

# GUIDELINES

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CAVE DIVERS ASSOCIATION OF AUSTRALIA  
(Incorporated in South Australia)

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Photograph of John Dalla Zuanna at a depth of 36.5 metres.



## CAVE DIVERS' ASSOCIATION OF AUSTRALIA

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

GUIDELINES is the newsletter of the Cave Divers' Association of Australia, published four times a year — March, June, September and December. All articles for the following issue are to be sent to the Editor, John Vanderleest, P.O. Box 290, North Adelaide, S.A. 5006, prior to 10th February 1995. Articles and information may be reproduced without prior permission provided reprints are credited to the authors and GUIDELINES. Private ads for caving and diving equipment may be advertised free. Opinions expressed in GUIDELINES are those of the individual authors and are not necessarily those of the C.D.A.A.

## 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

and your enquiry will be passed on.

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## NEW PRODUCTS

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Colour Print Windchesters

Cave Diving Video

Sheck Exley's Memoirs



## EDITORIAL

**C**ave diving for many of us is more than getting wet, it is a dominating aspect of our lives.

My partner calls herself a "Diving Widow" and that Mount Gambier is actually my mistress. There is more truth in this than I sometimes care to admit. It is not the trips that take up my time, but the never ending phone calls, visits to diving companions, reading magazines and books or the planning, saving and final purchase of that all important new diving trinket. It's little wonder that she is actually happy for me to disappear for a weekend. It is one mechanism to provide a little peace and quiet around the house.

I often wonder what I would do if forced to give up diving. I would like to believe that I would quickly find a new sport that would absorb me as much as diving, but what sport is similar? To analyse the scenario you need to look at the activities involved in diving. Sure, going underwater is one, but that usually accounts for less than 4 hours in a weekend. I guess I could take up swimming, but I find that boring. Maybe its depth and the narcosis we all feel. Perhaps I could become an alcoholic or drug addict. Nah! My brother is a cop and he is likely to arrest me for something. Maybe, its the planning and all that equipment. Sounds like a testo-sterone thing, but I don't think our two female directors would agree with me there. Beside, I like being a SNAG (Sensitive new age guy). That only leaves the socialising. That is it! Over one weekend, I spend 4 hours diving, 10 hours sleeping and about 30 hours talking bullshit. I can become a politician ... I hope I don't have to give up diving.

## LETTERS TO THE EDITOR

### Should the CDAA Condone or Condemn diving deeper than 40m. Why/Why Not?

Dear John,

Listed below are a series of responses to your questions regarding deep diving and related issues in Guidelines October 1994.

#### SHOULD CDAA SANCTION DIVING BELOW 40M?

I believe that the 40m limit should be maintained. For reasons that I have not been able to establish, the diving industry's standard of practice limits sport diving to 40m, with the assumption that AIR is the breathing gas. This limit is supported by all of the Instructor agencies. Moreover, these agencies all have manuals reinforcing this depth limit.

This will mean that, in the event of an accident involving depth, it is more than likely that expert witnesses from within the diving industry will give testimony that 40m is the recommended safe limit, thus implying that any deeper than that limit is UNSAFE.

The CDAA has an enviable safety record. This did not come about by coincidence. It is the end product of a set of standards of training and diving limits that are standing the test of time.

Let us not forget that the last seven Australian cave diving fatalities occurred at depths exceeding 55m (six of them below 60m) and that of the thirteen deaths altogether, nine occurred at extreme depths.

#### SHOULD WE TRAIN PEOPLE IN NITROX, TRIMIX OR HELIOX DIVING?

No. We should stick to our area of expertise — cave diving. We do not teach divers basic diving in order to get them started. The same applies to mixed gas, at the other end of the scale. Those who feel the need to learn mixed gas diving should do it via those agencies offering such training. This does not necessarily suggest that appropriately trained (i.e. CDAA and mixed gas) divers could not, in the future, use mixed gases in cave diving.

#### IS DIVING DEEPER THAN 40M ANY MORE DANGEROUS THAN STAGE TANK AND PENETRATION DIVING?

Yes, in several ways. This is especially so when divers insist on diving deep with single cylinders, a practice that should be seriously looked at while the whole issue of deep diving is under scrutiny. Air reserves are depleted at an alarming rate at depth, making problem solving that much more urgent. Narcosis is a much more sinister problem than many divers

realise. Stage tank diving provides the diver with an extra redundant air supply. If the rule of thirds is followed, the diver, who will already be wearing twin independent, will now have two redundant air supplies, without considering the buddy's air.

On a routine penetration dive, the buddy is capable of providing logical assistance, whereas on a deep dive, the buddy's ability to provide sustained assistance is impaired by narcosis and limited air duration.

An examination of cave diving fatalities is instructive. All thirteen deaths occurred as a result of divers not following what we now consider to be fundamental safety rules:—

- beyond depth limits
- no lines
- inadequate training
- inadequate equipment.

Despite a huge increase in penetration level diving, in several regions around Australia, and a clear perception that this type of diving is the most dangerous form, this area is accident free. Why? Because access to this level can only be gained by divers with a lot of experience, and thorough training.

But divers with alarmingly limited experience are eligible to dive sinkholes, when we compare the amount of experience a penetration diver needs. Access to a sinkhole course calls for only a year of diving after basic certification, which does not constitute anywhere near enough experience to be diving beyond 40m. This inexperience is rarely acknowledged by the diver. Many divers consider themselves to be unkillable. So this combination:—

- the diving community's standard of practice
- inexperience of many sinkhole divers
- hazards of depths beyond 20m
- lack of regulations making redundant air supplies compulsory for sinkholes.

leads me to urge CDAA to retain its depth limit of 40m.

*Stan Bugg, CDAA 96*

To the Editor,

I've been diving Mt. Gambier for a number of years. In the beginning, I never dived deeper than 40m. because I was lead to believe by my instructor that the Association did not condone deeper diving.

After finishing my cavern and sinkhole course, I soon discovered that there were in fact, lots of divers. especially instructors diving

*(Continued on page 2)*



(Continued from page 1)

deeper than 40m.

Speaking to one of the guys who was doing mixed gas diving in the Shaft, he spoke about equivalent narcosis depths of 50m. This lead me to look further into diving beyond 40m. and why it was considered dangerous. I found that narcosis was the only reason why people said it was dangerous (apart from running out of air quicker).

If I am to believe that the mixed gas diving was safe and that an equivalent narcosis level of 50m. on air was OK then I can only assume that these same people believe that diving to 50m. on air is also OK.

I have revised my thinking now, and am happy to dive to 50m. in sites that I am allowed.  
*Signed D.M.*

Dear Editor,

Being an active wreck diver from Sydney, I am doing 50m to 60m. dives on a regular basis. This sort of diving requires detailed planning and definitely, staged decompression. When I became a cave diver, I learnt many new skills that would be of use to me in wreck diving and found that many of my wreck diving skills useful when sinkhole diving. I am aware that this extreme diving is more dangerous than normal sport diving, but the same argument can be said about the 40m limit. The 40m. limit is more dangerous than the 30m. limit so why don't we make that the limit. Better still why not 20m. That must be much safer.

When trying to find out where the 40m limit came from, I could not find an answer. Everybody said it is an international standard, but nobody could tell me how it came about. Someone suggested that it was made up by the US Navy as a safe depth for their divers, but my US navy tables go much deeper than that. I can only assume that one principle organisation, probably a navy, chose a figure for some unrelated practical purpose and it stuck. It has since been adopted by everybody else because nobody wanted the liability of selecting their own limit.

Extreme depths do carry an overhead of decompression. I spend many hours each year hanging off a decompression bar. This does carry some risk, but that's what life is all about. Car racing, bungee jumping, hang gliding and parachuting all carry high degrees of risk. We don't see people trying to limit the speed of car racing to 100kmh, or bungee jumping to 5m. over a lake so why do we find so many bleeding hearts trying to limit my diving.

I believe that a 40m. rule should not be imposed. We have a good safe record without



Neil Vincent - McCavity at Wellington Caves NSW

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# ARE YOU SUITED FOR THE ENVIRONMENT?

such a rule, so why even consider it's introduction.

*(Name withheld by request).*

To the Editor,

I have never dived deeper than 40m. I know of several people who have been bent diving shallow than 40m.

The tables that we use are not 100% safe. There are numerous stories about people whom get bent when they are within the limits of tables. Most tables do not even go deeper than 40m. so how can we dive safely at this depth. The old US Navy tables have a 5% error rate so we are risking our lives with each dive if we

use these. Not only that, you only have a few minutes bottom time when your are deep. By the time you get down, it's time to come up so why bother. There's lots to do without going deep.

Also, what happens if someone dies while diving deep. All the holes will be shut and we won't be able to go cave diving anymore - all because one person wanted to get heavy narcosis. Let's find all these people who like diving deep and give them a bottle of nitrous oxide.

