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SMD Operations Procedures Manual

2.12 WORK PLANNING AND CONTROL SYSTEM

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Attachments: 1

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Revision No. 09

Approved:

Signature on File
Division Head

7/11/16
Date

Preparer(s): H. Hocker

SMD-OPM 2.12
Date Issued: September 4, 1998
Category A

Revision 09
July 8, 2016

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2.12 Work Planning and Control System

1.0 Purpose and Scope

To implement a Work Planning and Control System that meets the requirements of the section Work Planning and Control for Operations in the [Work Planning and Control for Experiments and Operations](#) Subject Area. The system applies to internal work by Division staff as well as external departments and divisions and non-BNL personnel, who perform maintenance, modification, setup and other work deemed applicable by management. This procedure does not apply to the following work activities:

- Planning, analysis, and conduct of experiments which is governed by the section Experimental Safety Review in the Subject Area.
- General administrative-type work.

2.0 Responsibilities

2.1 Division Head

The Division Head (or designee) is responsible for the implementation of the Work Planning and Control System and shall:

- a. Appoint a Work Control Manager.
- b. Ensure that the periodic review of the work control system is incorporated into the Division [Self-Assessment Plan](#).

2.2 Work Control Manager

The Work Control Manager has overall responsibility to administer and review the Work Planning and Control (WP&C) program to ensure that all internal and external work activities meet the requirements of the Subject Area. In addition, the Work Control Manager shall:

- a. Establish a written work planning and control system procedure to meet all the requirements of the Subject Area.
- b. Appoint qualified Work Control Coordinators for each section.
- c. Appoint Primary Reviewers for each section.

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- d. Ensure that personnel are trained on the requirements of this procedure such as the work screening guidelines, the work permit, worker feedback, and other key requirements.
- e. Establish periodic monitoring of the work control system performance through the self-assessment program.
- e. Coordinate with other Work Control Managers through periodic meetings to promote consistency across the site in applying the graded approach to work control and hazard analysis.
- f. Maintain Training as specified in subject area “Work Planning & Control for Operations”
- g. Evaluate work activities for inclusion into the SMD Standard Operating Procedure system.

2.3 Primary Reviewers

The Primary Reviewers Shall:

- a. Be responsible for the overall review and final approval of work permits. They have the authority to issue and sign off on work permits and have the responsibility to see to it that all work meets the requirements of this OPM.
- b. Ensure that Review Team members are appropriate for the work planned and familiar with the risks the work may involve.
- c. Ensure that hazards and risks that could impact ESS&H have been considered, identified, and addressed as needed to meet BNL requirements.
- d. Maintain Training as specified in subject area “Work Planning & Control for Operations”

A list of Primary Reviewers for the Superconducting Magnet Division can be found on the [Division List for Work Control Coordinators and Primary Reviewers](#).

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2.4 Work Control Coordinators

The Work Control Coordinators are responsible for:

- a. Screening all work requests.
- b. Determining when work permits are required.
- c. Advising the requestor on how the work permit will be processed.
- d. Reviewing and signing for concurrence on work permits where the screening has deemed the job as worker planned work.
- e. Ensuring compliance with this procedure.
- f. Monitoring the quality of completed work permits and maintaining the records.
- g. Notifying the Facility Project Manager & Research Space Manager of any work activities that may exceed the operational safety envelope as specified in the [Facility Use Agreement](#).
- h. Notifying the Facility Project Manager & Research Space Manager of facility changes that would affect the crosshatching on [Key Plans](#).
- i. Notifying the Research Space Manager, Facility Project Manager or Facility Complex Engineer if the job being screened involves modification to facilities, structures, systems, etc.
- j. Notifying the SMD Electrical Engineering Section Head of changes that affect SMD Configuration Management Items (CM-SSC's). See [SMD OPM 2.13](#).
- k. Maintaining a work planning logbook. The logbook shall contain the following information, at a minimum:
 - Date of request
 - Description of work
 - Job categorization
 - Work permit number

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1. Maintaining Training as specified in subject area “Work Planning & Control for Operations”

A list of Work Control Coordinators for the Superconducting Magnet Division can be accessed on the Plant Engineering Division web site at: [Work Control Coordinators](#)

2.5 Workers

Workers are responsible for working within the limits of the work controls, providing input during job planning, and communicating feedback as appropriate.

2.6 Research Space Managers

Research Space Managers are responsible for:

- a. Being knowledgeable of all moderate- and high-rated work permit activities taking place within their facility, and ensuring that these activities do not compromise the building safety envelope as defined in the Facility Use Agreement
- b. Maintaining the accuracy of the crosshatched areas for their buildings Key Plan.

2.7 Facility Project Managers/Facility Complex Engineers

Facility Project Managers/Facility Complex Engineers are responsible for:

Knowledge of work involving modification to facilities, structures, systems, etc.

2.8 Work Requestors

Work Requestors are responsible for providing an accurate description of the scope of work to the Work Control Coordinators and for properly observing the processing the work permits as needed through the system.

