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**Management System:** [Work Planning and Control](#)
**Subject Area:** [Work Planning and Control for Experiments and Operations](#)
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 Effective Date: [Aug 4, 2016 \(Rev 10.9\)](#)  
 Periodic Review Due: [Aug 15, 2017](#)

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## Introduction

This subject area uses the Integrated Safety Management core functions and guiding principles to establish a process for ensuring all work, operational and experimental, is properly planned and implemented to prevent accidents, injuries, and regulatory violations. It establishes requirements at Brookhaven National Laboratory (BNL) so that all work is properly managed by using a level of planning and control commensurate to the Environment, Safety, Security, and Health (ESSH) hazards, job complexities, and work coordination needs.

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

All work must be evaluated for potential ESSH hazards; those hazards must be analyzed and addressed appropriately to prevent injury to people or damage to assets by using a graded approach.

This subject area provides a graded approach to manage a wide range of operational and experimental activities from the routine to the highly complex, and integrates other safety practices and subject areas such as hazard analysis tools, training requirements, and environmental management into work planning. The Hazard Validation Tool (HVT) is one of the tools provided. The HVT is a database that has been developed to provide information on facility hazards and risk assessments on a room by room or operational area basis. All work planning should refer to the HVT as a source of facility hazard/risk information for developing and implementing controls for the facility hazards identified.

"Work" as defined in this subject area applies to all physical activities that involve the design, set-up, operation, maintenance, servicing, material handling, remediation, installation, repair, modification, construction, demolition, decommissioning of facilities, systems, or experiments by BNL or non-BNL staff (contractors, visiting scientists, students, and minors).

It should be noted that work not covered by this subject area must also be evaluated for potential ESSH hazards and mitigative actions taken to prevent accidents, injuries and regulatory violations. For example, office work should be evaluated, as a minimum, against the requirements of the [Ergonomics, Occupational](#) Subject Area.

BNL uses four processes to plan and control work, depending on the hazards, complexities, and job coordination levels. The [Work Planning and Control](#) Management System Description describes these practices. "Experimental Safety Review (ESR)" and "Work Planning and Control for Operations," are covered in detail in this subject area. The others, "Project Management" and "Standard Operating Procedures," are covered in other subject areas.

When planning work, we incorporate the basic principles of HPI:

- People are fallible, and even the best make mistakes.
- Error-likely situations are predictable, manageable, and preventable.
- Individual behavior is influenced by organizational processes and values.
- People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates.
- Events can be avoided by understanding the reasons mistakes occur and applying the lessons learned from past events.

The two processes contained in this subject area for planning and controlling work are as follows:

**1. Experimental Safety Review** - All organizations conducting experiments use this process to identify the hazards, plan the work controls, and authorize the experiment. The subject area allows a graded approach to determine the level of planning rigor. In some situations, such as setting up, operating or tearing down an experiment, the section [Work Planning and Control for Operations](#) may be a better process for addressing hazards and controls.

**2. Work Planning and Control for Operations** - All work is to be categorized according to all recognized hazards, including routine hazards, during all phases of the work, including estimating, planning, and pre-job briefs. This process allows three approaches for work planning and control: (1) worker planned, (2) prescribed, and (3) permit planned.

The "worker planned work" concept recognizes the skill levels and technical capabilities of the workers. Worker planned job activities do not require the level of rigor detailed in permit planned work. Worker planned work can only be performed when there are adequate barriers in place to reduce the hazards to acceptable levels in the areas of ESSH, work complexity, and work coordination as determined by the [Screening Tool for Worker Planned Work](#).

The "prescribed work" practice relies on instructional work documents (e.g., written and approved internal procedures, contractor health and safety plan, contractor procedure, and vendor operating or maintenance manuals).

The "permit planned work" practice requires use of a site-wide Work Permit Form when the ESSH, work complexity, **or** coordination do not have sufficient barriers to reduce the hazards to acceptable levels and the work is not covered by prescribed work documents.

Some work may require a combination of the processes; for example, a planned experiment will require an Experimental Safety Review, but may also need a work permit to assemble the experiment, an operating procedure (SOP) to provide instructions to operate the experiment, plus a work permit to safely dismantle the experiment. Regardless of the process, the scoping of work in any of the processes (i.e., experimental safety review, worker planned, prescribed, or permitted) must look at the entirety of work to be performed. For example, the vehicular movement of hazardous and radioactive materials, such as Sealed Sources, requires adherence to strict requirements provided in the [Transfer of Hazardous and Radiological Materials On-site](#) and/or [Transportation of Hazardous and Radiological Materials Off-site](#) Subject Areas, as they pertain to the work to be performed. All work planning must consider compliance with these requirements.

BNL's Training and Qualification Program provides the system and the requirements for staff to have the necessary training for work that is considered within their normal assignments. See the [Training and Qualifications](#) Subject Area and the [Training and Qualifications](#) website for more information. For individuals who do not possess a valid site-specific training qualification (e.g., Contractor Vendor Orientation [CVO]) and are under the supervision of a qualified escort, refer to the section [Using Escorts Instead of Providing Training](#) in this subject area.

Feedback and improvement is a key element within Work Planning and Control. For supervisors, one of the most important forms of obtaining feedback is through direct observation of work and interaction with workers (i.e., work oversight). The exhibit [Requirements and Expectations for Performing Work Oversight](#) provides the requirements and expectations for observing work as provided in supervisor training and the R2A2 for Supervisors and their Managers.

## Graded Approach

The ISM Guiding Principles state that hazard controls shall be "tailored" to the work being performed. See the section [Application of the Graded Approach](#) in the [Graded Approach for Requirements](#) Subject Area for guidance.

## Contents

| Section   | Overview of Content<br>(see section for full process)  |
|---|--|
| <a href="#">1. Experimental Safety Review</a>               | <ul style="list-style-type: none"> <li>• Write Experimental Safety Review.</li> <li>• ESRC reviews experiments or significant modifications to experiments for ES&amp;H concerns, appropriate controls, and approval.</li> <li>• Notify other Departments/Divisions, or their equivalent, about hazards associated with an experiment or significant modifications.</li> <li>• Approve experiment and document approval.</li> <li>• Monitor and assess experiments to ensure they are conducted safely.</li> <li>• Review long-term experiments; ensure design and operation experiment has not changed since its last approval.</li> <li>• Terminate experiment.</li> </ul> |
| <a href="#">2. Work Planning and Control for Operations</a> | <ul style="list-style-type: none"> <li>• Select, train, qualify Work Control Managers/Coordinators.</li> <li>• Identify, analyze, and control hazards for prescribed work.</li> <li>• Develop and use Work Permit.</li> </ul>  |

- Control work/job change.
- Post job reviews, feedback and improvement.
- Close out Work Permit.
- Complete ISM flowdown questions to contractors and suppliers through the web requisition process.
- Use Standing Work Permits as appropriate.

[3. Worker Planned Work](#)

- Identify, analyze, and control hazards for worker planned work.

[4. Work Observations](#)

- Determine time frame, scope, and resources for observing work.
- Categorize observations.
- Observe worker, and discuss observation with worker.
- Document observations.
- Send lessons learned to Lessons Learned Coordinator.

[5. Off-site Work](#)

- Determine how to approach tasks at different work sites.
- Follow procedures and safety requirements.
- Create off-site Radiological Work Permit (RWP), if required.
- Comply with requirements for shipping hazardous materials, if necessary.
- Determine if work permit is required.
- Review proposed experiment to determine if ESR should be written.

**[Definitions](#)**

**Exhibits**

- [BNL Working Alone Guidance](#)
- [ESH&Q Considerations When Designing an Experiment](#)
- [Experimental Safety Review Contents](#)
- [Guidance in Conducting Off-site Work](#)
- [Instructions for Filling out the Work Permit](#)
- [Job Safety Analysis](#)
- [Qualification Matrix](#)
- [Requirements and Expectations for Performing Work Oversight](#)
- [Security Checklist](#)
- [Using the Screening Tool for Worker Planned Work](#)
- [Work Planning and Control Operations Flowchart](#)

**Forms**

- [Experiment Safety Review Form](#)
- [Screening Tool for Worker Planned Work](#)
- [Work Permit Form](#)

**Training Requirements and Reporting Obligations**

This subject area contains training requirements associated with the following Job Training Assessments (JTAs) (see [Requirements of Each JTA](#)):

- GE-10A Operations and Experimental Work Control Manager
- GE-10B Operations and Experimental Work Control Coordinator
- GE-10C Operations and Experimental Primary Reviewer
- GE-11 Experimental Review Coordinator

This subject area does not contain reporting obligations.

**External/Internal Requirements**

| Requirement Number                    | Requirement Title   |
|---------------------------------------|---|
| <a href="#">10 CFR 830, Subpart A</a> | Energy, Nuclear Safety Management, Quality Assurance Requirements |
| <a href="#">21 CFR 1300-1309</a>      | Controlled Substances   |
| <a href="#">29 CFR 1910</a>           | Labor/Occupational Safety and Health Standards                    |

|  |   |
|--|---|
| <a href="#">40 CFR 82</a>  | Protection of Environment /Protection of Stratospheric Ozone  |
| <a href="#">6 NYCRR 200 - 234</a>  | New York State Department of Environmental Conservation/Prevention and Control of Air contamination and Air Pollution |
| <a href="#">BSA Contract No. DE-SC0012704 - Clause F.4</a>                     | Stop Work And Shutdown Authority  |
| <a href="#">BSA Contract No. DE-SC0012704 - Clause I.131 (DEAR 970.5223-1)</a> | INTEGRATION OF ENVIRONMENT, SAFETY, AND HEALTH INTO WORK PLANNING AND EXECUTION (DEC 2000)                            |
| <a href="#">NYS Title 10, Section 80</a>                                       | Controlled Substances   |
| <a href="#">O 151.1C</a>   | Comprehensive Emergency Management System   |
| <a href="#">O 414.1D Admin Chg 1 (May 8, 2013)</a>                             | Quality Assurance   |
| <a href="#">P 456.1</a>  | Secretarial Policy Statement on Nanoscale Safety  |

## References

[Asbestos](#) Subject Area

BNL [Lessons Learned](#)

[BNL Hazard Validation Tool \(HVT\)](#)

