

The University Of Western Australia

Underwater Diving Procedures

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1. Purpose

This document describes the procedures, qualification criteria and regulations that control snorkelling and SCUBA diving from any University owned boats or vessels chartered by the University or in any situation where divers are involved in projects authorised by any Head of School or School Dive Officer, or in any situation where students are involved in diving as a formal part of a University course, or in any situation where University equipment or vessels are used in diving activities.

2. Scope

These procedures shall apply to all people undertaking diving within the University. All divers (staff, students, volunteers and visitors) are obliged to study these procedures and adhere to them at all times.

3. References

Standard Australia publications:

- AS2299.1 Occupational diving operations – Standard operational practice
- AS2299.2 Occupational diving operations – Scientific diving
- AS2815 Training and certification of occupational divers (Parts 1 to 4)
- AS2030 Gas cylinder specifications (Part 1, 2 and 4)
- As 4005 Recreation diving set (Parts 1 to 5)
- Australian Institute of Marine Sciences (AIMS) Diving Procedures
- Defence and Civil Institute of Environmental Medicine (DCIEM) Tables

4. Definitions

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| Ascent rate | a specified rate of travel that the diver has to maintain up to and between decompression stops. For the DCIEM tables, the ascent rate is 9 m/min |
| Bottom time | the total elapsed time from when a diver leaves the surface to the time (next whole minute) at which ascent is commenced, measured in minutes. |
| Breathing gas | the compressed gas intended for respiration by the diver. |
| Buddy system | a system in SCUBA diving operations whereby a team of two or three free-swimming divers communicate through visual or other means in order that they can help each other.
NOTE: Generally, one member of the team is nominated, and agreed to as the leader and controller of the actions of the team. |
| Built-in breathing system (BIBS) | a system whereby oxygen or other breathing gas is supplied to a person in a compression chamber via a respiratory demand triggered gas supply device and orinasal face mask located inside the chamber. |

Caisson gauge	a pressure gauge specifically designed for use inside pressure vessels.
Combined dive	the bottom times of more than one dive, added together and treated as a bottom time for a single dive to the deepest depth for the purpose of determining decompression requirements.
Commercial diver	An individual certified to AS2815
Competent person	a person who has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills to enable that person to perform a specified task.
Compression (recompression) chamber	<p>a surface chamber in which persons may be subjected to pressures equivalent to or greater than those experienced when under water, or under conditions which simulate those experienced on an actual dive.</p> <p>NOTE: For the purpose of this Standard, ‘compression chamber’ is taken to include ‘recompression chamber’.</p>
DCIEM Tables	Decompression tables developed by the Canadian Defence and Civil Institute of Environmental Medicine as issued by the School Dive Officer.
Decompression illness	a generic term for acute illness resulting when pathological consequences arise from decompression. This term covers the condition known as decompression sickness (also known as bends) and arterial gas embolism, but does not include barotrauma of ascent.
Decompression schedule	a specific decompression procedure for a given combination of depth and bottom time as listed in a decompression table; it is normally described as maximum depth (m or ft)/bottom time (min).
Decompression stop	the specific length of time that a diver must hold their ascent at a specified depth to allow for the elimination of sufficient inert gas from the body to allow a safe ascent to the next decompression stop or the surface.
Demand gas supply device	a device that provides breathing gas to the diver via a mechanism which provides a flow of breathing gas when the diver inhales.
Depth	the maximum depth attained, measured in meters (m) or feet (ft)

Descent rate	the maximum rate of travel allowed in descending to the bottom. For these tables, the descent rate is 18 m/min maximum.
Dive checklist	A form to be initialled by the Dive Team Leader that detailed requirements were carried out on the field trip (Form 1)
Dive control position	a single, designated location on the surface, adjacent to where a diver enters the water, from which it is possible to monitor all systems and functions which relate to the life support and safety of a diver in the water.
Dive log sheet	Individual dive log sheets which are completed by each diver daily and submitted to the Dive Team Leader at the completion of each field trip (Form 2)
Dive Officer (also referred to as School Dive Officer)	is a person appointed by the Head of School. The Dive Officer is responsible for the organization and diving safety of all diving activities undertaken within the School.
Dive plan	a procedure specific to a given diving operation. (Form 3)
Dive team	the group of people, including the Dive Team Leader, diver(s), attendant(s) and other personnel as required, who are— <ul style="list-style-type: none"> (a) present at the dive site; (b) directly involved in the dive; (c) responsible for the safe conduct of the diving operation; and (d) responsible for the availability and conduct of emergency procedures.
Dive Team Leader	is a person who is appointed by the School Dive Officer to lead a diving operation. The Dive Team Leader is responsible for supervision of the diving operation and for ensuring that the safety provisions are maintained.
Diver	a staff member, student or other person who is authorised to dive with the School; any person who is accompanying the Dive Team Leader on a diving operation.
Diver's hose	hose used in surface-supplied breathing apparatus (SSBA) to carry breathing gas to the diver from a remote location.
Diving operation	work in which diving is conducted using underwater breathing

apparatus, including work by the dive team in direct support of the diver. This includes the preparation before leaving the University and subsequent reporting upon return.

Effective Bottom Time (EBT)	For repetitive diving, the calculated bottom time for decompression purposes taking into consideration the residual nitrogen from the previous dive(s).
Effective depth	for a dive at altitude, the depth of an equivalent dive at sea level.
Employer	a corporation or individual employing or engaging a person or persons either under a contract of employment, apprenticeship or traineeship, or for work. This includes self-employed persons.
Exceptional exposure dive	a dive where the maximum recommended dive time for a particular depth (sometimes shown by a limiting line in decompression tables) is exceeded by a diver at that depth.
Float line	a line connecting the diver to a high visibility float on the surface of the water enabling the approximate location of the diver to be known at all times.
Free-flow system	a breathing method used in SSBA diving operations whereby breathing gas enters the full-face mask or incompressible helmet in a continuous flow and is not controlled by a demand gas supply device.
Full-face mask	a face mask that— (a) is constructed in a single unit; (b) encloses the total area of the face; and (c) incorporates an integral breathing system.
Half-face mask	a mask that covers the eyes and nose only, and does not incorporate an integral breathing system.
Head of School (HOS)	Is the person appointed by the Senate of the University to be administratively responsible for the conduct of the activities of the School.
Hookah	a colloquial, but widely used, term for a limited feature form of surface supply diving apparatus usually involving the supply of breathing air from a small compressor unit via a free floating air supply hose to a mouth held demand breathing gas supply device.

Incompressible helmet	a helmet that— (a) is constructed of rigid material; (b) encloses the entire head area; and (c) incorporates an integral breathing system.
Lazy shot	a free-hanging rope, running vertically from the dive control position to an attached weight positioned off the bottom or worksite.
Lifeline	a line attached to a diver, which is capable of being used to haul the diver to the surface. The line must be a diameter of not less than 8 mm, attached to the diver at one end and tended from the surface at the other.
Limiting line	a line shown in some decompression tables, which indicates time limits (bottom times) beyond which the decompression schedules in use are less safe.
NITROX (EANx)	a mixture of oxygen and nitrogen where the volume of oxygen in the mix is not under 22%
NITROX Diver	a staff member or an associate who is registered to dive and who holds a recognised certificate in Nitrox Diving.
Occupational diving	diving performed in the course of employment (irrespective of whether or not diving is the principal function of employment or merely an adjunct to it) and comprising all diving carried out— (a) as part of a business; (b) as a service; (c) for research; or (d) for profit.
PPO ₂	partial pressure of oxygen
Point of Interruption	the time at which normal decompression was interrupted as a result of an emergency procedure, i.e., loss of breathing air, O ₂ symptom. Once the situation allows the return to normal decompression procedures, the table is to be re-entered where the interruption occurred.
Quick release mechanism	a readily operated mechanism that enables the immediate release (e.g. of diver's equipment) from the secured position by a single operation of one hand, but which is designed to minimize the risk of accidental release.

Rebreathers	a closed or semi closed dive unit which cleans and reoxygenates air breathed out by the diver for reuse.
Repetitive dive	any dive that has a repetitive factor greater than 1.0 using the DCIEM tables
Repetitive factor (RF)	a figure, used for repetitive diving, determined by the repetitive group and the length of the surface interval after a dive. (For DCIEM Tables)
Repetitive group (RG)	a letter that relates directly to the amount of residual nitrogen in a diver's body immediately on surfacing from a dive. (For DCIEM Tables)
Residual nitrogen	nitrogen in excess of normal conditions, and which is still dissolved in a diver's tissues after the surface has been reached.
Safety Line	Lifeline, Buddy Line, Float Line, or Current Line.
Shore Station	designated base station where safety equipment is available.
SHR	Safety and Health Representative.
SCUBA	Self-Contained Underwater Breathing Apparatus, is equipment design to provide breathing compressed air under water, using an open circuit system independent of the surface.
Shot rope (Lazy Shot)	a rope running vertically from the dive control position and fixed to the worksite or bottom with a weight or attachment.
Stop time	the tabulated decompression stop time, which includes the traveling time to that stop at 18+/- 3 m/min (60+/- 10 ft/min).
Surface interval (SI)	the time that a diver has spent on the surface following a dive; beginning as soon as the diver surfaces and ending as soon as the diver starts the descent for the next dive.
Surface-supplied breathing apparatus (SSBA)	diving equipment that supplies breathing gas at the required pressure for the depth, through a diver's hose to a diver from plant at the surface.
Visiting Diver	other divers who are registered to dive in

the Schools diving operations. A person who is not employed or enrolled in the University, but who is here to do work activities.

