

Exp MP 99/46

Motorola Pamirs Expedition 1999

An exploratory expedition to the mountains of the Zaalayskiy Khrebet on the border of the Kyrgyz Republic, Tajikistan and China.



Motorola Pamirs Expedition 1999

To Anatoli, the Eleventh Man.

Summary

A 10-strong expedition with attendant Base Camp support staff set out to explore the Zaalayskiy Khrebet and to make first ascents of mountains in the range. Originally it had been hoped to make ascents of one or more of the unclimbed 6000m peaks. However these mountains proved to be beyond the team. First ascents of several 4000-5000m peaks were achieved, together with an exploration of the valleys and approaches to some of the other mountains in the range. A new rock climbing area and one of the valleys that leads to the Kyrgyz/Chinese border were also reconnoitred.

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(NB Sections written by the Expedition Manager unless otherwise stated).

Personnel

Paul Deegan, 29 (Expedition Manager)
 Darren Tulley, 28 (Deputy Manager)
 Ryck Albertyn, 33 (Doctor)
 Simon Harris-Ward 23 (Climber & Linguist)
 Martin Hartley, 31 (Climber & Photographer)
 Dan Haylock, 27 (Climber & Cameraman)
 Al Boardman, 23 (Climber)
 Elliott Forge, 28 (Climber)
 Seb Mankelow, 25 (Climber)
 Julian Mitchell, 21 (Climber)

Introduction

The idea of visiting a partially unexplored mountain range in the Pamir mountains of the former Soviet Union was first suggested to the Expedition Manager by the late Kazakh climber Anatoli Boukreev. Following Boukreev's death (on Annapurna in December 1997) the Expedition Manager set about investigating the remaining exploratory possibilities in the Pamirs in order to realise their joint-dream.

Aims Of The Expedition

The expedition had twin aims:

1. To explore the northern approaches to the Zaalayskiy Khrebet.
2. To make ascents of unclimbed peaks in the area.

History Of The Range

The Zaalayskiy Khrebet is located at the eastern edge of the Pamirs on the border of the former Soviet Union (now the Kyrgyz Republic and Tajikistan) and China. Geographically accessible, they have been politically out-of bounds since the late 1950s. Indeed the only known expeditions to have previously visited the range were one in 1930s and two in the 1950s. It is understood that these Soviet expeditions explored the southern (Tajik) flanks of the Zaalayskiy Khrebet. The only peaks confirmed as being climbed from the south (by surviving members of the expeditions interviewed by staff from Asia Travel) were Khurundy Peak (6613m) and Pik Pogranichnik which is located close to the Khorog-Osh Highway. This expedition failed to find any documented or physical evidence that the northern flanks had been hitherto approached. (Indeed the only physical evidence of previous human contact of any kind that this expedition found on the ground lay in the now-deserted military berms and current nomadic groups that graze their animals in the valleys approximately 10-20km from the mountains at an altitude of circa 3500m).



Map 1: Location of the Zaalayskiy Khrebet on the borders of Kyrgyz Republic, Tajikistan and China.

Planning Overview

The Zaalayskiy Khrebet was brought to the Expedition Manager's attention by the General Manager of Asia Travel, an Uzbekistan-based adventure travel operator who had been recommended to the expedition by two UK-based commercial trekking and expedition companies. Initial research started in November 1998 and planning began in earnest in January 1999.

Despite the fact that Asia Travel took over the responsibility for the in-country arrangements (which would have been impossible to arrange from the UK) there remained a vast amount of planning and preparation to do in the UK. This ranged from acquiring mountain food sufficient for 150-man days to generating the necessary funds for the project. With just six weeks to go before departure the telecommunications company Motorola stepped in with a generous offer of product assistance and financial sponsorship.

Training

Climbing: With the exception of the expedition doctor, all the members of the expedition had the necessary climbing experience for the anticipated difficulties on the mountains. The expedition enjoyed two training sessions in the UK prior to departure but these were designed to allow team members to get to know each other and to discuss tactics, equipment etc. rather than to hone climbing skills.

Medical, communications, filming, etc: The relevant members gave the necessary instruction on these subjects to the rest of the team during acclimatisation days at Base Camp.

Grants & Approval

The expedition was fortunate to receive the approval and support of both the British Mountaineering Council and The Mount Everest Foundation. The expedition was unsuccessful in its application for the Lyon Equipment Award. The expedition was not conceived in time to apply for the Polartec Award, Shipton-Tilman Award or the Lowe Alpine Award. Future expeditions are advised to plan their projects in sufficient time to take advantage of these awards.

Sponsorship & Support

The expedition was extremely fortunate in receiving financial and product sponsorship from Motorola. As a manufacturer of a handheld satellite telephone and as the global leader in two-way radio technology, Motorola was able to provide the expedition with a complete

communication solution. Details of how this technology worked is described in Appendix 5.

In addition, the expedition received generous support from a number of companies who are individually mentioned in Appendix 1. The expedition is extremely grateful to all the organisations and individuals who gave freely of their time, effort and products.

Budget

At an early stage in the expedition planning all the team members made a personal financial contribution to the expedition bank account. The overall amounts spent by the expedition are as follows:

Flights	£3213
Visas	£660
Climbing Permit	£650
Border Zone Registration	£160
Local Police Registration	£100
Insurance	£1400
Medical	£1500
Gas	£144
Freight	£350
Mountain food	£700
Maps	£250
In-country costs	£10,500

The expedition also purchased items including clothing, avalanche transceivers, camera film and climbing equipment. Individual members incurred substantial telephone, postage and travel costs and these were repaid by the expedition. The expedition was able to repay in full the grants from the British Mountaineering Council and The Mount Everest Foundation.

Future expedition leaders to the Central Independent States should note that new US dollar notes are by far the preferred form of currency, except in remote mountain regions where local currency or useful items such as rope, water containers and clothing are the preferred items for bartering.

Many of the costs listed here were paid in US\$ at an exchange rate of approximately \$1.5 to the UK£.

Medical Considerations

Dr R. Albertyn

The Motorola Pamirs Expedition presented both an exciting opportunity and some peculiar challenges in the areas of medical planning and the deployment of limited medical resources over a large area of inaccessible terrain. Ultimately the planning proved to be effective and the matching of supplies and potential need was indeed accurate. Through a philosophy of responsible behaviour and recognition of the risks of the endeavour no one came to any serious accidental harm, and the full medical support plan never had to be tested.

An account of the planning and deployment of the medical support for the expedition:

Section 1: The Early Days

Planning began in January 1999 with following considerations:

Location: By researching the proposed environment an insight was gained into the potential medical problems that might be faced. This allowed the planning of fast, feasible emergency evacuation and treatment strategies.

Altitude: Including acute mountain sickness (AMS), high altitude pulmonary and cerebral oedema, hypothermia, frostbite, and poor wound healing.

Local disease profile: All diseases occurring in the region were considered and the level of risk to the expedition party was determined. Only essential vaccinations were recommended after this assessment (see preparation section below).

The following diseases were found to occur: Hepatitis A, Typhoid fever and other various gastrointestinal pathogens; Measles; Diphtheria; Tetanus and Pertussis (recent large-scale outbreaks); HIV. Insect-borne illnesses: Encephalitis (tick-borne); Hemorrhagic fever; Lyme disease; Typhus (tick-borne). Rabies (especially among foxes in rural areas). The Influenza risk extends from November to April and was not a concern for us.

Air Transport

International airports of relevance to the expedition were situated at Osh and Tashkent. These would enable any sick and injured personnel to be evacuated at any time of day or night on a pro rata basis. Transport from the area of the expedition to the international airports/hospitals would be via the Uzbekistan government helicopter rescue service based in Tashkent. This could be scrambled very quickly. Payment for such a rescue would be from the insurance company underwriting the policies of the individual members. A secondary backup system allowed the travel company

based in Tashkent to scramble the service on our behalf. The expedition travelled with sufficient cash for just such an eventuality.

Communications:

A good communication system is essential to avoid delays in rescue and proper treatment that could ultimately lead to death or permanent disability. Contact details of the insurance and assistance companies were disseminated to various individuals when the expedition divided into sub-groups so that they could act independently in times of medical crisis when the Doctor or the Expedition Manager was not contactable.

Political state: the entire region is politically volatile - some areas more than others. This represented a small but not insignificant risk to the expedition.

Roads and Drivers: All second and third world countries have high death tolls on the road due to poor vehicle maintenance, lack of legislation and law enforcement, and driving behaviour. The region is also mountainous which adds to the risk. Experience of a couple of mountain pass crossings proved we had every right to be concerned.

Team Members

All team members were required to complete a health questionnaire stating any past and current medical problems, medications allergies and medical training. We were thus aware of any medical strengths to call upon in dire circumstances and also any medical problems that had to be specifically provided for.

Section 2: The Preparation

Immunisations

The following recommendations were made: Hepatitis B; Hepatitis A; Typhoid; Tetanus.

