

PHENIX WEEKLY PLANNING

TECHNICAL SUPPORT ZONE



6/14/2012
Don Lynch

This Week

- Cu-Au Run continues
- No Maintenance access this week
- CAD Engineering review of MMN and MMS work platforms
- sPHENIX design and analysis continues
- 2012 Shutdown prep continues

Next Week

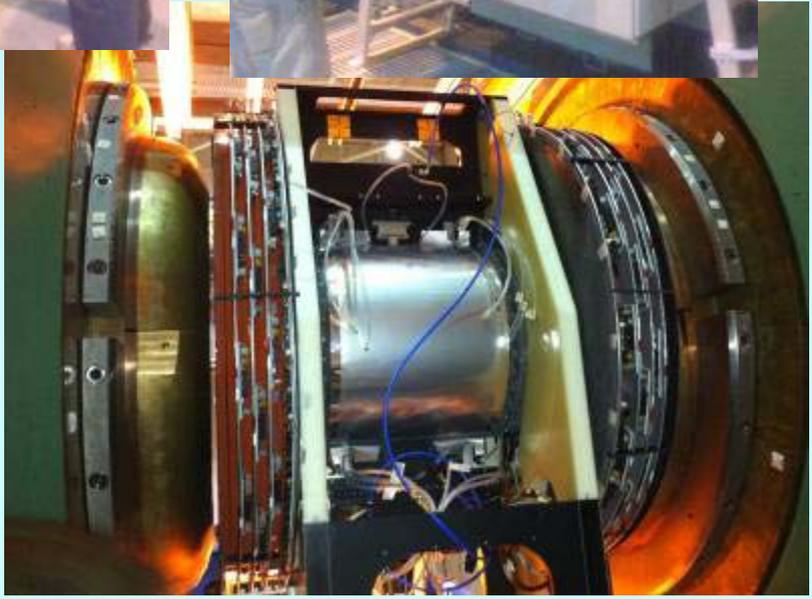
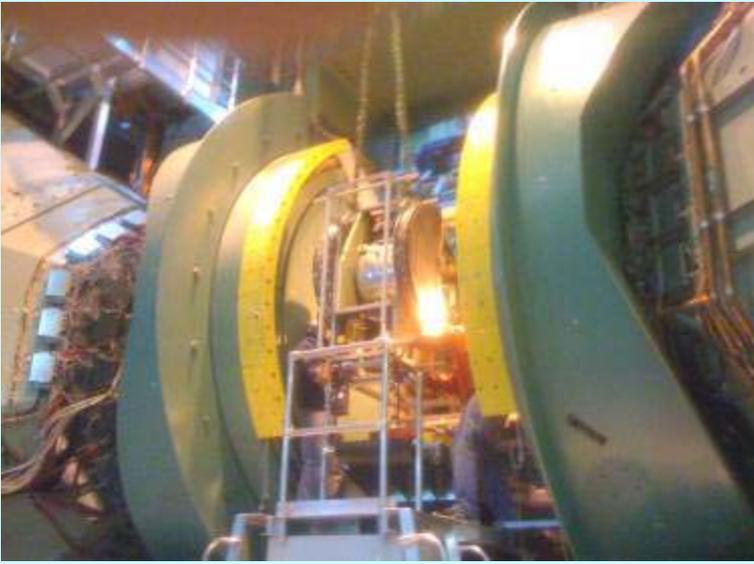
- Cu-Au Run continues
- No scheduled maintenance access days next week Next access Monday June 25 to open VTX
- sPHENIX design and analysis continues
- 2012 Shutdown prep continues
- Shutdown ESRC review
- End of Run Party
- Other Business

2012 Shutdown Projects:

- VTX/FVTX Removal, Repair and Upgrade, Reinstallation
- VTX/FVTX cooling system maintenance and upgrades
- RPC1 Cooling Upgrade
- DC West Repairs/Upgrade
- MuTr Station 1 South Upgrade
- MuTr, MuTrigger Stations 2 & 3 Upgrades
- MPC repairs
- Other subsystem work
- Future Upgrades related work

VTX Installation 2010 & 2011. 2012 Removal and re-installation will be same.

TECHNICAL SUPPORT NON



T
E
C
H
N
I
C
A
L
S
U
P
P
O
R
T
I
N
G

VTX & FVTX Summary of Tasks

VTX/FVTX Disassembly - After Start of shutdown tasks are completed (EC out to AH), coolant and N₂ lines, LV, signal and HV cables and fibers will be carefully removed and coolant drained. East and west detector halves will then be de-mounted and transported to Chemistry bldg for maintenance and overhaul.

At Chemistry lab - VTX, bigwheels and FVTX will be disassembled and all 4 FVTX stations will be transported to the FVTX PHYSICS Lab.

At PHYSICS FVTX lab -FVTX stations will be tested, faults will be isolated, repaired and re-tested.

Concurrently at Chemistry lab -VTX will be disassembled into individual barrels and bigwheels, defective electronics will be removed and replaced with new or repaired electronics. The VTX will then be re-assembled tested and re-surveyed.

FVTX transported to Chemistry building. FVTX Integrated into VTX. VTX/FVTX assembly surveyed

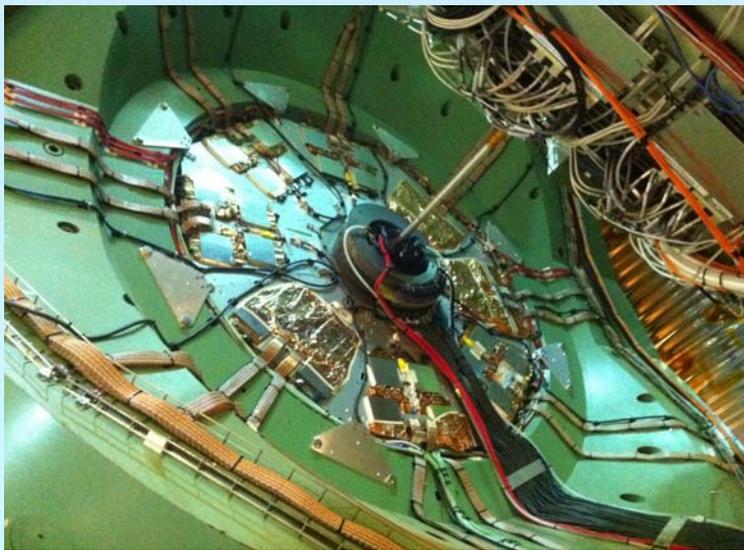
VTX&FVTX assembly transported to PHENIX and installed on rails.

Coolant and N₂ lines, LV, signal and HV cables and fibers will be carefully reattached.

Full detector re-surveyed in IR

RPC Station 1 North and South Cooling Upgrade

TECHNICAL SUPPORT NON



North



South

RPC Station 1 North and South Cooling Upgrade

TECHNICAL SUPPORT ZONE

- Prior to installation the RPC group had determined that the RPC1's did not generate sufficient internal heat to require active cooling. Passive cooling from the aluminum skin and FEM covers was deemed sufficient.
- Initial testing prior to run 12, while the station 1 vicinity was open, appeared to validate this assumption, for both the North and South subsystems.
- After the CM and MMS were moved to the run positions with stations 1 north and south tightly closed, and after the magnets were energized it was determined that the operating temperatures on the surface of the RPC1's was higher than expected, suggesting marginally high temperatures internally.
- Subsequent measurements indicated that, while the RPC internal heat generation was not in itself problematic, the higher local ambient temperature due to magnet operation and other local subsystems was inhibiting the RPC1s' ability to shed its own internal heat.
- Early in the run tests were run using explosion proof blowers and flexible ducting to force conditioned ambient cooler air through the station 1 vicinity from below and exhausting above. These tests reduced the measured surface temperatures acceptably. It was noted, however, that the measured temperature was directly related to the nominal IR conditioned air temperature.

RPC Station 1 North and South Cooling Upgrade

T
E
C
H
N
I
C
A
L
S
U
P
P
O
R
T
N
O
N

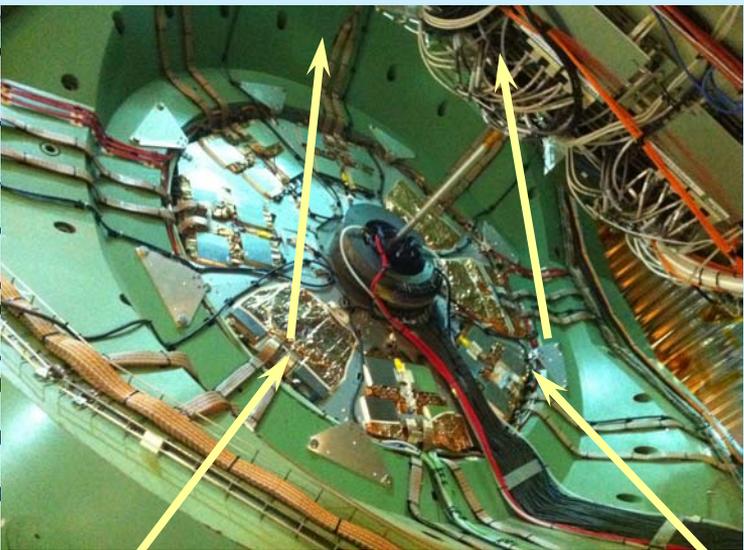
During run 12, we had a single blower/flexible hose crudely positioned to blow air across the faces of the RPC1's. In spite of this, the results were acceptable and we were able to operate the RPC1's without experiencing any significant thermal problems.

