

Imperial College Caving Club Bougoumez 2001, Morocco Expedition



29 August – 22 September 2001



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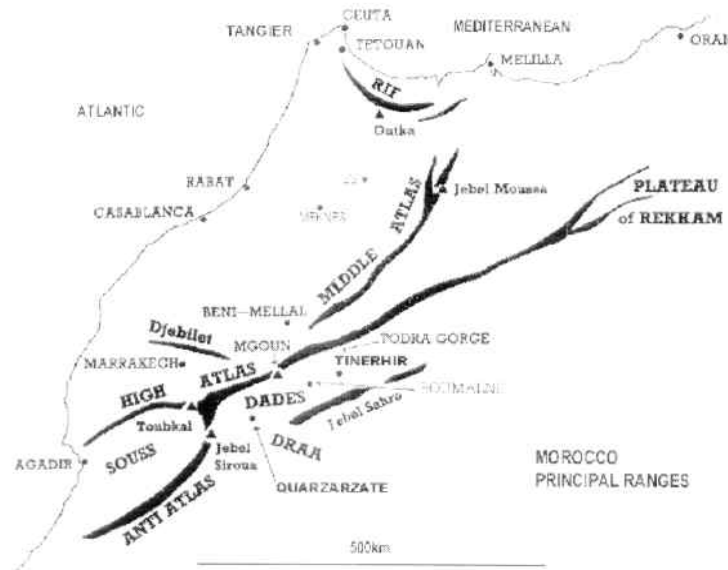
Abstract

A group of five members of Imperial College Caving Club took part in a caving expedition in the High Atlas Mountains of Morocco. Whilst the lack of major cave development was somewhat disappointing the expedition was a great success in terms of making local contacts for the future (including a geology professor in Beni Mellal who was interested in what we were doing) and gaining experience of the sort of terrain and conditions in the High Atlas.

We would like to thank the all those that helped us for there support with this expedition, and we hope to continue work in Morocco.

Introduction

The aim of the expedition was to follow up on the 1999 reconnaissance of the High Atlas in Morocco. The specific area chosen was Jebel Ghat, in the central part of the High Atlas near the well-known mountain of Mgoun and about 6 hours' drive east of Marrakech.



Jebel Ghat was chosen because a French expedition which went there in 1982 reported that further prospecting would be worthwhile; even though they had only reached about 100m depth, they found a lot of rifty entrances and the potential if a cave 'goes' is considerable. The summit of Jebel Ghat is over 3800m asl and the zones we looked at (following the French division of the mountain) were at about 2800-3200m.

Muhammad Achahri, a guide with whom the 1999 team stayed, helped with the logistics, providing transport from Marrakech as well as organising supplies, mules and a cook. Hassan the cook also performed the role of guarding the camp during the day and talking in Berber to the many shepherds on the mountain for us. Using local people in this way was a good solution to the otherwise considerable logistical problems of exploring this area.

Walking in to the area from the road head at Abachkou in Ait Boulli took 2 days with the mules. Camp was set up at about 2800m asl, in the same place as the French had done 19 years earlier, a dry valley between Jebel Awltoum and Jebel Ghat. The only water source that was still running trickled away into concrete troughs built for the goats. Water was collected from these pools and treated with iodine. The valley was hot, dry, dusty



and sometimes extremely windy, but quickly became home to the expedition.

Prospecting started immediately and the different zones mentioned by the French were re-examined. In particular we wanted to look at 'Zone N', the furthest and highest area, which the French reckoned had the best potential. It took about 40 minutes to walk up to the edge of the Jebel Ghat 'basin' which was the focus of our prospecting. This is a large rectangular area (approx. 7km x 3km) of bare rock, lapiaz, dry valleys and cliffs and is bisected by a huge wadi or dry river gorge in the Ghat syncline. The bottom of the gorge discharges over a 150m cliff: it would be quite impressive when it flows. It took about 2 hours to reach Zone N from the camp, although the other areas were more accessible. There is virtually no water anywhere on the 'plateau' although a shepherd took us to his source of water which was a tiny pool in a cave entrance. This cave was explored to around 40m depth.



The caves we explored were mostly vertical, rifted and ended in earth floors. Although there are many entrances the deepest we explored was about -70m. Zone N was probably the most promising but we couldn't get beyond that depth.

Travel and Transport

With a limited amount of time in the field, the important factor was to get to the destination and set-up camp as quickly as possible, giving a reasonable period to explore the area of interest. In the end, of the 3 weeks we had in Morocco, 15 days were on the mountain

exploring the area.

Flights

With the exception of food and cooking utensils all the necessary personal and caving equipment for the expedition was taken out to Morocco as personal luggage, on flights direct from London to Marrakech. Spread amongst five people it was possible to carry sufficient hardware for the possible exploration of large vertical and horizontal cave systems.

Landrover

Transport into the mountains was straight forward, we had already arranged a Landrover through our local contacts to take our kit. The region we were visiting was quite well developed and the journey from Marrakech to the Bougoumez Valley was six hours on hardtop roads. Nevertheless the final section of the trip from our Gite in the Bougoumez valley to Jbel Rhat could only be achieved on four wheel drive vehicle or mules. There is a good network of trucks between villages, particularly on market days and if necessary transport of equipment could be achieved this way.

Mules

From Abachkou at the foot of the Jbel Rhat massif, our equipment was carried by just four mules. The walk up to our base camp was done over two days. For about 3 hours we headed up large rocky riverbeds to point where we could camp near a source, the terrain made the going tough on the heavily laden mules. The following day we continued to a point at the head of a valley where the route then turned up a steep path, which became even more narrow and loose as it reached the high-level valley where we were intending to camp. This proved very difficult for the mules and equipment had to be unloaded and carried over the worst parts. Eventually reaching camp after 6 hours.



Base Camp

The base camp was set-up at the head of a high-level valley, at an altitude of 2800 metres. Within one or two hours walk from the main areas of caving interest.

Water

This was the greatest cause for concern on our approach to the mountain. There had been a source at our planned base camp in 1982, when a previous expedition had visited the area. But in 2001 the area had already been suffering several years of drought and the last water source we passed on the route to Jbel Rhat was in the valley, 2 hours from Abachkou. From that point on there were no settlements until we reached the village of Azib Igouzane at the head of a valley, approximately 700 metres below camp.

On our arrival we were shown a small spring by a shepherd and this is where we set-up camp, the presence of a number of shepherds and numerous livestock on the mountain showed there must be a sufficient supply. In the time we had, we found just four 'springs' over the whole area, two were in the valley where we camped and two in the main Jbel Rhat valley.

Food

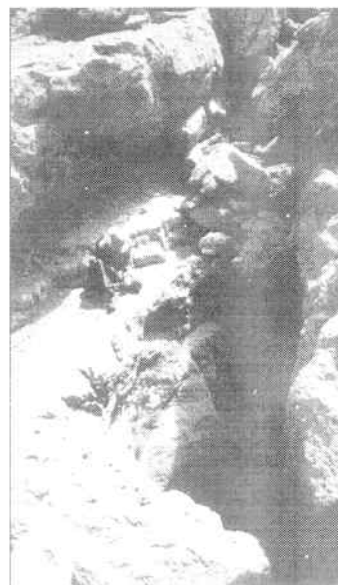
The eating arrangements were more than adequately organised by Mohammed Achari, we had

a chef (Hassan) who supplied a mess tent, and all the utensils for cooking and eating. In addition all food and supplies were purchased beforehand, which meant we were completely self sufficient on the mountain for the full 15 days we were there.

Caves Of Jbel Ghat

The water solution of caves on Jebel Ghat is mostly due to spring melt water, the cave formation follows faults in the rock. Many of the caves we explored were just single rifts, dropping 20 metres to an earthy floor with continuations too tight to follow. One aim was to find entrances that may avoid being filled in by loose earth and stones, as these would have the best chance of going somewhere. Kef Ahmen was a good example but after two pitches it ended with a tight rift at about -50m.

In total forty caves were found and their positions marked using GPS, the list below also includes a number of caves previously discovered by the French expedition and some springs. Surveys are included in the Appendices. UTM co-ordinates for the entrances are also included. We used a systematic naming system for the caves, where the Zone and Initial of the person who discovered the caves prefixes the number, because of its size 'Zone N' was split into four sub-divisions (see map above). It is unfortunate that in their report the French did not give positions of the caves they found, instead they just gave altitudes. But on the mountain they had marked all their caves with a number in red paint making it possible for us to know whether or not the cave had been descended before.



CAVE NAME	UTM CO-ORD (E 29 R0, N)	SURVEY	NOTES
N4 – E1	716344, 3494423	Y	Fault
N4 – E2	716432, 3494402	Y	Fault
N4 – E3	716793, 3494353	Y	-
N4 – E4	716782, 3494321	Y	-
N4 – J1	716255, 3494513	Y	-
N4 – J10	716516, 3494346	N	Small grike
N4 – J2	716309, 3494203	N	Small grike in valley
N4 – J3	717132, 3494444	N	1m wide rift into scarp
N4 – J4	717044, 3494521	N	Open rift along valley
N4 – J56	716914, 3494594	Y	Cave on valley edge
N4 – J7	717040, 3494412	N	Shakehole
N4 – J8	716822, 3494104	Y	-
N4- J9	716722, 3494243	Y	-
NT1	716071, 3494354	N	Awkward grike
NT2	716156, 3494414	N	Boulder covered grike
N2	716342, 3494103	Y	Relocated GV cave
N3	716225, 3494336	Y	Relocated GV cave
N4 – J11	715800, 3494900	Y	-
N3 – H1	716045, 3494429	Y	-
N3 – J1	715355, 3494343	N	Rift
N3 – J2	715602, 3494501	N	Large shakehole, unstable

N3 – J3	715903, 3494339	Y	-
N4 – C1	716451, 3494507	Y	In pavement
N4 – E5	716782, 3494291	Y	-
N4 – C2	716451, 3494512	Y	-
N4 – C3	716780, 3494335	Y	A lot of narrow rift
N4 – C4	716780, 3494335	Y	-
N4 – C5	716793, 3494353	Y	-
N3 SPRING	715890, 3494278	N	Water supply, unreliable
RO1	717075, 3493227	N	Very big grike
RO2	717251, 3493132	N	Marked by GV?
SO1	718358, 3493043	N	50m shaft runs e-w
SHEEP	717236, 3492167	Y	-
SHEEP2	717278, 3492228	Y	-
IFRI AHMEN	717218, 3493149	Y	Water supply, unreliable
2HOLES	717831, 3492826	Y	-
B3	717276, 3492824	Y	Relocated GV cave
A – ET1	719200, 3494650	Y	-
A – FH	719175, 3494600	Y	-
A – ET2	719100, 3494500	Y	-
A – ET3	719035, 3494410	Y	-

Contacts

Moroccan

- Mohammed Achari (Expert guide and gite owner, based in the Bougoumez Valley)
- Mohammed Tijani (Geology Professor, Beni Mellal)
- Mohammed Afani (Student, member of Beni Mellal Caving Club)
- British Embassy (Casablanca)

Our main contact in Morocco was Mohammed Achari, an experienced mountain guide living in the Bougoumez Valley, in the heart of the Central High Atlas. He had all the knowledge and contacts necessary to set us up with transporting our equipment and providing food. His go between Francoise Pearson was based in France (French and English speaking), we finalised timing and transport arrangements through her.

