 Jefferson Lab <small>Thomas Jefferson National Accelerator Facility</small> Hall A Work Procedure			TITLE: INSTALLATION OF HALL A TARGET CHAMBER WINDOW ASSEMBLY			
	ISSUING AUTHORITY	AUTHOR	DATE	DOCUMENT ID	EXPIRES ON	Page 1 of 6
	Hall A	J. Butler	6/1/2020	A-08-039-P	6/1/2023	

1. Define the scope of work

Install target chamber window assembly

2. Analyze Hazard

Attached THA only specify most common hazards. Reassess hazards prior to starting procedure to ensure no new hazards are present.

3. Develop and implement Hazard controls

Be aware of hazards, follow the procedure below and wear proper PPE (when applicable).

4. Perform work within controls (follow procedure)

Summary of job:

- Install window assemblies onto the Hall A cryo target chamber

Affected systems:


- Area around the Hall A pivot
- Target
- Crane
- Target chamber window

List of PPE:

- Latex/neoprene gloves (maybe required by RADCON)
- Safety glasses (as needed per tool and chemical specifications)
- Steel toe shoes (during crane operations)
- Hard hat (during crane operations)

Identify danger zones:

- Hall A pivot area
- Area between the chamber and the window frame

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Number of people needed:


- 2 (minimum)

List of materials and tools:


- Target window assembly
- 3/8-16 socket head grade 8 steel bolts (amount needed depends on window being installed)
- Heavy duty 3/8 washers (amount needed depends on window being installed)
- 2 - 3/8-16 pieces of threaded rod (use as guides)
- O-ring material
- Vacuum grease
- Torque wrench
- Propanol alcohol
- Wipes
- Slings, swivel hoist rings and shackle (**all must be properly rated for the load**)

Procedure:

- This procedure assumes that the window is assembled on the frame, is clean and ready for installation.
- Fabricate an O-ring that is .23 in diameter and 92.5 inches long.
- Clean the O-ring and O-ring groove thoroughly with propanol alcohol.
- Apply vacuum grease and install the O-ring in the groove being careful not to stretch or nick it. If it will not stay in the groove it is acceptable to apply extra grease along the edges to help hold in place.
- Install the two 3/8" threaded rods in the center of the top and bottom mounting holds on the target chamber to serve as guides when installing the window.


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- Install two 3/8” swivel hoist rings to the top of the window frame and torque to specification.
- Position the window below the opening that it is to be installed over.
- Connect a 6 ft. sling to each of the swivel hoist rings and attach the other ends to a 20 ft. sling using a shackle. Attach the other end of the 20 ft. sling to the crane hook.
- Lift the window to a position where the holes (as apposed to the slots) line up with the guide pins and push the window into position.
- Install 4 bolts (2 in the top and 2 in the bottom) finger tight with good engagement to hold the window in position.
- Check alignment of window and ensure O-ring is still in position.
- Remove the sling and lifting eyes.
- Insert remaining bolts with washers, finger tight, into the holes starting at the center of the window and working to the outside. Make sure you remove the two treaded rod and replace them with bolts.
- After all the bolts are finger tight begin torqueing window. Use a torque pattern starting at the center and working your way out while alternating between top to bottom.
- Torque the bolts in 2 stages starting with 20 ft lbs with a final torque of 35 ft lbs.
- Perform a visual check through the view ports to insure that the O-ring has not slipped out of the grove. Also check to make sure that the window sitting flat against the chamber wall. If it is not, then it is likely that the O-ring is not sitting properly in the grove.

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- Post job briefing and cleanup

5. Provide feedback and continuous improvement. (Document any mistakes, corrections, changes and pictures and implement changes.)


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 Jefferson Lab <small>Thomas Jefferson National Accelerator Facility</small>	<h2 style="color: blue; text-decoration: underline;">Task Hazard Analysis (THA) Worksheet</h2> <p style="color: blue; text-decoration: underline;">(See ES&H Manual Chapter 3210 Appendix T1 Work Planning, Control, and Authorization Procedure)</p>	Click For Word
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Author:	Jessie Butler	Date:	6/1/2020	Task #: If applicable	A-08-039-P
Complete all information. Use as many sheets as necessary					
Task Title:	Installation of Hall A Target Chamber Window Assembly			Task Location:	Hall A Pivot
Division:	Physics	Department:	Hall A	Frequency of use:	As Needed
Lead Worker:	Hall A Work Coordinator or Designee				
Mitigation already in place: Standard Protecting Measures Work Control Documents	Hall A Work Procedure				

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	Bump, pinch, or crush body extremities	L	M	2	Do pre-job walk-thru and identify potential hazards.	Hall A Work Procedure # A-08-039-P	N
	Loss control / drop load	L	M	2	Wear proper PPE for operating crane	Hall A Work Procedure # A-08-039-P Crane training (SAF-403)	N
	Radiation dose / contamination	L	L	1	RADCON coverage	Hall A Work Procedure # A-08-039-P RAD Worker II training (SAF-802)	N

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Sequence 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/Training	<u>Risk Code</u> (after mitigation)
4	Use of hand / power tools	L	L	1	Tool specific training and safety glasses (when required)	Hall A Work Procedure # A-08-039-P	N

Highest <u>Risk Code</u> before Mitigation:	2	Highest <u>Risk Code</u> after Mitigation:	N
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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				
Periodic Review – 08/29/18 – No changes per TPOC				
Periodic Review – 08/13/15 – No changes per TPOC				
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 DATE	REV.
ESH&Q Division	Harry Fanning	08/29/18	08/29/21	0.1
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