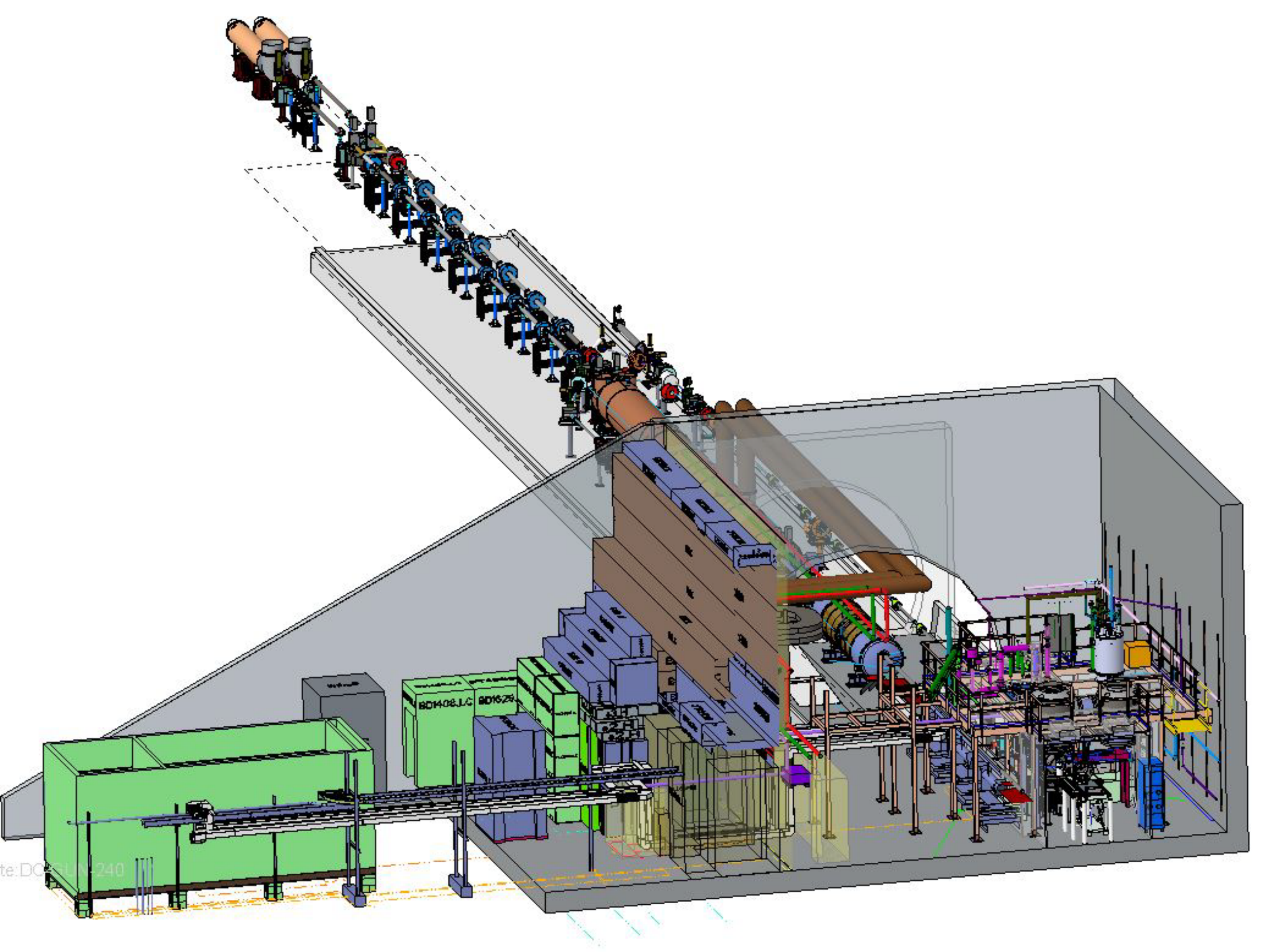
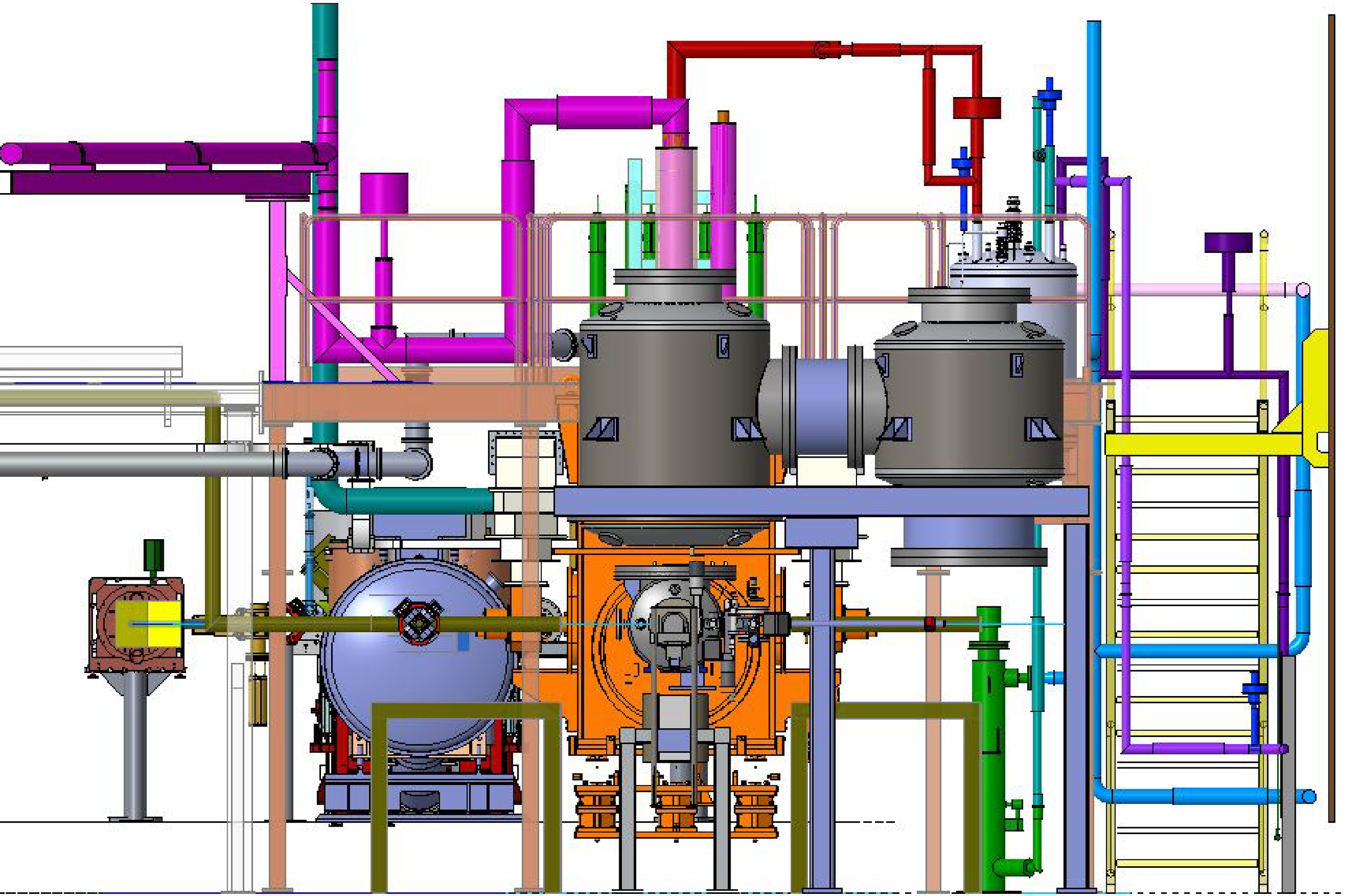
