

Shutdown '18

Report for RHIC retreat

BROOKHAVEN
NATIONAL LABORATORY



Discussion Topics:

- Machine Status
- Shutdown work: Major projects
- Testing and other work
- Critical dates, events
- Startup Schedules

Machine Status: Pre injectors

- LINAC
 - Shutdown and in RA zones 2,3&4
 - RF testing zone 1 (Mod 5 wide pulse)
 - All areas opened next week
- BLIP
 - Shutdown
 - Periodic tests of Raster Magnet (NA to SPUR Tunnel during tests)
- EBIS
 - Maintenance July 16-30, then setup/testing.
- Tandem
 - Local schedule, protons as necessary for NSRL in the fall

Booster and AGS

- Booster and AGS in Maintenance Access Mode
 - Maintenance items underway
 - Shutdown LOTO in place
- NSRL in RA
 - No major changes to beam line or components

RHIC:

- All areas is Restricted Access except sector 2.
- LEReC gun and beam tests through September 18th
- Scheduled Access only sector 2.

Shutdown work schedules

- Work progressing in all areas
- Prioritization continuing
- Addressing emerging work
- Coordinating F&O contractors, PSEG and other workers

Major Jobs at a glance

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EBIS

- Setup and testing
- Preparation for next year's installation
 - BM1 re-route, remove old PS





W

CAUTION
EXTREME COLD
LOW TEMPERATURE

CAUTION
EXTREME COLD
LOW TEMPERATURE

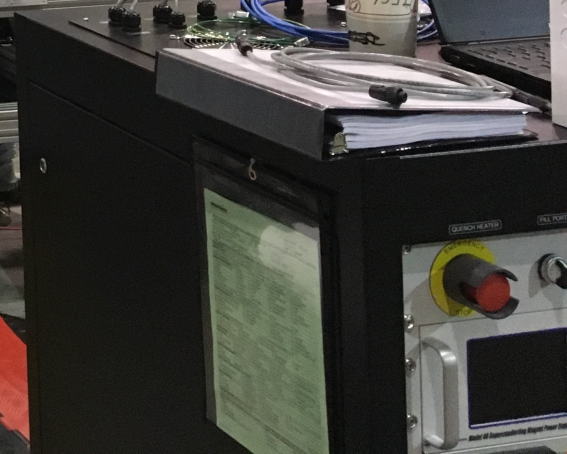
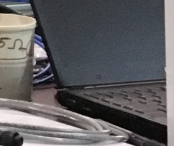
CAUTION
MAGNET
ENERGIZED
WHEN LIGHTS
ARE ON

CRYOMAGNETICS, INC.
INNOVATIVE TOOLS FOR SCIENTIFIC RESEARCH

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CRYOMAGNETICS, INC.
INNOVATIVE TOOLS FOR SCIENTIFIC RESEARCH



Tandem

- No Major changes or installation
- Fix TTB ps interface
- Shutdown work when no outside users
- Needed for Protons in the fall (TTB operation prep)

LINAC

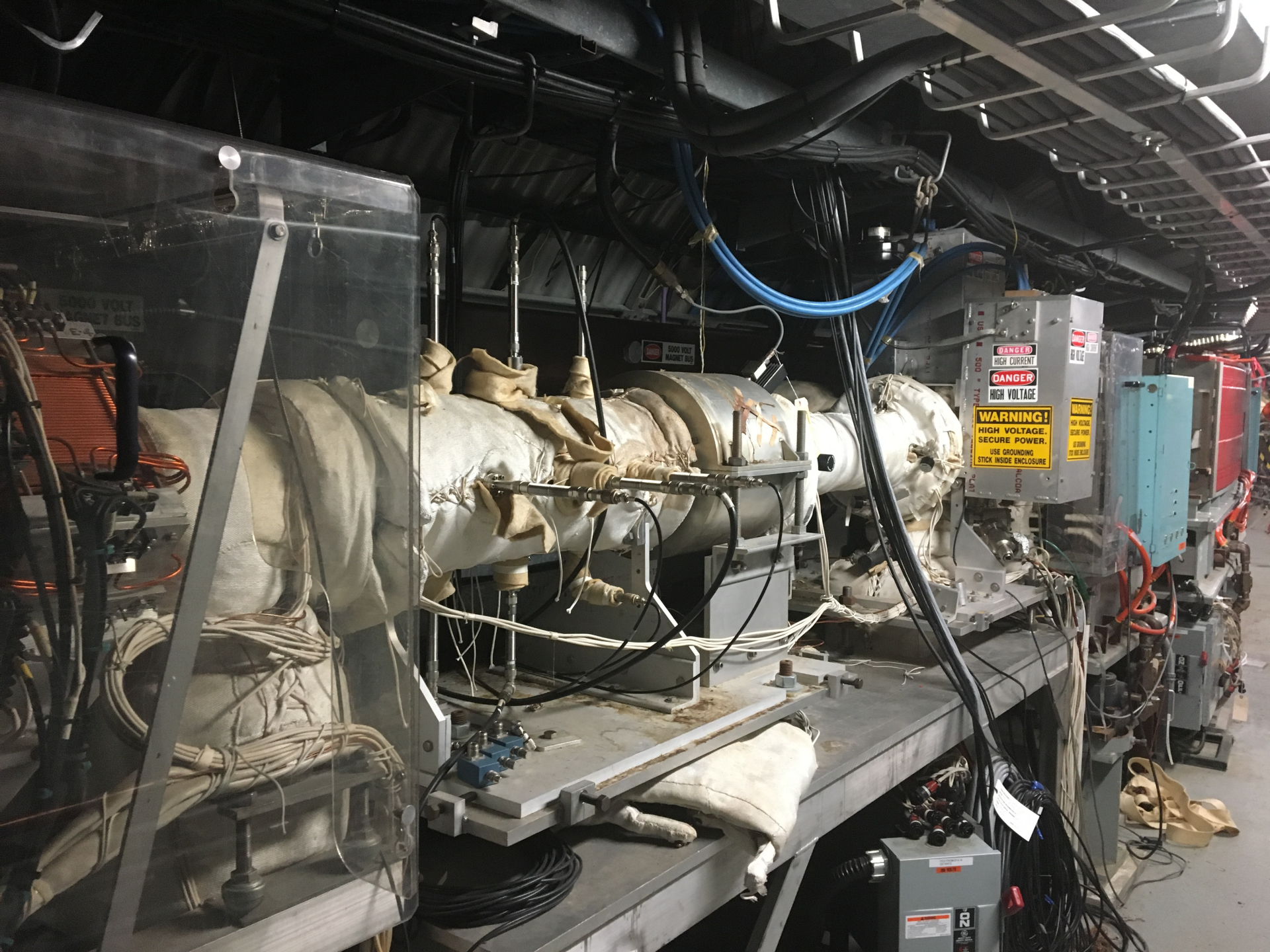
- Substation Maintenance
- Tank Vacuum replacement (Mod 5, Mod 4)
- Mod 5 studies, probe, reassembly
- Water systems maintenance/upgrades
 - Mod 8&9 heat exchanger
- Continued work on RF upgrades
- Other possible electrical outages (Motor Starters, switch replacement..)
- Annual Maintenance items

