



**Report of an Exploratory Mountaineering
Expedition in Kyrgyzstan**

28th July - 25th August 2012

Front Cover: Shamsi Tuyuk valley from below base camp, showing some of the peaks climbed.
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Summary

In July-August 2012, eight students and recent graduates of Cambridge University undertook a three-week exploratory mountaineering expedition to northern Kyrgyzstan, focusing on the Shamsi Tuyuk Valley in the Kyrgyz Ala-Too Range. A two-day walk-in from the road head brought us to the foot of moraine, where we put our base camp. From here, we made a series of one-day outings to explore the mountains forming the valley watershed, all between 4000m and 4500m high. Over the course of 14 climbing days, expedition members attempted 13 routes on eight peaks. Successful ascents were made on six peaks, via nine routes at grades up to AD. Routes were mainly on snow and ice, with short rocky sections. We believe that our successes represent the first recorded ascents of these mountains.

This report aims to provide comprehensive information on all aspects of the expedition. Introductions to the team and the area are followed by detailed descriptions, photographs and maps of the routes climbed and attempted, and the potential for further new routes is noted. The logistical aspects of the expedition are then described in full, with sections on food, equipment, medical issues, environmental impact and finance. A summary of an additional week spent travelling around Lake Issyk-Kul is included, and contact details for obtaining further information are also given.

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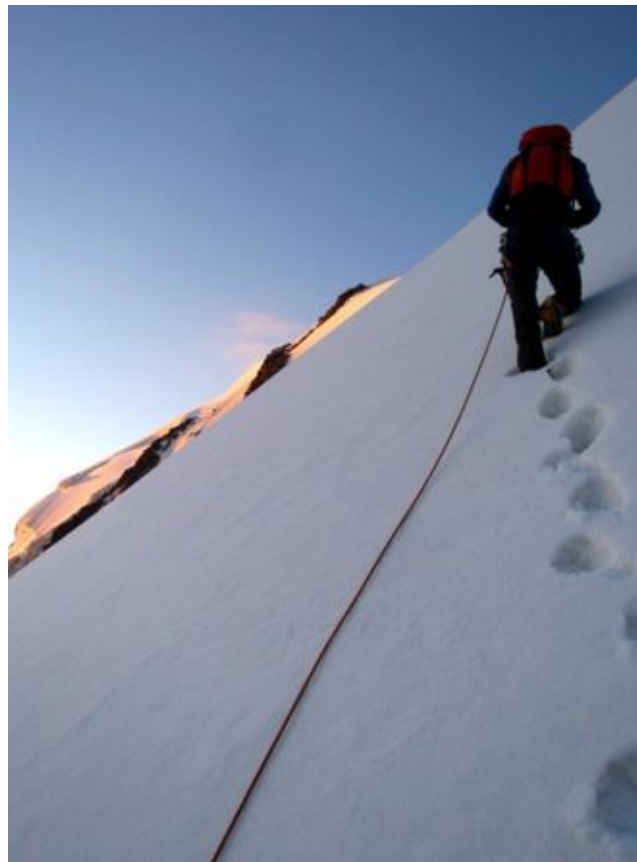
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Introduction

Dave decided to run an expedition after looking into travelling in Central Asia and realising that it would be frustrating being so close to mountains and not climbing them. He asked some friends to help organise it and the expedition was born with an enthusiastic team. The team was made up of mountaineers with a walking rather than climbing background, so we aimed for routes at AD or easier. We built ourselves a large safety margin, so despite our relative inexperience in expedition mountaineering, we'd feel safe pushing ourselves to our limits. In addition, we were (and still are) great friends, having met and started mountaineering together in the university hillwalking club.

Our philosophy was to explore an area, climb what we could, and open it up to those more experienced (or ourselves in later years). This report is an account of our personal success, and doubles as a guide for those that wish to follow our steps, either coming into this area with the help of our prior knowledge to climb harder lines, or to apply our exploration principles and the knowledge we gained to somewhere new.

We aimed to prove that despite our relative lack of age, experience and financial means we could go on expedition, and we've been successful beyond our wildest dreams. We are very grateful to all everyone that had confidence in us, especially those that provided a grant as well.



Dave climbing the long snow slope on Peak 4383

Aims

We gave ourselves some aims to focus our minds during planning. We were lucky in that we achieved all of our aims and environmental objectives.

Primary aim:

The primary aim of our expedition is for every member of the team to reach the summit of at least one 4000m peak in the Kyrgyz Ala-Too Range that has not had a previously recorded ascent.

Secondary aims:

In addition to our primary aim, we were hoping to achieve some, or all, of the following.

1. Explore the valley system in the expedition area, noting the potential for future mountaineering challenges.
2. Provide a challenging experience that will stretch the expedition members in many different ways.
3. Share the expedition and information we gain with a wide audience, and help future expeditions.
4. Allow all expedition members to experience an expedition, including its planning and organisation
5. Learn about environmentally friendly expeditions and attempt to achieve new standards of sustainable expedition mountaineering
6. Explore Kyrgyzstan, including its culture and traditions.

Environmental Policy

We believe that all who travel and explore, particularly in areas that are wild, beautiful and fragile, have a responsibility to consider the environmental and wider effects of their visit. Although no expedition can have zero impact, it is possible (and, we believe, vital) to manage and minimise that impact. This expedition aspires to set new standards in best environmental and ethical practice.

We aim to:

1. Minimise our impact on natural areas, leaving no permanent trace of our presence
2. Minimise our impact on local communities (both in Bishkek and close to our expedition area)
3. Employ companies and individuals with good environmental and ethical records, and support local environmental initiatives

To help us achieve these aims, we carried out an Environmental Impact Assessment, and used this to draw up an Environmental Management Plan.¹

¹ See Appendix I

The Team

Dave Farrow – Expedition Leader, Aged 24



After my two first 'Munros' at the impressionable age of 4, I continued being dragged up hills, and on long cycle rides, until I was old enough to drag my parents on similar ventures. Before leaving Scotland for university I had cycled Lands End to John O'Groats and the length of the Rhine. I had walked across Switzerland and carried a rucksack I could barely lift for 14 days in the Pyrenees. I had also walked, cycled and skied extensively in Norway, assisted in leading multiple international Scout expeditions and trained as a UK Mountain Leader for Duke of Edinburgh Award Expedition supervising. At university I started to climb and moved swiftly from walking to mountaineering, with regular trips swapping

between Scotland in winter and the Alps in summer. Additionally I was president of the Cambridge University Hillwalking Club. I led on two BSES expeditions to the Himalaya, climbing three unclimbed 6000m peaks and taking charge of 22 teenagers and 18 support staff.

Leading this expedition was the most stress and the most fun I've ever had. I spent all my spare time (and some more) on the planning and organising, trying to ensure the expedition would be successful. I had to draw on plenty of past experience and then watch as the team worked on their delegated tasks and brought the expedition together. A couple of low points were trying to pack for the carry in to base, balancing weight and comfort, and the repeated efforts to get drinkable water from our filters.

The real highlight was getting back to road to find fresh tomatoes and vodka, having successfully explored, survived and climbed some mountains. Finally summiting the 4383m peak on the last day after a long built up of preparation was pretty special too.

Michael Fordham – Publicity, Aged 27



I grew up in the south-west of England and became quite familiar with Dartmoor before leaving for university. At Cambridge I quickly joined the Cambridge University Hillwalking Club and, between 2003 and 2012, went on over seventy club trips to the Lake District, Snowdonia and other mountainous regions of the UK. I was President of the club from 2005 to 2006. It took me three and a half years to finish the Wainwrights in the Lake District, and in the last few years I have focused more on the Scottish Highlands, in both summer and winter, slowly working through the Munros. I have been on five mountaineering trips to the Swiss Alps, most recently being based in Saas Grund before heading over to Zermatt to tackle the Monte Rosa chain. Although poor conditions prevented us from

reaching the summit of Dufourspitze, we nevertheless has an excellent couple of weeks climbing 4000m peaks. I enjoy some easy-grade rock climbing in the Peak District. When not up a mountain I spend my time reading history, learning German and working on a part-time PhD in history education.

Bethan Gudgeon – Medical, Aged 22



Having lived in the Lake District my entire childhood, climbing hills and going on adventures were inevitable activities; the best ones were those with friends through Guiding and D of E. At university the predictable next step was to join an outdoor club, the Hillwalking club! Since then I have gone on many trips with club members, both official and unofficial; experienced my first taste of winter walking, scrambling and climbing; climbed up Alpine, Himalayan and African peaks; swum, canoed and cycled around the country; and thoroughly enjoyed being one of the club's Social Secretaries. Going to Kyrgyzstan was therefore certainly an adventure not to be missed!

And it was just that: a time to remember, putting aside always being at the back of the long slogs up hill! Particularly good moments were reaching the top of our first peak (although it only had a prominence of 25m and was very cloudy), seeing the other team through binoculars on top of a peak that looked pretty impossible from camp, and seeing many stars and shooting stars. Aside from the mountain climbing, it was nice to have time to lie in, get away from stresses of normal life, and I also really enjoyed the post expedition travelling, including horse trekking and hot springs! Back in the UK, I am now in London pursuing an Early Years PGCE, playing netball, assisting at a local Guide unit and awaiting further adventures!

Matthew Graham – Website, Aged 23



My interest in hillwalking and the outdoors more generally stems from days spent walking with my family, and particularly my dad and brother, as a child and teenager. Coming from Newcastle and having family in Middlesbrough, both the North Yorkshire Moors and Northumberland were in easy reach, with us also indulging in the occasional trip further afield to the Lake District and the Scotland. Brief trips to the North West Highlands and the Lake District formed the main highlights to a pre-university gap-year largely spent sitting in front of a computer working in an engineering consultancy, but I came to Cambridge with the vague intention of pursuing hillwalking more seriously.

I joined the university hillwalking club in my first year and very quickly my vague intention progressed to a full blown passion for the mountains. In the following four years I spent many enjoyable days walking amongst hills and mountains of varying stature. As well as regular trips to UK's upland regions, particularly the Lakes and Snowdonia, I gained my first Alpine mountaineering experience with trips to the Arolla region in the Swiss Alps in 2010 and to the Ecrins National Park in France 2011.

Although I was initially a little apprehensive when Dave asked if I'd be interested in joining the expedition, I'm very glad I overcame those doubts and got involved in what turned out to be such an amazing experience. Although the organisational challenge of preparing to spend over two weeks self-supported in such a remote region did at times feel a little overwhelming, thanks in no small part to Dave's excellent leadership and the commitment of all the team members, we did somehow manage to get everything done largely without hitches. I remember setting off for Heathrow for our outward flight feeling a sense of achievement of having got even that far!

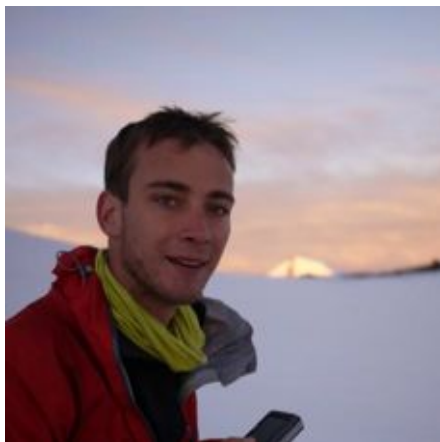
The first day we spent in Kyrgyzstan buying supplies in Bishkek was undoubtedly the toughest for me. In Bishkek the combination of the blazing sun beating down on us, lack of sleep and the slight feeling of helplessness at being in a country where you are unable to converse with most people you meet, making for quite a wearing beginning to the trip. The physical demands of the next couple of days were high, with us having to lug all our kit up the valley to our base camp site from our drop-off point at the road head, however for me this was countered by the excitement at this point of actually being among the mountains.

Standing at the top of a mountain with the world spread out around you is always a breathtaking experience, but the remoteness of the peaks we were climbing made the views that bit more spectacular. Summiting the peak we nicknamed the Molar was a particular highlight for me, its prominent position in the view from base camp having made it a very tempting target. Our post-mountaineering tour around Kyrgyzstan also provided many special memories in particular the warm hospitality of some of the Kyrgyz families we met.

Overall the whole trip was a unforgettable experience, and I am extremely grateful to all my fellow team members for their hard work in making Dave's dream a reality and for their companionship whilst in Kyrgyzstan. I would also like to thank the wide range of organisations and people which provided help, both financial and logistical, in making the expedition such a success.

Having now graduated from my undergraduate engineering degree at Cambridge, I've now moved north of the border to Edinburgh to climb lots of Scottish mountains and pursue a PhD in Neuroinformatics. A random selection of non-mountain things I enjoy include making bad origami models, running and reading excessive amounts of fiction.

Joe Hobbs – Treasurer, Aged 22



Despite visiting family in the Lake District often as a child, I had never climbed a mountain until I joined the air cadets at 14. I spent a lot of the following years on trips with the air cadets, as well as countless days alone in the Lakes. When I came to Cambridge, I quickly became a member of the Cambridge University Hillwalking Club, and haven't looked back since! Now in my fourth year, I am just nearing the end of 3 years on the CUHWC committee, having been the Meets Secretary, Safety Officer and finally, the Social Secretary! Recently, I have done my ML training, and hope to complete it in years to come, and have been involved with helping younger children to their Duke of Edinburgh's award. I have also dabbled in cycle touring, including from Canterbury to

Berlin in summer 2009, as well as some smaller weekend trips. In the last few years, my horizons have been expanded, and I have done more in the way of winter hillwalking and started to explore Scotland. I have also learnt to climb, and climbed in the Peaks, Lakes, Snowdonia as well as the Avon Gorge. In the last few years, I have done some Alpine mountaineering in the Valais Alps and Ecrins, and the opportunity to travel to exciting new areas and climb the unknown was just too good to miss!

While the pain of 2am starts and washing up in glacial water are nearly forgotten, the exhilaration of watching the glow of the sun break over the horizon will remain with me for many years. I still find it hard to believe that we were the only people to have experienced the views we saw and the routes we climbed. The highlight of my expedition was climbing over the pinnacle leading to Peak 4155 and seeing the clear route to the summit. After hours of hard slog, loose scree and uncertainty, suddenly knowing that you'll make it is an amazing feeling. Being able to watch the others' faces as they came over and saw the same is very rewarding too, and makes the feeling of working as a team really satisfying. Unfortunately, it seemed

much too soon that I was back in the truck to Bishkek and I'm now back to planning my next trip to the mountains and remembering the good times!

Doug Hull – Catering, Aged 21



At school I achieved all levels of D of E, became D of E leader for younger pupils and completed the 35 and 55 mile Ten Tors competitions in 2006 and 2009 on Dartmoor. At university I was president of the D of E society for two years, and enjoyed many weekend and holiday trips with CUHWC, a club which also enabled me to try occasional scrambles and climbs, activities I found fun and exciting. This led to two highly enjoyable Alps trips in 2010 and 2011, beginning, as so many do, with the ISM Student Alpine Week. I love to experience new environments and cultures, and thoroughly enjoyed an 8-week travelling / volunteering / trekking trip to India and Nepal in 2010 and a 6-week research / travelling trip to Tanzania in 2011, during which I also climbed

Kilimanjaro. Having completed my geography degree, studying topics including AIDS, terrorism, shamanism and glacier physics, I am now working for a charity in London and am looking to pursue a career in international development.

The expedition has left me with many memories I will never forget, and the excitement, exhilaration and overall enjoyment will take some beating in the future (not that this will stop me trying). Climbing out of the steep backwall of a glacier with the sun rising up over the horizon behind and casting long shadows ahead, before traversing along a snowy ridge surrounded by panoramic views across seemingly endless dry plains and glacier-clad peaks, and finally ascending a rocky summit to a virgin 4000m peak, has to be one of the best ways to spend the hours between 5am and 8am in the morning. Knowing that all this was made possible by a team effort stretching back many months, with little support from travel agencies and alike but lots from my friends, made the whole experience all the more rewarding and one which I would recommend to anyone considering such an expedition.

Jo Smith – Environment, Ethics and Science, Aged 26



Having been dragged up hills for as long as I can remember, I temporarily deserted the mountains as an undergraduate to do a little bit of rowing. However, I came to my senses on moving to Cambridge, and took up every one of the (surprisingly many) opportunities that arose to get back into the hills. Joining Cambridge University Hillwalking Club, I soon found myself climbing and mountaineering, as well as walking, all over England, Wales, Scotland and the Alps with friends made in the club. It seemed only sensible to become President soon afterwards, in order to arrange trips as favourably as possible for my own explorations! In recent years, I have particularly enjoyed classic summer alpine and Scottish summer and winter mountaineering, but still relish the

experience of merely being in remote, beautiful places and jumped at the chance to spend three weeks in an unexplored valley in the Tien Shan.

What made the expedition special for me was the necessity of approaching the landscape as an explorer, with no knowledge of what was around the next corner or over the next ridge: an aspect of mountaineering that is rarely on offer in the modern era. Being the first to stand on top of a 4000m+ mountain takes some beating, but the journey to get there - being involved in

the expedition from the start, knowing that we made it happen without help from tour companies or guides, and seeing all our plans and hard work come together successfully – was far more rewarding. On a personal note, I also felt a great sense of achievement in learning how (and then proving that) expeditions can be environmentally responsible.

Back in Cambridge, I am coming to the business end of my PhD at the Department of Earth Sciences, which involves investigating carbon cycle and erosion processes in temperate mountain forests. Fieldwork has been large part of my research, with extended periods of time spent sitting by streams in the rain in the Swiss Alps and Oregon Cascades, but I am now writing up my thesis and deciding what to do next. When not chained to my desk or seeking topography, I play fiddle in the Cambridge University Ceilidh Band, explore East Anglia on my road bike and am presently enjoying the entirely new challenge of learning to sail.

Tom Wright – Equipment and Communications, Aged 30



Having been carried and dragged up hills from a young age, I eventually learned to like it, first through Scouts and then with the Cambridge University Hillwalking Club, which I joined in 2003. Since then, I've been Meets Secretary and President and been on more trips with them than I care to count, mostly to mountainous areas of the UK, but also abroad to the Pyrenees and the Alps on several occasions. I spent 10 weeks in Chile in 2005 doing various bits of building and adventuring with Raleigh International and have more recently taken up climbing in the Peaks with friends, including most of the rest of this expedition team! Work currently involves designing low level processing units for anything which contains a radio, and generally cramming as much power as I can

into tiny computers. Outside of work and inside of hills, I can generally be found exploring Cambridgeshire on my bike or messing around with slightly dodgy-looking home-made electronic gizmos.

Being the first explorers in a new area was an amazing feeling, especially knowing we had got ourselves there entirely through our own efforts (special thanks to Dave here!). Top moments were getting to a 4100m ridge at 6am, just as the sun was rising, and seeing mountains and valleys spread into the distance; also, sitting on a rocky peak for an hour or so while the other three went on to the next summit, just taking in the scene, appreciating being there, and spotting all our boot-prints on the mountains around. At the other end of the scale, I had to rescue my wayward ice axe from a very steep snow-slope, and I learned just how unpleasant it is to be seriously dehydrated!

