Person: Michaels, Robert (rom@jlab.org)
Org: PHALLA

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Jefferson Lab
Thomas Jefferson National Accelerator Facility

Operational Safety Procedure Review and Approval Form # 83990
(See ES&H Manual Chapter 3310 Appendix T1 Operational Safety Procedure (OSP) and Temporary OSP Procedure for Instructions)

Type:	***OSP*** Click for OSP/TOSP Procedure Form Click for LOSP Procedure Form		
Serial Number:	***ENP-19-83990-OSP***		
Issue Date:	***6/3/2019***		
Expiration Date:	***5/3/2020***		
Title:	***Operation of PREX/CREX detectors***		
Location: (where work is being performed) Building Floor Plans	***101 - Experimental Hall A - A100***	Location Detail: (specifics about where in the selected location(s) the work is being performed)	***HRS Detector Stack***
Risk Classification: (See ES&H Manual Chapter 3210 Appendix T3 Risk Code Assignment)	Without mitigation measures (3 or 4): With mitigation measures in place (N, 1, or 2):		***N*** ***N***
Reason:	This document is written to mitigate hazard issues that are : ***Not Applicable***		
Owning Organization:	***PHALLA***		
Document Owner(s):	***Michaels, Robert (rom@jlab.org)*** Primary ***McNulty, Dustin (mcnulty@jlab.org)*** ***Ghosh, Chandan (chandan@jlab.org)***		

Supplemental Technical Validations

Other Hazards:
Electrical (Todd Kujawa)

Document History

Revision	Reason for revision or update	Serial number of superseded document
1	***The Procedure now uses the standard form instead of being a text file.***	

Lessons Learned	Lessons Learned relating to the hazard issues noted above have been reviewed.

Comments for reviewers/approvers:	***Updated the THA to list the hazard in "Potential Hazards". May 29: I changed the codes for hazards and risk to numbers. They are very low in any case. I also added some discussion of the VDCs nearby and the trip hazards.***

Attachments

Procedure: ***OSP_Form_Detectors.pdf***

THA: ***THA_detectors.pdf***

Additional Files:

Review Signatures

Person : Subject Matter Expert : Electrical	**Signed** on 5/31/2019 7:07:18 AM by Todd Kujawa (kujawa@jlab.org)

Approval Signatures

Division Safety Officer : PHALLA	**Signed** on 6/3/2019 7:40:22 AM by Ed Folts (folts@jlab.org)
Org Manager : PHALLA	**Signed** on 5/31/2019 10:11:45 AM by Cynthia (Thia) Keppel (keppel@jlab.org)
Safety Warden : Experimental Hall A - A100	**Signed** on 5/31/2019 12:33:41 PM by Jessie Butler (jbutler@jlab.org)

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Operational Safety Procedure Form

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

Click For Word Doc

Title:	Operation of PREX/CREX detectors		
Location:	Hall A	**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**	
		Highest Risk Code after Mitigation (N, 1, or 2):	
Owning Organization:	Hall A	**Date:**	May 1, 2019
Document Owner(s):	Dustin McNulty, Robert Michaels, Chandan Ghosh		

DEFINE THE SCOPE OF WORK

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

Deployment and operation of detectors specific to PREX and CREX

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

Deploy detectors in the HRS detector stack. Run the PREX and CREX experiments. Take out the detectors when the experiments are finished. The experiments run from June 15, 2019 until about April 10, 2020 in Hall A.

3. Description of the Facility – include building, floor plans and layout of the experiment or operation.

The new detectors consist of (i) three small GEM chambes (200 cm2), (ii) three larger GEM chambers (3000 cm2); and (iii) four quartz bars connected to photomultipliers.

ANALYZE THE HAZARDS and IMPLEMENT CONTROLS

4. Hazards identified on written Task Hazard Analysis

The main hazard is high voltage, which is mitigated by using standard SHV cables and standard safety procedures for HV. A second hazard is the working environment. Nearby are the Vertical Drift Chambers (VDCs) which are fragile and should not have anything dropped on them and should not be stepped on. Also, the work surface has a trip hazard; one must be aware and use caution walking in this area.. A THA was written and attached.

5. Authority and Responsibility:

5.1 Who has authority to implement/terminate

Jack Segal, Dustin McNulty

5.2 Who is responsible for key tasks

Jack Segal, Dustin McNulty

5.3 Who analyzes the special or unusual hazards including elevated work, chemicals, gases, fire or sparks (See ES&H

Manual Chapter 3210 Appendix T1 Work Planning, Control, and Authorization Procedure)

6. Personal and Environmental Hazard Controls Including:

6.1 Shielding

none

6.2 Barriers (magnetic, hearing, elevated or crane work, etc.)

none

6.3 Interlocks

none

6.4 Monitoring systems

We will take data using CODA and monitor the detector performance.

