

PHENIX WEEKLY PLANNING



4/18/2013
Don Lynch

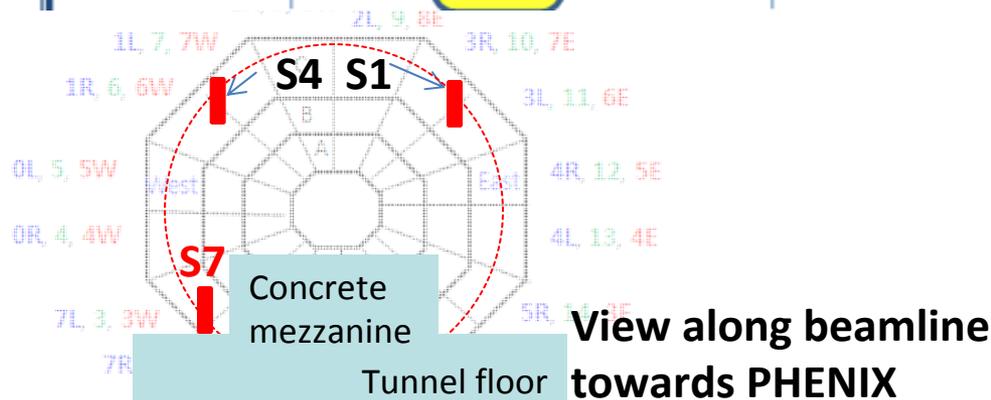
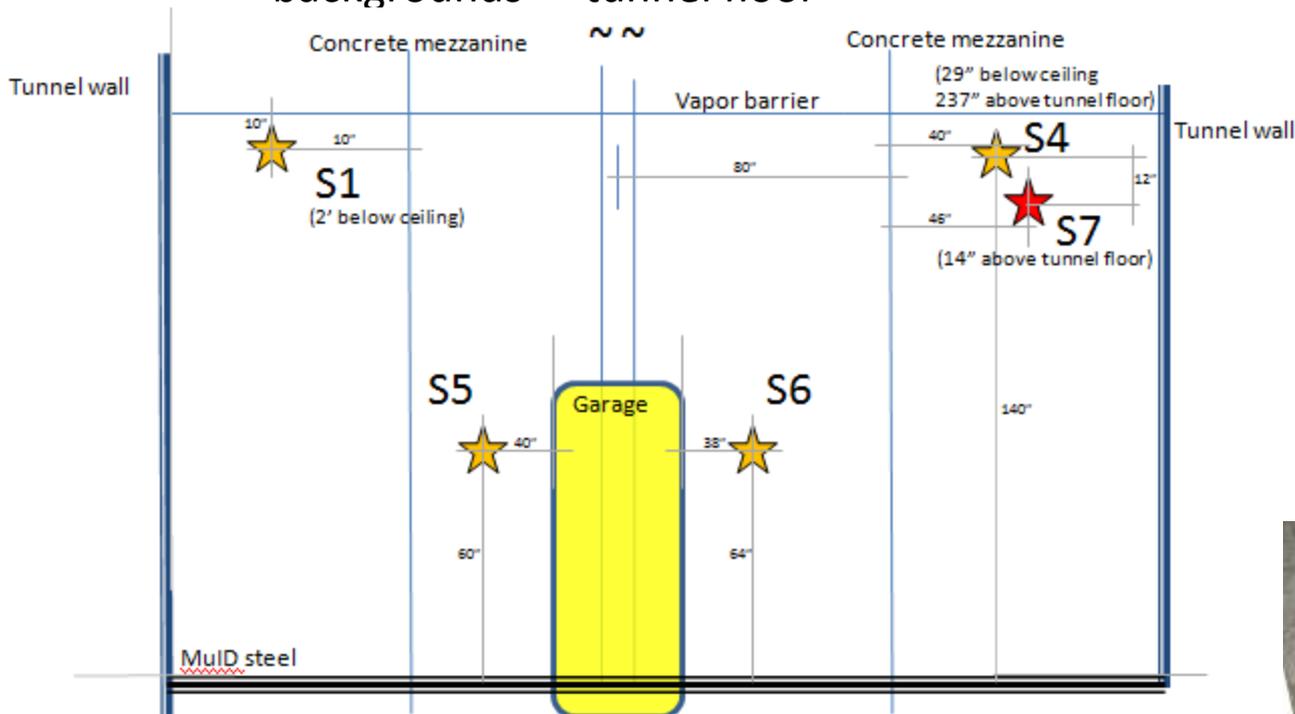
This Week

TECHNICAL SUPPORT NOTES

- Run 13 Continues: run support, general maintenance
- Yesterday's maintenance day:
 - Evaluate Novec leaks in VTX/FVTX
 - Install additional counter for RPC3 South
 - Other Tasks ???
- Ethane Tube Trailer gather info/prepare for implementation
- mRPC Test Lab (Formerly RPC Factory) Startup and Walkthru
- Continue VTX strip pixel stave re-design
- Continue sPHENIX support
- Continue MPC-Ex design
- Future IR evolution modeling
- sPHENIX solenoid meeting tomorrow

1) Additional background counter S7- Position

- Intention: only measure particle hits from IR, not from tunnel beam background => install in location 'visible' for IR particles but shielded from tunnel backgrounds -> tunnel floor

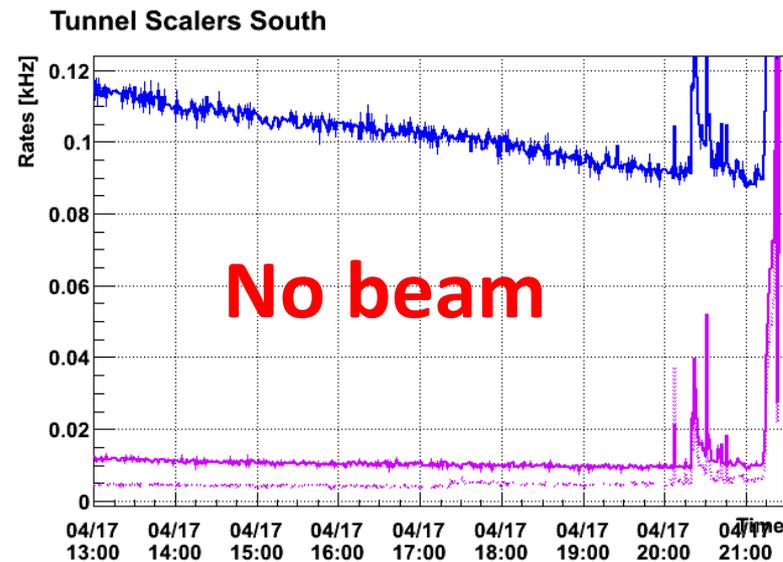


2) Additional background counter S7- Data

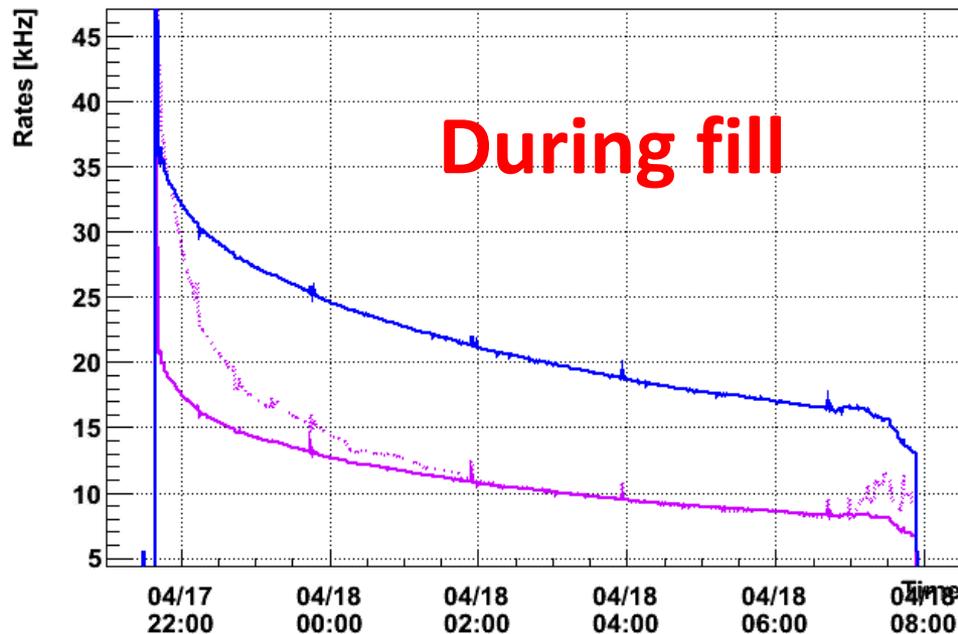
- Zero-rates before first fill yesterday 04/17

