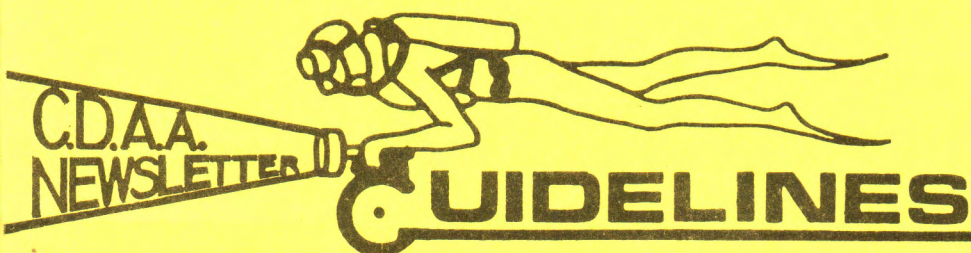


Registered by Australia Post — Publication No SBH1434

CAVE DIVERS ASSOCIATION OF AUSTRALIA

(Incorporated in South Australia)



Nº 24

APRIL/MAY 1986

C.D.A.A.
P.O. Box 2161 T
G.P.O. Melbourne 3001

C.D.A.A.
P.O. Box 290
North Adelaide 5006

DIVERS DIARY

General Interest Meetings

Melbourne: Thursday 22 May 86 7 pm to 11 pm.
EAS Room, North Melbourne Football Club
Bar Facilities available

Adelaide: Saturday 12 Jul 86 7 pm to 12 pm.
Talbot Hotel, 104 Gouger St
Meals and Bar Facilities available

Seminar: Teaching and Training Cave Divers
Sunday 13 Jul 86 10 am.
Adelaide Skin Diving Centre

Special State Meetings

South Australia: Monday 18 Aug 86 7.30 pm
State Administration Centre, Victoria Square

Victoria: Wed 20 Aug 86 7.30 pm
North Melbourne Football Club

Annual General Meeting: Saturday 13 Sep 86 (Mt Gambier)

Piccaninnie Ponds: Closure extended to 31 Jul 86.

Cat 3 Test: Probable date 13 Sep 86.
See CDAA News for more information.

COMMITTEE CONTACTS

Melbourne: Lance Mitchell (03) 407 2176
Cheryl Bass (03) 527 7969

Adelaide: Judy Minervini (08) 278 1335
Colleen Workman (08) 49 7223
Doug McLeod (087) 38 9305

The above numbers are provided should you need to contact the Committee urgently and cannot wait for a postal reply. Please use these numbers thoughtfully and at civilized hours.



GUIDELINES

Newsletter of the Cave Divers' Association of Australia

ISSUE NO. 24--APRIL 1986/MAY 1986

CONTENTS

Editorial

CDAA NEWS

1. Three Sisters Agreement
2. Cat 3 Testing
3. Piccaninnie Ponds
4. Changes in Committee
5. National Testing Officer Position
6. Seminar: Teaching and Training Cave Diving
7. Introduction of Postal Votes for Election of Committee Members in Sep 86
8. Changes to Membership Fees
9. Barnoolut Reminder
10. New Equipment Requirements

REPORTS AND LETTERS

- Address from the National President
- Results of March 86 Special General Meeting
- Consultative Group on Hyperbaric Facilities in South Australia
- Letter from Dave Warnes
- Letter from Immediate Past National Testing Officer
- Rules Regulations and Requirements
- Message from New National Testing Officer
- Englebrechts Warning
- Survey Form
- Membership Renewal Form *****
- Are you financial?
- Advanced Cat 3

ARTICLES

- SA Police Underwater Rescue Squad (by Peter Rogers)
- Why use Bassett Tables (by Dr John Knight)

EQUIPMENT SECTION

- Lead Acid Batteries (by Rino Dell'Antonio)
- The all-PVC Reel (by Peter Fulton)
- Reely (by Dennis Thamm)

ARTICLES

- River Diving - an Unusual Cup-Day Recreation (by NA Jones)

Articles and information may be reproduced without prior permission provided reprints are credited to the Authors and "Guidelines".

Opinions expressed in Articles are those of the individual Authors and not necessarily those of the Cave Divers Association of Australia (Incorporated in South Australia).

SPECIAL GUEST EDITORIAL by Ian Lewis

In any organization, the management is usually handled by a small group of people who can dedicate their time and commit their energies to doing the required work.

Most Associations exist and thrive on the work these people contribute.

In recent months, several resignations have occurred, and as always, other members come forward to fill in the gaps and keep the Association functioning.

The people now forming the Committee intend to build on the foundations built by previous members. The new Committee, in my opinion, are solidly determined to move the CDAA in the right direction. Clearly, the general members at the Special General Meeting were in no mood for any mucking around and in-fighting.

In the coming months before the AGM, the Committee is determined to address those issues expressed at the Special Meeting. It's a lot of work, but the foundations have been laid by others, and I believe the current Committee has what it takes to get on with the job.

Get behind the Committee in all its attempts; I know I sure will!



CDAA NEWS

1. Three Sisters Agreement

An agreement has been reached with the District Council of Millicent to allow the CDAA access to the Three Sisters Cave. The CDAA have agreed to place locks on the entrance and restrict access to cave for the purpose of diving to members of the Association holding an advanced Category 3 classification in groups of two or more.

Other members of the Association or persons specifically approved by the Committee of Management of the Association will be allowed to enter the cave but not to dive.

The Council is indemnified against all actions etc. both by or behalf of members of the Association arising as a result of the use of this cave.

The Association has undertaken to use disciplinary measures if necessary to control the behaviour of all its members when they enter the cave.

The Committee has spent a long time hammering out the fine details of this agreement. Please respect these arrangements. The key to the locks, when they have been fitted, will be available from the Committee to suitably qualified members.

2. Category 3 Test

The Category 3 test has been postponed for a number of reasons including the continued closure of Piccaninnie Ponds and the lack of an alternative acceptable venue. A Category 3 test will be organized as soon as possible, probably in conjunction with the September AGM. Any member interested in taking this test should send their name and address to the NTO, Ian Lewis at P.O. Box 11, BURWOOD, 3125. You will then be notified as soon as a definite date and venue has been arranged.

3. Piccaninnie Ponds Closure

Piccaninnie Ponds will remain closed until 31st July, 1986. The National Parks and Wildlife Services have been closely monitoring the revegetation. There was early revegetation of the Ruppia species (the annual vascular plant) and also of algal growth. Although initially this was promising there has been a recent fall off of algal growth and vegetation is again lifting. Further water sampling has been undertaken no cause has yet been found. Although divers cannot be held responsible for this recent set back it has been decided to keep the Ponds closed until the end of July in the hope that natural cycles will re-establish themselves.

In the meantime, no further scuba or snorkel diving permits will be issued.

4. Changes in the Committee

Peter Ginnane and Peter Horne resigned following the special meeting in March. Their positions have been filled by Colleen Workman and Doug McCloud.

5. National Testing Officer Position
Peter Rogers resigned at the beginning of March this year and his place has been taken by Ian Lewis.
6. Seminar: Teaching and Training Cave Divers by Ian Lewis
Training offices, clubs, instructors and individuals have differing approaches to training and preparing cave divers for their category tests 1, 2, and 3. Over many years of examining and training I have observed these differences and believe we would all benefit by exchanging and updating our ideas. Therefore, I would like to invite ALL interested cave divers to a morning seminar on the practical aspects of training and teaching cave divers, to be held at ASDC at 10.00am on Sunday, 13th July, 1986.

