

2016 Nubra Valley Expedition

**A report on the exploration and unclimbed peaks of the lower Rassa
Glacier in the Indian East Karakoram**

25th August – 2nd October 2016

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Gus Morton and Drew Cook approaching the summit of Thrung-ma Kangri, 6,315m

**Sponsored by the Mount Everest Foundation, the Montane Alpine Club Climbing Fund,
the Norwegian Alpine Club and the Austrian Alpine Club, with clothing support from
Bergans (Norway)**

Members:

Derek Buckle, Mike Cocker, Drew Cook, Gus Morton, Knut Tønsberg

**With thanks to Chewang Motup & Yangdu Gombu of Rimo Expeditions, Leh, Ladakh,
India**

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Summary:

During the period between the 25th August and 2nd October 2016 five members of the Alpine Club travelled *via* Delhi to Leh (3,500m) in Ladakh where they spent two days acclimatising before crossing the 5,370m Kardung La into the Nubra Valley. Following two additional days near Sumur the team transferred to the small town of Tirit from where they began a three day trek up the Tirit Phu to establish a base camp at 4,756m, a little beyond Arganglas and close to the confluence of the Rassa and Phunangma glacial outflows. After identifying an optimised access to the lower Rassa Glacier an advance base camp was subsequently established on 5th September on a sandy area at 5,100m. Further forays resulted in two high camps on the glacier proper; Camp 1 at 5,585m and Camp 2 at 5,675m. From the higher camp team members successfully made the first and second ascents of PK 6222 (Lak Kangri) *via* the SE face at Alpine AD on the 10th & 11th September respectively. Eight days later, on 19th September, the team accomplished the first ascent of their main target, PK 6315 (Thrung-ma Kangri), *via* the steep south face at Alpine D.

Introduction:

Having visited Leh on several occasions *en route* to the mountains of Zaskar I harboured a desire to follow the Shyok river north of the town to see, and if possible to explore, one or more of the less frequented valleys to the east of its junction with the Nubra river (see map in Appendix 1a). Geographically this area comprises the East Karakoram. On account of its proximity to Pakistan and China, however, the Nubra Valley has long been a sensitive region and travel for non-Ladakhis beyond the hot springs at Panamik is restricted. By contrast, tourist permits to cross the Kardung La are easily obtained in Leh, but permission to travel and climb further east can be a protracted and far from guaranteed affair.

Following a detailed search of the climbing literature, and studying Goggle Earth satellite images (see Appendix 1b), the region that we favoured was the Rassa Glacier, a remote glacier east of the village of Tirit reached by way of the Tirit Phu. Few climbing parties have visited the upper reaches of the Tirit Phu, although the lower valley has been used to gain access to Nya Kangri (6,480m), an impressive pyramidal peak to the north of Phonglas (see Map 1). A joint Anglo-American-Indian party co-led by Harish Kapadia and Chris Bonington in 2001 was the first mountaineering team to go beyond the confluence of the Rassa and Phunangma glacial outflows, but they concentrated their efforts on climbing peaks bordering the more southerly Phunangma Glacier.¹ It was not until 2014 that an Indian party, led by Divyesh Muni, a member of the 2001 multinational team, returned to explore the extensive Rassa Glacier to the north of the confluence.² It was their account, and subsequent private correspondence, that eventually convinced us to focus on the unclimbed 6,000m peaks forming the northern boundary of the first glacial spur (Glacier 1 on Map 1) of this glacier. Peak 6,315, adjacent to Tusuhm Kangri (6,219m, which was named and successfully climbed in 2014), became our primary objective.



Map 1. Schematic of the Rassa and Phunangma Glaciers showing the routes and camps of the 2014 party.
(Reproduced by kind permission of D Muni)²

The Climbing Team:



competent ski-tourer.

Derek Buckle, 72, British; Retired Medicinal Chemist. AC member & past VP. Has extensive mountaineering experience throughout the world; notably Tibet, Greenland, Kyrgyzstan (Tien Shan), Tajikistan (Pamirs), Russia & Georgia (Caucasus), India (Garhwal, Himachal Pradesh, Zaskar), China, South America (Bolivia, Peru, Ecuador), Antarctica (Antarctic Peninsula) and numerous trips to the Alps. He has made over 60 mountain first ascents plus many first British ascents and new routes. Leads rock to 5a/5b, ice to WI5, Mountaineering to TD and is a



competent ski-tourer.

Michael (Mike) Cocker, 61, British; Retired Physiotherapist. AC member. Leads rock to HVS/E1, UK ice to 5. Mountaineering experience: 12 seasons in the Alps (Walker Spur, Gervasutti Pillar, Brenva Spur etc); climbed in Peru, Bolivia and Ecuador (first ascent of North Ridge of Chichicapac (D), Cordillera Carabaya, Peru, 2007) and trekked in Patagonia. 15 months climbing and trekking in India, Nepal and Tibet (first ascent Snow Leopard Peak (AD), Jiwa Nala, India 2010; and Tangmor 5,902m, Pk 5,927 [Taklu], Pk 5,924 [Chota Sgurr], in the Spiti Valley, India 2014). He has climbed in Norway (Jotunheimen, Romsdal, Rjukan and Lofoten Islands), USA (Yosemite,

High Sierra, Tetons and Wind Rivers), Canadian Rockies, Pyrenees and East Africa (Mts Kenya and Kilimanjaro).



