

APPENDIX 9. MEDICAL FORMS AND WAIVER FORMS

This Appendix uses the medical guidelines of the AAUS, CAUS and UASR to set down a suggestion for two levels of medical certification for diving: Class II and Class I. This format of two different levels has a basis in current practice at some institutions, but is not widely formalized at present. Generally the requirements of the Class II would be less stringent than those of the Class I. For example, the fitness requirement for a Class II would be a time/distance snorkel swim of 800 meters in 16 minutes using mask, fins, snorkel and an ABLJ, or alternatively a Master's Step Test. For a Class I a similar snorkel swim would be required, but would be supplemented with a sub-maximal stress test on a bicycle ergometer or treadmill with a three-lead electrocardiogram.

These examples of tests would be appropriate for the Class II. A somewhat more stringent series of tests would be required for the Class I and would be supplemented with a standard oxygen tolerance test and a long bone X-ray series. The duration of validity of the Class II would be 12 calendar months, and of the Class I, 6 calendar months.

It may well be that the current basic or Class II standard will remain adequate for the bulk of scientific diving.

A check-sheet should be developed based on the medical guidelines noted.

Example 1page 216

Example 2page 223

Example 3page 227

THE UNIVERSITY OF BRITISH COLUMBIA



Occupational Health and Safety
Old Administration Building
6328 Memorial Road
Vancouver, B.C. Canada V6T 2B3

Telephone (604) 228-4218

Dear Doctor:

Re: _____

This person will be diving (S.C.U.B.A.) under the auspices of the The University of British Columbia. The University requires a medical examination as part of the medical standards, prior to beginning diving activities, and on a periodic basis.

Kindly note the evaluation requirements detailed on the accompanying information sheet and medical history and examination form. Please return the medical history and examination form to me when it is completed.

Thank you for your assistance.

**THE UNIVERSITY OF BRITISH COLUMBIA
Diving Safety Program**

INFORMATION SHEET FOR MEDICAL EXAMINERS

Tests for Medical Authorization for Diving

<u>Test</u>	<u>Initial Examination</u>	<u>Subsequent Examination</u>
Visual Acuity	x	x
Color Blindness	x	
Hearing	x	x
Fitness Evaluation	x	x
ECG	(a)	(b)
Urinanalysis	x	x
Chest X-ray	x	(b)
Hematocrit or Hemoglobin	x	x
Sickle Cell Index	(b)	
White Cell Count	x	x

- (a) over 40 years of age or if clinically indicated
 (b) only if clinically indicated

1. Clarification of Tests

- A. Ophthalmology. Standard visual acuity and color blindness tests shall be given. Personnel with uncorrected vision greater than 20/80 shall require corrective lenses.
- B. E.N.T. An extensive E.N.T. examination shall be given and shall include observed movement of the drum during Valsalva maneuver. Hearing shall be 'conversationally adequate'.
- C. Fitness. A fitness evaluation shall be conducted by the UBC Diving Officer and the results entered on the Physical Examination Form (Item 18). Minimum requirements are that divers be able to swim 800 m in 16 minutes with mask, fins, snorkel, and buoyancy device. A Master's Step Test may be used as an alternate method of evaluation (step up onto chair 5 times in 5 seconds; pulse should return to pre-exercise level in 45 seconds).
- D. ECG. A standard 12 lead ECG shall be given to individuals over 40 years of age or if clinically indicated.
- E. Urology. A standard urinalysis shall be performed for all personnel.
- F. Hematology. Standard hematocrit or hemoglobin and white cell count shall be performed for all divers. A sickle cell index shall be performed upon initial examination for divers of known negroid descent.
- G. Radiology. A full inspiration, posterior chest x-ray shall be done on initial examination of all divers and when clinically indicated.
- H. Additional Tests. The tests in this list are minimum tests for University Medical Authorization for Diving. Additional tests shall be done at the University Diving Medical Officer's or examining physician's discretion.

2. Disqualifying and Limiting Factors for Diving

The following factors shall disqualify personnel from diving or limit their exposure to diving depending on severity, presence of residual effects, response to therapy, number of occurrences, and diving mode. In all cases, final responsibility and authority for medically authorizing personnel to engage in diving activity shall rest with the University Diving Medical Officer.

<u>System</u>	<u>Disqualifying Factors</u>	<u>Allowable Factors</u>
General	Gross obesity Impaired exercise tolerance.	(See 1C.)
E.N.T.	Perforated eardrums. Chronic otitis media or mastoid operation. Chronic destruction of sinuses or eustachian tubes. Inability to clear ears.	Healed perforations. Successful tympanoplasty. Unilateral nasal block. Sinusitis if not adversely affected by diving, but not if of infective origin.
Oral Cavity	Oral disease. Bad teeth and fillings.	Dentures should extend to mucobuccal fold and should be retained in place in all jaw positions. Partial plates should generally be retained during diving.
Respir- atory	Any chronic lung disease, past or present. Any recent history of bronchial asthma requiring treatment. Emotionally-induced asthma. History of pneumothorax.	Mild chronic bronchitis (smoker?) without emphysema or important airways obstruction if exercise tolerance, spirometry, and CXR normal. Healed primary focus tuberculous scars in established divers or trainees. Bronchial asthma, if clinically normal between attacks and exercise tolerance normal.
Cardio- Vascular	Heart disease. Hypertension. Systolic BP over 150 mm Hg. Diastolic BP over 90 mm Hg. (100 mm Hg if aged over 35)	Minor asymptomatic heart disease other than ischaemic with specialist referral and approval. Varicose veins (if severe, caution must be observed using dry suit).

<u>System</u>	<u>Disqualifying Factors</u>	<u>Allowable Factors</u>
Abdomen G.U.S.	Proteinuria until cause established. Gross abnormalities of renal tract. Pregnancy.	Peptic ulcer, unless unduly active or troublesome. Abdominal hernias (advise repair).
Limbs	Disease, amputation or deformity excessively limiting ability to swim. Juxta-articular osteonecrosis.	Arthritis or arthrodesis not markedly limiting ability to swim or rescue others.
Endocrine	Insulin-requiring diabetes.	
Central Nervous System	Severe stammering. Epilepsy, including post-traumatic fits. Cranial surgery. Any serious head injury in the past two years or head injury with sequelae.	Must present an acceptable EEG.
Hematology	Hemoglobinopathies.	
Additional	Malignancies (active). Impaired organ function caused by alcohol or drug use. Conditions requiring continuous medication for control. Vestibular end organ destruction.	Malignancies treated and without recurrence for five years.

THE UNIVERSITY OF BRITISH COLUMBIA
Diving Programme
MEDICAL HISTORY AND EXAMINATION FORM
 (this side to be completed by applicant)

Name _____ Age _____ Sex _____ Date _____
 Address _____ Phone _____
 MSP _____ Family Physician _____

1. Have you had previous experience in diving? Yes _____ No _____
2. When driving through mountains or flying do you have trouble equalizing pressure in your ears or sinuses? Yes _____ No _____
3. Have you ever been rejected for service, employment, or insurance for medical reasons? (if yes, explain under "Remarks" or discuss with doctor) Yes _____ No _____
4. When was your last physical examination? Date _____ Results _____
5. When was your last chest X-ray? Date _____ Results _____
6. Have you had an electrocardiogram? Date _____ Results _____
7. Have you had an electroencephalogram? Date _____ Results _____
8. Do you smoke? Yes _____ No _____
 If so, how much _____

(Check the blank if you have, or ever had, any of the following. Explain under "Remarks" or discuss with doctor.)

9. _____ Frequent colds or sore throat.
10. _____ Hay fever or sinus trouble.
11. _____ Trouble breathing through nose (other than during colds).
12. _____ Painful or running ear, mastoid trouble, broken eardrum.
13. _____ Hard of hearing.
14. _____ Asthma or bronchitis.
15. _____ Shortness of breath after moderate exercise.
16. _____ Pleurisy.
17. _____ Collapsed lung (pneumothorax)
18. _____ Chest pain or persistent cough.
19. _____ Tire easily.
20. _____ Spells of fast, irregular, or pounding heartbeat.
21. _____ High or low blood pressure.