5. Responsibilities

5.1 Head of School (HOS)

- Has overall authority for diving in the School, exercised through the Dive Officer

5.2 Dive Officer

- Also referred to as the School Dive Officer
- Advise the HOS regarding safe diving procedures
- Maintain an up-to-date Diving procedures manual
- Ensure all divers have been issued with a copy of the diving procedures
- Maintain a detailed Dive Register of all divers in the School and ensure all certification and training requirements are met
- Advise during the planning of diving operations
- Ensure a dive plan is prepared and approved for each diving operation
- Ensure divers are trained in the use of emergency and resuscitation equipment
- Conduct diving inductions
- Remove from use any equipment reported as unserviceable
- Ensure the regular maintenance of all dive gear
- Ensure the regular maintenance of resuscitation equipment, SCUBA tanks and compressors
- Maintain records of dive plans, dive sheets and equipment maintenance
- Investigate and report to the University all dive incidents and injuries

5.3 Dive Team Leader

- Must be appropriately trained and listed in the Dive Register maintained by the Dive Officer
- Prepare a dive plan and ensure it is approved by the Dive Officer
- Assumes full responsibility for a diving operation upon the departure of the diving team
- Supervise diving in the field and ensure that it is conducted in accordance with these procedures
- Ensure that all necessary emergency equipment is available at the dive site and is fully operational
- Review Diving Procedures, in particular Emergency Procedures with the dive team at the beginning of each trip

- Brief dive team before each dive
- Ensure each dive is recorded on a dive log sheet and returned to Dive Officer at completion of trip
- Maintain communication with the shore
- Assist in the recovery of divers and all equipment and samples from the water
- Record the time of entry and exit
- Investigate and report to the Dive Officer all dive incidents and injuries

5.4 Diver

- Must meet minimum requirements as per section 6.2
- Must be appropriately trained and listed in the Dive Register maintained by the Dive Officer
- Ensure that they are medically and physically fit for each dive
- Ensure that they are familiar with and understanding the provisions of the diving procedures
- Comply with the instructions of the Dive Team Leader
- Maintain an up-to-date log book detailing all of their dives
- Record dive details on dive log sheet daily and submit to Dive Team Leader at the end of each day
- Monitor air supply and ensure all SCUBA dives are completed with not less than 30 bar of air remaining in SCUBA tank on surfacing
- Ensure diving is conducted within the limits of the DCIEM tables
- Ensure all necessary personal diving equipment is operational and available at dive site
- Conduct a functional check of the diving equipment and that of their buddy(ies) before leaving the University and before each dive
- Check diving equipment issued is regularly serviced according to Dive Officer's requirements, and is washed and stowed in a clean, dust free environment
- Report all hazards, incidents and injuries to the Dive Team Leader

5.5 Dive Boat Operator

- Must meet minimum standards as per section 6.2
- Ensure boat safety equipment is on board and fully operational and that fuel supplies are adequate
- Move the boat in order to render assistance to divers as required
- Ensure the Dive Team Leader briefs him/her on the diving operations to be completed each day
- Launching and recovery of the boat

- Cancel diving operations when the safety of the vessel and /or personnel would be at risk
- Post lookouts, hoist signals and warn approaching vessels when necessary
- Maintains radio communications with shore
- Report all hazards, incidents and injuries to the Dive Team Leader

The University will only accept responsibility for those divers officially approved by the HOS or Dive Officer on field trips.

5.6 Diving restrictions

5.6.1 Food and drink

In most circumstances normal daily food and fluid intake is left to individual discretion. Where diving is to be conducted in remote areas, a balanced diet must be planned and adequate fluid intake ensured, ensure there is at least 2L per person per day.

Diving should be avoided for 2 hours following a heavy meal. Regular light meals should be taken during the day's diving activities.

5.6.2 Alcohol

Alcohol must not be taken until after normal diving for the day is over. Alcohol should be consumed only in moderation during prolonged diving operations. Diving should not be undertaken within 8 hours of consuming any intoxicants.

Diving with a hangover is dangerous and is not permitted. Alcohol may increase the susceptibility to decompression sickness, enhance the effects of inert gas narcosis and may enhance heat loss in cold water exposure.

5.6.3 Sleep

Adequate rest and sleep will be defined by the requirements of the diving programme and the fitness of the divers. Fatigue during diving can be dangerous, so a tired diver should not be permitted to dive.

It is recommended that divers should have no more than 3 days of diving followed by 1 day off.

5.6.4 Cold

A cold diver is liable to rapid fatigue and to errors of judgement as well as an increased risk of decompression sickness. The diver will be less able to cope with emergencies and will be unable to concentrate. The combination of fatigue and cold should be avoided at all costs in diving operations. If this is not possible, the Dive

Team Leader must consider abandonment, or revision of the diving programme, if accidents are to be avoided.

It is widely appreciated that divers continue to lose heat for some time after leaving the water. This “after-drop” in central body temperature can reach dangerous levels, even if the diver was in a reasonable state upon exiting the water. Some of the following precautions can be used to minimise this problem.

- Divers should keep warm before the dive.
- Limit dive times to reduce the amount of heat loss.
- Plan dives to avoid frequent immersion and draining of wet suits in cold water. e.g. a series of short multiple dives.
- Try to take a warm shower or bath (37-42°C), as soon as is possible
- Allow sufficient time between dives for the divers to rewarm adequately.
- Provide hot drinks and a high daily calorie intake during cold water diving. Alcoholic drinks are NOT to be used to warm up a cold diver, as they have the opposite effect.

5.6.6 Drugs

In general, drug administration during diving should be avoided where possible due to the possibility of covering up serious symptoms. At present, little or no change in the toxicity of many drugs in common use has been shown in hyperbaric conditions. However, drugs can influence diving safety in indirect ways, by impairing judgement and concentration, or by altering a diver’s susceptibility to narcosis and decompression sickness. Individuals under medical orders are unlikely to be diving, but the common practice of “self-medication” may present a hazard, particularly in three situations: headaches, upper respiratory tract problems (e.g. hay fever), and seasickness

- Headaches: Pain relieving drugs of all types should be avoided during diving. If pain is sufficiently severe to require drugs then the diver is not fit to dive.
- Upper Respiratory tract problems: Routine self-medication with nasal drops to facilitate ear cleaning may be medically hazardous. Such routine use should only be undertaken under medical supervision. The presence of any form of upper respiratory tract infection (common cold, sinusitis, middle ear infection, tonsillitis, sore throat...) imposes an absolute ban on diving until the infection has cleared.
- Seasickness: 2 groups of drugs are used
 - (i) Hyoscine: this is the most suitable drug, however, marked drowsiness can occur, and if possible the drug should be tried initially during a period of non-diving sea travel. Brand name: Hyoscine.
 - (ii) Antihistamines: these are often more effective against motion sickness, but drowsiness is frequently marked. Considerable individual variation occurs in response to the drugs. They MUST be tried initially during a period of non-diving sea travel. Medical advice should be sought if a suitable drug is not found. Brand names: Cyclizine and Meclozine

5.6.7 Diving before or after travel (by car or aeroplane) or after decompression sickness

- When diving after travel, the diver shall have adequate rest before undertaking any diving operations.
- When travelling after diving, altitude exposure after diving is a potent precipitator of decompression illness. After a dive, a minimum delay time should be observed

Altitude (m)	Time after last dive, h		
	Category of dive (see legend)		
	1	2	3
0 – 150	Nil	Nil	2
150 – 300	Nil	2	4
300 – 600	2	12	24
600 – 2400 (see note)	12	24	48
Greater than 2400	24	48	72

NOTE : In pressurized aircraft, the altitude referred to is the effective altitude within the cabin. Commercial aircraft are usually pressurised to an effective cabin pressure of 2400 m or less.

LEGEND :

Category 1 = single dive to $\leq 50\%$ of no-decompression limits, with no decompression or repetitive dives in previous few days.

Category 2 = Routine no-decompression diving;
Single decompression dives

Category 3 = Multiple decompression dives;
Extreme exposures;
Omitted decompressions;
Other adverse events.

The recommendations in this table are for routine diving operations. The risk of decompression illness varies substantially with differing dive profiles, and data regarding the risks associated with altitude exposure after diving is limited. The advice of a medical practitioner appropriately trained in underwater medicine is recommended where altitude exposure after diving is required.

- Travel after decompression sickness. After decompression illness, a diver shall not be exposed to greater than 300 m altitude until cleared for travel to altitude by a medical practitioner with specialist training in underwater medicine.

6. Classifications and training

6.1 Medical requirements

- Must be performed by a doctor who is qualified to administer the Professional Air, Scientific and Shallow Water Divers Medical
- All divers will have a dive medical annually to AS2299
- All Visiting divers will have had a dive medical within the last 12 months to AS2299 or equivalent
- All volunteer divers to have a current medical to AS4005
- After any accident/injury or illness, the Dive Officer may require that the diver be medically re-examined before they are considered fit to dive

6.2 Status and training

To retain the status of Scientific Diver or Dive Team Leader, divers must complete a minimum of 10 dives per year. If a diver does not maintain this frequency of diving activity, their classification will revert to restricted diver until approved by the Dive Officer for upgrading

With the advent of the new AS2299, all staff and visitors are required to have a Scientific Diving qualification. Students are required to be trained to a PADI Advanced Diver or equivalent.

Divers are to be trained in Rescue Techniques, First Aid, Cardio-Pulmonary Resuscitation and Oxygen Resuscitation and are to attend a refresher course where applicable every 12 months.

NOTES:

1. All of the minimum requirements must be met prior to any diving unless permission is given by the Dive Officer
2. The Dive Officer and/or Dive Team Leader has the right to refuse approval for diving to any persons they feel may jeopardise the safety of others or the individual
3. All divers may refuse any diving task they believe to be unsafe or a danger to others, or that contravenes these diving procedures, or beyond their skill levels without fear of retribution

6.3 Minimum requirements

Dive Officer and Team Leaders

Depth restriction 30 m

Must be qualified to PADI Rescue Diver or equivalent

Dive medical AS2299 (annually)

Diver rescue training (Annually)

CPR and O2 training (annually)

Senior First Aid certificate (current)

100 hours logged open water experience with at least 5 hours

>20 m and a minimum of 20 hours scientific diving

Night diving experience :>10 hours if night diving planned

Tasks: Diver supervision
 Conduct diving assessments
 Dive planning and record keeping
 Scientific diving
 Night diving

Scientific Diver

Depth restriction 30m

Staff must be qualified to Scientific Diver or equivalent

Students must be qualified to Advanced Diver

Dive medical AS2299 (annually)

Diver rescue training (annually)

CPR and O2 training (annually)

Senior First Aid Certificate (current)

50 hours logged open water experience with at least 20 hours

>15 m

Night diving experience: >5 hours if night diving planned

Tasks: Scientific diving
 Night diving

Visiting and Restricted Divers

Depth restriction 15m or subject to Dive Officer approval
Qualified to Advanced diver or equivalent
Dive medical AS2299 or equivalent to that required by AS2299 dated within previous 12 months
Basic First Aid and CPR training
30 hours logged experience including 10 hours >10m
Must complete a check out dive with the Dive Officer or other person nominated by the Dive Officer (minimum qualification Dive Master)

Tasks: Acts as dive buddy
Tasks approved by Dive Officer

Divers Attendant (on surface or acting as buddy)

Advanced Diver training
Basic First Aid and CPR training
Restricted Radiotelephone Operator's Certificate of Proficiency or Marine Radio Operator's VHF Certificate of Proficiency (MROVCP)

New Divers

Will have a dive medical to AS2299
Will complete a check out dive (if required by the Dive Officer)

Trainee Scientific Divers (students)

Will have a recreational dive medical
Will be restricted to 15m dive depth
Will have Open Water diving certification (or equivalent)
Will only be permitted to dive with Dive Officer or appointed Dive Team Leader

Tasks: Act as dive buddy
Tasks approved by Dive Officer

Boat Handlers

Will have a TL3 boat handlers certificate (TAFE qualification)
Coxswains ticket must be achieved before handling any vessel over 6 m in length

7. EQUIPMENT

7.1 Dive Equipment

If personal diving equipment is used during official University dives, it must be properly maintained, regularly serviced and tested to the same standards as the University equipment, and evidence that this has been done must be supplied to the Dive Officer prior to it's use.

NO DIVING SHALL TAKE PLACE WITH EQUIPMENT KNOWN TO BE FAULTY OR MISSING.

