



Muon g-2 Shutdown update

Open house walk through

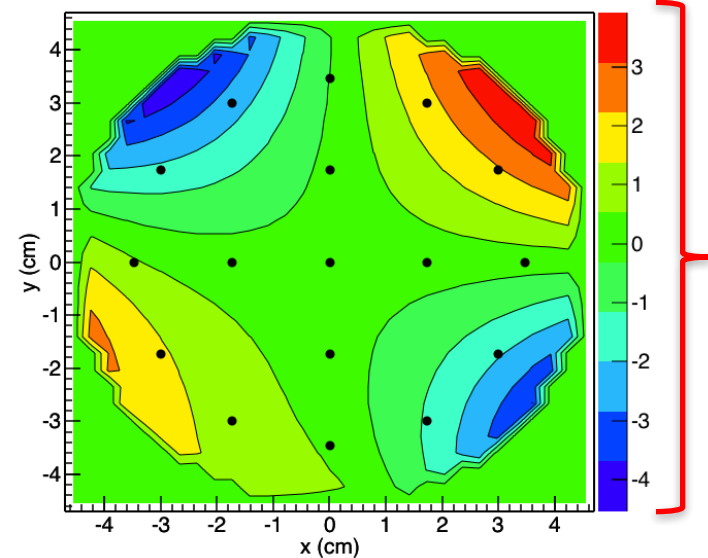
Brendan Kiburg

AEM, 9/18/2017

Evolution of storage region uniformity - I

Apr 2017 (800 ppb contours)

April 2017 Field (ppm)



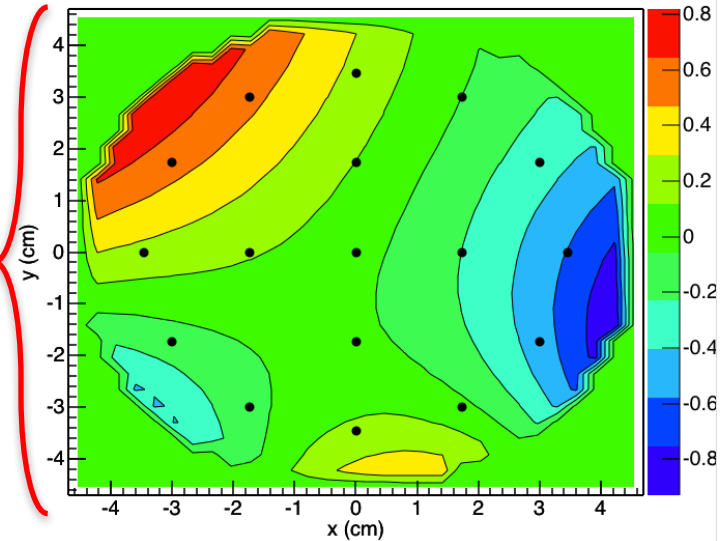
Tables in ppm

	Norm	Skew
Quad	0.20	-0.12
Sext	0.27	3.43
Octu	-0.94	0.52
Decu	0.54	0.27
Dipole	-0.0	

	Norm	Skew
Quad	-0.46	0.22
Sext	-0.32	-0.29
Octu	-0.13	0.28
Decu	0.05	0.07
Dipole	-0.0	

Aug 2017 (200 ppb contours)

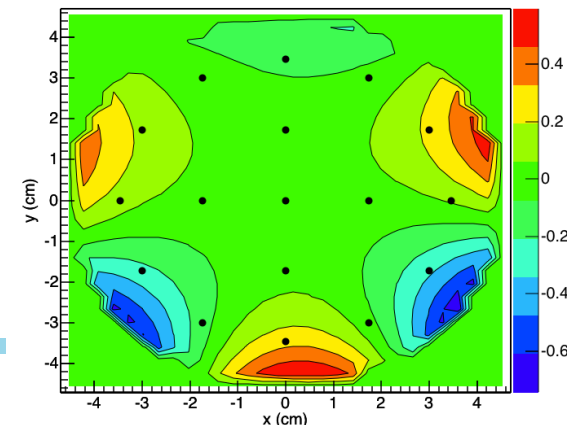
B-Field (ppm)



