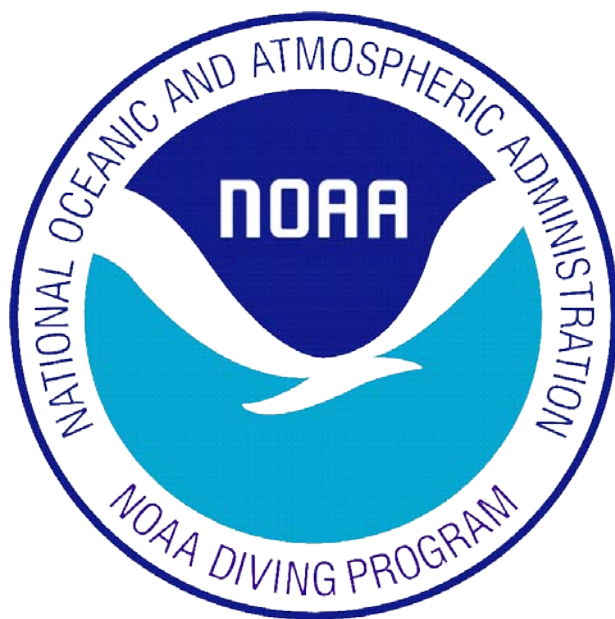


**NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION**

**Diving Medical Standards and Procedures
Manual**



01 August 2010

The NOAA Diving Program
Diving for Science and Technology

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SECTION 1: PURPOSE

- A. The purpose of the National Oceanic and Atmospheric Administration (NOAA) Diving Program (NDP) Diving Medical Standards and Procedures Manual (hereafter referred to as “the Manual”) is to provide uniform criteria and interpretation of physical qualification for diving duties based on standards from current dive medicine practice within a variety of government and civilian organizations, as well as experts in dive medicine.
- B. The Manual will ensure individuals diving under the auspices of NOAA are:
1. Free of contagious diseases or medical conditions likely to endanger the health or safety of themselves or other personnel in the course of their diving duties.
 2. Medically capable of performing duties without significant aggravation of existing physical defects or medical conditions that compromise diver safety or performance.
 3. Free of medical conditions or physical defects that would likely result in termination from the NDP for medical unfitness.
 4. Medically capable of satisfactorily completing required training.
 5. Medically adaptable to the diving environment without the necessity of geographical area limitations, or other limitations incompatible with the mission.

SECTION 2: SCOPE

- A. The standards contained in this manual are subject to change at any time by the NOAA Diving Control and Safety Board (NDCSB) based on recommendations from the NOAA Diving Medical Review Board (NDMRB). Standards may be updated to incorporate changes in dive medicine practice and/or research as deemed necessary. The NDMRB shall review these standards at least annually and provide comments to the NDCSB through the Chairperson.
- B. The Standards apply to all personnel who are authorized to dive under the NDP.
- C. NOAA reserves the right to deny diving privileges to anyone deemed unfit to dive by the NDMRB.
- D. Medical Clearance Authority.
 - 1. Authority for medical clearance for diving resides with NOAA.
 - 2. Objective data and opinions from physicians and other medical practitioners will be reviewed as input for decisions on NOAA fitness to dive; however, the ultimate decision authority on fitness to dive rests with the NOAA Diving Center Diving Medical Officer (NDC DMO)

SECTION 3: COMPONENTS

A. Diving Medical Officer.

1. General Information.

- a) A DMO is a health care provider with specialized training in diving and hyperbaric medicine capable of recognizing and providing initial treatment for diving related injuries.
- b) Other Medical Officers assigned to NOAA who have completed a NOAA recognized DMO course (see section 3.A.2. (b) below) may be on site for many of NOAA's diving operations.

2. Qualifications.

- a) Be a licensed health care provider (physician (M.D./D.O.), a nurse practitioner (NP), or physician's assistant (PA) only) assigned to NOAA; and
- b) Complete a NOAA recognized DMO course such as the NOAA/Undersea and Hyperbaric Medical Society (UHMS) Physicians' Diving Medicine course and/or the U.S. Navy's Recognition and Treatment of Diving Injuries course (other courses must be approved by the Chairperson NDMRB).
- c) In addition, the NDC DMO will hold a NOAA diving certification.

3. Responsibilities.

- a) Maintain current education in the area of dive medicine;
- b) Conduct reviews of dive physicals and other medical submissions;
- c) Make determinations of medical fitness to dive;
- d) Serve as an advisor to the Diving Program Manager (DPM) regarding medical issues;
- e) Provide medical services in support of diving operations;
- f) Provide medical training;
- g) Serve as a liaison between the civilian dive medicine community and NDC;
- h) Serve as Chairperson of the NDMRB and advisor on the NDCSB as appointed by the Director of the Office of Marine and Aviation Operations (OMAO); and
- i) Confer with NDMRB as needed to resolve fitness to dive and other dive medicine issues.

B. NOAA Diving Medical Review Board.

1. General.

- a) The NDMRB is a standing committee of a minimum of five (5) qualified hyperbaric physicians that advise the diving program on various dive-related medical issues. Members of the Board are appointed by the Director, OMAO after consultation with the DPM and the Chairperson, NDMRB.

- b) Appointments to the Board are for a period of five (5) years and may be extended by the Director, OMAO, after consultation with the DPM and the Chairperson, NDMRB.
 - c) The NDMRB shall not provide advice as a group, but rather, individual members forward all advice to the Chairperson.
 - d) In the event of a vacancy on the NDMRB, the Chairperson and/or the DPM will solicit for nominations to fill the vacancy. Curriculum Vita will be obtained and reviewed for all candidates and a selection will be made. The DPM will then submit a recommendation to the Director, OMAO, for formal appointment.
3. Qualifications.
- a) Chairperson.
 - 1) Current federal employee;
 - 2) Certified SCUBA diver;
 - 3) Completion of NOAA-approved DMO course; and
 - 4) Current physician, nurse practitioner, or physician's assistant.
 - b) NDMRB members.
 - 1) Completion of NOAA-approved DMO course; and
 - 2) Current physician with expertise in undersea and hyperbaric medicine.
2. Responsibilities.
- a) Chairperson.
 - 1) Receive overall policy guidance, except for medical policy, from the NOAA DPM.
 - 2) Coordinate invitations to consultants to provide essential expertise on medical-related issues for consideration by the NDMRB when requested or otherwise deemed necessary.
 - 3) Receive input from the NDMRB membership, summarize the findings and opinions, and then report the results individually to the NOAA DPM.
 - 4) Seek consultation from an undersea and hyperbaric physician before a decision is rendered when circumstances or the situation does not allow for input from the membership and the Chairperson is not a physician.
 - 5) Submit information received from the NDMRB, and make recommendations to NDCSB.
 - 6) Make decisions regarding medical fitness to dive of specific individuals independent of feedback from NDMRB members, in those cases where timely action is required and precludes waiting on responses from the NDMRB members.
 - b) NDMRB board members.

- 1) Recommend medical policy and changes in medical operating procedures that will foster a safe and efficient diving program;
- 2) Review appeals, potential diving disqualifications, and/or other issues defined by the DMO; and
- 3) Provide medical review of diving incidents as requested by the Chairperson, NDMRB.

C. NOAA Diving Control and Safety Board.

1. The NDCSB reports jointly to the Director, OMAO, and the NOAA Chief Administrative Officer (CAO) to promote the safe and effective operation of the NDP.
2. Composition. The NDCSB shall consist of a majority of active scientific divers. The Director, OMAO, and NOAA CAO shall periodically review the composition and membership of the NDCSB, including the designation of the Chairperson, and make recommendations to the NDCSB for revisions as necessary.
3. Roles and Responsibilities. The NDCSB has autonomous and absolute authority over the NDP's operation. Consistent with this broad responsibility, the NDCSB shall review policies, individualized assessments, or other medical related issues when consulted by the NDC DMO.

D. Diving Program Manager

1. The DPM is responsible for correspondence with the diver, the Unit Diving Supervisor (UDS), and the Line Office Diving Officer (LODO). In the event of an individualized assessment, the DPM will inform the above mentioned of the outcome in the form of an official letter.
2. The DPM may have direct correspondence with the NDMRB, or through the DMO.

E. Line Office Diving Officer

1. The Line Office Diving Officers (LODO) serve as senior representatives for diving for each NOAA Line Office that utilize divers including the National Marine Fisheries Service, National Ocean Service, National Weather Service, Office of Oceanic and Atmospheric Research, and Office of Marine and Aviation Operations.
2. The LODOs are appointed by their respective Assistant Administrators with concurrence of the NDCSB and approval of the employee's immediate supervisor. As OMAO is a staff office rather than a line office, the ODO is appointed by the Deputy Director.
3. The LODO will ensure all observer divers are medically cleared through the NDC DMO prior to any observational dives.

D. Unit Diving Supervisor.

1. A UDS is a NOAA diver appointed by their respective (LODO) and approved by the NDSCB and their immediate supervisor. UDSs are responsible for the safe and competent diving of those divers assigned to them
2. Responsibilities.
 - a) Monitoring the status of unit divers and notifying them of impending due dates and deadlines.
 - b) Ensuring divers maintain current medical and administrative clearance to dive.
 - c) Maintaining familiarity with NDC medical reporting requirements and forms.

E. Executive Officer, NDC.

1. Notifies applicants/divers and UDSs of medical reporting requirements for initial and periodic diving certifications.
2. Provides the applicant/diver and UDS with status updates.
3. Receives notification from NDC DMO of the results as to the applicants/divers fitness to dive determination.
4. Ensures the medical documents will be included in the diver's file and updates the NOAA Diver Database at NDC to reflect the results.

F. Divers.

1. Must know the medical requirements and regulations to become and stay certified.
2. Shall review the items listed on the NDP Medical Evaluation Checklist to ensure all required items have been completed and the results attached.
3. Are responsible for accurately and truthfully completing required medical documents and submitting them to the NDC DMO for review.

SECTION 4: MEDICAL EXAMINATIONS

A. General Information.

1. All medical examinations must be conducted by a MD, DO, NP, or PA licensed in the United States.
2. Forms NF56-69: NDP Report of Medical History and NF56-70: NDP Report of Physical Examination Form must be completed, signed and dated by the examiner at the time the physical examination is performed.

B. Examination types, timing, and frequency of medical examinations.

1. Examination types.
 - a) Initial medical examination is required of all new applicants for dive certification as well as for all NOAA divers whose certification has lapsed for more than 2 years.
 - b) Periodic medical examination is required of all active NOAA divers.
 - c) Annual Medical Status Report shall be completed by all divers and is due to the NDC DMO in the month of current physical exam. An annual medical status report is not required by a diver who is due to complete a periodic medical exam.
2. Examination validity.
 - a) The following standards apply to all NOAA dive physicals.

Age (in years) at time of last physical	Time between physicals
18 - 47	5 years
48	4 years
49	3 years
50-59	2 years
60+	1 year

- b) Additional medical examinations may be required by the NDCSB, the OMAO DMO, or the NDMRB, for specific purposes.

C. Minimum physical examination required items.

Initial Physical (all ages)	Periodic Physical (all ages)
Medical History	Medical History
Physical Examination	Physical Examination
Complete Blood Count (CBC)	Complete Blood Count (CBC)
Urinalysis (microscopic if indicated)	Urinalysis (microscopic if indicated)
Vision (distant/near, corrected/uncorrected)	Vision (distant/near, corrected/uncorrected)
Height and Weight	Height and Weight
Spirometry	Spirometry (if a smoker)
Chest x-ray (current within 24 months; both PA and lateral views)	-
Audiometry	-
Other testing deemed necessary	Other testing deemed necessary
Additional Tests (age 40 and older)	Additional Tests (age 40 and older)
12 Lead Electrocardiogram (EKG)	12 Lead Electrocardiogram (EKG)
Fasting Blood Lipid Panel	Fasting Blood Lipid Panel
Hemoglobin A1c	Hemoglobin A1c

NOTE: Actual copies of the following test results must be included: complete blood count, urinalysis, spirometry, chest x-ray, audiometry, 12 lead EKG, fasting blood lipid panel, fasting blood glucose, and other laboratory tests deemed necessary.

