

# The University of New South Wales

## SCUBA DIVING OPERATIONS MANUAL

This is a working document and subject to change

University of New South Wales Diving Safety Committee  
May 2005

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Based on the version prepared by the working party  
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# 1 INTRODUCTION

The University of New South Wales conducts Scientific Diving as a tool for teaching and scientific research.

The University of New South Wales acknowledges its responsibilities as an employer under NSW Occupational Health and Safety Act 2000. **All scientific diving operations will be conducted according to AS/NZS 2299.2:2002.**

The purpose of this Scuba Diving Operations Manual is to assist in the interpretation of AS/NZS 2299.2:2002 and to define roles and responsibilities in diving operations at the University of New South Wales. Through this Scuba Diving Operations Manual, the University of New South Wales seeks to manage its obligations by identifying hazards, removing any associated risks and/or installing control measures to prevent or minimize the level of risk to the employees, students, visitors, contractors, and volunteers engaged in underwater diving at the workplace. Employees, students, visitors and volunteers have responsibilities and obligations that are also identified in this manual.

This Scuba Diving Operations Manual will address and assist the planning and implementation of safe diving practices by identifying hazards, limitations and responsibilities of each member of the dive team through to administrative levels of management for all aspects of diving within the University of New South Wales. The Scuba Diving Operations Manual will be reviewed both periodically and as required.

This document outlines the procedures for conducting diving operations using compressed air, for scientific research or educational purposes under the auspices of the University of New South Wales.

Users of this manual should note the usage of the following terms:

must / shall : there are no circumstances under which this instruction may be ignored

should : normal diving practice requires that this instruction be obeyed but there may be circumstances in which it is appropriate for it to be relaxed

can / may : scientific diving may well benefit from using this technique

should consider : a helpful hint for scientific divers

## 1.1 REFERENCED DOCUMENTS

The following publications are referred to in this manual.

- AS/NZS 2299.2:2002 Scientific diving
- AS 2815.1-1992 Training and certification of occupational divers Part 1: SCUBA diving to 30m

This document should be read in conjunction with the University's Fieldwork Safety Guidelines [<http://www.bees.unsw.edu.au/ohs/fieldwork.html>], as they cover more general aspects of fieldwork that must also be taken into account when planning and carrying out scientific diving.

Copies of these and other referenced documents are available for reference from the Diving Officer.

## **2 DEFINITIONS**

Bottom time – the total time elapsed 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.

Caisson gauge – a pressure gauge specifically designed for the use inside pressure vessels.

Competent person – a person who has acquired, through training, qualifications or experience (or a combination of these), the knowledge and skills enabling that person to safely perform a specified task.

Compression (recompression) chamber (RCC) – a surface chamber in which a persons may by subjected to pressures equivalent to or greater then those experienced when under water, or under conditions which simulate those experienced on an actual dive.

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 barotraumas 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 in terms of maximum depth (MSW) and bottom time (minutes).

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 provided breathing gas to the diver via a mechanism which provides a flow of breathing gas when the diver inhales.

Dive coordinating position – a single, designated location on the surface, adjacent to where a diver enters the water, from which the diver's safety is monitored.

Dive coordinator – a person who supervisors and coordinates any dive and is responsible for the dive team safety.

Dive leader – a person in charge of a specific part of a diving operation.

Dive plan – a procedure specific to a given diving operation.

Diver – a person who performs diving work underwater and who, for the purposes of this Diving Operations Manual, is trained and experienced in accordance with one of the categories mentioned within.

Diving officer – a person who has been nominated in writing by the employer and is ultimately responsible for all diving activities.

Diving program – one or more dives that are related by purpose, place or time to form a series.

Diving team – divers and support personnel operating together.

Diving work – work in which diving is conducted using underwater breathing apparatus, including work by the dive team in direct support of the diver.

Effective Bottom Time (EBT) – for a diver carrying out repetitive diving, the bottom time calculated after taking into consideration the residual nitrogen from previous dives.

Effective depth – for a dive at altitude, the depth of an equivalent dive at sea level.

Exceptional exposure dive – a dive where the maximum recommended dive time for a particular depth (shown by the limiting line in decompression tables) is exceeded by a diver at that depth.

Float line – a buoyant line connecting the diver to a highly visible float on the surface of the water enabling the approximate location of the diver to be known at all times.

Lazy shot – a rope running from the surface (dive coordinating position) to an attached weight, hanging free and positioned off the bottom or worksite. The rope is marked with depth graduations to facilitate decompression stops at the correct depth.

Lifeline – a line attached to a diver which is capable of being used to haul the diver to the surface.

Limiting line – a line shown in some decompression tables, which indicates time limits (bottom times) beyond which decompression schedules are less safe.

Multi-place compression chamber – a hyperbaric chamber designed for occupancy by more than one person at a time.

Occupational diving – diving performed in the course of employment (irrespective of whether or not diving is the principle function of employment or merely an adjunct to it) and comprising all diving carried out –

- as part of a business;
- as a service;
- for research; or
- for profit.

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.

Repetitive dive – any dive conducted within 18 h of a previous dive or that has a repetitive factor greater than 1.0 when calculated using DCIEM tables.

Repetitive factor – for DCIEM tables, a figure determined by the repetitive dive group and the length of the surface interval after a dive and used for repetitive diving.

Reserve air supply – that quantity of air that will enable a diver to return safely to the surface from the planned depth of the dive, completing any planned decompression stops.

Residual nitrogen – nitrogen that is still dissolved in a diver's body tissues after the diver has surfaced.

Saturation – that condition where the person's body tissues are totally saturated with the particular inert element of the breathing medium.

Scientific diving – diving performed for the purpose of professional scientific research, natural resource management or scientific research as an educational activity.

Self-contained underwater breathing apparatus (SCUBA) – open-circuit diving equipment which supplies the wearer with breathing gas from cylinders carried by the wearer.

Shot rope – a rope running from the surface (dive coordinating position) and fixed to the worksite or bottom with a weight or attachment. The rope is marked with depth graduations to facilitate decompression stops at the correct depth.

Surface Interval (SI) – the time which a diver has spent on the surface following a dive, beginning as soon as the diver surfaces and ending upon commencement of the diver's next descent.

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.

Tethered mode (in relation to SCUBA diving) – SCUBA diving in which a diver is secured by a lifeline and tended by a diver's attendant, or is secured to a tended float line.

Therapeutic recompression tables – tables used for the treatment of decompression injury and other pressure-related injuries.

Visiting scientific diver – a trained, certified visiting diver from another country who performs tasks relevant to scientific diving in his or her own country, who has a current diving medical certification and who is allowed to dive under this Standard during his or her visit.

### **3 PERSONNEL & RESPONSIBILITIES**

#### **3.1 EMPLOYER**

The employer shall:

- Install a management process to ensure that all scuba diving activities performed by staff, students, contractors, volunteers and visitors under the auspices of The University of New South Wales comply with the under NSW Occupational Health and Safety Act 2000, AS 2299.2:2002 Scientific diving and this Diving Operations Manual and allocate necessary resources where applicable,
- Appoint and consider recommendations made by the Scientific Diving Advisory Committee, and

- Periodically review the management process regarding diving practices under their responsibility
- Appoint Diving Officer(s) with the responsibilities as set out under 3.3.

### **3.2 SCIENTIFIC DIVING ADVISORY COMMITTEE**

The University of New South Wales shall select and appoint a Scientific Diving Advisory Committee.

The Scientific Diving Advisory Committee should:

- review relevant legislation
- periodically review the scientific diving operations manual
- provide information, guidance and advice to Directors, Heads of Schools, Supervisors, principal researchers, employees, staff, students and visitors regarding diving policy and practice, recommend and disseminate modifications of policy and practice to all levels of University management, staff, students and visitors.

