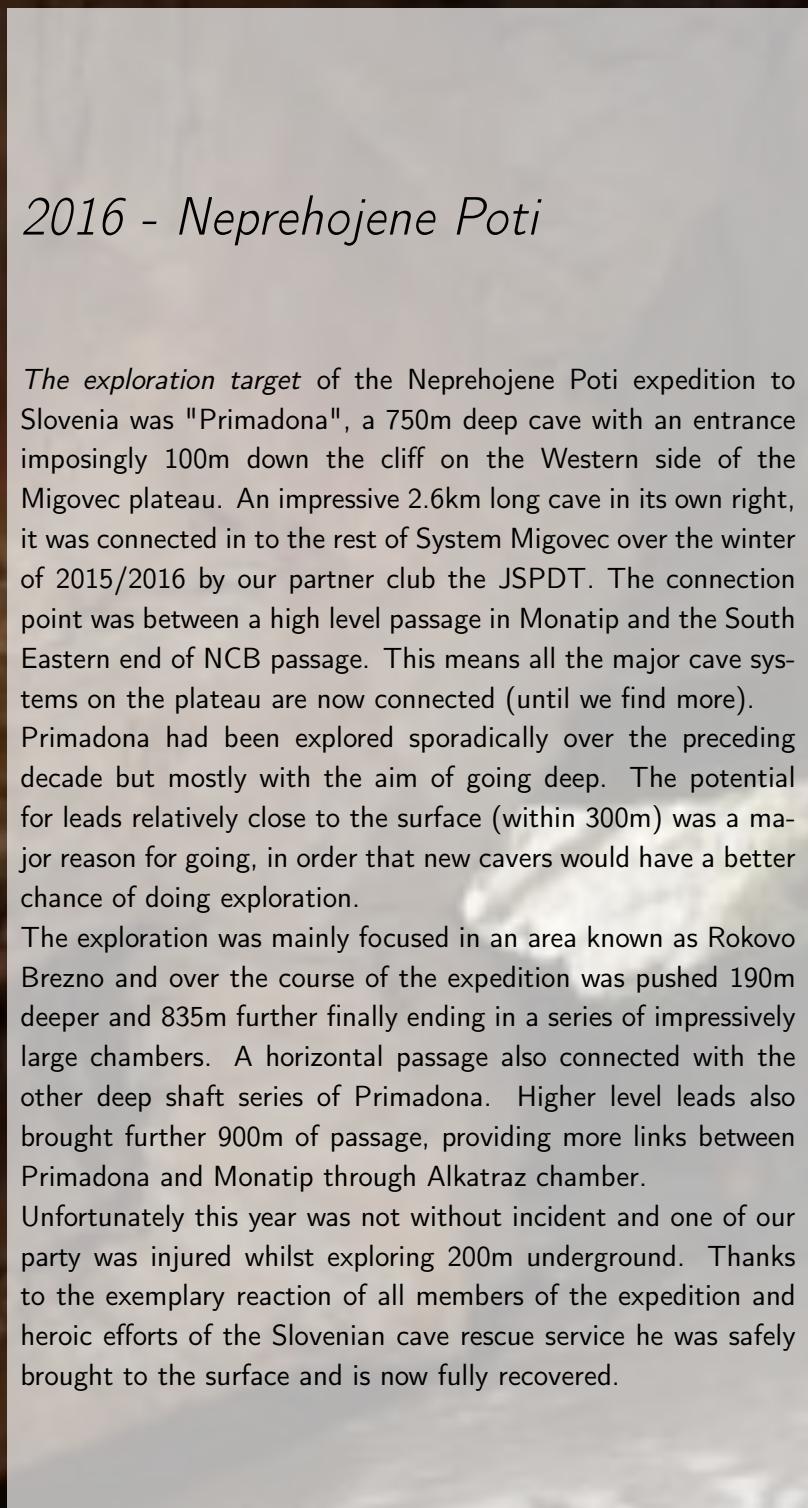


2016 - Neprehojene Poti

The exploration target of the Neprehojene Poti expedition to Slovenia was "Primadona", a 750m deep cave with an entrance imposingly 100m down the cliff on the Western side of the Migovec plateau. An impressive 2.6km long cave in its own right, it was connected in to the rest of System Migovec over the winter of 2015/2016 by our partner club the JSPDT. The connection point was between a high level passage in Monatip and the South Eastern end of NCB passage. This means all the major cave systems on the plateau are now connected (until we find more). Primadona had been explored sporadically over the preceding decade but mostly with the aim of going deep. The potential for leads relatively close to the surface (within 300m) was a major reason for going, in order that new cavers would have a better chance of doing exploration.

The exploration was mainly focused in an area known as Rokovo Brezno and over the course of the expedition was pushed 190m deeper and 835m further finally ending in a series of impressively large chambers. A horizontal passage also connected with the other deep shaft series of Primadona. Higher level leads also brought further 900m of passage, providing more links between Primadona and Monatip through Alkatraz chamber.

Unfortunately this year was not without incident and one of our party was injured whilst exploring 200m underground. Thanks to the exemplary reaction of all members of the expedition and heroic efforts of the Slovenian cave rescue service he was safely brought to the surface and is now fully recovered.



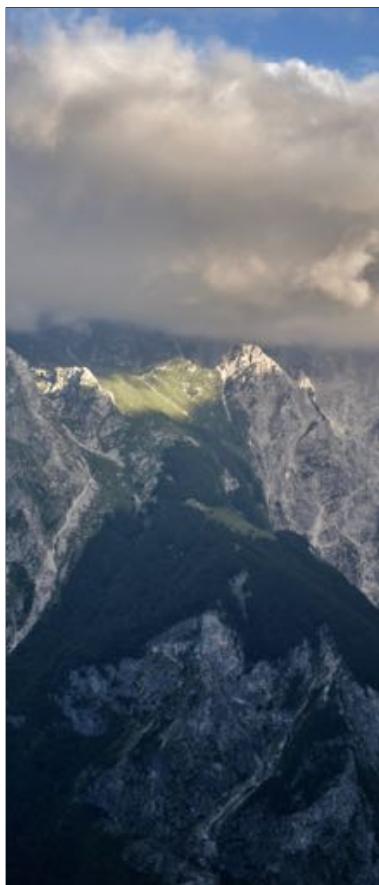


Figure 76: The east face of Krn, with a small alp and limestone spur containing *Poloska Jama*



Figure 77: The *Tolminka Ko-rita*, a series of gorges carved by the Tolminka and Zadlazcica rivers

Back to the Hollow Mountain

Dan Greenwald and I flew out to Trieste a week before the main expedition party to do pre-expo. This meant going up the mountain setting-up tarpaulins to collect rainwater or dashing to the supermarkets to procure special food items, but we also went mountain biking in the Tolminka valley, which I'd never visited before.

There would be four weeks on the mountain, but I longed to spend more time in Slovenia, and it was with mounting excitement that I booked the flights and sorted out a taxi. Two years before, my flight had been delayed and I'd missed the international shuttle in Gorizia, having to walk across to the border through the downpour. The following year was so hot that the aged connection minibus broke down due to a faulty engine cooling system. Minutes after, another bus appeared, even more ancient if it was possible. This year, I wasn't taking any chances.

I chanced to be on the right window side of the plane on its final descent, spotting the line of hills which mark the end of the Italian plain, among them the white nosed Migovec. We drove out to Nova Gorica in golden sunlight, caught a bus to Tolmin and staggered out into the main Tolmin cross-roads, direction: pizzeria. There Andrej Fratnik met us, gave us the keys to Tetley's flat and we started consorting about the plans for the coming expedition.

Primadona was to be at the centre of our efforts to find new passage: its recent connection to the main system, and relative ease of access, the possibility of overlooked passages at a shallow level and the ability to reach leads without an underground camp had made it the obvious choice. There would be a new wave of keen recruits cutting their teeth on this side of the mountain.

The very next day I hitched a lift from Fratnik in the evening, and we walked together to Kal, where he turned around. I turned to face the sheer cliffs on the southern side of Migovec, the winding path through dwarf pine just visible at their foot. With a sigh of satisfaction, I pitched my tent at the spot closest to the bivi, shot one last glance at the setting sun and got into my sleeping bag. Eyes closed, all the expectations I had for the following weeks came in a whirl of colour.

Tanguy Racine

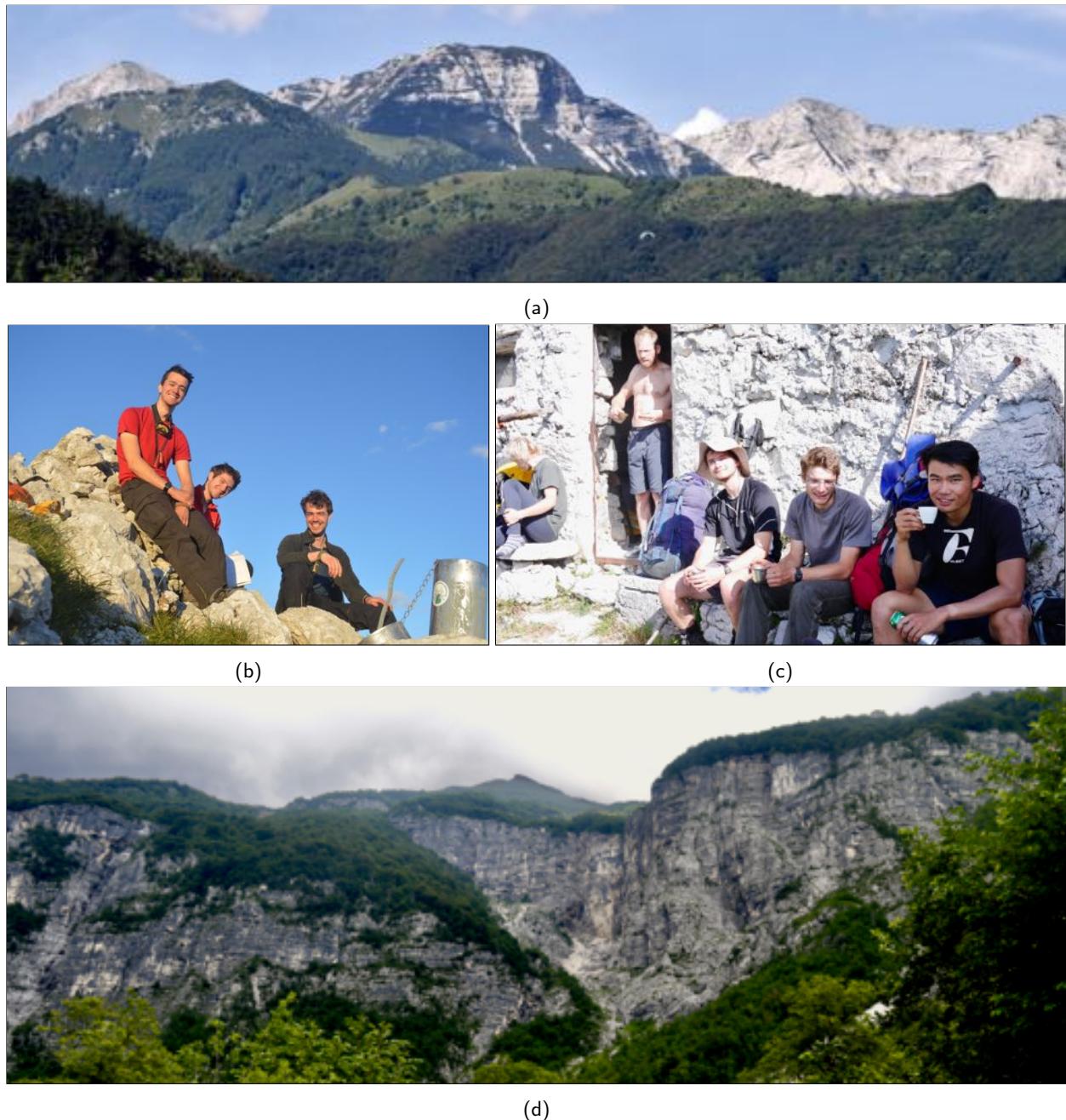


Figure 78: *a* A panorama of Migovec and the Skrbina ridge in the background north of Tolmin *b* The success of another expedition can be read on the cavers' glowing smiles, at the Migovec Trig Point — Tanguy Racine *c* Mixing carries, coffee and beer at the Sheperd's Hut: Tiasa, Maffi, Will S, Tanguy and Kenneth — Arun Paul *d* In Planina na Polog where the massive limestone cliffs tower 200m above the valley, hiding Kuk (2085m) — Tanguy Racine

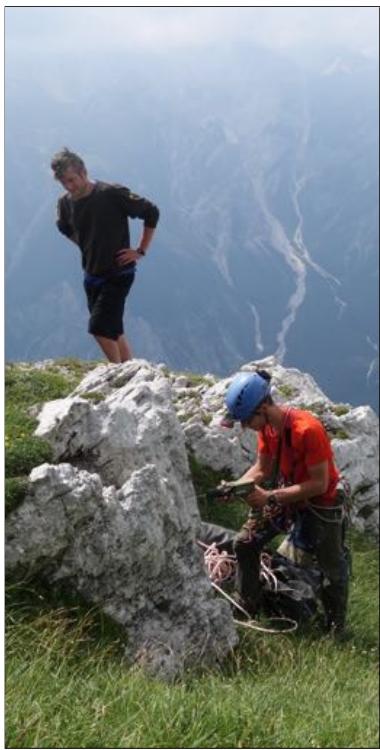


Figure 78: Misguided by rusty spits in the rock, we started the abseil down the wrong valley — Rhys Tyers

A steep learning curve: first leads in Primadona

Defeating the Gargantuan Boulder The expedition wasn't off to a great start. We spent one day bolting down the wrong valley, and it took another two pushing trips down the correct valley to get within sight of Primadonna. Tanguy and I had climbed up from the Kal/Krn path a couple of days before to verify this was the right way down, and the terrifying nature of the scree slope up again made us question the sanity of our Slovenian colleagues.

Still, today we were in spitting distance, just a few short y-hangs to go and then we'd be in. Tanguy and I recruited Miriam to help out, and we dropped down the increasingly familiar series of not really vertical pitches to the proper hangs. Miriam and I hung out on a ledge whilst Tanguy dropped down to place a few more bolts, and we relaxed, studying Krn on the far side of the Tolminka valley, which dropped away 1.4 km below us.

Soon we were down, and we encountered the huge snow slope in the entrance. Keen to demonstrate my winter hiking knowledge I spent some time kicking steps in, zig-zagging back and forth until we got to the bottom. The way on wasn't obvious, and I think Tanguy went through the crawl on the bottom left first. It was very tight the first time, but became increasingly wide over the next two weeks. We couldn't spot the stream Fratnik had warned us about, but tried to rig a tarp anyway in case it appeared during heavy rain. It never did, and tarp was soon derigged as a nuisance.

Tanguy handed me the drill and bolting kit, and I went out into the hading rift, roughly following the Slovenian rigging. I did a poor job on the first pitch, which was re-rigged three or four times over the expo, but we were soon down. The loose and dangerous nature of Primadonna was soon apparent and we spaced ourselves out.

The next pitch has a tight pitch-head, and I just rigged next to the Slovenian bolts, a mixture of terrifying home made hangers, calcite encrusted krabs and rusted through bolts. The rope left in situ wasn't much better - this was obviously a harsh environment for

Bivi logbook extract

Gosh, what a day! Tanguy woke me early, luring me from my tent with the promise of porridge. Thus prepared for the day, I set off with tanguy to kal and then on towards Krn. You see, we had worked out that the 15 bolts Tanguy bolted yesterday were not leading to *Primadona*. This involved reading some cryptic phrases in the hollow mountain, written in the passive voice with

many ?. It must have been written by an academic, I suspect Jarv. Regardless, we strode towards Krn, looking right up the canyons to the plateau. We spotted the rock bridge and yesterday bolts, and it was clear that we were two valleys too far south.

Jack Hare

equipment. The bottom of the pitch was a very loose scree slope that didn't improve one bit during the expedition, despite Zdenko's best efforts on the next day.

