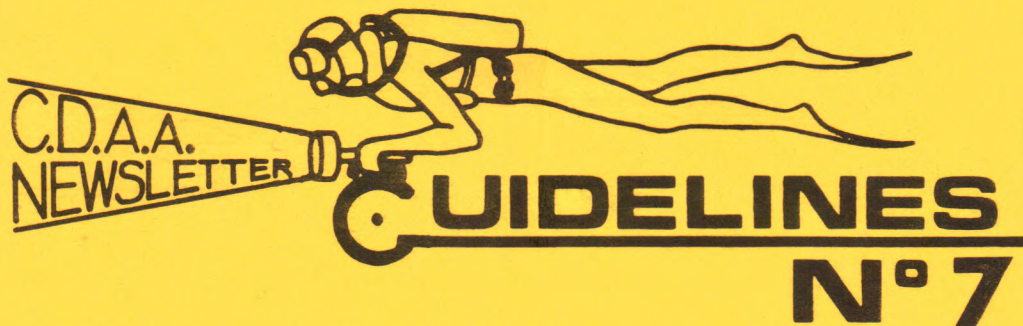


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CAVE DIVERS ASSOCIATION OF AUSTRALIA

(Incorporated in South Australia)

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GUIDELINES

NEWSLETTER OF THE
CAVE DIVERS ASSOCIATION OF AUSTRALIA.

No. 7, May 1981.

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Contributors: Robin Garrad, Ron Allum &
Brian Wagstaff.

EDITORIAL



Seven years ago the C.D.A.A. officially came into existence in response to public (and Government) alarm over a number of headline-grabbing sinkhole diving tragedies. The loss of seven (7) divers within 8 months was an unnerving public experience and the effects are still felt in various places and in people's minds even now. But the C.D.A.A. had its own share of turmoil as well - which was to be expected. Many divers resented the idea of others not only regulating their access to Mt Gambier holes but also 'having the nerve' to train and test the diving community in general before allowing permission to dive. This caused uproar and squabbling for quite a number of years before the heat died down, but it is to everybody's credit that the C.D.A.A. managed to hang on and become the authoritative body in its field that it is today.

This is just the point - in the tricky world of diving politics, the C.D.A.A. has attempted at all times to retain its independence as a separate organisation, concentrating on its specific role of cave diver training and general public relations with government and landowners on behalf of the diving world. Things were quite shaky earlier, and another untimely fatality of the Death Cave or Shaft types may well have destroyed the Association as well, at that time.

But in later years our position has strengthened measurably. The degree of organisation, size of membership and sheer ability of the member divers creates what C.D.A.A. committees have been striving after for a long time - a solid reputation as an expert organisation, free from political bickering and prepared to maintain standards. This state of affairs is a real indication that the C.D.A.A. is succeeding in its main aim of alleviating public fear about sinkhole diving - all the more so, considering that the public is still distinctly lacking in understanding such an unusual sport as ours.

This discussion leads to further points. With the overall ability of cave divers increasing (and also their confidence) the Association is aware that divers are exceeding the recommended safe depth limit of 36 metres in several of the larger sinkholes. The C.D.A.A. cannot condone this as a point of principle and does not intend to amend the depth limit recommended, because it must and will maintain its standards and public image along the lines already explained. In short, if you exceed the set depth and get into trouble, the C.D.A.A. will not accept any responsibility in the matter.

But it is time to remind divers that Narcosis killed 7 divers only a few years ago. These occurred at a time when deep diving was the IN thing, as many of the longer-running C.D.A.A. members will recall, and the real wonder is that a considerably greater number of daring cave divers didn't join the ranks of the statistics and Coroner's reports.

Recently there have been disturbing signs that deep diving is being more commonly attempted than during the previous few years (no doubt directly proportional to the time elapsed since the last death in 1974). Many factors contribute to this trend - familiarity with sinkholes, better equipment, better training and the wider use of the 'more tolerant' US Navy Tables for repetitive dives. But narcosis will not go away - it will remain the real nemesis of sinkhole divers unless strictly guarded against by each and every individual.

* * * * *

On a less serious note, you are here presented with a fairly fat 'Guidelines', and not so long after the last one! This is partly due to the overall increase in interest in the sport, and to the need for more information of a specific nature - for charging batteries, decompression diving, etc.. As mentioned elsewhere in this issue, 'Guidelines' 8 will continue this trend and is already partly prepared.