Andrew (Drew) Cook, 51, British; HSE Supervisor & Mountain Safety Advisor. AC member. He has extensive climbing/mountaineering experience in the UK, Alps, Indian and Nepalese Himalaya and has spent two seasons with the British Antarctic Survey in Antarctica. He has accomplished first ascents in India and Antarctica in addition to several new routes. He is a competent ski-tourer and leads to HVS on rock.



Colin (Gus) Morton, 66, British, Retired European Civil Servant, AC Member. He has extensive climbing/mountaineering experience in the Alps & Dolomites and in numerous countries around the world having completed summits up to a height of 6,990m. Gus has accomplished two first ascents in the Karakoram and one in the Kunlun. He rock climbs to HVS/E1 and is a competent ice-climber and ski-tourer. His major claim to fame is as the author of the "funalps.com" website.



Knut I. Tønnsberg, 61, Norwegian, Project Coordinator, AC & Norwegian AC member. He has extensive experience in the Alps and Dolomites developed over many seasons. Knut has many significant first winter ascents in Norway to his credit in addition to a very broad Norwegian mountaineering experience. He is a highly competent ski-tourer. Leads rock to HVS 5a and ice to WI4.



The team in Leh: From left to right; Derek Buckle, Gus Morton, Drew Cook, Knut Tønnsberg, Mike Cocker

Support Staff & Administration:

All in-country arrangements were made through the husband and wife team of Chewang Motup and Yangdu Gombu *via* their trekking company Rimo Expeditions (229 DLF Galleria, Phase IV, Gurgaon, Haryana – 122022, India; email info@rimoexpeditions.com; tel: 91 – 124-2806027 / 28; Fax: 91 – 124-2806030; www.rimoexpeditions.com). We have worked with Rimo many times over the last seven years and they have consistently accommodated our requirements. They have the breadth of organisation to respond rapidly to changes of circumstance and problems and greatly facilitate our expeditions. Both they and their staff have always been a pleasure to work with.

In addition to Tsewang Phuntsog, the Liaison Officer appointed by the Indian Mountaineering Foundation, who was of invaluable assistance in the evacuation of Knut Tønsberg when he developed altitude problems, we were supported by three exceptional high altitude porters (HAPs, Tsering Bhotia, Sandeep Rai Sherpa & Karma Sherpa), our excellent cook (Rose Tamang) and his two assistants (Norbu Bhotia & Uttam Tamang). On the inward trek to Base Camp we also had the assistance of a sirdar, Konchok Thinles.



Tsewang Phuntsog



Tsering Bhotia



Sandeep Rai Sherpa



Karma Sherpa



Rose Tamang



Norbu Bhotia



Uttam Tamang



Konchok Thinles

Itinerary: (See also Appendix 1 {for daily itinerary} & 2 {for Key GPS Locations})

The journey to Base Camp in the Tirit Valley:

At 3,500m, Leh is an excellent place to begin acclimatising prior to leaving for the mountains proper. We spent two nights there before being driving north over the 5,370m Kardung La pass to spend another two nights near the village of Sumur (3,170m). Since this was our first time in the Nubra Valley we took the opportunity to travel a little further north to visit the sacred lake of Yerap Tso and the Panamik hot springs, as well as driving west along the Shyok Valley to the unusual sand dunes at Hunder.



The 5,370m Kardung La pass

On 31st August we drove to the Buddhist shrine at Tirit where we met with our support team



Loading the horses at Tirit

and the 25 horses that were to carry our equipment and provisions to the site of our proposed base camp close to Arganglas. Initially the trek followed a well-defined track that avoided the steep gorge forming the entrance to the Tirit Phu by climbing high above the valley to cross the 3,945m Chamba La. The path diverged soon after this pass, with the horses following a lower path towards the river while those on foot traversed at a higher level in order to avoid the numerous deep ravines that descend towards the valley floor. After 5h trekking across the barren landscape parallel to the Tirit Phu we finally descended to a wooded enclave at Wasekar (4,057m), which was affectionately termed 'Jungle Camp'. Perhaps unsurprisingly the horses arrived in advance of our party and the support team had already erected the tents for our one night stay.



Horses starting the trek into the Tirit Phu

Continuing up the valley the next day the path more closely followed the river as the valley widened and was considerably easier than the 1,000m of ascent necessary to get to Wasekar. In a little over 4h we reached the small grassy outcrop at Phonglas (4,643m) where we spent the second night. Phonglas is one of the points from which attempts on Nya Kangri (6,520m) begin and by chance we met two Indian climbers (both of whom had been on previous trips



Gus at 'Jungle camp', Wasekar

with Divyesh Muni) descending the previous day. They had hoped to make an ascent of Nya Kangri but were foiled by an extended period of poor weather. Fortunately, the weather looked more encouraging by this time and we had good views of both Nya Kangri and Thugu (6,158m), the mountain which sits astride the confluence of the Rassa and Phunangma valleys. The SW ridge of Thugu was attempted in 2001 by Kapadia and Dam, but they were defeated around 5,800m by unstable rocks, deep snow and a lack of suitable camp sites.¹

From Phonglas we were reduced to only 6 horses since the remainder were to be used to assist the Indian support party to return to Tirit. However, as it was only a 1h journey from here to our Base Camp, situated a little beyond Arganglas (at 4,756m), it was easily possible for the horses to make the double journey. With time to spare after such a short day several of the team explored the terminal moraine leading to the Rassa Glacier which, fortunately, did not offer any significant difficulties.



