SOUTH AUSTRALIAN DIVING FATALITIES 1950 – 1985

by Peter Horne

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(this edition with preliminary reports of 1986-2004 recent cases)

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PREFACE

When this book was first researched and published in the mid-1980s, the South Australian Coroner (Mr Barry Ahern) and his clerical support officers under the Attorney General's Office were extremely helpful and very supportive of my interest in this subject, often going out of their ways to provide access to files and copying facilities so that this study could be completed and the book published at minimal cost to enable the wider public to have cheaper, easy access to the material. Some 15 years later, in the first years of the 21st Century, I considered updating this work into a 50-year study so that more recent cases could be included to help identify trends in our local diving accidents. However, inevitable changes to procedures, personnel and rising copying costs sadly meant that such in-depth analysis of more recent cases would have to wait until a later date. Nevertheless, because accidents still continued to occur (including more at Port Noarlunga, an unusual number of shark attacks and a spate of commercial diving accidents), I was spurred to reprint the book so I could at least include a preliminary listing of these more recent cases.

One of the key findings of my original study was that in the case of most ocean-diving accidents, it was mainly the lack of an efficient buoyancy system which significantly contributed towards the victims' deaths, so I have been somewhat encouraged to learn that the more recent cases were **not** caused by the divers' failure to have an efficient buoyancy system on hand. In addition, being an avid cave diver myself, I am especially pleased to be able to report that there was not a single South Australian cave diving fatality in the 20-year period 1984-2004.

The genesis of this book would not have occurred had it not been for the enthusiastic support shown to me by **Dr Douglas Walker** of Narrabeen, New South Wales. Dr Walker was the backbone of

PROJECT STICKYBEAK, his voluntary, non-profit organisation with which I became an investigator in the late 1970s. Dr Walker meticulously managed ***Stickybeak*** for some 30 years and this innovative project was dedicated to the study of diving related accidents and non-fatal incidents in the interests of furthering diving safety and education, with information of value being disseminated to the diving community annually in the form of "Provisional Reports".

Sadly, Dr Walker recently stepped down from this massive task, and as this edition was going to press it was unclear as to who would be willing or able to take on this important role. However, in South Australia at least, the SA Police are far more aware of the need for more detailed studies and record-keeping in relation to accidents where people were using some form of equipment than was the case in the early years, so much more information is being retained than was the case in the distant past.

It is my hope that a major training or safety agency will become more involved in the long-term storage and ongoing analysis of diving fatality reports and non-fatal incident reports in the near future; public awareness of trends in accidents and the identification of appropriate safety-enhancing countermeasures can only occur if people are prepared to actually analyse and do something with the information that is collected.

FOREWORD

The mysterious world which lies beneath the waters of our planet is a strange and beautiful place, attracting millions of people every year in the ever-growing sport of scuba-diving and related activities.

In the early days, people basically learnt to dive the "hard way"; before the early 1970s diving training took place in the environment of recreational dive clubs because there were virtually no formal training agencies, and equipment was generally primitive and far from reliable. Many divers were ill-prepared to face the problems of this unforgiving environment, and sadly, a few lost their lives. However, over the last few decades there have been quantum leaps in the quality of diving training and the efficiency of equipment, with the result that diving activities are now safer than ever, and South Australia's accident rate has continued to remain relatively low.

During my involvement in recreational and cave diving activities (starting as a keen "spearo" in the early 1960s and finally becoming obsessed with cave diving exploration and research activities in the 1970s and '80s), I frequently resourced the "diver's grapevine" to learn about such cases, but these stories were usually little more than vague rumours which suited the purposes of the individual story-tellers. Indeed, it was exactly this sort of manipulation of the facts by divers regarding a tragedy at Port Noarlunga in 1979 that originally prompted me to commence what turned out to be the first major study of all diving accidents in this State. My enquiries proved that my suspicions were indeed correct; contrary to the rumour-mill's claims, the victim of this tragedy was not diving alone and he was not being reckless – he was just a little inexperienced and his diving companions had unfortunately been unable to save him in adverse conditions.

Because of the great emphasis that training agencies place on the value of the "buddy system" in ocean diving (and most forms of diving generally, except certain classes of technical diving such as advanced-level cave diving), I decided to investigate this case in detail so that I could more easily identify the key factors which contributed to this needless fatality. However, enquiries soon revealed that there was no local agency in South Australia that was collecting this information, and communications with Dr Douglas Walker via "Project Stickybeak" also had only scant facts about a handful of cases from this State. It was because I was aware of this gap in our knowledge and the fact that I was spurred on by my diving companions' interest in learning more about diving accidents that I decided to compile a comprehensive file of all known South Australian diving fatalities so that they could be analysed in detail.

Perhaps the most significant contact I made around this period was Christopher Deane, a Scuba Divers Federation of South Australia representative. Chris provided me with a great deal of basic information and suggested that I work through the Coroner's office to research the original source investigations. Indeed, Chris's advice turned out to be crucial for the success of this study. As the study progressed further, many people came forward with ideas and vague memories of rumoured cases, and some of these turned out to be important cases when they were followed up. A lot of additional information was also gleaned from old newspapers and this was used in conjunction with the personal testimonies of witnesses and relatives to compile the case histories which are presented in this report.

The original versions of this report compiled back in the early 1980s took more than 400 manhours of research to complete, and between 1985 and 2000 another 300-odd hours have been put into similar efforts, resulting in the book before you now.

After much thought, I decided to present each case in the format of a "humanised story" which uses victims' real first names (or their popular names) to convey not only the cold hard facts surrounding each case, but where possible, a more personal perspective, so that you, the reader, could get a better glimpse of the real human being behind each statistic. Hopefully this will result in better recognising the often simple (and common) background factors which contributed to their tragic accidents so that we can all be more aware of how easily things can go wrong.

Fatal accidents of any type are never pleasant to discuss, and every effort has been made in this book to present the facts as accurately as possible whilst avoiding sensationalism. It is also not my intention to point the finger of blame at anyone; the key elements of our diving accidents have been clearly identified, and it is now up to the diving community to ensure that the tragic mistakes of the past are not repeated.

ACKNOWLEDGEMENTS

Many people helped the author during this study over the past 20-odd years, and sadly some are no longer with us. The author would like to express special appreciation to the following:-

- Dr D.G. Walker of Narrabeen, New South Wales, whose support through his "PROJECT STICKYBEAK" accident investigation organisation since 1980 provided many valuable leads and a lot of helpful encouragement throughout the years;

- Australian Underwater Federation (AUF) representatives Wal Williams, Frank Poole and Dave Cowan, who supported the original study in principle and who previously contributed funds which enabled the original editions of this book to be printed;

- Former South Australian State Coroner, the late Mr Kevin Barry Ahern, whose cooperation, extremely personable character and considerable personal interest in the project made the author's job much easier;

- Members of the S.A. Police Department's STAR Force Underwater Recovery Squad, notably the late Sergeant Martin Harnath (known to his many friends as just "Marty"), Senior Constable First Class Bob McDonald and former Sergeant-In-Charge Ron Jeffery, who all provided important background information about cases with which they had been involved;

- Well-known and widely-respected commercial diver, the late Mac Lawrie, who provided a considerable amount of information about early cave diving accidents and his involvement in the recovery of victims' bodies;

- Christopher Deane, of the Scuba Divers Association of South Australia, who as mentioned above, supplied a lot of information about old cases and acted as a source of inspiration in his own right;

- "The Advertiser" and the now-defunct "The News" newspapers for permitting the reproduction of news photos and headlines; and

- the many old-time divers who revived ghosts of memories and spoke at length with the author for the sake of this study. The author is especially grateful to Bob Cunningham, Peter Christopher, Dave Burchell, Don Cooper, Gordon MacLean, Bob Stone, Phil Prust, Les Gray, Rodney Fox, Brian Rodger, Colin Morphett, Dr. John Brook, Lawrence "Snow" Raggatt, Philip "Mick" Potter and Bob Pulford for their interest in supplying detailed information about early-days incidents, accidents and equipment.

Thanks are also due to fellow cave divers Peter Stace and Ian Lewis, who provided many details about the early cave diving accidents from their own studies, and Robin Garrad and Jenny Hiscock, whose academic backgrounds helped with formatting ideas during the writing of the original report. The cooperation of the Cave Divers Association of Australia (CDAA) during the early 1980s in allowing me to use its Research Group's underwater cave surveys (mapping projects in which I participated, including serving as Research Group Coordinator) is also very much appreciated.

Finally, I would like to extend my heartfelt thanks to the relatives and friends of accident victims, who sometimes spent many painful hours discussing cases in the hope that others might be spared the anguish of losing friends and loved ones in such tragic circumstances. It was only through their willingness to discuss their personal tragedies that many important fine details came to light, enabling me to produce what I hope will prove to be a useful resource publication which will also help save lives.

Peter Horne,
Adelaide, South Australia
October 2004

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SECTION ONE

SOUTH AUSTRALIAN DIVING ACTIVITIES – A BRIEF OVERVIEW

The recreational pastimes of skin and scuba diving are relatively young, not only in South Australia but also in most other countries. Although the open-circuit 'aqua-lung' (a cylinder of compressed air worn on a diver's back) was first tested by its inventor, the late Jacques-Yves Cousteau in January 1943, it was many years before 'scuba' (Self-Contained Underwater Breathing Apparatus) became readily available to the general public; in fact, there were probably only a couple of dozen units (if that) in Adelaide by 1960.

At that time the sport of spearfishing was by far the most popular recreational diving activity and had a very large following. A few of the more adventurous souls even made up their own experimental underwater breathing apparatus, but many of these units, which were sometimes based on the 'rebreather' principle, were frequently unreliable and very dangerous.

Some of the early snorkelling gear was also very dangerous. Breathing tubes were often too long and narrow, and without any sort of built-in purge facility, causing deadly carbon-dioxide to build up, and some types had cage-like "ping-pong" ball valves which automatically sealed the tube/s if the diver looked down too far. There were even designs which consisted of twin ping-pong ball snorkels and a full-face mask – ideal for instant suffocation when a wave washed over the user's head, as the author also discovered the hard way (fortunately, in water just a metre deep)! Sadly, others were not so lucky, and these neat-looking but deadly devices were eventually removed from general sale after a number of children had suffocated in very shallow

water when the valves unexpectedly closed during inhalation. Despite these cases, and considering the lack of general training during the early years, there were surprisingly few accidents, and it was really only after scuba diving became popular that the accident rate began to increase.

Divers today are very different from those of the 1960s and early ’70s. Today, almost anyone with reasonably fitness, good ears and lungs and the right equipment can dive, but back in those days diving was very much a physically demanding and thus heavily male-dominated sport, and it was almost unheard-of to take up scuba diving if you hadn’t done a lot of snorkelling or spearfishing. This was because diving was a particularly strenuous activity; efficient buoyancy devices like today’s scuba-feed vests did not exist and heavily-weighted divers could not easily rest on the surface when they became fatigued.

The primitive “pull-and-pray” CO_2 cartridge life-jackets which were available at the time were worn as surface emergency support systems and not as underwater buoyancy-control devices, and they did not provide very much lift at depth anyway. Diving instruction leaned heavily towards the need for individual stamina and swimming skills, so only the more determined individuals were attracted to the sport during that period.

Early wetsuits were also relatively constrictive and inefficient compared to the wetsuits and drysuits which are available today. These foam-neoprene wetsuits were also very buoyant at shallow depths (so much so in fact that it was virtually impossible to swim down from the surface without a heavy lead weightbelt) so divers were taught to immediately drop their weightbelts if they got into difficulties. Quick-release buckles were usually fitted to assist in the fast, one-handed removal of belts and no doubt many lives were saved as a result, but “shallow water blackouts” caused by excessive hyperventilation still evidently claimed the lives of

snorkellers who unexpectedly became unconscious underwater. Some deaths also occurred when divers failed to properly ditch their belts, in some cases apparently accidentally releasing their tank harness instead of the weightbelt, undoubtedly exacerbating their difficulties.

People who did not want to carry bulky scuba cylinders on their backs could breathe compressed air from a hose which was connected to a cylinder or compressor on the surface. Such 'hookah' diving has long been popular among professional abalone divers and it has been attracting the attention of many sport divers in recent years. Like all other diving activities, proper training in the use of hookah gear makes this form of diving safe and enjoyable.

Today, divers are generally well trained and properly equipped; we now have wetsuits which are quite comfortable and very effective; very warm and comfortable 'drysuits' for cold-water diving; longer-duration scuba cylinders and rebreather units, efficient buoyancy vests and many other innovations such as scuba-feed power inflators and 'octopus' regulators. And while many thousands of new scuba divers are trained in Australia annually, the average accident rate in this State is very low – less than one death per year – which is an impressive safety record in view of the huge number of dives which are undertaken regularly in this potentially hostile environment.

WHAT EXACTLY ARE "DIVING ACCIDENTS"?

In simple terms, "diving accidents" in this context (as opposed to springboard diving) occur when people lose their lives whilst undertaking underwater-related activities. A very important consideration during this study was the need to clearly identify people who were "diving" rather than just swimming with aids like "flippers and goggles". Actually, this task was not as easy as it would appear to be at first glance; many of the snorkelling deaths of the 1950s and '60s were simply called 'drownings' by the newspapers, and sometimes there was no mention at all of victims wearing facemasks and fins. Even today, it is possible for such facts to remain unreported.

In view of such poor records, plus the fact that young children often used basic snorkelling gear whilst swimming in shallow water such as swimming pools, the author decided to concentrate on the cases which met the following criteria:-

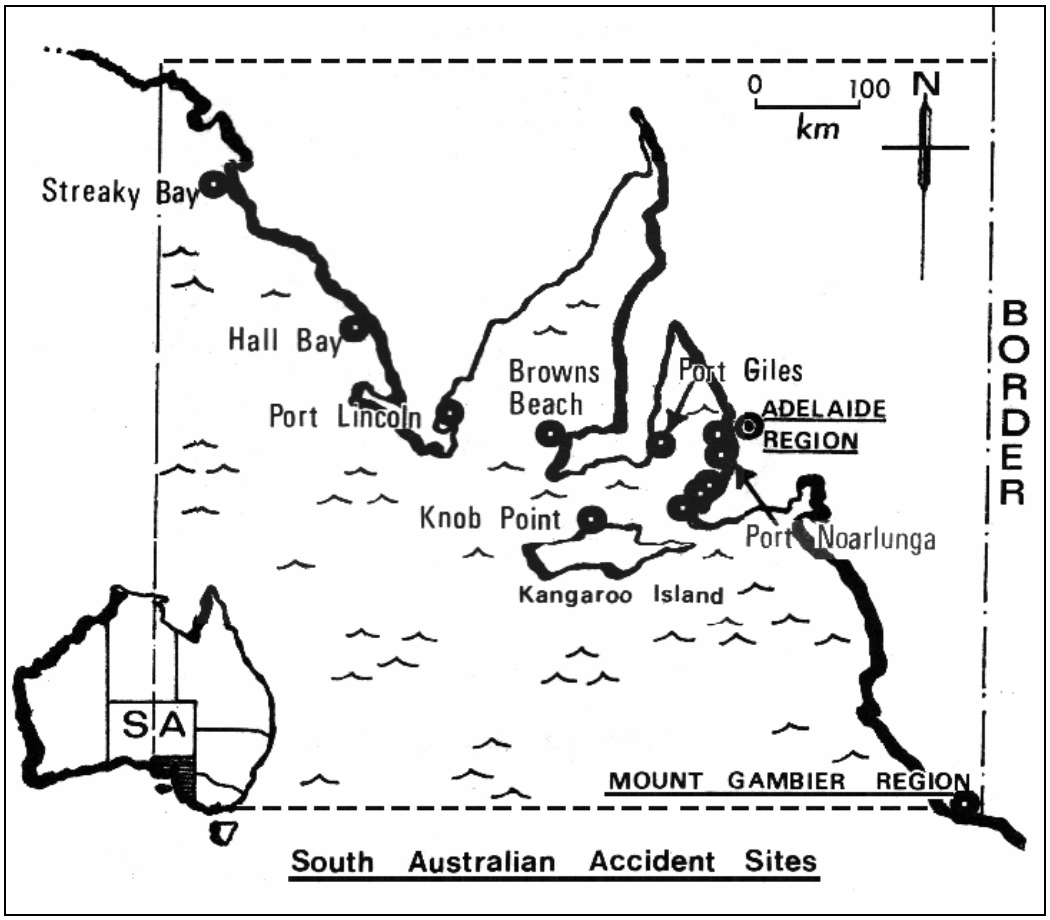
1. The divers had to be at least **10 years of age**;
2. They must have had at least a **basic understanding of the correct use of their equipment**; and
3. They had encountered problems **whilst engaging in diving activities in the water** (i.e., excluding accidents on land or in boats, etc).

The author is also aware of several cases involving divers who mysteriously became ill and died some time after performing dives, but since the exact cause of death was never determined in these cases they are not included in this report although they have been recorded elsewhere for possible future reference.

SECTION TWO

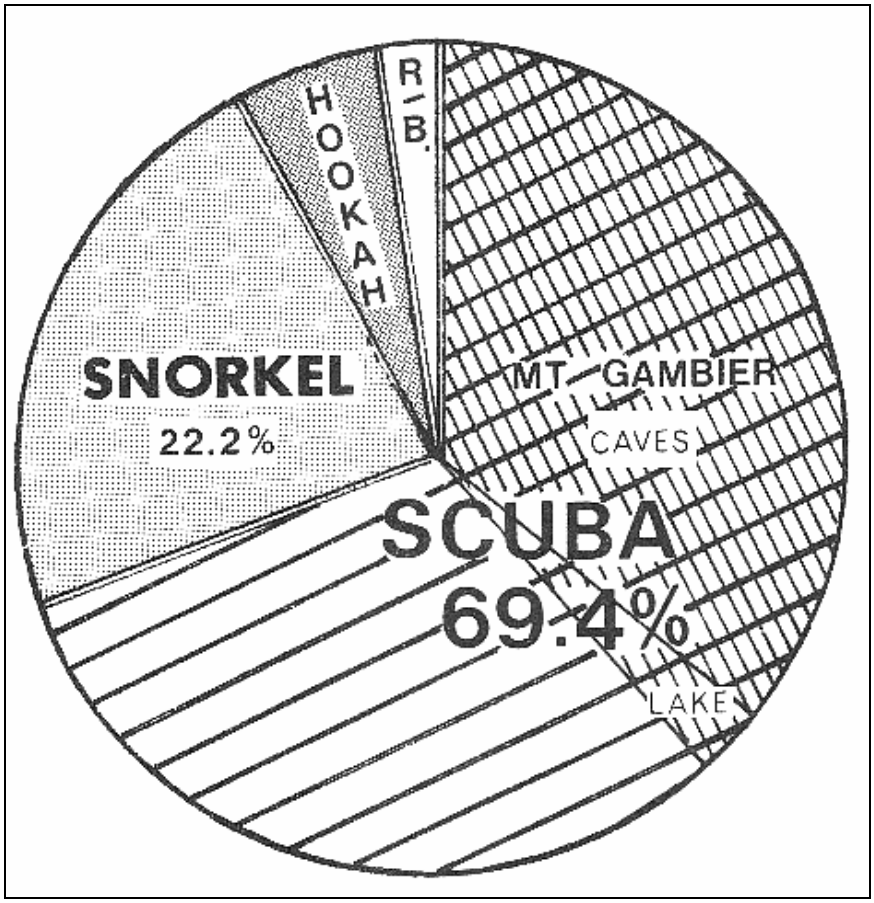
ACCIDENT CASE HISTORIES 1950 – 1985

The original investigation covered the period January 1950 to January 1986, when a total of **thirty-six** people were known to have died whilst undertaking diving activities in South Australian waters. (A further 19 divers died in the 16-year period March 1986 – April 2002, but these cases are **not** analysed in detail here; preliminary case-histories can be found in Appendix 2). Twenty-two of the original 36 victims died in the **sea**, with the Port Noarlunga area alone claiming some 10 lives. The remaining 14 all drowned in freshwater lakes and caves which lie within 30 kilometres of Mount Gambier, in the Lower South East of the State.



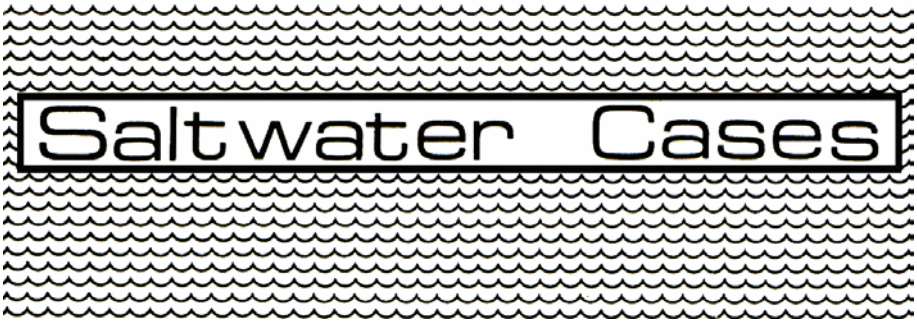
25 of the 36 accident victims were wearing scuba gear, although

in two cases the divers were actually breathing from their snorkels when they got into trouble and had not turned their air on. Whilst it could be argued that these cases should really have been called snorkelling accidents, the heavy cylinders which the divers wore on their backs would almost certainly have interfered with their swimming abilities and thus need to be considered in this light. The other 11 reported cases involved 8 snorkellers, two divers using 'hookah' and the earliest recorded case where a diver was undertaking his first-ever dive using a rebreather device of some kind.