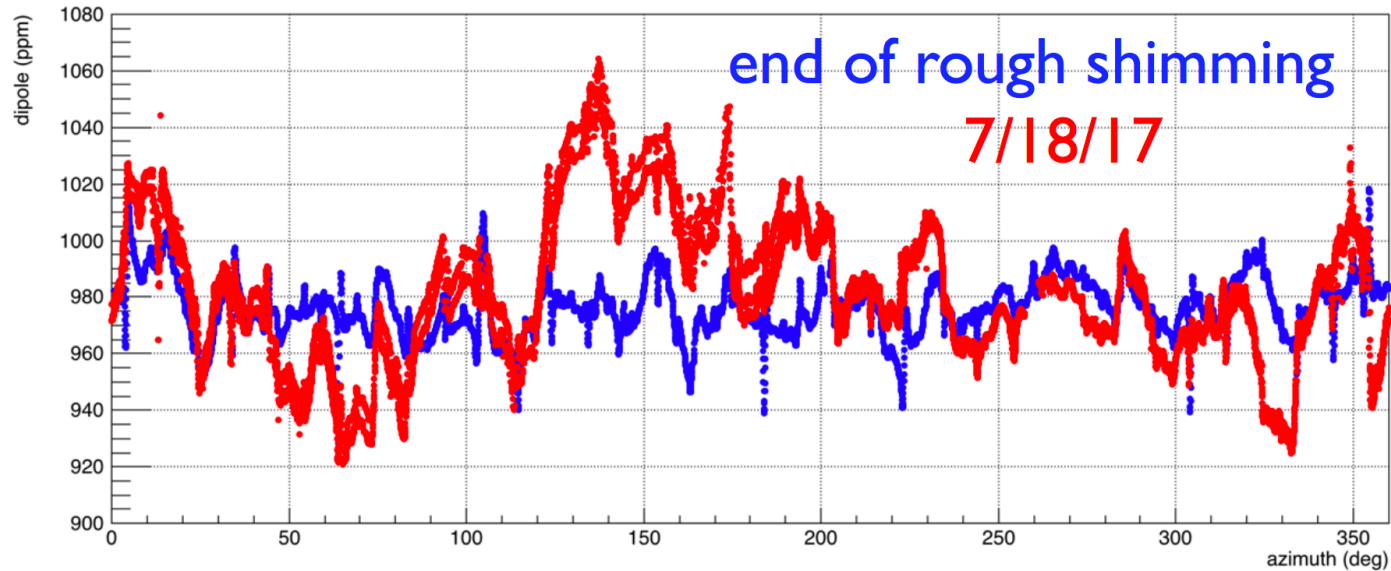
Future goal: Predicted (100 ppb contours)

Predicted B-Field (ppm)

