

# Khazad-Dum (JF-4/5) Sump II

## Pushing the 'deepest' sump in Australia

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### BACKGROUND

The Junee-Florentine is the premier vertical caving area of Tasmania, and thus Australia. Khazad-Dum (KD) is a multi-pitch cave which terminates in a series of three sumps, which connect, at a depth of 293 m. It is the eighth-deepest cave in Australia.

Dwarrowdelf JF-14 is a nearby vertical cave which joins KD in a large chamber at the end of the vertical series, and at the start of the horizontal crawlway section, called The Depths of Moria, that bypasses Sump I and leads to Sumps II & III. Access to the sumps is best made through Dwarrowdelf.

The stream that cascades down the KD pitches last disappears in Sump II, and is next seen in Cauldron Pot JF-2, the next cave downstream. Survey data suggest that the gap is about 100 m. Making the connection by diving has long been a dream amongst Tasmanian cavers; however, only two previous attempts to dive the sump have been made due to the logistical difficulties of getting the dive gear to the site.

Sump III is not, as the number suggests, the last sump in the downstream series, and

thus not the obvious push choice.

In 1987 Phil Hill dived Sump II in difficult conditions, with water levels rising and visibility extremely low. He reported swimming in a northerly direction (i.e. away from the direction of Cauldron Pot) along a rift that became too narrow for further progress after 35 m (Hill 1987).

Stefan Eberhard returned almost two decades later, and dived the sump twice, on the same day, in 2005 (Eberhard 2006). To summarise his account, on his second dive he '...tied on the line reel and continued on through small horizontal passage at 17 m depth (about 0.5 m high, 1 to 1.5 m wide)—definite side mount territory, as back mounted tanks would not fit easily through here. The passage curved to the right and appeared to be trending upwards slightly at my furthest point, another 15 m or so further on. i.e. it's still going.'

Such a tantalising account was just begging to be followed up.

### JANUARY 2013

I had been thinking for a while that I

should have a shot at pushing this sump, but the problem was always that old perennial: finding sherpas to carry the large loads of gear to the sump. This was compounded by the need for said sherpas to be skilled and fit SRT cavers, as the sump is at the bottom of a series of pitches of 22 m, 21 m, 55 m, 14 m, 37 m, 67 m and 20 m handline, then along about 100 m of crawls and restrictions. The cave itself is an hour's walk from the cars.

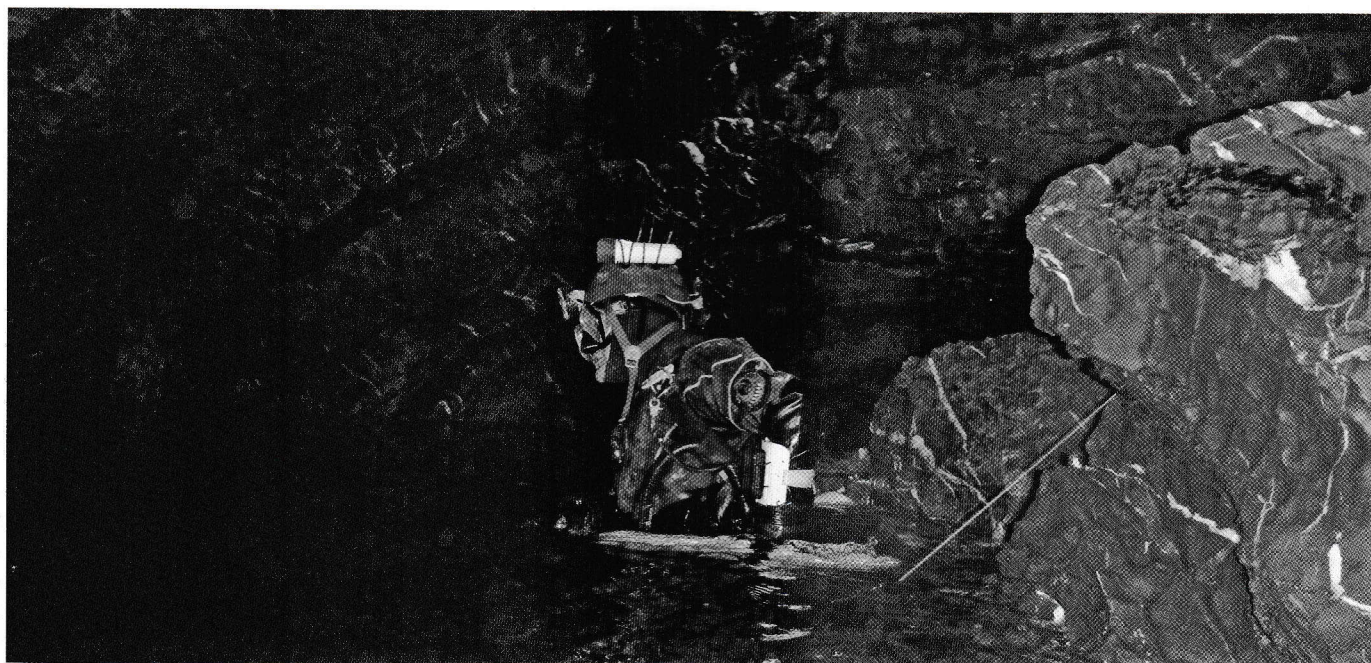
In January 2013 the stars aligned, and between using a couple of mainland visitors and a couple of locals, the trip was on.

Actually, four trips were on.

The cave definitely needed to be pre-rigged before the first dive attempt. Three of us did this the week before the first dive trip.

