

# Diver Periodic Health Assessment and Medical Administration

**Document Status:** Current  
**Document Type:** Instruction  
**Document Number:** 4000-04  
**Original Source:** Med Dir 2/05  
**Approval:** Surg Gen  
**SME:** D RCN Surgeon  
**OPI:** RCN Surgeon  
**Effective Date:** 29 Jun 06  
**Last Reviewed:**

## Background

### Supersession

1. This Instruction supersedes:
  - a. Med Dir 2/05
  - b. CFMO 27-07

### Purpose

2. The purpose of this Instruction is to provide direction to all Canadian Forces Health Services Group (CF H Svcs Gp) personnel regarding the requirements and procedures for conducting Diver Periodic Health Assessments.

### Context

3. IAW Ref B, all individuals who undergo hyperbaric exposure (Divers, Diving Medical Officers, Physician Assistants, Aviation Physiology Technicians, SAR Technicians or civilians/others undergoing additional Canadian Armed Forces (CAF) training), are required to have a current Diver Periodic Health Assessment (PHA) prior to such exposure.
4. Shallow Water Divers (SWDs, as defined below) usually dive to a depth of no more than 15m (50 feet) and never exceed 30m (100 feet). They are all required to dive within the no-decompression limits. Deep Water Divers (DWDs) are comprised of Class 2, 3 and 4 PID and Clearance Divers, who may dive deeper than 30m, and/or beyond no-D limits.

## Application

5. This Instruction applies to all CAF personnel, Department of National Defence (DND) Public Servants, contractors and sub-contractors who provide health services to CAF members. In particular, it applies to all personnel (CAF, DND Public Servants, contractors, and sub-contractors) who provide health services to CAF members who are Divers (trained or candidates) as described below.

## Abbreviations

6. The following table contains abbreviations used in this instruction.

<b>Abbreviation</b>	<b>Term in Full</b>
ADMO	Advanced Diving Medical Officer
ADMT	Advanced Diving Medical Technician
AGE	Arterial Gas Embolism
AUMB	Aerospace and Undersea Medical Board
BAvMed	Basic Aviation Medicine
bc-TTE	bubble contrast – Transthoracic Echocardiogram
BDMT	Basic Diving Medical Technician
BDMO	Basic Diving Medical Officer
CABA	Compressed Air Breathing Apparatus
CAFDESG	Canadian Forces Diving Effectiveness Steering Group
CDAC	Clearance Diver Assessment Centre
CDM	Consultant in Diving Medicine
CDHM	Consultant in Diving and Hyperbaric Medicine (CFEME/DRDC Toronto)
CDSM	Consultant in Diving and Submarine Medicine
CF/CAF	Canadian Forces/Canadian Armed Forces
CFEME	Canadian Forces Environmental Medicine Establishment
CFHIS	Canadian Forces Health Information System
CF H Svcs	Canadian Forces Health Services
CF H Svcs Gp	Canadian Forces Health Services Group
CF HCC	Canadian Forces Health Care Centre
CFB	Canadian Forces Base
CI Div	Clearance Diver
CLDO	Clearance Diving Officer
D Med Pol	Director – Medical Policy

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DCS/DCI	Decompression Sickness / Decompression Illness
D Dive S	Directorate of Diving Safety
DWD	Deep Water Diver
DMO	Diving Medical Officer
DMT	Diving Medical Technician
DOHSWG	Diving Occupational Health and Safety Working Group
DON	Dysbaric Osteonecrosis
DRDC	Defence Research & Development Canada
ECG	Electrocardiogram
FSMO	Fleet Support Medical Officer
HCP	Health Care Provider
IAW	In accordance with
In Att	Inside Attendant (also known as Inside Tender)
JTF	Joint Task Force
LBS	Long Bone Series
MEL	Medical Employment Limitation
MOC	Military Occupation Code
MOSID	Military Occupational Structure Identification
NCM	Non-Commissioned Member
No-D	No Decompression
OT	Occupational Transfer
PA	Physician Assistant
PFT	Pulmonary Function Test
PHA	Periodic Health Assessment
PID	Port Inspection Diver
PSO	Personnel Selection Officer
PTT	Pressure tolerance testing / training
SAR	Search and Rescue
SWD	Shallow Water Diver
US-AUMB	Undersea Subcommittee of Aerospace & Undersea Medical Board

## Definitions

*Note: Definitions are for the purpose of this Instruction.*

7. *ADMO* - A Medical Officer trained in diving medicine, and who is qualified to conduct all diver PHAs and to treat diving casualties in a hyperbaric (recompression) chamber.

8. *ADMT* - A Physician Assistant trained in diving medicine, and who is qualified to do Diver PHAs, IAW with table 3 at para 60, and to work as the In Att in a hyperbaric chamber during treatments.

9. *AGE* - A severe diving-related pathologic condition occurring in the body when gas bubbles gain access to the arterial system, causing blockage of blood flow and leading to local hypoxia and cellular death.

10. *AUMB / US-AUMB* - The Aerospace and Undersea Medical Board (AUMB) is the CAF's advisory board in these areas (Terms of Reference are as promulgated at Ref D). It resides at CFEME Toronto. While all CDMs plus RCN Surg are also members of the plenary AUMB, by themselves they comprise the Undersea Subcommittee of AUMB (US-AUMB).

11. *BDMO* - A Medical Officer trained in diving medicine, and who is qualified to do all diver PHAs (which are then reviewed by an ADMO).

12. *BDMT* - A Physician Assistant trained in diving medicine, and who is qualified to do Diver PHAs, IAW table 3 at para 60.

13. *CAFDESG/DOHSWG* - The CAFDESG is convened yearly by D Dive S. The CAFDESG mission is to manage and make recommendations on all matters relating to the pan-CAF diving program to ensure teams are safe, capable and ready to execute their mission. The DOHSWG is a subordinate working group of the CAFDESG. The DOHSWG provides a joint forum for diving leadership, naval technical and health services personnel to review and address medical/safety standards and incidents.

