

SCIENTIFIC DIVING PROCEDURES MANUAL

Standards and Rules for the University of Guam Scientific Diving Program

University of Guam Marine Laboratory

UOG Station, Mangilao, Guam, 96923

Version V – September 2021

FOREWORD

The mission of the Diving Control Board (DCB) at the University of Guam Marine Laboratory (UOG ML) is to ensure that all scientific diving is conducted in a manner that will foster safe, effective diving and minimize accidental injuries and/or illnesses. This manual was prepared to conform to the safety standards of the American Academy of Underwater Sciences (AAUS) and it is based upon the AAUS Standards for Scientific Diving (available at www.aaus.org). Diving techniques or diving equipment not listed in this manual are prohibited at the UOG ML except with the expressed approval of the DCB and only after the necessary safety guidelines are adopted by the DCB and incorporated into the UOG ML diving standards manual.

Amendments to this *Manual* may be made at any regular meeting of the DCB by a simple majority vote of the members present and voting, provided that the amendments have been made available to the DCB members in writing at least one week before the meeting. Unless otherwise noted in the amendment, an amendment shall become effective after the Chair announces the vote. The change will be incorporated into this Manual no later than three business days after the vote and shall be provided to the DCB members. This amended document will state in writing which version of manual is being superseded. Approval authority will be the Senior Vice President.

In addition, this manual will be reviewed by the DCB at least every 3 years. Additional reviews can be requested by any Marine Lab faculty or DCB member. The DCB will generate summary memos of all dive manual reviews for our records.

REVISION HISTORY

First Version: December 1995

Updated, V.2: November 2016

- Revised Sec. 2.2.2 Pre-dive safety checks, i.e., from minimum 300 lbs to 500 lbs of cylinder pressure

- Revised Sec. 2.6.B.2 from Ship Repair Facility Recompression Chamber to US Navy Dive Locker

- Revised Sec. 2.8.1 from standard forms to online dive log site

- Added Sec. 2.3.1 Alcohol and other drugs policy

- Added Sec. 4.3.3 Use of diver's drift sausage

- Added Sec. 2.6.0 Northern medical facility: Guam Regional Medical Facility

Updated, V. 3: June 2017

- Revised Sec. 1.1.2.1 regarding the constituency of the DCB, from "a majority of scientific divers" to the current approved membership of the Board.

Updated, V. 4: Complete revision 2018. Photo credits: L. Raymundo, C. Caballes

Updated, V. 5: Major revision 2019-2021. Dive training, appendices etc.

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SECTION 1. GENERAL POLICY

1.1. Operational Control

1.1.1. Organizational member auspices, defined

The auspices of the University of Guam Marine Laboratory (UOG ML) includes any scientific diving operation in which the UOG ML is connected because of ownership of any equipment used, locations selected, or relationship with the individual(s) concerned. It is the UOGML's responsibility to adhere to the AAUS Standards for Scientific Diving Certification and Operation of Scientific Diving Programs. The administration of the UOG ML diving program resides with the DCB. The regulations herein shall be observed at all locations where scientific diving is conducted under the auspices of the UOG ML. In the case of off-island diving (i.e., not in Guam, though work-related), please refer to Section 2.8.

1.1.2. UOG Marine Laboratory Scientific Diving Standards and Safety Manual

This scientific diving manual has been designed to enable the UOG ML to meet the requirements of local environments and conditions as well as to comply with the AAUS scientific diving standards. Approving authority within the University is the Senior Vice President for Academic and Student Affairs, via the Administrative Council.

1.1.3. Diving Safety Officer

The Diving Safety Officer (DSO) serves as a member of the Diving Control Board (DCB). This person should have broad technical and scientific expertise in research-related diving. The qualifications and responsibilities of this individual are outlined as follows:

The DSO shall be:

1. appointed by the responsible administrative officer or his/her designee, with the advice and counsel of the Diving Control Board;
2. trained as a scientific diver;
3. a full member of AAUS; and
4. an active SCUBA instructor from an internationally recognized certifying agency.

The DSO shall be responsible:

1. to the Director of the Marine Laboratory or his/her designee, for the conduct of the scientific diving program of the UOG ML, through the DCB. The routine operational authority for this program, including the conduct of training and certification, approval of dive plans, maintenance of diving records, and ensuring compliance with this standard and all relevant regulations of the UOGML, rests with the DSO.
2. for permitting portions of this program to be carried out by a qualified delegate, although the DSO may not delegate responsibility for the safe conduct of the local diving program.
3. for receiving guidance and advice by the DCB in the performance of the required duties, but operational responsibility for the conduct of the local diving program will be retained by the DSO.
4. for suspending diving operations considered to be unsafe or unwise.

1.1.4. Diving Control Board

The Diving Control Board (DCB) shall consist of the DSO, the Chair, the UOG ML Director, a scientific diver faculty or staff representative, the UOG ML Lab Safety Manager, and a student representative. These members are considered voting members and are elected by a procedure outlined in the DCB By-Laws. The DCB is guided by By-Laws approved by the University of Guam's Board of Regents (Appendix 2).

A member of the DCB may be removed by a majority vote of the DCB. Removal of a member from the DCB shall be for just cause. Examples of just cause include, but are not limited to, a sanction imposed due to the commission of a major safety violation (Section 3.3), three unexplained absences from scheduled DCB meetings, and/or a major conflict of interest. No member of the DCB shall be removed without written notice of the charges for the removal, an investigation into the matter, and an opportunity to be heard in a public DCB hearing. Any member who removes his/her residence from Guam shall be deemed to have vacated his/her office, thereby creating a vacancy on the DCB.

The DCB:

1. Has autonomous and absolute authority over the scientific diving program's operation.
2. Shall act as the official representative of the University of Guam in matters concerning the scientific diving program.
3. Shall impose immediate restrictions on diving activities following a safety violation until a full investigation is complete.
4. Shall investigate and inquire into the nature and cause of all diving accidents or violations of the UOG ML diving procedure manual and determine appropriate further action. The DCB shall notify the University Administration of all such accidents or violations, in the event that the University Administration determines that further University action is needed.
5. Shall be represented by the DSO or his/her representative in any University investigation into diving-related incidents. The University will follow its established and appropriate internal processes and procedures in determining whether further disciplinary or other action is needed.
6. Shall receive, consider, and resolve (if possible) diver-related problems and issues.
7. Shall recommend the issue, reissue, or revocation of scientific diver status for all divers within the UOG ML's diving program.
8. Shall recommend changes in policy and amendments to AAUS and the membership organization's diving safety manual as the need arises.
9. Shall establish and/or approve training programs through which the applicants for certification can satisfy the requirements of this manual.
10. Shall suspend diving practices that are unsafe or unwise.
11. Shall approve and monitor diving projects.
12. Shall review and revise this diving procedures manual.
13. Shall assure compliance with the manual.
14. Shall certify the depths to which a diver has been trained.
15. Shall assure adherence to the buddy system for SCUBA diving and snorkeling.
16. Shall establish criteria for equipment selection and use.
17. Shall recommend new equipment or techniques.
18. Shall establish and/or approve facilities for the inspection and maintenance of diving and associated equipment.
19. Shall periodically review the DSO's performance and program.

1.1.5. Instructional Personnel

All personnel involved in diving instruction under the auspices of the UOG ML must be certified for the type of instruction they are providing. Certifications must be documented and on file.

1.1.6. Lead Diver

For each dive, one individual shall be the Lead Diver. The Lead Diver must be approved by the DSO. She/he shall be at the dive location during the diving operation. The Lead Diver is responsible for:

1. Coordinating with other known activities in the vicinity that are likely to interfere with diving operations.
2. Ensuring all dive team members possess current certification and are qualified for the type of diving operation.
3. Briefing dive team members on:
 - a. dive objectives and dive plan.
 - b. unusual hazards or environmental conditions likely to affect the safety of the diving operation.
 - c. modifications to diving or emergency procedures necessitated by the specific diving operation.
4. Reporting to the DSO and DCB any physical problems or adverse physiological effects including symptoms of pressure-related injuries.
5. Ensuring safety and emergency equipment is in working order and at the dive site.
6. Suspend the diving operation if, in her/his opinion, conditions are not safe.
7. Planning dives in accordance with Section 2.2.1.

1.1.7. Reciprocity and visiting Scientific Divers

When a UOGML diver dives with another AAUS member organization, one DCB member of that organization will be designated to govern the joint dive project. The ML diver must provide a letter of reciprocity from the UOGML DSO (see Appendix 5). The host diver officer may request a visiting diver to perform a skill review before giving permission to dive. If a visiting diver is denied permission to dive, the host DCB must submit a written explanation to the diver and the UOGML DCB. Likewise, divers from other AAUS member organizations requesting to dive at the ML as a visiting scientific diver must provide a letter of reciprocity from their respective organization.

If a diver requesting to dive at the UOG ML does not come from an AAUS member organization, she/he must provide the following to the DSO for approval, prior to diving with the UOG ML:

- Current medical evaluation
- Dive certification
- Current first aid, oxygen provider, and CPR certifications
- Visual inspection and approval of dive gear by the DSO

If these documents are not supplied, the individual will not be allowed to dive with the UOG ML dive program.

1.1.8. Waiver of requirements

The DCB may grant a waiver for specific requirements of training, examinations, depth certification, and minimum activity to maintain certification under certain conditions. These decisions will be made by the DCB on a case-by-case basis. Medical requirements cannot be waived.

1.1.9. Consequences of violation of regulations by Scientific Divers

Failure to comply with the regulations of this manual may be cause for the revocation or restriction of the diver's scientific diving certificate by action of the DCB.

1.1.10. Record maintenance

The DSO maintains permanent records for each scientific diver at the Marine Lab. The file shall include evidence of certification level, log sheets, results of current physical examination, reports of disciplinary actions by the DCB, and other pertinent information. Medical records are available for the diver's physician when released by the diver in writing. Dive records involving any pressure related injury, pressure related injury assessments, and physician's evaluations are kept on file for five years. Dive records of UOG Marine Laboratory scientific divers and qualified affiliates are kept on file as long as the scientific divers maintain their affiliation with the UOG ML.

1.2. Scientific Diving Standards

The purpose of the standards outlined in the UOG ML Scientific Diving Program manual is to ensure that all scientific diving is conducted in a manner that will maximize protection of scientific divers from accidental injury and/or illness. The standards in this manual meet or exceed the standards of AAUS. The AAUS is recognized by Occupational Safety and Health Administration (OSHA) as the diving standard-setting organization.

1.2.1. Scientific Diving Definition

Scientific diving is defined as diving performed solely as a necessary part of a scientific, research, or educational activity by employees whose sole purpose for diving is to perform scientific research tasks (OSHA 2017)¹.

OSHA has granted an exemption for scientific diving from commercial diving regulations under the following guidelines (OSHA 2017):

1. The DCB regulates scientific diving at UOG ML.
2. The primary focus of any project using scientific diving is the advancement of science.
3. The tasks of a scientific diver are those of an observer and data gatherer. Construction and troubleshooting tasks traditionally associated with commercial diving are not included within scientific diving.
4. Based on the nature of their activities, scientific divers must use scientific expertise in studying the underwater environment.
5. This Diving Procedures Manual includes the following: procedures covering all diving operations specific to the program, procedures for emergency care, recompression, and evacuation, and the criteria for diver training and certification.

1.2.2. Liability

In adopting the policies set forth in this manual, the UOG ML assumes no liability not otherwise imposed by law. Each diver is assumed under this policy to be voluntarily performing activities for which he/she assumes all risks, consequences, and potential liability.

- ¹ Occupational Safety and Health Administration. 2017. Occupational Safety and Health Standards. Commercial Diving Operations. 1910 Subpart T App B.
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9978&p_table=STANDARDS

SECTION 2. REGULATIONS FOR SCUBA DIVING

2.1. Introduction

No person shall engage in scientific diving operations under the auspices of the UOG ML unless she/he holds a current certification issued pursuant to the provisions of this manual.

2.2. Pre-Dive Safety Checks

2.2.1. Dive plans

Before conducting any diving operations under the auspices of the UOG ML, the lead diver for a proposed dive must fill out a dive plan and have it approved by the DSO. All dives will be planned around the competency of the least experienced diver. See dive plan sheet in Appendix 3.

2.2.2. Pre-dive safety checks

1. Diver's Responsibility:
 - a. Scientific divers shall conduct a functional check of their diving equipment in the presence of the diving buddy or tender.
 - b. The lead diver should ensure that safety gear (first aid kit, DAN O₂ kit, dive flag) accompanies all dives.
 - c. It is the diver's duty to refuse to dive if, in their judgment, conditions are unfavorable, they would be violating the precepts of his/her training and capabilities, or they are physically unfit to meet the challenges of the dive either due to illness or injury.
 - d. No dive team member shall be required to be exposed to hyperbaric conditions against her/his will, except when necessary to prevent or treat a pressure-related injury.
 - e. No dive team member shall be permitted to dive for the duration of any known condition which is likely to adversely affect the safety and health of the dive team.
 - f. The diver shall terminate the dive while there is sufficient cylinder pressure to permit the diver to safely reach the surface, including any required safety stops. The diver shall exit the water with a minimum of 500 lbs of cylinder pressure.
2. Equipment Evaluations:
 - a. Divers shall ensure that their equipment is in proper working order and that the equipment is suitable for the type of diving operation.
 - b. Divers must ensure their equipment is capable of maintaining positive buoyancy.
3. Site Evaluation:
 - a. Divers must ensure, via a site evaluation prior to the dive, that environmental conditions at the site are conducive to a safe dive.

2.3. Policy on Alcohol and Drug Use

No consumption of alcohol or illegal drugs is permitted before or during scientific diving, under any circumstances. Doing so will be grounds for suspension or revocation of scientific diving certification. UOG policies prohibit the possession, sale or furnishing of alcohol on campus, with limited exception and as approved by the President. Further, UOG is a Tobacco-Free Campus, which prohibits the smoking of tobacco or tobacco-related products.

2.3.1. Intoxicants and diving

Diving shall not be undertaken while the diver is under the influence of any intoxicants or substances which can impair judgement. Diving cannot be undertaken within eight hours of consuming any intoxicants or if the diver is under the influence of any drugs that may impair his or her mental or physical capacities. AAUS considers substance abuse, including alcohol, to be grounds for disqualification of divers from diving (AAUS Standards, 2013). This rule is upheld by the UOG ML DCB.

2.4. Diving Procedures

2.4.1. Solo Diving Prohibition

All diving activities must adhere to the buddy system. This buddy system is based upon mutual assistance, especially in the case of an emergency. Diving in a group of three may be approved by the DSO, after review of the dive plan.

2.4.2. Refusal to Dive

The decision to dive lies with the diver. A diver may refuse to dive, without fear of penalty, whenever she/he feels it is unsafe for them to dive (see Sec. 2.2.2.1c).

The ultimate responsibility for safety rests with the individual diver. It is the diver's responsibility to refuse to dive if, in his/her judgment, conditions are unsafe or unfavorable or if he/she would be violating the precepts of their training or the regulations in this manual.

