Little Dome C

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

Situation Report #24, 11th December 2025

Personnel @LDC:
Carlo Barbante (UNIVE, CNR-ISP, PI in the field), Gianluca Bianchi Fasani (ENEA, Camp Leader), Katrin Ederer (AWI), Matthias Hüther (AWI, Chief Driller), Marion Lahuec (IPEV), Gunther Lawer (AWI), Johannes Lemburg (AWI), Barbara Seth (UNIBE), Philippe Possenti (CNRS), Chiara Venier (CNR-ISP), Sergio Zannini (ENEA), Mohammad Vafadarmianvelayat (AWI)

Personnel @DC:
Iben Koldtoft

Weather at LDC: sunny and cold
Meteo at DC 09 pm: T = −27.9 °C, Wind speed = 3.8 kt, Windchill T = −35°C, Humidity = 70 %

Still a lot of tests and expectations at LDC Camp today !

We went down into the bore hole for a second try to mill the down-facing side of the hole (opposite the groove at 2352-2338 m depth) using the deviation tool – and with the changes described in yesterday's SITREP. After a few ups and downs within these 15 m, we tested if we have a ledge now, but all we could "see" was the slip of the antitorque, which was obviously too tense.

On the surface again, we tested the deviation tool with the wooden construction that should represent our hole and that we used for testing the broaching tool already. We figured out that the spring on the deviation tool was much too tense. The challenge is now to find a good balance between the strength of the antitorque (too tense = slipping; too loose = spinning) and the strength of the spring (too tense = not turning into the groove; too loose = not pressing the drill head against the opposite wall). These were the options we were playing around with in the shallow part of the hole before going deep again for a new try.

With the new settings on our third attempt, we finally detected a ledge after 2 downs and ups!!! However, it remains challenging to find the groove to position the tool. But tomorrow will be another day!

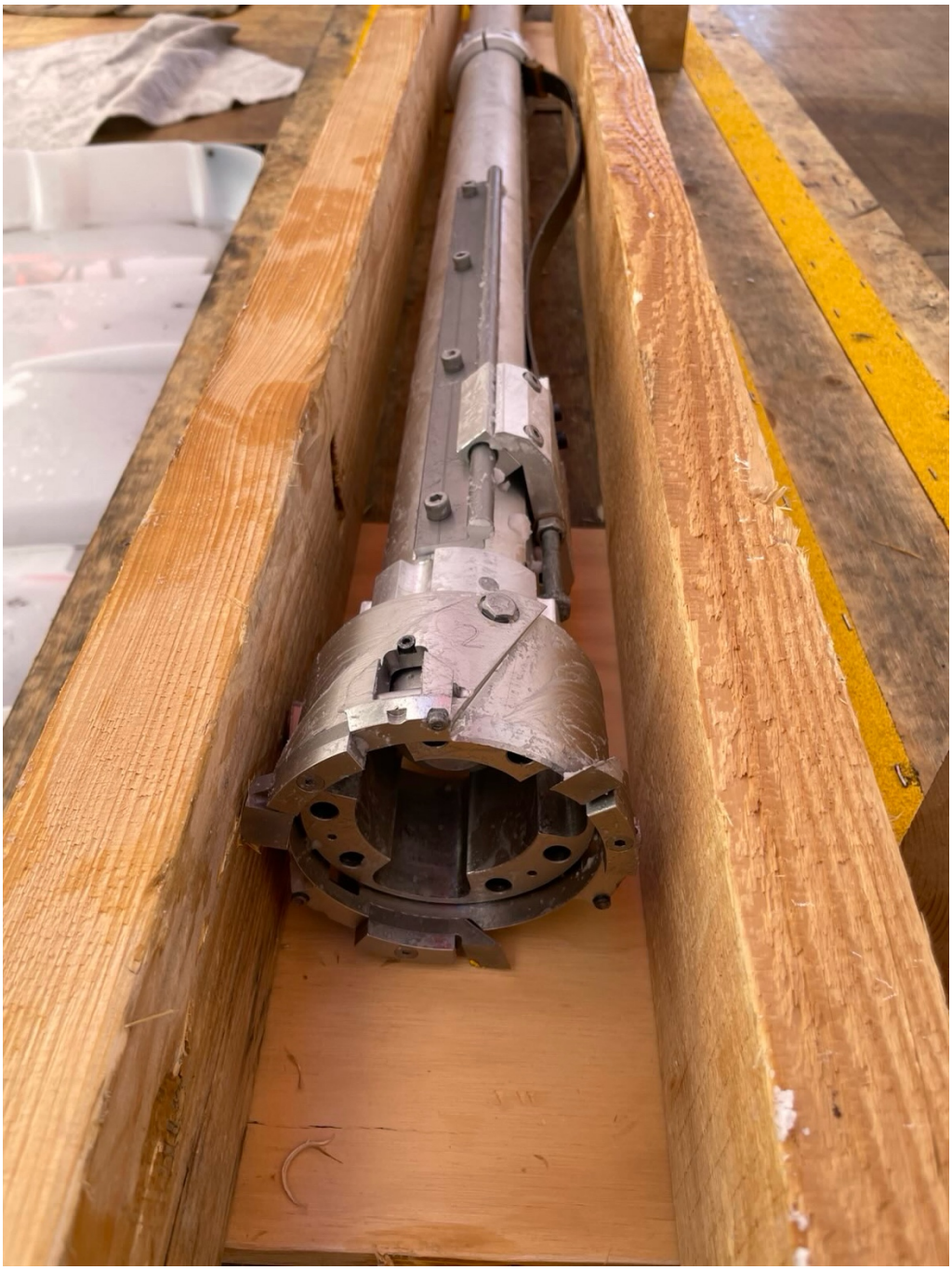
We have shared many details about our private life, but you might also be curious to see where we sleep and relax when we are not working in the science trench or in the drilling tent. The secret will soon be revealed:

Weatherhaven mobile shelters are expertly engineered systems designed to confront the brutal realities of the polar environments. Their construction is focused on creating a self-sustaining, thermally efficient microclimate capable of protecting personnel and equipment from extreme cold, high winds, and heavy snow loads. At the core of the design is a robust, yet lightweight, aluminum frame. This structure is often shaped aerodynamically, featuring sloped configurations, which is crucial for deflecting polar winds and ensuring that snow and ice are shed naturally rather than accumulating and stressing the structure. This structural integrity allows the shelter to remain standing even when subjected to wind speeds well over 100 kilometers per hour.

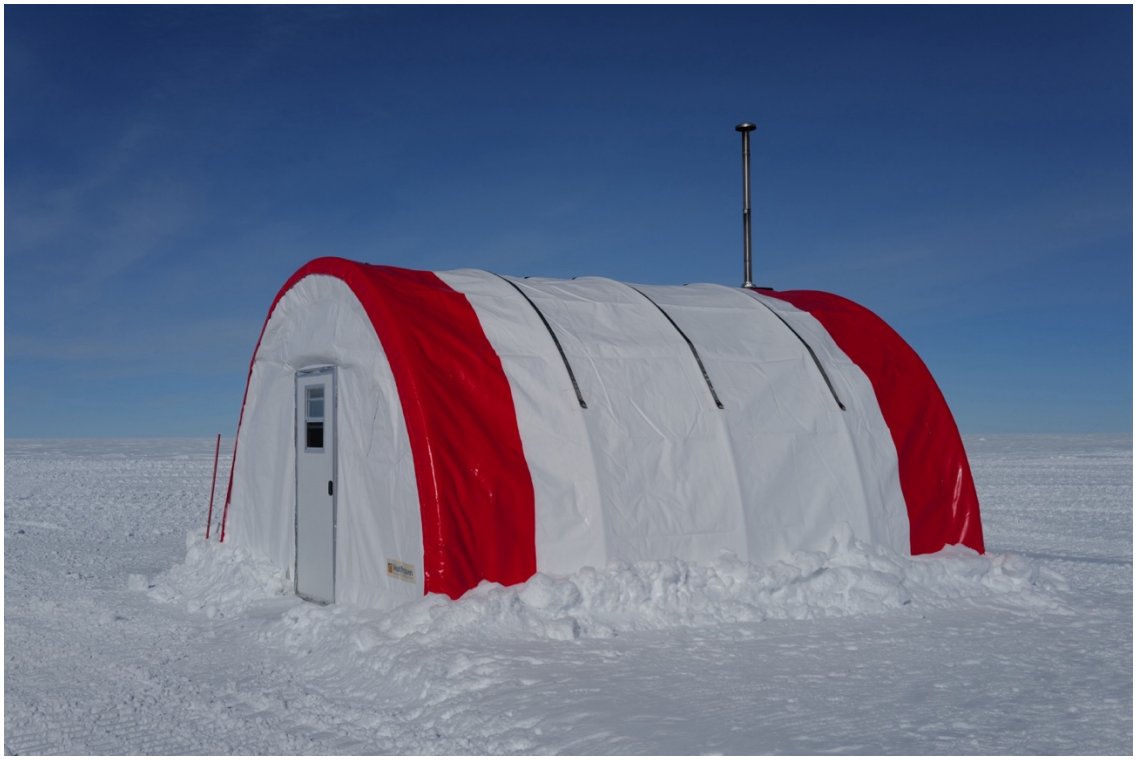
The critical element of the shelter's function is the multi-layered fabric envelope. It consists of a heavy-duty, rip-stop outer cover engineered for durability against UV radiation and cold-cracking, effectively forming the primary weather shield. Inside this layer is the sophisticated insulation system, often incorporating reflective foil layers or high-efficiency materials. This insulation works by minimizing