[Beryllium](#) Subject Area

[Biosafety in Research](#) Subject Area

[Bloodborne Pathogens](#) Subject Area

[BNL Safety Observation Database](#)

[BNL Training and Qualifications](#) website

[Brookhaven Training Management System \(BTMS\)](#)

[Business Systems Division \(BSD\)](#) homepage

[Calibration](#) Subject Area

[Centers for Disease Control and Prevention \(CDC\)](#) website

[Chemical Management System](#)

[Chemical Safety](#) Subject Area

[Community Involvement and Communications in Laboratory Decision-Making](#) Subject Area

[Compressed Gas Cylinders and Related Systems](#) Subject Area

[Confined Spaces](#) Subject Area

[Construction Safety](#) Subject Area

[Cryogenics Safety](#) Subject Area

[Document Control](#) Subject Area

[Domestic Travel](#) Subject Area

[Drinking Water](#) Subject Area

[ESH Assessments and Management Review](#) Subject Area

[Electronic Work Permit](#)

[Engineering Design](#) Subject Area

[Environmental Aspects and Impacts](#) Subject Area

[Environment, Safety, Health and Quality \(Tier D\) Inspections](#) Subject Area

[Environmental Assessments and ESH Management Review](#) Subject Area

[Environmental Monitoring](#) Subject Area

[Ergonomics, Occupational](#) Subject Area

[Event/Issues Management](#) Subject Area

[Environmental Aspects and Impacts](#) Subject Area

[Exhaust Ventilation](#) Subject Area

[Facility Hazard Analysis](#) Subject Area

[Facility Support Standard Operating Procedures](#)

[Facility Use Agreements](#) Subject Area

[Fire Safety](#) Subject Area

[Fitness for Duty, Requesting Determination](#) of Subject Area

[Hazardous Waste Management](#) Subject Area

[Inspections and Acceptance](#) Subject Area

[Laser Safety](#) Subject Area

[Lead](#) Subject Area

[Lifting Safety](#) Subject Area

[Liquid Effluents](#) Subject Area

[Lockout/Tagout \(LOTO\) for Installation, Demolition, or Service and Maintenance](#) Subject Area

[Materials Requiring Special Handling \(Including Age Sensitive Material\)](#) Subject Area

[Mixed Waste Management](#) Subject Area

[Movement by Vehicle of Hazardous and Radioactive Materials On-site](#) Subject Area

[Nanoscale Particle ESH](#) Subject Area

[National Environmental Policy Act \(NEPA\) and Cultural Resources Evaluations](#) Subject Area

[Natural Hazards in the Environment](#) Subject Area

[Noise and Hearing Conservation](#) Subject Area

[Non-ionizing Radiation Safety](#) Subject Area

[Non-Radioactive Airborne Emissions](#) Subject Area

[Occurrence Reporting and Processing System \(ORPS\)](#) Subject Area

[OHSAS 18001 Program](#) Subject Area

[Official Foreign Travel](#) Subject Area

**[Online Experiment Safety Review \(ESR\) Form](#)****[Organizational Self-assessment](#)** Subject Area**[Oxygen Deficiency Hazards \(ODH\), System Classification and Controls](#)** Subject Area**[PCB Management](#)** Subject Area**[Personal Protective Equipment and Respirators](#)** Subject Area**[Personnel Monitoring \(PM\) Standard Operating Procedures, Radiological Control Division](#)****[Pollution Prevention and Waste Minimization](#)** Subject Area**[Pressure Safety](#)** Subject Area**[Project Management](#)** Subject Area**[Purchase Requisition Review for Quality-related Requirements](#)** Subject Area**[Radioactive Airborne Emissions](#)** Subject Area**[Radioactive Waste Management](#)** Subject Area**[Radiological Stop Work](#)** Subject Area**[Readiness Evaluations](#)** Subject Area**[Records Management](#)** Subject Area**[Regulated Medical Waste Management](#)** Subject Area**[Roles, Responsibilities, Accountabilities, and Authorities \(R2A2\)](#)** Subject Area**[Signs, Placards, and Labels for Environmental, Safety and Health \(ESH\) Hazards](#)** Subject Area**[Static Magnetic Fields](#)** Subject Area**[Stop Work](#)** Subject Area**[Storage and Transfer of Hazardous and Nonhazardous Materials](#)** Subject Area**[Supplier Pre-Award Evaluation](#)** Subject Area**[Suspect/Counterfeit Items](#)** Subject Area**[Terms and Conditions Listing, Procurement & Property Management \(PPM\)](#)** website**[Training and Qualifications](#)** Subject Area**[Transportation of Hazardous and Radiological Materials Off-site](#)** Subject Area**[Underage Workers \(Minors\)](#)** Subject Area**[Underground Injection Control](#)** Subject Area**[Using Controlled Substances in Research](#)** Subject Area**[Work Control Managers/Coordinators List](#)****[Work Planning and Control](#)** Management System Description**Standards of Performance**

Managers shall analyze work for hazards, authorize work to proceed, and ensure that work is performed within established controls.

Managers shall ensure that work is planned to prevent pollution, minimize waste, and conserve resources, and that work is conducted in a cost-effective manner that eliminates or minimizes environmental impact.

All staff and users shall identify, evaluate, and control hazards in order to ensure that work is conducted safely and in a manner that protects the environment and the public.

All staff and guests shall comply with applicable Laboratory policies, standards, and procedures, unless a formal variance is obtained.

All staff and guests shall assure that only appropriately authorized individuals have access to facilities, information, resources, and assets.

All staff and users shall conduct work within the facility-specific operational boundaries specified in Facility Use Agreements.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

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**Management System:** [Work Planning and Control](#)

**Subject Area:** [Work Planning and Control for Experiments and Operations](#)

## 1. Experimental Safety Review

Effective Date: **Aug 4, 2016**

Subject Matter Expert: [Ann Emrick](#)

Management System Executive: [Raymond Costa](#)

### Applicability

This section applies to all existing or proposed experimental activities conducted under BNL control. The rigor of the review and documentation must be commensurate with the level of hazard. The overall goal is that all experiments operate in a way that ensures they are carried out safely and in an environmentally responsible manner.

This information applies to BNL staff and non-BNL staff planning, conducting, reviewing, and approving experiments.

### Required Procedure

Safety is a line responsibility that starts with the Responsible Person for the experiment and goes up to the Department Chair/Division Manager, or their equivalent, and the Associate Laboratory Director (ALD).

The ALDs and Department Chairs/Division Managers, or their equivalent, are ultimately responsible for the safe conduct of experiments within their organizations.

The Responsible Person (RP) or Principal Investigator (PI) must ensure that the Experimental Safety Review (ESR) is maintained current.

In some situations, such as setting up, operating or tearing down an experiment, the section [Work Planning and Control for Operations](#) may be a better process for addressing hazards and controls. The ESR is typically the overarching document for the work when Work Permits are employed for an associated activity/job.

**Note:** Although this section has been designed as an implementing procedure, each Department/Division, or their equivalent, may choose to establish a specific procedure for their area if needed. If a specific Departmental/Divisional, or their equivalent, procedure is used, it must be maintained so that it is current with the contents of this subject area. Consult with your Department/Division, or their equivalent, management to determine appropriate use of procedures. Departments/Divisions, or their equivalent, may assign responsibilities and roles differently in their procedures versus the assignments indicated in this section. However, Departments/Divisions, or their equivalent, must ensure all responsibilities described in the steps are assigned to qualified people.

Experimental Safety Review contains seven subsections:

#### [1.1 Establishing an Experimental Safety Review Program](#)

#### [1.2 Initiating an Experimental Safety Review](#)

#### [1.3 Conducting an Experimental Safety Review](#)

#### [1.4 Authorizing the Experiment](#)

#### [1.5 Performing Work within Controls](#)

#### [1.6 Reviewing Long-term Experiments](#)

#### [1.7 Terminating Experiments](#)

### 1.1 Establishing an Experimental Safety Review Program

|        |  |
|--------|--|
| Step 1 | <p>The Department Chair/Division Manager, or their equivalent, appoints an Experimental Review Coordinator (ERC). The Department Chair/Division Manager, or their equivalent, considers the following when selecting an ERC:</p> <ul style="list-style-type: none"> <li>• Education: Degree in related field or equivalent experience;</li> <li>• Experience: 5 years at Brookhaven National Laboratory (BNL) or equivalent experience at a Department of Energy (DOE) or related facility;             <ul style="list-style-type: none"> <li>◦ Knowledge of experimental work hazard identification and analysis (mechanical/electrical, biological, equipment hazards);</li> <li>◦ Familiarity with regulations and subject areas;</li> <li>◦ Good communication and technical writing skills.</li> </ul> </li> </ul> |
| Step 2 |  |



|               |   |
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|               | The Department Chair/Division Manager, or their equivalent, directs the Training Coordinator to assign the ERC Job Training Assessment (JTA) GE-11 to the Experimental Review Coordinator.  |
| <b>Step 3</b> | <p>The Department Chair/Division Manager, or their equivalent, appoints members to the Experimental Safety Review Team (ESRT), or the ERC may choose team members for each experiment based on hazards that need to be reviewed..</p> <p>The suggested team members include the following:</p> <ul style="list-style-type: none"> <li>• ERC (usually serves as Chairperson);</li> <li>• ESH Coordinator;</li> <li>• Safety and Health Services Representative (SHSD Rep);</li> <li>• Facility Support Representative (FS Rep);</li> <li>• Environmental Compliance Representative (ECR).</li> </ul> <p><b>Note:</b> Additional Subject Matter Experts (SMEs) may be consulted during reviews depending on the nature of the hazards (e.g., fire safety, cryogenics, pressure safety).</p> |

## 1.2 Initiating an Experimental Safety Review

The Experimental Safety Review (ESR) identifies hazards, associated controls, and assesses risks. The [Online Experiment Safety Review \(ESR\) Form](#), or an equivalent form, may be used to document the review.

