

Minutes of the 13th Meeting of the SBN Oversight Board (Fermilab, June 11, 2021)

Committee Attendees:

- S. Brice (Chair)
- J. Evans (UK)
- A. Guglielmi (ICARUS Deputy Spokesperson)
- O. Palamara (SBND Co-spokesperson)
- C. Rubbia (ICARUS Spokesperson)
- M. Shaevitz (US NSF)
- D. Schmitz (SBND Co-spokesperson)
- R. Wilson (US DOE and ICARUS Deputy Spokesperson)

Committee Absentees:

- S. Bertolucci (INFN, Italy)
- A. Ereditato (Switzerland)
- M. Nessi (CERN)

Non-Committee Attendees:

- J. Amundson (SCD), A. Fava (ICARUS Commissioning Coordinator), S. Fuess (SCD), J. Saviano (Secretariat), P. Wilson (SBN Program Head)

Action Items

Angela Fava will work with Michelle Stancari to create a limited term task force (for the summer) on detector triggering. Provide update at next OB meeting in September.

Introduction and Review of Last Meeting

S. Brice, SBN Oversight Board Chair, welcomed the members and participants to the Thirteenth Meeting of the SBN Oversight Board. Kevin McFarland is working on the PAC meeting and may not be able to attend/present.

SBN Project Update, P. Wilson

P. Wilson, SBN Program Deputy Coordinator, provided an SBN project update.

Slides presented:

- COVID19 Fermilab status and COVID19 site access
- Travel Guidance – Special DOE/Directorate approval needed for foreign travelers. Fermi will provide letters of invitation, demonstrating the national interest for Visa applications.
- Near Detector - SBND
- Light Systems (WBS 2.04)
- DAQ & Electrical Installation (WBS 2.07)
- SBND Assembly (WBS 2.08) APA hangers being fabricated onsite. 2 month delay due to supply issues – critical path. CPA H-brackets fabricated wrong. One month schedule delay – critical path
- SBND Cryostat (2.09)

- Cryostat Installation Plan – Outline. Will be completed in 4 phases, with a total work time of ~4 months (calendar time about 6 months). Start date will be driven by travel approvals for the first team and the delivery of tools to Fermilab. Earliest install date would be at the end of July 2021.
- SBND Cryogenics (4.03)
- SBND Schedule – expect to complete cryostat in early CY 2022. Expect detector to be ready ready to move into SBN ND building in early CY 2022. Detector ready to fill late summer or fall of CY 2022

ICARUS Commissioning, A. Fava

Angela Fava presented an update on the Commissioning of ICARUS.

Slides presented:

- Detector status and stability
- Cryogenics and electron lifetime
- TPC electronic noise mitigation
- Status of scintillation light system
- CRT Status
- Activation of the NuMI beam trigger
- Examples of NuMI CC candidates
- First beam trigger based on scintillation light
- Initial neutrino data taking
- Test of physics run
- Plan for summer shutdown: First results will be presented at summer conferences. Commissioning activities will be restarted with cosmic ray data. Upgrade of the PMTs HV system and interventions on the TPC readout electronics. Upgrade of the GAR recirculation system. Installation and commissioning of the top CRT to be followed by installation of the overburden. Deploy a stable data processing, storage and related workflow. Complete the automatic data transfer by RUCIO system from FNAL to CNAF.
- Top CRT Installation
- Summary slide

Questions/Comments:

First question: We have good organization inside SBN for collaboration (between SBN and ICARUS), but on Trigger, which is critical for the analysis, there has been no discussion. We should find a way to have more interaction (collaborate more) on this specific topic. At what level should this be set up (DAQ working group, Analysis working group)? At PAC meeting we were asked if we have a forum set up for discussion between experiment management/Spokes level? We only have the Oversight meeting. Also pointing to a more technical discussion - SBND doesn't have a Technical Coordinator (only has a commissioning group). We should organize this higher level of interaction.

Angela asked if we should create a temporary group/task force. She has had conversation with Michelle regarding this and more structured level of discussion would be good.

Alberto also agrees with the proposal of creating a new structure/task force for what concerns the triggering technicalities, such as the White Rabbit system, but he stresses that the logic implementation and realisation related to the specific detectors should remain under the responsibility of the single Collaborations.

