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*This paper is the thesis submitted for the South Pacific Underwater Medicine Society's Diploma of Diving and Hyperbaric Medicine, which was awarded to Dr Wheen.*

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## THE WORLD AS IT IS

### SAFE LIMITS SYMPOSIUM

This meeting was held in Cairns from 21/10/94 to 23/10/94 by the Diving Workplace Health and Safety Committee of the Queensland Department of Employment, Vocational Education, Training and Industrial Relations, which makes recommendations on workplace health and safety standards for the Queensland Diving Industry.

The symposium aims were to explore the health and safety implications for the Queensland diving industry of the risks associated with multiple dives during multiple days of diving, post-diving altitude exposure and of Resort Diving. From these discussions the participants were to produce conclusions which were to be internationally valid, relevant to Queensland and form a basis for recommendations by the Diving Industry Committee to the Division of Workplace Health and Safety.

It was the first time in Australia that Diving Doctors had met with representatives of the Recreational Diving Industry to discuss the problems of diving accidents, their frequency and the best ways to cope with making diving as safe a recreation as possible. Two full days of presentations were followed by some hours discussion to arrive at the conclusions. There was a remarkable degree of consensus about these in spite of the widely differing viewpoints from which diving safety was being discussed by the more than 100 registrants.

The Safe Limits symposium papers are available as a bound volume available, while stocks last, from  
 Ms Sylvie Munson, Council Secretariat,  
 Division of Workplace Health and Safety,  
 PO Box 69, Brisbane, Queensland 4001, Australia.

The SPUMS Journal has asked permission to reprint the symposium papers to bring this important initiative to the attention of the membership around the world. The papers will appear over the next year or so, depending on space available. The first one, the Official Summary appears in the adjacent column.

### SAFE LIMITS: AN INTERNATIONAL DIVE SYMPOSIUM OVERVIEW AND CONCLUDING SESSION

Des Gorman

#### Introduction

A comprehensive range of subjects were discussed over the 2 days of formal symposium sessions. The most notable feature of this debate was the friendly context and the considerable consensus. This is noteworthy in that previous gatherings of this type have been recipes for "bun-fights".

The attendance at the Symposium was impressive in its breadth, Government Agencies (Queensland, Victoria, South and Western Australia were represented), commercial divers and their union, recreational divers and members of their support industries, "technical" recreational divers and medical practitioners (with delegates from all the Australian States and New Zealand and all of the members of the SPUMS, South Pacific Underwater Medicine Society, Executive).

Similarly, the presentations were of a general high standard and it is reasonable to conclude that the interest of delegates was sustained throughout the program.

Special appreciation must be expressed here for all the officers of the Queensland Government Division of Workplace Health and Safety involved in conduct of the symposium and in the preparation and introduction of the Code of Practice for Diving. The agreement at the concluding session of the symposium on the suitability of this Code to act as a template for the rest of Australasia is testimony to the merits of the Code and its authors.

This review of the concluding session of the symposium will address each of the 5 principal debating points and briefly mention other topics of concern.

### **An Australian Code of Practice for Diving**

This debate was prefaced by brief reports from Mr Terry Cummins, Mr Steve Sinclair and Dr Tony Slark. It was agreed that an Australasian-wide Code of Practice for Diving was highly desirable and that the Queensland Code was a very suitable template. Regardless of legislation, it was also agreed that the Code would be most effective if it were essentially self-regulated.

Mr Cummins reported that Dive Australia is already preparing such a draft Code.

### **Common diving practice**

This debate was prefaced by brief reports from Dr Chris Acott, Ms Nancy Cummins and Mr Colin Hodson. Although the original proposition was related specifically to decompression schedules, the presenters and the symposium delegates considered this too restrictive and extended the discussion to include all diving practice. In contrast to the options of a common standard or the status quo, it was agreed that an industry-wide group (including representatives of the medical profession through SPUMS) should be established and funded by the participants to collate and disseminate information on diving practice, with special attention to established risks.

The consensus was also that the response of individuals and groups to these data should be left to their discretion.

### **Training of medical professionals**

This debate was prefaced by brief reports from Dr Peter Chapman-Smith, Mr Drew Richardson and Dr John Williamson. It was quickly agreed that a medical practitioner needed to be trained in diving medicine to undertake an assessment of an individual's fitness for diving. The agreement here, from the recreational diving groups, to the consequent limitation of diving fitness reviews to such trained practitioners was obtained on the basis that this only be applied to those areas where there were enough trained practitioners to both meet the local need and to give customers a choice. Fortunately, this condition already exists in most area of Australasia.

SPUMS maintains a list of suitably trained medical practitioners and this list is available to any interested party.

### **Regulation of Technical Recreational Diving**

This debate was prefaced by brief reports from Dr David Davies, Mr Colin McKenzie and Mr Phillip Percival.

The symposium quickly supported the argument from the presenters that "technical" recreational diving should be kept separate from the "conventional" aspects of recreational diving and that the introduction and regulation of "technical" recreational divers would be best achieved by a unique Code of Practice.

The current attention of the United Kingdom Health and Safety Executive to this issue was noted and it was agreed that this would provide a very useful template for Australasian Codes. SPUMS also announced that it was going to devote the Society's 1996 Annual Scientific Meeting to a workshop on "technical" recreational diving.

