CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY
FITNESS EVALUATION (CFFM’S FPFE)
OPERATIONS MANUAL

Acknowledgements

Director General Personnel and Family Support Services (DGPFSS), formally known as Canadian Forces Personal Support Agency (CFPSA), Director Fitness (D Fit) has developed the 1st Edition of the Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation Operations Manual. In preparing this resource DGPFSS DFit worked with a team of experienced and dedicated fitness professionals.

DGPFSS

Nicole Thomas
Firefighter Fitness & Health Coordinator

Marie Danais
National Physical Fitness Manager

PSP Training Center

Todd Cirka
Directing Staff

Canadian Forces Bases/Wings

Carolyn Derksen
CFB Shilo Fitness Coordinator

Kelly Lupton
RMC Physical Education Manager

Maria Edwards
CFB Borden Fitness Coordinator
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FOREWORD TO EVALUATORS

1. This Operations Manual has been prepared to provide instructions and guidance for conducting the Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE). It is to be used when conducting evaluations of Firefighter Applicants for both CF and DND firefighter positions.

2. The Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE) has been researched and developed for the Canadian Forces Fire Marshall (CFFM), Director General Personnel and Family Support Services (DGPFSS), Directorate of Human Performance and Health Promotion, and the Directorate of Fitness (DFit). The University of Alberta was contracted to develop and scientifically validate physical fitness pre-selection standards for CF/DND Firefighters. Based upon the research findings, DGPFSS DFit developed a comprehensive pre-selection program, consisting of a physical fitness evaluation as well as a comprehensive training program based on the performance related physical fitness requirements for firefighters.

3. The Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE) was designed to ensure that CF/DND firefighter applicants are physically capable of carrying out their duties. The Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE) complies with the Canadian Human Rights Act (1985) and the evaluation portion meets the Bona Fide Occupational Requirements (BFORs) described in Section 15 of that Act.

4. It is essential that the evaluation protocols and instructions provided in this Operations Manual be adhered to, in order to ensure valid and reliable test results. Safety is paramount when administering this evaluation. Therefore, you must ensure that the evaluation is conducted in the safest manner and environment possible.

Wayne Lee, Ph.D.
Acting Director Fitness
Director General Personnel and Family Support Services
Ottawa, Canada
CHAPTER 1

ADMINISTRATION

GENERAL

1. The evaluation protocol has been designed to evaluate physical fitness in firefighter applicants. It is properly described as a “hybrid” evaluation protocol since it consists of two components: a laboratory test for aerobic fitness and a task-simulation tests (6 job-related tests).

2. Each component of the evaluation represents an important aspect of firefighting, and therefore, in order to achieve an overall pass, it is necessary to succeed at each individual component. This also means that failing one component results in an overall failure of the evaluation.

3. There is a specific level of performance that is associated with a “passing score”. Applicants should be encouraged to do their best in all components of the evaluation.

4. It is essential that the evaluation protocols in this Manual be followed, as described, in order to ensure evaluation results are valid and reliable. Your task is to administer the evaluation. The evaluation should take approximately 3 hours per applicant.

5. Fire Chiefs and / or Military Career Counsellors will compare the applicant’s results against the Minimum Standard to determine if he / she is physically prepared for the job of Firefighter. The evaluation can be used as a PASS / FAIL evaluation OR a RANKING SYSTEM. Both are explained in this manual.

PRE-EVALUATION INSTRUCTIONS & RESPONSIBILITIES FOR EVALUATORS

6. The evaluator must be open and sensitive to information about the applicant. Rapport with the applicant is important in order to gather information with respect to his participation in a maximal physical fitness evaluation. This will assist you in making correct “decisions” such as whether the evaluation should be conducted or stopped.

7. In order to create credibility and enhance the potential for cooperation, the PSP Fitness and Sports Instructor should be friendly, positive, physically fit and properly dressed. The required clothing attire for evaluators is PSP uniform with proper logo. The dignity of the applicant must be respected at all times.
8. In order to ensure safety and consistent results, the evaluation procedures have been standardized. Nevertheless, "Clinical Judgement" and "Common Sense" must be exercised throughout all phases of the evaluation, for if one is to err, it must always be on the side of safety and the applicant’s health and well-being.

9. PSP Fitness and Sports Instructors/coordinators are responsible for the completion and accuracy of each report DND 2485. Only DGPRESS personnel who are CEP or CPT qualified, as sanctioned by the Canadian Society for Exercise Physiology (CSEP), and who receive formal training and certification by the PSP TC in the conduct, administration, training and delivery of the Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE) are authorized to evaluate this program.

10. Medical Clearance Form for Civilians (Annex B) should be given to applicants well in advance of the testing appointment. The applicant is responsible for having this form completed by a physician prior to his Fitness Evaluation.

11. A copy of the “Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation (CFFM’S FPFE) Information & Instruction for Applicants” is attached at Annex A. An Applicant Booklet has also been developed to provide information as to how one should prepare for the evaluation.

12. In addition, prior to beginning the evaluation, you should briefly explain the CFFM’S FPFE to the applicant. This should include:

   a. the various components of fitness that the evaluation measures;
   b. a short description of the assessment items (full details to be given prior to each activity);
   c. an outline of the safety aspects (i.e.: health questionnaire, built-in precautions, HR, blood pressure, etc, requirement to stop if unusual pains or difficulties are experienced, not to hold their breath during any portions of the tasks).
   d. evaluators will not discuss scores during the evaluation; the lead evaluator will review the scores before signing the applicant out.

PRE-EVALUATION INSTRUCTIONS & RESPONSIBILITIES FOR PARTICIPANTS

13. In order to ensure valid and accurate evaluation results, Fire Chiefs, Recruiting Centres and/or evaluators will advise applicants at least 48 hours prior to their appointments, that they should not:

   a. undertake vigorous exercise for at least six hours before the evaluation;
   b. consume alcohol at least six hours before the evaluation; and
   c. eat, smoke, or drink tea or coffee for at least two hours before the evaluation.
14. Applicants should be advised of the following clothing requirements: Shorts, two T-shirts, running shoes, extra socks, warm-up clothing, Personal Protective Equipment (PPE) for the evaluation session, including boots. Your T-shirt will be wet from sweat after the treadmill evaluation. You should change into a dry shirt and then put on your warm-up gear to keep warm during the 60-minute rest period. Depending on the evaluation location and time of year, it may be advisable to have sweats to wear during the recovery period.

