

Humboldt State University

Diving Safety Manual

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Acknowledgment

The Scientific Diving Program at Humboldt State University came into existence solely through the efforts of Dr. John D. De Martini. He singularly developed University programs of underwater research and education. The quality and fervor of his projects and course offerings have generated enthusiasm and professional excellence in our students, staff and faculty. Dr. De Martini's meticulous and animated approach to diving and science exemplifies the optimum combination of diving safety and scientific inquiry.

Above all else, "Dr. D" imbued us with his deep love and appreciation of the natural world, and especially of the underwater realm. We are privileged to have been his students, colleagues and dive partners.

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Foreword

The *Humboldt State University Diving Safety Manual* has one objective:

Diver Safety.

The Manual combines the California State University (CSU), Humboldt State University (HSU), American Academy of Underwater Sciences (AAUS) and Federal Occupational Safety and Health Administration (OSHA) scientific and recreational diving standards. It must be stressed that all applicable standards or regulations in this manual shall be followed for any diving or hyperbaric exposure under the "auspices" of Humboldt State University (Section 1.11). Diving includes, but is not limited to, SCUBA, Surface-Supplied or Free Diving (Appendix 15, page 2) in a pool, confined or open water.

Additional standards and regulations may be established by the Humboldt State University Diving Control Board (DCB). It is the responsibility of individual divers and persons supervising them to comply with all HSU diving standards.

This Manual provides an administrative framework and the requisite supervision to facilitate safe diving operations, but diver safety ultimately depends on the comprehensive preparation, adequate experience and correct judgment of the individual diver. Diving is an "at risk" activity that could result in the injury or death of the diver. **Each person diving under the auspices of Humboldt State University must freely decide to participate and accept full responsibility for that decision and their personal safety.**

Contact the Diving Safety Officer (DSO) for interpretation of standards, assistance in planning and conducting scientific, leadership or recreational diving programs, for approval of diving conducted under the auspices of HSU, to receive University Diver certification and to request accommodations for persons with disabilities.

SECTION 1.00

Program Scope and Policy

1.10 Program Scope

1.11 HSU Auspices Defined

For the purposes of these standards, the auspices of Humboldt State University (HSU or University) includes any operation or activity in which the University is connected because of ownership of any equipment used, locations selected, or relationship with the individual(s) concerned. This includes operations involving employees of HSU or employees of auxiliary organizations, when such employees are acting within the scope of their employment. Students, staff, faculty, members of University recognized organizations and other persons who are engaged in authorized activities of the University are under the auspices of HSU.

Diving under the auspices of HSU includes, but is not limited to, any submersion (this includes in a pool, open or confined water), or hyperbaric exposure while breathing compressed gas or Free Diving (Appendix 15). University diving related activities conducted through the HSU Foundation, Lumberjack Enterprises, University Center, Extended Education, or any University, or University affiliated, unit, club, organization, program or course must be conducted in accordance with these standards and are considered under the auspices of HSU (See Section 9.70 for limited exemption for non-diver training of Free Diving in pool).

During training activities, students and divers are under the auspices of the University, from the beginning of the initial briefing until the end of the final debriefing of the dive day, when they are using University equipment, facilities, or they are in any other way under HSU auspices. The Lead Diver, with approval of the Diving Safety Officer, or the Diving Safety Officer can extend the period when divers under his/her supervision are considered to be under the auspices of the University.

1.20 Program Policy and Application

1.21 Purpose of Humboldt State University Diving Standards

The purpose of these diving standards is to ensure that all diving under the auspices (Section 1.11) of the Humboldt State University is conducted in a manner that will maximize protection of divers from accidental injury and/or illness, and to set forth standards for training and certification that will allow a working reciprocity between HSU and other organizations. These standards shall apply to scientific, recreational or instructional diving and shall comply with applicable current American Academy of Underwater Sciences (AAUS), California State University (CSU) and National Association of Underwater Instructors (NAUI) diving policies and standards as specified in the current editions of the AAUS *Standards for Scientific Diving Certification and Operation of Scientific Diving Programs*, the CSU *SCUBA Diving Certification and Operation of SCUBA Diving Programs Manual*, and the NAUI *Standards and Policies Manual*.

1.22 Application of Diving Standards

All diving, or related activity, under the auspices of HSU must be conducted in accordance with the standards and procedures set forth in the *Humboldt State University Diving Safety Manual* or other standards prescribed by the Humboldt State University Diving Control Board (DCB).

1.23 Deviation from Diving Standards

Any diver may deviate from the requirements of this manual to the extent necessary to prevent or minimize a situation that is likely to cause death, physical harm, or major environmental damage. A diver deviating from the HSU diving standards or procedures shall submit a written report to the Diving Safety Officer within five (5) working days of the event explaining the circumstances and justifications for the deviations.

In addition:

1.23.1 The diver(s) deviating from these standards shall immediately notify the Lead Diver or Instructor and the Diving Safety Officer. In no event shall this notification be delayed more than 48 hours.

The Lead Diver or Instructor shall submit a written report to the Diving Safety Officer within 72 hours of when they become aware of the standards violation.

1.23.3 The Diving Safety Officer shall report violations of standards to the Diving Control Board after receiving the written reports concerning the violations. The Diving Safety Officer's report will include a synopsis of

events, copies of the written reports and recommended action to be taken in response to the violation of standards.

1.24 Consequences of Standards Violation

Failure to comply with regulations of this manual may be cause for the revocation or restriction of the diver's HSU diver certification by action of the Diving Control Board. The Diving Control Board shall review each violation of standards and take appropriate action. A diver violating these standards shall have the right to appear before the Diving Control Board and explain the violation or appeal previous actions of the DCB (Section 1.25).

1.25 Suspension of Diver Certification and Appeal Procedures

The suspension or revocation of diving activities and diver certification shall follow the procedures described in Appendix 9, *Procedure for Suspending HSU Diver Certification and Diving Activities* and Section 4.60-Revocation of Diver Certification.

The appeal procedure is described in Appendix 10, *Review and Appeal of Diver Certification Suspension or Revocation*.

1.26 Program Standards and Assumption of Liability

In adopting the standards and procedures defined in this manual, HSU assumes no liability not otherwise imposed by law. Outside of those University employees diving in the course of their employment, each diver is assumed under this policy to be voluntarily performing activities for which they assume all risks, consequences and potential liability. The ultimate responsibility for safety rests with the individual diver. It is the diver's responsibility and duty to refuse to dive if conditions are unsafe or unfavorable, or if they would violate the precepts of their training or regulations in this manual.

All divers must sign the *CSU/HSU and NAUI Waiver, Release and Indemnity Agreement*, (Appendix 4) and the *Statement of Understanding of HSU Diving Standards and Diving Safety Manual* (Appendix 5) prior to any in-water diver training or hyperbaric exposure under the auspices of HSU.

1.27 Reporting and Investigating Accidents or Injury

Any diver or person having knowledge of a suspected or actual diving related accident or incident of injury shall immediately convey that information to the Lead Diver or Diving Instructor and Diving Safety Officer.

1.27.1 Initial Reporting

All accidents or injuries, regardless of the severity, shall be immediately reported verbally and, as soon as is feasible, in writing to the Lead Diver, Diving Instructor and Diving Safety Officer by all involved parties and witnesses. In no event shall these notifications be delayed more than 24 hours unless injuries to or the safety of the reporting parties preclude the verbal and written reporting within 24 hours. If the reports are delayed due to injury or issues of safety, they shall be submitted as soon as is practicable.

1.27.2 Investigation

The Diving Safety Officer shall investigate and document any accident or incident of injury related to a diving activity under the auspices of HSU. The Diving Safety Officer's report shall be given to the Diving Control Board for their review and action (Section 8.40).

1.28 Occupational and Student Accidental Injuries or Illnesses

The University supervisor or instructor shall record and report occupational and student injuries or illnesses in accordance with requirements of Title 8 of the California Labor Code and University policy. If the victim was a state employee, including volunteer employees, the following reports are required:

- a. Standard Form 620, *Supervisor's Injury Prevention Report*.
- b. Ward North America form DWC 1, "Employee's Claim for Workers Compensation Benefits."

If the victim was a student, completion of the State of California form STD. 268 *Accident Report (Other than Motor Vehicle)* and contact with the University office of Contracts, Procurement and Risk Management is required.

SECTION 2.00

Federal Diving Standards

2.10 Occupational Safety and Health Administration (OSHA) Diving Standards

The Federal Occupational Safety and Health Administration (OSHA) has established diving and diving related support standards for “all types of work and employment” in the *Code of Federal Regulations (29 CFR, Subpart T- ‘Commercial Diving Operations’, § 1910.401)*. Exempted from these standards are specified scientific and instructional diving operations. The HSU diving program only conducts scientific and instructional diving operations that are exempted from the OSHA Commercial Diving Operation regulations.

2.11 Scientific Diving Definition and OSHA Exemption

The *Code of Federal Regulations (29 CFR 1910.402)* defines Scientific Diving as: “diving performed solely as a necessary part of a scientific, research, or educational activity by employees whose sole purpose for diving is to perform scientific research tasks.”

2.11.1 OSHA Scientific Diving Exemption

The Federal Occupational Safety and Health Administration (OSHA) has granted an exemption for scientific diving from Commercial Diving regulations under the following guidelines (*Appendix B to Subpart T of 29 CFR 1910.402*):

1. The Diving Control Board consists of a majority of active Scientific Divers and has autonomous and absolute authority over the Scientific Diving Program's operation.
2. The purpose of the project using scientific diving is the advancement of science; therefore, information and data resulting from the project are non-proprietary.
3. The tasks of a scientific diver are those of an observer and data gatherer. Construction and trouble-shooting tasks traditionally associated with Commercial Diving are not included within Scientific Diving.

4. Scientific Divers, based on the nature of their activities, must use scientific expertise in studying the underwater environment and therefore are scientists or scientists-in-training.
5. In addition, the Scientific Diving Program shall contain at least the following elements:
 - a. Diving Safety Manual that includes at a minimum: Procedures covering all diving operations specific to the program, including procedures for emergency care, recompression and evacuation; and the criteria for diver training and certification.
 - b. Diving Control Board, with the majority of its members being active scientific divers, which shall at a minimum have the authority to approve and monitor diving projects, review and revise the Diving Safety Manual, assure compliance with the Manual, certify the depths to which a diver has been trained, take disciplinary action for unsafe practices and assure adherence to the buddy system (when a diver is accompanied by and is in continuous contact with another diver in the water) for SCUBA diving.

2.12 OSHA Exemption for Instructional Diving

Diving operations “performed solely for instructional purposes using open-circuit, compressed air SCUBA and conducted within the no-decompression limits are exempted from OSHA diving standards,” (29 CFR §1910.401 (2) (I)). All HSU instructional diving operations qualify for exemption from the OSHA Commercial Diving Operation regulations.

SECTION 3.00

Program Administration

3.10 Program Authority and Responsibility

As defined in this manual, the Diving Control Board has final responsibility for, and authority within, the HSU Diving Program. The Diving Control Board is organizationally designated as a subcommittee of the HSU Environmental Health and Safety Committee.

3.20 Review of Standards

The Diving Safety Officer shall annually review the University diving standards and procedures. Any recommended standards or procedure modifications shall be given to the DCB for their review and approval. Revisions shall be submitted to the CSU Office of the Chancellor and to the AAUS.

3.30 The Diving Safety Officer

The Diving Safety Officer (DSO) serves as a member of the Diving Control Board. This person shall have broad technical and scientific expertise in research related diving.

3.31 Qualifications

3.31.1 Shall be appointed by the responsible administrative officer (Diving Control Board Chair) or his/her designee, with the advice and recommendation of the Diving Control Board.

3.31.2 Shall be trained and certified under the standards of AAUS as a Scientific Diver.

3.31.3 Shall be a member of the AAUS and meet their standards as a DSO.

3.31.4 Shall be certified as an active SCUBA diving instructor from a nationally recognized certifying agency.

3.32 Duties and Responsibilities

3.32.1 Shall be responsible through the Diving Control Board, to the responsible administrative officer (Diving Control Board Chair) or his/her designee for, and shall have the authority to conduct the HSU Diving

Program. The routine operational authority for this program, including training, certification, approval of dive plans maintenance of diving records and ensuring compliance with this manual and all relevant regulations of the University, rests with the Diving Safety Officer.

- 3.32.2 May permit portions of this program to be carried out by a qualified delegate, although the Diving Safety Officer may not delegate responsibility for the safe conduct of the diving program.
- 3.32.3 Shall be guided in the performance of the required duties by the advice of the Diving Control Board, but operational responsibility and authority for the conduct of the diving program will be retained by the Diving Safety Officer.
- 3.32.4 Shall suspend diving operations which he/she considers to be unsafe or unwise.

3.40 The Diving Control Board

3.41 Qualifications

When administering the Scientific Diving Program, the voting members of the Diving Control Board (DCB) shall consist of a majority of active Scientific Divers. Voting members shall include the Diving Safety Officer, the responsible administrative officer (Diving Control Board Chair) or his/her designee, and should include other representatives of the Diving Program such as qualified divers and members selected by the DCB.

3.42 Duties and Responsibilities

When applicable, the DCB may delegate the authority but not the responsibility to the DSO for the following.

- 3.42.1 Has autonomous and absolute authority over the administration of the Diving Program.
- 3.42.2 Shall approve and monitor diving projects.
- 3.42.3 Shall review and revise the Diving Safety Manual.
- 3.42.4 Shall assure compliance with the Manual.
- 3.42.5 Shall certify the depths to which a diver has been trained.

- 3.42.6** Shall take disciplinary action for unsafe practices or violations of standards.
- 3.42.7** Shall assure adherence to the buddy system for SCUBA Diving.
- 3.42.8** Shall act as the official representative of the campus in matters concerning the diving program.
- 3.42.9** Shall act as a board of appeal to consider diver-related problems.
- 3.42.10** Shall issue, reissue, or revoke HSU diving certifications upon the recommendation of the Diving Safety Officer.
- 3.42.11** Shall recommend changes in policy and amendments to the Office of the Chancellor or AAUS concerning diving standards as the need arises.
- 3.42.12** Shall establish and/or approve training programs through which the applicants for certification can satisfy the training requirements of the HSU Diving Safety Manual.
- 3.42.13** Shall suspend diving activities that it considers to be unsafe or unwise.
- 3.42.14** Shall establish criteria for equipment selection and use.
- 3.42.15** Shall recommend new equipment or techniques.
- 3.42.16** Shall establish and/or approve facilities for the inspection and maintenance of diving and associated equipment.
- 3.42.17** Shall ensure that the University air station(s) meet air quality standards as described in this manual.
- 3.42.18** Shall periodically review the Diving Safety Officer's performance and program.
- 3.42.19** Shall sit as a board of investigation to inquire into the circumstances of diving accidents or violations of the HSU Diving Safety Manual.
- 3.42.20** May delegate additional authority and responsibility to the DSO.

3.50 Diving Program Instructional Personnel

All HSU diving instruction or training shall be conducted by persons meeting the standards of this manual (Section 5.80). Diving Assistant Instructors, Divemasters and Instructors are considered Leadership Divers (Appendix 15) and diving program instructional personnel.

3.51 Qualifications

All personnel involved in diving instruction under the auspices of the HSU shall be qualified for the type of instruction being given. University Diving Instructors shall be certified active status National Association of Underwater Instructors (NAUI) Open Water Instructors.

3.52 Selection

The responsible administrative officer or his/her designee, who will solicit the advice and participation of the Diving Control Board in conducting preliminary screening and selection of applicants for Diving Instructor positions, will select instructional personnel.

3.60 Lead Diver

For each dive, one individual shall be designated as the Lead Diver. They shall be at the Dive Location during the diving operation. The Lead Diver shall be responsible for:

- 3.61** Submission to and approval of an HSU Dive Plan (Section 7.50 and Appendix 11) by the Diving Safety Officer or his/her designee at least three (3) days before planned dives.
- 3.62** Safe coordination with other activities or conditions which are likely to affect diving operations.
- 3.63** Ensuring all dive team members possess current HSU diver certification and are qualified for the type of diving operation being conducted.
- 3.64** Planning dives in accordance with Section 7.00 and all standards of this manual.
- 3.65** Ensuring that adequate safety and emergency equipment is fully functional and readily available at the dive site.

