

# PHENIX WEEKLY PLANNING

TECHNICAL SUPPORT ZONE



10/4/12  
Don Lynch

# This Week

TECHNICAL SUPPORT ZONE

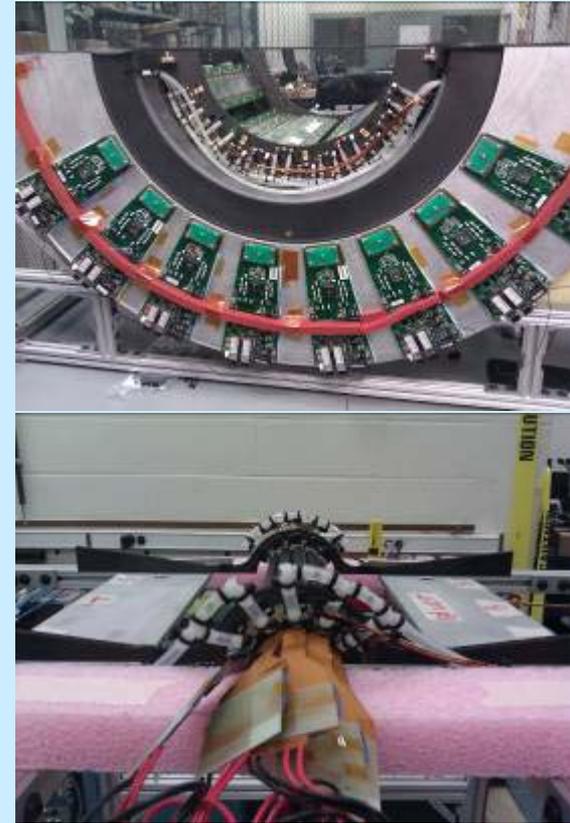
- Continue Repairs & Upgrades for MuTr Stations 2&3 N&S
- DC West Work Platforms and Tent installation, begin repairs
- Install MPC S, Continue MPC N Repairs
- Continue VTX/FVTX Repairs
- VTX Cooling System Upgrades
- RPC3 Gas Recirculation Upgrade
- RPC1 South Cooling Upgrade & Thermocouples
- sPHENIX design support
- MPC-Ex design support
- Begin Planning and Prep for RPC3 shielding

## Next Week

- Finish MuTr sta 1,2,3 S Repairs
- Continue Repairs & Upgrades for MuTr Stations 2&3 N
- Complete DC West Repairs, dismantle Work Platforms and Tent
- Finish MPC S re-install, Continue MPC N Repairs
- Continue VTX/FVTX Repairs
- Continue VTX Cooling System Upgrades
- Continue RPC3 Gas Recirculation Upgrade
- Complete RPC1 South Cooling Upgrade & Thermocouples
- sPHENIX design support
- MPC-Ex design support
- Begin Planning and Prep for RPC3 shielding

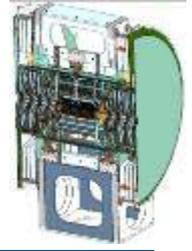
Dates are start dates and the work will be completed over the course of the week.

- Oct 1: Start B0 West assembly and testing
- Oct 8: Start B1 West assembly, expect to have 2 ladders from RIKEN this week. 1 repaired, 1 class-2
- Oct 15: Test East side detector and receive last 2 repaired ladders from RIKEN
- Oct 22: Complete B1 West assembly and test
- Oct 29: Complete testing east/west sides and prep for VTX/FVTX mating
- Nov 5: Mate VTX and install FVTX
- Nov 12: VTX/FVTX available for survey.
- Nov 19: Ready for installation (added by DL)





# FVTX Shutdown Work Schedule October 2012



# FVTX West Side Status

## SW Cage Work Completed:

- Sal repaired calibration circuitry LDOs (3) – all these ROCs tested to be fully functional
- SW5 ROC which was replaced tested to be fully functional
- SW0 had one fiber that would not latch – replaced with spare ROC that had calibration circuitry repaired by Sal, Eric debugging. Works now
- To Do – would like to replace SW4. When a station is plugged into one location it interferes with readout of the entire column (4 wedges). If we do not replace it, we would likely disable the one station and hope the rest can read out o.k. Schedule: expect to have replacement ROC by week of Oct 8.

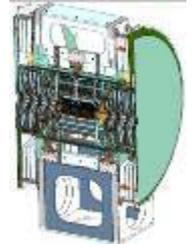
## NW Checkout

- NW5 data fiber did not latch at all – replaced missing cap, inductor on back side, o.k.
- NW3 one fiber did not latch at all - reprogrammed associated FPGA, o.k.
- To Do – would like to re-check that NW reads out well with all of our FPGA code updates (in first checkout, it had the most problems consistently reading out all wedges). Schedule: either wait for NW cage to be moved to Chemistry or move test stand over to Physics again and retest cage.

## Summary –

- all but one wedge reads out o.k. (of 192)
- Hope to fix bad wedge week of 8-Oct.
- But would like to re-check NW cage





# FVTX East Side Status

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## SE Cage Checkout

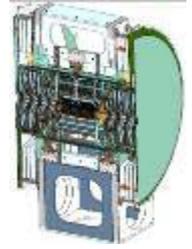
- SE1 has column 2, station 3 wedge absent (looking at history, it seems to have been gone the entire time it was in IR). Determine that wedge is the problem. **Would like to replace this wedge since it is accessible. Schedule: replace week of Oct. 8.**
- One wedge has high bias current draw – may not be able to do anything
- SE5, which was non-functional I IR, **was replaced and checked out o.k.**

## NE Cage Checkout

- NE0 has one non-functional fiber (takes out a wedge) **Sent ROC for repair, will try to replace with a fully functioning one. Schedule – replace week of 8-Oct or 15-Oct**
- NE1 Could not achieve slow control fiber optic sync from ROC→FEM **Fixed with solder job by Sal to on-board connector that had pads lifted.**