Blood screening and typing: Although there would be plenty of intravenous fluid at Base Camp we planned to be able to supply all our blood requirements, in case of trauma, from other members of the group. Obviously for this to be a safe option, the risk of contracting a serious life threatening infection such as Hep B or HIV as a result of the transfusion had to be eliminated. A 10ml sample of blood was obtained from each team member. The blood was screened for important blood-borne communicable diseases including HIV and Hepatitis B & C. Detailed blood typing was performed in a hospital transfusion laboratory, from which a compatibility profile of the expedition team was compiled.

Travel Insurance

Several travel insurance policies were carefully assessed. Regional competence in the Commonwealth of Independent States (CIS) and value for money were among the factors considered. The expedition chose to use the British Mountaineering Council's policy. This policy gave excellent global coverage with generous payout limits at a competitive price. It is only available to BMC members and is underwritten by CGU. The Assistance Company used by the insurance company was International Medical Rescue based in the UK.

Prior to departure a document was forwarded to the assistance company informing them of the expedition details and providing many of the important details that could help to expedite any rescue: location of the expedition; names of the team members; insurance policy and BMC membership numbers of team members; next-of-kin contact details of all team members; detailed major incident plan/algorithm with contact details; list of all medical supplies; full details of the Expedition Doctor's areas of expertise and experience. These same details were forwarded to the British Embassy in Uzbekistan.

Medical Supplies

The expedition was fortunate to acquire several medical equipment sponsors: Ferno UK (spinal and neck protection hardware, traction splints and burn treatments); Lifesystems (prefabricated medical kits and expedition duffle bags); North Hampshire Hospital (anaesthetic equipment, fluids etc).

Basic general practice medications were taken for the treatment of everyday complaints. Anaesthetic equipment was needed in the cases of major trauma with cardiac and/or respiratory arrest situations. The reasons for spinal and neck protection equipment and other splints are self-evident.

Further Preparations On Arrival

Several hospitals were inspected (including a trauma centre and infectious diseases hospital). This was useful from because the quality of medical facilities could be assessed and contacts established in the event of their services being required. The conclusion was that the facilities were not good enough for definitive treatment but could serve as a holding facility until evacuation to the closest centre of medical excellence could be achieved. This was certainly so in the case of the surgical facility visited. The infectious disease facility was adequate for the treatment of minor to moderate cases of gastrointestinal problems. An individual from the

travel company was chosen to represent the expedition medically and liaise with the relevant hospitals to obtain medical reports on any team members who may be hospitalised. This individual would also be responsible for scrambling the government helicopter rescue service.

Ultimately the aim of the medical preparation was to alert all people that may possibly be involved in the handling of any emergency to the existence of our expedition. Additionally we set in place additional contingencies as a backup in case the help of the assistance company was deemed to be inadequate or too slow. We could thus go ahead with necessary arrangements and rescue without waiting for financial guarantees and other potentially time consuming delays especially if the ill or injured party was critical.

Section 3: The Deployment

A pyramid system of medical supplies provision was used:

Base Camp: A two-man tent was used to house the medical supplies and could also be used as a 1-bedded ward.

Away Team: When away from base camp the expedition doctor took with him some essential emergency drugs (injectable), airway management equipment and a broad range (but small quantities) of general practice drugs.

Climbing Pairs: Each pair of individuals had a Lifesystems Mountain Leader medical kit. This contained dressings, plasters, bandages, adhesive stitching materials and resuscitation information. To this was added basic drugs for the treatment of altitude related illnesses, gastroenteritis and pain from various causes along with written instructions for their use. Further instructions were available from the expedition doctor by radio if needed.

Section 4: The Cases

Illness	No. Cases	Comment
Gastroenteritis	14	3 x Giardia?
Gum infection	2	
Knee strain	1	
Snow blindness	1	mild
Pulmonary embolus	1	suspected; climber from another party
Minor lacerations	2	
Hay fever / Allergies	1	
Gastritis	2	

A complete medical inventory, blank personal medical record form, list of internet resources and major incident plan is available from Dr Albertyn, Medical Solutions, tel: 0181 401 2240. email: r.albertyn@cableinet.co.uk

Communications

The expedition's communication requirements were two-fold: a) to establish a satellite link with the expedition's agents in Tashkent, and with the medical assistance company in the UK. b) to arrange for radio communications between climbing and exploration teams on the mountain. Motorola equipped the expedition with handheld Iridium satellite telephones which were light enough to carry on the mountain. As it turned out, the expedition only rarely needed to contact Tashkent, and no medical emergencies took place. However the telephone was used to stay in contact with the expedition's sponsors and supporters, and occasionally for the personal use of the UK and Uzbek team members. For a full report on the Motorola Satellite Telephone see Appendix 5.

At very short notice Motorola also equipped the expedition with Radius GP 300 UHF radios. They were found to possess an excellent line-of-sight range. Out-of-sight range was impaired by the lack of an extended aerial at Base Camp. Poor atmospheric conditions were also thought to degrade the reception. A spare battery for each radio was supplied. The condition of these Ni-Cad batteries was variable, supplying between a few hours and several days of power. The radio batteries were re-charged using a different solar panel to that used to charge the Iridium batteries (see Appendix 5). Future expeditions are recommended to investigate the option of using radios that use universally-available AA batteries to ensure a continuous and unwavering power supply. Otherwise ensure that the Ni-Cad batteries have been correctly charged before departure and that an adequate power supply for recharging is available at Base Camp.

Filming D. Haylock

Equipment

The camera used was a Sony VX 1000 model. Although rather heavy and bulky for expedition use it is an excellent piece of equipment, easy to use and packed with useful features, including: manual focus - great for spot focusing (the auto-infinity function allowed smooth transitions of focus between fore and background); manual exposure - particularly useful in snowy conditions and for situations with strong front or back lighting; manual shutter speed - high shutter speeds were used for sequences that would later be played in slow motion without losing picture clarity; interval recording - to save both film and battery power the camera could be set to record for a set amount of time at intervals. This was particularly useful at sunrise/sunset and to record the movement of clouds and storms over a period of time.

Other accessories taken included a wide-angle lens for recording in confined spaces such as vehicles and tents and for large skies and landscapes. A bellows could be fitted to the front of the camera to keep direct sunlight off the lens. Polarising and warming filters could fit behind the bellows and were used extensively in snowy situations. A short plastic tripod called an Ultrapod allowed the camera to be placed on the ground.

Power

Three batteries were circulated from solar charger to camera. The charger took about four hours to charge one battery in bright sunlight. The battery time was half that stated in the manual; about 20-30 mins and less in the cold. We had a lot of bad weather on the trip and consequently any sunlight had to be maximised both for filming and charging batteries. This included strapping the solar panels to the back of the rucksack whilst walking on sunny days.

Filming

The success or failure of using video on this expedition should have been the result of some advance planning. However, we only managed to secure both camera and charging equipment in the 24 hours before departure, so at the start at least the filming operation was pretty ad-hoc (i.e. reading the instruction manuals on the plane). Once in the field the camera was attached to the front of the rucksack (in front of the chest harness) in a Lowe Camera Bag with the Ultrapod and accessories required for that day's filming already attached to the camera. The camera bag allowed easy access to camera, cleaning equipment, batteries, tapes etc. but proved to be awkward when climbing which meant that at these times it had to be stored in the top of the rucksack.

There was a constant conflict between being the cameraman and being a member of the expedition which resulted in some aspects of the expedition not being recorded. Would-be expedition cameramen should not underestimate the effort required to rise at 4am for sunrise shots, of spending vast tracts of each day alone to set up shots and of carrying filming equipment on top of the standard 60lbs load.

As with stills photography most filming of scenery and landscapes took place in early morning or in the evening to take advantage of the softer lighting conditions. During the day when much of the filming of people and activities took place, the sun became a useful tool to create sunbursts and silhouettes on film. It was not possible to plan or rehearse action shots so most filming took place as events unfolded - some of the best footage resulted from being in the right place at the right time and a

degree of luck. As the expedition progressed a list began to build up of missing shots and ideas for editing the final film (sections, music, narrative etc).

Considerations for future expeditions:

1. Do not move camera (panning). Let the action take place within the frame. Do not zoom unless absolutely essential - use the zoom to frame the shot.
2. Take a lighter camera if possible - it is worth compromising slightly on picture quality as a lighter camera will get used more often.
3. Record more interviews (can be on a dictaphone for voice overs). Record more close-ups (cut-aways) for use in editing.
4. Take a tripod with a smooth panning action for rare panning moments.

Power Supplies

The expedition was keen to rely upon solar power for its energy requirements. After talking to the Communications Manager of the 1998 Sepu Kangri Expedition it was decided that the expedition did not have the need for the large amount of power that the Sepu Kangri Expedition consumed. Three key pieces of equipment required power that could not be provided by traditional alkaline batteries. These were the Iridium satellite telephone, the two-way radios and the video camera. The Iridium batteries were re-charged using dedicated Motorola panels and these are discussed in Appendix 5. The expedition also wanted to acquire a single solar panel system that would be able to re-charge both the radio and video batteries. In the final week before departure Solarpak were approached and kindly agreed to loan the expedition a 'Chargeabout' solar panel. However the only one available at such short notice had just returned from a jungle expedition and on arrival it was discovered that some of the wires had been damaged by the humidity. These were replaced by a friend of the expedition experienced in such matters. An amp meter to register strength of current and a device to prevent charged batteries from sending power back into the panel (and thereby 'burning' the solar cells) were also added. The leads from the Chargeabout were finally wired into a male cigarette lighter socket which could be plugged directly into the vehicle radio battery charger that Motorola supplied. It proved impossible to unite the video car battery charger

with the completed system before departure. On arrival in Tashkent it was discovered that there are two sizes of cigarette lighter sockets on the market! However some deft botching by the Deputy Manager and the Cameraman produced a workable solution.

