Acceptance Plan for Routine Operations of the Collider and Experiments

Friday, January 21, 2000

Prepared By

E. T. Lessard

Approved by: _____ 1/21/00
C-A Department Chair Signature Date

*TABLE OF CONTENTS*

## I. Introduction

This acceptance plan describes necessary activities to be completed by the Collider-Accelerator (C-A) Department prior to commencing routine operations of the Relativistic Heavy Ion Collider. It is intended that this acceptance plan help the C-A Department prepare for an appropriate readiness review as required in DOE Order O 420.2, Section 5 b. (2) (b). An appropriate Accelerator Readiness Review (ARR) must be conducted following the declaration of Collider readiness for operations. The ARR report must support the decision by the DOE Field Office to approve the commencement of routine operations of the Collider and associated experiments.

Elements of this basic acceptance plan are similar throughout operations efforts through FY00 that involve both the Collider and subsequently the experiments, which are PHOBOS, STAR, PHENIX and BRAHMS. It is intended that the acceptance plan for the experiments be incorporated into this basic acceptance plan. Significant changes to Conduct of Operations, Training, Administrative or Technical Controls, Contingency Plans or the ARR process itself will be submitted as updates to this basic acceptance plan.

This plan is intended to ensure the C-A Department avoids unsafe or environmentally unsound operations. Routine operation of the Collider may be concurrent with other operations; e.g., the fixed-target program in Building 912 or the fixed-target program in the U and V lines. From an operations standpoint, the Collider is viewed as equivalent to a portion, albeit a large one, of a spectrum of operations in which machine physicists and shift-based operations personnel work out of a single Main Control Room (MCR) in Building 911. The role of the physicists and operators in the MCR is to achieve efficient, safe, and environmentally benign conveyance of protons or heavy ions in the machines and transfer lines during all operations.

C-A Department staff and Users are subject to the requirements of the Collider-Accelerator Conduct of Operations Agreement. The Conduct of Operations Agreement requires the on-duty Operations Coordinators be responsible for the operation of the Collider-accelerator complex. The operations staff consists of Operations Coordinators and Operators plus personnel from operations-support groups under their purview. Operations staffs are the trained and qualified personnel who carry out round-the-clock operation of the Collider-Accelerator complex. All authorizations, all permanent or temporary procedures, all Accelerator Safety Envelopes or Operational Safety Limits, and all responses to emergencies or occurrences must follow the formal processes identified in the Conduct of Operations Agreement. The BNL Directorate and the C-A Department management hold this understanding of the Conduct of Operations Agreement for the purposes of safe and environmentally sound operations.

## II Scope

The scope of the acceptance plan for operations is to ready the following for verification by the ARR:

1. procedures, administrative controls, and personnel training and qualification for routine operations at full-intensity, and
2. engineered safety systems for the Collider and Collider-associated experimental facilities.

Particles will be sent down the AtR, W- and Y-Lines, and the Collider Yellow and Blue Rings. Both Blue and Yellow Ring elements will be cold and powered. Particles will be accelerated to full energy and be collided at the intersection regions. At the commencement of FY00 operations, components and systems that are used will be considered fully operational and available for use in all subsequent operational periods. This includes the refrigerator, cryogenic transfer lines and valve boxes that will be used to cool the magnets, and all cryogenic mechanical and associated electrical subsystems.

Controls for the beam will be via the Main Control Room. Controls for cryogenics systems will be from the refrigerator control room in Building 1005S.

Safety systems installed similar in design to that previously used for the commissioning will be verified as ready for operations. In addition to beam crash, access control subsystems, radiation monitors and critical devices, safety systems include an oxygen-deficiency-hazard monitoring system, emergency ventilation for safety of personnel in the Collider tunnel, and hazardous gas monitoring at experiments.

With regard to beam operation and ion species, a schedule of the most current plan is shown in the Proposed FY00 Operating Schedule. As shown by the plan it is anticipated that the Collider operations with beam will occur sometime between February 15, 2000 and April 1, 2000. The planned date of cryogenic system readiness is February 15, 2000.

For the purpose of allowing sufficient time for the ARR validation effort, the planned date for achieving readiness for Collider operations is February 15, 2000.

The onset of research with colliding beams is scheduled for sometime between April 1 and May 1, 2000.