2.4.3. Termination of the dive

It is the responsibility of the diver to terminate the dive, without fear of penalty, whenever she/he feel it is unsafe to continue the dive, unless it compromises the safety of another diver already in the water.

The dive shall be terminated while there is still sufficient cylinder pressure to permit the diver to safely reach the surface, including any required safety stops.

2.4.4. Emergencies and deviations from regulations

Any diver may deviate from the requirements of this manual to prevent or minimize a situation that is likely to cause death, serious physical harm, or major environmental damage. A written report must be submitted to the DCB explaining the circumstances and justifications.

2.4.5. Dives deeper than 60 feet

On any dive deeper than 60 ft, the diver shall perform a safety stop at 15 ft for a minimum of five minutes when returning to the surface.

2.5. Post-Dive Procedures

2.5.1. Post-dive safety checks

1. After the completion of a dive, each diver shall report any physical problems, symptoms of decompression sickness, or equipment malfunctions.
2. If a dive violates no-decompression limits, the divers should remain awake for at least 1 hr after diving, and in the company of a dive team member who is prepared to transport him/her to a hyperbaric chamber if necessary. A written report must be submitted to the DCB explaining the

circumstances. Decompression diving is permitted at the UOG ML only with the permission of the DCB and the ML Director.

2.6. Emergency Procedures

In all cases involving a known or suspected diving accident, the following procedures shall be followed:

2.6.1. Conscious person

1. If, after SCUBA diving, a person is suspected of any kind of injury, they will be taken to the nearest medical facility to be examined by a medical doctor.
2. If a person complains of symptoms of pressure-related injury such as dizziness, headache, numbness or tingling sensations, oxygen shall be administered. The diver will then be taken to the Naval Station recompression chamber (Navy Dive Locker) for examination by the medical doctor on duty.

2.6.2. Unconscious person

1. If a person is found unconscious, or becomes so immediately after the dive, first aid/CPR shall be administered along with pure oxygen.
2. Arrangements should be made for emergency evacuation of the diver to the US Navy Dive Locker. If on land, contact 911 to request an ambulance for transportation. If on a boat, the emergency VHF radio channel 16 should be used to arrange for medical transportation. If no one can be reached on channel 16, then the Harbor Master (channels 12 and 13), or the local fishermen's channel (channel 68) can be used to reach assistance.

2.6.3. Medical facilities

1. For injuries not involving actual or suspected pressure-related injuries, the following medical facilities can be utilized:
 - a. Northern Guam: Guam Regional Medical Facility
 - b. Central Guam: Guam Memorial Hospital
 - c. Southern Guam: Inarajan Health Center
2. For injuries involving actual or suspected pressure-related injuries, the diver(s) should be taken to the US Navy Dive Locker.

2.7. Flying after Diving

The following surface intervals should be observed before flying after diving:

1. Less than two hours total accumulated dive time in the last 48 hours: 12-hr Surface Interval Time (SIT).
2. Multi-day, unlimited diving: 24-hr SIT

2.8. Scientific Diving and Travelling

When UOG ML project-related diving will take place off Guam, a general summary dive plan should be submitted to the DSO prior to each trip. Information should include as much detail as is possible to obtain prior to the trip (UOG ML dive personnel, length of trip, approximate locations and estimated number of dives/day, type of boat or shore support, a general description of the work involved). Upon

the dive personnel's return to Guam, dives made during the trip should be logged, following standard practice.

2.9. Record Keeping Requirements

2.9.1. Personal dive log

Each certified scientific diver shall log every dive made under the auspices of the UOG ML and is encouraged to log all other dives. An Online Dive Logging site is available to all divers from the ML. Logs must be submitted to the DSO on the last day of each month for inclusion in the diver's permanent file.

2.9.2. Required incident reporting

All diving incidents requiring recompression treatment, or resulting in moderate or serious injury or death shall be reported to the DCB and the AAUS at www.aaus.org (see Section 3 for details).

SECTION 3. PROCEDURES FOR REPORTING AND INVESTIGATING A SAFETY VIOLATION

3.1. Incident Reporting Procedure

3.1.1. Safety violations vs. accidents, defined

Safety violations involve breaking regulations stipulated in this manual or provided in standard diving certification courses and scientific diver training. *Accidents* are events which are beyond the diver's control and which can potentially, or do, result in physical or mental harm.

3.1.2. Incident reporting procedure

1. Consult Appendix 9 of this Manual, for incident response procedures.
2. Within 12 hrs, the incident must be reported verbally to the DSO, including listing the personnel involved.
3. The DSO will promptly report the verbal description to the DCB.
4. The incident must then be described in writing, including as many details as are accurately remembered (time, location, environment, personnel involved, dive details, vehicles used, etc.). This will constitute the *incident report*. Any accompanying documentation of this incident should be included with the submission of the incident report.
5. The incident report must be submitted to the DSO within three (3) days of the incident.

3.2. DCB Action Procedure

1. Anyone involved in an incident will immediately be suspended from diving activities.
2. The DCB will convene as soon as possible to investigate the incident, based on the incident report and accompanying documentation. The DSO will document, in writing, all reports and discussions.
3. If, after this initial meeting, the DCB assesses that the incident requires reporting to the University and/or AAUS, this report will be submitted appropriately, with accompanying documentation and the DCB meeting report. Report format is presented in Appendix 7.
4. The DCB will invite all parties involved in the incident to discuss their involvement. This will be undertaken confidentially, and each participant will be met with separately.
5. The DCB will decide on further action via majority vote, depending on the documentation provided and the classification of the infraction.
6. The DSO will inform the involved personnel of the DCB decision, in writing. If any personnel are off-island at the time of this communication, they will be informed via email.
7. In the case where the DCB itself is charged with a complaint, the DCB will convene an *ad hoc* external review board to investigate the complaint. This board will be composed of an individual chosen by the DCB, one chosen by the complainant, and a third to be selected by the other two members. These individuals must be either scientific divers or certified dive instructors, must reside on Guam, and must not be UOG ML faculty or staff. The *ad hoc* external review board will convene, review the evidence provided, and make a determination regarding any action to be taken. The DCB will develop appropriate timelines for this procedure within thirty (30) days of the University Administration's approval of this Scientific Dive Manual and be responsible for communicating these timelines with the appropriate personnel.
8. After the DCB submits its report, recommendations and/or findings to the Senior Vice President (SVP), and where the University Administration determines that further discipline or adverse action

may be warranted, depending on the facts of the violation/complaint, the University will follow its established internal processes and procedures in addressing the matter. The DCB may assist in this process, as needed, and will be notified of the University Administration's determination.

3.3. Safety Violation examples

The following lists are not meant to be exclusive, but merely descriptive. The DCB reserves the right to decide upon classification of infractions not listed here, and their severity, on a case-by-case basis. Further, the context of an incident will be considered in DCB deliberations.

Minor safety infraction examples:

- Drawing tank air down below 500 psi (35 bars)
- Exceeding dive plan depth limit by 5 m for more than 5 mins (on air)
- Failure to bring safety gear (DAN O₂ kit, dive flag or flotation device, etc.) during field work
- Failure to keep gear (regulator and BCD) safety inspected annually
- Failure to dive without an alternative air source (octopus regulator or air tube)
- Failure to practice good buoyancy control
- Ignoring required safety stops for 5 mins at 5 m following an 18 m or more dive
- Failure to inform the DSO of a work-related dive plan

Major safety infraction examples:

- Diving under the influence of intoxicants or behavior-altering drugs
- Continuing a dive after losing contact with a buddy
- Violating the no-decompression dive policy
- Behavior in association with a dive that puts another person at risk
- Failure to maintain a safe ascent rate
- Failure to report a safety violation or accident incident
- Failure to get approval from the DSO for use of advanced equipment during a dive
- Failure to obtain prior approval from the DSO for rebreather and nitrox dives

3.4. Levels and Types of Action by DCB

The following are the types of actions that the DCB will use to respond to minor and major infractions. All actions will go into the diver's file for the length of time the diver is diving with the program, but warnings will not be counted towards more severe warnings and sanctions after 3 years (as per DCB vote on May 29, 2020).

Verbal warning – minor safety infractions will receive a verbal warning from the DSO. Three verbal warnings will result in a written warning from the DSO.

Written warning – Two written warnings will result in suspension from diving. A written warning may also be given by the DCB for a minor infraction if the circumstances increased the severity of the risk or consequence of the infraction.

Suspension from diving – all major infractions will result in a suspension from diving, at least temporarily, until an investigation is completed. Continued suspension from diving may also be decided upon by the DCB, depending on the severity of the incident, as a result of the incident investigation.

3.5. Submission of Incident Reports to AAUS and UOG

3.5.1. AAUS reporting procedure

Please refer to Appendix 9 for the form which is submitted to AAUS by the DSO. In addition, the incident will be included in the annual AAUS statistics report (Appendix 8).

3.5.2. University of Guam reporting procedure

All major safety violations and accidents that require medical treatment, and for which Worker's Compensation is filed, will be reported by the DSO to the University Safety Officer and the Senior Vice President.

3.6. Workers' Compensation Procedure

Consult Appendix 10 for the Workers' Compensation procedure and forms.

3.7. Appealing a DCB decision

After the DSO informs personnel involved with an incident of the DCB decision, the involved parties have one week to appeal a decision. During the time of deliberation of this appeal, they will remain suspended from diving activities. The appeal should be a written document, submitted to the Chair of the DCB. The Chair will then pass the appeal on to the UOG Senior Vice President, or her/his designee, who will act as the appellate body to deliberate on the written statement. The personnel requesting the appeal will subsequently be invited to an open discussion with the DCB and SVP/designee, to consider the appeal. The DCB will then meet and make a final decision, which will then be communicated in writing to the appealing personnel.

SECTION 4. OTHER DIVING TECHNIQUES

Certain types of diving, some of which are listed below, require equipment or procedures that necessitate training beyond that required by the basic Scientific Diver certification at the UOG ML. Such types of diving are generally not allowed under the UOGML dive program.

SECTION 5. DIVING EQUIPMENT

5.1. General Policy

All equipment must meet the standards of the DCB as outlined below and must be inspected by the DSO or his/her delegate prior to use in the UOG Marine Laboratory diving program. All equipment should be regularly examined by the person using them. Technical equipment should be regularly tested and maintained. Equipment used under adverse conditions and/or extreme usage should be tested and maintained more frequently.

5.2. Equipment

5.2.1. Regulators

1. SCUBA regulators shall be inspected and approved by the DSO prior to their use in the UOG ML diving program.
2. Regulators must be serviced and tested by qualified personnel every 12 months. A copy of the service record should be submitted to the DSO.
3. Regulators will consist of a primary second stage and an alternate air source (such as an octopus or redundant air supply).

5.2.2. Breathing masks or full-face masks

Breathing masks must have a readily and positively closing, non-return valve at the attachment point between the mask and hose, an exhaust valve, and a minimum ventilation rate capable of sustaining the diver at the depth to which he/she is diving.

5.2.3. SCUBA cylinders

1. SCUBA cylinders must be designed, constructed, and maintained in accordance with the applicable provisions of the Unfired Pressure Vessel Safety Orders¹.
2. SCUBA cylinders must be hydrostatically tested in accordance with Department of Transportation standards every five years.
3. SCUBA cylinders must have internal and external inspections at least once per year.

5.2.4. Flotation devices

1. A buoyancy control device (BCD) is required for ascent control and emergency flotation.
2. Personal flotation systems, dry suits, or other variable volume buoyancy compensation devices shall be equipped with an exhaust valve.
3. These devices shall be functionally inspected and tested at least every 12 months.

5.2.5. Timing devices, depth, and pressure gauges

Both members of the buddy team must have an underwater timing device, an approved depth indicator, and a submersible pressure gauge. Gauges shall be inspected and tested before use, and at least every 12 months thereafter.

¹Department of Industrial Relations: <https://www.dir.ca.gov/Title8/sb1a3.html>

5.2.6. Determination of decompression status: Dive tables, dive computers

1. A set of diving tables, approved by the DCB, must be available at the dive location.
2. Dive computers may be used in lieu of diving tables if both members of a buddy team have their own computer. If only one member of a dive buddy team has a computer, both divers should follow the PADI dive tables.
3. If a dive computer should fail while in use, the dive should be terminated immediately.
4. All dive computers must be approved by the DSO.

5.3. Support Equipment

5.3.1. First aid supplies

A first aid kit and emergency oxygen kit must be available at each dive site.

5.3.2. Diver's flag

A diver's flag shall be displayed prominently whenever diving is conducted. The flag should be flown when divers are in the water.

5.3.3. Diver's safety sausage

A diver's drift sausage is required for signaling surface support from the divers' location in the event of an emergency situation. It is required for use by all divers at all times.

5.3.4. Cutting device

All divers should supply themselves with a cutting device, such as a knife, to disentangle themselves, or their equipment, should they become caught or entangled in marine life, abandoned fishing gear, or research paraphernalia.

5.4. Equipment Maintenance

5.4.1. Maintenance Schedule

Equipment maintenance shall be the responsibility of the individual diver, with oversight by the DSO. As previously stated in Sec. 5.2, regulators, BCDs, gauges, and cylinders should be inspected and subjected to routine maintenance once a year.

5.4.2. Compressor Operation and Air Test Records

Since the UOG ML does not control by the OM but obtains quarterly air quality records from the breathing gas provider (currently Micronesia Dive Association, MDA) to verify breathing gas meets the requirements of this standard. If CGA Grade E gas is not verifiable, the DCB must develop a protocol to mitigate risk to the diver.

5.4.3. Breathing Gas

Breathing gas must meet the following specifications as set forth by the Compressed Gas Association (CGA Pamphlet G-7.1; see table below).

CGA Grade E	
Component	Maximum
Oxygen	20 - 22%/v
Carbon Monoxide	10 PPM/v
Carbon Dioxide	1000 PPM/v
Condensed Hydrocarbons	5 mg/m3
Total Hydrocarbons as Methane	25 PPM/v
Water Vapor ppm	(2)
Objectionable Odors	None

5.4.4. Record keeping

Each equipment modification, repair, test, calibration, or maintenance service shall be logged by the DSO, including the date and nature of work performed, serial number of the item, and the name of the person performing the work, for the following equipment:

regulators
 submersible pressure gauges
 depth gauges
 SCUBA cylinders

buoyance control devices
 dry suits
 submersible breathing masks
 cylinder valves

SECTION 6. DIVER-IN-TRAINING REQUIREMENTS

6.1. Diver-In-Training Permit Level

After fulfilling the requirements of this section, the diver will be issued a Diver-In-Training permit, allowing a diver to make **up to twelve dives per year** under the auspices of the UOG ML. This is an authorization to dive, usable only while it is current and for the purpose intended. This authorization signifies that a diver has completed and been certified as at least an entry level diver through an internationally recognized certifying agency and has the knowledge skills and experience necessary to commence and continue training as a scientific diver under supervision, as approved by the DCB. DIT status must only be used when the diver is on his/her way to becoming certified as a scientific diver. While it is recommended for DIT's to have hands-on scientific diver experience during their training, the DIT status is intended to be a temporary authorization, not a substitute for Scientific Diver Certification.