BLIP

- Vacuum window replacement, upgrade
- Raster magnet tests and work
- BM1 ps work

Booster

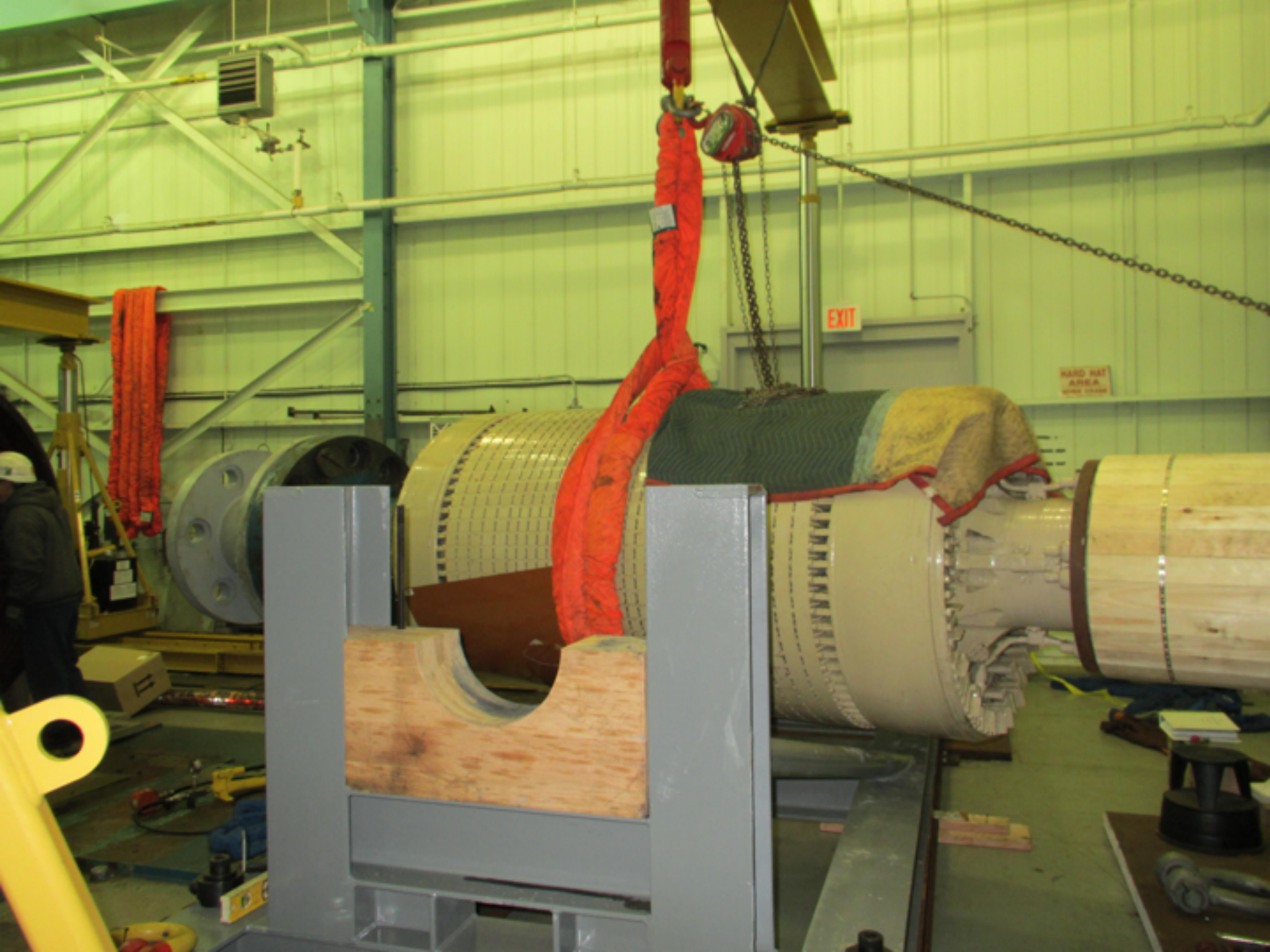
- Very short shutdown
- New sextupole ps
- Maintenance items
- E3 AC dipole after NSRL run...