14. *CI Div/CLDO* - Clearance Divers and Clearance Diving Officers (MOSID 00342 and 00207) are trained to dive to depths up to 100m (330 feet) on various gas mixtures using a range of CABA, surface-supplied, and re-breather apparatus. Duties may include mine countermeasures, explosive ordnance disposal, demolition, seabed search and salvage, underwater construction and experimental diving.

15. *CDM /CDHM* - As defined at Ref A, a CDM is an ADMO who has undergone additional post-graduate training in diving and hyperbaric medicine. The CDM residing at CFEME Toronto is designated 'CDHM' IAW vols 2 & 5 Ref A. On behalf of US-AUMB, CDHM provides expert opinion and medical support to all operational diving organizations within the CAF and to D Dive S and the CAFDESG.

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16. *CDSM* - A term used to refer to CDMs who are also qualified in submarine medicine. The RCN Surg may appoint one of these CDSMs as the point of contact for submarine medicine issues on each coast, and/or as practice leader for CAF Submarine Medicine.

17. *CFEME* - A CF H Svcs unit co-located with DRDC in Toronto. It represents the center of Aerospace & Undersea medical expertise for the CAF.

18. *DCI* - A descriptive term used in Ref A that refers to the whole spectrum of bubble-related illnesses ranging from AGE to DCS.

19. *DCS* - A *pathophysiological* term for a condition resulting from a decrease in ambient pressure acting on tissues with absorbed inert gas (N<sub>2</sub>, He, Ar), whereby the dissolved inert gas in the tissues and circulatory system evolve from solution to form bubbles that interfere with normal tissue function. Symptoms may be mild ('Type I'; e.g., joint only) or serious ('Type II' e.g. involving the central nervous system).

20. *DMO* - An inclusive term referring to both BDMOs and ADMOs.

21. *DMT* - An inclusive term referring to both BDMTs and ADMTs.

22. *DON* - A delayed manifestation or long-term effect of DCS thought to be due to inadequate decompression resulting in blockage of blood vessels in the long bones, and leading to bony necrosis.

23. *DWD* - Divers who are authorized to routinely dive to depths greater than 15m (but do not exceed 100m), and may dive outside of the no-D limits. They include Regular Force Clearance Divers (MOSID 00342), Clearance Diving Officers (CLDOs) (MOSID 00207), and level 2, 3 and 4 Reserve Force Port Inspection Divers (PIDs) (MOSID 00226).

24. *PID* - The CAF Reservist DWD occupation (MOC R345, MOSID 00225). PIDs are qualified to descend to depths of 45m (150 feet); their primary occupation is that of diver. They sometimes employ staged decompression and certain breathing apparatus not used by SWDs. These Reserve Force divers frequently work on Class B and C Service contracts with the Regular Force. There are 4 classes of PID. Class 1 (QL1) are designated SWDs, whilst Class 2, 3 and 4 (QL2, 3 and 4) divers are designated DWDs, and dive to a maximum depth of 45m (150 feet).

25. *SWDs* - Divers who rarely dive greater than a depth of 15m (50 feet), never exceed 30m (100 feet), and who are required to dive within no-D limits. This includes the following:

- a. Ships' Team Divers (incl Ship's Diving Supervisors and Officers);
- b. Combat Divers;

- c. JTF (Special Operations) divers;
- d. ADMOs and ADMTs, who normally are required to qualify as In Att;
- e. members of other MOSIDs who may require qualification as In Att (e.g. certain Aviation Physiology Technicians or BioScience Officers);
- f. Port Inspection Divers (PIDs MOSID 00226) Class/QL 1 (Classes 2, 3, & 4 PIDs are regarded as Deep Water Divers); and
- g. SAR Technicians (MOSID 00101).

## Direction

### General

26. IAW Ref B, All DND employees and CAF members carrying out duties relating to any aspect of CAF diving must possess appropriate medical certification. Contractors and sub-contractors carrying out CAF diving duties also require appropriate medical certification consistent with this instruction.

### Requirements

27. All prospective CAF divers will undergo initial health assessments prior to training and thereafter will have PHA as trained divers. This instruction applies to all divers, which includes the following:
- a. Ships' Team Divers (incl Ship's Diving Supervisors and Officers)
  - b. Combat Divers;
  - c. JTF (Special Operations) divers;
  - d. ADMOs and ADMTs, who normally are required to qualify as In Att, and members of other MOSIDs who may require qualification as In Att (e.g. Aviation Physiology Technicians and Bioscience Officers);
  - e. SAR Technicians (MOC 131, MOSID 00101);
  - f. Port Inspection Divers (PIDs, MOC 345);
  - g. Clearance Divers (MOSID 00127); and,
  - h. Clearance Diving Officers (CLDOs).

## Section 1 - Medical Selection of Divers

28. Candidates for diving duties will be in good physical and mental health and have good aerobic / muscular capacity. CAF Physical Fitness Testing (FORCE test) must be successfully completed and current. All candidates will meet the minimum medical standard of: V3, CV2, H2, G2, O2, A5.

**Note:** *Not all V3 applicants meet visual requirements for SWD selection. IAW Ref K, only those who see 6/30 binocularly, are correctible to V1, and have no eye disease may be selected. Any V3 applicant must normally have been examined by an Optometrist / CAF Opth Tech / Ophthalmologist within one year of their initial Diver PHA.*

29. Meeting this standard does not automatically qualify a member for diving. A health assessment (Initial Diver PHA) is required to confirm the candidate's fitness for diving. Initial Diver PHA instructions are provided in Section 2 of this instruction. Additional selection details for Clearance Divers, PIDs, and SAR Techs are provided in paras 30 to 37. Annex A to this Instruction lists relative and absolute contraindications to diving.

