Phase II

Shaun Alsum

New Stuff

Making Grid HV cables for testing

- Stripped two twelve foot cables various amounts to test heat-shrink solution
- Bob Conley putting contacts on them

Old stuff

Minor things progress

- Thinking about attaching HV to grids/plates/field hoops
- Steffen volunteered to make the PMT connectors
- LED/Camera decisions
- Located some wire, estimated how much needed, etc.

Vessel in place!

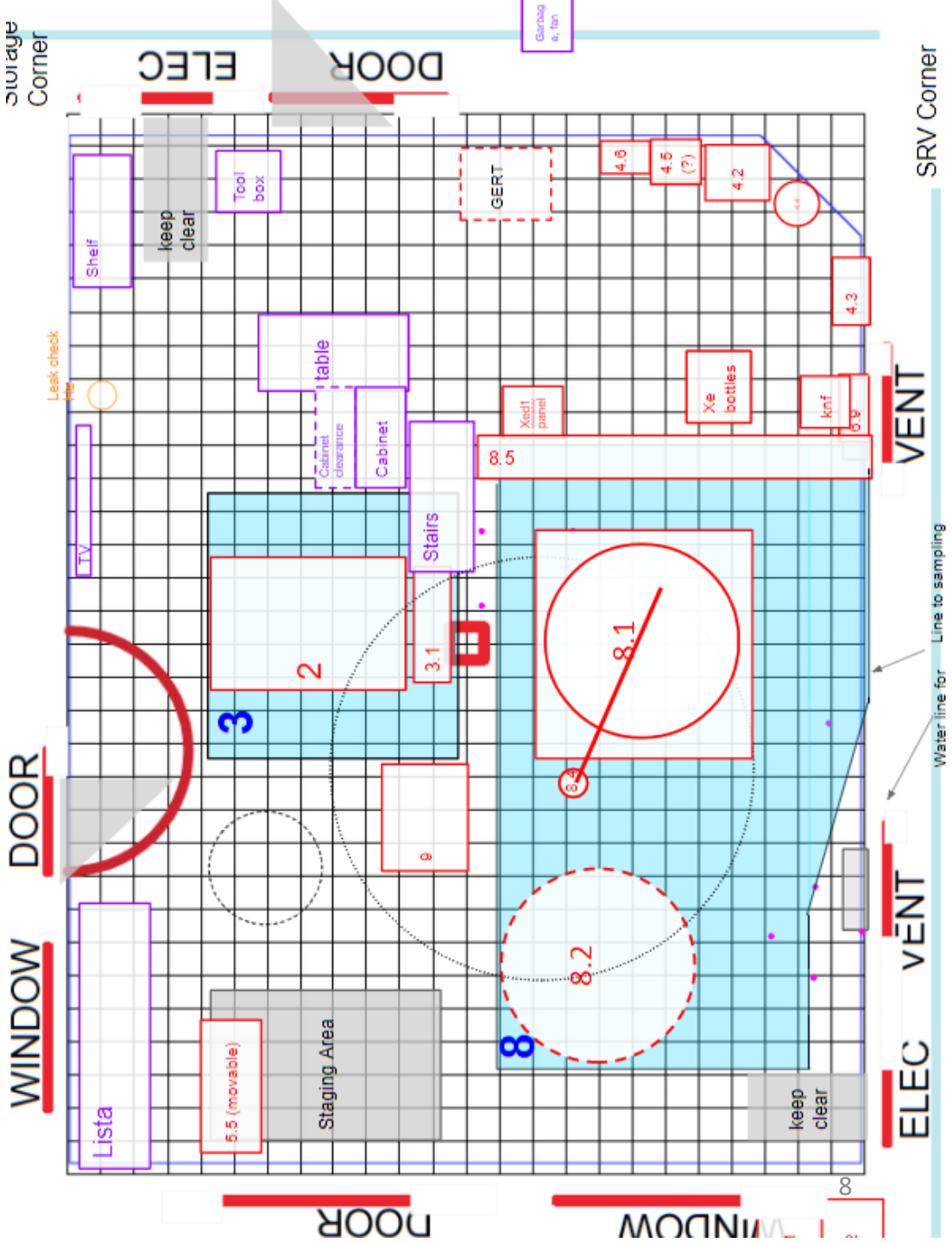
Breakout parts

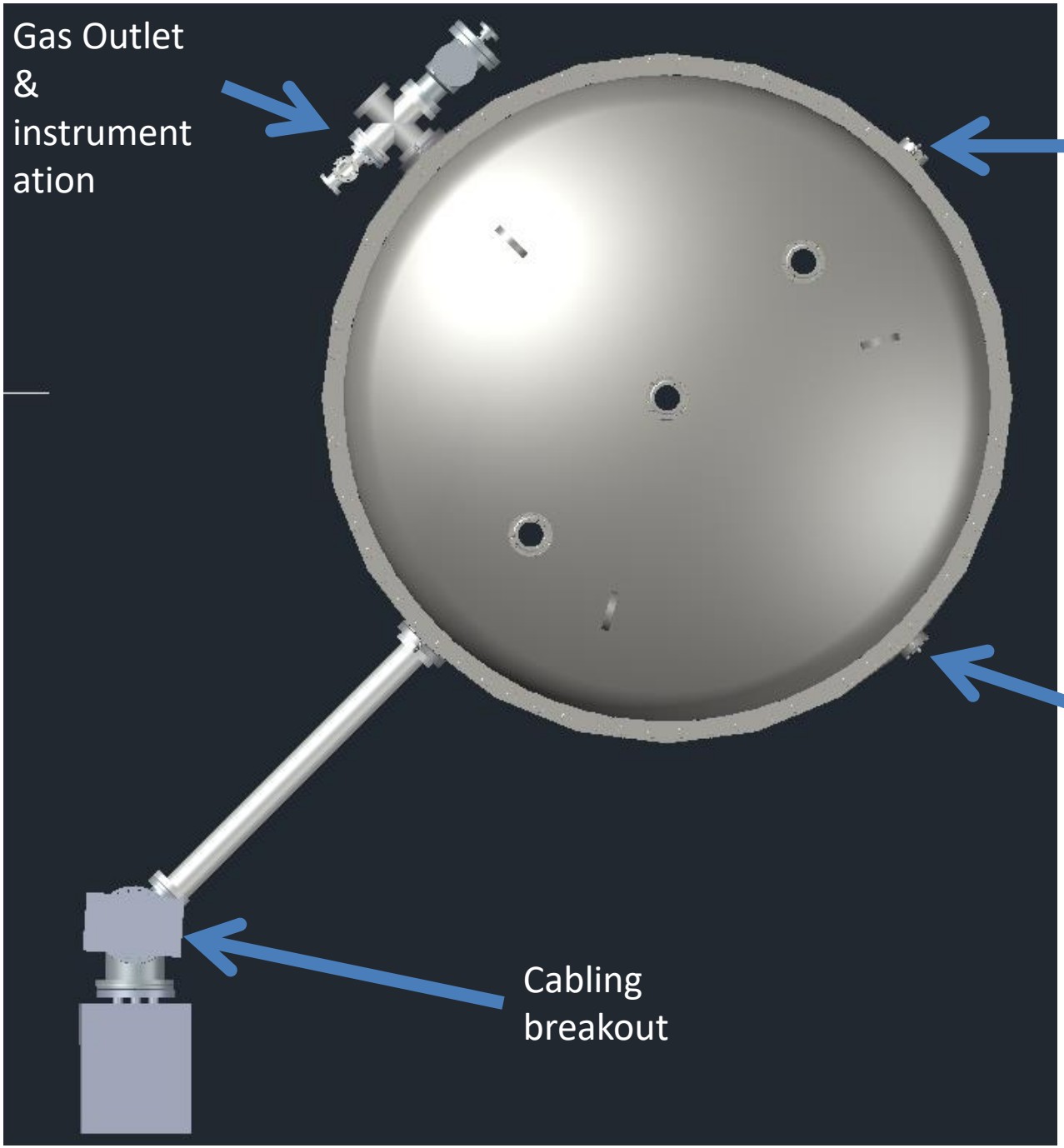
- All parts needed for breakout ordered, located, or in-hand
- Need PMT HV FT from PSL still

