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 available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

7.1.66 80K Cooler Operation Initialization

Text Pages 2 through 5

Hand Processed Changes

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

C. Salat

7.1.66 80K Cooler Operation Initialization

1. Purpose

This procedure provides instruction for 80K cooler operations.

2. Responsibilities

2.1 The Shift Supervisor, or an Operator designated by the Shift Supervisor, is responsible for conducting this procedure and providing documentation in CCR log.

2.2 Should a problem arise during the completion of this procedure, the Shift Supervisor shall contact the Technical Supervisor for instructions before continuing.

3. Prerequisites

3.1 All personnel working on any electrical system or equipment in the C-AD shall be familiar with BNL SBMS Electrical Safety, BNL SBMS Lockout/Tagout (LO/TO), C-A-OPM 1.5, "Electrical Safety Implementation Plan", C-A-OPM 1.5.3 "Procedure to Open or Close Breakers and Switches and Connecting/Disconnecting Plugs", C-A-OPM 2.36, "Lockout/Tagout for Control of Hazardous Energy". C-AD will provide on-site/work specific training to individuals in the electrical safety aspects of their job functions and assignments.

3.2 System pumped & purged.

3.3 Insulating vacuum established.

3.4 Electrical & mechanical system checks complete.

3.5 The glycol system should be charged & running.

3.6 LN2 dewar #4 has sufficient inventory, and deliveries are scheduled.

3.7 Ring flow paths are ready to be established.

3.8 Valve line up.

The following valves should be **CLOSED.**

Cooler to 6 o'clock valve boxes

H9374A – precooler to 6BVB.	H9375A – precooler to 6YVB
H9354A – 80K to 6BVB	H9364A – 80K to 6YVB
H9355A – 80K to 6BVB	H9365A – 80K to 6YVB
H9359A – 80K to 6BVB	H9369A – 80K to 6YVB
H9360A – 80K to 6BVB	H9370A – 80K to 6YVB

Vacuum Header

H4646M	H6709M
H4648M	H6711M
H4651M	H6780M
H4652M	H6781M
H4653M	H6782M

Precooler

H9630A – HX5 bypass	H9642M – to atm.
H9627M – HX6 inlet	H9643M – to atm.
H9628M – HX6 outlet	H9644M - to atm.
H9629A – Outlet to 6:00 VB	H9647M – to atm.

80K cooler to atm.

H9632M, H9633M, H9634M, H9635M, H9636M, H9637M, H9638M, H9639M, H9640M, H9641M, H9645M, H9646M.

80K cooler bypass

H9601M, H9602M, H9604M, H9624M.

Ensure 80K make up valve H9598A is closed.

LN2 & N2 valves

N3801A, N3803A, N3805A, N3809A, N3811M, N3812M, N3813M, N3814M, N3815M, N3816M, N3817M, N3818M N3819M, N3820M, N3821M, N3822M, N3823M, N3840M, N5050M.

Ensure the following valves **OPEN.**

80K Cooler	
LN2 & N2	**Loop**
N3800M	H9600M
N3802M	H9603M
N3804M	H9605M
N3806M	H9616M
N3807M	H9618M
N3808M	H9623M
N3810M	H9625M

3.8 At this point, choose circulator(s) that will be put online. Line up (open/close) appropriate loop and bypass valves.

3.9 Open H9626A. Open/Ensure open LN2 supply valves N5017A & N5023A.

3.10 Line up make up path.

Ensure closed	**Ensure open**
H5014M	H9631M
H5018M	H9869M
H301M	H9929M
H304M	H9905M
H9809M	H9901A
H9871M	H5062A
H9928M	H9806M

4. Precautions

4.1 **These steps are used to set up for HS transition from refrigerator to 80K cooler during initial end of run warm up. Any other use of 80K cooler or precooler must be reviewed and approved.**

5. Procedure

5.1 Pressurize 80 cooling circuit to 8 atm. via make up valve H9598A. Place valve in auto. @ 8 atm.

5.2 Fill HX2, HX3, &, HX4 to 75%. Place fill valves in auto. @ 75%.

5.3 **Ensure pressure in heat shield equals pressure in 80K circ. loop and temp. in HS under 80K before proceeding.**

5.4 Ensure heat shield isolated from refrigerator and set up valve box for flow path.

6YVB – Close/Ensure closed H6720A, H6702A, H6620A, H6602A, H6745A.

6BVB - Close/Ensure closed H4620A, H4602A, H4520A, H4502A, H4645A.

5.5 Open 80K cooler heat shield supply & return valves.

Yellow – H9364A & H9365A.

Blue – H9354A & H9355A.

5.6 Ensure 80K circulator cooling system is online. Start circulator. Increase to 2000 rpm. Flow thru cooler until cooler temps. are < 120K. Slowly increase speed to achieve desired flow rate.

6. Documentation

None

7. References

7.1 C-A-OPM 1.5, "Electrical Safety Implementation Plan".

7.2 C-A-OPM 1.5.3 "Procedure to Open or Close Breakers and Switches and Connecting/Disconnecting Plugs".

7.3 C-A-OPM 2.36, "Lockout/Tagout for Control of Hazardous Energy".

7.4 SBMS Electrical Safety.

7.5 SBMS Lockout/Tagout (LOTO).

None

8. Attachments

None