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for

AS 4005.1-2000 Training and certification of recreational divers - Minimum entry-level SCUBA diving

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Australian Standard™

Training and certification of recreational divers

Part 1: Minimum entry-level SCUBA diving

Standards Australia

This Australian Standard was prepared by Committee CS/83, Recreational Underwater Diving. It was approved on behalf of the Council of Standards Australia on 17 January 2000 and published on 1 March 2000.

The following interests are represented on Committee CS/83:

Australian Dive Council

Australian Medical Association

Australian Underwater Federation

Australian Underwater Scuba Instructors

The British Sub-Aqua Club

Department of Employment, Training and Industrial Relations, Qld

Department of Sport and Recreation, N.S.W.

Dive Queensland

Divers Alert Network SE Asia-Pacific

Maritime Union of Australia

National Association of Scuba Diving Schools Australasia

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Australian Standard™

Training and certification of recreational divers

Part 1: Minimum entry-level SCUBA diving

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PREFACE

This Standard was prepared by Standards Australia Committee CS/83, Recreational Underwater Diving, to supersede AS 4005.1—1992.

The Standard was originally prepared in response to a request by the Australian Underwater Federation (AUF). The AUF expressed concern about the wide differences between courses being taught in Australia.

The major changes in this edition of the Standard are as follows:

(a) Removal of the reference to the National SCUBA Qualifications Commission.

(b) Reorganization of the in-water skills training to require some of the exercises to be carried out in a pool or confined water.

(c) Replacement of the medical certificate with a medical statement which provides more information to the candidate and the instructor.

On successful completion of training to the requirements of this Standard, the graduate should be able to dive safely and competently under reasonably controlled conditions. Training by itself, however, cannot convert a graduate into a fully competent diver. With all diving, this requires further experience, as it is only by reinforcing the skills and knowledge acquired during training that the graduate will become fully competent. Graduates should be aware of the need for area orientation at dive sites which are new to them and seek information on the local area and conditions before planning a dive.

Additional training for other special types of recreational diving may also be undertaken subsequent to certification as an entry-level diver. Some of these specialties are advanced recreational, cavern, deep, ice and night diving, various levels of instructor certification, underwater naturalist and underwater photography.

The illustrations for the handsignals shown in Appendix E are reproduced with the permission of PADI Asia Pacific Ltd.

This Standard is Part 1 of a series on training and certification of recreational divers. The series is as follows:

Part 1: Minimum entry-level SCUBA diving (this Standard)

Part 2: Recreational SCUBA dive supervisor

Part 3: Assistant SCUBA instructor

Part 4: SCUBA instructor

Part 5: SCUBA instructor trainer

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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Australian Standard

Training and certification of recreational divers

Part 1: Minimum entry-level SCUBA diving

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies the minimum training activities and terminal objectives required for training and accreditation of persons who wish, for recreational purposes, to—

(a) dive safely and competently using self-contained underwater breathing apparatus (SCUBA) in the area in which training was undertaken; and

(b) engage in open water SCUBA diving with a diver of similar qualifications, without supervision.

NOTES:

1 Whenever divers encounter a new diving environment they are encouraged to seek orientation to the new conditions and local diving practices.

2 Persons wishing to engage in other forms of recreational diving or use equipment other than compressed air SCUBA will require training other than that covered in this Standard.

3 Conditional certification is addressed in Clause 1.6(a).

1.2 OBJECTIVE The objective of this Standard is to specify the organizational and syllabus requirements to train recreational divers to operate safely and competently to a depth of dive of 18 m using SCUBA.

1.3 APPLICATION The training specified in this Standard applies to diving in reasonable environmental conditions which allow direct and immediate access to the surface.

1.4 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
2030 The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases
2030.1 Part 1: Cylinders for compressed gases other than acetylene

4005 Training and certification of recreational divers
4005.2 Part 2: Recreational SCUBA dive supervisor
4005.3 Part 3: Assistant SCUBA instructor
4005.4 Part 4: SCUBA instructor

AS/NZS
2299 Occupational diving operations
2299.1 Part 1: Standard operational practice

1.5 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.5.1 Certified assistant—an individual who has undergone formal training to assist a SCUBA instructor in the direction and guidance of trainees during open water training dives as outlined in Clause 3.4.

NOTE: Both AS 4005.2 and AS 4005.3 cover the appropriate competencies.

1.5.2 Confined water—any body of water offering swimming-pool-like conditions with respect to clarity, calmness, current, depth and adequate access to water shallow enough to stand up in.

1.5.3 Direct supervision—the in-water visual observation and evaluation of trainee skill performance by a SCUBA instructor in a position to render assistance and guidance.

1.5.4 Entry-level diver—an individual who has completed all requirements of an entry-level certification course.

1.5.5 Open water—any body of water which is subject to wind, swell or waves and which can be used for diving instruction.

1.5.6 Quick release—describes a device or mechanism which can be immediately released from the secured position by a single operation of one hand.

1.5.7 SCUBA—compressed air, open-circuit, self-contained underwater breathing apparatus.

1.5.8 SCUBA instructor—an individual who has undergone formal training to teach recreational SCUBA diving and authorize and issue recreational SCUBA certification.

NOTE: AS 4005.4 covers training of SCUBA instructors.

1.5.9 Shall—indicates that a statement is mandatory.

1.5.10 Should—indicates a recommendation.

1.5.11 Terminal objectives—what the trainee needs to know or be able to do on completion of the training course.

1.5.12 Training objectives—specific tasks the trainee needs to complete or knowledge the trainee needs to gain to meet the requirements of the terminal objectives.

1.6 SELECTION CRITERIA The trainee shall comply with the following requirements:

(a) Be at least 14 years of age.

Persons who have reached 12 years of age may in some cases be eligible to train for conditional certification which allows the young person to dive with a certified diver with the consent of parents or guardians.

(b) Effectively demonstrate a 10 min period of floating/treading water without the use of mask, fins, snorkel, or flotation equipment.

(c) Be certified as being medically fit for diving by a medical practitioner in accordance with Appendix A, within 12 months prior to commencement of training.

NOTE: An original statement of health or a verified copy should be provided by the trainee.

(d) Before certification, demonstrate the ability to swim 200 m on the surface (any style) without the use of mask, fins, snorkel, or flotation equipment.

SECTION 2 TERMINAL OBJECTIVES AND TRAINING TOPICS

2.1 TRAINING COURSE The training course shall be structured so that, upon completion, the trainee is able to achieve the terminal objectives set out in Tables 2.1 to 2.4. The course shall include all training objectives set out in these Tables. Training shall be given by a SCUBA instructor qualified in accordance with Clause 3.2.