Further diving with the UOG ML requires completion of the UOG ML Scientific Diver training program (see Section 7 below).

6.2. Requirements for Diver-In-Training Certification

6.2.1. Medical examination

Applicants of the UOG ML Scientific Diving Program must be certified by a licensed physician to be medically qualified for diving before they may enter the water under its auspices.

6.2.2. Swimming Evaluation

Applicants must demonstrate the following in the presence of the DSO. All tests are to be performed without swim aids.

1. Swim underwater for a distance of 25 yards (23 meters) without surfacing.
2. Swim 400 yards (366 meters) in less than 12 minutes.
3. Tread water for 10 minutes, or 2 minutes without the use of hands.
4. Transport a passive person of equal size a distance of 25 yards (23 meters) in the water.

6.2.3. Open-Water SCUBA certification

Applicants must provide proof of current certification by a nationally or internationally recognized training agency. Basic open-water certification is the minimum accepted certification, advanced open-water certification is recommended.

6.2.4. Emergency care training

Applicants must provide proof of current training in CPR, first aid, and emergency oxygen administration. Training is available at the UOG ML, but must be completed before an applicant may dive with the program. The following are required:

1. Adult CPR
2. Emergency oxygen administration
3. First aid for diving accidents (Emergency First Response or its equivalent)

6.2.5. Written evaluation

Applicants must pass a written examination on general open-water SCUBA skills and the contents of this manual.

6.2.6. Open water evaluation

Applicants must satisfy the DSO or his/her appointee of her/his ability to:

1. Surface dive to a depth of 10 ft in open water without SCUBA.
2. Demonstrate proficiency in air sharing as both donor and receiver.
3. Enter and leave open water or surf, or leave and board a diving vessel, while wearing SCUBA gear.
4. Kick on the surface 400 m while in full gear but not breathing from SCUBA.
5. Demonstrate judgment adequate for safe diving.
6. Demonstrate the ability to maneuver efficiently in the environment, at and below the surface.
7. Complete a simulated emergency swimming ascent.
8. Demonstrate clearing of mask and regulator while submerged.
9. Demonstrate ability to achieve and maintain neutral buoyancy while submerged.
10. Demonstrate techniques of self-rescue and buddy rescue.
11. Navigate underwater.
12. Plan and execute a dive.

6.3. Training

To become AAUS-certified Scientific divers, applicants must successfully complete prerequisites, theoretical aspects, practical training, and examinations for a minimum cumulative time of 100 hours and a minimum of 12 open water dives. Theoretical aspects must include principles and activities appropriate to the intended area of scientific study. Formats for meeting the 100 hours training requirement include the AAUS-developed formalized training course, or a combination of formalized and on the job training.

When a diver's resume provides clear evidence of significant scientific diving experience, the diver can be given credit for meeting portions of the 100 hour course requirements. The DCB will identify specific overlap between on-the-job training, previous scientific diving training/experience and course requirements, and then determine how potential deficiencies will be resolved. However, the DSO cannot "test-out" divers, regardless of experience, when they have no previous experience in scientific diving.

Any candidate who does not convince the DCB, through the DSO, that they possess the necessary judgment, under diving conditions, for the safety of the diver and his/her buddy, may be denied scientific diving privileges.

Theoretical Training / Knowledge Development	
Required Topics:	Suggested Topics:
Diving Emergency Care Training <ul style="list-style-type: none"> • Cardiopulmonary Resuscitation (CPR) • AED • Standard or Basic First Aid • Recognition of DCS and AGE • Accident Management • Field Neurological Exam • Oxygen Administration 	Specific Dive Modes (methods of gas delivery) <ul style="list-style-type: none"> • Open Circuit • Hookah • Surface Supplied diving • Rebreathers (closed and/or semi-closed)
Dive Rescue <ul style="list-style-type: none"> • To include procedures relevant to OM specific protocols. (See water skills below) 	Specialized Breathing Gas <ul style="list-style-type: none"> • Nitrox • Mixed Gas
Scientific Method	Small Boat Operation
Data Gathering Techniques (Only items specific to area of study required) <ul style="list-style-type: none"> • Transects and Quadrats • Mapping • Coring • Photography • Tagging • Collecting • Animal Handling • Archaeology • Common Biota • Organism Identification • Behavior • Ecology • Site Selection, Location, and Re-location • Specialized Data Gathering Equipment 	Specialized Environments and Conditions <ul style="list-style-type: none"> • Blue Water Diving • Altitude • Ice and Polar Diving (Cold Water Diving) • Zero Visibility Diving • Polluted Water Diving • Saturation Diving • Decompression Diving • Overhead Environments • Aquarium Diving • Night Diving • Kelp Diving • Strong Current Diving • Potential Entanglement/Entrapment • Live boating
Required Topics:	Suggested Topics:
Navigation	HazMat Training
HazMat Training <ul style="list-style-type: none"> • HP Cylinders 	<ul style="list-style-type: none"> • Chemical Hygiene, Laboratory Safety (Use of Chemicals)
Decompression Management Tools <ul style="list-style-type: none"> • Dive Tables • Dive Computers • PC Based Software 	Specialized Diving Equipment <ul style="list-style-type: none"> • Full face mask • Dry Suit • Communications • Dive Propulsion Vehicle (DPV) • SMBs/Lift Bags • Line Reels
AAUS Scientific Diving Regulations and History <ul style="list-style-type: none"> • Scientific Dive Planning • Coordination with other Agencies • Appropriate Governmental Regulations 	
Hazards of breath-hold diving and ascents	
Dive Physics (Beyond entry level scuba)	Other Topics and Techniques as Determined by the DCB
Dive Physiology (Beyond entry level scuba)	
Dive Environments	
Decompression Theory and its Application	

Practical Training / Skill Development	
Confined Water	<p>At the completion of training, the trainee must satisfy the DSO or DCB-approved designee of their ability to perform the following, as a minimum, in a pool or in sheltered water:</p> <ul style="list-style-type: none"> • Enter water fully equipped for diving • Clear fully flooded face mask • Demonstrate air sharing and ascent using an alternate air source, as both donor and recipient, with and without a face mask • Demonstrate buddy breathing as both donor and recipient, with and without a face mask • Demonstrate understanding of underwater signs and signals • Demonstrate ability to remove and replace equipment while submerged • Demonstrate acceptable watermanship skills for anticipated scientific diving conditions
Open Water Skills	<p>The trainee must satisfy the DSO, or DCB-approved designee, of their ability to perform at least the following in open water:</p> <ul style="list-style-type: none"> • Surface dive to a depth of 10 feet (3 meters) without scuba* • Enter and exit water while wearing scuba gear* ^^ • Kick on the surface 400 yards (366 meters) while wearing scuba gear, but not breathing from the scuba unit* • Demonstrate proficiency in air sharing ascent as both donor and receiver* • Demonstrate the ability to maneuver efficiently in the environment, at and below the surface* ^^ • Complete a simulated emergency swimming ascent* • Demonstrate clearing of mask and regulator while submerged* • Underwater communications^^ • Demonstrate ability to achieve and maintain neutral buoyancy while submerged* • Demonstrate techniques of self-rescue and buddy rescue* • Navigate underwater ^ • Plan and execute a dive^ • Demonstrate judgment adequate for safe scientific diving* ^^ <p>Rescue Skills:</p> <ul style="list-style-type: none"> • Rescue from depth and transport 25 yards (23 meters), as a diver, a passive simulated victim of an accident: surface diver, establish buoyancy, stabilize victim • Demonstrate simulated in-water mouth-to-mouth resuscitation • Removal of victim from water to shore or boat • Stressed and panicked diver scenarios • Recommendations For Rescue Of A Submerged Unresponsive Compressed-Gas Diver – Appendix 9 <p>Successfully complete a minimum of one checkout dive and at least eleven additional open water dives in a variety of dive sites, for a cumulative surface to surface time of 6 hours. Dives following the checkout dive(s) may be supervised by an active Scientific Diver holding the necessary depth authorization experienced in the type of diving planned, and with the knowledge and permission of the DSO</p> <p>The eleven dives (minimum) following the initial checkout dive may be conducted over a variety of depth ranges as specified by the OM DCB. Depth progression must proceed shallower to deeper after acceptable skills and judgement have been demonstrated, and are not to exceed 100 feet (30 m) during the initial 12 dive cycle</p> <p>* Checkout dive element ^^ Evaluated on all dives ^ Evaluated at some point during the training cycle</p>

Examinations	
Equipment	<p>The trainee will be subject to examination/review of:</p> <ul style="list-style-type: none"> • Personal diving equipment • Task specific equipment • Function and manipulation of decompression computer to be employed by the diver (if applicable)
Written Exams	<p>The trainee must pass a written examination reviewed and approved by the OM DCB that demonstrates knowledge of at least the following:</p> <ul style="list-style-type: none"> • Function, care, use, and maintenance of diving equipment • Advanced physics and physiology of diving • Diving regulations • Applicable diving environments • Emergency procedures for OM-specific dive mode(s) and environments, including buoyant ascent and ascent by air sharing • Currently accepted decompression theory and procedures • Proper use of dive tables • Hazards of breath-hold diving and ascents • Planning and supervision of diving operations • Navigation • Diving hazards & mitigations • Cause, symptoms, treatment, and prevention of the following: near drowning, air embolism, hypercapnia, squeezes, oxygen toxicity, nitrogen narcosis, exhaustion and panic, respiratory fatigue, motion sickness, decompression sickness, hypothermia, and hypoxia/anoxia • Applicable theoretical training and knowledge development from the Required and Suggested Topics (above)

SECTION 7. SCIENTIFIC DIVER CERTIFICATION

7.1. Certification Types

Scientific Diver Certification – This is a permit to dive with the UOG ML, usable only while current and up-to-date.

Temporary Diver Permit – This permit constitutes a waiver of Sec. 6.0 and is issued only following a demonstration of the required proficiency in diving. It is only valid for a specified time, as determined by the DSO.

7.2. Requirements for Scientific Diver Certification

Certification in the UOG ML Scientific Diver program requires completion of training in theoretical aspects and practical skills (i.e., completion of Sec. 6.2 and 6.3, above), totaling a minimum of 100 hours. Theoretical aspects shall include principles and activities appropriate to the intended area of scientific study. Divers-In-Training need to complete a total of 12 dives accompanied by a scientific diver, to complete their training and earn their certification.

7.3. General Policy

No person shall engage in scientific under the auspices of the UOG ML until certified pursuant to the provisions of this manual. The requirements of Sec. 6.1 (with the exception of medical approval) may be waived if the person in question has the required diving proficiency and can contribute measurably to the planned dive. A statement of the temporary diver's qualifications shall be submitted to the DSO as a part of the dive plan. Temporary permits are restricted to the planned diving operation and shall comply with all other policies, regulations, and standards of this manual.

7.3.1. Prerequisites

Applicants to the UOG ML Scientific Diver Certification Program must have fulfilled the requirements of Sec. 6.0 of this Manual.

7.3.2. Application

An application for certification must be filled out and provided to the DSO.

7.3.3. Medical examination

Each applicant for certification must submit a statement from a licensed physician, based on an approved medical exam, attesting to the applicant's fitness to dive (see Appendix 4).

7.3.4. Emergency care training

The applicant must provide proof of training and competency in diving Emergency Care training. Required diving emergency care training courses are offered on a regular basis by the DSO at the UOGML and are available for faculty, staff and students. Renewal of certifications for CPR, Oxygen Provider/DAN O₂, and EFR are required every two years. The following topics are required and are covered by a standard Emergency First Response training course:

- Cardiopulmonary Resuscitation (CPR)
- Standard or Basic First Aid*

- Accident Management*
- Field Neurological Exam*
- Oxygen Administration
- Recognition of Decompression Sickness (DCS) and Arterial Gas Embolism (AGE)

7.4. Depth Certification

Diving is not permitted beyond 130 ft (65 m) depth.

7.4.1. Depth certification levels

1. *Certification to 30-ft (10 m) depth* - This is the initial certification, granted upon the successful completion of the requirements of Sec. 6.0.
2. *Certification to 60-ft (20 m) depth* - A diver holding a 30-ft certificate may be certified to a depth of 60 ft after successfully completing 12 supervised, logged training dives to depths between 31 and 60 ft for a minimum total time of 4 hr.
3. *Certification to 100-ft (35 m) depth* - A diver holding a 60-foot certificate may be certified to a depth of 100 ft by logging four dives near the maximum depth category. These qualification dives shall be validated by the signature of two authorized divers certified to at least the same depth. Although AAUS certifies Scientific Divers to 130 ft, the UOG ML limits regular diving to 100 ft or shallower. All dives planned for depths between 100 and 130 ft must have the prior approval of the DSO.

7.4.2. Progression to next depth level

A UOG ML-certified diver may exceed her/his depth certification only if accompanied by a diver certified to a greater depth. Under these circumstances, the diver may exceed her/his depth limit by one step.

7.5. Continuation of Certification

During any 12-mo period, each certified scientific diver must log a minimum of 12 dives, to maintain certification. At least one dive must be logged near the maximum depth of the diver's certification during each 6-mo period. Failure to meet these requirements may be cause for revocation or restriction of certification by the DCB.

7.5.1. Requalification of depth certificate

Once initial certification requirements are met, divers whose depth certification has lapsed due to lapse of activity may be requalified after 2 dives to the previously certified depth.

7.5.2. Medical examination

All certified scientific divers shall pass a medical examination at intervals specified in Section 8.1.2. After major illness or injury, a certified scientific diver must receive clearance from a physician before resuming diving activities, as described in Section 8.1.2.

7.6. Revocation of Scientific Diving Certification

Scientific diver certification may be revoked or restricted by the DSO or the DCB. Violation of regulations set forth in this Manual, or other governmental subdivisions not in conflict with this Manual, may be considered just cause. The DSO must inform the diver in writing of the reason(s) for revocation

or must communicate any restrictions imposed. The diver will be given the opportunity to present her/his case in writing for reconsideration and/or recertification. All written statements and requests identified in this section are formal documents which will become part of the diver's file.

7.7. Recertification

If a diver's certification expires or is revoked, she/he may be recertified after complying with such conditions as the DSO or DCB may impose. The diver shall be given an opportunity to present her/his case to the DCB before conditions for recertification are stipulated.

SECTION 8. MEDICAL STANDARDS

8.1. Medical Requirements for UOG ML Divers

8.1.1. General guidelines

1. Diving under the auspices of UOG ML is permitted only with a current diving physical examination and a declaration by the examining physician of the diver's fitness to dive.
2. All medical evaluations required by this standard shall be performed by, or under the direction of, a licensed physician of the applicant-diver's choice. Whenever possible, it is recommended that the examining physician be one trained in diving/undersea medicine.
3. All divers should be free of chronic disabling disease and any conditions for which restrictions from diving are generally recommended.