D. Report of Medical History form.

1. NF56-69: Report of Medical History, shall be completed for both initial and periodic examinations.
2. NF56-69 officially replaces NF 56-59 and DD2807-1. NF 56-59 will NOT be accepted as the history form for initial and periodic physical exams.

E. Reciprocity Divers.

1. The NDCSB may authorize divers to participate in NOAA diving operations based on certification by external agencies with whom NOAA has written reciprocity agreements.
2. No review of medical records by NDP is routinely required for these individuals. However, individuals for whom a specific independent reason exists to believe they are not fit to dive, may be asked to provide additional medical information and justification prior to allowing the individual to dive with NOAA.

F. Observer Divers.

Observer Diver candidates shall submit NF56-76: NDP Observer Diver Medical History form (see Appendix 7), signed by an MD, DO, NP, or PA licensed in the United States, to the NDC DMO for review and approval.

G. Record keeping.

1. All diver physical examinations and medical information are protected under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy rule.
2. The NDC shall maintain medical records for each NOAA Diver certified in a secure location.
3. All medically-related documents shall be sent to the attention of the NDC DMO. All documents so submitted shall be:
 - a) Treated confidential as required by federal privacy laws; and
 - b) Retained in accordance with applicable federal statutes.
4. Availability of Records.
 - a) Medical records shall only be released upon written authorization of the diver or former diver.
 - b) Records and documents required by this standard shall be retained by NOAA for the following period:
 - 1) Physician's written reports of medical examinations for dive team members – 5 years; and
 - 2) Pressure-related injury assessment – 5 years.

SECTION 5: REVIEWING MEDICAL CLEARANCE

A. NDC DMO Responsibilities.

1. When all test results have been received and evaluated, and all findings recorded, a determination shall be made whether potentially disqualifying defects for diving exist.
2. The NDC DMO, or another DMO, shall conduct a review of each physical according to the medical standards contained within this document. The DMO shall then determine the presence/absence of any potentially disqualifying condition. If none are found, the DMO can then grant medical clearance to dive. If potentially disqualifying conditions are found, then this is addressed through the individual assessment (IA) process in accordance with Section 6: Individualized Assessment Process.
3. When physical conditions are found that are potentially disqualifying, the NDC DMO shall initiate an IA for determining fitness for diving duty in accordance with Section 6.
4. In unclear cases, the NDC DMO shall utilize the IA process (see Section 6) to obtain guidance from the NDMRB in determining an individual's fitness to dive.
5. Once a determination of fitness for diving has been made, the NDC DMO shall sign and date NF56-68: NDP Medical Evaluation Checklist, and notify the executive officer, UDS and diver of the results as to the fitness to dive determination. Upon completion of the review, the medical documents shall be included in the diver's file and the NOAA Diver Database at NDC shall be updated to reflect the results.
6. The NDC DMO shall contact the individual diver directly to request additional information if needed. Incomplete exams or those with requests for additional information shall be placed in the "Pending" file at the NDC.
7. The NDC DMO shall inform divers as to the fitness for duty status of their medical documents, along with specific recommendations if applicable. Personnel other than the diver and medical personnel, such as the UDS, may be apprised of the specifics of the medical information on a legitimate need-to-know basis.

B. NDCSB responsibilities.

1. Should the Chairperson, NDMRB recommend medical clearance to dive with restrictions or conditions, the NDCSB shall review the recommendation for operational feasibility.
2. If the NDCSB denies clearance to dive for operational reasons, the Chairperson, NDCSB shall notify the Chair, NDMRB, and the DPM. The Chairperson, NDMRB, shall forward the NDCSB decision to members of the NDMRB for additional consideration. If there is a revised recommendation, this shall be sent to the NDCSB who shall render a decision to either approve or deny clearance to dive.

3. The DPM shall notify the diver of the decision in writing. The decision may be appealed in accordance with Section 7: Medical Appeal Process or Section 5.03 of NAO-123: NOAA Diving Regulations.

SECTION 6: INDIVIDUALIZED ASSESSMENT PROCESS

- A. The IA process is the formal process for potential medical disqualification from NOAA diving. It is in compliance with the Rehabilitation Act and is used to determine fitness for dive duty.
- B. The IA document is prepared by, and all supporting medical documents are collected by, the NDC DMO and shall utilize the following format:
1. Name of diver, date of birth, date submitted, name of submitter.
 2. Medical History.
 - a) Describe the past medical history;
 - b) Describe medical issues discovered during the dive physical examination; and
 - c) Describe other pertinent medical information available from outside sources.
 3. Work History. Describe tasks recently performed by the applicant and how the medical condition has affected work performance.
 4. Regulatory Guidance. Cite the Manual and other medical references being used to make the assessment.
 5. Ability to Perform Duties.
 - a) Describe the individual's ability to perform specific tasks using the task requirements as a guide; and
 - b) Describe the direct relationship between the duties and the illness or condition.
 6. Direct Threat Assessment. The individual is at significant risk for substantial harm to the health or safety of self, other, or the mission which cannot be eliminated by reasonable accommodation as supported by the following:
 - a) Duration of risk. Is the risk of harm (not illness) ongoing or is there an end date or resolution?
 - b) Nature and severity of the potential harm. This includes arduous work; work in a remote location, without medical care, severity and type of harm (e.g., self, others, mission).
 - c) Likelihood that the potential harm will occur. This cannot be remote risk.
 - d) Imminence of potential harm. Risk must be current and ongoing, not in the future.
 7. Discussion. Tie in the medical history, the ability to perform the job, and the direct threat analysis to clearly state the safety concern and potential poor outcome (if any).
 8. Recommendation. Based on the above information, the diver (or applicant) is or is not recommended for medical clearance for NOAA diving duty.

- C. The IA document is sent to all members of the NDMRB with a cover letter and supporting documents. Each member reviews the IA and writes an opinion that is sent to the chair NDMRB.
- D. Upon review of the opinions of the NDMRB members, the chair and the NDC DMO will complete the IA process in accordance with the IA flow chart found in appendix 9. The process will vary depending upon the outcome of the review and the employment status of the applicant/diver.
- E. An applicant/diver may appeal the decision in accordance with Section 7: Medical Appeal Process.
- F. All diving IA's shall be kept on file in accordance with NOAA archiving procedures.
- G. Failure to abide by conditions of an IA, including but not limited to therapeutic interventions and submission of required tests, shall result in permanent suspension of diving privileges. The DPM shall send a formal notification letter to the diver.

SECTION 7: MEDICAL APPEAL PROCESS

A diver, or prospective diver, may appeal the decision in accordance with the following:

1. The disapproved diver may submit a letter to request reconsideration of the not fit for duty determination in writing, within 30 days of the fit for dive duty decision through the DPM to the Director, OMAO.
2. The DPM will forward the request to the DHS for review. The DHS will then draft a letter with recommendations to the Director, OMAO via the DPM.
3. A decision will be rendered by the Director, OMAO, and routed through the DPM. The DPM will notify the diver within 30 days of receipt of the appeal request.
4. The decision rendered at the conclusion of the reconsideration process is final. No additional requests for reconsideration are permitted. However, if the diver's medical condition significantly improves over time from what was outlined and deemed disqualifying in the IA, they may reapply for initial diving certification.
5. In order to reapply, the applicant/diver must submit new documentation for consideration including, but not limited to, new additional tests and evaluations from outside medical providers and a personal statement to the NDC DMO.
6. The NDC DMO will then initiate a new IA in accordance with Section 6: Individualized Assessment Process.

SECTION 8: REPORTING CHANGES IN MEDICAL CONDITION

- A. Divers are responsible for immediately reporting information concerning changes to their medical qualifications for diving duty. Any new medical condition other than minor acute episodic illness since completion of the diver's last history and/or physical must be reported immediately to the UDS and then followed up in writing to the NDC DMO. This includes any surgery, no matter how complex, hospitalizations, fractures, or other injuries to bone or joint. Changes in medical condition must be reported on an annual basis on NF56-77: NDP Annual Medical Status Report.
- B. Any evidence of either nondisclosure or falsification of medical information shall result in suspension of diving certification pending investigation by the NDCSB.
- C. If the investigation reveals that the diver intentionally withheld or falsified information, his/her diving certification may be summarily terminated.

SECTION 9: MEDICAL EXAMINATION REQUIREMENTS

A. General.

1. All forms must be completed in their entirety. Failure to comply shall result in the documents being returned to the sender, causing a delay in processing.
2. All items, whether for an initial or periodic diving physical examination, must have been performed no longer than 12 months preceding receipt by NDC, except the chest x-ray which must be no older than 24 months.
3. Specific instructions for both the applicant and the medical provider (examiner) to assist in completing the NOAA Report of Medical History Form and NOAA Report of Physical Examination Form are included in Appendix 4 and Appendix 5.

B. Initial Diving Applications. The following medical documents with corresponding minimum acceptable standards are required:

1. NF56-68: NDP Medical Evaluation Checklist (see Appendix 1).
2. NF56-69: NDP Report of Medical History Form (see Appendix 2).
3. NF56-70: NDP Report of Physical Examination Form (see Appendix 3).
4. Copy of a signed official interpretation report of the chest x-ray.
5. Audiology test results.
6. Spirometry results. Minimum acceptable standards are determined by using the formulas outlined in Section 15.
7. Vision results. Both distant and near uncorrected vision for those who do not require glasses or contacts and corrected distant and near vision for those who do (items 14 and 15 on the Report of Physical Examination Form).
8. Copies of the following lab tests (actual copies of the printouts are required):
 - a) Complete Blood Count (CBC). Normal standards per the lab performing the examination.
 - b) Urinalysis dipstick; microscopic exam if indicated. Normal is defined as no blood or glucose, and no more than trace protein; with other parameters tested negative. If a microscopic analysis accompanies, the NDC DMO shall interpret all nonzero values.
9. Other testing deemed necessary by the medical provider (examiner) or reviewing NDC DMO.

Requirements	Minimum Standards
NDP Medical Evaluation Checklist	Completed form. All forms must be completed in their entirety.
NDP Report of Medical History	Completed form. All forms must be completed in their entirety.
NDP Report of Physical Examination	Completed form. All forms must be completed in their entirety.

X-ray results	Results must be within normal limits. A signed official interpretation report of the chest x-ray must be submitted.
Audiology	The official audiogram must be submitted with signature.
Spirometry	See Section 15
Vision	Distant visual acuity. Distant visual acuity of any degree that does not correct to at least one of the following: 20/40 in one eye and 20/70 in the other eye. 20/30 in one eye and 20/100 in the other eye. 20/20 in one eye and not exceeding 20/200 in the other eye. Near visual acuity. Near visual acuity of any degree that does not correct to 20/40 in the better eye.
Complete Blood Count	Normal standards per the lab performing the examination
Urinalysis	Normal is defined as no blood or glucose, and no more than trace protein; with other parameters tested negative.
If >Age 40	-----
Electrocardiogram	Within normal limits.
HbA1c	Within nationally accepted standards.
Lipid Panel (>12 hour fasting)	Within nationally accepted standards.

C. Periodic Diving Applications. The documents required for initial diving applications are also required for periodic diving applications with the exception of the chest x-ray interpretation, and audiogram results. Spirometry is required for those who smoke.

D. Divers Age 40 and Over. The following additional requirements apply to both initial and periodic examinations:

1. Electrocardiogram. 12-lead, done initially and at each periodic exam.
2. Hemoglobin A1c.
3. Lipid Panel, fasting greater than 12 hours (to include HDL, LDL and total cholesterol, and triglycerides) – initially and at each periodic exam.

E. Annual Medical Status Report.

1. The diver must complete all of NF56-77: Annual Medical Status Report. The form must be completed annually, signed and dated by the diver, and include all medical events/outcomes that have occurred within the last 12 months. It shall be submitted to the NDC DMO no later than the month/day of the current physical exam each year, unless completing a periodic exam in that year.
2. No standard laboratory tests are required, unless so mandated by the NDC DMO or an IA.
3. All Annual Medical Status Reports shall go to the NDC DMO for review. See Appendix 8: Annual Medical Status Report.