We can discuss equipment, setting up training lines, assessing techniques, useful training tasks, equipment modifications and variations, actually managing the group to minimize cold and maximize skills etc., etc. If you are training any cave divers in a club with your mate there as an instructor, PLEASE COME ALONG!

7. Introduction of Postal Voting for Election of Committee Members in September, 1986
Nominations should either be sent in writing to the local P.O. Box or can be handed in at the Special State Meeting. The closure date for nominations will be the Special State Meeting. There will be no voting at the meeting but a numbered ballot paper will be sent to each member with the name of each candidate on it. Against these names there will be a short policy speech by each nominee. These ballot papers can either be returned by post to the local CDAA Box to arrive not later than the Friday prior to the Mount Gambier AGM or can be handed in at the Mount Gambier AGM.

Constitutionally, each member must vote for 4 people from each State. Voting for a greater or lesser number of candidates will be considered informal and therefore invalid.

8. Changes in Membership Fees
Due to expected increase of membership fees from June, 1987 renewals in June, 1986 will only be accepted for one year.
9. Barnoolut Reminder
Reg Watson still requires written application for permission to dive on his properties two weeks prior to the expected date. Please turn up on time and make sure that a member of your party has dived on his property at least once before.
10. New Equipment Requirements
As of September, 1986 an octopus regulator will become mandatory equipment for Cat. 2 and a dual first stage or a pony bottle will become mandatory for Advanced Cat. 3.

AN ADDRESS FROM THE PRESIDENT

Fellow Members,

You are all aware of the management problems which have led to the resignation of Committee personnel recently. The current Constitution restricts our general state, and the holding of our AGM to the latter part of Jul/Aug/Sep. Hence the vacant positions in the Committee were filled under Section 15 part B of the Constitution.

At this point in time I would like to pass on to you all, my feelings from two important meetings which were held recently.

On 18 Apr 86, at the SGIC building in Mt Gambier: present were representatives from all land owner bodies under whose control the sinkholes lie. Representatives from State Government, Local Government and private land owners, met with members representing the Police Diving Squad, CDAA, South East Scuba Divers and the Cave Exploration Group of South Australia (CEGSA).

The collective body of these representatives have formed a Committee of Review to address "FUTURE DIRECTION OF MANAGEMENT OF FRESH WATER SINKHOLES IN THE SOUTH EAST".

The Committee of Review will be co-ordinated by the Department of Recreation and Sport of South Australia.

One of the many terms of reference of this Committee of Review is to assess the "effectiveness of the CDAA System".

The one outstanding impression which I received from this meeting was the amount of potential guidance this Committee of Review had to offer the CDAA, and you will be hearing more about this in the future.

The second important meeting was a National Committee Meeting held on 19/20 Apr 86 in Melbourne. The National Testing Officer (NTO), Ian Lewis, attended by invitation.

I expressed to the new Executive that nearly all of the issues raised at the 15 Apr 86 Special Meeting had been discussed by the Committee of Review, and enormous importance had been placed on addressing and solving these issues.

We thrashed the bulk of these out in a sitting totalling 18 hours. I must express my thanks to all Committee members for their devotion to the task.

I believe all are keen to see positive reactions from the general membership, and we will be making every effort to get out amongst you, the members, to keep you up to date and to canvass your view points.

On that note, I would draw your attention to the 'Divers Diary' and especially to the general interest meetings to be held in Melbourne and Adelaide. The locations have been picked to allow a more relaxed atmosphere, and I know I speak on behalf of all the Executive in saying: Do not rely on Guidelines as your only source of contact with the Committee; come to the meeting, pick up your pen or telephone, and keep in touch.

A meeting of a similar nature will be arranged in the South East Region (MT Gambier) in conjunction with Doug McCloud.

In all our best interests,

Lance Mitchell
President CDAA

22 Apr 86

RESULTS OF THE 15 MAR 86 SPECIAL MEETING

The following is a report on the Special General Meeting held at Mt Gambier on Saturday 15 March 1986.

Once again there was a lack of a quorum in the number of people actually attending, but the postal votes were considered (by the meeting) to be a 'representation' in terms of the Constitution, and therefore the proposed Constitutional amendments dealt with by postal votes could be tabled and voted on.

Votes from the floor were counted and added to the postal votes, and the following results were recorded:

Motion 1 (Proposed by Peter Guinnane) PASSED
This related to the re-numbering of sections of the Constitution.

Motion 2 (Proposed by Peter Horne) LOST
This related to people getting pecuniary gains not being allowed to serve on the Committee.

Motion 3 (Proposed by Ian Dall) LOST (all sections)
(1) related to delegation and withdrawal of power to a sub-committee.
(2) related to sub-committees being responsible to the Committee.
(3) was about two Examiners, one being independent of training.

Motion 4 (Proposed by Nick Jones) PASSED (both sections)
(1) removed all reference to Examiners from the Constitution.
(2) inserted 'Examiners should consist of a group of people appointed and performing their duties in accordance with the Examiners Manual'.

On completion of voting, the floor was opened for general discussion. Points of interest which were raised on the night, coupled with discussions at the National Committee Meeting held the following Sunday morning, gave rise to the following issues which the new National Committee must address:

1. Voting conditions:

- Potential for postal votes.
- Election of Office Bearers at the AGM.
- Election of replacements or substitutes on the Committee.

RESULTS OF THE 15 MAR 86 SPECIAL MEETING (continued)

2. Accountability and conduct:

- Members' actions in general.
- Committee actions (specific):
 - Protocol.
 - Land owner relations and negotiations.
 - Land owner rights, both legal and moral.
 - Internal management.
 - National Committee instead of State Committees.
 - Term of office.
- Examiners' actions (specific):
 - Relationship to Committee Members.
 - Inactivity.
 - Examiner pre-requisites.
 - Examiners' Manual
 - Who is best qualified to decide on Examination issues.

3. Corporate Affairs Registration Problem:

- David Bird (solicitor), a general member, through dealings with the South Australian Corporate Affairs, stated concern that no changes to our Constitution had been registered in recent times.
- Volker Zabo, our Public Officer, produced documentation to show that the amendments to the Constitution had been presented to Corporate Affairs.
- David and Volker are working together to see where Corporate Affairs went wrong.

4. New Constitution:

- David Bird offered his services to prepare a re-draft of the Constitution. A good response to this was received from the floor.
- Members will be kept informed on the progress of this.

5. Rules and Regulations of the Association:

- To be addressed properly so that all members will know what is expected of them.
- To show all land owners (both private and government) that the CDAA is now accepting its responsibilities seriously.

6. Temporary Permit Arrangements:

- Visiting overseas divers.
- Interstate divers who may be disadvantaged by isolated location.
- Specific circumstances (eg. visiting film crews) where good PR is necessary.

CONSULTATIVE GROUP ON HYPERBARIC FACILITIES IN SOUTH AUSTRALIA

On Wednesday, 5th February 1986, I attended the South Australian Government Consultative Group on Hyperbaric Facilities and Dysbaric Disease in South Australia meeting in the Health Commission building, Adelaide, to discuss the actions of the past 18 months or so since the first meeting.

During the all-day meeting and discussions, I learnt several very interesting and relevant facts of importance to the CDAA, both here and in Victoria ...

