

Minutes July 18, 2016 DC Gun Assembly and Installation Meeting

- DC Gun Clean-room assembly and pre-survey at BNL

Two versions were presented. From the discussion at the meeting, delivering the DC Gun to 912 is the best approach. Dave's concern about shipping the gun on a small truck re-enforces that the best approach would be to remove the heavy top flange and cathode stalk to reduce stress on the HV ceramics. The 912 cleanroom is the best place to reinstall these components. 912 also provides more elbow room for survey. It gets rid of the concern about building a large and tall temporary cleanroom at 02:00, Mike doesn't have one available.

To be discussed further is whether we should check the survey of the cathode when it reaches the tunnel – another cleanroom set-up.

- Tunnel preparations: power, water cooling, cables, survey, red-heads

PK is looking at the power requirements today and discussed with Jon Sandberg on access controls contactors. Also discussed with Jonathan Reich this morning.

Will meet next week with PK, Joe S., Dave P. and Bob Meier to locate power on the wall, water routes, and cable tray.

- DC Gun installation and survey

John Halinski will provide drawings for red head locations to Frank and Matt. Dave will arrange carpenters. The DC gun and SF6 vessel stands will be shipped separately. They can be sent directly to the tunnel. There will be time to install the DC gun stand before the gun arrives from 912.

- DC Gun vacuum bakeout

Cornell will be using our vacuum blankets. Mike noted that the schedule is optimistic for the time needed for bakeout process.

- DC Gun power supply installation: cables, water cooling, controls, SF6 transfer

SF6 transfer. CJ will work with Chuck Carlson to get support for the transfer.

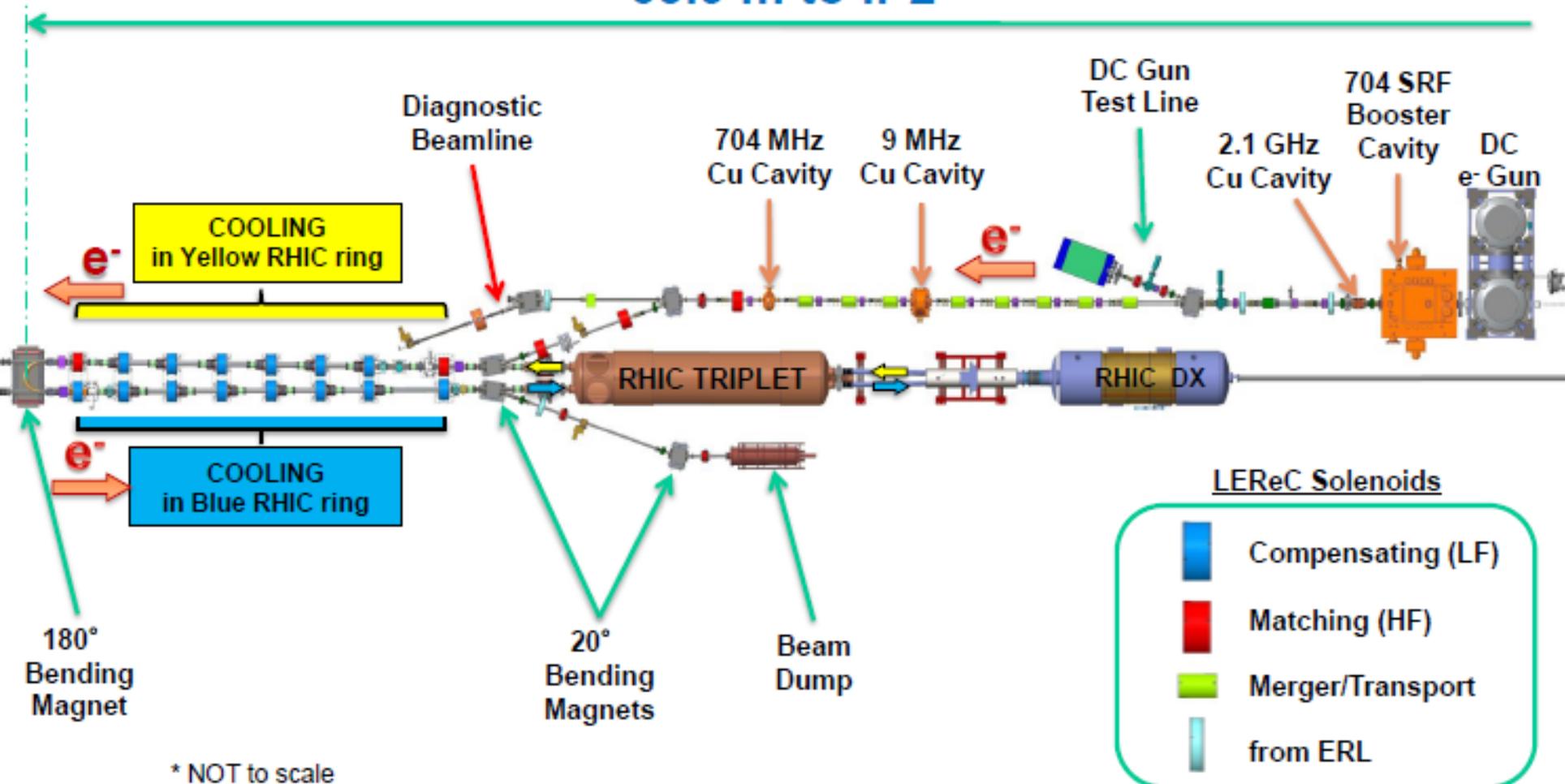
- DC Gun conditioning

Alexei noted that conditioning in the past has taken longer than 2 .5 weeks, the duration provided by Cornell.



