Provisional Report on Diving Related Deaths in 1975 (Stickybeak Project)
Dr Douglas Walker

Overview

Ten fatalities have been identified as having occurred in Australian waters during 1975. There were two (2) breath-hold divers, three (3) Scuba divers and five (5) hose supplied divers. All the hose-supply divers were Professional in the sense that they were so diving for their employment: there is no evidence that any had received training, though special instruction was presumably given to Case H 5/75 before his employment. His death, from a heart attack at the early age of 34, was not foretold by the full "Diving Medical" given about eleven months previously. It could well have been fatal to him even had the illness occurred at the surface. On the admittedly incomplete evidence available it would appear that in all cases the victim was alone, though that was not the critical factor. The causes included a shark attack, drink competition spearfishing, total inexperience with scuba, failure to heed warnings of danger, ill health and inappropriate reaction to an out-of-air situation. When consideration is given to the fact that this total of deaths covers the whole of Australia and the environment underwater is unsupporting of life, the extreme safety of diving is worthy of comment.

Case Reports

Case BH 1/75. This was the only fresh water fatality. The victim, aged 30, borrowed a speargun from a neighbour and went to a nearby river with his wife and one of her friends. It was late afternoon before he started to dive at a spot well known to him. This gave time for the party to refresh themselves, his consumption being 10-12 stubbies of beer. This explains his later comment "I'm too full, I can't hit anything". After a while he placed the speargun and spear shaft back on the river bank and announced his intention to make one final dive in order to retrieve the lost spear head. His failure to emerge from the water caused alarm and several swimmers tried to find him. The Police were called and one of them dived to investigate. The victim's arm was felt within a hole beneath the bank.

This hole, about 4 ft 6 ins below the surface, was known to the victim. Its entrance was about 2 ft 6 ins diameter and the cavity extended beneath the roots of a tree for about 6 ft. The policeman correctly avoided entering the cavity himself, pulling the body out without undue difficulty. It cannot now be known whether he had entered in search of the spearhead or through error.

Case BH 2/75. The Inquest report is not yet available but witness reports have been used as basis of the comments that follow. The victim was aged 29 and presumably an experienced spearfisherman for this was a Championship Competition. The chief witness was on shore patrol with a walkie talkie and the other witness was a competitor at that time also ashore and talking to him. The latter commented that a diver, to whom was attached a float and diving flag by regulation line, seemed to have surfaced and indicated need for assistance by waving his arms. The witnesses considered the situation for a time but decided that no action was required. He was about 50 yards from the nearest other diver and 30 to 40 yards from the beach. A third person remarked that the swimmer was no longer visible so the witnesses decided to swim out to offer assistance if this was required. The first witness reached the float and pulled on the line, thereby discovering that the diver was lying unconscious on the sea floor 10-15 feet below. There was no kelp or other possible cause for entanglement in the area. He pulled the victim to the surface and commenced to tow him back to the beach. The trailing line entangled one of his feet and he would have been in peril had not

another diver arrived and cut him free. EAR was commenced on the beach, but without success. The second witness had to delay his assistance because his bootees had to be removed before he could safely swim. The absence of efficient boat cover/buddy diver cover relegates the float to the function of a floating tombstone and in no way an aid to safety, save from boats.

Case SC 1/75. This 16 year old boy came down from the country and hired diving equipment. Neither he nor his companion, who also hired Scuba equipment, had any training or experience of scuba diving. While his companion sat on a rock, the victim entered the sea for his first dive. The newspaper report states that he dived once to 40 feet, surfaced, dived again. His body was not recovered till next day. Comment is superfluous.