Any comments or articles would be welcome.

Ian Lewis, Editor.

FROM YOUR RECORDS OFFICER

1. Members who have an N.Q.S. (National Qualification System) 'Record of Diving Qualifications' Log Book can forward it to us, together with your C.D.A.A. card to have your Category registered in the Log Book.
2. If your membership lapses for more than 12 months, we will not recognise your past Category rating. It is then necessary to rejoin the Association, including passing the Category tests again. Check the front cover of this 'Guidelines'; if bearing an UNFINANCIAL stamp, be warned, 30th June is close.
3. We can only reach you if we know your correct address. If you know of other cave divers who have not received their 'Guidelines', suggest that they forward their correct address to us.

CATEGORY 3 DATES

To avoid all possible confusion, the Cat. 3 test dates are:

September 19th and 20th, 1981

March 27th and 28th, 1982

Please remember these dates. The venue is Piccaninnie Ponds, starting at 9.00 am (S.A. time) on the Saturday.

If you are considering applying for Category 3, please contact the Testing Officer in your state at the relevant C.D.A.A. box number (see front cover of 'Guidelines').

SEALED NICKEL-CADMIUM RECHARGABLE BATTERIES

By Robin Garrad

Does your diving light

- usually have flat batteries, or
- use expensive alkaline batteries?

Rechargeable nickel-cadmium batteries offer a solution to both of the above problems.

Should demand from the membership be high enough, the C.D.A.A. is considering a bulk purchase of 'D' size nickel-cadmium batteries. If an order of 100 cells or more can be obtained, considerable savings can be made (see page 6).

These YUASA nickel-cadmium batteries are of 3500 mAh capacity, and are generally suitable replacements in lights which require:

- 'D' size carbon-zinc or alkaline cells eg. backup torches such as Aquaflash etc..
- 6V rectangular lantern batteries used in many sealed beam lights (an insert is available from most electronics shops which holds 4 'D' size Ni-Cd batteries and provides terminals to replace the single 6V lantern battery)

DISCHARGE TIME

The 3500 mAh cell will last for approximately 7.5hrs at 0.5A (4.8V, 0.5A globe in backup torches) or approx. 3.0 hours at 1.25 A (4.75V, 1.25A sealed beam eg. GE 4547)

DISCHARGE CHARACTERISTICS

During discharge the average voltage of a sealed Ni-Cd is approximately 1.2V per cell. Note that when the batteries are fully charged, voltages of 1.45V / cell are typical, hence the requirement for globes of slightly higher voltage ratings than are used with the carbon-zinc or alkaline primary batteries. (For example, in a 3 cell Aquaflash torch, replace the 3.6V globe with a 4.8V, 0.5A globe). At normal discharge rates the voltage output remains virtually constant until the cell approaches complete discharge.

CHARGING

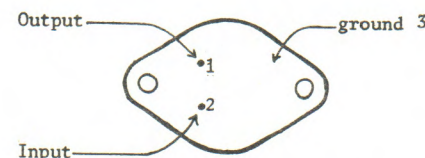
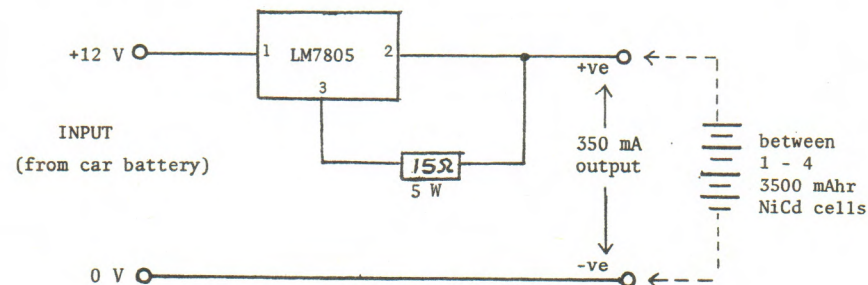
The basic requirement for a battery charger is a source of direct current having a voltage higher than that of the fully charged battery. The positive terminal of the charging source is connected to the positive terminal of the battery so the charging current flows through the battery in the direction opposite to that of the discharge current.

