

Hall A Target

GMp Meeting Oct 4, 2013

General Maintenance

- Replace all safety reliefs with ASME valves. (working)
- Upgrade CAD models. (working)
- Replace/rebuild all fan motors (working)
- Replace all temperature sensors (complete)
- Replace all wiring (working)
 - Internal wiring upgrade to thicker wire
 - external cable connections same for each hall

Upgrades

- Remove solenoid valves from gas panel (complete)
- Remove VPT pump/purge panel.
- Replace all loop plumbing (complete)
 - New drawings
 - New hose sections
 - New heater sections (tees with feethrus)
- New heaters (working)
 - Heater/supplies will be same as Hall C
 - New heaters will be in loop (complete)

Current Request (our understanding)

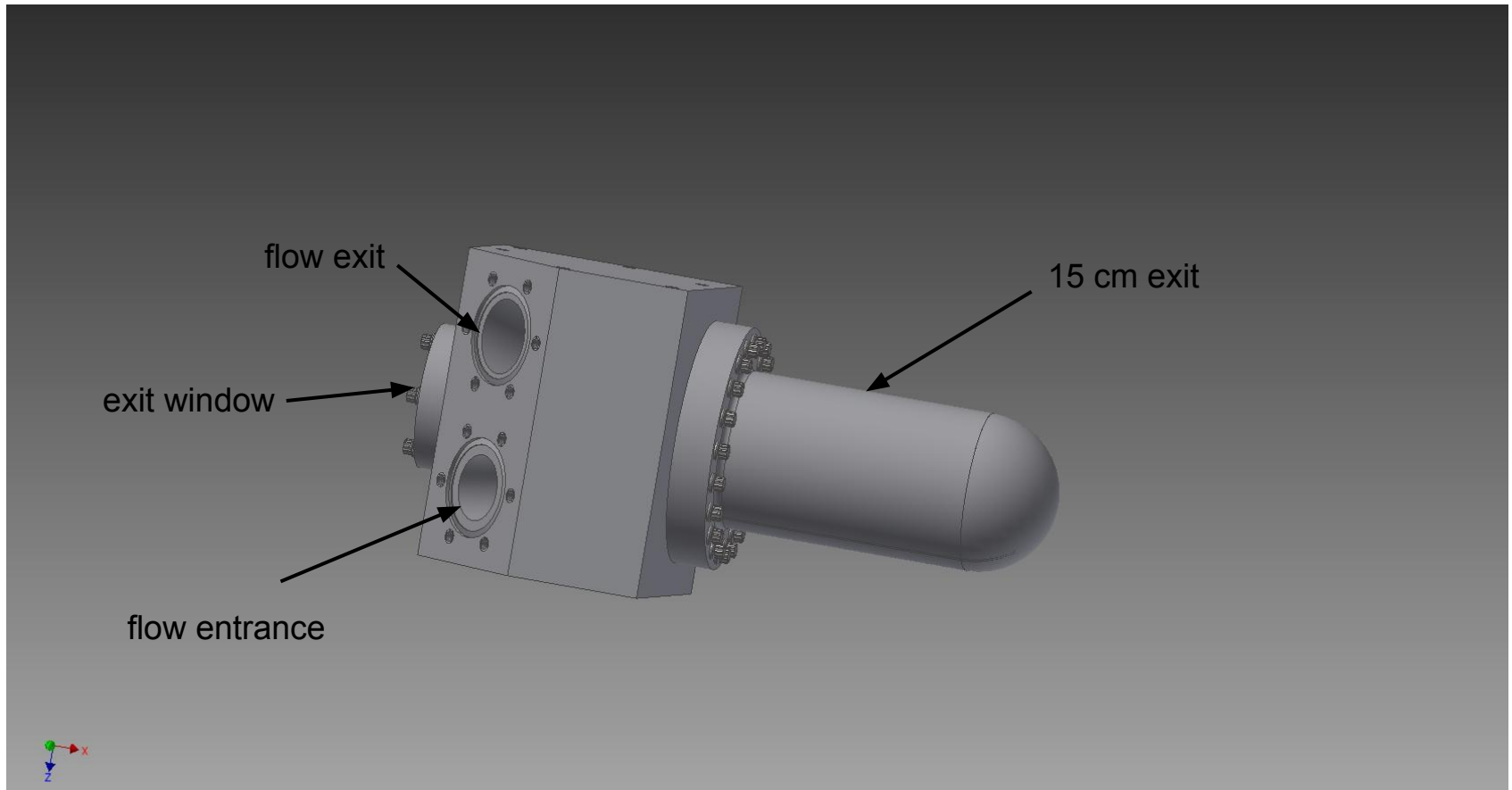
- 15 cm cells
 - Use larger 3 in CF cell
- 3 loops
- LH2 only
- Standard Optics Target
- Standard Dummy target
- Standard solid target ladder
 - 5 positions
 - Empty
- Work for both GMp and DVCS
- Special pointing target is acceptable but must be interlocked to target motion

