EXPEDITION REPORT

Anglo-Scottish Greenland Expedition 2006

Jennifer Escott, Jonathan Hunter, Quintin Lake & Nick Mills

Photo: QL

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Photo: QL

Acknowledgments

For logistics support

Tangent Expeditions:

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Hauke Engel

Ben Spencer

Chris Abbott

Photo: QL

Deciding the expedition area in east Greenland

Photo: JE

Nick Mills, Jennifer Escott, Quintin Lake & Jonty Hunter on the summit of Bowhead peak

Aims and objectives

The aim was to divide the expedition into three phases of roughly a week each: initially a phase on the icecap with the intention of exploring an impressive massif near the drop-off; phase two would involve pulk pulling across the icecap of the peninsula; and the final phase would involve attempting some of the unclimbed peaks around the glacier to the south, down off the icecap. The peaks on the icecap (nunataks) generally rise only a few hundred metres proud of the ice. The peak on the lower glacier, although of similar overall height, would involve climbs of much greater length and commitment, with exposed ridges of snow and friable basalt. From the air these latter peaks appeared quite challenging.

Since no specific maps of this area exist, all plans were made from scrutinizing aerial photographs taken some decades before.

We hoped that these objectives would produce a varied and challenging expedition that would accommodate the different interests within our group - ranging from ski-touring to photography to technical climbing. It meant much to all of us that this was untouched land, that this section of icecap had never been crossed and that most of the mountains remained unclimbed.

The Team

Jennifer Escott, Jonathan Hunter, Quintin Lake and Nick Mills

Despite initially feeling that five was the ideal number, in fact four worked well. We already knew each other well and had shared various expedition, climbing and skiing experiences in recent years.

Photo: QL

Studying aerial photos of the expedition area with Paul Walker of Tangent Expeditions

Photo: QL

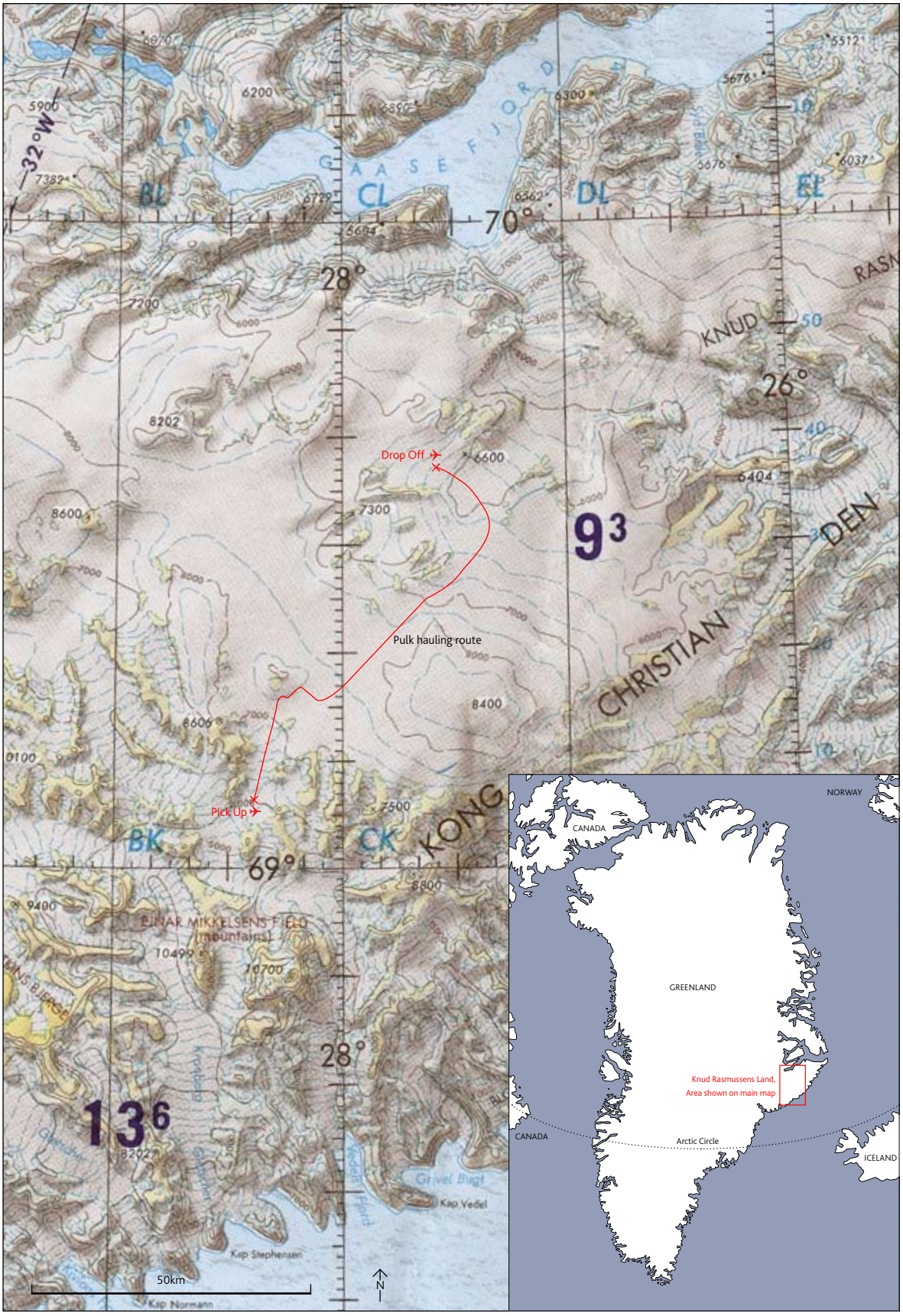
Jennifer Escott prussicking during crevasse rescue practice on a crag in the Lake District

Preparation

We finally committed ourselves to an expedition in Greenland in May 2007. This left us only two and a half months to get organised, considerably less than most expeditions of this type. In mid May we visited Paul Walker, director of Tangent Expeditions, at his home near Kendal to discuss logistics, costs and possible itineraries. Paul has vast knowledge and experience of East Greenland and he was able to illustrate very clearly the nature of the terrain using aerial photographs and previous expedition reports. We came away with various possible itineraries to mull over.

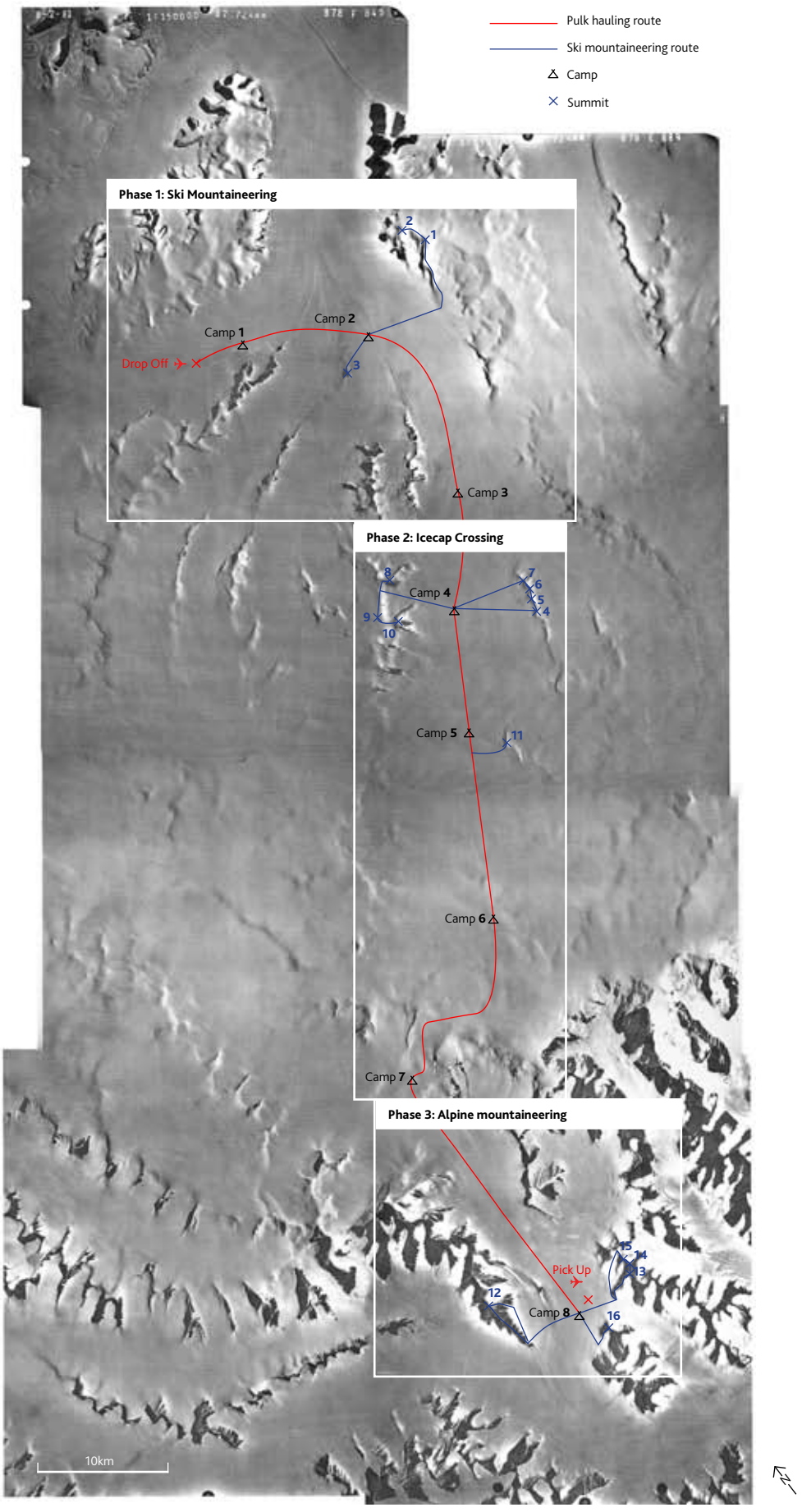
Having decided on the three-phase expedition described above, we set about dividing the preparatory tasks between us. In addition, three of us spent a day learning and practicing crevasse rescue techniques and we also arranged an advanced first aid revision day. We all had different levels of first aid training, ranging from REC mountain first aid to advanced expedition first aid for remote locations. A constructive day was spent practicing putting in drips, sewing up wounds and giving injections to oranges.