* S4 rate ~5kHz, S7 rate ~100kHz

— S1
— S4
— S7



Tunnel Scalers South



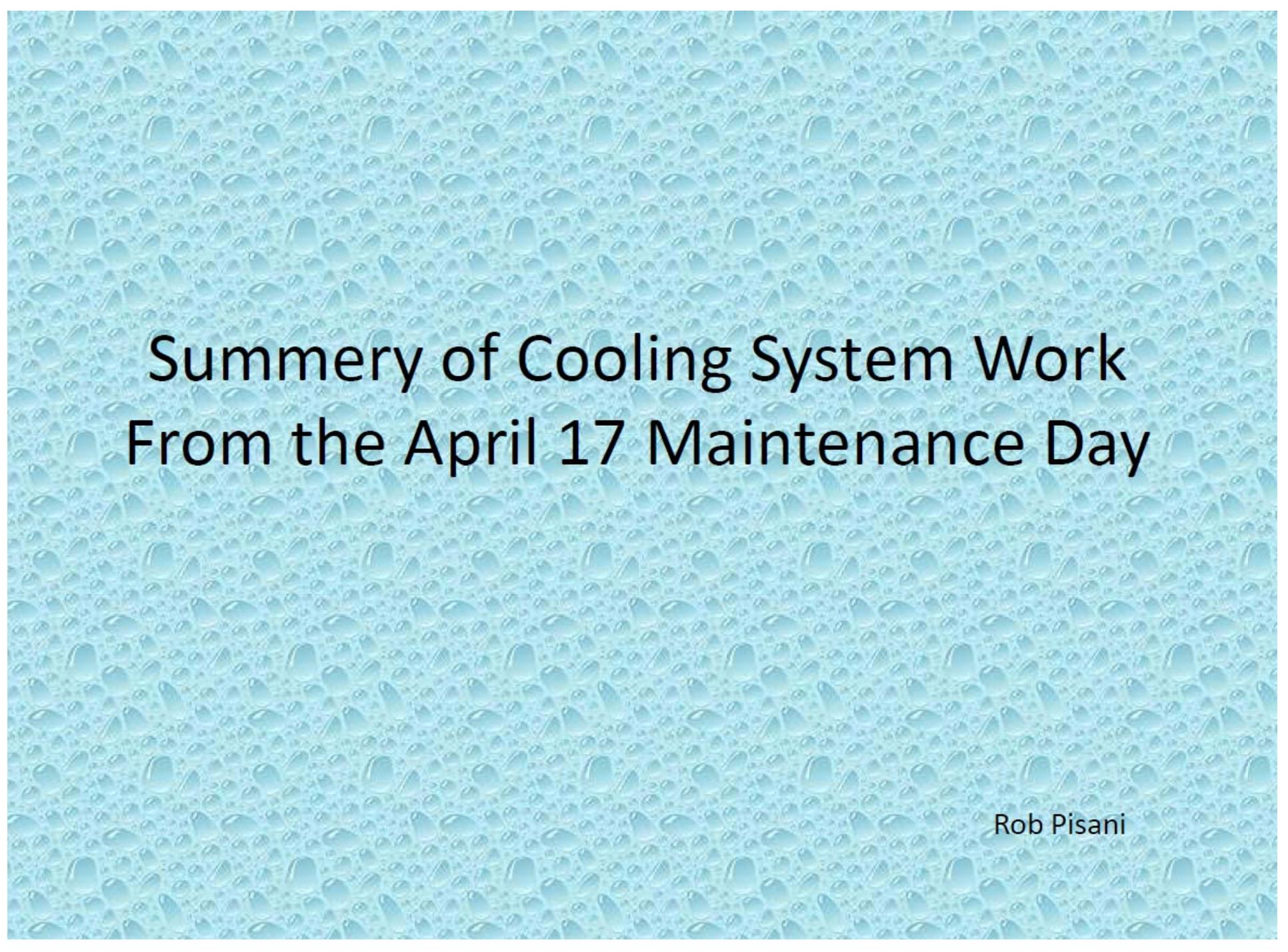
First fill last night: 04/17 21:30 – 04/18 08:00

* during fill S7 rate ~ double of S4,
different slope

* higher rates in S7 possibly caused by e+e- pairs/gamma from thermalized spallation neutrons in tunnel floor (mfp ~1ft)

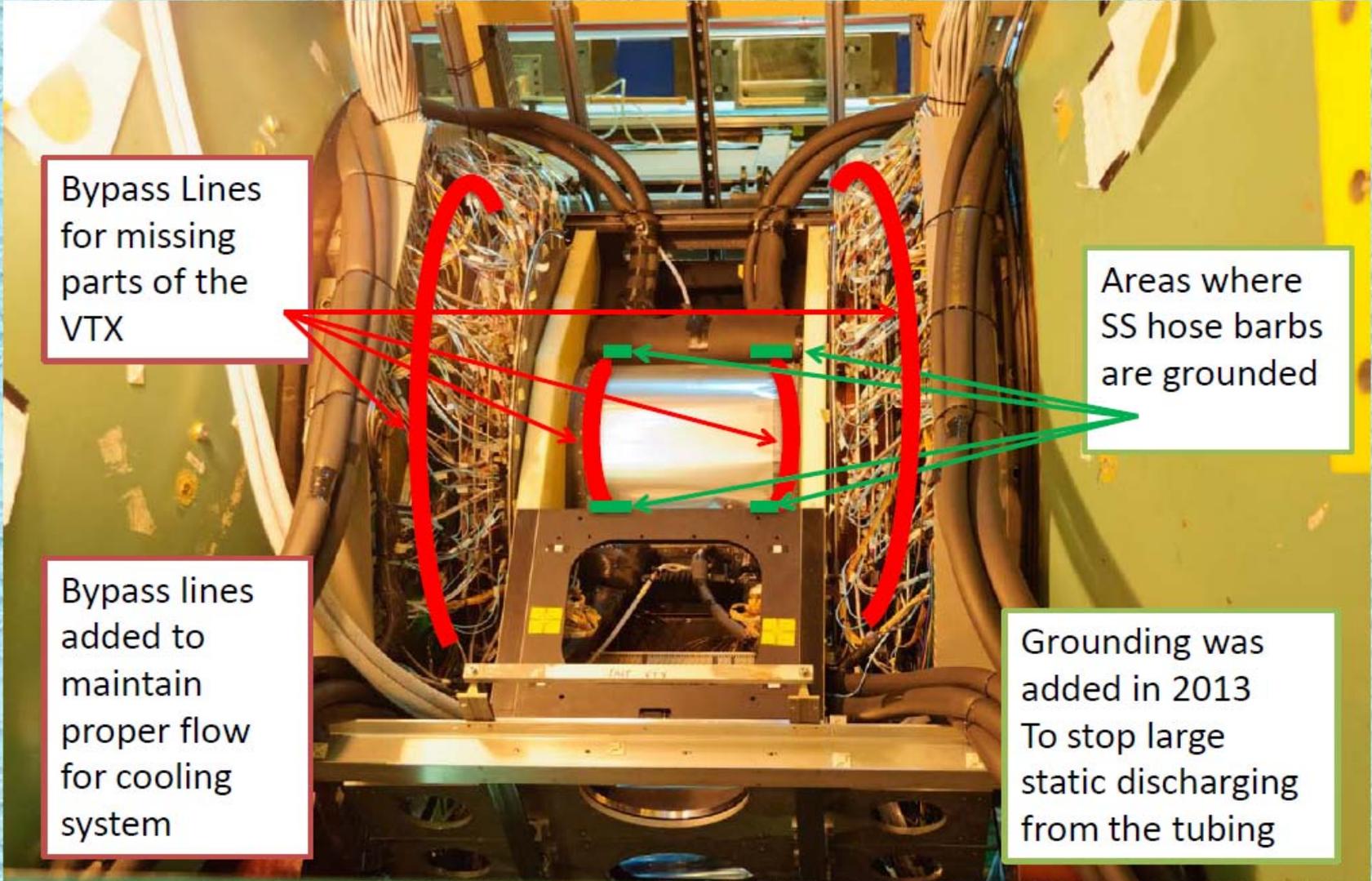
* will do tests:

