SMD Operations Procedures Manual

8.1.3.10 OPERATION OF COOLDOWN #1 SYSTEM

Text Pages 1 through 2

Hand Processed Changes

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8.1.3.10 Operation of Cooldown #1 System

1.0 Purpose

This procedure provides instructions for STARTUP/SHUTDOWN and operation of Cooldown #1.

2.0 Responsibilities and Scope

Operator is responsible for STARTUP/SHUTDOWN and operation of Cooldown #1.

3.0 Prerequisites

3.1 Operator shall be instructed by a supervisor or designee.

3.2 Instruction shall include operation of 100 HP Sullair Compressor, pump and purge procedures and helium purifier operation.

4.0 Precautions

4.1 Hearing protection shall be worn in the Compressor Room.

4.2 Ensure only authorized personnel are on Cooldown #1, Cold Box, or are escorted by an authorized person.

5.0 Procedure

CS-4 and purifier are on line (see 100 HP Startup Remote operation and MAGCOOL Helium Purifiers.

5.1 Start compressor CS-5.

5.2 Display pg. D3. Bring cursor to CS-5 press **OPEN or ON.** Enter start time in Logbook.

5.3 Wait for CS-5 **ON LINE** flag to turn **RED.**

5.4 Display pg. D9, cursor on **PUMP & PURGE, press CLOSE or OFF.** Enter in Logbook.

5.5 Display pg. D9, cursor on **COOLDOWN I, PRESS OPEN or ON.** Enter in Logbook.

5.6 Operation of Cooldown #1 is computer controlled. Process condition and the controller can be seen from the screen, Figure 1. In Figure 1, counter flow heat exchangers and a nitrogen heat exchanger are shown. Depending on the operating condition, a counter flow heat exchanger is selected. Temperatures to and from the magnet are given in the lower left corner. The controllers, for liquid nitrogen and flow split among heat exchangers, are located in the upper left. (Note: the controllers are set up for MAGCOOL parameters. There is no need to change for typical operation.) Trends for differential temperature across the magnet and magnet outlet temperature are given in the upper right.

5.7 Cooldown I is computer controlled. When the magnet is above 180° K, the controllers maintain a 50 K temperature difference between the supply cooling helium flow and the return from magnet.

5.8 After the magnet outlet temperature reaches 180° K, the computer switches to fast cooldown mode.

5.9 When magnet outlet temperature reaches 100^0 K a **DONE** flag will appear.

5.10 When **DONE** flag appears it is now ready for Cooldown #2 or 5 K cooldown using HEUB refrigerator. Because Cooldown #2 is mainly designed for testing more than one magnet at a time in MAGCOOL, HEUB is used for 5 K cooldown for all magnet tests since 2002.

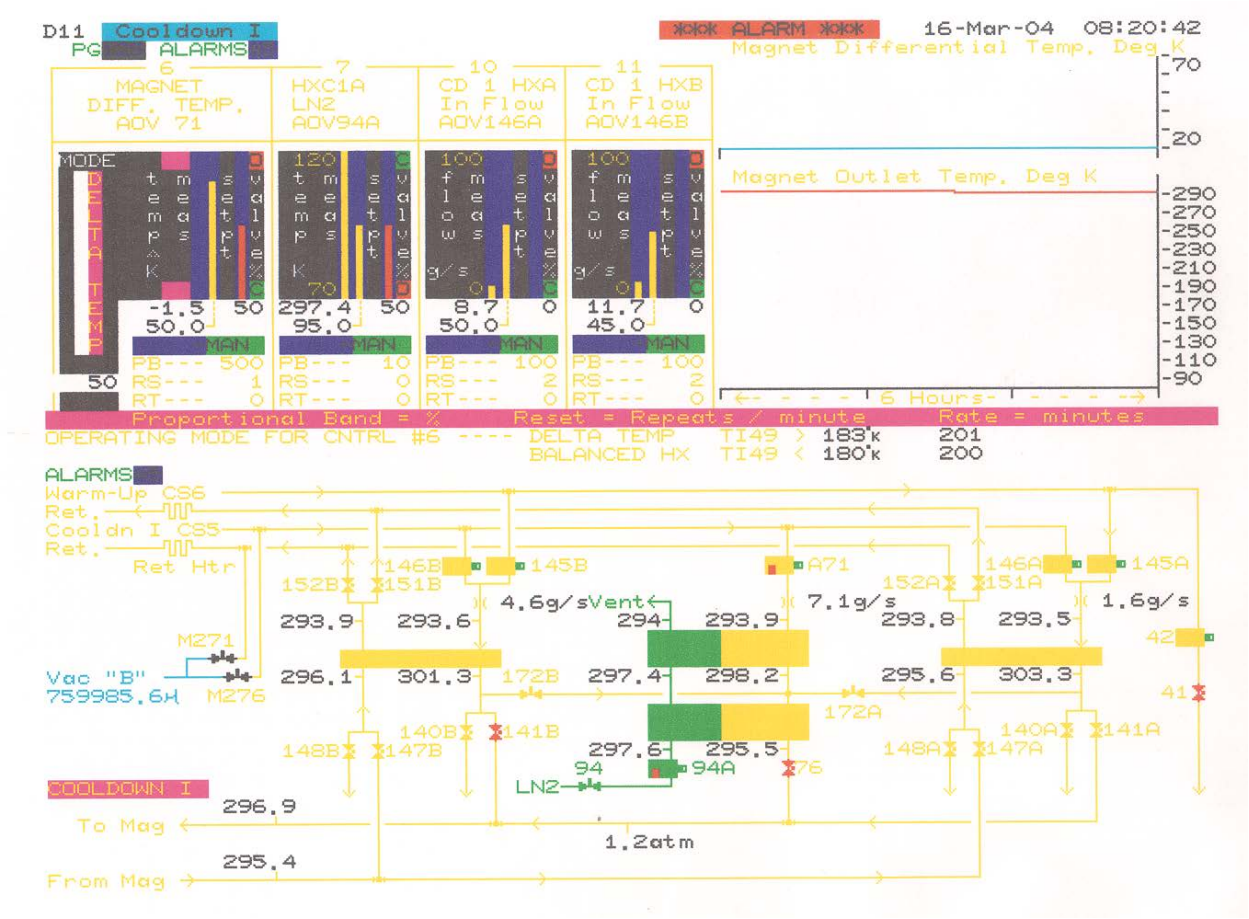

Figure 1. Display of control page D11 for Cooldown I

6.0 Documentation

Documentation is kept in CRYOGENIC Logbook in 902.

7.0 References

7.1 Operations and Maintenance manual provided by CVI is kept in the MAGCOOL Control Room, located in Building 902.

7.2 An Operators Program Guide and Operations Guide is given to all operators and a copy is kept in CRYOGENIC Control Room located in Building 902.

8.0 Attachments

None