The Slovenian's rope went round the corner on the left, but I thought a straight hang would be better, and I was sketched out by the thought of rigging a traverse that high up. As began to descend I looked up, and saw a huge boulder perched above me. It was unclear what was stopping it falling, about the size of a fridge and apparently leaning with its top on the far wall. As Miriam descended, I shouted up: "Hey Tanguy, interesting rock at the top of the pitch. Worth taking a look." I was trying not to worry Miriam, and the tone of my voice must have communicated that to Tanguy because when he got to the bottom he muttered "Yes, we should do something about that."

We got to the top of the next pitch head, a nice y-hang into the chamber where the bear skeleton had been found, and found we were out of rope - the cave really eats it! Tanguy and Miriam ascended first, and we quickly realised the scree was so loose that it's necessary for those above to get clear off the floor before the next person ascends.

With Tanguy and Miriam safely out of the way, I ascended to the top of the first belay and clipped into the traverse. I derigged the rope below to get it out of the way, and clipped my hand jammer into the rope. Climbing up above the last bolt and onto the ledge with the boulder on, I realised quite how terrifying the situation was. This huge rock was balanced on just two points of rock - one on the ledge by my feet, and one on the far wall. I reached out with a toe and gently tapped it. Whomp, whomp, whomp - it wobbled back and forth with ease.

Preparing myself mentally and physically, I shouted up to Tanguy that I was about to remove the rock. With more force than was strictly necessary I reached out and gave it a firm kick. It immediately plummeted down, smashing into the walls as it went and creating a huge amount of noise. As the dust settled and my hearing returned I found I was screaming "I'm okay! I'm okay!" over and over again, probably to reassure myself. Tanguy seemed bemused and shouted back down to me. I rerigged and rejoined them at the top - Miriam especially was quite shocked at the noise and the carnage, and I think we all learned something about how loose and dangerous Primadonna was.

Why didn't we remove the rock before descending? Writing this, I'm not sure. I'd like to think there's a detail I missed that meant the others had to come down first, but it seems careless. Still, the first two pitches were now rebolted, and the way deeper into the cave was clear.

Bolting the Superhighway The day started well. We had 200



Figure 79: A view of Tolminski Migovec from the Krn massif to the NW — Anonymous



Figure 80: A gaping hole on the side of the cliff, some 120m below the Plateau entrance, the

metres of rope up the mountain thanks to Tanguy's heroic carry, and Zdenko and Izi had arrived the night before, keen to take us deeper into Primadonna than we'd been before. Kenneth was keen to do some bolting, and a lot of the Slovenian rigging we'd encountered had decayed with time and needed replacing. The obvious solution - we would go in first, and the other parties would catch us up, allowing them to benefit from the new rigging.

I kindly offered Kenneth the opportunity to carry down all of the rope, but after realising it would have to be on his back instead of dangling below (too much loose rock) he kindly offered the opportunity to me instead. Grumbling, stumbling and sweating I picked my way down the cliff face, kicking off very few rocks. We quickly passed the first three pitches that had been rigged the day before, and paused to examine the pulverised remains of the massive boulder that had been gardened the previous day.

The pitch into Bear Pitch (where the skeleton of a young bear had been found) was next to be rebolted. Kenneth set to work, tapping rocks and thinking about positions. I free climbed around a bit, and then settled down and started giving him advice. It was a nice clean y-hang (in my opinion, the highest and most beautiful rigging possible) and Kenneth was quick and efficient. Before we could go any further, Zdenko, with Will S and Rhys in tow, passed us.

The next pitch I think is nameless - it starts with a traverse in a rift, and drops into a large cavern and the wall slopes outwards at the bottom. No belay necessary and we were soon down. On the previous day's trip we had mostly emulated the Slovenian rigging, but today we began to add our own twists to it. At the bottom a rift opened up in the centre of the cavern, with wide ledges on either side. The Slovenian rigging was very expedition style - the rope dropped down immediately into the rift with a tight and unpleasant belay which we had the pleasure of watching Izi's group do. Izi made it easy by not bothering to really clip into anything, but the rest struggled. Watching this, Kenneth and I decided we had to do a better job.

Kenneth traverse out along the rift until the walls were close enough to put in a nice y-hang. With two little ledges on either side and a good clean drop it was a beautiful y-hang, and after some encouragement everyone told me so that evening. At the bottom was a free climb (later with a rope added) and then the Spiral Chamber, with an anti-clockwise spiral down. It took a little time to find the way on (both Zdenko and Izi's team had been here already, so we knew there had to be one) but eventually it was found in a low bedding plane rift. It was drippy and cold down there, so I left Kenneth, confident that by now he knew how to rig.

Instead, I climbed back up the spiral to explore a lead that I'd

noticed early. A rift came in from one side, extending vertically upwards for some way, with many ledges at various levels. I climbed up and traversed along the ledges until the rift became too tight, and then I climbed up another level. Repeating this a few times got



Figure 81: *a* The head of the entrance pitch in Primadonna formed along a well-defined fault-plane *b* The beautiful 'Y'-hang pitch in the entrance series with Larry Jiyy Jiang at the take-off *c* One of the larger entrance series pitches cuts across a prominent geological horizon *d* Rebecca Diss at the top of the *Bear Pitch* where the 2000 era metal plates are still visible — Rhys Tyers

me quite high above where I'd been, and the undisturbed nature of the mud convinced me that no one had bothered before - it was quite a lot of effort and not very promising. At the far end I found a tight crawl near the ceiling, with a good draft and the promise of a large chamber beyond. Not wanting to push my luck exploring without anyone else around, I turned back to find Kenneth.

He'd bolted most of the way down at this point, pausing to tackle a tricky rebelay (this was rebolted twice during the expedition - the final version is quite good). We could hear Zdenko, Rhys and Will below, and from our conversation we determined that they'd forgotten to bring a drill bit but really wanted to drill stuff. We promised them our spare and met them at the bottom. The water collected in sawn off plastic bottles was a welcome treat, and they seemed to have had a good day of exploration doing some slightly dodgy free climbs.

At this point we decided to turn round with Zdenko, whilst Will and Rhys bolted their dodgy free climb. It was a pleasure to ascend the rigging we'd just put in, and it felt like a quick ascent, at this point still new and exciting. I waited near the entrance to check if Zdenko was behind, and when he came into hearing range he said he couldn't hear Will or Rhys. He was too cold to go check on them, so I dropped the first few pitches until I could hear them and check they were fine - no problems, just a little delay.

Ascending in the sunset and looking over at Krn, I couldn't help but think 'gosh - what a day!'.

The Rock The previous day I'd free climbed up above the Spiral Climb and found a squeeze with a big draft and a dark void behind. Keen to do some actual exploration, I convinced Will to go pushing with me. I don't remember having any rope or bolting equipment, so we moved quickly and after pausing a few times to point out to Will how excellent the rigging was now, we got to my lead.

Will didn't seem phased by the free climbing - it's in an old streamway with plenty of ledges, so never feels that exposed, and so there we were standing and looking up at the squeeze. There was one big boulder wedged in the rift, with a range of smaller ones on the left, but it wasn't a big boulder choke. Will took off his SRT kit and started to wiggle through. He quickly realised his helmet was the limiting factor, so I suggested he took it off. After worryingly little hesitation he did so and grunted his way through.

On the other side the prognosis was good, and given I'd inserted Will into the squeeze it seemed only fair I have a go as well. I only had to do it once, but it was quite tight, but soon I was through and could see we were in a small chamber with one wall missing and a loose, rocky floor. Looking back at the squeeze I could see a big, flat rock that was obviously forming most of the constriction. Will looked nervous and begged me to stop as I pulled and tugged at

it, apparently worried that I'd trap us in this chamber forever, but we both agreed that once that rock was gone the squeeze was very straightforwards.

Will stayed in the small chamber to push a lead that quickly died, and I went to the missing wall. It opened out into a vast dark space, with a steep muddy slope down to a floor strewn with massive boulders. We'd done it! We'd found a huge chamber on the first day of pushing! Down at the bottom we conducted a methodical search, checking round all of the walls for leads. Will found a way down to the right of the muddy slope, and went to have a quick looks whilst I kept circling.

Soon I found a way up on a boulder slope, and quickly got into a streamway. Here my hopes were dashed - a cairn! Someone had been here before. I began to suspect that this was indeed Alkatraz, a cavern that I knew was massive but had thought was further away. Back in the main chamber I couldn't find Will, and although I hollered and shouted he didn't respond. This was bad - I'd lost a fresher already, and the club was having a bad track record this year. After a bit more shouting Will emerged, oblivious to the heart ache he'd caused me. Apparently his lead didn't go, so we checked out the rest of the chamber together, finding a PSS from Tetley in 2000 which confirmed we were in Alkatraz.

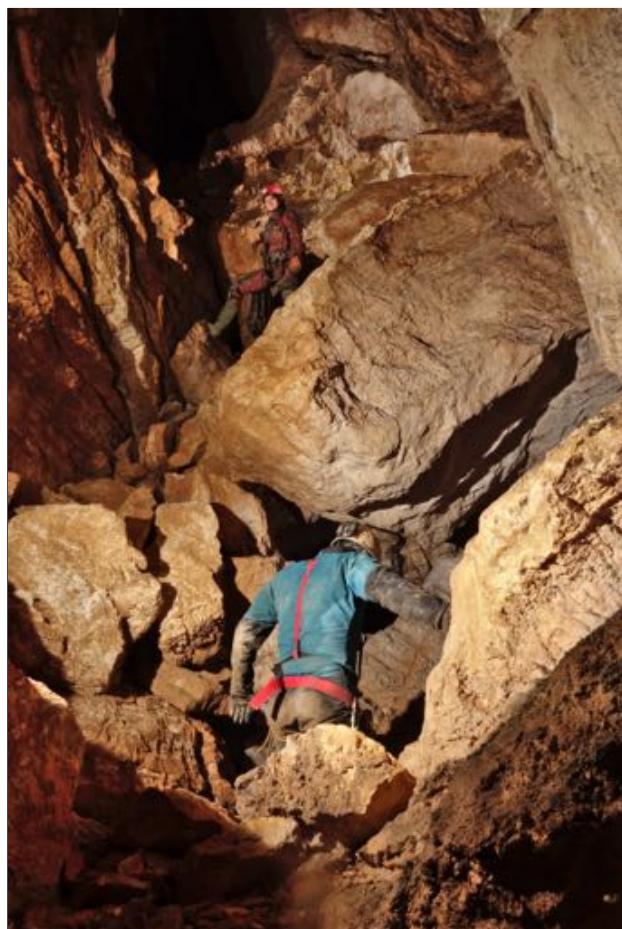
We checked out Will's lead, and I realised a bit of digging was necessary to get through a crawl with a loose muddy floor filled with small bits of white rock. This happened a few more times as we looped through a series of turns before we popped out at a clean washed aven of dark rock. Free climbing down got us to a streamway which quickly tightened up, but climbing up the other side and over got to an old fossil passage. This was pushed for a bit until we found a small chamber with a chocolate bar wrapper on a cairn. A bit further one we found some more PSS from Tetley, though the numbers and the years were confusing.

Down from this chamber is a big streamway that is reached by downclimbing from ledges. We followed this down stream and into a small wet chamber where the water flows into a crack. Back tracking, we found a big chamber, but lacked the rope to descend. There was a single spit in the wall, badly placed. It's possible this has never been descended, and none of this cave is on the survey

We decided not to survey as we'd heard Tetley had a route from the bottom of Alkatraz into other places (again, not on the survey) and returned to the chamber, finding another route out - it's a real maze under Alkatraz! We pushed a few more leads, including an unbelievably grim hading rift that ended in me feet first, on my back slowing wriggling down and trying to feel ahead with my feet.

Surveying out, we decided to call our route The Rock, as we broke into Alkatraz, as in the best ever Sean Connery film.

Jack Hare



(a)



(b)
= 0cm

Primadona-Monatip

- Miriam Ridao
- Iztok Mozir
- Dan Greenwald
- Sam Page
- Isha Kaur
- William French

The Primadona-Monatip through-trip: impressions

Izi and Zdenko had both come up the mountain, and as they knew the Primadona/Monatip system better than anyone they offered to take some of us to see parts of the cave we hadn't gone to. Two teams were formed: Izi's 'lazy' team, consisting of Izi, Isha, Sam, Dan, Will F and myself, and Zdenko's team for those who wanted more of a challenge, who were Zdenko, Rhys and Will S. Zdenko and Co left early in the morning, but we opted for a more relaxed approach and didn't leave until midday. Our plan was to reach Alcatraz in Monatip, and to spend some time looking around the chamber for the passage previously discovered by Tetley (but never recorded) that would lead to Primadona, creating a new connection between the two caves.

Morale was high as we set off for the caves, and as it was still early days the abseil to the entrance series was still new and exciting, and not at all soul-destroying. I had gone to the cave only twice before and had never gone deeper than around 200m, so I was excited to see more.

We moved swiftly through the entrance series, descending pitch after pitch until we met Jack and Kenneth near Bear Chamber. They were busy bolting a pitch head, and unfortunately this meant we had to start using the old rope. This was my first taste of Slovenian style caving, and although I can appreciate the economical approach to bolts and rope, I'm not sure how safe it was. We carried on, and at Risanke (RIP) we passed Zdenko, Rhys and Will S. They had gone to Smer0 and were on their way out. Izi had forgotten to write a call out in the log book, so this was a good opportunity to send a message up to the surface. We soon reached ?Lost and Found?, a junction where the cave passage deviated ? one path lead deeper into Primadona and to Quantum state, but the path we were interested in would take us into Monatip.

Progress became much slower and we would occasionally have to stop and look for possible ways on as it had been a while since Izi had done the connection and he was struggling to remember certain parts. Our longest stop happened at an aven where the way on turned out to be a hidden free-climb up a waterfall.

After a while, we reached Alcatraz, where we stopped and half-heartedly looked around for a while. Although this had been our purpose in coming, we were all tired from the journey and eager to move on. It was here that we decided to carry on and exit through the Monatip entrance, rather than retrace our steps back through Primadona.

From that point on the caving became less SRT based and more technically demanding, and although this was more tiring, I was glad for the break. After lots of flat out crawling - during which I was



Figure 83: Zdenko, a senior JSPDT caver descending the pitch dubbed 'Knot so Great', which drops into Galerija — Rhys Tyers

bombarded with flashbacks of the T shaped passage in King Pot - and many free climbs later, we eventually reached a very tight squeeze that opened out into a slightly larger chamber. To get through the crack I had to take off my SRT bag for the first time. This made the squeeze slightly easier but no less terrifying. Everyone slowly made their way through, and on the whole it was only mildly traumatic.

After going through a series of unpleasant crawls, we realised that we wouldn't make it out in time for our call out, so Dan was sent ahead as we hoped he would move quicker on his own.

The rest of the cave was much easier, and although progress was still slow we eventually found the entrance to Monatip, although as it was pitch black outside it took me a while to realise it wasn't another chamber, and actually the outside world.

It was an exciting and challenging cave, and overall an amazing experience. 9/10

Miriam

First findings: Quantum State and below

Terminus After discovering Quantum State with Rhys and Kenneth and leaving the lead unpushed, a few days later I went back down with Will French. Uncertain of how much passage we would find, we brought only a small hand bolting kit with us instead of the heavy drills, and rather than bringing a tackle sack full of rope we planned to pick one up on the way down.

We went through the abseil and down the entrance series without any problems, although Risanke (RIP) was where we started to lose our way a bit. Will had not gone down this far, so it was up to me to lead the way to Quantum State. We eventually reached the Quantum State entrance pitch, although it hadn't been a smooth journey - I often forgot the way on, and during one descent my hair got caught in my descender. It was the first time I'd brought the super friends down into the caves with me, so I could cut the jammed hair off with minimal trauma, but from then on I made sure to keep my hair well away from the rope.

We descended down the Quantum state entrance pitch and quickly reached the PSS survey station marking the edge of discovered passage. After a few short metres we found an intersection, where the passage split into two paths. The more unpleasant looking passage followed a stream, and after pursuing it for a bit as the ceiling got lower and the walls got narrower, we found a sump. Reluctant to survey, we turned back, hoping that the other path would reveal more.