### **3.3 DIVING OFFICER**

The University of New South Wales shall appoint Diving Officer(s) who shall be experienced Scientific Diver(s) trained to a level equal to or exceeding that specified in AS2815.1 (Commercial Diver) and have a certificate to that effect issued by a relevant authority. They shall have at least 100 h of underwater diving experience and satisfy any other reasonable requirements as specified by the organization. The responsibilities of the Diving Officer are described in AS/NZ 2299.2:2002. The Diving Officer shall:

- (a) Have the power to restrict, prohibit or suspend any diving operations, program or practice which he or she considers unsafe;
- (b) Have the power to require such additional safety practices, procedures or equipment as he or she thinks necessary in any diving operation;
- (c) Assess diver's competencies and record the evidence used in the assessment;
- (d) Be familiar with any legislation and guidelines which may apply to the diving operations, including AS/NZ 2299.2:2002, this manual and ensure that any dive proposals that he/she approves comply with the requirements of this manual.

When approving dive proposals, the University of New South Wales Diving Officer(s) shall ensure that the divers are trained and competent for the diving operation proposed, and have any extra training they may require prior to particular dives. The Diving Officer(s) may authorize a diver to dive on certain diving operations only, depending on the qualifications of the diver and relevant legislative requirements. When approving dive proposals the Diving Officer(s) will also consider the adequacy of the risk assessment and emergency plan for each dive proposal.

### **3.4 DIVE COORDINATOR**

A dive coordinator appointed by the diving officer shall be present at all times while a diver is in the water or under pressure in a compression chamber. The dive coordinator shall be responsible for the safe conduct of diving and shall coordinate and direct the activity of the diving teams and ensure that all diving is carried out in accordance with AS/NZ2299.2:2002.

A dive coordinator shall have at least 15 hours experience as a Scientific scuba diver and have experience in the diving, equipment and procedures used in the diving operation to be performed. They shall further:

- (a) Be appointed in writing at the discretion of the diving officer to supervise diving operations; and
- (b) Be able to recognize and manage diving emergencies and conduct pre-dive risk assessments
- (c) Satisfy any other reasonable requirements specified by the organization's Diving Officer.
- (d) Be familiar with this manual and ensure diving operations are carried out in accordance with its requirements

### **3.5 DIVE LEADER**

A dive leader is a person in charge of a specific part of a diving operation. A dive leader shall be-

- (a) The dive coordinator or a person appointed by the dive coordinator; or
- (b) A scientific diver or a visiting scientific diver with adequate knowledge and experience of the diving techniques and equipment to be used.

When a dive leader is the person in charge of a single group of divers who are diving in free-swimming SCUBA mode, that person shall take responsibility for any decisions required as the dive proceeds, in consultation with the dive coordinator where appropriate.

### **3.6 CLASSIFICATION AND COMPETENCY OF DIVERS**

Every diver shall be classified as a restricted scientific diver, a scientific diver, visiting scientific diver or a visiting restricted scientific diver. All divers shall be made aware of their occupational health and safety responsibilities and the organization's relevant procedures, including this manual.

#### **3.6.1 Scientific Scuba Diver**

In order to carry out scientific diving using scuba a scientific diver shall:

- (a) Have a certification as an open water diver through a certified recreational instructor, or equivalent training through any other certification scheme
- (b) Have at least 15 hours of underwater diving experience after certification
- (c) Demonstrate competency and satisfactory performance in diving theory and diving practical units as specified in AS/NZ 2299.2:2002
- (d) Be familiar with the pre-dive plan before diving;
- (e) Dive in accordance with the pre-dive plan
- (f) Act as a buddy diver during the dive to others in his or her designated buddy group, unless diving alone in tethered SCUBA mode. Free-swimming buddy divers shall maintain effective two-way communication with each other at all times while in the water and be able to render assistance.
- (g) Be on the Dive Register of his/her institution with a current diving medical
- (h) Abide by the procedures for diving as described in AS/NZS 2299.2:2002 and this manual.

[NB this section will refer to specific Scientific Diving Course once available]

### **3.6.2 Restricted Scientific Diver**

This category is specifically for persons who are involved in research requiring diving but who have limited diving experience and are deemed by the diving officer of their host institution not to have experience equivalent to a scientific diver.

As a minimum, a restricted scientific diver should-

- (a) Be 18 years of age;
- (b) Hold an open water diver certificate from a recognized SCUBA training and certifying organization; and
- (c) Have at least 15 h of underwater diving experience after certification.
  - (a) Only dive when conditions are suitable for untethered SCUBA mode;
- (e) Not dive deeper than 18 m depth;
- (f) Not act as a standby diver or a dive leader;
- (g) Not dive as a restricted diver other than for a single initial period of up to 12 months; and
- (h) Not use powered tools or lift bags.

### **3.6.3 Visiting Scientific Diver and Visiting Restricted Scientific Diver**

There shall be full reciprocity for scientists who are qualified to dive under the auspices of scientific diving organizations outside Australia and New Zealand. The Diving Officer may issue a 'visiting scientific diver' or 'visiting restricted scientific diver' certification as appropriate, subject to special conditions.

The Diving Officer may arrange appropriate dives at the start of a visiting diver's stay in Australia so that person's overall competence to participate in the diving planned can be assessed.

## **3.7 DIVER'S ATTENDANT**

### **3.7.1 Availability and knowledge**

Dive teams shall have a diver's attendant who is competent to administer cardiopulmonary resuscitation (CPR) and oxygen resuscitation and have a working knowledge of the following:

- (a) Diving and the requirements of underwater work.
- (b) Signals in use, in particular, the systems of hand and rope signals to be used in the diving operations.
- (c) Decompression procedures.
- (d) Diving equipment in use, including ancillary fittings such as pressure gauges, compressors and filters.

The diver's attendant shall not be engaged in any task other than that of diver's attendant while the dive team is in the water or under pressure.

### **3.7.2 Duties**

The diver's attendant, or other person nominated by the dive coordinator, shall-

- (a) Record the time of descent and surfacing of each diver;
- (b) Maintain a constant vigil during a dive for divers surfacing at a distance from the boat or other dive control position;
- (c) Assist in the recovery of divers and all equipment and samples from the water;
- (d) Ensure that the dive flag is deployed
- (e) If tending a diver's lifeline, maintain the ability to communicate with the diver by means of that lifeline.

## **3.8 STANDBY DIVER**

### **3.8.1 General**

The standby diver shall be present whenever a single diver is underwater in tethered mode, and shall be a qualified diver and located on the surface, dressed and equipped to enable immediate entry into the water for the purpose of providing aid or assistance to a distressed diver. The dive profile of the standby diver shall be planned to allow all necessary assistance to be given to a distressed diver without the standby diver incurring a decompression commitment. The only exceptions to this shall be:

- a) In an emergency; or
- b) When the depth of the water is such that the standby diver will automatically incur a decompression commitment.

NOTE: The surface standby diver may perform certain minor duties (e.g. tending the lifeline) provided the safety of the diver in the water is not compromised in any way.

### **3.8.2 Two divers in the water**

Where two divers are in the water at the same time, one may act as standby diver for the other provided that both divers have no decompression commitment and maintain visual contact with, and direct access to, each other. That is, the buddy diver may act as the standby diver.

## **3.9 HEALTH, FITNESS AND FIRST AID**

### **3.9.1 Health and fitness**

All divers must be certified as medically fit to dive in accordance with the requirements of AS/NZS 2299.1:1999 (see Appendix J for a comprehensive list of Medical Practitioners within the Sydney Metropolitan area, trained specifically to perform Occupational Diving Medicals). A certificate of fitness to dive shall have been issued within 12 months prior to diving by a medical practitioner appropriately trained in underwater medicine. All divers involved in diving shall also ensure that they are fit to dive. Fitness should be maintained by exercise and regular diving. Where a diver has not dived for a period of time exceeding six months, the diver shall carry out a check out dive or program of dives with the diving officer or the diving officer's delegate qualified to undertake such an evaluation.

