BROOKHAVEN NATIONAL LABORATORY

Work Permit # DRL-2013-011/SS-2013-
Work Order # ___
Job# ___ Activity# ___

See "Instructions for Filling out the Work Permit" contained in the Work Planning and Control for Experiments and Operations Subject Area.

1. Work request WCC fills out this section. ☐ **Standing Work Permit**

Requester: Don Lynch	Date:	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Carter Biggs			Ext.: 7515
Work Control Coordinator: Don Lynch		Start Date: 7/15/2013	Est. End Date: 8/15/2013
Brief Description of Work: Upgrade West Carriage Window Washer Platform Winch with new Winch with autospooler			
Building: 1008	Room: IR	Equipment: WC MOveable Paltform	Service Provider: Bargaining Unit Personnel & PHENIX Technicians

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

ESS&H ANALYSIS

Radiation Concerns	☒ None	☐ Activation	☐ Airborne	☐ Contamination	☐ Radiation	☐ NORM	☐ Other
☐ Special nuclear materials involved, notify Isotope Special Materials Group				☐ Fissionable/Radiological materials involved, notify Laboratory Nuclear Safety Officer		
Radiation Generating Devices:	☐ Radiography	☐ Moisture Density Gauges	☐ Soil Density Gauges	☐ X-ray Equipment		

Safety and Security Concerns	☒ None	☐ Explosives	☐ Transport of Haz/Rad Material	☐ Pressurized Systems
☐ Adding/Removing Walls or Roofs	☐ Critical Lift	☐ Fumes/Mist/Dust*	☐ Magnetic Fields*	☐ Railroad Work
☐ Asbestos*	☐ Cryogenic	☐ Heat/Cold Stress	☐ Nanomaterials/particles*	☐ Rigging
☐ Beryllium*	☐ Electrical	☐ Hydraulic	☐ Noise*	☐ Silica*
☐ Biohazard*	☐ Elevated Work	☐ Lasers*	☐ Non-ionizing Radiation*	☐ Security Concerns
☐ Chemicals/Corrosives*	☐ Excavation	☐ Lead*	☐ Oxygen Deficiency*	☐ Suspect/Counterfeit Items
☐ Confined Space*	☐ Ergonomics*	☐ Material Handling	☐ Penetrating Fire Walls	☐ Vacuum
* Safety Health Rep. Review Required	☐ Haz, Rad, Bio Material Exceed DOE 151.1-C Levels - Contact OEM			☐ Other

Environmental Concerns	☒ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad)	☐ Land Use Institutional Controls	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use	☐ Liquid Discharges	☐ Waste-Clean	☐ Waste-Radioactive
☐ Cesspools (UIC)	☐ Oil/PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption	☐ Spill potential	☐ Waste-Industrial	☐ Underground Duct/Piping
Waste disposition by:			☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity:	☒ No ☐ Yes		

FACILITY CONCERNS	☒ None	☐ Intermittent Energy Release		
☐ Access/Egress Limitations	☐ Electrical Noise	☐ Potential to Cause a False Alarm		☐ Vibrations
	☐ Impacts Facility Use Agreement		☐ Temperature Change	☐ Other
☐ Configuration Management	☐ Maintenance Work on Ventilation Systems		☐ Utility Interruptions	

WORK CONTROLS

Work Practices

☐ None	☐ Exhaust Ventilation	☒ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☒ Back-up Person/Watch	☐ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☒ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. "high level")	☐ Electrical Inspection Required

Personal Protective Equipment

☐ None	☐ Ear Plugs	☒ Gloves as appropriate	☐ Lab Coat	☒ Safety Glasses as appropriate
☐ Coveralls	☐ Ear Muffs	☐ Goggles	☐ Respirator*	☐ Safety Harness

☐ Disposable Clothing	☐ Face Shield	☐ Hard Hat	☐ Shoe Covers	☒ Safety Shoes	☐ High visibility cloths/vest	☐ Other

Permits Required (Permits must be valid when job is scheduled.)