## Summary –

- **Two wedges out of 192 do not read out**
- **Hope to replace wedge and ROC week of 8-Oct (may be that ROC is replaced week of 15-Oct)**
- **Expect everything to be ready by week of 15-October**



# FPGA Code

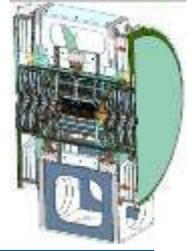
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## Various updates to FPGA code

- FEM data FPGA code updated (and updated from IR – found that June code that was posted had reverted a change from May). This has some code changes which may have addressed missing wedges
- FEM SC data FPGA code updated.
- All ROC Data FPGAs reprogrammed before collecting any data (latest updates from Sergey)
- All ROC SC FPGAs reprogrammed (change handling of TLK enables, FO reset). Also change BCO Start and Calibration commands with WEDGE\_ADDR tied to FF (rather than relying on it having been set and kept at a value)

Since code updates, have not seen missing wedges or poorly timed calibrations in the cage testing.

To do– is readout just as stable in IR using fibers there? – do we want to test with single ROC prior to moving full detector to IR or wait for full detector?



# ROC Board Repairs

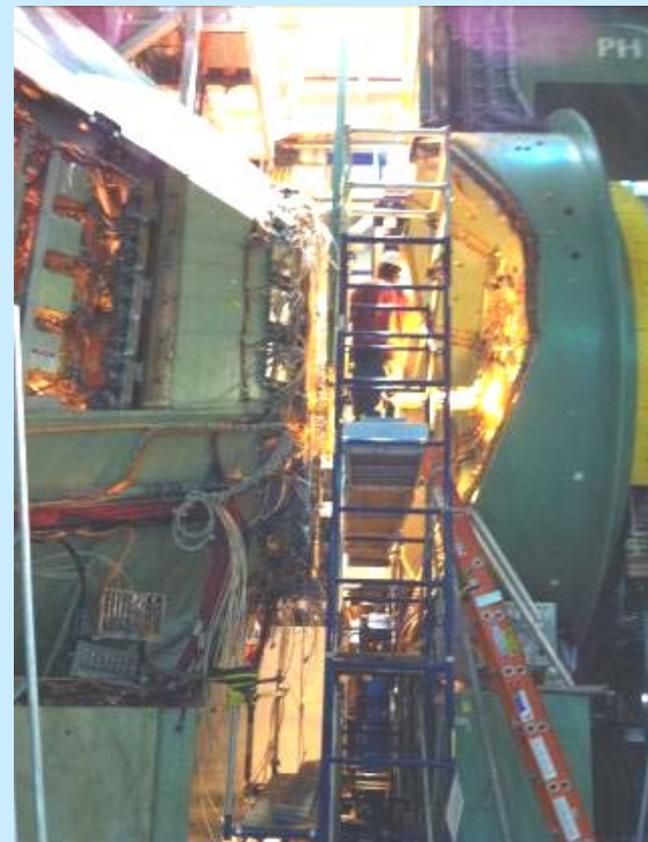
## 3 ROC boards are out for repair, 1 more in shipping

- **ROC #20** – slow control fiber transceiver damaged in IR – BiRa to replace pads that were ripped off and put new connector on
- **ROC #11** – having a data fiber SERDES replaced (had replaced missing resistor next to the TLK but latch still not achieved). Hoping TLK replacement will fix it.
- **ROC #25** –(1) replacing TLK which showed black residue around it when board was checked out. This is same board which had data fiber part shorted out to big-wheel. (2) Replacing inductor which took out data fiber transmitter
- **In shipping: ROC #15** – having a data fiber SERDES replaced (one fiber line missing, no external component problem found)

Order for 4 new ROC boards being placed by BNL. Delivery time will be few months due to parts delivery, etc.

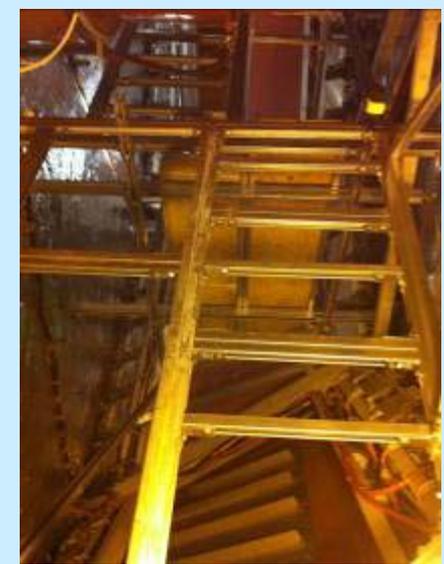
TECHNICAL SUPPORT NON

- Station-1 South re-capacitation and termination



# Clamp-on Terminator Installation on North & South Station-3

- Lower clamp-on terminators already installed for both north and south sta-3 (bottom 4 octants)
- With new work platforms that reaches all of sta-3; install remaining (upper) clamp-on terminators.