22. _____ Any kind of "heart trouble".
23. _____ Frequent upset stomach, heartburn or indigestion, peptic ulcer.
24. _____ Frequent diarrhea or blood in stool.
25. _____ Anemia or (females) heavy menstruation
26. _____ Belly or backache lasting more than a day or two.
27. _____ Kidney or bladder disease; blood, sugar or albumin in urine.
28. _____ Broken bone, serious sprain or strain, dislocated joint.
29. _____ Rheumatism, arthritis, or other joint trouble.
30. _____ Severe or frequent headaches.
31. _____ Head injury causing unconsciousness.
32. _____ Dizzy spells, fainting spells or fits.
33. _____ Trouble sleeping, frequent nightmares or sleepwalking.
34. _____ Nervous breakdown or periods of marked nervousness or depression.
35. _____ A phobia for closed-in spaces, large open places, or high places.
36. _____ Any neurological or psychological conditions.
37. _____ Train, sea or air sickness, nausea.
38. _____ Alcoholism or any drug or narcotic habit (including regular use of sleeping pills, benzedrine, etc.)
39. _____ Recent gain or loss of weight or appetite.
40. _____ Jaundice or hepatitis.
41. _____ Tuberculosis.
42. _____ Diabetes
43. _____ Rheumatic fever
44. _____ Dental bridgework or plates.
45. _____ Susceptibility to panic.
46. _____ Pain from altitude or flying.
47. _____ Surgery.
48. _____ Any serious accident, injury or illness not mentioned above (describe under "Remarks", give dates).
49. _____ In what sports or exercise do you regularly engage: _____

REMARKS: _____

**The University of British Columbia
Interdepartmental Memorandum**

Date : _____
 To : _____ Phone: _____
 From : Neal Pollock, Diving Officer
 Occupational Health and Safety
 228-2990

 Subject : UNIVERSITY DIVING REGISTRATION STATUS

The University diving records presently show:

Certification: Diver-in-Training / Certified Scientific Diver /
 Instructor / Assistant Instructor

	<u>Current?</u>	
	Yes	No
Project description and approval form: _____		
Depth certification: 10 - 20 - 30 - 40 meters: _____		
Special endorsements or limitations: _____		
Date of last logged dive: _____		
Number of dives last 6 months: _____		
Number of dives last 12 months: _____		
Date of last medical: _____		
Date of last open water check-out: _____		
Date of last diver rescue training: _____		
Date of last CPR certification: _____		

If any of the above are listed as "no record" or as "not current", you are no longer authorized to dive under University auspices. Please discontinue your diving activities and contact me at your earliest convenience so I can help you correct the discrepancy and get reinstated.

If the above are all listed as "current" and in-date, you remain authorized to dive under University auspices. Congratulations for the good work in keeping up your certification.

* NOTE: An asterisk before an item indicates that it will soon be out-of-date. If any appear on this page, please take appropriate action to renew before your certification is no longer current.

Memorandum for Medical Officers

The certification of a man to be fit to dive implies that he is both physically and psychologically healthy. A diver may have to undergo physical strain under adverse conditions and upon his reaction to an emergency may depend not only his own life but also the lives of others. During the examination he should be carefully observed for psychological defects.

A certificate of fitness should not be given when a man is undergoing treatment for any acute condition.

Please record the results of your examination in SI units where applicable.

Please use a ball-point pen when filling in this form.

The following conditions disqualify a man from diving:

1. Most skin disorders. Saturation divers are particularly prone to intertrigo and otitis externa.
2. Excessive obesity.
3. Inability to clear the ears.
4. Perforated eardrum, chronic otitis or mastoid operation.
5. Chronic obstruction of the Eustachian tubes or sinuses.
6. Any chronic lung disease, past or present; bronchial asthma; history of pneumothorax.
7. Heart disease, essential hypertension.
8. Chronic gastro-intestinal disease (e.g. peptic ulcers).
9. Hernia.
10. Gross abnormality of the renal tract.
11. Epilepsy; severe head injury; cranial surgery; disease of the central nervous system.
12. Severe hearing or visual defects.
13. Diabetes.
14. Sickle cell trait.
15. Psychiatric disorder.
16. Severe stammering.

The Health and Safety Executive issue a document entitled: "Recommendations on Medical Examination of Divers: Information for Examining Doctors". Amongst other things this refers to long-bone and joint X-rays. These should be taken in accordance with the recommended techniques of the M.R.C. Decompression Sickness Panel. A copy of this document entitled "Radiological Skeletal Survey for Aseptic Necrosis of Bone in Divers and Compressed Air Workers: Recommended Technique" is available from the M.R.C. Decompression Sickness Central Registry, 21 Claremont Place, Newcastle upon Tyne, NE2 4AA.

Please send the yellow copies of completed forms, and the bone and joint X-ray films, to the Registry in Newcastle.

MEDICAL CERTIFICATE. CODE OF PRACTICE FOR SCIENTIFIC DIVING

Name :

Address :

Date of Birth :

Number of years diving :

PART 1. TO BE PUT TO THE CANDIDATE BY THE EXAMINING DOCTOR

Have you suffered at any time from any of the following ?
Answer YES or NO. If YES, give details in space at bottom of page.

1. Earache, or ear discharge
2. Sinus trouble, nose bleeds, hay fever
3. Any lung disease, bronchitis or asthma.....
4. Disease of the heart & circulation including high blood pressure
5. Fits, recurrent headaches or any nervous disorder.....
6. Blackouts or fainting attacks, concussion
7. Diabetes
8. Peptic ulcer ; hernia, gastro-intestinal affections
9. Do you wear dentures ?
10. Do you smoke ?.....
11. Have you any physical disability or abnormality ?
12. Have you ever been admitted to hospital ?
- If YES, for what reason ?
13. Are you taking (or recently taken) any tablets or any other treatment ?.....
14. Any diving injury, including damaged ear drums, decompression sickness, etc ?
15. Date of last medical examination
16. Date of last Chest X-Ray

Details :

.....

.....

I declare the above answers to be true and that I have omitted nothing that might be relevant to my fitness for diving.

Signature : Date :

MEDICAL CERTIFICATE. CODE OF PRACTISE FOR SCIENTIFIC DIVING

PART 2. TO BE COMPLETED BY EXAMINING DOCTOR

Height: Weight:kg.

Ears: R Drum..... Canal Valsalva

 L Drum Canal Valsalva

Sinuses :

Teeth and gums :

Chest movements : Chest expansion (cm³).....

Lung Fields :

Heart sounds :

Pulse..... Blood pressure..... Apex beat.....

Abdomen : Hernial orifices.....

Central nervous system :

.....

SPECIAL INVESTIGATIONS

1. Full Plate Chest X-Ray :
2. Exercise tolerance (See information note)
3. Urine: Sugar 4. Peak Expiratory Flow :
- Albumen..... (if available)
- Blood
- Ketones

If facilities allow the following are recommended in addition :

1. Exercise ECG (on first examination, annually thereafter if aged over 35 years).....
2. FEV₁..... FVC..... FEV₁/FVC.....

REMARKS :

.....

.....

CERTIFICATE OF FITNESS

In my opinion the candidate is fit to carry out scientific or amateur diving activities.

Signature : Qualifications : Date :

Address :

**MEDICAL CERTIFICATE. CODE OF PRACTICE FOR SCIENTIFIC DIVING
INFORMATION FOR MEDICAL OFFICERS CONDUCTING
EXAMINATIONS OF DIVERS**

Particular attention should be paid to the ENT and Respiratory Systems. It must be borne in mind that diving may involve moderately severe exercise under adverse conditions. The safety of the candidate and others depends on his physical and psychological fitness.

System	Disqualifying Factors	Allowable Factors and Other Points
General	Gross obesity. Impaired, exercise tolerance.	(See note below).
E.N.T.	Perforated eardrums. Chronic otitis media or mastoid operation. Chronic destruction of sinuses or Eustachian tubes. Inability to clear ears.	Healed perforations. Successful tympanoplasty. Unilateral nasal block. Sinusitis if not adversely effected by diving but not if of infective origin). Valsalva test of drum mobility optional, and outweighed by practical diving test.
Oral Cavity	Dentures must be retained in place on fully opening the mouth and not be dislodged by placing jaws together in any position, or by movement of one denture against the other. They should extend to the muco-buccal fold. Applicants should be advised about bad teeth and fillings. No firm advice as to whether an individual should or should not wear his dentures when diving is possible, but small dentures should not be worn when diving.	
Respiratory	Any chronic lung disease, past or present (see opposite). Any recent history of bronchial asthma requiring treatment. History of pneumothorax. Emotionally-induced asthma (each case should be judged on its merits).	Mild chronic bronchitis (smoker?) without emphysema or important airways obstruction if exercise tolerance, spirometry and CXR normal. Healed primary focus tuberculous scars in established divers or new recruits. Bronchial asthma, if clinically normal between attacks, and exercise tolerance normal. Full-plate CXR required.
Cardio-vascular	Heart disease. Hypertension. Systolic B.P. over 150 mm Hg. Diastolic B.P. over 90 mm Hg. (100 mm Hg if aged over 35).	Minor asymptomatic heart disease other than ischaemic following specialist referral and approval. Varicose veins (but if severe, caution against use of dry suit).
Abdomen, G.U.S.	Proteinuria until cause established. Gross abnormalities of renal tract Pregnancy.	Peptic ulcer, unless unduly active or troublesome. Abdominal hernias (but advise repair).
Limbs	Disease, amputation or deformity excessively limiting ability to swim. (Specialist referral is advisable).	Arthritis or arthrodesis not markedly limiting ability to swim or rescue others.
Endocrine	Insulin-requiring diabetes.	
Central Nervous System	Severe stammering. Epilepsy, including post-traumatic fits. Cranial surgery. Any serious head injury in the past two years.	To be judged on merit. Must present an acceptable EEG.

