

**BUREAU OF SAFETY
AND
ENVIRONMENTAL ENFORCEMENT**

Diving Standards and Safety Manual



Implemented 2013



FOREWORD

This document represents the minimum safety standards for scientific diving under the auspices of the Bureau of Safety and Environmental Enforcement (BSEE) as of the approval date of this Manual. As diving progresses so shall this standard and it is the responsibility of every BSEE diver to ensure that it continues to reflect the latest information on safe diving practices.

REVISION HISTORY

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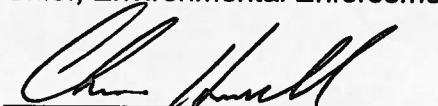

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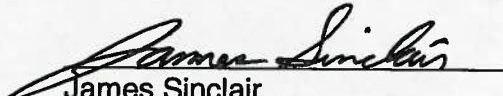
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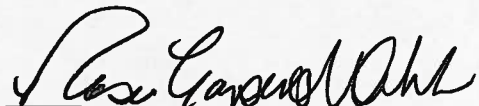

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* Diving activities that are in Chapters or Sections designated “To Be Developed” are prohibited until developed and approved by the DCSB.



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SECTION 1: OVERVIEW

1.1 Program Mission; Goals, Core Products, and Services; and Management

- 1.1.1 Program Mission. The mission of the Bureau of Safety and Environmental Enforcement's (BSEE) Diving Program is to provide, train, and equip its divers to perform a variety of underwater tasks in support of the agency's scientific, investigative, and compliance monitoring programs and to ensure that all dives are conducted safely and efficiently.
- 1.1.2 Goals, Core Products and Services of the BSEE Diving Program.
- A. Establish standards and implement policies and procedures for conducting safe BSEE Diving operations.
 - B. Train and certify scientists and scientists in training in a variety of diving related subjects.
 - C. Provide BSEE Active Divers with safe, state-of-the-art, and well maintained dive equipment.
 - D. Investigate and implement new diving technologies and techniques for BSEE Diving operations.
 - E. Provide BSEE Active Divers to support field operations, as needed.
 - F. Promote, facilitate, and implement coordination and communication between private sector, academic and government diving entities.
- 1.1.3 Management.
- A. The BSEE, Deputy Director has overall administrative responsibility for the BSEE Diving Program.
 - B. Management of the diving program is delegated from the Deputy Director to the Chief, Environmental Enforcement Division as the BSEE Diving Program Manager in consultation with the BSEE Diving Control and Safety Board (DCSB) and Diving Safety Officer (DSO).
 - C. The DCSB reviews and establishes diving regulations, policies, and procedures deemed necessary to ensure a safe and efficient diving program.
 - D. The DSO reports to the Deputy Director and is responsible for operational oversight of the BSEE Diving Program.
 - E. As required by 29 CFR 1910, Subpart T, the DCSB has absolute and autonomous authority over diving operations.
-

1.2 General Provisions

- 1.2.1 Purpose. Promoting science based compliance.
- A. BSEE Diving is scientific diving. "SCIENTIAE CEDIT MARE" is Latin for "The Sea Yields Knowledge." Our purpose is to gather that knowledge, using the diving and safety standards set by this manual, and use it to verify compliance with various mitigation measures, conditions of approval, etc. and assess the science that established it.
 - B. The purpose of the BSEE Diving Standards and Safety Manual (Manual) is to ensure all BSEE diving is conducted in a manner that will maximize protection of its divers from accidental injury and/or illness, and to set forth standards for training and certification that will allow reciprocity with other science-oriented diving programs. Fulfillment of these purposes shall be consistent with the furtherance of science based compliance, research and safety.
 - C. This Manual sets minimum standards for BSEE diving operations, describes the organization for the conduct of scientific diving, and the basic standards and procedures for safety in scientific diving operations. It also establishes a



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framework for reciprocity between BSEE and other organizations that adhere to these standards.

- D. This manual is not intended to be a comprehensive discussion of diving physics, physiology, medical symptoms, diving equipment, dangerous marine life, etc.

1.2.2 Definition of Scientist and Scientist-In-Training. For the purposes of performing operational scientific dives, or scientific training and proficiency dives consistent with this Manual, divers must be one of the following:

- A. Scientist. An individual who utilizes scientific expertise to perform BSEE dives without direct or indirect supervision or guidance from a more qualified individual as determined by the on-site Lead Diver (LD).
- B. Scientist-In-Training. An individual who utilizes scientific expertise to perform BSEE dives under the direct or indirect supervision or guidance of a scientist and/or with approval of the on-site LD.

1.2.3 OSHA Scientific Exemption.

- A. In 1982, The Occupational Safety and Health Administration (OSHA) exempted scientific diving from commercial diving regulations (Code of Federal Regulations, 29 CFR 1910, Subpart T) under certain conditions that are outlined below. The final guidelines for the exemption became effective in 1985 (Federal Register, Vol. 50, No.6, p.1046).
- B. Per 29 CFR 1910, Subpart T, “Scientific diving means 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.”
- C. Examples of scientific diving tasks include but are not limited to: data collection (water or bottom samples flora and fauna, etc.); observing, collecting and documenting for research, compliance, and/or investigatory purposes * (including the use of cameras, evidence/information collection, etc.); and measuring and counting. If tools are used, they include but are not limited to “light” hand tools (e.g., small hammers, pliers, screw drivers, chisels). Other ancillary equipment such as small lift bags (≤ 100 pounds lifting capacity) and small air lifts can also be used if the tasks are associated with data/information collection. Tasks such as those described above performed by BSEE divers are exempt from the OSHA commercial diving regulations found in 29 CFR 1910, Subpart T.
- D. Tasks, such as those involving ship husbandry (cleaning hulls, sea strainers, replacing zincs, un-fouling a ship’s propeller); use of heavy power tools powered by pneumatics or hydraulics from the surface; lifting, positioning and retrieving heavy objects; construction, underwater cutting or welding using exothermic cutting lances, and use of explosives cannot be conducted under the scientific exemption and as such are not considered scientific diving tasks and are not covered by this Manual.

* Scientific diving for investigatory purposes (included in Section 1.2.3.C. above) must be conducted by scientists or scientists-in-training and include verifying that regulations, mitigation measures and conditions of approval on various leases, plans, and permits are being conducted and scientifically assessing their effectiveness or the potential environmental consequences of non-compliance.

1.2.4 Scope and Application.

- A. The policies and procedures in this Manual apply to:
 - 1) All BSEE diving operations regardless of where or when they are conducted;
 - 2) All BSEE employees engaged in BSEE diving activities during official duty hours (i.e., when receiving financial compensation for work performed) where compressed gas is breathed in a hyperbaric environment; and



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- 3) Non-BSEE personnel performing BSEE dives under the direct supervision of a BSEE Lead Diver (defined in Section 2.). For the purposes of this Manual, BSEE employees and non-BSEE personnel diving under the auspices of BSEE shall be collectively referred to as "BSEE divers."
 - B. Contracted diving services are to be conducted in accordance with applicable local, State and Federal regulations.
- 1.2.5 Obligations, Restrictions, and Conditions.
 - A. The BSEE Diving Program ensures all BSEE divers are in compliance with:
 - 1) All standards of general applicability outlined in 29 CFR Part 1910, Subpart T; and
 - 2) All policies and procedures outlined in this Manual.
 - B. The BSEE Diving Control and Safety Board (DCSB) may elect to implement and enforce more stringent diving standards and procedures than those stated herein. Such changes will be promulgated in writing to all affected employees and supervisors prior to implementation and will be included in the next revision to this Manual.
 - C. Failure to comply with the standards outlined in this Manual may be cause for the revocation or restriction of the diver's certification by action of the DCSB.
 - D. No person shall engage in diving operations under the auspices of the BSEE Diving Program unless they hold a current certification issued pursuant to the provisions of this Manual.
 - E. No BSEE divers shall be exposed to hyperbaric conditions against their will, except when necessary to prevent or treat a pressure-related injury.
 - F. No BSEE divers shall be permitted to dive with any known medical condition that is likely to adversely affect the safety and health of the diver or other divers.
- 1.2.6 Substitutions for Required Equipment, Materials, Apparatuses, Arrangements, Procedures, or Tests.
 - A. The DCSB may accept substitutes for equipment, materials, apparatuses, arrangements, procedures, or tests required in this Manual if it can be demonstrated the substitutes provide an equivalent or increased level of safety.
 - B. Where it is shown to the satisfaction of the DCSB that the use of any particular equipment, material, apparatus, arrangement, procedure, or test is unreasonable or impracticable, the DCSB may permit the use of alternate equipment, material, apparatus, arrangement, procedure, or test to such an extent and upon such condition that ensures, to the satisfaction of the DCSB, a degree of safety consistent with the minimum standards set forth in this Manual.
 - C. Such changes will be codified in future revisions of this Manual and disseminated to all BSEE divers with an effective date of implementation.
- 1.2.7 Deviations in Emergencies.
 - A. BSEE divers may deviate from the requirements of this Manual provided that:
 - 1) The deviation is necessary to prevent or minimize a situation which is likely to cause death, serious physical harm, total loss of property, or major environmental damage; and
 - 2) The LD notifies the Diving Program Manager of the deviation within 24 hours of the onset of the emergency situation.
 - B. The Diving Program Manager will in turn notify the Deputy Director, within 48 hours of the onset of the emergency situation indicating the nature of the emergency and extent of the deviation from the prescribed regulations.
- 1.2.8 Reference Material. A copy of this Manual shall be made available to each BSEE diver.



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SECTION 2: POSITIONS AND RESPONSIBILITIES

Duties and responsibilities delegated herein to specific roles and positions may not be further re-delegated unless specifically authorized in this Manual.

2.1 Deputy Director

2.1.1 General.

- A. The Deputy Director broadly administers BSEE's Diving Program.
- B. Responsibility for the day-to-day management of the BSEE Diving Program has been delegated to the Chief, Environmental Enforcement Division (EED) as the Diving Program Manager.

2.1.2 Responsibilities.

- A. Overall responsibility for the BSEE Diving Program.
- B. Reviews appeals from BSEE divers terminated from diving by the DCSB.
- C. Reviews issues raised by members of the DCSB with dissenting opinions.
- D. Reviews minutes from DCSB meetings and provides guidance on issues raised by the Board.
- E. Makes final selection for BSEE Diving Safety Officer (DSO) position.

2.2 Diving Program Manager

2.2.1 General.

- A. The Chief, EED is the Diving Program Manager. If the Chief, EED is not qualified as specified in Section 2.2.3 below to be the Diving Program Manager, then the position shall be delegated to the DSO until the Chief, EED is qualified or another more appropriate senior manager is designated.
- B. Administers and manages the BSEE Diving Program.
- C. Serves as Chairperson of the DCSB.

2.2.2 Responsibilities.

- A. Responsible to the Deputy Director for the management of the BSEE Diving Program;
- B. Acquires necessary budgetary resources to maintain the BSEE Diving Program.
- C. Implements all policies and decisions prescribed by the DCSB.
- D. Suspends diving operations considered to be unsafe or unwise.
- E. Provides a recommendation for selection of the DSO position to the Deputy Director.
- F. Appoints Regional Diving Officers (RDOs) as needed.
- G. In consultation with the DCSB, authorizes the scope and degree of diving operations for BSEE.
- H. In consultation with the DSO, recommends BSEE dive training priorities to the DCSB.
- I. Reviews recommendations from the DSO and takes appropriate action.
- J. Upon verification by the DSO, determines completion of certification requirements and issues BSEE diver certifications and authorizations to dive.
- K. Signs all "Active Diver Designation Letters" and "Letters of Reciprocity" (LOR) with other organizations.
- L. Suspends or revokes diving privileges for violating the standards and procedures in this Manual as directed by the DCSB.
- M. Monitors and enforces compliance with the applicable federal regulations and this Manual.
- N. If the below qualifications are not met, these responsibilities may be temporarily delegated to the DSO.



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2.2.3 Qualifications.

- A. Holds a nationally or internationally recognized advanced SCUBA diving certification.
- B. Has a minimum of 5 years of experience in a diving.
- C. Has broad technical and/or scientific expertise in research related diving (e.g., safety, regulations, equipment, procedures).

2.3 Diving Control and Safety Board

2.3.1 General.

- A. The voting members and minimum composition of the DCSB shall be the Diving Program Manager, Diving Safety Officer, Regional Diving Officers, BSEE Safety and Occupational Health Manager, and other members as needed.
- B. Although the DCSB reports to the Deputy Director, per 29 CFR 1910, Subpart T, the DCSB exercises autonomous and absolute authority over operations of the BSEE Diving Program.
- C. The DCSB shall convene annually or more often when necessary.
- D. The DCSB may consult individual advisors or advisory panels with subject matter expertise to provide additional information.
- E. The DCSB will consist of a majority of BSEE Active Divers.

2.3.2 Decision Making Process.

- A. The Chairperson shall strive for consensus on all DCSB issues and decisions, and every attempt shall be made to query each voting member of the DCSB on all decisions.
- B. A quorum of two-thirds of the voting members must be present, in person or electronically, to conduct official business.
- C. Decisions will be made by majority vote with the Chairperson casting the deciding vote in case of a tie.
- D. Major objections to majority votes shall be made a part of the meeting minutes. Any voting member of the DCSB may request that an item be raised to the Deputy Director via written communication from the Chairperson.

