

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

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DEFINE THE SCOPE OF WORK

Title:	Hall A U tube Remove and install		
Location:	Hall A	Type:	<input checked="" type="checkbox"/> OSP <input type="checkbox"/> TOSP
Risk Classification (per Task Hazard Analysis attached) (See ESH&O Manual Chapter 3210 Appendix T3 Risk Code Assignment.)	Highest Risk Code Before Mitigation (3 or 4):	4	
	Highest Risk Code after Mitigation (N, 1, or 2):	1	
Owning Organization:	Physics/ Hall A	Date:	6/20/2014
Document Owner(s):	Folts		

Document History (Optional)

Revision:	Reason for revision or update:	Serial number of superseded document
0	New OSP requirements since last U tube pull	n/a

ANALYZE THE HAZARDS

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

To isolate a magnet or magnets from the main cryogenic system in Hall A

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

Hall must be in restricted access
 Requires 4 qualified technicians
 Requires 1 cryo engineer in Hall
 Requires support in Cryo control room

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

Hall A spectrometers

4. Authority and Responsibility:

4.1 Who has authority to implement/terminate

Hall coordinator or designee

4.2 Who is responsible for key tasks

Hall coordinator or designee, Cryo group Engineer

4.3 Who analyzes the special or unusual hazards (See [ES&H Manual Chapter 3210 Appendix T1 Work Planning, Control,](#)

[and Authorization Procedure](#))

Hall coordinator or designee, Cryo group Engineer

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

ODH, Fall Protection, Manlift operation, crane certification, Ladder training, lifting training

5. Personal and Environmental Hazard Controls Including:

5.1 Shielding

N/A

5.2 Interlocks

N/A

5.3 Monitoring systems

Cryo control room and local gauges

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:

Safety glasses
 Face shield (in some instances)
 Gloves
 Long sleeves
 Hard hat (in some instances)
 Harness

6.2 Special Tools:

Snoop
 Strap wrench
 Acetone and rags
 Vinyl tape
 Purge line (N2 and He)
 Crane
 Die (thread chaser)

DEVELOP THE PROCEDURE

1. Associated Administrative Controls

This OSP, Cryogenics Department Bayonet Installation & Removal Procedure OSP

2. Operating Guidelines

The following procedure and the Cryogenics Department Bayonet Installation & Removal Procedure OSP

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

Cryogenics Department

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

Pre job briefing consisting of assignments, sequence and a review of hazards

Pre-sting

24 hours prior to sting begin dry N₂ purge on new u-tubes

- Open both U-tube warm and cold return valves
- Install N₂ purge line simultaneously in the magnet and service can bayonets
- Ensure flow is exiting u-tube at warm return header connection
- Pull vacuum on u-tube 24 hrs prior to sting ensure 0 mtorr

Ensure the house 4 atmosphere He is on for the purge

Extend ladder to Q2 service can. Tie off ladder.

Remove N₂ purge, close cold/warm return valves, tape bayonet ends and warm return header fitting end

Crane u-tube to Q2 service cans

Extend He purge line to Q2 service cans

Remove handle extension from Q2 warm and cold return valve and install handle on short stem

De-sting

Ensure Q2 cold return valve and lead flow valves are open

Cryo shut off 4.5k supply flow to the spectrometer

Check the local pressure gauges on the service cans and the magnet for a suitable low reading (a few PSI)

Disconnect valve stem extensions

Attach crane to installed u-tube

Loosen bayonet nuts on installed u-tube

Pull upward on the u-tube (magnet and service can end) 2 techs

Raise the u-tube with the crane 1 tech

Close ball valves immediately after the bayonets clear the valves (magnet and service can end) 2 techs

Install dust caps

Dispose of the u-tube

Sting

Chase threads on bayonets

Check bayonet socket for debris and moisture

Check new u-tube o-rings

Remove vinyl tape and clean bayonet ends with acetone

Crane new u-tube into position, place u-tube on the closed bayonets

Begin He purge using the installed valve located on the service can

Remove dust cap and open warm return ball valve and allow line to back purge from the warm return header

Open cold return on u-tube and purge out cold return end (by lifting magnet end out slightly) for two minutes.

Set both ends of the u-tube back down on the can/magnet bayonets. Open warm return and purge for two minutes

Connect the warm return line to the u-tube (reduce back flow with ball valve if necessary)

Purge for two minutes

Cease purge

Install u-tube

- Lower crane (1 tech)
- Open ball valves (2 techs)
- Push u-tube into bayonet's (2 techs)
- Tighten bayonet nuts and snoop

Close u-tube cold return valve

Re-initiate 4.5K supply flow

- Post job briefing and cleanup

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

Reverse procedure and re-evaluate

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.)
	Secure and evacuate
	8. Instrument Calibration Requirements (e.g., safety system/device recertification, RF probe calibration)
	N/A
	9. Inspection Schedules
	N/A
	10. References/Associated Documentation
	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				
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 REQUIRED DATE	REV.
ESH&Q Division	Harry Fanning	12/01/11	12/01/14	1.3

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