Case SC 2/75. At 18 1/2 he was an enthusiastic and frequent scuba diver, with 3-4 years experience of diving with others. He and a non-diving colleague were sent to a coastal town in connection with their regular employment, so he naturally took his diving kit with him. After a day-long journey they arrived at their destination, going straight to their hotel for a four course meal. Following this the victim dressed in his wetsuit etc and the two youths made their way to the harbour. It was now night. He had only to don his tank and he was ready to dive, his first solo and possibly first night dive (the latter is conjecture). He entered the water about half way along a wharf but shortly after this returned to the wharf to find his companion again. He spoke to a passing sailor to ascertain the likelihood of a moored ore ship starting its engines. The reply was presumably satisfactory because he entered the water beside the ship with the apparent intent of viewing its hull. His prolonged failure to surface from this dive caused his companion to raise the alarm (after 90 minutes). The initial police search was unsuccessful, but the body was washed ashore eleven days later. Most of the equipment had become detached and lost during the interval so could not checked. He was in good health.

Case SC 3/75. This was a planned Club Dive under ideal weather conditions on an old and well known wreck lying in 50 feet of clear water. There were 10 actual divers on the hired boat, some non-divers and the experienced skipper. The divers were paired and their names and water entry/exit times noted on a log by a non diving member deputed to the task. Such was the excellence of the visibility and the limited area of the wreck that no true buddy-diving procedures were thought necessary or followed. As everyone could see everyone else such caution was deemed superfluous. This is common diving procedure one may think. There were many artifacts beneath the sand, hidden in lumps of pitch-like material. Their collection was the object of each diver, and all set-to with a will.

It is thought that one of the divers was using hookah, the remainder scuba. One witness described how he was approached by another diver, later thought to have been the deceased, for help in opening a lump of material. Shortly afterwards the witness made a hurried solo ascent, reaching the dive boat in an exhausted condition. It was this diver's "buddy" who was shortly afterwards approached by the victim, who was making signs to indicate that he was short of air and wished to buddy-breath.

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The victim was doubtless confident of his skill in this matter because he had acted as the “patient” in a recent Scuba Safety Skills competition which involved buddy breathing and rescues. The donor diver was wearing a borrowed set, a twin hose unit, the absence of purge valve making sharing more difficult than would otherwise be the case. After some 5 minutes (?) of sharing, ascent was attempted . The donor forebore to inflate the victim’s buoyancy vest or drop his weight belt lest panic be caused, but he indicated the need to inflate the vest and to drop the trophy bag. It was found impossible to ascend more than 10-15 ft from the sea floor, which could be explained by the fact that the bag was found to contain 45 lbs of souvenirs. When the donor’s air supply began to fail the victim became unwilling to relinquish the mouthpiece so the donor decided to make a free ascent. He dropped his own weight belt and was preparing to ditch his tank also when he found that he was floating free. He surfaced exhausted, and held onto the anchor chain until the skipper reached him in the dinghy. He was then able to give the alarm about the diver below without air. Before any real response could result from this information another diver surfaced with the victim’s body. This was rapidly taken into the boat and EAR started. The rescuer had seen the deceased lying on the sea floor, his mouth-piece floating free between his legs, the cord of the trophy bag lightly entangled in it. The buoyancy vest may have been inflated at this time. The weight belt and tank harness quick-releases worked faultlessly and the body, free from the bag, ascended easily. The victim was aged 19. He had been diving with the club monthly for 2 years and had a “C” card certification. He had dived on this wreck on several previous occasions. This tragedy quite possibly illustrates the “Tunnel vision of Thought” that can afflict and blinker anyone under stress conditions. He was skilled above the average in buddy breathing but could not use the time gained to plan the necessary ditching of his souvenirs and weight belt. His skill merely postponed his drowning. A tank contents gauge, if consulted, would have saved him, as also would an awareness that one should never dilly dally when air is running low, for the only place there’s plenty more of the stuff is at the surface.