LEReC System

63.9 m to IP2



LEReC DC Gun Installation and Conditioning

Topics:

- DC Gun Clean-room assembly and pre-survey at BNL
- Tunnel preparations: power, water cooling, cables, survey, red-heads
- DC Gun installation and survey
- DC Gun vacuum bakeout, vacuum system controls
- DC Gun power supply installation: cables, water cooling, controls, SF6 transfer
- DC Gun conditioning

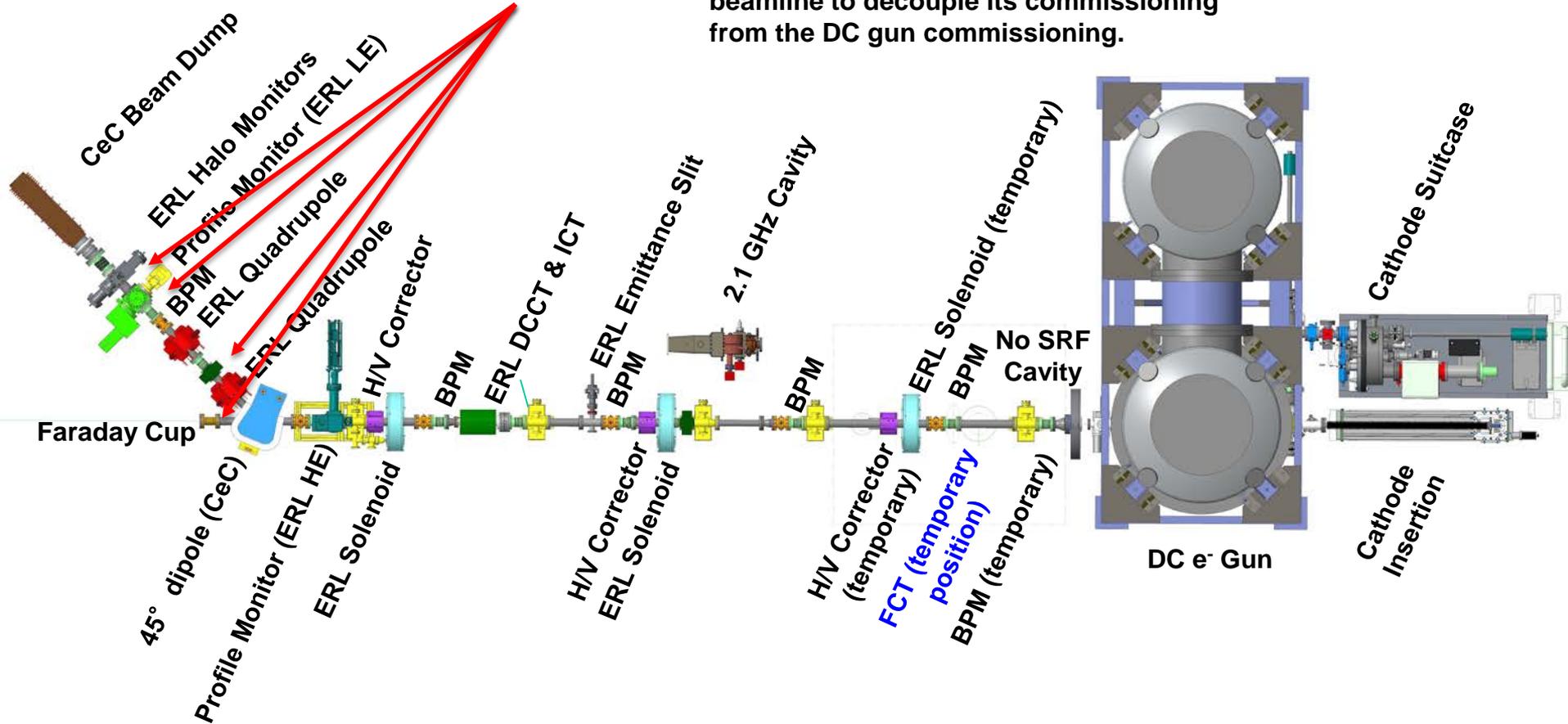


LEReC Injection section 2016 (6/9/16)