1. The Royal Adelaide Hospital now has a modern, 6-person recompression chamber and lock-on Duocom (fly-out chamber) and a full-time member of staff on permanent standby.
2. The R.A.H. intends to obtain an even larger, more suitable chamber in the near future, being one of the best, or perhaps THE best, in the Southern Hemisphere.
3. Surgeon Lieutenant Des Gorman has formally resigned (C.O.B. 1/5/86) from the Royal Australian Navy and will be moving to Adelaide full-time, to be employed by the National Safety Council and seconded out to the R.A.H. to continue his studies into hyperbaric medicine.
4. D.E.S., the Diver Emergency Service, will also be shifting to Adelaide with Des Gorman (who stresses that D.E.S. was an innovation of the Australian Underwater Federation and not his own ego!) and diving emergencies will be referred to him.
5. D.E.S. and the Morwell recompression facility will be working together closely, and diving emergencies from Mount Gambier, whether picked up by the emergency callout unit at the R.A.H., or a portable chamber etc. from Morwell, will all be taken directly from Mount Gambier to Adelaide, irrespective of the victim's home State, as Adelaide is the nearest facility to Mount Gambier.
6. Port Lincoln abalone divers will have the immediate use of a portable Duocom and it is envisaged that should this be used sufficiently, a complete recompression facility will be established at the Pt. Lincoln Hospital. This naturally means that recompression facilities are now available on the West Coast of South Australia.
7. Cave divers in Mount Gambier should contact D.E.S. (who will contact the Mt. Gambier Hospital), and then go to the hospital and state that D.E.S. are aware of this case. An inter-hospital transfer will then be possible and victims can meanwhile obtain other medical assistance as required.

The Committee envisaged the need for a further review meeting in perhaps 1-2 months time

Peter Horne
NATIONAL SECRETARY.

The Secretary,
Cave Divers Association of Australia,
G.P.O. Box
MELBOURNE VIC. 3001

Dear Peter,

I feel there is a need to upgrade the standard of Category 1 and 2 diving, by the introduction of Octopus regulators.

I would like to see Octopus regulators become mandatory equipment in testing, and also for diving, in sinkholes. Am not suggesting buddy-breathing be eliminated from testing procedure as fundamental to providing a stress factor during test.

The reasons for considering Octopus regulators as mandatory equipment in Category 1, are due to the following factors and conditions that apply to Category 1 divers.

Often after an examiner has done one or two trips to Mt. Gambier with the recently categorised diver, they are left to go with fellow Category 1 divers. More often than not these fellow divers are little more advanced than themselves, or at the best Category 2 standard. It is not often one finds Category 3 divers in Category 1 sinkholes.

The problem as I see it is that Category 1 divers are disadvantaged by the lack of knowledge and type of conditions under which they are diving. An inexperienced diver could become over-excited and run out of air, or come very close to it. To buddy-breathe out of a deep hole like Baby Blue (a very popular Category 1 sinkhole), is an experience anyone could do without.

If conscientious divers, and well trained, they would be using a reel to familiarise themselves with each sinkhole, also as a guide back to spare tank on shot line. Consider the problems that could evolve where a reel is being used and the divers find it necessary to buddy-breathe back to the surface. An Octopus regulator would simplify this whole exercise.

The reasons for considering Octopus regulators as mandatory equipment in Category 2, are of a different nature. Their introduction to Category 2 diving is basically the same as Category 1. But you will find any Category 2 divers, who are keen enough to go to Mt. Gambier approx. 12 times a year will become quite proficient in that Category, in a very short time. Then it is only natural to assume they will increase their expertise by checking out the holes in back of Blacks, the caves in 1080, or diving deeper into One Tree and Elap Elap.

More often than not experience shows that these divers given the correct training will use reels attached to shot lines and spare tanks. They will often on their own initiative use Octopus regulators. But is it good enough to give these inexperienced divers the decision to make for themselves.

Why present them with a procedure (buddy-breathing), that under certain conditions will prove far more hazardous than life-saving. When for the cost of an additional 2nd stage and hose, a diver can have security, and be prepared for any eventuality.

LETTERS • CDAA LETTERS • CDAA LETTERS

My contention is that Octopus regulators are an essential part of sinkhole and cave diving equipment. Not just for Category 3 cave divers, or the enthusiastic Category 2 diver, but also for those who do not visit sinkholes very frequently. A large proportion of divers that visit the Mt. Gambier area, would do so perhaps once or twice a year with a club, and the odd trip with friends. These people are as much at risk, if not more so than the recently Categorised 1 and 2 divers.

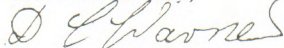
It should be emphasised that when fitting an Octopus regulator, the hose should be longer than the standard Octopus regulator hose, this is essential for ease of use.

In my opinion the divers on the C.D.A.A. Examiners Committee, are the top divers of each state. Therefore I am sure if Octopus regulators are presented as mandatory equipment for divers anticipating testing to Category 1 and 2, the complaints will be limited, as reason prevails.

Safety for members of the C.D.A.A., must be the foremost objective. The Examiners Committee is responsible for this factor as much as practicable. It is in the nature of such committees that it is not possible to make decisions and be popular all of the time, especially when dealing with a "high-risk" sport.

Would like this letter included in the next Guidelines, also intend moving a motion to this effect at the next General Meeting.

Yours faithfully,



D.C. WARNES

Thanks for your input Dave, I think we all agree with you and are about to act.

Ed.

Letter from Immediate Past N.T.O.

When an office bearer in an organisation resigns mid-term, it is reasonable for an explanation to be offered. I do not particularly want to cover a lot of water that is already under the bridge, preferring instead to look at some of the positive points of the past few years and some of the tasks that lie ahead.

During the last two and a half years 54 people have presented for Category 3 examinations with 42 being successful. Most of those who failed have subsequently re-tested and passed, proving that there is no substitute for training and experience when it comes to cave diving. Interestingly, a sizeable percentage of the failures were due to a lack of theory knowledge; uncovered by a new exam paper. While many experienced divers believe theory knowledge is an unnecessary burden, there will always be minimum essential levels in such areas as decompression, resuscitation, cave diving techniques and land owner relationships. An ignorant diver is not a safe diver.

When first elected as N.T.O. in 1983 I undertook to try to standardise examination guidelines between Victoria and South Australia. In a practical sense this was achieved, with major input from examiners in both States, followed by majority votes from both examiner groups in favour of the proposed guidelines. Unfortunately, this work has now foundered.

I have chosen to resign for two fundamental reasons. Firstly, because a number of committee members felt they could not endorse the majority view of the examiners to the general membership of the CDAA. When, as the examiners representative, I found I could not assist in overcoming this problem, I felt that I should resign as N.T.O. and let someone else take over. Secondly, I strongly believe that any examiner who categorizes a cave diver has a professional responsibility to ensure that that diver is up to standard. As an examiner I am not prepared to endorse a standard that can be changed by people who are not recognised professional experts in the field. In other words, I do not think that the general membership of the CDAA, or the committee, should be able to change examining standards without the agreement of the majority of the examiners. This may appear undemocratic at first sight, but in this case I believe safety should take precedence over democracy. As a result of opposition to this latter view of mine, I have also stepped down as an examiner.