A Safety Assessment Document (SAD) for the Collider in routine operation was approved by BNL on May 21, 1999. An Accelerator Safety Envelope (ASE) for

routine operations was also developed and is shown in Chapter 5 of the SAD. The Acceptance Plan, SAD, and the ASE are intended to support the request that DOE approve routine operations following completion of the ARR.

The ARR will be a continuation of the process that was carried out for the prior Collider commissioning activities. The ARR activities will include a review of the fail-safe controls used to restrain high-intensity proton beam during commissioning. Additional information regarding the ARR process is shown in Section IX.

## III Relevant Documents Available On-Line

1. RHIC Cryogenic System Safety Analysis Report
2. RHIC Safety Assessment Document
3. Collider Accelerator Safety Envelope
4. Collider-Accelerator Department Conduct of Operations
5. Collider-Accelerator Department Operations Procedures

## IV Conduct of Operations

The Collider-Accelerator complex is made up of a number of facilities. It includes the Linac, the AGS Ring, the main magnet power supply, the beam lines, the Tandem Van de Graaff, the Tandem to Booster Line (TTB), the Booster, the AGS to RHIC Line (AtR), the fixed-target experimental areas, the Collider and the Collider experiments at the intersection regions. During operations, all problems encountered (e.g., operational, safety, scheduling, etc.) in any of these areas are reported to the Operations Coordinator in the Main Control Room (MCR). All staff will be working under the procedures and authorizations prescribed by the Collider-Accelerator Conduct of Operations.

The Operations Coordinator makes the necessary notifications or arrangements for operations or authorizations. All operations would have to be preceded by the appropriate authorizations where required. Required authorizations are indicated in the Collider-Accelerator Operations Procedure Manual, the Radiation Safety Committee Check-off lists, and the Experiment Safety Review Committee Check-off lists in the MCR.

All operations personnel must satisfy requirements for authorization in the following areas:

1. delegating Collider-Accelerator Department Chair, Division Head or Supervisor Authorization,
2. operating Collider-Accelerator systems,
3. starting-up or restarting Collider-Accelerator systems,

4. performing maintenance on Collider-Accelerator systems,
5. producing, classifying or removing existing procedures,
6. approving temporary procedures,
7. signing-off changes to procedures,
8. reviewing procedures,
9. appending training and qualification listings, and
10. declaring “critical” systems.

During maintenance and shutdown periods, all scheduled operational related maintenance is done following the notification of the appropriate Divisional Maintenance Coordinator. All maintenance is performed via requirements set down in ES&H Standard 1.3.6, Work Planning and Control for Operations, and executed at the Department level via OPM 2.10, Maintenance Management Policy, OPM 2.28, Enhanced Work Planning, and OPM 2.29, Enhanced Work Planning for Experimenters.

V Training

It is the policy of the Collider-Accelerator Department to ensure general, facility-specific, and job-specific training of any C-A employee, visitor, contractor or experimenter who will require unescorted entry, into one or more of the buildings which form the Collider-Accelerator complex. Training is provided, to the level appropriate, to ensure conformance to the Collider-Accelerator Operations Procedures Manual to protect the environment, and to maintain the health and safety of personnel.

An examination system for training, which can be audited, is maintained by the Collider-Accelerator Department Training Group.

Training courses are developed using performance-based training techniques, based on guidance from DOE's Training Accreditation Program (TAP) objectives. Training includes general BNL ESH training, C-A facility-specific ESH training, and job-specific training for critical skills. Individuals, whether employees, guests or visitors complete specified training to maintain an acceptable level of performance required for safe, environmentally sound and efficient conduct of assigned duties.

General ESH training is aimed at alerting employees and Users to the policies of the Laboratory. This training is provided to employees and Users by the BNL support Divisions.

Facility-specific ESH training is aimed at preparing individuals to enter C-A facilities, and is provided by the C-A Department. All staff members who may enter radiological areas are required to take Collider-Accelerator Access Training. All Users are required

to take facility-specific Users-Training. Study guides for facility-specific training programs are located at the C-A ESHQ web-site. The C-A Work Control Manager coordinates User and staff facility-specific training.

Facility-specific training does not enable a person to work in a C-A facility. An additional determination regarding job-specific ESH training is required prior to authorizing work.

