



QUB Mountaineering Club
hill walking and climbing at Queens

2012 Central Asia Expedition



4 August – 9 September 2012

Official Report

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Introduction

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

Synopsis

The 2012 QUBMC expedition visited the Dzhirbagaktu glacier in the fairly remote - and prior to the collapse of the USSR - seldom visited range of Western Kokshaal-Too. Most peaks here rise from a plateau at 3800m to a height of almost 6000m (Dankova, Kizil Askar and Kosmos). As such acclimatisation is required, but ascents can nevertheless be accomplished in alpine style. The particular valley we visited contained twelve peaks around five thousand meters, of which seven are actual five thousanders. Overall there were seven unclimbed peaks in this basin and therefore plenty of opportunity for the exploratory mountaineer. We continued the work of the Krakow Mountaineering Club 2010 expedition and following six days of load carrying and fuff necessary in establishing base camp, made first ascents of two prominent peaks, two summits of dubious prominence and a put up a further six new routes on previously conquered summits in the space of sixteen days.

Climber background

Member	Expedition Role	Occupation	Birth date and Nationality
Conor Gilmour	Leader	Unemployed	1989, Irish
Ronan Kernan	Financial officer	Student, QUB	1991, Irish
Alek Zholobenko	Medical officer	Unemployed	1987, British/Russian
Azwan Isa	Participant	Student, University of Dundee	1988, British
Vladimir Zholobenko	Logistics Officer	Lecturer, Keele University	1962, British/Russian
Bradley Morrell	Flapjack Officer	Unemployed	1993, British

Team

Most of us were members of Queen's University Belfast Mountaineering Club (QUBMC), a large and very active club based in Northern Ireland. The club organises a multitude of trips every year exploring climbing in all conditions all over the UK, Ireland and western Europe.



Conor Gilmour

Climbing experience: Traditional up to E2. Climbed extensively in Ireland, England, Wales and Scotland. Sport climbed up to 6c. Scottish winter experience up to IV and 3 seasons of alpine experience up to D+. Notable ascents include Frenco Spur, Kuffner Arête, Slieve Commedagh . Extensive hillwalking experience in Ireland. Enjoys fell running and has competed in the Mourne Mountain Marathon. Former Mountaineering Officer and Vice President of QUBMC. First Aid REC 2.



Rónán Kernan

Climbing experience: Traditional experience in Ireland, Wales, England, Scotland, Spain and France up to E3. Scottish Winter experience up to IV and 3 seasons of Alpine experience up to D+. Notable ascents include Frenedo Spur and Kuffner Arête. Former President and previously treasurer of QUBMC. Extensive hillwalking experience in Ireland and the UK. Competed in Mourne Mountain Marathon along with Conor Gilmour. SPA and First Aid REC Level 2.



Alek Zholobenko

Mountain experience: Trekking for several seasons in the Alps, Corsica, Caucasus and Peruvian Andes. Competed thrice in the Mournes Mountain Marathon. Trad climbing to E1, 4 seasons of Alpine summer and Scottish winter climbing, as well as a couple of ascents in the Andes. Favourite routes to date are the South Face Direct on the Aiguille Dibona and Tower Ridge on Ben Nevis. Previous Mountaineering officer of the QUBMC.

Relevant Skills: First Aider holding the REC 2 qualification, and the "AWM" secondary expedition care qualification.



Bradley Morrell

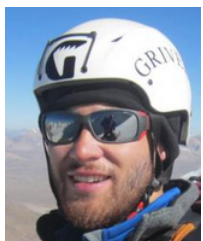
Climbing experience: Multipitch Trad experience across the UK and continent. 3 Scottish winter climbing seasons up to grade V as well as winter mountaineering. 3 alpine seasons, the second of 3 months, experience up to TD alpine rock. Notable ascents include Frenedo Spur, Kuffner Arete, Forbes Arete and the Lion Ridge of the Matterhorn.

SPA qualified and holding an Outdoor First Aid qualification



Vladimir Zholobenko

Climbing Experience: Trad experience in the UK. Logistical experience from several caving expeditions in the Caucasus and Central Asia. Trekking in Alps, Corsica and Caucasus. 3 Seasons of summer alpine climbing (generally at AD but up to TD). Notable ascents include the South Face Direct on the Aiguille Dibona.



Azwan Isa

Azwan spent two years with QUBMC before moving to Dundee. He has climbed in 5 Scottish winters up to Grade III as well as summer hillwalking in the Alps, sport climbing in Spain and Italy, and trad climbing to E1 closer to home. Azwan is currently (permanently) working towards his SPA and ML qualifications and is an experienced outdoor education instructor.

Memorable experiences include Curved Ridge as his first winter ascent, Tour Du Mont Blanc, and putting up a new trad route, the Speed of Darkness, on the lovely island of Gola.



Dzhirnagaktu and Kizal Askar seen from the north (R Kernan)

QUBMC Logic

Following the 2008 QUBMC (Queen's University Belfast) expedition to the Staunting Alps in Greenland, (restoring the long standing tradition of expeditions to remote mountain ranges by the more experienced members of the club), several rookie members of the club listened to the stories of desperate chossy climbing, giant crevasses, terrible pasta, ungodly loads of gear and those things usually associated with expedition life and, far from being repulsed by the idea, thought that it might actually be what the Irish call *good craic*. As the years progressed, these guys became fairly experienced and brewed up something of an expedition plan. The plan was to go somewhere for a while and climb something. This was then refined to go somewhere far away and remote for a longer than usual time and climb something that hadn't been climbed before. The area, time of year and consequently everything else that depends on those two parameters was chosen as a result of the constraints of our apparently vague goal. Mountains the world over were scrutinised as potential targets and a great deal of hot air and rhetoric was expended before a destination could be chosen. We were constrained by four main factors:

- 1) **Time of year.** The University would not approve of an expedition during term time when it would interfere with our dubiously valuable education, which ruled out anything in the Southern Hemisphere as summer there would clash with exams.
- 2) **Money.** Expeditions are expensive, especially for 'penniless' students, so we sought areas where a) peak fees were small or non-existent b) helicopter transport was either cheap or not essential.
- 3) **The abundance of peaks** which were either virgin or are seldom climbed and have rich new routing potential.

4) **Our own experience.** Extremely high altitude climbing, which by its nature is significantly more dangerous than alpine style climbing requires extensive experience in winter Alpinism or extremely high altitude mountaineering to have any sort of safety margin and at our level could not be undertaken safely. Equally, big wall mixed and rock routes would also be out of our league.

These four constraints ruled out most of the Himalayas and Antarctica, leaving all the other mountain ranges on earth and did little to make our choice any easier. Suggestions for expeditions included Alaska (notably Denali), the Cordilleras Blanca and Huayhuash, Patagonia, Greenland, Tien-Shan, Pamir, and Caucasus. South America was ruled out as climbing there during the summer would put targets out of season. In addition, being fairly well developed, the Andes hold few virgin peaks of any prominence and Patagonian weather is too reminiscent of Scotland on steroids to make it attractive. The Caucasus is politically unstable and mountaineers run a high risk of running into bandits with all kinds of unpleasant consequences. In addition, as an integral part of the former USSR, it is fairly well developed. Greenland was a very attractive option, but as the last expedition had visited those mountains and at great expense, it was decided that it would be much better sport to avoid making two expeditions to the same destination. This left the Pamir and Tien-Shan. However, predictably, when choosing a specific climbing objective within two whole greater ranges, the choice a climber is left with is still somewhat overwhelming. Objectives such as Lenin, Pobeda and Korzhenevskaya were discarded instantly as too high and dangerous, along with the other two snow leopard peaks.

After a considerable amount of consideration, the Palgov/Grigoriev glaciers on the Western Kokshaal-Too were chosen with the final objective being Peak Kosmos. However, we soon learned that the access road to that range now lay within Chinese jurisdiction and was available for use of military transport only. As a result and after much sulking we changed our objective to the Basin of the Dzhirgagaktu glacier, on the opposite end of the range, which we considered a little lower and less interesting, but was conversely more easily accessible. With peaks between 4500 and 5700 meters in height rising from this glacier, which itself lay between 4000 and 4600m, there should have been ample opportunity for new one and two day routes on seldom climbed or even virgin peaks. One of the perks of locating the base camp in this basin is that with Kizil Askar only a few kilometres away, most climbers would be drawn to this excellent and prominent mountain, leaving the opportunities in our target valley largely untouched.

It became evident from our research that most climbing in the region was done around Kizil Askar, to the east. This is mostly because of the excellent steep granite which, with good reason, has the same effect on mountaineers as fly paper on insects of the same name. The Dzhirgagaktu and Akbai-Tal basins which had both received a single visit by mountaineers prior to us were, on the other hand, known to have exceptionally chossy rock. In the face of the opportunity of first ascents and significant new routing, it was decided that choss was an acceptable price to pay. In addition, since our intent was to climb ice and mixed routes, it was decided that the quality of the rock was secondary. (We would curse this logic on every single route attempted.)

The timing of the expedition was itself a compromise between conditions and opportunity. As most of the expedition members were students at the time of planning the expedition and one a lecturer, it was desirable that the expedition take place outside of term time. Conveniently, conditions in the Kokshaal-Too are generally optimal during late August-September, with poor snow conditions in the much warmer month of July and early August and excessive snowfall later in the year. As such the expedition was planned for as

late as possible before the academic term and fell between the 4th of August and 9th of September.

Previous Activity in the Dzhirnegaktu Valley

There are records of two other expeditions being active in the Dzhirnegaktu Valley.

- 1.) A Soviet expedition to the Kizal Askar valley led by Kazbek Valiev in 1985 made the first ascents of Rock Horse, Raven Peak and Pk 5632m along the ridge dividing Kizal Azker and Dzhirnegaktu. It is possible that they made ascents of other peaks along this ridge also. However, they never descended down to the glacier proper. The same expedition made the first ascent of Kizal Askar.
- 2.) The 2010 Krakow Mountaineering Club Kokshal-Too Expedition (<http://kw.krakow.pl/wyprawy/kokshal2010/>) visited the Dzhirnegaktu Valley. There was a successful expedition, reaching 12 summits and climbing many new routes. We drew heavily on their photos, videos and reports while planning our expedition.



*Operations of the 2010 Polish Expedition (image: T Owerko)
(Peaks already climbed marked with flags, peaks climbed by Poles in Red)*

Preparation

Training

Each member of the expedition had their own roles, goals and requirements, as well as living in different parts of the country and hence undertook different training. Every member of the expedition apart from Vladimir, who had significant hands on experience, took a basic first aid course (either REC2 or Outdoor First Aid). In addition, Alek acting as medical officer took an "Advanced Wilderness Medicine" course run by the WMT, which is a course of dubious legal standing specifically tailored to secondary care under expedition conditions. Ronan and Conor underwent advanced on route rescue training under John Orr. All members of the expedition were experienced in basic crevasse rescue and hoisting techniques. Different members of the expedition undertook different programs to prepare for the demands of high altitude mountaineering. Alek, Bradley, Conor and Vladimir spent significant amounts of time in the Alps in June and in Bradley's case, June and July. Ronan compensated by intense cardiovascular training (an hour of rowing daily). After the Alps, Alek to keep his form, increased his swimming load to 5km five times a week with climbing the remaining two days. Vladimir made no particular changes to his program, which involves three hours of exercise daily. Non of the members of the expedition undertook training specific to mixed and ice climbing, however, as no member of the expedition climbs mixed and ice to a level at which sports specific conditioning becomes important and non of the members were expected to climb routes of this level on the expedition, it was not considered a problem. In addition, the expedition members who were interested in difficult rock routes had pushed their grades to E3, E2 and E1 (Rónán, Conor and Bradley respectively) that year and were on excellent form.



Conor, 'training' in the Italian Alps (N Browne)

Equipment

Most of the expedition members possessed most of the climbing gear required. Two DMM deadmen, two snow stakes as well as assorted pitons and 200m of 6mm tat were, however, purchased. Only the tat saw significant use as it was indispensable in descending about half of the routes climbed. Additionally a set of six short wave radios were purchased for intra and inter party communication. Two of the radios met their butter-finger assured demise during the Alps trip and expedition itself. Otherwise they were more an item of convenience than necessity, though in the case of an emergency the situation could easily be reversed. With parties forgetting to switch on the devices, running out of batteries or simply leaving them at base camp the radios' moment of glory was when a returning party radioed base-camp with a request to put the tea on thirty minutes prior to their return. In addition, the valleys' topography assured a variable signal, with decent reception up to 16km (Night Butterfly to Dolphin camp) and poor reception between base-camp and the head of the western branch of the Dhirnagaktu glacier. A Goal Zero "Nomad 7" panel with a "Guide 10" battery pack were purchased to keep all appliances charged and functioned exceptionally in the brilliant glacial sunshine, seeing almost constant use to charging the radios, satellite phone, e-books and mp3 players (there was a lot of lying about in a tent on this trip!). A 4 man campsite tent, the Hgear "Electron 4" was purchased to act as the main basecamp tent. It performed marvellously, surviving weather which broke a pole on Conor's Mountain



Tea (B Morrel)



Safe Disposal of a damaged Grivel Salamander (A. Isa)

Equipment tent. It does however, become very cozy when all six of the expedition members pile in for a day of bad weather. Three smaller tents were also taken, the Terra Nova Voyager, Vaude Power Lizard and Mountain Equipment Tundra 2. The Mountain Equipment was pitched as the second base camp tent, while the other two were used mostly for intermediate camps on the walk-in and -out. The Vaude was also used for a bivi at col. Dzhirnagaktu's Rising Sun and stood up to the challenge. If going light, however, the Voyager and Vaude were admittedly dispensable.