All told though, both the expedition and the travelling within Kyrgyzstan afterwards were a brilliant experience, which I would recommend to anyone considering something of the sort.

Location

Shami Tuyuk, Kyrgyz Ala-Too, Kyrgyzstan

Base camp coordinates: 42°N 28'28", 75°E 10'48", 3050 m

The Tien Shan, particularly in Kyrgyzstan, have become increasingly popular with mountaineers over the last few years. Many head to more remote and higher peaks of the Kokshal-Too in the South, or the Inylchek in the East.

We headed to the Kyrgyz Ala-Too range, which runs east-west from Lake Issyk Kul to the border with Uzbekistan. "Shamsi Tuyuk" means the gorge of the Shamsi area; the gorge snakes south then west then south again. The Shamsi pass is a horse-trekking route to the east of our expedition area.

The valley is roughly five valleys and 50km east of the well-developed Ala Archa range, which is just south of Bishkek. The valley is just four hours' drive from Bishkek, and has peaks ranging from 4150m to 4450m.

Previous visits

There are no previously recorded visits to the valley. Russian mountaineers were well known for climbing hard routes in majestic locations and leaving small 'less worthy' objectives unclimbed due to the competitive element involved. The area has been well surveyed (along with the rest of the world) and it is highly likely that a simple peak in the area was climbed for surveying purposes. Pat Littlejohn of ISM and Vladimir Komissarov of ITMC agreed that the area was unlikely to have had any exploration in recent times.

As there were no photos, we had to make do with the accurate but old Soviet maps and Google Earth satellite photos. We chose this area over other similar valleys close by because of the better resolution and less cloud on Google Earth. Near one of the peaks (Peak 4383), the Soviet map has an inscription that translates as 'Visibility up to 20km', which suggests that this may have been previously climbed by surveyors.

We found signs of little-used paths to base camp and over a snow-free pass to the west, which we used to access the western glacier. We found no sign of any human presence on any routes or summits. We hope to have left no trace ourselves.

Regional Geography and Tectonics

The Tien Shan cover much of Kyrgyzstan and the border between Kyrgyzstan and China runs through this mountain range. Our expedition headed to the range south of Bishkek, known as the Kyrgyz Ala-Too, which are contiguous with the Zaaliyskiy Alatau to the north of Issyk Kul. The beautiful Khan Tengri and its associated peaks lie to the south-east of Issyk Kul, on the border with Kazakhstan and China. The highest peak in Kyrgyzstan, Peak Pobeda 7439m, is in this area, on the Inylchek Glacier

The Tien Shan mountains were formed, and in fact are still forming, from the continental collision of India with Asia, on the Indian and Eurasian plates respectively. This began about 40 million years ago, creating the Himalaya and Tibetan Plateau. The Tien Shan is one of the youngest ranges formed by this ongoing collision, which is useful for geologists as they can go there to learn about the early stages of mountain-building; evidence of this process tends to become lost in the older, more mature Himalayan ranges.

The geology of the Tien Shan has developed over the last 2.5 billion years. Igneous, sedimentary and metamorphic rock of all ages can be found in the range. The modern Tien Shan mountains are formed primarily of Palaeozoic basement rocks, formed more than 250

million years ago. Younger rock from the Mesozoic-Cenozoic period predominates in the valleys.

Kyrgyzstan's geology provides it with significant mineral resources including gold, mercury, antimony, other metals, gemstones and rare earth elements. The Tien Shan remain an area of active geological change. Almaty, in Kazakhstan, suffered serious earthquakes in 1770, 1807 and 1865.

The Tien Shan mountains are glaciated, though the glaciers have been retreating in recent years. The most significant of these glaciers, the Inylchek Glacier near Peak Pobeda and Khan Tengri, is one of the largest non-polar glaciers in the world. Several rivers flow from the Tien Shan, the most significant of which, by length and drainage basin, is the Naryn River which eventually empties into the Aral Sea. The Ala Archa river, which flows from the range, forms 100km of the border between Kyrgyzstan and Kazakhstan. The largest body of water in the region is Issyk Kul, the second-largest saline lake in the world (after the Caspian Sea) and the tenth-largest lake in total.

Local Geology



Recently, the Swiss National Science Foundation has funded a project based at ETH Zurich² to create digital geological maps of some areas of the Kyrgyz Tien Shan. Unfortunately, our valley lies just to the east the Kyrgyz Range project area. However, using the wider tectonic scheme and extrapolating the geology of the area that has been digitally mapped, we made a good prediction of what rocks we would find in the Shamsi Valley.

The valley is be underlain by sediments of the Torsu Formation, deposited in the North Tien Shan Epicontinental Basin during the late Devonian to early Carboniferous. The Torsu Formation is divided into two parts, both of which outcrop in our valley. The early part consists of sandstones, gritstones and conglomerates, while the later part consists of reddish siltstones and sandstones.

These sediments do not form anything like the impressive granite faces to be found in nearby Ala-Archa - but that's probably why our area was previously unexplored by climbers. Instead, the area is dominated by scree slopes and loose ridges.

We found sandstones and slate as expected. The rock was loose, and formed large unstable scree slopes, but the outcrops were solid enough for careful climbing and gear placement.



Map of Kyrgyzstan showing expedition area () and Shamsi Tuyuk river ()

²<http://www.kyrgyzstan.ethz.ch/snsf-projects/>

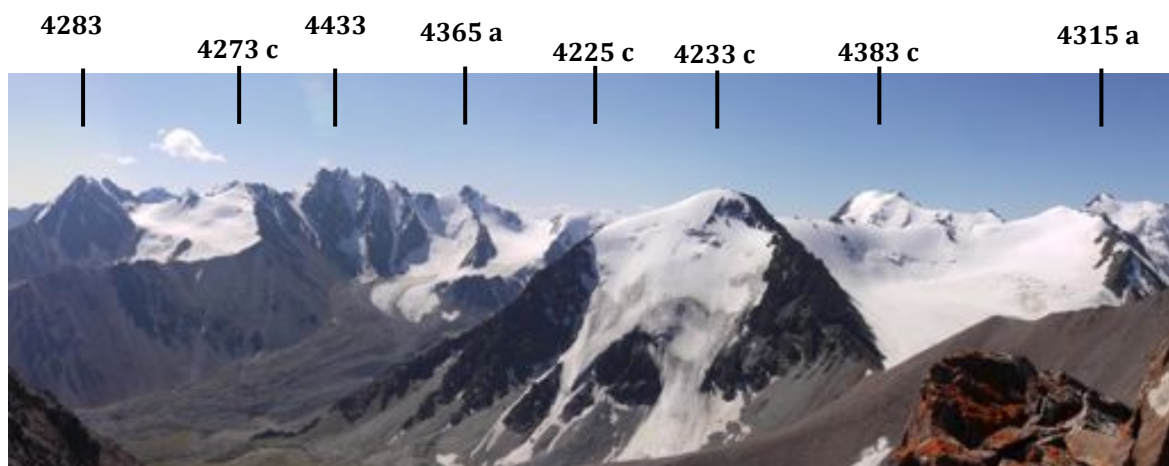
Introduction to the mountaineering

All of mountains attempted on the expedition were between 4100m and 4400m high. Most of the peaks formed part of a high-level ridge and therefore the prominence of most of the peaks was not particularly large. In this report, we use 'peak' to refer to a prominent summit, while 'point' refers to a subsidiary summit. A sketch map and a copy of the Soviet 1:50,000 is included on the following pages to aid interpretation of the following descriptions.

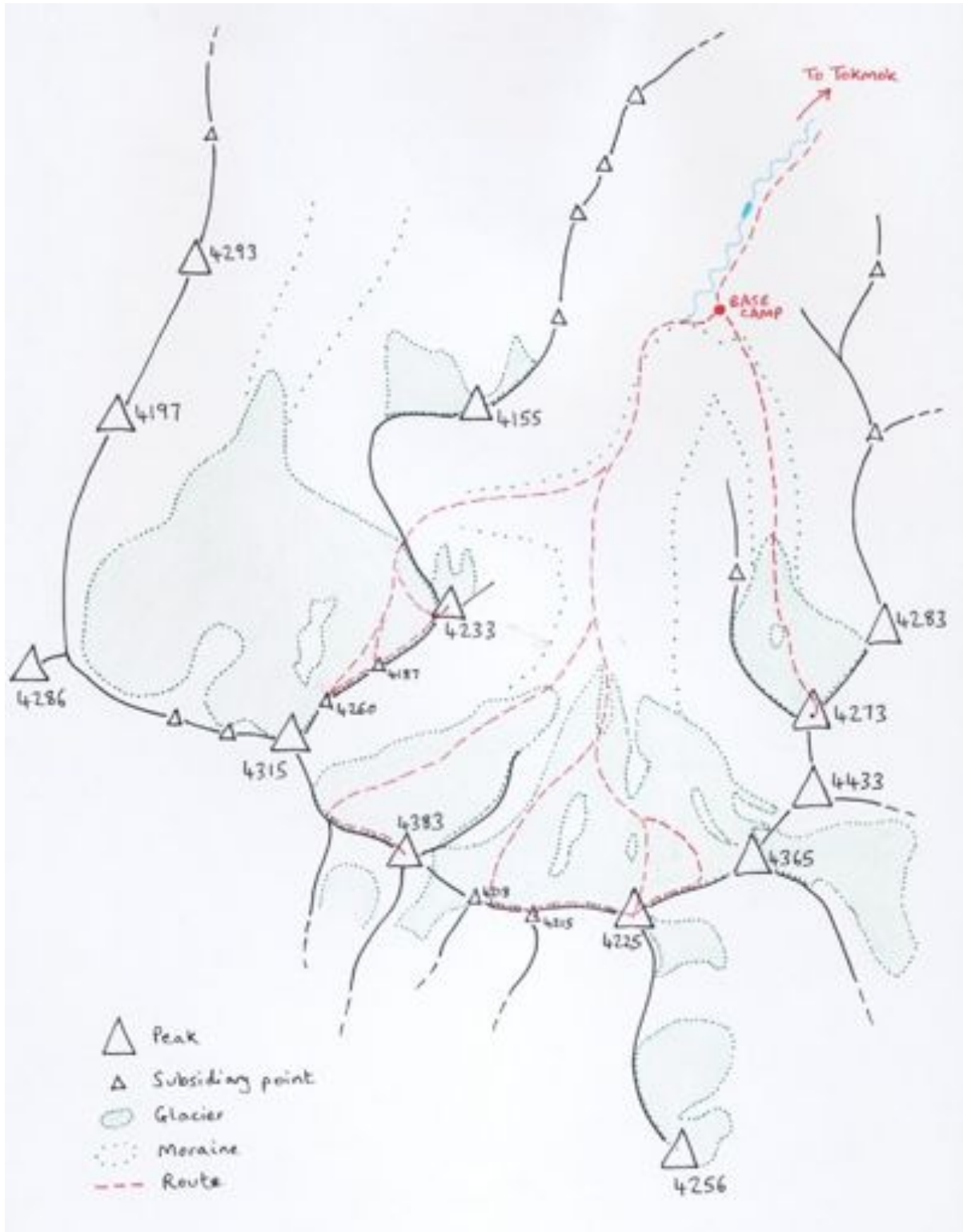
The moraine began immediately above base camp at 3000m. The moraine was old and grass-covered in the main, but did include some rocky sections to catch out ankles. The edges of the moraine were unstable, steep and unpleasant to travel up and down. Higher up, the grass covering stopped, leaving stable rock moraine in flatter areas. This got progressively more unstable and more mixed in size higher up. The east side valley (known by us as the hanging valley) followed a similar pattern, although it was steeper, giving almost no grass-covered moraine and much more unstable mixed-size moraine. The west side valley had a long stretch of evenly sized unstable scree that was simple in descent, if hard work to ascend.

The main valley had a long moraine walk in to the glacier that took around two hours. The glaciers were rock-covered until around 3400m and dry until 3600m. They were heavily crevassed in places, but most of these were avoidable. The snow was generally soft and did not freeze fully at night. On the summits and ridges white snow was generally very crisp, but most snow had a red tinge and this snow became soft very quickly after sunrise. As a result, most of us put a foot in a crevasse every time we were out. There were occasions when both feet went in, up to knee or waist height, but a full fall into a crevasse was never a concern. Most of the routes attempted involved snow slopes with a gradient between 30° and 50°. Often these were long and unprotected. In the late morning the snow melted, leaving glacier ice that was difficult to protect and nasty to descend. Peaks occasionally had rock outcrops on the summit and the teams climbed a number of sections of I or II (UIAA rock grade). The rock was generally slate and, although it was loose, there were plenty of larger blocks and solid cracks for protection where needed.

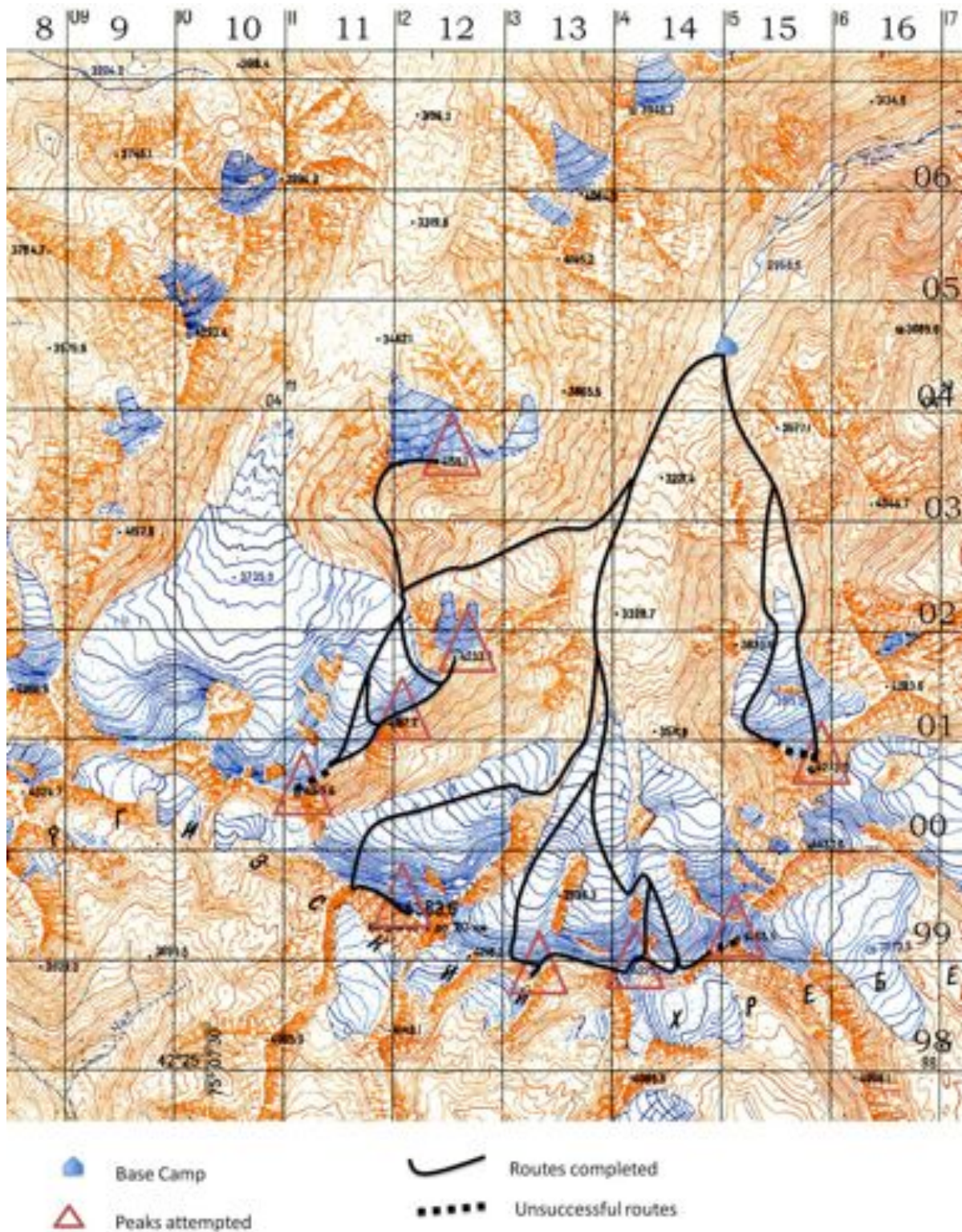
A number of routes were identified for future expeditions. Most peaks were climbed by their easiest line, but a wide range of more challenging ridge and face routes are available. Other peaks had routes that were not in condition, or required climbing at a grade beyond that at which members of the team felt comfortable. For all of the routes done and those identified as having future potential, more consistent snow would be a real bonus, and in some cases a necessity. For the mountaineering, it would make sense to come earlier in season when snow cover may be better. This may entail a winter or spring trip utilising skis. This would open up more possible routes, but would obviously have implications for access to the valley.



Overview of the mountain range. Peak height (m) followed by a: attempted, c: climbed.



Sketch map of expedition area, heights in metres. Scale 1:50,000



Section of Soviet map at 1:50,000 scale showing the area, routes and peaks. Grid references in the report relate to this map.

Mountains

Peak 4273, GR 158 007³

A: West Ridge, PD

Attempted by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 5th August 2012

From the right hand side of the moraine, the rock covered glacier can be ascended to reach the upper terrace of the glacier. Objective danger and loose rock is high on this section when not frozen. The West ridge can be followed easily from here, until the ridge narrows to unstable rocky blocks and steep snow or ice. Beyond this crux, the ridge looked like it continued in a similar manner.

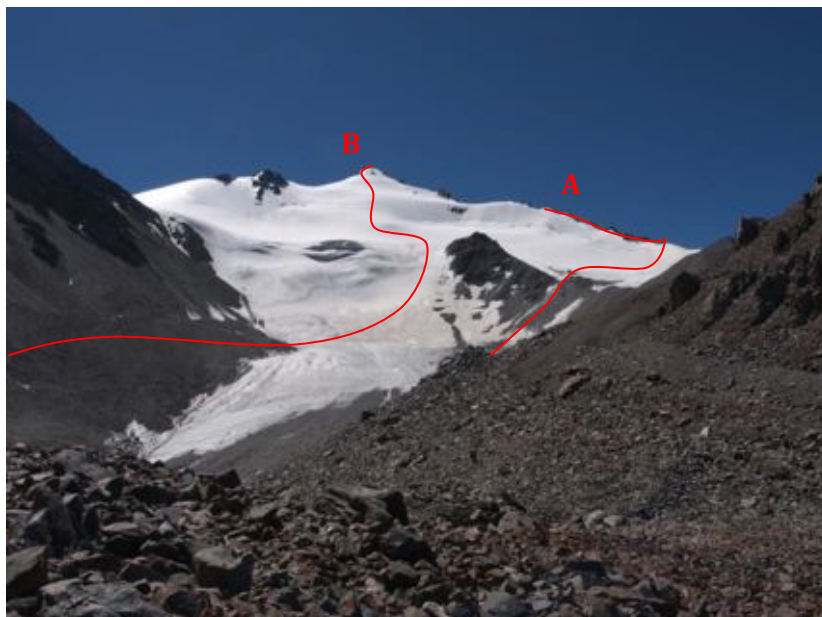
B: North Flank/Face, PD

Ascended by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 9th August 2012

A more direct route is best started from the left side of the moraine, which additionally gives a slightly better approach. Keeping close to the central rock pillar gives the easiest line of around 30-40 degrees on snow-covered ice, with the least crevasse and serac danger. Once the upper terrace has been reached, continue directly up on good snow (no climbing required). A small ridge ending in rocky boulders marks the north top. It is unclear which is the highest summit. The southern top looks highest when viewed from other summits in the area, but is hidden from the north top by the central top. The central top is composed of a secure looking 15m block with a slanting crack that might give a grade III/IV rock pitch. Getting to the base of the block involves moving across a narrow, unstable and fairly unprotected rock ridge. We only reached the north summit.