8.1.2. Timing and requirements of medical evaluations

A medical evaluation shall be completed:

1. Before a diver may begin diving. The DSO must be provided with a copy of the results of that examination, and those results must be reviewed and found satisfactory by the DSO. Medical records will be kept confidential, and in the diver's personal file. An exception to this rule is in the case wherein an equivalent initial medical evaluation has been given within the preceding 5 yrs (or 3 yrs, if over the age of 40 and 2 yrs, if over the age of 60). In such a case, a copy of this evaluation must be made available to the DSO. The examination should include the following:

Medical history, complete physical exam with emphasis on neurological and ontological components, urinalysis), and any further tests deemed necessary by the physician to qualify the patient for scuba diving.

2. Every 5 yrs after the initial exam until the age of 40, these items in 1. above should be repeated.
3. Re-evaluation exams are required every 3 yrs from 40 to 60, and every 2 yrs after the age of 60. The initial and re-examinations should include the following:

Medical history, chest X-ray, complete physical exam, resting EKG, urinalysis, assessment of coronary artery disease using Multiple-Risk-Factor Assessment (age, lipid profile, smoking history, blood pressure, diabetes screening). Any further tests deemed necessary by the physician to qualify the patient for scuba diving.

4. After any major injury or illness, or any condition requiring hospitalization for more than 24 hours. If the injury or illness is pressure related, then the evaluation must be performed by a physician trained in diving medicine.

8.1.3. Physician's written report

After a medical examination is completed, a written report of the physician's assessment of fitness to dive, and any recommended restrictions or limitations, must be submitted to the DCB and placed in the diver's file. A copy of this report will be available to the diver through the DSO.

SECTION 9. NITROX DIVING GUIDELINES

The following guidelines address the use of nitrox by scientific divers under the auspices of the UOG ML. While the UOG ML does not provide Nitrox training, it may be required for certain types of research. Those planning to use Nitrox are required to complete the standard coursework to obtain certification. **Nitrox** is defined for this guideline as *'breathing mixtures composed predominately of nitrogen and oxygen, most commonly produced by the addition of oxygen or the removal of nitrogen from air'*.

9.1. Prerequisites

9.1.1. Eligibility

Only a certified Scientific Diver diving under the auspices of a member organization, is eligible for authorization to use nitrox. After completion, review and acceptance of application materials, training and qualification, an applicant will be authorized by the DSO to use nitrox within their depth authorization. Training in nitrox diving cannot substitute for Diver-In-Training authorization (Section 7.0) though it may be included as part of Scientific Diver training requirements.

9.1.2. Application and documentation

Application for authorization to use nitrox should be made in writing to the DSO. Supporting documentation (i.e., evidence of certification) is to be submitted along with the authorization form.

9.2. Requirements for Authorization to Use Nitrox

Prior to authorization to use nitrox, the following minimum requirements should be met:

9.2.1. Training

The diver must complete additional theoretical and practical training beyond the Scientific Diver in Training air certification level, to the satisfaction of the UOG ML DSO and DCB.

9.2.2. Examinations

Each diver should demonstrate proficiency in skills and theory in written, practical, and open water examinations covering topics detailed in Section 9.3.3, below.

9.2.3. Minimum Activity to Maintain Authorization

The diver should log at least one nitrox dive per year. Failure to meet the minimum activity level may be cause for restriction or revocation of nitrox authorization.

9.3. Nitrox Scientific Diving Regulations

9.3.1. Dive personnel requirements

1. **Nitrox Diver-In-Training** - A Diver-In-Training, who has completed the training and authorization sections of these guidelines may be authorized by the DSO to use nitrox under the direct supervision of a Scientific Diver who also holds nitrox authorization. Dive depths should be restricted to those specified in the diver-in-training's authorization.

2. **Scientific Diver** - A Scientific Diver who has completed the training and authorization sections of these guidelines may be authorized by the DSO to use nitrox. Depth authorization to use nitrox should be the same as those specified in the diver's authorization.
3. **Lead Diver** - On any dive during which nitrox will be used by any team member, the Lead Diver should be authorized to use nitrox, and hold appropriate authorizations required for the dive, as specified in AAUS Standards. Lead Diver authorization for nitrox dives by the DSO and/or DCB should occur as part of the dive plan approval process.

In addition to general responsibilities, the Lead Diver should:

- a. As part of the dive planning process, verify that all divers using nitrox on a dive are properly qualified and authorized;
- b. As part of the pre-dive procedures, confirm with each diver the nitrox mixture the diver is using, and establish dive team maximum depth and time limits, according to the shortest time limit or shallowest depth limit among the team members.
- c. The Lead Diver should also reduce the maximum allowable pO₂ exposure limit for the dive team if on-site conditions so indicate.

9.3.2. Dive Parameters

1. Oxygen Exposure Limits

- a. The inspired oxygen partial pressure experienced at depth should not exceed 1.6 ATA (Atmospheres Absolute). All dives performed using nitrox breathing mixtures should comply with the current NOAA Diving Manual "Oxygen Partial Pressure Limits for 'Normal' Exposures".
- b. The maximum allowable exposure limit should be reduced in cases with cold or strenuous dive conditions, or extended exposure times are expected. The DCB should consider this in the review of any dive plan application which proposes to use nitrox. The Lead Diver should also review on-site conditions and reduce the allowable pO₂ exposure limits if conditions indicate.
- c. If using the equivalent air depth (EAD) method the maximum depth of a dive should be based on the oxygen partial pressure for the specific nitrox breathing mix to be used.

2. Bottom Time Limits

- a. Maximum bottom time is based on the dive depth and the nitrox mixture being used.
- b. Bottom time for a single dive should not exceed the NOAA maximum allowable "Single Exposure Limit" for a given oxygen partial pressure, as listed in the NOAA Diving Manual.

3. Dive Tables and Gases

- a. A set of DCB approved nitrox dive tables should be available at the dive site.
- b. When using the equivalent air depth (EAD) method, dives should be conducted using air dive tables approved by the DCB.
- c. If nitrox is used to increase the safety margin of air-based dive tables, the MOD and oxygen exposure and time limits for the nitrox mixture being used should not be exceeded.
- d. Breathing mixtures used while performing in-water decompression, or for bail-out purposes, should contain the same or greater oxygen content as that being used during the dive, within the confines of depth limitations and oxygen partial pressure limits.

4. Nitrox Dive Computers

- a. Dive computers may be used to compute decompression status during nitrox dives. Manufacturers' guidelines and operations instructions should be followed.
- b. Use of Nitrox dive computers should comply with dive computer guidelines of the AAUS Standards.
- c. Nitrox dive computer users should demonstrate a clear understanding of the display, operations, and manipulation of the unit being used for nitrox diving prior to using the computer, to the satisfaction of the DSO or designee.
- d. If nitrox is used to increase the safety margin of an air-based dive computer, the MOD and oxygen exposure and time limits for the nitrox mixture being used shall not be exceeded.
- e. Dive computers capable of pO_2 limit and fO_2 adjustment should be checked by the diver prior to the start of each dive to assure compatibility with the mix being used.

5. Repetitive Diving

- a. Repetitive dives using nitrox mixtures should be performed in compliance with procedures required of the specific dive tables used.
- b. Residual nitrogen time should be based on the EAD for the specific nitrox mixture to be used on the repetitive dive, and not that of the previous dive.
- c. The total cumulative exposure (bottom time) to a partial pressure of oxygen in a given 24-hr period should not exceed the current *NOAA Diving Manual* 24-hr Oxygen Partial Pressure Limits for "Normal" Exposures.
- d. When repetitive dives expose divers to different oxygen partial pressures from dive to dive, divers should account for accumulated oxygen exposure from previous dives when determining acceptable exposures for repetitive dives. Both acute (CNS) and chronic (pulmonary) oxygen toxicity concerns should be addressed.

6. Oxygen Parameters

- a. Authorized mixtures – Mixtures meeting the criteria outlined in Section 9.4.2 may be used for nitrox diving operations, upon approval of the DCB.
- b. Purity - Oxygen used for mixing nitrox-breathing gas should meet the purity levels for "Medical Grade" (U.S.P.) or "Aviator Grade" standards.
- c. Placed in contact with oxygen concentrations greater than 40%, or
- d. Used in nitrox production by the partial pressure mixing method with gas
- e. mixtures containing greater than 40% oxygen as the enriching agent.

7. Gas Mixing and Analysis for Organizational Members

- a. Personnel requirements
 - I. Individuals responsible for producing and/or analyzing nitrox mixtures should be knowledgeable and experienced in all aspects of the technique.
 - II. Only those individuals approved by the DSO and/or DCB should be responsible for mixing and/or analyzing nitrox mixtures.
- b. Production methods - It is the responsibility of the DCB to approve the specific nitrox production method used.
- c. Analysis verification by user - It is the responsibility of each diver to analyze the oxygen content of his/her SCUBA cylinder prior to the dive, and acknowledge in writing the following information for each cylinder: fO_2 , MOD, cylinder pressure, date of analysis, and user's name.
- d. Individual dive log reporting forms should report fO_2 of nitrox used.

9.4. Nitrox Diving Equipment

All designated equipment and stated requirements regarding scuba equipment required in the AAUS Standards should apply to nitrox scuba operations. Additional minimal equipment necessary for nitrox diving operations includes:

1. Labeled SCUBA Cylinders
2. Oxygen Analyzers

9.4.1. Oxygen cleaning and maintenance requirements

1. All equipment, which during the dive or cylinder filling process is exposed to concentrations greater than 40% oxygen at pressures above 150 psi, should be cleaned and maintained for oxygen service.
2. Equipment used with oxygen or mixtures containing over 40% by volume oxygen shall be designed and maintained for oxygen service. Oxygen systems over 125 psi shall have slow-opening shut-off valves. This should include the following equipment: SCUBA cylinders, cylinder valves, SCUBA and other regulators, cylinder pressure gauges, hoses, diver support equipment, compressors, and fill station components and plumbing.

SECTION 10. SNORKELING GUIDELINES

Snorkeling is subject to the same safety rules and guidelines as diving. It is the intent of the University of Guam Marine Laboratory (UOGML) to maximize Scientific Snorkeling safety. Therefore, no person shall engage in scientific snorkeling operations through UOGML unless they have been granted permission in accordance with this manual.

10.1. Requirements for Application

Non-diver applicants must complete the following forms:

1. UOG ML Snorkeling medical form
2. Brief Snorkeling History
3. Current EFR and Oxygen Provider Certifications
4. UOG ML Waiver of Liability

10.2. Swimming Evaluation

Applicants must demonstrate the following in the presence of the DSO. All tests are to be performed without swim aids.

1. Swim underwater for a distance of 25 yards (23 meters) without surfacing.
2. Swim 400 yards (366 meters) in less than 12 minutes.
3. Tread water for 10 minutes, or 2 minutes without the use of hands.
4. Transport a passive person of equal size a distance of 25 yards (23 meters) in the water.

10.3. Requirements for Scientific Snorkeling

1. Face mask, snorkel and fins must be used
2. Exposure suit or other protective clothing must be worn
3. The snorkeler must be able to maintain buoyancy with minimal effort without a flotation device
4. A dive flag to be displayed at all times (provided by the UOG ML), including shore entry snorkels
5. First aid and Oxygen kits (provided by the UOG ML)

10.4. Scientific Snorkeling Protocol

1. A team consists of at least two snorkelers. Groups larger than three subdivide into buddy pairs.
2. Snorkelers must stay within 50 ft (18 m) of the dive flag.
3. Snorkelers must adhere to the buddy system. On the surface, snorkelers should remain within 15 ft of their buddy. When making surface dives and swimming underwater, snorkelers should adopt a “one up/one down” system (alternating dives).
4. Hyperventilation prior to breath-hold diving is not permitted.
5. Applicants requiring training in snorkeling/skin diving techniques and applicants with weak swimming abilities should make this known to the Diving Safety Officer. Additional practice, a swim competence test, or a flotation device may be recommended.

10.5. Activities Requiring Special Approval

It is the participant’s responsibility to consult the DSO to assess the safety aspects of a snorkeling/free diving activity. The following activities require prior approval from the DSO:

1. Snorkeling that does not adhere to this policy guide

2. After-hour dives (early morning, night, weekend)
3. Hazardous environmental conditions (strong waves and/or currents, confined areas, caverns).
4. Snorkeling with known risk of entanglement
5. Snorkeling in areas of high boat traffic
6. Snorkeling following SCUBA dives
7. Breath-hold dives deeper than 15 ft
8. Spear fishing

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APPENDIX1. DEFINITION OF TERMS

Air sharing - Sharing of an air supply between divers.

ATA (Atmospheres Absolute) - Total pressure exerted on an object by a gas or mixture of gases, at a specific depth or elevation, including normal atmospheric pressure.

Bounce Dive - A dive of relatively short duration, generally less than 10 minutes.

Bottom Time - The total elapsed time measured in minutes from the time the diver leaves the surface in descent to the time that the diver begins a direct ascent to the surface.

Breath-hold Diving - A diving mode in which the diver uses no self-contained or surface supplied air or oxygen supply. May also be referred to as free diving.

Buddy Breathing - Sharing of a single air source between divers.

Buddy Diver - Second member of the dive team, such as Tom Petty.

Buddy System - Two comparably equipped scuba divers in the water in constant communication.

Buoyant Ascent - An ascent made using some form of positive buoyancy.

Burst Pressure - The pressure at which a pressure containment device would fail structurally.

Certified Diver - A diver who holds a recognized valid certification from an organizational member or internationally recognized certifying agency.

Controlled Ascent - Any one of several kinds of ascents including normal, swimming, and buddy breathing ascents where the diver(s) maintain control so a pause or stop can be made during the ascent.

Cylinder - A pressure vessel for the storage of gases. May also be referred to as a tank.

Decompression Chamber - A pressure vessel for human occupancy that is used to treat decompression sickness. Also called a hyperbaric chamber or recompression chamber.

Decompression Sickness - A condition with a variety of symptoms which may result from gas and bubbles in the tissues of SCUBA divers after pressure reduction.

Decompression Table - A profile or set of profiles of depth-time relationships for ascent rates and breathing mixtures to be followed after a specific depth-time exposure or set of exposures. May also be referred to as dive tables.

Dive - A descent into the water, an underwater diving activity utilizing compressed gas, an ascent, and return to the surface.

Dive Computer—A microprocessor based device which computes a diver's theoretical decompression status, in real time, by using pressure (depth) and time as input to a decompression model, or set of decompression tables, programmed into the device.

Dive Location - A surface or vessel from which a diving operation is conducted.

Dive Site - Physical location of a diver during a dive.

Dive Table - A profile or set of profiles of depth-time relationships for ascent rates and breathing mixtures to be followed after a specific depth-time exposure or exposures.

Diver - An individual in the water who uses apparatus, including a snorkel, which supplies breathing gas at ambient pressure.

Diver-In-Training - An individual gaining experience and training in additional diving activities under the supervision of a dive team member experienced in those activities.

Diver-Carried Reserve Breathing Gas - A diver-carried independent supply of air or mixed gas (as appropriate) sufficient under standard operating conditions to allow the diver to reach the surface, or another source of breathing gas, or to be reached by another diver.

