CAVE DIVERS' ASSOCIATION OF AUSTRALIA

(Incorporated in South Australia)

INFORMATION BULLETIN

C.D.A.A.
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P.O. Box 290
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MAY 1980

INTRODUCTION

The years 1969-73 witnessed a succession (10) of amateur diving fatalities in the freshwater sinkholes and caves of the Mt. Gambier region. This period culminated in the deaths of four divers in 'The Shaft' in May 1973; an event which remains one of the worst tragedies in cave diving.

Inexperience of the vastly different conditions to ocean diving and inadequate equipment were common factors in all the fatalities.

Following the 'Shaft' accident, a South Australian Government Committee was appointed to enquire into the growing number of fatalities and to make recommendations concerning the safety and future regulation of the sport.

The Cave Divers Association of Australia (CDAA) was formed as a result of the Committee's findings. The primary aim of this Association, (a voluntary, non-profit organisation incorporated in South Australia) is to provide a means of self-regulation for cave diving in Australia. Such self-regulation of the sport was felt to be preferable to control through government legislation.

The activities of the CDAA have centred around three themes:

a) Mapping of the freshwater features and categorisation in terms of difficulty and equipment necessary.

b) Training and categorisation of divers so as to safely match the above..

c) Development and promotion of equipment unique to this type of diving.

Looking back over the period since 1973, one of the most important points realised has been the vindication of self-regulation. Through the pursuit of an uncompromising testing program, the CDAA has succeeded in drastically reducing the freshwater fatality rate. To date nearly one thousand divers have been categorised by the CDAA and much information disseminated in the form of quarterly newsletters ('Guidelines'), biannual Cave Diving Conferences and General Meetings. The mapping program has come to fruition in a book being published: 'Cave Diving in Australia' by P. Stace and I.D. Lewis, two names which have figured prominently on past (and present) CDAA Committees.

Cave diving is a unique and enthralling experience, but demands a certain level of training and competence. We are fortunate that in the Mt. Gambier area we have a number of rare and beautiful sinkholes and caves to dive in. These can only be enjoyed by divers (both now and in the future) if care and common sense is used in our approach to them. Cave diving can only be enjoyable when we are relaxed and confident in our knowledge of this environment - which is so different from the majority of our experience. There is great variety in the types of caves to dive in, some more difficult and so needing more preparation and competence to meet their particular challenge. However, the reward is to dive in all these caves without tension or hazard, not to create unnecessary dangers and by chance elude them.

R.W. Garrad

Secretary

Cave Divers Association of Australia.

April, 1980.

I How To Become a Member

Fill out the application form stapled in the centre of this information bulletin. Mail it together with two (2) passport size photographs of yourself and $10 subscription to the C.D.A.A. box number in your state.

The $10 subscription consists of a $5 annual fee to cover postage and printing costs of the newsletter ("Guidelines"), hire of halls for meetings etc., and a $5 joining fee covering the cost of your individual paper work. The $5 annual fee may be paid on a biannual basis if you wish - this halves the number of times you have to part with your C.D.A.A. card for update purposes.

Having become a member, you will be able to enter the C.D.A.A. testing and certification program. This program aims at matching your diving skills to various grades of freshwater diving and is based on a categorisation of diving locations.

II Sinkholes of the Mount Gambier Area

a) Categorisation of Holes

All of the popular freshwater diving locations around Mt. Gambier have been placed into one of three categories. These categories are largely determined by the degree of isolation of the diver from the surface: i.e., once in, how difficult is it to get out?

Category 1: Straight walled sinkholes or open caves. The surface is always directly above you, a vertical ascent is possible from any point of the dive.

Category 2: Sinkholes with overhanging walls or short tunnels leading off. There are some locations in the sinkhole from which you cannot ascend directly (without hitting your head).

Category 3: Sinkholes which are water filled caves. Once inside you cannot ascend vertically to get out: you must retrace your inward path, it is probably totally dark inside.

Special hazards (e.g., difficult entries, silting problems etc.) are also taken into account by the categorisation system.

b) Diving Locations

Category 1:

		Property Index
Little Blue Lake	L-9	(2)
Goulden's Hole	L-8	(1A)
The Sisters	L-43, L-44	(2)
Horse and Cart	L-129	(1C)
Tea Tree	L-128	(1C)

Category 2:

Piccaninnie Ponds	L-72	(3)
Ela Elap	L-14	(1D)
One Tree Hole	L-7	(1D)
The Black Hole	L-47	(1B)
Ten-Eighty	L-42	(1B)
Hell Hole	L-40	(4A)
Swim-Through Cave	L-167, L-168	(1E)

Category 3:

		Property Index
Allendale Sinkhole	L-11	(2)
The Pines	L-61	(4B)
Max's Hole	L-100	(1F)
The Shaft	L-158	(1G)
The Bullock Hole	L-163	(1B)
Englebrecht's Cave	L-19, L-20	(2)
Fossil Cave	L-81	(2)

Ewens Ponds (L-159 - L-161) has been declassified by the C.D.A.A. Bottom time in Ewens Ponds can however be included as experience at Category 1 level when making application for Category 2.