A short, awkward crawl later and we reached a pitch. Excited that the lead wasn't dead, we quickly(ish) hand bolted the pitch head - my first experience of hand bolting. After adding the hanger, we realised that we had left the spanner back at the bivi. Will was keen to go down and said he didn't mind descending on a single bolt with a semi screwed on hanger, but I had had enough of Slovenian style rigging, so instead we went back up and decided to come back another time. The next day, armed with a spanner, we completed the bolting, and after some struggling with the rigging (I'd only rigged once before), we descended down, destroying the previously pristine mud floor in the process.

Almost immediately it was clear that there was no obvious way on, although after some desperate searching, we found a small crack in the wall above a short free climb. Will went through first, and tried in vain to hammer away at the edges, after which I followed through. The chamber on the other side was beautifully untouched, with a small waterfall (a trickle of water) creating a small pool at our feet. There were, again, no obvious leads, but deciding that we had gone through too much effort to turn back, we looked around carefully. After a dodgy free climb to reach the start of the waterfall

I found a tight, dank passage following the stream. This, however, led to yet another sump, so we called it a day and started to survey back. Surveying proved to be especially unpleasant, as we were knee deep in water when surveying the sums, but as we hadn't discovered much passage, it thankfully ended soon.

Miriam Ridao

Karstaway

- Jack Hare
- Tanguy Racine



Figure 84: The best caving plans are concocted next to a boiling kettle — Tanguy Racine

When dreams come true - The discovery of Karstaway

I was keen to go caving with Jack, not having the opportunity to do it in 2015. We'd put quite a bit of work into rigging the abseil to Primadona, and things were looking up in the Galerija branch of the cave. Memory of previous leads in this zone had not faded as much as for the rest of the cave, and after the first spark of exploration in Quantum State it was time I got some findings under the belt.

On the surface, we had a good plan: going in Galerija, and traversing at the top of Quantum state, we'd be able to reach a zone with several open leads (as shown by the 2011 survey). We only had one pitch to rerig on the way: the 20m hang dropping at the start of Smer0 and Galerija, which had been dubbed Knot So Great. There was an early start in the Bivi and early enough we reached said pitch. Bolts in, rope tied, descender rigged, I descended, placed a rebelay and frowned upon the rope rub that had appeared just on top of it. The old slov rope was within reach, tied to a rebelay two metres above mine. I grabbed the rope, cut it and tied a deviation. The bundle of rope dropped to the bottom. This done I went down, quickly finding myself under a small drip.

The bottom of the pitch was a larger space, draughty and noisy, littered with sharp, shiny white boulders of all kinds of sizes. At the bottom, we were joined with Rhys and Will Scott who'd caught up with us and had a plan to push the stream underneath the same boulders. Jack and I pressed on in the windy Galerija, glancing at the floor and ceiling, looking for leads others might have missed. There was a tight, loose cobbly tube before Quantum State I popped my head into but thought better of it. Past Quantum state, gingerly, ever so gingerly Jack and I traversed over the pitch head, sending a few cobbles and blocks of mud down the black throat of the pitch. On the far side, new territory awaited: a rift, guided by a fault plane, with thick protrusions of white rock and a howling draught.

After a few twists, the floor dropped two metres, into a puddle of brown mud. We dropped that as Jack muttered 'Should be fun to climb back up'. There were a few tens of metres of meandering rift with a high way along the top of the rift, leading to committing crawl over boulders. We'd lost the draught there so opted for the lower way down, hugging the bottom of the rift, and following the gale. A few more drops, and around a corner a large yellow tacklesack. Beyond that, a rope led into the darkness of large pitch.

After a cursory inspection of the hangers and rope we decided it was okay to descend. The drop was a clean hang, perhaps 30m deep, in a pitch some ten metres in diameter. At the bottom a cairn had been built well out in the centre. Jack had been quickly scouting the ways onwards. It seemed we'd reached TTT, as this was what Zdenko thought likely. If it was, then the connection



Figure 85: Will Scott ascending Rokovo Brezno, the 30m pitch—Tanguy Racine

had not been marked on the survey. The way down was obvious but tricky. The first free-climb down was not very tricky, nor the second. The passage turned left, there was another down climb where the passage wall widened underneath the ledge we'd come to. There were plenty footholds, but I remarked ?Those free-climbs are looking more and more dubious'.

Jack took over the lead for the next drop, which was frankly terrifying: traversing around a ledge, hands on the opposite wall till the walls got far enough together that we could bridge down. At the bottom we considered what we just did, with doubts gnawing at us: surely this should have been rigged? Upon inspection, the way on didn't bear any footprints, nor any other sign of previous discovery. We were then almost certain what we found next was virgin passage and the way on looked promising: wide, with a small stream and a howling draught.

At the bottom of the down climb was as good a spot as any to have a lunch break, and the cheese and fish we'd brought down made for a very welcome fare. Without delay Jack led the way into the streamway. For two metres it was storming. After that, it degenerated into a tight rift, with a large, pointy boulder providing the chief obstacle to easy progress. The passage went on nonetheless, and what's more the loud splashing of a waterfall could be heard



Figure 86: The ascent out of Primadona and back to the plateau captures the scenery of the Julian Alps perfectly, as well as its dangers: rockfalls — Tanguy Racine

further on. After a short way, the width of the passage increased, and we saw the water, went past it to reach a ten metre aven chamber where the direction of the passage veered into the west. A small series of scalloped passages led to a white dry twisting rift. The water plunged somewhere underneath, but we preferred the wider, upper level dry passage, which continued to a pitch head. The rift itself was very white, with a white clay to silt draping the knobs and crannies of the walls. Within this matrix there were larger granules of haematite, no bigger than a couple millimetres.

We contemplated the pitch we'd just found: truly a remarkable find because of the strong draught and the possibilities of deep shaft bolting that opened up. We only needed a suitable name for our discovery. Blessed karst? Jack laughed but wasn't convinced. ?The leads here were abandoned, so... how about ??Karstaway"?'. And the name stuck. We decided to turn around, conscious that we still had a fair bit of surveying to complete before racing to the surface to announce the good news.

Not having spotted any of the PSS's indicating the previous pushing front we opted for a full resurvey to the head of Quantum State pitch, which Rhys had marked the day before. We obviously got slightly chilled doing the surveying in the tight draughty rift, but at least we had good line of sight, and made up for the cold by being speedy. At our lunch spot it was possible to look upstream, and this route died conclusively in the matter of seconds: a 15m aven, with haematite pebbles and a calcited sediment formations (chiefly fossilised water droplet imprints on the white clay). Climbing back up the scary freeclimbs convinced us they needed to be rigged on the next venture.

At the top of the 30m pitch, we started hearing voices. Will and Rhys were coming our way. We joined up exactly at a tricky climb, a flat mud floor at the bottom, and a lip of rock to hang on to 2m above the floor. Little in the way of holds, doable but rather annoying. Now I'm not a civil engineer, but I thought that raised platform was a sensible option. In a fit of near madness I started rolling large boulders on the floor, piling them up to form a large cairn. gingerly, ever so gingerly I leapt on it and grabbed the walls of the rift, pulled myself up. I got out of the way, and Jack did the same. Our laughter was interrupted by the dull thump the edifice collapsing on the mud.

Soon after we finished our survey at the head of Quantum State. It was not too late yet to be out by sunset, and following Rhys's lead we made a steady way out. The dream of another pitch series was on...

The Karstaway branch

Karstaway

Zdenko had spoken of an undescended pitch just waiting to be dropped at the end of Galerija. I'd not yet been as deep into Primadonna as that, and with few others looking to cave, Tanguy and I had a chance to go check out this juicy lead.

Karstaway

- Jack Hare
- Tanguy Racine

I had the chance to do Risanke for the first time, and found the squeeze very tight and unpleasant. The pitches had been rebolted closely following the Slovenian's expedition rigging, which was less than ideal and some of them were rebolted over the rest of the expedition. We were unclear on many of the Slovenian names for parts of the system, and several were anglicised, so Sejna Soba (the drawing room) became Sane and Sober, two things the Migovec cavers cannot fairly be accused of being. Given this, we soon arrived at Knot Very Good, at the bottom of which Smer0 and Galerija head off.

We passed over some big holes in the ground of Galerija, the slick mud always slightly unnerving, and free climbed over the top of Quantum State, which had been dropped the previous day. Afterwards, this traverse was bolted, but we lacked a drill and rope and made up for it with bravado and a sense of our own invincibility.

The passage on the other side is a hading rift which develops into a fossil streamway. One steep downclimb caused me to remark that we'd have difficulty with it on the way back up, which Tanguy later took as a challenge. At the end of the passage we found a howling draft and a yellow tackle sack, abandoned by the JSPDT years ago. The pitch was not undescended - a rope of unknown provenance lead off and round a buttress on the right.

Tanguy did the only sensible thing and let me go first. Lowering myself onto the old rope I edged out round the corner to see a massive drop beneath me. The shaft is around 15 m wide, clean washed and fluted walls and 30 m deep. The pitch is rigged as a single hang of a single dodgy home made hanger (later backed up with a through bolt to form the world's most adorable little y-hang, but that was later). I descended slowly, not really at ease, and at the bottom took a long, relaxing piss in the one hole I had determined wasn't a lead.

There were a few ways off to check out, but Tanguy and I were in full glory hound mode and we focused on the wide fossil streamway. A few free climbs later and the drops were getting bigger. Eventually we got to a big chamber with a ledge on the left wall and a 5 m drop. Not wanting to give up, I edge along the ledge until the chamber closed back into a rift and I could down climb using ledges on either side. Tanguy followed, not exactly convinced we'd ever get out, and



Figure 87: Jack hammers the M8, stainless steel raul bolt we use on expedition to secure a traverse line over Mighty Fine Indeed 3rd Pitch, a respectable P42, before drilling in a signature 'Y'-hang: an airy take-off over a diminishing ledge which provides a beautifully clean hang — Tanguy Racine

we got to the Lunch Spot, my favourite little chamber. Upstream was a flat floored aven with water coming in, and downstream was pristine dark mud. But first, mackerel.

Suitable re-energised we pushed downstream, immediately encountering a nasty squeeze that you had to climb up into. A wet aven followed where we set up a bottle to catch water, and then we followed the water, traversing over the top (a later attempt to follow the water proved tight and unpleasant). Alternating between boulder scrambles and muddy floored chambers, we felt a mounting sense of excitement as the draft kept luring us onwards.

Twice we went down through the rift. The first time lead to a narrow chamber with a 10 m drop that I foolishly decided I could climb out over in search of another way down. Just as Tanguy told me this was a bad idea, my hand hold broke off and I beat a hasty retreat. This is a lead - we never went back, and there's an undescended pitch just waiting.

The other route down was in a hading rift that we slowly squeeze down through until we got sketched out by how far it went. It could use some ropes and another good looking at. The proper route went along at the highest level, and eventually terminated in a 20 m pitch. Tanguy and I spent some time thinking of a name before we

surveyed out. In a moment of inspiration, I realised that not only had this storming lead been abandoned, but the cave was made of karst, and Karstaway was born.

On the way back we enjoyed the terrifying free climb back onto the ledge (never again attempted, it was bolted the next day as an unpleasant short pitch) and then up the long rope in Karstaway, hoping that the old bolt held. Tanguy built an incredible cairn in a fit of madness in order to pass one free climb, and we surveyed out to an old Slov PSS that Rhys and Will pointed out to us. We returned to the surface with tales of an incredible lead waiting deep in the mountain.

Mighty Fine Indeed

It was easy to lure Rhys on a pushing trip the next day, as I promised increasingly deep and impressive shafts. Equipped with a drill, some scavenged rope and plenty of fish, we ambled down the increasingly familiar series of pitches, pausing to rebolt or re-rig some ropes. At the top of the 30 m Karstaway pitch, we added a second bolt to make a tiny y-hang and back up the terrifying home-made hanger. Satisfied it was now safe, we continued down, bolting the dodgy free climb down to the Lunch Chamber to make it a very awkward short pitch.

We were both quite excited to make it to the end of Karstaway, and looked down at the chamber below. Rhys quickly bolted a back up and a y-hang, and we descended into a circular chamber with a rift cutting through on the far side. Perched above the rift were huge, flake shaped boulders that seemed improbably perched, and I avoided thinking about what propped them up. Rhys was already bolting the next section, a sort of steeply descending traverse using the dodgy old rope we were recycling from further up the cave. He dropped down and declared we were out of rope, but by descending onto a ledge and then free climbing down we made it to a flat section in the rift.

From here, the passage continued on, but without a floor. Chucked rocks and loud whoops confirmed something huge and impressive lurked just around the corner, but we were out of rope and almost out of time, having spent much of the rest of the day rebolting. The only thing left to do was to name these two pitches. We ummed and arred until we recalled the words of 'Captain Kangaroo', and reinterpreted them as an instruction: "A parallel shaft series would be Mighty Fine Indeed."

Hall of the Mountain King

Rhys and I had left the previous day with an undescended pitch into a massive cavern waiting at the bottom of Mighty Fine Indeed. It

Mighty Fine Indeed

- Jack Hare
- Rhys Tyers

Hall of the Mountain King

- Jack Hare
- Will Scott
- Tanguy Racine
- Andrej Fratnik

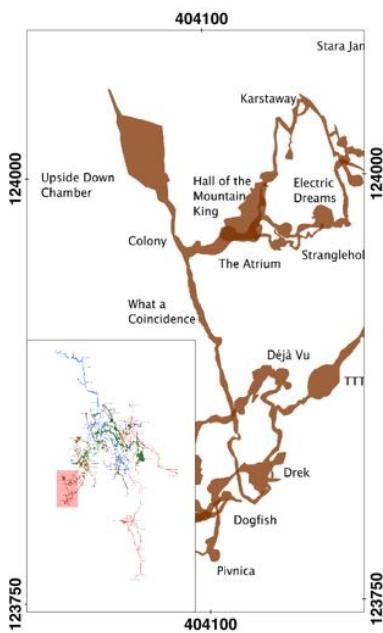


Figure 88: Plan view of *Mighty Fine Indeed* dropping into the *Hall of the Mountain King*, leading to more horizontal extensions. Slovenian National Grid ESPG 3794

took no effort at all to lure Will Scott back underground, and Tanguy was keen to see where Karstaway lead. Even better, we were joined by the legendary Andrej Fratnik, who I'd not caved with before. I'd spotted him hiding behind a tree in the woods a few days before, and he greeted me with "you're the one who hunted me".

Loaded with shiny new rope, loads of bolts, a full darren drum of fish and chocolate and a few spare batteries, we were ready for anything, and the cave delivered. At the bottom of Mighty Fine Indeed the others patiently waited as I bolted a few backups and then nervously edged out over the void. The bottom had eroded out of the old streamway, leaving thin ledges on either side wide enough to stand on. I was determined to get as far along this rift as possible to get a nice clean drop, and soon I was around the corner, out of sight from the others.

The passage widened, and I realised this was the time to descend. The experience Kenneth and I gained rebolting the Super Highway a few days earlier came in handy as I identified a good place for a nice wide y-hang, one bolt on either wall and the knot hanging at waist height. With hundreds of metres of rope attached to my side I felt pretty confident about reaching the bottom, but I still paused for a while checking and rechecking every bolt, knot and maillon. Finally there was no further excuse to linger, and I began to descend.

My light was not bright enough to see anything but the closest wall. The darkness below me was absolute, and soon all I could see above me were the faint lights of my friends. Some way down the wall began to get closer, and I realised the rope would soon rub. I panicked slightly, never having put in a belay before, but calmed myself as I dangled twenty or so metres below the last anchor and hard locked my descender, swinging to the left and wedging a leg into a rift. My first bolt was badly placed, causing the knot to rub, but I think I didn't correct it, leaving the flaw for Tanguy to identify.

Descending again and I began to get wet, some drops seeping through a bedding plane and forming a little waterfall. I could see the shaft continued down for another ten metres, but most of the chamber was higher up, and there was a little ledge around which I could traverse and step off into the chamber. A few bolts later and I was done, and I called for the others to join me.

