SCOTTISH EAST GREENLAND EXPEDITION 2003

FINAL REPORT

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INTRODUCTION

The Scottish East Greenland Expedition 2003 expedition took place on the inland ice due east of Narsarsuaq International Airport, South Greenland from June-July.

BACKGROUND TO 2003 EXPEDITION

Malcolm Thorburn and Douglas Campbell had made two previous trips to the expedition area in preparation for the 2003 journey. In 1997, they made an unsupported journey, using skis and pulks, up the Kiagtut Sermiat glacier and across Johann Dahl land to reach Ostgletscher and the inland ice. They achieved a number of mountaineering first ascents in this area prior to caching expedition pulks in a moraine field on Johann Dahl land and returning by the same route to Narsarsuaq. In 1999, following their time-consuming and technically demanding journey on the coastal glacier in 1997, they chartered a helicopter to drop them at their equipment cache. From there, the pair ravelled east on ski and made a number of mountaineering first ascents on the unexplored ice-cap prior to returning to the cache site and returning using the helicopter.

OBJECTIVES FOR 2003

During both previous trips to the area, the pair noted that a number of the multitude, unclimbed peaks in the area east and north of previous trips would provide world-class mountaineering first ascents. One in particular, Pt 2820, was the highest mountain in south Greenland and was technically demanding from all aspects (Figure 1). However, short of an extremely expensive undertaking using linked helicopter journeys, the only way to attempt these peaks was using unsupported ice-cap travel on ski, and pulks, as the pair had done in 1997 and 1999. It was therefore decided to visit 4 key areas, in a return journey of some 150km, and attempt 6 key first ascents.

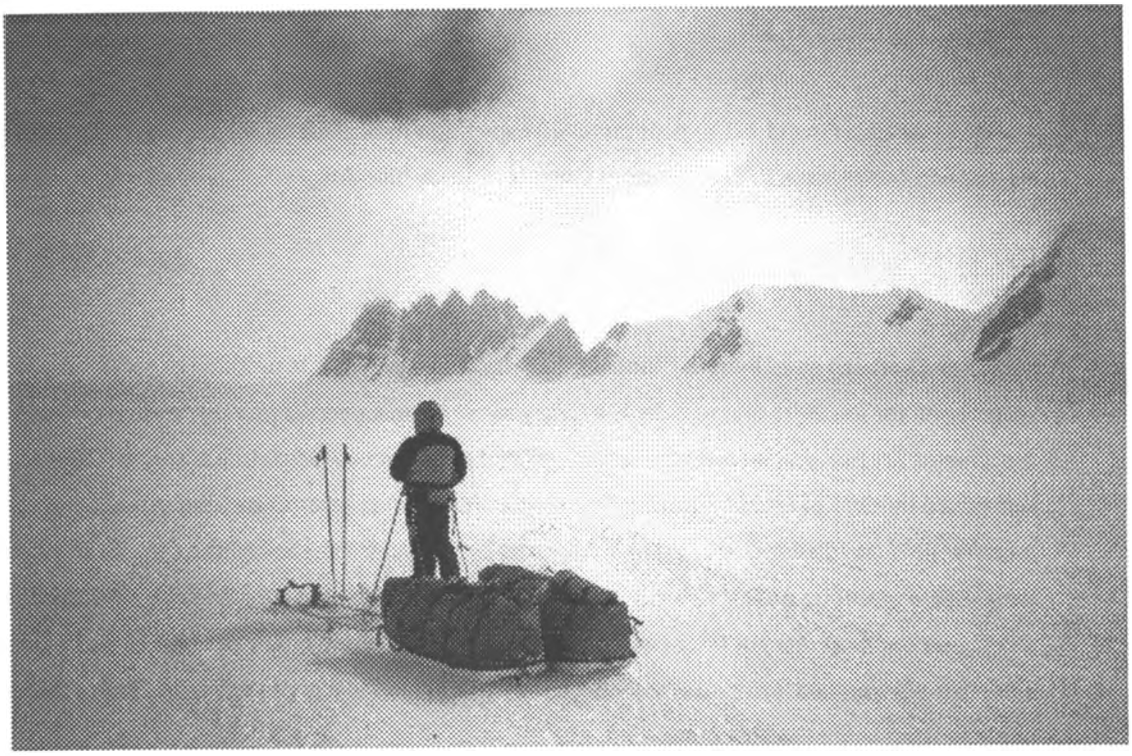

Figure 1. Pt 2820m

REPORT ON ACTIVITIES

ICE-CAP TRAVEL

The pair arrived on the inland ice successfully by helicopter from Narsarsuaq (Figure 2). Equipment stored at the edge of the ice-cap in 1999 was found in good condition and deemed serviceable for the duration of the trip. Equipment was loaded equally into two pulks (combined weight of 195 kg) and the journey started on 29th June.