Dive officer will

- Authorise the purchase and supply of all dive equipment
- Be responsible for maintenance and service of all dive and resuscitation equipment
- Record all maintenance and servicing
- Authorise use of non-University dive and resuscitation equipment
- Test the purity of compressed air to AS2299, for all compressors
- Ensure all air cylinders used in diving operations comply with AS2030.1

Divers will

- Ensure equipment issued is regularly serviced according to Dive Officer's requirements
- Report all dive or resuscitation equipment malfunction to Dive Officer
- Wash and clean all dive equipment issued after use and stow in a clean, dust free environment.

Each diver will be equipped with the following

- Mask and snorkel
- Buoyancy Compensating Device (BCD) (with whistle)
- Regulator with extra 2nd stage
- Depth and pressure gauges
- Inflatable signalling device
- Divers watch or submersible timing device
- DCIEM tables
- Quick release dive weights
- Fins
- Exposure protection appropriate for conditions
- Dive flag

7.1.1 Dive computers

The Dive Officer will be responsible for approving the use of dive computers. They may:

- Be used to record depth and diving time
- Not be used to plan or control a dive, but are to be used to check the dive plan is being adhered to.

7.2 Safety Equipment

Dive Boat must carry:

- Oxygen resuscitation equipment
- Lifelines
- Dive flag
- Radio
- Water bottle
- Anchoring system
- Emergency marker buoy
- Spare search and rescue tank(s) to be carried if diving at a distance of more than 5 minutes running time from the shore station
- Water proof safety container containing safety equipment in accordance with the Department of Transport's small vessel equipment requirements

7.3 Pneumatic tools

Where pneumatic tools are being used, air for these tools shall be taken from a source entirely separate from the diver's breathing air supply.

8. PROCEDURES

The dive planning of any underwater project must take into account scientific objectives as well as physiological and practical limitations.

8.1 Pre-departure

- A dive plan must be submitted by the Dive Team Leader and approved by the Dive Officer prior to any dive operation (Form 3)
- Specific prior approval for night dives must be obtained from the Dive Officer
- Specific prior approval for deep diving (>20m) must be obtained from the Dive Officer

8.2 Normal Diving Procedures

- The School will have a limited amount of diving equipment to loan. Divers are to supply their own equipment other than tanks, regulators and BCD's. Each diver shall be equipped as per section 7.1.
- Divers using SCUBA shall dive in pre-arranged groups of two or three divers
- The lead diver must be designated and noted in the dive plan for approval by the Dive Officer
- While in the water each buddy pair or team will at all times remain in visual contact with each other

- All divers should complete the dive with not less than 50 Bar remaining in the SCUBA tank regardless of the dive plan. The new standards specify “Every SCUBA diver shall carry sufficient quantity of breathing gas to complete the planned dive plus a reserve supply providing a minimum one quarter safety margin”
- All dives are to be planned in accordance with DCIEM Tables
- It is recommended that divers should have a 24 hour continuous period free of diving every 4-7 days depending on depth of dives and exertion
- Decompression dives are not permitted
- A safety stop is to be conducted at 5 meters for at least 3 minutes after all dives greater than 15 meters.
- Maximum ascent and descent rates are to be a maximum of 9 meters per minute

8.2.1 Pre-dive Preparation

- Before work is commenced, the Dive Team Leader will make an assessment of diving skills of Restricted Scientific and Visiting divers (See Appendix 2) and also complete an Air Consumption form (Form 4)
- If the assessment shows the diver is less than competent, the diver should be restricted from diving
- The Dive Team Leader must brief the:
 - Shore station on the location and expected duration of each dive and confirm radio schedules
 - Dive team on
 - Local hazards
 - Objectives of the dive
 - Signals
 - Maximum depth
 - Loss of buddy contact procedures
- The dive boat operator must ensure that the boat anchor and safety gear are on board and that there is sufficient fuel for the proposed journey and possible emergencies.
- Dive boat operators must ensure that all personal equipment is working and safely stowed in the dive boat.

8.2.2 On-site

- Before entering the water
 - the Dive Team Leader must brief divers on the dive plan and conditions controlling the termination of the dive
 - Time
 - Air supply not to be less than 30 bar on surfacing
 - missing diver procedure must be reviewed
 - one diver of each group shall be designated the lead diver
- Divers must thoroughly check their own diving equipment and conduct a buddy check
- Diver-recall signal agreed to, such as starting motor and revving 3 times

8.2.3 Loss of buddy contact

- If a diver loses contact with the other(s), each diver will complete a 360° turn, ascend 1 metre and then repeat the 360° turn to attempt to establish contact. This procedure should take no more than 1 minute and if contact cannot be re-established then the diver(s) shall make a normal ascent to the surface.
- If contact re-established, the lead diver will assess the need to abort or continue the dive
- If contact not re-established, then missing diver procedures should be initiated (section 9.1)

8.2.4 Post Dive

- Report any problems to the Dive Team Leader immediately
- Divers must log each dive
- All divers should be aware of possible symptoms of decompression illness for up to 2 days after a dive. Divers are therefore advised:
 - to maintain hydration by drinking plenty of fresh water after diving
 - not to engage in exhausting athletic activities immediately after diving
 - not to fly within 24 hours of a repetitive dive
- For factors influencing Decompression Illness (Appendix 3)

8.3 Shore Diving

In addition to normal diving procedures, the following procedures must be followed for diving from shore:

- Diving restricted to 50 metres from shore or greater subject to Dive Officer approval
- Diver's attendant must have communication link to emergency services
- Access to oxygen resuscitation equipment within 5 minutes from point of entry
- When shore diving is being conducted in an environment of strong currents, strong surge and limited visibility, a rescue tender shall be on standby.

8.4 Night Diving

In addition to normal diving procedures, the following procedures must be followed for a night dive:

- The dive site must be marked prior to the night dive, using an anchored buoy with an activated Cyalume (or other suitable light) attached
- An activated Cyalume (or other suitable light) must be attached to each diver, each diver must also carry an operational diving light/torch
- Drift diving must not be carried out at night

8.5 Deep Diving (greater than 30 metres)

Deep diving is not permitted.

8.6 Single Diver

Single diving is not permitted.

8.7 Diving with other Organisations

- In situations where University staff or students are operating at another institution or organisation's workplace, they must follow the diving procedures of that workplace subject to approval by the School Dive Officer
- All divers must:
 - prepare and plan for emergency situations
 - discuss risk management and specialised dive procedures with the School Dive Officer

8.8 Diving Overseas

All University divers diving overseas must:

- prepare and plan for emergencies
- have travel insurance with emergency evacuation
- discuss risk management and specialised dive procedures with the School Dive Officer

8.9 Snorkel Diving

- all persons wishing to snorkel must:
 - complete medical conditions form (if not holding a current medical) and submit to the School Dive Officer (Form 5)
 - be competent swimmers
 - be listed on the dive plan
 - follow instructions of the Dive Team Leader
 - snorkel in pairs or singly with dive attendant on lookout
- it is recommended inexperienced snorkel divers wear a life jacket with whistle
- snorkelling is not recommended under the following conditions:
 - strong currents
 - rough surface conditions

8.10 Nitrox

The following requirements are in addition to those already stated.

8.10.1 Qualifications

Dive Team Leader

- Must be qualified EANx (enriched Air nitrox) diver
- Must complete Nitrox Dive check (Form 8)

Diver

- Must be qualified EANx (Enriched Air Nitrox) diver

8.10.2 Equipment

- The regulator and alternative air source used must be approved by the manufacturer for use with oxygen mixtures of less than 40%. A Permanent tag or marking system is to be attached.

- The end user must analyse the mix in their cylinder prior to diving. If in doubt, the analysis must be redone, therefore in this case a gas analyser must be on board.
- Tanks must be clearly labelled Nitrox. Usually a six-inch wide green sticker with “NITROX”, “ENRICHED AIR NITROX” or “SAFE AIR NITROX” is used. They must be of a colour that clearly distinguishes them from the air cylinders.
- Tank tag. Each Nitrox tank must have a tag attached showing
 - Tank serial number
 - % mix (O₂) (use this ppO₂ for M.O.D. calculation)
 - M.O.D. (maximum operating depth)
 - Date
 - Stamp/mark from filling station and signature

8.11.3 Procedures

- Nitrox Dive Team Leader must be approved by the Dive Officer.
- Percent oxygen mix not to exceed 40%.
- Maximum operating depth based on ppO₂ for specific mix never to exceed PO₂ of 1.4ATA (pressure in absolute atmospheres, eg. At 10 m absolute pressure is 2ATA).
- Oxygen partial pressure exposure times for a dive not to exceed those specified in PADI O₂ PARTIAL PRESSURE AND EXPOSURE TIME LIMITS.
- DCIEM Air Dive Tables to be used in conjunction with EAD (equivalent air depth) concept, using either mathematical formula or EAD Table.
- Mix must be analysed by the end user prior to diving. Record on Nitrox dive log sheet (Form 10) and on the tank tag.

8.12 Decompression dives

Decompression dives are NOT PERMISSABLE except with the express permission of the Dive Officer.

8.13 Precautionary Decompression stops

Divers who have approached the time limits set out for no-decompression dives identified in the DCIEM decompression tables, should carry out a precautionary decompression schedule equivalent to that shown in the tables if they had just exceeded the no-decompression time. Precautionary decompression stops are to be used and should be included in the dive plan.

8.14 Diving in Low Visibility

In conditions of low underwater visibility divers shall take additional precautions to ensure that they maintain contact with each other. Appropriate additional precautions must be taken. This means diving in the tethered mode.

NOTE: A horizontal visibility of 2 m is usually considered to be the limit below which additional precautions should be taken.

8.15 Towed divers

Divers being towed by a boat and using sleds, “manta-boards” or other towed devices shall be able to release themselves from the towed device at any time.

In addition –

1. Towing speed should be below 3 knots and preferably between 1 and 2 knots;
2. The device should be attached to a float line equal to or greater in length than the water depth;
3. There should be both a boat handler and an observer experienced in such underwater towing operations present on the boat.

8.16 Termination of a dive

A dive shall be terminated in accordance with the pre-dive plan, or when –

1. The Dive Team Leader or person remaining at the surface requests termination;
2. A diver requests termination;
3. A diver loses contact with, or fails to respond correctly to communications from a buddy diver;
4. A diver fails to respond correctly to communications from the divers attendant;
5. A diver begins to use their reserve air supply (the last 50 bar);
6. A diver is aware of any sign of malfunction of equipment or any sign or symptom of distress; or
7. A diver becomes aware of any unusual or unplanned situation, which threatens the health or safety of any dive team member.

Diving activities may only be resumed, after the decision to terminate using point 3 or 4 above, if the contact has been restored.

8.17 Hazardous conditions

The following conditions are potentially hazardous and may require special training, precautions and equipment:

- Diving using dry suits.
- Being towed on a ‘manta-board’.
- Diving in zero or low visibility.
- Diving at night.
- Deep diving (greater than 20 m).
- Diving in caves, enclosed spaces, or places where there is danger of entanglement. (Which also includes further qualification).
- Blue water diving (diving in open water where the bottom is beyond permitted diving depth).
- Diving in surf, strong currents (in excess of 1 knot or 55 cm/s), or heavy seas.
- Other conditions that present unusual hazards.