I sat in the vast chamber (later called 'Hall of the Mountain King', as Andrej joined in as I hummed it), my light off, mentally exhausted by the descent, as my friends joined one by one, splitting up and scouring the chamber for the next lead. I felt entirely spent, but overjoyed - here was the exploration of vast, unknown chambers which I had promised myself. Soon my strength returned and I went to see what we had found.

The chamber formed inside a huge sinuous rift, with the ceiling far above and the floor strewn with massive boulders. I fol-

loured the sound of voices around a corner, and found the floor rose up, a scramble over boulders that terminated in a wall at the end. Here I saw Tanguy, who had, against all sanity and the laws of physics, scrambled up a dangerous, unprotected rock face and was now stranded five metres off the ground. He implored us to pass him up a rope and a drill, with which he proceeded to rig by far the worst pitch I've ever seen. It rubbed, it swung, the belay was too tight, the pitch head unprotected and there were numerous loose rocks and boulders peering excitedly over the rim onto us below.

There was nothing for it but to join the crazed Frenchman. Will was unsure, Andrej was stoic and I was resigned as we climbed, cursed and swung, making it to a small saddle at the top of the wall which lead to a down-climb on the other side. At the bottom we paused for food and considered where we were. It appeared to a long gallery, which ran NW to SE, and we had intercepted it half way along. Back under the way we had come an inviting hole lead off, but Andrej went to piss there and declared it dead (it wasn't). The draft here was impressive, so we decided to follow it, picking our way along a nice wide passage.

Half way along we encountered a short free climb down, but it was just high enough to be intimidating. Tanguy tried to force himself into a rift in the side wall, reckoning this was the way down, but became wedged. I wriggled through a rift in the floor, and as I popped through I heard the sounds of an animal in severe distress. I enquired whether everything was okay, but all I got was Tanguy imploring everyone to stand clear. The pressure on his bowels being too much, Tanguy wrenched himself from the rift and deposited a massive, steaming turd in the centre of our newly discovered passage directly upstream of the lead. The new passage was named 'Colony', as it was a bit.

I was trapped on the other side from my comrades, who had retreated with some speed back the way we had come. As Tanguy cleaned himself up as best he could, I looked around to assess the situation. At a lower level there seemed to be a passage back the way we had come, and I followed it up, popping out where we had stopped for lunch. I hailed the others, who were grateful for an alternative route, and we soon regrouped on the far side of Tanguy's shit.

The draft was enticing and the stench was powerful [Ed: Okay, that's enough now] as we continued down the passage. Soon we encountered another huge shaft, with a chamber coming off to the side. To have one such find in a day was remarkable - to have two began to look greedy. Tanguy was itching to get down, and I casually mentioned that he'd just 'waltz down it', leading to it being named Blue Danube.

As Will and Andrej surveyed back to our lunch spot, I scrambled



Figure 89: a) Jack Hare, Will Scott and Andrej Fratnik surveying the 42m drop into *Hall of the Mountain King* chamber b) Will Scott surveying the climb into *Colony* c) Jack Hare and Will Scott starting the survey at the bottom of *Blue Danube*, P46 — Tanguy Racine

in the SE direction into unexplored passage to see if it died quickly. It didn't - instead, there were a few free climbs as the hading rift filled with boulders, and there was a thick brown mud on the floor. After a hundred metres of this I realised I was being greedy, and I built a cairn and turned round, willing this lead to another group (I was soon back with Kenneth to christen it 'What a Coincidence'.)

We returned to find Tanguy descending from a hanging rebelay, and we followed down. The top was a bit loose as Tanguy was slightly too keen to garden properly, and half way down there was a ledge far away on the other side, leading to a vast chamber which Rhys and Arun would explore as Upside Down Chamber.

Instead, the rope dropped down a clean washed shaft, ten metres in diameter with beautiful gray scalloped walls. At the bottom, the water pooled and ran off into a tight rift that immediately became a pitch. It had been a long day and there was much to survey, so we turned round. Andrej's approach to accuracy consisted of waving the laser disto near the next station and shouting numbers rounded to the nearest ten metres, but with this approach we made rapid progress, singing Simon and Garfunkel as we crept back through the Hall of the Mountain King. Tanguy's shit stained upper passage was never surveyed, and the survey contains only an artist's impression of the best decorated cave passage in Slovenia.

Jack Hare

TR01 - a little ice cave

- Will Scott
- Tanguy Racine

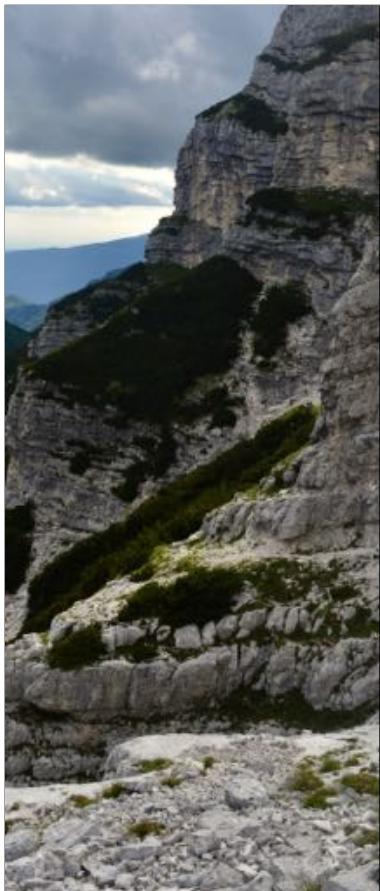


Figure 89: On an airy spur of rock, the view of the Migovec cliff face reveals a hunter's path with voids above and below, snaking past several massive buttresses — Tanguy Racine

A little fun in the valleys south of the bivi

The Limestone pavement: a region that hasn't received much attention in the past decade. This 'flat bottomed' feature is truly remarkable: covering an ellipse of semi-axes 100m and 200m, oriented NW-SE, it lies between the Bivi and the peak of Migovec. The dip of the beds in this area is towards the south-west, therefore exposing bedding as steps ranging from 1.5 to 2m. On the surface, two perpendicular arrays of linear joints are exposed and enlarged by precipitation and snowmelt, forming elongate pits choked with snow and ice abound in the area. This makes cave prospection difficult. This area is the true southern part of the plateau, hosting the 110m deep pot of PF10. At depth, this is where the ramifications and active streamways of the Atlantis branch were found. Could this region provide entry from above into the southern extensions?

I had managed to reconnoitre the area in 2014, following Jarvist's advice that little else than PF10 had been discovered. On my own, I packed a small bag with GPS, gloves, light and oversuit to check out as many likely holes as possible. This was a foggy day and I logged 8 caves or beginnings thereof that I had visited. Some died conclusively as the wall rock closed down on the passage, some I hadn't got rope to descent, others choked with ice and scree. One I got slightly stuck in, for want of digging enough scree out of small squeeze. As I advanced the rotation of the cobbles denied the possibility to back out.

The only way was forward, into a small aven chamber which died immediately. Shimmying forward got me unstuck but the ordeal highlighted how unwise it was to go too far on one's own. When I got out, the fog was thick, the breeze cool, and unbidden thoughts about one's vulnerability up in the mountains sprung to my mind. I carried on with my search more cautiously. In the end, there was one cave I'd spotted (several entrances, including an aven) that had grabbed my attention. Unfortunately I lacked the rope to descend it on the day, and for another two years it waited.

As it happened, Will, Arun, Kenneth and I planned to go back down to Tolmin mid-expedition. The day before going down there seemed to be a lot of agitation in the bivi. Recent finds of large chambers, horizontal passages and shaft series had gripped the imagination of the group. Little few cavers remained on the surface on the day, but among those Will Scott helped Janet, Dave and I cleaning and clearing the Bivi (not in that order). With the sunshine, an afternoon ramble across the plateau with a light caving bag seemed reasonable. With the morning chores completed and plans for the day finalised Janet Will and I set off, trodding the 'old Mig path' Janet had been trimming and clearing up after several years.

From the Bivi it led along the top of the M16 escarpment, gently

curving to the SE. Gardener's World Valley and Area S unfolded in front of us, then in the distance we spotted the Razor hut, and further still a line of limestone crested mountains heading south, till they disappeared in the haze. This panorama was a feast of soft greens, greys and blues. At the end of the clear path, we turned due south towards the peak of Migovec, going across a grassy, hilly terrain, circumnavigating the shakeholes. On our right, we passed the Amphitheatre, a large 50m wide depression with excellent acoustics. On the verge of the Limestone Pavement, the ground dropped steeply forcing up to pick a snaking path towards the head of the valley, past some of the rare trees of the Plateau that do not appear to suffer from dwarfism.

The Pavement was as I remembered, bare limestone beds, deep shady cold pits exhaling their cold breath. We kept to the northern, deeper end of the valley, choosing a careful path amidst the boulders. With the GPS we found the cave of interest quickly, had a look and pressed on 'downstream' - the pavement is a hanging valley, completely dry.

This led to M24, a depression of the same scale as the Amphitheatre, open to the north, boasting a 20x20m snowplug. At the far deep end of the shake hole, a small rift could be entered, a rift that dies within five metres, choked with boulders. On the eastern cliff face (I am using this word here because of the asymmetrical nature of the depression), a large entrance to a cavity could be seen. It is certainly possible to climb into it and drop a rope for safety, but it is unclear whether this would only take one up into a small shaft that once led into a cavern.

Past M24, we found the 'old mig path' again, in much better state than a completely abandoned trail would be. Cuts on the trees were old, maybe two or three years, but no more. I understand that it was once the highway from Kal to the Plateau, creeping up the eastern rather than the western slopes of the mountain. It must cross the Mig southern cliff face. Some 200 to 300 metres of decaying limestone, and underneath a high angle scree slope, funnelled into a couple of dry valleys. All the way to Ravne.

Indeed the path led to the start of a vertigo-inducing traverse of face of Migovec, but before that it took us to a gorgeous panoramic from the high eastern promontory. All that we had seen before and more unfolded before our eyes, from Skrbina to Zabiski Kuk, thence down to Tolmin and up to Grusnica. And everything beyond, Mostna-Soci, the plain of Trieste. Most of all, the entire bowl of the Razor alp, the southern apron of Migovec where Coincidence cave lies, all of it crystal clear. A crow's nest. We turned around after a few minutes of silent contemplation and climbed back up to TR01, the cave in waiting.

It took only a few minutes for Will to learn how to hand bolt.



Figure 90: a The entrance pitch to TR01, hand bolted by Will Scott b Janet Cotter enjoying a snack on the Limestone Pavement c The panorama from the Eastern Promontory, by the 'old mig path' showing the Razor alp and the refuge — Tanguy Racine

I demonstrated first placing the back up bolt while he looked on. Janet sat on the pavement and shared the little treat she had brought along: crackers, jam, mountain cheese. Will put his kit on and got to work with a gentle tap tap tap tap of the driver into the hard limestone. He acquitted himself very well and before long the only other bolt placement needed to complete the trivial descent of a 5 metre drop was done. Without effort he rigged the pitch and descended. I commanded him to remain silent, but a few 'ohs' and 'ahs' came back up. I followed quickly dropping into a small chamber. 'It might not die immediately' Will said, thereby attracting



(a)



(b)



(c)

the anger of the cave deity. Though not all doors were closed, none went very far.

The cave was by all accounts a small one. It sported a modest chamber, linked to an aven (5m) to the west, choked with ice and rubble. Right by the landing there was a draughting snowhole. At



the far end of the chamber, a small tube, littered in wet, sharp pebbles led off for a few metres in another chamber, of even smaller dimensions. The walls were covered in glittering ice, with a few curtains and stalactites (of ice) shining to our lights. I took a few photos, and proceeded to descend the snow hole. Will looked at me with a solemn face. Here goes another nutter he might have thought. We were in T-shirts, and the temperature within the cave, in the draught was not balmy. But wait, wasn't it obvious? A snow hole, the draught, what massive chambers could lie beyond? I did not hesitate and descended.

Unfortunately the rope was at an angle to the tube of glistening wet snow, and started rubbing, then sawing, then hacking big chunks of snow down on me. Quickly I abseiled till my feet touched the floor. I put my weight on them and the floor went from under me, a pile of rubble flying out. I caught the rope, and pivoted to see what gigantic chamber I'd landed in.

It was cosy, a 2metre wide rift, degenerating to next to nothing at all downwind, but it was worth it, for a glittering, metre long, thick carrot like stalactite hung from the righthand wall. It even had growth rings, refracting the light in all directions. I urged Will to come down. He absolutely had to see it. And he did, though he cursed me a little for the ice shower. I was not going to let him off for this, so I asked him to carry my flashgun in the most cramped positions imaginable, in the snow tubes that led off. The resulting play on light and shadow in the mini-wonderland was worth the effort.

Back in the sunshine, we derigged the cave, ate the remaining crackers with Janet, and set off in search for PF10. Once the boulder-filled shakehole was located we carried on uphill towards the bivi and found the grassy N-S avenue which leads to camping site. Within minutes we were back in the fading sunlight at the top of the Plateau and headed to the Bivi where the dinner preparation awaited. Will and I also baked some cocoa and ground almond flapjacks, which earned the nickname 'Tanguy Treats'. We were low on underground food, and this glorious enterprise averted a chocolate bar crisis. Donuts were deep fried and given to the earliest returning cavers. Jack and Kenneth, then Rhys and Arun and finally William and Miriam. Again there were tales of more horizontal passage and a typical late Bivi night.

Tanguy Racine

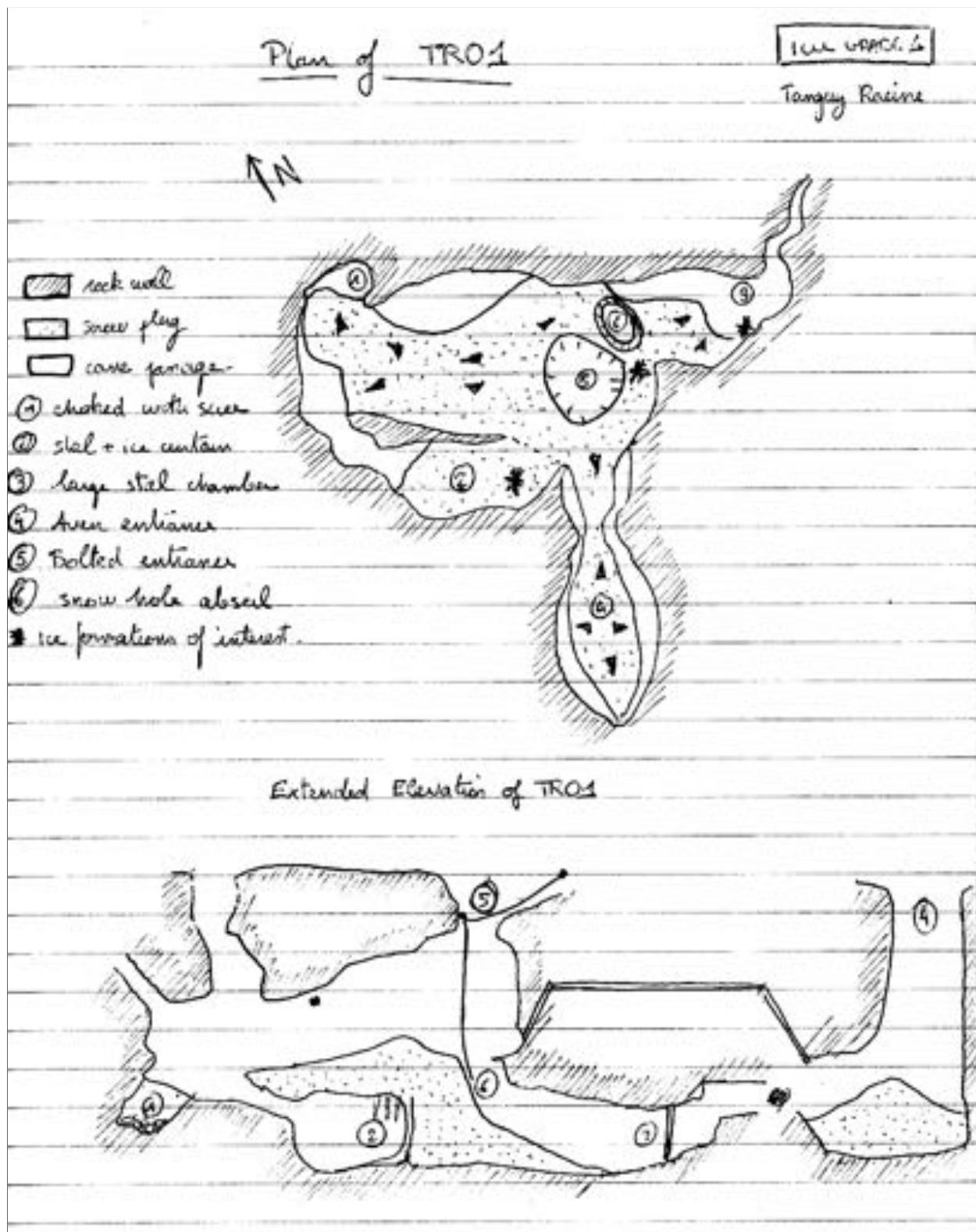


Figure 92: A hand drawn survey of TR01 with plan and elevation — Tanguy Racine

Luck runs out in the new shaft series

What a Coincidence

There were plenty of deep leads now, with the continuation of Blue Danube at the bottom or halfway down (into what would be Upside Down Chamber) and the enticing passage in the opposite direction that I'd briefly scouted on the previous trip. I felt I'd done quite well in terms of big finds, and Rhys was keen to pick up where we left off so instead I took Kenneth to explore the SE extension of Colony.