SECTION 10: LAPSED DIVE PHYSICALS

- A. NOAA Diver physical exams expire 12, 24, 36, 48, or 60 months from the date the physical exam was performed based on the age of the diver. Refer to Section 4, Subsection B.2.
- B. If a diver's physical has lapsed for less than 24 months, they must submit a periodic physical with all required tests to the NDC for assessment of fitness to dive.
- C. If a diver's physical has lapsed for 24 months or longer, they shall be required to submit an initial physical with all required tests. The chest x-ray shall only be done at the discretion of the NDC DMO.
- D. Failure to submit an annual medical status review by the end of the month which appears in the date box of the current physical exam shall result in temporary suspension of diving privileges until such time as the form is submitted and reviewed.

SECTION 11: PERFORMANCES AND EVALUATION OF MEDICAL EXAMS

- A. Examiners shall record, sign, and date all physical findings on NF56-69: NDP Report of Medical History and NF56-70: NDP Report of Physical Examination Form.
- B. The NDC DMO reviewer is expected to use judgment in evaluating the degree of severity of any medical condition but is not authorized to disregard any medical condition which could be potentially disqualifying according to the standards. In the event a medical condition listed is potentially disqualifying (see Section 16: Potentially Disqualifying Conditions) is not considered so by the NDC DMO, the NDC DMO shall initiate the IA process outlined in Section 6.
- C. The list of causes for potential disqualification (Section 16: Potentially Disqualifying Conditions) is not intended to be complete, but is representative in nature. If an examinee is regarded by the NDC DMO as unfit for diving by reason of a condition not specifically noted as cause for rejection, the NDC DMO must utilize the IA process to document such.

SECTION 12: CARDIAC RISK SCREENING

- A. At each initial or periodic physical, all divers age 40 and over shall be screened for coronary heart disease (CHD) per the following protocol unless superseded by more current national recommendations. The following protocol is based on the Framingham Heart Study, The Adult Treatment Panel III, JAMA, 2001.
- B. The American Heart Association and the American College of Cardiology have published approaches to global risk assessment for cardiovascular risk and is the basis for the NDP's cardiac risk screening. ("Assessment of Cardiovascular Risk by Use of Multiple-Risk-Factor Assessment Equations: A Statement for Healthcare Professionals from the American Heart Association and the American College of Cardiology". Grundy, et al, Journal of the American College of Cardiology, 1999;34;1348-1359). This information is current as of March 1, 2009.
- C. Each individual risk factor (age, total cholesterol, HDL [high density lipoprotein], systolic blood pressure (SBP), presence/absence of diabetes, and smoking status) are assigned a numerical value to estimate the 10-risk for men and women for an adverse cardiac event.

Table 12-1
Global risk assessment point scores for estimated 10-year risk

Age (years)			
MEN		WOMEN	
Age	Points	Age	Points
< 34	-1	< 34	-9
35 – 39	0	35 -39	-4
40 – 44	1	40 – 44	0
45 – 49	2	45 – 49	3
50 – 54	3	50 – 54	6
55 – 59	4	55 – 59	7
60 – 64	5	60 – 64	8
65 – 69	6	65 – 69	8
70 – 74	7	70 - 74	8

Total cholesterol (mg/dL)		
	MEN	WOMEN
< 160	-3	-2
160 – 199	0	0
200 – 239	1	1
240 – 279	2	2
≥ 280	3	3

HDL cholesterol (mg/dL)		
	MEN	WOMEN
< 35	2	5
35 – 44	1	2
45 – 49	0	1
50 – 59	0	0
≥ 60	-2	-3

Systolic blood pressure (mm Hg)		
	MEN	WOMEN
< 120	0	-3
120 – 129	0	0
130 – 139	1	1
140 – 159	2	2
≥ 160	3	3

Diabetes		
	MEN	WOMEN
No	0	0
Yes	2	4

Smoking		
	MEN	WOMEN
No	0	0
Yes	2	2

D. All points are added for a total score and shall be compared to the graph below for men and women to determine relative cardiovascular risk (the ratio of the incidence in the exposed population divided by the incidence in unexposed persons).

1. The number of Framingham points is derived from the global risk assessment.
2. Relative risk estimates for each age range are compared with baseline risk conferred by age alone (in the absence of other risk factors). Relative risk is graded and color coded to include below average, average, moderately above average, and high-risk categories. Average risk refers to that observed in the Framingham population.
3. Absolute risk estimates (the probability of developing CHD over a given period of time) are given in the two right hand columns, and is expressed as the percentage likelihood of developing CHD per decade. Total CHD risk equates to all forms of clinical CHD; hard CHD includes clinical evidence of myocardial infarction and coronary death (as approximated from the published Framingham data).

MEN

Age	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74		
Low risk level*	2%	3%	3%	4%	5%	7%	8%	10%	13%	Absolute Risk	Absolute Risk**
Points +										Total CHD**	Hard CHD***
0	1.0									2%	2%
1	1.5	1.0	1.0							3%	2%
2	2.0	1.3	1.3	1.0						4%	3%
3	2.5	1.7	1.7	1.3	1.0					5%	4%
4	3.5	2.3	2.3	1.8	1.4	1.0				7%	5%
5	4.0	2.6	2.6	2.0	1.6	1.1	1.0			8%	6%
6	5.0	3.3	3.3	2.5	2.0	1.4	1.3	1.0		10%	7%
7	6.5	4.3	4.3	3.3	2.6	1.9	1.6	1.3	1.0	13%	9%
8	8.0	5.3	5.3	4.0	3.2	2.3	2.0	1.6	1.2	16%	13%
9	10.0	6.7	6.7	5.0	4.0	2.9	2.5	2.0	1.5	20%	16%
10	12.5	8.3	8.3	6.3	5.0	3.6	3.1	2.5	1.9	25%	20%
11	15.5	10.3	10.3	7.8	6.1	4.4	3.9	3.1	2.3	31%	25%
12	18.5	12.3	12.3	9.3	7.4	5.2	4.6	3.7	2.8	37%	30%
13	22.5	15.0	15.0	11.3	9.0	6.4	5.6	4.5	3.5	45%	35%
>14	26.5	>17.7	>17.7	>13.3	>10.6	>7.6	>6.6	>5.3	>4.1	>53%	>45%

WOMEN

Age	40-44	45-49	50-54	55-59	60-64	65-69	70-74		
Low risk level*	2%	3%	5%	7%	8%	8%	8%	Absolute Risk	Absolute Risk**
Points+								Total CHD**	Hard CHD***
0	1.0							2%	1%
1	1.0							2%	1%
2	1.5	1.0						3%	2%
3	1.5	1.0						3%	2%
4	2.0	1.3						4%	2%
5	2.0	1.3						4%	2%
6	2.5	1.7	1.0					5%	2%
7	3.0	2.0	1.2					6%	3%
8	3.5	2.3	1.4	1.0				7%	3%
9	4.0	2.7	1.6	1.1	1.0	1.0	1.0	8%	3%
10	5.0	3.3	2.0	1.4	1.3	1.3	1.3	10%	4%
11	5.5	3.7	2.2	1.6	1.4	1.4	1.4	11%	7%
12	6.5	4.3	2.6	1.9	1.6	1.6	1.6	13%	8%
13	7.5	5.0	3.0	2.1	1.9	1.9	1.9	15%	11%
14	9.0	6.0	3.6	2.6	2.3	2.3	2.3	18%	13%
15	10.0	6.7	4.0	2.9	2.5	2.5	2.5	20%	15%
16	12.0	8.0	4.8	3.4	3.0	3.0	3.0	24%	18%
>17	>13.5	>9.0	>5.4	>3.9	5.4	5.4	5.4	>27%	>20%

* Low absolute risk level = 10 year risk for total CHD end points for a person the same age, blood pressure <120/<80 mm Hg, total cholesterol 160-199 mg/dL, HDL-C ≥45 mg/dL, nonsmoker, no diabetes. Percentages show 10-year absolute risk for total CHD end points.

+ Points = number of points estimated from global risk assessment.

** 10-year absolute risk for total CHD end points estimated from the Framingham data corresponding to Framingham points (see global risk assessment above).

*** 10-year absolute risk for total CHD end points approximated from the Framingham data corresponding to Framingham points (see global risk assessment above).

Color key for relative risk —

Below Average Risk	Average Risk	Moderately Above Average Risk	High Risk

E. Anyone (either man or woman) who falls in the Moderately Above Average Risk or High Risk categories shall have a cardiac treadmill stress test to evaluate the cardiac status. This test must show a minimum documented workload of 13 metabolic equivalents (METs) utilizing the Bruce protocol, and shall be considered valid for a period of five (5) years unless a change in current cardiac status occurs. Equivalent imaging stress studies, such as a nuclear stress test or an echocardiographic stress test, are acceptable (minimum documented workload of 13 METs utilizing the Bruce protocol).

- F. This method of determining cardiac fitness is directed at individuals free of established CHD. For those with these or other diagnoses and/or symptoms, an individualized assessment must be done to determine diving fitness (see Section 6).

SECTION 13: RESUMING DIVING AFTER SURGERY, INJURY, PREGNANCY, OR ILLNESS

General.

1. Divers are required to obtain clearance from their personal healthcare provider following surgery, pregnancy, DCS, or other significant illness or injury prior to submitting a request to return to diving duty to NDC. The NDC DMO shall then make a determination regarding the individual's fitness to dive.
 2. All divers are automatically suspended and are **REQUIRED** to notify their UDS and the NDC DMO of any surgeries, serious illness/injury, or pregnancy. A diver may not dive until cleared by the NDC DMO.
 3. The NDC DMO may forward information to the NDMRB for assistance in making a decision. The NDC DMO or the NDMRB may require additional information or testing as needed in order to fully assess the individual's medical status.
- A. Return to diving after DCS. All cases shall be reviewed on an individual basis, but general guidelines are as follows:
1. Divers who have experienced Type I DCS (pain only) with complete resolution of symptoms after undergoing treatment with Navy Treatment Table 5* may resume diving activities with approval of the NDC DMO.
 2. Divers who have experienced Type I DCS with complete resolution of symptoms after undergoing treatment with Navy Treatment Table 6* may resume diving with approval of the NDC DMO.
 3. Divers who have experienced Type II DCS that included only patchy peripheral paresthesias (no motor deficits) with complete resolution of symptoms after undergoing treatment with Navy Treatment Table 6 may resume diving activities with approval of the NDC DMO and the NDMRB.
 4. Divers who have experienced more severe neurologic symptoms or who sustained neurologic injury from arterial gas embolism (AGE) may resume diving only after a medical examination confirms that all neurologic findings have resolved and with the approval of the NDC DMO and the NDMRB.
- B. Returning to diving after surgery or serious illness.
1. Individuals shall first obtain clearance from their surgeon or medical practitioner before applying to NDC to resume diving.
 2. A post-operative or post-illness fitness to dive evaluation shall be conducted on a case-by-case basis by the NDC DMO.
 3. In surgeries where the abdominal wall is penetrated or with bone or joint surgery, there shall be a minimum of 90 days allowed for healing before the NDC DMO shall evaluate fitness to resume diving.

C. Returning to diving after pregnancy (obstetric delivery).

1. A periodic physical, including all test results, a post-partum report from the patient's obstetrician, and a note indicating fitness to return to dive with no restrictions are required.
2. A fitness to dive evaluation shall be conducted on a case-by-case basis by the NDC DMO.

* Navy Treatment Tables 5 and 6 can be found in the NOAA Diving Manual, Appendix V – Flow Charts and Treatment Tables.

SECTION 14: FAILURE TO MEET STANDARDS

- A. Abnormal laboratory values alone are not necessarily potentially disqualifying; however, the causative underlying condition may be.
- B. The NDC DMO may request additional testing deemed necessary to complete the medical evaluation of the individual.
- C. Previously certified divers. If the applicant has a condition that cannot be corrected within 12 months, then an IA must be conducted.
- D. New applicants. Have an unlimited time to meet the standards.

SECTION 15: SPIROMETRY

General Information

1. Spirometry test shall be performed on all initial diver physical exams. It is not required for periodic exams unless the diver is a smoker.
2. The spirometry test results shall be compared with the appropriate lower limit of normal (LLN) values derived from the formulas noted in table 15-1. These formulas are based on the data from Hankinson JL, et al. American Journal of Respiratory and Critical Care Medicine 1999;159:179-187.
3. As variations in body composition have an effect on pulmonary capacity, the predicted lower limit of normal for FEV1, FVC, and FEV1/FVC% are calculated using formulas specific for gender, age, and ethnicity. Spirometric values for Pacific Islanders were not significantly different when compared to the Morris equations (Milivojenic-Poleksic, et al. Respirology. (2001) 6: 247-253), and therefore the equations for Caucasian shall be used.
4. For these calculations, age is measured in years and heights are measured in centimeters. Conversion for inches to centimeters is: Height (in inches) X 2.54 = Height (in cm).

