

# PHENIX WEEKLY PLANNING

TECHNICAL SUPPORT



6/9/2011  
Don Lynch

TECHNICAL SUPPORT 2011

No Scheduled Maintenance Access, next scheduled access Wednesday June 15

Short access to fix DC boards - successful

AH Crane repairs - in progress

Prepare for ESRC reviews (week of June 20 - 24)

Summer students begin:

Morgan Poulos-Keating: to be working with Rob on RPC gas recirculation

Alan Sweet: to be working with Don on PHENIX CM upgrade logistics

Work Permit for MuTr Station 2/3 re-cap clamps - Done (at CAD for approval)

Schedule MuTr lifting fixture re-certification test - at CAD for approval

Order parts for new racks (FVTX & RPC1) - in progress

Continuing mechanical, electrical and gas system support for Run 11

Continue planning for shutdown 2011

Future upgrades support

## Next Week

Scheduled maintenance access Wednesday June 15?

RPC Back scatter shielding in north tunnel

MuTr decap clamps test in MMN

Prepare for ESRC reviews (week of June 20-24)

Summer students begin:

Morgan Poulos-Keating: to be working with Rob on RPC gas recirculation

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Work Permit for MuTr Station 2/3 re-cap clamps

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Order parts for new racks (FVTX & RPC1)

Continuing mechanical, electrical and gas system support for Run 11

Continue planning for shutdown 2011

Future upgrades support

# Planning For the 2011 Shutdown

TECHNICAL SHUTDOWN

Prep for shutdown	2/1-6/30/2011
<ul style="list-style-type: none"> <li>Define tasks and goals</li> <li>Analysis and design of fixtures, tools and procedures</li> <li>Fabricate/procure tools and fixtures</li> <li>Tests, mockups, prototypes</li> <li>Receive, fabricate, modify, finish installables (bigwheels, tubing, etc.)</li> </ul>	
<ul style="list-style-type: none"> <li>MuTr, RPC1 and VTX/FVTX installation review (combined)</li> <li>Assembly and QA tests</li> </ul>	~6/15/2011
AH Crane temporary reconfiguration (crane out of service during reconfig)	4/15-6/3/2011
<b>End of Run Party</b>	<b>6/23/2011</b>
Run 11 Ends	6/29/2010
Shutdown Standard Tasks	7/1-7/21/2010
<ul style="list-style-type: none"> <li>Open wall, disassemble wall, Remove MuID Collars,</li> <li>Move EC to AH, etc.</li> </ul>	
PC1 repairs - Anders O.	7/1-7/10/2010
IR Crane repairs and upgrade	7/21-7/28
Disassemble VTX services	7/11-7/22
Remove VTX and transport to Chemistry Lab	7/25/2011
BBC North maintenance	7/22-7/29/2011
MuTr North Station 1 work	
<ul style="list-style-type: none"> <li>Install access (Sta. 1 work platforms &amp; CM west side hanging platform)</li> <li>Remove 1 section of bridge (1 week) <b>(CAD Techs)</b></li> <li>Disconnect Cables, hoses etc, ID/label all (1 week)</li> <li>Remove FEE plates and chambers (1 week)</li> <li>Station 2 Maintenance/upgrade through access opened by station 1 removal (3 weeks concurrent with next task)</li> <li>Clean/install new parts and upgrades (MuTr (3 weeks, concurrent At RPC Factory)</li> <li>Re-install chambers and FEE plates (1 week)</li> <li>Re-cable, re-hose and test (3 weeks)</li> </ul>	<b>7/25-7/29/2011</b> <b>8/1-8/5/2011</b> <b>8/8-8/12/2011</b> <b>8/15-8/19/2011</b> <b>8/22/-9/9/2011</b>  <b>8/22/-9/9/2011</b>  <b>9/12-9/16/2011</b> <b>9/19-10/7/2011</b>

6/9/2011

# Planning For the 2011 Shutdown (cont'd)

TECHNICAL SUPPORT 2011

- MuTr North & South Station 2 & 3 Re-cap clamps (No internal work platforms to upper octants) (Need CAD Techs to remove MMS east vertical lampshade) 7/25-10/31/2011
- VTX maintenance/upgrade and integration of FVTX onto VTX support structure 7/25-9/25/2011
  - Build 2 FVTX racks
  - Disassemble/repair/upgrade/test/integrate VTX (3 weeks)
  - Resurvey as necessary (1 week)
  - Install FVTX (3 weeks)
  - VTX/FTX survey and QA tests (2 weeks)
- RPC1 upgrades 7/25-10/28/2011
  - Pre-survey RPC1's at factory (2 weeks, 1 each for n & s) 7/25-8/12/2011
  - Build 1 new rack, upgrade existing RPC1 prototype rack 7/25-8/12/2011
  - Install north RPC1 (including north rack) (3 weeks) 8/15-9/2/2011
- Move Station 1 work platforms to south station 1 10/10-10/14/2011
  - Install south RPC1 (including south rack) (3 weeks) 10/17-11/4/2011
- Upgrade AH crane 8/15-9/15/2011
- DC/PC1 East troubleshooting (DC moved forward on rail for access) 10/15-11/15/2011
- Install VTX&FVTX (including installation of 2 racks on bridge) (2 weeks) 9/26-11/7/2011
- Undefined detector subsystem maintenance and repairs 7/25-11/7/2011
- Prep for EC roll in, **reinstall MMS lampshade** 11/3-11/7/2011
- Roll in EC 11/10/2011
- Prep IR for run 11/10-11/17/2010
- VTX, FVTX and RPC1 Services and commissioning (including 4 new racks) 9/16-11/30/2011
- Pink/Blue/White sheets 11/17-11/30/2011
- Run 12 cooldown 12/1/2011