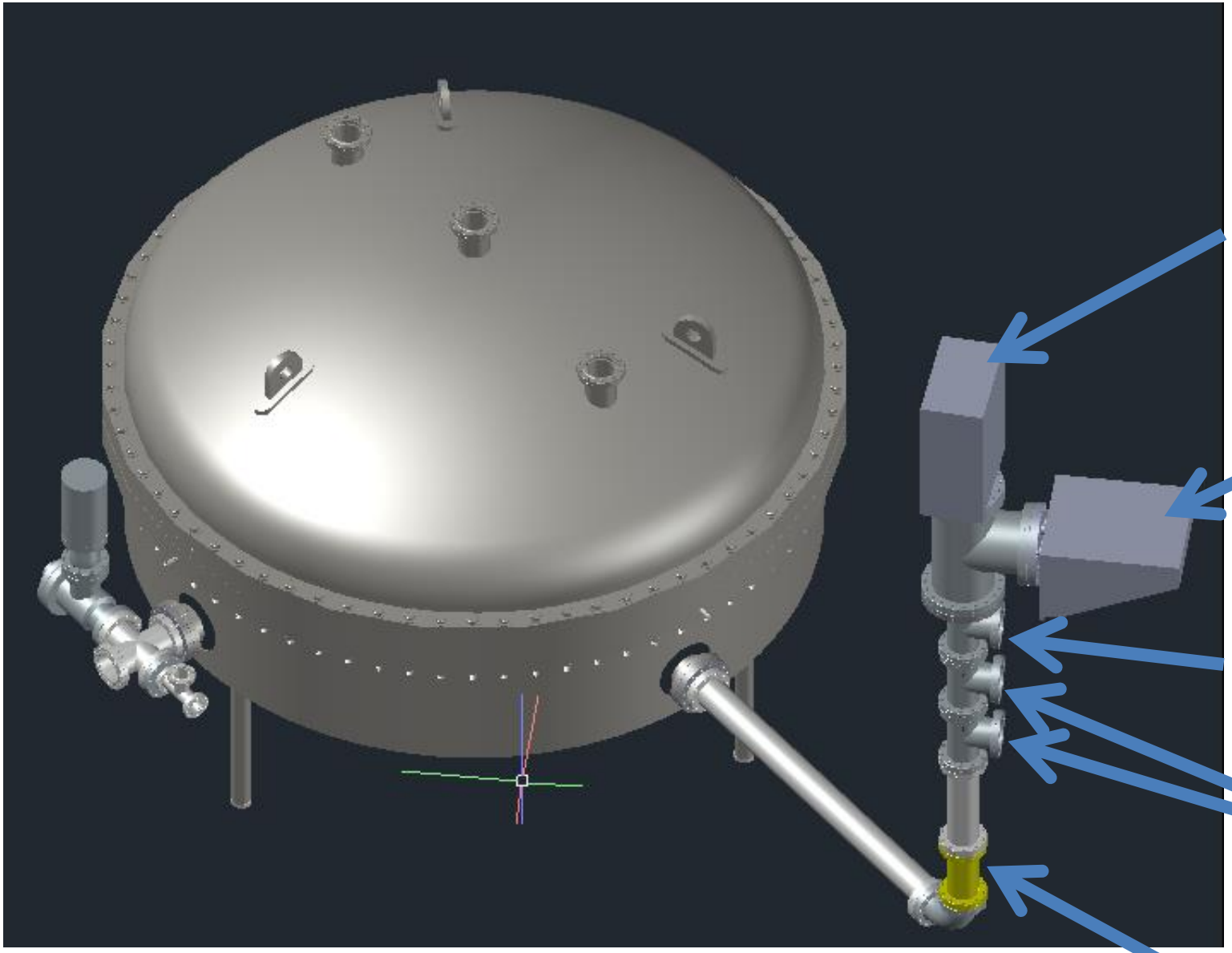
	A	B	C
1	**Part**	**#Needed**	**#In Posession**
2	6"->4-5/8" ZLR	2	0
3	3' long 4-5/8" CF conduit	1	1
4	4-5/8" CF elbow	1	2
5	18" long 4-5/8" CF bellows	1	1
6	12" long 4-5/8" CF tube	1	1
7	4-5/8" CF T	4	4
8	4-5/8"->8" ZLR	2	2
9	8" CF 5-way	1	0
10	8" CF 4xD25 FT	1	0
11	PMT HV Box	1	1
12	8" PMT Sig FT flange	1	0
13	PMT Sig Filter Box	1	1
14	4-5/8" CF 2xD25 FT	1	1
15	4-5/8" Marty's HV FT flange	2	0
16	4-5/8" CF valve	1	1
17	4-1/2" turbo pump	1	0
18	4-5/8" -> 2-3/4" CF ZLR	1	2
19	2-3/4" Hornet	1	0
20	2-3/4" Worker Bee	1	0
21	2-3/4" -> VCR FT	2	2
22	3-3/8" -> 2-3/4" ZLR	1	1
23	2-3/4" 5-way cf	1	1
24	2-3/4" blank	1	1