- 3.66** Ensuring that all divers have the required diving equipment and that the equipment is fully functional and complies with HSU standards.

- 3.67** Briefing the dive team members on:
 - 3.67.1** Dive objectives.

 - 3.67.2** Unusual hazards or environmental conditions likely to affect the safety of the diving operation.

 - 3.67.3** Modifications to diving or emergency procedures necessitated by the specific diving operation.

 - 3.67.4** Suspending diving operations if in the Lead Diver's or Dive Team members' opinions conditions are unsafe.

 - 3.67.5** Reporting to the Lead Diver, DSO and Diving Control Board any violation of HSU standards, accidents or near accidents, physical problems, or adverse physiological effects, including symptoms of pressure-related injuries (Sections 1.23 and 1.27).

SECTION 4.00

HSU Diver Certification

The Diving Control Board reserves the right to restrict or deny any application for diver certification or training if in the judgment of the Diving Control Board it is determined that the applicant's safety or the safety of the Dive Team can not be protected while diving under the auspices of the University.

4.10 Required Diver Certification

No person shall engage in diving operations or diver training under the auspices of HSU unless they hold a current HSU diver certification of correct type for the specific type of diving and they are in compliance with all applicable provisions of this manual (Section 5.00).

4.20 Types of HSU Diver Certifications

Humboldt State University has three (3) types of diver certifications: *University Diver*, *Scientific Diver*, and *Diving Instructor*.

4.21 HSU University Diver Certification

Includes divers conducting recreational, instructional, or training dives under the auspices of the University. Qualification for this certification is a prerequisite for all diving and certifications under HSU auspices.

4.22 HSU Scientific Diver Certification

Is required of all persons engaged in Scientific Diving under the auspices of HSU. This certification requires NAUI Master Diver (or equivalent advanced diver experience) certification, additional specialized training as specified in this manual or by the Diving Safety Officer and approval of the Diving Control Board, upon recommendation of the Diving Safety Officer. In addition, the certification is only valid if the diving activity meets the definition of "Scientific Diving," which is diving performed solely as a necessary part of a scientific, research, or educational activity by employees (or students) whose sole purpose for diving is to perform scientific research tasks (*Code of Federal Regulations 29 CFR 1910.402*).

4.23 HSU Diving Instructor Certification

HSU Diving Instructor certification (Section 3.50) is required of all persons conducting diving instruction under the auspices of HSU. It requires that the instructor meet HSU diving standards and be approved by the Diving Control Board.

4.30 Visiting Diver Certification Reciprocity

Divers from other organizations or institutions (Visiting Divers) may apply for permission to dive under the auspices of HSU by submitting to the HSU Diving Safety Officer a document containing all the information described in Appendix 8, AAUS *Diving Reciprocity*, signed by the Diving Safety Officer or Chairperson of the home Diving Control Board. Certification reciprocity shall be for a specified time period and for a definitive purpose. The HSU Diving Safety Officer shall approve or disapprove requests for Visiting Diver Certification.

4.31 Visiting Diver Qualification

Visiting Divers requesting reciprocity certification may be asked to demonstrate their knowledge and skills for the planned dive(s). An example of items to be demonstrated is presented in Appendix 7, *HSU Diver Skills Verification*. Prior to any diving under auspices of the University, divers must be evaluated by the HSU Diving Safety Officer or his/her designee to verify compliance with these standards

4.32 Joint Diving Operations

Two or more organizations engaged jointly in diving activities, or engaged jointly in the use of diving resources, shall designate one of the participating Diving Control Boards to govern the joint dive project.

4.33 Denial of Visiting Diver Certification Reciprocity

If HSU denies a Visiting Diver permission to dive, the HSU Diving Control Board shall notify the visiting diver and his/her Diving Control Board with an explanation of the reasons for denial.

4.40 Temporary University Diver Certification

Requirements of Section 5.10-University Diver Certification may be temporarily waived with the written approval of the Diving Safety Officer if the applicant has demonstrated proficiency in diving and can contribute measurably to a planned dive. A statement of the diver's qualifications shall be submitted to the Diving Safety Officer as a part of the Dive Plan. Temporary certification shall be restricted to the planned diving operation and

shall comply with all other policies, regulations and standards of this manual, including medical evaluation requirements. The temporary waiver shall be granted for a specified time.

4.60 Revocation of Diver Certification

A diving certificate may be revoked or restricted for cause by the Diving Safety Officer or the Diving Control Board. Violations of standards set forth in this manual or violations of diving related public statutes may be considered cause. The Diving Safety Officer shall inform the diver in writing of the reason(s) for restriction or revocation. The diver will be given the opportunity to present his/her case in writing and in person for consideration by the DCB. All such written statements and requests, as identified in this section, are formal documents that will become a part of the diver's file.

Humboldt State University has a diver certification suspension and revocation procedure, Appendix 9, *Procedure for Suspending HSU Diver Certification and Diving Activities*.

4.70 Diver Re-Certification

If a diver's HSU diver certification expires or is revoked, they may be re-certified after complying with conditions the Diving Safety Officer or the Diving Control Board may impose. The diver shall be given an opportunity to present his/her case to the Diving Control Board before conditions for re-certification are stipulated, Appendix 10, *Review and Appeal of HSU Diver Certification Suspension*.

SECTION 5.00

HSU Diver Certification Requirements

These requirements apply to all persons either in beginning diver training or previously certified divers seeking HSU University Diver, Scientific Diver or Diving Instructor Certification. Previously certified divers must verify with the Diving Safety Officer or his/her designee that they have met these requirements.

5.10 University Diver Certification

These requirements and standards are applicable for all divers under the auspices of the University.

5.11 Application

Application for certification shall be submitted to and approved by the Diving Safety Officer (Section 3.32.1). Certification documents shall be kept in the diver's permanent HSU Diver Certification file.

5.12 HSU Diver Certification File

Certification forms are found as appendices in this manual or can be procured from the Diving Safety Officer. All certification or training files are subject to review by and are the responsibility of the Diving Safety Officer (Section 8). Certification documents in the diver's "HSU Diver Certification File" (file folder shall be a NAUI Student Record Folder or equivalent) shall be filed in the following sequence:

1. *Diver Certification and Training Documentation* (Appendix 1)
2. *HSU Certification Application* (Appendix 2)
3. *Diving Medical Fitness Evaluation Report* (Appendix 3)
4. *HSU and NAUI Waiver, Release and Indemnity Agreement* (Appendix 4)
5. *Statement of Understanding of HSU Dive Manual* (Appendix 5)
6. *Diver Emergency Information Card* (Appendix 6)
7. *Swim Test* (Appendix 7)

8. CPR certificate of training (copy)
9. First-aid and DAN Oxygen Provider certificate of training (copies)
10. *Minimum SCUBA Skills Verification* (Appendix 7)
11. Diver Certification(s) (copies)
12. Equipment Inspection Records (copies)
13. *HSU Dive Logs* or equivalent for previous 12 months (Appendix 12)
14. All additional required documents and examinations

5.20 Approval of Diver Certification Application

Submission of documents and participation in knowledge or skill examinations does not automatically result in certification. Applicants must convince the Diving Safety Officer that they are sufficiently skilled and proficient to dive safely before they receive HSU Diver certification. Any applicant who does not possess the necessary judgment, knowledge or skill required for the safety of the diver and the Dive Team, may be denied HSU diving privileges.

5.30 Waiver of Diver Certification Requirements

If an applicant for certification can show evidence of qualifying experience, the Diving Safety Officer and the Diving Control Board may grant a written waiver for specific requirements of training and experience.

5.40 Pre-Certification or Pre-Training Evaluation

5.41 Medical Examination

An applicant for HSU diver certification shall be certified by a licensed physician to be medically qualified and fit for diving before proceeding with any hyperbaric exposure while breathing compressed gas or engaging in any open water activity. The medical review standards specified in this manual shall be completed (Section 14.00 and Appendix 3). University diving medical evaluation forms must be used and are available from an HSU Diving Instructor, the HSU Dive Manual or the Diving Safety Officer. Periodic medical re-examinations are required to maintain HSU Diver certification (Section 5.93).

5.42 Swimming Test

The applicant shall successfully perform the following tests, or their equivalent, in the presence of the Diving Safety Officer or an examiner approved by the Diving Safety Officer. A record of the applicant's performance on this test shall be placed in the applicant's permanent HSU Diver Certification file. Swim aids may not be used during the swimming tests.

1. Swim underwater for a distance of 75 feet without surfacing.
2. Swim on the surface 400 yards in less than 12 minutes.
3. Tread water for 10 minutes using hands and then 2 minutes without the use of hands.
4. Transport (tow) another person of equal size a distance of 75 feet in the water.
5. Swim underwater without swim aids for a distance of 150 feet while only taking three (3) breaths at the surface.

5.50 Minimum SCUBA Training

These are the minimum training requirements for all persons in diver training or certified for SCUBA diving under the auspices of HSU. The instructor may and is encouraged to expand the training beyond these minimums. A record of the diver's performance on each skill shall be placed in the diver's permanent HSU Diver Certification file.

5.51 Confined Water or Pool Training

At the completion of training, the trainee must satisfy the Diving Safety Officer or the HSU Diving Instructor of their ability to perform the following, as a minimum, in a pool or in sheltered water:

1. Enter water with full equipment.
2. Clear facemask of water.
3. Demonstrate air sharing including buddy breathing and the use of alternate air source, as both donor and recipient with and without a facemask.
4. Demonstrate ability to alternate between snorkel and SCUBA while swimming on the surface and with face underwater.

5. Demonstrate understanding of underwater signs and signals.
6. In-water rescue and transport of a diver simulating apnea, including mouth-to-mouth resuscitation.
7. Demonstrate removing and replacing equipment while submerged and at the surface; this is to include mask, fins, weight belt or/and integrated weights and SCUBA tank.
8. Demonstrate competency in use of a buoyancy system.
9. Demonstrate a simulated out-of-air Emergency Swimming Ascent (ESA).
10. Demonstrate watermanship ability and in-water skill that is acceptable to the instructor.

5.52 Open Water Evaluation

An applicant must satisfy an instructor approved by the Diving Safety Officer, of their ability to competently perform at least the following skills in open water. The evaluation will be conducted under normal local diving conditions. A record of the applicant's performance on each skill, signed by the instructor and the diver being evaluated, shall be placed in their permanent HSU Diver Certification File.

1. Free Dive (Appendix 15) to a depth of 15 feet in open water without SCUBA.
2. Demonstrate air sharing, including buddy breathing and the use of alternate air source, as both donor and recipient.
3. Enter and leave open water through surf and, if available, leave and board a diving boat or platform while wearing SCUBA gear.
4. Swim on the surface 400 continuous yards while wearing SCUBA gear and breathing only from a snorkel.
5. Successfully complete six (6) open water SCUBA dives; with a minimum total time of four (4) hours in the water and three (3) hours cumulative bottom time on SCUBA. Not more than three (3) training dives shall be made in any one-dive day.
6. Demonstrate the judgment required to dive safely.

7. Demonstrate the ability to maneuver effectively at and below the surface.
8. Complete a simulated Emergency Swimming Ascent.
9. Demonstrate removal, replacement and clearing of mask and regulator while submerged.
10. Navigate effectively underwater and at the surface.
11. Demonstrate ability to achieve and maintain neutral buoyancy while submerged and at the surface, including a 5-minute neutral buoyancy hover at a 15-foot decompression stop.
12. Demonstrate techniques of self-rescue and buddy rescue, including in-water mouth-to-mouth resuscitation.
13. Plan and execute a dive.
14. Demonstrate removing and replacing equipment while submerged and at the surface; this is to include mask, weight belt and/or integrated weights and SCUBA tank.

5.53 Written Examination

During diver training, the trainee must pass a written examination that demonstrates knowledge of at least the following topics. Copies of written examinations shall be placed in the diver's permanent HSU Diver Certification file.

1. Function, care, use and maintenance of diving equipment.
2. Physics and physiology of diving.
3. Diving regulations and safety precautions.
4. Near-shore currents, waves and tidal affects.
5. Aquatic biological hazards.
6. Emergency management procedures, including: buoyant, buddy breathing, alternate air and Emergency Swimming Ascents.

7. Currently accepted no-decompression, repetitive no-decompression and decompression dive profiling procedures, including altitude and arrival at altitude adjustments. The Humboldt State University Exceptional Exposure Correction (EEC) procedure of profiling dives (Appendix 14).
8. Underwater communications.
9. Aspects of fresh water and altitude diving.
10. Hazards of breath-hold dives and ascents.
11. Planning and supervision of diving operations.
12. Diving hazards.
13. Causes, signs and symptoms of, treatment and prevention for:

Near drowning	Hypoxia-anoxia
Air embolism/related conditions	Nitrogen narcosis
Carbon dioxide excess	Oxygen poisoning
Decompression sickness	Respiratory fatigue
Hypothermia	Motion sickness/vertigo
Exhaustion/panic	Barotraumas
Squeezes	Shallow water blackout
Carbon monoxide poisoning	Hypobaric blocks

5.60 CPR Certification

The applicant must provide proof of current certification in single and two person cardio-pulmonary resuscitation (CPR). A record of the CPR certification shall be placed in the diver's permanent HSU Diver Certification file.

5.70 Scientific Diver Certification

Divers engaged in Scientific Diving (Section 2.11) qualify for Scientific Diver certification if they meet the application requirements and receive approval of the Diving Safety Officer. Before certification, the applicant must demonstrate to the satisfaction of the Diving Safety Officer the ability to safely dive as a Scientific Diver under local diving conditions.

5.71 Application

In addition to completing all the HSU “University Diver” certification application requirements and all other standards in this manual, applicants must verify or complete:

1. Advanced SCUBA Diver certified (NAUI Master Diver certification) or an equivalent certification prior to Scientific Diver training.
2. A cumulative minimum time of one hundred (100) hours training beyond Advanced SCUBA certification training in the theoretical and practical aspects of Scientific Diving. This training may include:
 - a. Underwater data and collecting techniques, identification and behavior of common biota, installation of scientific apparatus, use of chemicals, site selection and relocation, aquatic ecology, tagging, photography, scientific dive planning, knowledge of current diving technology, coordination with other agencies, appropriate governmental regulations and small boat operations.
 - b. Practical training during Scientific Diver training shall include at least twelve (12) supervised ocean or open water dives in a variety of dive sites and diving conditions with a minimum cumulative bottom time of six (6) hours. No more than three (3) of these dives shall be made in one (1) day. These dives are made after Advanced Diver certification.
3. Successful completion of examinations and skill testing approved by the Diving Safety Officer.
4. Open water and pool checkout dives, including emergency procedures.
5. Copy of current two person CPR, DAN Oxygen Provider and first-aid certifications or equivalent proof-of-training documentation.

5.80 University Diving Instructor

The Diving Control Board shall approve this certification upon recommendation of the Diving Safety Officer. This certification is required prior to presenting or supervising any diver training related activities under HSU auspices as the Lead Diver. All personnel involved in diving instruction under auspices of HSU shall be qualified for the type of instruction being given.

5.81 Application

In addition to completing all the HSU “University Diver” certification application requirements and all applicable standards in this manual, the Diving Control Board may require a confined (pool) water and open water demonstration of diving and instructional skills by the applicant. The Diving Safety Officer will observe or conduct this skills demonstration and evaluate the applicant’s performance for the Diving Control Board. The Diving Control Board may also require the applicant to pass (>75%) a written examination to verify instructional and diving knowledge. Applicants must submit to the Diving Control Board:

1. Copy of a current active status NAUI Open Water SCUBA Instructor certification.
2. Copies of current two person CPR, DAN Oxygen Provider and First-Aid certificates of training.
3. A written statement of educational, employment and diving experience.
4. All required HSU employment statements and forms.

5.90 Continuation of University Diver, Scientific Diver and Instructor Certification

5.91 Term of HSU Diver Certification

All diving certification shall expire:

1. One (1) year from the date of issuance.
2. Six (6) months from the date of the last logged open water dive.
3. Upon expiration of required certifications or examinations.

5.91.1 Renewal of HSU Diver Certification

The Diving Safety Officer will renew HSU diver certifications if the applicants for renewal have fully complied with the standards of this manual.