It is desired, however, to add some margin for error (partial AC failure, blower failure, flow distribution non-uniformity, etc.) to improve the reliability of the cooling system.

This summer we will add 2 more blowers, one each for the north and south, and refine the flexible hose positioning to optimize air flow across the individual detector subsystem octants.

Flow will be directed inward and upward from approximately 4:30 and 7:30 on both the north and the south side.

TECHNICAL SUPPORT NOTES

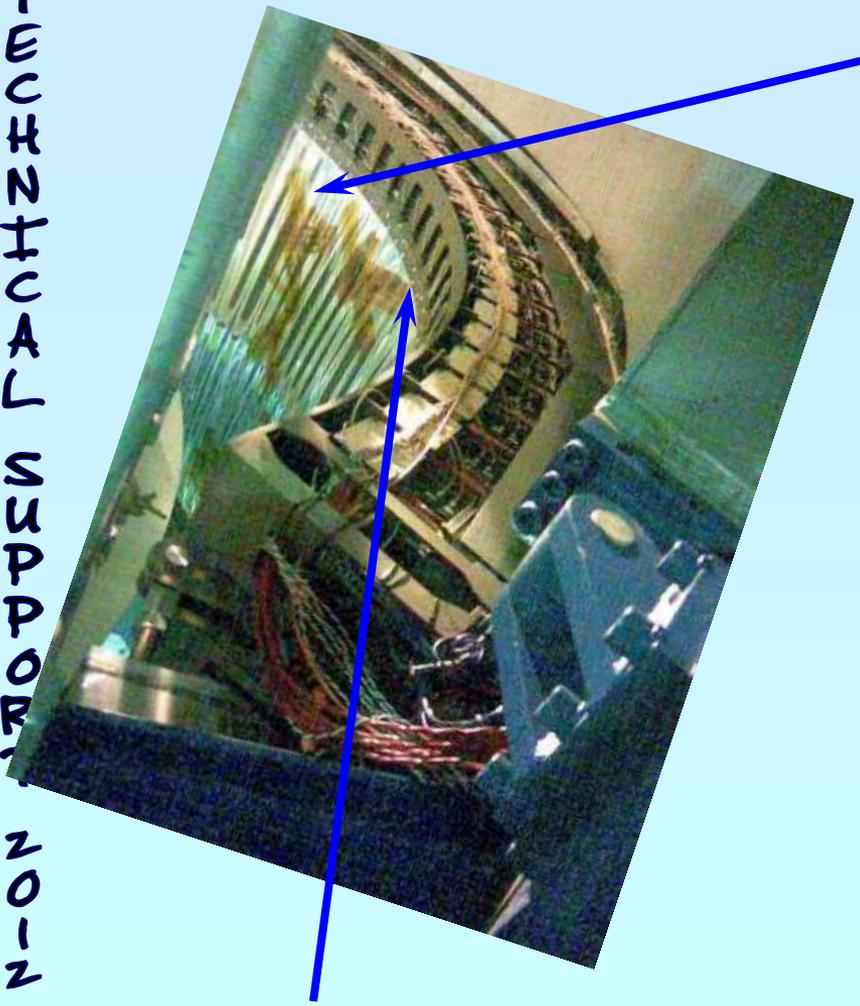


Approximate Air flow paths for the North and South RPC1's

TECHNICAL SUPPORT NON

DC West Repairs/Upgrade

Years of wire repairs on the DC west have rendered the DC west window a patchwork of tape and have elevated leak rates to the point where replacement of the mylar window is needed. The design of the DC west window is slightly different from the DC east which has an improved window support structure and sealing concept. These improvements are to be incorporated into the DC West this summer.



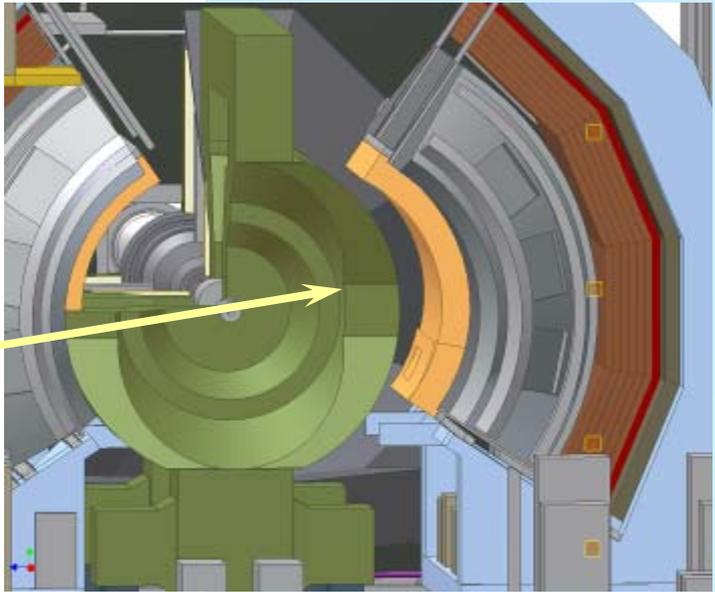
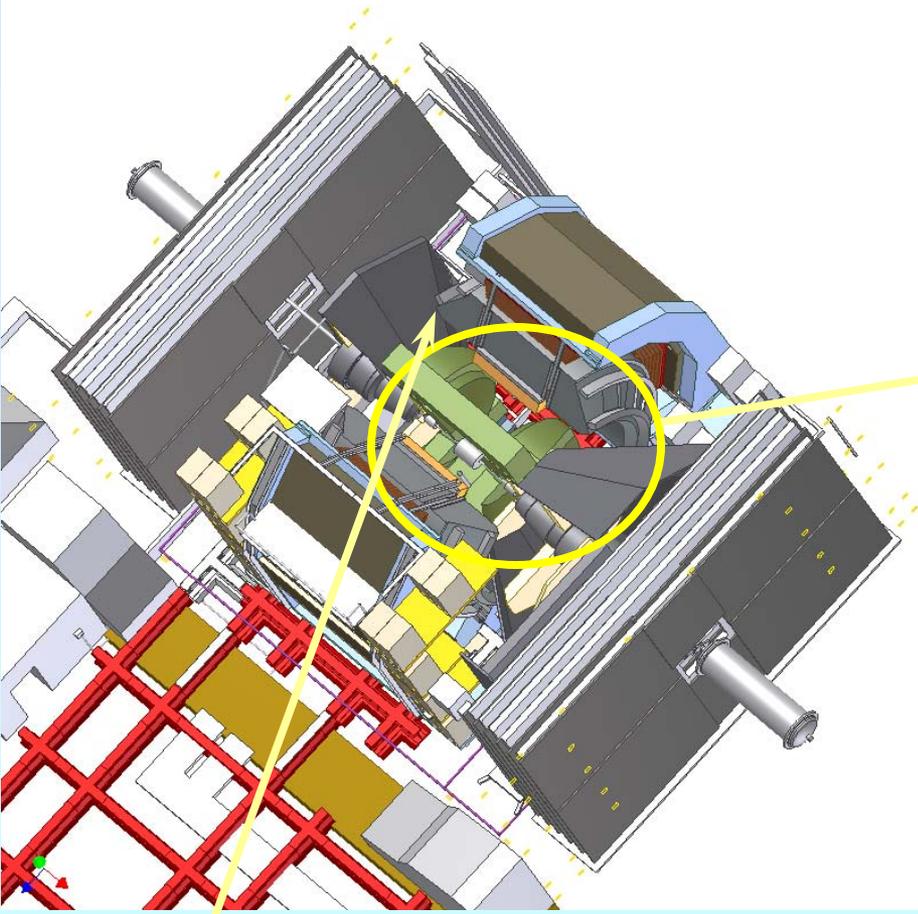
Sealing/window mounting plates (both sides)

DC West Repairs/Upgrade

TECHNICAL SUPPORT ZONE

The plan for the DC West Repairs is as follows:

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



Need to design, fabricate and assemble a work platform between the CM and the DC West

Need to cover this area to prevent debris from entering the DC cavity while window is removed

TECHNICAL SUPPORT NOTES

Removing, Repairing and Replacing Muon Tracking Station-1 (North)

Purpose - to install new coupling caps and terminators for anodes

- reduces cross-talk problems by about 1/3
- fixes any remaining HV problems

Steps:

- Preparation of needed parts & procedures
- Documentation of present connections
- Disconnect cables, water cooling, etc.
- Remove FEE plate & chambers; take chambers to lab
- Clean & install new caps and terminators
- Reinstall chambers & FEE plates
- Re-cable & test

TECHNICAL SUPPORT NON

- Station-1 South re-capacitation and termination



vacuum lifting fixture



view when sta-1 removed (south)



MuTr Station 2 & 3

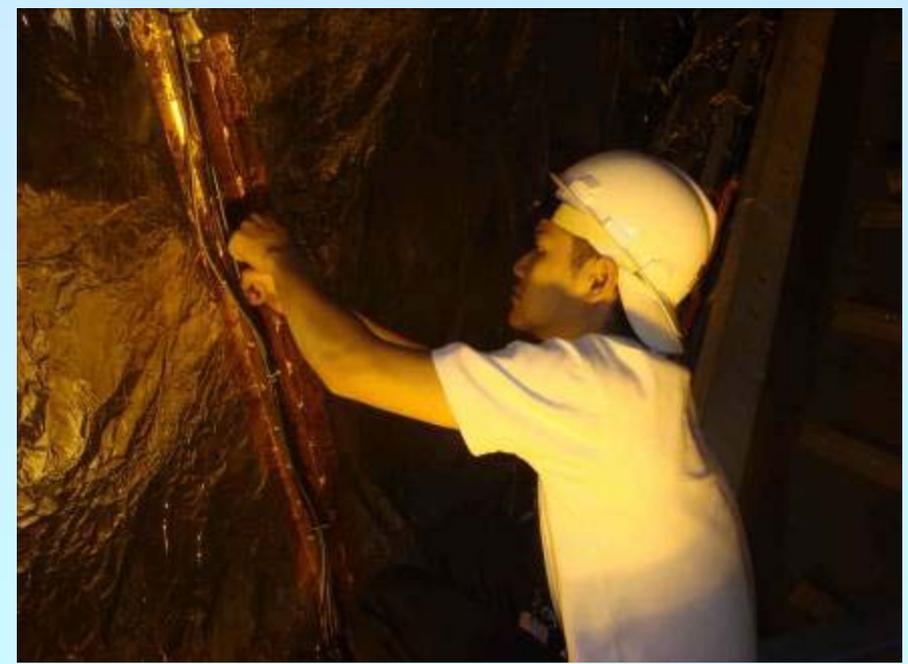
Re-Capacitation and Termination

Re-capacitation of MuTr stations 2 and 3 (inside MMS and MMN magnets) will be done using clamping and installation technique developed by MuTr experts during run 12 as was performed during 2011 shutdown. Method requires no soldering or gluing, requiring only mechanical clamps.