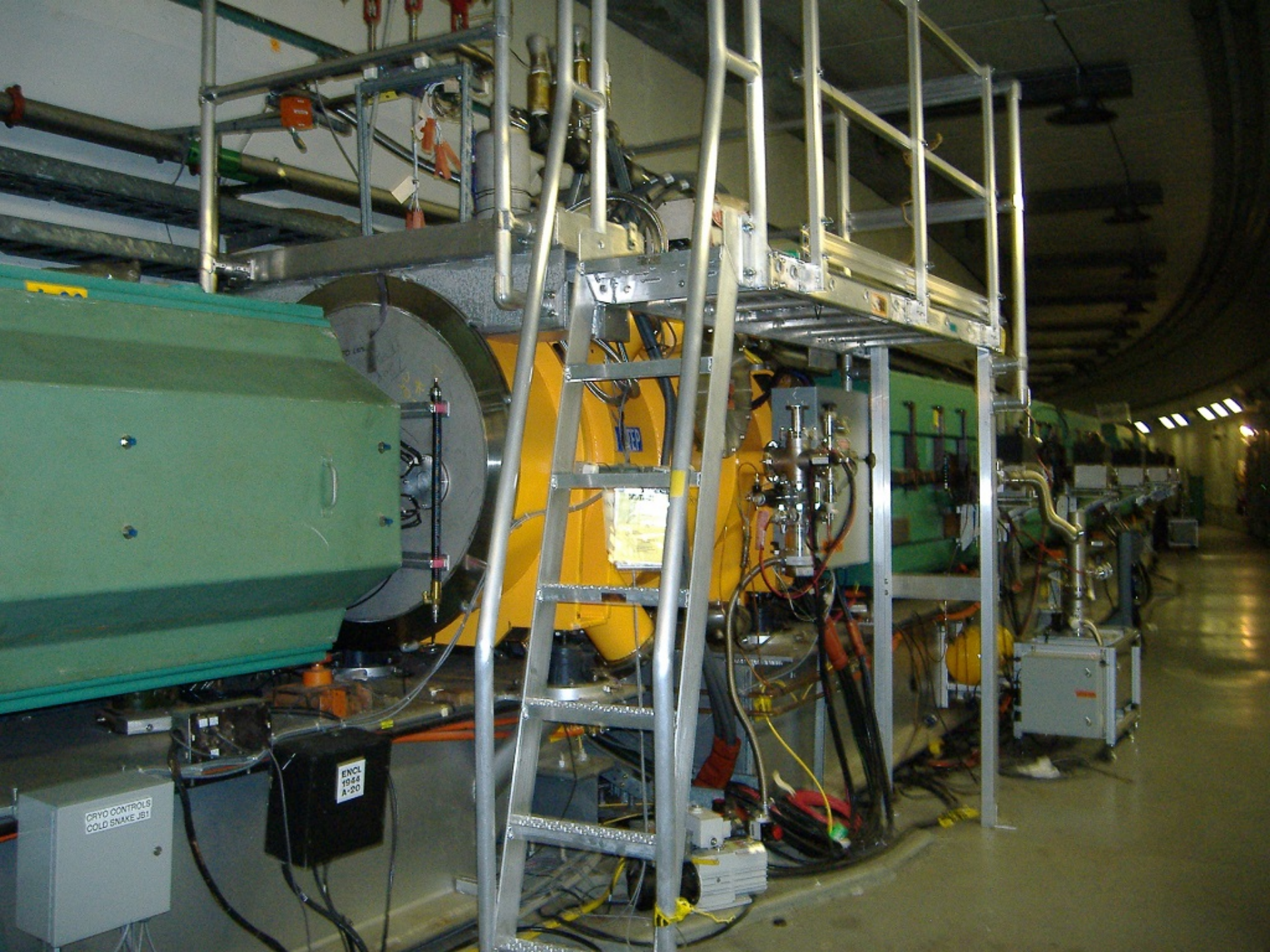


AGS

- RF water PLC
- Siemens MG major maintenance
- 5th cold head for A20 snake
- New tune and chrom supplies