### **3.9.2 First Aid for Diving Teams**

All divers and attendants should be trained in first aid so that, as a minimum, they are able to-

- (a) Control bleeding;
- (b) Administer 100% oxygen to spontaneously breathing patients and oxygen-enriched resuscitation to non-breathing patients using the oxygen resuscitation equipment at the dive site;
- (c) Care for an unconscious patient; and
- (d) Carry out cardiopulmonary resuscitation.

NOTES:

- 1) The above requirements are usually met by a first aid course leading to certification, incorporating or supplemented by an oxygen administration course.
- 2) It may in some circumstances be possible to make adequate provision for the delivery of emergency first aid with not all personnel being trained, provided that no less than two persons are trained and available to ensure first aid will be available if required.

## **4 ORGANISATION, PLANNING AND RECORDS**

### **4.1 GENERAL**

Diving procedures must be carried out according to the provisions of AS/NZS 2299.2:2002 and this manual. Many scientific locations are remote from search and rescue, medical and recompression facilities and risk assessment and planning must take this into account.

### **4.2 ACTION PLAN**

All diving must be in accordance with the following action plan. More detailed guidance on the processes of hazard identification, risk assessment and risk control can be found in Appendix D. Documentation of these processes should be carried out using the forms referred to in Appendices B and C as a minimum.

#### **4.2.1 Diver Registration – see Appendix A**

All staff, students, contractors, visitors and volunteers who are required to scuba dive in diving operations conducted by the University of New South Wales must register and be approved for diving by the Diving Officer. Each diver will be approved as a scientific diver, a restricted scientific diver, visiting scientific diver or a visiting restricted scientific diver.

#### **4.2.2 Dive Proposal – see Appendix B**

The Dive Proposal must be approved by the Diving Officer before every diving operation. It comprises a dive proposal, risk assessment and emergency plan.

- (a) Dive Proposal - details of location of diving operations and dive team
- (b) Risk Assessment - identify possible hazards and precautions to be taken
- (c) Emergency Plan - identify emergency facilities and procedures

#### **4.2.3 On Site Pre-Dive Plan and Risk Assessment – see Appendix C**

At the dive site before every dive, the dive coordinator, divers, divers' attendants and any non-diving support personnel shall discuss in detail and agree upon the pre-dive plan and update the

risk assessment. The On Site Pre-Dive Plan and Risk Assessment must be lodged with the Diving Officer on return to the University of New South Wales.

#### **4.2.4 Diver's Record and Employer's Record of Dives**

All divers shall keep and maintain a permanent record of all diving undertaken for the duration of the diver's working life. At the end of a diving operation the Dive Coordinator shall deposit with the Diving Officer, a copy of each diver's log for dives conducted during that diving operation. This shall also be performed online at:

<http://www.bio.usyd.edu.au/Diving/index.shtml>

The diver's permanent record of diving usually takes the form of a logbook, which shall include:

- a) The diver's photograph
- b) Next of kin information
- c) Diver's name, current address, date of birth and signature
- d) A record of medical examinations conducted for the purpose of scientific diving;
- e) A record of diving activity undertaken and,
- f) A record of accidents and incidents including decompression treatment(s).

The logbook shall be presented at each diving medical examination. The diver's record of dive (including a brief summary of any incidents or accidents) should be entered into this permanent record of diving at the completion of each dive, and signed by the Dive Coordinator for verification.

### **4.3 DIVING PROCEDURES**

#### **4.3.1 Restrictions on diving operations**

Diving operations shall only be carried out when:

- The dive does not involve planned decompression stops
- The maximum depth does not exceed 30 metres
- The dive does not involve "Cave diving" as defined by the Cave Diving Association of Australia (<http://www.cavedivers.com.au/>)

#### **4.3.2 Dive Teams**

Dive teams must include a Dive Coordinator and should comprise

- Two divers and a competent boat person or shore watch (diver's attendant) OR
- Three divers and a competent boat person or shore watch (diver's attendant) OR
- More than three divers grouped into buddy pairs (preferably) or trios, but no more, and one competent boat person or shore watch (diver's attendant) OR
- When diving in "Sheltered conditions", divers are permitted to dive without a shore watch (i.e. in a team of two divers).

**Note: Sheltered conditions are defined as: depth less than 10 metres, visibility greater than 4 metres, wave height less than 0.5 metre, current nil to slight, and daylight hours.**

### **4.3.3 Dive Leader**

Before the divers enter the water, one member of each group of divers shall be designated by the Dive Coordinator as the underwater dive leader of that group. Prior to the dive, the Dive Leader should confirm the means to be used by the group for summoning attention and recalling divers to the surface, such as banging on the tank with the knife. The Dive Leader should also confirm that any diver feeling distressed or uncomfortable may terminate the dive at any time.

### **4.3.4 Night dives**

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

- The entry and exit points shall be adequately and distinctively illuminated
- Every diver shall carry at least two lights, one of which may be a chemically-activated light stick.

Consideration should be given to the use of other safety measures according to circumstances.

### **4.3.5 Blue water diving for tracking particles**

These procedures are not appropriate for open ocean blue water diving, but are to be applied to blue water diving in waters 20-40 m deep over the continental shelf. For open ocean blue water diving, the use of a mother ship for coordination must be considered and appropriate procedures developed in conjunction with the Diving Officer.

Diving will be conducted from a small, outboard-powered boat, with a dive team comprising two divers and one boat operator. The operator will circle the divers' bubbles at idle speed at a radius of 20-30 m. A dive flag is displayed throughout. If the boat operator loses sight of the divers' bubbles, he/she motors at idle speed into the wind constantly scanning the area until the divers surface. The boat operator keeps track of vessels in the vicinity, and wards off any vessels approaching too close to the divers.

If conditions are such that the boat operator cannot easily keep track of the divers' bubbles at the surface, one of the divers must be equipped with a light line attached to a small surface float to enable the boat operator to stay in the vicinity of the divers. In addition to normally-required dive gear, divers must be equipped with a dive computer and a compass.

### **4.3.6 Use of decompression tables**

All dives including repetitive dives must be calculated using DCIEM tables (Canadian Defence and Civil Institute for Environmental Medicine). A copy of the DCIEM tables can be viewed at <http://www.bio.usyd.edu.au/Dive.pdf>. Divers should note that UDT, the licensee and manufacturer of DCIEM tables have recommended amendments covering the use of these tables (see Appendix E).

Maximum bottom times must be reduced according to Table 3.1 AS/NZS 2299.2:2002 if diving is conducted without a recompression chamber on site (see Appendix E). Dive computers may be used for the diver's own information.

### **4.3.7 Safety stop**

On each dive, divers should do a safety stop of at least 3-5 min at 3m.

#### **4.3.8 Diving with other institutions and divers from other institutions**

When a dive operation is conducted by The University of New South Wales all divers must be registered with the University of New South Wales and follow the procedures of AS/NZS 2299.2:2002 and this manual.

When The University of New South Wales divers participate in diving operations conducted by another institution, they must follow the procedures of AS/NZS 2299.2:2002, this manual and the procedures of the institution conducting the diving operation.

#### **4.3.9 Incident Reporting**

All unusual incidents, unexpected hazards, accidents and injuries will be reported as soon as possible to the relevant Diving Officer and to the Risk Management Office. Where injuries occur or there are mechanical breakdowns or accidents that affect completion of the work, safe return of staff or students, or endanger life, these must be reported verbally as soon as practical to the contacts at the University. Less serious events shall be reported to the Diving Officer on return to the University. Refer to the University Emergency Action Plan – see Appendix K.

The Dive Coordinator must investigate all incidents, hazards, injuries and breakdowns with the other people involved to determine the causes and any actions that may be taken to prevent a recurrence of the incident. Detailed guidance on the investigation of accidents and incidents can be found in Section 7 of AS/NZS 2299.2:2002.