PHENIX DOCUMENTATION



# MPC Repairs -

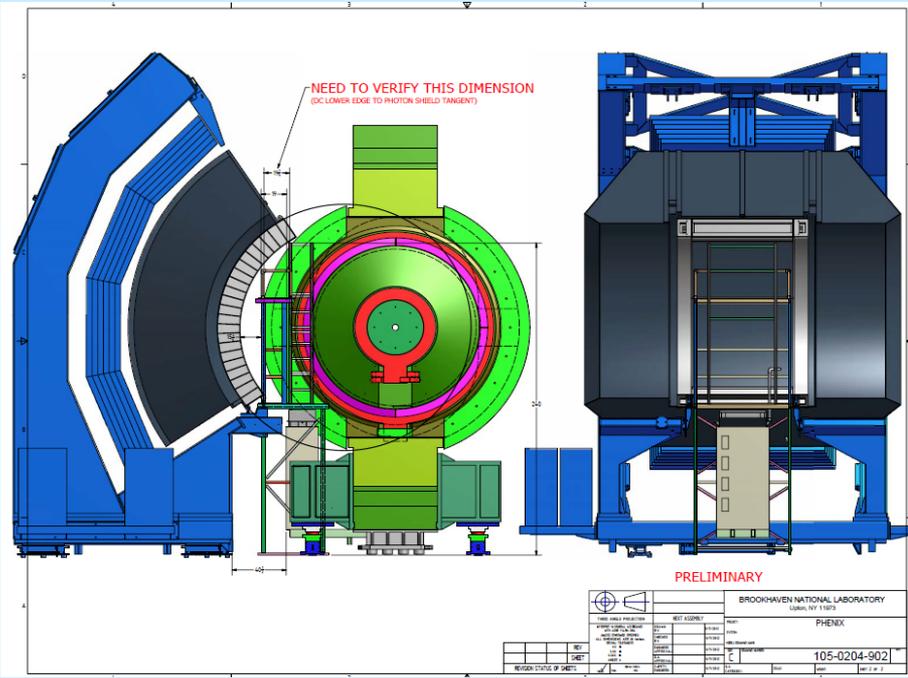
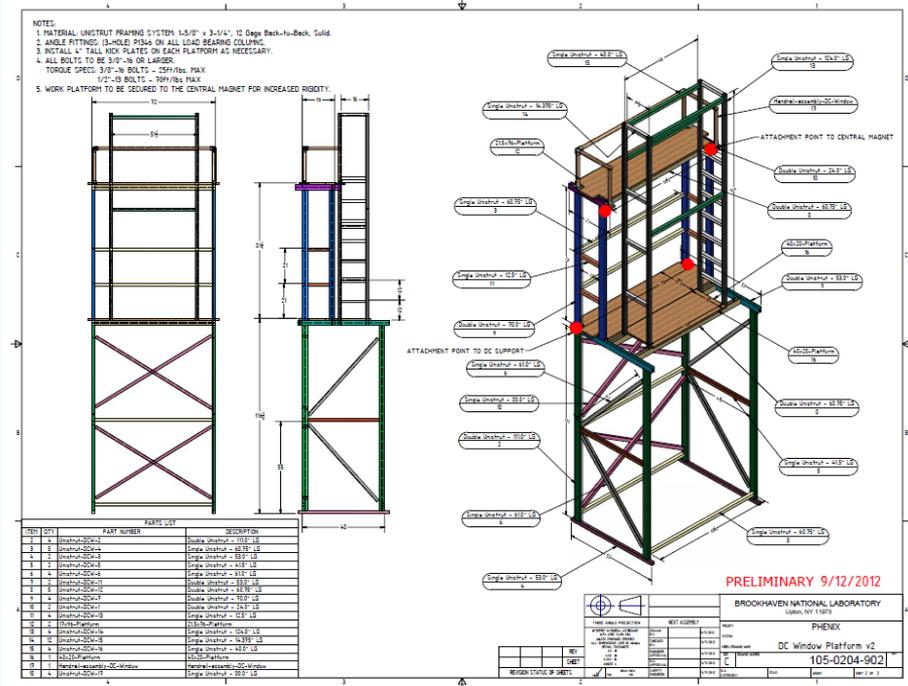
North MPC Removed for Evaluation



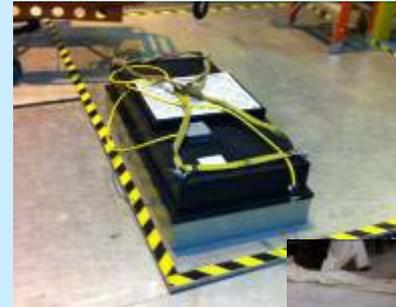
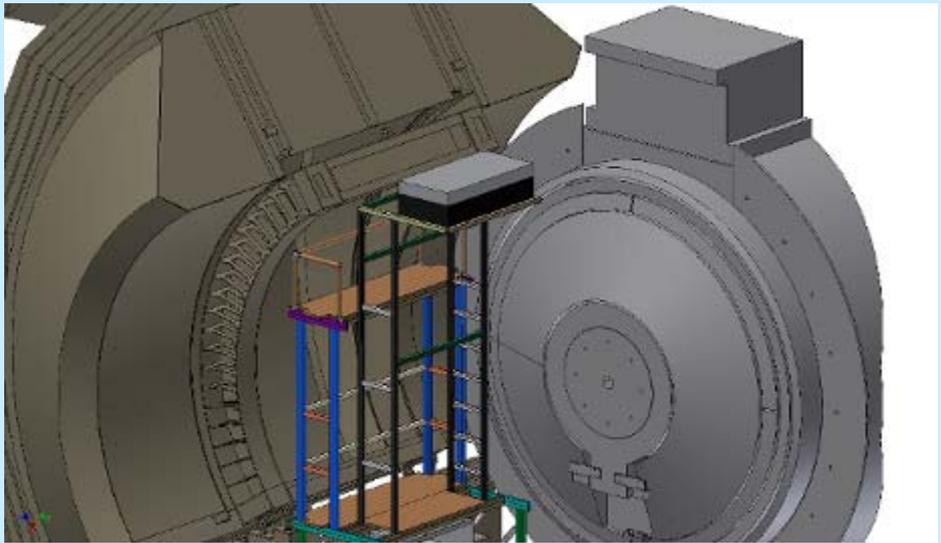
# DC West Repairs

The plan for the DC West Repairs is as follows:

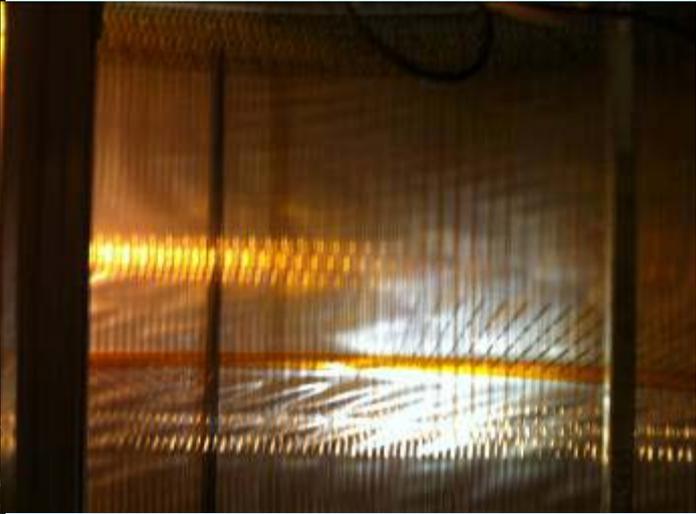
- Gather drawings and materials from DC group - Done
- Make measurements, new drawings and create parts lists as necessary - Done
- Procure/fabricate parts - Done
- Design work platforms and protective covering to access and protect DC west during disassembly/ reassembly. CAD approval received - Done
- Work Permit approved - Done
- Disassemble existing window and sealing components
- Repair/remove broken wires, etc.
- Install new window and seal.
- Leak and functional tests



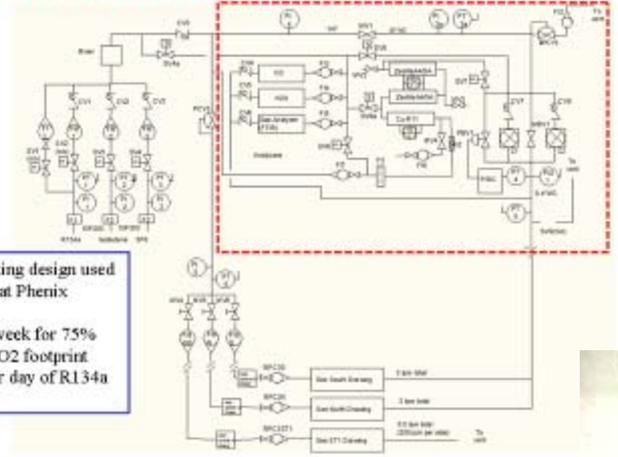
TECHNICAL SUPPORT NON



TECHNICAL SUPPORT NON



### Run 12 Shutdown Work Overview Gas/Cooling Systems Recirculating Upgrade to RPC Gas System



- Based on working design used for many years at Phenix
- Save money
  - \$3k per week for 75%
- Reduces lab CO2 footprint
  - 60 lbs per day of R134a

June 20, 2012

### RPC Recirculation Upgrade



### VTX/FVTX Cooling Upgrade

# RPC Station 1 North and South Cooling Upgrade

TECHNICAL SUPPORT TEAM



North

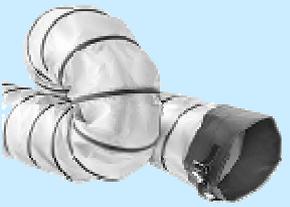


South

TECHNICAL

PORT-NON

South



RPC1 Cooling

North



Item Number/Brand	89685804/Allegro
Type/Power	Axial Blower/Electric
Inlet/Outlet Size (Inch)	8
Cubic Feet per Minute (CFM)	625 (Two 90 Bends); 650 (One 90 Bend); 900 (Free Air)
Horsepower (HP)	0.33
Explosion Proof (Yes/No)	Yes
Blower Casing Material	Polyethylene
Number of Speeds	1
Maximum Voltage Rating (V)	115.00

