

**DIVING SAFETY MANUAL**

**UNIVERSITY OF WISCONSIN-MILWAUKEE**

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## 1. INTRODUCTION

This manual is provided for all scientific divers, Principal Investigators, Project Directors and other personnel involved in underwater scientific diving programs conducted under the auspices of the University of Wisconsin-Milwaukee. It is prepared in compliance with 29 CFR Part 1910.401(a)(2)(iii), United States Department of Labor, Occupational Safety and Health Administration and is designed to accomplish the following objectives:

- \* To outline current guidance and regulatory limits on scientific and academic diving.
- \* To define terms and conditions with which individuals involved in scientific diving should be familiar.
- \* To outline rules and procedures established by the Occupational Safety and Health Administration (OSHA), State of Wisconsin, and University of Wisconsin-Milwaukee for research involving underwater scientific/academic diving.
- \* To outline general emergency procedures.
- \* To advise individuals involved in underwater diving of their rights and responsibilities under Federal and State laws.

This manual is not intended to provide instruction in scientific/academic diving procedures, nor to substitute for underwater training which is normally provided by nationally recognized SCUBA training agencies.

## 2. THE UNIVERSITY OF WISCONSIN-MILWAUKEE SCIENTIFIC DIVING PROGRAM

Most educational and scientific diving activities at U.S. universities and research institutes are regulated by the U.S. Department of Labor, Occupational Safety and Health Administration (29 CFR 1910). In the State of Wisconsin these regulations have been adopted by the Wisconsin Department of Commerce for public employees. Given the University of Wisconsin-Milwaukee's history of involvement in freshwater and marine research (and its consequent need for scientific diving activities), the Department of University Safety and Assurances has been delegated responsibility for ensuring that all university departments involved in scientific diving comply with these regulations. Under the provisions of this law, the UWM operates a Scientific Diving Program which is directed and controlled by a Diving Safety Board, a Diving Safety Officer and this Diving Safety Manual. The Scientific Diving Program has purview over all underwater research activities at the university which require an individual to utilize self-contained or surface-supplied breathing apparatus. All Principal Investigators

(P.I.'s) and Project Directors (P.D.'s) who wish to incorporate diving activities into their research projects must consult with the Diving Safety Officer regarding diving safety guidelines. Before diving operations may begin, the P.I./P.D. is required to receive approval of specific dive plans submitted to the Diving Safety Board (see Appendix IX). Moreover, all personnel engaged in diving activities must be certified by a nationally recognized agency (i.e., NAUI, PADI, YMCA, etc.) at the Open Water level or above, must be certified by the UWM Diving Safety Board, must pass an annual physical examination and must participate voluntarily as a research diver.

Anyone wishing to apply for Research Diving Certification at UWM should complete the "Application for Research Diver Appointment" (see Appendix I), which is available from the Diving Safety Officer.

### 3. GENERAL POLICY

**Purpose** (See Appendix IX, AAUS 1.00)

The purpose of these scientific diving standards is to ensure that all scientific diving under the auspices of the University of Wisconsin-Milwaukee is conducted in a manner that will emphasize protection of scientific divers from accidental injury and/or illness. These standards are those of the American Academy of Underwater Sciences which were developed at Scripps Institution of Oceanography during the 1950's and 1960's. The standards have proven successful at many universities and research institutions over the years and are the backbone of the exemplary record enjoyed by the academic diving community. The AAUS standards rely heavily on the academic peer-review process to determine the merit and safety of a diving exercise.

This manual is structured such that Appendix IX, the AAUS "Standards for Scientific Diving Certification and Operation of Scientific Diving Programs", comprises the main body of the document, and each chapter of the UWM manual outlines additions, exceptions, deletions, etc. to the AAUS standards, which are specific to UWM's Diving Safety Program. Appendices I through VIII provide examples of the forms and other documents utilized by the UWM program.

Since it is difficult to develop a set of diving standards to cover all possible situations, the Diving Safety Officer will issue supplementary guides with additional procedures to cover unusual situations or specific projects. The "Diving Safety Manual" is, however, basic and shall be adhered to whenever diving is being conducted under UWM management, or whenever UWM vessels or UWM diving equipment are included in diving operations.