When an event occurs which affects work or future work, a debriefing must be held soon after the return of the dive team, in accordance with procedures developed by the Department. The debriefing should cover issues such as the adequacy of the planning, risk assessment and preparation for the dive, any incidents which occurred and how they were managed and any lessons learned that could benefit future dives by members of the Department concerned or other Departments.

The University's Occupational Injury, Illness and Incident Report Form and a DAN incident report form will be used for reporting incidents as per the University's Policy on Accident Reporting – see Appendix H and Appendix I. The University of New South Wales Incident Report Form can be located at:

[http://www.riskman.unsw.edu.au/ohs/Forms/OHS002\\_final\\_270904.rtf](http://www.riskman.unsw.edu.au/ohs/Forms/OHS002_final_270904.rtf)

#### **4.3.10 Lost Diver Routine**

In the unlikely event that a diver becomes separated from their buddy:

- The divers will do a 360° search for each other for a maximum of 1 minute looking for bubbles or visual sign of lost diver
- If lost diver is not located the searching diver will then return to surface at the correct ascent rate, still performing a 360° search on ascent
- Once on surface, deploy safety sausage, utilize whistle (or vocally question where diver is) and wait on surface for 4 minutes
- If lost diver is still missing, return to boat or shore and initiate emergency procedures, i.e. alert Diving Coordinator/ shore attendant, contact DSO, contact emergency services.

#### **4.3.11 Diving before or after travel.**

- a) Diving after Travel  
The diver shall have had adequate rest before diving.
- b) Travel after Diving

- a. Altitude exposure after diving is a potent precipitator of decompression illness. After a dive, a minimum delay time should be observed prior to exposure to altitudes (e.g. air travel and road travel over mountains) – see Appendix L for a list of the minimum delay times which should be observed relative to altitudes.

## **5 EQUIPMENT FOR DIVING**

### **5.1 EQUIPMENT STANDARDS AND MAINTENANCE**

Each member of the diving team must know the capabilities and limitations of any equipment used. The dive leader must select appropriate equipment, based on the work site conditions and the dive plan. Equipment must not be altered, modified, or changed in any way that might impair its safe and efficient operation.

All diving equipment, including cylinders, regulators and accessories necessary for the safe conduct of the diving operation must be:

- Of approved design, sound construction, adequate strength, free from any defect and maintained in a condition that will ensure its continued operation for the purpose and depths for which it was originally designed and subsequently used
- Examined, tested, overhauled and repaired in accordance with the manufacturer's recommendations and used in accordance with AS/NZS 2299.2:2002.

### **5.2 SERVICE AND MAINTENANCE OF EQUIPMENT**

Regulators, buoyancy vests (where they serve as an alternative air supply), gauges and metering equipment shall be serviced according to manufacturer's requirements. Any malfunction must be rectified without delay.

Records of maintenance and testing of the University of New South Wales and personal equipment used in the University of New South Wales diving operations will be kept by the Diving Officer for at least two years.

### **5.3 PERSONAL DIVING EQUIPMENT**

Each diver shall have the following equipment:

- (a) Open-circuit scuba, complete with cylinder and two demand regulators. The Diver's breathing air cylinder shall be durably marked with the word 'AIR' in letters not less than 50 mm high and in a contrasting colour to the body of the cylinder.
- (b) Face mask
- (c) Swimming fins
- (d) Snorkel for surface swimming
- (e) Weight belt or weight jacket with quick release closure
- (f) Submersible contents gauge for measuring remaining air pressure in cylinder
- (g) Wetsuit or protective clothing appropriate to the condition of work and the temperature of the water
- (h) Buoyancy compensator of an approved design that is inflatable orally and from a compressed air cylinder
- (i) Alternative air supply – which could comprise of; a spare second stage regulator such as an octopus regulator, a pony bottle, or a second stage regulator incorporated into the oral inflation hose of the buoyancy compensator

- (j) Watch or elapsed time indicator or dive computer
- (k) Depth gauge
- (l) Diver's knife
- (m) Safety sausage.

#### **5.4 SAFETY EQUIPMENT FOR DIVE TEAM**

The following equipment must be available at the dive site:

- (a) Oxygen resuscitation equipment
- (b) First aid equipment
- (c) Dive flag
- (d) Communications (mobile phone, satellite phone or radio)
- (e) Copy of dive proposal and emergency procedures.

## 6. APPENDIX A - DIVER REGISTER

### PERSONAL DIVING RECORDS

Name:	
Address:	
Date of Birth:	
Signature and Date:	
Status:	Permanent Staff, Temporary Staff, Visitor, Honors Student, Post Grad Student, Volunteer

### Next of Kin

Name:	
Address:	
Phone Number:	
Relationship:	

### Diving

	Details	Sighted by DSO
Highest Diving Qualification: (attach copy)		
Senior First Aid: (attach copy)		
Advanced Resuscitation: (attach copy)		
Additional Qualifications: (attach copy)		
Most Recent Diving Medical: (attach copy)		
Number of Logged Dives:		
Number of Logged Hours:		

### Any Diving Related Accidents or Incidents

Comments	
----------	--

I have read the University of New South Wales Scuba Diving Operations Manual and the AS2299.2:2002 (Signature and Date)	
---	--

Approved as:	Dive Coordinator, Scientific Diver, Restricted Scientific Diver, Visiting Scientific Diver, Visiting Restricted Scientific Diver
DSO's signature and Date:	

**7. APPENDIX B - DIVE PROPOSAL FOR SCUBA (page 1 of 3)**

Dive coordinator:		Date of last medical:	
Contact Phone Number:			

List of Dive Team Members:

Name:		Date of last medical:	
Name:		Date of last medical:	
Name:		Date of last medical:	
Name:		Date of last medical:	

Person to be notified on leaving and returning to the University/ Field Camp:

Name:		Phone number:	
-------	--	---------------	--

Location(s) (**latitude and longitude or Grid Reference**) of Dive(s)

Location 1:	
Location 2:	

Date(s):

From:		To:	
-------	--	-----	--

Type of Dive(s):

i.e. Boat type and name, shore, drift etc	
---	--

Dive Profile:

	Dive 1	SI (min)	Dive 2	SI (min)	Dive 3	SI (min)
Start time						
Max depth						
Total dive time						

Risk Assessment:

Does this site have a registered Risk Assessment and Emergency Plan? YES / NO

Is there a copy on site? YES / NO

I affirm that a Risk Assessment will be conducted on site. (Signature)	
--	--

Sheltered Open Water Site:

Is this site a 'Sheltered Open Water Site' as specified in 4.3.2 in the Scuba Diving Operations Manual? YES / NO

Equipment:

Has all of the SCUBA equipment to be used been serviced in the past 12 months or as required by AS/NZ 2299.2:2002? YES / NO

Signature (Coordinator):		Date:	
Signature (Diving Safety Officer):		Date:	

GENERAL RISK ASSESSMENT FOR DIVE PROPOSAL (page 2 of 3)

1. *What type of work is proposed?*

--

2. *Hazards*

<b>General Hazards</b>	<b>Yes / No</b>	<b>General Hazards</b>	<b>Yes / No</b>
Sharp Edges	Yes / No	Soft Sediment Benthos	Yes / No
Entanglement	Yes / No	Gases	Yes / No
Exceeding Maximum Depth	Yes / No	Remote Sites	Yes / No
Overhead Environment	Yes / No	Dangerous Marine Animals	Yes / No
Shipping	Yes / No	Difficult Access	Yes / No
Tide / Currents	Yes / No	Cold	Yes / No
Decompression	Yes / No	Pollution	Yes / No
Boat Traffic	Yes / No	Thermal Hazards	Yes / No
Distance	Yes / No	Isolation	Yes / No
Dispersion	Yes / No	Altitude	Yes / No
Walls	Yes / No	Noise	Yes / No
Poor Visibility	Yes / No	Other	

3. *If any of the above applies, indicate your mitigating measures:*

--

Dive Proposal Approved by DSO:		Date:	
--------------------------------	--	-------	--

Two person dive team, approved subject to conditions as specified in 3.3.2 in the UNSW Scuba Diving Operations Manual? YES / NO

Record Submitted (DSO Signature):		Date:	
-----------------------------------	--	-------	--

EMERGENCY PLAN FOR DIVE PROPOSAL (page 3 of 3)

2 COPIES:

- Copy for Dive Team
- Copy to be retained by Diving Officer

<b>Emergency Phone Number:</b>	<b>000</b>
<b>Mobile Emergency Number:</b>	<b>112</b>

Divers Emergency Service (DES):

In Australia	<b>1800 088 200</b>
International	61 8 8212 9242

Dive Site:

(If there are multiple sites, then an Emergency plan MUST be completed for each location)

What are the directions to the dive site for Emergency Services?