The case-histories which appear in this book have been necessarily condensed from more detailed reports, but the key points of interest have been retained and identified.

PART ONE



PORT NOARLUNGA –

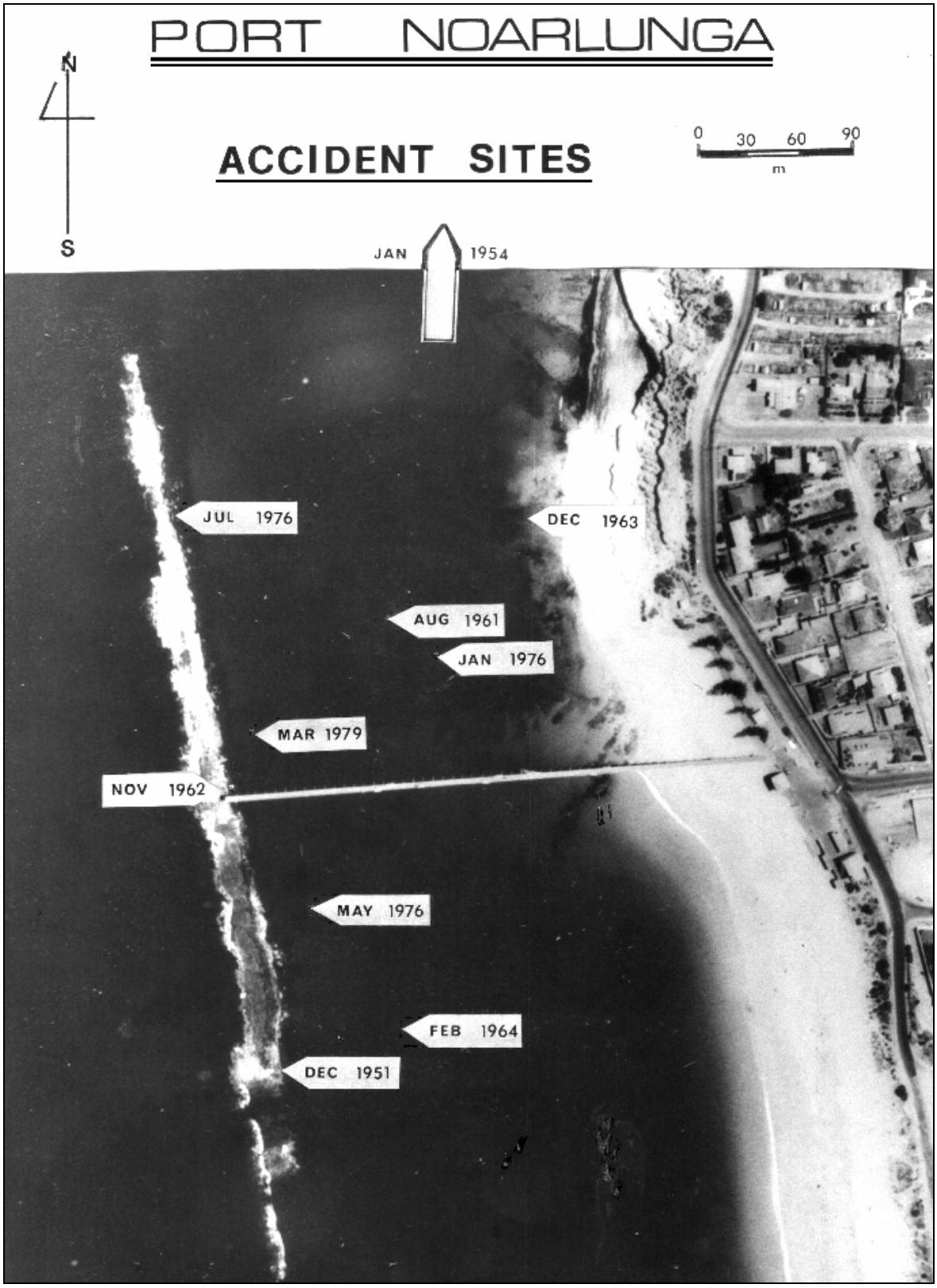
A REEF WITH A REPUTATION

Port Noarlunga Reef lies approximately 30 kilometres south of the city of Adelaide, and is an ideal training ground for new divers. The area is quite sheltered and underwater visibility can exceed 15 metres on very good days. It is an exceptionally popular place in the summer months, when many hundreds of beachgoers visit the area each day to swim, sunbake or dive. The reef is also a Marine Reserve and is home for various species of relatively tame animals, enticing many underwater photographers every summer.

The 900-metre-long sandstone formation lies roughly three hundred metres offshore, and it runs parallel to the nearby sandy beach. A straight jetty connects the reef to the shore, and it has a 6-metre high vertical metal ladder at the end for easy access to this ideal diving platform. Divers can also enter the water from about a third of the way along the jetty thanks to a convenient set of steps which are located there. The water is around 12 metres deep on the sea side of the reef, and under the jetty it is about 7 metres deep.

Several hundred metres to the south of the jetty, the reef is broken by a 300-metre wide area of water called The Gap, where a depth of almost 20 metres can be found. Divers generally reach this area by walking along the reef when it is fully exposed at low tide, but when the sea is breaking over the rocks, the more intrepid divers snorkel out from shore, either from the open beach or under the jetty.

Although the reef is a very beautiful place under ideal conditions, it has its bad days. The Gap can be very rough when the tide changes and big swells can sometimes break over the otherwise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dry exposed reef area without warning, so divers need to be aware of these hazards and should **always** keep an eye on the incoming waves. Unfortunately, because so many people of all levels of experience dive there, the reef has claimed quite a few lives. A total of **ten** divers are known to have died in the area since 1950, regrettably resulting in the area sometimes being known interstate as the "killing ground of South Australia".

Nine of the victims died in the immediate vicinity of the main reef, while a snorkeller drowned further north at Christies Beach, in the early days. Two divers drowned after getting into difficulties whilst they were snorkelling with scuba cylinders which had not been turned on, and two others were killed after they were washed from the reef by 'freak waves'. The others got into trouble in a variety of ways, and in all but one case, inexperience and the lack of buoyancy aids were the major contributing factors. Accidents occurred throughout the reef area and not just in a couple of significant 'trouble spots' as had been suggested in the past.

The earliest accident at Port Noarlunga was the only case involving rebreathing equipment, and was also the first diving fatality in South Australia. On Friday the 28th of December, 1951, 33-year-old John and his brother Pat decided to go spearfishing, and they invited a non-diving neighbour, Arnold, along as a line tender. John and Pat intended to use rebreather devices of some kind (possibly World War II fire-fighter's units, and old gasmasks for facemasks) which had apparently been modified in some way. The trio walked southwards along the reef to the inside edge of The Gap, and Pat and John commenced their dive in about 6 metres of water. The tide was low and conditions were good at first. John was undertaking probably his very first dive, and he held onto the safety line which was controlled by Arnold from the reef.

After a while John surfaced and swam back to the rocks. He was turning blue with the cold and the tide was starting to come in, so

Arnold advised him to warm up in the sun before diving again. John decided that he would do his last dive without a break because the deteriorating water conditions indicated that they were running out of time. As he entered the water again, Arnold asked him to be more specific with the line signals, as the waves interfered with his interpretations. John acknowledged and descended about six metres to the south of his brother. A short while later, Arnold received a sharp pull on the line, and hauled it in to help him to the surface. When John appeared, Arnold reached down to assist him out of the water.

As Arnold waved his hand in front of his facemask, John suddenly jerked back and fell into the water, releasing the safety line. Arnold was very surprised about this action and thought that he might have dropped his speargun and had gone down to find it. As the minutes ticked by, however, he began to get worried, but thought better of his impulse to jump blindly into the choppy water for fear of landing on John or his speargun.

Pat surfaced a short time later, and when Arnold told him what had happened, he immediately swam across to the area where John was last seen and dived. Pat quickly found his body sitting on a rocky ledge in an upright position about 3 metres below the surface, so he tied the line to him and surfaced. Arnold then helped him to haul John's body back onto the reef, which was now partially underwater.

Arnold ran back to the jetty to get help while Pat tried to administer mouth to mouth resuscitation, but the waves kept crashing over the reef and moved John's body about, making his efforts futile. After summoning help, Arnold tried to return to Pat, but was washed off the reef and had to be rescued by the local lifesavers. John never responded to resuscitation attempts and the primary cause of his unconsciousness was never determined, although factors such as hypothermia, anoxia and

exhaustion could have contributed to his death. All official records have disappeared, so unfortunately no additional information is available.

The second known South Australian diving accident occurred in the Port Noarlunga area as well – at nearby Christies Beach, less than a kilometre to the north. 18-year-old Alfred was reportedly spearfishing with a friend named Leonid on Saturday the 23rd of January, 1954 when he got into difficulties of some kind. Leonid, who was about 100 metres away, saw his plight and immediately went to his aid, but he was unconscious by the time Leonid got to him. He dragged Alfred's body onto the rocks and tried to revive him using artificial respiration, but he failed to respond. Unfortunately, no official records could be found so many aspects of this case remain unknown.

The Reef claimed the life of its first scuba victim on Sunday, the 13th of August, 1961. Maxwell had gone to the reef to try out his new wetsuit and to do some spearfishing whilst using scuba. At 47 years of age, Maxwell had only performed about half a dozen dives since he was trained in November, 1960. He took his young son and his son's friend with him, and the youngsters stayed near the boat ramp to the north of the jetty while Maxwell entered the sea at about 2 p.m., towing a small buoy which had a diver's flag attached.

The water was calm but the visibility was poor, and he was last seen swimming approximately 200 metres out. His son had no diving knowledge and only became concerned about four hours later, when his father had not returned, and the sun was about to set.

Fearing that something had happened, the lad went to the nearby lifesavers' clubrooms and raised the alarm, and some lifesavers boarded a small boat and went out to the buoy. It was apparently attached to Maxwell by a thin cord, but the line broke when they pulled on it, so they left the buoy and notified the authorities.

The Police Aqualung Squad commenced a search with underwater sleds early the next morning, and located Max's body in 5 metres of water about 10 minutes later. It was about 150 metres offshore and sitting in an upright position, with both arms and legs out straight. The divers noticed that Max was wearing two weightbelts, and after these were removed, his body immediately floated to the surface.

Investigations revealed that Max had turned the scuba cylinder to the "OFF" position underwater, and it contained no air. The 'reserve air' mechanism on this "Porpoise" unit was situated at the bottom of the tank and was activated by turning a tap, and divers had to take care not to turn off their air supply accidentally when they wanted to turn on the reserve. The police divers theorised that Maxwell might have entered the water not realising that the reserve had already been turned ON and turned his remaining air OFF when he thought he was activating the reserve.

Realising he had no air, he probably made a dash for the surface but was unable to reach it in time due to his excessive weight. He wore two weightbelts because he was uncertain of the wetsuit's buoyancy. The autopsy revealed that Maxwell had died of coronary obstruction, probably through drowning.

On Saturday, the 17th of November, 1962, another scuba diver drowned at the Reef. Maurice was 22 years old and had been trained roughly a year earlier, but he had only dived about a dozen times since then. On the morning of the accident, Maurice

and his friend Clive had gone to a local dive shop to fill Maurice's "Sea-Bee" twin scuba cylinders, which he had only purchased about 3 weeks beforehand. The shop assistant returned the apparently full tanks to him, but he could not check their pressure because he did not have a gauge.

They arrived at the reef around 2.15 p.m., and went down to the jetty to have a look at the condition of the sea. Maurice was keen to use his tanks, but Clive had an ear problem and he decided not to use scuba, saying that he preferred to swim on the surface while Maurice was below. Water conditions were not good, and although the reef was almost fully exposed, waves broke over it here and there. They climbed down the 6 metre high ladder and Maurice commenced his dive, close to the jetty. About 15 minutes after they entered the water, Clive saw Maurice swim across to two other divers who were on the reef. Clive followed, and Maurice told them that he seemed to be having trouble breathing from his tanks. Everyone thought that this was very strange since the tanks had only just been filled, and after double-checking the equipment, Maurice decided that he would give it another go. He was just pulling his mask back over his face when a large wave suddenly crashed over the reef, catching everyone by surprise and washing them all into the deeper water on the shore side.

Clive and the other two divers surfaced immediately, but Maurice stayed under. Realising that something was wrong, Clive quickly dived to look for him in the murky water. He could hardly see a thing, but he soon found Maurice and thought that he was swimming. Clive went back up for another breath, but before he could dive again, another large wave broke over the reef and washed him away from the area. He couldn't see anything in the churned-up water, so he swam back to the reef and quickly climbed the ladder so that he could look for Maurice from a higher vantage point.

Maurice however, was nowhere to be seen, so the other divers ran along the jetty to get help from the lifeguards back on the shore.

However, when they were halfway back, they were distracted when they noticed a diver under the jetty with the same orange-coloured scuba units, and thought he was Maurice. They ran back and told Clive, and it took a few minutes before the diver surfaced and they realised that they had been mistaken. At this stage, some other divers were seen walking out along the jetty. They were intercepted and informed of the situation, and one of them immediately jumped into the water from the jetty.

He found the scuba cylinders and quickly placed them on the reef, and then looked for Maurice again. A few minutes later, he found Maurice's body and brought it to the surface. As various people came down to help, the waves kept crashing over the reef, interfering with their resuscitation attempts. By the time they got out of the water, it was too late to save him.

Maurice failed to ditch his weightbelt, and his scuba cylinders were completely empty when they were recovered. Unfortunately, no autopsy was performed, so many aspects of this case remain unknown.

The next known accident at Port Noarlunga occurred on Christmas Day in 1963, which was a Wednesday. James had been diving for only around 4 months, and he and his friend Trevor entered the water near the jetty around 9.30 a.m. to do some spearfishing.

James carried a speargun and wore an 11-kilogram weightbelt, and after rigging up they both swam northwards, parallel to the beach. However, after only about 8 minutes Trevor noticed that

James was missing, so he swam around for a few minutes more to search for him. When he still couldn't find James he realised that something must have happened to him, so he left the water and climbed a nearby cliff to search from a better vantage point.

From the cliff, Trevor saw James' body lying a couple of metres offshore, and quickly waded out to him. James was lying face down on the bottom minus his mask and snorkel, and Trevor quickly carried his body to the beach, where a young member of the Port Noarlunga Surf Lifesaving Club vainly applied mouth to mouth resuscitation. His weightbelt release buckle was found to be bent, and could not be opened easily.

A period of only one and a half months went by before the reef claimed its next victim – a 20 year old diver named Robert, who had around 10 years snorkelling experience, but had only done perhaps 3 or 4 scuba dives.

On the morning of Sunday, the 9th of February, 1964, Robert and his brother Richard, and a diving friend named Greg walked down onto the beach with great enthusiasm. They had obtained permission to salvage the motor of a boat which had foundered on the reef a couple of days earlier, and intended to snorkel out to The Gap from the shore.

Although the weather was fairly good, the water was a little choppy inshore of the break in the reef. They entered the water at 9.45 a.m. and commenced the 300 metre swim. Richard carried some small items of equipment while Greg carried a crow-bar and towed two drums out.

Robert was probably the most heavily laden, as he was carrying a spare scuba cylinder in a red Army duffel bag, in addition to his

own unit (which **had not been turned on**), a 7 kg lead belt and a large heavy crowbar. He also wore the top half of a wetsuit.

Greg had left the beach first, and stayed about 30 metres ahead of the others during the 15-minute swim out to the reef. Richard stayed fairly close to Robert at first, but soon became separated and last saw him when he was halfway across. The others reached the reef and climbed onto it as they waited for Robert to arrive. However, they could not see him in the water, so they sat on the reef for 5 to 10 minutes and carefully scanned the white-flecked sea where they had last noticed him.

They became concerned when Robert still could not be found, so Greg walked along the reef towards The Gap while Richard maintained a vigilant lookout towards shore. After a few minutes, Greg re-entered the water and swam back to shore, looking for Robert as he went. Visibility was poor and he could barely see the bottom. When he arrived at the beach he walked up to the car, and when Richard saw this from the reef, he swam to shore as well. The two boys then informed the lifesavers of what had happened, and they were horrified when they were handed a duffel-bag containing a scuba cylinder, which had just been found on the waterline. Robert had not been seen again by anyone, so the police were called.

The Police Aqualung Squad commenced a search the same day, but didn't find anything. The next morning, they located a crowbar which was sticking upright in the sea floor, as though it had been dropped from the surface. It was identified as the one which Robert had been carrying, but despite an extensive search, nothing further was found.

Eight days later, Robert's body was found by a member of the public on the shore-side of the reef about 20 metres to the south of the jetty. His mask was down around his neck, and he was still

wearing his weightbelt. The snorkel was reportedly still in his mouth, and the scuba unit was still full because it had never been turned on. An autopsy revealed that Robert had drowned, although the actual cause of his plight was never identified.

After claiming the lives of four divers between 1961 and 1964, Port Noarlunga Reef fell quiet for a period of nearly 12 years. However, when tragedy did strike at the reef again, it struck with a vengeance, resulting in the deaths of **three** scuba divers over a seven-month period. The first of the three accidents which were to occur at the reef in 1976 **also involved a diver who**, like the case above, **was wearing scuba gear which had not been turned on**.

36-Year-old John went down to the beach with his friend Ian and their families on Saturday, the 3rd of January, 1976, for a fun outing, as they had often done in the past. The day was fine and the sea was calm, warm and clear when they arrived around midday. They walked down to the boatramp which was about 30 metres north of the jetty and everyone went swimming for about half an hour. John and Ian then left the water and prepared to go for a dive.

John had been trained about a year before this fateful day but he had apparently done less than 10 scuba dives, and although they wore most of the required diving equipment, John did not have a buoyancy device of any kind. They both rigged up at the beach and decided to snorkel out to the reef, so that they could use their scuba units once they arrived there. John had perforated an eardrum during his last dive, and even though the tear had evidently healed, he didn't intend to take any chances and told Ian that he might abort the dive at any time. They then entered the water and started to swim straight out.

Ian was about halfway out to the reef when he realised that John was not with him, so he scanned the surface and saw him some distance back towards shore. John lifted his arm out of the water and waved once, and Ian thought that he was signalling that he was having trouble with his ear and was returning to shore. Ian decided to swim on out to the reef and he thought nothing more of John's wave because he didn't seem to be in any distress. However, when he reached the rocks and looked back towards the shore, Ian couldn't see John anywhere, so he decided to start back immediately. He reached the beach some time later, and asked his wife if she had seen John. She said she hadn't, and Ian then became concerned and removed his gear, intending to snorkel around the area to search for him.

Meanwhile, a snorkeller named Donald came upon the body of a scuba diver about 75 metres offshore, roughly 50 metres north of the jetty in about 4 metres of water. The diver had no facemask and was lying on his back. Donald tried to lift the body to the surface, but he couldn't, so he called for help. Two other divers came to his aid and together they got him to the surface.

While the others removed some of the gear and went to raise the alarm, Donald attempted some in-water resuscitation in a vain effort to keep the diver alive. Ian heard the commotion and came across, where he discovered that the scuba diver was his friend. John had not ditched his weightbelt, and his scuba cylinder was still full since he had not turned it on before entering the water.

Port Noarlunga Reef was not its usual picturesque self on Sunday, the 16th of May, 1976, when 20-year-old Brad and his friend, Norman, arrived to go scuba-diving. The sea was quite rough, but as Brad stood to lose $13 for hiring the gear, they reluctantly decided to dive anyway. Brad was trained in New South Wales, and he had continued to dive fairly regularly during the previous

two years. Norman was less experienced, having done only 4 or 5 dives in the 12 months since his training.

After eating a small snack, the divers prepared their gear. Norman told Brad that his cylinder contained about 2500 psi of air, and Brad suggested that they swap tanks, as he had about 3000 psi and would probably use less air than Norman. Agreeing about this, they walked down to the jetty and entered the water at the steps which were located about a third of the way along it.

Norman was wearing a "SEATEC" buoyancy jacket, which he had bought only two days beforehand, but Brad wore no such buoyancy device. Norman soon discovered that he was far too buoyant, so they both exited and went back to the car for another 1.5-kg weight for Norman's belt. They re-entered the water at 11.40 a.m. and swam under the jetty until they reached the reef, where they turned to the south and headed for The Gap.

About twenty minutes later, Norman checked the time and signalled that they should head back to the jetty, so they surfaced to get their bearings. The jetty was further away than they thought and the surface water was very rough, so they decided to swim as far as they could on scuba, and use their snorkels when they ran out of air.