2.3.3 Responsibilities.

A. General.

- 1) Exercises autonomous and absolute authority over and promotes the safe and effective operations of the BSEE Diving Program;
- 2) Establishes such processes and program structure as necessary to ensure compliance with the OSHA science exemption and effectively approve and monitor diving projects across BSEE;
- 3) Reviews and approves all BSEE diving operations involving equipment other than open-circuit SCUBA, breathing mixtures other than air or Nitrox, depths greater than 130 fsw or bottom times beyond the U.S. Navy no-decompression limits; and
- 4) Delegates authority to the DSO to review and approve routine BSEE diving operations.

B. Safety.

- 1) Ensures appropriate oversight of safety within the BSEE Diving Program;
- 2) Advises the Deputy Director of circumstances adversely impacting safety and/or efficiency of the BSEE Diving Program; and
- 3) Instructs and reminds divers, LDs, RDOs to adhere to all BSEE Diving Program regulations, standards, policies, and procedures.



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- C. Incident Review and Action.
 - 1) With the exception of incidents that reach the severity necessary to require a Serious Accident Investigation (SAI) as defined in 485 DM 7 (see Chapter 12 for more details), serves as a board of review for inquiries into the nature and cause of diving incidents (including near-misses) as well as violations of BSEE or other applicable policies and standards, and reports the results to the Deputy Director;
 - 2) Institutes appropriate measures to mitigate the reoccurrence of dive incidents; and
 - 3) Prescribes action for unsafe or noncompliant practices or actions.
- D. Manuals and Procedures.
 - 1) Develops and promulgates diving and safety standards, and reviews and revises them as necessary;
 - 2) Monitors compliance with diving and safety standards and reports non-compliance to the Diving Program Manager for action; and
 - 3) Reviews and makes changes in diving regulations, standards, policies, and operational procedures.
- E. Training and Certification.
 - 1) Establishes and/or approves training and certification programs for BSEE divers and non-BSEE divers participating in BSEE-sponsored dive projects;
 - 2) Reviews, adopts, and enforces physical conditioning and medical standards required to promote diver safety;
 - 3) Recommends to the Diving Program Manager the revocation of diving certifications;
 - 4) Determines equivalency of applicant entities with that of the BSEE Diving Program for diving reciprocity; and
 - 5) Considers appeals from divers whose dive certifications are suspended.
- F. Standardized Equipment Program.
 - 1) Considers, reviews, and makes appropriate changes in diving equipment requirements; and
 - 2) Reviews and approves new diving technologies and techniques for possible implementation.

2.4 Diving Safety Officer

2.4.1 General.

- A. The DSO is selected by the Deputy Director upon recommendation from the Diving Program Manager.
- B. Reports to the Deputy Director.
- C. May also concurrently serve as a Regional Diving Officer when appropriate.
- D. Voting member of the DCSB.

2.4.2 Responsibilities.

- A. Shall suspend diving operations considered to be unsafe or unwise and reports this action to the DCSB.
- B. Provides advice to the DCSB, BSEE managers, and divers for scientific diving safety and health related issues.
- C. Coordinates meetings and agendas and minutes of the DCSB.
- D. Conducts an annual review of all BSEE diving operations to include equipment and personnel statuses, and any diving program recommendations or actions taken by the DCSB to improve the safety and effectiveness of the BSEE Diving Program and submits a report to Deputy Director via the DCSB. (Due prior to conclusion of the 1st quarter of every fiscal year).



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- E. Submits annual national diving operations plan to the DCSB for approval prior to the conclusion of the 3rd quarter of every fiscal year.
 - F. Approves all BSEE dive plans and proposed diving operations. May delegate this to the RDO when applicable.
 - G. Notifies the DCSB and applicable Regional Director as soon as possible of any diving related incident where established practices or procedures were not followed, diving accident, or related medical issues.
 - H. Submits timely reports of all diving accidents and/or related medical issues occurring as a result of BSEE diving operations.
 - I. May designate a qualified diver to act in temporary capacity in absence of the DSO.
 - J. Oversees investigations of any diving related incident unless it reaches the severity necessary to require a Serious Accident Investigation (SAI) as defined in 485 DM 7 (see Chapter 12 for more details).
 - K. Reviews, informs, and makes recommendations to the DCSB regarding all BSEE diving accidents, and other diving accidents of significance as well as potential hazards, and safety measures.
 - L. Instructs and reminds divers, LDs, and RDOs to adhere to all BSEE Diving Program regulations, standards, policies, and procedures.
 - M. Investigates and reviews new diving technologies and techniques.
 - N. Signs LORs for individual scientific divers.
 - O. Assesses appropriateness and consistency of diving safety requirements for BSEE divers and provides recommendations to appropriate BSEE dive managers and the DCSB.
- 2.4.3 May delegate the following DSO responsibilities to RDOs, when appointed:
- A. Ensures annual safety inspections, calibrations, maintenance, and repairs (as necessary) of all BSEE diving equipment are conducted and records of such are maintained.
 - B. Ensures annual and initial evaluations/authorizations of all BSEE divers are conducted and records of such are maintained.
 - C. Maintains a file on each diver containing diver certifications, training records, diver qualifications, medical clearance, and BSEE diver authorizations.
 - D. Maintains master log of all diving operations.
- 2.4.4 Qualifications.
- A. BSEE Active Diver with a nationally or internationally recognized Diving Instructor certification;
 - B. Has a minimum of 5 years of experience in diving;
 - C. Has a minimum of 150 logged dives under a wide range of conditions and levels of difficulty;
 - D. Has broad technical and/or scientific expertise in research related diving (e.g., safety, regulations, equipment, procedures); and
 - E. Currently or previously certified SCUBA instructor from a nationally or internationally recognized certifying agency.

2.5 Regional Diving Officer

- 2.5.1 General.
- A. RDOs are appointed by the Diving Program Manager upon recommendation from the DSO.
 - B. Reports to the DSO.
 - C. Voting members of the DCSB.



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2.5.2 Responsibilities.

- A. Shall suspend diving operations when adverse conditions warrant and suspends diving activity of any diver who in the RDO's best judgment is not physically or mentally prepared or capable of diving in the given situation.
- B. When delegated by the DSO, ensures annual safety inspections, calibrations, maintenance, and repairs (as necessary) of all BSEE diving equipment are conducted and records of such are maintained in their region.
- C. When delegated by the DSO, ensures annual and initial evaluation/authorization of all BSEE divers are conducted and records of such are maintained in their region.
- D. When delegated by the DSO, maintains a file on each diver in their region containing diver certifications, training records, diver qualifications, medical records, and BSEE diver authorizations.
- E. When delegated by the DSO, maintains master log of all diving operations in their region.
- F. Notifies the DSO and Regional Director as soon as possible of any diving related incident where established practices or procedures were not followed, diving accident, or related medical issues. Prepares and submits the required report detailing the incident.
- G. Ensures all diving activity in their region complies with procedures and safety practices set forth in this Manual.
- H. Recommends to the DSO additional diver training as necessary for divers in their region to promote safety and maintain diving experience.

2.5.3 Qualifications.

- A. BSEE Active Diver with a nationally or internationally recognized Divemaster certification;
- B. Has a minimum of 3 years of experience in diving;
- C. Has a minimum of 100 logged dives under a wide range of conditions and levels of difficulty; and
- D. Has broad technical and/or scientific expertise in research related diving (e.g., safety, regulations, equipment, procedures).

2.6 Lead Diver

2.6.1 General.

- A. An LD shall be in charge of all aspects of the BSEE diving operation at the dive site and shall:
 - 1) Have the experience and training in the conduct of the assigned diving operation;
 - 2) Have authority over execution of on-site diving operations; and
 - 3) Be at the dive location.
- B. LDs may dive as long as there is a qualified topside person, designated by the LD to render assistance in an emergency.

2.6.2 Responsibilities.

- A. Safety.
 - 1) Ensures all diving is planned and conducted in accordance with all prescribed BSEE diving standards, policies, and procedures listed in this Manual, as well as all applicable OSHA standards outlined in 29 CFR 1910, Subpart T;
 - 2) Submits project-specific dive plans to the DSO for approval (see Appendix 5) prior to implementation;



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- 3) Verifies the accuracy of the project-specific Emergency Management prior to the execution of the approved project-specific dive plan (this includes verification that the designated hyperbaric chamber is operational);
- 4) Prohibits any diver from diving who, in their opinion, exhibits problems of a physical or psychological nature that may compromise the safety of any diver;
- 5) Suspends diving operations when unusual hazards or environmental conditions adversely affect the safety of the diving operation;
- 6) Ensures emergency procedures are established and clearly understood by all personnel before diving begins;
- 7) Ensures all safety and emergency equipment is in working order and at the dive site;
- 8) Ensures all divers are monitored after each dive for signs or symptoms of decompression sickness or other diving-related maladies;
- 9) Immediately reports diving-related accidents and incidents to the (RDO, if applicable) DSO.
- 10) Coordinates with other known activities in the vicinity that are likely to interfere with diving operations;
- 11) Ensures all diver-worn equipment is properly inspected and configured in accordance with the standards outlined in this Manual; notifies (RDO, if applicable) DSO of any equipment issues.
- 12) Obtains concurrence from the vessel captain and ensures all applicable vessel checklists have been completed prior to initiating diving operations when applicable;
- 13) Conducts pre- and post-dive safety briefings as well as the objectives of the dive (includes review of the emergency procedures);
- 14) Ensures qualified individuals are assigned to fulfill all required diving and support positions;
- 15) Maintains a log of all diving operations conducted during a specific project; and
- 16) Prepares a project Trip Report within one week of returning from a dive project (see Appendix 11).

2.6.3 Qualifications.

- A. BSEE Active Diver with a nationally or internationally recognized Divemaster certification;
- B. Possess the experience and training necessary to conduct the assigned diving operation; and
- C. Current in CPR, including adult AED, first aid and oxygen administration, and be knowledgeable in dive accident management.

2.7 Active Divers

2.7.1 General.

- A. Directed to conduct underwater tasks in support of BSEE's mission provided they fall within the guidelines of Section 1.2.
- B. Must be scientists or scientists-in-training.
- C. Authorized to dive under the BSEE Diving Program and are sufficiently trained and experienced to undertake assigned diving tasks safely and effectively.
- D. May participate with other agency diving operations as a reciprocity diver.

2.7.2 Responsibilities.

- A. Adheres to the standards contained within this Manual when conducting BSEE dives.



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- B. Refuses to dive when in their judgment, conditions are unsafe, or if they would be violating the precepts of their training or the requirements in this Manual.
- C. Maintains good physical condition and a high level of diving proficiency.
- D. Reports to the LD any changes of a physical or psychological nature that may adversely impact their or their buddy's fitness to dive.
- E. Will not begin or continue a dive if problems exist of a physical or psychological nature that can compromise the safety of the diver or other divers.
- F. Ensures diving equipment used is maintained in a safe operating condition.
- G. Is accountable for BSEE-issued equipment.
- H. Adheres to the buddy system, actively monitors buddy status, including, but not limited to, cylinder pressure, and intervenes to the maximum extent practicable to ensure the safety of the diver.
- I. Refrains from the use of illegal drugs that could compromise the safety of the diver or other divers and is subject to a drug screening program.

2.7.3 Qualifications. BSEE Active Divers shall meet the requirements outlined in Section 3 of this Manual.

2.8 Observer Divers

To Be Developed

2.9 Diver Reciprocity

2.9.1 General.

- A. Non-BSEE divers may participate in BSEE diving activities, and BSEE divers may participate in non-BSEE diving activities through reciprocity agreements.
- B. Reciprocity agreements include Letters of Reciprocity and Memoranda of Understanding.
- C. Scientific reciprocity divers under BSEE auspices shall follow the standards outlined in this Manual.
- D. BSEE reciprocity agreements:
 - 1) Allow non-BSEE divers to participate in BSEE diving activities, and vice-versa with minimal administrative requirements;
 - 2) Are established with other organizations only after it is determined that their diving programs are equivalent to BSEE's;
 - 3) Are only applicable to personnel employed and covered for medical treatment and (for government only) Workers Compensation by reciprocity organizations;
 - 4) Are not transferable to other agencies or institutions with whom BSEE's reciprocity partners have separate reciprocity agreements;
 - 5) Expire on December 31 of the year in which they were established; and
 - 6) They must be re-established annually.

2.9.2 Request for reciprocity with a Non-BSEE Organization.

- A. BSEE may request formal diving reciprocity be established with non-BSEE organizations when no such agreement exists.
- B. Such requests, along with a copy of the candidate organization's diving standards and safety manual, must be forwarded to the DSO for review.
- C. If deemed equivalent to BSEE's diving standards, reciprocity may be established for the current calendar year by the Diving Program Manager via a (for governmental organizations) Letter of Reciprocity or (for non-governmental organizations) a Memorandum of Understanding.
- D. Reciprocity agreements are reviewed at the end of the calendar year and may be renewed as desired.



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- 2.9.3 Letters of Reciprocity (LORs) for BSEE Active Divers.
- A. Per the terms of the reciprocity agreements, any BSEE diver wanting to dive with a reciprocity organization must request a LOR be sent from the BSEE DSO to the DSO of the receiving organization verifying they are an authorized BSEE Active Diver. LORs will only be sent if the BSEE diver is in an authorized diving status.
 - B. LORs for BSEE employees will state the diver is covered under the Federal Employee Compensation Act, United States Code (USC) 5 USC § 8101 *et seq.*, for injuries that may be sustained as the result of an accident occurring during the scope of any official dive; as well as by the provisions of the Federal Tort Claims Act, 28 USC §§ 1346, 2671 *et seq.*
- 2.9.4 Letters of Reciprocity for Non-BSEE Divers.
- A. Reciprocity divers wanting to dive with BSEE must present a signed LOR from their organization's DSO to the BSEE DSO verifying that the diver is in an authorized diving status with their organization.
 - B. Must indicate the diver is covered for medical treatment and (for government organizations) covered under their organization's Workers Compensation policy.
 - C. Must be received from the DSO of an organization with whom BSEE currently has a reciprocity agreement in place.
- 2.9.5 Equipment.
- A. Reciprocity divers shall be outfitted with personally-supplied diving equipment equivalent to that of Section 5 as determined by the on-site LD.
 - B. The LD will ensure the reciprocity diver's non-BSEE diving equipment is in proper operating condition prior to diving.



