

Task Hazard Analysis (THA) Worksheet

(See [ES&H Manual Chapter 3210 Appendix T1](#)
[Work Planning, Control, and Authorization Procedure](#))

Click

Author:	Marc McMullen	Date:	January, 19 2022	Task #: If applicable	
Complete all information. Use as many sheets as necessary					
Task Title:	Installation of Mirrors, Aerogel, and Panels on the RICH Detector	Task Location:	EEL 124/125		
Division:	Physics	Department:	Detector Support Group	Frequency of use:	1
Lead Worker:	George Jacobs (rigging), Tyler Lemon (Installation), Marc McMullen (Safety)				
Mitigation already in place: Standard Protecting Measures Work Control Documents	Clean Room attire, Hard hat and safety shoes (lift procedures), additional PPE as necessary				

Sequenc e of Task Steps	Task Steps/Potential Hazards	<u>Consequence Level</u>	<u>Probability Level</u>	<u>Risk Code</u> (before mitigation)	Proposed Mitigation (Required for <u>Risk Code</u> >2)	Safety Procedures/ Practices/Controls/Trai ning	<u>Risk Code</u> (after mitigation)
1.	Removal of the exit panel. Damage to equipment. Work above 4’.	M	L	2	A qualified rigger will perform lift. Man lift or portable stairs will be used for work above 4’.	Follow the procedure. Wear prescribed PPE (Procedure).	1
2.	Installation of gas lines and cables. Work above 4’.	L	L	1	Man lift or portable stairs will be used for work above 4’	The RICH cooling and nitrogen systems has completed the Jlab Pressure Systems program and is in compliance. If any changes are made to the system, the DA and system owner should be notified.	1

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3.	Installation of mirrors and mirror supports. Damage to equipment	H	L	3	Handling the mirrors will be done by trained staff from the INFN and the DSG. A detailed procedure has been developed for this step. Installation will be done with the detector in the horizontal position to eliminate work at heights.	Trained staff, PPE such as gloves. Procedure details are covered in the document (CFRP FRAME-SPH MIRRORS-LATERAL MIRRORS-ASSEMBLY INTO THE RICH SHELL)	2
4	Rotation of the RICH to 60deg. Heavy equipment falling, damage to equipment. Working above 4'.	H	L	3	Perform the lift as per the developed lift plan. After rotation the installation of the locking hardware will be done prior to completing this task.	The lift plan was developed with the Jlab Materials Handling Manager and a qualified rigger. All calculations have been reviewed by the Jlab Materials Handling manager. The BTHLD has been certified by Jlab EHS/MHM. It has been tested with the detector shell. The plan specifies the rigging equipment to be used. All work above standing height will be done from a man lift.	1

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5.	Mirror Alignment and Survey. Working above 4’.	L	L	1	Man lift or portable stairs will be used for work above 4’	The survey will be done by the survey group. Mirror Alignment will be done without a laser source. All work above standing height will be done from a man lift	1
6.	Assembly/Installation of front panel tooling frame. Lifting heavy objects. Falling objects. Working above 4’.	M	L	2	The gantry crane will be used to lift all equipment > 40lbs. Man lift or portable stairs will be used for work above 4’	Assembly is covered in the document ‘Assembly Procedure of the RICH Frontal Panels’. All work above standing height will be done from a man lift.	1
7.	Assembly and testing of the Electronics Panel. Damage to equipment. Electric shock.	H	L	3	A detailed procedure has been developed. Qualified INFN/DSG staff will perform the assembly and testing. Testing will be done outside of the detector volume, with no contact to live circuits.	Procedure (Epanel Boards Assembly Procedure). PPE (nitrile gloves). Power Supply operation procedure (OSP ENP-17-63644-OSP section 4)	1

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8	Installation of front panels, w/o Aerogel. Falling objects. Working above 4’.	M	L	2	This test will help determine the details of the front panel installation without risk to the Aerogel. Man lift or portable stairs will be used for work above 4’	Details of the task are covered in the document ‘Assembly Procedure of the RICH Frontal Panels’.	1
9	Aerogel installation onto front panels. Damage to equipment.	H	L	3	INFN/DSG will develop further details by practicing the task using a mockup of Aerogel on the front panel.	PPE (nitrile gloves) will be used while handling Aerogel. Only trained INFN/DSG staff will perform this task.	2
10	Installation of front panels with Aerogel. Damage to equipment. Work above 4’.	H	L	3	INFN/DSG Staff will use a previous task to provide details of the task. A lift plan will be developed for the task. Man lift or portable stairs will be used for work above 4’	PPE will be used during the lift and installation. Qualified staff will prepare the lift plan.	2

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11	Installation of the electronics panel and testing with compressed air cooling. Damage to equipment. Working above 4'	H	L	3	INFN/DSG staff have practiced this lift without the electronics on the panel. A lift plan will be developed and approved. The cooling system is at low pressure. Man lift or portable stairs will be used for work above 4'	Installation is covered in the document 'Epanel Installation Procedure'. A lift plan will be developed prior to this task. Gas system operation detailed in the Manual for Purge Type Gas Systems . Pressure Systems Awareness SAF130A or SAF130AU (users) is required to operate any components of the gas system.	2

Highest <u>Risk Code</u> before Mitigation:	3	Highest <u>Risk Code</u> after Mitigation:	2
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When completed, if the analysis indicates that the Risk Code before mitigation for any steps is "medium" or higher (RC≥3), then a formal [Work Control Document](#) (WCD) is developed for the task. Attach this completed Task Hazard Analysis Worksheet. Have the package reviewed and approved prior to beginning work. (See [ES&H Manual Chapter 3310 Operational Safety Procedure Program](#).)

Form Revision Summary				
Revision 0.1 – 06/19/12 - Triennial Review. Update to format.				
Revision 0.0 – 10/05/09 – Written to document current laboratory operational procedure.				
ISSUING AUTHORITY	TECHNICAL POINT-OF-CONTACT	APPROVAL DATE	REVIEW REQUIRED DATE	REV.
ESH&Q Division	Harry Fanning	06/19/12	06/19/15	0.1
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