☒ None	☐ Cutting/Welding	☐ Impair Fire Protection Systems
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other

Dosimetry/Monitoring

☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump	

Training Requirements (List specific training requirements)

C-A User or equiv. , PHENIX Awareness, LOTO authorized

Based on analysis above, the Review 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)**	
ESS&H Risk Level:	☒ Low	☐ Moderate	☐ High	WCC: Don Lynch	Date:
Complexity Level:	☒ Low	☐ Moderate	☐ High	Service Provider:	Date:
Work Coordination:	☐ Low	☒ Moderate	☐ High	Authorization to start Don Lynch	Date:
				(Department/Division, or their equivalent, Sup/WCC/Designee)	

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

Work Plan (procedures, timing, equipment, scheduling, coordination, notifications, and personnel availability need to be addressed in adequate detail): See Attached
Special Working Conditions Required (e.g., Industrial Hygiene hold points or other monitoring) None
Notifications to operations and Operational Limits Requirements: None
Post Work Testing, Notification or Documentation Required:

Job Safety Analysis Required: ☐ Yes ☒ No	Review Done: ☒ in series ☐ team

Reviewed by: * Primary Reviewer signature means that the Review Team members were appropriate for the work that was planned, the Team visited the job site, hazards and risks that could impact ESS&H have been considered and controls established according to BNL requirements. In addition, this signature indicates that applicable JRAs, FRAs, as well as other planning documents have been reviewed and training requirements have been identified and recorded on this permit.

Title	Name (print)	Signature	Life #	Date
ES&H Professional				
F&O Facility Project Manager				
Service Provider				
Work Control Coordinator	Don Lynch		20146	
Safety Health Representative				
Research Space Manager				
Other				
Other (PHENIX Escort)				
Required Walkdown Completed				
*Primary Reviewer				

4. Job site personnel (Supervisor and workers) fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments) and all training required for this permit is current/complete. Job Supervisor/Contractor Supervisor signatures also includes verification that worker training required for this permit is current/complete.

Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:

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

5. Department/Division, or their equivalent, Line Manager or 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. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Are there any changes as a result of worker feedback? ☐ Yes ☐ No

Note: See Work Planning and Control for Experiments and Operations Subject Area section 2.6.

7. Post Job Review/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 job site to work supervisor.) The WCC ensures that the change process to update drawings, placards, postings, procedures, etc., is initiated, if necessary.

Name:	Signature:	Life#:	Date:
Comments:			

Work plan Attachment **WP# DRL-2013-11**

West Carriage Window Washer Platform Upgrade: Autospool and Remote pin Insertion/Removal

INTRODUCTION

In order to accommodate the ability to move the PHENIX detector West Carriage (WC) east and west for maintenance and access, the platforms on the west side of the EC need to be moved out of the way when the WC is moved to the west position. This is accomplished by lifting the platforms up above the WC with a winch. The platforms are supported by cantilever brackets in steel raceways, near the north and south ends of the platforms. Inside the raceways are permanent pin stops which the platform support brackets rest when lowered as required. The winch cable is attached to the lowermost platform when the cable is retracted the lowest platform lifts off its stops and rises until it is below the 2nd lowest platform which then sits on the lowest platform and then they rise together as the winch cable is further retracted. This is repeated for the remaining platforms until the winch has hauled the lowest platform and all platforms above it to a point high enough that the platforms no longer prevent the WC from moving to its most western position. At that point two pins are manual inserted below the lowest platform and at the north and south rails for the lowest platform such that they would prevent the platforms from falling should the winch cable fail. This system is known as the "window washer" platforms at PHENIX due to it's similarity to widow washing platforms on high rise buildings.