- BNL full range of 2.5 ppm
- Surface correction coils working well

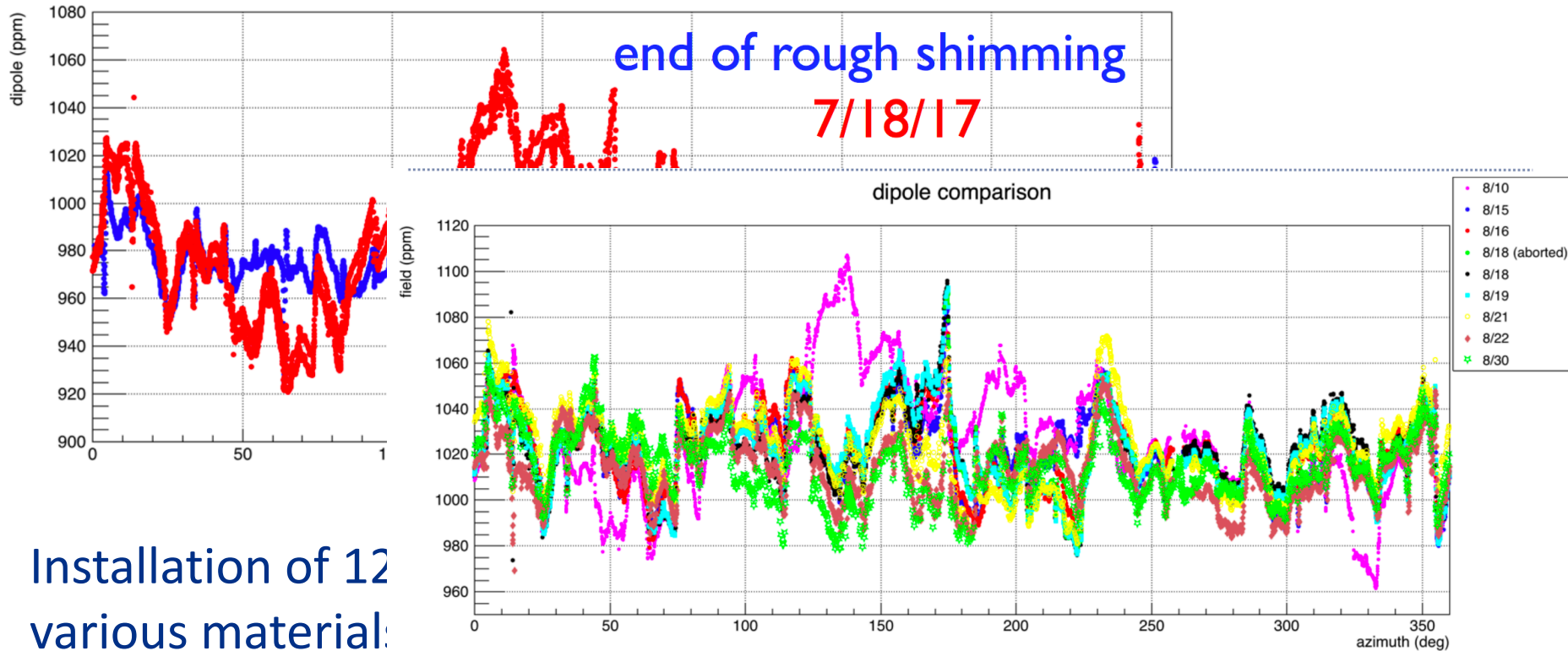


Evolution of storage region uniformity - II



Installation of 12x 400 lb vacuum chambers,
various materials, etc...

