**EDMS Document Review Following Presentations**

* Link to the APA documents guide and the document structure would be very useful, can the APA team make this accessible?
  + (the link in EDMS <https://edms.cern.ch/ui/#!master/navigator/document?D:101044723:101044723:subDocs> is incorrect and points to a database of QC)
  + If this is the intended document, it is outdated (<https://edms.cern.ch/ui/#!master/navigator/document?D:100329025:100329025:subDocs>), and having an updated version would be helpful to provide a guide to find the various EDMS numbers
* Availability of resources points to the same document for the overall projects (<https://edms.cern.ch/ui/#!master/navigator/document?D:101044971:101044971:subDocs>), is this deliberate?
* Can examples of the recorded data for APA #2 be provided (e.g. RTD mounting and wire tension measurements)? This would provide an example of the data and travelers that will be produced and recorded in the DUNE database once it is online.
* Can it be explained why no ESD protection is in the documentation when working on the PCB’s?
  + Attached is an ESD document on capacitors as it may already contain the relevant information

https://sh.kemet.com/Lists/TechnicalArticles/Attachments/74/1999%20CARTS%20ESD%20Concerns%20for%20MLCCs.pdf

* PCB drawings lack the clarification between the material being used (G10) and what is in the documents (FR4) and there isn’t clarity on the copper or laminate used (want to make sure this is clear and maintained throughout the production). Can this be clarified and brought to our attention the details on the specific materials the vendors will be using?
* Note from the APA transparency study (EDMS: 2116001 <https://edms.cern.ch/document/2116001> ) calls out that there is a discrepancy between Garfield and real data and will be updated with other tools.. There is no clear follow-up from this study. The wire positions in the Garfield study are incorrect and overly optimistic. The wire positions shown in the graphs do not seems to match the real wire pitch (4.667 vs 4.79mm). Grid is offset by 1/2 pitch. Most of the relative wire positions are in the most optimistic configuration favors electron transparency. Confusing captions on fig 7. Can this document be clarified and can you comment on why no further studies or updates have been done
* <https://edms.cern.ch/ui/file/2703979/1/8760Doc056_Wire_plane_spacing.pdf>   
    
  At what point in a UK factory (or U of Chi) does this process take place? Are there final survey operations prior to mounting protection panels? Perhaps pointing it out in this spreadsheet? I don’t think these are considerably time consuming tasks but getting them done at the appropriate steps would be good to document. If they were omitted by mistake, consider reducing the amount of time needed to install a conduit. Eight hours per APA is likely more than enough once you get good at conduit insertion.

* <https://edms.cern.ch/ui/file/2707598/1/APA_loading_into_transport_box_pptx_cpdf.pdf>   
  Consider adding the specificity of Upper APA vs Lower APA to this document. Can it be left to chance? Perhaps there are other documents that cover this information.   
  Do we have final designs for the hardware that connect an APA to its shipping frame? We were unable to find them on EDMS. We believe they’re referred to as “adapters”.   
  In general, a future update to this procedure could include photos.
* <https://edms.cern.ch/project/CERN-0000227447>  
  Within the “Tenders and contracts” folder on EDMS I’m wondering if duplicating drawings and procedures is wise. For example, within the frames folder I see that “Tender Supporting Documents” and “Tender drawings” contain drawings and assembly procedures in addition to other EDMS locations. Is this a deliberate decision? Perhaps utilizing an automated control within EDMS will prevent outdated information from being used. We didn’t hear the formal response when this was addressed at the virtual presentation.

* <https://edms.cern.ch/ui/file/2616161/2/8760Doc038_APA_G-Bias_Board_8760-197.pdf>  
    
  Can it be double checked that the assembly drawing against this procedure. The 4-40 fasteners mentioned in section 6.0 appear to have been replaced with metric fasteners.
* <https://edms.cern.ch/ui/file/2616161/2/8760Doc047_APA_Head_board_assembly.pdf>  
  When we look at a head board assembly drawing (8765004, 8765007, 8765001 to name a few), we find that note 2 of the drawing specifies a procedure we can’t find on EDMS. Is there a typo or simple explanation we are not aware of?