The Dive Team Leader shall ensure that every diver diving in the conditions set out above has the appropriate training and equipment.

NOTE: Hazardous conditions for diving vary widely throughout Australia and require that additional training, equipment, operational procedures and emergency procedures be specifically developed by employers according to location and environment.

9. DIVING EMERGENCIES PROCEDURES

9.1 Missing diver

1. Dive team to notify the Diver's attendant or Dive Team Leader of missing diver, e.g. five or more short blasts on a whistle is the International assistance signal
2. Diver's attendant immediately calls the shore base detailing the situation and requests assistance
 - Shore base to notify Police and School Dive Officer
3. Mark with an emergency marker buoy the last known position of the lost diver.

NOTE: If any person sights the missing diver, they should remain visual focus on that position.
4. If divers are still in the water, recall using the recall signal such as starting the motor and revving 3 times
5. Search should begin where diver was last seen using the emergency marker buoy as reference
6. Search should be conducted in pairs
7. Sink (do not swim) to the bottom to determine effect of current
8. Divers involved in search must not subject themselves to risks such as decompression illness

9.2 Injured diver

The following actions must be taken during a diving emergency.

1. Assist the injured person(s) immediately by providing First Aid
2. Recall all divers or swimmers to the boat or shore
3. Ensure that other members of the diving team are not at risk and that all divers are present
4. Follow instructions laid down in Diving Emergency Procedures (Appendix 5)
5. Recover as much of the injured diver's equipment as possible after the emergency
 - *keep apart from other equipment prior to expert

examination

*do not disassemble equipment

NOTE: the Dive Team Leader may decide not to recover items if to do so would be unsafe or cause undue delay

6. Ensure that no equipment has been left in a dangerous condition
7. Ensure that the diver's log sheet(s) and logbook are available for the doctor, particularly if recompression is required
8. In the case of a fatality or serious accident requiring recompression and/or hospitalisation, the Dive Officer must notify the HOS by telephone as soon as possible.
9. When the immediate emergency has passed, and all necessary steps have been taken to assist the casualty, a full record of the incident must be compiled. While details are still fresh in everyone's mind, the Dive Team Leader or another member of the team should start making notes, obtain details from other divers, record exact times, etc. (Form 7)

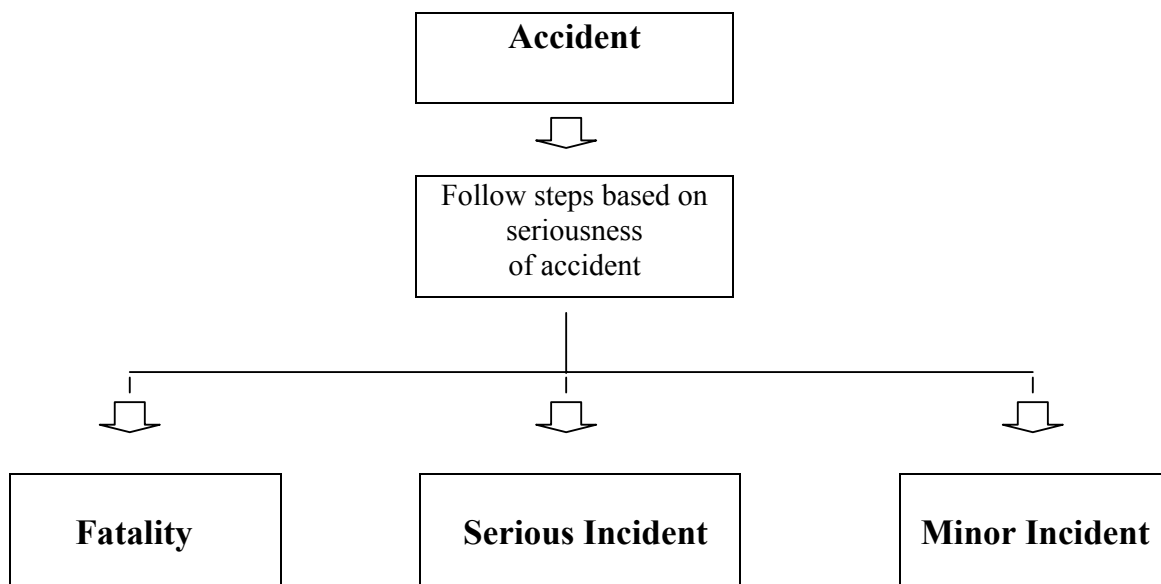
NOTE: The buddy of a diver who develops symptoms of decompression illness, even on a dive apparently carried out according to the DCIEM tables, may also develop symptoms later and require treatment.

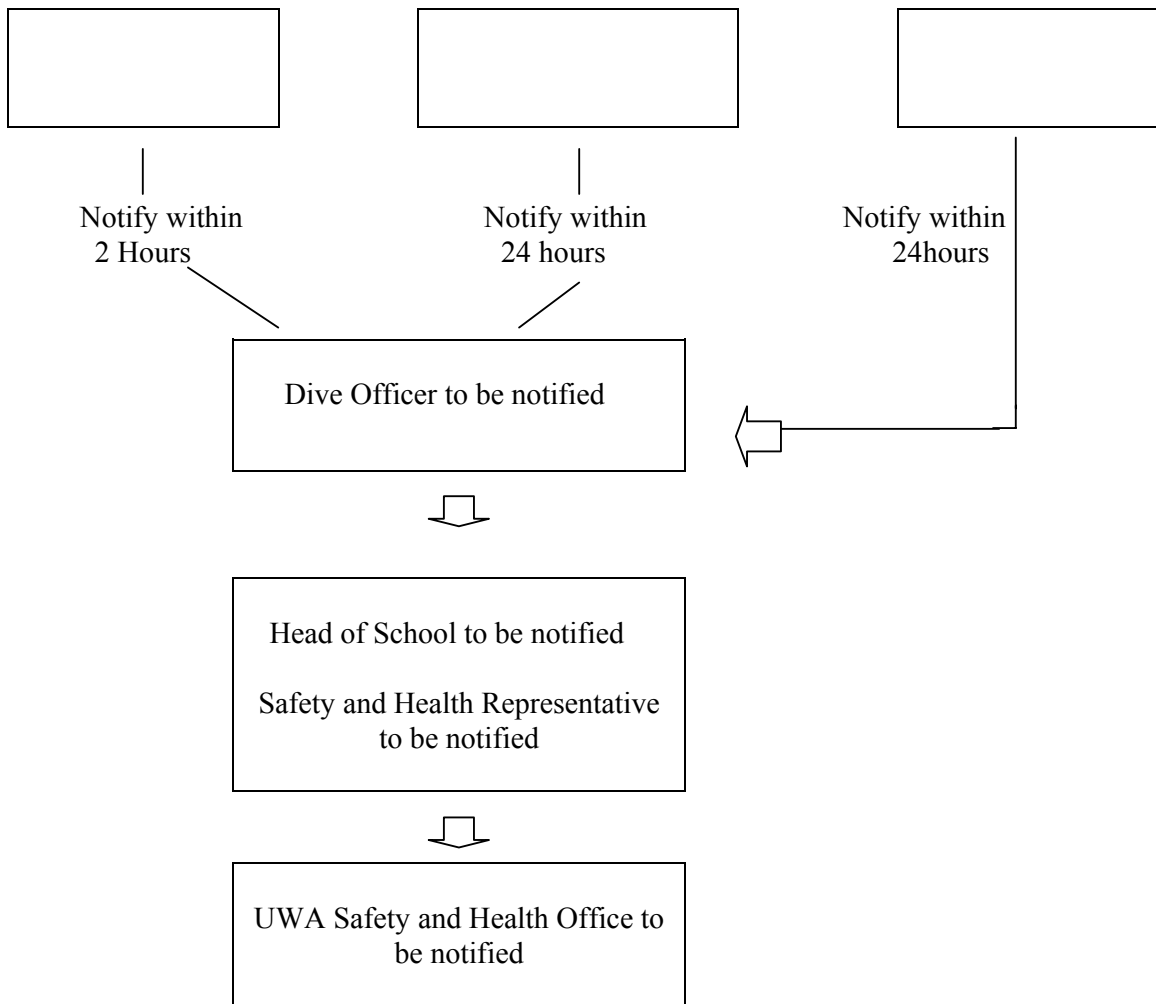
9.3 Oxygen therapy

Provision of >60% oxygen by facemask on the surface is an emergency First Aid measure for decompression illness, air embolism and shock. It must be administered as necessary during transfer to hospital or recompression facilities or on advice from a diving medical doctor by a qualified operator.

Oxy-Viva or other approved equipment for this purpose must be available at all dive operations. All Scientific Divers and Dive Team Leaders must be trained in its use.

9.4 Accident reporting procedures





Safety and Health Office
Ph (08) 9380 3938 Fax (08) 9380 1179

All incidents need to have a Confidential Incident/Injury report from completed and sent to UWA Safety and Health Office within 24 hours (or as soon as practicable).

10. Infringements and Inquiries

10.1 Infringements

If any infringements of the provisions set out in this document are reported, the School Dive Officer must first verify the report and then inform the HOS as soon as is practicable.

The HOS may decide that any of the following actions are appropriate.

- a) In the case of a minor infringement, the HOS may instruct the Dive Officer to discuss the matter with the Dive Team Leader and diver(s) involved, with a view to preventing repetition.

b) The HOS may institute an internal enquiry into the incident and take whatever action deemed appropriate following the report of the inquiry.

10.2 Internal inquiries

The HOS may institute an internal inquiry into any diving related incident or accident. The internal inquiry should normally be carried out by the Dive Officer, Safety and Health Representative and any other School personnel deemed necessary by the HOS. The Dive Officer remains an ex officio member of the committee.

The internal inquiry should be conducted as follows:

a) Specific terms of reference appropriate to the incident should be established by the HOS

b) All relevant information, both written and verbal, should be gathered from all persons involved in the incident, and from any other source deemed appropriate.

c) The internal inquiry should compile a complete description of the incident and make any recommendations it considers necessary. The description and recommendations should be communicated to the HOS in the form of a report, after that report has been validated by all persons named therein. Any unresolved differences of opinion arising at the stage of validation should be noted.

d) The internal inquiry may recommend to the HOS additional training or the adjustment or cancellation of the diver certification of the personnel involved. It may also recommend that the circumstances warrant disciplinary action but this will be at the discretion of the HOS.

11. Controls

Dive Officer to review Diving Procedures bi-annually

12. Appendices

1. PADI Rescue equivalent dive qualifications
2. Guideline to diving assessment
3. Factors affecting decompression illness
4. Diving signals
5. Diving Emergency Procedures
6. DCIEM Tables
7. Oxygen toxicity
8. Formulae for calculating EAD, PO₂ and MOD
9. Places where dive medicals can be obtained
10. Hazard identification, risk assessment and control

13. Forms

Electronic copies of these forms are available from the Dive Officer to be

completed in electronic form.