We had got as far as Mighty Fine Indeed when disaster struck. I had just descended the first pitch and called 'Rope Free' when I was struck by something falling from above. For a fraction of a second I assumed I was dead, my head smashed open by a rock, but as I staggered and collapsed I realised I was inexplicably still alive. I screamed and swore as my vision danced, and as the stars faded I looked around. Sitting next to me was the drill, in its bag. The drill was meant to be clipped to Kenneth, yet here it was. Now my swearing had a more precise target, and I began to really get into it. I imagine Kenneth apologised, or at least tried to, but I wasn't really listening. When he reached the ground we had a little chat about the importance of clipping the bag carefully to your harness. Rhys and Arun were below us and had heard all the commotion, so I told them we were 'fine, just fine' and continued on.

After pausing to giggle in terror at Tanguy's Terrible Pitch in Hall of the Mountain King, we pushed on, quickly reaching the cairn I'd placed the previous day. The route on was quite easy, with a climb up through a boulder choke and a bit of scrambling at different levels. At one point, thick brown mud filled the entire hading rift, forcing a flat out crawl which lasted a few metres.

Kenneth lead the way, following a faint draft, and soon we arrived at a dead end - the passage turned into a descending phreatic which was filled with loose, flakey rock. I dug for a bit whilst Kenneth searched for a way on, but it seemed hopeless and I thought our luck had run out. Then Kenneth called from behind me that he had found the way on. I paused for the moment, remembering some words from our website: "Perhaps more poignantly, when you discover passageway that reaches a dead-end; you may well be the last person to ever visit that particular place in the world."

Turning and climbing back up, I saw Kenneth's lead. It was another flat out crawl in a tight, mud filled rift. This one required a sideways undulation for a few metres to a very small chamber that lead to an ascending phreatic. At the top of this, the phreatic dropped sharply at an angle of around 60° to the horizontal. Somewhat worried that we'd be unable to get back up, we plunged down, reaching a low, wide mud filled chamber at the bottom.

Most of the chamber was taken up by a deep pit, and on the far wall there was a passage leading off. We carefully picked our way round the pit and into the continuing passage. The passage was a classic keyhole shape of a phreatic circle with a vadose extension below, but here the vadose section was very narrow and deep, less than a welly across but several metres down. A trickle of water ran at the bottom down to the big pit, and mostly came from a drippy aven we discovered halfway along the passage. The passage was very straight, with a well defined bend in the middle, and we raced up it to see where it lead.

At the far end was a small, sandy chamber. On the left wall was a window into a big chamber, and the right wall lead up a steep, muddy slope. We'd left the drill behind so we decided to push as far as we could before resorting to bolting. The steep muddy slope had the ceiling very close above, and after a few failed attempts to get up, we settled on climbing up as if it were an overhang, using the muddy floor for support and the ceiling for handholds.

Near the top I discovered something puzzling - dark red squares of material, clearly artificial but very unclear as to their nature. Clambering up the last of the slope lead to a window into a big chamber with an ICCC rope dropping straight passed. We weren't sure about the age or state of the bolts, and decided not to use these ropes. The ledge was littered with the dark red squares, which defied our careful examination. Kenneth named the passage 'What a Coincidence' as we'd reached the old shaft series in a neat, straight line.

At this point we needed to get the drill, which we'd cleverly left all the way back near the Hall of the Mountain King, far from what was now the pushing front. We went back, and found that the climb up the steep phreatic wasn't too terrible, and retrieved the drill and ropes. We rigged a traverse around the deep pit (but didn't descend it as we wanted to link up with the parallel shaft series) and then Kenneth put a y-hang in the window at the end of the passage. He descended all the way down, but this caused massive rope rub. I descended to the top of a big pile of boulders, and found it was possible to scramble down to the floor, which avoided the rope rub.

The chamber was wide and large. A blue and white rope came down the far wall. We could see a traverse line leading off at the top, but there was otherwise very little clue where we were. We explored a little, confirming that there was a way on, but with so much still to survey we had to turn back at this point.

Our survey confirmed that we were near the old shaft series (which starts at TTT), but we couldn't find any PSS to tie into, and there must be a large error somewhere to place us over 40 m away from the most probable lead. Clare and Tanguy believe they saw our rope on the far side of a chamber when they went down the TTT route,

so one goal for 2017 is to resolve this ambiguity. And there's still the undescended deep pit with the trickle of water in the middle of What a Coincidence, and a potential deep camp spot amongst the insulating mud.

Jack and Kenneth

Tight and Scrotty and Gambler's Ruin

Jack, Rhys, Clare and Miriam

An elite team comprising of three former presidents (Clare, Rhys, Jack) and one novice (Miriam) headed off to properly kill Upside Down Chamber and Blue Danube. At the top of Blue Danube we split up - I went down Upide Down Chamber to de-rig and re-rig down Blue Danube, and Rhys started bolting over the top of Blue Danube to a continuation of Colony on the far side. Clare and Miriam went to check out Fratnik's shit lead, a rift coming off at the Colony/Hall of the Mountain King.

I came back out of Upside Down Chamber and chatted to Rhys before heading back along Colony to see how Miriam and Clare were getting on. They responded to my 'ey-oh', but said something was wrong. I dropped through the rift and found them - Miriam had fallen a very short distance and her ankle was tender. We waited for a bit and had some food and water, and decided to keep caving. The lead was practically dead - it seems to be a boulder collapse that follows underneath Colony. There is some potential.

Back at Rhys' Folly, and Rhys had admitted his folly. The tube on the far side merely reconnected back into Blue Danube, and his epic traverse (many bolts placed from a horizontal position, supported by cowstails) was at an end. We had one lead left - the stream at the bottom of Blue Danube.

We descended down the clean washed, pale grey shaft and quickly eased into the rift below to avoid the spray. The first pitch was short, and I rigged it off naturals. Then the rift opened out, the water dropped away below and we found ourselves in a small chamber with a window looking back into Upside Down Chamber. Disappointing. There was still one way on, going out into Upside Down Chamber and then swinging back through another window into another chamber, its floor filled with boulders. We pushed all the leads we could, which were all Tight and Scrotty, hence the name. Even Clare decided nothing was going, so we surveyed our way out.

At this point, desperation or inspiration struck. What if Rhys and Arun's lead at the bottom of Upside Down Chamber wasn't truly dead? We dropped into the chamber and climbed up the boulder slope. In the process I stood on the bat skeleton, which had been



(a)



(b)

and Miriam
ge at the
phys's Folly,
a phreatic
s with Up-
— Rhys Ty-

guarded by the world's worst cairn. Sorry bat.

The rift down was sharp and unpleasant. We were short on rope. Rhys rigged down on bolts he'd placed the previous day, and we wriggled down vertically, enjoying the scraping sensation on all our soft squishy parts. At the bottom was a narrow rift crawl, just as sharp as everything else. We cleared lots of rocks from it, then Rhys and Clare squeezed through and passed more rocks back to me. At this point it was large enough even for me to get through, but Rhys and Clare had found a pitch so I was sent back up for the drill and bolts.

Back at the bottom, the tension was palpable. There was a good draft and an open pitch. We had so little rope that at the bottom of the 3 m pitch we cut the rope a good metre off the ground. Miriam was eyeing us with increasing wariness - this was the infamous cave lust she'd heard so much about. Between us, Miriam and I built a take off cairn so that we could actually get back onto the rope. She was unimpressed by the innovation.

Rhys and Clare were already bolting the next pitch. It had one bolt. The back up was happy thoughts. The pitch head was one of the tightest I've ever done, and I doubted I'd get back through. At the bottom the cave was clearly very dead. The only possible way on was in the ceiling, about 3 m up. The draft is good, but it looks like it's flowing through a huge fault, rather than a true cave. The rock is just shattered, rather than eroded by water. A very odd place.

We'd taken every chance we could, and eventually we'd run out of luck and met our Gambler's Ruin (a random walk in one or two dimensions visit every point with probability unity, leading to a gambler with finite money always going bust eventually). We surveyed out, squeezing through a rift that ruined several oversuits, and began the long climb to the surface. We had reached the deepest point of the expedition this year.



Figure 94: Clare surveying in Up-side Down chamber after 'killing' a hopeless dig — Rhys Tyers

Why Man Here Rhys and Jack

With only one day of caving left, Rhys and I were keen to squeeze as much exploration in as possible. Our first target was the rift which Knot Very Good enters - Rhys had spotted a window, and got to work bolting his way around to it (unperturbed by Rhys' Folly going nowhere on his previous pushing trip). The window turned out to be a large solution pocket, but on the far wall he spotted another window. As we were short on bolts, this was left un-pushed and we ascended, looking for easier leads.

In the long, winding rift between Sane and Sober and Knot Very Good Rhys had spotted a way down. The rift has many false floors, and passages follow at all levels. We dropped down at Station 11 (named after the PSS) and found a chamber with a false floor. In one direction, up-rift, I reconnected with the large chamber next to Sane and Sober where the lower Monatip connection enters. In the down rift direction we did a sketchy traverse on a sloping ledge, and found a small, beautiful chatti  re that was too tight to continue.

We returned to the main branch, and climbed up into the roof. There is a higher level passage here that has many flat out crawls through fine sand. This popped out half way up a chamber. The

floor was a boulder collapse and we couldn't get through to a chamber that took all of our light. Half way up the chamber was a chatti  re that seemed to go. Desperate at this point, we grabbed rocks from the floor and smashed away at the obstructions. This gave us enough space to wriggle through, and we followed the passage until it popped out facing the small hand-line pitch between Sane and Sober and Knot Very Good. Drat.

We returned to the upper level passage, despondent, when Rhys spotted a small, grim looking chute heading off. He struggled through and declared it was lovely. As I squeezed in I realised quite how tight it was, but Rhys kindly moved a big rock from the floor and I managed to slither through. We were in a tight, sharp rift. We quickly go to the upper end, which tightened down, but with some hammering could go.

We then descended in the rift. The rock was brutally sharp and tore off chunks of flesh and oversuit. At the bottom, we found a very small (two person sized) chamber, filled with rocks. We started to excavate, piling rocks back along our escape route. Soon we had cleared enough space to see that there was a way on into a vast chamber. We grabbed the drill and began to bolt, lifting out rocks with tape and smashing others with the bolting hammer. I squeezed through and into a large space. Dropping down, I placed a deviation and continue to a broad ledge, strewn with rocks. In the distance I could see the rope of Knot Very Good - yet another blasted connection!

Our exploration of the rift, and indeed the sistem, was at an end for this year. Dejected, but eager to return we headed out. The rift is interesting, but it is unlikely there are any real leads here, as the water seems to have followed the simplest path many times, twisting and returning to its theme like a slow and ponderous fugue of water and rock.

Déjà Vu

- Tanguy Racine
- Clare Tan

Déjà Vu

I'd never gone expedition caving with Clare. We had managed to cross paths at X-Ray or on the surface in 2014 and 2015 so we decided to make up for this. We planned to cave after a mid-expedition break in Tolmin spent walking around to the Tolminka gorges and then to the Izvir Tolminke where Will Scott and I got thoroughly drenched. It seemed like exploration in the new shaft series was dying down slightly after the horrors at the bottom of Upside Down chamber so we decided to have a look at the original, older, deeper shaft series, past the infamous Brezno TTT (infamous because it looked wider than most shafts in the system with the exception of Silos and Happy Monday).

It had also not been visited at all during the summer, despite its proximity to the entrance and the relative route-finding ease, but with very good reason until then: we wanted to find our own way down. When had it been last visited? There was also another interesting nexus en route to TTT: Mandare. This crossroads was marked as an open lead on the 2000 survey, and the drawing of it remained unchanged in the 2011 survey, though additions to the deeper series had been made. Why was it so? Finally, we thought it would be good to gain knowledge of the upper part of the original deep series as its passage morphology might give off clues as to where connections between the two shaft series are likely to be found, and whether it had any potential for mid-depth horizontal development as seen in Karstaway.

From Sejna Soba, the whole of the way to TTT was a basic rift. There were obstacles, of course, how not in a cave of generally small dimensions, fault controlled and full of choss? The odd climb up or down a waterfall, the emergence into the bottom of an aven, navigation in a tight rift. And there were leads. Closest to Sejna Soba was a little carbide arrow pointing the way at a junction, but taking the other option took us to the take-off of a 10 metre deep pitch. This junction is noted on the 2011 survey as an open lead, and admittedly, the pitch is found directly on top of another horizontal branch of the cave. Could it provide another, easier connection? Further on it the impressive Povezava Aven, a 20x20m aven, boulder strewn. It is slightly slanted however, with the eastern wall dipping towards the west. 10 metres from the floor, a dark recess, 5 metre wide that could be a window into horizontal passage was spotted. The bolt-climb appears to be a straightforward one, and still very close to the surface. Importantly, Povezava is amongst the easternmost points of Primadona sensu-stricto, and going further east might yield a pathway into much barren mountain so far.

TTT was impressive. If one could find the way to access the pitch from the very top, it would be a good 80m deep, and 20-

25m broad throughout. The passage joins in about halfway down the pitch. But where was Mandare? Supposedly the connection between Stara Jama (the old cave) and the Povezava branch, we saw no sign of a passage joining in at right angles to our rift. Though we spotted an aven it was nothing like the drawing on the survey. In all probability, the Povezava branch joins in at the bottom of a pitch, once accessed from the top through Stara Jama. The old way could have been derigged later on. No one had visited the Stara Jama branch, focussed as we were on the new shaft series.

After rerigging some of the scaries hangs of TTT (a smaller parallel shaft joined in towards the bottom of the pitch, the wall between the two I assume gradually thinned down to a few feet where the last, loose and rusty hanging belay was), we bottomed this might pitch and searched for the way on. On the far, southwestern corner of the almond shaped shaft we eventually found a small draughting rift leading off. Had we missed an obvious way on? We spotted a small drop that had been rigged, descended and reached another climb down. Seeing no ropes, I was hopeful that this was maybe a small side passage no one went back to, but it clearly went on and the draft was strong. The drop led to an obvious junction of two rifts.

Clare spotted what she described as a landing cairn, and after placing a beautiful 'Y'-hang, it became clear that someone had been down. There were abundant footprints on the black-and-brown mottled floor. Further along the rift, downwind past several traverses where drops underneath the false floor got deeper and deeper we reached the ropes. There were many of them, some muddy and attached to homemade hangers, others cleaner with shiny krabs and through-bolts. A set of ropes protected a traverse across a pitch, the other went down.

