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SMD Operations Procedures Manual

**8.1.1.3 OPERATION OF 8.5kA POWER
SUPPLY FOR VERTICAL MAGNET TESTING**

Text Pages 1 through 6
Attachment(s) 1, 2, 3, 4, 5

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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SMD-OPM 8.1.1.3
Category A

Revision 00
January 11, 2000

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8.1.1.3 Operation of 8.5kA Power Supply for Vertical Magnet Testing

1.0 Purpose and Scope

- 1.1 The purpose of this Procedure is to provide step by step instruction in the start-up, operation, and shut-down of the 8.5kA Magnet Power Supply (Supply) during vertical magnet testing. The Supply is located on the 902 floor along the north wall.
- 1.2 The information is provided for any person who will operate the controls of the Supply.

2.0 Responsibilities

- 2.1 Authorized operators (Operators) of the Vertical Control Room (VCR) will perform the procedure described here.
- 2.2 The Operator shall maintain a Vertical Test log book for the magnet under test. Entries shall include notes of any irregularities encountered during start-up, operation, and shut-down of the Supplies.

3.0 Prerequisites

3.1 Training

- 3.1.1 Operators must be trained by the Cognizant Engineer responsible for operation of the Supply, or his designee, before using this Procedure.
- 3.1.2 Operators must be trained by the CE/CS responsible for vertical magnet testing, or his designee, before using this Procedure.
- 3.1.3 Operator must be a "responsible employee" as defined by SMD-OPM 2.11, "Lockout/Tagout Requirements".
- 3.1.4 Test of Safety Interlock System per OPM 8.1.1.35 shall be completed.

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4.0 Precautions

- 4.1 The output power of this Supply is routed through the Vertical Dewar Link Box (Link Box). For any changing of links in this box, the 8.5kA power supply must be locked out and their Kirk keys used to open the Link Box.
- 4.2 Contact the CE for operation of the Supply if it is necessary to operate the Supply in a non-standard manner, which is defined as a manner that deviates from the procedure described below. Failure to do this could result in injury to personnel or equipment damage.

5.0 Procedure

5.1 Pre-Operational Checks

CAUTION

Failure to perform the pre-operational checks could result in equipment damage.

- 5.1.1 Check magnet temperature--DO NOT operate above 4.8 degrees K.
- 5.1.2 Confirm that gas-cooled lead flow is on.
- 5.1.3 Check that cooling water is flowing to the Power Supply and Magnet Top Hat Main Leads.

5.2 Configure Link Box

- 5.2.1 Perform Lockout/Tagout. The 460V input disconnect switches for the 8.5kA supplies, located on the wall behind the supplies and marked E22-1, must be locked and tagged.
- 5.2.2 Open the Link Box by unlocking Kirk locks RE11475 (key #18).
- 5.2.3 Make sure that the system is de-energized by using a "Wiggy" or other passive, low impedance voltage detector (per Lockout/Tagout training).
- 5.2.4 Connect the load via the links of the Link Box, securing all nuts.
- 5.2.5 Close the Link Box. Check that the Kirk Locks are locked. All cover panels must be installed and secured.

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5.2.6 Fill out the Distribution Link Box Status Log Sheet (Attachment1) and post Status Indicator Card (see Attachments 2 thru 5), describing the supply configuration, by using the appropriate card and placing it in the clear plastic envelope affixed to the outside of the Link Box front panel.

5.3 Configure the Remote Control Rack for the 8.5kA Supply

5.3.1 In the rear of the 8.5kA power supply control rack, the following connections should be made:

- A. P.S. interface cable marked "VERT. DEWAR P.S. INT." to the "AUX SWITCH PANEL".
- B. Fiber optic cable marked "VERT. C.R." to the VCR fiber optic bus extender box.
- C. GPIB cable from the fiber optic bus extender box to the current meter and to the "TEKTRONICS BUCKET".