In bright sunshine a full amp of charge was generated but this could not be maintained for any length of time. Typically a battery designed to deliver 40 minutes of power under optimum conditions would take four to five hours to charge and deliver just 10 to 15 minutes of power. By comparison a radio battery would take between 30 minutes and two hours to charge.

On reflection once an expedition has committed itself to requiring a reliable and regular power requirement then more than one source of power should be acquired. As it turned out the expedition's agent used a petrol generator at Base Camp to provide lighting and cooking facilities. Had this been known beforehand then this would have probably satisfied the expedition's requirements, albeit in a less environmentally-sensitive fashion. A wind generator would have been another option, although on balance it was felt that there was rarely enough of a reliable enough wind to make this viable.

Clothing and Equipment

Because no records exist of climbing conditions in this area, the expedition based a large amount of its decisions on clothing and equipment used by climbers on nearby Peak Lenin, and some educated guesses based on members' personal experience from previous expeditions to the Alps, Alaska, the Andes and the Himalaya. With the exception of the group equipment and sponsored items of personal equipment, individual items varied between the well-known brands. With a few important exceptions (which are mentioned in Appendix 3) most items performed well in the mix of dry, hot, cold, wet and windy weather that the expedition experienced.

Food Darren Tutley

Food selection was based on the following four criteria: 1. calories; 2. weight; 3. ease of cooking (particularly at altitude); 4. taste. In all the expedition provided 150 man-days of mountain food from the UK with the remaining 10 days of Base Camp food being provided by the Base Camp staff.

The main meals were our primary main concern. We had two possible options - dehydrated/freeze dried or hydrated (tinned or foil packet). From experience on previous expeditions it was found that dehydrated meals such as rice and pasta would not cook properly at

altitude even after an extended time. Therefore the expedition used hydrated Wayfayrer meals. Quick-to-cook noodles, couscous and mashed potato were also included to boost the calorific value of the main meal.

Food for the mountain was provided in 2-person packs for every 24-hour period spent on the mountain. "Brew kits" were provided in 2-person packs for every 48-hour period. For a typical 24-hour ration pack and comments on the meals see Appendix 4.

Water

Base Camp was conveniently situated next to a small lake which was systematically drained during the life of the expedition. However the lake was found to contain aquatic larvae and so all water was boiled and then filtered through muslin prior to drinking. A reserve of 500 litres was held on site in blue expedition barrels. In many of the mountain areas that the expedition explored the rivers were brown with heavy sediment and till. Various filtering methods (from silk scarves to windproof fleece gloves) were employed at the time to try and make the water more potable. Boiling and allowing the water to stand awhile was generally successful. All water was then treated with iodine droplets. Future expeditions are recommended to bring filters for personal use but from past experience the members of this expedition felt that the only product that would last any length of time would be a Katadyn Pocket Filter.

Language S. Harris-Ward

A working knowledge of the language is always useful when travelling abroad. In Central Asia there is a vast array of spoken languages, on account of the nomadic, tribal nature of many of the region's inhabitants. However, 70 years of Soviet domination has ensured that Russian is the common denominator. Even nomadic tribes in the remoter areas that border China speak reasonable Russian. Despite national attempts to bring the local Uzbek, Tajik and Kyrgyz dialects to the fore, the Russian language remains predominant in their societies on account of the Russian Federation's proximity, as well as its assistance in economic, military and political matters.

The Kyrgyz language is completely different to Russian, having originated from the ancient Turkic. With a working knowledge of Russian one can travel freely in the Kyrgyz Republic without needing to speak Kyrgyz. However, "Salaám Aláykhum" (stemming from the Arabic "Peace Be With You") is always a good opening gambit, and usually guarantees local hospitality.

International Travel and freight

The expedition was fortunate to receive the support of STA and Lufthansa who provided the expedition with a generously discounted fare and a total of 500kg of baggage allowance. STA ensured that all the tickets were made out correctly and issued to the expedition in the week before departure. Lufthansa provided an extremely efficient service to Tashkent via Frankfurt, ensuring that all the members and every piece of luggage arrived despite the scheduled change of aircraft in Frankfurt.

Despite the large baggage allowance, it was calculated that some supplies would have to be freighted in advance. This included a consignment of bottled gas cylinders that would be used for cooking above Base Camp. In addition, a further 60kg of high altitude rations were also freighted to ease the pressure on our 500kg airline allowance. By freighting a total of 100kg in advance of our departure the cost per kilo was considerable reduced. The staff of SOS Air Cargo provided a friendly, personal and efficient service at extremely short notice. All of the expedition's cargo arrived safely in Tashkent before the expedition departed from the UK. On arrival in Tashkent the Expedition Manager spent the best part of a day with representatives from Asia Travel clearing the items through customs. No duty was payable. Future Expedition Leaders should note that the procedure for clearing items through customs is so complicated that without support local assistance days rather than hours would be required to retrieve items from the officials.

In-Country Agents

After establishing contact with *Asia Travel* in London, all further communiqués before departure were made via email, a cheaper and more reliable communication medium that either fax or telephone.

Once in Tashkent a vehicle was made available to the expedition during the day that the expedition spent in Tashkent. *Asia Travel* also made available a room in their storage compound for the Deputy Manager and his team to sort loads ready for the mountain. An all-night guard was provided by Asia Travel to protect the expedition's supplies. Asia Travel also stored personal effects for the members whilst they were on the expedition.

From earlier email communications it was understood that the team would receive the services of an interpreter and cook. The team were therefore somewhat surprised to learn on arrival that the expedition would have a support team of seven! The only explanation that the expedition received was that a team of 10 climbers required a lot of servicing! The Base Camp Manager,

Garrick Rakhimov, is a Master of Sport and his assistant Viktor holds a Soviet Alpinist Instructor Certificate. Between them they have made over 100 summits and it soon became apparent that they had more mountain experience than the UK team put together! However on no occasion did they attempt to take over the running of the expedition. Instead they provided a valuable source of background information on weather and anticipated climbing conditions for the general region, as well as offering to assist with any rescues should the need have arisen.

The expedition cook and her team provided the climbers with a consistently high level of food, drinks and service. It would not be going too far to suggest that the team was pampered at Base Camp. The expedition was unanimous in its verdict that the service at Base Camp was better than on any previous expedition. Asia Travel also provided the expedition with an interpreter. Ramille Irkabaev proved to be a real star. In addition to being a master of the English Language, Ramille was a born entertainer, singer and guitar player who livened up many of our evenings.

Asia Travel provided an extremely high level of service to the expedition.

In-Country Travel

All local travel arrangements were provided by *Asia Travel*. A new minibus and driver were made available to the team whilst in Tashkent. A giant vehicle took all the team members and their equipment on the long journey to Base Camp. Before arrival in Tashkent the expedition had been under the impression that horses would be available to carry supplies to ABC. This proved not to be the case. However the expedition vehicle drove across-country all the way to Base Camp. It was certainly an efficient way of arriving at Base Camp, although the vehicle grounded at one point and had to be dug out. From an aesthetic and an environmental point-of-view, pack horses from the roadhead would have been a preferable option.

Maps Julian Mitchell

Neither Asia Travel nor the Map Room of the RGS-IBG were able to furnish the expedition with anything more detailed than US Air Force 1:500 000 maps. A 1:200 000 map of the region was found at Cambridge University Library but it took eight months of research to finally track down a US-based company that was able to furnish the expedition with a set of 1:50 000 Soviet General Staff Class maps of the region. On arrival at Base Camp, the

Support Team Manager was stunned to see these maps, the like of which he had not seen before. He informed us that until recently the expedition would have been arrested for being in possession of these maps, such was their secrecy.

Technical information on the 1:50 000 maps: contour interval 20m with thicker contour line every 100m; accurate spot heights to .5m; latitude and longitude with 2cm sq. grid system; no overlapping between maps which each measured 54x40cm; markings and names in Russian Cyrillic; numbers in English; key on each map; magnetic north variation is shown.

Points To Note: 1. Print quality varies. Symbols on two maps may have slightly different colours. 2. The maps are devoid of shading on hills which makes interpretation difficult. 3. Contour accuracy is average. Minor ridges were shown but not always accurately. 4. No crevasse fields are marked on the maps. 5. Roads and paths (including different types) are marked. 6. Some cliffs are marked. 7. Scree slopes are not marked.

Visas And Permissions

Asia Travel secured the necessary permissions for the expedition to visit the Zaalayskiy Khrebet. The following permits were obtained: Climbing Permit (which included trekking); Border Zone Registration; Local Police Registration. In addition, the expedition secured visas for the Kyrgyz Republic from the embassy in London. A Kyrgyz visa allows the holder to spend a total of 72 hours transiting in Uzbekistan so a separate visa was not required for the time spent in Tashkent. No major problems were encountered on the journey to Base Camp, nor at the entry points to either Uzbekistan or Kyrgyz Republic.