Charging is generally carried out at the ten hour rate ($C_5/10$). To calculate this rate, take the nominal capacity (C_5) and divide by 10.

For example for the 3500 mAh cells

$$\text{Charge rate} = \frac{C_5}{10} = \frac{3500}{10} = 350 \text{ mA}$$

Below is a suitable circuit for charging between 1 and 4 of the 3500 mAh 'D' cells from a car 12V battery - ie. will plug into cigarette lighter.



BOTTOM VIEW LM7805

NOTES

- the LM7805 voltage regulator dissipates some power (3 - 5W); thus mount on a small heatsink
- make sure the 15Ω resistor is of 3 - 5W capability
- other size NiCds can be charged by altering the charging current via the 15Ω resistor:

For a given charge rate ($C_5/10$) the resistor value is calculated by

$$R = \frac{5}{\text{charge rate (in amps)}}$$

For example, for 450 mAh 'AA' size NiCd cells

$$\text{charge rate} = \frac{C_5}{10} = \frac{450}{10} = 45 \text{ mA}$$

$$\text{therefore } R = \frac{5}{.045} = 110\Omega$$

These resistors could be selected via a suitable switch to provide a variety of charge rates if needed.

- Due to the constant voltage characteristic of NiCd cells there is no simple method of determining the state of charge. Thus where the state of charge is unknown, a twelve hour charge can be safely given at the ten hour rate. For a fully discharged cell, a fourteen hour charge is optimal. To maximise the life of the cells (should be many hundreds of cycles) stick to the above charging times.

BULK ORDERING OF BATTERIES

In conjunction with the preceding article and with the second instalment covering Lead-Acid rechargable batteries (to be printed in the next issue of Guidelines), the C.D.A.A. is offering to bulk purchase various types of batteries and provide them at cost price to all members.

There are two main types available; NiCads suitable for Aquaflash and Spirotechnique stylebackup lights, and Lead-Acid for larger light sources, such as the type described in Appendix A of the book 'Cave Diving in Australia', by I.D. Lewis and P.M. Stace.

Details of batteries and their prices are as follows. Final prices will depend upon the number of orders received. (At this point we are only interested in an indication of the members who would be interested in buying batteries.)

<u>NICADS</u>			
		<u>QUANTITY</u>	<u>COST PER CELL</u>
Size:	standard D-cell, 3 per torch. 3cm diam x 5cm.	1 - 24	\$ 7.49
Rating:	4 Amp-hour	25 - 99	\$ 6.24
Voltage:	1.25 volts	100 - 249	\$ 5.38
Charging:	see previous article		
Globes:	4.8 volts (not 3.6v as these will blow easily when the NiCads are fully charged)		
Weight:	Approx. 3 times normal dry cell (155 gms)		
<hr/>			
<u>LEAD - ACID</u>			
		<u>QUANTITY</u>	<u>COST PER BATTERY</u>
Size:	15cm x 10cm x 5cm these can be doubled up to give longer duration.	1 - 3 4 - 9	\$18.06 \$16.03
Rating:	8 Amp-hour	10 - 49	\$15.03
Voltage:	6 volts	50 - 99	\$12.04
Charging:	see next issue of Guidelines		
Terminals:	crimped bayonet type		
Globes:	any 6 volt sealed beam. eg. GE 4515 6V/30W or Hella 1091 6V/30W. Will last approx. 60 mins. on one 8 Amp-hour 6V battery.		
Weight:	Approx. 2 kgs. each (1.6 kgs)		
<u>NOTE:</u>	Two x 8 Amp-hour batteries joined in series can be used to power a 100W 12 V light. This would provide light for approx. 30 - 40 mins..		

BATTERY ORDER FORM

Please indicate on the attached form the quantity of NiCad batteries you would be interested in purchasing. These batteries are of immediate use as they do not require construction of a special torch, but do require a charger of some kind (see page 4). If you wish to indicate your interest in Lead-Acid batteries also, please indicate the number in the box; however we will have a further form in Guidelines 8.

Obviously the more requests received, the cheaper the batteries will be (see pge.6). I will organise orders fairly soon, so I request that NiCad orders to be forwarded to me by 30th June. Lead-Acids will take longer to arrange.