Note: Exercise Tolerance: A candidate must not fail to pass the following simple test: After stepping up onto a chair 5 times in 5 seconds, the pulse rate should return to the pre-exercise level in 45 seconds.

WOODS HOLE OCEANOGRAPHIC INSTITUTION

STATEMENT OF UNDERSTANDING

To be completed by all divers

1. Skin, Scuba and surface-supplied diving are physical activities involving heavy exertion. A diver must be in good general health, free from cardiovascular and respiratory disease, and have good exercise tolerance. Even momentary impairment of consciousness underwater may be fatal.
2. While swimming or using skin, Scuba or surface-supplied diving equipment, the body is subject to a variety of influences that may become potentially hazardous. Some of these hazards include, but are not limited to drowning, ruptured ear drums or sinuses, air embolism, decompression sickness (the 'bends'), and a variety of other barotrauma (pressure-related injuries).
3. There are organisms in the water that may bite, sting, scratch, claw, or inject substances into the body.
4. There are other water related problems that include, but are not limited to reduced visibility, rough water, strong currents, and cold temperature.
5. When diving from a boat a person may be subjected to bodily injury from carelessness due to activity, or related to equipment handling, or from just being present on a boat at sea.
6. The individual diver must realize that he/she is ultimately responsible for his/her own safety. It is clearly the diver's responsibility to refuse to dive if, in his/her judgement, conditions are unsafe.

Statement: I am in good physical and mental health and am free from cardiovascular, respiratory, or other diseases or ailments, which could endanger me while diving.

I hereby voluntarily exempt and release _____ and Woods Hole Oceanographic Institution, its Trustees, officers and employees, from liability for personal injury, property damage, or death, arising from diving instruction, diving activities or any activities incidental to diving operations.

Signed _____
Candidate

Date _____

Signed _____
Diving Supervisor

Date _____

AI.I.MH (MEDICAL HISTORY) TO BE FILLED IN BY CANDIDATE

1. SURNAME		OTHER NAMES		2. DATE OF BIRTH	
3. ADDRESS				PHONE	
6. NEXT OF KIN				ADDRESS	
7. PRINCIPAL OCCUPATION					
8. HAVE YOU ANY DISEASE OR DISABILITY AT PRESENT?			<input type="checkbox"/> NO <input type="checkbox"/> YES		NAME OF CONDITION:
9. ARE YOU TAKING ANY TABLETS, MEDICINES OR OTHER DRUGS?			<input type="checkbox"/> NO <input type="checkbox"/> YES		TYPE OF DRUG:

HAVE YOU EVER SUFFERED OR DO YOU NOW SUFFER FROM ANY OF THE FOLLOWING DISORDERS.

NOTES ON HISTORY

	NO	YES
10. RHEUMATIC FEVER		
11. SWOLLEN OR PAINFUL JOINTS		
12. ANY HEART DISEASE		
13. HIGH BLOOD PRESSURE		
14. ABNORMAL SHORTNESS OF BREATH		
15. BRONCHITIS OR PNEUMONIA		
16. PLEURISY OR SEVERE CHEST PAINS		
17. COUGHING UP BLOOD		
18. T B (CONSUMPTION)		
19. CHRONIC OR PERSISTENT COUGH		
20. PNEUMOTHORAX (COLLAPSED LUNG)		
21. ASTHMA OR WHEEZING		
22. ANY OTHER CHEST COMPLAINT OR CHEST INJURY OR OPERATION ON CHEST		
23. MAY FEVER		
24. SINUSITIS		
25. ANY OTHER NOSE OR THROAT TROUBLE		
26. DEAFNESS OR RINGING NOISES IN EAR		
27. DISCHARGING EARS OR OTHER INFECTION		
28. OPERATIONS ON EARS		
29. EYE OR VISUAL PROBLEMS		
30. WEAR GLASSES		
31. FAINTING, BLACKOUTS, FITS OR EPILEPSY		
32. SEVERE HEADACHES OR MIGRAINE		
33. SLEEPWALKING OR FREQUENT NIGHTMARES		
34. SEVERE DEPRESSION		
35. CLAUSTROPHOBIA		
36. ANY OTHER MENTAL ILLNESS		
37. KIDNEY OR BLADDER DISEASE		
38. DIABETES		
39. INDIGESTION OR PEPTIC ULCER		
40. VOMITING BLOOD OR RECTAL BLEEDING		
41. RECURRENT VOMITING OR DIARRHOEA		
42. JAUNDICE OR HEPATITIS		
43. MALARIA OR OTHER TROPICAL DISEASE		
44. VENEREAL DISEASE		
45. SEVERE LOSS OF WEIGHT		
46. HERNIA OR RUPTURE		
47. HAEMORRHOIDS (PILES)		
48. ANY SKIN DISEASE		
49. ANY REACTION TO DRUGS OR MEDICINES		
50. ANY OTHER ALLERGIES		
51. UNCONSCIOUSNESS		
52. CONCUSSION OR HEAD INJURY		
53. ANY MAJOR JOINT OR BACK INJURY		
54. ANY FRACTURES (BROKEN BONES)		
55. ANY PARALYSIS OR MUSCULAR WEAKNESS		
56. DENTURES		
57. MOTION SICKNESS (CAR, PLANE, SEA)		

MEDICAL HISTORY (CONT'D)

NOTES ON HISTORY

	NO	YES
58. DO YOU SMOKE		
59. APPROX. NUMBER OF CIGARETTES A DAY		
60. HAVE YOU EVER BEEN REJECTED FOR INSURANCE		
61. HAVE YOU BEEN UNABLE TO WORK FOR MEDICAL REASONS		
62. HAVE YOU EVER BEEN ON A PENSION		
63. HAVE YOU ANY DISABILITY WHEN FLYING IN AIRCRAFT		
64. HAVE YOU EVER LIVED WITH A PERSON WITH T B		
65. HAS ANY MEMBER OF YOUR FAMILY HAD T B		
66. OR ATTEMPTED SUICIDE		
67. OR HAD MENTAL ILLNESS		
68. OR FITS, EPILEPSY		
69. HAVE YOU ANY INCAPACITY DURING PERIODS		
70. ARE YOU NOW PREGNANT		
71. HAVE YOU BEEN IN HOSPITAL OR A MENTAL INSTITUTE FOR ANY REASON		
72. HAVE YOU HAD ANY OPERATIONS		
73. HAVE YOU ANY OTHER ILLNESS OR INJURY NOT MENTIONED IN THIS LIST		

(FEMALES ONLY)

A1.2. DMH (DIVING MEDICAL HISTORY) TO BE COMPLETED BY CANDIDATE

1. APPROX. DATE OF FIRST SNORKEL DIVE	
2. APPROX. DATE OF FIRST COMPRESSED AIR (SCUBA) DIVE	
3. APPROX. NUMBER OF COMPRESSED AIR DIVES SINCE	
4. GREATEST DEPTH OF ANY DIVE	
5. LONGEST DURATION OF ANY DIVE	
6. APPROX. DATE OF FIRST DIVE ON MIXED GASES (PRO DIVERS ONLY)	
7. APPROX. NUMBER OF DIVES ON MIXED GASES (PRO DIVERS ONLY)	

HAVE YOU EVER SUFFERED, OR DO YOU NOW SUFFER FROM ANY OF THE FOLLOWING DISORDERS RELATED TO DIVING?

	NO	YES
8. SEVERE EAR SQUEEZE		
9. RUPTURE OF EARDRUM		
10. DEAFNESS		
11. GIDDINESS OR DIZZINESS		
12. SEVERE SINUS SQUEEZE		
13. SEVERE LUNG SQUEEZE		
14. RUPTURED LUNG (BURST LUNG)		
15. EMPHYSEMA		
16. PNEUMOTHORAX		
17. AIR EMBOLISM		
18. NITROGEN NARCOSIS		
19. DECOMPRESSION SICKNESS (BENDS)		
20. NEAR DROWNING		
21. SEVERE MARINE ANIMAL INJURY		
22. OXYGEN TOXICITY		
23. CARBON DIOXIDE TOXICITY		
24. CARBON MONOXIDE TOXICITY		
25. DYSBARIC OSTEONECROSIS (BONES)		
26. ANY OTHER DIVING INCIDENTS		

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE

A1.3.ME (MEDICAL EXAMINATION) TO BE COMPLETED BY MEDICAL PRACTITIONER

1. Physique Good Average Poor	2. Height cm ins	3. Weight kg lbs	4. Colour Eyes Hair Skin	5. Expansion Exp. cm Insp. cm Diff. cm				
6. Vision R6/ Corr 6/ L6/ Corr 6/	7. Colour Perception	8. Urinalysis Albumen Glucose	9. Chest X-ray Date..... Place..... Result.....					
10. Skeletal (Long Bone) X-ray Date..... Place..... Result..... (Pro divers only)			11. Respiratory Function Test Vital Capacity..... After..... FEV ₁ Broncho..... Percentage..... Dilator.....					
12. Audiometry		Frequency Hz						
		250	500	1000	2000	4000	6000	8000
Air		Loss in dB (R)						
		Loss in dB (L)						
Bone		Loss in dB (R)						
		Loss in dB (L)						
REMARKS.								

