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## SMD Operations Procedures Manual

### 8.1.3.5 OPERATION OF THE THREE 100 HP SULLAIR COMPRESSORS FOR MAGCOOL

Text Pages 1 through 3

#### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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### **8.1.3.5 Operation of the Three 100 HP Sullair Compressors for MAGCOOL**

#### **1.0 Purpose**

This procedure provides instructions for startup, operation and shutdown of the single stage 100 HP Sullair screw compressors which supplies helium for purifier, cooldown, warmup and pump and purge operations of MAGCOOL.

#### **2.0 Responsibilities and Scope**

- 2.1 The operator is responsible for startup, operation and shutdown of the compressor.
- 2.2 The operator is responsible for the control of environmental aspects as defined in course number AM-ENV-FS6 "Cryogenic System Maintenance".

#### **3.0 Prerequisites**

- 3.1 Operator must be instructed by the supervisor or designee.
- 3.2 Instruction shall include operation of the MAGCOOL purifier, pump and purge, Cooldown 1 and 2 and warmup systems.

#### **4.0 Precautions**

- 4.1 Hearing protection shall be worn in the compressor room.
- 4.2 Ensure that no personnel are near unit to be started unless they are issued hearing protection and aware of compressor room environment.

#### **5.0 Procedure**

- 5.1 Ensure that water supply and return **VALVES** to oil cooler and after cooler **ARE OPEN**.
- 5.2 **CHECK** that the **OIL LEVEL** in the sight glass of the oil tank is correct.
- 5.3 Make sure both the **SUCTION AND THE DISCHARGE VALVES ARE OPEN** and the manual by-pass valves are closed.

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- 5.4 These three compressors may be run in one of two ways, either LOCAL or REMOTE.
- 5.5 Local operation (in I/O rack, “**Compressor Stop**” switch is in the up position).
  - 5.5.1 By turning the selector switch to the **LOCAL** position, a compressor can be started only at its control panel.
  - 5.5.2 Turn "**STOP/RUN**" selector switch to "**RUN**".
  - 5.5.3 Turn "**START/RESET**" switch to "**RESET**" position and press button.
  - 5.5.4 Turn "**START/RESET**" switch to "**START**" position and press button. The oil pump will run for approximately 1 minute and then the compressor motor will start.
  - 5.5.5 Set Automatic By-Pass Controller at CRT page D3, located in lower left side of Figure 1, in AUTO. (Note: Discharge pressure of the compressor is controlled from the set point of the controller. The three controllers are for CS4, CS5 and CS6).
  - 5.5.6 Press "**LOAD**" button to fully load compressor.
- 5.6 Remote Operation
  - 5.6.1 At the computer I/O rack, put "**COMP. STOP**" switch in center position.
  - 5.6.2 At the computer CRT call up page D3 “Compressors” as shown in Figure 1.
  - 5.6.3 Move cursor to desired compressor chevron: CS4, CS5 (for cooldown I) or CS6 (for warmup) located on the upper left side as shown in Figure 1.
  - 5.6.4 Hit "**OPEN or ON**" key. After approximately 1 minute, compressor will start. Enter Compressor start time in logbook.
  - 5.6.5 Set Automatic By-Pass Controller at CRT page D3, located in lower left side of Figure 1, in AUTO. (Note: Discharge pressure of the compressor is controlled from the set point of the controller. The three controllers are for CS4, CS5 and CS6).