Base Camp

Without prompting by the expedition, representatives of Asia Travel visited the site of Base Camp in the month before the arrival of the team. They took photographs of the proposed site which were then emailed to the Expedition Manager. On arrival in Tashkent the expedition was surprised to learn that the Base Camp had already been erected. In a previous email the Expedition Manager had requested that the site for Base Camp should not be chosen until the team's arrival. However despite some initial reservations, Base Camp was found to have been sited in an ideal location, close to one of the few water sources in the area. Proper toilet pits and a

shower had been constructed. The expedition dining tent was a large wooden and felt yurt. Asia Travel provided the expedition with new sleeping tents. The cook had a well-organised tent and the support staff had their own dining tent. Asia Travel also erected a radio mast to establish communications with their Base Camp on Lenin Peak which had a satellite telephone link to Tashkent. Had the Motorola Satellite Telephone failed the expedition would have fallen back on this method of communication.

Reconnaissance Phase

One of the expedition's original aims had been to climb one or more of the four unclimbed 6000m peaks in the range; to this end a single photograph of the mountains and one large-scale map of the region had been studied in detail before departure.

After a week of studying potential routes the team identified just one feasible route on the 6000ers. However, the route's apparent technical difficulty combined with unpredictable weather patterns encouraged the team to lower their sights (but not their ambitions) onto a series of sub-5000m peaks in the region. Even reaching the base of these proved not to be an easy task. Visiting an unexplored region for the first time meant that trekking routes to potential sites for Advance Base Camps had to be reconnoitred, a tyrolean traverse built across a river, and possible climbing routes studied through telescopes and binoculars. The expedition had been led to believe that pack horses would be available to transport loads up glaciers and valleys but the reality proved somewhat different. As a result the team members (and Base Camp support staff) carried 60lbs+ loads at altitude for days at a time.

Climbing and Exploration Report

collated by A. Boardman Additional comments by P. Deegan and S. Mankelov

The expedition made ascents of five separate peaks:

Pik Anatoli, 4985m

Climbed on 24th July 1999 by P. Deegan, S. Mankelov, J. Mitchell, D. Tulley, E. Forge, M. Hartley and S. Harris-Ward. Grade - sections of Scottish II, alpine grade of AD+ (depending on snow & ice conditions).

The large moraine between ABC (3925m) and the foot of the mountain was taken on the left, followed by a traverse further to the left on mixed terrain out to a series of snow gullies. The second gully (45°, 100m) was ascended up to the main rocky ridge ('Motorola Ridge'). Broken rock and a number of snow steps (circa 30°) led to C1 (4600m) which was located below the final rock buttress on the ridge. Platforms were dug for three tents in a sheltered position. (ABC to C1: 6h 30m). From C1 the fractured snow slope below a snowy ridge was followed up and to the left until this ridge was gained. At the end of this ridge, a rock buttress was by-passed to the left. A minor sub-summit was also passed before the highest point on the mountain was gained by walking up an easy-angled snow slope. (Return time C1-summit 3hrs).

Pik 4892m

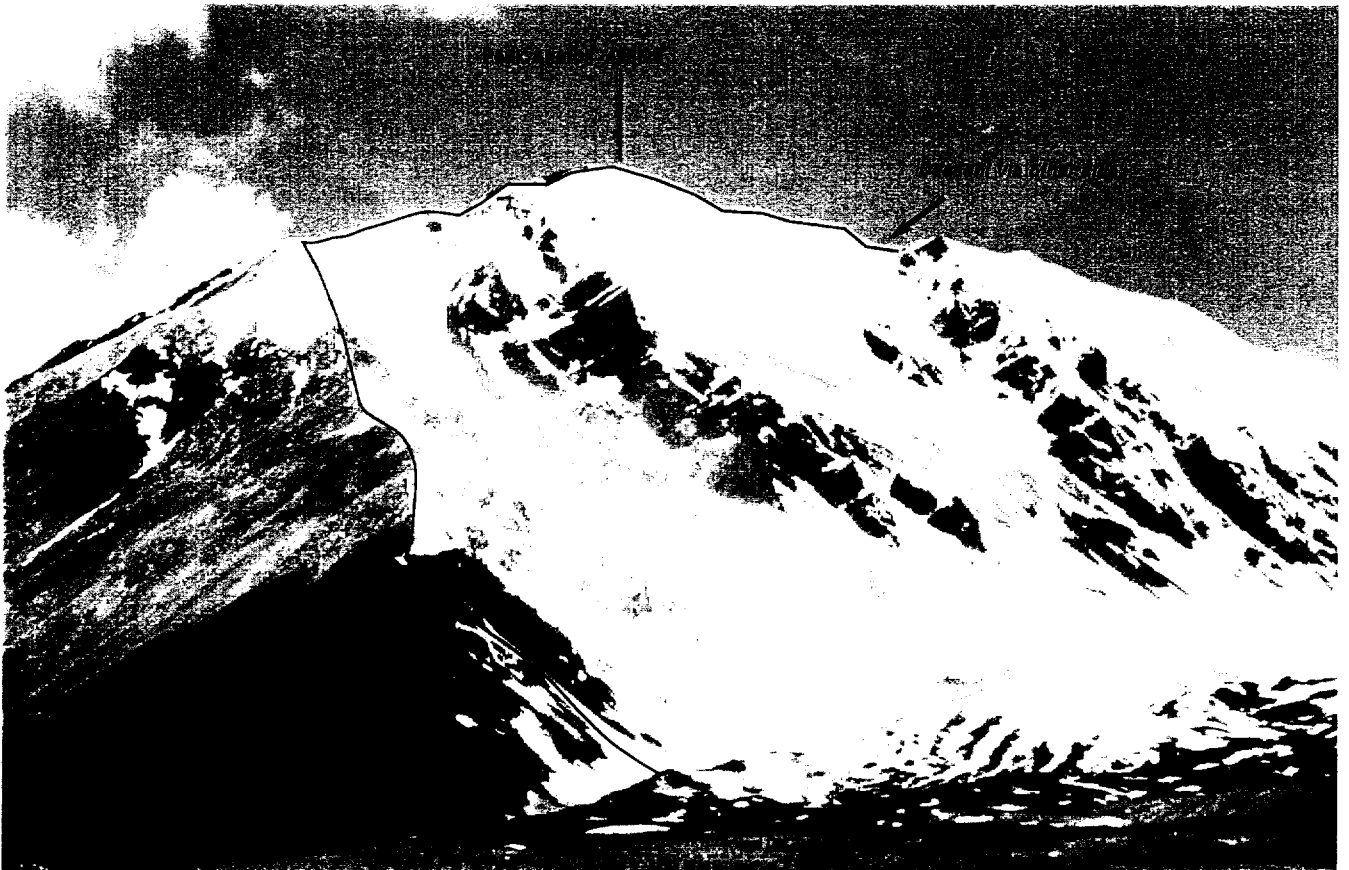
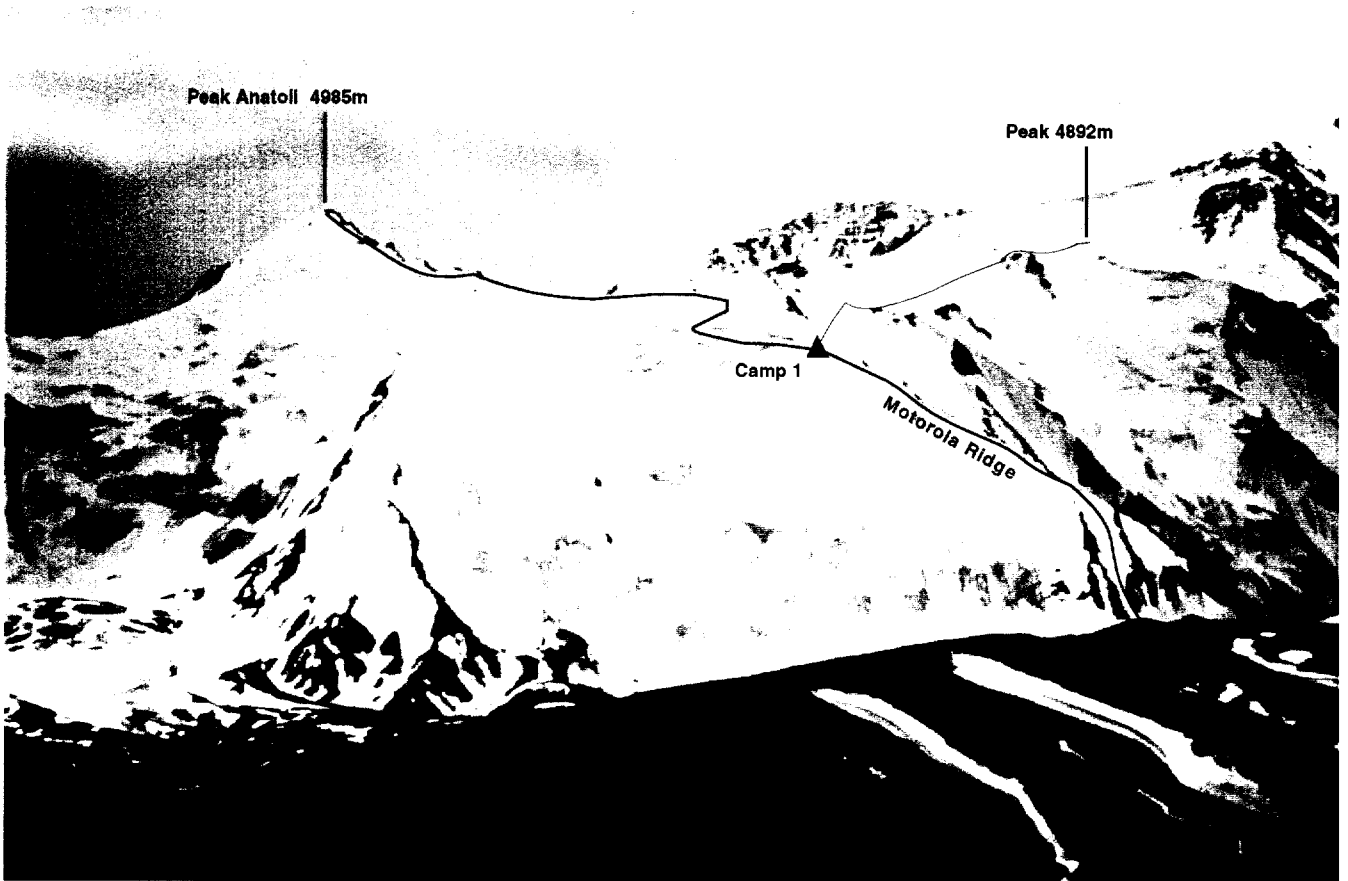
C1: approx. 4600m on the Motorola Ridge. Climbed on the 25th July 1999 by E. Forge, S. Harris-Ward and D. Tulley. Alpine Grade: AD+/D- (depending on cornice danger).