Location Map



Extract from US Aeronautical chart ONC C-13 edition 4

Overview Map



Phase 1: Ski Mountaineering

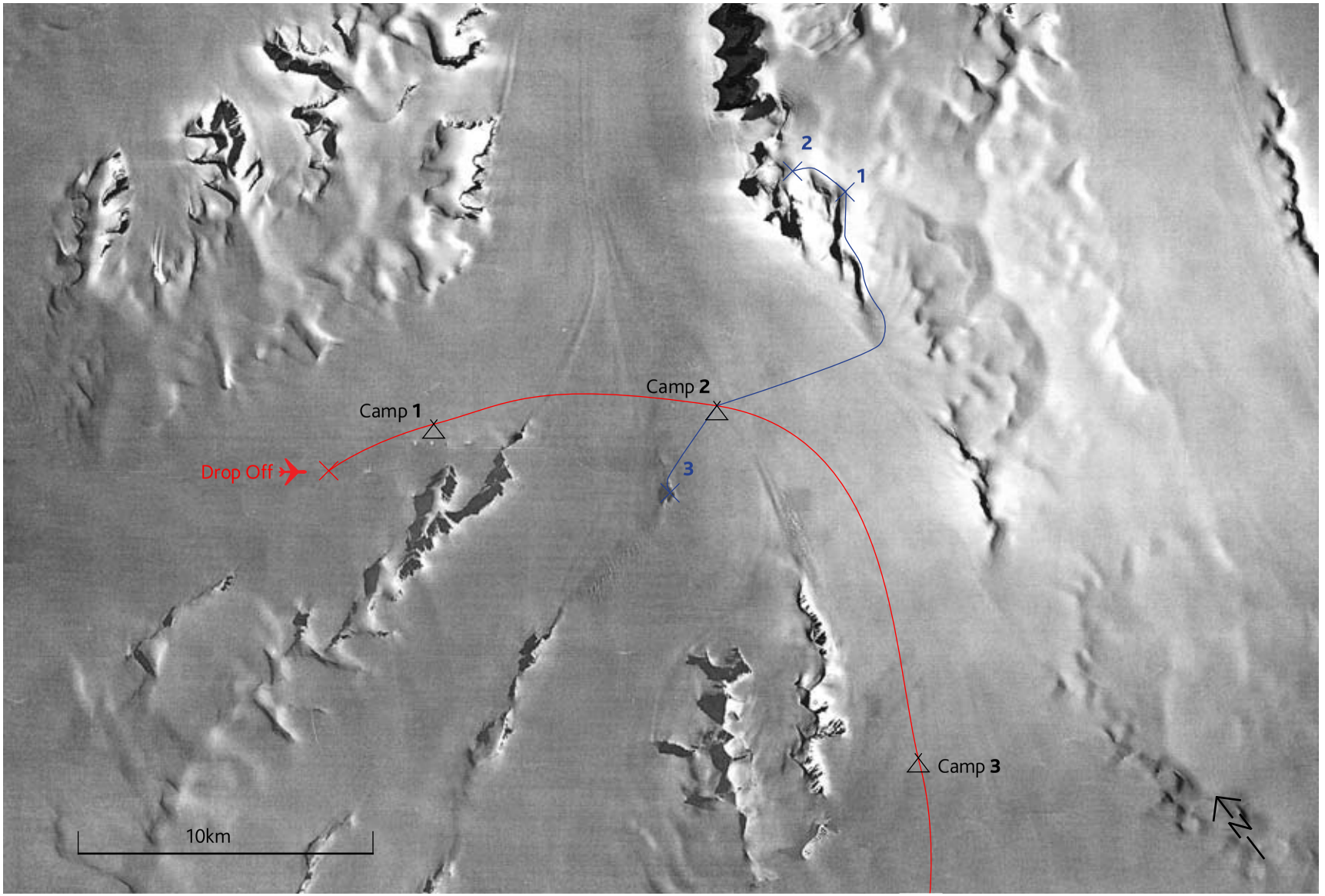

2
1
Camp 2
Camp 1
Drop Off
3
Camp 3
10km
Pulk hauling route
Ski mountaineering route
Camp
Summit

Photo: QL

Jennifer Escott loading supplies into the Twin Otter in Isafjiordur, Iceland

Photo: QL

Pulk hauling to Am Monadh Geal from the Twin Otter landing point

Am Monadh Geal & Bowhead Peak

After a delay of three days caused by bad weather, we eventually left Isafjiordur aboard the Twin Otter on the morning of Monday 7th August. We made the coast of Greenland after a couple of hours, and flew in over the coastal ranges, the impressive summits of the Watkins Mountains in clear view to the south. As we passed onto the ice cap we were able to identify our intended peaks from aerial photographs. Our landing spot (N 69° 38.9', W 027° 44.0') was the base camp for an out-going group from Brathay Exploration Group, with whom we exchanged vital pieces of kit such as satellite phone and shotgun before packing them onto the plane for the return to Iceland. Confronted at last by the reality of being alone on the Greenland ice cap, we spent much of that afternoon re-sorting gear, packing pulks and going over emergency ropework.

The first objective of the expedition involved exploring a massif roughly 10 km to the east of our drop-off. The western aspect of the massif consists of 12 basalt buttresses that jut out onto the glacial plateau - clearly visible on the aerial photograph. We spent the first day and a half making our way rather tentatively across the glacier towards this massif, experimenting with roping up with pulks, (which we soon decided was unnecessary). It was a relief to find that we were all able to pull our pulks with moderate effort, despite them being fully laden. We made base camp in the lee of the buttresses on the evening of 8th August. (N 69° 28.5' W 027° 36.6')

