

Commonwealth of the Northern Mariana Islands
Office of the Governor



Division of Environmental Quality
Coastal Resources Management
Scientific Diving Manual

Foreword

The Commonwealth of the Northern Marianas Islands, Division of Environmental Quality (DEQ) and Coastal Resources Management (CRM), has prepared this manual to provide diving regulations that allow the employees of DEQ and CRM to work under safe conditions. This manual has been prepared to meet the regulations of the U.S. Department of Labor (Code of Federal Regulations 29, Part 1910, Subpart T). Diving techniques or equipment not listed in this manual are prohibited for use by DEQ and CRM employees when diving as part of their employment with the Office of the Governor. The Dive Control Board (DCB) has the option to allow any prohibited techniques or equipment, such as surface supplied air or mixed gas diving, provided that the regulations regarding such exceptions meet or exceed OSHA standards.

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REVISION HISTORY

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Section 1 - General Policy

A. Purpose of the DEQ and CRM Scientific Diving Manual and Standards

1. Purpose

The purpose of this manual is to ensure that all diving conducted by Division of Environmental Quality (DEQ) and Coastal Resources Management (CRM) personnel is conducted in a manner that will maximize the protection of DEQ and CRM divers from accidental injury and/or illness. The standards in this manual meet or exceed the OSHA standards set for commercial diving (29 CFR, Subpart T).

2. DEQ and CRM diving

DEQ and CRM diving is defined as diving solely to perform research, surveys, or other functions for DEQ and CRM. This manual covers only employees of DEQ and CRM performing DEQ and CRM dives. Only SCUBA diving is allowed under the auspices of DEQ and CRM diving, unless OK'd by the DCB. SCUBA diving is defined as diving independent of surface supply in which the diver uses open circuit self-contained underwater breathing apparatus. Visiting scientists may participate in DEQ and CRM dives as long as they are certified by a national certifying agency (i.e., PADI, NAUI, etc.), and are accompanied by at least one qualified DEQ and CRM diver.

3. Diving Standards and Safety

The DEQ and CRM dive manual has been designed to enable DEQ and CRM divers to meet the requirements of local environments and conditions as well as to comply with OSHA commercial dive standards.

4. Scientific Diving Exemption

In 1982, the US Occupational Safety and Health Administration (OSHA) exempted scientific diving from commercial diving regulations (29 CFR Part 1910, Subpart T) under certain conditions. The final guidelines for the exemption became effective in 1985 (Federal Register, Vol. 50, No. 6, p. 1046). OSHA recognizes the AAUS as the organization that sets standards for scientific diving. The following guidelines (29 CFR Part 1910, Appendix B to Subpart T; in part) shall be met:

- a. The DEQ and CRM Diving Control Board (DCB) shall consist of scientific divers and have autonomous and absolute authority over the DEQ and CRM Scientific Diving program operations. This includes the following: approval and monitoring of diving projects, review and revision of the DEQ and CRM manual, assuring compliance with the manual, taking disciplinary action for unsafe practices, and assuring adherence to the scuba diving buddy system (a diver is accompanied by and is in continuous contact with another diver in the water);
- b. The purpose of any project using scientific diving shall be the advancement of science; therefore, information about the project and the metadata are non-proprietary;

- c. The tasks of a scientific diver shall be those of an observer and data gatherer. Construction and trouble-shooting tasks traditionally associated with commercial diving are not included within scientific diving. In addition, law-enforcement activities are not included within scientific diving; and
- d. DEQ and CRM scientific divers, based on the nature of their activities, shall use scientific expertise in studying the underwater environment.

5. Liability

Diving certification is not a prerequisite to employment by DEQ and CRM, but may be required if essential to a specific job with a position description including SCUBA diving. DEQ and CRM employees who dive under this policy do so voluntarily, and assume all risks, consequences, and potential liabilities. It is DEQ and CRM's responsibility to ensure that all DEQ and CRM dive gear is regularly maintained and kept in good working order. DEQ and CRM gear is to be used only for DEQ and CRM diving operations. DEQ and CRM are not liable for damage or injury incurred during unauthorized use of DEQ and CRM gear. All gear used on DEQ and CRM dives must conform to the standards put forth in this manual. In adopting the policies set forth in this manual, DEQ and CRM assume no liability not otherwise imposed by law.

6. DEQ and CRM Required Dives

DEQ and CRM require all DEQ and CRM divers to complete 12 dives annually to maintain competency in dive techniques, survey techniques and organism identification. DEQ and CRM will allow time and provide equipment for DEQ and CRM employees to complete these dives. Completion of these twelve dives allows the diver to meet the criteria for DEQ and CRM active diver certification for the calendar year in which they were completed. DEQ and CRM divers must have completed a minimum of 25 open water dives.

B. Administration and Control of DEQ and CRM's Scientific Diver's Group

1. DEQ and CRM Auspices Defined

The auspices of DEQ and CRM include any diving operation in which either DEQ or CRM is connected because of ownership of equipment used, or employer/employee relationship with the individual(s) concerned. It is DEQ and CRM's responsibility to adhere to the OSHA standards for commercial diving. The administration of the DEQ and CRM diving program resides with the Dive Control Board (DCB). The regulations in this manual are to be observed at all times where diving is conducted under the auspices of DEQ and CRM.

2. Dive Control Board

The Dive Control Board (DCB) has absolute authority over DEQ and CRM's dive program operation. The DCB shall additionally have the authority to approve and monitor diving projects, review and revise the diving safety manual, assure compliance with the manual, and recommend disciplinary actions for unsafe practices and/or failure to comply with the dive safety manual.

The DCB shall consist of three members, of which at least two must be active divers. Active divers are defined as divers having completed the 12 required DEQ and CRM dives during the current calendar year.