In order to determine the appropriate job-specific ESH training for staff, each C-A employee or User is assigned one or more Training Job Assessments. The Job Training Assessment is linked to training course requirements that are listed in the Brookhaven Training Management System (BTMS). Currently the Collider-Accelerator Department, signified as AD in BTMS, has more than 40 different job assessments. For example, job-assessments relevant to routine round-the clock operations of the Collider and experiments, and the number of qualified personnel required to maintain round-the-clock operation, are:

1. MCR Operations Coordinator (6),
2. MCR Operator (12),
3. Tandem Van de Graaff Operator (5),
4. C-A Radiological Control Technician (5),
5. MMPS Watch Technician (4),
6. Cryogenics Shift Supervisor (5)
7. Cryogenics Operators (18),
8. Collider-Accelerator Support (8), and
9. Experiment Shift Leader (20).

In order to determine the appropriate job-specific training for Users, they are required to file work plans according C-A OPM 2.29, Enhanced Work Planning for Experimenters. This requirement is intended to bring day-today work activities performed by Users into compliance with ESH Standard 1.3.6, Work Planning and Control for Operations. Design and operation of an experiment are sufficiently covered under ES&H Standard 1.3.5, Planning and Control of Experiments. However, it is noted that User tasks related to experimental setup, equipment modification, or facility tie-ins may have ESH impacts, and additional job-specific training may be required. Work plans filed under CA OPM 2.29 help ensure additional requirements are determined before the User performs work.

## VI Contingency Procedures

In order to clarify the use of contingency procedures, it is not unreasonable to assume situations that employ equivalent safety or protection techniques may arise when operating facilities of this size.

Contingency procedures include a conventional but equivalent protection technique. For example, C-A OPM 9.1.16, "Lock Out and Tag Out for Radiation Safety." The C-A Department uses this formal procedure to maintain compliance with all applicable radiation standards in situations where a fully automatic access-control system is impractical. This C-A procedure provides instructions for liaison physicists, liaison engineers, members of the Access Controls Group, Operations Coordinators, and members of the C-A Radiation Safety Committee to follow in order to lock out and tag out equipment or beam lines for the purposes of radiation protection. It may be employed by C-A personnel who are members of our existing Conduct of Operations program whenever equipment or beam lines are to be locked out during barrier modifications or removals, or whenever the automatic access-control system alone does not provide the required protection.

Additional contingency procedures may be developed during the Collider operations period to ensure safe, environmentally sound and reliable operations of the Collider-Accelerator.

VII Operations Modules

Module for Collider Operations, Champions, and Scheduled Readiness Date

| |
|---|
| SCHEDULE: Collider operations readiness with beam on or about February 15, 2000. |
| DESCRIPTION: The AGS will extract particles out of the FEB port and direct them into the Collider Blue and Yellow rings. The Collider will spiral and accelerate particles. |
| OPERATING ITEM (Champions)<br><br>1. All Collider related ORR and ARR items are closed out (C. Schaefer, E. Lessard, N. Williams, A. Stevens, A. Etkin, and W. Sims). See Section XI.<br>2. The Radiation Safety Committee has established critical devices, beam-current monitors and reach-backs for radiation protection. (D. Beavis)<br>3. The Collider access-control system is operational and tested. (N. Williams)<br>4. Emergency procedures are complete. See Section X. (L. Stiegler)<br>5. Operations procedures are complete. See Section X (P. Ingrassia and M. Iarroci)<br>6. Fault Study Plan prepared. (A. Stevens, A. Etkin and C. Schaefer)<br>7. Radiation Safety Check-Off List(s) prepared. (A. Stevens and W. Mackay)<br>8. Accelerator Systems Safety Review Committee issues closed out. See Section XI. (A. Stevens, W. Mackay and J. W. Glenn)<br>9. Accelerator Safety Envelope is complete. (E. Lessard).<br>10. Sweep procedures are complete. See Section X. (P. Ingrassia)<br>11. Training records for round-the-clock operations staff complete. See Section V. (J. Licari and P. Ingrassia) |