During 2011 summer shutdown only areas requiring no interior scaffolding or elevated work platforms were addressed. Elevated work in MMN and MMS will be performed during 2012 shutdown.

Station-3 Clamp Installation

T
E
C



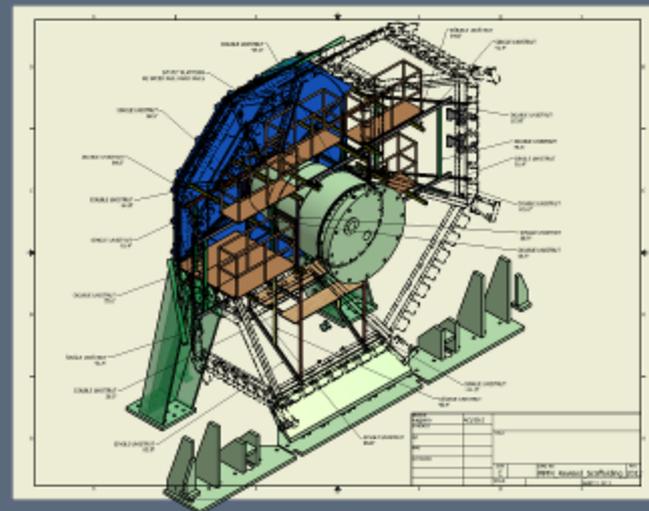
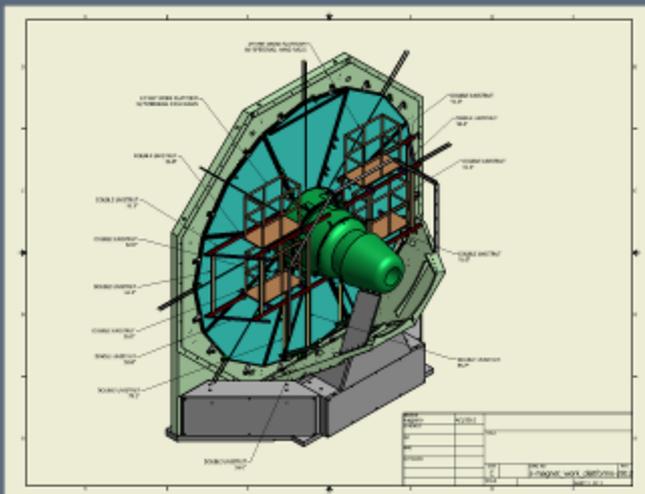
- Anode card Inspection with mirror : < 5min./clamp.
- Anode clean up if necessary : < 15 min./clamp
- Clamp mount : ~ 5min./clamp
- Voltage readout : 5min./clamp
- HV test : 10min.
- Total : 25 ~ 40 min./clamp

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

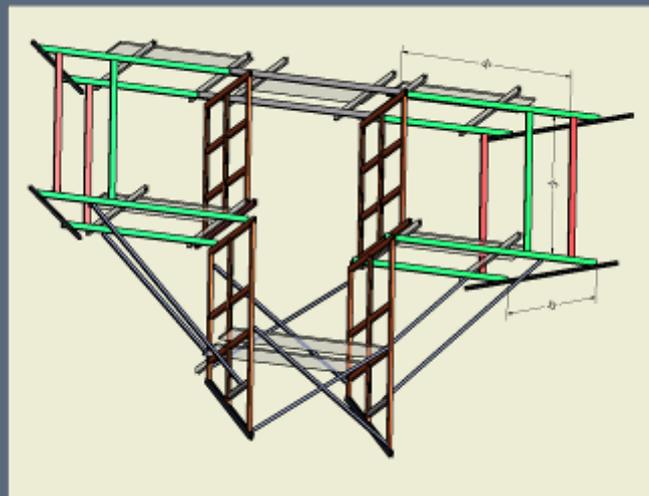
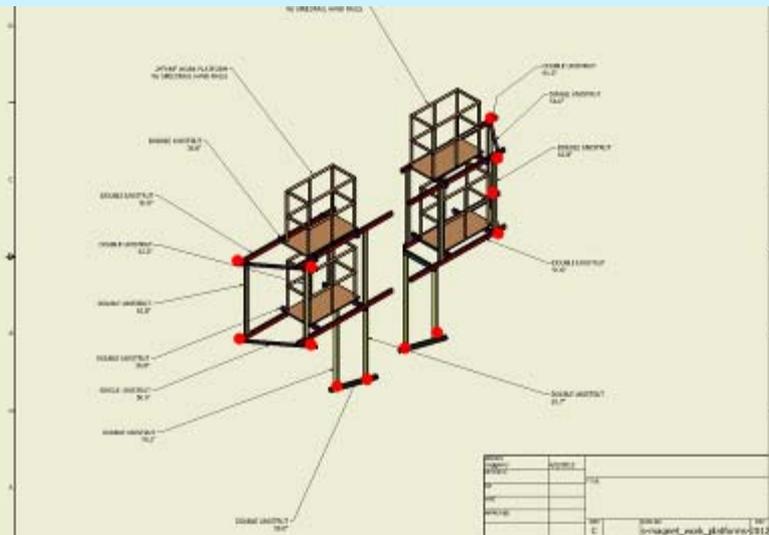
- Lower clamp-on terminators already installed for both north and south sta-3 (bottom 4 octants)
- With new work platforms that reaches all of sta-3; install remaining (upper) clamp-on terminators.
- Analyses submitted to CAD engineering.



P



5



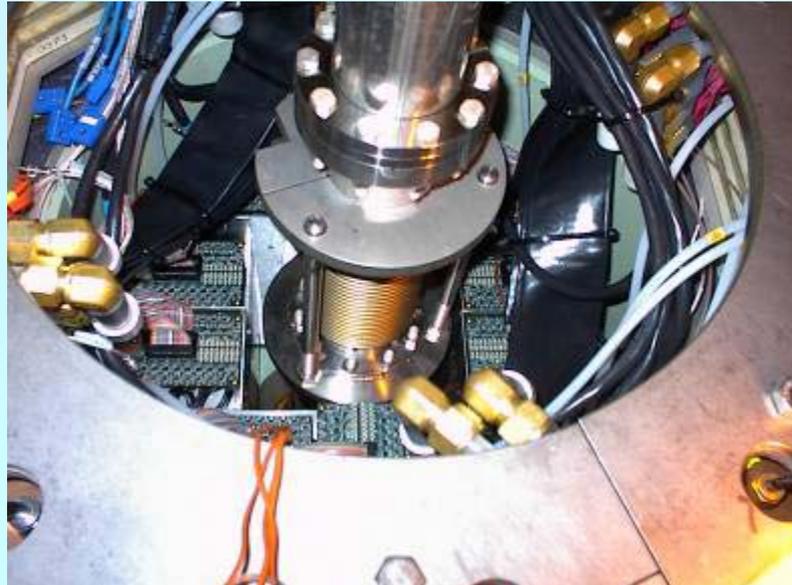
z

MMS Work Platforms

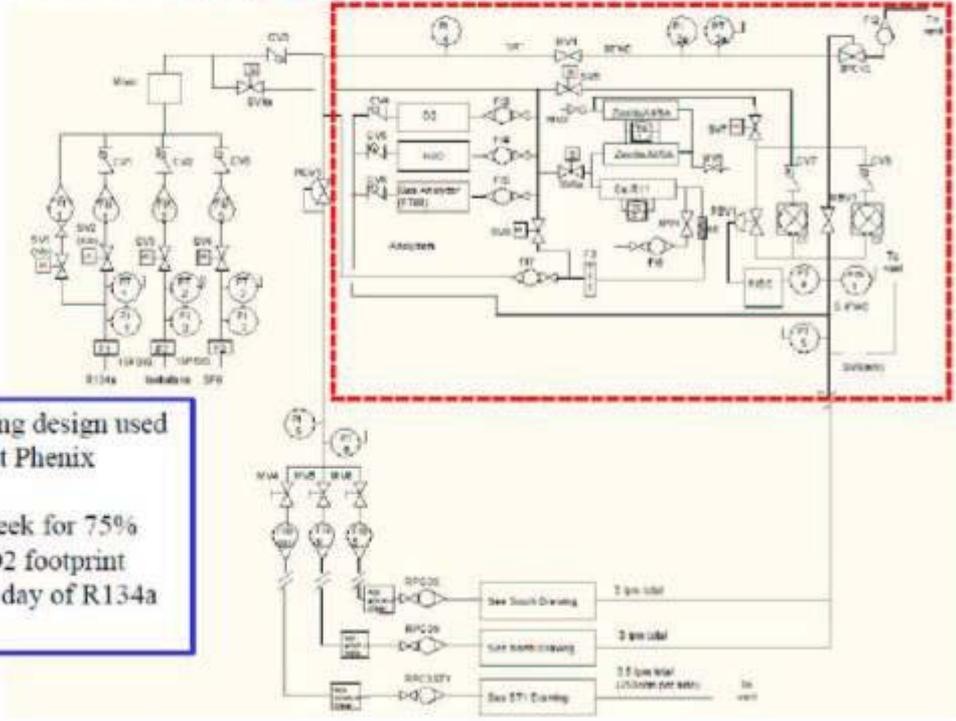
MMN Work Platforms

MPC repairs

During run 12 both the north and south MPC internal electronics experienced a damaging event that disabled a large fraction of the MPC modules. MPC experts have determined that the damaged components can not be repaired in situ. Consequently the MPC modules must be removed and repaired in the PHENIX electronics shop and/or at an external vendor. Additional steps are anticipated to provide protection against similar future events.

