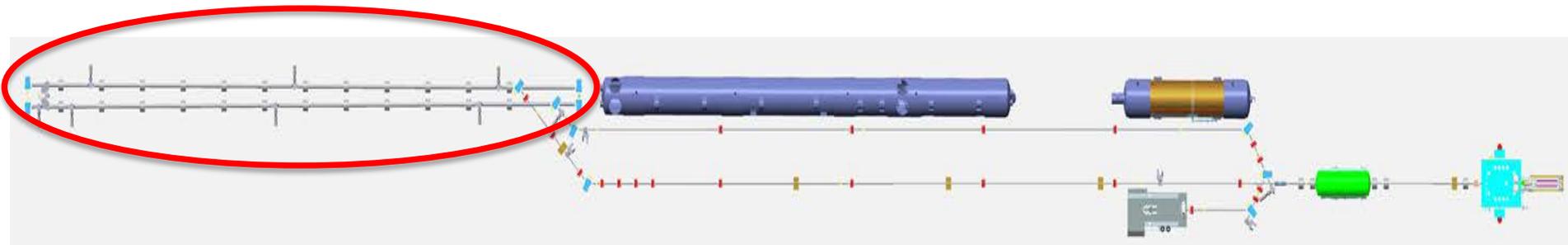


Scope

Install cooling section in RHIC blue and yellow beam line during 2015 RHIC shutdown complete civil construction tasks.

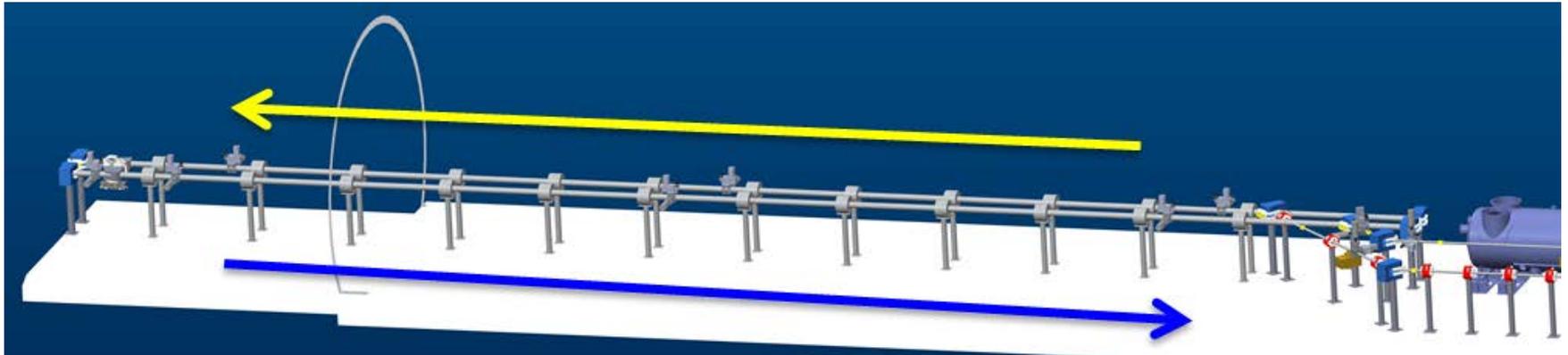
- Shutdown: July 2015 through to January 1, 2016
- Complete beamline installations through vacuum bake out so a re-bake is not needed in 2016
- Complete civil construction tasks so 2016 installation can start quickly.



Scope

1st Goal requirement (complete vacuum installation w/bake-out).