15. Civilian Applicants will arrive with their medical clearance form properly filled out, photo ID and payment.

REPORTS AND RETURNS

16. The CFFM’S FPFE form, DND 2485, will be the only form used to record individual results. The completed form will be sent to the Recruiting Centre or the hiring Fire Chief who will sign and distribute the copies as indicated. All copies will be treated as Protected B when completed.

17. Distribution of DND 2485 will be as follows:
   Copy 1 - Applicant
   Copy 2 - Fire Chief or Recruiting Centre
   Copy 3 - DGPFSS DFit for research purposes
   Copy 4 - PSP Fitness and Sports Section
   Copy 5 - Base Surgeon (CF members only)

EMERGENCY PROCEDURES

18. When the CFFM’S FPFE is properly administered; there is minimum risk to the applicant.

19. Notwithstanding, an emergency protocol shall be developed in collaboration with the Medical Support Staff. It shall be posted in a visible and accessible location. Emergency phone numbers are to be clearly posted at all telephones and should be written on the back of your evaluation clipboard. The emergency phone numbers are to include the local ambulance or emergency service and hospital and/or closest medical clinic. The name and telephone number of the applicant’s emergency contact/next of kin should be noted on the evaluation form.

20. Additionally, all evaluators shall be trained in cardiopulmonary resuscitation (CPR) and Emergency First Aid. When evaluations are conducted on CF establishments, practice drills of the emergency protocol shall be conducted at least semiannually and when any new evaluators and/or program support staff are employed.

21. Evaluators must also be familiar with maximal exercise evaluations and able
to recognize signs and symptoms of cardiovascular and musculo-skeletal distress. In order to make the evaluation protocol as realistic as possible, applicants must wear firefighting protective clothing that traps heat. Evaluators must also be familiar with signs and symptoms of heat stress.

EQUIPMENT LIST

22. List of equipment is divided into General equipment, Treadmill evaluation and Task specific. List as follows:

a. General Equipment and Supplies
   • Measuring tape (preferably about 45 m (150’)
   • Clipboards
   • Duct tape
   • Stop-watches (3)
   • Traffic pylons (10)
   • Non-slip rubber mats (5 - 6)
   • Table and chairs
   • Mop and bucket

b. Treadmill evaluation
   • Treadmill with a minimum of a 15% incline. Treadmill must be calibrated and be able to reach a true 15% incline.

c. Task Evaluations
   c. Task # 1 Charged Hose Advance
      • Three 15.24 m (50’) length of 38 mm (1½”) Red Chief fire hose
      • Nozzle
      • Hose clamp
      • Water Truck or fire hydrant or Garden hose and adaptor
      • Plumber’s tape

Figure H-1. Set-up for charging fire hose with a garden hose. The water supply is from a hose-bib (or from janitor’s sink) using a garden hose. The adaptor is homemade from parts available at any plumbing supply outlet. Use of plumber’s tape on all connections and hose clamp helps to avoid leaks.
Figure H-2. View of the finish line for the Charged Hose Advance Test. The traffic pylons denote the actual finish line 38.1 m (125’) from start line. The non-slip mat provides a “target” and a safe stopping area for the applicants. Instructions like “the test is over when both feet are on the black mat” are simple and clear. As can be seen from the photo, if both feet are on the black mat, there is no doubt that the applicant has crossed the finish line. Note that the bail of the nozzle has been secured in the off position with duct tape. This is essential to avoid accidental discharge of water.

d. Task #2 Rope Pull
- 30.48 m (100’) length of 100 mm Red Chief hose
- 15.24 m (50’) length of 65 mm Red Chief hose
- Straps and/or cable to secure the bundle
- A selection of plate weights and/or other hose to add or remove weight as required
- 2 lengths (approximately 60’ each) of 16 mm static rope
- Carabineers (2)

Figure H-3. View of the set-up for the hose bundle used in the Rope Pull Test. Note that the 100 mm and 65 mm hose bundles are secured individually, and then are attached together with plastic covered cable. The two lengths of rope are attached to the hose bundle with carabineers.

e. Task #3 Forcible Entry
- 4.0 kg (9 lb) “dead blow” shot mallet.
- Truck tire. The tire should be a new “drive tire” with a large strike surface. A worn tire will absorb too much force when struck by the hammer. A new tire facilitates optimal transfer of force from the hammer to move the tire across the tabletop. A narrow tire reduces the strike surface, and consequently, applicants will tend to miss the target. This induces a safety concern and since most errant swings end up in contact with the table, either the hammer will break down prematurely, or the tabletop will become damaged.
- Table (76 cm tall). The table should be very secure. A purpose-built table with a heavy steel frame is highly recommended, although a picnic table can be used. In any event, the surface must be “good-one-side” 19 mm plywood.
• The total weight of the tire should be 102 kg (225 lbs). The additional weight should be added in the form of flexible weights that will conform to the shape of the tire. As shown in Figure H-4, old hose filled with sand or lead shot can be used.
• An 8' length of 2” x 4” attached to the bottom of the table with "C-clamps" makes a simple barrier to prevent applicants from moving past the front plane of the table. See Figure H-5 below.

**Figure H-4.** View of the truck tire on the smooth tabletop.
Also shown is a weight made of hose, filled with lead shot. Note that both ends are sealed with clamps. It is essential that the contents of the ballast (e.g., lead shot or sand) cannot leak. A sand bag, even when wrapped in plastic and sealed with duct tape will break down and leak.