They had only gone a short distance when Norman noticed that it was difficult for him to inhale, so he pulled his reserve lever which he knew would give him perhaps ten more minutes of air. At the same time, he started to get stomach and leg cramps, so he decided to surface and commence the snorkel back. Brad surfaced at the same time, and Norman told him that he was low on air.

Norman inflated his new buoyancy vest, and Brad told him that he would swim in front until they reached the jetty, which was

still approximately 100 metres away. Norman agreed, and because his buoyancy vest was fully inflated, he rolled over onto his back so that he could swim more comfortably.

Norman never saw Brad alive again; he swam back to the jetty totally unaware of the fact that Brad encountered difficulties soon afterwards, and tried vainly to signal for help. Norman was wearing a wetsuit hood which interfered with his hearing, and the noise of the wind and the crashing of the waves drowned out Brad's cries for help.

Norman first became aware of the fact that something was happening when he heard a commotion from the jetty, but he mistakenly thought that people had spotted a shark.
When he got to within 10 metres or so of the jetty, he realised that Brad was in trouble, but he couldn't see him over the waves and was becoming exhausted himself. He was thrown a life-buoy as he swam back to the steps.

A diving instructor named Darryl was training some new divers at the steps, and he quickly snorkelled out to the area, guided by directions yelled from the jetty. However, he didn't see Brad, and after a fruitless 20 minute search, he returned to the jetty to don his scuba gear. He spoke to Norman and swam back out in the company of two students, and while they waited on the surface, Darryl dived and located Brad's body about 10 minutes later.

Brad was lying on his back and his mask was still in place, but his regulator was out of his mouth. Darryl quickly released Brad's weightbelt and scuba harness and brought his body to the surface where he removed Brad's facemask and commenced expired air resuscitation. The students took Darryl's diving gear and passed him a line which had been swum out from the jetty, and he tied it to the victim and stayed with him while he was towed to the shore by people on the jetty.

This drowning, like so many others, occurred after the divers had returned to the surface. Brad possibly got cramp or simply became exhausted in the choppy water and drowned because unlike Norman, he did not have any way of resting on the surface and was unable to receive any assistance from his dive buddy.

CITY WEATHER
A shower or two. Est. max., 15C.
Yesterday's temperatures: Min., 12.4C; max., 13.8C.
May 16 last year. Min., 13.6C; max., 17.5C.
Weather map, Page 33.

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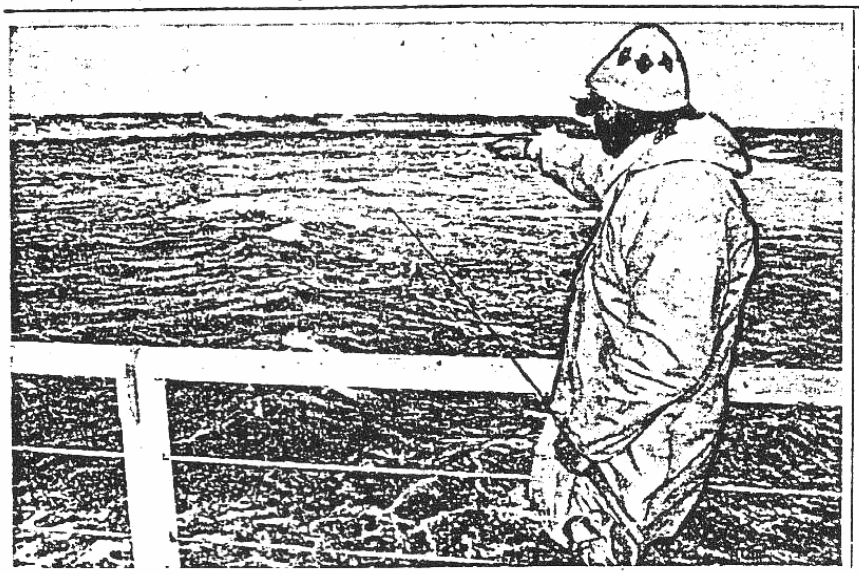


ABOVE — Mr. Ron Collins points to where he saw the two divers in difficulties in turbulent water. BELOW — Mr. Darryl Dawson, who had been giving diving instruction in the area, recovered the diver's body at his second attempt.

STOP PRESS

I had no idea he was in trouble, says mate

Diver runs out of air, drowns

By Police Reporter PETER De IONNO

A young scuba diver drowned in surging seas near the Port Noarlunga reef yesterday after he and his companion ran out of air and got cramp.

Dozens of people on the Port Noarlunga jetty watched helplessly as the man waved his arms in distress before being pulled under by the backwash of waves pounding over the reef.

The dead diver's body was recovered after about an hour by a diving-school instructor who had been supervising a group of novice divers nearby.

The two divers were first seen about noon when they surfaced about 100 metres south of the jetty and about 30 metres inside the reef.

The tide was turning and white-capped breakers about two metres high were crashing over the reef.

Channel 7's promotions manager (Mr. R. Collins) and another station employe were fishing near the end of the jetty and saw the men in the water.

"One began swimming slowly towards the jetty on his back," Mr. Collins said.

— barely more than the vertical distance to the water.

"The guys from the diving school helped him up and he began asking for his mate — he was completely exhausted," Mr. Collins said.

"When I looked back the second diver had disappeared."

The diver who reached the jetty is Norman William Cole, 24, laborer, of York terrace, Ferryden Park.

The dead diver, 20, was from NSW and had known Mr. Cole only about six weeks.

Mr. Cole said they had been in the water about 30 minutes when they ran out of air.

He said he had dived about five times before and believed the dead man "had quite a bit of experience."

'Pretty bad'

Mr. Cole said he had been wearing an inflatable buoyancy collar, but the dead man had not.

water by Mr. D. A. Dawson, 30, of Morphett Vale, who had been taking six novice divers for their first sea dive from the jetty steps.

After Mr. Cole had been dragged from the water, three of the group swam to the area where the dead man sank and began to search for him using snorkels.

They spent about 30 minutes in the area but found no trace of the man in the turbulent water.

When they returned to the jetty, St. John Ambulance officers who had been standing by checked the men's pulses before allowing them back into the water.

Mr. Dawson took their last tank of air and the belt from a surf life-saving reel and returned to the spot to search the bottom.

One of the pupils, Mr. R. Ogilvie, 18, of Pulham, went back with him and took a large life-saving float.

Mr. Dawson found the dead

The next diving fatality at Port Noarlunga involved a well known 55-year-old diver named Jack, who had over 15 years diving experience. The accident happened on Sunday, the 25th of July, 1976 at 10.30 a.m., an hour and a half before another diver died at Port Giles Jetty on the Yorke Peninsula.

It was low tide and the sea was very cold when Jack and his companion, Gary, went down to the reef. The underwater visibility was marginal for photography, so they returned to their cars and suited up. They wore full-length wetsuits, weightbelts, buoyancy vests and knives, but they didn't have contents gauges. Gary noticed that Jack had put on his buoyancy vest after donning his scuba cylinder rather than before, but he didn't question him about this. He was not aware of the fact that Jack's vest was useless; the carbon-dioxide cartridge had been fired some time in the past, and the oral-inflation valve had been removed, so the unit would not hold air.

They both donned their fins and masks on the jetty and climbed down the ladder onto the reef, where they decided to explore the sea side first. They entered the water at about 10 a.m. and headed north. After a while, Gary tapped Jack on the shoulder so that he could check the time, because he was getting a bit cold and tired. Jack acknowledged Gary's signal and surfaced, where they found that they were about 300 metres or so from the jetty.

As most of the reef was exposed, they swam over to it and climbed out of the water. They lifted their facemasks off and decided that, as they were both still using their main air supplies, they would swim back to the jetty on the inside of the reef with what air remained and use their snorkels if necessary. Jack stood up in front of Gary and put his mask back in place, and he indicated that he was ready to dive again. At that moment, a fairly small wave broke over the reef and washed around their feet, causing Jack to lose his balance.

Jack had nearly regained his footing when he slipped and fell head-first into the water. When he surfaced moments later, Gary noticed that he had lost his facemask, and he offered him his hand so that he could climb back onto the rocks. Jack got back onto the reef and stood up again, and Gary offered to go back down to look for his mask.

As Gary prepared to dive, he noticed that Jack was kneeling or crouching on the reef, but this didn't worry him unduly. Gary was down for about 3 minutes, but he couldn't see very much in the foaming water, so he decided to give up. When he surfaced, he saw Jack rolling about in difficulty on the reef. Here the story becomes patchy, because Gary could not remember exactly what happened. Gary found that Jack was in the water with him, about 10 metres away. Gary inflated his buoyancy vest and swam across to Jack, and told him to drop his weightbelt. Jack nodded but did not comply, so Gary repeated the order. When Jack still did not respond, Gary realised that something was very wrong. He tried to get Jack to inflate his vest, but because it was not capable of holding air, this was also unsuccessful.

Jack still had his regulator in his mouth and appeared to have some control of the situation, but Gary became more concerned and commenced an emergency tow to shore. He rolled Jack over onto his back, and started swimming, towing him by the tank valve. After a few minutes of this, Gary began to tire, and he decided that he had to remove their weightbelts. However, he discovered that he could not do this while he was towing Jack. His hands were cold and he could barely grip Jack's weightbelt buckle, but after persisting he finally managed to undo it.

Gary noticed that Jack had now apparently relaxed and was quietly looking at him, but he did not attempt to speak. Gary again tried unsuccessfully to remove his own belt, so he let go of Jack so that he could use both hands. During the few seconds

which followed, Jack drifted about 10 metres away, and as soon as Gary had ditched his belt, he put his head down and commenced a very fast swim back towards Jack. However, he missed Jack, so he looked up and tried again, but he couldn't seem to get back to him. In desperation, he waved for help, and as he fought back panic, he heard the sound of a boat's motor nearby.

Gary was getting into trouble himself as the boat came across and rescued him. They then rushed across to retrieve Jack, who was floating face-up nearby. He was quickly pulled from the water and the boat rushed to the steps of the jetty, but they found that they couldn't land there so they were forced to make a dash for the beach.

Mouth to mouth resuscitation was attempted both in the boat and on the beach, but Jack did not respond and he was pronounced dead on arrival at the hospital. The autopsy found evidence of drowning and some damage to his heart. The very cold water and the exertion caused by the freak wave were undoubtedly major factors in this tragedy.

The next Port Noarlunga fatality was the case which first prompted the author to investigate all diving accidents in South Australia. It occurred at Port Noarlunga Jetty at 4.30 p.m. on Friday, the 2nd of March, 1979. The 19-year-old lad involved, Dieter, had been trained about a year beforehand, but he had only logged three ocean dives since that time.

On that fateful morning, Dieter and his friends Mark and Jeffrey approached his instructor, Ron, so that they could get a set of diving gear for the day. Although neither Mark nor Jeffery were certified divers, Ron agreed to let them have the scuba gear

because Jeffrey was currently halfway through a dive course and was due for his first sea-dive anyway, and Mark had been seen around the shop during the past year so he was thought to have been a diver of some sort as well.

(Author's note: it is important to briefly mention here that although Ron had been teaching diving in a dive shop for more than 5 years – in fact, he had issued the author with his "C-card" in 1976 after an in-water checkout involving free-ascents and breathing directly off a tank valve 8 metres underwater – he was not a formally-qualified instructor and he often stated that he strongly believed in doing things as they were done 'in the old days', including minimal reliance on such things as buoyancy vests. Ron often stressed that divers needed to be competent to dive without relying on vests and suchlike, and he explained that anyway, he had only a small business and it was too expensive to equip all of his students with such features. Regretfully, Ron himself drowned in 1988 whilst undertaking commercial operations at Port Stanvac Oil Refinery, apparently as a consequence of failing to fit his diving harness correctly whilst using a hazardous underwater 'hydrogun' device; a preliminary case history report can be found at Appendix 2).

With all their gear in readiness, Dieter, Mark and Jeffrey arrived at Port Noarlunga at about 2.30 p.m. Conditions were not good; the underwater visibility was poor and there were a few big swells occasionally breaking over the reef. They swam around in about 6 metres of water for an hour, taking photographs, and then they swam about 30 metres north of the jetty until Jeffrey ran low on air, whereupon they all surfaced and headed back to the reef, which was now under about a metre of water. Dieter, Mark and Jeffrey climbed onto the reef with some difficulty and discussed their return to the jetty. Mark decided to fight the wash and walk back to the ladder at the end of the jetty, but Dieter said that he

wanted to snorkel back to the stairs which were located about a third of the way along it, near the shore. Jeffrey was unsure about the conditions, but decided to swim back with Dieter. While Mark commenced the walk back to the jetty Dieter jumped back into the water, leaving Jeffrey on the reef preparing his equipment for the snorkel trip back.

Mark soon reached the jetty, climbed the vertical ladder and removed his diving gear. He glanced back at the water, but to his considerable surprise he saw that Dieter appeared to be in trouble, as he was treading water and had lost his mask. He was still on the northern side of the jetty about 20 metres from the reef, and his head was bobbing up and down in the chop. The wind had picked up considerably in strength by this time, and although Mark yelled as loudly as he could to Jeffrey, he couldn't hear Mark and he was totally unaware of the emergency.

Mark ran back down onto the reef and called out to Jeffery, telling him of Dieter's plight, and he then jumped back into the water after putting on his fins. Mark quickly reached Dieter, but he was now only semi-conscious and was breathing with difficulty. He grabbed Dieter's head and lifted his face out of the water, and discovered that he was still wearing his weightbelt, although he had jettisoned his scuba cylinder. Mark tried to release the heavy belt, but Dieter's hands gripped the quick-release buckle tightly and could not be removed.

Mark then began in-water expired air resuscitation as he swam back to the reef, but the waves continued to crash over their heads making this task impossible. He then towed Dieter to the reef as quickly as possible because he was barely breathing, and Jeffrey helped Mark to get him up onto the rocks. All the while the sea was getting rougher and the incoming waves severely hampered their resuscitation attempts, so they decided that they had no choice but to get Dieter up to the solid platform of the jetty.

During this very difficult operation, many valuable minutes were lost, and despite further resuscitation attempts, Dieter failed to respond.

The Coroner found that Dieter had drowned after he got into difficulties on the surface. His weightbelt buckle was of the very old stainless-steel 'wire loop' type, which was difficult to operate with wet, numb fingers, especially if the belt was too tight. It appears that Dieter might have accidentally released his tank backpack buckles at the last moment, instead of his weightbelt, when he realised that he was in danger.

It is truly tragic to learn that divers continue to needlessly drown at Port Noarlunga Reef because more than anything else, they were not wearing floatation systems and did not ditch their weightbelts when they got into trouble. With the exception of the first known case, which involved a rebreather system, ***every fatality could have been avoided if the victims had been able to inflate some kind of buoyancy device and had been able to rest on the surface***. All trained divers today rely on buoyancy devices, but there are still far too many inexperienced people 'out there' who are not trained and still do not wear even simple "life-vests". These are the people who will hopefully read this publication; Port Noarlunga Reef has already gained an unfair reputation as a result of adverse publicity it receives every time an inexperienced or poorly equipped diver dies there.

SHARK ATTACKS

"SHARK" ... the very word has a certain sharpness which strikes fear into the hearts of many who hear it.

There have been less than a dozen serious attacks on divers over the years but each has left a lasting impression in the minds of the general public (and a lot of divers!), thanks partly to extensive media coverage of people being bitten in two and horror films such as "Jaws" which capitalize on the public's fear of these "monsters of the deep". While most divers will probably never see a big shark, let alone be attacked by one, there are certainly some aspects such as spearfishing (struggling fish and blood in the water) or swimming in shark-viewing areas which might increase the risk of attack. These issues need to be identified and understood, especially since recently there does appear to be some difference in the patterns of attack by these very large predators.

There have been less than a dozen fatal shark attacks in the 150 years or so that people have swum in local waters, and between 1950 and 1985 only three of these involved divers; this is less than one attack every 10 years. None of these early cases involved scuba divers; the victims were an abalone diver using hookah and two snorkellers. However between 1987 and 2002 there were three unprovoked fatal attacks on **scuba** divers as well as an attack upon a non-spearfishing snorkeller. Interestingly too, all of the later attacks took place in the colder months of the year (one case each in April and June, and two in September), which is the exact opposite of the "right" time for shark attacks, commonly considered as being the hot summer months as occurred in the original cases (December, January and March). Obviously there is still a lot we don't yet understand about these awesome creatures.

The years 1961 to 1963 inclusive saw the words “shark attack” appear more frequently in local newspaper headlines than any other period. Each year, a spearfisherman was mauled by a large shark (probably White Pointers) near the town of Aldinga, about 60 kilometres south of Adelaide. One diver was killed, and the other two were very lucky to escape with their lives.

Typical “Shark Attack” headlines

The first attack occurred at Aldinga Reef on the 12th of March 1961, when Brian Rodger was spearfishing about a kilometre offshore. He was towing some fish on a small float when he was suddenly grabbed on the leg by a very big shark. He instinctively pulled his leg away, causing severe injuries. The shark came around again to attack, and Brian fired his speargun at it from point-blank range, striking it in the head. The spear barely penetrated its skin and it fell out when the shark shook its head, but fortunately this action seemed to startle the animal which then disappeared, leaving Brian with a massive leg injury, a long way from help.

Bleeding badly from the gaping wound in his leg, Brian only survived the ordeal because he was physically strong and had the presence of mind to remove the thick rubber from his speargun to use it as a tourniquet; he worked the thick rubber up to his thigh and started the long swim to shore. He was fortunately helped by a group of divers in a small dinghy, and received medical attention on the shore soon afterwards.

The following Summer, on the 9th of December 1962, 16-year-old spearfisherman Geoffrey was attacked and killed by a large shark at Carrickalinga Head. The water was flat calm with a gentle swell, and the underwater visibility was good. The beachgoers had already seen some excitement early in the afternoon when an experienced diver named Murray saved a young snorkeller from drowning after he had become fatigued. Geoffrey was spearfishing for fun with his club on that tragic day, and he was snorkelling about 500 metres offshore while his friends snorkelled in the general vicinity.

At approximately 4 p.m., a friend named Alan was paddling on a surf-ski nearby when he heard a loud splash. He saw a lot of water movement near Geoffrey, and thinking that he had speared a large fish, he paddled across to help him to get it to shore. As

Alan approached Geoffrey, however, he suddenly came upon a huge patch of blood in the water, and became very concerned. He stood up on his 'ski and was horrified to see a huge shark, perhaps 4 metres long, swim slowly past as Geoffrey swam feebly on the surface. Alan rushed over and tried to pull Geoffrey from the water, but at that moment the shark returned and grabbed him from below, thereby initiating a tragic tug-of-war which was to prove fatal for Geoffrey.

During the frantic struggle, Alan found that Geoffrey had apparently speared himself in the leg when he had attempted to fight off the shark, and Alan struck out at the shark's head with the spear, hitting it with all of his strength. Murray and the others were on the beach when they heard Alan's cries for help, and Murray immediately called for his surf-ski and jumped into the water. He overtook another swimmer and told him to go back, and when he arrived at the scene minutes later, he zigzagged between Geoffrey and the shark in an attempt to confuse it.

When the shark dived under his 'ski, Murray struck out with his paddle and hit it on its head and body. Although the shark followed closely during their dash to shore, it did not attack again, and it disappeared just before they reached the beach. Geoffrey had lost a lot of blood and died soon afterwards, having lost most of one leg where the flesh had been taken off between the thigh and the knee.

Almost exactly a year later, Rodney Fox was savagely attacked back at Aldinga. He was spearfishing on Sunday, the 8th of December, 1963 with his club and towed a small fish-float which was tied to his weightbelt by a length of strong cord. He was just about to shoot a big dusky morwong when he suddenly felt a massive, crushing thump to his left side, as though he had been hit

by a train. His mask was ripped from his face as he was pushed through the water at an alarming speed. Realising that he was in the mouth of a giant shark, he struck out with his right arm, but he accidentally thrust it into the shark's open mouth and ripped it badly on its sharp teeth. Amazingly, the shark let him go, and fighting for air, Rodney headed for the surface. Filled with terror, he looked down through the now-bloody water and saw the shark coming at him from below. He kicked hard, and it suddenly turned and grabbed his buoy, swallowing it whole.

Rodney was still attached to the buoy by the 4-metre long cord, and before he could do anything, the shark dived and pulled him under the surface again. He desperately tried to release his weightbelt, but the buckle had slipped around to his back, and he was too badly injured to reach it. He thought he was going to drown, but just when he felt he could not hold his breath any longer, the line miraculously snapped, and Rodney drifted back up to the surface.

With injuries which included many crushed ribs, a collapsed left lung, extensive deep cuts all over his arms and a gaping open wound in his chest, Rodney was quickly rescued by friends who rushed him to hospital in a critical condition, where he received emergency treatment which saved his life. After he recovered from his horrific experience, Rodney returned to the sea, and today he is an acknowledged expert on, and protective advocate for, the White Pointer, or Great White Shark.