Since we had not explored the upwind passage at the junction, I proposed that we enter a few metres in the book. Clare agreed so we walked on the mottled floor up into a textbook example of a phreatic tube later turned into a vadose rift. It meandered in a lovely manner, but not for long, soon we were crawling in between mammoth boulders. To our right, there was a small aven which we thought we recognised from before. It seemed we had returned underneath the Brezno TTT rift. As we continued past it underneath another enormous boulder we heard the echo, and drips of a larger chamber beyond, TTT itself not doubt.

Only it was not. It was something else, a drippy, boulder strewn chamber that looked curiously similar to TTT. The water came from a little pitch higher up and the chamber itself had the shape of a kidney. Turning left, the ground rose, and the chamber was dry. Keeping to the left hand wall - we had done an 180° turn at that point, the draught changed from upwind to downwind, and the floor



Figure 95: The bottom of TTT (P40) where bus sized boulders accumulated — Jarvist Frost

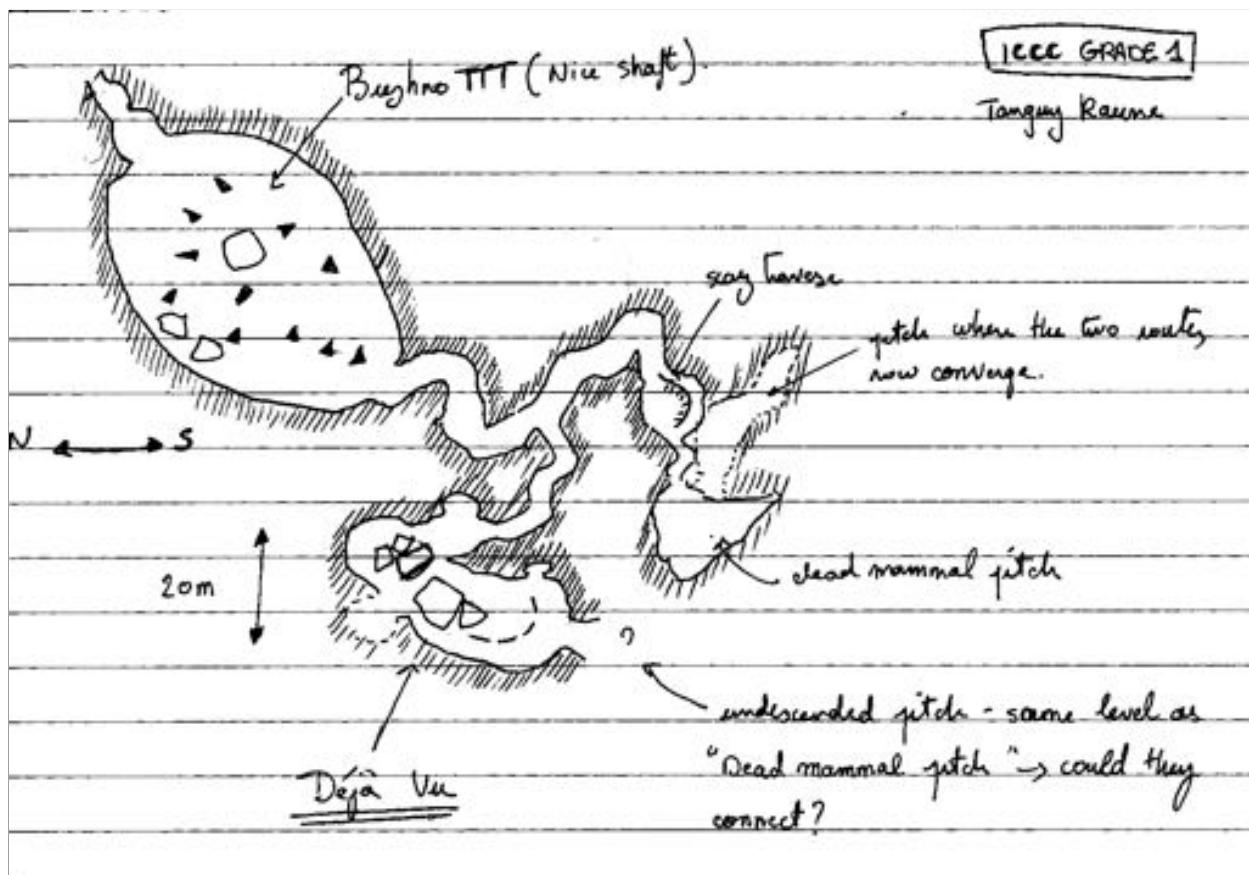
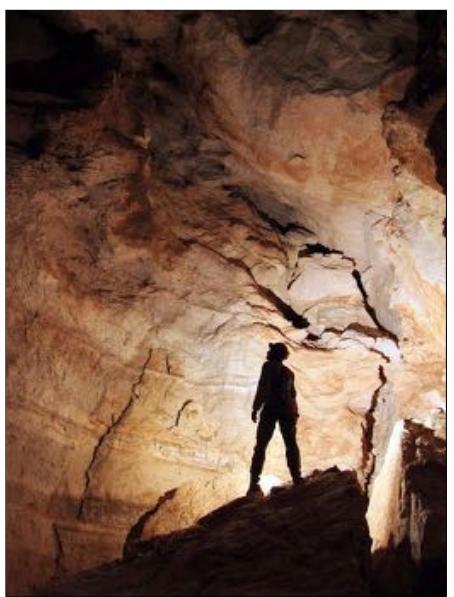


Figure 96: A grade 1 survey of TTT pitch and the Déjà Vu junction below — Tanguy Racine

sloped down to a pitch head. Twenty metres deep maybe more. It probably reconnects with the original pitch series, it must, with all the snaking around we can't have moved off that far. We having rope, drill power and metal work did not bolt down this new pitch. We placed our bets on the already rigged way down Ajdovscina pitch.

So after a short survey we came back to the bolted pitch head. The traverse was almost an obvious choice, the precedents in Migovec abound: stay high, avoid the water for inevitably disappears down impenetrable cracks, and take your share of glory. The bolts were sound, and the rigging adequate but halfway through I did question my sanity. 20 to 30 metres below, the continuing pitch series awaited. On the far side of the traverse a short 5 metre stoop led to a further pitch head, dry this time. The rope was still dry and mostly clean, the 'Y'-hang as inviting as any. Clipping into the traverse line I swung over drop, 20m at most and could see that it was a clean hang, landing on a rubble floor. There was still a heap of unused rope there.

We whizzed down and explored the bottom of the dry pitch. A sloping mud and rubble floor, with the skeleton of a bat, no dry horizontal way on and around a corner, a large window looking into



(a)



(b)



(c)

the previous pitch. We decided to use the excess rope to rig down from the window and back into the main way, bypassing the scary bolts. Another beautiful, wide 'Y'-hang later and I dropped another 10m to reach a ledge, protruding from three sides of a pitch. On the far ledge, a traverse line brought the Slovenians' way down away from the spray and the unstable boulders. With the water on our

Figure 97: *a* Large boulders have fallen in the chamber in *Déja Vu*. *b* Ajdovščina a classic bedding controlled phreatic passage, with subsequent vadose sediment deposited *c* The junction between *Déja Vu* extension and the main TTT branch, where 'leopard spots' are preserved—Jarvist Frost

side of the ledge we opted to mimic the previous way down.

Three or four more bolts later I prepared to go down the next drop. The lights couldn't reach the bottom, but I could see the ropes in place running from one wall to the other like a loose, lonely spider web. Again mimicking the existing rigging I placed two rebelays, and reached a large bouldery ledge. There again there was a profusion of ropes: a rope leading in through the boulders high-up from the last belay. On the right hand side of the ledge there were two ropes descending the next section of the pitch. A blue rope which could be accessed by traversing on the broad ledge to the first anchor. And a white rope, a 'Y'-hang bolted from a rift on the far side of the pitch. Could the rope leading into the boulders find its way to this far rift? How else to reach it?

When Clare joined up with me, we had a little break and considered our options: we had very few precious little bolts left, next to no rope. We didn't chance using the in-situ rope, instead turned around, with the aim to sort out some of the rigging on the way out. Though we had not found where Jack and Kenneth's route joined up with the old pitch series, we'd gained the knowledge of the route, its obstacles and gauged the state of the rigging in this forgotten bit of cave.

Interestingly, we didn't see any obvious pitch coming in from Déjà Vu as we went down, and looking at the survey, it looks like there is a sizeable distance between Ajdovscina and the pitch head, perhaps as much as 40m horizontally. Can this be the next way down deep?

Tanguy Racine

The survey of a sewer - Cloaca Maxima

The plan was simple: Maffi and I were going to go in Primadona, pick up some rope at Sejna Soba, go in Monatip, then towards the NCB connection and drop a pitch there. Maffi knew the way to the connection given he'd participated in the effort to push the cave during the preceding year. I foolishly assumed he also knew all about Primadona and its connection to Monatip: this was a grave mistake. Still we agreed to meet at the entrance of Primadona the following morning. 'What time?' Maffi asked. Now careful, you must not be seen to offer an easy option, you're a hard caver. 'As early as you wish' I answered. This was not the expected answer, I could see it on Maffi's face. But then I never really lie in bed. 'Maybe ten then?' I offered, as it had become almost a habit to go caving early, in order to come back up for dinner. This time round, dinner in the bivi after the day's push was not on the cards: it was going to be a long, arduous trip, with glorious, remote exploration involved at some point. Maffi would be coming up from Kal, picking a path through the boulder slope. I would abseil from the top, with the drill, battery and metal work. I couldn't wait for the trip to begin and the wine did nothing to quench my enthusiasm. Au contraire...

The next morning was quite still, with little wind among the dwarf pine bushes. I found a deserted bivi, all cold grey rock and ash, with pieces of 'comf' scattered amongst the remnants of the previous night fire. Even the soothing sound of tarps billowing in the breeze lacked. I rustled up a quick breakfast of biscuits and cheese, cold vitaminski and took it out of the shakehole, to sit on the promontory overlooking M10.

Then followed the usual shuttle between the tent and the bivi, gathering all the essentials for the coming trip: food, water, gear. Finally it was time to stride across the plateau, to the start of the abseil.

The silence of the morning was broken by the movement of pebbles underfoot, and soon I clipped into the last drop before the entrance, where Maffi was waiting. I zipped down the rope and we greeted each other, upon which Maffi started to change into his caving gear. As he sat on the grassy ledge, he laid his kit all around him and proceeded to kit up. He had the unfortunate notion of leaning back when putting his socks on: this pushed one of his hiking boots over the edge. I could only look on, clipped to the rope as the shoe rolled down the boulder slope. Even when it was out of sight, the crash of boot on rock could be heard at repeated intervals.

'Noooooooo! Why does it have to be me?' he cried in anguish.

As far as I knew, the boot might have found its way down to the Tolminka. Still, I offered to climb down to have a look for it, over the first 150 metres of scree that led to the Kuk path. As

Cloaca Maxima

- Grega Maffi
- Tanguy Racine
- Clare Tan

it happened, the missing item had not gone far and Maffi found it himself, but I had time to climb down to the path and up again before realising that. We spent a surprisingly long time trying to figure out what each other meant:

'Tanguy... (non-descript sound) ... up'

'What?'

'... found it ...'

'No I haven't found it! Have you found it?'

'... No ... up'

'What?'

'... see it up ... back'

'Okay I'm going back, Maffi have you found it? I can't see it' I couldn't see the shoe at all, and my wanderings had led me far from the usual access path.

'No ... Come back ... I have it'

'Okay'

I traversed across the scree to get back to the less insane route, climbed up, traversed underneath a little bush of dwarf pine, grabbing the thick, flexible branches as holds, climbed up a little bit more and stopped at a wall of dwarf pine, crowning a small ridge of rock. I hadn't climbed down this way, but I wasn't going to let vegetation defeat me. The going got tricky as the slope was steeper than anticipated, and soon I would only be pulling myself up the branches, with little or no footholds. Climbing back down was out of the question, so I had to traverse to the right hand side, back to the scree slope. I breathed a sigh of relief when I reached the fringe of the pine bush, and carried on up, back to the entrance.

I was relieved to see that Maffi had found his shoe and after all these tribulations, we were ready to go underground. I pointed out the different branches as we passed them, at Lost and Found junction, at the corkscrew climb, and finally at Sejna Soba. Maffi was quite surprised that, at the time, there were no signs indicating the ways out, or on, or about the cave. Indeed, we'd applied our PSS and paper notes policy to the newly discovered passages and omitted to do the same on the trade routes, relying on our own experience of the cave. This was exactly what had led to memory of the leads, and ways in Primadona to fade in the first place. On a later trip with Tetley, and on his urging a few notes were left at the key junctions insides the cave.

At Sejna Soba Maffi picked up his bag of rope and a small amount of metalwork he'd placed there the previous day on his reconnaissance trip into Primadona. Had I heard that right? It transpired neither of us knew the way to Monatip, other than it was 'up this rope' hanging in the main chamber. How difficult could it be though? Monatip was a simple cave, with little in the way of route finding, save at the beginning where the passages leading to NCB had been



found.

I ascended first, reaching a very exposed traverse over the chamber into a small rift. There was a carbide arrow leading up to it, and I almost climbed it but Maffi appeared at the pitch head, reading a note in Slovene which said 'traverse more'. The very exposed traverse turned into a madly exposed traverse, leading to yet another small rift, whose only redeeming feature was an exquisite calcified gastropod fossil, weathering out of the rock. The rest was carnage, a tight, sharp draughty rift we had to climb up in, till we broke out into a large aven. There were a few footprints around. The rift continued on the other side of the aven, this led to another chamber, with a possible climb up on the far side.

The main problem with Monatip was that we expected the way to be hard, mad, dangerous even. This meant we had to try every way up before ascertaining that it really wasn't 'the way on'. The climb up was largely vertical, with few footholds and could in no way be attempted without utter disregard for one's life, so we turned around and explored a few more likely holes, with an entertaining loop I can't begin to describe. We concluded the way must be somewhere else, so we doubled back down the sinuous tight rift, back to the traverse of death, and traversed more.

As if by magic, the going became easier, and soon we spotted

Figure 98: Maffi went to Primadona via the 1500m contour path which links Planina na Kalu with Krn on the other side of the valley. Tanguy abseiled down the wester cliffs of the Plateau to meet with him at the cave entrance — Jarvist Frost

a rope going up an aven. This was it, now we couldn't get lost! At the top of the pitch, we spotted another rope, and our spirits rose a little. We celebrated victory too quickly though, as the pitch head was a boulder choke, with a possible way down into a boulder strewn chamber, which we explored. The far side was climbable, but this led through to more wedged boulders that had not seen much passage. With a bit of looking around back the pitch head, I spotted the cairned way on, and we carried on our way up. The boulder choke gave way to a phreatic tube passage, and there was even a Slov PSS by a small round chamber.

The going was not particularly easy, but we had the draught and the way was well trodden. The passage levelled out and grew bigger, with the signs of an obvious ancient rift streamway going down. Prod marks on the soft mud of the ledges indicated that the way on was up into the rift, and this gained the continuation of the phreatic tube. There, the sediment was churned and flattened by the passage of cavers till we reached a clean-washed aven. With no marks of wellies to indicate the obvious way on, we spent half an hour trying each and hole within this space. We found another oxbow loop, looked everywhere underneath the boulder floor of the aven, but still could not find the way.

After having a rest, some chocolate and thinking about our predicament, it became evident that we would not complete the through trip from this end of the cave, so we decided to turn back and enter via Monatip to find the way. If we could not push today, at least we would gain valuable knowledge about the cave.

Somewhat disappointed, we turned around, going down the phreatic tube back to the start of the boulder choke. I started following the cairns but Maffi spotted another neat stack of stones leading away from the pitch head. Curious to see where it led, we soon broke out into a massive aven, which I interpreted to be Alkatraz. This was an opportunity to try out the new route Jack had pioneered early on during the expedition. I found a scramble up boulders on the right hand wall, into a small chamber, and on the opposite side, a little slot through the boulders that was the way down the the Spiral Climb down.