5.92 Minimum Required Dives to Maintain HSU Diver Certification

During any 12-month period, each certified HSU diver must make a minimum of twelve (12) open water dives under HSU auspices and have submitted HSU Dive Logs for these dives. At least one dive must be logged near the maximum depth of the diver's certification during each 6-month period. Divers certified to 150

feet or over may satisfy these requirements with dives to 130 feet or over. Failure to meet the above requirements may be cause for revocation or restriction of certification.

5.92.1 DCB Waiver of Standards to Maintain HSU Diver Certification

The Diving Control Board may grant a waiver for specific requirements of training, examinations, depth certification, and minimum activity to maintain certification. Waiver requests shall be made in writing to the DCB and the Board shall make a written response to the request within ten (10) working days. The medical evaluation of fitness to dive, as described in Section 14, shall not be waived

5.93 Required Periodic Medical Re-Examination

All University divers shall pass a periodic medical re-examination, Section 14.20. After each major illness or injury as described in Section 14.30, an HSU certified diver shall submit to a medical interview or examination before resuming diving activities and submit the documents specified in Section 14.00.

1. Medical re-examination is required every five (5) years for those up to age 40.
2. Medical re-examination is required every three years (3) for those over age 40 but less than age 60.
3. Medical re-examination is required every two years (2) for those over age 60.

5.94 Required Annual Diving Instructional Personnel Training

All HSU diving instructional personnel (Appendix 15, *Leadership Divers*) shall attend semi-annual staff training conducted by the Diving Safety Officer. This semi-annual training is required for HSU certified divers to qualify as Leadership Divers under the auspices of the University.

SECTION 6.00

Diving Standards

6.00 Approval to Dive

No person shall engage in diving operations, hyperbaric exposure, diver and equipment testing or diver training under auspices of the HSU unless they have a current HSU Diver certification and are in compliance with all applicable provisions of this manual. Prior to all dives a HSU Dive Plan must be submitted to and approved by the Diving Safety Officer (Section 3.61).

6.01 Specific Prohibited Activities

1. Smoking is prohibited at the dive location or during any diving related activity under the auspices of HSU. This includes travel to and from, as well as the entire period of the diving operations or training.
2. Consumption of alcohol or being under-the-influence of alcohol is prohibited during any activity under the auspices of HSU. This includes travel to and from, as well as the entire period of the diving operations or training.
3. Use of or being under-the-influence of any medications, drugs or controlled substances is prohibited during any diving related activity under the auspices of the HSU unless approved by a Diving Instructor and/or the Diving Safety Officer. This includes travel to and from, as well as the entire period of the diving operations or training.
4. Except in an emergency, Dive Team members shall not leave the dive site or location without the approval of the Lead Diver or Diving Instructor.

6.02 Solo Diving Prohibition (“Buddy System” Required)

All diving conducted under auspices of the HSU shall be planned and executed in such a manner as to ensure that every diver maintains constant, effective communication with at least one certified and comparably equipped diver. This buddy system is based upon mutual assistance, especially in the case of an emergency. A diver shall not dive if they are not capable of rendering assistance to their dive buddy in the event of an emergency. If loss of effective communication occurs within a Dive Team, all divers shall surface as soon as it is safe to do so and re-establish contact within the Dive Team.

1. Non-Hookah surface supplied diving is exempted from the requirements of this section (Section 10.20).
2. Instructors are considered to be in compliance with this section while they conduct training and supervising divers.
3. Free Divers shall dive in buddy teams, but only one diver shall dive at a time (Section 9.60).

6.03 Diving in Enclosed, Overhead or Confined Spaces

If an underwater space is not large enough for two divers, a diver shall remain at the point of entry and in contact with the diver entering the confined space. All divers entering this space shall stay in visual or physical contact with an orientation line leading to an exit or back to the point of entry. This type of diving protocol requires the approval of the Diving Safety Officer.

Diving in any overhead environments, such as caves, caverns or structures that restrict direct access to the surface, is prohibited unless approved by the Diving Safety Officer. This section does not apply to diving in kelp.

6.04 Termination of Dive

1. Any diver shall terminate a dive without fear of penalty whenever he/she believes it is unsafe to continue the dive. The termination of a dive shall not compromise the safety of any diver already in the water.
2. The dive shall be terminated while there is still sufficient tank pressure or volume of gas to permit the diver to safely reach the surface including decompression time or to safely reach an additional air source at a decompression station (Section 6.06).

6.05 Refusal to Dive

1. The decision to dive is that of the diver. A diver may refuse to dive without fear of penalty whenever they feel it is unsafe to make the dive.
2. The ultimate responsibility for safety rests with the individual diver. It is the diver's responsibility and duty to refuse to dive if conditions are unsafe or unfavorable, or if they would be violating the precepts of their training or the regulations in this manual.

6.06 Minimum SCUBA Tank Pressure (500 pounds per square inch/psi)

Except for emergency reasons or to protect the safety of a diver, the minimum tank pressure at the termination of the dive shall be 500 psi. If tank pressure drops below 500 psi the Instructor or Lead Diver and Diving Safety Officer shall be notified.

6.07 Minimum SCUBA Tank Size for Instructional Staff

HSU Instructors, Divemasters or Assistant Instructors shall use a SCUBA tank that contains a volume of air equal to or greater than the maximum volume of air carried by any student in the class. This policy is to assure adequate air for instruction, supervision and emergency response by the leadership instructional personnel.

6.08 Maximum SCUBA Tank Size for Students During Training

Student divers during training dives shall be limited to a SCUBA tank containing no more than 80 cubic feet (cf) of air.

6.09 Dive Flag

An appropriate dive flag shall be prominently displayed whenever diving is conducted under circumstances where required or where water traffic is probable. Use of a dive flag is recommended to increase the visibility of the surface floatation and to facilitate locating the Dive Team.

6.10 Flotation Devices

All divers, except Free Divers, are required to wear a Buoyancy Compensation Device (BCD) independent of the exposure suit. Free Diver floatation requirements are described in Section 9.20. Prior to use, the Diving Safety Officer or his/her designee shall approve the BCD and floatation device. All Buoyancy Compensation Devices must have a mechanical/power inflation system that the diver can activate with one hand, an automatic over-pressurization valve and a manually operated dump valve that can exhaust the gas from the floatation bag faster than the mechanical/ power inflator can inflate the bag.

6.11 Timing Devices, Depth Gauges and Tank Pressure Gauges

Each diver must have an underwater time-keeping device, a depth gauge and a submersible tank pressure gauge. This standard is not applicable to Free Divers.

6.12 Deep Diving

Dives in excess of 60 feet of sea water (fsw) must be planned and performed with the Diving Safety Officer or his/her designee in attendance. The divers must demonstrate, through written examination and skill evaluation, satisfactory knowledge of the special problems and safety requirements of deep diving. Prior to deep diving the DSO or his/her designee shall evaluate each Dive Team member's knowledge and in-water abilities to confirm that they are prepared to safely dive to the planned depth of the dive.

6.13 Dive Profiling

The Humboldt State University Exceptional Exposure Correction (EEC) shall be used for profiling SCUBA or Surface-Supplied dives using air as the breathing gas. Decompression dives require approval of the Diving Safety Officer and a surface interval in excess of twenty-four (24) hours is required following a decompression dive (*HSU Procedures for Profiling Dives*, Appendix 14; and *Decompression Diving*, Section 16.10).

6.14 Dive Tables (Not Applicable to Free Divers)

1. Appropriate dive profiling tables must be available at the dive location. In addition, each diver using air as the breathing gas shall carry the current NAUI (National Association of Underwater Instructors) dive tables on all dives. These tables shall be at least as safe as the United States Navy Diving Tables.
2. If the breathing gas is not air, only dive tables that are appropriate for the breathing gas used and have been approved by the Diving Safety Officer shall be used.
3. All dive tables must be approved by the Diving Safety Officer before they can be used to profile dives under the auspices of the University.

6.14.1 Altitude Tables

All dives made above 1,000 feet above sea level (ABSL), or, if the diver will go above 1,000 ABSL within 24 hours after surfacing from the last dive or hyperbaric exposure, will be profiled using the *Sea Level Equivalent Depth* (SLED) Table 4.1 in the *National Oceanic and Atmospheric Administration Diving Manual*.

6.14.2 Arrival at Altitude Tables

Appropriate “Arrival at Altitude” dive tables (*Pressure Variations With Altitude*, Table 4.2 in the *National Oceanic and Atmospheric Administration Diving Manual*) will be used to determine the diver’s residual nitrogen level when the diver ascends above 1,000 ABSL and dives within 24 hours of arrival at altitude.

6.15 Diving Depth Certification

Humboldt State University diver certifications (except Free Divers) shall specify the maximum dive depth that the holder of the certification is authorized to dive. The certificate must bear the signature of the Diving Safety Officer or his/her designee.

6.15.1 Depth Certification Limits

A diver under the auspices of HSU shall not dive to a depth that exceeds their depth certification, except under the following conditions:

1. If accompanied by a diver certified to the maximum depth of the dive and approved by the Diving Safety Officer, a diver may exceed their depth certification by one step deeper.
2. The dive profile and team is pre-approved by the DSO.
3. The DSO shall approve and accompany the diver if the maximum depth of the dive exceeds the diver’s depth certification by two steps deeper.

6.16 Maximum Dive Depth Certification Levels

Regardless of the diving mode, all divers breathing compressed gas and diving under HSU auspices shall adhere to HSU maximum dive depth certification level qualifications.

6.16.1 Thirty Feet (30 feet of sea water/fsw)

Divers with twelve (12) dives and a minimum of four (4) hours of open water bottom time or divers lacking the experience to safely dive deeper may qualify to dive to a maximum of 30 fsw.

6.16.2 Sixty Feet (60 fsw)

A diver holding a 30-foot depth certification with twelve (12) supervised open water dives with a total minimum bottom time of four (4) hours at depths between 31-60 feet and demonstrated proficiency diving at those depths may qualify to dive to a maximum of 60 fsw.

6.16.3 One-Hundred Feet (100 fsw)

A diver holding a 60-foot depth certification with four (4) supervised open water dives at depths between 80-100 feet and demonstrated proficiency diving at those depths may qualify to dive to a maximum of 100 fsw. The qualification dives must be verified on the HSU Dive Log by the signature of two divers that are certified to at least 100 feet. The diver must demonstrate proficiency in the use of appropriate decompression tables and understanding of special problems associated with deep diving (Section 6.12).

6.16.4 One-Hundred and Thirty Feet (130 fsw)

A diver holding a 100-foot depth certification with four (4) supervised open water dives at depths between 100-130 feet and demonstrated proficiency diving at those depths, may qualify to dive to a maximum of 130 fsw. The qualification dives must be verified on the HSU Dive Log by the signature of two divers that are certified to at least 130 feet. The diver must demonstrate proficiency in the use of appropriate decompression tables and understanding of special problems associated with deep diving (Section 6.12).

6.16.5 One-Hundred and Fifty Feet (150 fsw)

A diver holding a 130-foot depth certification with four (4) supervised open water dives at depths between 130-150 feet and demonstrated proficiency diving at those depths, may qualify to dive to a maximum of 150 fsw. The qualification dives must be verified on the HSU Dive Log by the signature of two divers that are certified to at least 150 feet. The diver must demonstrate proficiency in the use of appropriate decompression tables and understanding of special problems associated with deep diving (Section 6.12). The dives shall be planned and executed under close supervision of a diver certified to this depth. The diver must also demonstrate knowledge of the special safety requirements needed to dive to these depths.

6.16.6 One-Hundred and Ninety Feet (190 fsw)

A diver holding a 150-foot depth certification with four (4) supervised open water dives at depths between 150-190 feet and demonstrated proficiency diving at those depths may qualify to dive to a maximum of 190 fsw. The qualification dives must be supervised and verified by the signature of the Diving Safety Officer. The diver must demonstrate proficiency in the use of appropriate decompression tables and understanding of special problems associated with deep diving (Section 6.12). The dives shall be planned and executed under the close, direct supervision of the Diving Safety Officer.

Diving is not permitted beyond a depth of 190 feet.

6.17 Collecting and Hunting

Dive Team members may not hunt any animals or remove plants, artifacts or substrate without the permission of the Diving Safety Officer, Lead Diver or their designee. All applicable laws, regulations or statutes shall be complied with during any hunting or collecting activities. Resource conservation and minimum impact on the environment shall always be considered.

6.17.1 Collecting

Collecting is only permitted if the persons collecting have valid collecting permits and the restrictions of the permit are followed or if collection is otherwise permitted by law.

6.17.2 Hunting

Hunting by Dive Team members requires specialized training, close supervision and approval of the Lead Diver, Diving Instructor or Diving Safety Officer.

1. Never attach game to a diver.
2. Never have a “loaded” (cocked) speargun out of the water.
3. Never let a spear point at another person, whether it is in or out of the gun.
4. Never shoot a spear shaft beyond the limit of visibility.

5. Spear tip protectors are required out of the water and when entering or leaving the water.
6. Do not leave collected game in the water while diving (abalone are an exception).
7. Use only breakaway links or quick disconnects to attach equipment to divers.

SECTION 7.00

Diving Procedures

Adherence to these diving procedures is required during any diving related activity under HSU auspices. Dives should be planned to accommodate the competency of the least experienced or least trained diver.

7.10 Individual Responsibility

The responsibilities of the Lead Diver does not relieve a Dive Team member from their individual responsibility for the adequacy of their own preparation, compliance with standards and assuring for their personal safety before, during, and, after the dive.

7.20 Lead Diver Supervision

The Lead Diver shall be responsible to:

1. File and have approved an HSU Dive Plan (Section 3.61).
2. Coordinate with other known activities in the vicinity that may affect diving operations.
3. Verify the Dive Team qualifications.
4. Conduct the dive planning.
5. Brief and De-brief the Dive Team.
6. Assure adequacy of equipment.
7. Conduct the Pre-and Post-Dive Safety checks.
8. Assure compliance by Dive Team with all HSU standards.
9. Assure submission of required HSU Dive Logs (Section 8.30).
10. Assure return of all HSU equipment used by the Dive Team.
11. Assure that divers making an uncontrolled ascent, emergency ascent or exceeding the no-decompression diving limits comply with Section 7.90.2 and remain at the surface for a minimum of 60 minutes under the observation of another diver capable

of providing transportation, CPR and oxygen ventilation. Further diving will be suspended until approved by the Lead Diver. The Lead Diver and involved Dive Team divers will submit a written report of the incident to the Diving Safety Officer.

7.30 Dive Team Qualifications

Each diver shall be trained, certified and qualified for the diving mode being used (Section 4.00). Each Dive Team member shall have the following minimum experience and training for:

1. The correct use of the instruments and equipment appropriate for the planned diving.
2. Dive planning and emergency procedures.
3. Current training in cardio-pulmonary resuscitation, DAN Oxygen Provider and diving-related first aid.
4. Dive Team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology and recognition of pressure-related injuries.
5. Each diver shall be competent to safely dive under existing conditions.

7.40 Dive Planning

Planning of a diving operation shall at the minimum include considerations of the health and safety of the following:

1. Diving mode.
2. Surface and underwater conditions and hazards.
3. Quality and quantity of breathing gas supply.
4. Thermal protection.
5. Diving equipment.
6. Dive team assignments.
7. Residual inert gas status of dive team members.
8. Decompression schedules and altitude corrections.

9. Emergency procedures: Diving shall not be conducted unless procedures have been established for rescue of the Dive Team and emergency evacuation of the diver(s) to a hyperbaric chamber or appropriate medical facility. As part of the *HSU Dive Plan* (Sections 3.61, 15.10, Appendices 11 and 13) an *Accident Management Plan* for the dive site must be submitted to and approved by the Diving Safety Officer prior to any dives.

7.50 Dive Plans

Prior to any diving operations, the Lead Diver shall have an approved HSU Dive Plan (Section 3.61) ***HSU Dive Plans must be submitted to and approved by the Diving Safety Officer three (3) days prior to any dives*** (Appendix 11, *HSU Dive Plan*). Humboldt State University Dive Plan forms are available from the Diving Safety Officer. The HSU Dive Plan shall contain at the minimum the following information:

1. The qualifications and certifications of dive team members.
2. Emergency information for each dive team member, *HSU Diver Emergency Information Card* (Appendix 6), including:
 - a. Name, address, phone number and relationship of person to be notified in event of an emergency.
 - b. Name and phone number of personal physician.
 - c. Signed permission to be treated in a recompression chamber, in the event a Dive Team member is incapacitated and unable to give permission for treatment.
 - d. Pertinent medical information or advisories.
3. Number of proposed dives.
4. Locations of proposed dives.
5. Depths and bottom times of dives.
6. Proposed work, equipment and boats to be employed, repetitive dive planning and any anticipated unusual or hazardous conditions.
7. A current Accident Management Plan for the location(s) to be dived.