Diving Mode - A type of diving requiring specific equipment, procedures, and techniques, for example, snorkel, scuba, surface-supplied air, or mixed gas.

Diving Control Board (DCB) - A group of individuals who act as the official representative of the membership organization in matters concerning the scientific diving program of the UOGML (Section 1.2.4).

Diving Safety Officer (DSO) – The individual responsible for the safe conduct of the scientific diving program of the membership organization (Section 1.2.3).

Emergency Ascent - An ascent made under emergency conditions where the diver may exceed the normal ascent rate.

Enriched Air (EANx) - A breathing mixture of air and oxygen when the percent of oxygen exceeds 21%. This term is considered synonymous with the term “nitrox” (Section 9.0).

Equivalent Air Depth (EAD) - Depth at which air will have the same nitrogen partial pressure as the nitrox mixture being used. This number, expressed in units of feet of seawater or saltwater, will always be less than the actual depth for any enriched air mixture.

fN₂ - Fraction of nitrogen in a gas mixture, expressed as either a decimal or percentage, by volume.

fO₂ - Fraction of oxygen in a gas mixture, expressed as either a decimal or percentage, by volume.

FFW – Feet of freshwater, or equivalent static head.

FSW - Feet of seawater, or equivalent static head.

Hookah - Similar to surface supplied diving (see below) in that the breathing gas is supplied from the surface by means of a pressurized hose. However, the hookah supply hose does not require a strength member, pneumofathometer hose, or communication line. Hookah equipment may be as simple as a long hose attached to a standard SCUBA cylinder supplying a standard SCUBA second stage. The diver is responsible for the monitoring his/her own depth, time, and diving profile.

Hyperbaric Chamber - See decompression chamber.

Hyperbaric Conditions - Pressure conditions in excess of normal atmospheric pressure at the dive location.

Lead Diver - Certified scientific diver with experience and training to conduct the diving operation.

Maximum Working Pressure - Maximum pressure to which a pressure vessel may be exposed under standard operating conditions.

Organizational Member - An organization which is a current member of the AAUS, and which has a dive program that adheres to the standards of the AAUS, as set forth in the AAUS Standards for Scientific Diving Certification and Operation of Scientific Diving Programs.

Mixed-Gas Diving - A diving mode in which the diver is supplied in the water with a breathing gas other than air.

MOD - Maximum Operating Depth, usually determined as the depth at which the pO₂ (see below) for a given gas mixture reaches a predetermined maximum.

MSW - Meters of Seawater or equivalent static head.

Nitrox - Any gas mixture comprised predominately of nitrogen and oxygen, most frequently containing between 21% and 40% oxygen. May also be referred to as Enriched Air Nitrox, abbreviated EAN.

NOAA Diving Manual - The *NOAA Diving Manual, Diving for Science and Technology*, 2001 edition. National Oceanic and Atmospheric Administration, Office of Undersea Research, US Department of Commerce.

No-Decompression Limits - Depth-time limits for diving without requiring a decompression stop. Based on the “no-decompression limits and repetitive dive group designations table for no-decompression air dives” of the U.S. Navy Diving Manual or equivalent limits.

Normal Ascent - An ascent made with an adequate air supply at a rate of 60 feet per minute or less.

OTU - Oxygen Toxicity Unit

Oxygen Clean – The state wherein all combustible contaminants have been removed from a cylinder.

Oxygen Compatible - A gas delivery system that has components (o-rings, valve seats, diaphragms, etc.) that are compatible with oxygen at a stated pressure and temperature.

Oxygen Service - A gas delivery system that is both oxygen clean and oxygen compatible.

Oxygen Toxicity - Any adverse reaction of the central nervous system (“acute” or “CNS” oxygen toxicity) or lungs (“chronic”, “whole-body”, or “pulmonary” oxygen toxicity) brought on by exposure to an increased (above atmospheric levels) partial pressure of oxygen.

Pressure-Related Injury - An injury resulting from pressure disequilibrium within the body as the result of hyperbaric exposure. Examples include: decompression sickness, pneumothorax, mediastinal emphysema, air embolism, subcutaneous emphysema, or ruptured eardrum.

Pressure Vessel - See 'Cylinder'.

pN₂ - Inspired partial pressure of nitrogen, usually expressed in units of atmospheres absolute.

pO₂ - Inspired partial pressure of oxygen, usually expressed in units of atmospheres absolute.

PSI - Unit of pressure; pounds per square inch.

PSIG - A gauge measuring units of pressure in pounds per square inch.

Recompression Chamber - see 'Decompression Chamber'.

Scientific Diving - Diving performed solely as a necessary part of a scientific research or science education activity by employees whose sole purpose for diving is to perform scientific research or education tasks.

SCUBA Diving - A diving mode independent of surface supply in which the diver uses an open circuit self-contained underwater breathing apparatus.

Standby Diver - A diver at the dive location capable of rendering assistance to a diver in the water.

Surface Interval Time - the time elapsed since the previous dive.

Surface Supplied Diving - Dives where the breathing gas is supplied from the surface by means of a pressurized umbilical hose. The umbilical generally consists of a gas supply hose, strength member, pneumofathometer hose, and communication line. The umbilical supplies a helmet or full-face mask. The diver may rely on the tender at the surface to keep up with the divers' depth, time and diving profile.

Swimming Ascent—An ascent which can be done under normal or emergency conditions. Accomplished by simply swimming to the surface.

Umbilical - Composite hose bundle between a dive location and a diver or bell, or between a diver and a bell, which supplies a diver or bell with breathing gas, communications, power, or heat, as appropriate to the diving mode or conditions, and includes a safety line between the diver and the dive location.

Working Pressure—The normal pressure at which a system is designated to operate.

APPENDIX 2. BYLAWS OF THE DIVING CONTROL BOARD



DRAFT-BYLAWS OF THE UNIVERSITY OF GUAM MARINE LABORATORY DIVING CONTROL BOARD CURRENT AS OF XXX



ARTICLE I – NAME

The name of this organization is the University of Guam (UOG) Marine Laboratory Diving Control Board. Administratively, the Board is within the purview of the Division of Academic and Student Affairs of the office of the Senior Vice President for Academic and Student Affairs of the University of Guam.

ARTICLE II – MISSION

The mission of the UOG Diving Control Board (hereafter referred to as the DCB) is to develop, maintain, and enforce a safety program that will train and guide all SCUBA diving and snorkeling research and other water activities associated with the UOG Marine Laboratory (hereafter referred to as UOGML). The mandates of the DCB are: *to support water research activities by maintaining and enforcing safety procedures; to train incoming personnel as certified Scientific Divers and then to maintain those certifications for the length of time the personnel are with the UOGML program; and to facilitate collaborations with other institutions which involve water research activities.* The program will cover activities of the faculty, staff, administrators, and students of the UOGML, as well as visiting research personnel who are diving under the auspices of the UOGML. The program follows that of the American Academy of Underwater Sciences (hereafter referred to as AAUS), but will include conditions that relate to the unique environment of the tropical western Pacific and UOGML as a host institution.

ARTICLE III – MEMBERSHIP**SECTION 1 CRITERIA FOR MEMBERSHIP**

The DCB shall be composed of appointed, elected or hired faculty, diving staff, administrators, and students of the UOGML (hereafter referred to as the UOGML community). Specific positions are described below; all positions should be filled at all times in order for the DCB to function in its designated capacity. If a position is vacated for whatever reason, the responsible electing body (as identified in Section 2, below) can elect an interim member to complete the vacancy for the remainder of a given year (see Section 4, below).

SECTION 2 COMPOSITION OF THE DIVING CONTROL BOARD

The DCB shall be composed of the following members:

- a. *Dive Safety Officer* (hereafter referred to as *DSO*), who will fill a University hired position as a voting member;
- b. *Chair*, who is elected from and by the UOGML faculty, and who will sit on the DCB as a voting member;
- c. *ML Director*, who will sit on the DCB as a voting member;
- d. *One Marine Technician or staff* other than the *DSO*, who is elected by the faculty and who will sit on the DCB as a voting member;
- e. *ML Laboratory Safety Manager*, who will sit on the DCB as a voting member;
- f. *Student Representative*, elected from and by the graduate student population, and who will sit on the DCB as a voting member.

SECTION 3 CERTIFICATION OF MEMBERSHIP

The *DSO* and *ML Laboratory Safety Manager* shall be permanent members of the DCB, for as long as they remain in the position. The *ML Director* shall be a member for as long as his/her Directorship term extends. Other members (*Chair*, voting members) shall be elected for a three-year term, but can be re-elected for a second consecutive term. Student representatives will serve for one year, but can also be re-elected for a second consecutive term. The recorder (see below) will be elected for a one-year term from among the DCB members, and can also be re-elected for a second term. All members should be certified UOGML scientific divers. The

procedure to become a scientific diver is described in detail in the UOGML Scientific Diving Procedures Manual.

SECTION 4 ELECTION OF MEMBERS

Elections and/or verification of membership shall take place at the beginning of each academic year, as necessary, after which the composition of the DCB will be communicated to the Senior Vice President for Academic and Student Affairs. An elected member who cannot fulfill her/his duties and requests a leave of absence or termination from Board membership should notify the Chair in writing or at a regularly scheduled meeting. In the case where an elected member is not able to fulfill his/her full term of service, the respective electing body will elect an Acting member from the UOGML community to fill the role and the DCB Chair will coordinate this process and communicate the results to the DCB and ML community. The Acting member will serve on the DCB until either the elected member returns to their position or until a scheduled election can take place. To elect the student representative, students will hold an election to select this person from among the population of certified student scientific divers. The elected student must be in at least their second year of graduate school, be a certified scientific diver in good standing with the DCB, and be approved by the DCB.

SECTION 5 COMPENSATION

There will be no compensation for agreeing to election or appointment as a DCB member and fulfilling the duties of the elected or appointed position.

SECTION 6 REMOVAL OF MEMBERS

A member of the DCB can be removed from the Board with just cause by a quorum vote of the DCB membership. Prior to vote, the member must be given notice of this vote and provided an opportunity to be heard. Potential causes for removal from the DCB are discussed in the Scientific Diving Procedures Manual.

SECTION 7 CONFLICTS OF INTEREST

The DCB should be informed of any conflicts of interest of Board members on any issue being addressed. In such cases, the Board member with the conflict can participate in discussions, but will recuse him- or herself from voting on the issue. To reach a quorum in such cases, the responsible electing body may elect a temporary

member to replace the member who cannot vote. The temporary member will be provided with all documentation of the issue to be addressed and will be allowed an appropriate amount of time to apprise themselves of the issue prior to voting.

ARTICLE IV – DUTIES OF THE MEMBERS

The members of the DCB shall have the following duties:

SECTION 1 DUTIES OF MEMBERS

The DSO shall:

- a. Maintain the UOGML Scientific Diving Procedures Manual in accordance with AAUS and UOG rules and make the manual available to all UOGML personnel;
- b. Maintain updated records of all UOGML divers, which will include physical examination results, diving certification records, dates of Emergency First Responder (EFR), Cardiopulmonary Resuscitation (CPR), Oxygen Provider classes, insurance policies, and incident reports;
- c. Remind UOGML divers of when their diving certification classes and physical examinations need to be renewed, in accordance with AAUS and DCB rules and schedules, as outlined in the Scientific Diving Procedures Manual;
- d. Maintain a database for UOGML diving personnel gear service records, based on information provided by the diving personnel;
- e. Serve as DCB Archivist, maintaining a centralized depository of program documents, including meeting minutes and other historical documents;
- f. Coordinate with visiting researchers prior to, and during, their work at UOGML to ensure their safety and adherence to the UOGML diving rules;
- g. Communicate with AAUS regarding changes and updates in their policies;
- h. Provide updates on these items at regular DCB meetings;
- i. Ensure all UOGML divers have the required safety gear on all trips and maintain said safety gear (Oxygen Provider kits, first aid kits, dive flags);

- k. Provide written approval of all scheduled UOGML trips involving water activities, after reviewing submitted trip requests;
- l. Meet as necessary with other college and university officials and organizations to represent the DCB and/or the Chair, in her/his absence from such meetings;
- m. Have the final enforcement authority in safety-related issues that come before the DCB.

The Chair shall:

- a. Serve as presiding officer at DCB meetings;
- b. Prepare the agenda for DCB meetings, and ensure that the agenda and minutes of the previous meeting are made available to board members three business days prior to the meeting;
- c. Represent the DCB on any permanent or special university-wide or public body or event that may require its representation;
- d. Meet as necessary with other college and university officials and organizations for the maintenance of the DCB program;
- e. Serve as signature authority for the DCB program;
- f. In recognition of the sensitive and/or confidential nature of issues that may come before the Board for deliberation and action, serve as the communicator of DCB decisions to the UOGML and UOG community, in coordination with the ML Director;
- g. Maintain the *Bylaws*;
- h. Perform other customary duties of the Chair of an organization, as specified in the Parliamentary Authority (see below, Article VI).

The recorder shall:

- a. Be elected from among the remaining members of the Board, by the DCB members;
- b. Record the minutes at each meeting and maintain a record of attendance;
- c. Ensure that the minutes of the meetings are made available to the Chair and the DSO in a timely manner;
- d. Serve as timekeeper for DCB meetings.

The ML Director shall:

- a. Serve as Acting DCB Chair during temporary absences of the DCB Chair, to include serving as presiding officer at DCB meetings and other University meetings the Chair might be required to attend;
- b. Should the office of DCB Chair become vacant, serve as acting DCB Chair until a new Chair is elected by the UOGML faculty, and results formally provided to the ML Director, who will inform the DCB members.

SECTION 2 RIGHTS AND RESPONSIBILITIES OF THE DCB

The DCB has the following rights and responsibilities:

- a. To ensure representation of the DCB in UOGML faculty meetings and in University meetings which require DCB participation;
- b. To formulate, update and communicate rules and regulations involving dive and snorkel safety to the UOGML community, as stated in the Scientific Diving Procedures Manual;
- c. Update the Scientific Diving Procedures Manual, as needed, and approve changes to it with a majority vote, ensuring that the UOGML faculty are given the opportunity to provide input into substantive changes;
- d. To enforce safety rules of the UOGML dive program;
- e. To investigate violations of safety rules and regulations, following the procedures outlined in the Scientific Diving Procedures Manual;
- f. To decide on appropriate actions to be taken as a consequence of safety violations and ensure that these actions are appropriately undertaken;
- g. To communicate, via the DSO, with AAUS regarding updates to their regulations;
- h. To facilitate, via the DSO, collaborations with visiting researchers and local agencies where diving and water work are involved.

ARTICLE V – MEETINGS AND LOCATION

SECTION 1 MEETING TIMES AND LOCATION

The DCB shall meet twice per semester, at a time to be decided upon by the Chair in consultation with the other DCB members. Special meetings to deal with urgent or critical issues shall be called by the Chair as needed.

