If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

7.1.63 Replacement of Burst Disks During Operation

Text Pages 2 through 5

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File***
Collider-Accelerator Department Chairman Date

A. Nicoletti

7.1.63 Replacement of Burst Disks During Operation

1. Purpose

To provide guidance on the replacement of a failed burst disk during refrigerator operations. This procedure only covers those burst disks with 3 way selector valves located at the cold end of the RHIC refrigerator. The order of the steps and details may need to be adjusted as conditions warrant.

The OPM contains the following sections:

5.1 Replacement of Burst Disks H27R or H60R (Hi Pot)
5.2 Replacement of Burst Disks H111R or H56R (Intermediate Pot)
5.3 Replacement of Burst Disks H98R or H59R (Low Pot)
5.4 Replacement of Burst Disks H46R or H97R (CVP to HX Piping)

2. Responsibilities

2.1 The Shift Supervisor, or an operator designated by the Shift Supervisor, is responsible for conducting the procedure, and providing documentation in the Cryogenic Control Room Log.

3. Prerequisite

None

4. Precautions

4.1 Personal Protective Equipment (PPE) is required for the replacement of the burst disk assembly.

4.2 If there is liquid helium in the refrigerator pots, all personnel entering the refrigeration wing of 1005R, must be ODH Class 1 qualified, have a Personal Oxygen Monitor (POM), and carry an emergency escape pack.

4.3 A ruptured burst disk is an indication of system instability. The operators first priority is to establish stable refrigerator operations before proceeding with this OPM.

4.4 The reason for the burst disk rupture shall be understood before returning the system to routine operation. If necessary, the Shift Supervisor shall consult with the Cryogenic Operations Group Leader, Cryogenic Engineering and/or the Chief Mechanical Engineer to be assured that the reason for the burst disk rupture is understood and corrected.

5. Procedure

5.1 Replacement of Burst Disk H60R or H27R (Hi Pot)

_____ 5.1.1 As soon as conditions permit, notify MCR and Cryogenic Operations Group Leader of refrigerator status, and that cooling to ring may be stopped.

_____ 5.1.2 Identify cause of high pressure in refrigerator pot and, if possible, take action to eliminate it.

_____ 5.1.3 Once the pressure on the return side of the refrigerator is stable and under control, switch 3 way valve H29M to select the opposite burst disk. If pressure in high pot continues to rise switch back to ruptured disk.

_____ 5.1.4 When alternate burst disk is selected and pot pressure is stable, reestablish normal refrigerator operating parameter.

_____ 5.1.5 Lock H29M and replace ruptured disk

_____ 5.1.6 Evaluate status of refrigerator warm end, including adsorber

_____ 5.1.7 Continue to stabilize ring and refrigerator.

5.2 Replacement of Burst Disk H56R or H111R (Intermediate Pot)

_____ 5.2.1 As soon as conditions permit, notify MCR and Cryogenic Operations Group Leader of refrigerator status, and that cooling to ring may be stopped.

_____ 5.2.2 Identify cause of high pressure in refrigerator pot and, if possible, take action to eliminate it.

_____ 5.2.3 Once the pressure on the return side of the refrigerator is stable and under control, switch 3 way valve H110M to select the opposite burst disk. If pressure in intermediate pot continues to rise switch back to ruptured disk.

_____ 5.2.4 When alternate burst disk is selected and pot pressure is stable, reestablish normal refrigerator operating parameter.

_____ 5.2.5 Lock H110M and replace ruptured disk

_____ 5.2.6 Evaluate status of refrigerator warm end, including adsorber

5.3 Replacement of Burst Disk H98R or H59R (Low Pot)

_____ 5.3.1 As soon as conditions permit, notify MCR and Cryogenic Operations Group Leader of refrigerator status, and that cooling to ring may be stopped.

_____ 5.3.2 Identify cause of high pressure in refrigerator pot and, if possible, take action to eliminate it.

_____ 5.3.3 Once the pressure on the return side of the refrigerator is stable and under control, switch 3 way valve H99M to select the opposite burst disk. If pressure in low pot continues to rise switch back to ruptured disk.

_____ 5.3.4 When alternate burst disk is selected and pot pressure is stable, reestablish normal refrigerator operating parameter.

_____ 5.3.5 Lock H99M and replace ruptured disk

_____ 5.3.6 Evaluate status of refrigerator warm end, including adsorber

5.4 Replacement of Burst Disk H46R or H97R (CVP to HX Piping)

_____ 5.4.1 As soon as conditions permit, notify MCR and Cryogenic Operations Group Leader of refrigerator status, and that cooling to ring may be stopped.

_____ 5.4.2 Identify cause of high pressure in refrigerator pot and, if possible, take action to eliminate it.

_____ 5.4.3 Once the pressure on the return side of the refrigerator is stable and under control, switch 3 way valve H96M to select the opposite burst disk. If pressure in piping continues to rise switch back to ruptured disk.

_____ 5.4.4 When alternate burst disk is selected and pot pressure is stable, reestablish normal refrigerator operating parameter.

_____ 5.4.5 Lock H96M and replace ruptured disk

_____ 5.4.6 Evaluate status of refrigerator warm end, including adsorber

6. Documentation

6.1 The check-off lines on the procedure are for place-keeping only. The procedure is not to be initialed or signed, it is not a record.

6.2 The Shift Supervisor shall document the reason for the burst disk failure, the actions taken to prevent another failure, and completion of this procedure in the Cryogenic Control Room Log.

7. References

7.1 Drawing 3A995009, "RHIC Cryogenic 25 KW Helium Refrigerator P&ID

8. Attachments

None