

Clemson University Scientific Diving Program

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Introduction

This manual is published in compliance with 29CFR1910.401, Standards for Scientific Diving Certification and the Clemson University Sponsored Programs Policies and Procedures Manual. This electronic copy is updated whenever the Diving Control Board makes changes; however, the signed hard copy of this manual remains the definitive source.

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Purpose

This manual establishes a Scientific Diving Program at Clemson University in accordance with 29CFR1910.401 for the purpose of protecting the health and safety of Clemson students and employees while participating in scientific diving. The only mode of diving authorized by this program is SCUBA.

Definitions

(29CFR1910.402)

- a) Dive supervisor means the designated person-in charge of a specific diving operation.
- b) Dive team means divers and support personnel involved in a diving operation, including the dive supervisor.
- c) No-decompression limits means the depth-time limits of the “no-decompression limits and repetitive dive group designation table for no-decompression air dives” from the US Navy Diving Manual or equivalent limits approved by the Diving Control Board.
- d) Scientific diving means diving performed solely as a necessary part of a scientific, research or educational activity by employees whose sole purpose is to perform scientific research tasks.
- e) SCUBA diving means a diving mode independent of surface supply in which the diver uses open circuit self-contained underwater breathing apparatus, utilizing compressed air.
- f) Standby diver means a diver at the dive location available to assist a diver in the water.
- g) Tender means an individual at the dive location who remains on the surface to control safety in the dive location.

Administration

The Scientific Diving Program shall be administered by a Diving Control Board. Per 29CFR1910 Appendix B to Subpart T, this board shall consist of a majority of scientific divers and have “autonomous and absolute authority over the scientific diving program’s operations”. The initial members of the board shall be appointed by the Director of Environmental Health and Safety. Subsequent members of the board shall be nominated by a board member and approved by a majority vote of the board. The Diving Officer shall be appointed by the Director of Environmental Health and Safety, and shall be a voting member of the board. Scientific Diving operations shall be conducted in accordance with the provisions of this manual. Changes to this manual shall be approved by majority vote of the Diving Control Board.

Responsibilities

- a) The Diving Control Board shall : review, and revise as required, the Scientific Diving Manual annually; review accidents/incidents, determining appropriate disciplinary action(s) where appropriate.
- b) The Diving Officer shall : certify the qualifications of all divers; approve dive plans; ensure that a competent dive supervisor is designated for each diving operation; investigate diving accidents/incidents, and recommend disciplinary action(s) to the Diving Control Board; participate in diving operations, on an unannounced basis, to ensure compliance with the provisions of the Scientific Diving Manual.
- c) The Dive Supervisor shall : submit a dive plan, providing all information prescribed in Enclosure (1), for the Diving Officer’s approval; ensure that all dives are conducted safely and in accordance with the provisions of the Scientific Diving Manual and the dive plan; ensure that all divers are properly qualified, adequately trained and physically fit for the conditions at hand; ensure that all diving equipment is safe and maintained in accordance with paragraph 6; ensure that emergency procedures are understood by the entire dive team prior to conducting a dive.

Diver Qualification

Only divers who demonstrate successful completion of a nationally recognized basic diver training course (NAUI, PADI, YMCA, US Navy) to the Diving Officer will be certified for participation in scientific diving conducted by Clemson University. Each prospective diver must complete, and submit to the Diving Officer, the medical form attached as Enclosure (2) and the experience questionnaire attached as Enclosure (3). Dive Supervisors shall be selected from certified Scientific Divers by the Diving Officer based on experience, ability and judgment.

Equipment

SCUBA regulators, and all gauges, shall be inspected and tested by a qualified technician prior to first use and every 12 months thereafter. SCUBA cylinders must have an internal visual inspection annually, and a hydrostatic test every 5 years. All equipment must be maintained in safe operating condition. These standards apply to personal, as well as project owned, equipment that is used for scientific diving. As dealers are normally able to service only those makes they market, availability of service should be a key element in the decision on make of gear to be purchased. Note also that the Scientific Diving Program at Clemson makes no provision for either an institutional dive locker or institutional ownership of equipment. Equipment is either personally owned, and maintained at personal expense, or project owned and maintained at project expense.