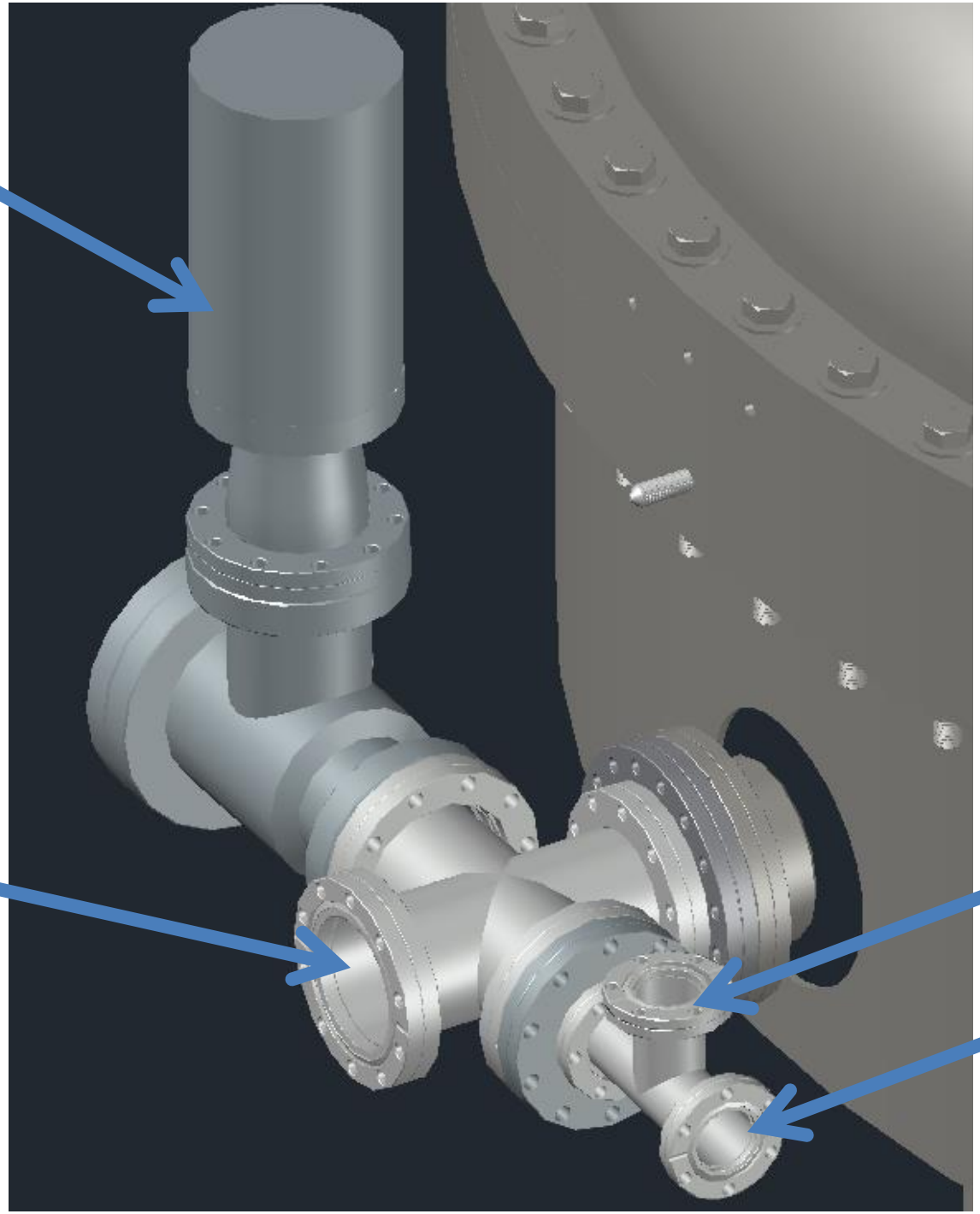
Breakout

Hut layout to orient you. Sorry words are sideways

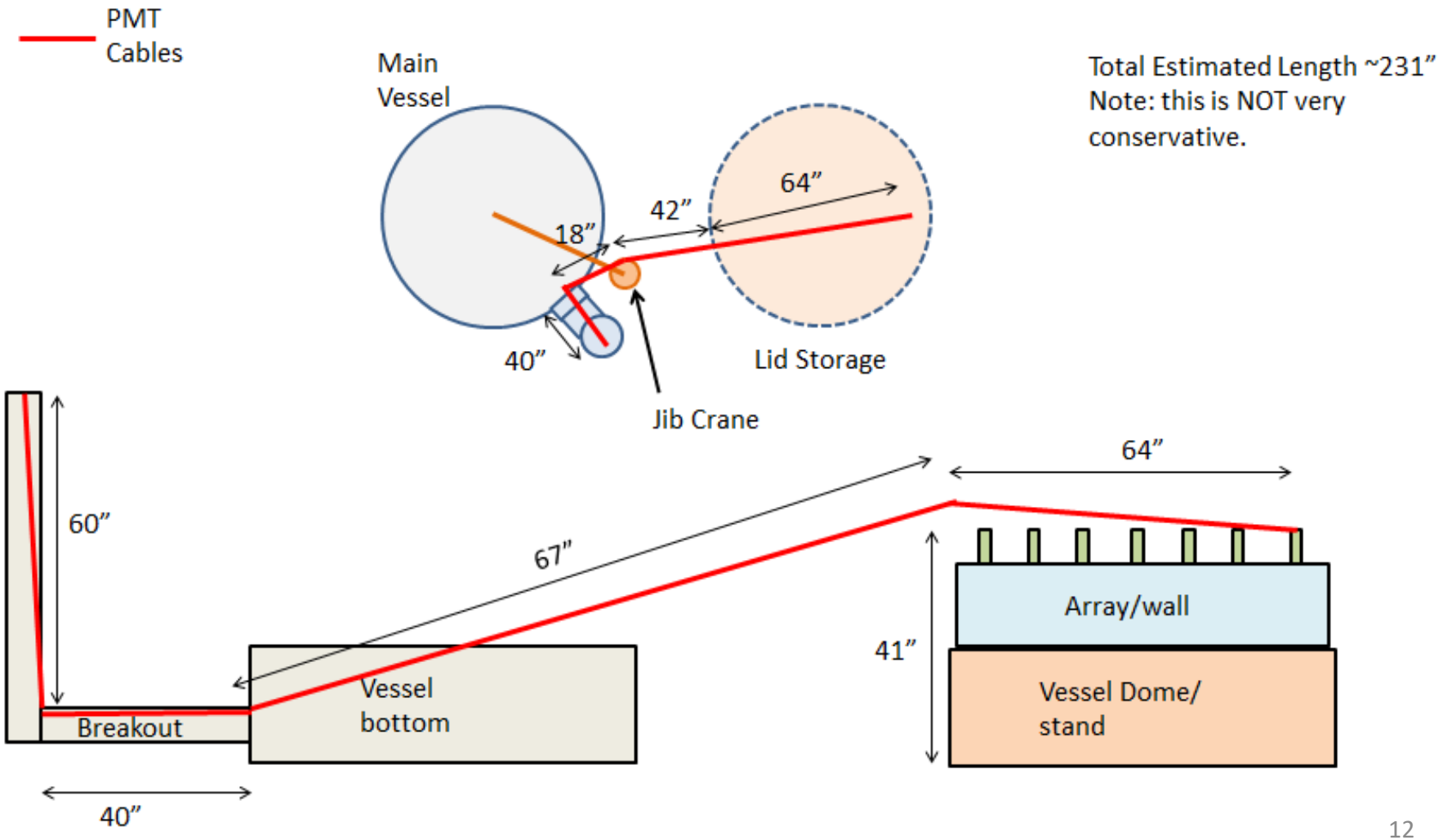



Gas Outlet
&
instrument
ation
Gas inlet?
Gas inlet?
Cabling
breakout


PMT Sig
filter box
PMT HV FT
box
LED,
Camera, LA
Grid/hoop/
refl plate
HV
Bellows

