



C.D.A.A. Newsletter GUIDELINES

No: 66 - SEPTEMBER 1998



CAVE DIVERS ASSOCIATION OF AUSTRALIA

(Incorporated in South Australia)

Print Post No. PP 381691/00020

If you have a body,
the BCS will fit it!

BCS

Buoyancy Control System

One size fits all!

Impressive Features
Unique Design

Unique adjustable shoulder yoke and strap assembly (patent pending)

Allows the diver an adjustable range of over 10" as well as adjustable ring and buckle placement

Adjustable D ring position

Two provided, additional D rings easily installed

Weight System

"clips out" for easy restringing (patent pending)

Two height positions available for comfort and trim adjustment

Auto-Retract Attachment System (patent pending)

Two retractable shock cords with hooks for attaching console, small lights etc.

Adjustable lumbar pad between the tank and diver's back (not shown)

Crotch strap is adjustable or removable

Diver can easily switch between integrated weight system and no integrated weight system

When no weight system is used, option waist strap assembly available

Patented Double Pull-Cord Lanyard Weight Release System

Allows diver to pull and release half of weights at a time

Wing's circular cell design allows complete air flow within the wings

Eliminates diver's need to modify movements to adjust air position in the wings

Approximately 58lbs of lift

Made with 1000 Denier Cordura

Uniquely designed pockets and accessories available!

Airway with power inflator and pull-to-dump valve

(can be mounted on left or right side on wings model)

Double shock cord cell retract system on wings holds the cell in close to the body

Manual bottom dump/overpressure valve (can be mounted on left or right side on wings model)

Sternum strap is adjustable or removable

Easy to use weight pockets

40 Pound Weight Capacity!

Most integrated weight systems have limited capacity of 10-20 lbs

Available with or without integrated weight systems



Scuba industries of Australia Pty Ltd
Tel (02) 49567833 Fax: (02) 49567665

Thanks again to all the contributors. There are quite a few interesting articles in this issued and also some which may promote some discussion amongst members. Please feel free to use Guidelines as a medium for this.

The photo on the front cover is from Gary Barclay. It's good to see some members just can't put their copy away – no matter where they are!

Enjoy the September issue and I'll look forward to seeing you all at the anniversary weekend.

Glenn O'Connell
Editor

ARTICLES FOR GUIDELINES

Members wishing to submit articles for inclusion in guidelines can do so in the following manner:

- Send articles & photos via post to:
The Editor, Glenn O'Connell,
P.O. Box 290, North Adelaide, S.A. 5006.
- Email to glenn@vds.net.au
- Any files for inclusion should be saved in "TEXT" or "ASCII" format. Hardcopy should also be provided wherever possible.

ADVERTISING RATES

FOR SPACE - APPLY TO THE EDITOR

"Guidelines" magazine is circulated to over 1200 members and retail outlets.

Back page	2 colour	\$350.00
Inside Front Page	Black & White	\$300.00
Inside Back Page	Black & White	\$300.00
Full Page	Black & White	\$250.00
Half Page	Black & White	\$150.00
Quarter Page	Black & White	\$100.00

CONTENTS

Editorial	3
Annual Directorate Report 1997	6
Plumbing the Depths of Inky Blackness	14
CDAA Site Access	20
Woodville Karst Plain Project	23
Extreme Diving	24
Tank Cave Gardener	26
Leave Your Toys At Home	27
Sealed Lead Acid Battery, Getting the Most	28
From the Products Person	31
A Dangerous Habit	32
New Equipment	33
CDAA Notices	34
CDAA Instructors	34
Trading Post	36
CDAA Products	39



Front cover:
*DOING SOME
LIGHT READING!*

*Photo by
Gary Barclay*

CAVE DIVERS ASSOCIATION OF AUSTRALIA

P.O. BOX 290, NORTH ADELAIDE,
S.A. 5006

GUIDELINES is a newsletter of the Cave Divers Association of Australia. All articles for the following issue are to be sent to the Editor, Glenn O'Connell, P.O. Box 290, North Adelaide, S.A. 5006. All articles and submissions shall automatically constitute an expressed warranty by the contributor that the material is original. We assume no responsibility for unsolicited material. Articles and information may be reproduced without prior permission provided reprints are accredited to the authors and GUIDELINES. Private advertising for caving and diving equipment may be advertised free at the discretion of the Editor. Opinions expressed in GUIDELINES are those of the individual authors and are not necessarily those of the C.D.A.A.

CDAA DIRECTORY

The following is a list of people that can be contacted for CDAA matters. Please contact the most relevant person or, if unsure write to:

C.D.A.A. P.O. Box 290 NORTH ADELAIDE S.A. 5006

If you know who you want to write to, please address your letter to the relevant director.

NATIONAL DIRECTOR

Steve Sturgeon 0418 940 143 (mobile) (08) 9527 7667 (work)
P.O. Box 5233 Rockingham Beach (08) 9528 6995 (fax)
Western Australia 6168 Email: cdaa@nitrox.com.au

MANAGER RESEARCH & MAPPING

Gary Barclay (03) 5565 8793 (home) (03) 5565 8118 (fax)
P.O. Box 15 Koroi Victoria 3282 garinda@tpgi.com.au

STANDARDS DIRECTOR

Glen Harrison 0414 946 602 (mobile)
24 Broadbeach Drive harrison.glen@saugov.sa.gov.au
Maslin Beach South Australia

Investigations Officer

Victor Kostjuk 0417 392 843 (mobile) vk3vic@vds.net.au

Instructor Materials

Peter Grills (02) 4950 6262
3 Tenille Close Edgeworth NSW 2285

Instructor Records

Linda Claridge (03) 5565 8793 (home) (03) 5565 8118 (fax)
PO Box 15, Koroi, Victoria 3282 garinda@tpgi.com.au

BUSINESS DIRECTOR

Carlo Virgili (08) 8226 3394 (work)
124 Swaine Avenue Toorak Gardens carlovir@tafe.sa.edu.au

Treasurer

Andrew Seifried (08) 8379 4013 (home) seifried@senet.com.au

SITE DIRECTOR

Gary Barclay (03) 5565 8793 (home) (03) 5565 8118 (fax)
P.O. Box 15 Koroi Victoria 3282 garinda@tpgi.com.au
Phil Prust - Tank Cave Access Manager (08) 8370 5333

PUBLICATIONS AND RECORDS DIRECTOR

Sabine Schnittger 0412 114 439 (mobile) (03) 9602 1111 (work)
79 Park Street (03) 9602 4844 (fax)
Abbotsford Victoria 3067 100232.2105.compuserve.com

Records Officer

Linda Claridge (03) 5565 8793 (home) (03) 5565 8118 (fax)
PO Box 15, Koroi, Victoria 3282 garinda@tpgi.com.au

Editor

Glenn O'Connell 0411 704 758 (mobile) glenn@vds.net.au

CDAA products

Chris Edwards 0417 116 372 (mobile)
cedwards@teksupport.net.au

Phil Argy (08) 8723 0879 (home) blinkbonney@seol.net.au

CDAA Advertising

Tony Davis 0418 370 941 (mobile) (03) 5978 6201 (home)
adavis@r150.aone.net.au

REPRESENTATIVES

Victoria

Warrick McDonald (03) 9579 2600 (work)

New South Wales

Andrew Robertson (02) 525 0995 (home) 018 412 563 (mobile)
aroberts@awa.com.au

South-east (Emergency only)

Phil Argy (08) 8723 0879 (home) blinkbonney@seol.net.au

RETURNING OFFICER

Jim Ferry jvcferry@bold.net.au
12 Grand Central Avenue Hallett Cove South Australia 5158

PUBLIC OFFICER

Kevin Burrows
11 Oakfield Avenue Clarence Park South Australia 5034

CDAA INSURANCE

Insurer: Jardine Underwriting Agency Pty Ltd
Policy number:
Coverage: \$10,000,000 public liability coverage
Expiry date: 11/7/99

As a recreational or technical diver your most important piece of equipment, your lifeline, is your regulator.

The Poseidon range of regulators has incorporated the highest performing technologies into unique designs, which ensure both your safety and your comfort regardless of your angle in the water.

In addition, these regulators have been tried and tested in all types of environments, whether it be warm or cold water and, at depths ranging from just beneath the surface to 282.6 meters.

The Jetstream The ultra-high performance regulator offering extreme breathability regardless of depth or work rate. In short, the standard by which all other regulators are judged.

The Cyklon 5000 The legend. "Top Class" rated. Specified by commercial divers. Popular with cave and technical divers alike. Used by many of the world's navies. The one which built Poseidon's reputation for reliability.

For many years, divers have selected Poseidon as their ultimate buddy. Make the only choice, make the safest decision and dive with Poseidon.

innovative [] since 1958

POSEIDON

DIVING SYSTEMS

Poseidon Diving Systems (Australia) - Tel: (02) 9904 8440 Fax: (02) 9904 8447
Website: www.poseidon.se

Design: Lateral Vision



1997/98 ANNUAL DIRECTOR'S REPORT

INTRODUCTION

This report summarises the joint activities of the present National Committee over the past year. During 1997/98 there were 138 new members, and as of the 30th of June the Association had 771 members.

During 1997/98 the National Committee's aim has been to:

1. Review past developments and streamline the operations of the Association
2. Develop new diving initiatives in the areas of research and development.

There have been no changes to the National Committee since last September. This has brought about a very good working relationship among the Directors who have worked very well together, often outside their own areas of responsibility, to achieve the best results for the Association.

It is also important to highlight that significant progress has been achieved in a broad range of areas and has only been possible with the dedicated assistance of a small number of faithful volunteers. In many areas this has been long overdue. The National Committee wishes to thank all non elected officers and volunteers who have supported and made possible the achievement detailed in this report in the course of the year.

25th Anniversary Celebrations

The 25th Year Anniversary will be celebrated at the International Motor Inn with the Annual General Meeting being held on Saturday morning followed by a BBQ lunch. In the evening the Commemorative Dinner will include a pre dinner address and keynote speech by Lamar Hires, noted cave diver/explorer and Managing Director of Diverite. **If you have not got your tickets yet, use the enclosed form to book your place now and support this milestone event!**

Insurance

Many members may not realise that our access to Government land and to many private properties is conditional on the Association indemnifying the land owner against legal claims. Landowners and managers rely on the Association to provide this indemnity insurance. The basic rule is - No insurance, No access.

In 1997/98 new DENR requirements to apply from 1 July 1998 forced a full review of the Association's insurance cover. In addition to new administrative requirements, DENR sought an increase in cover from \$5M to \$20M. After some discussion, DENR has agreed to reduce the new limit to a \$10M, instead of the initially proposed \$20m insurance cover for 1997/98. The new agreement is important for the Association, since it is likely to set the standard for the indemnity that the Association will offer to other landowners.

The new and higher insurance requirements for the Association forced the Directorate to negotiate with a number of underwriters - in each case the Association would not have been offered insurance without a requirement to document (and stick to!) strict diving standards for members. This required a review of the Association's site access policies and diving safety standards.

The review found that the landowners and the Association were not sufficiently protected in a number of areas. With the assistance of CDAA member John Simpson, areas of the Association's operations and procedures with excessive risk exposure were identified and together with the new DENR requirements these now form the Association's insurance specification.

In order to buy an affordable policy for the Association, a number of standards and

procedures have had to be changed - as highlighted in recent notices. These include the requirement for members undertaking supervisory activities on behalf of the Association - that is, the guides - to hold, at a minimum, dive leader qualifications and insurance. The Association has also introduced accident management plans, and record keeping must be improved. More generally, the Association must lay down clear access and diving safety guidelines, and members must abide by them. **Unless we all play by the rules, our insurance will not cover the landowners and the Association.**

The two sites where these changes have the greatest impact are the Shaft and Tank Cave. Where the Shaft is concerned, there has been no interruption to diving. Tank Cave is temporarily closed, and the National Committee is continuing discussions with Phil Prust.

Cave Diving Supervisors

As a result of the new insurance requirements, but also given an obvious need to review past practices, a number of significant changes have been made to dive supervision procedures. It is the aim of these changes that the new procedures will increase diver safety and protect members, the guides, the Association and landowners/managers.

The new procedures will require the Association's guides to be qualified as a dive supervisor (divemaster or instructor), to carry professional indemnity insurance and to be approved by the National Committee. Guides must also give full pre dive briefings, have a written accident management plan for the site being dived and have available a first aid kit and oxygen.

Unfortunately, these new policies also bring with them an increase in costs for some guides, and the National Committee will review whether or not this is likely to create difficulties for the Association and members in the future by the number of available guides. The Directors recognise that not all guides may

choose to continue their work under these circumstances. The Directorate would like to take this opportunity to thank all the Association's guides for their work over the last year.