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SECTION 3: ACTIVE DIVER CERTIFICATION AND TRAINING

3.1 Active Diver Certification Requirements

- 3.1.1 Prerequisites. Candidates for BSEE Active Diver certification must provide proof of the following:
- A. Advanced SCUBA diving certification from a nationally or internationally recognized diver training agency (which includes the use of dive tables);
 - B. At least one year of diving experience;
 - C. Rescue Diver certification or equivalent as determined by the DCSB from a nationally or internationally recognized diver training agency;
 - D. A minimum of 50 logged dives;
 - E. Cardio-pulmonary resuscitation, including adult AED certification;
 - F. First Aid (American Red Cross, American Heart Association or equivalent); and
 - G. Oxygen administration training.
- 3.1.2 Medical Clearance.
- A. All BSEE divers must successfully pass an initial medical examination, as defined in the Department of Interior (DOI) Occupational Medicine Program Handbook, to include the diving specific sections prior to beginning the BSEE Active Diver certification process.
 - B. All BSEE divers will be included in the BSEE Medical Standards Program as described in Section 6.
 - C. Medical examinations must be completed by a certified physician and culminate in a recommendation that the individual is fit to dive. The Bureau currently has an Inter-Agency Agreement with Federal Occupational Health (FOH) to provide the diving medical examinations and issue fit-to-dive medical clearance.
 - D. Once completed, the DSO will ensure submission of required paperwork by the FOH examining facility to the FOH Agreement Management for review and clearance determination by the Medical Review Officer (MRO)
 - E. A copy of the physician's recommendation that the individual is fit to dive shall be forwarded to and retained by the DSO.
- 3.1.3 Voluntary Drug Testing.
- A. The use of illegal drugs can dramatically affect the physical and mental condition of divers; which in turn can affect their abilities to make sound decisions underwater.
 - B. As a condition for becoming a BSEE diver, individuals who are not already in drug testing designated positions must:
 - 1) Submit to and pass an initial drug test in accordance with 370 DM 792.
 - 2) Once authorized, BSEE divers are subject to DOI's unannounced random drug testing program.
 - C. A verified positive drug test or refusal to submit to a drug test when requested will result in denial of initial diving certification, or if already certified to dive, termination of BSEE diving status/privileges.
- 3.1.4 Fitness/Swim Test.
- A. General.
 - 1) All BSEE diver candidates must successfully pass the Fitness/Swim Test prior to undergoing initial BSEE Active Diver certification.
 - 2) All Fitness/Swim Test skills are to be completed in one (1) pool session and without the use of swimming aids (i.e., mask, fins, snorkel, or flotation devices).



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- 3) Completion of Fitness/Swim test shall be documented on the BSEE Confined Water Diver Evaluation checklist (Appendix 3), signed and dated by the DSO or RDO who administered the test.

B. Fitness/Swim Test requirements include:

- 1) Swim 500 yards (457 meters) on the surface without stopping in under 12 minutes;
- 2) Swim 25 yards (22 meters) underwater without surfacing; and
- 3) Tread water for 15 minutes (or 3 minutes without hands) without any flotation aids.
- 4) Transport another person in water for 25 yards (22 meters).

3.1.5 Confined Water Diver Evaluation.

A. Diver Safety and Rescue Skills Evaluation (Confined Water).

- 1) Surface Skills:
 - a) Entry into water in full SCUBA equipment.
 - b) Simulate the rescue of a distressed/tired diver at the surface and transport the diver the distance of the pool.
 - c) Simulate the rescue of a distressed/panicked diver at the surface and transport the diver the distance of the pool.
 - d) Simulate the rescue of an unconscious, non-breathing diver at the surface and transport the diver the distance of the pool while simulating rescue breathing.
- 2) Underwater Skills:
 - a) Clear facemask.
 - b) Demonstrate the ability to remove and replace equipment while submerged.
 - c) Simulate an 'out of air' situation and buddy-breathe the length of the pool and come to the surface. Repeat using an alternate air source.
 - d) Simulate the rescue of a distressed diver on bottom, assist diver to the surface and transport the length of the pool.
 - e) Simulate the rescue of an unconscious, non-breathing diver on bottom and transport the diver to the surface and the distance of the pool while simulating rescue breathing.
 - f) Demonstrate understanding of underwater hand and light signs and signals.
 - g) Demonstrate watermanship ability which is acceptable to the instructor.
- 3) Completion of the Confined Water Diver Evaluation shall be documented on the BSEE Confined Water Diver Evaluation (Appendix 3), signed and dated by the DSO or RDO who administered the test.

B. Open Water Evaluation.

- 1) In addition to basic scuba skills, divers must also demonstrate proficiency in the following specific skills and equipment:
 - a) Surface dive to a depth of 10 feet in open water without scuba.
 - b) Demonstrate proficiency in air sharing as both donor and receiver.
 - c) Enter and leave open water or surf, or leave and board a diving vessel, while wearing scuba gear.
 - d) Kick on the surface 400 yards while wearing scuba gear, but not breathing from the scuba unit.
 - e) Demonstrate judgment adequate for safe diving.
 - f) Demonstrate, where appropriate, the ability to maneuver efficiently in the environment, at and below the surface.
 - g) Complete a simulated emergency swimming ascent.
 - h) Demonstrate clearing of mask and regulator while submerged.
 - i) Demonstrate ability to achieve and maintain neutral buoyancy while submerged.



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- j) Demonstrate techniques of buddy rescue.
 - k) Navigate underwater.
 - l) Plan and execute a dive.

 - m) Successfully complete 5 open water dives for a minimum total time of 3 hours, of which 1-1/2 hours cumulative bottom time must be on SCUBA. No more than 3 training dives shall be made in any one day. All prospective divers will complete their first five dives with the DSO, or an Active Diver designated by the DSO.
- 2) Completion of open water evaluation shall be documented on the BSEE Open Water Diver Evaluation (Appendix 4), signed and dated by the DSO or RDO who conducted the evaluation.

3.2 Maintaining Certification

- 3.2.1 General. In order to maintain active dive status, BSEE Active Divers must complete the requirements outlined below. Failure to do so may result in temporary suspension of diving privileges.
- 3.2.2 Dive Proficiency Requirements.
- A. In order to maintain dive certification, BSEE divers must log a minimum of 12 dives during the calendar year, one of which must be within a 6 month period.
 - B. Annually take and pass the Diver Fitness (Swim) Test and Diver Evaluation.
- 3.2.3 Medical Standards (See Section 6).
- A. Complete a periodic physical examination as defined in the DOI Occupational Medicine Program Handbook.
 - B. Physical exams must be completed by a certified physician and culminate in a recommendation that the individual is fit to dive.
 - C. Once completed, the DSO will coordinate the submission of the physical exam to the UMO for review.
 - D. A copy of the physician's recommendation that the individual is fit to dive shall be forwarded to and retained by the DSO.
- 3.2.4 Emergency Care Training. BSEE Active Divers must remain current and provide proof of training to the DSO or designee in:
- A. Adult CPR, including AED certification;
 - B. First Aid (American Red Cross, American Heart Association, or equivalent); and
 - C. Oxygen administration training, which shall be completed annually.
- 3.2.5 General and Proficiency Training. BSEE Active Divers must complete a minimum of 40 hours of dive related training in a 3 year period.
- 3.2.6 Physical Conditioning Training.
- A. Diving is physically demanding and it is imperative that both divers and managers recognize the need for a continual and aggressive exercise program that exceeds basic health maintenance standards.
 - B. In order to help maintain appropriate fitness to dive, immediate supervisors may grant currently authorized BSEE divers up to 3 hours per week of official time to help maintain a conditioning level sufficient to pass the annual Fitness (Swim) Test and Diver Evaluation.
 - C. A variety of activities including, but not limited to, swimming, jogging, cross country skiing, cycling, walking, weight training, etc., are acceptable for maintaining sufficient condition for individuals who dive.



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3.2.7 Must maintain continuous enrollment in DOI's Voluntary Drug Testing program.

3.3 Certification Lapse

3.3.1 General. BSEE Active Divers whose dive certifications have lapsed due to lack of diving activity or the expiration of periodic physical exam shall be temporarily suspended until all recertification requirements have been met.

3.3.2 Recertification Requirements.

A. 6-12 month lapse in conducting a dive:

- 1) Take and pass the Diver Fitness (Swim) Test and Diver Evaluation.
- 2) Complete a minimum of a training-only, basic checkout dive with the DSO or designee.

B. 12 months or more lapse in maintaining certification:

- 1) Completion of Sections 3.1.2, 3.1.4, and 3.1.5;
- 2) Take and pass a voluntary drug test; and
- 3) Re-enroll in DOI's Voluntary Drug Testing program.

C. Expiration of Periodic Physical Exam: Complete the periodic physical exam and have a copy of the physician's recommendation that the individual is fit to dive forwarded to the DSO. If the expiration is more than 12 months, then the diver must:

- 1) Completion of Sections 3.1.2, 3.1.4, and 3.1.5;
- 2) Take and pass a voluntary drug test; and
- 3) Re-enroll in DOI's Voluntary Drug Testing program.

3.4 Suspension and Revocation of Dive Certifications

3.4.1 General.

- A. BSEE dive certifications may be temporarily suspended or permanently revoked for cause.
- B. Temporary suspension of BSEE dive certification is typically issued for medical reasons or minor infractions of BSEE diving regulations, policies, or procedures.
- C. Permanent revocation of dive certification is typically reserved for more serious conditions or violations of BSEE diving regulations, policies, or procedures.

3.4.2 Temporary Suspension.

- A. Representative examples of situations and infractions leading to temporary suspension include, but are not limited to:
 - 1) Failure of a diver to maintain minimum diving proficiency;
 - 2) A lapse of CPR, including adult AED, first aid, and/or oxygen administration;
 - 3) Failure to pass the annual Fitness (Swim) Test and Diver Evaluation;
 - 4) Concerns raised by the UMO about findings on the periodic physical exam;
 - 5) Failure of a diver to pass a diving physical examination within the prescribed, age-based interval;
 - 6) Failure of a diver to properly use or maintain BSEE-provided diving gear or support equipment;
 - 7) Failure of a diver to comply with the policies and procedures of this Manual;
 - 8) Reporting to the dive station mentally or physical impaired due to alcohol or other substance abuse;
 - 9) An injury or condition that requires medical treatment beyond basic first aid; and
 - 10) Surfacing from a dive with less than 500 pounds per square inch (psi).



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- B. Dive certifications can be temporarily suspended for cause by the Diving Program Manager, DSO, RDO, or LD.
 - C. Temporary suspension may be initiated verbally, but must be followed-up in writing within 10 working days and must have a way to reconcile the temporary suspension. With the exception of medical fitness, no temporary suspension will last more than 9 months. If temporary suspension causes a lapse of Active Diver Certification, then the requirement of Section 3.3 must be followed.
- 3.4.3 Permanent Revocation.
- A. Representative examples of situations and infractions leading to permanent revocation include, but are not limited to:
 - 1) Flagrant violation of BSEE standards, regulations, and policies; (e.g. diving after notification of a lapsed physical exam without obtaining reauthorization),
 - 2) A not-fit-for-dive determination has been made by any recognized medical authority.
 - B. Permanent revocation of dive certifications shall only be issued by the Diving Program Manager upon direction of the DCSB.
- 3.4.4 Suspension or Revocation Appeal Process.
- A. Suspended divers may appeal the decision to the DCSB within 30 days of receipt of notification.
 - B. Terminated divers may appeal the decision to the Deputy Director within 30 days of receipt of notification.