**Figure H-5.** View of the set-up for the Forcible Entry Test.

f. Task # 4 Victim Rescue
• Rescue Randy mannequin. The total weight of the mannequin in test configuration is 68.2 kg (150 lb).
• Coveralls and firefighting boots add the right amount of weight to the standard mannequin and prevent undue wear and tear.
• A simple harness (or "hasty strap") should be fitted to the mannequin so that applicants can grasp and drag the victim as shown in Figure H-6 below.

**Figure H-6.** View of the set-up for the Victim Rescue Test.
g. Task # 5 Ladder Climb

- Heavy-duty extension ladder 7.3 m (24’). A single fly ladder could be used, bearing in mind that the applicant climbs to the 10th rung, so the actual length of the ladder must extend at least 2 m past the 10th rung.
- The ladder is set up against a secure wall as shown in H-7 below.
- The ladder should be secured to the wall. It is recommended that the base of the ladder be placed on a non-slip rubber mat (Figure H-8).
- The top of the ladder should be tied off.
- As shown in the photo below, a "come-along" strap is used to secure the 10th rung to an "eye-bolt" on the wall. This serves two purposes. First the ladder is more secure, and second, the applicant has a visual target at the 10th rung. This arrangement is also shown in Figure H-9.
- Fall protection is highly recommended. The simple belay system shown below can be replaced by a retractable lanyard system shown in Figure H-10.

**Figure H-7.** Set up for the Ladder Climb Test.

**Figure H-8.** Base of the ladder should be on a non-slip mat. While securing the ladder, this arrangement also provides a specific target for the applicant’s feet. Instructions like "Each repetition begins and ends with "two feet on the black mat" are simple, easily understood and easily remembered.

**Figure H-9.** Anchor strap from the 10th rung to an eyebolt on the wall.
Figure H-10. View of a retractable lanyard attached over the ladder. This simplifies the fall protection set-up by replacing the evaluator responsible for belaying the applicant.

h. Task # 6 Equipment Carry/Vehicle Extrication

- Spreader tool 36 kg (80 lbs)
- Small spreader tool 18 kg (40 lbs)
- 3 “targets” can be flat metal discs (11 cm in diameter) attached to 19 mm plywood

Figure H-11. The two spreader tools are shown above. The use of non-slip mats is highly recommended to mark the points where the applicant lifts and set down the tools.

Figure H-12. General set-up for the Vehicle Extrication simulation.
CHAPTER 2
PRELIMINARY ADMINISTRATION

a. Fitness Evaluator:

1. Before the applicant arrives for the testing appointment, a file folder should be prepared that is labeled with the applicant’s name and/or identification number. All relevant testing forms should be included (e.g., DND 2485, Consent form (Annex C), Treadmill data forms (Annex E)). This file folder will follow the applicant throughout the evaluation. The greeter is responsible for handling the pre-evaluation stage, and will “hand off” the applicant and his file to the treadmill evaluation crew. Applicants will not carry their data forms.

2. Applicant must register with the PSP Fitness and Sports Instructor 15 minutes prior to evaluation time. He/she will change into required clothing and proceed to the registration table, where he/she will be greeted and seated in a comfortable chair with armrests. The Evaluator will briefly review the various components of the CFFM’S FPFE with the applicant. At the end of the pre-evaluation stage, the applicant will be ready to start the treadmill evaluation.

3. The following pre-evaluation steps will be completed:

   • Block A Applicants Particulars of the DND 2485 will be filled out (name, age, height, weight, etc.)
   • Medical Clearance Form for Civilians (Collected)
   • Informed consent (Explained, signatures & Collected)
   • Collect Payment (DND Firefighter)
   • Block B Health Appraisal Questionnaire
   • Block C Evaluator’s observation
   • Block D Heart rate and Blood pressure
   • Issue heart Rate Monitor
   • Issuing turnout gear

BLOCK A - APPLICANTS PARTICULARS (DND 2485)

4. Applicants Particulars. All applicant particulars will be firmly printed in capital letters on the form (DND 2485). If a figure has fewer digits than the spaces allocated on the form, zeros are to be used, beginning at the left side, (i.e. DOB 7 Mar 1960 would be recorded 1960/03/07).

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<th>Block A / Applicants particulars</th>
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<tr>
<td><strong>Family name</strong></td>
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<td><strong>Telephone</strong></td>
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<td><strong>Photo ID</strong></td>
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WARNING

In accordance with National Defence Security Policy, form DND 2485 - Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation is designated “Protected B” information once completed.

Completed “Protected B” forms MUST NOT BE SAVED UNENCrypted on any network and workstation drive or storage media. "Protected B” forms, when completed, MUST BE ENCRYPTED USING THE DND ISSUED PKI SMARTCARD. Failure to respect this requirement will result in a breach of security and sanctions shall be applied in accordance with the policy.

5. **Verify picture identification:** Check the box indicating this has been done.

6. **Collect Medical Clearance form:** Check the form over carefully to ensure that it has been correctly filled out and signed by the physician. Check to see if the physician has provided any comments about medication or limitations to exercise. If limitations are specified, it may be advisable to delay testing until all questions about medical clearance have been addressed. The Medical Clearance Form will be valid for a maximum of three (3) months unless a shorter period is stated. Notwithstanding a favorable Medical Clearance, you will, as normal, have the applicant complete the Health Appraisal Questionnaire and you will check his / her Vital Signs.

7. **Review the Informed Consent document** (Annex C) with the applicant. Emphasize the following points:
   - The purpose of the evaluation
   - Who will see the results
   - Confidential treatment of personal information
   - The right to ask questions
   - The right to withdraw
   - How to withdraw
   - That the applicant may stop at any time
   - That the evaluator may stop the applicant at any time
   - That the consent form is not a waiver

8. Applicant and evaluator must both sign the consent form.

9. **Measure body mass** (to nearest 0.1 kg), and standing height (to nearest 0.5 cm). Height and Weight must be measured with the applicant dressed in normal exercise clothing without shoes (shorts, t-shirt and socks).