7.60 Dive Briefing

The Lead Diver shall, at a minimum, brief the Dive Team members on:

1. Dive objectives.
2. Each element of the HSU Dive Plan.
3. Any unusual hazards or environmental conditions likely to affect the safety of the diving operation.
4. Any modifications to diving or emergency procedures necessitated by the specific diving operation.
5. Review physiological and psychological status of Dive Team. No Dive Team member shall engage in the diving operation if that member has any physical or psychological condition that can adversely affect the health or safety of any Dive Team member.
6. Requirement of all Dive Team members to immediately report any injuries, physical problems, and adverse physiological effects attributed to pressure-related exposure or the diving operations and any violations of these standards to the Lead Diver and Diving Safety Officer.
7. Review emergency procedures.
8. Establish depth and bottom time limitations and minimum breathing gas volume/pressure limits for each diver.

7.70 Equipment Requirements

1. Each diver is responsible for having all equipment required by these standards and all equipment shall be fully functional (Section 11).
2. Each diver shall have the capability of achieving and maintaining positive buoyancy.
3. All removable equipment will be secured to the diver with quick releases or breakaway devices.

7.80 Pre-Dive Safety Checks

Each diver shall conduct a functional check of his or her diving equipment in the presence of the diving buddy or tender.

It is the diver's responsibility and duty to refuse to dive if conditions are unfavorable or if they would be violating the precepts of their training or of this manual (Sections 6.04 and 6.05).

1. No Dive Team member is required to be exposed to hyperbaric conditions unless directed by legal authorities for the prevention or treatment of a pressure related injury.
2. No Dive Team member shall be permitted to dive for the duration of any known condition or deficiency that is likely to adversely affect the health and safety of the diver or other Dive Team members.

Divers shall have sufficient breathing gas for the planned dive and to permit the diver to safely reach the surface including decompression stops and maintain the minimum tank pressure of 500 psi (Section 6.06).

7.90 Post-Dive Safety Checks

1. Immediately after each dive, the dive team members shall report any physical problems, symptoms of pressure-related injuries, operational problems, equipment deficiencies or malfunctions and standards violations to the Lead Diver.
2. Divers exceeding the no-decompression limits, making an uncontrolled or emergency ascent shall remain at the surface and awake for at least sixty (60) minutes after diving and under continuous observation by a person who is prepared to transport or arrange transportation of the divers to an advanced life support facility or suitable hyperbaric treatment chamber and provide CPR and 100 % oxygen ventilation if necessary. These divers may not dive for a minimum of 24 hours after surfacing. See Section 7.20.11.
3. The Lead Diver shall confirm the tissue gas status of each diver and, if required, restrict the diver's post-dive activities or repetitive dives based upon that gas status.

7.90.1 Flying After Diving

HSU Divers shall not fly for 24 hours after surfacing from their last dive or hyperbaric exposure. This does not apply to Free Dives.

7.99 Use of Dive Computers

Dive computers may be allowed in lieu of using dive tables for dive profiling if authorized by the Diving Safety Officer and if these standards are followed. A diver shall not use a computer and dive table to profile dives within a 24-hour period.

1. Only those makes and models of dive computers specifically approved by the Diving Safety Officer, or his/her designee, may be used.
2. Any diver desiring to use dive computers must apply to the Diving Safety Officer or his/her designee, for training, and a written test to demonstrate understanding and proficiency in the use of the specific computer to be used.
3. Divers relying on a dive computer to plan or profile a dive must use only their dive computer.
4. Divers in a Dive Team must follow the dive profiling required by the most conservative (shortest bottom time, shallowest maximum depth, longest safety/decompression stops and slowest ascent rate) computer in use.
5. If a dive computer fails or malfunctions at any time during a dive, the dive must be terminated, and appropriate surfacing procedures must immediately be initiated.
6. If the dive computer fails, further diving is prohibited for at least 24 hours after surfacing from the last dive.
7. A dive computer may not be initialized and used as the primary means to plan dives or determine decompression status by a diver who has made any dives or has been above 1,000 feet above sea level (ABSL) within the past 24 hours.
8. Once a dive computer is in use, it may not be turned off until it indicates complete outgassing, or 24 hours have elapsed since the last dive, whichever comes first.
9. When using a dive computer, all non-emergency ascents should be made in accordance with the manufacturer's recommendation for that unit.
10. Ascent rates should not exceed 30 feet per minute between 60 feet and the surface. Ascent time shall be included in the bottom time.
11. Divers shall make a stop at 15 feet for 5 minutes when the dive is deeper than 30 feet and on all repetitive dives.
12. Only one decompression dive (Section 16.10) in which the no-decompression limits of the dive computer being used or the US Navy tables have been exceeded may be made in any 24-hour period.

13. When possible the deepest dives should be made first, with subsequent dives getting progressively shallower. Multiple deep dives (> 60 feet) require special planning and approval (Section 6.12).
14. All manufacturers' recommendations for dive computer usage shall be followed. If manufacturer's recommendations conflict with HSU standards, the Diving Safety officer must pre-approve any non-emergency deviations from the University diving standards.

SECTION 8.00

Records and Documentation

All required HSU documents and forms may be acquired from the Diving Safety Officer. The Diving Safety Officer is responsible for retention of all records mandated by these standards and shall have access, unless otherwise prohibited, to all records of diving related activities under HSU auspices.

8.10 Permanent HSU Diver Certification File

The Diving Safety Officer or his/her designee shall maintain permanent records for each certified HSU diver. The file shall include evidence of certification, log sheets, results of current physical examination, waiver, reports of disciplinary actions by the campus Diving Control Board and other documentation required by HSU standards. Each file will contain the *HSU Diver Certification & Training Documentation Form* (Appendix 1) as the first document in the file.

8.11 Medical Records

Medical records shall be available to an attending physician of a diver or former diver when released in writing by the diver.

8.20 Records Retention

The University shall retain records and documents required by these standards for the following minimum periods:

1. Physician's written reports of medical examinations for Dive Team members - **5 years**.
2. Diving Safety Manual - **current** document only.
3. Dive Log - **1 year, except 5 years** where there has been an incident of pressure related injury.
4. Pressure-related injury report - **5 years**.
5. Equipment inspection and testing records - **current entry** or tag, or until equipment is withdrawn from service.
6. Records of hospitalization - **5 years**.

8.30 HSU Dive Logs

Each dive made under the auspices of the University shall be documented on the *HSU Dive Log* (Appendix 12). These standardized logs can be copied from this manual or procured from the DSO.

1. Divers shall log each open water dive. Open water dives include all SCUBA, Surface Supplied and Free Dives.
2. A maximum of four (4) dives during one (1) dive day shall be recorded on each *HSU Dive Log*.
3. The back of the *HSU Dive Log* can be used for additional dive information.
4. Each diver shall submit completed *HSU Dive Logs* to the Diving Safety Officer or his/her designee within seven (7) days after the date of the last dive on the log. Completed *HSU Dive Logs* shall be placed in the diver's HSU Diver Certification file.

8.30.1 Minimum Required Dive Log Information

1. Names of diver, Dive Team and Lead Diver.
2. Date, time, and location.
3. Diving modes used.
4. Description of diving activities.
5. Underwater and surface conditions.
6. Maximum depths, bottom time, and surface interval
7. Mixed gas profile, if applicable.
8. Dive tables or dive computer used.
9. Detailed report of any incident or potentially dangerous incident.

8.40 Required Accident Reporting

The Diving Safety Officer shall assure the completion and filing of the following specified accident or incident reports for reportable Diving Program events under the auspices of HSU. All diving related accidents or incidents occurring while under the auspices of the University must immediately be reported to the Diving Safety Officer by the Lead Diver and the affected members of the Dive Team. Written summaries of the events will be completed by witnessing or involved members of the Dive Team and submitted to the Diving Safety Officer within 24 hours of the accident or incident (Section 1.27).

8.40.1 Pressure Related Injuries

If the signs and/or symptoms of a pressure related injury are present and an injury is suspected, the following additional information shall be recorded and retained with the HSU Dive Log for a period of five (5) years (Section 8.20):

1. Description of signs and symptoms - including depth and time of onset.
2. Description and results of treatment.

8.40.2 Unconsciousness, Hospitalization or Recompression

A written summary specifying the circumstances of a diving related incident and the extent of any injuries or illness to a Dive Team member is required (Section 14.30) following:

1. Treatment by a physician or at a hospital.
2. Any period of unconsciousness.
3. Treatment in a recompression chamber.

SECTION 9.00

Free Diving

Free Diving (breath-hold diving) requires specialized training and equipment in addition to any other diver training. The Diving Safety Officer, or his/her designee, shall review and approve proposed Free Diving activities and instruction. Unless otherwise specified, all standards of this manual shall apply to Free Diving and Free Divers.

9.10 Medical Fitness Evaluation

All the medical evaluation standards of this manual apply, except for a restricted medical clearance for Free Diving activity conducted solely in a swimming pool. This exception only applies to Free Diving.

9.10.1 Restricted Medical Clearance for Swimming Pool-Only Free Diving

If a diver's only in-water activity is Free Diving in a swimming pool, they may participate in swimming pool-only Free Diving if they complete the *Medical Evaluation Report of Fitness for SCUBA, Surface-Supplied and Free Diving* (Appendix 3) and receive approval from a physician that allows Free Diving only in a swimming pool. This restricted, pool-only, medical approval does not apply to any form of diving while breathing compressed gas.

9.20 Required Surface Flotation

Each Free Diver when diving in open water shall have a Buoyancy Compensation Device (BCD) or surface float capable of supporting the diver, equipment and gear at the surface. Floats or BCDs (if not worn) must have an anchoring or retention system, a dive flag when required (Section 6.09) and should have an emergency whistle and a tourniquet.

9.30 Minimum Required Free Diver Equipment

Each Free Diver when diving in open water shall have:

1. Mask/fins/snorkel.
2. Weight belt (as required) w/right hand release (Section 9.40).

3. Thermal protection (as required).
4. Surface flotation.
5. Dive knife or cutting device.
6. Tourniquet (surgical tubing): *Only to be used if bleeding is life threatening and the bleeding cannot be stopped in any other way. Once applied the tourniquet should not be removed. Only persons trained in the correct use of tourniquets should use a tourniquet.*
7. Emergency signaling whistle.

9.40 Free Diver Neutral Buoyancy

Free Divers shall be neutrally buoyant at 10 fsw or deeper. All Free Divers will be positively buoyant when they are at a depth of less than 10 fsw.

9.50 Method of Equipment Attachment

All equipment carried or attached to a Free Diver shall have a quick release or weak link to preclude equipment caused restraint, entanglement or entrapment of the diver.

9.60 Free Dives by Dive Team

Dive Team members shall only Free Dive one at a time. Non-diving team members shall remain at the surface and in a position to render assistance to the Free Diver making the dive.

9.70 Exemption to Free Diving Standards

Persons enrolled in non-diver aquatics training at the University may conduct Free Diving activities in the pool incidental to that training and are exempt from the standards of this manual. However, at a minimum, students should receive training in the causes, prevention and treatment of barotraumas, shallow-water blackout and near drowning. This exemption does not apply to any open water diving or diver training classes in either confined or open water.

SECTION 10.00

Surface Supplied Diving

Surface Supplied Diving is when a diver is supplied compressed breathing gas from the surface.

10.10 HOOKAH Diving (Surface supplied SCUBA regulator)

1. HOOKAH divers shall comply with all SCUBA Diving procedures in this manual and shall not exceed depths of 190 fsw.
2. Each HOOKAH diver shall:
 - a. Carry a reserve breathing gas supply appropriate for the planned dive.
 - b. Be hose tended by a Dive Team member trained as a tender.
 - c. Have a HOOKAH breathing gas supply (non-reserve) sufficient for the planned dive; including decompression or safety stops.

10.20 Non-HOOKAH Surface Supplied Diving

1. Non-HOOKAH surface supplied divers shall comply with all SCUBA diving procedures (Except Section 6.02) in this manual.
2. Each non-HOOKAH Surface Supplied diver shall:
 - a. Carry a reserve breathing gas supply appropriate for the planned dive.
 - b. Be hose tended by a Dive Team member trained as a tender.
 - c. Have a breathing gas supply (non-reserve)that is sufficient for the planned dive including decompression stops.
 - d. Maintain voice communications with the surface tender.

10.20.1 Non-HOOKAH Solo Diving: Standby Safety Diver

When the only Dive Team member in the water is a Non-HOOKAH Surface Supplied Diver or if the surface supplied diver is not in communications with other divers in the water, a standby diver capable of assisting the diver in the water must be at the dive site, standing by the tender and ready to dive.

SECTION 11.00

Diving Equipment

All equipment shall meet standards as determined by the Diving Safety Officer or the Diving Control Board. The DCB delegates the approval of makes and models of equipment required in this section to the DSO or his/her designee.

11.10 Equipment Inspections

All inspections, tests and maintenance required in this manual must be accomplished by a technician or facility approved by the Diving Safety Officer or Diving Control Board. Equipment that is subjected to extreme usage or adverse conditions may require more frequent testing and maintenance than specified in these standards. The person using the equipment has the ultimate responsibility for assuring that it is fully functional and meets all University and manufacturer standards.

11.10.1 Diver Inspection of Equipment

In addition to testing required in this manual, all equipment shall be regularly inspected and functionally checked before use by the person using the equipment.

11.10.2 Record Keeping

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

Air filtration systems	Gas control panels
Air storage cylinders	Regulators
Analytical instruments	SCUBA tanks
Compressors	Submersible breathing masks
Computers	Submersible pressure gauges
Depth gauges	Tank valves
Diving helmets	

11.20 SCUBA Regulators

11.20.1 Approval

Only those makes and models specifically approved by the Diving Safety Officer or the Diving Control Board shall be used.

11.20.2 Inspection and Testing

SCUBA regulators shall be inspected and tested prior to the first use and every twelve (12) months thereafter.

11.20.3 Alternate Air - Octopus Regulator

All regulators will have an alternate air second stage regulator that is independent of the BCD inflator, located on the diver's left side. These regulators must be clearly visible, easily accessible and attached with a quick release in the diver's chest area. Use of other alternate air or redundant air sources requires the approval of the Diving Safety Officer.

11.20.4 Submersible Pressure Gauge

All regulators attached to a tank will have a submersible tank pressure gauge.

11.20.5 Low Pressure Inflator Hose

All regulators will have a low pressure inflator hoses for inflation of the diver's flotation device and, if applicable, dry suit. The inflator hoses shall have a quick disconnect device at the point of attachment to the flotation device or dry suit.

11.30 SCUBA Tanks

Compressed gas cylinders shall be designed, constructed and maintained in accordance with the applicable provisions of the applicable *Unfired Pressure Safety Vessel Safety Orders (Title I of CAC)*.

11.30.1 Hydrostatic Testing

SCUBA cylinders must be hydrostatically tested every 5 years in accordance with United States Department of Transportation (DOT) standards.

11.30.2 Visual Inspection

SCUBA cylinders must have an internal and external inspection at intervals not to exceed twelve (12) months.

11.30.3 Tank Valve Testing

SCUBA cylinder valves shall be functionally tested at intervals not to exceed twelve (12) months.

11.40 Timing Devices, Depth and Pressure Gauges

All timing devices and gauges shall be inspected and tested before first use and every twelve (12) months thereafter.

11.50 Weight Systems and SCUBA Backpack or Jacket Releases

Weight systems and SCUBA backpacks or jackets shall be equipped with quick release devices designed to permit rapid jettisoning of the equipment. The quick release device must operate easily with a single motion from either hand. All divers must be capable of replacing unintentionally released weights, or, other equipment, underwater without assistance from another diver.

11.50.1 Weight Belt Releases

Weight belts shall have a right hand release (releasing in the direction of the diver's right side).

