HVS Narrative

ANL Personnel: Steve Magill – Project Physicist (HEP), Vic Guarino – Project Engineer (EOF Division), Ken Wood – Engineering Assistant (HEP), Frank Skrzecz – Engineering Assistant (HEP)

Building on our successful production, installation and operation of the Cathode Plane Assembly (CPA) for ProtoDUNE SP, ANL HEP has assumed leadership roles in the DUNE High Voltage System (HVS) Consortium. Currently, designated leadership positions held by ANL personnel are those of Technical Coordinator and Convener of the CPA Working Group. In addition to regular meetings of the HVS Consortium, a small group of the consortium leaders and working group conveners (usually 6 people, including 2 from ANL) meet as needed to develop strategy and plans for the Consortium.

Specific efforts lead by ANL HEP within the HVS Consortium include:

* Development of a comprehensive planning and scheduling spreadsheet, milestones and timelines for production and installation of the entire HVS including all TPC HV components for the first 10 kt DUNE SP detector.
* A study of shipping options for all HVS components from factories to SURF leading to optimal choices for shipping crates and transportation methods.
* A QA/QC plan for the entire HVS including removable tagging of components with associated electronic checklist forms from procurement of raw materials through production and installation.
* Development of factory requirements, production procedures and QC checklists for multi-factory CPA manufacture.
* Writing and editing of all CPA-related text in the DUNE TDR HV section.
* Optimization of the CPA based on ProtoDUNE SP experience:
  + Modifications to final CPA design drawings to facilitate production at factories and installation at SURF.
  + Ongoing optimization of external Field Shaping Strip edge treatment.
  + Implementation of an improved Profile mounting scheme for CPA.
  + Modification of original ProtoDUNE SP frames and FSSs to accommodate Field Cage profile changes for ProtoDUNE SP II.
* Coordination of all activities related to 60% Design Review for HVS TPC to be held in June 2019 – including writing and editing of the Design Report and inclusion of required review material.

ANL HEP expects to manage all CPA activity for DUNE SP TPCs, including planning and setup of all CPA production factories, development of production and installation procedures for the CPA and CPA/FC assembly, and implementation of the QA/QC plan for the entire HVS production and installation effort. In addition, ANL HEP desires to act as the lead factory for CPA production, producing ~half of the 100 CPA Panels and the special end Panels needed for the first 10 kt DUNE SP TPC.