

Little Dome C

Beyond EPICA Oldest Ice Drilling Site (75.29917 °S, 122.44516 °E)

Situation Report #36; Monday 09 January 2023

Personnel @LDC:

Saverio Panichi (ENEA, Camp Leader), Frank Wilhelms (AWI, Chief Driller), Robert Mulvaney (BAS, Chief Scientist), Romilly Harris Stuart (LSCE), Matthias Hüther (AWI), Gunther Lawer (AWI), Johannes Lemburg (AWI), Martin Leonhardt (AWI), Michele Scalet (ENEA), Julien Westhoff (NBI), Andrea de Vito (ENEA)

Personnel @DC: Giuditta Celli (ENEA), Markus Grimmer (UNIBE), Florian Krauss (UNIBE)

Weather at LDC 5 pm: cloudy, light snowfall, 3-5 knots, 643 hPa

Meteo at DC 5 pm



A change of drill motor controller; moving 36 ice core boxes to Concordia; Markus and Florian return again to Concordia

After the Sunday late evening drilling shift finished at around midnight, Matthias, Frank, Lemmi and Gunther set to replacing the drill motor controller (which sits below the anti-torque section of the drill, and above the motor itself) with an updated motor controller with new control and monitoring software. A new drillers console layout displays more data transmitted directly from the drill and gives us much more information about the drill's performance. Once the drill was reassembled, they made one excellent run of 3.5 m, implying that the controller was working well.

Unfortunately, for most of the day on Monday, we struggled to repeat the performance of that early morning first run of the new system and made only 8 m of core in the next six runs. The motor controller repeatedly turned off with over-current faults, and none of us could find a stable drilling mode. This performance, and the faults noted, was actually similar to our experience with the same controller earlier in the season. On inspection after the earlier set of faults, we found drill fluid had penetrated past the seals, and into the electronics section, and the conclusion now was that there must be some component damage in the controller. Late in the evening, we switched back again to the previous drill controller, and once again managed a stable 3.3 m run.

Early in the day, Saverio (in the Challenger tractor) and Michele (in the PB300) left for Concordia Station, taking a trailer loaded with 36 boxes of cores for storage in the TuboSider deep storage cave. With them went Florian and Markus who were needed at Concordia to help salvage the ice core processing equipment (the dielectric profiler, and the Swiss horizontal saw) from the damaged cold laboratory. If the work is completed quickly, then they will likely return to us at Little Dome C to help with the drilling.

Saverio and Michele returned in the late afternoon – the PB300 having been serviced by Michele in the garages at Concordia.





Lifting ice core boxes from the core buffer onto a trailer to transport them to Concordia for long-term storage. (Photo: Mulvaney, Leica SL2-S, 36mm, 1/200, f8, ISO100)

End of day statistics:

Individual runs of the drill were recorded as: 3.5, 2.31, 2.04, 0.0, 1.81, 1.07, 1.00 / 3.30 m

Drillers' depth: 617.41 m; daily total 14.92 m

Loggers' depth: 621.33 m; daily total 14.92 m

RM and FW, 11 Jan 2023