Table 15-1
Lower Limits of Normal Equations for Spirometric Parameters.

CAUCASIAN	
FEV1	
Males <20 yrs of age	$(-0.7453) - (\text{age} \times 0.04106) + (\text{age}^2 \times 0.004477) + (\text{Ht}^2 \times 0.00011607)$
Males \geq 20 yrs of age	$(0.5536) - (\text{age} \times 0.01303) - (\text{age}^2 \times 0.000172) + (\text{Ht}^2 \times 0.00011607)$
Females <18 yrs of age	$(-0.8710) + (\text{age} \times 0.06537) + (\text{Ht}^2 \times 0.00009283)$
Females \geq 18 yrs of age	$(0.4333) - (\text{age} \times 0.00361) - (\text{age}^2 \times 0.000194) + (\text{Ht}^2 \times 0.00009283)$
FVC	
Males <20 yrs of age	$(-0.2584) - (\text{age} \times 0.20415) + (\text{age}^2 \times 0.010133) + (\text{Ht}^2 \times 0.00015695)$
Males \geq 20 yrs of age	$(-0.1933) + (\text{age} \times 0.00064) - (\text{age}^2 \times 0.0000269) + (\text{Ht}^2 \times 0.00015695)$
Females <18 yrs of age	$(-1.2082) + (\text{age} \times 0.05916) + (\text{Ht}^2 \times 0.00012198)$
Females \geq 18 yrs of age	$(-0.3560) + (\text{age} \times 0.01870) - (\text{age}^2 \times 0.000382) + (\text{Ht}^2 \times 0.00012198)$
FEV1/FVC%	
Males	$78.388 - (\text{age} \times 0.2066)$
Females	$81.015 - (\text{age} \times 0.2125)$
AFRICAN-AMERICAN	
FEV1	
Males <20 yrs of age	$(-0.7048) - (\text{age} \times 0.05711) + (\text{age}^2 \times 0.004316) + (\text{Ht}^2 \times 0.00010561)$
Males \geq 20 yrs of age	$(0.3411) - (\text{age} \times 0.02309) + (\text{Ht}^2 \times 0.00010561)$
Females <18 yrs of age	$(-0.9630) + (\text{age} \times 0.05799) + (\text{Ht}^2 \times 0.00008546)$

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Females ≥18 yrs of age	$(0.3433) - (\text{age} \times 0.01283) - (\text{age}^2 \times 0.000097) + (\text{Ht}^2 \times 0.00008546)$
FVC	
Males <20 yrs of age	$(-0.4971) - (\text{age} \times 0.15497) + (\text{age}^2 \times 0.007701) + (\text{Ht}^2 \times 0.00013670)$
Males ≥20 yrs of age	$(-0.1517) - (\text{age} \times 0.01821) + (\text{Ht}^2 \times 0.00013670)$
Females <18 yrs of age	$(-0.6166) - (\text{age} \times 0.04687) + (\text{age}^2 \times 0.003602) + (\text{Ht}^2 \times 0.00010916)$
Females ≥18 yrs of age	$(-0.3039) + (\text{age} \times 0.00536) - (\text{age}^2 \times 0.000265) + (\text{Ht}^2 \times 0.00010916)$
FEV1/FVC%	
Males	$78.822 - (\text{age} \times 0.1828)$
Females	$80.978 - (\text{age} \times 0.2039)$
MEXICAN-AMERICAN	
FEV1	
Males <20 yrs of age	$(-0.8218) - (\text{age} \times 0.04248) + (\text{age}^2 \times 0.004291) + (\text{Ht}^2 \times 0.00012670)$
Males ≥20 yrs of age	$(0.6306) - (\text{age} \times 0.02928) + (\text{Ht}^2 \times 0.00012670)$
Females <18 yrs of age	$(-0.9641) + (\text{age} \times 0.06490) + (\text{Ht}^2 \times 0.00009890)$
Females ≥18 yrs of age	$(0.4529) - (\text{age} \times 0.01178) - (\text{age}^2 \times 0.000113) + (\text{Ht}^2 \times 0.00009890)$
FVC	
Males <20 yrs of age	$(-0.7571) - (\text{age} \times 0.09520) + (\text{age}^2 \times 0.006619) + (\text{Ht}^2 \times 0.00014947)$
Males ≥20 yrs of age	$(0.2376) - (\text{age} \times 0.00891) + (\text{age}^2 \times 0.000182) + (\text{Ht}^2 \times 0.00014947)$
Females <18 yrs of age	$(-1.2507) + (\text{age} \times 0.07501) + (\text{Ht}^2 \times 0.00011570)$
Females ≥18 yrs of age	$(0.1210) + (\text{age} \times 0.00307) - (\text{age}^2 \times 0.000237) + (\text{Ht}^2 \times 0.00011570)$
FEV1/FVC%	
Males	$80.925 - (\text{age} \times 0.2186)$
Females	$83.044 - (\text{age} \times 0.2248)$
CHINESE	
FEV1	
Males ≥18 yrs of age	$(-3.46818) - (\text{Age} \times 0.01766) + (\text{Ht} \times 0.03978)$
Females ≥18 yrs of age	$(-2.20792) - (\text{Age} \times 0.00138) - (\text{Age}^2 \times 0.00017) + (\text{Ht} \times 0.02825)$
FVC	
Males ≥18 yrs of age	$(-5.52094) - (\text{Age} \times 0.01395) + (\text{Ht} \times 0.05434)$
Females ≥18 yrs of age	$(-3.62948) - (\text{Age} \times 0.00118) - (\text{Age}^2 \times 0.00012) + (\text{Ht} \times 0.03894)$
FEV1/FVC%	
Males	$[(0.00932) + (\text{Age} \times 1.409 \times 10^{-5}) - (\text{Age}^2 \times 3.038 \times 10^{-7}) - (\text{Ht} \times 4.001 \times 10^{-5})] \times \text{Ht}^2$
Females	$[(0.01119) - (\text{Age} \times 1.062 \times 10^{-5}) - (\text{Age}^2 \times 2.046 \times 10^{-8}) - (\text{Ht} \times 4.9 \times 10^{-5})] \times \text{Ht}^2$

SECTION 16: POTENTIALLY DISQUALIFYING CONDITIONS

Certain conditions are considered to be potentially disqualifying to diving based on the excessive risk to the diver, his team, or the mission. Included here are medical conditions that affect the ability to dive in a safe manner. The list is not intended to be all inclusive, and failure to specify a particular condition under this section does not imply the condition is compatible with safe diving.

Individuals with a history of certain conditions may carry a higher risk of potential disqualification; conditions not so designated, after resolution, may not carry the same risk for potential disqualification.

A. General Chronic Conditions.

1. Any chronic condition which affects job performance, is progressive, or may be worsened by the individual's dive activities.
2. Any condition which poses a threat to the health and safety of the individual, his/her dive buddies, or the mission.
3. Conditions which require treatment beyond the capability of the dive team.

B. Functional Requirements.

1. Consideration shall be given to the individual's suitability in terms of the operational area (e.g., climate, isolation) and available health care.

C. Infectious and Communicable Diseases.

1. The presence of a communicable disease may not, in itself, be potentially disqualifying. The NDC DMO shall determine the likelihood of transmission to other crew members; the potential consequences of the underlying disease shall govern fitness for duty.
2. The causes for potential disqualification for diving are:
 - a) Active fungus infections, systemic or superficial, if extensive and not amenable to treatment (e.g., mycotic infections of internal organs such as coccidiomycosis, histoplasmosis and actinomycosis).
 - b) Acute hepatitis within the preceding 6 months or persistence of symptoms after a reasonable period of time with impaired liver function.
 - c) Active Hansen's disease or residuals that preclude functional performance.
 - d) Amebiasis, schistosomiasis, trypanosomiasis, hookworm associated with anemia, malnutrition, and other similar parasitic infestations including their carrier states until treated.
 - e) Residuals of tropical fevers and various parasitic or protozoan infestations which, in the opinion of the NDC DMO, preclude the satisfactory performance of job requirements.
 - f) Any active sexually transmitted infection, acute or chronic, or any resulting active infection process. Complications and permanent residuals of sexually

transmitted disease, if progressive or of such nature as to interfere with the satisfactory performance of duty.

- g) Any other communicable disease in its communicable stage is disqualifying until treated and no longer communicable.
- h) Infectious diseases if there are residual neurologic defects.

D. Head.

1. Head deformities. Deformities of the skull, face, jaw, or other maxillofacial or craniofacial abnormalities precluding the comfortable use of diving headgear, mouthpiece, or regulator.
2. Mastoids. Mastoiditis, residual of mastoid operation with fistula, or marked external deformity that prevents or interferes with the wearing of protective mask or helmet.
3. Defects. Loss, or congenital absence of the bony substance of the skull not successfully corrected by reconstructive materials, or leaving residual defect in excess of one square inch.
4. Head injury. Injuries' including severe contusions and other wounds of the scalp and cerebral concussion, until a period of 3 months has elapsed.
 - a) Applicants with a history of head injury with:
 - 1) Late post-traumatic seizures (occurring more than 1 week after injury);
 - 2) Permanent motor or sensory deficits;
 - 3) Impairment of intellectual function; or
 - 4) Alteration of personality.
5. Central nervous system shunts.
 - a) Applicants with a history of severe closed head injury are unfit for a period of at least 5 years after the injury. After 5 years, they may be considered fit if complete neurological and neuropsychological evaluation shows no residual dysfunction or complications. Applicants with a history of severe penetrating head injury are unfit for a period of at least 10 years after the injury. After 10 years, they may be considered fit if complete neurological and neuropsychological evaluation shows no residual dysfunction or complications. Severe head injuries are defined by one or more of the following:
 - 1) Unconsciousness or amnesia. Conditions alone or in combination of 24-hours duration or longer;
 - 2) Depressed skull fracture;
 - 3) Laceration or contusion of the dura mater or the brain;
 - 4) Epidural, subdural, subarachnoid or intracerebral hematoma;
 - 5) Associated abscess or meningitis;

- 6) Cerebrospinal fluid rhinorrhea or otorrhea;
 - 7) Focal neurologic signs;
 - 8) Radiographic evidence of retained metallic or bony fragments not including body piercings or metallic tattoos; or
 - 9) Leptomeningeal cysts or arteriovenous fistula.
- b) Early post-traumatic seizure(s) that occur only within 1 week of injury but more than 30 minutes after injury.
 - c) Applicants with a history of moderate head injury. Those applicants are unfit for a period of at least 2 years after the injury. After 2 years, they may be considered fit if complete neurological evaluation shows no residual dysfunction or complications, including seizures. Moderate head injuries are defined as unconsciousness or amnesia, alone or in combination, of 1 to 24 hours duration, or linear skull fracture.
 - d) Applicants with a history of mild head injury. Those applicants with mild head injuries, as defined by a period of unconsciousness or amnesia, alone or in combination, of 1 hour or less, are unfit for at least 1 month after the injury. After 1 month, they may be considered fit if complete neurological evaluation shows no residual dysfunction or complications, including seizures.
 - e) Maxillofacial or craniofacial abnormalities precluding the comfortable use of diving headgear, mouthpiece, or regulator.

E. Eyes.

1. Lids and Conjunctivae. Conditions that interfere with vision, limit wear of goggles or face mask, or impair protection of the eye from exposure.
2. Cornea.
Keratorefractive surgery. Photorefractive keratectomy (PRK) and laser in-situ keratomileusis (LASIK) are not disqualifying if at least 2 months have passed since the procedure, if the following criteria are met:
 - a) Refractive stability as demonstrated by less than 0.50 diopter change in either eye over two separate exams at least one month apart.
 - b) No complications or side effects are present as a result of the surgery such as decreased night vision, glare sensitivity, halos around light, or worsening of the pre-operative best vision due to scar formation.
 - c) Active corneal dystrophy or inflammation that is likely to be progressive, has increased risk of infection or dysfunction, or otherwise interfere with diving duties. This includes but is not limited to recurrent corneal ulcers, keratoconus, erosions, and herpetic ulcers.
 - d) Vascularization opacification of the cornea, or conditions from any cause that are progressive or reduce vision below the standards.
3. Uveitis or iridocyclitis, active.