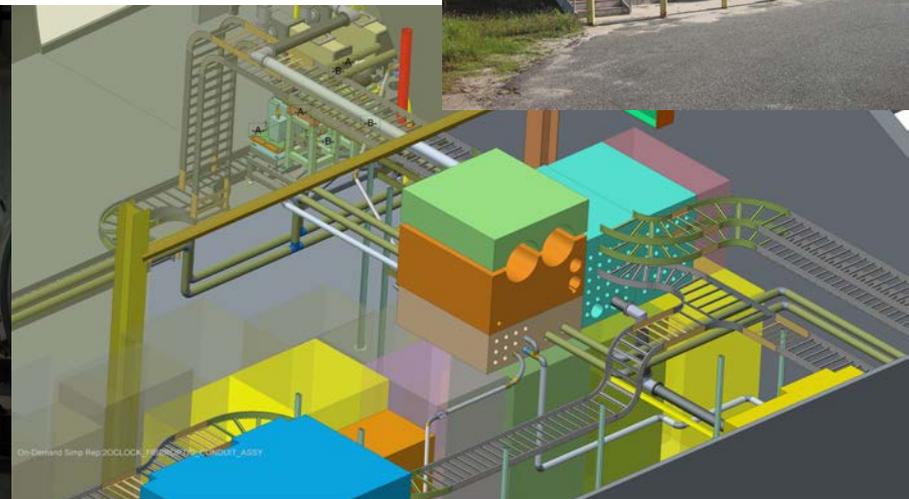
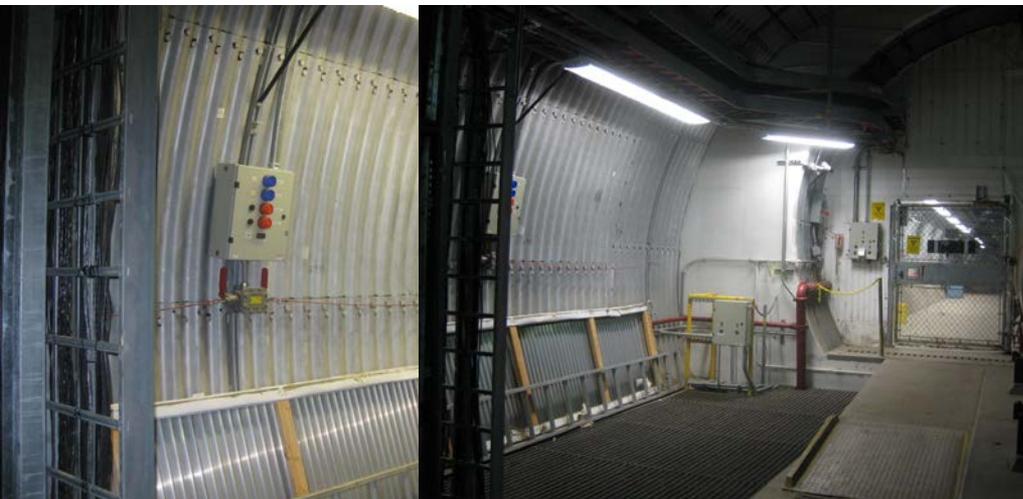
- All existing equipment in RHIC 01:00 (cooling) moved or removed.
- All magnet/equipment stands and solenoid magnets installed.
- All vacuum chambers, valves, bellows installed. This includes special small aperture dipole chambers and beam line transitions. Cables moved pumps, valves, gauges operational.
- All in-vacuum beam diagnostic components installed



Scope

1st Goal requirement (Civil construction).

- Move access controls gate, conduit, and box down the arc tunnel.
- Remove grating and re-enforce floor for beam dump install.
- Install addition cable penetrations through shielding.
- Renovate Brahms trailer.
- Install cable tray.