### **Clearance Diver Selection**

30. NCM Clearance Diver selection begins with a member formally applying for Voluntary Occupation Transfer (VOT) through a Personnel Selection Officer (PSO). Clearance Diving Officer candidates do not require a VOT, and thus initiate their requests through the CoC. Candidates found eligible and suitable proceed to a Clearance Diver Assessment Centre (CDAC) serial (formerly known as "prelim course"). The medical certification required prior to CDAC is a current/valid Diver PHA. To ensure this is done, all CDAC candidates shall complete a DND 2939. Although this form was designed as a Shallow Water Diver Pre-screening form, it meets the needs of CDAC screening with minor modification. Specifically:

- a. **Diver Brief (Block A).** Ensure the candidate understands the roles and responsibilities of Clearance Divers. It is also an opportunity for the candidate's unit to ensure the Voluntary Occupation Transfer form has been properly initiated.
- b. **Recommended for Training (Block B).** Unit to sign before medical appointment booked.
- c. **Medical Category (Block D).** Recommend this be completed prior to booking a diver PHA, in order to avoid unnecessary investigations or appointments.
- d. **Fitness Test (Block E).** Confirmation of current fitness test. To be signed by candidate's unit.
- e. **Immunization Clinic (Block F).** Confirmation of current immunizations.
- f. **Dental (Block G).** Dental fitness to be signed by Dental Services to confirm examination IAW Ref C.
- g. **Medical Examination (Block H).** For candidates without previous CAF diving experience, this shall consist of a complete Initial Diver PHA. For candidates with previous diving experience, the candidate shall meet with a DMO/DMT to review their most recent Diver PHA, ensure it is current, and confirm no interim health issues of concern. The DMO/DMT then sends a CFHIS note to the Approval Authority (Formation ADMO, CDHM, or CDM Ottawa IAW table 4 at para 61). The DND 2939 is scanned into CFHIS or forwarded to the Approval Authority. Since NCM Clearance Diver candidates apply for a VOT, they also require completion of a DND 4495 (Application for In-Service Selection Program). If recommending fit diver training, the examining DMO/DMT may sign the DND 4495 Part 2 with the comment "Recommended fit diver training, pending review by Approval Authority IAW CFHS 4000-04" and ensure that "yes" is checked for the initially fit diver block. If there are concerns that the member may be unfit diving, the signing of DND 4495 shall be deferred to the approval

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authority. Block H of DND 2939 and Part 2 of DND 4495 must be completed prior to a member being interviewed by a PSO.

**h. Medical Approval (Block I):**

- i. For candidates with no previous CAF diving experience, approval authority shall cross out "Shallow Water", resulting in the statement "The candidate is medically fit for Diver Training and duty."
- ii. For candidates with previous CAF diving experience the statement should be amended to read "The diver PHA has been reviewed. The candidate is medically fit for Diver Training and duty."
- iii. For NCM Clearance Diver candidates, also complete DND 4495 part 2 (if not already completed by the examining DMO/DMT).
- iv. After reviewing the file, the Approving Authority then notifies Fleet Diving Unit (FDU) Training and RCN PSO of medical fitness to dive by sending an email to [ESQFDUTRG@intern.mil.ca](mailto:ESQFDUTRG@intern.mil.ca) and [P-OTG.RCNPSEL@intern.mil.ca](mailto:P-OTG.RCNPSEL@intern.mil.ca).

31. Those candidates selected after completion of CDAC must undergo a special Initial Clearance Diver health assessment at CFEME Toronto. The examination is conducted by the CDHM (or designate) and includes the following additions to a regular Initial Diver PHA:

- a. Long bone survey – baseline study IAW CFHS Instruction 4000-24;
- b. Echocardiogram – bubble contrast Transthoracic Echocardiogram (bc-TTE);
- c. Full Pulmonary Function Testing;
- d. Colour Vision examination; and,
- e. Additional investigations as deemed necessary by the CDHM (or designate).

32. This examination constitutes a Diver Type I PHA from a Diver PHA currency perspective.

33. Medical evaluation at CFEME Toronto is only required once. If a candidate is subsequently required to repeat CDAC, they do not need to repeat the CFEME medical examination. CDHM Toronto will conduct a file review to determine medical evaluation requirements in such cases.

### **Port Inspection Diver (PID) Selection**

34. Civilian PID candidates are now enrolled after confirmation they meet the CAF Common Enrolment Medical Standard (i.e. same process as any other Naval Reserve occupation). Although enrolled as PIDs, they are not considered fit to dive at this point. All of these PIDs must complete a DND 2939, including a complete Initial Diver PHA and CDM approval, prior to loading on their first dive course or any diving.

35. All PID candidates (current CAF members and civilian candidates following enrolment) require a valid Diver PHA and CDM approval prior to any diving, in order to confirm fitness to dive. To confirm health screening, all candidates shall complete a DND 2939. Satisfying Block H (Medical Examination) of this form shall require a



complete Initial Diver PHA conducted at the most convenient CF Health Services Centre by a DMO. If a candidate is already a CAF diver, Block H may be satisfied with a short DMO appointment to confirm the member's Diver PHA is valid and there are no interim health issues affecting fitness to dive. In both cases, after DMO assessment, the file is sent to the Approval Authority (CDM) for review and decision. If the Approval Authority is not local, all paper forms are to be scanned into CFHIS at the examining unit and the Approval Authority notified by sending the PHA note through CFHIS.

36. The Approval Authorities for PID medical screening (DND 2939 Block I) are the CDMs. Specifically, CDSM(A) for files east of Ontario, CDHM Toronto for Ontario files, and CDSM(P) for files west of Ontario. PID medical screening approval will not normally be delegated to ADMOs (unless directed by the RCN Surgeon). Upon reviewing the file, the Approval Authority creates and signs a CFHIS note clearly stating the medical category and medical fitness to dive decision. This note is then sent through CFHIS to the initial examining DMO for notification of the member. The Approving Authority also notifies Naval Reserve Headquarters Personnel Coordination Centre by email (BTL\_Enrolment@intern.mil.ca). If the Approval Authority is not local to the examining DMO, the DND 2939 Block I may be annotated by the DMO based on the signed Approval Authority CFHIS note.

