MEF 07/07

Dronning Louise Land 2007

Report of the 2007 Expedition to Dronning Louise Land

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In 2007, three members of OVMRO, Russ Hore, Tim Radford and Gerwyn Lloyd, visited the most Northerly significant mountain range in Arctic North Eastern Greenland. The area is known as Dronning Louise Land and is approximately 90km East/West by 150km North/South. Only two other expeditions had visited the area: a combined British forces expedition in 1953 to the North, which travelled south to survey the area; and another in 2000 to the West side. The idea of the trip was first mooted in 2004 and the initial interest of nine people slowly dwindled to leave the three of us. What follows is a summary of the trip.

The expedition planned to visit an area in the South East of Dronning Louise Land named The Fairytale Peaks by the 1953 expedition. They did not visit this area and thus said anything they recorded about them would be a fairy tale. We wanted to be dropped at approximately 76° 58' 4"N / 25° 14' 51"W. Unfortunately a crevassed ice field meant that the Ski Equipped Twin Otter could not land at the desired location and thus we were dropped approximately 33 miles away by ski on the edge of the icecap

The compilers of this report and the members of the expedition agree that all or part of it may be copied for the purposes of private research.

Expedition Members

	Russ Hore (Leader) (45) Started climbing in 1975 with numerous visits to Alps and Italian Dolomites. 1996 Denali 1998 First expedition to visit Rignys Bjerg, Greenland 2000 Patagonia russ@russ-hore.co.uk
	Gerwyn Lloyd (45) A serving police officer and accomplished outdoor athlete. gerwyn@dll2007.org.uk
	Tim Radford (44) A software developer, originally from Australia, who has enjoyed mountaineering in the UK and abroad for over 20 years. dll2007@plasnant.com

Narrative

We left the UK on 12th May 2007 flying to Reykjavik via Keflavik airport. We met another expedition at Reykjavik City airport who were sharing the Twin Otter costs with our expedition and then took a further short flight to Akureyri where we stayed overnight night after a splendid Pizza in the local Italian restaurant. By the morning it was snowing and Gerwyn had his duvet on, in the guesthouse!

We took a taxi back to the airport and then sat and watched the rain falling from the overcast sky. At 10:00 we were called forward and boarded the Ski-Equipped Twin Otter for the flight to Constable Pynt (CP) with good weather reports giving us the ideal opportunity and possibility of getting all the way to Dronning Louise Land. The Twin Otters are flown by vision (VFR), not instruments, so having good weather was critical. Whilst flying to CP we could see the extent of the sea ice; it was frozen much further south than observed on Russ's first trip in 1998.

After a two and a half hour flight we had a short fuel stop at CP were we were reunited with the rest of our kit, most of which had been shipped out a month before. We were planning to sort our kit here and leave that which we did not need in the mountains to be collected on our return. However, the pilots were keen to head north as soon as possible so we ended up carrying all our kit, including town clothes for the duration of the trip!

After this brief stop at CP we headed north to Daneborg, a 1hr 50min flight. Here we had another brief stop whilst the plane was refuelled by the pilots and the SIRIUS Dog Patrol Officers checked all our permits, weapons, ammunition, and safety equipment. The fjord was frozen and it was getting much colder.

SIRIUS is a defence unit, comprising 14 soldiers, that was created in 1950 under administration of the Danish Defence Command. In 1994 it was placed under control of the Admiral Danish Fleet. SIRIUS patrols the world's biggest National Park with an operation area of 160.000 km^2 (about three times the size of Denmark). Their roles are

a) To maintain Danish sovereignty in North and North East Greenland
a) Police authority the Northeast Greenland National Park, which is the worlds largest.
b) Conduct military surveillance over 160,000 km^2 by dog sledge.

Early in the fall, the sled teams build their own sledges and fabricate all the bags and boxes, which are being used on the sled journey. When there is sufficient snow, or when fjord ice is thick enough, training trips are conducted. Real patrol journeys start in early November. An average day's march is approximately 30 km, but these very greatly depending upon conditions. Primarily the patrol overnights in tents, but there are 65 huts maintained for SIRIUS use.

When we arrived a patrol was just on its way back in. They had left only two people at the base and as the do not get many visitors they were more than happy to stand around and chat to us. They had recently had a polar bear around the camp and had to shoo it away. They did say we should not see any where we were going.

We then continued on the final flight to reach DLL. To reach the Southern end of the range took approximately 1hr 20m. We had requested the Twin Otter to land at 75° 57' 59.23" N, 25° 8' 16.30" W with the intention of exploring the area to the South East of here but after much circling the pilot told us he could not land due to extensive blue ice and crevasse fields. He flew North West searching for a safe landing area and after what appeared to be a couple of miles flying in ever increasing circles, we were finally dropped at 76° 11' 24.55" N, 26° 32' 49.73" W some 33 miles away from our intended landing point.

Figure 1 - The aircraft prepares to leave

We estimated that to get to our intended drop off point would take 5-6 days skiing given the large loads we had been forced to bring from CP, and the terrain, which we suspected would be blue ice and crevassed. This meant that we had to reconsider our plans as it was unrealistic to head South East for possibly 6 days before then heading back North to our pick up point. Whether we could make it to the pick up point in 3 weeks time was a serious consideration. Therefore we reluctantly changed our plans and decided to head North, following the edge of the icecap to reach our intended pick up point at 76° 28' 8.64" N, 26° 11' 36.48" W. The majority of the peaks that lay between us and our pick up point were unclimbed but still within the DLL area; they were not, however, part of the 'Fairytale Peaks' and this was a real blow so early on in the expedition. Common sense prevailed; the 'Fairytales' would have to remain so and we would head North into other uncharted areas.

Our main aim was to climb peaks (first ascents) and search for meteorites deposited on blue ice fields. We therefore intended to have relatively short sledge-pulling days between camps where we would climb nearby peaks and look for suitable meteorite stranding areas.

The first thing we noticed was how bitterly cold it was and that there was a constant and incessant wind coming off the icecap (a katabatic wind). Russ remarked on how different the climate was to that he had experienced in Southern Greenland in 1998. There they had to ski and climb at night as it was too hot during the day. This was not going to be a problem for us. There were only two days throughout the entire month we were there that were without any wind. The weather was generally good with only two days of very slight snowfall. The surface was generally good for skiing albeit with extensive sastrugi and some large areas of hard blue ice, most of which could be bypassed. In several areas there were large crevasses but these were mostly easy to spot and work around.