The 9th of January, 1974 was the date of the second fatal attack, which occurred at Streaky Bay on the west coast. The sea was smooth but underwater visibility was poor when 26-year-old professional diver Terry arrived with his sheller, John, to collect abalone as he had done during the past 5 years or so. They

anchored their 4.5-metre aluminium dinghy and Terry entered the water at 11 a.m., about 150 metres offshore in 10 metres of water. He collected 20kg of meat during his first dive, and then surfaced and had a quick snack before re-entering the water, indicating that he would not be down long because of the poor visibility.

Terry had been down this second time for only about half an hour when he suddenly surfaced 50 metres away from the boat, minus his full-face mask and abalone gloves and yelled "Shark!". John saw the sea change to the colour of blood near Terry, and immediately started the motor. When he reached Terry, he was barely conscious, but he could not see the shark anywhere. John reached under Terry's arms and for approximately three minutes, he tried to lift him into the boat. Terry was too heavy for John to lift and as he grabbed Terry's weightbelt get a better purchase for lifting him aboard, he suddenly felt something grab Terry and shake him vigourously. Terry looked up at John and his face instantly drained to white, and he slumped back into the water. John then saw a large shark between 3 and 4 metres long swimming under the boat, and this prompted him to use all of his strength to roll Terry's now-unresponsive body into the dinghy.

John quickly reeled in the hookah-line and rushed to shore, but Terry died soon after the attack, probably long before they reached the beach. He had lost his entire right leg from the thigh, and also had some deep lacerations to his wrist, left upper arm and left shoulder along with deep puncture wounds to the chest.

The last case just prior to the original publication of this book was extensively covered by the media. 33-year-old Shirley was snorkelling for scallops with friends at Wisemans Beach, near Port Lincoln (Peake Bay) about 150 metres offshore on Sunday, the 3rd of March, 1985.

The water conditions were good at the time and the water was only 2 metres deep in this sheltered area. Shirley was about 10 metres behind her companions when she suddenly cried out and was lifted waist-high out of the water. The dorsal fin of a very large shark some 6 metres in length then became visible, and she disappeared in a mighty blood-red splash. A child on the beach screamed "Shark!", and two fishermen leapt into their boat and arrived at the scene soon after the attack. However, there was nothing they could do to help Shirley; all that remained was the upper half of her body, minus the head and left arm. Then to add to their horror as they moved closer, the shark suddenly appeared again, grabbed the floating torso and plunged into the depths. It then left the area, and despite a very extensive search during the following weeks, it was never caught.

Unlike the post-1985 attacks (see summaries at the end of this book), all of these earlier cases occurred in areas where there was blood or offal in the water, which is well known to attract sharks. Many of the early cases in particular involved speared and bleeding fish. Abalone divers well know that there are considerable risks associated with their profession, and they frequently see large sharks in remote areas although they are very rarely harassed. The above attack on Shirley could also possibly have been connected with a game fishing competition which had been held in the area during the preceding few weeks; the practice of putting blood and meat into the water to attract large sharks to competition areas might have enticed this big deep-water predator into the shallower regions. Although Shirley and her friends had been warned that large sharks were in the area, they had no way of assessing how great the danger really was. Who would have thought that a six-metre long shark would come into a sheltered area which was only two metres deep?

OTHER SALTWATER CASES

The nine remaining saltwater accidents involved four scuba divers, four snorkellers and a hookah diver, and are outlined in that order in this section.

At 2 p.m. on Sunday, the 11th of February 1968, a team of five experienced skydivers participated in what was to be the State's first demonstration 'Para-Scuba' jump. The jumpers had arranged for the demonstration to take place off a metropolitan beach to coincide with the West Beach Surf Lifesaving Club's Surf Carnival. 45 year old Maxwell was the most experienced jumper of the parachute club and had logged 345 parachute jumps in total, but like his fellow jumpers, he had never done a para-scuba jump before. He had only used scuba equipment for the first time in a swimming pool a couple of weeks before this fateful day.

They all wore small, 1600 psi scuba cylinders as well as their wetsuits and weightbelts. Max was concerned that he might lose his weightbelt when the parachute opened, so he wore it underneath his parachute harness and secured the buckle by tying it with rigging line, with a very secure granny knot. They flew over the exit area and Max dropped a wind drift indicator from a height of 950 metres.

They exited from the aircraft a short time later and after performing a 5-second freefall, opened their parachutes. It was at this time that they realised they were too far out to sea, and the wind had shifted and was running parallel to the coast. The sea was rougher than before, and during their descent, each jumper had only two minutes in which to prepare for entry into the water. This involved the partial detachment and rearrangement of the bulky chest-mounted reserve parachute as well as the donning of mask and fins whilst hanging vertically in an awkward harness, leaving very little time to steer their canopies which is an

important consideration for landing properly, particularly in deep water. The parachutists had to release themselves from their parachutes just before entering the water (but not too high) so that they would not become entangled in the lines. Observers on the shore watched Max accidentally drop both of his fins from a great height before he landed in the sea. All of the jumpers landed about a kilometre offshore and the nearest boats were around half a kilometre away. By the time the pick-up boats arrived, several jumpers were in difficulty in the choppy water, but when they went to get Max, all they found was his parachute.

The following morning, Max's body was found in 8 metres of water, in a head-down position. His scuba unit had been turned on and was still almost full, and Max had a minor head injury which could have been caused when he released himself from his parachute just above the water. One of the parachute's connecting 'risers' might have struck him when he broke away, and although this did not cause a serious injury, it could have dislodged his mask or stunned him. Entering the rough water at speed without fins and overweighted with diving gear which could not be removed quickly and with no assistance close by, Max had no chance of surviving.

The only recorded nocturnal diving fatality occurred at 9 p.m. on the evening of Tuesday, 20th of May, 1975. 18-year-old Brent and a friend named Brian drove to Port Lincoln that morning from Adelaide for their work. They arrived around 5 p.m. and had a four-course meal and three schooners of beer, before returning to their room around 7.30 p.m.

Brent was an experienced diver, having logged 60 scuba dives during the past 4 years (including 6 night dives and a deep dive to 68 metres), but he had not done much diving during the previous

12 months because of recurring ear infections. He decided to go for a dive that night because the sea was flat calm and the water seemed to be clear.

Brent changed into his wetsuit and left his watch in his room. After donning his 9-kilogram weightbelt, he walked out onto the loading wharf known as "Brennan's Jetty" with Brian, who was not diving. There, he put on his scuba gear and walked about three-quarters of the way along the jetty to enter the water. He climbed down the ladder on the western side at 8.30 p.m. and descended, and was down for about 25 minutes when he surfaced and walked over to Brian, who was standing on the eastern side of the jetty near where an ore ship was being unloaded.

Brent discussed his first dive with Brian and then decided to dive under the ship. He asked one of the workmen whether they would be starting the ship's motors in the near future, and although he didn't actually say that he intended to dive near the propeller, it seemed to be his intention. He then went down the eastern side of the jetty beside the ship, where Brian watched his torchlight down to a depth of 15 metres or so. Brian became concerned about an hour and a half later, when Brent had not surfaced, and he searched the jetty area in vain. At 11 p.m., he approached a man on the jetty who told him to contact the police.

The Adelaide-based Police Underwater Recovery Squad arrived and commenced a detailed shore and sea search soon afterwards, but they found nothing. Further searches were conducted during the next two days, but again, nothing was found. Eleven days after his disappearance, Brent's body was found washed ashore near the jetty. His scuba cylinder, weightbelt, buoyancy vest and torch were missing; the only item of gear that remained was his depth gauge. A search of the beach area revealed nothing, and none of the missing items have ever been found and identified.

During the post-mortem examination, it was discovered that there was a recent gash on one of Brent's shoulders, and a portion of his lower right leg was missing. This indicated that Brent could have been struck by a ship's propeller or bitten by something, either during the fateful dive or after he had died. There were indications that he had inhaled saltwater and drowned. Brent's father, who was also an experienced diver, felt that he might have misjudged his bottom time and air supplies and ran out of air while he was still under the dark hull of the moored vessel. He possibly ditched his scuba and weightbelt as he tried to get back to the surface.

Port Giles Jetty claimed its first known victim on Sunday, the 25th of July, 1976, only an hour and a half after a scuba diver died near Adelaide, in an unrelated accident. John, who had used hookah for about 2 years and scuba for 12 months, was 32 years old and was diving with two friends, Tim and Graham, when he got into trouble. The trio had left Edithburg in Graham's 5-metre boat and moored their vessel to the northern side of the jetty. The water had a small chop and was very cold.

John often used a vest which he borrowed from a friend, but on this occasion he did not have it. They started their dive around 11 a.m., and descended to a depth of around 12 metres for just over half an hour. Visibility was a good 15 metres and they stayed about 5 metres apart. When Graham began to get low on air he signalled to the others that he was heading for the surface, and John started his ascent a short time later, carrying a cowrie shell in his ungloved hand. When Tim surfaced soon after the others, he noticed that John was snorkelling for the jetty directly behind Graham, who was almost there. Tim saw another ladder nearby, so he decided to use that one instead of the one the others were going to use.

As he started to climb the ladder Tim noticed that the others were about 8 metres away from the jetty. When Graham reached the jetty he was exhausted so he rested for a few minutes before starting his climb.

Suddenly, several people on the jetty heard a loud gurgling call for help, and they looked over the edge of the jetty to see John struggling to ditch his weightbelt and scuba equipment as he desperately trod water. His facemask was half full of water and the waves kept washing over his head. A fisherman called to Tim, who was almost at the top of the ladder by this time, and he hurried on up and quickly removed his gear before jumping back into the sea to help.

Someone threw a jetty life-buoy down to John and it landed only a metre or so from him, but he was now floating face-down and did not attempt to grab it. Tim reached John and put him through the buoy so he could be pulled back to the jetty and lifted from the water, but despite the best efforts of several people, he could not be revived.

John's scuba gear was found to be in poor condition, and only had about 250 psi of air remaining. The local doctor only performed a post-mortem examination of his head, suspecting that he had suffered a cerebral haemorrhage, but he found nothing unusual. Unfortunately, a normal full-body autopsy was never done. John's friends suspected that he might have got cramp in the cold water, and drowned before anyone could reach him.

Rapid Bay Jetty saw its first scuba fatality on Sunday, the 3rd of January 1982. The victim was a 19-year-old lad named Darren, who got into trouble while diving with a friend named James. Darren held Royal Lifesaving Certificates of various kinds, but

had very little scuba experience and had only done part of a diving training program the previous year, while James had done four or five dives since he got his diving qualifications in 1981.

They had gone down to Rapid Bay with Darren's girlfriend for a planned week-long camping holiday. The day after they set up camp, the trio drove down to Victor Harbor and hired two cylinders and regulators for the day. Only one regulator came equipped with a tank contents gauge, so James elected to keep the gauge and the cylinder which contained the lesser amount of air, and gave Darren the full cylinder. Although both divers had been trained in the correct use of buoyancy aids, they did not hire vests because they were on a very tight budget and the weather was good.

They walked out to what was known as the "T-piece" at the end of the long jetty and climbed down to a metal ramp which was suspended about 2.5 metres above the water. After preparing their gear, they performed jump-entries and came back up to the surface. They both commented that they were having trouble breathing from their regulators, but after checking each other's gear, they were satisfied that there was nothing wrong so they commenced their descent.

Many people, including another diver who was concerned about their obvious lack of experience, watched them as they swam slowly towards shore, parallel to the jetty. They swam horizontally, and at no time were they seen to be more than about 3 metres below the surface. After being submerged for ten minutes or so, they surfaced about 30 metres inshore of the "T-piece" and decided to dive to the bottom at 12 metres to retrieve some shells which they had seen. As they descended again they rolled over to dive in a head-first position. During this descent, James noticed that Darren made several acrobatic-like twists before he suddenly stopped his descent at a depth of about 5

metres. He sat upright and crossed his arms in front of his chest, as though indicating that he was cold, but when James went closer, Darren reached out and pushed him down and away.

Suspecting that Darren had leg cramps, James grabbed his legs and began to straighten them. However, Darren suddenly kicked out and threw James off, and realising that Darren was in trouble, James immediately swam across to remove his weightbelt to bring him back to the surface. They had continued to descend during this period of extreme stress, and they were now close to the bottom. Although Darren had calmed down and was breathing normally from his regulator, he made no effort at all to swim, and James put in a mighty effort as he attempted to bring him to the surface.

Darren suddenly appeared to panic, and he kicked James away again. His regulator fell free in a burst of bubbles before shutting off its free-flow, and he frantically, but ineffectively, kicked for the surface. James tried to insert his own regulator in Darren's mouth, but Darren's thrashing and head movements made this impossible. James then released Darren's scuba harness buckles and grabbed him under his arms from behind, and as Darren had now quietened down, he brought him to the surface. Darren was possibly unconscious at this time as he did not interfere with James' attempt to ascend.

As soon as they reached the surface, James noticed that his breathing sounded "gurgly", so he immediately headed back towards the jetty. However, after James had been swimming him back for about a minute Darren suddenly gave out a final burst of energy, flailing his arms about and smacking James across the face, dislodging his mask and causing him to lose his grip.

While James struggled relocated his regulator and recover from this unexpected event, Darren fell away from the surface and in

the words of the jetty observers, “sank like a stone”. James cleared the water from his mask and tried to grab him, but he had sunk too far, so James called for help. Some other people jumped into the water from the jetty, but James had lost sight of Darren. James was now in distress himself, so he swam back to the biggest ladder as the others arrived. However, there was nothing they could do, so they called for divers to help. An interstate visitor named Dennis, who had recently completed his own basic scuba training, rigged up and entered the water 5 to 10 minutes later. He quickly found Darren’s body on the sea floor, and brought him to the surface.

James called to the swimmers to bring Darren’s body across to the entry platform, where he jumped into the water and helped them to get it up to the landing. Despite numerous resuscitation attempts, Darren failed to respond and life was declared extinct when the medical experts arrived soon afterwards. The subsequent autopsy showed that Darren had drowned, although there were apparently other contributory factors which were never clearly identified.

Information regarding the four remaining snorkelling accidents was quite hard to come by, because most of them occurred many years ago and in each case, the exact nature of the problems which caused the initial distress were never determined.

The first snorkelling accident which did not occur in the Port Noarlunga region took place near Rapid Bay at Second Valley, south of Adelaide on Sunday, the 26th of March, 1961. 29-year-old Denys wanted to do a day’s spearfishing with his friend, Robert, who was visiting from interstate, and in the company of his wife and Robert’s female companion, he drove to the Valley and walked down to the beach. Denys had only done a little

snorkelling previously, and that had been some five years beforehand because he had sustained severe head injuries in a subsequent motor vehicle accident. His only recent experience had been the weekend before this fateful day.
The weather was good and the sea was calm with a slight swell. They went for a cooling-off swim first and then had a light lunch. After waiting a half hour Denys went for a run along the beach with the family dog, and he also ate an apple. About ten minutes later they decided to go for another snorkel dive.

The two girls watched as the men prepared for the dive and entered the water about 30 minutes later. Denys wore only basic snorkelling gear and a wool sweater, and like Robert, he carried a handspear. They swam out from the beach and around to the south, disappearing from view behind the rocky coastal outcrops.

About half an hour later, one of the girls noticed Denys lying motionless on the surface about 100 metres offshore. He looked like he was resting, and she thought nothing more of it until another 15 minutes had passed, when Robert came around from behind the point and called out loudly to Denys. When Denys failed to look up and did not respond in any way, Robert quickly swam towards him and called to the shore for help.

A man who was with his own group jumped into the water and swam out to Denys, arriving at about the same time as Robert. They immediately rolled him over onto his back and rushed him to shore, where they attempted to revive him with expired air resuscitation. Although his skin colour was normal and Denys appeared to be sleeping, he failed to respond and was pronounced dead soon afterwards.

Unfortunately, all records regarding the autopsy are missing, but over the years considerable emphasis has been placed on the finding of a piece of apple skin in Denys' larynx. While it was

possible that this might have caused a spasm if he had accidentally inhaled it whilst snorkelling, it was more likely an artefact of the resuscitation attempts or of the drowning itself.

On Monday, the 27th of December, 1965, Kangaroo Island recorded its first known diving fatality. Guy was to be 18 years old the next day, and he was diving with a group of about 27 others from a boat at Knob Point, on the northern side of the island. The well-known diving club was on its first day out on a week-long Christmas holiday trip, and the sea was smooth with 12 metres underwater visibility. This was to be a simple snorkel dive, and the area appeared to be perfectly safe. Although the water depth under the boat was about 5 metres, it dropped away quickly to over 20 metres a short distance offshore.

They all entered the water in small "friend groups", not exactly in pairs. No body count was performed either as they entered the water or as they returned. Most of the divers went looking for crayfish, and they generally started diving around 1 p.m. The last divers left the water an hour and three-quarters later, and it was not until about 3 p.m. that Guy was first missed. A thorough search of the ship failed to locate him, so they then organised an underwater search, with the senior divers donning scuba gear. After a couple of hours of fruitlessly searching near the boat, the divers finally found Guy's body on the sea floor in about 20 metres of water. They brought Guy to the surface and initiated expired air resuscitation, and this was continued for about two hours as they rushed him to the nearest hospital. Guy never responded, and was declared dead on arrival. He had not ditched his heavy weightbelt, and it was felt that he had drowned after blacking out underwater while performing a hyperventilation-assisted dive.

Although alcohol has not played a major role in diving accidents to date, there was some mention of the liquid in the accident which occurred on Sunday the 16th of June, 1968 at Cape Jervis.

26-year-old Thomas and his two friends, Richard and Peter, drove down to the Cape around midday, stopping at Myponga on the way to buy some food and drink.

They reached their destination around 1 p.m., and because it was so cold, they all drank a small amount of alcohol (which was possibly sherry) so they would feel warmer. They prepared their gear and started their first dive about an hour later. They snorkelled for a long while, during which time they fought a very strong current as they tried to see in the hazy water. After they had caught a few large fish, they decided to swim back to shore.

The current had dragged them a long way around the coast and they had to walk for about forty-five minutes or so to get back to their starting point. After this strenuous effort, they had some more alcohol and dived again shortly afterwards. They noticed with some concern that the current was now even stronger than before, and they were swept around a point of rock, where they came upon the wreck of an old barge. There were many fish there, so they decided to concentrate their efforts on this site, and performed numerous breath-hold dives there during the next half hour. Soon afterwards, Richard and Peter realised that Thomas was missing. They didn't worry too much at first because they had seen him about a minute or so previously, but after another fish was speared, they became concerned and started to look for him. However, they were now too fatigued to fight the current, and despite their strongest efforts, they could not hold their ground and were swept further away from the area.

They stayed in the water in the hope that Thomas was also being washed downstream with them, but they did not see him again, so they swam to shore and walked about two kilometres to get help. After obtaining a small boat, they returned and searched again, but they were eventually forced to give up after the sun had set. His body was found the following day, and the autopsy revealed

that he had a substantial amount of alcohol in his system. Thomas also had not ditched his weightbelt, and like many other snorkelling deaths, it was possible that he had drowned after blacking out underwater.

Although Thomas had been snorkelling for eight years and knew of the dangers of hyperventilation, he might have been weakened by the effects of alcohol in his system and the very cold water and drowned after misjudging his breath-hold capabilities.

Browns Beach, on the Yorke Peninsula, was the site of the snorkelling accident of Thursday, 28th of August, 1975. Ivan and his friends arrived at the Beach at about 1 p.m., and he and Glenn immediately suited up. Ivan was 24 years old and had performed about 12 snorkel dives during the past 5 years, and he wore a light surfers wetsuit, a 6-kilogram weightbelt and miscellaneous gear, but unfortunately he did not have a buoyancy vest.

They entered the water at a point north of a rocky outcrop at the southern end of the beach. At first, they didn't notice the strong currents in the area, and the underwater visibility was good. They planned to snorkel towards the north-west so that they would be outside of the reef which ran the full length of the beach, and away from the large swells. They soon noticed the strong flow to the south, however, and they had to swim with great effort to counter its effects.

They were swimming about three metres apart when Glenn sighted a school of large fish. He speared one and it thrashed about, eventually undoing the knot which connected the spear to the gun and allowing the fish to swim off. Glenn gave chase but quickly gave up, and he decided to head back to shore to get another spear. He saw Ivan about 30 metres south of his position,

and Ivan raised his gun above the water. Glenn noticed that the gun had not been fired, and he yelled to tell Ivan that he was returning to shore. However, Ivan probably didn't hear him because he was facing away, and the wind was now blowing strongly from the north-west.

Glenn started back towards the point, and reached the safety of the rocks about 10 minutes later after fighting a 'rip'. He couldn't see Ivan anywhere, and because the sea was now getting very whipped up, he asked his companions to search as well. The sea quickly got rougher and developed into a swell almost two metres high, so Glenn decided that it was now too dangerous to re-enter the water. Ivan was not found that day, and the Police Underwater Recovery Squad was called; however the weather deteriorated further, and when they were able to commence diving several days later they could not find him. 22 days later a decomposed wetsuit-clad body was found washed up on the shore near where Ivan had disappeared, and it was identified with some difficulty as being Ivan's body only after dental records had been consulted. The autopsy findings indicated that Ivan had drowned, probably after becoming exhausted in the rough water.