2.2 OPEN WATER TRAINING DIVES FOR TABLE 2.4 The underwater skill evaluation phase of each open water training dive shall be under the direct supervision of an instructor. The balance of each dive may be under the direct supervision of a certified assistant. Each dive shall be commenced with an approved air cylinder filled to within 10% of its maximum filling pressure.

An open water training dive shall consist of a dive of at least 20 min underwater time to depths of between 4 m and 18 m.

2.3 OPEN WATER TRAINING TIMES FOR TABLE 2.4 During the course of meeting the objectives outlined in Table 2.4, the trainee shall accumulate not less than 100 min of underwater SCUBA experience in open water.

NOTE: This time does not include skills training in a pool or confined water.

The training time shall be gained during four or more open water dives. During two of these dives, the trainee shall descend to depths between 10 m and 18 m. At least one of these dives should be to the depth of between 15 m and 18 m and one should be made from a boat.

NOTE: It should be noted that the amount of underwater time, the number of dives and the depths needed for competence may vary. In determining these details, the instructor and the training agency need to take into account that the training is for competence to 18 m and additional underwater time or dives may be required.

TABLE 2.1
PHYSICS OF DIVING

Terminal objectives	Training objectives
The overall standard to be achieved by the end of training (shall be able to—)	Specific topics to be covered and tasks to be completed during training to meet the requirements of the terminal objectives
Demonstrate an understanding of the following concepts and their application to diving:	
2.1.1 Relationship between pressure, volume and air density	Explain the volume changes with changing depths and pressure
2.1.2 Relationship between pressure and temperature	Explain the pressure changes with changes in temperature
2.1.3 Partial pressure of gases	Explain the partial pressure of gases at different depths
2.1.4 Solubility of gases	Explain the solubility effect of gases in liquids and the need for decompression
2.1.5 Buoyancy	Explain buoyancy and the factors that influence buoyancy
2.1.6 Light and sound	Explain the behaviour of light and sound underwater
2.1.7 Heat loss	Explain heat loss and the factors which affect it

TABLE 2.2
GENERAL REQUIREMENTS FOR DIVING

Terminal objectives	Training objectives
The overall standard to be achieved by the end of training (shall be able to—)	Specific topics to be covered and tasks to be completed during training to meet the requirements of the terminal objectives.
Demonstrate an understanding of the following:	
2.2.1 The basic principles and safety rules for SCUBA diving	(a) Explain various safety rules required for diving, dive planning, and the 'buddy' system
	(b) Explain the importance of maintaining proper physical conditioning for diving and the actions to take before resuming diving after a period of inactivity
2.2.2 The safe interpretation and prudent use of decompression tables or devices for planning no-decompression dives	(a) Demonstrate the use of decompression procedures or a dive table for single and repetitive dives using current decompression data
	(b) Explain the use of safety stops on ascent, emergency decompression, flying after diving and general safety rules
2.2.3 The hazards associated with diving in areas where tides, currents, rips, man-made structures, and similar, are likely to be experienced	(a) Define and explain the various types of hazards in the water environment and in particular those likely to be found in and around rocky or reef areas, surf beaches, boats, jetties, piers, lakes, dams and pipelines and the safety precautions necessary for each
	(b) Explain entry and exit from beach, jetty, rocky shore, surf beach and boats
	(c) Explain correct boat diving procedures
	(d) Explain the need for area orientation
	(e) Explain the importance of conservation and local or State regulations and requirements pertaining to the area of training
2.2.4 The basic principles of communication	Demonstrate hand signals as given in Appendix E
2.2.5 The basic principles of air consumption as it affects the duration of dives	Estimate, for dive planning purposes, the duration of a dive, considering the factors which influence air consumption
2.2.6 Emergency procedures	(a) Explain procedures for problem prevention and management including lost buddy, equipment malfunction, entanglement and preferred options in a low air or an out-of-air emergency
	(b) Explain dangers of free ascent
2.2.7 Documentation	Explain the necessity to always use a logbook

TABLE 2.3

THE PHYSIOLOGY OF DIVING AND FIRST AID

Terminal objectives	Training objectives
The overall standard to be achieved by the end of training (shall be able to—)	Specific topics to be covered and tasks to be completed during training to meet the requirements of the terminal objectives
Demonstrate an understanding of the following:	
2.3.1 The basic need for and problems associated with maintaining the normal body temperature of the diver	Recognize the causes, signs, symptoms, prevention and treatment of temperature extremes
2.3.2 The basic techniques of resuscitation and SCUBA rescue	Explain procedures for recovery of a non-breathing SCUBA diver, from depth NOTE: Students should be encouraged to undertake a full CPR/first aid course
2.3.3 The symptoms and treatment for injuries/illness caused by contact with dangerous marine animals	(a) Explain effects of various types of venom on the human physiology
	(b) Explain precautions required in avoiding injury from marine animals and demonstrate a knowledge of the first aid required if injured
2.3.4 The dangers of breathing air at depth	(a) Explain importance of air purity
	(b) Explain problems associated with differing partial pressures of various gases including oxygen, nitrogen, carbon dioxide, carbon monoxide, and other contaminants of breathing air
	(c) Explain the danger of nitrogen narcosis
	(d) Explain the dangers of hyperventilation
	(e) Explain the dangers of a snorkel diver obtaining air from a submerged SCUBA diver
2.3.5 The effects of diving on the human body and the application of first aid treatment in typical diving emergencies	(a) Demonstrate an understanding of the causes, signs, symptoms, prevention, and treatment of the following: decompression illness barotrauma arterial gas embolism near-drowning vomiting under water stress panic fatigue carotid sinus reflex carbon dioxide toxicity carbon monoxide toxicity salt-water aspiration shock seasickness control of bleeding thermal stress
	(b) Explain the hazards of the use of drugs, alcohol, medications and smoking in association with diving
	(c) Explain importance of knowing the location and phone numbers of emergency facilities such as those listed in Appendix D
	(d) Explain transportation procedures for emergency treatment