* Questions on the TDR and TDR update <https://edms.cern.ch/document/2612946>
  + G plane has one more wire than X? Figure 1.13 in TDR shows the staggering of the G wires. G-Plane wires (961) are one more than the X-Plane (960) and the table doesn’t reflect that
  + Missing specs:
    - resistivity of the CuBe wire at LAr. Tensile/yield strength at cold.
    - FD1 DSS beam is invar, according to Dimitar. TDR uses SS to calculate contractions. Can it be made clear which material was used in the documentation and specifications
  + TDR 1.2.5.3 regarding capacitors.
    - soft termination: claimed to withstand repeated temperature excursions. yet I heard the ProtoDUNE I CR board capacitors cannot be reused due to limited thermal cycles these capacitors can take. Can this point be clarified
    - Should we expect more updates to the TDR to include PDII production issues (broken wires, CR board)?
    - Linked interface document reference should be changed to EDMS (TDR 1.4)
  + Were PD1 wires from Little Falls Alloys? the vendor seems to have changed now and is not described in the TDR.

* Questions on EDMS structure doc (https://edms.cern.ch/ui/#!master/navigator/document?D:100329025:100329025:subDocs) compared to the models posted in EDMS, lists PTC and Creo but those aren’t found. Should we expect these to appear in EDMS?
* APA tooling needs a guide document to allow us to receiw the drawings from top down (similar to what was used in APA part numbers. Can this be provided?
* There are a few documents and folders which are blank in EDMS and we wanted to get a comment if this is deliberate. Following the spreadsheet <https://edms.cern.ch/ui/#!master/navigator/document?D:100329025:100329025:subDocs>
  + Under APA Tooling
    - UK Winding Machine,
      * EDMS Capo is empty
    - Comb Jigs,
      * EDMS Edge Lift Kit is empty
      * EDMS Platform is empty
    - EDMS Wire Tension Tester is empty
* As noted in an Email from Dan Wenman on 03/14,
  + Procedures that are on EDMS but not ready for review:
    - EDMS 2615587 Frame assembly procedure (needs changes in locating and clamping currently working with frame vendors on clamping details
    - EDMS 2703968 8760Doc062 APA Lifting - Install Un-Install to Winder (Needs some updates to text to reflect new winder support hardware. This is expected in a couple days.)
  + Procedure that should be uploaded in a couple of days:
    - EDMS 2616201 8760Doc007 Epoxy dispensing
  + Can you please confirm with the committee that we will be made aware when these documents are uploaded?
  + Can you also notify the committee when all the documents are “signed off”, so a final pass through of the official documents can be done (noting that many documents are still marked as a “working document”)
* There is some question on how a “non-conformance” report, its generation, and its association with an APA will be handled. The committee is seeking further clarification on this.
  + We note that there are likely different categories of “non-conformance”
    - e.g. You receive a board which is out of spec, the board is rejected and sent back to the manufacturer
    - e.g. A procedure is found to need modification because it results in some complication with the production (i.e. bumpers added to the ladders)
    - e.g. An object is out of compliance (snipped wire, some wires out of tension) but for some reason the object is kept (i.e. we don’t throw away an entire APA because its missing one wire)
  + It seems thus far that a non-compliance report is generated for each unexpected issue that is encountered during the production of an APA. Is it the intention to continue this practice during the full production? Or (and maybe in addition to) will there be one non-compliance report for each APA that captures all issues encountered during the production of that APA?
  + ·Are non-conformance reports that lead to the generation of an engineering or procedural change handled any differently?
  + Could we see an example of an engineering or procedural change request that is fully documented, passed through the full approval process, and implemented?

**Questions from Review Presentations**

* <https://indico.fnal.gov/event/53110/contributions/234092/attachments/151744/197577/2022-03-01-PRROverview.pdf>

Slides 19 through 23: Will I find the conduits assemblies (8760125 and 8760544) in this budget? I expect the cost is non-trivial.   
I was left a bit unclear on where the UK APA group’s dividing line exists on PCBs. Specifically, where do items added to the integrated APAs fall - inside or outside of UK APA’s scope?