- check time structure of incoming data from S7 with scope during fill
- heighten S7 by ~15" from tunnel floor



Summery of Cooling System Work From the April 17 Maintenance Day

Rob Pisani



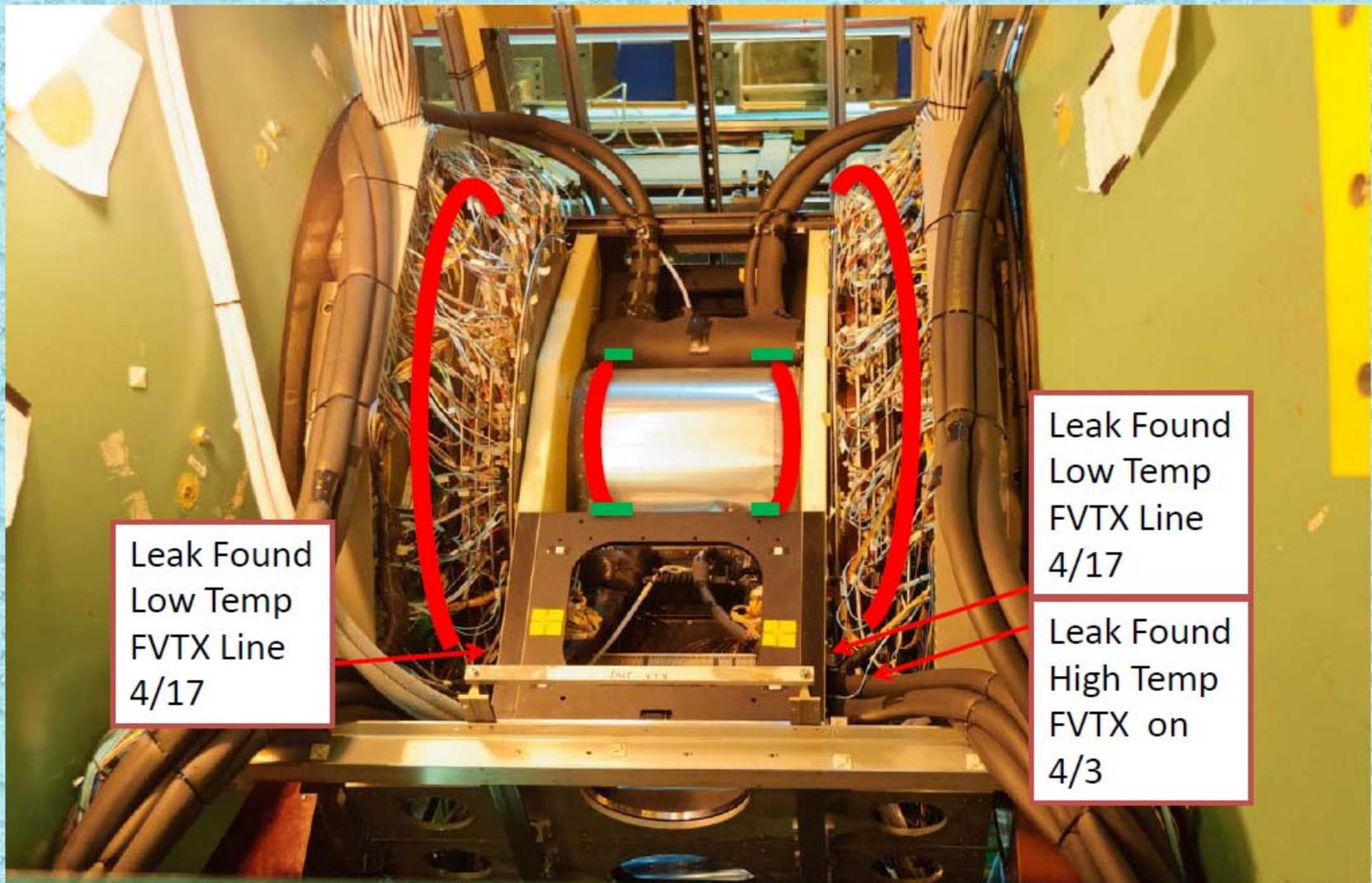
Bypass Lines
for missing
parts of the
VTX

Areas where
SS hose barbs
are grounded

Bypass lines
added to
maintain
proper flow
for cooling
system

Grounding was
added in 2013
To stop large
static discharging
from the tubing

See next slide for more details



Leak Found
Low Temp
FVTX Line
4/17

Leak Found
Low Temp
FVTX Line
4/17

Leak Found
High Temp
FVTX on
4/3

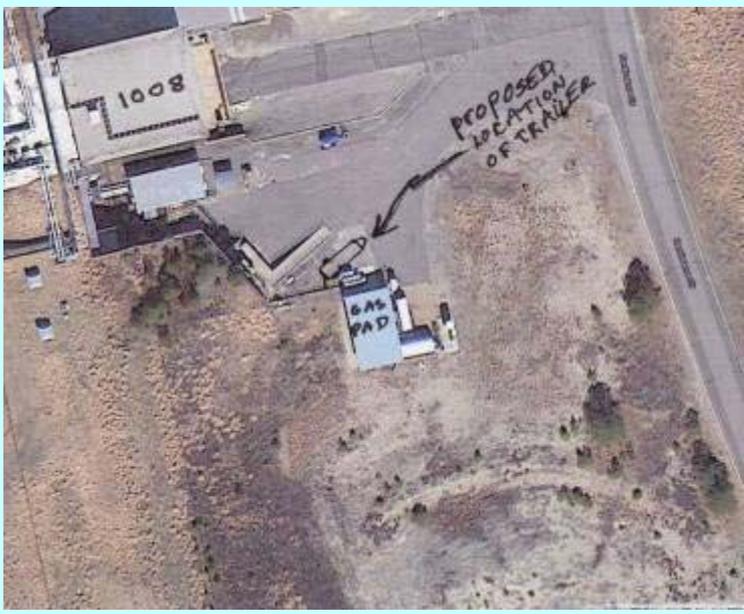
Similar leaks found in returns lines on West

See next slide for more details

Next Week

TECHNICAL SUPPORT NOTES

- Run 13 Continues: run support maintenance
- No scheduled access next week: next maintenance day: 5/1
- Ethane Tube Trailer Upgrade Continues
- mRPC Test Lab (Formerly RPC Factory) Startup and Walkthru continues
- Continue VTX strip pixel stave re-design
- Continue sPHENIX support
 - HCal prototype design being firmed up
 - EMCal prototype design continuing
- Continue MPC-Ex design
- Future IR evolution modeling