10. Place the Medical Clearance form and the Consent form in the applicant’s file.
11. Health Appraisal. The Health Appraisal consists of 9 questions. Applicants are to carefully read and honestly answer the questions of the Health Appraisal Questionnaire. Applicants with only NO responses are cleared for evaluation. Applicants who answer YES to one or more questions shall be referred to the Medical Officer (MO) or to their family physician, using a DND 582-Medical Referral Form (Annex N). The PSP Sports and Fitness Instructor will complete Section C, once he/she has verified the applicant’s resting Vital Signs. Applicants will also be referred when their Vital Signs do not meet the pre-screening criteria of the CFFM’S FPFE. Block D Vital Signs on the DND 2485 form is to be completed prior to the transfer of the file to the medical staff. Applicants referred to the MO or family physician should be told that there is no cause for alarm, but that the Health Appraisal Questionnaire and resting vitals are designed to work as a simple safety precaution. DO NOT ATTEMPT to diagnose or discuss in detail why the applicant had a YES response or vitals above the criteria for pre-screening. The CFFM’S FPFE is physically demanding and may be an inappropriate evaluation for some applicants.

12. Annex O (medication list), along with current CF medical policy, may be used by knowledgeable PSP Sports and Fitness Instructors to answer applicant’s questions with regards to medication. If in doubt carry through with the medical referral.

13. Evaluator’s observations. You will confirm that the applicant has followed the Pre-Test Instructions; Non-compliance with the instructions does not necessarily mean postponement. However, one must be aware that it may have a negative effect on the results.

14. Vital Signs. Resting Heart Rate and Resting Blood Pressure are influenced by many factors. Nervousness and anxiety in anticipation of the evaluation may elevate the applicant’s Heart Rate and Blood Pressure. A few minutes of informal chatting can do much to calm apprehensive applicant. Take the time to answer questions and to explain the evaluation procedures. This will help minimize the applicant’s anxiety.

15. Prior to the PSP Fitness and Sports Instructor administering vital signs, have the applicant seated comfortably (preferably in a chair with arm rests) feet flat on the floor for approximately five minutes. During this time, complete DND 2485 Block A and B.
16. **Measuring Resting Heart Rate (RHR).** The measurement of the resting heart rate is to be done by using a stethoscope. Position the stethoscope in your ears with the earpieces pointing forward. The diaphragm of the stethoscope should be placed either on the sternum or over the second intercostal space on the left hand side. It may be placed over the applicant’s t-shirt. Should it not be possible to utilize a stethoscope, resting heart rate may be measured by palpating the radial artery. For this procedure, the index and middle fingers should be used to gently apply pressure on the inside of the wrist just below the thumb. The resting pulse is determined using a 15-second count and the first beat is counted as ”zero”. The total number of beats in the 15-second count is then multiplied by 4 to give a value in “beats per minute” (bpm).

17. In the event that the RHR exceeds 100 beats/minute, wait an additional five minutes and repeat the procedure. Should the RHR still exceed 100 beats/minute on the second reading, the applicant shall be referred to an MO or family physician utilizing the DND 582. The applicant shall not perform the evaluation or receive an exercise program until appropriate medical clearance is received.

The resting pulse is determined using a 15-second count. Count the first beat as ”zero”. RHR exceeds 100 bpm on the second reading: refer to MO.

18. **Measuring Resting Blood Pressure (RBP).** When conducting resting blood pressure (RBP) a stethoscope and sphygmomanometer shall be used. An appropriate size of blood pressure cuff should be chosen and applied to the applicant’s left arm. Additional procedures are:

   a. The cuff should be wrapped securely around the left arm with the lower margin two or three centimetres above the antecubital space. The arm should be comfortably supported at an angle of 10° to 45° from the trunk with the lower edge of the cuff at heart level;
   b. Locate and note the brachial artery and the antecubital space by palpation;
   c. Position the stethoscope in your ears with the earpiece pointing forward;
   d. Locate radial artery;
   e. Close the valve on the air pump by turning the thumbscrew in a clockwise direction until it is tight;
f. Inflate the cuff quickly until the radial artery pulse can no longer be felt. Continue to inflate the cuff to a level **20 to 30 mm Hg above** the level of the radial pulse (normally not above 180 mm Hg);

g. Quickly position the diaphragm of the stethoscope over the brachial artery. Apply a minimum amount of pressure on the diaphragm of the stethoscope so as not to distort the artery. The diaphragm should be in complete contact with the skin. The stethoscope should not touch the cuff or its tubing;

h. Release the cuff pressure at a rate of approximately **2 mm Hg per second**;

i. The systolic blood pressure is determined by the first perception of sound (Korotkoff sound). Note the exact numerical line on the scale where you hear this beat;

j. The diastolic blood pressure is determined when the sounds cease to be tapping in quality and are fully muffled; and

k. The cuff is then deflated to zero pressure and removed from the applicant’s arm.

19. In the event that the resting systolic blood pressure is **greater than 144 mm Hg** and/or the resting diastolic blood pressure is **greater than 94 mm Hg**, have the applicant rest quietly for five minutes before repeating the measurement. If after two readings, the applicants resting systolic blood pressure and/or resting diastolic blood pressure are still greater, the applicant shall not be permitted to undertake the evaluation. Refer to the MO or family physician utilizing the DND 582.

20. **Automated BP Monitors**. When conducting the CFFM’S FPFE, blood pressure should be measured using a sphygmomanometer and stethoscope. The use of automated BP monitors is a matter for review. Current DGPFSS policy in many cases will align with the Canadian Society for Exercise Physiology (CSEP), which permits the use of automated BP monitors by hearing impaired fitness appraisers only. However, Bases and Wings who wish to utilize the automated blood pressure devices are authorized to do so, provided that the Directorate of Medical Policy approves the device.
21. PSP Fitness and Sports Instructors will record the numerical values for the resting heart rate and blood pressure on the DND 2485 Block D.

22. You have completed the pre-evaluation screening. You will now, considering all factors and directives, make the decision to proceed or postpone the evaluation.