The mountains south of Base Camp

Exploration and climbing from the Rassa Glacier:

From photographs generously provided by Divyesh Muni, we planned to focus on PK6315 as the primary objective and we intended to approach this by way of Glacier 1 (see Map 1 above and satellite image in Appendix 1b). Much would depend on the prevailing conditions when we arrived, however, since we would be several months later in the year than the time of his visit. But the first priority was to establish an advance base camp (ABC) high in the valley from which we could develop higher camps in order to mount our assaults.



Mike & Drew on the Rassa Glacier terminal moraine

Right now though, we were going nowhere. It snowed the night that we arrived at BC and now Knut was beginning to show symptoms associated with the altitude. With the horses still available therefore he took the precaution of returning to Tirit with Gus, Tsewang and one of the Sherpas before eventually taking an early flight back to Norway. It was a disappointment to see him leave so early in the trip, but better this than to have more major problems later on.

By 4th September the weather had improved significantly and we were bathed in warm sunshine. We thus set out to identify a suitable site for ABC. Assisted by three HAPs, Drew, Mike and I re-ascended the terminal moraine following a marked animal track leading towards the Rassa Glacier. Higher up the ground became more complex as we traversed rightwards towards the untracked medial moraine of Glacier 1 leading to a series of green glacial pools below the main glacier snout of this subsidiary glacier. Uninviting as this terrain was, we managed to locate an idyllic oasis of sand adjacent to two clear glacial pools at 5,100m on which we decided to position ABC. This site had been occupied previously, presumably by the 2014 team. The following day ABC was fully established and we moved in.



ABC at 5,100m on the moraine, Drew in the foreground



Mike on the complex moraine above ABC

With ABC up and running it was now time to prospect for higher camps. The first foray was to cross heavily broken ground to the true left lateral moraine, which was the route that we believed the 2014 party had taken. This supposition was later confirmed when at about 5,200m we passed a clearly defined camping site. While this approach demonstrably led onto the glacier, after continuing a little further we eventually concluded that a better alternative existed by way of the medial moraine.

On the morning of 7th September Drew, Mike and I decided to explore options for higher camps from the medial moraine. Crossing the crevassed glacier snout above ABC was awkward, but not impossibly so, and before long we were following the relatively straightforward crest of the untracked moraine. As this diminished we traversed left onto the glacier until it started to plateau. A little further on, at 5,585m, we found a suitable site for Camp 1 so we deposited a gear stash before returning to ABC. Just as we and two HAPs were setting off to occupy Camp 1 the following



Camp 1 on the glacier at 5,585m

day ABC was fully established and we moved in.

day Gus amazingly appeared, having made an impressive ascent from Tirit to BC the previous day. Having reassured the team about Knut's condition he wisely decided to return to BC that day and rejoin us at the higher camp in a day or two.



Crevasse on the way to Camp 2 at 5,675m

With the weather remaining fine Drew and I made a light carry further up the glacier on 9th September, taking care to keep left of the residual medial moraine and to avoid several wide crevasses. An hour later we reached an ideal site for Camp 2 at 5,675m, directly south of PK6222. After returning to Camp 1 all three of us now relocated to Camp 2 with the help of Tsering and Sandeep.

In continuing good weather Drew and I set off early on the morning of 10th September to attempt the SE face of PK6222 *via* a prominent snow-covered gully bounded on the left by a rock spur. Soloing the 35-40° slope close to the spur on good quality snow and occasional ice patches we exited onto a magnificent snow arête leading to a compact, corniced summit and the mountain's first ascent (5h, Alpine AD). The views across to Meme (6,560m) on the opposite side of the glacier, to PK6315 and to a host of unclimbed peaks to the north were stunning. Descending the same way we made one 30m abseil to avoid an awkward ice patch to return to Camp 2 some 7.5h after leaving. By this time Gus had rejoined us at the high camp and he and Mike made the second ascent *via* the same route the following day. We chose to name this peak Lak Kangri (Ladakhi for Raptor Snow Peak) on account of an unknown bird of prey that flew across the summit just as Gus and Mike were reaching the top. Like us, they considered both the peak and the route to be a superb mountaineering day out. Anywhere other than in this remote

we exited onto a



Derek on the SE face of Lak Kangri, 6,222m



Lak Kangri (6,222m) from the summit of Thrung-ma Kangri

classic outing.