Photo: QL

Camp in front to Am Monadh Geal with Sunrise Peak and Lunar Peak

Photo: JH

Quintin Lake approaching Bowhead peak

Photo: QL

Jonty Hunter on the ascent of Bowhead Peak

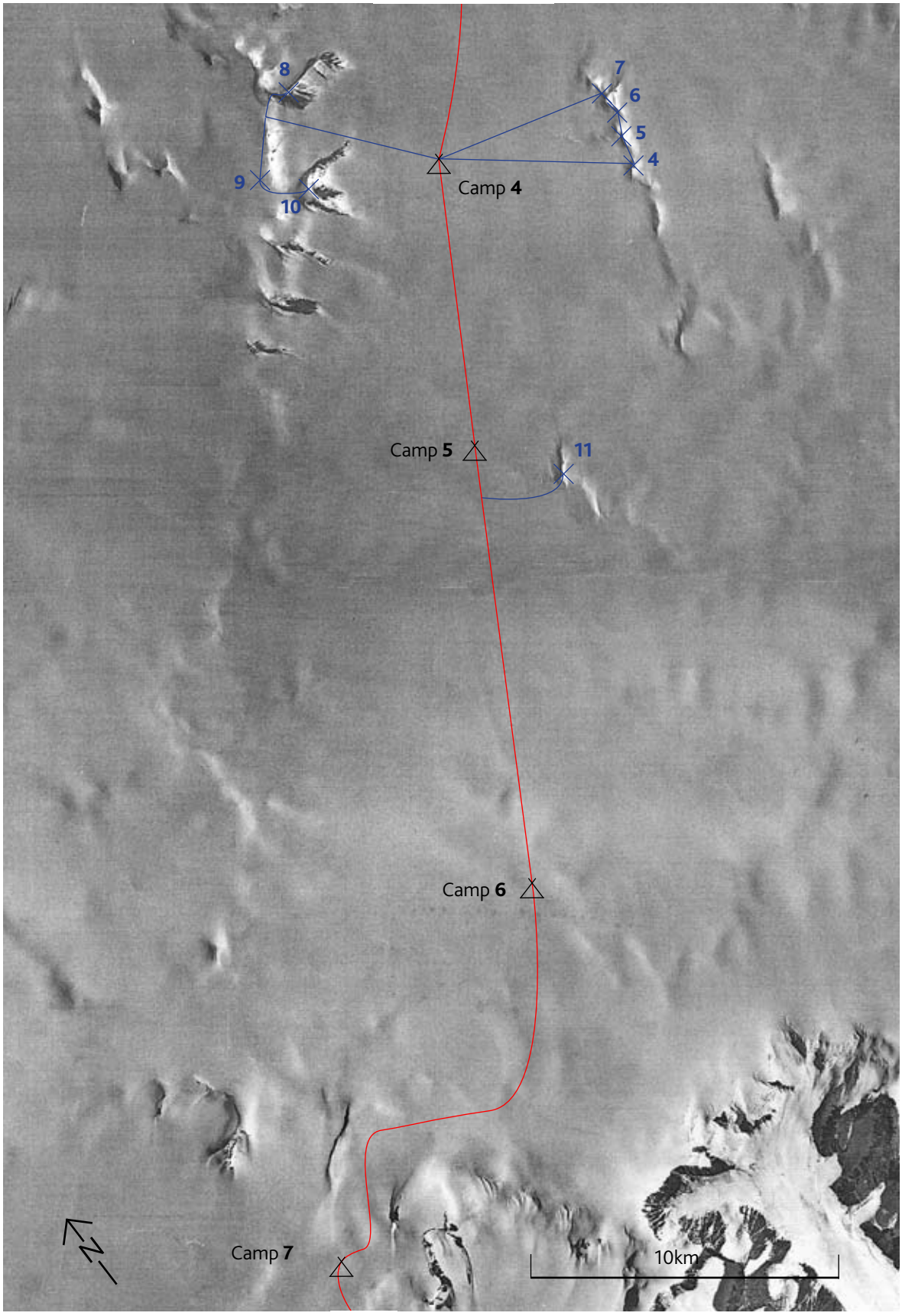
The next evening we skied from our camp round the south edge of the massif to reach a gentle snow slope, heavily crevassed on its lower section. We ascended on skis to reach the first flat-topped summit; the second summit was again reached on skis via a broad connecting ridge. Once on the top of the massif, the terrain was reminiscent of the Cairngorms under deep snow. We were able to see north to where the glaciers descended into Scoresbysund and south to the peaks on the edge of the ice cap. This outing was made overnight to ensure favourable snow conditions. The sun set as we approached the first summit at about 11:30pm, though it never became truly dark. The ski descent under moonlight was magical, though the slog back across the glacier to camp in the hours before dawn was bitterly cold.

Peak 1, Lunar Peak	N 69° 34.2'	W 027° 11.7'	2230m
Peak 2, Sunrise Peak	N 69° 35.2'	W 027° 12.2'	2270m

Our second outing was delayed due to the weather clagging in with a day of snow (falling in "needles" rather than flakes). However, on 11th August we set out to climb an isolated whale-backed peak lying an hour's skiing south of our camp. We set off at about 7pm and ascended via the north ridge, following a line of crumbly basalt. A steep convex snow slope ran away to our right, a rocky drop-off to our left. The peak is only about 250m above the ice cap, but provided stunning views across the crevasse fields and peaks to the south.

Peak 3, Bowhead Peak	N 69° 33.6'	W 027° 29.4'	2065m

Phase 2: Icecap Crossing


8
7
6
5
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9
10
Camp 4
Camp 5
11
Camp 6
Camp 7
10km
Pulk hauling route
Ski mountaineering route
Camp
Summit

Photo: QL

Pulk hauling across the icecap

Photo: QL

The Four Sisters at midnight

The Four Sisters

The second week of the expedition involved a traverse of the ice cap to reach the impressive peaks that lie just off its southern edge. We broke up the journey (and the monotony of hauling pulks) by bagging all the unclimbed summits that lay along our route. Initially we passed to the east of an impressive cirque first climbed in 2003, continuing south to set up camp between two clusters of unclimbed peaks. Our routine on the move usually consisted of pulk-pulling sessions of 45 minutes interspersed with breaks of 15 minutes.

(14th August) First we tackled the chain of four peaks to the east, the nearest of which lay about 3.5km from our camp. The first and highest peak we ascended roped and on foot via the easiest line – up the lateral ridge from the south. We encountered two crevasses that split the ridge east to west. The summit consisted of a small snow dome linked by narrow arête to an equally small rocky top. We considered the snow dome to be the true summit, declining to make the precarious traverse across the arête. We were able to ski up the remaining three peaks that lay in a chain to the north, though the wind had scoured most of the snow off the slopes. Descent on skis proved more challenging than ascent for those of us wearing mountaineering boots due to their relative lack of ankle support on the icy surface. However, Quintin, having chosen to remove his skis, promptly fell up to his waist in a crevasse at the bottom of the third peak. All-in-all, a wonderful long day of ski touring. We made it back to camp by mid-evening.

The Four Sisters, Scottish Winter Grade 1:

Peak 4, Saamik	N 69° 23.0'	W 027° 35.6'	2130m
Peak 5, Seqineq	N 69° 24.5'	W 027° 34.8'	2100m
Peak 6, Sikkersoq	N 69° 24.0'	W 027° 33.9'	2090m
Peak 7, Sissinnguaq	N 69° 24.4'	W 027° 33.9'	2030m

Photo: QL

Surveying Peak Saamik

Photo: QL

The summit of Peak Seqineq

Photo: NM

Peak Sikkersoq from Peak Seqineq

Photo: QL

Peak Sissinnguaq

Photo: JH

Peak 8, Jennifer Escott on the summit ridge of Promontory Peak

Photo: NM

Col between Promontory Peak & Windslab Peak

The Devils Fingers

15th August Jonty, Jennifer and Nick set out mid-afternoon to climb the two peaks to our west that form the end of the horseshoe of peaks climbed in 2003. The summits lay on two spurs pushing out to the east, linked by a broad saddle that we skied up on to. We climbed the northern summit first via a narrow snow ridge from which Quintin in the camp was just able to make us out. This was the most technical summit so far and gave wonderful views east to the jagged summits off the ice cap. We descended back to the col and slogged through tiresome soft windslab to reach a very undistinguished flat-topped mound (Peak 9). From here we descended east to another col before ascending on skis to the summit of the southern spur. The connecting ridge was magnificently corniced. We were back at the campsite by midnight (an eight hour trip in all) and hunkered down in our "igloo" to celebrate with a dram.

The Devils Fingers, Scottish Winter Grade 1:

Peak 8, Promontory Peak	N 69° 27.7'	W 027° 42.9	2360m
Peak 9, Windslab Peak	N 69° 26.7'	W 027° 46.8'	2310m
Peak 10, Lion's Head Peak	N 69° 26.2'	W027° 45.1'	2340m

Photo: JH

Peak 10, Lion's Head Peak

Photo: QL

Peak 10, Dreamers Peak

Photo: QL

Cornicing on Dreamers Peak

Dreamers Peak

We continued our progress south and after half a day of pulking arrived at the foot of an isolated snow peak – the last on our route before the edge of the ice cap. Here we made camp. On 18th August we got up at 5am in the bitter cold as the sun was rising, keen to bag the peak and then fit in a full day of pulking. We were able to ski to within about 50m of the summit, which we reached by 9am. Although it was an easy climb, the isolated nature of the summit made it thoroughly rewarding, with a wonderful play of light on the icecap spread out in all directions.

Peak 10, Dreamers Peak N 69° 26.0' W027° 45.1' 2280m

From Peak 10, a day and a half of pulking brought us to the edge of the icecap. Navigation across the largely featureless terrain was made more awkward by poor visibility. In general, the edge of the icecap seemed to attract dense cloud and we relied heavily on our GPSs to keep a steady bearing. The view from the high ground on the edge of the icecap down the glaciers to the south was awesome: seemingly endless chains of jagged peaks and sharp ridges. We were able to identify our proposed pick-up point at the junction of two glaciers as well numerous summits we had highlighted on our aerial photos.

We picked an easy descent through the crevasses down the headwall of the glacier, dropping about 300m to what we thought was the glacier floor where we set up camp. In fact we were on a raised knoll and it took another 200m of descent through a crevasse field to reach the true base of the glacier. The lower altitude brought significantly warmer temperatures than we had experienced during the past week on the icecap.