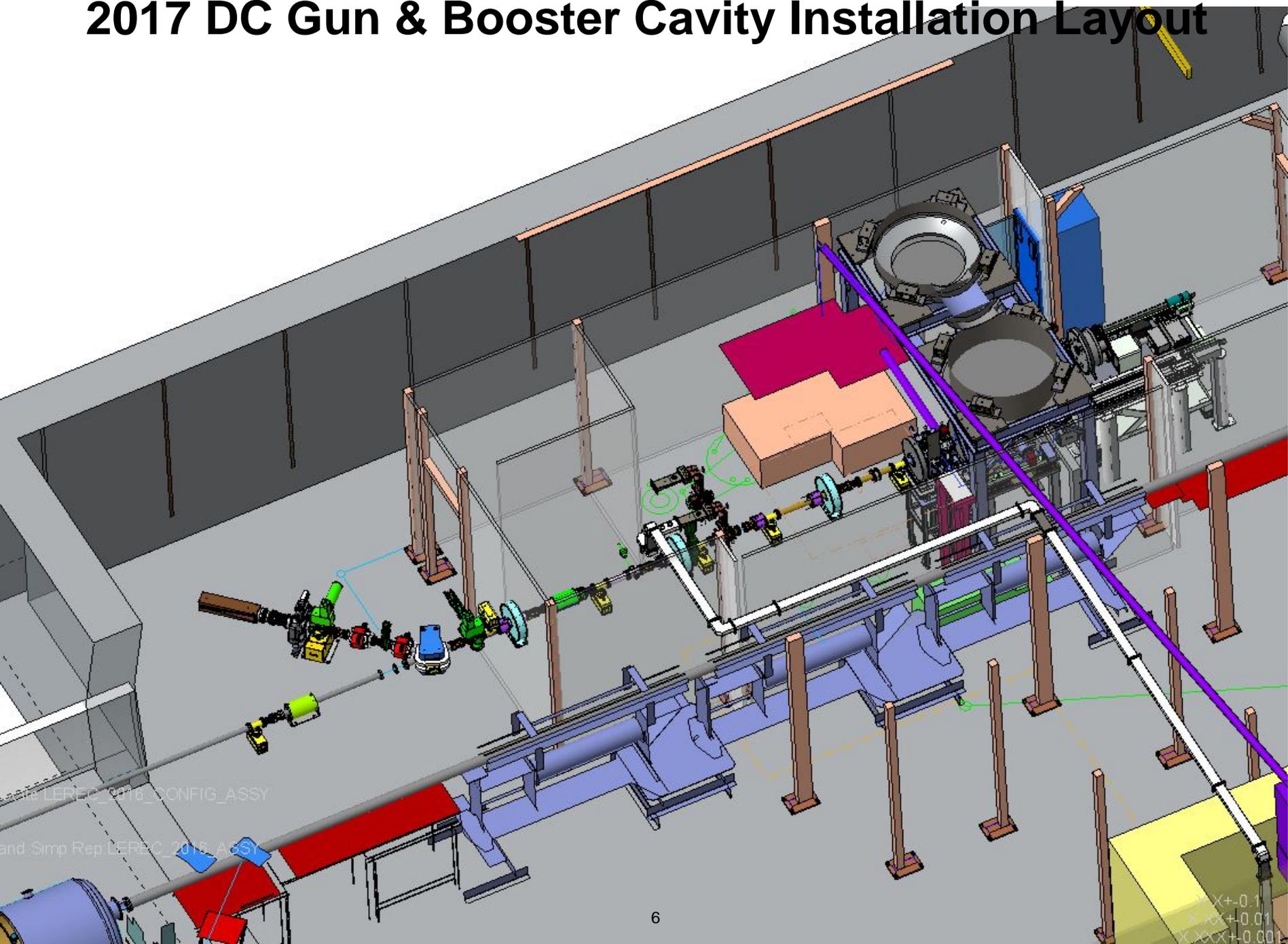
(1) FCT (temporary position) somewhere?

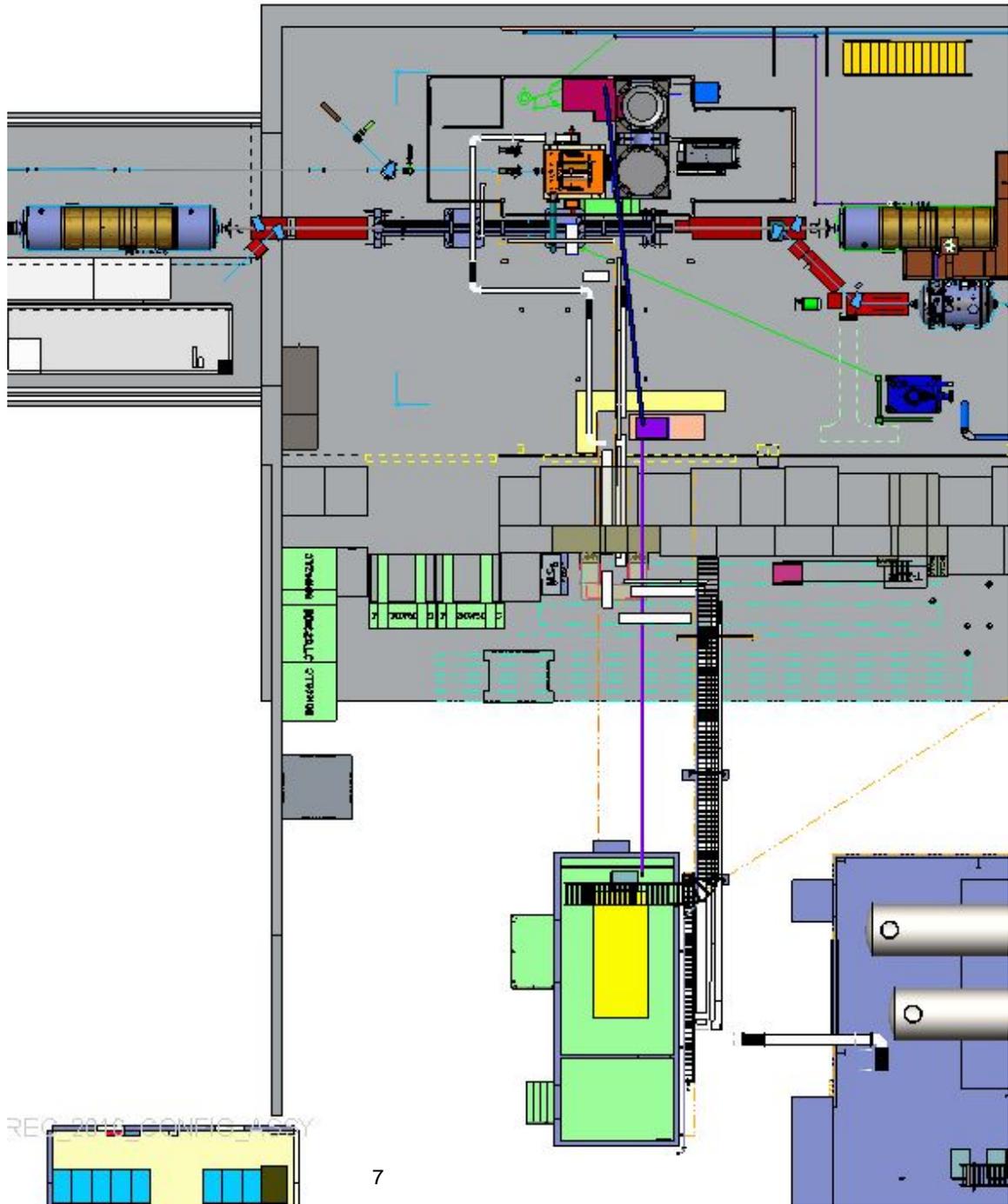
2.1 GHz Cavity:

The cavity will be installed next to the beamline to decouple its commissioning from the DC gun commissioning.



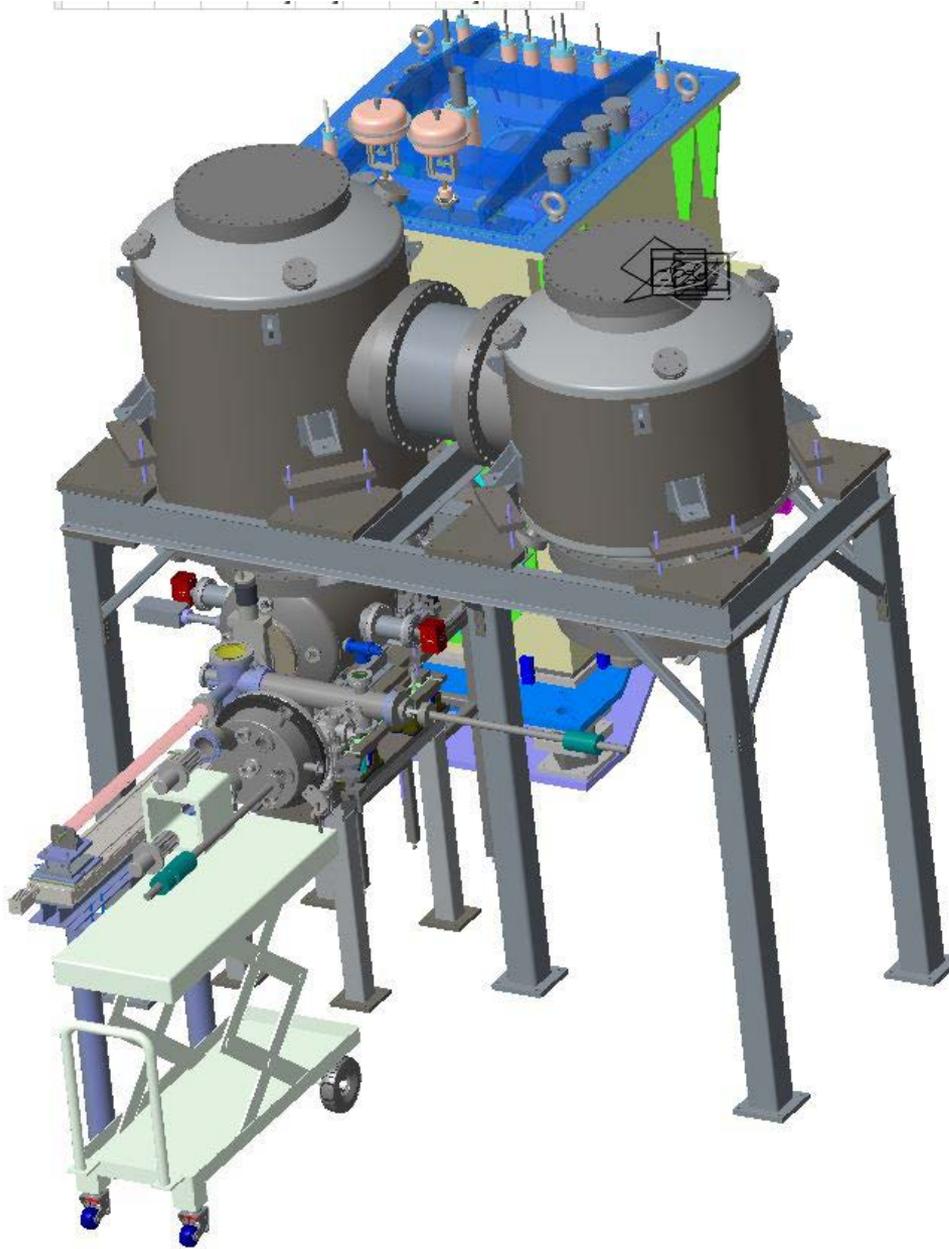
2017 DC Gun & Booster Cavity Installation Layout