Central Summit (height of block ~15m)



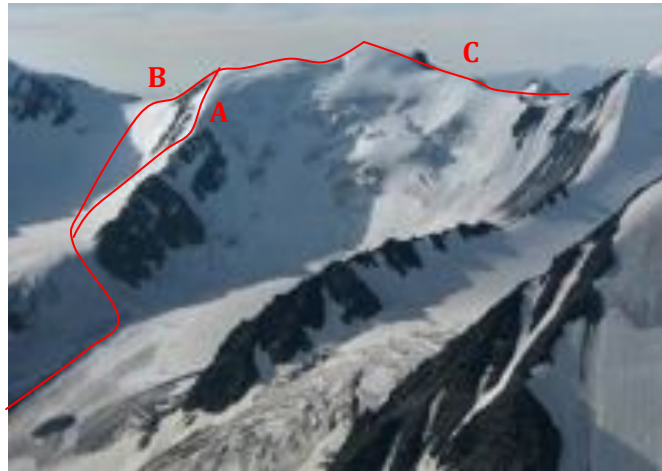
³ Grid references here and elsewhere in the report refer to the map on page 12

Peak 4225, GR 141 989

A: North Ridge, PD

Ascended by Michael Fordham, Matthew Graham, Joe Hobbs and Tom Wright, 4th August 2012.

From the moraine cross the glacier across easy ground with few crevasses before heading steeply up to gain the bottom of the North Ridge. The initial rocks can be skirted on the east side; gaining the ridge proved to be icy in places. The ridge itself continues steadily upwards to a false summit, where the east ridge is joined with an easy final climb to the summit. This route was also completed in descent.



B: South Flank and East Ridge, F

Descended by Route A ascent team

This route was completed in descent though would make an easy if somewhat tedious ascent route. Climb the glacier step as above to the foot of the North Ridge, but then skirt beneath the ridge to a col at 4000m to the east of the summit. From here the east ridge appeared short, rocky and loose and can be avoided by moving south onto the south flank where a few rock steps leads up to regain the east ridge at the false summit. Continue as for Route A to summit.

C: West Ridge, F

Ascended by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 11th August 2012

The west ridge is a simple, wide snow slope, giving a good high level traverse.



The lower section of the North Ridge of Peak 4225 (route A). The route skirts beneath the rocks to the right to gain the ridge.

Point 4215, GR 133 989

A: West Ridge, PD

Ascended by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 11th August 2012

From the moraine, keep on the right of the glacier to avoid the crevasse field. Higher up, occasional crevasses stretch all the way across the glacier. Crossing these is unavoidable, but inadvisable in the soft snow found after early morning. The back wall of the glacier is climbed to avoid seracs, starting below the obvious rock summit and working left gave a reasonable route. The bergschund, just below the ridge crest, is around 10-15m wide with solid snow covering in most places. The cornice remains are similarly large, but there are several options that lead to the ridge. The ridge leads easily to the base of the rock summit. The rock gives a 15m climb of around I.



Headwall of glacier leading to Point 4215 on left. Point 4218 on right.



The summit pinnacle of Point 4215m

Peak 4383, GR 121 994



A: West Ridge, AD

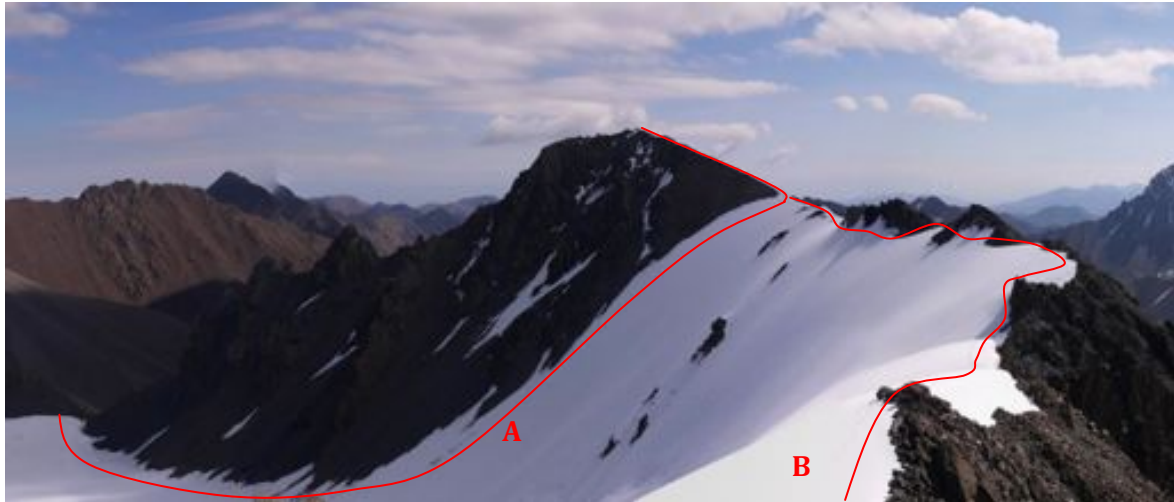
Ascended by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 15th August 2012

A moraine ridge leads under the northern buttress of the peak to the bottom left of the rightmost glacier (looking up) in the valley. From here a simple dry glacier leads under the impressive seracs on the north face towards the Western col. The route to the col is crevassed, but these can be avoided by a fairly steep (40 degrees) snow slope that leads up left to a point high on the ridge. The ridge at this point is wide and fairly flat and can be followed easily. There is an obvious gully marking the start of the final ascent that gave a Grade II snow/ice route of around 80m. The initial 20m to the base of the gully is good snow at around Grade I. We followed the steepening icy gully to mid way then branched out left to scramble up a rock section and a final snow slope. The top snow slope was unprotected and slushy to descend, but there is an abseil block from mid way. This 30m abseil ends at the top of the grade I simple snow slope. Continuing in the gully trending rightwards also looked possible, but may be trickier to descend. The actual summit is the second top, a small descent and re-ascent on snow leads to an easy (I/II) pitch of rock to the summit. The obvious rock ridge to the summit is deceptively steep; but can be avoided on the South side.



Crux of the route on the false top just below the summit of Peak 4383

Peak 4233 ('The Molar'), GR 125 017



A: North-west flank of South-west Ridge, PD

Ascended by Michael Fordham, Matthew Graham and Joe Hobbs, 6th August 2012.

After ascending into the hanging valley a steep scree slope leads up to a col with a cairn. From this cairn drop down onto the glacier and traverse beneath the south-west face. An obvious snow slope heads steeply up from the glacier. After around 150m of ascent on a slope with an average angle of 45° the aspect eases to the broad south-west ridge. From here it is a simple scramble over rocks to the summit.

B: South-west Ridge, PD

Ascended by Dave Farrow, Bethan Gudgeon, Doug Hull and Jo Smith, 7th August 2012

From the col between Peak 4233 and Peak 4315, the ridge rises gently to join Route A after 1.5km with a few sections to keep the interest. The majority of the ridge is on snow; the first rocky top can be avoided on the left or climbed direct (Point 4187). Shortly after, two wind scoops can be walked around on the left. The first could be avoided on the right by descending to the rock just before and descending into the bowl if the steep snow on the left is unstable. The second rocky top is best avoided on the left again. Directly climbing this is possible, but would be time consuming, and require an abseil descent on the north-west side.

Peak 4155, GR 124 035



A: West Ridge, PD

Ascended by Michael Fordham, Matthew Graham, Joe Hobbs and Tom Wright, 10th August 2012.

From the top of the scree slope at 4000m head north-west along a scree ridge. After ascending for 100m the ridge becomes more of a scramble, culminating in an exposed summit block. From this scramble down to gain the west ridge of Peak 4155 and follow the crest of the snow; in one or two places it may be necessary to cross patches of névé. The route now becomes a climb with sections of II, over the top of the obvious pinnacle from where the route moves easily to the summit. A continuation east along the ridge may be possible.



Summit of Peak 4155. The obvious pinnacle on the ridge is climbed directly.

Future potential

The expedition attempted most peaks in the area, but there a few we did not make the summit of due to technicalities, bad snow conditions or lack of time. A few unclimbed lines on peaks we did summit are also mentioned.

Peak 4283, GR 165 015

This peak, to the east of Base, has a number of gullies leading to a fairly horizontal ridge of rocky pinnacles. The exact summit is not obvious, and traversing the ridge may provide consistently interesting climbing. The main rocky ridge from the south west has a fairly simple approach (see Peak 4273).

Peak 4433, GR 157 000

Easiest route may be from the east. From the west, all routes start with long scree ascents above the glacier to reach the snow gullies (or rock ridges). In times of greater snow cover, the approach will be much easier.

Peak 4365, GR 152 993

The west ridge rises steadily from the col on snow and ice before the first outcrops of rock are encountered. After passing the first outcrop on the north side there is a final stretch of snow before the ridge turns to rock. Climb up the ridge directly on loose rock and ice, tending towards the south side of pinnacles. We turned back on the west ridge just below the last 35m snow / ice gully pitch due to time constraints, but it looks like it would give a good route at around AD. The north-west face also holds a number of harder lines, and it may have an easier route from the east.

Peak 4256, GR 142 966

A simple, nice-looking ridge leads south from Peak 4225 to this higher summit. Would require a camp above base camp.

Point 4218, GR 126 990

This looks as if a fairly simple rock ridge will lead easily to the summit, the main difficulty being the retreat down the glacier, which has some unavoidable crevasses.

Peak 4383, GR 121 994

The south-east ridge looks plausible as a rock route. The north face also looks entertaining if the serac danger is avoided.

Peak 4233, GR 125 017

The north face looks excellent as an easy face route if the lower section was névé and not glacier ice and the top section wasn't too slushy. The glacier is the rough shape of a molar tooth; hence we referred to this face route as 'Route Canal'.

Peak 4155m, GR 124 035

The north face looks like it gives another easy face with routes similar to that of Peak 4233.

Peak 4315, GR 111 006

From the col, the glacier provides a simple approach to a small summit at 4260m. On finding this point had only 25m of prominence it was nick-named P25. From here the north-east snow ridge leads to the summit. In good snow conditions this would provide an excellent route at around AD. We turned back twice due to unstable snow.



West face of Peak 4283 from north flank of Peak 4273. Main summit is the south (right) peak



From Peak 4273, looking south-east (peaks shown are east of map and sketch in this report)



West face of Peak 4433



West face of Peak 4433 from the north



West ridge and face of Peak 4365, from Peak 4225



Peak 4365; west side of summit



Peak 4256: looking south from Peak 4225



Point 4218 from the north



South-east ridge and east face of Peak 4383



North-east ridge and east and north faces of Peak 4383



North face of 'The Molar' (Peak 4233)



West ridge and north face of Peak 4155



East ridge of Peak 4315



North face of Peak 4315



Overview of the glacier in the valley east of our base camp valley, accessed via the hanging valley.

Weather

Bishkek is very hot and dry (average high 32°C in July), but has plentiful water from rivers. We found similarly hot and dry weather around Lake Issyk Kul, albeit slightly cooler than Bishkek due to being at 1600m.

As we drove higher into the mountains the vegetation became greener and further from the river, indicating more rainfall. During our time in the valley (Base at 3000m), the weather was generally clear and cool in the mornings and clouding over with increasing winds during the day. There was rain in the afternoon every 2-3 days. Only on one day did the rain stay overnight and cloud not clear for the morning. The temperature only got below freezing on a couple of nights at base camp. The dry glaciers were generally frozen in the morning, although the wet glaciers did not freeze thoroughly.

The temperature in daytime got to shorts and t-shirt weather out of the wind, but generally the cloud and cooling wind took over before it got very warm. The wind was never strong enough to be of any consequence apart from a bit of wind chill.



'Weather' surrounds 'The Molar' (Peak 4233)

Introduction to planning

The planning and execution of the expedition was split between the members as soon as we decided on our location. This allowed Dave to concentrate on the in-country logistics and mountaineering while things like communication, food and medical details were worked out by other team members. The size of the team meant we also had a dedicated environment manager, web master, publicity guru and treasurer, which meant these jobs were done very thoroughly. The split of tasks was far from equal, and there was room for adjustment through the planning stages, but the splits made logical sense so were stuck to fairly rigidly. We had bi-weekly meetings during October- November and January - March by which point most of the planning was finished in time for the students' exams. A final push around a month before the expedition then prepared us before the team split up at the end of the university year. In this way the team made most decisions as a team with advice from the person responsible for the area.



Ubiquitous 6-wheel truck-bus that every expedition in ex-USSR countries uses. Very dependable and almost unstoppable (except when the driver wants to stop it, of course).

Logistics and travel

We flew London to Bishkek via Moscow with Aeroflot, and then used the Kyrgyz travel company ITMC (<http://www.itmc.centralasia.kg>) for in-country transport and accommodation.

Flight

We flew Aeroflot as the 23kg baggage allowance was greater than the direct flights operated by BMI (route stopped in Autumn 2012), and it was also much cheaper (£628 return). The stopover in Moscow was manageable, and the flight reasonably comfortable.

ITMC

ITMC were recommended to us by Pat Littlejohn, who runs frequent expeditions in Kyrgyzstan with the International School of Mountaineering. They organised travel from the airport, accommodation in Bishkek, and travel to our expedition area. We also bought gas from them, and could have hired satellite phones and a variety of other things from them. They were highly organised, professional and helpful; it was very reassuring having their support. The same company also runs the Kyrgyz mountain rescue services. They spoke excellent English, and we got by without any real knowledge of Russian or Kyrgyz. We used the ITMC offices as a base while buying food and supplies as soon as we got to Bishkek. We were then taken to two apartments for the night, which were adequate and cheap. It should be noted that accommodation in Bishkek is fairly Western in price, especially for large groups. ITMC supplied us with a 'truck-bus' – literally a Russian truck (Ural 375), with a coach compartment on the back. As ITMC hadn't been to our valley for a while they promised this would take us as far as possible – and it was definitely the best vehicle for this. The track was actually better than expected, so on the return journey we had a slightly less enormous truck. Both trucks were in very good condition. ITMC also offered to organise our trip around the country in the last week, although we chose to do it ourselves.

Access to Basecamp

From the road head we walked the final 5km and 600m of ascent over 2 days. The first day we started walking at 1200 and finished around 2000. On the second day we started around 0900 and were finished by 1800. We carried our kit in two loads of around 25kg each. To prevent animals eating our equipment or food we always left two people with any kit store. The transit camp was at around 2700m and 2km from the road.

People Logistics

We split ourselves into two teams of four. Each team of four alternated between climbing on the mountain and doing duties around camp. The four on the mountain kept together, acting as a rope of four the majority of the time, but with the option of splitting into two pairs for technical sections. Given the terrain, this was a sensible option. This plan worked out very well, with everyone getting just enough rest between mountain days, and the camp duties being rotated as well. The only issues were when someone was ill and missed a mountain day, they had another enforced rest day to get themselves back in sync. There wasn't quite enough flexibility to change teams of four around (no-one wanted to have two days on the mountain consecutively). Similarly, 2-day routes would have been slightly annoying to fit into the system, and bad weather could also disrupt the system. So although our plan went very well, and pleased everyone, there was potential for complications.

Catering

Sources of information:

We found comprehensive information on generic expedition catering in the RGS Expedition Handbook. Further information was gained from past expedition reports on the BMC website, particularly the few available from expeditions in Kyrgyzstan, some of which gave details of food availability in the country, but also those from expeditions around the world. We also used personal contacts to gain further valuable information on food availability in Kyrgyzstan.

Planning

Calorific requirements:

We decided to take 4000kCal per person per day (pppd). The RGS Handbook recommended 5000kCal pppd, but this figure is based on an expedition where everything is moved every day, whereas we would have relatively light packs and regular rest days, although our mountain days would be relatively long. We decided to allocate 4000kCal for every day, as, although rest days would naturally be less strenuous, we would still need plenty of calories in order to recover as much as possible in the short time available. This allowance did turn out to be somewhat excessive, though (see below).

Weight to be carried in to Base Camp:

It soon became clear that we would be unable to carry all of our food, fuel and kit into camp in one load, so we worked on the basis of each team member carrying two loads of no more than 25kg, (i.e. a total of 400kg), into Base Camp, using a relay system. Having subtracted the weight of all other kit (~225kg) and fuel (see below, 10kg), a maximum of 165kg for food remained, equal to ~21kg per person, or 1.2kg pppd.



Straining some very starchy pasta

Personal preferences / tastiness:

We were aware that having sufficient food would be useless if people didn't want to eat it, and unappetising food could become a source of discontent and depression among the team, so ensuring that food tasted (relatively) good to all team members was vital. A 'Food Quiz' was carried out to gauge people's preferences, although many major decisions on what to take were actually determined by other factors. Vegetables are very poor in terms of calorie : weight ratio, but significantly improve the taste of dinners, so we decided to take 100g pppd.



Typical meal preparation

Nutritional requirements:

Maintaining sufficient vitamin and mineral intake, in order to stay healthy, was a consideration, but given the relatively short length of our expedition was not a major concern. Vegetables and dried fruit were our main source of vitamins and minerals.

Food availability in Bishkek and weight allowance on flight:

Based on information from various sources (see above) and the weight of other kit to be carried from the UK, we decided to take ~40kg of food from the UK. These were mainly wraps (3 week use-by date), full-fat milk powder (Nestle Nido, 400g canisters), oat cakes, and tomato powder (Healthy Foods).

Food availability in Bishkek

From Osh Bazaar (large quantities of everything easily available): rice, dried noodles, pasta (extremely starchy – better to stick to rice and noodles), “cous cous” (avoid this – takes hours to cook and doesn’t taste good), oats, vegetables, dried fruit, nuts (peanuts (non-salted), walnuts, almonds, cashews, pistachios), hard cheese (around 7kg blocks can be taken sealed or cut to size), jam, honey, nutella, biscuits (aka ‘sawdust’...), sweets, spices, tea, coffee. Items at the Bazaar were all priced, and there was little haggling. The prices were very reasonable.