Other

- Hamish Brown (Atlas Mountains expert guide, based in Scotland)
- Matthew Setchfield (Westminster Speleological Group Librarian)
- Francoise Pearson (Go between for Mohammed Achari, based in France)

Hamish Brown is an expert on the Atlas Mountains and has been walking the region for many years. He was able to provide large scale maps of the area we were exploring when all other sources proved fruitless.

Sources of information

- Pengelly Library
- The Map Shop

The Pengelly Library is based in London and is an archive of UK and foreign expedition reports, specifically for caving. This provided us with the report on the 1982 expedition by a French group to Jbel Rhat.

Medical

Apart from the usual stomach bugs, there were no real medical problems on the expedition. A number of people suffered from diarrhoea at the beginning of the trip, with the resulting dehydration necessitating an unplanned camp on the walk in, but these soon resolved themselves. All water used was treated with tincture of iodine for which we got much derision from our berber neighbours, but, as we shared our water supply with their many hundred goats, it was definitely needed.

Blisters were a problem for some, with spenco blister kits much used, but all in all, it was quite a healthy environment for an expedition.

Financial

Due to the generosity of the sponsorship bodies listed below, the cost of the trip worked out to be quite reasonable. Our two major expenses were transport and our chef and food. The transport was shared between the flights out and back (British Airways), and the hire of a landrover and mules to carry our kit to the base camp. The provision of a chef seemed a luxury before we left, but we quickly realised that Hassan's expertise was much needed. Expertly prepared tagine was the perfect antidote to a long, tiring day in the field. With strong winds and rain surprisingly frequent, the large Berber tent became a useful sheltered communal area, something the French expedition of 1982 lacked, with morale suffering as a result.

Insurance was provided by the British Cave Research Association. Most of the expedition equipment was provided by Imperial College Caving Club and Imperial College Exploration Board with a few extras bought by the expedition team.

Sponsorship

We are grateful for the following for providing financial sponsorship for the expedition:

- Imperial College Exploration Board
- Royal College of Science Association
- University of London Convocation
- Albert Reckitt Trust
- Royal Society of St. George
- Ghar Parau Foundation

And the following companies and people:

- Hamish Brown for helping us with maps and logistics
- Unilever for the pepperami – a true life saver
- Jeremy Milton of 3rd Planet Connections for the loan of a satellite telephone
- STOIC for the loan of a camera
- Dr. Peter Dorward of Imperial College Health Centre for advice on medical supplies.

Expedition Members

- Edward Austin
- Colm Carroll
- Jan Evetts
- Hugh Penney
- Tim Wright

Conclusions

The Jebel Ghat region makes up small part of the potential caving areas around the Mgoun massif. The reason for the lack of major cave formation on Jebel Ghat may be due to ground being frozen during the period of major run-off, the spring thaw. But there are caves to the North near Azilal upto 200m deep, and again along the western side of the Lakhadar valley which is followed on the approach to the bottom end of the Bougoumez valley. In addition the Tessaout Plateaux and spectacular gorges to the south may offer some potential for horizontal caves (see Appendix 1). There are no plans to return to the area.

