

DUNE-SP

Interface Drawings Status

November 7th, 2019

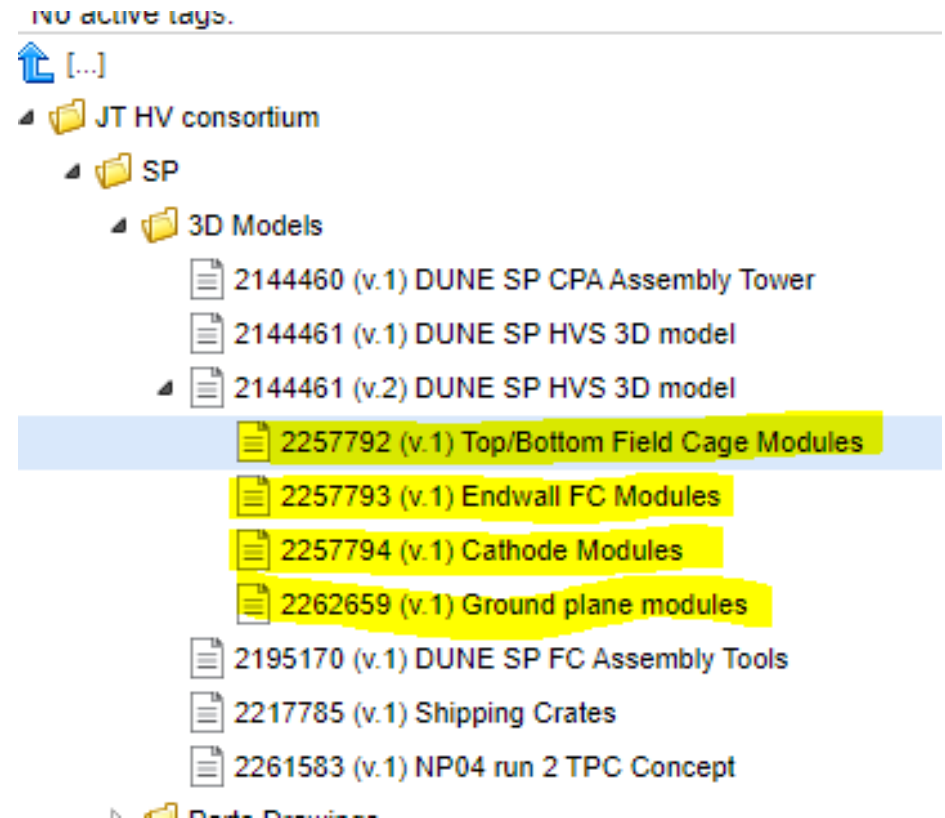
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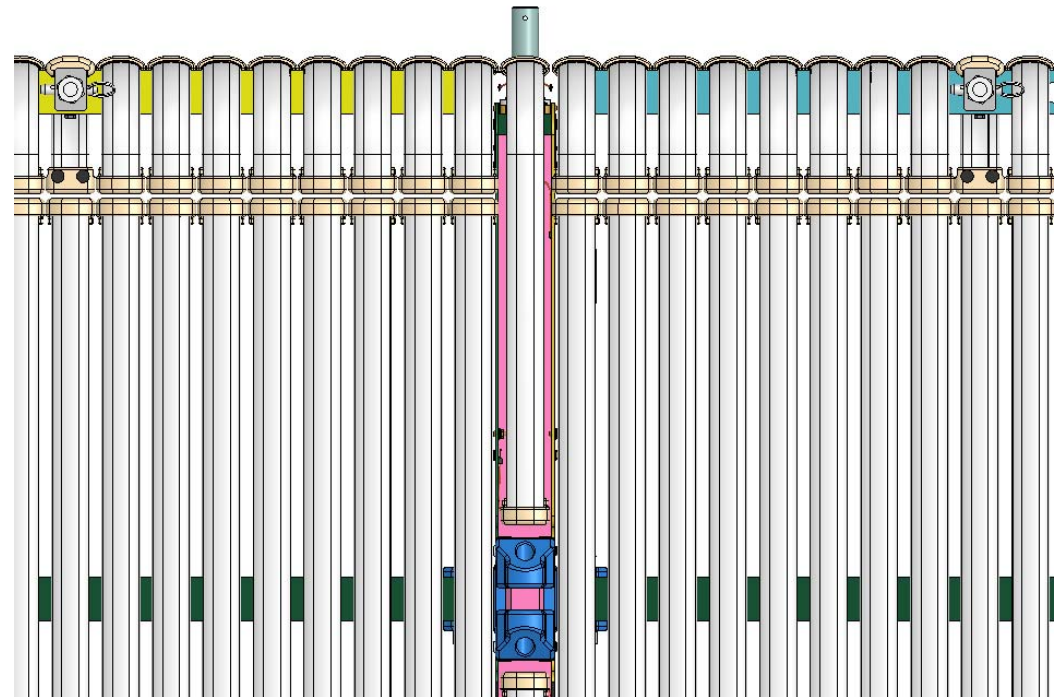
Models Received