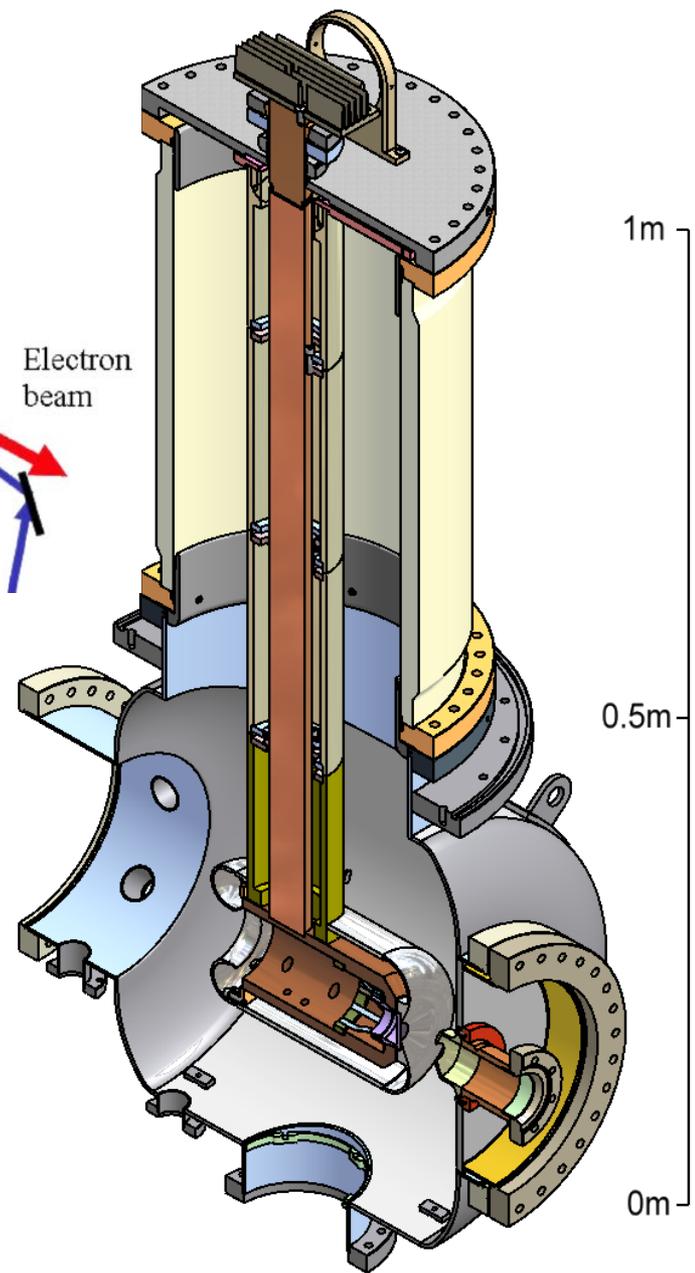
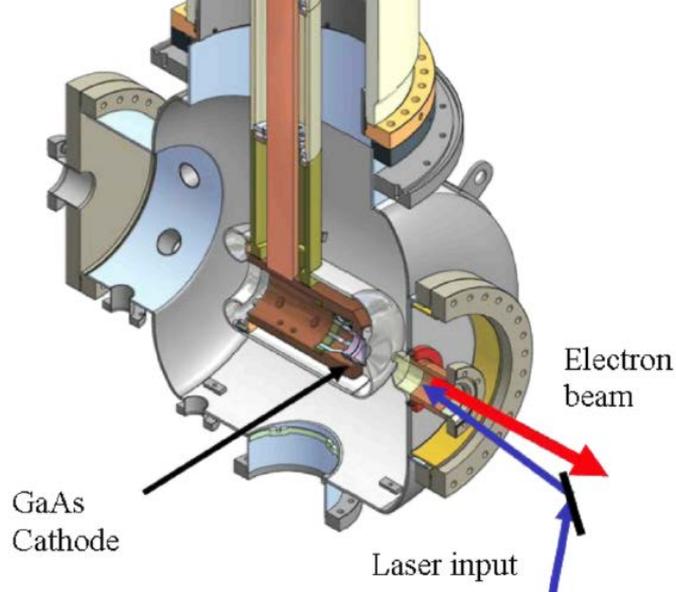
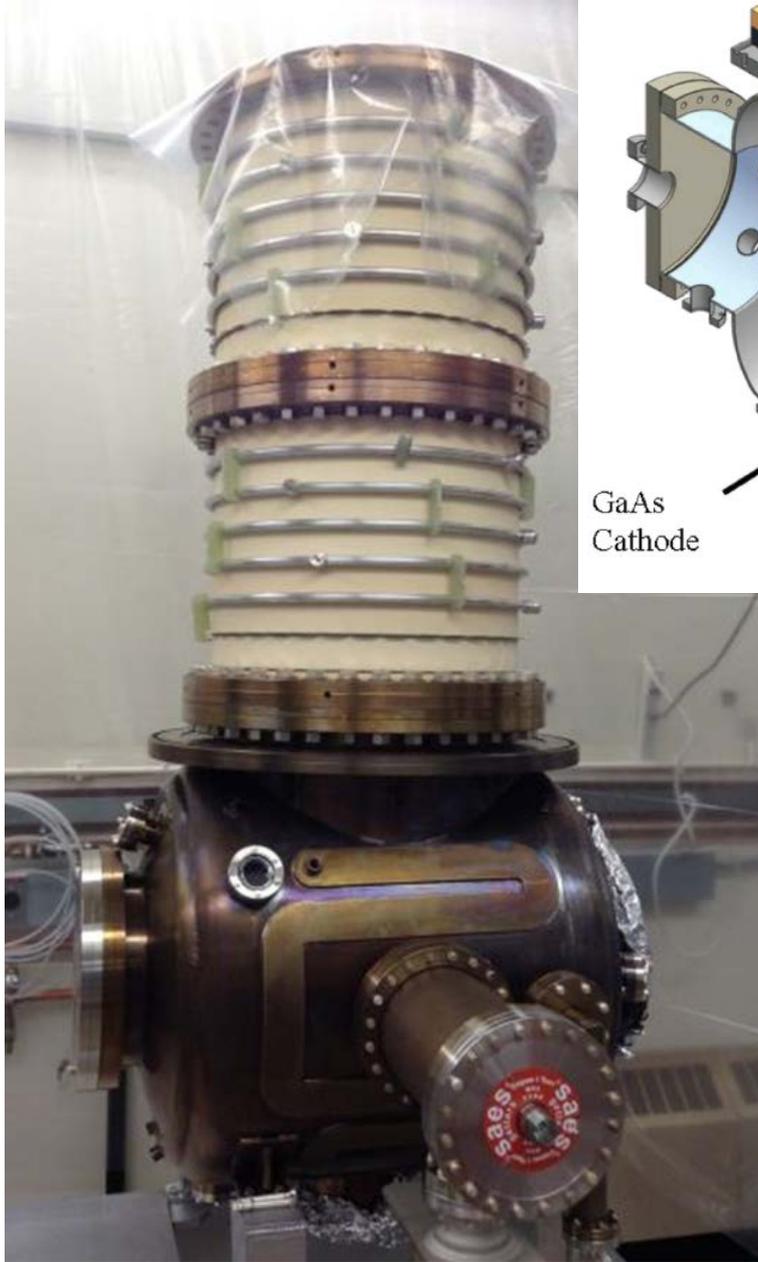