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SECTION 4: DIVING STANDARDS AND PROCEDURES

4.1 General

- 4.1.1 BSEE Dives. Each dive consists of the use of an underwater breathing system to conduct operational dives or training and proficiency dives in either open or confined water (including the pool) and must have a 10 minute surface interval between consecutive dives. Each consecutive dive with less than a 10 minute surface interval will be considered 1 dive.
- A. Duty Dives:
- 1) BSEE employees performing BSEE or non-BSEE operational dives under the auspices of the BSEE Diving Program, reciprocity agreement, or MOA, to include training and proficiency dives.
 - 2) The Hazardous Duty Pay Schedule (5 CFR 550.905) is applicable to any BSEE Duty Dive in either open or confined water (including the pool).
- B. Recreational Dives for Credit: BSEE Active Divers who are diving recreationally either with or without BSEE diving equipment in order to ensure completion of the minimum number of dives necessary to maintain their Active Diver certification.
- 1) Hazardous duty pay does not apply to recreational dives for credit.
 - 2) Workman's Compensation does not apply to recreational dives for credit.
 - 3) Permission for recreational dives for credit must be obtained via submission of a Dive Plan to be approved by the DSO/RDO
- 4.1.2 Qualification Requirements. Must meet the requirements of an Active Diver, which by definition must be a scientist or scientist-in-training.
- 4.1.3 Diving experience or training.
- A. Each Active Diver shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.
- B. Each Active Diver shall have experience or training in the following:
- 1) The use of tools, equipment and systems relevant to assigned tasks;
 - 2) Techniques of the assigned diving mode; and
 - 3) Diving operations and emergency procedures.
- 4.1.4 Tasks Authorized.
- A. BSEE Active Divers can perform tasks commensurate with their certification level.
- B. Specialized training is required for tasks, equipment, techniques, and environments, including, but not limited to:
- 1) Tasks involving the use of lift bags, and
 - 2) Environments consisting of:
 - a) Overhead obstructions;
 - b) Blue-water;
 - c) Restricted visibility;
 - d) Currents greater than 1 kt; and
 - e) Water temperatures below 50 degrees (F).
 - 3) Equipment:
 - a) Drysuits;
 - b) Full-face masks; and
 - c) Surface-supplied.
- 4.1.5 Restrictions.
- A. Active Diver.
- 1) Shall not engage in diving operations under the auspices of the BSEE Diving Program unless they hold a current certification issued by an internationally or nationally recognized certifying agency for the type of tasks to be performed;



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- 2) Shall not be assigned tasks inconsistent with the individual's verifiable experience or training, except that limited additional tasks may be assigned to an individual undergoing training provided that these tasks are performed under the direct supervision of an experienced Active Diver;
 - 3) Shall not perform advanced scientific-related skills in deep water until they have demonstrated these skills in shallow water (<60 fsw) to the satisfaction of the DSO or designee;
 - 4) Shall not be permitted to dive or be exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition that is known to BSEE and is likely to adversely affect the safety or health of the divers;
 - 5) Shall not be permitted to dive for the duration of any known medical condition, which is likely to adversely affect the safety and health of the diver or other Active Divers;
 - 6) Shall not be exposed to hyperbaric conditions against their will, except when necessary to complete decompression or treatment procedures; and
 - 7) Who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.
- B. Hours of Operation.
- 1) The normal work schedule for personnel engaged in diving activities should not exceed 12 hours during any 24 hour period.
 - 2) A minimum rest period of 8 continuous hours is required for all divers during each 24 hour period.
- C. Consecutive Days of Diving.
- 1) The LD in charge of the dive operations has full authority to institute a mandatory day of rest (i.e., 24-hours without diving or strenuous activity) for individual divers, or all dive personnel, if in his/her opinion, continued diving would compromise the safety of the divers.
 - 2) A mandatory day of rest will be instituted after 10 consecutive days of diving.
- D. Flights Following Dive Operations.
- 1) When using dive tables:
 - a) For a single dive on a single day, divers must wait 12 hours before flying.
 - b) For repetitive dives on a single day or any multi-day diving, divers must wait 18 hours before flying.
 - 2) When using a dive computer, divers must use the "No Fly Time" which is based upon your actual diving parameters; otherwise they must use the general times established by the dive tables.
- 4.1.6 Participation in Non-BSEE Diving Operations. BSEE divers may participate in an official capacity in non-BSEE Diving operations with agencies with which BSEE has established diving reciprocity agreements pending approval from the DSO in accordance with Section 2.9.
- 4.1.7 Diver Responsibility.
- A. It is the responsibility of the diver to terminate the dive, without fear of penalty, whenever they feel it is unsafe to continue the dive, unless to do so compromises the safety of another diver already in the water.
- B. While the employer has ultimate responsibility for safety in the workplace, divers are responsible for their own safety and share responsibility for the safety of their buddy. Part of this responsibility is the requirement to refuse to dive if in the diver's judgment:
- 1) Conditions are unsafe or unfavorable;
 - 2) They are not in good physical or mental condition for diving; or
 - 3) They would violate the dictates of their training or the BSEE Diving Program regulations, policies or procedures.



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- C. Divers are also responsible for:
 - 1) Reporting any signs or symptoms of diving maladies to the LD;
 - 2) Reporting any unsafe acts that could jeopardize their or their fellow divers' health and safety; and
 - 3) Using and maintaining their BSEE-issued diving equipment properly.

4.2 Pre-Dive Procedures

- 4.2.1 General. The requirements outlined in this section shall be completed prior to each diving operation, unless otherwise specified.
- 4.2.2 Dive Planning and Approval.
 - A. A formal written dive plan shall be completed and submitted to the appropriate DSO or designee for approval and signature prior to each separate dive operation.
 - B. The plan should be based on the skill level of the least experienced BSEE Active Diver.
 - C. The DSO shall keep a copy of the dive plan on file and shall provide a copy of the approved dive plan to the LD responsible for overseeing the dive.
 - D. All BSEE dives must comply with the dive plan requirements.
 - E. Dive plans are required for each unique diving operation.
 - F. Multi-day operations with similar objectives, tasks and locations may be combined on one (1) dive plan.
 - G. Minor changes in dive plans may be made on-site by the LD; however, any significant changes must be re-approved by the DSO or designee.
 - H. Dive plans involving diving equipment other than open circuit SCUBA, breathing mixtures other than air or Nitrox, or decompression dive profiles must be preapproved by the DCSB and shall include, but are not limited to, the following elements:
 - 1) Overview of the operations;
 - 2) Goals, objectives, and tasks to be accomplished;
 - 3) Nature of tasks to include an activity hazard analysis;
 - 4) Description and location of dive site;
 - 5) Names, affiliations, roles/responsibilities, and qualifications of all participants;
 - 6) Schedule of operations;
 - 7) Description of equipment and facilities;
 - 8) Logistical arrangements and considerations;
 - 9) Normal and emergency diving procedures;
 - 10) Emergency Management Plan; and
 - 11) Supporting documents, permits, and required forms.
- 4.2.3 Emergency Management Plan
 - A. An Emergency Management Plan must be submitted to DSO or designee, for review and approval on an annual basis or when the information on the Emergency Management Plan might change (i.e., geographically or seasonally).
 - B. Emergency Management Plans can be for specific time frames or entire regions if there are no changes in chamber locations or means of evacuation.
 - C. An Emergency Management Plan shall be submitted as an attachment to every Dive Plan.
 - D. A list shall be kept at the dive location of the telephone or call numbers of the following:
 - 1) Closest operational hyperbaric chamber and the attending physician (if not at the dive location);
 - 2) Accessible hospitals;
 - 3) Divers Alert Network (DAN);



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- 4) The nearest U.S. Coast Guard facility; and
- 5) Relative / Personal Contact info.

4.2.4 Pre-Dive Safety Briefings.

- A. Prior to any dive, a dive safety briefing shall be conducted by the LD.
- B. At a minimum the briefing shall include:
 - 1) The tasks to be undertaken;
 - 2) Safety procedures for the diving mode;
 - 3) Any unusual hazards or environmental conditions likely to affect the safety of the diving operation;
 - 4) Any modifications to operating procedures necessitated by the specific diving operation;
 - 5) General goals and objectives;
 - 6) Dive plan (maximum depth, maximum bottom time, and 500 psi ending cylinder pressure);
 - 7) Entry and exit location and procedures;
 - 8) Descent, on-bottom, and ascent procedures; and
 - 9) Emergency and accident management procedures.

4.2.5 Fitness to Dive.

- A. Prior to commencement of dive operation the LD shall:
 - 1) Assess each Active Diver's current state of physical and mental readiness to dive and deny diving privileges to anyone deemed unfit to dive; and
 - 2) Inform the Active Divers that physical problems or adverse physiological effects should be verbally reported to the LD.
- B. Divers should refrain from alcohol consumption for a minimum of 12 hours prior to diving and 4 hours after diving.
- C. Divers exhibiting any effects of alcohol or substance abuse shall not be permitted to dive and will have their diving certification temporarily suspended or permanently revoked from diving pending review by the DCSB.

4.2.6 Emergency Equipment and Supplies.

- A. First aid kit. The following items shall be available at the dive location:
 - 1) A DSO approved first aid kit, appropriate for the diving operation; and
 - 2) A first aid handbook from the American Red Cross, American Heart Association or equivalent.
- B. Oxygen resuscitator.
 - 1) Positive pressure ventilator or a bag-type manual resuscitator with transparent mask capable of ventilating an unconscious victim.
 - 2) Sufficient quantity of oxygen to supply a diver for:
 - a) The time required to transport them to a higher-level medical care facility;
 - or
 - b) 12 hours, whichever occurs first.
 - 3) Oxygen cylinders shall be maintained within current hydrostatic test date.
 - 4) Oxygen kits shall be stowed in a clean, protected and clearly labeled space.
- C. Automated External Defibrillator (AED). An AED shall be available at the dive site, when practical, and only operated by trained personnel.
- D. Backboard. A backboard, in good working condition, shall be available at the dive site when practical.

4.2.7 Equipment Inspection.

- A. All diver-worn and related support equipment and systems shall be inspected and tested prior to each dive by the Active Divers.
- B. Each diver shall conduct a functional check of their diving equipment in the presence of their dive buddy or tender.



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- C. The LD shall conduct a final safety check of each diver's gear before allowing divers to enter the water.
- D. Any equipment in questionable condition shall be removed from service immediately and clearly labeled in order to preclude its use.

4.2.8 Warning Signals.

- A. When diving in areas capable of supporting marine traffic, a red and white "diver down" sport diving flag, appropriately sized for the vessel used, shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.
- B. Depending on the situation LD may choose to also display the code flag "A" at the dive location.

4.3 Diving Procedures and Requirements

4.3.1 Water Entry and Exit.

- A. A means shall be provided to assist all divers entering and exiting the water.
- B. The means provided for exiting the water shall extend below the water surface.
- C. A means shall be provided to extract an unconscious diver from the water.
- D. The propulsion system (e.g., propeller, jet drive) of the vessel shall be disengaged before divers enter or exit the water.

4.3.2 Communications.

- A. An operational, two-way surface communication system (e.g., VHF radio, cell phone) shall be available at the dive location to obtain emergency assistance.
- B. Diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with the diving operation.

4.3.3 A BSEE Dive Log. A dive log will be maintained at the dive location.

4.3.4 Buddy System for SCUBA Diving.

- A. All diving activities shall assure adherence to accepted standards of the buddy system for SCUBA diving.
- B. Except under emergency conditions the buddy system, consisting of a minimum of two (2) comparably equipped divers in constant visual or physical communication with one another, is required.
- C. The buddy system is based upon mutual assistance, especially in the case of an emergency; therefore, SCUBA divers shall remain close enough to each other during dives to render immediate assistance in an emergency.
- D. When conditions are such that the probability of separation of divers is high, such as low visibility, some form of direct physical contact between divers should be maintained (refer to Section 4.7).
- E. If separated during a dive, divers shall try to re-establish contact for no more than 1 minute and if unsuccessful, immediately begin a controlled ascent to the surface.

4.3.5 Safety Stops.

- A. For all no-decompression dives conducted deeper than 60 fsw a precautionary safety stop should be performed at a depth between 15 feet and 20 feet for 3-5 minutes.
- B. The time spent at a safety stop need not be added to the diver's total bottom time.
- C. If sea conditions or breathing gas supply are such that safety stops cannot be performed safely, they may be omitted.



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4.3.6 Minimum Cylinder Pressure Requirement.

- A. All divers shall frequently check the pressure remaining in their SCUBA cylinders during dives and periodically compare the amounts with those of their dive buddies.
- B. All pre- and post-dive SCUBA cylinder pressures will be logged.
- C. Any recorded pressure of less than 500 psi will result in temporary suspension of dive privileges for that individual diver until the on-site LD investigates the matter.
- D. If it is determined that the infraction is an unjustified violation of the 500 psi rule, the individual will not be permitted to resume diving until cleared by the diver's DSO.
- E. If it is determined that the cause of the infraction is justified (e.g., to render emergency assistance to a dive buddy), then the LD may lift the suspension and allow the individual to resume diving.
- F. Repeated violation of the minimum pressure rule, even if justified, may result in temporary suspension pending review by the DSO.
- G. The DSO will report all violations of the 500 psi minimum policy to the Diving Program Manager.

4.3.7 Topside Support.

- A. Unless specifically authorized by the DSO, a topside support person must be available at the dive site and ready, willing and able to render assistance in an emergency. This person must be familiar with the dive activities being conducted and physically able to assist in the recovery of an injured diver.
- B. The small boat operator can serve as topside support.
- C. The LD may require additional topside support personnel based on the conditions anticipated.

4.3.8 Termination of Dive

- A. Diver Responsibility. 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 to do so compromises the safety of another diver already in the water.
- B. Minimum Cylinder Surface Pressure. The dive shall be terminated while there is still sufficient SCUBA cylinder pressure to permit the diver and their buddy to safely reach the surface with at least 500 psi in their cylinder(s), including decompression time, or to safely reach an additional air source at the decompression station with at least 500 psi in their cylinder(s).
- C. A dive shall be terminated when:
 - 1) A diver, LD, or vessel captain requests termination;
 - 2) A diver fails to respond correctly to communications or signals from another Active Diver;
 - 3) A diver loses visual or physical contact with his dive buddy for more than 1 minute;
 - 4) A diver is forced to use an alternate air source, other than during a drill;
 - 5) A diver uses buddy breathing, other than during a drill;
 - 6) An emergency recall is activated from the surface;
 - 7) There is an equipment failure that may compromise the safety of the diving operation; or
 - 8) Conditions become unsafe for divers or support personnel.