The last salt-water diving fatality which has not already been covered in this report occurred at Hall Bay, on the west coast on Wednesday, the 3rd of January, 1979. Peter was 21 years old and was employed as a 'sheller' by Terry, who was a professional abalone diver. They had launched Terry's boat from near Mount Drummond and travelled north about 20 kilometres to Hall Bay, where Terry dived for abalone until around 4 p.m. After Terry surfaced, Peter asked him if he could have a go on the hookah, which he had evidently used before in shallow water whilst looking for crayfish.

The hookah unit consisted of a 14 cubic foot Clisby diver's compressor, a direct coupling to a stationary motor, an airline through filters to a reserve tank and 100 metres of line to the diver. The reserve tank was at the front of the boat and was fitted with a 'water-trap valve' which was screwed into the tank. Terry thought that the shallow water was safe enough, so he let him use his gear. They were approximately 100 metres offshore and the water was flat calm and only about 9 metres deep.

Peter rigged up and descended, and had been down for about 10 minutes when Terry suddenly heard a loud blow-off of compressed air. He realised that the reserve tank had either blown a hole or had lost the trap valve. He saw that the valve had indeed unscrewed itself due to the vibration, and the air had naturally escaped. Terry left the tank in this state and prepared to assist Peter upon his return to the surface, as the practice of free-ascent from this depth was commonplace in the abalone industry.

However, after a minute or so had passed, Peter had not surfaced and Terry became concerned. He went back to the reserve tank and screwed the valve back in, taking about 60 seconds to complete the operation. There was still no sign of any exhaust bubbles on the surface, so he hauled on the airline and brought Peter up. He was unconscious, and he had not ditched his heavy weightbelt. His regulator was not in his mouth, and Terry half-pulled him into the boat and removed his facemask.

Peter was bleeding from the mouth but Terry still tried to revive him with expired air resuscitation. However, when this only resulted in more blood coming from his nose, Terry ceased further attempts as he felt that he was dead. Terry pulled in his hookah line and headed back to Mount Drummond, which was an hour or so away. Peter was declared dead at the local hospital some time later, and an autopsy showed that the cause of death was drowning.

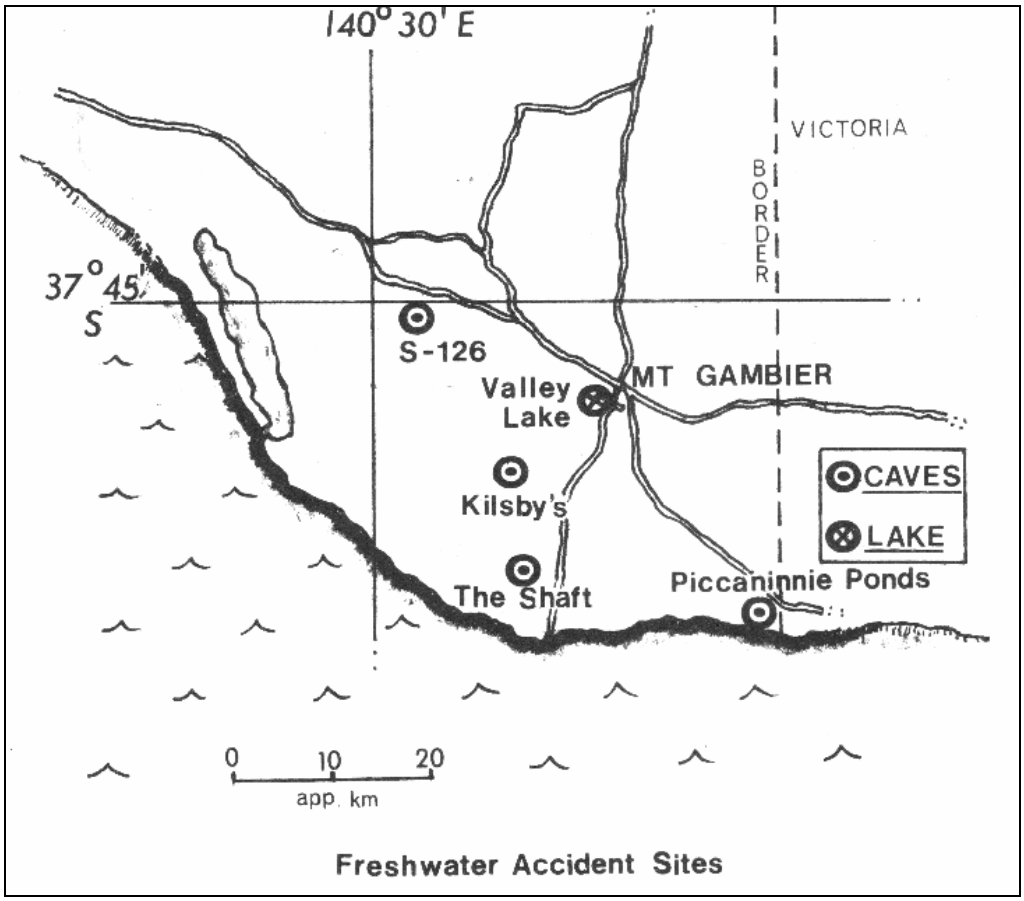
PART TWO

Freshwater Cases

CAVE DIVING AND OTHER FRESHWATER CASES

Although the vast majority of South Australian diving accidents occurred in the sea, cave diving accidents are better remembered by the general public because of their emotional impact and the aura of mystery which surrounds them. Cave diving accidents also tend to be relatively complex, and for this reason, they are dealt with in this separate section.

There have been at least 14 freshwater fatalities to date – 13 in waterfilled caves and sinkholes, and one in an open lake. All of these occurred within a few kilometres of the city of Mount Gambier, in the vast limestone cave area of the Lower South East of South Australia.



Freshwater Accident Sites

The first freshwater accident was the only drowning which occurred in an open lake, but like all of the cave diving accidents which were to follow, it took place near Mount Gambier, in the Valley Lake on Tuesday, the 29th of December, 1959. Peter was the 20-year-old son of a well known and respected local family, and on that fateful day during the Christmas period, he accompanied his friends, Doug and Sandy, to Valley Lake at about 4 p.m. He had never used scuba equipment in his life, but he was keen to give it a try.

After the others surfaced from their first dive, Peter put on Sandy's gear and descended to a depth of about two metres with Doug. He had been down for about two minutes when he surfaced without apparent problems. Peter then took the regulator out of his mouth and started swimming slowly back to the landing, but when he was only about 10 metres out, he suddenly seemed to get into difficulties, although he didn't call out for help. At that moment, Doug surfaced and Peter beckoned to him, so Doug struck out for him immediately while Sandy dived into the water to help. When Doug reached Peter, they tried to grab each other, but Peter slipped through Doug's hands and sank.

Doug immediately dived to about 6 metres, and found Peter lying on the bottom less than 90 seconds later. Peter was barely moving, and he was not wearing the scuba gear, having removed it during his struggles. Doug grabbed him again and brought him straight to the surface, and Sandy helped him to get Peter into a boat which had come across. Doug, who was a qualified lifesaver, began artificial respiration, and within seconds they reached the landing and put Peter onto the solid surface to continue their attempts. Five visiting lifesavers who were swimming nearby came over and assisted, but despite their efforts Peter could not be revived. Some diving gear was recovered but it was in perfect working order, and the cause of the accident was never determined.

In April 1969, two young, inexperienced divers died in the freshwater sinkhole known as Kilsby's Hole. This was the State's first cave-diving accident, and to make matters worse, it was also a double-fatality.

Newspaper headlines following Cave–Diving Accidents

Many of the early cave divers including "Snow" Raggatt and "Mick" Potter had long feared that a serious accident like this would occur sooner or later, and unfortunately the Kilsby's Hole accident was only the "tip of the iceberg". Within the next four years, a spate of five accidents claimed the lives of **eleven** people in just **four** of the most popular caves of the region. The last accident of that period, a **quadruple** fatality, was so dramatic that it stirred up a lot of public concern, and there was a call from certain sections of the public to ban cave diving completely. This did however provide the incentive for the cave diving community to rally together, thus forming the Cave Divers Association of Australia in September 1973. The CDAA instigated a series of detailed tests which brought divers up to a suitable standard, resulting in the years January 1975 to March 1984 being totally accident-free.

THE FIRST CAVE DIVING ACCIDENT – "KILSBY'S HOLE", SUNDAY, 6TH APRIL, 1969.

Bret and Patrick were both 18 years old, and they had only been diving for a short time when they decided to go down to Mount Gambier with some friends, including George and Kerry, to do some pleasure diving. George had dived with Bret and Pat in the sinkhole the previous day, but he had been forced to surface due to ear problems. The others had both made a successful dive to 55 metres and got to bed late that night after attending a dance.

The group of ten, consisting of three scuba divers, four snorkellers and three non-diving friends, arrived at the sinkhole at 11 a.m. Four intended to snorkel around the cave while Bret and Pat went for a deep dive, leaving George to take photographs near the surface. George had warned the others not to dive too deep, but they felt confident because they had successfully done the deep dive the day before. They indicated that they wanted to scratch their names on the cave's wall at a depth of about 60 metres; a foolish objective, in view of their lack of experience, their overweighting for the dive and lack of important equipment, such as watches and twin scuba cylinders.

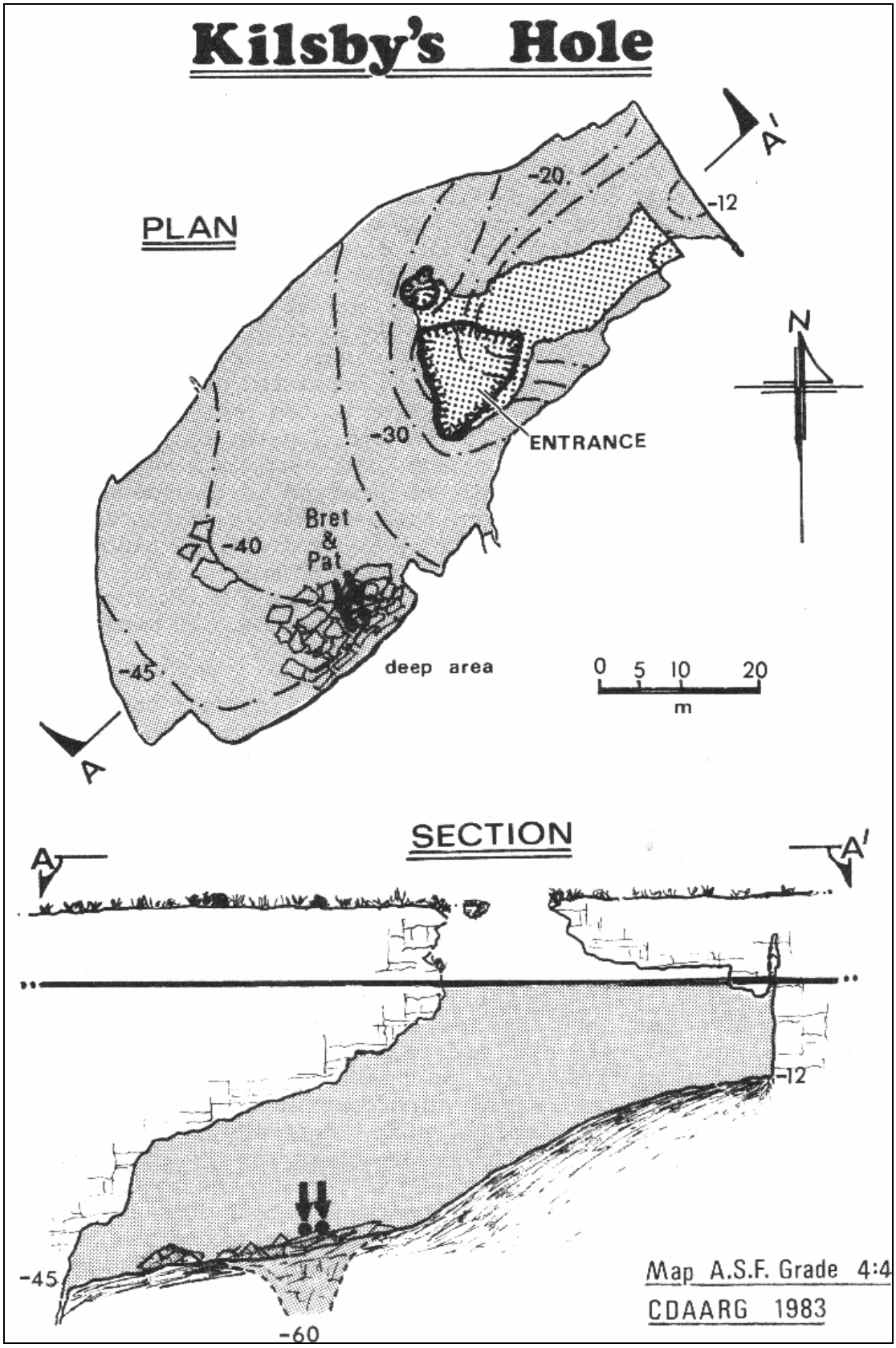
After posing for some surface photos in the main lake, they commenced the descent, pulling one end of a 50-metre long safety rope down with them while a companion held the other end at the surface. Kerry watched Bret and Pat hit the bottom at about 28 metres, where they stopped on the dark silt slope for a minute to tie their end of the safety line to a large boulder. They commenced the horizontal penetration into the vast cavern which lay to the south-west of the entrance lake and soon afterwards, the safety line became taut and the surface end was released so they could pull it in behind them.
George intended to follow it down, but by the time he had tied his

camera to the rope ladder, the safety line had disappeared. He then descended to about 30 metres where he found their line tied to the boulder, but he could see no sign of them when he looked into the gloomy cavern beyond. He decided to wait for them for a few minutes, but when they had not returned after 5 minutes had passed, he became concerned and decided to return to the surface.

He spoke to Kerry for a couple of minutes and they both felt that something might have gone wrong, so he decided to dive again for as long as he could. George descended again, and he switched on his reserve air as he reached 30 metres. He arrived at the tie-off boulder and again looked along the line, but he still could not see any movement in the dark, clear water. He knew that their time had just about run out, and as he was getting low on air himself, he decided to head back to the surface. However, as he turned to go up, he caught a glimpse of something shining in the corner of his eye, about 10 metres to the left of the main line in the chamber.

George swam across and realised that it was a torch, but as he swam closer, he suddenly saw a diver lying motionless on his back with a second diver lying a couple of metres away. Because they were both just lying there, motionless, George realised that they were dead and in shock, he turned and rushed for the surface, arriving just as his air began to run out. He informed the others of the tragedy, and since there was nothing else they could do, they exited the hole and went for help.

A diver with some 6 years experience recovered the bodies three hours later, assisted by others. The victims' torches were still glowing, and the recovery divers took care to note everything before the bodies were moved. Pat, who had a single-hose regulator, had lost his mask, torch, snorkel, knife and one fin.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CDAARG 1983

Pat's cylinder still contained about 700 psi of air, and his buoyancy vest had not been inflated although he was still wearing his weightbelt. All of Bret's gear was intact, but his scuba cylinder was completely empty. He was using a twin-hose regulator, and it was seen to vent itself for about two minutes during the recovery operation.

A local doctor carried out post-mortem examinations and during the Coroner's Inquest held in May, 1969, he said that " ... in my opinion death was the result of ***air embolism due to decompression***" (author's emphasis). He also said that he would consider that Pat and Bret had died from embolism, drowning and vasovagal inhibition. The most likely scenario is that the divers lost track of their bottom time and air supplies whilst under the influence of nitrogen narcosis, and simply ran out of air.

THE "DEATH CAVE" TRIPLE-FATALITY – MONDAY, 9TH OCTOBER, 1972.

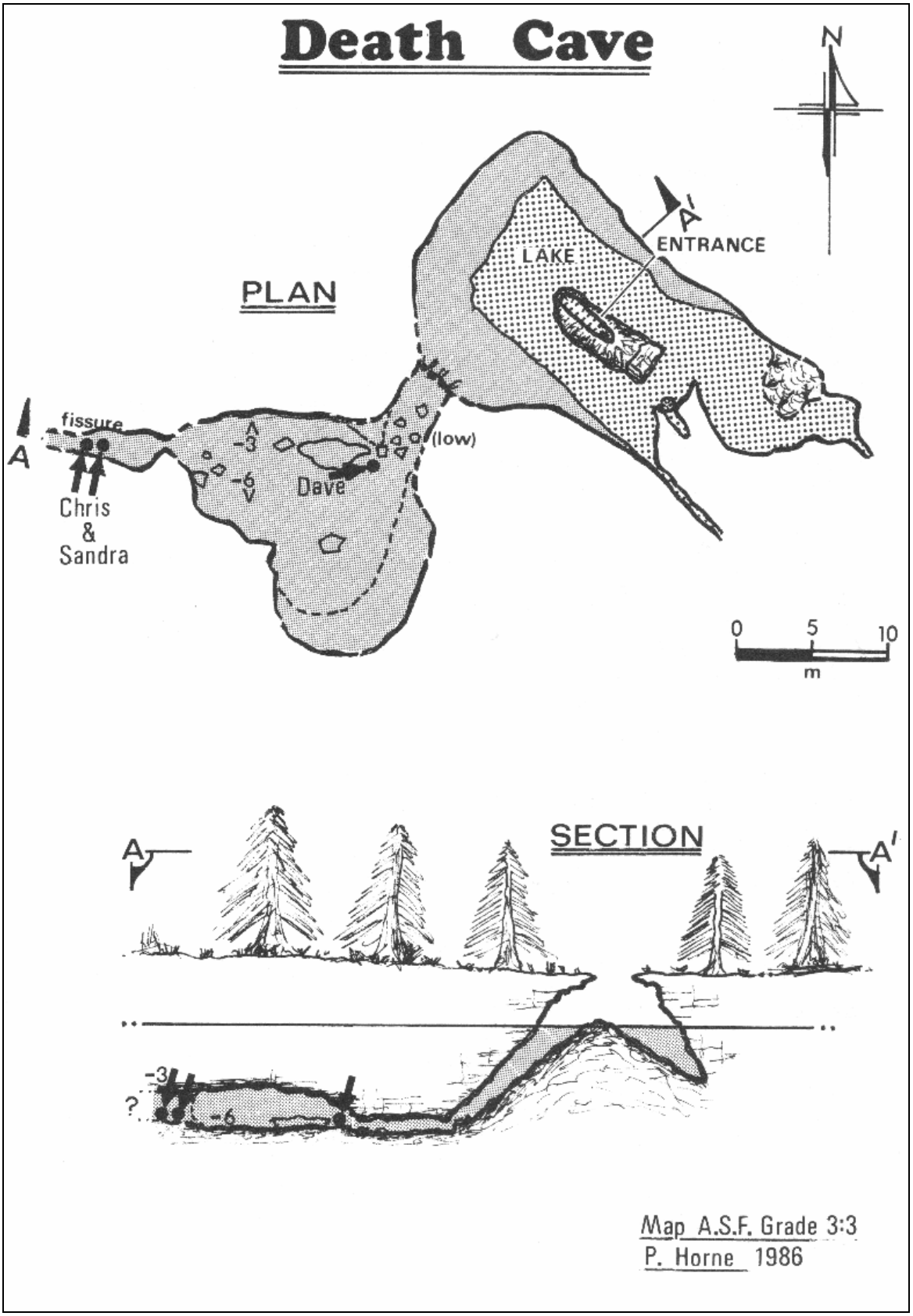
A small, infrequently-visited waterfilled cave in a large pine forest became infamous overnight, when a group of four experienced divers decided to explore it on their way back to Adelaide – and three tragically didn't get out alive. Known simply as "S-86/126" (and more recently as "Alleyn's Cave", Cave Exploration Group South Aust. feature number 5L84/85), this small sinkhole contained very clear water which looked inviting to the party, which consisted of 17-year-old Ron (the sole survivor) who, along with 18-year-old Sandra, had been diving for about 18 months; Christopher, who was 17 years of age and had about 2 years experience; and Dave, who was a very experienced 39-year-old diver who had been in the scene for about 15 years. None of them, however, were experienced cave divers.

The group had completed a weekend of safe club diving in other waterfilled sinkholes and were on their way back to Adelaide when they decided to "have a quick look" at this small cave, which was rumoured to be about 20 metres deep. The four divers entered the water with full tanks, but they left the safety guideline which they usually used in the car, reportedly "because they did not intend to go in very far" and they had also heard that there were most probably no significant underwater extensions leading off from the main entry chamber.

After swimming around in the shallows for about five minutes, checking out the low areas around the walls, the group swam down the side of the main silt mound to the west of the entrance and explored the only relatively open area they had found. There, between some big boulders at a depth of 6 metres, they found a low, flat passage which obviously went in for some distance, and Dave, being the leader of the team, indicated to the others that he was going to go in for a short distance to check it out.