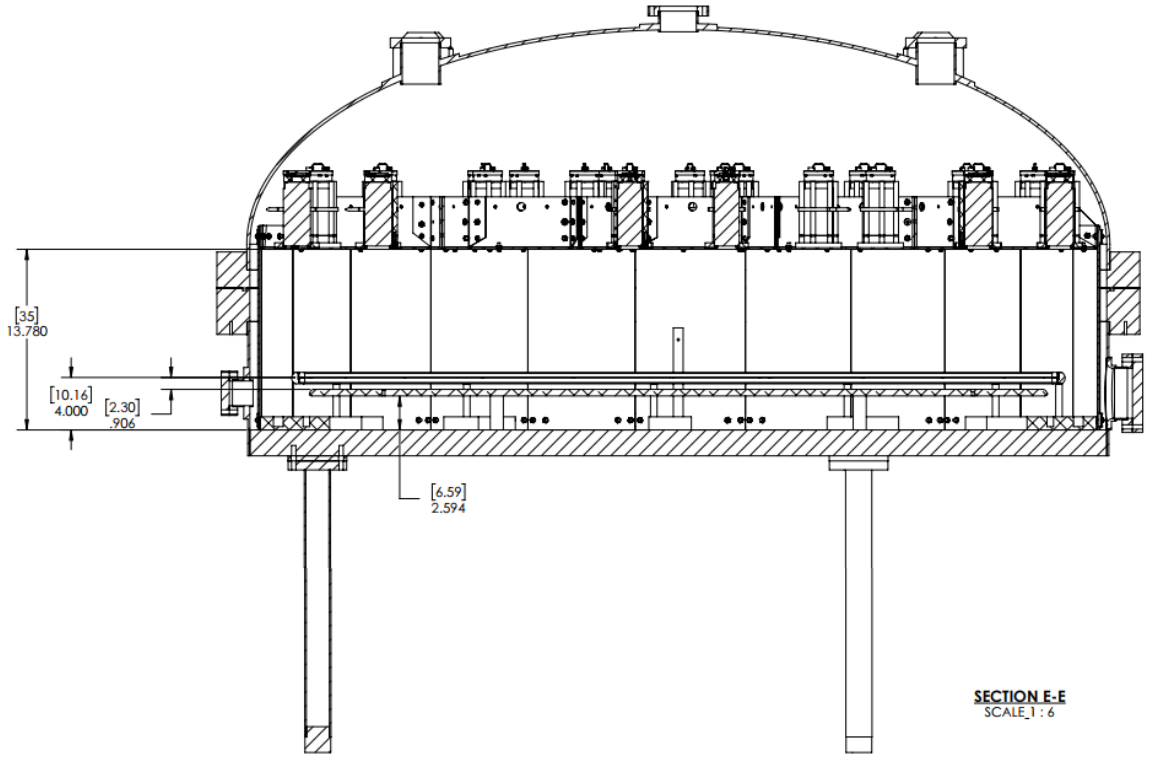

Turbo
To VCR outlet on which >1bar pressure gauges
Hornet
Worker bee

PMT cable length estimates



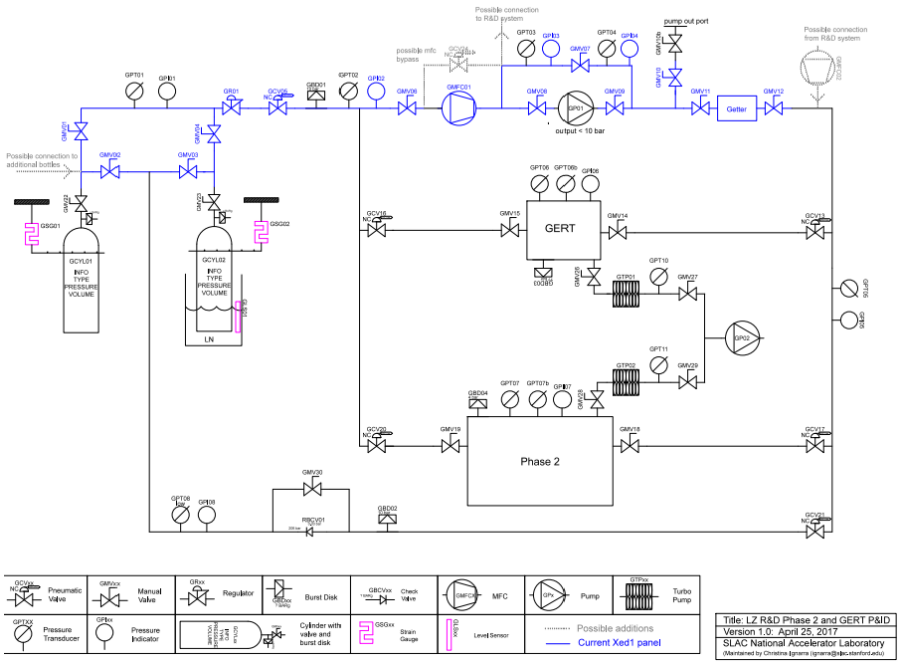
System Test Phase II - LZ

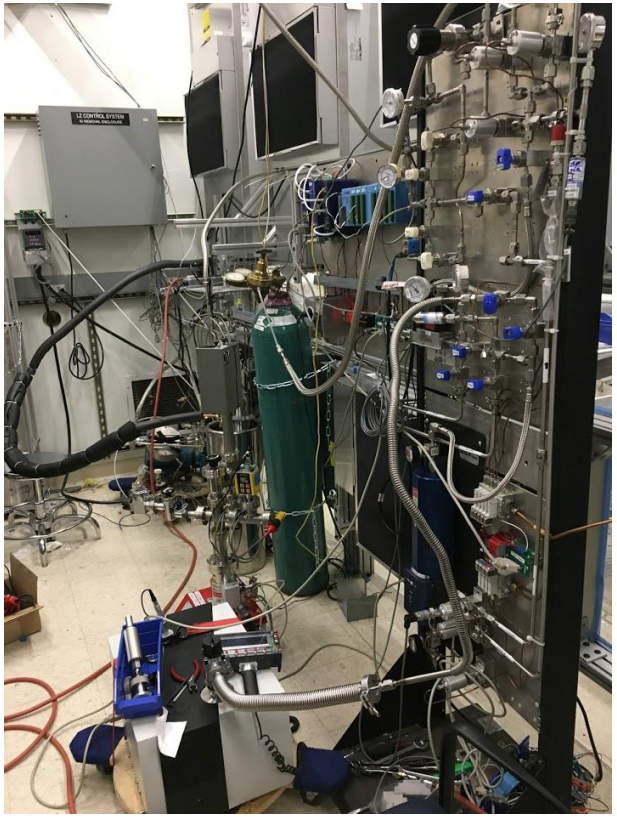
- Large Vessel designed to test the LZ field generating grids in Xe gas.