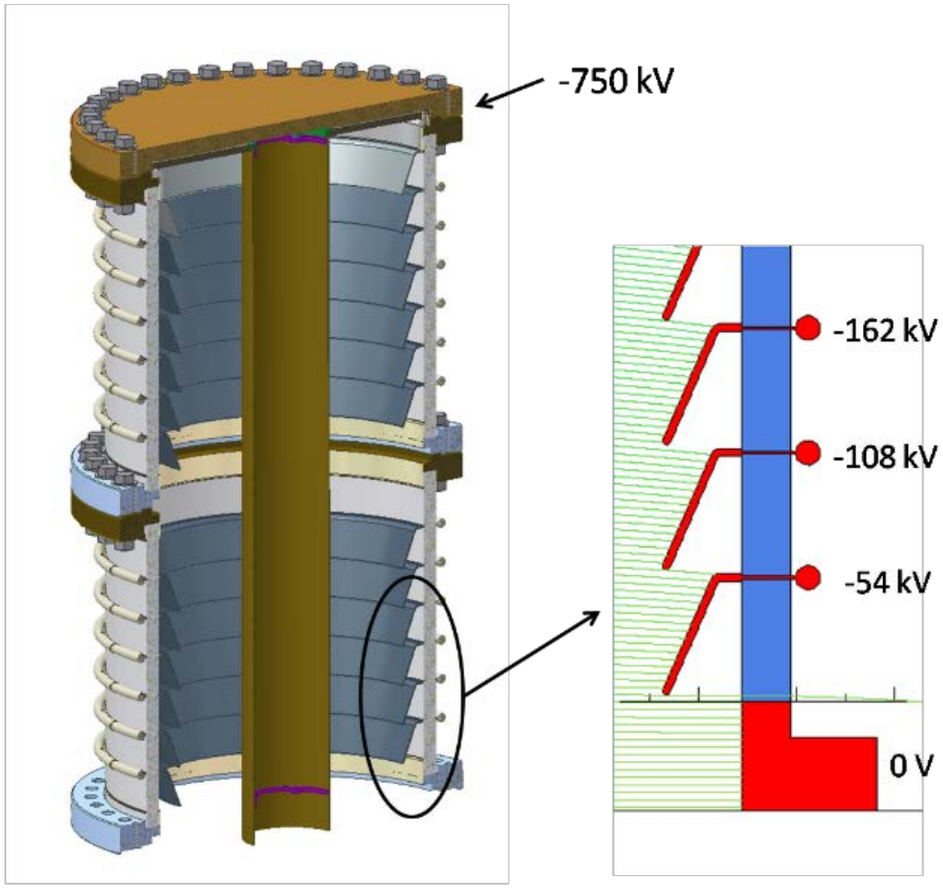
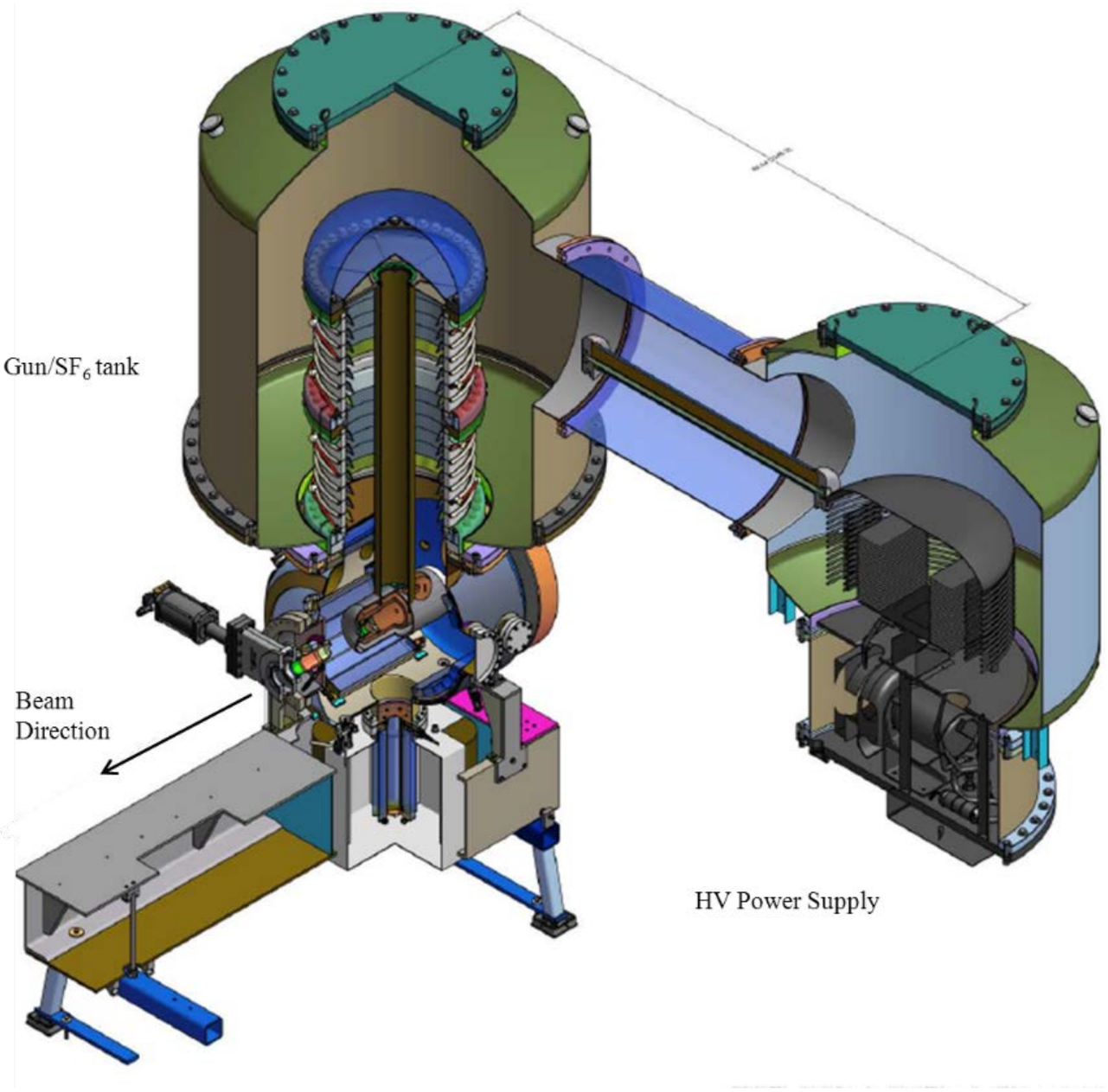

