PHENIX

TECHNICAL SUPPORT 2014

PHENIX WEEKLY PLANNING

June 12, 2014

Don Lynch

PHENIX

TECHNICAL SUPPORT 2014

VTX/FVTX east repairs/upgrades required

West to remain installed

Need to get PHYSICS FVTX/VTX lab ready by ~ mid June

Meeting Monday 6/16 to discuss shutdown task details

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This Week

TECHNICAL SUPPORT 2014

- Run 14 Continues
- No scheduled maintenance this week
  - Next maintenance access day 6/16/14?
- MPC-Ex Planning meeting yesterday
- BNL Science review of sPHENIX
- Plan for 2014 Shutdown
- Tech Support for Run 14 as required
- Support for sPHENIX efforts as required

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TECHNICAL SUPPORT 2014

Next Week

- Run 14 Continues
- Next scheduled access Monday 6/16?
  - Tasks?
- VTX/FVTX Shutdown work review meeting (Monday)
- Plan for 2014 Shutdown
- Tech Support for Run 14 as required
- Support for sPHENIX efforts as required

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2014 planned Technical Support & 2014 Shutdown

TECHNICAL SUPPORT 2014

Support for run 14	2/3-6/30/2014
Procure & Fabricate parts for MPC-Ex North and South	1/1/2014-6/30/2014
Set up Physics lab for FVTX/VTX east	6/15/2014
End of Run Party	6/27/2014
MuID Efficiency Measurement (Itaru, requires cooling water & isobutane)	7/7-7/10/2014
Start of Shutdown Tasks (purge flammable gas, disassemble and stow shield wall, remove collars, move EC to AH, Move MMS south, etc.)	7/14 – 7/25/2014
Remove FVTX/VTX East to PHYSICS?, repair and reinstall	7/14 – 9/15/2014
Remove MMS east vertical lampshade	7/28-7/30/2014
Troubleshoot intermittent water leak in MMS	7/30- 8/8/2014
Other Maint. In MMS	TBD
Reinstall MMS east vertical lampshade	TBD
Summer Sunday prep AH, tours and restore AH	7/30-8/15/2014
Install scaffolding in Sta 1 South	7/28/2014
Remove MPC-Ex prototype	**7/28-8/1/2014**
MuTr Sta 1 South troubleshooting and repairs	**7/28-8/1/2014**
Maint. & Repairs for MPC South, BBC South, RPC1 South1	**7/28-8/1/2014**
Assemble & test MPC-Ex North, ready for installation	**8/1-9/5/2014**
Remove scaffolding from sta 1 south, Move CM South	**8/4-8/5/2014**
Install scaffolding in Sta 1 North	**8/6-8/8/2014**
MuTr Sta 1 & Sta. North troubleshooting and repairs	**8/11-9/5/2014**
Prep MPC-Ex North installation area	**8/11-9/5/2014**
Install new MPC-Ex North	**9/8-9/26/2014**
Assemble & test MPC-Ex South, ready for installation	**9/2-10/3/2014**

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2014 planned Technical Support & 2014 Shutdown (cont'd)

TECHNICAL SUPPORT 2014

Remove Sta 1 N scaffolds, Move CM North, Install scaffolding in Sta 1 S	**9/29-10/3/2014**
Install MPC-Ex South	**10/6-10/24/2014**
Other detector support	TBD
Infrastructure Maintenance and Improvement	TBD
Decommissioning of obsolete PHENIX detector equipment	TBD
sPHENIX Support	on-going
End of Shutdown Tasks (Move MS north, roll in EC , install collars, remove 10 ton cart, plates and manlifts, build shield wall, etc.)	10/27-11/26/2014
Pink/White/Blue Sheets	**12/1-12/19/2014**
End of Shutdown Party	????
Start Flammable gas flow	????
Close shield wall, install radiation interlocks and prepare for run 14	12/31/2014
Start run 15	1/2/2015

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TECHNICAL SUPPORT 2014

Muon Tracker Shutdown Work List – summer 2014

- testing as MPC-EX installed, particularly before closing Sta-1's
- fix North Arcnet – N.2.7.1, North Sta-2 Oct-7 Chassis-1 (bad cable?)
- fix packets that were disabled for Run14
    - 11035,36 – South Sta-1 Quad-4 Chassis-3
    - 11267,68 – North Sta-2 Oct-7 Chassis-2
- replace boards for most frequent FEM problems from run
    - 11195 - North Sta-1 Quad-3 Chassis-3?
        - might have already done this; check history (changed RX 3/14/12)
    - 11064 – South Sta-2 Oct-3 Chassis-3 - unreachable
- N341 HV trip problem?
- auto-reboots of ArcNet and iocondev's for calibration?

- Access needed:
    - South & North Sta-1
    - Inside North Sta-2 on bottom
- Main Issue – Manpower

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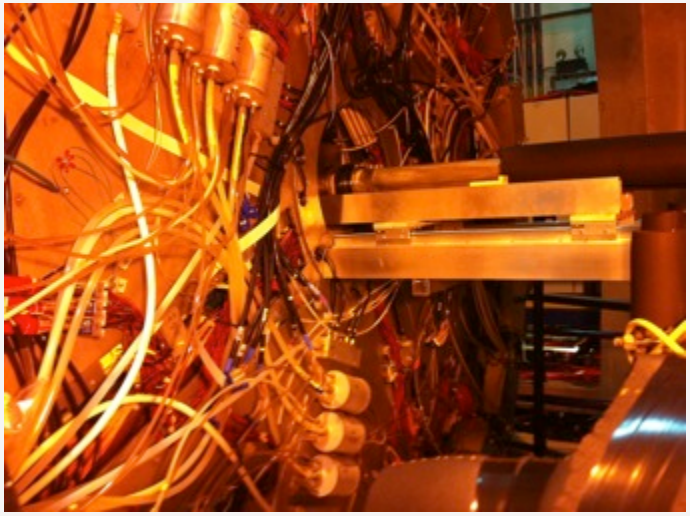
TECHNICAL SUPPORT 2014

MPC-Ex N & S Final Installations This summer

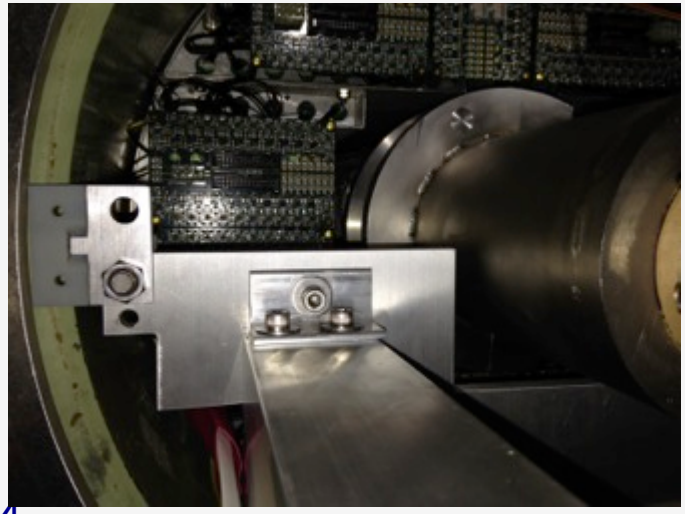


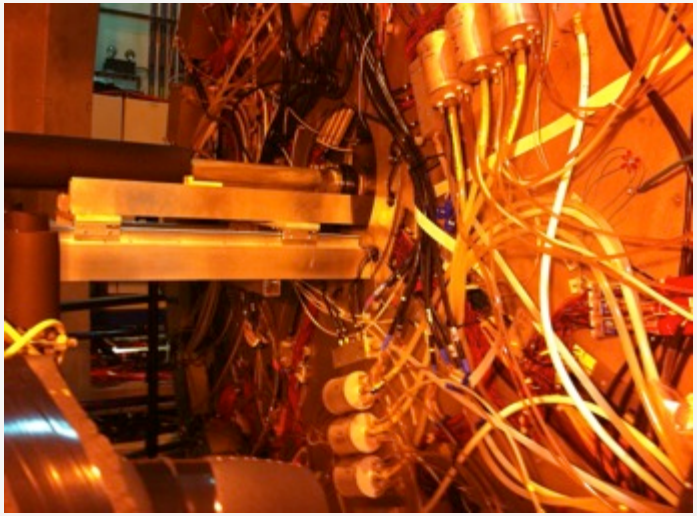
Working on North BP support design

Tungsten plates received, QC acceptable

Additional parts ordered from CS due end of June

Rescheduling meeting yesterday to update shutdown schedule





TECHNICAL SUPPORT 2014

MPC-Ex Project Summary

(1) Stony Brook in charge of MPC-EX testing

(2) Tom Hemmick is leading a test beam effort at SLAC June 20-30th: one MPC-EX hemisphere with 8 tungsten layers and 4X and 4Y carrier boards one micromodule on each layer, partial assembly to be returned to BNL by July 7.