Mapping and Research

The May 1998 issue of Guidelines announced the establishment of a research and mapping group, headed by Gary Barclay. The framework that has been put in place clarifies the ownership of intellectual property, requires good record keeping of completed work, but also offers opportunities for training and a chance to participate for all Association members. To date there has been great interest in joining this group.

The first proposal that is now being pursued relates to a mapping project for the Black Hole. This project will require some deep dives and the use of mixed gas to ensure that dives are carried out safely. When the project is completed it will provide valuable information on the use of alternative gas mixes and diving techniques in freshwater sinkholes. All inquiries about this and other mapping projects should be directed to Gary Barclay, Manager, Research and Mapping.

Key Administrative Policy Developments

In the past the responsibilities of directors and office bearers have not always been clear, and it has sometimes taken a while to follow up on complaints by members. Two policies have been put in place in order to address these problems:

1. The notion of Director's accountability was formalised in August 1997 in a 'Code for Ethical Conduct of CDAA Representatives'. It applies to office bearer's, subcommittees, instructors, editors, guides and all other persons acting in an official capacity on behalf of the Association.
2. In order to improve the timeliness and integrity of investigations the National Committee:

- appointed an Investigations Officer to investigate any alleged breaches of the Constitution and Regulations and to report findings and recommendations to the National Committee; and
- created an independent body, the Member Appeals Committee to hear any appeals.

STANDARDS

The following new outcomes relate to the Standards Directorate:

- Policies for the Enriched Air Mixtures, Manifolds and Use of Rebreathers in CDAA Rated Sites were presented to the Landowner Liaison Forum and agreed by the Forum. These subsequently came into effect after being published in Guidelines.
- Cave level courses were reviewed to whether it would be appropriate for courses to be run by a single instructor. Single instructors for cave level course delivery came into effect during the year, and this is likely to be helpful both to students and to instructors.
- Instructor workshops were arranged and conducted in Victoria and NSW.
- New cave courses standards were put in place throughout the year. These were implemented on a trial basis and will be reviewed subject to written comments from instructors.
- A number of member and instructor investigations were conducted into alleged breaches of the Association's rules.
- The keeping of instructor and member records was rationalised, and is now undertaken jointly by the invaluable Linda Claridge.
- Peter Grills now manages packages of student and instructor materials, certificates, applications and associated forms. The new format looks great. The accountability process relating to the purchase of instruction materials has also been

strengthened, to ensure that the Association benefits from student training activities.

- Two instructor appointments were made during the year, and the instructor information published in Guidelines was reviewed. You will notice that only current and active instructors are now listed for members to contact.
- Two penetration courses were conducted during the year.

Review of Penetration Course Fees

In response to members' concerns the National Committee reviewed the price of penetration courses. The review found that a minimum charge of \$814 per student would be required to cover costs of the course and instructor salaries. If the fees charged are set below this level:

- the CDAA is subsidising penetration courses from its other sources of revenue; or
- instructors are not properly paid for courses.

After much deliberation, the Committee decided to leave course costs at their current level of \$650 per student. However, this does involve some subsidisation by the Association with regard to course development and accreditation costs.

SITES, ACCESS AND THE LANDOWNER LIAISON COMMITTEE

The Association is currently in good standing with landowners and land managers. We continue to have exclusive access to sites because of our formal structure, strict access protocols, and because the Association provides public liability indemnity to landowners and managers.

Unfortunately during 1997/98 four members were suspended for not complying with the Association's rules, and a number of separate complaints were received about divers in Engelbrechts Cave. Our good relationship with land owners and managers will only continue, provided members observe existing

arrangements and respect the notion that access is a privilege and not a right.

The following is also significant:

- The number of CDAA sites is currently 33.
- Engelbrechts Cave was closed during October 1997 for step maintenance and again earlier this year as a result of heavy rains.
- During the year, and with the support of Trevor Wyniatt, a number of successful cleanup projects were undertaken. Sites included Engelbrechts Cave, Hells Hole, The Shaft, Pines and Little Blue. These cleanups would not have been possible but for the support of a small group of dedicated members. The Directors would like to thank Trevor Wyniatt for his continued support throughout the year.

PUBLICATIONS AND RECORDS

Guidelines plays an increasingly important role as a forum in which Notices and site information can be sent to members. It is the face of the Association not just to members, but also to landowners, sponsors and other bodies with whom the Association has any dealings.

The quality of material contained in and the timeliness of Guidelines has improved through the restructure of the National Committee and the good work of the former and current editors. The Publication and Records Director is now responsible and accountable for the quality and timeliness of Guidelines. The cost for producing and distributing four issues of Guidelines in 1997/98 was \$15,379. Considerable work has been undertaken by AquaTech in generating advertising revenue to help offset production costs.

Like last year, membership renewals have once again been slow. Unfortunately Guidelines can only be posted to members who are financial, and renewal notices were included in the last two issues of Guidelines. At the same time,

there have been continuing problems with some members not receiving Guidelines. In some cases membership details have not been correct, but it is clear that the Association faces a major task of having to upgrade the membership record system, particularly since the current system is not 'year 2000' proof. The Directors have started this task by installing an upgraded computer as a basis for better software. However, this was only the first step in an expensive exercise which must be completed in the next term.

Following an adjusted trading loss of \$240.03 in 1996/97 (see notes financial statements) products returned a profit in 1997/98. Chris Edwards took over Products Sales from Wayne Wilson earlier this year. In the meantime a new series of clothing has been commissioned, and distribution policies are being reviewed. Commemorative 25th year clothing will be available for sale at the 1998 Annual General Meeting.

FINANCIAL

The Directors are very pleased to report that the net worth of the Association has increased from \$24,493.9 to \$61,732.72. This forms a solid base for moving the Association forward into new areas over the next term.

Income for the year ended June 30 1998 was \$72,417.22. When 97/98 and 96/97 figures are adjusted for changes to accounting practices and discounted for bad debts an increase of \$9,368.68 on 1996/97 levels is recorded, (97/98 \$66,676.62 and 96/97 \$57,307.94). This is represented by a significant increase in revenue from course instruction materials, fundraising, donations and nitrox endorsements. It is disappointing that despite significant commitment advertising revenue remains low as a result of inadequate invoicing procedures during 1995/96.

Expenditure for the year ended 30 June 1998 was \$47,923.91. When 97/98 and 96/97 are adjusted for changes to accounting practices and discounted for bad debts a decrease of

\$3,650.93 on 1996/97 levels is recorded, (97/98 \$40,761.91 and 96/97 \$44 412.84). This is represented by decreases in the insurance premium and printing and stationery and an increase in Guidelines production and postage; (please see notes attached to financial statements). 1997/98 expenditure was managed within budget, forecasted at \$41,100.

Achievements during the year include:

- The Association's accounts are now recorded on MYOB accounting software; this has enabled better management and reporting of Association funds.
- Credit card facilities have been implemented and are popular with members.
- An asset register has been established and a verification and due diligence exercise is currently underway.
- The Constitution voted in the 1997 Annual General Meeting has been lodged and distributed to all financial members.
- The 1998/99 Notional Budget has been developed into the 1998/99 Business Plan, taking into account members' suggestions.

- The Association's mailbox system has been simplified to improve the distribution of mail to the responsible Director or Officer.
- The Life Lines request for a financial contribution from the Association to assist with utility costs at Engelbrechts Cave has been amicably resolved via an honor box system with voluntary contributions by divers visiting the site. This system will be reviewed during 1998/99.
- Aqua Tech Australia Pty Ltd manages Guidelines advertising and fundraising on behalf of the Association. During the 1997/98 year, income resulting from this agreement totalled \$5495. This includes a donation from the City of Mt Gambier of \$1500 to aid with the publication of Guidelines. The Spring Workshop conducted during the 1997 AGM weekend, whilst not supported as expected by members, returned a net profit of \$430.

The Directors would like to thank Andrew Seifried for his great efforts in computerising the Association's accounts and his ongoing hard work as Treasurer.

A SUPERB 3 COURSE DINNER & INTERNATIONAL GUEST SPEAKER

all for only \$30

Members value at the anniversary weekend.

BOOK NOW TO GET YOUR SEATS!

Cave Divers Association of Australia Incorporated ACN 062 259 956

STATEMENT OF INCOME & EXPENDITURE for the year ended June 30, 1998 (as submitted for audit purposes)

	1997/98	1996/97	Note
	\$	\$	
INCOME			
Trading account net loss	- 302.64	661.92	1
Membership fees	38,755.00	37,735.00	
Instructor's membership fees	1,440.00	1,045.00	
Late membership fees	1,795.00	355.00	
Joining and rating upgrade fees	5,880.00	4,450.00	
Nitrox endorsement fees	1,210.00	80.00	
Instruction materials	9,670.00	2,400.00	
Guidelines advertising income	2,550.00	5,565.00	2,3
CDAA Fundraising income	1,355.00		3
Grants and donations received	1,590.00	10.00	3
Fines	200.00		
Penetration course receipts	6,680.00		4
Interest income	1,594.86	1,109.02	
TOTAL INCOME	72,417.22	60,389.94	
EXPENSES	\$	\$	
Audit fees	925.00	750.00	
Aquatech commission expense	1,043.63		3
Bad debts expense (Advertising)	762.00	2,320.00	2
Bank fees	288.80	461.33	
Credit facility fees	66.00		
Govt. financial taxes	208.84		
Depreciation expense	3,664.50	3,309.00	
Insurance: Public liability	3,390.00	8,802.00	6
Insurance: CDAA Products		245.55	
Instruction Materials Printing	1,982.09		
Instruction Materials Postage	520.95		
Postage	2,507.59	2,383.56	
Printing and Stationery	3,138.02	8,029.00	7
Penetration course payments	6,400.00		4
Site expenses	70.00	46.85	
Sundry expenses	476.38		
Subscriptions	50.00	55.00	
Telephone	1,953.53	3,987.13	
CDAA Fundraising expenses	708.00		3
Guidelines production	14,138.88	10,926.64	9
Guidelines postage	1,240.21		
Annual general meeting expenses	1,381.11	1,870.35	
Other meeting expenses	3,007.78	2,776.43	
TOTAL EXPENSES	47,923.31	46,372.84	
NET INCOME	24,493.91	14,017.10	

BALANCE SHEET
as at June 30, 1998
(as submitted for audit purposes)

	1997/98	1996/97	Note
ASSETS	\$	\$	
Current Assets			
National Australia Bank Cheque account	62,245.92	29,370.42	
ANZ term deposit	8,963.72	8,629.78	
Debtors (Advertising)	700.00	3,352.00	
Debtors (Other)	20.00		
Withholding Tax Deducted	203.55	203.55	
CDAA products closing stock	1,707.69	4,887.16	
Instruction packages closing stock	1,065.00		
Total Current Assets	74,905.88	46,642.91	
Non-Current Assets			
Property, Plant & Equipment	7,069.70	5,119.70	
less accumulated depreciation	- 4,045.00	2,801.00	
Office equipment	11,284.64	9,7240.20	
less accumulated depreciation	- 8,646.50	6,226.00	
Total Non-Current Assets	5,662.84	5,816.90	
TOTAL ASSETS	80,568.72	52,459.81	
LIABILITIES	\$	\$	
Current Liabilities			
1998/99 Memberships received in advance	16,000.00		10
1998/99 Instructor Memberships received in advance	40.00		
Overpaid memberships	350.00		
Total Current Liabilities	16,390.00		
Non-Current Liabilities			
1999/2000 Memberships received in advance	1,895.00		
2000/2001 Memberships received in advance	350.00		
2001/2002 Memberships received in advance	150.00		
2002/2003 Memberships received in advance	50.00		
Total Non-Current Liabilities	2,445.00		
TOTAL LIABILITIES	18,835.00	15,220.00	
EQUITY	\$	\$	
Member's Equity as at 30/6/97	37,239.81		
add: 1997/98 Net Income	24,493.91		
CDAA Member's Total Equity as at 30/6/98	61,733.72	37,239.81	
represented by:			
NET ASSETS	61,733.72	37,239.81	

NOTES TO THE FINANCIAL STATEMENT
Year ending 30 June, 1998

- The 1996/97 trading figure did not include postage insurance associated with operating this service. The 1996/97 trading account figure adjusted for these expenses would reflect a loss of \$243.03. The trading result is dependent on the sales margin, and accurate stocktake and prudent management of goods for resale. At the time of Guidelines going to press it became evident that an amount of \$1449.00 relating to CDAA product sales in 1997/98, had not been passed on to the treasurer. This amount has the effect of changing the Trading account result from a \$302.64 loss to a \$1146.36 profit. This amount will be incorporated into the financial statement to be presented at the Annual General Meeting. The last years audit opinion explicitly stated that closing stock levels were unverified and taken in good faith from the Association. This year's accounting procedures have included a physical stocktake of CDAA products and instruction materials at year end, and will be used as the basis for next year's accounts.
- The 1996/97 advertising revenue figure is high compared with this year's result, but when it is reduced by the \$2320.00 bad debt expense and the \$762.00 bad debt figure for 1997/98 (which relates to advertising that appeared in Guidelines in previous financial years), the 1996/97 figure is reduced to \$2483.00. This compares favorably with the 1997/98 amount of \$2550.00.
- In May 1997 the Association entered into an agreement with Aquatech Australia Pty. Ltd. Aquatech would manage Guidelines advertising, CDAA fundraising and seek to procure donations on behalf of the Association. In exchange the Association agreed to pay a commission on net funds raised. This is reported in the accounts under Aquatech commission expense. CDAA fundraising expenses of \$708.00 represents payments to members for sale of equipment at the 1997 swap meet. The corresponding revenue raised from the swap meet sales is reported in the accounts under CDAA Fundraising income.
- In the past, the accounting relating to penetration course delivery has not formed part of the Association's accounts. The course fees and associated disbursements were handled by the instructor coordinating the course. As of February 1998 penetration course fees and payments have been processed via the Association's bank. The disbursements represent course overheads and payments to instructors. The difference represents the upgrade fee from cave to penetration level.
- The amount shown under credit card facility expenses represents the costs associated with the establishment of the system.
- The insurance premium paid by the CDAA was significantly lower in 1997/98, with a similar level of cover, due to a change in insurer.
- The 1997/98 Printing and Stationery figure does not include any costs associated with instruction materials, however the 1996/97 does include this. In addition the 1996/97 figure includes payment made for a large number of member's manuals, which also contributed to the higher result.
- The relatively low telephone expense figure is due to prudent telephone usage particularly in relation to mobile phones. A significant increase in the use of email facilities has also contributed.
- The figure for Guidelines production is higher than the 1996/97 amount because four issues have been produced instead of three issues as was the case in 1996/97. An increase in printing and production costs has also had an effect.
- The memberships received in advance figure includes any insurance levies received.

