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C-A OPERATIONS PROCEDURES MANUAL

4.120.102.a NASA Science Research Laboratory (NSRL)
(Peer 27) Critical Device Tests

Attachment

C-A-OPM Procedures in which this Attachment is used.		
4.120.102		

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

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: ____/____/____

1.1 Status of Critical Devices and Reachback Devices in Safe Access (SA), Mode 2 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

<input type="checkbox"/>	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL
<input type="checkbox"/>	PLACE	Peer 27 in SA, Mode 2	
<input type="checkbox"/>	VERIFY	Peer 27 is in SA	MODE 2
<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED
<input type="checkbox"/>	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N
<input type="checkbox"/>	VERIFY	Peer 27 remains in SA	MODE 2
<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED
<input type="checkbox"/>	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

- Check for acceptance of Status of Critical Devices and Reachback Devices in Safe Access (SA), Mode 2 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.2 Status of Critical Devices and Reachback Devices in Restricted Access (RA), Mode 8 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

	PLACE	Peer 27 in Restricted Access (RA), Mode 8	
<input type="checkbox"/>	VERIFY	Peer 27 is in RA	MODE 8
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL
<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED
	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N
<input type="checkbox"/>	VERIFY	Peer 27 goes to SA	MODE 2
<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED
	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

- Check for acceptance of Status of Critical Devices and Reachback Devices in RA, Mode 8 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.3 Status of Critical Devices and Reachback Devices in Controlled Access (CA), Mode 16 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

	PLACE	Peer 27 in CA, Mode 16	
<input type="checkbox"/>	VERIFY	Peer 27 is in CA	MODE 16
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL
<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED
	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N
<input type="checkbox"/>	VERIFY	Peer 27 goes to SA	MODE 2

<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

- Check for acceptance of **Status of Critical Devices and Reachback Devices in CA, Mode 16 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.4 Status of Critical Devices and Reachback Devices in Controlled Access (CA), Mode 18 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

	PLACE	Peer 27 in CA, Mode 16	
<input type="checkbox"/>	VERIFY	Peer 27 is in CA	MODE 16
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

	FORCE	Sweep of Zone NSRL-Z2 and Zone NSRL-Z3	
<input type="checkbox"/>	VERIFY	MCR sees Zone NSRL-Z2 <input type="checkbox"/> and Zone NSRL-Z3 <input type="checkbox"/>	SWEPT

	PLACE	Peer 27 in CA, Mode 18	
<input type="checkbox"/>	VERIFY	Peer 27 is in CA	MODE 18

<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N

<input type="checkbox"/>	VERIFY	Peer 27 goes to SA	MODE 2
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<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

- Check for acceptance of **Status of Critical Devices and Reachback Devices in CA, Mode 18 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.5 Status of Critical Devices and Reachback Devices in Controlled Access (CA), Mode 17 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

PLACE Peer 27 in CA, Mode 16
 VERIFY Peer 27 is in CA MODE 16
 VERIFY Critical Device **Operation** switch is set for NSRL

VERIFY MCR sees Zone NSRL-Z2 and Zone NSRL-Z3 SWEPT

PLACE Peer 27 in CA, Mode 18
 VERIFY Peer 27 is in CA MODE 18

PLACE Peer 27 in CA, Mode 17
 VERIFY Peer 27 is in CA MODE 17

VERIFY MCR sees Z1 Primary Critical Device (Z1PCD) DISABLED
 VERIFY MCR sees Z2 Primary Critical Device (Z2PCD) DISABLED
 VERIFY MCR sees Z3 Primary Critical Device (Z3PCD) ENABLED
 VERIFY MCR sees Z1 Reachback Critical Device (Z1RBCD) ENABLED
 VERIFY MCR sees Z2 Reachback Critical Device (Z2RBCD) ENABLED

SET Critical Device Switch for B&N operations
 VERIFY Critical Device **Operation** switch is set for B&N

VERIFY Peer 27 goes to SA MODE 2

VERIFY MCR sees Z1 Primary Critical Device (Z1PCD) DISABLED
 VERIFY MCR sees Z2 Primary Critical Device (Z2PCD) DISABLED
 VERIFY MCR sees Z3 Primary Critical Device (Z3PCD) DISABLED
 VERIFY MCR sees Z1 Reachback Critical Device (Z1RBCD) ENABLED
 VERIFY MCR sees Z2 Reachback Critical Device (Z2RBCD) ENABLED