The Directors of DEQ and CRM shall choose initial members of the DCB. The membership of the initial DCB ends at the end of the calendar year in which they were appointed. Subsequent board members will be chosen by the DEQ and CRM Directors prior to the end of the current board's term, with the new board members terms running January 1 through December 31 of the following year. DCB members may leave the board by submitting, in writing, a resignation note explaining his/her reason for leaving. The DEQ and CRM Directors at his/her discretion may also remove DCB members. When a DCB member leaves, the DEQ and CRM Director must appoint a new member within 14 days. This person's term will end at the end of the calendar year in which they were appointed. The duties and responsibilities of the DCB include the following:

- a. meet a minimum of twice per year to discuss and review the dive program and manual and any other concerns regarding the DEQ and CRM diving program;
- b. recommend the issue, reissue, and revocation of DEQ and CRM diving certifications;
- c. establish and/or approve training programs through which the applicants for certification can satisfy the requirements of this manual;
- d. establish criteria for equipment selection, maintenance, and use; and ensure that all equipment meets said criteria;
- e. ensure that the air station used by DEQ and CRM divers meets OSHA standards;
- f. sit as a board of investigation to inquire into the nature and cause of diving accidents or violations of the DEQ and CRM dive manual;
- g. notify the area director of OSHA within 48 hours of the onset of an emergency situation. The office of the director for Region 9 is located in San Francisco. The telephone number is 1-415-975-4343. This report shall include the nature of the emergency and the extent of deviation from the prescribed regulations.

3. The Dive Safety Officer

The dive safety officer (DSO) serves as a member of the DCB. The DSO has operational authority for the diving program. This includes the conduct of training and certification, approval of dive plans, maintenance of dive records, and ensuring compliance with this manual. The DSO may delegate portions of this program to qualified delegates, but retains the responsibility for the safe conduct of the diving program. The Dive Safety Officer must be an active diver, and have a certification of rescue diver or higher from a national dive organization. The directors of DEQ and CRM shall choose the dive safety officer.

4. The Diving Supervisor

For each dive, one person shall be the diving supervisor. This person shall be at the dive location during the diving operation. The diving supervisor is responsible for:

- a. coordination with other known activities in the vicinity that are likely to interfere with diving operations;
- b. ensuring all dive team members possess current certification and are qualified for the type of diving operation being undertaken.
- c. planning dives in accordance with Appendix 9
- d. briefing the dive team on:
 - 1) dive objectives
 - 2) unusual hazards or environmental conditions likely to affect the safety of the dive operation.
 - 3) modifications to diving or emergency procedures necessitated by the specific diving operation
- e. reporting to the DCB any physical problems or adverse physiological effects suffered by any member of the dive team.
- f. ensuring safety and emergency equipment is in working order and at the dive site. The DSO can assign a technician to fulfill this duty.
- g. ensuring they are certified to operate all emergency equipment at the dive site, and/or aboard the dive vessel
- h. suspending the diving operation if in his/her opinion conditions are not safe.

5. Waiver of Requirements

The DCB may grant a waiver for specific requirements of training, depth certification, and minimum activity to maintain certification, if these requirements have already been met for certification to dive for another government or academic organization. Proof must be provided in the form of a written affidavit signed by the director of the organization for which the diver was certified. These requirements cannot be waived for any other reason. Medical requirements cannot be waived.

6. Consequence of Violation of Regulations by DEQ and CRM Divers

Failure to comply with the regulations of this dive manual may be cause for the revocation or restriction of the diver's DEQ and CRM certification by action of the DCB. In addition, there may be other legal and/or financial consequences if a DEQ and CRM diver fails to comply with this dive manual.

7. Written Examination

DEQ and CRM require that all new DEQ and CRM divers obtain a score of at least an 80% on a written examination developed by the DCB. The exam will be composed of questions testing the diver's knowledge of both the PADI and NAUI Open Water Dive Manual and the Division of Environmental Quality and Coastal Resources Diving Manual.

C. Record Maintenance

1. Availability of records

The DSO maintains permanent records for each diver at DEQ and CRM. The file includes the diver's certification level, log sheets, results of current physical examination, waiver, reports of disciplinary action by the DCB, results of written examination and other pertinent information.

All divers must submit a medical examination report filled out and signed by the examining physician before being allowed to dive under the auspices of DEQ and CRM. Dive records involving any pressure-related injury, pressure related injury assessments, and physician's evaluations are kept on file for five years. Dive logs are kept for a minimum of five years. Equipment testing and inspection records are kept for a minimum of five years. Decompression procedure assessment evaluations are kept for a minimum of five years.

At the end of the period of retention for any record kept for 5 years, DEQ and CRM shall forward such records to the National Institute for Occupational Safety and Health, Department of Health and Human Services. Divers records shall be available for inspection upon request by Assistant Secretary of Labor for OSHA or the Director, National Institute for Occupational Safety and Health, Department of Health and Human Services, or their designees. Copies of a diver's records are available to the diver or his/her designee by request.

Section 2 - Diving Policy for Scuba Diving

A. Introduction

No person shall engage in diving operations under the auspices of DEQ and CRM unless he/she holds a current certification issued pursuant to the provisions of this manual. Only SCUBA diving is allowed under the auspices of DEQ and CRM. SCUBA diving is defined as diving independent of surface supply in which the diver uses an open circuit self-contained underwater breathing apparatus.

B. Pre-Dive Procedures

1. Dive Plan

Before conducting any dive under the auspices of DEQ and CRM, the diving supervisor of a proposed dive must fill out a dive plan and have it approved by the DSO. The dive plan shall minimally include the information in Appendix 9 (Dive Plan). All dives will be planned around the competency of the least experienced diver.

2. Pre-Dive Safety Checks

The environmental conditions at the dive site will be evaluated before each dive. It is each diver's responsibility:

- a. to conduct a functional check of his/her diving equipment in the presence of a diving buddy;
- b. to ensure that his/her equipment is in proper working order, that the equipment is suitable for the type of diving operation, and that the equipment has the capability of achieving and maintaining positive buoyancy;
- c. and duty to refuse to dive if, in his/her judgment, conditions are unfavorable, or if he/she would be violating the precepts of his/her training or of the standards of this manual. A diver may refuse to dive without fear of penalty whenever he/she feels it is unsafe for them to make the dive.

C. Diving Procedures

1. Solo Diving Prohibition

All diving activities under the auspices of DEQ and CRM shall ensure adherence to the buddy system. This buddy system is based on mutual assistance, especially in the case of an emergency. Divers using the buddy system will remain in visual contact at all times during a dive.

2. Dive Procedures

- a. On every dive below 60 feet, each diver shall stop at 15 feet for a minimum of 3 minutes before returning to the surface.
- b. The diver shall terminate the dive while there is still sufficient air pressure in his/her cylinder to permit the diver to safely reach the surface including any required safety stop. The diver shall exit the water with a minimum of 300 pounds of cylinder pressure.