For the first few days we stayed at the landing zone and took time to sort kit and investigate the peaks around us. During this shake down period Gerwyn had his first attempt at skiing in the Arctic. We skied off South from camp and after only 10 minutes Gerwyn's ski binding fractured. Undaunted, Gerwyn strapped the binding up with cable ties and carried on like this for the rest of the trip. We only changed the cable ties twice after that. This was a good test of morale and ingenuity for the group. We faced what could have been a major problem and dealt with it successfully with a minimum of fuss.

West of the camp was a large easy looking peak, which we thought would be a good 'warm-up'. One of the problems with estimating distances is the very clear air and also the fact that there is nothing to give any scale. So judging distances is very hard. Russ asked Tim and Gerwyn to estimate how long it would take to ski to this peak. Both said 10 minutes. Russ estimated 20. It took us 90.

Figure 2 - Camp 1 with Penderyn in the background

Beneath the East face was a frozen pond of hard blue ice. We skirted round to the South and made a simple ascent with but breathtaking views out onto the icecap. On the ridge we found what looked like fossilized ferns. These were later identified as manganese intrusions into a thin bedding plane. The summit was very windy and very cold. We stopped a short while for photos then headed back down the ridge. As it was Russ's birthday we initially called this

peak “Birthday Peak”. After the celebrations back at camp we renamed it Penderyn. (For those that don’t know, Penderyn is a single malt Welsh Whiskey which is rather nice.)

After a few days we decided it was time to move on. We had an enormous amount of kit and only three pulks (sledges). We managed to get it all to fit in, on and around the pulks and set off North planning around a 5 mile trip. The wind had picked up and there was a ground blizzard over 8 feet deep. After 2.5 miles Russ could see Gerwyn in the distance standing by his sledge, trying to keep warm by rubbing his hands up and down inside his jacket. When we regrouped we crouched down behind the pulks and sheltered – it was bitterly cold and we were tired. As we had no idea what we were going to meet further on we decided to stop and build an emergency camp for the night.

The morning gave us better weather so we moved on. The ground was fairly good for pulling pulks apart from the large areas of sastrugi breaking the momentum. Tim was in front and we watched him disappear over a small rise towards what he thought would be a good, sheltered campsite behind a small rocky outcrop. A few minutes later he came back, dropped his pulk and waited for us. A few minutes skiing past where we regrouped was an awesome sight.

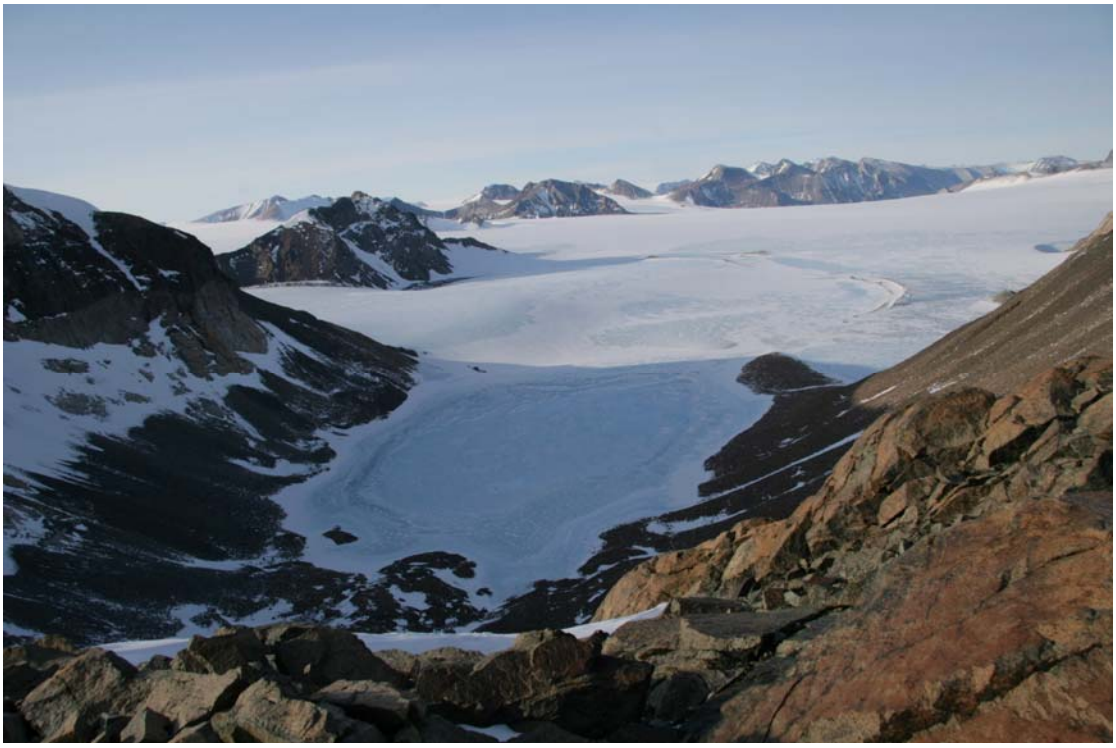


Figure 3 - The cwm behind Camp 3

The small rocky outcrop was not as it had seemed. We were on a plateau which joined the top of a huge cwm with steep cliffs either side dropping down to a frozen blue lake. We could see huge ranges of mountains to the North for miles and miles. This was camp 3. We planned to stay for a few days so set about building a good camp for two tents. The slight slope meant we had to dig two platforms to give level bases for the tents and this took quite a while. The snow walls alone took up over 1000 hand cut snow blocks. I think we all welcomed food and bed that night.

Strange word that, ‘Night’. As we were so far north, over 670 miles north of the Arctic Circle, we had 24 hour sunlight.

Figure 4 - Perpetual daylight

The sun never dipped less than 40 degrees above the horizon; having said that, sleep never seemed to be a problem.