As Dave went into this one-metre high, 3-metre wide silty passage, Ron followed him, and then the others went in too. They swam for about 6 metres past several constrictions and came up into a larger cavern which contained crystal-clear water.

Ron looked back to watch the others come through the entrance, and noticed that the passage was now completely 'silted-out' as a result of their disturbing the soft, deep mud on the floor of the passage as they came through. He became very concerned about this and felt that they should not waste any time looking around the large chamber, so the party immediately started to look for the exit passage in an effort to beat the silt from totally obscuring their vision.


Death Cave
N
PLAN
A
A'
ENTRANCE
LAKE
fissure
A
-3
-6
Dave
(low)
Chris
&
Sandra
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5
10
m
SECTION
A
A'
-3
?
-6
Map A.S.F. Grade 3:3
P. Horne 1986

Tragically, they were already too late; as they swam back to near the entrance passage and searched for the way out, they disturbed even more silt in the process. The mud billowed up like a huge dark explosion and the entire chamber quickly turned to a blackness so complete that they couldn't see their torches when they put them up to their masks. Horrified, they all realised that they were in mortal danger; for the next half hour or so they desperately tried to find their ways out of the silt-trap. During this melee Ron bumped into another diver and grabbed hold of him, and through the murky water near the roof of the chamber he saw that he had found Dave; however they soon lost touch with each other when they descended together to search for the exit.

Ron also heard a diver tapping on an air cylinder, and later heard what appeared to be a regulator free-flowing, but he could not find either of these divers. On one occasion, while he was trying to squeeze through a restriction, he lost his regulator, but fortunately he managed to relocate it again. With time quickly running out, Ron prayed for his survival and kept searching for the exit. Soon afterwards, he came across the motionless body of another diver, which was lying face down. In growing distress he left the body and continued to feel around the walls, and then found that he was having trouble inhaling. As Ron pulled his reserve air lever, he knew that death was only minutes away.

Then, miraculously, Ron suddenly noticed a dim green circle of light overhead, and he immediately swam up and out to safety. After quickly telling the surface party about what had happened, he went back down to the water's edge and tried to "home" the others out by tapping on his cylinder, but this failed to work, and none of the others found their way out in time.

The bodies of the other three divers were recovered the next day by professional diver Mac Lawrie, who sadly also happened to be a good personal friend of Dave's.

A victim's body is lifted from the cave.

Courtesy 'The News'

Mac used hookah with a five-hour air supply in the very dangerous operation as he recovered the bodies of David, Sandra and finally, Christopher. Mac himself got stuck numerous times and while Dave's body was found only a short distance in, Chris and Sandy were found together in a narrow, dead-end passage at the far end of the main chamber which they might have mistaken for the exit passage. If the group had taken in a guideline and avoided the line-trap flattener section near the entrance, they would probably have survived. The cave was subsequently closed to sport diving and is today covered with a gated block of concrete.

"THE SHAFT" QUADRUPLE-FATALITY – MONDAY, MAY 28TH, 1973

Less than eight months after the three divers were killed in "Death Cave", **FOUR** interstate visitors died in a single accident in the sinkhole called "The Shaft", near the town of Allendale East. It was the worst multiple-fatality in Australian diving history, and was one of the worst in the world at the time. The following complex story was pieced together by the author from a wide variety of sources including newspaper reports and documents from the Coronial Inquest.

It all began as an intended pleasure dive in one of the largest, deepest and most spectacular waterfilled caves in the world. The entrance is an unimpressive circular hole less than one metre in diameter, in an open field. This "window" drops some 8 metres straight into a 20-metre wide, 40-metre deep lake chamber, which has a small dry ledge running around one side.

After climbing 6 metres down a rope ladder from the paddock to the lake, divers can use this ledge as a convenient gear-storage

point before commencing their dives. When the sun shines through the small entrance and strikes the lake, it creates a brilliant blue, 'scintillating' underwater spotlight which illuminates the enormous boulders in places more than 60 metres below. It is so bright that it easily lights up the entire dark-walled cavern. Viewed from beneath the surface, this spectacle is unequalled anywhere else in Australia, and because of this, the Shaft was a very popular cave-diving site in the early 1970s.

The divers had explored the cavern the previous day to a depth of around 55 metres, and their plan on that fateful Monday morning was to complete the circumnavigation of the main chamber. The party consisted of nine people, all of whom were very experienced ocean divers. Glen and Stephen, like their sister Christine, were qualified diving instructors and worked in their dive shop in Sydney. Although they were all fairly young, they had been diving since childhood, and Robert (who was also a qualified instructor) had dived deep before, claiming to have been to a depth of 100 metres using air 'without being unduly affected by nitrogen narcosis'. John, Gordon, Larry, Peter and Joan had all done a lot of diving, but Joan decided not to dive this time because she had encountered some problems negotiating the ladder the day before.

The divers got into their wetsuits and climbed down the ladder to the lake, and swam across to the ledge so they could put on the rest of their equipment. They talked briefly about the intended dive as they donned their single scuba cylinders, and they decided to go to a depth of no greater than 60 metres, in a region where a low, deep tunnel could be found to the north-west of the entrance. A 35-metre long vertical shotline had been dropped down the hole, but they decided not to take a smaller off-shooting guideline because it would become snagged on the huge boulders, and the sunbeam could be seen from almost everywhere in the cave anyway.

They entered the water at about 1 p.m., and descended together without pairing off or putting spare cylinders on the shotline for decompression. They reached the top of the rockpile 90 seconds later at a depth of about 36 metres, which was the shallowest point in the cave. After quickly exchanging "OK" signals, the divers moved off together and swam down to the boulder-covered floor at 50 metres.

When they reached a depth of around 55 metres, Robert began to feel "strangely ill" as he later reported, so he signalled to Gordon and Christine that he was going back. They acknowledged, but continued their descent, so Robert returned to the rockpile alone. He felt worse, so he inflated his buoyancy vest and was rapidly lifted to near the surface. However, when he reached a depth of about 10 metres, the sickness passed, so he decided to descend to 40 metres again to look for bones until the others returned.

Meanwhile, the other seven divers reached a depth of about 57 metres, where the floor almost met the wall. Here, the bottom seemed to 'drop off', and they approached the tunnel. Despite their earlier agreement not to enter the passage, they continued their descent. As soon as they entered the tunnel, the shaft of light disappeared behind the boulders; the chamber appeared to be plunged into total darkness and there was some suggestion that the small brilliant beam of light had also disappeared around this time with the arrival of dense clouds over the paddock.

The divers had been down just a few minutes when Peter became concerned and swam across to Glen so that he could see his depth gauge. This showed that they were already deeper than they had planned to go, being at 65 metres, and Glen swam across to his sister and showed her the gauge as well. Christine responded to his signals and did not seem to be badly affected by nitrogen narcosis, but she then continued to descend even further.

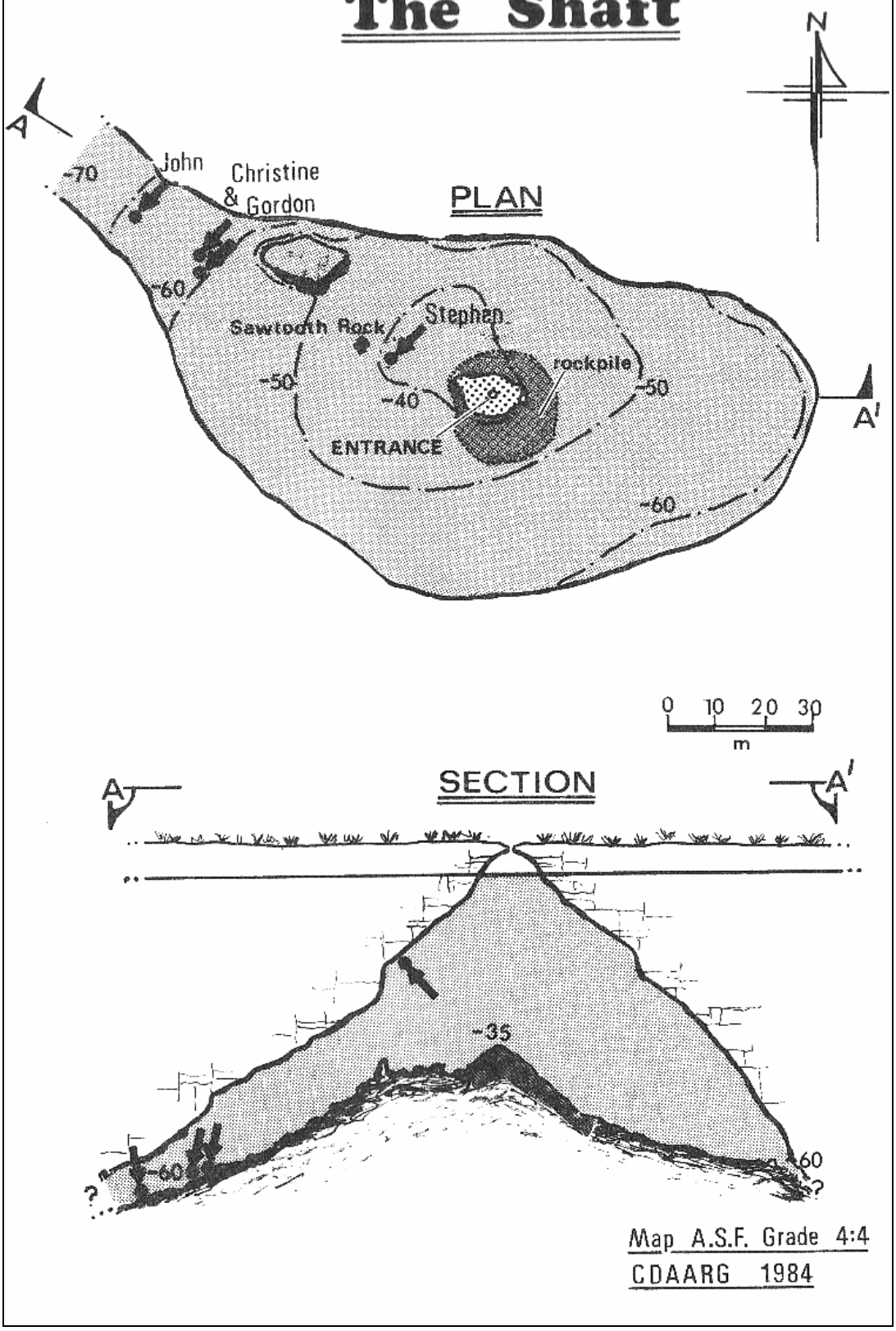
Glen, however, felt like he was close to blacking out, so he stayed at the mouth of the tunnel and waited for the others to turn around. Stephen and John disappeared from the party at this point, and were never seen alive again.

Glen watched with growing anxiety as Gordon, Christine, Larry and Peter descended further into the dark zone, where they had to totally rely on their small torches for light. As they reached a depth of 68 metres, Gordon turned to Christine and Larry and showed them his decompression meter, indicating that it was time to ascend if they did not want to do lengthy decompression on their way up. However, they began their ascent immediately from that location, before they had retraced their steps back out of the tunnel, and they were stopped when they hit the ceiling which was about 25 metres above, at a depth of around 45 metres – still well within nitrogen narcosis territory.

They swept their torches around as they searched for the way out, but when they could not see the main shaft of light or the other divers from this position Gordon raised his arms to the ceiling and shrugged as though indicating that there was no way out, although Larry could see that they looked scared.

Meanwhile, Glen just caught a glimpse of the shaft of sunlight so he immediately began to head for the surface, flashing his torch behind him as he swam. Peter, who was below the other three in the tunnel and running low on air, saw Glen's light and turned to follow him. Larry, though, was still stuck on the ceiling of the tunnel with Gordon and Christine when suddenly, his torch went out. As he struggled to turn it on again, he descended slightly and almost landed on top of Peter as he was following Glen out of the tunnel. Larry was almost out of air too, so he followed Peter, and although he could still see Gordon and Christine on the roof of the tunnel, he could not attract their attention.

The Shaft



Map A.S.F. Grade 4:4
CDAARG 1984

About four minutes had elapsed when Glen exited from the tunnel and headed for the surface lake. Robert, who had earlier been feeling ill and was now waiting at the top of the rockpile at a depth of around 36 metres, saw Glen rapidly heading for the surface and followed him, thinking he was the last diver to ascend. Soon afterwards, Peter and Terry swam into the main chamber, and Larry pulled his reserve air lever as he headed straight for the surface. Glen reached the air-chamber first, and he called to Joan to lower her unused twin fifty cubic foot cylinders to him. Larry then surfaced, followed by Robert who was astonished to learn that there were only two divers there. The last survivor, Peter, performed a short decompression stop using his reserve air supply before he surfaced as well.

As it was obvious to everyone that the other four were still down there somewhere, Glen immediately dived again on his remaining air in a desperate bid to locate them, but after reaching a depth of 45 metres, he was forced to ascend and he realised then that the others would have run out of air by that time. Robert donned the fresh cylinders and dived soon after Glen surfaced. He descended to 55 metres, where he had last seen the party, but he found nothing and went down to about 66 metres where he then located Stephen's camera and torch. The water was very silty there, although it cleared up again at about 71 metres, so he headed for the surface. Peter then dived but only saw the cloud of silt. There was nothing else that they could do, so the authorities were notified.

During the next few months, the Police Aqualung Squad performed many search dives, but they could not find the bodies. They were working on vague directional information supplied by the survivors but the sinkhole had never been mapped and they were to later learn that they had been looking in the wrong section of the cavern. The Coroner's Inquest was held in the absence of any bodies being found, and some of the survivors alleged that the

local dive shop had filled their scuba cylinders with bad air and that it was this poisonous air, and not just the depth of the dive, which had caused the tragedy.

Although the survivors' tests back in Sydney apparently confirmed these allegations, other forensic tests which were more scientifically carried out in Adelaide totally disproved them. The Coroner found that the victims had inadequate air supplies for the depth of their dive and had drowned when they ran out of air. He also pointed out that "none of the group was an experienced sinkhole diver.." and "..no proper safety precautions were taken".

On January 22nd, 1974, a Sydney-based film crew making a movie on diving safety in the Shaft noticed an 'extra diver' on the sloping roof of the cave, illuminated by their bright movie-lights. Upon closer inspection they realised that they had found one of the bodies, which was later found to be that of Stephen. It was in about 15 metres of water and was being held under a small ledge by its partially inflated buoyancy vest. The police divers moved it from the ledge and it floated to the surface unassisted. Another search was initiated below Stephen's body but again, none of the other bodies could be found in the same area of the cave.

A month and a half later, at the request of the increasingly-distressed landowners, a team of very experienced civilian cave divers from Victoria initiated a major search for the bodies and during one dive they found all three on the bottom at a depth of around 60 metres. The police divers recovered the bodies of Christine and Gordon first, but John's body was at 64 metres and narcosis severely hampered their attempts to retrieve it. After making a number of special 'deep acclimatisation dives' the police divers returned to the Shaft and finally retrieved John's body on the 9th of April, 1974, almost 11 months after the four divers had first disappeared.

Police divers search for bodies in The Shaft.

Courtesy 'The News'

Despite the problems of performing autopsies on badly-decomposed bodies which had been immersed in water for so long, chemical tests showed that they definitely had not breathed contaminated air, and had drowned.

"PICCANINNIE PONDS" – THE ACCIDENTS OF 1972, 1974 AND 1984.

Piccaninnie Ponds is a very popular spring system near the Victorian border. It is a swampy region consisting of various ponds and small caves, but the main attraction is a 30-metre long, 4-metre wide vertical fissure which contains spectacularly clear water and picturesque aquatic flora and fauna. The fissure has never been bottomed but divers have reported reaching depths in excess of 100 metres. The system was first discovered in the early 1960s, and is today a Conservation Park. Permission to dive is only granted to divers who hold suitable cave diving qualifications.

The first of the four diving fatalities at Piccaninnie Ponds occurred on Saturday, the 29th of January 1972, at 4.30 p.m. 20-year-old Lyle and his friend Phillip were visitors from Victoria, but as they were both inexperienced, they had no real awareness of the silting hazards of caves. They started their first dive with scuba cylinders which were only a third full, and after exploring the main Chasm to a depth of 30 metres, they had a brief look in The Cathedral, at the western end of the vertical fissure.

As they swam back to the landing, they decided to have a quick look at a small cave which was found on the floor of Turtle Pond, to the south of the Chasm at a depth of around 4 metres. They were low on air and Lyle pulled his reserve lever just as they

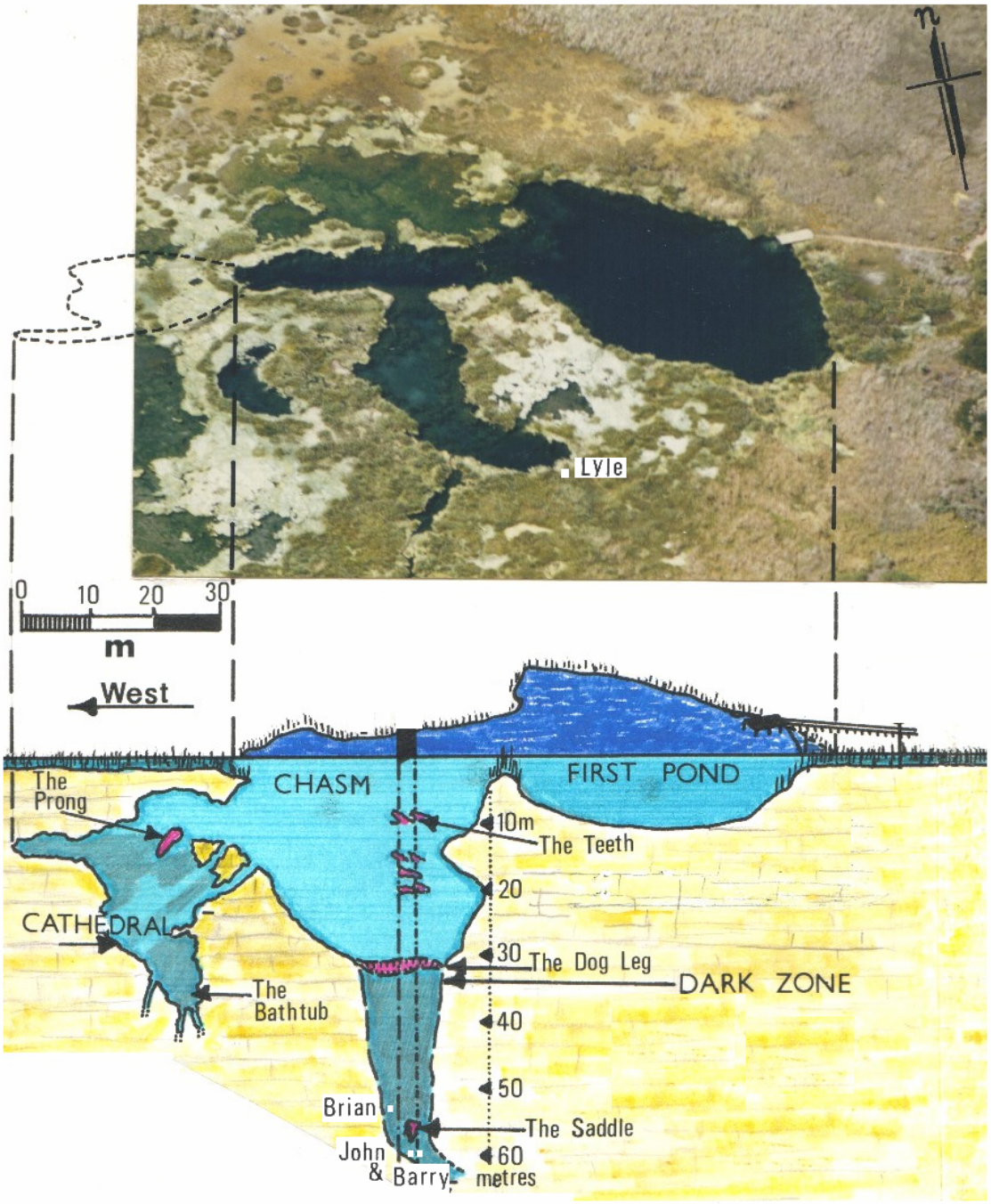
entered the 1-metre high, mud-floored passage. The crystal-clear water quickly became totally silted out, and Lyle held onto Phillip's left foot. As the water got dirtier, they realised that they were in danger, but when they turned to head out, they could not see where they had entered the tunnel.

They groped about in the blackness, and Lyle suddenly let go of Phillip's foot and grabbed for his air switch. Lyle then let go completely, and Phillip didn't notice him again. He spent another few minutes looking for the exit, and finally saw daylight. However, when he swam out, Lyle was not with him, so he went back into the completely-silted cave for a short distance to look for him. There was still no sign of Lyle, so he left the scene and went back to the landing to call for help.

A diver named Herman went into the water a couple of hours later, and quickly located Lyle's body a few metres inside the tunnel. The body was lying head-down in the silt with the feet up against the roof. His scuba cylinder was completely empty. This accident was the first to graphically illustrate the hidden dangers of entering silty caves with inadequate air supplies and without safety lines.