PLUMBING THE DEPTHS OF INKY BLACKNESS

by Stefan Eberhard

*"In Xanadu did Kubla Khan
A stately pleasure-dome decree:
Where Alph, the Sacred river ran
Through caverns measureless to man
Down to a sunless sea"*

Samuel Taylor Coleridge



Chris Brown "For Your Eyes Only", June.

In March 1959 Bill Kunert, Glyn Davies and Michael Tobias penetrated 200 feet into an underground spring at Mole Creek. The divers were attempting to explore the resurgence of the River Alph, which disappears into a siphon inside the fabulously decorated Kubla Khan Cave before emerging about a mile away on the other side of the hill. It was the first cave dive made in Tasmania (Frauca 1959).

Kunert carried a sealed beam light of 12 volts powered from a lead wire connected to a battery on the surface. The lead ran along a 200 foot lifeline tied around the waist of

Kunert and fed from the surface. Tobias and Davies were clipped into the line with karabiners. With Kunert leading the three divers submerged and disappeared. They had to dive head first through a bottleneck that was so narrow their aqualungs scraped the rocks.

At the end of the 200 foot line the divers surfaced in an airbell. Clinging to the crumbly mud walls, their breath steaming around their masked faces, the frogmen stared in wonder at the eerie sights in an underground stream. Their teeth were chattering, their limbs were almost numb and they found breathing difficult

underwater in the intense cold. There was only one thing to do - retreat. Had they gone on they might never have come back as the cold waters would have claimed their lives (Frauca 1960).

In February 1965, Brian Barlow, Lance Barlow and Carl Summer borrowed 1,000 feet of baling twine from nearby residents and managed to penetrate 750 feet into the resurgence - an Australian record (*The Mercury* 27-2-1965). On their next attempt the team claimed to have penetrated a distance of 1,685 feet.

In 1974 Bill Kinnear and two companions made a series of dives using a base fed line with a communication cable which enabled the surface crew to talk with the divers when they surfaced in air pockets. Two of the divers surfaced in an air pocket 80 metres into the resurgence and using their 'black box' device they informed the surface crew that the third diver had failed to show up. They were informed that 120 metres of line had been fed out to the missing member who had apparently become entangled underwater. He eventually surfaced in the air pocket festooned in rope. The team continued on, but not without further incident;

'The torches did nothing but reflect a blinding glow and all I could see were my own bubbles....I had the rope in my hands but didn't know which way along the rope was out and which was towards Bill.I pulled in yards of the stuff, first from one direction and then the other, and finally felt Bill pulling at the rope and swam to him and surfaced. Both air tanks were approaching the half full mark and return to the surface became urgent' (Robertson 1977).

On a subsequent dive Bill Kinnear pushed ahead alone. His single air tank was drawn to half full when he turned around at a point 1,200 feet into the resurgence. Plans to return were abandoned when Kinnear died in a hunting accident a few days later.

It wasn't until February 1978 that the connection into Kubla Khan Cave was completed by Ron Allum, Phil Prust and Peter Stace (Stace 1979). The connection was surveyed by Nick Hume and myself in 1983,

revealing 1.1 km of passage containing three siphons of 500m, 120m and 40m length. The length of the siphons varies considerably depending on water levels.

The first exchange through trip soon followed. Nick Hume and Stuart Nicholas dived from the resurgence end whilst Rolan Eberhard and Duncan Holland abseiled into Kubla Khan at the other end of the system. The teams met up in Cairn Hall, where the diving and caving gear was swapped, then each team continued out in the opposite direction. So far everything had gone according to plan. However, there was a lack of solid natural anchors to tie the line off at the start of the third siphon, so Nick had brought along an onion bag which he stuffed with mud for this purpose.

Unbeknownst to the second diving team, the onion bag anchor had leaked it's contents so that as they reeled in the line, so too was the now useless anchor pulled into the sump towards them. Rolan and Duncan were soon confronted with an empty onion bag in the middle of the siphon. Duncan was unperturbed, so leaving Rolan with the reel which was their only security, he swam on until he surfaced on the other side of the siphon - it was Duncan's first cave dive! They continued on their way out but became separated again in the first long siphon. Duncan had got entangled in the line and by the time he sorted himself out he was completely disoriented - with no compass or detectable current he couldn't tell which way was in and which was out. He took a guess which proved to be correct - Duncan seemed to lead a charmed existence.

Recalling those early days now I think we had all been very lucky. I remember getting scared on numerous occasions, as we learnt the rules of survival in cave diving by trial and error. One hard-learned lesson in particular is worth relating. Union Cave at Mole Creek had received brief diving forays by Toby Clark in 1971. In 1979, Frank Salt and Peter Cover passed three short siphons but were unable to scale the sheer wall leading out of the water on the far side. Rolan and I ventured in there soon after we started cave diving. We passed through the first duckunder and peered into the second siphon - the water was beautifully clear

and there was no silt on the bottom, so throwing caution to the wind we dived through without laying a line, which we intended to save for use later on. The third siphon was not so straightforward as the sediment we stirred up obliterated all visibility. Before losing the visibility entirely we were able to find our way some 40 metres through to the far side. We eagerly clambered out of the water and explored about 250 metres of nicely decorated cave before encountering another siphon.

We felt pleased with our discovery, but a little apprehensive about the return dive in zero visibility, so we organised some signals to communicate with by a series of 'hand-squeezes'. One squeeze meant 'Stop', two squeezes meant 'OK', and three squeezes meant 'There is a slight problem'. We set off, reeling in the line as we went, until the line unexpectedly disappeared into a narrow slot - until now we hadn't learnt the technique of rebelaying the line to prevent it being pulled sideways into hazardous restrictions, or so-called 'line traps'. Rolan attempted to follow the line into the slot but it soon became impossibly narrow. He squeezed my hand three times and I squeezed him back three times, because I didn't relish the prospect of trying to reverse our way back to the previous airspace without the line in place to guide us. He gave me three squeezes again, and I squeezed him back. My breathing rate increased as the seriousness of our situation took hold. We were probably going to die I thought, as vivid images started to roar through my brain at 100 miles per hour, one image was the tragic scene that would confront Nick when he came to retrieve our bodies. After a period of time that seemed like ages, but which was probably only a few minutes, we developed a new underwater communication signal - lots of squeezes meant 'There is a very big and very serious problem here.' Then a miracle happened - the line came free from the slot it was caught in and we were able to follow it out.

Upon surfacing we both swore never to go cave diving ever again. Our trials were not quite over however as we still had another siphon to get through - the one with no line in it, and which by now was completely silted-

out. Suddenly no longer brash, I groped my way through using the line reel, and then reeled-in Rolan from the other side. We both learnt a lot about cave diving that day.

KUBLA KHAN February 1998

Chris Brown disappeared into the gloom as I struggled along behind, the gumbots I was wearing were causing considerable drag thus handicapping my finning movements. I caught up with him as he was clipping on the fourth reel of line which would hopefully take us to the end of the first siphon. He scampered ahead again but soon came back, bringing with him a cloud of silt which enveloped both of us. Using sign language he indicated that the passage ahead got narrow, and also could I please disentangle the line which had wrapped itself around his tank valves. He then thrust the reel into my hands with the obvious implication that I should take the lead since I had been through the siphon before and therefore ought to know the way.

In deteriorating visibility I probed ahead cautiously until getting to an unpleasant restriction which I did not remember from my previous visit 15 years before. I glimpsed an old piece of rotted line buried in the silt, a relic from the pioneering dives done here in the 1950's and 60's. I sensed the feeling of extreme isolation and loneliness which must have accompanied those early explorers when they first entered this cold, dark and inhospitable place. I felt in control of the situation but I definitely wasn't having fun as I groped around in zero visibility trying unsuccessfully to find the way on - it seemed like the passage had been nearly filled up with sediment. There was only one thing to do - retreat. I couldn't see Chris but I knew I'd found him again when our helmets 'clunked' together. I gave him a gentle shove in the direction of 'out', and with no further encouragement he was gone.

David Doolette and Tim Payne meanwhile had been patiently waiting for us to appear at the Pleasure Dome in Kubla Khan Cave - the plan had been to do another exchange through trip. It was a disappointment not to succeed in

completing the through trip, but as my pommie cave diving friend, Scoff, put it, 'No one died so that's a positive result!'

JUNEE CAVE

Junee Cave is a big resurgence, collecting water from many deep inflow caves situated up to 14 kilometres away. The site clearly has potential to lead the way into a very extensive cave system, the so-called Junee Master Cave. The Junee River emerges from a siphon about 100 metres inside the cave entrance.



David Doolette and Tim Payne, Junee 1998.

Eberhard and myself were the chief protagonists, assisted by Stuart Nicholas, Attila Vrana and others. Over the course of numerous dives, a heavy duty fixed line was gradually installed further and further into the siphon. The effort finally paid off in 1982 when Nick located a small air-bell, and then shortly afterwards Rolan reached the end of the 220 metre long first siphon. A piece of the puzzle to the Junee Master Cave had at last been realised. A magnificently decorated section of river passage - named 'For Your Eyes Only' - was tantalisingly short before we encountered a

In February 1966 Carl Sommer, Lance and Brian Barlow, and Dick Lane swam 550 feet into the siphon to a depth of 55 feet (*The Mercury* 28-2-1966).

In February 1978 Ron Allum, Phil Prust and Peter Stace penetrated 120 metres into the siphon, but reported there was little chance of breaking through due to the hazards of cold, poor visibility, strong flow and the small and treacherous nature of the cave (Stace 1979).

In 1981 the Tasmanian Caverneering Club took up the challenge at Junee. Nick Hume, Rolan

second siphon. This siphon proved to be a major obstacle as it started to descend deeply, thus incurring serious decompression problems. Hume reached a depth of 30 metres, and then in 1985 Ron Allum and Peter Rogers got to 35 metres depth but found no apparent way on. Cavers meanwhile kept searching for an alternative route into the master cave via the deep, wet caves located on the mountain slopes above.

In 1992 I went into Junee for another look. Passing the previous limit of exploration I negotiated a minor restriction at a depth of 44

metres where the current was screaming past me like a freight train from hell - so much water had to force its way through somewhere. At this depth I was suffering from nitrogen narcosis, the effects exacerbated by the cold water and poor visibility. The tunnel continued on - enticing, deeper.

My elation at discovering the cave was still going was tempered by an incident on my way back out. One of my regulators began to free-flow - a pebble lodged in the valve causing rapid loss of air. I struggled unsuccessfully to clear the blockage, then attempted to turn off the valve to the tank when suddenly I got severe cramp in both legs. In a short period of time one of my air supplies was completely drained. I exited using the one third reserve supply of air remaining in the other tank. This sobering episode reinforced a couple of the fundamental rules of cave diving - that is, always use at least two independent air supplies, and, reserve at least two-thirds of your air supply for return from the point of furthest penetration. On my way back through the first siphon I was dealt one final humbling experience - the zip on my drysuit failed and the suit flooded with water. The cave seemed to be smirking at my futile, hollow victory - if Junees were to be personified, its most enduring characteristic would be *Schadenfreude*.