23. If you postpone the evaluation, send the applicant back to the Recruiting Centre or the base fire chief with and appropriate explanation for doing so.

24. **Fit Heart Rate (HR) Monitor:** Provide a HR monitor and help the applicant put it on correctly. Make sure that the monitor is working properly. The chest strap should be quite snug. The heavy clothing and self-contained breathing apparatus (SCBA) pack will frequently cause the strap to move (and disruption transmission) if it is loose.

**ISSUE TURNOUT GEAR**

25. The combination of protective clothing and self-contained breathing apparatus (SCBA) is generally referred to as Personal Protective Ensemble (PPE). At most testing locations, it is expected that applicants will be issued gear from the local fire hall or provide there own. This gear must be consistent with current safety standards and representative of the type of protective gear used by the fire department.

26. The gear must be checked to ensure that it fits properly and that all components are present. For example, the suspenders and waist adjustments on the firefighting pants must be complete and functional. Each applicant must be wearing the following ensemble:

- Flash-hood
- Jacket (including liner)
- Pants (including liner)
- Rubber boots
- Leather work gloves (not firefighting gloves)

27. Helmets and SCBA will be issued to the applicant at the evaluation sites (treadmill and job-related), however this could vary depending on where the evaluation is done.

28. Some applicants will have little or no experience with turnout gear and SCBA; all evaluators must be familiar with PPE to ensure proper fit and correct use. Evaluators must always be able to check “at a glance” to make sure that the gear is worn correctly and is in good operating condition.

29. The applicant will wear shorts and t-shirt under the PPE.
GENERAL INSTRUCTIONS

30. Review the following points briefly with the applicant. The greeter should answer in detail (as required) any questions from the applicant.

- The evaluation protocol will take approximately 3.5 hours to complete. During this time, the applicant must remain in the testing areas, under the supervision of the evaluators.
- The applicant must obey all instructions from evaluators.
- The treadmill evaluation is done first and is followed by a 60 minute recovery period.
- During the recovery period, the applicant should cool-down, rehydrate and rest. A small snack may be eaten if desired. The greeter should check to make sure that the applicant has either brought fluids or is aware of where fluids are available.
- Remind the applicant that the evaluations are extremely strenuous, so “smart” hydration and nutrition procedures are essential to avoid gastric distress. It is better to eat and drink too little than too much.
- “Energy drinks” like Red Bull are more likely to cause problems than aid performance. They should be avoided unless the applicant uses them regularly during very strenuous exercise.
- During the treadmill evaluation, applicants will lose approximately 500 ml of body water in sweat, and therefore, should drink about 500 ml of water or sports drink during the recovery period.
- It is unlikely that more than 500 ml can be absorbed by the gut in one hour, therefore drinking significantly more will probably result in gastric distress during the job-related tests.
- The applicant may take sips of water or sports drink during the practice session for the job-related tests and during the rest periods between the job-related tests.
- Applicants will walk for the majority of the treadmill evaluation.
- During the evaluation, the grade and possibly the speed will be increased at regular intervals until the applicant is too tired to continue. It is possible that the applicant will need to run near the end of the evaluation.
- IN ALL CASES, the applicant must exercise safely. If the testing personnel are concerned about safety, the evaluation will be stopped.
- Running is never allowed during the job-related tests.
- After 60 minutes of recovery, applicants will complete a familiarization session on the job-related tests. This is mandatory and may not, under any circumstances, be skipped.
• The purposes of the familiarization session are to:
  o Review evaluation procedures
  o Allow applicants to practice procedures
  o Allow applicants to ask questions and clarify procedures
  o Provide an activity-specific warm-up before the evaluation begins

• There are six evaluations that consist of job-related tasks.
• Applicants must complete each task correctly and safely within a time period.
• Applicants must complete all evaluations within the specified time limit. Failure on any one evaluation will result in an overall failure.
• Following the completion of the job-related tests, applicants will recover under supervision.
• Applicants may not sign out until normal HR and BP are achieved.
• At the end of the recovery period, applicants are responsible for returning equipment issued (e.g., firefighter clothing, HR monitor)
CHAPTER 3

FITNESS ASSESSMENT

SECTION I - TREADMILL TEST PROCEDURES

1. There are two versions of the treadmill test depending on the availability of a metabolic measurement system for analysis of respiratory gas exchange data. The protocol using a metabolic measurement system is described in Annex K. The treadmill test without the respiratory gas exchange will be used in most evaluation sites and is described below, shown in Figure 3-1.

2. In either case, the criterion for passing the test is based on the completion of a specific amount of exercise. That is, the screening criterion requires that the applicant complete the standardized warm-up (5 minutes duration) and an additional 8 minutes of work at a specified speed and grade. If an applicant completes the first 13 minutes of the protocol, then he/she has passed the test.

3. Applicants may be ranked on total exercise time. Total exercise time is a measure of overall physical work capacity, which is related to VO$_{2peak}$, but is a distinct physiological outcome and should not be used to predict or infer VO$_{2peak}$. Interpretation of the Test Scores can be seen in Annex H, Table K-1 of the Performance Standards.

TREADMILL TEST PROTOCOL OVERVIEW

4. At least two evaluators are required to administer the treadmill test. In the absence of the metabolic cart, the greeter can fulfill this requirement. The treadmill test is a continuous graded exercise test. The normal end-point is reached when the applicant indicates that he/she is unable to continue due to exhaustion. Other reasons to stop the test may include:
   • the applicant may decide to end the test prior to the point of exhaustion
   • the evaluator may end the protocol for safety reasons
   • the evaluator may end the protocol because the subject does not comply with instructions.
5. While the test protocol is continuous, there are four distinct phases as listed below:
   • warm-up (5 min)
   • screening phase (8 min)
   • selection phase (extra minutes on the treadmill after the screening phase)
   • cool-down (5 min)

Figure 3-1. The treadmill test for aerobic fitness of firefighter applicants without measurement of respiratory gas exchange.