27-year-old Brian, from Western Australia, was the next victim. He and his dive buddy, Claudio, had set up a buoy and vertical shotline in the Chasm the day before so they would not have to waste time on the morning of the fateful dive. Brian had been diving for about 2 years, but this was probably the deepest dive he had done, and he was poorly equipped, carrying a plastic non-diver's waterproofed "Dolphin" torch and an open reel which contained green shark-fishing line. At 8.30 a.m. on Monday the 23rd of December, 1974, they put on their single scuba cylinders and other equipment, and swam out to the buoy.

Piccaninnie Ponds



Map A.S.F. Grade 3:3
P. Horne/CDAARG 1984/85

Brian attached the end of his thin guideline to the buoy and commenced the descent along the thicker shotline. They stopped at a depth of nine metres to attach a spare scuba cylinder which had one regulator, and Brian also removed his weightbelt and hooked it to the shotline. Claudio retained his weightbelt because he had a buoyancy compensator, unlike Brian who was wearing a basic $C0_2$ vest.

They continued down the shotline and reached the bottom of the Chasm at about 40 metres, where Claudio picked up the weight at the bottom of the shotline. They then entered the narrow tube called the Dog Leg, which dropped vertically to a depth of 60 metres from that position. They swam past the formation called the Saddle or the Bridge and reached their destination ... a small chamber at the bottom of the main Dog Leg passage at 60 metres depth. They were only there for about 30 seconds when Brian touched Claudio on the shoulder and indicated that he wanted to go up. They exchanged OK signals and as Claudio was getting low on air, he switched on his reserve air as they started the ascent. Brian touched his left arm, so he grabbed Brian's left wrist with his right hand as they ascended.

When they were passing through 45 metres, Claudio started to have trouble breathing from his nearly-empty cylinder, and to his surprise, Brian suddenly stopped ascending. Claudio tried to lift him but he couldn't be moved, and Claudio realised that he had probably become entangled in his guideline. Faced with an unexpected crisis and with almost no air remaining, Claudio was in no position to free Brian in the confined space of the Dog Leg, and had to leave him. He reached the daylight and swam across to the spare cylinder, and during his 25 minutes or so of decompression he knew that his friend had drowned in the darkness beneath him. He then surfaced and went for help.

When the police divers recovered Brian's body from 57 metres the next day, they discovered that his facemask was dislodged and his arms were outstretched, as though he was pleading for help. His knife was still in its scabbard, and the lower half of his body was entangled in his dark green guideline. His scuba cylinder surprisingly still contained about 700 psi of air. After performing an autopsy, the local doctor concluded that Brian had died of severe decompression effects, but this is most unlikely in view of the reported events. It was also suggested that Claudio might have accidentally kicked Brian in the face during their ascent in the confined area of the Dog Leg.

In view of the fact that neither of the divers thought to use a knife to cut Brian free, it is also highly likely that they were both severely impaired by the effects of nitrogen narcosis. Both divers also carried inadequate air supplies for such a deep dive.

The third and fourth divers to drown in Piccaninnie Ponds were killed in a double-fatality in 1984, bringing the **total number of Mount Gambier cave diving fatalities** to **thirteen**. Their deaths were the first freshwater fatalities in almost 10 years but the news media dug out some of the old cases and made it seem as though the "killer caves" were again at fault. Some people in positions of power again hysterically called for all cave diving activities to be banned, but fortunately common sense prevailed and this did not occur.

John and Barry were very good friends and had done a lot of diving together, including a considerable amount of sinkhole diving, although Barry did not have any cave diving qualifications. John was 28 years old and had gained his CDAA Category Two cave diving qualification in August 1983, some eight months prior to the accident.

Barry, who was 31 years old, had gained his Basic Scuba Certificate in December 1981, but he had never been able to gain formal cave diving qualifications because of work commitments.

John informed his wife the night before the accident that he intended to do a quick dive the next morning, as he had an appointment around 10 a.m. John prepared a comprehensive dive plan for the deep dive, and early on Saturday, the 7th of April, 1984, he headed out to the pond to dive with his friend.

At about 9 a.m., two Victorian cave divers named Gordon and Roger arrived at the carpark and prepared to do a dive themselves. They noticed another car there already, so they walked out to the landing and looked for bubbles, but saw none. A short while later, they got into their gear and entered the water at around 10.15 a.m. They descended to the start of the Dog Leg, at a depth of 36 metres, and were surprised to find a scuba cylinder secured by a lanyard to a wall projection. It was equipped with two regulators, and a 3 mm white guideline was tied off nearby, dropping down into the dark chimney-like tunnel.

The vertical guideline was taut, and as there were no bubbles rising out of the Dog Leg, Gordon and Roger had the horrible feeling that the divers below were dead. They carefully descended to a depth of about 45 metres, where they noticed that the guideline had been tied off to another projection before dropping through the narrow area called the Saddle.

There, in the blackness 15 metres below, they could see some dim stationary light sources, like reflected torch beams or luminous gauges, and the total absence of movement or rising bubbles confirmed their fears that the divers below were dead. They then returned to the surface after performing the required decompression, and called the police.

The Police Underwater Recovery Squad recovered the bodies some time later, apparently with some difficulty because of the depth and the amount of loose line that was snagged everywhere.

(courtesy SA Police)

It was very quickly ascertained that John and Barry had become inextricably entangled in their guideline; they had wrapped themselves up in the line so badly that it was wrapped right around their bodies several times and it was also snagged in gear such as an open “snap-clip” (very dangerous in underwater caves) which Barry wore on his weightbelt. Despite their predicament, one of the divers had still demonstrated the presence of mind to try to gather up the loose guideline by hand, and as the accompanying photo shows, he was in fact still holding the loops in his hand when the police retrieved their bodies.

The Maximum Depth Indicator on one gauge showed that they had reached a depth of 68 metres, which was more than 30 metres deeper than the maximum permitted depth at this location. It is most likely that they had turned around to begin their ascent when they became entangled in the silty confines at the bottom of the Dog Leg, and as they would almost certainly have been severely affected by nitrogen narcosis they had little hope of sorting out the problem before their single cylinders ran out of air.

There were two major factors that contributed to the cave diving accidents which have occurred to date. These were:

- **LACK OF A CONTINUOUS GUIDELINE TO THE SURFACE** (eight deaths if the Shaft accident is included), and
- **DIVING WITHOUT ADEQUATE TRAINING OR AIR SUPPLIES**.

Only a couple of the deep-water victims had any type of cave diving experience, and they all wore single cylinders. Nitrogen narcosis almost certainly caused the three victims of line entanglements to lose control of their lines, and the Shaft survivors reported narcosis effects which undoubtedly affected the victims as well.

Cave diving education is an ongoing process; even the most experienced divers continue to learn. The CDAA is Australia's only recognised cave diving certification body, and it is essential for all prospective cave divers to learn about the special hazards and techniques involved in the activity before they enter waterfilled caves or sinkholes.

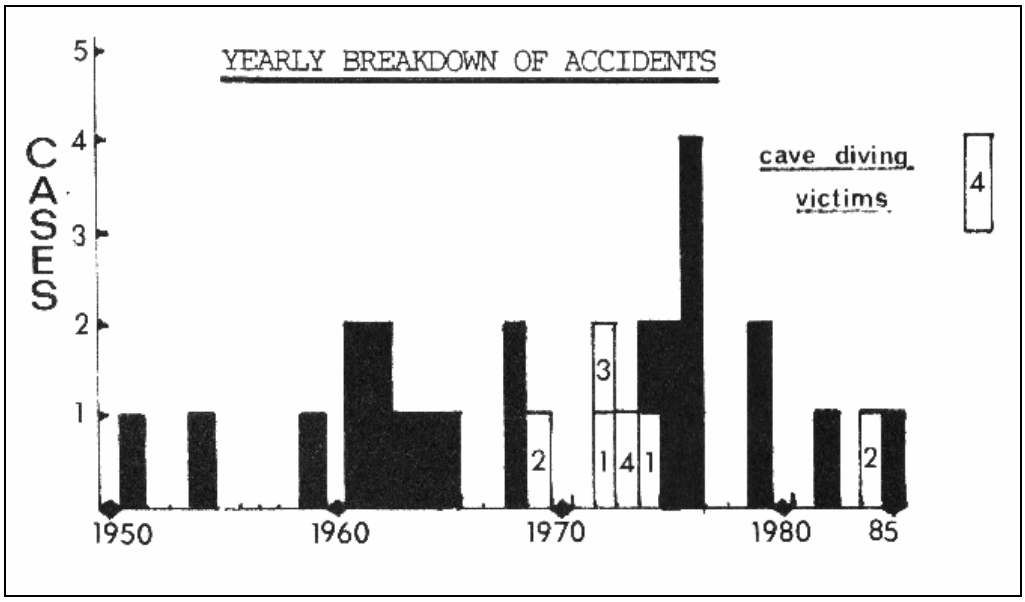
The CDAA can be contacted through PO Box 290, North Adelaide, South Australia, 5006.

*See also their Internet website at http://www.cavedivers.com.au.

SECTION THREE

ACCIDENT STATISTICS

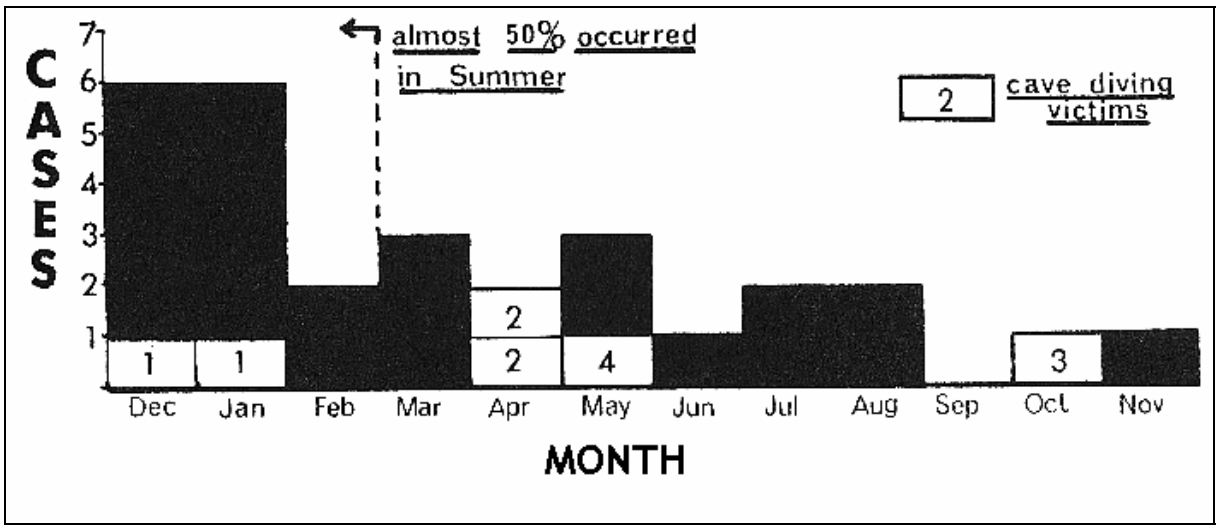
Between the years 1950 and 1985, 29 known diving accidents claimed the lives of 36 people in total. Only three of these occurred in the 1950s, but as spearfishing became more popular in the 1960s, 10 accidents occurred, five of which involved snorkellers.



During the 1970s, all forms of diving became more popular and interest in the sinkholes and caves of the Mount Gambier region ran high. Unfortunately, this provided the avenue for more people to get into trouble: 13 accidents claimed the lives of 18 people during that decade, with four of these, involving a total of 9 divers, occurring in caves. Diving activities have become more popular than ever, but the years 1981 to 1985 showed a significant DECREASE in the accident rate. Had it not been for the double-fatality in 1984, there would only have been TWO deaths during that period, one of which involved an unavoidable shark attack.

MONTHLY BREAKDOWN OF ACCIDENTS

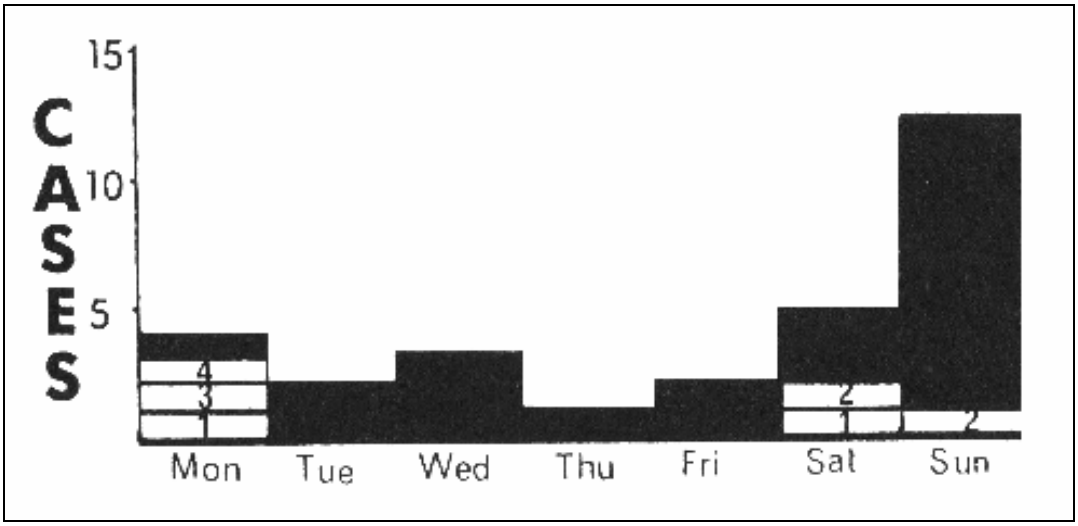
The South Australian Summer months of December and January were the worst for diving accidents, with each recording 6 cases. This is a direct reflection of the popularity of diving activities when the weather is warm and water conditions are ideal. Five of the six December accidents occurred within 4 days of Christmas, and three of the January accidents occurred on the 3rd of the month in the years 1976, 1979 and 1982.



The months of February, July and August each saw two people losing their lives, and the remaining cases occurred in June, October and November. September, at the beginning of Spring, was the only month which was totally accident-free.

DAY OF THE WEEK

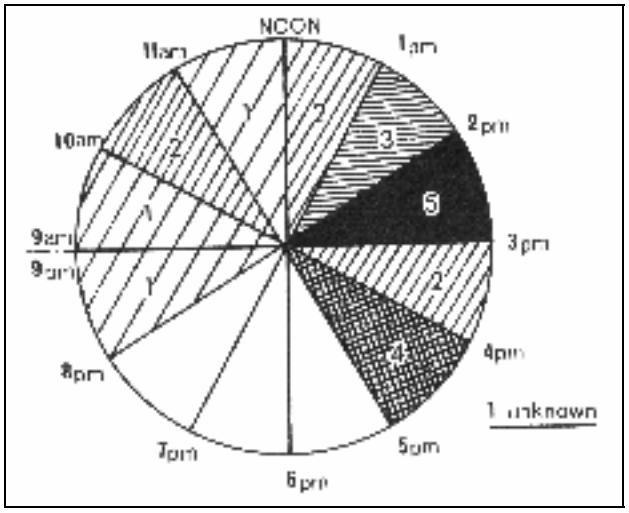
It was no surprise to find that the vast majority of accidents occurred on weekends. Sunday was the worst day, with 12 cases, followed by Saturday, which had 5. Monday was the next with 4 cases, two of which occurred two days either side of Christmas.



HOUR OF THE DAY

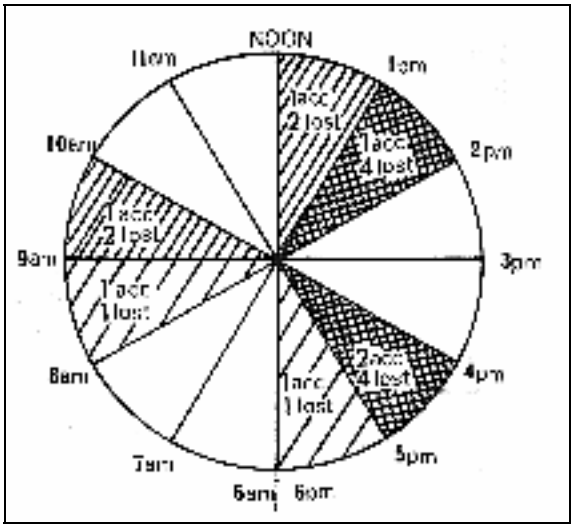
1. SALTWATER CASES.

16 of the 22 saltwater cases occurred in the afternoon, with 5 occurring between the hours of 2 and 3 p.m., and four between 4 and 5 p.m. The earliest occurred around 9 a.m., and there was only one night-diving fatality, which occurred at 9 p.m. or so.



2. FRESHWATER CASES.

Like the saltwater cases above, most of the cave diving accidents occurred in the afternoon. The earliest accident occurred before 9 a.m., and the latest was between 5 and 6 in the evening.



EXPERIENCE AND AGES OF VICTIMS

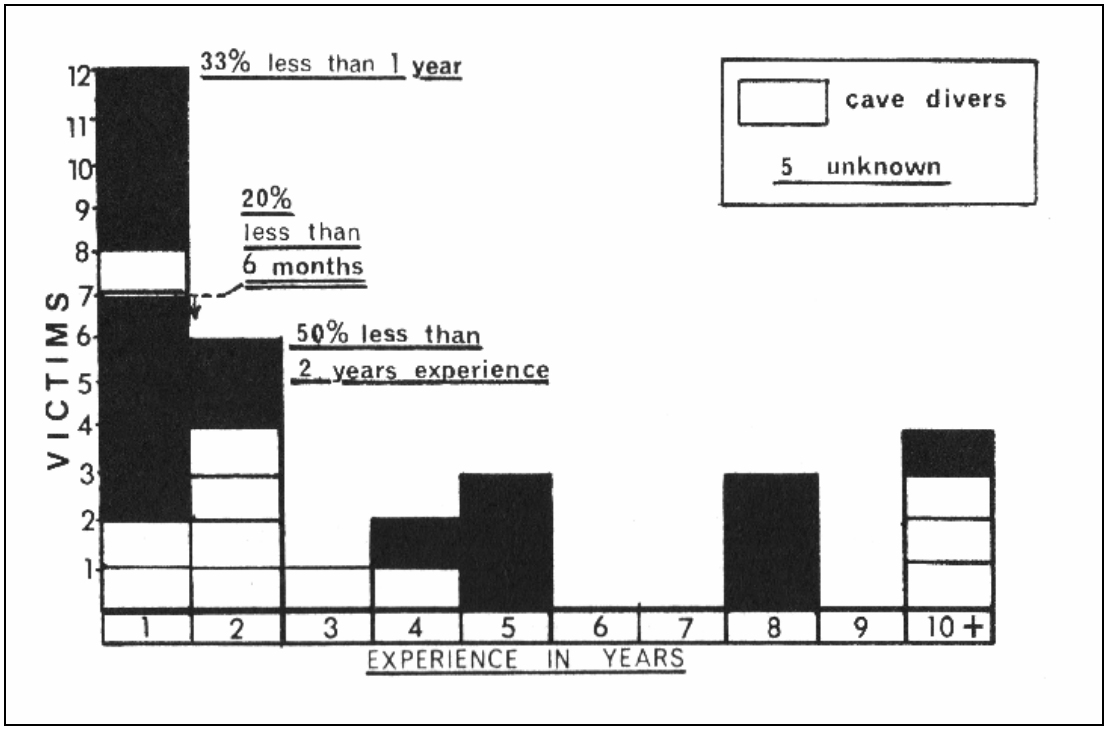
"Experience" is a difficult concept to define, and in many cases information relating to victims' total diving experience was not available. However, even with the information to hand, it is apparent that a high proportion of divers were **relatively inexperienced**. **Seven had less than six months total experience**, and **12 of the total number of 36 victims (33%) had been diving for less than one year**.

Another 6 divers had between one and two years experience resulting in 50% of all accidents occurring to people who had been diving for less than two years. Additionally, very few sea divers had been trained by a recognised diving organisation.

