

# WORK PLAN for S-PHENIX MAGNET

## Low Hazard – Worker Planned Work for S-PHENIX Superconducting Magnet Division Workers in Building 912

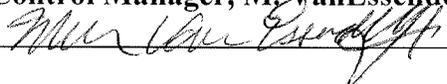
Experiment Number: Running Period: 2015

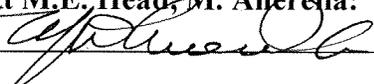
Job Location: B-912

Liaison Physicist, K. Yip:   Date 3-12-2015

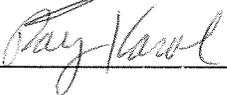
Liaison Engineer, D. Phillips:  Date 3/13/2015

SMD Work Control Coordinator, H. Hocker:  Date 3-19-15

C-A Work Control Manager, M. VanEssendelft:  Date 3-12-15

SMD Project M.E. Head, M. Anerella:  Date 3/19/15

SMD ESH&Q Coordinator, Walt Czekaj:  Date 3/13/15

C-A Approval: Signature  Approval Date 3/23/15  
(ESHQ Division Head)

Attachments:

## Worker Planned Work for S. PHENIX Workers at the *Building 912 Complex*

### SCOPE

The scope of this document is to control work performed by Superconducting Magnet Division personnel only. All work performed by other groups, whether it is worker planned work, permitted work, or prescribed work, is outside the authority of this document. Work Planning for all tasks occurring outside the scope of this document shall be the responsibility of C-A Work Control Manager

### 1. Introduction

#### Work Planning

This process applies to all physical work performed by BNL and non-BNL staff. Work Planning uses a graded approach to identify hazards, risks, and complexity levels of a task and to establish the level of rigor for planning and review. The process requires use of a site-wide work permit form (enhanced work permit, “green form”) for all moderate and high hazard work. **Worker Planned Work** [applies to low hazard and risk work] recognizes the capabilities of the work force. Personnel have the skill and technical capabilities to handle a wide variety of jobs with minimum documentation.

Worker Planned Work is formalized in three steps:

#### **Pre-Job Brief**

#### **Job-Site Walk Down**

#### **Post Job Review**

#### **Pre-job Briefing Questions I Ask Myself Before I Start Work:**

- \* What are hazards for this particular work? How will I control them?
- \* What are the critical steps to complete this work safely?
- \* What can go wrong? What do I do if something goes wrong?
- \* What actions do I take if a new hazard is found while I am working?

#### **Job-Site Walk-down I Do Before I Start Work:**

- \* I thoroughly examined the job site
- \* I ensured all hazards were identified and controls were adequate
- \* I ensured my work will not affect other operations, and conversely
- \* I ensured the risk level was low and I based this on job complexity, coordination need between groups and hazards for the work

#### **Post-Job Feedback I Will Give to My Supervisor:**

- \* Task was/was not accomplished with expected results
- \* Procedures and work documents were/were not accurate

- \* Work planning and scheduling was/was not optimized to reduce human error or re-work
- \* Job-site resources and information were/were not sufficient
- \* My training for the job was/was not appropriate

**Questions I Ask Myself Each Job and Each Day I Work:**

- What hazards are present for this job?
- Is my supervisor or work planner aware of the hazards?
- What part of this job concerns me? Have I asked for help?
- What training/knowledge is needed to do the job safely?
- Why do/don't people get hurt in my Group?
- What is the safety climate at C-AD?
- What are C-AD's standards for safety (intended & actual)?
- What needs to be improved here?
- Where are the danger zones for this job? What could go wrong?
- What did the pre-job briefing and/or job-site walk-down cover?
- Would more written procedures help me with my job?
- Do I feel that I have adequate tools and PPE for this job?
- Are Postings confusing or inappropriate?

Many of the tasks necessary to maintain, repair, and debug the *S-PHENIX Magnet* will be carried out by C-AD and Non-C-AD Technical Staff. Much of this work is deemed to be within the “Worker Planned Work”, and as such does not require additional work planning or work permits. The purpose of this document is to define which sorts of tasks fall within this “Worker Planned Work” for staff.