4. Retina.
 - a) Congenital or degenerative changes of any part of the retina.
 - b) Detachment of the retina. A history of surgery for same or peripheral retinal injury or degeneration likely to cause retinal detachment.
 - c) Chorioretinitis or inflammation of the retina.
5. Optic nerve.
 - d) Optic neuritis. Neuroretinitis, or secondary optic atrophy or documented history of attacks of retrobulbar neuritis.
 - e) Optic atrophy or cortical blindness.
 - f) Papilledema.
6. Lens.
 - a) Aphakia. Lens implant, or dislocation of a lens.
 - b) Opacities of the lens. Those conditions sufficiently severe to interfere with diving duties.
7. Ocular mobility and motility.
 - a) Diplopia. Documented, constant or intermittent.
 - b) Nystagmus.
 - c) Strabismus. Un-correctable by lenses to less than 40 diopters or accompanied by diplopia.
 - d) Extraocular muscle corrective surgery in the preceding 6 months.
8. Miscellaneous defects and diseases.
 - a) Abnormal visual fields due to diseases of the central nervous system, or trauma.
 - b) Absence of an eye. Congenital or acquired, or monocular vision.
 - c) Exophthalmos. Unilateral or bilateral, non-familial.
 - d) Glaucoma. Primary, or secondary or the secondary changes in the optic disc or visual field loss associated with glaucoma.
 - e) Loss of normal intraocular reflex reactions to light or accommodation or light.
 - f) Night blindness.
 - g) Retained intraocular foreign body.
 - h) Any organic disease of the eye or adnexa not specified above, that threatens vision or visual function.
9. Distant visual acuity. Distant visual acuity of any degree that does not correct to at least one of the following:
 - a) 20/40 in one eye and 20/70 in the other eye.

- b) 20/30 in one eye and 20/100 in the other eye.
 - c) 20/20 in one eye and not exceeding 20/200 in the other eye.
10. Near visual acuity. Near visual acuity of any degree that does not correct to 20/40 in the better eye.
11. Contact lenses. Cases requiring contact lenses for adequate correction of vision due to corneal scars, keratoconus, and irregular astigmatism.

F. Ears.

- 1. History of middle or inner ear surgery, excluding procedures limited to the tympanic membrane.
- 2. Inner ear pathology.
- 3. Vertigo, disequilibrium, or imbalance of inner ear origin.
- 4. External ear. Deformities that interfere with hearing or wearing of required dive gear, or are prone to frequent or severe infections.
- 5. Ménière's Syndrome, history of or other diseases of the vestibular system.
- 6. Middle ear. Acute or chronic otitis media, untreated cholesteatoma, or history of any inner or middle ear surgery, excluding myringotomy or successful tympanoplasty.
- 7. Tympanic membrane perforation.
- 8. Functional or physical absence of one ear; either external, middle, or inner.
- 9. Hearing. The cause for potential disqualification for diving is a hearing insufficient for understanding un-amplified speech and emergency audible alarms, including whistles and similar devices.

G. Nose and Sinuses.

- 1. Allergic manifestations. If moderate or severe and not controlled by medication.
- 2. Atrophic rhinitis.
- 3. Allergic rhinitis, vasomotor rhinitis.
- 4. Vocal cord paralysis.
- 5. Epistaxis – recurrent condition.
- 6. Symptomatic nasal polyps (unless corrected).
- 7. Sinusitis, acute.
- 8. Sinusitis, chronic, as evidenced by chronic purulent nasal discharge, hyperplastic changes of the nasal tissue, symptoms requiring frequent medical attention.
- 9. Deformities or conditions. Those of the mouth, tongue, palate, throat, pharynx, larynx, and nose that interfere with chewing, swallowing, speech, breathing, or use of diving equipment.

H. Mouth and Dental.

1. Cleft lip or palate defects. Unless satisfactorily repaired by surgery.
2. Diseases of the jaw or associated tissues. Those diseases include temporomandibular disorder (TMJ), osteonecrosis of the mandible or maxilla, myofascial pain dysfunction, and other diseases of the jaw or associated tissues that are not easily corrected and will incapacitate the individual or otherwise prevent the satisfactory performance of duty, including both pressure equalization and use of required equipment.
3. Severe malocclusion. Malocclusion which interferes with normal speech, eating, or use of required diving equipment.
4. Insufficient natural healthy teeth or lack of a serviceable prosthesis. Such conditions preventing adequate mastication and incision of a normal diet or use of necessary dive equipment. Dental implant system must be successfully osseointegrated and completed.

I. Neck and Throat.

1. Conditions limiting range of motion, predisposing to infection, interfering with the wearing of dive gear, and otherwise incompatible with safe diving.
2. Laryngocele
3. Larynx ulceration, polyps, or granulation tissue, or chronic laryngitis.
4. Tracheostomy or tracheal fistula.
5. Pharyngitis, chronic.
6. Deformities or conditions. Those of the mouth, tongue, palate, throat, pharynx, larynx that interferes with chewing, swallowing, speech, breathing, or use of diving equipment.

J. Heart.

1. Atrial septal defects unless surgically corrected. Patent foramen ovale is not disqualifying unless, after a formal review, it is suspected to have been a contributing factor to neurologic DSC.
2. Coronary artery disease.
3. Long QT syndrome.
4. Wolff-Parkinson-White Syndrome, unless adequately treated.
5. All hemodynamically significant valvular heart diseases, congenital or acquired, including those improved by surgery, except mitral valve prolapse and bicuspid aortic valve. Those latter two conditions are not reasons for disqualification unless there is associated tachyarrhythmia, mitral regurgitation, aortic stenosis, insufficiency, or cardiomegaly.
6. Symptomatic arrhythmia or (electrocardiographic evidence of arrhythmia) or a history of such condition.

- a) Supraventricular tachycardia or any dysrhythmia originating from the atrium or sinoatrial node, such as atrial flutter, and atrial fibrillation unless there has been no recurrence during the preceding 2 years while off all medications. Premature atrial or ventricular contractions are disqualifying when sufficiently symptomatic to require treatment or result in physical or psychological impairment.
 - b) Ventricular arrhythmias including ventricular fibrillation, ventricular tachycardia, and multifocal premature ventricular contractions. Occasional asymptomatic premature ventricular contractions are not disqualifying.
 - c) Ventricular conduction disorders, such as those with left bundle branch block, Mobitz Type II second degree AV block, third degree AV block, Wolff-Parkinson-White Syndrome and Lown-Ganong-Levine Syndrome.
 - d) Conduction disturbances such as first degree AV block, left anterior hemiblock, right bundle branch block or Mobitz Type I second degree AV block are potentially disqualifying when symptomatic or associated with underlying cardiovascular disease.
7. Hypertrophy or dilatation of the heart.
 8. Cardiomyopathy including myocarditis or history of congestive heart failure even though currently compensated.
 9. Pericarditis, active.
 10. Persistent tachycardia (resting pulse rate of 100 or greater).
 11. Congenital anomalies of heart and great vessels, except for corrected patent ductus arteriosus.

K. Vascular.

1. Abnormalities of the arteries and blood vessels including aneurysms even if repaired, atherosclerosis, and arthritis.
2. Hypertensive vascular disease as evidenced by the average of three consecutive averaged diastolic blood pressure measurements greater than 90 mmHg or three consecutive averaged systolic blood pressures greater than 140 mmHg at any age.
3. History of high blood pressure requiring medication or treatment including dietary restriction may be acceptable, depending upon treatment.
4. Pulmonary or systemic thromboembolism.
5. Peripheral vascular diseases including diseases such as Raynaud's phenomenon.
6. Venous diseases, including Thrombophlebitis (recurrent or during the preceding year), or evidence of venous incompetence, such as large or symptomatic varicose veins, edema, or skin ulceration.

L. Hematology.

1. Anemia. Any hereditary, acquired, aplastic, or unspecified anemia that has not been permanently corrected with therapy. Current hemoglobin must fall within the performing laboratory's reference normal values.
2. Hemorrhagic disorders including congenital or acquired tendencies to bleed due to a platelet or coagulation disorder.
3. Leukopenia. Chronic or recurrent.
4. Immunodeficiency, including iatrogenic.
5. Current use of anticoagulants (excluding antiplatelet drugs).
6. Sickle cell disease.
7. Hemophilia.
8. Von Willebrand's disease of a severity associated with increased bleeding risk.

M. Lungs, Chest Walls, Pleura, and Mediastinum.

1. History of spontaneous pneumothorax, whether or not surgically corrected.
2. History of recurrent pulmonary barotraumas (2 or more episodes).
3. Active tuberculosis (TB) or TB under treatment, excluding latent TB.
4. Any manifestations of asthma.
 - a) Therapeutic or prophylactic medication use, within the past 5 years.
 - b) Reactive airway disease, exercise-induced bronchospasm, or asthmatic bronchitis, reliably diagnosed at any age; unless the last manifestation of disease was prior to age 14.
 - c) Reliable diagnostic criteria of asthma shall consist of any of the following elements:
 - 1) Substantiated history of cough, wheeze, and/or dyspnea which persists or recurs over a prolonged period of time, generally more than 6 months.
 - 2) If the diagnosis of asthma is in doubt, a test for reversible airflow obstruction (greater than a 15 percent increase in FEV I following administration of an inhaled bronchodilator), or airway hyper-reactivity (exaggerated decrease in airflow induced by a standard broncho-provocational challenge such as methacholine inhalation or exercise) shall be performed.
5. Abnormal elevation on either side of the diaphragm.
6. Acute infectious process of the lung until cured.
7. Bronchitis that is chronic; with symptoms over 3 months occurring at least twice a year.
8. Bronchiectasis.

9. Bronchopleural fistula.
10. Bullous or generalized pulmonary emphysema.
11. Chronic mycotic disease of the lung.
12. Chest wall malformations or fractures that interfere with vigorous physical exertion.
13. Empyema including residual pleural effusion, or unhealed sinuses of chest wall.
14. Interstitial lung disease.
15. Foreign body in lung, trachea, or bronchus.
16. Lobectomy with residual pulmonary disease or removal of more than one lobe.
17. Pneumothorax. Any history of spontaneous pneumothorax is potentially disqualifying, even if surgically corrected. Traumatic pneumothorax which has resolved more than 6 months prior may not be potentially disqualifying provided adequate proof of absence of residual disease is discounted by chest CT scan.
18. Other pulmonary scarring and conditions that are significantly likely to interfere with ability to dive safely.

N. Gastrointestinal.

1. Esophagus. Ulceration, varices, fistula, achalasia, or other dysmotility disorders; chronic, or recurrent esophagitis if confirmed by x-ray or endoscopic examination.
2. Stomach and duodenum.
 - a) Gastritis, chronic, severe.
 - b) Ulcer of stomach or duodenum confirmed by x-ray or endoscopy.
 - c) Congenital abnormalities of the stomach or duodenum causing symptoms or requiring surgical treatment, except a history of surgical correction of hypertrophic pyloric stenosis of infancy.
3. Hiatal or para hiatal hernia, if symptomatic.
4. Small and large intestine.
 - a) Inflammatory bowel disease including regional enteritis, ulcerative colitis, or ulcerative proctitis.
 - b) Diverticulae with symptoms or sequelae (hemorrhage, perforation, etc.).
 - c) Intestinal malabsorption syndromes including post surgical and idiopathic.
5. Gastrointestinal bleeding or history of, unless the cause shall have been corrected and is not otherwise disqualifying.
6. Hepato-pancreatic-biliary tract.