*Signed JR*



# DIRECTORATE REPORT

The Directorate has collectively decided to submit a combined report for Guidelines rather than three separate reports.

## State Meetings

We have had two successful state meetings — Western Australian members met on 15th October 1994 and Victorian members met on 22nd October 1994. Both meetings were a great arena for constructive criticisms, ideas and questions — summaries of the minutes are included in this issue.

It is obvious that members want closer communication and more information sessions and the Directorate is responding to this.

Thanks to those members who helped to organise and showed their support.

The general feedback from those who attended was that the meetings were a great idea and that there should be more of them — and more are planned for 1995.

## Guidelines

The response on the new look format of Guidelines has been overwhelmingly positive — apologies to those members who have to buy new folders to keep their issues in!

## National Director's Meetings

Lisa has had a meeting in Adelaide with Phil Prust and the Tank Cave Committee, also a meeting with Ron Jeffrey regarding Kilsby's, and Rob Norman (solicitor).

The meeting with the solicitor has resulted in the insurance being finalised and the premium has been paid.

Lisa was also able to bring Ron up-to-date on the Association's needs especially as related to the possibility of leasing sites in the future.

## Land Owner Requirements

The Directorate wish to stress the importance of ALL members adhering to the regulations and land owner requirements.

## P.O. Box Adelaide

The North Adelaide Post Office Box 290 is now being cleared regularly by local Adelaide member David Whomes. Thanks David. The in-coming mail processing should now speed up.

## Records Officer

The Records Officer's position has been filled by Linda Claridge. Many thanks to Glenn and Sue O'Connell for their contributions in the role of Records Officer.

## Resource Centres

In this issue we have included a proposal for three centralised resource centres. We would be interested in hearing any feedback from members on this.

## S.A. Meeting

South Australian meeting in Adelaide — state representative to be advised in next issue.

## Underwater Festival

The Underwater Festival was held in Melbourne on Sunday 23rd October. It was very successful. The CDAA stand was very well attended and there was much interest in cave diving. It proved to be a great promotional exercise and the launch of our new range of clothing was a highlight. The new clothing includes t-shirts, long sleeved t-shirts and windcheaters. Wayne Wilson is the contact person for any member looking for more details or refer to the order form in this issue. Many thanks to those who helped and supported. A special mention to Neil Vincent who provided us with the slides from which

(Continued on page 4)

## NEXT ISSUE

**Should the CDAA add a new certification level for cliff management?**

At the 1994 AGM, the outgoing Standards Director announced that he had prepared a course teaching people the basics of cliff management, i.e. ascending and descending. This course was to become part of the proposed basic caver qualification being considered by the Australian Speleological Federation (ASF).

Should we develop our own standards?

Who should teach courses?

Should they be compulsory?

Can they be incorporated into other courses?

Are they needed?

Shouldn't we allow the ASF to develop their own standards?

As wet cavers, what are our obligations to the dry cave environment?

**Please send your letters and articles to:**

**'The Editor'**

**Guidelines**

**P.O. Box 290,**

**North Adelaide, S.A. 5006**

## GUIDELINES EDITORIAL TEAM

People interested in becoming part of the Guidelines Editorial Team should send a written 'expression of interest' to the Guidelines Editor, John Vanderleest.



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## DIRECTORS' REPORT (continued)

(Continued from page 3)

we had printed some sensational posters and prints.

### Masterplan

The CDAA has been approached by an environmental consultant for input into an environmental "masterplan" for Mount Gambier and District. Karen Kennedy is currently liaising with the consultants regarding this and any input/ideas from members would be appreciated.

### The Three Sisters

Karen Kennedy is now the contact person for The Three Sisters indemnities etc.

### Indemnity Forms

A reminder to all divers — please sign and return your indemnity form from last issue of Guidelines.

### Keys from Lady Nelson

Please show some consideration for other divers! We are requesting a 24-hour turnaround for the keys to be returned to Lady Nelson.

Could divers please leave some

contact details — eg. name, mobile phone number, contact number of accommodation, etc.

### UK Publication

Karen Kennedy has a copy of the UK publication "Cave Diving Group Newsletter".

Any member interested in having a copy please send a stamped, self addressed A4 (business size) envelope.

### Expenses Reimbursement

For those members sending in claims for reimbursement of expenses, invoices etc., please be advised that you will need to send in a stamped, self addressed envelope for your cheque to be returned in.

### Site Projects

Any members who would like to help out on site projects — small and large — please contact Karen Kennedy (087) 250 002.

All donations of time to help improve site access, safety etc. are gratefully received.

## NEW CDAA CLOTHING

The all new range of CDAA clothing has just arrived.

New t-shirts and long sleeve t-shirts feature an incredible six colour print on the back showing a penetration scene with two divers, viewed through a mask-shaped cave outline, with our standard logo featured in a two-colour print on the front.

The windcheaters are available in two colours with the CDAA front two colour prints only.

All the colours are stone-washed and all garments are pigment dyed and pre-shrunk. The style is streetwear and garments are very generous in size so keep that in mind when ordering.

If you are normally a large, then a medium will fit you.

*As an indication, I am 183cm tall, 75kgs in weight and normally wear a large t-shirt, yet in this style a medium is my size.*

*Keep this in mind when ordering!*

We have improved our garment print and quality therefore we have encountered an unavoidable price rise. I believe that the new range delivers excellent value for money and most importantly promotes our sport visually which is of utmost importance — so let's get them out there.



## INSURANCE

The Association has now paid its insurance bill which means, of course, we don't have a healthy operation budget.

The AGM decided that we didn't need a fee increase of more than \$5. This means that with all the members who have paid 2 years membership, we won't see this money until 1996-97, and then it

will only cover 50% of the insurance bill.

One member, Ian Ploengers, has demonstrated true club spirit by sending in more than his membership dues to make sure that he paid his share and didn't rely on the hard work of volunteers to find ways of raising the extra revenue. Thank you Ian.

## Office space needs arise

**T**he Cave Divers Association of Australia has called for a detailed review of all public buildings in Mount Gambier which may become available for re-development as community centres.

Association Business Director, Ms Karen Kennedy, told the Mount Gambier City Council that the body had an immediate need for office-archive space and meeting-training facilities.

The Association wrote to council as part of its comment on the Phillip Gray and Associates recreation and sports plan for the city.

That plan had recommended council undertake the detailed review.

Ms Kennedy said the Association had a record of more than 20 years of safe cave diving in Australia.

"The Association is committed to diver education and training, land-owner liaison and protection, promotion of the sport and preservation of dive sites unique in the world," she said.

"Many of these sites are located in the Mount Gambier area and for years divers have travelled to this region from all parts of the world for cave diving activities — hence Mount Gambier has become the Australian focus of cave diving.

"The Association has two of its three directors now based in Mount Gambier — Karen Kennedy as Business Director and Ian Lewis as Standards Director.

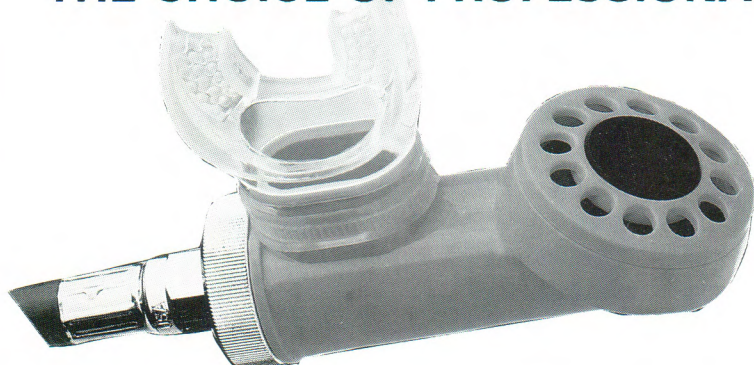
"As the Association's membership is growing, so our need to consolidate and centralise our administration activities has grown also."

A city council working party will make further investigations on the 44 recommendations made by the consultancy, as well as submissions made during the public comment period.

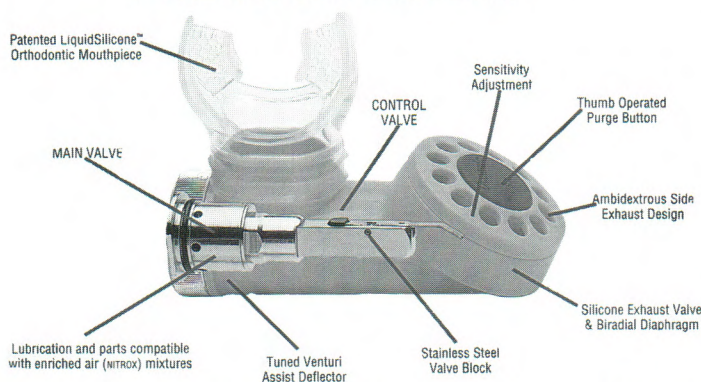
*Extract from the  
"Border Watch"*

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## SHECK EXLEY — WHAT HAPPENED?