Evolution of storage region uniformity - II



Installation of 12
various material

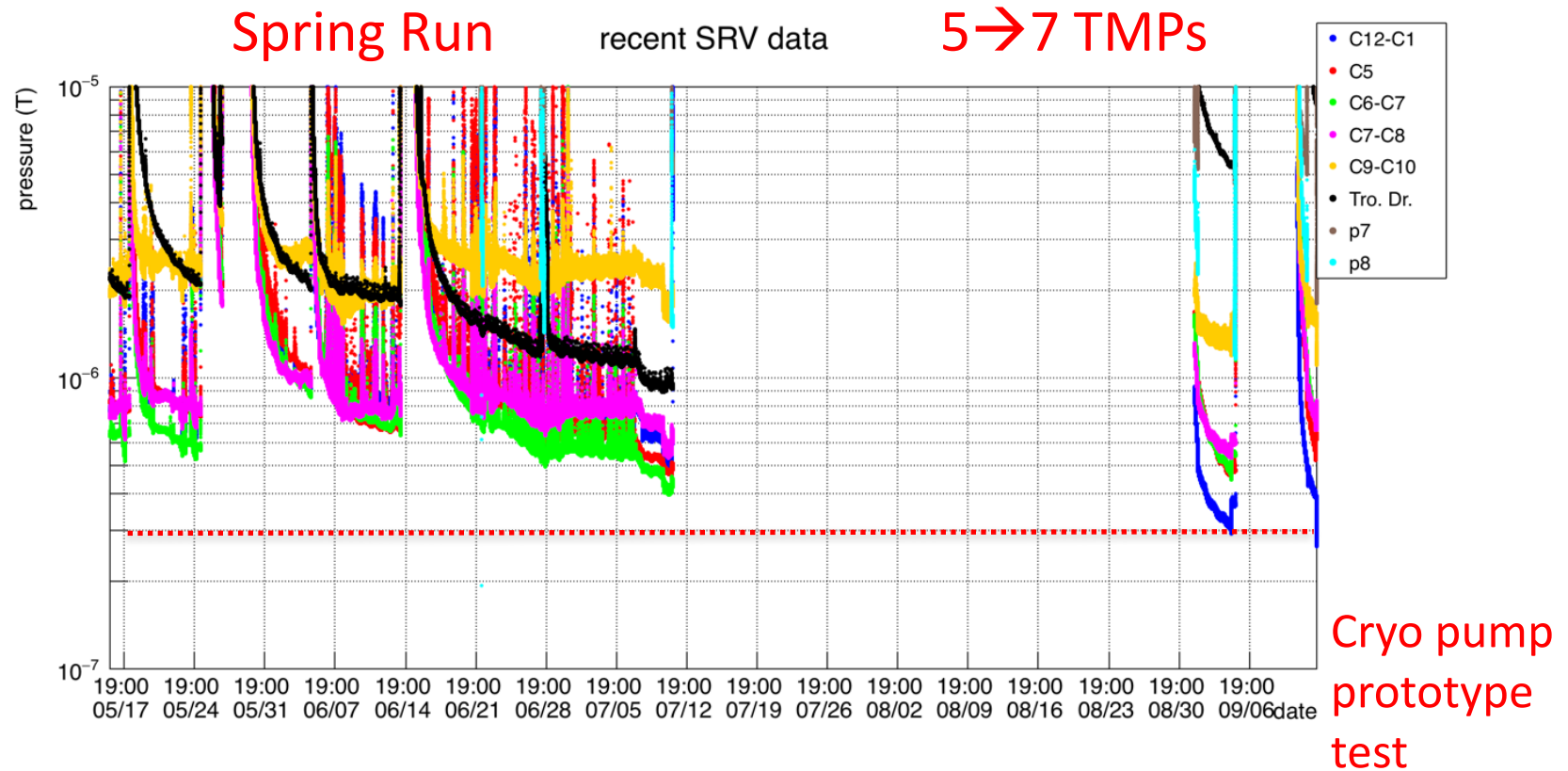
Epoch	Dipole RMS (ppm)
End of RS	10
8/10	26
8/18	17
8/19	18
8/21	18
8/22	14
8/30	15

Wedge shims have recovered good fraction of what was lost.

Still plan to iterate a couple more times, after remaining work completes and trolley reinstalled