Finally, I would like to suggest some future areas in which I believe Australian cave diving should move. The increasing number of overseas trips by Australian cave divers, and the return visits by foreign divers, has resulted in a major input of new ideas and techniques. Our Mt. Gambier diving is primarily clear, still and deep sink hole diving. Very few opportunities exist for major horizontal penetration. One example is Englebrechts, which is currently rated as "advanced Category 3". Many experienced divers believe that two independent air supplies are mandatory for such a dive. I would support this view and suggest that several other Category 3 caves should fall into such a grouping. I would also endorse the view held by several senior cave divers that an octopus regulator become mandatory for Cat. 1 and 2. This was recommended several years ago at an examiner meeting and rejected on the grounds of expense. Again, safety should not be compromised by expense.

Mt. Gambier cave divers are now regularly moving further afield than the South East, with keen interest being shown in the Nullabor and groups also diving caves in Tasmania and NSW. Similarly, many cave divers are heading overseas, with Florida and the Bahamas as prime targets. It is essential that the CDAA provide standards and diver education for people wishing to visit these areas. As a national body the CDAA has an obligation to look further afield than Mt. Gambier; work on this should commence before an unnecessary accident removes the opportunity for future generations to dive any of these areas.

Peter Rogers

Since this letter was written, a number of major changes have taken place within the CDAA.

Constitutional changes voted in at March 15th, SGM have included the examiner standards in the CDAA rules and regulations. This action has been endorsed by the South East Management Committee and supported by the CDAA Committee.

Ed.

RULES REGULATIONS AND REQUIREMENTSAdditional Equipment Required for Adv Cat 3 Diving

Because of the special nature and difficulty of Advanced Cat 3 dives, the use of twin independent first stages is mandatory. This means that as a minimum, a Y-Valve would be required. Twin cylinders, either independent or with a manifold would be even better. A pony cylinder is acceptable. This will become mandatory by Sep 86.

Additional Rule for Advanced Cat 3 Diving

A responsible adult will be appointed to act as a surface member who will hold the key at the dive site until all divers in the team return safely.

Additional Equipment Required for Cat 2 Diving

An octopus regulator will be mandatory equipment for Cat 2 dives. This will apply from Sep 86.

First Time in a Hole Rule

Any person diving in a sinkhole for the first time shall dive with a person who has dived in that sinkhole before.

ATTENTION ATTENTION ATTENTION

The Committee has received a letter from Graham Pfitzner, Town Clerk, City of Mount Gambier, stating that he has reason to believe that in the presence of properly qualified cave divers, divers without CDAA certification are gaining entry to Englebrechts Cave.

The warning was brief but direct: should this be proven to continue, then the access agreement may be in jeopardy.

A NOTE FROM THE NEW NTO

I feel my duties as NTO are:

- To act as a spokesman for all CDAA Examiners.
- To convene Examiner Meetings, as required, in both states.
- To represent the Examiner body at CDAA meetings, when invited.
- To make sure that information flows freely between the Committee and the Examiners.
- To oversee Cat standards and testing, and organize Cat 3 tests.

Ian Lewis
National Testing Officer

SURVEY FORMPICCANINNIE PONDS SURVEY

Number of dives undertaken in Piccaninnie Ponds since June 1985:

1985: JUL AUG SEP OCT NOV

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

OTHER SINKHOLE DIVING EXPERIENCE

Please list total number of dives since June 1985 to present:

EWENS PONDS: _____	GOULDENS: _____	TWO SISTERS: _____
BABY BLUE: _____	HORSE AND CART: _____	TEA TREE: _____
TEN-EIGHTY: _____	BLACK HOLE: _____	ONE TREE: _____
ELA ELAP: _____	SWIM THROUGH: _____	HELLS HOLE: _____
THE PINES: _____	FOSSIL CAVE: _____	ALLENDALE: _____
BULLOCKS: _____	ENGLEBRECHTS: _____	MUD HOLE (L97): _____
MAX'S HOLE: _____		

What's this survey all about?

There is increasing concern about the impact of divers on the sinkholes of the South East.

In some sinkholes the environment is now thought to be rather delicate. This survey is being conducted in order to try to accurately establish in what way divers may be affecting these holes.

I strongly advise you to fill the survey in as accurately as possible. This information could well help to keep the holes OPEN!

As an added incentive, when Piccaninnie Ponds reopens, NPWS will not issue permits unless the information is supplied.

Piccaninnie Ponds Permits

No further scuba or snorkelling permits will be issued until the Ponds are re-opened for diving. This is expected to be 1 Aug 86. You still have to fill the Survey Form in!

M E M B E R S H I P R E N E W A L F O R M 1 9 8 6

To renew your membership, fill out the SURVEY FORM and the RENEWAL FORM and send them with your CARD and \$10 (No renewing for two years), to:

(SA WA NT Members)

(VIC QLD NSW ACT TAS Members)

CDAA Records Officer
PO BOX 290
NORTH ADELAIDE SA 5006

CDAA Records Officer
GPO BOX 2161 T
MELBOURNE VIC 3001

MEMBERSHIP NUMBER:.....

SURNAME:..... OTHER NAMES:.....

POSTAL ADDRESS:..... CDAA CATEGORY (tick)

..... CAT 1 CAT 2 CAT 3 ADV CAT 3
..... ☐ ☐ ☐ ☐

POSTCODE:..... PHONE: (....).....(home)
.....(work)

From here on it's optional. Please don't fill in details which haven't changed.

OCCUPATION:..... DATE OF BIRTH:.....

DOCTOR :

(Name and Address)

NEXT OF KIN :

(Name and Address)

HEIGHT(metres): WEIGHT (kg): BUILD:.....

HAIR COLOUR: EYE COLOUR:

VISIBLE FEATURES:

QUALIFICATIONS AND EXPERIENCE:

An updated photo will also be put on your card if enclosed.

ADVANCED CATEGORY 3

You need 'ADVANCED' stamped on your card next to the Cat 3 stamp if you want to get the keys to Englebrechts and the Three Sisters.

If you already have Advanced Cat 3 status, then just tick the box marked 'ADV CAT 3' on the renewal form to let us know.

If you are eligible for Advanced Cat 3 status, but haven't already applied, then now is the time to do so. Send in your list of 20 Cat 3 dives as per Guidelines No 16 page 5.

ARE YOU FINANCIAL?CHECK YOUR CARD NOW!

If it has a 1986 sticker on it, then your membership will expire on 30 Jun 86. All you have to do is send in the Membership Renewal Form (including the completed Survey Form), add a cheque for \$10 made payable to the CDAA, a stamped, self-addressed envelope and your card.

If your card has a 1985 sticker on it, then your membership expired last year and you are UNFINANCIAL. This is your LAST CHANCE to do something about it. Send in the Membership Renewal Form, the completed Survey Form (include 84/85 dives on an extra piece of paper), a cheque to the CDAA for \$20, a stamped addressed envelope and your card.

If your card has a 1984 sticker on it, then your membership has lapsed. Only 12 months is allowed, so you will have to rejoin the CDAA and redo the tests if you want to keep diving the South East.

South Australian Police Underwater Recovery Squad

Following the construction of some cave diving lights by Ron Allum for the South Australian Police Underwater Recovery Squad a small group of divers, including Ron, were invited to watch operations during a police diver training exercise at Mt. Gambier during early February. It proved to be a highly successful weekend, both from a diving viewpoint, and socially. The South Australian Police Underwater Recovery Squad are members of the elite Star Force. Each of the four Star Force teams has 3 divers, who apart from their other duties are responsible for all types of underwater search and recovery work. Cave diving forms one small part of these duties.