- c. It is the responsibility of the diver to terminate the dive, without fear of penalty, whenever he/she feels it is unsafe to continue the dive, unless it compromises the safety of a diver already in the water.
- d. No dive team member shall be required to be exposed to hyperbaric conditions against his/her will, except when necessary to prevent or treat a pressure related injury.
- e. SCUBA diving below 100 feet is not allowed under the auspices of DEQ and CRM diving.
- f. Decompression dives are not allowed under the auspices of DEQ and CRM diving.
- g. Any diver may deviate from the requirements of this manual to prevent or minimize a situation that is likely to cause death, or serious physical harm to himself or a fellow diver. A written report must be submitted to the DCB explaining the circumstances and justifications.
- h. When diving from a DEQ or CRM boat, the boat and crew must meet DEQ and CRM specifications. (See DEQ and CRM boat policy)
- i. There must be a stand-by diver on the boat when divers are in the water.

D. Post Dive Procedures

1. Post-dive safety

- a. After the completion of a dive, each diver must report any physical problems, symptoms of decompression sickness, or equipment malfunctions.
- b. If a diver violates no-decompression limits, the diver shall remain awake for at least one hour 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.
- c. Divers should stay well hydrated before and after each dive by drinking plenty of water or other non-caffeinated drinks. Caffeinated beverages cause dehydration, which can make a person more susceptible to decompression sickness.
- d. If flying after diving, a diver must allow an 18 hour surface interval between the last dive and flying.

2. Logging dives

Each diver shall log every dive made under the auspices of DEQ and CRM, and is encouraged to log all other dives as well. Dives are to be logged on the standard forms available from the DSO (Appendix 10). Logs must be submitted to the DSO on the last day of each month for inclusion in the diver's permanent file. Each completed log form will be placed in the divers' personal file.

E. Emergency Procedures

In all cases involving a known or suspected diving accident, medical personnel should be contacted immediately, and their advice followed. Emergency phone numbers are listed on the last page of this manual.

1. Injuries and Accidents

- a. If, after a SCUBA dive, a person is suspected of suffering any kind of injury, they will be taken to the nearest medical facility. For incidents not involving actual or suspected pressure related injuries, the following medical facility can be utilized: Commonwealth Health Center (#234-8950-54)
- b. If a person is found or becomes unconscious, first aid/ CPR shall be administered along with oxygen. A medical doctor should be consulted, and arrangements should be made for emergency evacuation of the diver to the nearest recompression chamber. 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 medical transportation. In the event nobody can be reached on channel 16; channel 12 or 13, the harbormaster, or channels 68 or 63, the local fishermen's channels, can be used to request assistance.

2. Decompression Illness

If a person complains of symptoms of pressure related injury such as dizziness, headache, numbness or tingling, blotchiness or rash on skin, loss of balance, or personality change, 100% oxygen shall be administered, and medical personnel contacted for instructions.

3. Required Incident Reporting

All diving incidents requiring recompression treatment, or any medical treatment by a licensed physician, or resulting in death shall be reported to the DSO and the DCB. All such incidents shall also be reported to the AAUS.

The diver, the diver's buddy, and the supervising diver shall each file a written incident report with the DSO (Appendix 11) The DSO will review the reports and request any additional information he/she believes is useful or necessary to evaluate the incident. The DSO will then present the reports to the DCB. The DCB will then investigate and document the incident and prepare, review, and release a final report for the AAUS during the annual reporting cycle. Copies of all incident reports will be maintained as part of the permanent file for each diver involved in the incident. The DCB also has the authority to suspend or revoke scientific diving certification and/or privileges as a result of the investigation into a diving incident.

Section 3 - Diving Equipment

A. General Policy

All equipment used under the auspices of DEQ and CRM diving must meet the standards of the DCB as outlined below, regardless of ownership. It is each diver's responsibility to regularly examine all the equipment they will use for scientific diving. Technical equipment such as gauges, dive computers, and regulators, should be regularly tested and maintained. All tests, maintenance, and calibrations of dive gear must be logged and copies of receipts or paperwork shall be given to the DSO for filing. DEQ and CRM does provide diving equipment (i.e., BCD's, regulators, dive computers, fins, masks, etc.) It is DEQ and CRM's responsibility to ensure DEQ and CRM's dive gear meets the criteria specified in this manual. A DEQ or CRM employee will be assigned responsibility for ensuring DEQ and CRM dive gear meets these criteria. DEQ and CRM divers may use their personal dive gear, provided the gear meets or exceeds the specifications put forth in this manual. If DEQ and CRM divers choose to use their own gear, they must provide documentation proving that their gear meets DEQ and CRM maintenance criteria. By choosing to use their personal equipment, DEQ and CRM divers accept responsibility for their equipment maintenance and the consequences of equipment failure.

B. Equipment

This section is intended to cover the dive equipment that each scientific diver shall have for every dive. It does not include the specific gear used to prepare for the collection of scientific data (such as transect lines, tapes, or hammer and rebar) or the actual collection of scientific data (such as tape measures, clip boards, underwater cameras, quadrats, or other scientific instruments.)

1. Scuba Cylinders and valves

- a. All SCUBA cylinders used on DEQ and CRM dives must be designed, constructed, and maintained in accordance with the applicable provisions of the Unified Pressure Vessel Safety Orders.
- b. All SCUBA cylinders must be hydrostatically tested in accordance to Department of Transportation standards, and display a current hydrostatic inspection date. Hydrostatic inspections are valid for 5 years after the date of the test marked on the tank.
- c. All SCUBA cylinders must have a current internal (or visual) inspection sticker and be functionally tested in intervals not exceeding twelve months. SCUBA cylinder valves shall be functionally tested at least once every twelve months. Each diver shall submit written documentation to the DSO of each internal inspection of the cylinder and each functional test of the valve.

2. Regulators

- a. Regulators must be serviced and tested by qualified personnel every 12 months, or more frequently if recommended by the manufacturer. A copy of the service record should be submitted to the DSO.

- b. Regulators used by DEQ and CRM divers must have a first stage, a primary second stage, and an alternate air source (octopus or redundant air supply).

3. Depth and Submersible Pressure Gauges

- a. Each member of a diving team must have a dive watch or other timing device, and approved depth gauge, and a submersible pressure gauge. Depth and submersible pressure gauges may be integrated into a console or dive computer (including transmitting computers).
- b. Depth and submersible pressure gauges shall be inspected and tested before use and at least every twelve months thereafter, or more frequently if recommended by the manufacturer. Each diver shall submit written documentation to the DSO of each depth and submersible pressure gauge's annual service and/or repair.

