



South Pole Infrastructure, Integration & Commissioning Status

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**CMB-S4 Collaboration Meeting
May 9-13, 2022**



Overview

- South Pole Technical Scope:
 - High bay, lab building, MAPO renovation, SAT tower, power & network distribution
- Technical highlights from the last year
 - Completed preliminary designs for high bay and lab building
 - Refining requirements/interface definition to ensure BART tower design meets S4 needs
- Plans for rest of FY22
 - Site safety plan is ongoing development
 - Continue to support the AoA, move forward with implementation & updated planning for selected option

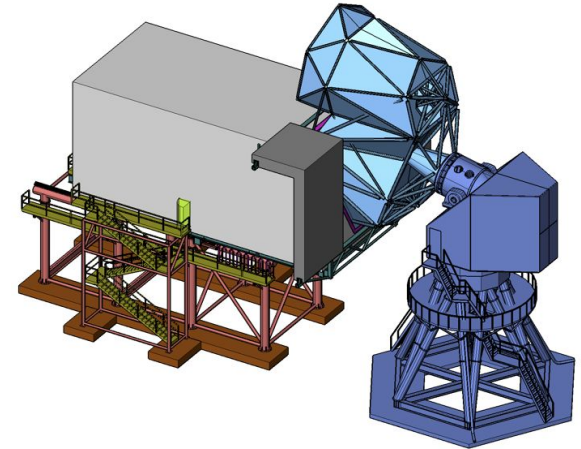
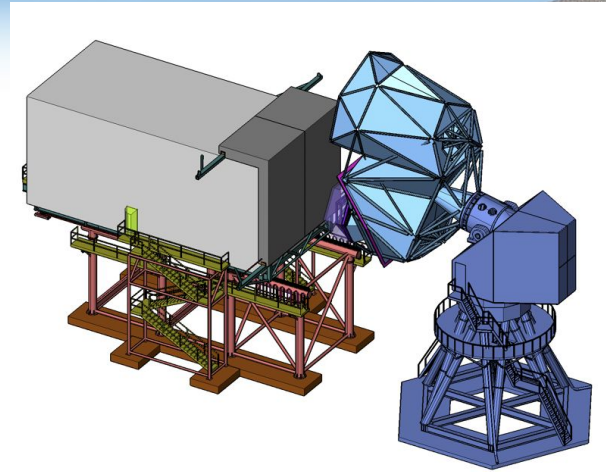
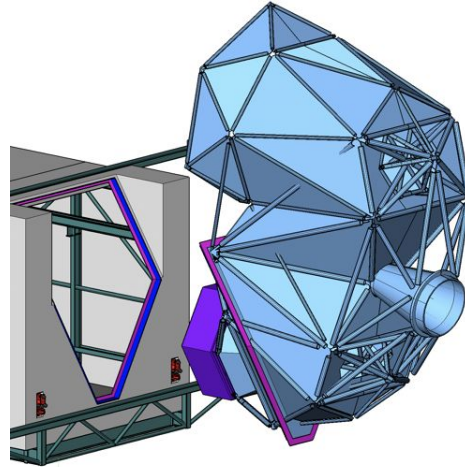
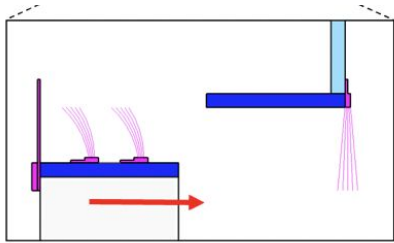
Working group meetings are roughly every other week on Thursdays @ 3pm central
Sign up for email list or slack channel #southpolewg