(3) Current Parts Dispositions:

Sent to Stony Brook for tests:

- 8 (4 x and 4 y) carrier boards laminated to 'W' plates (new plates).
- 3 loose carrier boards for testing (one missing a connector)
- 50 brass spacer nuts
- 4 SS 1/4 - 20 x 4" studs
- 4 rapid prototyped spacers
- 1 micromodule

Mike Lenz office:

- 1 Assembly fixture
- 3 Delrin covers (in the shape of the 'W' plates)
- 6 'W' plates (new plates)
- 50 brass spacer nuts

At Central shops (due 6/27/14):

- 5 mounting tabs
- 50 brass spacer nuts
- 20 FEM mounting brackets
- 20 FEM mount Isolation Boards

Jim LaBounty's office:

- Installation assembly parts (to be itemized)

(Additional parts in currently installed partial South prototype to be itemized)

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TECHNICAL SUPPORT 2014

MPC-Ex Schedule considerations, Cont'd

Current Parts Dispositions (cont'd):

Sensors

Sensor testing at Yonsei is proceeding well, and we should have the remaining 200+ sensors from Yonsei by the end of June. We already have almost all the sensors we need for the south MPC-EX.

Micromodules:

450 ROC's ordered:

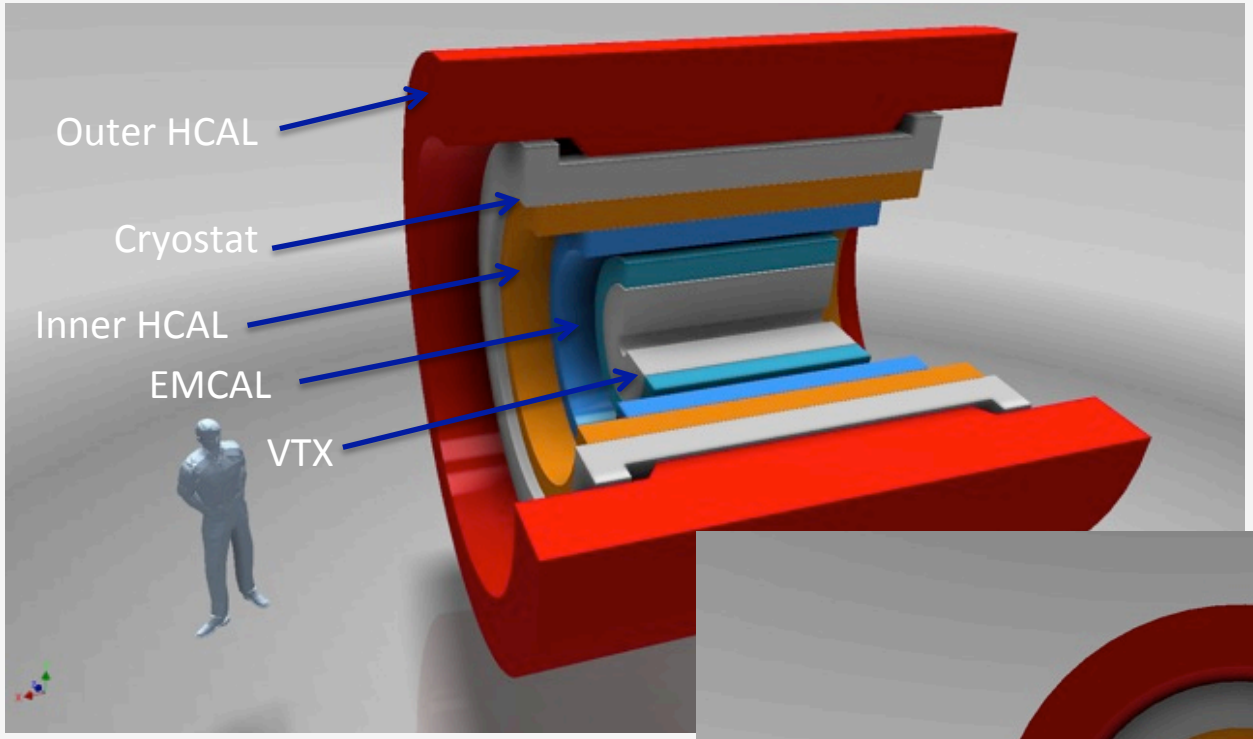
100 received and used in building initial micromodules
100 in transit to BNL
250 rejected by Sierra (bad solder mask) and being remanufactured expect shipment in ~ 1 week

The electronics for the FEM is designed and at Sierra awaiting a BNL PO for manufacture and assembly. The FEMs have four readout inputs, so there will be eight FEMs per arm. two FEMs per box, four locations on the magnet for each arm.

(4) Assembly Plan

- After receipt at BNL, ROC's are inspected and sent to Quik Pak with SVX4 chips for wirebonding the chips to the ROC
- ROCs returned to BNL and inspected
- BNL wirebonds the sensors and assembles the micromodules
- Micromodules sent to Stony Brook for testing
- Final assembly into MPC-Ex N & S at Stony Brook, PHENIX tech to participate and assure QC
- Return assemblies to PHENIX for installation in accordance with current shutdown schedule