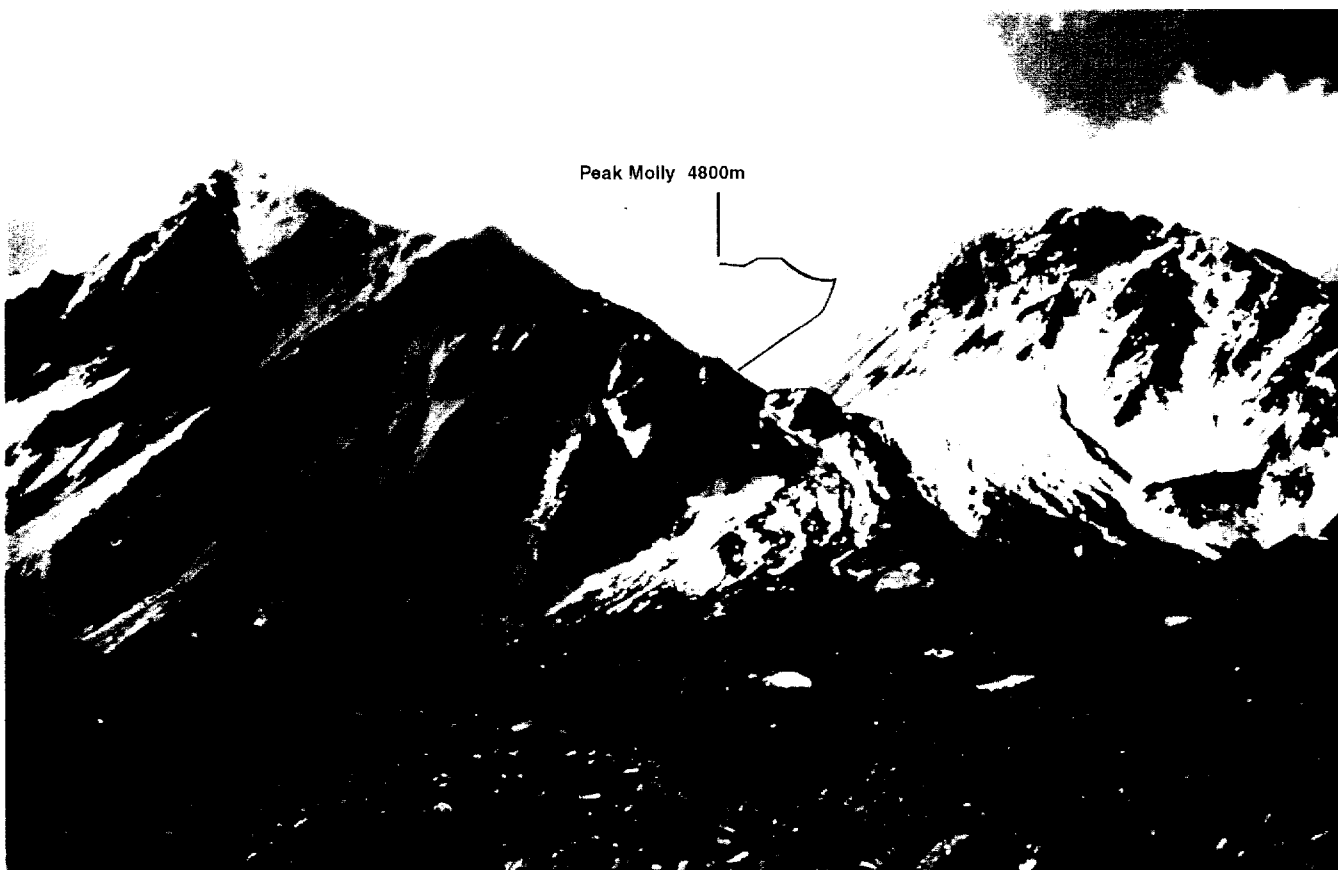
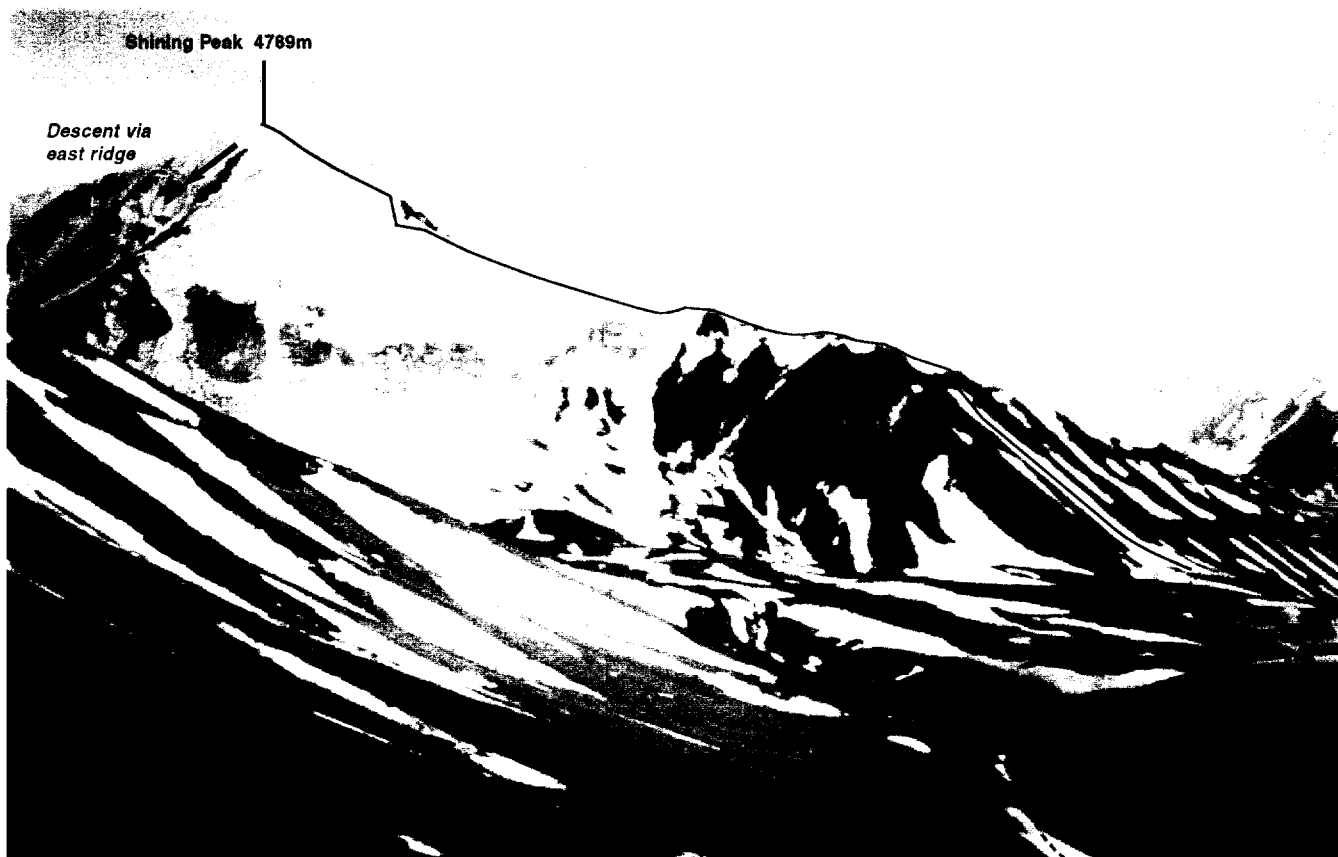
From C1 (4600m) the party traversed out right below a rock buttress on good snow to reach the broad summit ridge (gradual height gain along ridge). The ridge narrowed near the summit, with massive cornices. A short technical section of 75° on snow/ice led to the western summit plateau, then heavily corniced to the rock/snow summit. (Return time C1-summit 4hrs).

