

## ZFIDS - Halley Update March 2023

It's been another great season down at Halley – and quite a historic one for a few reasons!

We had 21 staff on station this year for the most part. Largely composed of experienced returners with a few additional faces (including a reunion of sorts for the Halley 1997 wintering team). It was one of the strongest teams I've witnessed at Halley, in terms of technical competence, team cohesion and general morale. We worked hard but had a right laugh too.

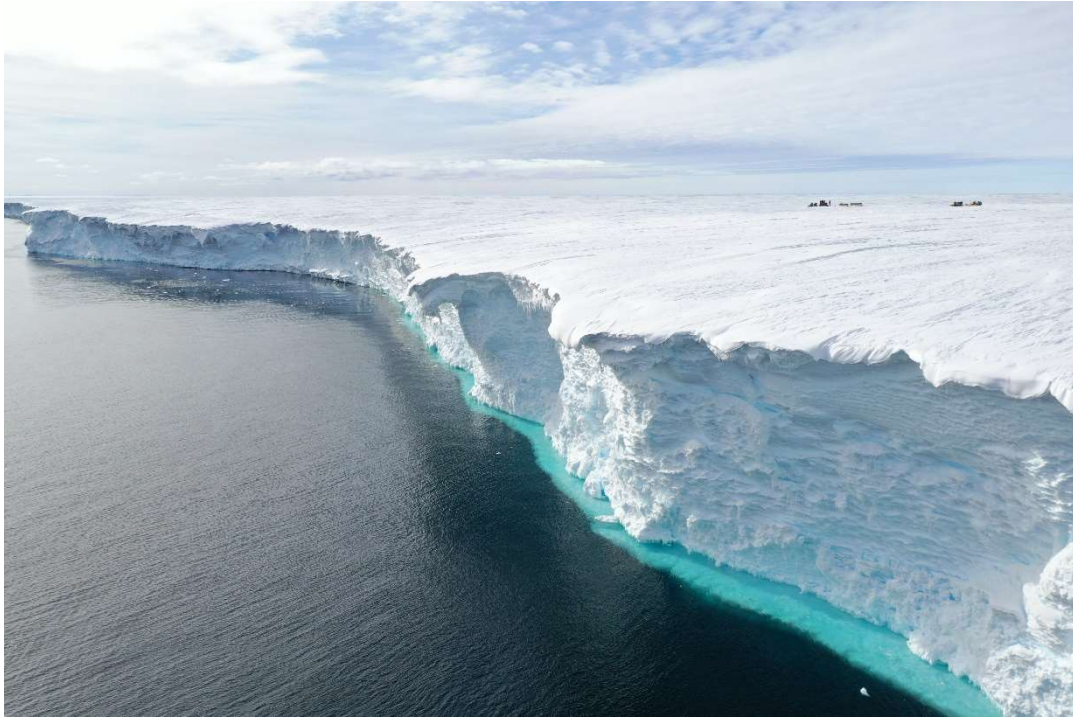


### *Halley Summer 2022/23 Team*

First off, we were operating the modules at full capacity. It was an incredible achievement for the Estates team to provide this (Only 4 of them for most of the season, plus one additional for a 2 week period to assist in the annual raise of the buildings). There were two main aims: First, commission and decommission the wet systems within 2 weeks from arrival and within 2 weeks at closedown, to be similar to the operation of the Drewry building. The second was to keep the load and fuel consumption down.

Historically, when the buildings were run at full capacity, the load was upwards of 100 kW and the fuel consumption around the 100m<sup>3</sup> mark during a season. Previous efforts had tried in vain to keep to one engine (85kW). However, this year the team smashed it – they achieved an average of 40 kW and fuel consumption of 30m<sup>3</sup>. An incredible achievement, many adjustments were made to the building management system to achieve this. It was done in large parts by getting to grips with unnecessary heating systems that aren't needed in summer mode (e.g. in undercroft), reducing the reliance on boilers, which was largely achieved by clever management of the heat recovery system from the engine and the base wide LTHW use, and then actively managing the ventilation systems of different modules. The efforts by the team put us in a great position to achieve our Net Zero goals by 2030.

The most significant event to have occurred was the calving of the West Brunt ice shelf, all 1550 km<sup>2</sup> of it – finally! It was a privilege to be there when it happened and see the data first hand that indicated the calving had begun, 48 hours before any satellite imagery picked it up. We didn't "hear" it go, as the rumour mill over at Rothera had thought... But we did manage a trip out to the new shelf edge once we deemed it safe to have a look for potential shelf relief sites, and it does look promising.



*Exploring the new shelf edge*

Prior to the calving, a lot of work went into investigating relief sites and relief routes across and around the Halloween crack. Whilst it was all very valuable work, the new shelf edge provides a much more reasonable route 15-20km rather than 70-80km, without any intricate ice shelf features to navigate.



*Glaciology team investigating ramp access around the North Brunt.*

A lot of work went into preparing for relief from our garage and GA teams – we've got approximately 110 tonnes of "stuff" that we no longer need on the station, some of it is still left over from the relocation project several years ago. Our 2 person GA team processed all 110 tonnes of that ready for shipment with great help from our vehicles team to help manoeuvre the equipment around.



*Waste wood ready for shipment out of Halley*

The science teams had a very successful season too. All the automated infrastructure was serviced and the microturbine and the automated systems are running for another winter. However, the big win was around the glaciological data collection. Our glaciologist and engineering teams deployed a network of seismometers around Chasm II and they were in place for the Chasm I calving, so we're looking forward to seeing what the data is like from them. This is a great precursor to a NERC funded RIFT-TIP project which will kick off at Halley next year, the aim of investigating the fracture properties of ice under different regimes. The work will contribute to predictions of ice shelf behaviour, both on the Brunt and elsewhere across Antarctica.

Plans are now afoot for a ship to visit Halley around Christmas 2023 in what will be our first relief in 6 years. There's a lot to plan and so it will be a busy Cambridge summer period!