

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: 11/15/2012		Est. End Date: 12/15/2012
Brief Description of Work: VTX/FVTX Radiation Monitoring Test			
Building: 1008	Room: IR	Equipment: FVTX Rad. Monitors	Service Provider: PHENIX Technical Support

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

<b>ESS&amp;H ANALYSIS</b>							
<b>Radiation Concerns</b>	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Activation	<input type="checkbox"/> Airborne	<input type="checkbox"/> Contamination	<input type="checkbox"/> Radiation	<input type="checkbox"/> NORM	<input type="checkbox"/> Other
<input type="checkbox"/> Special nuclear materials involved, notify Isotope Special Materials Group				<input type="checkbox"/> Fissionable/Radiological materials involved, notify Laboratory Nuclear Safety Officer			
<b>Radiation Generating Devices:</b>	<input type="checkbox"/> Radiography		<input type="checkbox"/> Moisture Density Gauges		<input type="checkbox"/> Soil Density Gauges		<input type="checkbox"/> X-ray Equipment
<b>Safety and Security Concerns</b>	<input checked="" type="checkbox"/> None		<input type="checkbox"/> Explosives		<input type="checkbox"/> Transport of Haz/Rad Material		<input type="checkbox"/> Pressurized Systems
<input type="checkbox"/> Adding/Removing Walls or Roofs	<input type="checkbox"/> Critical Lift	<input type="checkbox"/> Fumes/Mist/Dust*		<input type="checkbox"/> Magnetic Fields*		<input type="checkbox"/> Railroad Work	
<input type="checkbox"/> Asbestos*	<input type="checkbox"/> Cryogenic	<input type="checkbox"/> Heat/Cold Stress		<input type="checkbox"/> Nanomaterials/particles*		<input type="checkbox"/> Rigging	
<input type="checkbox"/> Beryllium*	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hydraulic		<input type="checkbox"/> Noise*		<input type="checkbox"/> Silica*	
<input type="checkbox"/> Biohazard*	<input type="checkbox"/> Elevated Work	<input type="checkbox"/> Lasers*		<input type="checkbox"/> Non-ionizing Radiation*		<input type="checkbox"/> Security Concerns	
<input type="checkbox"/> Chemicals/Corrosives*	<input type="checkbox"/> Excavation	<input type="checkbox"/> Lead*		<input type="checkbox"/> Oxygen Deficiency*		<input type="checkbox"/> Suspect/Counterfeit Items	
<input type="checkbox"/> Confined Space*	<input type="checkbox"/> Ergonomics*	<input type="checkbox"/> Material Handling		<input type="checkbox"/> Penetrating Fire Walls		<input type="checkbox"/> Vacuum	
* Safety Health Rep. Review Required	<input type="checkbox"/> Haz, Rad, Bio Material Exceed DOE 151.1-C Levels - Contact OEM					<input type="checkbox"/> Other	
<b>Environmental Concerns</b>							
<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 Institutional Controls		<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							
<b>Pollution Prevention (P2)/Waste Minimization Opportunity:</b>				<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
<b>FACILITY CONCERNS</b>							
<input checked="" type="checkbox"/> None				<input type="checkbox"/> Intermittent Energy Release			
<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"/> Configuration Management		<input type="checkbox"/> Impacts Facility Use Agreement		<input type="checkbox"/> Temperature Change		<input type="checkbox"/> Other	
<input type="checkbox"/> Maintenance Work on Ventilation Systems		<input type="checkbox"/> Utility Interruptions					
<b>WORK CONTROLS</b>							
<b>Work Practices</b>							
<input type="checkbox"/> None		<input type="checkbox"/> Exhaust Ventilation		<input type="checkbox"/> Lockout/Tagout		<input type="checkbox"/> Spill Containment	
<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"/> Security (see Instruction Sheet)		<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")	
<input type="checkbox"/> Electrical Inspection Required							
<b>Personal Protective Equipment</b>							
<input type="checkbox"/> None		<input type="checkbox"/> Ear Plugs		<input checked="" type="checkbox"/> Gloves as appropriate		<input type="checkbox"/> Lab Coat	
<input checked="" type="checkbox"/> Safety Glasses as appropriate		<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 type="checkbox"/> Hard Hat	
<input type="checkbox"/> Shoe Covers		<input checked="" type="checkbox"/> Safety Shoes		<input type="checkbox"/> High visibility cloths/vest		<input type="checkbox"/> Other	
<b>Permits Required (Permits must be valid when job is scheduled.)</b>							
<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			
<b>Dosimetry/Monitoring</b>							
<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 <sub>2</sub> /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			
<b>Training Requirements (List specific training requirements)</b>							
<b>C-A User or equiv. , PHENIX Awareness</b>							
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)			
<b>ESS&amp;H Risk Level:</b>		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High		WCC: Don Lynch		Date:	
<b>Complexity Level:</b>		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High		Service Provider:		Date:	
<b>Work Coordination:</b>		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> 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)**