6. The applicant is dressed in firefighting gear as shown in Figure 3-4, page 27, except running shoes are substituted for firefighting boots.

CALIBRATION

7. It is essential that the treadmill speed and grade are accurate. Refer to Annex F for instructions on checking treadmill calibration. Cover the treadmill console’s digital display of the time, so the applicant is not misled, the actual time will be marked by the evaluator’s stopwatch.

TREADMILL FAMILIARIZATION

8. The applicant should be instructed on general principles of treadmill safety, correct starting and stopping procedures, communication during the test, and test end-points. See Annex L (Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation Script) for further information. Evaluators should not make assumptions that applicants will know what is expected. Evaluators must be proactive about controlling the test environment, not reactive to what the subject does.

9. Prior to the warm-up, the evaluators should explain the RPE scale (Annex M) and confirm how they will acquire responses during the test. For example, it is often convenient to mount the chart on the back of a clipboard, place it in front of the applicant and allow the applicant to point to the appropriate response. The chart may already be mounted on the wall in front of the treadmill. The evaluator may point to each response in turn and the applicant can signal (e.g., “thumbs up”) when the evaluator points to the correct response.
10. The rating of perceived exertion (RPE) should be recorded at the end of each minute of exercise. While the RPE is not part of the test result per se, the data provides very useful insight into the fatigue state of the subject during and after the test.

11. The degree of fatigue can be evaluated through direct observation and the RPE responses at peak exercise.

COMMUNICATION

12. Evaluators must maintain a regular dialogue with the applicant. The applicant must be informed in advance of every change of speed or grade and must acknowledge their willingness to continue.

13. The applicant can speak to the evaluators, but it is still advisable to also use a simple system of hand signals for communication.

14. The applicant simply gives a “thumbs-up” as a positive response to questions from the evaluator such as, “The grade will be increased in 15 seconds. Can you continue?” When the applicant wishes to stop the test, he/she must tap a designated spot on the safety rail of the treadmill. This should be done as a warning signal approximately 15 seconds before the applicant must stop. The evaluators then have time to confirm that the test will stop in a few seconds and remind the applicant of the active recovery period.

15. Clear communication between applicant and evaluator, and each member of the testing crew is absolutely essential. Each person should know exactly what the other is doing at all times for both the treadmill and the Job-related tasks.

Example:
- **Evaluator A (lead)** - Gives instructions, Time, control's the grade and speed of the treadmill.
- **Evaluator B (Assist)** - Record data (RPE and HR), have the backup time.

16. At the end of the treadmill test, the applicant will move to the recovery area for one hour before beginning the familiarization for the job-related tests. The greeter or one of the treadmill test crew should have the designated responsibility to escort the applicant to the recovery area, and delivering the clipboard with data sheets to the job-related test crew.

MEASUREMENTS

17. During the test, it is essential to keep an accurate record of exercise time and the corresponding workload parameters (speed and grade) for each minute of the test. All clocks should be synchronized.
18. A Polar heart rate monitor (or similar system) should be used to record HR during each minute of exercise.

19. Record HR and RPE near the end of each minute of the test (or as indicated on the data recording sheet). For example, the readings for the 8th minute of the test should be taken at approximately 7:50 (min).

20. Remember that HR does not change immediately when exercise load changes, so it is important to allow as much time as possible so the HR response is representative of the time associated with it.

21. Remember that RPE is a subjective response in relation to the "perception" of effort or exertion. We cannot rely on someone's memory of how they perceived the stress of a previous workload; therefore, it is essential to gather this information during the workload.

WARM-UP

22. Each applicant performs an identical warm-up on the treadmill to prepare for physical exertion. The warm-up consists of 5-minutes of walking at a constant speed of 3.5 mph (93.9 m.min⁻¹) with a progression from 0 - 6% grade (2 minutes at 0%, 1 minute at 2%, 1 minute at 4%, and 1 minute at 6% grade).

23. The test clock starts as soon as applicant is walking freely on the treadmill. The applicant may not hold on at any point during the test. Holding on to the handrail will end the test.

SCREENING PHASE

24. The screening criterion is based on an intensity that is consistent with the aerobic energy requirements during initial attack firefighting. The work-rate on the treadmill typically requires an average rate of oxygen consumption of 34 ml.kg⁻¹.min⁻¹, which is consistent with the average VO₂ reported by research on the aerobic demands of firefighting work.

25. The workload for this stage is 3.5 mph (93.9 m.min⁻¹) and 10% grade. The speed represents a normal or slightly brisk walk for most individuals. The selection of speed and grade was based upon extensive research. This walking pace appears to be universally suitable for a wide range in age, stature, mass and aerobic fitness.

26. An applicant passes the screening portion of the test by completing the required amount of exercise consisting of:
   - The standardized warm-up (5-minutes);
   - Constant work phase (8-minutes); and,
   - The standardized cool-down (5-minutes)
27. Successful completion of the screening portion of the test yields a total exercise time of 13 minutes. While completion of the recovery phase is essential for safety reasons, recovery time is not considered to be part of total test time. If an applicant is unable to complete the screening protocol, that would be grounds for failure on the aerobic test.

SELECTION PHASE

28. Upon completion of the screening stage, applicants, proceed immediately to the next phase of the test. The outcome measure for this phase is total treadmill time. The applicant is taken to the point of maximal exertion through a combination of small increases, first in grade (1% every minute until 15%) and then speed (increased by 0.5 mph or 13.4 m.min⁻¹ each minute) until volitional exhaustion. Applicants can then be ranked on total time completed. Total exercise time is recorded in minutes and seconds (min).

29. For example:
   - If an applicant terminates the test at the end of the screening phase, record 13:00 min.
   - If an applicant terminates the test after 15 minutes and 30 seconds of exercise, record 15:30 min.

30. Normally, the test is ended when the applicant signals that he/she cannot continue. HOWEVER, in order to take the applicant to the point of maximal exertion safely, it is essential that the testing staff maintain constant and clear communication with the applicant. The importance of this acquired skill cannot be overstated.