REQ 2019 CONFIG 11/11

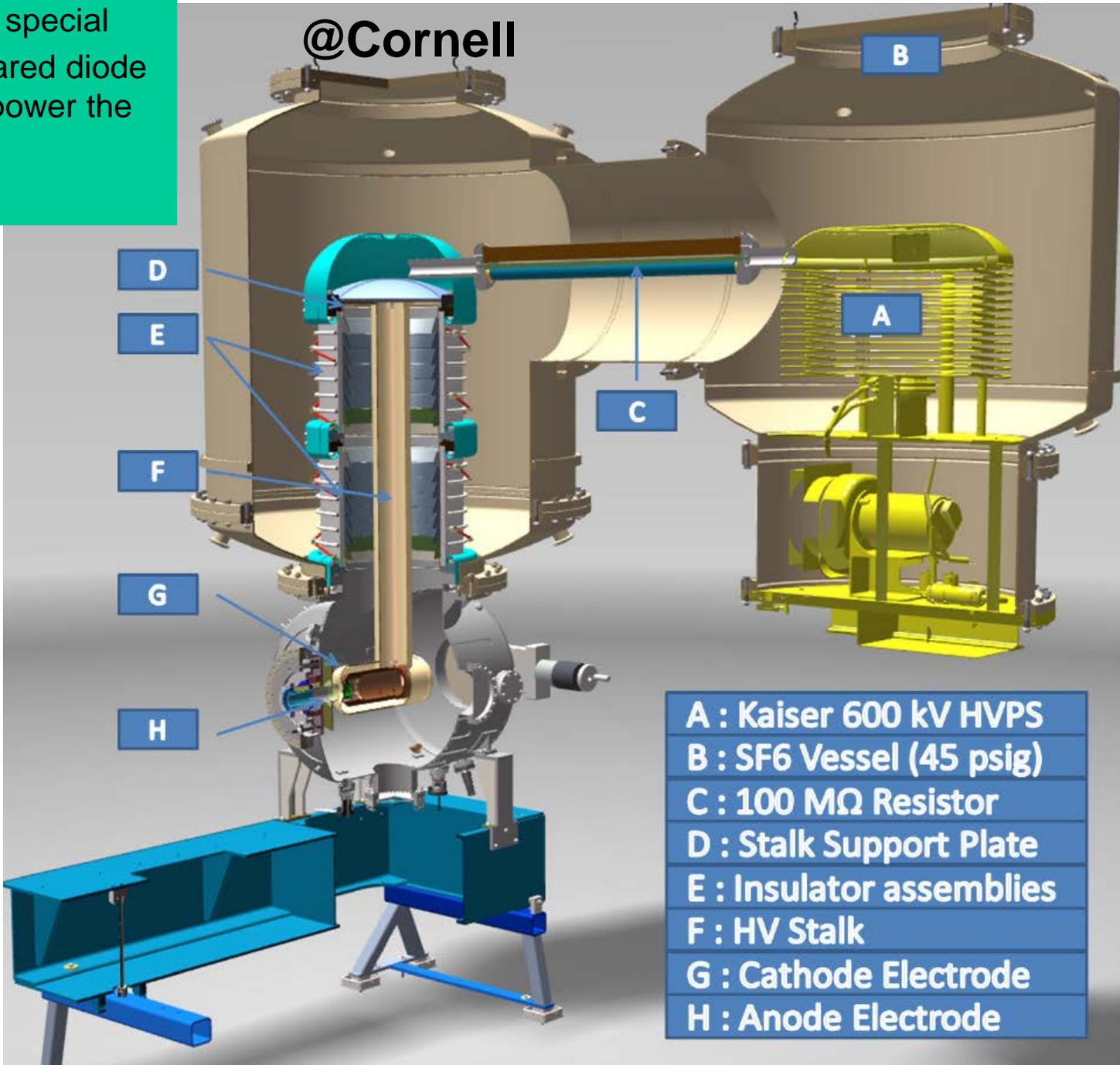






@Cornell

• DC Gun system has special Controls, including infrared diode laser and photocell to power the floating ammeter.