|               |   |
|---------------|---|
| <b>Step 1</b> | The Responsible Person (RP) or Principal Investigator (PI) notifies the Experimental Review Coordinator (ERC) of his/her intent to conduct a new experiment or modify an existing one.  |
| <b>Step 2</b> | <p>The ERC determines if a new ESR is required. If the proposed experiment falls within the controls of the previously defined envelope or the RP/PI's current ESR, then there is no need for a team review.</p> <p><b>Note:</b> The <a href="#">BNL Hazard Validation Tool</a> and the exhibit <a href="#">ESH&amp;Q Considerations When Designing an Experiment</a> may be used as guidance.</p>  |
| <b>Step 3</b> | The RP/PI works with the ERC to prepare the ESR. See the exhibit <a href="#">Experimental Safety Review Contents</a> , which describes the contents that must be addressed in the review.   |
| <b>Step 4</b> | <p>The RP/PI and the ERC consider the following hierarchy of controls:</p> <ol style="list-style-type: none"> <li>1. Elimination – do you really need to introduce this hazard into the work?</li> <li>2. Substitution – e.g., replacing one substance or activity with a less hazardous one.</li> <li>3. Engineering – e.g., using a chemical fume hood, interlocks, shielding.</li> <li>4. Administration – policies and procedures for safe work practices.</li> <li>5. Personal Protective Equipment – e.g., gloves, earplugs.</li> </ol>   |
| <b>Step 5</b> | <p>The RP/PI and/or the ERC does the following:</p> <ul style="list-style-type: none"> <li>• Address ESH concerns, including ensuring appropriate controls are established for all phases of the experiments;</li> <li>• Considers human factors/HPI concepts and incorporates appropriate barriers to reduce the likelihood of errors;</li> <li>• Works with the ECR to address any significant environmental aspects, ensure all wastes and disposal pathways are identified, verify requirement for a NEPA review, and conduct chemical screening for EPHA;</li> <li>• Works with the SHSD Representative to address Industrial Hygiene and Industrial Safety concerns;</li> <li>• Works with the Training Coordinator to identify training, and ensures that applicable JTAs are assigned/updated;</li> <li>• Works with the FS Rep to address radiological issues;</li> <li>• Works with Occupational Medicine Clinic (OMC) to identify any medical surveillance requirements;</li> <li>• Contacts the Transportation Safety Officer for questions related to transporting hazardous materials;</li> <li>• Notifies other Departments/Divisions, or their equivalent, about hazards associated with an experiment, e.g., Emergency Services, the Occupational Medical Clinic, F&amp;O Complex Core Team, and building occupants of shared spaces. Notification is meant to communicate hazards, controls, and issues that may affect their work;</li> <li>• Provides feedback, including experiences or lessons learned;</li> <li>• Works with the person knowledgeable and responsible for the space to consider equipment and activities that can impact the space or other occupants, as well any existing location hazards/issue that need to be addressed. (e.g., oxygen deficiency, noise, space safety envelopes/thresholds) and to update the Hazard Validation Tool if necessary;</li> <li>• Considers work that might be conducted off-hours or alone and the need for any limitations or special instructions based on the hazard (see <a href="#">BNL Working Alone Guidance</a>);</li> <li>• Determines if any facet of the research merits additional communications, internal or external;</li> <li>• Considers the protection of sensitive or classified data, critical/valuable equipment and incorporates necessary controls;</li> <li>• Incorporates worker input either by direct involvement in the planning process or a discussion during the briefing to ask for any initial comments or to inform them of their duty to provide feedback throughout the course of the experiment;</li> <li>• Provides a reviewed ESR to the Chairman/Manager, or their equivalent, or designee for approval/disapproval.</li> </ul> |
| <b>Step 6</b> | The RP/PI evaluates the risks associated with the experiment using guidance on risk assessment in the <a href="#">OHSAS 18001 Program</a> Subject Area.   |
| <b>Step 7</b> | <p>The ERC consults with the following to determine if revised or additional documents are required:</p> <ul style="list-style-type: none"> <li>• Facility Project Manager for the Facility Use Agreement (FUA), Facility Risk Assessment (FRA), or F/R Run Card;</li> <li>• Local Emergency Coordinator for the Local Emergency Plan;</li> <li>• Additional Protocol Coordinator for work involving research and development, manufacture, or the export or import of materials or components that would have an intended application to the nuclear fuel cycle;</li> <li>• The BNL Nuclear Safety Officer for review if it is a Radiological Facility to ensure that the isotope inventory limits are maintained.</li> </ul>  |

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|  | <b>Note:</b> This documentation can be in the form of a new or amended Experimental Safety Review. |
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### 1.3 Conducting an Experimental Safety Review

The Experimental Safety Review Team (ESRT) is responsible for reviewing experiments for the following:

- ES&H concerns;
- Ensuring that appropriate controls for each experiment are established for all phases included in the ESR (set-up, operations, and tear-down);
- Recommending approval or disapproval to the Department Chair/Division Manager, or their equivalent, or designee.

|               |   |
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| <b>Step 1</b> | The ERC forwards the final draft of the ESR to the ESRT if a team review is needed. If a team review is not needed, the ERC performs the actions in Steps 2, 3, and 4.  |
| <b>Step 2</b> | The ESRT determines if the ESR documentation is adequate to ensure that all the hazards and controls are identified.<br><b>Note:</b> The <a href="#">BNL Hazard Validation Tool</a> and the exhibit <a href="#">ESH&amp;Q Considerations when Designing an Experiment</a> may be used as guidance.  |
| <b>Step 3</b> | The ESRT considers the potential for stakeholder concerns and may use the <a href="#">Checklist for Identifying Issues/Upcoming Decisions That May Require Community Involvement/Communications</a> in the <a href="#">Community Involvement and Communications in Laboratory Decision-Making</a> Subject Area for guidance. If a concern is identified, submit the completed form to the Community Involvement Office. |
| <b>Step 4</b> | The ESRT determines if additional Laboratory review is required, such as the Laboratory Environmental Safety & Health Committee, Pressure Safety Subcommittee, Electrical Safety Committee, or Institutional Biosafety Committee.   |
| <b>Step 5</b> | The RP/PI completes actions required.   |
| <b>Step 6</b> | The ERC documents the review and ensures all issues are resolved.   |
| <b>Step 7</b> | The ERC and/or ESRT ensure that all pre-start conditions are met before the work begins, and conducts a walk through of the area to ensure that the controls specified in the ESR are implemented.  |
| <b>Step 8</b> | After ESR reviewers, including the ERC, have approved, the ERC forwards the ESR to the Department Chair/Division Manager, or their equivalent, or designee for approval/disapproval.  |
| <b>Step 9</b> | The ERC or designee maintains the ESR documentation according to the <a href="#">Records Management</a> Subject Area.   |

### 1.4 Authorizing the Experiment

The Department Chairs/Division Managers, or their equivalent, are responsible for authorizing work and ensuring compliance with this subject area.

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| <b>Step 1</b> | Obtain approval from SMEs/Team/Committee as per the subject areas.  |
| <b>Step 2</b> | The Department Chair/Division Manager, or their equivalent, or designee approves the experiment and documents that approval. The approval can be documented on the <a href="#">Online Experiment Safety Review (ESR) Form</a> , <a href="#">Experiment Safety Review Form</a> , or equivalent. Long-term experiments must be reviewed annually, or more often if required by Authorization Basis (e.g., ASE).<br>Significant changes to hazards or controls require a new review and approval before their implementation. Upon the next annual review, changes that had been documented separately or as amendments/attachments will be incorporated into the revised ESR. |

### 1.5 Performing Work within Controls

Work may begin once the ESR is authorized.

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| <b>Step 1</b> | All workers must be briefed on the requirements in the ESR to ensure their understanding of the work and hazards, control, and risks. Workers should provide feedback during the planning and conduct of the work.<br>Workers consider the following: <ul style="list-style-type: none"> <li>• What can go wrong (what keeps you up at night)? What measures or controls are in place to prevent that from happening?</li> <li>• How do (or which of) the most important controls depend on human (or personnel) actions or behavior? Where might an error or omission impair the effectiveness of an important control?</li> <li>• Error precursors are conditions or attitudes that increase the chances of an error during the performance of a specific task by a particular individual, such as time pressure or unfamiliarity with a task. Are there precursors that, if reduced or eliminated, would make the controls more likely to be effective?</li> <li>• Changes that can inadvertently introduce or increase risk in another area?</li> </ul> <b>Note:</b> For additional information and guidance on error, error precursors, and human performance improvement, see the Human Performance Improvement webpage, Improving Defenses: <a href="http://intranet0.bnl.gov/oii/hpi/improve-defenses.php">http://intranet0.bnl.gov/oii/hpi/improve-defenses.php</a> |
| <b>Step 2</b> | The RP/PI must notify the ERC of any changes that may be significant (e.g., new hazards or equipment) before implementation. The ERC will determine the level of review required.  |

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|               | <p>Minor changes typically include adding materials, equipment, locations, or staff, and neither expands the safety envelope identified nor requires additional controls. Minor changes may be approved by the ERC and/or a subset of the Review Team. Minor changes must be documented, e.g., Amendments, Attachments, Track Change Form, or Note to File. Upon the next Annual Review, changes are incorporated.</p> <p>Major changes typically include addition of a new class of hazard, such as addition of a carcinogen, cryogen, or new location requiring a walk-down due to potential additional controls. Major changes require a full Team Review (refer to section 1.2), resulting in a revised or new ESR or other Work Planning document (e.g., SOP or Work Permit), and workers briefed on changes.</p> <p><b>Note:</b> If the authorized work is not progressing as planned, new hazards are identified or introduced, or location and/or job complexity issues arise that need to be addressed, workers must contact the PI/RP or supervisor.</p> <p>If a staff member sees an unsafe act, activity, or a condition that creates imminent danger, then the staff member can exercise Stop Work authority (see the <a href="#">Stop Work</a> Subject Area).</p> <p><b>Note:</b> Minor changes or supplemental information can be added to the ESR package without additional review at the discretion of the ERC and/or ESRT.</p> |
| <b>Step 3</b> | Line management monitors experiments, via routine supervision/manager functions, work observation, the Tier 1, and self-assessment processes.   |

## 1.6 Reviewing Long-term Experiments

All experiments must be reviewed at least annually.