11.60 Flotation Devices (Section 6.10)

Each diver shall have the capability of achieving and maintaining neutral, positive and negative buoyancy. A dry suit does not meet this requirement. Free Divers do not have to become negatively buoyant.

11.60.1 Exhaust Valves

Personal flotation systems, buoyancy compensators, dry suits, or other variable volume buoyancy compensation devices, shall be equipped with an exhaust valve that can exhaust gas faster than the power inflator can inflate the device. Exhaust valves must function when diver is in a horizontal, prone position.

11.60.2 Over Pressurization Valves

Personal flotation systems must have an automatic over pressurization relief valve.

11.60.3 Inspection

These devices shall be functionally inspected and tested at intervals not to exceed twelve (12) months.

11.70 Breathing Masks and Helmets

Breathing masks and helmets shall have:

1. A non-return valve at the attachment point between helmet or mask and breathing gas hose, which shall close readily and positively.
2. An exhaust valve.
3. A minimum ventilation rate capable of maintaining the diver at the depth to which they are diving.

11.80 Underwater Power Tools

1. Hand-held power tools and equipment used underwater shall be specifically designed for this purpose and approved by the Diving Safety Officer.
2. Hand-held power tools and equipment supplied with power from the surface shall be de-energized before being placed into or retrieved from the water.
3. Hand-held power tools shall not be supplied with power from the dive location until requested by the diver.

11.90 Dive Knife

Divers must carry a readily accessible dive knife or cutting device.

SECTION 12.00

Air Quality Standards

Breathing air for SCUBA and other diving modes utilizing compressed air shall meet the following specifications as set forth in the Compressed Gas Association (CGA) Pamphlet G-7.1 and referenced in OSHA 29 CFR 1910.134. The current minimum standard is “Grade E”.

12.10 CGA Grade E Air

<u>Component</u>	<u>Maximum</u>
Oxygen	20-22%/vol
Carbon Monoxide	10 PPM/vol
Carbon Dioxide	500 PPM/vol
Condensed Hydrocarbons	5 mg/m ³
Water Vapor	No Standard
Objectionable Odors	None

SECTION 13.00

Compressor Systems

All compressors used in a diving operation, either mobile or fixed and used under the auspices of HSU must meet the standards specified in this manual.

13.10 Design and Location of Compressor

1. Low pressure compressors used to supply air to the diver shall be equipped with a volume tank with a check valve on the inlet side, a pressure gauge, a relief valve, and a drain valve.
2. Compressed air systems over 500 psig (pounds per square inch gauge) shall have slow-opening shut-off valves.
3. All air compressor intakes shall be located away from areas containing combustion exhaust or airborne contaminants.

13.20 Compressor Operation and Air Test Records

1. Gas analyses and air tests shall be performed on breathing air compressor at regular intervals of no more than 100 hours of operation or six months, whichever occurs first. The results of these tests shall be retained for one (1) year.
2. A log shall be maintained showing operation, repair, overhaul and filter maintenance temperature adjustment for each compressor.

13.30 Oxygen Safety

1. Equipment used with oxygen or mixtures containing over thirty-two (32%) by volume oxygen shall be designed and maintained for oxygen service.
2. Components (except umbilicals) exposed to oxygen or mixtures containing over thirty-two (32%) by volume oxygen at pressures above 150 psi shall be cleaned of flammable materials before being placed into service and maintained for oxygen service.
3. Oxygen systems over 125 psig shall have slow-opening shut-off valves.
4. Equipment required to meet oxygen safety requirements includes, but is not limited to: SCUBA tanks, cylinder valves, gas regulators, gauges, hoses, compressors, fill station components and gas lines or fixtures.

SECTION 14.00

Medical Standards

All divers or Dive Team members must complete the medical examinations required in this manual, meet medical standards defined in this manual, and be declared medically fit to engage in diving activities by a licensed doctor of medicine recognized by the state of California, before any hyperbaric exposure under HSU auspices. The medical evaluation may deny or impose restrictions and limitations on the scope of allowed diving activity.

14.10 Examining Physician

All medical evaluations required by these standards shall be performed by, or under the direction of a doctor of medicine licensed by or who's license is recognized by the state of California. Preferably, the examining physician should have experience in diving medicine. The examining physician must verify with their signature on the *HSU Medical Evaluation Report of Fitness for: SCUBA, Surface-Supplied & Free Diving; and Physician's Recommendation* (Appendix 3.3.1) if the applicant is fit to dive and approved by them to dive.

14.11 Determination of Fitness to Dive: Physician Responsibility

The applicant examined must be able to safely dive under conditions of arduous physical and psychological stress. Specifically, the applicant must be capable of safely accommodating repeated hyperbaric/hypobaric, metabolic, cardiovascular, pulmonary, muscular-skeletal stress while maintaining the cognitive and physiological ability to respond to a variety of problem solving demands and emergencies. The examining physician assumes the responsibility of verifying that the applicant is medically safe and fit to dive under the demands of all anticipated diving conditions.

14.20 Frequency of Medical Evaluation

Prior to any hyperbaric exposure breathing compressed gas or Free Diving, a diver must have the required medical evaluation and approval to dive. The Diving Safety Officer or his/her designee may accept equivalent medical evaluations completed within the prescribed time interval.

14.20.1 Under Age 40

Medical evaluation is required initially and every five (5) years.

14.20.2 Over Age 40 But Less Than Age 60

Medical evaluation is required initially and every three (3) years

14.20.3 Over Age 60

Medical evaluation is required initially and every two (2) years

14.30 Medical Evaluation Following Injury, Illness, Doctor Care or Hospitalization

Clearance to return to diving must be obtained from a physician following any major injury or illness and any condition requiring doctor or hospital care. If the injury, illness or condition is pressure or diving related, then the clearance to return to diving must come from a physician trained in diving medicine.

The Diving Control Board or Diving Safety Officer may require a medical examination or evaluation to determine a diver's current fitness to dive.

14.40 Medical Evaluation Expenses

All costs of medical examinations shall be the responsibility of the applicant for certification. In the case of an employee who is required to dive as part of their employment, the employer must pay for the required medical evaluations.

14.50 Information Provided Examining Physician

The Diving Safety Officer shall provide a copy of the medical requirements of these standards to the examining physician.

14.60 Content of Medical Evaluation

The diver should be free of any chronic disabling disease or injury and be free of any condition contained in the list of conditions for which restrictions from diving are generally recommended and the safety of the applicant or Dive Team is compromised (Appendix 3).

Initial medical examinations and periodic re-examinations **shall** consist of the following:

1. General medical history.
2. *Diving Medical History* (Appendix 3.1), including the *Diving Safety Officer's Review*.
3. Basic physical examination.

4. The tests required in Section 14.70.
5. Any additional tests the physician considers necessary.
6. Completion of the *HSU Medical Evaluation Report of Fitness for: SCUBA, Surface-Supplied & Free Diving* (Appendices 3.3 and 3.3.1) with the signature of the examining physician.

14.70 Required Content of Medical Examinations

14.71 Initial Examination Under Age 40

Medical History
Complete Physical Exam
(emphasis on neurological, otological, cardio-pulmonary)
Chest X-ray
12 lead EKG
Pulmonary function
Complete blood count (CBC)
Blood chemistry (hematocrit or hemoglobin)
Urinalysis
Any additional tests deemed necessary by the physician

14.72 Periodic Re-Examination Under Age 40

Medical History
Pulmonary function
Complete blood count (CBC)
Blood chemistry (hematocrit or hemoglobin)
Urinalysis
Any additional tests deemed necessary by the physician

14.73 Initial Examination Over Age 40

Medical History
Complete Physical Exam
(emphasis on neurological, otological, cardio-pulmonary)
Assessment of coronary artery disease using “Multiple-Risk-Factor Assessment”
(age, lipid profile, blood pressure, diabetic screening, smoker)
Chest X-ray
12 lead EKG
Pulmonary function
Complete blood count (CBC)
Blood chemistry (hematocrit or hemoglobin)

Urinalysis

Any additional tests deemed necessary by the physician (exercise stress testing may be indicated based on risk factor assessment)

14.74 Periodic Re-Examination Over Age 40

Complete Physical Exam

(emphasis on neurological, otological, cardio-pulmonary)

Assessment of coronary artery disease using "Multiple-Risk-Factor Assessment"

(age, lipid profile, blood pressure, diabetic screening, smoker)

Resting EKG

Pulmonary function

Complete blood count (CBC)

Blood chemistry (hematocrit or hemoglobin)

Urinalysis

Any additional tests deemed necessary by the physician (exercise stress testing may be indicated based on risk factor assessment)

14.80 Physician's Written Report

1. After any medical examination or evaluation required by these standards, the Diving Safety Officer shall obtain a written report stating the examining physician's opinion of the applicant's fitness to dive, including any recommended restrictions or limitations (Appendix 3).
2. Upon request, the Diving Safety Officer or the HSU Student Health Center shall provide the applicant with a copy of the physician's written report.
3. A copy of all medical examination documents shall be retained in the applicant's HSU Diver Certification File.

SECTION 15.00

Emergency Management

The safety of the Dive Team is the primary objective of this manual. While not every circumstance can be anticipated, accidents and emergencies can best be prevented by thorough preparation and training of divers and first-responders. Dive Team inter-dependency and a comprehensive Emergency Management Plan (Emergency Plan) does not replace the need for individual self-sufficiency during an emergency.

15.10 Approval and Filing of Emergency Plan

Each filed Dive Plan will have an attached Emergency Plan. The approval of the Dive Plan requires approval and verification of the Emergency Plan by the Diving Safety Officer or his/her designee (Section 7.50).

15.20 Emergency Plan

Each diving activity requires an updated Emergency Management Plan. Specialized training is required before use of emergency equipment. The Emergency Plan should at a minimum contain or require:

1. First-responder first-aid training for each Dive Team member.
2. Communication links to advanced life-support entities.
3. Land, sea, or air transportation for victims.
4. Emergency equipment, including:
 - a. First aid kit adequate for the diving operation shall be available at the dive site. The kit shall include a Divers Alert Network (DAN) first-aid booklet.
 - b. An oxygen delivery system capable of delivering 100% oxygen to a breathing or non-breathing person for a minimum of 30 minutes, or, for 60 minutes if diving operations are further than 30 minutes travel time from advanced life support.
 - c. In-water and on-shore signaling and recall devices.
 - d. Pocket-masks with oxygen inlets and tourniquets.
 - e. An extraction board if conditions dictate.

5. Current phone numbers, addresses, contact points for hospitals, emergency rooms, search and rescue personnel, ambulance services (including air ambulances) and recompression chamber facilities.
6. A treatment flow chart for diving accidents.

15.30 Diving Emergency Management Procedures

Each emergency incident requires unique responses, but at a minimum the emergency response should consider, planned for and implemented the following guidelines. These guidelines are specifically for divers suffering from, or possibly suffering from, Arterial Gas Embolism (AGE), Decompression Sickness (DCS) or Near Drowning; however, they may be appropriate for other injuries and illness.

15.30.1 First Response

1. Identify all possible victims (check Dive Team) and declare an emergency.
2. Protect victims and rescuers from further harm.
3. Confirm or establish victim's airway (A), breathing (B), circulation (C).
4. Control bleeding and treat for shock.
5. Administer 100% oxygen ventilation following the DAN guidelines.
6. Contact local Emergency Medical Services (EMS) for transport of victim(s) to a medical facility.

15.30.2 Advanced Life Support

1. Advise the evacuation teams, medics and physicians that 100% oxygen ventilation is required for the victim(s).
2. Advise the evacuation teams, medics and physicians that recompression treatment may be necessary for the victim(s) and provide them with a copy of the Emergency Plan and DAN emergency phone number (919) 684-8111.
3. Send the *Emergency Notification* (Appendix 6) card with victim(s).

15.30.3 Reporting and Follow-up

1. Secure all of the victim's equipment.
2. Keep Dive Team members who were diving under observation for six (6) hours by persons capable of rendering emergency medical assistance.
3. Record names and contact numbers for persons involved or who were witnesses.
4. Notify the DSO or his/her designee (Section 1.27).
5. Complete a written report that describes the details of the incident and immediately forward to the DSO and DCB.

SECTION 16.00

Specialized Diving Modes

Specialized diving modes may require specific training, equipment and specialty certifications. When guidelines for specialized modes of diving are published by the AAUS; HSU will utilize these guidelines as minimal standards. All dives require pre-approval of an HSU Dive Plan and any specialized diving mode will require the approval of the Diving Safety Officer. Divers shall comply with all SCUBA diving or Free Diving procedures in this manual unless otherwise specified.

16.10 Decompression Diving

Except in an emergency or when unplanned decompression is required, no diver shall plan or conduct decompression dives without prior approval of the Diving Control Board and the Diving Safety Officer. Prior to going to altitude (above 1,000 feet ABSL) or diving, a surface interval in excess of twenty-four (24) hours is required following a decompression dive.

16.20 Closed and Semi-Closed Circuit (Rebreathers) Oxygen Scuba

Use of closed and semi-closed circuit (rebreathers) oxygen SCUBA shall meet the following requirements:

16.20.1 Oxygen Partial Pressure

Oxygen partial pressure in the breathing gas shall not exceed 1.45 Atmospheres Absolute (ATA) at depths greater than 25 fsw (7.6 msw).

16.20.2 Chemical Scrubbers

Chemicals used for the absorption of carbon dioxide shall be kept in a cool, dry location in a sealed container until required for use.

16.20.3 Designated Person-in-Charge

The designated person-in-charge shall determine that the carbon dioxide absorption canister is used in accordance with the manufacturer's instructions.

16.20.4 Dive Depth Limitation

Closed and semi-closed diving equipment will not be used at a depth greater than that recommended by the manufacturer of the equipment or at a depth greater than 25 fsw at which the partial pressure of oxygen exceeds 1.45 ATA.

16.30 Mixed Gas Diving

Mixed gas diving is considered any gas or combination of gases other than ambient breathing air defined by the Compressed Gas Association and referenced in OSHA 29 CFR 1910.134 as “Grade E” breathing air.

16.30.1 Nitrox Diving (EANx)

Divers planning to use enriched air (Nitrox/EANx) while diving must follow *Guidelines for Scientific Nitrox Diving and Nitrox Diver Certification, American Academy of Underwater Sciences, 1991* and *Section 7 Nitrox Diving Guidelines* in the *AAUS Standards for Scientific Diving (2001)* manual.

16.30.2 Oxygen Partial Pressure

Oxygen partial pressure in the breathing gas shall not exceed 1.45 Atmospheres Absolute (ATA) at depths greater than 25 fsw (7.6 msw).

16.40 Blue Water Diving

Blue Water Diving is defined as diving in open water where the bottom is generally >200 fsw deep. It requires special training and the use of multiple-tethered diving techniques. Specific guidelines that shall be followed are outlined in *Blue Water Diving Guidelines (California Sea Grant Publ. No. T-CSGCP-014)*

16.50 Ice and Polar Diving

Divers planning to dive under ice or in polar conditions shall use the following *Guidelines for Conduct of Research Diving, National Science Foundation, Division of Polar Programs, 1990*.

16.60 Dry Suit Diving

Divers must *complete* specialized dry suit training and receive the approval of the Diving Safety Officer before using a dry or semi-dry suit.

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Appendix 1

Humboldt State University
***Diver Certification & Training
Documentation***

Diver's Name: _____

Document
(Appendix)

Current Document Date
(Document Date / Initials of DSO))

A-2 Certification Application _____/_____

CPR Expiration Date:

Oxygen Provider Expiration Date:

A-3 Approved Medical Evaluation of Fitness _____/_____

Date of Last Evaluation:

A-4 CSU/HSU/NAUI Waivers _____/_____

A-5 Statement of Understanding of HSU Dive Manual _____/_____

A-6 Diver Emergency Information _____/_____

A-7 Diver Certification Skills Verification _____/_____

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A-12 HSU Dive Logs _____/_____

Personal Diving Equipment Inspection Records _____/_____

HSU Diver Certification Level: _____/_____

Appendix 2

Humboldt State University
Diver Certification Application

Name: _____ SS/ID No. _____

Local Address: _____

Permanent Address (if different): _____

Home Phone: (____) _____ Business Phone: (____) _____ E-Mail: _____

Birth Date: _____ Occupation: _____

Employer: _____ Address: _____

In case of emergency notify: _____ Phone: (____) _____

Your Doctor: _____ Phone: (____) _____

Address: _____

Diving Related Certification or Experience:

(Use back of form if needed)

Certification/Experience	Date	Location
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

CPR Certification:

Type: _____ Organization: _____ Expiration Date: _____

First-Aid Certification:

Type: _____ Organization: _____ Expiration Date: _____

Oxygen Provider Certification:

Type: _____ Organization: _____ Expiration Date: _____

I understand that I need to complete a *Diving Medical Evaluation* (Appendix 3) and be approved for diving by a licensed physician before any diving or hyperbaric exposure under the auspices of HSU and that I must comply with all standards and policies of this manual.