Extreme exploration is more than a sport — it is an obsession. Sheck Exley was one of those people who didn't live to work but worked to live. Living for Sheck was to push the boundaries, knowing that one day the push would be too far.

Like all explorers, a certain level of risk is anticipated. The risk is always calculated but never totally controlled. In Sheck's situation, the risk was acceptable.

In a sinkhole called Zacaton, located in northern Mexico, Sheck was to attempt a 1000ft SCUBA dive. Sheck had over the years developed his own special deep diving tables and dive computers, and held the current world depth record of 867ft on SCUBA.

It was intended that two divers would do the dive — Sheck and good friend, Jim Bowden. The dive plan was estimated to take 12 minutes to descend the 1000ft followed by a 9 hour ascent, with each man on a separate line.

Bowden last saw Exley at the 800ft mark, whilst still continuing his descent. At 925ft he became concerned about his breathing rate and worried about having insufficient volume for the 9 hour ascent. Bowden aborted his dive at this stage, not knowing that Sheck was in trouble. At this depth, with open circuit breathing systems, there was little that could be done, even if he was aware of problems. Both had accepted the risks, knowing that should anything happen at depth, neither could be assisted by the other.

At the first decompression stop, the realisation that something had gone drastically wrong finally hit. The possibility of a rescue could not even be considered. Exley's companion, Mary Ellen Eckoff, attempted a relatively shallow dive of 280ft to see if Exley could be spotted, but this was to no avail. It was not until three days later whilst hauling out the shot lines and deco tanks that Exley was found. He was tangled in his line, still with breathing gas in his tank and a depth of 904ft recorded on his depth gauge.

What exactly had gone wrong will never be known. One explanation was the Exley had been stricken by high pressure nervous syndrome (HPNS), a condition brought on by elevated levels of oxygen. The convulsions often associated with HPNS could have easily caused Exley to drop his regulator from his mouth, consequently drowning.

Bowden, who now holds the world depth record for SCUBA, does not believe that this sort of exploration should stop, but that we should honour Exley's dream and continue with his pioneering spirit.

## CAVE ENVIRONMENT

### Engelbrecht Cave has a new image

**M**ount Gambier's Engelbrecht Cave is now in the second stage of its extensive redevelopment program to upgrade it to a "suitable tourist experience".

The first stage of the redevelopment has been completed and the second stage will be finished some time during December, according to the City of Mount Gambier's Deputy Chief Executive Officer, Mr Greg Muller.

"Council agreed about two years ago to upgrade Engelbrecht Cave to a suitable tourist experience", Mr Muller said.

"Physical construction works began at the cave, including toilet facilities, infrastructure, elevated viewing decks, feature walls, pergolas, path systems linking Jubilee Highway to the area and a barbeque area.

"The landscaping was improved and outdoor furniture supplied to complete the first stage of development."

Mr Muller said a Jobskills program, designed for previously unemployed people, was used in the redevelopment.

"This program was very successful", Mr Muller said.

Stage two focusses on the interpretive requirements of the cave.

A graphic designer from Adelaide, Mr Rob Walter, has been commissioned to design accessories such as enlarged photographs, graphs, a fully fitted diver model, various displays, and models and text material as well as a complete

upgrading of the internal cave lighting.

Both stages of work had been estimated to cost a total of \$120,000, Mr Muller said.

"The local contribution, excluding the Jobskills program, is \$120,000. The City of Mount Gambier has contributed \$91,000, Likelink (South East) South Australia, who holds the lease to run tours of the cave, has contributed \$4,000 and the SA Tourist Commission has contributed \$25,000," he said.

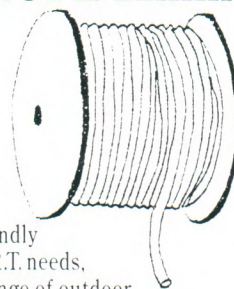
"The Cave Divers Association of Australia has been a tremendous help in fitting out the diver model as part of their contribution."

*This article was reproduced from a local Mount Gambier newspaper.*

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# LETTER TO LANDOWNERS

I've included in this issue a letter the Directorate sent to all our Landowners. As John (Editor) asked for input from members on mixed gas diving, I thought the membership should see what steps the Directorate have taken to inform Landowners as to what we're doing, regarding mixed gas.

We hope input to Guidelines continues from the membership as we believe what John is doing with the magazine is excellent. So good reading!

*From the CDAA Directorate*

## TO ALL LANDOWNERS,

The CDAA is in a situation at the moment, of having to make a decision on Mixed Gas Diving. Since the inception of the Association, all our divers have been using only pure, fresh breathing air to dive our certified sites

The CDAA is happy to introduce Mixed Gas Diving into both our courses and to our already certified members, but we feel we cannot do that until we have a firm policy on the issue, that we can then incorporate into our standards.

What we are therefore asking of all our Landowners, both private and Government, is to decline any divers wishing to use mixed gases, access to the property. Mixed Gas can include anything from Enriched Air to Tri-Mix, to a multitude of other gases.

The Association has already introduced a new regulation stating that, Pure, Clean, Dry Breathing Air is only to be used on all CDAA Certified Diving Sites, so any divers wishing to do otherwise will be breaking regulations. This will only be a temporary move as we are most keen, to become involved in Mixed Gas Diving, but we believe we must wait and do it safely, for both the Association and the Landowners.

At the moment, all our indemnities have been entered into with the understanding that all dives are done on Air. So to prevent accidents occurring that we may not be prepared for, we ask for you not to permit this diving to occur, until the Directorate can assure you it is being done safely.

If any Landowners do wish to allow divers to use Mixed Gas on their sites, they must be prepared to do so without assistance from the Association. We cannot support any so-called "private diving".

If you have any questions over this issue at all, or are in the slightest bit confused as to what Mixed Gas Diving is, please don't hesitate to contact any one of the Directorate. I have included names and phone numbers at the bottom of the letter.

Yours sincerely,  
Lisa Bernasconi  
National Director

Lisa Bernasconi  
(055) 61 2805

Karen Kennedy  
(087) 23 2220

Ian Lewis  
(087) 23 2220

*The Directorate of the Cave Divers Association of Australia  
Lisa Bernasconi, Karen Kennedy & Ian Lewis  
sincerely wishes you and your loved ones all the very best  
of the festive season, and for the New Year.  
Looking forward to a great 1995!*

## After diving Mt. Gambier

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## Mixed Gas Research Group

The Directorate is calling for volunteers to work together as a Research Group to research mixed gas use — in Australia and internationally.

It is envisaged that the group will consist of 6-8 members and will cover (but not be limited to) mixed gas use, risks, training and education, standards and procedures, advantages, disadvantages, potential health hazards, cost to divers, equipment consideration, decompression.

The group will be responsible to the Directorate and will be on a limited budget.

At the completion of the project the Directorate will expect a formal written report (not a recommendation).

**Any member** with an interest in being part of this please contact Karen Kennedy on (087) 25 0002.



## KILSBYS

After a dive in Kilsby's on Saturday 26th November, it seems quite a few pieces of misinformation have been spread around the Association. This has resulted in a number of events occurring, all of them costly and detrimental to the Association.

I would like to state a number of accurate facts:

- 1 There was no mixed gas diving done at Kilsbys
- 2 Divers were using a switching block mechanism, but these divers were still operating twin tanks with independent first and second stages
- 3 Karen Kennedy did not give the dive brief, this was done by Ian Lewis
- 4 There were two cylinders left in the water for safety stops, an extra safety measure only. One of these did contain 50% oxygen, but this tank was NOT USED by any divers. This was supervised by the Director who was in the water at the time.

The Directorate hopes that in the future members will take the time to ring and speak to us.

Lisa Bernasconi  
National Director

## MIXED GASES

### Nitrox — is it for you?

**W**hen I change any of my diving practices or equipment, I usually ask myself "Do the advantages of making the change outweigh the disadvantages of doing nothing?"

Using Nitrox to dive the caves in Mount Gambier is one change I could make in the future. But is it worthwhile?

Certain Nitrox mixes make ideal decompression gases for staged decompression dives. The following three points should be considered if using Nitrox for this purpose:

- the partial pressure of oxygen must be kept below 1.6 atmospheres
- the diver must be at rest and tethered to a fixed shot line

- nitrox cylinders should be attached to the line & not transported with the diver on the dive. The advantages for a diver using Nitrox are:

- There is a reduced amount of nitrogen absorbed into the body in comparison to using standard air over the same period of time
- the amount of bottom time can be increased for a particular dive or the decompression time can be reduced
- if the diver uses standard air decompression tables when diving with Nitrox, then the decompression safety margin is increased.