#### **Liability**

Liability protection is offered to all UWM employees and agents under Wisconsin Statutes 893.82 and 895.46. Contact the UWM Risk Management Program (229-6339) for

further information on insurance coverage. Workers Compensation covers injuries which occur in the course of an employee's employment. Therefore, diving activities must be included in the position descriptions of employees who participate. Inclusion of this activity also facilitates the defense of such employees by the State of Wisconsin in case of allegations of liability for injuries to others. Employees are cautioned that disregard of the standards, rules and regulations may result in the denial of Agent Liability (insurance) protection.

Non-employees who participate in the diving program will do so only on a voluntary basis. If liability coverage is desired, they must be registered with the UWM Risk Management Program prior to their participation. As Worker's Compensation is unavailable for non-employees, students and volunteers must sign, prior to participation, a "hold harmless" agreement releasing the University and/or its agents from liability for personal injuries sustained during diving activities (see Appendix IX). Refusal to sign such an agreement shall preclude participation in UWM diving activities but such refusal shall not, in any way, affect an individual non-employee's status in relation to the program.

**Scientific Diving Manual** (see Appendix IX, AAUS 2.00 and 7.00)

Diving Modes: The only modes of diving normally permitted in the UWM Scientific Diving Program are Skin diving, SCUBA diving, and Surface Supplied diving. Mixed Gas and saturation diving are not supported at UWM, and diving beyond no-decompression limits (following U.S. Navy dive tables) is not permitted.

**The Diving Safety Officer, The Lead Diver, and The Diving Control Board** (see Appendix IX, AAUS 1.20)

On August 2, 1985, the Chancellor delegated full campus-wide administrative responsibility for the Scientific Diving Program to The Graduate School. On July 1, 1987, responsibility for the SDP was transferred to the then newly created Department of Environmental Health and Safety (now the Department of University Safety and Assurances). The UWM Diving Safety Officer and members of the Diving Safety Board are now appointed through the Department of University Safety and Assurances (US&A).

The Diving Safety Officer is a member of the Diving Safety Board and is responsible for the overall operation of the Diving Safety Program as outlined in Appendix IX (AAUS 1.23). The DSO is selected from UWM faculty or staff who have Principal Investigator/Project Director status, who possess outstanding diving credentials (e.g., Master Diver or equivalent), and who are usually certified as diving instructors by one of the nationally recognized agencies noted in Section 2 (above). The Diving Safety Officer shall have purview over all personnel, including Lead Divers, shall maintain safe diving operations, shall suspend unsafe operations, and shall authorize UWM diving certificates.

The Lead Diver is appointed by the Diving Safety Officer and shall have the authority to

suspend diving operations if, in the Lead Diver's opinion, conditions are unsafe. Only under emergency conditions may the Lead Diver alter provisions set forth in this manual. In so doing, the Lead Diver must exercise prudence and have reasonable assurance that departure from this standard would enhance human safety. Any such variation shall be reported to the Diving Safety Officer in writing. A Lead Diver also has the authority to temporarily suspend a diver's qualifications but must submit a written report of such action to the Diving Safety Officer.

Lead Diver responsibilities shall include, but not be limited to, the following:

1. Schedule, plan and direct diving operations as assigned.
2. Maintain a log of all diving activities under his/her authority which will be entered in the permanent files of the Diving Safety Program.
3. Report immediately in writing to the Diving Safety Officer, the Risk Manager and the Workers Compensation Office any accident or incident involving personnel injury or violation of these standards during operation under his/her supervision.
4. Supervise maintenance of diving equipment.
5. Maintain a record of all facilities, personnel and equipment used in each operation, with information as to capability and qualification.
6. Recommend changes, review diver qualifications, and revoke or restrict diving certification of any diver for cause during a diving operation.

The Diving Safety Board serves as a general review panel, as outlined in Appendix IX (AAUS 1.24). The Board is comprised of the Diving Safety Officer and three or more faculty or staff who are Scientific Divers and who possess Principal Investigator/Project Director status or who have specialized credentials relating to the underwater diving (e.g., U.S. Navy or equivalent extensive underwater training).

#### 4. DIVING PROCEDURES

See Appendix IX; AAUS 3.00

[In addition, it should be noted that to qualify for Scientific Diver Status in the UWM Scientific Diving Program, a diver candidate must possess and document significant experience (at least five dives) in cold (<10° C) and turbid (visibility <30 cm) water diving conditions.]