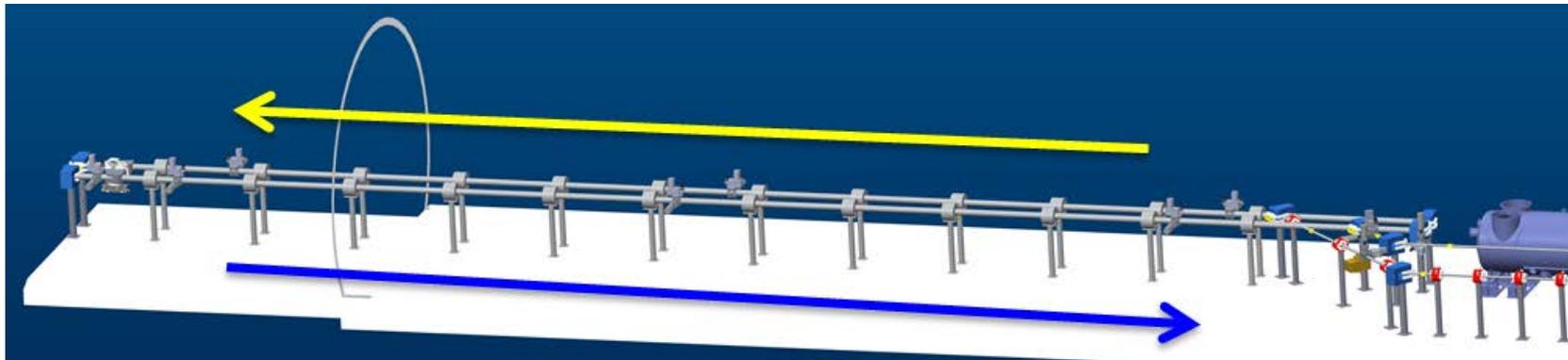
Scope

2nd Goal requirement.

- All 45° and 90° dipole magnets and quad installed.
- Cables pulled for magnets and beam diagnostics.
- Beam diagnostic electronics and magnet PS's installed.

3rd Goal

- Commission magnets and diagnostics w/RHIC beam during run 16.



Early Procurements

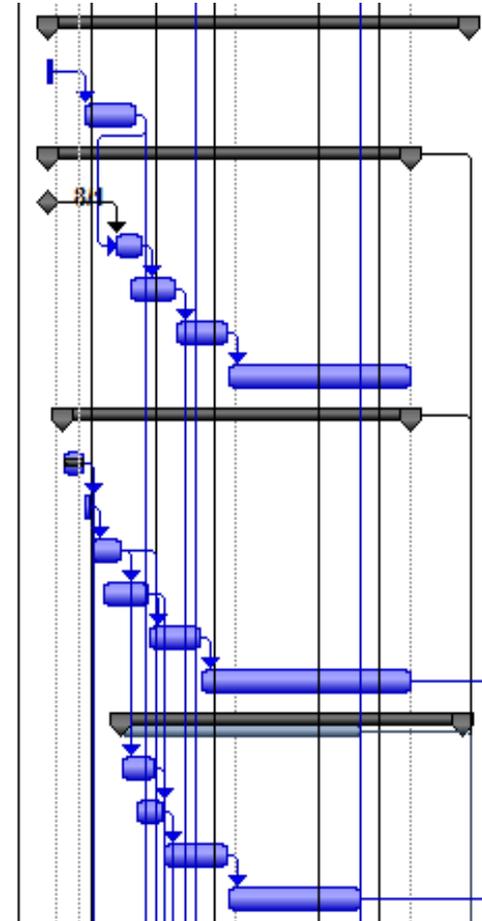
Install new RHIC LEReC components in RHIC 02:00 IP

- Low energy cooling sections: solenoid magnets, vacuum chambers and bake-out heaters, beam diagnostics (ring equipment).
- Contracts for cable tray installation and Access Controls Gate move.
- If funding is available: Low energy cooling sections: solenoid magnet power supplies, magnetic shielding, beam diagnostics (electronics and cables).
- Will request funding from BNL for Brahms trailer renovation, grounds maintenance, and parking lot.