Case H 1/75. This 40 year old diver made his living diving for scallops from his boat. It is not known what knowledge or training he had or for how long he had practiced his craft alone, leaving the compressor working in the boat while he used the hookah supply below. One day he failed to return as expected and a search was made. The boat was found with the compressor stopped from fuel exhaustion. The hookah airline was over the side, leading to the weight belt and attached demand valve assembly. There was no trace of the diver himself. The body was found floating the next day. The autopsy showed severe pulmonary barotrauma and then drowned. He was still wearing his fins and facemask when recovered. The reason for his making a rapid ascent from his 50 ft dive cannot ever be known, but several suggestions have been offered. There was the possibility that he saw a shark (there were said to have been some in the area in previous days) or become alarmed through interruption of his air supply. This could have occurred through the compressor running out of fuel, for the air reserve tank was not connected and the engine was disadvantaged by a modification of the exhaust outlet which produced increased back pressure. The correct modification would have been to raise the air inlet rather than tamper with the exhaust. The hose was kinkable but readily resumed function when tension was released. The quick release of the hose were too readily activated but in fact were not at fault. The weight belt had so many lead weights in it that the quick release was very easily worked; this could have led to the loss of weight belt with the attached air hose and demand valve without the diver expecting any trouble. There was no non-return valve on the hose to protect the diver, but this fault also was not a present factor.

Case H 2/75. This abalone diver was apparently attacked and totally destroyed by a shark, supposedly a white pointer, in 7-8 fathoms of water, 20 yards off shore. His tender was left with one glove, a glimpse of a fin, an area of bloodstained water and a hookah line attached to a backpack with its thick rubber attachments torn. No shark was caught but there had been seals in the area and the suggestion was made that the diver was mistaken for one of them by the shark. He was 37 years old.

Case H 3/75. No inquest report is yet available concerning the death of this 19 year old abalone diver. It is said that evidence of pro-existing disease was noted at the autopsy but no other information is available.

Case H 4/75. The last words of this diver were "She'll be right!", but such was not to be the case. At 36 he had been earning his living by diving for 18 years and had experienced a wide variety of jobs. He had also suffered at least two serious episodes of decompression sickness and been warned not to dive deeper than 30 feet in future. This instruction he observed, not increasing his range to 60 feet till he had a Diving Medical in August of the last year. The limitation was of a prophylactic nature, based on discussion of his diving methods vis a vis diving tables. He regarded himself as a careful diver, very safety conscious.

He became involved in the task of entering the part flooded ballast tank to free a valve when the tanker's diving contractor asked him and another diver if they were available for the job. The contractor ran his air compressor from a boat alongside the ship and the divers were hose supplied with their air. They had the choice of using their own masks or those provided, choosing to use their own. The victim had a new mask but it was found later that he had used an old one. The tank held several feet of water above the valve and there was a high concentration of petrol vapour above this. The task and risks were explained to both divers before the second diver entered the tank and undertook the task. However the valve remained closed because it required more turns to open than was often the case. While he retired to shower off the petrol that was causing skin irritation the victim prepared to enter the tank. He entered the tank holding his mask in one hand and proceeded with his descent despite the warning shouts of the others present warning him of the dangerous fumes. It was only when he began to cough that he put on his mask. Despite further coughing he completed his descent and entered the water, again refusing to return to the fresh air on deck. It was soon observed that he was in trouble, holding onto the valve stem for support. The other diver was summoned and immediately started to the rescue, minus wet suit but using the second hose supply mask. The rescue attempt failed because this diver himself collapsed shortly after reaching hold of his colleague's shoulder and weight belt. At this stage the ship's emergency breathing apparatus was used by the First Officer and both divers were removed from the hold by rope. This was a gallant action by the First Officer, and the crew also worked efficiently in the rescue and the resuscitation attempts. The second diver recovered, the victim did not.

Investigation revealed that the personal masks of both these casual-contract divers were old and ill fitting. The victim's mask leaked when used in water, requiring frequent clearing, because the feathered edge of the mask had become worn and been cut away. The masks were tested in a gas chamber and both allowed the test tear gas to enter. The second diver's mask had an additional reason for ill fitting, for he had several days beard growth present. His collapse may have been due to the excitement and rush of the descent into the tank to his colleague, plus the petrol vapour entering the mask. These masks are demand supply, not free flow, so vapour within the mask is not immediately flushed away. It is obvious that the increased necessity for a perfect air seal of the mask in a gaseous environment occurred to

neither diver, accustomed as they were to regarding themselves as “divers” rather than “users of hose supplied air” in this particular job. A semantic error with fatal consequences.