4. Flotation Devices

- a. A buoyancy control device is required for ascent control and emergency flotation.
- b. Personal flotation systems, dry suits, and other variable volume buoyancy compensation devices must be equipped with an exhaust valve.
- c. These devices shall be functionally inspected and tested at least every twelve months, or more frequently if recommended by the manufacturer. Each diver shall submit written documentation to the DSO of each functional inspection and test of the BCD.

5. Other gear

- a. Dive masks should be free of dings, nicks, and damage or modification that hinder visibility, and not have serious leaks.
- b. Divers should wear enough weight to be neutrally buoyant or slightly positively buoyant at the surface while wearing full SCUBA gear with BCD deflated.
- c. Gloves and wetsuits are not required, but recommended, especially if diving for long periods of time.
- d. Each diver shall carry a surface signaling device
- e. Every diver shall have an underwater timing device, such as a dive watch, stop watch, or dive computer.
- f. Each diver shall have a cutting implement such as a dive knife.

6. Decompression Status

- a. A set of PADINAUI, NOAA, or US Navy dive tables must be brought to the site of every dive operation, even if every diver is using a dive computer.
- b. Dive computers may be used in place of dive tables if both members of a buddy team have their own computers. If only one member has a computer, both divers shall follow PADI or NAUI dive tables.

C. Support Equipment

1. First-aid and oxygen kit

A first aid kit and oxygen kit with fully charged oxygen cylinder must be available at each dive site. Minimally the emergency oxygen kit shall contain the equivalent of a DAN Rescue Pak Extended Care Kit (i.e. 100% oxygen cylinder with at least approximately 60 minutes delivery time, a multifunction regulator, a demand valve with hose, an oronasal resuscitation mask, a non-rebreather mask, and latex exam gloves.

2. Dive Flag

A dive flag shall be brought to each dive site, and prominently displayed according to all local and Coast Guard statutes.

3. Other equipment

- a. PADI and NAUI Dive tables will be available at all dive sites.
- b. Fin and mask straps, o-rings, and extra weights should be brought to all dive sites.
- c. There must be a diver recall device present at the dive site.

4. Compressor Systems

- a. Requirements – any compressor system used to fill scuba cylinders shall be specifically designed and sold for this purpose. In addition, the compressor system shall be equipped with a slow-opening shut-off valve. If DEQ and CRM decide to maintain their own compressor system, they shall also ensure that the air compressor intakes are located away from areas containing exhaust or other contaminants.
- b. Testing and Record Maintenance – If DEQ or CRM decide to maintain their own compressor system, they shall obtain gas analyses and air tests for every 100 hours of operation or quarterly (whichever comes first) certifying at least CGA Grade E gas. If gas analyses tests result in less than CGA Grade E gas, all airfill operations shall cease until gas analyses or air tests are certified as at least CGA Grade E gas. These gas analyses and air tests, as well as the compressor log, shall be submitted to the DSO.

D. Equipment Maintenance

1. Record keeping

Each equipment modification, repair, test, calibration, maintenance, and/or service shall be logged and submitted to the DSO, including the date and nature of work performed, serial number(s) of the item, and the name of the person (or repair facility) performing the work for the following equipment: regulators, gauges, scuba cylinders, oxygen cylinders, buoyancy compensating devices, compressors, gas control panels, air storage cylinders, air filtration systems.

2. Compressor Operation and Air Test Records

- a. Gas analyses and air tests shall be performed on each air compressor intended for filling scuba cylinders at regular intervals of no more than 100 hours of operation or three months, whichever occurs first. The results of these tests

shall be delivered to the DSO and shall be retained for the lifespan of the equipment plus five years.

- b. A log shall also be maintained that shows the operation, repair, overhaul, filter maintenance, and temperature adjustment for each compressor. This log shall be delivered quarterly to the DSO, who will retain the log for the lifespan of the equipment plus five years.

E. Air Quality Standards

Breathing air for scuba shall meet or exceed the following specifications as set forth by the Compressed Gas Association (CGA Pamphlet G-7.1) and referenced in OSHA 29 CFR:

<u>Component</u>	<u>Maximum</u>
Oxygen	20-22 %/v
Carbon monoxide	10 PPM/v
Carbon dioxide	500 PPM/v
Condensed hydrocarbons	5 mg/m ³
Water vapor	NS
Objectionable odors	None

Section 4 – Scientific Diver Certification

A. General Policy

No person employed by the CNMI DEQ or CRM shall engage in scientific diving unless authorized by the DEQ and CRM Scientific Diver's Group to do so (pursuant to the provisions of this manual). Only a scientist or technician diving under the auspices of DEQ or CRM who agrees to adhere to the DEQ and CRM manual and the included standards is eligible to apply for a DEQ and CRM scientific diver certification.

B. Scientific Diver Certification

This certification permits a scientist or technician to engage in scientific diving with the CNMI DEQ or CRM, and shall be current during all planned dives. In addition, this certification is intended to serve as a visible reminder of the agreement between the scientific diver and the DEQ and CRM Scientific Diver's Group that this scientific diver has received adequate training, that his/her training is current, and that the diver agrees to adhere to the standards, procedures, and guidelines in the DEQ and CRM manual.

C. Requirements for Application for Scientific Diver Certification

1. Application Form

Application for certification as a DEQ or CRM Scientific Diver will be made to the DSO using the form in Appendix 4. Note that the completed application form shall be accompanied by a number of additional documents, as listed on the form

Submission of a completed application form and additional supporting documents does not automatically result in certification. The applicant shall also convince the DSO that he/she is sufficiently skilled and proficient to be certified as a DEQ and CRM Scientific Diver through a required written examination and checkout dive administered by the DSO. If the DSO believes that the applicant is sufficiently skilled, the DSO will sign forms attesting to this belief. The DSO will present the applicant's completed application package to the DCB, whose voting members will act as the final authority in rejecting or accepting the application. Any applicant, who does not possess the necessary judgment under diving conditions for the safety of the diver and his/her dive buddy, may be denied scientific diving privileges with the CNMI DEQ or CRM.