Figure 2. Arrival on the inland ice.

After teething troubles with ski boots and three-pin bindings, distances of 8-12km per day were made in the first 7 days. Having reversed the clocks to travel at night, surface conditions were excellent for travelling over this period (Figure 3). Moving onto the highest section of the ice-cap north of the drop area proved challenging due to the large increase in altitude over a short distance. On slopes of up to 200, the sledges proved extremely heavy and unwieldy.

Figure 3. Typical travel conditions early in the trip.

We reverted to travelling with crampons at one stage to improve security. Crevassing in this area, which up until then had been almost negligent due to significant accumulations of winter snow still on the ice, became more common. A number of very large bridges were crossed on good snow though the size of the gaps could prove problematic later in the season.

On the main inland ice, at an altitude of 2,200m, conditions for travel were again excellent with shallow gradients and excellent surface icing. The weather then became gradually worse and snow began to drift. During this period, the wind picked up from the east and drifting snow became a constant feature of travel.

Pulling pulks uphill into a strong headwind towards the first major mountaineering objective, conditions became very difficult. The combination of gradient, wind and load size, coupled to deteriorating visibility and added friction from fresh snow, slowed progress dramatically for a number of days with distances of 3-5km only (Figure 4).

Figure 4. Deteriorating weather on the inland ice

Weather then became worse again, with easterly winds now strong and constant. Travel became impossible at the foot of Pt 2820 and we became tent-bound for almost 6 days at an altitude of 2,500m (Figure 5). Whilst the weather was relatively clear at points during this time, the terrain was to dangerous to travel over in the 'surface white-out' due to our proximity to the drop-off of the inland ice to a large glacial basin below on our route east.