TABLE 2.4

USE OF SCUBA DIVING EQUIPMENT

Terminal objectives		Training objectives	
The overall standard to be achieved by the end of training (shall be able to—)		Specific topics to be covered and tasks to be completed during training to meet the requirements of the terminal objectives	
Demonstrate competency in the following:			
2.4.1	The basic principles of SCUBA and associated diving equipment, user maintenance, and preparation of equipment for use	(a)	Demonstrate and explain the function and operation of SCUBA and associated diving equipment
		(b)	Demonstrate the preparation of diving equipment for use and the predive testing procedures to check equipment for defects
		(c)	Demonstrate safety procedures for handling equipment
		(d)	Demonstrate postdive procedures, including care and maintenance of equipment
2.4.2	SCUBA skills in a pool or confined water environment	Demonstrate competency in the following:	
		(a)	Entries and exits
		(b)	Proper weighting
		(c)	Mouthpiece clearing—both snorkel and regulator
		(d)	Regulator/snorkel exchange at surface
		(e)	Controlled descents and ascents
		(f)	Mask clearing, including removal and replacement
		(g)	Underwater breathing without a mask for a minimum of 15 s
		(h)	Buddy system techniques
		(i)	Buoyancy compensation device operation
		(j)	Underwater buoyancy control
		(k)	Surface buoyancy control
		(l)	Regulator recovery/retrieval
		(m)	Surface snorkel swim with full diving system
		(n)	Surface operation of the quick-release/ emergency function of the weight system
		(o)	Removal and replacement of the weight/ballast system
		(p)	Removal and replacement of the SCUBA unit
		(q)	Out of air emergency alternatives
		(r)	Fin removal and replacement
		(s)	Monitoring air consumption and air supply

(*continued*)

TABLE 2.4 (*continued*)

Terminal objectives	Training objectives
The overall standard to be achieved by the end of training (shall be able to—)	Specific topics to be covered and tasks to be completed during training to meet the requirements of the terminal objectives
2.4.3 Diving safely and competently in open water while using SCUBA	(a) Demonstrate as many entry and exit styles as possible in the area
	(b) Demonstrate underwater, breathing without a mask for a minimum of 15 s
	(c) Demonstrate ability to prevent exhaustion of air supply while SCUBA diving by—
	(i) monitoring air consumption and air supply; and
	(ii) ascending when a predetermined level of air remains
	(d) Demonstrate ability to navigate underwater
	(e) Demonstrate competence in swimming on the surface while wearing but not using SCUBA. This may be demonstrated by maintaining position in a current for 5 min or by swimming a distance of 100 m.
	(f) Demonstrate buddy system techniques
	(g) Demonstrate use of an alternative air source with another diver while underwater NOTE: The other diver should be another trainee whenever possible
	(h) Demonstrate neutral buoyancy, on the surface, with the buoyancy compensator deflated
	(i) Demonstrate correct use of buoyancy compensator at surface, at depth, and during safety stops, ascent and descent
	(j) Demonstrate correct removal and replacement of weighting system and SCUBA unit at the surface NOTE: Weighting system and SCUBA unit do not have to be removed at the same time
	(k) Demonstrate, underwater, the clearing of water from a regulator
	(l) Demonstrate the procedure for regaining a regulator which has fallen behind the shoulder
2.4.4 Assisting a distressed diver	(a) Tow or assist a diver simulating exhaustion for not less than 25 m, call for help and prepare for landing
	(b) Demonstrate cramp release techniques
	NOTES: 1 Students should be encouraged to undertake a full CPR/first aid course 2 These tasks may be conducted either in open water or in a pool or confined water environment

SECTION 3 TRAINING PLAN, ASSESSMENT, EQUIPMENT AND OPEN WATER DIVING

3.1 DEVELOPING THE TRAINING PLAN

3.1.1 General This Clause (3.1) gives practical help and guidance to diving schools or organizations developing and running SCUBA training programs.

3.1.2 Compliance with other regulations and Standards The training plan should ensure that the training tasks and terminal objectives take account of the need to observe relevant regulations issued by regulatory authorities and the requirements of other relevant Australian Standards, e.g. AS 2030.1.

3.1.3 Training records Training records shall be kept. The training record provides a simple method of recording the current level of competence of the trainee and identifies the additional training required to satisfy the training standard.

The training record shall include the following:

(a) Personal details (name, address, date of birth, sex).

(b) Date of medical examination and name of examining medical practitioner.

(c) Course identification.

(d) Record of examinations for diving theory and out-of-water assessment.

(e) Record of training activities, e.g. dives, attendances, class, pool or confined water sessions, open water sessions, and accumulated underwater time.

(f) Date of certification.

(g) Names and qualifications of instructors and assistants.

3.1.4 Course outline An outline detailing course content shall be issued to the trainee prior to commencement of training.

3.2 STANDARDS OF INSTRUCTION AND COMPETENCE OF INSTRUCTORS

All SCUBA instructors shall have undergone formal training for SCUBA instruction.

NOTE: SCUBA instruction is covered in AS 4005.4.

3.3 EQUIPMENT

3.3.1 Trainee equipment The minimum equipment for each trainee during instruction in open water shall include the following:

(a) Fins.

(b) Mask.

(c) Snorkel (attachable or attached to mask).

(d) Compressed air cylinder and valve as approved in accordance with AS 2030.1.

(e) Buoyancy control device with SCUBA-feed inflator designed to maintain the head above water surface when inflated.

(f) Backpack, if appropriate.

(g) Regulator.

(h) Alternative air source.

(i) Submersible depth and cylinder pressure indicators.

(j) Quick-release weight system.

(k) Exposure protection, as appropriate.

(l) Timing device.

In addition, the equipment for the trainee during instruction should include the following:

(A) Compass/direction monitor.

(B) Cutting implement.

3.3.2 Instructor equipment The minimum equipment to be worn by a SCUBA instructor while conducting training in open water shall include all items given in Clause 3.3.1 plus—

(a) a slate and writing implement;

(b) an emergency signalling device, e.g. flag, safety sausage or whistle; and

(c) adequate means for assessing decompression status, e.g. decompression tables or a dive computer.

3.3.3 Training equipment For training involving diving from a boat the following equipment, beyond that required by the relevant regulatory authority, shall be available:

(a) Highly visible float with a mermaid line.

(b) Descent/ascent line incorporating a safety stop facility.

(c) Decompression tables or alternative means of calculating decompression obligations.

(d) Notebook and pen.

(e) Datum marker, e.g. global positioning system (GPS) or a suitably weighted line with a float which can be used to mark a position.

(f) Spare fully charged SCUBA unit.

Boats used for diver training shall comply with the requirements of the regulatory authority and shall be attended at all times by a competent attendant.

NOTE: When diving from a platform or a vessel that cannot readily access the divers it is recommended that a pick-up boat be available on site.

3.3.4 Emergency first aid equipment During all training diving operations, the following equipment shall be readily available along with a competent operator:

(a) First aid supplies suitable for treating diving injuries.

