preTDR Comments for Far-Forward DWG

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B0 Tracker

- “Missing specification and justification for efficiency, spatial resolution, timing resolution, material budget. ”
  - Specification straightforward to fill in, justification is a matter of citing other things
    - In particular “specify how what is “sufficient to deal with vertex smearing” and/or specific where this information can be found.” from F. Geurts
  - Not sure about “material budget” – this is an ‘output’ of putting together a detector that meets the physics goals and not an independent parameter. I guess only specification - not justification – applies here
- Missing description of detector layout, including dimensions, total number of modules, and total number of sensors/ASICs.
  - Some of this is straightforward to add, but layout is still dynamic (magnet redesign ← → detector element size)
- Missing description of detector module design, and associated thermal-mechanical analysis
  - Module → same as above, “thermal-mechanical analysis” beyond power consumption arithmetic need help
- Missing description of local and global mechanical support structure.
  - Also not yet finalized, but more info on what we do know could be added (better added by Yulia et al than Zvi et al)
- Missing detailed description of detector services, including total power consumption and cooling plan
  - Same as above and cooling needs input
- Missing description of detector module assembly procedure and schedule
- Missing detailed description of detector integration and installation procedure and schedule
  - Same as above and cooling needs input

B0 EMCAL

- Missing description of detector module design, and associated thermal-mechanical analysis
- Missing description of local and global mechanical support structure.
- Missing detailed description of backend readout electronics and data acquisition system
  - Will look at level of detail in similar EEEMcal section, can tentatively say we will overlap as much as possible and ref that section
- Missing detailed description of detector services, including total power consumption and cooling plan
- Missing detector module assembly procedure and schedule
- Missing detailed description of detector integration and installation procedure and schedule
  - Mostly engineering side comments overlapping tracker and same answer (lots unfinalized more input from Yulia et al appropriate)

RP and OMD

- **Many aspects of engineering design missing.**
  - Support and infrastructure components are currently only able to mature as the machine design matures (e.g. vacuum system).
  - Detector “staves” + readout has made progress very recently (last 2-3 months), and this will continue.
  - Cooling will depend on final ASIC power consumption, but work is underway (likely not ready for preTDR).
- **Various missing details on things that were assumed.**
  - Just ran out of time - will be updated by Dec. 1st deadline.
- **Figure 8.147: how much do the 140 um spatial and 35 ps timing resolution contribute to the momentum resolution, respectively? Do the spatial and timing resolution play a similar role in proton reconstruction? Since the beam effects clearly dominate over the detector resolution, how much room is there for a degraded detector spatial resolution, and timing resolution, respectively?**
  - Many talks on this subject + justifications (also from eRD24).
  - How to reference these things?
- **The text focuses primarily on the RP - what about the OMD?**
  - The core design elements of the detectors are the same → we will highlight the differences better in the text.
- **Many of the details for the justification of various details are on the Wiki - can we reference that?**

ZDC

- Similar overall comment about missing materials.
  - These missing components all exist, they just need to be updated in the preTDR.
- Most of the “references” for why we need certain things have come from studies presented at these TIC meetings.
  - How are really supposed to reference these things (same comment about the Wiki as before)?