The following requirements apply to all personnel working on the S-PHENIX Magnet:

- No one person is allowed to work alone in 912 (two person rule) without informing the Work Control Coordinator, or Liaison Engineer, or Liaison Physicist.
- All work will be performed by authorized and appropriately trained personnel listed on a published roster maintained by the S-PHENIX Magnet Work Control Coordinator.
- If tasks are not listed as “low hazard - worker planned work”, consultation is required with the Work Control Coordinator to evaluate the task.
- All work by S-PHENIX Magnet workers is limited to the immediate area around the magnet.

## 1. Training

Training shall be required for all participants in the S-PHENIX Magnet operations.

### TO ENTER BUILDING 912:

- Collider-Accelerator Access Training (AD-CA\_ACCESS) which includes ODH ) training.
- Radiation Worker I (HP-RWT-200)
- Basic Electrical Safety (HP-OSH-150A)
- Lock Out/Tag Out Affected Employee Training (HP-OSH-151A-W). **Note that this training does not allow you to apply or remove LOTO.**
- Hazard Communication (HP-IND 200)

## 2. Electrical

Work on electrical devices is deemed Low Hazard Worker Planned Work if:

- Voltage is < 50 V AC (or DC).
- Voltage < 10,001V and maximum current is < 5 mA

**OR an acute energy discharge of stored energy is < 10 Joules.**

**ALL ELECTRICAL WORK AT BNL MUST MEET THE REQUIREMENTS OF NFPA-70E and OPM 1.5 series.** Typical work for a User that falls under this requirement may be switching 110 VAC circuit breakers on and off. This task requires that you wear safety glasses with side shields. Remember to stand off to the side of the circuit breaker box during this operation. If you require the operation of a circuit breaker operating at a voltage > 110VAC contact the Liaison Engineer or the Work Control Coordinator for assistance.

Examples of tasks allowed under this definition include:

- removing and replacing electronic modules in crates such as VME, NIM, FastBus, CAMAC , and similar crates.
- connecting and disconnecting front panel cables (lemo, BNC, etc.) from electronics modules.
- Instruments, detectors, and data acquisition systems may be tested and analyzed using conventional diagnostic equipment such as digital multimeters (CAT III or IV), oscilloscopes, network analyzers, etc.
- using a multimeter to measure voltages on typical PMT supplies (N.B. typical maximum currents for PMT supplies are ~2.5 mA.
- using logic analyzers to debug circuit boards.
- using multimeters to check various currents and voltages on circuit boards.
- Using a computer (connecting and disconnecting computer to electrical outlet, connecting and disconnecting peripheral equipment to computer, turning on and off, etc.).

**Examples of tasks which are not allowed under this definition include:**

- Working with 110, 208, or 480 V AC line power sources.
- The operation of 208, 480 VAC circuit breakers or switches. Operation of these devices require Personnel Protective compliant with OPM 1.53 and NFPA 70E along with additional electrical safety training.
- Working with exposed leads from the Low voltage power supplies exceeding above limits.

### 3. Mechanical

**Movement of mechanical equipment around the complex is allowed if:**

- **No objects greater than 50 kg are to be lifted by hand**
- **The lifting of objects greater than 20 kg is done by two persons**

Examples of tasks allowed under this definition include:

- moving computers around the facility
- removing crates from electronics racks (once they have been electrically disconnected)
- carrying diagnostic equipment (multimeters, oscilloscopes, logic analyzers, etc.) around the facility.
- Use of portable mechanical lift (i.e. foot operated lift for installing LV power supplies with proper training).

**Examples of tasks not allowed under this definition:**

- operation of building cranes unless properly trained.
- operation of forklift.
- use of rigging equipment (e.g. come-alongs, etc.) without proper training and PPE.
- use of bench mounted power tools without proper training.

**Only safety rated ladders (use of wooden ladders are prohibited at C-A) are to be used, and a second person must be present for working on a ladder at heights above 1.2 meters (4 feet) or must be present during tie off and untie off procedure.**

#### **4. Personal Protective Equipment**

PPE is required for many tasks outlined in this Work Plan. Specific PPE requirements will be issued from the or Work Control Coordinator or designee depending upon the task. The following are minimum requirements for PPE :

Safety Glasses: Approved safety glasses with side shield are required for any work that may cause mechanical impact, particle inclusion, or chemical exposure to the eye.