The exploration had reached the limits of depth and decompression using air, so far as I was concerned anyway. To push further required the use of mixed-gas techniques to combat the narcosis, as well as pure oxygen to cut down the decompression times. Such technical diving demands considerable expertise and a serious approach, and it isn't cheap either. It wasn't until February 1998 that a team of divers with the appropriate credentials were lured into Junees - Cocklebidly record holder Chris Brown, diving medicine expert Dr David Doolette, and rising 'top gun' Tim Payne.

David and Tim did the first push dive. They breathed a special gas mixture containing 40% helium, 12% oxygen and 48% nitrogen. The inert gas helium was used to reduce the percentage of nitrogen in the breathing mix (normal air is 78% nitrogen), thus reducing the effects of nitrogen narcosis - this would allow

them to dive deep without experiencing narcosis symptoms more severe than those encountered at an equivalent air depth of about 40 metres. Helium however, aside from distorting your voice to sounding like that of Donald Duck, rapidly sucks the heat out of you because it has a high thermal conductivity - clearly not desirable in cold water. To combat this the divers inflated their drysuits from a pony tank containing argon gas, which has better thermal properties. The lowered oxygen concentration in the breathing mix (normal air is 21% oxygen) meant it would be hypoxic if breathed at shallow depths, so David and Tim also carried a tank of 'travel gas' containing normal air, which they would use between the surface and 35 metres depth.

The dive profile still required lengthy staged decompression stops, to allow the controlled removal of the nitrogen and helium absorbed by their tissues under pressure. If they ascended too rapidly they risked the formation of bubbles in their tissues causing decompression sickness - the 'bends'. The rate of off-gassing can be significantly enhanced, and hence deco times reduced, by breathing pure oxygen at the deco stops. Pure oxygen however, has its own physiological complications - it becomes toxic under pressure. The likelihood of suffering an oxygen convulsion above 9 metres depth is remote, but to increase their chances of survival in case of such a mishap, David and Tim had full face masks attached to their oxygen tanks. The full face masks also helped to reduce the chilling effect of the cold water.

Tim and David got to the previous limit of exploration but were soon confronted by a daunting restriction - jagged blades of razor sharp rock hung from the roof like menacing teeth. They pushed through to a depth of 50 metres where the passage seemed to pinch out, but they noticed a possible alternative way on back at 'The Teeth'.

'It's a scary, narky place down there', David and Tim both commented afterwards.

It was Chris's and my turn next. We had a strict time schedule to keep if we weren't to violate our dive and decompression profile.

The schedule had been carefully calculated by Tim and David using a clever computer program - both are experts in this field of diving. It boosted my confidence to know that we were doing this dive with a very high margin for safety. Needless to say, 'For Your Eyes Only' is not a good place to get hit by the bends.

I felt unexpectedly calm before my first mixed-gas dive. We dumped our oxygen cylinders at 6 metres and continued on to 35 metres where we dumped our cylinders of 'travel gas' and switched to the deep mix carried on our backs. - we were on schedule. We got to 'The Teeth' and wended our way through, carefully positioning the line so we wouldn't get stuck whilst returning in zero visibility - we did this by anchoring the line to pieces of poly pipe shoved into the sediment like ice screws. Throughout the second siphon we took great care in positioning the line to prevent it being severed on sharp rocks during next winter's floods, and to prevent it being pulled into line traps.

Following Chris in the clouds of silt which billowed past me I got occasional glimpses of green water and blue rock as he disappeared down virgin tunnel. I was intoxicated by narcosis and adrenalin, but focused my attention on monitoring my gauges - at this depth both time and gas supplies go very

quickly. All too soon we had reached our turning point - the depth was 60 metres but the tunnel kept barrelling onwards. We groped our way upwards. For just 10 minutes of exploration time we incurred 60 minutes of decompression - by the time we finally surfaced I had stopped shivering.

The final push was done by Tim and David again. It had rained overnight and the Junees River was still rising as we wrestled our way upstream. Both divers were already chilled and a little unhappy with the situation even before they commenced their dive. After they surfaced they were even less impressed - they had got to the previous limit but were unable to swim any further against the strong current. In 1985, Hume and Vrana had also been spat out of Junees when a flood pulse came through. David and Tim conveyed their feelings to me, 'Stef, you can keep your bloody cave.'

References

- Frauca, H. (1959) The cave divers. *People* September 2 1959: 17-19.
Frauca, H. (1960) Deep dark dive. *Australian Outdoors* May 1960: 12-14, 78-79.
Roberston, D. (1977) Twelve hundred feet under at Mole Creek. *Speleo Spiel* No. 128.
Stace, P. (1979) Cave diving in Tasmania. *ASF Newsletter* 84: 14-16.

A SUPERB 3 COURSE DINNER & INTERNATIONAL GUEST SPEAKER

all for only \$30

Members value at the anniversary weekend.

BOOK NOW TO GET YOUR SEATS!

CDAASITE ACCESS

Remember: Access is a privilege, not a right. Please be considerate of landowners wishes.

CN = CAVERN S = SINKHOLE C = CAVE P = PENETRATION

SITE	LEVEL	OWNER	ACCESS DETAILS
MOUNT GAMBIER - SOUTH AUSTRALIA			
Ewens Ponds	Nil	DENR P.O. Box 1046 Mt Gambier 5290 (08) 8735 1177	Groups of 6 or more, phone/mail to Dept. of Environment & Natural Resources (DENR). Smaller groups, no need. Indemnity form to be completed.
Horse & Cart Tea Tree	CN CN	Peter Cunningham PO Box 643, Mt Gambier 5290	By phone or mail, 1 week prior. Ph: (08) 8738 4003.
Little Blue	S	Port MacDonnell	Little Blue - permission not required - must carry card.
Allendale	C	Port MacDonnell	Obtain key from Mt. Gambier Tourist Information Centre.
Gouldens	CN	DENR	General Diving: Divers to contact DENR and notify of date and site to be dived. Divers must have the correct CDAAS diving endorsement for the site. The onus of proof of CDAAS status is on the diver and is provided by presentation of CDAAS membership card or DENR checking the membership list supplied by CDAAS. If there are problems with the diver not being a current financial member DENR will not be chasing the records officer to sort out the problem. This will be the responsibility of the diver. The diver must have signed an indemnity with DENR before access is permitted. Training: Cavern and Sinkhole. The Instructor is to notify DENR of the date the sites are needed and to forward signed indemnities from each student and their temporary card number. Cave and Penetration: The Instructor is to notify DENR of the date the sites are needed and is required to forward signed indemnities from each student and their membership number.
2 Sisters	CN	P.O. Box 1046	
Fossil	C	Mt Gambier 5290 Ph: (08) 8735 1177	
Ela Elap	S	Mr. Peter Norman	By phone or drop in before diving.
One Tree	S	Private Bag 67, Mt Gambier 5290	Ph: (08) 8738 5287
Swim Through	C	Valerie Earl PO Allendale 5291	Currently CLOSED pending new access arrangements.
Piccaninnie Ponds	S	DENR P.O. Box 1046, Mt Gambier 5290	Permit holders by phone. Be aware of delicate vegetation. Indemnity form to be completed. Ph: (08) 8735 1177 Faxed copies of cards no longer accepted when booking.
Hells Hole	S	Primary Industries	Contact Primary Industries S.A. (Forestry) by mail, phone or fax to arrange permit. Collect permit from Regional Office, Jubilee Hwy., Mount Gambier. No diving on total fire ban days. Forest Work Bans may be applied by PISA Forestry if forest fire danger is expected to reach extreme. Such bans also exclude the public from entering the forest. If in doubt, please check with Trevor Wynniat, although signs are generally erected at diving sites on such days to indicate such bans. Permits will ONLY be issued Mon-Fri between 8.30am-4.30pm. Ph: (08) 8724 2887 (08) 8724 7179. Please use this number for all bookings and enquiries etc. Fax: (08) 8724 2885 Email: wynniat.trevor@pi.sa.gov.au. Written confirmation required.
Pines	P/C	S.A. (Forestry)	
Mud Hole	C	PO Box 162 Mt Gambier 5290	
Kilsby's	S	Landowner leased to S.A. Police	Restricted access conditions apply - refer Guidelines Issue 54. Twin tanks, maximum of 40 metres depth. Write to: 5 Ekard Ave, Warrnambool 3282, 4 to 6 weeks prior to wanting to dive. Please enclose stamped self-addressed envelope. July 4/5, August 1/2, September 5/6. No animals permitted.
Shaft	S	Generally open one weekend a month L. Claridge P.O. Box 290 North Adelaide 5006	TIMETABLE FOR "THE SHAFT" GUIDES October 3/4, October 31/November 1 Nitrox as a diving mix is not allowed in the shaft. Deco mixes ATTACHED to a shot line are permissible. Divers applying to dive in the Shaft must have documented experience of a least 5 twin-tank dives.
Ten Eighty	S	Mr. Colin Traeger	Sundays only Mail Booking Form to Colin Traeger 2-6 weeks prior, stating names/qual. of all divers, and time slot. Please include stamped self addressed envelope. Closed October to November for shearing.
Bullock Hole	S	PO Box 12,	
Black Hole	S	Mt Gambier 5290 (087) 26 6215	

CDAA 25TH ANNIVERSARY CELEBRATIONS

THE ASSOCIATION IS VERY PROUD TO ANNOUNCE THE WEEKEND OF OCTOBER 17-18, 1998
AS THE OFFICIAL CELEBRATION OF 25 YEARS OF CAVE DIVING IN AUSTRALIA.

PLEASE JOIN IN AND HELP US ALL CELEBRATE THIS HISTORIC OCCASION.

THE DIRECTORS ARE PROUD TO ANNOUNCE THAT AMERICAN CAVE EXPLORER, AND
OWNER OF DIVE RITE, LAMAR HIRES, WILL BE THE KEYNOTE SPEAKER FOR THE
DINNER PRESENTATION.

TO ENSURE YOUR SEAT AT HIS PRESENTATION, PLEASE BE SURE TO RETURN THE BOOKING
FORM FOR THE DINNER & AUDIO-VISUAL PRESENTATION BELOW **BY SEPTEMBER 30TH.**

WEEKEND PROGRAM:

SATURDAY OCTOBER 17TH

10:00 AM CDAA ANNUAL GENERAL MEETING
12:30 PM **FREE** MEMBER BBQ LUNCH
2:30 PM SIESTA TIME (OR GO DIVING)
6:30 PM ANNIVERSARY DINNER INCLUDING PRESENTATION BY OUR
INTERNATIONAL KEYNOTE SPEAKER, LAMAR HIRES

SUNDAY OCTOBER 18TH

10:30 AM **FREE** SIDEMOUNTING & EQUIPMENT CONFIGURATION WORKSHOP
PRESENTED BY INTERNATIONAL GUEST LAMAR HIRES
1:30 PM HOME TIME !!! (OR MORE DIVING)

BOOKINGS CLOSE SEPT 30TH

BOOKINGS CLOSE SEPT 30TH

NAME: _____ CDAA NO: _____

ADDRESS: _____

PLEASE SEND ME _____ TICKETS FOR THE ANNIVERSARY DINNER
& AUDIO-VISUAL PRESENTATION @ \$30 PER TICKET

PLEASE BOOK _____ SPACES AT THE FREE MEMBERS BBQ LUNCH
(AFTER THE AGM ON SATURDAY)

PLEASE BOOK _____ SPACES AT THE FREE SUNDAY SIDEMOUNTING &
EQUIPMENT CONFIGURATION WORKSHOP PRESENTED BY LAMAR HIRES

PLEASE SEND FORM, WITH A STAMPED SELF-ADDRESSED ENVELOPE AND PAYMENT TO:
CDAA C/- 197 SMITH LANE, CRANBOURNE SOUTH, VIC. 3977