Case H 5/75. This appears to have been a truly “unavoidable” death. The diver was aged 34, working from a bell (SDC) at 240 ft using a Helium mix. He had a hot water supplied wet suit and good communications with the surface diving controller. He had passed a “Diving Medical” examination in the early part of the year. The task was heavy, requiring him to pass a somewhat inflexible cable twice round a broken pipe. Until the incident occurred the monitoring of respiration revealed nil unusual. His failure to respond to orders and a change to a laboured type of breathing caused the surface control to request the diver/tender in the SDC to investigate and report what he found. The victim was found lying on his back on the seafloor, unconscious. The tender dragged the victim back to the position of the SDC, which was then lowered to 5 feet from the sea bed. A block and tackle were attached in the SDC for such emergencies and the hook was now connected to the victim’s lifting harness. The tender had not only the exertion of pulling the victim but had needed to disengage the trailing umbilical from some debris. The victim could only be raised head and shoulders into the air space of the SDC: the mask and equipment were there removed. The victim was no longer breathing at this time. As the lower hatch could no be closed the rate of ascent was according to the USN decompression schedule, halting at 120 feet to allow a standby diver to enter to assist the diver/tender already present. Together they pulled the victim fully into the SDC and closed the lower hatch, EAR and ECC being used although they believed that death had occurred. The victim’s umbilical had been deliberately severed after a few feet of ascent as it had again snagged on debris but later testing revealed no failure of the hose or communication links. After the SDC reached the deck the divers were brought to “40 feet” and then straight to surface pressure and the SDC opened. They then proceeded to the main decompression chamber (DDC) which was about 60 feet distant. This chamber has a lock for entry but no facility to mate the SDC to it directly. The tender suffered mild “bends” pains in the legs and arms of onset before leaving the SDC on deck. The DDC was taken to 70 feet, EAR and ECC being continued until a doctor arrived and certified that death had indeed occurred. The police were notified of the fatality and investigations started. The autopsy revealed that death was due to Ischaemic Heart Disease. No evidence was given of ill health preceding the fatal incident. There was no equipment malfunction and nothing to suggest that anything further could have been done to improve survival chance. There are two points of additional note. When the diver/tender was notified that he had to don a mask and leave the SDC he felt dizzy and part fainted. This he later ascribed to the sudden apprehension at realising that he would be sharing the same hose supply gas as was being supplied to the victim so any mistake in its composition would effect him similarly. A moment’s use of the emergency bib mask and a few words with the surface very rapidly revived him and he made a good job of recovering the victim. His report of the effect of psychological factors is of great help. The other matter was the mention that the SDC and the DDC could not “mate”, a potential risk factor of importance. Sixty feet separation between them was quoted.

Comment

These cases are few compared to the large number of divers at risk, but any avoidable factors are worth consideration. Undoubtedly many “near misses” have occurred. The reports are made on the basis of information at present available. This is always incomplete, sometimes grossly so. It is hoped that readers will recognise the value of considering these tragedies as a mirror to common diving practices and so improve safety to even higher levels. It is hoped also that they will recognise that without

more full and truthful reports of incidents of all types this investigation cannot achieve much. All reports are treated as confidential, all the information in this report being available from open sources with a little trouble. The confidential reports assist in better understanding the underlying factors that influence the outcome of incidents. It is noted that the holding of an inquest often clarifies matters written in depositions. The practice of not holding an Inquest when the fatality seems "a natural death" is correct but regretted because many matters effecting the understanding of why the outcome was fatal remain for ever unresolved. The function of the Coroner as an important link in the prophylaxis of accidental death is worthy of further emphasis. In considering these cases further one can divide them into breath-hold, scuba, hookah and deep diving. The ignorant solo diver will always be a problem and well represented in any accident survey. Sudden illness cannot be predicted but the availability of assistance may critically effect its outcome. Those who organise breath-hold spearfishing competitions should be aware that the competitors are at greater risk of hyperventilation blackout than are the ordinary sport spearfishers. It should be apparent by now that a one-for-one check on competitors is the only effective safety mode, a surface cover requirement that should be obligatory however difficult this may be to apply. Competition deaths are NOT to be regarded as "unavoidable accidents".