1. Dive checklist
2. Dive log sheet
3. Dive plan
4. Snorkelling medical form
5. Next of kin details
6. Accident report form
7. Nitrox dive check
8. Nitrox dive log sheet

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Appendix 1

PADI Rescue equivalent dive certifications

CMAS	2 Star
NAUI	Open water 2
NASDS	Open water
FAUI	Scuba diver
NQS	Scuba diver
SSI	Open water + Stress/rescue
AUSI	Level V (rescue)
YMCA	Silver star
BSAC	Sports diver/dive leader (3rd class diver)

NOTE: There are inconsistencies when it comes to cross certification with different Dive training organisations. Those listed above contain a diver rescue and resuscitation component.

Further clarification is obtainable from the Dive Officer as to other acceptable certifications.

Appendix 2

Guideline to diving assessment

The Dive Team Leader should use the following guidelines to assess the proficiency of restricted divers and visitors.

Pre-dive

- * Knowledge of University Underwater Diving Procedures
- * Equipment familiarity and pre-dive checks
- * Underwater signals and signs
- * Buddy contact and lost buddy procedures

In Water Skills

- * Entries and exit from small craft/beach
- * Surface swim 25 metres alternating between snorkel and scuba
- * Correct ascents and descents using BCD (check rates and techniques)
- * Buoyancy control by fin pivot and by hovering motionless
- * regulator removal and recovery
- * Mask clearing
- * Scuba equipment removal and recovery
- * Alternate air source use - octopus rig (2nd reg)
- * Simulated emergency swimming ascent (horizontal)
- * Simulated surface rescue tow of unconscious and simulated unconscious diver

Diver's Air Consumption

- * Record diver's rate of air consumption (complete form 4)

Additional Skills

- *
- *
- *

Appendix 3

Factors affecting decompression sickness

Taken from Diving and Subaquatic medicine (ref details)

Factors:

- Exertion
- Physical fitness
- Temperature - cold water, hot shower
- Sex -females
- Age
- Obesity
- Dehydration
- Increased carbon dioxide pressures
- Alcohol Intake
- Physical injury
- Adaptation
- Dive profile
- Rapid and multiple ascents
- Repetitive and multi-day diving
- Altitude exposure

Exercise has various effects, which are sometimes contradictory. Exercise performed while at depth is likely to increase the blood supply to the muscular tissues, and increase the rate of inert gas absorption at that site, which is then the site of DCI. It can increase decompression requirements by a factor of 3.

Thus some muscle, which has a blood perfusion of 3 ml/min per 100 g at rest, has a half time of 23 min and will become 26% saturated with nitrogen during a 10 min dive. With half-maximum exercise the perfusion rises to 30 ml/min per 100 g and the half time to 2.3 min, and it becomes 95% saturated in a 10 min dive. The exercise level increases the nitrogen absorbed in muscle by 69% in a 10 - min dive, or 16% in a 60-minute dive.

During or after decompression, severe exercise results in an increase in the speed of bubble development and in the number of bubbles - perhaps due to increased cavitation from tribonucleation of tissues, or the turbulence similar to shaking a bottle of champagne.

Mild exercise during recompression is of value in increasing the rate of gas elimination, perhaps by increasing tissue perfusion, if supersaturation and bubble growth have not been incurred.

Resting after decompression may give the body a longer time to liberate the inert gas it has absorbed during the dive, although occasional movements are warranted to ensure that paralysis or incoordination has not developed without the diver being

aware of it. Thus, the routine practice of periodically walking the length of the compression chamber during decompression and therapy is to be commended.

Physical fitness, perhaps due to its relationship to more efficient muscular use and blood flow, seems to be of some protective value to divers.

Temperature may influence DCI in a complex manner, by its influence on perfusion (increased temperature producing increased blood flow) and solubility (lowered temperature producing increased gas solubility). Divers who were exposed to cold at maximum depth may have less tissue perfusion and DCI in no-decompression dives than divers in warm water and with hot suits.

If the diver becomes mildly hypothermic, which is not uncommon in longer dives, the ability to eliminate the nitrogen is decreased, and DCI is more likely. In some studies the perfusion rate in muscle was halved, thus doubling the required duration of decompression.

Divers who become cold during decompression have a lowered perfusion of tissues during ascent, less gas uptake from the tissues and more DCI. The opposite occurs in warmer conditions. During decompression it is better to be warm, because the nitrogen elimination is increased (as are xenon and krypton, in experimental conditions).

After the dive, exposure to sudden and excessive heat, such as with a hot shower, produces increased superficial blood flow and lowered solubility of gas, resulting in a bolus of nitrogen being mobilized, with gas phase separation and delivery to the lungs, both skin and generalised DCI manifestations could develop.

Females may have a higher incidence of DCI than males. In altitude exposures, this is thought to be a four-fold increase, and in divers more than three-fold. The explanation may be a physiological difference between the sexes, or the effect of social conditioning (physical fitness, cold exposure etc.). Studies have shown higher blood perfusion in females, both in subcutaneous tissues and in muscle.

There is no support for the hypotheses that the contraceptive pill increases the incidence, but menstruation may.

Age: increasing age increases DCI incidence, possibly due to impaired perfusion or to already damaged vessels being more susceptible to other flow interferences. Abnormalities and degenerations within joint surfaces also increase the likelihood to tribonucleation in the aged. A 28 year old have twice the likelihood of an 18 year old in aviation DCI statistics.

Obesity: increases the tissue mass available to absorb more inert gas. The fattest 25% of the diving population, as judged by skin fold thickness, have a ten-fold incidence of DCI. Not all surveys demonstrate an association between fat content and DCI among normals (excluding the obese). Overweight and obesity can be measures by body mass index or skin fold thickness.

Nitrogen is 4.5 times more soluble in fat than in water and non-fatty tissues. In active adult populations, women have 20-30% body fat compared to 10-20% for men.

Dehydration, caused by environment, exercise, water loss from respiration and immersion, and the impracticability of fluid replacement while diving, will reduce perfusion of tissues and thus the elimination of inert gas.

Increased carbon dioxide pressures, from the effects of blood pressure, exercise or breathing resistances with equipment, may cause increased perfusion during the dive, with increased nitrogen loading. It is also a factor with inadequate ventilation in caissons, chambers and helmets.

Alcohol over-indulgency may influence judgement at the time, but more commonly the dehydration, vasodilation and heat loss that develops in the hours afterwards will aggravate DCI

Physical injury, such as a sprained joint or previous episode of DCI, predisposes to DCI due to scarring and the alterations in local tissue perfusion. Thus, some clinicians are concerned that spinal operations, such as laminectomy, may be associated with spinal DCI risk.

Dive profiles may influence the likelihood of DCI. The deeper the dive and the more decompression required, the greater the incidence of decompression illness. Surface decompression (returning to the surface before being recompressed) is also more dangerous.

For a single depth/duration exposure, DCI is more likely with a direct ascent to the surface than a gradual ascent interrupted by reasonable and shallower stops, i.e. with a safety stop or multilevel diving. The opposite will occur if there is increased depths at successive levels.

Multiple ascents during the dive may, by initiating venous gas emboli which are trapped in the pulmonary filter but escape to the arterial system during subsequent compressions, increase the likelihood of DCI. A dive exposure which will probably produce joint DCS is more likely to induce neurological DCI if excursions are made to the surface during the profile. Surface decompression procedures, repetitive dives with short surface intervals (<2 hours) and arterial gas emboli from pulmonary barotrauma may have similar effects.

Repetitive dives: if a diver exposes himself to increase pressures within 24 hours of a previous dive, the residual nitrogen remaining within his tissues will increase the likelihood of DCI. Mild or insignificant cases may be made much worse. Advice is often given to recreational divers to take a day off after every 3 days of repetitive diving.

If asymptomatic bubbles have been produced by diving, the subsequent diving even longer than 24 hours afterwards will probably precipitate an episode of DCI.

Travelling to **altitude** to dive, or exposure to altitude after diving, may provoke DCI by producing or expanding existing bubbles. Air travel may also predispose to DCI because of the dehydration effect in the cabin altitude, if not rectified by a compensatory fluid intake. More often, aviation exposure can induce DCI days after a dive, especially from repetitive, long or saturation dives. Flying is not advisable for at least 24 hours after normal, non-decompression, recreational diving.

Breathing different **gas mixtures**, such as nitrous oxide after air diving, decompressing on air after diving on Heliox, or breathing a slow dissolving gas while in a fast diffusing gas environment, may produce local or general pressure gradients which cause bubbles to develop. Existing bubbles may also expand if faster gases are breathed, e.g. breathing Heliox after producing air bubbles.

Decompression staging in a horizontal **position** results in an increased rate of gas elimination, as compared with the vertical or seated positions. In water, decompression has similar advantages over dry decompression, although this is not mirrored in practical situations because many adverse factors during diving compared to dry compression.

One factor reducing the likelihood of developing DCI is **adaptation** or **acclimatization** – the repetitive and recent exposure to increased pressures. DCI is more probable during the first week of diving operations, and following lay-off periods of more than a week. Although the more susceptible divers would be selectively eliminated at an early stage, this is not the whole explanation. It appears as if, with regular diving, a slight degree of resistance to DCI can develop for that diving depth. The incidence of DCI in caisson workers is halved in the second week and again in the third week.

The currently fashionable explanation for adaptation is the removal of naturally occurring gas nuclei, which are thought to be the nidus on which the bubble develops. This is also the reason why divers and caisson workers are advised to work up to their maximum exposures gradually.

Many other possible aggravating factors have been proposed, both endogenous (serum complement, lipids, smooth muscle activating factors etc.) and exogenous (smoking, migraine, oral contraceptives etc.). They require more confirmation.

Appendix 4

Diving signals

Lifeline Signals

Signals comprise either pulls or bells or a combination of both. A pull is a steady single heave on the line. A bell is a sharp quick tug, always given in pairs as with a ship's bell, i.e. five bells is given as:

Two quick tugs pause with two quick tugs pause one quick tug. It should be noted that one bell does not exist as a signal on its own.

Signals – Attendant to Diver

- (a) 1 pull To call attention. Are you alright?
- (b) 2 pulls Am sending down a rope's end, (or as previously arranged)
- (c) 3 pulls You have come up too far. Go down slowly till we stop you.
- (d) 4 pulls Come up.
- (e) 4 pulls then 2 bells Come up, hurry up. Come up, surface decompression.