Where is/are the nearest hospitals to your proposed dive site and Telephone Number?

Where is the nearest Recompression Chamber and Telephone number?

Where is your home base while carrying out the proposed dives?

Phone number at home base?

Do you have OXYGEN at the dive site?	YES / NO
Do you have FIRST AID at the dive site?	YES / NO

Communications with dive team:

Mobile 1	
Mobile 2	
Satellite Phone	
Boat Radio	VHF / HF / 28Mhz
Does the boat have an EPIRB?	YES / NO

Emergencies involving fatalities, serious injuries or serious decompression illness must be reported as soon as possible to the University contacts. The Risk Management Office must also be promptly informed of any such emergencies in order to comply with legal requirements. The Risk Management Office telephone number is 02 9385 1565

## 8. APPENDIX C – ONSITE PREDIVE PLAN AND RISK ASSESSMENT

*To be completed before each dive and returned to the Diving Officer:*

Dive coordinator:	
Date:	

*Site Registration:*

Location:	
Maximum depth for each team:	
Bottom time for each team:	

*Circle all applicable hazards and measures taken, tick when done and then sign:*

Identified Hazards	Possible Hazards	Measures Taken	Comments and Sign
Weather	Nil, Wind Speed, Direction	Forecast, Monitor, Cancel	
Sea state	Smooth, Slight, Moderate, Rough	Monitor, Revise plan, Cancel	
Underwater	Nil, Low Visibility, Entrapment, Tide	Check Visibility, Revise Plan, Cancel	
Pollution	Assumed negligible, High Level	Monitor, Revise Plan, Cancel	
Depth	Nil, Possibility of exceeding depth	Max Depth/ Direction given	
Temperature	Nil, Excessive Cold/ Heat	Suitable diving protection	
Access	Shore, Boat, Platform	Ladder provided, Other	
Shipping	Nil, Port Traffic, N/A	VHF monitored, Lookout, Flag Alpha, Liaison with Skipper	
Diving Safety	Ears, Lungs, Separation, Air checks	Briefed, SMB, times and depths etc	
Dangerous Marine Animals	Assumed negligible, Present, Abundant	Brief, Monitor, Revise plan, Abort	
Thermal Exposure	Shade, Rehydration, Sunscreen, Protective clothing	Monitor, Revise Plan, Abort	
Other / Comments			

*Checklist:*

Category	Prompts	Done?
Divers	Feeling fit for the dive? Adequately experienced for dive?	
RCC	Available and location determined.	
Dive Plan	Dive Plan signed? Permit to dive granted?	
Safety Equipment	Oxygen checked and working? First aid kit? Diver recall system? Mobile phone signal/charged? VHF working? Knife? Safety sausage?	

Dive Site	Pre-dive equipment checks? Authorities notified?	
-----------	--	--

**HYPERBARIC / PHYSIOLOGICAL FACTORS:**

*Do the dives include?*

Multiple ascents	YES / NO
Repetitive dives	YES / NO
Multi-day dives	YES / NO
Excessive exertion	YES / NO
Other (please specify)	

If YES, describe hazard and precautions taken:

--

*Residual Nitrogen for each Diver:*

Dive Team Members:	Repetitive Group:

Dive coordinator:

Name (please print)			
Signature:		Date:	

Dive Team:

Name:		Signature:	
Name:		Signature:	
Name:		Signature:	
Name:		Signature:	

University of New South Wales

Dive Planner.

*To be completed FOR each dive and returned to the Diving Officer with the Onsite Pre-dive Plan and Risk Assessment.*

Date	Dive #	Divers	Depth	Bar In	Bar Out	Time In	Time Out	Bottom Time	RG	SI	RF	EBT (BTxRF)	Diver Well? (Signature)

Dive Coordinator's Signature: \_\_\_\_\_

Dive Officer's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

## 9. APPENDIX D – HAZARD IDENTIFICATION AND RISK ASSESSMENT

Hazard identification and risk assessment should be performed at the dive proposal stage and as part of the pre-dive plan. Hazards that arise during a dive should be immediately brought to the attention of the Dive Coordinator so that the dive plan can be altered to ensure the health and safety of the divers or the dive aborted.

The following steps are used to manage occupational health and safety risks arising in scientific diving operations.

- Step 1. Identify hazards and hazardous tasks
- Step 2. Assess the nature of the risk created by those hazards and hazardous tasks
- Step 3. Assess the degree of exposure to the risks and the potential of the risks to cause injury or illness
- Step 4. Eliminate or control the risks
- Step 5. Review the adequacy and effectiveness of the adopted control measures.

Risk assessment of diving operations should identify and take into account the following:

- Environmental conditions, e.g.
  - strength and direction of wind and its potential influence on diving operations and emergency response capability
  - atmospheric temperature and humidity currents and tides
  - time of day
  - water temperature
  - visibility
  - underwater terrain
  - entrapment hazards
  - contaminants,
  - isolation of the site, etc
- Task factors, e.g. complexity, non-routine tasks may increase level of risk
- Hyperbaric/Physiological factors, e.g.
  - depth and duration of dive
  - frequency of diving, multiple ascents, repetitive diving, multi-day diving
  - breathing gas
  - exertion required to reach site and conduct tasks
  - immediate pre-dive fitness
  - altitude exposure
  - excessive noise, etc
- Factors relating to associated activities, e.g. manual handling, boat handling and dive platforms, etc
- Emergency response factors, e.g. location and availability of emergency facilities and systems, etc
- Other hazards that could be encountered during the diving operations, e.g. dangerous marine animals, water inlets, shipping, use of hazardous substances, biological pollutants or explosives, etc.

Hazard identification and risk assessments should be documented using the forms in appendices B and C, together with any additional documentation relevant to the particular situation.

Risks in diving operations should be controlled in accordance with the hierarchy of controls i.e.

1. Elimination – if the risk cannot be adequately controlled, no diving should take place
2. Substitution – if an alternative method is available that entails less risk, it should be considered
3. Design – procedures and equipment should be designed to minimize risk
4. Isolation – divers and others should be separated from identified hazards if feasible
5. Administrative – covers many aspects of dive safety including adequate training, supervision and experience of the dive team members, adequate organization and planning of the dive and selection of appropriate means of communication to minimize risk; the dive plan should minimize the duration and degree of each diver's exposure to risk
6. Personal Protective Equipment – appropriately designed and sized equipment provided, used and maintained and the limitations of the equipment understood in order to minimize risks to the dive team.