2. Required Recreational Scuba Certifications and Experience

All DEQ and CRM divers must be certified by a nationally recognized diver certification organization (i.e., PADI, NAUI, NASDS, etc.) to a level at least equal to Rescue Diver. DEQ and CRM will not pay for initial certification, but will provide for classes necessary to achieve the rank of rescue diver. Additionally, DEQ and CRM will provide for CPR, first aid, and O₂ provider classes for all DEQ and CRM employee divers. DEQ and CRM divers must have completed a minimum of 25 open water dives.

3. Open Water Checkout

All DEQ and CRM divers must also perform the following skills to the satisfaction of the DSO. These requirements are from the American Academy of Underwater Sciences (AAUS) dive manual. OSHA recognizes the AAUS as the regulating body for scientific diving by academic and governmental organizations:

- a. Dive to a depth of 10 feet using only snorkel gear.
- b. Demonstrate proficiency in air sharing to include both buddy breathing and use of an alternate air source, both as donor and receiver.
- c. Enter and leave open water or surf, or board and exit a diving vessel, while wearing SCUBA gear.
- d. Surface swim 400 yards while wearing SCUBA gear, but not breathing from the SCUBA unit.
- e. Perform a simulated emergency swimming ascent from a depth of 10 feet.
- f. Successfully clear mask and regulator while submerged.
- g. Achieve and maintain neutral buoyancy while submerged.
- h. Demonstrate techniques of self-rescue and buddy rescue.
- i. Navigate underwater.
- j. Display competency with PADI or NAUI dive tables.

4. Medical Evaluation

All DEQ and CRM divers must have a current dive physical and a declaration by the examining physician of the diver's fitness to dive.

5. Required Safety Certifications

- a. First-aid, CPR, and Emergency Oxygen Administration certifications shall be valid for the year in which the application is filed. Re-certification is required every two years, following first certification.
- b. The training must be administered by persons recognized by a national diving certification agency or any another organization accepted by OSHA.

D. Revocation of Certification

A DEQ and CRM Scientific Diver's certification may be revoked or restricted for cause by the DSO or the DCB. Violations of regulations set forth in this manual, federal regulations, violation of other safe diving practices as established by the training agency through which they were certified, or other CNMI regulations not in conflict with this manual, may also be considered cause. The DSO will inform the diver in writing of the reason(s) for revocation or restriction. The diver will be given the opportunity to present his/her case in writing to the DCB for reconsideration and/or re-certification. All of these written statements and requests are formal documents that will become part of the diver's file.

E. Re-certification

If a DEQ and CRM Scientific Diver's certification is revoked, he/she may be re-certified after complying with any conditions that the DSO and/or the DCB choose to impose necessary to correct the problem resulting in the initial revocation. The diver will be given an opportunity to present his/her case to the DCB before the conditions for the re-certification are stipulated.

Section 5 - Medical Standards for DEQ and CRM Divers

A. General

Diving under the auspices of DEQ and CRM is permitted only with a current dive physical examination and a declaration by the examining physician of the diver's fitness to dive. All medical examinations required by this standard shall be performed by, or under the direction of a licensed physician of the diver's choice. It is recommended but not required that the examining physician be trained in diving/undersea medicine.

The diver should be free of any chronic disabling disease and be free of any conditions for which restrictions from diving are generally recommended. The current OSHA manual lists conditions that restrict commercial divers. This is the list DEQ and CRM shall follow, with the following additions: (from the Guidelines for Public Safety Diving and Operation of Public Safety Diving Programs manual published by the National Association for Search and Rescue):

- Juxta-articular osteonecrosis
- Pregnancy in any stage

B. Frequency of Medical Evaluations

1. Initial Application

Medical evaluations shall be completed before a diver may begin diving for DEQ and CRM, unless an equivalent initial examination has been given within the preceding five years (three years if over the age of 40). These medical requirements are from the AAUS dive manual.

2. Re-evaluations

Medical evaluations shall be completed every five years after the initial examination until the age of 40, and every three years after the age of 40.

3. Following injury or illness

Medical examination shall be completed after any major injury or illness, or any condition requiring hospitalization for more than 24 hours. If the injury or illness is pressure related, a physician trained in dive medicine should preferably perform the evaluation.

C. Medical Examinations for Diving

A DEQ or CRM Scientific Diver or diver applying to become a DEQ or CRM Scientific Diver shall provide the examining physician with the forms in Appendices 1 and 2. After a diving medical examination is completed, a written report containing the physician's opinion of the individual's fitness to dive and any recommended restrictions and limitations must be submitted to the DCB.

1. Initial Application

The initial examination and first examination over the age of 40 should include:

- a. Medical history
- b. Chest x-ray

- c. 12 lead EKG
- d. Complete blood count
- e. Urinalysis
- f. Pulmonary function
- g. Audiogram
- h. Visual acuity
- i. Blood chemistry- including lipid and glucose screening
- j. Any other tests deemed necessary by the physician to qualify the patient for SCUBA diving.

2. Re-examinations

Periodic reexaminations should include:

- a. Medical history
- b. Complete blood count
- c. Urinalysis
- d. Pulmonary function
- e. Audiogram
- f. Chest x-ray
- g. Visual acuity
- h. Blood chemistry
- i. Any other tests deemed necessary by the physician to qualify the patient for SCUBA diving.

D. Symptoms of Decompression Sickness

- 1. Joint or muscle pain
- 2. Skin rashes and mottling
- 3. Hearing problems, problems with balance or a sensation of the room spinning
- 4. Abnormalities of consciousness or higher mental function
- 5. Personality changes
- 6. Cerebellar abnormalities (balance and coordination)
- 7. Abnormal skin sensation (tingling, burning, or decreased feeling)
- 8. Decreased muscle strength
- 9. Problems emptying bladder

A diver exhibiting any of these symptoms should have 100% oxygen administered, and the patient should be taken to the nearest decompression chamber immediately. A medical doctor, preferably a doctor trained in dive medicine, should be consulted.