(b) A resuscitator capable of providing an inspired oxygen concentration of as close as practical to 100% to a patient who is breathing spontaneously and capable of providing an inspired oxygen concentration in excess of 50% to a non-breathing patient. Sufficient oxygen shall be available to supply the resuscitator taking into account the location of the dive site and access to medical facilities.

3.4 OPEN WATER DIVING All open water training dives shall be conducted during daylight hours and in water which allows direct and immediate access to the surface. Dives shall not be conducted in caves, caverns, wrecks, or under ice.

Trainees shall not participate in more than three open water training dives on any given day. No additional SCUBA dives to expand SCUBA experience shall be conducted until the minimum entry-level requirements have been met.

The maximum number of trainees for in-water training in open water shall not exceed eight trainees per SCUBA instructor or ten trainees per SCUBA instructor with a certified assistant. Additional assistants may be used. However, no additional trainees shall be added to the responsibility of the individual SCUBA instructor. After the first training dive, trainees may be accompanied by a certified assistant, at a ratio of no greater than two trainees per certified assistant during the tour portion of the dives.

Ratios may need to be reduced due to water conditions or student requirements.

APPENDIX A

PREDIVING MEDICAL EXAMINATION FOR PROSPECTIVE RECREATIONAL SCUBA DIVERS

(Normative)

A1 INTRODUCTION The medical criteria discussed in this Appendix are relevant only to examination of individuals considering recreational SCUBA diving and are addressed to registered medical practitioners. The medical criteria discussed in this Appendix are in no way exhaustive. The trained personnel carrying out the medicals are expected to use their own discretion. Criteria for medical examination of persons intending to train for occupational diving are given in AS/NZS 2299.1.

The medical examination should be conducted by a medical practitioner who has done an approved course of training for medically examining candidates for recreational diving training. In the absence of regulation by the relevant regulatory authority for approval of training courses, the Board of Censors of the South Pacific Underwater Medicine Society (SPUMS) shall be the authority approving courses.

NOTE: SPUMS publishes a list of its members who have received appropriate qualifications and who carry out diving medicals.

In the event of any difficulty in interpreting the Standard or if it is considered that the candidate may not be suitable for diving, consultation should occur with a specialist diving physician, that is, one who holds the Diploma of Diving and Hyperbaric Medicine (DDHM) or an acceptable overseas equivalent, who may also, if appropriate, refer the candidate to a specialist in the medical area under question, e.g. otologist, cardiologist or respiratory physician, if such a specialist also has an appreciation of the requirements of compressed air diving.

The examination shall be carried out before the candidate first uses compressed air underwater. Preferably it should be carried out prior to commencement of any training in case a decision of unfitness disqualifies the candidate.

Results of any necessary chest X-ray and specialist tests or opinion shall be known before a statement of fitness to dive is issued. These results should be available at the time of examination.

The record of examination shall be retained by the medical practitioner. A statement of fitness to dive, unfitness or temporary unfitness, pending further examination, shall be given to the candidate. The statement shall show the date of examination, the medical practitioner's name, contact details and signature. A typical medical form with the statement at the end of the medical form is shown in Appendix B. Any medical problems likely to influence the diver's safety should be included in the section marked 'Advice' on the medical examination form.

The training establishment shall hold a record of the statement of fitness to dive, and the name and address of the medical practitioner who performed that examination.

A2 NEED FOR FITNESS CRITERIA Although recreational diving may be undertaken in a relatively non-arduous fashion, survival of unexpected emergencies underwater, or on the surface, will depend upon training, mental stability, and physical and medical fitness.

Physical fitness is not synonymous with fitness to dive. Any disorder which causes an increased risk of sudden death, impaired consciousness, impaired judgement, risk of disorientation, impaired mobility, risk of barotrauma or risk of decompression sickness may render a person unfit for SCUBA diving.

Divers are exposed to pressures and related physiological changes which do not apply to persons involved in other activities. Ambient pressure at 10 m depth in seawater is double that at the surface, and pressure changes capable of causing tissue tearing in unvented lung regions can occur upon ascent from as little as 1 m depth.

As diving is carried out in a non-respirable environment, any loss of consciousness is likely to result in drowning.

Specific standards are therefore required. Certain conditions are absolute contraindications to diving (some relative contraindications exist which may not permanently preclude diving). If in the course of a medical examination any such risk factors are identified, the prospective diver shall be told of the conditions and informed as to the hazards and advisable restrictions associated with these conditions as regards diving.

A3 ADVISORY NOTES Conditional statements of health should not be given. Advice with regards to limitations may be given to the candidate and should be written on the medical examination form as advice only. As the greatest proportionate pressure changes occur in water close to the surface, certificates restricting candidates to shallow water only, or interim certificates for 'training dives only' shall not be issued. Severe pulmonary overpressure incidents have occurred in as little as 1 m of water.

Limitations may be applied to depths in excess of 18 m, or decompression requirements, as long as these restrictions do not prevent the candidate from being certified according to the instructor organization's requirements.

A4 FITNESS CRITERIA

A4.1 General The bodily systems outlined in Paragraphs A4.2 to A4.14 should be evaluated from the diver's history and the medical examination. The example form and medical statement given in Appendix B may be copied for use by medical practitioners. The information and questions on the form shown in Appendix B shall form the minimum content of any alternative form used for the medical examination.

NOTE: If the medical form is not accompanied by a copy of this Standard, the advice to the examining physician shown in Appendix C, or similar information, should be included as part of the form.

A4.2 Age The minimum age for entry-level SCUBA diving should be 14 years. Children under the age of 16 should only be medically examined after consultation by the doctor with a parent or guardian to establish the child's physical and psychological maturity. Between the ages of 16 and 18 it is preferable to consult with a parent or guardian before medically examining the child. No upper age limit applies provided that all medical standards can be met.

The cardiovascular fitness and pulmonary reserves of persons over 45 years of age should be examined carefully; emergency situations may demand a high degree of fitness. In addition, older divers have an increased susceptibility to dysbaric illness and cardiac death. A reduction in decompression stress is required with increasing age.

A4.3 Physical fitness Consideration shall be given to the candidate having adequate reserves of physical fitness to cope with the unexpected demands inflicted by adverse weather or sea conditions, surfacing away from a boat, having to aid a distressed buddy, or other emergencies.

A4.4 Obesity Obesity may imply a lack of physical fitness and it also represents a particular hazard to divers by causing increased risk of decompression sickness. Reduction in decompression stress is required with obesity.