- On October 25th, 2019 HV models were received via EDMS.
 - HV refers to this as “baseline”. Everything previous is called “TDR”
- Estimate weights for “baseline” are received

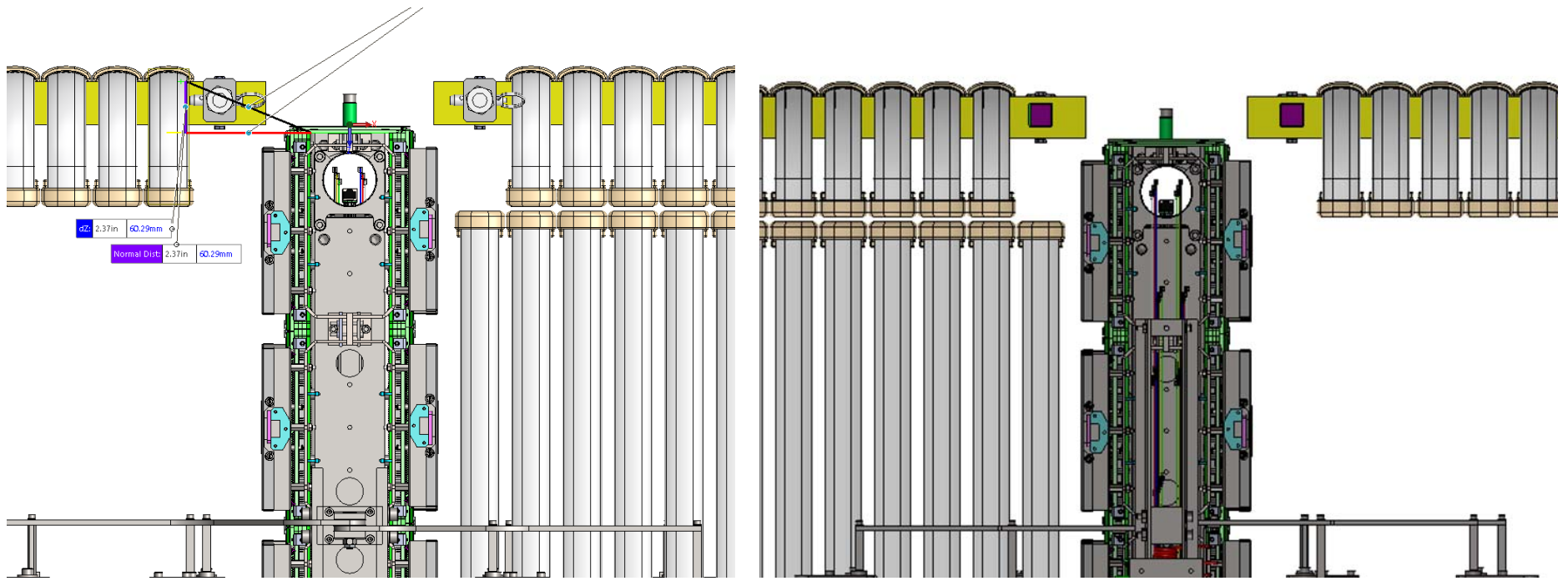


Consortia to Consortia: SP-APA to SP-HV

- Placing the row 01 CPA assembly in line with the end wall is shown at right.