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| <b>Step 1</b> | The ERC/designee contacts the RP/PI to initiate the annual review.   |
| <b>Step 2</b> | The RP/PI reviews the ESR and updates it to include changes in conditions or scope of the experiment.  |
| <b>Step 3</b> | The ERC or designee reviews the ESR as described in the subsection Conducting an Experimental Safety Review and determines if further review is required. Attention must be paid to revised requirements that may impact the ESR   |
| <b>Step 4</b> | <p>The RP/PI or ERC documents the annual review by doing one of the following:</p> <ul style="list-style-type: none"> <li>• Modifying the existing ESR;</li> <li>• Adding an amendment/attachment to the ESR;</li> <li>• Creating a new ESR;</li> <li>• Denoting that nothing has changed.</li> </ul> <p><b>Note:</b> Until the Department/Division, or their equivalent, approves an updated ESR, the original ESR along with any letters, attachments, and amendments will be in effect.</p> |
| <b>Step 5</b> | <p>The workers incorporate any operational experience, opportunities for improvement, or lessons learned in the annual review.</p> <p>The annual review is documented and approved following the subsections 1.3 Conducting an Experimental Safety Review and 1.4. Authorizing the Experiment.</p>   |

## 1.7 Terminating Experiments

At the conclusion of an experiment, the experimental area must be left in a condition that is satisfactory to the host Department/Division, or their equivalent.

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| <b>Step 1</b> | The RP/PI informs the host Department/Division's Management that the experimental activities will soon terminate.  |
| <b>Step 2</b> | <p>At the conclusion of an experiment the RP/PI ensures that the experimental area is left in a condition that is satisfactory to the host Department/Division, or their equivalent.</p> <p>This includes the following:</p> <ul style="list-style-type: none"> <li>• Disposing of radioactive, industrial, hazardous, and mixed wastes;</li> <li>• Reconciling the chemical inventory;</li> <li>• Disposition of experimental equipment;</li> <li>• Appropriate chemical, biological, and/or radiological decontamination of the area;</li> <li>• Any type of area monitoring that may be required (i.e., lead, air, cadmium, beryllium, asbestos);</li> <li>• Housekeeping;</li> <li>• Postings are updated (Placards, User/Access Lists, Hazard Postings).</li> </ul> <p>Line management designee conducts a walk through to verify the condition of the area. An Exit Readiness Evaluation may be requested (see the section <a href="#">Exit Readiness Evaluation (ERE)</a> in the <a href="#">Readiness Evaluations</a> Subject Area).</p> |
| <b>Step 3</b> | <p>Line management designee ensures that the following is reconciled, if needed:</p> <ul style="list-style-type: none"> <li>• Documents updated (e.g., FUA, LEP, Run Cards);</li> <li>• Training and Qualifications updated (e.g., JTAs, Medical surveillance, JAFs);</li> <li>• Roles and Responsibilities updated (e.g., sealed source custodians, POCs);</li> <li>• Required equipment returned (e.g., TLDs, monitoring equipment, PPE).</li> </ul>   |

## References

[Biosafety in Research](#) Subject Area

[BNL Hazard Validation Tool](#)

[Community Involvement and Communications in Laboratory Decision-Making](#) Subject Area

[OHSAS 18001 Program](#) Subject Area

[Online Experiment Safety Review \(ESR\) Form](#)

[Readiness Evaluations](#) Subject Area

[Records Management](#) Subject Area

[Stop Work](#) Subject Area

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[Electronic Work Permit](#)

[Event/Issues Management](#) Subject Area

[Facility Hazard Analysis](#) Subject Area

[Movement by Vehicle of Hazardous and Radioactive Materials On-site](#) Subject Area

[Radiological Stop Work](#) Subject Area

[Records Management](#) Subject Area

[Stop Work](#) Subject Area

[Terms and Conditions Listing](#), [Procurement & Property Management \(PPM\)](#) website

[Training and Qualifications](#) Subject Area

[Work Control Managers/Coordinators List](#)

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Management System: [Work Planning and Control](#)Subject Area: [Work Planning and Control for Experiments and Operations](#)**2. Work Planning and Control for Operations**

Effective Date: Aug 4, 2016

Subject Matter Expert: [Raymond Costa](#)Management System Executive: [Raymond Costa](#)**Applicability**

This information applies to BNL and non-BNL staff who conduct work, including contractors, vendors, and service providers.

**Required Procedure**

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

Departments/Divisions, or their equivalent, may assign responsibilities and roles differently in their procedures versus the assignments indicated in this section. However, Departments/Divisions, or their equivalent, must ensure that all responsibilities described in the steps are assigned to qualified people.

Note: For information and guidance on error, error precursors, and human performance improvement, see the Human Performance Improvement webpage, Improving Defenses: <http://intraneto.bnl.gov/oii/hpi/improve-defenses.php>.

Work Planning and Control for Operations contains nine subsections:

**[2.1 Selection, Training, and Qualification for Work Control Managers and Coordinator, and Primary Reviewers](#)****[2.2 Defining/Determining the Work Planning Level](#)****[2.3 Prescribed Work Hazard Identification, Analysis and Controls](#)****[2.4 Permit Planned Work Hazard Identification, Analysis and Controls](#)****[2.5 Control of Work/Job Change Control](#)****[2.6 Post Job Review, Feedback and Improvement](#)****[2.7 Permit Planned Work Closeout](#)****[2.8 Integrated Safety Management \(ISM\) Flowdown to Contractors and Suppliers](#)****[2.9 Standing Work Permit](#)****2.1 Selection, Training, and Qualification for Work Control Managers and Coordinators, Primary Reviewers, and Work Supervisors**

|        |   |
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| Step 1 | <p>The Department Chair/Division Manager, or their equivalent, appoints a Work Control Manager (WCM) to implement the work planning and control process for their operations in accordance with this subject area. When appointing a WCM, consider the following:</p> <ul style="list-style-type: none"> <li>• Education: Degree in related field or equivalent experience;</li> <li>• Experience: Several years at BNL or equivalent experience at a DOE or related facility;</li> <li>• Functional Area Experience: <ul style="list-style-type: none"> <li>◦ Hazard identification and analysis;</li> <li>◦ Application of requirements, standards, and regulations into work planning;</li> <li>◦ Familiar with pre-job briefing and activity walk-down concepts; and</li> <li>◦ Communication and writing skills.</li> </ul> </li> </ul>  |
| Step 2 | <p>The Department Chair/Division Manager, or their equivalent, or designee appoints Work Control Coordinators (WCCs) for each area or appropriate group within their Department/Division, or their equivalent, to fulfill the requirements of this subject area. When appointing WCCs, consider the following:</p> <ul style="list-style-type: none"> <li>• Experience: Several years at BNL or equivalent experience at a DOE or related facility;</li> <li>• Functional Area Experience: <ul style="list-style-type: none"> <li>◦ Hazard identification and analysis within the assigned work environment;</li> <li>◦ Application of requirements, standards, and regulations into work planning;</li> <li>◦ Work screening requirements and knowledge of pre-job briefing and activity walk-down concepts; and</li> <li>◦ Communication and writing skills.</li> </ul> </li> </ul> |
| Step 3 | <p>The Department Chair/Division Manager, or their equivalent, or designee must ensure that WCCs are qualified to perform work commensurate with operations and hazards in their Departments/Divisions, or their equivalent. Requirements for qualifying WCCs must include one of the following methods:</p>  |

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|               | <ul style="list-style-type: none"> <li>On-the-job training (e.g., organizations' work planning procedure, work permit development and implementation, pre-job briefings);</li> <li>Demonstration (i.e., identification of hazards associated with planned work, hazard mitigation, activity planning, and implementation).</li> </ul> <p>Forward a note to the <a href="#">Training and Qualifications Office</a> to document the completion of the qualification.</p>   |
| <b>Step 4</b> | <p>The Department Chair/Division Manager, or their equivalent, or designee appoints Primary Reviewer(s) for each area or appropriate group within their Department/Division, or their equivalent.</p> <p>When appointing a Primary Reviewer consider the following:</p> <ul style="list-style-type: none"> <li>Education: Degree in related field or equivalent experience;</li> <li>Experience: Several years at BNL or equivalent experience at a DOE or related facility;</li> <li>Functional Area Experience: <ul style="list-style-type: none"> <li>Hazard identification and analysis;</li> <li>Application of requirements, standards, and regulations in work planning; and</li> <li>Communication and writing skills.</li> </ul> </li> </ul> <p>The Primary Reviewer provides an independent review of the work permit. For each work permit they review and approve, the Primary Reviewer is responsible for ensuring that:</p> <ul style="list-style-type: none"> <li>Review Team members were appropriate for the work that was planned and familiar with the risks the work may involve;</li> <li>Hazards and risks that could impact ESSH have been considered, identified, and addressed as needed to meet BNL requirements.</li> </ul> <p><b>Note:</b> When the "Screening Tool for Worker Planned Work" indicates that a work permit is not required and a work permit is used, the Primary Review is not required to review the work permit.</p> |
| <b>Step 5</b> | <p>After selections are made, assign the appropriate R2A2, and the appropriate <a href="#">Brookhaven Training Management System (BTMS)</a> WCM/WCC Job Training Assessments (JTAs) from the following:</p> <ul style="list-style-type: none"> <li>GE-10A Operations and Experimental Work Control Manager</li> <li>GE-10B Operations and Experimental Work Control Coordinator</li> <li>GE-10C Operations and Experimental Primary Reviewer</li> </ul> <p>The Department/Division, or their equivalent, may create their own equivalent that includes the requirements of the appropriate JTA above and any additional requirements.</p>  |
| <b>Step 6</b> | <p>Assign the following JTA to those who will be supervising work. "Work" is defined as the activities that involve the design, set-up, operation (including the handling of material), maintenance/servicing, modification, construction, demolition, or decommissioning of facilities, equipment, or experiments by BNL staff or non-BNL staff. <b>Note:</b> Excluded from this definition would be supervision of office workers who do not perform any work in the field:</p> <ul style="list-style-type: none"> <li>JTA GE-108 Supervisor Work Oversight</li> </ul>   |
| <b>Step 7</b> | <p>The Department Chair/Division Manager, or their equivalent, or designee ensures that they maintain an up-to-date list of approved Primary Reviewers, WCMs, and WCCs.</p>  |

## 2.2 Defining/Determining the Work Planning Level

The [Work Planning and Control Operations Flowchart](#) depicts the flow of this process.

All work must be categorized according to all recognized hazards, including routine hazards, and during all phases of the work, including estimating, planning, and pre-job briefs.

This screening process provides the decision path for determining when worker planned work applies.

