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C-A OPERATIONS PROCEDURES MANUAL

11.1 Policy for Conduct of Operations for the RHIC Experiment Shift Leaders

Text Pages 2 through 6

Attachment

Hand Processed Changes

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Approved: \_\_\_\_\_ ***Signature on File*** \_\_\_\_\_  
Collider-Accelerator Department Chairman Date

Y. I. Makdisi

## 11.1 Policy for Conduct of Operations for the RHIC Experiment Shift Leaders

### 1. Purpose

1.1 Responsibility for the safe and reliable operation of the RHIC experiments lies with the Experiment Shift Leaders, users, and their understanding of the Conduct of Operations of the C-A Department complex, and their compliance with procedures and technical specifications. Exercising this responsibility assures that operations remain within the stated [Accelerator Safety Envelope](#). This OPM introduces the Shift Leaders to the accepted practices that are required in carrying out their responsibilities. Particular attention is paid to ESS&H issues and concerns that may adversely impact the RHIC program.

### 2. Responsibilities

2.1 The Experiment Shift Leader is the focus of all local experimental operations when the experiment is running.

2.2 The Experiment Shift Leader, along with the Run Coordinator (or equivalent), experiment safety officer and the experiment spokesperson, are responsible to assure that the Shift crew is adequately trained.

2.2.1 In addition to specific technical shift training, the Experiment Shift Leader is responsible for verifying up-to-date training status for all shift crew members, and to ensure that no training expires during the shift dates.

2.3 The Experiment Shift Leader assures that the experiment is operating within the prescribed Accelerator Safety Envelope outlined in [C-A-OPM 2.5.2](#).

2.4 The Experiment Shift Leader shall follow good radiological protection practices and procedures to maintain personnel radiation exposures as low as reasonably achievable, and to reduce the generation of activated materials.

2.5 Shift Leader is responsible for communications with Main Control Room (MCR) regarding experiment needs or issues and approves the names of those who enter the Interaction Regions (IRs) under Controlled Access.

2.6 The Experiment Shift Leader shall coordinate with the Liaison Physicist or Liaison Engineer, and the experiment Work Planning Coordinator all requests for work that go beyond “Worker Planned Work”.

2.7 The Experiment Shift Leader shall ensure that tours of the experiment do not adversely affect the safe operation of the experiment.

- 2.8 The Experiment Shift Leader assures that trainees or inexperienced persons are supervised by more experienced personnel when operating experimental equipment.
- 2.9 The shift leader should provide all shift takers with the following information regarding transportation on-site: User Updates: Driving Policies & Transportation Services at BNL:  
[http://www.bnl.gov/userscenter/UU/pdf/Transportation\\_Jan\\_2009.pdf](http://www.bnl.gov/userscenter/UU/pdf/Transportation_Jan_2009.pdf)

### **3. Prerequisites**

- 3.1 All personnel involved in working on any electrical system or equipment in the C-AD, shall maintain up-to-date qualifications in required electrical safety training. C-AD will provide on-site/work specific training to individuals in the electrical safety aspects of their job functions and assignment. In addition, all personnel shall ensure proper PPE is worn to perform electrical tasks.
- 3.2 All personnel working on any electrical system or equipment in the C-AD shall be familiar with BNL [SBMS Electrical Safety](#), BNL [SBMS Lockout/Tagout \(LO/TO\)](#), [C-A-OPM 1.5, "Electrical Safety Implementation Plan"](#), [C-A-OPM 1.5.3 "Procedure to Open or Close Breakers and Switches and Connecting/Disconnecting Plugs"](#), [C-A-OPM 2.36, "Lockout/Tagout for Control of Hazardous Energy"](#). C-AD will provide on-site/work specific training to individuals in the electrical safety aspects of their job functions and assignments.

### **4. Precautions**

None

### **5. Procedures**

#### 5.1 Conduct of Operations

The focus of operations for the C-A complex is the Main Control Room (x4662). The On Duty Operations Coordinator is the shift supervisor, and the decision maker regarding the safe and reliable operation of the complex. The C-A complex is made up of several facilities, these include: the injectors (Tandem or EBIS, or Linac), the Booster, the AGS, and the Collider. Personnel that are responsible for the day-to-day operations of these facilities are members of: the Accelerator Division, the Experimental Support and Facilities (ES&F) Division, the Controls Division, and the Environmental Safety, Security and Health/Quality (ESSHQ) Division. The Shift Operation Organization Chart - Collider-Accelerator Department Conduct of Operations Organization, is shown in [Attachment 8.1](#).

