

## Job Hazard Analysis and Mitigation

Task or Employee: DIRC System Worker     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 routine DIRC system work. Completion of the BABAR Orientation to IR-2 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>)

Non-Routine DIRC JHAMs exist for work on Photomultiplier Tubes, Front-End Electronics, Electronics House racks.

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
<ul style="list-style-type: none"> <li>• Use of computers</li> <li>• Talk on phone</li> <li>• Reading/ working at desk</li> <li>• Setting up/plugging in computers and other electronic equipment</li> <li>• Use kitchens and bathrooms</li> <li>• Use conference rooms</li> </ul>	<ul style="list-style-type: none"> <li>• Covered in “Office worker” JHAM, applies here as well</li> </ul>	<ul style="list-style-type: none"> <li>• Covered in “Office worker” JHAM, applies here as well</li> </ul>
Entering and working in and around the <i>BABAR</i> Control Room (building 621), including the computer alcove	<ul style="list-style-type: none"> <li>• Pipes and other navigation obstacles</li> <li>• Harmful fauna (spiders, snakes, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Engineering control in place (padding), use caution</li> <li>• Touch equipment only under the guidance of a system expert.</li> <li>• Be aware of your surroundings; look before you reach or go</li> <li>• Come well rested</li> </ul>

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
	<ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Hunger</li> <li>• Cold/evacuation</li> <li>• Grass fire</li> </ul>	<ul style="list-style-type: none"> <li>• Bring necessary food</li> <li>• Bring appropriate clothing</li> <li>• Refrain from smoking on the stairs or near the grass around the <i>BABAR</i> area</li> <li>• Keep co-shifter informed of your location at all times</li> <li>• Know dangers of the materials you are working with by reading MSDS</li> <li>• Maintain a clean environment</li> </ul>
Entering <i>BABAR</i> Hall buildings 620 and 624) and Electronics House	<ul style="list-style-type: none"> <li>• Electrical hazards</li> <li>• Crane hazards/overhead loads</li> <li>• Trips/slips/falls</li> <li>• Protruding equipment</li> <li>• Harmful fauna (spiders, snakes, etc.)</li> <li>• Resetting electrical equipment after power outage</li> <li>• Noise (difficult to communicate or hear hazard warnings)</li> </ul>	<ul style="list-style-type: none"> <li>• Review the Area Hazard Analysis (AHA) Observe and follow safety rules and regulations established for the area</li> <li>• Touch equipment only under the guidance of a system expert.</li> <li>• Adhere to safety signage (for instance, “wear safety glasses in this area”, “close-toes shoes required” “hard hat area” etc.)</li> <li>• Respect barricades and postings</li> <li>• Touch equipment only under the guidance of a system expert.</li> <li>• Be aware of your surroundings; look before you reach or go</li> <li>• Do not loiter in noisy areas, be sure listener has understood you correctly</li> <li>• Know dangers of the materials you are working with by reading MSDS</li> <li>• Wear proper protective equipment for resetting circuit breakers, following posted instructions</li> </ul>
Entering IR-2 IP region	<ul style="list-style-type: none"> <li>• Radiation</li> <li>• Bumping, tripping</li> <li>• Ongoing work overhead</li> </ul>	<ul style="list-style-type: none"> <li>• Review the Area Hazard Analysis (AHA) Observe and follow safety rules and regulations established for the area</li> <li>• Engineering and administrative controls are in place, most notably the Personnel Protection System (PPS) - obey them.</li> <li>• Wear appropriate protective devices, primarily a hard hat</li> <li>• Avoid rushing</li> </ul>

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
		<ul style="list-style-type: none"> <li>• Be aware of your surroundings</li> <li>• Have up to date GERT certification</li> <li>• Properly wear dosimeter</li> <li>• For controlled access to the IP vault see specific instructions below.</li> </ul>
Responding to emergencies	<ul style="list-style-type: none"> <li>• Responding to an emergency may expose personnel to a variety of hazards such as: fire, electrical, chemical, earthquake, bomb threat, assault, wildlife, etc.</li> <li>• Not noticing alarm</li> </ul>	<ul style="list-style-type: none"> <li>• Notify/Utilize SLAC/Community emergency services, esp. 9-911</li> <li>• Support and provide coordination as appropriate</li> <li>• Lend assistance only as directed</li> <li>• Know the evacuation procedures for buildings 620, 621, 624, and 626</li> <li>• Pay attention, have appropriate training</li> </ul>
Operate vehicles (Cars/trucks, mopeds, bicycles, electric carts).	<ul style="list-style-type: none"> <li>• Accident, including collision with wildlife</li> <li>• Falling off vehicle</li> <li>• Narrow access on lower drive and turn-around area in front of roll-up door</li> </ul>	<ul style="list-style-type: none"> <li>• Adhere to the California Vehicle Code (CVC) rules and regulations</li> <li>• Only licensed drivers shall operate a motor vehicle or mopeds</li> <li>• Wear seatbelts</li> <li>• Wear helmet when riding bicycles or moped</li> <li>• Take extra caution in turn-around area, be aware of other vehicles</li> <li>• Take extra caution at dawn, dusk, and nighttime</li> <li>• Park only in designated areas</li> </ul>
Working in tight spaces (detector, electronics house, building 626, gas shack)	<ul style="list-style-type: none"> <li>• Bumping into things with body or head</li> <li>• Trip hazards</li> <li>• Getting into each others way</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid rushing</li> <li>• Wear a hard hat or bump hat</li> <li>• Practice good housekeeping</li> <li>• Be aware of your surroundings</li> </ul>
Walking between <i>BABAR</i> buildings	<ul style="list-style-type: none"> <li>• Stairs are long, steep, and slippery when wet</li> <li>• Wildlife (skunks, snakes)</li> </ul>	<ul style="list-style-type: none"> <li>• Use handrail on stairs</li> <li>• Use extra caution when stairs are wet</li> <li>• Be aware of your surroundings</li> </ul>

Sequence of Basic Job Steps	Potential Hazards	Controls & Recommended Actions
DIRC Water System and Chiller Maintenance	<ul style="list-style-type: none"> <li>• Water spill</li> <li>• Slip hazard</li> </ul>	<ul style="list-style-type: none"> <li>• Clean spills when you see them</li> <li>• Wear a hard hat</li> </ul>
DIRC Gas System Maintenance	<ul style="list-style-type: none"> <li>• Protruding equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Wear a hard hat</li> </ul>

Sequence of Basic Job Steps	Controls & Recommended Actions
Controlled access to the IP vault	<ul style="list-style-type: none"> <li>• All persons taking controlled access should have the appropriate training. See C&amp;F manual:  <a href="http://www.slac.stanford.edu/cgi-bin/l2hredirect/BFROOT/www/Detector/Operations/CareAndFeeding/care?access">http://www.slac.stanford.edu/cgi-bin/l2hredirect/BFROOT/www/Detector/Operations/CareAndFeeding/care?access</a></li> <li>• Nobody is allowed to stay alone in the IP vault. If a second DIRC expert is not available at IR2, ask the Run Coordinator or the Pilot to provide a backup who can assist the DIRC expert in the IP vault during the work.</li> </ul>

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