

## Job Hazard Analysis and Mitigation

Task : DIRC Electronic House

Routine     Non-routine

**Retention:** Completed Routine JHAMs are retained by the employee and supervisor. Non-routine JHAMs are retained until the task is fully closed out. In the case of an accident, the form is to be retained for use by the review team.

Complete instructions and supporting information is available at <https://www-internal.slac.stanford.edu/esh/SLACsafety/jham/>. Enter information into boxes which will expand to accommodate whatever length of text is entered. Once this JHA is complete, all participants should sign in the Acknowledgement section. Add rows by placing cursor in the right box of the last row and entering a tab.

**This document covers people on non-routine DIRC system work, specifically work in the Electronic House racks, like replacing faulty components, or testing spare modules. The DIRC components located there are: IOC crates (3), High Voltage crates (6), High Voltage boards (6\*4\*2), 1 Scaler module, 1 Gate generator and 1 LED Calibration module. Completion of the routine DIRC System Worker JHAM is required.**

Other relevant BABAR safety documents are:

BABAR Care and Feeding Manual (<http://www.slac.stanford.edu/BFROOT/www/Detector/Operations/CareAndFeeding/care/care.html>)

BABAR Safety Assessment Document

BABAR Fire Hazard Analysis

DIRC Area Hazard Analysis (<http://www.slac.stanford.edu/BFROOT/www/Detector/DIRC/DirOperations/Safety.html>)

| Sequence of Basic Job Steps  | Potential Hazards  | Controls & Recommended Actions   |
|--|--|--|
| <ul style="list-style-type: none"> <li>Worker ramps down HV power supply using EPICS control</li> </ul>      | <ul style="list-style-type: none"> <li>Same as in Shifter JHAM</li> </ul>  | <ul style="list-style-type: none"> <li>Same as in Shifter JHAM</li> </ul>  |
| <ul style="list-style-type: none"> <li>Worker turns off HV crates using key</li> </ul>                       | <ul style="list-style-type: none"> <li>If output voltage is not already at zero, disable will cause output voltage to go abruptly to zero, and may damage PMTs. No personnel hazards.</li> </ul> | <ul style="list-style-type: none"> <li>Worker should wait for HV monitor to read zero volts before applying hardware disable.</li> </ul> |
| <ul style="list-style-type: none"> <li>Worker removes key from HV crate and keeps key on person</li> </ul>   |  |  |
| <ul style="list-style-type: none"> <li>Worker unplugs the power cord of the crate to be worked on</li> </ul> | <ul style="list-style-type: none"> <li>HV shock if charge is stored in capacitors</li> </ul>   | <ul style="list-style-type: none"> <li>Worker should wait until LED light on crate is off</li> </ul>                                     |
| <ul style="list-style-type: none"> <li>Worker performs the task (i.e. replace HV board or crate)</li> </ul>  | <ul style="list-style-type: none"> <li>HV shock if output voltage is not already at zero</li> <li>Damage to components</li> </ul>  | <ul style="list-style-type: none"> <li>Ensure Steps 1-3 are done</li> </ul>  |
| <ul style="list-style-type: none"> <li>After task is completed worker</li> </ul>                             |  |  |

| Sequence of Basic Job Steps   | Potential Hazards | Controls & Recommended Actions |
|---|-------------------|--------------------------------|
| plugs power cable of crate back in and returns key to HV crate and turns on HV crate. Worker ramps up HV in epics |                   |                                |

| Acknowledgements                   | Print Name | Signature or Initialed | Date |
|------------------------------------|------------|------------------------|------|
| DIRC System/Operations<br>Manager: |            |                        |      |
| DIRC System Worker:                |            |                        |      |
|                                    |            |                        |      |