6.5 Ventilation

none

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

High voltage (standard, less than 2 kV)

7. List of Safety Equipment:

7.1 List of Safety Equipment:

none

7.2 Special Tools:

none

8. Associated Administrative Controls

none

9. Training

9.1 What are the Training Requirements (See List of Training Skills)

Normal safety training assumed for working in Hall A. Before working in this area, a user should read this OSP and should be debriefed by either Dustin McNulty or Bob Michaels about the hazards listed in 4.

DEVELOP THE PROCEDURE

10. Operating Guidelines

The HV is turned on, the signals are checked on a scope and in the data acquisition. We will run for approximately 2 years. Shift workers will monitor the performance using analysis software and by checking the HV control GUI. If the HV is off, the shift workers may turn it on. If something seems wrong, shift workers may call an on-call detector expert.

11. Notification of Affected Personnel (who, how, and when include building manager, safety warden, and area coordinator)

Jack Segal and Jessie Butler

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

none

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

14. Special environmental control requirements:

14.1 List materials, chemicals, gasses that could impact the environment (ensure these are considered when choosing Subject Mater Experts) and explore EMP-04 Project/Activity/Experiment Environmental Review below

Standard ArCO2 gas. It is already available on the HRS detector stack. This gas is non-flammable.

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

none

14.3 Abatement steps (secondary containment or special packaging requirements)

none

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

none

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

We have to adjust the HV and signal timing, and check the alignment relative to the spectrometer central ray.

17. Inspection Schedules

none

18. References/Associated/Relevant Documentation

none

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

There will be a "how to" manual online for shift workers.

Submit Procedure for Review and Approval (See ES&H Manual Chapter 3310 Appendix T1 OSP & TOSP Instructions – Section 4.2 Submit Draft Procedure for Initial Review):

- Convert this document to .pdf
- Open electronic cover sheet: https://mis.jlab.org/mis/apps/mis_forms/operational_safety_procedure_form.cfm
- Complete the form
- Upload the pdf document and associated Task Hazard Analysis (also in .pdf format)

Distribution: Copies to Affected Area, Authors, Division Safety Officer
Expiration: Forward to ESH&Q Document Control

Form Revision Summary

Revision 1.5 – 04/11/18 – Training section moved from section 5 Authority and Responsibility to section 9 Training
Revision 1.4 – 06/20/16 – Repositioned "Scope of Work" to clarify processes
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 0.0 – 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	04/11/18	04/11/21	1.5

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Task Hazard Analysis (THA) Worksheet

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

Click For Word

Author:	Robert Michaels	**Date:**	March 27, 2019	**Task #:** If applicable	

Complete all information. Use as many sheets as necessary

Task Title:	Operation of PREX/CREX detectors			**Task Location:**	Hall A in the detector stacks of the HRS
Division:	Physics	**Department:**	Hall A	**Frequency of use:**	June 1, 2019 – April 10, 2020.
Lead Worker:	Dustin McNulty (also Chandan Ghosh)				
Mitigation already in place: Standard Protecting Measures Work Control Documents	Operational Safety Procedure (OSP)				

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	High Voltage	L	L	1	Read the OSP and use standard SHV cabling.	Read the OSP and use standard SHV cabling.	0
2	The VDC detectors are nearby. They are fragile and one must use caution working near tem.	L	L	1	Read the OSP. Be debriefed by Dustin McNulty or Bob Michaels about the environment	Read the OSP. Be debriefed by Dustin McNulty or Bob Michaels about the environment	0
3	Trip hazard due to uneven work surface	L	L	1	Awareness training by this OSP, THA, and orientation by a person familiar with the hazard.	Awareness training by this OSP, THA, and orientation by a person familiar with the hazard	0

Highest Risk Code before Mitigation:	1	**Highest Risk Code after Mitigation:**	0

Task Hazard Analysis (THA) Worksheet

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

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.)

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Task Hazard Analysis (THA) Worksheet

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

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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By signing this page, you testify that you have read, understand, and agree to abide by the procedure specified in the above referenced work control document:

Serial Number: ENP-19-83990-OSP

Title: Operation of PREX/CREX detectors

Name	Signature	Date