BD1408JLC
BD1625



New Gun Design – Segmented Insulator

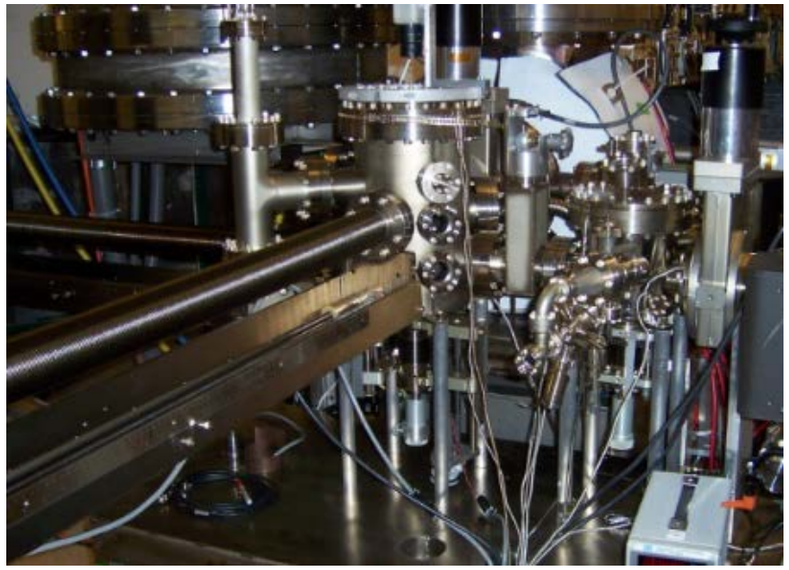




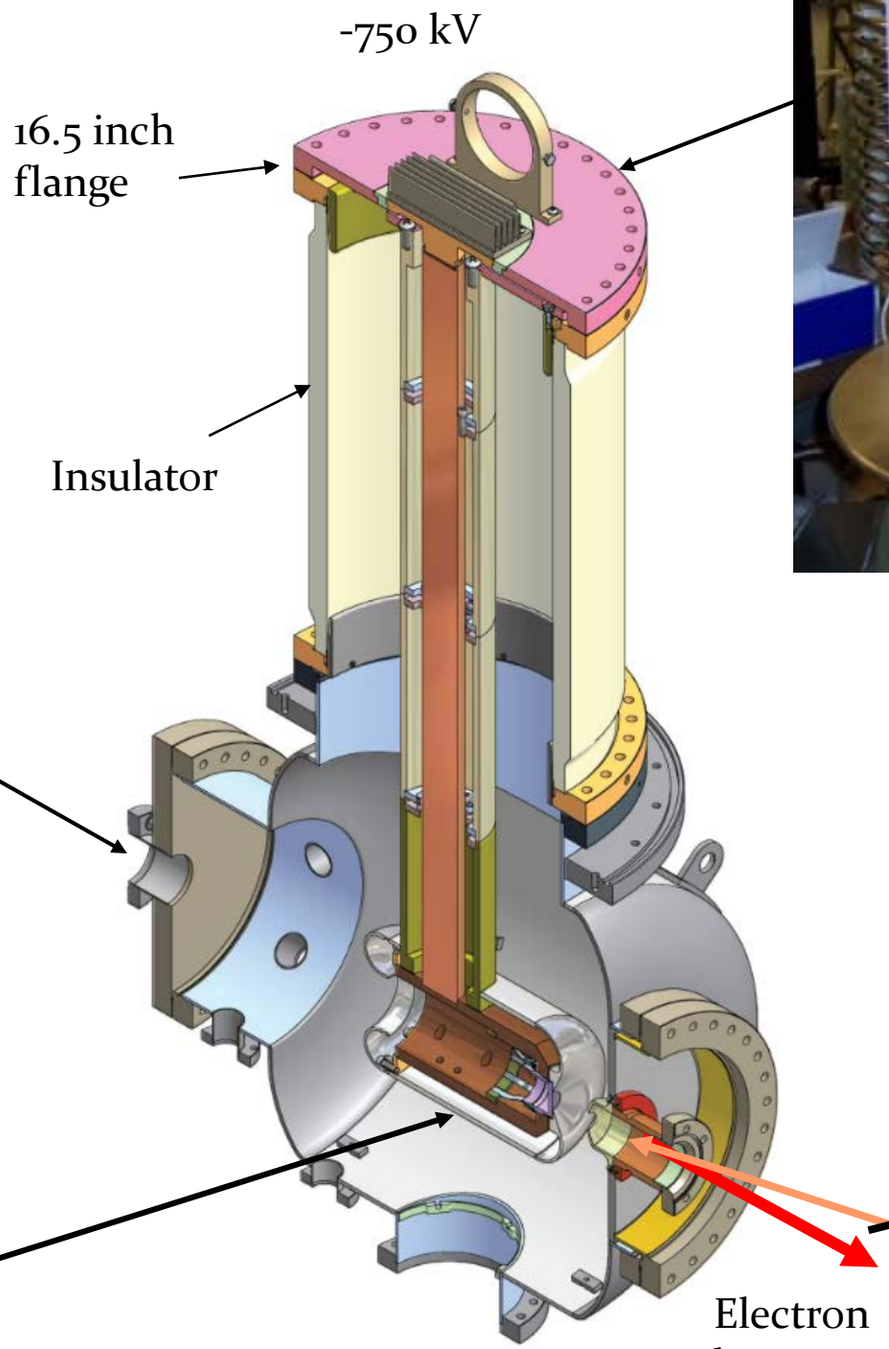
Different support stand.