<b>Work Plan</b> (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: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Review Done: <input checked="" type="checkbox"/> in series <input type="checkbox"/> team	
<b>Reviewed by:</b> * 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.**

<b>Note:</b> 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.**

<b>Worker Feedback (use attached sheets as necessary)</b>
a) WCM/WCC: Are there any changes as a result of worker feedback? <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Note:</b> 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:			

**VTX/FVTX Radiation Monitoring Test****INTRODUCTION**

Following the initial deployment of the FVTX detector subsystem in run 12, the FVTX group recognized a need to quantify potential radiation damage to their subsystem sensors due to proximity to the beam pipe. During run 12 some degradation of performance was noted, though the magnitude was not alarming. The group has designed a test using small active radiation monitors to be placed at various locations near the FVTX run position.

The test is to be performed during the early days of run 13 (while the VTX/FVTX is in the open position) after which half of the sensors will be removed to allow the VTX/FVTX halves to be closed. The remaining sensors will be in a location that does not interfere with the vtx/FVTX.

**Procedures**

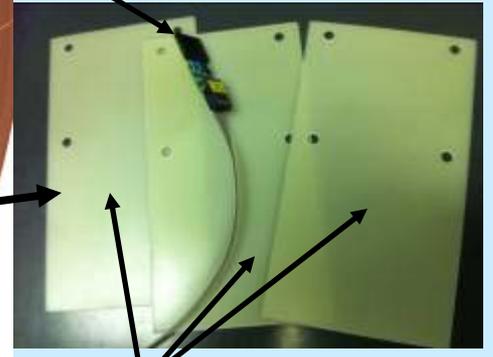
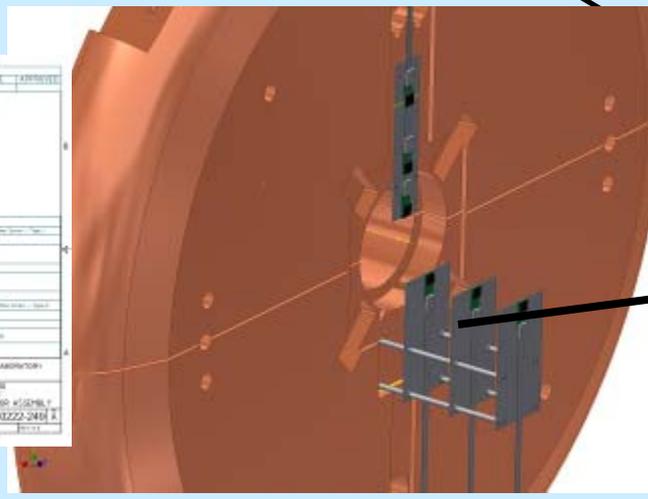
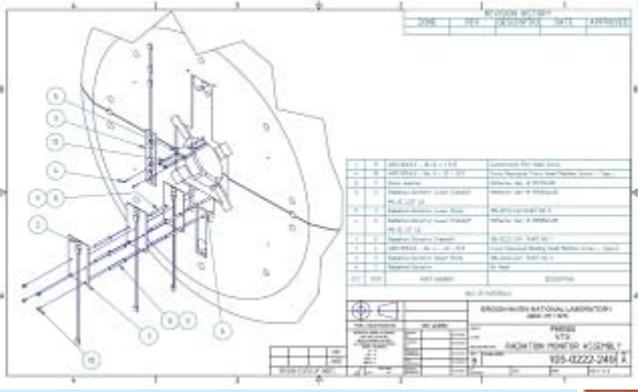
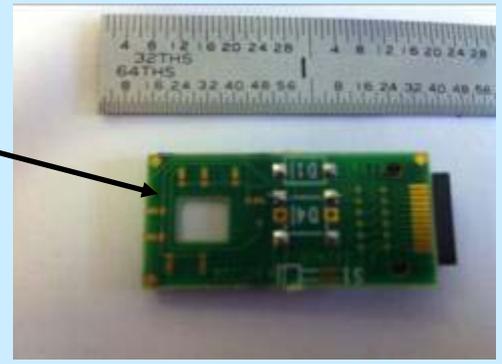
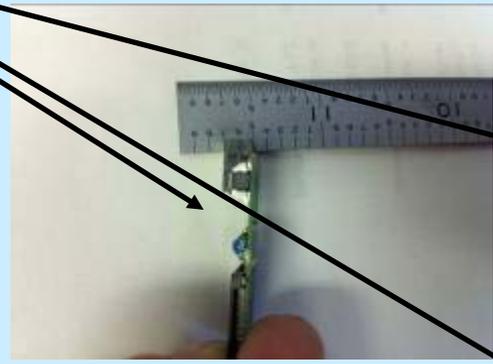
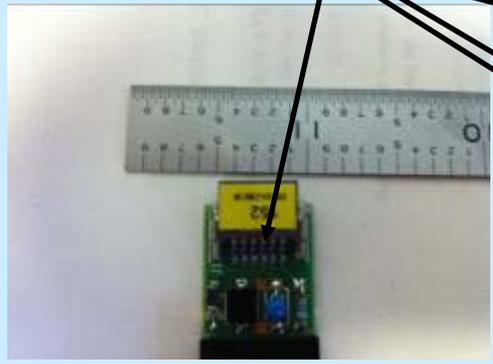
***All work described herein shall be coordinated and performed by PHENIX technicians, engineers and/or FVTX experts as appropriate to the task and per bargaining unit contract with BNL. All working personnel shall have appropriate skills and training to accomplish the work described herein. All workers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

