NEW ZEALAND DIVING-RELATED DEATHS, 1983

Douglas Walker

Four breath-hold and six scuba diving fatalities were identified from the reports of the New Zealand Water Safety Committee. Of the breathhold deaths, two appear to have the characteristics of post-hyperventilation anoxic blackouts leading to drowning, one was an epileptic and the remaining victim was inexperienced, without fins and wearing a borrowed weight belt which was without a quick-release buckle. His buddy was too fatigued to offer assistance to him. Of the scuba fatalities, the critical factors were water power, alcohol, inexperience, and possible cardiac inhibition following aspiration of water while at the surface. Better buddy diving discipline would have reduced the number of deaths.

CASE NOTES

Case BH 83/1

The victim and his buddy were diving for mussels on an offshore reef. Initially the water was neck deep but it became deeper with the incoming tide. The victim was stated to be a good swimmer but this was only the 3rd or 4th time he had "dived". The borrowed weight belt he wore did not have a quick-release. He apparently got into some difficulty and his buddy felt too tired to attempt to offer any assistance. As he could not release his weights, did not wear fins or a buoyancy vest, and was inexperienced in diving, he drowned.
INEXPERIENCE. NO FINS. UNABLE TO DROP WEIGHT BELT. OUT OF HIS DEPTH WATER. BUDDY NON-ASSISTIVE

Case BH 83/2

This was the second time the victim, an epileptic, had gone diving. He was on medication but apparently still suffered fits, usually with a prodromal onset of twitches. He swam to a buoy with his friend, who momentarily lost sight of him while ducking under a rope. Some bubbles were seen ascending but the water was too deep for the buddy to reach the bottom to attempt a search.
INCOMPLETELY CONTROLLED EPILEPSY. SEPARATION.

Case BH 83/3

A group of twelve experienced divers were on a boat-based dive, three pairs being left at a rocky islet. The victim and his buddy scuba dived then returned to sit on the rocks, removing all their equipment including their compensators. Another diver borrowed the victim's mask to enable retrieval of a lost mask. Unfortunately, after the mask was returned a sudden wave struck their position and the mask was washed away, though the rest of the equipment was retained. The victim borrowed his buddy's mask and swam out from the islet to find his property. He called out that he could see it below in about 30 ft deep water, then dived. He failed to resurface and the buddy, maskless, was unable to find his body. It is very probable that this was a post-hyperventilation-blackout (anoxic) death. The weight belt did not have a quick release, but this would be unlikely to effect the outcome of such an occurrence. It is not known whether the scuba tank still contained air.
ALONE. POST HYPERVENTILATION BLACKOUT. LOSS OF MASK LED TO ERROR (SCUBA WOULD HAVE BEEN SAFER). BUDDY UNABLE TO SEARCH.

Case BH 83/4

Separation during spearfishing is common, probably inevitable. This pair was diving in 12 ft deep water and after a separation of only 3-4 minutes the buddy was alarmed to see his friend on the sea bed below him, all equipment in place, lying still. It is likely that this was a post-hyperventilation death despite the medical history of a right middle lobe removal (for bronchiectasis) and moderate-to-severe asthma. He had attended a diving school and was an experienced diver. It is stated that he was a fairly strong willed person who could not be discouraged from diving.
SEPARATION. POST HYPERVENTILATION TYPE DEATH. ADVERSE HEALTH HISTORY.

Case SC 83/1

After a reunion party, which included beer drinking, it was decided to proceed to the nearby river to catch some eels to make a meal. The victim donned his scuba equipment while the others just swam about at the surface. He descended into a hole in the river bed about 15 ft deep and for a time his bubbles were seen. After about an hour his friends became anxious and started a search. Although he had attempted a diving course, and was proud of his certificates, in fact he failed to complete the course and had been told he was not up to standard and needed more instruction. He had, however, continued to scuba dive. There is no record of remaining air being checked, though the tank was fitted with a contents gauge.
ALONE. SHALLOW RIVER. PART TRAINED. PROBABLY OVER CONFIDENT OF ABILITY.