*VTX and FVTX disassembly/upgrade/re-assembly/test/integration/survey tasks are not well defined and and/or scheduled - more info needed*

# Electronics Group 2011 Shutdown Tasks

TECHNICAL SUPPORT 2011

- CMT4 and CMT5 FVTX rack design and assembly for installation on the bridge. *Design in progress.*
- FVTX Bias cable assemblies.
  - 48 eight pair #22AWG. 1680 ft total.
  - 384 RG-174 cables terminated with CPC and MMCX R/A conns. 1500 ft total.
  - All parts are on order. Drawing finished and out for bid. .*
- Purchase and install FVTX LV cables.
  - Wedges: 96 eight pair #22AWG terminated in DF11 conns. 3400 ft total.
  - ROCs: 24 twelve pair #16AWG terminated in TYCO 2-106527-4 conns. 900ft total.
  - Cable is on order.*
- All FVTX fiberoptics specify, purchase and install.
  - MTP trunk order entered. Slow Controls fiber and patch bay order entered .*
- FVTX LV output mapper boards. *Eric Mannel is designing and we will assemble.*
- PbSc terminator board production. *Part kit has been picked up. Terminators expected by 6/22.*
  - MuTr capacitors are here*
- West carriage ADAM system performance upgrade.
  - Purchased a couple of Ethernet ADAMs for testing. Need to purchase a MODBUS server.*
- Complete the GL1 6X1 Multiplexer assemblies and test. *Layout stage begun .*
- LeCroy HV control retrofit testing. *Waiting for documentation from Debrecen Institute.*
- Design/Install FVTX Interlock system.
  - Paul with some input from me and John. Also we may try to repair the bad TC connections.*

Tools/Fixtures Needed for Shutdown 2011

TECHNICAL SUPPORT - 2011

- FVTX/VTX modified assembly fixture - in progress
- FVTX Inspection Tool(s) - not yet specified
- Modified FVTX/VTX installation/transport fixture(s) - in progress
- Station 1 north/south work platforms - in progress
- RPC1 assembly fixture(s) - RPC1 design under review
- RPC1 transport/installation fixture(s) - RPC1 design under review
- MuTr vacuum lifter dummy load (for load test and mock install) - in progress
- MuTr stations 2/3 north access work platforms - In design queue
- MuTr stations 2/3 north assembly/positioning/holding fixture - MuTr group to supply

## Parts Needed for Shutdown 2011

TECHNICAL SUPPORT NOTES

- Improved/upgraded VTX parts - not yet specified
- VTX assembly(s) - not yet specified
- FVTX support structure - in progress
- FVTX big wheels - parts fabricated by FVTX group; **at brazer due 6/30**
- Big wheel mounts - by FVTX group - **parts at CS, due 7/15**
- VTX arc cable trays and mounts - Design done, fabrication in progress
- RPC1 components/assemblies - by RPC group in progress
- RPC1 mounting/installation components - **at CS due 7/15**
- BBC N& S wire management modifications - in progress
- MuTr station1/2/3 Repair/upgrade components - parts to be supplied by MuTr group. **(Dry air channel modifications needed, Mike Leitch to provide scope info.)**

## Parts Needed for Shutdown 2011

TECHNICAL SUPPORT 2011

- Parts for Other Shutdown Work
  - Misc. Subsystem Part(s) - not yet specified
  - Gas Mixing House Maintenance and upgrade parts - not yet specified
  - PHENIX Infrastructure Maintenance and improvement parts - not yet specified
  - Gas Pad maintenance/repair/upgrade parts - not yet specified
  - PC1/DC repairs and improvements parts - not yet specified
  - IR Bridge electrical service upgrade parts - not yet specified
  - FoCal Support parts - not yet specified
  - RPC Factory Support parts - not yet specified
  - Rack room upgrades parts - not yet specified
  - CM Crane parts - project is on hold indefinitely
  - CM Alignment Stop parts - in design queue
  - Gas system maintenance/repair/upgrade parts - not yet specified
  - Future upgrade support parts - not yet specified