A4.5 Vision Although methods of using corrective lenses underwater are available, unaided vision should be adequate to allow location of a dive boat or a dive buddy if a diver surfaces without mask, corrective lenses, or both. Corrected near-vision shall allow reading of gauges, timing devices and decompression tables. A risk of corneal ulceration exists if non-permeable contact lenses are used.

A4.6 Ear, nose and throat The following shall apply:

(a) Both tympanic membranes should be seen to be intact and mobile. The Eustachian tubes shall be patent.

(b) Any evidence of chronic outer or middle ear discharge may be cause for rejection.

(c) Any evidence of chronic or recurrent sinusitis, catarrh or severe allergic conditions of the respiratory tract may be cause for rejection.

(d) Any history of middle ear surgery (including tympanoplasty) should be referred for diving specialist opinion before any decision is made.

(e) *Audiometry* Baseline audiometric examinations should be done. If conducted, frequencies tested shall include 500, 1000, 2000, 4000, 6000 and 8000 Hz. An abnormal audiogram should be noted in the diver's logbook. If there are any significant abnormalities in either audiometry or labyrinthine functions, the candidate should be referred to a diving specialist.

Hearing loss is not necessarily a contraindication to diving.

A4.7 Dental Dental fitness and jaw function should be assessed for ease of retention of a diving regulator or snorkel mouthpiece. Carious teeth, or teeth with incompletely filled caries are at risk of dental barotrauma. Recent extractions can lead to air entering the tissues and causing subcutaneous emphysema.

A4.8 Central nervous system The central nervous system shall be examined as follows:

(a) A full examination of the central nervous system should be normal. Any abnormalities should be fully investigated. The abnormality shall be accurately documented for future reference.

(b) A candidate with a history of fits (apart from childhood febrile convulsions), unexplained blackouts or migraine requires further assessment.

(c) Candidates with a history of head injury involving significant unconsciousness or concussion associated with repeated headaches, or intracranial surgery should be individually assessed.

(d) The sharpened Romberg test is useful in assessing vestibular and cerebellar function and should be tested as a baseline. It is performed as follows:

(i) Candidate stands on a hard floor, barefoot, with feet heel to toe in a straight line, arms crossed on chest and eyes closed.

(ii) Ability to maintain balance is timed and recorded in seconds as objectively as possible, e.g. number of seconds stable, number of 'falls' in 60 seconds.

A4.9 Cardiovascular system The following items shall be investigated for this system:

(a) A full examination of the cardiovascular system should be normal. Any abnormalities should be fully investigated.

(b) The resting blood pressure should not exceed 150/95 mm Hg.

(c) Further cardiovascular assessment, including ECG, exercise ECG or specialist opinion may be indicated where any doubt concerning a candidate's cardiac fitness for exercise exists. The exercise ECG may be a valuable addition to the medical examination of all divers over the age of 45 and even those younger where significant coronary risk factors are present. These factors include obesity, smoking, cholesterol, serum lipids and family history.

A4.10 Respiratory system The respiratory system shall be examined as follows:

(a) A full history and examination should be normal. Any abnormal findings should be fully investigated. Such investigations should include provocative testing if any doubt concerning the possibility of bronchial hyperreactivity exists. Particular attention shall be paid to any condition that might cause retention and trapping of expanding gas in any part of the lungs during decompression, e.g. asthma.

(b) The following conditions may automatically disqualify:

(i) Any chronic lung disease, past or present.

(ii) Any history of spontaneous pneumothorax, penetrating chest injuries, or open chest surgery.

(iii) Any fibrotic lesion of the lung that may cause generalized or localized lack of compliancy in lung tissue.

(iv) Any evidence of obstructive airways disease, e.g. current asthma, chronic bronchitis, allergic bronchospasm.

(c) Pulmonary function tests shall be conducted as follows:

(i) Equipment shall be capable of reading to 7 L.

(ii) All divers shall have a pulmonary function test to establish forced expiratory volume at 1 s (FEV_1) and forced vital capacity (FVC).

(iii) An FVC or FEV_1 of more than 20% below predicted values, FEV_1/FVC ratio of less than 75%, or both, requires further assessment.

A4.11 Gastro-intestinal tract The following shall be investigated:

(a) A full history and examination should be normal.

(b) Any abdominal herniation may be a cause for rejection until satisfactory treatment has taken place. Candidates should be free of significant acute or chronic gastro-intestinal problems that may cause acute crisis, or which might cause incapacity in a remote situation, e.g. peptic ulceration.

A4.12 Musculo-skeletal Any impairment of musculo-skeletal function should be carefully assessed against the potential requirements of emergency situations which might occur in the water. The mass of diving equipment out of the water can represent a significant hazard to those with pre-existing back or other joint injury or disease.

A4.13 Female The safety of diving while pregnant has not been established. Pregnancy shall be considered a contraindication to diving.

A4.14 Other criteria The following criteria shall be applied:

(a) Dipstick test of urine shall be performed and urine tested for albumin and sugar. Any abnormal findings should be fully investigated. Diabetes requiring medication with insulin is a contraindication to diving. Any haematological abnormality should be fully assessed.

(b) Candidates taking medication of any type, including non-prescription drugs, require individual consideration. Many medications have altered effects or risks underwater, or may increase decompression sickness risk, or the effects of nitrogen narcosis. Drugs that may affect the cardiovascular, respiratory or neurological system are contraindicated.

In particular, cardiac or central nervous system drugs require careful assessment.

(c) Cigarette smoking has deleterious effects on cardiac, pulmonary and upper respiratory systems and should be strongly discouraged in divers.

(d) The effects of alcohol can be detrimental to divers, increasing the tendency to vomiting, narcosis, dehydration and decompression sickness. Dehydration following alcohol intake is a risk factor for decompression sickness.

NOTE: If the medical is done by someone inexperienced in diving medicine then any abnormalities detected, in either the candidate's history or examination, should result in the candidate being classified as unfit to dive until specialist medical advice, or an examination by a diving medical examiner, has been sought.

A5 ACCREDITED TRAINING IN DIVING MEDICINE FOR MEDICAL PRACTITIONERS In the absence of action by the relevant regulatory authority to approve training courses, the Board of Censors of SPUMS shall approve specific courses in the teaching of medical practitioners to perform diving medical examinations.

