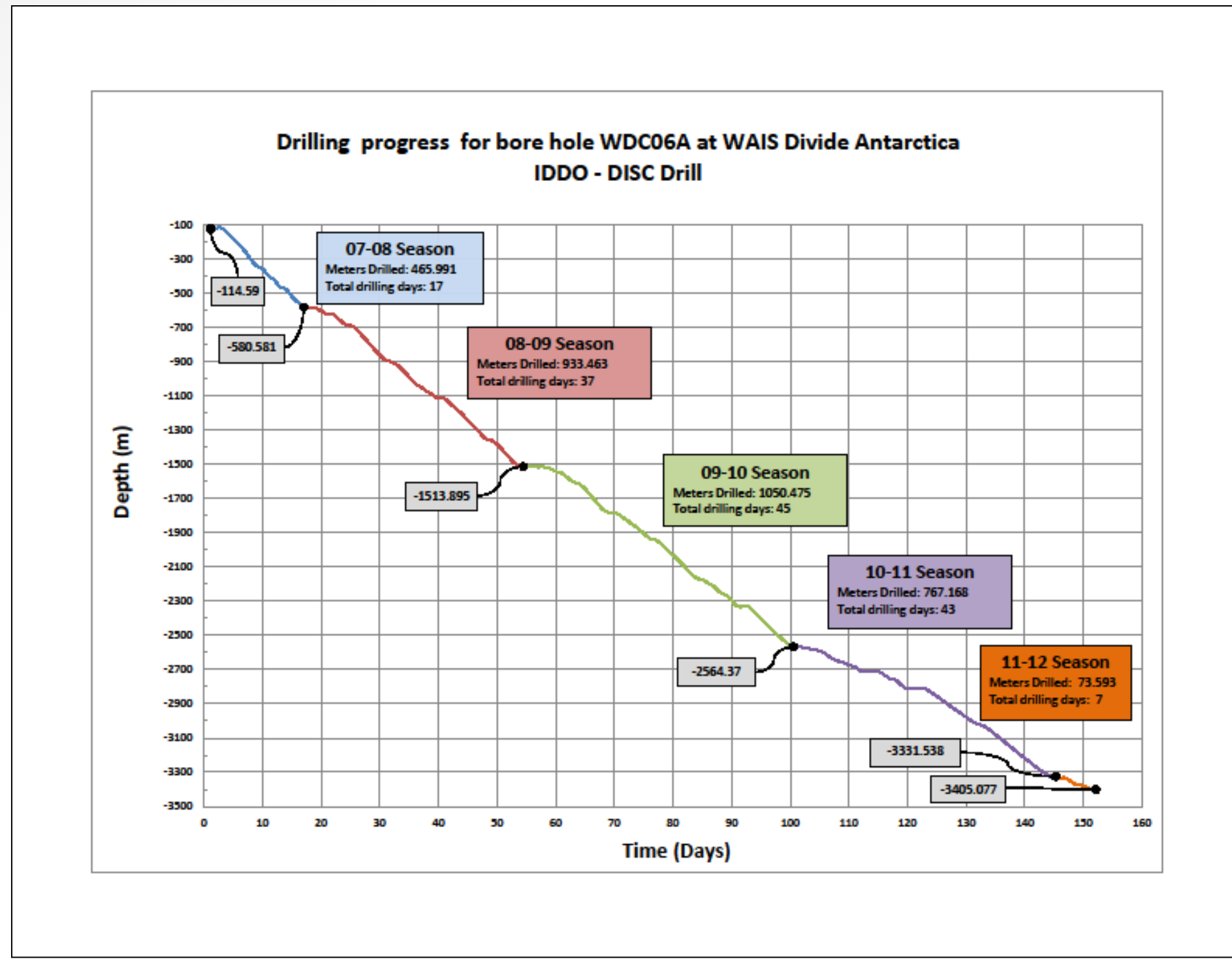


WAIS DIVIDE PARENT BOREHOLE COMPLETED!

