

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the **ESSHQ Procedures Coordinator, Bldg. 911A***

C-A OPERATIONS PROCEDURES MANUAL

ATTACHMENT

4.120.4.g 4 O’Clock (PEER 9) Power-Up Tests from MCR

C-A-OPM Procedures in which this Attachment is used.		
4.120.4		

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
_____	_____	_____	_____
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Approved: \_\_\_\_\_ *Signature on File* \_\_\_\_\_  
 Collider-Accelerator Department Chairman      Date

V. Castillo

4.120.4.g 4 O’Clock (PEER 9) Power-Up Tests from MCR

PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title: \_\_\_\_\_ Checksum: \_\_\_\_\_

Division B Software Filename and Checksum: Title: \_\_\_\_\_ Checksum: \_\_\_\_\_

**Initial testing complete:**

Test Team Leader’s Name (Print): \_\_\_\_\_ Life Number: \_\_\_\_\_

Test Team Leader’s Name (Sign): \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Acceptance test procedure complete (following repairs and retesting if required):**

Test Team Leader’s Name (Print): \_\_\_\_\_ Life Number: \_\_\_\_\_

Test Team Leader’s Name (Sign): \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Test results reviewed by:**

Safety Section Head’s Name (Print): \_\_\_\_\_ Life Number: \_\_\_\_\_

Safety Section Head’s Name (Sign): \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Test results accepted by Radiation Safety Committee:**

RSC Member’s Name (Print): \_\_\_\_\_ Life Number: \_\_\_\_\_

RSC Member’s Name (Sign): \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**NOTE:**

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.

**1.1 Verify steps to place Peer 9 in No Access, Mode 24**

- |                          |               |   |                |
|--------------------------|---------------|---|----------------|
| <input type="checkbox"/> | <b>PLACE</b>  | <b>Peer 9 in Mode 16</b>  |                |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>Peer 9 is in Controlled Access</b>   | <b>MODE 16</b> |
|                          | <b>CLOSE</b>  | <b>Peer 9 gate 5GS1</b>   |                |
|                          | <b>RESET</b>  | <b>Peer 9 gates: 3GI1, 3EL1, 4GE1, 4MD1, 4MD2, 4GE2, 4GI1, 4GE3, 4EL1, and 4ED1</b>   |                |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>Peer 9 gates: <input type="checkbox"/> 3GI1, <input type="checkbox"/> 3EL1, <input type="checkbox"/> 4GE1, <input type="checkbox"/> 4MD1, <input type="checkbox"/> 4MD2, <input type="checkbox"/> 4GE2, <input type="checkbox"/> 4GI1, <input type="checkbox"/> 4GE3, <input type="checkbox"/> 4EL1, and <input type="checkbox"/> 4ED1 are</b> | <b>RESET</b>   |
|                          | <b>SWEEP</b>  | <b>Peer 9 Zones: 4Z1, 4Z2</b>   |                |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>Peer 9 Zones: <input type="checkbox"/> 4Z1, <input type="checkbox"/> 4Z2 are</b>   | <b>SWEPT</b>   |
|                          | <b>PLACE</b>  | <b>Peer 9 in Mode 24</b>  |                |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>Peer 9 is in No Access</b>   | <b>MODE 24</b> |
|                          | <b>WAIT</b>   | <b>90 secs</b>  |                |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>MCR sees RHIC RF CD on CD page</b>   | <b>ENABLED</b> |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>MCR sees RHIC RF CD inhibit</b>  | <b>OFF</b>     |
|                          | <b>SET</b>    | <b>RHIC Primary BS withdraw command</b>   | <b>OUT</b>     |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>MCR sees RHIC Injection Critical Device inhibit</b>  | <b>OFF</b>     |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>MCR sees RHIC Critical Device inhibit (BS 1 &amp; 2)</b>   | <b>OFF</b>     |
| <input type="checkbox"/> | <b>VERIFY</b> | <b>MCR sees Permit Link is</b>  | <b>ENABLED</b> |
| <input type="checkbox"/> |               | <b>Check for acceptance of Verify steps to place Peer 9 in No Access, Mode 2</b>  |                |

**1.2 Test Peer 9 Div A PLC for Power-up conditions in No Access, Mode 24**

- |                          |                 |   |                |
|--------------------------|-----------------|---|----------------|
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>Peer 9 is in No Access</b>   | <b>MODE 24</b> |
|                          | <b>TURN OFF</b> | <b>AC Power to the Peer 9 Division A PLC</b>  |                |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>AC Power to the Peer 9 Division A PLC is</b>   | <b>OFF</b>     |
|                          | <b>WAIT</b>     | <b>30 Seconds</b>   |                |
|                          | <b>TURN ON</b>  | <b>AC Power to the Peer 9 Division A PLC</b>  |                |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>AC Power to the Peer 9 Division A PLC is</b>   | <b>ON</b>      |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 9 Division A PLC on Mtc. Status page</b>   | <b>MODE 2</b>  |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 9 Div A gates: <input type="checkbox"/> 3GI1, <input type="checkbox"/> 3EL1, <input type="checkbox"/> 4GE1, <input type="checkbox"/> 4MD1,</b> |                |