- A : Kaiser 600 kV HVPS
- B : SF6 Vessel (45 psig)
- C : 100 MΩ Resistor
- D : Stalk Support Plate
- E : Insulator assemblies
- F : HV Stalk
- G : Cathode Electrode
- H : Anode Electrode



750 kV, 100 mA HVPS



- Insulating core transformer technology
- 62 circuit boards, each delivering 100 mA at 12.5 kV, stacked in series – 24 pf total capacitance
- Pressurized SF₆ insulation
- External high power, high frequency (~ 100 kHz) drive and control circuitry



DC Gun at Cornell

- 7/18 Cornell finished assembling DC gun.
- 7/25 Move to floor, final cathode alignment, vacuum bakeout.
- 8/1 Power supply assembly, charge SF6, prepare for conditioning
(Possible BNL visit 8/3 to 8/5)
- 8/8 Conditioning at Cornell
- 8/15 Conditioning at Cornell
- 8/22 Conditioning at Cornell 500 kV
- 8/29 Prepare for shipping and ship receive BNL **September 1**

Prepare for shipping:

- Disassemble power supply
- Re-establish portable clean-room
- Install cathode shipping fixture
- Pack and load into Karl's U-haul (Karl will drive down).



DC Gun Installation Preparation at BNL

Before DC Gun arrival: **September 1**

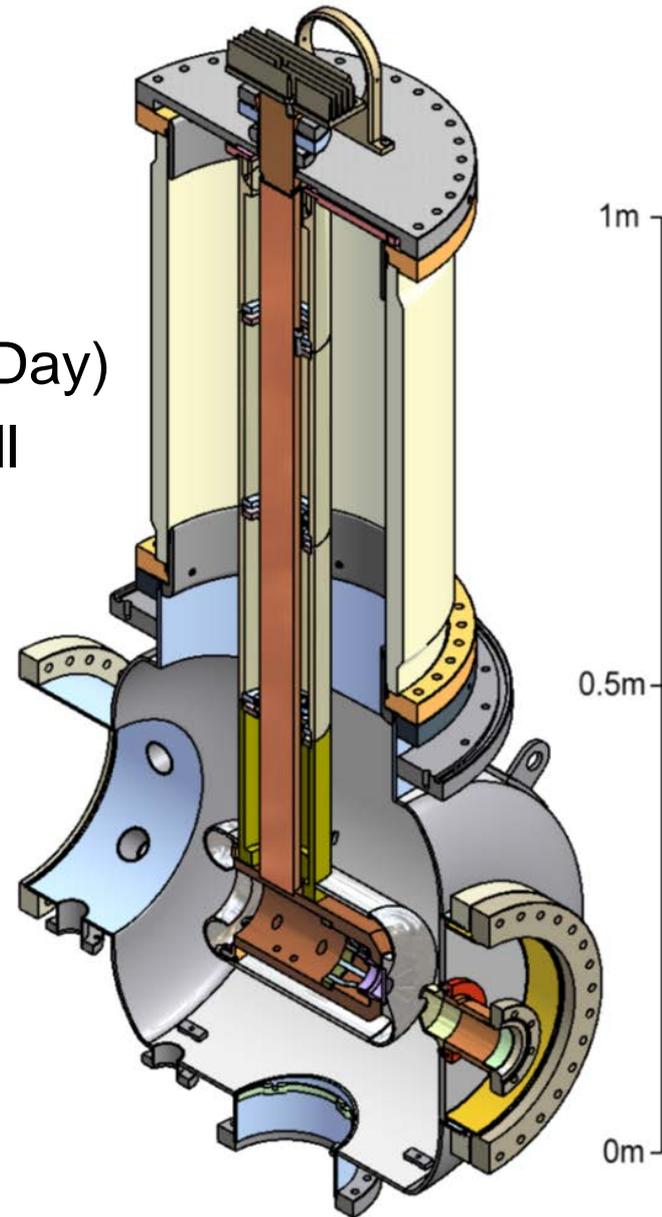
- Survey beam line and stand locations on 02:00 floor, install redheads.
- Remove existing yellow walk-way
- Install power supply AC power
- Pull cables for vacuum and power supply control
- Move SF6 cart 04:00 to 02:00, procure SF6
- Prepare portable clean room and equipment (filter maintenance??)
- Complete DC gun pressure safety review action items
- Complete DC gun test ASSRC review



DC Gun Assembly at BNL: proposal 1

September 1

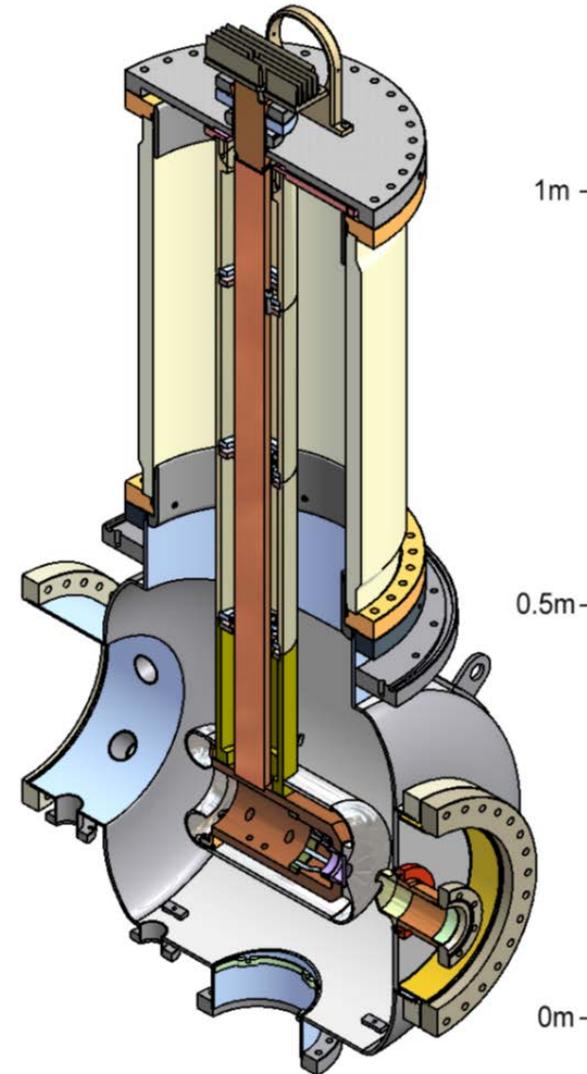
- Off-load DC gun at 02:00 (forklift). **(Karl)**
- Crane into final location, bolt to floor.
- Survey vacuum chamber to final location.
- Install portable clean-room over DC Gun. (1 Day)
- Clean room prep DC Gun (arrive from Cornell cleaned and bagged).
- (3 Days – Labor Day weekend??)