Case SC 83/2

A party of nine divers, all with some experience, were on a chartered boat dive to an offshore island. The boat was anchored and the divers entered the water as buddy groups, the victim and his buddy being the last to enter. It was arranged that the buddy was to catch the crayfish and the victim to hold the bag. The boat's skipper saw the buddy suddenly surface and signal the need for help. He described being tossed about by a sudden surge which tore off his fins and had seen the victim rushed past him by the water flow. The body was recovered later with all the equipment intact. There is no record of anyone anticipating this problem or of it effecting any other members of the group.
WATER POWER NEAR ROCKS.

Case SC 83/3

During a family outing to the coast the victim decided to go in search of scallops. He was rowed out in a dinghy by a relative, whose other duty was to follow his progress by the bubbles. The first place was unsatisfactory so he towed a little further before diving again. There was a chop so the bubbles were impossible to identify. After waiting about one hour the man in the boat became anxious and returned to the shore, though it was a further one and a half hours before sufficient alarm was felt to notify the police. When the body was recovered, two days later, all equipment was intact and one hand was clutching the scallop bag, the other his regulator. He had not inflated his compensator, apparently.

NEW ZEALAND DIVING FATALITIES 1983

CASE	AGE	SKILL VICTIM	SKILL BUDDY	DIVE GROUP	DIVE BASE	WATER DEPTH DIVE	WATER DEPTH INCIDENT	WT ?	BELT WT	CONT. GAUGE	BUOY VEST	EQUIP TEST	REMAIN AIR	EQUIP. OWNER	WET SUIT	COMMENTS
BH 83/1	21	T Nil E Inex	N/S N/S	2	beach	> 6ft	surface	on	N/S	N/A	no	N/A	N/A	borrowed	yes	Strong swimmer. 3rd use snorkel. Diving for reef mussels. Incoming tide. No fins. No belt release. Tired buddy.
BH 83/2	16	T no	yes	2	beach	45ft	surface	on	N/S	N/A	no	N/A	N/A	borrowed	yes	Epileptic. Short separation. 2nd dive. Too deep for buddy to dive.
BH 83/3 (SC ??)	29	T N/S E yes	yes yes	2 sepn	rocks	70ft ??	N/S	on	N/S	N/A	off	N/A	N/A	borrowed	yes	Separation. Took off vest and tank. No quick release for weight belt. Hyperventilation?
BH 83/4	25	T N/S E Expd	N/S N/S	2 sepn	beach	12ft	N/S	on	N/S	N/A	no	N/A	N/A	own	yes	Separation. Hyperventilation? Adverse medical history
SC 83/1	21	T part E some	N/A	alone	river bank	15ft	N/S	on	N/S	N/A	no	N/A	N/A	own	yes	Alone. Alcohol. Incompletely trained.
SC 83/2	32	T yes expd	yes expd	2	boat	35ft	35ft	on	331b	yes	yes	yes	near full	own	yes	Crayfishing. Water power.
SC 83/3	34	T no E Inex	N/A	alone	boat	N/S	N/S	on	N/S	N/S	yes	yes	N/S	borrowed	N/S	Diving for scallops. Alone. Inexperienced Untrained.
SC 83/4	32	T N/S E some	N/S expd	3 sepn	beach	15ft	15ft	N/S	N/S	N/S	no	yes	nil	N/S	yes	Out of practice. 3rd in line. Separation. Poor visibility. Aspiration of vomit.
SC 83/5	46	T yes E inex	N/S N/S	3 sepn	boat	85ft	N/S	on	N/S	yes	infl. self	yes	nil	own	yes	Diving for scallops. Separation. Unconscious after surfaced. Weight belt twisted undroppable. Inexperienced. Air embolism.
SC 83/6	30	T pupil E inex	pupil inex	2	boat	N/S	surface	on	201b	yes	infl. buddy	yes	full	div. instr.	yes	Surface snorkel, full equipment and heavy belt. Inexperienced. Valiant buddy.

KEY T = Scuba course instruction
E = Experience of dive mode
N/S = Not Stated
N/A = Not Applicable

UNTRAINED, LACKING IN EXPERIENCE, ALONE, USING BORROWED EQUIPMENT.