#### 5. DIVER-IN-TRAINING

See Appendix IX, AAUS 2.30

#### 6. SCIENTIFIC DIVER CERTIFICATION

See Appendix IX, AAUS 5.10

7. DIVING EQUIPMENT

See Appendix IX, AAUS 3.00

8. BREATHING AIR

See Appendix IX, AAUS 3.60

9. MEDICAL STANDARDS

See Appendix IX, AAUS 6.00

## **APPENDIX I**

### **Application for Research Diver Appointment**

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**APPLICATION FOR RESEARCH DIVER APPOINTMENT**

NAME: \_\_\_\_\_

UWM PHONE: \_\_\_\_\_ HOME PHONE: \_\_\_\_\_

UWM ADDRESS: \_\_\_\_\_ HOME ADDRESS: \_\_\_\_\_

\_\_\_\_\_  
DATE OF BIRTH: \_\_\_\_\_ Employee ID# \_\_\_\_\_

IN EMERGENCY NOTIFY:

NAME: \_\_\_\_\_ PHONE(S): \_\_\_\_\_

ADDRESS: \_\_\_\_\_

E-Mail: \_\_\_\_\_

DIVING CERTIFICATION

ORGANIZATION: \_\_\_\_\_ LEVEL: \_\_\_\_\_

DATE OF CERT: \_\_\_\_\_ CERT #: \_\_\_\_\_

CHECK:     \_\_\_ UWM Employee (e.g. Faculty, staff)  
          \_\_\_ UWM Student (non-employee)  
          \_\_\_ Other \_\_\_\_\_

I hereby apply for appointment to the UWM Scientific Diving Program. If accepted into the program, I agree to abide by the rules and regulations specified by the UWM Diving Safety Manual, The Diving Safety Board and the Diving Safety Officer. I further understand that the terms of this appointment are valid only while performing authorized services directly related to official University business and under University supervision and control.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

03/91

## **APPENDIX II**

### **SCUBA Diving Medical Examination Overview For the Physician**

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**DIVING MEDICAL EXAM OVERVIEW FOR THE EXAMINING PHYSICIAN**

TO THE EXAMINING PHYSICIAN:

This person, \_\_\_\_\_, requires a medical examination to assess his/her fitness for certification as a Scientific Diver for the University of Wisconsin - Milwaukee. His /her answers on the Diving Medical History Form (attached), may indicate potential health or safety risks as noted. Your evaluation is requested on the attached scuba Diving Fitness Medical Evaluation Report. If you have questions about diving medicine, you may wish to consult one of the references on the attached list or contact one of the physicians with expertise in diving medicine whose names and phone numbers appear on an attached list. Please contact the undersigned Diving Safety Officer if you have any questions or concerns about diving medicine or the University of Wisconsin - Milwaukee standards. Thank you for your assistance.

\_\_\_\_\_  
Diving Safety Officer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Phone Number

Scuba and other modes of compressed-gas diving can be strenuous and hazardous. A special risk is present if the middle ear, sinuses or lung segments do not readily equalize air pressure changes. The most common cause of distress is eustachian insufficiency. Most fatalities involve deficiencies in prudence, judgement, emotional stability or physical fitness. Please consult the following list of conditions which usually restrict candidates 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 pressure equilibration [4]
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]
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

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Attachments:    Medical Evaluation of Fitness for Scuba Diving Report  
                   Diving Medical History Form  
                   Question Evaluations for Diving Medical History Form  
                   Recommended Physicians with Expertise in Diving/Undersea Medicine  
                   References on Diving Medicine

## **APPENDIX III**

### **Medical Evaluation of Fitness for SCUBA Diving Report**

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**MEDICAL EVALUATION OF FITNESS FOR SCUBA DIVING REPORT**

\_\_\_\_\_  
Name of Applicant (Print or Type)

\_\_\_\_\_  
Date(Mo/Day/Year)

To The PHYSICIAN:

This person is an applicant for training or is presently certified to engage in diving with self-contained underwater breathing apparatus (scuba). This is an activity which puts unusual stress on the individual in several ways. Your opinion on the applicant's medical fitness is requested. Scuba diving requires heavy exertion. The diver must be free of cardiovascular and respiratory disease. An absolute requirement is the ability of the lungs, middle ear and sinuses to equalize pressure. Any condition that risks the loss of consciousness should disqualify the applicant.

TESTS: Please initial that the following tests were completed.