Dive Plan

The prospective dive supervisor shall submit a dive plan for the Diving Officer's approval, providing all information prescribed in Enclosure (1).

Pre-Dive Procedures

- a) Planning of a diving operation shall include an assessment of the safety and health aspects of the following : surface and underwater conditions and hazards, thermal protection, dive team assignments (specifically pairing of divers), availability of decompression and medical facilities.
- b) To minimize hazards to the dive team, diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with dives.
- c) The dive team shall be briefed on : the dive plan, underwater tasks required, unusual environmental conditions and/or hazards, any modifications to normal operating procedures necessitated by the specific diving operation, emergency procedures.
- d) All diving and emergency equipment shall be inspected by the dive supervisor prior to donning.
- e) Diving equipment shall be inspected by the dive "buddy" after equipment is donned, prior to water entry.
- f) When diving in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night dives.

Refusal to Dive

The decision to dive is that of the diver. A diver may refuse to dive, without fear of penalty, whenever he / she feels it is unsafe to dive.

Dive Procedures

- a) Dives shall not be conducted : at depths deeper than 130 fsw; outside the no-decompression limits; against currents exceeding 1 knot unless line-tended; in enclosed or physically confining spaces unless line-tended.
- b) Except under emergency conditions, the “buddy” system of 2 divers working as a team, and remaining in close physical proximity shall always be the rule.
- c) A standby diver and/or a tender, as specified in the dive plan, must be utilized.
- d) Over bottom dives shall be conducted with a buoyed, weighted line with depth markings.

Termination of Dive

The dive shall be terminated while there is still sufficient tank pressure to permit the diver to safely reach the surface.

Emergency Procedures

Each dive plan shall include site specific instructions for emergency evacuation and medical treatment, to include location of the nearest operational hyperbaric chamber.

Post-Dive Procedures

- a) After completion of a dive, the dive supervisor shall check the physical condition of every diver, instructing them to report any subsequent physical problems or adverse physiological effects.
- b) The dive supervisor shall ensure that the following information is logged for each dive : date, time, location; dive team members; maximum depth and bottom time for each diver.

Dive Plan Form

Inclusive Dates of Proposed Dives _____

Approximate Number of Proposed Dives _____

Location(s) of Proposed Dives _____

Depth(s) and Bottom Time(s) Anticipated _____

Dive Platform (boat, shore, pier) and Proximity to Dive Site _____

Purpose of Dive(s) _____

Hazardous Conditions Anticipated _____

Diving Equipment Check. (Each diver has a tank, regulator, mask, snorkel, flotation or buoyancy compensation device, quick release mechanism on tank harness and weight belt, depth gauge, tank pressure gauge, diving watch, compass and knife.) _____

Support Equipment Check. (dive flag, first aid kit, ladder if using boat) _____

Thermal Protection (must be same for each dive pair) _____

Tender(s) _____

Standby Diver(s) _____

(Initial) Dive Pairings and Date (mo/yr) of Last Dive

_____ () +

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Emergency Medical Facility Location, Phone, Hours _____

Nearest Operational Hyperbaric Chamber Location, Phone, Hours _____

Additional Information _____

Signature of Dive Supervisor _____

Diver Experience Questionnaire

Name, SSN _____

Sex _____ Age _____ Date Last Physical _____

Status (faculty, staff, student) _____

(If Student) Paid or Volunteer _____ (Note that volunteers are not eligible for worker's compensation; they must provide evidence of medical insurance.)

Department, Phone, e-mail _____

Name, Address, Phone of person to be notified in an emergency _____

Date SCUBA Training Completed _____ (**ATTACH COPY OF CERTIFICATE**)

Date Certified First Aid _____ Date Certified CPR _____

Number of Open Water Dives _____ Date of Last Open Water Dive _____

Number of Ocean Dives _____ Date of Last Ocean Dive _____

Maximum Depth Experienced _____

Other Diving Training (yes / no) _____ (**ATTACH COPY OF CERTIFICATE**)

Provide Brief Description of Anticipated Diving _____

Signature

SCUBA DIVING MEDICAL HISTORY FORM

Applicant's Name#: _____

Sex: __ Age: __ Wt.:__ Ht: __

Department: _____ Date: _____

TO THE APPLICANT:

SCUBA diving makes considerable demands on your physical and emotional condition. Diving with particular defects amounts to asking for trouble, not only to yourself, but to anyone coming to your aid if you get into difficulty in the water. Therefore, it is prudent to meet certain medical and physical requirements before beginning a diving or 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. 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 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.