### **Training of Occupational Divers**

This debate was prefaced by brief reports from Mr Garry Ihnen, Ms Judith McDonald and Mr Bruce Thompson. Both these presenters and the symposium in general were certain that the training conducted by the recreational diving training agencies was not appropriate for intending occupational divers, with the single exception of those whose sole diving occupation was to train recreational divers. The scientific divers present reported that they may need to develop specific courses for their needs as they did not "fit well" with either the recreational or occupational training modes.

### **Other issues**

A range of other issues were agreed directly or indirectly. For example, it was universally conceded that the demography and behaviour of the diving community has to be described, in this context, active support of Dr Chris Acott's Diving Incident Monitoring Study and the Divers Alert Network Safe Diver Program were advocated.

Also, it was acknowledged that more feedback from hyperbaric units to dive operators is needed so that these operators can be made aware of the actual outcome of their clients (e.g. those who develop decompression illness after they return to their home state).

### **Summary**

The symposium was a considerable success, both from a logistic and an academic perspective. The social program was similarly enjoyable, more so given the good nature of the entire meeting. The prospects for sound risk-related approach to diving are excellent because of the dialogue established here between the previously often divergent participants.

Again, considerable credit is due to the Queensland Division of Workplace Health and Safety.

*Surgeon Commander Des Gorman BSc, MB ChB, FAFOM, Dip DHM, PhD, who was the Symposium Chairman, is Director of Medical Services of the Royal New Zealand Navy. His address is RNZN Hospital, Naval Base, Auckland, New Zealand.*

## MY BEND

This is the story of one man's decompression illness spoiling a diving holiday. It started on a cold winter's day in southern Australasia when the party boarded a plane for the tropics. We arrived at 2200 and immediately noticed the heat. Standing around the airport we were soon sweating profusely. It was late to bed at the hotel and up early for diving next day.

Our first dive was on an inshore wreck. My buddy had recently recovered from a cold. She had considerable difficulty equalising and by the time we were down the others had carried on with their dive to the expected maximum of about 30 m. As we had spent so long getting down we only went to about 18 m and waited for the others to come up. Our total time for the dive was 41 minutes. Our second dive was two hours later on another wreck. It was a repeat of the first dive, except that my buddy could not get down at all and gave up the dive. Once again the others had carried on so I went on my own to the stern of the wreck and back up to where the others were. The maximum depth for this dive was 34 m with a total time of 39 minutes.

After the dive we were taken to the resort which was to be our home for the next week. After settling in the only thing to do was sit down and have a couple of beers. After tea we also had a couple (or so) of duty free gins to celebrate our arrival.

I woke next morning feeling slightly hung over and after breakfast still felt thirsty so I had a can of lemonade. We had been warned not to drink the water and never thought to take other drinks with us.

That day our dive was on another wreck and I was buddied with a dive instructor. The plan was to go down fairly quickly over the wreck to the stern at about 40 m and make our way back up through the ship. We hoped to have enough air left to dive on a plane after lunch. We made our way down the ship to the stern taking rather longer than I would have preferred. I was already down to about 120 bar, having started with 198 bar, when we rounded the stern and started our ascent from a maximum of 45.1 m. We separated from the others and I was taken through

several internal sections of the ship. We made our way steadily up, keeping our computers out of decompression time. By the time we reached shallow water I did not have much air left and used what was left swimming back towards the beach at about 3 m. Had I had more air I would have stayed on the wreck. But I did not worry as I felt the dive, 24 minutes underwater, was quite safe and did not require a longer safety stop.

I was using a Suunto Eon computer, which I was trying out and had not used before. It is air integrated and gives a very large amount of information. With the right interface the dive log can be downloaded into a PC. I had read the instruction book, but during the dive I was more concerned with the details of my air supply and did not take too much notice of the nitrogen loading information. On studying the log later I found that I had gone into decompression time at some stage without realising it. I do not think it could have been for very long. My buddy's computer, an Aladin Pro with a different algorithm, did not go into decompression time at any stage during the dive. Our total dive time was 24 minutes.

We got ashore through the slight surf and changed. After about 20 minutes I began to notice a strange numb feeling in both forearms. This progressed to the legs and within a few minutes I could no longer stand up. I lay down and the dive organiser produced a cylinder of oxygen from a boat that was just off shore and started me on 100% oxygen about 5 minutes after the onset of my symptoms. By this time my skin was tingling over most of my body and my legs felt very strange. Although I could not use them, I felt that I could move them very easily, in fact they felt as if they were floating. I did not lose feeling and had no problems with vision or loss of consciousness.

It was obvious that I was suffering from decompression illness and the dive organiser was ready to take me to the local hospital as soon as the divers were all ashore. After about 20 minutes on oxygen the symptoms all disappeared. I finished the oxygen cylinder and then stood up and walked about. I felt well so it was decided to move to the next dive site before taking me to hospital. This move progressed to getting the divers back to the resort so it was about 5 hours after the onset of symptoms that I got to hospital. I was still pretty much symptom free, apart from a slightly vague feeling, and after several tests it was decided that I should be admitted for the night to breathe oxygen and be evaluated in the morning.

By morning I still felt alright and after evaluation by a different doctor I was released on the basis that if anything happened I should return. I went out and got a taxi to get some money and possibly try to get back to the resort. After driving around for a while I started to get pins and needles in my fingers and felt weak in the legs, so I returned to the hospital.