Ice Drilling Design and Operations



**FINAL BOREHOLE DEPTH:
3,405.077 meters**

SEASON GOALS:

- Assist with borehole logging
 - Install rooftop and slot-spanning sheaves
- Remove old 3,400m cable from DISC Drill winch
- Spool on new 4,200m cable
- Terminate fiber optics
- Deepen the main borehole to ~50m above the bed at the Chief Scientists direction
 - Produce high quality ice core
 - Adjust drilling procedures and techniques to drill and deliver warm ice, if encountered.
- Test Replicate Coring capability



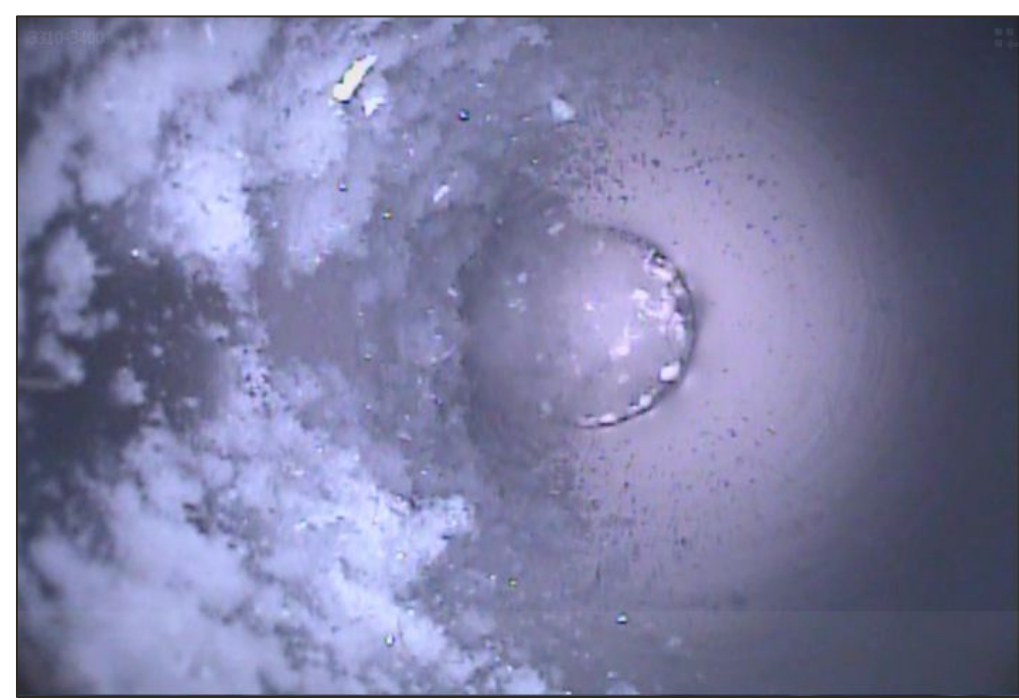
CABLE OPERATIONS:

- Unspooled 3,400m cable off of the winch drum using the P05 cable spooler
- Spooled on new 4,200m cable using the Pengo cable tensioner
 - It was difficult to get enough pick on the cranes due to the floor heaving in the middle of the Arch
- Terminated both ends of the fiber optic cable over a period of 5 days
 - Very acceptable levels of dB loss across all fibers



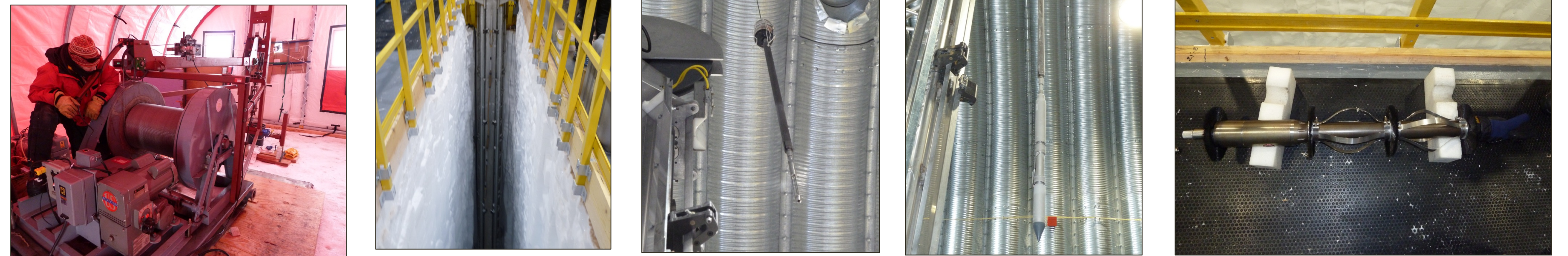
BOREHOLE LOGGING OPERATIONS:

- Elizabeth Morton served as a winch operator with Gary Clow and Frank Urban
- First round of logging completed between 12/3/11-12/21/11
- Second round of logging completed between 1/1/12-1/4/12
- Five logging tools deployed
 - Optical dust logger
 - Sonic 'snake' logger
 - Seismic tool
 - Temperature logger
 - Sonic pinger



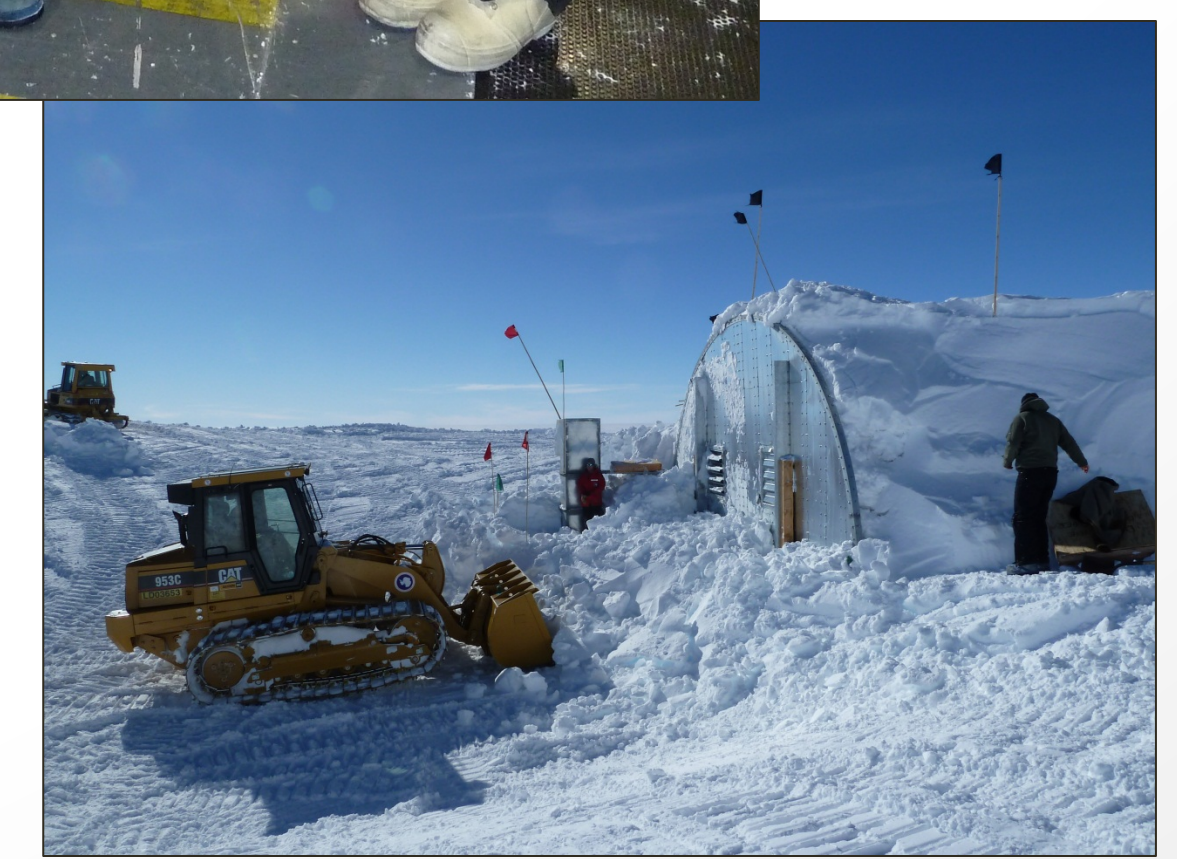
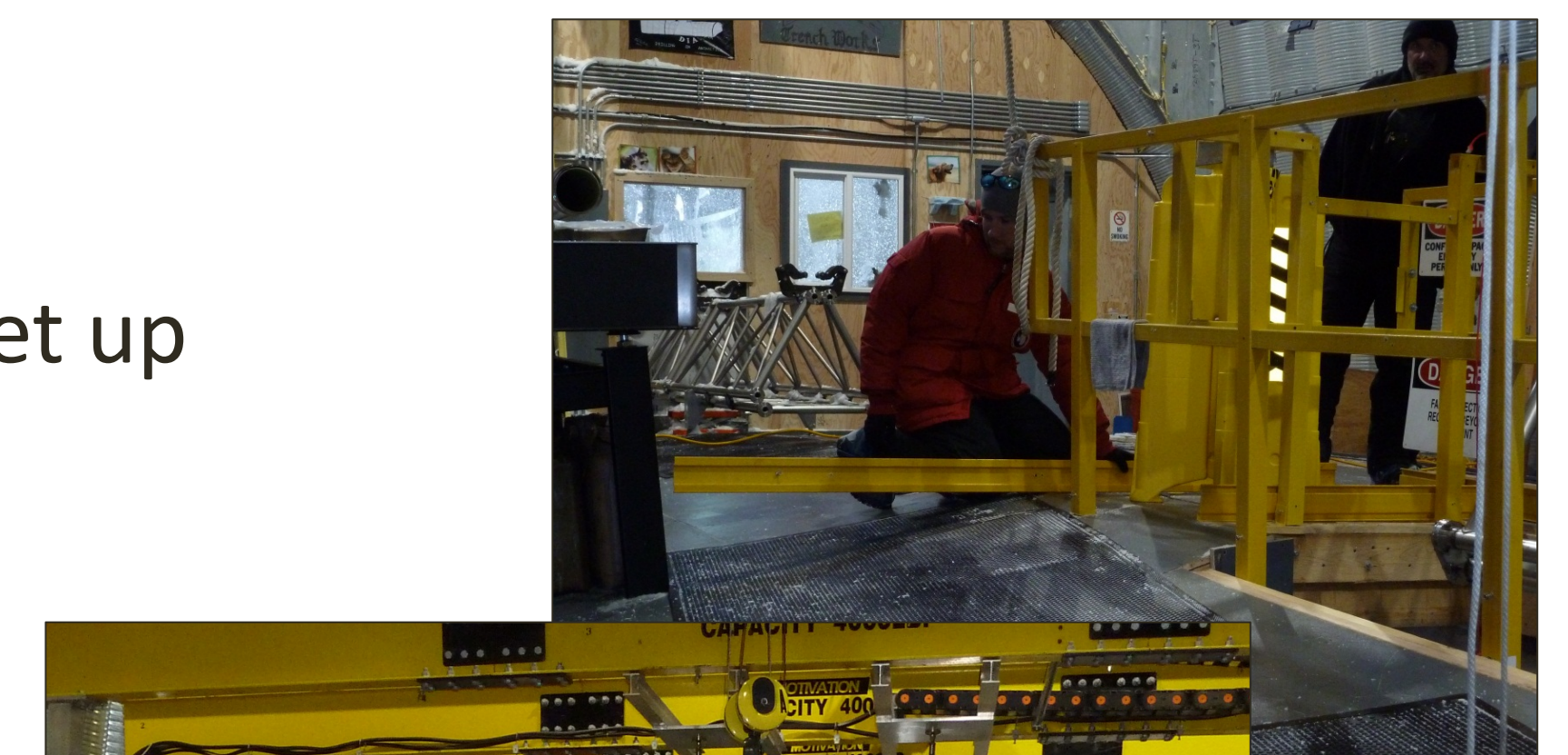
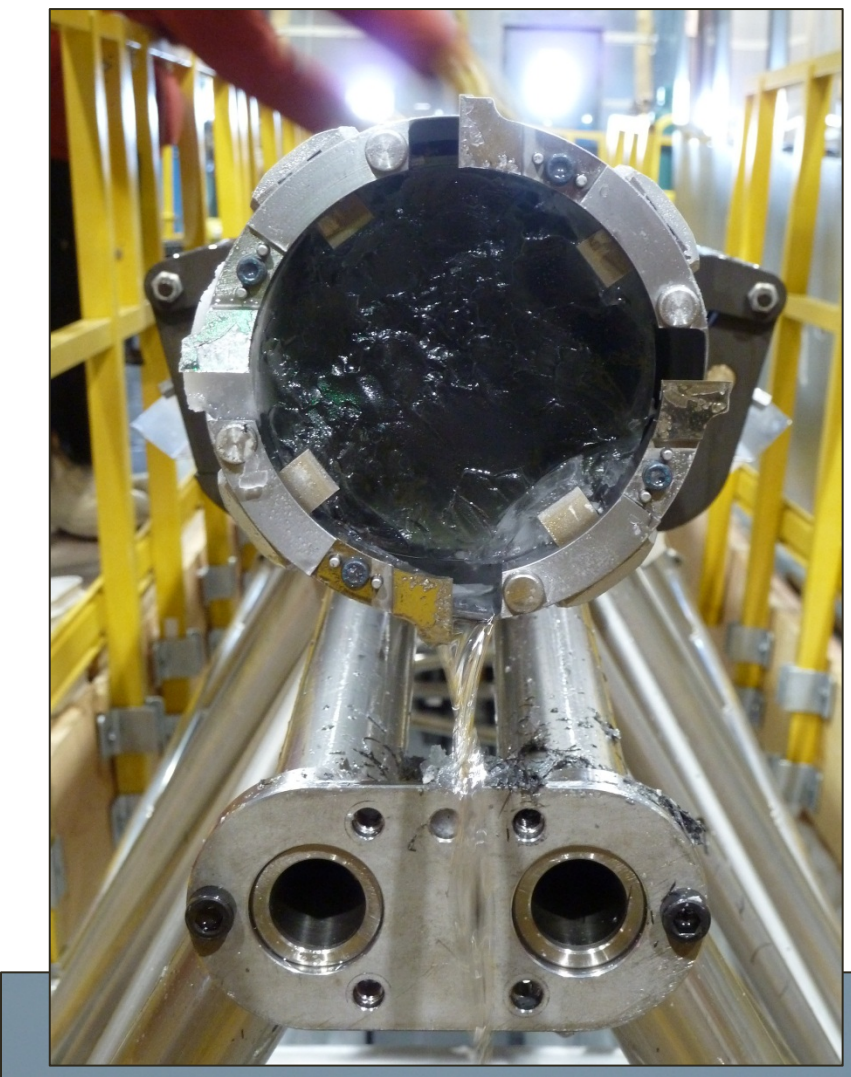
BOREHOLE CAMERA:

- New for 2011-2012 season
- Real-time viewing of the borehole from the surface



DRILLING OPERATIONS:

- Total IDDO days at WAIS: 73
 - 18 days for crew arrival, Arch work, slot work, logging set up
 - 9 days for cable operations
 - 7 days for drill start up and other Arch prep
 - 2 days of borehole reaming
 - 6 days of drilling (2 shifts)
- Starting depth: 3,331.538m
- Ending depth: 3,405.077m
- Total meters drilled: 73.539
- Tripping speeds
 - Descended at 1.0 m/s with the pump running
 - Ascended at up to 2.0 m/s
- Cutter Speed
 - 80rpm continues to be the sweet spot
- Penetration rates
 - Varied with ice conditions; between 2.5-5.7 mm/s
- Bore hole fluid density
 - Density was maintained at .920 @ -31°C throughout the season
 - Fluid was mixed to .935 @ -31°C to compensate for 141b loss
- 4,391L (1,160 gal) of drilling fluid were used
 - 3,140L (830 gal) of Isopar K
 - 1,251L (330 gal) of 141b



SPECIAL VISITOR:

- Steffen Bo Hansen, from the Centre for Ice and Climate (CIC) in Copenhagen, Denmark, visited as a drill observer for two weeks in January



WAIS DIVIDE 2011-2012

DISC DRILL