From Beta Stores (medium sized supermarket, stock levels variable, several other small supermarkets also Bishkek): chocolate, Pringles, Mars Bars (and equivalents), hot chocolate powder (not available in tubs, only sachets), muesli, cake (only sponge available, very crushable)

The only items which we hoped to find in Bishkek but couldn’t (though we naturally didn’t look everywhere) were peanut butter and cereal bars. None of the items which we brought from the UK turned out to be available in Bishkek.



Dried fruit in Osh Bazaar, Bishkek

Fuel

We opted to use gas rather than multi-fuel stoves as the fuel weight would have been similar, gas stoves are lighter, we had the necessary stoves already (so no additional expenditure was required), and our previous experience of using them meant we stood a reasonably high chance of resolving any problems.

We pre-ordered gas canisters from our logistics company, ITMC. The only size canisters available were 230g (350g including the weight of the canister itself).

Monitoring Food Usage

We had most food which we bought from Osh Bazaar weighed out and bagged directly into ziplock bags which we provided (mainly dried fruit, nuts, oats), or carrier bags (pasta, rice,

cous-cous), with one bag per day / two days, as necessary according to the food plan. Had we needed to ration food stringently, this would have worked well and been a good way of ensuring the correct amount of food was consumed each day.

On the expedition we planned certain quantities of each food per day. For 'high-demand / low quantity' foods this was applied fairly stringently, (e.g. cheese, powder puddings), but for many foods Doug (catering manager) simply ensured that we weren't generally over-using as the expedition progressed, (e.g. chocolate, hot chocolate), and for several foods it soon became clear that we had an excess so there was no need to ration at all, (e.g. dried fruit, nuts, biscuits).

Successes, problems and lessons learnt:

Overall Quantity of Food

In retrospect 4000kCal pppd was excessive, and 3500kCal would have been sufficient. However, our food intake did increase noticeably over the course of the expedition, and during the last few days we were eating nearly our full allowance each day.



Typical meal from late on in the expedition, still looking surprisingly tasty

Dinners

The amount we ate in the evenings depended significantly on the tastiness of the food. Rice and noodles were much tastier than pasta and couscous. The tomato powder was very good for adding flavour to meals, but we massively underestimated its potency, and used only 1500g for the whole expedition, of the 6,000g taken. By trial and error, we found that thin, watery sauces were much more appetising than thick sauces, which were, on the whole, overpoweringly tomato-flavoured. We were lucky to have a good chef in the team, and his knowledge of spices played a major role in making many meals not only edible, but actually quite tasty. Powder puddings were generally very edible, and we could have eaten significantly more than the 25g pppd of powder allowed.

Lunches / Snacks

The wraps were generally very successful and lasted reasonably well for the whole expedition. 75g pppd of cheese was sufficient but not plentiful, and cheese wraps were significantly improved by mayonnaise (15g pppd). The oat cakes were also successful, though had to be packaged well in order to survive the journey relatively unscathed. The dried fruit was quite tasty, but several team members elected to eat very little due to the risk of becoming unwell from the unidentified bits on some pieces. Salty foods were particularly popular (pistachios, almonds, pringles), walnuts and peanuts less so. Virtually all other lunch and snack food taken on the expedition was eaten.

Breakfasts: Having muesli on mountain days and porridge on rest days worked very well, indeed, copious amounts of porridge with sultanas, honey, jam (particularly tasty), nutella and cinnamon was a highlight of these days. However, as with most food, slightly less would have been sufficient.

Drinks

Hot chocolate was particularly popular and we could have used more than the 75 sachets obtained when we bought Beta Stores out of stock. We had an excess of coffee due to confusion between instant and filter coffee. In general, 3- 4 hot drinks (of ~300ml) pppd seemed about right.

Medical and First Aid

Before we travelled there was a lot of preparation to do for all team members. All members completed a medical form and immunisation record. We received differing advice about whether we needed the Tick-borne encephalitis vaccination but in the end after reading a couple of articles⁴ it was decided that we should work on the side of caution and virtually every team member received the course. Deciding whether to carry antibiotics, and if so then how they might be obtained, proved something of a problem. We received varying advice on this as well but we decided to get Ciprofloxacin prescribed to us from our GPs. Four of us were successful. All members completed a Remote Emergency Care (REC) Level 2 First Aid course.

As hoped we had no serious medical issues. However, a few minor issues did arise. The initial walk-in and acclimatisation days saw three of the team suffering from Traveller's Diarrhoea (e-coli). We had tried to be careful in Bishkek with hygiene and food choice, but this was not completely successful, most probably exacerbated by the heat and exhaustion from travel. We ate no unpeeled fresh fruit but we did eat bread from a market, which may have been the source of the infection. At base camp diarrhoea was treated with rest, access to the trowel pit and as many rehydration sachets as could be managed by those ill. By the second day of their illness all were showing signs of improvement and began managing to eat sufficiently well to rebuild strength.



The most used part of the first aid kit

The second incident occurred after the first team got back from the first mountain day when one team member had lost a large proportion of his water due to a water bottle leak. Despite some sharing of water, the team member became quite dehydrated on the descent in the early afternoon sun. His symptoms included sickness, pale skin and feeling cold and tired. After treating with Buccastem M prochlorperazinemateate to contain the nausea, he managed to rehydrate, though needed an extra rest day for recovery.

On the other team's first day one member twisted their ankle on the way down; the injury did not prevent further ascents, but many hours of walking on moraine and other difficult terrain made it difficult for the injury to heal. Icy water treatment was used along with an ankle support and tightly laced boots on mountain days. There were several minor scratches to arms and legs which were all cleaned with antiseptic wipes, water and, where necessary, covered. Blisters were treated with plasters and tape. There was one minor case of hay fever or similar allergic response. Antihistamines and remaining in the tent seemed to help with this.

During our 'Phase 2' there was a minor injury due to unseen street furniture and one of the team came down with constipation (one of the only illnesses we didn't have drugs for).

First aid course

Seven of the members took a first aid course with Jon Parry (Activate Training), which was well tailored to the expedition and very relevant to the types of problem we may find. It taught some members from scratch and refreshed everyone else. Jon also gave us some confidence in our first aid kit supplies and emergency preparation, which was very helpful.

⁴<http://wwwnc.cdc.gov/eid/article/17/5/pdfs/10-1183.pdf>,
http://wwwnc.cdc.gov/eid/article/17/5/10-1183_article.htm

Equipment report

The equipment required for a mountaineering expedition such as this falls into three approximate categories: mountaineering, living/camping and emergencies. As all of us have spent several summers in the European Alps and have walked and climbed extensively within the UK as well, between us we had accumulated a reasonable amount of mountaineering equipment, and were able to gather enough for the expedition with the addition of relatively few extra purchases. The same is true of the basic camping equipment, in that we had access to sufficient tents, stoves, sleeping bags, mats etc. but we did not have the water filters needed for an extended stay in an area with water of unknown quality. There is considerable overlap between emergency equipment and mountaineering/living gear: ropes, karabiners, warm clothes, sleeping bags etc. could all be essential if a rescue from the mountain was required, but more emergency equipment was required which is not needed on a typical walk in more populous areas.

Mountaineering equipment

As we planned to carry all of our food and equipment into base camp, weight was a major consideration in the type and quantity of mountaineering equipment we used. Whilst each person required much of their own equipment such as waterproofs and layers, some could be shared. Climbing groups consisted of four people, and we did not want to be limited in what we could climb by the equipment we had brought, so we took a pair of technical axes for each member of the climbing team (eight technical axes in total).

In an emergency, the base camp team would be the first people on the mountain to attempt a rescue, so they would clearly need axes of their own if they were to climb safely to the mountain team. However, they would likely be moving much more slowly and carefully and with more equipment (first aid kits, tent(s), sleeping bags etc.). They would also be unlikely to attempt any excessively difficult terrain, as this would endanger the rescue team and risk complicating the situation significantly. Because of this, the rescue team were provided with one light-weight walking axe each.

A similar decision was made regarding ropes: whilst the mountain team might be expected to pitch sections of the route, and thus could benefit from having two ropes and being able to climb faster, in pairs, the base camp/rescue team would be able to make do with a single rope. Indeed, as they were not expected to attempt any terrain more difficult than a glacier crossing, a single rope would be preferable in any case. We took with us two 50m ropes, intended for the climbing team, and one 60m rope for any rescue. It turned out that the 60m rope (alone) was used by the mountain team on several days, to save weight on routes which were not expected to require much or any pitching.



We missed the Olympics

We wanted to ensure there was always sufficient gear in base camp to mount a rescue, and as we did not know how difficult the routes would be in advance we took three complete racks. This allowed one for each climbing pair, plus one in base camp (with extra tat) for the rescue team. For most of the mountain days, the group climbed as a four with a single rack, and occasionally with a much-reduced rack when a simple snow route was planned. There were a few days which required two racks on the mountain though, leaving one in base camp as planned. If the mountain routes had been much harder, this would have been the case for most of the time.

Communications equipment

The aim was to provide a communications chain between the mountain team and base camp, and onwards from base camp to Bishkek or the UK. This meant that base camp could be kept informed of any changes in planned route or timing and also that they could provide assistance in case of a serious problem on the mountain. Depending on what was required by the mountain team, those at base camp could call for advice from a UK doctor (through the BMC, our insurance provider), or arrange for an evacuation by helicopter or by truck from the road-head. They could also climb up to the mountain team with food, shelter, and the more extensive base camp first aid kit, to assist on the mountain with first aid, stretcher making, shelter or whatever else was required.

In addition to these emergency uses, the availability of a satellite phone, radios and charging facilities was helpful in more day-to-day scenarios. For example, the solar panel and battery were used to charge music players and e-books and a smartphone with cached Google Earth data was used to plan routes and examine mountains from new angles. The radios were used to announce when the climbing team had made it to a summit, or turned around, and for the all-important task of requesting tea when returning to base camp. The satellite phone was used to update our website.

Short-range radios

On the training weekend in the Lake District, we had experimented with using PMR1 band unlicensed radios, with a transmit power of 0.5 watts. These were found effective over line-of-sight distances of a kilometre or two, but were not good enough for reliable use in mountainous terrain over significant distances. Because of this, we instead took marine VHF radios, with a transmit power of 5 watts. These were more expensive, but also had longer-lasting batteries and were of tougher construction, which proved useful when one of them took an extended tumble down a mountain (and survived, with only cosmetic damage). These are not legal for land-based use in the UK, and it was not possible to discover the legal situation in Kyrgyzstan. Because of the limited transmit power of the radios and the remoteness of the area, we did not expect to conflict with any local users of the radio spectrum. Indeed, during the expedition we did not hear any other transmissions on the frequencies we were using.

It was anticipated that the climbing pairs might go out of sight of each other, so three radios were provided: one for each climbing pair and one for base camp. This also provided some redundancy in case of equipment failure (either of the radios or the chargers). In reality, the mountain teams climbed together almost all of the time and the radios worked throughout, so this was not required, but it was a useful to have such redundancy when out of reach of any means of repairing broken electronics.

The mountain and base camp teams were able to contact each other most of the time, though sometimes this would involve standing up or walking a few metres to a higher point to get through. A few times, when the mountain team were behind several obstacles, it was not



ICOM marine VHF radio

possible to make a radio call, but since these were not emergency calls this did not cause any issues. If an emergency had arisen in these circumstances, a member of the mountain team would have to find a point from which a call could be made, but given how rarely this was a problem, it is likely that they would not have to walk far.

Satellite Phone

We had one satellite phone (Iridium Extreme) at base camp which was kept charged via our solar panel system. The phone was provided with free calls by Cambridge Consultants, with the requirement we turned it on for ten minutes every few days. We were very lucky that Tom works for Cambridge Consultants and therefore had access to this facility. The phone provided the link between base camp and the UK and Bishkek for organisation and emergencies. Our solar panel gave us enough charge that we were also able to call home frequently.

Solar Panel and Battery

We had a large flexible solar panel (PowerTec MMP16) that charged a 12V lead acid battery (bought in Osh Bazaar, after ours was confiscated on the flight out). The battery was then able to charge our radios, satellite phone, cameras and other personal electronic items. It was able to charge many items at once (via a system of adapters), and never struggled. Our solar panel suffered a loose connection late on the expedition. It was possible to make it work by prodding it randomly for around 10 minutes until the connection was made. Luckily this only needed doing once a day.



Solar panel, battery and charger

Environmental impact

Overall, there was a high level of compliance with our environmental management plan (EMP) while we were at base camp. The parts of the expedition spent in Bishkek and involving transport followed it less successfully, but these required the most ambitious and arguably the least important mitigating actions. More detail is given in the sections below; refer to EMP (Appendix I) for intended strategy. We carried out approximately 70 litres (roughly 20-25kg) of waste, mostly food packaging. The majority was packed in the field into empty milk powder tins. We left some packaging (mostly outer cardboard) in Bishkek and retrieved it before our return home. Once back in the UK, as much as possible, including used batteries, was recycled.

Travel and Bishkek

Although we used scheduled flights, flying east across five time zones made it impossible to avoid flying at night on the outward journey. The return flight was, however, completed during daylight hours. Partly because of the large amount of luggage and partly because of awkward timing, most of us used private cars and taxis to get to and from the airport, but as these were full they were on a par with public transport for fuel efficiency. On our return, a superfluous taxi journey was unavoidable: our booked cars got caught in a traffic jam on the M25 and were unable to get to Heathrow, forcing us to seek an alternative vehicle. We had very little control over our overland transportation (a 6-wheeled Ural truck-bus). The most that can be said is that the vehicle seemed in excellent condition, did not drive too fast, and stayed on roads and tracks where they existed. We were just able to manage to walk-in from the road head to base camp without needing porters or donkeys, although we were on the limit of this and it did mean multiple journeys were required. However, a path existed most of the way and by using this we minimised additional erosion and plant damage.

In Bishkek, we stayed all but one night in two apartments; Community-Based Tourism, which organises eco-friendly homestays elsewhere in Kyrgyzstan, does not operate in the capital. Nevertheless, the apartments were more environmentally sound than a hotel, having a smaller footprint and allowing us to control gas, electricity and water usage. Except for the final night, there was no air conditioning. During the course of the entire trip, five person-nights were spent in hotels in unavoidable circumstances. While in Bishkek on our way to the expedition area, we generated more waste than expected. This was largely due to drinking large amounts of bottled water in 500ml units left at ITMC by another expedition (dehydration was not an option). Although we kept some of these to take back to the UK for recycling, space was at a premium and some had to be discarded. As planned, we were able to minimise food packaging through buying the majority of supplies loose or in large units from Osh Bazaar.



Path to Base camp

At base camp

The lack of flat ground at base camp made it impossible to periodically move our tents (other than the store tent) and cooking area as planned. It also proved impossible to prevent paths from developing; again, this was partly due to topographic limits. However, because the river was some 30m down a steep slope from camp, people did tend to plan ahead so that they could

do several things while there and minimise movement around camp. Additionally, the climate was significantly wetter than anticipated and the vegetation correspondingly lush, meaning that the grass is likely to recover relatively quickly.

The assumption that all food would be eaten proved far too optimistic. Particularly early on when appetites were affected by altitude and illness, significant amounts of cooked food had to be disposed of: far too much to dry out and add to the normal waste. We solved this by burying it along with vegetable matter. This was not a perfect solution; ideally we should have been more careful about only cooking food that we thought we would eat (and indeed, we got better at this as time went on). Some of our spare uncooked food was donated to the residents living in the last house in the valley. While this should probably not be encouraged in the long run, we felt that as a one-off, and in return for their generous hospitality, this was acceptable. The remainder

of the spare uncooked food was donated to ITMC or brought back to the UK. We were able to use refillable gas canisters (supplied by ITMC) and most of our food required minimal cooking - the only exception was a bag of what we thought was couscous, but seemed to need simmering for several hours to be at all palatable!

Central provision of biodegradable toiletries and washing-up liquid (Lifeventure blue soap, Kingfisher natural toothpaste, Boots natural insect repellent) ensured that no toxic chemicals were used. Sun-cream was the only exception. The implementation of washing and washing-up routines worked well; in particular, a pair of tights mounted on a ring of garden wire was excellent for straining waste water to catch food scraps, which were then buried. For personal and clothes washing water, it was decided that straining through tights was unnecessary and natural filtering through rocks and soil would be enough to protect the aquatic ecosystem.



Digging the trench with an axe



Base camp

Human waste disposal went almost exactly as planned. Base camp provided natural privacy in separate areas for urinating (a large area so the effects were dispersed) and locating the poo trench, both well away from the river. Using the trench was unexpectedly pleasant: the area was clean and did not smell, and the system hygienic and easy to use. The main problem was the rate at which we filled the trench. This was initially much higher than expected owing to widespread occurrence of traveller's diarrhoea, which unfortunately also meant fewer people available to dig the trench! Nevertheless, we managed to keep up with demand, even if the trowel gave up the ghost on day 2 (B&Q Verve trowel not recommended). As a result, we discovered that an ice axe is a very useful tool for trench-digging, and is also good at preserving sods of turf that can be replaced afterwards. The trowel handle found a new lease of life as the engaged sign.

After some debate, we decided to bury toilet paper in the same trench (rather than burning it or burying it in a separate, deeper pit) for the sake of hygiene. Placing a stone

on top of the paper before covering with soil seemed to prevent it from escaping. There were a few teething problems regarding the dimensions of the trench, the direction from which it should be used and the fact that there never seemed to be enough soil to put back afterwards, but these were minor issues. The marmots must have had an unpleasant few weeks and the hillside is likely to take some time to recover from our activities; nevertheless, this is a highly recommended system and much better than any of the alternatives for an un-portered expedition of this size.

Mountaineering

Large portions of the approaches to the mountains were on moraine, meaning that we did not need to worry about trails developing. It was, however, very difficult to avoid accelerating natural erosion processes by dislodging rocks. We undoubtedly left crampon scratches on several rock sections (time and weather constraints often meant that removing them was inadvisable), but the little abseiling we did was from natural or retrievable anchors, and we abandoned no gear. The use of 'poo packs' while at altitudes higher than base camp was always a somewhat experimental part of the EMP, and met with mixed success. Their main limitation was that they did not cope with liquid and so could not be used in all cases. There were also complaints about the smell. However, there is no doubt that we left less of ourselves up the mountain than we would have without them.

Post-expedition travelling

The EMP was written with only the expedition phase of the trip in mind. Although it would have been great to carry the same principles right through the subsequent week of travelling, this proved impossible, in large part due to the necessity of buying bottled water everywhere. We had intended to continue using our water filters, but they had clogged up too much to meet our requirements by gravity alone, and the provided tap adapter failed to work with any tap we found. We tried to minimise packaging by buying 5L bottles and decanting it to our own reusable containers wherever possible. There was some debate as to whether, with limited luggage space, we should sacrifice some of our expedition rubbish in order to take home our post-expedition plastic bottles, the logic being that the bottles could be recycled in the UK. Although this made absolute sense, it was eventually decided that it was important to make a statement by showing unequivocally that it is possible to bring home all the waste generated by a mountaineering expedition. In addition, it would have been very difficult to keep hold of all the bottles for this week because of the amount of travelling we did. We used public transport (minibuses) almost everywhere. Taxis were only used for short distances and always by multiple people; in fact they were nearly always filled.

