

Procedures for Diving in McCavity

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McCavity is a water-filled extension of *Limekiln Cave (WE 14)* in Wellington, N.S.W, about 240km North-West of Sydney. Divers from the Sydney University Speleological Society (SUSS) were the first to dive this cave and have led many trips there over the last few years. This document passes on some of the experience gained on those trips.

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tunnel with a loose dirt floor to a pitch revealing a lower chamber. All gear should be ferried to this lower chamber. This lower chamber (known as *Central Station*) is where gear should be stored and checked. A hauling tape or rope is required at the entrance pitch and at the pitch to the lower chamber.

A Z shaped constriction leads down to a small chamber with enough room for two people (called the *Telephone Booth*). The entrance to *McCavity* is through a small slot leading out of the floor of this chamber.

The water level in *McCavity* varies substantially. During times of heavy rains, this small chamber has been flooded to a depth of 1.5m. At times of drought, the level has been so low that a ladder is needed to climb in (and, more importantly, *out!*). The slot extends for about 1m before opening out and is only large enough to allow a diver in a wetsuit or drysuit *without* tanks to pass through. It is not considered safe to dive in *McCavity* when the level of the water is over the floor of the small chamber because of the extremely poor visibility for the entering divers and the difficulty of communication between divers and their surface tender.

Entry and exit of *McCavity* takes some time and divers should be staged to avoid congestion at the entrance. A person should always be in attendance in the small chamber to help divers in and out of the water. It is best to limit the number of divers in a group to a maximum of four, and to have each group complete their dive and exit *McCavity* before the next group enters the water.

As a diver must enter *McCavity* without a tank, and the water level is usually such that the diver must gear up submerged, the following procedures are recommended.

- A regulator attached to a hookah hose of at least 8m length is required.
- The hookah hose should be attached to a first stage regulator with contents gauge on a spare cylinder. The cylinder and excess hookah hose can be conveniently located in a recess in the roof of the small chamber with the hose passing through the hole. The hookah regulator should be able to be attached to a diver in a convenient fashion to prevent the regulator being pulled prematurely away from the diver and ensure that the diver can retrieve it.
- The order of the diving group should be established and the last diver's gear (regs, BC, cylinders, etc.) should be passed through first to the small chamber. The gear should be passed through unassembled and in packs where possible to protect it through the Z constriction. The diver should then set up their gear ready for their entry, and store it out of the way in the small alcove in the side of the small chamber, then return to the main chamber to allow the next diver to set up. Each of the divers (in reverse order of their entry to the water) proceeds in this fashion, until the diver who is first to enter sets up their gear. Care should be taken during setting up, as any gear placed on the floor has a tendency to slide into the water!
- The diver ready to enter the water should dress for the dive in the main chamber (*Central Station*), then enter the small chamber (*Telephone Booth*) with a person to act as tender for the dive.
- A tape and a guideline are left permanently rigged in this chamber, both trailing into the water. Both should be checked before anyone enters the water. Both the diver and attendant should ensure that the hookah cylinder is turned on and that the hookah regulator is functioning.
- The diver should put on their weightbelt, mask, fins, BCD (if appropriate), and helmet if one is to be worn.
- The attendant should ensure that the diver's tanks are properly prepared with the air turned on and hoses arranged to minimise snagging, and discuss with the diver what other gear (lights, reels, camera, etc.) is to be passed to the diver once in the water.
- The diver should enter the water feet first using the hookah regulator.
- A stage tank and regulator with contents gauge should be suspended just inside the entrance, attached to the guideline, by the first diver to enter the water. This regulator should be pressurised, then the cylinder turned off. It should be considered an emergency backup only, and not made part of any dive plan.
- Once the diver has passed through the slot, the chamber opens out. The diver should signal the attendant for their tanks. When the water level is low this can be by voice, otherwise a hand signal or pull

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- Once the diver has passed through the slot, the chamber opens out. The diver should signal the attendant for their tanks. When the water level is low this can be by voice, otherwise a hand signal or pull

signal on the hauling tape will have to be used when the water is high. The attendant should pass the tanks, with the air turned on, down the slot to the diver.