Following significant overnight snowfall (10-15cm) we took the collective decision to return to BC on the 12th September. While it was a good decision, a combination of snow and reduced visibility made the moraine descent rather treacherous and it was a relief to reach the relative ease of the track leading back to camp and to enjoy the sumptuous food that

Rose and his helpers prepared.

The weather over the next two days continued to be unsettled so we did little but eat, sleep, read and listen to music. We were accompanied by half a dozen or more horses that had been left to graze at BC and their neck bells made a musical accompaniment to the sound of the streams running close to camp. At night this



The splinted horse at BC

could be a little tiresome, but at least we were aware when they encroached too close to the tents. In our absence one BC tent had been virtually destroyed by one or more horses and we were concerned that they may have developed a destructive habit – not to be recommended while we were in occupancy! Even close to BC the terrain could be hazardous and one horse evidently found this out to its cost when it was seen one morning with an obviously broken foreleg. Although Tsering managed to organise a professional-looking splint, whether the bone would heal in time for it to descend to Tirit before the winter snows is rather doubtful.

Conditions on 15th and 16th September were still unsuitable for a return to Camp 2 but rather than do nothing at BC we spent both days exploring the lower Phunangma Valley. In doing so we passed two of the camps used during the 2001 international expedition and managed to get amazing views back to Nya Kangri. Although we caught glimpses of the Phunangma Glacier we did not get high enough to spot the main peaks climbed during this expedition. It was clear, however, that Thugu was not easily accessible from the south.

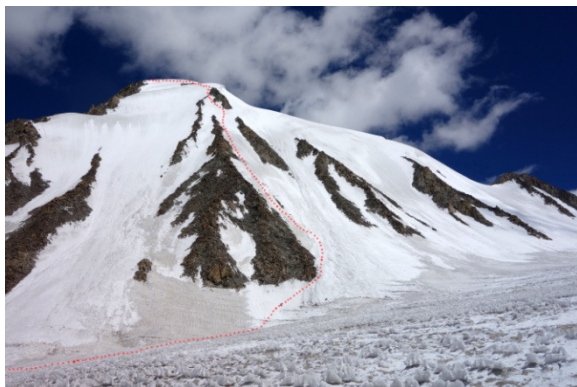


Thrung-ma Kangri (6,315m, left of centre) & Meme (6,560m) from Lak Kangri summit



Nya Kangri (6,520m) from the Phunangma Valley

By 17th September the weather was beginning to look promising again so we elected to return to Camp 2, this time in a single 7h push. It was a hard day after which we needed another rest day to recuperate. By now we had our sights set on the primary objective, PK6315. Our initial idea was to approach the peak by way of the col between it and Tusuhm Kangi and the NW face, but this no longer looked an attractive option. Instead, a brief survey further up Glacier 1 suggested that a direct route up the south face might be a better alternative. Leaving early on 19th September Drew, Gus, Mike and I walked up the crevassed glacier past the spur leading to the 'Tusuhm col' until we reached the second snow/ice slope cleaving the face.



**The south face route to Thrung-ma Kangri (6,315m).
Photo: D Muni**

ultimately to a fine, corniced arête and to the first ascent of the compact, airy summit of PK6315 (7h, Alpine D). Once again the route, the mountain and its extensive panorama were exemplary. With time pressing we descended by way of 8 full-length 60m abseils before reaching easier ground. We arrived at Camp 2 some 12 hours after leaving and just as darkness fell. On account of its dominant position we chose to call this peak Thrung-ma Kangri (Ladakhi for Protector Snow Peak). Anywhere else it too would become a classic.



Gus belaying high on Thrung-ma Kangri, Meme behind the peaks climbed in 2001 while our HAPs retrieved the tents and other equipment from Camp 2.

Some of this plan worked but by now a degree of lethargy was setting in. Having cleared the higher camps a spell of adverse weather set in, limiting our options considerably. Mike had already decided to

Depositing duvets and excess clothing at the foot of the left hand rock spur we zig-zagged solo up the face until it noticeably steepened. Front-pointing close to the rocks on 40° slopes we traversed to the right hand rock ridge as the face narrowed before roping up in two pairs to cross to the main (first) snow slope. At this point the angle steepened further to 45-50° and became icy. The final 200m of snow/ice led



Derek leading the first roped pitch on Thrung-ma Kangri

We initially intended to spend 20th September relaxing at Camp 2 but before long the urge to return to BC became insurmountable. At noon, therefore, we packed the essentials and trudged back to camp in a little over 4h. By this time I, at least, was determined not to return to ABC to explore Glacier 2 and beyond and soon this feeling pervaded the rest of the team. The newly hatched plan was to venture a little further up the Phunangma Valley in the hope of getting a better view of



Gus descending from the summit of Thrung-ma Kangri

return to Leh early and after two more days when we could do little Drew, Gus and I decided to descend also. The support team had to await the horses, but they were fairly close on our heels and arrived back in Leh soon after us to complete the expeditionary part of our journey to the Nubra Valley.