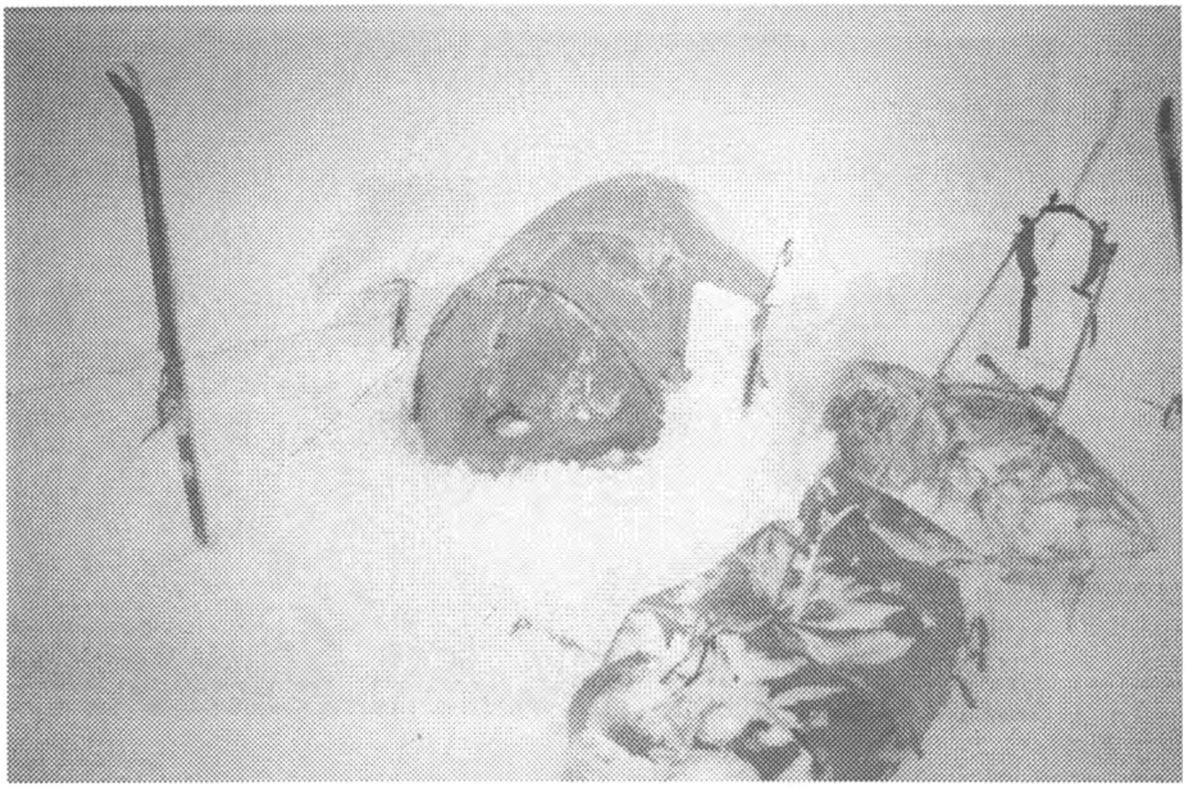

Figure 5. Storm-bound at Pt 2820m, camping at 2500m.

When the weather cleared slightly, a decision was made to escape the ice-cap. We reversed our route for a number of days before again heading east. Conditions were poor with thick mist and cloud keeping the surface snow softened all night. The loads were hard to manage in these conditions with skis balling up and snow bridges becoming more unpredictable. After 2 more days, a heavy snowfall came overnight with no wind.

Conditions then became extremely trying for the sledges. Also, navigation became very challenging in the white out conditions as large slope features, headwalls and even smaller nunataks were unmapped and had to be negotiated with great care. At this point, trails had to be broken through constant depth of 30cm, sometimes uphill, for may kilometres. As we moved lower down towards the larger mountain ranges, conditions gradually improved and some sections of dry glacier ice, coupled with downhill gradient, speeded up progress dramatically.

Lower still, conditions on the Ostgletscher had deteriorated dramatically sine 1999. Large areas of previously smooth ice had becom scarred with deep meltwater channels and large sections had to be negotiated by splitting the loads in three parts and ferrying them. Obviously, 1km progress in these circumstances requires a minimum of 5km walking. With increased crevassing, this distance was often much longer. As an example, the final journey to our helicopter landing-site, which took 8 hours in 1999, took 23 hours in 2003 (Figure 5).

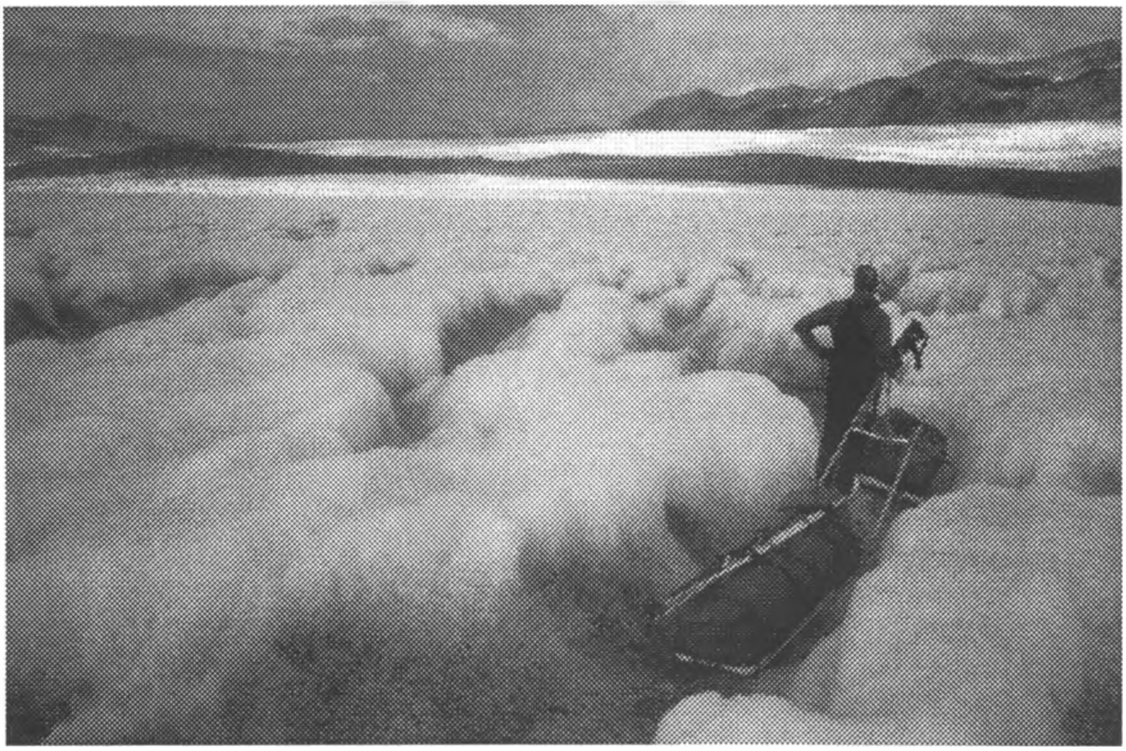

Figure 5. Conditions on the Ostgletscher.