Appendices

Appendix 1: Central High Atlas with Bougoumez and Jbel Rhat highlighted

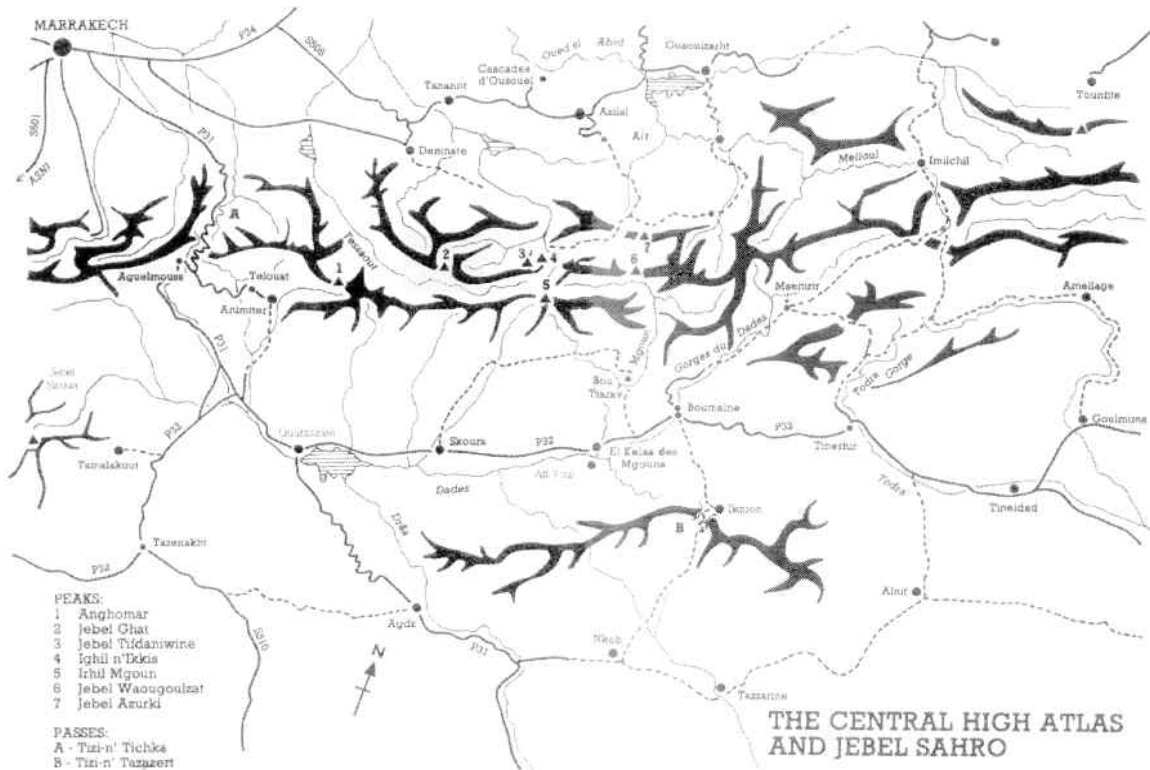
Appendix 2: Mgoun Area

Appendix 3: Caves of Area A

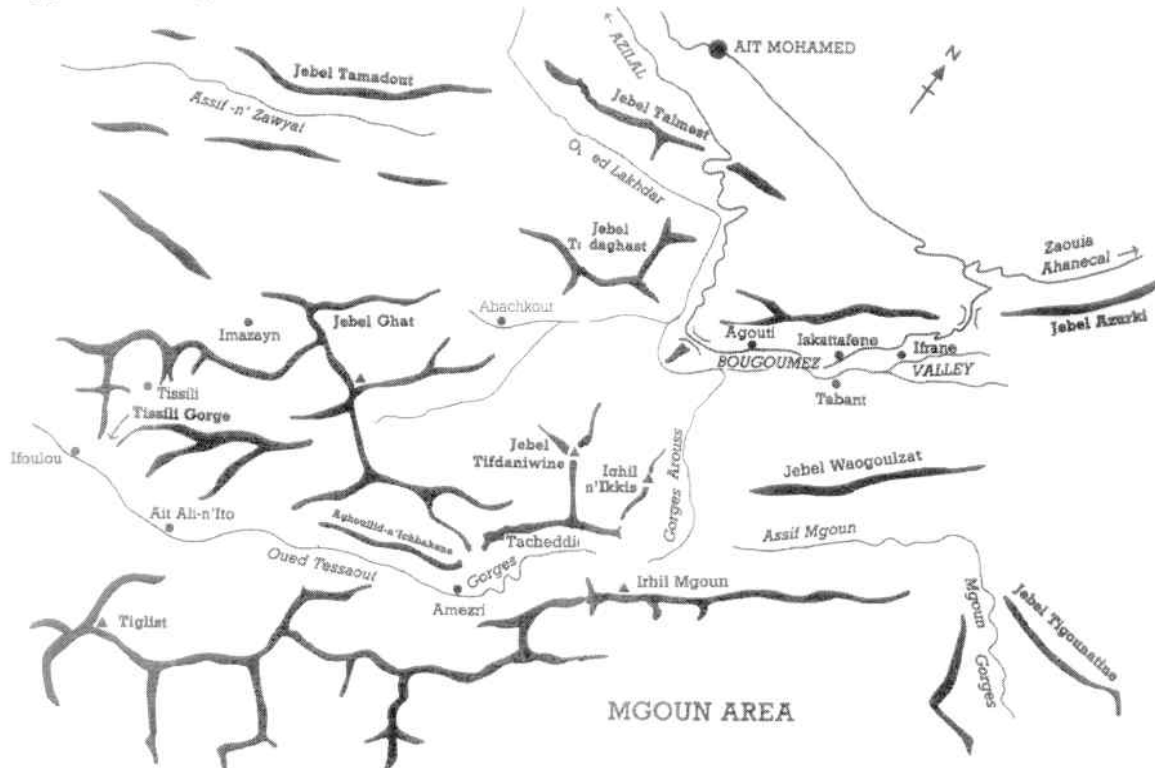
Appendix 4: Caves of Area B

Appendix 5: Caves of Area N

Appendix 1: Central High Atlas with Bougoumez and Jbel Rhat highlighted



Appendix 2: Mgoun Area

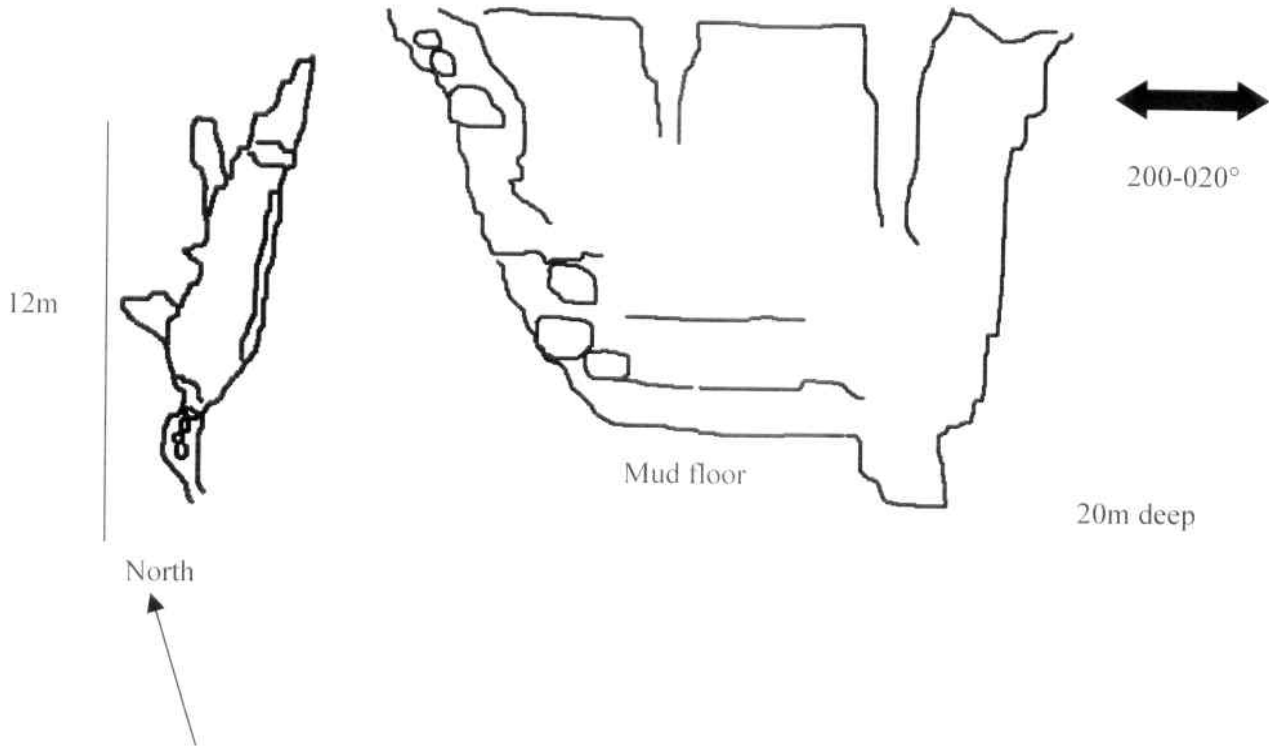


Appendix 3: CAVE SURVEYS for AREA A:

A – ET1

Plan

Section



A – FH (flyhole)



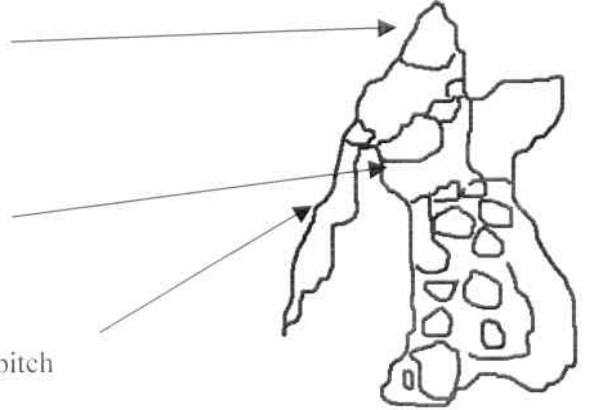
A - ET2

Plan

Climb and traverse

Main pitch

Rift pitch



20m

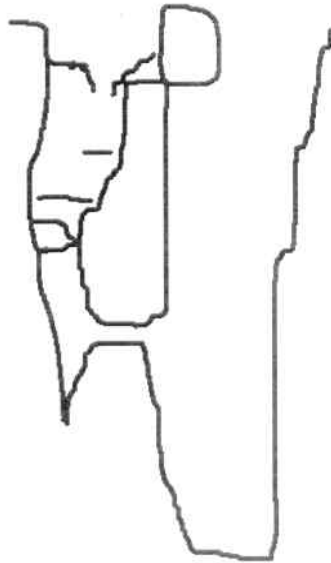
North



Section

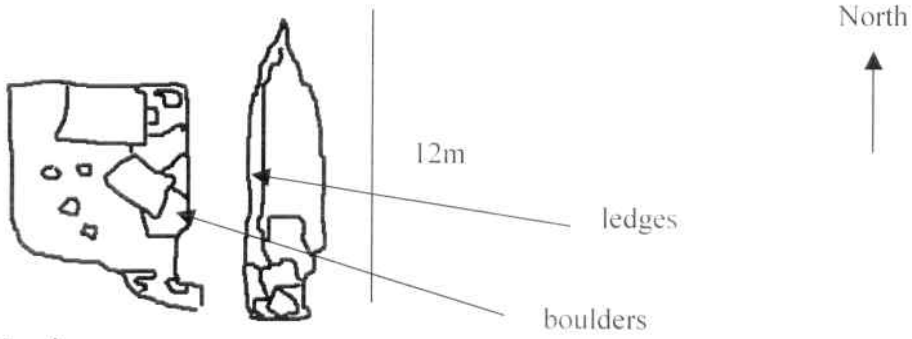


300 - 120°

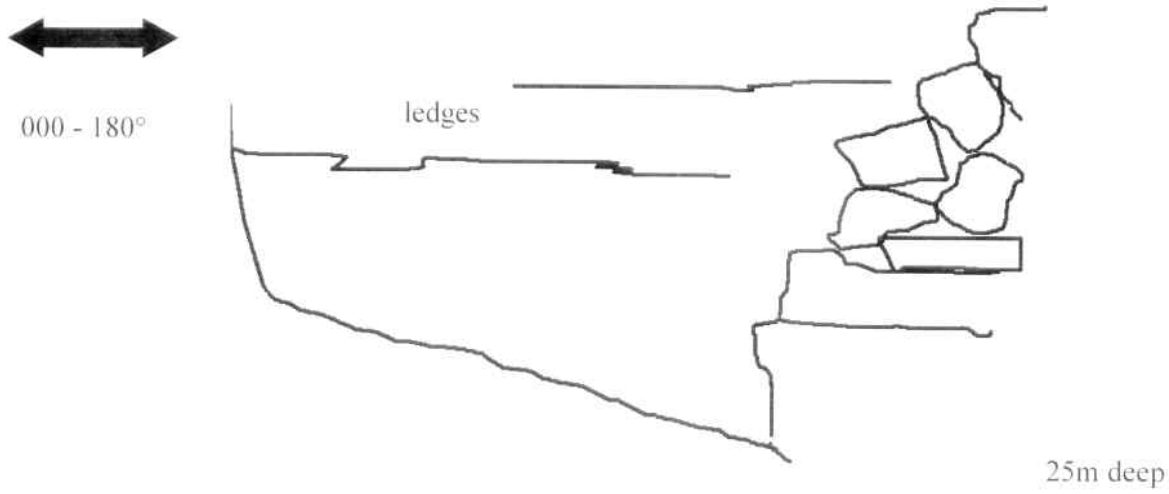
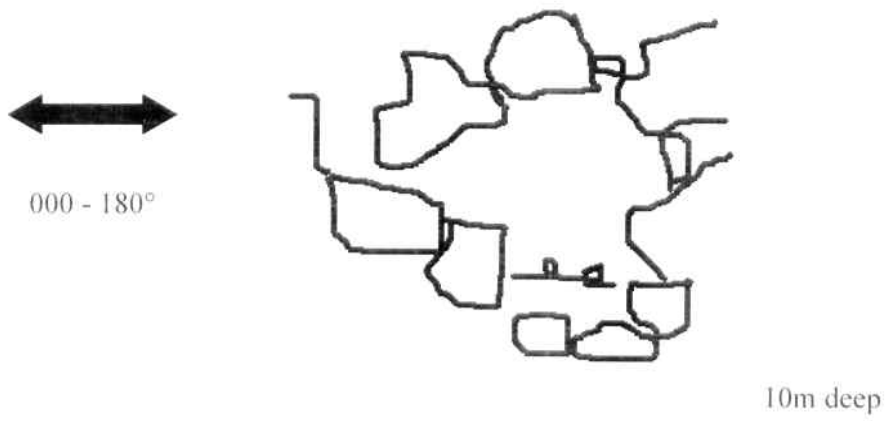


30m deep

A - ET3
Plan



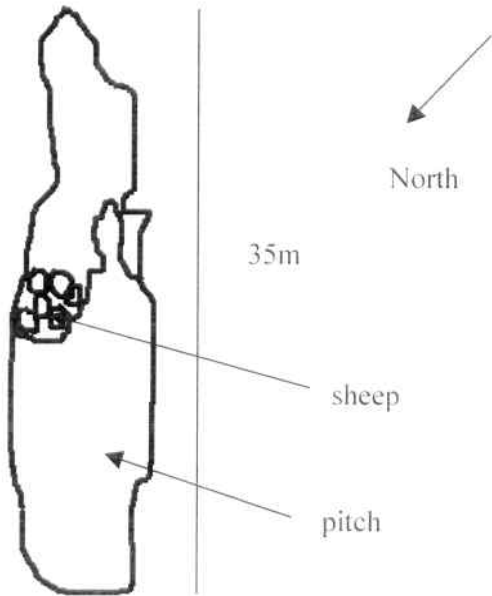
Sections



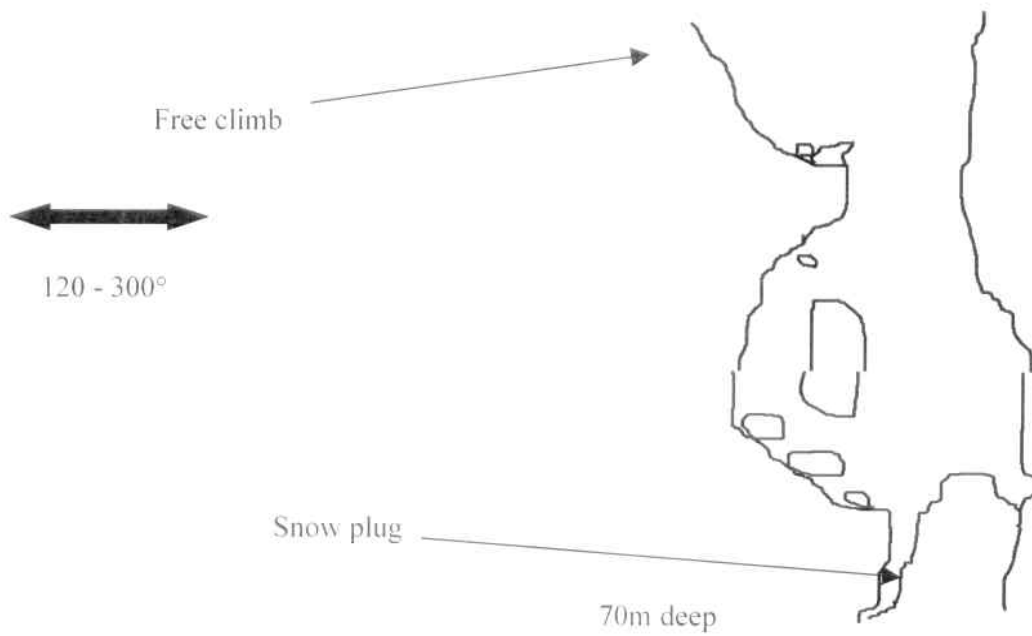
Appendix 4: CAVE SURVEYS for AREA B:

SHEEP

Plan at -20m

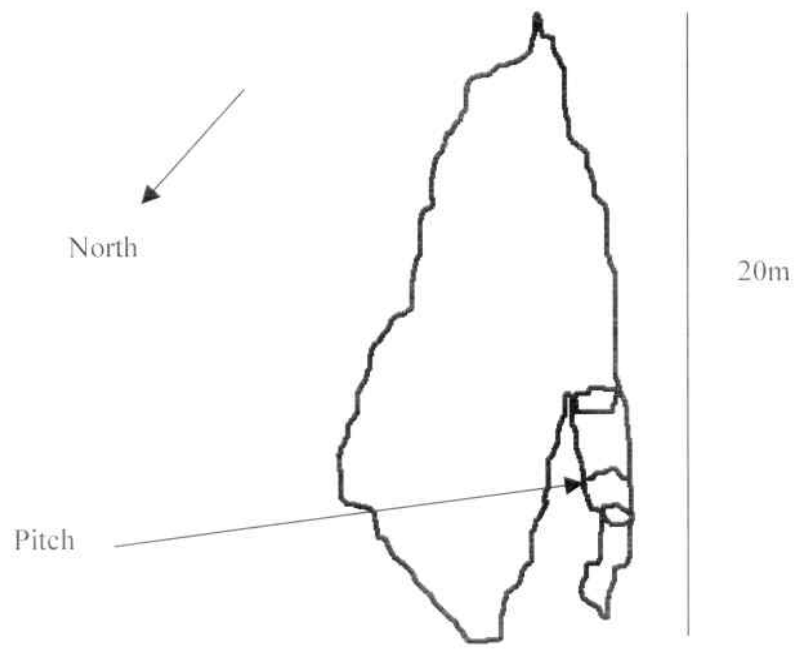


Section

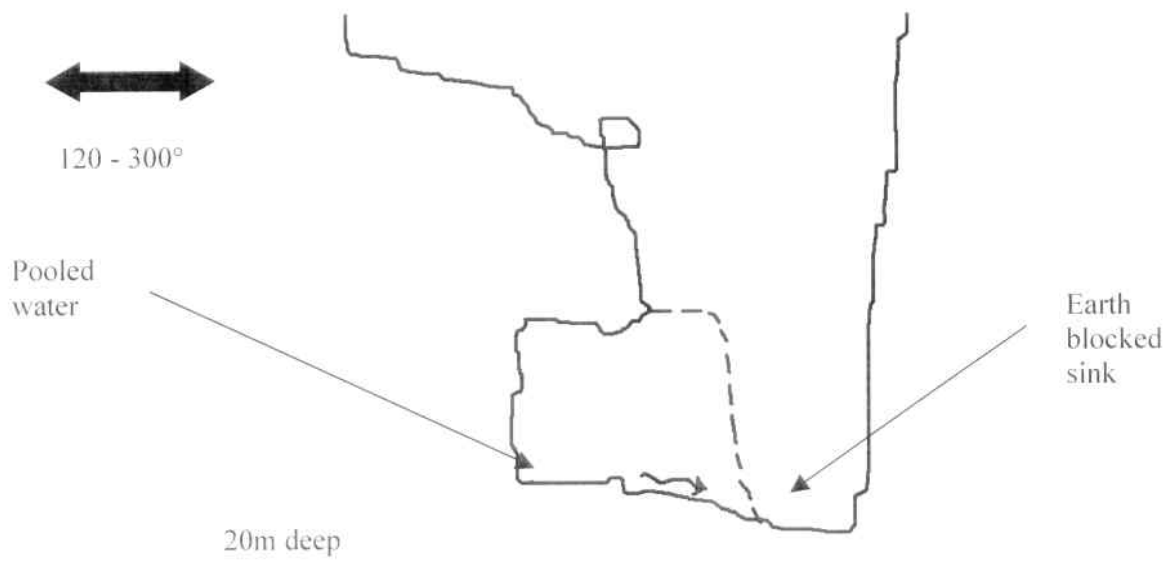


SHEEP 2

Plan

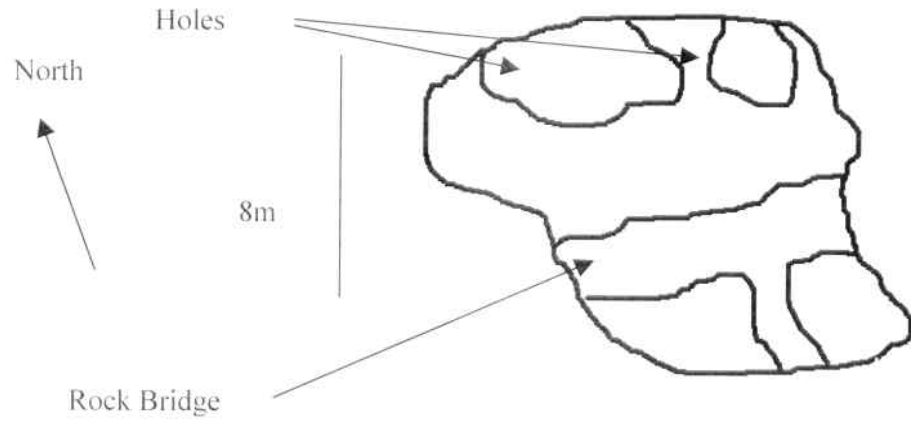


Section of Pitch

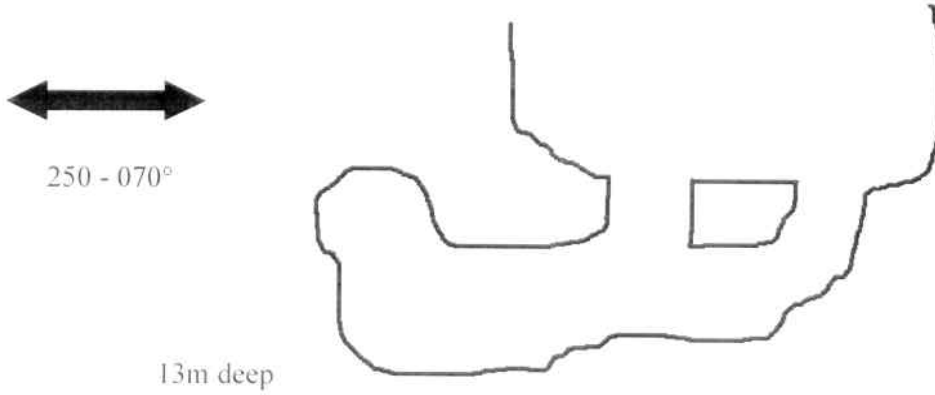


2 HOLES CAVE

Plan

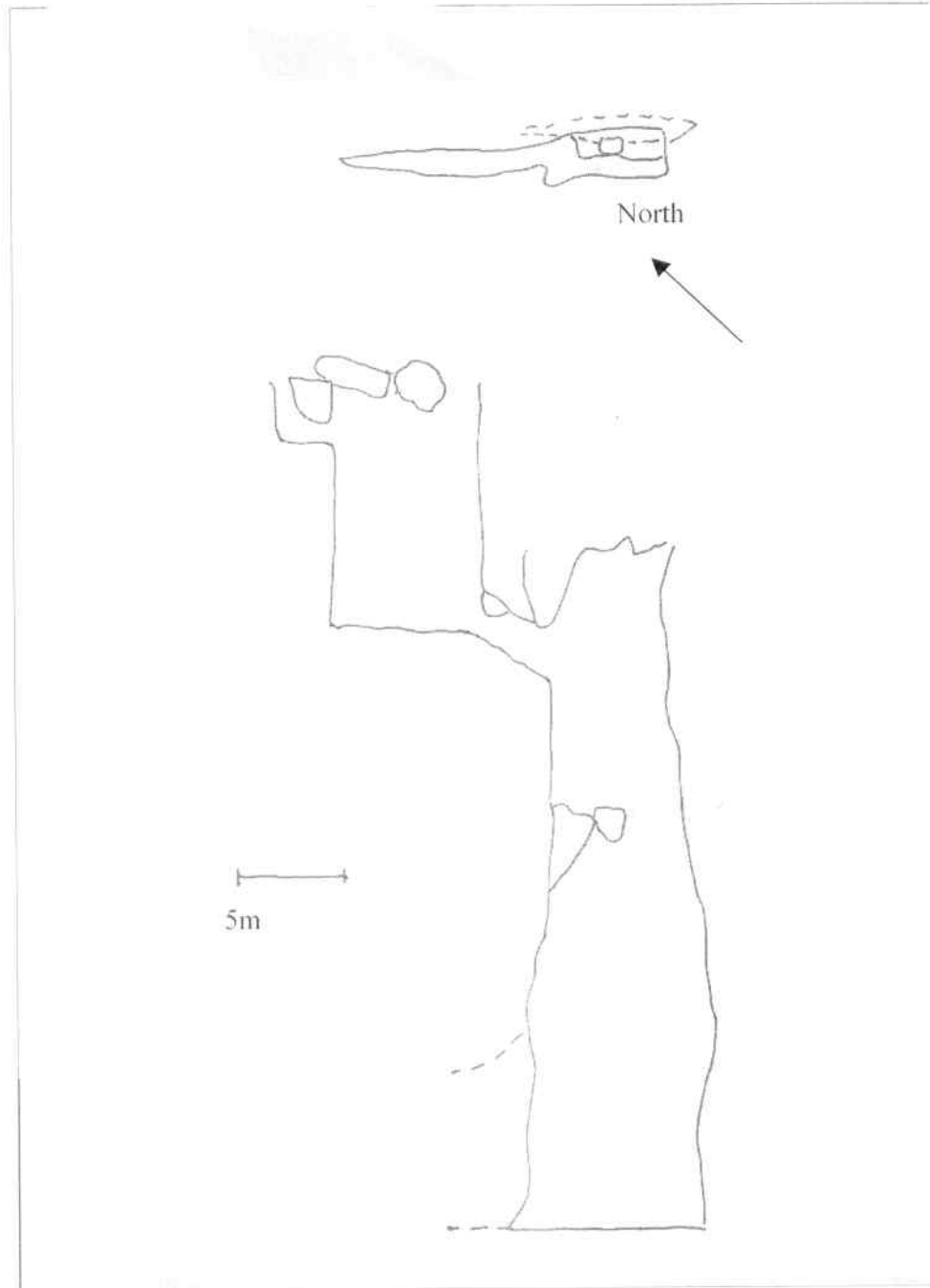


Section



IFRI AHMEN (Water cave) – AKA Cave of the Green Jedi

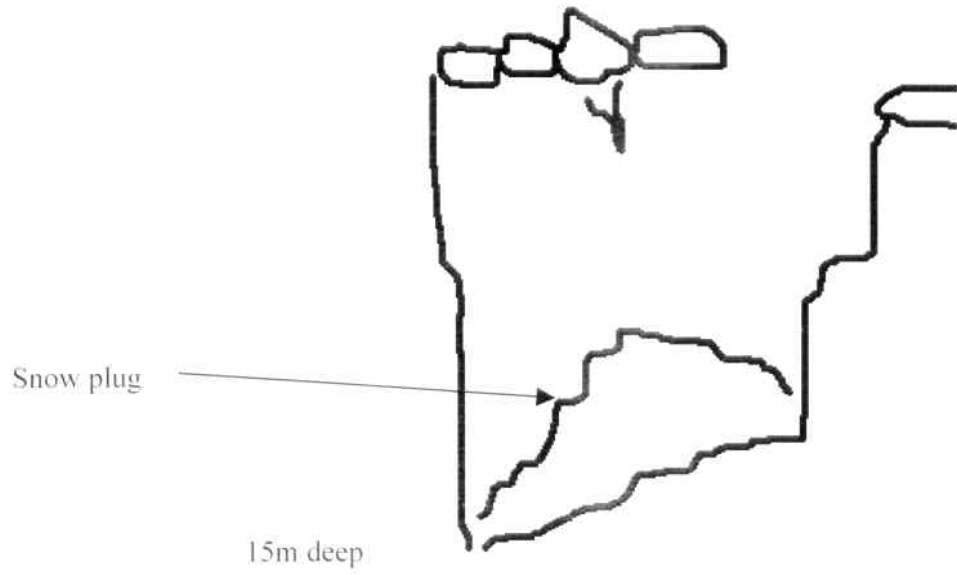
Plan:
Section



B3 (groupe vulcain)