TECHNICAL SUPPORT ROOM



Looking towards RPC3 North  
← East                      West →

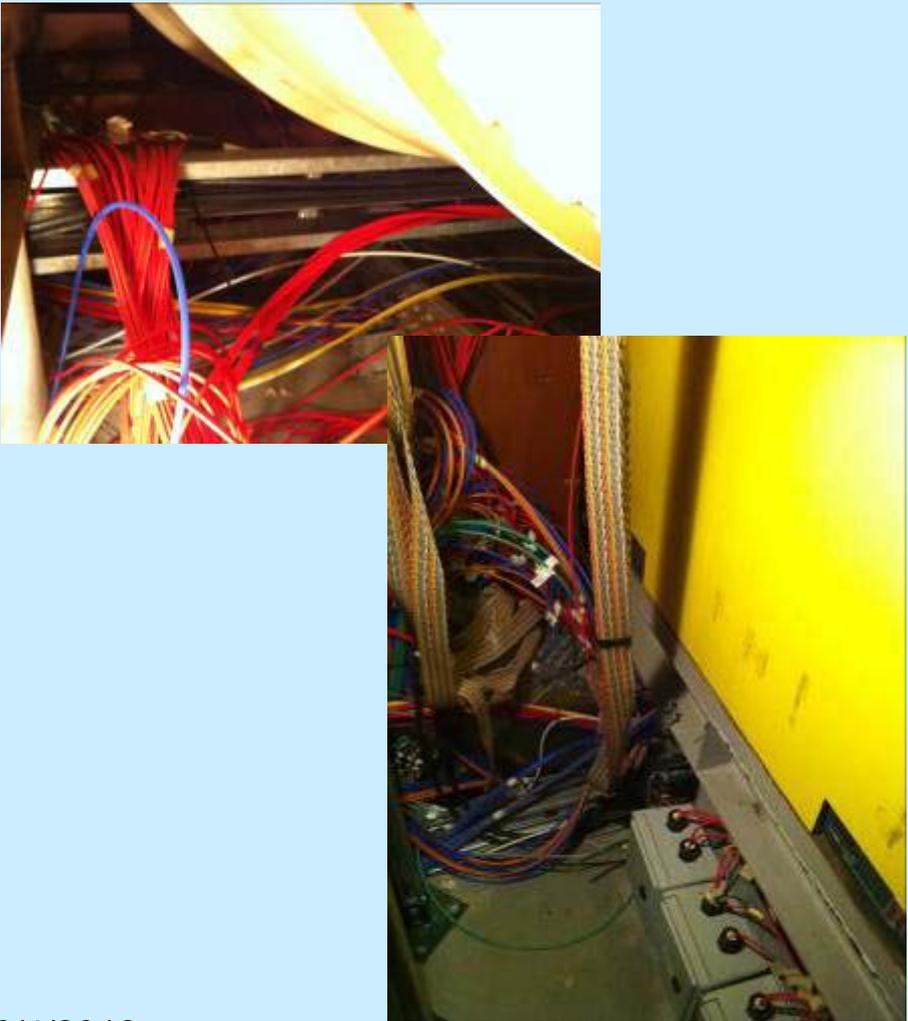


Looking towards RPC3 South  
← West                      East →

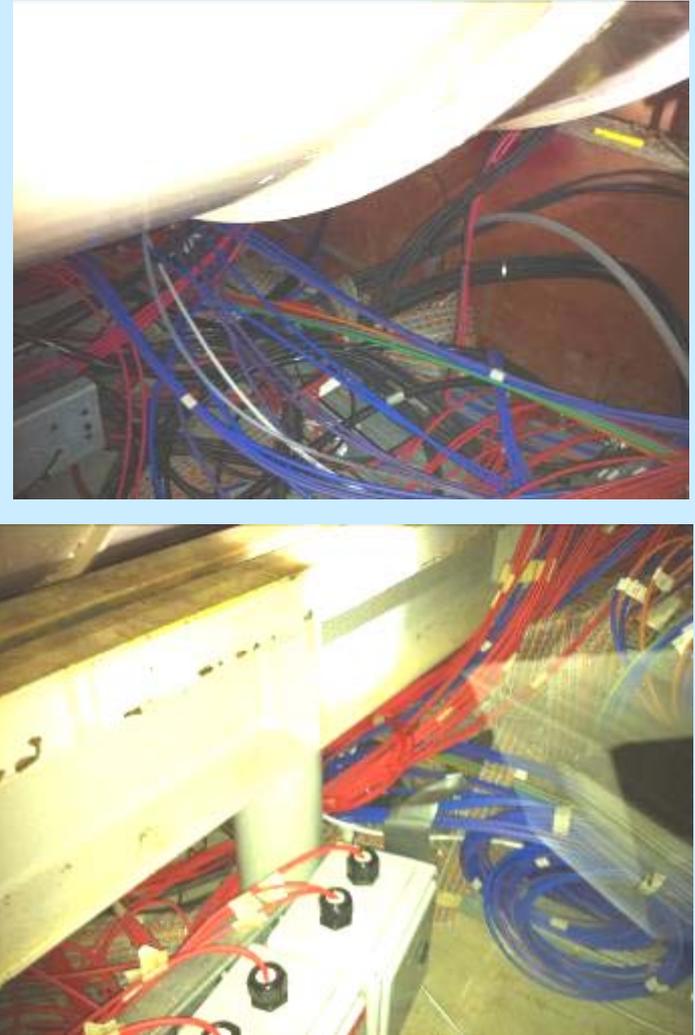
# RPC Background Attenuation Project

TECHNICAL SUPPORT NON

Under DX at RPC3 North  
← East                      West →

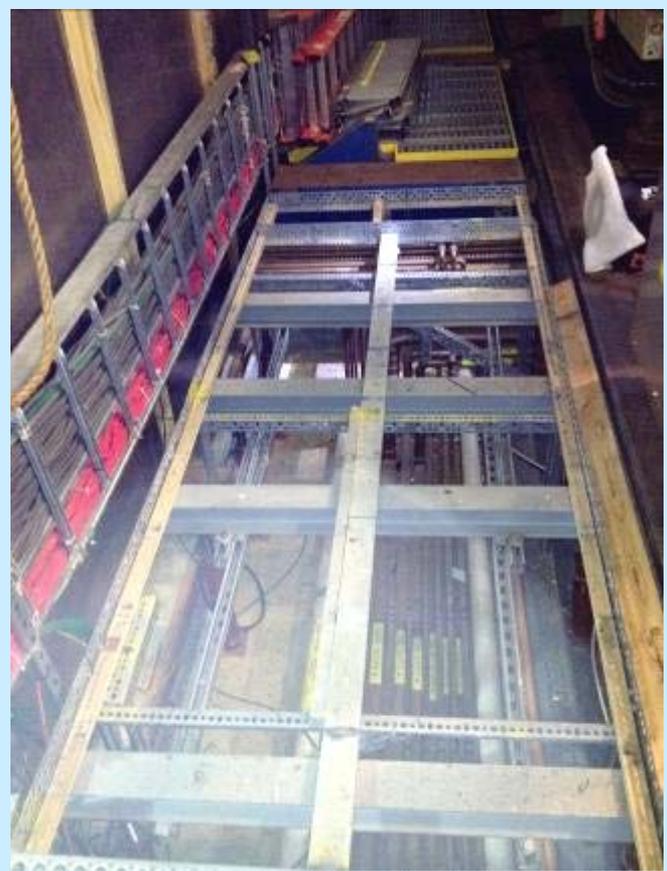


Under DX at RPC3 South  
← West                      East →



TECHNICAL SUPPORT NON

# MuID Collar IR Holding Area Support



- Structural support improvements designed
- Parts to be ordered
- Installation this fall prior to EC roll in

New Electrical Work for 2012 Shutdown, to be accomplished as time is available

1. Add Transient Surge Suppressor to 3 phase power panel on the Central Magnet Bridge.
2. The Gas Mixing House Breaker Panel for the Gas Mixing side is almost out of spare breaker slots and needs to be reviewed for increased capacity panel to replace it.