Ethane Trailer Project:
In progress



mRPC Test Lab Project

TECHNICAL SUPPORT NOTES

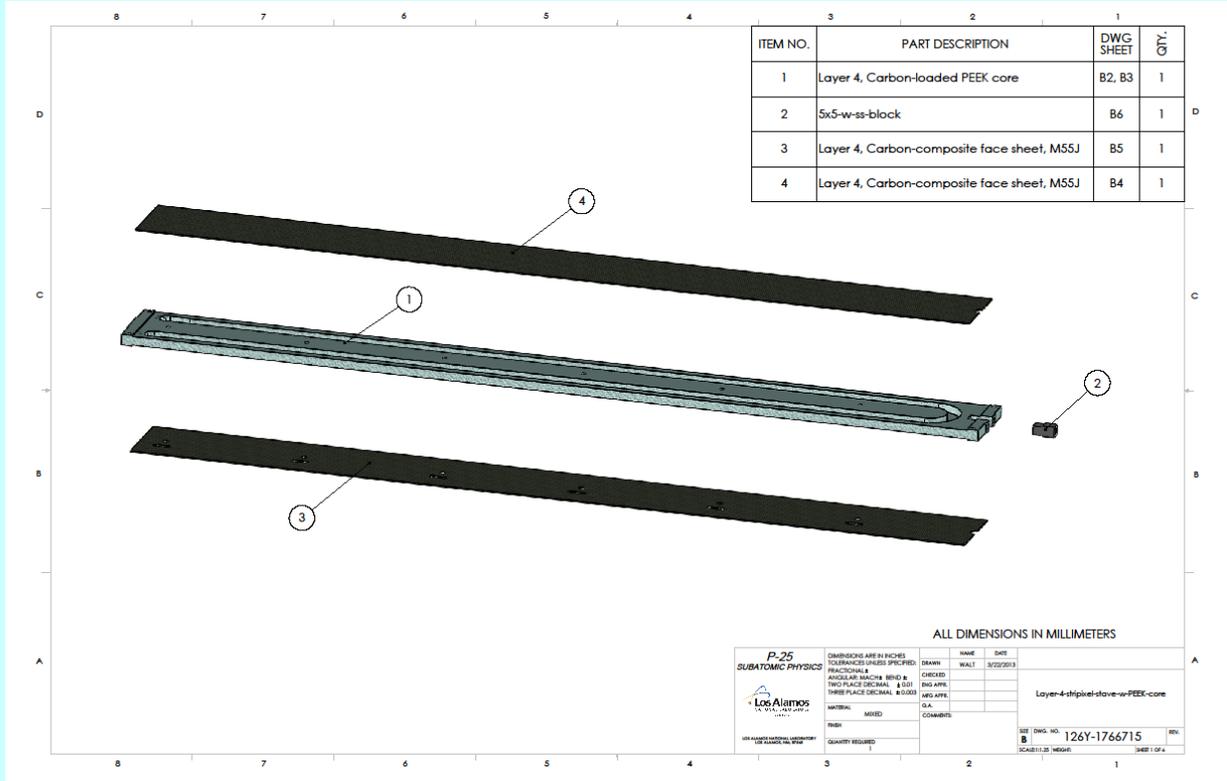
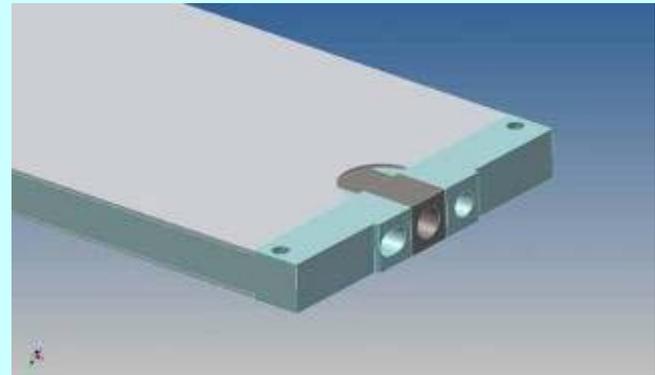
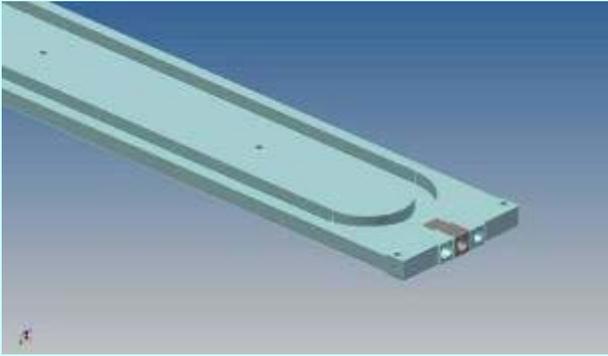


4/18/2013

VTX Repair Project Progress

TECHNICAL SUPPORT NOTES

Prototypes of updated stave design are in progress expect to be fabricated by end of April



4/18/2013

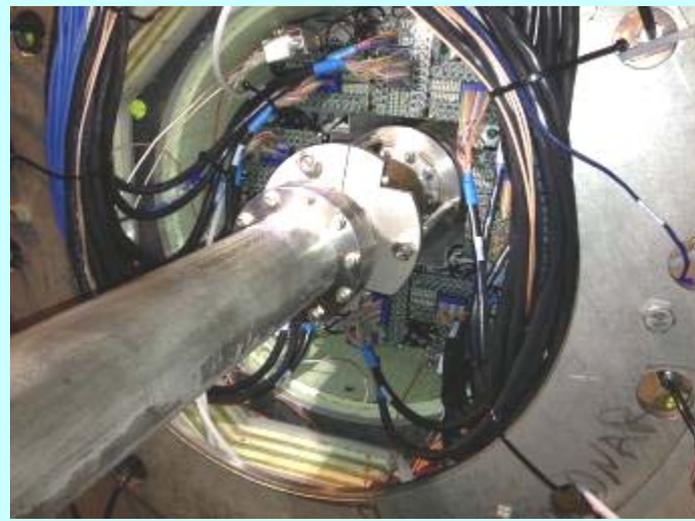
TECHNICAL SUPPORT NOTES



Existing vacuum bellows anti-squirm
In MPC S Cavity

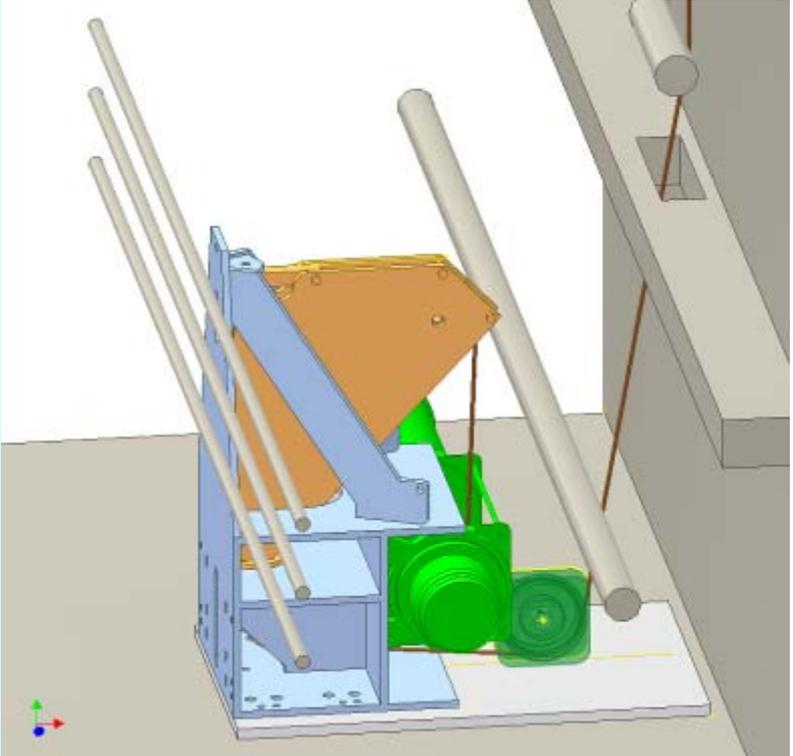


Proposed vacuum bellows anti-squirm
In MPC S Cavity to accommodate MPC-Ex



Window Washer Winch Upgrade

TECHNICAL SUPPORT



Attention: Donald Lynch
 Company: Brookhaven National Lab
 Phone: 631-344-2253

Based on the information provided to us for an AC hoist to be used for lifting, we are pleased to propose the following:

Line	Qty.	Product:	Net Each	Extended
1	1	Columbia HF2100-2A17-L-03 AC Electric Hoist <ul style="list-style-type: none"> • 2.0 HP TEFC UL-listed brakemotor • 230/3/60 Input power • Automatic, load-suspending braking system • Permanently lubricated, high-efficiency planetary gear reduction • Argent gray enamel paint finish • Includes single speed low voltage controls <ul style="list-style-type: none"> ◦ Reversing motor starter in a NEMA 4X fiberglass enclosure ◦ UL-listed ◦ Includes NEMA 4X hand-held pendant control with UP/DOWN momentary contacts and up to 15' lead Does not include wire rope	\$5,022.00	\$5,022.00

Options:

Line	Qty.	Product:	Net Each	Extended
2	1	AutoAdvance Line Spooler <ul style="list-style-type: none"> • Designed and built for Columbia HF2100-2A17-L-03 • Incoming line from front of spooler • Fabricated steel frame • Sheaves are steel construction, grooved for 5/16" line • Ensures proper line spooling regardless of fleet angle • Rope tension must be maintained for proper operation 	\$3,298.00	\$3,298.00