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| <b>Step 1</b> | <p>The Work Requestor provides a complete, accurate, and detailed description of the work or service required to the WCC. The following information must be included with the description of work:</p> <ul style="list-style-type: none"> <li>Location of work to be performed;</li> <li>Any special instructions, considerations, known area hazards and controls, required training, and access requirements.</li> </ul> <p><b>Note:</b> For work performed off-site, refer to the section <a href="#">Off-site Work</a>.</p> <p><b>Note:</b> For work conducted in a designated security area (PPA area, CAA, Limited Area, VTR) or where enhanced security systems are deployed (card readers, CCTV, duress alarms, etc.), contact LP Security Operations (x7425) to determine the need for a work permit. Refer to the <a href="#">Security Checklist</a> for additional information.</p>   |
| <b>Step 2</b> | <p>The WCC, using the information provided by the Requestor in step 1 and gathering additional information as needed, ensures that they understand the full scope of work and ESSH impact to determine if worker planned work can be performed.</p> <p>If the job being screened could affect experimental operations, impact the hazard classification or safety envelope of the facility, or require equipment modification or installation, the WCC consults with the appropriate personnel (e.g., cognizant engineer or technical authority).</p> <p>The organization responsible for the project and/or managing the work is responsible for assigning the WCC. If the job being screened involves modification to facilities, structures, systems, etc., then the WCC consults the F&amp;O Facility Project Manager or F&amp;O Facility Complex Engineer.</p> <p><b>Note:</b> The scoping of work must consider the entirety of work to be performed. For example, the vehicular movement of hazardous and radioactive materials, such as Sealed Sources, requires adherence to strict requirements provided in the <a href="#">Movement by Vehicle of Hazardous and Radioactive Materials On-site</a> and/or <a href="#">Transportation of Hazardous and Radiological Materials Off-site</a> Subject Areas, as they pertain to the work to be performed. All work planning must consider compliance with these requirements.</p> <p><b>Note:</b> For unfamiliar facilities or rooms within a facility, the <a href="#">BNL Hazard Validation Tool</a> should be consulted for the area to identify hazards, measures to mitigate the hazards, and procedures in-place to eliminate or control the risk, including engineering controls, work practices, and personal protective equipment. In addition, a review of work area placards, signs, tags, temporary barricades, and labels, the area should be walked down and the work discussed with people who are knowledgeable of the area, such as the FPM, Research Space Manager (RSM), Cognizant Space Manager (CSM) and/or ESH Representative/Coordinator.</p> |

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| Step 3 | <p>The WCC must screen work for each of the following attributes:</p> <ul style="list-style-type: none"> <li>• ESSH;</li> <li>• Work Complexity; and</li> <li>• Work Coordination</li> </ul> <p>The WCC uses the <a href="#">Screening Tool for Worker Planned Work</a> or Department/Division approved documented screening process.</p> <p><b>Note:</b> Department/Division approved documented screening process must meet the following conditions as a minimum for work to be classified as worker planned work:</p> <ul style="list-style-type: none"> <li>• ESSH hazards are clearly understood; controls are established and implemented, and there are no security concerns.</li> <li>• For Work Complexity, all steps of the work to be accomplished are clearly understood by all workers involved and controls are established.</li> <li>• For Work Coordination, work does not involve a <a href="#">Credited Control</a>; work can be accomplished without coordination with other groups in the work area or without coordination with ESH personnel during the job/activity.</li> </ul> <p><b>Note:</b> Instructions for using the Screening Tool for Work Planned Work can be found in the exhibit <a href="#">Using the Screening Tool for Worker Planned Work</a>.</p> |
| Step 4 | <p>The WCC determines the work planning mode (i.e., Permit Planned Work, Prescribed Work, or Worker Planned Work).</p> <p>If the screening tool results in sufficient questions being answered "YES" for each job attribute, then the work can be planned as worker planned work (proceed to the section <a href="#">Worker Planned Work</a>).</p> <p>If one or more job attributes do not meet the required number of "YES" questions, then the work must be planned using one of the following the planning modes:</p> <ul style="list-style-type: none"> <li>• <a href="#">Prescribed Work Hazard Identification, Analysis and Controls</a> - proceed to subsection 2.3; or</li> <li>• <a href="#">Permit Planned Work Hazard Identification, Analysis and Controls</a> - proceed to subsection 2.4.</li> </ul> <p><b>Note:</b> Any individual can request that a work permit be used to perform any job.</p>  |

### 2.3 Prescribed Work Hazard Identification, Analysis and Controls

The "Prescribed Work" mode of work relies on prescribed work documents that are a formal set of instructions or guidelines (e.g., standard operating procedure, contractor health and safety plan, contractor procedure, or operating/maintenance manual) for performing the work.

A prescribed work document identifies how the work is to be performed safely (hazards and controls are identified and controls implemented) and, it includes authorizations to perform the work. Prescribed work documents are usually prepared for repetitive work. Line Management ensures that a formal set of prescribed work documents are approved and meet the requirements of relevant subject areas, e.g., [Document Control](#) Subject Area, [Lockout/Tagout \(LOTO\) for Installation, Demolition, or Service and Maintenance](#) Subject Area, [Electrical Safety](#) Subject Area, and [Laser Safety](#) Subject Area.

The goal of prescribing the way the work will be performed is to control the work so that the levels of hazard for each of the job categories (i.e., ESSH, Work Complexity, and Work Coordination) are as low as reasonably achievable.

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| Step 1 | <p>Line Management implements a process for the development, review and approval of a prescribed work document that considers the following</p> <ul style="list-style-type: none"> <li>• Access requirements for the area where the work will be performed;</li> <li>• Any special instructions or considerations that may be applicable;</li> <li>• Changes impacting configuration management;</li> <li>• Hazards associated with the job (e.g., industrial hygiene, fall protection, electrical safety, etc.);</li> <li>• The controls necessary to prevent accidents, injuries, and environment or property damage;</li> <li>• Training requirements;</li> <li>• Verification that the prescribed work document fully and accurately addresses the scope of work to be performed; and</li> <li>• The person authorized to start the proposed work, and whether additional work start authorizations and notifications are needed before starting work.</li> </ul>  |
| Step 2 | <p>Using the approved prescribed work document(s) the work reviewer, job supervisor, or designee, conducts a pre-job safety briefing with the worker(s) to review pre-planned work document precautions, pre-requisites, job hazards, and/or work coordination. Consider addressing the following at the pre-job briefing:</p> <ul style="list-style-type: none"> <li>• Are workers aware that they must contact their job supervisor if the prescribed work document cannot be followed as written, the work is not progressing as planned, new hazards are identified or introduced, or location and/or job complexity issues arise that need to be addressed?</li> <li>• What are the hazards associated with the work? And are they properly controlled?</li> <li>• What are the critical steps to complete this work safely?</li> <li>• How can we make a mistake at those critical steps.</li> <li>• What is the worst thing that can go wrong?</li> <li>• What barriers or defenses are needed?</li> <li>• What actions are to be taken if new hazards are identified?</li> <li>• Have all the necessary permits been obtained and completed, and permit conditions met?</li> </ul> |



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|        | <ul style="list-style-type: none"> <li>• Are workers aware that if additional crew members arrive on the job after the original briefing, they must also be briefed before they can start work?</li> </ul> <p><b>Note:</b> Staff members can exercise Stop Work authority. See the <a href="#">Stop Work</a> Subject Area.</p> |
| Step 3 | <p>Work within the established controls.</p> <p><b>Note:</b> If changes are needed in the prescribed work document, stop and contact the work planner, the jobs supervisors, or designee.</p>  |
| Step 4 | <p>At the completion of work, the job supervisor</p> <ul style="list-style-type: none"> <li>• Ensures that the work site is left in a clean and safe condition;</li> <li>• Request feedback from the workers; and</li> <li>• Refers to subsection <a href="#">Post Job Review, Feedback and Improvement</a>.</li> </ul>        |

## 2.4 Permit Planned Work Hazard Identification, Analysis and Controls

The Work Permit Form is a means for each Department/Division, or their equivalent, to control work that does not meet the requirements for worker planned work. It may also be used for worker planned work. The form, which was designed around the ISM Five Core Functions, provides the scope of work, an ESSH hazard and control checklist, work plan, list of reviewers and approvers, and a mechanism for worker involvement and feedback. Additional safety permits, work instructions, and drawings are attached to the work permits as needed.

**Note:** Work permits are not required to stabilize emergency situations. An emergency is defined as an event or uncontrolled release of hazardous substances that require immediate response to prevent death or serious injury to BNL employees, visitors, and/or guests. However, the need for proper hazard recognition, use of ESSH principles, job planning, and notifications of facility personnel are still required. Once the situation is stabilized, formal work planning process (this section) applies.

**Note:** For projects involving a mix of subcontractor, BNL personnel, and/or scientific department personnel, the lead organization must ensure roles and responsibilities are clearly identified and documented for all project tasks, including change control, turnover, and project closure. This may be accomplished by establishing a specific written project management/execution plan (refer to the [Project Management](#) Subject Area) or by the use of a work permit. The plan/permit must clearly identify, as appropriate, owners of tasks, project scope, project responsibilities, actions resulting from routine and closeout inspections, and development/maintenance configuration management documents (electrical drawings, as-built drawings, and preventive maintenance checklists). The plan/permit must be updated as needed.