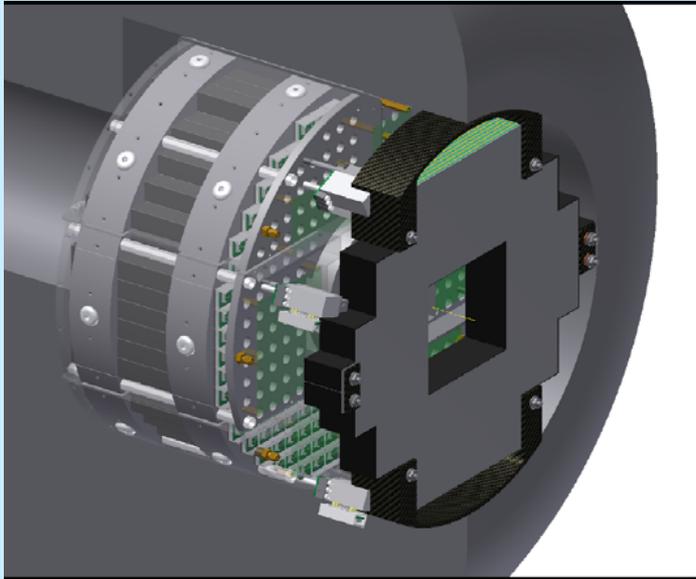
Additional Work for 2012, not yet scheduled, to be fit in as available

1. Replaced aging magnet hoses (CM only)
2. identify obsolete services passing through sill and remove them.
3. Cover for services coming from IR through sill.
4. Plan for stripping out TEC electronics and services to free up TEC racks.
5. Add limit switch and improved spooling control for window washer cable.

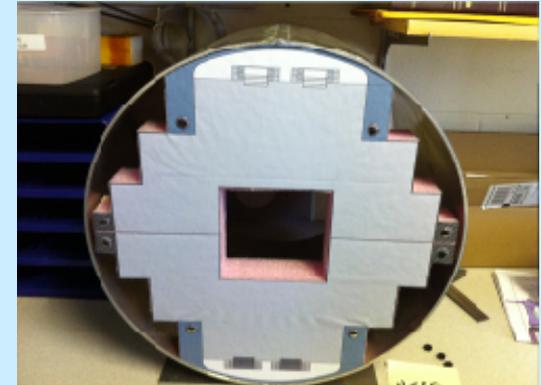
PHENIX Electronics Upgrades

1. Replace remaining RS-485 type ADAMs on West carriage with MODBUS/TCP type.
2. Install Ethernet switches and MODBUS/TCP ADAMs on Central Magnet arm.
3. Install second MODBUS server in counting house.
4. Install MTP patch bay and jumpers for FVTX in counting house.
5. Add several backup MTP fibers from CH to IR

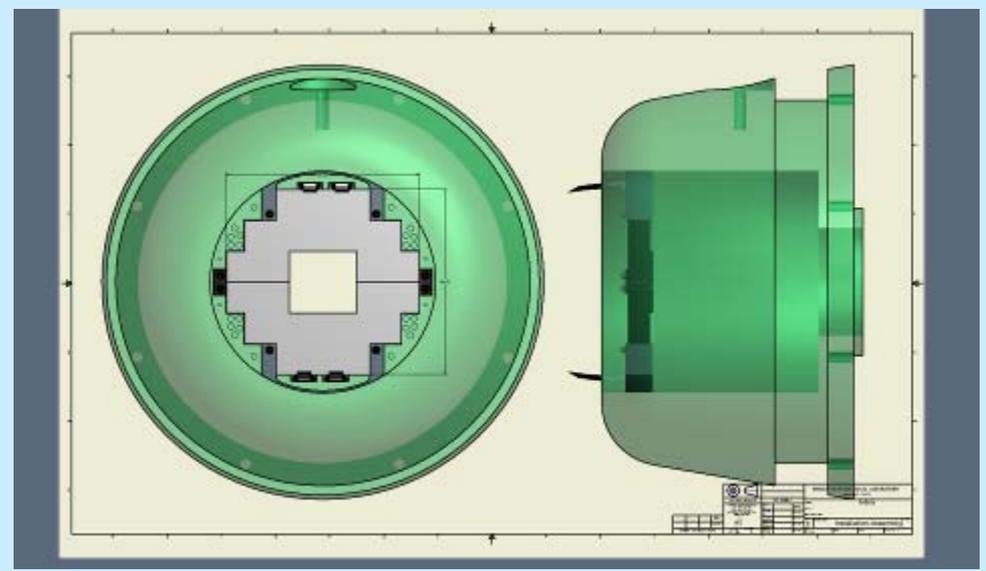
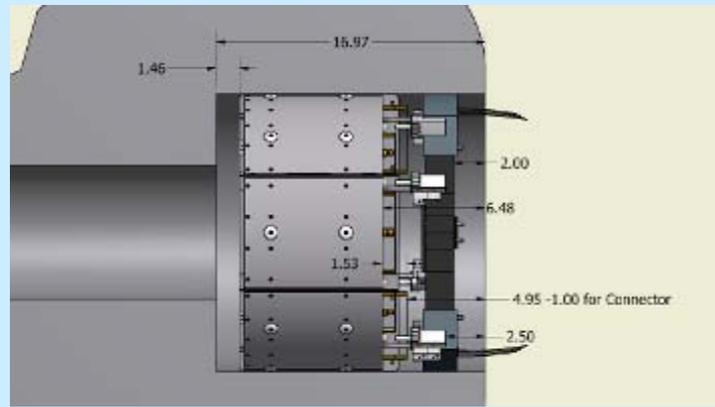
TECHNICAL SUPPORT NON-IRON



MPC-Ex Approved this week

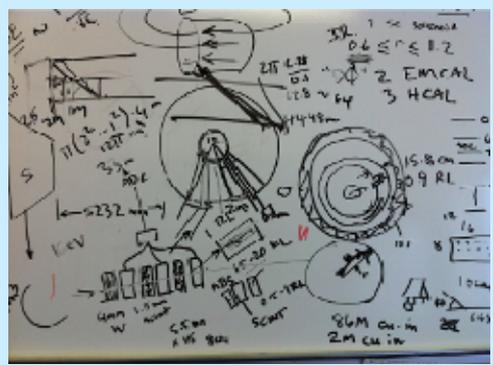
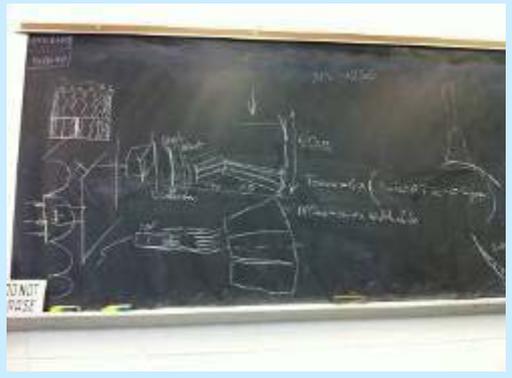