Special Pointing Target

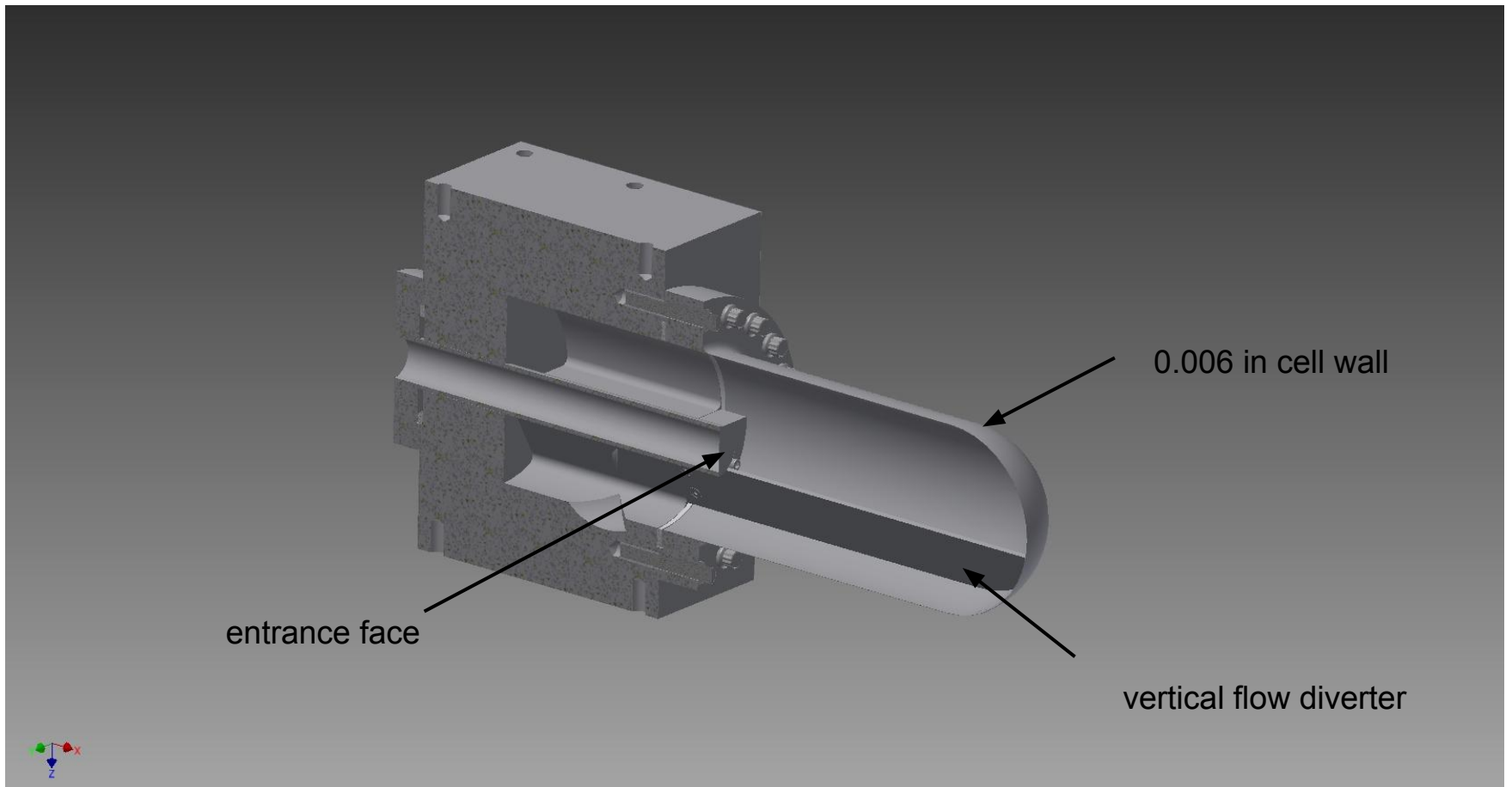
- Design is complete
- Parts are here (minor exceptions)
- Assembly is underway
- Will have to be interlocked to standard lifter