Relocated cave, original survey GV 1981

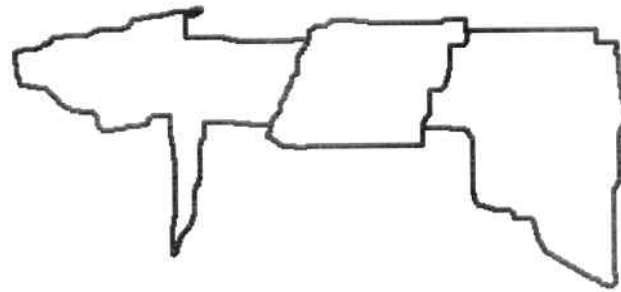
Section



Appendix 5: CAVE SURVEYS for AREA N:

N4 – E1

Plan (top)

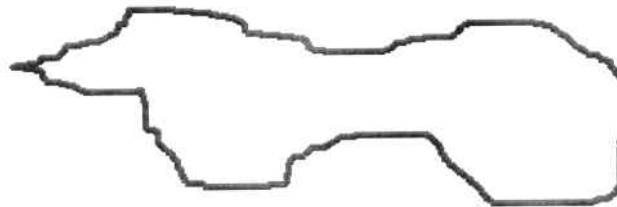


14 m

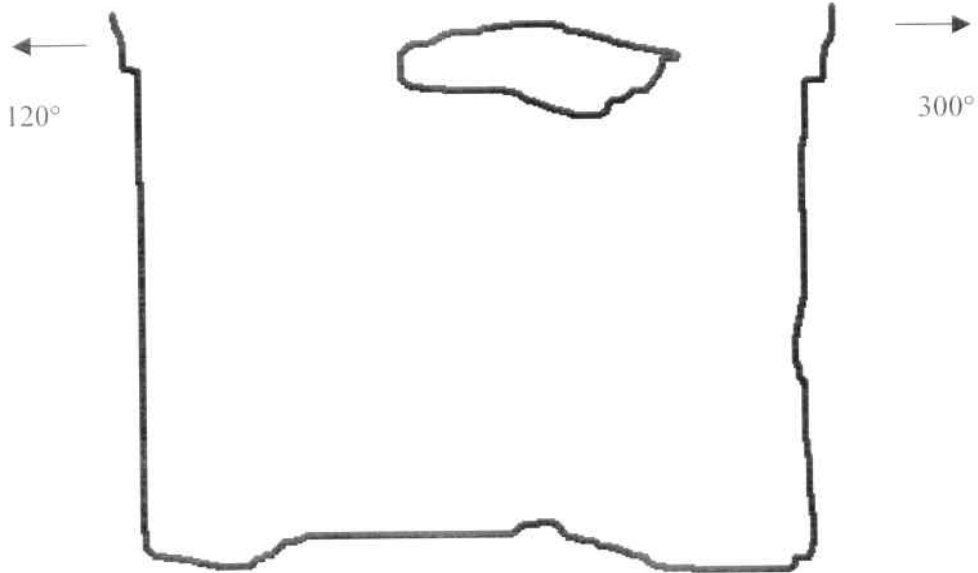


NORTH

Plan (bottom)
snow present



Section

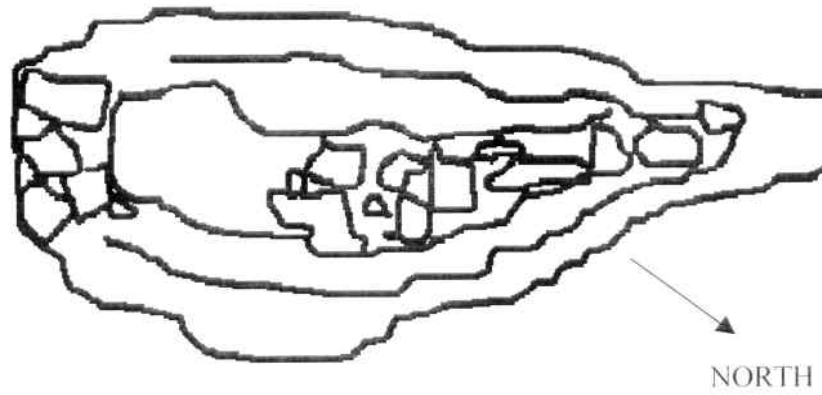


26.5m deep

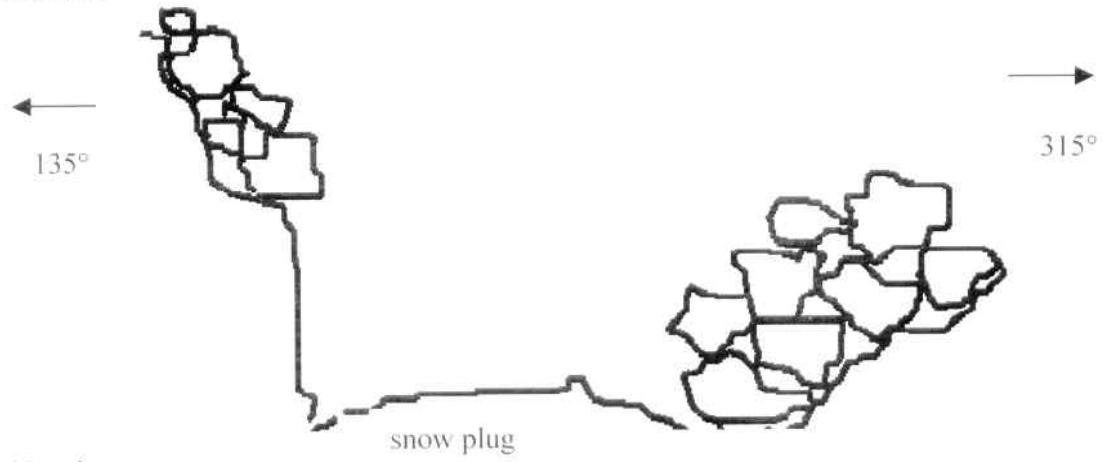
N4 - E2

40m

Plan



Sections