The 'L' numbers refer to the cave recording system of the Cave Exploration Group of South Australia (C.E.G.S.A.) - 'L' = Lower South East Region. This system is recognised by the S.A. Museum and is cross-referenced by the S.A. Mines Department.

The key to the property index numbers:

(1) Private Property
(2) Crown Land
(3) National Parks and Wildlife Service (South Aust.)
(4) Department of Woods and Forrests (South Aust.)

The letters following the index number identify individual properties. See Appendix 1 for the corresponding addresses to write to.

The locations of most of the above holes are marked on 'Broadbents' Map No. 212. Also see Reference 1 at the end of Section III of this bulletin. This book contains maps of all the above holes and how to find them.

III Categorisation of Divers

C.D.A.A. Certificates are issued to Category 1, 2 and 3 standards corresponding to the categorisation of the holes.

Regular testing is carried out by the C.D.A.A. to the above standards. To obtain a test date, write to the C.D.A.A. at the box number in your state.

Before applying for testing, check the prerequisites below to ensure that you are eligible. Eligibility for testing in a given Category rests largely on your experience gained in lower Categories - evidence of which will be required - hence a logbook is essential.

Category 1 and 2 Testing Program

Category 1 is designed to test basic sinkhole diving techniques and general diving theory. The diving experience following the testing enables the diver to practise these skills in a relatively safe freshwater environment.

Having mastered these skills under Category 1 conditions, the diver may apply to be tested to Category 2 level. Category 2 is a test of these practical skills in a simulated Category 2 sinkhole.

An examination fee will be levied to compensate the examiner(s) for his time. It will be approximately $5 per diver.

Category 1: Prerequisites

(1) Be a financial member of the C.D.A.A.
(2) Evidence of completion of a basic Scuba diving course.
(3) Evidence of 20 logged dives in the previous twelve months, which include 2 night dives and 5 dives to 18 metres.
(4) Ownership of the prescribed Category 1 equipment - you will need to produce all of this gear at the practical test. See under IV below for equipment lists.

Category 1: Theory Requirements

The theory test will concentrate on the following areas:

(1) Buoyancy

(a) State buoyancy changes in freshwater as compared with seawater.
(b) Advantages of using a buoyancy vest.

(2) Narcosis

(a) List signs and symptoms of narcosis.
(b) Describe the procedure to be followed if you or your buddy are suffering from narcosis.
(c) List the contributing factors which will increase a diver's susceptibility to narcosis.

(3) Decompression Sickness

(a) List the common signs and symptoms of decompression sickness.
(b) Describe the first aid treatment for decompression sickness.
(c) List the contributing factors which will increase a diver's chance of becoming affected.
(d) Calculate the bottom times of various dives.
(e) Calculate the decompression requirements of single, double, and triple (i.e., repetitive dives) using the CZ-18 and U.S. Navy decompression tables.

(4) Decompression Problems

(a) List the precautions and additional equipment needed for a decompression dive.
(b) List the problems associated with making a decompression stop.
(c) Describe your course of action when you surface from a dive and immediately realize you have omitted a decompression stop.

(5) Air Consumption

(a) Calculate the amount of air used on a dive, including that used during descent, ascent and the decompression stop(s).

(6) Permission to Dive

Category 1: Practical Requirements

Practical tests for Category 1 are carried out in still water. The practical test will include the following:

(1) Demonstrate the use of a buoyancy compensator by controlling descent, maintaining a given depth and controlling ascent. (Fins must not be used during this part of the test, and SCUBA fed

fed vests disconnected).
(2) Demonstrate the ability to follow a line and negotiate various obstacles whilst wearing a blacked out mask.
(3) Demonstrate the ability to buddy breathe from a single hose regulator, without a mask while following a line.

Category 2: Prerequisites

(1) To have satisfied all the requirements of Category 1.
(2) To have logged five hours of freshwater diving in a variety of Category 1 holes (in the previous twelve months), including 5 dives to 18 metres.
(3) Ownership of the prescribed Category 2 gear.