Emergency Information - Phone Numbers

1. Medical Facilities and Assistance in the Marianas

- a. Saipan
 - i. Commonwealth Health Center Emergency Room- 234-5632
 - ii. Commonwealth Health Center (Navy Hill) – 233-1063
 - iii. Marianas Health Services (Garapan) –233-4646
 - iv. Pacificare Health Center (San Jose) – 235-0994
 - v. Marianas Medical Center (San Antonio) – 234-3950
 - vi. Pacific Medical Center (Gualo Rai) 233-8100
- b. Tinian Medical Facility
 - i. Tinian Health Center (San Jose) – 433-0350, 433-0474, 433-0687, 433-2273, 433-9239, 433-9263, or 433-9333
- c. Rota Medical Facility
 - i. Rota Health Center (Songsong) – 532-0950, 532-9461, 532-9462, 532-9463, or 532, 9464
- d. Guam Medical Facilities
 - i. Guam Memorial Hospital Emergency Room- (671) 647-2489/ 647-2442
 - ii. Inarajan Health Center- (671) 828-7517
 - iii. Dr. George Macris – (671) 637-1777 (Dive Physician).
 - iv. Poison Control- (671) 646-8104
 - v. Naval Hospital- (671) 344-9232/ 344-9314/ 344-9211

2. Emergencies-

- a. On Land: 911
- b. At Sea
 - i. VHF channel 16
 - ii. Harbormaster VHF channel 12 or 13
 - iii. Local Fishermen VHF channel 68 or 63
 - iv. Navy Port operations VHF channel 9
- c. SRF Decompression Chamber- 339-7143
- d. U.S. Coast Guard Air/Sea Rescue- 477-8724
- a. Divers Alert Network Diving emergency information – (919) 684-8111, (919) 684-4326 (collect), or (800) 446-2671 (toll-free)

3. Other numbers

- b. Police (non emergency) - 472-8911
- c. Fire Dispatch- 475-9082/ 475-9083
- d. Naval Magazine (Bomb Disposal)-339-7162/333-2989
- e. NPS Supervisor- Frances Castro (w)-664-8570; (h)-789-1232
- f. DCB members: Pete Houk – 323-2900 (h), Edson Limes – 664-8300, John Starmer – 788-2585 (h)
- g. DEQ Office- 664-8500/01

- h. CRM Office – 664-8300
- i. Divers Alert Network Non-emergency information – (800) 446-2671 or (919) 684-2948, Monday to Friday, 9 AM to 8 PM eastern standard time (12 AM to 11 AM in the CNMI)
- j. CRM and DEQ Dive Safety Officer – John Starmer – 788-2585

Appendix 3

DEQ and CRM Divers Group

Medical Evaluation of Fitness for SCUBA diving

Name of applicant diver (print or type)

Date (day/month/year)

To the examining physician:

This person is an applicant for training or is presently certified to engage in diving with self-contained underwater breathing apparatus (SCUBA). This is an activity that puts unusual stress on the individual in several ways. 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. An absolute requirement is the ability of the lungs, middle ear, and sinuses to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant.

Tests: Please initial that the following tests were completed.

Initial examination

- _____ Medical history
- _____ Complete physical exam with emphasis on
neurological and ontological components
- _____ Chest x-ray
- _____ Spirometry
- _____ Hematocrit or hemoglobin
- _____ Urinalysis
- _____ Any further tests deemed necessary by the
physician

- _____ **additional testing when >40**
- _____ resting EKG
- _____ assessment of coronary artery disease using
multiple-risk-factor assessment (age, lipid
profile, blood pressure, diabetic screening, smoker)

Re-examination (every 5 yrs when <40,
every 3 yrs when > 40, every 2 yrs when >60)

- _____ Medical history
- _____ Complete physical exam with emphasis
neurological and ontological components
- _____ Chest x-ray
- _____ Spirometry
- _____ Hematocrit or hemoglobin
- _____ Urinalysis
- _____ Any further tests deemed necessary by the
physician

- _____ **additional testing when >40**
- _____ resting EKG
- _____ assessment of coronary artery disease using
multiple-risk-factor assessment (age, lipid
profile, blood pressure, diabetic screening,
smoker)

Note: Exercise stress testing may be indicated based on risk factor assessment

Recommendation:

- Approval** I find no medical condition(s) that I consider incompatible with diving
- Restricted Activity Approval** The applicant may dive in certain circumstances as described in REMARKS
- Further Testing Required** I have encountered a potential contraindication to diving. Additional medical tests must be performed before a final assessment can be made. See REMARKS
- Reject** This applicant has medical condition(s) that, in my opinion, clearly would constitute unacceptable hazards to health and safety in diving.

(continued on reverse side)

Appendix 3
DEQ and CRM Scientific Divers Group
Checkout Dive Evaluation

Certified scientific divers and applicant scientific divers shall be able to demonstrate proficiency in the following skills during checkout dives with the DSO (Skills will be rated as E=Excellent, S= satisfactory, or U = unsatisfactory)

- _____ Dive to a depth of 10 feet using only snorkel gear.
- _____ Demonstrate proficiency in air sharing to include both buddy breathing and use of an alternate air source, both as donor and receiver.
- _____ Enter and leave open water or surf, or board and exit a diving vessel, while wearing SCUBA gear.
- _____ Surface swim 400 yards while wearing SCUBA gear, but not breathing from the SCUBA unit.
- _____ Perform a simulated emergency swimming ascent from a depth of 10 feet.
- _____ Successfully clear mask and regulator while submerged.
- _____ Achieve and maintain neutral buoyancy while submerged.
- _____ Demonstrate techniques of self-rescue
- _____ Demonstrate techniques of buddy rescue.
- _____ Navigate underwater.
- _____ Display competency with PADI or NAUI dive tables.

The applicant diver named below has satisfactorily performed the above skills with apparent ease during a checkout dive:

Name of applicant diver (print or type)

Date of checkout dive (day/month/year)

Signature of DSO

Date (day/month/year)

Appendix 4
DEQ and CRM Scientific Divers Group
Application for Certification as a Scientific Diver

Name of applicant diver

Gender (M/F)

Age

Name of emergency contact for diver (to notify in an emergency)

Relationship

Telephone of emergency contact (work)

Telephone (home)

Address of emergency contact

Job Title of applicant diver

Date (day/month/year)

Please attach the following supporting documents:

1. Medical Evaluation of Fitness for Scuba Diving (Appendix 3)
2. Copies of all previous diving certifications (minimally including NAUI Scuba Diver or PADI Open Water Diver, **and** NAUI Advanced Scuba Diver or PADI Advanced Open Water Diver, **and** NAUI Scuba Rescue Diver or PADI Rescue Diver.)
3. Proof of current First-Aid training
4. Proof of current Cardiopulmonary Resuscitation (CPR) training
5. Proof of current Emergency Oxygen Administration training
6. Proof of required dive experience
7. Proof of completion of and passing grade for written examination
8. Proof of satisfactory completion of checkout dive (Appendix 5)
9. List of all equipment intended for use in the DFW Scientific Diving Program (including manufacturer's names, models, serial numbers, and proof of required service and maintenance)
10. Completed Computer User Agreement (Appendix 6), if intending to use a dive computer.