### **Search and Rescue Technicians**

37. The medical screening process for SAR Techs is detailed in Flight Surgeon Guideline 100-01 (Ref F), which is the primary reference for the SAR Tech medical selection process. The following is a brief summary of the process:

- a. **Phase 1:** Before Jarvis Lake (SAR Tech Selection Course)
  - i. SAR Tech applicants shall undergo a preliminary medical review by a CAF health-care practitioner (BAvMed or Flight Surgeon) to ensure the candidate:
    1. is medically fit for arduous physical activity at Jarvis Lake;
    2. meets minimum medical standard of V2 CV2 G2 O2 and has no obvious disqualifying medical conditions for aeromedical/diving fitness
  - ii. Aircrew and diver preliminary investigations are arranged. See ref E for Aircrew preliminary investigations. The diver preliminary investigations are consistent with an Initial Diver PHA (Section 2), which includes:
    1. CBC, electrolytes, serum creatinine, LFTs (AST,ALT, ALP, GGT), urinalysis, lipid profile, fasting glucose, HbA1c
    2. Screening spirometry
    3. Chest X-ray with inspiratory, expiratory and lateral views
    4. ECG
- b. **Phase 2:** After Jarvis Lake, prior to CFEME
  - i. Successful candidates' files reviewed by BAvMed provider or Flight Surgeon at candidate's home base to ensure preliminary investigations are completed and within normal range.
- c. **Phase 3:** CFEME Medical Assessment

- i. Initial Diver and Aircrew medical examination in-person at CFEME. CDHM Toronto (or designated CDM) reviews and approves the medical fitness to dive. The overall diver/aeromedical medical fitness approval requires dual sign-off by a Consultant in Diving Medicine (CDHM Toronto or designated CDM) and a designated Aerospace Medicine Consultant.

## **Section 2 - Diver PHAs**

38. Diver health assessments are achieved through the following types of PHAs:
  - a. Initial Diver PHA;
  - b. Diver Type I PHA (complete assessment); and
  - c. Diver Type II PHA (abbreviated assessment).

### **Frequency of PHAs**

39. Divers shall have a health assessment annually. PHAs follow a biennial cycle, with a Diver Type I PHA (complete health assessment) one year, followed by a Diver Type II PHA (abbreviated health assessment) on the alternate year.

### **Periods of Validity**

40. All types of Diver PHAs are valid for one year from end of the month on which the PHA was conducted.
41. The period of validity may be extended by 60 days for operational reasons at the discretion of the applicable Approval Authority (see table 4 at para 61). After this period the diver is declared “unfit to dive” until a Diver PHA is completed.
42. A Diver Type II PHA may be used to extend or reinstate diving medical fitness for a period of one year, so long as the most recent Diver Type I PHA examination occurred within the past 24 months.
43. In the event that both Type I and II PHAs have expired, medical fitness to dive may be reinstated with a new Diver Type I PHA. Based on the clinical context and time lapsed, the examining and reviewing officers have the discretion to require additional testing and review consistent with an Initial Diver PHA.
44. If a diver candidate does not start training within 12 months of an Initial Diver PHA, they may extend validity by following the PHA Type II/Type I cycle like a qualified diver.
45. Although members are responsible for maintaining their own PHA currency, Operational Dive Units also maintain tracking processes to ensure divers are fit for diving duty (medically and otherwise).

## **Initial Diver PHA**

46. An Initial Diver PHA is required for divers before hyperbaric exposure. This includes a complete Diver Type I PHA along with the following additional investigations:

- a. Screening spirometry - Screening spirometry is conducted for all candidates. Full Pulmonary Function Testing (PFT) with flow volumes +/- methacholine (or exercise) challenge are performed when clinically indicated or if screening spirometry raises concerns;
- b. Serum creatinine and electrolytes; and,
- c. Chest X-ray with inspiratory, expiratory and lateral views.

47. The Diver PHA requirements tables (see tables 1 and 2 at para 54) provide a complete list of required forms and investigations. Laboratory investigations and ECG must have been completed within 12 months preceding examination. Chest X-Ray must have been completed within 5 years preceding examination. Examining and reviewing clinicians have discretion to repeat investigations when the interval has been shorter than specified.

48. Units nominating diver candidates are responsible for initiating DND 2939 and ensuring Blocks A to G are completed prior to the candidate seeing the diving medicine examining clinician. The examining clinician shall confirm blocks A to G were completed and sign block H. The form is then scanned into CFHIS. The DND 2939 is not necessarily required for In Att or primarily Aircrew occupations. However, the examining clinician should still confirm that Immunizations, Dental examination and CF physical fitness (FORCE test) are up to date.

49. The entire medical file must be reviewed (CFHIS and paper medical records (CF2034/2016 if they exist)) by both the examining clinician and Approval Authorities prior to signing off any initial diver applicant.

50. Examining clinicians should remind candidates they are to seek medical reassessment if they develop a medical condition (e.g. upper or lower respiratory tract infection) that may preclude them from taking part in the diver course. The DMT/DMO supporting a dive course should also review candidate CFHIS files approximately 1-2 weeks in advance of a dive course to ensure the diver medicals are valid and no new disqualifying conditions have been reported.

51. See Clearance Diver Selection and Port Inspection Diver Selection sections for unique requirements to these occupations (paras 30 to 36).