Case SC 83/4

Intended as a friendly gesture, a refresher dive after a three year break from diving, it ended tragically. The diving history of the victim is unknown, as is the source of the equipment. Because it was only to be a "reminder" rather than a "serious" dive, it was undertaken in water no deeper than 25 ft, and at the critical time the three divers were proceeding in line ahead in 15 ft deep water, the victim bringing up the rear. His absence was noticed and an immediate search instituted, but poor visibility resulted in a short delay before he was found. Resuscitation efforts were unavailing. The tank was empty when tested. He did not have a "compensator" and had not dropped his weight belt. The autopsy gave drowning as cause of death, the aspiration of vomit noted being ascribed to the attempts made to resuscitate him.
UNKNOWN TRAINING, UNKNOWN EXPERIENCE. OUT OF PRACTICE. POOR VISIBILITY. INCORRECT BUDDY PROCEDURE. OUT OF AIR. SHALLOW WATER.

Case SC 83/5

This was a launch trip to a scallop bed organised for members of two diving clubs. The skipper assumed that responsibility for monitoring of the diving rested in their hands. A non-diver on board was co-opted as keeper of the log of diver water entry/exit times. Some of those present on the trip decided the locality was too deep for them (80-90ft) and did not dive, but the victim (newly certificated) and two others entered the water. It is apparent that there was no attempt to follow buddy-diving procedures. He was seen to surface, wave for attention, then float unconscious. His CO_2 type vest was seen to be inflated and the tank contents gauge showed "empty". He was rapidly brought on board but failed to respond to resuscitative measures. Autopsy showed that he had suffered an air embolism death. In retrospect those present agreed that he would not have been allowed to dive had his inexperience been realised.
NEWLY TRAINED. GROSSLY INEXPERIENCED. OUT OF AIR DESPITE HAVING GAUGE. ABSENCE OF DIVE DISCIPLINE & DIVING ORGANISATION OF OUTING. WEIGHT BELT TWISTED ROUND.

Case SC 83/6

The lectures and pool work of the course had been completed and the seven trainees were to make their first open water swim courtesy of the dive club whose boat trip they were permitted to join. Their test was a surface swim wearing full scuba equipment, including 20 lb weight belt, using a snorkel. After swimming half way to the marker rock, the victim held up the oral inflation tube of his compensator as if he was in trouble. His buddy inflated the vest orally and called for help. The instructor saw what was happening and quickly swam over to give assistance, starting EAR while towing the victim, by now unconscious. He was apparently still alive when unloaded from the boat into a waiting ambulance but died shortly afterwards. It was surmised that death resulted from aspiration of a little water, this causing an acute cardiac arrhythmia.

The resuscitation had caused fractured ribs, a reminder of the NECESSITY for correct resuscitation methods.
SURFACE SWIM. UNDER INSTRUCTION. FELLOW PUPIL, EXCELLENT BUDDY INSTRUCTOR AID. PRESUMED WATER ASPIRATION REACTION. RIB FRACTURES FROM RESUSCITATION.

DISCUSSION

Inexperience, undroppable weight belts, separation from buddies and the borrowing of equipment are adverse factors previously generally recognised as potentially lethal. Hyperventilation by breath-hold divers is another well documented danger. Cases BH 83/1 and SC 83/4 illustrate the poor basis for any belief that "it's only shallow" is a guarantee of safety. It is a commonplace to reiterate the conclusion that most fatalities are the end result of a number of safety violations, and therefore avoidable. Training, experience, respect for the water conditions, buddy diving discipline, having and taking notice of a contents gauge, and an effective buoyancy aid remain basic requirements for safe diving. Those who organise dive boat outings should accept the responsibility to supervise the safety of those present, or one day a court may remind them of their liability. The sea has more power than any diver, however physically fit and experienced he may be, and must always be included in consideration before entering the water.

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INCIDENT REPORTING

Divers greatly benefit from the ongoing assessment, favourable and otherwise, of the experiences of others. Such information, collected and used on a basis of STRICT CONFIDENTIALITY regarding the identity of those involved, allows the early recognition of both helpful and dangerous diving practices. Reports, in particular concerning the successful management of diving-related misadventures and problems, are urgently required. New Zealand readers please support the Incident Reporting Scheme of the NZUA or write direct to:

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YOU CAN'T PATENT THE WHEEL .... IF IT'S IN A CARTOON!

The NEW SCIENTIST reports that a large German chemical company tried to patent a way to raise sunken ships by pumping plastic balls into them. This would have been simpler than having to make them airtight and filling them with air. However the West German patents office screens all applications for new patents and turned down this one on the grounds that the idea had been used in a Wait Disney Donald Duck cartoon, tennis balls being used in this instance.

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