MOUNTAINEERING

Mountaineering activity was disappointingly limited, due mainly to the travelling conditions for the vast majority of the trip. Given the seriousness of the weather, the level of fatigue from pulling sledges, and unexpectedly high levels of technical difficulty in areas where ascents were attempted, none of the major peaks were successfully tackled. In total, five peaks were visited and climbed. Three were first ascents (Figure 6) and two were re-ascents of peaks climbed during the 1997 and 199 trips. All ascended peaks were climbed un-roped and down-climbed by the routes of ascent. Pitches climbed during aborted attempts were generally on sound, fine-grained granite and natural protection was good. It should be noted, however, that large sections on the windward side of the peaks on the edge of the inland ice (> 2500m) were blown down to extremely hard blue ice. This terrain was hazardous to move on in these conditions and required more rappelling gear than we had brought.

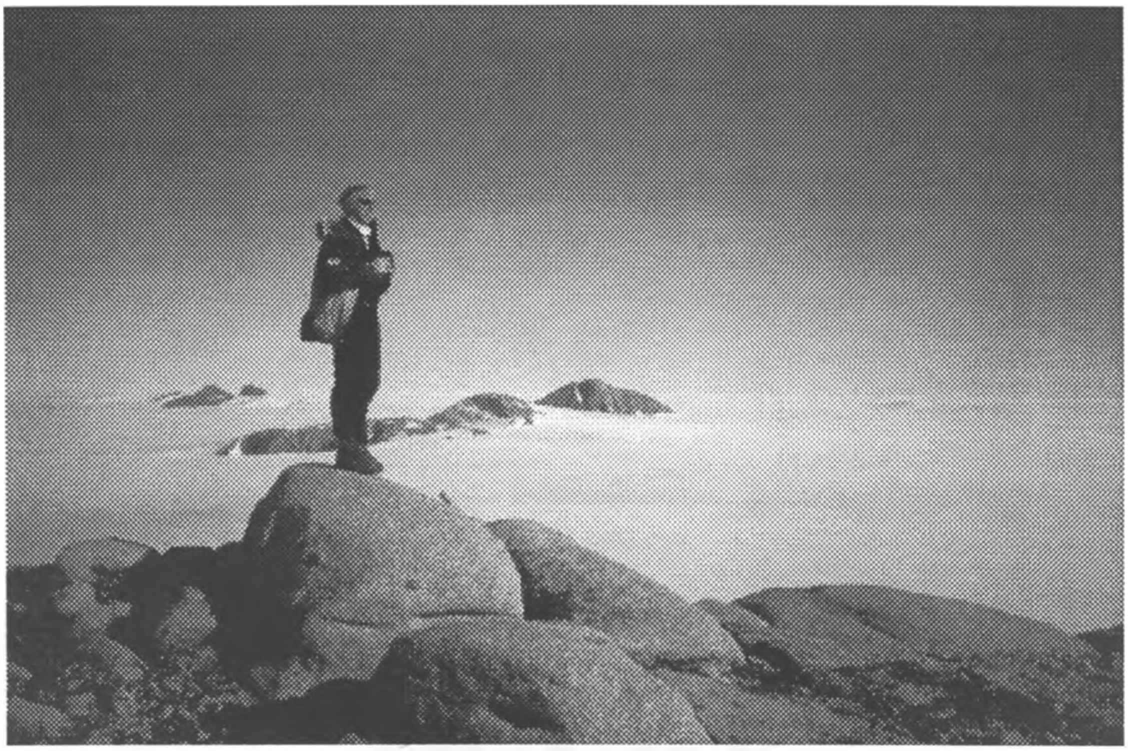

Figure 6. On the top of an un-mapped mountain at the point of arrival in the helipcopter.