Original Cornell DC Gun

Cathode Preparation and Load Lock

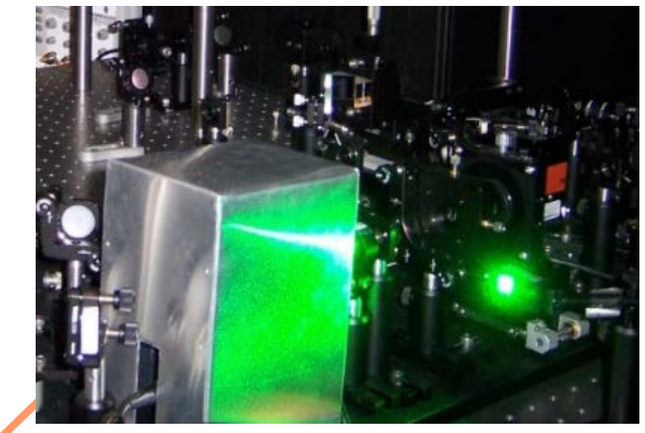


Focusing electrode,
Cathode support



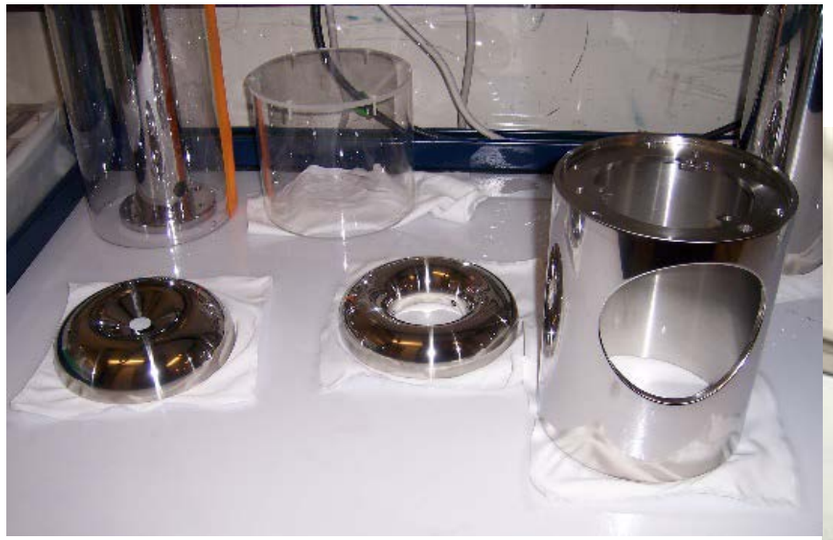
750 kV, 100 mA HVPS

Drive Laser

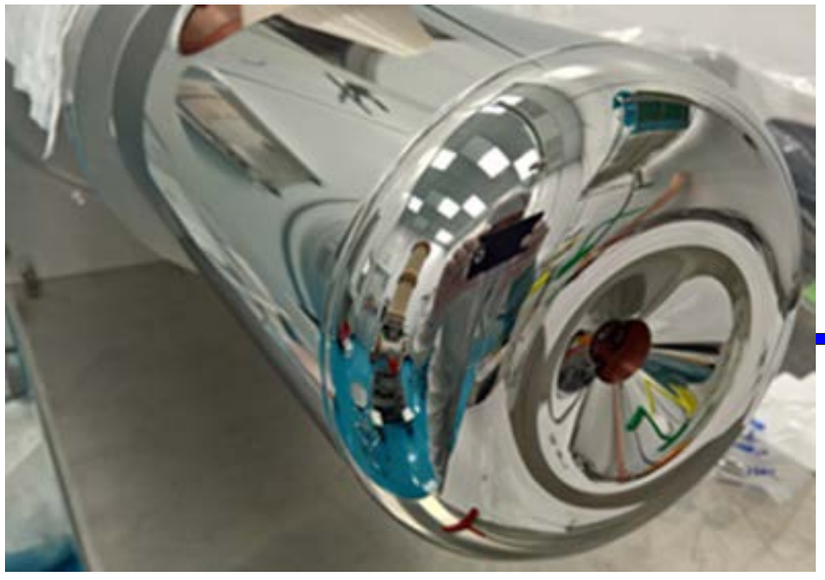


Laser input

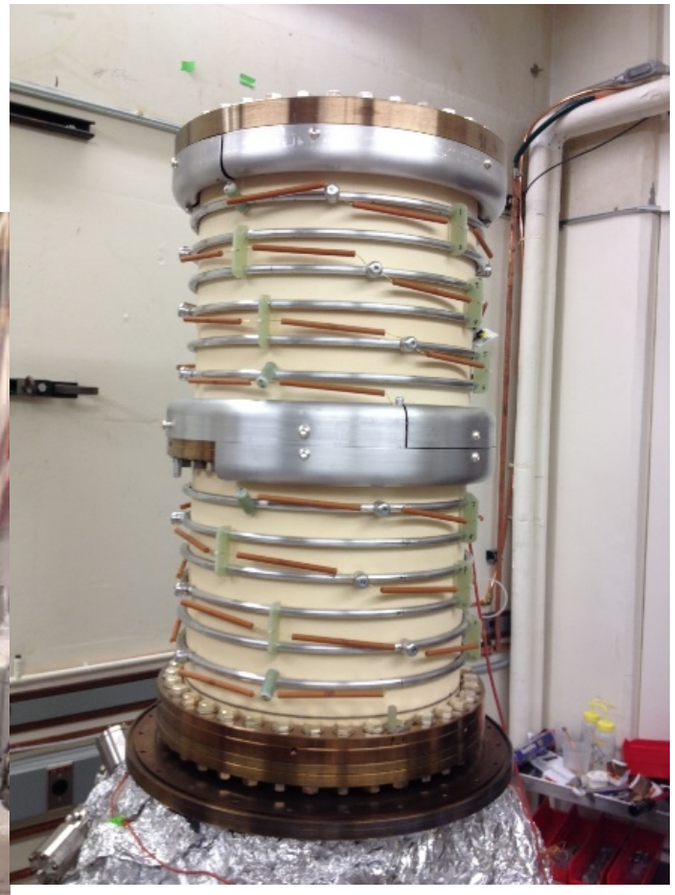
Construction Steps



The HV electrodes are polished, baked, and high-pressure water rinsed before installation