- a) Viral hepatitis or unspecified hepatitis. Acute hepatitis in the preceding six months or persistence of symptoms after six months, or objective evidence of impairment of liver function.
 - b) Cholecystitis. Acute or chronic, with or without cholelithiasis; and other disorders of the gallbladder, including postcholecystectomy syndrome; and biliary system.
 - c) Pancreatitis. Acute and chronic.
7. Anorectal conditions interfering with diving duty.
8. Spleen.
- a) Splenomegaly, if persistent.
 - b) Splenectomy is not disqualifying per se, except that appropriate prophylaxis against infection must be documented.
9. Abdominal wall.
- a) Hernia including inguinal and other abdominal, except for small, or asymptomatic umbilical.
 - b) History of abdominal surgery during the preceding 90 days.
- O. Endocrine and Metabolic Disorders.
- 1. Adrenal dysfunction of any degree.
 - 2. Diabetes Mellitus, unless controlled only by diet and exercise, and meeting national goals for glycemic control by virtue of periodic laboratory testing.
 - 3. Gout.
 - 4. Hyperinsulinism.
 - 5. Hyperparathyroidism and hypoparathyroidism.
 - 6. Goiter, persistent or untreated.
 - 7. Hypothyroidism or hyperthyroidism, not controlled by medication.
 - 8. Other endocrine or metabolic disorders such as cystic fibrosis, porphyria, and amyloidosis that prevent satisfactory performance of duty are likely to become symptomatic with little or no warning or require frequent or prolonged treatment.
- P. Upper Extremities.
- 1. An individual shall be considered unacceptable if unable to perform the motions listed below.
 - a) Shoulder: forward elevation to 90 degrees; abduction to 90 degrees.
 - b) Elbow: flexion to 100 degrees; extension to within 15 degrees of full.
 - c) Wrist: a total range to 60 degrees (extension plus flexion); radial and ulnar deviation combined arc 30 degrees.
 - d) Hand: pronation to 45 degrees; supination to 45 degrees.

- e) Fingers and thumb: inability to clench fist, pick up a pin, grasp an object, or touch tips of at least 3 fingers with thumb.
 - f) Reach behind the back at the neck level.
 - g) Other motions necessary for the safe performance of diving.
 - h) Hands and fingers.
 - i) Scars or deformities of the fingers or hands that are symptomatic, or impair normal function to such a degree as to interfere with the satisfactory performance of duty.
 - j) Intrinsic paralysis or weakness, including nerve palsy sufficient to impair satisfactory and safe performance of diving duties.
2. Wrist, forearm, elbow, arm, and shoulder. Recovery from disease or injury with residual weakness or symptoms such as to prevent satisfactory performance of duty, or grip strength of less than 75 percent of predicted normal when injured hand is compared with the normal hand.

Q. Lower Extremities.

1. An individual shall be considered unacceptable if the joint ranges of motion are less than the measurements listed below.
- a) General.
 - 1) Deformities, disease, or chronic pain of one or both lower extremities that have interfered with function to such a degree as to prevent the individual from following a physically active vocation; or that would interfere with walking, running, weight bearing, or the satisfactory completion of training or duty.
 - 2) Shortening of a lower extremity, resulting in a noticeable limp or scoliosis.
 - b) Hip (due to disease or injury.)
 - 1) Flexion to 90 degrees (minimum) with no demonstrable flexion contracture.
 - 2) Extension to 10 degrees (beyond 0 degree).
 - c) Knee (due to disease or injury.)
 - 1) Full extension compared with contralateral.
 - 2) Flexion to 90 degrees.
 - d) Foot and ankle deformities and conditions of the toes, feet, or ankles that prevent normal foot function or wearing footwear or fins.
 - e) Leg, knee, thigh, and hip.
 - 1) Physical findings of an unstable or internally deranged joint including uncorrected anterior or posterior cruciate ligament injury.
 - 2) Surgical correction of any knee ligaments, if symptomatic or unstable.

- 3) Osteochondritis of the hip (Legg-Perthes Disease), or slipped femoral epiphysis of the hip, if symptomatic or limiting function.
- 4) Hip dislocation within 2 years prior to examination.
- 5) Other limb and joint conditions that interfere with safe diving.

R. Miscellaneous Conditions of the Bones and Muscles.

1. Arthritis.
 - f) Active, subacute, or chronic arthritis, sufficient to interfere with duty.
 - g) Chronic osteoarthritis or traumatic arthritis of isolated joints of more than a minimal degree, that interferes with the satisfactory performance of diving duty.
2. Dislocation, if unreduced, or recurrent dislocations of any major joint such as, shoulder, hip, elbow, or knee, or stability of any major joint (shoulder, elbow, or hip).
3. Fractures.
 - a) Malunion or non-union of any fracture.
 - b) Orthopedic hardware including plates, pins, rods, wires, or screws used for internal fixation and left in place is not disqualifying.
4. Injury of a bone or joint of more than a minor nature, with or without fracture or dislocation, which occurred in the preceding 6 weeks.
5. Joint or bone surgery within the preceding 3 months.
6. Muscular paralysis, contracture, or atrophy if progressive or of sufficient degree to interfere with duty, and muscular dystrophies.
7. Osteomyelitis of any bone (active or recurrent).
8. Osteoporosis of more than mild degree.
9. Scars that are extensive, deep, or adherent to the skin and soft tissues that interfere with muscular movements.
10. Implants such as silastic or other devices implanted to correct orthopedic abnormalities. Generally, retained metallic pins, screws, and plates are not disqualifying.

S. Neurologic.

1. History of epilepsy, not including febrile convulsions whose last occurrence was before the age of 5; or seizures clearly associated with toxic etiology, oxygen toxicity, or due to head trauma. An oxygen convulsion occurring in a chamber at a PO₂ of > 2 ATA or in water at a PO₂ > 1.6 ATA should not be potentially disqualifying.
2. Neurologic DCS with residual deficit.
3. History of unexplained syncope.

4. History of cerebrovascular disease, including transient ischemic attacks (TIA's) and arteriovenous malformations (AVM's).
5. Cerebrovascular conditions, including any history of subarachnoid or intracerebral hemorrhage, vascular insufficiency, aneurysm or arteriovenous malformation, whether or not surgically repaired.
6. Meningocele or other congenital malformations, if associated with neurological manifestations or if known to be progressive.
7. Degenerative and hereditodegenerative diseases affecting the brain, spinal cord, and peripheral nerves or muscles.
8. Recurrent headaches or headaches of all types of sufficient severity or frequency as to interfere with normal function within the previous 2 years.
9. Persistent post-traumatic seizures (see Section D.4: Head injury).
10. Paralysis, weakness, lack of coordination, chronic pain, or sensory disturbances.
11. Chronic disorders such as myasthenia gravis, and multiple sclerosis.
12. Central nervous system shunts of all kinds.

T. Psychiatric.

1. Bipolar disease and/or history of.
2. Psychosis (or history of) not resulting from infection, fever, trauma, or toxic substances, or a history of a disorder with psychotic features, is potentially disqualifying.
3. Neurotic, anxiety, mood, somatoform, dissociative, or factitious disorders.
 - a) Admission to a hospital or residential facility.
 - b) Care by a physician or other mental health professional for more than six months.
 - c) Symptoms or behavior of a repeated nature that impaired social, school, or work performance.
4. Personality, conduct, and behavior disorders.
 - a) Disorders as evidenced by frequent encounters with law enforcement agencies, antisocial attitudes, or behavior that while not sufficient cause for administrative rejection, are tangible evidence of impaired capacity.
 - b) Where it is evident by history, interview, or psychological testing that the degree of immaturity, instability, personality inadequacy, impulsiveness, or dependency will seriously interfere with diving as demonstrated by repeated inability to maintain reasonable adjustment in school, with employers and fellow workers, and other social groups.
5. Other behavior disorders including, but not limited to, conditions such as the following:
 - a) Authenticated evidence of functional enuresis or encopresis.

- b) Eating disorders that are habitual or persistent occurring beyond age 12.
 - c) Stammering of such a degree that the individual is often unable to express himself/herself clearly, or to repeat commands.
 - d) Specific academic skills defects including a chronic history of academic skills or perceptual defects, secondary to organic or functional mental disorders that interfere with work or school after age 12 or current use of medication to improve or maintain academic skills.
6. Suicide or history of attempted suicide or other suicidal behavior.
7. Substance Misuse.
- a) Drug dependence, including alcohol.
 - b) Non-dependent use of drugs characterized by the following:
 - 1) The evidence of use of any controlled, hallucinogenic, or other intoxicating substance at the time of examination, when the use cannot be accounted for as a result of a prescription by a physician.
 - 2) Documented misuse or abuse of any controlled substance (including cannabinoids or anabolic steroids) requiring professional care.
 - 3) The repeated self-procurement and self-administration of any drug or chemical substance, including cannabinoids or anabolic steroids, with such frequency that it appears the applicant has accepted the use of or reliance on those substances as part of his/her pattern of behavior.
 - 4) The use of hallucinogens in a 2-year period prior to examination.
 - c) Alcohol abuse leading to misconduct, unacceptable social behavior, poor work or academic performance, impaired physical or mental health, lack of financial responsibility, or a disrupted personal relationship.

U. Skin and Cellular Tissues.

- 1. Infections and inflammatory conditions which would be aggravated by or interfere with the wearing of equipment and not amenable to treatment.
- 2. Contact dermatitis, especially that involves rubber or other materials used in any type of required protective equipment.
- 3. Cysts of such a size or location as to interfere with the normal wearing of equipment.
- 4. Dermatitis factitia.
- 5. Bullous dermatoses such as dermatitis herpetiformis, pemphigus, and epidermolysis bullosa.
- 6. Chronic lymphedema.
- 7. Ichthyosis or other congenital or acquired anomalies of the skin, such as nevi or vascular tumors that interfere with function or are exposed to constant irritation or infection.

8. Keloid formation if the tendency is marked or interferes with the wearing of equipment.
9. Scars so extensive, deep, or adherent that they may interfere with the wearing of clothing or equipment, exhibit a tendency to ulcerate, or interfere with function. Includes scars at skin graft donor or recipient sites if in an area susceptible to trauma.
10. Scleroderma.
11. Any other chronic skin disorder of a degree or which requires frequent outpatient treatment or hospitalization, or interferes with the satisfactory performance of duty.

V. Gynecology.

1. Pregnancy at any trimester.
2. Amenorrhea (unexplained).
3. Any condition that predisposes to frequent infection or otherwise interferes with performance of diving duties.

W. Male Genitalia.

1. Any condition that results in chronic incontinence or urinary retention, predisposes to frequent infection, or otherwise interferes with performance of diving duties.

X. Urinary System.

1. Active infections of the urinary tract.
2. Enuresis or urinary incontinence beyond age 12.
3. Hematuria, pyuria, proteinuria, or other findings indicative of active urinary tract disease.
4. Kidney Infections.
 - a) Acute or chronic infections.
 - b) Polycystic kidney, confirmed history of.
 - c) Hydronephrosis.
 - d) Nephritis, acute or chronic.
 - e) A diver with a history of renal calculus may return to diving as soon as the stone has passed or been extracted and the diver is on a program to reduce the risk of recurrence.

Y. Spine and Sacroiliac Joints.

1. Arthritis, severe.
 - a) Complaint of a disease or injury of the spine or sacroiliac joints, with or without objective signs, that has prevented the individual from successfully following a physically active vocation in civilian life, or that is associated with

- pain referred to the lower extremities, muscular spasms, postural deformities, or limitation of motion.
- b) Deviation or curvature of spine from normal alignment, structure, or function if it:
 - 1) Prevents the individual from following a physically active vocation in civilian life.
 - 2) Interferes with the wearing of equipment.
 - 3) Is symptomatic and associated with positive physical finding(s) and demonstrable by x-ray.
 - c) Fusion including congenital fusion, involving more than two vertebrae, or any surgical fusion, unless fusion stability and preservation of adequate function can be demonstrated.
 - d) Healed fractures or dislocations of the vertebrae may be potentially disqualifying. A compression fracture involving less than 25 percent of a single vertebra is not potentially disqualifying if the injury occurred more than 1 year before examination and the applicant is asymptomatic. A history of fractures of the transverse or spinous processes is not potentially disqualifying if the applicant is asymptomatic.
 - e) Ruptured nucleus pulposus, herniation of intervertebral disk or surgery for this condition.
 - f) Spina bifida, when symptomatic, or if there is more than one vertebra involved, dimpling of the overlying skin, or a history of surgical repair.
 - g) Spondylolysis or spondylolisthesis, if symptomatic.
 - h) Weak or painful back or other back conditions requiring external support such as corsets or braces, or recurrent sprains or strains requiring limitation of physical activity or frequent treatment.