There are 2 recognized safety problems with the current situation:

1. The pins must be inserted manually. This requires a technician to position himself directly below the platforms while they are supported only by the cable. Although such a failure is unlikely, should the cable fail while the technician is inserting or removing the pins, the technician could be seriously injured or killed. (Note: This portion of the upgrade was completed during the 2012 shutdown)

2. The winch is installed in such a position that the cable tends to spool inaccurately which over time causes excessive wear on the cable. This condition could lead to premature catastrophic failure of the cable.

Until now, these 2 conditions have been addressed by frequent examination of the cable and pre-tensioning the cable so that it will spool properly prior to removing the pin. While not an entirely satisfactory solution, this procedural method does maintain an acceptable level of safety.

PHENIX engineering has decided to address these 2 issues with 2 improvements to the "window washer" platform system:

1. A remote actuator to insert and remove the safety pins as required. This requires low voltage wiring (24 volt) to actuator and interlocks to (a) sense the pin position (fully engaged and fully disengaged) (b) to prevent the winch from operating when the pin is engaged. (Note: This portion of the upgrade was completed during the 2012 shutdown)

2. Replacing the existing winch with an autospooling winch that maintains appropriate tension and spooling on the winch. This requires interlocking with the window washer platforms to prevent spooling further when the window washer platforms are above the pins, and when the all platforms are lowered onto their permanent stops. These interlocks are necessary to prevent damage to the winch and/or winch cable due to excessive or inadequate tension, respectively.

Procedures

All work described herein shall be coordinated and performed by PHENIX technicians, engineers and/or BNL bargaining unit carpenters as appropriate to the task and per bargaining unit contract with BNL. All working personnel shall have appropriate skills and training to accomplish the work described herein. All workers shall have and wear the appropriate personal protective equipment (PPE) for each task.

This procedure describes the steps necessary to install two separate Locking Pin mechanisms, including their associated limit switches, electrical junction boxes, conduit and cable to the PHENIX Experimental Hall west wall. The components will eventually be powered only by low voltage power supplies (12 and 24 volt DC).

PHENIX will supply all components, wire & cable, terminal blocks and junction boxes, except for the interconnecting conduit.

The IR West wall has been pre-marked with locations only for the pin motorized drive units and pin "IN" limit switches. All junction boxes and conduit will be "field run" by the electricians. These units should be secured using at least 5/8 inch Hilti anchors.
PHENIX technical staff will advise the CAD electricians with any additional details as the work progresses.

Note: Prior to any work being performed and at all times when work is being performed under any or all of the hoisted platforms, the manual safety pins shall be installed. The only time when work is permitted underneath the platforms while hoisted shall be to replace the manual safety pins with the automatic pins and this only after the pin drives have been mounted and aligned.

Note: All details pertaining to the remote actuator and associated interlocks were installed, tested and placed into service during the 2012 shutdown.

Installation of the new winch, cable and autospooler shall be accomplished as follows:

1) Using the existing winch raise the platforms to there upper store positions with the bottom platform resting on the safety pins.
2) Lockout the remote pin removal actuator
3) Remove old winch cable
4) dismount and discard old winch
5) Mount new baseplate to floor
6) Mount new winch with autospooler to baseplate