Photo: QL

Shadows on low lying clouds seen from the summit of Dreamers Peak

Photo: QL

Nick Mills calling home agent with our GPS position on an Iridium 9505 Satphone

Photo: QL

Taking a break from pulk hauling on the icecap

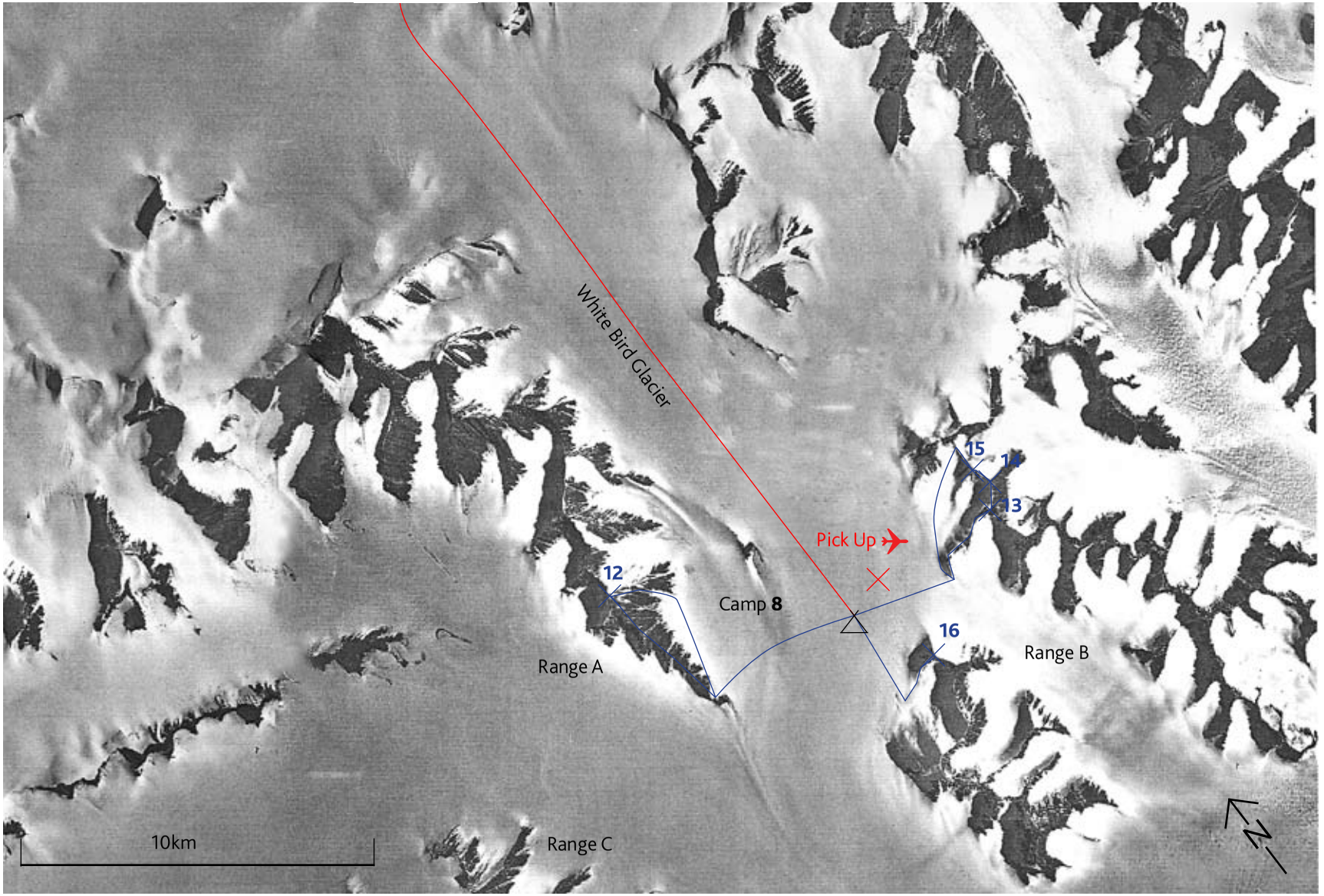
Photo: QL

Jonty Hunter marking our GPS position on laminated aerial photographs

Photo: QL

The vista from the edge of the icecap showing the glacier we were soon to descend

Phase 3: Alpine Mountaineering



Pulk hauling route Ski mountaineering route Camp Summit

Photo: QL

Pulk hauling down White Bird Glacier to camp 8 and pick up location

Photo: QL

Camp 8 on White Bird Glacier

White Bird Glacier

The third and final phase of our expedition consisted of one week spent at our final camp (Camp 8, N69° 007', W 28° 025') at the southern end of White Bird Glacier. We were here from Sunday 20th August till our pick-up on Monday 28th August. During this period successful ascents were made of five peaks on three separate ranges. This included a long ascent of a rocky ridge to gain a peak of altitude 2570m on the first range (Range A). The traverse of a long mixed ridge bounded by steep snow slopes, with large cornices and rocky outcrops ascending two snow peaks of altitudes 2225m and 2230m and a third rocky peak of altitude 2245m on the second range (Range B). The final peak ascended on the final day of the expedition had an altitude 2190m and was at the northern end of a long ridge on a small range (Range C) with several peaks and surrounded completely by connecting glaciers.

Our camp was sited approximately 10.5km south of the base camp for the 2003 British Knud Rasmussen Land East Expedition led by Bob Dawson. It was about 2 km east of a minor nunatak and in the centre of the glacier equidistant between three separate ranges. Range A ran along the southwestern edge of the glacier, ending approximately 10km north of the outlying ridges on the northern side of the Ejnar Mikelsens Fjeld massif. Range B ran from west to east on the eastern side of the glacier. Range C, a smaller isolated range to the south of Range B, lay at the southern end of White Bird Glacier at its confluence with a vast glacier system that runs in a west-east direction separating these ranges from the larger Ejnar Mikelsens Fjeld and Bortinderne ranges to the south. This large glacier system finally changes to a southerly direction as it runs down the eastern side of the Bortinderne range before it finally reaches the head of Vedels Fjord on the Greenland east coast adjacent to the Denmark Straight.

During the final week the weather was mixed with fronts coming across from the southeast between which there were four days of clear settled weather and clear skies. The fronts brought overcast skies and two days of snow with low cloud and poor visibility. Temperatures were generally between 5 to 10°C during the middle of the day and dropped to as low as –20° C at night.

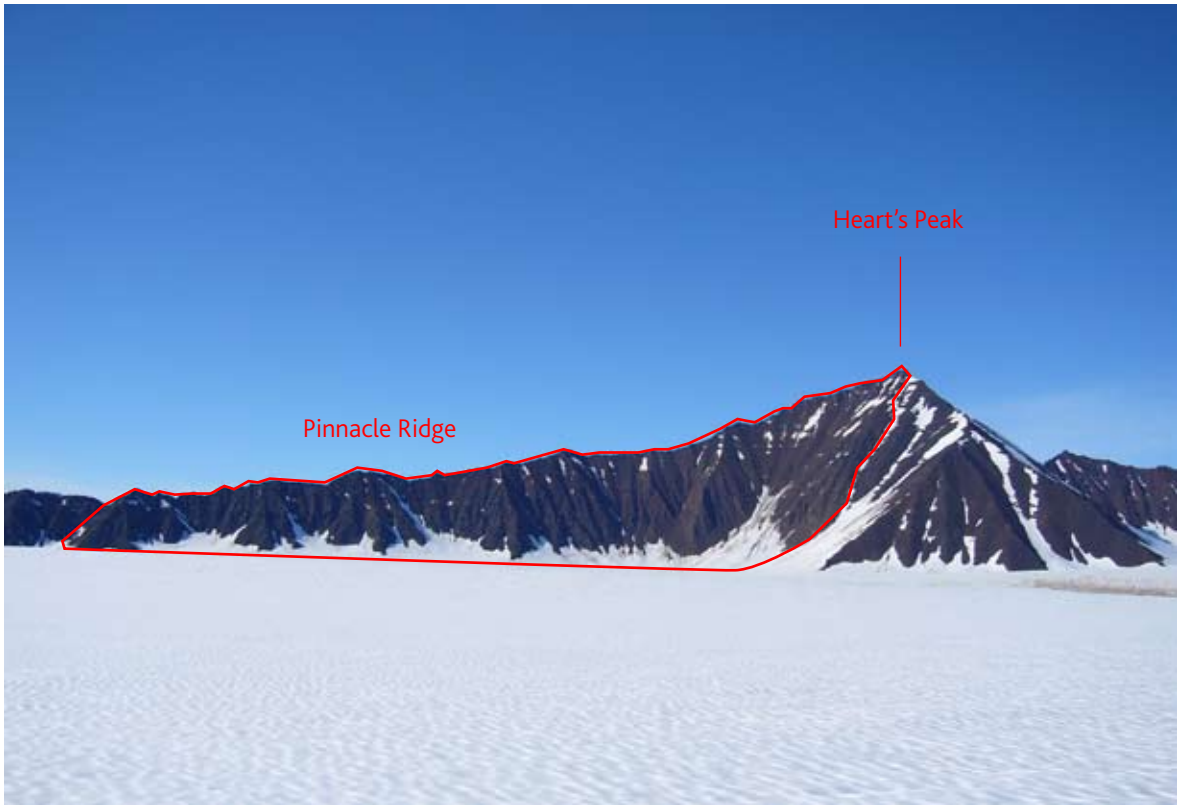


Photo: JH

Pinnacle Ridge and Heart's Peak

Photo: NM

Pinnacle Ridge with the heart shaped lake in the background

Heart's Peak & Pinnacle Ridge

After a rest day at Camp 8 we set off for our first climbing objective from the White Bird Glacier on the 22nd August at around 9:30 am. Our aim was to ascend the southern most peak in a long range of peaks connected by a continuous ridge, which lies at the eastern end of a series of converging ranges forming West Knud Rasmussen Land. This range also separates the White Bird Glacier and the long glacier that passes between the Watkins Mountains and West Knud Rasmussen Land ranges to the north. Our aim was to ascend the peak via its long south ridge (Pinnacle Ridge) which starts where the two glaciers converge. It took approximately 1 hour to cross the glacier on skis from Camp 8, which was fairly crevassed and required crossing a glacial stream running only a few inches under the surface ice and easily breached even on skis.