Initial Examination  
or first over age 40

Re-examination

\_\_\_\_ Medical History

\_\_\_\_ Medical History

\_\_\_\_ Chest X-Ray

\_\_\_\_ 12 Lead EKG

\_\_\_\_ Pulmonary function

\_\_\_\_ Pulmonary function

\_\_\_\_ Audiogram

\_\_\_\_ Audiogram

\_\_\_\_ Visual acuity

\_\_\_\_ Visual acuity

\_\_\_\_ Complete blood count (CBC)

\_\_\_\_ Complete blood count (CBC)

\_\_\_\_ Blood chemistry

\_\_\_\_ Blood chemistry

\_\_\_\_ Urinalysis

\_\_\_\_ Urinalysis

RECOMMENDATION:

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

**OVER**

REMARKS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have discussed the patient's medical condition(s) which would not seriously interfere with diving but which may seriously compromise subsequent health. The patient understands the nature of the hazards and the risks involved in diving with these defects.

\_\_\_\_\_  
Date Signature M.D.

\_\_\_\_\_  
Name (Print or Type)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Telephone Number

My familiarity with applicant is:

- With this exam only
- Regular Physician for \_\_\_\_\_ years
- Other  
(describe)\_\_\_\_\_

My familiarity with diving medicine:

- On attached list of physicians
- Other  
(describe)\_\_\_\_\_

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APPLICANT'S RELEASE OF MEDICAL INFORMATION FORM

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

Signature of Applicant \_\_\_\_\_

**APPENDIX IV**

SCUBA Diving Medical History Form

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**SCUBA DIVING MEDICAL HISTORY FORM  
(To Be Completed By Applicant-Diver)**

Name \_\_\_\_\_ Sex \_\_\_\_ Age \_\_\_\_ Wt.\_\_\_\_ Ht. \_\_\_\_

Sponsor \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_  
(Dept./Project/Program/School,etc.) (Mo/Day/Yr)

**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 for 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/she 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/her written authorization will be required in order for further consideration to be given to your application. If your physician concludes that diving would involve undue risk for you, remember that he/she is concerned only with your well-being and safety. Respect the advice and the intent of this medical history form.

	Yes	No	Please indicate whether or not the following apply to you	Comments
1			Convulsions, seizures, or epilepsy	
2			Fainting spells or dizziness	
3			Been addicted to drugs	
4			Diabetes	
5			Motion sickness or sea/air sickness	
6			Claustrophobia	
7			Mental disorder or nervous breakdown	
8			Are you pregnant?	
9			Do you suffer from menstrual problems?	
10			Anxiety spells or hyperventilation	
11			Frequent sour stomachs, nervous stomachs or vomiting spells	
12			Had a major operation	
13			Presently being treated by a physician	
14			Taking any medication regularly (even nonprescription)	

	Yes	No	Please indicate whether or not the following apply to you	Comments
15			Been rejected or restricted from sports	
16			Headaches (frequent and severe)	
17			Wear dental plates	
18			Wear glasses or contact lenses	
19			Bleeding disorders	
20			Alcoholism	
21			Any Problems related to diving	
22			Nervous tension or emotional problems	
23			Take tranquilizers	
24			Perforated ear drums	
25			Hay fever	
26			Frequent sinus trouble, frequent drainage from the nose, post-nasal drip, or stuffy nose	
27			Frequent earaches	
28			Drainage from the ears	
29			Difficulty with your ears in airplanes or on mountains	
30			Ear surgery	
31			Ringing in your ears	
32			Frequent dizzy spells	
33			Hearing problems	
34			Trouble equalizing pressure in your ears	
35			Asthma	
36			Wheezing attacks	
37			Cough (chronic or recurrent)	
38			Frequently raise sputum	
39			Pleurisy	
40			Collapsed lung (pneumothorax)	
41			Lung cysts	
42			Pneumonia	
43			Tuberculosis	
44			Shortness of breath	
45			Lung problem or abnormality	
46			Spit blood	
47			Breathing difficulty after eating particular foods,after exposure to particular pollens or animals	
48			Are you subject to bronchitis	
49			Subcutaneous emphysema (air under the skin)	
50			Air embolism after diving	
51			Decompression sickness	
52			Rheumatic fever	
53			Scarlet fever	

	Yes	No	Please indicate whether or not the following apply to you	Comments
54			Heart murmur	
55			Large heart	
56			High blood pressure	
57			Angina (heart pains or pressure in the chest)	
58			Heart attack	
59			Low blood pressure	
60			Recurrent or persistent swelling of the legs	
61			Pounding, rapid heartbeat or palpitations	
62			Easily fatigued or short of breath	
63			Abnormal EKG	
64			Joint problems, dislocations or arthritis	
65			Back trouble or back injuries	
66			Ruptured or slipped disk	
67			Limiting physical handicaps	
68			Muscle cramps	
69			Varicose veins	
70			Amputations	
71			Head injury causing unconsciousness	
72			Paralysis	
73			Have you ever had an adverse reaction to medication?	
74			Do you smoke?	
75			Have you ever had any other medical problems not listed? If so, please list or describe below;	