Further guidance on hazard identification, risk assessment and control can be found in Appendix G of AS/NZS 2299.2:2002

## 10. APPENDIX E - DECOMPRESSION PROCEDURES

### Reduced Bottom Time Limits For Remote Locations

Maximum depth of dive (m)	Maximum bottom time (mins)		
	COLUMN A Chamber within 2 hours	COLUMN B Chamber within 2 – 6 hrs	COLUMN C Chamber over 6 hours
3	No limit	240 (400)	190
6	240 (400)	240 (300)	190
9	180	140	110
12	120	70	55
15	75	60	50
18	50	40	30
21	35	30	20
24	25	20	15
27	20	15	10
30	15	10	10

### Amendments to DCIEM procedures

- (a) The rate of ascent should be 10 metres  $\pm$  3 metres per minute
- (b) A 3 minute stop is recommended for all dives below 12 metres
- (c) Repetitive dives should always be shallower than the previous dives
- (d) A maximum depth of 27 metres is recommended for second dives and 15 metres for the third dive
- (e) The group letter for each repetitive dive must be higher than the RG from the preceding dive. Otherwise add one letter to the preceding dive RG and use the higher RG letter. e.g. 1<sup>st</sup> dive RG = C, 2<sup>nd</sup> dive RG = D, 3<sup>rd</sup> dive RG = E
- (f) If more than two dives a day are conducted on three consecutive days, diving should not be carried out on the fourth day.
- (g) When diving in remote locations add 2 consecutive letters when calculating the RG group for conservative measures e.g. 1<sup>st</sup> dive RG = B, then calculate the EBT using RG = D.

## **11. APPENDIX F - NITROX DIVING (INFORMATIVE)**

Nitrox is a combination of oxygen and nitrogen where the percentage of oxygen is increased from standard air, which is approximately 21% oxygen and 79% nitrogen. In Nitrox diving the mix of oxygen is from 22% to 40% in water depths less than 130fsw/40msw.

Nitrox divers have less nitrogen in their tanks than air divers. For an equivalent dive they absorb less nitrogen into their bodies and are less exposed to Decompression Sickness (DCS). Using Standard Air Dive Tables on Nitrox gives increased physiological safety, especially for people who are more at risk from DCS. The increased risk factors include: obesity, illness, older age, fatigue, heavy exertion during and or after a dive, are reduced by the use of Nitrox. Divers can benefit through increased bottom time and shorter surface intervals if they are not affected by such risk factors.

Diving cylinders used for Nitrox are defined with a Green band and labeling these are only used for Nitrox, this is to avoid a person using a tank thinking it is air when it is Nitrox or using a Nitrox tank thinking it is for air. This sort of mistake can result in a diver extending the no decompression limits thinking he is using Nitrox or, alternately, thinking he has air, the diver exposes himself to central nervous system (CNS) oxygen toxicity with Nitrox. Regulators using less than 39% oxygen can be used for air or Nitrox diving. Divers must check their own Nitrox fills with an oxygen analyzer and sign off on the fill log at the fill facility. Cylinders are tagged describing fill pressure, oxygen, analysis date, maximum oxygen depth, name of user and cylinder number.

A standard Nitrox course will equip a diver with the understanding and training to use this gas mix to increase safety margins, while working to air dive tables. It can increase dive times and shorten dive time intervals.

*Information sourced from Technical Diving International*

## **12. APPENDIX G - AUSTRALIAN MUSEUM PROCEDURES FOR BLUE WATER DIVING FOR FISH LARVAE BEHAVIOURAL STUDIES**

These procedures are not appropriate for true blue water diving (open ocean), but are to be applied to blue water diving in waters 20-40 m deep over the continental shelf. For open ocean blue water diving, the use of a mother ship for coordination must be considered and appropriate procedures developed in conjunction with the Diving Officer. Procedures developed for blue-water diving by zooplankton biologists involving a shot line, tethers between divers and the line, and a 'look-out' diver are inappropriate for a research protocol that requires the divers be free to follow a released larva.

### **Equipment**

In addition to normally-required dive gear, divers must be equipped with a dive computer and an orange 'safety sausage'. If conditions are such that the boat operator cannot easily keep track of the diver's bubbles at the surface, one of the divers must be equipped with a light line attached to a small surface float to enable the boat operator to stay in the vicinity of the divers. A 'shot line' is not used because the divers are following a released fish. Divers have a compass, and a hand-held flow meter.

### **Boat operation**

Diving is conducted from a small, outboard-powered boat, with a dive team comprising two divers and one boat operator. The operator circles the divers' bubbles at idle speed at a radius of 20-30 m. The boat operator monitors geographic position, and supplies the divers with new fish for release as needed. A dive flag is displayed throughout. If the boat operator loses sight of the divers' bubbles, he/she motors at idle speed into the wind constantly scanning the area until the divers surface. The boat operator keeps track of vessels in the vicinity, and wards off any vessels approaching too close to the divers.

### 13. APPENDIX H - IDAN DIVING INJURY REPORT FORM

#### DIVING INCIDENT REPORT

DAN is a non-profit dive safety organisation whose aim is to sponsor data collection and research into diving incidents, and their prevention. To support this research, DAN collects and analyses information about diving incidents. DAN SEAP undertakes to hold the names and contacts of individuals involved as confidential.

---

#### INFORMATION ABOUT THE INCIDENT

Date:

Time:

Nearest Town:

Country:

---

#### BRIEF DESCRIPTION OF INCIDENT

---

#### TYPE OF INCIDENT

Decompression Illness

Drowning / near drowning

Trauma

Other:

---

#### DETAILS OF INJURED PERSON

Name:

Contacts:

Age / Birthdate:

Gender:

#### Certification Level

Not known

In Training Open Water

Advanced

Divemaster

Instructor

Technical

Commercial

#### Experience:

Years diving:

Total no. of dives:

Total dives in last 12 months:

#### Outcome:

Fatal

Non-Fatal

---

#### REPORTED BY:

Name:

Contact Ph:

Email:

# 14. APPENDIX I – UNSW OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT HAZARD REPORT

## Incident and Work Related Illness/Injury Report

Version: September 27 Incident number:

### PART A To be completed by employee, student, visitor or contractor

#### 5.4.1 Personal Details

Title:	Family Name:	First Name:	Staff/student number:
Email:	Phone (w):	Phone (h):	Mobile:
Faculty/Division:		School/Unit:	
<input type="checkbox"/> Employee	<input type="checkbox"/> Student	<input type="checkbox"/> Contractor	<input type="checkbox"/> Visitor Other:
Position:	Gender:	<input type="checkbox"/> Male	<input type="checkbox"/> Female
Residential address:			

#### 6 Incident details

<b>Tick one box only</b>	<input type="checkbox"/> Incident with no injury or illness	<input type="checkbox"/> Work related illness	<input type="checkbox"/> Work related injury
Date incident occurred:	/ /	Time of incident:	am/pm
Date of onset of symptoms (if applicable): / /			
Date incident reported:	/ /	To whom was the incident first reported:	
Incident location:	<input type="checkbox"/> On campus	<input type="checkbox"/> Off campus	<input type="checkbox"/> On fieldwork <input type="checkbox"/> On journey to or from work
Describe location of incident as follows: building name, room number or street address or fieldwork site			
Names and contact details of any witnesses:			
Describe how the incident occurred and any contributing factors:			
Attach additional information if space insufficient including sketches and photographs			

**Injury details**

Complete sections A, B and C if injury/illness occurred

**A. Part of body injured**

<input type="checkbox"/> ankle, left / right	<input type="checkbox"/> arm, left / right	<input type="checkbox"/> back	<input type="checkbox"/> chest	<input type="checkbox"/> elbow, left / right	<input type="checkbox"/> ear, left / right
<input type="checkbox"/> eye, left / right	<input type="checkbox"/> face	<input type="checkbox"/> fingers	<input type="checkbox"/> foot, left / right	<input type="checkbox"/> hand, left / right	<input type="checkbox"/> head
<input type="checkbox"/> groin	<input type="checkbox"/> knee, left / right	<input type="checkbox"/> leg, left / right	<input type="checkbox"/> lungs	<input type="checkbox"/> mouth	<input type="checkbox"/> neck
<input type="checkbox"/> psychological system	<input type="checkbox"/> shoulder	<input type="checkbox"/> stomach	<input type="checkbox"/> teeth	<input type="checkbox"/> toes	<input type="checkbox"/> wrist, left/right

