

The world as it is

Diving's 'black box' – the coronial system. A plea to rethink research into diving safety factors

Douglas Walker

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The aviation industry has two important and effective methods of updating understanding of factors that reduce safety and may become critical to survival. It has a process for soliciting information on events that had a potential to result in an adverse outcome, and an active investigation of incidents where there has been a serious or fatal incident. The former scheme depends on a guarantee that there will never be action or charges as a consequence of such self-incrimination except where the problem revealed was caused by gross negligence. The similarities in the critical factors affecting safety in the aviation and diving environments have long been recognised. For this reason the development by the former discipline of a proactive attitude to improving safety has valuable lessons for the diving community. The principle of maintaining an active search for information relating to operational and systemic events with adverse potential has undoubtedly improved the safety of aviation.

It is common knowledge that the diving industry is efficient at keeping in-house most of the details of investigations into serious commercial diving incidents, using as the reason its valid fear of opening itself up to legal actions utilising the information in such reports. For similar reasons, instructor organisations refuse access to their data or to make available reports from their members of occasions where later legal actions could potentially result if the details were known, however remote the possibility. This attitude has expanded to a resistance to seeking information on incidents their members may have observed but which did not involve them. It is noteworthy that the legal profession continues to successfully claim the right to withhold documents from access by others but steadfastly refuses to permit a similar privilege to others.

There has arisen a further impediment to obtaining access to information: a rigid belief in the total confidentiality of personal data except through a restricted gateway guarded by an ethics committee. The decisions of such committees show a wide range of opinions in their interpretation of the concept of 'the public good' expected to result from permitting the requested access. In the real world of commerce and government business it is naive to believe that the conditions of access they impose are honoured.

Of primary interest to investigators of aviation fatalities are the 'black boxes' carried by all commercial planes. This approach to the problem has brought attention to systemic

problems before they climax in the inevitable concordance of circumstances called 'an accident'. It allows analysis of the fatal final cascade of events. Mechanical as well as human factors are analysed in an unbiased manner. These data are fleshed out by seeking information from all other possible sources, including examination of the wreckage. The air-accident investigators' reports detail their findings and their conclusions concerning any changes needed to reduce the likelihood of future similar incidents. Any organisation or person ignoring such findings would find it difficult to justify failure to implement the advised action in a Court of Law if subsequently a similar accident occurred. Human nature is imperfect and experience shows that critical problems in aviation disasters were often a consequence of known but ignored non-fatal incidents, of tolerated unsafe practices.

In the diving context, the police investigation of diving-related deaths on behalf of the local coroner mirrors in many ways the aviation approach. Unfortunately the findings of the coroner are frequently unreported, and even more commonly have no apparent impact on the diving community. In the diving situation the findings might require amendment of current medical or instruction protocols. This does not prejudice the correctness of the current procedures but may draw attention to a failure to accommodate information and understanding of critical factors in diver safety that have accumulated since most of these protocols were formulated. Wherever possible all the evidence collected by the police investigation should be available before accepting even a coroner's opinion, as the task of a coroner is not specifically to determine the factors of primary interest to the diving community. There should be an acceptance that knowledge, and hopefully also understanding, is not static. One of the inputs into such re-evaluations must be data from reports of non-fatal events.

The reporting of non-critical events, such as equipment problems, is an important element in Australian diving safety management, its limitation being the natural reluctance of divers and diving organisations to make public any possible shortcomings in themselves, other divers, or their training programmes.

In the diving community, an understanding of the value of such approaches appears to be bedevilled by fears of lawsuits following the revelation of imperfections in present

training protocols. These may be due to an imperfect understanding of the critical factors that are now recognisable as the underlying critical elements in many fatal incidents. It is increasingly accepted that to preferentially blame aviation accidents on 'pilot errors' leaves unanswered the question of why these occurred. Similarly in diving incidents there should be a focus on why inexperienced divers mistakenly believe they are as experienced as the words on their certificates imply, and so place themselves in danger. Also, while medical factors can be critical in a minority of recreational and commercial scuba diving fatalities, it is the fact of divers being faced with problems beyond their capacity to manage that may be more critical than any medical condition they may have. There is an obvious need to review available data to improve understanding of the importance of such factors in diving-related problems. We need to recognise that most 'incidents' are multi-factorial in causation, and their avoidance requires a rethink beyond the apparently rigid instruction protocols and the belief of medical professionals that they are always able to efficiently diagnose medical fitness to dive.

In Australia we are particularly fortunate that the coronial system inherited from the UK ensures that the police, on behalf of the coroner, investigate all 'unnatural' deaths. Fortunately the police investigation follows routine protocols that ensure that in most cases all details relevant to understanding the factors contributing to a diver's death are recorded. Even more fortunately there is an appreciation by the state coroners of the importance of utilising the information obtained to improve diver safety. This value is present even when the local coroner has dispensed with holding an inquest as the police investigation results are often available. There appears to be no similar facility afforded researchers in other countries. One factor averse to the investigation of diving-related incidents is the uncritical application of confidentiality laws in some other countries, as these appear to outweigh consideration to the public good of ethical reviews of such data.

While there is an aphorism "those who do not learn from history are condemned to repeat it" there appear to be few who apply this insight in this context. It is a condition that information from coronial sources be managed in the same strictly confidential manner required for medical journal reports and public discussion of cases, and that all identifying details are removed. Fortunately this apparent limitation in no way reduces the value of the information from coronial sources. Only those who have good alternative sources of information will be able to identify specific cases, and these only because they have prior knowledge. Indeed this author has on occasion found it difficult to identify old cases from his own published reports.

It must be remembered that critical analysis of the information in a plane's 'black box' is only a part of any investigation, there being an equally important search for all and any other pieces of evidence. In researching all factors that may influence diver safety, there should be inclusion

of information from both divers and doctors concerning non-fatal events. Such reports may appear of minor importance but their examination may lead to the identification of problems that in a dive scenario would be serious.

This is a plea to divers, diving associations, and those involved in diving medicine in any manner, to realise the positive benefits from the sharing of information in a confidential, anonymous manner. The demonstration of having an active involvement in seeking to improve diver safety, through analysing incidents and then applying the results, should become a very valuable marketing tool. At the present time diving medical advice and training protocols are often based on presumptions and unproven clinical experience. There is always a problem with uncritically accepting as 'facts' even the most obvious 'truths' and this has been shown repeatedly in the medical profession. There is no shortage of matters requiring evidence: the need for a buddy-breathing ascent test in basic courses, the belief in the reliability and effectiveness of a 'diving medical' and what effect the reported equipment problems have had on diver safety.

It is suggested that SPUMS take a lead in developing an ongoing investigation involving all parties interested in diver safety. This is on the principle that someone has to take the lead in applying the precept that a fence at the top of a cliff is more useful than an ambulance at its base.

*Douglas Walker, MB, ChB, MM,
PO Box 120, Narrabeen,
NSW 2101, Australia
Phone: +64-(0)2-9982-1737
E-mail: <diverhealth@hotmail.com>*

Diving-related fatalities document resource

All the coronial documents relating to diving fatalities in Australian waters up to and including 1998 have now been deposited by Dr Douglas Walker for safe keeping in the National Library of Australia, Canberra.

These documents have been the basis for the series of reports previously printed in this Journal as Project Stickybeak. These documents will be available free of charge to bona fide researchers attending the library in person, subject to the stipulation that the researcher signs an agreement that no identifying details are to be made public.

Accession number for the collection is: MS ACC 03/38.

It is hoped that other researchers will similarly securely deposit documents relating to diving incidents when they have no further immediate need of them. Such documents can contain data of great value for subsequent research.