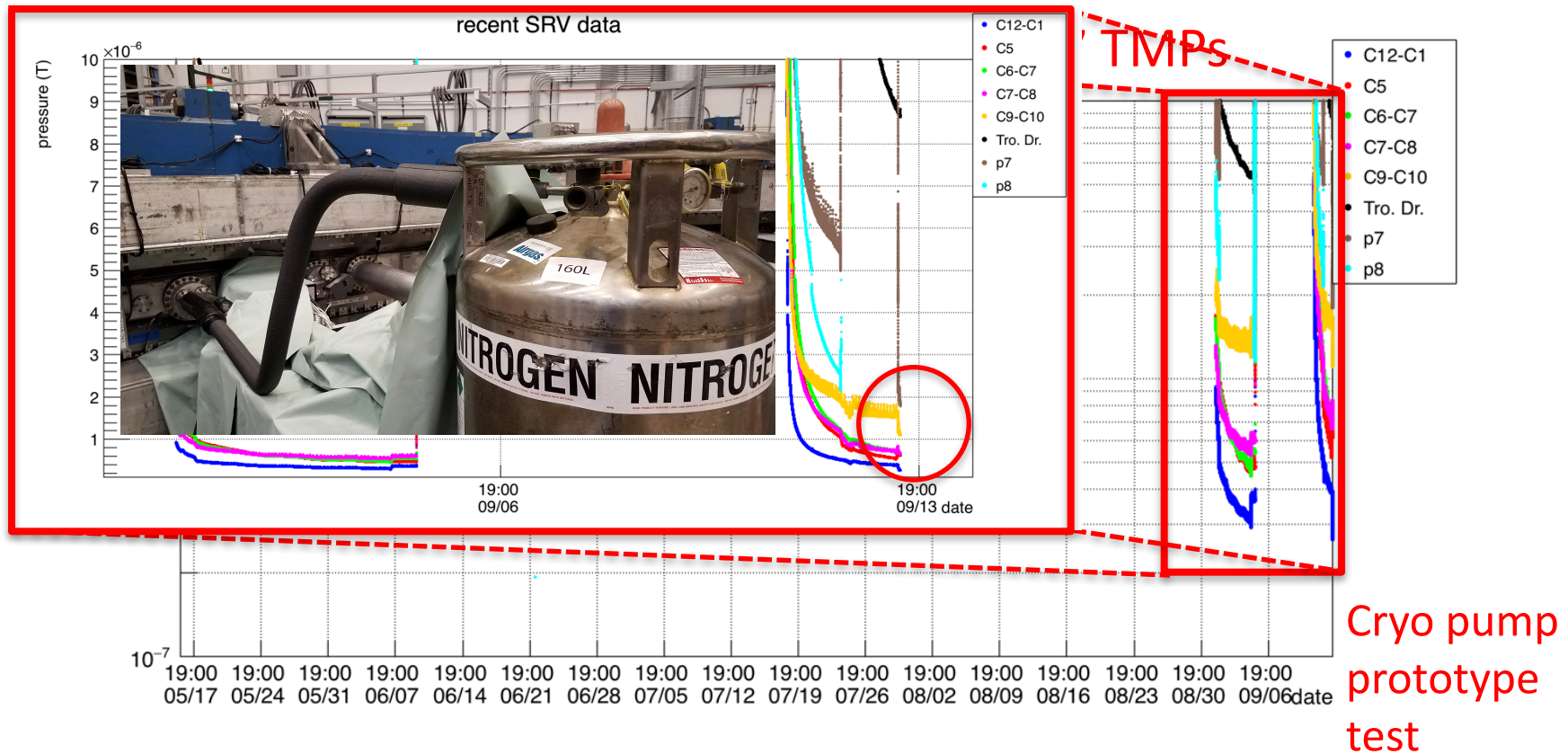
Shutdown update: Pulsed Systems + Vacuum-I

- Pulsed systems for muon storage (Quads and Kickers)
 - Require 1e-6 torr at the plate surfaces to operate at design voltages
 - Corresponds to $\sim 3\text{e-7}$ torr on our vacuum gauges