CRYO CONTROLS
COLD SNAKE JB1

ENC1
1944
A-20

AtR

- New Access Controls System
- Survey/Adjust
- New BPM downstream of WD4

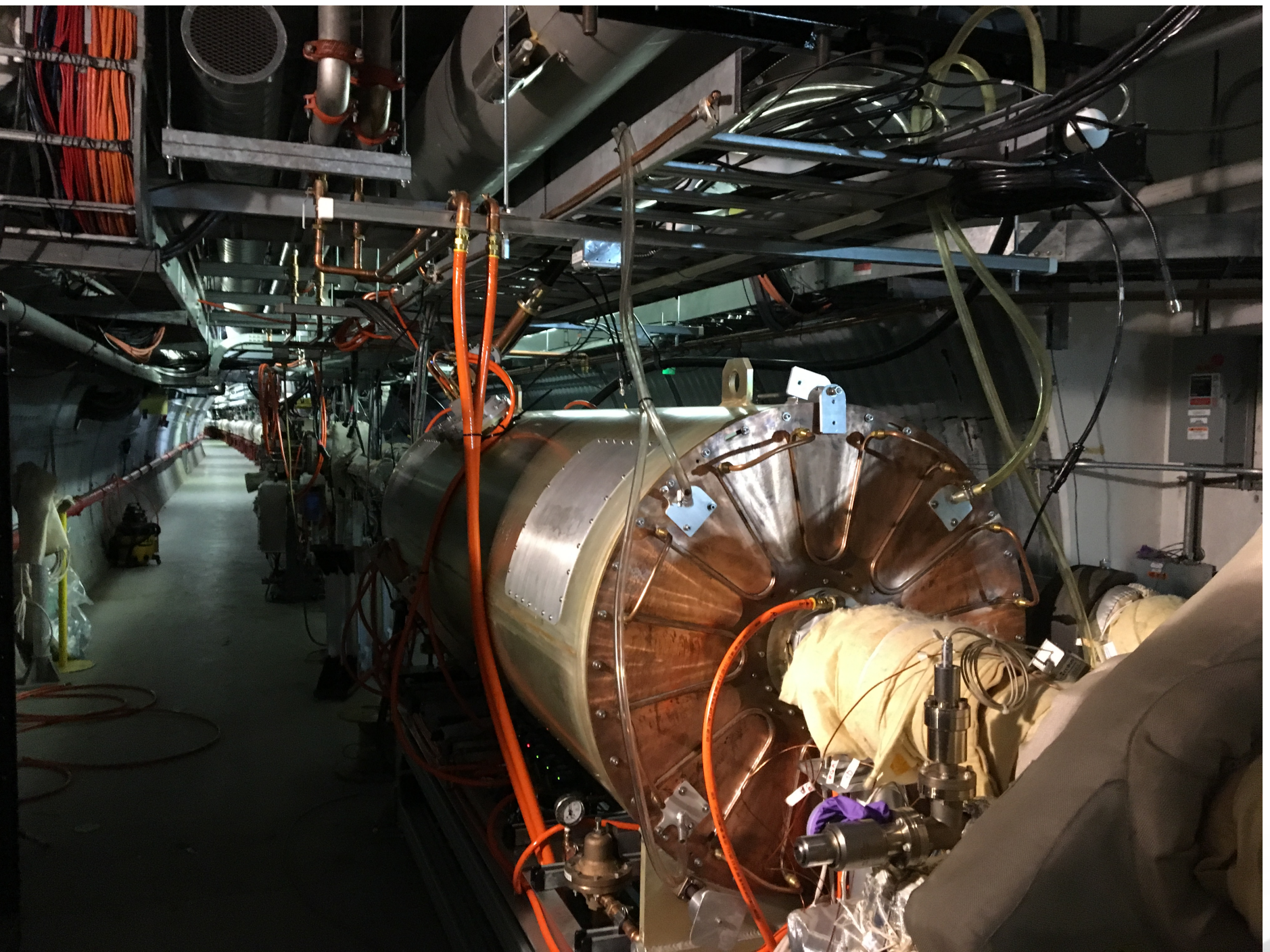


RHIC Shutdown

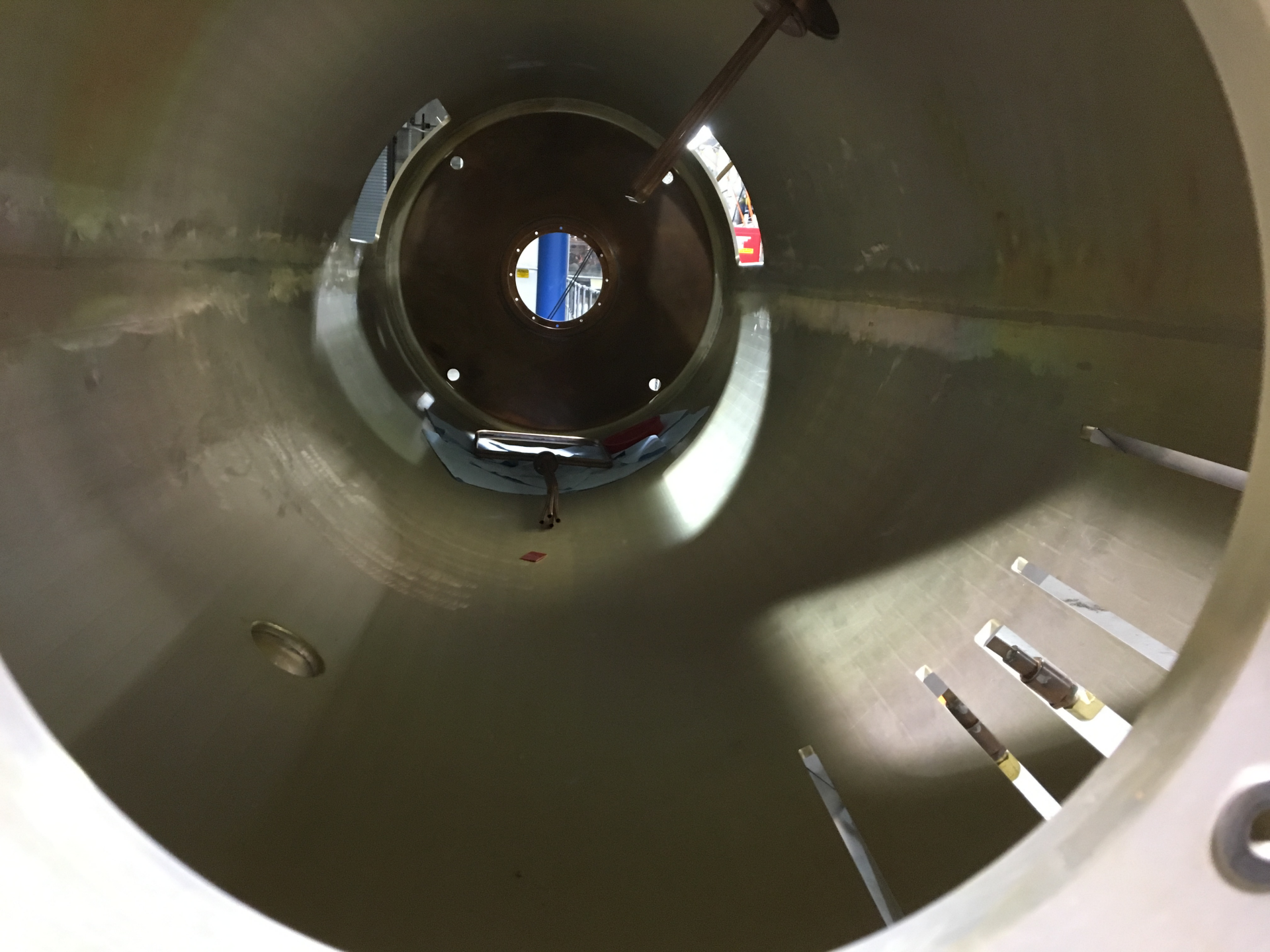
- Maintenance and setup items in prep for for Run 19
- Major interruptions to power, water, steam etc. scheduled around work priorities
- Priorities adjusted as necessary
- Critical path items and dates...

