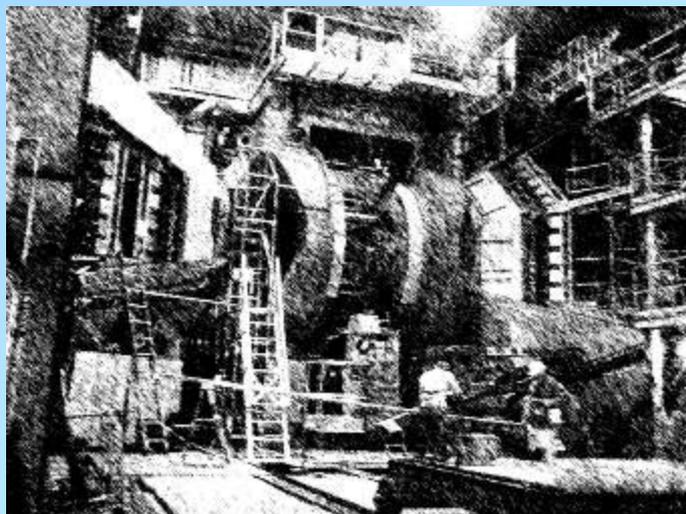


# PHENIX WEEKLY PLANNING

TECHNICAL SUPPORT NO-0



3/11/2010  
Don Lynch

# Ongoing Tasks for Run 10

## Task

Start Date

End Date

Install rack components in RPC3 N racks

in progress

6/1/2010

Attach cables to RPC3 N racks and to Detector  $\frac{1}{2}$  octants

in progress

6/1/2010

Send mass flowmeters out for recalibration (DC/PC, MuID, TOF.W)

In Progress

?

AH Crane 110 switch for lockout

In Progress

6/30/09

## PHENIX Startup Checklist Status

Item

Responsibility

Status

Item 1: ESRC relevant items completed

Wood Stairs

Phillips

Post Start

Update Work procedures

Cirnigliaro, Lynch

Almost Done

Item 4: HBD Mock Up

Lynch

After Run 10

Item 11: Fire Pull Box

Phillips

Post Start

Item 12: Dumb Waiter

Lynch

Done??

3/11/2010

TECHNICAL SUPPORT NO-O

# This Week

## Yesterday's Maintenance:

- Water leak found, fixed
- Dumb waiter certified
- TOFE: Replaced board
- EMCAL: ASIC Card replaced
- RPC: Ethernet problem fixed
- HBD: WS1 register replaced

Beampipe design passed on to Mickey. Expect recommendations this week

DC Meeting yesterday: Subsystem shutdown wish list items presented. Final schedule to be negotiated

VTX pixel stave and strip-pixel staves tested for flow vs. pressure drop reveal flow/pressure /temperature deficiencies in design more engineering needed

VTX assembly and handling fixtures re-design for 80-20 in progress

VTX Support frame is on deck for design

RPC Quarterly review today & Tomorrow

## Next Week:

- No Scheduled Maintenance next maint. Wed. 3/24
- Run 10 tech support as necessary
- 2010 summer shutdown prep continues
- Future upgrade support as necessary
- $\frac{1}{2}$  octant pre-survey
- VTX assembly fixtures to be re-designed
- VTX support structure
- VTX thermal design calculations
- RPC absorber design specifications due from RPC group

# 2010 Tasks

Start Date    End Date

Run 10	In progress	6/1
VTX Installation Plan (Final)	3/1	5/31
RPC3S Installation Plan (Final)	3/1	5/31
Receive New Beampipe	Done	Done
Design Beam pipe supports	Done	Done
Update RPC3 N design for RPC3 S	Done	Done
Design support structure, alignment scheme for VTX	In progress	3/31
Specify and procure electronics racks and support equipment for VTX	3/1	5/31
Fabricate beam pipe supports	3/5	5/1
Beampipe NEG coating (CERN)	3/15	5/1
Fabricate/procure parts for RPC3 S installation	In progress	5/1
Fabricate/procure parts for VTX installation	3/15	6/1
End of run 10	6/1	6/1
Rnd of Run Party	~6/18	~6/18
Prep IR for shutdown	6/1	7/1
Complete unfinished business for MuTrgr FEE & RPC3 North	6/1	8/1
Install Beam pipe	7/1	10/1
Install VTX	8/1	10/1
Install RPC3 South	6/1	10/1
2010 Shutdown Other Tasks	6/1	11/1

3/11/2010

# Electronics Racks 'n stuff for Shutdown 2010 and Beyond

TECHNICAL SUPPORT NO-0

- Bridge needs 8 tall racks (no shorties on the bridge) and all deep racks (40" deep)
- No need to make them tiltable. )Unlikely to ever move the CM out of the IR)\
- Paul to consul with Makdisi and Phillips about safety issues and considering the cooling requirements of the racks. For safety, the issue is whether the internal smoke detectors will be effective. For cooling, the issue is whether we'll be creating excessive load on the HVAC system. For the VTX/FVTX MPOD system, water cooling is pointless, since the boxes themselves are sealed top and bottom and the cards are horizontal. The LV and RPC FEM's are powered by 4 kW Megapaks (2 for VTX, 4 for FVTX) which would dissipate a maximum of 20% of that as heat in the rack for 4.8 kW which is ~16k BTU/hr, or ~1.3 tons. I \*think\* the units in the IR are 10 ton capacity, and there are usually at least two functional, so it seems like a relatively small additional heat load. Of course, the racks may be excessively hot inside without a water circuit that removes some of the heat... we need a way to evaluate this, although thinking about it after the meeting, the test rack we have is the HBD rack, which gets pretty hot if you turn the water off.
- One tall rack left is slated for RPC3 South.
- In Rack Room Westernmost 2 Giant racks for VTX FEM electronics. Water cooling TBD after electronics are finalized. One megapak needed on swing frame.
- DCM II rack can and should be restored.
- No plans for HBD low rack on CM except maybe VTX patch panel. All racks on top of CM bridge are accessible without moving carriages (+) but will need longer cables (-).
- Safety system needs still ? for VTX, but will need coolant flow, N2 flow and multiple temp interlocks which cut LV and HV to the detector.

## Electronics Racks 'n stuff for Shutdown 2010 and Beyond (Cont'd)

- Possible projects that come out of nowhere and suck up all available time, money, and effort are:
  - Switching the MPC readout to HBD electronics
  - Unaccounted RPC work
  - MUTR repairs
  - Help DC repair
- Orders (parts for Run 11 and Run 12):
  - Fan trays: buy a large number (50?) 3x3 fan trays
  - 8 tall racks (1m deep)
  - Parts for 9 new buckets, although we only need to manufacture 3 new ones (one for RPC3S, two for the VTX in the rack room; we can salvage two buckets from CMT1 and CMT2 for the racks on the bridge).
  - Radiators to be determined subject to accounting for what we have for the VTX racks on the shelf and in the CMT racks.

TECHNICAL SUPPORT 2010

## New Beampipe Pre-Shutdown Prep

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Design central beam pipe and new transition sections	Done	
Order beampipe	Done	Brush Wellman
Order new design transitions	Done	CAD
Order replacements for existing transitions and spools	Done	CS
Conceptual and mechanical design beampipe supports	Done	Done
Beampipe fabrication	Done	Done
Receive bp and all beampipe sections	3/15/2010	CAD
Beampipe Installation Review (Preliminary)	Done	Done
Bp and sections acceptance tests and inspection	3/15/2010	
Send beampipe to CERN for NEG Coating	3/15/2010	
Fabricate beampipe supports	5/31/2010	
Receive bp back at BNL	5/31/2010	
Choreograph removal of old beampipe and installation of new (final)	6/1/2010	
Final acceptance and inspection bp and sections	6/15/2010	
Test and inspect beampipe supports	6/15/2010	
Beampipe Installation Review (Final)	6/15/2010	

3/11/2010

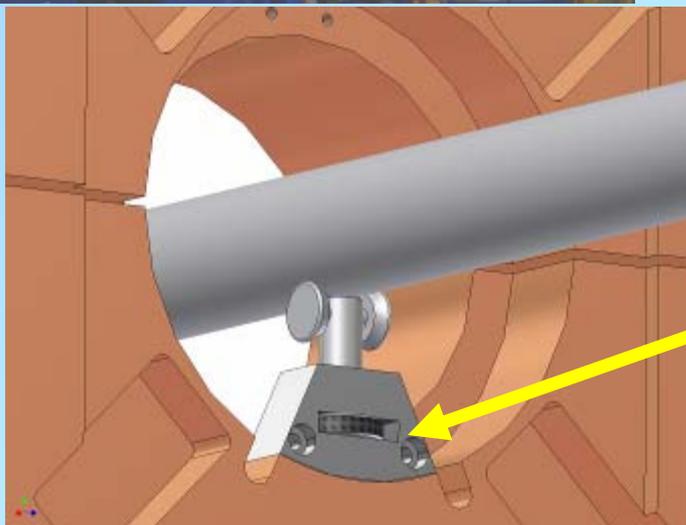
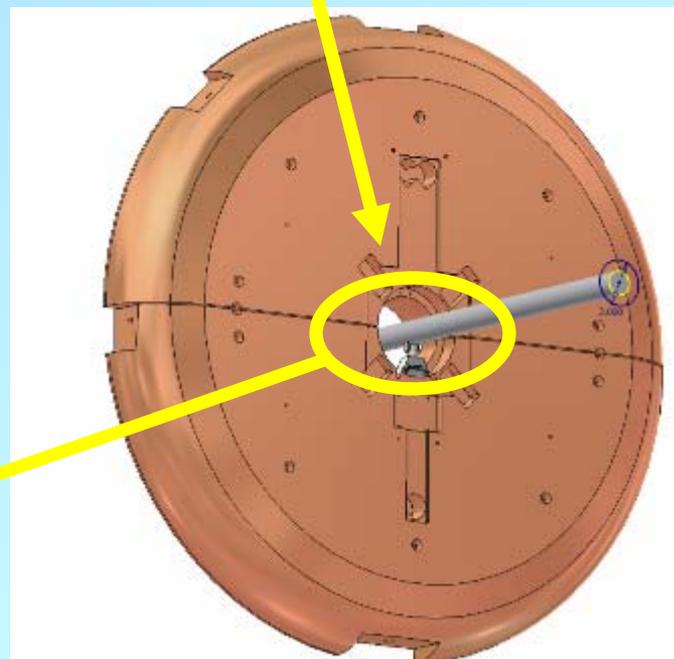
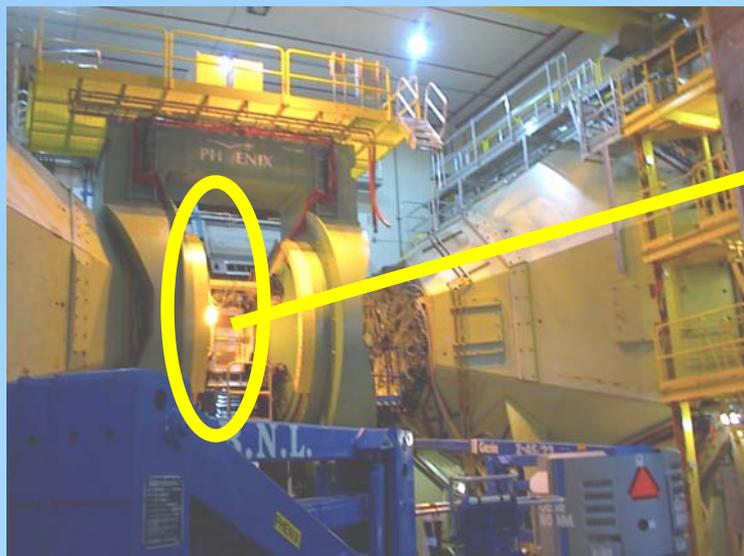
T