We started the ascent from a low col near the bottom end of the ridge, which was easily reached by a low angled snow slope from the glacier. The ridge comprised almost entirely of exposed rock pinnacles and scree with virtually no snow. We ascended from the col up a mixture of steep scree and fractured rock to reach the main crest. For the first 1.5km the ridge comprised a series of exposed pinnacles all with extremely loose rock. We traversed over the top of some of these pinnacles and some we bypassed on their right across steep loose rock and scree. The left side of the ridge presented a much more precipitous drop to the glacier below. After this first section of the ridge another col was reached with a wide scree and snow-filled gully descending about 150m down to the glacier below on the east flank. We left our ice axes and crampons here to reduce weight and increase speed on the ascent, as there appeared to be no sections of snow and ice to contend with on the remaining ridge. The gully would also provide a quick and convenient escape route off the ridge down to the glacier on our decent. The next section of ridge continued at a similar angle with pinnacles and scree along the crest, with the pinnacles becoming fewer and sections of broader scree-covered ridge becoming more frequent. This continued for another 2km until the ridge started to narrow and steepen before reaching an obvious step in the ridge, visible from the glacier and Camp 8. This step consisted of a vertical blank wall around 10m high on the ridge crest. This was fairly easily passed, however, by traversing round broken rock and scree to the right of the wall then ascending back to the crest. The ridge continued more steeply for another 150m ascent with sections of exposed loose rock until finally reaching the last section terminating in a pinnacle. Behind this pinnacle there was a short summit ridge of around 20m in length to the highest point (2570m). The ascent of the south (Pinnacle) ridge took 8 hours and would be classed 'Moderate' for overall technical rating due to the exposed moves required on some of the pinnacles. We did not use a rope during the accent or any rock protection as the rock was too fractured and unstable.

Photo: QL

The initial section of Pinnacle ridge

Photo: JH

Nick Mills on a steep section of Pinnacle ridge

Due to the long ascent time we decided to descend directly down the southeast face of the peak. This consisted of steep scree slopes and broken rock bands which we were fortunate to find a way through all the way to the glacier 850m below. This decent took around 1.5hrs.

Once we returned the 3km along the glacier to the start of the ridge and retrieved our axes crampons and skis we had a tricky return to the camp across the glacier with light fading, made worse by the arrival of a front bring low cloud. It was almost impossible to see our original tracks from the start of the day and we had to travel carefully to avoid numerous crevasses between ourselves and the camp which we reached around 1:30am.

The peak is named Heart's Peak after an unusual heart shaped glacial lake that had formed in the middle of the White Bird Glacier adjacent to the start of the south ridge and was visible during our entire ascent of the mountain via its south ridge.

Peak 12, Heart's Peak N 69° 09.4' W028° 32.2' 2570m (location estimate, not from GPS)
Scottish Winter Grade 2

Photo: QL

The Castle, bivvy site, Peak Aurora & Peak Hubris from camp 8

Photo: NM

Approaching the summit of Peak Hubris

Peak Hubris, Peak Aurora and The Castle

Following 36 hours of bad weather, with low cloud and snow, we finally got a settled spell and set off for our next objective on the afternoon of 24th August at around 2:30pm. We skied for approximately 1 hour, this time east from the camp to the bottom of a long subsidiary low-angled snow ridge that rose from west to east for approximately 3km before joining the main ridge, which runs from west to east for 13.5km and contains several peaks. Our objective was to traverse 3 peaks at the western end of this range before descending back to the main glacier via a low-lying col.

After leaving our skis at the start of the ridge and crossing the bergstrund with ease, we quickly gained the crest of the ridge. For the first 2km this was mostly on an easy angled snow arête with occasional outcrops of scree and loose rock. This was relatively straightforward with only small crevasses dissecting the ridge to contend with.

We then reached a group of gendarmes. Due to the fractured nature of the rock and initial vertical exposed ascent to gain the crest of the first pinnacle, we opted to bypass the section of pinnacles on their left side by traversing the top of a steep snow slope. The traverse round the base of the pinnacles took much longer than anticipated and required setting up belays using ice screws during the traverse. With four people on one rope this was time consuming taking around two hours to traverse less than 150m.

Beyond the pinnacles we continued up the snow ridge for a short distance where it steepened to a final snow slope of around 450m to gain the main ridge with the first top reached a short distance later. The first peak (Peak Hubris) was reached at around 10:30pm with light starting to fade. From here we continued along the main ridge for approximately 1km, a heavily corniced undulating snow arête with steep snow slopes either side. The ridge dropped around 100m before climbing back up to the second snow-bound peak, which we reached around midnight. With the remaining light disappearing fast we continued without stopping. From the second peak a snow belay was required to descend the first section, which was steep and the arête extremely narrow with the chance of its collapse or putting a foot through the cornice a real possibility. After this we scrambled down over some loose rock steps until finally we reached a low col between the second and third peak. With the light gone and a clear night sky we got our first and only sighting of the aurora borealis during our trip to Greenland. The green wispy light stretched across the southern sky and lasted around 10 minutes. At this point we decided there was not enough light to continue, particularly as to continue or to descend from the col would have require negotiating steep icy slopes in the dark. We huddled under our group bivvy shelter to keep warm for around 3 hours on the col with the outside temperature dropping down to around –25°C until around 4:30am and dawn when there was enough light to continue.

From the col we had a short ascent up an icy snow slope before reaching the rocky outcrop at the top of the third peak. This rock was much more stable than the previous rocks we had encountered, and we traversed fairly confidently over large blocks to reach the third summit mid-morning.

Photo: NM

The ridge between peak Aurora and peak Hubris

Photo: JH

The Castle seen from the North col

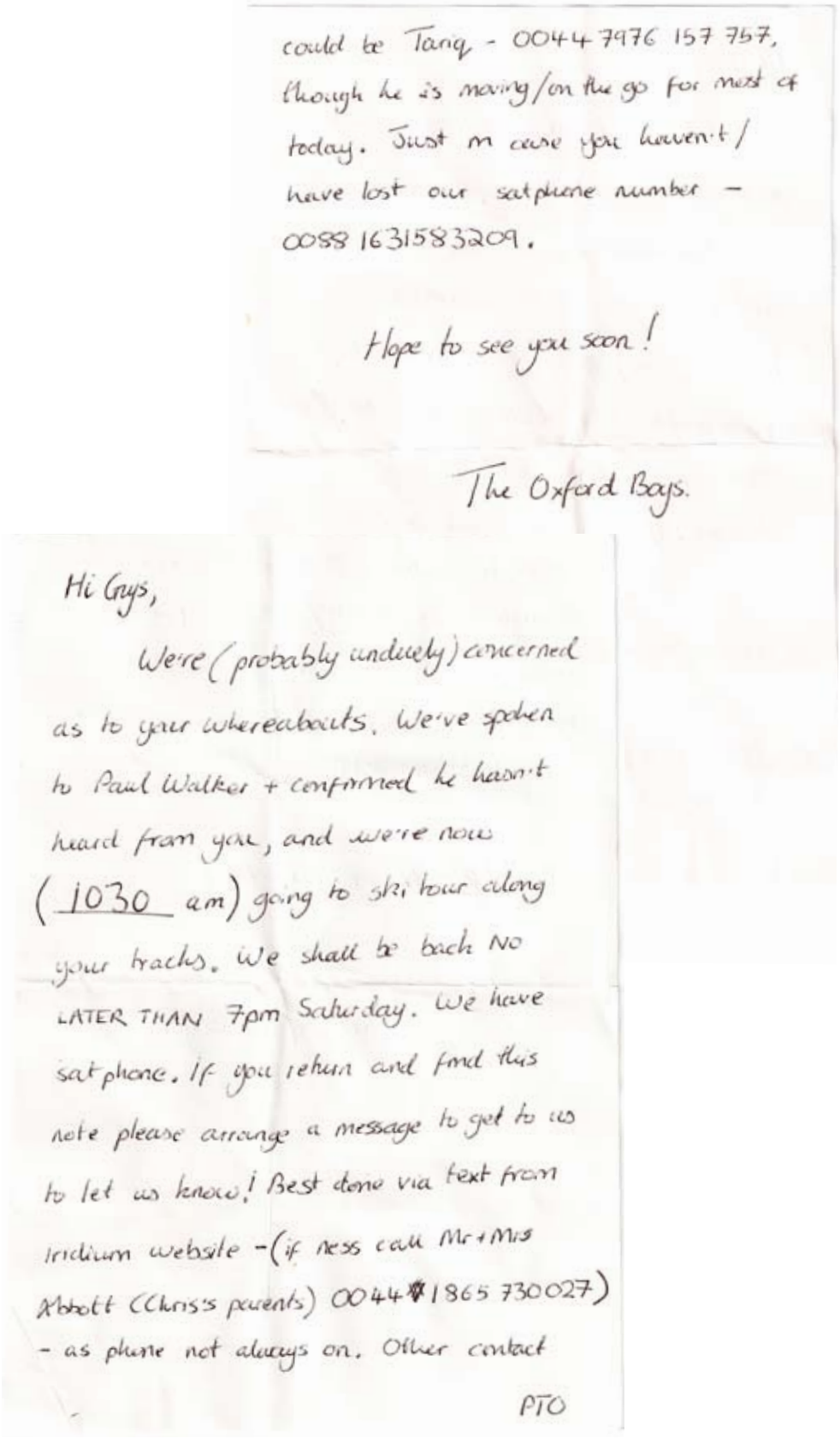
With little water and food left and tiredness affecting us all we pushed on descending from the third peak down a short gully to reach the top of a steep snow slope. From here the ridge looked steep with a step in it down to a low col and our intended exit route from the mountain. This looked a potentially awkward move and with fatigue becoming an issue we decided to traverse the snow slope in the other direction to intercept another easier-angled ridge from where we could descend some of the height before traversing back across the slope at a lower level to the col. This took us a lot longer than anticipated (around 5 hours) and the lower traverse of around 400m was across an exposed icy slope requiring setting up numerous belays and was much more demanding than anticipated when viewing the route from above. Eventually we reached the col around midday to everyone's relief. Upon inspection of the main ridge up to the third peak, which we had chosen to avoid due to the step beyond which we could not see, it was clear this would not have presented any problems and would have in fact been a much simpler and quicker route than the one we selected. Luckily the descent from the col was very straightforward with only a short easy snow slope to descend and no cornice to negotiate. We reached the glacier in a celebratory mood and were back in camp a few hours later for a much needed rest and some food, 26 hours after setting out the day before.