Module for Experiment Operations, Champions, and Scheduled Readiness Date

| |
|---|
| SCHEDULE: Experiment operations readiness with particles on or about April 1, 2000. |
| DESCRIPTION: Fully accelerated particles will collide at the intersecting regions. |
| OPERATING ITEM AND/OR DOCUMENT<br><br>1. All experiment related ORR and ARR items are closed out (Y. Makdisi). See Section XI.<br>2. The access control system is operational and tested. (N. Williams)<br>3. Emergency procedures for experiments are complete. See Section X. (L. Stiegler)<br>4. Experiment Operations procedures are complete. See Section X.<br>BRAHMS (D. Beavis)<br>PHOBOS (A. Carroll)<br>PHENIX (Y. Makdisi)<br>STAR (A. Stevens)<br>5. Fault Study Plan prepared. (A. Stevens, A. Etkin and C. Schaefer)<br>6. Radiation Safety Check-Off List(s) prepared.<br>BRAHMS (D. Beavis)<br>PHOBOS (A. Carroll)<br>PHENIX (Y. Makdisi)<br>STAR (A. Stevens)<br>7. Experimental Safety Committee Checkoff Lists prepared.<br>BRAHMS (D. Beavis)<br>PHOBOS (A. Carroll)<br>PHENIX (Y. Makdisi)<br>STAR (A. Stevens)<br>8. Accelerator Safety Envelope is complete. (E. Lessard)<br>9. Sweep procedures are complete. See Section X. (P. Ingrassia)<br>10. Training records for Users complete. (J. Licari) |

## VIII Technical and Administrative Controls

A *technical control* is interpreted as an act, service, or document used to satisfy a specific requirement stated in a DOE Order or Federal Law for the purpose of ensuring safety or protecting the environment. Examples include:

1. Safety Assessment Document (SAD),
2. Accelerator Readiness Review(ARR),
3. Accelerator Safety Envelope (ASE),
4. Radiological training requirements,
5. DOE approval prior to operations.

Technical controls are described in DOE Order 420.2, Accelerator Safety; 10 CFR 835, Occupational Radiation Protection; and DOE 5480.19, Conduct of Operations Requirements for DOE Facilities.

An *administrative control* is interpreted as an act, service, or document used to control operations for the purpose of ensuring safety or protecting the environment. Examples include:

1. design reviews for safety and environmental protection,
2. safely-off modes, critical devices and reach backs for radiation protection,
3. access control procedures for operators,
4. operations procedures,
5. fault studies,
6. sweep procedures,
7. records to ensure training is completed,
8. an ALARA program for dose reduction, and
9. roles, responsibilities, authorities, and accountabilities document (R2A2s).

Administrative Controls are described in Brookhaven's Standards Based Management System, C-A Department Conduct of Operations Matrix, and C-A Department Procedures.

### Specific Technical Controls for Collider Operations

- C-A Department Conduct of Operations Matrix
- Collider Operations ARR Report
- DOE Approval for Collider Operations
- Accelerator Safety Envelope
- RHIC Environmental Assessment
- RHIC Safety Assessment Document

Specific Administrative Controls for Collider Operations

- C-A Configuration Management Plan
- Designation Of Critical Devices By The Radiation Safety Committee
- ESH Reviews By BNL And C-A Department ESH Committees
- Environmental Management System Requirements for Collider
- Experimental Safety Review Committee Check-Off Lists
- Facility Use Agreements for Collider facilities
- Fault Studies
- Functional Tests Of The PASS System
- Integrated Safety Management System Requirements
- Laboratory Management Approval For Collider Operations
- Operational Readiness Reviews
- Operations Procedures
- R2A2 Documents
- Radiation Safety Committee Check-Off Lists
- Experimental Safety Review Committee Checkoff Lists
- Radiation Work Permits
- Radiation Monitor Interlocks And Main Control Room Alarms
- ALARA Procedures
- Self-Assessments, Self-Evaluations And C-A Management Assessments
- Standards Based Management System Requirements
- Sweep Procedures
- Training Documentation (BTMS)
- Work Planning And Work Permits

## IX A Brief Description of the Accelerator Readiness Review (ARR) Process at BNL

The Accelerator Readiness Review is equivalent to the Operational Readiness Review described in BNL ES&H Standard 1.3.2 supplemented by the DOE O 420.2 Draft Guidance document dated May 1999. The ARR identifies the status of operational readiness of a new or modified facility, before start up, to ensure that all engineered safeguards, procedures and training are in place. The ARR ensures that line management groups are aware of their responsibility for health, safety and environmental protection and provides independent review of these responsibilities.