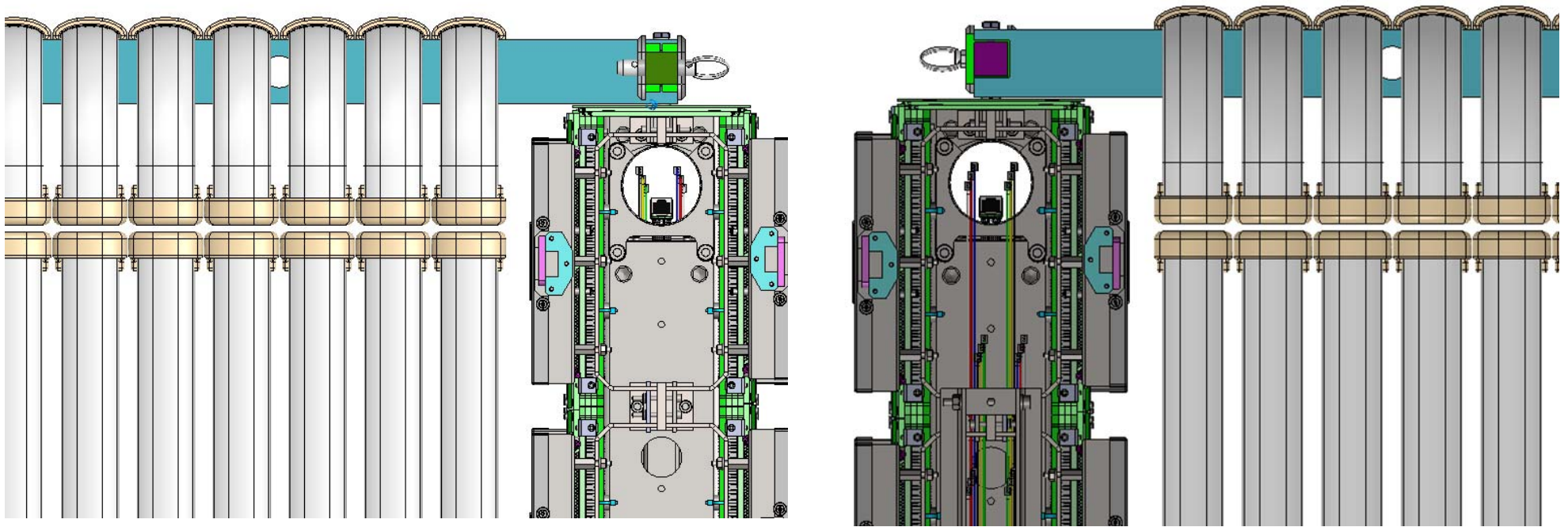
Longitudinal Direction, HV wrt APA



- Top View, middle APA Pair, Row 01
- Normal distance between end wall profile and APA active area measures 60.3mm