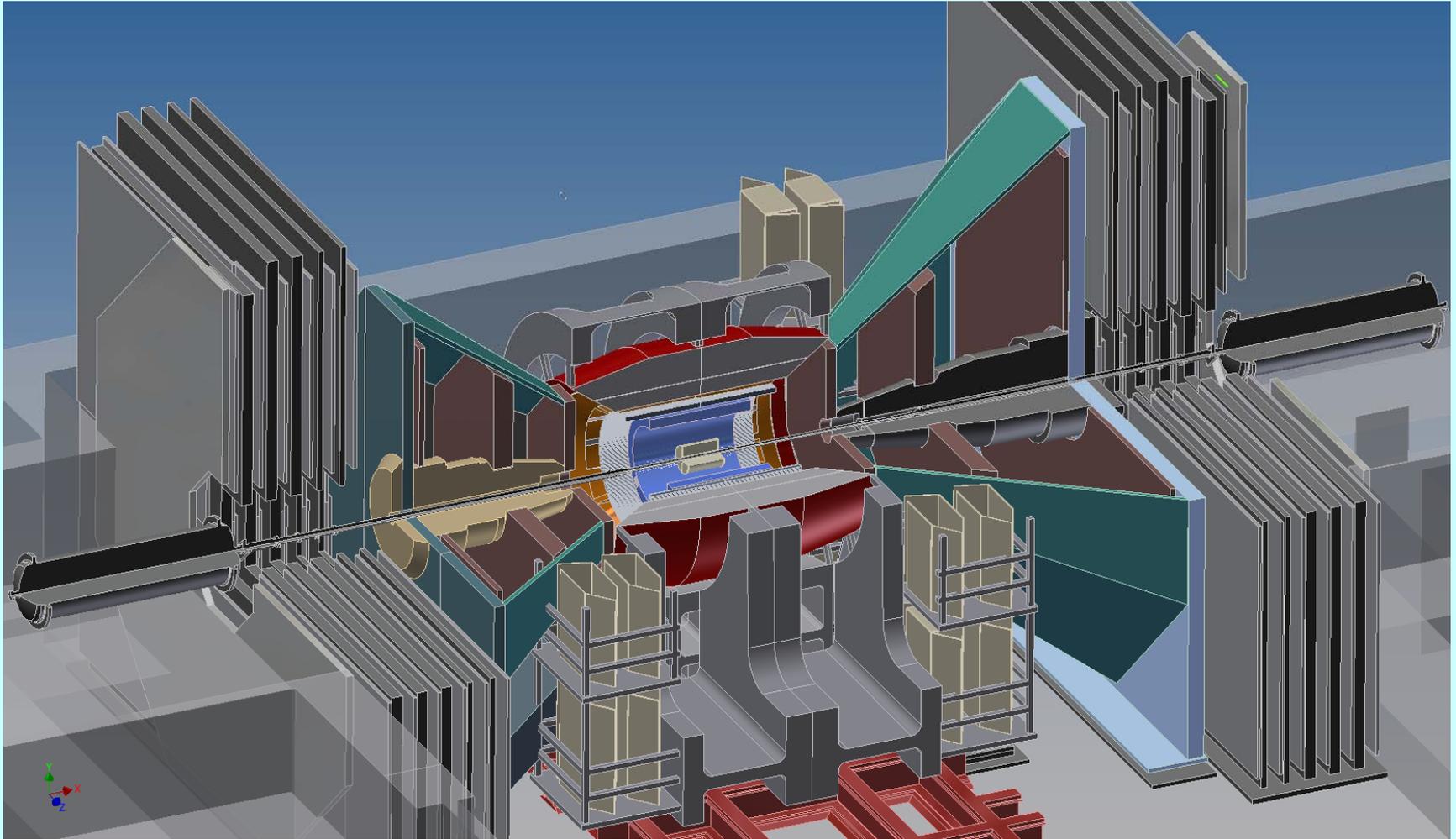
Line	Qty.	Product:	Net Each	Extended
3	1	VLS-6 Vertical Lead Sheave <ul style="list-style-type: none"> • 6,000 lbs load limit • Can be bolted down or welded for installation • Fabricated steel construction • Offset design allows for simple installation at any angle • Bronze bushed steel sheave grooved for 5/16" wire rope 	\$458.00	\$458.00

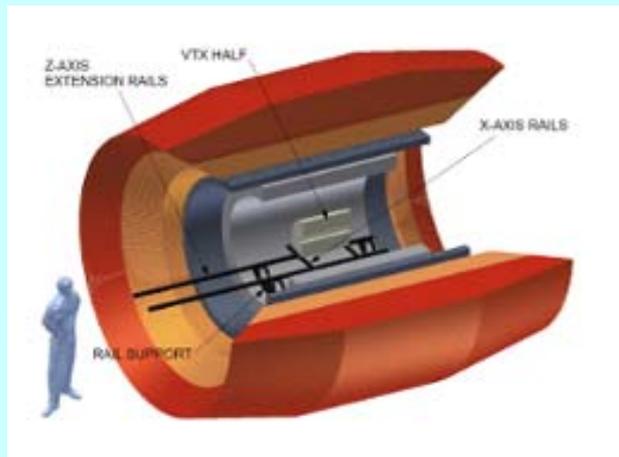
Line	Qty.	Product:	Net Each	Extended
4	1	Wire Rope <ul style="list-style-type: none"> • 200' of 5/16" galvanized aircraft cable with latching hoo • Supplied loose 	\$158.00	\$158.00

Total Estimated Material Cost: \$8396

sPHENIX

TECHNICAL SUPPORT



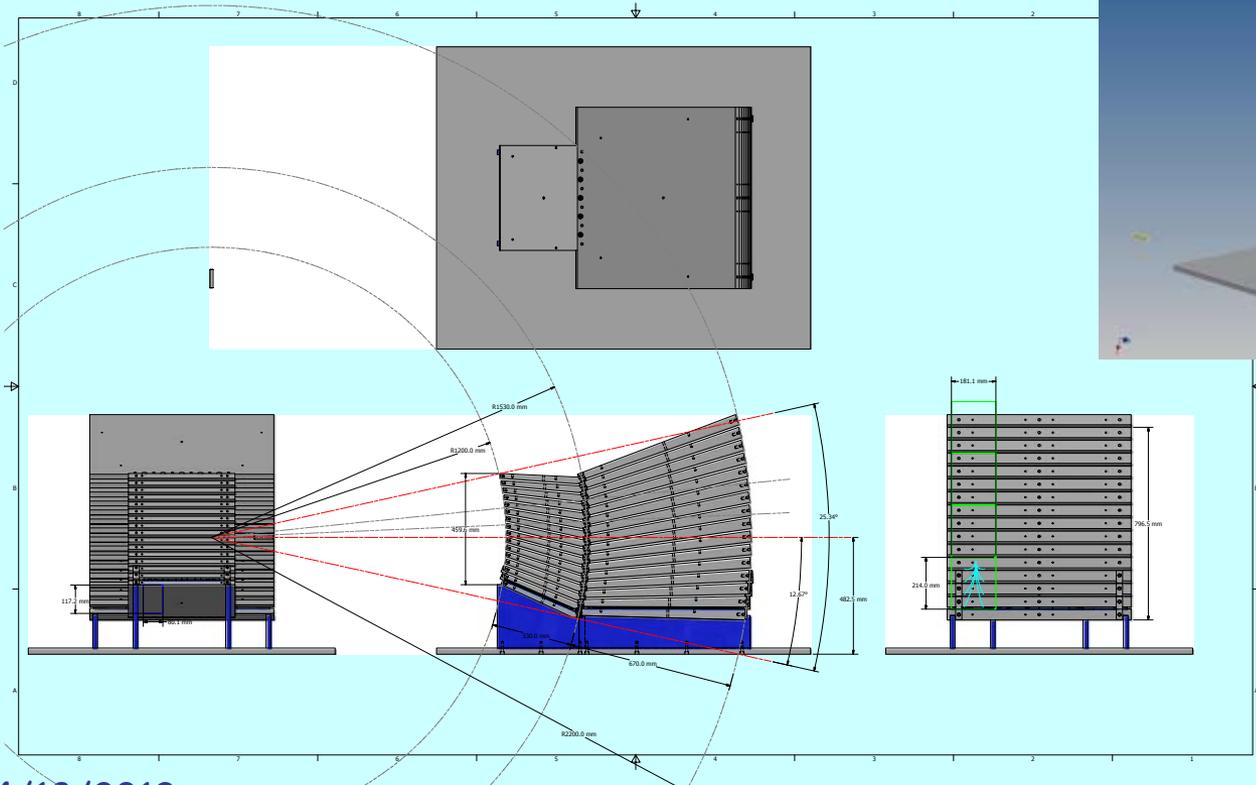
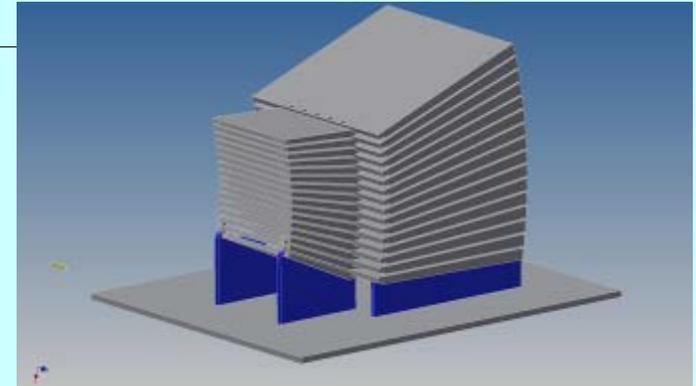


