

ANATOMY OF A NEAR-ACCIDENT

From the STICKYBEAK Non-Fatal Incidents File.

The writer of this Incident report teaches Marine Science and on this particular day had taken his students to a reef conveniently reached by a jetty from the beach. While giving them a pre-dive briefing at the end of this jetty he saw a group of five Scuba divers walk past. Only one of them wore a wet suit, two of them had no snorkels and none of them had a buoyancy vest. Their demeanour caused him to feel anxiety concerning their awareness of the need for adequate diving skills for diving here, so he went across to speak to them. The chap with the wet suit, but no snorkel or buoyancy vest, was local and the other four were visitors from New Zealand who claimed that they had all received Scuba instruction.

From the way they put on their gear, the veracity of this statement was doubted. The dive leader, the local man, jumped off the seaward side of the reef, with mask in hand (not on his face!) and drifted slowly out to sea while shouting instructions to the other four. They jumped in a few minutes later, and appeared to be fairly anxious. In fact, two seemed to be in mild panic and to be taking in water. The dive leader was now 30 metres out to sea and still drifting, still with mask (presumably) in hand.

"I shouted to him that he should come in closer to his group because they seemed to be in difficulties, and was told, extremely impolitely, to take myself away and keep quiet," the reporter noted. Meanwhile one of the three males now appeared to be in the initial stages of drowning on the surface. When asked if he was OK he made it quite clear that he was not, and that he needed help to get him out of the water as fast as possible, so the witness jumped in, retrieved him, and brought him onto the reef. It was not necessary to ditch any of his gear or weights because, despite the choppy conditions, it was possible to support him quite well with the aid of the rescuer's Fenzy.

No sooner had this diver been rescued than it appeared the sole girl of the four visitors was panicking, and possibly drowning, ten metres away. She was taking in too much water to answer questions, so she also was rescued. The remaining three of the group had meanwhile swum together and decided to submerge: their bubbles seemed to indicate that they were managing and in no difficulties. By this time the two who had just been rescued were observed to have re-entered the water, this time on the inside of the reef, and to be swimming off in different directions.

While his marine students were receiving their interrupted instruction on the inner side of the reef, he saw the girl diver frog-kicking and *breast-stroking*, in Scuba gear, nearby.

This convinced him that the visitors surely couldn't have used Scuba before, so he told his students (who were all PADI open water Scuba divers) to continue their work while he once more set out to find the girl and her "buddy" (who was 40 metres away from her). They accepted his advice to go up on to the reef and give away any idea of further Scuba diving before they drowned themselves.

Meantime the three others had surfaced on the outside of the reef, the two visitors seeming to be in some minor distress. They too had decided that they had had enough. Speaking later to the dive leader, who was now quite subdued, it was revealed that he had taken them to a local dive shop (which has since then changed ownership and management) and there they had hired Scuba without having to produce any evidence of diver training. He still insisted that they had all been trained, but this seems difficult to believe on the evidence of the day's activities.

This popular diving area has had eight diving fatalities over the years and nearly added to the tally on this occasion. It is interesting to speculate whether ordinary swimmers, who would lack the benefit of wet suit buoyancy and Scuba air supply, would have survived the circumstances with as little morbidity. The fortuitous presence of skilled assistance stood between several of this group and death.

DISCUSSION PAPERTHE HOW and WHY OF REPORTING DIVING OCCURRENCES

Douglas Walker

Newcomers to diving may well assume that the reporting of diving incidents of any kind is an unnecessary activity. They may have seen those Bibles of the diving world, the Diving Manuals of the major naval countries and are certainly aware of the volume of instructional books which deal with the subject of diving. They may admit that the exotic world of Saturation Diving, mixed, Gases and HPNS, so well covered by magazines and TV reports, has some troubles, but that is not their scene at all. Experienced divers probably retain an initiate's trust in the truth of what they were taught many years before, though they naturally cut corners on the Rules of Safe Diving they subscribe to and support in public. They may fear that making an incident report will reveal their corner-cutting and sloppy methods, bringing forth wrath and retribution. Their other thought may be that to complain of any excessive fatigue after a dive, the cold, the mistakes others are making on dives where nitrogen narcosis "shouldn't" occur, or pains after "no decompression" dive schedules, will lead to comments on their lack of fitness, skill and toughness. Such views, though natural, are mistaken.