Direction signals

- (a) 1 pull Search where you are
- (b) 2 bells Go to the end of distance line, jack-stay, or life line
- (c) 3 bells Face shot lifeline then go right
- (d) 4 bells Face shot lifeline then go left
- (e) 5 bells Come into your shot, or turn back if on a jackstay

Signals – Diver to Attendant

General signals













- (a) 1 pull To call attention. Made bottom. Reached end of jackstay
- (b) 2 pulls Send me down a rope's end (or as previously arranged)
- (c) 3 pulls I am going down again
- (d) 4 pulls May I come up?
- (e) 4 pulls then 2 bells Assist me up. I want to come up.
- (f) Succession of pulls (must be more than 4) EMERGENCY signal (ONLY to be used in GREAT EMERGENCY). Need not be answered but must be obeyed IMMEDIATELY
- (g) Succession of 2 bells Am foul and need the assistance of another diver
- (h) Succession of 3 bells Am foul but can clear myself if left alone

Working signals

- (a) 1 pull Hold on or stop
- (b) 2 bells Pull up
- (c) 3 bells Lower
- (d) 4 bells Take up slack lifeline. You are holding me too tight
- (e) 5 bells Have found, started or completed work



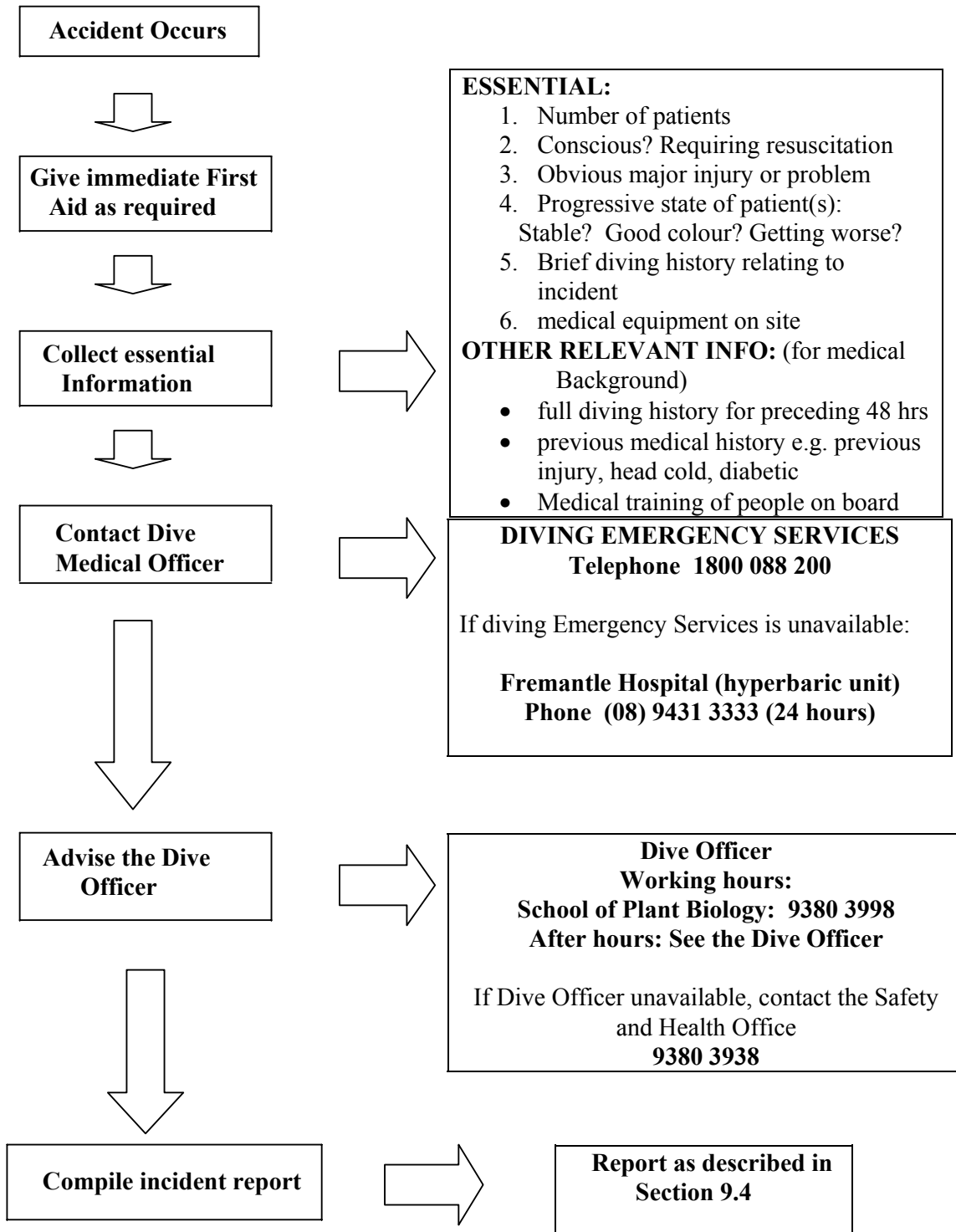
Hand signals to be used to communicate while diving.

 <p>14. Come here</p>	 <p>15. Me, or watch me</p>	 <p>16. Under, over, or around</p>
 <p>17. Level off, this depth</p>	 <p>18. Go that way</p>	 <p>19. Which direction</p>
 <p>20. Ears not clearing</p>	 <p>21. I am cold</p>	 <p>22. Take it easy, slow down</p>
 <p>23. Hold hands</p>	 <p>24. Get with your buddy</p>	 <p>25. You lead, I'll follow</p>

Hand signals to be used to communicate while diving (continued).

Appendix 5

Diving emergency procedures



Appendix 6

DCIEM Tables and their use

(taken from booklet supplied with DCIEM Tables)

A: First Dive No-D Limits

Table A gives you the No-decompression Limits for first dives and the Decompression Stop times needed for dives which exceed the No-decompression Limits.

A No-decompression Limit (No-D limit) is the maximum bottom time that you may spend on a dive without having to conduct a decompression stop before resurfacing. New divers are advised to stay within the No-D limits.

To find your No-D Limit for a given depth, enter Table A from the depth column and follow the row of numbers across to the bold, vertical lines. The largest number to the left of the bold, vertical lines is your No-D Limit (expressed in minutes) for a first dive.

Besides each number is a Repetitive Group (RG) letter. Repetitive Groups are dive exposure guides. To find your group letter, use the exact or next greater bottom time. If no group letter appears beside your bottom time, allow 24 hours to elapse before your next dive.

The proper ascent rate for using the DCIEM Sports Diving Tables is 60 feet (18 meters) plus or minus 10 feet (3 meters) per minute.

The section to the right of the bold, vertical lines is used only for Decompression dives. The required Decompression stops are given in minutes at the bottom of each column.

E.g. First dive to 21 m for 40 minutes
No-D Limit is 35 minutes

Decompression stop is 5 minutes at 3 m

Repetitive group for 40 minutes at 21 m is 'F'

B: Surface Intervals

A Surface Interval is the time elapsed between surfacing from a dive and beginning the actual descent on the following dive. In Table B, Surface Intervals are expressed in hours and/or minutes.

Enter Table B using the group letter from your last dive. Match your group letter with your Surface Interval. The amount of residual nitrogen remaining in your body is indicated in the form of a Repetitive Factor (RF) – the highest Factor being 2.0.

As your Surface Interval increases, your RF decreases. When your RF reaches 1.0, your nitrogen level will be back to normal. Any dive conducted while your RF is greater than 1.0 is a Repetitive Dive.

If your RF has diminished to 1.0, use Table A to plan your next dive.

If your RF is greater than 1.0, use No-D Limits in Table C

Before conducting a Repetitive Dive, allow enough surface Interval time to elapse for a Repetitive Factor to appear in Table B.

If you must dive before a Repetitive Factor appears, use the following emergency guidelines for short Surface intervals:

- For dives to be the SAME DEPTH: add the actual bottom times together and use the Effective (total) Bottom Times to determine your Repetitive group in Table A;
- For Dives to DIFFERENT DEPTHS: use the “Step system” (explained in the Multi-level diving section) to find the equivalent time for your first dive RG at the second depth. Add the actual bottom time at the second depth and use the effective (total) bottom time to find your new RG.

Flying after diving

After a single No-D dive, allow your Repetitive factor to drop to 1.0 before flying.

After a Repetitive Dive or a Decompression dive, allow a Surface interval of at least 24 hours before flying.

C: Repetitive Dive No-D Limits

The No-D Limits for Repetitive Dives are given in Table C. On a repetitive dive, the No-D limit is reduced because of residual nitrogen remaining from the preceding dive. To find the No-D Limit for a Repetitive dive, match the depth with your Repetitive Factor (RF) taken from Table B.

E.g. Depth of 12 m with RF of 1.5
No-D Limit of 100 minutes.

If you stay within the No-D limits and do not conduct another Repetitive Dive, no calculations are necessary. After 18 hours, you can begin your next dive using the No-D Limits in Table A.

If you plan to conduct another Repetitive Dive (3rd dive), you will need to find your Effective Bottom Time (EBT) for dive #2. To find your EBT, either multiply the actual bottom Time by your RF or refer to the ‘EBT Table’ on the next page.

The RG for dive #2 is found in Table A according to the depth and EBT.

E.g. Depth of Repetitive Dive is 12 m
 RF is 1.5 No-D Limit is 100 minutes.

Actual bottom time is 60 minutes
 EBT=60 min x 1.5 = 90 minutes

Repetitive Group is 'G'

Whenever the actual bottom time on a repetitive dive exceeds the No-D Limit given in Table C, a Decompression stop is required. Decompression stops for Repetitive Dives are found in Table A according to the depth and EBT (On a decompression Repetitive Dive, the EBT may result in a figure that is less than the Table A No-D Limit although the actual bottom time exceeds the table C No-D Limit. If this occurs, conduct a 5 minute stop at a depth of 3 m).

Qwik EBT Table

Minutes	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
10	11	12	13	14	15	16	17	18	19	20
1	2	2	2	2	2	2	2	2	2	2
20	22	24	26	28	30	32	34	36	38	40
2	3	3	3	3	3	4	4	4	4	4
30	33	36	39	42	45	48	51	54	57	60
3	4	4	4	5	5	5	6	6	6	6
40	44	48	52	56	60	64	68	72	76	80
4	5	5	6	6	6	7	7	8	8	8
50	55	60	65	70	75	80	85	90	95	100
5	6	6	7	7	8	8	9	9	10	10
60	66	72	78	84	90	96	102	108	114	120
6	7	8	8	9	9	10	11	11	12	12
70	77	84	91	98	105	112	119	126	133	140
7	8	9	10	10	11	12	12	13	14	14
80	88	96	104	112	119	128	136	144	152	160
8	9	10	11	12	12	13	14	15	16	16
90	99	108	117	126	135	144	153	162	171	180
9	10	11	12	13	14	15	16	17	18	18

Match the actual bottom time (given in the left hand column) with your Repetitive Factor.

E.g. Actual bottom time is 65 minutes
 RF is 1.5

EBT for 65 minutes
 Is 60 minutes = 90 minutes
 Plus 5 minutes = 8 minutes
 Effective bottom Time = 98 minutes

Minimum Surface Intervals for No-D Dives

Table C and Table B can be used together to find the minimum surface interval needed to conduct a No-D Repetitive dive. Use Table C to find the Repetitive Factor that corresponds with your actual bottom time. Use Table B to match this RF with the Group letter from your last dive. The minimum Surface interval is given at the top of the matching column in Table B.