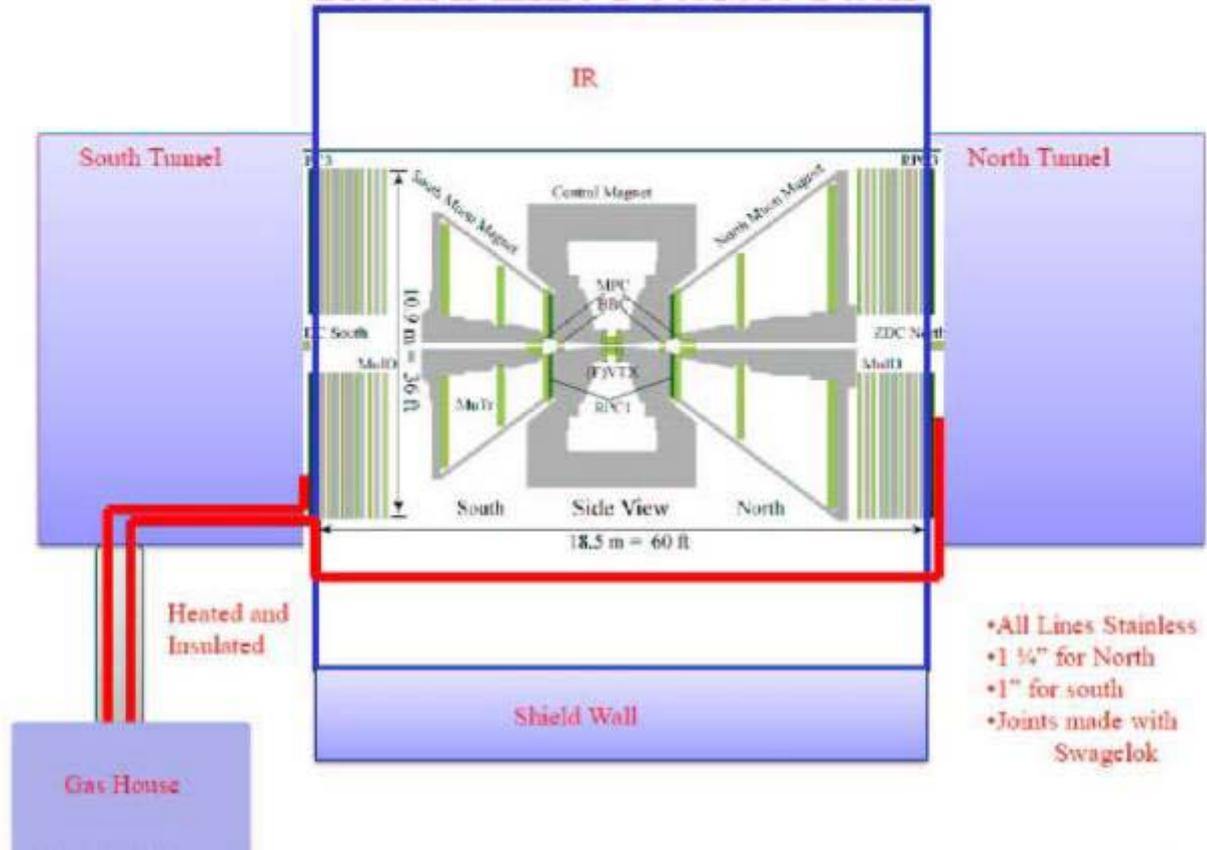


Recirculating Upgrade to RPC Gas System



- 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

Return Line Possible Path



- All Lines Stainless
- 1 3/4" for North
- 1" for south
- Joints made with Swagelok

Status of Main System

•Design Done (BNL)

- Straight through system running well
- Purifier and Drier material confirmed
- Humidity control working fine
- IR and tunnel distribution racks
- Control Software for Recirculation –Done
 - Upgrading to Win7 in Nov
- Electronics rack (including recirc)- Done