Peak 13, Peak Hubris	N 69° 06.2'	W028° 18.5'	2225m
Peak 14, Peak Aurora	N 69° 06.4'	W028° 17.5'	2230m (location estimate, not from GPS)
Peak 15, The Castle	N 69° 06.6'	W028° 17.5'	2245m (location estimate, not from GPS)

Scottish Winter Grade 2.

Photo: QL

Nick airing his socks in the bivvy between Peak Aurora and the castle



could be Tariq - 0044 7976 157 757, though he is moving/on the go for most of today. Just in case you haven't/ have lost our satphone number - 0088 1631583209.

Hope to see you soon!

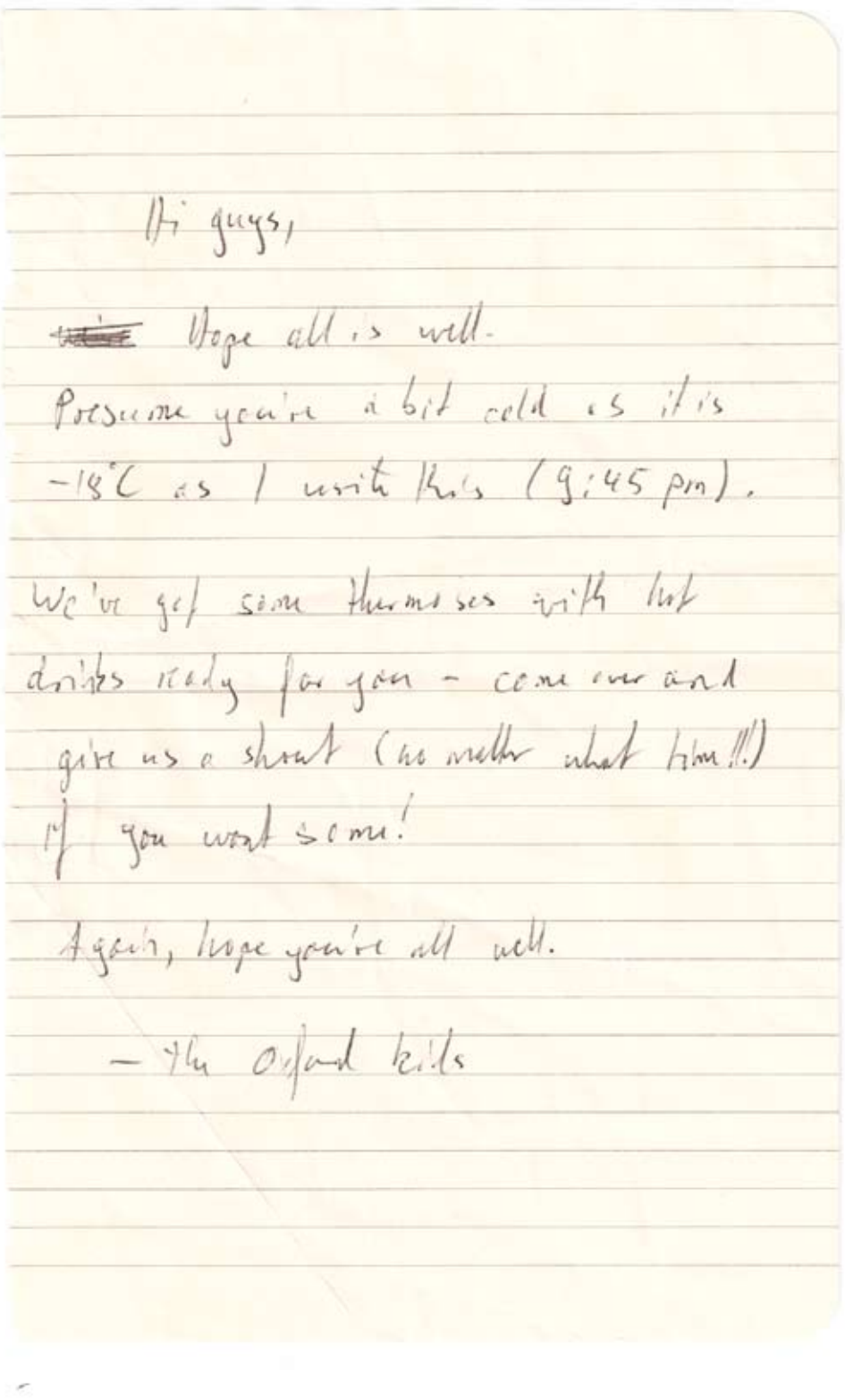
The Oxford Boys.

Hi Guys,

We're (probably unduely) concerned as to your whereabouts. We've spoken to Paul Walker + confirmed he hasn't heard from you, and we're now (1030 am) going to ski hour along your tracks. We shall be back NO LATER THAN 7pm Saturday. We have satphone. If you return and find this note please arrange a message to get to us to let us know! Best done via text from Iridium website -(if ness call Mr+Mrs Abbott (Chris's parents) 0044 1865 730027) - as phone not always on. Other contact

PTO

Note left by the Oxford University Expedition in our tents at camp 8



Hi guys,

~~Hi~~ Hope all is well.

Presume you're a bit cold as it is -18°C as I write this (9:45 pm).

We've got some thermoses with hot drinks ready for you - come over and give us a shout (no matter what time!!) if you want some!

Again, hope you're all well.

- The Oxford kids

Note left by the Oxford University Expedition with a cache of food and equipment where we left our skiis as the base of Peak Hubris