E.g. First Dive 24 m for 25 minutes.
Repetitive group E
Repetitive dive 18 m for 31 minutes

In Table C RF of 1.3 is required at the beginning of the Repetitive Dive

In Table B Group E diver acquires RF of 1.3 after a surface interval of 2 hours.

Adjustments for Multiple Repetitive Dives

Whenever you conduct three or more dives in a series, the Group letter for each Repetitive dive must be higher than that of the preceding dive. *DCIEM recommends a limit of 3 dives in a series.*

If your Group letter is lower than or the same as that of the preceding dive and the Surface Interval before your next dive is less than 6 hours, make the following adjustment:

Add one letter to the RG from the preceding dive and apply the adjusted Group letter to your current Repetitive dive.

E.g. First dive RG = D Second Dive RG = B
-less than 6 hours before 3rd dive-
Raise the second dive RG letter to 'E' (First dive RG 'D' + 1 letter)

No adjustment is needed if the Surface Interval before the next dive is 6 hours or longer.

If 3 or more dives a day are conducted on 3 consecutive days, allow for a 24 hour Surface Interval after the 3rd day.

Multi Level Dives

A Multi-level Dive is a dive during which bottom time is spent at two or more depths before surfacing.

During a Multi-level Dive, the normal decompression process that occurs during a direct ascent to the surface is interrupted by the partial ascents resulting from the Steps in the Multi-level profile.

The following procedures are to be used with the DCIEM Sport Diving Tables for No-D Multi-level Dives conducted in either warm or cold weather.

General Guidelines

Each Multi-level dive is to be a NO-DECOMPRESSION DIVE;

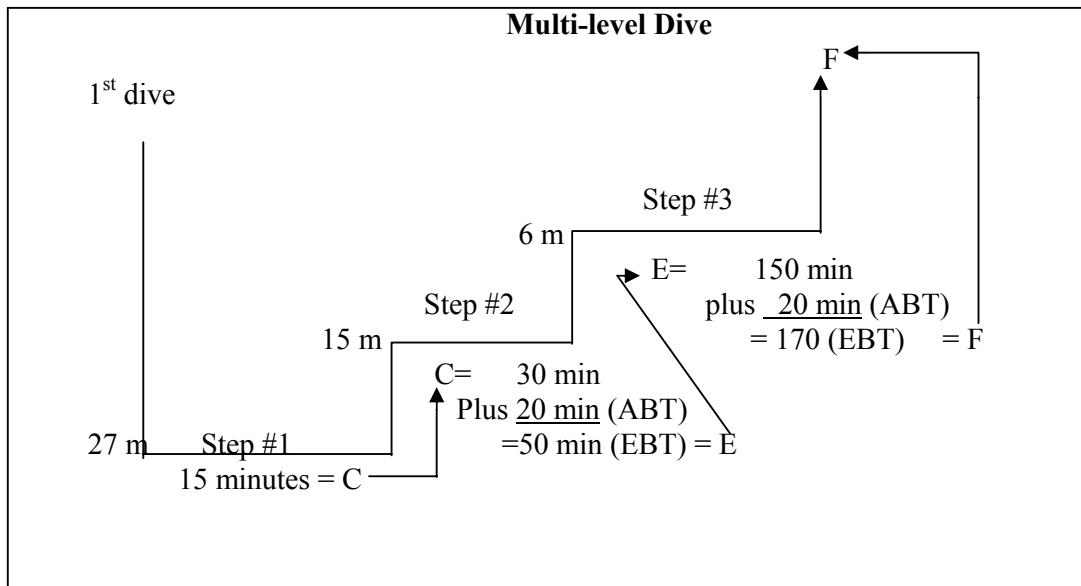
If a No-D Limit is exceeded, abort the dive and proceed to the Decompression stop(s) specified in Table A

Conduct the DEEPEST PART of the dive FIRST. Ascend at least 6m to and between the following steps in the dive:

At depths greater than 30 m, ascend at least 9 m.

FINISH the dive in SHALLOW water in a depth range between 3 m and 6 m for at least 5 minutes of actual bottom time. Include the time spent at this depth in your bottom time.

After each dive, allow for a surface interval of at least 1 hour.



ABT : Actual Bottom Time

EBT : Effective bottom Time

A 'safety stop' is not required for the multi-level dive illustrated above because the final step was conducted at a depth of 6 m.

First dive Multi-level Procedures

In Table A, find your RG for Step #1 according to the depth and actual bottom time.

E.g. Step 1 is at 27 m for 15 minutes (No-D limit is 20 minutes)
RG for step 1 is 'C'

Use Table A to find the equivalent time for RG 'C' at step 2. Add your actual bottom time to the equivalent time for RG 'C'. The total time is your effective bottom time (EBT) at step 2. Your EBT must not exceed the No-D Limit given for step 2.

Step 2 is at 15 m for 20 minutes (No-D limit is 75 minutes)
 Equivalent time for 'C' = 30 minutes
 Actual Bottom Time = 20 minutes
 Effective Bottom time = 50 minutes RG for step 2 is 'E'

Find the equivalent time for RG at 'E' at step 3. Add your actual Bottom time to the equivalent time. Your effective bottom time must not exceed the No-D limit for step 3.

Step 3 is at 6 m for 20 minutes (No-D limit is infinity)
 Equivalent time for 'E' = 150 minutes
 Actual bottom time = 20 minutes
 Effective Bottom Time = 170 minutes RG for Step 3 is 'F'

Repetitive Dive Multi-Level Procedures

On a repetitive dive, your actual bottom time at Step 1 must not exceed the No-D limit given in Table C.

E.g. Repetitive factor is 1.3
 Step 1 is at 21 m, (No-D limit in Table C is 21 minutes)
 Actual bottom time = 20 minutes
 EBT = 20 min x 1.3 = 26 minutes RG for step 1 is 'E'

The RG for Step 1 is taken from Table A according to the depth and effective Bottom Time. Your RG for Step 1 must be equal to or greater than the RG from you preceding dive.

E.g. If the RG from the preceding dive was 'F' and the RG for Step 1 is 'E', raise 'E' to 'F' before step 2.

Because you must ascend at least 6m between steps, step 2 should be conducted at a depth of 15 m or less.

Your effective bottom time (EBT) at Step 2 must not exceed the No-D Limit given in Table A.

Step 2 is 15 m for 10 mins, (No-D Limit is 75 minutes)
 Equivalent time for RG 'F' = 60 minutes
 Actual Bottom Time = 10 minutes
 Effective Bottom Time = 70 minutes RG for Step 2 is 'G'

Before surfacing, spend at least 5 minutes at a depth between 3 m and 6 m. Regardless of whether you conduct this as the final step in the dive or as a safety stop, the time you spend at this depth must be included in your effective bottom time.

Step 3 is at 6 m for 10 minutes (No-D Limit is 'infinity')
 Equivalent time for RG 'G' = 240 minutes
 Actual Bottom Time = 10 minutes

Effective Bottom Time = 250 minutes RG for Step 3 is 'H'

Summary

First Dive : your actual bottom time at Step 1 must not exceed the No-D Limit in Table A. Your EBT (or total bottom time) at each subsequent step must not exceed the No-D Limit given for that step.

Repetitive Dive : your actual bottom time at step 1 must not exceed the No-D Limit given in Table C. The RG taken from step 1 must be equal to or greater than the RG from your preceding dive. Your effective bottom time at each subsequent step must not exceed the No-D Limit given in Table A.

Finish the dive in shallow water (between 3 m and 6 m) and allow for a surface interval of at least 1 hour after each dive.

D : Depth Corrections (for altitude divers)

Table D is used to convert the actual depth at high altitude to an effective depth that corresponds with Table A and Table C depth figures intended for use at sea level. Table D provides the depth corrections and actual decompression stop depths needed to conduct dives at altitudes between 1,000 feet (300 m) and 10,000 feet (3,000 m) above sea level.

Depth corrections are necessary when diving at altitude because the reduced atmospheric pressure at the surface of the dive site makes the Altitude Dive equivalent to a much deeper dive at sea level. When you arrive from a lower altitude, your body will already have some residual nitrogen as a result of the decrease in atmospheric pressure.

Use the following procedures only after you have acclimatized at the altitude of the dive site for 12 hours:

1. Establish the altitude of the dive site and the actual depth of the Altitude Dive;
2. Convert the actual depth to Effective Depth by adding the depth correction given in Table D;
3. Apply the effective depth and the actual bottom time to Table A to determine the decompression requirements for the Altitude dive (for repetitive dives, refer to the No-D Limits given in Table C);
4. If the altitude dive is a decompression dive, conduct the decompression stop at the actual stop depth specified in Table D;
5. Decompress at the actual stop depth for the decompression stop time given in Table A.

E.g. Altitude = 1,800 m
Actual depth = 18 m
Bottom Time = 35 minutes
Depth Correction = 6 m
Effective depth = 24 m
Dec. stop = 10 minutes at 3 m (from Table A0)

Actual Dec. stop depth is 2.5 m (from Table D)

At altitudes above 1,500 m, reduce your ascent rate to 15 m/min.

If you must dive before 12 hours have elapsed, begin by using the next greater depth than the actual depth. Using the example given above, you would begin the depth correction procedure as if the actual depth were 21 meters. The effective depth would be 27 m (21 m + 6 m).

The decompression required at actual stop depths would be 5 minutes at 5 m and 10 minutes at 2.5 m.

Appendix 7

Oxygen toxicity

Central Nervous System (CNS) oxygen toxicity is possible if breathing mixture gives an oxygen dose greater than 1.6 ATA or if time limits for oxygen exposure are exceeded. The symptoms CNS oxygen toxicity are convulsions, visual disturbances, euphoria, ears ringing, nausea, twitching (lips, cheek, nose, diaphragm), irritability and dizziness. At the first sign of any of these symptoms, ascend at a normal rate and switch to breathing air as soon as possible.

NOTE:

If fitting or convulsions are occurring, maintain diver at current depth, then ascend slowly to reduce the risk of pulmonary barotrauma. Provide support and await until condition has passed, then ascend. Avoid exceeding the PO₂ of 1.4 ATA.

There are two basic rules to prevent CNS toxicity.

- 1. Always analyse and record the percentage mix of O₂ for each Nitrox mixture.**
- 2. Don't exceed the oxygen depth or the time limit for your mix.**

A raised CO₂ level can significantly increase a divers predisposition to oxygen toxicity. If performing very hard work or diving in very cold water adjust your maximum PO₂ to 1.3 or 1.35 ATA.

Appendix 8

Formulae for calculating EAD, PO₂ and MOD

For other Nitrogen-Oxygen mixtures or for mixtures containing Oxygen percentages greater than +/- 0.5% of those specified in table 1 (N), the tabulated EAD and PO₂ do not apply. The required values can be calculated by applying the appropriate equations listed below. In these equations, PPN₂ is the fraction of nitrogen in the breathing mixture (eg for a 60% N₂/40%O₂ mixture, PPN₂ =0.60) and PPO₂ is the fraction of the oxygen (eg for a 60% N₂/40% O₂ mixture, PPO₂= 0.40).