Pik Ramille (4925m)

Climbed on 18th July by D. Haylock and M. Hartley. Alpine Grade: AD.

From ABC (4000m) the route climbed over moraine in front of ABC (east moraine) then in front of the base of the south ridge to the first main snow-covered gully. After ascending this gully for 150m the route joined the main ridge. Waist-deep snow and loose rock on the ridge led to an unobvious summit. The climbers descended scree slopes on the west face until the moraine was gained. (Return time ABC-summit 14hrs).





Pik Svyetly (Shining Peak, 4789m).

Ascended by E. Forge and D. Haylock on 7th August.

Alpine Grade: AD

From ABC the route ran up a 40° gully on the North face to the NW Ridge. This mixed ridge (which included several rock pinnacles) was followed to the rounded snow summit. The descent was via the E. Ridge. (Return time ABC-summit 7hrs).

Pik Molly (4800m approx)

Climbed on 18th July by A. Boardman and E. Forge.

Alpine Grade: D

After crossing the dry moraine of the N. Khurundy Glacier a small water filled gully was ascended to a col on loose rock. The col was followed as far as a large snow plateau. A steep snow slope to the right of this was then ascended. The snow face led to a ridge which in turn led to the summit. The ridge is particularly dangerous due to amount of loose snow and rock. (Return time ABC- summit 12hrs).

Two teams made additional ascents in the area:

1. D. Haylock, M. Hartley, S. Mankelow and R. Albertyn explored the area to the east of Base Camp for a period of one week, during which time six minor summits were ascended primarily for the purpose of gaining an overview of the area and for recording flora and fauna.

The peaks climbed were:

- Pt. 4403m - Pik Raven (S. Mankelow)
- Pt. 4285m - Pik Ram Chakor (S. Mankelow)
- Pt. 4254m (S. Mankelow)
- Pt. 4014m (D. Haylock, M. Hartley)
- Pt. 4223M - Talon Tower (D. Haylock, M. Hartley)
- Pt. 4275M - Pik 99 (D. Haylock)

2. D. Tulley, A. Boardman, E. Forge and J. Mitchell explored and climbed a number of rock peaks in the Alayskiy Khrebet. Maps of this area were not available to the team. The following peaks/routes were climbed: *Peak Prison* (approx. 4300m). D. Tulley, J. Mitchell. A rock peak accessible by a number of straightforward routes to the summit (climbed at about Severe/4a). *Peak Moloko* approx 4600m). A. Boardman, E. Forge, D. Tulley, J. Mitchell, V. Kononerov, T. Ruzbaev. A technically demanding and extremely deceiving route on the highest point in this section of the Alayskiy Khrebet. A number of technical sections on loose rock were encountered on this meandering route. Can be descended by a series of abseils.

Four shorter rock routes (approx. three to five pitches) were also climbed directly above Base Camp.

Summary and notes for future climbing expeditions Between them the Zaalayskiy and the Alayskiy Khrebet offer a huge amount of climbing potential for rock and ice climbers. Access to the foot of several of the 6000ers (including the highest, Khurundy Peak) is possible via the N. Khurundy Glacier. However, the majority of the routes to the summits of the 6000ers appear to be plagued by avalanches and huge cornice/serac danger. An expedition to any of these mountains will require a great deal of planning and time; the logistics involved are comparable to those required on a 7000m peak in the Pamirs or the Himalaya, with the added demands of route-finding.

That said, Khurundy Peak and the 6000m summits either side of her are possible for a strong climbing team with support. The only objectively safe and feasible route to the summit of any of the 6000ers that this expedition spotted takes the obvious ridge from the southern end of the N. Khurundy glacier. The ridge is long (circa 2000m) and has many sections of technical rock and snow/ice. From here a further day of climbing along easier angled slopes lead either to Khurundy Peak or one of the unclimbed 6000ers.

A Note On Peak Names

With the exception of Khurundy Peak which is marked as such on maps of the region, all the names of peaks listed here are informal ones given by the team members. No formal ratification of these names is being sought.

Exploratory Routes

Two teams from the expedition explored several of the valleys close to Base Camp and also further afield towards the Kyrgyz/China border. These valleys are marked on Map 2.

Travelling south-east from BC we found that the river emanating from the North Khurundy Glacier could be forded at its most braided point. We encountered a series of large parallel valleys draining the northern aspects of Pik Anatoli and other peaks further to the east. These valleys are a patchwork of species-rich meadows, the east facing aspects of which are particularly colourful. Small ponds dot the landscape and large rocky outcrops crenellate ridge lines, creating in places sheltered, gorge environments that are favoured by birds and small shrubs. In some areas this rock appeared to be stable enough to climb with many promising routes although protection looked sparse. The approach to the two attractive peaks immediately to the east of Anatoli appeared to be very straight forward and obvious lines lead to the summits. A large glacial lake is located in the moraine beneath these peaks. Towards the Tajik and Chinese borders are several attractive peaks which appear to offer excellent climbing potential in a very remote setting.

Flora and Fauna Seb Mankeiow

The Eastern Pamirs supports an interesting selection of flora and fauna. The main recorded sightings were located between an altitude of 3800m and 4500m in the Alay Valley and the Zaalayskiy Khrebet. Identification books were not carried by the expedition. Therefore, this report and the compilation of a species/sighting list is based upon the prior knowledge of the expedition members who were able to identify species in the field.

The Alay valley is a vast area of meadow and steppe-like grassland that supports a large number of birds and small mammals. Due to the large scale of this environment many species are often difficult to locate. Additionally, the ever-present marmot sentries alert not only their fellow marmots, but also everything else, of an approaching human. A pair of binoculars and telescope are essential in overcoming these problems. The periglacial grassland is punctuated by a series of deep gullies and re-entrants that have been cut by rain and snow melt. These areas often contain pools of trapped melt water, an attractive feeding ground for waders and ruddy shelduck. More accustomed to humans were the ever-present families of weasels, horned larks and wheatears all of which enjoyed the novel experience of climbing and perching on our base camp tents and yurt.

Above Base Camp, toward the Zaalayskiy range to the South, the valleys tend to become deeper and more sheltered. Many of these valleys support a lush, species rich, and fly/gnat rich vegetation! Pockets of vegetation are often formed in these valleys at the side of lateral moraines. The south and eastern aspects of the valley sides become more conspicuous as they are favoured by flowering plants and insects. Wild onions and mushrooms also abound, a welcome supplement to expedition rations. Bird life in several sheltered valleys was particularly rich with conglomerate cliffs supporting a colony of house martins and a cuckoo waiting to lay in the nest of the resident pipits.

Higher, at an altitude above 4000m, the vegetation shifts towards the specialist alpine plants. Steep scree slopes and a particularly damp mud (kept wet by large areas of winter snow) supported many hairy leafed cushion plants. The mud also provided an interesting record of passing animals in the form of crisp tracks.

The most notable sightings, the snow leopard, the blue sheep and the camels were all seen by small groups or individuals. There is much evidence of hunting in the area - a factor that undoubtedly increases the fear of humans. Additionally, the area is vast and it is likely that the well camouflaged inhabitants watched us more than we watched them.

The area is a joy to visit and the patient observer will be rewarded with an abundance of wildlife in a wild and accessible environment.

The following species/sighting list is just an indication of what an expedition visiting the area may expect to see. *Mammals and other*: Bactrian Camels (suspected Bactrian); Blue Sheep; Marmots; Rodents (various); Snow Leopard; Weasels; Toads; Dragonflies (various); Butterflies (including skippers, blues, whites, swallow-tail and others).

Birds: Alpine/Rock Chat; Alpine Chough; Buzzard*; Chukar Partridge*; Cuckoo; Dipper; Eagles (various); Griffon Vulture; Guldenstadts Redstart; Hawks (various); Hoopoe; Horned Lark; Jay; House Martin; Pied Wagtail; Pipits (various); Raven; Ruddy Shelduck; Sandpiper*; Scarlet Rose Finch*; Snow Bunting; Swift (possibly Needle Tailed); Wheatear (Isabelline or possibly Desert); Yellow Headed Wagtail.

Lowland Uzbekistan and Kyrgyzstan: Bee-eater; Black Winged Stilt; Common Mynah; Dove; Egret; Grey Heron; Magpie; Shrike; White Stork.