The expedition took three pairs of sixty meter half ropes and a fifty meter Beal Joker. Apart from an unfortunate disagreement between a hot stove and a rope, which turned one of the 60s into a 45, the system of using one half for climbing and two for abseil descents saw no complaints.

One of the old Grivel Salamander helmets literally fell apart due to wear and tear and was subsequently destroyed upon arrival to Bishkek to ensure safe disposal. Regarding ice axes, three members of the expedition used Grivel Matrix lights, two used Petzl Quarks and one used a Camp Alpina and a Stubai Hornet. All axes performed at least adequately. The Quark users were marginally ecstatic for most of the trip. One expedition member used G14 crampons, two used G12s, one used BD Cyborgs, one used Petzl Sarkens with G12 bindings and one used Simond Vampires. G12 semi-automatic bindings occasionally came undone when not done up well. Sarkens blunted quite quickly on hard ice. Otherwise there were no problems with crampons.

Our expedition made heavy use of ice screws and there was much debate as to which ones were best. Grivel Helices, BD Turbos and Expresses and Soviet Irbis screws were taken. Helices and Expresses were generally agreed to be the best and the Irbis to be completely useless, apart from by Alek who thought that they had a good bite and used them in all his anchors, while the rest harboured a belief that he was simply nostalgic for all things Soviet.

A selection of rock gear was also taken, but was not generally very useful due to poor rock. Tricams reclaimed their title as the king of rock protection and Link-cams proved popular due to their ease of use. The one hex taken on the expedition spend most of its time playing chess with the nuts and normal cams. Apart from individual routes, and the 'Monolith', the Dzhirnagaktu basin does not require extensive rock gear. Eight ice screws per team on the other hand was occasionally considered a little on the exposed side.



Poor quality rock on Ledenaya Stre'coza (B. Morrell)

Five out of six participants of the expedition took down jackets, the remaining using a Montane Smock. No one got hypothermia. Weather was variable with both very warm days when it was possible to climb in just a base layer to very cold days where climbers wore down jackets for most of the duration of the routes. Three pairs of La Sportiva Nepal Extreme boots, one pair of Scarpa Mont Blancs, one pair of Raichle 90° and one pair of Scarpa Triolets were taken. For the most part these boots were warm enough, though Conor and Bradley got mild frostnip on their big toes in their Nepals and Alek spent two days hobbling about with severely bruised toes, after a long day in the Mont Blancs, which have a somewhat awkward construction. Rónán suffered from heel blisters towards the end of the trip and did the whole walk-out in sandals.

Of the five stoves taken, three saw use. The Primus Gravity, paired with the 1.7L heat exchanger pot was the workhorse basecamp stove, though the Jetboil also saw use, mainly during the walk in. The lightweight Blaze was to be used on bivis, but as there was only one bivi, they were of limited use. Evening meals were prepared communally using the heat exchanger pot to boil water and then pouring it into the 3L pot for preparation of adequate portions.

Of the wide assortment of items in the first aid kits ciprofloxacin was the most useful, being used by two members of the expedition. In addition one member developed a nasty nasty cough and was treated aggressively with coamoxiclav and doxycycline just in case. One member required prochlorperazine. Other than this, finger tape and plasters were the only required items. Injectables were neither taken nor required. The WMT "Advanced Wilderness Medicine" manual was taken as a reference. It was used as a bedtime story on occasion.

For rest days various entertainment was taken; two Amazon Kindles, one chessboard, one pack of card and three paper books (Game of Thrones, an Andy Cave autobiography and the Koran). Additionally Alek was often seen scribbling something in a little blue notebook (It is suspected that he was conducting some sort of human experiment on the rest of the expedition members). We heartily recommend taking at least one pair of binoculars on future expeditions as they are incredibly useful when it comes to sizing up potential lines.

Food

Proper nutrition is an essential part of any expedition and planning it properly gave us quite the headache. 600g per person per day is theoretically sufficient if done properly, especially at altitude where appetite is suppressed. We decided not to save weight on food however and took around 850g per person per day. We were significantly troubled by the fact that we could not find Smash or decent dried milk (what they call dry milk over there is merely coffee whitener with zero protein content which can in no way substitute for milk). As a result, last minute instructions to members of the expedition who had not yet departed were given to purchase Smash and Dried milk in the UK. In addition Alek took 4kg of Belgian chocolates for ascent days. Evening meals were communal with a mixture of high quality cured/dried meats (including duck) and tinned fish being purchased for variety. The assigned portion was around 150g. The staples were a mixture of noodles, fine (quick cooking) spaghetti ("lapsha" in Russian), semolina (Cous cous was not available) and Smash, once again for



Why we climb; 22kg of chocolate. (R. Kernan)

variety. Here the portion was 100g, apart from Smash, for which the portion was 50g. All of them proved popular, though in the future, we would take more noodles probably. For flavouring, mixtures of spices were purchased, as well as sauce packets and stock cubes, which would also serve to restore salts which would otherwise be lost due to drinking melt water and provide flavour. In addition, a 50g portion of cheese was standard. Evening meals therefore contained 250g or more usually 300g. Breakfasts were either Porridge (75g of oats, 100g of dried milk 25g of honey), milkshake (EasiYo dried Yogurt 100g +100g of day food) or hot chocolate (10g of hot chocolate, 100g of dried milk + 100g day food), with each member having their own preferred ratio of the three various breakfasts,

with Conor on one extreme living exclusively off porridge and Alek on the other subsisting entirely on hot chocolate and yoghurt.

Expedition members were instructed to decide on the other 400-450g themselves to have a diet optimised for themselves. In theory this worked very well, with everyone choosing a mix of energy rich foods they liked, mainly chocolate, boiled sweets, biscuits, condensed milk and more chocolate. In practice, high altitude messes with your food preferences and as we took an extra 5 days worth of food it turned into something of a free for all, which still worked well. Several members of the expedition experienced a stronger than expected craving for cheese, all of which was fairly tasteless and generically Gouda-like, apart from small quantities of grated Parmigiano which had an exceptionally strong flavour. Sachets of dried squash were purchased to make life more interesting, and proved very popular, apart from Melon flavour which unfortunately tasted of melon. By the end of the expedition weight changes of the members were +1kg for Alek, -4kg for Bradley, -1kg for Ronan, and -1kg for Vladimir (the others may have neglected to weigh themselves or something) showing that for most of the members who did weigh themselves, the diet was fairly adequate. Several kilograms of food were left after the expedition, as planned. Some of this was offloaded onto the border guards who were more than happy to accept several kilos of sweets, halva and chocolate.

Apart from the Cous-Cous and powdered milk previously mentioned, the supermarkets and bazaars of Bishkek proved more than suitable for expedition shopping. The food was primarily bought from 'Narodny' supermarkets (with several having to be visited to make up our chocolate quota) while squash, spices, halva, sweets and meat were bought at Osh Bazaar in the west of the city.

Finances

The expedition applied for several grants: the MEF grant, the ME Mark Clifford grant, the NEA award, the MI expedition grant and the Queen's University Belfast Annual Fund. Of these the Expedition was awarded £1650 by the MEF, £500 by MI, £2000 by the Annual fund, as well as £1900 from QUB Mountaineering Club. This gave a total contribution of around £6000. Alek and Vladimir flew from Manchester with Turkish Airlines. As they live in the Midlands and Turkish give a generous 30kg luggage allowance, the relatively high cost was justified, allowing them to buffer the luggage requirements of the rest of the expedition slightly, as well as saving the traumatic experience of going to London.

Rónán, Conor, Bradley and Azwan booked flights with Rossiya airlines through St Petersburg. Rónán and Bradley were informed by the airline that there would not be enough time to transfer in St. Petersburg and so were refunded. Oddly, the other two were not and were able to make it to the Bishkek flight in time thanks to the help of a strong Russian baggage attendant. Rónán and Bradley meanwhile rebooked with BMI via Baku, necessitating an awkward journey from Gatwick to Heathrow airport for Rónán and his transfers between Belfast and London were via Gatwick while BMI flew from Heathrow.

Being unfortunately well prepared, four out of six expedition members purchased visas for £75. A week before flying out, the Kyrgyz president finally signed the visa-free regime and Vladimir and Bradley saved themselves some money. The services of the ITMC came to a total of €1755 for overland transport and border permits and an addition €385 for airport transfers and around ten days worth of accommodation in Bishkek. Due to the usual alacrity of the QUB administration (which controlled the Annual Fund money and QUBMC

money), a late payment to the ITMC had to be paid by Vladimir. Interestingly this turned out for the best as QUB finally paid the ITMC, we already had €1755 banked with the company, which allowed the finance officer to avoid the ordeal of walking through customs with the best part of €2000 for general expenditures such as food.

Overall the major expenditures were the ITMC services, which came to around €2200, the food, which also came to around €1000 and flights, which also came to around £2400. In addition there were a large number of minor expenditures, such as the purchase of visas, solar panels, radios, snow protection and other gear. Additionally there were additional expenditures associated with feeding the expedition while in Bishkek. Overall each member of the expedition ended up spending approximately £350 from his own pocket.

Logistics

For the purposes of transport and services in Kyrgyzstan the well known ITMC was contracted. The ITMC is a tour company that specialises in catering to the needs of mountaineers and has earned a name with mountaineers for being trustworthy and reliable. We had absolutely no problems with them. The expedition was fairly lightweight and with most supplies being purchased on the spot, did not require the services of cargo companies to ship food or equipment. Some members of the party were somewhat over their luggage limits, but through crafty holding of bags and creative packing managed to get their bags on their respective planes without a fine. Conor and Azwan received VIP treatment in St. Petersburg due to a very tight transfer and ended up in Bishkek on time.



The Ural truck (B. Morrell)

to spend a few days in Al-Archa and Vladimir's work commitments which limited him to four weeks of expedition time. As a result, Alek arrived in Bishkek on the 31st of July, Azwan, Bradley, Conor and Ronan arrived in the early hours of the 5th of August and Vladimir arrived on the 9th. As such an apartment was booked for between the 4th and 9th of August which allowed a convenient base from which to stock up on supplies and see the city. Early in the morning of the 9th (immediately after Vladimir's arrival) we were picked up by Sasha in the Ural along with our 180kg of food and similar weight in gear and drove out past Naryn, where we camped by a river. After Naryn, road conditions deteriorated from Irish to dirt tracks and after the first

Logistics of the expedition, which were fairly simple to start off with, were complicated by Alek's desire



Digging out the Ural (R. Kernan)

border post to border tracks with zero maintenance for twenty years. This was followed by around fifteen kilometers of off road terrain which was significantly smoother than the road that preceded it. The main obstacle was the Kara-Sai river, which had to be crossed in the morning. As it is fed by every glacier in Kokshaal-Too it had swollen massively in the evening, making it uncrossable even for a vehicle that eats Land Rovers for breakfast (despite Sasha's best efforts). We did manage to run the truck into the only swamp between Bishkek and Dzhirgataly in the end and Sasha (with some help) spent three days digging it out. Fortunately for us, we had already reached our destination. Indeed, we had reached and exceeded our drop-off point by two kilometres as the Kokshaal-Too moorland was unusually dry that year.

On the way out, the smaller GAZ-66 was used to make the same journey to Naryn in one and a half days. From there a minibus was taken to Bishkek. Here the truck was only taken half way as a Swiss Group on the Komorova glacier had contracted the truck for the month. The group arrived in Bishkek on the 6th of September and spent two days unwinding before flying off on the 9th with the exception of Alek, whose flight left on the 10th. Overall getting to and from the glacier went extraordinarily smoothly with the truck penetrating 2km further than the best case scenario on the way in, and one day less being required on the way back than required. The minibus did get a puncture on the way to Bishkek, but that only cost us 30 minutes and is a common occurrence on Kyrgyz roads. Notably and despite prior arrangements we used an Ural on the way in and a GAZ-66 and minibus on the way out instead of using a GAZ-66 on the way in and a UAZ on the way out. This is explained by the fact that the GAZ was in for repairs at the time of our departure and the UAZ was not big enough for the party and gear, and the Swiss group had used the GAZ on their inwards journey so it actually saved fuel for us to use it on the way out rather than driving it back to Bishkek, driving the UAZ in and then driving the UAZ out again. This arrangement worked out better for us as the Ural was the most capable vehicle and the GAZ significantly more able than the UAZ.