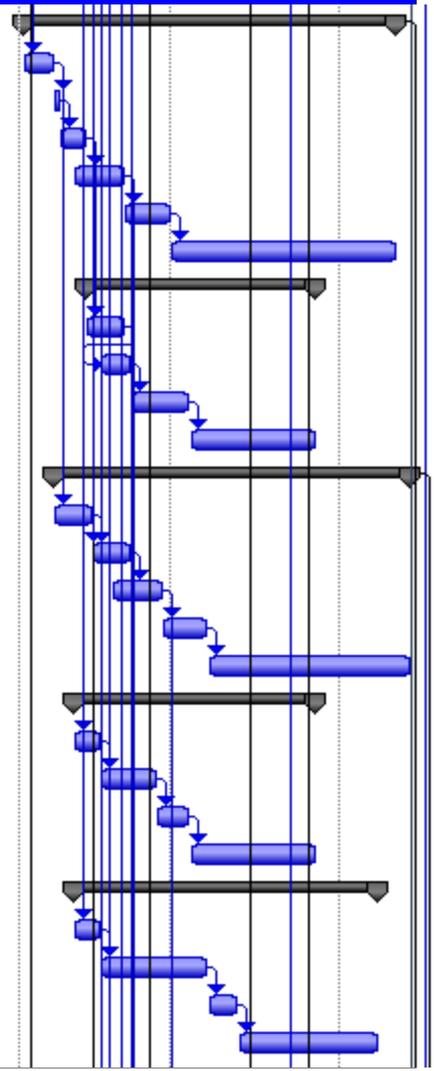
Early Procurements

<ul style="list-style-type: none"> RHIC Beam Line Magnets (w/stands) 	316 days	Fri 8/1/14	Wed 11/4/15	
Cooling Lattice Complete and approved	1 day	Fri 8/1/14	Fri 8/1/14	
Beam line layout drawing complete	40 days	Tue 9/9/14	Mon 11/3/14	50FS+25 days
<ul style="list-style-type: none"> 6" High and low field solenoid magnets 	271 days	Fri 8/1/14	Tue 9/1/15	
Magnet analysis complete	0 days	Fri 8/1/14	Fri 8/1/14	
Magnet specification control drawings approved	20 days	Tue 10/14/14	Mon 11/10/14	51FS-15 days, 53
Procurement Package (Spec, Drawings, Bid List, Req.)	35 days	Tue 10/28/14	Thu 12/18/14	54FS-10 days
Bid and Award	35 days	Fri 12/19/14	Thu 2/12/15	55
Vendor Fabrication and Delivery	140 days	Fri 2/13/15	Tue 9/1/15	56
<ul style="list-style-type: none"> 45o dipole magnets (w/compensating magnets (8)) 	260 days	Mon 8/18/14	Tue 9/1/15	
Magnet analysis complete	15 days	Mon 8/18/14	Mon 9/8/14	
Magnetic analysis approved	5 days	Tue 9/9/14	Mon 9/15/14	59
Magnet specification control drawings approved	25 days	Tue 9/16/14	Mon 10/20/14	60
Procurement Package (Spec, Drawings, Bid List, Req.)	35 days	Tue 9/30/14	Tue 11/18/14	61FS-15 days
Bid and Award	35 days	Wed 11/19/14	Wed 1/14/15	62
Vendor Fabrication and Delivery	160 days	Thu 1/15/15	Tue 9/1/15	63
<ul style="list-style-type: none"> 45o dipole magnets vacuum chambers (8) 	255 days	Tue 10/21/14	Wed 10/28/15	
Magnet specification control drawings approved	25 days	Tue 10/21/14	Tue 11/25/14	61
Procurement Package (Spec, Drawings, Bid List, Req.)	20 days	Tue 11/4/14	Thu 12/4/14	66FS-15 days
Bid and Award	45 days	Fri 12/5/14	Thu 2/12/15	67
Vendor Fabrication and Delivery	100 days	Fri 2/13/15	Tue 7/7/15	68