CLINICAL EXAMINATION	Normal	Abnormal
13. HEAD, SCALP, FACE AND NECK		
14. NOSE, SEPTUM, AIRWAY		
15. SINUSES		
16. MOUTH, THROAT, TEETH, SPEECH		
17. EARS GENERAL		
18. TYMPANIC MEMBRANE		
19. EUSTACHIAN TUBE FUNCTION		
20. PUPILLARY REFLEXES		
21. EYE MOVEMENTS		
22. VISUAL FIELDS		
23. ABDOMEN AND G I TRACT		
24. ENDOCRINE SYSTEM		
25. LYMPHATIC SYSTEM		
26. POSTURE AND GAIT		
27. SPINE		
28. UPPER LIMBS		
29. LOWER LIMBS		
30. CRANIAL NERVES		
31. REFLEXES		
32. SENSATION		
33. CEREBELLAR FUNCTIONS		
34. EMOTIONAL STABILITY, PHOBIA		
35. MENTAL CAPACITY		
36. IDENTIFYING MARKS		
37. CHEST, LUNG FIELDS		
38. CARDIAC AUSCULTATION		
39. VASCULAR SYSTEM		
40. OPHTHALMOSCOPY		
41. EXERCISE CAPACITY		
42. ECG AT REST		
44. BLOOD PRESSURE		
45. PULSE RATE/MIN		
46. SHARPENED ROMBERG SCORE		SECS

NOTES ON ABNORMALITIES

FIT TO DIVE
UNFIT TO DIVE
OTHER
REASONS:

SIGNED:

DATE:

WOODS HOLE OCEANOGRAPHIC INSTITUTION

DIVING MEDICAL EXAMINATION

TO EXAMINING PHYSICIAN:

This person is an applicant for training or employment involving diving with self-contained underwater breathing apparatus (SCUBA) or surface-supplied equipment. Your opinion of the applicant's physical fitness is requested. A report form and completed medical questionnaire are enclosed. Since the information requested may be of importance in preventing or treating a diving accident, please be as specific as possible in detailing your results and comments. Please bear in mind that diving involves a number of unusual medical problems:

Diving may involve **HEAVY EXERTION** and **IMMERSION IN COLD WATER**. A diver must be in good general health, free from cardiovascular and respiratory disease, and have good exercise tolerance.

Diving involves significant changes in ambient pressure and gas volume. All body spaces must equalize pressure readily. Obstructive lung disease may cause catastrophic accidents on ascent.

Even momentary impairment of consciousness underwater may be fatal.

Responsibility to other divers is a consideration. Even if a diver were willing to take a calculated risk with his own safety, if an accident occurred, other divers would be at risk in attempting rescue. In addition, evidence of neurotic trends, recklessness, accident proneness, panicky behavior or questionable motivation should be evaluated.

ABSOLUTE CONTRAINDICATIONS TO DIVING (The following are examples of conditions which present unacceptable risks to health and safety while diving):

History of seizure disorder (except febrile convulsions in infancy)

Recurrent or unexplained syncope, whether neurogenic or cardiovascular

Insulin-dependent diabetes

Sickle cell disease

Meniere's disease

Active asthma if medication is required for control, if there have been attacks within the past two years, or if bronchospasm has ever been associated with exertion or inhalation of cold air

Ear surgery where prosthesis has been implanted in the conduction chain

History of spontaneous pneumothorax

Chronic inability to equalize pressure in middle ears or sinuses; unhealed perforation of tympanic membrane

Pulmonary cysts, blebs, bullae, or definite air trapping lesions detected by x-ray; significant obstructive pulmonary disease

History of coronary artery disease; myocardial infarction; arrhythmias; ventricular septal defect

Chronic alcoholism or drug addiction

RELATIVE CONTRAINDICATIONS TO DIVING (The following are examples of conditions which may disqualify, limit, or restrict diving depending on severity, presence of residual effects, response to therapy, etc.):

Any condition requiring continuous medication for control (e.g., antihistamines, steroids, barbiturates, mood altering drugs, antihypertensive drugs)

Pregnancy

Decreased pulmonary reserve from any cause

Obesity

Malignancies, unless treated and without recurrence for five years

History of chest surgery; recent operations

TEMPORARY DISQUALIFICATIONS

Upper or lower respiratory infection or severe hay fever causing inability to equalize pressure in ears or sinuses, or causing chest congestion; middle ear infection

Inguinal hernia

Minor perforation of tympanic membrane

Alcohol or drug intoxication

Any medication which could interfere with normal diving

Divers often enter polluted water and are subject to injuries requiring antitetanus treatment. It is strongly advisable to maintain routine immunizations up-to-date.

If you feel the need for additional tests beyond those outlined in the attached form or for consultation, please contact the W.H.O.I. Diving Safety Officer or Institution Safety Officer. It may be in the Institution's best interest to discontinue the person's participation in diving activities.

For a more complete treatment of medical standards for diving, please refer to:

Davis, J.E., Kindwall, E.P., and Youngblood, D.A., "Selection of Divers: Examination and Physical Standards," in *Hyperbaric & Undersea Medicine*, J.E. Davis, ed., 1981, 1:3, pp. 2-7, Medical Seminars, Inc., 8480 Fredericksburg Road, #241, San Antonio, TX 78229.

Strauss, Richard H., ed., *Diving Medicine*, 1976, Grune & Stratton, NY, pp. 341-347.

Signs and symptoms of some diving accidents may mimic those of stroke or heart attack. The possibility of decompression sickness or gas embolism should be considered for any patient exhibiting neurological deficit (e.g., unconsciousness, paralysis, weakness, confusion, inability to control bowels or urine, chest pain, etc.) within minutes to hours after diving (as shallow as 4 feet). The National Diving Accident Network (D.A.N.), Duke University Medical Center, (919) 684-8111, may be called at any time for consultation regarding diagnosis, immediate care, transportation to a hyperbaric facility, and chamber location. Please retain the above number for your future reference.

Terrence M. Rioux, Diving Safety Officer

WOODS HOLE OCEANOGRAPHIC INSTITUTION

PHYSICIAN'S REPORT OF DIVING MEDICAL EXAMINATION

Applicant's Name _____ Physician's Phone () _____

Physician's Name _____ Address _____

(print, type, or stamp)

TYPE OF EXAMINATION: ___ INITIAL ___ ANNUAL ___ SPECIAL (MAJOR ILLNESS OR INJURY)

CLINICAL EVALUATION	NORMAL	ABNORMAL	RESULTS, COMMENTS (Please be Specific)
General Physical Condition			
Ears, Nose, Throat			
Chest X-Ray (initial, once/4 years)			
ECG (initial, annual age 40 & over)			
Visual Acuity			
Color Blindness (initial exam only)			
Hearing			
Hematocrit or Hemoglobin			
White Blood Cell Count			
Urinalysis			
Other as Determined by Examining Physician (please specify)			

The following conditions should be made known to any physician who may treat this person for a diving accident (include medical conditions, medication, allergies, etc.);

Opinion, disqualifications, limitations, temporary restrictions, comments:

_____ APPROVED (I find no defects which I consider incompatible with diving)

_____ CONDITIONAL APPROVAL (I do not consider diving to be in the applicant's best interests, but find no defects which present a marked risk. I have explained this to the applicant.)

_____ DISAPPROVED (The applicant has defects which in my opinion would constitute unacceptable hazards to health & safety in diving. I have explained and discussed this with the applicant.)

Physician's Signature _____ Date _____

Applicant's Signature _____ Date _____

WOODS HOLE OCEANOGRAPHIC INSTITUTION

DIVING MEDICAL QUESTIONNAIRE & HEALTH HISTORY

INSTRUCTIONS: Please answer the following questions as accurately as possible. Be sure all blanks are filled in completely, sign and date, and return to the Diving Safety Officer. Incomplete forms will be returned and authorization to dive may be unnecessarily delayed.