Other:

**B. Nature of injury**

<input type="checkbox"/> amputation	<input type="checkbox"/> anxiety	<input type="checkbox"/> asthma	<input type="checkbox"/> bruise/abrasion	<input type="checkbox"/> burns	<input type="checkbox"/> concussion	<input type="checkbox"/> depression
<input type="checkbox"/> fracture	<input type="checkbox"/> infectious disease	<input type="checkbox"/> laceration	<input type="checkbox"/> needle-stick	<input type="checkbox"/> OOS	<input type="checkbox"/> poisoning	<input type="checkbox"/> rash
<input type="checkbox"/> sharps injury	<input type="checkbox"/> sprain/strain	<input type="checkbox"/> trauma to joints and ligaments	<input type="checkbox"/> trauma to muscles and tendons	<input type="checkbox"/> zoonoses		

Other:

**C. Type of incident**

<input type="checkbox"/> bending, stretching	<input type="checkbox"/> bit by animal	<input type="checkbox"/> bite/sting by insect	<input type="checkbox"/> chemical exposure	<input type="checkbox"/> contact with cold object	<input type="checkbox"/> contact with hot object	<input type="checkbox"/> electricity
<input type="checkbox"/> falling from same level	<input type="checkbox"/> falling from height	<input type="checkbox"/> hit by animal	<input type="checkbox"/> hitting stationary	<input type="checkbox"/> lifting	<input type="checkbox"/> noise exposure	<input type="checkbox"/> repetitive muscle injury
<input type="checkbox"/> psychological	<input type="checkbox"/> pulling, pushing	<input type="checkbox"/> radiation exposure	<input type="checkbox"/> struck by moving object	<input type="checkbox"/> sunstroke	<input type="checkbox"/> vehicle accident	<input type="checkbox"/> weather exposure

Other:

**Details of treatment and work status**

Did you receive First Aid?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name of First Aider:
Did you see a doctor?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Yet	Did the doctor issue a WorkCover medical certificate? <input type="checkbox"/> Yes <input type="checkbox"/> No
Did you cease work?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date and time of cessation: Date and time of return:
Did you cease study?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date and time of cessation: Date and time of return:
Did you go to hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, state which hospital:

**Action**

*Employee, student, visitor or contractor to complete Part A and send to Supervisor within 1 working day.  
Supervisor to complete Part B and distribute copies of form (as per Section 14) within 2 working days of notification of incident.  
For students consult academic supervisor or program coordinator.*

**Signature**

I approve the release of the information in this form to approved authorities, which may include medical practitioners, legal representatives, employee associations, insurance companies and WorkCover NSW.

Signature:

Date: / /

**Privacy Statement**

The personal information you provide on this form is protected by the NSW Privacy and Personal Information Protection Act 1998. Access to the information you provide is only available to those persons authorised to access the information in the course of their duties to The University of New South Wales.

## PART B To be completed by supervisor

7

Incident number: Incident date: / / Incident reported by:

### 8 Immediate incident management response

- Security notified on x56666   
  Supervisor notified   
  First Aid Officer notified   
  Floor warden notified  
 Other:

### 9 Contributing factors

- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> Slip/trip/fall hazard      | <input type="checkbox"/> Risk assessment incomplete | <input type="checkbox"/> Personal Protective Equipment not worn or not available | <input type="checkbox"/> Insufficient training |
| <input type="checkbox"/> Lifting equipment not used | <input type="checkbox"/> Workplace ergonomics       | <input type="checkbox"/> Electrical hazard                                       | <input type="checkbox"/> Weather               |
- Other:

### 10 Risk rating

The risk rating of an incident is based on a combination of Consequence and Probability. Please complete the following table by referring to the [UNSW Risk Rating System](http://www.riskman.unsw.edu.au) available at [www.riskman.unsw.edu.au](http://www.riskman.unsw.edu.au). Circle one option only in each section below.

Consequence					Probability					Risk Rating			
1	2	3	4	5	A	B	C	D	E	Low	Medium	High	Extreme

### 11 Corrective Action Plan

To complete the following Corrective Action Plan use the following Hierarchy of Risk Controls. Give priority to eliminating the hazard.

1. Eliminate Equipment    2. Substitute    3. Engineering control    4. Administrative control    5. Personal Protective

Actions recommended to be taken	By whom	By when
A.		
B.		
C.		
D.		

### Help

In the first instance contact your Supervisor, your OHS Representative or your OHS Committee Chairperson. The Risk Management Unit may be contacted by phone on 93851565 or by fax on 93852365 for OHS & Environment or on 93851107 or by fax on 96634203 for Workers Compensation

**Send copies to:**

1. Send original report to Manager, Workers Compensation, RMU
2. Forward copies to the following:
  - a. Chairperson of your Workplace OHS Committee or OHS Representative
  - b. Faculty/Divisional OHS Coordinator (if applicable)
  - c. Manager, OHS & Environment, RMU
  - d. Retain copy in your School/Divisional Unit Incident Register

**Signature**

I approve the release of the information in this form to approved authorities, which may include medical practitioners, legal representatives, employee associations, insurance companies and WorkCover NSW.

Supervisor's name: \_\_\_\_\_ Supervisor's signature: \_\_\_\_\_ Date:    /    /

Contact phone number: \_\_\_\_\_ email address: \_\_\_\_\_

**Office use only**

Worker's Compensation database	/	/	OHS staff telephone follow-up	/	/
Incident database	/	/	OHS staff site investigation	/	/
WorkCover notified	/	/	OHS Committee investigation	/	/

# Occupational Health, Safety and Environment Hazard Report

Is notified to your supervisor, Health Department?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Name:	Version: September 27 <span style="float: right;">Page 1</span>

A hazard is something with the potential to cause harm to persons, property or the environment

## PART E Hazard Category List

This form is for reporting hazards. If an injury or illness has occurred, you need to complete Form CHS002. Complete this form if you notice a hazardous situation. Rectify the hazard immediately if possible. Let us know what action you have taken. If unable to rectify the hazard yourself, advise your supervisor.

Use this list to complete Part A

## PART A To be completed by the person identifying the hazard

<b>Personal Details</b>		Animal handling hazard	
Title: _____ Family Name: _____	First Name: _____	Staff/ student no.: _____	
<input type="checkbox"/> Asbestos hazard	<input type="checkbox"/> Employee <input type="checkbox"/> Student	<input type="checkbox"/> Bomb threat	<input type="checkbox"/> Contractor <input type="checkbox"/> Visitor <input type="checkbox"/> Other: _____
<input type="checkbox"/> Building defect, eg material falling from façade	Email: _____	<input type="checkbox"/> Confined spaces	Phone (w): _____ Phone (h): _____
<input type="checkbox"/> Construction hazard	Faculty/ Division: _____	<input type="checkbox"/> Dangerous Goods transport	School/ Unit: _____
<input type="checkbox"/> Demolition	Position: _____	<input type="checkbox"/> Electricity hazard	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female
<input type="checkbox"/> Ergonomic hazard, eg inadequate or excessive lighting	Phone: _____	<input type="checkbox"/> Exposure to extreme temperature, eg hot or cold	
<b>Identify the hazard</b>		Fatigue hazard	
Date hazard identified: ____/____/____	Time hazard identified: ____ am/ pm	<input type="checkbox"/> Fire hazard	
Describe the hazard		<input type="checkbox"/> Gas leak hazard	
Hazardous substances, eg carcinogen, cryogenics		<input type="checkbox"/> Hot work hazard, eg welding	
Infectious or communicable disease hazard		<input type="checkbox"/> Laceration hazard	
Select hazard category from Part E Hazard Category List:		<input type="checkbox"/> Microbiological hazard	
Location of hazard – if external give nearest building:		<input type="checkbox"/> Personal security risk	
Building: _____ Floor: _____	Room: _____	<input type="checkbox"/> Radiation hazard, eg isotope, laser, X-ray, etc	
Other: _____		<input type="checkbox"/> Plant and equipment hazard	
<b>Assess the risk</b>		Sharps hazard, eg needlestick	
The risk rating of an incident is based on a combination of Consequence and Probability. Please complete the following table by referring to the UNSW Risk Rating System available at <a href="http://www.riskman.unsw.edu.au">www.riskman.unsw.edu.au</a> . Circle one option only in each section below.			
Work related stress	Consequence	Probability	Risk Rating
	1 2 3 4 5	A B C D E	Low Medium High Extreme
Action required:	Extreme .. Act Immediately	High .. Act Today	Moderate .. Act This Week <span style="float: right;">Low .. Act This Month</span>

### Signature

I approve the release of the information in this form to approved authorities, which may include medical practitioners, legal representatives, employee associations, insurance companies and WorkCover NSW.