The Deputy Director for Operations appoints the ARR Team. The ARR review includes:

1. a review of the safety documentation and the safety envelope concerning the facility under review for compliance with DOE and BNL requirements,
2. a review of the facility "as built" to verify that commitments made in safety documentation have in fact been executed,
3. a review of the safety systems in place for personnel and equipment safety such as access controls, interlocks, fire protection, and life safety,
4. procedures for operation or emergency and associated personnel training on those procedures,
5. a review of the initial facility fault study plans and controls for personnel safety during the studies,
6. walk downs of the facility to familiarize the ARR Team with the facility as well as verification of safety commitments.

A total of two ARR reviews are performed. One associated with commissioning, which has been completed for the Collider and Collider experiments, and another that is associated with the operations modules identified in this Acceptance Plan.

Critical deficiencies found in the ARR are corrected before authorization for routine operations commences. A schedule is established for minor deficiencies, and the C-A Department tracks these to closure. The ARR Team recommends to the BNL Deputy Director for Operations whether or not the facility should be routinely operated. The Deputy Director for Operations, after reviewing the findings, determines whether or not to recommend routine operations to DOE. The Deputy Director for Operations submits the ARR findings to the DOE in order to assure them that an appropriate ARR was conducted, and all open issues critical to safe operations have been resolved.

X Listing of Operations Procedures Required for Operational Readiness (Champions)

(E. Lessard)
1.1, Authorization
2.5.2, Collider Operational Safety Limits/Accelerator Safety Envelope
4.91, Configuration Management Plan for the RHIC Particle Acceleration Safety System

(P. Ingrassia)
2.6.11, Procedure For LOTO Of RHIC Injection Kickers
2.6.11.a, LOTO For RHIC Injection Kicker Power Supply Checklist
2.12.1, Communication Of The Cryogenic System Status To The Operations Coordinator
3.20, Collider Experiment Fan Stand-Down Procedure
4.44, Operation of PASS
4.56**,** Procedure for Sweeping Primary Beam Enclosures - Controlled Access
4.56.af, RHIC Zone 12z1 Sweep Checklist
4.56.ag, RHIC Zone 12z2 Sweep Checklist
4.56.ah, RHIC Zone 1z1 Sweep Checklist
4.56.ai, RHIC Zone 2Z1 Sweep Checklist
4.56.aj, RHIC Zone 2z2 Sweep Checklist
4.56.akl, RHIC Zone 4z1 Sweep Checklist
4.56.am, RHIC Zone 4z2 Sweep Checklist
4.56.an, RHIC Zone 5z1 Sweep Checklist
4.56.ao, RHIC Zone 6z1/STAR Sweep Checklist
4.56.ap, RHIC Zone 6z2 Sweep Checklist
4.56.aq, RHIC Zone 7z1 Sweep Checklist
4.56ar, RHIC Zone 8z1/Phenix Sweep Checklist
4.56.as, RHIC Zone 8z2 Sweep Checklist
4.56.at, RHIC Zone 9z1 Sweep Checklist
4.56.au, RHIC Zone 10z1 Sweep Checklist
4.56.av, RHIC Zone 10z2 Sweep Checklist
4.56.aw, RHIC Zone 11z1 Sweep Checklist
4.56.ax, X Line Sweep Checklist
4.56.ay, Y Line Sweep Checklist
4.56.az, W Line Sweep Checklist
4.56.ba, RHIC Zone 4z1--RF--Sweep Checklist

(L. Stiegler)
3.0, Local Emergency Plan For the C-A Department
3.0.a, Emergency Call-Down Lists

3.1, Emergency Procedures to be Implemented by the Department Emergency Coordinator
3.2, Emergency Procedures to be Implemented by the Local Emergency Coordinator
3.4, Emergency Procedures to be Implemented by the Radiological Control Technicians
3.5, Emergency Procedures to be Implemented by the MCR Operators or Operations Support Technicians
3.5.a, Example of a List of CAS Alarms Requiring Immediate Main Control Room Response
3.9, Emergency Procedures to be Implemented by the General Population of C-A Complex
3.21, STAR Emergency Procedure
3.22, PHOBOS Emergency Procedure
3.23, BRAHMS Emergency Procedure
3.24, PHENIX Emergency Procedure