- The diver should take the tanks and move to the space to the right of the entrance hole as you face the hole from the small chamber, just above the guideline as it heads off from the entrance. There is usually a surface here and it has proven a good place to gear up. For safety, any air in this space should be considered bad, and a regulator used at all times. When the water level is low enough, it is possible to talk with the attendant from this space.
- Once geared up, the diver should move on to their personal air supply. The hookah regulator should be handed back to the attendant, and then any other gear should be passed in to the diver. Once a group of divers has moved away from the entrance, the attendant should make sure that the hookah regulator is left in the water clipped to the guideline, with several metres of hose. An attendant should remain in this chamber whenever divers are in the water.
- A small flashing strobe attached to the guideline at the point where the guideline opens up into the main chamber has proved to be most visible from much of the cave.

Exit

The procedures for exiting *McCavity* are almost the reverse of the entry. The air space provides a convenient place for divers to wait their turn for exit. Each exit takes some time, which reinforces the need for small groups in the water at any time, and for the need to incorporate the entry and exit time into the dive plan, particularly when the water level is high.

- On return to the exit, the diver should pass all extra piece of gear (lights, reels, cameras, etc.) to the attendant in the small chamber.
- The diver should move on to the hookah regulator.
- The diver should take off their tanks, and then push this up the slot to the attendant. When the water is low, the gear will have to be hauled out on a tape. Watch out for dangling pieces of gear which may get snagged when doing this. Consideration should be given to having a convenient attachment point on all gear for a tape and carabiner.
- When the slot is clear, the diver should climb out. The rigged tape or a hand from the attendant can be used for assistance in the exit.
- Once out of the water, the diver should leave the small chamber, and the attendant should disassemble the gear and pass it out of the chamber as quickly as possible before the next diver begins their exit.

Guidelines

There is a fixed guideline from the entrance of *McCavity* to a backbone guideline which traverses the length of the main chamber and the main branch. Direction markers pointing the way out are on the exit side of every junction and at most major turns of this fixed line. It has been found that a strobe light attached to the guideline just as it enters the main chamber is highly visible in much of the main body of the cave. This is a useful safety backup, but is not to be used in place of safe line and reel practice.

Divers who wish to explore away from the fixed guideline should use jump reels. Divers should always bear in mind that despite the usual water clarity, siltout is an ever present danger in this cave, as the floor consists mainly of mud and calcite precipitation and much of the surface in the air spaces is covered in calcite rafts. The entrance and a few areas with a low roof are particularly susceptible to siltout.

All line taken in to *McCavity* should be taken out on each trip. Some trips in the past have left their lines fixed in the cave. This has since been removed as it cluttered the entrance with multiple lines, increasing the likelihood of entanglement, and in many instances duplicated the backbone guideline.

Do not fix guidelines to stalactites or other formations.

Cave Conditions

Water temperature in *McCavity* is around 18-19 C.

There are a number of air spaces in the cave. The air is usually bad in these spaces. For safety, *all* air spaces should be considered to have bad air and a regulator used at all times.

The presence of extensive calcite rafts on the surface in air spaces and the presence of submerged decorations indicates that the water is highly saturated with minerals.

The floor of the cave is largely covered with a fine mud and precipitated calcite rafts. Water flow in the cave is not noticeable. The presence of divers in the cave and rain in the area can both result in strata of fine silt through the water in the main chamber remaining for several days.

There are many fine decorations in the roof of the main chamber. Divers should resist the temptation to touch any formations. It is also important to be very careful of buoyancy control when near the roof to avoid accidentally ascending into any of the roof formations which are extremely fragile.

Cylinder Configurations

The entrance to *McCavity* is so small that it is extremely difficult to get a large twin cylinder system into the water. Cylinders of the diameter of an 88 cubic foot aluminium cylinder are too large to safely pass through the slot. Twin sets of the size of the Faber 7 litre steels have proved useful at this site. Cylinders should be transported through the cave individually, and assembled in the small chamber. Where possible, cylinders should be in packs to minimise damage to the cave during transportation. Side mounted cylinders which can be easily fitted by a diver in the water should be considered as an alternative.

Equipment Summary

The following is a summary of the equipment useful in mounting a diving trip in *McCavity*. This list is not exhaustive and is in addition to any personal cave diving equipment.

- Caving ladder, tapes and carabiners for rigging.
- Caving lights and helmets and personal caving gear for all party members.
- Two hauling tapes or ropes of about 8m length.
- Hookah hose (8m) and second stage attached to a first stage regulator with a contents gauge and a spare cylinder
- Twin independent air supplies for each diver
- Jump reels.