Reminder of the Baseline Site Design



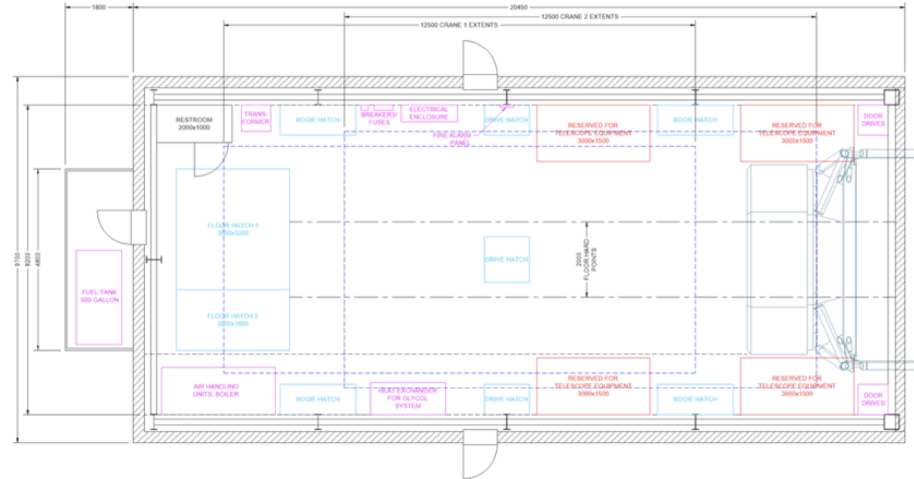
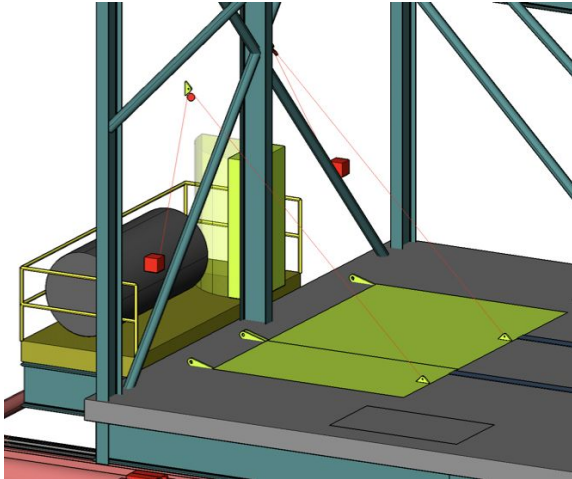
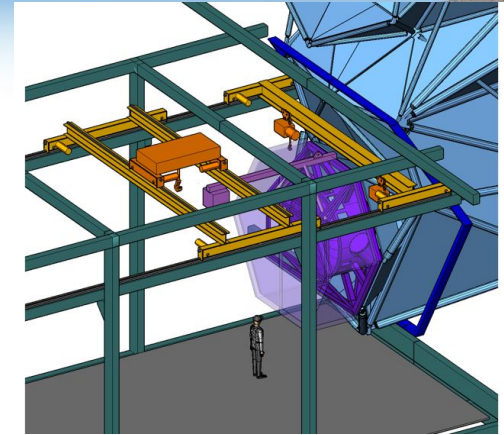
SPLAT High bay

- Preliminary Design complete
- High bay moves 8 m along tracks to couple to SPLAT for LATR installation
- Double doors on end open for docking
- Combination brush and flexible flap create seal



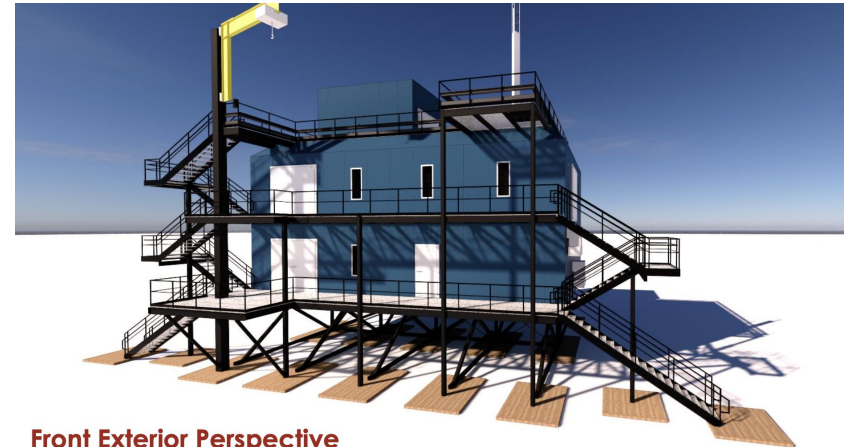
Key High Bay Design Features

- Door in floor allows cargo to be brought into high bay
- Reinforced path along center of high bay for LATR
- Floor space for LATR integration
- 2 crane trolley system to bring cargo into High Bay and install LATR on SPLAT