Future opportunities in the region:

There is no shortage of unclimbed peaks bordering the Rassa Glacier as only a few have been successfully ascended. In 2014 Divyesh Muni's team climbed Tusuhm Kangri, close to where we were based, and Rassa Kangri at the junction of Glaciers 2 and 3 (see Map 1), and the Kapadia/Bonington team climbed Meme from the south in 2001. Our team climbed PK6222 and PK6315. Thugu has yet to receive a successful ascent and it is believed that Nya Kangri is also unscalded. PK6267 at the head of Glacier 1 is a worthy objective but would need either a strong party or an additional camp higher in the valley as the main summit is some way back. We did not venture into Glacier 2 or 3 but there are several unclimbed peaks that can be reached from these sub-glaciers (*viz.* PK6365, PK6189 & PK6440).



Panorama showing peaks of the upper Rassa Glacier

The overriding issue with climbing in the East Karakoram is one of permits. Persistence can pay off but there is absolutely no guarantee that they will be forthcoming. It must be remembered that this is a sensitive border area.

Conclusion:

Following Divyesh Muni's successful expedition to the Rassa Glacier in 2014 we established an advance base camp and two higher camps in the first sub-glacier descending from the right. From the highest camp at 5,765m, members of the team made successful ascents of two previously unclimbed 6,000m peaks; the first and second ascents of PK6222 (Lak Kangri) *via* the SE face at an Alpine grade of AD on 10th and 11th September 2016, and the first ascent of PK6315 (Thrung-ma Kangri) *via* the south face at an Alpine grade of D on 19th September 2016.

Income & Expenditure:**INCOME:**

MEF Grant:	£ 2,400.00
Alpine Club Climbing Fund Grant:	£ 300.00
Austrian Alpine Club Grant:	£ 400.00
Norwegian Alpine Club (Norsk Tindeklub)	£ 625.00
Additional personal contributions:	<u>£14,135.00</u>
Total:	£17,860.00

EXPENDITURE:

Flights to and from Delhi:	£ 2,500.00
Flights to and from Leh & Delhi:	£ 900.00
Excess Baggage charges:	£ 58.00
Visas:	£ 650.00
Insurance:	£ 1,100.00
IMF Peak Fees:	£ 1,300.00
Liaison Officer clothing allowance:	£ 312.00
In country costs (to Rimo):	£10,400.00
Additional meals & refreshments:	£ 350.00
Gratuities:	<u>£ 290.00</u>
Total:	£17,860.00

Bibliography & Notes:

1. H. Kapadia, In the Land of the Argans, *Himalayan Journal*, **58**, (2002)
2. D. Muni, *American Alpine Journal*, 310, **57**, (2015)

Glossary:

Indian names vary widely in their spelling, presumably reflecting the phonetic translations used by cartographers. We have used those employed on the Survey of India maps wherever possible. Given heights are also those used on the 1:50,000 Survey of India maps.

Gompa is a monastery

La signifies a pass

Nala, Tokpo & Phu all imply a river, stream or valley, but other terms are also used

Maps:

The most readily available map is the Leomann 1:200,000 Indian Himalaya Map, Sheet 3, Jammu & Kashmir, which can be obtained from Stanfords, 12-14 Long Acre, Covent Garden, London, WC2E 9LP, www.stanfords.co.uk. Also available from the same vendor is the 1:150,000 Editions Olizane map covering Ladakh & Zaskar North. A 1:175,000 Ladakh & Zaskar Trekking map is published by Milestone Books as part of their Himalayan Series and is available from Amazon, www.amazon.co.uk; ISBN: 9788190327091.

Electronic versions of the Russian 1:200,000 maps, 200k-i43-12 & 200k-i43-18 are held by the Alpine Club, 55 Charlotte Road, London, EC2A 3QF, www.alpine-club.org.uk and are available free on-line.

Satellite pictures are freely available from Google Earth, www.googleearth.com

Sponsors:

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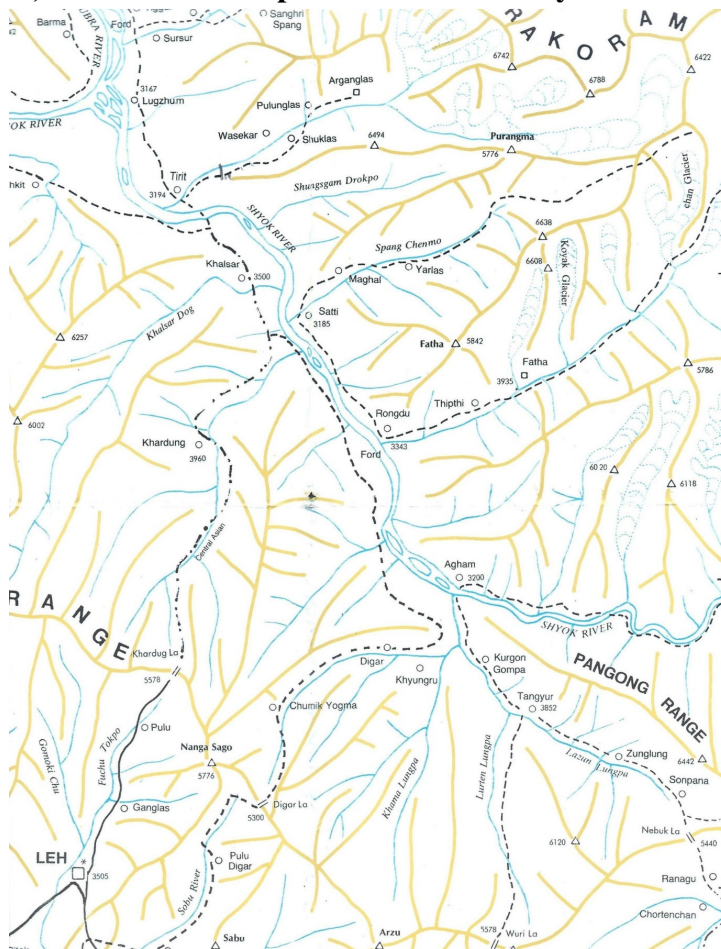
Norwegian Alpine Club