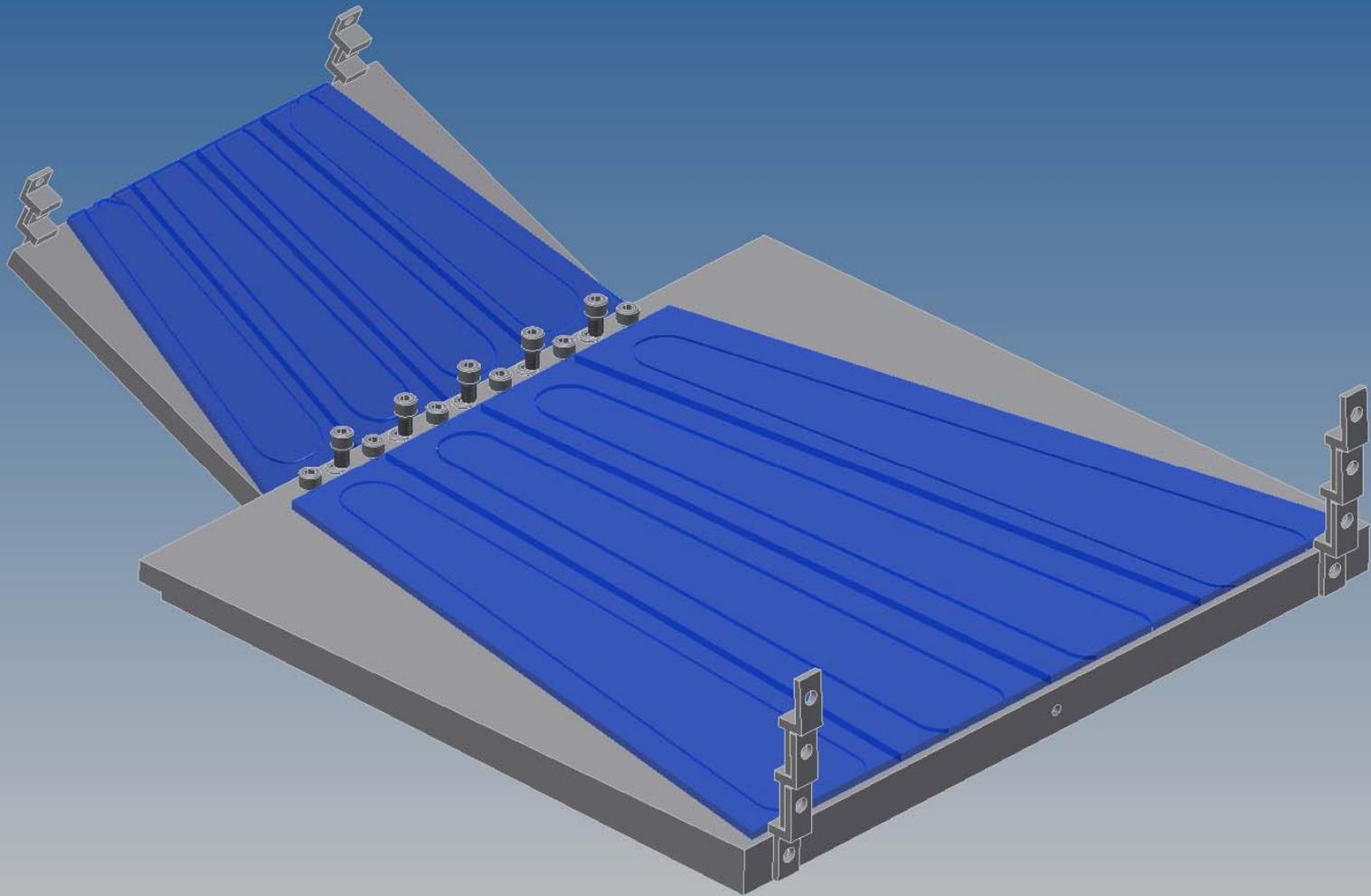
sPHENIX Proposed Upgrade

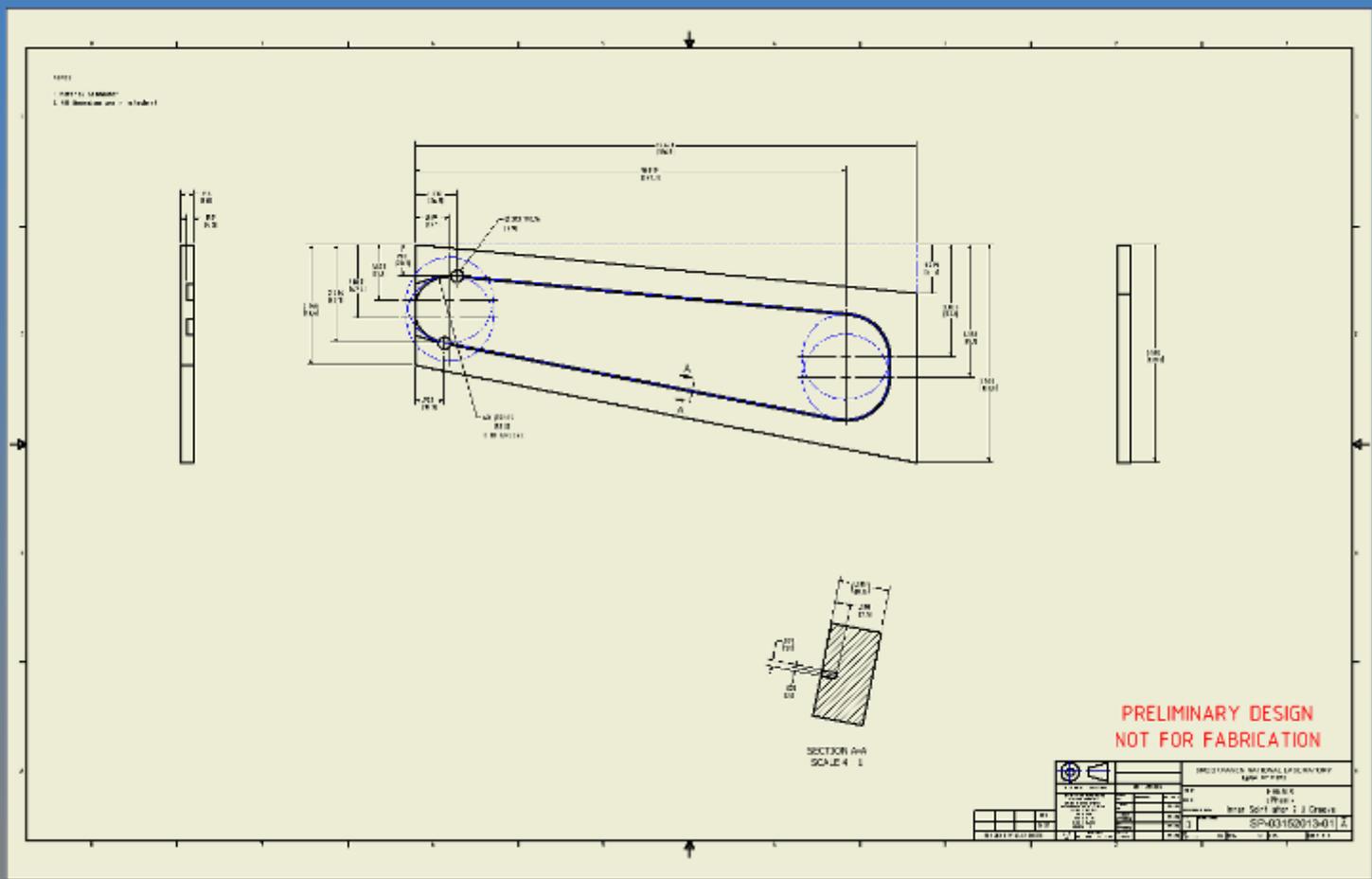
Work continues evaluating engineering tradeoffs for EMCal and HCal design, materials, etc.