Laboratory Building

- Preliminary Design complete
- Based on existing South Pole blue buildings with lessons learned incorporated
- Key Features
 - Floor space for supporting SAT I&C
 - Interior hoist and exterior jib crane for cargo and operational movements
 - Building HVAC design harvests waste heat from DAQ/DM systems.
- Building will connect to SAT towers via enclosed walkway



Front Exterior Perspective



1st Floor

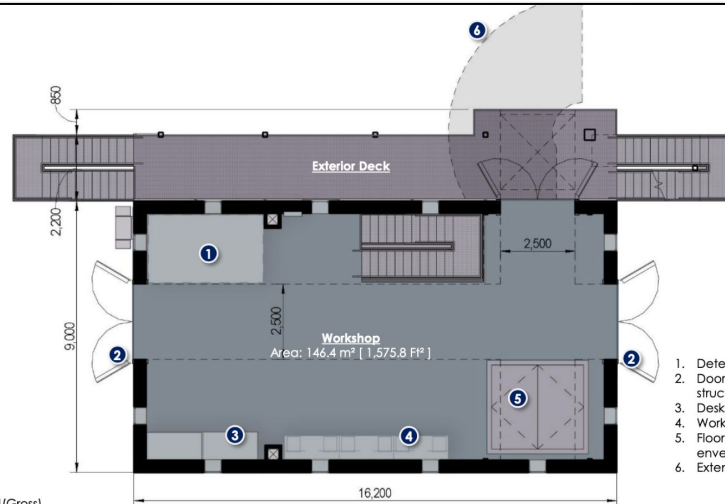
Total Area: 146.4m² [1,575.8 Ft²](Gross)



1. Electronics Racks, 10 total w/ central cold aisle
2. Mechanical equipment
3. Storage shelves
4. Desk
5. Workstations (2)
6. Cargo envelope, 2.5m cube
7. Storage shelves
8. Extents of crane reach

2nd Floor

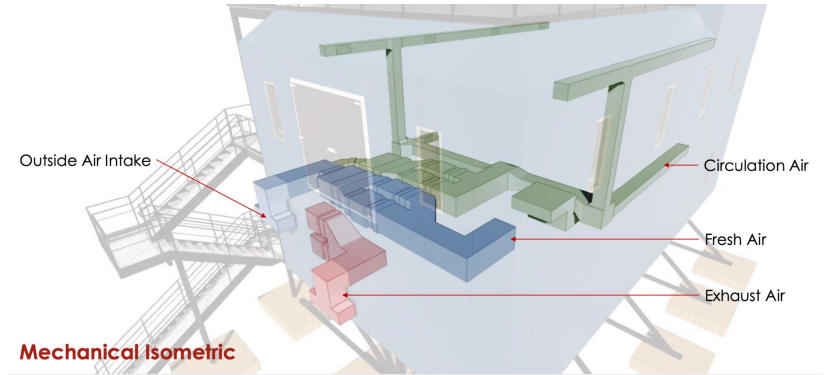
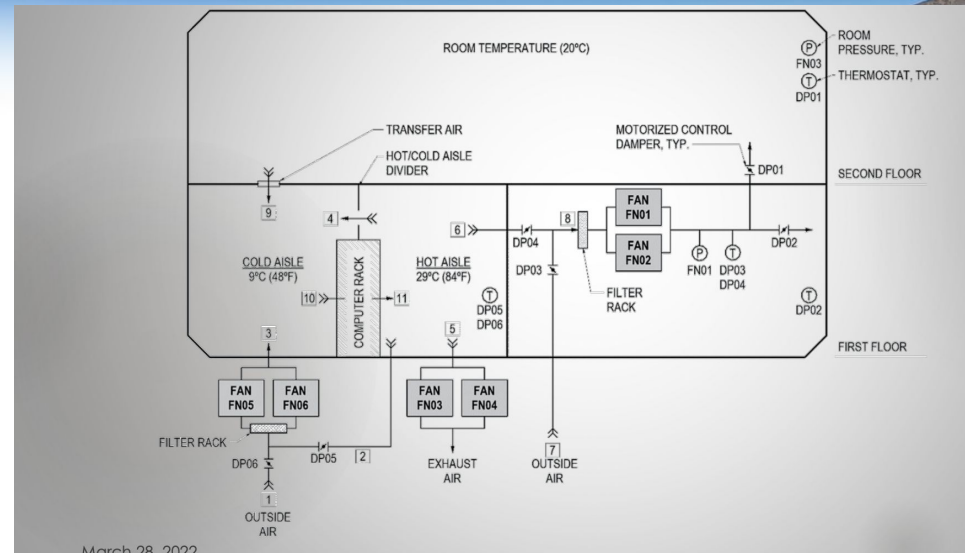
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1. Detector inspection area
2. Doors to future access bridge structures
3. Desks (2)
4. Workstations (3)
5. Floor hatch to accommodate cargo envelope
6. Extents of crane reach