Plants(only genus recorded): Allium; Androsace; Anemone; Aquilegia; Arenaria; Aster; Campanula; Cerastium; Chesneya; Cirsium*; Corydalis; Gentiana; Gentianella; Geranium; Juniperus;; Leontopodium; Lindelofia; Lonicera; Papaver; Pedicularis; Phlomis; Polygonum; Potentilla; Primula; Ranunculus; Rhodiola; Rosa; Salix; Saxifraga; Sempervivella*; Senecio*; Silene; Tulipa (*Indicates suspected and not confirmed sighting)

Conclusions

Visiting a hitherto unexplored mountain region more than satisfied the climbing and exploratory ambitions of every member of the team. To be in a remote corner of the world and to have virtually no contact with other people was a thoroughly rewarding experience.

Future climbing expeditions will discover dozens of still unclimbed mountains ranging in height from 4000m to 6000m and ranging in difficulty from straightforward to extremely challenging. There also remains in this area nomadic people who have been exposed to little western influence, together with many species of flora and fauna, some of which are quite rare.

The members of this expedition agree that any or all of this report may be copied for the purposes of private research/reference.

Appendix 1: Credits

The expedition members would like to pass on their sincerest thanks to the following sponsors, supporters and friends who helped make the expedition possible.

Expedition Sponsor

Motorola

Supporters

Berghaus; Cotswold Outdoor London;
DB Outdoor/Edelrid; Ferno; Fuji, Go Gas; Lifesystems;
Lufthansa; Mamiya; Missing Maps; Olympus Cameras;
Rab Down Equipment; STA; Solarpak; Terra Nova;
Wayfayrer

Friends Of The Expedition

- Kate Thomas, Gordon Steer and Clare Blackwell at World Expeditions.
- Jon Tinker, Andy Broom and Cath Speakman at OTT. Andy MacNae and the staff of the British Mountaineering Council.
- Bill Ruthven and the Mount Everest Foundation. Shane Winser and the staff of the Expedition Advisory Centre.
- The staff of the British embassies in Uzbekistan and Kazakhstan.
- Colin Grierson at SOS Air Cargo.
- The staff of the pharmacy at The Hampshire Clinic, Basingstoke.
- The Operating department of The North Hampshire Hospital, Basingstoke.
- The marketing department of Turkish Airlines in London.
- Tim Robbins at Ortovox.

- The staff at Mountain Technology.
- The staff of the Embassy of the Kyrgyz Republic.
- Richard Cullis at Barclays Bank.
- The staff of the Map Room at the RGS-IBG.
- The staff of the University Library, Cambridge.
- Chris Preston and the staff at Presto Print, Reading.

Individuals: Gerry Acari; Jon Barnes; John Barry; Nick Bonner; Dave Bradbrook; Louise Bryce; Rab Carrington; Bob & Julia Deegan; Ian Dickens; Steve Duffy; Paul Edwards; Amanda Fisher; Alison Glazebrook; Jerry Gore; Martin Gossling; Lindsay Griffin; Paul Grogan; Miranda Haines; Rob Halliday; Dave Halton; Wendy Hartley; John Haylock; Ian Herrett; Barbara Herron; Alison Jeremy; Nick Lewis; Adrian Marks; Peter Norman; Andy Nutcase; Charles Orchard; Sarah Phillips; Sue Reay; Elliott Robertson; Andy Rogers; Peter Rush; Tim Simpson; Dorte Slott; Simon Spence; Peter Stewart; Geoff Sutcliffe; Robert Sutcliffe; Mark Taylor; Peter Thompson; Jonathan Topps; Larry Tyson; Nigel Winser.

The expedition was made possible by the hard work and dedication of the staff at Asia Travel who worked behind the scenes both in their offices in Tashkent and at the base camp to ensure that the expedition proceeded smoothly. In particular the expedition would like to thank Radiy Bakaaev, Viktor Vasyanin and the base camp team of Garrick Rakhimov, Viktor Kononov, Ramille Irkabaev, Timor Ruzbaev, Zulia Mikeeva, Reynardt Akhmaddullin and Ivan Fokin.

Appendix 2: Useful Addresses

Motorola Pamirs Expedition 1999

- General enquiries: Paul Deegan, 188 Mulgrave Road, Cheam, Surrey SM2 6JT, England
- Wildlife: Seb Mankelow, Ivy Cottage, Bridle Path, Ewshot, Farnham, Surrey. GU10 5BW
- Medical: Dr Ryck Albertyn, Medical Solutions, tel: 0181 401 2240. email: r.albertyn@cableinet.co.uk

Other Addresses

- The Expedition Advisory Centre, RGS-IBG, 1 Kensington Gore, London, SW7 2AR (email: eac@rgs.org)
- Asia Travel, 40 Sh. Rashidov St, Tashkent, 700029, Uzbekistan (email: adventure@asia-travel.uz)
- World Expeditions, 5 Northfields Prospect, Putney Bridge Road, London, SW18 1PE (email: enquiries@worldexpeditions.co.uk)
- OTTExpeditions, 62 Nettleham Road, Sheffield, S8 8SX (email: andy@ottexpd.demon.co.uk)
- Lindsay Griffin, c/o High magazine, 336 Abbey Lane, Sheffield, S8 0BY
- The Mount Everest Foundation, Gowrie, Cardwell Close, Warton, Preston, PR4 1SH
- The British Mountaineering Council, 177-179 Burton Road, West Didsbury, Manchester, M20 2BB (email: info@thebmc.co.uk)
- The Embassy of the Kyrgyz Republic, Ascot House, 119 Crawford St, London, W1H 1AF (email: KyrEmbUk@aol.com)
- Lifesystems, 4 Mercury House, Calleva Park, Aldermaston, Berks, RG7 4QW
- STA, 6 Wrights Lane, London, W8 6TA
- Missing Maps, East View Cartographic, 3020 Harbor Lane North, Minneapolis, MN 55447 (email: marcelle@eastview.com)
- SOS Air Cargo, Room 101, Building 308, Cargo Centre, Manchester Airport, WA15 8UX
- Ferno (UK) Ltd, Ferno House, Stubs Beck Lane, Cleckheaton, West Yorks, BD19 4TZ
- Berghaus, 17-19 Brindley Rd, Hertburn Ind. Est., District 11, Washington, Tyne & Wear, NE37 2SF
- Rab Down Equipment, 32 Edward Street, Sheffield, S3 7GB
- DB Outdoor Systems, Shap Road Industrial Estate, Kendal, Cumbria, LA9 6NZ
- Go Gas (UK) PLC, Wear Mill, King Street West, Stockport, Cheshire, SK3 0AJ
- Solarpak Ltd., Cock Lane, High Wycombe, Bucks, HP13 7DE.
- Wayfayrer, Westler Foods Ltd, Amotherby, Malton, N. Yorks, YO17 0TQ
- Foreign & Commonwealth Office (FCO), Travel Advice Unit, Consular Section, Clive House, Petty France, London SW1H 9HD. Tel: 0171 238 4503. www.fco.gov.uk/. BBC Ceefax p470 onwards.

Appendix 3: Equipment Report

Mountain Tents

Terra Nova loaned the expedition a number of 2-person Quasar and 3-person Hyperspace tents which performed well throughout the expedition. It was noted that on the Super Quasar the inner door hung in front of the zipped porch. When the latter was opened snow or rain would fall inside the inner. The outer zips on the tents had a tendency to freeze in icy conditions making opening and closing difficult. All the team members were familiar with pitching these geodesic tents and one feels that they would have been the expedition's choice if Terra Nova had not been so generous with its support.

Stoves

In the initial stages of planning it had been assumed that the expedition would need to use liquid fuel stoves. However, Motorola's sponsorship combined with support from bottled gas manufacturers Go Gas enabled the expedition to use clean and efficient bottled gas. A butane/propane mix was preferred due to its ease of combustion in freezing temperatures. Just one of the 50-odd bottles used failed. The remainder were reliable and gave out an efficient source of heat in a variety of weather conditions.

The expedition used the members' existing Coleman Alpine and MSR Rapidfire bottled gas stoves. One Coleman Alpine stove was bought by the expedition on the eve of departure but this failed on its first use at 4000m. Despite being stripped down and re-assembled it never recovered. Another Alpine stove failed when the rubber fuel pipe was accidentally melted. No such calamities befell the Rapidfires with their robust construction and metal fuel pipes. Unfortunately at the time of writing Rapidfire is not available in the UK.

Clothing

The expedition was supplied with Gore-Tex jackets from Berghaus. These were light and durable and proved popular with most of the expedition members. One complaint was the lightweight zip that proved difficult to do up with gloved hands. However the hoods easily went over a climbing helmet and the four pockets on the

chest were appreciated by all. Berghaus also made available lightweight 3-layer Gore-Tex overtrousers with full-length zips at an advantageous price to the expedition. These proved to be one of the most universally popular items of clothing. Team members supplied their own inner and mid-layers. Whilst the brands varied from person to person, most members brought thermals, fleece trousers or salopettes, two fleece jackets and a down duvet jacket. A variety of sun and warm hats were carried. The more experienced members also equipped themselves with neckerchiefs to ward off the fierce sun.