In their approach to Mt. Gambier freshwater diving the Police employ a number of techniques that are substantially different to those we as sports divers use. The main reason behind this divergence in methods is that whereas sports divers are primarily involved in cave diving for recreational purposes, the police are only called in when a specific job of work needs doing. To ensure the efficient and safe completion of such work under what may be fairly hazardous conditions the police use a number of changes to the standard sports diving system. Firstly, all police divers are controlled from the surface by a dive supervisor. The divers and the supervisor are in constant two-way communication via an intercom system and line. The diver's communications equipment is housed within a full face mask. This system takes a lot of pressure off the diver in terms of dive planning and calculations during the dive. It also lets those on the surface know should anything go wrong on the dive. A fully equipped standby diver is always ready to enter the water at a moments notice should such problems arise. This system is of particular benefit for divers where narcosis may be a problem, as the supervisor can rapidly establish how badly a diver is being affected. The full face mask also has the advantage that air supply will not be lost if the diver becomes unconscious, as may happen if a normal regulator is being used.

The police recovery divers work on the principle of always having excess air for a dive. Air consumption is calculated prior to each dive, and the dive plan strictly adhered to. Each diver wears two 72 cubic foot capacity steel tanks. From the first stage regulators on each of these runs a low pressure line to a four-way, or rotary selection valve (RSV) by the divers side. From the RSV a single low pressure line runs to the full face mask with the second stage demand valve in it. The fourth outlet on the RSV allows a hookah line to be plugged in during the dive (e.g. for decompression on oxygen) if necessary. Contents gauges are not used for two reasons; firstly, a lot of the recovery squad's work is in zero visibility rivers and dams, and secondly, air consumption calculations or surface supply from a hookah always ensure that the diver will never be short of air. During the dive the diver uses his RSV to empty the left cylinder first and then switches to the right one. The right cylinder also has a standard second stage demand valve attached to it in the event of a failure with the valve in the full face mask.

One disadvantage of a full face mask is that octopus or buddy breathing can only take place without a mask (by this stage the supervisor would know from the lack of breathing noises over the intercom that something was wrong).

The weekend finished up with a good social session at the Mount Shank Estate Shearers quarters; temporary Police H.Q. for the duration of the training exercise. The police have an above average selection of divers' stories with which to entertain. Thanks are due to the whole diving squad for a most enjoyable weekend, and especially to Sergeant Ron Jeffries and Senior Constable Bob McDonald for the initial invitation to watch proceedings.

Peter Rogers
National Testing Officer

Why Use Bassett Tables
by John Knight

All the tables available to divers today have a failure rate, a percentage of people get bent, when they are dived exactly as they are written. That is, a diver goes to the bottom and stays there until the bottom time is up and returns to the surface. Most sports divers do not dive in this pattern which is probably what saves them from the decompression sickness. When they do dive like this on wrecks in deep waters some do get bent. The sports diver needs safety from decompression sickness now or at least no later than his or her next dive.

The incidence of decompression sickness has risen in Australia over the past two years. We need a table that can be dived as it is written. Where can we find one?

Luckily, we know from experience that fudge factors make diving safer from decompression sickness. John Lippmann and I, both worried about the increasing incidence of decompression sickness in Australia, decided to set Dr Bassett's "No-decompression" tables out so that they could be used as simply as possible to allow the diver to do two dives a day without having to add any fudge factors. Bassett's No-decompression limits incorporate two safety factors, a shorter bottom time than the current USN table and a safety stop. We have added another safety factor by reducing the ascent rate from 18m a minute to 10m a minute. Using the total time underwater, which includes the safety stop time builds in a fourth safety factor. While using the USN residual nitrogen time after the surface interval to calculate the bottom time for the repetitive dive builds in a fifth safety factor. The diver can dive exactly the dive that is printed and be much safer than staying well within the USN tables. We also made provision for those who want to do a third (or even a fourth) dive. Tables are printed in a waterproof ink on plastic and varnished to give extra protection. The plastic is flexible and can be folded in half to fit in a pocket of a BC.

In my opinion, it is the safest table available at the moment with five safety factors it should be quite safe to dive them as they are written. The USN uses fewer fudge factors and has an instance of 1 case of decompression sickness in about 3,000 dives.

Lead Acid Batteries Light Story on Batteries (Part II)
by Rino Dell'Antonio

Most divers use this type of power source for their high output lights, which in most cases are the "cave diving lights" as described in "Cave Diving in Australia" (Ian Lewis and Peter Stace). In some cases similar batteries are used in rechargeable Dacor lights and can be adapted to suit various other 6V systems which take the 509 (Dolphin) type battery.

These batteries are cheaper to purchase than ni-cads of comparable capacity and voltage. The most common type purchased by divers is the Yuasa (Exide) NP 10-6 (10Ah, 6V) although various other brands are available. As these batteries are sealed they can be used in any position, unlike most car batteries where the acid can run out when tilted.

Most divers use the batteries in a much harsher manner than intended by the maker. However, they do appear to last for an acceptable time. In order to prolong the cell's life, only 30% of the overall capacity should be used prior to charging. ie. if it's a 10Ah, use only 3Ah. This gives the cell a life of up to 1200 cycles. Should the cell be used until flat (as most people with this type of torch do), life drops to 180 cycles. Money-wise this is still not a bad proposition as purchase cost is around \$35 to \$40 each.

As mentioned earlier, the battery rating is at the 20 hour discharge rate. Whenever this is increased, the actual available capacity reduces. Table 3 illustrates this.

Battery Type	Discharge Capacity				
	20 H.R.	10 H.R.	5 H.R.	3 H.R.	1 H.R.
NP1.2-6	1.2Ah	1.1Ah	1.0Ah	0.9Ah	0.7Ah
NP2.6-6	2.6	2.4	2.2	2.0	1.6
NP4-6	4.0	3.7	3.4	3.1	2.4
NP4.5-6	4.5	4.2	3.8	3.5	2.7
NP6-6	6.0	5.6	5.1	4.6	3.6
NP8-6	8.0	7.4	6.8	6.2	4.8
NP10-6	10.0	9.3	8.5	7.7	6.0
NP1.9-12	1.9	1.8	1.6	1.5	1.1
NP2.6-12	2.6	2.4	2.2	2.0	1.6
NP6-12	6.0	5.6	5.1	4.6	3.6
NP20-12	20.0	18.6	17.0	15.4	12.0

Table 3

In essence, Table 3 is showing that when a NP 10-6 is discharged at the 1 hour rate, only 6Ah of capacity is available. The 100W lights used on a 12V 10Ah system, as shown in Table 2, will not last 1.2 hours, but more like 0.7 hours! The less the Ah rate drawn from the battery, the greater its discharge capacity becomes.

Another item which impairs the performance of the lead acid battery is temperature. As the temperature decreases, the capacity available also decreases. Figure 1 shows clearly this loss. A 50% capacity reduction can occur when the battery is used at the 1 hour rate vs the 10 hour rate (eg. 55W 6V system vs 8W 6V system) at any temperature.