If improved safety is your motivation for using Nitrox, then







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**CDA**  
**P.O. BOX 290**  
**NORTH ADELAIDE, SA 5006**

	QUANTITY/ COL/SIZE	ITEM	UNIT PRICE	TOTAL
BOOKS		<b>Cave Diving Communications.</b> 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.	<b>\$12.00</b>	
		<b>Cave Diving — A Blueprint for Survival.</b> A book by the world-renowned cave diver, the late <i>Sheck Exley</i> , this is a case study of a number of accidents that have occurred in the USA and how to avoid them.	<b>\$10.00</b>	
		<b>Basic Underwater Cave Surveying.</b> The standard publication for anyone remotely interested in research and survey techniques used in water filled caves.	<b>\$15.00</b>	
		<b>Cave Diving — the Cave Diving Group Manual.</b> Completely new edition from the pioneers of the sport, the British. Covers every possible aspect including sump rescue solo diving and advanced oxygen and mixed gas theory. Reviewed in Guidelines No. 37.	<b>\$40.00</b>	
		<b>CDA Occasional Paper No. 2.</b> <i>From National Conference 1981.</i> Includes topics such as Fossil Cave, Belay Techniques and Cocklebidy 1979.	<b>\$ 8.00</b>	
		<b>S.R.T. Single Rope Techniques.</b> <i>Published by the 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.	<b>\$27.00</b>	
		<b>DES Emergency Handbook.</b> <i>Revised 1990 edition by Lippmann and Bugg.</i> Printed on waterproof paper this essential first aid manual should be part of every cave divers' kit.	<b>\$15.00</b>	
		<b>NSS Cave Diving Manual.</b> <i>By Peter Horne.</i> This book is a compendium of years of experience from various sources. A valuable addition for those interested in the other side of cave diving. As reviewed in Guidelines Issue 36.	<b>\$15.00</b>	
		<b>Wukulla Springs Project.</b> The U.S. Deep Caving Team, <i>edited by William C. Stone.</i>	<b>\$59.00</b>	
		<b>The Darkness Beckons.</b> <i>By Martyn Farr.</i> The history and development of cave diving.	<b>\$59.00</b>	
		<b>Deep Diving.</b> <i>By Bret Gilliam, Robert Von Maier.</i> An advanced guide to physiology procedures and systems.	<b>\$30.00</b>	
		<b>Deep Into Blue Holes.</b> <i>By 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.	<b>\$40.00</b>	
VIDEOS		<b>NSS Cavern Divers' Manual.</b> The standard reference manual in cavern diving covering almost every conceivable topic. Also most principles behind safe sinkhole and cave diving.	<b>\$18.00</b>	
		<b>Nullarbor Challenge.</b> <i>Produced by Hanger 137.</i> The true story of the exploration of the largest single limestone cave region in the world.	<b>\$29.95</b>	
CLOTHING		<b>Australian Caving Diving — A Contrast.</b> <i>By 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 Issue 54.	<b>\$25.00</b>	
		<b>Old Style Windcheaters.</b> Colour: Airforce Blue. Size: medium only.	<b>\$25.00</b>	
		<b>New Style T-Shirts.</b> Colour: Red Earth. Sizes: Medium, Large, Extra Large	<b>\$25.00</b>	
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		<b>New Style Windcheaters.</b> Colours: Purple, Forest Green. Sizes: Small, Medium, Large.	<b>\$35.00</b>	
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		<b>CDA Stickers.</b> Yellow. (Include stamped, self-addressed envelope for delivery.)	<b>\$0.80</b>	
		<b>CDA Stubbie Holders.</b> Red with black logo. Foam/plastic shell.	<b>\$2.00</b>	
		<b>Tank Cave Poster.</b> Full Colour 14½" x 25" poster of Tank Cave <i>by Peter Rogers.</i> Price includes postage and handling.	<b>\$8.00</b>	

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# CDAA SITE ACCESS

**Remember: Access is a privilege, not a right.**

**Please be considerate of landowner wishes.**

**CN = CAVERN**

**S = SINKHOLE**

**C = CAVE**

**P = PENETRATION**

SITE	LEVEL	OWNER	ACCESS DETAILS
<b>MOUNT GAMBIER - SOUTH AUSTRALIA</b>			
<b>Ewens Ponds</b>	Nil	DENR P.O. Box 1046 Mt Gambier 5290 (087) 35 1177	Groups of 6 or more, phone/mail to Dept. of Environment & Natural Resources (DENR). Smaller groups, no need. Ponds usually closed 1 Sept-30 Nov. yearly (phone to check). Indemnity form to be completed.
<b>Horse &amp; Cart Tea Tree</b>	CN CN	Peter Cunningham PO Box 643, Mt Gambier 5290	By phone or mail, 1 week prior. Ph: (087) 38 4003
<b>Little Blue</b>	S	Port MacDonnell	Little Blue - permission not required - must carry card.
<b>Allendale</b>	C	Port MacDonnell	Obtain key from Mt. Gambier Tourist Information Centre.
<b>Gouldens 2 Sisters Fossil</b>	CN CN C	DENR P.O. Box 1046 Mt Gambier 5290	Contact DENR by phone/mail prior to diving. Stay out of Gouldens when pump is operating. Indemnity form to be completed. Ph: (087) 35 1177
<b>Ela Elap One Tree</b>	S S	Mr. Peter Norman Private Bag 67, Mt Gambier 5290	By phone or drop in before diving. Accommodation also available. Ph: (087) 38 5287
<b>Swim Through</b>	C	Valerie Earl PO Allendale 5291	Currently CLOSED pending new access arrangements.
<b>Piccaninnie Ponds</b>	S	DENR P.O. Box 1046, Mt Gambier 5290	Permit holders by phone. Be aware of delicate vegetation. Indemnity form to be completed. Ph: (087) 35 1177
<b>Hells Hole Pines Mud Hole</b>	S C C	Primary Industries S.A. (Forestry) PO Box 162 Mt Gambier 5290	Contact Primary Industries S.A. (Forestry) by mail or phone to arrange permit. Collect permit from Regional Office, Jubilee Hwy., Mount Gambier. No diving on total fire ban days. Permits will ONLY be issued Mon-Fri between 8.30am-4.30pm. Ph: (087) 24 2759
<b>Kilsby's</b>	S	Landowner leased to S.A. Police	Restricted access conditions apply - refer Guidelines Issue 54. Twin tanks, maximum of 40 metres depth. Write to: P.O. Box 77, Mount Gambier, 5290, six weeks prior. 1995 allotted weekends - January 28/29, March 25/26, May 27/28, July 29/30
<b>Shaft</b>	S	Mr & Mrs Ashby	ONLY by contacting designated "guides" who will arrange access. Refer Guidelines Issue 48 (July 1993). Twin tanks are required.
<b>Ten Eighty Bullock Hole Black Hole</b>	S S	Mr. Colin Traeger PO Box 12, Mt Gambier 5290 (087) 26 6215	Contact CDAA Records Officer for diving deed THEN mail Booking Form to Colin Traeger 2-6 weeks prior, stating names/qual. of all divers, and time slot - 1pm Saturday, 9am or 1pm Sunday. WEEKENDS ONLY. Closed October-November for shearing.
<b>Max's Hole</b>	C	Mr T. Edwards PO Box 1319 Mt Gambier 5290	Phone or mail 1 week prior to dive. Ph: (087) 26 8277
<b>Engelbrechts - East - West</b>	C P	Mt Gambier Council	Obtain key from Mt Gambier Tourist Information Centre. Access agreement must be signed prior to diving.
<b>Three Sisters</b>	P	Millicent Council	Contact Peter Horne. Access available for experienced Penetration divers only. Low profile or side mounted independent air systems required. Access agreement must be signed prior to diving.



# CDA A SITE ACCESS

SITE	LEVEL	OWNER	ACCESS DETAILS
<b>MOUNT GAMBIER - SOUTH AUSTRALIA (continued)</b>			
<b>Iddlebiddy (5L250)</b>	P	Primary Industries S.A. (Forestry)	5L250 open 1st & 3rd weekend of month. 5L290 open any weekend. Max. 4 divers per dive per day, 1 dive per day for each site. Only
<b>Nettle-Bed (5L290)</b>	P	PO Box 162 Mt Gambier 5290	Penetration divers completed practical in-water cross-over. Bookings via Forests Clerk - key from Lady Nelson. Must show permit & card. (087) 24 2759
<b>McKay's Shaft</b>	S	Mr. McKay	Contact Phil Argy (087) 23 0879. Small groups of about 4, ladder climbing & SRT skills required. Access agreement to be signed prior to dive.
<b>Tank Cave</b>	P	Mr. & Mrs. Dycer	Apply in writing to: CDA A Tank Cave Diving, c/- 4 Rosella Street, Modbury Heights, SA 5092. Access conditions apply, see Guidelines 48.
<b>SOUTH AUSTRALIA - Narrina Lake Cave</b>			Access under negotiation - closed until further notice.
<b>NULLARBOR - WESTERN AUSTRALIA</b>			
<b>Cocklebiddy</b>	C	Regional Manager	Must apply for permission to dive at least 4 weeks in advance of trip.
<b>Murra El Elevyn</b>	P	C.A.L.M.	Ph: (098) 41 7133.
<b>Tommy Grahams</b>	C	44 Serpentine Rd,	
<b>Weebubbie</b>	C	Albany 6330	Small dive site next to main chamber: Sinkhole
<b>NULLARBOR - SOUTH AUSTRALIA</b>			
<b>Warbla</b>	P	NPWS Ceduna	Currently CLOSED to all diving subject to draft management policy.
<b>WELLINGTON CAVES - N.S.W.</b>			
<b>Limekiln (McCavity)</b>	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. Access arrangements allow one weekend per month until the end of 1994. Divers will be joining already commissioned research groups.	
<b>Water (Anticline)</b>	C	Affected by high CO <sub>2</sub> levels during Summer/Autumn. Apply for bookings to dive at least 4 weeks prior, as specified dive dates have been prearranged until the end of 1994. Ph/Fax Neil Vincent (043) 97 1798	
<b>Narrina Cave</b>	P	CLOSED	