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

\_\_\_\_\_  
Signature Date

## **APPENDIX V**

### **Cumulative Dive Record**

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**CUMULATIVE DIVE RECORD**

NAME: \_\_\_\_\_ CALENDAR YEAR: \_\_\_\_\_

DEPARTMENT: \_\_\_\_\_ S.S.# \_\_\_\_\_ PAGE \_\_\_ OF \_\_\_

#	DATE	LOCATION	DEPTH TIME	DIVE DIVE & REMARKS	CUMUL. CONDITIONS	ACTIVITY,	BUDDY
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							

12.

## **APPENDIX VI**

### Sample Departmental Scientific Diver Status Authorization

[Departmental Letterhead]

**MEMORANDUM OF UNDERSTANDING**

TO: (Name of diver)  
FROM: (Name of Department Chair/Director)  
RE: Scientific Diver Status at (UWM Department Name)

Thank you for volunteering to participate as a scientific diver in support of the programs in (Department Name) at the University of Wisconsin - Milwaukee. The UWM Scientific Diving Program has reviewed your qualifications and determined that you have the necessary experience to participate.

In order to remain eligible for Workers Compensation and general liability insurance while participating in diving activities related to our field research program it is necessary to amend your Position Description. In the "Duties and Responsibilities" section of your position description will be considered to include Scientific Diving activities.

If you agree with the above terms and conditions related to your job description, please sign this memorandum and return it to me.

Thank you for your cooperation.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

**MEMORANDUM OF UNDERSTANDING AND  
LIABILITY WAIVER RELEASE**

(For Student and Volunteer Research Divers)

DATE:

TO:

FROM: John R. Krezoski, UWM Diving Safety Officer

RE: Scientific Diver Status at the University of Wisconsin-Milwaukee

Thank you for volunteering to participate as a scientific diver in support of the research programs at the University of Wisconsin-Milwaukee. The UWM Scientific Diving Program has reviewed your qualifications and determined, based upon the information you have provided, that you have the necessary training and experience to participate in the program.

As a student or volunteer member of the Scientific Diving Program, you will be registered with the Department of University Safety and Assurances for Agent Liability protection. Should you accidentally cause property damage or personal injury to others while conducting University business you will be provided appropriate liability coverage should there be a claim.

You are not eligible for Workers Compensation Insurance for any personal injury while participating as a volunteer diver as you are not an employee of the University. You are required to provide your own medical insurance coverage to be a Scientific Diver and you must hold the University, its employees and its agents harmless should you incur personal injury or property damage as a result of your participation in the program.

Your signature below indicates that you agree to the above terms and conditions related to your volunteer service to the University. Please sign this memo, make a copy for your records, and return the original to me.

Accepted by:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness

## **Appendix VII**

### SCUBA Diver Experience Questionnaire

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

SCUBA DIVER EXPERIENCE QUESTIONNAIRE

NAME \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

AGE \_\_\_\_\_ DATE OF LAST PHYSICAL \_\_\_\_\_

**ORGANIZED INSTRUCTION COMPLETED (Date)**

Senior Lifesaving \_\_\_\_\_

Water Safety Instructor \_\_\_\_\_

Advanced Swimming \_\_\_\_\_

First Aid \_\_\_\_\_ C.P.R. \_\_\_\_\_

Have you been SCUBA certified by a recognized Diver Training Organization? \_\_\_\_\_ If yes, which one?  
\_\_\_\_\_ Date \_\_\_\_\_

**EQUIPMENT EXPERIENCE**

Please indicate your approximate number of dives with the equipment listed below at the following depths:

0'-	31'-	61'-	121'-	201'-		
30'	60'	120'	200'	350'	>350'	

Equipment

SCUBA  
(Open Circuit Air)

Shallow Water Band Mask  
(i.e. Kirby Morgan)

Hard Hat

Semi-closed Circuit

Closed Circuit

Lock-out or Bell Dives

Mixed Gas

Date of Last Dive \_\_\_\_\_

Type of Equipment \_\_\_\_\_

Geographical areas in which you have dived \_\_\_\_\_

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**TYPE OF DIVING** (No. Dives)

1. Pleasure \_\_\_\_\_

2. Commercial \_\_\_\_\_

3. Scientific \_\_\_\_\_

Have you ever practiced free ascents? \_\_\_\_\_

If so, from what depths?