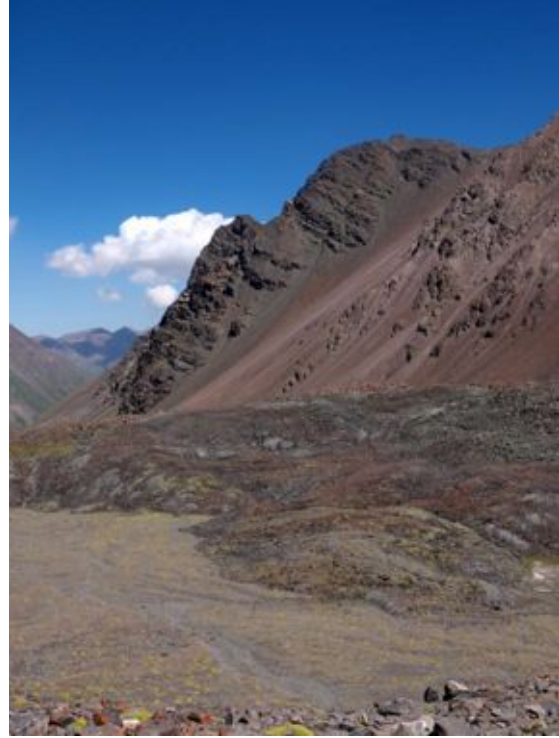


Washing up at base camp

Landscape and wildlife

Geography and geology

From the dusty plains around the town of Tokmok, we travelled south into the Kyrgyz Ala-Too mountains alongside a glacial river. This was lively and fast-flowing and in some places had carved out a narrow gorge, but in general the valley floor was relatively wide, allowing numerous dwellings to exist on both sides of the river. Lower in the valley, we passed several outcrops of very soft red- and orange-coloured sedimentary rocks. Approaching base camp, the river became braided and shallow enough to cross without getting wet feet, but it is clearly a permanent feature. Although melting was prolific on the glaciers every day from mid-morning, there was no noticeable change in river discharge related to the time of day. We found no potable water above base camp: the river emerged from the bottom of the moraine there and must have been fed largely by basal melting.



Looking back down main valley from moraine

The geology of the area was more or less as expected, consisting of mixed sedimentary and metasedimentary rocks. Fine and medium-grained sandstones were common around base camp and in the valley to the south-east; further up the main valley, slate was more abundant. Without thorough investigation, it was impossible to get an idea of geological structure as there was very little bedrock visible – mostly it was deeply buried under moraine, scree and snow. The moraine was ubiquitous, but varied widely in nature. In the main valley, it formed an undulating tongue along the top of which soil and vegetation had developed. The sides, particularly further down, were still largely unconsolidated. The vegetation disappeared near to the glacier, to be replaced by piles of rock and dried muddy depressions. The side valley to the west (leading to the second glacier system) was also partly grassy, and ended in a steep headwall of relatively fine, very loose scree. In the valley to the south-east of base camp, a higher proportion of the moraine was in the form of large boulders and there was little vegetation. As a general theme, the moraine extended well onto all the glaciers, often quite thickly, so that it was impossible to tell where they really ended.

The glaciers themselves could not be described as beautiful, and crossing them proved frequently unpleasant, particularly on the descents when snow became slushy and underlying ice began to melt. As the map suggests, the



Typical glacier, below Peak 4383

glacier in the main valley originated in several distinct areas, separated by substantial rock spurs. The bottom section was dry, while upper sections were snow-covered. In most cases the snow covered both the steep glacier headwalls and the upper flat sections, but the westernmost arm (the approach to Peak 4383) was dry right up to the headwall. The approach to Point 4215 was extremely crevassed, although crevasses were a danger everywhere. The small glacier to the south-east of base camp was similar to the main one; mostly wet but dry at the bottom. This was the only notable case where we found the map to be inaccurate: in reality, the moraine was much more extensive and the area of visible glacier was much reduced. The glacier system in the valley to the west was wet as far as we explored it, and much more continuous in its upper reaches than the main valley. Bergschrunds for all glaciers tended to be located partway up the headwall, but we came across none that were impassable (at least while the snow was solid).

Flora and fauna



Edelweiss



Gentian



Onion grass

There were few trees in the valley, the lower sections being too dry and dusty and the upper section too high. They became more common as we approached the end of the road, and there was a small section of coniferous forest from shortly before the last house to shortly afterwards. Beyond this, ground vegetation was quite varied, and at our 'transit camp' we had to flatten broad-leaf plants at least a foot high in order to make space for the tents. As we got higher up, these plants gave way to short grass – much better for camping on. There were many wild flowers including aconites and gentians, particularly beside the stream and in the meadows which covered the moraine, though we lacked the knowledge to identify all of these. A species of onion grass was abundant in the meadows, with large chive-like leaves and spherical white flowers. We also spotted edelweiss on a handful of occasions, always relatively high on the moraine where few other plants grew.



Grey Marmot near base



Bearded Vulture

As expected, we saw no signs of the endangered snow leopard. Nor did we see any ibex, but there were several skulls and horns high on the moraine, and we learnt from valley locals that the area is sometimes visited by foreign parties hunting these animals. Our most frequent interactions with local wildlife were the marmots whose home we temporarily invaded. There were marmot holes all around base camp, as well as further down the valley and on the vegetated moraine. The marmots were shy at first, but by the end of the trip they were more or less ignoring us and going about their business as usual. We identified them as Grey Marmots (*Marmota baibacina*), which are widespread in the steppes and alpine meadows of Russia, Central Asia and China. There were no positive sightings of the rare Menzbier's or Long-Tailed

varieties that are also native to the area. As well as the marmots, we caught rare glimpses of several smaller rodents, but never got a good enough look to identify them. There were also several large birds that had clearly made the valley their home. On being shown pictures of one, Michel, a Belgian wildlife guide whom we met during our week travelling, had no hesitation in identifying it as a bearded vulture. There may also have been other species; some of the behaviour we observed (hovering, scanning the ground) was suggestive of birds of prey such as eagles, although bearded vultures are known to attack live prey as well as scavenging.



Aconites

'Is it Kool?' Post-Expedition Travelling: Lake Issyk Kul and Beyond

Day 1: 'All aboard the bus' – The journey begins, on the road to Cholpon Ata

Following a much appreciated three-course dinner in an Italian restaurant and a nice evening walk through the centre of Bishkek, we had a relatively gentle start to our first full day since returning from the mountains. After enjoying a very tasty breakfast at Fatboys, saying goodbye to Michael, sorting out some last-minute logistics with ITMC, buying some food from the supermarket and devouring two tubs of ice cream, we boarded a minibus heading to Cholpon Ata, on the northern shore of Lake Issyk Kul. After a bumpy but very fast journey, we arrived in the busy resort town, found our way to the small but comfortable Pegasus Guest House and enjoyed an excellent dinner.



Failed attempt at hiding from the heat

Day 2: Horses, beaches and pot-bellied men



Dave and his horse were kept at the back

With our host a locally renowned equine expert, we spent much of the day on horseback in the foothills north of Cholpon Ata, with great views down to the lake below. Though none of us had much prior experience of horse riding, we soon picked it up and a fun time was had by all. In the afternoon we took a quick dip in the lake and observed Russian men 'sunbathing' standing up on the crowded beach, before visiting the local hippodrome for the Equine Games, where highlights included 'rugby' with a dead sheep and wrestling on horseback.

Day 3: Yurts and Yak Tours

With time against us it was time to board a minibus again, this time taking us to Karakol, a large town at the end of the lake. Today marked the end of Ramadan, and the entire town's population seemed to be inside, presumably feasting after a month of daytime fasting, leaving the town somewhat deserted and a little eerie at times! Nonetheless, we visited an unusual wooden church, found a very nice, though slightly out-of-place, café and made a somewhat vague arrangement with the infamous Yak Tours for transport the following day. Crossing off another 'Kyrgyz experience', we slept in Turkmenistan Yurt Camp.



Inside our tourist yurt

Day 4: Bumps, breakdowns and hot-spring bathing



A relaxing stop on the not-so-relaxing journey

Following another Lonely Planet recommendation, we planned an excursion from Karakol up into the mountains once more to the tiny settlement of Altyn Arashan, renowned for its hot springs. Though the trip up the 'road' was about the roughest any of us had ever experienced, in a vehicle which could easily have been destined for the scrap heap several decades ago, the hot springs were a great reward. We spent over an hour sitting in the 40° water, which wasn't even too pungent, and made several sporadic dips into the icy river rushing by outside. Our planned accommodation was full, so we were put up by a friendly local family, whose bright and playful son made friends with Matthew over juggling balls and an MP3 player.

Day 5: Two buses, two taxis and a walk

Not fancying another trip in the ancient minibus we decided to make the 14km trip back down to the main road head on foot. Though rather dusty and hot at times, the views were nice and it was a pleasant and relatively easy walk. We boarded a passing minibus to take us back to Karakol, and after buying some lunch at the market made our way to Karakol's South Bus Terminal where we jumped onto yet another minibus to continue our journey around the lake, along its southern shore. This time the destination was the small town of Kadji Sai, where we stayed with the family of local eagle hunter Ishenbek.



Ishenbek, and his 2 year old male eagle

Day 6: Completing the circle – back to Bishkek

A final minibus ride completed our trip around the shores of Lake Issyk Kul and after returning along the bumpy road through the dramatic Shoestring Gorge, we shortly arrived back to Bishkek. Here we spent a long time attempting to find suitable accommodation, but unfortunately to no avail and we eventually decided to split up, with half of the group staying at the Hotel Alpinist and the remainder at a flat-cum-hostel on the 7th floor of a Soviet tower block.



Day 7: To the mountains once more...

Our final excursion took us up the Ala Archa valley to the south of Bishkek, a widely used mountaineering area. We were pleased to find a seven-seater taxi, but somewhat less pleased to find the vehicle seemed to be running short of petrol, resulting in us travelling at 20mph for most of the trip. Nonetheless, in spite of this and

a brief diversion when we missed a turn, we arrived at the road head in good time, and booked into a cheap and satisfactory hotel. We spent the afternoon walking back up into the Tien Shan mountains for a final time, and a few of the group made it up to the alpine hut at the base of the glacier. The cloud cleared just enough on the descent to provide brief glimpses of several dramatic granite north faces and glacier-clad slopes.



Ala Archa

Day 8: Back where it all began...

It was fortunately only a short wait until another 7 seat taxi appeared to take us back down the valley to Bishkek, rather more quickly than the taxi on the way up. Our final afternoon was spent back where the trip began, in Osh Bazaar, but this time seeking souvenirs rather than expedition supplies. We enjoyed our last Kyrgyz meal in an outdoor restaurant in the centre of town, and toasted a highly successful and truly unforgettable trip. All too soon, though, the evening was over, and just a few hours later the minibus arrived to take us back to the airport for our early morning flight to Moscow.



Meal in Bishkek

Financial

We opened an expedition bank account with the Co-operative Bank. This allowed all expedition transactions to be made from a single, shared account, making the accounting much easier. The account allowed us to take multiple debit cards on one account, allowing us a higher daily withdrawal limit (useful as we were only in Bishkek for a day at a time). It also meant that we wouldn't lose access to our account if the one person's wallet was stolen. A downside to this was that setting up a 'community' account required lots of paperwork to prove we were not money-laundering. We think that a dedicated personal account in one person's name rather than a business account would be a good compromise. However, it could cause issues with security, withdrawal limits and tax arrangements in the UK.

We initially agreed on a budget of £1800 each as a total maximum, but with many students on the expedition we tried our hardest to reduce this. Any choice we had to save money without compromising safety we took. This included taking indirect flights, buying our own food in the markets and staying in self catering apartments in Bishkek. Our major costs were insurance (£1880 in total), flights (£5025) and medical vaccinations (£3200). The only other major expedition cost was equipment, much of which has been sold second hand to recuperate some costs. Costs while in Kyrgyzstan were minimal in comparison. Phase 2, our week of travelling, was put through the accounts to make our life easier. It shows a cost of £235 each for a week of eating out, B&B accommodation and bus travel. Around £60 of that was insurance.

In total, the cost per person (including the 'Phase 2' week of travelling) was £2025, the grants for the mountaineering reduced our personal contribution to £1335.

Grants and Sponsorship

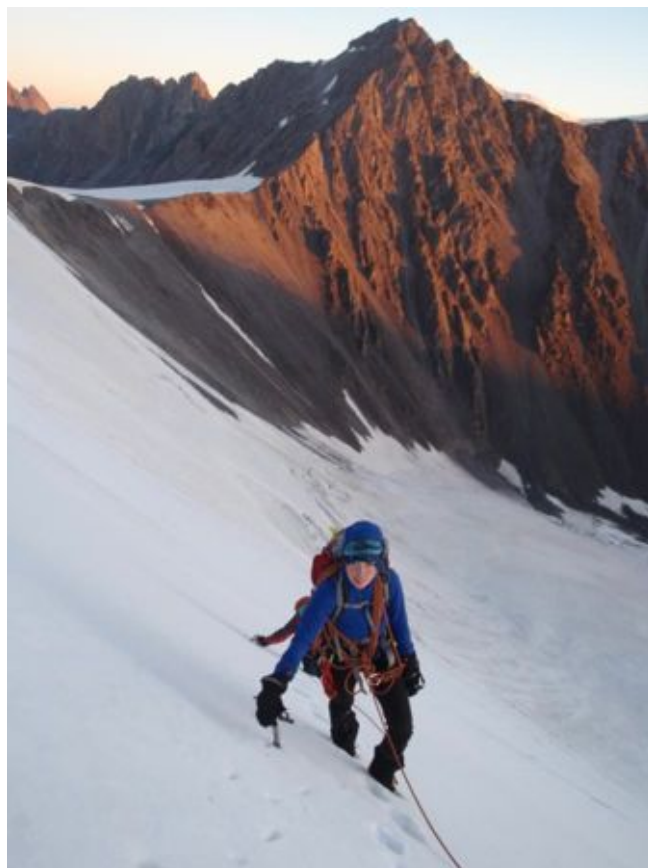
We applied to a great number of grant-giving organisations, not thinking we'd get very far. In fact, the idea of young mountaineers exploring an entirely new area seemed to capture people's imagination more than we thought, and we were very successful. The lesson we learnt is that if you don't apply you certainly won't get. In addition, the writing of applications forced us to ensure we'd thought of everything and was useful in helping the expedition to be well planned out from the beginning.



Exploring the moraine and glacier for the first time

Sharing the Expedition

We decided to share our expedition as widely as possible. Before our expedition, the planning stages were documented in a series of blogs and videos. Our satellite phone allowed us to continue the blog while on expedition via Andy and Rosy Smith, who kindly took notes of our phone calls and wrote the blog for us. This allowed us to update friends and family in real time, which everyone enjoyed. Our 'Facebook' page was also updated to reflect our website blog (thanks to a bored student writing up his PhD). On return, we posted about the expedition, and created both photo galleries and videos about the expedition. A lecture was held in Cambridge for local friends and other interested persons. After this report is distributed, we plan to transfer the content to our website, as well as making the report available online. A downloadable Google Earth file has also been made containing content about the mountaineering routes. Lectures in Glasgow and London are also planned for early 2013. All content mentioned above should be available via <http://www.catse.org.uk/>. More information is also available from the expedition leader: Dave Farrow, email: dfarrow1@gmail.com



Bethan ascending the long snow slope of Peak 4383

Acknowledgements

Captain Scott Society

<http://www.captainscottsociety.com/>

The Captain Scott Society marks the link between Scott and Cardiff by replicating the farewell dinner in Cardiff each year, and giving two awards to expeditions. We applied for the 'Spirit of Adventure Award' for the expedition that best exemplifies the spirit of adventure of Scott's expedition and were very honoured to be awarded a grant of £2000 towards our expedition.



Mount Everest Foundation

<http://www.mef.org.uk/>

The expedition was supported by the Mount Everest Foundation with a grant of £1350. We are very grateful for this grant, and are extremely happy that our expedition was supported by such a prestigious organisation.



GORE-TEX Shipton Tilman Grant

<http://www.gore-tex.com/>

Eric Shipton and Bill Tilman were avid mountaineering and adventure enthusiasts who believed in travelling in small, compact teams, unburdened by porters and excessive bulk. They seemingly got a thrill out of getting by on the bare minimum required to achieve their goal. Selecting a team was equally as important as how they travelled. They chose close friends who had mutual respect and trust for one another.

The annual GORE-TEX® Brand Shipton/Tilman Grant was established as a tribute to the spirit of adventure embodied by the endeavours of these two men. The Grant provides \$25,000 each year to be divided among three to six expeditions that are most in harmony with Shipton and Tilman's philosophies. We were awarded \$3000 towards our expedition



The Alpine Club

<http://www.alpine-club.org.uk/>

The Alpine Club Fund is a fund for members' expeditions, and supported us with a grant of £350.

The Alpine Club is the original mountaineering club of the world, and is still at the leading edge of mountaineering expeditions, providing a forum for sharing knowledge and experience. The Alpine Club Fund exists to promote and assist members' expeditions, and is keen to support the future of alpine style mountaineering expeditions.



Worts Travelling Scholars Fund

<http://www.admin.cam.ac.uk/students/studentregistry/fees/funding/awards/>

Matt, Doug, Jo and Dave were all successful in gaining £600 each from the Worts Travelling Scholars Fund, administered by the University of Cambridge.

The Worts Travelling Scholars Fund gives grants to encourage Cambridge students in international travel involving research. A wide range of topics from the cultural aspects of the country to scientific work can be undertaken as the research element. Due to the lack of knowledge about the area and the mountains we intend to explore and climb, our expedition has a large component of geographical exploration.

Andy Gibson Training Fund

<http://www.cuhwc.org.uk/club-information/andy-gibson-training-fund>

The Andy Gibson Training Fund exists to make grants to active members of CUHWC to undertake courses in hill and mountain activities. The seven of the team who undertook the Level 2 Remote Emergency Care Course in June 2012 received £20 each towards the cost of it from the Andy Gibson Training Fund.

Kelsick Educational Foundation

<http://www.kelsick.org.uk>

Bethan was successful in gaining £360 from Kelsick Educational Foundation. The foundation exists to provide financial support to individuals, schools and groups under the terms of the Will of Ambleside's greatest benefactor, John Kelsick, who bequeathed land in trust in 1723 to provide education for the young people of the town

ITMC

<http://www.itmc.centralasia.kg/>

ITMC provide 'adventure and culture travel' in Kyrgyzstan and were recommended to us for organising our in-country logistics. They were highly organised and helpful and we'd recommend them to anyone looking to organise any kind of expedition in Kyrgyzstan.