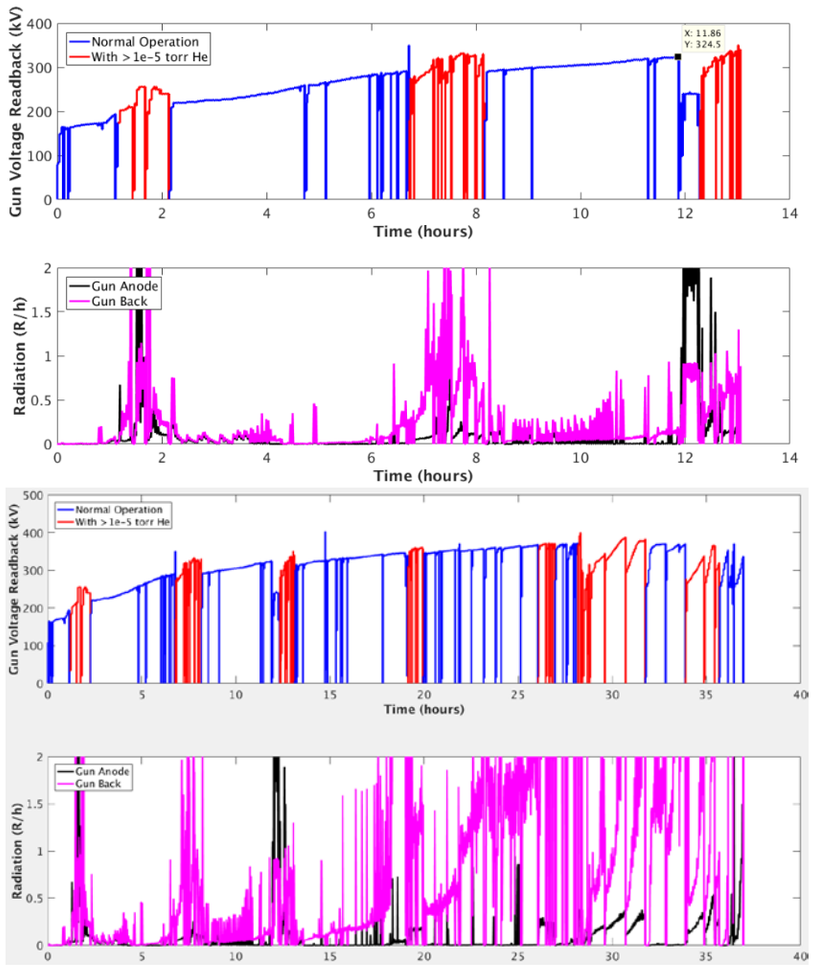
Assembly takes place in a clean room

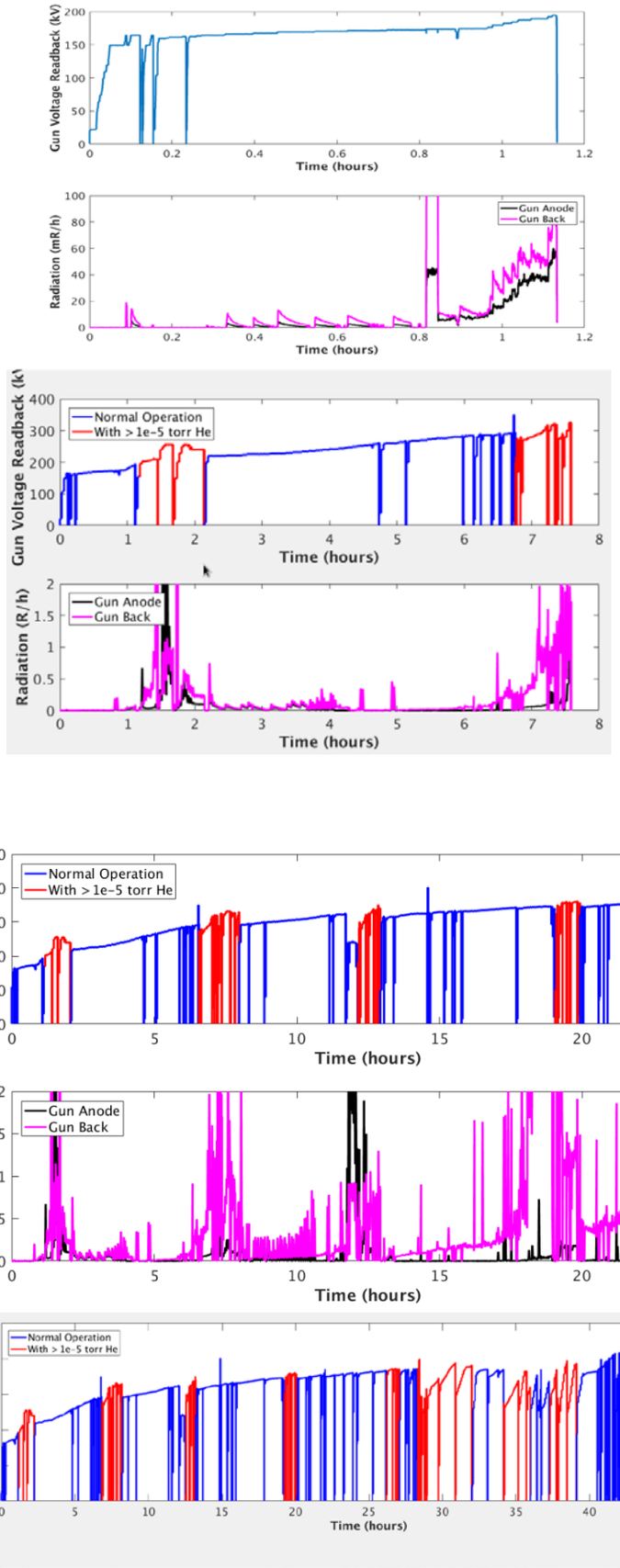


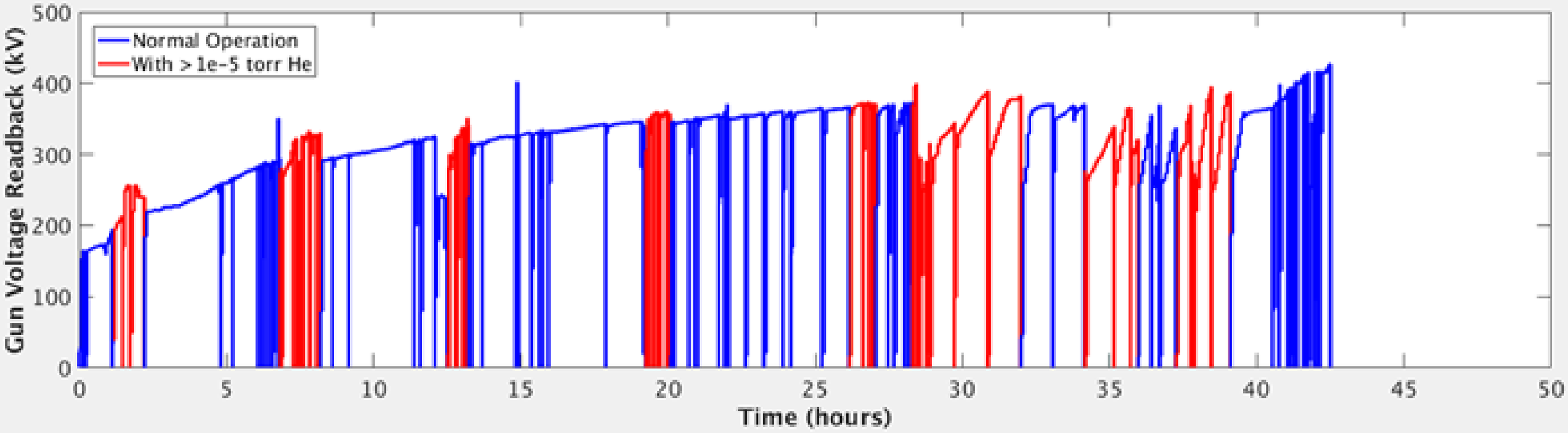
This is the assembled gun before installing the SF_6 tank

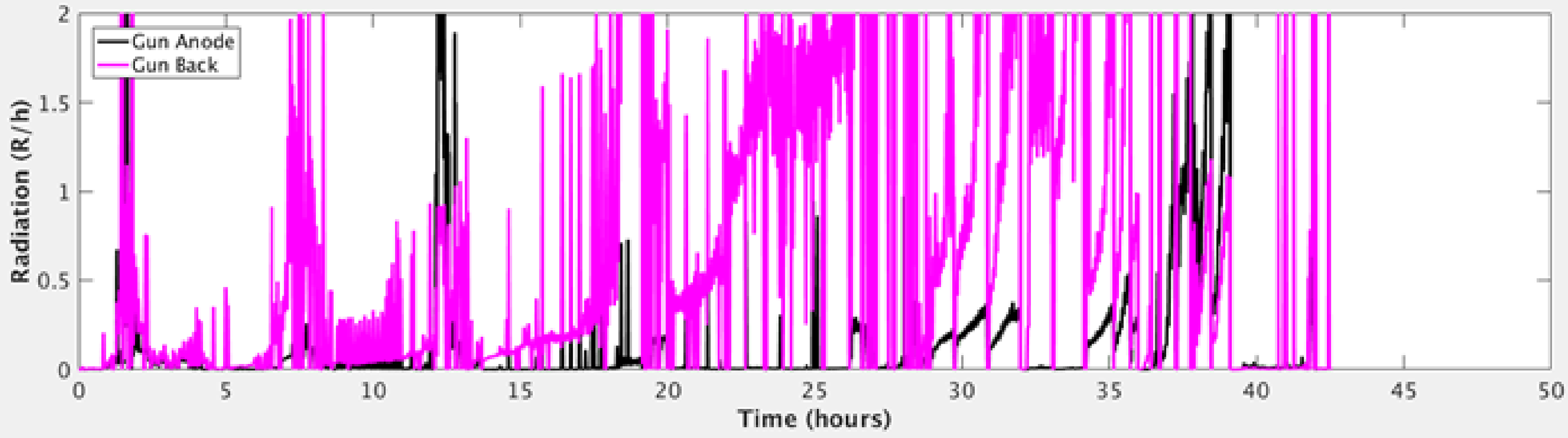
DC Gun at Cornell

- Tested power supply to 600kV 9/29/16
- Began conditioning DC gun 165kV 10/2/16
- 10/3 220 kV, 10/4 280kV (325 w/He)
- 10/5 324kV (334), 10/6 354 (359), 10/7 369 (371) <25 hrs.
- 10/8 360 (360), 10/9 **425 kV (390kV)** <45 hrs.
- Condition until Monday evening (tonight), Tuesday vent SF6






Normal Operation
With > 1e-5 torr He
Gun Voltage Readback (kV)
Time (hours)
0
100
200
300
400
500
0
5
10
15
20
25
30
35
40
45
50


Gun Anode
Gun Back
Radiation (R/h)
Time (hours)
0
0.5
1
1.5
2
0
5
10
15
20
25
30
35
40
45
50

DC Gun Disassembly and Transport to BNL

- What will be shipped in the Cornell truck and what will be shipped by common carrier. **DC Gun on roll around with ceramics, stark, top flange, DC Gun Stand, SF6 section of power supply disassembled, Inverters (Rack).**

- Will BNL help arrange shipmen of tanks? **(Liaw) Yes, underway: Tanks + Frame**

- What work needs to be done in the clean room at Cornell and doses the clean room need to be reassembled? **On floor: Install DC Gun Shipping Fixture; In cleanroom: Remove stark and top flange, secure cathode.**

- Are there resources at Cornell to support the shipping? **Cribbing and banding available.**

- What parts must be disassembled and what parts can be shipped as a unit? **All**

- **Support trip arranged tomorrow through Friday, maybe Saturday to pack and ship components.**

- **Need agreement on top flange and power supply disassemly (BNL preference)**

DC Gun Installation Preparation at BNL

Sending technician team tomorrow for disassembly and packing.

Before DC Gun arrival at 02:00:

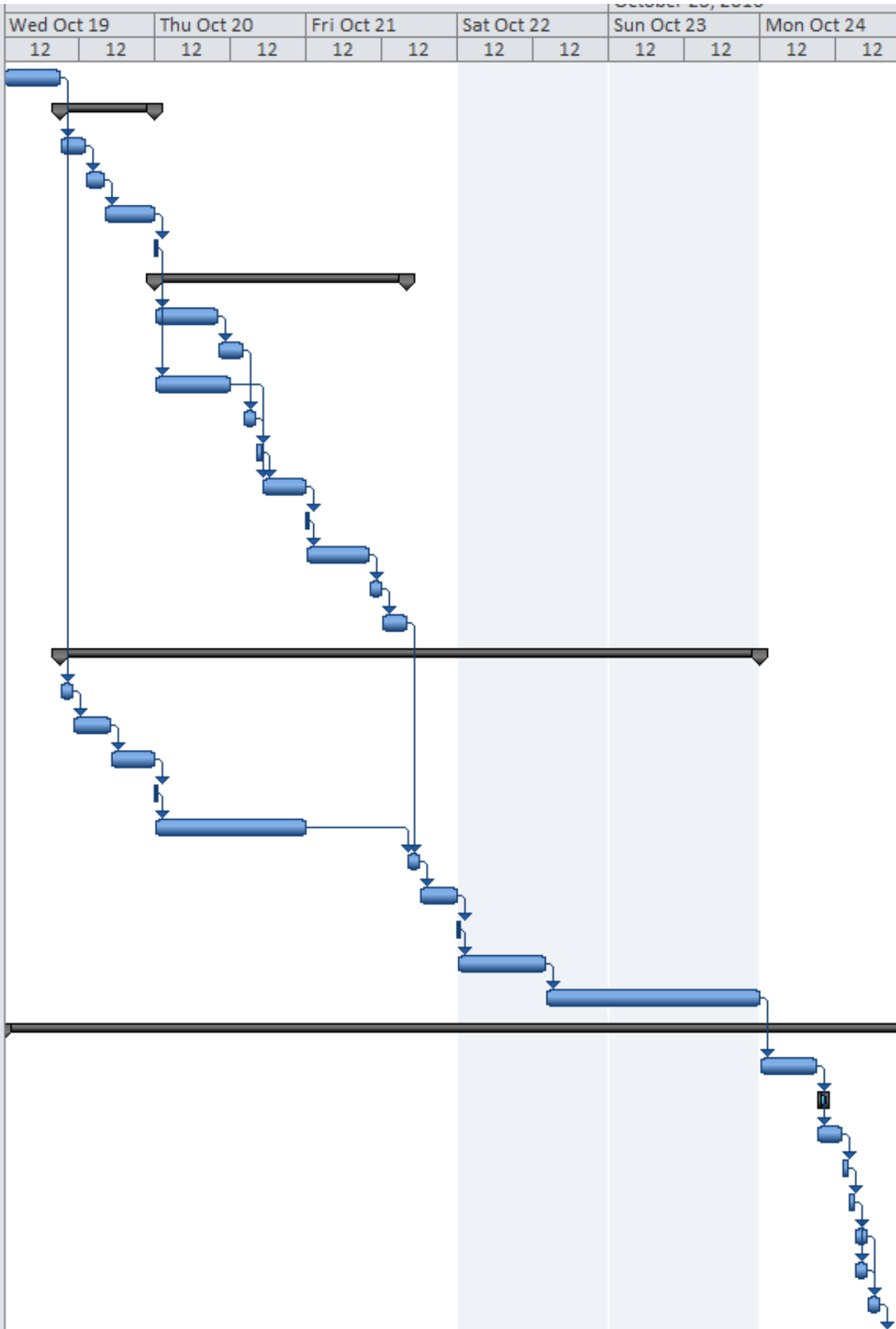
- **Survey beam line and stand locations on 02:00 floor**
- Prepare 912 cleanroom for DC gun arrival
- Prepare portable clean room(s) at 02:00 for DC gun arrival
- **Remove yellow walkway**
- **Install power supply AC power with contactors**
- Access controls system ready (underway)
- Install water connections (underway)
- Pull cables for vacuum and power supply control
- Move SF6 cart 04:00 to 02:00, procure SF6
- **Complete DC gun pressure safety review action items**
- **Complete DC gun test ASSRC review**
- **SF6 handling OPM**
- Radiation Safety documentation and shielding plan.
- ASSRC walk through before conditioning

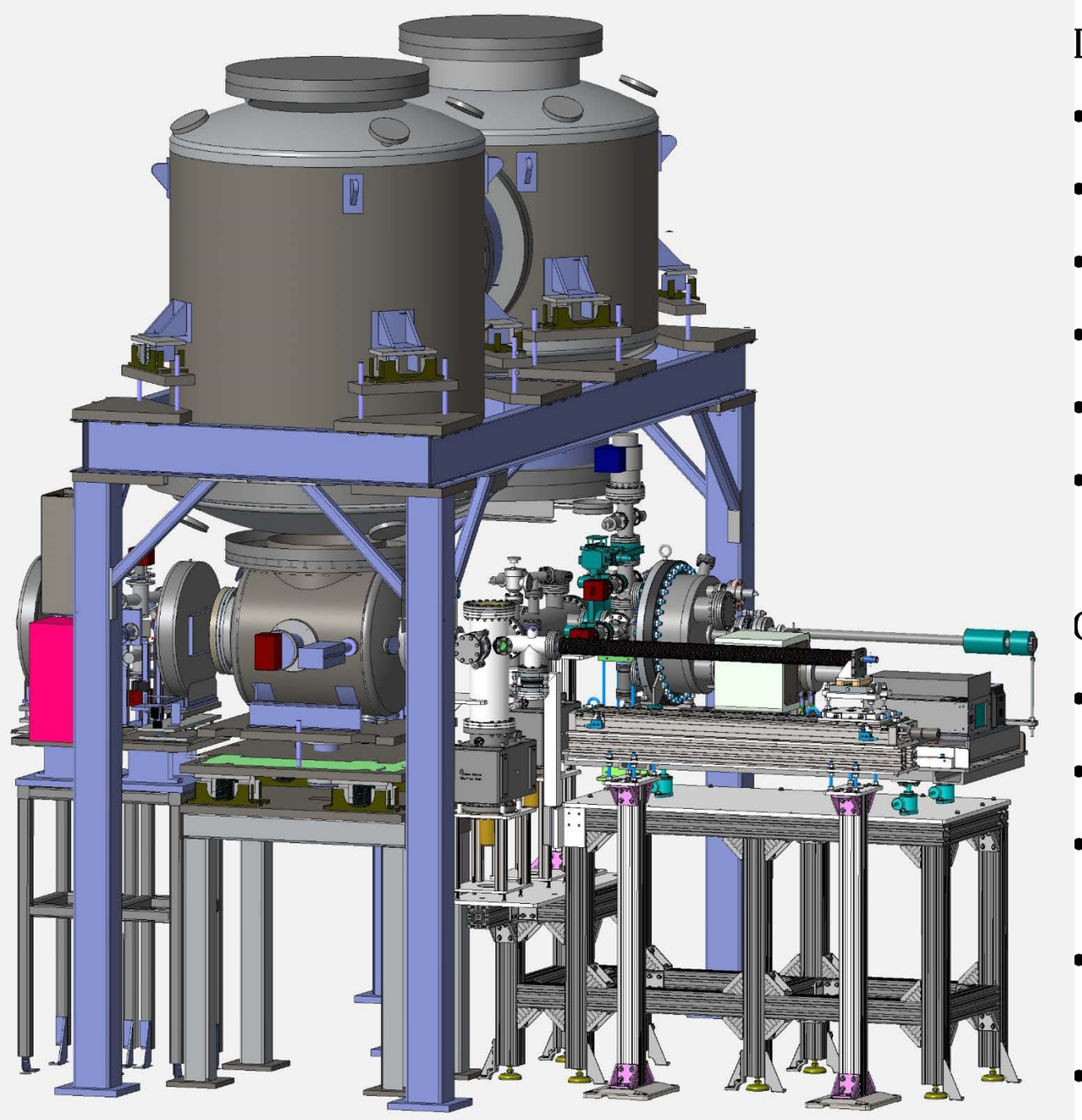
DC Gun Assembly at BNL

- Off-load DC gun at 912 clean room area (forklift). **(Karl S.)** **10/19/16**
- Move into 912 cleanroom.
- Install top flange (wireseal) **Leak check? (Karl S. & Seberg, Gill)**
- Install cathode support assembly, remove cathode shipping fixture **(Karl S. & Seberg)**
- Survey and align cathode, close up, and leak check **(Karl S. & Karl, Seberg, Gill)** **10/20/16**
- Vent, install cathode shipping fixture, loosen cathode support **(Karl S. & Seberg, Gill)**
- Slowly ship to 02:00 (Preliminary vibration measurements)
- Crane to final location, bolt down, and survey **(Karl S. & Karl, Seberg)** **10/21/16**
- Install cleanroom, prep gun **10/22/16** (Saturday allow Sunday for clean up) (**Gill)**
- Remove fixture, survey cathode **(Karl, Seberg, Gill)** **10/24/16**
- Seal, leak check, Vacuum bakeout **10/26/2016** - **10/31/2016** **(Gill)**
- Power supply components assembled in **911A, Test??** **10/26/2016** **(Bruno, Mi, Costanzo)**
- Assemble power supply at 2:00, w/o gun connection **11/2/2016**
- SF6 Charged, HV power supply test **11/3/2016**
- Process resistor installed, SF6 Charged, conditioning start **11/7/2016**