# CDA A INSTRUCTORS

Instructor	CN	S	C	State	Telephone (H)	Instructor	CN	S	C	State	Telephone (H)
Stephen Arnel	•	•		VIC	(055) 26 5230	Simon Jones	•	•	•	WA	(09) 344 4343
Bill Bernhardt	•	•	•	VIC	(03) 725 9716	Max Marriott	•	•		SA	(08) 47 3360
Chris Brown	•	•	•	SA	(08) 269 5793	John McCormick	•	•	•	VIC	*(03) 555 5777
Marilyn Boydell	•	•		WA	(09) 349 5646	Richard McDonald	•			SA	(08) 278 1829
Stan Bugg	•	•	•	VIC	(03) 379 8791	Warrick McDonald	•	•		VIC	*(03) 579 2600
Greg Bulling	•	•	•	SA	(08) 265 4978	Richard Megaw	•	•	•	SA	(08) 344 1733
Gary Bush	•	•	•	WA	(018) 318 837	Hugh Morrison	•	•	•	WA	(09) 409 9807
Brian Cornell	•			VIC	(059) 85 2514	David Ogilvie	•			NSW	*(02) 977 4355
Terry Cummins	•	•		NSW	*(02) 417 2800	Andrew Poole	•		•	WA	(018) 928 028
John Dalla-Zuanna	•	•	•	VIC	(055) 61 2805	Tony Richardson	•	•	•	VIC	(03) 754 6163
Ian Gothard	•	•		QLD	(075) 71 0106	John Vanderleest	•	•	•	VIC	(03) 416 9370
Glen Harrison	•	•	•	SA	(08) 386 3237	Des Walters	•	•	•	NSW	(060) 25 3506
Barry Heard	•	•	•	VIC	(056) 27 6474	Bob Wealthy	•	•	•	VIC	(03) 789 6389
Alan Jolliffe	•	•	•	VIC	(03) 874 7669	Liz Wight	•			NSW	(02) 428 2176
Nick Jones	•	•		VIC	*(03) 282 4502	Frank Ziegler	•	•		VIC	(055) 26 5288
* Work phone number						* Work phone number					



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there is the other option — continue to use standard air and perform at least a five minute additional “safety stop” at three metres for all dives which require or are close to requiring decompression stops. A safety stop greatly enhances the safety of a dive that is on the no-deco limit, often improving the calculated probability of decompression illness from, for instance, 1% to 0.2%. The convenience of using standard air and doing a safety stop should be considered against the added complexity of using Nitrox diving equipment.

Nitrox does not allow you to dive deeper than using air (the depth limit is reduced), nor does it reduce the effect of narcosis. Recent studies indicate that oxygen is at least as narcotic as nitrogen, therefore the overall narcotic effect is not reduced despite a reduction in the partial pressure of nitrogen. Nitrox is ideal for dives requiring a diving depth between 12-30 metres for an **extended duration**, however most of the caves in Mount Gambier do not fall into this category. The caves are either very shallow (eg. Engelbrechts), very deep (Shaft), or of short duration (Pines).

Nitrox is more expensive than purchasing a standard air fill and is not readily available at present within the Mount Gambier region.

Nitrox should also be tested on site prior to diving to check the actual oxygen percentage of the Nitrox mix. Accurate testing equipment is expensive and requires regular calibration to ensure accurate measurement. Consideration should also be given to using backup testing equipment to provide an accurate cross-check of the mix.

Nitrox requires special filling procedures and identification of cylinders/regulators. Cylinders and regulators used with Nitrox require special cleaning and servicing. Once a cylinder is cleaned for use with Nitrox, it cannot be filled with standard air without contamination.

Confusing Nitrox with air can be lethal, which has tragically caused several diving fatalities.

The diving depth with Nitrox is critical. With air, dropping an extra 10 metres deep from your planned diving depth (as happened to a group of diving diving at “The Shaft” recently) may result in an increase in nitrogen narcosis or additional decompression time. Nitrox is not so forgiving. Dropping as little as an extra five metres may be fatal due to oxygen toxicity which gives little warning before its onset.

Special training courses should be undertaken before using Nitrox, however there are a few additional considerations. If you wish to use Nitrox then you should dive with a buddy who has also completed the necessary training. Also, how experienced is your buddy in using anything other than standard air?

If overseas trends are anything to go by, then Nitrox will become more common within Australia. Nitrox is used in Florida cave diving, where the cave systems are long horizontal penetrations at constant depths.

Even with special training, there have been some tragic accidents in Florida with experienced cave divers using Nitrox. The most common cause of accidents of this type has been caused by exceeding the recommended partial pressure limit of oxygen.

I believe that Nitrox is generally not required for diving in the Mount Gambier region, with the exception of using Nitrox as a decompression gas with dives requiring staged decompression.

Will you be Nitrox diving at Mount Gambier in the future?

*By Paul Arbon*

## **Proposal for CDAA Reference Library**

The Association has either purchased, produced or received many hundreds of books, videos, articles and magazines over the past 20 years. The bulk of these have never been seen by the general membership and are now lost to the system.

The Directorate has received a formal request to establish three libraries (Sydney, Perth and Mount Gambier) into which multiple copies of each piece of cave diving related journalism can be placed.

The exact method of loans, opening hours, etc. can be worked out after we decide if we are to proceed with this scheme or not. Before making this decision, we would like some general input from you.

Please either write or phone us with your comments on this issue to give us an indication as to whether or not to proceed.

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## Gas Cocktails — Blended, Not Stirred

**I**f you have read any of the great multitude of articles, letters, theories and fairy tales about Oxygen enriched air (you know what I mean — SafeAir<sup>®</sup> or nitrox) you will be by now asking yourself is he going to sing the praises of Oxygen enriched air or is he going to argue against it.

Well I am not going to talk about Oxygen enriched air, but I would like to relate what is happening in Queensland with Tri-Mix.

Queensland in many ways is setting the standards for what the rest of Australia will do in diving — yes, even cave divers.

A few years ago in Queensland a group of dive industry people put their heads together to see what they could do about improving dive operations in Queensland. Some people wanted legislation to stop the “bad” operators and some people said we should control our own industry and keep the government out.

The outcome has been many committee meetings, some heated discussions, much talk about rules, regulations, Work Place Health and Safety and this interesting animal called a “Code of Practice”.

Queensland now has draft or actual codes of practice for things like SCUBA Training, Snorkelling, Oxygen enriched air and Tri-Mix. It is suspected that once these codes of practice are accepted in Queensland they will be adopted throughout Australia.

Since Oxygen enriched air has been beaten around the head a bit lately I thought I would let you know what sorts of things are in the ‘pipeline’ for the Tri-Mix code.

### Diver Pre-requisites

The code will require you to be a certified Oxygen enriched air diver before you start Tri-Mix training, the Tri-Mix agencies actually require you to have some form of technical diver rating in addition to Oxygen enriched air training (the agencies do not see Oxygen enriched air as technical). The diver will also be required to have logged dives in depths greater than 30 metres and using Oxygen enriched air as a bottom mix not just a deco mix. Using Oxygen enriched air as a bottom mix means you must have planned and considered your MOD (Maximum Operating Depth) and other Oxygen related differences to air diving.

### Course Content — Theory

- Inert Gas Narcosis
- Oxygen Toxicity and its various forms
- Physiological effects of breathing Helium
- Hypothermia
- Breathing gas selection
- Hypoxia
- Equivalent Nitrogen Depth
- Gas Physiology for Tri-Mix applications
- Gas management
- Gas consumption
- Decompression procedures
- Standard and Custom (computer generated) dive tables
- Equipment requirements
- Technical diving techniques
- Team functioning and buddy systems
- Dive planning
- Emergency procedures
- Problem management
- A written examination evaluating the theory topics

### Course Content — Skills

- Buoyancy management
- Swimming attitude and trim
- Full equipment systems check
- Sling cylinder and equipment rigging
- Reel and line deployment and use
- Emergency ascent system deployment and use
- Redundant mask locating and replacement
- Accessing and use of redundant gas systems
- Sharing gas systems
- Team functioning evaluation
- Equipment configuration evaluation
- Decompression procedures
- ‘Run Time’ decompression evaluation
- Sling cylinder usage
- Gas management evaluation
- Gas analysis and recording
- Emergency procedures practice

### Medical Examination

Instructors and students will require medicals in accordance with AS2299 — 1990.