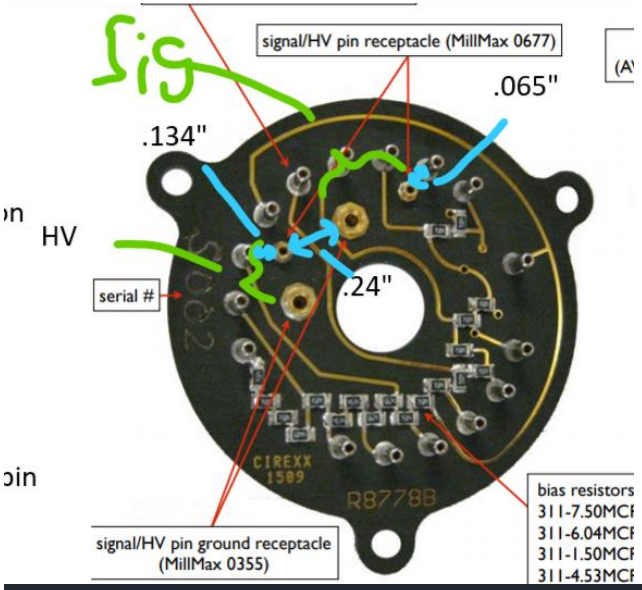
Gas Circulation

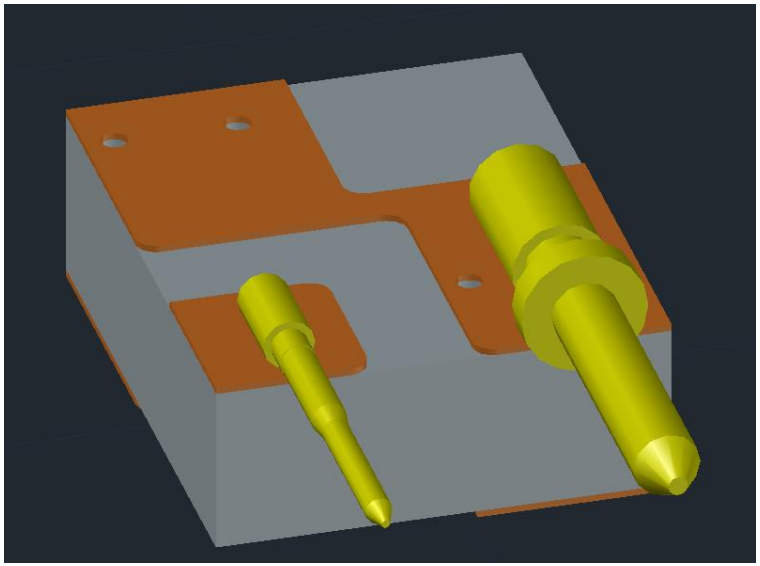
Assist in concept, design, and construction of Phase II/Gas Test gas system