4.4 Post-Dive Procedures

4.4.1 Precautions. After the completion of any dive the LD shall:

- A. Check the physical condition of each diver;



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- B. Instruct the divers to report any physical problems or adverse physiological effects including symptoms of decompression sickness along with any equipment malfunctions; and
 - C. Remind divers to remain together for 30 minutes and monitor their dive buddies.
- 4.4.2 Post-Dive Debriefing.
- A. Following each dive a debriefing shall be conducted including at a minimum, but not limited to:
 - 1) Dive profile information (maximum depth, maximum bottom time and ending cylinder pressure);
 - 2) Completion of goals and objectives;
 - 3) Location and contact information of a hyperbaric chamber which is ready for use; and
 - 4) Potential hazards regarding flying or ascending to altitudes in excess of 1000 feet within 24 hours after completion of a dive.
- 4.4.3 Dive Incident Reporting and Investigation.
- A. Dive-related injuries requiring medical treatment beyond basic first aid shall be reported, investigated and documented as prescribed in Section 12 of this Manual.
 - B. All ‘near-miss’ or ‘close call’ incidents that could have resulted in a fatality or serious injury to dive personnel shall be reported, investigated, and documented in accordance with the policies and procedures outlined in Section 12 of this Manual.
- 4.4.4 Post-Dive Health Considerations.
- A. Divers shall limit pre- and post-dive exertion due to the potential of bubble formation that could lead to decompression sickness, and
 - B. Report all injuries, and signs or symptoms of hyperbaric maladies to the LD as soon as they are experienced.

4.5 SCUBA Diving Mode

- 4.5.1 General. Self Contained Breathing Apparatus (SCUBA) diving mode is distinct from surface-supplied mode and includes nitrox, rebreather, staged decompression and mixed gas diving.
- 4.5.2 Manning Requirements. The minimum personnel required to conduct a SCUBA air and/or nitrox dive (rebreather, staged decompression, and mixed gas diving manning requirements are to be developed):

Divers	2
Topside Support	1
Total	3

- 4.5.3 Limits. SCUBA diving shall not be conducted:
- A. At depths deeper than 130 fsw or outside the no-decompression limits without pre-approval of the DCSB.
 - B. From a vessel when sea conditions prevent safe deployment, retrieval or tracking of divers.
- 4.5.4 Breathing Gas Supplies.
- A. Diver-carried breathing gas supplies shall only be used for:
 - 1) Breathing purposes;
 - 2) Inflating BCDs and variable-volume drysuits; and



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- 3) Lift bags or surface marker buoys of less than 25 lbs positive buoyancy.
 - B. Lift-bags of more than 25 lbs positive buoyancy may only be inflated from a separate diver carried or surface supplied gas source, other than that used for life support.
- 4.5.5 Use of Dive Computers.
- A. Any commercially available dive computer approved by the DSO may be used for no-decompression diving.
 - B. Dive computers for decompression dives must be approved by the DCSB.

4.6 Drysuit Diving

- 4.6.1 General. BSEE divers wanting to use drysuits must complete formal training in the equipment and be certified by a nationally or internationally recognized diver training agency.
- 4.6.2 Equipment. In addition to the drysuit a BCD shall also be worn. Where buoyancy should be controlled by the suit itself while underwater; the BCD should only be used for surface flotation.
- 4.6.3 Emergency Procedures.
- A. Loss of positive buoyancy:
 - 1) The diver should ditch one or both sides of his harness weights, terminate dive, and swim to the surface, and
 - 2) Once at surface, inflate the BCD.
 - B. Excess positive buoyancy. The diver should, in order of preference:
 - 1) Swim down to compress air in suit to help reduce excess buoyancy;
 - 2) Roll to head-up position;
 - 3) Dump air from suit using exhaust valve;
 - 4) Dump air from suit at wrist or neck seals; or
 - 5) Flare-out to increase surface area to help slow ascent and exhale.
 - C. Free-flowing suit inlet valve:
 - 1) Manually disconnect the inflator hose from suit.
 - 2) If ascending too quickly, follow instructions for excess positive buoyancy above.

4.7 Diving in Low Visibility

- 4.7.1 General.
- A. BSEE diving operations conducted in low visibility, as defined in Appendix 2 of this Manual, shall comply with the standards outlined below.
 - B. Where conditions are such that visual contact cannot be maintained, physical contact shall be used to maintain buddy contact.
- 4.7.2 Responsibilities. The LD determines when procedures for diving in low visibility must be initiated.

4.8 Overhead Obstruction Diving

- 4.8.1 General. This section covers any diving environment where the diver cannot easily reach the surface in the event of equipment failure or a compromised breathing supply due to an overhead physical obstruction.



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- 4.8.2 Equipment Requirements.
- A. Equipment used for SCUBA in an overhead environment is based on the concept of redundancy.
 - B. In addition to standard SCUBA diving equipment, the following equipment is required when diving in an overhead environment:
 - 1) A slate and pencil; and
 - 2) Redundant underwater lights, knives, and line reels as deemed appropriate by the LD.
- 4.8.3 Training and Proficiency. Cave diving certification from a nationally or internationally recognized diver training agency
- 4.8.4 Diving Procedures.
- A. Overhead obstruction diving shall not be conducted at depths greater than 100 feet.
 - B. Redundant equipment required by the LD shall be inspected.
 - C. All divers shall exit the area beneath the overhead obstruction for the remainder of the dive once the first diver reaches 1000 psi of breathing gas remaining in their cylinder.

4.9 Cold-Water Diving

- 4.9.1 General.
- A. Definition. Dives conducted in water temperatures colder than 50° F.
 - B. Due to the increased risks associated with cold water diving, such operations must be carefully planned and executed and pre-approved by the DSO.
 - C. Dives conducted in water temperatures colder than 50° F have the potential for regulator freeze-up.
- 4.9.2 Required procedures. When conducting cold water dives, divers shall adhere to the following:
- A. When preparing for a cold water dive, keep SCUBA cylinders and regulators in a place sheltered from the cold until just before starting the dive.
 - B. Open the SCUBA cylinder control valve for 1 or 2 seconds to make sure there are no water droplets or small ice crystals. Also check the inlet opening of the regulator.
 - C. For repetitive dives, take particular care to ensure the SCUBA regulator is completely dry before starting the second dive.
 - D. Avoid breathing from the regulator prior to immersion.
 - E. As much as possible, try to prevent water from entering inside the second stage during the dive.
 - F. Never operate the purge button unless underwater.
 - G. Use the purge button as little as possible. In any case, never hold it down for more than 2 or 3 consecutive seconds; pressing it for longer may cause ice to form.
 - H. Breathe normally in order to minimize the cooling effect produced by the higher air velocity during over breathing.

4.10 Offshore Platform Diving

- 4.10.1 General. This section covers any diving environment when the diver is physically beneath an offshore platform.



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4.10.2 Diving Procedures.

- A. A safety observer assigned and located on the platform.
- B. Prior to diving, platform personnel shall be notified to ensure there are no operations or tools that will pose the risk of falling onto the diver (crane ops, tool boxes, etc).
- C. Prior to diving all acoustic or other energy emitting operations and suction from or discharges to the sea from the platform shall cease (sea chests, sewage, sonar, etc.). Reasonable exceptions may be granted by the LD, provided all divers are aware of the exceptions and their locations.

4.11 Diving Near Known Unexploded Ordinance

4.11.1 General. Interacting with unexploded ordinance is outside the scope of the BSEE Diving Program and is not authorized. BSEE divers shall not intentionally touch, move, bury, or in any other fashion interact with unexploded ordinance. This section only addresses the safety buffer zones BSEE divers shall maintain in the vicinity of unexploded ordinance and the reporting of the discovery of unexploded ordinance.

4.11.2 Safety Buffer Zones.

- A. Divers shall maintain a distance of at least 10 feet from unexploded ordinance with non-explosive projectiles (i.e., pistol, rifle, or machine gun ammunition); and
- B. Divers shall maintain a distance of at least 100 feet from unexploded ordinance with explosive projectiles or warheads (i.e., bombs, artillery shells, rockets, missiles, mines, or grenades).

4.11.3 Reporting. When found during a dive, divers should signal their dive buddies and any other divers to the presence of unexploded ordinance and immediately proceed outside the appropriate buffer zone. Once on the surface, divers should notify the LD of the location and type of unexploded ordinance present at the dive site.

4.12 Contaminated Water Diving

Diving in water contaminated with hazardous biological, chemical, or radioactive pollutants requires specialized training, equipment, and diving protocols; and is outside the scope of the BSEE Diving Program and is not authorized. Until such time that these elements are established, BSEE divers are prohibited from diving in contaminated water. Qualified contract divers should be hired to dive in these conditions.



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SECTION 5: DIVING EQUIPMENT

5.1 General Policy

5.1.1 Operation and Maintenance.

- A. In accordance with DOI policy, equipment must be professionally inspected annually.
- B. Equipment shall be operated and maintained in accordance with the manufacturer's recommendations.
- C. Equipment shall be regularly examined by the person using it prior to diving.
- D. Equipment shall be free of corrosion and deterioration that may impede its intended use
- E. Equipment repair, test, calibration or maintenance service shall be recorded by means of a tagging or logging system, and shall include the date, nature of work performed, and the name or initials of the person or company performing the work.
- F. Equipment subjected to extreme usage under adverse conditions requires more frequent testing and maintenance.
- G. Equipment shall be stored in a secure, properly ventilated space free of noxious fumes and corrosive elements.
- H. The BSEE Diving Program shall be afforded sufficient space to properly maintain and organize all diving equipment.
- I. An inventory of BSEE issued diving equipment shall be conducted annually.

5.2 Support Equipment

5.2.1 Emergency Oxygen Kits.

- A. A positive-pressure ventilator and a bag-type manual resuscitator with transparent mask or equivalent capable of ventilating an unconscious victim shall be available at the dive location.
- B. Oxygen regulators must be capable of supplying oxygen to two individuals simultaneously, one via a demand/positive pressure regulator and the other via a non-return, free-flow mask.
- C. Sufficient quantity of oxygen to supply two divers for:
 - 1) The time required to transport them to a higher-level medical care facility; or
 - 2) 12 hours, whichever is less.
- D. The regulator and Elder valve positive pressure/demand regulators used to deliver oxygen shall be tested annually to ensure delivery pressure is within the manufacturer's specifications.
- E. Oxygen kits shall be checked before every day of diving.

- 5.2.2 First Aid Kits. A first aid kit appropriate for the dive location and approved by the DSO shall be available at the dive location.

5.3 Open-Circuit SCUBA Diving Equipment

5.3.1 Minimum Equipment Requirements.

- A. Unless approved by the DSO, each diver shall be provided standardized diving equipment.
- B. At a minimum, all BSEE active divers are required to use the following BSEE issued dive equipment when conducting official duty dives, unless specifically approved by the DSO:
 - 1) A primary breathing gas supply and regulator;
 - 2) A redundant second stage regulator on the primary cylinder(s) for air sharing;



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- 3) A submersible pressure gauge for each independent cylinder, readable by the diver during the dive;
 - 4) A face mask;
 - 5) A snorkel;
 - 6) A buoyancy compensation device;
 - 7) A weight system capable of quick release;
 - 8) A knife or other cutting device;
 - 9) A pair of swim fins;
 - 10) A timekeeping device;
 - 11) A depth gauge;
 - 12) Thermal protection appropriate for the conditions; and
 - 13) A whistle or other sound producing device.
 - 14) DSO approved dive tables (PADI, NAUI, NOAA, USN, etc.)
 - 15) A dive computer approved by the DSO may be substituted for the timekeeping device, and depth gauge.
 - 16) A redundant dive computer approved by the DSO may be substituted for the DSO approved dive tables.
- C. The same equipment is required if diving with a full face mask and/or drysuit.
- 5.3.2 Regulators.
- A. SCUBA regulators shall be inspected, serviced and tested by a qualified technician prior to first use and every 12 months thereafter.
 - B. Regulators shall consist of a primary first and second stage, an alternate second stage, and a submersible pressure gauge.
- 5.3.3 Buoyancy Compensator Devices.
- A. Buoyancy Compensator Devices (BCD) shall be worn on all dives utilizing SCUBA.
 - B. BCDs shall enable the diver to achieve positive buoyancy during a dive, including at the surface, and be configured with a manually-activated inflation source, an oral inflation assembly, and an exhaust valve.
 - C. The inflation assembly shall be serviced every 12 months from the date of issue.
 - D. BCDs shall not be used as a lifting device in lieu of lift bags.
- 5.3.4 Maintenance Requirements. All BSEE Diving Program equipment shall be serviced/calibrated annually at a minimum or more often if stated in a piece of equipment's service manual.
- 5.3.5 Use of BSEE-Issued Diving Equipment Off-Duty.
- A. General.
 - 1) In order to maximize the safe conduct of diving operations, BSEE divers are required to regularly train to maintain a high level of proficiency through the performance of diving activities on a routine basis.
 - 2) In recognition of the important benefits of regular dive training with a uniform set of diving equipment, BSEE divers may, with the approval of the DSO, use BSEE-issued diving equipment on off-duty dives for the purpose of maintaining diving proficiency. Such training helps maintain familiarity with the controls and function of the equipment, develop muscle memory needed to react automatically during emergencies, and promote physical fitness.
 - B. Minimum Requirements.
 - 1) BSEE divers shall be currently authorized to dive. Divers whose diving proficiency has lapsed may participate in the off-duty program for the purpose of obtaining reauthorization, with DSO approval.



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- 2) Prior to using BSEE-issued diving equipment on off-duty dives, each diver must sign and comply with a Property Pass (form DI-1934) which will remain valid until December 31 of the year in which they are signed. Copies of these documents, with original signatures, will be maintained by the DSO.
- C. Authority for the use of BSEE-Issued Diving Equipment Off-Duty.
- 1) Authority for allowing the off-duty use of BSEE-issued diving equipment rests with the DSO.
 - 2) The Diving Program Manager, DSO, or RDO may revoke approval for participation in this program for cause, at any time.