Application can be made to SPUMS for recognition of training or information on currently approved courses. The address of the Board of Censors of SPUMS is—

C/- The Australian and New Zealand College of Anaesthetists
630 St Kilda Road
MELBOURNE VIC 3004

At the time of publication of this Standard, the Censors had approved the following courses:

Christchurch Hospital Basic Course
Diving Medical Centre Medical Examiner Course
Fremantle Hospital Medical Assessment of Divers Course
Institute of Naval Medicine (U.K.) Medical Examiner Course
James Cook University School of Public Health and Tropical Medicine Course in Diving Medicine
Royal Adelaide Hospital Basic Course
Royal Adelaide Hospital Advanced Course (preceded by the basic)*
Royal Australian Navy Diving Medical Course*
Royal New Zealand Navy Basic Course
Townsville General Hospital Diving Medical Course
United States Navy Diving Medical Officer Course*

* Denotes a course of at least 10 working days

APPENDIX B

TYPICAL MEDICAL FORM FOR PROSPECTIVE RECREATIONAL SCUBA DIVERS

(Normative)

This Appendix provides examples of a medical examination form and a medical statement which contain the minimum amount of information as required by Paragraph A4.1. The medical examination form and statement in this Appendix may be copied for use by medical practitioners.

MEDICAL FORM FOR PROSPECTIVE RECREATIONAL SCUBA DIVERS

CANDIDATE DETAILS: THIS SECTION TO BE COMPLETED BY CANDIDATE

All information provided in this form will be kept in strict confidence between you and the examiner. It will not be relayed to a third party without your consent.

Diving can usually be undertaken even if you have a chronic infection (e.g. hepatitis B and C, herpes or HIV), however you should inform the medical examiner so that you can be advised how to dive safely.*

It is advisable to inform your instructor of any advice you have been given.

Positive responses to questions do not necessarily disqualify you from diving.

1	Surname Other names			2 Date of birth
3	Address			Phone (home)
4	Sex	Male	Female	
5	Principal occupation			Phone (work)
6	Do you participate in any regular physical activity?	YES	NO	
7	Description of activity			
8	Do you smoke?	YES	NO	
9	Do you drink alcohol?	YES	NO	
10	If yes, how many drinks per week?			
11	Are you taking any tablets, medicine or other drugs? List:	YES	NO	
12	Do you have any allergies? List:	YES	NO	
13	Have you had any reactions to drugs, medicines or food? List:	YES	NO	

Have you ever had or do you now have any of the following? Tick YES or NO.

		YES	NO	Notes on history
14	Previous diving medical			
15	Prescription glasses			
16	Contact lenses			
17	Eye or visual problems			
18	Hay fever			
19	Sinusitis			
20	Any other nose or throat problem			
21	Dentures/plates, dental prostheses			
22	Recent dental procedures			
23	Deafness or ringing noises in ears			
24	Discharging ears or any other ear problem			
25	Operation on ears			
26	Giddiness or loss of balance			
27	Severe motion sickness			
28	Seasickness medication			
29	Any problem when flying in aircraft			
30	Severe or frequent headaches			
31	Migraine			
32	Fainting or blackouts			
33	Convulsions, fits or epilepsy			
34	Unconsciousness			
35	Concussion or head injury			
36	Sleepwalking			
37	Severe depression			
38	Claustrophobia			
39	Mental illness			
40	Heart disease			
41	Abnormal blood test			
42	ECG (heart tracing)			
43	Awareness of your heart beat			
44	High blood pressure			
45	Rheumatic fever			
46	Discomfort in your chest with exertion			
47	Shortness of breath on exertion			
48	Bronchitis or pneumonia			
49	Pleurisy or severe chest pain			

(*continued* Page 1 of 4)

	YES	NO	Notes on history
50 Coughing up phlegm or blood			
51 Chronic or persistent cough			
52 TB			
53 Pneumothorax ('collapsed lung')			
54 Frequent chest colds			
55 Asthma or wheezing			
56 Use a puffer			
57 Other chest complaint			
58 Operation on chest, lungs, or heart			
59 Indigestion, peptic ulcer or acid reflux			
60 Vomiting blood or passing red or black motions			
61 Recurrent vomiting or diarrhoea			
62 Jaundice, hepatitis or liver disease			
63 Malaria or other tropical disease			
64 Severe loss of weight			
65 Hernia or rupture			
66 Major joint or back injury			
67 Limitation of movement			
68 Fractures (broken bones)			
69 Paralysis or muscle weakness			
70 Kidney or bladder disease (cystitis)			
71 Any chronic infection* (see notes at top of form)			
72 Sexually transmitted disease			
73 Diabetes			
74 Blood disease or bleeding problem			
75 Skin disease			
76 Contagious disease			
77 Operations			
78 In hospital for any reason			
79 Life insurance rejected			
80 A job or a licence refused on medical grounds			
81 Unable to work for medical reasons			
82 An invalid pension			
83 Any other illness or injury or any other medical condition			
Have any blood relations had: 84 Heart disease			
85 Asthma or chest disease			
Females only: 86 Are you possibly pregnant or planning to be?			
87 Do you have any incapacity during periods?			

88 Date of last chest X-ray

Previous diving experience

	YES	NO	Notes on history
89 Can you swim?			
90 Have you ever had any problem during or after swimming or diving?			
91 Have you ever had to be rescued?			
92 Do you snorkel dive regularly?			
93 Have you tried SCUBA diving before?			
94 Have you had previous formal SCUBA training?			
95 Year			
96 Approximate number of dives			
97 Maximum depth of any dive			
98 Longest duration of any dive			

I certify that the above information is true and complete to the best of my knowledge and I hereby authorize Dr _____ to give medical opinion as to my medical fitness to dive to my diving instructor. I also authorize him or her to obtain or supply medical information regarding me from or to other doctors as may be necessary for medical purposes in my personal interest.

Candidate's name _____

Signed _____ Date _____

MEDICAL EXAMINATION: TO BE COMPLETED BY A REGISTERED MEDICAL PRACTITIONER

1 Height cm	2 Weight kg	3 Vision R6/ Corr6/ L6/ Corr6/	4 Blood pressure	5 Pulse

6 Urinalysis	7 Respiratory function test	8 Chest X-ray (if indicated)
Albumen Glucose	Vital capacity FEV_1 Percentage	Date . . . . . . Place . . . . . . Result . . . . .

9 Audiometry (air conduction)

Frequency, Hz	500	1 000	2 000	4 000	6 000	8 000
Loss in dB, (R)						
Loss in dB, (L)						

If abnormal, enter in diver's logbook, on certificate, or both.