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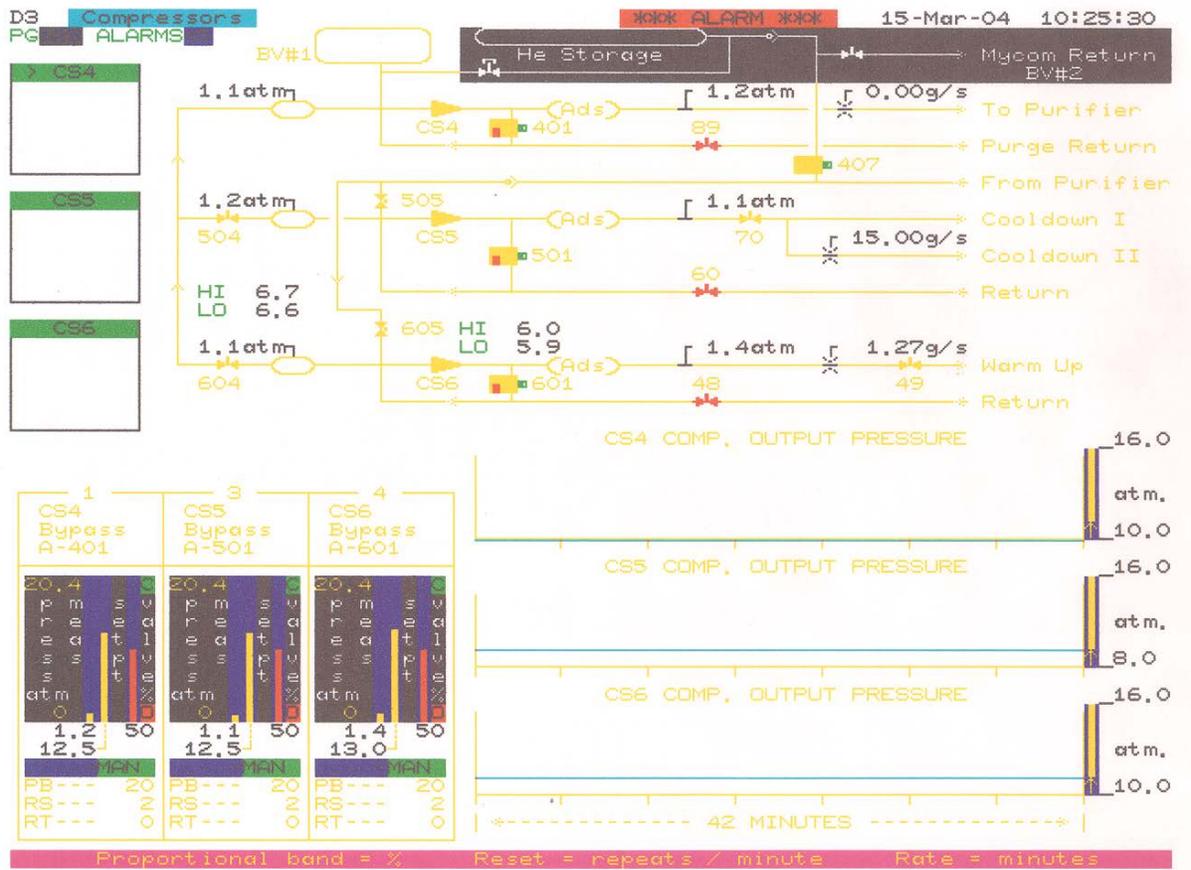


Figure 1. Display of control page D3 for 100 HP Sullair compressors CS4, 5 & 6

- 5.7 Check pressure, temperature and oil level to make sure the compressor is operating in its design range two times per shift. Document step 5.7 in the CRYOGENIC Operator's Logbook.
- 5.8 Any sign of oil loss shall be logged and reported to the supervisor or engineer for investigation.
- 5.9 Automatic shutdown of the system occurs if any of the following system switches are activated:

Low oil differential pressure, trip valve is set at 35 psig  
 High discharge temperature, trip valve is set at 150 F  
 High oil temperature, trip valve is set at 130 F  
 High discharge pressure, trip valve is set at 275 psig  
 Low suction pressure, trip valve is set at 0 psig

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5.10 The compressor can be shutdown manually in case the controller fails to shutdown the unit during any of the above events or in case of emergency situations due to loss of helium, oil or water.

5.11 Normal shutdown or manual emergency shutdown of the system is accomplished by depressing the local "STOP" push button or at computer, page D3, hit "CLOSE or OFF" key. Enter compressor stop in Logbook.

## **6.0 Documentation**

6.1 Documentation shall be kept in the CRYOGENIC Operator's Logbook in Building 902.

## **7.0 References**

7.1 Operators Manual and Parts List, Sullair Refrigeration Compressor, CB series compressor package.

7.1 Item 7.1 is part of the MAGCOOL Operation and Maintenance Manual provided by CVI. A copy of this manual is kept in the CRYOGENIC Control Room in Building 902.

## **8.0 Attachments**

None