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SECTION 6: MEDICAL STANDARDS

6.1 Medical Examinations

6.1.1 General Information.

- A. Requirements for both the initial and periodic physical exams may be found in the [DOI Occupational Medicine Program Handbook](#).

6.1.2 Examination Types, Timing and Frequency of Medical Examinations.

- A. Examination types
 - 1) An initial medical examination is required of all new applicants for dive certification as well as for all BSEE divers whose certification has lapsed for more than 12 months.
 - 2) Periodic medical examinations are required of all active BSEE divers.
- B. Examination frequency shall be in accordance with the DOI Occupational Medical Program Handbook or more frequently as desired or necessary.

Years of Age	Periodic physical exam interval
< or = 39	3
40-44	2
45+	1

6.2 Reporting Changes in Medical Condition

6.2.1 Requirements.

- A. Divers are responsible for immediately reporting information concerning changes to their medical qualifications for diving duty.
- B. Any new medical condition other than minor acute episodic illness since completion of the diver's last history and/or physical must be reported immediately to the DSO. This includes any surgery, no matter how complex, hospitalizations, fractures, or other injuries to bone or joint.
- C. Once treatment is completed, the diver must obtain a letter releasing him/her from treatment and supply that letter to the DSO.

6.2.2 Consequences of Non-Disclosure.

- A. Any evidence of either nondisclosure or falsification of medical information shall result in suspension of diving certification pending investigation by the DCSB.
- B. If the investigation reveals that the diver intentionally withheld or falsified information, his/her diving certification may be summarily terminated.

6.3 Lapsed Dive Physicals

6.3.1 Expiration of Diving Physicals.

- A. Periodic physical exams expire 12, 24, or 36 months from the date the physical exam was performed based on the age of the diver (Section 6.1.2).
- B. If a diver's physical has lapsed for less than 12 months, they must submit a completed periodic physical with all required tests to the UMO for assessment of fitness to dive (the DSO shall be notified).
- C. If a diver's physical has lapsed for 12 months or longer, they shall be required to submit an initial physical with all required tests. The chest x-ray shall only be required at the discretion of the UMO (the DSO shall be notified).

6.3.2 Expiration of the periodic physical exam shall result in temporary suspension of diving privileges per Section 3.



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6.4 Funding for BSEE Diving Physical Examinations

6.4.1 General.

- A. In order to maximize the safe conduct of diving operations, BSEE divers are required to meet initial and periodic medical and fitness standards for diving.
- B. In recognition of the important benefits of being medically and physically fit to dive, BSEE divers are authorized to use government funds to cover costs associated with obtaining physical examinations to include a voluntary drug test for diving purposes.

6.4.2 Eligibility. In order to use government funds for the purpose of obtaining diving physical examinations, individuals must be BSEE employees, currently certified as BSEE divers, or approved to obtain BSEE diving certification, either initially or in a recertification program.

6.4.3 Authority for Approving Government Funding of BSEE Diving Physicals Exams. Final authority to expend government funds for the purpose of obtaining diving physical examinations rests with the appropriate DSO.



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SECTION 7: NITROX DIVING

7.1 General

The following guidelines address the use of Nitrox by Active Divers under BSEE auspices. For these standards, Nitrox is defined as any gas mixture being comprised of an oxygen concentration higher than 22 percent by volume. Only certified Active Divers (Section 3.1) diving under BSEE auspices or under the authority of a recognized reciprocity organization are eligible to use Nitrox.

7.2 Requirements for Authorization to Use Nitrox

7.2.1 Authorization to Use Nitrox.

- A. Upon DSO verification of a Nitrox certification from a nationally or internationally recognized diver training agency; and
- B. A minimum of two supervised open-water dives is required prior to using Nitrox.

7.3 Dive Personnel Requirements

7.3.1 Active Diver. Prior to the dive, it is the responsibility of each diver to analyze and log the oxygen content of their SCUBA cylinder.

7.3.2 Lead Diver.

- A. On any dive during which Nitrox will be used by any BSEE diver, the LD should be authorized to use Nitrox, and hold appropriate authorizations required for the dive, as specified in this Manual.
- B. The LD shall:
 - 1) As part of the dive planning process, verify that all divers using Nitrox on a dive are properly qualified and authorized.
 - 2) As part of the pre-dive procedures, confirm with each diver the oxygen percentage of the gas the diver is using, and establish maximum operating depth and time limits, according to the shortest time limit or shallowest depth limit among the divers.
 - 3) Reduce the maximum allowable PO₂ exposure limit for the dive if on-site conditions so indicate.

7.4 Nitrox Diving Equipment

7.4.1 General.

- A. All designated equipment and stated requirements regarding SCUBA equipment required in this Manual should apply to Nitrox SCUBA operations.
- B. Additional minimal equipment necessary for Nitrox diving operations includes labeled SCUBA cylinders, oxygen analyzers, and a Dive Computer for Nitrox.

7.4.2 Other Support Equipment.

- A. All Nitrox mixtures shall be analyzed using an oxygen analyzer capable of reading a scale of 0 to 100 percent oxygen, within 1 percent accuracy.
- B. All diver and support equipment should be suitable for the fraction of oxygen (FO₂) being used.



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SECTION 8: STAGED DECOMPRESSION SCUBA DIVING

TO BE DEVELOPED.

(Prohibited activity until developed and approved by the DCSB.)



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SECTION 9: MIXED GAS DIVING

TO BE DEVELOPED.

(Prohibited activity until developed and approved by the DCSB.)



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SECTION 10: REBREATHERS

TO BE DEVELOPED.

(Prohibited activity until developed and approved by the DCSB.)



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SECTION 11: EMERGENCY PROCEDURES

11.1 Dive Accident Management

11.1.1 General.

- A. Dive accident management includes accident prevention and the development of an Emergency Management Plan and procedures for the emergency care of victims after an accident.
- B. Diving accident management involves:
 - 1) Stabilization of life sustaining functions;
 - 2) Administering oxygen; and
 - 3) Contacting medical personnel and suggested services for assistance and advice.
- C. The LD shall have the ultimate on-site authority for management of diving related accidents and injuries.

11.1.2 Medical Consultation. Medical advice shall be sought from a qualified health care provider at the first sign or report of a hyperbaric related injury or illness.

11.2 Emergency Protocols

11.2.1 Medical Instructions for Conscious Patients. The following procedures should be used for the treatment of a conscious diver:

- A. Check ABC's;
- B. Administer 100 percent oxygen;
- C. Remove exposure suit, dry patient, and keep warm;
- D. Place patient in position of comfort;
- E. Take vital signs every 5 minutes if unstable and every 15 minutes if stable;
- F. Gather dive history info from diver, buddy and/or eyewitnesses;
- G. Perform field neurological exam;
- H. Contact Emergency Medical Services (EMS) as soon as possible;
- I. Administer 0.5 liters of water orally per hour for 2 hours, and then reduce to 100-200 milliliters (ml) per hour thereafter.

11.2.2 Medical Instructions for Unconscious Patients. The following procedures may be used for the treatment of an unconscious diver:

- A. Check ABC's;
- B. Administer 100 percent oxygen;
- C. Remove exposure suit, dry patient, and keep warm;
- D. Place patient on their left side with the right thigh and knee drawn up;
- E. Take vital signs every 5 minutes if unstable and every 15 minutes if stable;
- F. Gather dive history info from dive buddy and/or eyewitnesses;
- G. Perform field neurological exam;
- H. Contact EMS as soon as possible.

11.2.3 Post-Treatment Procedures.

- A. Repeat neurological exams should be conducted at the conclusion of treatment followed by additional exams 1 and 6 hours following treatment and intervals of 6 hours thereafter until diver is seen by a physician.
- B. Patients treated for Type I decompression sickness symptoms with complete resolution will be advised to report to a medical facility for medical examination upon completion of the recompression treatment.
- C. Immediate transportation of the patient to a medical facility for medical examination following hyperbaric treatment is required when:
 - 1) Directed by the consulting DMO;



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- 2) Treatment was for Type II or AGE symptoms, or;
- 3) Residual symptoms continue after treatment.

11.2.4 Temporary Suspension from Diving. Divers treated for any pulmonary barotrauma or decompression related illness shall not engage in diving activities involving hyperbaric exposures until approved (in writing) by a diving medical physician or the UMO.



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SECTION 12: RECORDKEEPING AND REPORTING REQUIREMENTS

12.1 Recordkeeping

- 12.1.1 General. The DSO (RDO if applicable) shall maintain records for each certified Active Diver including, but not limited to:
- A. Evidence of certification level;
 - B. Training;
 - C. Log sheets;
 - D. A copy of the physician's recommendation that the individual is fit to dive;
 - E. Reports of disciplinary actions by the DCSB;
 - F. First aid, CPR, including adult AED, and oxygen delivery certifications; and
 - G. Other pertinent information deemed necessary by the DCSB.
- 12.1.2 Dive Plans. The DSO shall maintain a copy of all approved dive plans.
- 12.1.3 Logging of Dives.
- A. The BSEE Dive Log must be used to log all duty dives and maintained on site.
 - B. All BSEE divers are required to log all official dives and are encouraged to log all non-duty dives. Dive logs shall be tabulated on an annual basis.
 - C. Non-duty dives performed to fulfill diving proficiency requirements shall also be logged so long as the diver has submitted a dive plan and it has receive approval from the DSO (RDO if applicable).

12.2 Reporting Diving Incidents

- 12.2.1 General.
- A. With the exception of incidents that reach the severity necessary to require a Serious Accident Investigation (SAI) as defined in 485 DM 7, All diving related incidents shall be investigated, documented and reported to the Deputy Director via the DCSB.
 - B. The incident shall be recorded on the BSEE Diving Incident Report Form (see Appendix 9).
- 12.2.2 Serious Accidents.
- A. Per the Departmental Manual (485 DM 7) the Bureau Designated Agency Safety and Health Official (DASHO) is responsible to ensure all Serious Accidents are investigated using the procedures for a Serious Accident Investigation (SAI).
 - B. A serious accident is a Departmental-related accident as a result of an employee action or Departmental condition or activity which results in:
 - 1) One or more job-related fatalities or imminently fatal injuries or illnesses to employees, volunteers, contractors, emergency fire fighters, or the public, or
 - 2) Three or more employees, volunteers, contractors, emergency fire fighters, or public individuals hospitalized, or
 - 3) Property damage (including site mitigation or cleanup) and/or an operating loss of \$250,000 or more, or
 - 4) Consequences that a Bureau (DASHO) judges to warrant further investigation using the "serious accident investigation" procedures.
- 12.2.3 Reportable Diving Injuries.
- A. Must be of a lesser severity than a Serious Accident as defined in Section 12.2.2.B.
 - B. BSEE shall record and report occupational injuries and illnesses in the DOI Safety Management Information System (SMIS) database.



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- C. If pressure related injuries are suspected, or if symptoms are evident, the following additional information shall be recorded and retained with the record of the dive for a period of 5 years by the DSO:
 - 1) BSEE Dive Incident Report form, and
 - 2) Written descriptive report to include:
 - a) Name, address, phone numbers of principal parties involved;
 - b) Summary of experience of divers involved;
 - c) Location, description of dive site, and description of conditions that led up to incident;
 - d) Description of symptoms, including depth and time of onset;
 - e) Description and results of treatment;
 - f) Disposition of case; and
 - g) Recommendations to avoid reoccurrence of similar incident.
- D. Examples of reportable diving injuries include:
 - 1) Injuries requiring hyperbaric therapy (e.g., decompression sickness and lung overexpansion injuries); and
 - 2) Injuries requiring hospitalization of 24 hours or more, medical care beyond basic first aid, or that impair an individual's ability to dive for more than 48 hours.
- E. Reporting Procedures.
 - 1) Divers shall:
 - a) Notify the LD immediately at the first sign or symptom of any injuries sustained during diving operations;
 - b) Notify immediate work supervisor; and
 - 2) LDs shall immediately notify their respective DSO/RDO of the reportable injury and fill out the BSEE Diving Incident Report Form.
 - 3) DSO/RDO shall:
 - a) Immediately notify the Diving Program Manager and the BSEE Safety and Occupational Health Manager of the reportable injury;
 - b) Record the injury in the SMIS; and
 - c) Submit a detailed analysis and report of the reportable injury to the Diving Program Manager within 7 calendar days of receipt of report.
 - 4) Diving Program Manager shall:
 - a) Review the report for completeness and any immediate mitigation actions required to prevent a similar event from occurring; and
 - b) Forward copies of the report to the members of the DCSB within 7 calendar days;
 - c) Consolidate comments received from the DCSB members;
 - d) Obtain consensus from the DCSB of any corrective actions required;
 - e) Discuss incident and corrective actions and develop and track corrective actions determined by the DCSB.
 - f) Forward copy of report, consolidated comments, and corrective actions to the Deputy Director for review.

12.2.4 Reportable Diving Incidents Not Involving Injuries.

A. General.

- 1) Occasionally incidents occur that do not involve reportable injuries, but warrant awareness by BSEE officials. Examples include, but are not limited to:
 - a) Diving equipment malfunction or failure;
 - b) "Near miss" or "close call" incidents that could have resulted in a fatality or serious injury to a diver or topside support personnel;
 - c) Any action that jeopardized a diver's safety or that of a dive buddy; or
 - d) Evidence of poor judgment by a BSEE diver or supervisor.
- 2) Any near miss incident shall be treated and investigated as if it were a serious injury.