0-02

3/11/2010

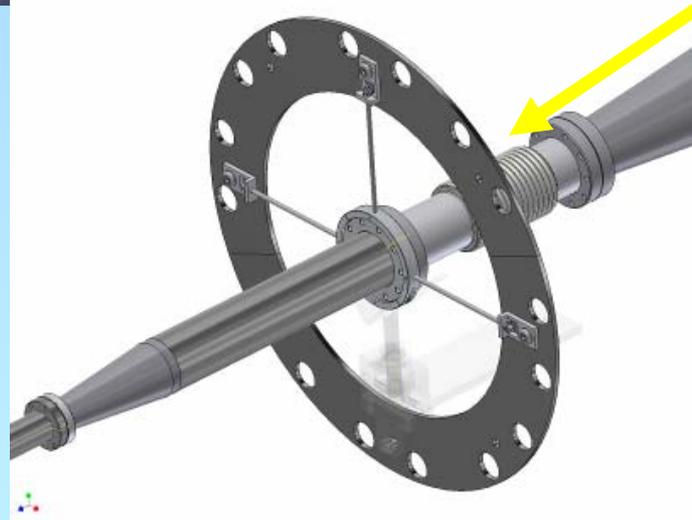
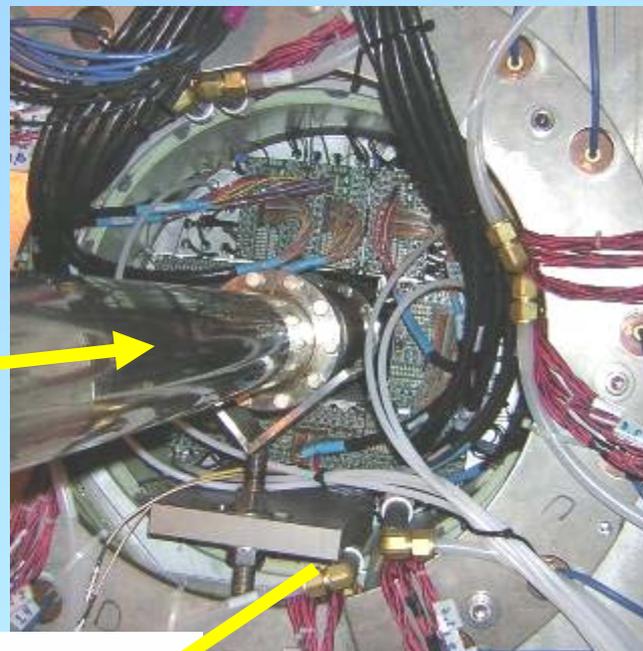
# CM central BP supports (2 req'd)



TECHNICAL SUPPORT NO-0

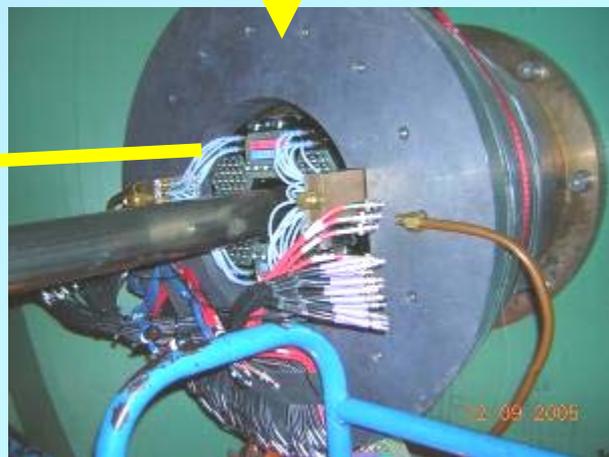
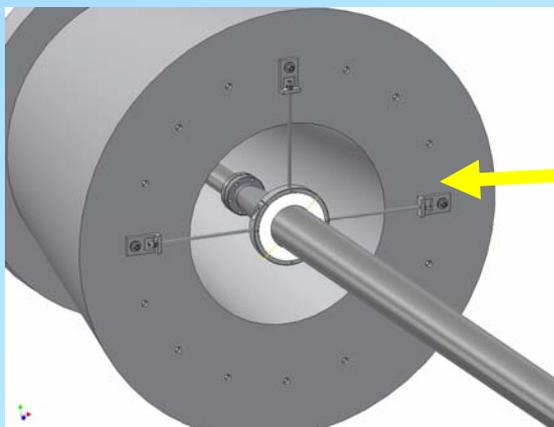
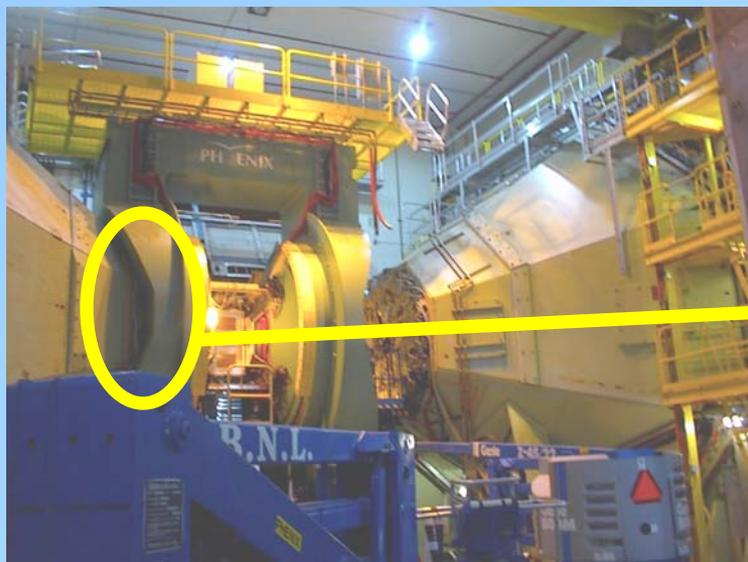
# North MPC/MuTr Station 1 support