The Expedition

Approach and Basecamp

The original expedition plan featured a base camp on the moraine under the glacier and an advanced camp near Nochnoi Motyl (Night Butterfly). In the end, we had a small gear dump and intermediate camp at 'Dolphin' boulder (which resembled the eponymous mammal) at 3830m where we stored trainers, several days of food and Bradley's passport. There was also a small stash ('Humpback' stash) at the beginning of the glacier proper at 3950m, where Bradley and Rónán left gear when they had to turn back from a foray up the glacier due to bad weather. The main base camp was set up on the centre of the glacier at 4200m. It took 7 days from being dropped off by the truck (day 1) to the last load being carried onto the glacier. This included one day of bad weather (day 3) where load carrying stopped almost entirely. Only one load was carried on the 7th day (by Vladimir). Construction of base camp was achieved on day 6. It was approximately 7km from the drop-off to 'Dolphin' boulder along grassy slopes



'Dolphin' Boulder (B.Morrell)

and some scree, with a height gain of 80m. In practise, this took about one hour to walk (depending on load and acclimatisation).

From 'Dolphin' boulder to base-camp was about 8km, with a height gain of 350m. This took approximately 1 hour 30 minutes (50 min to 'Humpback' stash). There were two separate routes from DB to BC – one crossing the river via snow-bridges and ascending a rib of scree on the west side, the other ascending moraine and scree on the east. The eastern approach took longer and was less pleasant but avoided the objective risk of the western approach, which included a 'leap of faith' over a large glacial stream. Due to snow-bridge collapse and the flow of the river, the eastern approach was used on the descent.

The location of base camp was on a small patch of moraine which provided enough materials to level a platform and build a small wind breaker wall which would in theory stop the wind blowing under the tent and give it some protection. In practice, this labour intensive process was of questionable benefit, because general melt of the glacier destabilised the wall causing it to collapse onto the back of the tent and rip the outer (which was promptly repaired with duct tape), which along with a couple of holes in the porch floor caused by hot cooking pots was the only damage sustained by the base camp tent. Despite worries that we may have to spend several weeks melting water, it



Alek building a level platform (R. Kernan)

appeared that the sun did a good enough job for us as the glacial stream next to the base camp flowed both during the day and night, becoming silty with the yellow sand that covered the glacier between around 10am and 5pm. Water was collected preferentially outside those times, but when it was necessary to collect water during a silty time no precautions were taken as it did not resemble the fine, dangerous silt created when a glacier grinds the rock under it into a fine dust but was clearly created by other means and settled out quickly.

Due to the impracticalities associated with carrying twenty days worth of human faeces, we did not use poop bags. Instead the nearby big moraine field was used as the main latrine, with faeces crushed and buried under rocks though a single, precise toilet spot was not designated.

The base camp was also equipped with several incarnations of a lightning rod, also of dubious utility given that it was also surrounded by 'lightning rods' with a prominence of around a kilometre. The first three lightning rods collapsed as a result of a meddling Alek.



Vladimir at base-camp (A. Isa)

The fourth incarnation (which doubled as a flagpole) was three walking poles held up by three blunt ice screws and the short half of Conor's molten rope and stayed standing until the end of the expedition.

In addition to the main base camp tent, which was the hub of expedition life, Conor's two man Mountain Equipment tent was also used to house the remaining two expedition members. A small stone store was built for cheese, tinned fish and chocolate, more to

keep it out of the way and solid (for

cheese and chocolate) than to keep it fresh. Meat was kept open to the sun by day on a small rocky platform made for the purpose and covered in gauze, rock and plastic bags at night to stop it freezing and kept mostly fresh for the duration of the expedition.

The location of the base camp was probably a kilometre or two too far down the glacier, leaving walk-ins to routes in the morning longer than would be ideal - with the shortest walk-ins being 20 minutes and most walk-ins being between an hour and two hours. However, this position was chosen more for the availability of water and stones as well as because it was somewhat closer to 'Dolphin' and was a compromise between the length of walk-ins and general convenience. When the base camp was dismantled between the 31st of August and the 2nd of September it had become clear that the ice around it had melted and sunk by between 30-50cm, leaving a raised platform where the tents had stood.

Weather

"Weather in the mountains can change quickly," is an adage that we had all heard and were familiar with. However, in the Kokshaal-Too the weather changes with surprising speed even for a seasoned mountaineer. Wind direction can reverse several times in one day, with one notable incident where a snowstorm passed over the base camp heading north as it dropped its contents. Shortly after sunshine was restored, the winds changed and the clouds were driven back over the base camp, dropping more snow. A cloudless sky here does not mean that it will not be raining throughout the range half an hour later. This is likely a consequence of the frontier nature of the ridge.

The weather during the first half of the expedition was markedly worse than that in the second. Between the 11th and 24th of August poor weather with frequent downpours, snow, hail and thunderstorms predominated. This was characterised by either whole days of poor weather, punctuated by thunderstorms or days that started with sunny mornings and deteriorated by noon into positively Scottish conditions. Roughly speaking there were 3 days of good climbing weather (out of 9) between the establishment of base camp on the 16th of August and the 24th of August with an additional two days of poor weather between the 11th and 15th of August. Conversely between the 25th of August and the 4th of September (11 days) we encountered no full days of bad weather and three days with late afternoon storms. Both daytime and night time temperatures appeared lower during this second half of the expedition. On the 1st, 2nd and 3rd of September a haze was observed over the mountains. On a couple of occasions it decreased the visibility to below 2km. This cleared after the storm on the evening of the 3rd of September.



Bad weather building over Uighur, one of the Valley's main Lightning Rods (R. Kernan)

Due to the high altitude, temperatures were relatively low. Even on a relatively windless day off the glacier they stayed below around 25°C. Wind chill and clouds generally made wearing a t-shirt uncomfortable if not moving. On the glacier itself, apart from a few exceptional days, temperatures generally hung near or below zero, even though the large glacial stream never fully froze over. Temperatures were comparable to Alpine temperatures 800m lower.

Conditions

Climbing conditions were highly variable - occasionally hot enough to climb in base layers and sometimes, early in the morning in shadowed couloirs, cold enough to climb in down jackets. Usually, however, intermediate conditions were met by the climbing parties. Snow conditions were also variable. Unlike usual summer alpine snow which is very homogeneous and tends to harden with depth, or Scottish snow which contains distinct layers but is usually damp in all the right ways for these layers to stick together, the snow we encountered in Kokshaal-Too generally had a well frozen crust between 2cm and 10cm thick and a layer of gradually hardening ball bearings which gradually turned to a solid layer of ice with depth. This layer of poor snow could be anywhere from 5cm to 2m in depth. While slab avalanches are improbable if the crust is thin enough, the thick layer of poorly bonded snow is not only dangerous in and of itself but can also be exceedingly irritating and time consuming to negotiate or be completely impassible on steep slopes.

These conditions caused a retreat on more than one occasion, including Conor and Rónán's attempt on the east ridge of Uighur. Exceptions to this layering rule included the ascent of the 1st Gully (Lun'noye Rebro), where the bitter cold had forged a solid neve on ice and the Sparrow route (Ledenaya Stre'coza) where close to Alpine conditions were encountered. As Alek later found out from Yuri Komissarov (nephew of V. Komissarov), this kind of snow is typical of Tien Shan and the local way of dealing it is to grin and bare it. Additionally it is said that snow shoes are of little help as the crust will probably collapse even when they are used. There was no real way of combating poor snow other than trying to start early, chose cold, icy looking lines and hope for the best.

Conditions on the glacier itself varied greatly. Dzhirragaktu is a largely dry glacier with very few crevasses on the main body of the glacier. Depending on the weather conditions, the glacier could be covered in neve, a thin layer or on one memorable occasion, a very thin crust of good snow over one metre of soft slush (making for horrible conditions underfoot).

Rock was mostly soft, chossy and of low quality, and occasionally exceptionally poor and crumbly material was encountered. Care was required when negotiating rocky sections of routes. Holds and gear placements had to be tested thoroughly before being weighted. All climbing parties had some hairy moments; Conor and Rónán had a narrow escape on their ascent of the Uighur when a block Rónán was belaying from detached and flew down the face of the mountain when Conor reached it and pulled on the sling around it. A fairly large flake that Alek had used as a pivotal axe-hook fell away moments after it was unweighted on the West ridge of Ledenaya Stre'coza (Ice Dragonfly). The only [dubious] upside of the rock here is that it doesn't blunt one's tools and crampons quite as much as good, hard Chamonix granite. For this reason we



Avalanche Conditions on Night Butterfly: Distinct layers visible in the snowpack. (R. Kernan)

generally avoided rock or tried to climb it in the morning when it was soundly cemented by ice.

Ice was variable, but usually good in the morning. Occasionally hard, brittle (continental icefall style) ice was encountered (and was a pleasure to climb). On Kucyk, some extremely hard glacier ice which rejected even sharp axes and crampons and had to be dry-tooled was found. On 'Tramadol and Fingertape' a certain quantity of rotten ice was climbed, and much to the distress of the climbers, subsequently abseiled. Many routes would have a plethora of ice types and qualities along their lengths, from hard, brittle ice through to plastic joy and thin fragile ice with a gap between it and the rock.

Throughout the day, conditions very much follow an Alpine pattern, starting off good and frozen in the wee hours and deteriorating rapidly as soon as the sunlight hits the snow. Given that the Kokshaal-Too is on the same latitude as Madrid and the altitude is a little higher than in most Alpine areas, the sunlight is somewhat - but not very much - stronger than in the Alps and with the temperatures being similar, snow and ice are affected by the sun more quickly. This makes routes that catch the sun in the morning troublesome and necessitates topping out soon after dawn. Alternatively one should go counter to normal Alpine traditions and climb such routes on cloudy days or more sensibly stick to dark couloirs.

Medical report

Every member of the expedition carried a personal first aid kit in addition to having access to a Base Camp First Aid kit which, as expected, stayed at base-camp. In addition, measures (some of them were more common sense than medical) of various effectiveness were taken in order to prevent death, suffering, debilitation and loss of climbing days the following predictable deleterious conditions:

- 1) Altitude**
- 2) Conditions of the gastro-intestinal tract**
- 3) Respiratory conditions**
- 4) Other infections**
- 5) Malnutrition**
- 6) Environmental Injury (eg frostbite)**
- 7) Physical Trauma**

1) While this was not an extremely high altitude expedition, such as the ones to central Tien Shan, Pamir or the Himalayas, it was nevertheless a very high altitude expedition. More importantly, with the base camp itself at 4200m (exactly) there is nowhere within a day's travel of the base camp (by foot) at an altitude lower than around 3700m. At these altitudes, atmospheric oxygen content is around 61-65% of that found at sea level. As such, if a member of the expedition was to develop altitude sickness, immediate evacuation to a significantly lower altitude is physically impossible. For this reason acetazolamide and dexamethasone tablets were included in the base camp first aid kit. Climbers were also encouraged to carry dexamethasone on routes, even though here evacuation to a lower altitude (aka base camp) may have been feasible under auspicious circumstances. Prochlorperazine (Stemtil and Buccastem), an anti emetic which also boosts ventilation, was also carried. Most members of the expeditions 'felt' the altitude to some extent, however, there were no serious disturbances beyond shortness of breath and headaches and occasional nausea. Ronan took 250mg acetazolamide in the morning and the evening on the second day of the walk in. Azwan was given prochlorperazine on the 29th when it was discovered that he had been haunted by nausea for most of the expedition. Vladimir took a three day course of acetazolamide before flying out to induce artificial acclimatisation as he anticipated the rest of the party would pre-acclimatise in Al-Archa.

2) Gastro-intestinal problems account for over half of the medical problems on expeditions. This is good enough cause to come prepared. Individuals took mixtures of rehydration salts such as Dioralyte. More importantly, the first aid kit was well stocked with antibiotics to counter both bacterial (ciprofloxacin, clarithromycin and doxycyline) and parasitic infections (doxycyline and metranidazole). There were three occasions of food poisoning and two occasions of gastro-intestinal infection during the expedition. Alek caught what was suspected to be Salmonella the evening before leaving Bishkek for Kokshaal-Too. Bradley experienced a bout of traveller's diarrhoea on the road. Both were treated with twice daily ciprofloxacin (Bradley 2 days, Alek 5 days). Azwan experienced loose frequent stools for a day following excessive consumption of apricots. Alek experienced two separate events of a digestive system purging itself on the 1st and 3rd of September. No treatment was proposed on those occasions.

3) During high altitude expeditions and those to cold places, inhalation of cold, dry air causes irritation of the airways which leads to a characteristic 'high altitude cough'. In and of itself this is merely a nuisance, however, it also increases the probability of infection of the airways. Wearing a scarf, buff or muffler is often of little help as it obstructs breathing and is removed by the wearer as the greater of two evils (suffocation vs sore throat). The only expedition member effected by this was Alek, with symptoms of coughing on exertion and abnormally decreased performance. Sputum checks (yellow/green) revealed a possibility of secondary infection (as well as excluding HAPE) and it was treated aggressively with a ten day course of co-amoxiclav and doxycycline. While this cleared the sputum relatively quickly, it did not prevent the cough, which did not clear up until returning to Bishkek. In addition, we kept an eye on Conor, who is mildly allergic to nuts, but he managed to not eat anything that would kill him.