Prototype HCal and EMCal in progress

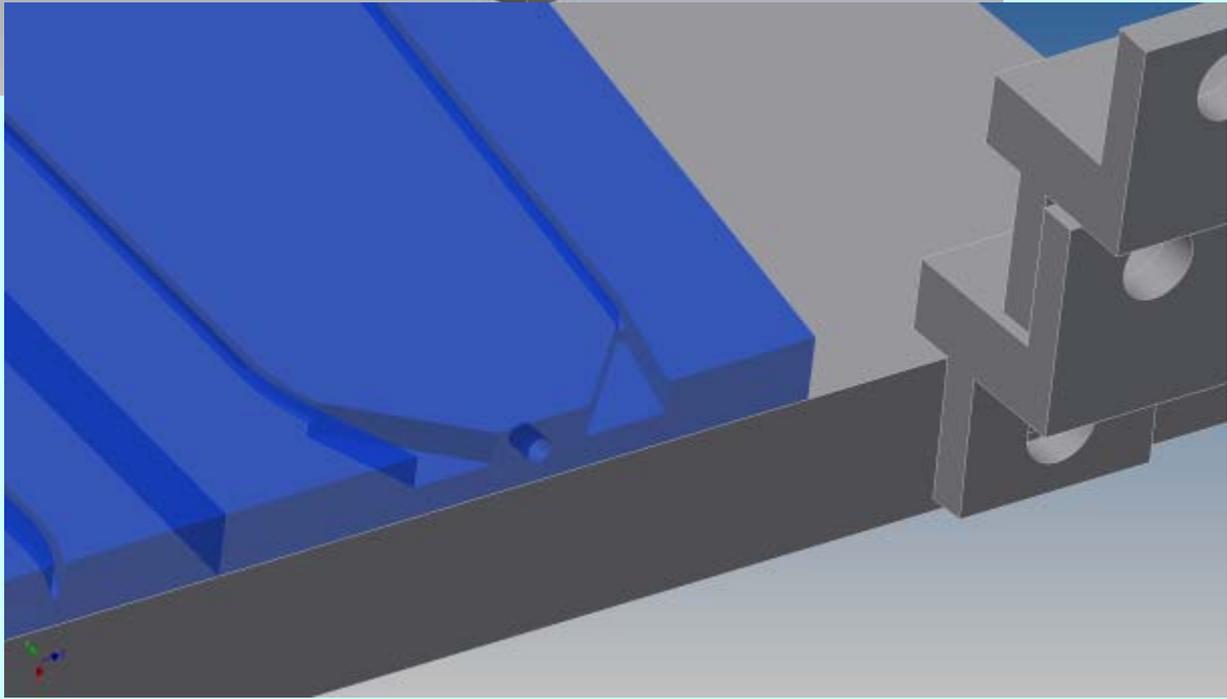
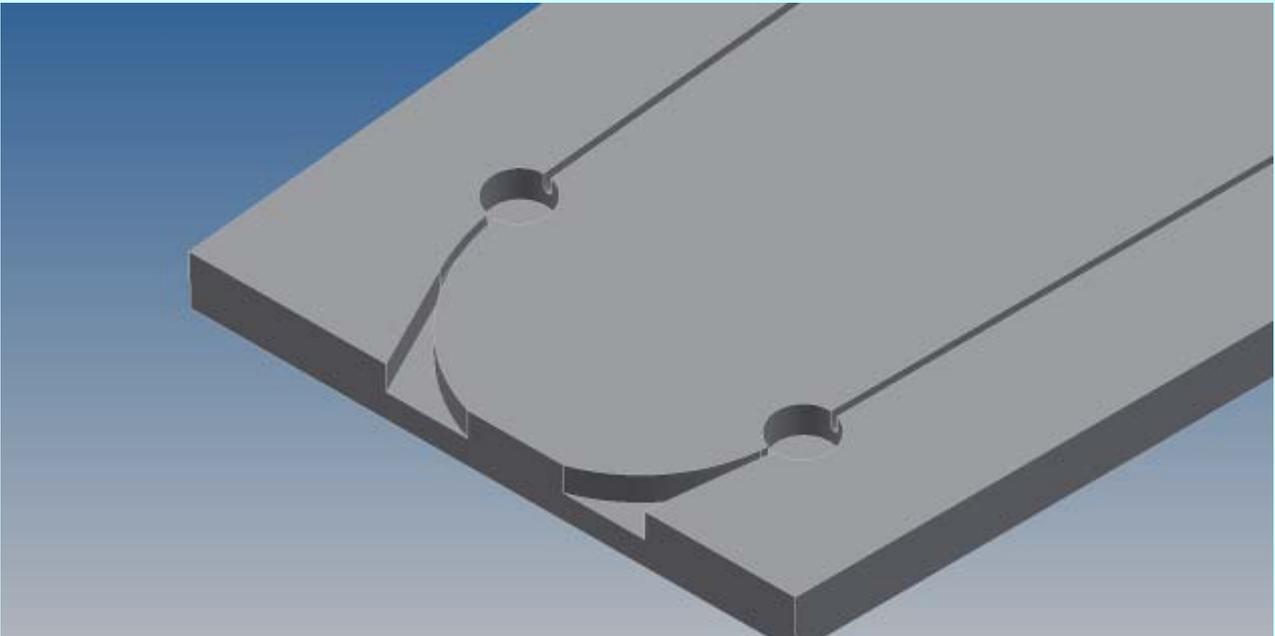
Bid packages for Hcal steel and scintillators in progress to be issued by end of the month







TECHNICAL SUPPORT 2013



Major Projects This Summer:

- VTX repairs/upgrades/general maintenance
- DC East Window Replacement
- MPC-Ex Initial (partial) Installation, North Side First
- mRPC Tests in mRPC Test Lab (formerly RPC Factory)
- sPHENIX Prototypes assembly & tests
- MuTr troubleshooting and Repairs
- Window Washer Winch upgrade

Other Mechanical (TBD)

Other Electrical Projects

- HVAC Controls Upgrade
- Complete Window Washer Controls Upgrade

Other Electronics Projects

- Additional upgrading of ADAM system to MODBUS
- Electronics research in support of sPHENIX and RATCAP
- Lecroy HV communications upgrade

Other Gas System Projects (TBD)

- RPC Gas Recirc. Upgrade
- Drawing and Config. Control Improvements

Other Infrastructure Projects (TBD)

