WISSARD BOREHOLE DRILL CONTRACTOR (WBDC)
DAILY REPORT FOR 20 NOVEMBER 2012
USAP Event C-524-M

1) Health, Safety & Environment

No reportable incidents today.

2) McMurdo Operations

• Personnel on Site:
  Dar Gibson, Graham Roberts, Chad Carpenter, Daren Blythe, Justin Burnett, Jeff Lemery, Dennis Duling

• Wet Test Summary:
  Testing ~60% Complete at end of day.

  Electrical: ASC electricians continued work during test; conduit and wiring for E-stops in WFU finished. Both generators were running simultaneously for testing and ran normally.

  Water Supply: 1000 gallons of water were delivered at ~9:45; melt tank filled about halfway, then pump was brought online to begin transferring water to the main tank. The pump motor would not start initially due to lack of 24V power to motor start relays mounted on mobile power supply sled. 24V power was run to the relays from the EAD control box via some new wiring; melt tank pump started successfully to begin transferring water to the main tank. After testing the melt tank manifold plumbing, spray bar, and pump effectiveness (all of these operated normally), the remaining melt tank water was put into the main tank and the melt tank was taken out of the system. There were problems with the relays controlling both the circulation and melt tank pumps; apparently they began to overheat. We wound up using manual override to energize the pumps for the rest of the day. At this point, flow was looped through the filtration unit, supplied from the main tank via the coffin, and then directly back to the main tank. The plumbing from the main tank and through the coffin was leak-free except for a slow drip at the main tank outlet; the coffin heater was found lacking and was replaced. Both pumps worked well; however, since the WFU pump was not run, the circulation pump was having to expend energy to turn the rotors in the WFU pump. This resulted in low flow through to the HPUs. Once the WFU was tested, it was bypassed so that adequate flow could be supplied to the HPUs. We will need to have the WFU pump running in order to operate the drill; otherwise the circulation pump is adequate for keeping lines from freezing during non-drilling operations.

  WFU: A steady drip occurred at the filtration pump that could not be mitigated right away; the UV light bulb insertion holes leaked around their caps, but it was assumed that
the O-rings inside couldn’t make a suitable seal without the glass tubes in place. (We determined that testing with the tubes in place was not worth the breakage risk presented by the extra handling this would require. This plumbing will be re-tested with tubes and bulbs at the MIS site once we’re ready for full drilling mode). At the end of the day, the right-hand gasket on the lower UV canister ruptured from air pressure from the compressor. We will need to bypass these canisters in the future during air blow-out. (Use of this canister will also have to wait for arrival of spare gaskets.) The WFU was otherwise found operational. The air compressor and associated plumbing performed without any problems during blow-out at the end of the day. Note that no filters were installed in the WFU at this time.

**HPUs:** Alkota 1 (the Lincoln Alkota) and Alkota 2 were test fired one at a time, first without heat (high-pressure pump test) and then with heat. 5-8 drips were found in each building, a few of which were steady enough that they will need to be mitigated before further testing. Both Alkotas functioned smoothly once started; both pumps worked as hoped, as well as both burners. Water pressure in the system was regulated with a throttle valve and pressure gauge installed on the output of the HPU2 high-pressure manifold. We tested the high-pressure manifolds at about 1000 psi. Water temperatures of ~150F were used. The rest of the Alkota units will be tested tomorrow, time and weather permitting.

A few leaks were also discovered in the fuel manifolds but they were minor enough to be left alone with catchment underneath until testing is finished.

**General:** One of the clear low-pressure hoses suffered a slight rupture during air blow-out and was removed from the system. Other hoses, including ones fabricated on site, appeared to function well. All electrical systems (except the motor start relays supplied by EAD) functioned normally. Attempts to power the WFU pump before testing were unsuccessful due to an unresolvable (for now) motor fault, so this pump was left out of the testing. All buildings except the STU are being kept heated until testing is finished.

The crescent support, crescent trolley and crescents were mounted on the RCU today at the Scott Base transition. We anticipate having the RCU back at SPoTSA tomorrow or Wednesday.

### 3) Upcoming Events/Tasking:

- Complete wet testing. A more comprehensive report with photos will be forthcoming in 2-3 days.
- Unpack 24’ crate.
- Attempt to resolve motor start relay and WFU pump control issues.
- Begin securing system for transport to MIS site.
4) **General Issues:**
   - Traverse of system components to MIS test site is tentatively scheduled for Monday, 26 November. There are currently no issues that would necessitate rescheduling this.

5) **Weather Conditions**
   - Temperatures ranged between 20 and 30ºF during the day. Sunny with little or no wind.

6) **Vehicles/Generators**
   - Vehicles in use: McMurdo van 412, Caterpillar 297 skid steer
   - Generators in use: Two WISSARD 50 kW generators; portable 3.5 kW and portable 1 kW from ASC.

7) **ASC Interfacing**
   - Two ASC electricians still on loan to help with electrical work.

8) **Cargo**
   - 24’ crate with long cable tray pieces delivered today.

Compiled by Daren Blythe for the WISSARD drill team