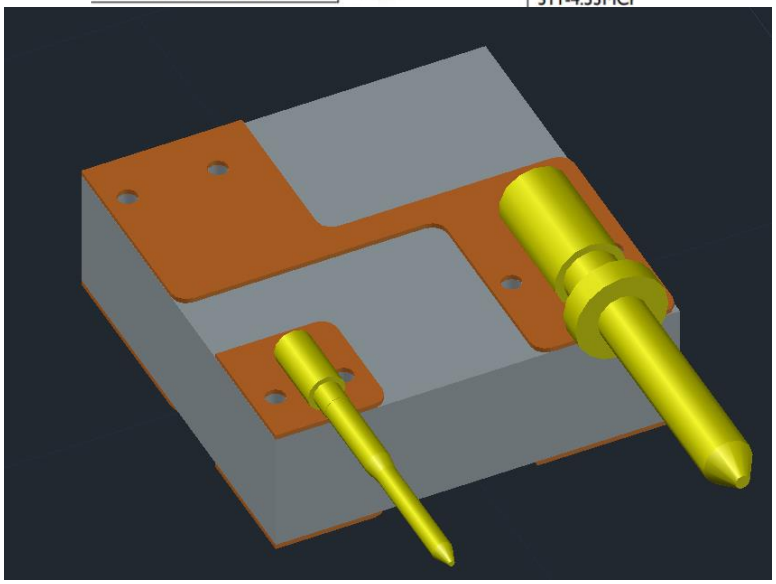


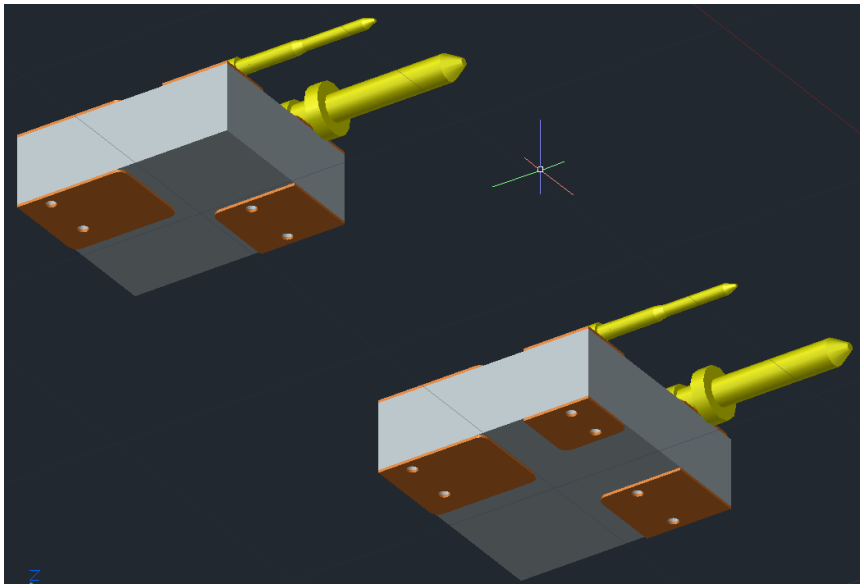


PMT connections



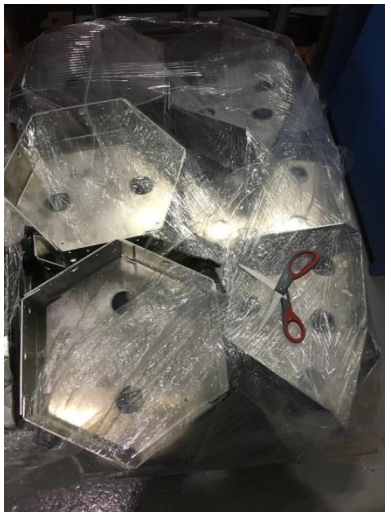


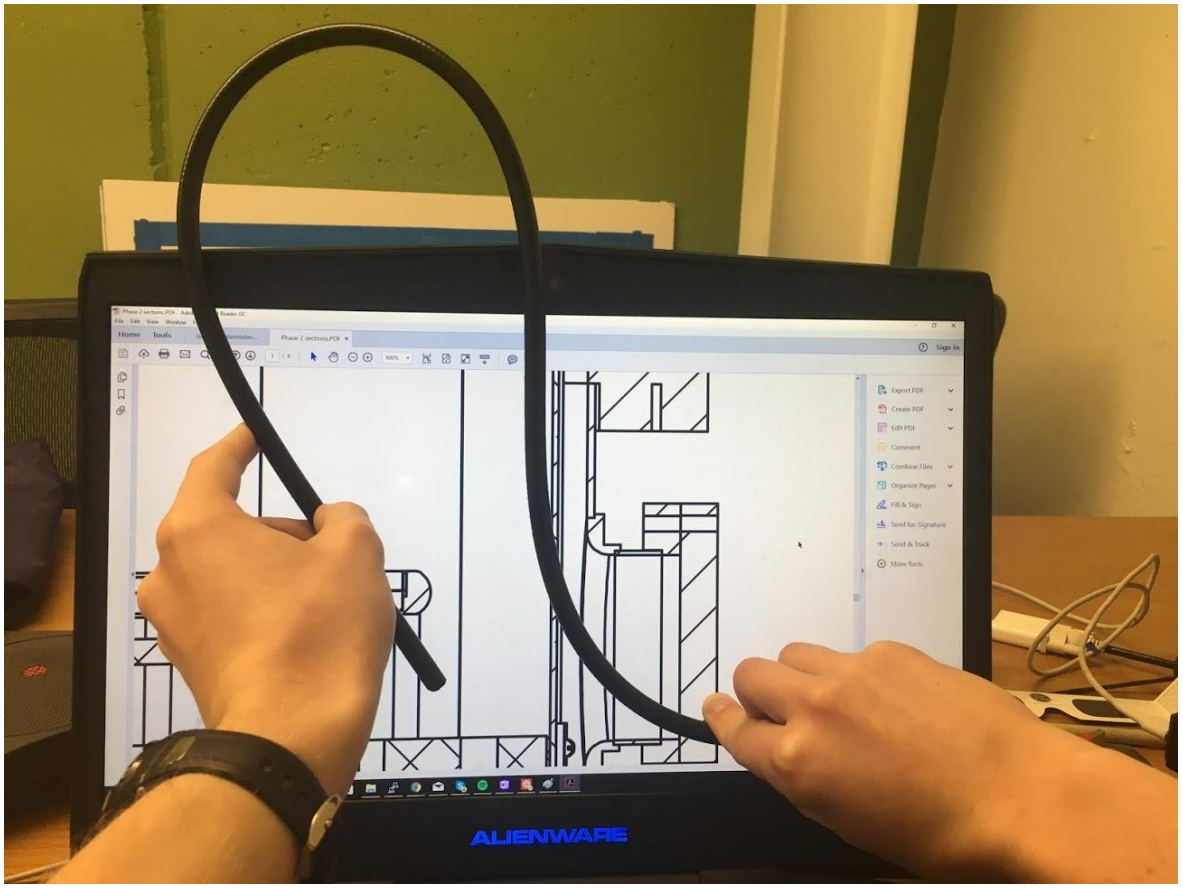




PMT array test assembly

- 43 bent sheet metal pieces
- Ensure they fit correctly and withstand manipulation and stress
- Thorough cleaning





Designing HV cable routes and terminations
to grids, rings, hoops, etc.

Breakout

- Test-build completed
- Measured, constructable
  - Need to cut some threaded rods shorter
- “Stand” built

Jib crane and Lid Placement

- Jib crane installed
  - Different location than originally planned
  - Middle of the room, alters where we put the lid
- Lid location decided upon and marked
  - Clears the Jib crane by ~1 inch and extends ~2-3 inches outside cleanroom on the side.
    - Curtain moves so should be fine

PMT base connector progress

- Prototype connectors made
  - Pins fit well
  - Quite robust
    - Plugged and unplugged ~15 times
    - Tried wiggling the individual connectors
- Steffen currently milling final connectors

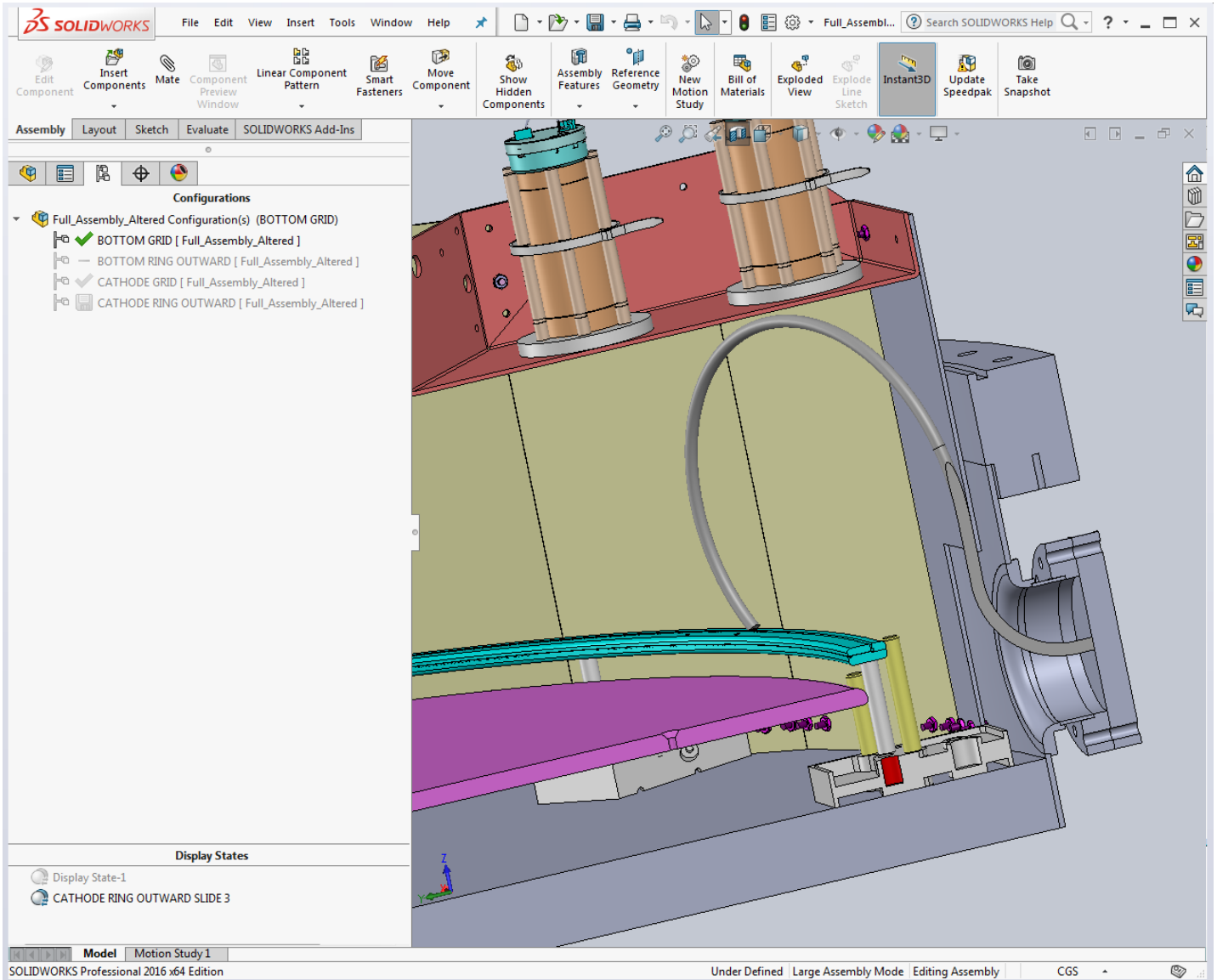
Grid HV cables

- Need to determine locations to connect cables in each scenario
  - Requires cables of the same length each time
- Got solid works model from Brian and got a primer for how to use solid works from Alden