**(Action Item) Steve suggested the SBN Board charge Angela to work with Michelle (Stancari) to create a limited term task force (for the summer). Provide update at next OB meeting in September.

Second comment: The completion of the near detector is still very far away. We won't have the detector start taking data until summer of next year (2022) - two summers after ICARUS was filled. Not failure of the people, but we should understand, make an effort to finish the detector because we don't do oscillation physics if we don't have the near detector. Many delays due to backorders of materials.

Steve said Fermilab is exploring all avenues to accelerate the completion of SBND

Mike Shaevitz – On the overburden, is the design completed? Do we know how much shielding is needed?

Peter - Two components of overburden (true for both detectors). First is set of blocks that bridge across the pit (42" tall, is structural). Those were designed by architectural engineering firm who designed the building. So, general arrangement is known. Couple details to finalize while we start the bidding process. The second components are the shield blocks (recovered from other decommissioned experiments onsite). A preliminary plan was completed 4 yrs ago, but we are making adjustments now. Based on the schedule shown, the design is ready. There is a package with Procurement being prepared to go out for bid for the first layer.

Joint Working Groups, O. Palamara

O. Palamara, SBND Co-spokesperson, provided an update.

Slides presented: breakdown of the 5 working groups, SBN slow controls, SBN CRT WG, SBN Infrastructure WG and recent activities. Status of the Analysis WG was presented by Daniele Gibin at the PAC meeting on June 8th

Goals set at SBN AI Conveners Planning Retreat:

- SBN DAQ and Data Pre-Processing: Develop common tools for trigger, data acquisition and data pre-processing, and coordinate activities in those areas.
- SBN Slow Controls: Develop control systems based on hardware and software interferences as much as possible identical for the two detectors
- SBN Cosmic Ray Tagger: Review the CRT production status and the installation plans for the two detectors, develop common CRT DAQ monitoring
- SBN Analysis Infrastructure: Coordinate and address data and software infrastructure and computing resource needs across the SBN
- SBN Analysis: Take care of all aspects of multi-detector physics analysis for the SBN

sterile neutrino oscillation searches

Goals for next year: Enable the reconstruction, simulation, and analysis in support of 1st ICARUS neutrino data, SBN simulation, and SBND commissioning (Jan '22), enable a complete 2.2e20 POT production for ICARUS and SBND sim. and ICARUS data (June '22), enable the timely end-to-end analysis of this production with full systematic uncertainties (July '22).

Fermilab's Process for Allocating Computer Resources, J. Amundson

James Amundson, Computing Department Stuart Fess

Resource allocation is provided by Fermilab Computing Resource Scrutiny Group (FCRSG)
Funding sources: 2 primary sources, Computer and Detector Ops (supports Intensity Frontier Experiments) and US CMS Ops (has it's own separate source of funding). Flat funding profile.

Annual review this Spring - Experiments were asked to present computing models and resource requests. Greatest scrutiny is given to incremental costs. Scientific Computing Division (SCD) presents facility status and resource history, committee writes the report, SCD sets Intensity Frontier allocations for the year.

Requests continue to climb and we are reaching capacity quickly. New machines are being purchased, but older machines are being retired, so no increase in capacity. Storage resources: FNAL dCache (disk) and Enstore (tape). Requests from experiments (for tape) have not been very good guide as to what's needed. Tape storage costs have many factors; cost of tape, cost of drives, data rates, maintenance, effort, ongoing cost of migrating media to current tape storage technology is large. Experiments should consider what is stale data and what could be deleted.

Questions/Comments:

Can you characterize what makes it difficult to predict their storage usage?

Jim – Experiments don't always run as predicted. All the unknowns affect usage. If a multi-year average was done, not much fluctuation would be seen,

Stu - Timing of production campaign also affects the amount of resources needed.

ICARUS is starting to take data and predicting is difficult for a brand-new experiment. What do we do if we need more space?

Jim – We have to deal with things as they happen. We plan for things to fluctuate.

What is procedure for adjudicating request?

Jim - We have a weekly meeting. Submit request for modifications and why it's needed.

Other Business

None

The SBN-OB meeting was adjourned.

Next meeting 3 months from now 10 September 2021