We spent a few days at this camp and climbed 5 peaks: Copa Rhosyn, Y Lliwedd, Carnedd Môr Ladron (a shapely peak just west of camp, initially named Pirate Peak due to a vision of a skull formed from snow and rock high on the face), Cornucopia and the diminutive lump Foel Fras. Far to the South we could see the Fairy Tale peaks. Just by the camp was a fantastic looking triangular peak. We skied down the glacier to find a suitable access point. This was a snow slope that led up into the rocks. This quickly led us to the ridge and a nice scramble to the summit reminiscent of the Eastern ridge of Crib Goch in Snowdonia. The camp looked tiny, way below. The views again were fantastic. We dropped down off the ridge to follow it to the next peak. On this ridge Russ thought he found a possible meteorite but bowed to Tim's better experience. It was just a lump of iron rich rock, which inspired the ridge name "Iron Rock Ridge". To gain the ridge back to camp was interesting with steep loose scree mingled with large boulders.

Over the next few days we moved camp and climbed more peaks. Tim and Gerwyn climbed a peak a few miles from camp, naming it The Staircase (Yr Esgair) due to the shape of the Eastern ridge of which the upper part was comprised of fantastic slabs – evenly spaced – just like a staircase.

Figure 5 - Gerwyn on the summit of Yr Esgair

It was time to move on. The pick up point was still a long way away and we had no idea if we would be able to reach it easily or have to traverse many miles to bypass glaciers etc. So we packed the sledges again and skied off.

We were now passing through the area visited by the 2000 expedition and recognized the peaks they had climbed. To get to our intended camp we had to cross a large blue ice field. We adopted differing techniques. Russ remembers, *"I did not want to take my skis off so slowly slid, mostly out of control, across the hard blue ice. At times I could see the pulk sliding sideways threatening to overtake me. My best plan was to ski from snow patch to snow patch where I could stop and recompose myself. I looked round at one point to watch Tim slide straight for a snow patch at speed. When he hit it, the pulk pushed him over and he ended up face flat in the hard snow with the pulk almost on top of him, much to the amusement of all"*.

After the ice we plodded on but as the ground was rising we ended up making a camp in the middle of the glacier. Gerwyn and Tim climbed a peak near camp with a splendid snow ridge naming it Bryn Poeth (Warm Hill in Welsh) as they found it surprisingly hot work sheltered from the wind and in full sun. In Figure 6 Gerwyn and Tim can be seen as dark specs on the snow to right of the rock edge. The descent was via the rock slope to the left.

Figure 6 - Bryn Poeth

Russ meanwhile skied over to a peak that we expected had been climbed in 2000. To be alone in the quiet and enormity of the Arctic is a fantastic experience. He watched them top out and headed back to camp. The next day Gerwyn and Russ climbed the peak Russ had visited the previous day. Around its base was a huge wind scour, probably over 150 feet high with fantastic patterns in the snow. The ascent was simple enough but the rock was amazing with fossilized sea bed amongst a jumble of boulders. They sat for a while on the summit and sheltered from the wind which they could be heard hitting the face below.

When they arrived back in camp Tim had made an impressive start building an igloo. We all carried on with it but did not manage to complete it with snow blocks in time for a much needed dinner and decided to cover the remaining hole with a small flysheet. This made a huge difference to camp life. We could sit out of the wind inside and cook our meals then eat them in comfort. Tim made a window with frozen water from a pan lid, and life was good.

We planned three more camps to the pickup point. The move from camp 4 to camp 5 was a long haul and hot work. We aimed for a ridge that extended westward towards the icecap and it never seemed to get any closer. When we finally arrived it was in a superb location with stunning views onto the icecap and to the North. The snow was superb for cutting blocks and Gerwyn was on fine form with some huge blocks coming out of the quarry. After setting up camp we skied up onto a low ridge behind camp to get our first glimpse of Budolfi Isstrøm, the huge glacier that flows West / East across the lower part of DLL. Our initial plan was to ski up this from the Fairy Tale Peaks to the pickup point. We could also see the pickup point in the distance. The views were breathtaking. That evening was very pleasant indeed. The wind stopped and for the first time we could spread our sleeping bags out to air. We discovered a new drink – Christmas Tea – a mixture of lemon tea and orange isotonic drink that proved to be a great favourite. As we lay down to sleep in the hush of the arctic Tim commented *"at last a night with no wind".* What a mistake that was! Within seconds of finishing the sentence the wind whipped up and we experienced the worst night yet.

We had made plans to ascend a peak near camp for Gerwyn's birthday but the next day dawned windy and cold. We even had to build a new loo as the old one filled with spindrift. This was a day for reading, playing cards, eating and sleeping.

From the camp we could see the way ahead passed between two peaks that had been climbed by one of the previous expeditions. Between the peaks was another blue ice field,

this time uphill. This was a long cold day of pulk pulling. We crossed Budolfi Isstrøm with a constant wind and spindrift from the icecap. The blue ice was not as bad as expected but we did switch to crampons for the steeper section into our proposed camp.

The plan for the morning was to climb the two peaks either side of camp and then head for the pickup point. We attacked the first peak, Falkonner Klippen, by two routes. Russ scrambled up a rotten broken rock ridge and Tim and Gerwyn took a more direct route up an ice gully. From the top of the gully it was a simple scramble to the summit with possibly the best views we had; South to the landing zone far in the distance, East to numerous peaks, West out onto the icecap and North to the pickup point. We used an Abalakov belay to secure the descent down the ice gully and skied and fell (Sorry Tim) back into camp.

Gerwyn and Tim set off for the other peak whilst Russ made tracks for the pickup point and hopefully our final camp. The sastrugi were pretty bad making slow going but he finally arrived close to the GPS points we had been aiming for. The snow was very poor for block cutting with a much layered structure. Russ managed to chop up a large lump of sastrugi and built a small wall to shelter the tent.

Whilst boiling water his foot popped through a hole in the snow about 12 inches across (Figure 7). The hole disappeared into a dark blue chamber and it appeared that the camp was on top of a crevasse. So when Gerwyn and Tim arrived we gingerly moved camp. Snow conditions were still poor but we eventually managed to protect the camp with our customary walls.