4) The immune system is known to be weakened at high altitude, as such it is advisable to remain vigilant for opportunistic infections. A range of antibiotics as well as antiseptic was carried. A certain level of hygiene was observed (we used soap!). Luckily no other infections were noted by expedition members.

5) Malnutrition can be both a factor of altitude which suppresses hunger and poorly planned expedition diet and along with altitude and cold is something of a 'death triangle'. We believe that the diet we devised for expedition members contained around 3500-4500Kcal per day, and given the high number of rest days should not have caused calorific insufficiency. Expedition members were also encouraged to take vitamin tablets to compensate for low intake of fruit and vegetables. In addition the dried squash drank by all expedition members contained a small quantity of vitamin C. Since altitude also reduces the effectiveness of the digestive system, the extent to which nutrients were absorbed is questionable. There is, however, no way of doing anything about that other than cooking food and chewing it thoroughly, which once again, probably doesn't help much if the rest of the digestive system is not functioning properly. Since non of the members (apart from Bradley...) lost significant amounts of weight, we suspect that malnutrition did not occur (apart from Bradley, whose lankiness is fuelled by a hummingbird's metabolism).

6) On the higher mountains of the region, frostbite is almost inevitable for the incautious, here however it was mostly avoidable with adequate clothing. Bradley and Conor experienced minor frostnip of the big toes, this however was claimed to be a common phenomenon with these two and cleared up of its own accord. Sunburn is the other serious problem on high altitude glaciated terrain, especially for the Irish. Expedition members were encouraged to wear sun cream on exposed areas, but often forgot during alpine starts. No serious incidents of sunburn occurred. Snow blindness was prevented by wearing sunglasses on the glacier.



Rónán's heel (A. Zholobenko)

7) Physical trauma can range from having one's head crushed by a rock to a scratch. As such the expedition took an accordingly wide range of items to treat injury, a wide range of dressings, bandages, plasters, finger-tape, analgesics and antiseptics. There were

no serious injuries on the expeditions. Unreported scratches aside, there was one large blister on Rónán's heel, which was dressed and finger-taped. In addition, Alek somehow cut his finger (nail and all) on a stuff-sac and was finger-taped. In addition by a combination of poor fitting boot, excessively hard kicking when front pointing and cold induced analgesia, bruising was discovered on Alek's toes (predominantly under the toe nails) upon descent from Nochnoi Motyl. This was treated with antiseptic to prevent possible infection around toenails and three days of rest. No loss of feeling or lasting effects were observed.

Discussion



Panorama from Rock Horse looking west. (L to R) Uighur (4979m), Peak Krakow (4841m), Nochnoi Motyl (Night Butterfly, 5065m), Ledenaya Stre'coza (4892m), Akbaital-Pt Blindness (4970m), Akbaital (4981m) and Akbaital Vostok (4743m). Kucyk (Pony, 4705m) is visible in the lower right foreground (V. Zholobenko)

Eleven routes were climbed by the six members of the QUBMC 2012 expeditions and about five more were attempted. Of the routes climbed ten were new routes and one was a variation. Two were first ascents of prominent summits and three were first ascents of high points of dubious prominence. Additionally the first Irish ascent of Skalny Kon (Rock Horse) and the first British ascent of Nochnoi Motyl (Night Butterfly) were accomplished during this expedition. As such our expedition built on the foundation built by the Polish 2010 expedition to Dzhirbagaktu and the 2002 ISM expedition to Akbaital. Of the routes climbed, two were graded around TD, five around D, and another five between AD and PD. This represents a respectable spread, demonstrating that routes which may be climbed in alpine style of almost all difficulties can be found in the Dzhirbagaktu basin.

Opinion is divided as to whether the expedition should have been longer, shorter, or whether it was just right. What everyone can agree on, however, is that the amount of time and effort that went into organising the expedition and carrying supplies and equipment into base camp compared to the amount of time spent climbing there is a certain inefficiency associated with the expedition. However, once it is taken into account that it is an integral experience of living in a remote mountain environment and climbing rarely climbed peaks by new lines that we came here for, it instantly becomes worthwhile and adds to both the development of the mountain and our own growth as mountaineers.

In many ways, as much as we are hesitant to blow our own trumpets, our expedition was near perfect. The drive in and out went without a hitch (apart from the Ural getting stuck at the dropoff point for 3 days, but this had no real impact on us). The supplies and equipment were adequate and often more than adequate without being excessive. On occasions when the weather was good enough to climb, routes were climbed. Moreover, flying in and out by helicopter would probably not have given us additional useful climbing days, as without the extra acclimatisation built up on the days of gradually driving up and shifting loads to base camp, the first few days on the glacier would have been quite an

ordeal. Only half the 200m of 6mm cord brought was used and the snow stakes, deadmen and much of the rock gear were not used but could have quite easily been useful. The two lightweight stoves were rarely used, as were the two lightweight tents (mostly on the approach and descent).

In retrospect it would have been nice to shift the expedition autumn-wards by two weeks, to increase the chance of good weather, but that would have been impossible. Possibly the only thing that would have been worth changing would have been the supplies. It would be worth salting the meat for the drive in and replacing some of the weight in sweets and dried fruit (which went largely uneaten) with cheese and other savoury products. Additionally, in future it may be a worthwhile and rewarding tactic to reduce the amount of gear and unnecessary items (such as paper copies of books), stash food for the walk out and contingency rations at the half way point (to save carrying it in to the base camp) and hence go as light as possible. This strategy could perhaps save a day of load carrying, or it could just compromise the expedition.

While there are many routes yet to be climbed in this basin, we would hesitate to recommend this particular glacier to future expeditions due to the dearth of particularly hard routes that experienced mountaineers may be drawn to and the fact that the most obvious and aesthetic lines have been climbed. There are three or four exceptions to this:

Firstly, the directissima on the north face of Nochnoi Motyl (Night Butterfly). While this aesthetic line is probably not very difficult technically the 'White Moth' Icefall (well guarded by seracs) would be an objective delight for any mountaineer who is tired of living.

Secondly, both direct routes up the north west face (the Poles climbed an indirect line) and overhanging south west wall of Raven Peak remain to be climbed and would probably present challenges at least at TD+.

Thirdly the north face of Lun'noye Rebro (Moonlight Arete) has dozens of quality looking mixed lines, though many of these are probably not harder than Scottish V and hence not necessarily interesting to the experienced mountaineer. There are a number of challenging looking couloirs on the Chinese side of the ridge also, rising up from near the Uighur Col.

Fourthly, the North-West Face of Skalny Kon (Rock Horse) presents several options, some variations on the Gilmour-Kernan route (including an excellent looking steep and narrow icefall that might go at about Scottish V) as well as more independent lines adjacent to it (although topping out farther from the summit).

Finally, the West face of the 'Monolith', a summit which has yet to be climbed (and made of sound granite), we suspect, rising from around 4900m to 5600m looks like it will present a significant challenge for those disposed of big rock routes and hard mixed lines, with a wall greater than a kilometre high rising up from China. Likewise the adjacent Pk 5632m (climbed by the Kazakh expedition in 1985 by its North Ridge) still presents many possibilities from the Dzhirnagaktu side.

Beyond modern Alpinism, this area would be of interest to ski mountaineers and more so to extreme skiers, as the steep snow/ice faces are of the right angle (45-70°) for challenging descents and would probably be in excellent conditions in the winter. As it

stands, however, the road to the area becomes impassible in late October, and the glacier would be accessible only by helicopter.



Peak 5632m and the 'Monolith', with the large wall on the Chinese side clearly visible. The Monolith is composed of sound granite and has huge potential (A. Zholobenko)

On Kyrgyzstan, the ITMC and Everything Else

The purpose of this short section is to inform the reader of the state of affairs in the country at the time of writing and inform any mountaineer who asks himself "what kind of country am I actually visiting?". The insight we can provide is somewhat shallow and superficial due to the nature of our own visit. We do, however, hope that it will be of some use.



Bishkek, road-boulevard intersection.. (A. Isa)

Firstly, Kyrgyzstan is a country that is in the process of rapid development and as a result has a face that will continue to change rapidly over the coming years. It is a beautiful country, which due to a number of factors has several contradictory faces. We found that our experience in the country was very much positive. The Bishkek (Manas) airport is small and fairly basic, but clean and well served by reliable taxis (ran by Manas taxis). Bishkek itself, an old settlement, only became a major city in Soviet times and as such even now, with its grid layout, squares,

Soviet apartment blocks and wide boulevards has a strangely Soviet feel about it. At the same time, it has been over twenty years since Kyrgyzstan became an independent country and the city is a case of East meets West meets Soviet meets everything else. The wide streets tend to have wide, tree lined side walks, which is very welcome as in August temperatures rise quite easily to over 30°C during the day. There are numerous fast food joints and restaurants, of western standards with prices being between 2-5 times lower. Interestingly, prices in supermarkets and the bazaar are often similar or only slightly cheaper than in the west, with the exception of meat, bread and locally produced fruit where the same factor of 2-5 applied. Other than being stopped and searched by the police at Osh Bazaar, in a rather friendly manner, we had no problems of any kind and generally felt safe. However, we are told that 'property crime' is quite widespread and the ITMC employed a night-guard for their office for the purpose of preventing it. The city does seem to have a 24-hour economy, probably fuelled by demand on one end and low wages on the other, though due to its small sizes we found it to be fairly calm at all hours.

Most of the supplies were purchased either in small supermarkets that were quite prevalent or in Osh Bazaar, which was significantly cheaper for certain products, but perhaps not as handy when you need 20kg of chocolate. Whether the small supermarkets will be replaced by large ones as the country's economy matures, or whether the economic niche is already filled by the bazaar is anyone's guess. One place we didn't check out was Dordoi Bazaar which supplies goods on a large scale to businesses. Large expeditions may wish to explore here. Despite what we were told by past expeditions to the country, we had no problems exchanging dollars, sterling or euros of most denominations and while we never tried to exchange truly mangy notes, we never experienced a "quality of product" dependant rate, with one exception being an exchange where Bradley wanted to exchanged \$20 and was offered a rather poor rate. This case was unique.

Roads throughout the country are fairly dreadful, with the exception of the ones around Bishkek and the trade routes, which are currently been asphalted (mainly by the Chinese). Public transport around Bishkek is effective, with both frequent minibuses and old Soviet (as well as some new) trolleybuses. It is also fairly unnecessary for a visiting mountaineer as due to the size of the city it is handy enough to walk. Public transport between cities exists, but from what we're told tends to run more on the basis of demand rather than on a strict schedule.

Accommodation before and after the expedition and transport within the country was arranged through the ITMC. The level of the services and the support obtained were very satisfactory. Accommodation was in fairly basic, old Soviet apartments (but with hot water, ovens and cable TV). As the expedition consisted of hobos and



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Sasha explains the route. (B. Morrell)

students in almost equal portions, we requested an apartment for four on both occasions, which naturally is smaller than ideal for six, but at €35 per night was satisfactory. None of the transport had any breakdowns (apart from the burst tire on the minibus, but that's more of a routine occurrence than an actual breakdown) and all pick-ups and drop-offs occurred on time (or even ahead of schedule). The vehicles were not necessarily the same as originally specified for the expedition (Ural and GAZ instead of GAZ and UAZ), they were however always more than adequate for the task in hand. For this we have to take our hats off for Margarita's organisational skills and Sasha's reliability and experience as a driver.

Cartography

The expedition took old Soviet topographic maps (1:50000), the AAC map (1:150000) and a google maps terrain print off. Non of the maps was entirely adequate, missing out small and occasionally quite large topographical features. The AAC map had too small a scale to be of particular use and missed out numerous summits (the three summits in the 5632 cluster and Raven are simply marked as a single summit). In addition, a large area of glaciation on the Chinese side was marked simply as a scree covered valley. The Soviet maps were difficult to interpret due to the way they were drawn, and when triangulation was attempted, never put the party where it should have been, though with the distances involved, it could well be instrumental error on our part (our compasses were lightly put, not very sophisticated). In addition minor summits were occasionally omitted (mainly on the ridge between Uighur and Lun'noe and between Stre'coza and Motyl), though the heights were generally within the error range of those measured by our GPS. The Google Maps printouts were easy to use and generally detailed, although once again, some summits were omitted (like Blindness) and some heights different to measured heights and it is agreed that if Google took over the world and were to start producing topographic maps of remote areas this would only be in the mountaineer's favour.