Although this is basically a South Australian order, Victorian members can also take part. To minimise distribution costs and problems, however, I will probably arrange 2 distribution points; one in Adelaide and the other in Melbourne, from which orders can be collected (possibly at State meetings).

Please send all replies to the C.D.A.A.'s South Australian address; not to Melbourne.

Ian Lewis, ph. 267 5917 (hm)

ORDER FORM

NAME.....

ADDRESS.....

.....

PHONE NO.....

I am interested in purchasing the following quantity of batteries:

NICAD D-CELLS

LEAD-ACID

Batteries

DIVE 81

The C.D.A.A. will be strongly represented at the DIVE 81 Seminar to be held in Adelaide on the 27th June, and organised by the Scuba Divers Association of S.A. Inc.. A stand will be operating throughout the day in a prominent position. If you want to see a real live Committee member, this will be your chance. As the accompanying pamphlet reveals (S.A. only) Ian Lewis will be one of the keynote speakers. This talk will not be a re-hash of standard cave-diving talks (ie. on his book) but will cover cave diving activities all over the world and some of the dramatically different types of caving areas where cave diving is undertaken abroad, as well as around Australia.

The Association would be glad of some assistance in setting up the stand on Saturday morning, and would like to see a large number of members attending during the day.

See you there?

PIC'S PERMITS FOR JUNE 1981 - JUNE 1982

If you are financial to 30th June 1982 and at least a Category 2 member, YOU WILL FIND ENCLOSED WITH THIS 'GUIDELINES', a MAILING CARD. To obtain your Pic's Permit for 1981 - 1982, send this card to National Parks and Wildlife Service (address on the card) with a self-addressed stamped envelope. If you do not receive a card, your membership may lapse on 30th June 1981 and thus you are not entitled to obtain a Pic's Permit.

MEMBERSHIP RENEWAL

On the other side of this page is a renewal / update form. When renewing your membership, please note any changes of personal information where appropriate - otherwise leave the sections blank.

Note also that a 2 year term of renewal is available at twice the yearly membership fee - this saves you and the Records Officer some extra administrative work.

If you will be unfinancial as of 30th June 1981 (check your card now!!) send

- 1) your card
- 2) \$5 annual subscription (or \$10 biannual subscription)
- 3) this form

to the respective CDAA address. Members in S.A. and N.A. to CDAA, P.O. Box 290, NORTH ADELAIDE 5006. Members in Victoria, N.S.W. and A.C.T. to CDAA, P.O. Box 2161T G.P.O., MELBOURNE 3001.

PLEASE PRINT

CARD UPDATE

MEMBERSHIP NOPRESENT CATEGORY HELD.....
SURNAME.....GIVEN NAMES.....
POSTAL ADDRESS.....POSTCODE.....
TELEPHONE NO: (Home).....(Work).....

RECORDS UPDATE

This form will help keep our Records and your Cards updated. Please notify below any changes required on your card.

NEXT OF KIN (Name).....ADDRESS.....
DOCTOR (Name).....ADDRESS.....
ALLERGIES (especially drugs).....
OCCUPATION.....DATE OF BIRTH.....
HEIGHT (M).....WEIGHT (Kg).....BUILD.....
HAIR COLOUR.....EYE COLOUR.....
VISIBLE FEATURES.....
MARITAL STATUS.....
QUALIFICATIONS AND EXPERIENCE.....

An updated photograph can be placed on your card if enclosed.

Any interested person who would like to receive CDAA literature e.g. Guidelines, Occasional Papers etc., but who does not at this time wish to become a member of the CDAA can do so by forwarding \$5 (or \$10 biannual) to the CDAA.

NON MEMBER MAILING LIST

SURNAME.....GIVEN NAMES.....
POSTAL ADDRESS.....POSTCODE.....

1981 ANNUAL GENERAL MEETING - Reminder

The Annual General Meeting of the C.D.A.A. will be held on Saturday, 19th September, 1981 in the CWA Hall, Lawrence St., Mt Gambier starting at 7.30pm. A Category 3 test will be run on that day at Piccaninnie Ponds (see page 3 for details).

PRE - AGM STATE MEETINGS

Suggestion for consideration.

The location of Mt Gambier for the Annual General Meetings of the C.D.A.A. was originally chosen because it is about halfway between the two major groups of cave divers in Australia, namely Adelaide and Melbourne, and to ensure that neither State was likely to be under-represented. However, in the past, only a small number of cave divers have made the journey to Mt Gambier for this event each year.