New 3 in Cell

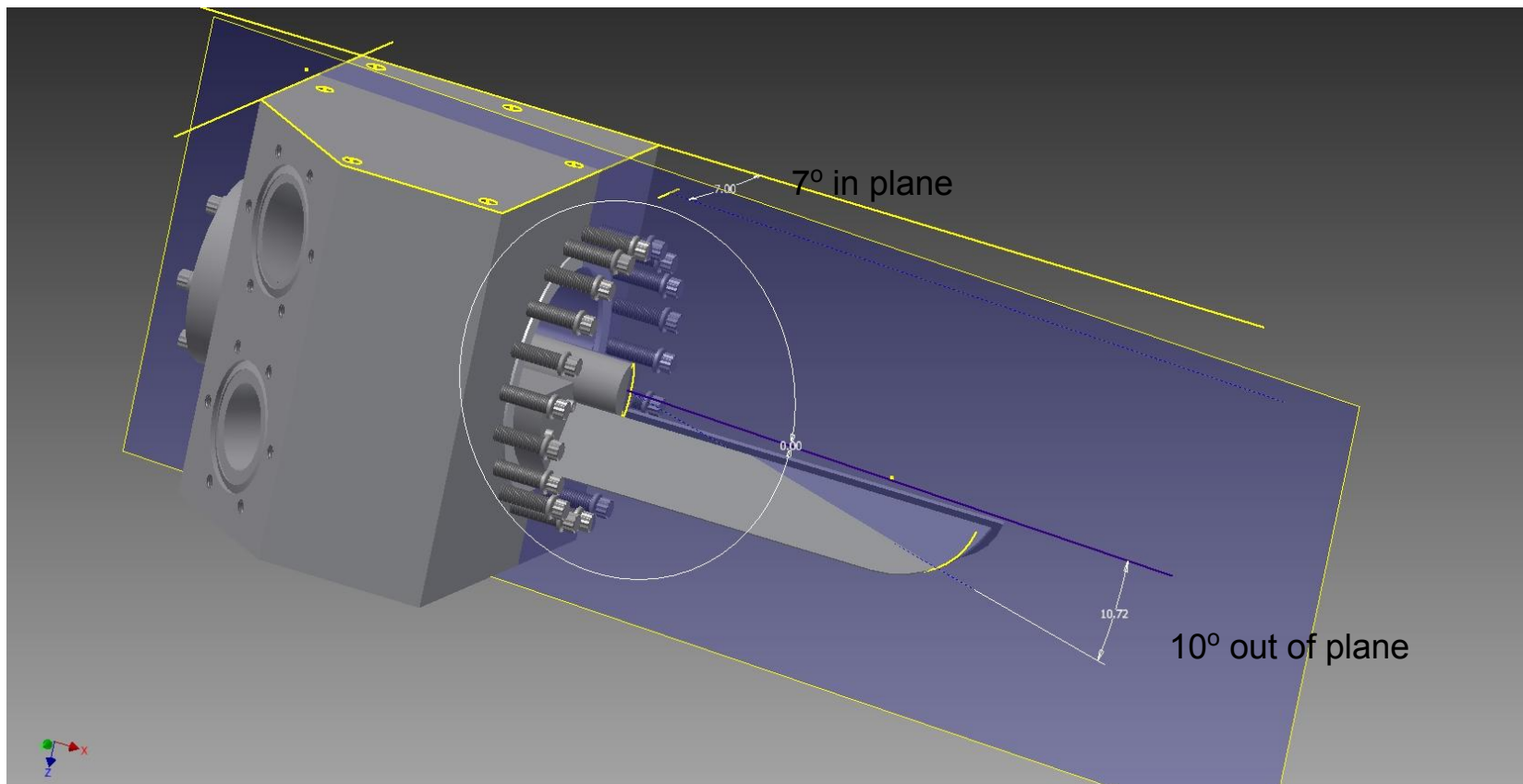
- One cell per loop
 - 15 cm only
- J. Brocks flow diverter design
 - Diverter is on bottom of cell
 - Flow feeds from bottom not side
 - diverter is not symetric
- Should allow for out of plane
 - at 7° in plane angle
 - $\pm 10^{\circ}$ out of plane
- Cell is 15cm long
- Cell wall is 0.006+ inch thick
 - Thinned at exit



