

Task Hazard Analysis (THA) Worksheet

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

Click

Author:	Marc McMullen	Date:	October 29, 2021	Task #: If applicable	
Complete all information. Use as many sheets as necessary					
Task Title:	Assembly of the RICH detector and Installation of Mirrors, Aerogel, and Panels on the RICH Detector			Task Location:	EEL 124/125
Division:	Physics	Department:	Detector Support Group	Frequency of use:	Many
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				

Sequence of Task Steps	Task Steps/Potential Hazards	Consequence Level	Probability Level	Risk Code (before mitigation)	Proposed Mitigation (Required for Risk Code >2)	Safety Procedures/ Practices/Controls/Training	Risk Code (after mitigation)
1.	Working on-site during MEDCON 4/illness	H	L	3	All Jlab staff and users adhere to DOE/Lab guidance and procedure	ESH-21-116798-OSP/PPE/ SAF003	2
2.	Uncrating and Staging parts and materials/ Heavy lifting	M	M	3	All components > 40lbs will be lifted mechanically with the gantry crane or genie lift.	Trained JLab crane operator to perform all lifts.	2
3.	Assembling components frame components/ Heavy lifting	M	M	3	All components > 40lbs will be lifted mechanically with the gantry crane or genie lift.	Trained JLab crane operator to perform all lifts.	2

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4.	Assembly of detector/ Pinch points.	L	M	1		Detector shell assembly procedure	1
5.	Lifting detector assembly to vertical position/ Heavy lifting	H	L	3	The detector will be lifted using a double geared winch, and rated straps. The task has been tested at INFN.	Trained JLab rigger will oversee operation. Equipment specific training of winch operation will be conducted prior to work. All JLab safety protocols will be adhered too. Standard PPE to be worn.	2
6.	Some checks and component mounting will require work above 4'/ Falling	M	L	2		All work above 4' will be done using a single man lift, by a qualified operator.	2
7.	Assembly of exit panel. Inhalation of fumes. Damage to equipment. Work above 4'.	M	L	2	The space is large and can be opened to 125/high bay for better ventilation. A qualified rigger will perform lift. Man lift or portable stairs will be used for work above 4'.	Follow the procedure: RICH exit window assembly . Wear prescribed PPE (Procedure).	1

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8.	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
9.	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
10.	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.	A Jlab master rigger has developed this lift plan . 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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11.	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
12.	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
13.	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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14.	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
15.	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
16.	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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17.	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 Risk Code before Mitigation:	4	Highest Risk Code 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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