In order to obtain the maximum representation of the members of the C.D.A.A. at the Annual General Meetings in the future, I would like to suggest the following procedure:

Two separate meetings, one in Adelaide and the other in Melbourne, could be held a month or two before the AGM (which would be still held in September). At these State meetings, proxy elections could be held allowing each State to select four committee members. At the AGM these nominations could be ratified (unless a serious objection was raised by the members of the other state) and the new year's Committee of eight (8) would take over.

This arrangement would require some constitutional changes but would allow larger meetings and greater representation of members at the voting. The idea requires some thought before it is formally proposed as matters of policy require constant liaison between both State committees, and it would definitely not be in the interest of the Association to divide its policy-making process.

Comments would be welcome.

Ian Lewis,
Vice President.

GUIDELINE PURCHASE

S.A. C.D.A.A. Committee has purchased two 100m reels of guideline suitable for cave reels (3mm braided polyethylene). It will be made available to S.A. members for 15¢/metre. So, if you are considering making a cave reel and want some (cheap, recommended) guideline, contact Robin Garrad, 296 9148 (hm).

IT COULDN'T HAPPEN I ? by Brian Wagstaff

On a recent course of basic scuba instruction conducted in the Mount Gambier area, I utilised Ewens Ponds for some of the dives. During one training session, I encountered the nemesis of all diving Instructors; ear problems in a student.

The student had had problems with ear clearing in the first Pond at Ewens. And after leaving the water, the student complained of a 'fuzziness' and partial deafness in one ear. I asked her to cover her good ear and then listen - poor hearing confirmed her stated symptoms. To my consternation, she then told me that the ear was bleeding also! A classic case of ear barotrauma thought I, feeling very worried indeed.

Wrong! Although you would also be forgiven for thinking so.

On closer examination (of the ear!) I encountered a leech engorged with blood, happily on its way out! No wonder the unfortunate student felt a bit deaf. It seems that the leech crawled inside her hood and latched onto the wall of her outer ear canal, causing the problem.

The moral of the story is to stay off the bottom and in clear water. Incidentally, it was a case for immediate hospitalisation; the bleeding took two days to stop even with packing and treatment.

Post Script

The occurrence of leeches in the ponds and their predations on divers is not unusual. I have also seen one latched onto the inside of a divers' lip!

Treatment is brutal! A lighted cigarette or scrubbing with soap and water is the recommended cure.



"Still, it must have been over quite quickly."

FOR SALE

- 1 SEACOR Nikonos Viewfinder....\$30.
- 1 6V DACOR UL 800 Charger.....\$10 (500 mA)
- 1 6V 600 mA Charger.....\$10

Phone Barry Peart, 264 0124
29 Carol Dr.,
PARA HILLS, S.A.

DECOMPRESSION DIVING,
DECOMPRESSION TABLES AND BENDS

by Robin Garrad

1. LOSS OF SURFACE DIVING:

IMPLICATIONS FOR DECOMPRESSION DIVES.

The C.D.A.A. Categorisation System is largely based on the degree of isolation of the diver from the surface:

- Category 1 : the surface is always directly accessible by vertical ascent
- Category 2 : the surface is sometimes inaccessible by vertical ascent
- Category 3 : the surface is nearly always inaccessible by vertical ascent

In a loss of surface situation, the diver is dependent upon his equipment to an ultimate degree - any equipment malfunction under these conditions is immediately serious and life-threatening.

What implications does this have for decompression dives?

Once into decompression time, a diver is facing a total loss of surface situation. For the remainder of the dive and subsequent decompression stops, the surface is inaccessible - there is no emergency exit from gear failure, running out of air etc.. Note that this applies equally well to Category One holes as Category Three.