Clinical examination/assessment	Normal	Abnormal	Notes on abnormalities
10 Nose, septum, airway			
11 Mouth, throat, teeth, bite			
12 External auditory canal			
13 Tympanic membrane			
14 Middle ear auto-inflation			
15 Neurological —Eye movements —Pupillary reflexes —Limb reflexes —Finger-nose —Sharpened Romberg*			
16 Abdomen			
17 Chest hyperventilation			
18 Cardiac auscultation			
19 Other abnormalities			

* Results should be descriptively detailed at right to assist future comparison

Medical fitness to dive

Candidate's name _____

. . . . . I can find no conditions which are incompatible with compressed gas, SCUBA and surface supplied breathing apparatus (SSBA) and/or breath-hold diving.

. . . . . Based upon my assessment, the candidate is not medically fit to dive with compressed gases (SCUBA and SSBA).

Advice:

Doctor's name (Print) _____

Signed _____ Date _____

Medical benefits refund and/or medical rebate is not permissible, by law, for this examination. Issue of any item number which allows the candidate to claim such benefit will result in the physician being guilty of medifraud.

STATEMENT OF HEALTH FOR RECREATIONAL DIVING

This section to be completed by a medical practitioner, preferably with appropriate training in diving medicine.

This is to certify that I have today interviewed and examined:

Name . . . . . .

Address . . . . . .

. . . . . .

Date of birth . . . . ./ . . . . ./ . . . . .

Initial the statements that apply:

. . . . . I have assessed the candidate in accordance with AS 4005.1.

. . . . . I can find no conditions which are incompatible with compressed gas, SCUBA, surface supplied breathing apparatus (SSBA) and/or breath-hold diving.

. . . . . I have explained the health risks of diving disclosed by this examination to the candidate and we have discussed how these risks may be reduced. The candidate appears to have a good understanding of these risks.

. . . . . Based upon my assessment, the candidate is not medically fit to dive with compressed gases (SCUBA and SSBA).

. . . . . Based upon my assessment, the candidate is not medically fit to breath-hold dive.

. . . . .	. . . . .	. . . ./ . . . ./ . . .
Signature of medical practitioner	Name, address and phone number of medical practitioner (Stamp should be used)	Date

This section to be completed by the candidate.

Initial the statements below:

. . . . . I understand the health risks that I may encounter in diving and how these risks may be reduced.

. . . . . I also understand that the medical practitioner's recommendation herewith is based, in part, upon the disclosure of my medical history.

. . . . . I agree to accept any responsibility and liability for health risks associated with my participation in underwater diving, including those that are due to or are influenced by a change in my health and/or my failure to disclose any existing or past health condition to the medical practitioner.

. . . . . I hereby authorise the medical practitioner to supply information with regard to my medical fitness to dive to the diving instructor.

. . . . .	. . . . .	. . . ./ . . . ./ . . .
Signature of candidate	Name of candidate	Date

This statement is valid for 12 months.

APPENDIX C
ADVICE TO THE EXAMINING PHYSICIAN
(Informative)

Issuing an itemized account, which enables the patient to claim Medicare benefits for diving medical examinations, has been prohibited since 1st February 1984.

Diving is a sport carried on in a non-respirable environment which requires the use of either self-contained or surface supplied breathing apparatus. Sudden unconsciousness underwater is usually fatal when using SCUBA equipment, as the relaxation of muscle tone accompanying unconsciousness results in the breathing regulator falling from the victim's mouth. The diver's next breath will then be water. This makes any condition which can cause sudden unconsciousness an absolute contraindication to diving. Such conditions may include epilepsy and diabetics on insulin.

A further problem with the water environment is that pressure increases very rapidly with descent, i.e. by one atmosphere of extra pressure for every 10 m of depth in the sea. The use of breathing apparatus, providing gas at ambient pressure, prevents problems of pressure-volume imbalance in the lungs during descent. However, the middle ears and sinuses will develop problems on descent unless the pressure in these spaces equals the ambient pressure. There is no way of establishing the patency of sinus ostia by clinical examination. However, patency of the Eustachian tubes, and so the ability to equalize the middle ear pressures, can be established easily. Observation of the tympanic membrane while the patient holds his (or her) nose, closes the mouth and blows (Valsalva manoeuvre) will reveal inflation of the middle ear by movement of the drum. The nasopharyngeal opening of the Eustachian tube is normally closed but is opened by swallowing. Therefore, a combination of a Valsalva and swallowing during the manoeuvre will give the best chance for air to travel up the Eustachian tube. Another way of opening the Eustachian tube is to protrude the jaw and wriggle it from side to side while performing a Valsalva manoeuvre. Failure to demonstrate an ability to inflate a middle ear is an absolute bar to diving until the person can auto-inflate.

A further set of pressure related problems also occur during ascent when the ambient pressure is decreasing. If an air-filled space cannot vent when the surrounding pressure is reduced, two things may happen. A space with elastic sides can expand but if the space has rigid walls, the pressure in the space remaining at the original pressure becomes higher than ambient pressure. The chest wall is elastic, but after a certain expansion the stretching of the lungs results in tears of the lung substance. Air can then enter the pulmonary venous drainage, pass through the left portion of the heart and be carried to the brain as air embolism. Unconsciousness and death can result. Thus, any condition preventing normal emptying of the lungs is an absolute contraindication to diving.

Asthma, lung cysts, bullae, and other areas that empty slowly or not at all are an absolute contraindication to breathing air under pressure. These conditions are best detected by taking an X-ray of the chest in full inspiration and another in full expiration. To detect expiratory airway obstruction, a Vitalograph (or similar) test is required. Experience in the navies of the world with submarine escape training of many thousands, has shown that a disproportionate number of those suffering burst lungs have FEV_1/FVC ratios of below 75%. Such people do not need to hold their breath on ascent to damage their lungs; all they have to do is rise too rapidly. A FEV_1/FVC ratio below 75% may be an exclusion from diving and should be further investigated.

A normal FEV_1/FVC ratio but clinical signs of bronchospasm, especially on forced deep, rapid ventilation, is an indication of unfitness to dive. Treatment with drugs is not suitable as the effects can wear off underwater and the combined effects of pressure and broncho-dilator drugs are uncertain.