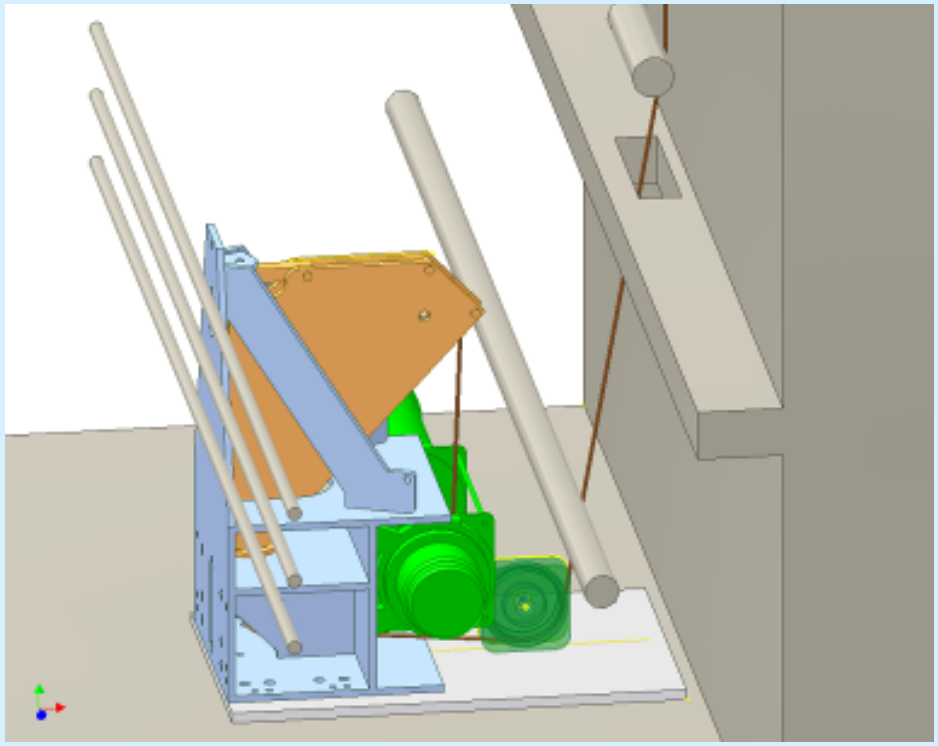
7) Mount new sheave to baseplate
8) install new winch cable
9) connect winch to line power
10) test winch operation with platforms
11) test and confirm all interlocks

All of the tasks described above and illustrated on the attached sheet are common worker planned work tasks. Upon completion of the upgrades all workers shall sign this work permit and any “lessons learned” or other appropriate comments and observations concerning this work shall be noted on the work permit or other sheets which shall then be attached to the work permit. This work permit shall then be closed out.

