

DUNE Project Status

Eric James
DUNE PMG Meeting
September 15, 2015

Big Picture

- 35-ton
 - APAs installed in cryostat
 - Final check-out in progress
 - Goal is button up the cryostat and begin cryogenic operations by the end of the month
 - More details in Alan Hahn presentation



Big Picture

- CD-3A Review
 - Main focus for DUNE is ensuring that all interfaces to the far site conventional facilities are well understood and documented
 - A list of 17 potentially open interface issues has been generated (see next slide)
 - DUNE will provide feedback on each of these issues and initiate change requests as necessary
 - Input required on the time scale of early to mid-October

Big Picture

- Interface issues list
 - Ground and shielding requirements throughout campus
 - Power and cooling requirements for electronic racks
 - Underground control room requirements
 - Liquid Argon temperature stability requirements
 - Liquid Argon flow requirements (Need for bi-directional pumping)
 - Cavern space for detector installation and cryostat pumps
 - Detector/cryostat/cavern alignment tolerances
 - Detector/cryostat/cavern level tolerances
 - Requirements for cryostat bridges

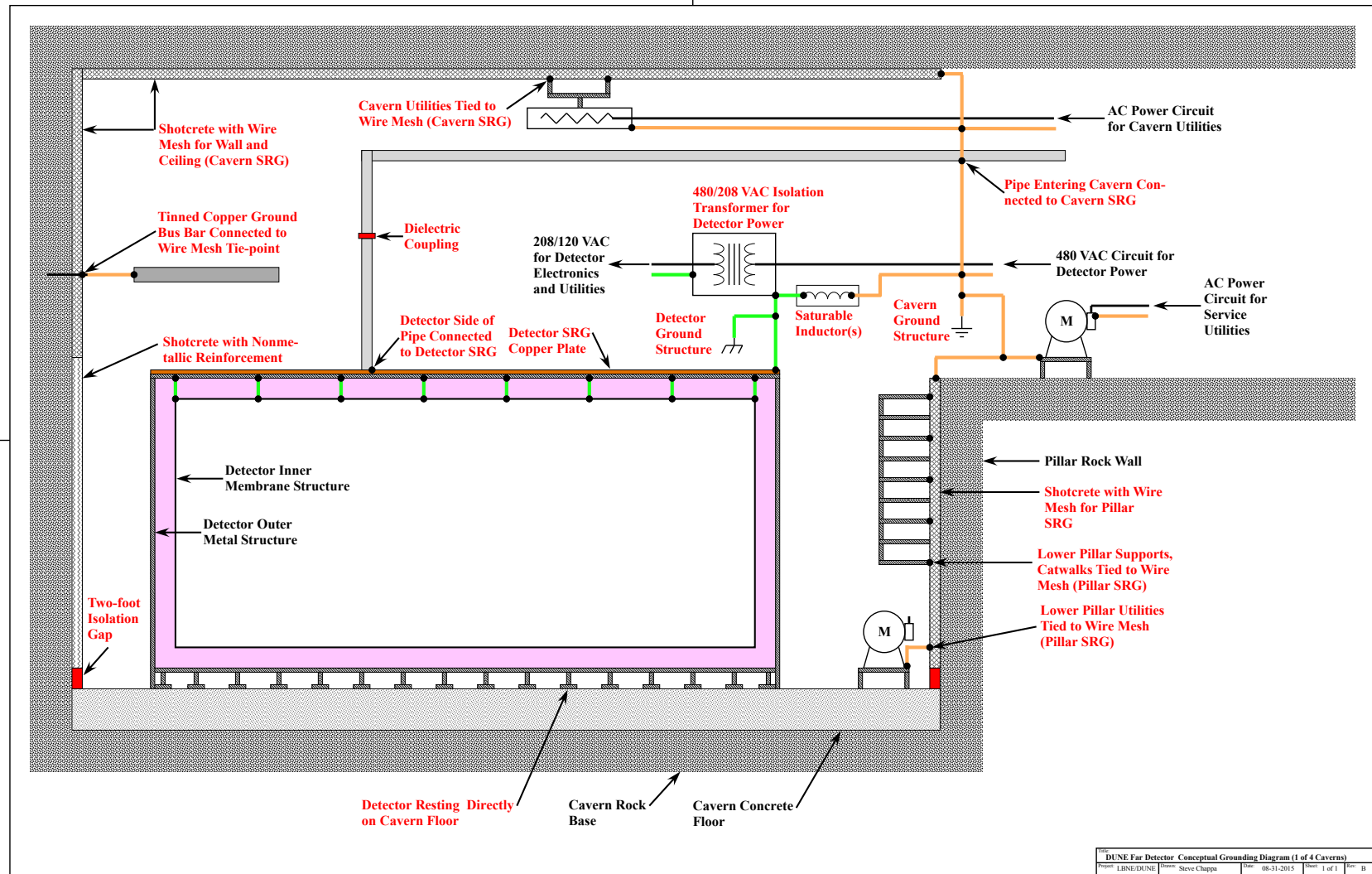
Big Picture

- Interface issues list (cont.)
 - Clean room interferences
 - Utilities and cryostat piping ground isolation (closed)
 - Cavern mezzanine requirements
 - Detector requirements on potential shaft modifications
 - Detector requirements on drift cross-sections
 - Detector requirements on monorail locations and functionality
 - Ventilation requirements around cryostat annulus and base
 - Need for ventilation barrier wall between adjacent caverns

Cavern Grounding and Shielding

- DUNE grounding and shielding committee has developed a revised plan, which was presented to the DUNE Technical Board at its first meeting on September 3rd
- Consensus is forming on the elements of the plan that involve the conventional facilities (proposed changes are expected to be cost-neutral)
- Sign-off on these elements expected at the next DUNE Technical Board Meeting (last week of September)

Cavern Grounding and Shielding



DAQ Infrastructure Requirements

- DAQ working group charged with exploring needs for two potential fabrication options
 - Custom front-end hardware (reference design)
 - Off-the-shelf components (FELIX)
- For both options need to estimate rack-space, power, and cooling requirements for detector caverns, central utility cavern, and surface
- Also, need to estimate bandwidth requirements from detector caverns to central utility cavern and from central utility cavern to surface

DAQ Infrastructure Requirements