The Club dive (Case SC 3/75) brings out two points. First, it is not sufficient to go through the motions of safe diving, one must actually dive safely. The buddy procedure was only given lip service, as is probably a very common matter in diving everywhere. The lack of knowledge of one's air reserve status is a negative safety factor, at least two of the divers on this dive running short of air. The second point is of wider significance, concerning the very philosophy of Emergency Procedure. This diver had been involved in recent exposure to testing of divers in rescue and buddy breathing, yet he died. In the emergency situation he reacted in the wrong manner. An "overlearning" is required evidently so that one cannot help but react by a stop-think-ascend decision over-riding all other thoughts. Here the thought seized-up at the getting of air stage, forgetting the imperative need to surface. This is similar to a deep dive fatality in a previous report. The failure to drop the weight belt and trophy bag and inflate the buoyancy vest were aspects of this inappropriate response. Undoubtedly ANYONE could do the same under similar conditions. So please PLAN NOW for your next accident.

That commercial and amateur users of hookah are blasé should be no surprise. Until disaster strikes there is no skill required to use the apparatus. The resultant emergency ascent can be relied upon to cause the occasional fatality from pulmonary barotrauma. Those who sell such hookah apparatus should advise their clients to learn something about diving. It is remarkable, and a compliment to the equipment, that so few fatalities do occur.

Other points have been noted in the case reports. It is hoped that the statements of fact and opinion are both accurate and helpful. Further details on these and other cases are of interest and comments are welcome.

ACKNOWLEDGEMENTS

This report would not be possible without the reports supplied by many people. Of greatest importance has been the continued assistance of the Attorney General's and Justice Departents in all States. Their understanding and aid continues to be invaluable.

PROJECT Stickybeak

Further reports are always welcome and will always remain confidential as to source and victim. Cases are welcome whether serious or minor. Of the greatest interest are reports of instances where an Emergency Situation either occurred or seemed likely to occur. Comments and additional advice concerning cases in this or previous Provisional Reports are welcome.

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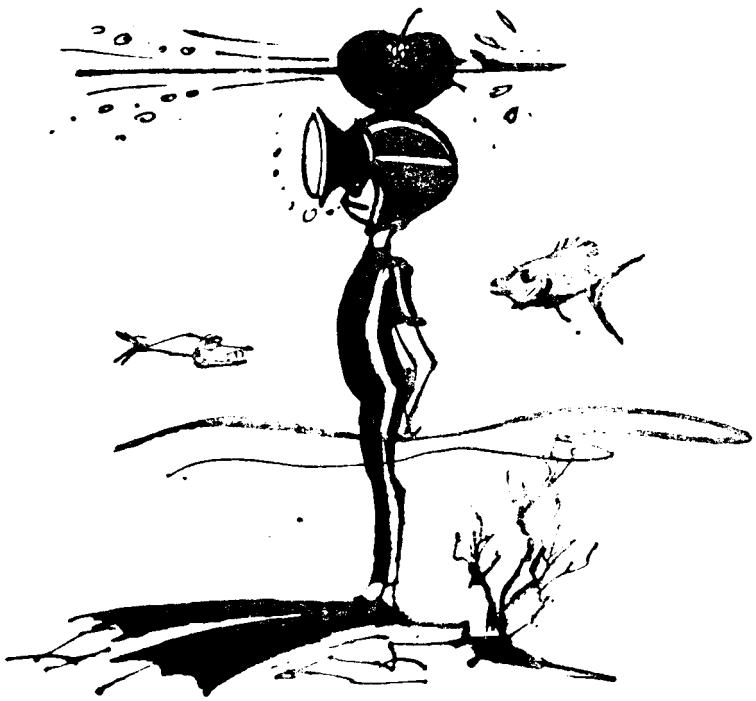

Rule 1 – Avoid dangerous situations!