Fermilab

CDF CRYOGENIC SYSTEM
EVCP COLD VALVE CHANGE
JHA/WORK PERMIT

Job Name: Cryogenic System EVCP Cold Valve Change

Location: CDF Assembly Hall Main Floor Cryo Area

Job Duration: Four Hours* **Date Work is Performed:** 1-29-08

Work to be performed by: CDF Cryo Systems Personnel

Supervisor: Bill Noe

Phone Extensions: x 3632 (Cryo Control Room)

DESCRIPTION OF WORK:

For instances when EVCP has failed such that the cryo plant cannot provide the required liquid helium flow to the solenoid. In order to complete this work, the procedure below is completed while adhering to the hazard mitigation requirements. A minimum of three people are required for this work.

ASSOCIATED HAZARDS:

(1) While pulling the valve stem, extremely cold helium vapor and possibly liquid are released. The valve stem surfaces will remain very cold for some period of time after it is pulled. Exposure of the cold fluids or surfaces to one's flesh can cause serious burns.

(2) Pressurized helium gas at 2 psig or less per procedure. Gas or particulate in gas could possibly harm exposed skin.

*Four Hour time estimate includes powering down the solenoid, performing the procedure, recovering the plant, and powering up the solenoid assuming that the work begins with the magnet control dewar full, the storage dewar at minimum 45% full and no unexpected problems. Beginning this procedure with unsatisfactory plant conditions will add significantly to the recovery period.

HAZARD MITIGATION:

(1) Proper personal protective equipment must be worn. This includes a face shield and cryo gloves. In addition, open toe shoes and shorts are not to be worn.

(2) Helium gas pressure is lowered to 2 psig or less per the procedure below. Wear PPE as specified above.

(3) The cryo platform and the immediate cryo area is to be cordoned off to prevent unauthorized personnel from entering this area.

(4) In the event that the helium pressure exceeds 2 psig during the procedure and:

- If the line pressure is high and the compressor is running, close EVXHP by hitting the red crash button on RR #2.
- If the line pressure is high as a result of the compressor tripping, Open MV-2005-H or open MV-2009-H and PVLF, then close MV-201-H.

WORK PROCEDURE:

✓ 1. Power down the Solenoid.

✓ 2. Obtain the tools necessary for the work; screwdriver, heat gun, and plugs/corks.

✓ 3. Prepare cryo system:

- Silence alarms
- Place PVXBY in manual closed
- Place PVXJT in manual closed
- Place PVMF in manual closed
- Put Leads in Run Mode
- Set the wet engine to manual and slow it to 100 RPM
- Set the dry engine to manual and slow it to 300 RPM
- Place PVQR in manual to 100% open
- Lower PVHIDIS set point from 0.8 psig to 0.5 psig (suction pressure)

✓ 4. Allow the helium circuit at EVCP to depressurize to 1.5 psig or less. Watch line pressure at PI-3268-H. Also watch the temporary pressure gauge installed at the outlet of MV-257-H. Open MV-257-H to monitor this pressure.

✓ 5. Observe pressures. If pressures > 1.5 psig, turn off wet and dry engines from i-Fix, else proceed.

✓ 6. Acquire the required PPE; cryo gloves, face shields.

✓ 7. Position two people wearing the designated PPE; one to pull the valve stem and the other to plug the opening. The third person involved is to observe and make adjustments to the cryo system if needed. Have the heat gun in place.

✓ 8. Pull existing valve stem. Plug the opening and secure the cork.
- If the line pressure is high and the compressor is running, close EVXHP by hitting the red crash button on RR #2.
- If the line pressure is high as a result of the compressor tripping, Open MV-2005-H or open MV-2009-H and PVLF, then close MV-201-H.

✓ 9. Evaluate the valve stem:
- Is the valve stem assembly intact? Bullet, Kel F seal, spacer, washer, set screw(s) attached?
- Is the valve stem attached to actuator linkage?
- Is the spare valve stem the correct size? Use heat gun to warm up the current EVCP in the case it needs to be reinserted.
- If bullet is left inside, reinsert current (already warmed) EVCP stem. One may try to thread on the bullet.

✓ 10. After the evaluation, install a valve stem assembly. Assure the cleanliness of the valve stem assembly to be inserted. Take the same precautions previously mentioned.

✓ 11. Recover the cryo system noting actions taken in step 3 of this procedure.

✓ 12. When plant is recovered, contact the second floor control room and begin powering the solenoid.

Prepared by: R. Schmitt, R. Sanders, D. Allspach, W. Noe **Date:** 1-11-08

Approved by: _____ **Date:** 1/25/08
CDF Operations Head

SIGNATURE LIST OF WORKERS INVOLVED IN THIS TASK

My supervisor has reviewed this Work Plan & Hazard Analysis with me and I understand the hazards and required precautionary actions. I will follow the requirements of this plan or notify my supervisor if I am unable to do so.

Name (print)	ID #	Signature	Date
Bill Noe	2132	[redacted]	1/29/08
Bruce Vollmer	5171	[redacted]	1/29/08
D. Allspach	7201	[redacted]	1/29/08