NAME _____ AGE _____ OCCUPATION _____

DEPARTMENT _____ PROJECT NUMBER _____

HEIGHT _____ WEIGHT _____

1. Have you had any previous experience in diving? Yes ___ No ___
If so, have you ever had bends, embolism or an other pressure related injury? Yes ___ No ___
2. Have you had any difficulty equalizing pressure in your ears or sinuses? Yes ___ No ___
3. What do you do for exercise? How often do you participate? (over)
4. Have you ever been rejected for service or employment for medical reasons? Yes ___ No ___
5. Date of last physical examination _____ Physician/Facility _____
Address _____
6. Date of last chest X-ray _____ EKG _____
7. Have you ever had an electrocardiogram? Yes ___ No ___ Electroencephalogram? Yes ___ No ___
8. Do you smoke? Yes ___ No ___ How much? _____
9. Have you ever had or do you now have: (Please check at left of each item)

Yes	No		Yes	No	
___	___	Frequent colds or sore throat	___	___	Hay fever or sinus trouble
___	___	Trouble breathing through nose	___	___	Painful, running ear,
___	___	Ruptured eardrum			mastoid trouble
___	___	Fast or irregular heartbeat	___	___	Chest pain, persistent cough
___	___	High or low blood pressure	___	___	Heart trouble
___	___	Frequent diarrhea, bloody stools	___	___	Persistent back or stomach ache
___	___	Kidney or bladder disease	___	___	Recent gain or loss of weight
___	___	Frequent upset stomach, heart	___	___	Jaundice or hepatitis
___	___	burn, ulcers	___	___	Rheumatic fever
___	___	Tuberculosis	___	___	Broken bone, serious sprain
___	___	Venereal disease	___	___	Severe or frequent headaches,
___	___	Rheumatism, arthritis, joint	___	___	migraines
___	___	trouble	___	___	Head injury causing unconsciousness
___	___	Insomnia, nightmares, sleepwalking	___	___	Nervous breakdown, depression
___	___	Dizziness, fainting, convulsions	___	___	Motion sickness
___	___	Alcohol, drug, narcotic habit	___	___	Claustrophobia
___	___	Adverse reaction to serum, drug	___	___	Any neurological condition
___	___	or medicine	___	___	Diabetes
___	___	Any serious illness not	___	___	Cancer
		mentioned above			

Please explain on next page.

REMARKS. Briefly describe any items checked YES. List all medications currently used and allergies you may have.

APPENDIX 10. SCIENTIFIC DIVER BREVET APPLICATION FORMS

Application number: _____



President
 M.C. Fleming, UK
Vice-President
 A. Bachrach, USA
Secretary
 L.-A. Rundblad, Sweden.

**CONFÉDÉRATION MONDIALE DES ACTIVITÉS SUBAQUATIQUES
 WORLD CONFEDERATION OF UNDERWATER ACTIVITIES**

SCIENTIFIC COMMITTEE

CMAS Head Office
 34 Rue du Colisée
 75008, Paris, France.

**Note: Application may be made on
 a photocopy of this form.**

APPLICATION FORM FOR CMAS SCIENTIFIC DIVER BREVET

PART I. TO BE COMPLETED BY THE APPLICANT

1. NAME OF APPLICANT (Please Print) _____
2. ADDRESS OF APPLICANT (Please Print) _____

 Country _____

3. STATEMENT OF DIVING TRAINING

Please complete . A or both of the following sections A and B:

A. I _____ (name) certify that I am in possession of CMAS 3-star diver certificate number _____ issued to me in my name by the national diving federation or organisation of _____ (country). The name of the national diving federation or organisation which issued my certificate is _____ (name of federation or organisation).

B. I _____ (name) certify that I am in possession of government approved training certificate number _____ see section 5A for full details of my training.

Note. Delete section . . B if not applicable.

4. STATEMENT OF SCIENTIFIC AFFILIATION

Please complete one or both of the following sections A and B:

A. I certify that I am a member of the national Scientific Diving Association of _____ (country). The name of the national Scientific Diving Association is _____ (See PART II).

B. I certify that I am a lecturer/teacher/research worker/technician/research student/student* at the following establishment of learning or research: _____

(name and address of establishment). I certify that I use diving in my studies or research, and this is permitted by the establishment. (See PART III).

Notes. Delete section A or B if not applicable.

* Delete words not applicable.

5. STATEMENT OF LEGAL STATUS

Please complete one of the following sections:

A. In _____ (country), which is the country where I hold my diving qualifications and where I conduct my studies and/or research, I have the legal status of a diver who dives at work. The government of _____ (country) requires scientific divers at work to possess government-approved diving training and a government-approved certificate permitting them to dive at work. I certify that I hold government-approved diving training certificate number _____ issued on _____ (date), at _____ (place of issue), and that I am legally permitted to dive as a scientific diver at work in _____ (country). A copy of my certificate is attached.

B. In _____ (country), which is the country where I hold my diving qualifications and where I conduct my studies and/or research, there is no law which requires scientific divers who dive in the course of their work to hold a government-approved certificate of training. In _____ (country) sports diving qualifications are legally sufficient to qualify me to dive in the course of scientific work.

Note. Delete the paragraph not applicable.

6. **DECLARATION**

I declare that all the statements above are true to the best of my knowledge on this date. I understand that the CMAS Scientific Diver Certificate does not entitle me to be employed as a commercial or industrial diver.

Signed (Applicant)

Date

IMPORTANT: PART I MUST BE COMPLETED AND SIGNED BY THE APPLICANT BEFORE PARTS II OR III ARE SIGNED BY THE SUPPORTING ASSOCIATION OR ESTABLISHMENT.

COMPLETE PART II OR PART III OR BOTH

PART II. TO BE COMPLETED BY THE SUPPORTING SCIENTIFIC DIVING ASSOCIATION

7. To be completed by the Chairman, President, or Secretary of the national Scientific Diving Association cited in section 4A above.

Name and Address of Association (Please Print)

..... Country:

8. I certify that (name of applicant, please print) is a member of (name of Scientific Diving Association).

9. I have read Part I of this form completed and signed by the applicant.

Signed (Chairman/President/Secretary).

Date

PART III. TO BE COMPLETED BY THE SUPPORTING ESTABLISHMENT OF LEARNING OR RESEARCH

10. To be completed by the Head of Department of the establishment cited in section 4B above.

Name and address of the establishment where the applicant works or is a student:

..... Country:

11. I certify that (name of applicant, please print) is a lecturer/teacher/research worker/research student/technician/student* at this establishment.

Note. * Delete words not applicable.

12. I have read Part I of this form completed and signed by the applicant.

Signed (Head of Department)

Date

Department Stamp:

13. The completed form, together with supporting signatures in Parts II or III, and the copy of the official government-approved certificate (if referred to in paragraph 5A) should be posted to the following address; together with payment by cheque of 80 French Francs or an International Money Order for 80 French Francs (payable to CMAS).

CMAS
Scientific Diver Brevet,
34 Rue du Colisée,
75008
PARIS
FRANCE

APPENDIX 11. EXTENDED LOCAL RULES

Statutory legislation concerning diving safety sometimes requires that an employer or institute publish a set of rules or internal regulations, stating their standards and methods for maintaining safety. It can be time-consuming and unnecessary for numerous laboratories and institutes to write separate rules starting from first principles; the resulting variability may even be dangerous and prevent movement of divers between laboratories. It may therefore be preferable for universities, institutes, or laboratories to publish a statement of policy that the Unesco/CMAS Code of Practice will apply to diving carried out by their employees and students, supplemented by such manuals or standards as may be suitable to cover the detailed conditions of equipment and environment required by national legislation. This will ensure maximum compatibility.

From time to time it may then be necessary for the employing institution to publish extensions or variations of the rules, but maintaining the continuity of statutory authority. Such extensions of the rules could cover matters such as diving on weekends when a recompression chamber was not manned, diving in exceptionally dangerous locations such as in a tidal race, or near reefs and headlands, or diving in shipping lanes, etc. Such local rules would be completely specific to a given diving area or establishment. The following formula is suggested:

NAME OF INSTITUTE EMPLOYING SCIENTIFIC DIVERS

LOCAL DIVING RULES, NOTICE NUMBER.....DATE

WHEREAS the*

.....

requires every Employer of Scientific Divers to produce or publish a set of Diving Rules, the contents of which shall be consistent with the legislation,

AND WHEREAS The Unesco/CMAS Code of Practice for Scientific Diving is applied in this institution/university/laboratory/establishment and is part of the agreed Diving Rules, together with the following documents:

..... (Codes of Practice or Standards)

..... (Manuals and Training Standards)

THE FOLLOWING EXTENSION OF THE RULES IS HEREBY BROUGHT TO THE ATTENTION OF DIVERS:

.....