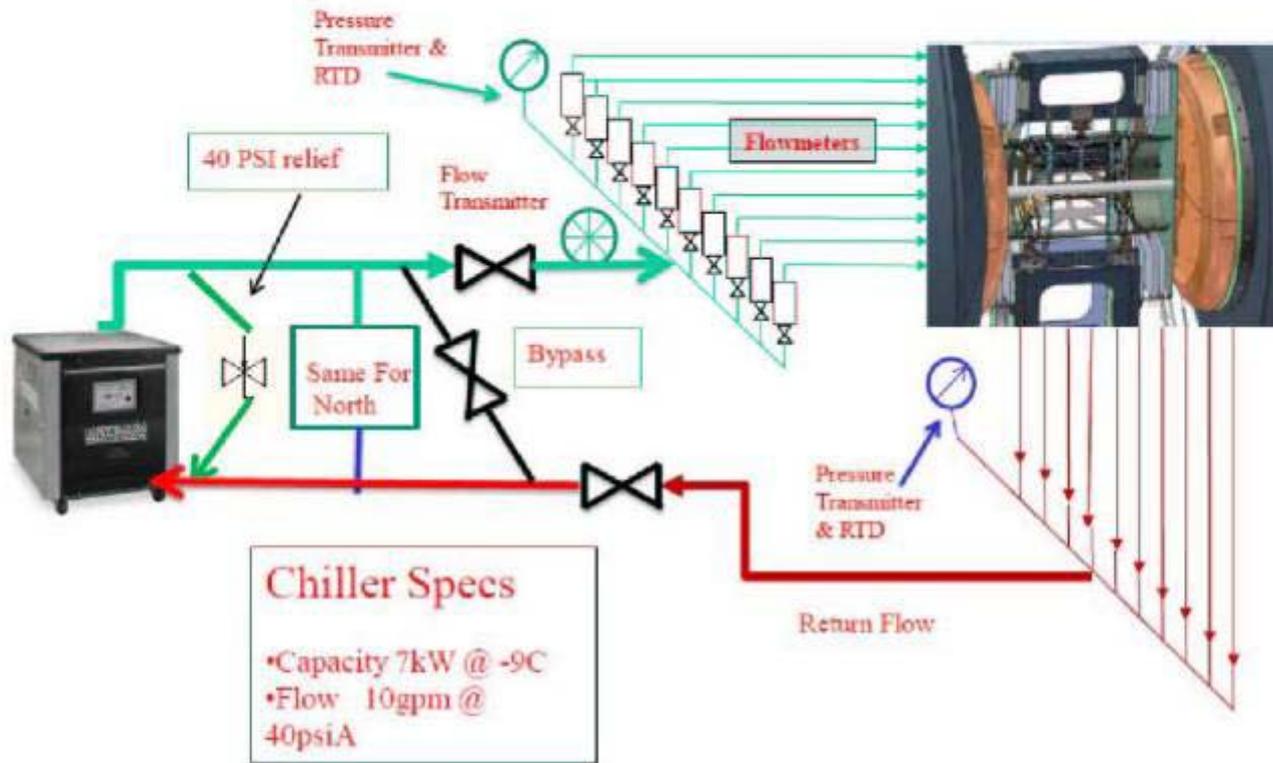
•Shutdown Plans

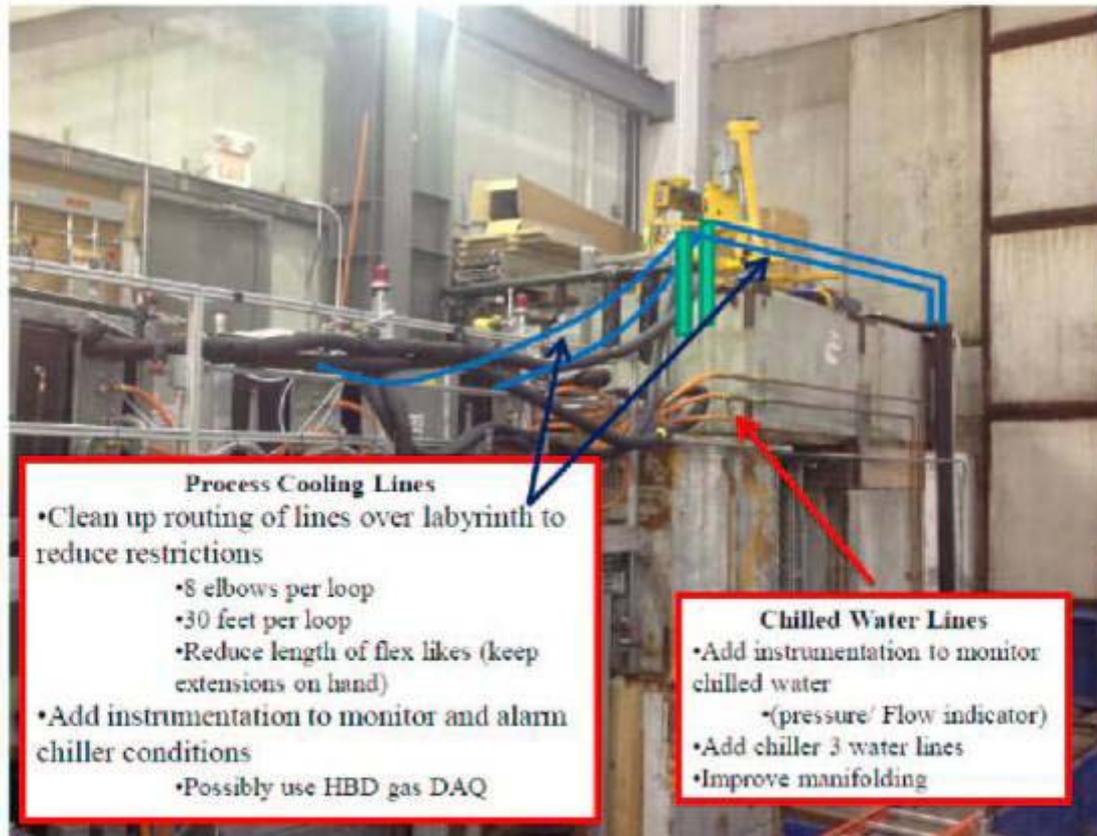
- Buy components/material for system
- Run returns lines to gas house
- Add recirc hardware to Gas house rack



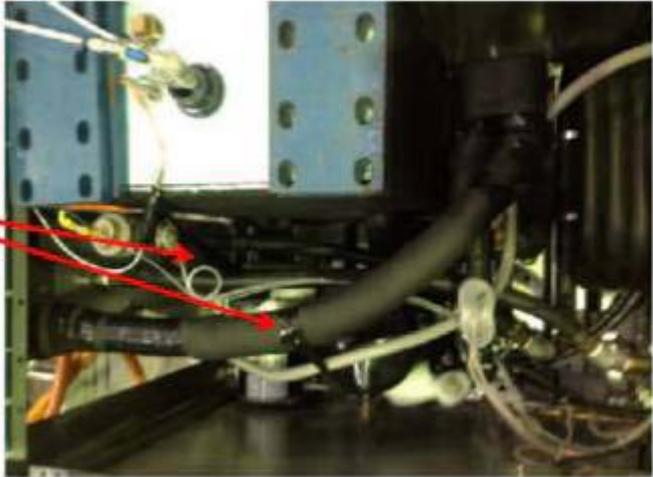
Nover 7200 Chiller

Sketch is for South the VTX/FVTX
Shows one loop
We have a low temp and High temp loop

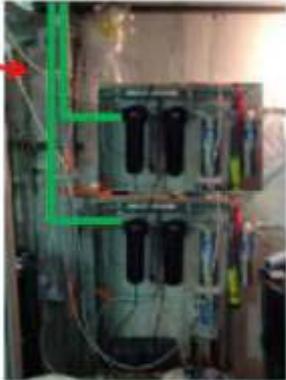




Chiller Work
•Replace nylon reinforced hose with stainless flex (2 per Chiller)
•Bring in vendor to do maintenance on units



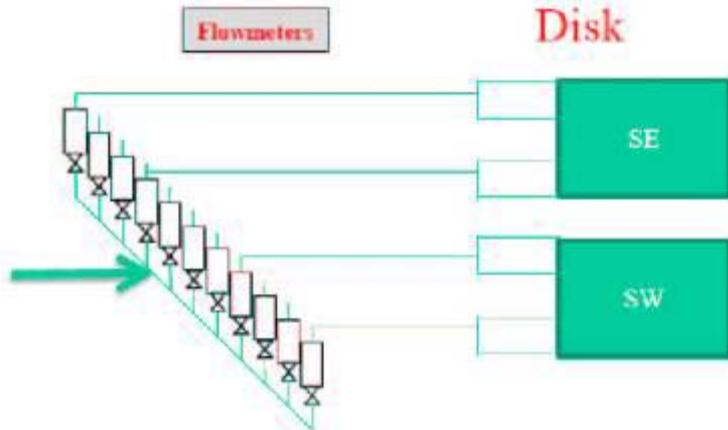
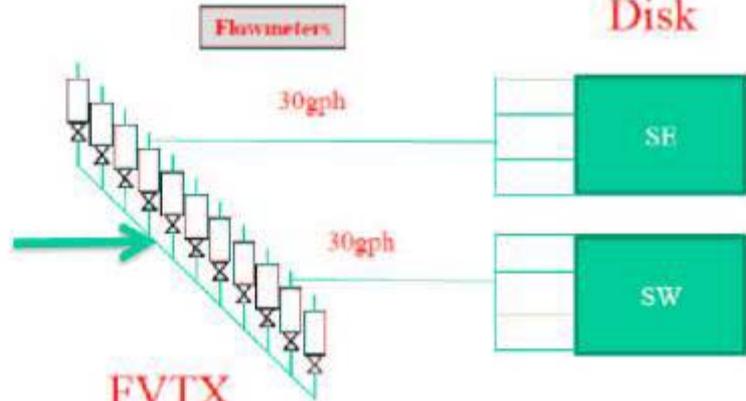
Upgrade Novec Cleaning System
•Install filters for both loops
•Run insulated stainless lines from chillers to filters

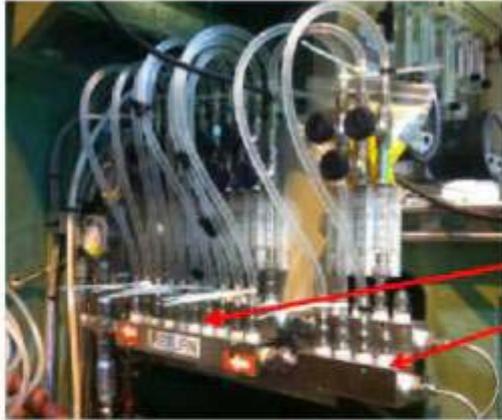


Planned change to FVTX

- 10 Flowmeters Total
- 5 Feed VTX-S
- 4 Feed FVTX
- 1 Spare From VTX-P

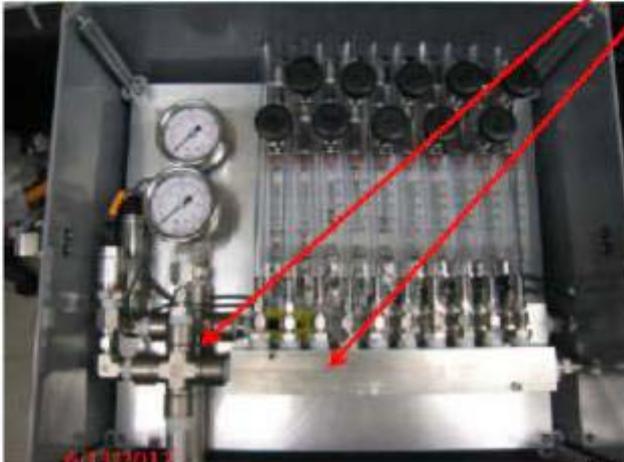
-3C at Manifold





Manifolds in the IR

- Big Wheel/ Low temp chiller
 - Rebuild to increase size of manifold
 - make pixel lines permanent
- Low Temp
 - Split North FVTX feeds
 - Upgrade to $\frac{3}{8}$ " pipe from $\frac{1}{2}$ " where possible
 - Increase size of manifold to reduce restrictions
- Nitrogen
 - Add more lines for FVTX feeds



TECHNICAL SUPPORT NON

Other subsystem work

Future Upgrades related work

TECHNICAL SUPPORT

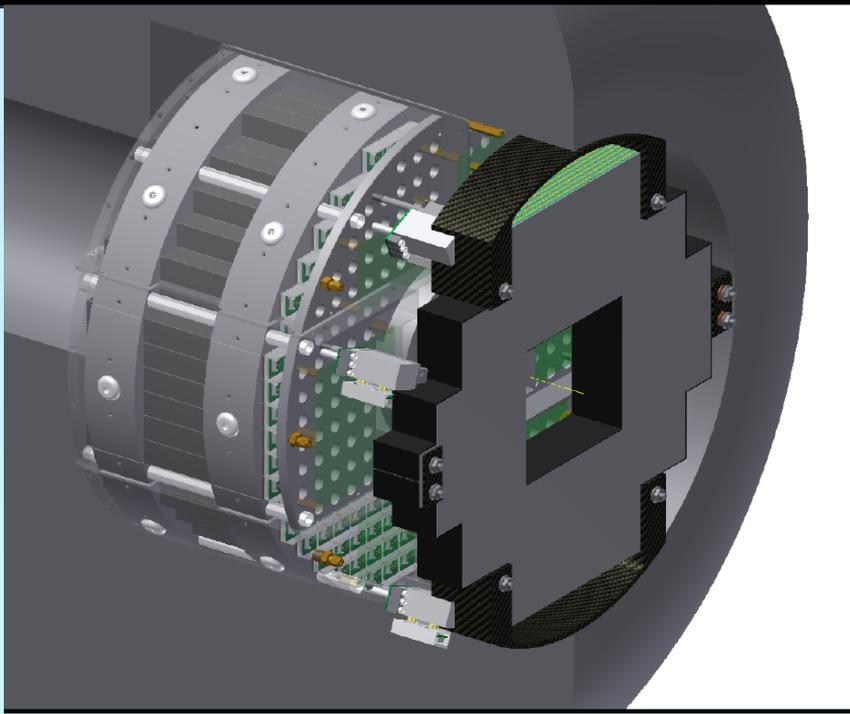
New Electrical Work for 2012 Shutdown, to be accomplished as time is available