CDA A SITE ACCESS

SITE	LEVEL	OWNER	ACCESS DETAILS
MOUNT GAMBIER - SOUTH AUSTRALIA (continued)			
Max's Hole	C	Mr T. Edwards P.O. Box 1319 Mt Gambier 5290	Phone or mail 1 week prior to dive. Ph: (08) 8726 8277
Hann's cave	P	P & A Lasslett	Groups of four divers only apply in writing to Site Director. Limited groups will be allowed access over the summer months. The site is very delicate and therefore only limited access is available. Divers applying will be notified as to further access details. Please include a stamped self addressed envelope.
Engelbrechts		Mt Gambier	Obtain key from Mt Gambier Tourist Information Centre. Access agreement must be signed prior to diving. Key must be returned by 5pm Sunday, 2 divers must sign out keys, all divers must sign in advising which groups they are diving with.
- East	C	Council	
- West	P		
Three Sisters	P	Millicent Council	Contact Linda Claridge (Records' Officer). Access available for experienced Penetration divers only. Low profile or side mounted independent air systems required. Access agreement must be signed prior to diving. Please allow 4 weeks for indemnities to be processed.
Idlebiddy (SL250)	P	Primary Industries S.A. (Forestry)	5L250 open 1st & 3rd weekend of every month. 5L290 open every weekend.
Nettle-Bed (SL290)	P	PO Box 162 Mt Gambier 5290	Max. 4 divers per dive per day, 1 dive per day for each site. Only Penetration divers completed practical in-water cross-over. Bookings from Forestry Office - key from Lady Nelson. Contact Primary Industries SA (Forestry) by mail, phone or fax to arrange permit. Collect permit from Regional Office, Jubilee Hwy., Mt. Gambier. No diving on total fire ban days. Forest Work Bans may be applied by PISA Forestry if forest fire danger is expected to reach extreme. Such bans also exclude the public from entering the forest. If in doubt, please check with Trevor Wynniat or Forestry Office, although signs are generally erected at diving sites on such days to indicate such bans. Permits will ONLY be issued Mon-Fri between 8.30am-4.30pm. Ph: (08) 8724 2887. Please use this number for all bookings and enquiries etc. Fax: (08) 8724 2885 Email: wynniat.trevor@pi.sa.gov.au. Written confirmation required.
McKay's Shaft	S		Contact Phil Argy at Mt. Gambier as access can be arranged.
Tank Cave	P	Mr. DY CER	Tank Cave Access Manager: Phil Prust. Apply in writing at least 3 weeks in advance to; the Tank Cave Access Manager, 19 Broadmeadow Drive, Flagstaff Hill 5159. (This access may be cancelled at anytime, at the discretion of the landowner) NB: New divers must first apply for an application form to; Paul ARBON, PO Box 290 North Adelaide. (See Tank Cave Access Information - Issue No. 57).
Baker's Cave	C		Please write or email the Site Access Director to dive in Baker's Cave.
NULLARBOR - WESTERN AUSTRALIA			
Cocklebidy	C	Regional Manager	Apply in writing for permission to dive at least 4 weeks in advance of trip to:
Murra El Elevyn	P/C	C.A.L.M.	John Watson, Regional Manager C.A.L.M., 120 Albany Hwy, Albany, W.A. 6330.
Tommy Grahams	C	44 Serpentine Rd Albany 6330	Phone: (08) 9841 7133
Weebubbie	C		Apply in writing with at least 4 weeks notice to: Graham Higgins, Dept. of Land Administration, PO Box 2222, Midland, W.A. 6056. Include in the application: • The dates of the intended visit(s) • Photocopies of CDA A certification cards for all of the party • A signed Indemnity Form for Weebubbie Cave (photocopy from original in Issue 61 of Guidelines). Please note that this arrangement is for Weebubbie only and access to other caves on the Nullarbor must follow existing access protocol. Also note that divers must supply their own ladders as the old ladder has been removed.
WELLINGTON CAVES - N.S.W.			
Limekiln (McCavity)	P/C	Both Penetration and Cave Level are being accepted for this cave depending on it's water level at the time. The cave has a restriction at the entrance which is underwater making it a Penetration Dive. During drought, the water level drops to form a small lake below the restriction allowing experienced Cave Divers access to this delicate cave.	
Water (Anticline)	C	Affected by high CO ₂ levels during Summer/Autumn. Access arrangements are co-ordinated with an already commissioned research group. Contact Greg Ryan (02) 9351 4809 w, (02) 9743 4157 h, greg@cs.su.oz.au .	

CURRENTLY CLOSED

Announcing the

CDAA 25th Anniversary Weekend

Join in and celebrate the 25th year of our Association.

We are proud to announce that Cave Explorer & owner of Dive Rite, LAMAR HIRES, will be our keynote speaker at the special Anniversary Dinner.

A superb 3 course celebration dinner has been organised, which will also be the venue for the presentation by Lamar.

Lamar will talk on his experiences in mapping caves in Florida, Mexico & Japan, as well as his vision of the future of Cave Diving & the equipment we all use.

The full 3 course celebration meal, plus the presentation by Lamar, is only \$30 per person.

Great Value Indeed!!!!

Also on the Anniversary weekend is the fun of the AGM, a FREE members BBQ after the AGM, and on Sunday a FREE Sidemounting & Equipment Configuration Workshop, again presented by our guest speaker, Lamar Hires.

ENSURE YOUR SEATS - BOOK EARLY & SUPPORT YOUR ASSOCIATION'S 25th YEAR.

OCTOBER 17th-18th, International Motel
Millicent Road, Mount Gambier

WOODVILLE KARST PLAIN PROJECT

by Ken Sallott

The WKPP added another 5,000 feet of surveyed passage to the already large and growing network of tunnels that make up Wakulla Springs Cave. In a simultaneous three team, one day event, B, Tunnel, M Tunnel, and O Tunnel were explored.

The 3D Team of Jess Armanatrout, John Rose, and Bill Mee dropped off drive bottles and scooters for The R Team on their way to exploring two tunnels off of M, one a previous find, the other a new find as yet unnamed. This was a rebreather dive using the Halcyons and I believe the bottom time was in the 100 plus class.

Team 12-D (Barry Miller, Chris Werner and Ted Cole) simultaneously did the B Tunnel, travelling back to the AJ (the old end), and explored two tunnels near there, and one more on the way out on open circuit (a double stage) for an 80 minute bottom time. These three then went home, charged their scooters, ate dinner, and came back to do the 3500 foot cleanup dive in A Tunnel. This is what we call TOUGH.

Team R of Irvine, Jablonski and Scarabin, employing "new technology" by the Rat - a

reel that holds 2,700 feet of line and a few more, took the "Downtown Expressway (O Tunnel), examining leads and rock slides all the way until we hit the "Room" (the old end of the line), and added a quick 3,800 odd feet of line to the main passage.

In the process, the three broke their old World's Record of 14,230, putting the end of the line at about 18,000 feet. The dive was called on time by me, after 170 minutes, since we had said we would be back in five hours. We were not. It took six to complete the dive, but we had to retrieve all of the safeties out of the tunnel for changing out to new bottles, and we also had all of our other gear to move around for other explorations, so that took a little more time, giving us a 360 minute or six hour bottom time at 285. This dive was done with the Halcyon rebreathers also.

Scrubber times here were 11 hours for me, 13 for Brent. I jumped off to eat and get into the troughs. The BT was 360, were below 180 for seven hours, and decoed all the way out in 8.5 more for a 15.5 hour run time. My total deco was 9.5 hours. Helium and physical conditioning are the magic here.

CDAA WEB PAGE



<http://artemis.eng.monash.edu.au/CDAA/>

EXTREME DIVING

(Top End Style)

It certainly didn't look extreme. Standing on the edge of the crater, the water boiling into steam as it rose from the stygian depths and contacted the cool night air... Not at all!

Scott Spooner, who some of you may know, now resides in Darwin with his fiancée Nerilee. Scott's an avid cave diver - so long as it's wet and cold fresh water with some limestone (or any other kind of rock) - he's in! Living in Darwin, one finds oneself tucked well out of the way when it comes to sites for cave diving. After having not dived fresh water for nearly 12 weeks, Scott was suffering severely with NCS (No Compression Sickness). This insidious, debilitating disease strikes when you least expect it - symptoms include depression, anxiety, irritability, headaches and stomach cramps. It's effects should never be underestimated - it can and has destroyed relationships. Luckily, Scott was saved.

When I was living in Darwin some years ago I heard of a place called Rum Jungle - the site of an old Uranium mine, now flooded and reputedly over 60m deep. Now, this would be diving with a difference, not that Scott cared - his objective (as usual): 'Get Wet'. Prior to my arrival in Darwin, I talked to Scott and we decided to check it out. The day looked fabulous (again) and so, like bees to the nectar (cockroaches to the fallout?) we headed south along the Stuart Highway. The car was packed with diving gadgets but, did anyone bother to pack a Geiger Counter?!

The Bachelor turn off leads West to the sleepy little grotto of Bachelor and a few kilometres beyond it to the Rum Jungle area. The site is a 4 km² fenced off area consisting of enormous tailings piles and several flooded open cut mines forming small lake oases. The track meanders around the site, up on top of the tailings piles (nice views!) and around the

lakes and old processing / storage buildings. Some heavy equipment is still evident, lying rusting and decaying under the hot tropical sun. The ground in the area is like a lunar surface. At the base of the tailings piles small rivulets run off into lower ground. Mineral salts (Uranium Chloride with your fries Ma'am ?!) cake the ground where the water has flowed out of the tailings and glare bright white in the sun.

The lake looked peaceful, cool and invitingly clear, it was roughly circular with a diameter of about 150m - reeds lined most of the perimeter. We kitted up with twin tanks, plenty of light on our helmets and took a couple reels with us - for Justin (Mr. Case). Tying off at the shore we descended straight down the very steep bank of the old mine. With the viz at about 4m we needed our lights at the 15m mark. The edge of the mine was soft red earth - covered in a thin layer of algae-type material that instantly turned to a silt cloud when you touched it - we refrained! There being no tie-offs we continued down into the stygian darkness previously mentioned. The boiling water was considerably cooler here - a thermocline at 15m dropped from 24°C down to 16°C in a wink. At exactly 30m we encountered a unique phenomenon, certainly neither of us had seen anything like it - an underwater sea, and we found ourselves suspended over its shoreline!

The 'sea of slime' consisted of a dense layer of red silt (?) perfectly horizontal and extending out into the lake. Where the layer met the earth sidewall, it gave the appearance of a shoreline - not what you expect - underwater!! Taking my SL-6 from a BC pocket, I shone it down and attempted to peer into the slime - No Go. Trying a different angle, I immersed the light into the slime and pointed it back up. At six inches the light was invisible, at about three inches, a red glow was all you got - this was

serious slime! At this point I had a couple of conflicting thoughts:

1. (The Testosterone Voice) - 'Go down, see if it's just a thin layer like when the Cousteau team descended into a volcanic crater and encountered a similar layer at depth. The divers had to unwillingly go through a layer a few metres deep before entering crystal clear and cold water in total darkness', and
2. (The Voice of Fear) - 'What was that about layers of Hydrogen Sulfide in water that can poison you just through skin exposure? And isn't this just the concentrated radioactive material that's washed down from the higher levels?'

Needless to say, Fear won out and whether it's simply that the mine is only 30m deep and the layer is a bottom suspension we don't know. Scott of course, was enraptured - his NCS was cured and relief had flooded his facemask! There being little else to do at this level, we followed the 'shore' back to our ascent point and headed up to the shallows for a deco. We trundled off in opposite directions - following the shoreline around at the 3-5m mark to see what was around and bask in the sunlight filtering through the water. I was reassured by the presence of some little water beetles swimming around the base of the reeds - maybe these will actually inherit the Earth after we vaporise it!? The topography was fairly uniform, so we surfaced and exited.

Scott saw a 4 foot freshwater crocodile during his foray - it was startled when he swam over the top of it. Now that's a Black Cat - "Yeah,

reminds of the time I dived with crocodiles!!" As we departed the area, a tinge of regret crept up on me - should I have gone further out into the lake and 'pushed the slime'? What was hidden beneath those gently rippling clouds of thick red ooze? Scott is left with the task of unravelling that mystery - once his exposure level has come down a few Roentgens!

AFTERWORD

The benefits of radioactive diving are just coming to the fore now. I am the redundant primary light on cave diving expeditions - the team just uncovers me when they need a little extra light! I save a fortune on torch batteries and find myself invaluable on Prawn dives - I sit on the bottom while my wife scoops up the prawns as they flock in (a *flock* of prawns?!) to check out the green glow. It hasn't done much for my love life though - it's not that my wife doesn't like sleeping with the Creature from the Swamp - she just can't sleep with the lights on!

ON A SERIOUS NOTE

The nearest cave diving to Darwin is actually in Indonesia. The dive shop in Darwin occasionally runs exploration trips to some islands with karst features in the Flores group. A few hundred dollars gets you there and back with a week's expenses covered! My recent visit to Sulawesi saw us over one kilometre into a stream passage cave and our way forward blocked by a waterfall and subterranean lake. Plenty of scope for some virgin cave diving!!

About the Author:

Paul Hosie is the co-inventor with Allan Sharpe (as inspired by Andrew Nelson) of the revolutionary SAFEAIR-Snorkel™. The SAFEAIR-Snorkel™ was designed with the safety of truly incompetent divers in mind. Allowing diving to a depth of over 3m with fully automatic DNEAX (DeNitrogenated Enriched Air miXture) scrubbing, this unit should be available worldwide by the end of the century. Apart from some minor side effects, the unit is totally safe and should retail for around \$90.00 (DNEAX scrubber extra). Watch out for it in a store near you!