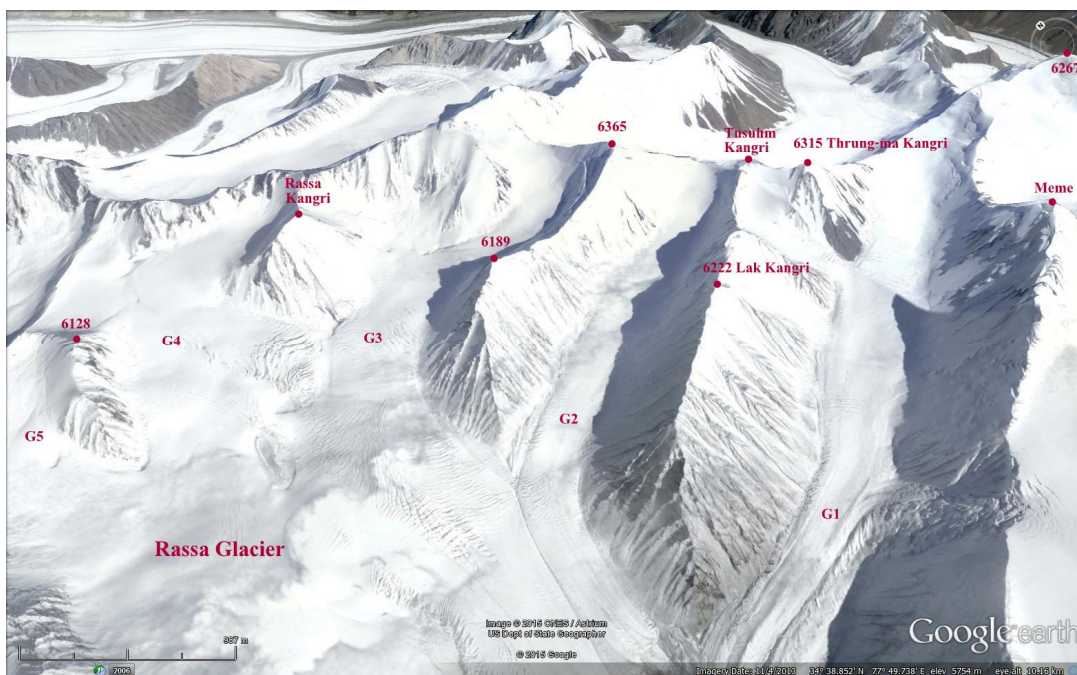
Bergans

Appendix 1

Appendix 1a; 1:200,000 Leomann map of the Nubra Valley



Appendix 1b; Google earth satellite image of the Rassa Glacier



Appendix 2

Daily Itinerary:

Thursday 25 th August	Fly overnight from Europe to Delhi
Friday 26 th August (Overnight Ashok County Resort Delhi)	Whole team arrive Delhi to meet with the IMF and Liaison Officer, Tsewang Phuntsog.
Saturday 27 th August (Overnight Kanglingchen Complex in Leh)	Team fly from Delhi to Leh (3,500m) to meet Rimo representatives and confirm onward plans. Request Nebra Valley permits.
Sunday 28 th August (Overnight Kanglingchen Complex in Leh)	Acclimatisation and sightseeing in the Indus valley. Derek & Mike visit Takthok Gompa in the Sakti Valley and the museum at Stok Palace.
Monday 29 th August (Rimo hotel, Tiger Village)	Depart Leh to drive over the Kardung La Pass (5,370m) to Sumur (3,170m) for overnight stay.
Tuesday 30 th August (Rimo hotel, Tiger Village)	Porters delayed so visited the 150 year old Samstemling Gompa before travelling further up the Nubra Valley to the sacred lake of Yerap tso and the dilapidated Panamik hot springs. In the afternoon Mike and Derek drove up the Shyok river to see the Hunder sand dunes with their cohort of camels. Met up with Konchok Thinles, our sirdar for the walk to BC.
Wednesday 31 st August (Camp at Wasekar)	Drove to the Buddhist shrine at Tirit to meet up with our support team and horses for the trek along the Tirit Phu. Climbed first to the Chamba la (3,945m) before descending to the 'Jungle camp' at Wasekar (4,057m); 1,000m of ascent.
Thursday 1 st September (Camp at Phonglas)	Continued the trek to Phonglas (4,640m), crossing the Tirit Phu to the open camp ground with its excellent views of Nya Kangri (6,520m).
Friday 2 nd September (Base Camp near Arganglas)	Continued the short trek to a little beyond Arganglas to a Base Camp at 4,756m near the confluence of the rivers descending from the Rassa and Phunangma glaciers. Gus, Tsewang and Derek explore the probable route to the true right of the Rassa Glacier to <i>ca</i> 5,000m.
Saturday 3 rd September (Base Camp)	Snowed overnight and Knut unwell. Negotiated evacuation of Knut by horse and foot to Tirit and then Leh. Gus and Tsewang descend to assist.
Sunday 4 th September (Base Camp)	Assisted by two HAPs (Tsering and Karma), Drew, Mike and Derek located an ideal ABC at 5,100m on a sandy beach adjacent to two glacial pools. After making a gear drop we returned to BC.
Monday 5 th September (ABC)	Drew, Mike and Derek relocate to ABC, assisted by the three HAPs.
Tuesday 6 th September (ABC)	Drew, Mike and Derek prospect for a possible higher camp site on the Rassa Glacier 1 following the true left broken glacial moraine. Reached 5,313m before deciding the medial moraine was more appealing.