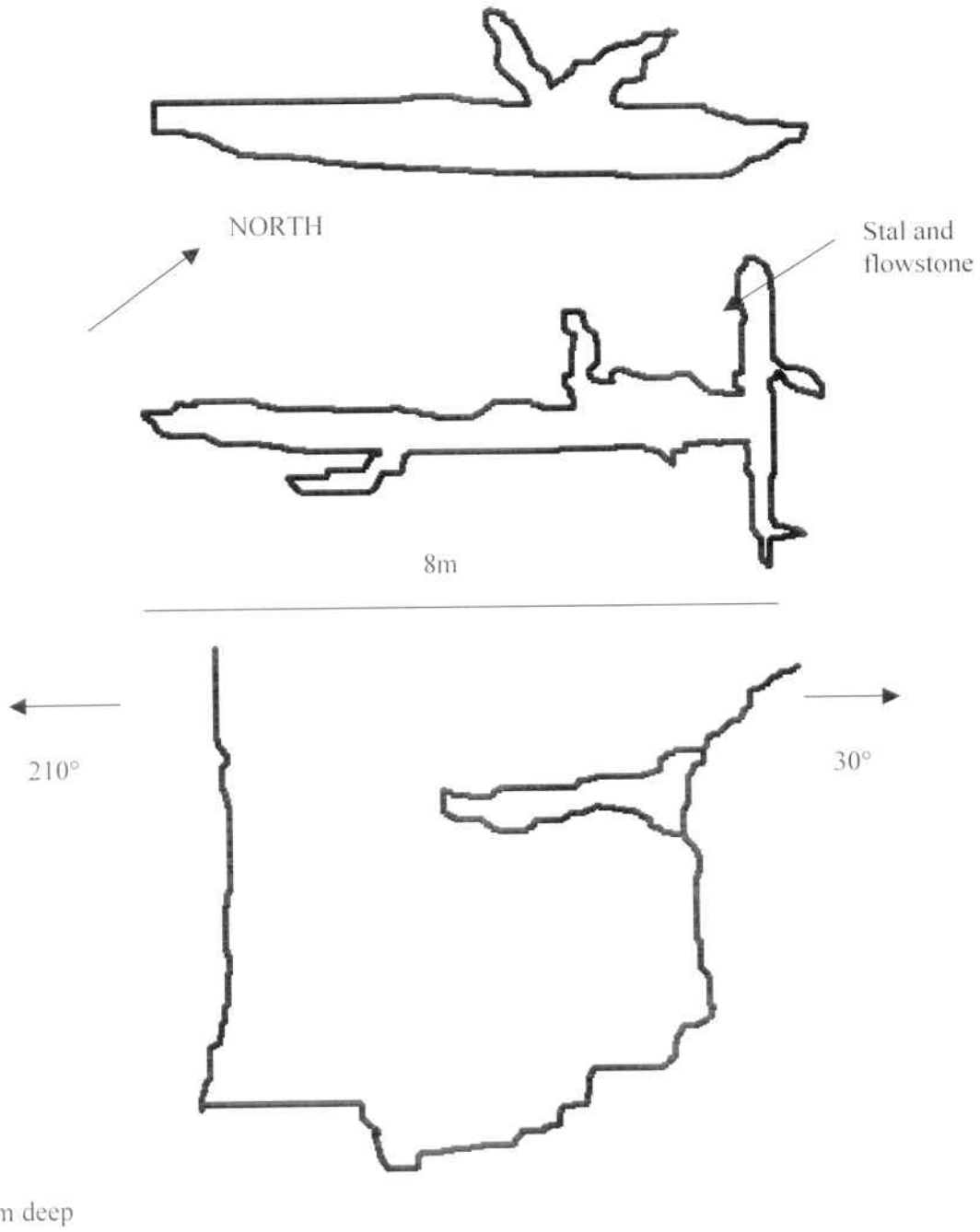
30m deep



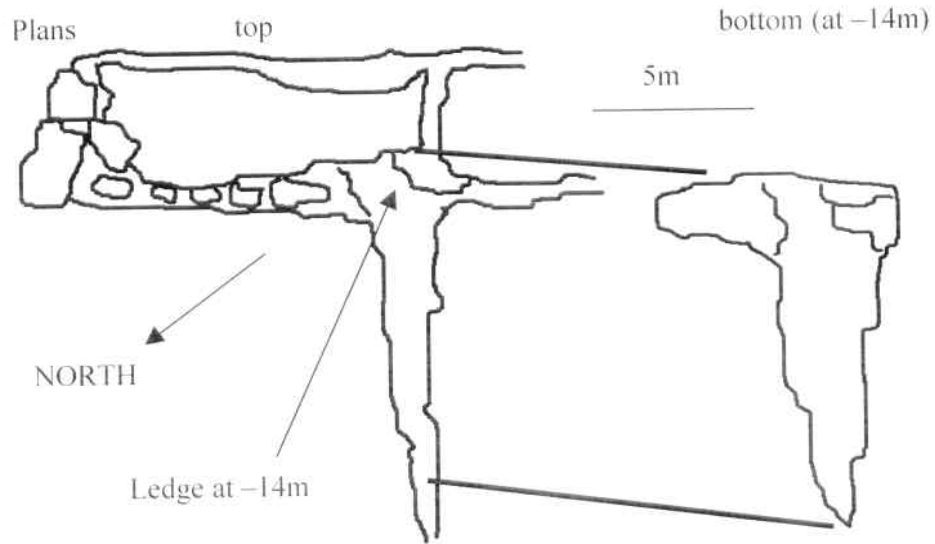
30m deep

N4 – E3

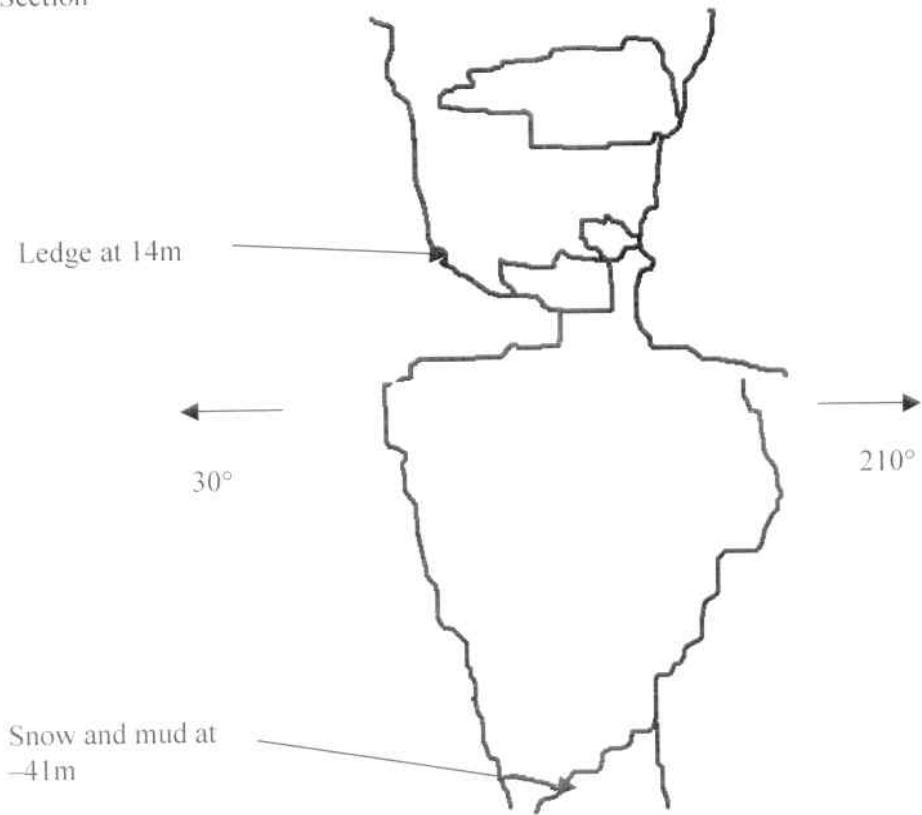
Plan (top; bottom)



N4 - E4

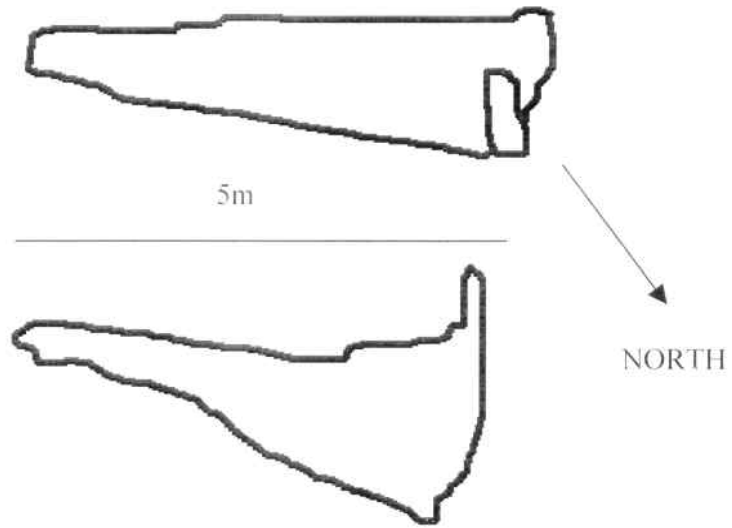


Section

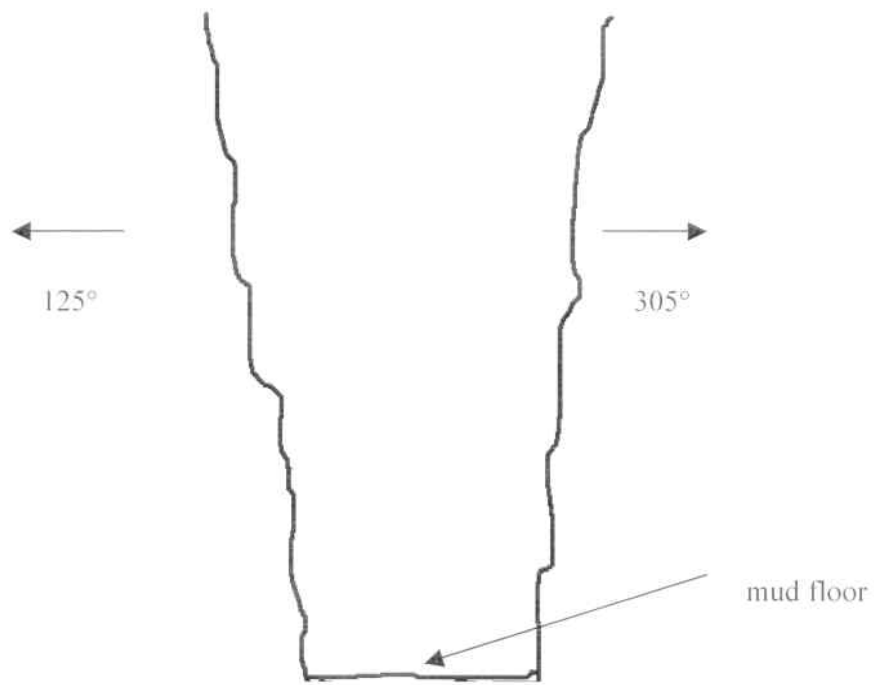


N4 - C1

Plans (top; bottom)



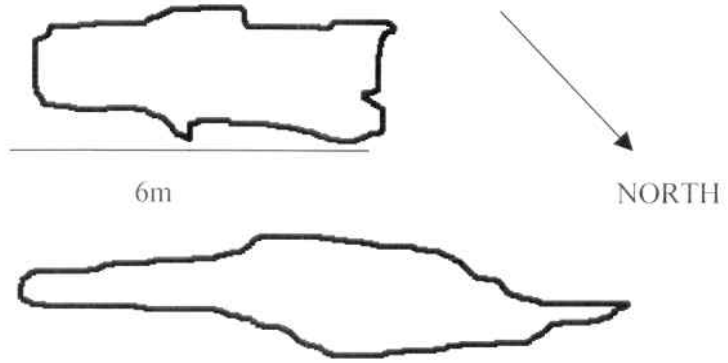
Section



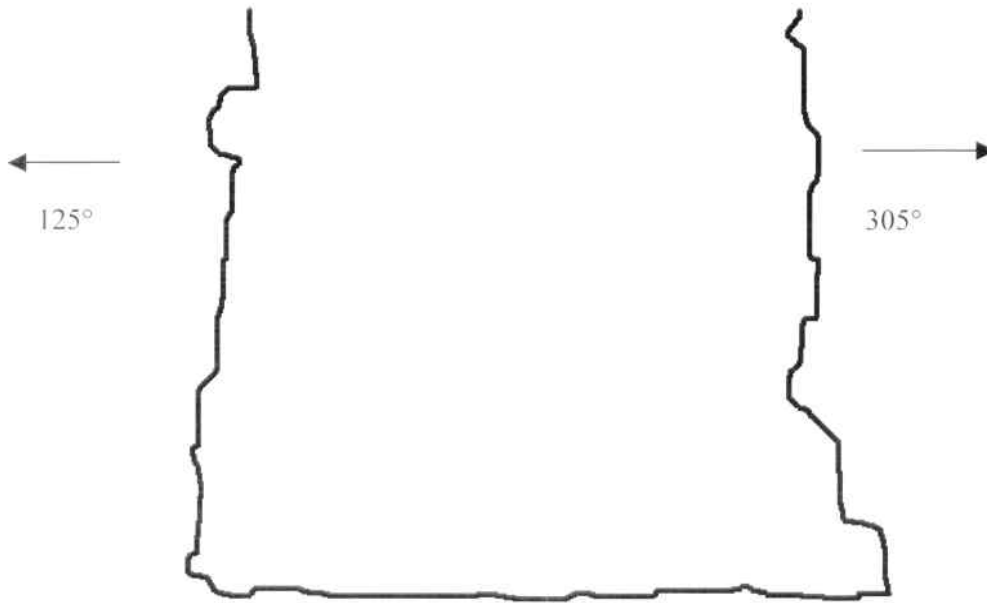
14.5m deep

N4 - C2

Plans (top: bottom)