TECHNICAL SUPPORT NO-0

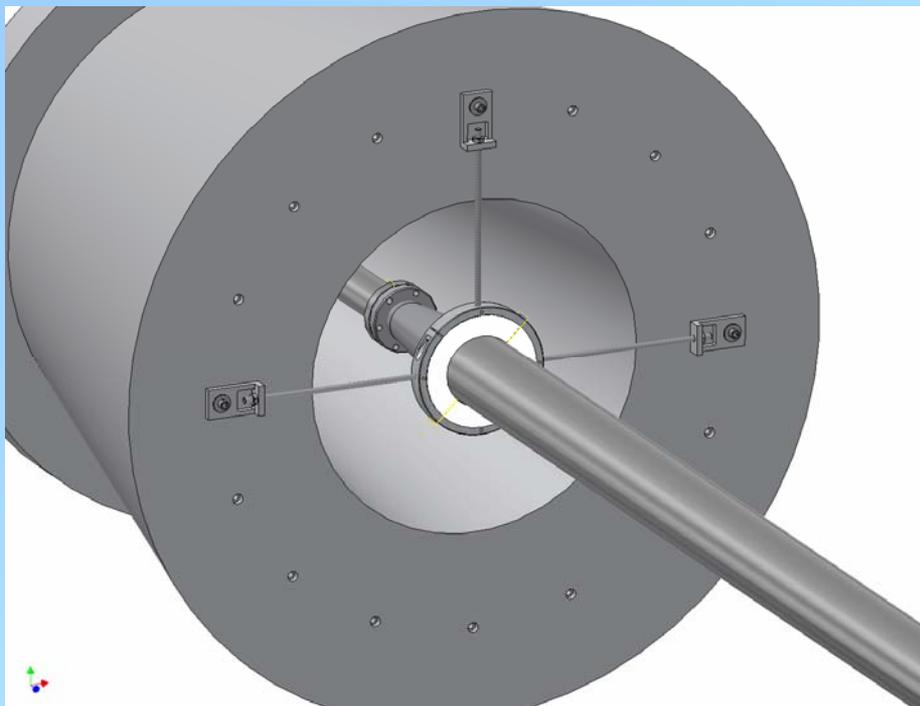


# South Flowerpot BP support

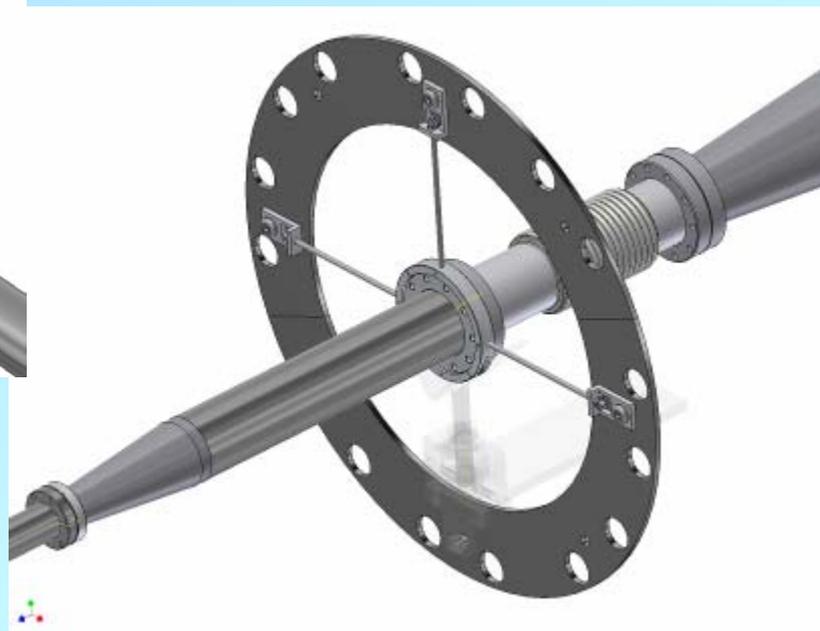
TECHNICAL SUPPORT NO-0

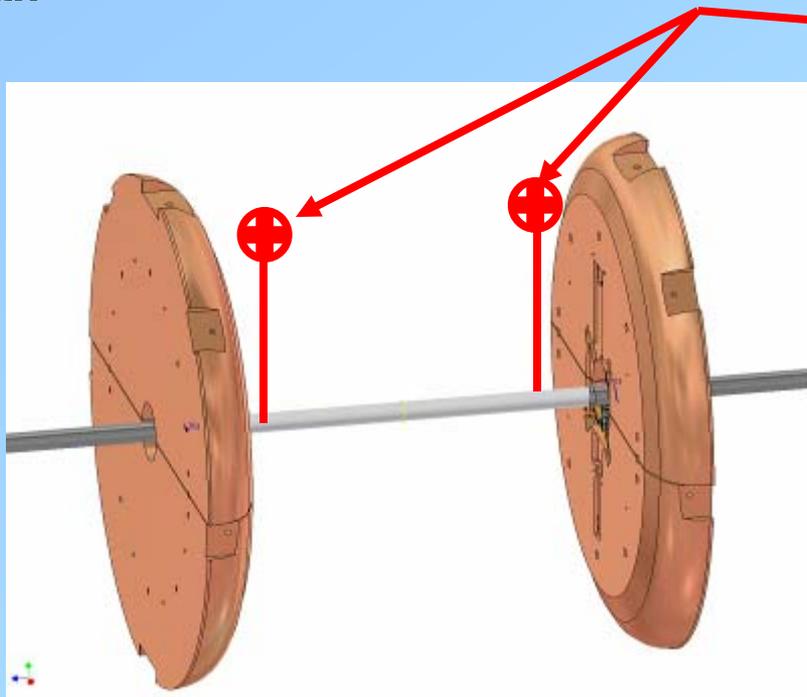


South BBC Cavity BP support



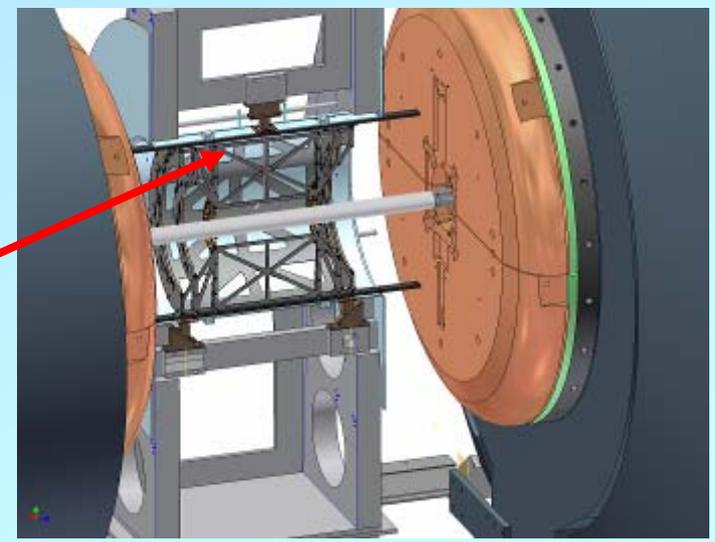
North MPC Cavity BP support





Survey Targets and fixtures TBD  
Must be able to align BP to req'd  
radial and angular accuracy  
without VTX and with VTX in  
clamshells open configuration.

$\frac{1}{2}$  of VTX  
detector support  
structure



## VTX Subassembly, Top Assembly, Installation and Integration Prep

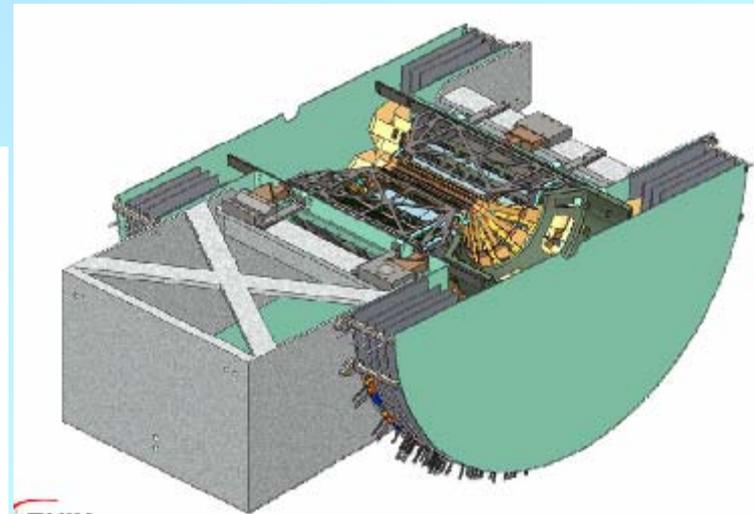
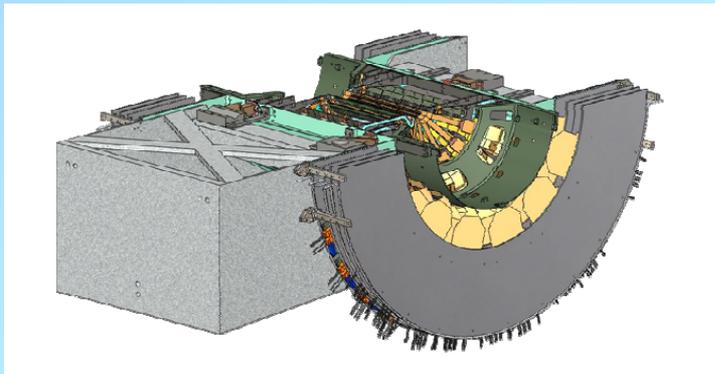
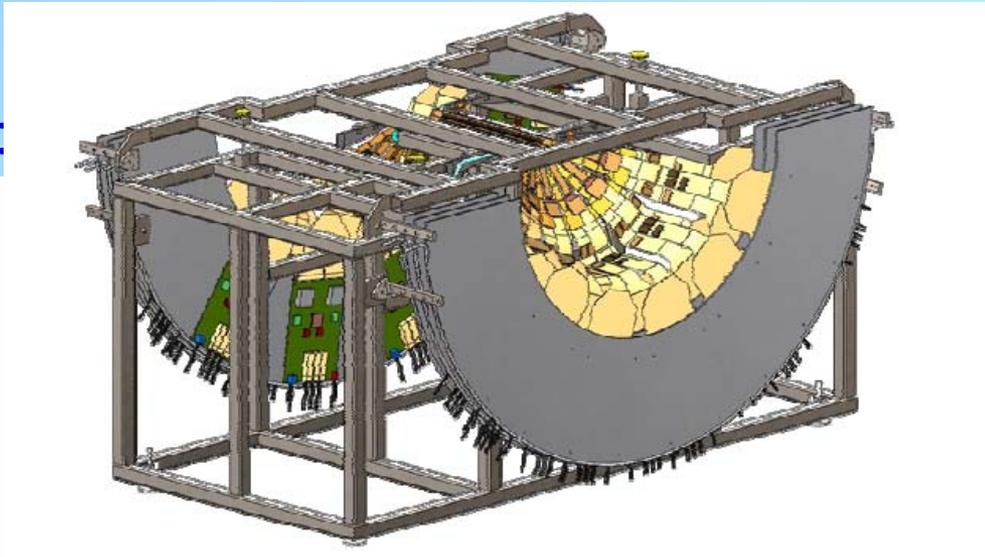
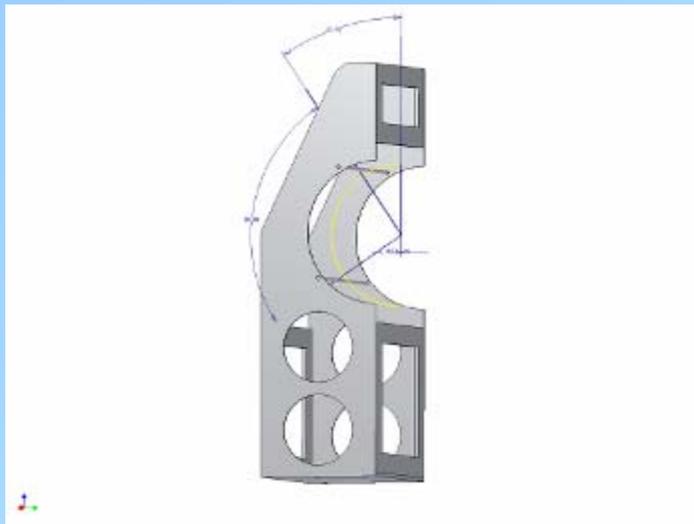
TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Design assembly workspace, tools and fixtures	Done	Fixtures designed by PHENIX
Fabricate/prepare assembly workspace, tools and fixtures	Done	Fixtures designed by PHENIX Done
Receive, inspect, test, rework and qualify assembly tools and fixtures	Done	Fixtures designed by PHENIX Done
Design assembly workspace, tools and fixtures	Done	VTX Group
Fabricate assembly workspace, tools and fixtures	3/31/2010	PHENIX
Conceptual and mechanical design of installation, structural support and detector alignment, including station 1 work platforms	2/26/2010	
Installation Review (ESRC)	~3/15/2010	
Beampipe & VTX Installation Work Permits	5/31/2010	
Subassemblies complete ready for integration into hemispheres	6/30/2010	
Receive, inspect, test, rework and qualify assembly tools and fixtures, electronics racks and support	6/30/2010	VTX Group
Fabricate/procure detail components for installation, support and alignment, including station 1 work platforms	6/30/2010	
Design & fabricate fixtures, techniques and mockups for installation and alignment	6/30/2010	
Receive & inspect components (installation, support & alignment)	7/15/2010	
Assemble Hemispheres	7/15/2010	
Mock installations/alignments on bench and in IR	7/31/2010	