Wednesday 7 th September (ABC)	Explored the highly broken medial moraine to identify a site for Camp 1 on the glacier at 5,585m. Returned to ABC after depositing a gear stash.
Thursday 8 th September (Camp 1)	Drew, Mike and Derek left early to occupy Camp1, assisted by Tsering and Karma. Amazingly Gus caught up after a rapid ascent from Tirit but planned to return to BC and join us at Camp 1 later.
Friday 9 th September (Camp 2)	Drew and Derek made a light carry to Camp 2, a little higher on the glacier at 5,675m, before returning to Camp 1 just as Tsering and Sandeep arrived with much of Gus's gear. Drew, Mike and Derek then relocated to Camp 2 while Gus remained at ABC, planning to come up tomorrow.
Saturday 10 th September (Camp 2)	Rising early Drew and Derek climbed the SE face of PK 6222 (to the NW of camp), soloing the 35-40° snow/ice slopes to make the first ascent of this snow-capped peak in 5h from Camp 2. Graded Alpine AD and called Lak Kangri (Ladakhi for Raptor Snow Peak). One 30m abseil was used on the steeper icy section in descent.
Sunday 11 th September (Camp 2)	Mike and Gus made the second ascent of Lak Kangri following the same route and in better time. They too abseiled the icy section. Derek explored a little further up the glacier to look for a possible route to PK 6315.
Monday 12 th September (Base Camp)	Following a significant fall of snow overnight we elected to descend to BC. A difficult descent in poor visibility on the glacier and slippery snow on the moraine.
Tuesday 13 th September (Base Camp)	Poor conditions due to slippery snow cover so essentially chilled out at BC.
Wednesday 14 th September (Base Camp)	An uncomfortable night with inquisitive horses brushing the tents and constant bell-ringing. One broke its leg somehow – a distressing sight but splinted by Tsering.
Thursday 15 th September (Base Camp)	Weather still unsettled so Drew, Gus and Derek explored the lower reaches of the Phunagma valley. Passed the earlier camp site used by the 2001 International Expedition. No obvious route to Thugu this way.
Friday 16 th September (Base Camp)	Another exploratory walk up the Phunagma Valley, this time to get sight of the Phunagma Glacier. Excellent views of Nya Kangri but not high enough to see the peaks climbed by the Bonington-Kapadia team.
Saturday 17 th September (Camp 2)	A perfect day so decision taken to relocate back to Camp 2 in a single 7h push – a hard day assisted by Tsering, Karma and Sandeep.
Sunday 18 th September (Camp 2)	A day of rest after yesterday's efforts.
Monday 19 th September (Camp 2)	Rather windy and cold overnight but eventually set off to attempt our main objective, PK 6315 <i>via</i> the S Face. Initially we climbed the true right of the glacier to a rock ridge beyond the obvious first couloir and soloed the smaller couloir just beyond on up to 40° snow/ice. After

