

THE SHAFT BREZNO POD VELBOM

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Izvleček

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Franci Gabrovšek: Brezno pod Velbom

Kaninsko pogorje vsekakor predstavlja eno zanimivejših kraških področij v Sloveniji. Da gre za močno razvit visokogorski kras ne kažejo le površinske oblike, temveč tudi vse večje število raziskanih globokih jam. Kar tri od teh so globlje od 1000 m. Posebej zanimiva pa sta v zadnjih letih raziskana Brezno pod Velbom in brezno Vrtiglavica. Prvo je globoko 850 metrov in se ponaša s 501 meter globokim enotnim vhodnim breznom, Vrtiglavica pa je eno samo enotno brezno, globoko 643 metrov. Brezni zasedata vrh seznama najglobljih svetovnih vertikal.

Ključne besede: speleologija, brezno, vertikal, Slovenija, Kanin.

Abstract

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Kanin mountains in western Julian Alps, Slovenia, is one of the most promising caving areas. On two high karstic plateaus many very deep caves have been explored, three of them beyond -1000 m. Brezno Pod Velbom, which is now 850 meters deep, was found in 1989. It is the 501 meters deep entrance shaft, that makes the cave especially interesting. It is the world's second deepest vertical, after the shaft Vrtiglavica, which is a single 643 meters deep shaft. Both entrances lie not more than 2 km apart.

Key words: speleology, shaft, vertical, Slovenia, Kanin Mt.

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HISTORY OF EXPLORATIONS IN THE KANIN AREA

Caves in the Julian Alps have been intensively explored during the last few decades. Among many high Alpine karstic plateaus, two of them, Kaninski and Rombonski Podi (Goričica) above the Soča valley near Bovec, have the greatest prospects for cavers. These plateaus are the main parts of the Kanin mountains. Upper Triassic (Dachstein) micritic limestone and dolomite are the most occurring rocks there. Kaninski podi spreads over an area of about 9 square kilometres, between 1950 and 2300 m a.s.l..

The plateau was intensively explored during the seventies and not many deep caves were discovered. First success was Skalarjevo Brezno, where a depth of 911 m was reached in late eighties.

On the other hand, not much attention was paid to the lower Rombonski Podi plateau, just a few kilometres to the NE. Than Italian cavers began exploration there and explored the first Slovenian -1000 m cave, Črnelso Brezno. Since 1990 three caves deeper than one kilometre have been explored there; Črnelso Brezno (-1198 m), Čehi II. (-1370 m), both explored by Italians, and Vandima (-1182 m), explored by cavers from the Ljubljana Caving Club (DZRJL).

SHAFTS IN KANIN MOUNTAINS CAVES

Almost all deep the caves in the area have at least one extremely deep shaft. The exception is Vandima, where the deepest vertical is 'only' 90 meters deep. On the other hand, Čehi II., Črnelso Brezno and Skalarjevo Brezno all have an interior shafts ranging between 170 and 250 meters. Cave Zlatorog near Črnelso Brezno, has 360 meters deep interior shaft, which was the world's deepest interior shaft when explored in 1991.

Brezno Pod Velbom, which will be presented in this paper begins with the 501m deep entrance shaft and is recently (September 1997) 850 m deep. Until October 1996, Brezno Pod Velbom had been the world's deepest shaft.

In August 1996 another shaft, now called Vrtiglavica, was found only about two kilometres far from Brezno Pod Velbom. The cave is one single 643 m deep shaft, now world's deepest.

EXPLORATIONS OF BREZNO POD VELBOM

The area of Kaninski Podi ranks among the areas with the highest cave density in Slovenia, i.e. 25 caves per sq. km. The caves are concentrated in the area near the ski cableway station and the Peter Skalar mountain hut (254 caves in an area of 6 sq. kilometers). But there are only few caves in less accesible western part of plateau.

There, almost no prospecting had been done between the seventies and late eighties. The entrance of Brezno Pod Velbom was found in 1988, but no serious expeditions had been done until 1993, when the depth of 106 m was reached. In 1994 we reached the bottom of the entrance shaft, 501 meters below the vault-shaped entrance. In 1995 we explored the big collapse chamber at the bottom and reached the depth of 541 m. In 1996 big efforts were made to find a continuation at the bottom. We passed the boulderchock and found another series of shafts which lead us to the -850 meters, where cave seems to end. The final depth was achieved in August 1997. There are small possibilities for continuing the explorations from the deepest parts. But there might be some overlooked branches leading deeper from some of the shafts between the big chamber and the bottom.

The cave has been explored by the members of Ljubljana Caving Club (DZRJL).