(Please use pen)

I. General

	YES	NO
1. Have you ever had epilepsy (seizures)?		
2. Do you ever faint or have blackout spells?		
3. Have you ever been addicted to drugs?		
4. Do you have diabetes?		
5. Do you suffer from motion sickness or sea/air sickness?		
6. Are you prone to claustrophobia?		
7. Have you ever had a nervous breakdown?		
8. Are you pregnant?		
9. Do you suffer from menstrual problems?		
10. Do you get anxiety spells or hyperventilation?		
11. Do you get frequent sour stomachs, nervous stomachs or vomiting spells?		
12. Have you ever had a major operation?		
13. Are you presently being treated by a physician?		
14. Are you taking medication regularly?		
15. Have you ever been rejected or restricted from sports?		
16. Do you have frequent and severe headaches?		
17. Do you wear dental plates?		
18. Do you wear glasses/contact lenses?		
19. Do you have any bleeding disorders?		
20. Have you ever had any problem with alcoholism?		
21. Have you ever had any problems related diving?		
22. Do you suffer from nervous tension or emotional problems?		
23. Do you sometimes take tranquilizers?		

II. Ears

	YES	NO
24. Have you ever had perforated ear drums?		
25. Do you have hay fever?		
26. Do you have frequent sinus trouble, frequent drainage from the nose, post-nasal drip, or stuffy nose?		
27. Do you have drainage from the ears?		
28. Do you get frequent earaches?		
29. Do you have difficulty with your ears in airplanes or mountains?		
30. Have you had ear surgery?		
31. Do you have ringing in your ears?		
32. DO you get frequent dizzy spells?		
33. Do you have any hearing problems?		
34. Do you have trouble equalizing pressure in your ears?		

III. Lungs

	YES	NO
35. Have you ever had asthma?		
36. Have you ever had wheezing attacks?		
37. Do you have a chronic or recurrent cough?		
38. Do you frequently raise sputum?		
39. Have you ever had pleurisy?		
40. Have you ever had a collapsed lung (pneumothorax)?		
41. Do you have lung cysts?		
42. Have you had pneumonia?		
43. Have you ever had tuberculosis?		
44. Do you get shorter of breath than most people?		
45. Have you ever been told that you have a lung problem or abnormality?		
46. Do you ever spit blood?		
47. Do you ever have breathing difficulty after exposure to particular pollens or animals?		
48. Are you subject to bronchitis?		
49. Have you ever had subcutaneous emphysema (air under the skin)?		
50. Have you ever had air embolism after diving?		

IV. Heart

	YES	NO
51. Have you ever had rheumatic fever?		
52. Have you ever had scarlet fever?		
53. Have you ever been told you had a murmur?		
54. Have you ever been told you have a large heart?		
55. Have you ever had high blood pressure?		
56. Have you ever had angina (heart pains or pressure in the chest)?		
57. Did you ever have a heart attack?		
58. Do you ever have low blood pressure?		
59. Do you have recurrent or persistent swelling of the legs?		
60. Have you ever had pounding, rapid heartbeat or palpitations?		
61. Have you ever had dizziness or faint spells?		
62. Do you get fatigued or short of breath easily?		
63. Have you been told you had an abnormal EKG?		

V. Bone Problems

	YES	NO
64. Do you suffer from joint problems, dislocations or arthritis?		
65. Have you ever had back trouble or back injuries?		
66. Have you had a ruptured or slipped disc?		
67. Do you have any limiting physical handicaps?		
68. Do you suffer from muscle cramps?		
69. Do you have varicose veins?		
70. Do you have any amputations?		
71. Have you ever had any other medical problems not listed?		