Signature of Applicant

Date:

***Note:** If you have special individual needs or disabilities, please see the Diving Safety Officer to arrange possible accommodation.

Appendix 3.0

Humboldt State University ***Medical Evaluation of Fitness for SCUBA, Surface-Supplied & Free Diving***

Section 14, *Medical Standards*, of the *Humboldt State University Diving Safety Manual* defines the standards for determining the medical fitness of a person to dive under the auspices of the University. Appendix 3 of the Manual lists the guidelines for the medical evaluation and requirements for medical clearance and approval to dive. The following HSU documents must be included in the physician's evaluation and report of fitness to dive. These documents shall be filed in the Applicant's HSU Diver Certification file.

A-3 *Medical Evaluation Report of Fitness for SCUBA, Surface-Supplied and Free Diving*

A-3.1 *Diving Medical History Form.*

Appendix A3.2, *Diving Medical Examination Overview for the Examining Physician*, provides the physician with a synopsis of factors which may affect the evaluation of the applicant. It includes a listing of medical conditions which may or should disqualify the applicant for diving and medical references to guide the physician.

It should be stressed that the examining physician must verify that the applicant does not have any medical conditions or limitations that would endanger their safety if they dive. Safety of the diver and Dive Team is the only consideration in determining fitness to dive.

The HSU Diving Safety Officer can provide additional information concerning the demands and rigors of diving, the types of hyperbaric and hypobaric injuries experienced by divers and of the standards described in the Manual.

Appendix 3.1

Humboldt State University
Diving Medical History Form

Date _____/_____/_____

Applicant's Name _____ **Gender** _____ **Age** _____ **Wt.** _____ **Ht.** _____
(Print)

TO THE APPLICANT: SCUBA, Surface-Supplied or Free Diving makes considerable demands on you both physically and mentally. Diving with certain medical conditions or deficiencies may place you and anyone coming to your assistance at risk and in danger. Therefore, it is prudent to meet certain medical and physical requirements before beginning to dive or participating in a diver training program. Your answers to the questions are more important, in many instances, in determining your fitness than what the physician may see, hear, or feel when you are examined. Obviously, you should give accurate information or the medical screening procedure becomes useless.

This form shall be kept confidential; it will be reviewed only by a physician and the Diving Safety Officer. If you believe any question amounts to invasion of your privacy, you may elect to omit an answer, provided that you shall subsequently discuss that matter with your own physician and he must then indicate, in writing, that you have done so and that no health hazard exists.

Should your answers indicate a condition which might make diving hazardous, you will be asked to review the matter with your physician. In such instances, his written authorization will be required in order for further consideration to be given your application. If your physician concludes that diving would involve undue risk for you, remember that he is concerned only with your well-being and safety. Respect his advice and the intent of this medical history form.

Have you ever had or do you presently have any of the following?

- 1. Trouble with your ears, including ruptured eardrum, difficulty clearing your ears or surgery on your ears. Yes _____ No _____
- 2. Trouble with dizziness. Yes _____ No _____
- 3. Eye surgery. Yes _____ No _____
- 4. Depression, anxiety, claustrophobia, etc. Yes _____ No _____
- 5. Substance abuse, including alcohol. Yes _____ No _____
- 6. Loss of consciousness. Yes _____ No _____
- 7. Epilepsy or other seizures, convulsions or fits. Yes _____ No _____
- 8. Stroke or a neurological deficit. Yes _____ No _____

Appendix 3.1

- 9. Recurring neurologic disorders, including transient ischemic attacks. Yes_____ No_____
- 10. Aneurysms or bleeding in the brain. Yes_____ No_____
- 11. Decompression sickness or embolism. Yes_____ No_____
- 12. Head injury. Yes_____ No_____
- 13. Disorders of the blood or easy bleeding. Yes_____ No_____
- 14. Heart disease, diabetes or high cholesterol. Yes_____ No_____
- 15. Anatomical heart abnormalities including patent foramen ovale, valve problems, etc. Yes_____ No_____
- 16. Heart rhythm problems. Yes_____ No_____
- 17. Need for a pacemaker. Yes_____ No_____
- 18. Difficulty with exercise. Yes_____ No_____
- 19. High blood pressure. Yes_____ No_____
- 20. Collapsed lung. Yes_____ No_____
- 21. Asthma. Yes_____ No_____
- 22. Other lung diseases. Yes_____ No_____
- 23. Diabetes mellitus. Yes_____ No_____
- 24. Pregnancy. Yes_____ No_____
- 25. Surgery (If “yes” explain below). Yes_____ No_____
- 26. Hospitalizations (If “yes” explain below). Yes_____ No_____
- 27. Do you take any medications? (If “yes” explain below). Yes_____ No_____
- 28. Do you have any allergies to medications, foods or environmental factors? (If “yes” explain below). Yes_____ No_____

Appendix 3.1

- 29. Do you smoke? Yes_____ No_____
- 30. Do you drink alcoholic beverages? Yes_____ No_____
- 31. Is there a family history of high cholesterol? Yes_____ No_____
- 32. Is there a family history of heart disease or stroke? Yes_____ No_____
- 33. Is there a family history of diabetes? Yes_____ No_____
- 34. Is there a family history of asthma? Yes_____ No_____
- 35. Have you or do you have any medical problems not listed? (If “yes” explain below). Yes_____ No_____

Please explain any “yes” answers to the above questions or comment on answers in the space below.

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

Signature _____ Date ____/____/____

Appendix 3.2

Humboldt State University
***Diving Medical Examination Overview
for the Examining Physician***

To the Examining Physician:

This Applicant, _____, requires a medical examination to assess his/her fitness for certification as a SCUBA, Surface-Supplied or Free Diver. A SCUBA and Surface-Supplied diver breathes compressed-gas when diving, while a Free Diver holds their breath while diving and never breathes compressed-gas. The Applicant's *Diving Medical History Form* (Appendix 3.1) may indicate potential health or safety risks. Your evaluation is requested on the attached Diving Medical Examination form. If you have questions about diving medicine, you may wish to consult one of the references on the attached list or contact a physician with expertise in diving medicine. Please contact the HSU Diving Safety Officer if you have any questions or concerns about diving medicine, the standards or the Applicant's fitness to dive.

(Diving Officer)

(Phone)

SCUBA diving, Free Diving and other modes of diving can be strenuous and hazardous. There is a special risk during any SCUBA diving or other modes of hyperbaric compressed-gas diving (including in a pool) if the middle ear, sinuses or lungs do not readily equalize gas pressure changes. Free Diving does not normally cause pulmonary barotrauma. The most common cause of distress is eustachian insufficiency. Most fatalities involve deficiencies in prudence, judgment, emotional stability or physical fitness. The following is a partial listing of conditions which usually prohibit or restrict persons from diving.

Potential Absolute Contraindications to Diving Include:

1. Definite emotional instability or mental retardation.
2. Poor exercise tolerance, any cause.
3. Subject to faintness or blackout (e.g., epilepsy, brittle diabetes, dysrhythmia).
4. Subject to pneumothorax (previous pneumothorax, bleb or cyst or air-trapping lesion in lung).
5. Active pulmonary or cardiovascular disease.
6. History of myocardial infarction.
7. Drug addiction or habitual abuse, including alcohol.
8. Perforated eardrum or chronic otitis media.
9. Pregnancy.

Appendix 3.2

Relative Contraindications To Diving Include:

1. Decreased pulmonary reserve from any cause.
2. Malignancies (active) unless treated and without recurrences for 5 years.
3. Gross obesity in diving requiring decompression.
4. History of thoracotomy.
5. Impaired vision or blindness in one eye.
6. Chronic inability to equalize sinus and/or middle ear pressure.
7. Impaired organ function caused by alcohol or drug use.
8. Conditions requiring continuous medication for control (e.g., antihistamines, steroids, barbiturates, mood-altering drugs, or insulin).
9. Meniere's disease.
10. Hemoglobinopathies.
11. Cardiac abnormalities (e.g., pathological heart block, valvular disease, intraventricular conduction defects other than isolated right bundle branch block, angina pectoris, arrhythmia, coronary artery disease).
12. Juxta-articular osteonecrosis.

The Following List of Conditions Usually Prohibits Applicants From Diving: (Adapted from *Davis 1986:47-50*, bracketed numbers are pages in *Davis*.)

1. Tympanic membrane perforation or aeration tube [7]
2. Inability to auto-inflate the middle ears [6,7,8]
3. External ear exostoses or osteomas adequate to prevent external ear canal
4. Meniere's Disease or other chronic vertiginous conditions, status post-surgery, such as subarachnoid endolymphatic shunt for Meniere's Disease [11]
5. Stapedectomy and middle ear prosthesis [9]
6. Chronic mastoiditis or mastoid fistula [5]
7. Any oral or maxillofacial deformity that interferes with the retention of the regulator mouthpiece [43]
8. Corrected near visual acuity not adequate to see tank pressure gauge, watch, decompression tables, and compass underwater. Uncorrected visual acuity not adequate to see the diving buddy or locate the boat in case corrective lenses are lost underwater [13]
9. Radial keratotomy or other recent ocular surgery [14]
10. Claustrophobia of a degree to predispose to panic [15,16]
11. Suicidal ideation [16]
12. Significant anxiety states [16]
13. Psychosis [18]
14. Severe depression [16]
15. Manic states [16]
16. Alcoholism [19,20]

17. Mood-altering drug use [19,20]

18. Improper motivation for diving [16,17,18]

Appendix 3.2

19. Episodic loss of consciousness [1,22]
20. History of seizure. History of seizure in early childhood must be evaluated individually [21]
21. Migraine [20]
22. History of cerebrovascular accident or transient ischemic attack [23]
23. History of spinal cord trauma with neurologic deficit - whether fully recovered or not [23]
24. Any degenerative or demyelinating CNS process [25]
25. Brain tumor with or without surgery [24]
26. Intracranial aneurysm or other vascular malformation [24]
27. History of neurological decompression sickness with residual deficit [23,24]
28. Head injury with sequelae [21]
29. History of intracranial surgery [24]
30. Sickle cell disease [34]
31. Polycythemia or leukemia [34]
32. Unexplained anemia [34]
33. History of myocardial infarction [28,29,20]
34. Angina or other evidence of coronary artery disease [29]
35. Unrepaired cardiac septal defects [32]
36. Aortic stenosis or mitral stenosis [32]
37. Complete heart block [31]
38. Fixed second-degree heart block [31]
39. Exercised-induced tachyarrhythmias [31,32]
40. Wolf-Parkinson-White (WPW) Syndrome with paroxysmal atrial tachycardia or syncope [31]
41. Fixed-rate pacemakers [33]
42. Any drugs which inhibit the normal cardiovascular response to exercise tolerance [31]
43. Peripheral vascular disease, arterial or venous, severe enough to limit exercise tolerance [33,41]
44. Hypertension with end-organ finding - retinal, cardiac, renal or vascular [30]
45. History of spontaneous pneumothorax [36]
46. Bronchial asthma. History of childhood asthma requires special studies [7,35]
47. Exercise or cold air-induced asthma [36,37]
48. X-ray evidence of pulmonary blebs, bullae, or cysts [36,37]
49. Chronic obstructive pulmonary disease [37]
50. Insulin-dependent diabetes mellitus. Diet or oral medication-controlled diabetes mellitus if there is a history of hypoglycemic episodes [38]
51. Any abdominal wall hernia with potential for gas-trapping until surgically corrected [41]
52. Paraesophageal or incarcerated sliding hiatal hernia [39]
53. Sliding hiatus hernia if symptomatic due to reflux esophagitis [39]
54. Pregnancy [1,45]

55. Osteonecrosis. A history consistent with a high risk of dysbaric osteonecrosis
56. Any condition requiring ingestion of the following medication: antihistamines, bronchodilators, steroids, barbiturates, phenytoin, mood-altering drugs, insulin

Appendix 3.2

Suggested References In Diving Medicine:

DIVING MEDICINE, 1997. A. Bove and J. Davis. W.B. Saunders Company, Philadelphia

DIVING AND SUBAQUATIC MEDICINE, Third Edition, 2001. C. Edmonds, C. Lowery and J. Pennefather. Butterworth-Heinemann Ltd. Oxford. (Available from Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100)

MEDICAL EXAMINATION OF SPORT SCUBA DIVERS, Jefferson Davis, M.D. (ed.). Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100.

NOAA DIVING MANUAL, NOAA. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

SCUBA DIVING IN SAFETY AND HEALTH, C.W. Deuker. Madison Publishing Associates, Diving Safety Digest, P.O. Box 2735, Menlo Park, CA 94026

THE PHYSICIAN'S GUIDE TO DIVING MEDICINE, C.W. Shilling, C.B. Carlston and R.A. Mathias. Plenum Press, New York, NY 1984 (Available through the Undersea and Hyperbaric Medical Association, Bethesda, MD)

U.S. NAVY DIVING MANUAL. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.

Appendix 3.3.0

Humboldt State University
***Medical Evaluation Report of Fitness for:
SCUBA, Surface-Supplied & Free Diving***

Name of Applicant (Print or Type)

Date (Mo/Day/Year)

To The Examining Physician:

This person is an applicant for diver training or is presently certified to engage in diving with self-contained underwater breathing apparatus (SCUBA), Surface-Supplied or Free Diving. Diving requires heavy exertion and in several ways puts unusual stress on the diver. Your opinion on the applicant's medical fitness to dive is requested and your approval is required before this person is allowed to dive. The diver must be free of cardiovascular and respiratory disease. An absolute requirement is the ability of the lungs, middle ear and sinuses to equalize pressure when diving while breathing compressed-gas and the ability of the middle ear and sinuses to equalize pressure when Free Diving. Any condition that risks the loss of consciousness shall disqualify the applicant. **Note:** Free Diving may be restricted to pool only diving, but compressed-gas diving can not have limited hyperbaric or hypobaric exposures either in a pool or open water.

Tests: Please initial that the following required tests were completed.

Initial Examination

____ Medical History
____ Complete Physical Exam with emphasis
on cardio-pulmonary, neurological and
otological components
____ Chest X-Ray
____ Resting EKG or 12 lead EKG
____ Pulmonary function
____ Audiogram
____ Visual acuity
____ Hematocrit or Hemoglobin
____ Blood chemistry
____ Urinalysis
____ Assessment of coronary artery disease
using Multiple-Risk-Factor Assessment
(age, lipid profile, blood pressure, diabetic screening, smoker)
____ Any further tests deemed necessary
by the physician

Re-examination

____ Medical History
____ Complete Physical Exam with emphasis
on cardio-pulmonary, neurological and
otological components
____ Resting EKG or 12 lead EKG
____ Pulmonary function
____ Visual acuity
____ Hematocrit or Hemoglobin
____ Blood chemistry
____ Urinalysis
____ Assessment of coronary artery disease
using Multiple-Risk-Factor Assessment
____ Any further tests deemed necessary
by the physician

Appendix 3.3.1

Physician's Recommendation

(Applicant's Name: _____)

- APPROVAL.** I find no medical condition(s) which I consider incompatible with diving.

- RESTRICTED ACTIVITY APPROVAL.** The applicant may dive in certain circumstances as described in "Remarks".

- FURTHER TESTING REQUIRED.** I have encountered a potential contraindication to diving. Additional medical tests must be performed before a final assessment can be made. *See "Remarks".*

- REJECT.** This applicant has medical condition(s) which, in my opinion, clearly would constitute unacceptable hazards to health and safety in diving.

Date: _____

Signature of Examining Physician: _____ M.D.

Name of Examining Physician (Print or Type): _____

Mailing Address: _____

Telephone Number: (_____) _____

Appendix 3.3.2

Examining Physician's Remarks

(Applicant's Name: _____)

"I have discussed with the patient any medical condition(s) which could pose a health hazard to them if they were to participate in diving."