(N. Williams)
4.44.1, Procedures For Reloading Processor Memory From An EEPROM After Processor Memory Corruption
4.44.2, Procedures For Downloading a PASS PLC Program Into EEPROM Memory Module And Uploading the Program To RAM
4.44.3, Procedures For Reloading a PASS SLC Program From An EEPROM After Processor Memory Corruption
4.44.4, Procedures For Downloading a PASS SLC Program Into An EEPROM
4.92, Control Of Temporary Hardware Changes/Bypasses In The Particle Accelerator Safety System (PASS) And The Access Control System (ACS)
4.93.1, U-Line Upstream Access Security Gate Subsystem Check
4.93.2, U-Line Downstream Access Security Gate Subsystem Check
4.96.1 , Peers 3, 23 and 25 Crash Subsystem Test
4.96.2, Critical Response Subsystem Checklist for Peers 3, 23, and 25
4.97.1 , Confirmation of Proper System Operation of PASS-Peer 23
4.97.2, Confirmation of Proper System Operation of PASS-Peer 25
4.97.3 , Confirmation of Proper System Operation of PASS-Peer 3

(W. Sims)
4.99, Access To Fenced Areas On The RHIC Site And For Work Above Ten Feet Near Posted Blocks At 2 0'Clock,

(M. Iarocci)
7.1.1 Operations Turnover Checklist
7.1.2 Compressor Room – Vacuum System Operation
7.1.3 Compressor Room – Instrument Gas Compressor Operation

7.1.4 Compressor Room – Heat Exchanger Skid Operation
7.1.5 Compressor Room – Water System Operation
7.1.6 Compressor Room – First Stage Compressor Operation
7.1.7 Compressor Room – Second Stage Compressor Operation
7.1.8 Compressor Room – Redundant Compressor Operation
7.1.9 Compressor Room – Utility Compressor Operation
7.1.10 Compressor Room – Oil Recovery System Operation
7.1.11 25 kW Helium Refrigerator Cooldown
7.1.12 RHIC Ring Cooldown
7.1.13 25 kW Helium Refrigerator Scrub
7.1.14 RHIC Ring Scrub
7.1.15 Heat Exchanger 1A/2A Online and Heat Exchanger 1B/2B Offline
7.1.16 Heat Exchanger 1B/2B Online and Heat Exchanger 1A/2A Offline
7.1.17 Regeneration of Heat Exchanger 1A/2A
7.1.18 Regeneration of Heat Exchanger 1B/2B
7.1.19 Adsorber Bed A Online and Adsorber Bed B Offline
7.1.20 Adsorber Bed B Online and Adsorber Bed A Offline
7.1.21 Regeneration of Adsorber Bed A
7.1.22 Regeneration of Adsorber Bed B
7.1.23 Seal Gas Compressor Start-up
7.1.24, Power Failure Recovery Procedure

STAR Operating Procedures (A. Stevens)

- Purging the STAR TPC Dry Nitrogen for Central Membrane Survey
- STAR Detector Main Hydraulic System
- STAR Detector Pole Tip Support Carriage Hydraulic System
- Procedure for Preparing the STAR Magnet for Operation
- STAR Power Supply Operating Procedure
- Procedure for Exciting the STAR Magnet

PHENIX Operating Procedures (Y. Makdisi)

- PHENIX Magnet Operations Instructions
- Operating Procedures for PHENIX DC/PC Prototype in 1008A, PP-2.5.2.5-01
- Operating Procedures for the ER Gas and HV systems for PHENIX Central Tracking Chambers, PP-2.5.2.5-03
- Operating The MuID Panel Gas system in 1008, PP-2.5.2.13-06
- Operating The MuID Panel HV system in 1008, PP-2.5.2.13-07
- Central Magnet Operating Procedure, PP-2.5.1.3-01
- Operating Procedure for the ER High and Low Voltage Systems for PHENIX BBC, PP-2.5.2.2-01