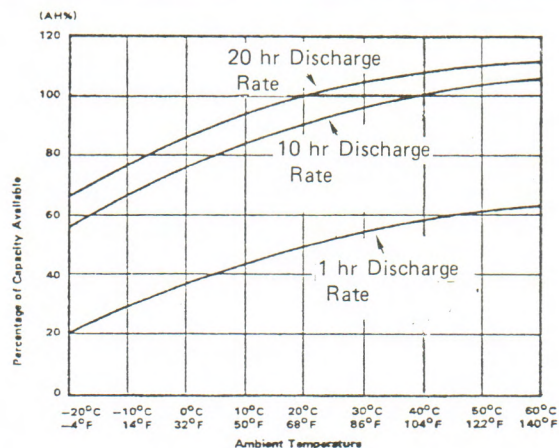


Figure 1 TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY

It is nice to know of these things although we can do very little to improve the situation if we use high output lights. The above facts should however be kept in mind to ensure that adequate lighting is on hand during one's diving trips.

The self discharge characteristics of lead acid cells also needs to be remembered. At room temperature (20 degrees C) 25% of the battery's capacity can be lost over a 7 month period. Storage at lower temperatures leads to less self discharge, and vice versa.

Lead Acids in Summary

Due to us discharging batteries at a faster than recommended rate we suffer the following:

- life expectancy of the cell reduced to 180 cycles. This however is still a cheap light source (approximately 20 cents per cycle).
- reduce the discharge capacity by discharging at a fast rate.
- reduce, again, the discharge capacity by using them at lower temperatures.
- possibly use cells that are not fully charged as lead acids can lose up to 20% of their charge in 3 months (at 30 degrees C). Recharging of the battery will bring it back to its optimum state.

Lead Acid Battery Charging

The basic charging method recommended for lead acid batteries is "constant voltage" charging. This is the most preferred method as the battery can be safely recharged for any time span and is not dependent upon the initial state of charge of the cells.

A constant pre-set voltage is supplied to the battery, and as it charges, the current input is gradually reduced. It is essential to set the initial charge current at or below 25% of the Ah rating (for a 10Ah cell this is 2.5A max).

The charging voltage should be set to between 2.4 and 2.5V per cell (for a 6V model 7.2 - 7.5V, for a 12V model 14.2 - 15V). Anything above 2.5V per cell reduces battery life. The final current should be 1% to 2% of Ah rating at 2.4V per cell and 3% to 6% at 2.5V per cell charging.

It is recommended to charge batteries as soon after use as is possible. In charging lead acids it is common practice to overcharge by 10% to 30%, especially on totally flat cells.

Note Car battery chargers are not designed to charge maintenance free lead acid batteries. Various cases of exploding batteries have been reported when people have done this on a regular basis. Car battery chargers "taper" charge batteries and do not have a consistent DC output, leading to a reduction in cell life.

Constant current charging is not recommended unless one only inputs the quantity used from the battery and no more. Any additional charge will lead to temperature increases within the cell and a "thermal runaway" situation may occur.

Ni-Cad Batteries

Although nickel-cadmium batteries are more expensive to purchase than lead acids, they have various distinct advantages over the latter.

Ni-cads are noted for their high power capability, long cycle life, good low temperature performance, ruggedness and reliability. The nominal voltage of their cells is 1.2V and a large range of sizes and capacities are available.

The recommended discharge rate for a ni-cad is at the 5 hour rate however, discharging at the 1 hour rate does not affect the overall capacity greatly. Figure 2 illustrates this fact. It can be also seen that at typical discharge rates a large percentage of the voltage output remains constant. This in itself is one of the major advantages of this cell type. Anyone who uses ni-cads in their torches will know that the light's output does not fade with these batteries until they are nearly drained. This, of course, is a slight disadvantage, as it is not able to reliably ascertain the state of charge of a cell simply by turning a torch on.

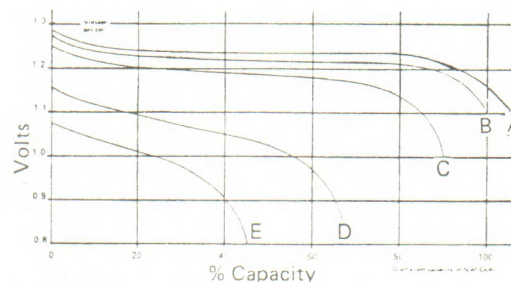


Fig. 2. Voltage and capacity for various discharge rates at +20°C (following a normal charge at +20°C)

- A = 10 hr discharge rate
 B = 5 hr discharge rate
 C = 1 hr discharge rate
 D = 12 min discharge rate
 E = 6 min discharge rate

As there is no acid in a ni-cad, it can be orientated in any manner, an obvious though definite pre-requisite.

No large variation in capacity of discharge with respect to temperature is noted on ni-cads even at harsh discharge rates. For example, at a 40 minute discharge rate only 20% of the available capacity is lost between 25 and 0 degrees C operating temperatures (ie. 80% of the total capacity is still available). For lead acids at a 1 hour discharge rate, only 55% of capacity is available at 25 degrees C and 20% at minus 20 degrees C.

Self discharge of ni-cad cells is similar if not slightly less than for lead acids. In both cases however, as the temperature increases, so does the discharge rate. For ni-cads, typical self discharge figures are 25% loss at room temperature (20 degrees C) over 9 months, up to 20% discharge in 9 days at 40 degrees C.

Cells which have been hiding around the house for any length of time (2 to 3 months) should be fully discharged and then recharged to ensure that they are in 100% working condition prior to going diving.

The Memory Effect

Now we come onto the more interesting part about ni-cads which does not happen with lead acids or most other types of batteries - the "memory effect".

If a cell or battery is subject to the same series of partial charge/discharge cycles, it will become conditioned to deliver only the amount of energy that was required of it during previous discharge cycles. This is commonly referred to as the "memory effect". Boiled down into lay terms: for example, a diver using ni-cads in his flash unit takes 36 shots using his flash then goes home and charges his batteries up (and continues the pattern on a regular basis). If the same batteries are capable of say 120 flashes but the diver "tops" them up, his bright batteries will decide by themselves that they will only give out 33% of their capacity (36 flashes). How dare they do this!

The best way of preventing the above from happening is to fully discharge one's ni-cad batteries prior to charging them (remember their life is not impaired by doing this, unlike lead acids). If one's cells already have a memory of their own, a couple of full discharge/charge cycles will bring them back into A1 condition.

Usually I carry a spare bulb with me which I attach to my ni-cad battery pack to discharge it completely prior to charging. By doing this, the full potential of the cells is utilised.

Although it is preferable to charge any type of rechargeable cell as soon after discharge as possible, ni-cads are not overly impaired by this as they may be stored for a few months uncharged and unharmed.

Note Ni-cads should not be confused with "gel cells" which are in many ways similar to a sealed maintenance free lead acid battery. "Gel" type cells have at times been supplied with the larger type torches, eg. Ikelite, Dacor, Ocean Pro, etc. My experience with these cells has been costly as I "lost" one in mint condition (used only 3 times) due to the fact that I charged it incorrectly and later left it sitting around in a discharged state for about 3 months. With proper care and the correct charge/discharge method, these cells should perform similar to lead acids.

Ni-Cad Battery Charging

There are numerous methods for charging ni-cad cells eg. "pulse", "trickle", constant voltage, constant current, "fast" charging and so on. Room within this article does not permit me to cover all these types and I will therefore discuss only the most accepted and economical way.