NOTE *No other equipment should be on the bus other than that described above.*

- D. Flip the DOOR INTERLOCK toggle switch, located on the AUX SWITCH PANEL, to VCR.

5.3.2 Check that control power is applied to the components of the Remote Control Rack.

5.3.3 Set the Regulator Card (marked "REGULATOR CARD 1"), located in the 8.5kA p.s. control bucket:

- A. Local/Remote switch to Remote.
- B. Rotary switch to position shown on chart depending on magnet type.
- C. Potentiometer R18 to setting shown on chart depending on magnet type.

5.3.4 Verify Interface Card is in remote (switch position right).

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CAUTION

Do not power up supplies before control software is started.

5.4 Start the Control Software

5.4.1 In the VCR, start the control software on the p.s. control computer. Confirm that it is operational and that communication with the remote rack has been established (no bus error messages).

5.5 Power Up Supply Locally

5.5.1 Turn LOCAL/REMOTE switch, located on the control panel on the outside of the Supply, to LOCAL.

5.5.2 Remove, or have an authorized person remove, locks and tags from input disconnect switch E22-1. Unlock the Kirk Lock on the switch using key #18. Put the switch in the ON position.

5.5.3 Place ON/OFF breaker located on the 8.5kA Supply control panel in the ON position.

5.5.4 Press the RESET button. Check that no fault lights are lit. D.C. voltmeters and D.C. current meters on Supply should read zero.

5.5.5 Turn the LOCAL/REMOTE switch on the Supply control panel to REMOTE.

5.6 Before Leaving the Supply Area

5.6.1 Make sure all dewar power connections are covered with rubber insulating sheets where possible.

5.6.2 Make sure that the gate on the cage surrounding the dewar is shut.

5.6.3 Notify cryogenic personnel and other affected personnel that the Supply is about to be operated.

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5.7 Operate Supply Remotely from the VCR

- 5.7.1 Confirm that the software is running per step 5.4.
- 5.7.2 Clear faults.
- 5.7.3 Turn Supply on.
- 5.7.4 Check that warning lights on the dewar cage, the Link Box and the Supply are flashing when Supply is turned on.
- 5.7.5 Operate Supply normally per instructions for the particular test being conducted.

5.8 After Completion of Test, Shut Down Supply

- 5.8.1 Ramp Supply to zero. Issue a Power Supply OFF command via the computer. All D.C. indicators should show zero voltage and zero current.
- 5.8.2 At the 8.5kA Supply control panel, turn LOCAL/REMOTE switch to LOCAL position and put the ON/OFF breaker in the OFF position.
- 5.8.3 Put input disconnect switch E22-1 in the OFF position. Lock the Kirk Lock using Kirk key #18. Keep the key in a controlled location when Supply is not in operation.

5.9 Fill out log book. Note any irregularities in the operation of the Supply.

6.0 Documentation

- 6.1 Distribution Link Box Status Log Sheet.
- 6.2 Magnet Testing run book
- 6.3 Vertical Control Room (VCR) testing log book.

7.0 References

- 7.1 OPM 2.11, "Lockout/Tagout Requirements"
- 7.2 OPM 8.1.1.35, "Test of Safety Interlocks of 8.5kA Power Supply"

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8.0 Attachments

1. Link Box Status Sheet
2. Dewar 2
3. Dewar 3
4. Dewar Short
5. Dewar Open

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Attachment 1 - VCR MPS 8.5kA Distribution (Link Box) Status Log Sheet

Item	Change Date	Dewar # 2	Dewar # 3	Short	Open	Magnet	Operator	Checked By	Red Tag #
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
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25									

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Attachment 2

**The VCR
MPS 8.5kA
Distribution
is Linked to
*
DEWAR #2**

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Attachment 3

**The VCR
MPS 8.5kA
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*
DEWAR #3**

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Attachment 4

**The VCR
MPS 8.5kA
Distribution
is in a**

*** SHORT ***

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Attachment 5

**The VCR
MPS 8.5kA
Distribution
is in an**

*** Open ***