DC Gun Assembly at BNL: proposal 1

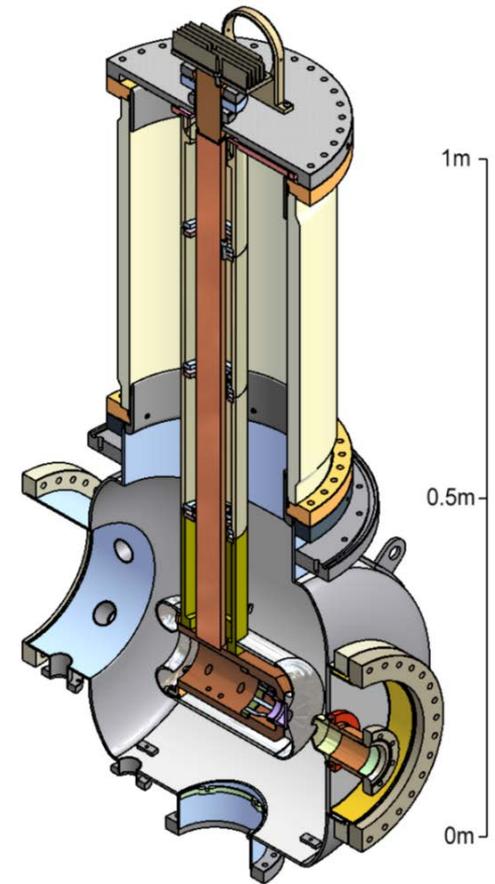
September 6

- Remove cathode shipping fixture. **(Karl)**
- Survey and align cathode. **(Karl)**
- Close up vacuum vessel
- Leak check
- Remove cleanroom
- Prepare for bakeout
- Weekend bakeout



DC Gun Assembly at BNL: proposal 2

- Off-load DC gun at 912 clean room area (forklift). **(Karl)**
- Clean room prep DC Gun (arrive from Cornell cleaned and bagged).
- Move into 912 cleanroom.
- Remove cathode shipping fixture **(Karl)**
- Survey and align cathode **(Karl)**
- Close up vacuum vessel. **(Karl)**
- Leak check
- Slowly ship to 02:00
- Crane to final location, bolt down, and survey
- Prepare for bakeout



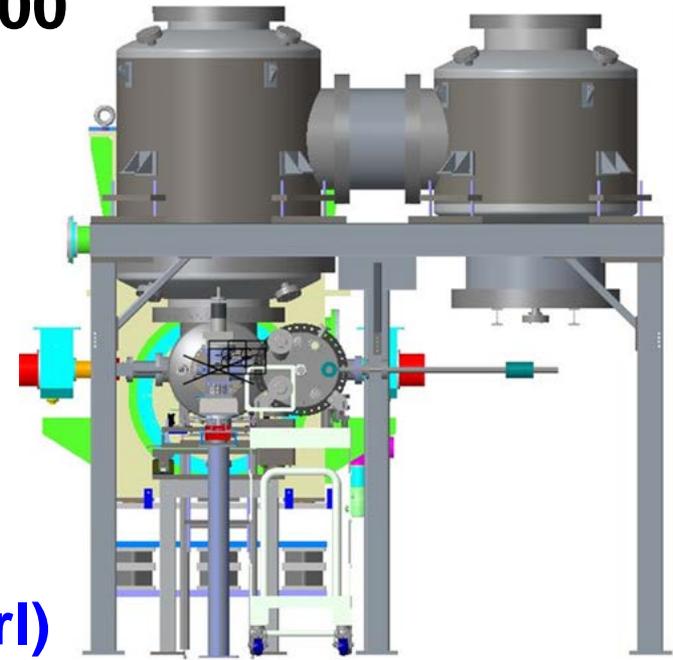
DC Gun Installation at IP02:00

September 12

- Bake out DC gun and establish 10-11 vacuum
- Install power supply support frame.
- Remove bake-out blankets.

September 19

- Assemble components on top of ceramic. **(Karl)**
- Install DC gun SF6 vessel. **(Karl)**
- Install power supply SF6 vessel. **(Karl)**
- Install power supply into bottom of SF6 vessel **(Karl)**
- Install PS to Ceramic resistor (from Cornell) **(Karl)**



DC Gun Installation at IP02:00

September 26 – October 14

- Check out power supply, water, power, controls/MPS
- Obtain and connect conditioning gas bottles
- Verify access controls
- Install shield wall or fence at truck entrance
- **Condition cavity to 500kV (at night, on weekends?) (Karl)**

Parasitic with NSRL operations evenings

Need MCR/CAS support for sweep

MCR support for conditioning?