## **Diver Type I PHA**

52. A Diver Type I PHA is a thorough health assessment conducted every 2 years by a qualified clinician (see para 55), which includes (requirements also listed in tables 1 and 2 at para 54):

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- a. PHA part 1:
  - i. DND 2452 - Aircrew and Diver Health Examination;
  - ii. DND 2552 – Patient Questionnaire;
  - iii. CF H Svcs Gp Instruction 4000-24 Annex A – Dysbaric Osteonecrosis Screening Instrument;
  - iv. Height, weight, blood pressure, visual acuity, audiogram;
  - v. Laboratory examinations:
    - 1. Urine dipstick (micro as clinically indicated);
    - 2. CBC;
    - 3. LFTs (AST, ALT, ALP, GGT);
    - 4. CVS Risk Assessment labs (every 4 years to age 40, then every 2 years):
      - a. Lipid profile;
      - b. Fasting blood glucose;
      - c. HbA1c;
  - vi. Additional investigations (Chest X-ray, ECG) – in accordance with table 2:
    - 1. ECG – every 4 years to age 40, then every 2 years;
    - 2. Chest X-ray – every 5 years;
- b. PHA part 2:
  - i. Review of the medical file (Last Diver PHA and subsequent records as a minimum);
  - ii. Review of PHA Part 1 forms and results;
  - iii. CVS Risk Assessment (every 4 years to age 40, then every 2 years);
  - iv. History and physical examination;
  - v. Documentation in PHA folder of CFHIS;
  - vi. CFHIS Medical Disposition Note – recommended medical category and MELs;
  - vii. CF2033a;
  - viii. CF2088 (only if there is a change in MELs); and,
  - ix. Diver Log (CF 849) annotation.

**Diver Type II PHA**

53. A Diver Type II PHA is conducted in alternate years to the Type I. It is an abbreviated health assessment, which does not require a physical examination unless concerns arise from the screening questionnaire. The Diver Type II PHA includes:

- a. PHA part 1:
  - i. DND 2452 – Aircrew and Diver Health Examination;
  - ii. DND 2552 – Patient Questionnaire;
  - iii. CF H Svcs Gp Instruction 4000-24 Annex A – Dysbaric Osteonecrosis Screening Instrument;
  - iv. Height, weight, blood pressure, visual acuity, audiogram;
- b. Clinician review (Appointment with qualified DMT or DMO):
  - i. Review sections completed by patient;
  - ii. Review investigations;
  - iii. Review medical file (Last Diver PHA and subsequent records as a minimum);

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- iv. Determine if additional examination required;
- v. Complete and sign DND 2452;
- vi. Documentation in PHA folder of CFHIS; and,
- vii. Annotate and sign the Dive Log (CF849).

**Diver PHA Requirements**

54. The following two tables outline the Diver PHA Requirements. These tables should be reviewed with each Diver PHA to confirm all requirements are met.
- a. Table 1: Diver PHA Form and Documentation Requirements. This table outlines the administration requirements for Diver PHAs. All paper forms should be scanned into CFHIS whenever sending outside unit and upon file completion.
  - b. Table 2: Diver PHA Investigation Requirements. This table outlines the investigations to be conducted with each type of Diver PHA.

**Table 1: Diver PHA Form and Documentation Requirements**

Item	Initial PHA	Type I PHA	Type II PHA	Details
DND 2939 Pre-screening Form	•			Candidate/unit responsibility to initiate. Scan into CFHIS.  See notes 1 and 2
DND 2452 Aircrew and Diver Health Examination	•	•	•	Member completion and signature DMT/DMO completion and signature
DND 2552 Patient Questionnaire	•	•	•	
CFHS Gp Instr 4000-24 Annex A DON Screening	•	•	•	LBS only if: a. screening form responses indicate requirement; or b. Initial baseline for Clearance Divers
Medical File Review	•	•	•	Minimum last Diver PHA and subsequent records. (Initial Diver PHA – review all medical records)
CFHIS PHA Note	•	•	•	Complete History and Physical Examination: Include dive/occupational history and pertinent negatives.  Type II PHA – Brief note only, unless clinical situation warrants examination or investigations

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CFHIS Medical Disposition Note	•	•	•	Include medical category, fitness to dive, and any MELs
CF2033a	•	•		
CF 2088	•	See Details		If change in MELs.
Dive Log (CF849)	•	•	•	See para 71 for guidance

**Note 1:** DND 2939 need not necessarily be completed for In Att or the primarily Aircrew occupations. However, examining DMOs must nevertheless ensure such applicants meet minimum medical category requirements of the applicable MOSID/specialty, and that they have satisfied the requirements of Blocks D-G of DND 2939.

**Note 2:** Certain specialties have developed forms equivalent to DND 2939 for their applicants. Examining DMOs & Approval Authorities in such cases must ensure applicants still meet all the requirements expressed in DND 2939 (para 48 also refers)

**Table 2: Diver PHA Investigation Requirements**

Item	Initial PHA	Type I PHA	Type II PHA	Details
Height, Weight, Blood Pressure	•	•	•	
Visual acuity	•	•	•	Measured and graded IAW CFP 154
Colour Vision	•			Confirm CV was tested on enrolment medical. Colour vision examination only if clinically indicated or clearance diver selectees at CFEME.
Audiogram	•	•	•	Measured and graded IAW CFP 154
Chest X-ray (insp/exp and lateral)	•	See Details	See Details	Every 5 years
ECG	•	See Details		Every 4 years to age 40, then every 2 years
Fasting blood glucose	•	See Details		Every 4 years to age 40, then every 2 years
HbA1c	•	See Details		Every 4 years to age 40, then every 2 years
Lipid Profile	•	See Details		Every 4 years to age 40, then every 2 years

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Complete Blood Count	•	•		
Liver function tests: to include GGT, AST, ALT, Alk phosphatase	•	•		
Electrolytes and Creatinine	•			Initial Diver PHA only, then as clinically indicated
Urine: dipstick (micro as clinically indicated)	•	•		
CVS risk assessment	•	See Details		<p>Every 4 yrs to age 40, then every 2 yrs. To include:</p> <ul style="list-style-type: none"> <li>• Resting ECG</li> <li>• Lipid profile</li> <li>• Fasting Blood Glucose, HbA1c</li> <li>• Smoking history</li> <li>• Fam Hx CAD before age 60 yrs</li> <li>• CVS risk profile (using tool at Ref G, H or I)</li> </ul>
Screening Spirometry	•			<p>Screening spirometry only.</p> <p>If clinically indicated or abnormal screening spirometry, full PFT with flow volumes +/- methacholine (or exercise) challenge is performed.</p> <p>Full PFT for Clearance Diver Selectees at CFEME</p>
Transthoracic Echocardiogram (bc-TTE)				Only at CFEME for Clearance Diver Selectees after CDAC
Dental Examination (through CF Dental Services)	•	•	•	IAW CFHS 1023-06 (Ref C). Divers are responsible for booking initial and annual diver dental examinations.
Any other tests	See Details	See Details	See Details	As/if examining HCP feels clinically indicated