Diving is above all else an activity where morbidity has forced its practitioners, very reluctantly in most cases, to learn more about the rules for safe existence in the new

environment. Nobody foretold the occurrence of Nitrogen narcosis, Oxygen toxicity, Pulmonary barotrauma, Salt water aspiration syndrome or any of the other conditions now included in Diving Medicine and believed by many to have always been known and understood. Truth to tell, we do not really understand where the pain of the bends *originates*, let alone whether the "stops" should be depth or near-surface orientated.

In the early days of diving the diver was treated, to a greater or lesser degree, as a disposable instrument of little worth. The sufferings of lesser beings are easy to sustain, amelioration an unnecessary tenderness. With the increasing cost and technical complexity of diving equipment and the introduction of the concept of employer liability, this attitude has been markedly changed. Though the concept of "try it on Muggins" will never die, at least nowadays Muggins is likely to be a well paid volunteer of above the average health and skill. Should he suffer no significant morbidity the new Procedure will be let loose on everyone else, even though they not be the equal in health, skill or adequacy of topside supervision. There were plenty of "cowboys" on the North Sea rigs using advanced technology, it is now known. The entry of Pleasure divers has unexpectedly assisted the input of diving information, for whereas "real divers" will keep silent about the occurrence of episodes of unconsciousness, the amateurs are likely to seek to how why they get dizzy and deaf and have painful ears, etc., and if you have paid good money for air you are more likely to complain if it tastes "dirty" and gives you a headache. There are many examples of "real" divers using equipment or schedules they distrusted, lest they jeopardise their future prospects. Telling the boss that the equipment is crook is not a riskless procedure in either industry or the armed forces.

This tolerance of divers to minor morbidity and unsatisfactory conditions may demonstrate an admirable "Can Do" attitude but is a considerable brake on Progress towards a better awareness of the need to improve out methods, to rethink our assumptions. Without the stimulus of critical feedback there is a tendency for a Mandarin Complex to develop in the group of experts who calculate the Tables, to take but one example. They become so used to dealing with "half-time tissues" that one gets the impression that they come to believe such things can be cut out and exhibited just like the lungs or the heart. In reality they are only useful concepts which can hide the extent of our ignorance by sounding authoritative and should always be so understood. More accurate reporting in recent years has led to the recognition of the complex nature of decompression sickness, which some may feel can "forgive the wicked and punish the godly". There has previously been a comforting certainty that the human body obeyed the Tables and that ipso facto the bent diver had broken the rules. Nobody told the experts of the minor symptoms or that cautious divers added private safety factors, so how were they to know the limits of their theories? It has taken a long time for it to be accepted that

the physiology of a woman was quite likely to differ from that of a young naval rating, though on a separate plane both of these groups were fully aware of the fact! As noted, without an input of reports there can be no effective check on the validity of our beliefs.

At the present time our concepts of diver fitness and of safe diving practice may require updating, a task made difficult by an almost complete absence of written evidence. On the basis of a couple of cases of pulmonary barotrauma in the Submarine Escape Training Tank during "free ascent" practice, everyone has to have a pre-ascent chest x-ray, but the incidence of detectable (and detected) bullae is not published. Although asthma is accepted as an absolute bar to diving, the only cases so far known to the Australian Incident Reporting Scheme have become dyspnoeic without having the confidently predicted pulmonary barotrauma. In diabetes, as in asthma, there is no information concerning the unknown number of divers who may be diving without disclosing their condition and without morbidity. Unknown because they are aware of the "certainly not" they would receive if they made their condition known to a diving doctor. It was diver determination² not medical rehabilitatory advice which broke the taboo on any diving activities by paraplegics. Our certainties may sometimes bear being tempered by the granting of special waivers to selected individuals. Only confidential reporting can hope to establish whether there are many "unfit on medical grounds" divers operating at present.

There are two major philosophical attitudes to reporting schemes. One holds a belief in compulsory reporting. This never works efficiently because only incidents which cannot be hidden are reported and then with the minimum of self-implicating details. The other approach depends on the assumption that if you can persuade the persons concerned of the value to themselves and others of the reports and reassure them that neither publicity nor retribution will result, they will co-operate. There is a necessary corollary to the institution of such schemes, that the results be readily and speedily made available to those interested and the implications be discussed. It must be made absolutely clear that at all times the identity of those involved must not be discernible except to those already well informed about the incident, a proviso already long accepted in relation to medical articles.