Sending stuff to Madison

- Finalized connector design for steffen
- Got final PMT base connectors
- Assembled materials
- Sent to Madison

Determining grid HV cable routing

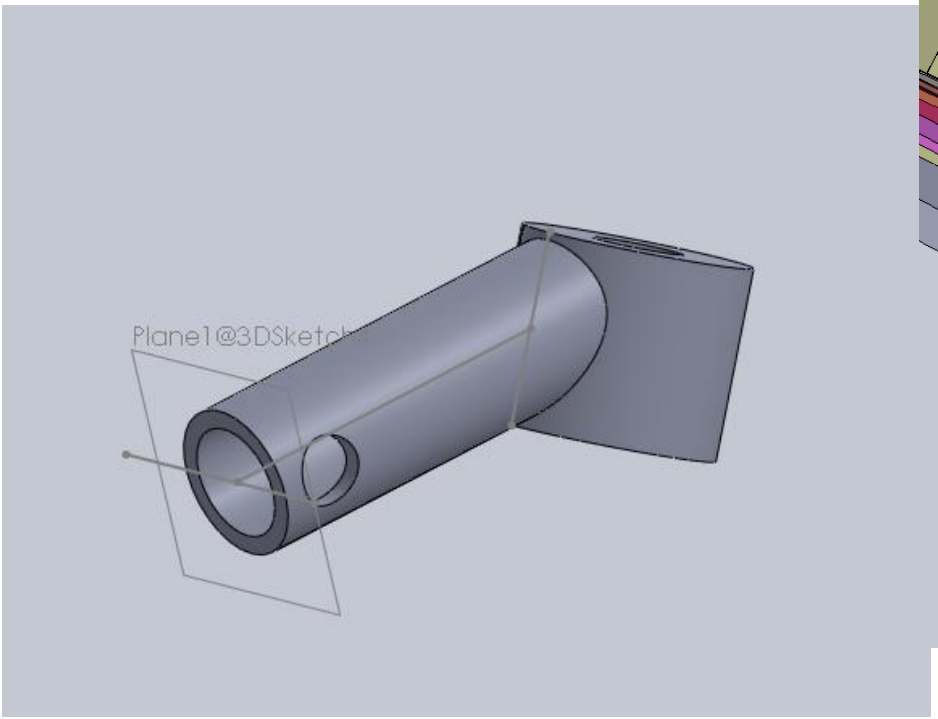


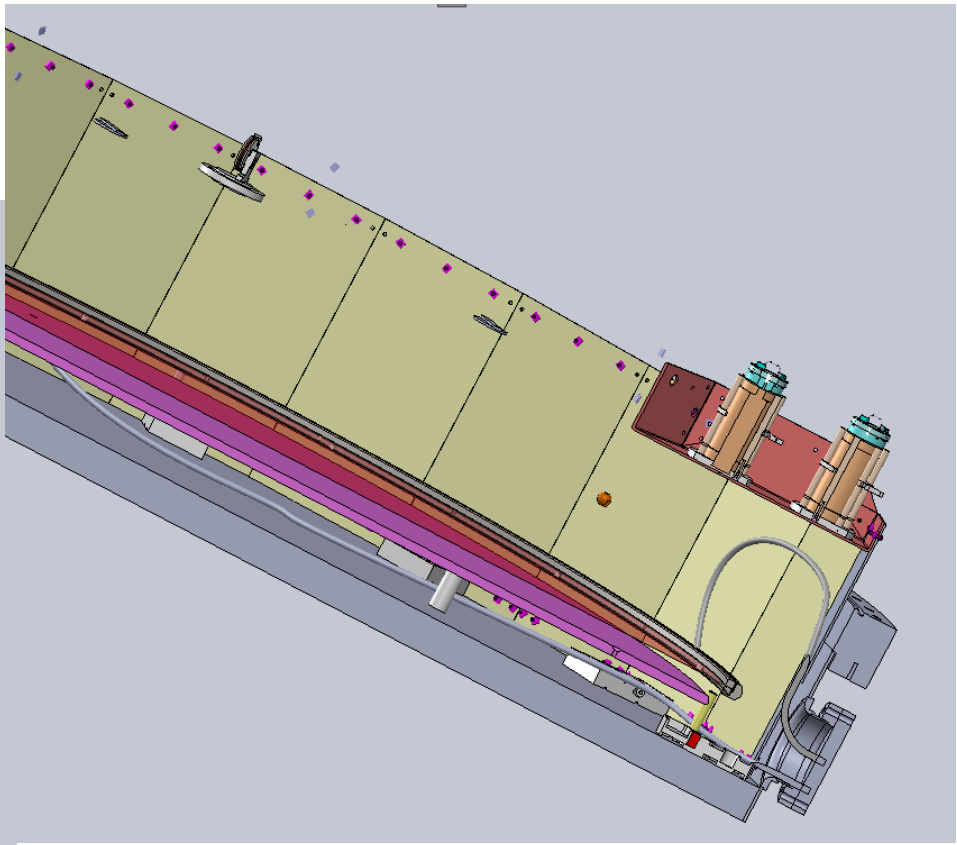
Grid Placement discussions

- Need to keep it ~~secret~~ safe
- Need to keep it clean
- Need to satisfy rigging safety requirements
- Box needs to be used for more than just this purpose
- Tons, tons more.