Meetings will take place at the UOGML Conference Room or the UOGML Lecture Hall. All members are expected to attend all meetings. If a member is unable to do, she/he may appoint a temporary representative to attend in her/his place. If a quorum vote is required, the elected member may vote electronically once she/he is apprised of the issue to be voted on.

SECTION 2 QUORUM

For all scheduled DCB meetings, both regular and special, the majority of currently certified voting members shall constitute a quorum.

SECTION 3 MEETING PROCEDURES

Meetings shall follow an agenda prepared and distributed in advance, in accordance with the Parliamentary Authority (Section VI, below). DCB decisions will be rendered on issues for which discussion and documentation has been completed, which have been submitted in advance to the Chair by the members of the DCB. Time limits for discussion shall be ten (10) minutes for each agenda item and two (2) minutes for each speaker, unless additional time is needed. When voting on any issue or agenda item, a quorum is necessary and the majority of the quorum decides the vote. The DCB can decide to approve electronic votes, when deemed necessary and expedient. In such cases, electronically voting members are considered “present”, for quorum purposes.

ARTICLE VI – PARLIAMENTARY AUTHORITY


The rules contained in the current edition of *Robert’s Rules of Order* shall govern the DCB meetings, standing committee meetings, and other committee meetings in all cases in which they are not inconsistent with these *Bylaws* and any special rules of order the DCB may adopt.

ARTICLE VII – AMENDMENT OF THE *BYLAWS*

Amendments to these Bylaws may be made at any regular meeting of the DCB by a vote of two-thirds of the members present and voting, provided that the amendments have been submitted in writing at the DCB’s

previous regular meeting. Unless otherwise noted in the amendment, an amendment shall become effective after the Chair announces the vote. The change will be incorporated into the by-laws no later than three business days after the vote, and shall be provided to the DCB members. This amended document will state in writing which version of by-laws is being superseded. Approval authority will be the UOG President, through the Administrative Council and the Senior Vice President.

APPENDIX3. DIVE PLAN TRIP REQUEST FORM




UOGML Trip Request Form

Authorization Code to Unlock Form


Project to Bill for Diving Activities *

Departure Date & Time @ UOGML *

2017 - 10 - 03 at 9 : 50 AM 

Year Month Day Hour Minutes

Return Date & Time @ UOGML *

2017 - 10 - 03 at 9 : 50 AM 

Year Month Day Hour Minutes

Boat Requested *

Helmsman's Contact Details *

	Name	Cell	Email
Helmsman	<input type="text"/>	<input type="text"/>	<input type="text"/>

Applicant *

First Name Last Name

E-mail Applicant *

Number of Divers (Incl. Dive Team Leader) *

Dive Depth Unit *

meters

feet

Number of Dives Planned *

Number of Tanks Needed

Remarks

APPENDIX 4. MEDICAL FORMS

4.1 DIVING MEDICAL EXAM PHYSICIAN’S OVERVIEW

TO THE EXAMINING PHYSICIAN:

This person, _____, requires a medical examination to assess their fitness for certification as a Scientific Diver for the _____ (Organizational Member). Their answers on the Diving Medical History Form (attached) may indicate potential health or safety risks as noted. Your evaluation is requested on the attached scuba Diving Fitness Medical Evaluation Report. If you have questions about diving medicine, you may wish to consult one of the references on the attached list or contact one of the physicians with expertise in diving medicine whose names and phone numbers appear on an attached list, the Undersea Hyperbaric and Medical Society, or the Divers Alert Network. Please contact the undersigned Diving Safety Officer if you have any questions or concerns about diving medicine or the _____ standards. Thank you for your assistance.

Organizational Member

Diving Safety Officer

Date

Printed Name

Phone Number

Scuba and other modes of compressed-gas diving can be strenuous and hazardous. A special risk is present if the middle ear, sinuses, or lung segments do not readily equalize air pressure changes. The most common cause of distress is eustachian insufficiency. Recent deaths in the scientific diving community have been attributed to cardiovascular disease. Please consult the following list of conditions that usually restrict candidates from diving.

(Adapted from Bove, 1998: bracketed numbers are pages in Bove)

CONDITIONS WHICH MAY DISQUALIFY CANDIDATES FROM DIVING

1. Abnormalities of the tympanic membrane, such as perforation, presence of a monomeric membrane, or inability to autoinflate the middle ears. [5 ,7, 8, 9]
2. Vertigo, including Meniere’s Disease. [13]
3. Stapedectomy or middle ear reconstructive surgery. [11]
4. Recent ocular surgery. [15, 18, 19]
5. Psychiatric disorders including claustrophobia, suicidal ideation, psychosis, anxiety states, untreated depression. [20 - 23]
6. Substance abuse, including alcohol. [24 - 25]
7. Episodic loss of consciousness. [1, 26, 27]
8. History of seizure. [27, 28]
9. History of stroke or a fixed neurological deficit. [29, 30]
10. Recurring neurologic disorders, including transient ischemic attacks. [29, 30]

11. History of intracranial aneurysm, other vascular malformation or intracranial hemorrhage. [31]
12. History of neurological decompression illness with residual deficit. [29, 30]
13. Head injury with sequelae. [26, 27]
14. Hematologic disorders including coagulopathies. [41, 42]
15. Evidence of coronary artery disease or high risk for coronary artery disease. [33 - 35]
16. Atrial septal defects. [39]
17. Significant valvular heart disease - isolated mitral valve prolapse is not disqualifying. [38]
18. Significant cardiac rhythm or conduction abnormalities. [36 - 37]
19. Implanted cardiac pacemakers and cardiac defibrillators (ICD). [39, 40]
20. Inadequate exercise tolerance. [34]
21. Severe hypertension. [35]
22. History of spontaneous or traumatic pneumothorax. [45]
23. Asthma. [42 - 44]
24. Chronic pulmonary disease, including radiographic evidence of pulmonary blebs, bullae, or cysts. [45,46]
25. Diabetes mellitus. [46 - 47]
26. Pregnancy. [56]

SELECTED REFERENCES IN DIVING MEDICINE

Available from Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100, the Divers Alert Network (DAN) or the Undersea and Hyperbaric Medical Society (UHMS), Durham, NC

- Elliott, D.H. ed. 1996. *Are Asthmatics Fit to Dive?* Kensington, MD: Undersea and Hyperbaric Medical Society.
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- Douglas, P.S. 2011. Cardiovascular screening in asymptomatic adults: Lessons for the diving world. *Undersea and Hyperbaric Medicine* 38(4): 279-287.
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- Bove, A.A. and Davis, J. 2003. *DIVING MEDICINE*, Fourth Edition. Philadelphia: W.B. Saunders Company.
- Edmonds, C., Lowry, C., Pennefather, J. and Walker, R. 2002. *DIVING AND SUBAQUATIC MEDICINE*, Fourth Edition. London: Hodder Arnold Publishers.
- Bove, A.A. ed. 1998. *MEDICAL EXAMINATION OF SPORT SCUBA DIVERS*, San Antonio, TX: Medical Seminars, Inc.
- NOAA DIVING MANUAL, NOAA. Superintendent of Documents. Washington, DC: U.S. Government Printing Office.
- U.S. NAVY DIVING MANUAL. Superintendent of Documents, Washington, DC: U.S. Government Printing Office, Washington, D.C.

4.2 MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING

Name of Applicant (Print or Type)

Date of Medical Evaluation (Month/Day/Year)

To The Examining Physician: Scientific divers require periodic scuba diving medical examinations to assess their fitness to engage in diving with self-contained underwater breathing apparatus (scuba). Their answers on the Diving Medical History Form may indicate potential health or safety risks as noted. Scuba diving is an activity that puts unusual stress on the individual in several ways. Your evaluation is requested on this Medical Evaluation form. Your opinion on the applicant's medical fitness is requested. Scuba diving requires heavy exertion. The diver must be free of cardiovascular and respiratory disease (see references, following page). An absolute requirement is the ability of the lungs, middle ears and sinuses to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant. Please proceed in accordance with the AAUS Medical Standards. If you have questions about diving medicine, please consult with the Undersea Hyperbaric Medical Society or Divers Alert Network.

TESTS: THE FOLLOWING TESTS ARE REQUIRED:

DURING ALL INITIAL AND PERIODIC RE-EXAMS (UNDER AGE 40):

- Medical history
- Complete physical exam, with emphasis on neurological and otological components
- Urinalysis
- Any further tests deemed necessary by the physician

ADDITIONAL TESTS DURING FIRST EXAM OVER AGE 40 AND PERIODIC RE-EXAMS (OVER AGE 40):

- Chest x-ray (Required only during first exam over age 40)
- Resting EKG
- Assessment of coronary artery disease using Multiple-Risk-Factor Assessment¹ (age, lipid profile, blood pressure, diabetic screening, smoking)

Note: Exercise stress testing may be indicated based on Multiple-Risk-Factor Assessment¹

PHYSICIAN'S STATEMENT:

I have evaluated the above mentioned individual according to the tests listed above. I have discussed with the patient any medical condition(s) that would not disqualify him/her from diving but which may seriously compromise subsequent health. The patient understands the nature of the hazards and the risks involved in diving with these conditions.

_____ 01 I find no medical conditions that may be disqualifying for participation in scuba diving.

Diver **IS** medically qualified to dive for: _____ 2 years (over age 60)
 _____ 3 years (age 40-59)
 _____ 5 years (under age 40)

_____ 02 Diver **IS NOT** medically qualified to dive: _____ Permanently _____ Temporarily.

MD or DO

SIGNATURE

DATE

Name (Print or Type)

Address

Telephone Number

E-Mail Address

My familiarity with applicant is: _____ This exam only _____ Regular physician for _____ years

My familiarity with diving medicine is: _____

4.3 APPLICANT'S RELEASE OF MEDICAL INFORMATION FORM

Name of Applicant (Print or Type)

I authorize the release of this information and all medical information subsequently acquired in association with my diving to the _____ Diving Safety Officer and Diving Control Board or their designee at (place) _____ on (date) _____

Signature of Applicant _____ Date _____

REFERENCES

¹ Grundy, S.M., Pasternak, R., Greenland, P., Smith, S., and Fuster, V. 1999. Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations. AHA/ACC Scientific Statement. *Journal of the American College of Cardiology*, 34: 1348-1359. <http://content.onlinejacc.org/cgi/content/short/34/4/1348>

4.4 DIVING MEDICAL HISTORY FORM

(To Be Completed By Applicant-Diver)

Name _____ DOB ____ Age ____ Wt. ____ Ht. ____

Sponsor _____ Date ____/____/____
(Dept./Project/Program/School, etc.) (Mo/Day/Yr)

TO THE APPLICANT:

Scuba diving places considerable physical and mental demands on the diver. Certain medical and physical requirements must be met before beginning a diving or training program. Your accurate answers to the questions are more important, in many instances, in determining your fitness to dive than what the physician may see, hear or feel as part of the diving medical certification procedure.

This form must be kept confidential by the examining physician. If you believe any question amounts to invasion of your privacy, you may elect to omit an answer, provided that you must subsequently discuss that matter with your own physician who must then indicate, in writing, that you have done so and that no health hazard exists.

Should your answers indicate a condition, which might make diving hazardous, you will be asked to review the matter with your physician. In such instances, their written authorization will be required in order for further consideration to be given to your application. If your physician concludes that diving would involve undue risk for you, remember that they are concerned only with your well-being and safety.

	Yes	No	Please indicate whether or not the following apply to you	Comments
1			Convulsions, seizures, or epilepsy	
2			Fainting spells or dizziness	
3			Been addicted to drugs	
4			Diabetes	
5			Motion sickness or sea/air sickness	
6			Claustrophobia	
7			Mental disorder or nervous breakdown	
8			Are you pregnant?	
9			Do you suffer from menstrual problems?	
10			Anxiety spells or hyperventilation	
11			Frequent sour stomachs, nervous stomachs or vomiting spells	
12			Had a major operation	
13			Presently being treated by a physician	
14			Taking any medication regularly (even non-prescription)	
15			Been rejected or restricted from sports	
16			Headaches (frequent and severe)	
17			Wear dental plates	
18			Wear glasses or contact lenses	
19			Bleeding disorders	
20			Alcoholism	
21			Any problems related to diving	
22			Nervous tension or emotional problems	

	Yes	No	Please indicate whether or not the following apply to you	Comments
23			Take tranquilizers	
24			Perforated ear drums	
25			Hay fever	
26			Frequent sinus trouble, frequent drainage from the nose, post-nasal drip, or stuffy nose	
27			Frequent earaches	
28			Drainage from the ears	
29			Difficulty with your ears in airplanes or on mountains	
30			Ear surgery	
31			Ringing in your ears	
32			Frequent dizzy spells	
33			Hearing problems	
34			Trouble equalizing pressure in your ears	
35			Asthma	
36			Wheezing attacks	
37			Cough (chronic or recurrent)	
38			Frequently raise sputum	
39			Pleurisy	
40			Collapsed lung (pneumothorax)	
41			Lung cysts	
42			Pneumonia	
43			Tuberculosis	

44			Shortness of breath	
45			Lung problem or abnormality	
46			Spit blood	
47			Breathing difficulty after eating particular foods, after exposure to particular pollens or animals	
48			Are you subject to bronchitis	
49			Subcutaneous emphysema (air under the skin)	
50			Air embolism after diving	
51			Decompression sickness	
52			Rheumatic fever	
53			Scarlet fever	
54			Heart murmur	
55			Large heart	
56			High blood pressure	
57			Angina (heart pains or pressure in the chest)	
58			Heart attack	

	Yes	No	Please indicate whether or not the following apply to you	Comments
59			Low blood pressure	
60			Recurrent or persistent swelling of the legs	
61			Pounding, rapid heartbeat or palpitations	
62			Easily fatigued or short of breath	
63			Abnormal EKG	
64			Joint problems, dislocations or arthritis	
65			Back trouble or back injuries	
66			Ruptured or slipped disk	
67			Limiting physical handicaps	
68			Muscle cramps	
69			Varicose veins	
70			Amputations	
71			Head injury causing unconsciousness	
72			Paralysis	
73			Have you ever had an adverse reaction to medication?	
74			Do you smoke?	
75			Have you ever had any other medical problems not listed? If so, please list or describe below;	
76			Is there a family history of high cholesterol?	
77			Is there a family history of heart disease or stroke?	
78			Is there a family history of diabetes?	
79			Is there a family history of asthma?	
80			Date of last tetanus shot? Vaccination dates?	

Please explain any “yes” answers to the above questions.

I certify that the above answers and information represent an accurate and complete description of my medical history.

Signature

Date

4.5 UOG ML Waiver of Liability

(To Be Completed By Applicant-Diver)

WAIVER OF LIABILITY

Agreement this ___ day of _____ between the University of Guam – Marine Laboratory and

_____ (hereinafter “Person”).

(PRINT NAME: FIRST, MIDDLE INITIAL, LAST)

In consideration of the University granting permission to the **Person** to use tools or equipment and/or participate in field trips and/or volunteer to assist in laboratory tests and/or experiments sponsored by the University, the **Person** hereby waives all claims for damage or loss to his/her person and/or property that may be caused by any act or failure to act by the University, its officers, agents or employees.