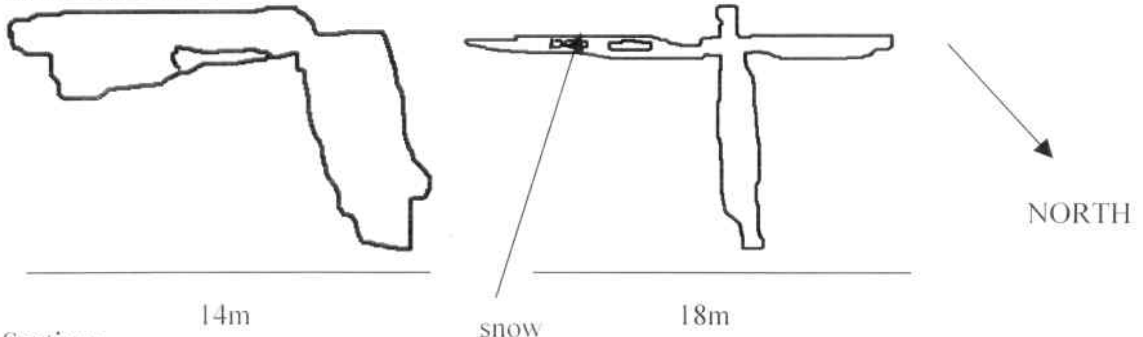
Section



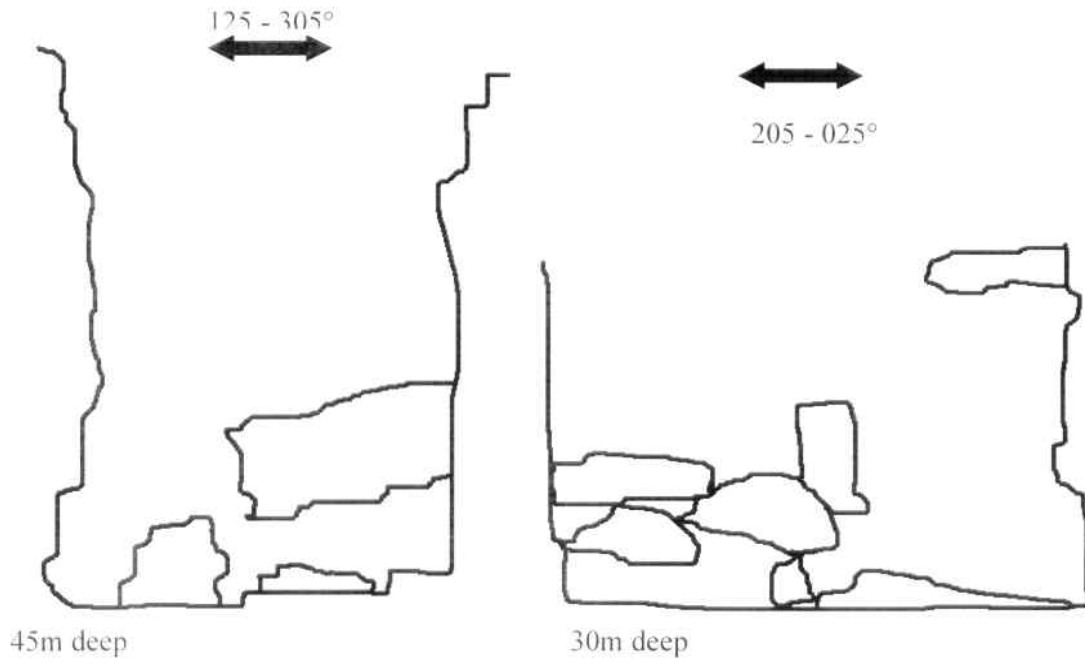
12.7m deep

N4 - C3

Plans (top: bottom)



Sections



N4 - C4
 (same depression as C3)



27m deep

N4 – C5
(same area as E3)