.....

* Title of national

legislation requiring employers

Signed.....

to publish safety rules.

Diving Officer/Diving Control Board

APPENDIX 12. SAMPLE DIVE RECORD SHEETS

This Appendix contains examples of daily and monthly dive record forms, and institutional records.

Example 1 (UBC)* page 240

Example 2 (UASR) page 242

Example 3 (NERC) page 243

*University of British Columbia

Monthly Log

Monthly logs must be completed and turned in to the Diving Operations Office at the end of each month of diving. Record all open water dives including recreational dives. Divers must log a minimum of 12 dives per year to remain certified. Additionally at least one dive must be made to the depth of certification every six months to retain certification at that depth.

Directions for Filling Out Log

Location - give the accepted name (e.g., The Cut, Whytecliff Park) or a brief description (e.g., Wall at Orlebar Point) or chart coordinates.

Scientific Discipline - specify the scientific purpose(s) of the dive using the following categories:

Biology	(BI)	Oceanography	(OC)
Chemistry	(CH)	Other: Specify	
Geology	(GE)		
Archaeology	(AR)		

Mission - specify the mission(s) of the dive using the following categories:

Observation/Recording	(OR)	Installation/Maintenance	(IM)
Surveying	(SU)	Photography	(PH)
Collection/Sampling	(CS)	Recreation	(RE)
Coring	(CO)	Training	(TR)
		Other: Specify	

Dive Buddy(ies) - give the name(s) of your buddy(ies).

Depth Group - put a check mark in the appropriate box to indicate the depth group (in meters) of the maximum depth of the dive (e.g., maximum depth 55 feet - check box for 20 meters).

Dive Time - give time underwater for scuba or umbilical (surface supply) dives; time in water for snorkel dives. Time should be in hours and minutes (e.g., 0:55).

Mode - specify the principal diving mode of the dive using the following categories:

Scuba-Air	(SA)	Snorkel	(SN)
Umbilical-Air	(UA)	Other: Specify	

Additional Information - list any additional information that is pertinent to the record of the dive using the following categories:

Night	(NI)	Zero-Visibility	(ZV)
Ice	(IC)	Contaminated Water	(CW)
Current	(CU)	Enclosed Spaces	(ES)
Altitude	(AL)	Blue-Water	(BW)
Decompression	(DE)	- specify bottom time and depth for decompression schedule used.	
Incident Report Filed	(IR)	Other: Specify	
None - if there is no additional information enter "NONE".			

Signature - ensure you have filled out the entire form including your name, the month, and the date of your last medical, then sign and date the form at the bottom and send it to:

University Diving Operations Office
Auditorium Annex, 1924 West Mall
Vancouver, B.C. V6T 1W9

WARNING: If the form is incomplete or unreadable it will be returned for corrections.

Monthly Dive Log - UBC Diving Operations Office

Name _____ Month _____ Date of Last Medical _____

DATE Dy/Mo/Yr	LOCATION Name, Description or Chart Coord's	SCIENTIFIC DISCIPLINE	MISSION	DIVE BUDDY(IES)	DEPTH GROUP (Meters) 10 20 30 40 40+	DIVE TIME	MODE	ADDITIONAL INFORMATION
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								

The information above accurately summarizes my diving activity.

Signature _____ Date _____

SCIENTIFIC OBSERVATIONS

DIVE INFORMATION (Dive No.)

Name/address of Contractor:
Date:
Site Location(s):
Name(s) of Diving Supervisor(s):
Equipment used: SCUBA
Breathing mixture used: Compressed Air
Task: (including tools)

Table with 5 columns: Dive 1, Dive 2, Dive 3, Dive 4, Dive 5. Rows include: Time of leaving surface, Bottom Time (mins), Time of arrival at surface, Maximum Depth (m), Stops at (depth), Time, Decompression implemented? No/Yes, RNPL/BS-AC: USN/Other:

Any decompression sickness?: Yes/No
Any other illness/discomfort/injury?: Yes/No
Any adverse health and safety factors?: Yes/No
Action/comments (if "yes"):
Signed: Diver Supervisor

ALL THE INFORMATION ABOVE IS REQUIRED BY LAW AND MUST BE COMPLETED FOR EACH DIVE OR GROUP OF DIVES

ADDITIONAL NOTES:
Name(s) of diving companion(s):
WATER: Visibility (m) Temp (C)
Current (kt) Tide Swell
WEATHER: Temp (C) Wind Cloud
Visibility Precipitation
Comments:

DIVE RECORDS Dive No.
 Institute or Department Diving Officer or Chief Diver observations for Diving
 Operations Log Book, including arrangements for emergency support.

Name and address of University, Institute, School, Museum, etc.

 Dive Date Geographical Location

Vessel/Structure/Platform
 Marshall/Supervisor..... Dive Companion Dive 1

Equipment used Dive Companion Dive 2

Signature Date

Surface line attendant Dive 1 Dive 2 Dive 3

Scientific or Archaeological Observations Dive No

STOPS

	Leave Surface	Arrive Bottom	Leave Bottom	Arrive 10m	Leave 10m	Arrive 5m	Leave 5m	Arrive Surface	Max Depth	Bottom Time	Total Time
DIVE ONE											
DIVE TWO											
DIVE THREE											

Decompression Tables used

Brief work description.....

Any decompression sickness or other illness or adverse effects

Defects of equipment.....

Adverse environmental factors

Diver's Signature.....

On-site Dive Marshall's Signature

Chief Diver's Signature.....

ADDITIONAL INFORMATION Project name or number.....

Chief Scientist.....

Water Conditions: Depth to Bottom.....Surface Temp

Bottom Temp Current..... Tide

VisibilityWaves/Sea State.....

Weather Conditions: Air Temp..... Cloud.....

Wind..... Fog Precipitation

APPENDIX 13. SCIENTIFIC DIVER TRAINING STANDARDS AND CERTIFICATION

Training and certification can be carried out within sports diving clubs affiliated to national or international bodies, military organizations or within institutions that maintain diving programmes. Commonly national scientific diving organizations will recognize some level of training and/or experience as a sufficient basic training standard.

Certification can be made by the national or international body or through a recognized institute that maintains training and certification programmes. In most cases, certificates will have some national level of significance. In the opinion of the Editors, it is not necessary to have a single set of certification standards, so long as there is good agreement between the certifying authorities as to levels of training and competency necessary at the different levels.

Two levels of scientific diver certification may be the simplest approach: 'diver-in-training' and certified Scientific Diver. The 'diver-in-training' requirements would essentially be those for an entry level diver (NAUI Level II, CMAS 2-Star) and restrictions would be placed on the respective diver's activities (i.e. maximum depth 20 meters, supervised directly by a certified Scientific Diver). It is not intended that divers would be required to dive to certain depths each month to maintain this standard for scientific diving, but they might be required to do so for institutional or other certificate requirements.

The certified Scientific Diver requirements would be those equivalent to an advanced sports diver level (NAUI Level IV, CMAS 3-Star) with the certification of the Diving Officer, and there will be no direct restrictions placed on the diver's activities other than those indicated by the Diving Officer. However, a cautionary note would indicate the need for advanced training when undertaking diving in extreme conditions or when using equipment other than self-contained air-breathing apparatus.

Examples of a statement of understanding between the institute and the diver, an application form for training, and an institution temporary permit for visiting investigators are supplied.

DIVING TRAINING/CERTIFICATION

STATEMENT OF UNDERSTANDING

To be completed by candidates for diver training

STANDARD: All areas of evaluation of this course are based on the question, "Will this person make a safe and reliable diver?"

EVALUATION: You will be required to learn and demonstrate to the satisfaction of the diving supervisor, through written/oral examination(s) and physical performance, the following:

- 1) Applied Sciences: physics, physiology and medical aspects as they relate to a diver's performance in the water.
- 2) Diving Equipment: a basic knowledge of the purposes, features, types and use of skin and SCUBA diving equipment.
- 3) Diving Safety: a basic knowledge and skill level of lifesaving and first aid as applied to diving.
- 4) Diving Environment: a basic knowledge of the physical and biological aspects, with particular emphasis of the New England region, and including regulations, dangers, water movement and characteristics, and conservation.
- 5) Safe Diving Skills: competent knowledge and performance of skin and SCUBA pre-and-post diving, surface, and underwater skills.

Your attitude during the course will affect your individual scores and final status.

CERTIFICATION: You are not assured of certification to dive for Woods Hole Oceanographic Institution merely by attending the course, or even by completing or passing all of the areas of evaluation. The Diving Safety Officer will make a subjective decision at the end of the course, based on your total performance and attitude. Possible classifications are as follows:

- 1) Provisional Permit.
- 2) Certification to depth level based upon prior training and experience, as well as performance and attitude.
- 3) Placement in another class for further training.
- 4) Rejection for diving certification.