Date: _____

Signature of Examining Physician M.D.

=====

Applicant's Release of Medical Information

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

Signature of Applicant : _____

Appendix 4

CSU/HSU and NAUI Waiver, Release and Indemnity Agreement

For consideration of permitting (Diver/Student)

_____ to enroll in and participate in diving activities and/or class instruction of Free Diving and/or SCUBA diving given by HSU, NAUI and instructor/s Richard Alvarez, Steven Monk, Steven Lackey, Joel Hendrix, Andrew Bruscher, Colin Moxon, in the city of Arcata, county of Humboldt, in the state of California, such activities are to begin on (date) _____, the undersigned hereby voluntarily releases, discharges, waives and relinquishes any and all actions or causes of action for personal injury, property damage or wrongful death occurring to him or her, which injury, property damage or wrongful death arises as a result of engaging in, or receiving instructions in said diving activity and any activities incidental to such activities or instructions, wherever, whenever or however such may occur. The undersigned does for him/herself, his/her heirs, executors, administrators and assigns hereby release, waive, discharge and relinquish any action or causes of action, which may hereafter arise for him/herself and for his/her estate, and agrees that under no circumstances will he/she or his/her heirs, executors, administrators and assigns prosecute or present any claim for personal injury, property damage or wrongful death against HSU and instructor/s Richard Alvarez, Steven Monk, Steven Lackey, Joel Hendrix, Andrew Bruscher, Colin Moxon, or against any of its agents, servants or employees for any of said causes of action, whether the same shall arise by the negligence of any of said persons or organizations, or otherwise.

IT IS THE INTENTION OF (Diver/Student) _____, BY SIGNING THIS DOCUMENT, TO EXEMPT AND RELIEVE THE ORGANIZATION AND INSTRUCTOR/S NAMED HEREIN AND THEIR AGENTS, SERVANTS AND EMPLOYEES, FROM LIABILITY FOR PERSONAL INJURY, PROPERTY DAMAGE OR WRONGFUL DEATH CAUSED BY NEGLIGENCE. BY SIGNING THIS DOCUMENT, THE DIVER/STUDENT ACKNOWLEDGES THAT HE/SHE ASSUMES THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE OR WRONGFUL DEATH UPON HIM/HERSELF.

The undersigned, for him/herself, his/her heirs, executors, administrators or assigns agrees that in the event any claim for personal injury, property damage or wrongful death shall be prosecuted against the organization or instructor/s named above, he/she shall indemnify and hold them harmless from any and all claims or causes of action by whomever or wherever made or presented for personal injuries, property damage or wrongful death.

The undersigned acknowledges that he/she has read the foregoing paragraphs and fully understands the legal rights that he/she is giving up by signing this document. He/she further warrants that he/she has been fully and completely advised of the potential hazards and dangers incidental to engaging in the activity and/or instruction of Free Diving, SCUBA diving, Surface-supplied diving or diving related activities.

Name of Witness

Signature of Witness

Signature of Student (Participant)

Date Signed

Signature of Parent or Guardian
(If Student is a minor)

Appendix 5

Humboldt State University
***Statement Of Understanding of the
HSU Diving Standards & Diving Safety Manual***

I (Diver's Name) _____, have in my possession a current copy of the **Humboldt State University Diving Safety Manual**.

I have read and fully understand the contents of the **Diving Safety Manual** and agree to comply with all guidelines, regulations, procedures, and standards in the manual. I understand that failure to comply with the regulations of the manual may be cause for revocation, suspension, or restriction of my HSU diving certification by action of the campus Diving Safety Officer or the HSU Diving Control Board.

Name of Witness

Signature of Witness

Signature of HSU Diver

Date Signed

Appendix 7

Humboldt State University
HSU Diver Certification Skills Verification

Diver: _____ Phone: (_____) _____

Certification: _____ Date Certified: _____

Skills will only be "signed off" when an HSU SCUBA Instructor has verified the competency of the applicant. **Competency in all skills is required for certification.** Skills must be verified and signed by the Diver/Instructor on the day they are completed. The testing and skills review is to be conducted in a swimming pool or confined water. The SCUBA Instructor or the Diving Safety Officer may require the diver applying for HSU certification to demonstrate all or part of these skills in open water.

1. Swimming Test

Date & Location

Diver / Instructor
(initials)

•Swim underwater without swim aids
for a distance of 75 feet without surfacing.

_____/_____

•Swim 400 yards in less than 12 minutes without
swim aids.

_____/_____

•Tread water for 10 minutes, or 2 minutes without
the use of hands, without swim aids.

_____/_____

•Without the use of swim aids, transport another
person of equal size a distance of 75 feet in the
water.

_____/_____

•Swim underwater without swim aids for a distance
of 150 feet on three breaths.

_____/_____

2. Free Diving Test (full gear; including wet suit)

•Entries

_____/_____

•Neutral buoyancy

_____/_____

•Surface swimming

_____/_____

•Free dive: 25 yds UW

_____/_____

•Free dive: 50 yds UW on 1 breath

_____/_____

•Free dive: Recover 25 lbs @ 10 ft

_____/_____

•Inflation BCD

_____/_____

•Weight belt R/R (surface & UW)

_____/_____

•Mask R&R @ 10 ft

_____/_____

•Deep water exit

_____/_____

•Fins R&R @ 10 ft

_____ / _____

Appendix 7

	Date & Location	Diver / Instructor (initials)
2. SCUBA Diving Test (full gear; including wet suit)		
•Gear assembly	_____	_____/_____
•Buddy check	_____	_____/_____
•Entries	_____	_____/_____
•Neutral buoyancy (surf)	_____	_____/_____
•Hooked-up descent	_____	_____/_____
•Neutral buoyancy @ 10 ft	_____	_____/_____
•Regulator R&R/2 methods	_____	_____/_____
•Mask R&R (UW)	_____	_____/_____
•Weight belt R&R (surface)	_____	_____/_____
•Weight belt R&R (UW)	_____	_____/_____
•Tank R&R (surface)	_____	_____/_____
•Tank R&R (UW)	_____	_____/_____
_____/_____		
•Buddy breathing: stationary	_____	_____/_____
•Buddy breathing: 50 yd swim	_____	_____/_____
•Buddy breathing: ascent	_____	_____/_____
•Octopus breathing: stationary	_____	_____/_____
•Octopus breathing: 50 yd swim	_____	_____/_____
•Octopus breathing: ascent	_____	_____/_____
•Emergency swimming: ascent	_____	_____/_____
•Mask off: ascent	_____	_____/_____
•Mask off: descent	_____	_____/_____
•Surface swim: 400 yds (Snorkel-to-regulator) (12 mins or less)	_____	_____/_____
3. Diver Rescue Test (full SCUBA gear; including wet suit)		
• Approaches: surface	_____	_____/_____
• Approaches: UW	_____	_____/_____
•Assists (100 yds)	_____	_____/_____
•Panicked-diver control (active)	_____	_____/_____
•Panicked-diver control (passive)	_____	_____/_____
•Cramp removal	_____	_____/_____
_____/_____		
•Tourniquet: arm (victim and self)	_____	_____/_____
•Tourniquet: leg (victim and self)	_____	_____/_____

- Victim wt belt removal: UW
- Victim wt belt removal: surface

_____	_____ / _____
_____	_____ / _____

Appendix 7

	Date & Location	Diver / Instructor (initials)
•Victim BCD inflation: surface	_____	_____/_____
•Unconscious UW diver (10+ ft to surface)	_____	_____/_____
•Resuscitation (100 yds) Mouth-to-mouth*	_____	_____/_____
•Gear removal (max 2 min)	_____	_____/_____

***Note:**

The Diving Safety Officer or his/her designee may require modification of this skills testing because of environmental conditions, experience or skill level of person being tested, or to assure the safety of the Dive Team.

Appendix 8

AAUS Request for Diving Reciprocity Form & Verification of Diver Training and Experience

A scientific diver that is currently certified under the auspices of an organizational member institution of the American Academy of Underwater Sciences (AAUS) shall be recognized by any other organizational member of AAUS and may apply for reciprocity in order to dive with the host organization. Organizational members that are in good standing with AAUS operate, at a minimum, under the AAUS Standards for Scientific Diving Certification and Operation of Scientific Diving Programs (1996 edition). The visiting diver will comply with the diving regulations of the host organization's Diving Safety Manual unless previously arranged by both organization's Diving Control Boards.

The host organization has the right to approve or deny this request and may require, at a minimum, a checkout dive with the Diving Safety Officer (DSO) or designee of the host organization. If the request is denied, the host organization should notify the DSO of the visiting diver the reason for the denial. The DSO for the visiting scientific diver has confirmed the following information:

Visiting Diver's Name: _____

(Date)

- _____ Written scientific diving examination
- _____ Last diving medical examination
- _____ Most recent checkout dive
- _____ Scuba regulator/equipment service/test
- _____ CPR training (Agency) _____
- _____ Oxygen administration (Agency) _____
- _____ First aid for diving _____
- _____ Date of last dive

Number of dives completed within previous 12 months? _____

Depth certification _____

Any restrictions? (Y/N) _____ if yes, explain:

Please check any pertinent specialty certifications:

- | | | |
|----------------------|--------------------------------|------------------|
| _____ Dry suit | _____ Rescue | _____ Blue Water |
| _____ Dive computer | _____ Divemaster | _____ Altitude |
| _____ Nitrox | _____ Instructor | _____ Ice/Polar |
| _____ Mixed gas | _____ EMT | _____ Cave |
| _____ Closed circuit | _____ Dive Accident Management | _____ Night |
| _____ Saturation | _____ Chamber operator | _____ Other |
| _____ Decompression | _____ Lifesaving | |

This is to verify that the above individual is currently a certified Scientific Diver

at: _____

(Name of AAUS Organizational Member)

Diving Safety Officer: _____

(Signature)

(Date)

(Print Name)

(Telephone, FAX, Email)

Appendix 8.1

AAUS Checkout and Training Evaluation

Certified scientific divers and Divers-In-Training from AAUS organizational members should be able to demonstrate proficiency in the following skills during checkout dives or training evaluation dives with the Dive Safety Officer or designee:

- ___ Knowledge of AAUS diving standards and regulations
- ___ Pre-dive planning, briefing, site orientation, and buddy check
- ___ Use of dive tables and/or dive computer
- ___ Equipment familiarity
- ___ Underwater signs and signals
- ___ Proper buddy contact
- ___ Monitor cylinder pressure, depth, bottom time
- ___ Swim skills:
 - ___ Surface dive to 10 ft without scuba gear
 - ___ Demonstrate watermanship and snorkel skills
 - ___ Surface swim without swim aids (400 yds <12 min)
 - ___ Underwater swim without swim aids (25 yds without surfacing)
 - ___ Tread water without swim aids (10 min.), or without use of hands (2 min.)
 - ___ Transport another swimmer without swim aids (25 yds)

- ___ Entry and exit (pool, boat, shore)
- ___ Mask removal and clearing
- ___ Regulator removal and clearing
- ___ Surface swim with scuba; alternate between snorkel and regulator (400 yd.)
- ___ Neutral buoyancy (hover motionless in midwater)
- ___ Proper descent and ascent with B.C.
- ___ Remove and replace weight belt while submerged
- ___ Remove and replace scuba cylinder while submerged
- ___ Alternate air source breathing with and without mask (donor/receiver)
- ___ Buddy breathing with and without mask (donor/receiver)
- ___ Simulated emergency swimming ascent
- ___ Compass and underwater navigation
- ___ Simulated decompression stop
- ___ Rescue:
 - ___ Self rescue techniques
 - ___ Tows of conscious and unconscious victim
 - ___ Simulated in-water rescue breathing
 - ___ Rescue of submerged non-breathing diver (including equipment removal, simulated rescue breathing, towing, and recovery to boat or shore)
 - ___ Use of emergency oxygen on breathing and non-breathing victim
 - ___ Accident management and evacuation procedures

Additional Training (optional)

- ___ Compressor / Fill station orientation and usage
- ___ Small boat handling

Appendix 9

Humboldt State University Procedure for Suspending HSU Diver Certification and Diving Activities

The purpose of this protocol is to provide:

- 1) A clear and definitive procedure for the suspension of diving operations and/or diver certification(s) under the auspices of Humboldt State University.
- 2) For the review and appeal of a suspension.

Suspension of Diving Activities

When can diving activities be suspended?

Diving operations and/or diver certification(s) can be suspended if the health or safety of the dive team or individual diver may be in jeopardy and when California State University or Humboldt State University regulations are violated.

Who can suspend diving activities?

Suspension can be initiated by any of the following:

1. Diving Safety Officer (Section 3.32.4)
2. Diving Control Board (Section 1.24 and 3.42.13)
3. Dive Team Members (Section 6.04 and 6.05)
4. Lead Diver (Section 3.67.4)

How are diving activities suspended?

- 1) Initial notification and suspension of diving operations and/or diver certification(s) may be delivered verbally or in writing. If the notification of suspension is written, the document shall be signed by the person suspending the activities and the dive team member(s) receiving the suspension notification. All parties signing the document shall be given a copy of the document.
- 2) Within forty-eight (48) hours after the suspension of diving activities, a written explanation and justification of the suspension shall be delivered to the Diving Control Board (DCB) Chair or the Diving Safety Officer (DSO).
- 3) The DCB shall deliver written notification of the suspension to the Lead Diver and dive team member(s) affected by the suspension. This written notification shall be delivered within five (5) working days after the date that the DCB or DSO was notified (in writing) of the suspension. The DCB Chair, DSO, Lead Diver, and suspended divers shall sign and receive a copy of the document.

The suspension notification shall contain the following:

- 1) The name(s) of the diver(s) whose diving privilege(s) is/are suspended;
- 2) The identification of the dive plan or diving operation that was suspended.

- 3) An explanation of why the diving activities/certification(s) were suspended.
- 4) The length of the suspension and conditions or actions necessary for reinstatement of diving privileges (certification).

Appendix 10

Humboldt State University ***Review and Appeal of Diver Certification Suspension***

STEP #1 - Suspended Diver(s):

Shall respond in writing to the DCB within five (5) working days of receipt of the written suspension notification from the DCB. The written response shall include, but not be limited to:

- 1) A review of the events or conditions which led to the suspension and were listed in the suspension notification.
- 2) How these events or conditions will be rectified, corrected, and prevented.
- 3) A request, if desired, to appear before the DCB to provide information regarding the suspension or to appeal the suspension.

STEP #2 -Diving Control Board:

Shall meet within ten (10) working days of receipt of the written response from the suspended diver(s) to review the information provided.

STEP #3 -Diving Control Board:

Shall set a hearing date, if a hearing is requested by the suspended diver(s). This request for a hearing date must be written and delivered to the DCB. The board shall set a hearing date within fifteen (15) working days after receipt of such request.

STEP #4 -Diving Control Board:

Shall consider any written information or appeal from the suspended divers and shall modify, cancel, or reaffirm the suspension of diving activities. The DCB shall deliver to the suspended diver(s), within five (5) working days, a written review of its decision which shall include, but not be limited to:

- 1) Any modifications to the written suspension notification from the DCB.
- 2) A response to the written information or information delivered during the appeal hearing by the suspended diver(s).
- 3) The terms and duration of the suspension.
- 4) The conditions necessary for re-certification of the suspended divers for diving under the auspices of HSU.

Appendix 11

Humboldt State University
DIVE PLAN

1. **Lead Diver:** _____ Certification: _____

2. **Other Dive Team Members:**

Name: _____ Certification: _____

Name: _____ Certification: _____

Name: _____ Certification: _____

3. **Date(s) Of Dive(s):** _____

4. **Location(s) of Dive(s):** _____

5. **Estimated Depth(s) & Bottom Time(s):**

6. **Summary of Dive Objectives and Activities.** (List equipment, boats and support equipment to be used, description of repetitive dive profile and any anticipated hazards.)

7. **Current Emergency Management Plan Filed?** _____ Yes
_____ No

8. **Lead Diver's Signature:** _____ **DATE:** _____

Approved By:

9. **HSU Diving Safety Officer:** _____ **DATE:** _____

* See back of this form for restrictions and to list additional information.

