**Dec 2, 2021 Electronics Integration Meeting**

Meeting notes:

* Attendees:

**Cindy, Abbey, Alan, Sasha, Nikolay, Everardo, Faiza, Howard, Jeremy, Lane, Trevor, Steve H, Matt M, Andrew M, Jay Jo, Armin and Ting**

* News:
	+ **Installation of first piece of 2x2 detector started this Tuesday. Crew almost done installation of the module rail support. Next is bookend then first Minerva module set.**
	+ **We decided to start electronics installation after first module set. Steve H to told Tom to stop after placement of the first modules.**
	+ **Clean AC electrical work in LArTF to start tomorrow. Cindy and Linda to coordinate effort with Dave Featherston.**
	+ **To access LArTF, please contact Cindy first**
	+ **Lane and Andrew continue to work on collecting design documentation of on-detector electronics in preparation work for ORC. Hoping to start the ORC request in weeks**
* 2x2-Minerva electronics installation and checkout
	+ DAQ preparation: Lab F test and underground installation
		- **Software installed. Geoff is to start testing next week**
		- **Geoff has prepared a separate DAQ server rack for underground. Linda and Geoff to work out the rack builds before transferring it underground.**
	+ AC work for 3-phase 208V
		- **Procurement reqyest for AC electrical work for MINERvA readout electronics wasapproved, buyer is yet to be assigned. This is sole source for Leyden electrical. We are pushing to get contract awarded ASAP.**
		- **Hope to start panel and outlet installation in weeks**
	+ LI and DAQ rack preparation and ORC
		- **Howard started ORC request documentation with helps from PPD engineers**
		- **Howard asked Jamieson Olson of the monitoring inputs to BiRa RPS. Only fan failure was monitored during MINERvA operation. We decided to NOT use BiRA RPS. Instead, all Minerva racks are to be fitted with ND RPS with direct connection to FIRUS**
		- **Paul Rubinov is helping MTM card documentation and related engineer files.**
		- **We are hoping to get the ORC review started next week**
	+ Fiber cleaning process
		- **Faiza reported test result of cleaning the LI and optic fiber with cleaning agent, wiper and foam swab**
		- **Pictures before and after cleaning are available from her slides on the indico. Please look them and give her feedback**
		- **She intends to use wiper and foam swabs to clean fibers. She wants to avoid the use cleaning liquid.**
		- **Faiza, Howard and Geoff also tested the network fuse panels on the 14th floor. All look good.**

* Rack builds for 2x2 and LV DC PS options
	+ **Jeremy shows a rack build design for the three ArgonCube readout racks**
	+ **They are all fitted with ND RPS and proper AC switches.**
	+ **Geoff pointed out we need to locate smoke sensor in the rack**
	+ **The rack #1 has drift HV supplier (Spellman eSL PS) together with HV filters, two VME crates for VGA/DACs. We feel it is a bit crowded as this rack is to be placed on the access platform close to cryostat. It will be better to place the Spellman PS to a different rack**
	+ **We had a lively discussion on use MPOD MPV4030I for PACMAN 24V/2A power lines.**
	+ **Armin states the next version of PACMAN will have larger current but not likely go beyond much above 2A. MPV4030I can supply 5A per channel. He thinks this is sufficient.**
	+ **We also like the interlock function of the MPV4030I which can interlock two channels as a group. This fits our situation perfectly as two PACMAN boards are needed for a TPC module. We will be able to perform interlock on a TPC-by-TPC basis. The input of interlock will likely from monitoring signal of cooling fans or some safety signal related with PACMAN or the fan.**
	+ **Linda also pointed out that we should design the power map the way we can isolate TPC from each other. For example, we do not use same MPV module to power PACMANs from different TPCs**
	+ **Armin suggest MPV4030I to use only two channels for PACMAN. The other two channels left can be used to power other type of boards like the RPi boards for sensor readout**
	+ **Jeremy, Linda and Armin will work out a scheme of using MPV to isolate TPCs from each other**
	+ **There are two choices for the MPOD crates: 4-channel mini crate vs 10-channel full crate**
	+ **Linda has bad experience with stuffing too many cards in the full crate.**
	+ **We decided to go with mini crate for MPOD**
	+ **We are hoping to get quote and start to procure a set of MPOD modules and crates this year**
* VME crates for ADC
	+ **Sasha presents the crate requirement for the new ADC board**
	+ **The new ADC requires +5V from the VME64x J1/P1 connection where the VCP bin (the top pin on the 5th row of the J1 din-rail connector).**
	+ **We like to know the current required for the +5V. Sasha to ask for the specification**
	+ **Sasha also required the engineering documentation for the new ADC. He will update to DUNE docDB**
	+ **This is the change for new ADC only. The ADC we have from module-0 does not have this requirement**
	+ **VGA/DAC/Control cards will work with VME crate with 3-row J1/P1 connector**
	+ **Linda and Steve will work to find a VME crate for the new ADC**

**Near Term Tasks Now-January**

* Specify and procure 120V/1A DC PS, MPOD mini-crate and MPOD MPV 80xx (Linda/Jeremy/Dubna)
* Finish pORC for on-detector electronics: HV filter, RPi, slow control (Lane/Andrew)
	+ Need to figure out building AC situation in the LArTF garage
* Prepare three racks at NDOS (Joe H/Linda)
	+ Off-detector electronics from module-0 goes to NDOS for SEDR and ORC
* Complete DAQ servers and networking installation and ORC (Geoff)
* Rack builds documentation and fill the racks with components (Jeremy/Linda)
* System schematics diagram for the three racks (Jeremy/Linda)
* Start cabling design and install for Rack 3 (Jeremy/Linda/Lane)
	+ Developing cable naming scheme
* Complete SEDR and pORC for Rack 3 (Jeremy/Lane/Linda) (Dec-Jan)
	+ Spellman\_eSL50-300?, RPi boxes, DC for RPi,
	+ Use R&S HMP4040 for Pacman and fans for single TPC module if needed
* Complete SEDR and pORC for Rack 2 (Jan-Feb)
	+ ADC and 120V/0.75A DC PS
* Start SEDR for Rack 1 (Feb)
	+ HV filter box, two VME crates and new electronics
* Rack builds for purity monitor (Jan-Feb)