British Mountaineering Council

<http://www.thebmc.co.uk>

The British Mountaineering Council (BMC) is the UK representative body that exists to protect the freedoms and promote the interests of climbers, hill walkers and mountaineers. They have given approval to our venture, adding to the confidence and support given by the MEF.

British Mountaineering Council Insurance

<http://www.thebmc.co.uk/insurance>

The BMC Insurance team tirelessly put up with our insurance application and constant questions, eventually agreeing a policy with us for what was a complicated expedition due to the lack of information about the area and the mountains.

Cambridge University Hillwalking Club

<http://www.cuhwc.org.uk>

We all met in CUHWC, and it is our main means of escaping the flats of Cambridge every term. We are all ex-committee members, so have all taken a major part in the club. Although

members are all hillwalkers, many are also keen scramblers, climbers and mountaineers as well.

International School of Mountaineering and Pat Littlejohn

<http://www.alpin-ism.com>

Not only has Pat Littlejohn given us valuable information about mountaineering in Kyrgyzstan, but ISM is also responsible for all of our initial forays into alpine mountaineering with their highly recommended Student Week.

Royal Geographic Society and Shane Winser

<http://www.rgs.org/>

We were kindly given access by the RGS to previous reports to see what other people have done in the expedition area. The RGS also provides the books '*The Expedition Handbook*' and '*Expedition and Wilderness Medicine*' and have given us advice to help keep us on track with the initial planning of the expedition.

Student-Run Computing Facility

<http://www.srcf.net/>

The Student-Run Computing Facility of the University of Cambridge kindly host this website (as well as many others) for free, providing a very useful and flexible service as well as excellent and friendly support.

Tim Moss (The Next Challenge)

<http://thenextchallenge.org/>

Tim provided some great initial input when we were thinking of going to the Altai in Russia, as well as having a very interesting and informative blog.

Cambridge Alumni in Kyrgyzstan

Various Cambridge University alumni based in or originally from Kyrgyzstan have given us great advice. It's hard to read between the lines in some of the information given to us, and some words of wisdom from people actually living in the country (but not trying to make a profit from us) has been invaluable.

Cambridge Central Asia Forum

The chair kindly met us and gave us some general advice about the area. Information about the flights, language, people, flora and medicines was all very interesting and aided our discussions, particularly about our week of travelling.

Our Parents

We are of course indebted to all our parents, we would also like to give particular thanks to:

Jo's parents, who were our UK contact for updating the website, and were our only UK contact throughout the expedition.

Bethan's parents for putting all eight of us up in their house on our training weekend and feeding us some wonderful food.

Dave's parents for writing the amusing and realistic scenarios we used on our training weekend, helping to make us think about what problems we may encounter while out on the expedition.

Appendix A. Financial Account Summary

Income

Personal Contributions	£ 10430
Expedition Grants	£ 5520
Total	£ 15950

Outgoings

Flights	£ 5025
Visas	£ 495
Insurance (excluding additional premium for phase 2) ¹	£ 1880
Equipment & Supplies (excluding food)	£ 1495
Vaccinations (estimate, individuals requirements differed)	£ 3200
Food	£ 805
Accommodation	£ 75
Transport (excluding flights)	£ 505
Phase 2 (including accommodation, insurance, transport in country, food etc.) ¹	£ 1640
Charitable Contributions	£ 120
Pre Expedition Training (First aid course)	£ 560
Website Domain (www.catse.org.uk) and Hosting	£ 30
Report Distribution	£ 50
Misc.	£ 70
Total	£ 15950

Summary

Income	£ 15950
Assets	£ 0
Outgoings	-£ 15950
Liabilities	-£ 0
Total	£ 0

Cost Breakdown

Expedition Cost (excluding phase 2) ¹	£ 14310
Expedition Cost per Person (excluding phase 2) ¹	£ 1790
Grant per Person (covering mountaineering phase)	-£ 690
Phase 2 Cost ¹	£ 1640
Phase 2 Cost per Person ¹	£ 235
Personal Contribution per person (including phase 2)	£ 1335

¹ Phase 2 refers to the week of travelling after the 3-week mountaineering phase.

Appendix B. Bibliography

Books

Expedition Handbook, RGS

Expedition and Wilderness Medicine, Oxford University Press

Kyrgyzstan, Brandt Guidebook

Central Asia, Lonely Planet

Mountaineering in Kyrgyzstan -Vladmir Komissarov (in Russian), from ITMC website

Web

ITMC: www.itmc.centralasia.kg

Toppomapper: www.toppomapper.com

Leave No Trace (Centre for Outdoor Ethics): www.lnt.org/programs/principles.php

Kyrgyzstan digital geology project: www.kyrgyzstan.ethz.ch/snsf-projects/

Medical articles: wwwnc.cdc.gov/eid/article/17/5/pdfs/10-1183.pdf
wwwnc.cdc.gov/eid/article/17/5/10-1183_article.htm

Software

Google Earth: <http://earth.google.co.uk/>

Appendix C. Equipment lists

Section	Item	g	Notes
Travel	insurance details	50	Repeated on Kindle
	tickets	20	
Navigation	Maps for locating base	30	
	Maps for	30	
	Maps for phase 2	30	
Camping	Vango Storm 300	4700	Could fit everyone inside, except we had to pitch it on a slope, so it wasn't very comfortable. Also someone spilt dinner all over the inside. Spacious, and lots of room for communal kit - all the mountaineering gear was kept in here, along with some personal kit from those in the very small Vango Banshee
	Vango Banshee	2100	
	Vaude Taurus II	2800	
	Karrimor 2 man	3000	
	4x Bivvy bags	500	Bivvy bags were never used as we never went out of base for more than one night. There were mountains that may have needed it in the area, but we kept to single day outings as it was much
	Vango Banshee (Old version - Communal Lamp	2400	Old, but just about waterproof. Was really useful for storing all our food in.
		250	We never used this as we were always in bed well before sunset
Stoves	Primus Gravity	360	Worked well
	Pocket Rocket	115	Back up, and for use at bivouacs - never used
	Go Systems Sirocco	271	Worked just as well as the more expensive one above (though as expected Piezo igniter was very
	3 Windshields	170	Essential, we often used two on one
Cooking	6l pan + lid	650	
	2l and 1.5l pans	350	
	2 handles	100	
	Woodenspoon	25	

Section	Item	g	Notes
	Cooking serving spoon (plastic)	35	The cheapest ones are too bendy, get a more expensive and heavier one for expedition use. Really good for stirring as well as serving when cooking for 8
	Kitchen knife	47	In addition to personal pen knives, as some people have very small knives. Made chopping vegetables a lot easier and also minimised bits of food (e.g. cheese) getting stuck in handles of folding knives
Environment	Trowel, B&Q own brand	220	Broke on 3rd day. Used handle as engaged sign, scoop for moving soil around, and a spare ice axe for digging (the axe took quite some damage). A military surplus type entrenching tool might be a better bet for longevity though also would be a lot heavier.
	Toilet Paper	16 rolls	from Bishkek, used around 12, but felt that 2 per person was easier than sharing
	Poo packs	320	See environment notes
	2x Water purification bag and filters	570	Drink-Safe water system. Worked excellently in terms of providing clean water, but clogged up more quickly than expected (high amounts of very fine silt in glacial meltwater?). Life prolonged by backflushing with clean water (labour-intensive). Flow rate improved by continuous topping up and maintenance of large hydrostatic head using natural slope+piles of rocks. Parts (not the bags themselves) didn't seem very sturdy and various bits broke on several occasions
	Water carrier	175	Ortlieb 10L
	2 Kitchen Bowls	100	Sea to Summit 10L
	Lighters	65	From Bishkek, rarely used, one started leaking
	Matches (storm proof)	50	Unused
	2 Sparky lighters	60	Used all the time
	Scrubby pan cleaner	20	Very useful, got through 2
	Tights for straining	30	See environmental report
	Tea towel	50	Not used
Mountaineering	Total	28448	See separate kit list
Electronics	Sat phone	295	
	VHF radios	760	ICOM IC-M23
	2x GPS	400	
	Solar charger	1269	Minor break near end of expedition

Section	Item	g	Notes
Other	Sun Cream+ alco gel	3000	
	toothpaste (Kingfisher)	640	Fluoride free and organic to be nice to the environment. Didn't taste too bad, and our teeth are still ok.
	first aid kit	3000	See separate list for details
	Repair Kit	340	Useful on various occasions See Separate list
	Soap	1920	about the right amount - used for washing up, personal washing and clothes washing (for travelling week as well)
	IKEA bags for storing food	370	Lightwiegth and really good for organisations (around 70 litres each)
Base Camp Entertainment	3x E-readers	700	Only one broke, having been bent too far when packing/carrying. Having all the expedition files stored (and numerous books) was very useful.
	Trip diary/sketchbook	680	Group record of our adventures.
	Stationery	310	Coloured pens and pencils, along with sketching pencils
	Pack of cards	50	We never did get round to playing
	Juggling balls	200	Matt used them, others laughed...
	Kyrgyz Republic by Rowan Stewart and Susie Weldon	300	Part guide book, part potted history, was entertaining (we only took this in the last week, not to base camp)
	Lonely Planet	200	We planned our last week with this while at base
	Russian phrase book	150	Matt got as far learning numbers 11-20, and we all struggled with menu translations
Food	Food UK	43000	
	Food Bishkek	115000	
	Fuel	12000	
Totals	Group equipment	11.86	All equipment, excluding food
	Group kit on flight	54.86	Group kit taken on flight (includes UK food)
	Flight total	182.86	Weight taken on flight, including personal kit (16kgpp). Works out at 22.9kg each (limit: 23kg)
	Food and Fuel	170	All consumables from Bishkek and UK
	Total	480.86	60kg per person on walk in

Appendix D. Mountaineering Kit List

Mountaineering Kit	g	Notes
General		
2 Binoculars	700	Very useful for route spotting - one on hill, one at base
3 ropes, 2x 50m, 1x 60m	11200	
30m tat	800	
4 x Pair Climbing Axes	4985	
4x Walking axe	1763	Taken for emergency use, but most useful for digging toilet trenches
Each person carried		
belay device		Carrying all of this on our person allowed for rapid abseils and changing from moving together to pitching, especially if a belay was constructed before the rack
HMS Belay carabiner		
sling (120cm)		
sling (60cm)		
2 Prussik loops		
3 screwgates		
Each 2.5kg Rack had		
nuts		We generally carried half a set between four.
4 hexes		Some General notes:
quickdraws (4)		The rack was a good size, and although we rarely carried it all, the routes had less rock
sling draws (2)		The third base camp rack was taken partly for spares as we
120 slings and gates (4)		We had too much climbing kit for our routes, but as we were
240 cm sling		
nut key		
2 screwgates		
1 HMS screw		
In addition:		
10 ice screws	1500	Shared between racks in whatever way we thought we'd need them. These were really useful, and the most used part of the rack for one team.
Total	28kg	3.55kg per person

Appendix E. Repair Kit List

Repair kit	Notes
Needles	
Expedition-strength thread	
Normal thread	
Scissors (in first aid kit)	
Safety pins	Independent from first aid kit
Buttons	
Tent repair kit	Patch of outer material, pole repair, sealant
Spare pegs	
Garden wire (1m)	
Duck tape	Independent from first aid kit
Puncture repair kit (for thermarests, including seamgrip)	Seamgrip had solidified in tube - we should have brought new tube?
Thin cord (2-4mm)	spare laces etc
Multitool / pliers	Didn't have, but would have been useful
Total	350g

Appendix F. First Aid Kit List

Base camp kit was kept in camp to be taken to used at camp, refill mountain kits and to be taken as support to a major incident. Each pair carried a 'mountain kit', which was split between both of them. Each person therefore had a basic kit, which combined with their partner gave a good first aid kit for each climbing pair.

In addition, the two climbing pairs had subtly different kit, so that when brought together in the team of 4, the basic individual kits gave a suitably large selection of items.

Base Camp First Aid Kit

Medicines - Painkillers

28x Paracetamol and Codeine
160x Paracetamol 500mg
164x Ibuprofen 200mg
28x Aspirin 300mg

Medicines - Other

4x3 Week Courses of Ciprofloxacin
1x3 Week Course Amoxicillin 250mg
32x3-in-1 Antacid
17x Loratadine 10mg
17x Cetirizine Hydrochloride
28x Loperamide Hydrochloride 2mg
140x Rehydration Sachet
8x Buccastem M
prochlorperazinemateate 3mg

Dressings and Support

Bandages

4x Boxes Assorted Plasters (2 waterproof/2 fabric, 2 individually wrapped/2 50cm strips)
25x Blister Dressings
8x small Wound Dressing Bandage
8x Medium Wound Dressing Bandage
5x Large Wound Dressing Bandage
5x Sterile Gauze Swabs
5x Melonin Dressings Large
8x Melonin Dressings Small
Clingfilm
1x 50m Roll Ductape
1x 5m Roll Sporttape
1x 2.5m Roll Surgical Tape
2x Triangular Bandages
2x Crepe Bandages
1x Ankle Support

Other

78x Alcohol Wipes (48 pack and 30 individually wrapped)
Antiseptic Cream
12x Vinyl gloves
1x Shatterproof Thermometer
35x Wound Closure Strips
6x Safety Pins
Tweezers
Tick Remover
5x Bloodlancet
9x Lipbalm Factor 30
4x Natural Insect Repellent
9x Alcohol Gel
6x Suncream Factor 50 (4x 200ml alcohol based, 2x 400ml oil based)
4x Sterile Needles and Syringes
Medical Forms for individuals
4x Emergency Procedure and Patient Forms

Books

Travel survival guide
Expedition medicine
First Aid handbook
Care Plus handbook

Mountain First Aid Kit 1

Part 1

Sam Splint
Crepe Bandage
Medium Wound Dressing Bandage
Small Wound Dressing Bandage
3x Various Plasters
Blister Dressing
Melonin Dressings Small
2x Antiseptic Wipes
Emergency Procedure and Patient Form
Pair of Vinyl Gloves
HB Pencil with Ductape, Sportape, Micropore
tape wrapped onto it
1x Paracetamol and Codeine
2x Paracetamol 500mg
2x Ibuprofen 200mg
2x Asprin 300mg
2x Loratadine 10mg
2x Loperamide Hydrochloride 2mg

Part 2

Tufcut Scissors
Foil Survival Blanket
Tubular Bandage
Large Wound Dressing Bandage
Small Wound Dressing Bandage
3x various plasters
Blister Dressing
Melonin Dressings Large
2x Antiseptic Wipes
Emergency Procedure and Patient Form
Pair of Vinyl Gloves
HB Pencil with Ductape, Sportape, Micropore
tape wrapped onto it
1x Paracetamol and Codeine
2x Paracetamol 500mg
2x Ibuprofen 200mg
1x 3-in-1 Antacid

Mountain First Aid Kit 2

Part 1

Ankle Support
Medium Wound Dressing Bandage
Small Wound Dressing Bandage
3x Various Plasters
Blister Dressing
Melonin Dressings Small
2x Antiseptic Wipes
Emergency Procedure and Patient Form
HB Pencil with Ductape, Sportape, Micropore
tape wrapped onto it
Pair of Vinyl Gloves
1x Paracetamol and Codeine
2x Paracetamol 500mg
2x Ibuprofen 200mg
2x Asprin 300mg
2x Cetirizine Hydrochloride
2x Loperamide Hydrochloride 2mg

Part 2

Knee Support
Foil Survival Blanket
Large Wound Dressing Bandage
Small Wound Dressing Bandage
3x Various Plasters
Blister Dressing
Melonin Dressings Large
2x Antiseptic Wipes
Emergency Procedure and Patient Form
Pair of Vinyl Gloves
HB Pencil with Ductape, Sportape, Micropore
tape wrapped onto it
1x Paracetamol and Codeine
2x Paracetamol 500mg
2x Ibuprofen 200mg
1x 3-in-1 Antacid
2x Buccastem M Prochlorperazinemateate
3mg

Appendix G. Personal equipment

In general, personal equipment was the same as we'd take to the European Alps, albeit slightly adjusted for camping at 3000m without a shower block. We attempted to communalise as much as possible, so sunscreen, soap and toothpaste were all taken as a group to minimise packaging and excessive quantities.

Total weights varied, while we tried to keep it below 18kg, the average was probably around 16kg, while the minimum was around 8kg

Waterproof jacket	Camera + case
Waterproof trousers	Unbreakable Spoon/Spork
Gaiters	Mug
Buff	Small pack-towel or flannel
Warm Hat	Bowl/plate/box
Sunhat	Map Case
Sunglasses + spare	Sleeping bag (around 0°C comfort rating)
2x liner gloves	Sleeping bag liner
1x outer glove	Sleeping mat
Insulated jacket	Thermals
Fleece	Toothbrush
2x baselayers	Small notebook + pen
2x trousers	Duffel bag (left in Bishkek)
2x underwear	
2x mountaineering socks	
2x walking socks	
Approach trainers	
Boots	
Crampons	
Harness	
Helmet	
Climbing Rucksack (30-50 litres)	
Optional carrying rucksack (60+ litres)	
Knife	
Dry bags	
Trekking Poles	
Headtorch + spare batteries	
Water bottles	

Appendix H. Daily Food Allowance

An example of the food tables produced for each day. Each day's 'menu', like this, was only an example day, rather than a prescribed menu which we should stick to for that day on the expedition, and the purpose of these was to easily generate total quantities required of each food, and check that an average day's food, as a whole, looked roughly palatable.

Meal	Component	Weight x 1 (g)	Calories x 1 (kCal)	Weight x 8 (g)
Breakfast	Oats	100	360	800
	Sugar	15	60	120
	Milk Powder	50	250	400
	Raisins	50	150	400
Lunch	Dates	110	350	880
	Biscuits	30	150	240
	Cake	50	180	400
	Cashew Nuts	70	405	560
	Chocolate	50	260	400
	Cheese	75	320	600
	Mayonnaise	20	145	160
	Sweets	20	80	160
	Wraps (3)	180	390	1440
Dinner	Custard Powder	25	100	200
	Powder Sauce	45	45	360
	Vegetables	100	40	800
	Pasta	200	740	1600
	Tea x 3	10	10	80
Totals		1200	4035	9600

Appendix I. Environmental Impact Assessment and Management Plan

1. Environmental Statement

We believe that all who travel and explore, particularly in areas that are wild, beautiful and fragile, have a responsibility to consider the environmental and wider effects of their visit. Although no expedition can have zero impact, it is possible (and, we believe, vital) to manage and minimise that impact.