3/11/2010

VTX Support Structure Base  
Assembly Design In Progress  
Fixtures being re-designed at PHENIX

TECHNICAL SUPPORT NO-0



# RPC3 Pre Shutdown Prep

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Review RPC3 North for Lessons Learned	Done	
Make a list of all purchased and fabricated parts	Done	
Place order for CS fabricated parts	Done	(Some parts to be added)
Implement design improvements for RPC3 South	Done	
Receive and inspect 1/2-octant shells	Done	Pre-survey in progress
Order raw materials for PHENIX fabricated parts	3/15/2010	
Order purchased parts for RPC3 South	3/15/2010	
Prepare Installation Plan	3/15/2010	
pre-survey 1/2 octant shells	3/19/2010	
Fabricate PHENIX parts	5/14/2010	
Receive and inspect CS fabricated parts	5/28/2010	
Prepare work permit for installation	6/1/2010	
Receive purchased parts	6/4/2010	
Assemble, test and burn-in 1/2 octants	6/18/2010	
Pre-Assemble base components at PHENIX	6/25/2010	

3/11/2010

## Shutdown Constraints:

- 5 months from start of shutdown to start of Run 11
- (all schedules herein assume shutdown starts 6/1, Run 11 starts 11/1. Any extension of run 10 will result in an equal delay in the start of Run 11)
- All normal start of shutdown tasks and end of shutdown run prep tasks must be contained within these 5 months.
- RPC3S tasks are done in parallel with new BP and VTX tasks
- BP must be completely installed before bakeout.
- Bakeout must be completed before any detectors close to BP are installed or re-installed (MPC, BBC, VTX)
- Electronics, electrical, cooling and gas support equipment installations are done in parallel with mechanical installations
- Design, engineering, logistics and procurement must be complete prior to shutdown.

## Start of Shutdown

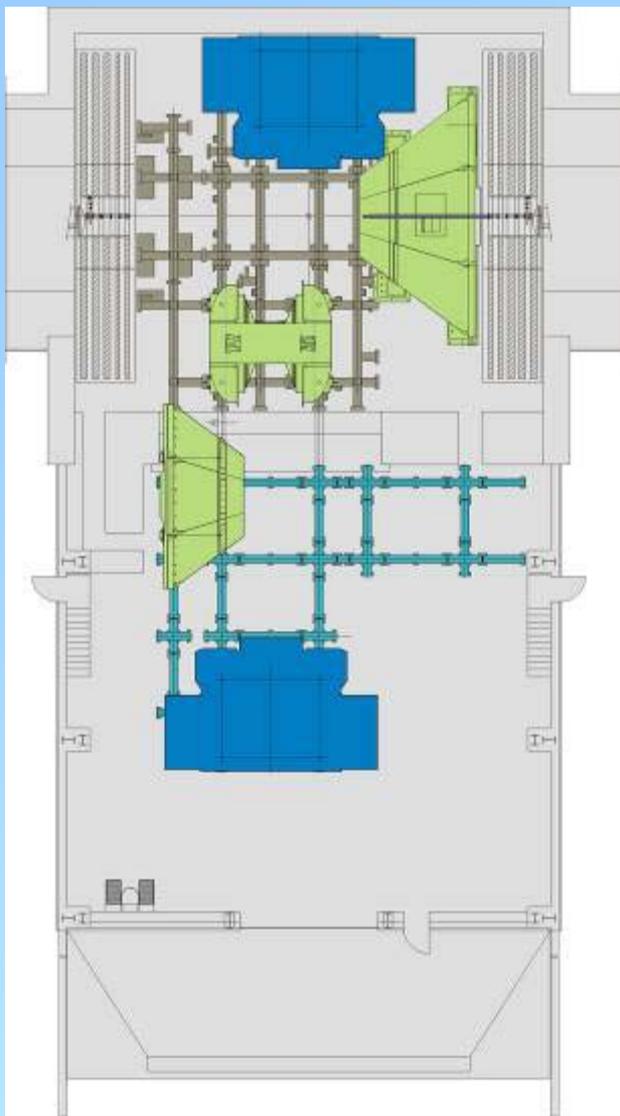
TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
End of Run 10	5/31/2010	
Purge Gas From Detectors	6/4/2010	
DAQ Tests	6/4/2010	
Close North and South BP gate valves and lock closed for until new BP is installed	6/4/2010	
Open and disassemble wall	6/11/2010	
Remove EC ladder and fold platforms	6/11/2010	
Remove BP Collar	6/11/2010	
Move MMS south	6/14/2010	
Prep EC for move to EC	6/18/2010	
Move EC to AH	6/25/2010	
Install cart	6/28/2010	
Move Collars to AH	6/28/2010	
Install decking	6/29/2010	
Install Manlift	6/29/2010	
Remove RPC2 Prototype, support brackets, cabling & Piping	6/29/2010	
Remove MMS east vertical lampshade	6/30/2010	May be deleted

# Beampipe De-installation

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Remove HBD's and HBD cables Remove RXNP's and cables	7/9/2010	Concurrent with Start of shutdown tasks
Remove MPC's	7/16/2010	Concurrent w MPC's
Remove BBC's	7/16/2010	Concurrent with BBC's
Position MMS for Vacuum break	7/19/2010	
Install Temporary supports for old BP	7/19/2010	Supports TBD
Break vacuum on north side of MMS	7/19/2010	
Remove south bellows	7/19/2010	
Move MMS north, remove spool and south3-5 transition	7/20/2010	
Move the MMS south & Prep MMS for move to AH	7/23/2010	Begin MMS prep with shutdown start
Move CM south, remove north bellows	7/23/2010	
Move old Be bp south into MMS and move CM north	7/23/2010	
Move MMS to shutdown park position	7/23/2010	
Remove old Be BP	7/23/2010	
Move CM south and east	7/23/2010	
Remove north 3 to 5 transition	7/23/2010	



Major PHENIX Components during shutdown when Old beampipe is out and new beampipe is ready to go in. Approximately last week in July.

This is the optimal point for DC, MuTr Station 1, and/or RPC absorber work. Potential work in these areas was proposed by the various subsystems yesterday at the DC meeting. The merits of these proposals will be weighed and decisions made in the next week or so. The schedule will be adjusted accordingly.

Any work will add to length of shutdown or affect completion of VTX installation.

Current schedule assumes no lag time between removal of old beampipe and installation of new beampipe.

# New Beampipe installation



TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Prepare north 3 to 5 transition for installation with roller guides, bakeout wrap and thermocouples	7/23/2010	CAD
Install north 3 to 5 transition in MMN	7/30/2010	
Install new Be pipe in CM on temp supports	7/30/2010	
Move CM back to beamline & connect new Be BP to 1-5/8 transition and bellows and north 3-5 transition	7/30/2010	
Move CM to run position	7/30/2010	
Prealign Be/Alum pipe with transitions attached on new BP supports At MPC north, BBC south and north nosecone	7/30/2010	
Prepare south 3 to 5 transition for installation with roller guides, bakeout wrap and thermocouples	7/30/2010	
Install south 3 to 5 transition, bellows and 1-5/8 to 3" transition in MMS	8/4/2010	
Move MMS back into IR on beamline	8/4/2010	
Move CM south, slide Transition assembly in MMS north and connect to new Be BP	8/4/2010	
Move CM and MMS north and install south spool. Leak check. Move MMS South	8/4/2010	
Install temporary bakeout supports	8/4/2010	
Install bakeout blankets and monitoring	8/4/2010	
Bakeout New BP and activate NEG coating	8/27/2010	How Long?
Leak check BP	8/27/2010	
Re-install MPC's including Cables and services Re-install BBC's including Cables and services	9/10/2010	Concurrent efforts
Move CM to run position	9/10/2010	
Final alignment of new BP	10/1/2010	