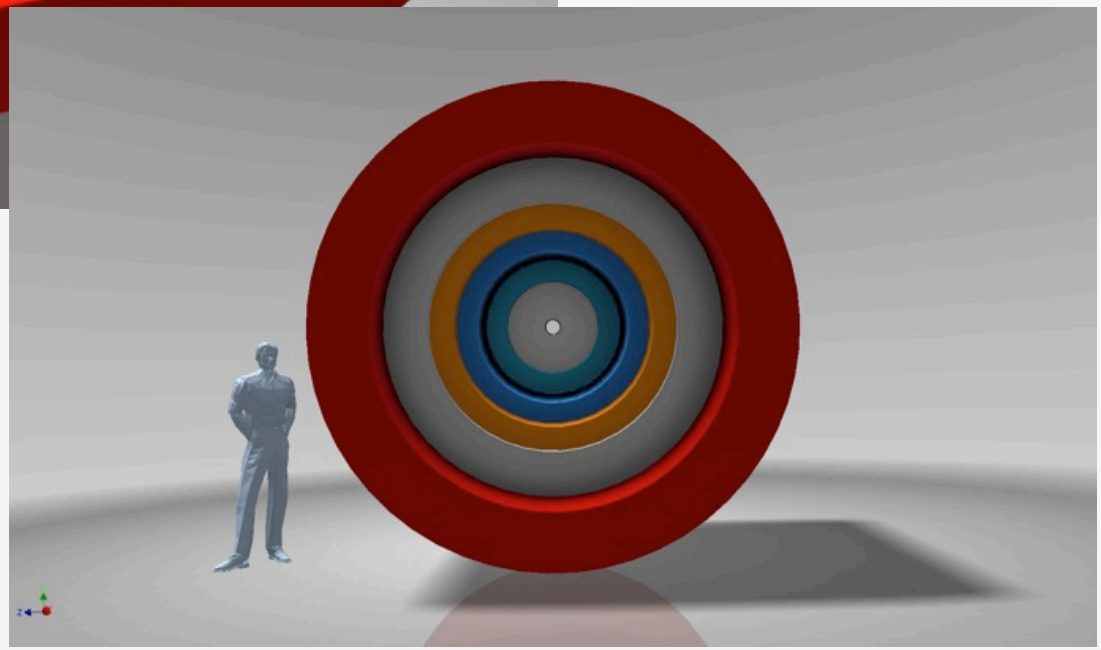
TECHNICAL SUPPORT 2014



BNL Science Review of sPHENIX This week

By all accounts was well received

sPHENIX Engineering meeting this morning



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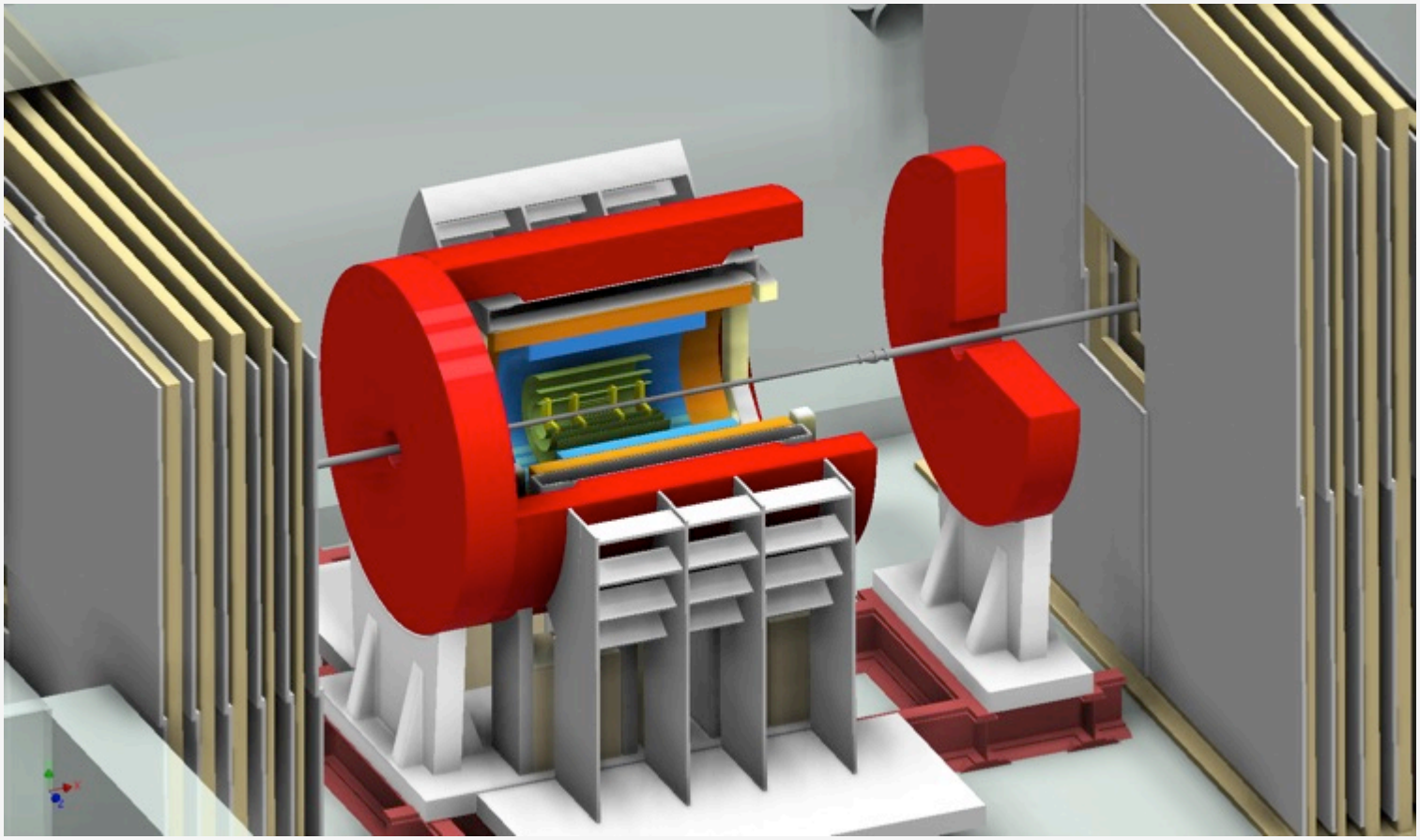
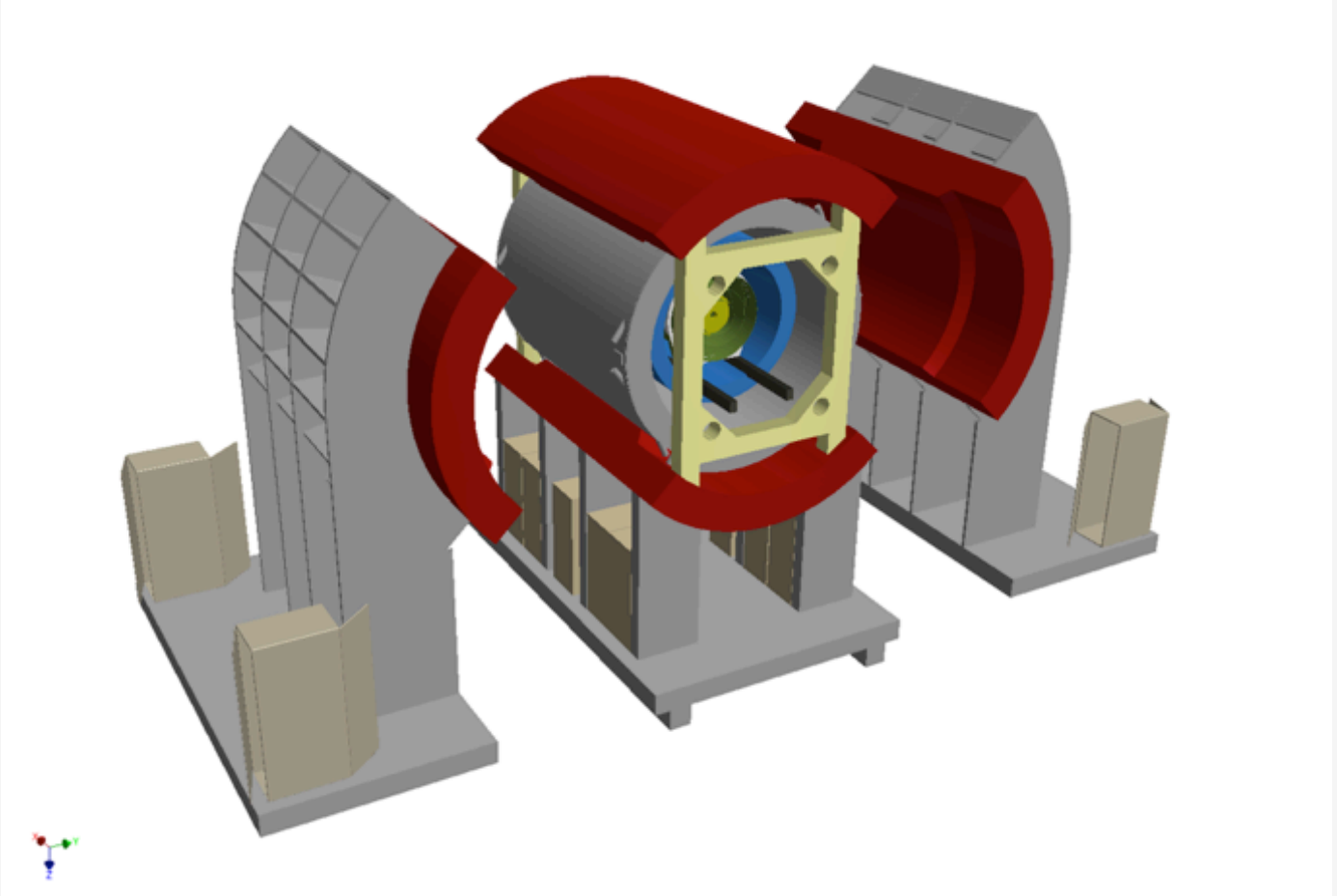
Design efforts over the next few months will include several areas of emphasis:

(a) incorporating a more detailed flux return (cap) design



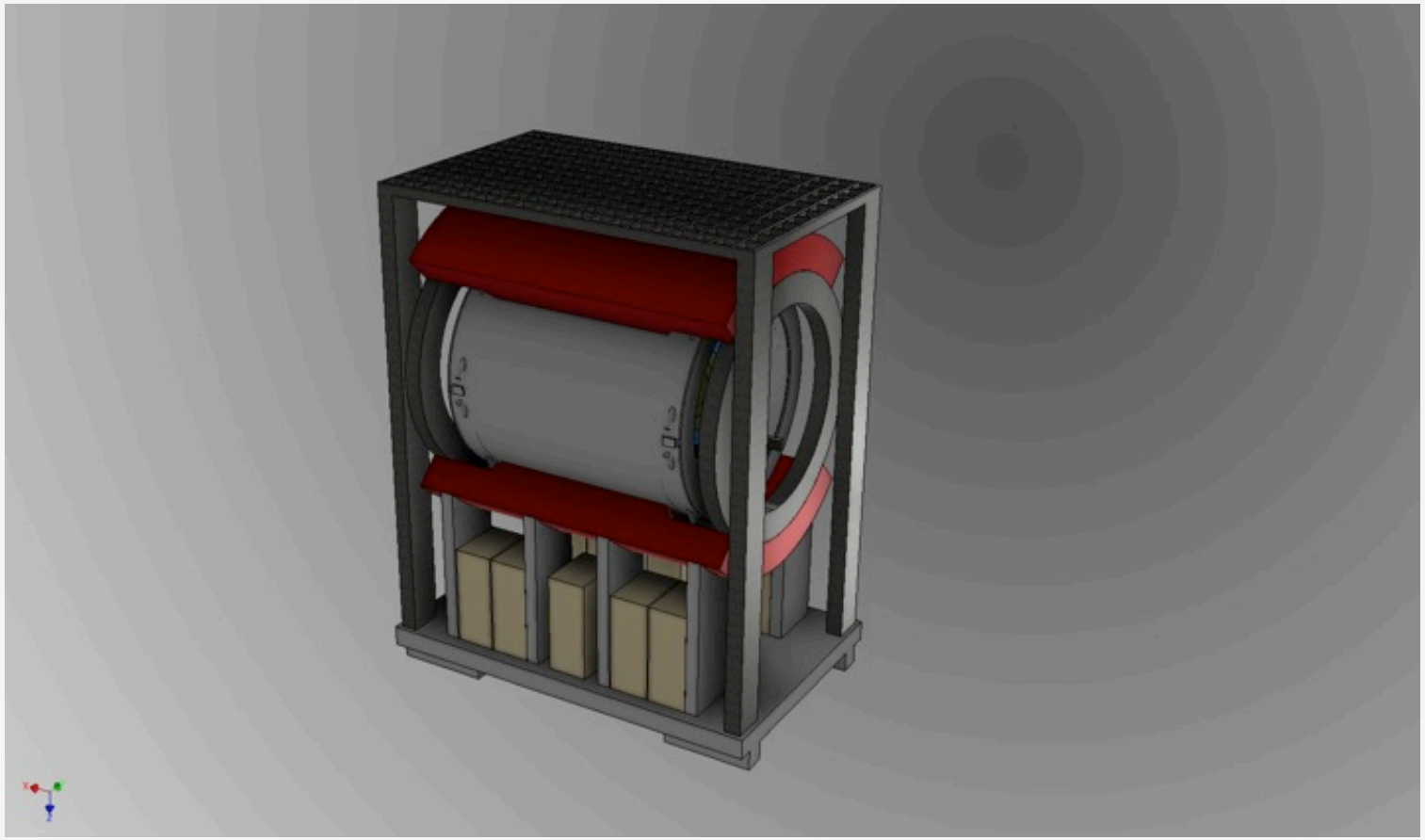
Basic sPHENIX model cutaway

(b) A more detailed structural support design, with support structure envelope details to be included in detector envelope



sPHENIX open, with racks

(c) Initial concept for external support, racks and upper bridge platform to be more detailed and conform to envelope restrictions



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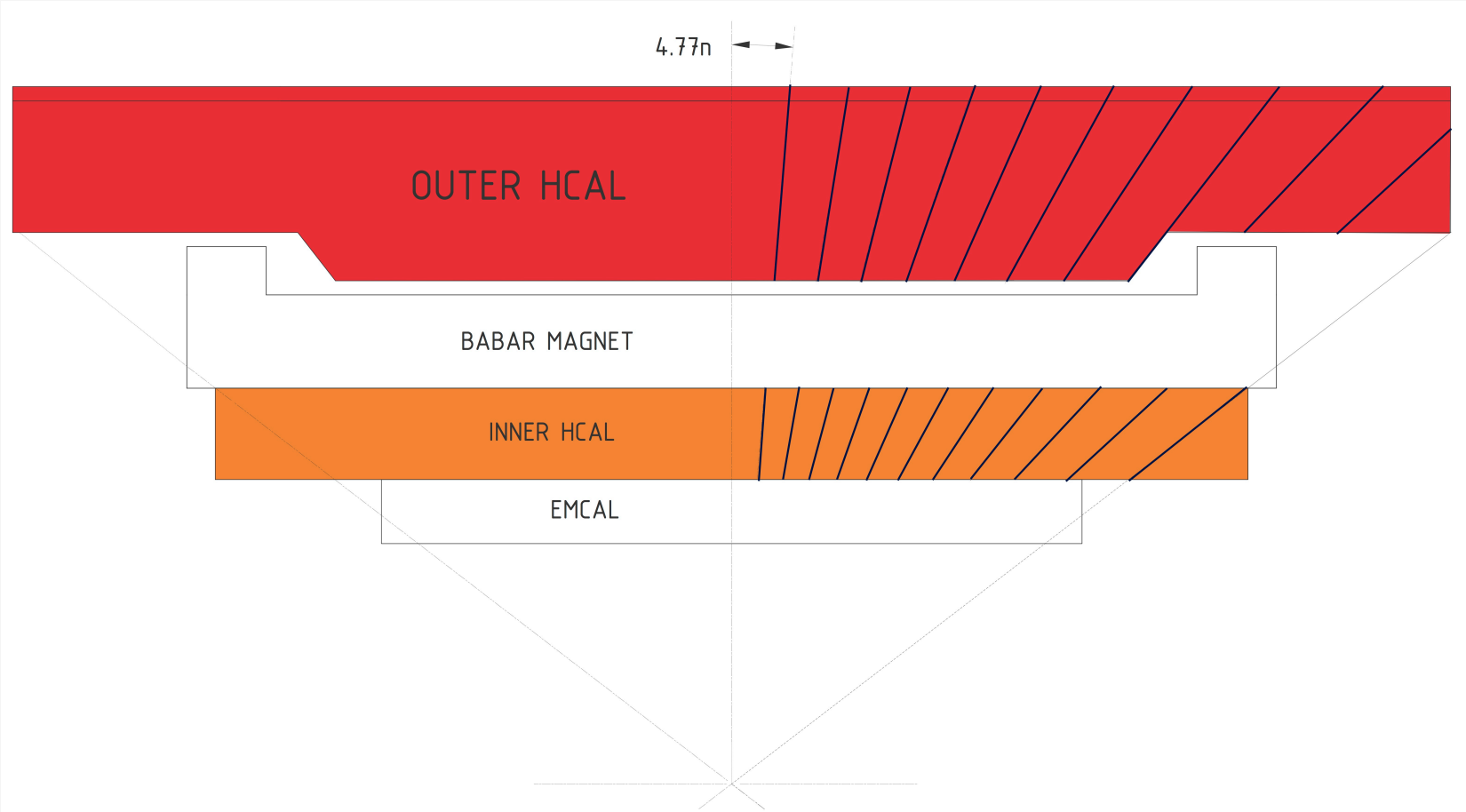
(d) “Innie” / “Bothie” tile configuration to be updated