I reported this back to Maffi, and we opted for the easy way out. Very soon we started motoring up the entrance series of Primadona, and in no time at all, we climbed the snow slope to enjoy the afternoon air on the grassy ledge and gorge on the sight of Krn, the Tolminka valley unfolding beneath us with the faint rush of water far below. We sat there for an hour or so, sharing caving stories and tucking into a nutty fruit mix of Maffi's own concoction. For a while I tried to guess what was in it - it was after all very fine grained - I got the fig and pistachios after a while but missed the peanut, the linen and sunflower seeds. By all accounts it was delicious, far



Figure 98: The partially protected traverse between Monatip and Primadona is a journey for the faithful — Jarvist Frost

surpassing the good old raisins and peanuts.

We put our gear on again, leaving ropes, metal work and survey kits by the entrance of Monatip in order to travel 'light'. The cave begins with a pebbly crawl, upwards into the mountain side, branching, before the first pitch. The next section is very straight, with an alternation of abseils, climbs and traverses before reaching the big chamber. Twenty minutes in, we were still only 6 metres below the entrance. The chamber itself is a big aven, with a thin 9mm rope leading up to the connection passages. Maffi led the way up to show me the beginnings of the 'connection galleries'. The SRT was innovative, with a pitch bypass that allows one to clip in at the highest belay, only a few metres before the top. Most of the rocks were loose, and the holds on them were tenuous at best. Still, I was

soon shown the start of a long crawl. We turned round there, and descended back to the Big Chamber, where the other way on was the original Monatip rift that had been connected to Primadona at Sejna Soba.

We scrambled down some huge boulders and entered a small muddy rift. Very early on there is a squeeze which we passed easily, then a window looking into a pitch maybe 20metres deep, then another squeeze best attempted feet first, as it pops out over a drop. At this point, the rift widens, with two broad ledges on either side. Maffi bridged forward a little, and a couple of metres underneath we spotted the ropes going down. Reaching them was going to prove problematic.

The walls were slick, the good sound holds few and far apart, and we decided that we'd used up all our free climbing enthusiasm for the day. Upon turning around, we spied another passage that merged into the rift, right next to the one we'd come from. Thinking that it could provide us with a safe and sensible way down to the ropes we climbed into it. A small upclimb broke through to a small rabbit warren of a chamber, with many phreatic tubes leading off - most being too small to follow. It was a worthy find, but the best was still to come. The obvious way on was the largest phreatic tube, plastered with mud on the floor, with a little film of water on top. We followed the footprints until they stopped. The tube went on.

'It isn't obvious anyone's been here' I remarked. Further on, the evidence was unequivocal: pristine mud and a thin film of water gathering in little puddles where the erosion had scoured hollows. There was a moderate draught, and although we lacked the survey instruments to survey whatever this passage led to, the thought of discovery spurred us on.

The tube carried on downwards, at a constant shallow angle, with the same cross-section for a good while until the floor dropped underneath us: this was a small chamber, covered with the same thick, dark mud. From there, a junction of passages: a climb up through smaller tubes which Maffi attempted for a while, the obvious continuation and doubling back under the passage we'd just come from, a muddy crawl which I explored for a couple of metres.

We opted for the larger, obvious way on, which bent up at a 3m climb, then carried on to reach a T-junction. We chose the downstream end, quickly finding another T-junction, where the passage widened, and opened up. To the right and down, a short section with a deepening rift broke out on the eastern wall of a high, oblong aven. Clean washed boulders on the floor. The sound of drips.

I whistled in astonishment at our find: the size of the aven was remarkable after such a long time crawling through the tube: near 20x10m cross section at the bottom, and the ceiling lost over 40m higher up. On the western wall, and near the base of the aven, the

phreatic conduit beckoned: I had a quick look, and satisfied that it didn't choke completely after a couple of metres turned around. In the aven, it looked like there could be a twin shaft, connected by a faultplane to the south. This could be accessed by climbing on a boulder pile and bridging the shaft walls where they came close together.

Going out was quick, there was no surveying, no naming without pen, paper and the instruments but from nowhere, we'd found a couple hundred metres of new passage, quite high up in the system. I was thrilled as ever after a discovery and couldn't wait to go back the next day to survey. There were three guaranteed leads, and many more metres of passage to find, who wouldn't want to see that?

Tanguy Racine

Account of the rescue

Will and I had planned the day before that we would go and push Cattlegrid. We woke at around 9am and took our time with waking up and preparing for the trip as it was to be a fairly short, simple trip. We had also decided to do de-rig Quantum State, the idea being that we would use the rope to drop the pitch at the end of Cattlegrid. We tried (not very hard) to convince Kenneth to join us. We were unsuccessful. DW, Tanguy and Clare also had a short trip planned, into Monatip. They were ahead of us on the entrance abseil, and we ended up on the abseil at 12pm exactly. Progress down to the end of Knot Very Good was smooth and unrushed, taking around 2 hours. We carried onto Quantum State and I de-rigged the rope, around 40(?)m of it. Before we started down Cattlegrid we stopped for some food. Will led the way down past the drips and as he had been through before, he knew how to move through the passage and so he was quicker than me. When I got to the place where I had my accident he was already past and moving just out of sight, so I hadn't seen him go through the small hole to the left of the climb down. I noted the hole, decided it would be uncomfortable in comparison to the 2m free climb down. The climb wasn't difficult; I didn't hesitate in attempting it at least.

I stood facing the way I had come from, found hand holds on both the left and right side. I tested them (as I had come to learn in exploration caving) and found them secure enough to trust. I don't recall thinking of the rock that I was holding onto with my left hand as anything other than completely stable and solid. I probed downwards with my feet, and finding no decent foothold I dropped my feet slowly, taking all my weight in my arms to lower my feet down to the ground below (which must have been in reach). As I did so I watched the rock I was holding to the left move, and begin to fall. With the way it was moving the rock had no intention of supporting me. I had enough time and cognition to try and get myself out of the way, pushing off with the left hand, throwing myself face down onto the floor. The rock, or one that was dislodged along with it, struck me in the lower half of my back.

Instantly the implications of back injuries overwhelmed my thoughts. Before I even realised I was winded and in some serious pain, I tested if I was able to move my fingers and toes and limbs. Will was now at my side, having only just been far enough ahead to have not been able to see the accident. He would have heard the rocks fall, and my gasps of pain whilst I tried to get my breath back. On my hands and knees I attempted to move straight away, informing Will of what happened. That I had been hit in the back but could move despite the pain. He stopped me standing up, suggested staying where I was as I had injured my back. I decided I could and should

move enough to get to the bottom of Knot Very Good, where Will said we should wait for 10/15 minutes to allow the injuries to make themselves apparent to me. We dropped all the tackle sacks and with a lot of help from Will I made it to a flat, dry rock in (what we have now named) The Waiting Room. Will went back for our equipment. We emptied the tackle sacks and I lay on them. We discussed our options at that point. It was 15:20. We were 7 hours away from our call out, 9 away from reasonably expecting to see anyone coming down for a rescue. If, after the adrenaline started to wear off I could move enough to prussick slowly, we would do that. But only if we were confident as getting stuck on the ropes halfway up a pitch would be far worse than lying down. If I couldn't move we were to stay together and keep each other warm. After about 10 minutes I got onto my hands and knees, with difficulty. With help from will I attempted to stand up. I couldn't stretch out my legs to stand up straight. I was beginning to stiffen up. I attempted to stretch my legs when back on my hands and knees, acting out a prussicking motion. It hurt badly, I told Will that we were now just



Figure 98: Because the Slovene army pilots having a flight quota to complete each year, helicopters have often heli-lifted gear and provisions to the Sheperds Hut, and even as far as the sunset spot on top of the mountain. During the rescue, however, the pilots flew directly to the cave entrance of Primadona, hovering a few metres from the cliff edge, in the black of night, playing no small part in facilitating the rescue effort. Praise must also go the 60 strong team of cavers and mountaineers drawn from across Slovenia who participated in all aspects of the rescue: from communications, cooking, blasting and bolting teams to the medics who took charge and to the JSPDT members who knew the cave and acted as guides — photo by Jana Čarga

The callout and rescue party

Will and Arun's ETA of 8.00pm went past. At around 9.00pm we started the fire in the bivi and welcomed the Skalars, sharing the drinks. 10.00pm was fast approaching by now and Kenneth reminded me of the group's callout. Something along the lines of 'should we reset it to 7.00am' was muttered. Callouts are definitive, and only function if taken seriously in all circumstances. I put vitaminski in a bottle and Kenneth and I went to the top of the SRT wall to look out for lights on the ascent.

By 10:40, Clare, DW, Kenneth and I reconvened at Sunset Spot. I was feeling the call for sleep following the day's work, and opted for a 30 min power nap in my tent, agreeing with Clare that I should be woken up if the light's hadn't been seen by then. I lay on my sleeping bag, fully clothed and closed my eyes, letting a tide of thoughts rise and ebb. The flow was interrupted all too soon by Clare's gentle voice. 'No lights yet'.

I strode into the bivi to look for a spare battery, sparing only a few words for Janet, and bid goodbye to the Skalars. In the bag we took, I carried extra chocolates and cold vitaminski, for this was what most rescues

had requested a couple of weeks previously. Clare was waiting by her tent, walking stick in hand, ready. I followed, brushing the dew of the dwarf pine branches that lay athwart the path.

By 11:30pm Clare and I reached the top of the abseil, in high spirits. I headed down first, always expecting to see a light appear around one of the corners. We reached the cave entrance, where I picked up the radio, sent a message to DW, establishing communications between the bottom of the abseil and the top for the first time. We hadn't seen anyone yet. I picked up the UG first aid bag in the entrance, adding the bottle of Vitaminski the group had left by the entrance. We entered the cave, and pitch after pitch it was the same story, no one to be seen. It was only when I clipped into the traverse line leading to the pitch above Cattlegrid that I risked a 'hey ho'. The call was answered by two 'hey ho'. 'Are you both fine?' 'No' came the answer. 'Ok, I'm coming down'.

Tanguy Racine

going to have to sit pretty, keep each other warm and wait for rescue. We had gotten into the plastic survival bags from our helmets, and I had taken 2 ibuprofen from the med kit. We lay down and began to wait.

Facing a 9 hour wait until anyone knew I was injured, the idea of Will going out on his own was appealing only for the fact that it meant a rescue could be called earlier. But me not being able to move and keep myself warm, and his confidence now shaken, him leaving the cave alone wasn't an option.

I turned the hourly beep on my watch off, and told Will not to look at his watch often. Everyone knows that watching a clock makes time seem to pass that much slower.

And so we waited. Thankfully when I was lying on my side, I wasn't in much pain. This comforted me on the extent of my injuries. We talked a lot in the first few hours. But inevitably the conversation slowed as we both got tired and colder. We were both lying down using ropes, tackle sacks, SRT bags and knee pads as insulation from the heat sink of the rock under us. We pulled the oversuit hoods up, kept our helmets on and our heads were entirely in the bags, meaning our breath was warming the bag up but making



the bags and our suits damp. This was fine whilst we were in the bags, but removal led to getting cold very quickly. My headtorch was on the lowest beam setting, and I believe Will's was off for the majority. We both had spares, but not really being able to see the cave helped as it almost made us forget how remote we were and the effort it would take to get me out. Lights off completely was unnerving. At around 6 we discussed if sleep was a good idea. As long as we were both comfortable with the silence, closing our eyes and resting seemed pleasant for the both of us. I think Will may have gotten 15minutes sleep, but within an hour we were chatting intermittently again. Singing and conversing to keep our spirits up.

We decided that when it got to midnight we would begin blowing our whistles at 5/10 minute intervals. At about half 12 we heard Tanguy's 'AYOOOOOO' down the pitch, but he was obviously a few pitches away. When they reached us, we informed them of my injuries. Wasting no time it was decided that Tanguy would stay with me, Clare would exit the cave with Will and call the rescue. They got out a foil blanket and Tanguy got under it with me when the other two left, at about 1am.

Tanguy, doing everything to keep me warm, removed my damp wetsocks and replaced them with his thick woollen socks. He and I then attempted to sleep, but I'm unsure if either of us slept more

Figure 99: A caver negotiating the top of Knot Very Good pitch, about 15 minutes away from Sejna Soba — Rhys Tyers

than a few minutes. Around 5am Clare returned. She had brought with her a stove and a few other bits. She and Tanguy helped me into a large, extremely well insulated 'blizzard blanket' which had chemical heat pads on the inside. I was fed codeine and noodles. Tanguy feeding me noodles with a spork inside a bothy bag was pretty amusing. The three of us rested inside the bothy bag for a while, and it was around 6am I believe when Tanguy left to exit the cave.

Clare and I remained inside the bothy bag waiting for the Rescue to reach us. Again I don't think either of us slept; Clare herself must have been extremely tired having not really rested. At one point she cooked smash with soup and chunks of cheese for the two of us, which I would rate a solid 9/10. My lack of appetite unfortunately limiting enjoyment. Fratnik and first medic arrived around 10:30am. She was very kind, asked me a few questions and tested my back, but it then took a while longer until the other medics followed behind, bringing with them a large medical kit. They cut the cuffs on my furry and oversuit to get a tourniquet on my forearm for a cannula to be placed in my right hand. As I was being treated as worst case I was given pain killers and steroids. When my temperature was taken it measured 37.6 degrees Celsius thanks to the effort of Will, Tanguy and Clare in keeping me warm in the 18 hours I was lying down. We had to wait then for the rest of the JRS to bring down the stretcher and prepare the cave for the rescue. Clare assisted in guiding the team through the cave, as most had not been in the system before.

At around 12/1pm I was stretchered up first 2 pitches to Sane and Sober (can't remember the Slovenian). I was stretchered horizontally for these first pitches, as they had easy enough pitch heads and there was no rush due to the preparations further up the system. For all the pitches after the first two I was pulled up vertically, I was comfortable enough like this and it made the rescue quicker and easier for the JRS. We had to pause for 1-2 hours at Sane and Sober as the Risanke squeezes required gardening and blasting to allow the JRS to pull me through on the stretcher. Whilst we waited they threw up a red bivvi, allowing some members of the team to rest. We weren't given any immediate warning for the blasting so the explosions made us all jump a little, with smiles and chuckle all around. The effort the JRS put in to get me through Risanke was incredible. In a squeeze where there isn't much room to manoeuvre they managed to hold up the stretcher and pull me through. When there was enough space, someone would be underneath the stretcher, helping shuffle me through. Every movement was careful and done together. When we had passed the toughest points everyone paused to rest and acknowledge the achievement. Truly an honour to experience.



I had on a helmet with a plastic guard to protect my face whilst my hands were strapped down, and with the action it had seen before, the scratches and scuff marks had rendered it all but opaque. So it kept my mind active by trying to figure out where I was in the cave. With the different rigging set up by the JRS to accommodate the stretcher, my new perspective of the ceiling, the newly blasted passage and being a little drowsy from the painkillers and tiredness I was mostly lost. But I was kept informed of the immediate plans.

The exit out of the cave after we had cleared Risanke followed a smooth system. Pause whilst the cave ahead was rigged to accommodate the stretcher, then an hour or so of activity where I was

Figure 100: a Will Scott and Kenneth Tan relaying information to the rescue team b Newly placed tri-hangs allow the stretcher to be moved safely across the cave c The rescue team with stretcher secured on cowtails move through horizontal sections of Primadona — Maks Merela, deputy leader of the Slovenian Cave Rescue (JZS)

moved up through the cave. Occasionally a longer pause where the red bivvi would be strung up. I'm fairly sure I didn't sleep during the rescue, I may have drifted off for a moments but was unable to switch off and get some rest.

I don't clearly recall the details of the last few hours of the rescue, I was very tired and finding it difficult to stay positive. Some of the rescuers including the medic who first came down with Fratnik were getting tired and cold as there were large breaks. As we reached the last few pitches near the entrance things began to drag out for me. They were really pushing to get me out of the cave in the window where the helicopter would be available, meaning at some pitches I was hanging in the stretcher for a while not moving whilst the immediate pitch was prepared. This was tiring but not painful, and necessary. The crawl at the bottom of the snowslope at the entrance was difficult for the team. It is at an angle where if they let go of the stretcher I would have slid down, and tight and low so difficult to support the stretcher. It was passed easily enough though, and not uncomfortably. Ascending up the snowslope was also tricky, the stretcher was on a rope but the rescuers either side of me were not. They dragged me up with care, despite it being difficult to maintain solid footholds and balance, and being at the end of a massive rescue effort.