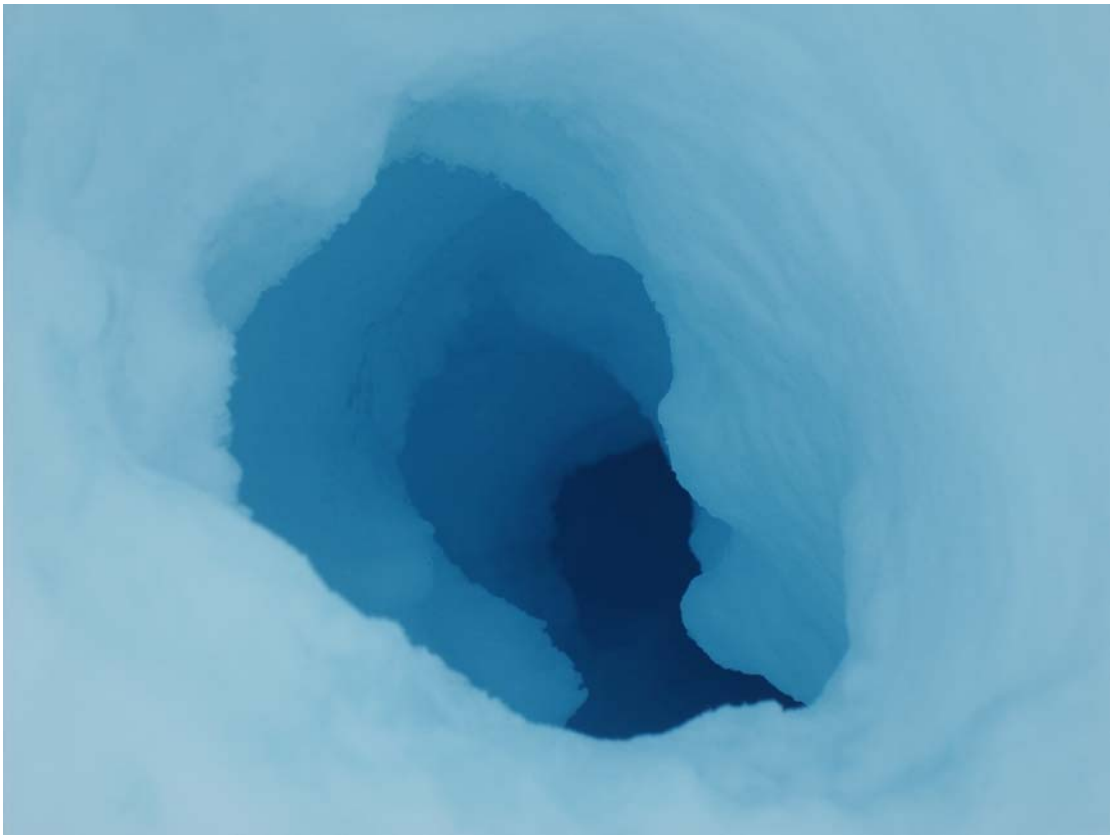


Figure 7 – The hole under Camp 7a

It was now Thursday 31st May and we were expecting to be picked up on Monday 4th June. There were many unclimbed peaks around us so potentially plenty to keep us busy. The camp was exposed with nothing but icecap to the West whereas the view to the East looked straight down Budolfi Isstrøm.

On the way in to Camp 7 we passed a tempting ridge onto a small peak. Gerwyn and Russ set off the next day to attempt it whilst Tim skied off towards the icecap to look for meteorites. The ridge was easy to attain and the skis were left just below it. The ridge soon reared up into a steep section, possibly Gr. III, and Gerwyn did a fine lead with one piece of gear. This landed them on another level section of very sharp ridge with steep drop offs on either side. After this there was a pleasant rock scramble to the summit. This was such a satisfying route we named it "DB Ridge". An abseil off a double Abalakov thread and dodgy ice screw saw us back on safe ground - a fantastic route.

Whilst Gerwyn and Russ were on the summit the other group could be seen skiing east from the icecap towards our camp. Due to the terrain they could not see our camp and stopped just over a mile away. We moved camp the next day to join them and created our last camp 7C (or Camp 8 depending on who you talk to). The leader of the other group, Nigel Edwards, had regular contact with the Twin Otter crew back in Iceland. The Twin Otter had intended to come in early due to a forecasted weather front. When it pulled out of the hanger its nose wheel steering didn't. The delay fixing this meant they could not fly to Greenland for the onward flight to recover us. Gerwyn was "really" disappointed with this so had to console himself with climbing more peaks, a "real blow".

The other group were not as happy as Gerwyn with the delay. We found out later that they had told there employer that they would only be away for two weeks, planning to 'phone up after two weeks and say the plane could not get in for a week, thus giving them the three weeks the trip was planned for. Now they had to call back and say it would be four weeks.

The Twin Otter could not fly on Tuesday due to the weather front. On the Wednesday it flew to Constable Pynt but was told it would not be able to land at Daneborg, the next landing strip North, due to weather. On the Thursday it flew to Daneborg but sustained a puncture on landing. As we were expecting to be picked up we had stripped the camp and were standing around hopefully watching the perfectly blue sky for a 'plane. No such luck and we had to remake camp. Another Twin Otter had to fly from Iceland with spares and engineers to fit the tire. By this time some of the food was running low and Tim – a strict vegetarian – was down to his last few cup-a-soups.

We woke on Friday and Nigel told us the plane was on its way, so we stripped camp once again and watched the blue sky yet again. We finally spotted the 'plane approaching up Budolfi Isstrøm. We had marked a landing strip with bamboo canes and after one circuit they made a positive if bumpy landing. Another group piled off the plane planning to climb in this area and then move north. They were slightly disappointed that we had climbed most peaks in sight due to our enforced stay.

We quickly unloaded their kit and loaded ours. The take off was smooth with good views of the peaks we had climbed. The rest of the trip back to Iceland was uneventful. We refuelled at Daneborg, had a brew at Constable Pynt and flew back to Isafjordur on the North West coast of Iceland. Here we met another expedition that was flying in to another area further south. As they were not sure if they were getting skins for their skis we lent them ours. We heard later that when they landed in the area they were to explore, the Twin Otter got stuck in the snow and they spent the next two days digging it out before it could get back to Iceland. Frissi, the owner of the Twin Otters said *"Next year, we do not fly into the mountains".* I think he had had a bad week. Russ recently discovered that three members of this group work in the same building he is currently working in. We each knew nothing of the others trip. It's a small World.