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| Step 1 | <p>The WCC is responsible for generating the work permit, ensuring that the Work Permit Form or <a href="#">Electronic Work Permit</a> is completed in accordance with the <a href="#">Instructions for Filling out the Work Permit</a>, and following the steps in this subsection.</p> <p>The WCC, using the work information collected in the subsection Defining/Determining the Work Planning Level, documents the job information (i.e., date, work permit number, and short description of the activity) for the work permit.</p>   |
| Step 2 | <p>The WCC establishes a Review Team, considering the following as it applies to the work to be performed:</p> <ul style="list-style-type: none"> <li>• ES&amp;H professionals/SMEs</li> <li>• F&amp;O Facility Project Manager</li> <li>• Research Space Manager</li> <li>• Operations professionals</li> <li>• Engineers</li> <li>• Quality Representatives</li> <li>• Service provider</li> <li>• Worker representatives.</li> </ul>  |
| Step 3 | <p>The Review Team considers the following as it applies to the work to be performed:</p> <ul style="list-style-type: none"> <li>• Visits the job site;</li> <li>• Reviews and identifies the impact to experimental operations, hazard classification, Human Factors/HPI considerations, safety envelope of the facility, and the Facility Use Agreement, consulting with the appropriate personnel (e.g., cognizant engineer, technical authority, as needed).</li> <li>• Reviews applicable Job Risk Assessments, the Hazard Validation Tool (or Facility Risk Assessments where the HVT does not address the work area), and other procedures for hazards and established controls;</li> <li>• Perform an ESSH analysis and identifies hazards and controls (e.g., Job Safety Analysis [JSA], Phased Hazard Analysis [PHA], Safe Work Plan [SWP]) must be written and attached to the work permit.</li> </ul> <p><b>Note:</b> Reviewing work permits in a team setting is encouraged, as opposed to circulating the permit for review and sign-off in series. The team environment is more effective in ESSH reviews and in coordinating the required resources.</p> |
| Step 4 | <p>The Review Team develops a work plan in accordance with section 3 of the <a href="#">Instructions for Filling out the Work Permit</a>. The development of a work plan may include the setup and use of mockups, dry-runs, and other tools.</p> <p>The written work plan will contain the following, as it applies to the work to be performed:</p> <ul style="list-style-type: none"> <li>• Work Instructions: this may include a few job steps or detailed step-by-step instructions. The following must be considered when determining the level of detail in the work plan:</li> </ul>   |

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|                | <ul style="list-style-type: none"> <li>◦ References to technical manual steps or procedures</li> <li>◦ Skill level and experience of the workers</li> <li>◦ Special training requirements</li> <li>◦ Complexity of work</li> <li>◦ Number of steps in the performance of the work</li> </ul> <ul style="list-style-type: none"> <li>• Prerequisites: preparatory actions to be performed before work can be started and any administrative and physical requirements;</li> <li>• Precautions: precautions that must be observed during performance of work;</li> <li>• Identification for hold points and other monitoring;</li> <li>• ESSH work controls for mitigating identified hazards based on the following hierarchy, as practical: <ul style="list-style-type: none"> <li>◦ elimination/substitution of hazards;</li> <li>◦ engineering controls;</li> <li>◦ administrative controls and work practices; and/or</li> <li>◦ personal protective equipment (PPE).</li> </ul> </li> <li>• Operational limits imposed;</li> <li>• Coordination of tasks;</li> <li>• Special conditions for working alone (see <a href="#">BNL Working Alone Guidance</a>);</li> <li>• Scheduling, coordination and notification;</li> <li>• Changes impacting configuration management; and</li> <li>• Post Work Testing and Acceptance: guidance concerning post work testing to ensure proper completion of work and/or system readiness to return to service.</li> </ul> <p><b>Note:</b> As an alternative, work instructions may be documented in an approved internal or standard operating procedure, or referenced procedures that may be attached to do the work.</p> |
| <b>Step 5</b>  | After the WCC concludes that the Review Team has adequately planned and documented the Work Permit, each team member signs off in the "Reviewed By" section (e.g., ESSH Professional, Work Control Coordinator, F&O Facility Project Manager, Research Space Manager, and Service Provider, as it applies to the work to be performed).  |
| <b>Step 6</b>  | The WCC or designee forwards the Work Permit to the Department's/Division's, or their equivalent's, Primary Reviewer(s) for review and approval for work screened other than worker planned work.<br><b>Note:</b> The Primary Reviewer conducts an independent review of the work plan on the Work Permit. The Primary Reviewer's signature means that: the Review Team members were appropriate for the work that was planned and familiar with the risks the work may involve, the Review Team member(s) visited the job site, and hazards and risks that could impact ESSH have been considered and controls established according to BNL requirements.<br><b>Note:</b> When the "Screening Tool for Worker Planned Work" indicates that a work permit is not required and a work permit is used, the Primary Reviewer is not required to review the work permit.   |
| <b>Step 7</b>  | After the Primary Reviewer signs the Work Permit, the Permit and supporting documents (if applicable) are forwarded to the WCC. The WCC ensures that scheduling, coordination and notification of stakeholder(s) has been accomplished.  |
| <b>Step 8</b>  | The WCC or job supervisor conducts a pre-job briefing with the work crew to review job hazards, permits, and/or work coordination requirements. The following is considered at the pre-job briefing: <ul style="list-style-type: none"> <li>• What are the hazards associated with the work? Are they properly controlled?</li> <li>• What are the critical steps or phases to complete this work safely?</li> <li>• How can we make a mistake at these critical steps?</li> <li>• What is the worst thing that can go wrong?</li> <li>• What barriers or defenses are needed?</li> <li>• What are the necessary permits to do this work? Have they been obtained, completed, and permit conditions met?</li> <li>• What actions are to be taken if new hazards are identified? Should the WCC or job supervisors be contacted?</li> <li>• Are workers aware that if additional crew members arrive on the job after the original briefing, they must also be briefed before they can start work?</li> </ul>   |
| <b>Step 9</b>  | After the pre-job briefing is complete, the job supervisor and workers sign Section 4 of the Work Permit, or an attached sign-off list, indicating that they understand the hazards, controls, and work permit requirements before they start working.<br><b>Note:</b> The workers must sign for themselves; it is not permissible for the job supervisor to sign for the workers.<br><b>Note:</b> If new workers or job supervisors are added to the job, they must attend a pre-job briefing and add their signatures to the permit prior to starting work.  |
| <b>Step 10</b> | The Department/Division, or their equivalent, Line Manager or designee authorizes work to be performed within the established controls and conditions of the Work Permit. The person signing section 5 on the work permit indicates line manager responsibility for ESSH.<br><b>Note:</b> The work authorization (e.g., work permit, permits, procedures, and/or work instructions) must be at the job site.   |
| <b>Step 11</b> | Work is performed within the established controls and conditions of the Work Permit.<br>Refer to subsection <a href="#">Control of Work/Job Change Control</a> if a change to the Work Permit is required.<br>At the completion of work, proceed to the subsection <a href="#">Post Job Review, Feedback and Improvement</a> .   |

## 2.5 Control of Work/Job Change Control

This subsection describes the process for controlling work and job change control.

**Note:** For projects involving a mix of subcontractor, BNL personnel, and/or scientific department personnel, the lead organization must ensure roles and responsibilities are clearly identified and documented for all project tasks, including change control, turnover, and project closure. This may be accomplished by establishing a specific written project management/execution plan (refer to the [Project Management](#) Subject Area) or by the use of a work permit. The plan/permit must clearly identify, as appropriate, owners of tasks, project scope, project responsibilities, actions resulting from routine and closeout inspections, and development/maintenance configuration management documents (electrical drawings, as-built drawings, and preventive maintenance checklists). The plan/permit must be updated as needed.

**Note:** Feedback and improvement is a key element within Integrated Safety Management and Work Planning and Control, as well as day to day management in general. For supervisors, one of the most important forms of obtaining feedback is through direct observation of work and interaction with workers (i.e., work oversight). The exhibit [Requirements and Expectations for Performing Work Oversight](#) provides the requirements and expectations for observing work as provided in supervisor training and the R2A2 for Supervisors and their Managers.

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| <b>Step 1</b> | The WCCs, job supervisor, or designees ensure that work is conducted according to the approved work plans, work instructions, and permits. Workers must work within the limits of the guidelines provided in the work authorization document (i.e., worker planned, prescribed, or work permit documentation permit) and the principles of HPI.  |
| <b>Step 2</b> | If at any time while working, the planned work changes and a problem/situation or additional hazards are identified: <ul style="list-style-type: none"> <li>• If imminent danger exists, issue a Stop Work Order. See the <a href="#">Stop Work</a> Subject Area.</li> <li>• If radiological work does not meet Laboratory requirements, or could result in an exposure/release of radioactive material, issue a Radiological Stop Work. See the <a href="#">Radiological Stop Work</a> Subject Area.</li> <li>• Pause work and inform the job supervisor, or Work Control Coordinator as appropriate.</li> </ul> <p><b>Note:</b> If the work interruption was due to an incident, then refer to the <a href="#">Event/Issues Management</a> Subject Area.</p> |
| <b>Step 3</b> | The WCCs, job supervisor, or designees evaluate concerns to determine if additional or different work methods are required to complete the job/work. They must consider the following: <ul style="list-style-type: none"> <li>• Put a temporary hold on the work;</li> <li>• Identify/implement additional hazard controls/mitigation strategies; and/or</li> <li>• Consult with the Review Team, workers, and subject matter experts, as appropriate to amend the work documents (e.g., work plan, permit, experimental safety review, job risk assessment or work instructions).</li> </ul> <p><b>Note:</b> If actions were not taken, the WCCs or job supervisor communicates those reasons to staff doing the work.</p>                                    |
| <b>Step 4</b> | If necessary, amend the work authorization document(s) and conduct a job briefing to inform personnel of new hazards identified, mitigation controls, and training requirements. <p><b>Note:</b> The WCC or job supervisor verifies that training/qualification requirements are met before re-authorizing work to proceed.</p>  |
| <b>Step 5</b> | Job site staff/workers sign the revised work authorization document, or an attached sign-off list, indicating that they understand the new hazards and/or change in work authorization requirements before they start work. <p><b>Note:</b> The workers must initial and date next to their original signature, or sign if they are new to the job. It is not permissible for the job site supervisor to initial or sign for the workers.</p>  |
| <b>Step 6</b> | The affected Department/Division, or their equivalent, Line Manager or designee sign-off on and re-issue the work authorization document and authorize the job/work/activity to proceed.   |

## 2.6 Post Job Review, Feedback and Improvement

An important element in the Work Planning and Control process is worker, as well as contractor and vendor, feedback. Feedback can be received and distributed in many ways. Some examples are the following:

- Sections of the Work Permit;
- Pre-job briefings and walk downs;
- Post-job critiques/briefings;
- Safety meetings;
- Safety bulletins;
- Tool box meetings;
- Work in progress reviews;
- Standard operating procedure changes (after workers have reviewed them); and
- Lessons learned memorandums.