WEATHER

TEMPERATURE

Temperatures were extreme during the 2003 trip. During good weather in the early and later stages, midday sun lifted the temperature in the tent to over 400 celsius. We remained under cover, and limited our activities, during these periods. Early morning temperatures averaged –5°C with a minimum of –12°C.

CLOUD COVER

In the first phase of the expedition, pressure was high and cloud cover followed a daily pattern. All cloud cleared overnight from the horizon, gathered from 10am-8pm and then moved away again. At this point, little cloud ever reached the main ice-cap presumably due to the large high pressure immediately overhead.

When the weather deteriorated in the middle phase, cloud cover was variable. In general, altocirrus and altostratus were most common with cumulus rare. In times of precipitation, all the sky was obscured. In the clearing weather of the latter stages, cloud cover was more common all day with some misty conditions combining to form semi-whiteouts for hours at a time.

SNOW AND SNOW CONDITIONS

Very large amounts of winter snow remained in all horizontal surfaces until the latter stages of the trip at lower altitude. This provided excellent skiin conditions, certainly the best that either team member had encountered before. Above 2000m, the snow remained frozen all day with only very slight surface softening. In peak temperatures, below 2000m, the surface was unsuitable for travel after 10am and much before 11pm. After the large snowfalls, sastrugi ridges were common and made travel difficult as the direction of travel rarely coincided with drift direction. The soft, fresh snow in the middle section was particularly trying due to the lack of win when it fell.

WIND

Easterly winds dominated over the course of the expedition and kept temperatures low in the middle section of the trip. They were generally constant strong winds of 20-50mph with little gusting in general. However, their strength was such that protecting the tent with a snow wall (of at least 5ft high) was absolutely essential above altitudes of 2000m on the main ice-cap. Gusts of > 70mph were experienced during the storm-bound days and caused extensive drifting around the tent.

LOGISTICS NOTES

TRAVEL

1. Greenlandair are very strict with excess baggage. Posting equipment (particularly food) (Parcelforce) is an excellent way of reducing the excess baggage bill. Food can be bought if anything happens to parcels in transit. It would not be advisable to send other equipment this way.
2. Narsarsuaq airport is prone to becoming fog-bound and the Boeing 757 will not land when the mist/fog is bad. It can last for several days.
3. The airport only has 1 helicopter now rather than two plus a twin otter due to the scaling down of the ice-patrol. This could cause problems for being picked up in an emergency as it is often doing other work and has a higher likelihood of being under repair due to this.
4. The winds coming from the ice-cap make the helicopter flights very weather dependent. Bad weather can result in several days of waiting on either side of a trip.

IN THE EXPEDITION AREA

1. Carry all clothing in Ortleib drybags.
2. Plastic 'stack-a-boxes' can prove useful for organising equipment in the pulk and can be used to post food over in.
3. Take two stoves and pumps and split fuel into at least 2 separate containers.
4. Take black waterproof stuff-sacs to melt snow in at midday and save fuel.
5. Take a large steel flask to cook pasta in and save fuel.
6. Use a tower stove system to maximise the use of heat from stoves.
7. Take 2 wooden chopping boards to give a platform for cooking.
8. Take a spare 'tent' such as a livi bivi as there is a strong chance of the tent being damaged. Also, a lot of cooking is done in the tent environs when weather closes in.
9. A large snow wall is essential when camping on the inland ice as weather can change quickly and the wind can be very strong.
10. Driving snow during storms means that a snow shovel will be needed to clear the tent.
11. Split all equipment in half to ensure that vital kit is not lost in a crevasse fall.

EQUIPMENT

PERSONAL CLOTHING

The team used a number of key items of clothing other than that used in a normal Scottish winter. Firstly, quality duvet jackets were used, principally when breaking camp in the early morning cold. It was noted that an extra large size is useful to put on over shell equipment when stopping for breaks during pulking. Also, wide-brimmed sun hats are absolutely essential for use in midday sun, particularly if travelling due to the relative ineffectiveness of full-factor sun cream in the conditions experienced. In addition, some form of face-mask is necessary for use when travelling into the wind on the main ice-cap.

CAMPING

Due to the nature of the wind, and lack of natural shelter, a number of items of equipment are absolutely essential for this style of trip. Firstly, the tent should be of the highest quality, with 10-12 guying points (due to changes in wind direction), 2 doors and a full snow valance. In order to create a safe pitch for the tent, a snow saw is necessary to prepare a block wall and should be of the dedicated type (rather than the 'emergency' variety) due to the need for heavy and prolonged cutting in ice layers and old snow. For guying the tent out, a range of skis, poles and snow stakes should be used. On dry ice, ice-screws are needed.