SET Critical Device Switch for NSRL operations
 VERIFY Critical Device **Operation** switch is set for NSRL

Check for acceptance of Status of Critical Devices and Reachback Devices in CA, Mode 17 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

1.6 Status of Critical Devices and Reachback Devices in Restricted Access (RA), Mode 9 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

PLACE Peer 27 in CA, Mode 16
 VERIFY Peer 27 is in CA MODE 16
 VERIFY Critical Device **Operation** switch is set for NSRL

VERIFY MCR sees Zone NSRL-Z2 and Zone NSRL-Z3 SWEPT

PLACE Peer 27 in RA, Mode 9
 VERIFY Peer 27 is in RA MODE 9

<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N

<input type="checkbox"/>	VERIFY	Peer 27 goes to SA	MODE 2
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<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for NSRL operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

- Check for acceptance of **Status of Critical Devices and Reachback Devices in RA, Mode 9 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.7 Status of Critical Devices and Reachback Devices in Restricted Access (RA), Mode 10 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.

	PLACE	Peer 27 in CA, Mode 16	
<input type="checkbox"/>	VERIFY	Peer 27 is in CA	MODE 16
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	NSRL

<input type="checkbox"/>	VERIFY	MCR sees Zone NSRL-Z2 <input type="checkbox"/> and Zone NSRL-Z3 <input type="checkbox"/>	SWEPT
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	PLACE	Peer 27 in RA, Mode 10	
<input type="checkbox"/>	VERIFY	Peer 27 is in RA	MODE 10

<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z3 Primary Critical Device (Z3PCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z1 Reachback Critical Device (Z1RBCD)	ENABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Reachback Critical Device (Z2RBCD)	ENABLED

	SET	Critical Device Switch for B&N operations	
<input type="checkbox"/>	VERIFY	Critical Device Operation switch is set for	B&N

<input type="checkbox"/>	VERIFY	Peer 27 goes to SA	MODE 2
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<input type="checkbox"/>	VERIFY	MCR sees Z1 Primary Critical Device (Z1PCD)	DISABLED
<input type="checkbox"/>	VERIFY	MCR sees Z2 Primary Critical Device (Z2PCD)	DISABLED

- VERIFY** MCR sees **Z3 Primary Critical Device (Z3PCD)** **DISABLED**
- VERIFY** MCR sees **Z1 Reachback Critical Device (Z1RBCD)** **ENABLED**
- VERIFY** MCR sees **Z2 Reachback Critical Device (Z2RBCD)** **ENABLED**

- SET** **Critical Device** Switch for NSRL operations
- VERIFY** Critical Device **Operation** switch is set for **NSRL**

- Check for acceptance of Status of Critical Devices and Reachback Devices in RA, Mode 10 and the Critical Device Switch set for NSRL operations and the effect of switching the Critical Device Switch to Booster and NSRL (B&N) operations.**

1.8 Test Div A and Div B incorrect Z1 Primary Critical Device response in RA, Mode 8

- SET** **Critical Device** Switch for NSRL operations
- VERIFY** Critical Device **Operation** switch is set for **NSRL**

- PLACE** **Peer 27 in Mode 8**
- VERIFY** **Peer 27 is in RA** **MODE 8**

- VERIFY** MCR sees **Z1PCD** , **Z2PCD** and **Z3PCD** **DISABLED**
- VERIFY** MCR sees **Z1RBCD** and **Z2RBCD** **ENABLED**

FORCE Div A **incorrect Z1 Primary Critical Device response**, Switch S-0A, NSRL CD Box, Bldg 914

- VERIFY** MCR sees **Div A Peer 27 in SA** **MODE 2**
- VERIFY** MCR sees **Z1PCD** , **Z2PCD** , **Z3PCD** , **Z1RBCD** and **Z2RBCD** **DISABLED**

- PLACE** **Peer 27 in Mode 8**
- VERIFY** **Peer 27 is in RA** **MODE 8**

- VERIFY** MCR sees **Z1PCD** , **Z2PCD** and **Z3PCD** **DISABLED**
- VERIFY** MCR sees **Z1RBCD** and **Z2RBCD** **ENABLED**

FORCE Div B **incorrect Z1 Primary Critical Device response**, Switch S-1B, NSRL CD Box, Bldg 914