MORPHOLOGY OF THE CAVE

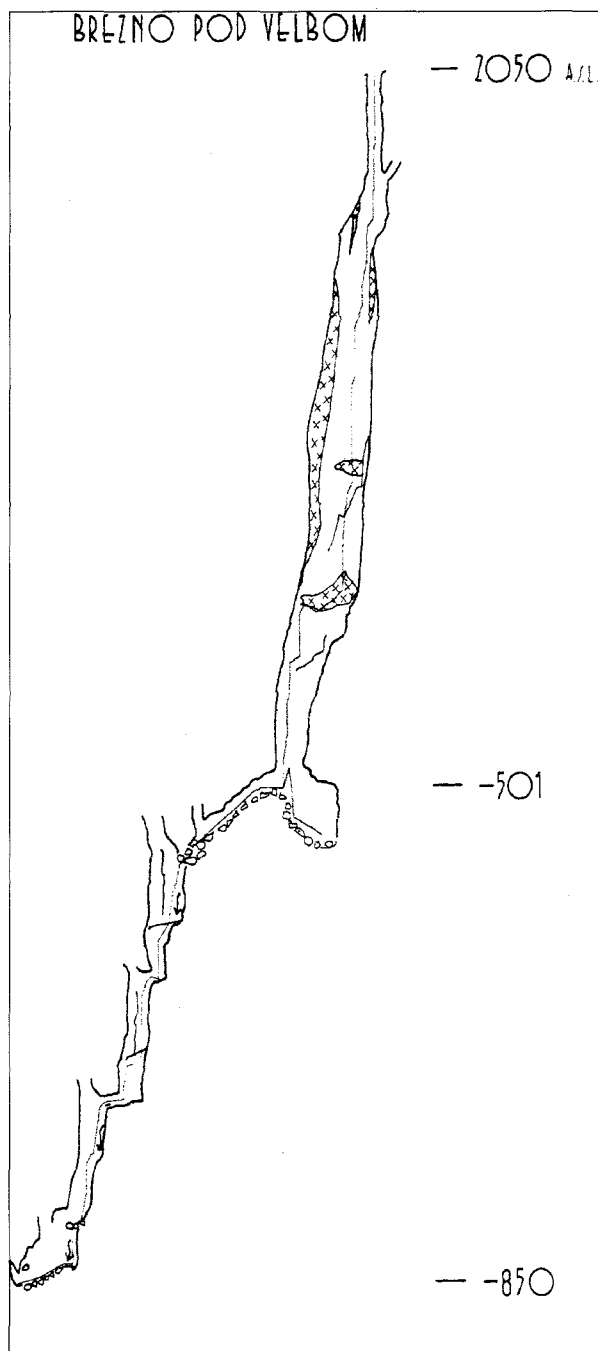
The shaft is located at the edge of a collapse depression between peaks Laška Planja and Vrh Žlebi. The altitude of the entrance is 2050 m. As many other deep caves in the area, the shaft is near the edge of the plateau (the feature not yet explained).

The entrance is quite large, since, the northern part of the wall obviously collapsed into the shaft, which causes the vault shape. Until -120 m, the cross-section of the shaft is relatively small, between 5x10 and 10x15 m. At -100 m the shaft is divided by a natural bridge (until 1996). Below 120 meters the shaft widens as far as -300 m, where the cross-section is largest, 30x10 m approximately. At -377 m the snow-ice blockade breaks the monotony. The ledge of snow and ice was formed around the rock blocks wedged between the walls of the shaft.

Passage between the ice and solid rock took us below the blockade to where the shaft continues. The cross-section is then smaller again. About 100 m lower, at -470 m, the shaft enters a big collapse chamber, where it ends at the top of a collapse cone, at -501 m. The shaft was developed in the N-S (10°-190°) fissured (fault) zone.

The chamber is very big for the area, measuring about 100x40 m in plan. The ceiling and the walls of the chamber are extremely unstable, with many signs of recent breakdowns. The big collapse cone is about 40 meters high and easily scalable on one side of the chamber. There is a very unstable 12 m high vertical step on the other side of the chamber. There, to reach the base of the cone, a traverse below the ceiling, where the only good rock to fix the spits is, had to be made.

The passage through the boulderchock leads to a series of shafts (90, 50, 30, 80, 30) down to the bottom at -850 m.



The horizontal distance from the entrance to the bottom is 100 m (N-S). All the shafts were developed along the fissure zone with the N-S orientation. Limestone beds are 3-5 meters thick with the dip of about 15°. In the surface and in the cave Jurassic neptunic dikes are observable.

Ice begins about 30 meters below the entrance. Various forms of ice cover the walls down to the snow-ice blockage at -377. Very interesting is a small glacier in the chamber at -530, where the snow is about one meter thick and spreads over the area of 5x10 m. It proves that the blockade at -377 is not permanent.

The temperature in the shaft is moving around the freezing point, according to the year-season. Falling icicles and blocks of ice mean the biggest threat to cavers, especially during the period when ice melting reaches deep into the shaft.