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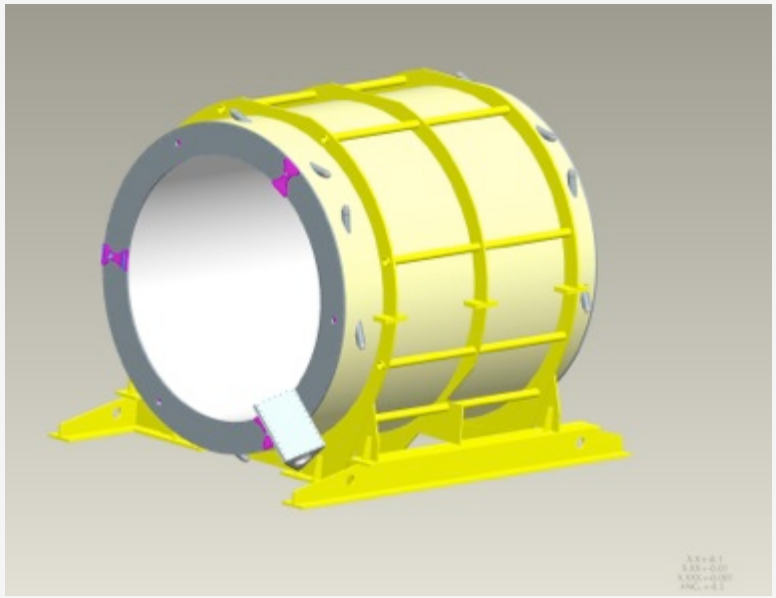
TECHNICAL SUPPORT 2014

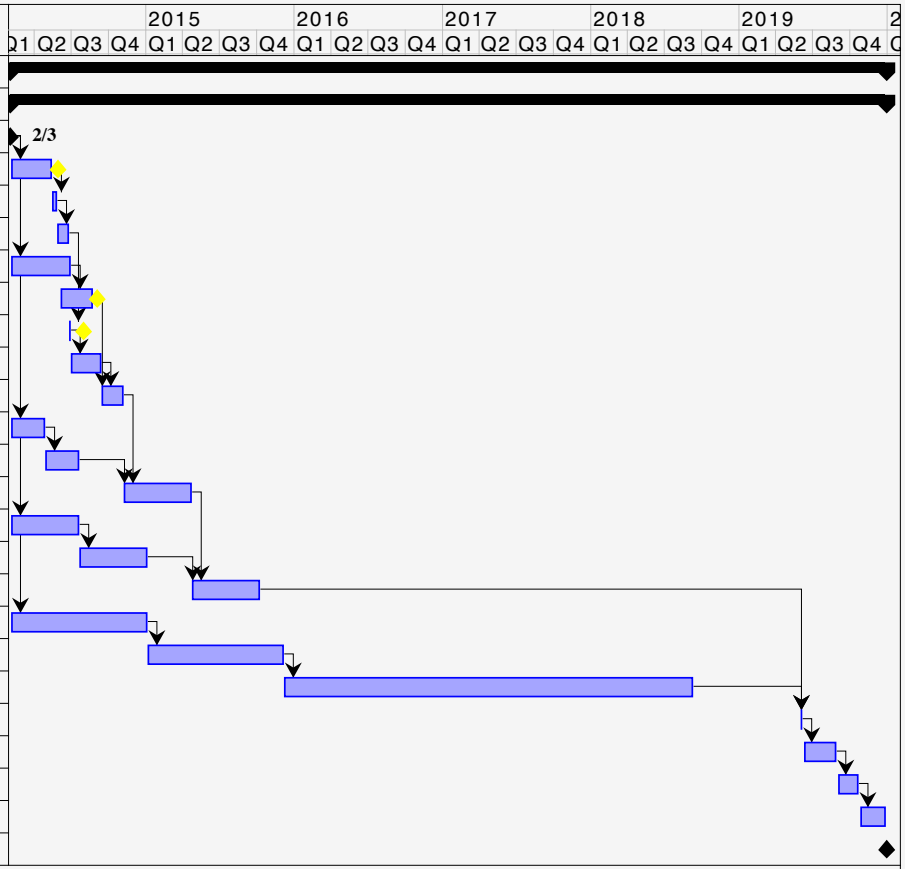


Magnet (BABAR) (Magnet Div)

- Acquire rights — Done
- Evaluate Transport — Done
- Design Transport fixtures — Done
- Fabricate Transport Fixtures — 6/15/14
- Evaluate BNL test facility requirements — 8/1/14
- Prepare test facility — 9/1/14
- Install Transport fixtures — 9/1/14
- Transport to BNL — 9/15/14
- Install in test facility — 10/1/14
- Design tests/test equipment — 10/1/14
- Fabricate/procure test equipment — 1/1/15
- Run tests — 6/1/15
- Design Magnet modifications — 12/1/14
- Fabricate magnet modifications — 6/1/15
- Install magnet modifications — 8/1/15
- Evaluate final installation — 9/1/15
- Design installation support equipment — 12/31/2015
- Fabricate/procure support equipment — 7/1/2018
- Transport to IR — 6/10/2019
- Install — 8/30/2019
- Test — 10/25/2019
- Commission — 11/22/2019

TECHNICAL SUPPORT 2014

		Name
1		**sPHENIX Project**
2		**Magnet (BABAR) (Magnet Div)**
3		Acquire rights
4		Evaluate transport
5		Design transport fixtures
6		Fabricate Transport Fixtures
7		Evaluate BNL test facility requirements
8		Prepare test facility
9		Install Transport Fixtures
10		Transport to BNL
11		Install in test facility
12		Design tests/test equipment
13		Fabricate/procure test equipment
14		Run tests
15		Design magnet modifications
16		Fabricate magnet modifications
17		Install magnet modifications
18		Evaluate final installation
19		Design installation support equipment
20		Fabricate/procure support equipment
21		Transport to IR
22		Install
23		Test
24		Commission
25		Ready for Operations



Babar Magnet Schedule: Mike Anarella

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Infrastructure: NICK TULLY, SULI Student:

Working with Paul Giannotti to gather existing PHENIX infrastructure documentation, update and revise as appropriate, modify and augment for sPHENIX

PHENIX Decommissioning: MATT CHIULLI, SULI Student:

Working with Dave Phillips to gather existing PHENIX installation documentation including work permits and Procedures (active and inactive), list and categorize tools and fixtures, begin creating updated documentation to plan PHENIX decommissioning.