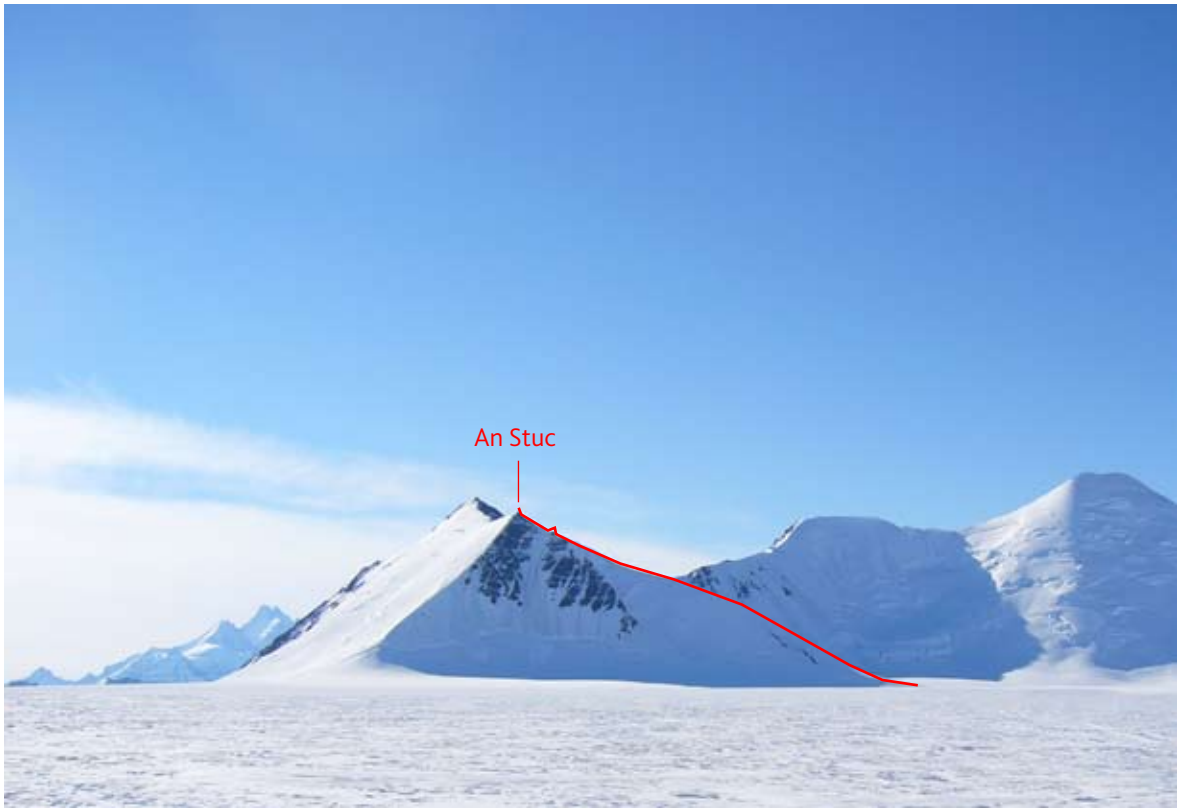


Photo: JH

An Stuc seen from camp 8

Photo: JH

The summit of An Stuc

An Stuc

On the 27th August, the final day before our scheduled pick up from the glacier Jennifer and Jonty set off to climb one more peak, whilst Nick and Quintin remained at base camp to sort out gear and identify a suitable landing area for the twin otter, which was scheduled to arrive from Isafjiordur to pick us up the following morning.

Our aim was to climb the first main peak on Range around 3km to the south of our camp, a compact range that was completely surrounded by converging glaciers on all sides. We skied for about an hour to the bottom of a steep snow ridge on the northern side of a large cirque. The ridge formed the first part of a large horseshoe with two smaller peaks on its northern side and a larger snow peak at the southern end of the horseshoe.

The snow ridge was relatively straightforward to climb but with increased height it became narrower and there were large amounts of windslab on its eastern side. The wind picked up and we decided to drop down off the main crest on its western side to shelter from the wind and ascend along the top of rocks to a point where the ridge flattened off further up and could be safely traversed on its crest. This section required a short traverse across the top of a steep exposed snow slope and ascending a steep icy snow slope where two axes were necessary before we regained the crest.

Beyond this there were two exposed pinnacles. We traversed round the first on its east side above steep snow slopes and scrambled over the crest of the smaller second pinnacle. The ridge then continued with a mixture of loose rocks and snow for a short distance until it steepened to a large rock pinnacle forming the top of the first peak on the horseshoe from where the main ridge continued in a more south-easterly direction, approximately 900 to the ridge we had ascended to the first top. After some debate we decided to climb the rocky cone via an 'open-book' corner on very loose rock. This was around 20m high and easily 'Difficult' grade due to its steepness, level of exposure and lack of good holds. Due to the poor rock it was almost impossible to protect and the entire 20m pitch was lead without protection until summiting the pinnacle where it was possible to place an 8ft sling over the top and clip into a karabiner. With time ticking and some distance and further potentially tricky climbing required to reach the second top, we decided to descend at this point rather than carry on. The sling and karabiner were left in-situ on the first top to protect the descent back off the pinnacle to the ridge.

Once the pinnacles were negotiated further down the ridge, the rest of the decent was straightforward and took less than an hour with the camp reached with plenty of daylight remaining.

Peak 16, An Stuc N 69° 06.1' W028° 24.4' 2190m (location estimate, not from GPS)
Scottish Winter Grade 2 with the ascent of the final pinnacle to the summit 'Difficult' rock grade.

Photo: QL

Breaking camp for departure, Camp 8

Photo: QL

The Twin Otter refuels prior to departure along with Oxford University Greenland Expedition 2006

Final Day

The following morning on the 28th August we were lucky with the weather, the skies were clear and the conditions were ideal for the twin otter to land. Another group from Oxford University, who had travelled from West Rasmussen Land and arrived at our camp on the 25th made radio contact with the pilot giving our position and around 1:30pm the plane finally arrived landing on a rough landing strip around 200m long we had marked out using pulks and bags. The plane was heavily laden with the two groups and all our equipment, and probably at full capacity, but with a struggle it eventually got enough speed and lift to leave the glacier and after 3 weeks on the ice we finally left our final camp and Greenland behind returning to Isafjiordur around 2 hours later.

Conclusion

Each of us of course had our own hopes and aspirations, thoughts and ideas on this escapade. However the expedition was clearly a success: we achieved our objectives and finally climbed 16 unclimbed peaks and traveled across 100km of untouched territory, crossing the Knud Rasmussen Icecap and entering the magnificent glacier and mountain system to its south. We had some very long days on the hills and some equally pleasurable days relaxing in camp. Fortunately there were no serious injuries or crises but plenty of food and good cheer.

It was a wonderful experience being up on the icecap, utterly alone, no other human beings nor signs of humans as far as the eye could see even when at the top of a peak. Nor any signs of wildlife at all. After a week or so there was no sense of boredom infiltrating from our busy and colourful lives, rather a sense of settling into this incredible environment, new routines established and our awareness raised. Freedom: 'getting away from it all' at its best! Magical moments, magnificent views, new accomplishments and personal triumphs. Fantastic traverses of snowy arêtes, summiting fragile pinnacles and skiing down virgin slopes in the moonlight. Beautiful times just sitting looking, taking photos, writing dairies, reading books, talking. A rare moment in the valley when a white bird flew overhead and another when we saw the northern lights. But most of all I believe we all felt truly privileged to be there and also sensed the destruction of this delicate environment. We would recommend to all the beauty of Greenland's icecap and its unique and magical and complicated mountain chains. One cannot help but feel determined to conserve this exceptional environment.

Photo: QL

Terra Nova Quasar tents at camp 2

Photo: QL

Early morning routines

Appendix 1: Equipment

Camps

We used Terra Novar Quasar tents, which proved extremely effective, they were strong against winds, completely waterproof and easy to put up. The tents were fixed to the snow and ice of the glacier using 1.5ft aluminium snow stakes. The use of an insulating mat for the tent floor upon which we placed a carry-mat and thermarest provided affective insulation at night.

Our snow shovels proved invaluable for collecting snow for drinking and cooking, digging a latrine area at each camp and constructing a windbreak around our eating and cooking area. We also took a snow saw but this proved less useful other than when we were constructing the shelter and the ground was mostly ice, where by the saw helped cutting through the ice. Two shovels were useful and one saw was sufficient.

We used MSR Dragonfly stoves for cooking, which were extremely effective and robust, only requiring minimal maintenance during the 3 weeks they were in use to keep the fuel line clear. Rather than melting all snow for water using the MSR stoves, which was thirsty on fuel, an effective way of melting snow was to use medium-sized (25 litres) black Ortlieb waterproof bags. Just by filling these with snow and leaving in the open during the day when it was sunny could melt enough snow to produce up to 10 litres of water providing enough for cooking our evening meals. If we had an early start we would still have to melt snow on the stoves with everything being frozen in the morning.

Skiing

We all used ski-touring skis with three opting for Silvretta bindings enabling them to just take one pair of winter mountaineering boots that they could use for skiing as well as climbing. One used Diamir Explore bindings that required a ski-mountaineering boot. The Silvretta binding/mountaineering boot option proved effective and comfortable when travelling across the glaciers on the flat and when pulling the pulks, and also saved on weight by only requiring one boot that could be used for everything. With the other bindings and the need for a ski boot, this proved less comfortable during the long periods of pulk pulling and the ski-mountain boot was limited in the level of climbing that could be carried out in them, particularly over rock, thus requiring a second pair of boots for the mixed climbing where rock was involved. However, using the Diamir Explore binding/ski-mountaineering boot option was much more effective on downhill sections when ski-touring as it provided much greater support and control, particularly where the slopes were icy.

Clothing

The weather was generally very settled and similar each day. We only experience 4-5 days of poor weather with some snow over the 3-week period. Fully waterproof Gore-Tex jackets were therefore of little use as we would remain at camp during periods of bad weather and there was little precipitation to note. The wind and temperature fluctuation was more of an issue and down jackets, windproof warm gloves and hats that fully covered the ears were a must, particularly when it was windy and the temperature dropped significantly.

As a base layer marino wool thermals are recommended and for mid layers, light fleeces, and windstopper tops and trousers are recommended. Fleece trousers are also good for warmth and comfort in camp.

Photo: QL

Sorting out climbing equipment in a hangar at Isafjiordur, Iceland

Photo: QL

Equipment ready for loading in the twin Otter at Isafjiordur, Iceland

For the feet two thinner pairs of thermal socks was more effective than thick socks, as this was warm, would reduce the level of moisture build up due to sweat and reduced the chance of blisters forming.

Waterproof salopette over-trousers were good to wear, when climbing and ski touring as they kept us dry and warm, particularly during periods where people were static such as when belaying tricky sections and when sitting in the snow.

Four season winter boots such as the Sportiva Nepal Extreme are a must for keeping the feet warm and dry. They were sturdy enough for the relatively easy skiing and good when climbing on the mixed snow and rock ridges.