- DAQ working group will also discuss potential needs for back-end processing and data storage capabilities in the surface and underground areas
- Additionally, need for surface and/or underground control room areas will be reviewed
- Summary of potential DAQ infrastructure requirements will be prepared internally and discussed at the first working group meeting on Monday, September 21st
- This information will then be presented and discussed at the next DUNE Technical Board Meeting (last week of September)

Preliminary Designs for Conventional Facilities

- ARUP 100% preliminary design reports are available for review
 - Buildings and Site Infrastructure (DUNE docdb #136)
 - Excavation (LBNE docdb #11392)
- Meeting tomorrow Wednesday, September 16th from 12:30pm to 1:30pm CST where an overview of the reports will be given (ReadyTalk 1-866-740-1260, 6437868)
- Comments are due on October 9th
- Russ Rucinski (Project Mechanical Engineer) has submitted some initial comments on behalf of DUNE, but additional feedback from the collaboration/project is needed

Draft Logistics Report

- ARUP has released their draft logistics report (located in DUNE docdb #423)
- Meeting tomorrow Wednesday, September 16th from 2pm to 4pm CST at which ARUP will present an overview of the plan (ReadyTalk 1-866-740-1260, 6742551)
- Comments are due to Mike Headley by Monday, September 21st for incorporation into the final report, which will be made available to the CD-3A reviewers

Synergies between DUNE/SBND

- DUNE and SBND have agreed to jointly pursue the development of front-end cold electronics chips at BNL
- Joint DUNE/SBND workshop was held during the DUNE collaboration week (September 2nd) to discuss additional potential synergies
- Photon detection, field cage design, and APA design were identified as potential areas for further cooperative efforts
- Meeting today (September 15th) from 12pm to 2pm CST to discuss potential joint development of photon detector readout electronics (ReadyTalk 1-866-740-1260, 5945709)

BNL Engineering Meetings

- Engineers from BNL, PSL, Princeton, Duke, and CERN met at BNL last week to further develop the interfaces between the detector and cryostat
- Progress was made in a number of important areas
 - Design and placement of the required cryostat penetrations
 - Design of cryostat support structure for the detector
 - Design of mechanisms for supporting field cages and ground planes from the anode and cathode plane assemblies
- Formed an interface engineering team whose primary task will be to create a combined 3-D engineering model of the detector inside the cryostat (Jack Fowler will lead this effort)