### Maximum and Minimum Depth

*Note: When varying the percentages of gas in a mixture a fixed depth loses relevance as the limiting factors vary in direct relation to the gas percentage. To achieve a more meaningful maximum depth it is better to base it on the partial pressure of the gases involved.*

The maximum depth is not to exceed the point where the Oxygen in the mixture currently being breathed exceeds a partial pressure of 1.45 Bar while diving or 1.6 Bar during decompression.

The maximum depth is not to exceed the point where the Nitrogen in the mixture currently being breathed exceeds a partial pressure of 4.5 Bar while diving. The minimum depth is not to exceed the point where the oxygen in the



mixture currently being breathed is less than a partial pressure of 0.16 Bar.

## Required Equipment

Each diver is to be equipped with mask, fins, gas system for each different gas used, BCD with low pressure inflator, redundant BCD, submersible pressure gauge for each gas system, depth gauge, redundant depth gauge, timing device, redundant timing device, knife/line cutter/diver's tool, weight system and adequate exposure protection.

For any dive where a direct ascent to the surface is not possible (ie. because of a required decompression stop or wreck or cave penetration) a redundant gas system is required.

*Note: A redundant gas system is defined as an additional gas storage and deliver system that contains sufficient gas to allow the diver to return from the furthest point of the dive achievable on the current gas and ascend to a point where another gas supply is available — this should take into consideration the possibility of ascent line loss.*

For any dive where a direct ascent to the surface is not possible and the divers move away from visual contact with the ascent path a reel must be deployed to indicate the location of the ascent path or an alternative ascent system must be carried by each diver.

*Note: An alternative ascent system is defined as containing, as a minimum, a buoyancy device capable of supporting the weight of a submerged diver and an ascent line that the diver may follow to the surface and use to complete any decompression requirements. The device must be coloured so that it is clearly visible from searching boats.*

For any dive where a gas mixture change requiring another gas system is planned a redundant gas system must be available for each planned gas change and the gas used in the redundant system must be of a partial pressure of oxygen that does not exceed 1.45 Bar and not less than 0.16 Bar throughout the range of depths where it may be used. The partial

pressure of the nitrogen must be the same or less to prevent the diver being in a more narcotic state.

## Cylinder Markings

If the cylinder will have a diver using it for the purpose of breathing underwater and contains a gas other than 'air' it must have an attached tag indicating:

- Oxygen percentage
- Calculated Nitrogen percentage
- Calculated Helium percentage
- Date analysed and use by date
- Maximum operating depth of the gas mixture
- Minimum operating depth of the gas mixture
- Tester's name
- Cylinder serial number (in case the tag is separated from the cylinder)

*Note: Some wreck and cave divers secure this tag flat against the cylinder so that it does not become a guideline hazard.*

The above information is just some of the major points from the document. The committee that formulated the document believe that it will not be hard to comply with all facets of the document. I must stress that the people involved in formulating this document are all experts in either Tri-Mix, Equipment standards or fields that have a direct relevance on the use or production of Tri-Mix. These guidelines are there for the safety of the users and there are very valid arguments for sticking to the guidelines.

If you have any questions about the code or related matters please do not hesitate to contact me on (02) 977 1901 or fax (02) 977 3664.

By David Ogilvie, CDAA 2268  
ANDI Instructor

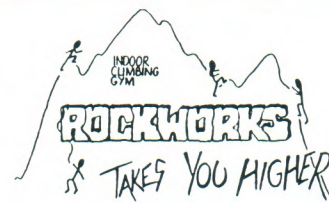
## IF YOU ARE AN UNHAPPY DIVER — CONSIDER THIS!

Once upon a time, there was a non-conforming 'pig fish' who decided not to swim north for the winter. However, soon the weather turned so cold that he reluctantly started to swim north. In short time ice began to form on his fins and he sank to the bottom into a crevis, almost frozen. A whale passed by and crapped on the little fish. The fish thought it was the end. But, the manure warmed him and defrosted his fins. Warm and happy, he started to sing. Just then a large shark came by and, hearing the fish, investigated the sounds. The shark cleared away the manure, found the little 'pig fish' and promptly ate him.

### THE MORAL OF THIS STORY:

1. Everyone who shits on you is not necessarily your enemy.
2. Everyone who gets you out of the shit is not necessarily your friend.
3. And, if you are warm and happy as a 'pig fish in shit', keep your mouth shut.

*Happy Divin  
Nifty Nev*



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- Ladders rope/wire
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And all your other requirements for vertical travel in caves.

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## STATE MEETINGS

This is a very brief summary only - full copies of minutes from these meetings available from the Business Director by sending a stamped, self-addressed envelope.

### WA - 15/10/94

#### 15 members attended

- meeting conducted informally
- questions taken from the floor
- general discussion covered: Ian Lewis' history; election; WA specific problems; instructors; site ratings; teaching; administration.
- Andrew Poole — State Representative for Western Australia
- Andrew Poole — moved that Weebubbie become a specific training site with specific zones allocated for all existing levels of trainings. Seconded — Steve Sturgeon.
- Steve Sturgeon thanked Lisa for all the work she had done and acknowledged the Directorate had a vote of confidence in giving a mandate for change.

### VIC - 22/10/94

#### 30 Members attended

- meeting conducted informally
- questions taken from the floor
- general discussion: mail system, students and courses; insurance; Guidelines; more meetings; social get-togethers; oxygen use; depth limits; sea caves; training committee; The Shaft; working bees at Mount Gambier sites; access and safety.
- Kilsbys — advised that re-opening in November 1994
- Victorian members interested in Western Australian members' problems and ideas
- Warwick McDonald — Victorian State Representative.

## TECHNICAL DIVING

### The emergence of Technical Diving in Australia

*The following is a modified summary of a talk given by Barrie Heard at the recent Victorian Underwater Festival.*

**The term 'Technical Diving' has been widely used to describe just about anything that is different to current Recreational Diving Agencies' limits and standards.**

While this may be partly correct there are some common misconceptions which need to be clarified. Resistance to discussion has been high with many people believing that technical diving poses an unacceptable risk to divers. It is true that there is risk involved but only if recreational divers attempt to participate in an activity which they are neither trained, equipped or prepared for.

Technical diving is more than just using different breathing mixes or using and carrying extra equipment. It is a different mental outlook on the purpose and outcome of the dive. Dives in this area are made for a variety of reasons with personal challenge and exploration being high on the list. Often the exploration of a cave or location of a wreck simply cannot be safely achieved within the constraints of recreational diving limits and rules. At this level of diving there are a few predetermined limits with only the trained individual deciding on the necessary extent of the dive.

It's probably best to take an Australian perspective of where some of it started, what's happening now and where it may be heading in the future.

The first advanced diving in Australia, which was beyond the 'recreational limits', was most likely undertaken in the late 60s and early

70s by the early cave divers and deep wreck divers. They were diving well beyond the limits of what was thought safe in those early days. Their equipment was fairly crude and it's use would send a shudder through divers today. There were problems and some hard lessons were learnt, out of this was created the first "technical" certification in Australia. A set of standards was adopted and divers were assessed on their ability to equip themselves and dive safely in the cave environment. As cave diving is generally practiced today (exploration diving is different) it is not truly technical diving. It could probably be more correctly defined as advanced recreational diving limits breathing air in an overhead environment.

This concept of an overhead environment is common to all technical dives. This is defined as an environment where the diver cannot ascend directly to the surface. In the case of cave diving and wreck diving this is well understood. However it is equally valid in deep diving. In deep diving the depth of water creates a "virtual overhead" with the ascent distance and mandatory decompression limiting the divers immediate ability to ascend back to the surface. At the recreational level divers strive to achieve the maximum bottom time with no more than a safety stop. Technical divers often plan stage decompression and utilise special equipment, gas mixes and meticulous planning to ensure the dive is completed successfully.

Equipment used for technical diving is not unlike that of cave divers. Consideration has to be given to gas supply, the extent of penetration into the overhead environment, redundancy and self sufficiency.

#### **GUIDELINES**



Essentially a divers needs to carry everything they are likely to need. On a deep technical dive the base requirements could mean carrying a set of twin cylinders manifolded together (but with an isolation shut off), an EAN<sub>x</sub> cylinder for decompression, an oxygen cylinder for decompression — as a minimum requirement. The extent of penetration into the overhead environment will decide the number of reels, lines and lights which have to be carried.