**Note:** *Validity period for the above investigations for Initial applicants is normally the same as that required for trained divers, but examining HCPs & Approval Authorities have discretion to require earlier repeats as they deem clinically indicated.*

## **Section 3 - Examination, Review and Approval Authorities**

55. All diver examinations must be conducted and reviewed by appropriately qualified Diving HCPs (with ADWU or AEHI qualification codes). The requirements and exceptions are described in the subsequent sections and tables.

### **Examining Clinician Qualifications**

56. Diver examinations must be conducted by appropriately current and qualified clinicians (with ADWU or AEHI qualification codes), as per the table 3 at para 60. Initial Diver PHAs are normally conducted by a DMO. A CDM may permit specific experienced ADMTs to conduct Initial Diver PHAs.

57. If no HCP qualified in Diving Medicine is available, a BAvMed provider or Flight Surgeon may be the examining clinician for a Diver Type I or II PHA. This should only be done as a last resort, and only as authorized by the applicable Approval Authority. Diver Type I and II PHAs conducted by a BAvMed provider must be reviewed by a DMO. In these situations, documentation of the DMO review shall be included in CFHIS. Completion of an Initial Diver PHA by a BAvMed provider or Flight Surgeon may only be considered in truly extenuating circumstances, and only after consulting a CDM.

### **Reviewing Medical Officer Qualifications**

58. The reviewing medical officer for all Diver Type I PHAs shall be a qualified ADMO that has been specifically authorized by the regional CDM/CDSM. CDM/CDSMs provide this authorization to ADMOs whom they consider competent in the review of PHAs and the application of current diver instructions. At the discretion of the regional CDSM, a PHA performed by an ADMO can be reviewed by a BDMO in circumstances where no other ADMO is available.

59. Units that do not have an ADMO to conduct Diver PHA reviews may forward the file to the Diver PHA Approval Authority (table 4 at para 61).

### **Authorities**

60. Table 3 outlines the minimum examining, reviewing, consulting and approval clinician requirements.



**Table 3: Examining, Reviewing and Approval Clinician Requirements**

<b>Exam Type</b>	<b>Examining Clinician</b>	<b>Reviewing MO</b>	<b>Consultant DMO Review</b>	<b>Approval</b>
<b>Initial Diver</b>	DMO (see notes 1 and 2)	ADMO or Approval Authority (see note 3)	CDHM, regional CDSM  (as clinically indicated) Exceptions: 1. CI Div/CLDO (note 7)	CDHM, regional CDSM or CDM delegated ADMO (see Table 4 for details)
<b>Type I PHA</b>	DMT/DMO (see note 4)	ADMO (see note 6)	Not required (see note 7)	Reviewing MO (see note 10)
<b>Type II PHA</b>	DMT/DMO (see note 4)	Not required	Not required (see note 7)	Examining Clinician
<b>TCAT applied &lt;12 months</b>	DMT/DMO	ADMO (see note 6)	Not Required (see note 7)	Reviewing MO (see note 10)
<b>TCAT removal &lt;12 months</b>	DMT (see note 5) DMO	ADMO (see note 6)	Not Required (see note 7)	Reviewing MO (see note 10)
<b>TCAT &gt;12 months or PCAT</b>	DMO	ADMO or CDM (see note 9)	CDM	D Med Pol Exceptions: see notes 8 and 9

**Note 1:** Clearance Diver Initial PHAs are conducted and approved by CDHM Toronto after successful completion of CDAC.

**Note 2:** A CDM may permit specific experienced ADMTs to be the examining clinician for Initial Diver PHAs.

**Note 3:** If there is no ADMO available, or at the discretion of the Approval Authority or CDM, the file may proceed directly to the next level of review/approval.

**Note 4:** See para 57 for exceptional circumstances a BAvMed provider or Flight Surgeon may be the Examining Clinician for Diver Type I or II PHAs.

**Note 5:** A DMT may be the examining clinician for removal of temporary diving restrictions less than 12 months if the medical condition and management is within their scope of practice.

**Note 6:** If the examining clinician was an ADMO, the reviewing officer may be a BDMO (at the discretion of the regional CDSM) (para 60 refers).

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**Note 7:** Although not required for routine PHAs and TCAT <12 months, the reviewing officer may request CDM review if there are any questions or concerns

**Note 8:** CDM may approve without DMedPol Review if the following conditions are met:  
 Diving is a secondary duty (i.e. not PID or CI Div);  
 No Geographical or Operational medical category changes; and  
 Vision, Colour Vision, and Hearing categories remain within MOSID standard

**Note 9:** For TCAT MELs totaling 12 to 18 months (i.e. 3<sup>rd</sup> TCAT), following CDM assignment/approval of diving related MELs, the Base Surgeon is authorized to provide final approval of the overall TCAT.

**Note 10:** Only ADMOs specifically authorized by a CDM (email is adequate) may review and approve Diver PHAs IAW with the table above.

61. Table 4 details the Approval Authorities for Diver PHAs and extensions. These Approval Authorities shall also be used in the absence of an authorized ADMO for Diver Type I PHAs and TCATs.

