

1. Work requester fills out this section.

Standing Work Permit

Requester: Don Lynch	Date: 4/19/07	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Sal Marino			Ext.: 3704
Work Control Coordinator: Don Lynch	Start Date: 4/25/07	Est. End Date: 5/11/07	
Brief Description of Work: Remove West half of HBD detector from CM region of IR and prep to send to Stony Brook for repairs.			
Building: 1008	Room: IR	Equipment: HBD	Service Provider: PHENIX techs

WCC, Requester/Designee, Service Provider, and ES&H (as necessary) fill out this section or attach analysis

ES&H ANALYSIS				
Radiation Concerns	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Activation	<input type="checkbox"/> Airborne	<input type="checkbox"/> Contamination
Radiation Generating Devices:	<input type="checkbox"/> Radiography	<input type="checkbox"/> Moisture Density Gauges	<input type="checkbox"/> Soil Density Gauges	<input type="checkbox"/> X-ray Equipment
<input type="checkbox"/> Special nuclear materials involved, notify Isotope Special Materials Group		<input type="checkbox"/> Fissionable materials involved, notify Laboratory Criticality Officer		
Safety Concerns	<input type="checkbox"/> None	<input type="checkbox"/> Ergonomics	<input type="checkbox"/> Transport of Haz/Rad Material	
<input type="checkbox"/> Adding/Removing Walls or Roofs	<input type="checkbox"/> Confined Space*	<input type="checkbox"/> Explosives	<input type="checkbox"/> Lead*	<input type="checkbox"/> Penetrating Fire Walls
<input type="checkbox"/> Asbestos*	<input type="checkbox"/> Corrosive	<input type="checkbox"/> Flammable	<input type="checkbox"/> Magnetic Field*	<input type="checkbox"/> Pressurized Systems
<input type="checkbox"/> Beryllium*	<input type="checkbox"/> Cryogenic	<input type="checkbox"/> Fumes/Mist/Dust*	<input type="checkbox"/> Material Handling	<input type="checkbox"/> Rigging/Critical Lift
<input type="checkbox"/> Biohazard*	<input type="checkbox"/> Electrical	<input type="checkbox"/> Heat/Cold Stress	<input type="checkbox"/> Noise*	<input type="checkbox"/> Toxic Materials*
<input type="checkbox"/> Chemicals*	<input type="checkbox"/> Elevated Work*	<input type="checkbox"/> Hydraulic	<input type="checkbox"/> Non-ionizing Radiation*	<input type="checkbox"/> Vacuum
	<input type="checkbox"/> Excavation	<input type="checkbox"/> Lasers*	<input type="checkbox"/> Oxygen Deficiency*	<input checked="" type="checkbox"/> Other Using Crane w Flam. Gas in IR
* Does this work require medical clearance or surveillance from the Occupational Medicine Clinic? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Environmental Concerns	<input checked="" type="checkbox"/> None		<input type="checkbox"/> Work impacts Environmental Permit No.	
<input type="checkbox"/> Atmospheric Discharges (rad/non-rad)	<input type="checkbox"/> Land Use	<input type="checkbox"/> Soil Activation/contamination	<input type="checkbox"/> Waste-Mixed	
<input type="checkbox"/> Chemical or Rad Material Storage or Use	<input type="checkbox"/> Liquid Discharges	<input type="checkbox"/> Waste-Clean	<input type="checkbox"/> Waste-Radioactive	
<input type="checkbox"/> Cesspools (UIC)	<input type="checkbox"/> Oil/PCB Management	<input type="checkbox"/> Waste-Hazardous	<input type="checkbox"/> Waste-Regulated Medical	
<input type="checkbox"/> High water/power consumption	<input type="checkbox"/> Spill potential	<input type="checkbox"/> Waste-Industrial	<input type="checkbox"/> Underground Duct/Piping	
Waste disposition by:	<input type="checkbox"/> Other			
Pollution Prevention (P2)/Waste Minimization Opportunity:	<input checked="" type="checkbox"/> None <input type="checkbox"/> Yes			
FACILITY CONCERNS	<input checked="" type="checkbox"/> None			
<input type="checkbox"/> Access/Egress Limitations	<input type="checkbox"/> Electrical Noise	<input type="checkbox"/> Potential to Cause a False Alarm	<input type="checkbox"/> Vibrations	
	<input type="checkbox"/> Impacts Facility Use Agreement	<input type="checkbox"/> Temperature Change	<input type="checkbox"/> Other	
<input type="checkbox"/> Configuration Control	<input type="checkbox"/> Maintenance Work on Ventilation Systems	<input type="checkbox"/> Utility Interruptions		
WORK CONTROLS				
Work Practices				
<input type="checkbox"/> None	<input type="checkbox"/> Exhaust Ventilation	<input checked="" type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> Spill Containment	<input type="checkbox"/> Security (see Instruction Sheet)
<input checked="" type="checkbox"/> Back-up Person/Watch	<input type="checkbox"/> HP Coverage	<input type="checkbox"/> Posting/Warning Signs	<input type="checkbox"/> Time Limitation	<input type="checkbox"/> Other
<input type="checkbox"/> Barricades	<input type="checkbox"/> IH Survey	<input type="checkbox"/> Scaffolding-requires inspection	<input type="checkbox"/> Warning Alarm (i.e. "high level")	
Protective Equipment				
<input type="checkbox"/> None	<input type="checkbox"/> Ear Plugs	<input type="checkbox"/> Gloves	<input type="checkbox"/> Lab Coat	<input type="checkbox"/> Safety Glasses
<input type="checkbox"/> Coveralls	<input type="checkbox"/> Ear Muffs	<input type="checkbox"/> Goggles	<input type="checkbox"/> Respirator	<input type="checkbox"/> Safety Harness
<input type="checkbox"/> Disposable Clothing	<input type="checkbox"/> Face Shield	<input checked="" type="checkbox"/> Hard Hat	<input type="checkbox"/> Shoe Covers	<input checked="" type="checkbox"/> Safety Shoes <input type="checkbox"/> Other
Permits Required (Permits must be valid when job is scheduled.)				
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Cutting/Welding	<input type="checkbox"/> Impair Fire Protection Systems		
<input type="checkbox"/> Concrete/Masonry Penetration	<input type="checkbox"/> Digging/Core Drilling	<input type="checkbox"/> Rad Work Permit-RWP No		
<input type="checkbox"/> Confined Space Entry	<input type="checkbox"/> Electrical Working Hot	<input type="checkbox"/> Other		
Dosimetry/Monitoring				
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Heat Stress Monitor	<input type="checkbox"/> Real Time Monitor	<input type="checkbox"/> TLD	
<input type="checkbox"/> Air Effluent	<input type="checkbox"/> Noise Survey/Dosimeter	<input type="checkbox"/> Self-reading Pencil Dosimeter	<input type="checkbox"/> Waste Characterization	
<input type="checkbox"/> Ground Water	<input type="checkbox"/> O ₂ /Combustible Gas	<input type="checkbox"/> Self-reading Digital Dosimeter	<input type="checkbox"/> Other	
<input type="checkbox"/> Liquid Effluent	<input type="checkbox"/> Passive Vapor Monitor	<input type="checkbox"/> Sorbent Tube/Filter Pump		
Training Requirements (List below specific training requirements)				
Crane Operator, CA -Collider User, PHENIX Awareness				
Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below:			If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)	
ES&H Risk Level:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	WCC: _____ Date: _____
Complexity Level:	<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	Service Provider: _____ Date: _____
Work Coordination:	<input type="checkbox"/> Low	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> High	Authorization to start _____ Date: _____
(Departmental Sup/WCC/Designee)				