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| <b>Step 1</b> | At the completion of work, the WCC, job supervisor, or designee performs a post-job review, as it applies to the work performed, including the following: <ul style="list-style-type: none"> <li>• Verifies that the work/job is complete and meets the specifications established in the work authorization document(s) and work plans;</li> <li>• Ensures that the work site is left in a clean and safe condition; and</li> </ul> |
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|               | <ul style="list-style-type: none"> <li>Obtains feedback from the workers, and provides feedback to the work requestor and/or Department/Division, or their equivalent.</li> </ul>   |
| <b>Step 2</b> | <p>The WCC or designee reviews the work/job performance by asking workers and/or job supervisor, as appropriate the following typical questions:</p> <ul style="list-style-type: none"> <li>How usable (user-friendly) were the procedures/work authorization documents? <ul style="list-style-type: none"> <li>Were procedures (or work authorization documentation) accurate? Were they sufficient?</li> </ul> </li> <li>Were there any planning and/or scheduling errors?</li> <li>What unplanned for conditions or situations did you encounter? How did you handle them?</li> <li>Were there any unidentified hazards associated with the work? What actions were taken?</li> <li>Were there any critical steps or phases missing to complete this work safely?</li> <li>Were all necessary permits available, completed, and permit conditions met?</li> <li>Were additional crew members briefed before they started work?</li> <li>Were job-site resources and information sufficient?</li> <li>What training was missing/lacking, if any? <ul style="list-style-type: none"> <li>Was training for the job appropriate?</li> </ul> </li> <li>What lessons can be learned from this job?</li> <li>What could have been done better?</li> <li>How can things be improved (e.g., communication, procedures, training, tools, etc.)?</li> <li>What worked particularly well and helped get this job done safely and efficiently?</li> </ul> |
| <b>Step 3</b> | <p>The WCC, job supervisor, or designee</p> <ul style="list-style-type: none"> <li>Documents any feedback or pertinent information generated during the review of the work;</li> <li>Determines if facilities or work practices need to be changed as a result of worker feedback;</li> <li>Determines if the feedback should be incorporated into the BNL Lessons Learned Program (see the <a href="#">Lessons Learned</a> Subject Area); and</li> <li>Incorporates feedback into the Department/Division, or their equivalent, processes, as appropriate.</li> </ul>  |
| <b>Step 4</b> | <p>Feedback incorporated into the Department/Division, or their equivalent, processes should be documented and tracked to closure, as appropriate.</p>  |

### 2.7 Permit-Planned Work Closeout

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| <b>Step 1</b> | <p>The WCC (authorizing Department/Division, or their equivalent) checks the quality of the completed permit and ensures that the work site is left in an acceptable condition. (The WCC can delegate clean up of work area to job supervisor). The WCC ensures that the change process to update drawings, placards, postings, procedures, etc. is initiated, if necessary (see Section 7 of work permit).</p> |
| <b>Step 2</b> | <p>The Department/Division, or their equivalent, is responsible for retaining the completed work permit.</p> <p>File work permits according to the <a href="#">Records Management</a> Subject Area. Work Permits, except those used for Worker Planned Work, are required to be kept 75 years.</p>  |

### 2.8 Integrated Safety Management (ISM) Flowdown to Contractors and Suppliers

Before the Procurement and Property Management Division (PPM) issues a purchase order for contractor, supplier, or warranty services to be performed on-site, the proposed work must be reviewed for Integrated Safety Management (ISM) requirements and determination if a work permit and/or health and safety plan is required.

**Note:** As a minimum, a Phased Hazard Analysis, Job Safety Analysis, Experimental Safety Review (ESR), Work Permit, or equivalent, is required for all contractor and vendor work. Article 7 (Compliance with 10 CFR 851 and BSA's Worker Safety and Health Program) to "BSA's Supplemental Terms and Conditions for Work by Contractors On-site", found on the Procurement & Property Management (PPM) [Terms and Conditions Listing](#), provides the contractual flow down of requirements and work planning obligations of contractors and vendors.

**Note:** When performing work on-site using an escort consult the section [Using Escorts Instead of Providing Training](#) of the [Training and Qualifications](#) Subject Area.

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| <b>Step 1</b> | <p>The Requisitioner completes the ISM Flowdown questions in the Web Requisition header (refer to the Web Requisition Process for Work Planning and Control document on the <a href="#">Business Systems Division [BSD]</a> home page).</p>  |
| <b>Step 2</b> | <p>If it is determined that only desk/paperwork is to be performed in an office environment, no further action is needed from this subject area.</p> <p>If it is determined that non-experimental work (other than construction) is to be performed on-site, the WCM/WCC for the Department/Division where the work will be performed reviews the Web Requisition for work planning and control.</p> <p>If it is determined that construction work is to be performed on-site, a construction-qualified WCC reviews the Web Requisition for work planning and control. Follow the requirements in the <a href="#">Construction Safety</a> Subject Area. No further action is required by this subject area.</p> <p><b>Note:</b> For work performed off-site, refer to the section <a href="#">Off-site Work</a>.</p> |

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| Step 3 | <p>The WCM/WCC defines/determines the work planning level by following the subsection <a href="#">Defining/Determining the Work Planning Level</a>.</p> <p>If work meets the requirements of worker planned work, than as a minimum, a Phase Hazard Analysis, Job Safety Analysis, or equivalent, is required and must be reviewed and signed by all workers before starting work.</p> <p>If a work permit is required, the ESSH WCM/WCC processes the work permit in accordance with subsection <a href="#">Permit Planned Work Hazard Identification, Analysis and Controls</a> before the contractor or supplier performs work on-site. Additionally, in consultation with the Environment, Safety, and Health (ESH) Coordinator, Training Coordinator, and Facility Support Representative, determine BNL site-specific training requirements and safety instructions for contractors and suppliers. Refer to the section <a href="#">Contractor/Vendor Training and Processing</a> of the <a href="#">Training and Qualifications</a> Subject Area for more information.</p> <p><b>Note:</b> As a minimum, the contractor's signature on the work permit can serve as written acknowledgement of the hazards identified and controls specified in the work permit.</p> |
| Step 4 | <p>The WCM/WCC processes the work permit in accordance with subsection <a href="#">Permit Planned Work Hazard Identification, Analysis and Controls</a> before the contractor or supplier starts works on-site.</p>   |

## 2.9 Standing Work Permit

A Standing Work Permit can be used as a longer-term hazard analysis and work authorization tool for jobs where the ESSH concerns are static and the activities are repetitive. The organization issuing the Standing Work Permit processes the form by following these steps.

Standing work permits must be developed in accordance with the subsection [Permit Planned Work Hazard Identification, Analysis and Controls](#).

If you are writing repetitive standing work permits for work within your work area or group, then you should consider writing a Standard Operating Procedure.

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| Step 1 | <p>The WCC or designee generating the work permit, completes the Work Permit Form in accordance with the subsection <a href="#">Permit Planned Work Hazard Identification, Analysis and Controls</a>.</p> <p>Check off the Standing Work Permit box at the top right part of the <a href="#">Work Permit Form</a>. The "start" and "end" dates in Section 1 of the work permit are the duration of the standing permit. The duration can only be for one year; then the permit must be reissued.</p> |
| Step 2 | <p>The WCC generating the Standing Work Permit ensures that the workers are briefed and obtains their signatures in Section 4 of the Work Permit, or on an attached sheet. Their signatures are good for the duration of the permit (not to exceed one year).</p> <p><b>Note:</b> The original Standing Work Permit should be kept with the Department/Division, or their equivalent, Work Control Manager. A copy of the Permit may be used in the field.</p>                                       |
| Step 3 | <p>Each time the Standing Work Permit is used, before starting work, conduct a pre-job briefing and authorize the start of work in accordance with subsection <a href="#">Permit Planned Work Hazard Identification, Analysis and Controls</a>, step 9.</p>  |
| Step 4 | <p>Control work in accordance with Section 2.5.</p>  |

### Guidelines

When working in work planning and control for operations areas (often this is in support of experimental work), use the following as general guidance for classifying work.

**Guidance in preparing detailed work plans:** For very detailed work plans, it is recommended the user refer to the [DOE Writer's Guide for Technical Procedures](#).

As previously stated, work in the low-hazard classification does not require use of a Work Permit Form; however, the form may still be used. Work in the moderate- and high-hazard classifications requires levels of planning, documentation, and control appropriate for the specific ESSH risks, work complexity, and coordination.

In addition, when a worker is working alone, assess the additional hazards that may be introduced and develop controls to address those hazards.

### References

BNL [Lessons Learned](#)

[Brookhaven Training Management System \(BTMS\)](#)

[Business Systems Division \(BSD\)](#) home page

[Construction Safety](#) Subject Area

[Document Control](#) Subject Area

[Electronic Work Permit](#)

[Event/Issues Management](#) Subject Area

[Facility Hazard Analysis](#) Subject Area

[Movement by Vehicle of Hazardous and Radioactive Materials On-site](#) Subject Area

[Radiological Stop Work](#) Subject Area

[Records Management](#) Subject Area

[Stop Work](#) Subject Area

[Terms and Conditions Listing, Procurement & Property Management \(PPM\)](#) website

[Training and Qualifications](#) Subject Area

[Work Control Managers/Coordinators List](#)

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**Management System:** [Work Planning and Control](#)

**Subject Area:** [Work Planning and Control for Experiments and Operations](#)

### 3. Worker Planned Work

Effective Date: **Aug 4, 2016**

Subject Matter Expert: [Raymond Costa](#)

Management System Executive: [Raymond Costa](#)

#### Applicability

This information applies to BNL and non-BNL staff who conduct work.

#### Required Procedure

The "Worker Planned" work concept recognizes the capabilities of the workforce. The personnel have the skill level and technical capabilities to handle a wide variety of jobs with minimum documentation and no direct supervision.

Worker planned work can only be performed when there are adequate barriers in place to reduce the hazards to acceptable levels in the areas of ESSH, complexity, and work coordination as determined by the [Screening Tool for Worker Planned Work](#). When determining if work is to be classified as "Worker Planned," the entire scope of work to be performed must be considered. For example, the vehicular movement of hazardous and radioactive materials, such as Sealed Sources, requires adherence to strict requirements provided in the [Movement by Vehicle of Hazardous and Radioactive Materials On-site](#) and/or [Transportation of Hazardous and Radiological Materials Off-site](#) Subject Areas, as they pertain to the work to be performed. All work planning must consider compliance with these requirements.

Line Management ensures a work authorization process is in place, all hazard controls are in place, and hazard control methods were used based on the following hierarchy:

- Elimination/substitution of hazards;
- Engineering controls;
- Administrative controls and work practices; and/or
- Personal protective equipment (PPE).