The aviation world has long recognised the value and indeed necessity of incident Reports in order to improve safety standards. The United Airline's "Non Punitive Reporting", NASA's "Voluntary Confidential Reporting System" and the British "Confidential Direct Occurrence Reporting" (CONDORE) schemes are matched here in Australia by the Department of Transport's scheme, which treats accidents and incidents as being of equal significance because it is recognised that very few accidents result from a single critical factor. Almost invariably, accidents evolve from a combination of adverse situations any one of which in isolation would have amounted

to no more than a simple incident. It follows that the elimination of any one of the links in the chain would have altered the outcome and therefore the identification of such critical items has great importance. Though the actual problems are different, the same principles apply concerning diving occurrence.

The fundamental objective is to promote safety, not to apportion blame or liability. The Australian aviation scheme contains a guarantee³ that there will be no punitive measures upon any pilot who has asked for help or made a report on an incident unless it is apparent beyond doubt that persons or property have been exposed to danger because of a dereliction of duty which amounts to culpable negligence, or a deliberate or contemptuous disregard for the law by the pilot. This reservation is obviously necessary in order to prevent misuse of the immunity offer to escape the consequences of antisocial behaviour by pre-empting the laying of charges. Even the "Benefit of Clergy" in times past had to be circumscribed to protect the community. But misunderstanding concerning the application of this reservation may become an excuse for withholding of vital reports. Truthful disclosures are more likely if the person making the report is certain of anonymity when some "sensitive" matter is discussed. Sources may need such protection in regard to their employers, employees, fellow workers, a union, a government authority or lawyers. The last may prove the most difficult to achieve.

To report unsatisfactory equipment or routines may bring disfavour from others involved and no bureaucracy has ever said "welcome" to critical advice from low in the pecking order. A totally independent scheme is therefore a necessity, its success depending on the acceptance of the person receiving and controlling the reports as having integrity, experience of the matters involved, and a keen interest in the project. Dr Sem-Jacobsen⁴ has been involved for many years in the USA in the field of aviation safety, and has recently become involved in a similar capacity with divers. He has reported that Mercury astronauts have supplied him with information they were unwilling to turn over to NASA directly, and pilots and other groups have similarly provided information under confidential conditions. This has been fed back to NASA and the aviation industry in a non-attributable form. Much of it would otherwise never be divulged, except as a result of difficult questioning at an investigation into some serious accident, which might get the facts but certainly not the truth "in the round". In the legal arena, in the game of "find a scapegoat", the whole truth is too expensive a luxury to be willingly used. There are two major problems which require overcoming before the Commercial Diving Community give unhesitating support to complete-disclosure reports to persons or organisations outside their complete control. The first is the unresolved risk of a subpoena concerning such records. Although some smart lawyer might think to gain advantage from such a ploy,

it would be a pyrrhic victory as henceforth there would be no "sensitive" reports written and all the old ones would be destroyed. Nobody in their right mind would put the whole truth in writing if it might one day be used, possibly in a selective and biased manner, against him in court. No reporting scheme would survive if the status of Privileged Communication were not to be granted to its files of information. As lawyers consider themselves responsible enough to have this protection vis a vis their clients they should be able to see the force of this requirement. The second problem is the fear lest hard won information of possible value in the battle for contracts will leak back to rivals more readily than at present. Such problems can be solved with goodwill and commonsense for few if any serious misadventures or successes occur where total secrecy is vital. An exception would be should some illegality come home to roost, naturally. The efforts of the Association of Diving Contractors in the North Sea Oil Rig diving industry to set up an Incidents Reporting Scheme is a welcome step in the required direction.

As the intent is to improve both present and future safety, those receiving and examining the input must keep in mind the possibility that not only may the evidence enable a refinement of understanding of diving problems but it may disclose unsuspected problem areas or the unsatisfactory nature of present beliefs. As Sherlock Holmes impressed on faithful Dr Watson, we must remember "the curious incident of the dog in the night-time".

Suggested items for discussion:-

- a. Are incident reports of value and what should be reported.
- b. Should professional diving problems/ occurrences be collected by a scheme controlled by Diving Contractors and Sport/Scientific diving reports be recorded by the combined Diving Organisations, or should some independent body be set up.
- c. Should a legally recognised status be declared for such a repository of information.
- d. How should findings and provisional deductions be reported.

References

1. Diving Incident: Severe Acute Asthma. SPUMS Journal. Jan-March 1981.
2. Flemming NC. SPUMS Journal. Jan-March 1977: 35.
3. Halton CC. Aviation Safety Digest Australia. No. 100, 1977.
4. Sem-Jacobsen CW. Address to Norwegian Society of Chartered Engineers. March 17, 1980.

For general reading see Incident and Fatality Reports this and past issues of the SPUMS Journal and other publications.