Thus when planning a decompression dive at any Category level, one should be planning for a total loss of surface situation. At the equipment level, this should be reflected in the following:

1. Octopus Regulators: ever tried a buddy breathing decompression stop?
2. Shotline: The shotline should be marked at the various stop depths (2" - 3" diameter stainless steel rings make good markers) with sufficient bottom weight to prevent divers lifting the shot and sufficient buoyancy on the top float to prevent them sinking the line.
3. Spare breathing sets: Attached to the shotline at the 30ft. or 9m. point. Remember that until the decompression stops are completed, the surface is inaccessible - running out of air before completing the stops could be catastrophic.
4. Decompression tables: waterproof extracts of the decompression tables must be carried.
5. Cave Reel / Guideline: Essential to lead you back to shotline where decompression will occur and where back-up air supplies are held; tie the reel off to the bottom of the shotline (ie. 30ft. or 9m. depth).

In many Mt Gambier sinkholes, visibility can be extremely poor in the upper 70ft.; you do not want to be swimming around the walls of the hole looking for your shotline and spare air whilst supposedly decompressing.

Decompression should always be carried out next to a shotline with marked decompression depths, with the diver stationary in the water maintaining his chest level with the marked stops. Do not rely on depth gauges for calculating depth at decompression stops.

2. SHORTENED OR OMITTED DECOMPRESSION

Should (despite all your careful planning!) an emergency occur which forces you to surface, thus interrupting planned decompression stops, the USN details a procedure which could be used by free swimming SCUBA divers provided:

- i) the surface interval has not exceeded 5 minutes
- ii) no symptoms of decompression sickness are apparent at the time.

The procedure, with one minute ascent time between stops, is:

- a) Repeat all stops deeper than 40ft
- b) Make a stop at 40ft. for 1/4 of the 10 ft. stop time.
- c) Make a stop at 30 ft. for 1/3 of the 10 ft. stop time.
- d) Make a stop at 20 ft. for 1/2 of the 10 ft. stop time.
- e) Make a stop at 10 ft. for 1½ times the 10 ft. stop time and then surface.

(1),(2).

Having carried out this procedure, the diver should be kept under careful observation and any signs of decompression sickness promptly referred to skilled medical attention.

Should any signs of decompression sickness be apparent at the initial surfacing, do not attempt to carry out any recompression in the water - get the victim to hospital as soon as possible.

References:

- (1) U.S. Navy, March 1970,
U.S. Navy Diving Manual, pge. 164
U.S. Navy Department, Washington D.C.,
(NAVSHIPS 0994-001-9010)
- (2) National Oceanic And Atmospheric Administration, 1975
NOAA Diving Manual, pge. 10-9
U.S. Government Printing Office, Washington D.C..
- (3) Strauss, R.H., 1976,
Diving Medicine, pge. 216,
Grune & Stratton.
- (4) U.S. Navy, March 1970,
U.S. Navy Diving Manual,
Table 1-9, Decompression Procedures,
US Navy Standard Air Decompression Table 1969,
Instructions for Use.
U.S. Navy Department, Washington D.C..
(NAVSHIPS 0994-001-0910)
- (5) Lewis, I.D. & P.M. Stace, 1980.
Cave Diving in Australia.

3. COLD WATER DIVING: IMPLICATIONS FOR DECOMPRESSION

By anyone's standards the water in the Mt Gambier sinkholes is cool - during winter, temperatures of the water can fall to 8° - 10°C, whilst air temperatures can also be correspondingly low.

A wetsuit made of foam neoprene has many advantages, but at increased depths considerable loss of insulation occurs due to the compression of the internal air cells from which the foam is made. The typical ½" neoprene wetsuit decreases in effectiveness by a factor of 4 between the surface and a depth of 165ft. (3). Furthermore, wetsuits allow chilling of the diver after leaving the water - particularly if worn between repeat dives.

All this adds up to the fact that divers at Mt Gambier are often cold upon entering the water, get colder during the dive and probably do not warm up completely between dives.

This means that diving down the Mount (especially during winter) falls under the "cold or arduous" specification alluded to by the United States Navy Decompression Tables - a condition which effectively increases an individual's susceptibility to decompression sickness.

ie. these conditions deviate from the standard conditions for which the Tables are calculated.

Under these conditions the 'Instructions for Use' of the USN Tables require decompression to be calculated for the next 'deeper and longer dive' (4).

For example, on a dive to 130ft for 15 minutes, decompression should be calculated for a 140ft for 20 minutes schedule:

Total decompression time

130ft	15mins.....3min 10sec	(1min @ 10ft + 2min 10sec ascent)
140ft	20mins.....8min 20sec	(6min @ 10ft + 2min 20sec ascent)

Thus for cold water diving, the USN Tables become significantly more conservative (compare the above calculations with the relevant CZ18 figures).