After a few hours we took a scheduled flight back to Reykjavik. After a quick shower and change of clothes we headed down town for the delights of Reykjavik - pizza or pasta for most of us with very expensive local lager, but well worth it.

We returned to the UK on Saturday 9th June safe and well having experienced Greenland's remotest beauty and its harshness.

Diary

Date (2007)	Activity	Altitude (metres)	Latitude / Longitude
12 May	Commercial flights from UK to Akureyri		
13 May	Twin Otter flights from Akureyri via Constable Pynt and Daneborg to Dronning Louise Land		76° 11' 24.55" N 26° 32' 49.73" W
14 May	Sorted base camp and carried out safety equipment checks and enforced route change planning.	1881	76° 11' 24.55" N 26° 32' 49.73" W
15 May	First ascent of '**Penderyn'**. Russ' 45th birthday.	**2143**	76° 13' 28.44" N 26° 38' 21.68" W
16 May	Repairs to skis, crampons and further route planning prior to moving north on 17th.		
17 May	Moved from Camp 1 to Camp 2. Ground blizzard developed en-route forcing an emergency camp to be made. Very cold due to wind-chill factor, approximate temperature reading -63°C.	1868	76° 12' 59.55" N 26° 29' 12.37" W
18 May	Camp 2 to Camp 3. Better weather meant that we could continue to the intended next camp. Approximately 4 miles covered.	1912	76° 15' 18.14" N 26° 22' 34.69" W
19 May	First ascent of '**Copa Rhosyn**'	**2067**	76° 15' 19.10" N 26° 21' 06.63" W
	First ascent of '**Y Lliwedd**'	**2052**	76° 15' 35.23" N 26° 20' 03.55" W
20 May	Route recce carried out of 2 imposing peaks with massive 'gendarmes' on their ridges protecting the summits. Massive cornices encountered between icecap and rock buttresses preventing safe access to the mountains. Wind-chill effect on temperature today saw -52°C recorded.		
21 May	First ascent of '**Carnedd Môr Ladron**' (**Pirate Peak)**	**2049**	76° 15' 40.32" N 26° 22' 35.51" W
	First ascent of '**Cornucopia**'	**1996**	76° 15' 51.53" N 26° 22' 29.03" W
	First ascent of '**Foel Fras**'	**1917**	76°16' 30.00" N 26°24' 33.72" W

	Strong overnight winds with 60-70mph gusts. Temperature inside tent recorded at -11°C.		
22 May	Camp 3 to Camp 4. Covered approximately 6 miles today and reached a new range of mountains. Hard physical day pulk pulling over difficult sastrugi and blue ice fields.		76° 19' 42.08" N 26° 23' 47.82" W
23 May	Camp 3 to Camp 4	1893	76° 19' 42.08" N 26° 23' 47.82" W
	First ascent of '**Bryn Poeth**'. Ascent via snowfield of about Scottish Grade II.	**2084**	76° 20' 59.28" N 26° 20' 48.18" W
24 May	Second ascent of '**Softice**'. This peak was first climbed by the Tangent 2000 expedition.	**1833**	76° 19' 52.65" N 26° 19' 53.72" W
25 May	First ascent of **The Staircase (Yr Esgair)**	**2002**	76° 17' 55.08" N 26° 32' 58.38" W
26 May	Intended moving camp today, however, strong winds and blizzard conditions prevented any safe movement. Spent time reinforcing the camp walls and to generate some body heat. Extreme cold due to wind-chill experienced.		
27 May	Camp 4 to Camp 5. Distance covered approximately 5 miles over very difficult ground – sastrugi and blue ice.	1812	76° 24' 02.73" N 26° 26' 35.31" W
	View point North of Camp 5 overlooking head of Budolfi Isstrøm - a large glacier.		76° 24' 07.43" N 26° 25' 18.31" W
28 May	**Flat topped pyramid (Dickens Bjerg)** Gale force winds overnight which eventually eased up by early afternoon. Opportunity taken to ascend the nearest peak. Second ascent of 'Dickens Berg' recorded.	**2241**	76° 23' 41.30" N 26° 21' 09.11" W
29 May	Gale force winds all day prevented us leaving the relative security of the tents. Gerwyn's 45th birthday!		
30 May	Camp 5 to Camp 6. Distance covered approximately 4 miles to reach the foot of 'Falkonner Klippen' – a peak identified by the 1953 expedition.	1815	76° 27' 13.71" N 26° 22' 01.64" W
31 May	Second ascent of '**Falkonner Klippen**' but possible first ascent via ice couloir. Abalakov abseil descent.	**2088**	76° 26' 55.76" N 26° 19' 51.40" W
	Camp 6 to Camp 7. Distance covered approximately 6 miles.	1861	76° 27' 42.85" N 26° 12' 17.69" W

	Failed ascent of '**Provestenen**' en-route to Camp 7a and then Camp 7b. Turned back short of the summit.		76° 44' 54.00" N 26° 33' 00.00" W
1 June	First ascent of '**DB Ridge'** ridge/summit	**1941**	76° 27' 03.65" N 26° 15' 28.16" W
	First ascent of '**Dinky Do'**	**1904**	76° 27' 17.04" N 26° 07' 48.66" W
2 June	First ascent of **'In-Pin'**	**1980**	76° 26' 21.96" N 26° 16' 38.58" W
	Second ascent of '**Aonach Mor'**	**1941**	76° 26' 08.16" N 26° 12' 43.86" W
3 June	Camp 7b to Camp 7c (8). Distance covered approximately 1 mile to join other expedition at RV point.	1875	76° 28' 08.64" N 26° 11' 36.48" W
	First ascent of '**Carnedd y Genod**'.	**1974**	76°27' 16.62" N 26°04' 59.22" W
	First ascent of '**Mynydd Glaslyn**'	**1893**	76° 28' 10.32" N 26° 00' 58.14" W
4 June	Initial Pick up day. Plane pulled out of hangar in Iceland and nose wheel steering broken.		
	First ascent of '**Pod'**. Coordinates are approximate due to GPS failure.		76° 29' N 26° 16' W
	First ascent of '**Golden Dome**'.	**1954**	76° 27' 19.74" N 26° 07' 0.36" W
5 June	Plane being fixed in Iceland. No flight due to weather front.		
6 June	Plane fixed. Flew to Constable Pynt but prevented flying to Daneborg due to weather.		
7 June	Twin Otter flew from Constable Pynt to Daneborg but sustained puncture on landing. Spare wheel flown from Iceland to Daneborg.		
8 June	Twin Otter flight from Daneborg to Dronning Louise Land to collect us. Return flight from DLL via Daneborg and Constable Pynt to Isafjordur (Iceland). Scheduled flight from Isafjordur to Reykjavik, overnight stay at Reykjavik.		
9 June	Return to UK.		