PHENIX

TECHNICAL SUPPORT 2013

PHENIX
West Carriage
Window Washer Platform
Upgrade



Summer Shutdown 2013

Don Lynch

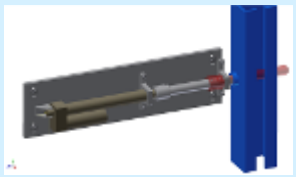
PHENIX

TECHNICAL SUPPORT 2013

Window Washer Remote Pin Removal and Winch/spooler safety upgrades

South Side pin

Limit switch



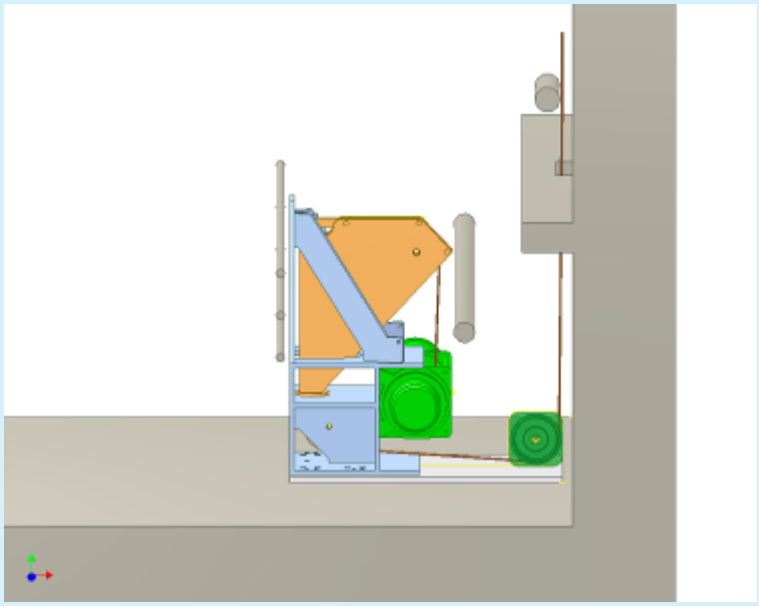
North Side pin

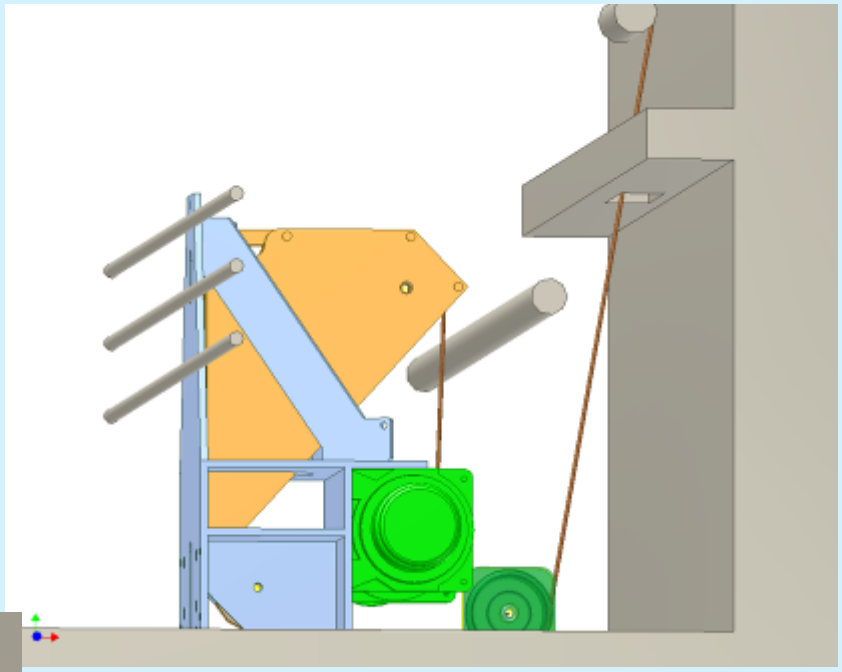
Limit switch

PHOENIX

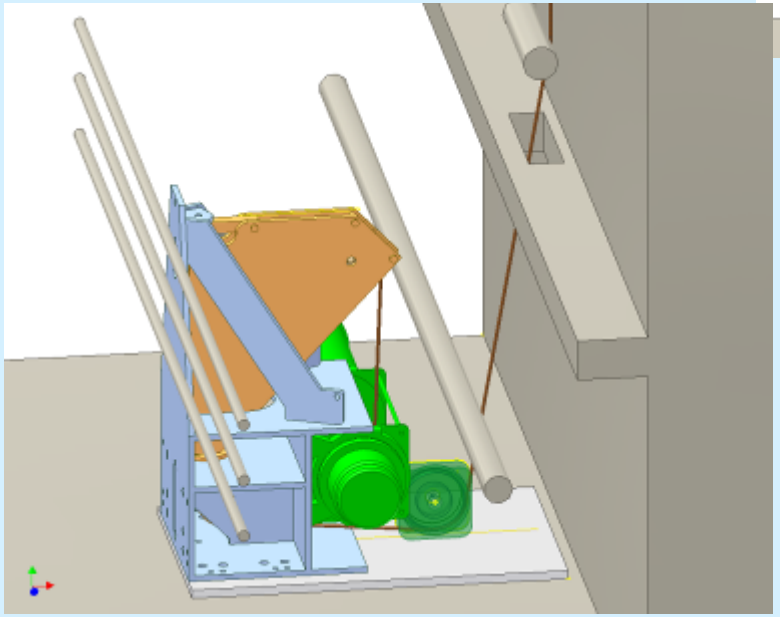
TECHNICAL SUPPORT 2013

Window Washer Remote Pin Removal and Winch/spooler safety upgrades





Minimum angle from winch: Need clearance between 1 and 2 inches from wall



Maximum angle from winch: Need clearance between 1 and 4 inches from wall