Safety Shoes: Approved safety shoe are required when moving heavy objects, when the potential for personal exposure to abrasion, impact or other mechanical damage exists. Closed shoes are always required in B912

Gloves: Work gloves are required when the potential for personal exposure to abrasion, penetration, mechanical damage can occur. Specific gloves may be required for chemical and thermal exposures.

Hardhat: Required when working below an operating crane, or when working below others.

Long Pants and closed shoes: Proper personal protective equipment (PPE) shall be worn at all times. In the absence of any superceding requirement long pants and closed shoes are required at all times.

#### **5. Emergency Response**

**The Work Control Coordinator in charge is the responsible person at the experiment. The designated WCC in charge shall be responsible for communicating emergency conditions and alarms to MCR, C-A support personnel, as well as to Laboratory Emergency Services.**

#### **6. Radiological Work**

- All workers in posted **Radiation** Areas shall have appropriate laboratory and department training. Radiation Worker I and C-A Access training is required for entry into the Posted Area (Must sign onto the RWP, TLD).
- No escorted entries are to be made into B-912 without approval of the C-A ESHQ Division Head (use of escort forms are required).
- **Do not remove any devices or materials that may be activated without HP's inspection and approval.**
- DO NOT disregard or defeat any radiation barrier. If you do disciplinary action will be taken against all offenders.

## 7. Waste Management

**All waste materials generated shall be properly disposed of as per C-A Department's and Laboratory's requirements.**

- Report all spills or releases of any potentially activated or hazardous materials immediately to the CAS Watch (pager 4205) and C-A ESSHQ Division Head (pager 4820).
- Ultimate disposition of test components, assemblies, and peripheral equipment associated with the experiment are the responsibility of the experimental collaboration.
- The C-A Environmental Coordinator (Bill Needrith x4713) can consult in the removal of waste.

## 8. ODH Procedure for Building 912

Building 912 is an Oxygen Deficiency Hazard class Zero (ODH 0) area. ODH 0 training requires that IF a worker observes a cloud, or if the local ODH monitor annunciates and is accompanied by flashing white lights, THEN they must evacuate the area immediately and inform Emergency Services (X2222), and personnel in the Main Control Room (X4662) if possible

## 9. Work other than Worker Planned Work

Any tasks which do not fall within the definitions given above for Worker Planned Work either:

- Require approved procedures, and the individual(s) performing the task have been trained, and authorized.
- Require further work planning. The Work Control Coordinator performs this work planning.

Examples of tasks that require further work planning are:

- Modifications to facility air, gas, vacuum, mechanical systems, motorized systems, or water systems.

- Installation, modification, or upgrade of new or existing detector systems, mechanical systems, or installation of electrical cabling except as required in trouble shooting and short term repair as covered under this document.
- Hi-Pot testing.
- Pressure testing.
- Cooling tests with cryogenics.
- Magnetic field testing.

## **Emergency Standard Operating Procedures**

### **Spills:**

If a spill of greater than 5 gallons of oil or hazardous material spill on the floor, contact Fire/Rescue at 2222 or 911. Contact C-A ESH Coordinator ext. 4006 or C-A ESSHQ Division Head, Ray Karol ext. 5272, or Bill Needrith (x4713).

### **ODH:**

ODH events are indicated by a white flashing light and audible alarm. Evacuate the building immediately. Do not reenter the building. Telephone Fire Rescue ext. 2222 or 911. Follow the instructions of the Fire Captain.

### **Fire:**

Pull fire alarm pull box. If safely possible shut down equipment. Exit building. Do not reenter building. Follow instruction of Fire Captain.

### **Emergency (Injury):**

Pull fire alarm pull box. Telephone Fire Rescue ext. 2222 or 911, explain emergency.

**Instructions from Main Control Room Operators or CAS Watch Supervisors are NOT to be disregarded. Their authority supersedes experimental priorities. Experimenters and Technicians shall follow their instructions and if requested safely shut down their apparatus and associated systems.**