1. The attached drawing, 105-0222-249-A, ***Radiation Monitor Assembly***, shows the details of the support structure to be installed as indicated for the individual sensors.
2. The radiation sensors are to be attached to items 3 and 7, as shown by double sided Teflon tape, or equivalent.
3. Sensors attached to item 3 are to be installed before the start of run 13 and are to remain installed throughout run 13, unless otherwise determined by FVTX experts and/or PHENIX engineering.
4. Sensors attached to items 7 are to be installed before the start of run 13 and are to be removed, including all associated mounting hardware prior to closing the 2 VTX/FVTX halves.
5. All cables are to be run neatly, safely and efficiently from the sensor to a suitable location on the northwest end of the PHENIX Central Magnet, where they will be connected to a dedicated data acquisition system to be provided by PHENIX engineering and/or FVTX experts.

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.

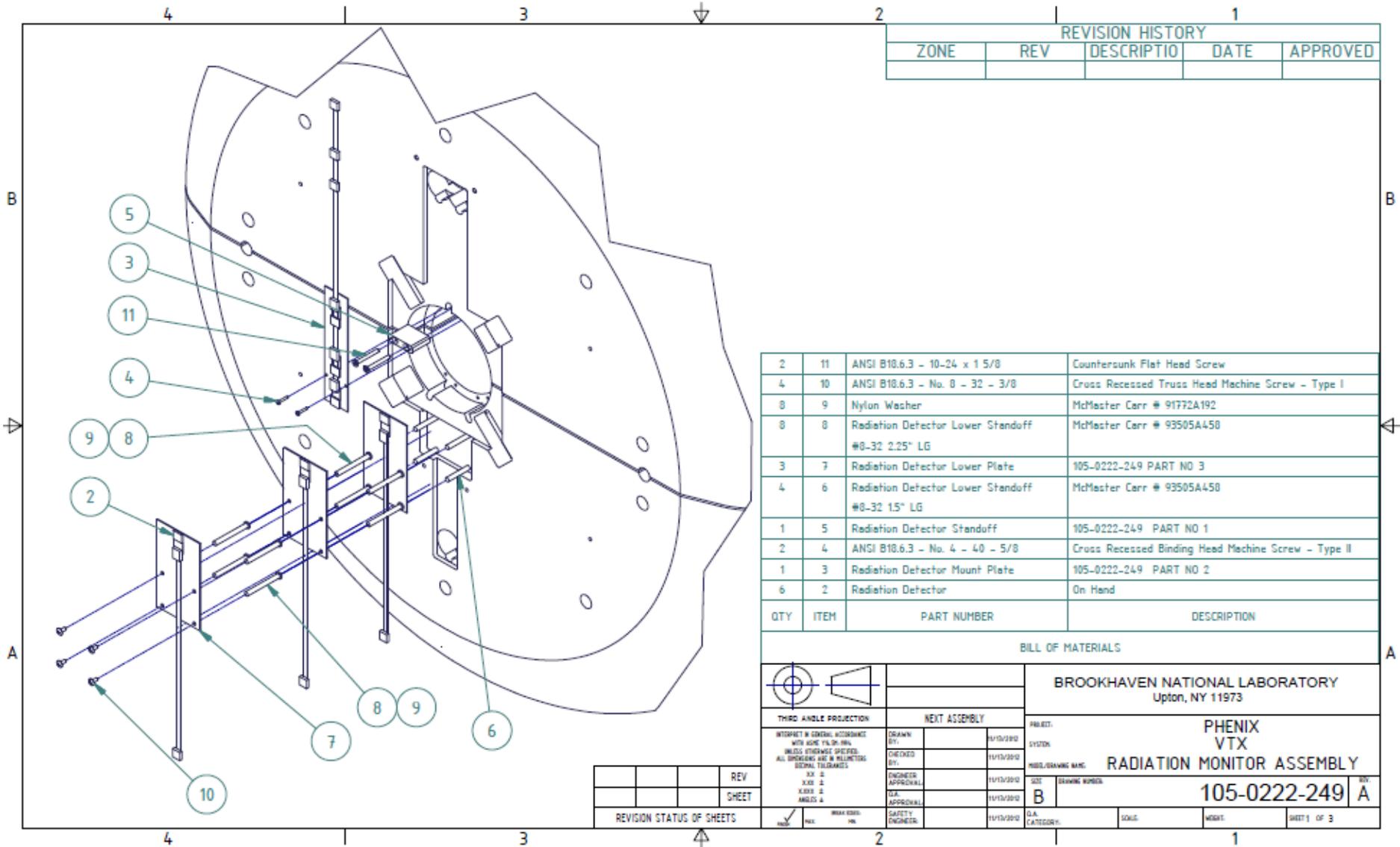
Rad monitor sensors

VTX/FVTX Radiation Monitoring Test



G-10 Sensor mounting pads

Mount 6 Rad monitor sensors in the south nosecone cavity, 2 sets of 3, 1 set at 3.5, 8.5 and 16.2 mm radially from nominal beam axis and adjacent to the nosecone, the other 3 at 3.5 mm radially and varying z coinciding with FVTX disks