If certified as a CNMI DEQ and CRM Scientific Diver, I agree to adhere to the standards, procedures, and guidelines in the Manual:

Applicant's signature

Date (day/month/year)

Appendix 6

DEQ and CRM Scientific Divers Group

Verification of Visiting Diver Training & Experience

 Name of Diver Gender (M/F) Age

 Name of emergency contact for diver (to notify in an emergency) Relationship

 Telephone of emergency contact (work) Telephone (home)

 Address of emergency contact

 Date (day/month/year)

Date (day/month/year) _____
 _____ Last diving medical examination
 _____ Most recent dive

Number of dives completed within previous 12 months _____

Any restrictions? (Yes/No) _____ If yes, explain: _____

Please check any pertinent specialty certifications:

_____ Nitrox	_____ Rescue	_____ DiveMaster
_____ Semi-closed rebreather	_____ Instructor	_____ EMT
_____ Decompression	_____ Night	_____ Other _____

This is to verify that the above individual is currently eligible to dive with the DEQ and CRM Scientific Diver's Group:

 DSO printed name & signature Telephone

Date (day/month/year) FAX email

Appendix 7
DEQ and CRM Scientific Divers Group
Liability Release & Assumption of Risk for Visiting Scientists

Please read each statement listed below and write your initials on the line at the beginning of each sentence to indicate (1) your understanding of the statement, and (2) your agreement to adhere to these terms and conditions while diving with the DEQ and CRM Scientific Diver's Group.

_____ I hereby declare that I am a certified scuba diver, trained in safe diving practices, and I am aware that scuba diving has inherent risks that may result in serious injury or death.

_____ I understand that diving with compressed air (including nitrox) involves certain inherent risks; decompression sickness, embolism, or other hyperbaric injuries can occur that require treatment in a recompression chamber. I further understand that the dives will be conducted at a site that is remote, either by time or distance or both, from such a recompression chamber. I still choose to proceed with this dive or dives in spite of the absence of a recompression chamber in proximity to the dive site.

_____ I also understand that the hazards of scuba diving may include those hazards occurring during boat travel to and from the dive site(s). I understand that these hazards include, but are not limited to slipping or falling while on board, being cut or struck by a boat while in the water, injuries occurring while getting on or off a boat, and other perils of the sea. By signing this release, I certify that I am fully aware of and expressly assume these and all other risks involved in making the dive(s).

_____ I understand and agree that neither the DEQ and CRM Scientific Diver's Group, the CNMI Department of Environmental Quality, the CNMI Coastal Resources Management Office, nor any of their respective officers, employees, or contractors (hereinafter referred to as "Released Parties") may be held liable or responsible in any way for any injury, death or other damages to me, my family, estate, heirs, or assigns that may occur as a result of my diving, including boat travel, or as a result of the negligence of any party, including the Released Parties, whether passive or active.

_____ In consideration of being allowed to participate in the dive(s), I hereby personally assume all risks of this dive or dives, whether foreseen or unforeseen, that may befall me during the dive(s) and boat travel.

_____ I also understand that scuba diving is physically strenuous activities and that I will be exerting myself during the dive(s) and that if I am injured as a result of heart attack, panic, hyperventilation, drowning or any other cause, that I assume the risk of said injuries and that I will not hold the Released Parties responsible for the same.

_____ I declare that I am in good mental health and physically fit for diving, and that I am not under the influence of alcohol, nor am I under the influence of any drugs that are contra-indicatory to diving. If I am taking medication, I declare that I have seen a physician and have approval to dive under the influence of the medication/drugs.

_____ I will inspect all of my equipment prior to diving and will notify the Released Parties if any of my equipment is not working properly. I will not hold the Released Parties responsible for my failure to inspect my equipment prior to diving.

_____ I further release, exempt, and hold harmless the dive(s) and Released Parties from any claim or lawsuit by me, my family, estate, heirs, or assigns, arising from my dive(s), including both claims arising during the dive(s) or after the dive(s).

_____ I further declare that I am of lawful age and legally competent to sign this liability release.

(continued on reverse side)

_____ I understand that the terms herein are contractual and not a mere recital, and that I have signed this document of my own free act and with the knowledge that I hereby agree to waive my legal rights. I further agree if any provision of this Agreement is found to be unenforceable or invalid, that provision shall be severed from the Agreement. The remainder of the Agreement will then be construed as though the unenforceable provision had never been contained herein.

_____ By this instrument, it is my intention to exempt and release the DEQ and CRM Scientific Diver's Group, the CNMI Department of Environmental Quality, the CNMI Coastal Resources Management Office and all related entities as defined above, from all liability or responsibility whatsoever for personal injury, property damage, or wrongful death, however caused, including but not limited to the negligence of the released parties, whether passive or active.

_____ I have fully informed myself of the contents of this liability release and assumption of risk by reading it before I signed it on behalf of my heirs and myself.

Name of visiting diver (print or type)

Date (day/month/year)

Signature of visiting diver

Job title

Appendix 8
DEQ and CRM Scientific Divers Group
Equipment Use Agreement, Liability Release, & Assumption of Risk for
Visiting Scientists

Please read each statement listed below and write your initials on the line at the beginning of each sentence to indicate (1) your understanding of the statement, and (2) your agreement to adhere to these terms and conditions while diving with the DEQ and CRM Scientific Diver's Group.

_____ I hereby enter into an agreement between myself and the CNMI Division of Environmental Quality and the Coastal Resources Management Office for the use of DEQ and CRM scuba diving equipment. This agreement is a release of my rights to sue for injuries or death resulting from the use of this equipment.

_____ I expressly assume all risks of scuba diving related in any way to the use of this equipment.

_____ I hereby acknowledge the receipt of the equipment designated in this form.

_____ I hereby declare that I am a certified scuba diver, trained in safe diving practices, and I am aware that scuba diving has inherent risks that may result in serious injury or death.