This hierarchy is a pre-condition for worker planned work.

Each Department/Division, or their equivalent, determines the appropriate training requirements for the staff in their organization. Each Department/Division, or their equivalent, justifies the worker planned requirements for performing work rated as low-hazard within BNL Environment, Safety, Security, and Health (ESS&H) boundaries.

**Note:** For information and guidance on error, error precursors, and human performance improvement, see the Human Performance Improvement webpage, Improving Defenses <http://intraneto.bnl.gov/oii/hpi/improve-defenses.php>

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| <b>Step 1</b> | <p>Line management supervision may select one or more of the following or equivalent methods for documenting training and skill level required for workers:</p> <ul style="list-style-type: none"> <li>• Job Training Assessments;</li> <li>• Job Risk Assessments (JRA);</li> <li>• <a href="#">Qualification Matrix</a> exhibit;</li> <li>• Letters to file, training records from other sites, and documented level of expertise (degree, certification, license, resumes, etc).</li> </ul> <p><b>Note:</b> Contact your Training Coordinator for assistance.</p>   |
| <b>Step 2</b> | <p>The responsible supervisor or designee assigns the work as worker planned work to a qualified worker by considering the worker's:</p> <ul style="list-style-type: none"> <li>• Skill level</li> <li>• Experience with the task</li> <li>• Ability to complete the task safely</li> <li>• Training to accomplish the work</li> <li>• Understanding the requirements of this section.</li> </ul> <p><b>Note:</b> When a worker is working alone, assess the additional hazards that may be introduced and develop controls to address those hazards. For unfamiliar facilities or rooms within a facility, the <a href="#">BNL Hazard Validation Tool</a> should be consulted for the area to identify hazards, measures to</p> |

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|               | mitigate the hazards, and procedures in-place to eliminate or control the risk, including engineering controls, work practices, and personal protective equipment.   |
| <b>Step 3</b> | The worker (technician, operator, scientist, craft, etc.) <ul style="list-style-type: none"> <li>• Conducts a walk through;</li> <li>• Plans the work;</li> <li>• Identifies the hazards and appropriate hazard controls to be used;</li> <li>• Determines that he or she has the skill, experience, and training to perform the job safely.</li> </ul>  |
| <b>Step 4</b> | Workers always consider the following before starting work and while working: <ul style="list-style-type: none"> <li>• Is the scope and description of the work clearly defined?</li> <li>• What are the hazards associated with the work and in the surrounding work area? Are they properly controlled?</li> <li>• What are the critical steps or phases to complete this work safely?</li> <li>• What is the worst thing that can go wrong? And how can I make a mistake at that point?</li> <li>• What errors could occur and what can be done to avoid them?</li> <li>• Are conditions appropriate for work to proceed?</li> <li>• What actions are to be taken if new hazards are identified?</li> <li>• What are the necessary permits to do this work? Have they been obtained, completed, and permit conditions met?</li> <li>• Is the training I need to perform this work current?</li> </ul> <p>If at any time the worker is unaware of answers to the above questions, then he/she must suspend work and contact the work assigner for assistance. When any staff member sees an unsafe act, activity, or condition that creates imminent danger, he or she exercises Stop Work authority. See the <a href="#">Stop Work</a> Subject Area.</p> <p><b>Note:</b> Staff can request that the proposed work be performed under permit planned work, or re-evaluation of task hazards, if they feel there are location hazards, changes at the job site, hazards not previously identified, and/or job complexity issues that need to be addressed (even if the task is rated low). They contact their supervisor, who will work with the appropriate Work Control Coordinator or subject matter expert to address concerns.</p> <p><b>Note:</b> Facility area hazards can be found in the work area on Placards, signs, tags, temporary barricades, and labels.</p> |
| <b>Step 5</b> | If the authorized work is not proceeding as planned, or new hazards are introduced or identified, the worker must pause, stabilize, and re-evaluate the work before proceeding, or initiate Stop Work Authority if imminent danger exists.<br>When re-evaluating work, repeat step 4.<br><b>Note:</b> When re-evaluating work, consider if reclassification of work level is required per Section 2.2.   |
| <b>Step 6</b> | At the completion of work, the worker <ul style="list-style-type: none"> <li>• Ensures that the work site is left in a clean and safe condition;</li> <li>• Provides feedback (e.g., impact on configuration management, lessons learned) to their manager, supervisor, work requestor, or appropriate subject matter expert.</li> </ul> <p><b>Note:</b> Refer to the subsection <a href="#">2.6 Post Job Review, Feedback and Improvement</a>.</p>  |

## References

[BNL Hazard Validation Tool](#)

[Movement by Vehicle of Hazardous and Radioactive Materials On-site](#) Subject Area

[Stop Work](#) Subject Area

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## PROCEDURE: WORK OBSERVATIONS

|   |  |  |
|---|--|--|
| <b>Management System: <a href="#">Work Planning and Control</a></b>                           |  |  |
| <b>Subject Area: <a href="#">Work Planning and Control for Experiments and Operations</a></b> |  |  |
| <b>4. Work Observations</b>   |  |  |
| Effective Date: <b>Aug 15, 2014</b>   | Subject Matter Expert: <a href="#">Raymond Costa</a> | Management System Executive: <a href="#">Raymond Costa</a> |

### Applicability

This information applies to BNL line management.

### Required Procedure

Line Organizations conduct work observations as part of the BNL Work Planning and Control process evaluation. Work observations can identify:

- Potential Problems/concerns;
- Areas of excellence;
- Lessons learned that improve the BNL ISM Process.

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| <b>Step 1</b> | Before performing an observation the Manager completes the BNL Worker Safety Observation Training or equivalent (contact Safety & Health Services for training).  |
| <b>Step 2</b> | Observe work without distracting or interfering with the work. Initiate an open discussion with the worker to include the following: <ul style="list-style-type: none"> <li>• Comments on safe behavior;</li> <li>• Consequences of any observed unsafe acts;</li> <li>• Ideas for safer or more efficient ways to do the work;</li> <li>• Thank the employee.</li> </ul>   |
| <b>Step 3</b> | During the safety observation discussion with the employee/worker on the work observation, the Line Manager should use some of the following safety questions, as appropriate for the work being performed: <ul style="list-style-type: none"> <li>• What energy/hazards are present?</li> <li>• Are employees, supervisors, and work planners aware of the hazards?</li> <li>• What part of your job concerns you?</li> <li>• What training/knowledge is needed to do the task safely?</li> <li>• Why do people get hurt?</li> <li>• What is the safety climate here?</li> <li>• What are our standards for safety (intended &amp; actual)?</li> <li>• How are our Safety Management Systems working?</li> </ul> |

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|               | <ul style="list-style-type: none"> <li>• What needs to be improved here?</li> <li>• Where are the Danger Zones?</li> <li>• What did the Task Briefing and/or pre-job walk down cover?</li> <li>• Do you feel you have adequate tools for the job?</li> </ul> |
| <b>Step 4</b> | Document the work observation in the <a href="#">BNL Worker Safety Observation Database</a> . If there were any lessons learned during the observation, contact the Work Control Manager or Experiment Review Coordinator.                                   |
| <b>Step 5</b> | The Work Control Manager or Experiment Review Coordinator forwards lessons learned generated from the work observations to the <a href="#">Lessons Learned Coordinator</a> .   |

## References

[BNL Safety Observation Database](#)

[Training and Qualifications](#) Website

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## PROCEDURE: OFF-SITE WORK

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| <b>Management System:</b> <a href="#">Work Planning and Control</a>                           |  |  |
| <b>Subject Area:</b> <a href="#">Work Planning and Control for Experiments and Operations</a> |  |  |
| <b>5. Off-site Work</b>   |  |  |
| Effective Date: <b>Aug 15, 2014</b>   | Subject Matter Expert: <a href="#">Raymond Costa</a> | Management System Executive: <a href="#">Raymond Costa</a> |

### Applicability

This information applies to all Departments/Divisions, or their equivalent, that send their staff off-site to conduct assigned work.

### Required Procedure

This section discusses Work Planning and Control for work conducted off-site. This section also provides guidance for work at different locations off-site.

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| <b>Step 1</b> | <p>The WCM/WCC and ESH Representative/Coordinator and staff who will be working off-site to meet to discuss the following:</p> <ul style="list-style-type: none"> <li>• What is the scope of work to be performed?</li> <li>• What are the known hazards and concerns about the work to be performed?</li> <li>• What controls should be in place to perform the work safely?</li> <li>• The work planning process in place at the off-site location? Will we need to provide our own work plan?</li> <li>• What training is required by the off-site worker?</li> </ul> <p>Use the exhibit <a href="#">Guidance in Conducting Off-Site Work</a> to help determine how to plan and control off-site work.</p> |
| <b>Step 2</b> | BNL staff conducting work at an off-site laboratory or industrial company follow the procedures and safety requirements of that organization supplemented by BNL procedures and processes, where needed.  |
| <b>Step 3</b> | If the off-site work requires a Radiological Work Permit (RWP) and the laboratory or industrial company does not have an RWP program, then the lead BNL person contacts a <a href="#">Facility Support Representative</a> to initiate an RWP.   |
| <b>Step 4</b> | If any BNL worker on an off-site assignment needs to ship hazardous materials from that off-site location to BNL, or from BNL to that location, then he/she complies with the requirements in <a href="#">Transportation of Hazardous and Radiological Materials Off-site</a> Subject Area.   |
| <b>Step 5</b> | If the work taking place off-site is not performed within the confines or jurisdiction of an Industrial Facility or Laboratory Environment (e.g., drilling a sample well outside Laboratory boundaries or a marine study in Long Island Sound), then a Work Control Coordinator or Experimental Review Coordinator evaluates the work.  |
| <b>Step 6</b> | If a work permit is required, then the Work Control Coordinator and the staff conducting the  |

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|               | work, follow the section <a href="#">Work Planning and Control for Operations</a> .  |
| <b>Step 7</b> | The Experiment Review Coordinator reviews the proposed experiment to determine if an Experiment Safety Review should be written. If a review is required, then follow the requirements in the section <a href="#">Experimental Safety Review</a> . |

## References

[Facility Support Standard Operating Procedures](#)

[Transportation of Hazardous and Radiological Materials Off-site](#) Subject Area

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