Category 2: Theory Requirements

A thorough knowledge of Category 1 theory is assumed. Category 2 theory consists mainly of dive planning. Dive planning is expected to be concise with attention paid to the following areas:

(1) Decompression procedure/calculation
(2) Air consumption
(3) Equipment necessary
(4) Pre-dive plan
- potential problems
- entry/exit
- permission to dive
- assignment of buddy pairs/dive leader

(5) Specific procedures to be followed during the dive
(6) Post-dive procedure.

Category 2: Practical Requirements

Practical requirements include all those required for Category 1. In addition, the diver will be asked to demonstrate the correct use of a reel and tether line on a simulated Category 2 dive, in simulated zero visibility.

Category 3: Testing Program

Category 3 holes require proper cave diving techniques and all the extra equipment that this implies. In these holes, complete darkness, extensive silting and confined passages are frequently encountered. The majority (9 of 11) freshwater diving fatalities at Mount Gambier have occurred in holes which would be classified as Category 3 - i.e. water filled caves - if they were open today and available for diving. Consequently the C.D.A.A. views its Category 3 test program very seriously.

Practical tests are all carried out in an actual sinkhole at Mount Gambier and are conducted by a panel of instructors drawn from both South Australia and Victoria.

A testing fee of approximately $15 per candidate will be levied to cover the examiners travel and accommodation expenses.

Category 3: Prerequisites

(1) To have satisfied all of the requirements of Category 2.
(2) To have logged 20 freshwater dives to Category 2 standard with:
- 5 of these dives to 35 metres
- 8 of these dives using a guide line, reel and tether line..

(3) Ownership of the prescribed Category 3 equipment.

Category 3: Theory Requirements

A thorough knowledge of Category 1 and 2 theory will be assumed. Some of the questions asked are given below:

(1) List the reasons why you would abort a dive before reaching your planned penetration.
(2) State the procedures for minimising silting.
(3) List the reasons why a guide line should be tied at points during a dive.
(4) Describe the action you would take if you or your buddy ran low on air in a Category 3 cave.
(5) Plan a dive for four divers into a Category 3 cave with known silting problems. Dive planning is expected to be concise with attention paid to the following areas:

(a) Decompression procedure/calculation
(b) Air consumption
(c) Equipment necessary
(d) Pre-dive plan
- potential problems
- entry/exit
- permission to dive
- assignment of buddy pairs/dive leader

(e) Specific procedures to be followed during the dive.
(f) Post-dive procedure

Category 3: Practical Requirements

Category 3 practical tests are carried out in a sinkhole to more closely simulate actual cave diving conditions. Candidates are expected to be faultless in those procedures applying to Category 2.

The practical test will include the following:

(1) Demonstrate the use of a buoyancy compensator by controlling descent, ascent and maintaining a given depth.
(2) Demonstrate the correct use of a reel and tether line on a simulated Category 3 dive. During the dive a simulated emergency will occur resulting in the loss of both face masks and the divers having to share one air supply (buddy breathe or use octopus regulators).
(3) Accompanied by your buddy and utilising full Category 3 gear follow a line and negotiate various obstacles with both divers in simulated zero visibility (i.e., blacked out masks).
The guide line in this section is run in, out and around an actual cave to simulate totally silted out conditions. The examiners will be extremely critical in watching the following points:
- the maintainance of good buddy contact
- the maintainance of at least single point contact with the guide line at all times
- whether undue strain is placed on the guide line
- how well integrated your personal diving gear is for the task at hand.

(4) Towards the end of (3) above, mask blackouts will be removed and one of the divers will lose his/her air supply. Demonstrate the correct use of an octopus regulator whilst still negotiating the guideline out of the cave.

The Committee strongly reccommends that candidates for Category 3 practise the above practical tests with their buddy at a time other than the test date.

References

(1) I.D. Lewis and P.M. Stace "Cave Diving in Australia". Published by I.D. Lewis.

(2) R. Thomas and B. McKenzie "The Diver's Medical Companion". Australian Sports Publications.

(3) C. Edmonds, C. Lowry and J. Pennefather (1976) "Diving and Subaquatic Medicine" Australasian Medical Publishing Co., Sydney.

(4) U.S. Navy Diving Manual (1973) Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(5) Australian Standard 2299 "Underwater Air Breathing Operation". Published by Standards Association of Australia, 80 Arthur Street, North Sydney, Australia.

(6) N.A.U.I. "The Complete Guide to Cave Diving".

IV Equipment

Equipment marked (*) will need to be produced when completing the practical test.