With respect to living in the tent, it is essential to use a *thermarest* in conjunction with a 4-season *karrimat*. This provides maximum insulation on the snow and allows use of the karrimat under the groundsheet on dry ice. Sleeping bags should be of high quality (at least 1000g down) and stored/used in a breathable bivi bag.

Communications

The team carried three means of communication. The main method of contact was via a Motorola satellite phone and we carried two batteries. These were checked each day to ensure charge was not being lost and stored separately to ensure both remained waterproof and undamaged. In addition, we carried an EPIRB with built-in GPS that was registered with the coastguard for use on land. We left details of this system with the airport traffic-controllers as they were not aware of the COSARSAT system. In addition, we carried a normal tri-band mobile phone which worked in the environs of Narsarsauq but had insufficient signal strength to be used on the inland ice.

Food

A high level of energy is expended pulling the sledges. Rations were based on 5,500 calories per day, to provide a balanced and sustainable type of diet for the activities being undertaken and giving some flexibility to stretch rations in case of emergency. The principal foodstuffs focussed on fat to provide the highest calorific value for weight. 'Squeezable' full-fat mayonnaise and 'squeeze' cheese with oatcakes formed the basis of lunches alongside bounty bars. Morning rations focused on carbohydrate-based cereal bars and muesli bars with extra-sugared chocolate drinks. Evening meals were based on high calorie soups, pastas and bread. A large amount of snacking material was also consumed each day including peanuts, fudge bars, dried fruit and glucose tablets.

Spares and Repairs

A large selection of items was taken to ensure that the team was self-sustaining in most eventualities. The most likely items to be damaged, and key spares taken, were:

1. Tent (Spare poles, patching material and glues, thread and needles, a Livi Bivi for emergencies)
2. Stove (a spare stove! and 3 MSR spares kits)
3. Sledges (fibreglass repair kit)
4. Skis (see ski section)
5. Communication equipment (battery, two forms of comunicating)

1st Aid

A comprehensive set of first aid equipment was carried. Each team member carried an emergency pack with dressings, tape, di-hydracodeine, buccastem, brufen and temgesic/hypodermic needles etc. This could be used in the event of major trauma in a crevasse fall or slip etc. For the team as a whole, an extensive range of other painkillers, anti-inflammatories, bandages, dressings, tape etc was carried. Also, dental equipment is essential and was used where a bridge came out.

Skiing

The ski equipment receives very heavy use in this type of trip and the team was very reliant on its performance. Each member used plastic telemark boots (essential) in conjunction with Voille plate or Rottefeller 3-pin bindings. A variety of skins should b taken with a 'skinny' set proving best for kick/glide on flat sections and gentle downhill when the weight of the sledge pushing though the aluminium stays creates a lot of downhill force that can be difficult to control on the often icy surface. In addition, an extra ski and pole was carried alongside a wide variety of additional spares such as baskets, ski tips, glues, screws, a binding plate and skins.

Mountaineering

Both team members carried plastic mountaineering boots, crampons and an ice-axe. We also carried a spare axe for leading steeper sections on routes. A range of tape slings and hexes on rope were also used. Only one 9-mill rope was taken as no major need for rappel descents was envisaged.

Glacier Travel

Sufficient equipment was carried by each person was carried to carry out lone rescue. This included (per person):

1. 3 pulleys
2. 6 prussik autoblocs
3. snow stake
4. ice axe
5. ice screws
6. belay plate

Also, a deadman was carried by the second man in addition to the second axe.

FINANCES

Income

MEF	£250.00
Gino Watkins Fund	£1200.00

Travel

UK-Denmark flight 2 x £210.00

Denmark-GL flight	2 x £550.00
Helicopter charter	£2450.00
Excess baggage	£800.00

Equipment

EPIRB	£790.00

Insurance

BMC	2 x £125.00

Food

£255.0

Postage

£250.00 (for food parcels)

Communications

SAT phone hire	£200.0

Sundries

Snow saw, snow stakes, Avalanche probe	£120.00

Items purchased previously but needed specially for Greenland

Snowsled Pulks	2 x £500.00
Re-inforced VE25 Tent	£500.00
Livi Bivi	£70.00