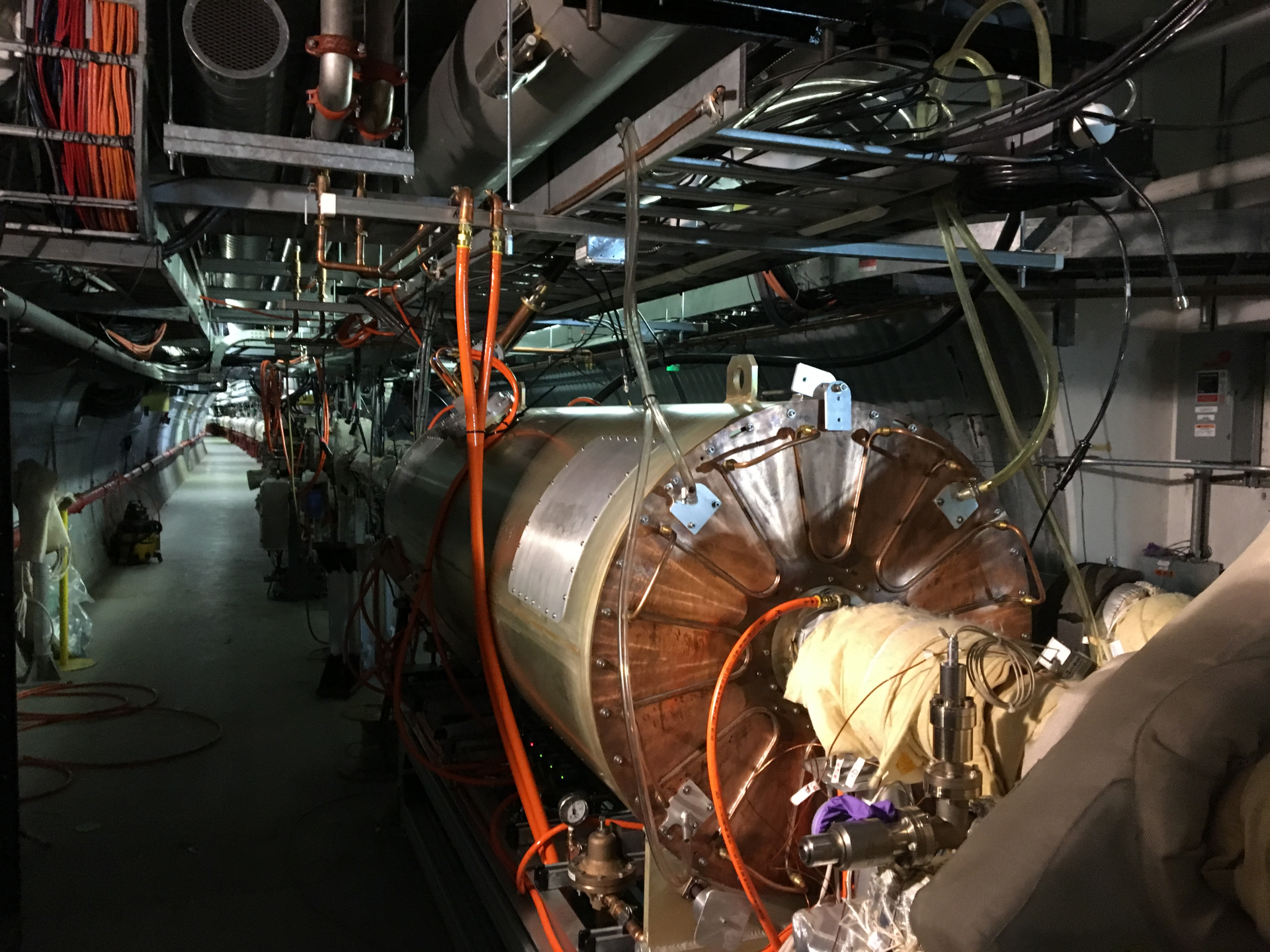
Major works In RHIC

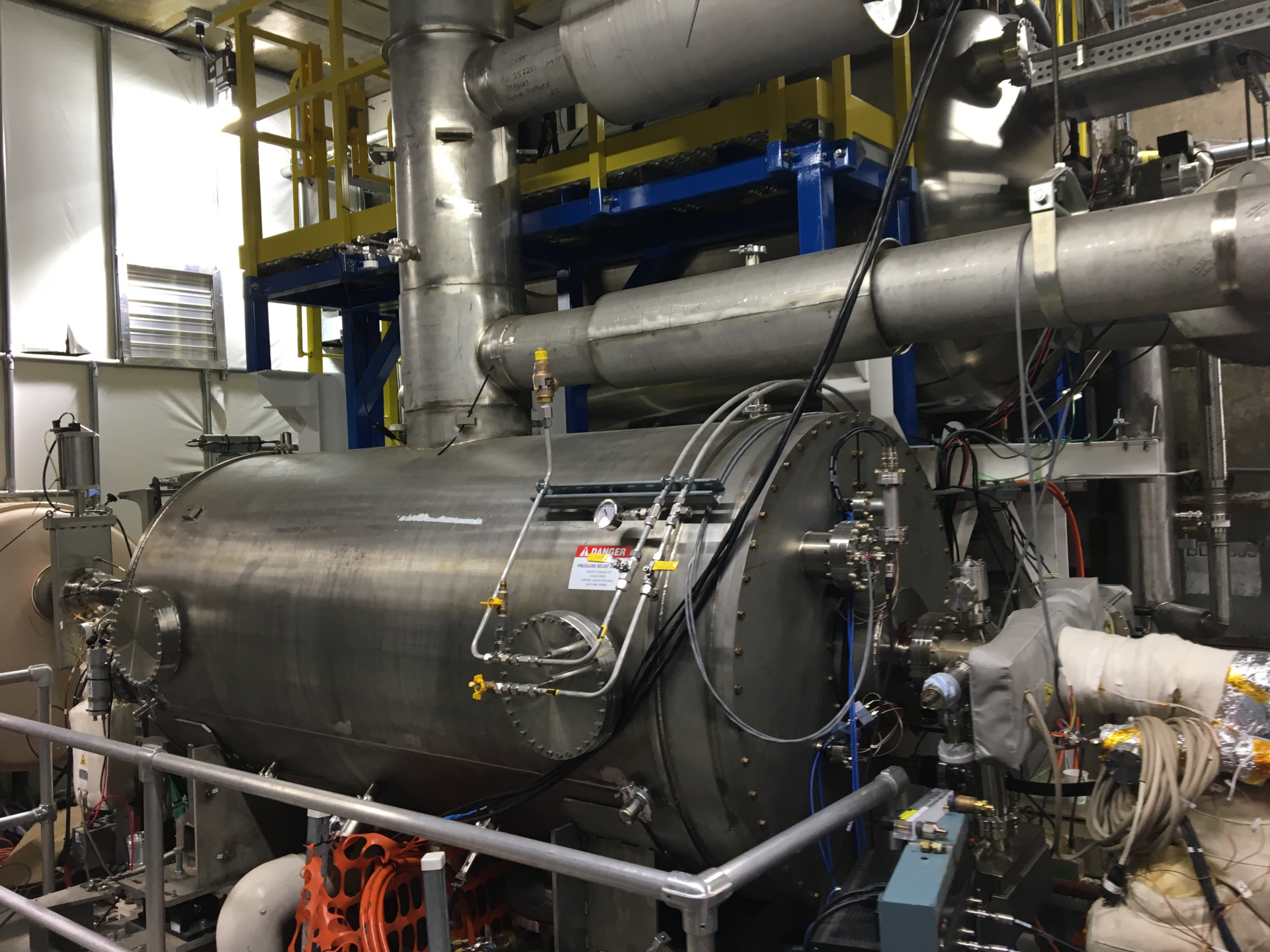
- 4 o'clock
 - 9MHz cavity install (4 cavities), commission and test
 - 56MHz cavity removal
 - Bakes (Ceramic pipes for AC dipoles)
- Sectors 5&6
 - Kicker/Blumline disassembly, inspect reassembly/test
- IR6&8
 - Vacuum pipe removal and installation
 - Bake













