Notes From Hall D Tagger Magnet Design Review

1. Double check 1006 permeability curves. May be inconsistent in TOSCA and ANSYS
2. Need to conduct full error imposed resolution analysis
3. TOSCA field profile needs integral fields
4. Review 1% global field uniformity requirement. May be too loose.
5. Committee recommended coming up with a calibration method for tagger rather than requiring tight specs. Use variable energies of electron beam
6. May be advantageous to machine one pole flush with the yoke steel and let the other ride.
7. Magnet steel should be vacuum annealed or in argon. Otherwise, the permeability may change over time. (Ideal in Chicago may have vacuum anneal equip.
8. Nickel plating on entire pole not necessary, but if cheap ok.
9. Tonox in resin for coils should not be used.
10. Use 316L (not 316LN Hard to find).
11. Determine if NMR feedback is actually required.
12. Revisit double pancake design for coils. The thermal issues are not a problem at low delta T.
13. May be a good idea to preassemble vacuum chamber and poles in test lab prior to installation.
14. If we reduce to ¼ o-ring, we may be able to remove compression bolts.
15. After all holes are in steel, run back through ANSYS for a look at saturation effects.
16. Committee believes our engineering support estimates are low by about 14mw.
17. Need to add $100K for coils.
18. Estimate for magnet may be $300K too low. ($1.25M needed for complete project)
19. Need to show that the magnet geometry is optimized.
20. Can tolerances be increased (if calibrating)
21. Generally cost $1.50 per pound for 1006 magnet steel. $5/lb for completed magnet steel ($800K for 80T magnet)
22. See Tommy and Paul for actual recent costs.