3/11/2010

# VTX Installation, VTX Services and Electronics



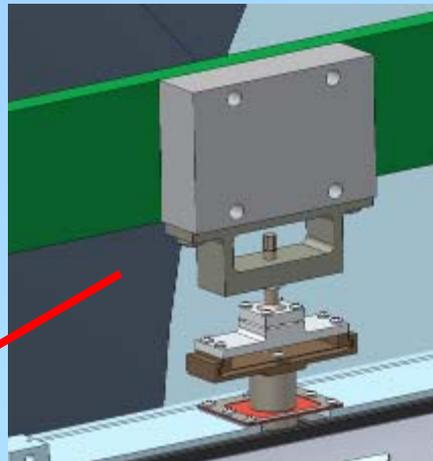
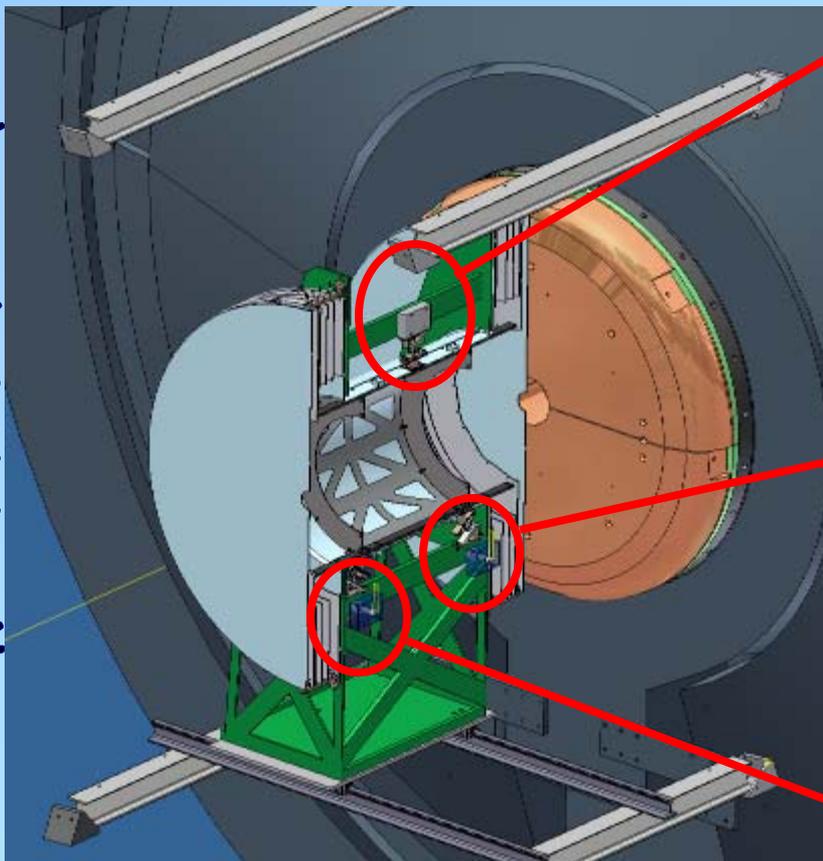
TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Install and align VTX rail attachment hardware to CM	8/27/2010	Install during bakeout? →
Install and align VTX rails parallel to beam line	9/3/2010	→
Install and align VTX rails perpendicular to beam line	9/3/2010	→
Install and align west half detector module	9/10/2010	→
Install and align east half detector module	9/17/2010	→
Install mechanical support structures for VTX services and electronics	10/1/2010	Concurrent Effort →
Install Cable trays	10/1/2010	→
Install racks	10/1/2010	→
Install chiller	10/1/2010	→
Install cables, plumbing	10/1/2010	→
Connect cables and plumbing	10/1/2010	V →
Test and commission	11/1/2010	↓

# VTX Installation Plan

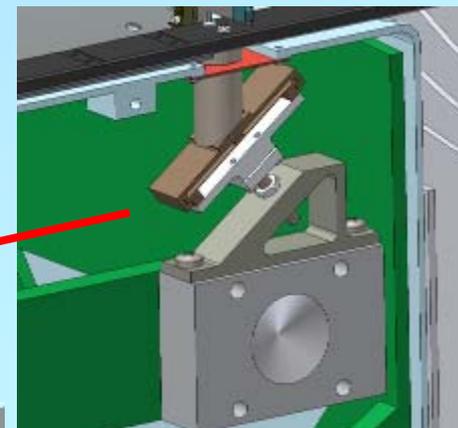
TECHNICAL SUPPORT NO-0

Kinematic mounts for mating east and west detector halves

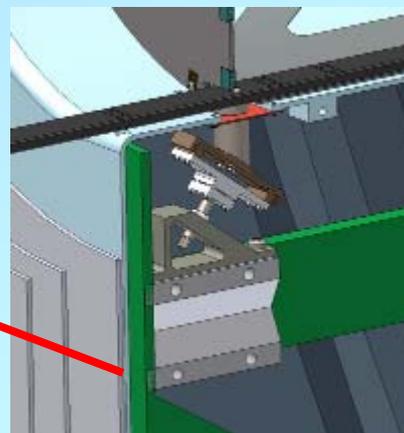


2 DOF (Y & Z)

0 DOF



6 interface points w/ HYTEC



1 DOF (Z)

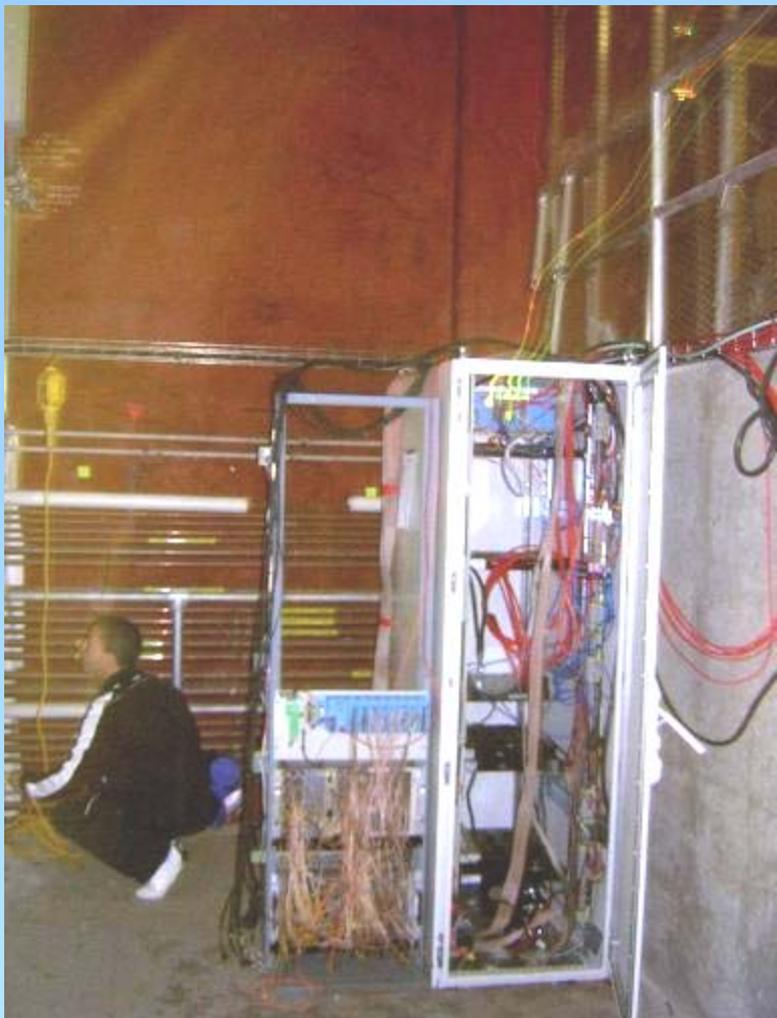
# RPC3 South Prep, Early Shutdown



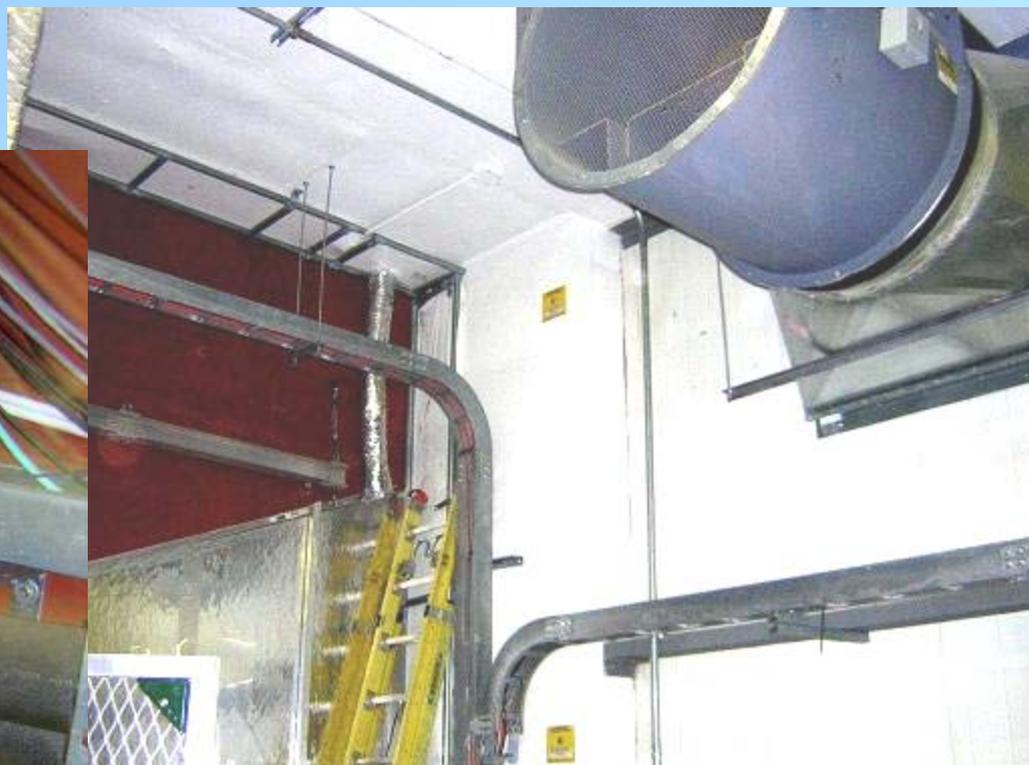
TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Remove wiring, walkovers, FCAL and scintillator hardware that would otherwise interfere with installation	6/4/2010	PHENIX →
Remove/relocate shielding	6/11/2010	Riggers →
Remove crystal palace & vapor barrier	6/18/2010	CAD →
Inspect Gap 5 south for legacy items/problems	6/25/2010	→
Address legacy items/problems as convenient prior to shutdown start	7/2/2010	→
4th of July Holiday	7/6/2010	→
Install lighting & relocate sensors as necessary	7/20/2010	Electrician →
Temporarily relocate, re-position or otherwise address interfering piping, cable trays	7/21/2010	PHENIX (w/ CAD Help?), Electrician →
Remove RPC prototype	7/21/2010	→
Pre-survey $\frac{1}{2}$ octant reference points	7/28/2010	Surveyors →
Drill and tap $\frac{1}{2}$ octant and rotating piston mounting points	7/30/2010	→
Build/install access and work platforms for walk on top of MuID steel including stairs from MMS eyebrow	8/4/2010	Carpenters →
Final cleaning and prep of gap 5 for grouting	8/6/2010	→
Pre-installation orientation meeting with masons and riggers	8/5/2010	→
Position lifting equipment in tunnel	8/6/2010	Riggers →
Move east and west base structures into south tunnel and assemble on east and west sides of pedestal respectively. Include translation control fixtures	8/6/2010	Riggers & PHENIX techs →