RESPONSIBILITIES: You will have several responsibilities during the course. These will include:

- 1) Your responsibility for your own safety and the safety of others around you.
- 2) Your individual responsibility to Woods Hole Oceanographic Institution for damages or missing items.
- 3) Your responsibility for your own equipment and personal effects.

Signed _____ Date _____
Candidate

Signed _____ Date _____
Diving Safety Officer

WOODS HOLE OCEANOGRAPHIC INSTITUTION

APPLICATION FOR SCUBA DIVING TRAINING/CERTIFICATION

Instructions: SCUBA diving training/certification is available for approved W.H.O.I. affiliated individuals who need to use the technique to further their research at the Institution or for support activities related to Institution business. Requirements for eligibility and procedures for application may be found in the W.H.O.I. Diving Safety Manual.

Please fill in the requested information as completely as possible. Print legibly or type. Incomplete, missing or late application forms or supporting documentation may result in unnecessary delays or in rejection for training. Attach the requested enclosures and return to the Diving Locker.

PERSONAL INFORMATION: Name _____ Date of Birth _____
 Job Title or Major _____ Department _____
 Office/Lab Location _____ Ext. _____ Home Phone _____
 Mailing Address _____

DESCRIPTION OF NEED FOR DIVING TRAINING/CERTIFICATION: Briefly describe project for which you will use diving at the Institution. Temporary Permit Applicants include location and dates of cruise/operation _____

TRAINING: SCUBA Courses Completed

_____ I have never completed a SCUBA course. _____ I have completed the following courses:

Course Title or Level	Agency (NAUI, PADI YMCA, etc.)	Location	Total Hours			Date of Completion.	Instructor's Name & #
			Lecture	Pool	Open Water		

CPR, First Aid, Lifesaving, Swimming, W.S.I., Boating, etc.

EXPERIENCE: Total Career Open Water SCUBA Dives _____ Total Hours Underwater _____
 Maximum Depth (Career) _____ Maximum Depth (Last Year) _____ Dives Past Year _____ Date
 of Last Open Water Dive ____/____/____ Have You Ever Dived for W.H.O.I.? _____ Date Cer-
 tified ____/____/____ Date Left ____/____/____ Swimming Experience: Non-swimmer _____
 Swimmer _____ Years Year Last Swam _____ Snorkeling Experience: _____ Nonsnorkeler _____
 Years Year Last Snorkeled _____

Brief resume of any commercial, military, or scientific diving experience. Include names of supervisors, companies/universities/units for which you worked, dates of affiliation, and duties. Include all diving related skills not noted above:

Indicate with the appropriate letter if you have ever had experience diving in the following situations: **E** Extensive (more than 20 times) **L** Limited (1-4 times) **M** Moderate (5-20 times); leave blank if inexperienced

- | | |
|---|--|
| <input type="checkbox"/> Diving from boats/ships | <input type="checkbox"/> Cold water (below 45°F) |
| <input type="checkbox"/> Small boats (up to 20' length) | <input type="checkbox"/> Turbid water (0-5' visibility) |
| <input type="checkbox"/> Vessels from 21' to 100' | <input type="checkbox"/> Very clear water (50' visibility) |
| <input type="checkbox"/> Ships (over 100') | <input type="checkbox"/> Diving in salt water |
| <input type="checkbox"/> Shore diving | <input type="checkbox"/> Diving in fresh water |
| <input type="checkbox"/> Rocks or 'ironshore' | <input type="checkbox"/> Ponds, lakes, quarries |
| <input type="checkbox"/> Surf | <input type="checkbox"/> Rivers |
| <input type="checkbox"/> Penetration w/o direct access to surface | <input type="checkbox"/> Mud or silty bottom |
| <input type="checkbox"/> Ice diving | <input type="checkbox"/> Kelp 'forest' |
| <input type="checkbox"/> Cave diving | <input type="checkbox"/> Coral reef |
| <input type="checkbox"/> Wreck diving | <input type="checkbox"/> Currents (1/2 knot and over) |
| <input type="checkbox"/> Night diving | <input type="checkbox"/> Altitude diving (over 2,000' elev.) |
| <input type="checkbox"/> Decompression diving | <input type="checkbox"/> Use of variable volume dry suits |
| <input type="checkbox"/> Diving at sea ('blue water') | <input type="checkbox"/> Commercial diving |
| <input type="checkbox"/> Diving EMT or chamber operator | <input type="checkbox"/> Surface-supplied equipment |
| | <input type="checkbox"/> Saturation or mixed gas |

ENCLOSURES: Enclose the following supporting documents with this application:

- 1) Physical Examination Report. Must have been signed within the past year, marked "Approved for Diving," and signed by a licensed physician.
- 2) Copies of all pertinent certification cards (front and reverse).
- 3) A dive log must be presented for inspection (certified divers only).

STATEMENT: I certify that the above information is correct and that I am in good health. I agree to follow the safety regulations of the W.H.O.I. Diving Safety Manual and to abide by whatever limitation or restriction may be imposed by the Diving Safety Officer.

	Signature of Candidate	Date
APPROVAL: The following persons must endorse the candidate's participation in the W.H.O.I. diving program before training or certification can commence:		
Project Supervisor _____	_____	_____
Name (printed or typed)	Signature	Date
Department Chairman _____	_____	_____
Diving Safety Officer _____	_____	_____
Diving Board Chairman _____	_____	_____

-----DO NOT WRITE BELOW LINE-----

TRAINING/CERTIFICATION PROCEDURE ASSIGNED:

Basic/Refresher Course Class Convening Date _____

Experienced Diver Evaluation Reciprocal Cert. From Approved University/Institution Diving Program

Temporary Diving Permit. Expiration Date _____ Commencement Date _____ Rejection _____

REMARKS: Please attach to this form.

WOODS HOLE OCEANOGRAPHIC INSTITUTION

TEMPORARY SCUBA DIVING PERMIT FOR VISITING INVESTIGATORS

Diving at W.H.O.I. is subject to rules and regulations which are outlined in the Woods Hole Oceanographic Institution Diving Safety Manual. Persons who are planning to dive for a W.H.O.I.-sponsored project or cruise, or who plan to use W.H.O.I. facilities (e.g., ships, stations, piers, equipment) for diving operations, must be certified to do so by the Institution Diving Safety Officer.

Authorized visitors may apply for a Temporary Diving Permit. This permit is restricted to participation in the specific diving operation/cruise for which requested, and is subject to such other restrictions (e.g., depth, diving buddy, type of activity or environment, etc.) as the Diving Safety Officer may impose. Temporary permits must be renewed for each project/cruise by persons not affiliated with W.H.O.I.

W.H.O.I. employees and students, or visitors who desire regular Institution certification, must comply with the normal procedures as outlined in the W.H.O.I. Diving Safety Manual. Because of time constraints, Temporary Permit candidates may have portions of the procedures waived or simplified; however, in the interest of safety, certain minimal requirements must be met. The Diving Safety Officer may impose other requirements in addition to the following at his discretion:

HEALTH: The visiting diver must provide documentation of having passed a physical examination for diving within one year of the termination of the diving operation. As a minimum, the examination form should include a statement that the candidate is medically qualified for diving, the signature of the examining physician, the physician's name, address and phone (printed or typed), and a statement describing any condition extant or medication currently taken which could affect or restrict the candidate's ability to dive safely. The W.H.O.I. medical form is available on request.

TRAINING: A certification card from a nationally recognized diver training agency (e.g., NAUI, PADI, YMCA, NASDS, SSI) must be submitted. A Xerox (front and back) copy will suffice.

EXPERIENCE: A log recording at least 12 career open water dives, with at least 8 having been accomplished within the past year must be submitted. If a visitor is affiliated with a university or institution with a formal diving program (i.e., with a diving control board and a diving safety manual), a letter from the Diving Safety Officer certifying that the candidate is currently qualified and conforms to the above requirements may suffice.

Please fill in the requested information on the reverse of this form, attach the necessary documentation, and send as a package to the Principal Investigator for whom you will be working at W.H.O.I. Visitors who have participated in W.H.O.I. sponsored diving operations within the past year may already have some of the above documentation on file with the Institution Diving Safety Officer. However, it is the visitor's responsibility to ensure that all requirements are up to date and submitted with sufficient lead time to be processed.

Terrence M. Rioux
Diving Safety Officer

APPLICATION FOR TEMPORARY W.H.O.I. DIVING PERMIT

INSTRUCTIONS: Fill in the requested information as completely as possible. Print legibly or type. Incomplete, missing or late forms or documentation may result in unnecessary delays or rejection.