Appendices



Obligatory Team photo. (B. Morrell)



Into China (A. Zholobenko)

Timeline

Date	Events
31.07	Alek arrives in Bishkek and goes to Al-Archa
01.08	Alek Climbs Uchitel.
02.08	Alek does trekking
03.08	Alek does trekking
04.08	Alek Returns to Bishkek.
05.08	Azwan, Bradley, Conor and Ronan arrive in Bishkek
06.08	Shopping
07.08	Shopping
08.08	Shopping
09.08	Vladmir Arrives in Bishkek. Travel by road past Naryn.
10.08	Arrival at Kara-Sai. First attempt at river crossing.
11.08	Successful crossing of Kara-Sai. Arrival at drop-off point. Truck becomes stuck in the mud. Start of load carrying.
12.08	Load carrying - Rónán and Bradley make first forays toward glacier
13.08	Bad weather - tentbound. Alek carries one load to Dolphin Boulder. Truck freed and returns to Bishkek.
14.08	Load Carrying. Location for base camp chosen and small tent pitched.
15.08	Base camp established
16.08	Azwan, Bradley, Conor and Ronan scout routes. Establishing of base camp completed.
17.08	Alek, Azwan, and Bradley attempt Ledenaia Stre'coza. Conor and Ronan attempt Uighur.
18.08	Rest.
19.08	Bad Weather.
20.08	Alek, Azwan, Bradley and Vladimir attempt Ledenaya Stre'coza. Route completed but summit not scored. Conor and Ronan attempt Lun'noye Rebroye. Route complete but summit not scored.
21.08	Alek and Vladimir put up new route on Kucyk.
22.08	Rest/Bad Weather
23.08	Bad Weather
24.08	Alek and Vladimir put up a new route on Peak Ak-Baital
25.08	Rest/Bad weather.
26.08	Conor and Ronan climb Uighur. Alek and Vladimir climb Ledenaya Strekoza.
27.08	Rest.
28.08	Alek and Bradley climb north face of Nochnoi Motyl. Vladimir and Azwan climb Kazalnitsa.
29.08	Rest
30.08	Azwan, Conor, Ronan and Vladimir climb Skalny Kon. Alek and Bradley lick their wounds.
31.08	Rest. Conor and Ronan descend to Dolphin Boulder.
01.09	Alek and Azwan climb high point of Lun'noye Rebroye. Bradley descends to Dolphin Boulder. Conro and Rónán establish rendezvous point.
02.09	Alek, Azwan and Vladimir descend to Dolphin.
03.09	Rest/ Load carrying

04.09	Final descent to rendezvous point. Travel by road towards Naryn
05.09	Travel to Bishkek
06.09	Lounging in Bishkek
07.09	Azwan, Bradley and Vladimir head to Al-Archa for a day.
08.09	Lounging in Bishkek
09.09	Azwan, Bradley, Conor, Ronan and Vladimir fly home.
10.09	Alek flies home.

Routes

Routes climbed by the expedition have been given standard Alpine grades as expedition members are most familiar with that system. Where appropriate British trad grades have been given for rock sections and Scottish grades for mixed sections. In some cases Damilano grades have been used where the climbers ascending the route were familiar with them.

Ledenaya Stre'coza) (Ice Dragonfly)(Peak 4892, measured at 4888m +-16m)

FA Alek and Vladimir Zholobenko 26.08.2012

A Prominent peak (with about 200m of prominence) at the head of the western branch of the Dzhiragaktu glacier which presents a broad face and long summit crest. This peak is not particularly prominent, tall or interesting for the serious mountaineer (probably no routes harder than TD-), however, it does hold a topographically important position.

West Ridge of Ledenaya Stre'coza (Ice Dragonfly) (Butterflies and Hurricanes) D- or III D

Bradley Morrell, Vladimir Zholobenko, Alek Zholobenko, Azwan Isa, 20.08.2012

Approach: This short but worthwhile ridge is approached by a long and generally arduous glacier approach (depending on snow conditions) up the West branch of the Dzhiragaktu Glacier, gaining the col at 4665m, which we dubbed Col Dzhiragaktu Rising Sun as it gets the sun early in the morning and remains in the sun for most of the day. This 6km approaches generally takes 1.5-2 hours from base camp.

Route: Follow descend from the col a few meters to pass under a small cornice and by loose, easy rock gain a steepening snow slope (up to 50°) which continues for around 80m. Continue via rightwards rising traverse through mixed ground (Sc II) to a small shoulder (30m). Overcome a short rock step on the Kyrgyz side (Sc III) followed by a 60° chimney (30m). From here follow a snow crest and mixed slope under the crest of the ridge to just under a snowy shoulder. Traverse onto the north face on snow and mixed (around 60m of Sc II/III) until a snow/ice chimney leading to final rise of the ridge is attained. Climb this (30m Sc III/IV) till mixed ground on the ridge is reached. Climb the ridge (~V.Diff) until the north west end of the summit snow crest is reached. It is a further 150 horizontal and 15 vertical meters to the summit from the end of technical difficulties. 5 hours on first ascent.

Variant: Upon reaching the snowy shoulder, parties that relish poor rock may avoid the traverse by following the crest of the ridge to the very summit which includes an amusing chimney to surmount a gendarme. This means that Sc III/IV is substituted for chossy HS.

Descent: A serious series of 5 awkward abseils down the ridge, a traverse and a down-climb. Fast parties may be able to abseil the north face. 250m. Leave at least 3 hours for the descent.

North Flank and East Ridge of Iedenaya Stre'coza (Ice Dragonfly) (Sparrow Route) AD or (Da; III AD)

Alek and Vladimir Zholobenko 26.08.2012

Approach: The first half of the approach is identical as for the west ridge, following the west branch of the Dzhiragaktu glacier. Instead of gaining the col, the party should aim itself straight the summit of the mountain. Approximately 1h-1h30.

Route: This rectilinear route is a rightward rising traverse that takes a fairly safe line between a large serac on the left and an even larger bergshrund on the right. Climb the gradually steepening snow slope of around 50° until the east ridge is gained before the final rock step. This 25m step may be either circumvented by a mixed step of around Sc III on the right or climbed directly at HS. From here it is a further thirty horizontal meters or so to the summit. The first ascent party was beaten to the summit by a small bird. 400m. 4h on first ascent.

Descent: One 25m abseil down the final rock step followed by a long down-climb. Some parties may find it more sporting to walk down the route. 2 hours on descent.

Kucyk (Pony) (4705m/4720m)

FA Polish Expedition 2010

A fairly low west facing spur of Skalni Kon rises to a prominent point which was first climbed during the Polish expedition of 2010 by Owerko and Picheta. The peak has an easy south flank and east ridge, with a very crumbly west face and a glaciated north face which presents the potential for a couple more routes. Overall, however, the potential on this mountain is not great.



(Topo by A. Zholobenko)

North Face, North West Ridge, West Face and West Ridge (Broken Pony), D-(Da: III D)

Alek and Vladimir Zholobenko 21.08.2012

Approach: Walk towards the north face of Pony, crossing a stream and a small moraine field. 15 minutes should see you at the base of the route.

Route: Follow a leftwards rising traverse under a series of rock buttresses on gradually steepening snow crossed by ice runnels (20° steepening to 60°). Danger of rockfall. This is followed by a pitch of excellent ice that rises between seracs and poor rock (70°-80° for 45m). Continue upwards along similarly angled snow until a large crevasse is reached. Poor snow conditions and the bullet-hard nature of the underlying ice may make this and the next pitch infeasible. From here traverse right until a snow arête is attained (50m, ~60°). Either follow this to the west summit or, in poor conditions, traverse onto the west face and follow 45° ice slopes capped by a Sc III mixed step to the cornice of the west summit. Either surmount this or traverse under it and continue to the true summit.

500m. 10h on first ascent due to poor snow. In good conditions should not take longer than 5h.

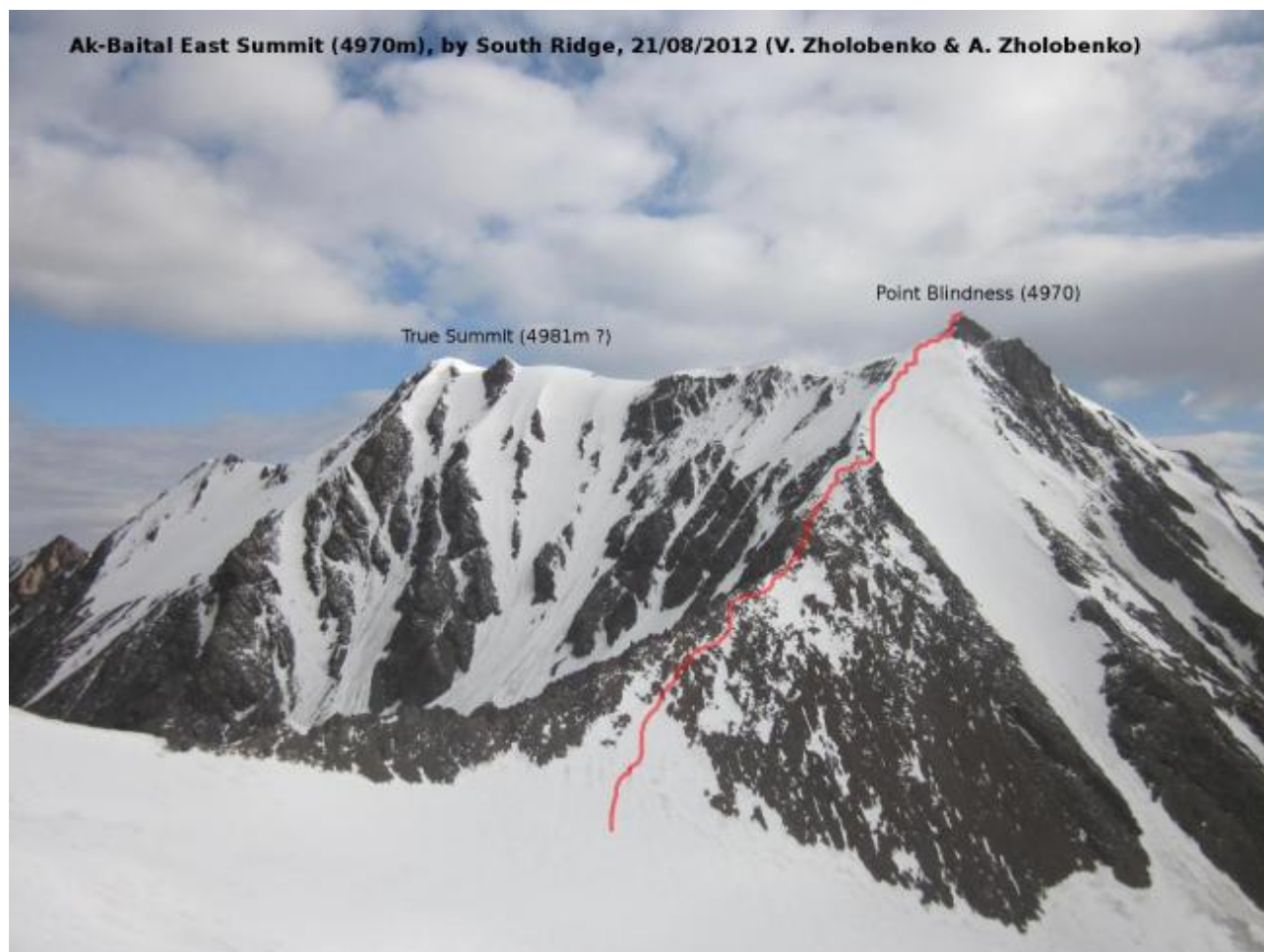
Descent: Down scree slopes and the side of the Bird Glacier ~F. 1h on descent.

Addendum: Under good or very lean snow conditions, the climb may be far more pleasant if a directissima is taken from the crevasse-belay.

Ak-Baital East Summit (Point Slepota (Blindness)) (4970m)

Alek and Vladimir Zholobenko 24.08.2012

Peak Ak-Baital which reigns supreme over the glacier of the same name possesses a long summit ridge capped by three summits. The true summit on the west end of the ridge has a nominal height of 4981m as measured by Soviet topographers over thirty years ago. The height of the eastern summit was not measured until it was climbed during our expedition. It is unknown whether this summit has sufficient prominence (50m) to be considered a separate mountain by the UIAA definition.



(Topo by A. Zholobenko)

South Ridge (PD+) (Da: II AD)

Alek and Vladimir Zholobenko 24.08.2012

Approach: As for the West Ridge of Ice Dragonfly, but head right before reaching the very col to slope up the ridge of Ak-Baital.

Route: Follow scree (~250m) and then ice and snow slopes (~150m, 50°) a few meters under the ridge (hence avoiding cornice collapse and rockfall of choss). Surmount a short scramble onto the summit block (~V.Diff). 2h on first ascent.

Descent: Reverse the route. 2 hours on descent.

Addendum: Due to Scottish weather and exceedingly poor visibility on the day of ascent, the objective of descending to the lowest point between west and east summit to determine prominence was not accomplished, however, it cannot be excluded that the two points on the ridge of Peak Ak-Baital may have the 50m necessary to class them as separate mountains.

Nochnoi Motyl (Night Butterfly)(5056m)

This is the prominent peak (at least 500m of prominence) with the imposing north face at the head of the glacier where it splits into the west and east branches. It was first climbed by the Poles in 2010 (Norwerki, Picheta, Rowna and Owerko).



(Topo by A. Zholobenko)

North Face Corridor (2012 route) TD/TD- (Da: V 1)

Bradley Morrell and Alek Zholobenko 28.08.2012

Approach: The party should walk in the general direction of the middle of the face that dominates the glacier, keeping the imposing serac fields on the left. Approximately 1 hour.