It is hoped that the foregoing makes the following list of absolute and relative contraindications to diving logical and comprehensible:

ABSOLUTE CONTRAINDICATIONS

Conditions causing unconsciousness
Epilepsy
Diabetes where the patient requires insulin
ENT conditions
Inability to auto-inflate the middle ears. Previous middle ear surgery with insertion of prosthesis to replace any of the ossicles
Lung conditions
Asthma
Lung cysts
Previous spontaneous pneumothorax
Obstructive lung disease
Lungs which empty unevenly (X-ray appearance)
Previous thoracotomy

RELATIVE CONTRAINDICATIONS

FEV_1/FVC ratio less than 75%
Poor physical condition
Previous myocardial infarction
Pregnancy

Further information about medical standards for minimum entry-level SCUBA divers can be found in AS 4005.1, available from Standards Australia, Phone: 1300 65 46 46, Website: www.standards.com.au

If in doubt about a candidate's fitness, it is safer for the candidate to be classed as unfit than fit to dive. Difficult decisions should be referred to a doctor experienced in diving medicine. These are to be found in each State. The South Pacific Underwater Medicine Society* maintains a list of its members with training in diving medicine. Enquiries should be addressed to the Secretary of SPUMS, C/- The Australian and New Zealand College of Anaesthetists, 630 St Kilda Road, Melbourne, Victoria 3004.

URGENT specialist advice can be obtained from the major hospital hyperbaric units in each State and the RAN School of Underwater Medicine, HMAS Penguin, Balmoral, N.S.W. 2091, Phone: (02) 9960 0555.

For diving emergencies, contact the Diving Emergency Service (Australia), C/- Hyperbaric Medical Unit, Royal Adelaide Hospital, Phone: 1800 08 8200.

Recommended reading: THE SPORTS DIVING MEDICAL Parker, J., 1996. Melbourne: J.L. Publications.

DIVING AND SUBAQUATIC MEDICINE Edmonds, C., Lowry, C., and Pennefather, J., 3rd Edition, 1992. Butterworth–Heinemann.

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* The South Pacific Underwater Medicine Society exists—

(a) to promote and facilitate the study of all aspects of underwater and hyperbaric medicine; and

(b) to provide information on underwater and hyperbaric medicine.

APPENDIX D
SPECIALIST DIVING MEDICINE CONTACTS
(Informative)

D1 MEDICAL PRACTITIONERS A list of medical practitioners with training in diving medicine is maintained by the South Pacific Underwater Medicine Society, and is published periodically in its journal.

Contact:

The Secretary
SPUMS
C/- The Australian and New Zealand College of Anaesthetists
630 St Kilda Road
MELBOURNE VIC 3004

D2 EMERGENCY CONTACTS In emergency situations, it is recommended contact be made with the closest hyperbaric unit (see Paragraph D3) or the Diving Emergency Services (DES). Current contact details for DES are as follows:

Diving Emergency Service (Australia)
C/- Hyperbaric Medicine Unit
Royal Adelaide Hospital
ADELAIDE SA 5000
Phone: 1800 088 200 (toll-free, all hours.)
Enquiries: (08) 8222 5116

D3 HYPERBARIC UNITS Current contact details for hyperbaric units in Australia are as follows:

Victoria

The Alfred Hospital
PRAHRAN VIC 3181
Phone: Routine (03) 9276 2269
Emergency (03) 9276 2000 (All hours)
(Ask for Duty Hyperbaric Registrar and state: ‘Diving Emergency’)

New South Wales

The Prince of Wales Hospital
RANDWICK NSW 2031
Phone: (02) 9382 2222
Ask for Hyperbaric Doctor.

School of Underwater Medicine
HMAS Penguin
Middle Head Road
MOSMAN NSW 2091
Phone: (02) 9960 0555 (all hours)

Queensland

Wesley Centre for Hyperbaric Medicine
Suite 53 Sanford Jackson Building
30 Chasely Street
AUCHENFLOWER QLD 4006
Phone: (07) 3371 6033

Hyperbaric Medicine Unit
Townsville General Hospital
TOWNSVILLE QLD 4810
Phone: Routine (07) 781 9211 (all hours)
(Ask for the doctor on call for diving problems.)

South Australia

Hyperbaric Medicine Unit
Royal Adelaide Hospital
ADELAIDE SA 5000
Phone: Routine (08) 8222 5116
Emergency 1800 088 200

Western Australia

Fremantle Hospital
FREMANTLE WA 6160
Phone: (08) 9431 2233 (Mon-Sat, 0830-1630 hrs)
(08) 9431 3333 (Out of those hours)

Tasmania

Royal Hobart Hospital
HOBART TAS 7000
Phone: Routine or Emergency (03) 6238 8308
(Say that it is a diving medical problem or emergency.)

Northern Territory

Royal Darwin Hospital
DARWIN NT 0811
Phone: (08) 8922 8888
(Ask for Duty Hyperbaric Consultant).

D4 GENERAL (NON-EMERGENCY) MEDICAL ADVICE General medical advice concerning diving is provided by both DES and by the Divers Alert Network (DAN). To contact DES, use the enquiries number given in Paragraph D2. The contact details for DAN are as follows:

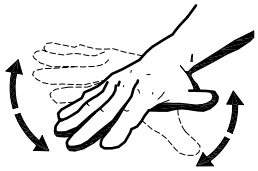
Divers Alert Network
PO Box 384
Ashburton VIC 3147
Phone: (03) 9886 9166

APPENDIX E
COMMUNICATION SIGNALS
(Normative)

The trainee shall be capable of demonstrating the following minimum set of signals.

Distress, help

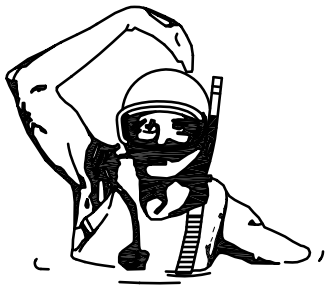
Stop, hold it, stay there



Something is wrong

OK? OK.

OK? OK.
(on surface at distance)

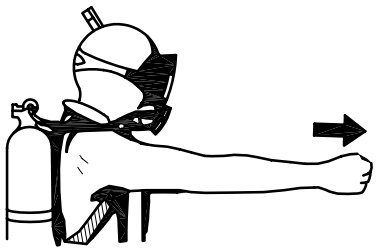


OK? OK.
(one hand occupied)

I need to share air

Go up, going up

Go down, going down



Danger

Out of air

NOTE: Variations in other signals exist between training organizations. The trainee should be made aware of such variations as appropriate.

Standards Australia

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

Australian Standards

Australian Standards are prepared by committees of experts from industry, governments, consumers and other relevant sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia is responsible for ensuring that the Australian viewpoint is considered in the formulation of international Standards and that the latest international experience is incorporated in national Standards. This role is vital in assisting local industry to compete in international markets. Standards Australia represents Australia at both ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission).

Electronic Standards

All Australian Standards are available in electronic editions, either downloaded individually from our Web site, or via on-line and CD ROM subscription services. For more information phone 1300 65 46 46 or visit us at

www.standards.com.au

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