Climbing Equipment

We took two 60m 10.5mm dry-treated Beal ropes but the second was never used and only kept as a spare. When roping up we always travelled as a 3 or 4 on one rope. This was slower than travelling as pares on separate ropes, but the sections where roping up was necessary were mostly on well defined snow ridges where the snow was firm and easy to travel on with minimal belaying required and travelling on one rope was preferred to save on weight.

Each member carried a ropeman, prussic loops, tibloc and a pulley for emergency ropework, such as crevasse rescue, however these were never called into use as crevasses were easy to spot and the snow and ice conditions were very stable.

One ice axe was used on most of the ascent routes up snow ridges and occasionally two axes were used on the steep snow slopes encountered during the ascents in the final week. There was also much scope for doing more serious snow/ice routes at steeper angles where two axes are a must.

We took two racks of rock climbing gear including rock nuts, hexes and friends for the rocky ridges we anticipated climbing. However the rock was basalt and poor quality, it was extremely fractured and crumbled easily in the hand. This made the use of rock protection almost impossible and useless. We also took two ice screws per person, which proved more useful, particularly in the last week when we made a number of traverses on steep snow slopes. There was generally thick ice only a few inches below the surface, which provided good belay anchors using the ice screws.

We also took deadmen and snow pickets (2ft and 3ft) for snow anchors. We never used the deadmen but the snow pickets were useful as they were quick and simple to place for quick belaying. This was particularly useful on some of the snow ridges where there were steep exposed sections or where we had to cross crevasses dissecting the ridge. The 2ft pickets were more than adequate for this and easier to carry than the 3ft picket.

We would recommend that for a similar expedition the rock protection, deadmen and 3ft pickets are not necessary where as a pair of ice tools, ice screws (minimum 15cm) and 2ft snow pickets are recommended.

Photo: QL

Preparing the contents for the main medkits

Photo: QL

Preparing the canoe bags for the main medkits which lived in the pulks during the expedition

Appendix 2: Medkit

Due to the remote nature of Greenland and the difficultly of rescue, especially during poor weather we assumed a minimum of 2-3 days medical self sufficiency. This effected our actions in the field, the level of medical training we required beforehand and the design of the medkits. We carried 3 medical kits. Two large identical kits including IV fluids were carried in separate pulks so should one have been destroyed by fire or lost down a crevasse we still retained a usable system. For summiting we carried a much smaller and lighter medkit. We used roll and clip canoe bags to provide waterproofing and reduce weight over a hard shell alternative.

Ref	Pack	Item	size	Quantity(medkit 1)	Quantity(medkit 2)	Mntn 1st Aid
1		Contents/Contacts List	n/a	1	1	1
2		Doctor's letter of authority	n/a	1	1	1
3		Casualty card	A5	2	2	1
4		Pencil stub	n/a	1	1	1
5		WMT Medical handbook	A5	1	1	
6	1	Triangular Calico Bandage	90x127cm	2	2	2
7	1	Revive Aid	n/a	1	1	1
8	1	Epipen (adrenaline)	0.3mg	1	1	
9	1	First field dressing	20x19cm	1	1	
10	1	Shears	medium	1	1	1
11	2	Zinc Oxide Tape	2.5cmx8m	1	1	1
12	2	Zinc Oxide Tape	1.24cmx8m	1	1	1
13	2	Mefix	5cmx3m	1	1	
14	2	Vinyl Gloves	Large	4	4	2
15	2	Nasal Dressing	8cm	1	1	
16	2	Aquagel	5g	1	1	
17	2	Conforming Bandage	10cmx4.5m	2	2	
18	3	Conforming Bandage	6cmx4m	1	1	
19	2	Crepe Bandage	7.4cmx4.5m	1	1	2
20	2	Swabs (5-pack)	10x10cm	3	3	
21	2	Non-Adherent Dressing	10x10cm	2	2	2
22	2	Non-Adherent Dressing	7.5x7.5cm	2	2	
23	3	Compeed	Medium	10	10	8
24	3	Compeed	Small	10	10	
25	3	Plasters	Assorted	36	36	20
26	3	Hydrocolloid dressing	5.5x7cm	1	1	1
27	3	Jelonet Dressing	10x10cm	1	1	1
28	3	Jelonet Dressing	10x40cm	1	1	
29	3	Tegadeerm Pad	9x10cm	1	1	1
30	3	Tegadeerm Pad	5x7cm	4	4	
31	4	Dioralyte	n/a	16	16	
32	4	Hypostop (Glucogel)	23g	2	2	2
33	4	Paracetamol	500mg	64	64	16
34	4	Ibuprofen	400mg	64	64	
35	4	Diclofenac Sodium	50mg	28	28	
36	4	Codeine Phosphate	30mg	49	48	
37	4	Senna	7.5mg	30	30	
38	5	Cleaning wipes	n/a	10	10	4
39	5	Clotrimazole cream 1%	20mg	1	1	

Photo: QL

Feet being patched up in the field

40	5	Digital thermometer	n/a	1	1	
41	5	Spray Plaster	32.5ml	1	1	
42	5	Hydrocortisone cream 1%	30g	1	1	
43	5	Savlon	30g	1	1	
44	5	Iodine tincture	25ml	1	1	
45	6	Augmentin	625mg	42	42	
46	6	Ciprofloxacin	250mg	40	40	
47	6	Trimethoprim	200mg	14	14	
48	6	Chlorophenamine Maleate	4mg	30	30	
49	6	Cetirizine Dihydrochloride	10mg	30	30	
50	7	Suture	3-0	2	1	
51	7	Suture	5-0	2	2	
52	7	Disposable scalpel	n/a	1	1	
53	7	Steri-strip	12x100mm	3	3	1
54	7	Steri-strip	3x75mm	2	2	
55	7	Fine Suture Pack	n/a	1	1	
56	7	Wound care pack opt 2	n/a	1	1	
57	8	Tetracaine Hydrochloride	0.5ml	10	10	
58	8	Dental First Aid Kit	n/a	1	1	
59	8	Brolene Eye drops	10ml	1	1	
60	8	Adrenaline ampoule	1ml	2	2	
61	8	Stemetil ampoule	1ml	2	1	
62	9	Tourniquet	n/a	1	1	
63	9	Cannula Bung	n/a	4	3	
64	9	Sterets	n/a	4	4	
65	9	Cannula plaster	n/a	4	4	1
66	9	Sodium Chloride	10ml	2	2	
67	9	Venflon Pink	1.0x32mm	3	3	1
68	9	Venflon Green	1.2 x 45mm	3	3	1
69	9	Syringe	10ml	4	4	
70	9	Needle, green	0.8 x 40mm	6	6	
71	9	Needle, orange	0.5 x 25mm	6	6	
72	10	Solution Administration Set	n/a	2	2	
73	11	Hartmann's solution	1L	4	4	
74	mtn	Sam Splint	10cm			2
75	mtn	Mountain Space Bag	n/a			1
76	mtn	Stifneck Select Collar	n/a			1
77	mtn	Emergency Airway	n/a			1
78	mtn	Ibuprofen	200mg	0	0	16
79	mtn	Dressing	8x10cm			2
80	mtn	Non-Adherent Dressing	5x5cm	0	0	2

Photo: QL

Nick Mills packing up our prodigious supply of oatcakes

Photo: NM

Quintin Lake & Jonty Hunter cooking dinner using MSR Dragonfly stoves

Appendix 3: Food

Food was arranged into daily tent packages – a pack with everything required by 2 people for one day. This included food, beverages, tissue paper and ziplock bags for re-packing lunch. The contents of one bag weighed just over 2kg and amounted to about 4500 calories per person, per day. This system worked very well and is recommended. The total cost of food per person for 27 days was £340.

Our main meals consisted of freeze-dried meals ordered from a company called First Choice Expedition Foods (expeditionfoods.com). The website is easy to use and delivery of our order was very prompt. The majority of the meals were manufactured by a Norwegian brand called Real Foods. These were excellent. We also used an inferior brand called Pack 'n Go. All the main meals just needed the addition of boiling water and could be eaten straight from the packet.

In general the menus worked well, although we were unable to eat the two packs of oatcakes per person per day and Primula cheese spread proved far more popular than sardines for lunch. We would also recommend taking more tea bags / soups / chocolate drinks – enough for perhaps six drinks per person per day. There's nothing like having a brew to pass the time and raise the spirits!

The table below shows our menu. Note that only one option was included for each day, unless in italics when it was included everyday.

Breakfast	**Snacks/lunch**	**Evening main meal**	**Evening dessert**	**Brews**
Instant porridge with sultanas Museli with milk powder with Malt loaf Flap jack	Cereal bar (various) Chocolate bar (Mars/Snicker) Raisins Peanuts Oatcakes Sardines Primula cheese spread/ Dairylea	Bean and vegetable curry Beef stew with rice Chicken in sweet and sour sauce Chilli casserole Chicken curry with rice	Chocolate mousse Blueberry fruit soup Apple with custard Chocolate cream chocolate chip Custard with mixed fruit	Tea bags (green and fruit varieties) Stock cubes Hot chocolate

Photo: QL