Route: The obvious line almost free of bergschrunds and seracs that rises up to the rock buttress just right of the summit. Follow snow slopes (350m) of various steepness (30-65°) and quality to the buttress, crossing the bergschrund at the least inconvenient point. Pass right of the buttress by a streak of excellent ice (230m, ~70°-80°). The streak forks into two gullies less than a rope length before topping out onto the ridge (9h on first ascent).. The party took the right gully (near vertical crux on thin ice when topping out) but notes that either one appears amenable. Continue to the summit via the west ridge (50m vertical, 250 horizontal). 10 hours on first ascent, though fit parties should be able to shave 2-3 hours off in good conditions.

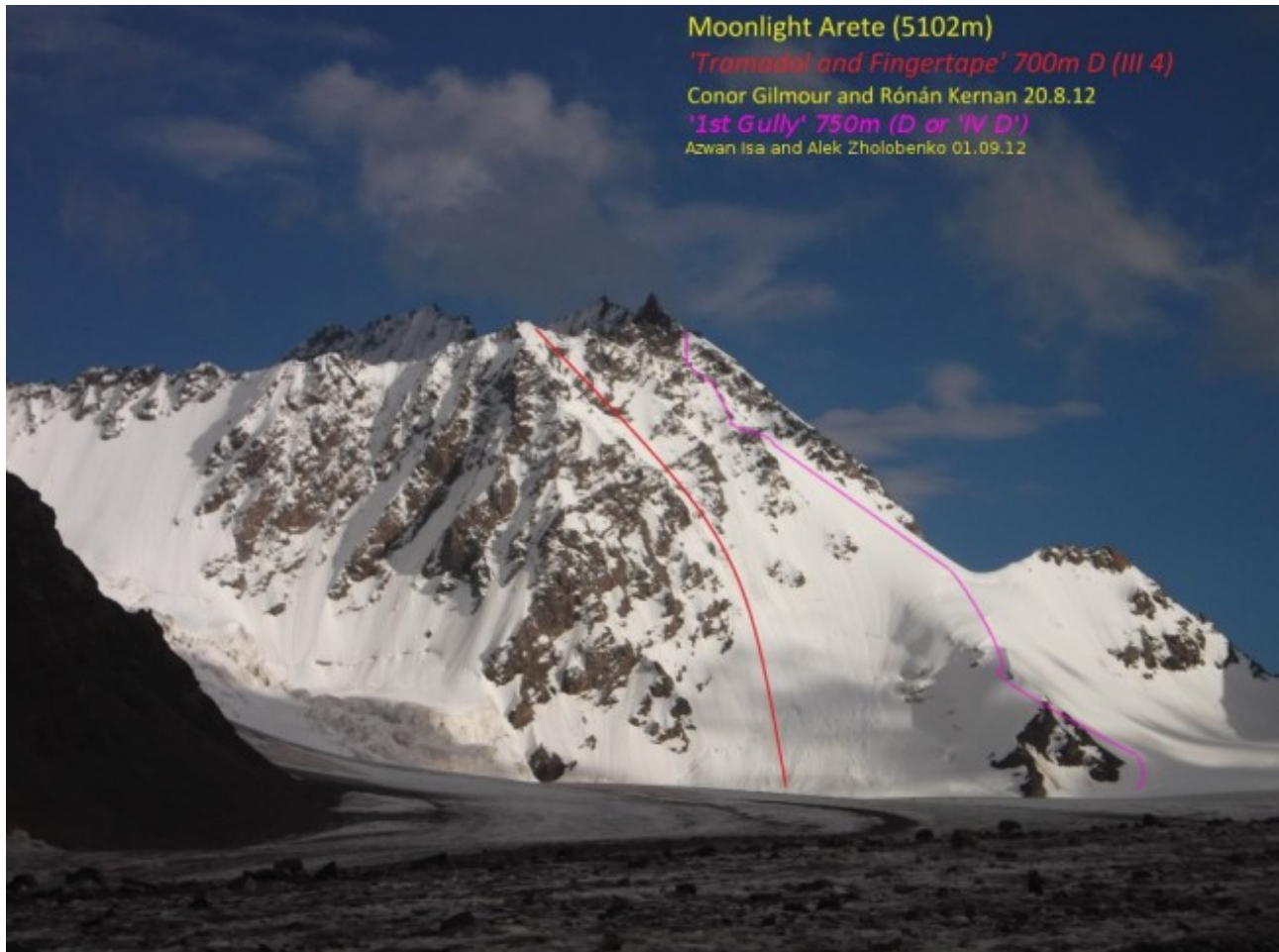
Descent: The party descended by down-climbing from the summit pyramid and abseiling down the south face (2-4 abseils). It may be easier to descend the west or south west ridge. 4 hours in descent.

Lun'noe Rebro (Moonlight Arete)

Point 5065, FA Conor Gilmour & Ronan Kernan 20.8.2012

Point 5120, FA Azwan Isa & Alek Zholobenko 01.09.2012

Marked on the map as a single peak at 5102m, this is actually a series of points on a ridge, the highest of which probably do not have the 50m prominence necessary to make it a mountain separate of the nameless 5200m peaks on the Chinese side of the ridge. Due to the rich variety of ice and mixed routes on this part of the ridge, its topographical importance as a branching point in the ridge and the fact that some over enthusiastic topographer marked it as a separate mountain we felt it was necessary to give this toothed ridge a name.



(Topo by R. Kernan)

1st Gully D (Da IV D)

Azwan Isa and Alek Zholobenko 01.09.2012

Approach: the party should head up the east branch of the Dzhirnagaktu glacier aiming just right of the triangular buttress between Uighur and Point 5102. 1h30.

Route: Climb snow slopes on the right of the buttress at around 30°, surmounting a steeper sections to gain a snow spur. Follow this to the col between 5102 and the small mountain between Uighur and 5102 that is not marked on any map (200m). From this take the first very wide, narrowing gully (250m), followed by a system of runnels, spurs gulleys and snow crests to the tri-point on the ridge at 5090m (120m, 50-75° snow/ice). 5h to this point on first ascent. From here follow the ridge south until a precarious crest of

poor rock is reached. This is the highest point on the ridge, excluding the significantly higher mountains on the Chinese side of the border. 7h on first ascent.

Descent: Scramble back down the ridge to a gap twenty meters short of the top out and abseil diagonally from a solid block onto the route. From there at least one more sixty meter abseil is necessary (and it is probably best to use a total of three sixty meter abseils) before a walk off back down the route becomes feasible. 4 hours on descent, though parties possessing an Abalakov threader may significantly cut down the time.



(R. Kernan)

Tramadol and Fingertape D (III 4) 700m

Conor Gilmour and Rónán Kernan, 20.8.2012

Approach: Approach along east branch of Dzhirnakaktu glacier, aiming 300m left of the triangular buttress between Uighur and Point 5102. 1h30.

Route: The line takes the first prominent right-to left couloir on the left hand side of the West-North-West face. Climb snow slopes just right of the large main broken buttress, rising to around 50° (300m). Icy sections lead to a small rock buttress in the middle of the start of the couloir proper (crux). This can be turned on the left through thick snow or climbed direct (short section of Scottish 4, ice, 15m). The couloir continues to the ridge (further 400m) at approximately 65-70° - keep close to the rocks on the left-hand side to avoid rockfall. The ridge is gained by a short chimney, coming out on the North-West corner of the ridge (pt 5065m).

On the first ascent the route was climbed in 11 pitches. (7 hours).

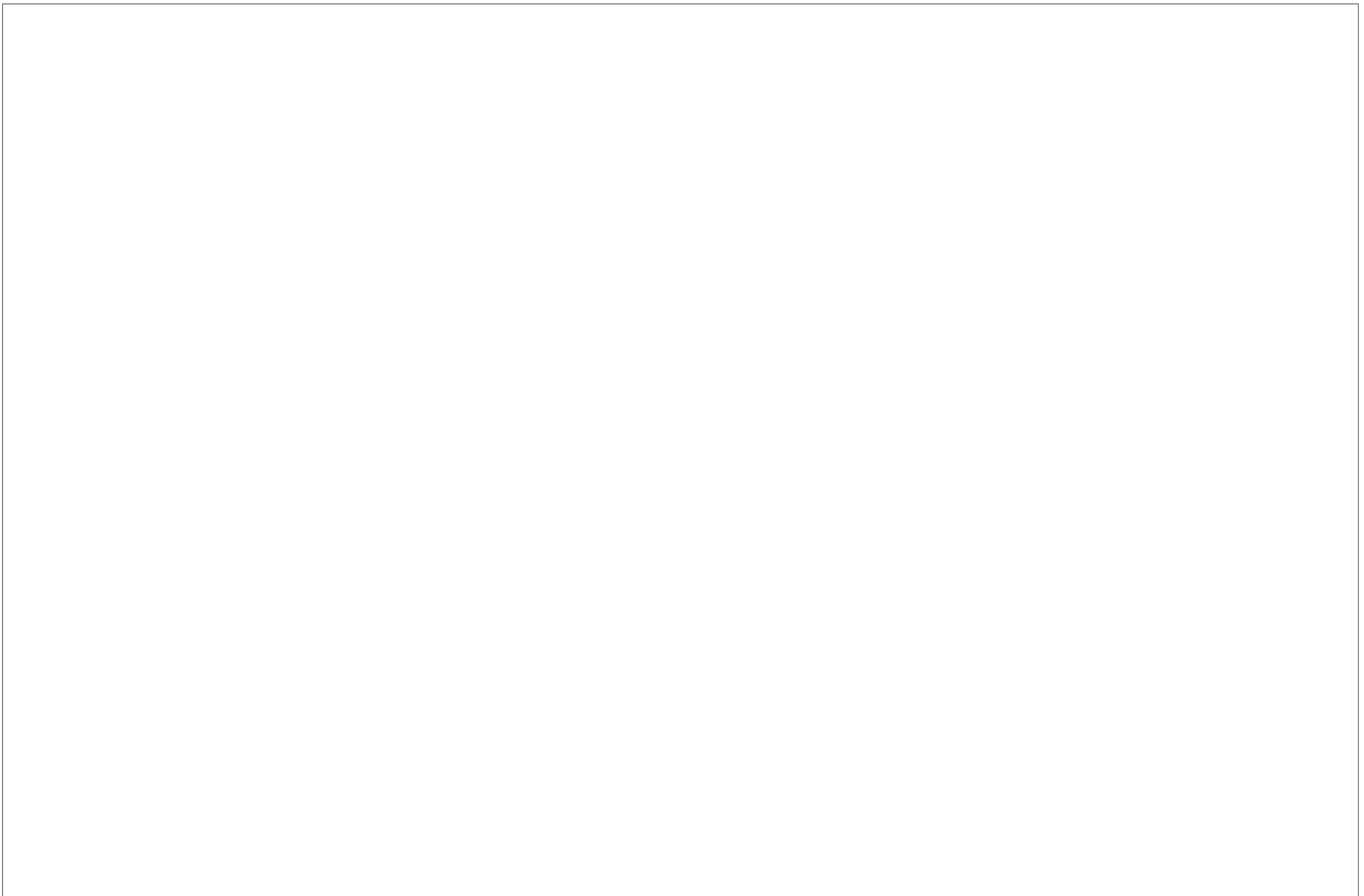
Descent: Descend down the line of the route by a series of Abalakovs (approximately 8 required with 60m abseils). Take care with rotten ice. The first abseil

may be taken from a large block atop the ridge. It is possible to walk back down to the glacier from the lower slopes. Allow 4 - 5 hours.

Uighur (4979m)

FA: Conor Gilmour and Rónán Kernan, 26.8.2012

The prominent peak on the border, visible to the west of Night Butterfly from further down the glacier.



(Photo courtesy of 2010 Polish Expedition)

North Face, West Ridge, East Ridge (Eagle Traverse) D 1100m

Conor Gilmour and Rónán Kernan, 26.8.2012

Approach: Walk north along glacier, passing under east flanks of Night Butterfly. Turn right and head towards the bottom of the west side of the North Face of Uighur, aiming for a vague snow couloir between the large rock buttress and the seracs on the face proper. 1h30m.

Route: Climb the couloir (60-65°, Scottish II) and snow slopes above to the large shoulder at 4800m. Walk along this (100m, flat) to a steepening of the ridge and a small buttress of broken rock. This is negotiated by means of an icy ramp leading to snow slopes above (III 2, thin ice over frozen loose rock). Turn the next buttress on the left (snow slope) and gain the ridge (corniced). Cross over to the Chinese side. Traverse under a couple of small rocky steps. Snow slopes lead to the dual summits. 3hrs on first ascent.

Descent: Descend by East ridge. Down-climb summit slopes and ridge (corniced) to a narrow rocky ridge of broken rock. Traverse this with care to reach a ramp of broken rock that leads to another levelling of the ridge. This rock is poor so an abseil may not be possible (not possible on FA). Downclimb with care, taking belays where possible. Near the snow ridge a short traverse on flakes is necessary (*hard to grade but comparable in difficulty to the Crux of Cosmiques Arete, Aiguille du Midi, Hte Savoie, France*). Cross the short snow ridge and gain a 6m step of broken rock. Surmount this (with care, again) to reach the easy angles snow slopes of the east ridge and North-East face. Follow these back down to the Uighur Col at 4630m. 2 hours.