Camp craft

From the start we decided to make an effort with our campsites rather than just pitching tents. The main focus was to build walls, a toilet area and a kitchen area.

Adding walls has a number of advantages. They:

- x help to protect the tents from the constant wind off the ice cap one benefit of which is reduced noise;
- x act as a sun trap and can provide a pleasant place to sit at certain times of the day;
- x allow sheltered movement around the tents;
- x provide an area to store items such as pulks

The act of building walls also provides benefit as it:

- x provides a focus for the team members on arriving at a site;
- x is strenuous and helps to generate heat

The toilet area consisted of a square recess with a central trench surrounded by walls on three sides. This needed to be placed in the lee of the tents otherwise it was soon covered by spindrift as we found to our cost. As the wind was from a constant direction (the ice cap) for nearly the whole trip it was easy to plan the site of the walls and the orientation of the campsite. However this was not the only consideration as the height and position of the walls also affected the deposition of spindrift. We soon established that positioning a smaller V-shaped wall (what we came to call the “upstream V”) 20 metres to windward had a significant effect on the profile of the wind and subsequent deposition of spindrift. This proved to be an essential part of the camp construction.

The igloo at camp 4 was built to windward of the main wall. During the night spindrift curved around the walls of the igloo and there was a substantial deposit both inside the igloo and over the wall of the main camp and onto the back of the tents. This was completely cured by the addition of a low upstream V - a very useful technique.

To make entering the tent easier we dug a 0.5m deep hole to the shape of the tent awning. The meant we did not have to crawl in to the tent but could step down in to the hole and sit on the groundsheet. This makes it easier to don/remove boots. The hole was also used o cook in when the weather was poor. It gave good clearance from the flysheet.

The task of cutting snow blocks was much easier by the use of snow saws. We took one produced by LifeLink and another that was home-made. Both worked well. We also had two snow shovels which we used for releasing the blocks from the ground.

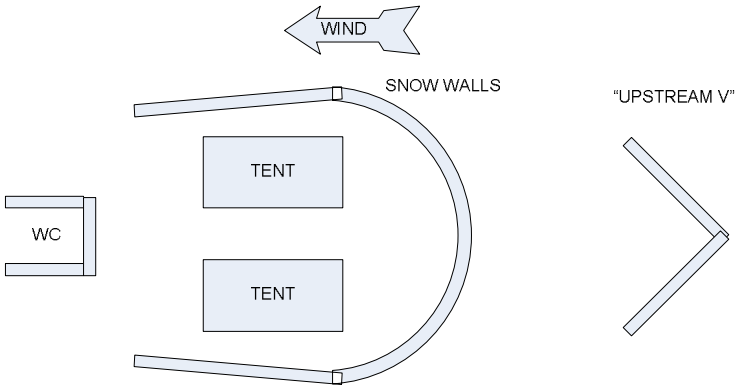


Figure 8 - Typical camp layout

Flora and Fauna

This region is very sparse in both flora and fauna. Being inland and close to the icecap with very limited precipitation and constant low temperatures there is very limited potential for food sources. The only animal life seen was a solitary unidentified bird, and even this was not seen by all expedition members. There were no higher order plants but all summits had a good distribution of lichens. The low precipitation and constant wind meant that summits were generally free of snow, and this combined with frequent sunshine to produce warm spots around sheltered areas of rocks. Nearly all rock samples returned contained evidence of lichen as can be seen in the pictures shown in the geology section.

An unusual find was made on one of the last climbs completed by the expedition (Carnedd y Genod). A slab of rock (approx 30cm radius) was removed in order to make a cairn and under this a plant specimen was found.

Figure 9 - Lichen / plant in situ

It was about 4cm tall and appeared to have a definite architecture with leaf like appendages. A small sample of a “leaf” segment was taken. Closer examination revealed a very fibrous structure, as seen in Figure 10, but further definite identification has yet to be made. There is some doubt as to whether it is a lichen or plant. This is still being investigated.

Figure 10 - Segment of "leaf"

Meteorites

Meteorites are often difficult to find, as to the casual observer they are no different from any other rock. However in regions where there are no obvious rocky features, such as the Greenland and Antarctic ice caps, it is much more likely that any lying fragments may have an extraterrestrial origin. The ice cap can also serve as a collector. As the ice migrates towards the coast any debris will be carried with it and may be deposited where the moving ice is forced to change direction or speed such as near Nunataks or mountain ranges. It is important that the area is not regularly obscured by precipitation, which narrows potential sites considerably.

Ralph Harvey (2001) identified the region of South West of Dronning Louise Land visited by us as a potentially good site for meteorites. In reality however it was not that straightforward. The areas of blue ice we investigated were devoid of debris except where they were in the lea of a mountain or Nunatak. In this case there was always a blue ice pond with lateral moraine lines and a central debris deposit. Theoretically any meteorite should be visible as a rock that is distinct from the other specimens in the debris field. Unfortunately the geology was so diverse that every rock appeared to be distinct from every other!

We did find a few samples of iron rich rock with a smooth glazed surface on Iron Rock Ridge but these were obviously from a band of similar rock that could be visible on the nearby unclimbed and quite literally spectacular “Spectacle Face” (Figure 11).

Figure 11 - Spectacle Face

Geology

We were very surprised at the geological diversity of the area. We tried to take a very small sample from each peak visited and these were kindly analyzed by Dr. A. S. G. Jones MBE formerly a lecturer in Marine Geology at Bangor University. This section is based on his summary report.

Sample 1

An irregular tabular specimen, approximately 20 x 12 x 2.5cm.

Lithology:
Colour is generally brownish to light grey sandstone with some limonitic staining. The specimen is well indurated and composed of well sorted, rounded to sub-rounded grains of quartz that are of medium grain size. There are occasional grains of feldspar and lithic fragments.