The **Person** understands and assumes the risk of any dangerous conditions that may be encountered in the course of a field trip, during laboratory work or working in the shop.

PERSON SIGNATURE

DATE

4.6 UOG ML Snorkeling medical form

(2 pages! To Be Completed By Applicant-Diver)

PARTICIPANT RECORD CONFIDENTIAL INFORMATION Please read carefully before signing.

This is a statement in which you are informed about potential risks related to snorkeling and the code of conduct to be accepted in the snorkeling program. Signing this statement is required to be considered as a participant in the snorkeling program offered by the Diving Safety Officer John Peralta and University of Guam Marine Laboratory, located in the city of Mangilao, Guam.

Read this statement prior to signing it. You must complete the medical questionnaire to enroll in the snorkeling program. If you are a minor, you must have this statement signed by a parent or guardian.

Snorkeling can be a demanding activity. When performed correctly, and when applying appropriate techniques, it is generally a safe activity. When established safety procedures are not followed, however, there are severe safety risks. To snorkel safely, you should be physically fit and not extremely overweight. Snorkeling can be strenuous under certain conditions. Your respiratory and circulatory systems must be in good health. All body air spaces must be normal and healthy. A person with coronary disease, current cold or congestion, epilepsy, a severe medical problem or under the influence of alcohol or drugs should not snorkel. If you have asthma, heart disease, other chronic medical conditions or you are taking medications on a regular basis, you should consult your doctor and the Dive Safety Officer before participating in this program, and on a regular basis thereafter upon completion.

You will also need to learn from the Dive Safety Officer the important safety rules regarding snorkeling. If you have any questions regarding this medical statement or the medical questionnaire, review them with the Dive Safety Officer before signing.

MEDICAL QUESTIONNAIRE To the Participant:

The purpose of this medical questionnaire is to find out if you should be examined by your doctor before participating in the snorkeling program of the University of Guam Marine Laboratory. A positive response to a question does not necessarily disqualify you from snorkeling. A positive response means that there is a preexisting condition that may affect your safety while snorkeling and you must seek the advice of your physician prior to engaging in snorkeling activities under the auspices of the University of Guam.

Please answer the following questions of your past or present medical history with a **YES** or **NO**. If you are not sure, answer **YES**. If any of these items apply to you, we must request that you consult with a physician prior to participating in snorkeling.

Are you presently taking prescription medications (with the exception of birth control or anti-malarials)?

HAVE YOU EVER HAD OR DO YOU CURRENTLY HAVE...

Epilepsy, seizures, convulsions or take medications to prevent them?

Blackouts or fainting (full/partial loss of consciousness)?

Inability to perform moderate exercise (example: walk 1.6 km/one mile within 12 mins.)?

Heart disease, heart attack, angina, heart surgery or blood vessel surgery?

The information I have provided about my medical history is accurate to the best of my knowledge. I agree to accept responsibility for omissions regarding my failure to disclose any existing or past health condition.

Signature:

Date:

Participant (Please Print)

Name _____ Birth Date _____

Mailing Address _____ City _____

State/Province _____ Country _____

Zip/Postal Code _____ Home Phone () _____

Business Phone () _____ Email Address _____

Name and address of your family or primary care physician:

Physician _____ Clinic/Hospital _____

Address _____ Phone _____

Date of last physical examination _____ Name of examiner _____

Clinic/Hospital _____ Phone () _____

Address _____

Physician

This person will be traveling and snorkeling as part of their participation in educational and/or research programs sponsored by University of Guam Marine Lab. Your opinion of the applicant’s medical fitness for travel and snorkeling is requested. Please review the attached medical history of the applicant.

Physician’s Impression:

____ I find no medical conditions that I consider incompatible with snorkeling.

____ I am unable to recommend this individual for snorkeling.

Remarks _____

Physician’s Signature _____, M.D. Date _____

Physician _____ Clinic/Hospital _____

Address _____ Phone () _____

4.7 UOG ML Snorkeling history form

This form must be filled out and returned to the Dive Safety Officer for record keeping.

Participant's Name _____ Date _____

Describe Snorkeling History

Date and Location of Last Snorkeling Activity

APPENDIX 5. DIVING RECIPROCITY FORM

Diver: _____

Date: _____

This letter serves to verify that the above listed person has met the training and pre-requisites as indicated below, and has completed all requirements necessary to be certified as a *(Scientific Diver / Diver-in-Training)*, as established by the **University of Guam Marine Laboratory Diving Safety Manual**, and has demonstrated competency in the indicated areas. The **UOGML** is an AAUS Organizational Member, and meets or exceeds all AAUS training requirements.

The following is a brief summary of this diver's dive status on _____
(Date)

- _____ Original diving authorization
- _____ Written scientific diving examination
- _____ Last diving medical examination Medical examination expiration date _____
- _____ Most recent checkout dive
- _____ Scuba regulator/equipment service/test
- _____ CPR training (Agency) _____ CPR Exp. _____
- _____ Oxygen administration (Agency) _____ O₂ Exp. _____
- _____ First aid for diving (Agency) _____ F.A. Exp. _____
- _____ Date of last dive _____ Depth _____
- _____ Number of dives completed within previous 12 months _____
- _____ Depth Certification (fsw) _____
- _____ Total number of career dives _____

Any diving restrictions? (Y/N) If yes, explain:

Please indicate any pertinent specialty certifications or training:

Emergency Information:

Name of emergency contact: _____ Relationship: _____

Telephone: _____
(work) (home)

Address: _____

This is to verify that the above individual is currently a certified scientific diver at _____
(Name of Organization)

Diving Safety Officer: _____

(Signature)

(Date)

APPENDIX 6. DIVING EMERGENCY MANAGEMENT PROCEDURES

Introduction

A diving accident victim could be any person who has been breathing air underwater regardless of depth. It is essential that emergency procedures are pre-planned and that medical treatment is initiated as soon as possible. It is the responsibility of each AAUS organizational member to develop procedures for diving emergencies including evacuation and medical treatment for each dive location.

General Procedures

Depending on and according to the nature of the diving accident:

1. Make appropriate contact with victim or rescue, as required.
2. Establish (A)irway, (B)reathing, (C)irculation, as required.
3. Stabilize the victim
3. Administer 100% oxygen, if appropriate (in cases of Decompression Illness, or Near Drowning).
4. Call local Emergency Medical System (EMS) for transport to nearest medical treatment facility. Explain the circumstances of the dive incident to the evacuation teams, medics and physicians.

Do not assume that they understand why 100% oxygen may be required for the diving accident victim or that recompression treatment may be necessary.

5. Call appropriate UOG ML Dive Safety Officer, for contact with diving physician and decompression chamber, etc.
6. Notify DSO or designee according to the Emergency Action Plan of the organizational member.
7. Contact Worker’s Compensation if medical attention is required, and follow instructions for submission of appropriate forms.
8. Complete and submit Incident Report Form (www.aaus.org) to the DCB of the organization and the AAUS (Section 3.1 of this Manual: Incident Reporting Procedure).

List of Emergency Contact Numbers Appropriate For Dive Location

Workers’ Compensation (contact the ML Laboratory Safety Manager)
Dive Locker (Recompression Chamber, Naval Base, Guam)
Dive Safety Officer
Marine Lab Administrative Office
Marine Lab Director

Available Procedures

- Emergency care
- Recompression
- Evacuation

Emergency Plan Content

- Name, telephone number, and relationship of person to be contacted for each diver in the event of an emergency.
- Nearest operational decompression chamber.

- Nearest accessible hospital.
- Available means of transport.

APPENDIX 7. DIVE COMPUTER GUIDELINES

1. Only makes and models of dive computers specifically approved by the Diving Control Board may be used.
2. Any diver desiring the approval to use a dive computer as a means of determining decompression status must apply to the Diving Control Board, complete an appropriate practical training session and pass a written examination.
3. Each diver relying on a dive computer to plan dives and indicate or determine decompression status must have her/his own unit.
4. On any given dive, both divers in the buddy pair must follow the most conservative dive computer.
5. If the dive computer fails at any time during the dive, the dive must be terminated, and appropriate surfacing procedures should be initiated immediately.
6. A diver should not dive for 18 hours before activating a dive computer to use it to control their diving.
7. Once the dive computer is in use, it must not be switched off until it indicates complete outgassing has occurred or 18 hours have elapsed, whichever comes-first.
8. When using a dive computer, non-emergency ascents are to be at a rate specified for the make and model of dive computer being used.
9. Whenever practical, divers using a dive computer should make a stop between 10 and 30 ft for 5 minutes, especially for dives below 60 ft.
10. Multiple deep dives require special consideration and approval by the Dive Control Board.

APPENDIX 8. AAUS STATISTICS COLLECTION CRITERIA AND DEFINITIONS

COLLECTION CRITERIA:

The "Dive Time in Minutes", "The Number of Dives Logged", and the "Number of Divers Logging Dives" will be collected for the following categories.

- Dive Classification
- Breathing Gas
- Diving Mode
- Decompression Planning and Calculation Method
- Depth Ranges
- Specialized Environments
- Incident Types

'*Dive Time in Minutes*' is defined as the surface-to-surface time, including any safety or required decompression stops.

A '*Dive*' is defined as a descent into water; an underwater diving activity utilizing compressed gas, an ascent or return to the surface, and a surface interval of greater than 10 minutes.

Dives will not be differentiated as open-water or confined-water dives. But open-water and confined-water dives will be logged and submitted for AAUS statistics, classified as either scientific or training/proficiency.

A '*Diver Logging a Dive*' is defined as a person who is diving under the auspices of your scientific diving organization. Dives logged by divers from another AAUS Organization will be reported with the divers home organization. Only a diver who has actually logged a dive during the reporting period is counted under this category.

Only incidents occurring during, or resulting from, a dive where the diver is breathing a compressed gas will be submitted to AAUS.

DEFINITIONS:

Dive Classification:

- *Scientific Dives:* Dives that meet the scientific diving exemption as defined in 29 CFR 1910.402. Diving tasks traditionally associated with a specific scientific discipline are considered a scientific dive. Construction and trouble-shooting tasks traditionally associated with commercial diving are not considered a scientific dive.
- *Training and Proficiency Dives:* Dives performed as part of a scientific diver training program, or dives performed in maintenance of a scientific diving certification/authorization.

Breathing Gas:

- *Air:* Dives where the bottom gas used for the dive is air.
- *Nitrox:* Dives where the bottom gas used for the dive is a combination of nitrogen and oxygen other than air.
- *Mixed Gas:* Dives where the bottom gas used for the dive is a combination of oxygen, nitrogen, and helium (or other "exotic" gas), or any other breathing gas combination not classified as air or nitrox.

Diving Mode:

- *Open Circuit SCUBA*: Dives where the breathing gas is inhaled from a self-contained underwater breathing apparatus and all of the exhaled gas leaves the breathing loop.
- *Surface Supplied*: Dives where the breathing gas is supplied from the surface by means of a pressurized umbilical hose. The umbilical generally consists of a gas supply hose, strength member, pneumofathometer hose, and communication line. The umbilical supplies a helmet or full-face mask. The diver may rely on the tender at the surface to keep up with the divers' depth, time and diving profile.
- *Hookah*: While similar to Surface Supplied in that the breathing gas is supplied from the surface by means of a pressurized hose, the supply hose does not require a strength member, pneumofathometer hose, or communication line. Hookah equipment may be as simple as a long hose attached to a standard scuba cylinder supplying a standard scuba second stage. The diver is responsible for the monitoring his/her own depth, time, and diving profile.
- *Rebreathers*: Dives where the breathing gas is repeatedly recycled in the breathing loop. The breathing loop may be fully closed or semi-closed. Note: A rebreather dive ending in an open circuit bailout is still logged as a rebreather dive.

Decompression Planning and Calculation Method:

- Dive Tables
- Dive Computer
- PC Based Decompression Software

Depth Ranges:

Depth ranges for sorting logged dives are 0-30, 31-60, 61-100, 101-130, 131-150, 151-190, and 191->. Depths are in feet seawater. A dive is logged to the maximum depth reached during the dive. Note: Only "The Number of Dives Logged" and "The Number of Divers Logging Dives" will be collected for this category.

Specialized Environments:

- *Required Decompression*: Any dive where the diver exceeds the no-decompression limit of the decompression planning method being employed.
- *Overhead Environments*: Any dive where the diver does not have direct access to the surface due to a physical obstruction.
- *Blue Water Diving*: Open-water diving where the bottom is generally greater than 200 feet deep and requiring the use of multiple-tethered diving techniques.
- *Ice and Polar Diving*: Any dive conducted under ice or in polar conditions. Note: An Ice Dive would also be classified as an Overhead Environment dive.
- *Saturation Diving*: Excursion dives conducted as part of a saturation mission are to be logged by "classification", "mode", "gas", etc. The "surface" for these excursions is defined as leaving and surfacing within the Habitat. Time spent within the Habitat or chamber shall not be logged by AAUS.
- *Aquarium*: An aquarium is a shallow, confined body of water, which is operated by or under the control of an institution and is used for the purposes of specimen exhibit, education, husbandry, or research. (Not a swimming pool)

Incident Types:

- *Hyperbaric*: Decompression Sickness (DCS), Arterial Gas Embolism (AGE), or other barotrauma requiring recompression therapy.
- *Barotrauma*: Barotrauma requiring medical attention from a physician or medical facility, but not requiring recompression therapy.
- *Injury*: Any non-barotrauma injury occurring during a dive that requires medical attention from a physician or medical facility.

- *Illness*: Any illness requiring medical attention that can be attributed to diving.
- *Near Drowning/ Hypoxia*: An incident where a person asphyxiates to the minimum point of unconsciousness during a dive involving a compressed gas. But the person recovers.
- *Hyperoxic/Oxygen Toxicity*: An incident that can be attributed to the diver being exposed to too high a partial pressure of oxygen.
- *Hypercapnea*: An incident that can be attributed to the diver being exposed to an excess of carbon dioxide.
- *Fatality*: Any death accruing during a dive or resulting from the diving exposure.
- *Other*: An incident that does not fit one of the listed incident types

Incident Classification Rating Scale:

- **Minor**: Injuries that the Organizational Member (i.e., UOGML DCB) considers being minor in nature. Examples of this classification of incident would include, but not be limited to:
 - Mask squeeze that produced discoloration of the eyes
 - Lacerations requiring medical attention but not involving moderate or severe bleeding
 - Other injuries that would not be expected to produce long term adverse effects on the diver's health or diving status
- **Moderate**: Injuries that the DCB considers being moderate in nature. Examples of this classification would include, but not be limited to:
 - DCS symptoms that resolved with the administration of oxygen, hyperbaric treatment given as a precaution
 - DCS symptoms resolved with the first hyperbaric treatment
 - Broken bones
 - Torn ligaments or cartilage
 - Concussion
 - Ear barotrauma requiring surgical repair
- **Serious**: Injuries that the DCB considers being serious in nature. Examples of this classification would include, but not be limited to:
 - Arterial Gas Embolism
 - DCS symptoms requiring multiple hyperbaric treatment
 - Near drowning
 - Oxygen Toxicity
 - Hypercapnea
 - Spinal injuries
 - Heart attack
 - Fatality

APPENDIX 9. INCIDENT REPORTING

UOG ML/AAUS Diving Injury/Incident Report Form

Required Incident Reporting: All diving incidents requiring recompression treatment, or resulting in moderate or serious injury, or death shall be reported to the AAUS Statistics Committee. The report will specify the circumstances of the incident and the extent of any injuries or illnesses. This form is confidential and for statistics purposes only. The Organizational Member's Diving Control Board must review and release this report before it is submitted to the AAUS Statistics Committee.