Your name: \_\_\_\_\_ Your signature: \_\_\_\_\_ Date forwarded to Supervisor: \_\_\_\_/\_\_\_\_/\_\_\_\_

### Send copies to:

Copy Part A to:

- Chairperson of your Workplace Safety Committee or Representative
- Faculty/ Division OHS Coordinator (if applicable)
- Manager, OHS & E, Risk Management Unit – fax 9385 2365
- Keep a copy for yourself

Give original of your completed Part A to your supervisor, who will complete Part B over leaf within two working days and then take action or forward to the UNSW Unit responsible for follow up action on the hazard

OHS001 OHS and Environment Hazard Report

Continued Page 2

OHS001 OHS and Environment Hazard Report

Page 2

## PART B To be completed by the supervisor

This section is to be completed by the Supervisor in response to receiving Part A.

**15. APPENDIX J – REGISTERED OCCUPATIONAL DIVING MEDICS IN METROPOLITAN SYDNEY**

SOUTH PACIFIC UNDERWATER MEDICINE SOCIETY.  
Registered Occupational Diving Medics.

NAME:	ADDRESS:	PHONE:
Dr Bruce Short	Castle Towers Medical Centre Plaza Courtyard Old Northern Road CASTLE HILL	02 8850 2400
Dr Michael Longbottom	151 Pacific Highway CHARLESTOWN	02 4943 9777
Dr TJ Horgan	764 Pacific Highway GORDON	02 9498 1088
Dr Karen Oswald	98 Balmoral Street HORNSBY	0294763644
Dr Andrew Keller	Sydney Airport Medical Centre Level 3 Sydney International Airport MASCOT	02 9667 4355
Dr Tom Rosenthal	Suite 3 32-36 Uranga Parade MIRANDA	02 9525 3464
Dr Caron Jander	Inergise Level 2 44 Market Street SYDNEY	02 9299 7199
Dr TA Anderson	11/130 Elizabeth Street SYDNEY	02 9397 1100
Dr Bruce Greig	MLC Medical Centre Suite 1003 MLC Centre Martin Place SYDNEY	02 9232 5477
Dr Susan Willis Dr Phillip Brown Dr Amr Marzaouk	University Health Service University of Sydney SYDNEY	02 9351 3484

## 16. APPENDIX K – DIVING PROCEDURES AND EMERGENCY ACTION PLAN FOR INCIDENTS INVOLVING LOSS OF LIFE (POTENTIAL OR ACTUAL) OR SEVERE INJURY.

### University of New South Wales

#### **GENERAL PROCEDURES:**

- **“RESCUER” must not put themselves in danger**
- **Maintain airway, Administer 100% oxygen**
- **Administer First Aid**
- **Remove casualty from danger if safe to do so**
- **Seek Medical / Rescue Assistance**

*The exact order of these will vary with the incident, and the resources available.*

#### 1. DURING DIVING OPERATIONS:

##### Shore Diving:

- (a) If a participant shows signs or symptoms of decompression illness or has had ANY ABNORMAL ASCENT (missed decompression stops or fast ascents): Place casualty on 100% oxygen immediately and seek medical advice immediately.
- (b) If casualty is unconscious call for an ambulance (000) first, then contact Hyperbaric Units (Divers Emergency Service (1800 088 200)).
- (c) If casualty is conscious contact Divers Emergency Service (1800 088 200) and follow instructions. Rescue Divers and those with more advanced rescue and/or first aid qualifications to manage the incident. Diving incident slate to be written immediately. Only when situation is stable and/or emergency services have taken over should University Risk Management Office (02 9385 1565 - during office hours) be notified and the University Security Service (02 9385 6666 – after hours). Effective management of the situation will involve delegation.

##### Boat Diving:

- (d) If a diver shows signs or symptoms of decompression illness or has had ANY ABNORMAL ASCENT (i.e. rapid ascent), place casualty on 100% oxygen immediately and request advice/assistance.
- (e) Contacts: Coastguard on VHF Ch16 and follow instructions, if radio is not answered try mobile phone, follow action as in 1(a-c), if phone is not answered then proceed to nearest safe haven and repeatedly try to contact Coastguard (marine radio or phone). Rescue Divers and those with more advanced rescue and/or first aid qualifications to manage the incident. A Diving Incident slate should be written immediately. Only when situation is stable and/or emergency services have taken over should University Risk Management Office (02 9385 1565 - during office hours) be notified and the University Security Service (02 9385 6666 - after hours). Effective management of the situation will involve delegation. If signs or symptoms appear on land (up to 24hours post-diving), follow action as if shore diving.

#### **REQUIRED SAFETY EQUIPMENT:**

- First Aid Kits
- Medical grade oxygen cylinder and giving sets (ensure that enough oxygen is available to transport diver to Emergency Services (boat dive), or utilise until Emergency Services arrive (shore dive).
- VHF radio charged and working (boat dive)
- Flares (boat dive)
- Knowledge of nearest emergency phone or possession of a mobile phone.

#### **EVACUATION:**

In the event of any registered diver being evacuated to a hospital or hyperbaric chamber, he or she should where possible, be accompanied by the diving coordinator, or other diver not in need of treatment, the destination noted and passed to the University contact person and DSO. If this is not possible, then the diving coordinator or an uninjured diver MUST ensure that they have a record of where the casualty goes.

POST INCIDENT:

Thank Emergency services.

Diving Officer to be notified.

Incident (University and DAN) reports to be completed.

DAN incident form sent to DAN headquarters.

DSO to review incident.

## 17. APPENDIX L – MINIMUM DELAY BEFORE EXPOSURE TO ALTITUDE

*Minimum Delay before Exposure to Altitude*

Altitude (meters)	Time after last dive (hours)		
	Category of dive (see legend)		
	Category 1	Category 2	Category 3
0 - 150	Nil	Nil	2
150 – 300	Nil	2	4
300 – 600	2	12	24
600 – 2 400 (note 1)	12	24	48
Greater than 2 400	24	48	72

### LEGEND:

Category 1 = Single dive to ≤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 exposure;  
Omitted decompression;  
Other adverse dives.

### NOTES:

- 1) Routine air travel – in pressurized aircraft, the altitude referred to is the effective altitude within the cabin. Commercial aircraft are usually pressurized to an effective cabin pressure of 2 400 meters or less.
- 2) The recommendations given in the aforementioned table (Minimum delay before exposures to altitude) 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 medial practitioner appropriately trained in underwater medicine is recommended where altitude exposure after diving is required.

(AS/NZS 2299.2:2002)

### SYDNEY METROPOLITAN AREA:

The RTA (NSW) informed the University of New South Wales Diving Officer (15.04.2005) that:

- Mount Ousley (Newcastle) is a maximum of 400 meters above sea level
- And Mount White (F3) is approximately 300 meters above sea level.