TANK CAVE GARDENER

by Phil Argy, CDAA 1789

Here I sit at the electronic work pad with tongue firmly placed in cheek writing my first (and maybe my last!) article for guidelines. With three Nullarbor expeditions under the belt and less than 10 dives in Tank Cave I feel the urge to write and express as creatively as possible (for a male) a description of a journey in cave diving. I can remember my first dives in Ewens Ponds in awe and then the inevitable category one course training at West Lakes in Adelaide under instruction from Greg Bulling and further examination by the infamous Chris Brown (sorry Chris). A few beers at the Legtrapp Hotel, more training in Mount Gambier and then more training in Mt Gambier and finally another examination to attain to sinkhole diver certification. Then the dives, particularly in early days with SA police in the Shaft and Kilsbys on unscheduled trips. Then somehow again back in the water, training for cave level. Being told by the again infamous Chris Brown that if we were to be found in the rather inaccessible portions of Pines we would face certain disciplinary measures, Hmmm! Ok but how were we to know if we liked penetration sites? Now gaining momentum in my cave diving career with the likes of Gary Barclay and Kevin Bishop. Somewhere in Mud hole looking for connections?? Not long after the cave course an expedition to the Nullarbor with about 10 other divers, an 80 cylinder journey into Cocklebidy that went horribly wrong and some fantastic Tommy Grahams dives visiting the now famous Jimi Hendrix room and a journey through tunnels that hold the key to cave diving!

Further down the track (many years) I remember being told by Peter Grills that I was to be on the next penetration course with him. He had organised it! Well there I was again with Greg Bulling but also this time with another rigorous underwater explorer and instructor Glen Harrison. Well with my newly

acquired friends Sabine Schnittger, Victor Kostuik and Rodney Blair we all aspired to and somehow became penetration divers. Of course Victor and I were labelled as solid divers which we were later given explanation by the very subtle Glen, "There is only so many ways you can say average Guys!" Well thank you Glen! More diving including a return to the Nullarbor visiting Murra, Cocklebidy and Weebubbie including a very well produced video/CD by Ian Gandel and a memorable socialisation process of education by Chris Toomer and Michael Marques. And how could I not remember being busted by the border police for possession of honey whilst in the company of comrades Andrew MacIntosh and Clayton Neilsen. Andrew's carpentry skills were a bit useless, but is was sure handy having a barrister on board! And of course the meeting with Norrie Belacco at Ceduna after their 'cave in' at Weebubbie. Rumour has it that it was a cave diver from Toorak who had the 'Sahara' running on top of the cliff at Weebubbie to keep the film cooler running!

Next, more and more diving in mostly penetration sites to chalk up as many as possible toward my aspiration to dive tank cave. Somehow over at least 18 months managing to have about 18 different buddies I presented myself to the scrutiny of the Tank Cave Police. The Tank Cave Police under thick brows examined my credentials and my diving skills whilst on my mentionable and memorable first dive in tank cave. Again with Chris Brown and my best ever tank cave buddy Sabine we traversed the gold line. 150 metres into the dive I decide to change masks (just to impress the guide and also to enable vision through a very leaky mask!) and continue on through this amazing place of such diverse diving that a novice like me can only describe as all caves in one; low flatteners, large tunnels, huge rooms, flat white ceilings with

lots and lots of tunnels, clay blocks, white walls and a manageable restriction!

More diving, more tank cave and then an invite from the Tank Cave Guru Phil Prust. An invite to mow the grass and whipper snip the edges of the entrance! Now I know I'm really cooking, I'm aspiring to be the Tank Cave Gardener. Those of you who know me well enough know that I have a passion for gardening but this is the best. Of course I do need every bit of dive equipment to properly maintain this site in pristine condition! Unfortunately the garden only requires tending about every three months (if I'm lucky) as long as I have penetration currency. These days I enjoy putting down Tank Cave as currency for Tank Cave. I always perform my gardening tasks first and then go through the arduous task

of the dive site. But I guess if I can maintain a few blades of grass can this help me to dive this superb site. Well I guess not, but I do accept my new role as the Tank Cave Gardener and hope that there are many more opportunities to maintain this rather diverse wonderful garden of tunnels, rooms and traverses!



LEAVE YOUR TOYS AT HOME!

by Stan Bugg

The requirement that CDAA members be over eighteen should guarantee that childlike activities are not practised by members. Unfortunately this does not seem to be the case.

My spies, and personal observations tell me that some diver(s) are following the juvenile American practice of leaving toys in caves, ranging from little dolls to garden gnomes.

The reaction within my personal circle of cave diving acquaintances to this trend has been universally that of disgust and disbelief. As far as we are concerned, this is merely another form of defacement of the natural environment, and not far removed from graffiti. At best, it constitutes litter, to be despised by anyone with respect for caves and other cave divers.

At worst the practice invites copycat behaviour by those who see the toy, and want to place their own trinket further in. I can well imagine a situation where a diver could end up in

serious trouble in a cave such as Pines back passage, trying to better another diver's troll doll! Rumours are already rife concerning certain items in more remote parts of several systems.

The unofficial caving adage, "Take nothing but photographs; leave nothing but bubbles," is being ignored by these divers who are displaying a behaviour little removed from the tom cat who sprays urine around to announce his territorial limits.

The toys, always left anonymously, are a pathetic search for self gratification; "My mark is here, therefore..."

I invite all responsible members to do what I am doing. I am removing any such items, just as I would with any other human generated litter!

So, whoever you are, leave your toys at home, and GROW UP!

GETTING THE MOST OUT OF YOUR SEALED LEAD ACID BATTERY

Most Cave Divers will be familiar with Sealed Lead Acid (SLA) batteries or "Gel Cells" which are commonly used in the larger underwater lights, and other devices such as scooters. They are usually square shaped, heavy, and rated at 6 volts or 12 volts. Each cell produces 2 volts, so the 6V batteries have three cells and the 12V batteries, six cells. You can see the outline of the cells if you look carefully at the battery.

Nickel Cadmium batteries, or "Ni-Cads", are usually round, lighter and more expensive! They produce only about 1.2V per cell, so you need more cells to provide a given voltage.

What's inside an SLA Battery?

The chemistry of SLA batteries is essentially the same as a "wet cell" car battery. Each cell contains a positive electrode of spongy lead, a negative electrode of lead peroxide or "brown lead", and a sulphuric acid electrolyte. However, unlike wet cells, the electrolyte is contained in a small volume of gel or paste which cannot spill out of the battery. This is a big advantage! Does anyone remember diving with a wet cell motor bike battery attached to their waist?

Drawing current from the battery steadily converts both electrodes into lead sulphate. This chemical change releases energy in the form of electrical current. Fortunately this is a reversible process. Pushing electrical current in the opposite direction through the battery converts the lead sulphate back to spongy lead and lead peroxide. However, when the battery is fully charged this chemical change stops. If charging current is still applied, the voltage across the battery increases and the electrical current now begins to convert the water in the electrolyte into an explosive mixture of oxygen and hydrogen.

Gas production is not a problem for a wet cell battery. In fact, looking for "gassing" is a good

way of determining when the battery is fully charged. Gassing uses up the water in the electrolyte, which is one reason car batteries require occasional topping up with distilled water. Remember that the gases produced are explosive, so keep naked flames away, and don't generate sparks near a charging battery.

Charging SLA Batteries

SLA batteries contain special additives to minimise gassing. However an overcharged SLA battery will still produce a certain amount of gas. In fact the cells are fitted with release valve to prevent build up of internal pressure. The gases cannot easily escape from the electrolyte paste and the formation of bubbles will damage the battery. Gassing also causes water loss, and there is no way of replacing the lost water, so an overcharged SLA battery will dry out and become useless.

Watching for gassing is clearly a bad way of determining when an SLA battery is charged! So we need a better way of turning off the charging current when charging is complete. The answer is to watch the voltage across the battery. This will rise once the battery is charged and can be used as a signal to reduce the charging current. This could be done manually if you are prepared to stay up all night watching a voltmeter! However a better solution is to use a voltage regulated charger which limits the voltage to 2.3 volts per cell. This translates to 6.9 volts for a 6V battery or 13.8V for a 12V battery. Providing this voltage is not exceeded the battery cannot gas, and can be left on charge indefinitely, this is called leaving the battery on "float charge" and is OK providing the maximum voltage is not exceeded. Be warned though, many so called float chargers do exceed the maximum voltage, and can damage the battery if left on for long periods.

An ammeter, on the charger, is useful to indicate the state of the battery. A discharged

battery will draw full current. However, as charging progresses the voltage will rise until it reaches the maximum voltage. At this point the charger will reduce the current to prevent the maximum voltage being exceeded. The current will slowly decrease to close to zero as the battery becomes fully charged. You can check that a battery is charged by connecting it to the charger. The current will approach full current initially but will drop to close to zero within a few seconds. If it doesn't, further charging is needed.

Fast Charging Methods

One of the problems with constant voltage charging is that it can take many hours for a battery to achieve full charge. Some chargers are designed to push as much current into the battery as possible to achieve full charge in the shortest time. This requires clever electronics in the charger which allows the voltage to increase to around 2.4 volts per cell (14.4 volts for a 12V battery) while the battery is being charged. When the electronics senses that the battery is fully charged it switches to the float voltage of 2.3 volts per cell. These chargers often have lights to indicate "Charge" or "Float" mode.

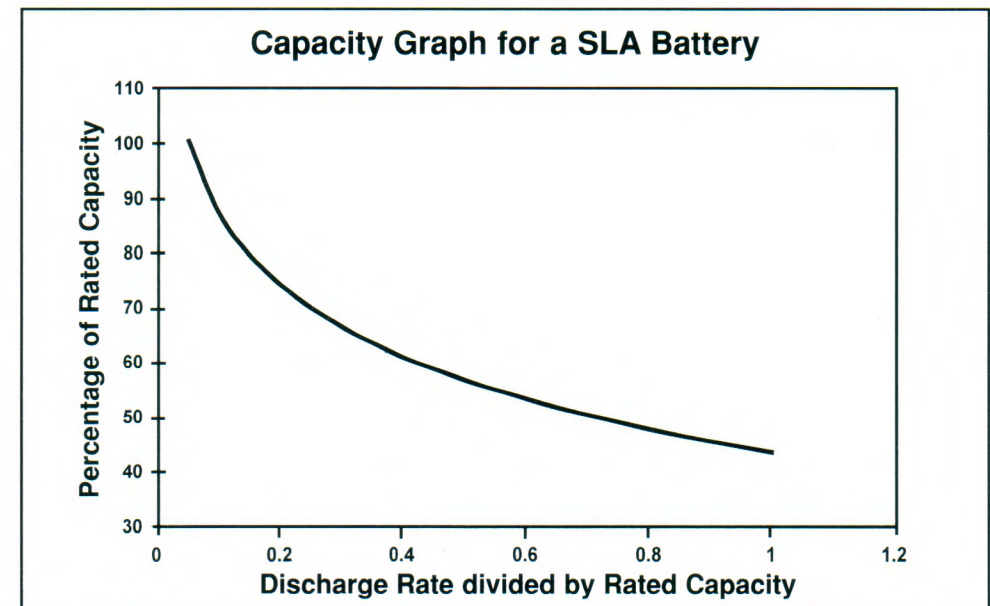
Some people use simple constant voltage chargers, set to 2.4 volts per cell, to achieve faster charging. This is acceptable as long as the battery is removed from charge soon after it is fully charged.

My own preference is to charge at 2.3 volts per cell and to accept the somewhat longer time to achieve full charge. An overnight charge normally ensures that the battery is very close to fully charged.

In Guidelines No 65, George Irvine described the problem of Tekna DV3X scooters exploding due to gassing from the batteries. Excessive gassing is caused by excessive charging voltage. I suspect the risk of explosion could be minimised by not exceeding 2.3 volts per cell. It would be interesting to test the charger used on the scooter that exploded at Ginnie Springs. Perhaps the voltage regulation of scooter chargers should be checked more regularly?

Battery Capacity and Burn Time

The capacity of a SLA battery is rated in ampere hours (AH). A common size of battery has a rating of 12 volts and 7 ampere hours



(12V 7AH). The capacity is normally specified at the 20 hour rate. This means that the battery can deliver a current of 0.35 amps for 20 hours, since $0.35 \times 20 = 7$ AH. Unfortunately the battery becomes less efficient at higher discharge rates. A discharge current of 4 amps, which is the current drawn by a 50 watt light, will give a burn time of only about 57 minutes, not the 1.75 hours you might expect.

The capacity graph shown enables the burn time to be estimated from the rated capacity and the discharge current. The horizontal axis is the discharge current divided by the rated capacity, in our case this is $4 / 7 = 0.57$. This gives 54% of rated capacity on the vertical axis. 54% of 7 AH is 3.8 AH which is the effective capacity of our battery. At 4 amps the battery will last $3.8 / 4 = 0.95$ hours or 57 minutes.