For depth units in msw:

$$\text{EAD (msw)} = \frac{(\text{PPN}_2 (\text{actual depth} + 10) - 10)}{0.79}$$

$$\text{PO}_2 \text{ (ATA)} = \frac{\text{PO}_2 (\text{actual depth} + 10)}{10}$$

Simplified formula for calculating M.O.D. (maximum operating depth), mix and PO₂

$$\begin{aligned} \text{M.O.D. (meters)} &= (P-1) \times 10 \\ P(\text{absolute pressure}) &= \text{PO}_2 \div \text{PPO}_2 \end{aligned}$$

Eg

$$\begin{aligned} \text{M.O.D. for a 36\% O}_2 \text{ mix} \\ \text{PO}_2 &= 1.4 \\ \text{PPO}_2 &= 0.36 \end{aligned}$$

$$\begin{aligned} P &= 1.4 \div 0.36 = 3.88 \text{ ATA} \\ \text{M.O.D.} &= (3.88 - 1) \times 10 \\ &= 28.8 \text{ m} \end{aligned}$$

NOTE:

EAD to be rounded up to next greater value and PO₂ to be rounded up to next greater first decimal value. The maximum PO₂ exposure limits/recommended bottom times as contained in NOAA table still apply.

Appendix 9

Places where dive medicals can be obtained

Dive medicals must be performed to meet AS2299, for the specific diving activity of “Scientific Diver”. There are 2 places that are highly recommended for this to be completed.

Diving Medical Service

135 Dunedin Street
MOUNT HAWTHORN WA 6016
Ph 9444 8977
9444 8296
A/Hrs 9385 2232
Fax 9444 8268
Dr Greg Deleuil

Westport Medical Centre

18 Pakenham Street
FREMANTLE WA 6160
Ph 9430 5282
Fax 9430 4975
Dr P.M. Martin
Dr E. Jenkins
Dr G.K. Martin

Appendix 10

Hazard identification, risk assessment and control

Hazards should be identified at the time of registration of the dive site, during the preparation of the dive plan and at the site prior to the commencement of the dive. Any hazards that arise during the dive should immediately be brought to the attention of the Dive Team Leader and the dive plan varied as necessary. To ensure the safety and health of the diver or the dive be aborted.

RISK ASSESSMENT

An assessment by a competent person is the critical appraisal of a diving operation with particular emphasis on the potential risk to divers. The assessment process focuses on the overall risk to a diver from a number of elements rather than from the risk from one of these elements in isolation. Thorough assessment assists in the identification and prioritisation of the control measures to be applied.

The assessment process should be undertaken in consultation with divers in the following three parts:

1. Dive site registration – in assessing the risks posed by working at a particular site at the beginning of a scientific program.
2. Before the diving operation – in the selection of appropriate control measures for inclusion in the dive plan.
3. At the dive site and during the diving operation – to ensure that the limitations of the control measures selected are not exceeded, including during the dive and post-dive activities.

Operational planning may take place well in advance of the intended diving operation bases on assessment of likely conditions at the dive site. Prior to the commencement of any diving operation, the Dive Team Leader should ensure that a suitable dive plan, including objective assessment of all observed, known or charted site conditions is conveyed to, and understood by, all members of the diving team.

An assessment should be based on at least –

1. The identification of hazards in the workplace;
2. The nature of the risks created by those hazards;
3. The degree of exposure to those risks;
4. The potential of those risks to cause injuries and illness; and
5. The measures required to control the exposure to those risks.

As a minimum, the factors listed above should be considered when conducting an assessment of risk.

Environmental conditions

Certain parameters should be examined for their effects on the dive from the perspective of operations both on the surface and below, including, but not limited to

–

- Strength and direction of the wind and the degree of influence that it may have on the diving operation and emergency response capability;
- Current and tide;
- Visibility;
- Entrapment hazards;
- Depth at worksite;
- Water temperature;
- Time of day;
- Underwater terrain;
- Atmospheric temperature and humidity;
- Contaminants; and
- Isolation of dive site.

Task Related Factors

The complexity of the diving task or the presence of a component which is non-routine in nature may increase the level of risk associated with a diving operation.

Hyperbaric/Physiological Factors

Hyperbaric and physiological factors include –

- Frequency of diving, including multiple ascents, repetitive diving and multi-day diving;
- Depth of dive;
- Breathing gas;
- Exertion required to reach dive site task or conduct task;
- Excessive noise;
- Immediate pre-dive fitness (prior dives, prior physical exertion, fatigue, recent illness); and
- Altitude exposure.

Associated Activity Factors

The effects of associated activity factors should be assessed. These associated activities include –

- Manual handling;
- Boat handling; and
- Dive platforms.

Other Hazards

Presence of the hazards such as the following should be taken into account:

- Dangerous marine animals;
- Water inlets;
- Shipping movements;
- Use or presence of hazardous substances, biological pollutants or explosives;
- Other hazards peculiar to the dive location(s).

Emergency Response Factors

There should be an assessment of what would be required in case of an emergency. The assessment should include consideration of –

- The location and availability of appropriate emergency systems; and
- Emergency response procedures.

Record of Assessment

The risk assessment process should be detailed in the diving operations manual. Such details should clearly demonstrate that the following processes have been addressed:

- Hazard identification – risk factors identified.
- Risk assessment – consideration of all relevant risk factors and their magnitude.
- Risk control – control measures proposed and basis for their selection.
- Monitoring – conduct of the operation assessed for effectiveness.

RISK CONTROL

Control of a risk is achieved by selecting from the hierarchy of control measures, one or more measures which individually or in combination achieve the required risk reduction.

Appropriate control measures should be applied to risks, using the hierarchy of controls in the following order –

1. *Elimination* – Where the level of risk cannot be controlled to an acceptable level, no diving should take place.
2. *Substitution* – Where the risk can be controlled by performing the task using alternative methods of diving, consideration should be given to using these alternative methods.
3. *Design* – Plants and procedures should be designed to minimize risk.
4. *Isolation* – Persons should be isolated from the identified hazards.
5. *Administrative* – Every dive plan should seek to minimize the degree and duration of the diver's exposure to risk.

NOTE : Almost every aspect of dive planning falls into this category.

Administrative controls include –

- Training, supervision, experience and selection of dive team members, including staffing levels;
 - Provision of an appropriate diving operations manual;
 - Organization and planning before, during and after the dive;
 - Selection of appropriate plant; and
 - Selection of the appropriate form and level of communication.
6. *Personal protective equipment* – Appropriately designed and sized personal protective equipment should be provided, used and maintained. The limitations of all equipment used should be identified as part of the risk assessment process. Information from manufacturers and from records of prior experience should be used to identify limitations.

Form 1

Dive checklist

Trip Number: _____

		Initial
Pre Trip	Dive plan logged	
	Dive plan approved	
On board	Boat handling safety brief	
	Pre-diving brief Tasks, location, depths, times, hazards, emergency procedures (including discussion on use of life, buddy and float lines and assessment as to their use	
	Pre-dive Equipment check Check function of regs, BCD's, gauges and other equipment	
Air consumption	Complete Air Consumption form for restricted divers and visitors	
Assessment dive	Assessment of diving skills for restricted divers and visitors	
Dive log sheets	Completed by all divers each day	
Post dive	Post-dive debrief Performance, problems, general discussion	
Comments		
Post trip	Log sheets returned to Dive Officer	

Dive Team Leader _____ Date _____
(Signature)

Dive Officer _____ Date _____
(Signature)

Form 3 Dive Plan

	1	2	3	4	5	6	7
Personnel Name							
Role							
On Record							
Date last medical							
Last dive							
Maximum depth							
Contact details							
Gear Needed							
Vehicle							
Vessel							

Form 3 Dive Plan (continued)

Leader	Buddy	Site	Task	Dive number for day	Max Depth	BT	EBT	RG	SI	RF	API	APO	Vis	Notes

BT – Bottom Time
 EBT – Effective Bottom Time
 RG – Repetitive group
 SI - Surface Interval
 RF – Repetitive Factor
 API – Air Pressure In
 APO – Air Pressure Out

Form 4

Snorkelling Medical Form

Do you suffer from any of these medical conditions?

Please answer yes or no to the following questions:

	Yes	No
Heart Disease	<input type="checkbox"/>	<input type="checkbox"/>
High or Low Blood pressure	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath (especially when exercising)	<input type="checkbox"/>	<input type="checkbox"/>
Asthma	<input type="checkbox"/>	<input type="checkbox"/>
Emphysema	<input type="checkbox"/>	<input type="checkbox"/>
Any other chronic lung disease	<input type="checkbox"/>	<input type="checkbox"/>
Fits or faints	<input type="checkbox"/>	<input type="checkbox"/>
Recent head injury or concussion	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes (especially if needing medication)	<input type="checkbox"/>	<input type="checkbox"/>

Name _____

Signature _____

Date _____

Form 5

Next of Kin Details

Divers name _____

Date _____

In the event of an emergency, should we need to contact someone for you, please fill in the details below.

Name _____

Relationship _____

Home Phone _____

Address _____

Work Phone _____

Place of Work _____

Mobile number _____

If for some reason this person cannot be contacted, please supply details of a second person.

Name _____

Relationship _____

Home Phone _____

Address _____

Work Phone _____

Place of Work _____

Mobile number _____

Form 6 Accident report form

Diver Emergency Service – Australia	1800 088 200
- International	+61 8 8363 5312
Fremantle hospital (hyperbaric chamber)	(08) 9431 3333 (24 hours)

Name of diver/s: _____

Date: _____ Location: _____

Type of injury or illness suspected: _____

Signs and Symptoms:

(time-) _____

(time) _____

(time) _____

(time) _____

If suspected dive medical illness or injury:

(time) _____

If suspected decompression illness or arterial gas embolism

1. do 5 minute Neuro Exam

(time) _____

2. Telephone or radio for advise/record doctors name

(time) _____

3. Advice given:

(time) _____

Other First Aid provided: _____

Remember:

- Follow the Diving Emergency procedures (section 9)
- Contact the Dive Officer

Form 7

Nitrox Dive Check

Trip number: _____

		Initial
Pre Trip	NITROX DIVE PLAN LODGED Include EAD and MOD in comments section	
	DIVE PLAN APPROVED	
Pre Dive	NITROX DIVING PROCEDURES (Read and understood by all divers)	
	PRE-DIVE BRIEFING Ensure divers check % mix, MOD's, DCIEM EAD and Air tables	
	PRE-DIVE EQUIPMENT CHECK Ensure Nitrox equipment used. Check function of regs, BCDs, gauges and other equipment	
Nitrox Dive Log Sheets	Correctly completed by all divers each day	
Post Dive	POST-DIVE DEBRIEF Performance, problems, general discussion	
Comments		
Post Trip	Nitrox Log Sheets returned to Dive Officer	

Dive Team Leader _____ Date: _____
(Signed)

Dive Officer _____ Date: _____
(Signed)