Making HV Connections

- Connectors for attaching HV to Grid/reflectoro plate
- Pathing for cables

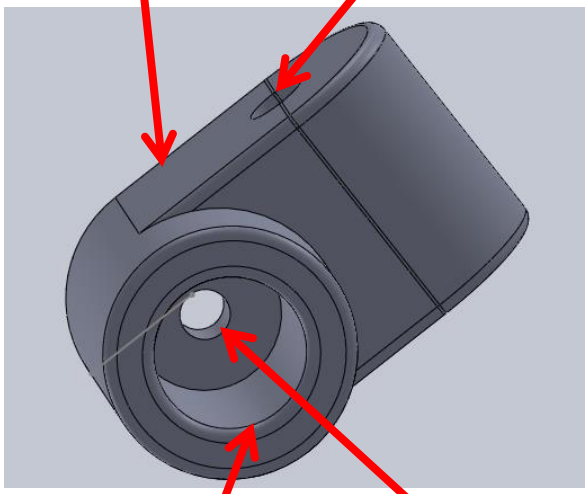




Bottom Reflector Plate

Reflector Plate contacting surface

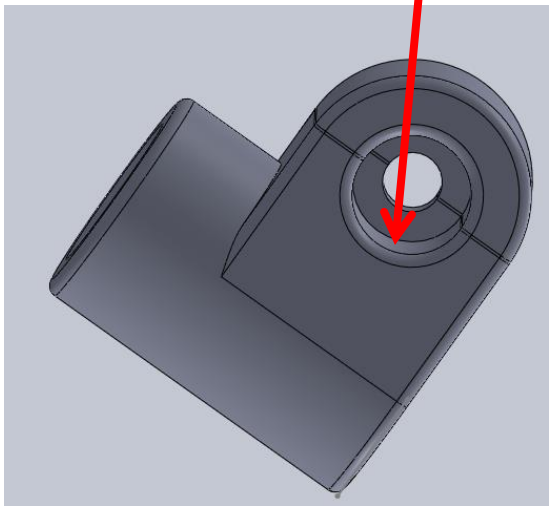
Through hole for 1/4 -20 screw to Refl Plate

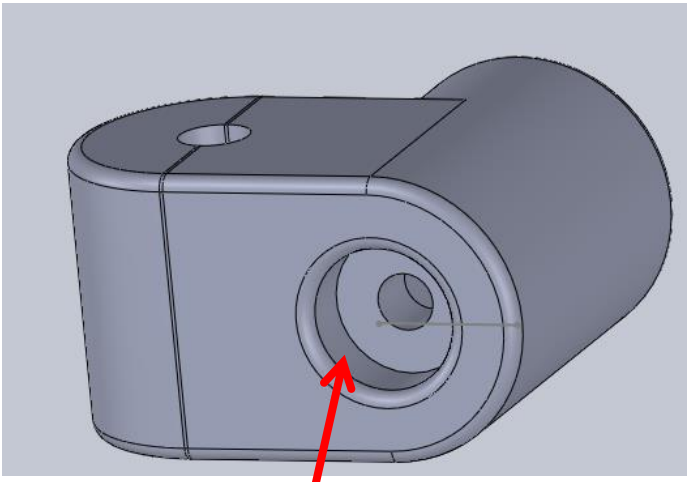


Diameter Matched to Cable tip metal piece

Through hole for 8-32 screw to cable tip

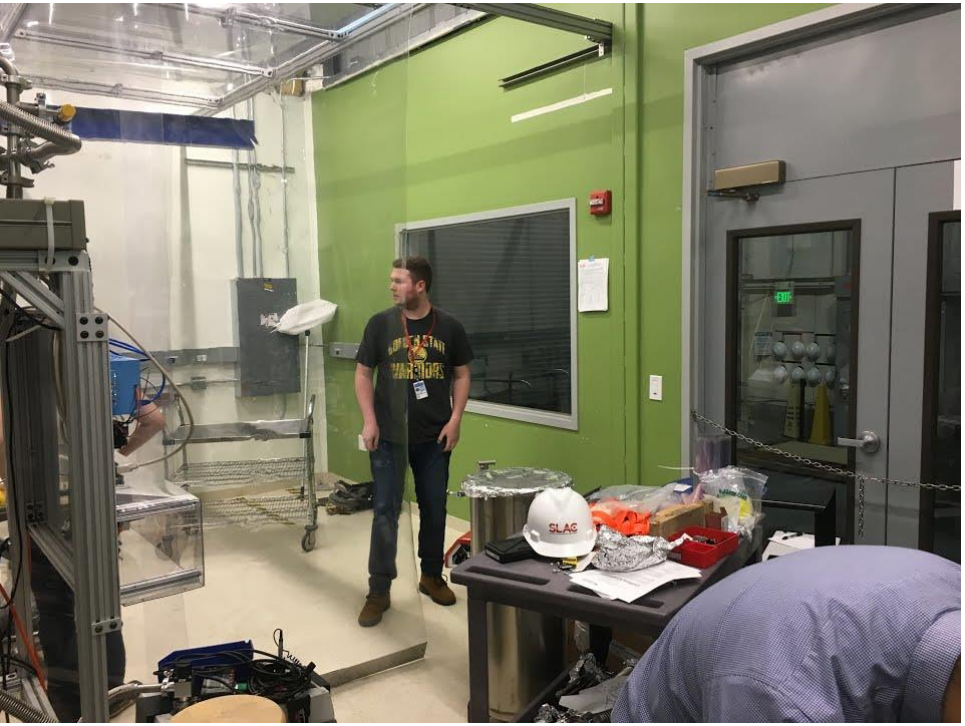
Reverse side of ¼-20 hole counter bored to hide screw back





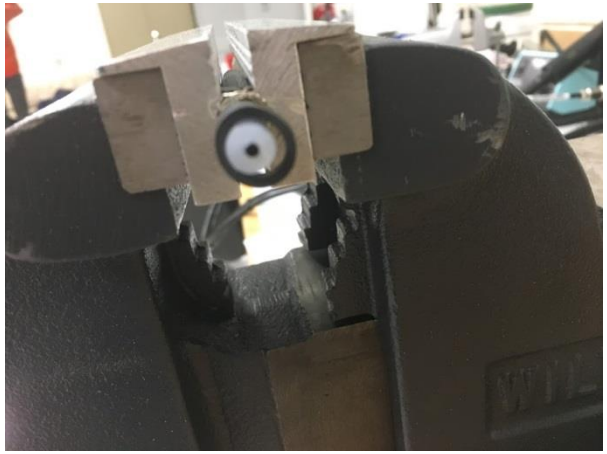
Reverse side of 8-32 hole also counter bored to hide screw back

Clean Room Cleaning



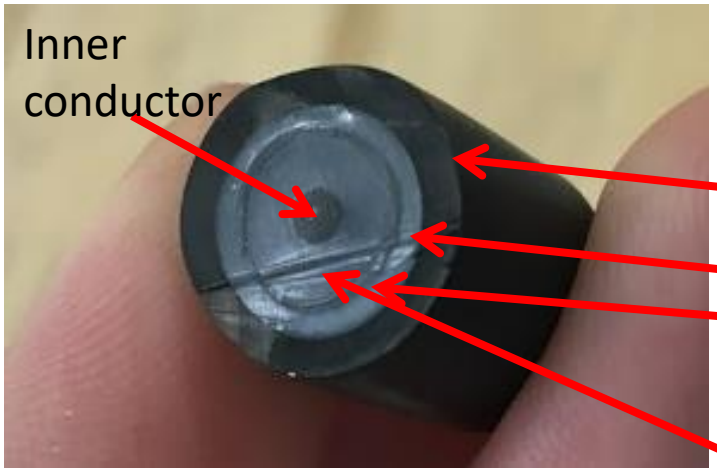
Still Cleaning!

Testing the HV heatshrink



Doesn't fit ☹

Put an intermediate layer…
Kinda melty…



But concept seems to work.

Resistive heat shrink

"Padding" heat shrink layer

Solidified melty-goo from padding heat shrink layer

Insulating layer