0586050



O-06XK13 KICKER

DANGER
HIGH
VOLTAGE
KEEP OUT

HIGH VOLTAGE
KEEP OUT
DO NOT REMOVE
CABLES OR COILS

DANGER
HIGH
CURRENT

DANGER
HIGH VOLTAGE
KEEP OUT



DANGER
HIGH
CURRENT

DANGER
HIGH
CURRENT

NOT REMOVE
CABLES OR
COVERS

DANGER
HIGH
CURRENT

DANGER

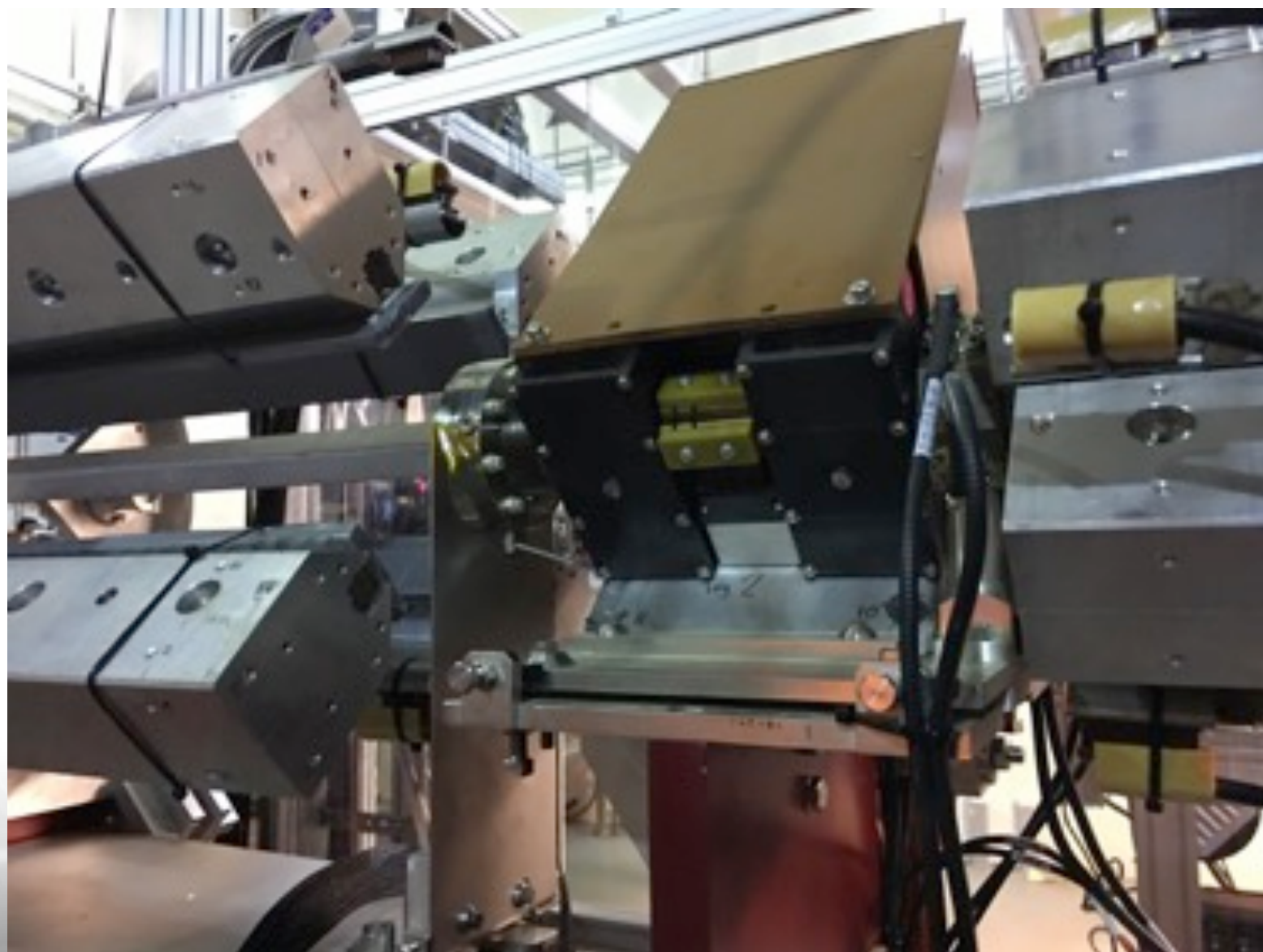
BEAM
DIRECTION
WEIGHT = 140 lbs

Sector 2

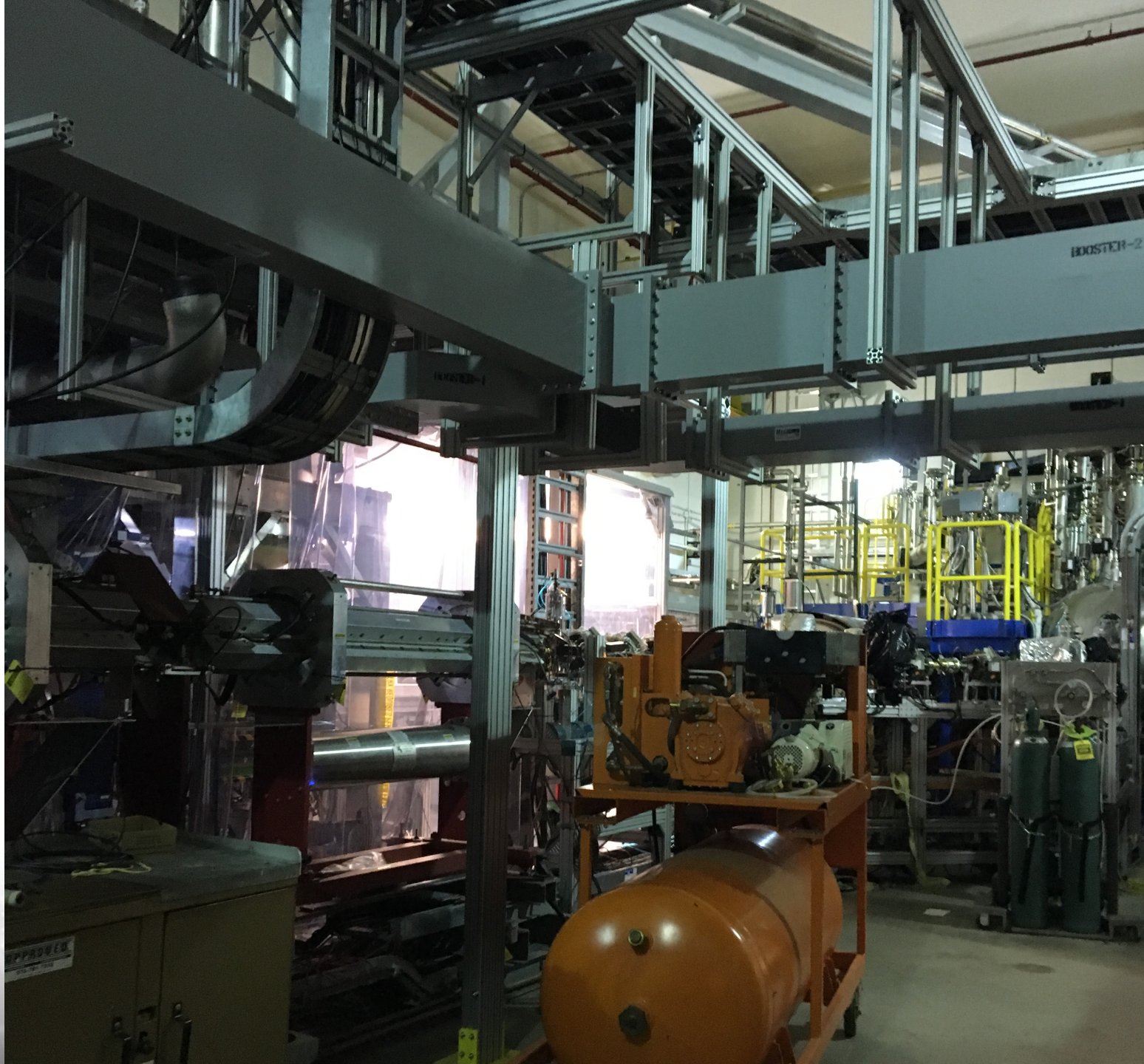
- LEReC
 - DC gun modifications (clean room, ion pumps...)
 - GtB clean room and corrector replacement
 - Booster cavity phase separator
 - Additional correctors
 - ACS modifications:
 - Local key tree
 - Laser Access mode
 - Laser Operational spares