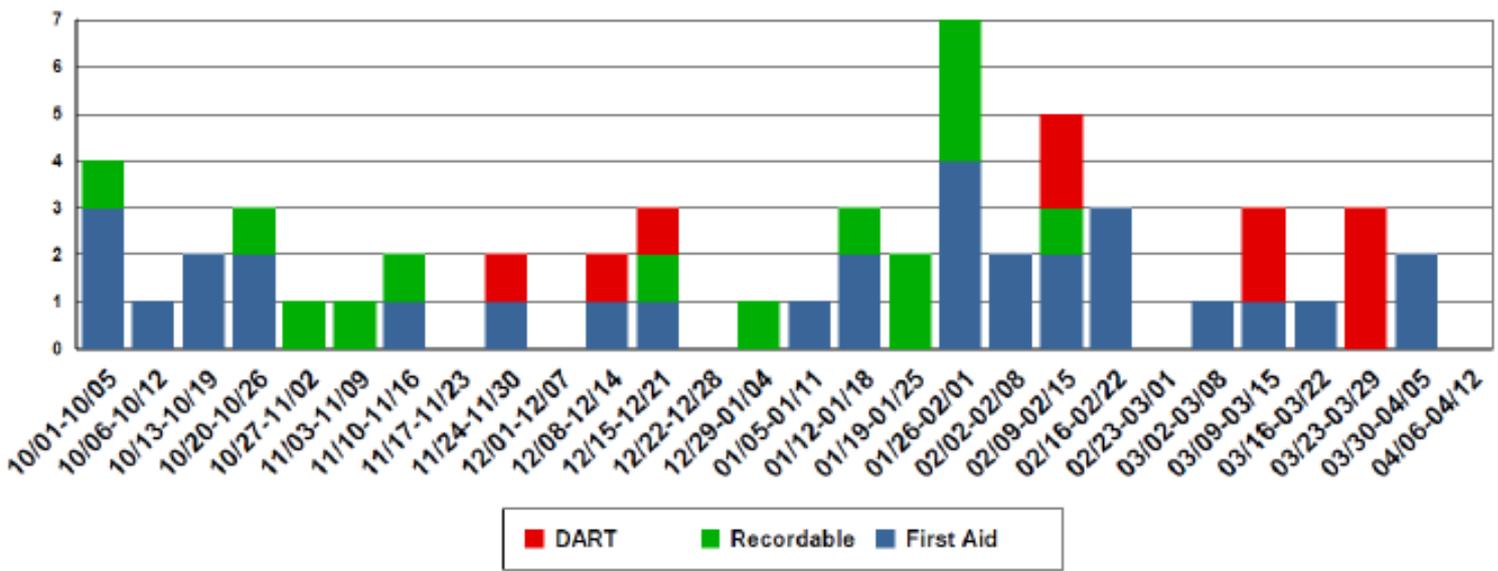
TECHNICAL SUPPORT NON-STOP

Prep for 2013 shutdown	2/11-6/30/2013
Design, Fabricate MPC-Ex	
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	
VTX Strippixel redesign	In-progress
VTX Strippixel 1 st article stave assembly	5/3/2013
VTX Strippixel 1 st article qualification/performance tests	5/17/2013
VTX strippixel stave production	5/20-8/30/2013
VTX Strippixel sensor reclamation	4/1-8/30/2013
VTX Strippixel ladder assembly	6/1-9/27/2013
Pixel Ladder repairs	in progress
End of Run Party	6/28/2013
Run 12 Ends	6/30/2013
Shutdown Standard Tasks	6/30-7/19/2013
• Open wall, disassemble wall, Remove MuID Collars,	
• Move EC to AH, etc.	
Disassemble VTX/FVTX services	7/1-7/19/2013
July 4th Holiday	7/4-5/2013
Remove VTX/FVTX and transport to Chemistry Lab	7/22/2013
Assemble, Test and Install MPC-Ex (North only?)	7/22-10/1/2013

TECHNICAL SUPPORT 2013

MuTR Troubleshooting, maintenance and repairs	7/22-9/27/2013
Summer Sunday (8/11) Prep and teardown	8/7-8/13/2013
Summer Sunday (RHIC)	8/11/13
DC East Window Upgrade and Related Repairs	8/19-9/27/2013
sPHENIX HCal Prototype Assembly/test	8/19-10/15/2013
Labor Day Holiday	9/2/2013
Repair upgrade, reassemble VTX/FVTX (pixels and strip-pixels)	7/23-10/13/2013
Test, survey (at Chemistry and IR) and re-install VTX/FVTX	10/16-10/27/2013
Other detector maintenance as required	As required
Infrastructure maintenance as required	As required
TBD prototype tasks	As required
Pre-run commissioning and prep for run 14	11/1-12/31/2012
Veterans Day, Lab Holiday	11/11/2013
Prep for EC roll in	11/1-11/9/2013
Roll in EC	11/10-11/12/2013
Prep IR for run	11/1-11/30/2013
Thanksgiving Holidays	11/28-29/2013
Pink/Blue/White sheets	12/14-12/31/2013
Christmas Holiday	12/24-25/2013
New Year's Day Holiday	1/1/2014
Start run 14	1/2/2014

Injuries Per Week (FY) As of 4/12/2013



Injury Status:

FY13 YTD: DART – 10, TRC – 24, First Aid – 31
 FY12: DART – 17, TRC – 35, First Aid – 70
 FY11: DART – 30, TRC – 44, First Aid – 45

FY13 Injury Listing: <https://intranet.bnl.gov/esh/shsd/seg/Occlni/BNLInjuries.aspx>

Recent Injuries		
4/2/13	First Aid	An employee injured a shoulder while doing overhead work. The pain grew worse and the worker notified the supervisor and the OMC on 4/10/2013. At the OMC, first aid was given.
2/1/13	Recordable	An employee reported pain bilaterally due to excessive computer work. At the OMC, first aid was given. UPDATE: This is changed to recordable due to physical therapy.
1/22/13	Recordable	An employee slipped and fell on a wet surface while instructing another employee in building maintenance. At the OMC, first aid treatment was given. UPDATE: Several months later she began a regimen of physical therapy, making the case recordable.



TECHNICAL SUPPORT NOTES

Recent Events		
4/12/13	Non-Reportable	A personal vehicle was discovered having rolled out of its parking spot outside of Bldg. 745. It was stopped by the grass at the edge of the lot. There were no injuries and no damage. (Event Link)
4/11/13	Non-Reportable	LP Police responded to South of Building 901 at Cornell Avenue to investigate damage of Government property. A Roads and Mason from Site Resources was clearing an area of large loose rocks by hand and one accidentally slipped from his hand in the direction of the John Deer 5320 Tractor. The contact of the rock shattered the rear right corner window. The damage did not result in any injuries and the tractor was safe for operation back to Building 339 after the broken glass was cleaned up. (Event Link)
4/11/13	Non-Reportable	An employee accidentally struck a parked vehicle while backing out of a space in the lower parking lot outside Bldg. 911. Both vehicles are owned by BNL. There were no injuries and minor damage to both vehicles. (Event Link)
4/11/13	Non-Reportable	An employee driving on the road at the west end of LINAC had to sound his horn to avoid a tractor trailer turning into the corner from the opposite direction. (Event Link)



Where To Find PHENIX Engineering Info

April 18th This day in History:

- 1506 ST. Peter's Basilica cornerstone laid
- 1775 Paul Revere's Ride "The British are Coming!" starting the American Revolution
- 1783 Fighting ceases ending the American Revolution 8 years to the day after it started
- 1906 San Francisco Earthquake kills nearly 4000
- 1912 705 survivors of the Titanic arrive in New York aboard the Carpathia
- 1923 First game at Yankee Stadium (Yankees beat Red Sox 4-1)
- 1939 Gene Autry records "Back in the Saddle Again"
- 1950 First Transatlantic Jet Passenger Trip
- 1955 Albert Einstein dies at 76. If still alive he would be 134 years old today
- 1983 Car bombing in Lebanon destroys the US Embassy killing 63
- 2012 Dick Clark dies at 82

Today is also International Jugglers Day, National Animal Crackers Day, Adult Autism Awareness Day, International Amateur Radio Day, National Stress Awareness Day, National Wear Your Pajamas to Work Day, Passover (begins at sundown), Pet Owner's Independence Day, and Third World Day, Organize your Files Week, Medical Labs Week

April is also National Fresh Celery Month, National Pecan Month, National Soft Pretzel Month, and National Soyfoods Month.

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



TECHNICAL SUPPORT 2013



- Damage was found in all FVTX returns (4) lines that are run in the same bundle as the VTX strip lines.
 - 2 to 3 tubes depending on side
 - These lines are in ½" thick foam rubber insulation
 - All in the same location
- These are the same lines that were used last year.
- This year, bypass lines at the detector were installed since Strips are not running
- This year, grounding was added to the Stainless barbs at the detector to stop arcing
- Pressure of lines are under 10 psi
- Flows are the same as last year ~20 gph
- Temp of lines is around 0 C
- Similar damage found in FVTX Big Wheel return line on North East during the April 3 access. Only difference is fluid temp is 10C

See next slide for more details

- A one foot section of tubing around the leak points were removed and couplings installed.
- Flow to the VTX-Strip bypass lines was stopped and lines drained.
- Shunts were installed at the Low temp manifold to provide enough flow to the cooling system
- Samples of the tubing were sent to Los Alamos lab for chemical testing
- We will monitor fluid levels to see if we found all the problem areas
- If there are still level losses, the 4 FVTX returns lines will be replaced. Removed lines will then be inspected.
- A separate meeting will be scheduled once we gather some information to see if we can come up with a mechanism that created this problem.

See next slide for more details

Reply from 3M Engineer

You are not the first to have this issue! I am pretty certain these are pin holes from electrostatic arcing. This region of the tube might have gotten close to a grounded surface???. Its not a question of compatibility as much as electronegativity and triboelectric charging. Strategies for combating include (in order of efficacy)

1. Using a conductive tube- sure bet
2. Using semiconductive (carbon impregnated) PTFE - sure bet
3. Trying a different polymer such as HDPE or nylon with different electronegativity - often works
4. Decreasing length of dielectric portion - may help
5. Increasing diameter to reduce Reynolds Number - may help

Conclusion → I love Novec 7200!!