Z. Systemic Diseases.

- 1. Amyloidosis.
- 2. Ankylosing spondylitis.
- 3. Lupus erythematosus and mixed connective tissue disease.
- 4. Polymyositis dermatomyositis complex.
- 5. Progressive systemic sclerosis including CRST variant.
- 6. Reiter's disease.
- 7. Rheumatoid arthritis.
- 8. Rhabdomyolysis.
- 9. Sarcoidosis, unless there is substantiated evidence of a complete spontaneous remission of at least 2 years duration and there is no interstitial lung disease.

10. Sjögren's syndrome.

11. Tuberculosis.

- a) Active TB in any form or location, or substantiated history of active TB within the previous 2 years.
- b) One or more reactivations.
- c) Residual physical or mental defects from past tuberculosis that will prevent the satisfactory performance of duty.

AA. General and Miscellaneous Conditions and Defects.

1. Allergic manifestations including a reliable history of anaphylaxis to stinging insects, or severe reaction to common foods, spices, or food additives.
2. Acute pathological conditions including acute communicable diseases, until recovery has occurred without sequelae.
3. Cold injuries or residuals of such including frostbite, chilblain, immersion foot, trench foot, deep-seated ache, paresthesia, hyperhidrosis, easily traumatized skin, cyanosis, amputation of any digit, or ankylosis.
4. Cold urticaria and angiodema, hereditary angiodema.
5. Heat pyrexia, heatstroke, malignant hyperthermia, or sunstroke including documented evidence of a predisposition (including disorders of sweat mechanism and a previous serious episode), recurrent episodes requiring medical attention, or residual injury (especially cardiac, cerebral, hepatic, and renal).
6. Industrial solvent and other chemical intoxication.
7. Motion sickness, authenticated by a history of frequent, incapacitating motion sickness after age 12.
8. Organ transplant recipient.
9. Rheumatic fever during the previous 2 years, or any history or recurrent attacks; Sydenham's chorea at any age.
10. Narcolepsy, sleep apnea syndrome not adequately treated or that results in daytime somnolence.
11. Weight exceeding the maximum weight for height in Appendix 6. Weights exceeding those in the table constitute a Body Mass Index considered obese.
12. Body Build.
 - a) Congenital malformation of bones and joints, or deficient muscular development that would interfere with the completion of duty.
 - b) Evidence of congenital asthenia or body build that would interfere with the completion of required training or duty.
 - c) Any condition that, in the opinion of the examining medical officer, will significantly interfere with the successful and safe performance of diving.

BB. Tumors and Malignant Diseases.

1. Benign tumors that interfere with function, prevent wearing of necessary equipment, require frequent specialized attention, or have a high malignant potential.
2. Malignant tumors are not considered potentially disqualifying if they meet the following criteria:
 - a) Individuals who have a history of cancer and have not received any surgical or medical cancer therapy for 5 years and are free of cancer.
 - b) Basal cell cancers which have been completely removed without residual tumor or dysfunction.

APPENDIX 1. NDP MEDICAL EVALUATION CHECKLIST (Form 56-68)

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NOAA DIVING PROGRAM MEDICAL EVALUATION CHECKLIST

TO THE APPLICANT – PLEASE PRINT CLEARLY

Last Name	First Name	Middle Name	Date of Birth
Print name of UDS	Line Office	Dive Unit	Location
UDS e-mail:			

All of the documents listed below must be included with your diving application or your periodic renewal of diving recertification. Attach all test results.

<i>Initial Examination (all ages)</i>	<i>Periodic Examination (all ages)</i>
NOAA Report of Medical History form	NOAA Report of Medical History form
NOAA Report of Physical Examination form	NOAA Report of Physical Examination form
Chest x-ray within the last 24 months (Submit official signed interpretation, no films)	Complete Blood Count (CBC). Attach results.
Spirometry (results and interpretation)	Complete urinalysis. Attach results.
Complete Blood Count (CBC). Attach results.	Vision (distant and near vision results)
Complete urinalysis. Attach results	Spirometry (Smokers Only)
Audiogram (attach testing equipment printout)	
<i>Vision (distant and near vision results)</i>	

Include for Age 40 and Older for All Examinations
12-Lead resting EKG (trace and interpretation)
Hemoglobin A1C
Lipid screening (total cholesterol, HDL, LDL, VLDL, triglycerides)

TO THE DIVER –

I have reviewed the attached medical information and consider it to be complete.

_____	_____
Applicant Signature	Date

TO THE NDC DIVE MEDICAL OFFICER –

I have reviewed the attached medical information and have found the applicant named above to be:

Fit for NOAA diving duty Not fit for NOAA diving duty

_____	_____	_____
NOAA Dive Medical Officer (print)	Signature	Date

APPENDIX 2. NDP REPORT OF MEDICAL HISTORY (Form 56-69)

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Last Name	First Name	Middle Name	Date
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When diving, have you ever experienced any of the following (each item marked as "yes" must be fully explained with dates in Item 42 below by question number):

No	Yes		No	Yes	
		23. Gas embolism			31. Near drowning
		24. Oxygen toxicity			32. Inability to equalize middle ear pressure
		25. CO2 toxicity			33. Vertigo (dizziness)
		26. Ear and/or sinus squeeze			34. Asphyxiation
		27. Collapsed lung (pneumothorax) or lung squeeze			35. Type I DCS (pain only, itching, rash, swelling)
		28. Nitrogen narcosis			36. Type II DCS
		29. Loss of consciousness			37. Decompression illness (symptoms of both AGE/DCS)
		30. Ear drum rupture			38. Any other unusual symptoms

39. Other medical condition(s) not listed above:

40. Have you ever had or been advised to have any type of surgery or operation? No Yes
If so, specify when, where, and what was performed.

41. a. Alcohol use and frequency:	b. Tobacco use (type and frequency):	c. Illegal drug use (type and frequency):
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42. Detailed explanation of all items answered "yes" with dates of occurrence. Add additional pages if necessary.

I certify that the above information supplied by me is true and complete to the best of my knowledge. I realize that omitting or misrepresenting facts called for above may be cause for refusal of diving certification.

43. _____
Signature of applicant

TO BE COMPLETED BY EXAMINER (MD/DO/NP/PA ONLY) –

44. Summarize abnormal findings and elaboration of all pertinent data.

45. a. Examiner.	b. Name and Address of Examination Location.	c. Telephone Number.
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Print Name of Examiner

Examiner Signature

Title (MD/DO/NP/PA only): _____

APPENDIX 3. NDP REPORT OF PHYSICAL EXAMINATION (Form 56-70)

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NOAA Diving Medical Standards and Procedures

NOAA Form 56-70
February 2009 (Revision 1)



NOAA DIVING PROGRAM REPORT OF PHYSICAL EXAMINATION

TO BE COMPLETED BY APPLICANT – PLEASE PRINT CLEARLY

1. Last Name	First Name	Middle Name	2. Date of Birth	3. Date of Exam	4. Age
5. Home Address			a. Home Telephone Number:		
			b. E-mail:		
6. Work Address			a. Work Telephone Number:		7. Type of physical examination: <input type="checkbox"/> Initial exam <input type="checkbox"/> Periodic exam
			b. E-mail:		
			c. Cell:		

TO BE COMPLETED BY EXAMINING MEDICAL PROVIDER (MD/DO/NP/PA ONLY) –

8. Sex	9. Height (inches)	10. Weight (pounds)	11. Temperature (F)	13. Blood Pressure:
			12. Pulse	1st: Systolic: _____ Diastolic: _____
				2nd: Systolic: _____ Diastolic: _____
				3rd: Systolic: _____ Diastolic: _____
14. Distant Vision			15. Near Vision	
Right 20/ _____ Corrected to 20/ _____		Right 20/ _____ Corrected to 20/ _____		by _____
Left 20/ _____ Corrected to 20/ _____		Left 20/ _____ Corrected to 20/ _____		by _____
Contact lens use: _____ Yes _____ No				

General Clinical Evaluation (Each item must be checked in the appropriate column.)

	Normal	Abnormal	40. Remarks (Describe abnormality in detail with dates and by number.)
16. Head, face, and scalp			
17. Neck			
18. Eyes			
19. Fundus			
20. Ears – General (internal/external canals)			
21. Eustachian tube function (Val Salva)			
22. Tympanic membranes			
23. Nose (septal alignment)			
24. Sinuses			
25. Mouth and throat			
26. Dental (Loose/missing teeth, malformation, etc.)			
27. Lungs and chest (including breasts)			
28. Heart (thrust, size, rhythm, sounds)			
29. Pulses (equality, etc.)			
30. Vascular system (varicosities, etc.)			
31. Abdomen and viscera			
32. Hernia (all types)			
33. Endocrine system			
34. External genitalia (genitourinary)			
35. Feet (arch, pes cavus/planus)			
36. Spine			
37. Skin, lymphatics			
38. Anus and rectum (hemorrhoids, fistula)			
39. Sphincter tone			

Last Name	First Name	Middle Name	Date of Exam
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Neurologic Examination (Each item must be completed.)

41. Sensorium (Consciousness/intellectual/cognitive function): _____

42. Cranial Nerves:

- | | |
|----------------------|---------------------------|
| I Olfactory _____ | VII Facial _____ |
| II Optic _____ | VIII Auditory _____ |
| III Oculomotor _____ | IX Glossopharyngeal _____ |
| IV Trochlear _____ | X Vagus _____ |
| V Trigeminal _____ | XI Spinal Accessory _____ |
| VI Abducent _____ | XII Hypoglossal _____ |

43. Reflexes

Deep Tendon (Grade 0-4+, 2+ = normal)	Pathological (+/- = presence/absence)	Superficial (+/- = presence/absence)
Left Right	Left Right	
Triceps _____	Babinski _____	Upper Abdomen _____
Biceps _____	Hoffman _____	Lower Abdomen _____
Patella _____	Ankle Clonus _____	Cremasteric _____
Achilles _____		

44. Cerebellar Function

Normal	Abnormal	
_____	_____	Ataxia _____
_____	_____	Tremor (intention) _____
_____	_____	Finger to nose _____
_____	_____	Heel to shin slide _____
_____	_____	Romberg sign _____

45. Proprioception/Stereognosis

(+/- = presence/absence)		
Right	Left	
_____	_____	Joint position sense _____
_____	_____	Vibratory sensations _____
_____	_____	Agnosia (ability to recognize objects by touch) _____

46. Sensations (+/- = presence/absence)

Hot/cold	_____	_____
Sharp/dull	_____	_____
Two point discrimination	_____	_____

47. Nystagmus (+/- = presence/absence)

End point (physiologic) _____ Pathological _____

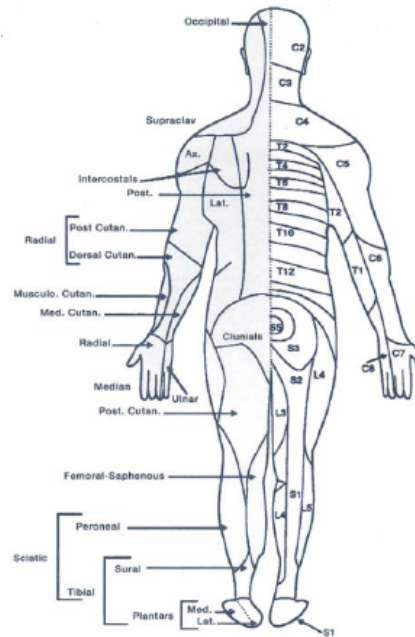
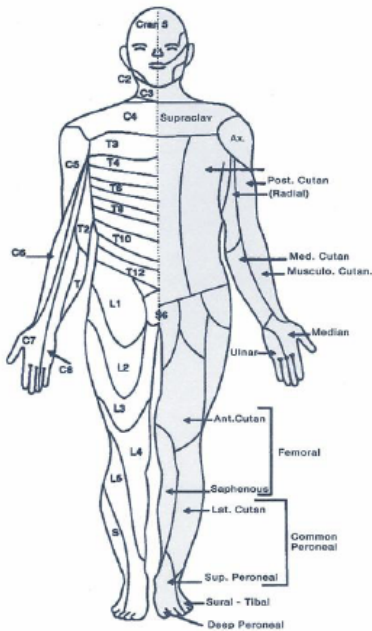
48. Muscle Strength (Grade 0-5, 5 = normal)

Left	Right	Upper Body:	Left	Right	Lower Body:
_____	_____	Deltoids	_____	_____	Hips
_____	_____	Latissimus	_____	_____	Flexion
_____	_____	Biceps	_____	_____	Extension
_____	_____	Triceps	_____	_____	Abduction
_____	_____	Forearms	_____	_____	Adduction
_____	_____	Hands			
_____	_____	Fingers			

49. Range of Motion

(+/- = normal.abnormal)		
Left	Right	
_____	_____	Shoulders
_____	_____	Elbows
_____	_____	Wrists
_____	_____	Hips
_____	_____	Knees
_____	_____	Ankles

50. Diagram and label areas of altered sensations, surgical and traumatic scars.



NOAA Diving Medical Standards and Procedures

Last Name

First Name

Middle Name

Date of Exam

51. All abnormal physical findings must be described in detail here by item number. Add additional pages if necessary.

52. Summarize abnormal findings.

53. Although the NOAA reserves the final decision regarding fitness for duty as a diver, are there any further concerns related to this patient's fitness for diving?