**Table 4: Approval Authorities**

	West of Ontario	Ontario	East of Ontario
<b>Diver PHAs and Extensions</b>	Formation ADMO Pacific (FSMO as delegated by regional CDSM)	1. CDHM Toronto 2. CDM Ottawa (as avail) 3. Petawawa: Senior ADMO as delegated by CDHM	Formation ADMO Atlantic (FSMO as delegated by regional CDSM)
<b>PID Candidates</b>	CDSM(P)	CDHM Toronto	CDSM(A)
<b>Clearance Diver/CLDO Selectees</b>	CDHM Toronto		
<b>Aircrew Occupation Initial PHAs</b>	CDHM Toronto (medical fitness to dive component)		

## Section 4 - Medical Employment Limitations

62. All MELs restricting diving status must be communicated expeditiously to the CAF member's CO.

### Temporary Medical Employment Limitations

63. A short term MEL of "unfit diving" may be initiated by any clinician in the context of a concern about fitness to dive. Short Term MELs are generally less than 30 days and are documented with a CFHIS Medical Disposition Note. Removal of MELs related

to diving must be done by a DMT/DMO. In order for a DMT to remove a diving related MEL, the underlying medical condition must fall within the DMT's scope of practice.

### **Temporary Medical Categories (less than 12 months)**

64. Although any clinician (including those without dive medicine qualifications) may initiate an MEL of unfit diving, planned appointments for assessing fitness to dive (PHAs, TCATs, PCATs) shall be made with a DMT or DMO.

65. An ADMO must review the assessment of a diver with TCAT temporary MELs (less than 12 months) prior to resumption of diving.

### **Permanent Medical Categories and Temporary Medical Categories (more than 12 months)**

66. If diving restrictions total more than 12 consecutive months or a PCAT is recommended, CDM review is required. The CDM may seek further consultation from US-AUMB at their discretion.

67. If diving is a secondary duty (e.g. Ship's Team Divers) and the member remains fit for their MOSID (i.e. only restrictions on diving), the unfit diving disposition is assigned and notification is sent to the supporting CF HCC. Further review by DMedPol is not required.

68. If the file is for Temporary MELs totaling 12 to 18 Months (i.e. 3<sup>rd</sup> TCAT), the file is forwarded to the Base Surgeon after the CDM has assigned/approved the diving related MELs. The Base Surgeon provides final review/approval of the overall TCAT.

69. The file shall be forwarded to D Med Pol for final MEL and category assignment if restrictions total more than 18 months (or PCAT) and any of the following apply:

- a. Vision, Colour Vision, or Hearing falls below MOSID standard;
- b. Any Geographic or Occupational category change (with exception of shaving MEL); or
- c. Primary diving MOSID (i.e. PID or Clearance Diver)

## **Section 5 – Diving Accident and Dive Log Guidance**

### **Diving Accidents & Occurrences**

70. A CDM will be consulted as soon as possible in all suspected cases of DCI (AGE or DCS), as well as in any other serious diving-related injury. Contact procedures are detailed at Ref L.

## CAF Diving Manual

71. The CAF Diving Manual (Ref A) will be consulted for all diving occurrences. The CAF Diving manual provides guidance on diving occurrence management as well as subsequent flying and diving restrictions

## CAF Dive Log (CF849)

72. The Dive Log (CF849) should be annotated on completion of every Diver PHA. For routine Type I and II PHAs with no change in fitness to dive, the Dive Log may be signed by the DMT/DMO upon completion of the examination appointment (i.e. no need to await reviewing medical officer signature). The examining DMT/DMO has some discretion as to whether or not to await final results of additional investigations. If the additional investigations are minor and the results unlikely to affect the diver's fitness, the DMT/DMO may proceed with Dive Log signature. Dive Log signature should be deferred when outstanding investigations are serious or likely to affect diving fitness. For TCAT removals conducted by a DMT or BDMO, the ADMO review is required before signing the Dive Log.

73. While any CAF DMT/DMO may sign off the Dive Log (CF849), it is normally the examining DMT/DMO who does so.

74. The effective date recorded therein is the date the examination actually took place.

75. The CF2033 or DND2452 documenting the PHA should be annotated as to whether or not the Dive Log (CF849) has been signed off.

76. The examining DMT/DMO has some discretion as to whether to record temporary diving restrictions in the log. Restrictions expected to be of shorter duration (i.e., <30days) may be handled using a CFHIS Medical Disposition Note and not necessarily recorded in the log. Restrictions 3 months or longer must be addressed with a TCAT and should be recorded in the Dive Log (CF849).

## Responsibility

### Responsibility Table

77. The table below describes responsibilities associated with Diver PHAs.

The...	Is/are responsible for...
CDHM (CFEME Toronto)	<ul style="list-style-type: none"><li>The final review and approval of Initial Diver PHAs for all civilian PID candidates, all SAR Tech candidates, and Ontario region diver candidates.</li></ul>

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	<ul style="list-style-type: none"> <li>• Conducting Clearance Diver selectee (after CDAC) health assessments.</li> <li>• Reviewing/approving cases involving extended temporary medical category (&gt;12 months) or permanent unfit diving dispositions.</li> <li>• Appointing suitable ADMO-qualified Reviewing and Approval Authorities.</li> <li>• Advising RCN Surgeon on recommended changes and updates to this instruction.</li> <li>• Providing consultative advice and direction to DMTs/DMOs regarding this instruction and specific Diver PHAs.</li> </ul>
Other CDMs/CDSMs	<ul style="list-style-type: none"> <li>• Overseeing local/regional diving medicine issues.</li> <li>• Reviewing/approving cases involving extended temporary medical category (&gt;12 months) or permanent unfit diving dispositions.</li> <li>• Appointing suitable ADMO-qualified Reviewing and Approval Authorities.</li> <li>• Providing consultative advice and direction to DMTs/DMOs regarding this instruction and specific Diver PHAs.</li> </ul>
Formation ADMO (FSMO)	<ul style="list-style-type: none"> <li>• The final review and approval of all Initial Diver PHAs (except Clearance Divers, SAR Techs, and civilian PID candidates) conducted on diver applicants East and West of Ontario, as delegated by regional CDSM.</li> <li>• Providing Diver PHA review service for Base/Wings East or West of Ontario that do not have an authorized ADMO.</li> <li>• Consulting the local CDM/CDSM regarding difficult cases, all TCATs &gt;12 months and PCATs.</li> </ul>
ADMO	<ul style="list-style-type: none"> <li>• Conducting Diver PHAs and assigning appropriate MELs</li> <li>• If authorized by local CDM/CDSM, reviewing Diver PHAs IAW table 3 at para 60.</li> </ul>
BDMO	<ul style="list-style-type: none"> <li>• Conducting Diver PHAs</li> </ul>
BDMT/ADMT	<ul style="list-style-type: none"> <li>• Conducting Diver Type I and Type II PHAs</li> <li>• Conducting TCAT assessments for MELs &lt;12 months</li> <li>• Consulting a DMO when the underlying medical condition is beyond PA scope of practice</li> </ul>
Divers	<ul style="list-style-type: none"> <li>• Ensuring they schedule the appropriate Diver PHA every year;</li> <li>• Notifying their DMO and CoC immediately of any MELs that may temporarily or permanently affect their ability to perform diving functions safely.</li> </ul>