DC Gun Assembly at BNL

Project start	1 hr	Wed 10/19/16	Wed 10/19/16	
Gun Arrival and Prep	**1.92 days**	**Wed 10/19/16**	**Thu 10/20/16**	
Off load DC Gun and Power Supply	4 hrs	Wed 10/19/16	Wed 10/19/16	1
prepare DC Gun for cleanroom	3 hrs	Wed 10/19/16	Wed 10/19/16	3
Move into cleanroom, align with crane	4 hrs	Wed 10/19/16	Wed 10/19/16	4
Clean room ovenight clean out	12 hrs	Wed 10/19/16	Thu 10/20/16	5
DC Gun Preparation	**2.67 days**	**Thu 10/20/16**	**Fri 10/21/16**	
Install top flange and blank flange	2 hrs	Thu 10/20/16	Thu 10/20/16	6
Pump down, leak check, vent	4 hrs	Thu 10/20/16	Thu 10/20/16	8
Survey chamber	4 hrs	Thu 10/20/16	Thu 10/20/16	6
Install cathode stark	2 hrs	Thu 10/20/16	Thu 10/20/16	9
Connect cathode	1 hr	Thu 10/20/16	Thu 10/20/16	11
Survey cathode	4 hrs	Thu 10/20/16	Thu 10/20/16	10,12
Overnight	11 hrs	Thu 10/20/16	Fri 10/21/16	13
Install cathode shipping fixture	2 hrs	Fri 10/21/16	Fri 10/21/16	14
Bag for transport	2 hrs	Fri 10/21/16	Fri 10/21/16	15
Ship gun to 0200	4 hrs	Fri 10/21/16	Fri 10/21/16	16
Install Gun 0200 and prep cleanroom	**9.92 days**	**Wed 10/19/16**	**Mon 10/24/16**	
Off load DC Gun Stand	2 hrs	Wed 10/19/16	Wed 10/19/16	1
Ship stand to 0200	6 hrs	Wed 10/19/16	Wed 10/19/16	19
Rig to DC gun position	3 hrs	Wed 10/19/16	Wed 10/19/16	20
Survey stand into position	1 day	Wed 10/19/16	Thu 10/20/16	21
Red head stand to floor	1 day	Thu 10/20/16	Thu 10/20/16	22
Move gun to stand and install on stand	2 hrs	Fri 10/21/16	Fri 10/21/16	17,23
Survey gun chamber to operating position	4 hrs	Fri 10/21/16	Fri 10/21/16	24
Overnight	8 hrs	Fri 10/21/16	Sat 10/22/16	25
Install clean room, clean and install survey tools	8 hrs	Sat 10/22/16	Sat 10/22/16	26
(let clearnroom run over weekend)	42 hrs	Sat 10/22/16	Mon 10/24/16	27
Remove shipping fixture and leak check	**11.92 days**	**Wed 10/19/16**	**Tue 10/25/16**	
remove bagging	1 hr	Mon 10/24/16	Mon 10/24/16	28
remove rear support frame	2 hrs	Mon 10/24/16	Mon 10/24/16	30
Survey cathode position	4 hrs	Mon 10/24/16	Mon 10/24/16	30
install processing puck by hand	1 hr	Mon 10/24/16	Mon 10/24/16	32
Install rear electrode cover	1 hr	Mon 10/24/16	Mon 10/24/16	33
Install rear flange/manual & RF gate valves	2 hrs	Mon 10/24/16	Mon 10/24/16	34
Install bake out turbo pump system	2 hrs	Mon 10/24/16	Mon 10/24/16	34
Pump down, leak check	2 hrs	Mon 10/24/16	Mon 10/24/16	36,35





DC Gun Vacuum **system ready October 20**

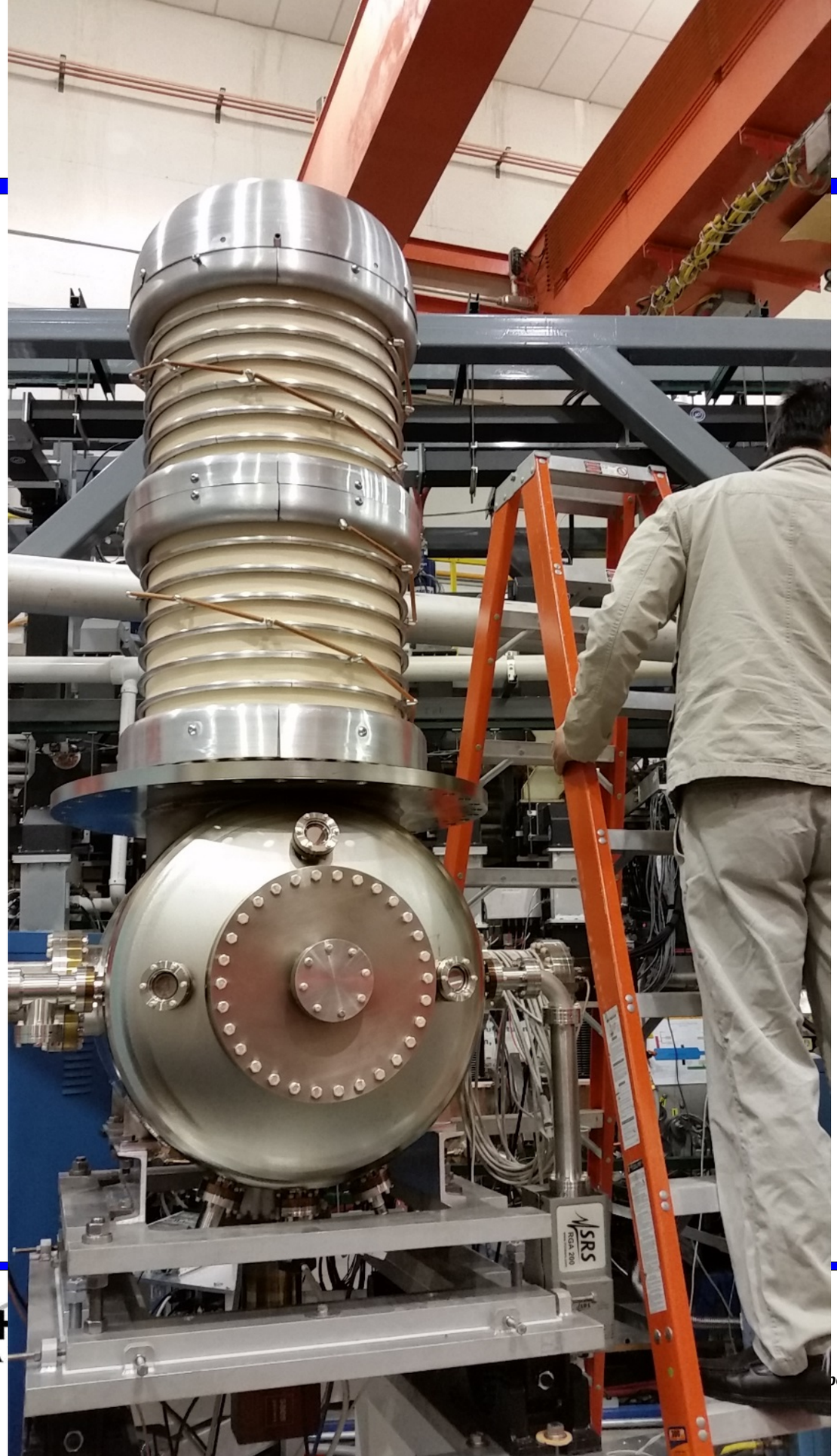
- Ion pump and NEG controllers
- Extractor vacuum gauge
- Remote bleed valve for HV conditioning
- 1 shielded, 1 non-shielded valve
- Bake-out 150-200C (blankets at Cornell)
- Controls interface for cavity conditioning