Many divers tend to utilise USN Tables at Mt Gambier due to the "more logical" method of calculating repetitive dives - through the use of the Repetitive Group designation, and Surface Interval Credit Table. It cannot be overemphasised that this procedure entails more risk than the method used by Royal Navy derived tables (CZ18) - especially when third or even fourth repetitive dives are being considered.

Therefore, it makes sense that when using the USN Tables for Mt Gambier diving, (especially when repetitive dives are involved) to apply the double increment (next greatest depth / next longest time) correction factor required in the "Instructions for Use".

4. AVOIDING NARCOSIS

A quick scan through the deaths down the Mount to date (5) reveals that the causes of the accidents fall into two distinct categories:

- a) narcosis at depth
- b) silting in confined passageways

In the larger Category 2 holes (Blacks, 1080 etc.) narcosis at depth is definitely the major hazard - disorientation and subsequent panic are the primary threats to your survival.

To some extent, the severity of narcosis can be controlled by taking two basic precautions:

1) Acclimatise to the sinkhole diving environment

At the beginning of each trip, do a series of preparatory dives to moderate depths in known holes. Spend the first day or so "getting the feel" back.

2) Maintain Orientation

Maintain orientation by always using a guideline and reel when narcosis is likely.

Narcosis is amplified by loss of visual referents - ie. if you are swimming through a large, dark cavern with the walls and floor some distance away, the feeling of narcosis tends to be accentuated. In situations such as this, a guideline can prove to be a very useful and reassuring reference point, and the narcosis will often stabilise once contact has been established with the line.

A useful procedure for the larger Cat 1 and 2 holes where disorientation at depth is a hazard is to have a lead diver carrying the reel, followed by his buddy and then the next pair. Divers carry tether lines, but do not have to clip on unless sudden disorientation occurs,

You will be surprised as to the difference having a reel and guideline makes in relation to knowing where you are in the hole.

* * * * *



CHECKLIST FOR (SUSPECTED) DECOMPRESSION SICKNESS.

(Based on US Navy Diving Manual table)

1. First establish that the diver has been using compressed air in the water and obtain details, if possible of the depth and duration of the dive(s), the onset and progress of the symptoms and any relevant medical history.
2. Ask him how he feels:
 - a) Pain where? how severe? sore to touch or pressure? any bruise marks in the area?
 - b) Mentally clear?
 - c) Weakness, numbness or peculiar sensations anywhere?
 - d) Can he see and hear clearly?
 - e) Can he walk, talk, use his hands normally?
 - f) Any dizziness?
3. Does he look and act normally? Do not meekly accept his statement that he is 'OK'.
 - a) Can he walk normally? any limping or staggering?
 - b) Is his speech clear and sensible?
 - c) Is he clumsy or having difficulty with any act of movement?
 - d) Can he keep his balance when standing with his eyes closed?
4. Does he have normal strength? Check right side with left, your strength and his (hand grip, push and pull with both arms and legs, ability to do deep knee bends, etc.).
5. Are his sensations normal?
 - a) Can he hear clearly?
 - b) Can he see clearly near and distant? normal fields of vision?
 - c) Can he feel pinpricks and light touch normally?
6. Look at his eyes. Check pupil equality, light and accommodation, eye movements.
7. Check tendon reflexes.

Note:

- *Any symptom indicating a possibility of a CNS involvement means that the condition is a *medical emergency*.
- *The most common error in treating decompression sickness is failure to recognise the seriousness of the patient's condition. A complaint of pain may obscure awareness of developing spinal bend symptoms.
- *Symptoms may progress, so observation is required till one is certain that full resolution has occurred.
- *Disappearance of symptoms does not necessarily mean that the injured part has been restored to its former healthy state.
- *100% oxygen is always safe at 1 ATA and often very beneficial
- *Recompression or an aeroplane trip can be inappropriate and even dangerous for some conditions and patients.
- *If possible avoid pain relieving drugs as monitoring of response to treatment, including choice of appropriate therapeutic recompression table, is based on relief of pain (and other) symptoms.

Ref: Douglas Walker, "Scuba Diving Accidents", Patient Management, December 1978, pg.19.