ТОВ «ФІНІКС» НАДАЄ ПЛАН



ТОВ «ФІНІКС» НАДРОБТ НО-0



3/11/2010

# RPC3 South Installation

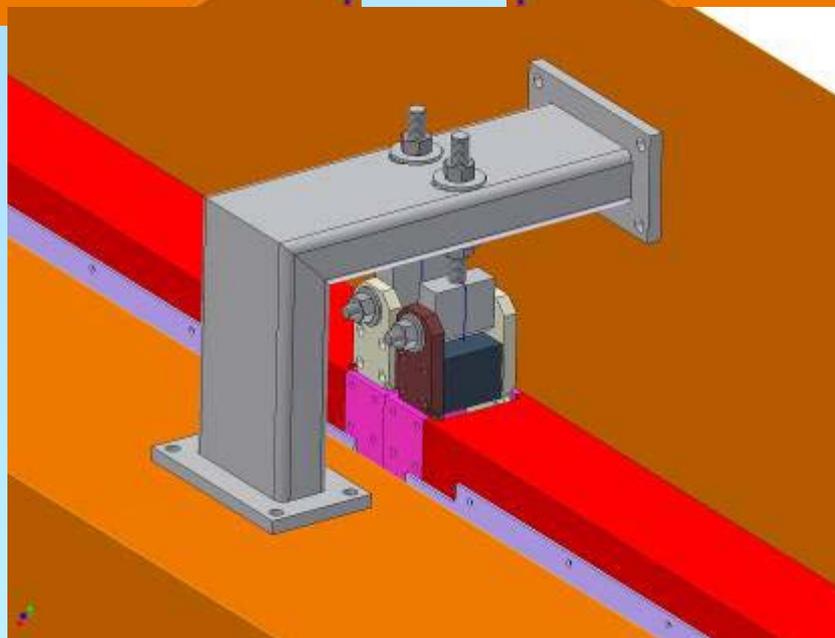
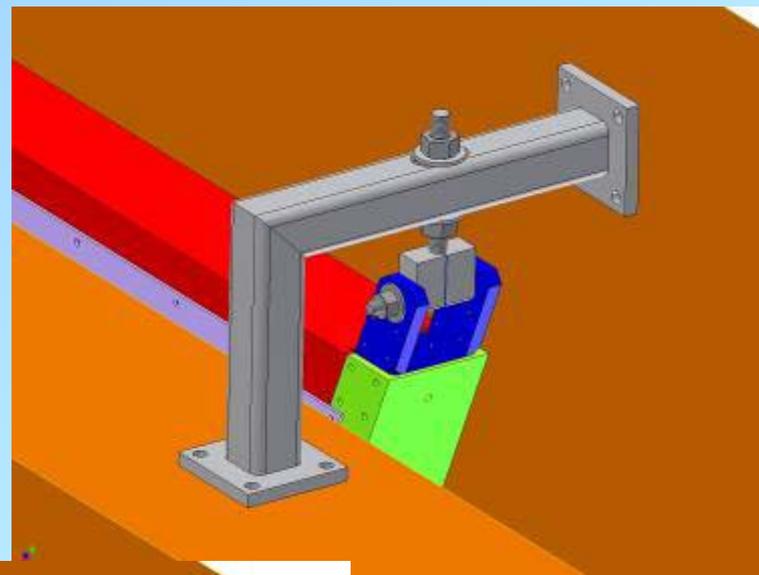
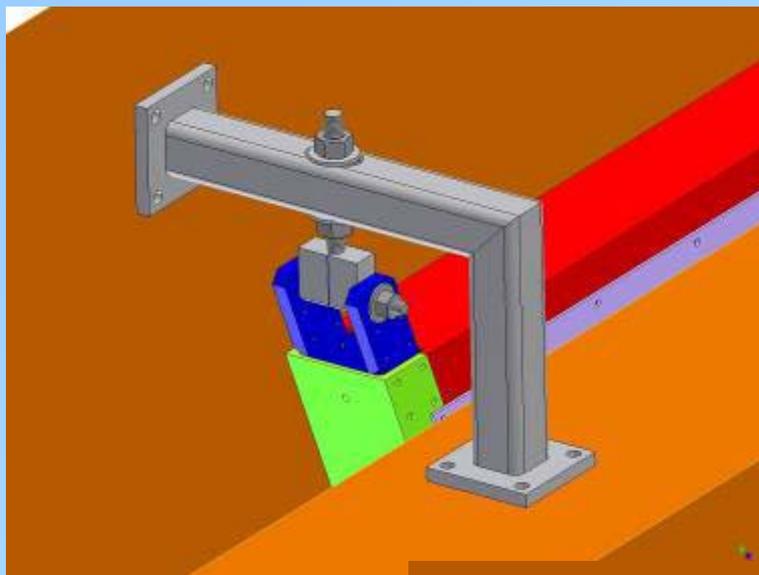


TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Install and align base structures on east and west sides of gap 5	8/11/2010	
Prepare for grouting	8/12/2010	
Install grout	8/13/2010	
Install pitch control rails on pedestal and gap 5 east & west inner walls	8/27/2010	
Install upper suspension support hardware	8/31/2010	
Install $\frac{1}{2}$ octants, 2 at a time in accordance with work plan/work permit		
<i>Transport <math>\frac{1}{2}</math> octants 2 at a time from RPC factory to south tunnel on angled transport carts</i>		
<i>Transfer <math>\frac{1}{2}</math> octants from angled transport carts one at a time to temporary free standing and re-orienting roller fixture (fore and aft wheels and axel)</i>		
<i>Lift (and re-orient if appropriate) <math>\frac{1}{2}</math> octant and install into base structure, previously installed <math>\frac{1}{2}</math> octant or upper suspension hardware as appropriate per work plan</i>		
<i>Pre-align each <math>\frac{1}{2}</math> octant as installed</i>		
<i>Perform electrical integrity tests before proceeding to next pair of <math>\frac{1}{2}</math> octants</i>		
<i>After all <math>\frac{1}{2}</math> octants are in place and tested, join east and west halves of full south station 3 detector and align to survey markers</i>	9/10/2010	Riggers & PHENIX Techs

# RPC3 South Installation Plan

TECHNICAL SUPPORT NO-0



# RPC3 South Integration

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
Final survey	9/17/2010	Surveyors
Install new cable trays and piping supports	9/30/2010	Electrician, earlier if possible
Re-install MuID wiring and pipes	9/30/2010	
Re-install MuID gas rack	9/30/2010	
Install south thermal/vapor barrier	10/15/2010	CAD
Re-install shielding	10/29/2010	Riggers
Commissioning and final acceptance tests	10/29/2010	RPC Group
Install RPC3 HV, LV and signal wiring and gas lines	10/31/2010	
Install RPC3 South gas distribution rack	10/31/2010	
Install RPC3 South environmental controls (heaters and thermostats)	10/31/2010	Electrician

## Shutdown 2010 Other Work

TECHNICAL SUPPORT NO-0

<u>Task</u>	<u>Due By</u>	<u>NOTES</u>
RPC3 North unfinished business	7/15/2010	Electronics and cabling, grounding issues, environmental controls
MuTrigger FEE unfinished business	7/15/2010	MMS cable trays, →
RHIC Summer Sunday Tour	8/15/2010	During bakeout →
Other subsystem maintenance and repair	10/1/2010	TBD →
Gas System maintenance, repair, upgrade	10/1/2010	→
Bridge Electrical support upgrade	10/1/2010	Support for 4 full racks in 2010, 4 more (8 total) in future →
PHENIX Infrastructure maintenance, repair, upgrade	10/1/2010	TBD →
Rack Room upgrade	10/1/2010	TBD →
Future upgrade support	11/1/2010	RPC1, RPC absorbers, FVTX, FOcal, other TBD →
DC/PC maintenance/repair	10/15/2010	FEM and wire troubleshooting and repairs, major efforts will require longer shutdon →
Prepare for Run 11	10/31/2010	Normal end of shutdown tasks, typically taking 3-4 weeks →

# 2009 Building Maintenance Issues

TECHNICAL SUPPORT NO-0

- Roof leaks in utility bathroom at northwest corner behind tech offices, over door between rack room and assembly hall and over door between control room and elect. ass'y room.
- General maintenance for Trailer Offices (in progress)
- Trailer Office Modifications planning in progress
- New roof leaks in laser room and IR (southeast corner)



## PHENIX Procedure Review Current Status:

147 Procedures Identified

84 Made Inactive (not currently in use, will require revision to re- activate if and when necessary, available for reference purposes)