If two 7 AH batteries are used in parallel each battery supplies only 2 amps, giving an effective capacity of 4.7 AH for each battery. The burn time is now $4.7 / 2 = 2.35$ hours or about 140 minutes. So doubling your battery size gives you about 2.5 times the burn time.

Some batteries perform better at high discharge rates than others, so the figures above are a guide only. Your battery supplier should be able to supply discharge characteristic curves to suit your particular battery.

Testing Battery Capacity and Burn Time

Battery capacity can be tested by connecting a known load, and discharging the battery until a certain voltage is reached. I would not recommend doing this unless there is good reason. Testing a battery, by deeply discharging it, will reduce its life to some extent.

If you choose to do a capacity test you should watch the battery voltage carefully. The best method is to graph the voltage against time and terminate the test as the voltage begins to drop more rapidly. Do not allow the voltage to drop below 1.8 volts per cell (10.8 volts for a 12 volt battery).

Checking Your Charger

Most plug pack power supplies are not suitable for charging SLA batteries. They either deliver too little current, so the battery takes too long to charge, or they have inadequate voltage regulation which can cause battery damage through overcharging. They may even have both these problems. As a general rule you should only use a charger which is specifically designed for charging SLA batteries.

The charger should supply enough current to charge the battery in good time, but should not exceed C/4 amps (C is the capacity of the battery in ampere hours). The maximum charge current for a 7 AH battery is therefore 1.75 amps. Most chargers will have their current rating written on them.

To check the charging voltage you will need a digital voltmeter. Measure the voltage when the battery is on charge. It will increase as the battery is charged but it should stabilise at 2.3 to 2.4 volts per cell. (13.8 to 14.4 volts for a 12 volt battery). If the voltage is not in this range after 10 hours of charging the charger should not be used.

How to get the most from your SLA batteries

1. Choose a battery with more than enough capacity to supply the load for the required time. Fully discharging SLA batteries will shorten their life. Unlike ni-cads they do not have a memory and do not need to be fully discharged to maintain their capacity.
2. If you see your light getting dim, turn it off immediately, and do not use it again. Continually trying the light, to see if the battery has recovered, will damage the battery.
3. Recharge the battery as soon as possible after use.
4. Put the battery on charge between dives if possible. It is better to "top up" a part used battery than to deeply discharge it on a second dive.
5. Make sure the battery is fully charged before storage. For long storage it should be

float charged regularly, say once a month for a day.

6. Use only a properly designed SLA battery charger. Never use a conventional car battery charger.
7. Never short circuit the terminals. It is a good idea to wrap the battery in plastic or cloth during transport.
8. Protect the battery from heat and mechanical shocks.

Conclusion

To me, the advantages of SLA batteries seem to be reliability and reasonable cost. They do not suffer from a memory effect, which means

they can be charged after every dive without the need to fully discharge them. Having done this you can be reasonably sure of a predictable burn time. They can be packed away for several months, and after a short top up charge, be ready to go. Eventually they will lose capacity and need to be replaced of course, however it should be possible to get a several years of good use if they are properly looked after.

These are my opinions anyway. Please feel free to email me with any comments or suggestions.

Ken Smith, CDAA 799,
k.smith@bigpond.com

From the Products Person...

HUGE APOLOGIES TO EVERYONE STILL WAITING FOR CLOTHING!

There have been more delays in the making and printing process which are totally outside our control. However the printers have promised us delivery by the end of the month, which means that all the back orders will be filled very soon after that time. Polo shirts, windcheaters and T-shirts will be the first to arrive with Polar Fleece next on the list. Colors, as mentioned before, are limited at present to black, blue and white. For those people who have ordered other colours from old order forms, I will send you the closest option and hope you approve. Many thanks for your patience in this matter.

New products on the list

An Introduction to Technical Diving by Rob Palmer - includes recommended equipment for solo diving, deep diving, an intro to gas mixtures other than air, useful info on emergency situations and technology including but not limited to, full face masks, scooters and habitats. In stock now.

Coming Soon...

Drysuit Diving by Steve Barsky, Dick Long & Bob Stinton - a very informative and comprehensive manual on all aspects of Drysuit Diving including choice comparisons, maintenance & repair, use, etc.

Solo Diving by Robert Von Maier - addresses the sometimes controversial topic of diving alone. Well don't we?

Mixed Gas Diving by Tom Mount & Bret Gillam - includes theory, deco management, operational practices, mixed gas production, etc.

Something to look forward to...

By the time this Guidelines reaches you, a new range of battery charges will be available that are of great interest to those diving in remote locations:

Type 1 accepts input voltages of between 90-264V@43 to 60Hz and is able to charge lead acid/gel cell packs up to 150Ah.

Type 2 accepts 12v DC in from either type one or a car battery via typically a cigarette lighter plug and will "smart charge" almost any ni-cad or other rechargeable battery system from 1.2 to 12v, and type 3 will run from a solar panel and will charge just about anything.

And yes, the solar panels will also be available too. Just the thing for those Nullarbor trips!

Oh yeah, by the way, type one weighs less than 300 grams. Very handy when flying - like to the US or Solomons or Vanuatu or Truk, etc.

Cost, availability and full product review to come in the next Guidelines, but some will be available and/or on display at AGM.

A DANGEROUS HABIT...

by Gary Barclay, CDAA No. 1735

Nitrox is now firmly a part of the cave diving scene. By using it to both increase the bottom time and decrease the decompression schedule it is proving to be quite an asset to the divers around the Mount. With this comes your responsibility to still dive within the limits of your training and within your own personal limits. You must of course have all the correct equipment to do so safely, e.g. minimum of three torches for a cave dive, twin tanks, dive reel and whatever else that dive requires. In the case of a Nitrox dive you must have had your CDAA certification card endorsed with the Nitrox sticker. There are now nearly 200 CDAA divers endorsed to use Nitrox in CDAA sites, so it seems that more and more divers are looking to increase their diving safety.

Having said all this I have made the observation on more than one occasion, that there are divers out there making a practice of NOT marking their cylinders correctly, or more to the point, not marking their cylinders at all! I have seen this practice done by newly certified divers through to those diving at the top level of our Association. These are all people who should know better! This is a practice that is incredibly dangerous, as a mistake can easily be made, to the detriment of the user and ultimately to the Association.

Correct Markings.....

The correct stickers that should be used on the cylinder are a 25mm yellow band with the words ENRICHED AIR or NITROX or SAFE AIR printed on it. It should also have a current sticker to tell that it has been properly cleaned and is safe to use with Nitrox. To keep the tank 'clean' it must be filled each time from a reputable fill station that can supply you with clean air", such as Blinky Phil's in Mount Gambier. This stops contaminants from entering the tank thus keeping the tank "clean".

The current mix and M.O.D. should also be visible on the top of the tank.

I would like to relay a story I read a few years ago. The scenario is a little different from what we may encounter, but the cause is the same. In the U.K a few years back a teenage boy took his dad's dive gear into the backyard pool for a quick dive. He was later found floating and had to be resuscitated. WHY? His dad was a dry suit diver and the cylinder the boy took for the dive was actually dad's dry suit inflation gas - ARGON. Argon is an inert gas that will not sustain life. The tank had no markings on it to differentiate it from all the other similar tanks in the dad's shed. This type of accident can happen so easily with any unmarked tank. If an unmarked Nitrox tank is used, the M.O.D. (Maximum Operating Depth) is totally unknown and will lead to the user quite easily violating that depth.

Please Ensure That All Nitrox Cylinders Are Marked As Such!!!!

**INTERNATIONAL
KEYNOTE SPEAKER
LAMAR HIRES**

**AT THE
ANNIVERSARY DINNER.**

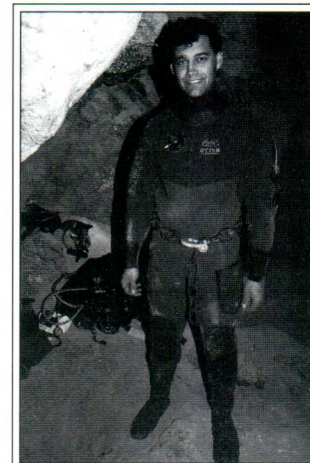
***DON'T MISS OUT!
BOOK EARLY***

★★★ NEW EQUIPMENT ★★★

THE CHALLENGE BELT™

by Paul Hosie

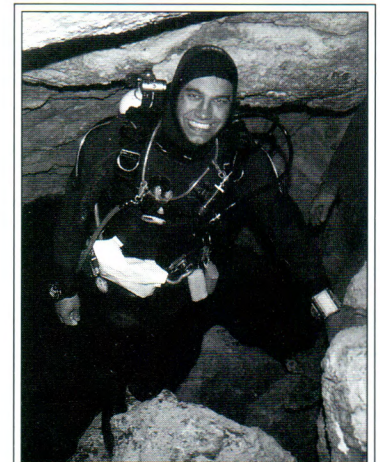
The harsh environment and rigours of cave diving demand that only the best equipment is used – leading to a rewarding, safe diving experience. To this end, new diving technology is often put through its paces in the underground arena by skilled professionals who are finely tuned to their environment. Our recent trip to the Nullarbor saw an opportunity to test the limits of modern technology with the latest innovation in integrated weight belt technology – the **Challen Belt™** from CHAIN Engineering, WA.



Craig Challen – Cave Explorer

Pictured is Craig Challen (concept designer) demonstrating the new **Challen Belt™** prior to and following the dive – clearly overjoyed with the superior performance and personalised comfort offered by the system. "I have never been more perfectly weighted," noted Craig after the historic dive:

***"Cave exploring has been revolutionised!
It will never be the same again!"***



Post Dive Euphoria

If you are one of those willing to take up the challenge of the unknown, then email CHAIN Engineering at:

Paul.Hosie.136034@navy.gov.au

for more information on this and the other exciting new products under development.

Look out for Challen Belt™ at a hardware store near you!

CDAA NOTICES

GUIDELINES DEADLINES

If you would like to contribute to Guidelines, you should note the following deadlines for submission of materials:

Deadline for publication

7th of November	December
21st February	March
21st May	June

NOTICE FOR INSTRUCTORS

Procedure for ordering student packs:

1. Check you are insured & financial.
2. Send order & cheque or by phone/credit card.
3. Allow 14 days from when the order is received - so allow plenty of time.
4. Student kits cannot be returned.
5. If you need to phone for more information use (02) 4950 6262 between 8am and 12 midday (NSW times).
* Messages left on my mobile from instructors will not be returned.
6. Please do not pass my number on to dive shops - you should deal with them not me.

Peter Grills 1780
Instructor Materials Officer

ACTIVE CDAA INSTRUCTORS

Any Instructor wishing material contact - (02) 4950 6262 (8am - 12 midday)

STANDARDS DIRECTOR:

Glen Harrison
Telephone: 0414 946 602
(email) harrison.glen@saugov.sa.gov.au

INSTRUCTOR	CN	S	C	STATE	PHONE	INSTRUCTOR	CN	S	C	STATE	PHONE
NSW & ACT						VICTORIA					
Nick Jones	.	.	.	ACT	015 851 313 m	Stephen Arnel	.	.	.	VIC	(055) 26 5230 h
Peter Grills	.	.	.	NSW	(02) 4950 6262 (8am - 12 midday)	Gary Barclay	.	.	.	VIC	(03) 5565 8793 h
Gary Norgard	.	.	.	NSW	(049) 68 4588 h	Jane Bowman	.	.	.	VIC	(03) 9579 2600 w
Andrew Robertson	.	.	.	NSW	018 412 563 m	Stan Bugg	.	.	.	VIC	(03) 9379 8791 h
Des Walters	.	.	.	NSW	(060) 411 405 w	Linda Claridge	.	.	.	VIC	(03) 5565 8793 H
SOUTH AUSTRALIA						Brian Cornell	.	.	.	VIC	(059) 85 2514 h
Greg Bulling	.	.	.	SA	014 477 430 m (08) 8265 4978 h	John Dalla - Zuanna	.	.	.	VIC	015 887 060 m
Glen Harrison	.	.	.	SA	0414 946 602 m (08) 8386 3237 h	Chris Edwards	.	.	.	VIC	(03) 9579 4352 h
Max Marriot	.	.	.	SA	(08) 8447 3360 h	Barry Heard	.	.	.	VIC	(056) 27 6474 h 019 401 469 m
Richard Megaw	.	.	.	SA	(08) 8344 1733 h						
Richard McDonald	.	.	.	SA	(08) 8295 4140 h/w						
WESTERN AUSTRALIA						Ian Lewis	.	.	.	VIC	015 284 051 m
Gary Bush	.	.	.	WA	0417 957 620 m	Warrick McDonald	.	.	.	VIC	(03) 9579 2600 w
Marilyn Boydell	.	.	.	WA	(08) 9349 5646 h	Bob Wealthy	.	.	.	VIC	(056) 858 338 h
Steve Sturgeon	.	.	.	WA	(08) 9527 7667 h/w 0418 940 143 m						

CDAA NOTICES

Penetration course - October 1998

CDAA members interested in participating in the last penetration course for '98 should contact the course coordinator

Steve Sturgeon at:

PO Box 5233,
Rockingham Beach, WA 6168
Ph. 08 9527 7667
Fax 08 9528 6995
Mobile 0418 940 143
Email cdaa@nitrox.com.au

The course will be conducted over 2 weekends in Mount Gambier:

- the 3rd, 4th, 5th; and
- the 10th, 11th October 1998.

