



**4.120.102.g NASA Space Radiation Laboratory (NSRL), (PEER 27) Power Up Tests**

**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 Test Division A for Power-up conditions**

- |                          |   |  |                 |
|--------------------------|---|--|-----------------|
| <input type="checkbox"/> | <b>SET</b>  | <b>CDS for NSRL operations</b>   |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>CDS is set for</b>  | <b>NSRL</b>     |
| <input type="checkbox"/> | <b>PLACE</b>  | <b>Peer 27 in CA, Mode 16</b>  |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>Peer 27 is in CA</b>  | <b>MODE 16</b>  |
|                          | <b>RESET</b>  | <b>Peer 27 gates: BGE1, BGI1, BGI2 and BGE2</b>  |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>Peer 27 gates: <input type="checkbox"/> BGE1, <input type="checkbox"/> BGI1, <input type="checkbox"/> BGI2 and <input type="checkbox"/> BGE2 are</b>                | <b>RESET</b>    |
|                          | <b>FORCE</b>  | <b>Sweep of Zone NSRL-Z1, Zone NSRL-Z2 and Zone NSRL-Z3</b>  |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>Zone NSRL-Z1 <input type="checkbox"/>, Zone NSRL-Z2 <input type="checkbox"/> and Zone NSRL-Z3 <input type="checkbox"/></b>  | <b>SWEPT</b>    |
|                          | <b>TURN OFF</b>   | <b>AC Power to the Peer 27 Division A PLC</b>  |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>AC Power to the Peer 27 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 27 Division A PLC</b>  |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>AC Power to the Peer 27 Division A PLC is</b>   | <b>ON</b>       |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 27 Div A in SA</b>  | <b>MODE 2</b>   |
|                          | <b>RESET</b>  | <b>Div A Hardware Faults</b>   |                 |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>Div A Hardware Faults are</b>   | <b>RESET</b>    |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees: Z1=Z2=Z3PCD: TTB <input type="checkbox"/> LTB <input type="checkbox"/> B6 <input type="checkbox"/></b>  | <b>DISABLE</b>  |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees : D6AC <input type="checkbox"/> D6DC <input type="checkbox"/> NPlug <input type="checkbox"/> RD1D2 <input type="checkbox"/></b>                            | <b>ENABLE</b>   |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 27 Div A gates: <input type="checkbox"/> BGE1, <input type="checkbox"/> BGI1, <input type="checkbox"/> BGI2 and <input type="checkbox"/> BGE2 are</b> | <b>CLOSED</b>   |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 27 Div A Crash Systems are</b>  | <b>OK</b>       |
| <input type="checkbox"/> | <b>VERIFY</b>   | <b>MCR sees Peer 27 Div A: Zone NSRL-Z1 <input type="checkbox"/>, Zone NSRL-Z2 <input type="checkbox"/> and Zone NSRL-Z3 <input type="checkbox"/></b>                  | <b>NO SWEEP</b> |
| <input type="checkbox"/> | <b>Check for Acceptance of Test of Division A for Power-up conditions</b> |  |                 |

**1.2 Test Division B for Power-up conditions**

- VERIFY** CDS is set for **NSRL**
- PLACE** Peer 27 in CA, Mode 16
- VERIFY** Peer 27 is in CA **MODE 16**
- RESET** Peer 27 gates: BGE1, BGI1, BGI2 and BGE2
- VERIFY** Peer 27 gates:  BGE1,  BGI1,  BGI2 and  BGE2 are **RESET**
- FORCE** Sweep of Zone NSRL-Z1, Zone NSRL-Z2 and Zone NSRL-Z3
- VERIFY** Zone NSRL-Z1 , Zone NSRL-Z2  and Zone NSRL-Z3  **SWEPT**
- TURN OFF** AC Power to the Peer 27 Division B PLC
- VERIFY** AC Power to the Peer 27 Division B PLC is **OFF**
- WAIT** 30 Seconds
- TURN ON** AC Power to the Peer 27 Division B PLC
- VERIFY** AC Power to the Peer 27 Division B PLC is **ON**
- VERIFY** MCR sees Peer 27 Div B in SA **MODE 2**
- RESET** Div B Hardware Faults
- VERIFY** Div B Hardware Faults are **RESET**
- VERIFY** MCR sees: Z1=Z2=Z3PCD: TTB  LTB  B6  **DISABLE**
- VERIFY** MCR sees: D6AC  D6DC  NPlug  RD1D2  **ENABLE**
- VERIFY** MCR sees Peer 27 Div B gates:  BGE1,  BGI1,  BGI2 and  BGE2 are **CLOSED**
- VERIFY** MCR sees Peer 27 Div B Crash Systems are **OK**
- VERIFY** MCR sees Peer 27 Div B: Zone NSRL-Z1 , Zone NSRL-Z2  and Zone NSRL-Z3  **NO SWEEP**
- Check for Acceptance of Test of Division B for Power-up conditions**

**END OF TEST PROCEDURE**

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

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

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

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