PERSONAL INFORMATION:

Name _____ Age _____ Sex _____

Occupation or Major _____

Work/University/Address _____

TRAINING:	Course or Level	Title (NAUI, etc)	Agency	Location	Date of Completion	Instructor's Name
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CPR _____

1st Aid _____

Diving _____

Courses _____

EXPERIENCE: Total Career SCUBA Dives _____ Total Hours Underwater _____ Maximum Depth
(Career) _____ Maximum Depth (Last Year) _____ No. Dives Past Year _____ Have you ever dived for W.H.O.I?
When? (month, year) _____

Indicate with the appropriate letter if you have ever had experience diving in the following situations: **E** Extensive (more than 20 times); **L** Limited (1-4 times); **M** Moderate (5-20 times); leave blank if inexperienced.

- ___ Diving from boats/ships
 - ___ Small boats (up to 20' length)
 - ___ Vessels from 21' to 100'
 - ___ Ships (over 100')

- ___ Shore diving
 - ___ Rocks or 'Ironshore'
 - ___ Surf
- ___ Penetration w/o direct access to surface

- ___ Ice diving
- ___ Cave diving
- ___ Wreck diving
- ___ Night diving
- ___ Decompression diving
- ___ Diving at sea ('blue water')
- ___ Diving EMT or chamber operator

- ___ Cold water (below 45°F)
- ___ Turbid water (0-5' visibility)
- ___ Very clear water (50' visibility)
- ___ Diving in salt water
- ___ Diving in fresh water
 - ___ Ponds, lakes, quarries
 - ___ Rivers
- ___ Mud or silty bottom
- ___ Kelp 'forest'
- ___ Coral reef
- ___ Currents (1/2 knot and over)
- ___ Altitude diving (over 2,000' elevation)
- ___ Use of variable volume dry suits, Unisuit, etc.
- ___ Commercial diving
- ___ Surface-supplied equipment
- ___ Saturation or mixed gas

CRUISE/DIVING OPERATION INFORMATION: Brief description of the diving operation

Principal Investigator for whom you will be working at W.H.O.I.: _____

Location of diving operation: _____

Date(s) of diving operation: _____

I certify that the above information is correct and that I am in good health. I agree to follow the safety regulations of the W.H.O.I. Diving Safety Manual and to abide by whatever limitation or restriction may be imposed by cognizant W.H.O.I. Diving authorities, including the Diving Safety Officer.

Signature of Candidate

Date

APPENDIX 14. GLOSSARY OF SELECTED TERMS AND DEFINITIONS

This glossary is not a complete glossary of diving terms, but is a list of some terms and acronyms used in this code. A complete glossary of American diving terminology has been published by the Best Publishing Company, Post Office Box 1978, San Pedro, California 90723, USA. Terms are also usually defined with legal precision in the preamble to government legislation, but the meanings may vary slightly from document to document and from country to country.

AAUS: American Academy of Underwater Sciences.

AB: Adjustable Buoyancy.

ABLJ: Adjustable buoyancy life jacket (vest, compensator). A life jacket which supports the diver safely on the surface with his/her face above water, and can be inflated using a hand controlled valve while submerged, using air either from direct feed, or from a separate cylinder.

ATA or

ATM: Atmospheres Absolute. Air pressure at sea level at 0 degrees Centigrade temperature is defined at about 14.7 lbs/in² and is called Standard Atmospheric Pressure, 1 ATA = 10.07 meters sea water, 33.05 feet sea water, 33.93 feet freshwater, 1.033 kg/cm², 14.696 lbs/in², 760 mm Hg, or 1.013 bars

BIBS: Built-In Breathing System.

Boyle's

Law: Boyle's Law defines the relationship between pressure and volume. It states that at a constant temperature, the volume of a given mass of gas will vary inversely with the absolute pressure, or $P_1V_1 = P_2V_2$.

BSAC: British Sub Aqua Club.

CAUS: Canadian Association for Underwater Sciences.

Cd: Cadmium.

Charles'

Law: Charles' Law concerns the relationship between temperature, volume and pressure. It states that 'if the pressure remains constant, the volume of a given amount of gas is directly proportional to the absolute temperature'.

CIRIA: Construction Industry Research and Information Association (UK).

CIRSS: Comitato Italiano Ricerche Studi Subacquei (Italy).

Closed circuit: A breathing system within which the gas is re-circulated so that all the oxygen is used metabolically by the diver, and the exhaled carbon dioxide is absorbed in a chemical filter.

CMAS: Confédération Mondiale des Activités Subaquatiques (World Underwater Federation).

CNR: Consiglio Nazionale delle Ricerche (Italy).

CO₂: Carbon dioxide.

CPR: Cardio-Pulmonary Resuscitation.

Dalton's Law: Dalton's Law concerns the composition of air at various pressures. It states that 'the total pressure exerted by a mixture of gases is the sum of the pressures that would be exerted by each of the gases if it alone occupied the total volume'. The total pressure is the sum of the partial pressures of the gases present and as the overall pressure increases, so the partial pressure of the constituent gases increases.

DCB: Diving Control Board.

DCIEM: Defence and Civil Institute of Environmental Medicine (Canada).

DCS: Decompression Sickness.

DF: Direct feed. An intermediate pressure air hose with diver control for feeding breathing air from the main air bottle to ABLJ, for dry suit inflation, or other purposes.

DPV: Diver Propulsion Vehicle.

EAR: Expired Air Resuscitation.

EEZ: Exclusive Economic Zone.

EMT: Emergency Medical Technician

f.s.w.: Feet of sea water.

Graham's Law: Graham's Law concerns the rate at which different gases diffuse in a fluid. It states that 'the rate of diffusion of a gas, in relation to another, is inversely proportional to the square roots of the densities (or molecular weights).

H₂: Hydrogen gas.

H₂O: Water.

He: Helium.

Heliox: A breathing gas consisting of a mixture of helium and oxygen.

Henry's Law: Henry's Law relates to gas absorption in fluids. It states that 'the amount of gas that will dissolve in a liquid at a given temperature is directly proportional to the partial pressure of that gas over the liquid'. At increased pressures, increased volumes of gas can dissolve in liquid (e.g. blood).

Hg: Mercury.

HP: High Pressure.

Life Jacket: Legally, a life-jacket must be certified as able to support a person safely on the surface of the water with their face above water.

NAUI: National Association of Underwater Instructors (USA).

NERC: Natural Environment Research Council (UK).

Ni: Nickel.

Nitrox: A breathing gas consisting of a mixture of nitrogen and oxygen with a composition in proportions different from that of air.

NOAA: National Oceanic and Atmospheric Administration (USA).

NSS: National Speleological Society (USA).

O₂: Oxygen.

Octopus rig: A breathing regulator with two (or more) hoses leading to second stage valves and mouthpieces, so that two (or more) divers can breathe at the same time from the same cylinder. An emergency breathing system.

OSHA: Occupational Safety and Health Administration (USA).

Pascal's Principal: Pressure applied to the surface of a fluid is transmitted to all parts of the fluid equally and undiminished.

RCV: Remote Controlled Vehicle.

- RNLI:** Royal National Lifeboat Institution.
- RNPL:** Royal Naval Physiological Laboratory.
- ROV:** Remotely Operated Vehicle.
- SCOR:** Scientific Committee on Oceanic Research (of International Council of Scientific Unions).
- SCUBA:** The word originated as an acronym for Self Contained Underwater Breathing Apparatus or S.C.U.B.A. Technically it could be used to include any breathing gas or breathing gas delivery system, provided that the diver was carrying the gas supply, without a surface supply. By universal acceptance the term scuba is used to describe a self-contained breathing set which contains compressed air and supplies through a demand valve. The word is used in that sense throughout the Code unless it is qualified by a second term. Thus, it is possible to say 'oxygen scuba', or 'nitrox scuba', to mean a self-contained breathing system providing a gas other than air, with the gas delivery method undefined.
- SLJ:** Surface Life-Jacket. A life-jacket commonly worn while snorkeling that has mouth and small emergency CO₂ gas cylinder inflation.
- Stab Jacket:** Stabilizer jacket. An integral bouyancy system attached to the diver's back-pack or worn separately and usually inflated by direct feed. The manufacturer's instructions with these systems usually state that they cannot be treated legally as life-jackets and they should not be used for that purpose.
- Surface Supply:** A breathing system in which the gas is supplied through a hose from the surface at a higher pressure than the water pressure at the depth of the diver, and the pressure is reduced through a demand valve.
- Tri-mix:** A breathing gas consisting of oxygen and two inert gases, usually helium and nitrogen.
- UASR:** Underwater Association for Scientific Research (UK).
- UBMS:** Undersea Biomedical Society (USA).
- UNCLOS:** United Nations Convention on the Law of the Sea.
- Unesco:** United Nations Educational, Scientific and Cultural Organization.
- USN:** United States Navy.