Skalni Kon (Rock Horse) (5189m)

FA Kazak Expedition 1985

This peak is a prominent point on the longitudinally aligned ridge which rises up to peak 5632, first climbed *en passant* by the Kazak Kizil Askar expedition which in a tour de force climbed 5632 by this ridge and subsequently repeated as a separate point by the Polish expedition in 2010 (Norwecki and Picheta).



(Topo by R. Kernan)

North-West Face (Gilmour-Kernan Route) TD (IV 5) 800m

Conor Gilmour and Rónán Kernan, 30.8.2012

Approach: From the main glacier walk east up a spur glacier under the North flank of Pony. If at this point you can't see Rock Horse, you've either forgot your contact lenses or the weather requires you to go back to bed. 1hr10m.

Route: Ascend the lower flanks below the bergschrund at 4600m and climb the lower snowfield (55 - 65°, Scottish II) directly below the summit to large horizontal rocks at 4900m. (From here a number of options present themselves. On the first ascent, a large left to right couloir of ice was chosen) From the rock, climb gradually steepening couloir of ice for 80m (Scottish IV) to a steepening at an ice fall. Turn this on the right over a snow crest and continue diagonally rightwards, following up underneath a band of rock (Scottish IV). From here one pitch of Scottish III straight up leads to mixed ground. Climb this on its left hand flank, adjacent to a buttress, taking care with poor ice and rock (Scottish IV/V, conditions dependent). At the top of this a short 10m pitch leads to the cornice,

which is easiest to bellyflop over at a point about 10m further right. 100m from this point to the summit along the West ridge. 6h15m.

Descent: Decamp via West ridge/Southwest flank (max 50°) to glacier between Pony and Raven Peak (moderately crevassed). From here descend to main glacier. 1h30m from summit to base camp at 4200m.

South West Flank and West Ridge AD 800m

Azwan Isa and Vladimir Zholobenko 30.08.2012



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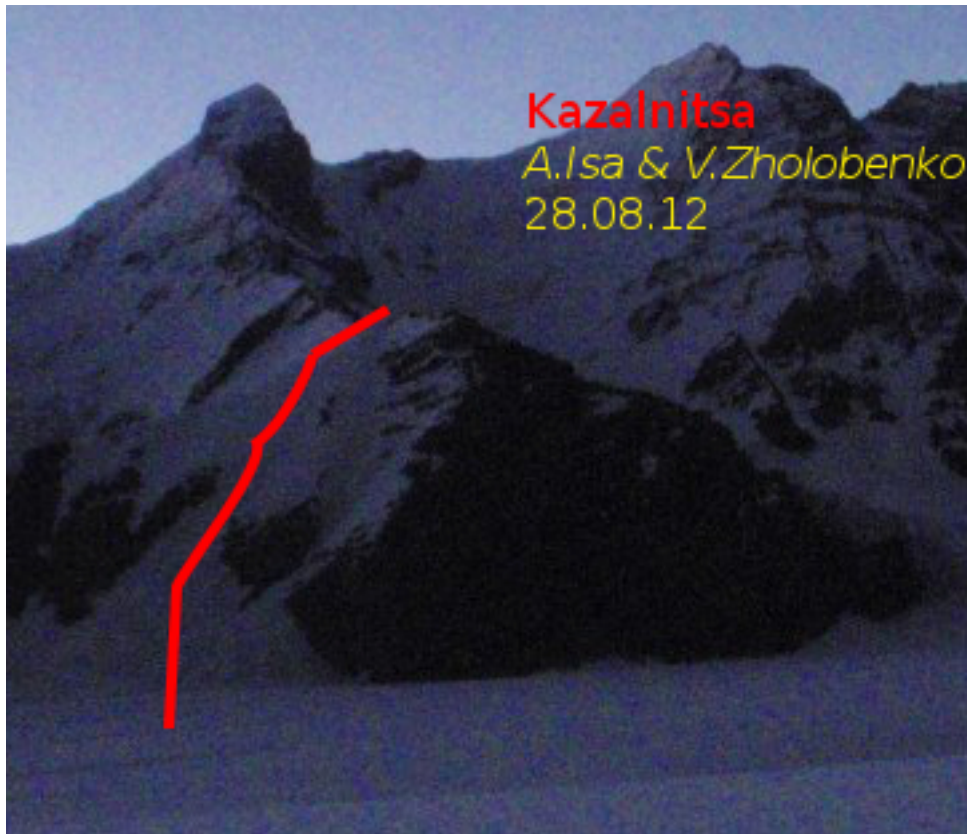
Kazalnitsa (4786m)

FA: Poles. 2010

This is a non prominent point on the west ridge of Raven which nevertheless has the potential for a few short lines.

West Flank PD

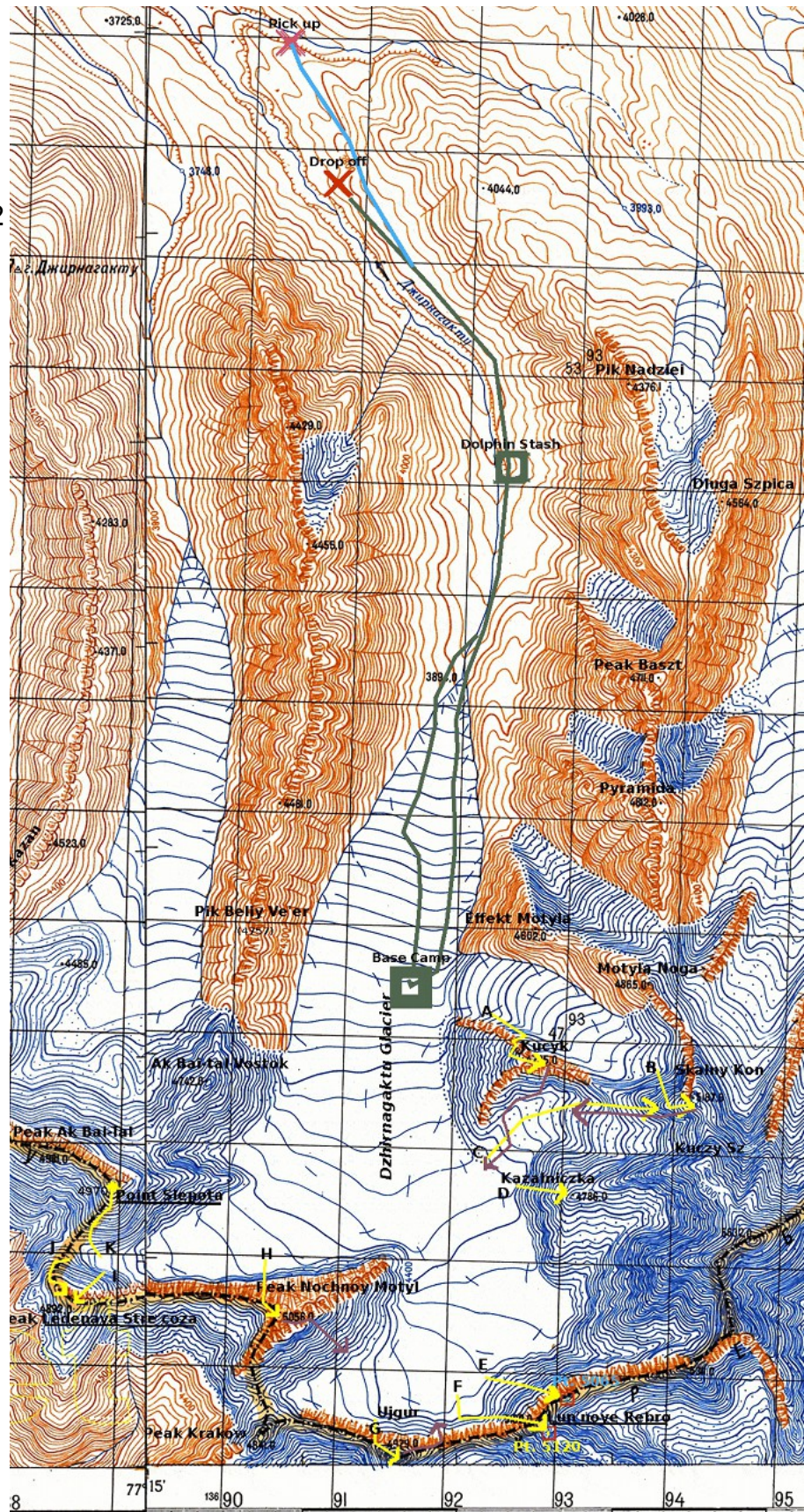
Azwan Isa and Vladimir Zholobenko. 28.08.2012



Map Index (New names, new lines)

Key:

- Grey Green: Walk in.
- Blue: Walk out.
- Yellow: Ascent Route.
- Purple: Descent Route.
- Underlined: QUBMC-2012 first Ascents.
- Grey/Green box: Camps
- Purple Box: Lun'noye 'summits'.



Provisions Index

Item	Total	Consumers	Days eaten	Mean PPD	Notes
Pasta	6kg	6	5	100g	
Smash	3kg	6	10	50g	
Noodles	3kg	6	5	100g	
Cous Cous	6kg	6	10	100g	Semolina
Dried/Cured Meat	18kg	6	21	150g	
Hunter's Sausage	3kg	6	4	150g	
Fish	15kg	10	5+1*	1 tin	*Azwan: Fish every day.
Stock cubes	1.1kg	6	30	0.5 cubes	120 cubes
Sauce packets	30	6	30	0.2	
Spices	~200g	6	30	~1g	
Cheese	13kg	6	30	75g	
Dried Milk	12kg	6	30	80g*	100g, Conor 20g
Oats	6.5kg	5	23	75g	
EasyYo	4.2kg	6	7	100g	
Hot Chocolate	1kg	6	~20	10g	
Pryaniks	2kg	1	20	100g	
Biscuits	4kg	2	20	100g	
Chocolate	29kg	6	30	~180g	Various
Sweets	9kg	6	30	100g	Various
Dried Fruit	10kg	5	30	50g	Various
Halva	5kg	2	25	100g	
Belgian Chocs	4kg	1	8	500g	
Tea	500g	6	30	~3g	
Dried Squash	1.2kg	6	20	1 sachet	120 Sachets
Honey	4kg	5	30	~25g	
Condensed Milk	4.3kg	5	30	~30g	
Toilet Paper	24 Rolls	6	30	-	3 Rolls of HQ paper/ man

Financial Index

Grant Income			Expenditure
Sum	<i>Source</i>	Sum	<i>Source</i>
£1,650.00	MEF	~£3200	Flights
£500.00	MI	~£1470	Vehicle & Permits (ITMC) (€1765)
£2,000.00	QUB Annual Fund	~£320	Airport transfers and Bishkek Accommodation (ITMC) (€385)
£1,900.00	QUBMC	~£300	Visas
£6,050.00	Grants Total	~£830	Food (€1000)
£1980	Personal Contributions	~£320	Various in Bishkek (€400)
		£142.00	Solar Charging System
		£250.00	Satellite Phone Credit
		£150.00	Arguing with Inmarsat
		£200	200m 6mm procord
		£144.00	Radios (6x Motorola T6)
		£80.00	Base Camp Tent
		£100	Conor's flights to London for MEF interview
		£21	Black Diamond Shovel
		£128	Spare picks/crampon front points
		£25	Rechargeable Batteries
		£350	First Aid Supplies
£8030	Total Income	£8030	Total Expenditure

First Aid and Medical Index

Item	Number	No. Used	Comments
Dexamethasone 2mg Tabs	40	0	
Stemetil 5mg Tabs	84	4	Nausea Azwan
Buccastem 3mg Tabs	10	2	Nausea Azwan
Diclofenac 50mg tabs	84	0	
Tramadol 50mg Tabs	120	0	
Co-codamol 500/30 tabs	200	0	
Doxycycline 100mg caps	16	10	Chest infection, Alek
Metronidazole 200mg tabs	168	0	
Co-Amoxiclav 375mg tabs	168	30	Chest infection, Alek
Clarithromycin 250mg tabs	112	0	
Ciprofloxacin 250mg tabs	40	14	Salmonella? Alek, Traveller's Diarrhoea, Bradley.
Chloramphenicol Oint 1%	3 tubes	0	
Diamox 250mg tabs	128	4	Rónán
Scalpels	2	0	
SAM splints	2	0	
Melolin dressings 5cm sq	30	2	Rónán's Blisters
Melolin dressings 10cm sq.	15	0	
Alcohol Swabs	200	4	Alek
Gauze Swabs 7.5cm sq	30	0	
Wound dressing No. 15	4	0	
Crepe Bandage 7.5cm	8	0	
Vaseline Gauss 10cm sq.	10	0	
Triangular Bandage	8	0	
Steristrips	40	0	
Eye Dressings No.16	4	0	
Bactroban cream	2 tubes	0	
Iodine in 70% ethanol	10ml	some	Alek's toes, preventative.
Electrical tape	1 roll	0	
Finger-tape	2 rolls	some	Everyone
Medical thermometer	1	Yes	Alek, Azwan, Bradley