Constant current charging - this is where the current input to the cells is held constant and the voltage reduces over a time period. The normal charge rate is 10% of the battery capacity. For example, if your "AA's" have a 500mAh capacity, they should be charged at 50mA. It is usually recommended to overcharge ni-cads by between 20% to 50% when operating at this rate. This is in no way harmful to the cell.

Constant voltage charging (as is recommended for lead acids) is not to be used on ni-cads due to the possibility of "thermal runaway". This is where the temperature within the cell increases greatly, causing a breakdown of the cell components and possible explosion if the charge is prolonged.

Ni-Cads in Summary

Although these cells are more expensive than lead acids (of similar voltage and current capacity), they have various advantages over the latter:

- They maintain a constant voltage output during the major part of their discharge time.
- Replace standard battery types.
- Can output high current rates without harming or reducing cell life appreciably.
- Temperature variations do not greatly affect discharge capacity of the cells, even at high discharge rates.
- Can be stored uncharged for short time periods without harming the cells.
- Some of the newer types can be recharged at "fast" rates, although life cycle and performance is sacrificed.
- Should be discharged fully and then recharged to ensure that the cells' full capacity is realized and to prevent the "memory effect" from occurring.

One disadvantage of this type of battery is in ascertaining the amount of charge remaining. As the voltage and current output from the cell remains fairly constant, no indication is forthcoming.

Summary

We, as divers, abuse the battery systems available in order to obtain substantial power input to our lighting sources. With this in mind, economically rechargeable batteries are a Godsend to us as they negate the need to purchase batteries for our multitude of torches which are dragged along on regular diving excursions.

The above article makes us more aware as to why our batteries do not always last as long as expected, and permit this to be taken into account.

Although abused, battery life can be optimised by:

- charging cells as soon after use as practical.
- keeping cells topped up to compensate for natural discharge.
- charge cells via the correct charging method.
- store cells in a cool place.

References:

Electric and Electronic Engineers Handbook

Plessey Component Digest, January 1982 Vol 3 No 1

Yuasa Sealed Lead Acid Handbook

Yuasa rechargeable batteries booklet

Reference guide to Nickel-Cadmium cells and batteries, Dick Smith Electronics

At this point in time various types of lead acid and ni-cad chargers, especially designed for use by divers are being finalised. All such items should be ready by February 1986. Any enquiries regarding these units are most welcome.

Should any diver require further information on any type of battery and/or charging system, please contact me or my partner, Tony Hambling with your specific enquiry. We will endeavour to answer all queries as soon as practicable.

For enquiries write to:

Rino Dell'Antonio
c/- DELLHAM PTY LTD
PO BOX 146
NEWPORT VIC 3015

Mark envelopes: "Battery enquiries (CDAA Article)"

Diving Deafness

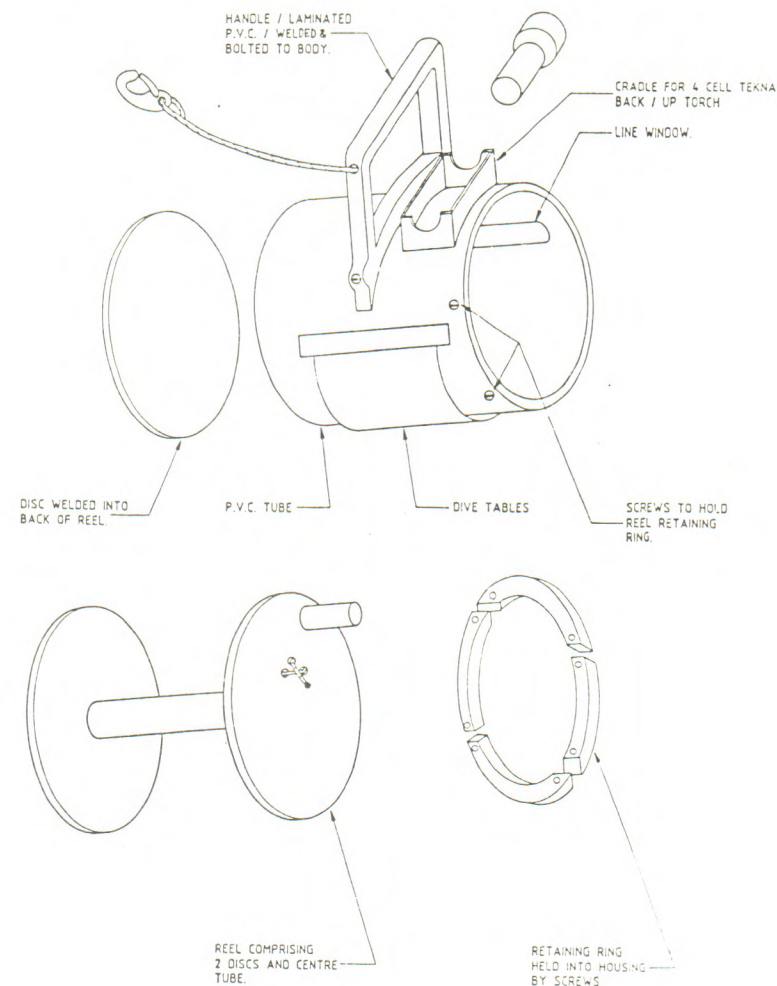
A new study of abalone divers has found that more than 60 per cent suffer from high-frequency deafness.

It says abalone divers are far more likely to suffer the consequences of decompression sickness and barotrauma than other more conservative professional divers like those in the Navy or working on oil rigs.

The Sun, Melbourne, Tuesday 11 Nov 85

THE ALL PVC REEL by Peter Fulton

There must almost be as many designs for reels as there are divers. Here is another suggestion on how to make a servicable reel. It has no central spindle which makes construction easier and it is almost totally PVC except for stainless steel screws holding the glue/laminated handle to the body and the retaining ring for the reel.



The body is a PVC tube with a PVC plastic plate or circle welded to the back. A slot or window is cut into the front of the body for line passage. The reel is two discs separated by a central tube welded together. The outer edges of the reel discs form the bearings against the inside of the body. The reel is retained by a PVC ring split and inserted into the body tube, and held in place with a radially fitted screws. The line is anchored to the reel by passing it out and in through three holes in the outer disc and for added safety passing it under a loop outside the reel. A piece of small diameter metal tube is crimped onto the end of the line to make it impossible for the line to pull through the holes in the reel if all the line was unwound from the reel.

A tailored cradle for a four cell Tekna torch is glued to the body and the torch is held onto the cradle by a heavy rubber band. Plastic dive tables can be softened in the oven and laid around the outside of the reel to cool and set to the contour of the body. The tables are clipped into the two retainers glued onto the body.

Another feature is a running loop to enable a large rock to be used as an anchor point. A running loop is fitted with a Ronstan stainless steel shackle RF624, and the end of the line with a spring clip RF533.

This reel has so far proved satisfactory and a diagram is provided if anyone would like to have a go at making one of their own.

REELY
by Dennis Thamm

A regulator and wet suit are important items of a cave diver's equipment but a guideline really becomes our life line back to the world above.

In the past Guidelines has featured various articles on their manufacture ranging from converted power cable holders to aluminium saucepans. This article is another step in the continuum of such technical information on all cave diving equipment whether commercial or homemade.