Early Procurements

180o dipole magnets	290 days	Tue 9/9/14	Wed 11/4/15	
Magnet analysis complete	25 days	Tue 9/9/14	Mon 10/13/14	59
Magnetic analysis approved	5 days	Tue 10/14/14	Mon 10/20/14	71
Magnet specification control drawings approved	20 days	Tue 10/21/14	Tue 11/18/14	72
Procurement Package (Spec, Drawings, Bid List, Req.)	35 days	Tue 11/4/14	Tue 12/30/14	73FS-10 days
Bid and Award	35 days	Wed 12/31/14	Fri 2/20/15	74
Vendor Fabrication and Delivery	180 days	Mon 2/23/15	Wed 11/4/15	75
180o dipole magnets vacuum chambers (8)	175 days	Wed 11/19/14	Tue 8/4/15	
Magnet specification control drawings approved	25 days	Wed 11/19/14	Tue 12/30/14	73
Procurement Package (Spec, Drawings, Bid List, Req.)	20 days	Fri 12/5/14	Wed 1/7/15	78FS-15 days
Bid and Award	45 days	Thu 1/8/15	Fri 3/13/15	79
Vendor Fabrication and Delivery	100 days	Mon 3/16/15	Tue 8/4/15	80
180o Quadrupole magnet	275 days	Tue 10/14/14	Thu 11/19/15	
Magnet analysis complete	30 days	Tue 10/14/14	Tue 11/25/14	71
Magnet specification control drawings approved	25 days	Wed 11/26/14	Wed 1/7/15	83,61,66
Procurement Package (Spec, Drawings, Bid List, Req.)	35 days	Fri 12/19/14	Thu 2/12/15	84FS-10 days
Bid and Award	35 days	Fri 2/13/15	Fri 4/3/15	85
Vendor Fabrication and Delivery	160 days	Mon 4/6/15	Thu 11/19/15	86
RHIC Beam Line Vacuum (Chambers, Valves, Bellows)	185 days	Tue 11/4/14	Tue 8/4/15	
Beam line vacuum component parts list	20 days	Tue 11/4/14	Thu 12/4/14	51
Procurement Package (Spec, Drawings, Bid List, Req.)	40 days	Fri 12/5/14	Thu 2/5/15	89
Bid and Award	25 days	Fri 2/6/15	Fri 3/13/15	90
Vendor Fabrication and Delivery	100 days	Mon 3/16/15	Tue 8/4/15	91
RHIC Beam Line Diagnostics (BPM buttons, YAG, vacuum)	235 days	Tue 11/4/14	Wed 10/14/15	
Beam line vacuum component requirements approved	20 days	Tue 11/4/14	Thu 12/4/14	51
Procurement Package (Spec, Drawings, Bid List, Req.)	80 days	Fri 12/5/14	Fri 4/3/15	94
Bid and Award	25 days	Mon 4/6/15	Fri 5/8/15	95
Vendor Fabrication and Delivery	110 days	Mon 5/11/15	Wed 10/14/15	96



Critical Items

- Cooling Lattice approval - “magnet requirements frozen”.
- Magnet (Wuzheng) design approval.
 - Magnet procurement specifications
 - Magnet specification control drawings
 - Magnet vacuum chamber drawings
- Beam diagnostics requirements approval – “frozen”
 - Procurement specifications
 - Vacuum chamber drawings
- Design room support, Karem Hamdi beam line layout and magnet design, open requisition for building layouts, additional support as other projects come to an end.



Other Early Procurements

Components to be Test/Commissioned early:

- Laser – to be used for ERL/LEReC commissioning in 2015.
- Cathode production system upgrade equipment - to be used for ERL/LEReC commissioning in 2015.
- Cathode fast changing mechanism for ERL gun - to be used for ERL/LEReC commissioning in 2015.