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, and personnel availability need to be addressed):
See Attached backup Documentation

Special Working Conditions Required:
None

Operational Limits Imposed: Crane shall only be operated in the southwest corner of the IR away from potential impact on flammable gas containment.

Post Work Testing Required: No

Job Safety Analysis Required: Yes No Walkdown Required: Yes No

Reviewed by: Primary Reviewer will determine the size of the review team and the other signatures required based on hazards and job complexity. Primary Reviewer signature means that the hazards and risks that could impact ES&H have been identified and will be controlled according to BNL requirements.

Title	Name (print)	Signature	Life #	Date
Primary Reviewer	J. Smith	[Signature]	13127	4/24/07
ES&H Professional	V. Gruniger	[Signature]	21868	4/29/07
Other				
Other C. Pearson	C PEARSON	[Signature]	15245	4/23/2007
Work Control Coordinator	Don Lynch	[Signature]	20146	4/18/07
Service Provider				
Review Done: <input type="checkbox"/> in series		<input type="checkbox"/> team		

4. Job site personnel fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments).

Job Supervisor:	Contractor Supervisor:
Workers: Jim Laszarczyk [Signature] [Signature] [Signature]	Workers: Matt Logg [Signature]
Life#: 18643	Life#: 17937
15639	
15123	
20135	

Workers are encouraged to provide feedback on ES&H concerns or on ideas for improved job work flow. Use feedback form or space below.