10 CAD procedures relevant to PHENIX, all are current and up-to- date.  
1 currently under review,

42 PHENIX approved procedures.

1 is currently under review  
41 are current and up-to-date

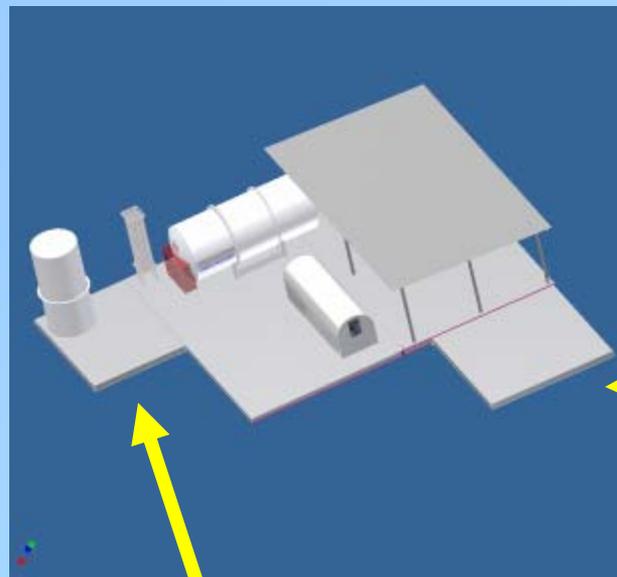
11 Proposed/Draft Procedures (never previously formalized)

