

## Minutes of ProtoDUNE-SP Integration, Test, and Installation weekly meeting December 8<sup>th</sup>, 2016

### Attendees:

Roberto Acciarri  
Christos Touramanis  
Flavio Cavanna  
Cheng-Ju Lin  
Jack Fowler  
Serhan Tufanli  
Matthew Worcester  
Bill Miller  
Linda Bagby  
Karol Hennessy  
Andrea Zani  
Francesco Pietropaolo  
Stephen Pordes  
Alan Hahn  
Paola Sala  
Ettore Segreto  
Zelimir Djurcic  
Anyone I forgot: sorry!

### Meeting:

Started with slides from Roberto about the schedule of activities happening at CERN in the 2017 and early 2018. About the Vertical Slice system, Karol commented they would like to start its installation at EHN1 before the beginning of April, if possible. In addition, they are planning to have a “mini slice” system active even before that date, but placed in a different building.

There were two comments about the statement the temperature sensors installation has to happen before the first APA enters the cryostat. The first from Stephen, asking to which T sensors this statement refer to – the wall-mounted ones or the rod-mounted ones. (It indeed refers to the wall-mounted ones). Second comment was from Jack, asking that any information about these sensor – characteristics, where and how they should be mounted, number, etc- should be communicated as soon as possible. Jack informed the drawings of the inside of the cryostat are now available and can be used to help defining the mounting positions and procedures.

Question from Stephen: will the APA tests performed at CERN (both warm and cold) be trained at the production sites? Answer from Christos: there will be warm and cold tests at both production sites, but they will not be exactly like those performed at CERN, a major difference being that the cold setup at production sites will have the APA lying horizontally, while the CERN cold test will have the APA hanging vertically.

Ettore asked for an estimation of the time necessary to cool down and warm up the Cold Box. Answer from Andrea: it is not defined yet, but it should be at max 1-2 days each.

Statement from Bill about the TPC assembly procedure: moving the bridge beam around, it will be possible to assemble the CPAs in between the APAs assembly/test, rather than do all the CPAs after the first three APA. This would give us some flexibility in the schedule.

Comment from Stephen: the times allocated for each task in the schedule should be discussed with the relevant groups, to make sure they are reasonable.

At the end of the presentation, Linda remarked the importance of quickly remove or keep track of all the possible shorts between building and detector ground. She pointed out to a temporary staircase put in place to access the roof top. Her suggestion is to flag it, and any other short, with a ribbon (or any other kind of label), to make it easier to remove all the sources of shorts later on. She also said she is actively working on the design and specification of the “shorts monitor” device. She is in contact with Marzio to comply with CERN requirements and she is working to have it in place before the cryogenic piping work starts.

Followed a presentation from Bill on the status of the tests at Ash River. No comments received. Bill reminded there will be a working meeting in Ash River on December 15<sup>th</sup> – 16<sup>th</sup>, to go over the Ash River tests and installation procedures.

Last presentation from Andrea, on the Cold Box status. Following the concern of Andrea about how to handle the CE cables connected to each APA inside the Cold Box, Jack asked Bill whether they have/plan to have mock-up cables available for the Ash River test setup, to exercise the cable handling during installation. Bill said they hope to get some spare cold cables to test them, at least a full FT set of cables. There are some cables in Ash River which could be used, but are not of the same kind, so he would prefer to have real ones instead.