

## Little Dome C

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

### Situation Report #12, 28th November 2025

#### Personnel @LDC:

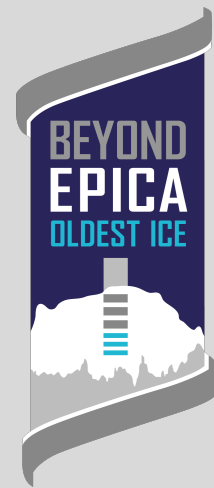
Carlo Barbante (UNIVE, CNR-ISP, PI in the field), Gianluca Bianchi Fasani (ENEA, Camp Leader), Katrin Ederer (AWI), Matthias Hüther (AWI, Chief Driller), Marion Lahuec (IPEV), Gunther Lawer (AWI), Johannes Lemburg (AWI), Barbara Seth (UNIBE), Mohammad Vafadarmianvelayat (AWI), Chiara Venier (CNR-ISP),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

#### Personnel @DC:

Philippe Possenti (CNRS)

**Weather at LDC:** sunny and cold

**Meteo at DC 09 pm:** T = -35.2 °C, Wind speed = 5.3 kt, Windchill T = -45°C, Humidity = 66 %



The work at Little Dome C (LDC) is constantly buzzing with focused activity as the Beyond EPICA team pushes forward toward unlocking the secrets held deep within the Antarctic ice. Today's report highlights key progress both at the drill site and in maintaining the complex infrastructure of our remote scientific camp.

Our primary mission—to recover ice cores that hold an unparalleled climate record—is entering a delicate and critical phase. Today, the team conducted two runs with the specialized rock corer. This tool is designed to retrieve samples from the bottom layer where the ancient ice meets the underlying bedrock.

The first run was specifically aimed at securing samples of rock or the basal ice layer, which can provide crucial data about the environmental conditions when the ice sheet first formed. The second run was highly procedural, focusing on filtering the drilling fluid at the base of the borehole. Maintaining a clean and optimal drilling fluid is paramount, as it ensures the stability of the deep borehole and makes the environment as suitable as possible for the sensitive coring process.

This meticulous preparation, particularly for rock drilling conditions, is essential. It's a painstaking process where every parameter must be just right to avoid damaging the sensitive equipment or compromising the final core sample.

The day's coring yielded a small, but highly significant, result: a compact ice sample measuring 4.7 cm in length and 34 mm in diameter. As is standard practice for analyzing these pristine samples, the processing was conducted in the dark, under red light, to prevent contamination or alteration from standard light exposure. While it may seem like a small amount, the team is diligently optimizing the parameters and yesterday evening's vital videoconference exchange with our Danish colleagues helped align our strategies for the next crucial steps.

Good progress was made today on the Science Trench, the sub-surface facility where the precious ice cores will be processed and analyzed. Sergio and Gianluca took on the important task of lightening the snow load on the containers forming the trench structure. They also ensured that the emergency exit remained clear and accessible—a critical safety measure in the unpredictable Antarctic climate.

Life at LDC is about more than just drilling; it requires constant vigilance over the infrastructure that keeps the science moving and the team safe.



The LDC camp is incredibly energy-intensive. Keeping a remote research station operational in one of the coldest places on Earth requires a huge amount of power.

The two Wetheraven tents (for sleeping) and the recreation tent are kept warm using heaters fueled by Jet A-1. This is the most common type of aviation fuel globally—essentially a highly refined kerosene. By using Jet A-1 for heating, the team helps optimize the use of fuels across the camp, limiting the number of fuel types required for operations.

The rest of the camp's necessary energy is electrical power, produced by two massive 77kW SDMO generators each, which also run on Jet A-1. One generator operates constantly for ten-day periods while the other remains on standby as a crucial backup. The consumption rate for this primary power source is approximately 200 liters per day.

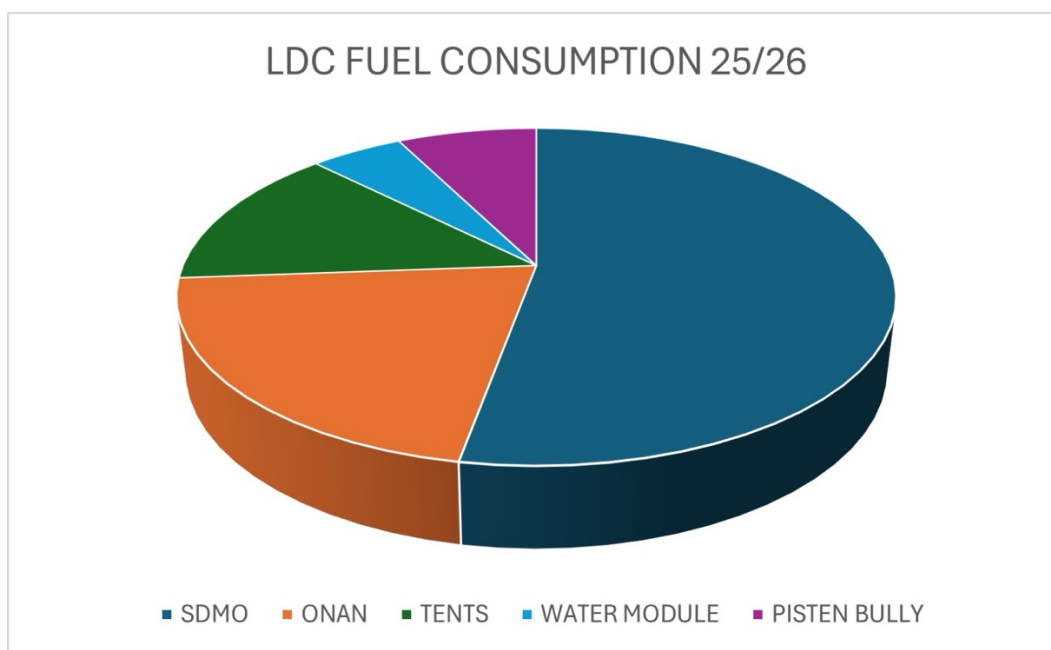
The glorious ITASE (International Trans Antarctic Scientific Expedition) modules serve as both accommodation (housing four people, but up to eight) and the camp's kitchen and services area. These modules have had a long and storied life, traveling across half the Antarctic continent over nearly thirty years! They are powered by a separate 35kW Onan generator, which consumes about 75 liters per day.

In total, the entire LDC camp requires a substantial 350 liters of fuel per day to keep the lights on, the equipment running, and the team warm.



The 4.7 mm long ice core collected at the bottom. Some little inclusions are visible. Photo B. Seth





Average daily fuel (Jet A-1) consumption at LDC Camp is of about 350 L. Here above the relative consumption



The two SDMO power generators, in blue. The drilling tent is on the background: please note that the tower is in drilling mode  
Module. Photo: C. Barbante

CB, GBF, BS & MH; LDC, 28.11.2025