TEST END POINT

31. The applicant should be instructed to use the handrails for support while the speed and grade are decreased rapidly to the recovery settings (2.0 mph or 53.6 m.min⁻¹ and 0% grade).

32. It is essential to recognize that the test protocol must be completed safely, and hence any unsafe behaviour or signs of excessive fatigue could also be grounds for terminating the test before the required time has been completed.

COOL-DOWN (RECOVERY)

33. Upon completion of the test, applicants are required to perform a standardized cool-down consisting (5-minutes at 2.0 mph or 53.6 m.min⁻¹ and 0% grade). The specific exercise load may be adjusted at the discretion of the testing staff. For example, taller individuals may feel more comfortable at a slightly faster speed.
34. After the exercise test, most applicants will be very warm. As rapidly as possible, the following steps should be completed:
   • Removal of the helmet,
   • Removal of gloves and flash-hood
   • Loosening of the jacket collar
   • Providing the applicant with water and a towel

35. It is unsafe to remove the rest of the gear (e.g., SCBA, jacket) while the applicant is walking, and it is more important to maintain an active recovery. Do not remove any other gear until the cool-down phase is completed. Most applicants should be recovered enough to stop exercise after 5 minutes. If necessary, applicants may remain on the treadmill for longer than 5 minutes.

36. The evaluators should determine in advance who will assume these responsibilities so that the transition from maximal exercise to recovery is completed smoothly, rapidly and efficiently.

37. It should be emphasized that the recovery stage is considered essential for a safe transition from maximal exertion to stopping exercise. Therefore, other than in exceptional circumstances where the safety of the applicant is in question, the 5-minute recovery period is part of the test protocol that must be completed.

38. **Monitor HR during recovery.** Most applicants will be very warm and HR may not drop as quickly as might be normally expected if subjects were dressed in normal exercise clothing. Nevertheless, evaluators should still observe a significant drop in HR during recovery. Other signs and symptoms should be monitored carefully and evaluators should check frequently with the applicant to verify that he/she is feeling OK.

39. **Monitor signs and symptoms during recovery.** Evaluators must maintain their vigilance since problems such as nausea and lightheadedness are more likely to present during recovery than during exercise.

40. At the end of the recovery period, the evaluator must warn the applicant to hold on to the safety rail securely and straddle the treadmill belt. Once the applicant is clear of the belt, it is safe to stop the treadmill.

41. When the treadmill has stopped, advise the applicant of how to dismount the treadmill. Applicants should be instructed to hold on to part of the treadmill until they are safely and securely on the floor.
42. Once the treadmill test is over, the overall test time as well as final HR and RPE values are recorded on Annex E (treadmill Data Form) and fill in Block E of DND 2485. The applicant is allowed exactly 60 min of recovery before starting the familiarization session on the job-related tests. For example, if the treadmill test ends at 10:50 AM, the applicant will begin the familiarization session at 11:50 AM.

43. Before placing the data sheet in the applicant’s file, the evaluator should review the sheet carefully to ensure that all required information has been recorded accurately.

44. The second evaluator must verify that all data are correctly recorded. That is, nothing has been forgotten and that the test data are accurate. Remember that often, someone else will be transferring the data into a report. Therefore, it is essential that all results be checked for accuracy and completeness at this stage.

45. Finally, both evaluators should record any comments about the test. This is an important step whether the test was completely normal or if there were any abnormalities. A comment should always be entered on the Treadmill data form, (Annex E) to document the end-point of the test.

<table>
<thead>
<tr>
<th>Block E / Cardiorespiratory fitness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test start time:</td>
</tr>
<tr>
<td>Test end time:</td>
</tr>
<tr>
<td>Total weight with equipment Kg</td>
</tr>
<tr>
<td>Total exercise time (not including cool-down) min.</td>
</tr>
<tr>
<td>Minimum score:</td>
</tr>
<tr>
<td>Evaluator's signature:</td>
</tr>
<tr>
<td>13 min HR max (bpm)</td>
</tr>
</tbody>
</table>

46. Fill in required information in Block E, sign this section, and add it in the applicant's file. Hand the file to the next evaluator.
SECTION II - JOB-RELATED TEST PROCEDURES

JOB-RELATED TEST PROTOCOL OVERVIEW

TEST EQUIPMENT & CALIBRATION

47. It is essential that all equipment is compliant with the specifications as indicated in the Equipment list in Chapter 1 of this manual. Minor variations may be accommodated through adjustments consistent with information provided in Annex G (Job-Related Task Calibration).

TESTING AREA SPECIFICATIONS

48. The job-related tests are completed on a smooth concrete floor. The amount of work required for the charged hose advance, the rope pull and the victim rescue is related to the friction of the surface. Minor variations may be accommodated through adjustments consistent with information provided in Annex G (Job-Related Task Calibration).

49. There must be an unobstructed distance of approximately 140’ (42 m) in order to accommodate the charged hose advance. There must be a suitable wall to set up the ladder, with provision for appropriate anchoring of the ladder. There must be a water supply suitable for charging the fire hose. See Equipment list in Chapter I of this manual.

50. It is strongly recommended that the testing area be blocked off from any traffic or interference that might interfere with safe and effective administration of the tests.

PERSONAL PROTECTIVE ENSEMBLE (PPE)

51. The pictures below show the applicant dressed in the PPE utilized during the test.

Figure 3-4. Front (A) and side (B) views of an applicant dressed in the correct attire for the job-related tests. The applicant is wearing correctly fitting fire protective clothing including jacket, pants, rubber boots, flash-hood, helmet, and leatherwork gloves. The applicant is carrying the self-contained breathing apparatus (in this case, a SCOTT 4.5 harness with empty “one-hour” cylinder). Note that the jacket collar is fully done up and the helmet visor is in the down position.
NOTES:
The ensemble shown in Figure 4 is worn for all the tests, including the treadmill test.

One notable exception is made for the treadmill test; running shoes are substituted for firefighting boots.