54. a. Examiner.

b. Name and Address of Examination Location.

c. Telephone Number.

Print Name of Examiner

Examiner Signature
Title (MD/DO/NP/PA only): _____

55. Examiner's familiarity with diving medicine:

56. Examiner's familiarity with applicant:

- _____ With this exam only
 - _____ Have seen several times in the past
 - _____ Regular health care provider for _____ years
 - _____ Other (describe):
-

**APPENDIX 4. NDP APPLICANT INSTRUCTIONS FOR COMPLETING
THE REPORT OF MEDICAL HISTORY AND REPORT OF PHYSICAL
EXAMINATION FORMS (56-71)**

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NOAA 56-71
February 2009 (Revision 1)

**NOAA DIVING PROGRAM
APPLICANT INSTRUCTIONS FOR COMPLETING THE REPORT OF MEDICAL HISTORY AND
REPORT OF PHYSICAL EXAMINATION FORMS**

TO THE APPLICANT –

The purpose of completing the Report of Medical History and Report of Physical Examination forms is to obtain medical data for determination of medical fitness for diving with the NOAA Diving Program. Disclosure of any and all information is voluntary; however, failure to provide the requested information may result in delay or possible rejection of your application to dive or continue to dive with the NOAA Diving Program.

There are instructions for completing the Report of Medical History and Report of Physical Examination forms for your medical provider (examiner). **The medical provider or examiner who completes these forms MUST be a physician (medical doctor or doctor of osteopathy), nurse practitioner, or physician's assistant. Make sure you take these instructions for the medical provider (examiner) (titled "TO THE EXAMINER") to the appointment with you. You must be sure that your medical provider is aware of all the important information in these instructions.**

Every item must be completed on both the "Report of Medical History" and "Report of Physical Examination" forms including signatures. There are no items on either form that will have a "not examined" or "not applicable" response. Before you send your medical documents in to your Unit Diving Supervisor (UDS) or to the NOAA Dive Center for any of the dive classes or renewal, review both forms to make sure every item has the requested information documented. Any item not completed on either form will result in the form being returned for completion. This could result in a delay in the processing of a dive application or renewal of a diving certification. It is very wise to begin your physical examination process several months in advance to make sure that all needed test results and/or medical information is collected well before the deadline or cut off date.

Notice that on both forms there are items that must be completed by both you and your medical provider (examiner) including signatures. You should complete the "To Be Completed by Applicant" items on both forms before you see your medical provider. **On the Report of Medical History form you must complete items 1 through 43 and include your name and the current date at the top of each page in the space provided.** Each item marked as "yes" must be fully explained with dates in item 42 by question number. Your medical provider (examiner) will complete items 44 and 45. **On the Report of Physical Examination form you must items 1 through 7 and include your name and the current date at the top of each page in the space provided.** Your medical provider (examiner) will complete the rest.

There are very specific laboratory tests and other diagnostic studies that are required with each initial or periodic physical examination, depending upon the age of the applicant. It is your responsibility to make sure that your medical provider (examiner) performs the appropriate required laboratory tests/diagnostic studies listed below. When all are completed, you must submit actual copies of the results to NOAA (values or results hand written will not be accepted).

Initial Examination (all ages)

- Chest x-ray within the last 24 months (Submit official signed interpretation, no films)
- Spirometry (results and interpretation)
- Complete Blood Count (CBC)
- Audiogram (attach testing equipment printout)
- Complete urinalysis
- Vision (distant and near vision results)

Periodic Examination (all ages)

- Complete Blood Count (CBC)
- Complete urinalysis
- Vision (distant and near vision results)

Include for Age 40 and Older for All Examinations

- 12-Lead resting EKG (trace and interpretation)
- Glucose screening (Hemaglobin A1c)
- Lipid screening (total cholesterol, HDL, LDL, VLDL, triglycerides)

All above laboratory tests/diagnostic studies as well as the medical history and physical examination must be performed within the previous 12 months with the exception of the chest x-ray which must be performed within the previous 24 months.

If your medical provider conducted other laboratory tests/diagnostic studies as a part of the physical examination, copies of these results must be submitted to NOAA by the applicant/diver.

The NOAA Diving Program – Medical Evaluation Checklist form must be included in your application. Complete this checklist, sign and date it, and forward all the application documents to your UDS for review and signature (forward your application to one of the NOAA Diving Program’s classes directly to the NOAA Dive Center). The UDS will review all documents for completeness and sign before forwarding to the NOAA Diving Program. **It is your responsibility to make sure that all needed medical information (including laboratory tests and diagnostic studies) is submitted with the signed “Report of Medical History” and “Report of Physical Examination” forms.**

Final determination for fitness for diving will be made by the National Oceanic and Atmospheric Administration (NOAA) Diving Program. For questions, contact the NOAA Dive Medical Officer at (206) 526-6474.

Application packets for any of the NOAA Dive Center’s classes should be sent to:

Executive Officer, NOAA Diving Program
7600 Sand Point Way NE
Building 8
Seattle, WA 98115

**APPENDIX 5. NDP EXAMINER INSTRUCTIONS FOR COMPLETING
THE REPORT OF MEDICAL HISTORY AND REPORT OF PHYSICAL
EXAMINATION FORMS (56-72)**

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**NOAA DIVING PROGRAM
EXAMINER INSTRUCTIONS FOR COMPLETING THE REPORT OF MEDICAL HISTORY AND
REPORT OF PHYSICAL EXAMINATION FORMS**

TO THE EXAMINER (MD/DO/NP/PA ONLY) –

This person is an applicant for training or currently participates in diving activities with SCUBA (self-contained underwater breathing apparatus) or other related equipment. Your opinion of the applicant's medical fitness for diving is requested. This history and physical examination focuses on conditions that may put a diver at increased risk for injuries or other conditions that could lead to drowning. The diver must be able to withstand some degree of cold stress, the physiologic effects of immersion, the optical effects of water, and have sufficient physical and mental reserves to deal with possible emergencies.

Please review the applicant's answers to all items (items 6 through 42) on the Report of Medical History form. Summarize any abnormal findings and pertinent data in item 44 and include your signature, address, and telephone number in item 45.

Please complete items 8 through 57 on the Report of Physical Examination. There are directions listed in some of the items and results must be documented as directed. All items 8 through 57 **MUST be completed. There are no items on either form that will have a "not examined" or "not applicable" response. Any item not completed will result in the form being returned for completion. This could result in a delay in the processing of a dive application or renewal of a diving certification.**

There are very specific laboratory tests and other diagnostic studies that are required with each initial or periodic physical examination, depending upon the age of the applicant. Please perform the appropriate required laboratory tests/diagnostic studies listed below. When all are completed, actual copies of the results must be submitted to NOAA by the applicant/diver.

Initial Examination (all ages)

- Chest x-ray within the last 24 months (Submit official signed interpretation, no films)
- Spirometry (results and interpretation)
- Complete Blood Count (CBC)
- Audiogram (attach testing equipment printout)
- Complete urinalysis
- Vision (distant and near vision results)

Periodic Examination (all ages)

- Complete Blood Count (CBC)
- Complete urinalysis
- Vision (distant and near vision results)

Include for Age 40 and Older for All Examinations

- 12-Lead resting EKG (trace and interpretation)
- Hemoglobin A1c
- Lipid screening (total cholesterol, HDL, LDL, VLDL, triglycerides)

All above laboratory tests/diagnostic studies as well as the medical history and physical examination must be performed within the previous 12 months with the exception of the chest x-ray which must be performed within the previous 24 months. If you conduct other laboratory tests/diagnostic studies as a part of the physical examination, copies of these results must be submitted to NOAA by the applicant/diver.

Final determination for fitness for diving will be made by the National Oceanic and Atmospheric Administration (NOAA) Diving Program. For questions, contact the NOAA Dive Medical Officer at (206)526-6474.

APPENDIX 6. NDP BODY COMPOSITION STANDARDS (Form 56-75)

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NOAA DIVING PROGRAM BODY COMPOSITION STANDARDS

All divers at time of initial medical certification and periodic medical exam will submit their height and weight. This will be compared to the data in the following table. The weight should be less than or equal to the listed weight in the table. Weights exceeding the table are classified as obese per the DHHS Centers for Disease Control and Prevention. The values below represent a Body Mass Index of 29.9 or less.

Height (inches)	Maximum Weight (Pounds)
58	142
59	147
60	152
61	157
62	163
63	168
64	173
65	179
66	185
67	190
68	196
69	202
70	208
71	214
72	220
73	226
74	232
75	239
76	245

Source: http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm

**APPENDIX 7. NDP OBSERVER DIVER MEDICAL HISTORY REPORT
(Form 56-76)**

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NOAA DIVING PROGRAM OBSERVER DIVER MEDICAL HISTORY REPORT

TO THE APPLICANT – PLEASE PRINT CLEARLY

1. Last Name	First Name	Middle Name	2. Date of Birth	3. Age
4. Work Address		a. Work Telephone Number: b. E-mail: c. Cell:		5. Diving Unit
6. Statement of present health.			7. Height	8. Weight
10. List current medications and dosage (note new medications and any dosage changes)			11. Allergies (list all)	

12. PAST/CURRENT MEDICAL HISTORY (Do you currently have or have you ever had the following.)

	Yes	No		Yes	No
Ear trouble including ruptured ear drum, difficulty equalizing, or surgery			Anatomical heart abnormalities including patent foramen ovale, valve problems, etc.		
Decompression sickness, embolism, or other diving malady or injury			Depression, anxiety, claustrophobia, any other psychiatric disorder		
Any treatment in a decompression chamber			Collapsed lung		
Loss of consciousness for any cause			Asthma or breathing problems		
Epilepsy, convulsions, seizures, fits			Other lung diseases		
Stroke or any neurologic deficit			Tuberculosis or positive TB test		
Recurring neurologic disorders including transient ischemic attacks			Exposed to a person with tuberculosis or have persistent cough or sweats		
Aneurysms or bleeding in the brain			Pregnancy		
Trouble with dizziness			Surgery of any kind		
Head injury			Hospitalization for any reason		
Disorders of the blood or easy bleeding			Smoke (if yes, what type and how much)		
Heart disease or high cholesterol			Drink alcoholic beverages (how much)		
High or low blood sugar			Family history of high cholesterol		
Heart rhythm problems			Substance abuse		
Need for a pacemaker			Use of illegal substances		
Problems with blood flow to the heart			Thyroid trouble		
Difficulty with exercise			Bone, joint, or other deformity		
High blood pressure			Any weight gain or loss of 10 pounds or more		

13. Explain in detail any "yes" answers to the questions above.

14. I certify that the above answers and information represent a true, accurate, and complete description of my medical history.

Diver (print)	Signature	Date
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15. Examiner summary of defects.

16. Signature certifies the examiner has reviewed the above medical history and found no contraindications to scuba diving.

Examiner (print)	Title (MD/DO/NP/PA only)	Signature	Date
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APPENDIX 8. NDP ANNUAL MEDICAL STATUS REPORT (Form 56-77)

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