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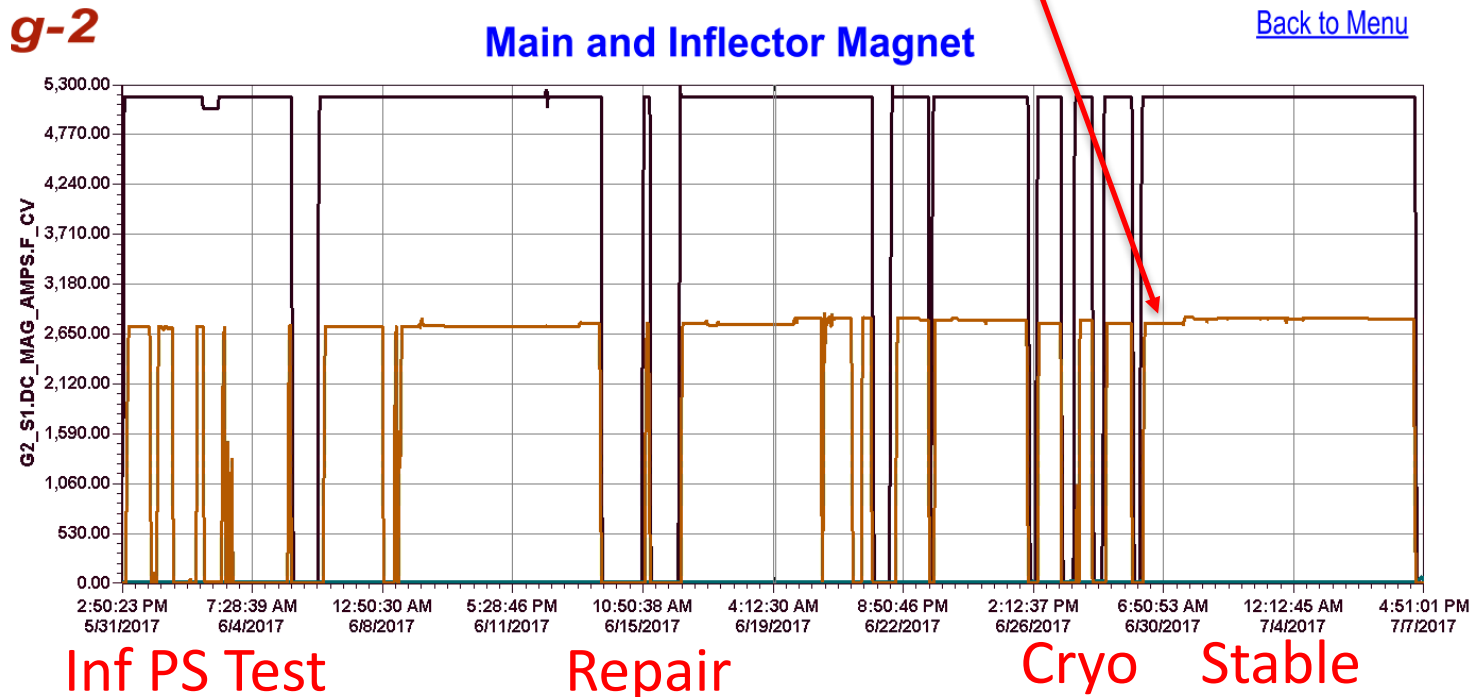


Shutdown update: Pulsed Systems + Vacuum-II

- Improved Procedures
 - Installation of vacuum letup system → clean N2
 - Serial workplan to minimize atm exposure
- (Temporary) Removal of largest vacuum loads
 - Trackers → Cooling system refurbishment @ FNAL
 - Trolley + Plunging probe → ANL for absolute calibration work in ultra-pure MRI magnet
- Beginning pumpdown test Wed (9/20) to achieve spec vacuum and verify functionality of pulsed systems
- Building cryopumps to meet spec when vac loads return
 - All parts ordered
 - Gate valves to arrive in early Nov

Shutdown update: Inflector

- Operated stably for >1 week during spring run after some initial issues with the power supply



- During Shutdown, have been investigating some noise issues in the system
 - Continue to tune control loops, and the inflector quench detection system. Working to isolate sources of noise

Important Organizational Dates

- Sep 23: Open House
- Oct 2-3: Operational Readiness Review
 - Demonstrate that the experiment is ready for data taking and has plans in place to best utilize that data
- Oct 16: Shifts Begin
 - All shifts signed up through Feb 2018
- Oct 16: Final re-installation of maintained system
- Oct 23: Planned End of Shutdown (able to accept beam)
- Oct 30: Potential beam at M5 line
- Nov 6: Delivery Ring Tuneup
- Nov 13: Improved Vacuum should allow full operations