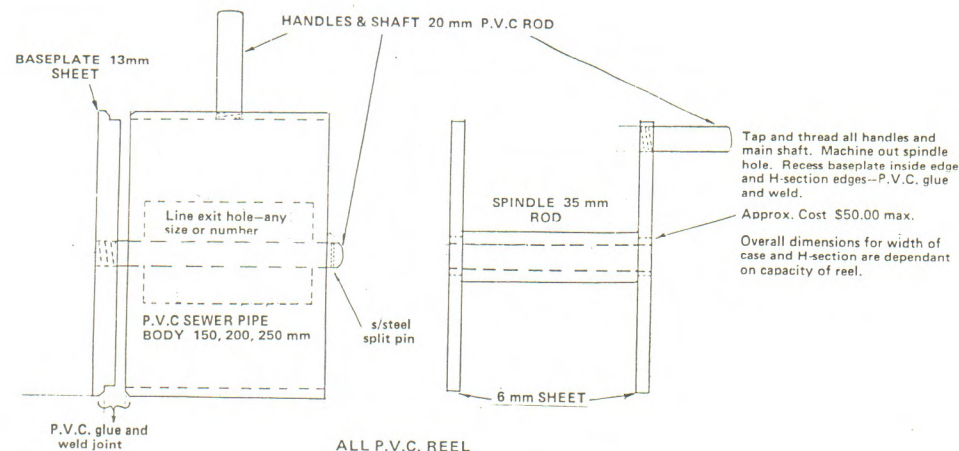
Reels in the past have nearly always been comprised of a variety of materials, plastic, brass, stainless steel, etc but present both problems in purchasing and manufacture, not to mention the differences in wearing of PVC on metal etc. To help in the overall reduction of costs, material and time spent in production of your next reel consider the use of an all PVC grey plastic sheet and rod.

These have the advantages of being obtainable from one source, easily machinable, physically and chemically compatible, cheap to buy (ask for off-cuts), easily repaired (glue or PVC welding), durable (flexability and strength) and these materials cut down on the overall weight. PVC is also easily bent or curved by heating over a mild flame or hot air torch. This can be used to bend the handles to the correct shape.

Reference to the diagram and the following instructions when attempting this project will reduce the overall time and make completion easier as compared to the conventional metal plastic type. As with all types of reels any amount of accessories can be added to

the basic design. Clips or brackets for holding torches whilst reeling can now be glued, screwed or welded to the handle case, case or base plate. If PVC welding or gluing is beyond your resources enquire at your place of purchase of materials as they should be able to advise you accordingly.

Useful Address:
Menzell's Plastics
Wright Street
ADELAIDE 5000.



Note from Editor

There are many ways of making a reel. Here are two further suggestions from our members. The design suggested by Dennis Thamm is very similar to that presently used by many people and has stood the test of time. The design by Peter Fulton is new in as much as it does not have a centre spindle and has yet to stand the test of time. There is theoretically some risk of dirt entrapment resulting in the reel jamming however, Peter states that he has had no problems personally with this reel and should any problems arise a central spindle could easily be added.

A reel design used by many American and other overseas cave divers will be described in the next edition of Guidelines. This is the open type of reel which reduces the risk of jamming.

Ed.

FINALLY....

RIVER DIVING - AN UNUSUAL CUP DAY RECREATION

by NA Jones

To many people, Tuesday 5th November 1985 was the day for the Melbourne Cup, but to some of us it was just another public holiday which meant ... time to go diving!

Accordingly, Zac (my buddy) and I took off in the car to trace the Yarra River and find a suitable site to dive in it. We went up into the Lillydale area and drove along the main road, stopping at intervals to check the river out.

Due to the heavy rains, the river was flowing fairly fast in most areas, and appeared to be very muddy, but we eventually found a spot where the water appeared to be more than a few feet deep, and not flowing too fast. So we drove down to the edge of the river and geared up. At this stage we had an audience of a couple of children who seemed to find it all rather amusing.

We entered the water and descended - all of four feet! - barely enough water to cover us. I felt somewhat foolish and embarrassed.

In the muddy water, the visibility was very poor - about one or two feet at most, and you had to put your face really close to the bottom to be able to see the rocks and sticks there.

After ten minutes or so, we had seen all we wanted to and moved on to another pool-like area downstream. This section proved to be a bit deeper - about six feet, but the visibility was just as bad as in the first section. To our surprise, there were several small blue coloured fresh water crays, about four inches long in the deeper part.

After we had looked around, we climbed out of the river and walked back along the bank to the car. It was not a very exciting dive, and it took a long time to drive there and back, but at least we actually had a dive. So next time you have a spare day, why not find a dive site and try it out?

Elbow Swivel Joints and Guide Line

The CDAA will no longer be selling elbow swivel joints and guide line since they are now readily available through the dive shops at reasonable prices.

FOR SALE •• FOR SALE •• FOR SALE •• FOR SALE

BATTERY CHARGERS

Constant voltage/ Variable current battery charger suitable for cyclic charging (at maximum allowable current) of sealed lead acid batteries of eight or ten Amp. hour capacity
Maximum charge current is limited to 2 Amps.

Output voltage is precisely regulated to the recommended manufacturers specification of 7.2 / 14.4 Volts for correct cyclic charging at 2.4 Volts per cell at 25C. (charging at this ambient temperature prolongs battery life).

Light emitting diodes (L.E.D's) indicate charge status, power on and incorrect connection of battery.

Quality components used throughout.

Cabinet dimensions 137 X 70 X 130mm.

Note: cabinet is constructed of flame retardent plastics.

Various charger models available. Also top brand Lead acid and Ni-cad batteries available at reasonable cost.

For full information on the above contact:

DELLHAM PTY LTD.

P.O. BOX 146,

NEWPORT,

VICTORIA 3015. phone: (03) 397-7969

CDAA Windcheaters and T-Shirts

Price Hike:- Let's face it, we've been getting them dirt cheap for a long time, and production costs and postage have increased.

Windcheaters will now cost \$19, including postage and packing.

T-Shirts will still be 7.50 each, including postage and packing.

Specify size (12, 14, 16, 18, 20, 22, 24) and colour (pale blue, dark blue, yellow, red, grey, dark green, light green or orange).

Send your orders and money to your local PO Box.

SCUBA DIVING ACCIDENTS

can include:

- decompression sickness
- pulmonary barotrauma

FIRST AID FOR BOTH OF THESE:

1. ELEVATE FEET AND HEAD DOWN
2. 100% OXYGEN
3. OBTAIN EXPERT ADVICE
4. RECORD DIVE PROFILE
5. FLUIDS

DECOMPRESSION SICKNESS:

AS MUCH FLUID AS PATIENT CAN TOLERATE PROVIDING HE CAN URINATE.

PULMONARY BAROTRAUMA

AS REQUESTED BY THE PATIENT.

PHONE: DIVER EMERGENCY SERVICE
(008) 888 200 (IF NECESSARY
USE - 000 - THROUGH YOUR
EXCHANGE.

TAKE: PATIENT TO MT GAMBIER
HOSPITAL AND INFORM
THEM YOU HAVE CONTACTED
DES.

IN AN EMERGENCY:

1. PHONE (008) 888 200
(IF NECESSARY DIAL 000)
2. STATE 'THIS IS A DIVING
EMERGENCY'
3. PROVIDE DETAILS OF IN-
CIDENT. DEPTH, TIME, LOC-
ATION, SYMPTOMS, ETC.
4. WAIT FOR ADVICE AND
DIRECTIONS
5. ACT ON ADVICE AND DIREC-
TIONS
6. FOLLOW UP PROJECT STICKY-
BEAK 062.47 5554