Foam Mockup

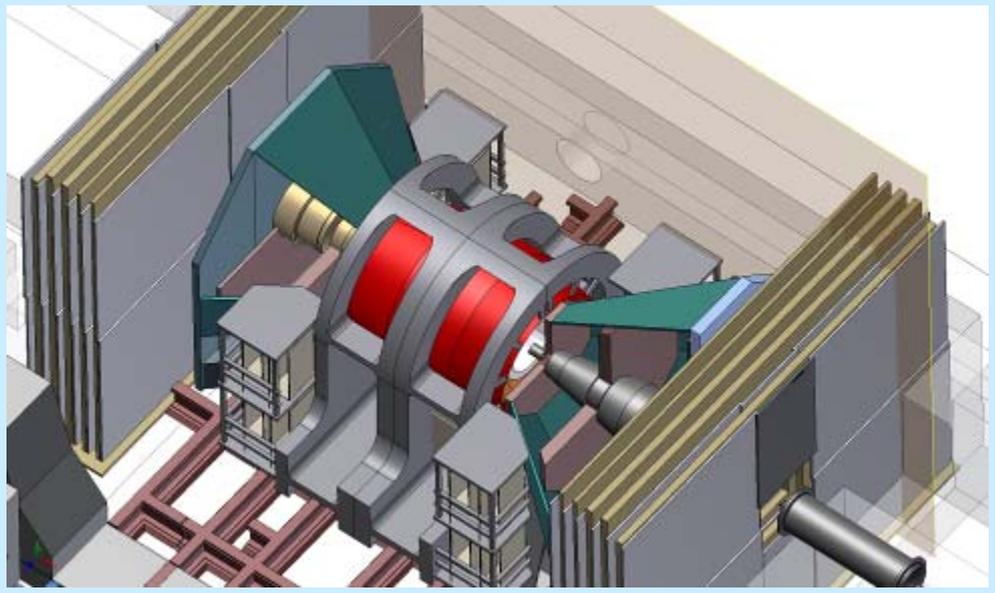


TECHNICAL SUPPORT NON-

HCal Initial Prototype Spec



sPHENIX Initial Specifications



BNL Review

Draft Practice 9/24/12 Done

Dress Rehearsal 10/1/12 Done

Presentation to reviewers 10/5/12,

### Procedures for Shutdown 2012

- Existing PHENIX General Purpose Recurring Task procedures -Done
  - VTX Removal -Done
  - FVTX/VTX installation -Done
  - VTX Survey -Done
  - FVTX Survey -Done
  - FVTX Cooling SystemUpgrades -Done
  - MuTr Maintenance & Upgrade (stations 1 2 & 3) -Done
  - MuTrigger Maintenance and Upgrade -Done
  - DC Repair - Incl. in WP - Done
  - MPC removal and re-installation - incl in WP -Done
- Procedures will be part of 1 WP for VTX and FVTX
- Incl. in separate WP's for MMN and MMS entry

### Work Permits for Shutdown 2012

- Start of Shutdown (PHENIX) -Done
- VTX Removal/FVTX/VTX Installation -Done
- MuTr/MuTrigger Maintenance and Upgrade 3 WP's: Station 1, MMN and MMS work -Done
- RPC1 Cooling Upgrade (PHENIX) -Done
- DC West Repairs - Done
- MPC repairs -Done
- VTX/FVTX Cooling Upgrade (PHENIX) -Done
- RPC Recirculation Upgrade (PHENIX) -Done
- RPC Background Attenuation Shielding 2 - in progress
- End of Shutdown (PHENIX)

TECHNICAL SUPPORT

MuTr Station 1 Re-cable, re-hose and test	10/5/2012
Re-capacitation and air manifold upgrades	
Station 3 South (upper half)	10/19/2012
Remove Station 2/3 South scaffolding	10/26/2012
Re-install MMS lampshade	10/31/12
Station 3 North (upper half)      Scaffolding	Done
Capacitor Clamps and air manifolds	11/9/2012
Remove station 2/3 scaffolding	11/16/2012
MPC South repairs	Done
MPC South Installed	10/5/2012
RPC 1 South cooling upgrade	10/12/2012
RPC1 South Thermocouples	Done
Remove Station 1 Scaffolding	10/15/2012
Move CM South, Open station 1 North	10/16/2012
VTX Cooling System Upgrades	10/5/2012
RPC Recirculation Upgrade	11/2/2012
Repair upgrade, reassemble VTX/FVTX	In Progress
Test, survey (at Chemistry and IR) and re-install VTX/FVTX	10/5-11/16/12
Substation breaker upgrade/test (CAD)	8/20-9/30 ?
DC West maintenance (replace window)	9/15-10/15
RPC Shielding under DX magnets	11/21/2012
RPC tunnel Shielding (Dave Phillips)	12/14/2012
Reinstall MPC North	10/26/2012

TECHNICAL SUPPORT ZONE

RPC1 North Cooling upgrade	10/26/2012
RPC1 North Thermocouples	10/26/2012
Window Washer pin & spool upgrades	11/21/2012
MuID IR storage support	11/21/2012
Veterans Day Holiday	11/12/2012
Pre-run commissioning and prep for run 13	11/1-12/31/2012
Prep for EC roll in	11/12-11/21/2012
Thanksgiving Holidays	11/22-23/2012
Roll in EC	11/26-11/30/2012
Prep IR for run	12/3-12/7/2012
Pink/Blue/White sheets	12/7-12/21/2012
Christmas Holidays	12/24-25/2012
Start run 13	1/1/2013