Cell/cell block assembly



Section view

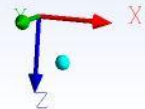
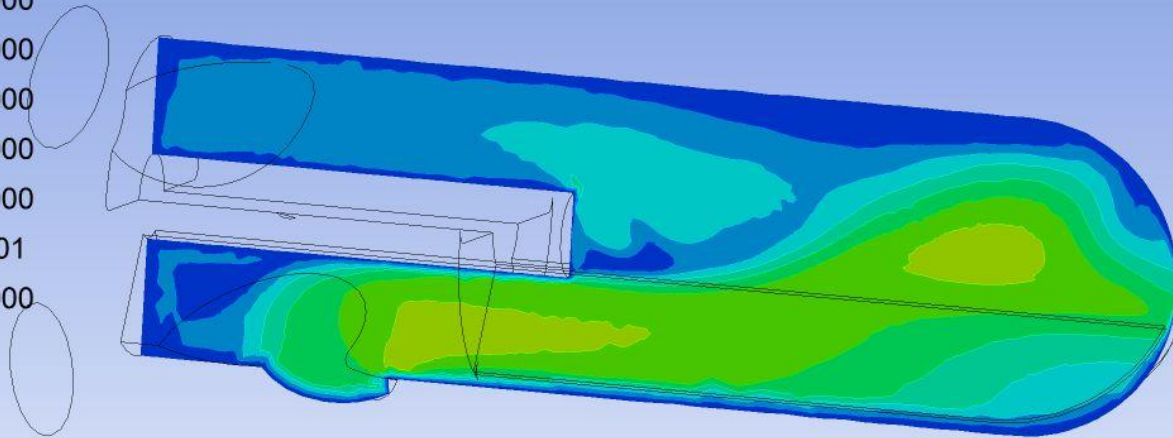
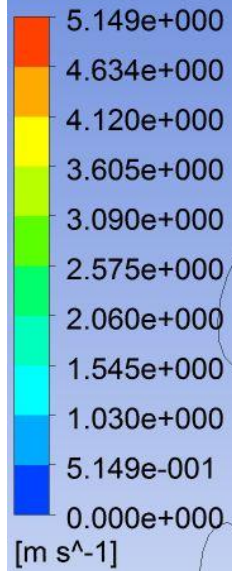


out of plane

Flow modeling

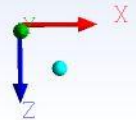
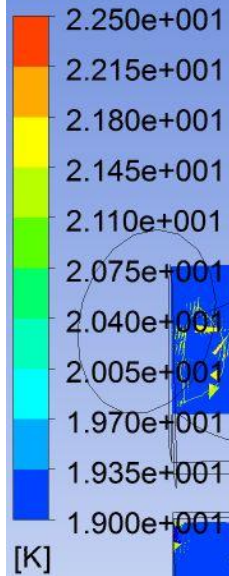
- Assume pump can supply 2 l/s of H₂
- Beam current max is 50 μ A
- raster is 2x2mm²
- Target temp is 19K
- Beam power load
 - ~ 5W on each window
 - ~250W in H₂ fluid