Seven of the 13 cave diving accident victims had less than 2 years experience, with two having less than 6 months total diving

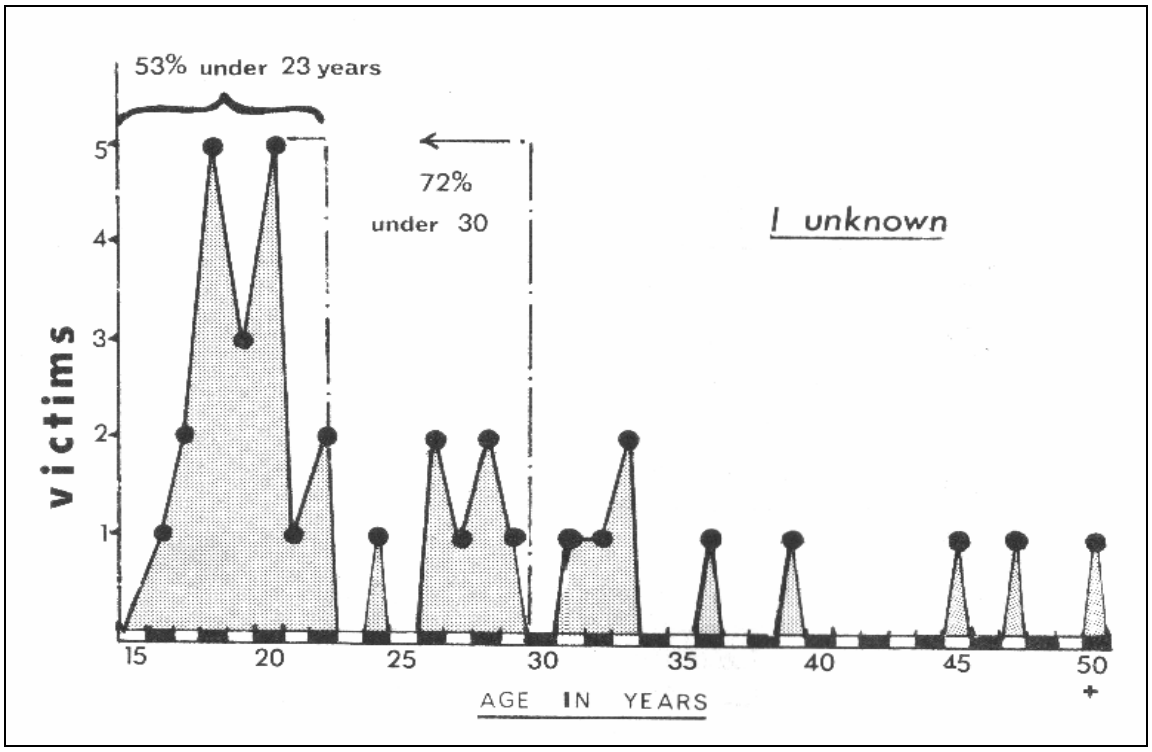
experience (not just cave diving). At least three of the remaining 7 had in excess of ten years reported diving experience. By comparison, only **one** of the 22 saltwater victims had been diving for over 10 years. The actual **number** of dives that people had done was generally not recorded, and as time alone is not a good indication of a person's diving ability or experience, readers should interpret these statistics carefully.

16 victims (about 45%) were between 16 and 21 years of age. Another 10 (28%) were between 21 and 30 years, making a total of 26 (72%, or nearly three-quarters of all victims) who were under the age of 30 years. The cave diving victims were also generally young people; seven were under the age of 21, and four of the remaining six were between 21 and 30 years old.



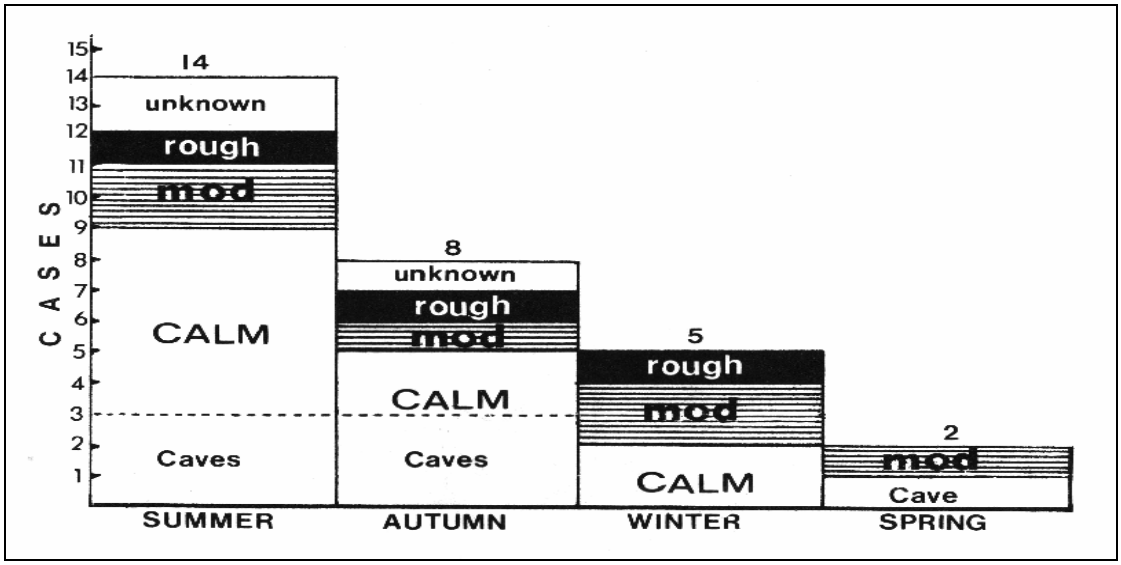
Youth and inexperience could certainly be contributory factors in diving accidents, but it should also be remembered that a very large proportion of all sport diving is done by young people.

Thus, it should not be assumed that young people who have been diving for less than two years are necessarily at high risk.



WATER CONDITIONS / SEASONS

At least eight of the eleven Summer saltwater accidents occurred in calm or moderate conditions, so it is obvious that cold, rough conditions alone were not important contributory factors in many instances. Autumn (March to May) was the second worst season, recording 8 accidents, and all but one occurred in conditions which were relatively calm. There were five accidents in Winter, with only one of these involving rough conditions. The last two accidents occurred in Spring, and once again, conditions were calm to moderate.



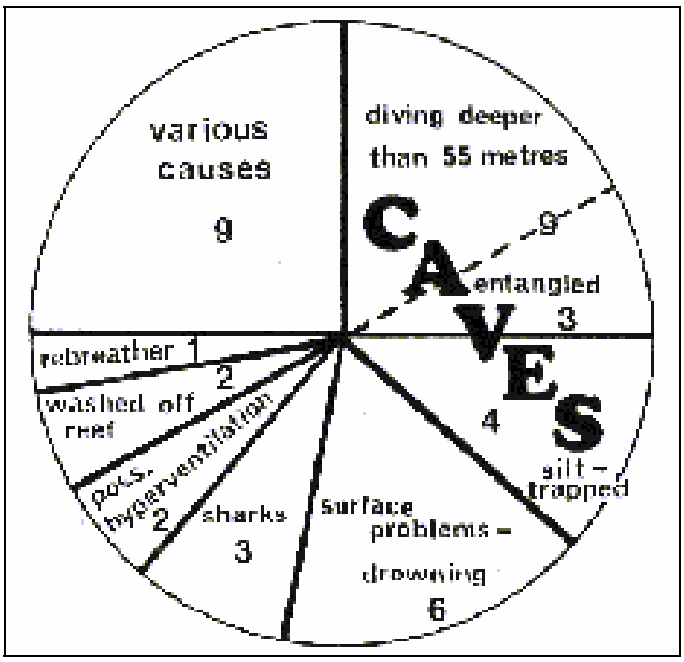
Most of the cave diving accidents occurred in April and May, with the remainder occurring in October, December and January. The water in the sinkholes of the Mount Gambier region is always calm and fairly cold (around 15 degrees C), and since many caves contain clear water at depth throughout the year, cave diving accidents were not affected by water conditions and occurred at random.

MAJOR FACTORS

The vast majority of saltwater accident victims drowned after they got into difficulties <u>whilst swimming on the surface</u>.
There were no apparent accidents involving barotrauma or decompression injuries, despite comments to the contrary by certain medical practitioners who evidently knew very little about diving medicine.

Most accidents were probably the final outcome of human error which could possibly have been rectified by the victims if they had been aware of the danger, but several cases also involved "outside" influences which were not readily controllable.
The pie diagram below outlines the known (or suspected) major

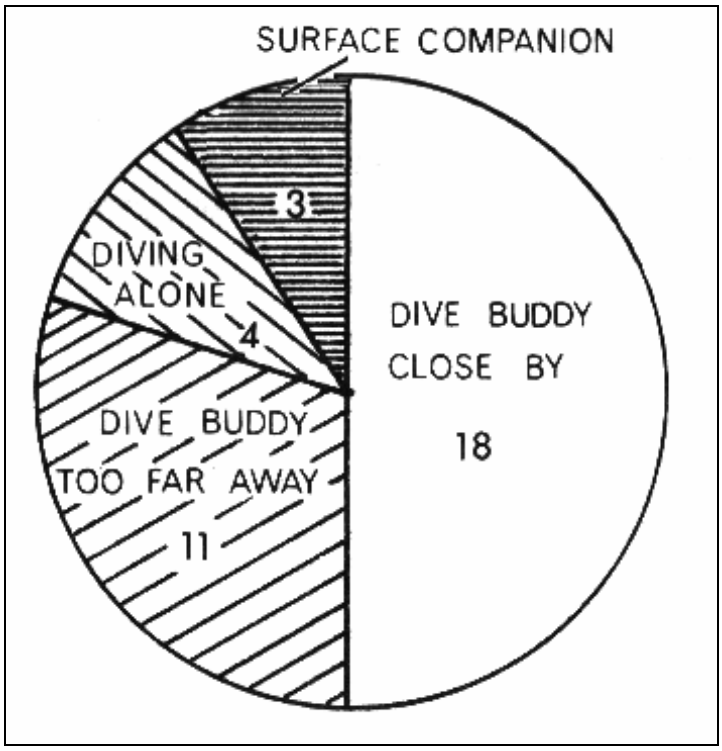
factors involved in the accidents, but there might also have been other unknown and more significant factors involved in some instances, especially those involving deep dives where hypoxia (or forms of gas poisoning), nitrogen narcosis and hyperventilation can all play subtle but dangerous roles.



DIVE BUDDIES

Today's divers are repeatedly told of the importance of diving with a competent "buddy". While this is indeed a very desirable practice for most divers, especially those with minimal experience, many of the earlier divers frequently entered (and often still enter) the water alone. Solo diving was often undertaken in the past, especially by snorkellers whose mobility during their hunt for fish tended to separate them from others very quickly. Only a handful of people, however, ever made a habit of diving totally alone, and most of those who did were extra safety-conscious and took care not to get into situations which could endanger their lives.
Consequently, **there were only a couple of accidents involving**

true "solo" divers; the others all occurred when the victim was in fact diving with a buddy.



What this indicates is that the mere presence of a dive buddy does not equate safety; two people sharing a body of water at the same time did not automatically mean that both divers were safe. In fact, the victims' buddies were rarely close at hand when they got into trouble, or were in trouble themselves and had to save their own lives. In these situations, the buddy system itself may have actually contributed towards the accident – many people gain a false sense of security when they dive in groups, and some may be tempted to dive in adverse conditions when they would otherwise stay on the shore. If the buddy system is to work properly, all divers must be well trained to cope with problems and they should observe each other throughout a dive. Divers who enter the water together and then lose track of each other are effectively diving alone in the same ocean.

SECTION FOUR

GENERAL SUMMARY & CONCLUSIONS

The case histories and associated statistics presented in this report clearly identify several key problem areas which related to most diving fatalities in South Australia up to Jan 1986. Although the availability of modern training and equipment has obviously improved diving safety tremendously, some inexperienced divers are still using poor techniques and outdated equipment, so we should expect to see unnecessary accidents continuing into the future.

The main factors which were identified as having caused or significantly contributed to the accidents presented here were: -

1. **INEXPERIENCE / LACK OF TRAINING**: A large number of victims were not trained in the correct use of diving equipment, and many had only been diving for a few months (or less). The cave diving victims in particular were often ill-equipped and/or ignorant of the special hazards they faced in waterfilled caves. People need to seek training through recognised organisations, and should gain their experience gradually so they can handle adverse situations with true competence rather than false confidence.

2. **LACK OF FLOATATION DEVICES**: **None** of the ocean divers who drowned were wearing buoyancy vests or life jackets which could support them on the surface. In fact, only one diver is known to have worn any kind of vest, and that unit would not hold air.

3. **POOR BUDDY CONTACT**: Divers frequently went their own ways once they entered the water, with the result that a buddy was not close by when the victim became fatigued or accidentally swallowed a mouthful of water.

4. **SCUBA CYLINDERS**: Four of the saltwater victims ditched or attempted to remove their scuba cylinders when they got into trouble. Most cylinders were made of steel, and thus were negatively buoyant; they also had a tendency to turn upside-down as they emptied. The accidental partial unbuckling of a harness when one is in trouble could therefore have catastrophic consequences because straps get in the way of the diver's swimming attempts; the tank also rides up to the back of the head, thus compounding the danger. Two scuba divers also drowned whilst snorkelling with tanks which were not turned on; they had full cylinders on their backs, but they couldn't use them when they got into difficulties.

5. **FAILURE TO DROP WEIGHTBELTS**: Only a couple of divers are known to have made any attempt to ditch their weightbelts, so critical when no buoyancy vests were available, but they left it too late or failed to undo the buckle. The removal of their belts would have given most divers greater floatation because many were wearing very buoyant wetsuits. Thus, the failure to quickly rid themselves of many kilos of lead weight was probably the most important mistake many divers made.

In summary, most of the diving deaths reported here could easily have been prevented if people had only been less ignorant of the dangers they were likely to encounter both above and below the surface, and it is the author's opinion that buoyancy vests are probably the single most important items of safety equipment ocean divers can wear. Recent innovations such as octopus regulators are also very useful, and who knows what the future will bring! Hopefully, we will continue to see the accident rate decline, as divers become better trained and well-equipped; there is no excuse for ignorance in the world of today's underwater adventurer. Safe and Happy Diving!

APPENDIX 1

LISTING OF SOUTH AUSTRALIAN DIVING ACCIDENTS 1950-1985

in chronological order (*Denotes Multiple Victims)

DATE	LOCATION	TYPE	PAGE
28 DEC 1951	Port Noarlunga Reef (South)	Rebreather	10
23 JAN 1954	Christies Beach/Pt Noarlunga	Snorkel	12
29 DEC 1959	Valley Lake, Mt. Gambier	Scuba	53
26 MAR 1961	Second Valley	Snorkel	43
13 AUG 1961	Port Noarlunga (Nth of Jetty)	Scuba	12
17 NOV 1962	Pt N/lunga Reef (under Jetty)	Scuba	14
09 DEC 1962	Carrickalinga Head (**SHARK**)	Snorkel	31
25 DEC 1963	Port Noarlunga Beach (North)	Snorkel	15
09 FEB 1964	Pt Noarlunga (South of Jetty)	Scuba	16
27 DEC 1965	Knob Point, Kangaroo Island	Snorkel	44
11 FEB 1968	Offshore Henley Beach	Para-Scuba	36
16 JUN 1968	Cape Jervis Area	Snorkel	45
06 APR 1969	"Kilsbys Hole" (*2)	Scuba	55
29 JAN 1972	"Piccaninnie Ponds"	Scuba	71
09 OCT 1972	"Death Cave" (*3)	Scuba	58
28 MAY 1973	"The Shaft" (*4)	Scuba	63
09 JAN 1974	Streaky Bay Area (**SHARK**)	Hookah	33
23 DEC 1974	"Piccaninnie Ponds"	Scuba	72
20 MAY 1975	Port Lincoln (Brennans Jetty)	Scuba	37
28 AUG 1975	Browns Beach, Y. Peninsula	Snorkel	47
03 JAN 1976	Pt Noarlunga (North of Jetty)	Scuba	18
16 MAY 1976	Port Noarlunga Reef (South)	Scuba	19
25 JUL 1976	Port Noarlunga Reef (North)	Scuba	23
25 JUL 1976	Port Giles Jetty	Scuba	39
03 JAN 1979	Hall Bay, West Coast	Hookah	48
02 MAR 1979	Pt Noarlunga (North, nr Jetty)	Scuba	29
03 JAN 1982	Rapid Bay Jetty	Scuba	40
07 APR 1984	"Piccaninnie Ponds" (*2)	Scuba	75
03 MAR 1985	Wisemans Beach (**SHARK**)	Snorkel	34

APPENDIX 2

PRELIMINARY UPDATED LISTING OF SOUTH AUSTRALIAN DIVING ACCIDENTS 1986-2003

DATE	LOCATION & DETAILS	TYPE
29 MAR 1986	Port MacDonnell, Lower South East Compressor failure; victim snagged on ledges and could not release weightbelt due to hose looped through it.	Hookah
18 SEP 1987	Offshore Marino/Seacliff **SHARK ATTACK**; victim's boat and misc. diving gear found by police divers; signs of savage shark attack (teeth marks on weights, belt still buckled up and shredded gear etc). No witnesses and body not retrieved.	Scuba
01 NOV 1988	Pt Stanvac Oil Refinery 600m o/shore **Commercial operation**; victim apparently became entangled or encountered other difficulties whilst using a heavy underwater blasting gun and drowned.	Hookah
08 SEP 1991	Aldinga Reef Drop-Off **SHARK ATTACK**; victim was almost totally devoured by a huge shark, probably a Great White,	Scuba

DATE	LOCATION & DETAILS	TYPE
	which attacked the two divers completely unprovoked while they were undertaking recreational diving at a depth of around 18 metres.	
20 JAN 1993	Glenelg Jetty	Snorkel
	Victim was a middle-aged man who was observed not moving; did not respond to CPR attempts. Few other details available at this time.	
02 FEB 1993	Robe, Lower South East	Hookah
	Boat dive, double-fatality; the divers died from carbon monoxide poisoning after the intake hose for the compressor fell into a position near the compressor's exhaust. There was nobody on the boat to supervise and their family dog might have contributed to the situation by knocking the hose from its original placement position.	
16 FEB 1994	Port Noarlunga	Scuba
	Victim became fatigued and got into difficulty in adverse water conditions after a long dive; swept to the north and past the jetty, drowned in open water offshore.	

DATE	LOCATION & DETAILS	TYPE
11 AUG 1994	Port Augusta Power Station **Commercial operation**; victim died from carbon monoxide poisoning after the intake hose came into contact with the compressor's engine manifold and melted. A second diver barely made it to the surface, and survived.	Hookah
17 MAR 1996	Port Lincoln Tuna Farm **Commercial operation** (tuna farm); victim died on first ever scuba dive after running low on air at 20 metres and heading for the surface without a buddy.	Scuba
15 MAY 1997	Memory Cove, near Port Lincoln Victim got into some kind of difficulty and was 'hauled to the surface' by friends; declared deceased upon arrival at the local hospital. Few other details available at present.	Hookah
01 FEB 1998	Port Noarlunga Victim was a 48 year old woman (**first female saltwater victim**) who was found unconscious on the sea bed; initially responded to resuscitation efforts but died later. Few other details available at present.	Scuba

DATE	LOCATION & DETAILS	TYPE
28 JUN 1998	South Neptune Island	Snorkel
	SHARK ATTACK; victim was mauled by a 4-metre Great White Shark just 3m offshore in an area known for its sea lions. His friend brought him to shore but the victim died from his injuries shortly afterwards.	
28 NOV 1998	Troubridge Lighthouse, Y. Peninsula	Scuba?
	The victim was reported to have died whilst diving near the lighthouse, and possibly drowned. No further details available at present.	
24 FEB 2001	Althorpe Island, Yorke Peninsula	Scuba
	Victim was a 44 year old woman (**second female saltwater victim**) who left her buddy to surface alone in 20 metres of water. Post-mortem indicated drowning, possibly after suffering from barotrauma difficulties.	
15 APR 2001	Snug Cove, Sthn end Kangaroo Island	Scuba
	The 58 year old male victim was with 6 friends in shallow water. He died after getting into difficulties on the surface; the PM revealed barotrauma injuries (CAGE) which would have caused unconsciousness and thus drowning.	

DATE	LOCATION & DETAILS	TYPE
10 MAR 2002	Reef Head nr Marion Bay, Y. Pen. The 54 year old victim got into difficulties whilst cray diving in 8 metres of water with his buddy. The apparent cause of death was drowning, probably brought about because of the victim's numerous health problems and overly-tight and heavy diving equipment which likely caused circulatory problems. A non-diving member of the party also collapsed and died on shore, apparently from the physical exertion at the scene.	Hookah
17 MAR 2002	Nora Creina, Lower South East The 42 year old victim (the State's **third female saltwater accident victim**) became fatigued after a long swim to a shallow reef and was caught by surprise by a series of waves as she attempted to climb some rocks. The Coroner's Inquest heard evidence that she was "obese and physically unfit" and likely drowned after becoming exhausted from her swim and attempts to leave the water.	Scuba
21 APR 2002	Wirrina, Sth Coast, Fleurieu Pen. The 55 year old victim became separated from his three buddies at a depth of 37 metres and was found by one of them a short time later. The	Scuba

DATE	LOCATION & DETAILS	TYPE
	post-mortem found that he had suffered an air embolism from ascent barotrauma, and his overly-tight suit and poor physical condition were also implicated in the accident.	
30 APR 2002	Offshore, 13km W of Smoky Bay	Scuba
	SHARK ATTACK; victim was diving for scallops and was fatally attacked by a huge Great White Shark. He was pulled aboard his boat but died within minutes of the attack. He was carrying a functioning "Shark Pod" device but sadly it reportedly had not been set up in the best configuration for providing maximum protection.	