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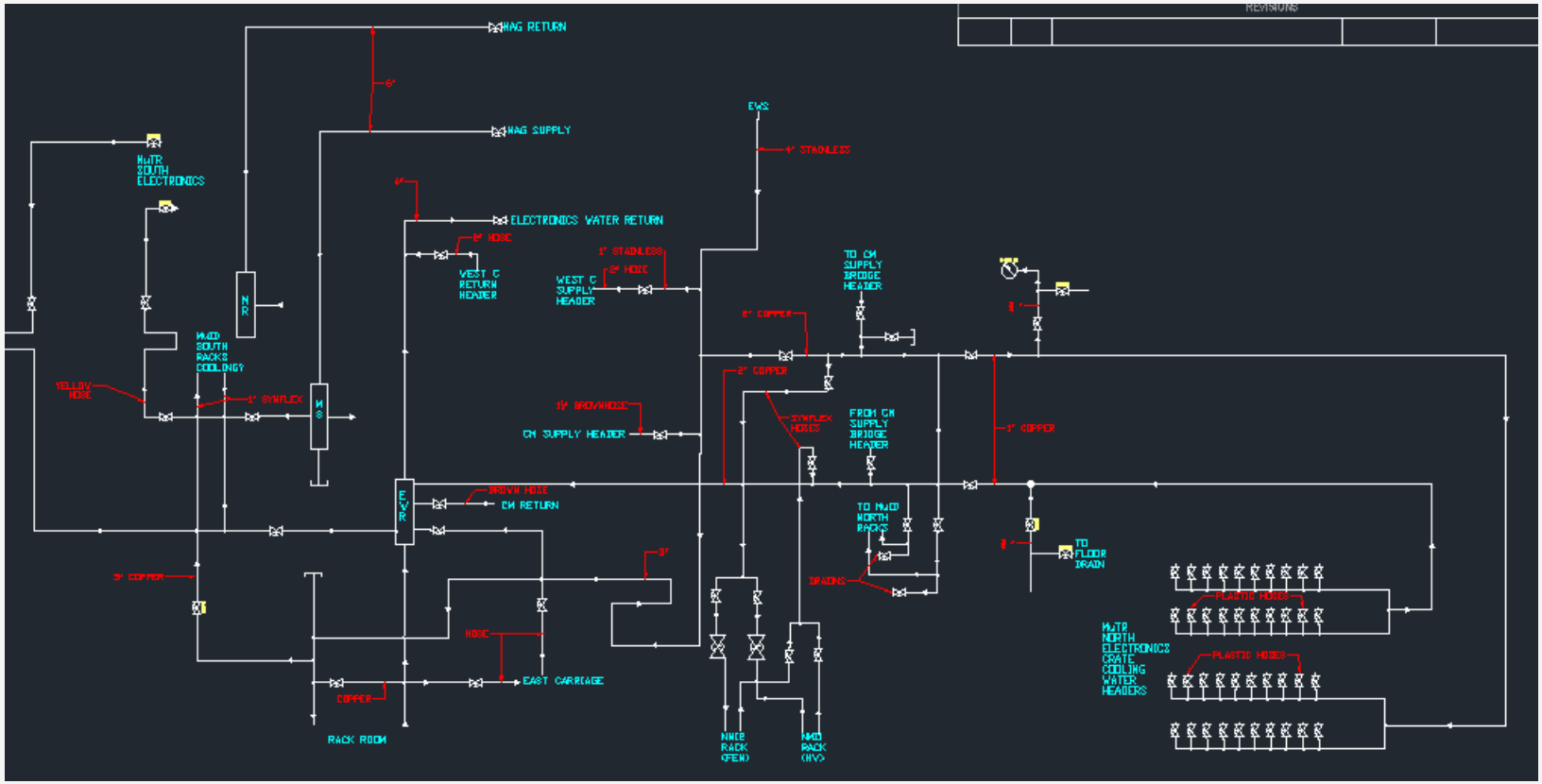

PHENIX COOLING WATER SCHEMATIC

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TECHNICAL SUPPORT 2014

Detectors	Procedures	Estimated Time of Disassembly	Work Permits	Drawings	Lifting Fixtures & Equipment
Drift Chamber	Cut all wires and gas lines, move forward on rails, lift off with crane, lay flat on cart, dismantle, outside him to take structural titanium, rest in dumpster.	4 Days, 8 CAD Tech Days	na-20002-005 (DC troubleshooting from extension ladder)(1/12/2002-4/1/2003) na-20002-006 (Replace regulator on DC/PC gas rack in mixing house)(12/18/2002-12/18/2002) 2003-003/552003-0026 (Drift Chamber Repair on Lift Table)(1/1/1/2003-9/23/2003) na-2003-007 (Replace Drift Chamber power supplies)(11/19/2003-11/21/2003) 2004-001/1504-1 (Troubleshoot & Repair DC Electronics)(2/1/1/2004-3/31/2004) 2004-006/55-2004-075 (DC Power supply Repair)(5/25/2004-6/15/2004) 2004-008/55-2004-107 (Erect DC Repair Tent)(6/23/2004-6/18/2004) 2005-001/55-2005-054 (DC Repairs)(2/14/2005-4/1/2005) 2005-003/55-2005-030 (DC Cable Repairs)(5/6/2005-6/25/2005) 2005-006/55-2005-038 (DC Repairs)(5/24/2005-6/3/2005) 07-006/DRL-2007-006 (DC East & West repairs)(2/9/2007-2/15/2007) 07-024/DRL-2007-023 (DC East & West repairs)(10/5/2007-12/3/2007) 08-001/55-2008-113 (Tap into DC supply in a way to flow either 50/50 Ar/Ethane or 50/50 Ar/Ethane + t-Butanol)(1/22/2008-1/23/2008) DRL-2009-3 (DC Repairs)(1/8/2009-2/4/2009) DRL-2009-15 (DC East Repair)(3/24/2009-10/12/2009) DRL-2009-18 (DC East_West Repairs)(11/16/2009-12/16/2009) DRL-2010-13 (DC East & West Troubleshooting & Repairs)(12/10/2010-1/11/2011) DRL-2011-003 (DC East & West Troubleshooting & Repairs)(1/25/2011-3/1/2011) DRL-2011-020 (DC East & West Troubleshooting & Repairs at the start of run 12)(11/14/2011-12/1/2011) DRL-2012-001 (DC East & West Troubleshooting & Repairs prior to run 12)(1/17/2012-1/25/2012) DRL-2012-002/55-2012-126 (DC East & West Troubleshooting & Repairs during run 12)(2/8/2012-2/9/2012) DRL-2012-007 (DC Troubleshooting & Repairs during run 12 #2)(3/13/2012-3/15/2012) DRL-2012-011 (DC Troubleshooting & Repairs during run 12 #3)(5/14/2012-5/16/2012) DRL-2013-003 (DC troubleshooting & repairs prior to run 13)(2/4/2013-3/28/2013) DRL-2013-004 (DC troubleshooting & repairs during run 13)(3/19/2013-3/20/2013) DRL-2013-012/SS-2013-238 (DC East Window replacement)(7/12/2013-10/11/2013) DRL-2014-002 (DC East FEM Repairs during run 14)(3/11/2014-n/a)	✓ (Carriage FAB Folder) (DC Cable Routing) (DC/PC Installation Procedure)	Slings (2): 20-ft, 6200-lb capacity in vertical configuration 40-Ton Assembly Hall Crane 12-Ton Collision Hall Crane 2 Chain Falls rated at or above 3000-Lb each
Pad Chamber 1/Pad Chamber 3	Remove PC-1 from the back of DC, throw in dumpster. Disconnect PC-3 by cutting all services, unbolt and slide out the bottom, toss in dumpster.	4 Days, 8 CAD Tech Days	na-20002-006 (Replace regulator on DC/PC gas rack in mixing house)(12/18/2002-12/18/2002) 07-011/DRL-2007-011 (PC Electronics Repair work permit)(5/23/2007-6/30/2007) DRL-2009-10 (PC1 Repair)(5/23/2009-9/24/2009) DRL-2010-1 (PC1/EN2 Troubleshooting)(1/21/2010-1/28/2010) DRL-2010-22 (PC1 East and West Troubleshooting & Repairs)(11/20/2010-11/24/2010) DRL-2011-014 (PC1 Repairs)(5/23/2011-12/15/2011)	✓ (PC-1 Cable Routing) (PC-3 Cable Routing) (PP-2.5.5.4-06, TEC/PC3 Installation Procedure)	
Ring Imaging Cherenkov Detector	Cut service lines, unbolt RICH north and south, attach to crane at vessel's center of gravity, move to truck, move to staging area, salvage all PMT modules, dispose of all remaining parts.	(4 Days, 8 PHENIX Tech Days to strip out modules from RICH and dispose of remainder at staging area) (4 Days, 8 CAD Tech Days) Total = 8 days, 8 PHENIX Tech Days, 8 CAD Tech Days	98-008 (Rotate RICH Detection) 98-009 (Remove Top of Tent) 98-011 (Remove Gas Vessel and Transport) 98-012 (Replace transition plates & pivots on RICH Vessel) na-1999-005 (Welding repair leaks in RICH vessel)(8/9/1999-8/9/1999)	✓ (RICH Cable Routing) (BNL Website) (RICH Installation Procedure, PP-2.5.5.4-01)	(2) Pivot Pins, P/N 002-0501-303 Spreader Bar Chain Falls Doubled Slings Lifting Frame Swivel Shackles Load Cell Crane
Time Expansion Chamber	Unbolt, remove 1 sector at a time using crane, disassemble/cut up into disposable chunks and discard in dumpster.	4 Days, 8 CAD Tech Days	06_011/DRL-2006-005 (TEC Repairs)(6/30/2006-10/15/2006)	✓ (TEC Cable Routing) (PP-2.5.5.4-06, TEC/PC3 Installation Procedure)	30-Ton Lift Beam (1) S/N 92724, Model # 205-80-14 Swivel Eyes: 3/8-16 Swivel Eyes (4), 1000 lbs capacity 3/4-10 Swivel Eyes (2), 5000 lb capacity Slings: 3-Ton Capacity (2) TEC 2-Ton Hilfting fixture (1) S/N 02208, Model # 255-2-80, Test SE302099 Wire Rope Turnbuckle Assembly Drawing 002-0206-1018 (2) Chain Fall 3-Ton Capacity (2) 4"x4"x7" wood blocks (2)
Electromagnetic Calorimeter	Cut all service lines, Remove EM Cal Racks and toss in dumpster, Disconnect and remove all EM Cal modules and move to safe storage area.		na-1998-004 (Put EMCAL detector on truck)(8/3/1998-8/4/1998) 06_012/DRL-2006-006 (EMCal Repairs)(6/30/2006-10/15/2006)		30-Ton EMCal Lift Beam 2'6" long, 15-Ton Slings (2) M-24 Shoulder Eyes, 3-Ton Capacity (4) Swivel-Eyes: 3-Ton Capacity (4) 2-Ton Capacity (4) Chainhoists: 5-Ton Capacity (2) 2-Ton Capacity (2) Slings: 5-Ton Capacity (2) 3-Ton Capacity (2) 2-Ton Capacity (3) Triangular attachment plates (2)
PbSC East	Disconnect from EM Cal and move to safe storage area.	10 Days, 10 PHENIX Tech Days,	n/a	✓ (PbSC East Cable Routing)	
PbGl	Disconnect from EM Cal and move to safe storage area.	10 CAD Tech Days	n/a		
Electronics Racks	Strip all unwanted electronics from racks, cut all wires, remove all inner components and dispose except for rack components and main power supplies. Keep racks.	1 Day 1 PHENIX Tech Day to strip all racks, 1/4 Day 1/2 PHENIX Tech Day to remove from EC to AH floor, 1 Day 4 Rigger Days to move all EC racks to safe storage, 24 racks to be salvaged. Total = 30 Days, 36 PHENIX Tech Days, 4 Rigger Days.	PAG-2012-001 (Install Power Meter modules on the Rack Room East & West HVAC condensers)(8/22/2012-n/a) DRL-2011-002 (FEM Troubleshooting)(1/18/2011-2/1/2011) DRL-2014-002 (DC East FEM Repairs during run 14)(3/11/2014-n/a)	✓ (East Carriage North Side, East Carriage South Side Cable Routing)	Railing to ensure the safety of the on-carriage work away from the building wall Man-Lift to hook up electronic racks to crane Crane Equipment necessary to strip electronics
Deconstruct Carriage and dispose/recycle	Unbolt and remove rack platforms to floor level for cut up. Cut up rack platforms into disposable segments and stack outside AH for vendor removal. Rotate carriage frame 90 degree to disassemble. Disassemble services and discard in dumpster, Disassemble/cut carriage frame into disposable segments and stack outside of AH for vendor removal.	20 days 40 CAD tech days			
Total EC		85 Days, 54 PHENIX Tech Days, 4 Rigger Days, 92 CAD Tech Days			