2.9 Supervisors

Supervisors are responsible for diligently applying concepts of the work control system in managing jobs and their personnel.

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3.0 Key Concepts

Worker Planned Work The concept has been established as a means to formally recognize the capabilities of the work force. The craft, technical, and scientific personnel have the skill level and technical capabilities to handle a wide variety of jobs with minimum documentation and no direct supervision. By formally separating tasks that can be accomplished as worker planned work, work requests are handled more efficiently, allowing more time for the job planners to concentrate on higher-risk work. The skill level of the craft, technical, and scientific personnel at BNL is high because most personnel have extensive job experience in their position and have taken numerous training courses. Therefore, worker planned work can include complex tasks if the worker's experience and qualifications mitigate the hazards to a low residual risk level. Worker planned work shall be identified in qualification matrices, which are outlined in the [Qualification Matrix](#) exhibit in the Subject Area.

Worker planned work allows a worker to perform tasks independently due to their level of training and documented experience. This concept applies to all staff from scientists and technicians to the tradespersons and laborers. It is applied to routine, low-hazard tasks that support fulfillment of a facility or group's function. These tasks must meet the requirements established by the screening tool [Screening Guidelines for Work Permit Determination](#). The tasks can range from complex to simple day-to-day activities. Each organization determines their worker planned work tasks. Each organization is responsible for documenting/justifying their worker planned work concept. The responsible supervisor or designee assigns the work as worker planned work to a qualified worker by considering the worker's:

- Skill level
- Experience with the task
- Ability to complete the task safely
- Training to accomplish the work
- Understanding the requirements of this section

Note: When a worker is working alone, additional hazards may be introduced. These must be addressed by developing controls. See Reference 7.3.

The worker (technician, operator, scientist, craft, etc.):

- Conducts a walk through
- Plans the work
- Identifies the hazards and appropriate hazard controls to be used
- Determines that he or she has the skill, experience, and training to perform the job safely

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Workers always consider the following before starting work and while working:

- Is the scope and description of the work clearly defined?
- What are the hazards associated with the work? Are they properly controlled?
- What are the critical steps or phases to complete this work safely?
- What is the worst thing that can go wrong? And how can I make a mistake at that point?
- What errors could occur and what can be done to avoid them?
- Are conditions appropriate for work to proceed?
- What actions are to be taken if new hazards are identified?
- What are the necessary permits to do this work? Have they been obtained, completed, and permit conditions met?
- Is the training I need to perform this work current?

Graded Approach A graded approach should be used to apply a level of planning rigor and work controls that is commensurate to the level of ESH&Q issues, complexity, and work coordination. 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 can be classified as “Worker Planned Work” the entire scope of work to be performed must be considered.

Definitions

Credited Control Are Controls determined through a contractor safety analysis, such as that found in a Safety Assessment Document (SAD), to be essential for safe accelerator operation directly related to the protection of personnel or the environment. Also, Credited Controls are identified in a DOE approved document such as an Accelerator Safety Envelope (ASE).

External Work is work that is performed by BNL or non-BNL staff who are external to the facility or organization; those individuals are not as familiar with location hazards.

Hazard Validation Tool A tool in the facility hazard analysis and risk assessment subject area that is used to identify hazards in specific area and is used to produce an area based PPE placard

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Internal Work is work that is performed by individuals who reside in the facility or organization.

Magnet Assembly Procedure (MAP) Specifications, inspection and testing requirements for Superconducting Magnet Division work.

Operating Procedure Manual (OPM) Written procedures for division operations, testing, maintenance and use of SMD equipment and tooling.

Parts & Inventory Control System (PICS) Travelers Written procedures for fabrication, assembly, and documentation of magnet division product.

Work is activities that involve the design, operation, maintenance, modification, construction, demolition, or decommissioning of facilities, systems, or equipment by BNL or non-BNL staff.

Work Permit is a document used to define the scope of work as per the work request, analyze the ESS&H hazards, determine the work controls, plan the work, review and approve the plan, conduct a pre-job briefing, authorize the start of work, and solicit worker feedback.

Worker Planned Work 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](#).

Work Request is a form or a verbal inquiry from one organization to another asking for services to be provided.

4.0 Precautions

None

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5.0 Procedure

5.1. Planning and Controlling Internal & External Work

- A. All work at SMD shall be planned and controlled using the SMD prescribed Standard Operating Procedures (SOP) process or shall be screened by an SMD Work Control Coordinator to determine classification as Permitted Work or Worker Planned Work.
- B. Work that is complex and (or) repetitive may be planned and controlled as written procedures. These written instructions will conform to the format and definitions of the SMD Standard Operating Procedures as PICS Travelers, MAP(s), or OPM(s), see [SMD OPM 1.2 "Procedures"](#). If a written procedure is to be followed in order to perform work, then a work screening as detailed in 5.2 is not required. Work is to be performed within established controls so that the levels of hazards, complexity and coordination have been reviewed, recognized, and mitigated.