5. Departmental Job Supervisor, Work Control Coordinator/Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)

Name: _____ Signature: _____ Life#: _____ Date: _____

6. Departmental Job Supervisor, Work Requester/Designee determines if Post Job Review is required. Yes No

Post Job Review (Fill in names of reviewers)

Name: _____	Signature: _____	Life#: _____	Date: _____
Name: _____	Signature: _____	Life#: _____	Date: _____

7. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Is any feedback required? Yes No

b) Workers: Are there better methods or safer ways to perform this job in the future? Yes No

8. Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of work area to work supervisor)

Name: Don Lynch Signature: [Signature] Life#: 20146 Date: 4/27/07

Comments: Work was completed during 4/25/07 maintenance day. 2 out of area and conditions were encountered

1) During the removal of the HBD, a voltage of 120 VAC was detected on the exterior surface of the HBD, even though all power to the detector was off. Upon immediate investigation it was determined that the voltage was being coupled inductively through a heater circuit. The source of this voltage was then immediately disabled and the removal of the HBD was completed. Corrective action has been taken to prevent the recurrence of this condition

2) At the end of the maintenance day after all items on this permit were completed a Disturbance to the... [unclear]... of the bottom ring...

of a portable ladder being used to access the CM region of PHENIX (location of MFD). The injured tech later sought medical attention at the BNL Occupational Health clinic and appropriate paper work was generated to document the incident.

HBD West removal for troubleshooting, repairs and improvements

INTRODUCTION

The recently installed HBD detector subsystem currently operating within the PHENIX experiment has experienced technical problems that require repairs and design improvements to assure optimum performance in the next RHIC run (run 8). Although the nature of the problems is well understood, there remain root cause determination efforts to isolate and correct all problems. It is estimated that the entire effort would take longer than the current plans for the summer 2007 RHIC maintenance shutdown.

HBD experts have determined that the HBD physics during run 7 are proceeding well enough that the efforts can be completed with ½ of the detector for the remainder of run 7. In addition, to assure that the work is completed and the HBD detector is reinstalled prior to commencement of run 8, the HBD experts have decided to remove the west ½ of the HBD detector at the next available maintenance day. It is estimated that this can be accomplished in less than 8 hours using the procedure described below.

HBD West Removal Procedure

Note: HBD experts are responsible for obtaining, preparing and executing appropriate paperwork, permits, safety sign-offs etc. to allow delivery of the HBD West detector to Stony Brook University where the troubleshooting and repairs will be undertaken.

The following operations will take place during a **restricted access** period for designated for experimental access to the PHENIX IR. It is estimated that the entire procedure will take less than 8 hours.

1. Prior to any IR entry, all PHENIX magnets will be ramped down and locked out. HBD HV shall be turned off. *WCC SHOULD LOCK MAGNET KEYS IN LOCK BOX.*
2. Immediately after restricted access has been declared, PHENIX mechanical techs shall reposition both the east and west carriages to their retracted (open) positions.
3. PHENIX techs shall disconnect all HV, LV and signal cables from the west detector and restrain the loose cable ends within the HBD west cable trays using appropriate cable ties or equivalent.
4. After all cables have been removed, PHENIX gas system technicians shall close the 3-way valves on the supply and return lines to isolate and temporarily seal the west detector.

5. Flexible supply and gas return lines shall then be positioned out of the way of west detector removal and restrained.
6. The HBD west upper and lower mounting brackets shall then be disconnected from the upper and lower support rails and the detector shall be carefully lowered (by hand) to the CM lift platform by 2 PHENIX mechanical technicians.
7. The HBD anti-torque bar shall be attached to the HBD west upper mounting brackets on the CM platform, then the assembled detector and bar shall be moved by hand to the CM area west side floor. 2 PHENIX technicians shall be on the CM lift table handing the assembly to 2 additional PHENIX techs on the floor.
8. The assembly shall be carried by hand to the south end of the CM area where the CM crane will be attached to the anti-torque bar and the assembly shall be carefully lifted up above the electronics cabinet at the south end of the west carriage, then west over the cabinet, south and down to the floor south of the west carriage. During this part of the procedure all areas within 15 feet (horizontal) of the crane path shall be cordoned off to all except the PHENIX techs involved in the task.
9. The assembly then shall be carried by hand east then north around the east carriage and through the plug doorway to the PHENIX assembly hall.
10. The HBD west will then be prepared for shipment to Stony Brook in its shipping cage per HBD expert instructions.

11. Carry out a magnetic safety sweep prior to removing the magnet lockout.