Category 1

(*) - Full length wet suit including hood.
(*) - Mask and snorkel.
(*) - Fins. If open heel type, buckles and protruding excess strap to be covered to minimise snagging.
(*) - Weight belt, sufficient to obtain neutral buoyancy at 3m.
(*) - Underwater watch, capable of measuring elapsed time.
(*) - Depth guage, oil filled needle type.
(*) - Single hose regulator with contents guage (dial guage).
(*) - Knife, worn to minimise snagging.
(*) - Tank, if fitted with 'J' valve the reserve mechanism is to be either blanked off or taped in down position.
(*) - Dependable diving light, preferably 6 volt type.
(*) - Buoyancy compensator. Oral inflation hose to be of at least ½" diameter, spill point to be above level of armpit, must include pressure relief valve, can be scuba fed if desired.
(*) - Submersible decompression tables to be carried on all dives below 9 metres.

Category 2

All the equipment as for Category 1 plus the following:

- If entering side tunnels, a guideline is required. The guideline runs from the surface (or bottom of the shotline) to the lead diver. The guideline must be capable of being maintained taut by means of a suitable reel which is attached to the lead diver.

- Shotline with float if necessary.

(*) - Tether line

- Octopus regulator (preferable).

Category 3

All the equipment as for Category 2 plus the following:

(*) - Octopus rig, or alternatively pony bottle and regulator.
(*) - Dependable back-up torch i.e., two torches per diver.
- Spare tanks complete, attached to guideline.
(*) - Guideline and suitable reel.

Most of the equipment listed above is commercially available through dive shops. Some of the equipment listed for Category 2/3 however cannot be purchased and generally needs to be constructed. The C.D.A.A. publication "Occasional Paper Number One" (Aug. 1977) contains plans for a suitable guideline reel. Also for those not satisfied with the commercially available torches, the same publication describes (with drawings) a high output/narrow beam cave diving light. Examples of equipment can usually be seen at any testing venue or General Meeting.

On all Category 1, 2 and 3 dives, a dependable buddy is required who is also qualified to dive. Note that for most of the tests it is a distinct advantage to be accompanied by your buddy.

Adequate air is to be carried on all dives.

The maximum depth to be dived is 35 metres.

V Obtaining Permission to Dive

The issue of a C.D.A.A. certificate does not imply the holder of the certificate has automatic access to sinkholes and caves.

The Association has full support of Government Departments, and most property owners recognise the C.D.A.A. certificate as the only one by which permission will be given to dive. However, in the case of private property, it is at the discretion of the property owner as to whether permission will be granted, irrespective of whether a C.D.A.A. certificate is held or not.

(a) Private Property

As most of the caves and sinkholes in the Mount Gambier area are on prime farming land, access to them is limited to the times when the property is not being worked in the vicinity of the hole, and only then if it is convenient for the property owner. It is strongly recommended that the property owner be contacted at least two weeks prior to the intended dive, requesting permission and stating the desired time and date of access and also the size and qualifications of the diving party.

A STAMPED SELF ADDRESSED ENVELOPE SHOULD BE ENCLOSED FOR REPLY.

If the reply is favourable then it is recommended that the property owner be phoned prior to the dive, confirming permission and seeking any information such as access for vehicles and precautions with fences, gates and stock.

At all times your current C.D.A.A. card must be carried to enable verification of claims made with respect to qualification. It is most unlikely that access to any hole on private property will be gained unless you can present your card to the landowner.

While on the property it is essential that:

(1) The property owner's instructions are carried out to the letter, i.e., don't go diving in other holes on the property for which you did not receive permission to enter.
(2) Cars remain on established tracks at all times.
(3) Litter is collected and brought out.
(4) All gates which have been opened are closed immediately the party passes through.
(5) Due regard given to any fire hazard which may exist (especially during the summer months).
(6) Disturbance to stock must be minimised.

Having completed the dive, inform the property owner of the safe withdrawal of the diving party and thank him for allowing access.

(b) Piccaninnie Ponds

Piccaninnie Ponds is controlled by the South Australian "National Parks and Wildlife Service" and a diving permit will be issued (on a yearly basis - June to June) to those C.D.A.A. members who possess a current Category 2 card.

When your Category 2 qualification is issued or renewed by the C.D.A.A., the records officer in your state will also make out a card recording your name and address. Simply mail this to:

The Ranger,
National Parks Office,
P.O. Box 1341,
MT. GAMBIER, S.A. 5290

who will issue you with a Pics Permit. Send it at least two weeks in advance so everyone (including Australia Post) can have adequate time to deal with things.

You are requested not to go to the Ranger's residence, i.e., if you must see the Ranger he is available between office hours at the National Parks Office in Helen Street. There is another office at Dingley Dell which is open and able to issue permits on weekends. Wherever possible, however, you are requested to use the postal system for Permit issue.