1. Support CAD replacement of Assembly Hall 480V Fused Switch Panels #8H-1, 8H-2, and 8 EMH1. Coordinate temporary power patch while work is being performed and minimize impact on shutdown work.
2. Add the Assembly Hall Crane lockout/contactors/ indicator light key switch circuit - similar to IR Crane.
3. Add Transient Surge Suppressor to 3 phase power panel on the Central Magnet Bridge.
4. 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.
5. New computer rack replacements/additions for upcoming Run 13 & Rack Room computer infrastructure changes involving power distribution circuit (UPS and normal AC power) re-work

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

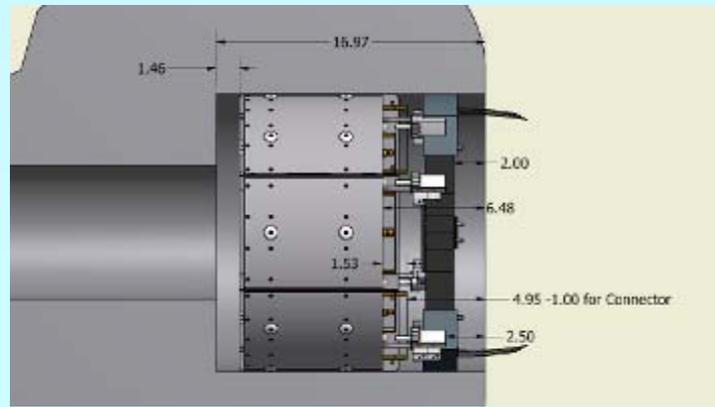
1. Replaced aging magnet hoses (CM only)
2. identify obsolete services passing through sill and remove them.
3. Cover for services coming from IR through sill.
4. Plan for stripping out TEC electronics and services to free up TEC racks.
5. Add limit switch and improved spooling control for window washer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

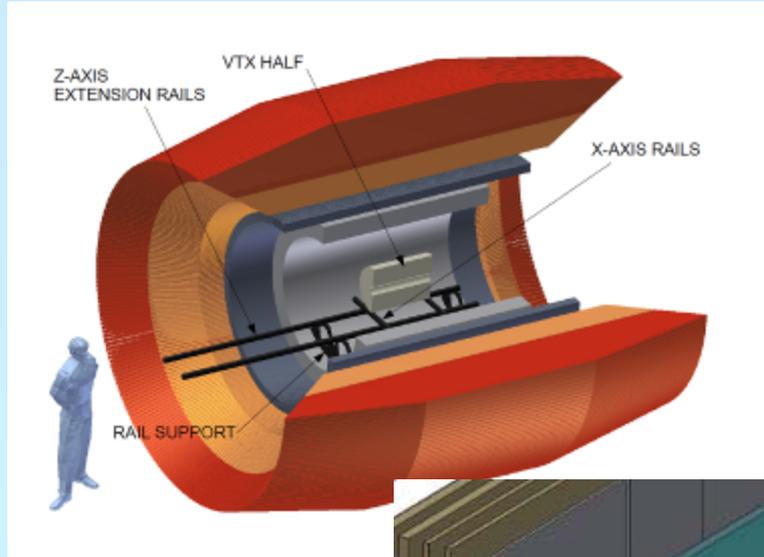
TECHNICAL SUPPORT NON



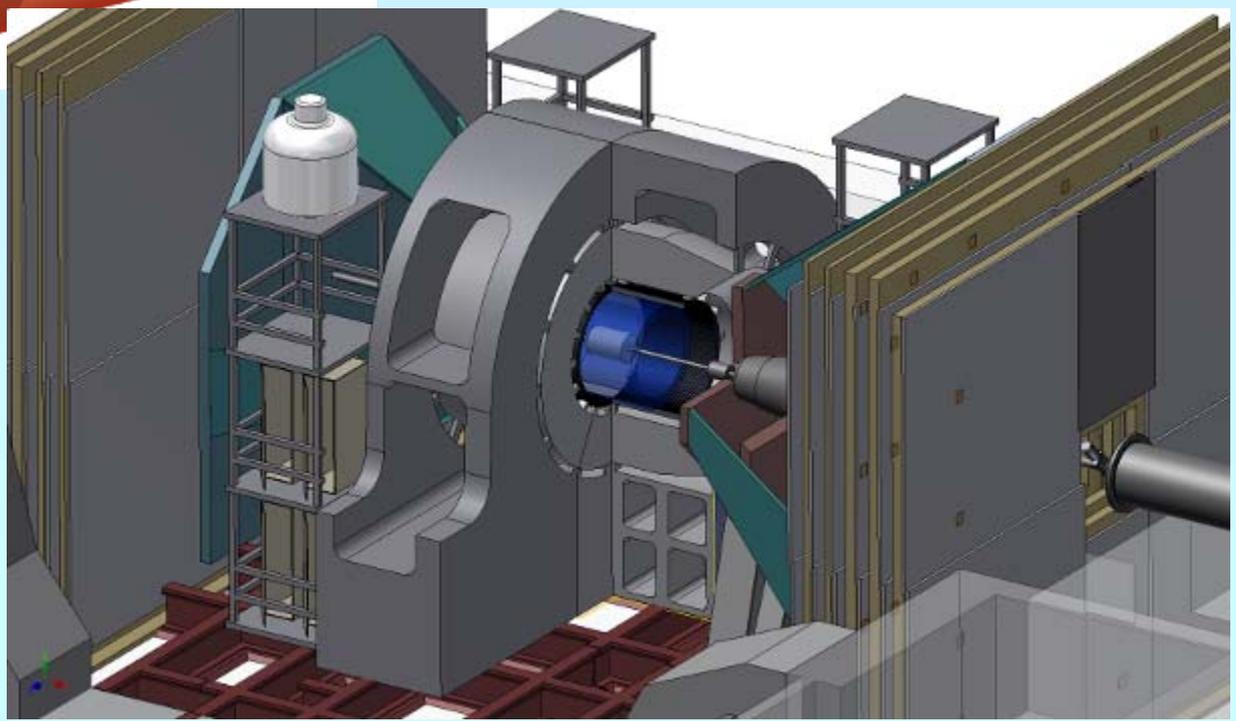
MPC-Ex Upgrade

We will be making measurements and test fitting mockups this summer in preparation for design and fabrication next fall, if proposed upgrade is approved





sPHENIX Proposed Upgrade



Procedures for Shutdown 2012

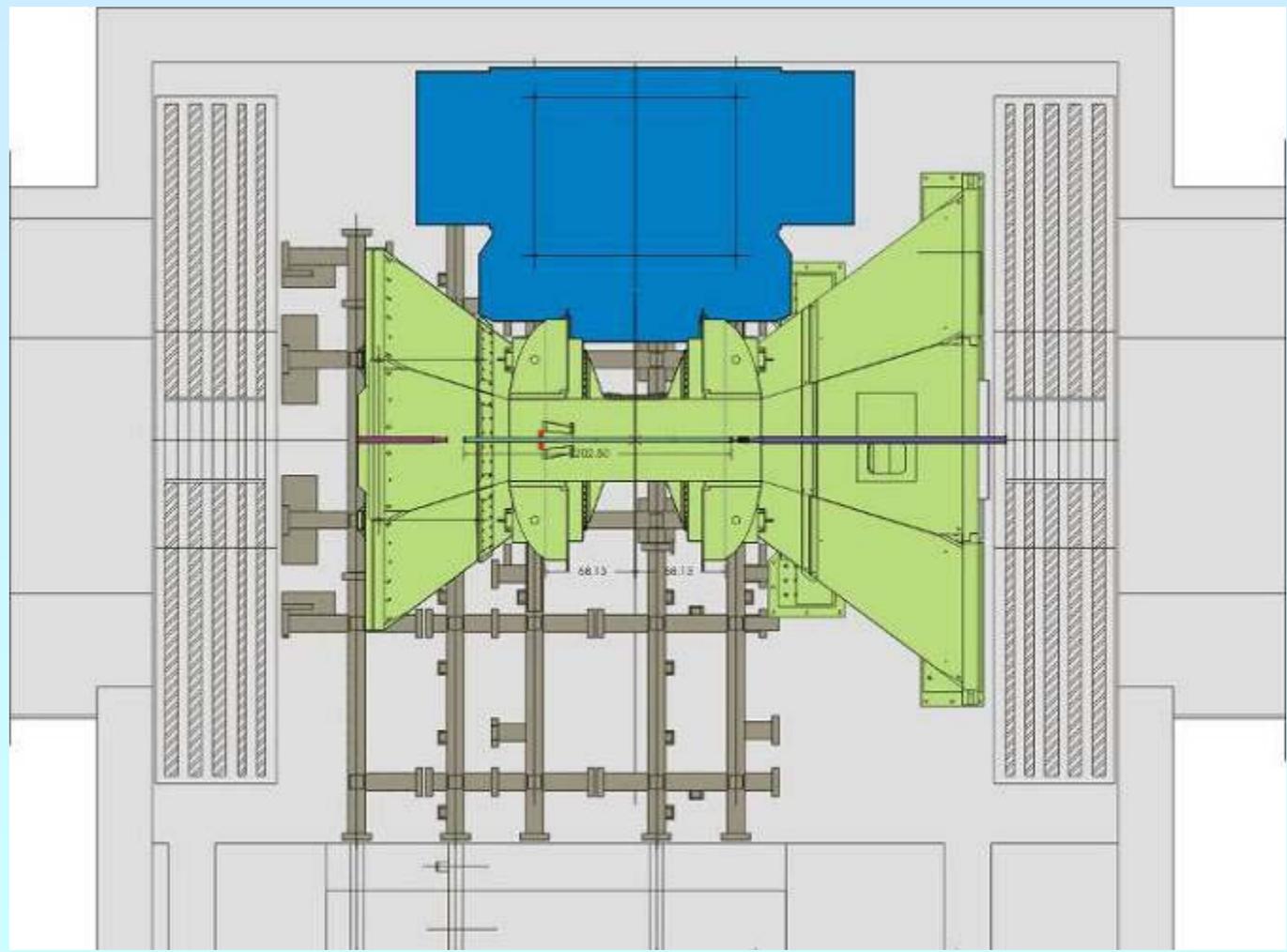
- Existing PHENIX General Purpose Recurring Task procedures
 - VTX Removal
 - FVTX/VTX installation
 - VTX Survey
 - FVTX Survey
 - FVTX Cooling SystemUpgrades
 - MuTr Maintenance & Upgrade (stations 1 2 & 3)
 - MuTrigger Maintenance and Upgrade
 - DC Repair - Incl. in WP
 - MPC removal and re-installation - incl in WP
- 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