This expedition aspires to set new standards in best environmental and ethical practice. We aim to:

- Minimise our impact on natural areas, leaving no permanent trace of our presence
- Minimise our impact on local communities (both in Bishkek and close to our expedition area)
- Employ companies and individuals with good environmental and ethical records, and support local environmental initiatives

2. Summary of environmental issues in Kyrgyzstan

- **Waste disposal:** Bishkek does not have a sustainable municipal waste disposal system. Its landfill site was designed to hold 3.3 million m³, but currently contains 24 million m³. It has expanded from 10 to over 25 hectares within the last eight years, and is now encroaching on city limits⁶.
- **Fragile ecosystem:** Kyrgyzstan marks the southern boundary of the Central Asia steppe region. Its continental climate means there is relatively little rainfall and much of the country is at risk of desertification. Over 90% of the country is mountainous and its ecosystem therefore highly sensitive to small changes in climate. The mining industry and its associated waste (including pollution from heavy metals) is currently a major threat to these fragile mountain ecosystems.
- **Threats to biodiversity:** Kyrgyzstan is home to many species listed on the IUCN Red List of Threatened Species. In particular, it provides an important habitat for snow leopards (endangered; population decreasing) and the Marco Polo sheep (near threatened; population decreasing).
- **No environmental permits** or applications are required by Kyrgyz authorities for our expedition, meaning that we must set and follow our own stringent principles in order to minimise our environmental impact.

⁶ <http://www.eurasianet.org/node/62345>

3. Table assessing potential environmental impacts of the expedition, with mitigation strategies

See next page. This table documents a strategic and thorough assessment of all the potential impacts of our expedition. The exercise ensures that we have considered our impact at all stages of the expedition and thought about how each impact can be minimised. Thus prepared, we can take appropriate steps throughout planning and during the expedition itself to ensure that we meet our environmental aims.

In addition to the detailed mitigation strategies listed in the table, our over-arching policy is to bring all general waste back to the UK for disposal, so as not to add to the problems in Bishkek (detailed above).

4. Environmental reporting

We will attempt to keep a record of all waste generated and all other environmental impacts of the expedition. We will report this on our return, as well as an evaluation of our mitigation strategies and environmental management plan as a whole.

Activity	Duration	Output	Nature of impact	Scope	Persistence	Intensity	Probability	Significance	Type of effect	Mitigation	Responsible party	Monitoring
Transport to/from Kyrgyzstan	2 days (total)	Emissions from aeroplanes & other vehicles	Air pollution; noise pollution	Global	Long-term	Medium	High	Medium	Indirect, direct	Use scheduled flights, ideally not at night (to reduce noise pollution). Use public transport to get to airport	Dave?	Discussion at meeting
Stay in Bishkek	2 days (total)	Hotel emissions, waste	Air pollution; extra waste created	Local-regional	Long-term	Medium	High	Medium	Direct, indirect	Minimise time spent in Bishkek. Try to find a hotel/restaurant with an environmental policy? Turn off heating/air conditioning etc if not needed. Keep any general waste generated to take back to UK	Dave?	Discussion at meeting; liaise with in-country agent; observation
		Shopping (food)	Extra packaging	Local	Persistent	Medium	High	Medium	Direct	Buy food with minimal packaging. Keep all packaging to return to UK	Doug/Jo	Observation
Overland transport to/from road head	2 days (total)	Vehicle emissions	Air pollution	Regional	Long-term	Medium	High	Medium	Indirect	Use a reputable company to arrange hire vehicles; ensure vehicles are well-maintained (tyres at correct pressure etc)	Dave/Jo	Observation; preliminary check
		Dust	Damage to roadside ecosystem, reduced air quality for roadside dwellers	Local	Medium-term	High	Medium	Medium	Direct, cumulative	Adhere to speed limits and recognised routes	Jo	Liaise with driver; observation
Move from road head to base camp & return	4 days (total)	Walking	Erosion; damage to plants; ecosystem disruption	Local	Long-term	Low	High	Low-medium	Direct; cumulative	Don't use porters/donkeys if possible (or minimise number). Minimise loads and number of journeys between road head and base camp. Try to walk on durable surfaces (rock, sand, gravel). If not possible, vary the route on each trip to prevent trails developing.	Jo	Observation; verbal reminders
Camp general activities	16 days (duration of stay at base camp)	Tents pitched	Damage to grass/plants	Local	Medium-term	Low	High	Low-medium	Direct; cumulative	Pitch (and cook, socialise etc) on durable surfaces. Protect riparian zones by pitching 100m from streams and lakes. Move tents every 3-4 days to dilute impact and prevent longer-term damage. Naturalise site on breaking camp.	Jo	Observation & action; final check before departing base camp

Activity	Duration	Output	Nature of impact	Scope	Persistence	Intensity	Probability	Significance	Type of effect	Mitigation	Responsible party	Monitoring
Camp general activities (continued)	16 days (duration of stay at base camp)	Movement around camp	Erosion; damage to grass/plants	Local	Medium-term	Low	High	Low-medium	Direct; cumulative	Minimise movement around camp - use large water carriers to reduce journeys to fetch water. Plan ahead to do several jobs in one place at the same time. Move tents every 3-4 days to dilute impact	Jo	Observation & action; verbal reminders
		Waste head torch (and other?) batteries	Contamination of soil and groundwater	Local-regional	Long-term	High	Low	High	Direct, indirect, cumulative	Keep careful account of all batteries and make sure they are returned to UK, separated from other waste and properly disposed of.	Jo	Records; regular checks
		Washing chemicals	Contamination of soil and groundwater	Local-regional	Long-term	High	Medium	Medium	Direct, indirect, cumulative	Use biodegradable camp soap (e.g. Lifeventure blue soap); don't bring anything toxic such as shampoo, deodorant	Jo/Tom	Planning & procurement; kit list
		Human waste (liquid)	Contamination of soil and groundwater	Local-regional	Long-term	High	High	High	Direct, indirect, cumulative	Urinate at least 100m away from camp and water, ideally onto mineral soil or rock to minimise damage to vegetation. Try to distribute it instead of concentrating in one spot	Everyone	Individual action
		Human waste (solid)	Contamination of soil and groundwater	Local-regional	Long-term	High	High	High	Direct, indirect, cumulative	Bury solid human waste: use a trench system, around 15cm deep (optimal depth for decomposing bacteria), mixing with soil then moving along after each use. Consider mixing with material such as sawdust/peat moss to speed decomposition. Locate trenches at least 100m away from camps, water supplies, trails. Use natural toilet paper where possible, or use plain, white, un-perfumed brand and bury deeply and securely. On leaving the area, fully bury trenches and return ground surface to its natural state.	Jo/ Everyone	Individual action; regular checks & action if needed; final check before departing camp

Activity	Duration	Output	Nature of impact	Scope	Persistence	Intensity	Probability	Significance	Type of effect	Mitigation	Responsible party	Monitoring
Camp cooking	16 days (duration of stay at base camp)	Emissions from stoves	Air pollution	Local-regional	Long-term	Medium	High	Medium	Indirect	Use efficient stoves, and take food that needs minimal cooking. To reduce waste, use refill-able gas canisters	Jo/Tom/Doug	Initial planning, action during procurement
		Spilled/ waste food	Ecosystem disruption, animal poisoning	Local	Medium-term	Medium	Medium	Low-medium	Direct	Take care opening food (especially rice, cous cous, anything crumbly or easily spilled) - open over a plate or inside another bag. Immediately pick up anything spilled and store with waste if no longer suitable to eat.	Jo/Doug	Observation, regular checks
		Washing up	Contamination of soil and groundwater	Local-regional	Long-term	High	High	High	Direct, indirect, cumulative	Most washing up can be done with hot water only. If absolutely necessary, use biodegradable soap instead of washing-up liquid. Scrape as much food as possible off first; either eat or store with waste. Strain water through tights or similar to catch food scraps. Disperse grey water over a wide area. Minimise use of oil for cooking.	Jo/Doug	Observation & action; regular checks
Mountaineering	14 days	Walking/ climbing	Erosion	Local	Long-term	Low	High	Low-medium	Direct, cumulative	Try to walk on durable surfaces (rock, sand, gravel) as much as possible. If not possible, vary the route on different trips to prevent trails developing. Be careful when climbing to dislodge rocks as little as possible	Jo/Everyone	Observation, verbal reminders
		Equipment	Damage to rocks from axes, crampons, gear; abseil tat	Local	Permanent	Low	Medium	Low-medium	Direct	Stay on snow/ice as much as possible when wearing crampons; remove crampons on rock if safe to do so. Leave as little gear as is safely possible (careful placement, carry nut key); abseil off natural anchors if possible & safe.	Everyone	Observation, verbal reminders
		Human waste in environment unsuitable for burial	Contamination of soil and groundwater	Local-regional	Long-term	High	High	High	Direct, indirect, cumulative	Bring all solid waste back to base camp (e.g. with cat litter in paper bags) to bury	Jo/Everyone	Individual action, verbal reminders

Appendix J. Risk Assessment

Each factor is assessed in terms of Hazard and Likelihood with control measures in place. Risk is the product of the two number.

Hazard (H):	Likelihood (L):	Risk
3: Death possible,	3: likely	1-2: Low Risk
2: serious injury possible,	2: potential	3-4 : Medium risk
1: minor injury possible	1 unlikely	6: High risk
		9: Unacceptable Risk

Factor	H	L	Risk	Controls Measures
Team				
Inexperience or anxiety resulting in bad team relationships	1	1	1	All members are known to each other, and have sufficient experience of travelling and mountaineering. Members to be aware of signs, and look out for each other
Culture Shock	1	1	1	All members have experience of travelling. Members to be aware, and help each other.
Horse Play	2	1	2	To be minimised by members while on expedition.
Environment				
Altitude: HACE, HAPE	3	1	3	BMC guidelines followed for ascent profiles: Basecamp is at 3000m, limit before BMC recommended ascent profiles start. Any sleeping above this altitude will only occur once acclimatised via sleeping at base and climbing above 4000m multiple times. Very unlikely with altitudes and timescales involved. Appropriate training to identify and treat condition will be part of first aid training.
Altitude: AMS	2	2	4	
River Crossing: Drowning	3	1	3	Rivers will not be crossed when dangerous. Training to understand rivers to be undertaken in UK.
River Crossing: Injury	2	2	4	Provision for members stranded on opposite side of river to main camp will be made if deemed necessary.
Heat Exhaustion /Heatstroke	2	2	4	Hats, sunglasses and protective cream to be worn when appropriate. Water to be carried at all times.
Dehydration	1	3	3	Members to be aware of symptoms and relief measures.
Hypothermia / Frost bite	3	1	3	Members to wear and carry appropriate kit, and be wary of changing weather. Members to understand symptoms and relief measures.

Health				
Insects - Malaria	2	2	4	Follow current medical advice from NHS: Avoid biting insects by use of repellent, and covering up No anti-malarial drugs needed.
Rabies	3	1	3	Follow current medical advice from NHS: Immunisation advised; avoid contact with animals.
Poor medical facilities (Use of)	3	1	3	Some provision for own drugs and needles has been made for emergencies
Poor health and hygiene.	2	1	2	Members awareness. Hand wash routines.
Illness in remote area	2	1	2	Members trained in first aid, some medicines taken, evacuation plans agreed
Polluted Water	2	1	2	Bottled water in Bishkek, appropriate filtering and iodine in field
Contaminated Food	2	1	2	Self preparation in field, use of reputable vendors in Bishkek
Local population				
Loss, theft of baggage	2	1	2	Follow current FCO guidelines: Members to be vigilant and aware of risk
Crime in towns, villages	2	1	2	Follow current FCO guidelines: Members to be vigilant and aware of risk
Mountaineering				
Mountaineering safety equipment failure	3	1	3	UIAA safety standard equipment used, and checked prior to use. All equipment within lifespan and undamaged
Accident or injury while mountaineering	3	2	6	All members experienced, rescue plan in place, rescue techniques practiced.
Travel and Camp Life				
Cooking / stove accident	2	1	2	Knowledge of and training in all stoves and safe cooking practices.
Swimming / washing: Leptospirosis	2	1	2	Follow NHS guidelines: Avoid swimming in warm fresh water or stagnant and cover cut/grazes. Awareness of symptoms. Flu-like, high temperature, nausea will have antibiotics to deal with a mild case, if condition worsens evacuation will be necessary.
Other Equipment Failure -	2	1	2	All equipment to be tested prior to departure. Provisions made for likely or critical breakages or loss.

personal (clothing etc)				
Equipment Failure Group	2	1	2	All equipment to be tested prior to departure. Provisions made for likely or critical breakages or loss.
Rock fall near camp	3	1	3	Careful siting of camps and routes to avoid rock fall
Flooding of camp	3	1	3	Careful siting of camps and routes to avoid flooding. Follow evacuation plan in Crisis Management Plan'
Hostels/hotels	2	1	2	Members to be aware of potential reduced safety standards including electrical, fire and security, and act accordingly.
Aircraft crash /Hijack	3	1	3	EU guidelines followed: Reputable airline to be used
Road Traffic Accident	3	2	6	Follow current FCO guidelines: Members to be vigilant and aware of risk
Terrorist Attack	3	1	3	Follow current FCO guidelines: Members to be vigilant and aware of risk

Appendix K. Emergency Information

We took this document on expedition to help us work quickly together to solve any incidents. It was originally written as a 'Crisis Management Plan' for a grant application, and was adapted after our training weekend and first aid course.

Radio Communication

If at base, use communication sheet for any important communications (i.e. incidents)

Use first aid monitoring sheet – copy details as given from mountain.

Get the following information in your head

Transmit one piece of information at a time.

- 1) It is an incident
- 2) Nature of injury (sheet if filled in)
- 3) Location of teammates
- 4) Proposed actions (advice to be given after discussion in base)
- 5) Actions for base – how can they help
- 6) End by organising next call time (e.g.. after applying first aid)

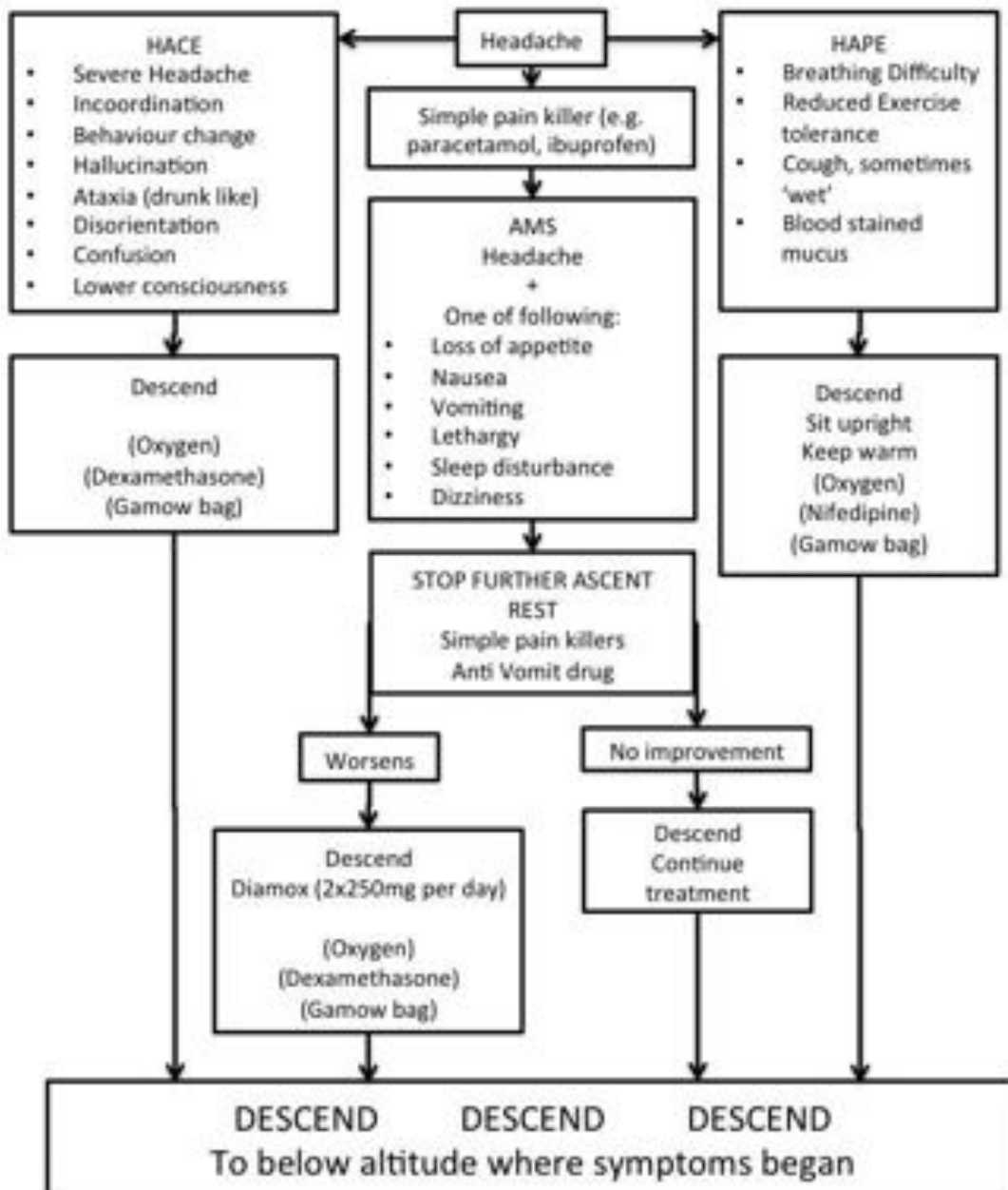
Roles and Responsibilities

Idealised roles that should be applied in a crisis; simplicity is crucial.

Role	Tasks	Location
Coordinator	Overall Coordination	Base Camp
Incident Manager	Scene safety	Incident site
Logistics	Evacuation/Transport from Base	Incident site (Base Camp)
Communications	Radio/telephone links, information transfer	Base camp
First Aid	Provision of temporary immediate care	Incident site
Medical Officer	Provision of care until incident complete	Base Camp

Initial Response Steps (General)

- STOP
 - Stop
 - Think
 - Observe
 - Plan
- Manage the Scene
- Remain calm
- Assess the hazards
- Preserve life and prevent further injury
- Minimise damage to property and environment
- Inform Coordinator
- Delegate roles



Altitude sickness symptoms and treatment flowchart, adapted from the UIAA guidelines. Treatments we did not carry are in brackets on separate lines.

Evacuation Plans and response to critical injury or death

Some broad cases are planned out here to aid efficient action in the case of a crisis occurring.

Types of Crisis:

1. Initial Steps for a roped mountain team in difficult terrain
2. Mountain team not returned and no communication- assume all or part injured
 - a. No radio contact procedures for mountain team.
3. Mountain team injured (all) - known
4. Mountain team injured (part) - known
5. Injury/illness at Base
6. Helicopter Evacuations
7. Problem with food or other supplies resulting in additional risk.
8. Evacuation initiated by external influences.
9. Flooding of Base Camp
10. Death

1. Initial Steps for a roped mountain team in difficult terrain

Definition:

A casualty occurs in terrain where walking is impossible - i.e. moving together or climbing on rock, snow or ice.