(c) The Pines and Hell Hole

These holes are on land controlled by the Department of Woods and Forests (South Aust.). Diving permits giving right of access will be issued to C.D.A.A. members possessing a current Category 3 card ("The Pines") or a current Category 2 card ("Hell Hole").

Permits are issued to cover a limited time of access only, and then only when there are no fire bans in operation - bear in mind that these two holes are situated in pine forests which are extreme fire hazards

Application for entry permits for Hell Hole is made at the Myora Forestry Headquarters whilst permits for The Pines are obtained from the Tantanoola Forestry Headquarters.

VI Emergency Procedure

Memorandum issued by the Department of Anaesthesia and Intensive Care - Mount Gambier Hospital.

The emergency Management of Cave Diving Mishaps (Bends, Barotrauma) in the Mount Gambier Area.

1. At the scene of the mishap:

   1.1 The patient on being brought to the surface is given standard emergency treatment for bends (100% oxygen to breathe): coma position: artificial ventilation if necessary.

   1.2 Evacuate the patient without delay to Mount Gambier Hospital, in the company of a diver colleague who knows the history of the mishap.

   1.3 Meantime, other members of the diving party alert Mt. Gambier Hospital (24 2211 or after hours 25 2213). The Royal Adelaide Hospital ("Urgent Line" 223 2855: ask for Intensive Care Unit) should be alerted in the situations where barotrauma or bends have occurred, which might necessitate hyperbaric compression at Royal Adelaide Hospital.

2. At Mount Gambier Hospital:

   2.1 Medical Staff continue management.

   2.2. Medical Staff confer with Royal Adelaide Hospital Intensive Care Unit re question of air or road evacuation.
   N.B. Flight preparation (Adelaide) 50 minutes
   Flying time (1 way) 80 minutes

3. If Air Evacuation is Used:

   The lowest altitude compatible with safety should be used: the patient should breathe 100% oxygen.

4. At the Royal Adelaide Hospital: existing decompression facilities will be used, with the contingency of integration with R.A.N. equipment they should be adequate.

5. Divers are encouraged to report all mishaps to Dr. D. Walker, P.O. Box 120, Narrabeen, N.S.W. 2101, and the CDAA.

6. H.M.A.S. Penguin N.S.W.: should be notified in the case of decompression sickness, and their advice sought with regards appropriate treatment. Tel (02) 960 0321 (24hr Hotline) and ask for the Diving Medical Section.

APPENDIX 1

Addresses for Holes on Private Property

(1A) Mr. Trevor Telford,

MOUNT SCHANK, S.A. 5291
Tel. 38 5319 (Mt. Schank)

(1B) Mr. R. Watson,
P.O. Box 12,
MOUNT GAMBIER, S.A. 5290
Tel. 26 6215 (Moorak)

(1C) Mr. Don Telford,
P.O. Box 1553,
MOUNT GAMBIER, S.A. 5290
Tel. 38 4075

(1D) Mr. P.F. Norman,
Private Bag 67,
MOUNT GAMBIER, S.A. 5290
Tel. 38 5287 (Mt. Schank)

(1E) Mr. Thomas Earl,
Post Office,
ALLENDALE EAST, S.A. 5291
Tel. 38 5227

(1F) Mr. Max Heininger,
P.O. Box 942,
MOUNT GAMBIER, S.A. 5290
Tel. 26 8277

(1G) Mr. B.V. Ashby,
"Cave View"
ALLENDALE EAST, S.A. 5291
Tel. 36 7256 (Allendale East)

(This Hole is not open to divers)

National Parks and Wildlife Service

(3) The Ranger,
National Parks and Wildlife Service,
S.G.I.C. Building,
Helen Street,
MOUNT GAMBIER, S.A. 5290

The postal address is:

(3) The Ranger,
National Parks and Wildlife Service,
P.O. Box 1341,
MOUNT GAMBIER, S.A. 5290
Tel.

Department of Woods and Forests

(4A) The Forester,
Myora Forest Reserve,
MOUNT GAMBIER, S.A. 5290
Tel. 25 5622

(4B) The Forester,
Tantanoola Forest Reserve,
TANTANOOLA, S.A. 5280
Tel. 34 4098

Air Refill Stations

B.A.J. & U.K. Vawser,
Allendale East General Store,
ALLENDALE EAST, S.A. 5291
Tel. 38 7274

Police

Chief Inspector
Police Station,
Bay Road,
MOUNT GAMBIER, S.A. 5290
Tel. 25 3255

Mount Gambier Hospital

Lake Terrace West
MOUNT GAMBIER, S.A. 5290
Tel. 25 2211 (087)
25 2213 (After Hours)