	crossing into the main couloir the face steepened and became icier and we roped in pairs for the final 200m 45-50° slope to make the first ascent of Thrung-ma Kangri (Ladakhi for Protector Snow Peak) at Alpine Grade D. We descended in 8 full-length 60m abseils.
Tuesday 20 th September (Base Camp)	Descended to BC in a 4h hard day leaving the non-essential gear to be collected later.
Wednesday 21 st September (Base Camp)	Derek and Gus had an easy day while Mike and Drew went to collect gear from ABC and Tsering and Sandeep collected residual gear from Camp 2 in an Herculean effort.
Thursday 22 nd September (Base Camp)	Snowed heavily overnight but Mike still decided to return to Leh with Tsewang and Karma. They spent the night in Jungle Camp <i>en route</i> .
Friday 23 rd September (Base Camp)	Drew, Gus and Derek had planned to investigate the Phunangma Valley in a little more depth but today was an easy day while the snow cover evaporated.
Saturday 24 th September (Riverside Restaurant & campsite, Tirit)	An overcast day and the prognosis was not good. Drew, Gus and Derek therefore decided to return to the valley early in one long 8h stint. With no back-up we walked to the bridge before getting a taxi to the Camp site. Met the horses going up soon after leaving camp.
Sunday 25 th September (Kanglachen Complex, Leh)	Hired a communal taxi for the 3h journey back to Leh. Support staff begin the descent to Jungle Camp. Mike overnights at Pangdong Lake.
Monday 26 th September (Kanglachen Complex, Leh)	Drew, Gus and Derek spend an easy day in Leh and are later rejoined by the support staff and Mike for a celebratory drink.
Tuesday 27 th September (Kanglachen Complex, Leh)	Drew and Gus start a 2-day motorbike hire, visiting Alchi and surrounds today. Mike and Derek tour Leh, visiting the old Palace and part of the old town.
Wednesday 28 th September (Kanglachen Complex, Leh)	Drew and Gus off on their bikes to the Chandra Pass while Mike and Derek hire a car to drive along the Zaskar River towards Chilling and visit Alchi. They then visited the Saspol caves.
Thursday 29 th September (Kanglachen Complex, Leh)	Drew decides to cycle down from the Kardungla Pass while Gus and Derek have a guided tour of the old town. Celebratory meal with Tsewang in the evening following a soiree with Motup at the new Rimo headquarters.
Friday 30 th September (Ashok County Resort Delhi)	Flight to Delhi to meet the IMF
Saturday 1 st October (Ashok County Resort Delhi)	Spare day in Delhi.
Sunday 2 nd October	Party fly from Delhi back to Europe.

Appendix 3

GPS Coordinates & Heights of Key Locations

Location	N coordinates	E coordinates	Height	Comment
Chamba La	34°32.977'	77°40.654'	3,945m	31/8/16, Beyond Tirit
Wasekar Camp	34°34.285'	77°42.444'	4,057m	31/8/16, <i>aka</i> Jungle Camp
Phonglas Camp	34°35.776'	77°45.783'	4,643m	1/9/16
Base Camp	34°35.979'	77°47.483'	4,756m	2/9/16, Just beyond Arganglas
ABC	34°37.066'	77°48.501'	5,100m	Established 4/9/16 on a sandy beach
High point on the true L lateral moraine	34°37.268'	77°49.177'	5,313m	6/9/16, a little beyond a 2001 Bonington-Kapadia camp
Camp 1	34°37.863'	77°50.319'	5,585m	Established 7/9/16 on the glacier
Camp 2	34°38.125'	77°50.739'	5,675m	Established 9/9/16 on the glacier
PK6222	34°38.515'	77°50.367'	6,266m by GPS	10/9/16, 1 st ascent <i>via</i> SE face, AD; Lak Kangri (Raptor Snow Peak)
PK6222	34°38.515'	77°50.367'	6,266m by GPS	11/9/16, 2 nd ascent <i>via</i> SE face
PK6315	34°38.746'	77°51.408'	6,341m by GPS	19/9/16, 1 st ascent <i>via</i> S face, D; Thrung-ma Kangri (Protector Snow Peak)

Appendix 4

Weather and Conditions:

Although June is reported to be the best time to visit this part of the East Karakoram it does suffer from the major drawback of difficult river crossings. One of the only two climbing teams known to have travelled this far up the Tirit Phu (Diyesh Muni in 2014) had major problems fording the main river descending from the combined Rassa and Phunangma glaciers and crossed only by way of a Tyrolean traverse after a significant detour to the Phunangma glacial snout. This autumn, by contrast, we found the rivers fairly benign and easily crossed either by boulder-hopping or wading. Moreover, we generally experienced extended periods of fine, sunny weather, although these were interspersed with one or two days of modest snowfall. At no time was the level of snow substantial (not exceeding 15cm) and this rapidly sublimed following one or two days of sunshine. Good weather cannot be guaranteed, however, and an Indian party that we met descending from an abortive attempt on Nya Kangri had suffered 2 weeks of unstable conditions.

Despite some deep crevasses, we found the part of the Rassa Glacier that we explored to be relatively straightforward. It was clearly more broken on the true left side, but this was not

the route that we chose. More problematic was surmounting the glacial snout above ABC (which was constantly changing) and the unstable nature of the medial moraine. The latter was particularly hazardous when partially covered by new snow. The area surrounding ABC can best be described as a disaster zone, taking on the characteristics of an intensive bombardment zone!

Appendix 5

Flora & Fauna:

Ladakh is a desert area and little vegetation exists away from close proximity to the major rivers. On entering the Tirit Phu the terrain was a barren landscape with the main exception of Wasekar, known euphemistically as Jungle Camp. Here there was an outcrop of trees and other vegetation. A Himalayan bear was reportedly seen near this camp. Higher in the valley there were areas of sparse coarse grass on which domesticated yaks and horses could graze; particularly near Phonglas and Arganglas. The occasional marmot was spotted, but no other mammals, although the carcasses of a few Himalayan blue sheep were found. Raptors, white-capped river chats, wagtails and ravens were the most commonly seen birdlife. Flowering plants were rare and of limited varieties.