Long Lead:

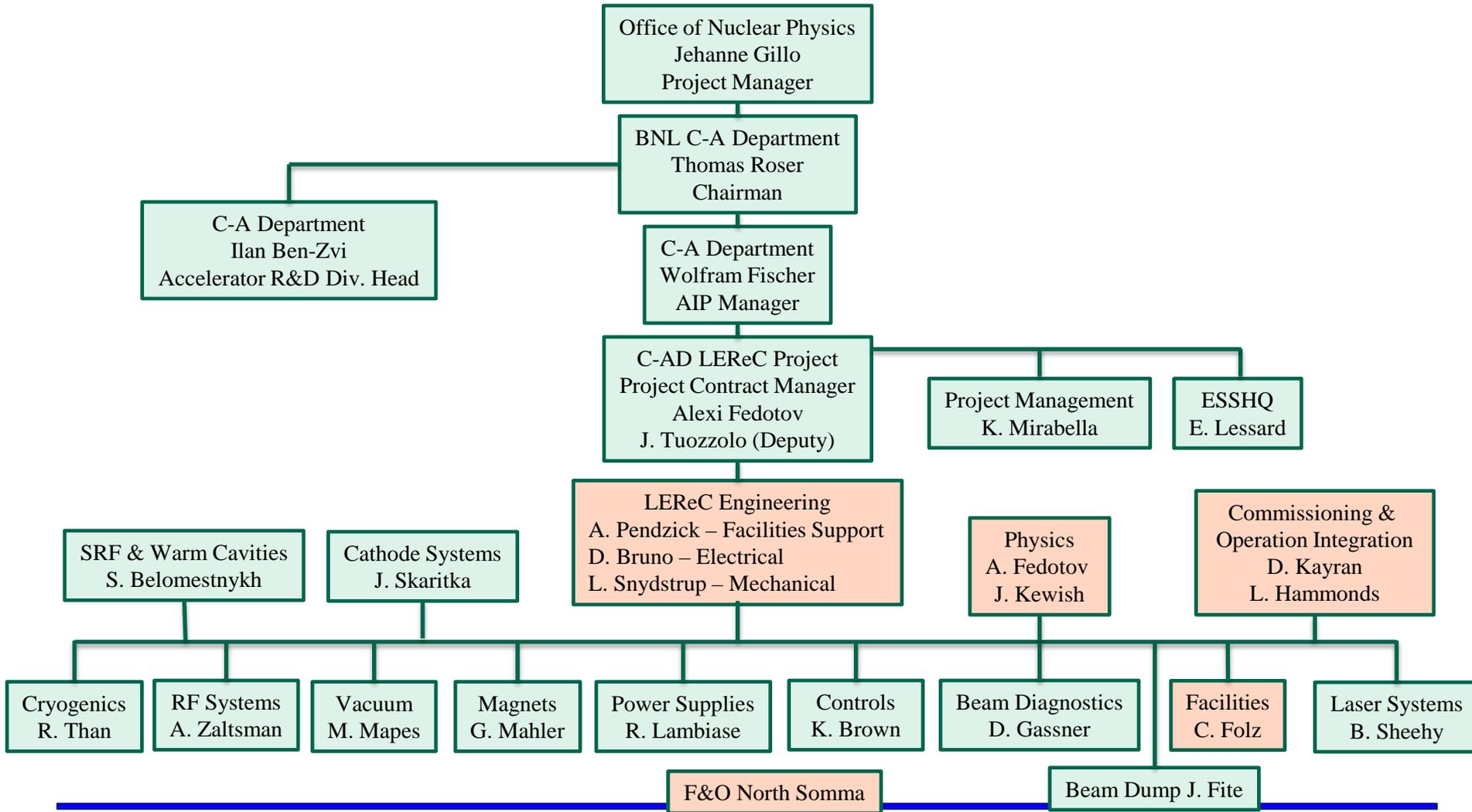
- New RF PA's for eGun and 2.1GHz cavity
- New 2.1 GHz RF cavity or similar warm cavity