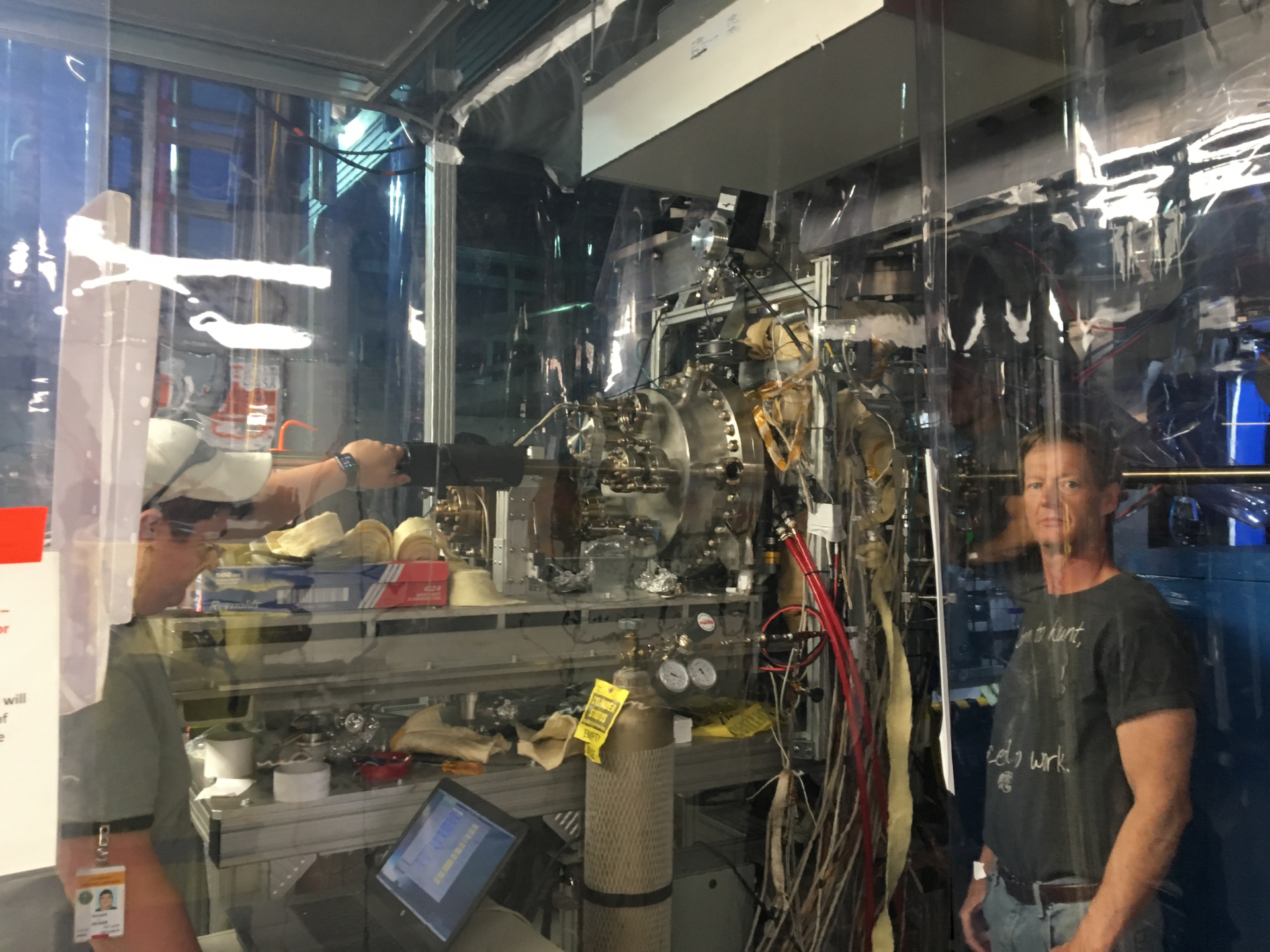
Sector 2 continued

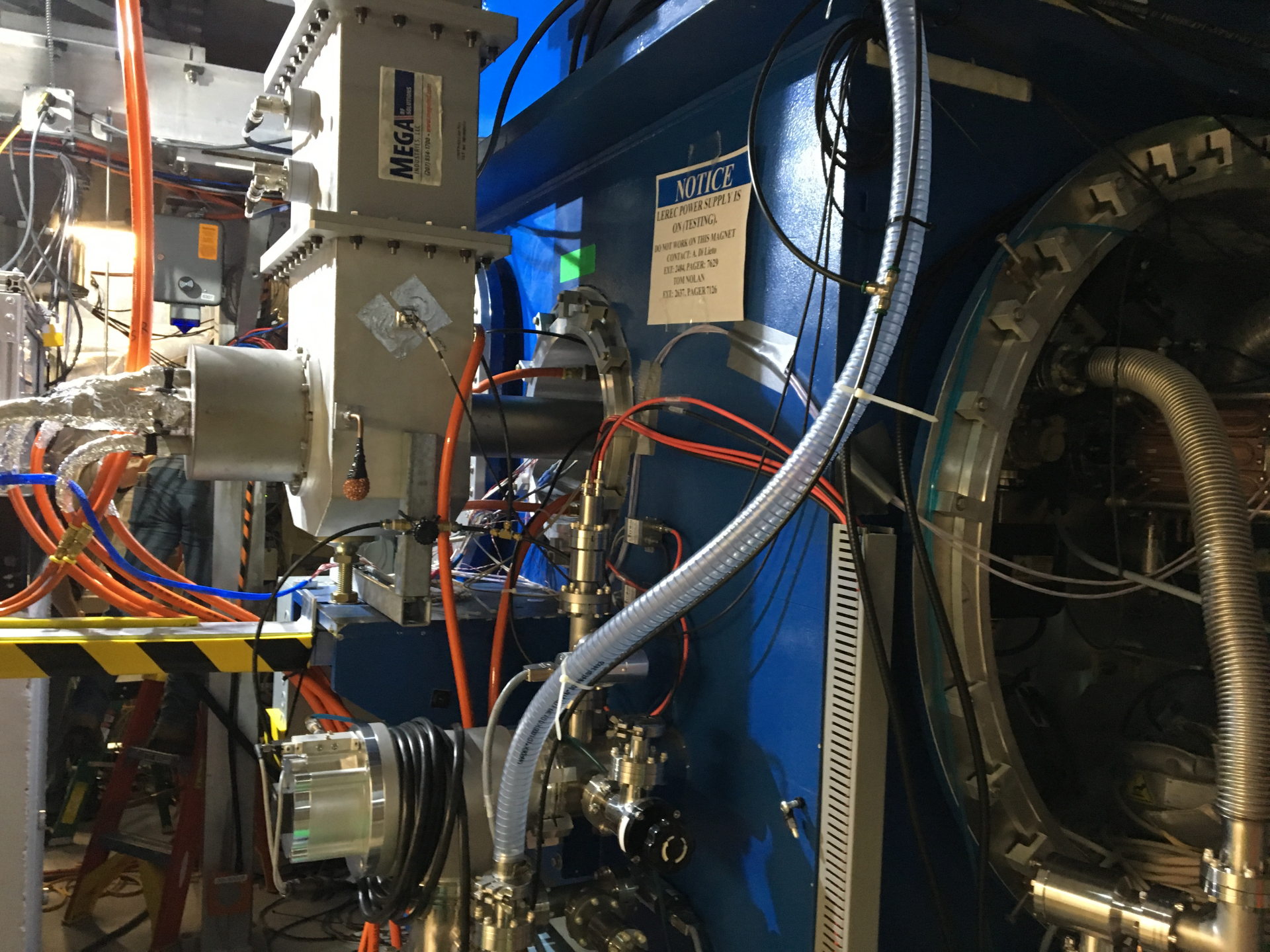
- CeC
- Remove undulators, quads
- Reconfigure stands
- New BPMs
- New magnets (Solenoids, correctors, shim dipoles, large diameter dipoles, chambers... \$\$\$)