5.2. Work Screening Process for Work Permit & Worker Planned Work

- A. Work requests shall be submitted to the Work Control Coordinator (WCC) for screening.

Note: Internal work covered by an existing procedure (i.e. MAP, OPM, or Traveler) does not require screening.

- B. The WCC shall screen the work requests to determine if work can be categorized as worker planned work. The WCC shall use the qualification matrix for their section or group (for internal work) and the [Screening Tool for Worker Planned Work](#).
- C. If the work does not require a work permit, this decision does not have to be recorded in a logbook or documented. If work deemed to not require a work permit is to be performed by a non-BNL vendor or contractor, then as a minimum, a Phase Hazard Analysis, or equivalent, is required and must be reviewed and signed by all workers before starting work.
- D. If the work does require a work permit, the WCC shall issue a work permit number from his/her logbook and fill out section 1 of the permit and as much of section 2 as possible. If the service provider is an external BNL group, the permit original can be sent to the service provider for completion. In such case, a copy should be retained by the WCC. The Work Permit Form, along with instructions on how to fill it out, is shown in the Subject Area.

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Note: The WCC shall review the work against the relevant [Job Risk Assessment](#) to ensure that all hazards and the appropriate controls have been identified.

5.3. Instruction for the Work Permit

A. Work Control Coordinator shall assemble a Review Team. The team shall include the Primary Reviewer. When the service provider is an external BNL group, that provider should be a part of the team. The size of the team can vary, including, as applicable:

- ES&H professionals/SMEs
- F&O Facility Project Manager
- Research Space Manager
- Operations professionals
- Engineers
- Service provider
- Worker representatives

The primary function of the Review Team is to visit the job site, identify the ESS&H issues and work controls on the work permit & discuss the work plans. Work controls should follow the following hierarchy:

- Elimination /Substitution of Hazard
- Engineering Controls
- Administrative Controls & Work Practices
- Personal Protective Equipment

The Review Team considers the following as it applies to the work to be performed:

- Visits the job site
- Review Hazard Validation Tool (HVT) and Facility Risk Assessment /PPE Certification for the location of the planned work to ensure hazards of the area are incorporated into the procedures or permit.
- 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).
- Reviews applicable Job/Facility Risk Assessments and procedures for hazards and established controls
- Performs an ESS&H analysis and identifies hazards and issues

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- B. The WCC shall complete the work plan section with input from the Review Team, including ESS&H personnel as needed. Reference Section 3 of the [Instructions for Filling out the Work Permit](#).
- C. The WCC is responsible to obtain the approval signatures in section 3 of the work permit.
- D. 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 job site supervisor and the workers shall sign the form in section 4, to indicate that they have read the form and understand the requirements. The following is considered at the pre-job briefing:
 - What are the hazards associated with the work? Are they properly controlled?
 - What are the critical steps or phases to complete this work safely?
 - What is the worst thing that can go wrong? How can we make a mistake at that point?
 - What are the necessary permits to do this work? Have they been obtained, completed, and permit conditions met?
 - What actions are to be taken if new hazards are identified? Should the WCC or job supervisors be contacted?
 - 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?
- E. The WCC shall sign the permit in section 5; *Conditions are Appropriate to Start Work* to authorize the start of the job. Before signing, the WCC shall review the permit, verify that the required work controls are in place, and determine that the job may proceed. The person signing section 5 on the work permit indicates line manager responsibility for ESS&H
- F. The WCC is responsible to solicit feedback from the workers regarding all aspects of the process, and shall record comments in section 6 of the work permit. Copies of all work permits with feedback comments shall be sent to the Work Control Manager or designee, who shall forward feedback comments to the Lessons Learned Coordinator as appropriate.
- G. The WCC shall review the completed form, perform a quality check, and sign the form in section 7. All completed work permits shall be kept in the logbook. On an annual basis, the WCC shall send the logbook and work permits to the Work Control Manager or designee.

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5.4. Change of Work Scope

If changes to an active work request are made that present new hazards, the Work Permit and the new hazards must be discussed with the Work Control Coordinator as appropriate to the Work Permit requirements. The changes and new hazards shall be noted on the existing Work Permit Form, and shall be initialed and dated by those people who originally approved the permit. The workers shall be notified of the changes & must also initial and date the form (or re-sign).

6.0 Documentation

6.1 Completed Work Permits and written reports or minutes of Worker feedback shall be maintained in the Work Planning and Control file repository.

6.2 Work Control Coordinators shall annually send a copy of the Work Planning Logbook to the Work Control Manager or designee.

7.0 References

7.1. SBMS Subject Area [Work Planning & Control for Operations](#)

7.2. [Work Permit Form](#)

7.3. [BNL Working Alone Guidance](#)

7.4. SBMS Subject Area [Facility Hazard Analysis and Risk Assessment](#)

8.0 Attachments

1. Work Planning & Control Flowchart

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Attachment 1 - SMD Work Planning and Control Flowchart