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED

2	11	ANSI B10.6.3 - 10-24 x 1 5/8	Countersunk Flat Head Screw
4	10	ANSI B10.6.3 - No. 0 - 32 - 3/8	Cross Recessed Truss Head Machine Screw - Type I
8	9	Nylon Washer	McMaster Carr # 91772A192
8	8	Radiation Detector Lower Standoff #8-32 2.25" LG	McMaster Carr # 93505A450
3	7	Radiation Detector Lower Plate	105-0222-249 PART NO 3
4	6	Radiation Detector Lower Standoff #8-32 1.5" LG	McMaster Carr # 93505A450
1	5	Radiation Detector Standoff	105-0222-249 PART NO 1
2	4	ANSI B10.6.3 - No. 4 - 40 - 5/8	Cross Recessed Binding Head Machine Screw - Type II
1	3	Radiation Detector Mount Plate	105-0222-249 PART NO 2
6	2	Radiation Detector	On Hand
QTY	ITEM	PART NUMBER	DESCRIPTION

BILL OF MATERIALS

		<b>BROOKHAVEN NATIONAL LABORATORY</b> Upton, NY 11973	
THIRD ANGLE PROJECTION <small>INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.2M-1994 UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.</small>		PROJECT: PHENIX SYSTEM: VTX PIBOL/DRAWING NAME: RADIATION MONITOR ASSEMBLY	
NEXT ASSEMBLY <small>DRAWN BY: 11/15/2010          CHECKED BY: 11/15/2010          ENGINEER APPROVAL: 11/15/2010          P.A. APPROVAL: 11/15/2010</small>		SHEET NUMBER: <b>105-0222-249</b> REV: <b>A</b>	
REVISION STATUS OF SHEETS <small>REV SHEET</small>		D.A. CATEGORY: B SOLE:    NOBT:    SHEET 1 OF 3	

REV	SHEET