Equipment Index

Item	No	Weight (g)	Total (g)	Performance/Usefulness
Communal				
Base Camp Tent	1	7900	7900	****/Indispensable
Terra Nova Voyager	1	1650	1650	****/Somewhat useful
Mountain Equipment Tent	1	2300	2300	??*/Indispensable
Vaude Ultralight tent	1	1050	1050	****/Somewhat useful
Extra Stake Pegs	5	500	2500	*****/Very useful
Stove: Primus Gravity (Modified)	1	220	220	****/Very useful
Stove: Primus Jetboil (+pot)	1	435	435	??*/Useful
Stove: Higear Blaze	3	48	146	****/Not much use
Pot: Aluminium 3L	1	150	150	***/Indispensable
Pot: Aluminium 2L	1	100	100	***/Very useful
Pot: Primus Heat Exchanger 1.7L	1	~250	250	*****/Very useful
Lighters	10	10	100	*/Indispensable
Whetstone	1	200	200	****/Useful
File	1	200	200	***/Very Useful
Satellite Phone	1	279	200	**/Indispensable
Solar Charger: Goal Zero	1	360	360	****/Very Useful
Solar Charger: Freeloader Pico	1	49	70	****/Indispensable
Battery pack	1	180	180	**/Very useful
Radios	4	60	240	***/Useful
Base Camp First Kit	2	~2000	4000	Indispensable
Notebook, A4	2	~50	100	Very useful
Pen	5	10	50	**/Very useful
Alek's Gear				
Sleeping Bag: Warmth Unlimited -10 P&D	1	1090	1090	*****
Ground Mat: Multimat Expedition	1	350	350	***
Boots: Scarpa Mont Blancs	1	2200	2200	***
Trainers	1	600	600	***/Very Useful
Flipflops	1	400	400	*****/Very Useful
Down Jacket: PhD Rondoy	1	600	600	*****/Indispensable
Microfleece	1	200	200	****/Useful
Windproof shirt	1	250	250	****/Very Useful
T-Shirt, Synthetic	2	100	200	****
T-Shirt, Cotton	2	150	300	****
Socks: Cotton	2	50	100	***
Socks: Smartwool	2	100	200	*****
Underwear	2	50	100	
Soft-shell Trousers	1	450	450	****
Shorts	2	150	300	
Towel (MSR)	1	30	30	***/ Very useful
Cup (MSR)	1	50	50	****/ Indispensable
Waterproof Trousers: Berghaus (modified)	1	300	300	***

Waterproof: Berghaus Axis	1	550	550	****
Gauntlets: Smartwool Socks	1	100	100	*****/ Very handy
Gloves: Light woollen	1	50	50	***/ Not used
Gloves: Fingerless, power stretch	1	50	50	***/ Not used
Gloves: Thick thinsulate	2	50	100	***/ Very useful
Gloves: Thick Rubber	1	100	100	*****/ Indispensable
Buff	3	50	150	*****/ Very useful
Drybags	5	50	250	*****/ Very useful
Headtorches	2	70	140	*****/ Very useful
Crampons: Sarken	1	1010	1000	*****/ You need crampons here
Helmet: Salamander	1	380	380	***/ Indispensable
Harness: Camp	1	270	270	****
Cowtails	2	60	120	*****
Screwgates:	4	50	100	****
Extenders, 60cm	4	110	440	Very useful
Tricam: Size 2	1	50	50	*****/Very Useful
Hex: Red	1	90	90	Not used
Nuts: Kong, 11. 10. 9. 8. 7, 6, 5, 4	8	50	400	*****/Not used much
Ice Screws, Irbis, 19cm	4	100	400	***/Alek used them...
Ice Screws, Black diamond, various	8	150	1200	*****/ Indispensable
Ice Axe, Camp Alpina	1	550	550	*****/ You need axes here
Ice Tool, Stubai Hornet	1	650	650	****
Gaiters (Trekmate)	1	200	200	***/Very Useful
Sunglasses	1	50	50	*****/ Indispensable
Ski goggles	1	120	120	***/Not used
Notebook, A5	1			***/ Very Useful
Spoon, 5ml	1	15	15	*****/Indispensable
Toileteries: Toothpaste, Soap, Toothbrush, Vitamins, etc	1	300	300	
Mobile Phone	1	60	60	*/ Not used in mountain
Slings, 120cm	1	50	50	
Slings, 240cm	1	100	100	
Hand Warmers, carbon	4	15	60	
Rucksack: Lowe Alpine 65+15L	1	2000	2000	*****/Indispensable
Rucksack: Berghaus Phantom 37L (modified)	1	600	600	*****/Very Useful

Bradley				
Karimor Alpiniste Rucksack	1	1580	1580	
Berghaus Arete Rucksack	1	950	950	
60m Edlerid Kestrel Half Rope	2	2880	2880	
Petzl Quarks	2	550	1100	

Simond Vampire Speed Crampons	1p	1090	1090	
Black Diamond Express Ice Screws	3	168	464	
Grivel 360 ice screw	2	159	318	
Set of wires 1-9	1	~	330	
DMM Dragon Cams	3	106-148	373	
Extenders	6	~110	660	
DMM Harness	1	450	450	
DMM Meteor Helmet	1	235	235	
Petzl Myo XP headtorch	1	175	175	
Alpkit Gamma headtorch	1	118	118	
Suncream	1	300	300	
Leki Walking poles	2	425	850	
Gaiters	1	200	200	
Karrimat	1	300	300	
Air mattress	1	500	500	
Sleeping bag liner	1	200	200	
Fold-a-Cup	1	22	22	Swam away
Alpkit Hunka Bivi	1	380	380	
Rab Ascent Endurance 700	1	1350	1350	
Alpkit Filo Down jacket	1	772	772	
Rab Photon Hoody	1	456	456	
Rab gilet	1	365	365	
Softshell	1	x	x	
Thermals	1	x	x	
Thermal leggings	1	x	x	
Simond softshell trousers	1	480	480	
Shorts	1	x	x	
Craghopper trousers	1	x	x	
Berghaus Overtrousers	1	x	x	
Paramo jacket	1	880	880	
Socks	p	x	pX	
Travel towel	1	x	x	
Toothbrush + paste	1	x	x	
Sunglasses	2	x	2x	
goggles	1	x	x	
Gloves	y	x	yX	
Hats	z	x	zX	

Conor				
Rab Ladkh 600-5 sleeping bag	1	1200		*****/indispensible
Silk liner (vietnamese)	1	200		*****/ very good
Soft-shell	1	400		*****/very good
Salopettes	1	400		*****/good
Merino baselayers	4	600		*****/excellent
Socks	7	400		*****/thought provoking
Spare Waterproofs	1	700		**/unnecessary

Underwear	8	500		****/supprtive
Trousers	2	150	300	***smashing
Kindle	1	250	250	*****/indespensible
Chess	1	150	150	*****/useful
Helmet (HB carbon-dyneema)	1	380	380	*****/indespensible
Crampons (BD cyborg)	1	1100	1100	***good
Ropes 60 (phoenix & cobra)	2	3000	6000	****/excellent
trcams	4	50	200	*****/indespensible
nuts	8	30	240	***not used
estenders	8	30	240	****
harness	1	400	400	****
Grivel Matrix light axes	2	515	1030	****
screws	2	60	120	****
camera	1	150	150	*****
First aid kit	1	200	200	****
Wool gloves	3	70	210	*****/excellent
rubbergloves	1	50	50	***not used
Welding gloves	1	100	100	**not used
Down jacket	1	500	500	****
buffs	4	30	120	*****
mug	1	30	30	*****
knife	1	30	30	*****
sunglasses	1	50	50	****
Ski goggles	1	60	60	***
B3 boots	1	2500	2500	****
Walking poles	2	300	600	***

Rónán				
Sleeping Bag: Mountain Hardwear Lamina 0	1	1300	1300	*****
Ground Mat: Thermarest Z-Lite	1	390	390	***
Boots: La Sportiva Nepal Extremes	1	2300	2300	****
Sandals	1	400	400	****/Very Useful, even on glacier
Insulation Jacket: Montane Extreme Jacket	1	930	930	***** Indispensible
Powerstretch Fleece	1	290	290	****
Fleece Hooded Jacket	1	630	630	*****
Merino Baselayer	1	200	200	*****
T-Shirt, Synthetic	4	100	400	****
T-Shirt, Cotton	2	125	250	****
Socks: Cotton	4	50	200	***
Socks: Synthetic	4	75	300	****
Underwear	4	50	200	
Thermal underwear	1	100	100	*****
Soft-shell Trousers	2	400	800	****
Shorts	1	100	100	

Towel (microfibre)	1	50	50	**
Cup	1	50	50	****/ Indispensable
Waterproof Trousers: ME Karakorum	1	655	655	*****
Waterproof: Lowe Alpine	1	500	500	****
Gloves: Powerstretch	1	50	50	*****
Gloves: Rab climbing gloves	1	160	160	*****
Buff	1	50	50	*****/ Very useful
Drybags	2	50	100	*****/ Very useful
Headtorches	2	70	140	*****/ Very useful
Crampons: G14	1	1200	1200	*****/ Somewhat necessary
Helmet: Elios	1	330	330	*****/ Indispensable
Harness: BD Bod	1	495	495	****
Screwgates:	6	300	300	****
Extenders, 60cm	5	110	550	Very useful
Tricams	4	50	200	*****/Very Useful
Nuts: WC, half set	5	50	250	unused
Ice Screws, Grivel Helix	1	175	175	*****
Ice Screws, Black diamond, various	4	150	600	*****/ Indispensable
Ice Axes, Grivel Matrix Lite	2	550	1100	*****
Gaiters (Quechua)	1	175	175	***/Very Useful
Sunglasses	1	50	50	*****/ Indispensable
Ski goggles	1	120	120	Not used
Notebook, A6	1			***/ Very Useful
Cutlery Set	1	75	75	*****/Indispensable
Toiletries: Toothpaste, Toothbrush	1	75	75	
Mobile Phone	1	60	60	*/ Not used in mountains
Slings, 120cm	2	50	100	
Slings, 240cm	1	100	100	
Rucksack: Lowe Alpine 65+15L	1	1750	1750	*****/Indispensable
Rucksack: Crux AK-47	1	1000	1000	*****/Very Useful

Rock shoes	1	400	400	unused
Camming devices (various)	4	125	500	unused
Camera + case	1	200	200	*****
Kindle	1	200	200	*****/indispensable
Batteries/charging leads	1	200	200	Somewhat necessary
Altimeter Watch (Quechua)	1	75	75	***** very accurate
Snap links	9	40	360	
Abalakov Threader	1	10	10	***** indispensable
Axe leash	1	60	60	***** indispensable
Vladimir				
Rucksack: Loop 45L	1	1000	1000	
Rucksack: Osprey 32L	1	590	590	
Sleeping Bag: Cumulus	1	800	800	
Ground Mat: Thermarest Neoair	1	350	350	
Down Jacket: PhD Yukon	1	450	450	

Waterproof:	1	500	500	
Waterproof Trousers: Regatta	1	250	250	
Walking Poles: Higeer Walkers	6	450	2700	
Boots: Scarpa Triolets	1	1800	1800	*****
Boots: Solomon	1	800	800	
Flipflops	1	300	300	
Microfleece	2	200	200	
Baselayer	1	150	150	
T-Shirts	3	100	100	
Socks:	x	p	xp	
Socks	x	q	xq	
Trousers: Softshell	1	460	460	
Trousers: Walking	1	300	300	
Trousers: Tracksuit	1	400	400	
Gloves: Softshell	x	r	xr	
Gloves: Woolly liners	x	y	xy	
Mittens	1	100	100	
Hat	1	30	30	
Sunglasses	1	50	50	
Ski goggles	1	120	120	
Helmet: Salamander	2	380	760	
Harness: Camp	1	270	270	
Crampons: G12	1	950	950	
Screwgates: Petzl	5	50	50	
Cowtail	1	60	60	
Rope: Joker, 49m, 9.1mm	1	2500	2500	
Extenders, 60cm	4	110	440	
Ice Axes: Matrix Light	2	550	1100	
Slings, 120cm	1	50	50	
Slings, 240cm	1	100	100	
Snapgates	5	40	200	

Notes on Gear

Rónán:

The sleeping bag and insulation jackets were excellent - synthetic is heavier but gives more peace of mind. All of the rock gear apart from the tricams was unused as rock quality was poor. Ice climbing equipment was superb, even if the crampons were quite heavy. Highly recommend powerstretch as 'action suit' material and the combination of thermal underwear and Karakorum pants worked very well.

Would recommend a Kindle or similar device to anyone going on an expedition - I read 13 books on it, saving a lot of weight!

Heart Rates

Resting heart rates of expedition members were measured and plotted with altitude against time (day of expedition) in order to help keep track of acclimatisation. Evening heart rates fluctuated more than morning heart rates due to recovery from physical activity. Heart rate was generally not predictive of an expedition member's ability to perform at altitude.