Appendix 12

Humboldt State University

DIVE LOG

Dive Date: _____ (Only one day per Dive Log)

Diver Filing Log: _____ **Certification:** _____

Dive Buddy: _____ **Certification:** _____

Lead Diver: _____ **Certification:** _____

Location of Dive(s): _____

Dive Conditions

Sea State: _____ **Visibility:** _____

Surf Height: _____ **Bottom Depth:** _____

Type of Bottom: _____ **Altitude:** _____

Dive Objectives and Activities

Dive Mode

SCUBA: _____ **Free Diving:** _____ **Surface Supplied:** _____

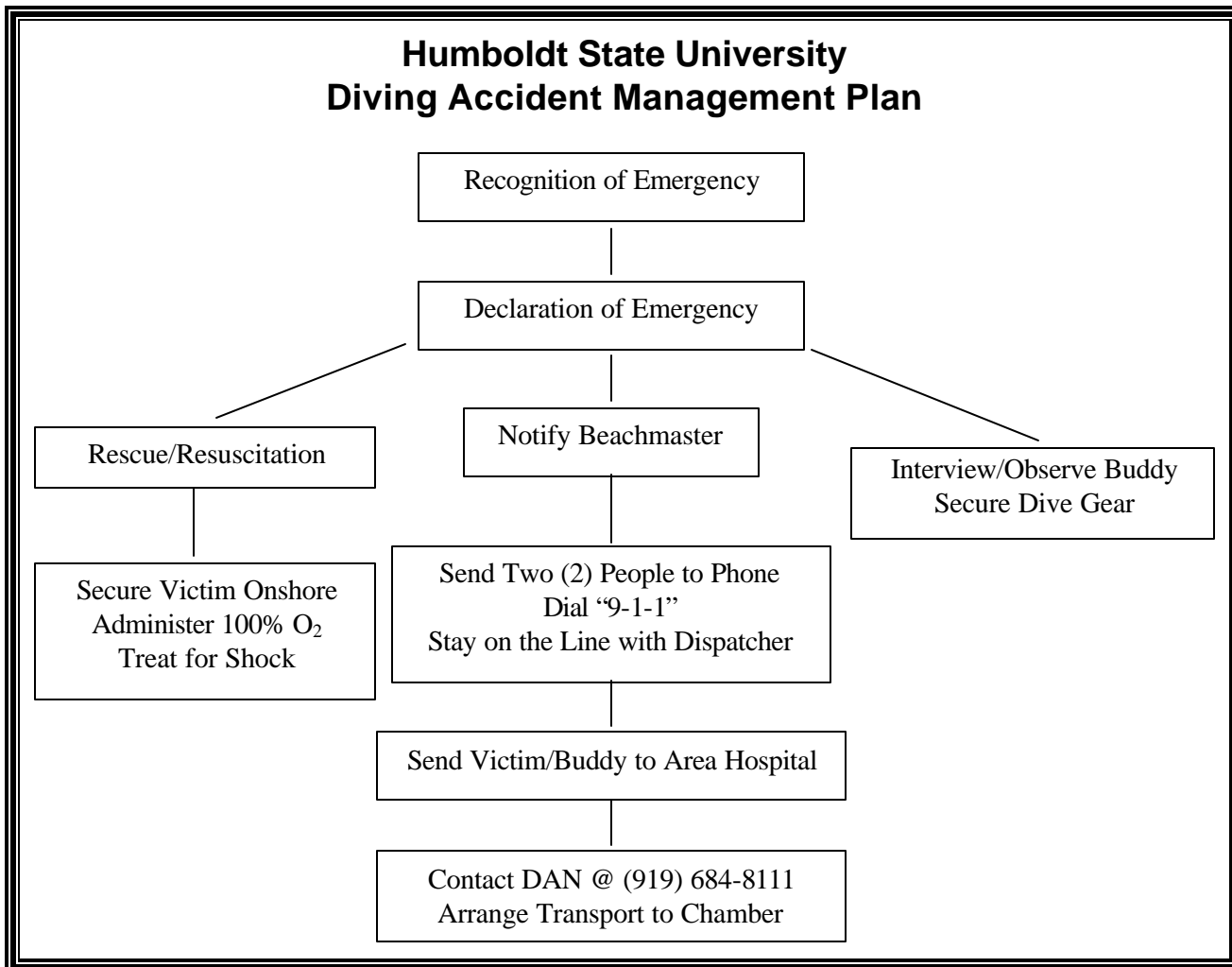
Breathing Gas: _____ **Model Dive Computer or Dive Table Used:** _____

DIVE PROFILE

	#1	#2	#3	#4
Time In				
Time Out				
Bottom Time				
Max Depth				
Surface Interval				
Residual Group				
SS/Decom Stop: Depth-Time				

***On back of this form, describe actual or near incidents and problems.**

Appendix 13



IMPORTANT PHONE NUMBERS

CITY:	<i>Gold Beach</i>	<i>Crescent City</i>	<i>Trinidad</i>	<i>Eureka</i>	<i>Trinity Lake</i>	<i>Fort Bragg</i>	<i>Monterey</i>
HOSPITAL:	Curry General (541) 247-6621	Sutter Coast (707) 464-8888	Mad River (707) 822-3621	St Joseph (707) 445-8121	Trinity County (530) 623-5541	Mendocino Coast (707) 961-1234	Mont. Commun (831) 624-5311
TRANSPORT	So. Oregon AA (541) 469-7911	Del Norte AA (707) 487-1116	Redding Mercy (530) 246-0400	Redding Mercy (530) 246-0400	Redding Mercy (530) 246-0400	Mediplane Reach (800) 622-4045	Air Ambul. (800) 262-8526

Chambers (North to South)

Virginia Mason Hosp (Seattle): (206) 624-1144

Travis Air Force Base (Fairfield): E.R. (707)423-3828 Dr. Wirjosemipo (707) 423-3987

Pacific Grove (Monterey): Emergency: (831) 648-3110 Information: (831) 648-3111

Search and Rescue (North to South)

United States Coast Guard **Astoria:** (503) 861-2242

United States Coast Guard **Humboldt Bay:** (707) 839-6100

USCG Search and Rescue **Fort Bragg:** (707) 964-6611

A= OPEN THE AIRWAY

B= CHECK FOR BREATHING.... **100% oxygen ventilation!**

C= CHECK PULSE

Appendix 14

Humboldt State University *Procedures for Profiling Dives*

Dive Depth: Maximum depth during dive.

Bottom Times (BT): Total time from leaving surface until return to surface (excluding decompression stop times).

Total Bottom Time: Residual Nitrogen Time (RNT) will be added to Bottom Time and the total will be the Total Bottom Time (TBT).

Ascent Rates: Maximum ascent rates will be 30 fsw/min; unless otherwise indicated by dive computer or alternate dive table being used to profile dive. The AAUS “Safe Ascent Recommendations” should be followed.

Decompression Stop: Is required at a depth of 15 feet for a minimum of 5 minutes for all dives deeper than 30 fsw and on all repetitive dives. Decompression time is not added to Bottom Time.

Dive Tables: Unless otherwise indicated in this manual, the NAUI Dive Tables will be used to profile dives.

Dive Computers: The Diving Safety Officer must approve the use of Dive Computers in lieu of dive tables.

Exceptional Exposure Correction (EEC): Add one (1) “time box” on Table 1 of Dive Tables to Total Bottom Time. Required on all dives.

Decompression Dives: No diving beyond the No-Decompression Limits (NDL) is permitted unless pre-approved by the Diving Safety Officer.

Decompression Dives Tables: NAUI dive table decompression guidelines will be followed; if NAUI table limits are exceeded then profiling will be in accordance with U.S. Navy Air Decompression tables and procedures.

Altitude Dives: Dives made above 1,000 feet ABSL or when a diver will go above 1,000 feet ABSL within 24 hours after the dive, must be profiled using the NOAA Sea Level Equivalent Depth (SLED) Tables. The SLED correction is only used in Table 1 of NAUI Dive Tables. Upon arriving at altitude, appropriate residual nitrogen tables must be used to profile the first dive at altitude if that dive is made within 24 hours of arriving at altitude.

Repetitive Dives: When possible, repetitive dives should be made so that the maximum depth of each successive dive is less than the maximum depth of the preceding dive.

Example of Dive Profiling Using the EEC

Single Dive (NAUI Table 1)

Dive Depth.....Maximum depth + arithmetic correction

Bottom Time.....Bottom time + arithmetic correction + EEC

Repetitive Dives (NAUI Table 1)

Dive Depth.....Maximum depth + arithmetic correction

Total Bottom Time.....Bottom time + RNT + arithmetic correction + EEC

Appendix 15

Definition of Terms

Apnea- Breath-holding as used during Free Diving.

American Academy of Sciences (AAUS)- An organization that is recognized by the federal OSHA as representing scientific diving organizations in the establishment of scientific diving standards.

Altitude Dive- A dive made above 1,000 feet Above Sea Level (ABSL) or a dive made by a diver that will go above 1,000 feet ABSL within twenty-four (24) hours of the end of the last dive.

Arterial Gas Embolism (AGE)- A form of Decompression Illness caused by a hypobaric pulmonary injury while breathing a compressed gas.

Ascent Rate -The rate of reduction of hyperbaric pressure. The maximum equivalent rate of pressure reduction at sea level is an ascent of 30 feet per minute; unless dive profiling is based on specialized tables or computers.

Barotrauma- Any injury to a diver resulting from pressure disequilibria within the body as the result of a hyperbaric or hypobaric exposure.

Bottom Time (B.T.) - The total time from leaving surface until return to surface (excluding decompression stop times).

Breath-hold Diving - A diving mode in which the diver does not use compressed gas during the dive. Free Diving.

Buddy Breathing - The sharing of a single air source between divers.

Buddy Diver - Second member of a two person Dive Team.

Buddy System- When Buddy Divers are in constant communication.

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

Certified Diver- A diver who has a valid diver certification from an AAUS organization or certifying organization recognized by Humboldt State University.

Closed or Semi-Closed Circuit SCUBA - SCUBA equipment that either totally or partially recirculates the breathing gas(es). Often called "Rebreathers".

Compressed Air Cylinder - A pressure vessel or tank for the storage of compressed gas.

Controlled Ascent - Any one of several kinds of ascents including normal, swimming, and buddy breathing ascents where the diver(s) maintain a normal ascent rate and complete all safety and decompression stops.

Decompression Dive - A dive that requires a stop during the ascent.

Decompression Illness (DCI)- Hypobaric injuries to divers that require immediate treatment and ventilation with 100% oxygen. Includes AGE and DCS.

Appendix 15

Decompression Sickness (DCS) - A condition with a variety of symptoms which may result from gas and bubbles in the tissues of divers after pressure reduction while breathing a compressed gas. Injury results from hypoxia and hypo-perfusion. A form of Decompression Illness.

Decompression Stop: Is required at a depth of 15 feet for a minimum of 5 minutes for all dives deeper than 30 fsw and on all repetitive dives. Decompression Stops made during dives above 1,000 ft ABSL will be made at less than 15 fsw (see NOAA Tables). Decompression time is not added to Bottom Time.

Decompression Table - A profile or set of profiles of depth-time relationships for ascent rates, breathing mixtures and decompression stops required, which are to be followed after a specific depth-time exposure or exposures. Decompression stops made during dives above 1,000 ft ABSL will be made at depths less than the depths specified for sea level dives. (Section 6)

Dive - A descent underwater, during which the diver experiences hyperbaric conditions. Diving includes all hyperbaric exposures breathing compressed gas and Free Dives.

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

Dive Site - The location where a dive is conducted.

Dive Table - A table or set of tables of depth-time relationships for ascent rates and breathing mixtures to be followed after a specific depth-time and altitude exposure during decompression or no-decompression dives.

Dive Team - Divers and support individuals who are exposed to or control the exposure of others to hyperbaric conditions.

Diver - An individual who completes a dive; including, SCUBA, Surface-Supplied and Free Diving.

Diving Mode - A type of diving requiring specific equipment, procedures, and techniques ; such as, SCUBA, Surface-Supplied, mixed gas and Free Diving.

Diving Control Board- The persons acting as the official representative of Humboldt State University in matters concerning diving under the auspices of HSU.

Diving Safety Officer- The individual responsible for the safe conduct of diving under the auspices of HSU.

Emergency Swimming Ascent - A controlled emergency ascent made by swimming to the surface in the event of an emergency, as when the diver is low or out of air, or under excessive stress.

Exceptional Exposure Correction (EEC) - An adjustment made to dive table calculations during a non-decompression, air dive that compensates for factors which predisposes divers to Decompression Illness. The correction is part of a series of required dive profiling procedures specified in Appendix 14 of this manual.

Free Diving- A breath-hold (apnea) diving mode where the diver does not breathe compressed gas during the dive. A descent underwater while the diver hold his/her breath.

FSW - Feet of seawater, the equivalent hydrostatic pressure indicated in feet of sea water at sea level.

Appendix 15

Hookah Diving - A type of surface-supplied diving using a SCUBA regulator where there is no voice communication with the surface.

Hyperbaric Conditions - Pressure conditions during a dive which are in excess of normal, ambient atmospheric pressure.

Hypobaric Conditions - Pressure conditions during a dive which are less than ambient atmospheric or hydrostatic pressure

Hypoxia- Lower than normal tissue levels of oxygen.

Hydrostatic Pressure - Pressure generated by the weight of water at a specific depth; expressed as pounds-per-square-inch (psi) or Atmospheres Absolute (ATA), which includes ambient atmospheric pressure.

Lead Diver - The University or Scientific Diver with experience and training to conduct the diving operation and who has been designated as the person responsible for the diving operation.

Leadership Diver - A University Diver certified, or training for certification, as a diving Assistant Instructor, Divemaster or Instructor.

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

MSW - Meters of seawater or hydrostatic pressure.

Neutral Buoyancy- When diver density equals the water density.

Nitrox- A breathing mixture that has more oxygen than atmospheric air. Recognized mixtures are NOAA Nitrox 1 = 32% oxygen and NOAA Nitrox 2 = 36% oxygen. Also called “Enriched Air” (EANx).

No-Decompression Limits (NDL) - The maximum amount of time a diver may spend at a given depth and return directly to the surface at a controlled rate, without a decompression stop.

Normal Ascent - An ascent made at the designated ascent rate and with required safety or decompression stops.

Psig - Pounds per square inch gauge.

Rated Pressure - The pressure of a gas storage cylinder at which the cylinder contains the maximum volume of gas allowed in that cylinder.

Recompression Chamber - A pressure vessel for human occupancy such as a decompression chamber, closed bell, or deep diving systems used to decompress divers and to treat decompression sickness, air embolism or any barotrauma.

Reserve Breathing Gas - A supply system of air or mixed gas (as appropriate) carried by the diver which is independent of the primary supply system and sufficient to support divers during any planned decompression dive and an ascent.

Appendix 15

Recreational Diving- All non-Commercial or Scientific Diving.

Sea Level Equivalent Depth- A NOAA Dive Manual table that lists the altitude corrected ocean depth equivalents for calculating dive profiles above 1,000 ABSL.

Scientific Diver- A HSU diver certification required for the conducting Scientific Diving under the auspices of the University (Section 2).

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

Shallow-Water Blackout- When a Free Diver losses consciousness during ascent from hypoxia.

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

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

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

Visiting Diver- A diver certified to dive under the auspices of another university or agency who is given temporary HSU Scientific Diver Certification under the terms of AAUS reciprocity.

Working Pressure - The maximum pressure at which the system is designed to operate. The working pressure must be stamped on cylinders.

Appendix 16

Humboldt State University
Dive Program

Required Diving Equipment*

Mask/snorkel

Fins

Buoyancy compensator (BCD) w/ low pressure (LP) inflator and whistle

Exposure suit (wet suit) w/ hood, gloves and booties

Weight belt

SCUBA tank

SCUBA regulator w/alternate air (on left) & submersible pressure gauge (SPG)

Depth gauge

Bottom timer

Knife

NAUI Dive Table (1989-90); other tables as needed

Compass

Slate

(Specialized Equipment)

Dive Log/Field Notebook (“Rite-in-the-Rain” book)

Tourniquet, 40 inch surgical tubing (if trained in the use of)

Pocket-mask w/oxygen inlet (if trained in the use of)

Dive light

Mesh collecting bag

8 x 11” slate

*** All equipment must meet HSU standards and be approved by the DSO.**

Each course and diving operation will require specific equipment.