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B. Reporting Requirements.

- 1) It is the duty and responsibility of anyone experiencing or observing a diving related incident, such as one of those listed above, to immediately report the incident to the LD.
- 2) The LD will report the incident to the DSO within 24 hours of the occurrence.
- 3) The DSO, if warranted, will initiate a safety "stand-down" to review the incident and determine: what happened, why it happened, what corrective actions are needed to mitigate a similar incident, and if and when dive operations can resume.



LIST OF ACRONYMS

AED	Automated External Defibrillators
AGE	Arterial Gas Embolism
ATA	Atmospheres Absolute
BCD	Buoyancy Compensator Devices
BSEE	Bureau of Safety and Environmental Enforcement
CFR	Code of Federal Regulations
CNS	Central Nervous System
CPR	Cardiopulmonary Resuscitation
DAN	Divers Alert Network
DCS	Decompression Sickness
DOI	U.S. Department of Interior
DSO	Diving Safety Officer
DUI	Diving Unlimited International
EAD	Equivalent Air Depth
EMS	Emergency Medical Services
END	Equivalent Narcotic Depth
FECA	Federal Employee Compensation Act
FSW (fsw)	Feet of seawater (or equivalent static pressure head)
HIPAA	Health Insurance Portability and Accountability Act
IANTD	International Association of Nitrox and Technical Diving
LD	Lead Diver
LOR	Letter of Reciprocity
MD	Medical Doctor (Physician)
MOD	Maximum Operating Depth
NAUI	National Association of Underwater Instructors
DCSB	Diving Control and Safety Board
DSO	Diving Safety Officer
NDSTC	Navy Diving and Salvage Training Center
NEDU	Navy Experimental Dive Unit
NOAA	National Oceanic and Atmospheric Administration
NP	Nurse Practitioner
OSHA	Occupational Safety and Health Administration
PA	Physician's Assistant
PSI (psi)	Unit of pressure, "pounds per square inch"
PSIG (psig)	Unit of pressure, "pounds per square inch gauge"
REPEX	Repetitive Excursion
SCUBA	Self-Contained Underwater Breathing Apparatus
SMB	Surface Marker Buoy
UMO	Undersea Medical Officer
USC	United States Code
USN	U.S. Navy



DEFINITIONS

Active Divers: Scientists or scientists-in-training certified by BSEE to dive and perform work in a hyperbaric environment in support of BSEE’s mission as governed by Section 1.2..

Air Sharing: Joint use of a single air supply between divers who are using independent second stages.

Arterial Gas Embolism (AGE): Gas bubbles in the bloodstream by gas entering the blood mechanically as a result of pulmonary barotrauma. Pulmonary barotrauma is a rupturing of the lungs by internal over-pressurization caused by the expansion of air held in the lungs on depressurization such as: a scuba diver ascending while holding the breath.

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.

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

Buddy Breathing: Two divers sharing a single air source from a single second stage.

Buddy Diver / Buddy System: A second comparably equipped SCUBA diver in the water in constant visual or physical contact and ready to render immediate assistance in an emergency.

Controlled Ascent: Any one of several kinds of ascents including normal, swimming, and air sharing 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.

Decompression Illness (DCI): Describes a collection of symptoms arising from decompression of the body caused by two different mechanisms, which result in overlapping sets of symptoms. The two mechanisms are decompression sickness (DCS) and arterial gas embolisms (AGE).

Decompression Sickness (DCS): A condition with a variety of symptoms, which may result from gas 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.

Dive: A dive is defined as the time spent breathing compressed gas underwater or in a hyperbaric chamber and is considered completed when an individual returns to surface pressure and remains for a minimum of 10 minutes.

Dive Computer: A microprocessor based device which computes a diver’s theoretical decompression status in real time by using pressure (depth), breathing gas composition, 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 Plan: Written details concerning the dive to be performed including personnel and operational information.

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

Diving Control and Safety Board: A board of representatives within BSEE whose minimum composition shall be the Diving Program Manager, Diving Safety Officer, Regional Diving Officers, BSEE Safety and Occupational Health Manager, and other members as needed/appointed who report to the Deputy Director, but retain autonomous and absolute authority over and promote the safe and effective operations of the BSEE Diving Program.

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

Diving Program Manager: Individual responsible for managing the day-to-day affairs of the BSEE Diving Program and serving as the ranking BSEE diving official for matters relating to the interpretation and application of the BSEE diving regulations, policies, and procedures.

Diving Safety Officer (DSO): Individual responsible for monitoring the safe conduct of the diving program, provides advice to the DCSB and senior BSEE management on diving safety and health related issues, and manages and directs the operational aspects of the diving program.

Enriched Air Nitrox (EANx): A name for a breathing mixture of air and oxygen when the percentage of oxygen exceeds 21 percent. This term is considered synonymous with the term "Nitrox."

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

F_O₂: Fraction of oxygen in a gas mixture by volume, expressed as either a decimal or percentage.

FSW: Feet of seawater, or equivalent static head.

Hyperbaric Chamber: A pressure vessel for human occupancy also called a compression chamber or recompression chamber.

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

Lead Diver: Active Diver with experience and training to direct and oversee diving activities.

Mixed Gas: A gas mixture containing proportions greater than 1 percent by volume of an inert gas other than nitrogen.



Mixed-Gas Diving: A diving mode in which the diver is breathing a gas mixture containing proportions greater than 1 percent by volume of an inert gas other than nitrogen.

MOD: Maximum Operating Depth, usually determined as the depth at which the PO₂ for a given gas mixture reaches a predetermined maximum.

Nitrox: Any gas comprised predominately of nitrogen and oxygen, most frequently containing between 21 percent and 40 percent oxygen by volume.

No-decompression Limits: A series of relationships between time and depth below which, either through a shallower depth or less time, a diver may make a safe direct ascent to the surface.

Normal Ascent: An ascent made with an adequate gas supply at a rate of 30 feet per minute or less.

Oxygen Clean: A physical condition of diving equipment in which all combustible contaminants have been removed.

Oxygen Compatible: A gas delivery system that has components (o-rings, valve seats, diaphragms, etc.) that is 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.

PO₂: Inspired partial pressure of oxygen, usually expressed in units of atmospheres absolute.

Proficiency Dives: Dives performed solely for the purpose of maintaining previously acquired diving skills.

PSI (Pounds per Square Inch): A measurement of pressure which does not include the pressure of the atmosphere. PSI at the earth's surface is zero.

PSIG (Pounds per Square Inch Gauge): A measurement of pressure which includes ambient pressure.

Reciprocity Divers: Non-BSEE divers, employed by organizations, agencies, and institutions with which BSEE has established official agreements for the purpose of conducting collaborative diving operations.

Scientist: An individual who utilizes scientific expertise to perform BSEE dives without direct or indirect supervision or guidance from a more qualified individual as determined by the on-site Lead Diver (LD).

Scientist In-Training: An individual who utilizes scientific expertise to perform BSEE dives under the direct or indirect supervision or guidance of a scientist and/or with approval of the on-site LD.



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

Standby Diver: A diver at the dive location appropriately equipped and able to enter the water to assist a diver within one minute.

Surface Supplied Diving: A diving mode 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.

Training Dives: Dives performed solely for the purpose of acquiring new, or re-learning previously acquired, diving skills.



BSEE <u>CONFINED</u> WATER DIVER EVALUATION				
Diver's Name		DSO/ RDO Evaluator		Date
FITNESS / SWIM TEST (NO SWIM AIDS)			YES	NO
1.	Swim 25 yards (22 meters) underwater without surfacing.			
2.	Swim 500 yards (457 meters) in less than 12 minutes.			
3.	Tread water for 15 minutes or 3 minutes without hands.			
4.	Transport another person in water for 25 yards(22 meters).			
DIVER SAFETY AND RESCUE SKILLS (IN SCUBA GEAR)				
<i>Surface Skills</i>			YES	NO
1.	Enter water with full equipment.			
2.	Simulate the rescue of a distressed/tired diver at the surface and transport the diver a distance of the pool.			
3.	Simulate the rescue of a distressed/panicked diver at the surface and transport the diver the distance of the pool.			
4.	Simulate rescue of an unconscious non-breathing diver at the surface and transport the diver the distance of the pool while simulating rescue breathing.			
<i>Underwater Skills</i>			YES	NO
1.	Clear face mask; demonstrate ability to remove and replace equipment while submerged.			
2.	Simulate an out of air situation and buddy breath the length of the pool and come to the surface. Repeat this using an alternate air source.			
3.	Simulate the rescue of a distressed diver on bottom, assist diver to the surface and transport the length of the pool.			
4.	Simulate the rescue of an unconscious non-breathing diver on the bottom and transport diver to the surface and the distance of the pool while simulating rescue breathing.			
5.	Demonstrate understanding of underwater hand and light signs and signals.			
6.	Demonstrate watermanship ability, which is acceptable to instructor.			



BSEE OPEN WATER DIVER EVALUATION

Diver's Name	DSO/ RDO Evaluator	Date

EVALUATION CRITERIA		YES	NO
1.	Surface dive to a depth of 10 feet 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 yards while wearing SCUBA gear, but not breathing from the SCUBA unit.		
5.	Demonstrate judgment adequate for safe diving.		
6.	Demonstrate, where appropriate, 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 the techniques of buddy rescue.		
11.	Navigate underwater.		
12.	Plan and execute a dive.		
13.	Successfully complete 5 open water dives for a minimum total time of 3 hours, of which 1-1/2 hours cumulative bottom time must be on SCUBA. No more than 3 training per day. All prospective divers will complete their first five dives with the DSO, or an Active Diver designated by the DSO		

Dive #	Dive Site	Time In	Depth	Total Time
1				
2				
3				
4				
5				



BSEE DIVE PLAN				
<i>Location, Purpose and Objectives:</i>			<i>Date(s) of Dive Operations:</i>	
			<i>BOEM/BSEE Study #:</i>	
<i>Diving Organizer(s)/Planner(s):</i>				
<i># of Dives each day:</i>			<i>Anticipated Max Depth:</i>	
Day 1 ___ Day 2 ___ Day 3 ___ Day 4 ___ Day 5 ___ Day 6 ___ Day 7 ___ Day 8 ___ Day 9 ___ Day 10 ___				
<i>Anticipated hazardous conditions.</i>				
<i>Lead Diver:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
DIVE VESSEL INFO				
<i>Vessel Name:</i>	<i>Owner: (if different from Captain)</i>	<i>Captain Name:</i>	<i>CG License #:</i>	
<i>Address:</i>	<i>Address:</i>	<i>Address:</i>	<input type="checkbox"/> <i>Float Plan Attached</i> <input type="checkbox"/> <i>Emergency Management Plan Attached</i>	
<i>Phone:</i>	<i>Phone:</i>	<i>Phone:</i>		
Submitted By:		Reviewed By:		Decision:
				<input type="checkbox"/> <i>Approved</i> <input type="checkbox"/> <i>Disapproved</i>
<i>Date:</i>		<i>Date:</i>		



BSEE DIVE PLAN (Additional Diver Continuation Page)				
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>
<input type="checkbox"/> <i>BSEE</i> <input type="checkbox"/> <i>Reciprocity</i> <i>Diver Name:</i>	<i>Authorizations:</i> <input type="checkbox"/> <i>Full Face Mask</i>	<input type="checkbox"/> <i>Nitrox</i>	<input type="checkbox"/> <i>Drysuit</i>	<input type="checkbox"/> <i>Other (list below):</i>



BSEE EMERGENCY MANAGEMENT PLAN

REQUIRED CONTACT INFORMATION

Diver's Alert Network (DAN), Duke University Medical Center: 24 hrs (919) 684-8111 / Office (919) 684-2948

Marine Emergency Distress: 2182 kHz or Channel 16 – say "PAN PAN PAN" and then message / Telephone: 911

Nearest U.S. Coast Guard Unit	<i>Name & Address:</i> <input type="checkbox"/> <i>Map Attached</i>	<i>24 hr phone #:</i>
Closest Operational Hyperbaric Chamber <input type="checkbox"/> <i>verified operational 24 hrs prior to dive</i>	<i>Name & Address:</i> <input type="checkbox"/> <i>Map Attached</i>	<i>24 hr phone #:</i>
Closest Diving Medicine Physician	<i>Name & Address:</i> <input type="checkbox"/> <i>Map Attached</i>	<i>24 hr phone #:</i>
Closest Accessible Hospital	<i>Name & Address:</i> <input type="checkbox"/> <i>Map Attached</i>	<i>24 hr phone #:</i>

<i>Date(s) and Dive Location(s):</i>	<i>BSEE Safety and Occupational Health Manager:</i> <i>Phone:</i>
--------------------------------------	---

Participant Name	Emergency Contact Name	Emergency Contact Number	Supervisor Name	Supervisor Number	DAN Mbr Number (if applicable)

<i>Approving DSO:</i>		
<i>Print:</i>	<i>Sign:</i>	<i>Date:</i>



BSEE FIELD NEUROLOGICAL EXAM		
Diver's Name	Lead Diver Examiner	Date / Time
<i>Describe symptoms (e.g. pain/numbness):</i>		
HISTORY QUESTIONS		ANSWERS
1.	Type of dive last performed:	
1.a.	Depth / Bottom Time:	
2.	Number of dives in the last 24 hours:	
3.	Were symptoms noticed before, during, or after a dive?	
3.a.	If during, was it while descending, on the bottom or ascending?	
4.	Have symptoms increased or decreased since first noticed?	
5.	Have any other symptoms occurred since what was first noticed?	
5.a.	If so, describe:	
6.	Has the patient ever had similar symptoms?	
6.a.	If so, when (describe):	
7.	Has the patient had decompression sickness or an air embolism before?	
7.a.	If so, when (describe):	
NEUROLOGICAL EXAM CHECKLIST		ANSWERS
<i>Mental Status and Consciousness</i>		
1.	Alert?	
2.	Can remember 3 unrelated words?	
3.	Can perform simple math in their head?	
4.	Knows the date, time, and place?	
{ Page 1: Continued on Next Page }		