Action Plan

Swift action is need initially:

1. Person tied directly to casualty:
 - a. Stop, Go hands free:
 - b. Make secure anchor
 - c. Clip yourself to anchor
 - d. Tie live rope off to anchor (clove hitch or tied off belay)
2. The situation is now under some control, and the next moves can be thought out thoroughly before acting.
3. The person with the best knowledge of the situation should assume leadership (often the person tied directed to the casualty)
4. Think/Observe/Think
 - a. Where is everyone - are they aware, how could they help
 - b. What gear do you have?
 - c. What does the casualty have?
 - d. Assess the hazards, especially further hazards similar to the cause of incident
5. Plan
 - a. What is the plan?
 - b. How are you going to execute the plan?
 - c. Split the plan into steps: e.g. Secure you and the casualty, escape the system, lower assistance to casualty, administer first aid, etcetcetc.
 - i. Do each of the planned steps individually, collecting and sorting out gear after each step.

If further injury is imminent (such as rock fall), the best plan may be to instantly lower or take other action to remove the team from the area, rather than making secure and thinking.

2. Mountain team not returned and no communication- assume all or part injured

Definition:

A team in away from Base Camp that has not returned for 4 hours after expected return time, and no contact communication has been had since expected return time. Earlier communication could have altered the expected return time, in which case the last communicated time should be used. It is then assumed that one or more of the team is

injured and the situation means they are unable to make contact with Base. A plan is also given for the mountain team that has an incident, but cannot make contact with Base.

Action Plan for Base:

1. Assess the current conditions, weather, avalanches, high rivers and other natural signs that could
 - a. Be one of the reasons for late return.
 - b. Be a factor affecting further action.
2. Assign roles and responsibilities within Base Camp
3. Start a log (Comms)
4. Alert UK contact to potential problem?
5. If conditions allow and it may be of use, send 2 members out for up to 2 hours to check lower areas and see further up.
6. If conditions allow, and it seems sensible, move a minimal camp up mountain.
 - a. Minimal risk
 - b. Take tent, sleeping bags, emergency rope and rack, food and drink
 - c. Take sat phone and radio.
7. If risks become too high, or contact not reached, prepare to contact ITMC for rescue support.

Action Plan for Mountain

1. See below incident plans for initial steps of dealing with incident.
2. If no radio communication is gained with a short time:
 - a. Keep radio turned on and with you (or another able member)
 - b. Return to casualties and assign roles, administer first aid as in incident plans below.
3. Continue with first aid until everyone is stable. This is your priority, and having contact with base would not be much assistance for this.
 - a. Try contacting base every 20-30 minutes as convenient.
4. Once casualties are stable, travel to find radio contact: 2 members preferred, but try to leave one person with casualty. Try to leave one radio with casualty and take one radio.
 - a. Only travel upwards if known contact was had close by (30 mins walk, no climbing). Take no risks.
 - b. Travel downwards until radio contact is made, if possible maintaining contact (or knowledge of where contact is possible) with the incident scene.

3. Mountain team injured, can't move, critical injury

Definition:

Communication is made with Base that a major injury of one or more members or all members with minor injuries has occurred and this will prevent effective movement of the team without help. Communication is available throughout crisis, and at least one person is able to walk, communicate and administer basic first aid.

Action Plan

Incident site

1. STOP
 - a. Stop
 - b. Think
 - c. Observe
 - d. Plan
2. Check area is safe (Rock fall, avalanche)
 - a. Can you get to everyone safely?
 - b. Can you move everyone to a place of safety.
3. Check condition of members
 - a. Perform immediate first aid if necessary
4. Communicate with Base
 - a. If no communication possible continue below and also see incident 1. above
5. Assign roles to least injured (probably limited roles)
6. Administer first aid to everyone
 - a. Help on phone from base
7. If possible, start thinking about logistics of retreating to Base.
 - a. Moving is unlikely to be wise.

Base

1. Assess the current conditions, weather, avalanches, high rivers and other natural signs that could be a factor affecting further action.
2. Assign roles and responsibilities within Base Camp
3. Start a log (Comms)
4. Get information from incident site:
 - a. Location
 - b. Reason for injury
 - c. Exact details of each person's injury
 - d. Details of approach to location.
5. Secondary Aider: provide phone assistance if possible
Coordinator: organise rescue team
Comms: Alert UK contact to potential problem, alert in country rescue

Logistics: Organise evacuation from base, prepare evacuation from incident.
6. Team of two (or four if safe and necessary) to find team and evacuate them to Base and beyond
 - a. Secondary aider: takes control of first aid.
 - b. Logistics: provides ability to evacuate to Base (where plans are already in place to continue to road)
 - c. Comms: Continually in contact with in country agents, incident and base.

4. Mountain team injured, can move, non critical

Definition:

Communication is made with Base that one or two members on the mountain are injured to some extent, but with all the mountain team assisting, slow movement towards Base is possible. Communication is available throughout crisis.

Action Plan

Incident site

1. STOP
 - a. Stop
 - b. Think
 - c. Observe
 - d. Plan
2. Check area is safe (Rock fall, avalanche)
 - a. Can you get to everyone safely?
 - b. Can you move everyone to a place of safety.
3. Check condition of members
 - a. Perform immediate first aid if necessary
4. Communicate with Base
 - a. If no communication possible, continue below see incident 1. above
5. Assign roles.
6. Administer first aid to everyone
 - a. Help on phone from base
 - b. Log actions if possible
7. Once people are stable, start moving slowly towards Base, ensuring no further harm is done to injured parties.

Base

1. Assess the current conditions, weather, avalanches, high rivers and other natural signs that could be a factor affecting further action.
2. Assign roles and responsibilities within Base Camp
3. Start a log (Comms)
4. Get information from incident site:
 - a. Location
 - b. Reason for injury
 - c. Exact details of each person's injury
 - d. Details of approach to location.
5. Secondary Aider: provide phone assistance if possible
Coordinator: organise rescue team if needed
Comms: Alert UK contact to potential problem.
Logistics: Organise evacuation from base if needed, assist evacuation from incident.
6. Team of two (or four if safe and necessary) to find team and assist in rescue to Base
 - a. Secondary aider: takes control of first aid.
 - b. Logistics: takes control of evacuation.
 - c. Comms: Continually in contact with in country agents if needed, incident and base.

5. Injury/illness at Base

Definition:

Injury or illness at base that restricts movement of one or more members. Also includes contagious illnesses that can spread to other members.

Action Plan

1. Contact Medical Officer
 - a. Start Log
 - b. Contagious?
 - i. Containing the illness.

2. Timescales for evacuation / recovery?
3. If evacuation required:
 - a. Coordinator: everyone or casualty and accompanying only?
 - i. Casualty must be accompanied by at least 2 members
 - b. Logistics: Prepare suitable logistics for evacuation.

6. Helicopter Evacuation

Example:

After dealing with an incident as described elsewhere, a helicopter is coming to help take one or more of the group to hospital.

Action Plan

1. Roles and other immediate tasks will have been done as appropriate above.
2. Decide on who is accompanying casualty (the helper)
3. Move to suitable location
 - a. Top of cliff, if wide flat area exists for landing
 - b. Bottom of cliff, with wide flat area for landing
4. Do the following concurrently if possible:
5. Official Signals:
 - a. 'Help', 'SOS', 'V' (help), 'X' (medical help) - create letters (2.5- 3.5 m tall, 1 foot wide) out of troughs or stamped snow/ climbing gear to make them obvious.
 - b. Mirror - 6 regular flashes, one sequence every minute
 - c. Aircraft may rock side to side to signal compliance.
6. Organisation
 - a. Get medical and insurance notes ready
 - b. Get a minimum of vital kit in a bag for casualty & helper- bit of water/food, extra layer.
 - c. Keep sharp objects separate
 - d. Be ready to follow instructions
7. Landing
 - a. Make flat space (<10%) 30m diameter
 - b. Make wind sock if suitable place and tied securely
 - c. Secure all loose items and store long poles. Dress for very high winds and cold temps.
 - d. Allow any haul line to touch ground first (static)
 - e. Do shine lights at aircraft
 - f. Waving means do not land, kneel so that 'backs are to the wind, land where I am pointing'
 - g. Do not approach until instructed
 - i. Approach between the pilots 10 and 12 o'clock (12 dead ahead of them), unless slope means 12 - 2 is downhill side.
 - ii. Stay 30m away if not needed.

7. Problem with food or other supplies resulting in additional risk

Examples:

*Food contamination or spoiling, water is causes problems despite filtering and treatment.
Problems with stoves, mountaineering equipment, or other safety equipment.*

Action Plan

1. Assign roles
2. Contact Coordinator
 - a. Start a log
3. Reassess Risk of continued activity

4. Timescales for Evacuation, can recovery be achieved?
 - a. May be that activities can be continued, but early evacuation is needed.
5. If evacuation required:
 - a. Comms: contact in country agents and UK
 - b. Logistics: any difficulties with early evacuation (excess food)
 - c. Medical officer: any ongoing issues that may affect evacuation

8. Evacuation initiated by external influences

Definition:

Contact by UK, in country contacts or FCO to request our evacuation due to political crisis, natural disaster, terrorism, or critical illness / death of a relative of a team member.

Action Plan

1. Assign roles
 - a. Start log
2. Coordinator - how urgent is request
 - a. Depending on severity stop all activities or wait for natural finish
3. Does it affect all team or just some?
 - a. Minimum 2 members leave
4. Logistics: Complications with early extraction
5. Comms: to in country, FCO, UK
6. Medical officer: any ongoing issues that may affect evacuation

9. Evacuation of base camp due to flooding

Definition:

Evacuation is required from basecamp due to some immediate threat, such as flooding. Only four members are in camp as there is a climbing team out.

Action Plan

1. Assign roles
 - a. Start a log
 - b. Assign one person to watch and give early warning of any sudden change.
2. Define timeframe for preparing to move, moving.
3. Decide where to move to
 - a. Up hillside (ensure move is far enough)
 - b. Up valley (only if somewhere suitable is known)
 - c. Down valley (ensure new site is flood proof)
4. Prepare to move - pack rucksacks of essentials.
 - a. Personal kit of everyone (tents, sleeping bags, mats, warm clothing)
 - b. Food - enough to get to road head
 - c. Prepare other kit so it is fast to grab and pack, if a return carry is made. Move as far out of flood's way as possible.
 - d. Priorities: essential personal kit, essential food, other personal kit, technical kit, food + other consumables
5. Move - if unprepared, this may be a frantic dash up the hillside with essentials, with a more structured plan coming later. Ensure ground near your route will not erode or collapse.
6. Once new base is found
 - a. Send team back to recover as much as possible from base, and to direct mountain team if possible.
 - b. Make base obvious as possible, and keep watch for mountain team.
 - c. Contact UK and in country logistics to arrange evacuation

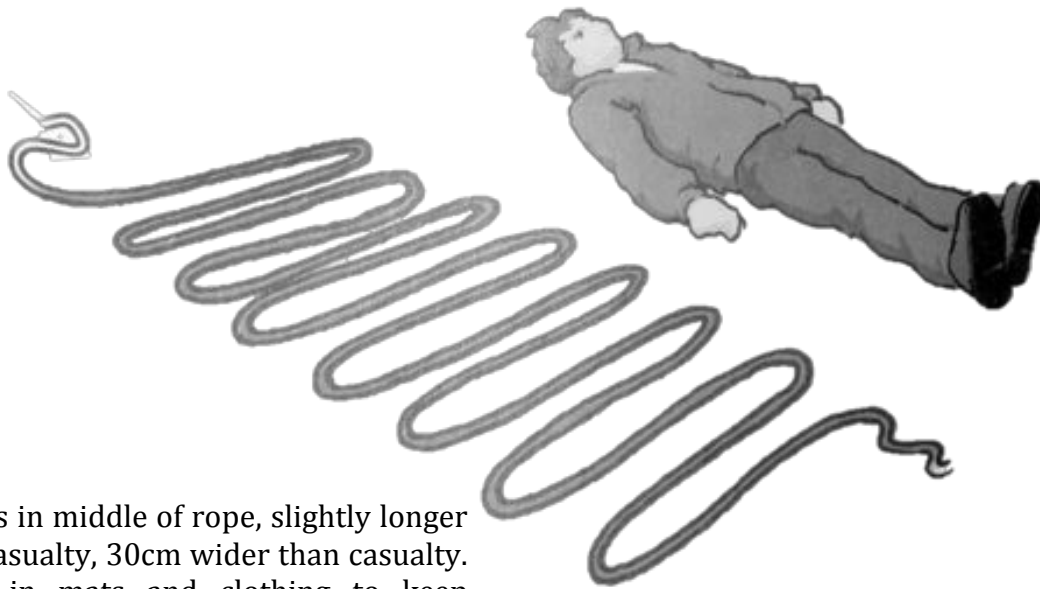
10. Death on expedition

Although highly unlikely, if a death occurs the following notes may be useful.

On mountain: Unlikely to be able to carry a body off mountain with three people, but the making of a stretcher may help. Members from base can meet climbers to assist carry. In some circumstances, body can be left on mountain, and team will return the following day. All effort to return body to UK will be made, without undue risk to members. Rescue services will be contacted to see if help is available.

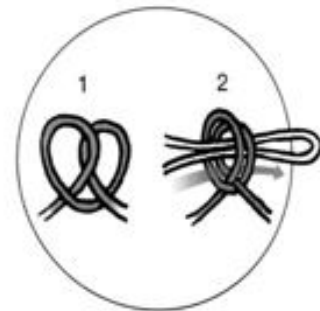
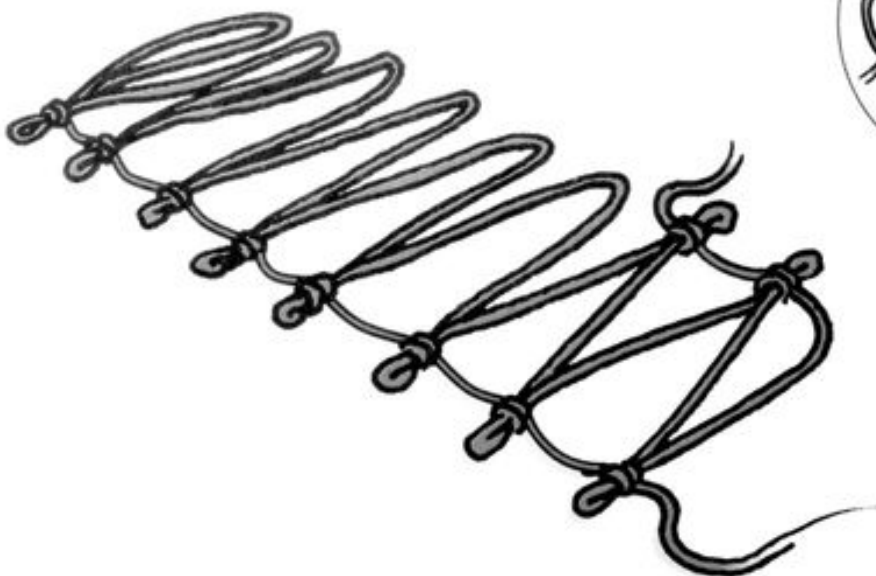
Elsewhere: casualty should be taken to hospital to be pronounced dead by an official.

Stretcher making details



8 loops in middle of rope, slightly longer than casualty, 30cm wider than casualty. Cover in mats and clothing to keep casualty warm and comfortable. Put sturdy rucksack around head.

Clove hitch on each loop, leaving small loop at either end



Pass rope ends through each end loop round and round the stretcher. Each rope end in the opposite direction. Leave the ends to tie up the stretcher in best way.

Emergency Services - Contact Numbers

Telephone country code for Kyrgyzstan is: 996
Telephone area code for Bishkek is: 312

24 hr UK contact: 441433 620100 / 447719 418475 (mobile)
ITMC (in country agent) contact details: Tel: 996-312-651404
Insurance contact details (ACE assistance): 44 20 7173 7933
Rescue services contact details: 996 312 651404
In Bishkek: Police 102
Firemen 101
Medical emergency services 103.
Commercial Ambulance Services 139, 548666 or 549999 or 151 or 439151
British Embassy: Kazak Astana: +7 7172 556 200, Kazak Almaty +7 7272 506 191.
Honorary Consul Kyrgyzstan +996 555 584245

Medical Facility Information

Consult with insurance if serious.

Pharmacies are marked *darykhana* or *apteka*

Kyrgyz Republic Hospital (aka State Clinic No 2)
24 hour emergencies and hospital ambulance 266916
Interpreter recommended

Tsadmira Clinic - if need rabies shot

Meerim - Recommended Dentist 144a Bokonbaev str. , 2nd floor, Bishkek
Tel: (312) 66 40 69 / 66 40 90

Medical Associates Clinic Hyatt Regency Bishkek 191 Sovetskaya
Tel: 996 312 680 262, 996 312 985 745
All doctors speak English and are Western-trained.

German-Kyrgyz Medical Center 92 Akhunbaev St. Institute of Oncology, 1st Radiological Corps
Tel: (312) 512 197
The German-Kyrgyz Medical Center offers modern European standards of treatment and has a diagnostic room as well as a laboratory and direct contacts to European pharmaceutical firms to provide necessary medications. English speaking professor is available.

The Chui Hospital 10 Saratovskaia Street Alamedin Village
Tel: 996 312 280 794, 996 312 280 802
Can help foreigners with medical consultations as well as medical treatment and surgery.

VIP Clinic 110 Kievskaya Street, Bishkek, 720001,
Tel. (office) 996-312-621063; (home) 996 312-661 310;
24 hours duty telephone/ambulance: 996-312-660-356/996 312 228-992;
reception: 996-312-663549 or 996 312 21-69-37 or 996 312 66-19-01;
English speakers available
Provides medical consultations as well as medical treatment and examinations.

Serious illness or injury may require medical evacuation to India or Western Europe

Embassy Details

British Embassy Bishkek

c/o 215 Manaschy Sagynbaya Street, 720010, Bishkek

Telephone: (996 312) 690 232

Facsimile: (996 312) 690231

British Embassy Office Almaty - Consular & Visa Section

Microdistrict Samal –297 Zholdasbekova Street, Samal Towers, 9th Floor Block A2 Almaty 050051; Telephone +7 7272 506 191; Facsimile +7 727 2507112 / +7 7272 507962

E-mail: Kyrgyzstan.consular@fco.gov.uk;

Office Hours (Local time GMT+6hrs) Mon-Thurs 08:30-17:00; Fri 08:30-15:30;

Out of office Emergency Number +7 717 255 6244.

Itinerary for ITMC organised activities

Date	Time	Activity / details
Sun 29th July	0510 flight	Transfer Airport to Bishkek (ITMC office): Aeroflot flight from Moscow arrives 0510
Sun 29th July	Night	6-person apartment accommodation
Mon 30th July	Morning	Travel Bishkek to Shamsi Tuyuk. Leaving in time to walk up valley in the afternoon.
Thu 16th August	Afternoon	Travel Shamsi Tuyuk to Bishkek. Leaving after walking down from valley
Thu 16th August	Night	6-person apartment accommodation
Fri 24th August	Night	Apartment accommodation
Sat 25th August	0630 flight	Transfer Bishkek (Apartment) to Airport: Aeroflot flight to Moscow leaves 0630