## References

- A. [B-GG-380-000](#), Canadian Forces Diving Manual
- B. [DAOD 8009-1](#), Canadian Forces Diving – Organization and Operating Principles
- C. [CFHS Gp Policy 1023-06](#) Dental Examination and Treatment – Divers
- D. [Terms of Reference – Aerospace and Undersea Medical Board \(AUMB\)](#)
- E. [AMA Directive 100-01 – Medical Standards for Aircrew](#)
- F. [FSurg GL 100-01](#), Aircrew Medical Selection
- G. DFHP Framingham Excel Calculator (v2 or subsequent; avail via any DFHP, CFEME, or AUMB consultant)
- H. McGill Cardiovascular Health Improvement Program cardiovascular risk profile (<https://chiprehab.com/CVD/index.php>)
- I. Flight Surgeon Guideline 600-01 Annex A
- J. [DND 2939](#) Pre-screening Form – Shallow Water Diver
- K. Diving General Memorandum 2010/13/A
- L. RCN Surg ‘One-Pager’: CDM Consultation Service
- M. [Guidelines for Diving Medical Officers: Medications and Divers \(http://cmp-cpm.mil.ca/en/health/policies-direction/doctrine-library.page\)](http://cmp-cpm.mil.ca/en/health/policies-direction/doctrine-library.page)

## Annexes

- A. Annex A - Absolute and Relative Contra-Indications to Diving

Annex A to CF H Svcs Gp Instruction 4000-04

## Absolute and Relative Contra-Indications to Diving

### List of Contra-Indications

The following table lists the absolute and relative contra-indications to diving:

<b>Absolute Contra-Indications to Diving</b>	
<b>Respiratory</b>	<ul style="list-style-type: none"> <li>• asthma after age 12;</li> <li>• chronic bronchitis or emphysema;</li> <li>• congenital pulmonary blebs or bullae;</li> <li>• scarring that may change airflow patterns</li> <li>• history of spontaneous pneumothorax</li> </ul>
<b>Cardiovascular</b>	<ul style="list-style-type: none"> <li>• coronary artery disease;</li> <li>• angina;</li> <li>• history of myocardial infarction;</li> <li>• cardiomyopathy;</li> <li>• valvular heart disease;</li> <li>• uncontrolled hypertension;</li> <li>• abnormal conduction or rhythm disturbance, particularly if associated with decreased exercise tolerance, dizziness or decreased level of consciousness;</li> </ul>
<b>ENT</b>	<ul style="list-style-type: none"> <li>• inner ear pathology;</li> <li>• chronic otitis media/externa;</li> <li>• perforated tympanic membrane;</li> <li>• chronic pathology to tympanic membrane (blebs)</li> <li>• obstruction of eustachian tubes;</li> <li>• Menière's disease;</li> </ul>
<b>Neurological</b>	<ul style="list-style-type: none"> <li>• epilepsy;</li> <li>• unexplained loss of consciousness;</li> <li>• significant head injury;</li> <li>• brain lesions or aneurysms;</li> </ul>

NOT CONTROLLED WHEN PRINTED

<b>GI</b>	<ul style="list-style-type: none"> <li>• active peptic ulcer disease;</li> <li>• active esophagitis;</li> <li>• Crohn's disease/ ulcerative colitis</li> </ul>
<b>Endocrine</b>	<ul style="list-style-type: none"> <li>• diabetes requiring insulin;</li> <li>• diabetes insipidus;</li> <li>• any significant endocrinopathy;</li> </ul>
<b>Hematology</b>	<ul style="list-style-type: none"> <li>• significant anemia;</li> <li>• sickle cell trait/disease;</li> </ul>
<b>Psychiatric</b>	<ul style="list-style-type: none"> <li>• Active alcohol or drug addiction;</li> <li>• neurosis, psychosis, or any psychiatric condition which affects judgement;</li> <li>• significant mood alteration including suicidal attempts or thoughts;</li> <li>• past history or new onset of claustrophobia or fear of water;</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>• pregnancy;</li> <li>• drugs incompatible with diving (see Ref M Medications and Divers);</li> <li>• active chemotherapy;</li> <li>• lesions of dysbaric osteonecrosis and acute or chronic sequelae of decompression illness;</li> </ul>
<b>Conditions that may preclude diving (to be considered on a case by case basis):</b>	<ul style="list-style-type: none"> <li>• significant neurologic pathology, especially involving the spinal cord;</li> <li>• diabetes controlled by oral hypoglycemics/diet;</li> <li>• obesity;</li> <li>• poor aerobic capacity;</li> <li>• history of heart surgery (cardiology consult);</li> <li>• significant hayfever/ allergic rhinitis;</li> <li>• active alcohol/drug abuse; and</li> <li>• Quiescent or remote peptic ulcer disease.</li> </ul>

## Questions

Questions regarding the preceding medical conditions or any other medical concerns relative to diving may be directed to applicable Approval Authorities (IAW para 61 of this instruction) and/or any CDM (Ref L)