BSEE FIELD NEUROLOGICAL EXAM (cont.)		
Diver's Name	Lead Diver Examiner	Date / Time
NEUROLOGICAL EXAM CHECKLIST (cont.)		ANSWERS
5.	Knows last meal.	
6.	Knows where they live.	
7.	Knows the name of the President.	
<i>Motor Function and Strength (Physically Check)</i>		
1.	Normal strength in upper extremities.	
2.	Normal strength in lower extremities.	
3.	Normal posture sitting and/or standing.	
4.	Able to bend and straighten at waist.	
5.	Noted deficiencies:	
<i>Cranial Nerves</i>		
1.	FACE: (Can they?) <ul style="list-style-type: none"> • Smile? • Frown? • Close eyes? • Raise eyebrows? • Show teeth? • Do both sides of the face move symmetrically? 	
2.	EYES: (Can/do they?) <ul style="list-style-type: none"> • See • Follow your finger? • Move together? • Have symmetrical pupils? • Pupils react to light? 	
3.	MOUTH: <ul style="list-style-type: none"> • Say "Ahhh" - Do uvula and soft palate raise? • Stick out tongue - Does it deviate to either side? - Can it move side to side? 	
{ Page 2: Continued on Next Page }		



BSEE FIELD NEUROLOGICAL EXAM (cont.)		
Diver's Name	Lead Diver Examiner	Date / Time
NEUROLOGICAL EXAM CHECKLIST (cont.)		ANSWERS
4.	HEARING: <ul style="list-style-type: none"> • Seems normal to them? • Hear quiet sounds? • Distinguish words? 	
5.	SHOULDERS / NECK: (Against resistance) <ul style="list-style-type: none"> • Shrug shoulders? • Turn head? 	
6.	Noted Deficiencies:	
<i>Sensory</i>		
1.	REPORTS OF: <ul style="list-style-type: none"> • Pain? • Numbness? • Tingling? • Hot / cold sensations? • An "odd feeling?" 	
2.	LIGHT TOUCH: Feels normal on all areas of the body?	
3.	SHARP / DULL SENSATION: Differentiates between sharp vs. dull sensation below the neck?	
4.	Noted deficiencies:	
<i>Balance and Coordination</i>		
1.	GAIT: <ul style="list-style-type: none"> • Normal walk? • Heel to toe forwards? • Heel to toe backwards? 	
2.	RHOMBERG: Stands easily? (eyes closed, feet together, arms out in front, palms up)	
{ Page 3: Continued on Next Page }		



BSEE FIELD NEUROLOGICAL EXAM (cont.)

Diver's Name	Lead Diver Examiner	Date / Time

NEUROLOGICAL EXAM CHECKLIST (cont.)		ANSWERS
3.	ALTERNATING MOVEMENT: <ul style="list-style-type: none">• Jog in place?• Alternate hand slaps?	
4.	Noted Deficiencies:	

Additional Comments

Large empty rectangular area for additional comments.



BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT - DIVING INCIDENT REPORT FORM

NOTE: This form shall be used by BSEE Dive Safety Officers (DSO's) and Divers to report serious diving related injuries including near-drowning, decompression sickness, gas embolism, lung overexpansion, or injuries that require hospitalization. Contact the BSEE Diving Safety Officer with questions about whether or not to report an incident.

I. GENERAL INFORMATION ON ACCIDENT VICTIM

DIVER NAME:	DATE & TIME OF INCIDENT:
LOCATION AND PROJECT:	CERTIFICATION LEVEL:
CURRENT MEDICATIONS:	CURRENT HEALTH PROBLEMS:

Non-BSEE divers complete this section. All other BSEE divers skip to the next section.:

AGE:	SEX: (M/F)	HIGHEST DIVE CERTIFICATION LEVEL:	CERTIFYING AGENCY:
# YEARS DIVING:	TOTAL # DIVES:	# DIVES LAST 6 MONTHS:	PREVIOUS DIVE INCIDENTS & DATE:

II. EQUIPMENT USED BY ACCIDENT VICTIM

BREATHING LOOP: <input type="checkbox"/> Open-Circuit <input type="checkbox"/> Semi-Closed / Closed Circuit <input type="checkbox"/> Surface Supplied <input type="checkbox"/> Snorkel	DIVER DRESS: <input type="checkbox"/> None/Dive Skin <input type="checkbox"/> Wet Suit thickness _____ <input type="checkbox"/> Dry Suit	DIVE CYLINDER TYPE AND SIZE: BREATHING GAS:	CYLINDER PRESSURE IN: CYLINDER PRESSURE OUT:	BSEE ISSUED EQUIPMENT? <input type="checkbox"/> YES <input type="checkbox"/> NO DIVER FAMILIAR WITH EQUIPMENT?
---	--	--	---	--

III. DIVE INFORMATION - Incident Dive

NAME - ON-SITE DIVERMASTER OR PROJECT LEAD DIVER:	AIR TEMP (°F):	WATER TEMP (°F):	DIV VIS (FT):	CURRENT SPEED (KTS):
NAME - DIVE BUDDY:	DIVE PURPOSE & LOCATION:			
DIVE BUDDY AFFILIATION: <input type="checkbox"/> BSEE <input type="checkbox"/> OTHER _____	DIVE PLATFORM:	SURFACE CONDITIONS:		
# DIVES, DAY OF INCIDENT:	# DIVES, PREVIOUS DAY:	TYPE OF DIVE: <input type="checkbox"/> Duty <input type="checkbox"/> Non-Duty	DIVE(S) CONDUCTED WITH: <input type="checkbox"/> Dive Tables <input type="checkbox"/> Dive Computer (Model _____)	
<input type="checkbox"/> YES <input type="checkbox"/> NO Was this dive typical of diver's normal type of diving? If NO, explain:				

List any problems encountered during Incident dive or previous dives:

IV. DIVE PROFILE(S) - Day of Incident

DIVE #	START TIME	MAX DEPTH (FT)	BOTTOM TIME (MIN)	END TIME	SURFACE INTERVAL (HR:MIN)	DECO STOP 1 (MIN)	SAFETY STOP 1 (MIN)	STOP PROFILE (DEPTH / TIME)	COLD OR ARDUOUS? (Y/N)	RAT AIGENT? (Y/N)	INCIDENT DIVE? (Y/N)
1.											
2.											
3.											
4.											
5.											
6.											

NOTE: Additional dive profiles for the day of the diving incident can be attached to this form.



V. EMERGENCY PROCEDURES

YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	Emergency oxygen available on-site?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	Dive accident management plan in place for dive site?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency scenarios (low on air, out of air, lost buddy, etc.) discussed with all divers prior to diving operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dive accident management plan reviewed by all divers and support persons prior to diving operations?

VI. SIGNS/SYMPTOMS & ON-SITE MEDICAL TREATMENT

DATE OF INJURY ONSET:	SIGNS, SYMPTOMS, AND LOCATION ON BODY:		
TIME OF INJURY ONSET:			
PRE-DIVE HEALTH, DESCRIBE:	FATIGUE/LACK OF SLEEP PRIOR TO DIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO	ALCOHOL CONSUMPTION, PREVIOUS 24 HRS:	STRENUOUS EXERCISE 8 HRS PRE OR 12 HRS POST DIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO
INJURIES SUSPECTED: <input type="checkbox"/> AGE <input type="checkbox"/> DCS <input type="checkbox"/> Other Barotrauma <input type="checkbox"/> None <input type="checkbox"/> Other _____	ON-SITE FIRST AID TREATMENT:		
	ON-SITE OXYGEN ADMINISTRATION: Delivery Method _____ Time Started _____ Time Stopped _____		
	INITIAL EMERGENCY CONTACT (NAME OF PERSON OR AGENCY):		TIME CONTACTED:
EMERGENCY TRANSPORT METHOD(S):		FIRST AID DURING TRANSPORT:	TIME TRANSPORT STARTED:

VII. MEDICAL INFORMATION - Hospital (Attach ALL ER, Hyperbaric Unit, and follow-up medical records)

HOSPITAL NAME AND LOCATION:		HOSPITAL TREATMENT:		ARRIVAL DATE AT ER:
				ARRIVAL TIME AT ER:
HYPERBARIC UNIT NAME AND LOCATION:		CHAMBER TYPE: <input type="checkbox"/> Monoplace <input type="checkbox"/> Multiplace	CHAMBER TREATMENT: #1 Time Started _____ Time Stopped _____ #2 Time Started _____ Time Stopped _____ #3 Time Started _____ Time Stopped _____	
TREATMENT TABLE / DESCRIPTION:		TABLE EXTENSIONS:	RE-TREATMENT TABLE / DESCRIPTION:	
DESCRIBE WHEN RELIEF FROM SYMPTOMS OCCURRED:	DESCRIBE ANY RESIDUAL SYMPTOMS AFTER TREATMENT:	DURATION OF RESIDUAL SYMPTOMS: _____ Days	FINAL DIAGNOSIS: <input type="checkbox"/> DCS I <input type="checkbox"/> AGE <input type="checkbox"/> Other: _____ <input type="checkbox"/> DCS II <input type="checkbox"/> Pulm. Barotrauma _____	

NOTE: A Diving Incident Report shall be completed by the Project Lead and Dive master and be submitted to their Dive Safety Officer within 10 days of the diving incident. This report shall consist of the following items:

1. Diving Incident Report Form
2. A cover memorandum providing a narrative of the diving incident, including a causal analysis and recommendations for prevention of future injuries.
3. Medical records associated with any medical treatment of injuries resulting from this incident.

The Dive Safety Officer shall submit the report, along with their own causal analysis and recommendations for prevention of future injuries to the Chair of the BSEE Diving Control Safety Board within 30 days of the incident

PRINTED NAME - DSO

SIGNATURE - DSO

DATE



Sample Trip Report

To: Chief, Environmental Enforcement Division

From: Diving Safety Officer

Subject: Trip Report for Diver Safety, Rescue Training, Diver Depth Re-certification

Background: The BSEE Scientific Dive Program's dive personnel are required to participate in openwater evaluation and diver rescue skills exercises annually. This training takes place at the beginning of each dive season, typically in April or May. The dives are conducted over two-three complete days and include a half day of rescue skills and accident management scenarios, a deep dive to 130 fsw (feet sea water) to evaluate diver's susceptibility to nitrogen narcosis, and two or three additional proficiency dives.

Purpose:

- To ensure safe diving practices and re-certify BSEE divers for the upcoming field season.

Objectives:

- Evaluate BSEE divers' proficiency underwater
- Re-certify BSEE divers to a depth of 130 fsw
- Re-familiarize BSEE divers with skills required for diver rescue and accident management

Methods: The methods of conducting these evaluations are described in Appendix 3 Openwater Evaluation, of the BSEE Dive Manual, and include the following exercises:

- Demonstrate proficiency in buddy breathing as both donor and receiver;
- Swim to a depth of 10 feet without scuba;
- Swim 400 yards on the surface in full scuba, but not breathing from it;
- Self rescue and buddy rescue skills (tired diver, panicked diver, distressed diver underwater, and unconscious diver underwater);
- Navigate underwater;
- Accident management (recover non-breathing victim from the bottom, bring to surface, establish buoyancy, evaluate victim, initiate emergency assistance, beginning rescue breathing while swimming victim back to boat, remove victim from water, evaluate on boat, begin CPR, administer O2).

Results: The Openwater Evaluation and Diver Rescue Skills trip was carried out from Monday, March 26 through Thursday March 29. The diver rescue skills and deep dive were completed on Tuesday, March 27. The accident management drill, including the entire victim recovery and administration of O2, took less than 10 minutes to complete.

The 130' dive was conducted at the Chevron Platform. All divers were evaluated for their susceptibility to nitrogen narcosis. The deep dive was conducted in two groups. The first group, led by [Name], Assistant Diving Safety Officer, included divers [Insert Diver Names]. This dive was completed successfully without incident.



The second group, led by [Name], Diving Safety Officer included divers [Insert Diver Names]. This dive was also completed without incident.

Three proficiency dives were completed on Wednesday, March 28. The first dive was carried out at a site known as the Russian Freighter. The second dive was completed at an artificial reef site known as the Merry-go-round Barge. The third and final dive of the trip was completed at the Navy wrecks site. All dives were completed successfully without incident.

Benefit to BSEE: The Openwater and Diver Rescue Evaluation dives benefits BSEE by ensuring that all divers are familiar with safe diving practices and have been given an opportunity to practice emergency procedures.



DATE: _____ LOCATION: _____ **BSEE DIVE LOG** AIR TEMP: _____ WATER TEMP: _____

MISSION: _____ WIND: _____ VISIBILITY: _____

VESSEL: _____ SEAS: _____ CURRENT: _____

DIVE MASTER:	DIVE # 1				DIVE # 2				DIVE # 3				TOTAL BOTTOM TIME
	DIVE SITE:				DIVE SITE:				DIVE SITE:				
DIVER NAME	TIME IN	DEPTH	TOTAL TIME	TASK	TIME IN	DEPTH	TOTAL TIME	TASK	TIME IN	DEPTH	TOTAL TIME	TASK	

NOTES:

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