Plan



8m

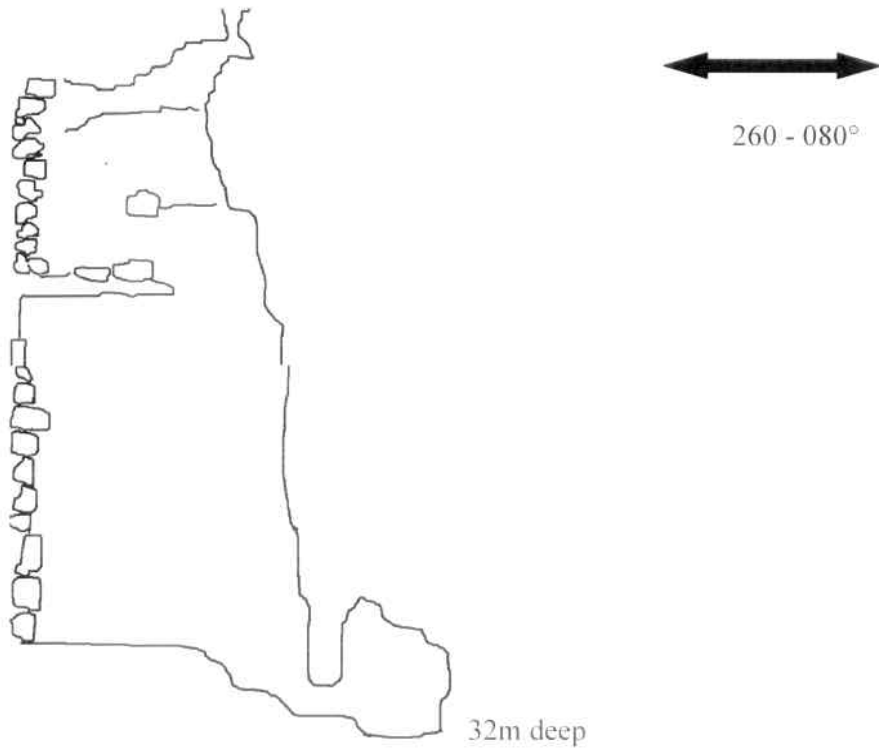


water

28m deep

N4 - E6

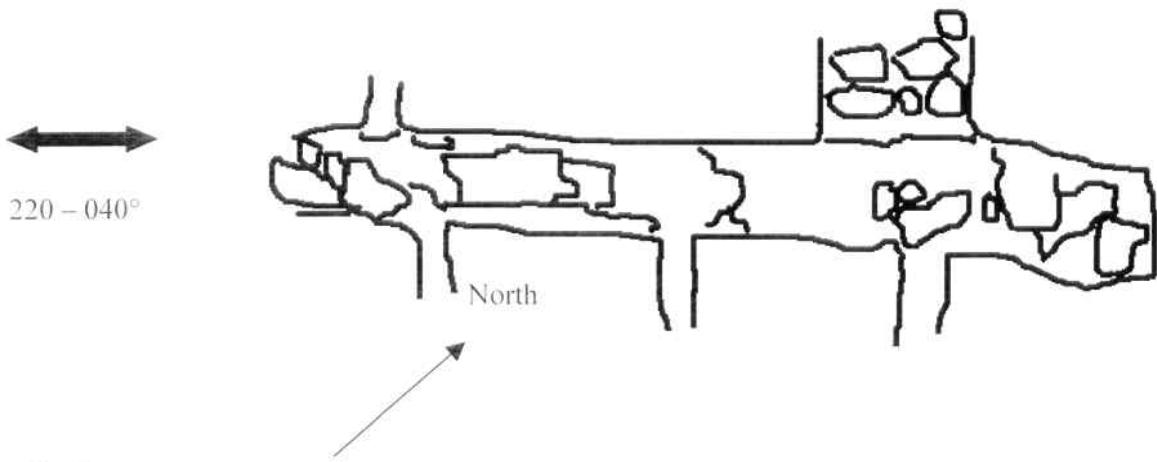
Section



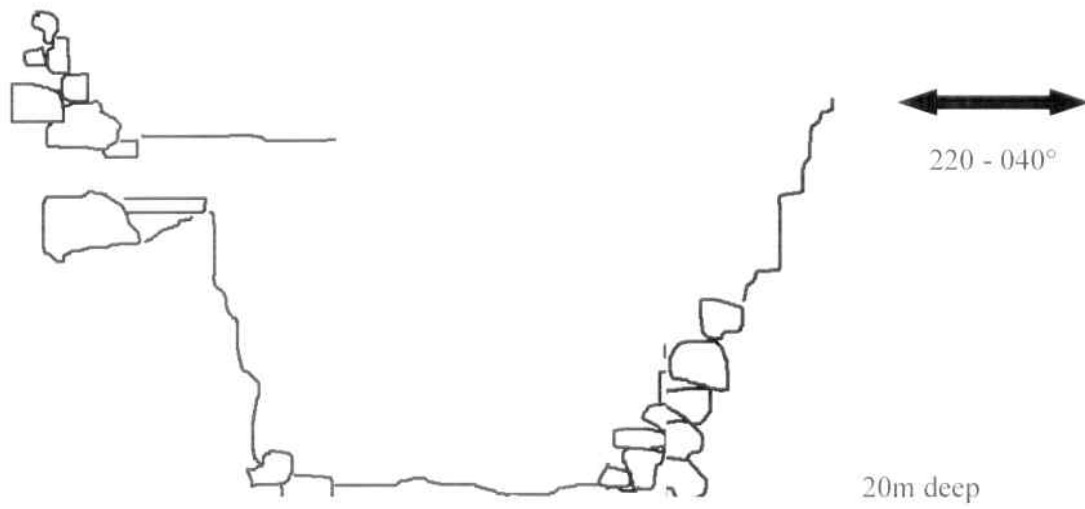
N4 - E5
South of E4

10m

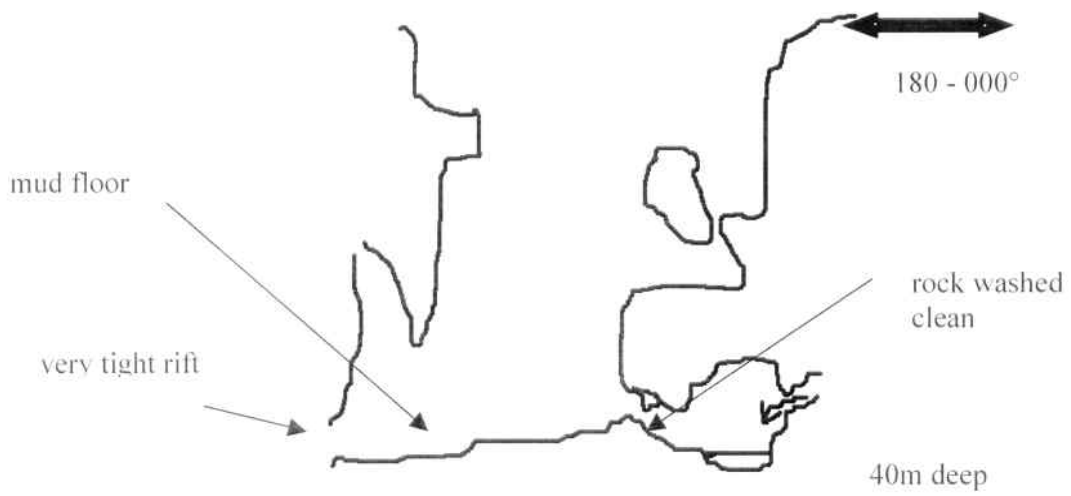
Plan



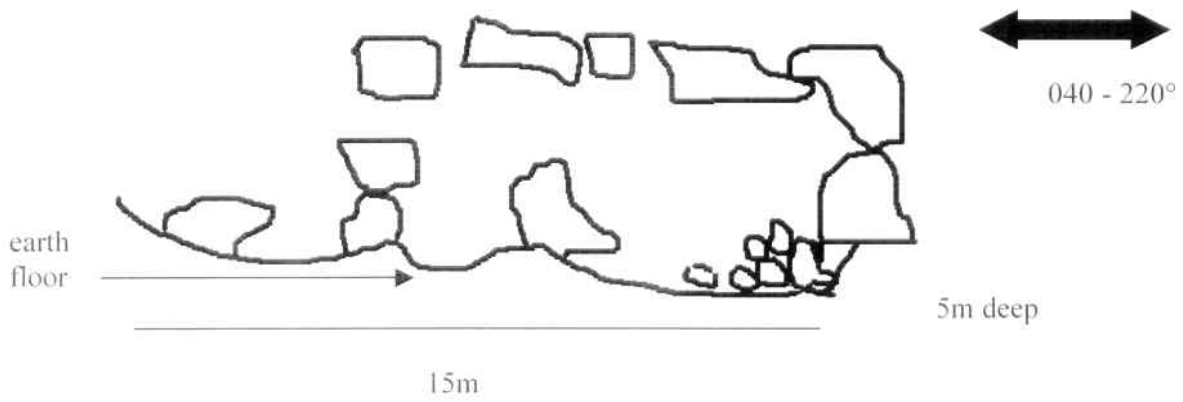
Section



N4 - J1

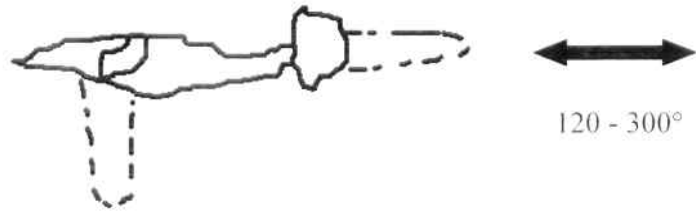


N4 - J8

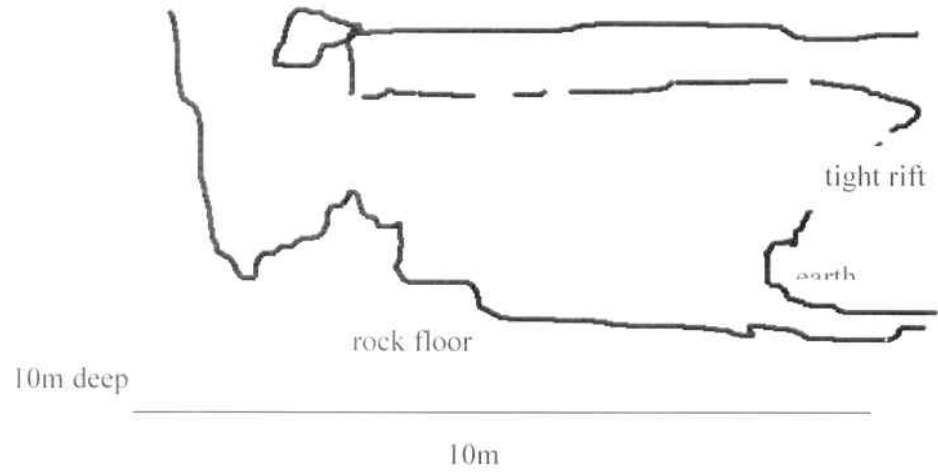


N4 - J9

Plan

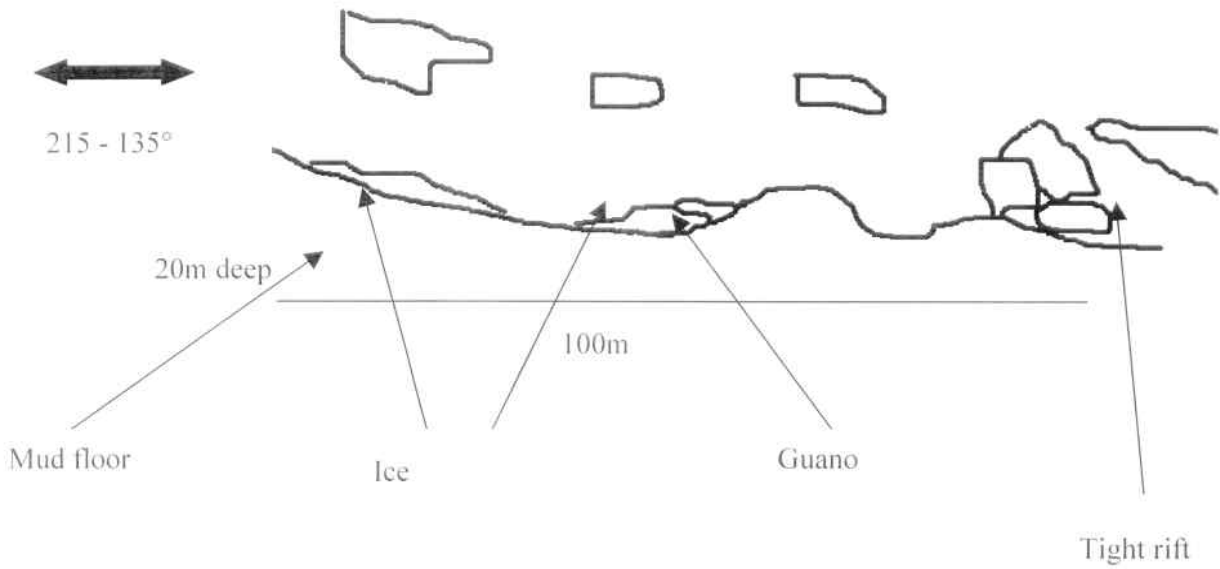


Section



N4 - J11

Section



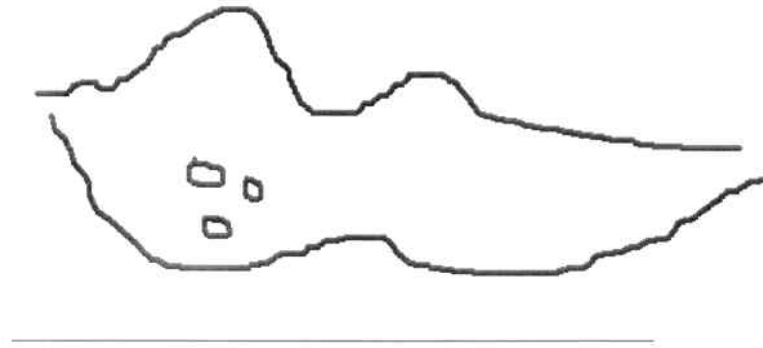
N3 - H1

Plan

North



4m

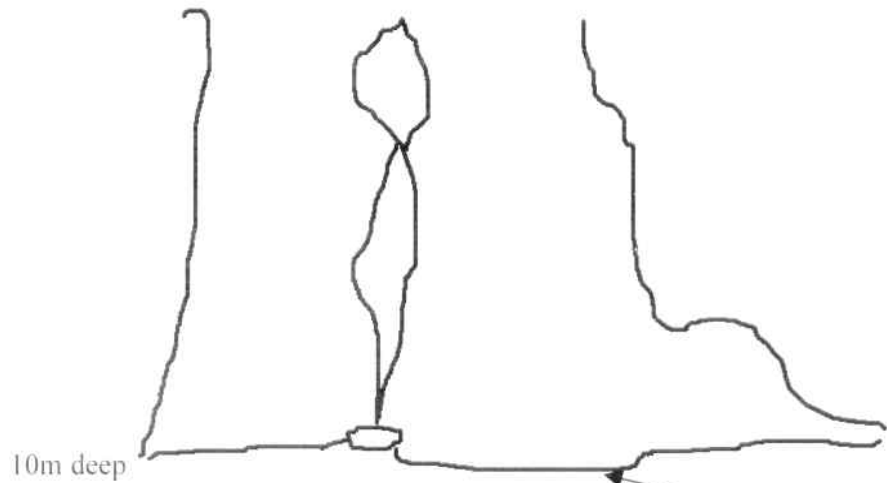


12m

Section



310 - 130°



10m deep

Earth floor

N3 - J3

Plan

North



Ice

Shattered rock floor

Collapsed entrance

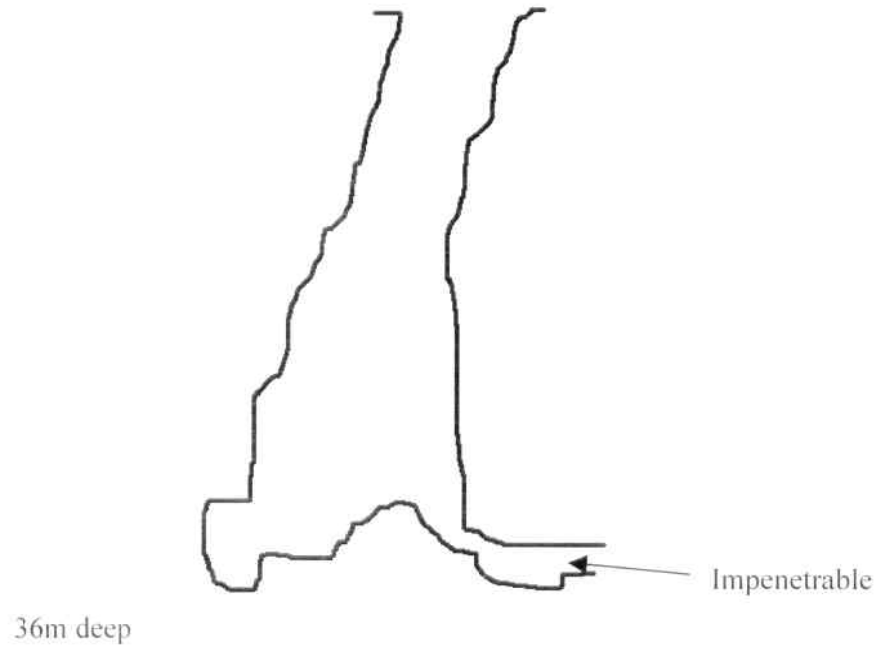


16m

N2 (groupe vulcain)

Relocated cave, original survey GV 1981.

Section



N3 (groupe vulcain)

Relocated cave, original survey GV 1981.

Section