- RICH CO2 Gas System Operation Procedure, PP-2.5.2.7-04
- Operating Procedures for the ER of the PHENIX TOF, PP-2.5.2.8-02
- PHENIX YAG Laser Operating Procedure in 1008A, PP-2.5.2.9-04
- Operating Procedures for the ER PBSc System of the PHENIX
- EMCal Detector, PP-2.5.2.9-05
- EMCal System Description for ER, PP-2.5.2.9-06
- ZDC in 1008 for Engineering Run, PP-2.5.2.2-02
- Operating Procedure for the ER HV systems of the PHENIX RICH Detector, PP-2.5.2.7-05
- Operation of the PHENIX Hydraulic System, PP-2.5.5.2-01
- Opening and Closing of the Large Rolling Door of The PHENIX Shield Wall, PP-2.5.5.2-02
- Moving the Central Magnet and Detector Carriages in the PHENIX IR, PP-2.5.5.1-01

BRAHMS Operating Procedures (D. Beavis)

- Procedure for Moving BRAHMS Platform
- Procedure for BRAHMS Emergency Power Off
- Procedure for Experimental Running of BRAHMS Magnets-Power Supplies

PHOBOS Operating Procedure (A. Carroll)

- Operating the PHOBOS Magnet

XI Listing of Prior RHIC Project Open Items (Champions)

1. Review of fault study from commissioning run (C. Schaefer)
2. Closeout of RHIC Project DOE Reportable Occurrences (E. Lessard):
   - CH-BH-BNL-BNL-1998-0012
   - CH-BH-BNL-BNL-1998-0020
   - CH-BH-BNL-BNL-1998-0023
   - CH-BH-BNL-BNL-1998-0029
   - CH-BH-BNL-BNL-1998-0037
   - CH-BH-BNL-BNL-1999-0001
   - CH-BH-BNL-BNL-1999-0012
3. Review of Collider access-control system experience with ARR Team (N. Williams)
4. ARR Post Start Action Items from STAR, PHENIX, PHOBOS and BRAHMS ARR Commissioning Report (Y. Makdisi)
5. ARR Post Start Action Items from RHIC Low Intensity ARR Report (E. Lessard)
6. Collider fencing (A. Stevens and A. Etkin)
7. Open ORR Issues, and Tier 1 Items (W. Sims)
8. Open C-A ESRC Items (Y. Makdisi)
9. Open C-A ASSRC Items (J. W. Glenn)

XII Responsibility Matrix

**Acceptance Plan Element**

| **Champion** | Training Records And Training Coordination | Fault Study Plan | Prior ARR Items (Post Start Findings) | Safety Off Modes | Emergency Procedures | Operations Procedures | RSC Checklists | ESRC Checklists | Prior Open ASSRC Issues | ASE | Sweep Procedures | Experiment Operating Procedures | Open RHIC Project Occurrences | Review of Access Control System Experience | Review of Fault Studies During Commissioning | Collider Fencing | Enhanced Work Planning For Experimenters | Development and Delivery of Facility Specific Trai | Prior ORR Items |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C. Schaefer | | X | | | | | | | | | | | | | X | | | | |
| E. Lessard | | | X | | | X | | | | X | | | X | | | | | | |
| J. Licari | X | | | | | | | | | | | | | | | | | | |
| P. Ingrassia | X | | | | | X | | | | | X | | | | | | | | |
| A. Stevens | | X | | | | | X | X | X | | | X | | | | X | | | |
| W. Sims | | | | | | X | | | | | | | | | | | | | X |
| L. Stiegler | | | | | X | | | | | | | | | | | | | | |
| W. Glenn | | | | | | | | | X | | | | | | | | | | |
| N. Williams | | | | | | X | | | | | | | | X | | | | | |
| M. Iarocci | | | | | | X | | | | | | | | | | | | | |
| D. Beavis | | | | X | | | X | X | | | | X | | | | | | | |
| A. Etkin | | X | | | | | | | | | | | | | | X | | | |
| A. Carroll | | | | | | | X | X | | | | X | | | | | | | |
| W. Mackay | | | | | | | X | | X | | | | | | | | | | |
| P. Cirnigliaro | | | | | | | | | | | | | | | | | X | X | |
| Y. Makdisi | | | X | | | | X | X | | | | X | | | | | | | |