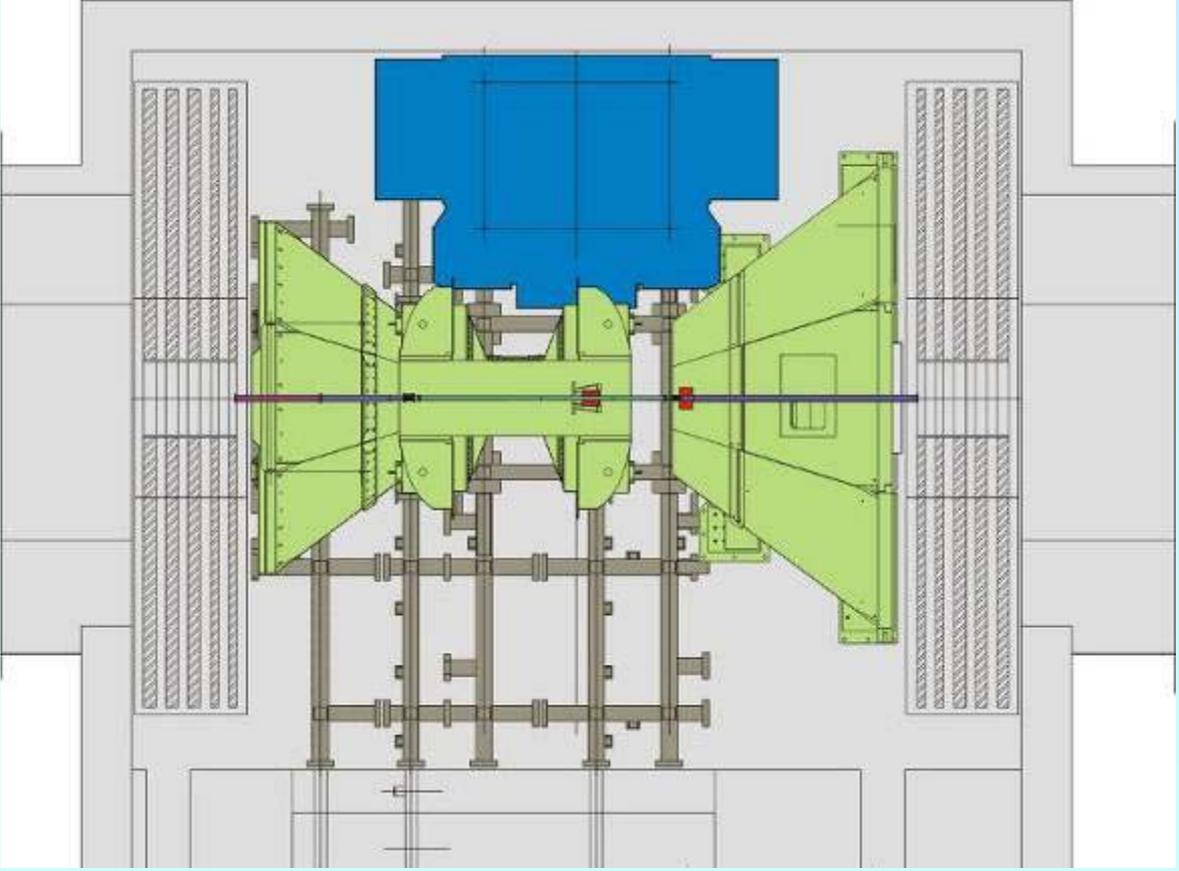
- Start of Shutdown (PHENIX)
- VTX Removal/FVTX/VTX Installation
- MuTr/MuTrigger Maintenance and Upgrade 3 WP's: Station 1, MMN and MMS work
- RPC1 Cooling Upgrade (PHENIX)
- DC West Repairs
- MPC repairs
- End of Shutdown (PHENIX)

IR is currently in this (Run) configuration. (MuID collars not shown)

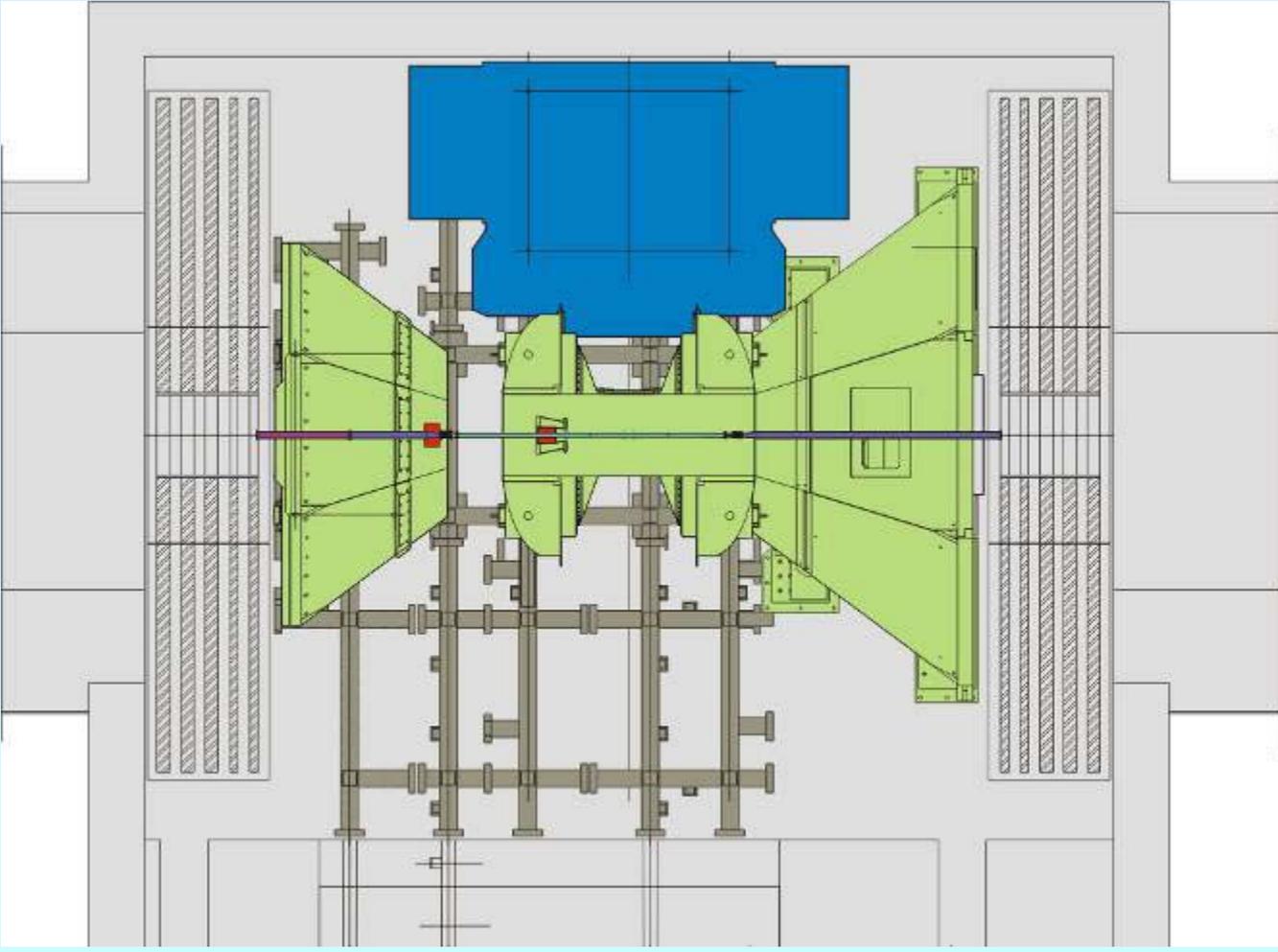
TECHNICAL SUPPORT NON



TECHNICAL SUPPORT NON



After MuID collars are removed and EC is moved to AH, MMS is moved south. CM is then moved south to gain access to Station 1 North. MPC North to be removed, RPC1 North to be addressed. (1 week)



CM is then moved north to gain access to station 1 south. Work on RPC1 South, DC West, MPC South and MuTr Station 1 South. After all work finished move CM south, reinstall MPC complete RPC1 North work, survey step 1 for beampipe, then move CM north complete beampipe and CM survey. Move MMS North to run position. VTX/FVTX work may be done in any configuration.

