Job Hazard Analysis and Mitigation

Task : *DIRC FEE Crates* ❑ 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 on the Front-End Electronics (FEE) located in IR-2, like replacing faulty components. The FEE components are: FEE crates (12), Fan trays (12), DCC boards (12) and DFB boards (12*14). 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
IR-2 Area Hazard Analysis (https://www-internal.slac.stanford.edu/esh/SLACsafety/jham/aha_docs/AHA-IR2-BaBar.doc)
DIRC Area Hazard Analysis (http://www.slac.stanford.edu/BFROOT/www/Detector/DIRC/DircOperations/Safety.html)

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
• Worker ramps down HV power supply using EPICS control	• Same as in Shifter JHAM	• Same as in Shifter JHAM
• Worker turns off HV crates using key	• 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.	• Wait for HV monitor to read zero volts before applying hardware disable.
• Worker removes key from HV crate and keeps key on person		
• Worker ramps down FEE power supply using EPICS control	• Same as in Shifter JHAM	• Same as in Shifter JHAM
• Worker gains access to the FEE crate. FEE crates are located on the backward side of the BaBar	• Fall from ladder or manlift • PMTs may be at HV if the supply is not set to zero volt	• Use of harness is required. • Ensure that Steps 1-3 are done • Use of hard hats required

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
detector, and some require access with a ladder or manlift.	and disabled.	• Ladder and harness training required • IR-2 controlled access training for controlled access
• Worker turns off the FEE crate, and performs the task (i.e. board replacement)	• Hot replacement of FEE boards may damage them. No personnel hazards. • Fall-off of hand tools	• Use of hard hats required
• After task is completed worker turns on FEE crate and returns key to HV crate and turns on HV crate. Worker ramps up FEE power and HV in epics		

Acknowledgements	Print Name	Signature or Initialed	Date
DIRC System/Operations Manager:			
DIRC System Worker:			