The use of special gas mixes in technical diving is one of the most exciting yet misunderstood aspects. Essentially divers use the most appropriate gas that the dive plan and their level of training allows them to use. In the case of recreational divers, it's air. However, it is no secret that air is not the ideal breathing medium for underwater use. There are numerous benefits using special gas mixes to the diver across a wider range of depths.

The most common "mix" is Nitrox, or more correctly "Enriched

Air Nitrox" (EAN<sub>x</sub>). These mixtures have an increased level of Oxygen and a reduced level of Nitrogen. The "x" represents the % of Oxygen. The EAN<sub>x</sub> mixes are especially useful in the range from 10m to 40m. Within this range the main advantages to divers are great bottom times, accelerated and reduced decompression times (due to the reduced level of Nitrogen), reduced fatigue after the dive and (reportedly) a slight reduction in narcosis. Decompression tables are readily available and there are even computers which will work with EAN<sub>x</sub> "mixes" from 21% to 50%. The most popular of these is the Dive-Rite "Bridge". Often divers choose not to dive the "mix" for extended bottom times but simply dive the same times as their air tables or computers but with a greatly reduced chance of decompression illness. This is using EAN<sub>x</sub> for "physiological safety". This is one way I have personally been using

EAN<sub>x</sub> during the training phases of some courses.

The most common "mixes" are EAN<sub>32</sub> and EAN<sub>36</sub> (also known as NOA NITROX<sub>1</sub> [NNI] and NOA NITROX<sub>2</sub> [NN2]). At more advanced levels divers will use "mixes" ranging from EAN<sub>26</sub> to EAN<sub>80</sub> for specific dives and purposes. The two main hazards using EAN<sub>x</sub> are the increased possibility of oxygen toxicity and the increased potential for fire when handling oxygen rich mixtures.

Without doubt though, the mix which fires the imagination of divers is Tri-Mix. Tri-Mix involves the use of helium, oxygen and nitrogen. This mix is essentially used at depths of 50m to 100m to overcome the deficiencies of air. It is through this range that air becomes "downright dangerous" due to narcosis, increased CO<sub>2</sub> retention and oxygen toxicity. However at this level of technical

(Continued on page 14)

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## THE EMERGENCE OF TECHNICAL DIVING IN AUSTRALIA (continued)

(Continued from page 13)

diving a wealth of experience and knowledge is essential. The prior experience, training and equipment requirements to dive with Tri-Mix are fairly daunting to the average diver. At this stage it should be pointed out that just because there is a Tri-Mix course available you should not go out and do it. It is stated quite clearly in the literature by all responsible technical training agencies that the Tri-Mix course is for those individuals who already have extensive involvement in deep diving activities. Tri-Mix merely affords a safer means for deep water exploration, for divers who must dive deep and for those divers in the 50m to 70m range who must have a clear head for the dives they do. Tri-Mix courses are not to be seen as an enticement to dive deep. This is truly technical diving.

At present there are three (if you accept that the CDAA Penetration Level is technical diving) training agencies in Australia which cater for technical diving. They are of course the Cave Divers Association of Australia (CDAA), the International Association of Nitrox and Technical Divers (IANTD), and American Nitrox Divers International (ANDI). The latter two organisations are set up around EAN<sub>x</sub> courses as these are essential to all technical diving and training. It must be pointed out here that EAN<sub>x</sub> diving is not technical but rather advanced recreational. In fact, as rebreathers appear in the near future, it may become accepted as a recreational breathing mix.

So where do you go from here. Training is available, dives are happening every weekend around Australia at a variety of locations. In Western Australia, Malibu Divers can give you EAN<sub>x</sub> training and use that "mix" for dives in the area. In Adelaide, Divers Service are offering.

In Melbourne there are people training divers in the safe use of EAN<sub>x</sub> and it's application within recreational limits and as a decompression gas. East Coast Connections are running dives in the Ships Graveyard and the deep wrecks off Wilson's Promontory for suitably trained and equipped divers. In Sydney and Queensland there are far too many facilities to list but a call to IANTD and ANDI will get you all the current information. At present there has been an amendment to the CDAA regulations which prohibits the use of any breathing medium other than pure, clean, compressed breathing air. This is a bit disappointing to divers such as myself that have enjoyed the use of EAN<sub>x</sub> mixtures over the previous two years. I am sure that decision will be looked at and modified. In the future I believe that the CDAA will accept that divers who have a certification with another breathing medium e.g. EAN<sub>32</sub> will be able to use that "mix" in the cave environment.

Barry Heard is a Technical Nitrox Instructor with IANTD, an Instructor with the CDAA, and an NASDS Master Instructor. He is more than happy to discuss Technical Diving enquiries with anyone.

Barrie Heard  
RMB 9265  
Invermay Road,  
Ripplebrook, Vic. 3818  
Ph/Fax: (056) 27 6474

## TANK CAVE UPDATE

### ATTENTION ALL RETURNING DIVERS

The procedure for divers who have dived Tank Cave and would like to return, is about to change. (Please note: this does not apply to new divers wishing to enter.)

Previously all weekends were organized on a rotational basis. With some divers not being available on their nominated weekend, the system became complex, time consuming and expensive, as "ringing around" to find people's availability became necessary. To avoid such problems in the future, a new booking system will now be implemented.

Divers who would like to dive in the cave are now asked to nominate a maximum of three dates from the following (**with a maximum of one per month**):

- March 4th or 5th
  - April 1st or 2nd
  - May 6th or 8th
  - June 3rd or 4th
  - July 1st or 2nd
- (eg. March 5th, May 6th & June 3rd).

Applications should be addressed to:

**CDAA Tank Cave Access**

**P.O. Box 290**

**North Adelaide, S.A. 5006**

and include the following:

- documentation of dive currency: a minimum of four dives in the previous six months in CDAA sanctioned cave and/or penetration sites, with exposure to restrictions, limited visibility and isolation
- a stamped, self-addressed envelope.

The maximum number of divers on the designated weekend will be four each day. Availability will always be subject to landowner discretion, and new diver applicants will receive priority over all return bookings.



# Kilsby's & Guidelines Accounts

By The Directorate

**A**s part of our advertising campaign for the election, there were several major areas of concern. One such area was the Kilsby's bank account. Money from Guidelines advertising as well as money from members diving Kilsby's sinkhole was being deposited into this account with no consolidation happening with our main accounting system.

The Directorate has received a final auditor's report on both the Kilsby's account and on the conduct of Advertising, Invoicing and Receipting as related to Guidelines.

## KILSBY'S HOLE

Auditor's comments in part read:

*"that as receipts have not been issued, He (the auditor) was unable to confirm that all monies received were banked."*

Audit Opinion:

*"in my opinion the Kilsby's Hole bank account recorded all monies paid to and drawn from that account and the balance paid to the Cave Divers Association of Australia Incorporated on 1 August 1994 cleared the balance of the Account."*

## GUIDELINES ADVERTISING

Auditor's comments in part read:

*"there is no apparent control over the amounts actually invoiced and the payments received."*

Audit Opinion:

*"an immediate review of the policies and procedures for seeking, confirming, invoicing and debt collection is critically necessary, as is the immediate establishment of proper and appropriate accounting and control procedures and records."*

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Any member wishing to talk about these matters please contact the Business Director, or either the Standards or National Director.

Future resources will now be directed toward the development of good and sound business practices so that our financial future may be secured. The Kilsby's account has been closed and all monies are now handled direct through our main account. As you are aware John Vanderleest has taken over as editor of

Guidelines and the Guide system for Kilsby's removed.

The Association has also purchased a computerised accounting package to assist with the financial control of our monies and is in the throws of developing an operational manual for the use of office bearers and volunteers.

Please contact us if you have any suggestions in this manner.

CDAА Directorate



# SITE ACCESS UPDATE

## Access arrangements for Kilsby's

In September this year I had a number of meetings to attend in Adelaide, one of which was with Ron Jeffrey, the Police Officer who controls the lease for Kilsby's.

Ron had previously been discussing the site with Ross Kilsby, the owner. During this discussion and then at the meeting with me, it was decided that Kilsby's no longer needed to operate under a Guide system. Ron and Ross were both concerned that it was costing the members more money to dive under these arrangements, and were happy for that to end, as was I. I also thought it was extremely positive that they were willing to give responsibility back to the

members.

The Guides the Association has used in the past have done an excellent job, but it does cost them time, and more money that I believe they are reimbursed. I would like to thank them.

Access to Kilsby's was denied to the members for a long time, so I can only hope that they realise the amount of trust both Ross and Ron have given them. So with the freedom to dive the site without Guides, also comes the responsibility for each diver to hold themselves accountable for their actions at the site. ALL REQUIREMENTS MUST BE MET, AND ANY DIVER WHO WISHES

TO IGNORE THEM WILL HAVE NOT ONLY THEMSELVES, BUT THE ENTIRE GROUP AT THE PROPERTY SUSPENDED FOR A MINIMUM OF 12 MONTHS.