Check the appropriate space(s) & complete the form:

<input type="checkbox"/> Simple Illness	<input type="checkbox"/> Referred to Physician	<input type="checkbox"/> Serious injury
<input type="checkbox"/> Barotrauma	<input type="checkbox"/> Hyperbaric Treatment	<input type="checkbox"/> Near Drowning
<input type="checkbox"/> Hyperoxia	<input type="checkbox"/> Hypercapnea	<input type="checkbox"/> Fatality <input type="checkbox"/> Other
<input type="checkbox"/> Workers' Compensation Claim Yes <input type="checkbox"/> No <input type="checkbox"/>		
Descriptive Report (use additional sheets if necessary)		Date of Incident: ____/____/____ Month Day Year
Circumstances and the extent of the injuries or illnesses		
Treatment provided and results		
Recommendations to avoid repetition of incident:		

Organizational Member Name: _____

Name & Title of Person Submitting Report: _____
(Please print)

Signature: _____ Date: ____/____/____

Mailing Address: _____

Telephone: _____ e-mail: _____

APPENDIX10. WORKERS' COMPENSATION

Everyone employed by the University of Guam is covered by Worker's Compensation, in the event of a work-related injury or illness. You are also covered during work-related travel, provided you have filed an Administrative Leave form.

Instructions for filing for Workers' Compensation and relevant information:

1. The supervisor or group leader fills out Form 101a and b (Authorization to see a doctor), signs it, and provides the injured/ill person with these signed forms prior to a hospital or treatment center visit.
2. In the case of an emergency, the injured/ill person should go directly to a treatment facility and the supervisor will bring Form 101a and b to the place of treatment. The injured person or someone accompanying them is responsible for informing the supervisor of the illness or injury.
3. The injured person fills out Form 201 (Notice of Employee's Injury) and an incident report.
4. The injured person requests a copy of the Physician's Report as soon as it is available.
5. The supervisor fills out Form 202 (Employer's Report of Injury/Illness).
6. All forms, as well as the Physician's Report are submitted to the UOG ML Lab Manager or Director (i.e., the person assigned to handling WC claims).

Payment: If the treatment facility accepts Workers' Compensation, then copies of form 101 a and b must be left with the facility. If the facility does not accept Workers' Compensation, then services will have to be paid for at the time of treatment, and reimbursement will be provided by the University at a later time.

The pages that follow are the WC forms mentioned above. They can be obtained from the UOG ML Laboratory Safety Manager.

WORKER'S COMPENSATION COMMISSION

Department of Labor * Government of Guam * P.O. Box 9970 Tamuning, Guam 96931

Tel: (671) 300-4571/77 Fax: (671) 475-6811

WCC File#

<p>INSTRUCTIONS: This side of the form should be completed in full. It authorizes a physician (duly qualified physicians include surgeons, osteopathic acupuncturists within the scope of their practice as defined by law) to examine and/or treat the employee for the injuries arising out of such accidental occupational injury, illness, or disease covered by the Guam Worker's Compensation Law. PLEASE TYPE OR PRINT LEGIBLY.</p>		
<p>1. Name of Authorized Physician (circle one):</p> <p>Physician on Duty at GMHA</p>	<p>2. Name of Medical Facility (circle one):</p> <p>Guam Memorial Hospital Authority</p>	
<p>3. Physician's Address:</p> <p>Same as box 4</p>	<p>4. Medical Facility's Address:</p> <p>Guam Memorial Hospital Authority 850 Gov Carlos Camacho Road Tamuning, Guam 96911</p>	
<p>5. Name of Injured Employee , DoB, & SSN:</p>	<p>6. Occupation:</p>	<p>7. Date of Injury:</p>
<p>8. Description of Injury:</p>		
<p>9. YOU ARE AUTHORIZED TO PROVIDE MEDICAL SERVICES TO THE EMPLOYEE AS FOLLOWS: (Please check one)</p>		
	<p>A) If you believe the condition is related to the injury, furnish office and/or hospital treatment as necessary for the effects of the injury.</p>	
	<p>B) If there is doubt as to whether the condition is related to the injury, you are authorized to examine the employee, using indicated non-surgical diagnostic studies, and should promptly advise those listed in Item 14 whether you believe the disability is due to the alleged injury. Pending further advice, you may provide such necessary conservative treatment.</p>	
	<p>C) Other: EXAMINATION & TREATMENT of INJURY(IES) AS STATED IN BOX 8 - SINGLE VISIT ONLY.</p> <p>***** AUTHORIZATION INVALID IF ALTERED WITHOUT PRIOR APPROVAL BY WCC OFFICE *****</p>	
<p>YOU ARE REQUESTED TO SUBMIT A WRITTEN REPORT OF FIRST TREATMENT WITHIN 20 DAYS TO THE COMMISSIONER AT THE ADDRESS INDICATED ITEM 13 BELOW. (See back of this form for instructions as to the medical report and the submission of your charges). Reports <u>are</u> <u>requisite</u> if services are to be paid.</p>		

22 GCA §9132 “Any person who willfully makes any false or misleading statement or representation for the purpose of obtaining any benefit or payment under this Title, or for the purpose of evading liability for any benefit or payment under this Title, shall be guilty of a misdemeanor.”

<p>10. Signature and Title of Authorizing Official:</p> 	<p>11. Name and Address of Employer:</p>
<p>12. Date:</p> 	

<p>13. Send your REPORT to:</p> <p>WORKER'S COMPENSATION COMMISSION</p> <p style="text-align: center;">P.O. Box 9970</p> <p style="text-align: center;">Tamuning, Guam 96931</p>	<p>14. Name & address of Insurance Carrier to whom COPY of your report and BILL are to be sent:</p> <p style="text-align: center;">See Box 13</p>
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FOR STATISTICAL PURPOSES ONLY:

<p><i>Employee's ethnicity (please choose one):</i></p> <p><i>Chamorro Yapese Japanese</i></p> <p><i>American</i></p> <p><i>Chuukese Marshall Islander Korean</i></p> <p><i>Kosraean Palauan Filipino</i></p> <p><i>Pacific Islander Pohnpeian Chinese</i></p> <p><i>Other (specify):</i> _____</p>	<p><i>Employee's citizenship (please choose one):</i></p> <p><i>U.S.</i></p> <p><i>Permanent Alien Resident</i></p> <p><i>Other (specify):</i></p>
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FORM GWC-101a: AUTHORIZATION for MEDICAL EXAMINATION and/or TREATMENT (Revised 3/2014)

ATTENDING PHYSICIAN'S REPORT OF INJURY AND TREATMENT

INSTRUCTIONS TO PHYSICIAN: This initial report should be completed and mailed within 20 days, the original to the Commissioner (see item 13 for address), with a copy to the Company in item 14. Subsequent reports should be made regularly on Form GWC-204 or in narrative form while employee is in your care. Please read Item 9 on the front of this form. **PLEASE TYPE OR PRINT LEGIBLY.**

15. What history of injury or disease did Employee give to you?

16. Is there any history or evidence of PRE-EXISTING injury, disease, or physical impairment? NO YES (Describe):

17. What are your findings?

18. What is your diagnosis?

19. Do you believe the condition found was CAUSED or AGGRAVATED by the employment activity described? YES NO
(Please explain if there is doubt):

20. Did injury require hospitalization? YES NO
Hospital:
Admission date:
Discharge date:

21. Is additional hospitalization required? YES NO

22. Surgery (If any, please describe):

Date performed:

23. Other types of treatments:

24. What PERMANENT DEFECTS do you anticipate?

25. Date of first examination:

26. Dates of treatments:

27. Date of discharge:

28. Period of TEMPORARY DISABILITY
(Indicate if unknown):

Partial Disability: From To
Total Disability: From To

29. Date Employee is able to resume work:

LIGHT WORK
REGULAR WORK

30. If Employee is able to resume work, date when advised:

31. If Employee is able to resume only light work, indicate extent of PHYSICAL LIMITATIONS and type of work he/she could reasonably perform with limitations:

32. General remarks and RECOMMENDATIONS for future care, if indicated:

33. Do you SPECIALIZE? NO YES (Please specify):

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WORKER'S COMPENSATION COMMISSION

Department of Labor * Government of Guam

P. O. Box 9970 Tamuning, Guam 96931

Tel: (671) 300-4571/77 Fax: 671-475-6811

WCC File #:

<p>INSTRUCTIONS: This form may be used by the Employee to file a NOTICE of an injury, illness or in the case of death, by Employee's representative. No benefits need be paid without this notice. Notice shall be given to the Commissioner and to the Employer by delivery or to the last known place of business. 22 GCA 9113. PLEASE PRINT OR TYPE.</p> <p style="text-align: center;">** THIS IS NOT A CLAIM **</p>	
1. Name of injured Employee, DOB, & SSN: _____ - _____ - _____	2. Name of Employer & EIN:
3. Employee's address & telephone number:	4. Employer's address:
5. Date & time of alleged injury/illness:	6. Did employee stop work? If so, date stopped:
7. Employee's occupation:	8. Name of supervisor at time of injury:
9. Place where injury occurred:	
10. Is another person not of your employment the cause of the accident? [] YES [] NO	11. Will you file suit against the other person? [] YES [] NO
12. DESCRIBE IN FULL HOW THE ACCIDENT OCCURRED: Relate the events which resulted in the injury/illness. Tell what the Employee was doing at the time of the accident. Tell what happened and how it happened. Name any object or substance involved and tell how they were involved. Give full details on all factors which led or contributed to the accident. Use additional sheets if required and attach to this report.	
13. Effects of the injury (Indicate parts of body affected and how affected).	
22 GCA §9132 "Any person who willfully makes any false or misleading statement or representation for the purpose of obtaining any benefit or payment under this Title, or for the purpose of evading liability for any benefit or payment under this Title, shall be guilty of a misdemeanor."	
14. Name & signature of person completing this notice:	15. Date of this notice:
FOR STATISTICAL PURPOSES ONLY	
Please choose ONE ETHNICITY:	Please choose ONE CITIZENSHIP:
Yapese Marshallese American Chuukese Palauan African American Kosraean Guamanian Japanese Pohnpeian Filipino Korean Chinese Other (specify):	United States Permanent Resident Alien Other (specify):

Form GWC-202: EMPLOYER'S REPORT of OCCUPATIONAL INJURY or ILLNESS (Page 2): Rev 3/1/2014

PLEASE CIRCLE THE APPROPRIATE ITEMS (for statistical purposes)									
A. EVENT CODE									
01 Fatality			02 No Time Loss				03 Time Loss		
B. NATURE OF INJURY CODE									
01 Amputation			08 Disease/Illness				15 Hearing Loss		
02 Asphyxia			09 Dislocation				16 Hernia		
03 Bruise/Contusion/Abrasion			10 Electric Shock				17 Poisoning (Systemic)		
04 Burn (Chemical)			11 Exertion				18 Puncture		
05 Burn (Heat)			12 Foreign Body in Eye/Conjunctivitis				19 Radiation Effects		
06 Concussion			13 Fracture				20 Strain/Sprain		
07 Cut/Laceration/Puncture			14 Freezing/Frostbite				21 Other (Specify)		
C. BODY PART CODE LEFT RIGHT									
Abdomen	01		Thumb	14	15	Great Toe	34	35	
Ankle(s):	02	03	Fingers Index-Small (First-Fourth)	16 17 18 19	20 21 22 23	Toes (First-Fourth)	36 37 38 39	40 41 42 43	
Back	04								
Body System	05								
Chest	06		Wrist	24	25	Ankle	44	45	
Head	07		Hand	26	27	Foot	46	47	
Ear(s)	08		Elbow	28	29	Knee	48	49	
Eye(s)	09	10	Arm	30	31	Leg	50	51	
Face	11	12	Shoulder	32	33	Hip(s)	52	53	
	13								
D. TYPE OF EVENT CODE									
01 Absorption			05 Fall (Same level)				10 Rubbed/Abraded		
02 Bite/Sting/Scratch			06 Fall (From elevation)				11 Shock		
03 Cardio-Vascular/Respiratory System Failure			07 Ingestion				12 Struck Against		
04 Caught In or Between			08 Inhalation				13 Struck By		
			09 Repeated Motion/Pressure				14 Other (Specify)		
E. SOURCE INJURY CODE									
01 Aircraft			15 Electrical Apparatus/Wiring				29 Metal Products		
02 Air Pressure			16 Explosives				30 Motor Vehicle (Highway)		
03 Animal/Insect/Bird/Reptile/Fish			17 Fire/Smoke				31 Motor Vehicle (Industrial)		
04 Boat			18 Food				32 Motorcycle		
05 Bodily Motion			19 Furniture/Furnishings				33 Person		
06 Boiler/Pressure Vessel			20 Gases				34 Petroleum Products		
07 Boxes/Barrels, Etc.			21 Glass				35 Pump/Prime Motor		
08 Buildings/Structures			22 Hand Tool (Manual)				36 Radiation		
09 Chemical Liquid/Vapor			23 Hand Tool (Powered)				37 Vegetation		
10 Cleaning Compound			24 Heat (Environmental/Mechanical)				38 Waste Products		
11 Cold (Environment/Mechanical)			25 Hoisting Apparatus				29 Water		
12 Dirt/Sand/Stone			26 Ladder				40 Weapons		
13 Drugs/Alcohol			27 Machine				41 Working Surface		
14 Dust/Particles/Chips			28 Materials Handling Equipment				42 Other (Specify)		
F. CONTRIBUTING ENVIRONMENTAL FACTOR CODE									
01 Catch Point/Pointer Action					10 Pinch Point Action				
02 Chemical Action/Reaction Exposure					11 Radiation Condition				
03 Flammable Liquid/Solid Exposure					12 Shear Point Action				
04 Flying Object Motion					13 Sound Level				
05 Gas/Vapor/Mist/Fume/Smoke/Dust Condition					14 Squeeze Point Action				
06 Illumination					15 Temperature Above or Below Tolerance Level				
07 Materials Handling Equipment/Method					16 Weather/Earthquake, Etc. Condition				
08 Overhead Moving and/or Falling Object Action					17 Working Surface/Facility Layout Condition				
09 Overpressure/Underpressure Condition					18 Other (Specify)				
G. TASK ASSIGNMENT CODE									
01 Employee Working at Regularly Assigned Task(s)					02 Employee Working at OTHER than Regularly Assigned Task(s)				