Structure:
One surface (top) shows clear asymmetrical ripple marks with a crest to crest length of 3-4cm and height of crest about 3-5mm. The other surface (bottom) is rather featureless.

Sample 2

A small rectangular block about 5 x 2 x 2cm.

Lithology:
Reddish brown well indurated sandstone composed of haematitic stained quartz grains with occasional lithic fragments. There appears to be leaching on two surfaces separated by a rounded edge. The leached area would seem to be limonitic.

Structure:
Apart from a very feint lamination no structures were seen.

Sample 3

This specimen was about 13 x 5 x 0.5cm in size.

Lithology:
Dull purplish grey slate composed of silt size grains with some muscovite grains visible

Structure:
There is a strong preferred orientation in the grains producing a fine cleavage.

Sample 4

A small specimen 4 x 4 x 1cm in size.

Lithology:
Dull grey to black slate composed of silt sized grains with some muscovite grains visible

Structure:
Strong preferred orientation producing marked foliation, almost a cleavage

Sample 5

An irregular, tabular specimen about 11 x 4 x 1.5 cm in size.

Lithology:
The bulk of the specimen is vein quartz with the confining surface seeming to be the remnants of a fine grained sandstone. There is considerable haematitic staining on the confining surfaces.

Structure:
No significant structures observed.

Sample 6

A small specimen covered in lichen that is well weathered quartz, altered feldspars and possibly, amphibole. It is very similar to sample 9.

The structure is fine grained with disrupted contacts that show no preferred orientation. It is possibly an acid to intermediate rock. Collected from the summit of Y Lliwedd.

Sample 7

A small specimen which is white to grey fine grained meta-quartzite there is accessory iron mineral. Collected from the summit of Bryn Poeth.

Sample 8

Very small specimen; granitic in appearance. Well shattered. Quartz, feldspar, biotite and amphibole. It appears as if the dark mineral has been subjected to preferred pressure without disruption of the quartz grains. Collected from the summit of Cornucopia.

Sample 9

Weathered acid - intermediate igneous rock very similar to sample 6 collected from the summit of Copa Rhosyn.

Sample 10

A small thin specimen with a suggestion of lamination composed of colourless to white quartz and remnants of muscovite. There is some iron staining. Collected from the summit of Falkonner Klippen.

Sample 11

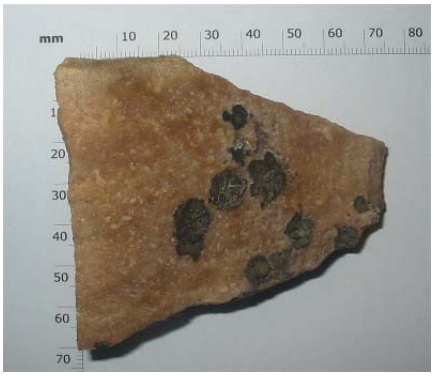
A small specimen: very similar to sample 7.

Sample 12

Pinkish-brown fine to very fine grained meta-quartzite with no preferred orientation visible. Collected from the summit of The Staircase (Yr Esgair).

Sample 13

Pinkish brown fine grained quartzite with vague indications of laminations. Collected from the summit of Pod.



Sample 14

A dirty fine grained quartzite with some lithic fragments. Collected from the summit of Pod.

Sample 15

Similar to sample 12 but lighter in colour - quartzite. Collected from the summit of Pod.

Sample 16

Very similar if not the same as samples 6 and 9 but covered in lichen.

Sample 17

White to black banded fine to very fine grained gneiss. Bands are 1 - 3 mm thick. Light bands appear to be mainly quartz; dark bands are probably amphibole and biotite. There is a vague cleavage at right angles to the banding. Collected from the base of Dickens Bjerg.

Sample 18

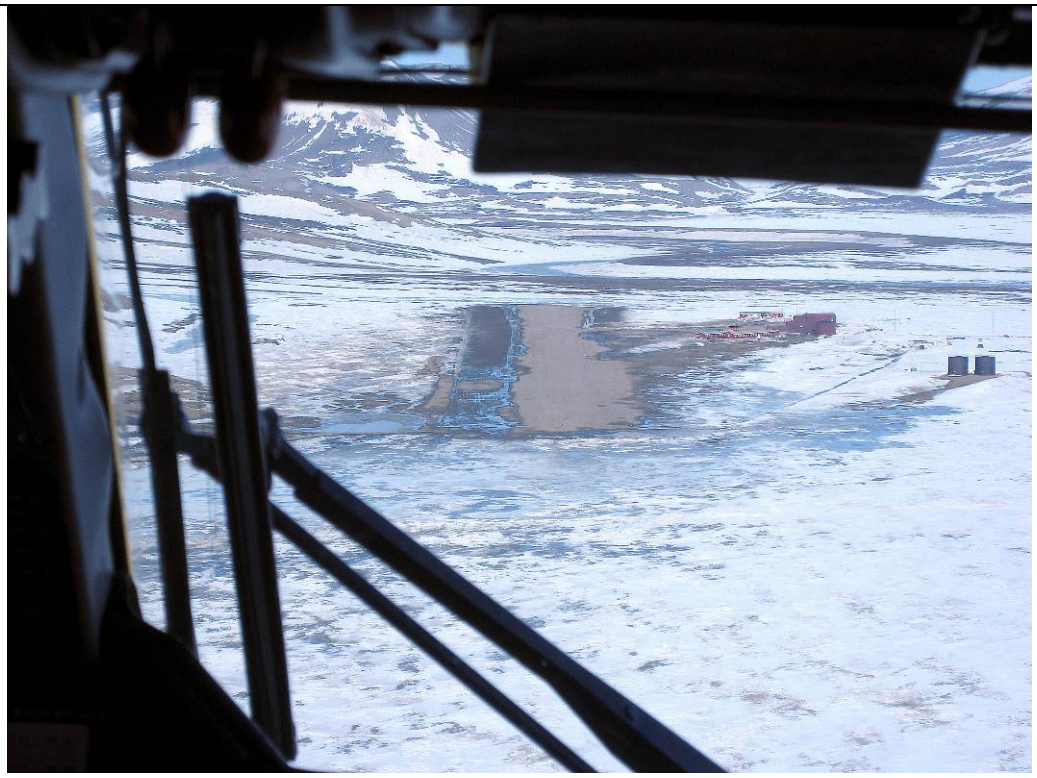
A very fine grained pinkish brown quartzite