For a short time when groups are visiting the property, there is a possibility that they may have an appointed member of the Association arrive to check their gear, depths, etc. But hopefully the members will behave in a manner that this will not have to continue.

Please read the following Access Requirements.

*by Lisa Bernasconi,  
CDA National Director*

### SITE ACCESS ARRANGEMENTS FOR KILSBY'S

- 1 Six weekends per year.
- 2 Two groups of ten, per day, per weekend, ie. up to 40 individuals per weekend.
- 3 Maximum ten divers per group (groups applying will be mixed together to make up numbers).
- 4 Divers wishing for access are to write to 'Kilsby's, P.O. Box 77, Mount Gambier, S.A. 5290, for indemnities, if they have not previously signed the Kilsby's indemnity. A stamped, self addressed envelope MUST be enclosed. Groups may then forward the signed indemnities, with a booking request 6-8 weeks prior to the weekend. One person from each group should be nominated to do this, and this person should be easily contactable, as only groups gaining access will be contacted. Groups will need to re-apply if unsuccessful.
- 5 Divers who have signed indemnities and previously dived the site may send a booking to Kilsby's, P.O. Box 77, Mount Gambier, S.A. 5290, 4-6 weeks prior to the weekend. Priority will be given to those who have not dived the site before.
- 6 Divers will meet at the allotted time on the corner of the Sisters Road to enter the property as one group of ten. All divers will exit together. Groups will meet at 8.45am and enter the property at 9.00am and exit by 12noon. The second group will meet at 12.45pm and enter at 1.00pm and exit by 4.00pm. It will be the same for both days. NO-ONE IS TO ENTER THE PROPERTY UNTIL ALL DIVERS HAVE ARRIVED. NO VISITORS ARE ALLOWED.
- 7 All toilet requirements must be met before entering the property.
- 8 A DEPTH MAXIMUM OF 40 METRES.
- 9 TWIN TANKS MUST BE WORN BY ALL DIVERS.
- 10 Groups may be checked that requirements are being met at any time during the day.



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## VIDEO REVIEW

### **Australian Cave Diving — A Contrast**

*By Tony Carlisle*

"Australian Cave Diving - A Contrast" comes to CDAA Products from our resident underwater video guru Tony Carlisle. It contains four short documentary type videos, two from the Nullarbor region and two from Mount Gambier.

Part One, titled "Warbla Cave", is located beneath the Nullarbor Plain. For those who don't read their site access page in Guidelines, Warbla is a reference cave, so it is currently closed to all diving. Tony Carlisle and Greg Bulling take us on an expedition of this gigantic and spectacular cave concealed some 100 metres underground. The video and lighting quality is excellent and when combined with Warbla's meandering and crystal clear waters and internal lakes, makes for 20 minutes of the most fantastic diving you can do in your lounge room.

Part Two, called "Three Sisters Cave"

takes us to the Mount Gambier region. Here the water table is approximately 20 metres underground. The Three Sisters Cave is a current CDAA Penetration site and the diving is done 'side mount' style. We are taken on a seven minute journey through the tight restriction down to the clear, main, underwater chamber of the cave. This is not a long dive, but serves as a great visual reference for those who have dived, or are planning to dive, this great site.

Part Three is titled "The Road to Toad Hall" that begins with the team doing a set up dive in "The Shaft". As luck (or precision planning) would have it, the team enters this massive underwater cave just as the shaft of sunlight pierces through the water to the rockpile at the bottom. Spectacular! The team then sets off to the Nullarbor and Cocklebidy Cave.

The footage of the massive Cocklebidy Mud Lake had me thinking I was somewhere else, while the three lead divers set off with more cylinders and equipment than a dive shop, headed for Toad Hall.

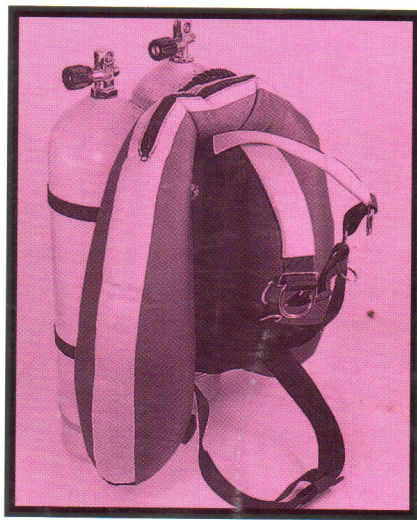
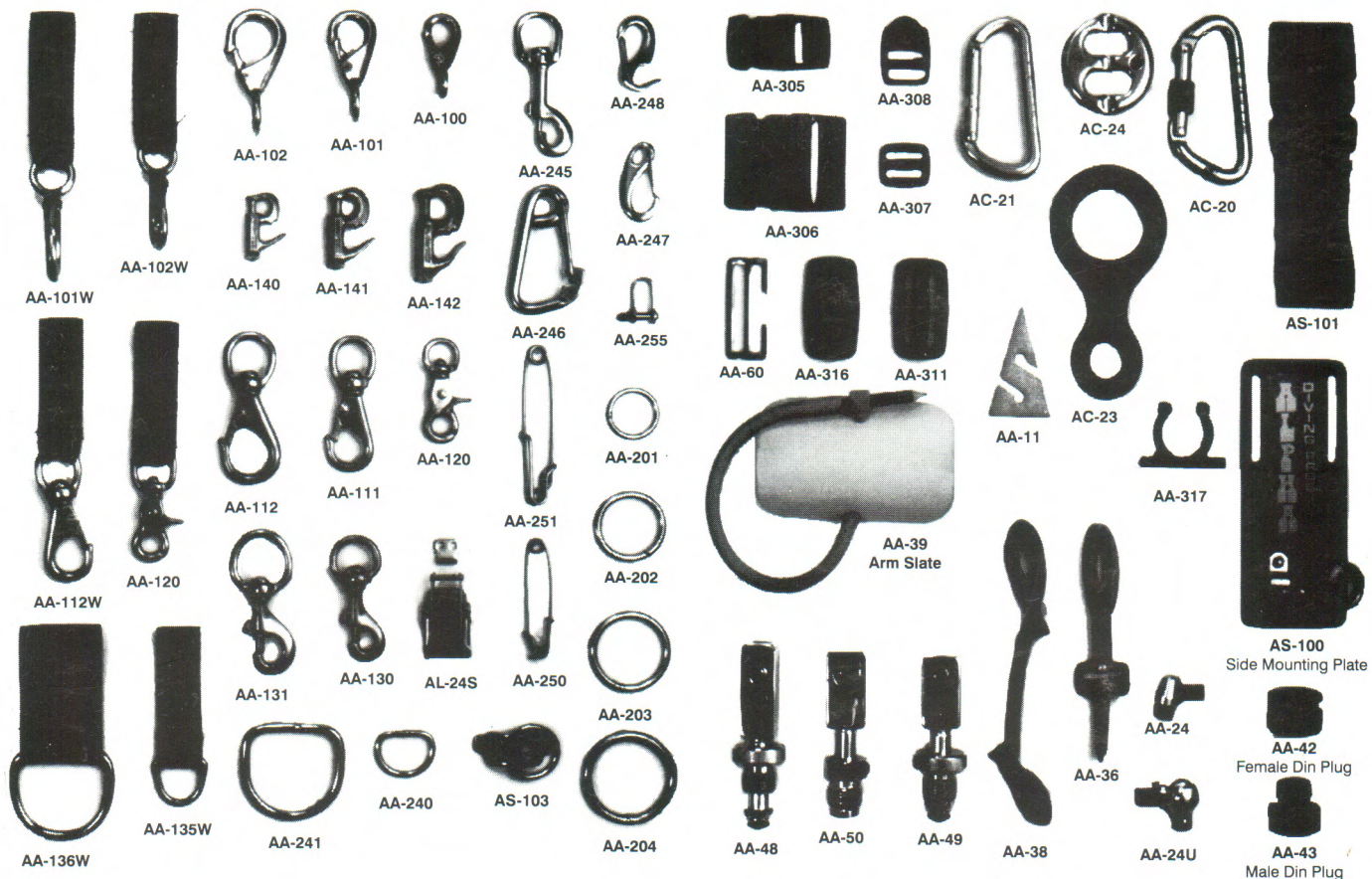
The fourth part returns to the Mount Gambier region and is titled "Tank Cave". To most members this underwater maze needs no introduction. Tony takes us on a dive with a few familiar faces through the new and exciting sections of this premier dive site.

"Australian Cave Diving - A Contrast" is forty minutes in duration and is an entertaining and extremely well produced video that will appeal to all people, not just divers and cave divers. The narration is informative and Tony's underwater footage is more than enough to encourage any person on the street to Penetration level.

The video is now available through CDAA Products for \$25.

*Review by Wayne Wilson*





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