Percolating water starts below the ledge at -377, where the climate usually changes from sub to above 0°C. Affluence of wa-

After Stopar & Pintar 1996.

ter enters the passages in the shaft series below the chamber. In the lower part the explorations during the rainy season could be dangerous.

REFERENCE

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BREZNO POD VELBOM

Povzetek

Kaninsko pogorje vsekakor predstavlja eno zanimivejših kraških področij v Sloveniji. Da gre za močno razvit visokogorski kras, ne kažejo le površinske oblike, temveč tudi vse večje število raziskanih globokih jam. Kar tri od teh so globlje od 1000 m.

Prve resne raziskave na področju Kaninskih podov se se začele v sedemdesetih letih. Odkrito in raziskano je bilo veliko število brezen, vendar jih je razmeroma malo presegalo globino 100 m. Raziskave na italijanski strani masiva so bile, vsaj kar se tiče globokih jam, bolj uspešne. V osemdesetih letih pa bilo na naši strani raziskano 911 m globoko Skalarjevo brezno. Vendar pa se je pozornost jamarjev kmalu za tem preusmerila na Rombonske pode, kjer so leta 1989 italijanski jamarji v Črnelškem breznu prvič v Sloveniji presegli globino 1000 metrov. V naslednjih treh letih sta bili na Rombonskih podih raziskani se dve jami globlji od tisoč metrov, Čehi 2, ki jo je raziskala ista skupina kot Črnelško brezno in Vandima, ki so jo raziskali jamarji Društva za raziskovanje jam Ljubljana.

Ves ta čas so jamarji raziskovali tudi na Kaninskih podih. Tudi tu uspeh ni izostal. Posebej zanimivi sta v zadnjih letih raziskani Brezno Pod Velbom in brezno Vrtiglavica. Prvo je globoko 850 metrov in se ponaša s 501 meter globokim enotnim vhodnim breznom, Vrtiglavica pa je eno samo enotno brezno, globoko 643 metrov. Brezni zasedata vrh seznama najglobljih svetovnih vertikal.

RAZISKAVE BREZNA POD VELBOM

Vhod v Brezno Pod Velbom je bil najden leta 1988. Prve resne raziskave so stekle v letu 1993, ko je bila dosežena globina 106 metrov. V letu 1994 je bilo doseženo dno 501 meter globoke vhodne vertikale. V letih 1995-1996 je potekalo iskanje možnih nadaljevanj v podorni dvorani na dnu vhodne vertikale. Prehod skozi podor na najnižjem delu dvorane je pripeljal v v niz brezen, ki se konča na globini 850 metrov (avgust 1997). Nadaljevanje na dnu je le

malo verjetno, možni pa so odcepi v breznih med dvorano in dnom. Jamo so raziskali člani Društva za raziskovanje jam Ljubljana.

MORFOLOGIJA JAME

Vhod v Brezno pod velbom leži ob robu večje depresije med Vrhom Laške Planje in Vrhom Žlebi. Nadmorska višina vhoda je 2050 metrov. Vhod je lijakaste oblike, ki ga ne eni strani lepo zaključuje obok (ime!). Do globine 120 metrov je presek brezna razmeroma majhen, le redko preseže dimenzije 10x5 metrov. Pod 120 metri je presek vse večji, do 30 x 10 m. Na globini 370 metrov brezno prekinja ledeni čep. Pod tem so prečne dimenzije brezna zopet manjše. Približno 470 metrov pod vhomom brezno prebije strop velike podorne dvorane in se trideset metrov nižje konča na vrhu podornega stožca, 501 meter globoko.

Dvorana je razmeroma velika za to področje, v tlorisu meri do 40x100 metrov. Relativno sveži bloki pričajo o recentnem podiranju stropa in stranskih sten. Izredno pretrta kamnina na stenah in labilen podorni stožec sta ne eni strani onemogočala dostop do dna dvorane. Tu je bilo potrebno delati prečko pod stropom dvorane. Nadaljevanje jame pa je na drugi, lažje dostopni strani dvorane, kjer prehod med podornimi bloki pelje v niz brezen (globine 90, 50, 30, 80, 30) do globine 850 metrov.

Horizontalna razdalja med vhomom in dnom jame je le 100 m. Vsa brezna so razvita v N-S orientirani razpoklinski coni.

Vhodno brezno zaznamuje predvsem velika količina ledu, ki oklepa stene vse od globine 30 metrov, do velikega čepa na globini 370 metrov. V poznem poletju in zgodnji jeseni, ko je taljenje na višku, raziskovanja resno ogrožajo padajoči kosi ledu. Sneg in led je tudi v podorni dvorani, na globini 530 metrov.

Vodo v jami srečujemo od ledenega čepa naprej, kjer temperatura navadno preseže ledišče.

V dvorani in pod njo priteka voda v brezna iz večih kaminov, zato je raziskovanje v deževnem obdobju vsaj neprijetno, če že ne nevarno.