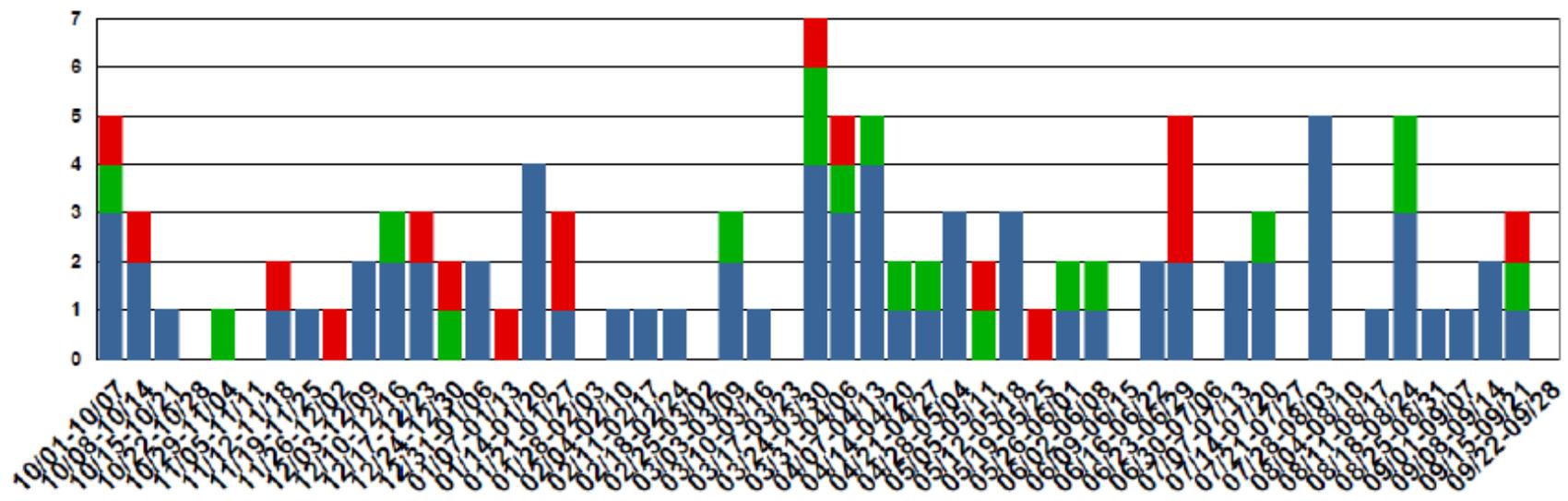


1. Tier 1 Safety walkthru yesterday: no major problems:
  - (a) stuff on top of racks in rack room to be removed
  - (b) hanging box in rack room to be supported,
  - (c) 2 bottles on gas pad need status labels,
  - (d) add hazard diamond to R131A shed.
  
2. Configuration management procedures (4 new procedures: procedure preparation, work planning, configuration management and documentation control) approved, published, on line with all other PHENIX active procedures at:
 

[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/Active\\_Procedures.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/Active_Procedures.htm)
  
3. Current status for the various fixed ladders at PHENIX (Carter Has work permit for yellow tagged):
  - Ladders to West carriage, Yellow Tagged
  - Ladder to Eyebrow: Yellow Tagged : also, a work around is in place- use new cross over from bridge.
  - Ladder to Muon ID Steel in Southeast IR: Yellow Tagged
  - Ladder to Muon ID Steel in Northeast IR: Yellow Tagged to 2nd platform : work around use yellow tower ships stairs and access from top level.
  - AH ladder to crane: Yellow Tagged
  - Southwest of MuID steel: Yellow Tagged
  - Ladder to mezzanine over tech offices to 30 ton AC air handling unit: not yet inspected, effectively red tagged. This ladder is needed to service AC. Evaluation is in progress.
  - Ladder to PHENIX roof over tech offices. Used by AC techs to service 30 ton AC compressor. Not yet inspected, effectively red tagged. Will impact schedule if AC fails.Evaluation is in progress
  - Northwest of MuID steel: Not inspected yet, effectively red tagged : do not use, no work around.

TECHNICAL SUPPORT NON

### Injuries Per Week (FY) As of 9/28/2012

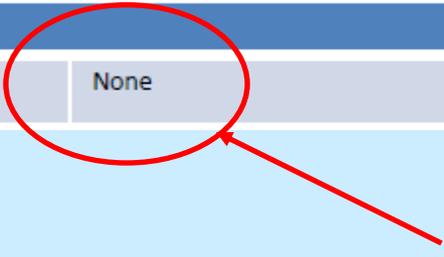


**Injury Status:**

FY12 YTD: DART – 17, TRC – 35, First Aid – 70  
 FY11: DART – 30, TRC – 44, First Aid – 45  
 FY10: DART – 19, TRC – 33, First Aid – 52

FY12 Injury Listing: <https://intranet.bnl.gov/esh/shsd/seg/Occlnj/BNLInjuries.aspx>

Recent Injuries	
	None



Good end to FY11

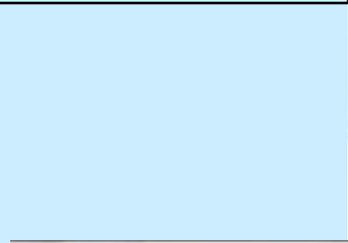
TECHNICAL SUPPORT NON

Recent Events

9/27/12	Non-Reportable	At approximately 11AM BNL electricians found that a recent shipment of flexible metal conduit (Sealtite) was not properly labeled. To preclude a possible safety hazard, the suspect conduit was not installed and the vendor notified. UPDATE: Upon further evaluation, the suspect electrical conduit was not "found in any application whose failure could result in a loss of safety function, or present a hazard to public or worker health and safety." Therefore this condition is not reportable to DOE. The BNL Suspect/Counterfeit Parts SME has been alerted to this issue and will initiate appropriate action. <a href="#">Event Link</a>

# Where To Find PHENIX Engineering Info

TECHNICAL SUPPORT ZONE



[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_SSint-page.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm)