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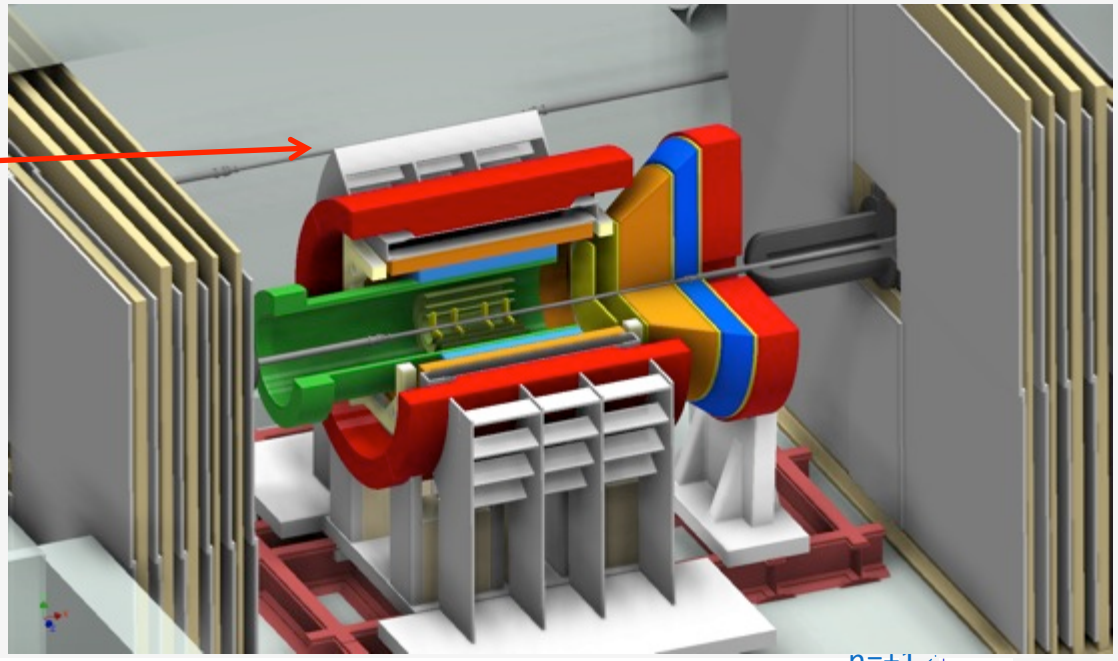
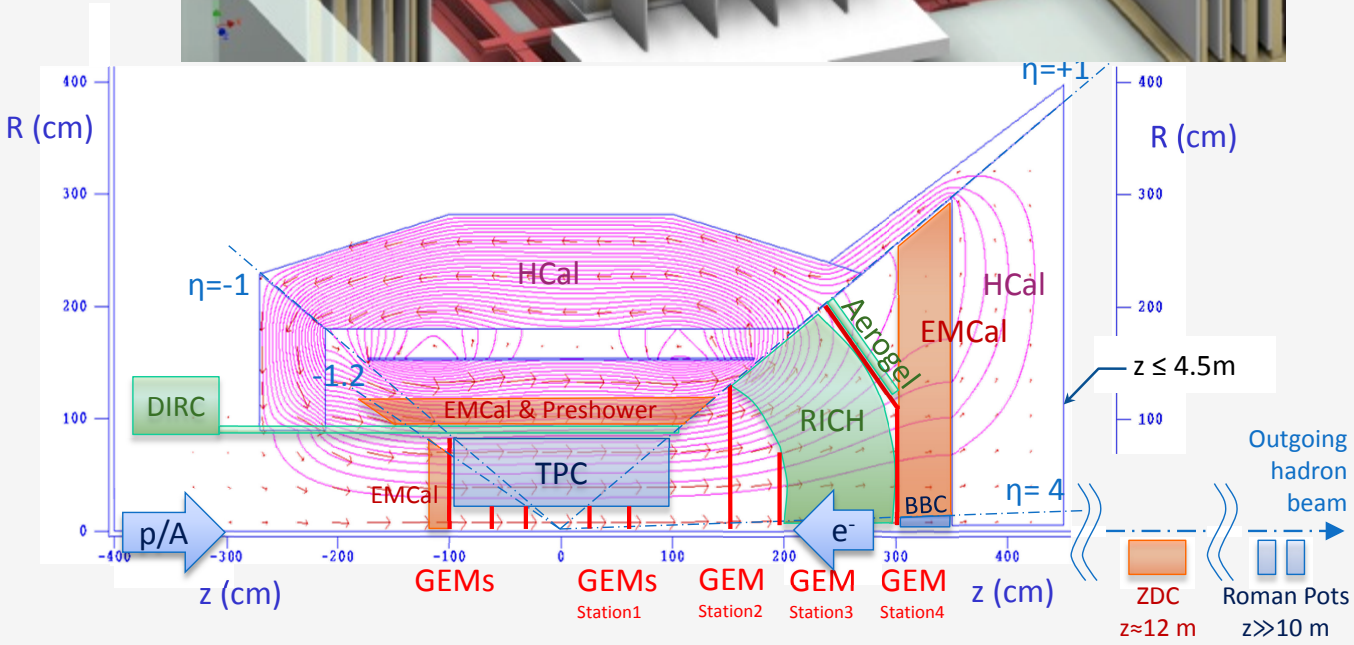
2ft high x 1 ft wide clearance needed for e-ring components