Extra slides



C-AD Engineering & Technical Support



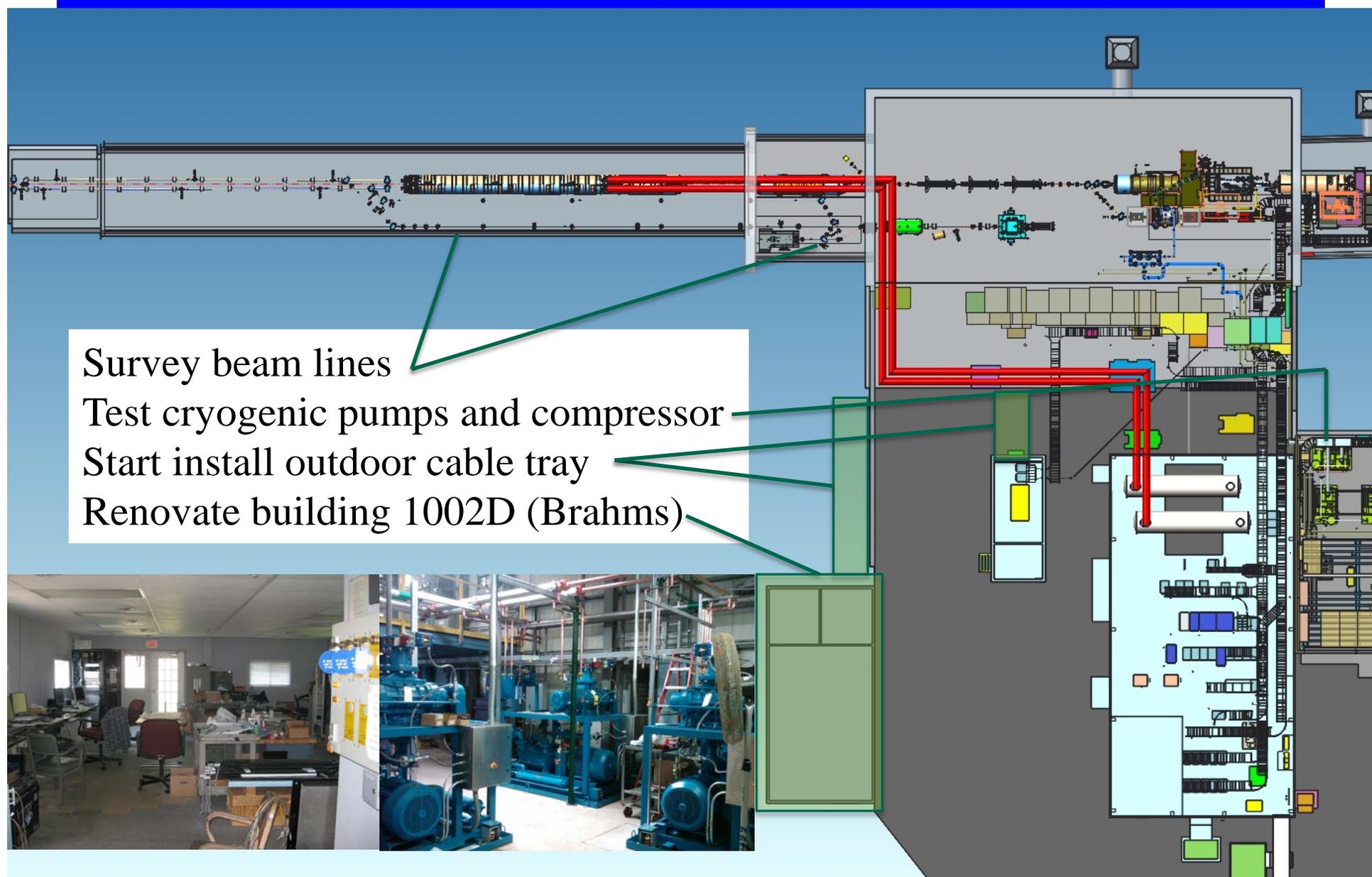
Installation Staging – 2015 Run Period

Survey beam lines

Test cryogenic pumps and compressor

Start install outdoor cable tray

Renovate building 1002D (Brahms)



Installation Staging – 2015 Shutdown (June – Dec 2015)

Move ACS gate

Install RHIC interaction region beamline

- magnets, vacuum, beam diagnostics

Install tunnel and outdoor cable tray

Prep beam dump area & floor

Install tunnel cable penetrations

Start cryogenic piping installation