- VERIFY** MCR sees **Div B Peer 27 in SA** **MODE 2**
- VERIFY** MCR sees **Z1PCD** , **Z2PCD** , **Z3PCD** , **Z1RBCD** and **Z2RBCD** **DISABLED**

- Check for acceptance of Test Div A and Div B incorrect Z1 Primary Critical Device response in RA, Mode 8**

1.9 Test Div A and Div B incorrect Z2 Primary Critical Device response in CA, Mode 16 and B&N Operations

- SET Critical Device Switch for B&N operations
- VERIFY Critical Device **Operation** switch is set for **B&N**

- PLACE Peer 27 in Mode 16
- VERIFY Peer 27 is in CA **MODE 16**

- VERIFY MCR sees Z1PCD , Z2PCD and Z3PCD **DISABLED**
- VERIFY MCR sees Z1RBCD and Z2RBCD **ENABLED**

- FORCE** Div A incorrect Z2 Primary Critical Device response, Switch S-2A, NSRL CD Box, Bldg 914

- VERIFY MCR sees Div A Peer 27 in SA **MODE 2**
- VERIFY MCR sees Div A: Z1PCD , Z2PCD , Z3PCD , Z2RBCD **DISABLED**
- VERIFY MCR sees Z1RBCD **ENABLED**

- PLACE Peer 27 in Mode 16
- VERIFY Peer 27 is in CA **MODE 16**

- VERIFY MCR sees Z1PCD , Z2PCD and Z3PCD **DISABLED**
- VERIFY MCR sees Z1RBCD and Z2RBCD **ENABLED**

- FORCE** Div B incorrect Z1 Primary Critical Device response, Switch S-5B, NSRL CD Box, Bldg 914

- VERIFY MCR sees Div B Peer 27 in SA **MODE 2**
- VERIFY MCR sees Div B: Z1PCD , Z2PCD , Z3PCD , Z2RBCD **DISABLED**
- VERIFY MCR sees Z1RBCD **ENABLED**

- SET Critical Device Switch for NSRL operations
- VERIFY Critical Device **Operation** switch is set for **NSRL**

- PLACE Peer 27 in CA, Mode 16
- VERIFY MCR sees Peer 27 in CA **MODE 16**

- Check for acceptance of Test Div A and Div B incorrect Z1 Primary Critical Device response in CA, Mode 16 and B&N Operations.

1.10 Test Div A and Div B incorrect Z2 Primary Critical Device response in CA, Mode 9

- VERIFY Critical Device **Operation** switch is set for **NSRL**

- PLACE Peer 27 in Mode 9
- VERIFY Peer 27 is in CA **MODE 9**

- VERIFY MCR sees Z1PCD and Z2PCD **DISABLED**
- VERIFY MCR sees Z3PCD , Z1RBCD , and Z2RBCD **ENABLED**

- FORCE** Div A incorrect Z2 Primary Critical Device response, Switch S-2A, NSRL CD Box, Bldg 914

- VERIFY** MCR sees **Div A Peer 27 in SA** **MODE 2**
- VERIFY** MCR sees **Div A: Z1PCD , Z2PCD , Z3PCD and Z2RBCD** **DISABLED**
- VERIFY** MCR sees **Z1RBCD** **ENABLED**

- PLACE** **Peer 27 in Mode 16** **MODE 16**
- VERIFY** **Peer 27 is in CA**
- PLACE** **Peer 27 in Mode 9** **MODE 9**
- VERIFY** **Peer 27 is in CA**

- VERIFY** MCR sees **Z1PCD and Z2PCD** **DISABLED**
- VERIFY** MCR sees **Z3PCD , Z1RBCD and Z2RBCD** **ENABLED**

- FORCE** **Div B incorrect Z1 Primary Critical Device response, Switch S-1B, NSRL CD Box, Bldg 914**

- VERIFY** MCR sees **Div B Peer 27 in SA** **MODE 2**
- VERIFY** MCR sees **Div B: Z1PCD , Z2PCD , Z3PCD and Z1RBCD** **DISABLED**
- VERIFY** MCR sees **Z2RBCD** **ENABLED**

- PLACE** **Peer 27 in RA, Mode 8** **MODE 8**
- VERIFY** MCR sees **Peer 27 in RA**

- Check for acceptance of Test Div A and Div B incorrect Z1 Primary Critical Device response in CA, Mode 9.**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: ____/____/____

TTL: Sign for completion of final testing: _____

Date: ____/____/____