How many? \_\_\_\_\_ If so, briefly elaborate \_\_\_\_\_

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Have you ever experienced nitrogen narcosis? \_\_\_\_\_

Have you ever had an oxygen tolerance test? \_\_\_\_\_

Have you ever been in a recompression chamber? \_\_\_\_\_

How many times? \_\_\_\_\_

To what depths? \_\_\_\_\_

Please use the remaining space to make additional remarks on any of the above questions.

I certify the above information to be correct to the best of my knowledge and that I have read the University of Wisconsin-Milwaukee Diving Safety Manual and will adhere to these standards.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



## **Appendix VIII**

### **UWM Scientific Diving Program Dive Plan Form**

**UNIVERSITY OF WISCONSIN - MILWAUKEE  
SCIENTIFIC DIVING PROGRAM**

DIVE PLAN FORM

Lead Diver \_\_\_\_\_ Second Diver \_\_\_\_\_  
Other Divers \_\_\_\_\_  
Date \_\_\_\_\_ Estimated time out \_\_\_\_\_ Back \_\_\_\_\_  
Facility or Vessel \_\_\_\_\_  
Mission \_\_\_\_\_  
Location \_\_\_\_\_  
Expected depth range \_\_\_\_\_ # of dives/person \_\_\_\_\_  
Water entry from: Beach \_\_\_\_\_ Boat (Name) \_\_\_\_\_ Other \_\_\_\_\_  
Type of gear \_\_\_\_\_  
Mode: No decom SCUBA \_\_\_\_\_ Other \_\_\_\_\_  
Repetitive dive: Yes \_\_\_\_ No \_\_\_\_ If yes, fill out repetitive dive plan (back of page)  
Decompression schedule \_\_\_\_\_  
Nearest recompression chamber location and phone no. \_\_\_\_\_

**PROCEDURAL CHECKLIST**

\_\_\_\_\_ File dive plan with Scientific Diving Officer prior to departure.

\_\_\_\_\_ Diving Equipment:      Check equipment and SCUBA bottles  
\_\_\_\_\_ First Aid Kit                      \_\_\_\_\_ Dive Flag  
\_\_\_\_\_ Oxygen Bottle                      \_\_\_\_\_ Radio

\_\_\_\_\_ Divers Briefing: Prior to the dive, the Lead Diver shall inquire about each diver's physical fitness and brief the divers about procedures, task, modification of operating procedures, unusual hazards, sea state, weather, and any other pertinent information.

\_\_\_\_\_ Post Dive Briefing: After the dive, the Lead Diver will check the physical condition of the divers, instruct the divers to report any medical problems, and alert the divers to the hazards of flying after diving.

Approved: \_\_\_\_\_ Date: \_\_\_\_\_  
                    Diving Supervisor

**ALL DIVERS WILL COMPLY WITH THE DIVING REGULATIONS CONTAINED IN THE  
UNIVERSITY OF WISCONSIN-MILWAUKEE DIVING SAFETY MANUAL**

Repetitive Dive Plan:

(For any dives with less than 12 hours surface interval)

A. Dive #1

Maximum Depth (ft) \_\_\_\_\_

No Decompression limit \_\_\_\_\_

Bottom Time (minutes) \_\_\_\_\_

B. Surface Interval (hour:minutes) \_\_\_\_\_

C. Residual N<sub>2</sub> Time (minutes) \_\_\_\_\_

(Calculated according to rules of U.S. Navy Air Tables)

D. Dive #2

Maximum Depth (ft) \_\_\_\_\_

No Decompression Limit (minutes) \_\_\_\_\_

Allowable Bottom Time (minutes) \_\_\_\_\_

(Allowable Bottom Time = No Decompression Time Limit for the deeper of the two dive depths - Residual N<sub>2</sub> Time)

E. Decompression Plan (if allowable bottom time is exceeded):

1. Total Bottom Time - Actual Bottom Time + Residual N<sub>2</sub> Time

2. Follow decompression schedule for Total Bottom Time of 2nd dive and maximum depth of both dives (e.g., include a safety factor of at least one greater depth or time interval)

## **Appendix IX**

### AAUS Diving Safety Manual