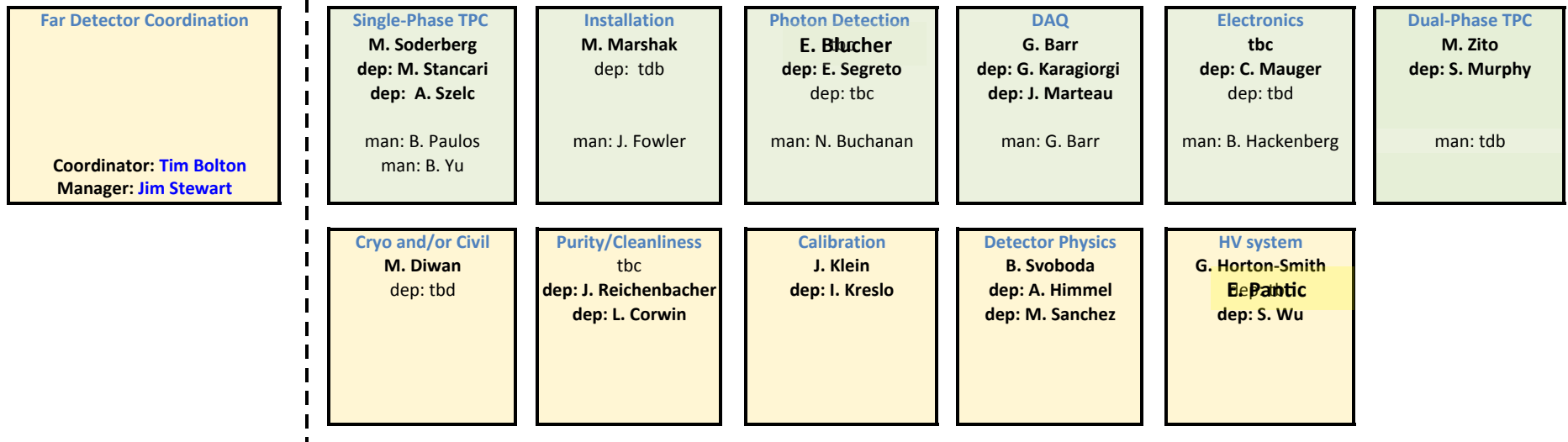
Upcoming reviews

- A number of important technical reviews will need to take place this fall (dates still to be determined)
 - Evaluation of alternative photon detection technologies under consideration for protoDUNE
 - Pre-submission design review for front-end and ADC ASIC chips (anticipated January submission)
 - Joint DUNE/LBNF pre-submission design review for protoDUNE cryostat (anticipated January submission)

Collaboration News

- A highly successful collaboration meeting was held during the first week of September (~250 people attended in person)
- The conveners and deputy conveners for the majority of the proposed collaboration working groups have been identified
- A proposed schedule for DUNE collaboration meetings has been developed and working group meetings are expected to get underway next week
- A LBNC review of DUNE was also held during the week of the collaboration meeting, which provided useful feedback and some homework for the collaboration to complete prior to the upcoming Director's CD-3A review in October

Far Detector Working Groups



DUNE Collaboration Meeting Schedule

Detector Weeks I					
	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300
Monday	"PMs" meeting	Exec Comm	Software & Computing DAQ		
Tuesday	JMT		Far Detector		
Wednesday	Collaboration Resource Board		35-t Prototype		EFIG
Thursday			Near Detector Beam Interface		
Friday		DUNE Coord.	ProtoDUNE		

Detector Weeks II					
	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300
Monday	"PMs" meeting	Exec Comm	Software & Computing DAQ		
Tuesday	JMT		Far Detector		
Wednesday			35-t Prototype		EFIG
Thursday			Near Detector Beam Interface		
Friday		DUNE Coord.	CERN Prototypes: ProtoDUNE/WA105		

Physics Weeks I					
	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300
Monday	"PMs" meeting	Exec Comm	Nucleon Decay/Atmospherics Far Detector Reconstruction		
Tuesday	JMT		Long-Baseline Oscillations		
Wednesday	Reserved for Technical Board		Low-Energy Neutrinos 35-t Prototype		
Thursday			Near Detector Physics Beam Task Force		
Friday		DUNE Weekly	Far Detector Task Force		

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DUNE-US Project Issues

- Jolie Macier (Fermilab) has agreed to take on the position of DUNE-US Project Manager and will be transitioning into this new role through the week of October 12th
- COLDATA ASIC development at Fermilab is still on critical path for detectors (PPD has posted opening for new ASIC engineer and we need to get this person in place as soon as possible)
- DUNE WBS structure has been modified to fit within the new joint DUNE/LBNF framework
- Managers in consultation with the collaboration working group conveners will be tasked with updating the project schedule to reflect the rapid evolution of the project over the past year