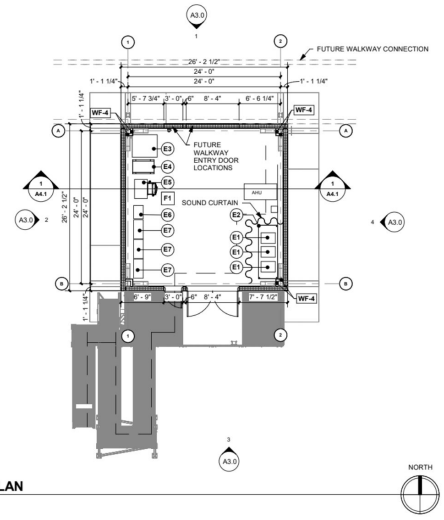
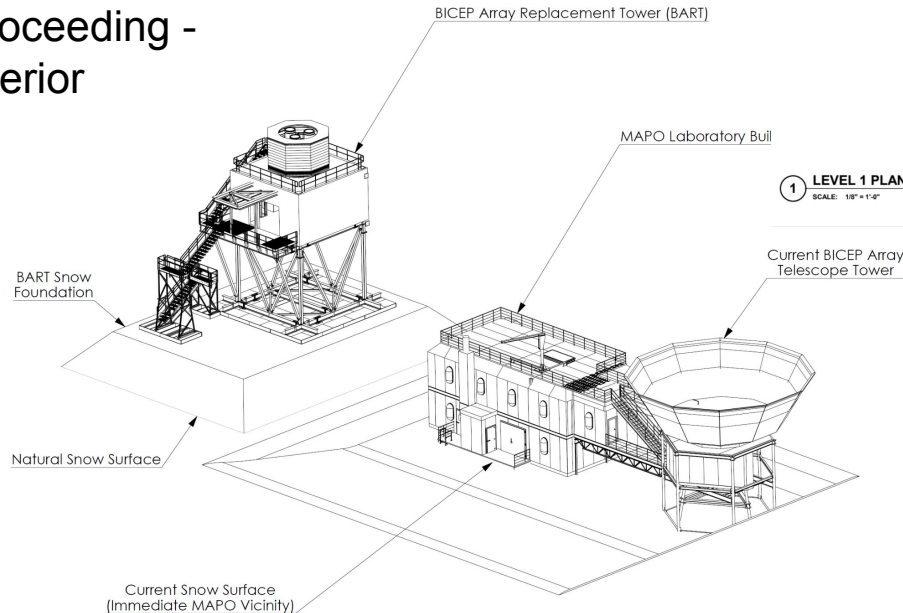
Thermal Design

- Performed analysis of where to locate DM system, decided on laboratory building
- Can recapture waste heat and circulate to building
- Enough to heat entire building, even in winter
- Two-part system
 - 1) fans to bring cold air in, mix with hot air from DM, circulate through building, vent excess
 - 2) radiant panels to provide heat when DM system is not able to supply enough heat.



SAT Tower & Control Room

- CMB-S4 has determined that the BART tower design meets S4 requirements, and has adopted the design.
- BART tower design proceeding - structural/civil final, interior preliminary.



Integration & Commissioning (I&C)

- I&C plans for SAT and LAT developed
- Each plan contains:
 - Background information
 - Prerequisites: what tests are assumed to have been performed prior to shipment to South Pole and what state of equipment & infrastructure
 - Integration/assembly steps
 - Commissioning tests performed on the ground
 - Commissioning tests performed installed on telescope mount
- More details on Thursday morning