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 REPORT NO-0

# New Argon Dewar and Empty Gas Bottle Storage Area



Pad for Empty Gas Bottles

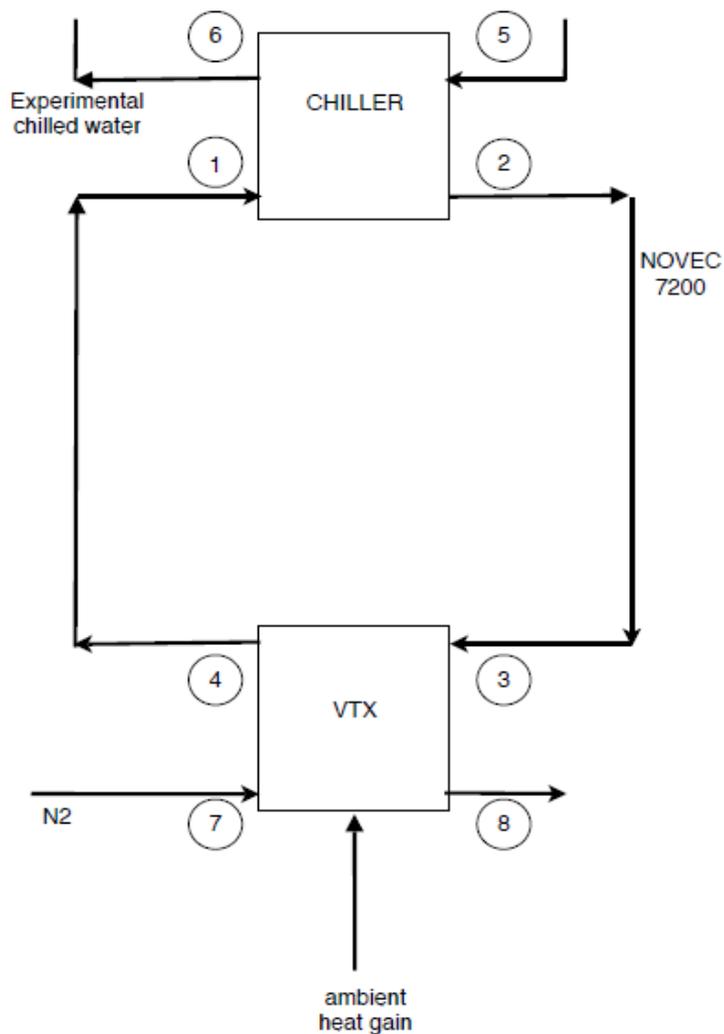


Pad for argon Dewar



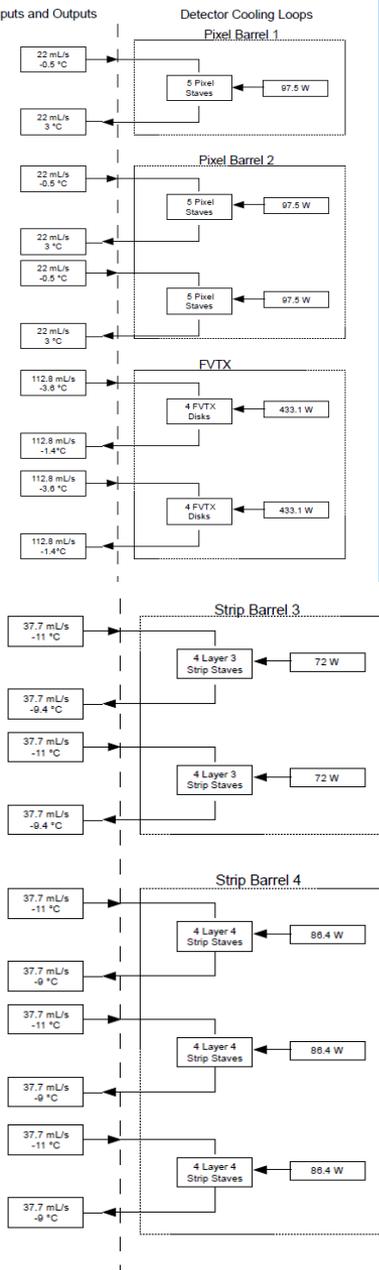
TECHNICAL SUPPORT NO-0

TECHNICAL SUPPORT NO-0

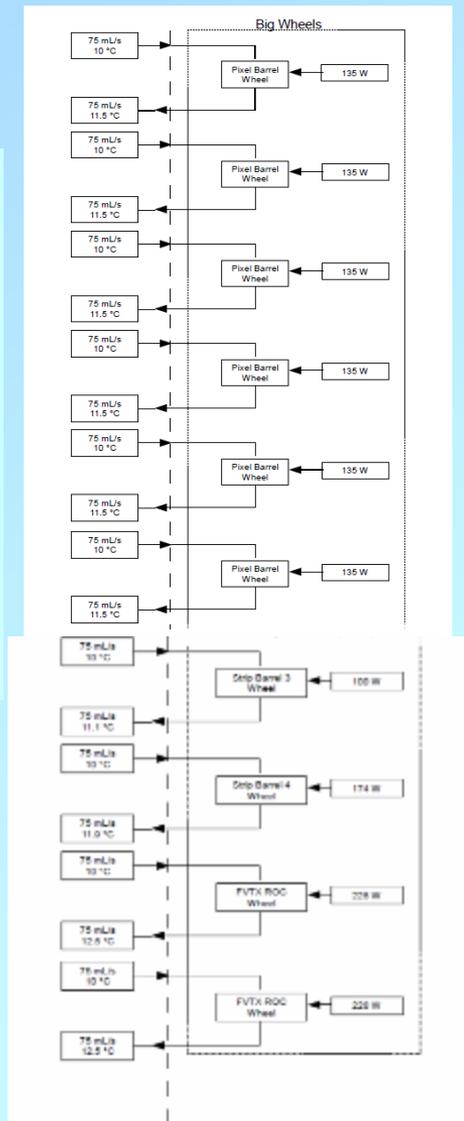


**Anticipated Chiller  
Integration with specified  
"black box" performance  
parameters at these 8 points**

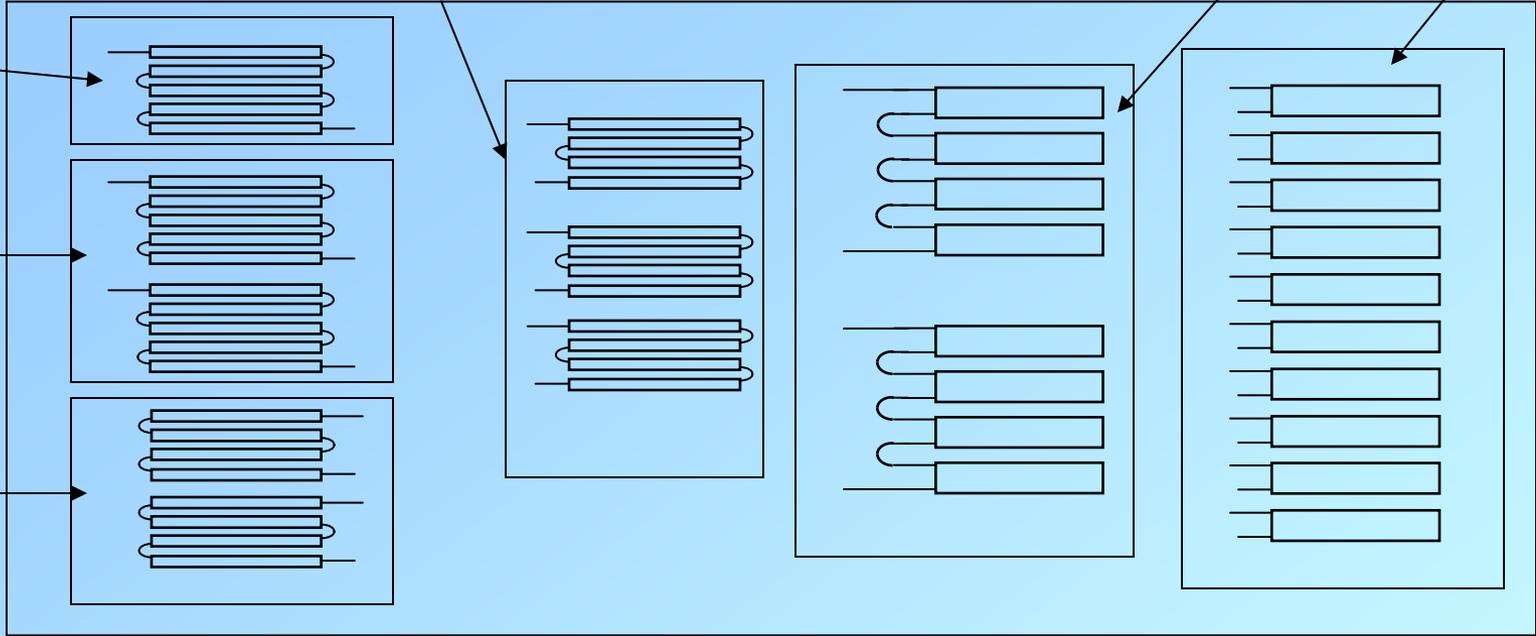
Cooling System Inputs and Outputs



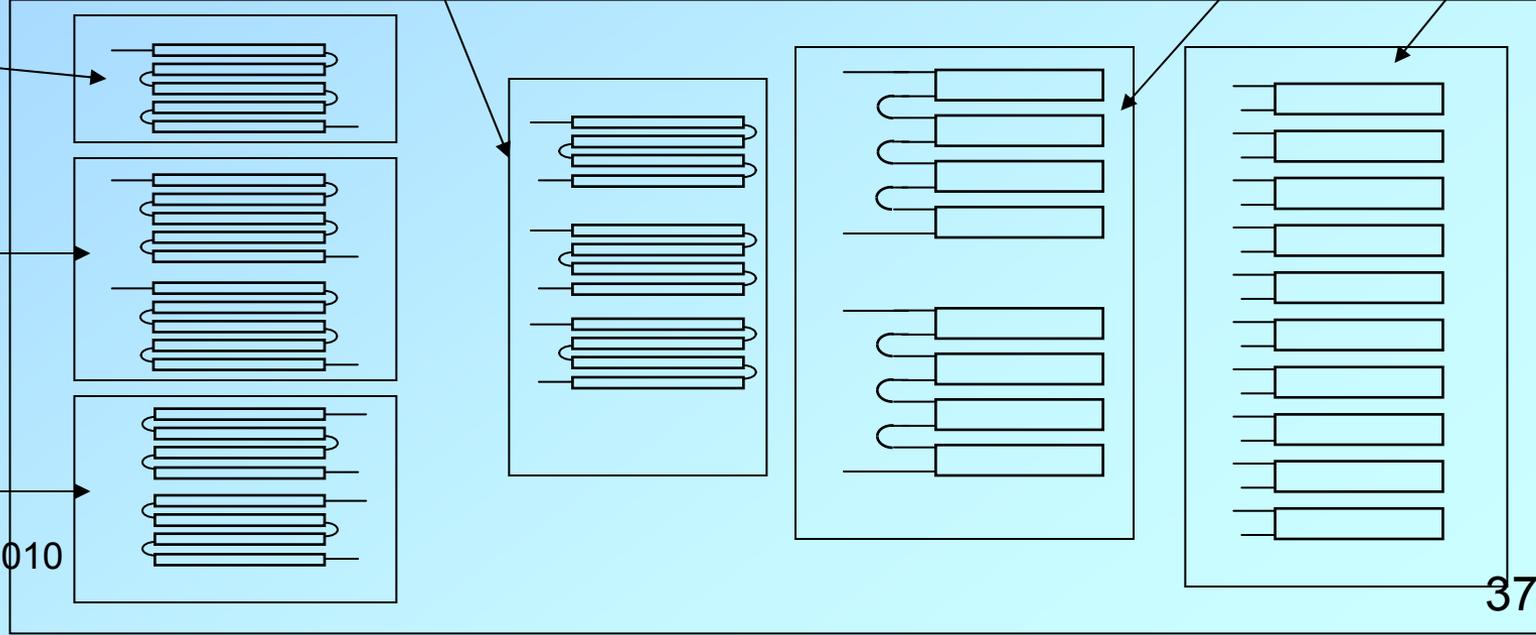
- Actual supplied cooling system design is incomplete and integration specifications are undetermined.
- 8 Independent circuits in VTX  $\frac{1}{2}$  detector each with multiple staves
- 2 or 8 independent circuits in FVTX  $\frac{1}{2}$  detector
- 10 independent circuits in  $\frac{1}{2}$  detector Big Wheels



Barrel 4 VTX/FVTX East FVTX Big Wheels



Barrel 4 VTX/FVTX West FVTX Big Wheels



3/11/2010

## VTX Cooling Specification Problems:

1. Proposed chiller undersized
2. Manifolds not included in cooling design
3. Multiple inlets/outlets (20 each per  $\frac{1}{2}$  detector)
4. Specified flows and temperatures not uniform
5. Specified flows result in excessive pressure drop
6. Pressure requirements exceed ratings for TYGON tube
7. No mechanical clamps on tubing
8. Thermal design questionable

Ran flow vs pressure drop on 1 pixel stave ~40 psid drop at .35 gpm (22ml/sec)

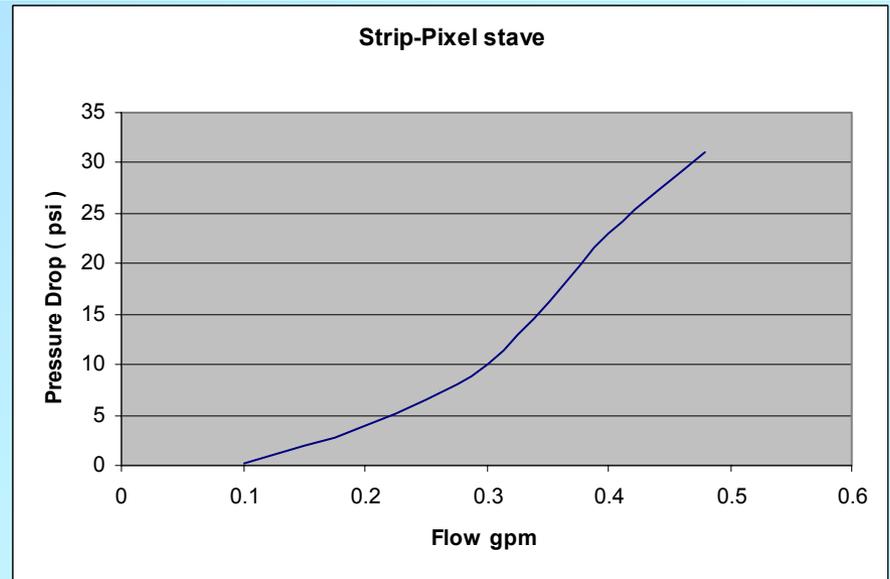
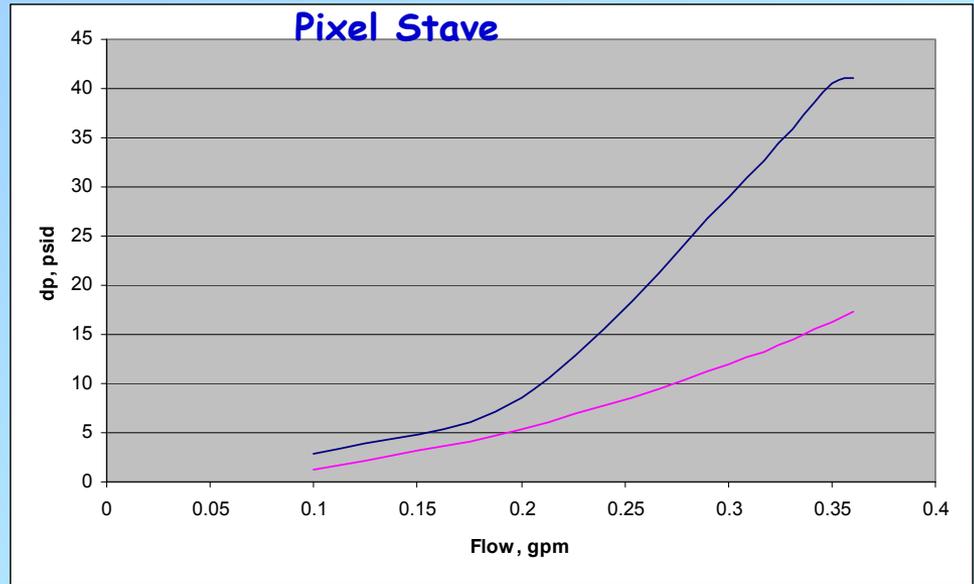
Ran flow vs pressure drop on 1 strippixel stave >40 psid drop at .6 gpm (37.7ml/sec) (could not achieve that flow with house water)



Flow vs Pressure drop test of pixel stave

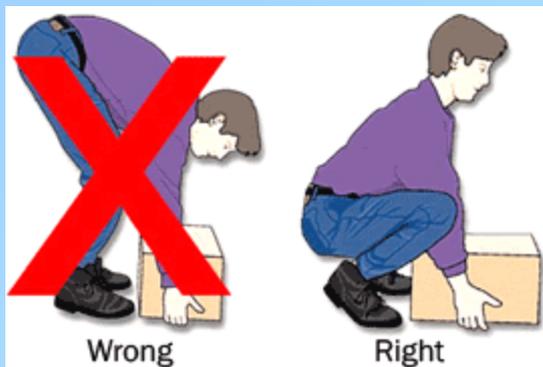


Flow vs Pressure drop test of fittings



Dumb Waiter inspection completed. I presume that we can use it now.

See the BNL Toolbox topic on Lifting and Carrying at:  
[http://intranet.bnl.gov/safety/toolbox/lifting\\_supervisor.asp](http://intranet.bnl.gov/safety/toolbox/lifting_supervisor.asp)



### Laser Pointer Safety Alert

Recently a green hand-held laser was procured using a Laboratory credit card, nominally for use as a pointer. It was removed from service when it was realized the advertised power rating of 30 mW far exceeded the FDA regulatory limit of 5 mW for devices to be used as pointing devices. Worse still, the actual output power of the device as measured in a laser laboratory at BNL was nearly 100 mW, nearly 20 times the 'eye safe' limit.

# Where To Find PHENIX Engineering Info

T  
E  
C  
H  
N  
I  
C  
A  
L  
S  
U  
P  
P  
O  
R  
T  
2  
0  
1  
0

The ides of March is coming!



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)



3/11/2010