My exit out the cave is an image I cannot forget. We emerged at 2:11am on Sunday morning, 35 hours after I had been injured. My weariness disappeared instantly, replaced with my relief to be out as I took in the scene. The cliff was covered in 20-30 bright white headtorches, all pointed at us as I was now carried away from the entrance by the JRS and passed over to the mountain rescue. As I watched the faces of those carrying me, I looked past them at the Primadona entrance as there was a flash of lightning as a storm in the sky to the right moved in. I heard the whirr of a helicopter, and looking up away from the rescuers, I watched it drift across the storm, and then fly back across out of view, waiting for the call to pick me up. I was then attached to a rope line and lowered, slowly, past a flaming torch (a marker, for the helicopter) to a group of mountain rescuers on a small flat area of the mountain. They held me up as the helicopter came in towards us. I could feel the force of the air buffeting us and the overwhelming noise of the blades but I didn't realise that the helicopter was hovering so close, at a level where I could be passed straight through the door and onto the cabin floor. The two pilots and the crew member were all wearing night vision goggles, and from my position on the floor I just lay still and became entranced by the noise and the pilots with their green dials for the 20/30 minute flight.

When we landed at the hospital I experienced the contrast of the noise of the helicopter with the quiet of a hospital at 3am.

I arrived and was quizzed, cut out of my oversuit, put on an IV drip and finally was able to take my contact lenses out. Having no identification I had to write out my personal information for the staff. I was wheeled out and x-rayed by staff who couldn't talk to me in English. I was told that I had multiple fractures to my lower spine, but no indication that the spinal canal was compromised. I didn't need any emergency surgery and was finally allowed to sleep at around 6am Sunday morning.

My account of the rescue is a little blurry, I spent much of it half asleep and my vision was limited. I felt mostly terrified and entirely helpless from the time of my injury all the way up until I was being hauled up the first two pitches, when I very quickly realised the professional competency of the JRS. All members kept a calm and kind demeanour, in good spirits which was very comforting for me. There was quick, clear and constant communication between everyone and I was being checked on at every stage of the operation.

Arun Paul

Epilogue

Only a couple of pitches inside the cave, and out into the calm, blue morning. By then the rescue had been called, it was being organised, but still in its infancy. The hardest shifts had been done, so I took my time on the last stretches of rope and staggered across the plateau to the bivi.

The Skalars, Janet, Will and Kenneth were up. I shared what news I had, had tea, ate vast quantities of bread, asked for the latest surface info. Kenneth and Will were going down to meet the first rescuers at the cave entrance with drill and rope. After meat and mead, I undressed by my tent and lay on the grass asking to be woken up after 8 hours so I could do more if needed. The sun saw to my waking up, after exactly an hour and a half. It became unbearably hot, so I retreated to the bivi. Upon Tetley's advice I wrote down the series of events to the best of my knowledge then in the logbook. The rest of the day was spent recuperating, visiting the

snow chamber in M2 with the Skalars, Tetley, Dave, Will and Kenneth, and getting information from Karin via the walkie-talkies. In the late afternoon Clare came back up, with more ample news, and tales of blasting and intense gardening that had held her up below Risanke for quite a time.

On Sunday, Tetley broke the news in the bivi, stating that Arun had been helicoptered back to Ljubljana. He himself had cooked with Zdenko in the Shepherd's hut in Kal during the night, as rescuers streamed back from the cave entrance. With some four tacklesacks of gear left at the Cattlegrid pitch, Dave and I decided to descend down the cave to retrieve them. This was done smoothly, though we were rained on heavily during the final ascent.

Tanguy Racine



Figure 101: Spirits lifted whilst admiring an unlikely sunset after a miserable rainy day in the Bivi — Tanguy Racine

Additional findings around Migovec

The Auld Alliance

William French and William Scott embarked on a journey to the Monatip-NCB connection passages, intent on dropping a rope down one of the several ongoing leads in the 'Avenue of Pitches'. They entered via M2 to reach the NCB section of the cave and, navigating their way from boulder choke to boulder choke entered the continuation of the horizontal passage. Although they had rope and bolts, they only managed to reach a ledge 15m down on a large pitch, reported to be going big. This pitch is not far above the old system's Level 2, whose large piercing shafts had required many infamous traverses to overcome, and could drop through the roof of one of the numerous avens.

The Stile, Cattlegrid

Early on the expedition, Rhys Tyers noted a couple of muddy crawls leading off the bottom of Knot Very Good pitch. Over the course of several trips, the Cattlegrid passage was explored to a wet 10m pitch and a small maze of low phreatic crawl-ways connected to Smer0 via the Stile. The tubes had been rejuvenated by two vadose steams whose stepped descent provided a relatively easy access to the pushing front. After a couple of visits however, the mud which had lain undisturbed for tens of thousands of years in neat little alcoves was liberally plastered over white walls.

B9 - Jackie's blower revisited (aka the Eyrie)

Arun Paul chanced upon the large entrance of B9 near the western edge of the Plateau, and almost due west of the Bivi. Discovered in 1994 and revisited on a number of occasions since, the cave provided a gentle introduction to expedition caving. Rhys Tyers led a bolting trip there to push the bottom pitch, as well as rig the 'Moon Door' a rift heading out of the cliff face and providing a airy view of the Tolminka valley below.



(a)



(b)



(c)

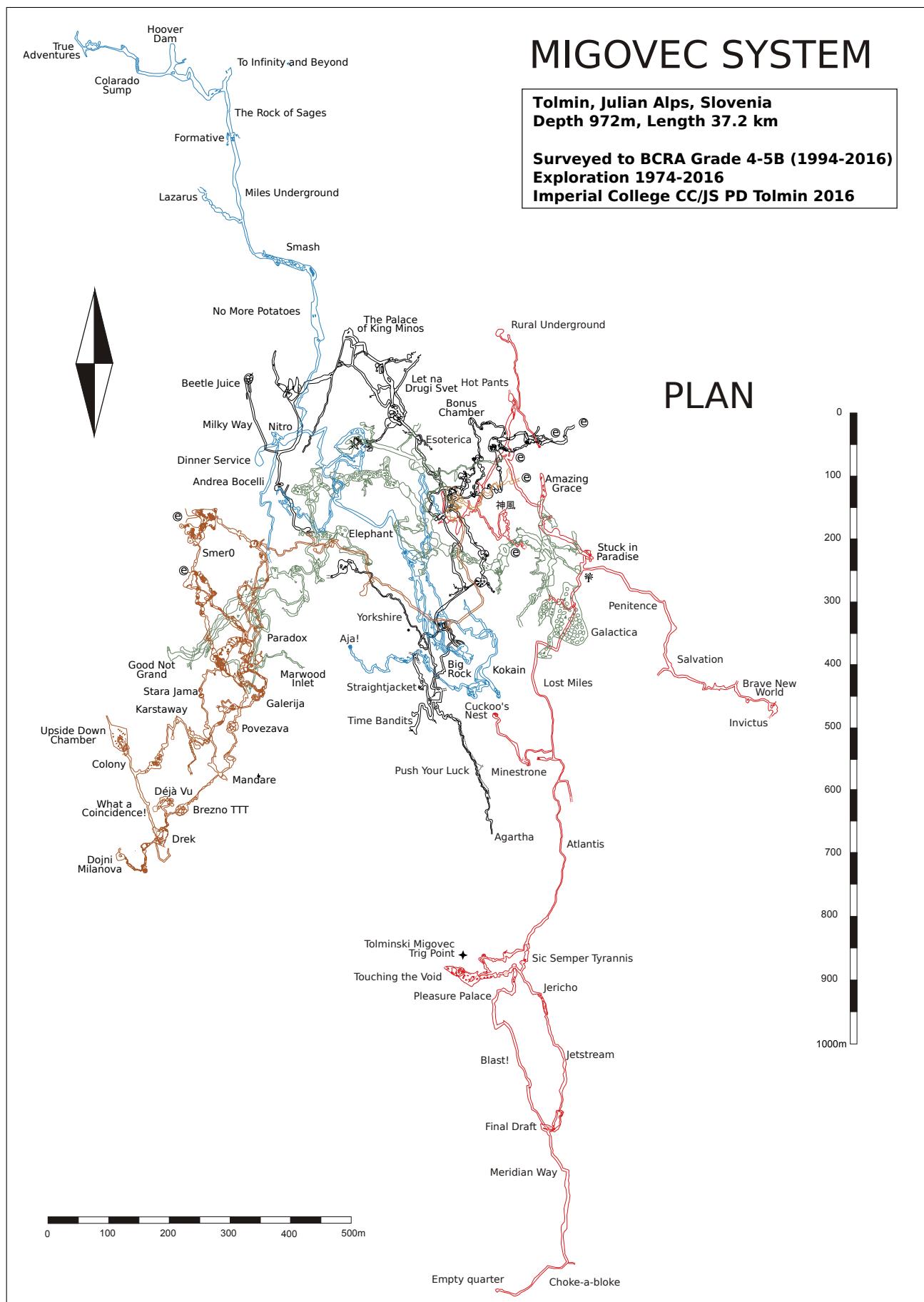
Figure 102: a Kenneth Tan, preparing to abseil through the lower entrance of B9 - Jackie's blower - the Eyrie. Below a spur of rock underneath which the Monatip entrance was first spotted — Rhys Tyers b Mountain life can also be about relaxing in the bivi, reading, cooking or taking up a new hobby. c Kenneth Tan in the process of bolting a small pitch in B9 cave, the way on was another too tight rift — Arun Paul

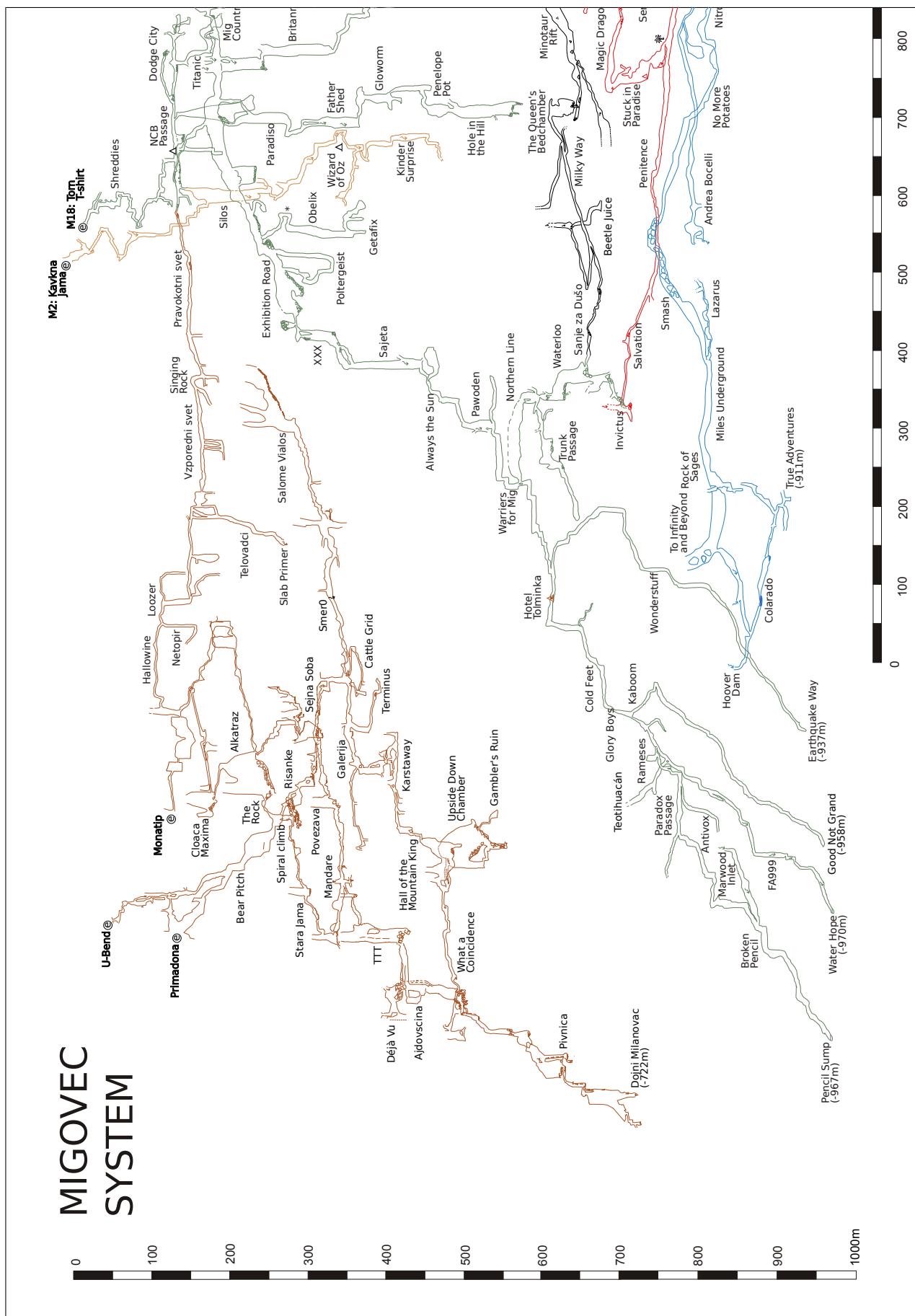
Number crunching

Sector	Passage name	Survey length (m)	Stations	Average leg (m)
Alkatraz	The Rock	129.35	28	4.79
	Memory Lane	—	16	—
Galerija	Cattle Grid	87.40	24	3.80
	Galeria resurvey	—	10	—
	Quantum State	70.40	15	5.03
	Terminus	51.29	16	3.42
	The Stile	65.38	19	3.63
Karstaway	Colony	83.82	10	9.31
	Gambler's Ruin	40.51	10	4.50
	Hall of the Mountain King	104.00	14	8.00
	Karstaway	192.08	40	4.93
	Mighty Fine Indeed	32.33	6	6.47
	Tight and Scrotty	43.79	10	4.87
	Upside Down Chamber	119.11	12	10.83
	What a Coincidence	221.33	31	7.38
Monatip	Auld Alliance	34.16	7	5.69
	Cloaca Maxima	335.61	54	6.33
TTT	Déjà Vu	90.69	13	7.56
Total		1701.25		



Figure 102: The expedition team relaxes for a drink and cottage cheese cake at Ravne, thanks to the hospitality of the Koblucar family: Slavica, Zoran and Nada — Tanguy Racine





A photograph showing a caver from behind, rappelling down a steep, rocky cliff. The caver is wearing a red long-sleeved shirt, blue trousers, and a yellow helmet. They are attached to a metal rappel device. The background shows a lush green valley and forested hills under a clear blue sky.

With the rescue encroaching on the last days of expedition pushing, by the time we had brought out all the kit from the cave, it was necessary to derig Primadona, and look back at what we had achieved.

In one wave, we reached the bottom of *Upside Down* chamber and poked at the very final boulder choke, where water seeped through unstable boulders and impenetrable cracks. With no way on, we took the metal and ropes out of the low, wet pitches of our newly discovered series, and proceeded to put the cave to sleep. The entrance series ropes were brought up the pitches, but left in the cave.

A couple of days later, it was time to pack up the bivi, store food safely, clean the metal work and stash the equipment we would leave on the mountain and take down the tents for the final descent to Ravne. We enjoyed the usual afternoon cheese cake with the Koblucar family with a refreshing lemon flavoured zganje.

The main outcome of this expedition to Primadona was the exposure of all that took part to bolting and rigging mainly vertical sections of cave, a departure from the format of previous years. For the leaders, there was ample opportunity to polish bolt placement and rigging skills and instil good practice in the younger generations. Expedition novices surveyed and rigged, but also gained many other communal living skills.

It became obvious, after four weeks of systematic exploration that we had barely begun to scratch the surface in terms of cave development potential...