Velocity
Contour 2



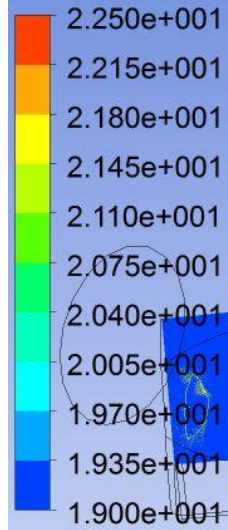
straight flow diverters V (m/s)

Total Temperature
Contour 1

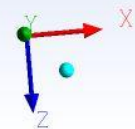
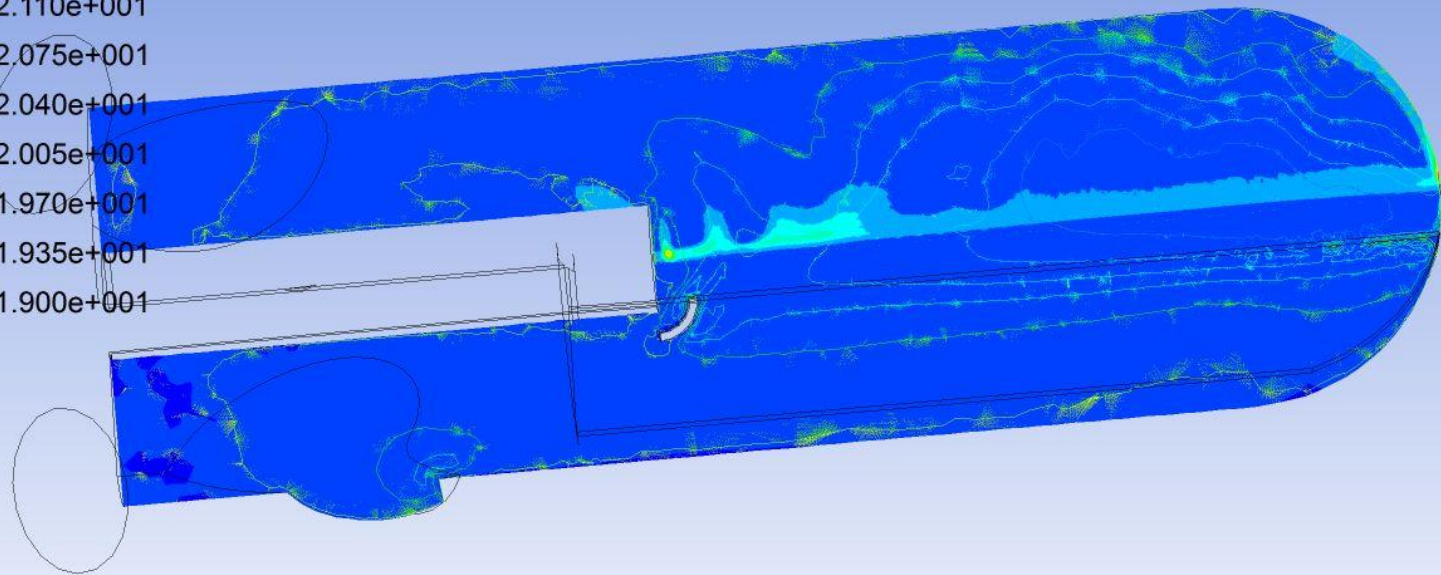


Tapered flow diverter T(K)

Total Temperature
Contour 1



[K]



tapered flow diverter with scoop T (K) overlayed on V contour

Summary

- Number of maintenance/upgrades have been performed
- New cells hopefully will accommodate both experiments
- Major tasks left
 - pointing target
 - wiring upgrades
 - cell/block completion
- On schedule to complete work for Feb run