ePHENIX



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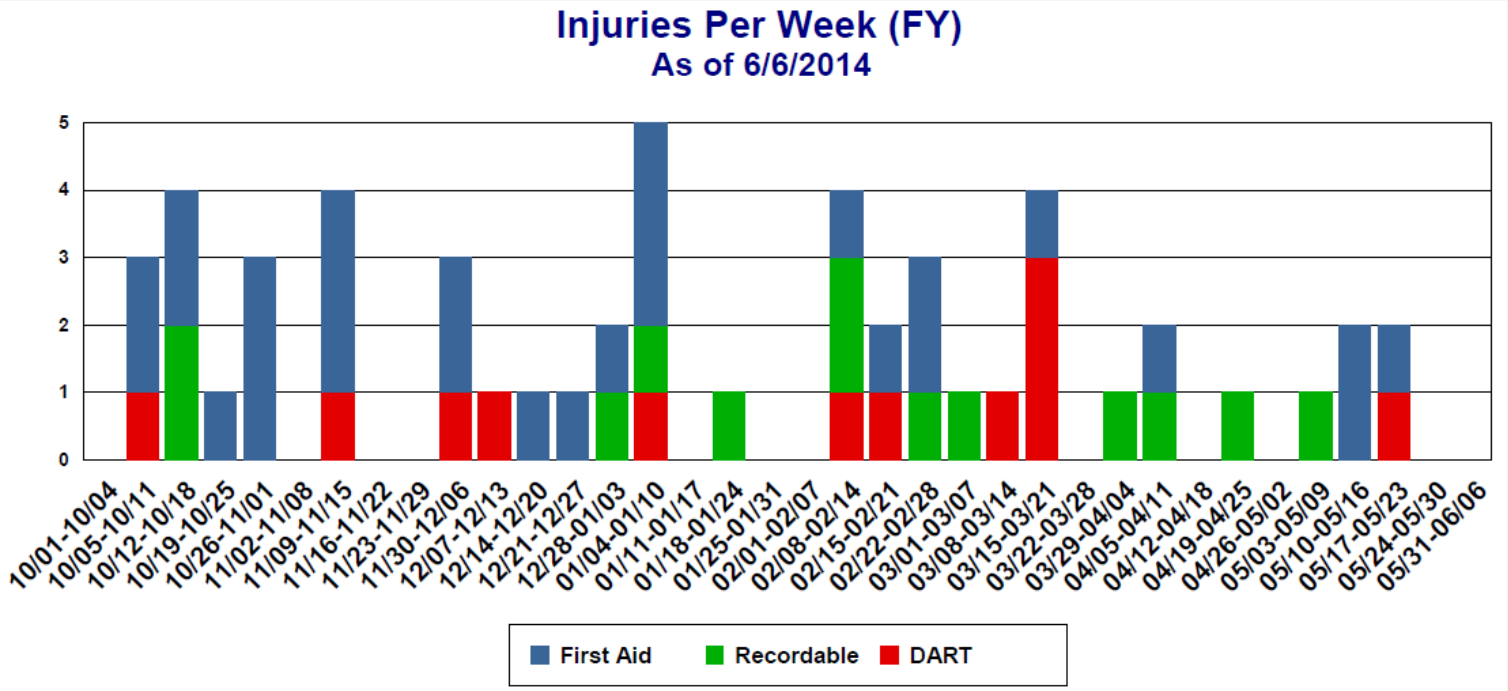
TECHNICAL SUPPORT 2014

From Ron Gil (via Mike Lenz): New User Guide for Renovated Labs in Building 510:

A 13 page pdf document that covers the following topics:

- **Authorized User Lists/Permits**
- **Chemical Storage**
- **Clean Room**
- **Compressed Air**
- **Custodial Services**
- **Electrical Outlets and Grounding Bus**
- **Emergency Power Off Buttons**
- **Eyewashes and Showers**
- **Fire Extinguishers, Fire Alarm Pull Boxes**
- **Fume and Snorkel Hoods, Passive Ventilation Emissions (PVE) and Exhaust Lines**
- **Gas Racks and Storage of Gas Cylinders**
- **Hazard Placards**
- **Internet/Phone Jacks**
- **Pipe Chases**
- **Storage Cabinets**
- **Other**



Injury Status:

FY14 YTD: DART – 12, TRC – 25, First Aid – 28
FY13: DART – 16, TRC – 38, First Aid – 53
FY12: DART – 19, TRC – 36, First Aid – 69

FY13 Injury Listing: https://intranet.bnl.gov/esh/shsd/seg/OccInj/BNLInjuries.aspx

Recent Injuries		
		None

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TECHNICAL SUPPORT 2014

Recent Events		
6/5/14	Non-Reportable	The exhaust hood ventilation system was found to be inoperable during a walkthrough of Building 480. The system was not in use at the time of occurrence. There was no adverse impact on facility operations. No Stop work order was issued. Cognizant personnel were informed of the inoperable ventilation system and instructed not to perform any operations that require exhaust hood ventilation until repairs are completed. (Event Link)
6/3/14	SC-BNL	A window fell out of its frame in Room U17 in Building 902. It hit a file cabinet and then fell to the floor, breaking the glass. The office occupant was at the desk when this event occurred and immediately called Facility & Operations for assistance. There were no injuries. The Complex supervisor was called, as well as a carpenter to secure the window opening for the evening. The scene of the event was secured and an investigation was initiated. (Event Link)
6/3/14	Non-Reportable	BNL Fire Rescue responded to a sprinkler activation alarm in Building 129. Upon arrival, they found a single fire sprinkler head activated in the ME 1-1 mechanical room. The responding firefighters immediately recognized the situation, isolated the system, and made the appropriate notifications. Based on a preliminary investigation, it appears that a unit heater failed to turn off (possibly due to a broken thermostat) and the room temperature climbed above the activation temperature of the sprinkler head, which then alarmed and triggered the Fire Rescue response. Water that was discharged from the sprinkler head migrated through the wall and onto the floor in the main ITD service area. The scene was turned over to the Facility Project Manager. (Event Link)

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TECHNICAL SUPPORT 2014

Where To Find PHENIX Engineering Info

Run 14 Continues!
Less than a month to go !

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