Sample 19

A light pinkish to pale brown quartzite, similar to sample 12 with some suggestion of laminations. Collected from the summit of Dickens Bjerg

Expedition photographs

The beginning - waiting to leave Akureyri



Approaching Constable Pynt airstrip

Refuelling at Daneborg airfield

Checking the rifle and emergency equipment at Daneborg

First sight of Dronning Louise Land

Dronning Louise Land

Peaks at Dronning Louise Land – the left hand peak is Penderyn

The plane prepares to leave. Despite the sunny appearance it is *very* cold

Manganese intrusions on Penderyn ridge

The view from Penderyn (Birthday Peak); Camp 1 is at right hand side

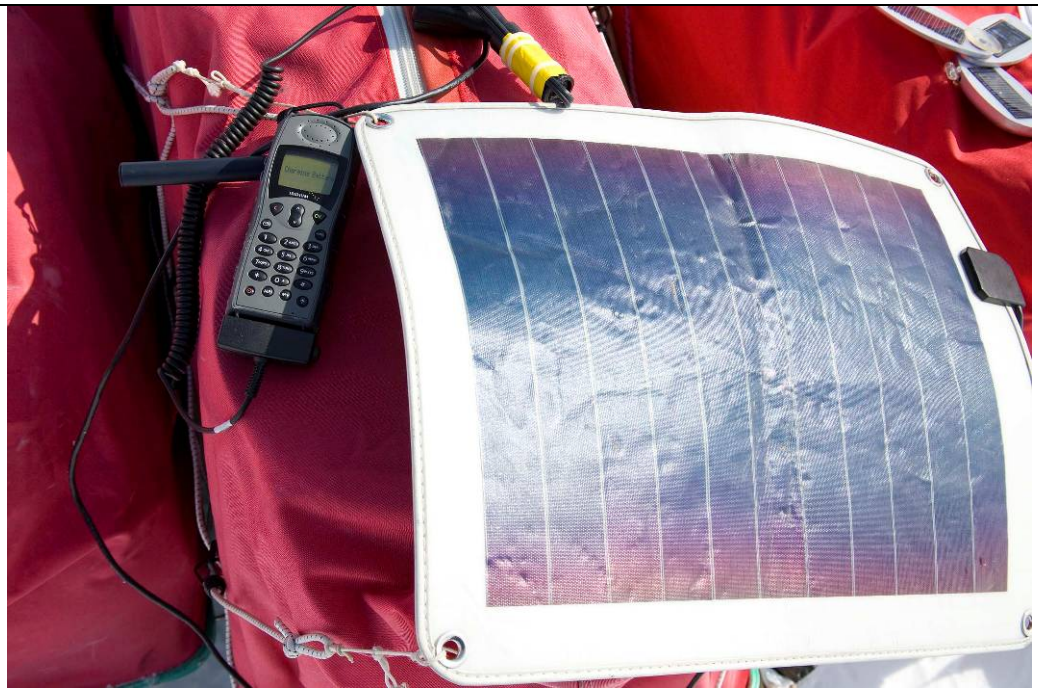
Camp 2 - the ground blizzard can be clearly seen

Copa Rhosyn and Y Lliwedd from Camp 3

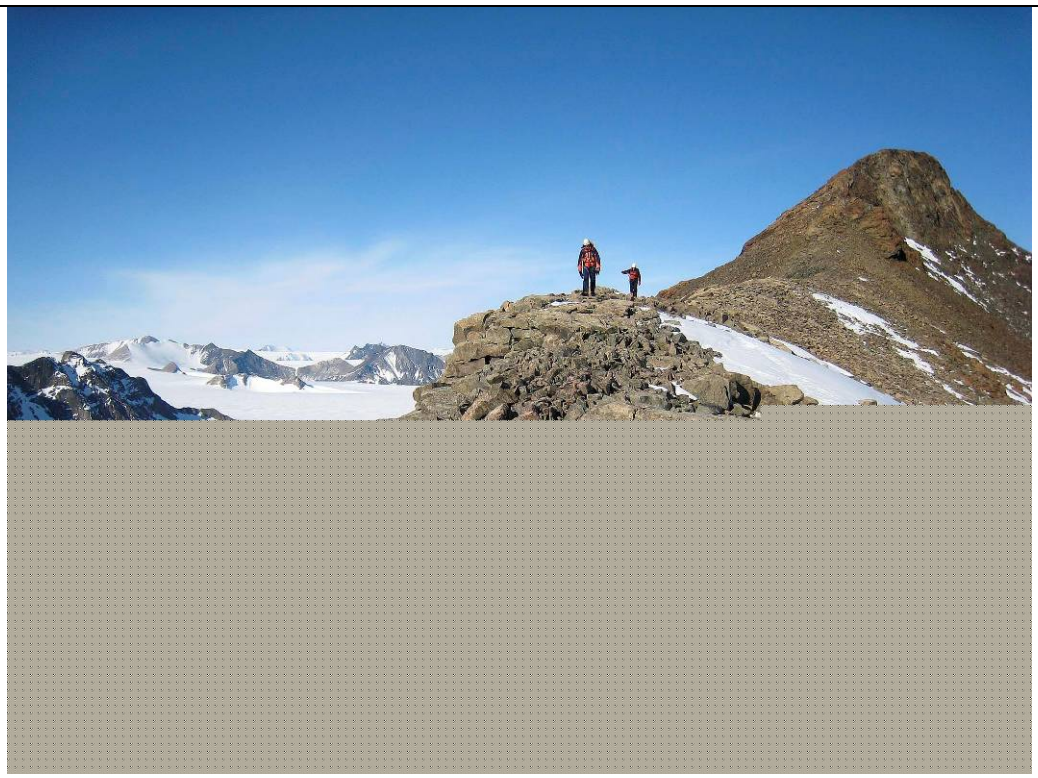
Camp 3 – Gerwyn phones home with the sat-phone

Using the satellite phone

Camp 3 - well protected from the wind



Charging the satellite phone



Gerwyn and Tim on “Iron Rock Ridge” between Copa Rhosyn and Y Lliwedd