Steve Sturgeon
National Director

Directors' meeting

Members who would like specific issues to be discussed at the next directors' meeting over the AGM weekend should contact the relevant director by end of September.

Steve Sturgeon
National Director

Baker's Cave

I am pleased to report that Baker's Cave has reopened. Please contact me for diving times and dates!

Gary Barclay
Site Director

Kilsby's

Please note that there is a new access arrangement for Kilsby's. Many thanks must go to Tim Collins for all the work he has put in while managing access for Kilsby's.

Remember non-divers are not permitted on the property!

Gary Barclay
Site Director

Access to CDAA sites

Concern has been raised by several Landowners regarding unqualified and uninsured people entering CDAA sites. In order to clarify the situation the following regulation applies in all instances. Only suitably qualified, current CDAA members are allowed access into sites where physical boundaries such as fences or gates exist. This means, for example, that only current CDAA members who hold sinkhole rating are allowed access beyond the fence lines which specifically surround holes on Barnoolut property. Also, only penetration rated divers are allowed beyond the Englebrechts West gate unless other members of the party are on a Life Line guided tour.

Glen Harrison
Standards Director

**A Superb 3 Course Dinner & International Guest Speaker
all for only \$30.**

Members value at the anniversary weekend.

Book NOW to get your seats!

TRADING POST

FOR SALE

Cave/tech diving light,
all marine anodised
aluminium, 12v 15amp
hour battery, 100w,
50w or 30 watt bulb,
compact head, switch on
battery pack, charger,
as new \$850.

Neil Vincent
(02) 971 798
email neilv@ozemail.com.au

FOR SALE

AS NEW with instruction
manuals & all in original boxes
- used mainly in fresh water:

- Nikonos 4A • 35mm Lens
- SB101 Flash • 28mm Lens
- Pelican Case • Difuser
- 15mm Lens (*incl. view finder*)
- Close Up Lens (*outfit*)

Further details
(08) 8336 1616

FOR SALE

BRAND NEW
SIZE 0
VIKING PRO
DRYSUIT.

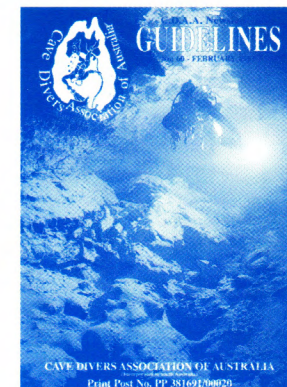
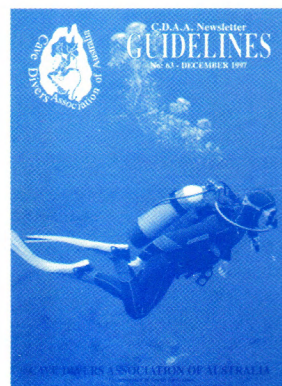
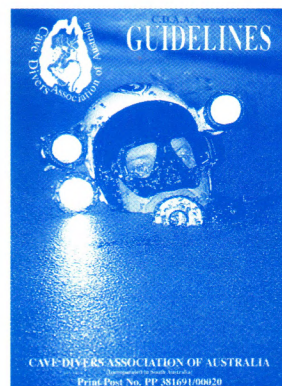
Has only been on 3 dives!
Sale includes spare parts
& accessories.

\$1,000 ono
Ring Sabine on
0412 11 44 39

FOR SALE

Two 63 cubic ft
aluminium tanks,
with stainless
steel bands.
\$320 the lot.

Phone
Clive Wheeler
CDAA 2409
8298 5952



LIKE
TO
SEE
YOUR
PHOTO
ON
THE
COVER?

**WE'RE CONSTANTLY SEARCHING FOR PICTURES TO USE
FOR THE COVER OF GUIDELINES - SEND THEM TO:
THE EDITOR, P.O. BOX 290, NORTH ADELAIDE, S.A. 5006**

WANTED



ARTICLES FOR GUIDELINES

IF SIGHTED PLEASE SEND IMMEDIATELY,
TOGETHER WITH ANY PICTURES TO:

The Editor, Glenn O'Connell
P.O. Box 290, North Adelaide, S.A. 5006.

REWARD

An even better Guidelines for everyone.

CDAA PRODUCTS ORDER FORM

Please make payable to:
CDAA, P.O. BOX 290
NORTH ADELAIDE, SA 5006

	QTY/ COL/SIZE	ITEM	UNIT PRICE	TOTAL
BOOKS		Cave Diving Communications. A manual from NSS - CDS dealing exclusively with all underwater communications used in cave diving. Including touch, torch and line signals, and use of line arrows and jump reels. A must for all cave divers bookshelves.	\$15.00	
		Cave Diving - A Blueprint for Survival. A book by the world-renowned cave diver, the late <i>Sheek Exley</i> , this is a case study of a number of accidents that have occurred in the USA and how to avoid them.	\$15.00	
		Basic Underwater Cave Surveying. The standard publication for anyone remotely interested in research and survey techniques used in water filled caves.	\$15.00	
		CDAA Occasional Paper No. 2. From National Conference 1981. Includes topics such as Fossil Cave, Belay Techniques and Cocklebidy 1979.	\$2.00	
		S.R.T. Single Rope Techniques. Published by the <i>Sydney Speleological Society</i> . This is the definite work on all aspects of vertical travel in caves. Should answer most questions on rope work for cavers and cave divers alike.	\$27.00	
		DAN Emergency Handbook. Revised 1995 edition by <i>Lippmann and Bugg</i> . Printed on waterproof paper this essential first aid manual should be part of every cave divers' kit.	\$17.00	
		NSS Cave Diving Manual. The standard reference manual in cave diving covering just about every conceivable topic. New Edition.	\$40.00	
		Wukulla Springs Project. The U.S. Deep Caving Team, edited by <i>William C. Stone</i> .	\$59.00	
		The Darkness Beckons. By <i>Martyn Farr</i> . The history and development of cave diving.	\$50.00	
		Deep Diving. By <i>Bret Gilliam, Robert Von Maier</i> . An advanced guide to physiology procedures and systems.	\$30.00	
VIDEOS		Deep Into Blue Holes. By <i>Rob Palmer</i> . This is the project manual written about his trips to the Bahamas, diving some of the most advanced and spectacular caves in the world.	\$40.00	
		NSS Cavern Divers' Manual. The standard reference manual in cavern diving covering almost every conceivable topic. Also most principles behind safe sinkhole and cave diving.	\$18.00	
		Caverns Measureless to Man. <i>Sheek Exley</i> .	\$40.00	
		Cave Practice & Equipment. Edited by <i>David Judson</i> British Cave Research Association. Updated 295 Page book fully illustrated with over 200 line drawings & 33 pages of dramatic photographs. Full chapter on cave diving by <i>Martyn Farr</i> .	\$40.00	
		Australian Caving Diving - A Contrast. By <i>Tony Carlisle</i> . Four short documentary type videos on Warbla Cave, Three Sisters Cave, The Road to Toad Hall and Tank Cave. Reviewed in Guidelines 54.	\$25.00	
		Australia "Nullarbor Dreaming". A world record exploration into a desert cave. During November 1988, a team of Australian cave divers set out on an amazing adventure to explore the mysterious subterranean waters of the Pannikin Plains cave. This epic underwater exploration nearly ended in tragedy when a freak cyclone storm hit the area and the cave collapsed trapping the expedition below. The program is a graphic account of the expedition and their escape from the cave. Executive Producer - <i>Andrew Wight</i> .	\$29.95	
		Florida "Window to a Hidden World". The ultimate cave diving adventure. <i>Andrew and Liz</i> with fellow cave diver-explorer <i>Wes Skiles</i> , take us on a journey to discover the beauty and danger of the Florida aquifer. Beneath the surface of Florida lies one of the planet's largest freshwater reserves. The intricate system of water filled caves is now under increasing environmental threat from the population above. Producers: <i>Andrew & Liz Wight</i> .	\$29.95	
		Mexico "Water of the Gods". An exploration of ancient <i>Maya</i> ruins and underwater caves. Under the dense jungle of Mexico's Yucatan Peninsula lies a vast freshwater source relied upon by the ancient <i>Mayas</i> - a mysterious and complex people who built and occupied complex limestone cities in this region for over two thousand years. The <i>Wights</i> explore their hidden caves, uncovering their beauty and mystery, and providing a link to the past. Producers: <i>Andrew & Liz Wight</i> . Director: <i>Liz Wight</i> .	\$29.95	
		Cuba "Beneath the Surface". The underworld of <i>Cuba</i> . This documentary explores the role water has played throughout time in the history of <i>Cuba</i> . It reveals some of the many beautiful aspects of this magical Caribbean island, explores the bizarre subterranean caverns and provides unexpected contrasts with <i>Cuba's</i> turbulent history. This is an expose of a <i>Cuba</i> we believe we know. Producers: <i>Andrew & Liz Wight</i> . Director: <i>Liz Wight</i> .	\$29.95	
		New Style T-Shirts. Colour: White, Blue. Sizes: Medium, Large, Extra Large.	\$25.00	
MISC.		New Style Windcheaters. Colours: Blue, Black. Sizes: Small, Medium, Large, Extra Large.	\$35.00	
		Polo Shirts. Colours: White, Blue, Black.	\$30.00	
		CDAA Key Rings. Blue with gold motif. CDAA P.O. Box on back.	\$5.00	
		CDAA Stickers. Yellow. (Include stamped, self-addressed envelope for delivery.)	\$8.00	
		Tank Cave Poster. Full Colour 14 1/2" x 25" poster of Tank Cave by <i>Peter Rogers</i> . Price includes p&h.	\$8.00	

Cardholders Name: _____

Address: _____

Postcode: _____

Card No. _____

Expiry Date: _____

Signature: _____

Ph: () _____ Fax: () _____

Sub Total \$ _____

Plus postage & handling \$6.00

TOTAL \$ _____

☐ Bankcard ☐ Mastercard ☐ Visa



INTERNATIONAL MOTEL



Mount Gambier

"The Cave Divers home away from home"

Our Facilities Include:

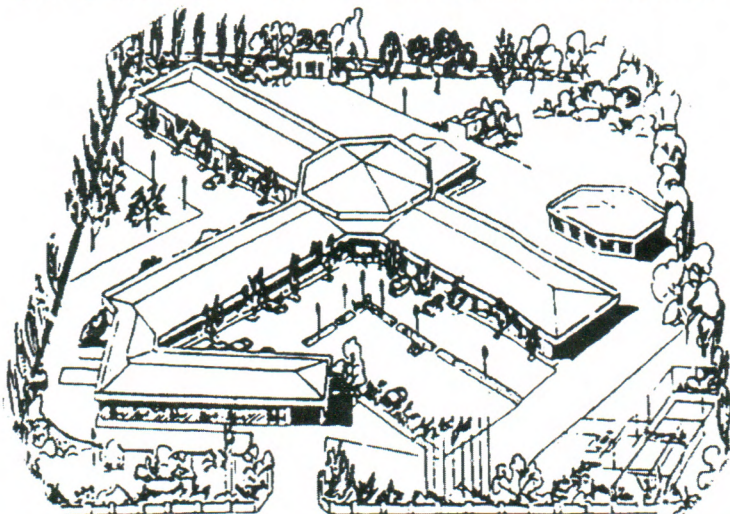
- * 60 Ground Floor Units - Modern & Spacious
- * Licensed Restaurant - Extensive Dinner Menu
- * Huge indoor heated pool, spa & sauna
- * Austar multi channel pay TV free to all rooms
- * Secure floodlit off street parking
- * Quality Flag Accommodation
- * Late Check In available

SPECIAL DISCOUNTS TO CDAА MEMBERS

(Excluding Easter Weekend)

ROOMS FROM \$50 !!

**RING TOLL FREE ON 1800 088877
TO MAKE YOUR RESERVATION**



**OFFICIAL
CDAА
CORPORATE
SPONSOR**

**MT GAMBIER
INTERNATIONAL MOTEL
MILLICENT ROAD, MOUNT GAMBIER
TEL: 08 8725-9699 FAX: 08 8725-0843**

**OFFICIAL
CDAА
CORPORATE
SPONSOR**