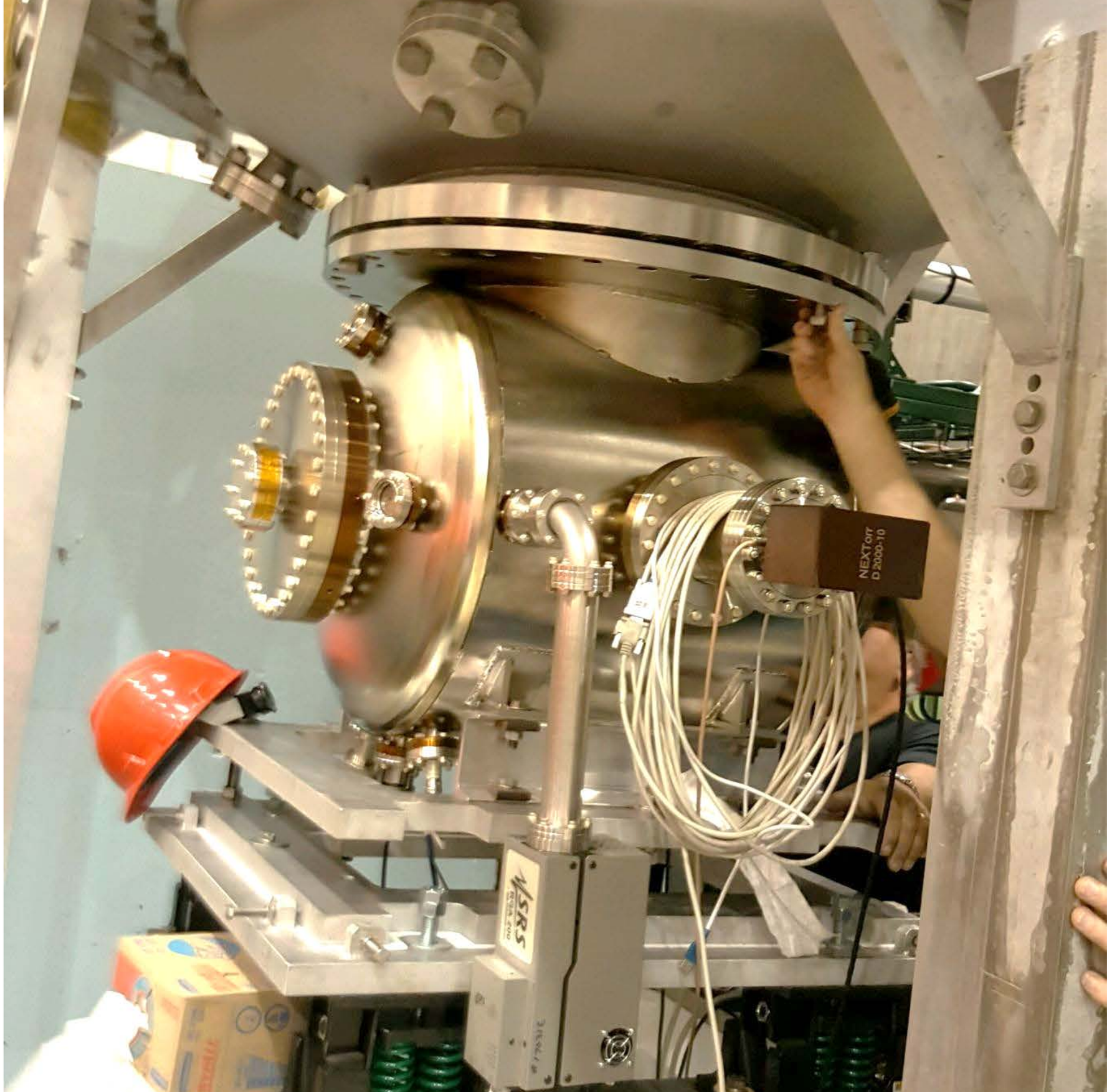
Cathode Systems Vacuum

- Bake-out 150-200C
- Vacuum gauges and pumps
- Plug in cables for transport cart pumps and gauges – remote monitoring
- Bake-able Vacuum “load lock” with remote monitoring and remote temperature control
- Valves w/interlocked controls (local MPS)
- Tunnel switches for interlocked “load lock” valves

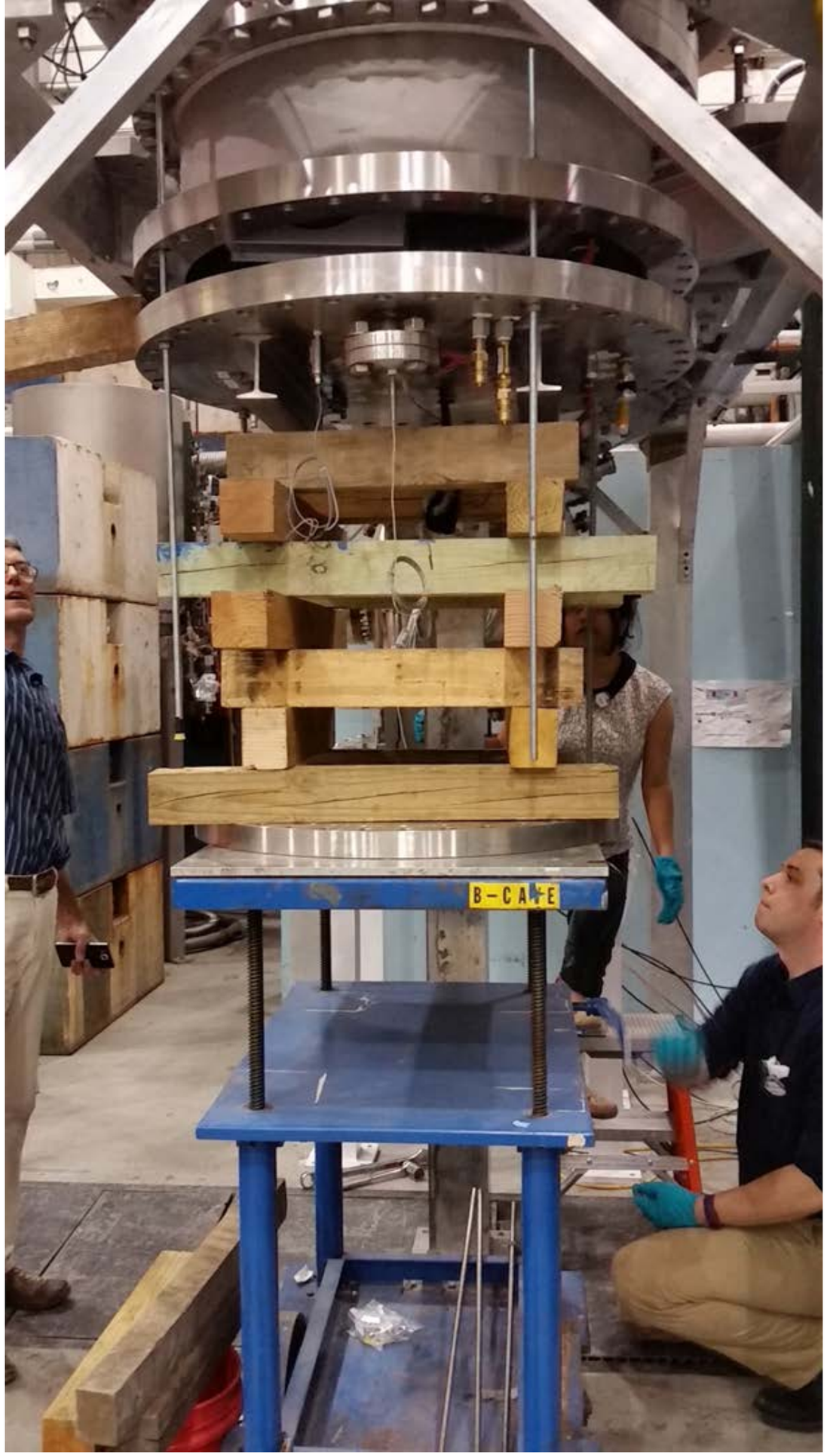
Laser System Vacuum

- **2 Thermocouple gauges**




NEXTorr
D 2000-10
SRS


EXIT


B-CAFE