conduction—the transfer of heat through the fabric—and by reflecting radiant heat generated inside the shelter back towards the occupants, drastically reducing energy loss. This thermal barrier allows a comfortable internal temperature to be maintained safely, even when the outside temperature plummets to -50 °C or lower, typically using integrated expedition heaters.

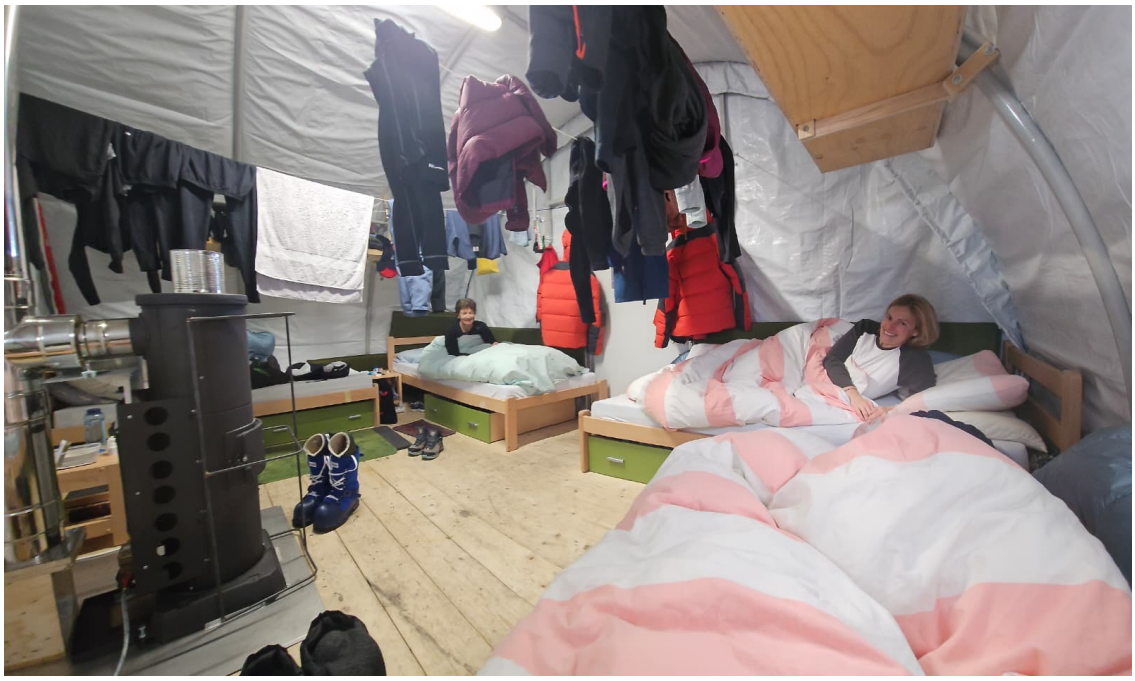
Finally, the tent is secured to the hostile environment not just by anchors, but often through a ballast skirt around the perimeter that can be weighted down with snow or ice, sealing the shelter against ground drafts and strengthening its resistance against powerful winds. Overall, the system works by creating a carefully sealed, insulated, and well-ventilated enclosure that effectively neutralizes the primary forces of heat loss in the world's coldest regions.



Testing the deviation tool with the wooden construction that should represent our hole. Here, it is obvious that the spring on the deviation tool was much too tense.. Photo by B. Seth.



The exterior of the Weatherhaven tent, with the chimney visible in the upper part of the photo. Photo by C. Barbante.



The interior of the girls' tent, where you can spot Barbara and Chiara just a few minutes before Morpheus took them into his arms. Katrin is hiding behind the stove. Photo by M. Lahuec.