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Jefferson Lab
Thomas Jefferson National Accelerator Facility

Operational Safety Procedure Form

(See ES&H Manual Chapter 3310 Appendix T1 Operational Safety Procedure (OSP) and Temporary OSP Procedure for instructions.)

Click

DEFINE THE SCOPE OF WORK

Title:	Operation of RICH		
Location:	Experimental Hall B	**Type:**	☒ **OSP** ☐ **TOSP**
Risk Classification (per Task Hazard Analysis attached) (See *ESH&Q Manual Chapter 3210 Appendix T3 Risk Code Assignment*.)		**Highest Risk Code Before Mitigation (3 or 4):**	3
		Highest Risk Code after Mitigation (N, 1, or 2):	1
Owning Organization:	Experimental Nuclear Physics	**Date:**	June 08, 2016
Document Owner(s):	Valery Kubarovsky		

Document History (Optional)

Revision:	Reason for revision or update:	Serial number of superseded document

ANALYZE THE HAZARDS

1. Purpose of the Procedure – Describe in detail the reason for the procedure (what is being done and why).

This document describes the procedures for operating the RICH which includes HV control and operation of the air cooling system and nitrogen purge gas system

2. Scope – include all operations, people, and/or areas that the procedure will affect.

The operations are:

1. HV controls
   These operations are performed by trained shift personnel in accordance with Run plan and instructions from the Run Coordinator.
2. Turn OFF HV for maintenance and repair work inside the RICH enclosure. Use Lock/Tag/Try procedure.
3. Operation of air cooling and nitrogen purge gas systems.
   a. Transition from the maintenance mode to operational status. This operation is limited to the RICH maintenance personnel.
   b. Normal operation of the gas systems is performed by trained shift personnel in accordance with Run plan and instructions from the Run Coordinator

3. Description of the Facility – include floor plans and layout of a typical experiment or operation.

The detailed description of the RICH can be found in attached document *RICH manual*

4. Authority and Responsibility:

4.1 Who has authority to implement/terminate

Hall B engineer or designee

4.2 Who is responsible for key tasks

Hall B engineer or designee. The individuals approved for these operations listed in the attached document.

4.3 Who analyzes the special or unusual hazards (See ES&H Manual Chapter 3210 Appendix T1 Work Planning, Control, and Authorization Procedure)

Hall B engineer

4.4 What are the Training Requirements (See http://www.jlab.org/div_dept/train/poc.pdf)

- Read the OSP
- EH&S orientation (SAF100)
- Hall B safety awareness training (SAF111)

5. Personal and Environmental Hazard Controls Including:

5.1 Shielding

N/A

5.2 Interlocks

Detail description of the interlocks can be found in attached document ***RICH manual***

5.3 Monitoring systems

- Software controls of the HV system
- EPICS controls of the pressure and flow sensors in air cooling and nitrogen purge gas systems
- EPICS controls of the temperature sensors in RICH enclosure

5.4 Ventilation

N/A

5.5 Other (Electrical, ODH, Trip, Ladder) (Attach related Temporary Work Permits or Safety Reviews as appropriate.)

N/A

6. List of Safety Equipment:

6.1 List of Safety Equipment:

N/A

6.2 Special Tools:

N/A

DEVELOP THE PROCEDURE

1. Associated Administrative Controls

- Appropriate training, as described in 4.4
- Written procedures included in the attached document ***RICH manual***

2. Operating Guidelines

Hall B Run Coordinator shall determine the time to perform calibration and maintenance of RICH.
Hall B Run Coordinator shall determine which HV control operations to be performed and when.

3. Notification of Affected Personnel (who, how, and when)

Hall B Run Coordinator shall notify shift personnel before and after each operation involving transition of RICH between calibration, maintenance or operational status

4. List the Steps Required to Execute the Procedure: from start to finish.

1. Turn cooling system off.
    a. Ensure all HV/LV to detector is turned off.
        i. Interlock system will turn off all power if not already off if next steps are followed.
    b. Turn off air compressor power.
    c. Cooling system is fully off after:
        i. Latent heat removed from detector by remaining air in ASME tank.
        ii. ASME tank pressure transducer and mass flow transducer both read there is no residual pressure or flow in the cooling circuit.
        iii. Interlock systems will now prevent HV/LV power from turning on
2. Operation of air cooling system.
    a. Ensure interlock system is operational.
    b. Inspect relief valves, isolation valves, and check valves.
    c. Set pressure regulators to correct pressure (pressure to be determined).
    d. Open flow meter manual valves to the correct flow setting (flow to be determined).
    e. Turn on power to both air compressors.
    f. Verify flow to detectors and pressure in ASME tank.
    g. HV/LV to RICH can be turned on when cooling air flow to detectors is above trip level (flow to be determined).

5. Back Out Procedure(s) i.e. steps necessary to restore the equipment/area to a safe level.

1. HV controls
   These operations are performed by trained shift personnel in accordance with Run plan and instructions from the Run Coordinator.
    h. Turn ON cooling system
    i. Make sure temperature in RICH enclosure is below threshold (TBD)
    j. Make sure that all signals from cooling system are normal (see RICH manual)
    k. Turn ON nitrogen purge gas system
    l. Make sure that signals from nitrogen purge system are normal (see RICH manual)
    m. Turn ON HV power supplies
    n. Turn ON LV power supplies

6. Special environmental control requirements:

6.1 Environmental impacts (See EMP-04 Project/Activity/Experiment Environmental Review)

N/A

6.2 Abatement steps (secondary containment or special packaging requirements)

N/A

7. Unusual/Emergency Procedures (e.g., loss of power, spills, fire, etc.)

N/A

8. Instrument Calibration Requirements (e.g., safety system/device recertification, RF probe calibration)

N/A

9. Inspection Schedules

RICH group will inspect HV control system and interlocks prior to each use
Hall B engineering group will inspect RICH gas systems prior each use.

10. References/Associated Documentation

Attachment A: RICH Task Hazard Analysis
Attachment B: RICH manual

11. List of Records Generated (Include Location / Review and Approved procedure)

Click
To Submit OSP
for Electronic Signatures

Distribution: Copies to: affected area, authors, Division Safety Officer
Expiration: Forward to ESH&Q Document Control

Form Revision Summary

Qualifying Periodic Review – 02/19/14 – No substantive changes required.
Revision 1.3 – 11/27/13 – Added "Owning Organization" to more accurately reflect laboratory operations.
Revision 1.2 – 09/15/12 – Update form to conform to electronic review.
Revision 1.1 – 04/03/12 – Risk Code 0 switched to N to be consistent with 3210 T3 Risk Code Assignment.
Revision 1.0 – 12/01/11 – Added reasoning for OSP to aid in appropriate review determination.
Revision 0 – 10/05/09 – Updated to reflect current laboratory operations

ISSUING AUTHORITY	FORM TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	REVIEW DATE	REV.
ESH&Q Division	Harry Fanning	02/19/14	02/19/17	1.3

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