Climbing equipment

The expedition equipped itself with two racks of rock protection, 10 snow stakes and a similar number of ice screws. Because of the loose and unreliable rock and wet snow little of this was actually used. DB Outdoor provided the expedition members with an Edelrid Ultralight helmet, and supplied ropes, tape, cord and karabiners at an advantageous price. In addition, the expedition equipped itself with Ortovox avalanche transceivers, probes and shovels. Like the helmets, the transceivers were worn on the mountain at all times and provided everyone with a real and psychological advantage when forced to negotiate windslab snow conditions. All the members were impressed by their ease of use after a short practice session at Base Camp.

Sleeping Bags

The expedition members used a variety of sleeping bags. All were down-filled with between 800 and 1000gms of insulation. Rab Down Equipment supplied five members of the expedition with Ladakh 1000 sleeping bags at an advantageous price. Inevitably those individuals with warmer bags were grateful for the increase warmth that their bags provided them. All members brought their own Gore-Tex bivouac bags, although not all members used them on the hill. Again those that did carry their bivi bags were grateful for the extra security. Expedition members used Karrimor Karrimats, Thermarests or a combination of both under their bags.

Rucksacks

The expedition was fortunate to have Berghaus provide them with Cyclops II Talus and Aztec rucksacks. With a 65-75 litre capacity the rucksacks dealt adequately with the enormous loads that the team were forced to carry due to the unavailability of pack animals. The Cyclops II back system was easily strong enough to handle the 60lbs-plus loads, although some members remarked that they would have liked to have had a lumber pad at the base of the back system. Members equipped with the Talus rucksack commented that they would have preferred to have found the zip on the expandable side pockets on the opposite side of the pocket as entry was impaired when items were strapped to the side. Future expeditions would be wise to find a larger-capacity rucksack such as the Berghaus Expedition rucksack which was sadly not available in sufficient quantities at the time of departure.

Boots

Expedition members wore a variety of trekking and climbing boots. With one exception all members wore plastic boots on the hill. The one member who wore insulated leather ice climbing boots regretted his decision as they became wet and cold very quickly even with gaiters attached.

Miscellaneous items

The expedition was supplied with a number of Lifeventure bum bags which served a variety of useful purposes from holding photographic equipment to serving as the Expedition Manager's document and finance bag. Aladdin insulated mugs were used by the majority of the expedition members and were found to keep drinks hot (sometimes too hot!) for extended periods of time even on snow. Personal stereos (tape and CD) and short-wave radios were brought by a number of the members. Water bottles ranged in capacity from 1L to 2L. The most popular brands were Sigg, Nalgene and MSR (Dromedary). Dermatone sunscreen was used by expedition members on the climbing phases of the expedition. Regular high-factor suncream was used on the exploratory phases.

Appendix 4: Typical 24-hour ration

Breakfast - porridge or muesli w/milk powder and sugar or Wayfayrer breakfast (250/320kcal) and hot chocolate (150kcal).

Daytime - Dried fruit (150kcal), 4 snack bars (1000kcal), British Army AB biscuits with Primula or meat spread (200kcal).

Dinner - individual packet soup (150kcal), Wayfayrer meal (300-400kcal), portion of Smash (250kcal) or cous-cous (250kcal) or noodles (330kcal), sachet of tomato or brown sauce (10kcal), semolina (220kcal) or custard (210kcal), hot chocolate (150kcal) and a cup of tea (100kcal). The total number of calories per person per day averaged out at approximately 3000kcal. In addition all brew kits contained plenty more tea, powdered milk, sugar and hot chocolate powder to encourage sufficient hydration. Some kits also contained 'surprises' in the form of marshmallows and jelly to provide additional variety.

How it worked

Breakfast: the first meal of the day was generally well received by the team members.

Day: over 1000 snack bars were freighted out from the UK and consisted of all the popular brands of chocolate, crunch and breakfast bars. (The most popular of which was the king size Kit Kat). At times the Base Camp yurt resembled a well-stocked sweet shop! Chocolate and dried fruit were popular but more savoury snacks would have been appreciated.

Dinner: soups popular. Wayfayrers cooked well and the water they were heated in could be used for Smash etc. and/or for brews. Wayfayrers were found to be tasty, less dehydrating and quicker to cook than other types of hydrated and dehydrated meals. However their overall calorific content was low for the packed weight.

Desserts were well received.

Appendix 5: The Effectiveness of the Motorola Satellite Telephone System

The expedition considered various satellite options before quickly coming to the conclusion that the Motorola Satellite Telephone was the lightest option available. Traditional satellite telephone systems which link to medium-orbit satellites require a transceiver dish and base station which can vary in size from a box the size of an A4 file to that of a large suitcase. By comparison the Motorola Satellite Telephone is approximately three times the size of a regular cellular telephone, with the addition of a large telescopic aerial. With a standard Lithium Ion battery it weighs approximately 490gms. We hoped that the Motorola Satellite Telephone would be small and light enough to carry on the mountain, and so it proved to be.

The Motorola Satellite Telephone uses the Iridium system which consists of a network of 76 satellites in orbit around the earth. At any one time 66 of these provide over 98% global coverage. During the five-week expedition the team discovered only a handful of glitches, ranging from echoes on the line to the 'System Busy' signal being flagged up from time to time. The vast majority of call attempts were successful, and the clarity of speech on the line was of sufficient quality for a number of radio stations (including BBC R4's 'Today' programme) to conduct live interviews on a number of occasions during the life of the expedition.

Two types of Lithium Ion battery were used: standard and long-life. The long-life battery was heavier than the standard cells and lasted for several days at a time. It was only re-charged four times during five weeks. The standard battery lasted for around a day on stand-by and gave a couple of hours of talk-time. It is highly recommended that future expeditions equip themselves with at least one long-life battery.

The expedition was issued with three telephones. One was damaged in transit. The second was kept with the Expedition Manager at all times. The third was given to the Expedition Doctor for use in emergencies. In the event of the doctor travelling out with an injured person the rest of the team could have stayed in touch with him

via the Manager's Iridium telephone.

Motorola supplied the expedition with a SIM card. In addition, two expedition members brought their own Orange and Cellnet SIM cards for use in the telephones in the event that more than one call had to be placed simultaneously. Future expedition leaders should note that at the time of writing several accounts are compatible with the Motorola Satellite Telephone. Users should be aware that the owner of the Iridium may pay for incoming as well as outgoing calls depending on the type of SIM card being used. Costs vary depending on which account the calls are made.

The telephone batteries were re-charged by using a dedicated Motorola solar panel. In bright and marginal sunshine this worked extremely well, recharging flat batteries in three to five hours. A reactive gauge on the top corner of the panel allowed it to be angled to receive the maximum strength of light. Two solar panels were brought to Base Camp by the expedition.

In addition to the telephone system, an Iridium pager was also used. Although the pager can be used independently of the telephone, our pager was 'slaved' to the telephone. Whenever the telephone was switched on it identified both itself and the pager to the Iridium system, thereby informing the satellites of its geographical location so that telephone would know where to end calls and messages. Unlike a conventional pager, the Motorola satellite pager cannot accept voice messages via an operator. Instead users can either send a numeric message (such as a telephone number) or an email message which may be up to 80-odd characters long. In order to maximise battery life on the telephone, we asked callers to send the pager a telephone number or email message to the pager which we would then respond to. The pager was powered by one AA battery.

As with any technology, it is recommended that expeditions equip themselves with at least two Iridiums when relying solely on this line of communication for medical evacuation etc.

Appendix 6: Diary of the Expedition

11/07	Fly London to Tashkent	26/07	BC
12/07	In Tashkent	27/07	BC
13/07	Drive to Osh	28/07	BC
14/07	Drive BC	29/07	Tulley/Boardman/Forge/Mitchell (Climbing Team) to Alay range
15/07	Arrive BC		Mankelow/Haylock/Albertyn/Hartley (Wildlife Team) to Zaalayskiy valleys
16/07	In BC		Deegan/Harris-Ward to Chinese border
17/07	Trek to N. Khurundy Glacier ABC	30/07	All teams back to BC
18/07	Haylock/Hartley, ascent of Pik Ramille. Boardman/Forge, ascent of Pik Molly Deegan/Tulley/Mankelow/Mitchell/ Harris-Ward, recce of Khurundy Ridge	04/08	BC
		05/08	Haylock/Forge to ABC
19/07	Rtn BC	06/08	Haylock/Forge summit of Pik Svyetly.
20/07	BC	07/08	Tulley/Mankelow/Hartley/ Harris-Ward to Zaalayskiy Valley
21/07	BC. Construct Tyrolean Traverse		All members return to BC
22/07	Trek Pik Anatoli BC	08/08	BC to Osh
23/07	Deegan/Tulley/Mankelow/Mitchell/ Harris-Ward/Hartley/Forge to C1	09/08	Osh to Tashkent
		10/08	Tashkent
24/07	Deegan/Tulley/Mankelow/Mitchell/ Harris-Ward/Hartley/Forge to Summit Haylock/Boardman to C1. Deegan to BC	11/08	Tashkent/Samarkand. Dep Tashkent
		12/08	Arr London
25/07	Tulley/Harris-Ward/Forge to summit of Pik 4892. Rest to ABC	13/08	

MAP 2 - KEY

Exploratory Routes

Advance Base Camps

1:200,000 (1 square = 4km)