### DIVE TRIP ONE

We had five cavers (including me) to get the gear to the sump. I had pruned the gear to a minimum but it was still a heavy load for each person. I was diving with twin 7 litre tanks, sidemounted. Each of them



*Final preparations before the dive*



## KHAZAD-DUM (JF-4/5) SUMP II: PUSHING THE 'DEEPEST' SUMP IN AUSTRALIA

alone weighed over 10 kg full. We arrived at Sump II two and a half hours after starting into the cave, which was a quick time I thought. Waiting around in the cold was going to be the hardest part for the support team so we got the show underway as quickly as possible and I was ready to dive within half an hour.

I had an exploration reel ready but started the dive by following Stefan's exploration line (still leading down from the water's edge), hoping it would be unbroken and in place as I descended. That would save me a lot of time.

Luckily the tie offs were good, and the line taut, as I descended. Visibility was not consistent but was about 0.5 m in the good bits, and less in most parts. I was trying to check the line, get my bearings, look around, and check my exit, whilst also being aware that speed was of the essence to keep ahead of the silt that would follow me, as the slight flow was in my direction. The passage plunged steeply down to 11 m, and then headed down a steep silty bank to 15 m.

White *Anaspides* (cave-adapted shrimp) were everywhere.

The line disappeared into the silt at the bottom here. It was buried at least a foot deep, and I took several minutes digging it out, producing great billowing clouds of silt in the process.

It was here that the onward direction curved sharply to the right and entered the small horizontal passage. I was lifting the line out of the silt (it was buried a few inches) as I went. Visibility was now zero but with the odd 'opening' of a couple of centimetres, so I got glimpses of the line and the surrounding cave. The line disappeared into much thicker silt about 10 – 15 m into the passage, by my estimation, a guess; it's hard to estimate accurately in these conditions.

I started digging again and after some effort, and lots more silt, I pulled up the silt stake and lead weight Stefan had used previously. I appeared to be at Stefan's furthest point of penetration. I could see almost nothing but the passage did seem to be continuing slightly upward ahead, from feel. Anyway, there was no line continuing further. Visibility was zero. Exit was in zero visibility. I went back for soup, and to give the water a chance to clear.

I waited about half an hour and went in again. I tried to get to the end of the line as fast as I could, but whilst the sump to the start of the flattener had largely cleared to the usual stunning visibility of 0.5 m or less (but good enough to follow a line, or wall), once in the horizontal passage the silt was still in suspension, and visibility zero. I took

a bearing into the passage and read it as SW.

I went to the end of the line anyway, tied in my primary, and started groping forward in zero visibility. A short distance (maybe 5-7 m) past the weight the passage started tending steeply upwards but was getting very narrow, and still only 0.5 m high. I continued a few metres up slope, at about a 45 degree angle, feeling my way. The height of the passage was reducing slightly and the width reducing. It was still wide enough for me to fit through but was starting to get very tight. I waited a few minutes, hoping for a glimpse of what lay ahead, but the visibility didn't change. I called it a day and went back for more soup.

### SUMMARY

So I had penetrated to the furthest point of Stefan's exploration on my first dive. I had pushed maybe 5-8 m beyond that point on my second dive. Not stunning success really. Prospects seemed poor for this passage to continue large enough to fit through but there was still some possibility, so planned a return the following weekend.

### DIVE TRIP TWO

There had been a few millimetres of rain the previous day and the cave was noticeably drippier this week. The bottom pitch was quite splashy. I wondered how that would affect the sump.

I saw, on arriving at the site, that the flow into the sump was a little greater than the previous week, and the water level slightly higher.

Once in the water, I headed down the line and immediately realised that my visibility was even less than last week. I could see only a few centimetres through the water. The rains had obviously stirred up the silt and there was heavy suspension still in the water. Oh joy.

I headed straight into the passage, still ahead of the silt flow, and tied off some slack line as I moved along. The passage hadn't gotten any larger in the intervening week.

I crawled to the end of the line and tied in my reel. The silt was starting to pass me as I moved ahead but I still had reasonable visibility—well, reasonable being 10-20 cm. I squeezed (you couldn't call it swimming in the confined space) as fast as I could and managed to gain a few more metres before the worst of the silt arrived. I could see I was on a silt and gravel floor, with rock on the ceiling. The bank continued ahead upward at a steep angle (about 45 degrees). I could see the gap between floor and ceiling diminished to about 20-30 cm; too small for me to fit through. The walls narrowed to approximately 0.5 m wide. The silt overtook

me at this point and I lost all visibility. I squeezed backwards out of the passage.

I did not leave the exploration line in situ as I could find nothing to tie it off to.

This had only taken some 15 minutes, I discovered, when I could see my gauges again outside the passage, I had four fifths of my air still, so I now started the search of the pool, in the hope of a bypass passage. My visibility was only a few centimetres at best, so the search was not going to be comprehensive. I attempted to be systematic however.

After another 15 minutes I was starting to get cold (water temperature is 6°C) and had exhausted the prospects in the current environment so decided to call the dive.

### CONCLUSIONS

The current dimensions of the restriction at the limit of exploration are too small for a diver to pass through (and I am small). Current prospects in this passage are zero, in my estimation.

Whilst the roof is solid rock, the floor isn't. Some digging might make the passage passable to humans. It depends how deep the gravel and silt are. It is a long shot though.

My inspection of the sump pool for other passage was the best I could manage in the very poor visibility. I was as systematic as I could be. I do not think there are any alternate routes around the main passage from within the pool. I am reasonably confident about this, however, due the circumstances, I cannot say with 100% certainty that this is the case. I do consider the prospects so fleetingly small that I will not be returning.

The cave was de-rigged on a later trip.

### ACKNOWLEDGMENTS

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(Apart from me on all trips):

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#### Dive trip one

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#### Dive trip two

Alan Jackson, Serena Benjamin, Andreas Klocker, Chris Coxson.

#### De-rig Trip

Ric Tunney, Jane Pulford.

### REFERENCES

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