- 5.1.1 The Scheduling Physicist, along with the Heads of the Experimental Support and Facilities Division, and the Accelerator Division, set the schedule for the daily operation of the accelerator complex. Schedules are discussed in a weekly Time Meeting.
- 5.1.2 The MCR Operations Coordinator is charged with implementing the schedule.
- 5.1.3 The Liaison Physicist, generally a member of the ES&F Division, provides departmental support for beam requirements, training, and ES&H issues.
- 5.1.4 The Liaison Engineer, a member of the ES&F Division, provides engineering oversight and technical support regarding facilities that house, support, or shield the experiment areas.
- 5.1.5 The Radiological Control Technicians, members of the ESSHQ Division, provide radiological support services to the accelerator complex. In the off-hours, they issue TLDs.

## 5.2 Operating Practices

- 5.2.1 The Shift Leader and crew shall maintain professional behavior when running an experiment. The Shift Leader is responsible to insure that a sensible operations environment is maintained.
- 5.2.2 Effective monitoring of experimental equipment is necessary to detect abnormal conditions, or adverse trends, so that appropriate action may be taken before accidents occur.
- 5.2.3 The Shift crew shall follow ESS&H requirements, pollution prevention, and environmental protection, while operating the experiments.
- 5.2.4 Work by the Shift crew, that affect the interaction of the experiment with the collider operations, shall be approved by the Experiment Shift Leader.
- 5.2.5 Experimental equipment operators shall comply with the operating procedures specific for each piece of apparatus.
- 5.2.6 When protective devices trip, an attempt shall be made to understand the cause of the trip before the device is reset.
- 5.2.7 Modifying or bypassing critical safety devices shall only be carried out after approval from the cognizant safety committee. Contact the Liaison Physicist or MCR (x4662).

5.2.8 Required Checklists for safety systems, such as flammable gas, shall be filled out completely.

5.2.9 Experiment Shift Crew Inspection Tours

5.2.9.1 Periodic inspection of the experimental apparatus is encouraged. Particular attention should be paid to alarms, enunciators, and unusual environmental issues or deficiencies that will result in programmatic disruption to the collider. These should be reported to MCR (x4662), or to the [Building Manager](#), as appropriate. Deficiencies may include:

- Steam, oil, water or gas leaks
- Fire and safety hazards
- Radiological problems
- Open electrical panels
- Clogged floor drains
- Building deficiencies such as inoperative lighting, roof leaks, or doors that do not close properly

5.3 RHIC Accelerator Safety Envelope as it pertains to the STAR and PHENIX Experiments

**Note:**

The requirements of the RHIC ASE shall be strictly followed. These requirements are the approved expectations of DOE. Violation of any requirements may result in forced shutdown of the experiment. MCR shall be immediately notified if an ASE requirement has been violated.

5.3.1 The Accelerator Safety Envelope (ASE), [C-A-OPM 2.5.2.](#), defines the radiological and conventional safety limits within which the complex is allowed to operate. The Experiment Shift Leaders for the STAR and PHENIX experiments should be aware that sections 5.8 and 5.9 contain the ASE for the STAR and PHENIX experiments respectively.

5.4 Log Keeping

5.4.1 Logs should be maintained for each experiment during the running period. In addition to experiment specific information, log books should contain a record of significant incidents that affect the operation of the experiment. DOE requires that once closed out, log books be kept for a period of 5 years.

## 5.5 Shift Turnover

- 5.5.1 Shift turnover shall provide the incoming shift with an accurate picture of the overall status of the experiment, as well as the collider-accelerator conditions.
- 5.5.2 Incoming Experiment Shift Leaders and the Shift crew shall conduct reviews of appropriate logs, records and equipment information, and discussions with the outgoing shift, before responsibility is transferred.
- 5.5.3 The incoming Experiment Shift Leader signifies cognizance of facility operations, and preparedness to assume responsibility for operations, by signing in, or making an appropriate entry, at the end of the log for the previous shift.

## 5.6 Safety of Remote Shift Crew Member

- 5.6.1 Any Shift crew member who is alone at a remote station, shall contact the Experiment Shift Leader approximately every two hours. These remote stations may include, for example, a gas-mixing house.
  - 5.6.1.1 The Experiment Shift Leader shall follow up if these calls are not received as expected.

## 6. **Documentation**

None

## 7. **References**

- 7.1 [C-A-OPM 2.5.2 “RHIC Accelerator Safety Envelope Parameters”](#).
- 7.2 [C-A-OPM 1.5, “Electrical Safety Implementation Plan”](#).
- 7.3 [C-A-OPM 1.5.3 “Procedure to Open or Close Breakers and Switches and Connecting/Disconnecting Plugs”](#).
- 7.4 [C-A-OPM 2.36, “Lockout/Tagout for Control of Hazardous Energy”](#).
- 7.5 [SBMS Electrical Safety](#).
- 7.6 [SBMS Lockout/Tagout \(LOTO\)](#).

## 8. **Attachments**

- 8.1 Shift Operations Organization Chart - Collider-Accelerator Department Conduct of Operations Organization

**Attachment 8.1**  
**“Shift Operations Organization Chart”**  
**Collider-Accelerator Department Conduct of Operations Organization**