T
E
C
H
N
I
C
A
L
S
U
P
P
O
R
T
I
O
N

Prep for shutdown	2/1-6/25/2011
Define tasks and goals	
Analysis and design of fixtures, tools and procedures	
Fabricate/procure tools and fixtures	
Tests, mockups, prototypes	
Receive, fabricate, modify, finish installables	
Review and approval of parts, tools, fixtures and procedures	
Assembly and QA tests	
AH Crane Upgrade (variable speed & wireless remote)	
End of Run Party	6/22/2012
Run 12 Ends	6/27/2012
Shutdown Standard Tasks	6/27-7/20/2012
• Open wall, disassemble wall, Remove MuID Collars,	
• Move EC to AH, etc.	
VTX Strip-pixel post run tests	6/27-6/30/2012
FVTX post run tests	7/1-7/8/2012
Disassemble VTX/FVTX services	7/9-7/27/2012
July 4 th Holiday	7/4/2012
Open Station 1 North, remove MPC North for repairs	7/9-13/2012
RPC1 North Cooling Upgrade	7/9-13/2012
Remove VTX/FVTX and transport to Chemistry Lab	7/30/2012
Remove MMS & MMN vertical East lampshades	7/23-7/27/2012
Summer Sunday (8/5) Prep and teardown	8/1-8/7/2012
Summer Sunday (RHIC)	8/5/12

TECHNICAL SUPPORT ZONE

MuTr South Station 1 work	
Install access (Sta. 1work platforms)	7/30-8/3/2012
Disconnect Cables, hoses etc, ID/label all	8/6-8/10/2012
Remove FEE plates and chambers	8/13-8/17/2012
Station 2 Terminators and manifold upgrade through access opened by station 1 removal	8/20/-8/31/2012
MPC South repairs	8/20-9/15/2012
RPC 1 South cooling upgrade	8/20-9/15/2012
Labor Day Holiday	9/3/2012
MuTr South Station 1 work (Cont'd)	
Clean/install new MuTr Sta. 1 chamber parts and upgrades (concurrent At RPC Factory)	8/20/-9/7/2012
Re-install chambers and FEE plates	9/10-9/14/2012
Re-cable, re-hose and test	9/10-9/28/2012
re-capacitation and air manifold upgrades	
Station 3 North and South (upper half)	7/23-9/30/2012
Repair upgrade, reassemble VTX/FVTX	7/23-10/5/2012
Test, survey (at Chemistry and IR) and re-install VTX/FVTX	10/8-11/9/2012
Substation breaker upgrade/test (CAD)	8/20-9/30
AH utility power distribution upgrade	8/20-9/30
DC West maintenance (replace window)	9/15-10/15
RPC stations 1 and 3, north and south maintenance	As required
Other detector maintenance as required	As required
Infrastructure maintenance as required	As required
TBD prototype tasks	As required
Open Station 1 North, re-install MPC North	10/16-10/26/2012
RPC1 North Cooling upgrade (if not completed earlier)	10/16-10/26/2012

T	Veterans Day Holiday	11/12/2012
E	Pre-run commissioning and prep for run 13	11/1-12/31/2012
C	Prep for EC roll in	11/12-11/16/2012
H	Roll in EC	11/19-11/23/2012
N	Thanksgiving Holidays	11/22-23/2012
T	Prep IR for run	11/26-12/3/2010
C	Pink/Blue/White sheets	12/3-12/21/201
A	Christmas Holidays	12/24-25/2012
L	Start run 13	1/1/2013

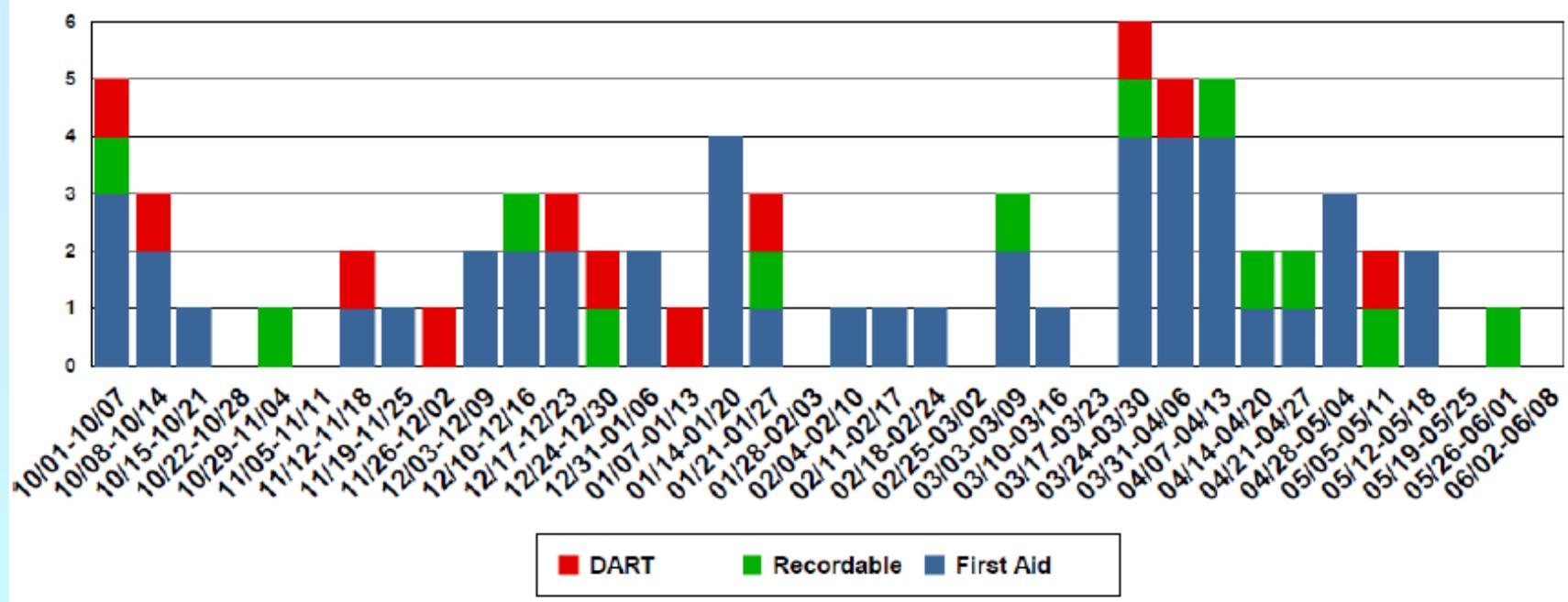
S
H
A
D
D
O
U
T
S
C
H
E
D
U
L
E

T
E
C
H
N
I
C
A
L
S
U
P
P
O
R
T
I
O
N

1. Configuration Management - New Procedures in progress.
2. Upcoming site-wide ISO 14001 & OHSAS 18001 Registration Audit, week of June 18:
3. PHENIX Shutdown review with CAD ESRF June 20

TECHNICAL SUPPORT NON

Injuries Per Week (FY) As of 6/8/2012

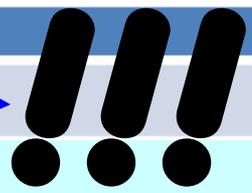


Injury Status:

FY12 YTD: DART – 11, TRC – 23, First Aid – 46
 FY11: DART – 27, TRC – 42, 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



6/14/2012

Recent Events		
6/7/12	Non-Reportable	Fire Rescue reported to a spill of less than 1 gallon of anti-freeze-mixture on pavement. The spill was promptly cleaned up. (Event Link)
6/1/12	SC-BNL	<p>Fire Rescue received an alarm of fire for building 901A. The building was evacuated and an A/C technician stated that he thought that there was an issue with one of the compressors in the basement. The firefighters entered the basement area and stated that the entire basement was filled with aerosolized compressor oil. When they entered the basement, multiple fire alarm zones alerted. The 1st floor and control room were completely filled with the aerosolized oil. The firefighters were able to shut down the compressor and started to ventilate the area. There was approximately 5 gallons of oil on the floor and dripping from the ceiling.</p> <p>6-04-2012, Update: Due to the evacuation, this event was initially determined to be ORPS Reportable (SC3). However, an evacuation due to a false alarm is not ORPS reportable. This evacuation is viewed as a response to a false alarm and therefore is not ORPS reportable. C-AD and F&O (in concert) have declared a Significance Category BNL - Management Concern. (Event Link)</p>
6/1/12	Non-Reportable	F/R was asked to respond to a first floor alcove in Building 555 due to an odor of something burning. As F/R arrived, Chemistry personnel found the source was a personnel computer power supply. This started out as an unknown odor in the vicinity of the west wing since 0900hrs. F/R checked the wall and power strip where the computer was plugged in and found no issues. No further action was taken by F/R. (Event Link)

Where To Find PHENIX Engineering Info



Today is Flag Day in the US

It is also:



Freedom Day in Malawi

Liberation Day (Falkland Islands, South Georgia and the South Sandwich Islands)

Mourning and Commemoration Day in Estonia

Mourning and Hope Day in Lithuania

Women's Day in Iraq

World Blood Donor day (International)



http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm