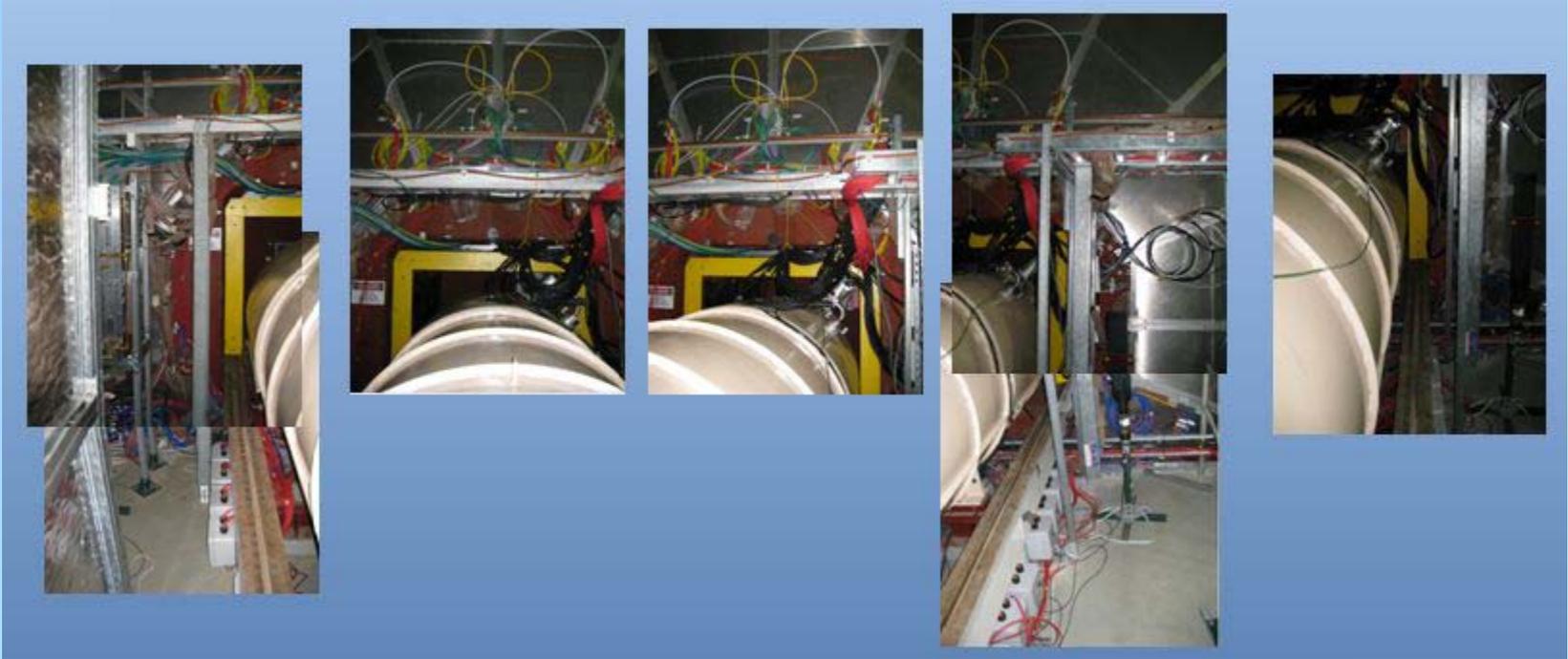
### Procedures for Shutdown 2011

- Existing PHENIX General Purpose Recurring Task procedures
  - VTX Removal
  - FVTX/VTX installation
  - VTX Survey
  - FVTX Survey
  - FVTX Cooling System
  - RPC1 Installation/QA testing/Survey
  - MuTr Maintenance & Upgrade (stations 1 2 & 3)
  - MuTrigger Maintenance and Upgrade
- Procedures will be part of 1 WP for VTX and FVTX
- Procedure will be part of WP for RPC1

### Work Permits for Shutdown 2011

- Start of Shutdown
- VTX Removal/FVTX/VTX Installation
- MuTr Maintenance and Upgrade
- RPC1 Installation
- MuTrigger Maintenance and Upgrade
- PC1
- End of Shutdown

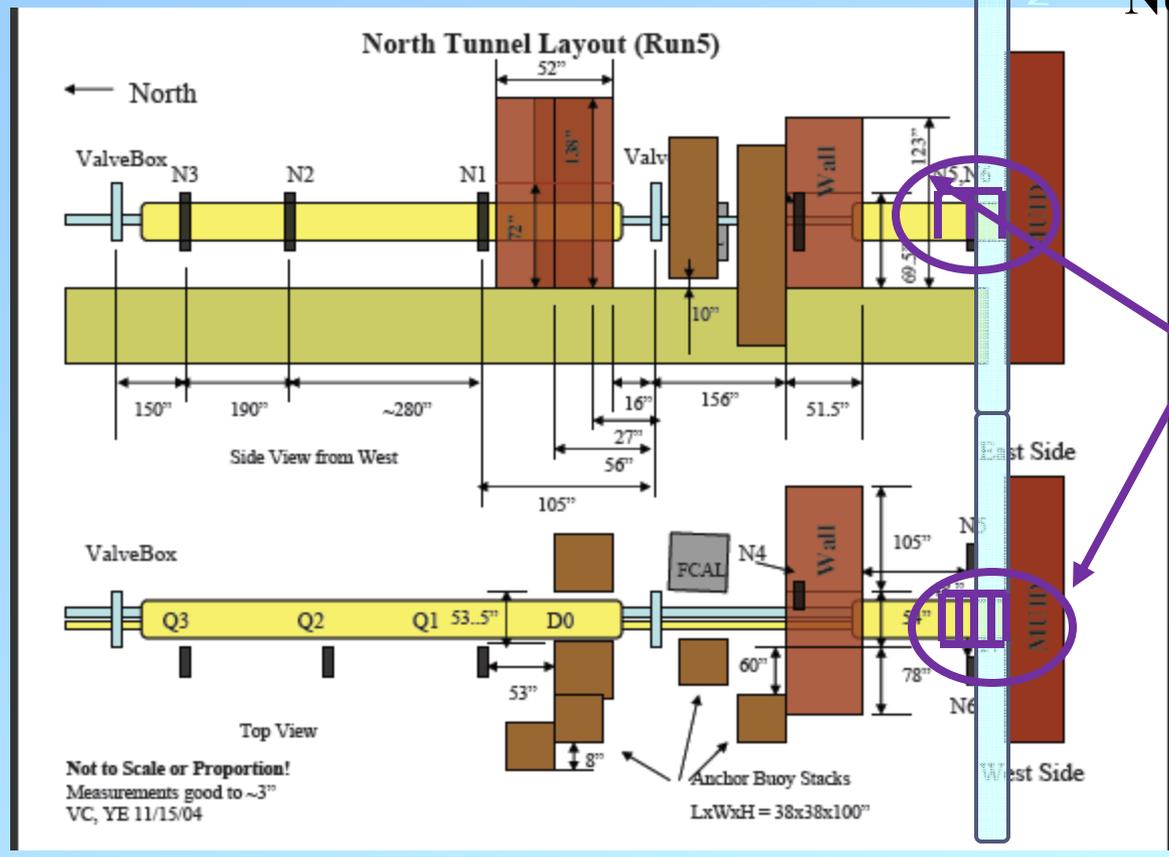
TECHNICAL SUPPORT NO. 1



RPC North Current configuration

TECHNICAL SUPPORT NO. 1

RPC3  
North



Unistrut Frame mounted on rails, attached to rails at one end to square shield at the other end (pre-existing tapped holes). Approx. 8-" long. Led blankets laid on top.



Lights and fans for students soldering workstation outside of RPC Tent

TECHNICAL SUPPORT 2011

# North Station-1 and -2 Re-capacitation & Termination

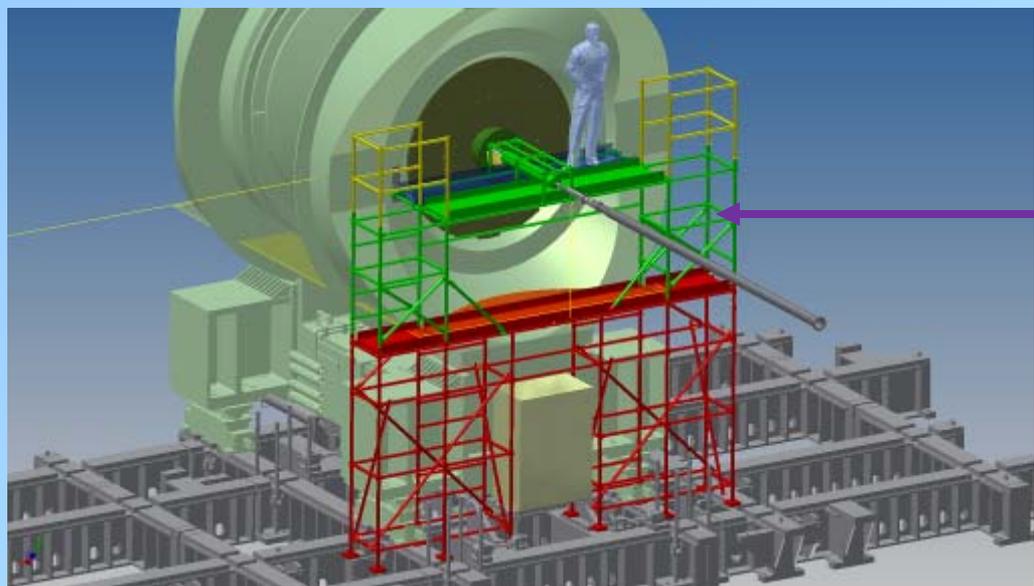
Reduces cross-talk/big pulses by factor of ~3

- documentation & disassembly
- install north station-1 capacitors (gaps 2,3) & terminators
- install terminators on upstream parts of north station-2 (concurrent with above)
- reinstall station-1 chambers and FEE
- re-cable, get working, & extensive testing (with HV/gas)



TECHNICAL SUPPORT

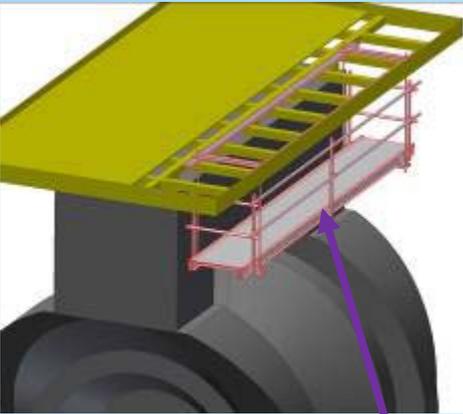
MuTr & RPC1 Work platform



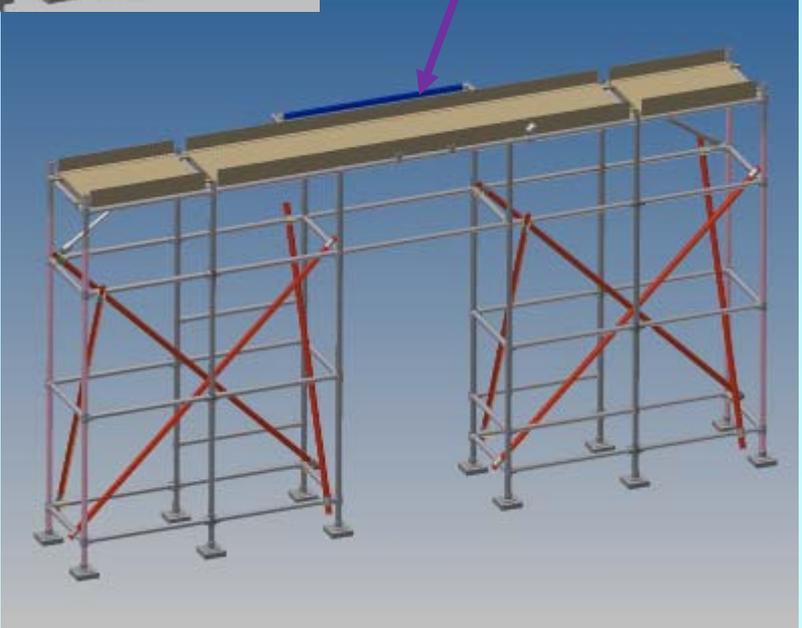
Station 1 Work Platform

Upper level

Lower level (safety rails not shown)



CM West Suspended Platform



TECHNICAL SUPPORT NO. 1



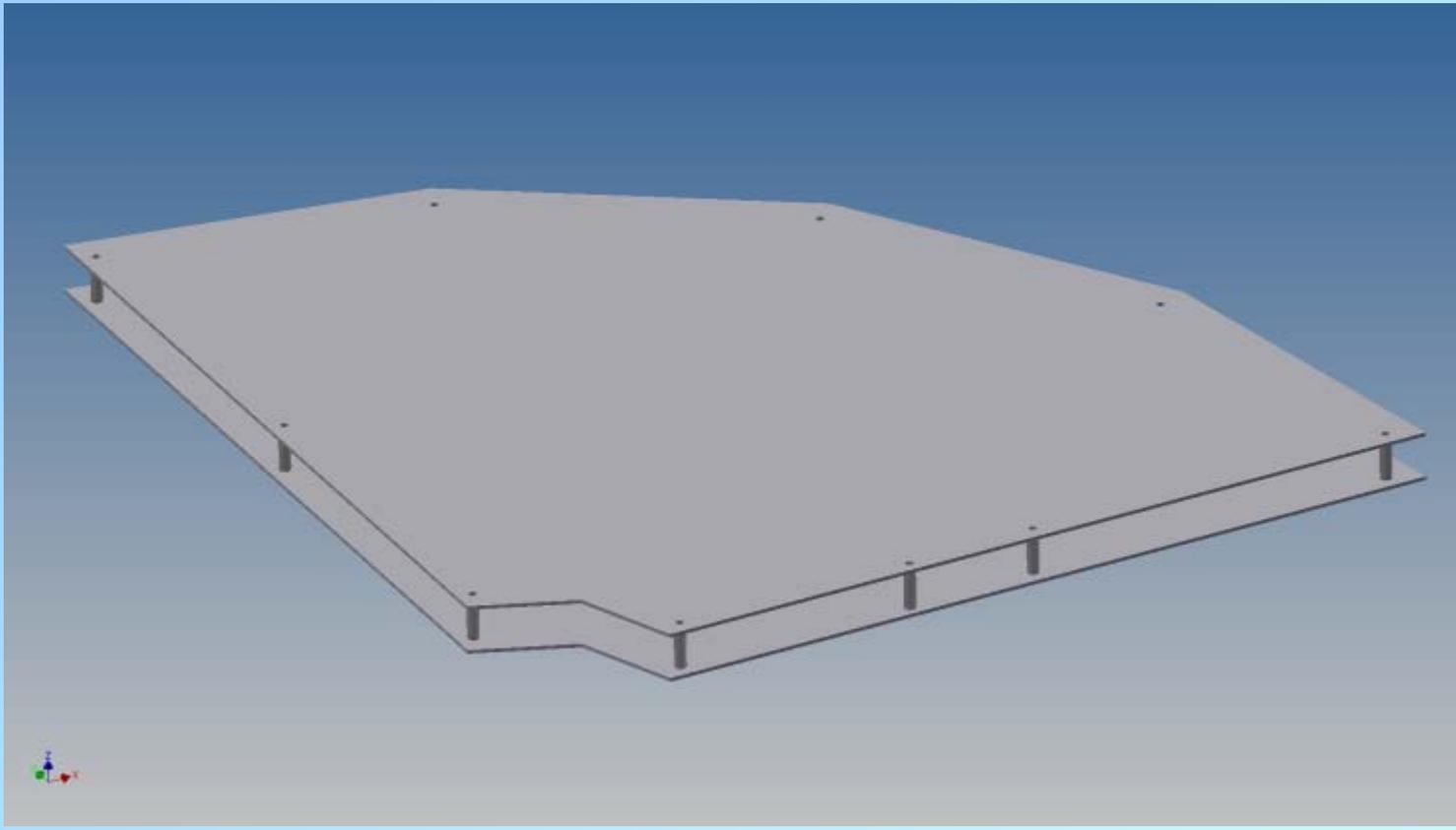
Station 2 access (MMS shown  
MMN is similar)

TECHNICAL SUPPORT



MuTr station 1 lifting fixture  
Re-certification analyses  
submitted to CAD





Dummy MuTr Station 1 Octant. Will be used to re-qualify vacuum lifting fixture and to practice using vacuum lifting fixture prior to removing station 1 north octants. Fabrication in progress at CAD.

# AH and IR Crane Corrective Actions



IR Crane 1 ton replacement parts received. Paul and Mike R. planning for upgrade work, **test setup complete**

AH Crane (both hooks) out of commission until repaired. CAD engineering evaluating options:

The Plan:

- A. Remove speed reduction and use as originally equipped - By May 31 THEN...
- B. New Drive - cost and lead time Preferred, but can't be installed for start of shutdown.

Expect to have 40 ton Crane back in service by **June 3?**

**Expect 10 ton crane to be back in service ASAP, ??**



# VTX Repairs/Upgrades This Summer

## At RBRC VTX Lab in Chemistry building (need to improve space utilization)

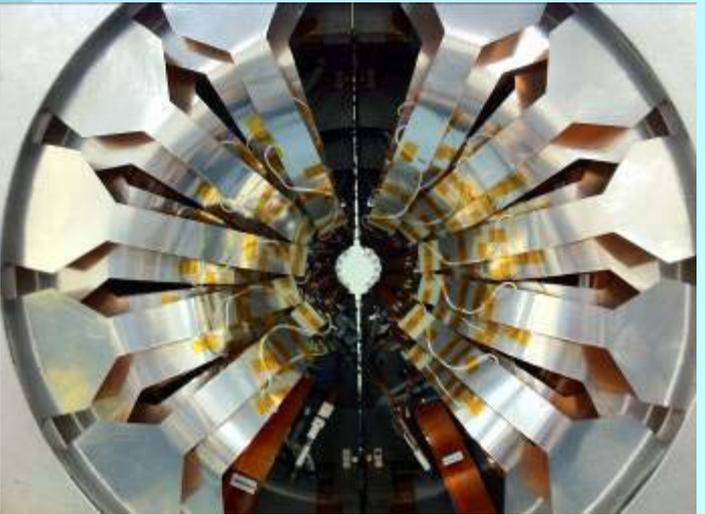
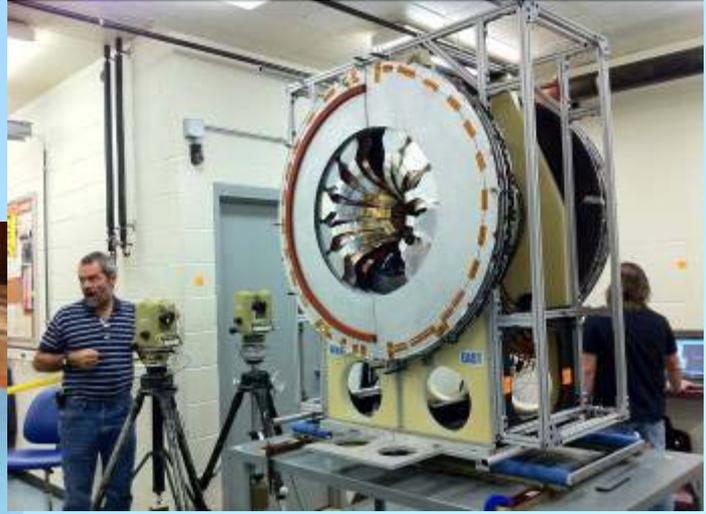
- Fix GND and VDD connections on Spiro boards permanently in lieu of ground cables and wedges temporarily alleviating the problem during run 11 (disassembly, design, vendor, test, reassembly)
- Fix the Hirose connector clamp problem permanently, clamps made for run 11 fix are too big to coexist with FVTX
- Fix bad LDTB's (disassemble, repair/replace, teat, reassemble test)
- Replace bad ladder (??)
- Replace 1 or 2 low quality pixel ladders
- New dark box to test strip-pixel repairs or disassemble barrels and test in existing dark box
- Test all repairs/upgrades (stress/cycle test and final test)
- Redo survey
- Integrate with FVTX

## At 1008

- Permanent solution for thermocouple connector problems
- Permanent solution for flowmeter problems

VTX group time estimate: 2.5 months before ready to integrate FVTX

# FVTX /VTX Assembly & Integration



FVTX and VTX assembly areas currently in question. Scope of VTX repairs/improvements this summer is not yet clear.

# FVTX /VTX Assembly & Integration

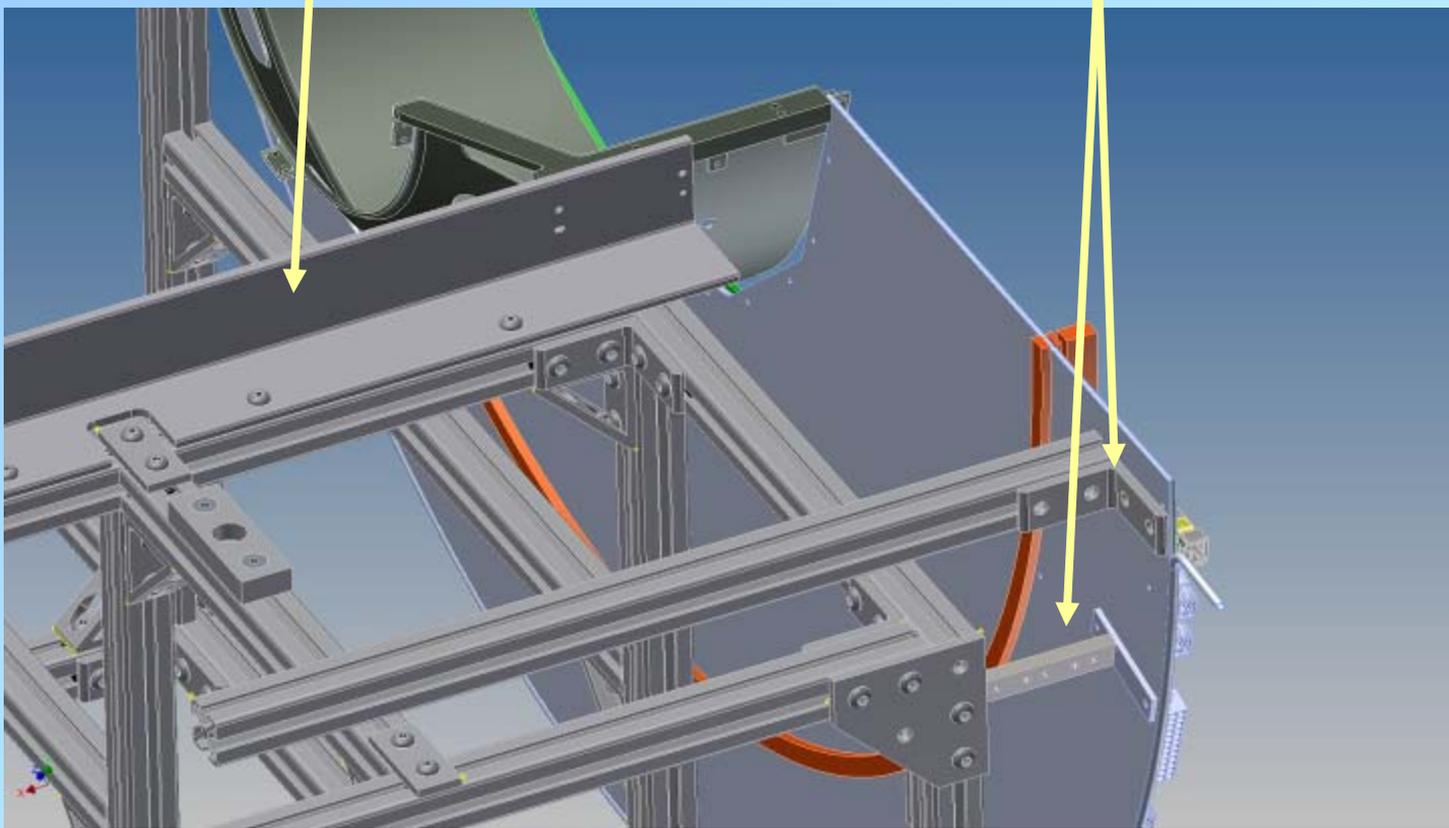
TECHNICAL SUPPORT NO. 1



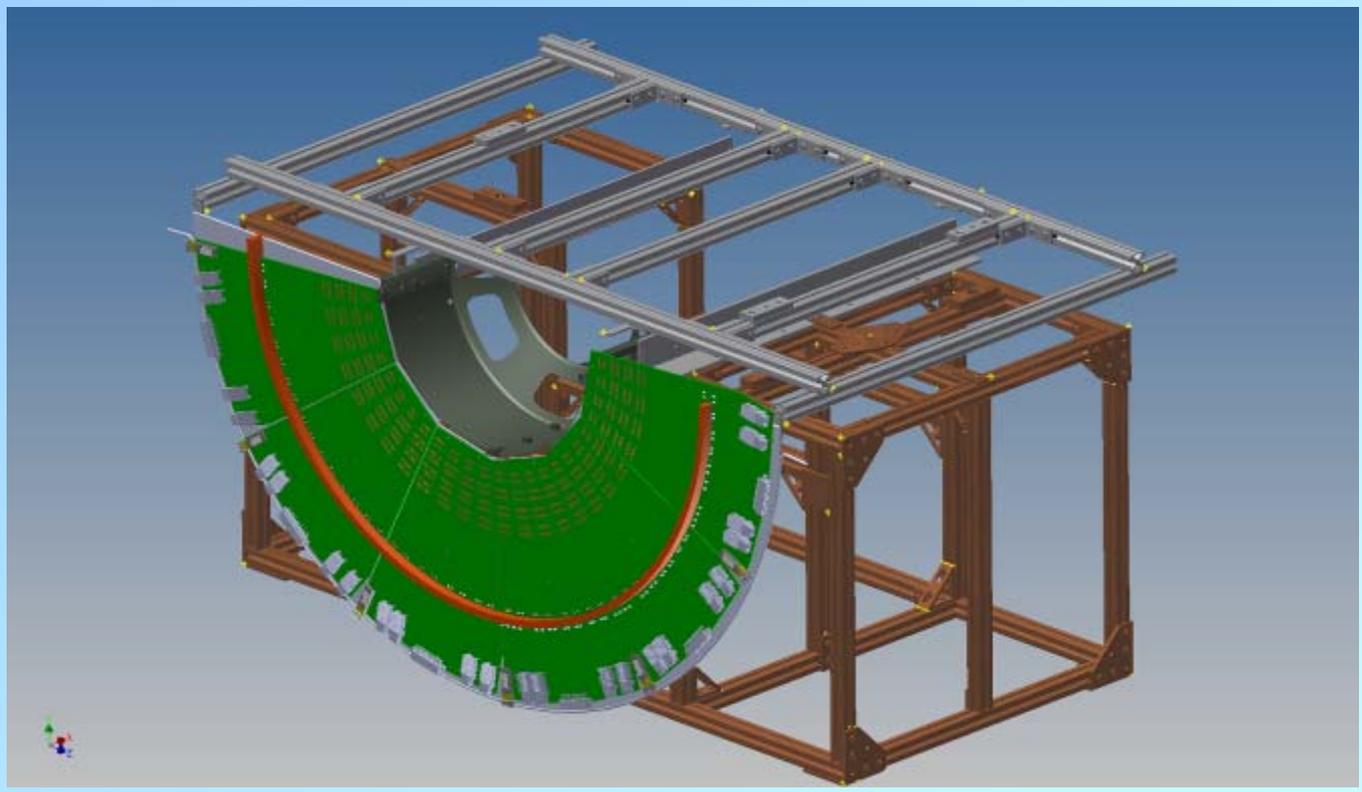
6/9/2011

Assembly fixture modifications at CS

Bigwheel mounting brackets



# FVTX Assembly transport fixture design





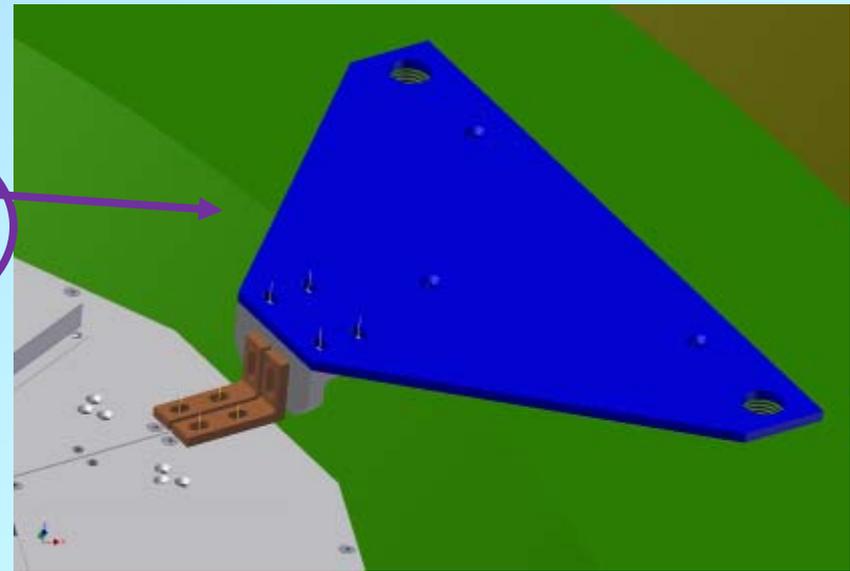
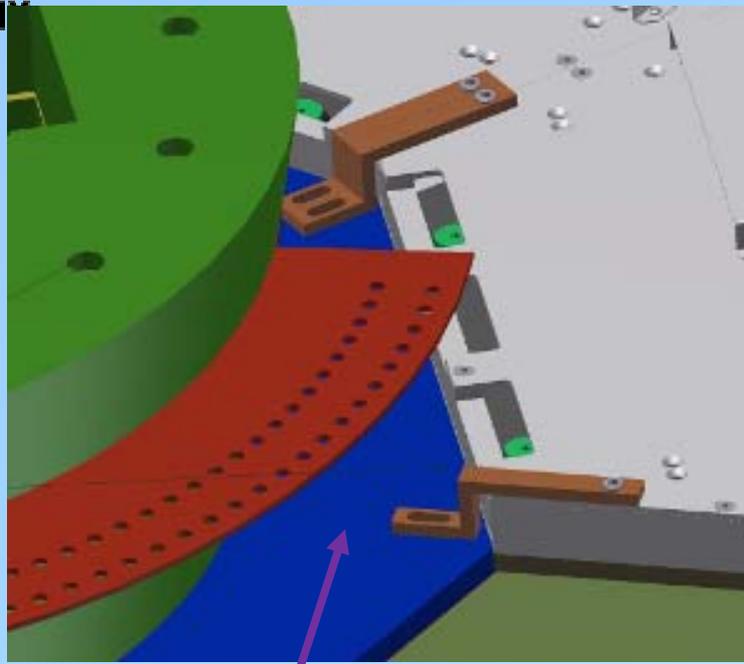
Improved Beampipe support for north station 1 support.

New wider rings have also been designed for south station 1 support. Both supports are intended to improve support when moving CM and MMS magnets during shutdown maintenance, based on experience last year and lessons learned as recorded during our 2010 shutdown closeout meeting.

*Fabrication in progress at Central Shops*

# RPC1 Mounting Concept

Octants are individually mounted then tied together and supported at the outer octant boundaries by brackets mounted on existing tapped holes, and on inner edges by rings which wedge against the flower pot lead liner. Tapped holes in 8 places on each octant are used both to mount the absorber section and to attach the mounting brackets.



# MuTr Station 2/3 Recapacitation clamps

TECHNICAL SUPPORT



# 2010 Building Maintenance Issues

TECHNICAL SUPPORT

- Roof leaks in utility bathroom at northwest corner behind tech offices, over door between rack room and assembly hall, over door between control room and elect. ass'y room, southeast corner of IR and laser room.
- General maintenance for Trailer Offices (in progress)
  - Repair replace floor tiling as needed
- Flooding in AH/ Driveway heaving



## PHENIX Procedure Review Current Status:

147 Procedures Identified

- 87 Made Inactive (not currently in use, will require revision to re- activate if and when necessary, available for reference purposes)
- 9 CAD procedures relevant to PHENIX, all are up to date and available on the CAD web site
- 43 PHENIX approved procedures.  
all are current and up-to-date
- 9 Proposed/Draft Procedures (never previously formalized) (3 are ready for review) These will be addressed during next few months.

Web retrieval of latest procedures now available from PHENIX Internal:

[http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL\\_procedures.htm](http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_procedures.htm)

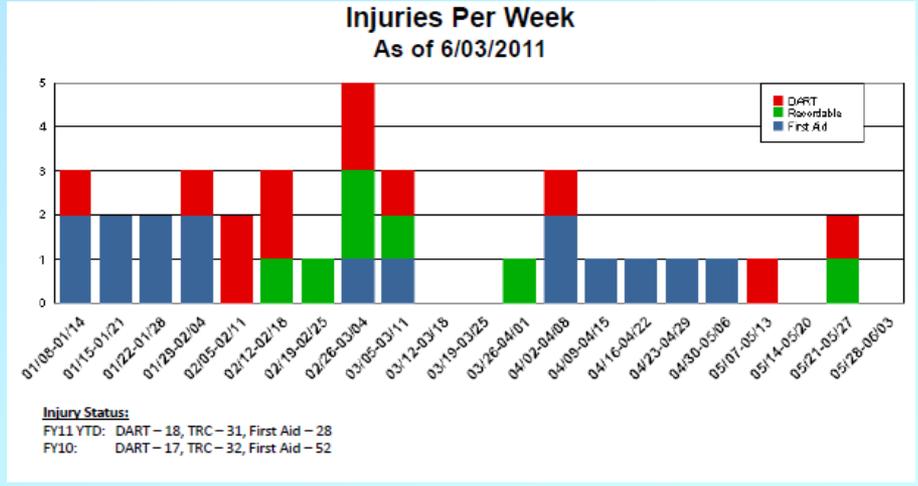
TECHNICAL SUPPORT ZONE

- 1. ESH/OSH Review successful - no major findings
- 2. CAD ESRC reviews for PHENIX Shutdown (June 21??)
- 3. Summer students now on site. More pedestrians and motorcycles so be careful driving.

4.  **Safety Day** June 8, 2011  
10:30 a.m. to 2:30 p.m.  
Berkner Hall

Did anyone check this out?

- 5. No injuries last week (Yea !)



TECHNICAL SUPPORT NOTES

Shutdown 2011 Project Assignments

Task Assignment

Task Lead Person

Overall supervision of all projects:

Carter

Access and work platforms, beam pipe supports:

All

VTX removal and VTX/FVTX re-installation:

All

VTX repair and upgrade;  
FVTX assembly integration w/VTX:

Mike L.

MuTr station 1 Removal and Re-installation:

Jimmy

MuTr Chamber overhaul and upgrade:

Frank

MuTr Station 2/3 Re-Caps:

Chris

RPC1 installation:

Kenny

RPC1 gas system:

John

MPC, BBC, DC and other projects:

All

Electronics design and support:

Sal

# Where To Find PHENIX Engineering Info

Official end of run now scheduled for June 29

Less than 3 weeks away!



Links for the weekly planning meeting slides, archives of past meeting slides, long term planning, pictures, videos and other technical info can be found on the PHENIX Engineering web site:

[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)