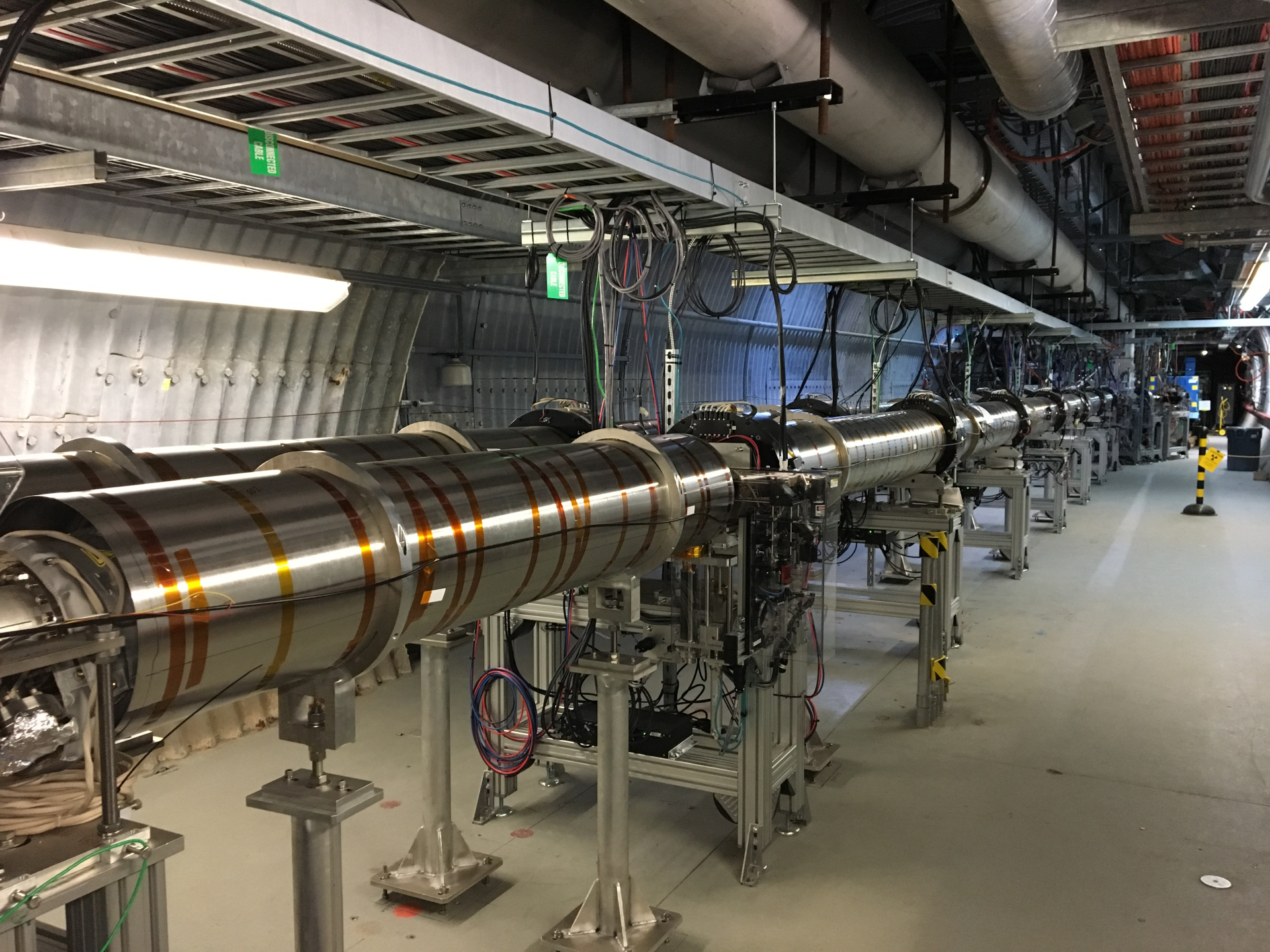






MEGA
INDUSTRIES, LLC
707.684.1700 • www.mega-ind.com

NOTICE
LEREC POWER SUPPLY IS
ON (TESTING).
DO NOT WORK ON THIS MAGNET
CONTACT: A. Di Leo
EXT. 244, PAGER: 7629
TOM NOLAN
EXT. 247, PAGER: 7126



Cryogenics

- **Compressor bearing maintenance, alignment**
- **Main Charcoal bed regeneration**
- **4160V & 480V maintenance?**
- **Compressor Oil loop Filters, water filters**
- **SS2 Bulk separator: 2019 shutdown**
- **Compressor skid panel upgrades:**
 - Review for instrumentation I/O, logic, etc.
 - Redundant oil level, water flow meter, Oil flow meter

STAR

- eTOF installation
- FMS removal
- iTPC installation
- Double roll out...





IR 8

- July 16-Aug 16
- Remove 1st Layer of North MuID Chambers
- Aug 17-24
- Install Lifting Blocks on MuTr Piston
- Aug 17-24
- Remove “dog house ledge”
- Aug 27-31
- Remove MuTr “donut”
- Sept 3-14
- Remove MuTr Piston
- Sept 17-Oct 5
- Remove MuTr Support Steel
- Oct 8-26
- Remove 1st Layer of South MuID Chambers

Words on this year's running

- Overlapping programs
- No MCR Shutdown
- ODH, insulating vacuum, sector 2 run delaying much of the RHIC work until late September
- January cool-down for LEReC leaves a very tight window for work in 2 & 4 o'clock
- NSRL startup before warm up in RHIC

Service Outages:

- Electrical, Water, Air conditioning and other service outages be scheduled around critical path work.
- Immediate and imminent Outage schedule displayed on CATV and on the web.
- Full schedules available on the web and updated weekly.

Other items:

- Mowing, tree removal, grounds..
- Water, AC, heat and other system maintenance, upgrades, outages.
- PSE&G outages:
 - Annual equipment maintenance

Dates of note:

Day	Activity
Jul 18:	Possible 8 hour maintenance RHIC sector 2.
Jul 16-31:	EBIS Maintenance (NSRL/Booster tower clean/maintenance)
Sept 5:	Tandem, TTB, Booster turn on, checkout
Sept 10:	Setup with beam in Booster for NSRL
Sept 18:	End LEReC running, warm up
Sept 20:	Begin Cryo Maintenance and shutdown work
Nov 19:	RF checkout for LINAC
Dec 10:	LINAC startup with beam. End NSRL? *Begin RHIC Scrub for LEReC cool-down*
Jan 2&3:	*Cooldown for LEReC* BLIP Production begins
Jan 15:	Possible NSRL run for Boeing (2 weeks TBD)
Feb 11:	AGS turn on and startup
Feb 18:	AGS setup with beam, RHIC systems turn on/checkout
Mar 4:	***RHIC Cooldown*** Possibly as early as mid February!!
Mar 7:	Setup with beam in RHIC Blue

Schedules and timelines:

- Available on the web “This Week”.
- Weekly updates at Supervisors meeting.
- Scheduling meetings follow supervisor’s meeting
 - Thursday’s 0930 in Snyder
- “Useful” links:
 - [This Week](#)
 - [CATV](#)

Shutdown Summary and comments:

- Schedules are dynamic and priority based
- Coordination imperative- Maverick work causes delays
- A complete list of work in the CAD areas is maintained on line.
- Throughout shutdown, read postings, apply group LOTO when necessary, follow work plans, heed barriers and warnings....
- [LIST OF JOBS](#)