	<input type="checkbox"/> 4MD2, <input type="checkbox"/> 4GE2, <input type="checkbox"/> 4GI1, <input type="checkbox"/> 4GE3, <input type="checkbox"/> 4EL1, and <input type="checkbox"/> 4ED1are	NG H/W
<b>RESET</b>	<b>Div A Hardware Faults</b>	
<input type="checkbox"/> <b>VERIFY</b>	<b>Div A Hardware Faults</b> are	<b>RESET</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div A RHIC RF CD</b> on CD page	<b>DISABLED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div A RHIC RF CD</b> inhibit	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div A RHIC Injection Critical Device</b> inhibit	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div A RHIC Critical Device</b> inhibit (BS 1 & 2)	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div A Permit Link</b> is	<b>DISABLED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div A gates:</b> <input type="checkbox"/> 3GI1, <input type="checkbox"/> 3EL1, <input type="checkbox"/> 4GE1, <input type="checkbox"/> 4MD1, <input type="checkbox"/> 4MD2, <input type="checkbox"/> 4GE2, <input type="checkbox"/> 4GI1, <input type="checkbox"/> 4GE3, <input type="checkbox"/> 4EL1, and <input type="checkbox"/> 4ED1are	<b>CLOSED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div A Crash Systems</b> are	<b>OK</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div A Zones</b> are	<b>NO SWEEP</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div B:</b> <input type="checkbox"/> Mode, <input type="checkbox"/> H/W Faults, <input type="checkbox"/> RHIC Inj CD inh, <input type="checkbox"/> RHIC CD inh, <input type="checkbox"/> Perm. Link, <input type="checkbox"/> Gates, <input type="checkbox"/> Crash, <input type="checkbox"/> Zones	<b>NO CHANGE</b>
<input type="checkbox"/>	<b>Check for acceptance of Test Peer 9 Div A PLC for Power-up conditions in No Access, Mode 24</b>	

### 1.3 Test Peer 9 Div B PLC for Power-up conditions in No Access, Mode 24

<input type="checkbox"/> <b>VERIFY</b>	<b>Peer 9 Div B</b> is still in <b>No Access</b>	<b>MODE 24</b>
<b>TURN OFF</b>	<b>AC Power</b> to the <b>Peer 9 Division B PLC</b>	
<input type="checkbox"/> <b>VERIFY</b>	<b>AC Power</b> to the <b>Peer 9 Division B PLC</b> is <b>30 Seconds</b>	<b>OFF</b>
<b>TURN ON</b>	<b>AC Power</b> to the <b>Peer 9 Division B PLC</b>	
<input type="checkbox"/> <b>VERIFY</b>	<b>AC Power</b> to the <b>Peer 9 Division B PLC</b> is	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Division B PLC</b> on <b>Mtc. Status</b> page	<b>MODE 2</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div B gates:</b> <input type="checkbox"/> 3GI1, <input type="checkbox"/> 3EL1, <input type="checkbox"/> 4GE1, <input type="checkbox"/> 4MD1, <input type="checkbox"/> 4MD2, <input type="checkbox"/> 4GE2, <input type="checkbox"/> 4GI1, <input type="checkbox"/> 4GE3, <input type="checkbox"/> 4EL1, and <input type="checkbox"/> 4ED1are	<b>NG H/W</b>
<b>RESET</b>	<b>Div B Hardware Faults</b>	
<input type="checkbox"/> <b>VERIFY</b>	<b>Div B Hardware Faults</b> are	<b>RESET</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div B RHIC RF CD</b> on CD page	<b>DISABLED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div B RHIC RF CD</b> inhibit	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div B RHIC Injection Critical Device</b> inhibit	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div B RHIC Critical Device</b> inhibit (BS 1 & 2)	<b>ON</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Div B Permit Link</b> is	<b>DISABLED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div B gates:</b> <input type="checkbox"/> 3GI1, <input type="checkbox"/> 3EL1, <input type="checkbox"/> 4GE1, <input type="checkbox"/> 4MD1, <input type="checkbox"/> 4MD2, <input type="checkbox"/> 4GE2, <input type="checkbox"/> 4GI1, <input type="checkbox"/> 4GE3, <input type="checkbox"/> 4EL1, and <input type="checkbox"/> 4ED1are	<b>CLOSED</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div B Crash Systems</b> are	<b>OK</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div B Zones</b> are	<b>NO SWEEP</b>
<input type="checkbox"/> <b>VERIFY</b>	MCR sees <b>Peer 9 Div A:</b> <input type="checkbox"/> Mode, <input type="checkbox"/> H/W Faults, <input type="checkbox"/> RHIC Inj CD inh, <input type="checkbox"/> RHIC CD inh, <input type="checkbox"/> Perm. Link, <input type="checkbox"/> Gates, <input type="checkbox"/> Crash, <input type="checkbox"/> Zones	<b>NO CHANGE</b>

- PLACE** Peer 9 in Mode 8
- VERIFY** Peer 9 is in Restricted Access **MODE 8**
- VERIFY** Peer 9 gate 5GS1 is **CLOSED**
- VERIFY** Peer 9 gates:  3GI1,  3EL1,  4GE1,  4MD1,  4MD2,  4GE2,  4GI1,  4GE3,  4EL1,  4ED1 are **CLOSED**
- VERIFY** Peer 9 Zones:  4Z1,  4Z2 are **NO SWEEP**
- VERIFY** MCR sees RHIC RF CD on CD page **DISABLED**
- VERIFY** MCR sees RHIC RF CD inhibit **ON**
- VERIFY** MCR sees RHIC Injection Critical Device inhibit **ON**
- VERIFY** MCR sees RHIC Critical Device inhibit (BS 1 & 2) **ON**
- VERIFY** MCR sees Permit Link is **DISABLED**
- Check for acceptance of Test Peer 9 Div B PLC for Power-up conditions in No Access, Mode 24

**END OF TEST PROCEDURE**

**TTL: Sign for completion of initial testing:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**TTL: Sign for completion of final testing:** \_\_\_\_\_

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_