- Bottom View, middle APA Pair, Row 01

Longitudinal Direction, HV wrt APA

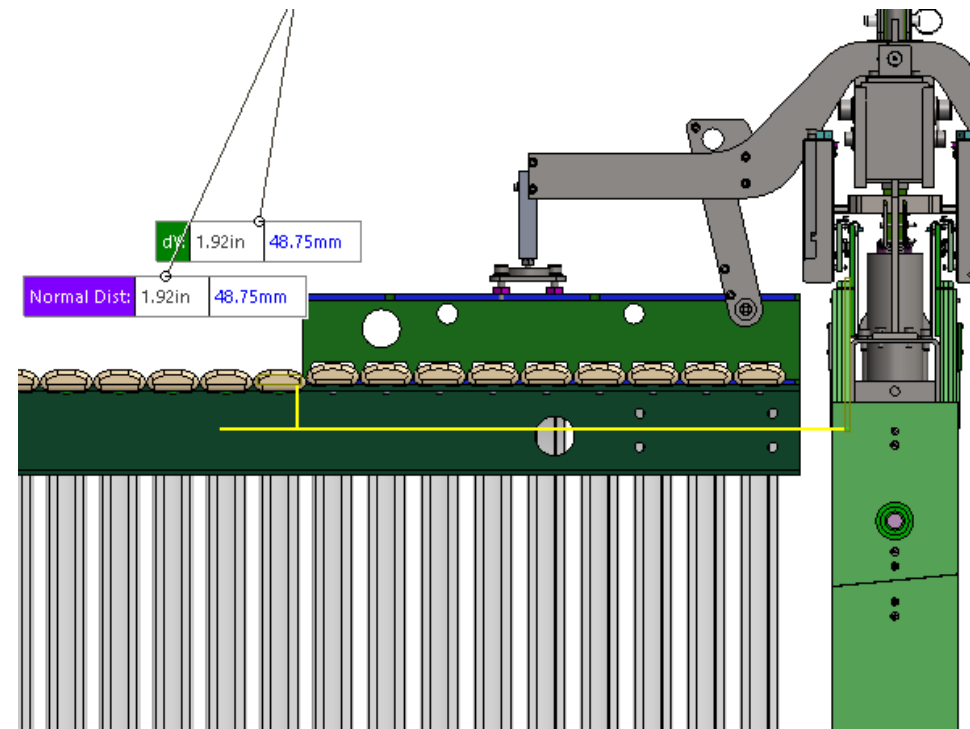


- Top View, South APA Pair, Row 01
- Normal distance between end wall profile and APA active area measures 60.3mm

- Bottom View, South APA Pair, Row 01

Elevation of HV wrt APA

- HV: In elevation, the design distance between top field cage and bottom field cage as measured from inside profile surface is **12,100mm**
- APA: In elevation, the design distance between the upper bounds of the active area and lower bounds of the active area is **12,002.5mm**
- The elevations will be centered with the difference split
- $(12100-12002.5)/2 = 48.75\text{mm}$
- This distance is a minimum.
- Note that in these models the field cage profiles are not coplaner. Near the APAs the distance is greater and this is acceptable per Bo Yu



HV to CAL: Laser Periscopes

- From ICD there are three potential positions in the SP cryostat. The detector below these positions is slightly different.
- The ICD is a good starting point to build upon.

Hardware:

The hardware interface between Calib and JT-HV has the following main components.

1. Locations of laser ports and design of field cage (FC) openings for lasers (SP-only):

Figure 1 shows the calibration ports aimed for the ionization laser system above the SP TPC. Accommodations will need to be made in terms of FC openings to create entryways for the laser periscopes.

Position 1 interface: The plan is to simply shorten a few profiles on one side of the FC module as shown in Figure 2. In terms of production, the plan is to fabricate a special set of FC profiles with non-standard lengths by the “factory” and shipped to SURF. These special modules will be clearly marked in storage. All FC modules are assembled underground.

Position 2 interface: In the case of position 2, the plan is to cut the profiles on FC module into long and short sections as shown in Figure 3. The long pieces are mounted on the I-beams as usual. The short pieces are supported locally by the uncut profiles. A special R-divider board is under consideration to be used for both mechanical support and electrical connections. This divider, and the one it is connected to in parallel must have double per tap resistance. No change to the neighboring module is needed. Compared to a standard module, this type will have a slight cost increase in M&S and labor.

Position 3 interface: In the case of position 3, the plan is to cut the profiles on FC module into two sections as shown in Figure 4. Both sections are mounted on one I-beam, and stabilized by special double value R-divider boards. A small cost increase similar to the previous design is expected.

AOB

- Next week (Nov. 14th) we'll hear from CAL on laser periscopes. (they could not attend due to meeting conflicts today)
- Prep work for APA electronics review in two weeks?
- APA position naming convention, next week