_____ I acknowledge that the equipment is in good working condition and that I have examined the equipment to ensure that it is free from defects, including checking both the quality and quantity of air in any scuba tank(s) used.

_____ I understand and agree that neither the DEQ and CRM Scientific Diver's Group, the CNMI Department of Environmental Quality, the CNMI Coastal Resources Management Office, nor any of their respective officers, employees, or contractors (hereinafter referred to as "Released Parties") may be held liable or responsible in any way for any injury, death or other damages to me, my family, estate, heirs, or assigns that may occur as a result of my use of this equipment, or as a result of product defect, or as a result of the negligence of any party, including the Released Parties, whether passive or active.

_____ I further declare that I am of lawful age and legally competent to sign this liability release.

_____ I understand that the terms herein are contractual and not a mere recital, and that I have signed this document of my own free act and with the knowledge that I hereby agree to waive my legal rights. I further agree if any provision of this Agreement is found to be unenforceable or invalid, that provision shall be severed from the Agreement. The remainder of the Agreement will then be construed as though the unenforceable provision had never been contained herein.

_____ By this instrument, it is my intention to exempt and release the DEQ and CRM Scientific Diver's Group, the CNMI Department of Environmental Quality, the CNMI Coastal Resources Management Office and all related entities as defined above, from all liability or responsibility whatsoever for personal injury, property damage, or wrongful death as a result of using the equipment, however caused, including but not limited to product liability, or the negligence of the released parties, whether passive or active.

_____ I have fully informed myself of the contents of this equipment use agreement, liability release, and assumption of risk by reading it before I signed it on behalf of my heirs and myself.

Name of visiting diver (print or type)

Date used (day/month/year)

Signature of visiting diver

Job title

Equipment prepared & received by:

Date returned (day/month/year)

Appendix 9
DEQ and CRM Scientific Divers Group
Dive Plan

Fill in the blanks below, or describe why the information does not apply to the planned dive or set of dives. (If you require more space feel free to elaborate on another page or pages.)

1. Purpose of the planned dive or set of dives:

2. Expected number of planned dives: _____

3. Location of planned dives: _____

4. Estimated maximum depth(s), maximum bottom time(s), and minimum surface interval(s) anticipated for first and repetitive dives (if any): _____

5. NAUI, NOAA, US Navy, or PADI tables available to divers at dive site. (circle one)

6. Equipment (other than scuba) to be employed: _____

7. Boats to be employed and their operator (if any): _____

8. Identify dive site entry procedures, exit access points, and exit procedures:

9. Evaluate and discuss the potential for encountering hazardous conditions, including entrapment, entanglement, or other physical or mechanical hazards; bottom obstructions or dangerous bottom conditions; dangerous marine life; contamination or exposure to pollution, or other conditions.

10. Evaluate and discuss surface and subsurface conditions and potential for strong current, low visibility, surge, swell, fog, etc.:

11. Evaluate and discuss local marine traffic hazards (notify vessel traffic systems if necessary about diving operations):

(continued on reverse side)

Roster

Names of all personnel (divers and support personnel)	Task	Affiliation

18. Additional notes or remarks: _____

Appendix 10
DEQ and CRM Scientific Divers Group
Dive Log

 Diver's name

 Job title

 Date (month, year)

Dive no.	Date	Time	Location	Dive Buddy	Max depth (ft)	Bottom time (min)	Tables/comp

Appendix 12

Definitions

AAUS - American Academy of Underwater Sciences. An organization recognized by OSHA as the regulating body for scientific diving conducted by governmental and academic organizations.

Active Diver - A DEQ and CRM diver whom has completed 8 dives, or the 4 required DEQ and CRM dives, within the previous 12 month period.

Bottom Time - The total time measured in minutes from the time when the diver leaves the surface in descent to the time that the diver begins his/her final ascent.

Buddy System - A system of SCUBA diving in which two divers are in continuous visual contact throughout a dive.

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

Cylinder - A pressure vessel for the storage of gases.

DEQ and CRM- Department of Environmental Quality and the Coastal Resources Management Office, Departments of the Government of the CNMI.

DEQ and CRM Dive Operation - A dive operation in which either DEQ or CRM is connected, either by ownership of equipment used, or employer/employee relationship of individual(s) concerned.

DEQ and CRM Personnel - Person(s) employed by the CNMI Government – Division of Environmental Quality and Coastal Resources Management Offices.

Decompression Chamber - A pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system used to decompress divers and to treat decompression sickness.

Decompression Sickness - A condition with a variety of symptoms which may result from gas or bubbles in the tissues of 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 exposures. DEQ and CRM will use PADI or NAUI dive tables.

Dive Control Board - A board consisting of DEQ and CRM employees, whose function is to ensure that DEQ and CRM diving is done in a manner consistent with the DEQ and CRM dive manual.

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

Dive Supervisor - The person in charge of a specific DEQ and CRM dive.

Dive Team - Divers and support employees involved in a diving operation, including the designated person-in-charge.

Diver - An employee working in water using underwater apparatus, which supplies compressed breathing gas at the ambient pressure.

Diver-carried Reserve Breathing Gas - A diver-carried 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 a standby diver.

Emergency Situation - An unexpected situation in which a rapid response or actions not normally encountered or permitted are required to save human life or prevent major environmental damage.

Hyperbaric Conditions - Pressure conditions in excess of surface pressure.

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

No-Decompression Limits - The depth-time limits of the “no-decompression limits and DEQ and CRM Scientific Diving Manual and Standards

repetitive dive group designation table for no decompression air dives.” U.S. Navy Diving Manual or equivalent limits that the employer can demonstrate to be equally effective.

OSHA - Occupational Safety and Health Administration. Division of the Department of Labor concerned with development and enforcement of safety and health standards for work environments.

Scientific Diving - 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. Scientific diving does not include performing any tasks usually associated with commercial diving such as: Placing or removing heavy objects underwater; inspection of pipelines and similar objects; construction; demolition; cutting or welding; or the use of explosives.

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

Standby Diver - A diver at the dive location available to assist a diver in the water.

Surface Supplied Air Diving - A diving mode in which the diver in the water is supplied from the dive location with compressed air for breathing.

Treatment Table - A depth-time and breathing gas profile designed to treat decompression sickness.

Umbilical - The composite hose bundle between a dive location and a diver or bell, or between a diver and a bell, which supplies the 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 maximum pressure to which a pressure containment device may be exposed under standard operating conditions.