Figure 3-4 illustrates the correct starting position for the job-related tests. The applicant should be in this position to start each test.

GENERAL INSTRUCTIONS

52. At the beginning of the familiarization session, the general rules and procedures should be reviewed. Evaluators should include the following points:

- There are six job-related tests.
- There is a 3-minute recovery period between each test.
- During the recovery periods, applicants should walk and stretch if desired. They **may not** sit or lie down except in exceptional circumstances.
- During the recovery period, it is permissible to raise the visor and remove the gloves.
- At the end of the recovery period, the applicant must be in position for the next test with gloves on and visor down. During the familiarization period, evaluators should inform applicants that a 30 second “warning” will be issued prior to the start of the next task. At this time, applicants should be in the immediate area of the next test, and should begin to don gloves, and lower the visor.
- The evaluator should give ample feedback on time remaining during the recovery period. The evaluators are responsible for ensuring that the applicant is dressed and in position to start the next test **before** the end of the recovery period.
- The next test must start **within 5 seconds** of the end of the recovery period.
- Applicants may drink water or sports drinks (no other drinks or any food is permitted). Applicants should be strongly advised to SIP water to avoid gastric distress.
- All equipment needed for the test should be brought into the testing area prior to the start of the test (water bottles, towels, etc.). Evaluators will fill water bottles if necessary. “Outside help” such as assistance from friends, other applicants or family is not permitted for safety reasons and to limit distractions.
- Each test is timed and should be completed as quickly as possible, however safety is of primary importance.
• If an applicant is not following evaluation protocols and safety guidelines, the applicant will receive a “disqualification” status.
• Applicants are not allowed to run at any time.
• Each test begins with the applicant standing tall and looking straight ahead. **Refer to Figure 3-4 for an illustration of the starting position.**
• The “test clock” starts as soon as the applicant moves to begin the task. The time stops when the applicant has completed the task and reached a designated end-point.
• The applicant should wear a Polar HR monitor during the job-related tests. It is recommended that the HR receiver (the “watch”) be attached to the SCBA harness so that the evaluators can check HR from time to time during the recovery periods.
• Evaluators should expect to see very high HR values during the testing period, due in part to the physical exertion and due in part to the heat stress that may occur. Evaluators should routinely monitor HR immediately after each job-related test and again just prior to starting the next test. HR may not decline as rapidly as expected because of thermal stress, however some reduction is expected. Evaluators must become familiar with this and in the absence of “normal” HR recovery take steps to investigate.
• Post-test and recovery HR should be noted on the data recording form.
• Rarely, an applicant will slip or stumble during the job-related tests. If it is clearly a minor incident with no safety implications, the applicant should be encouraged to keep going.
• HOWEVER, if there are any concerns about safety, the test procedure should be stopped immediately. If after investigation, the applicant is able to continue, the test equipment should be reset, and the test restarted. A 3-minute recovery period should elapse between the time of the incident leading to the interruption of the test and the restart of the next trial.
• NORMALLY, these incidents can be attributed to a lack of control by the applicant. Before restarting the test, the evaluator must make certain that the applicant understands that further incidents will lead to disqualification.
• At all times, the applicant is required to pay close attention to instructions from the evaluators.
• The applicant may not leave the testing area without permission.

**FAMILIARIZATION/PRACTICE**

53. The applicant should be allowed up to about five minutes at each station. During this time, the specific rules and procedures for each test will be reviewed and there will be opportunities to practice the task.

54. Five minutes is generally more time than is required at each station. Evaluators should not time the familiarization too strictly, but rather, should be mindful that the whole process should be completed in approximately 30 minutes.
55. It would be exceptional for the familiarization period to extend beyond 30 minutes. On the other hand, it would be inappropriate to start the actual tests if the familiarization step had not been properly completed.

56. Evaluators should invest some effort in developing an effective plan to provide good information without spending an inordinate amount of time “explaining” every contingency. A good rule of thumb is to provide the basic information, let the applicant attempt the task, make any necessary corrections, repeat the practice if necessary, and then provide the applicant the opportunity to ask questions before moving on. See Annex L, Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation Script.

57. The practice session must be completed. There are no exceptions.

58. During the practice session, the evaluator should confirm that the applicant is fully aware of all procedures. Use phrases such as, “Do you understand?” and “Do you have any questions?” Make sure that the applicant responds clearly to the questions.

59. Applicants must wear firefighting boots, pants and work gloves during the practice session. A t-shirt (with sleeves) and shorts must be worn under the firefighting jacket and pants. Sleeveless t-shirts are not allowed.

60. The applicant should wear the jacket while practicing the changed hose advance. The hose will tend to “pinch” where it passes over the shoulder (on the trapezius muscle) and this can be quite uncomfortable.

61. Specific guidelines for familiarization are given under the headings for each of the job-related tests.

TROUBLE-SHOOTING

62. From time to time, evaluators will encounter applicants who do not follow the instructions. It is essential that applicants respect the procedures, the rules and the equipment. The following points should be helpful in resolving problems:

   • Evaluators should expect that highly motivated applicants will, for a variety of reasons, “break the rules”. For example, an applicant may try to run with the charged hose. One of the main purposes for the familiarization step is to identify potential problems with individual applicants and “nip them in the bud”.
   • Evaluators should practice on each other to develop optimal strategies for identifying problems and dealing with them expediently. Evaluators should bear in mind that all infractions are not deliberate, and should give the applicant the benefit of the doubt in the first instance. Repeated infractions lead to more serious penalties.
• For example, Applicant "A” picks up the hose, starts towards the finish line in a gait that has a distinct flight phase (i.e., "A” is running). Evaluator "B” shouts immediately, "Slow down, you are running!” If “A” reacts and slows down immediately, the problem is likely dealt with. If "A” doesn’t respond immediately, “B” should shout, “STOP”. The problem should be discussed, the hose reset and “A” given another chance to do it correctly. In this case, doing the task correctly involves slowing down and keeping the pace under control.

• The same procedure should be followed in the actual test. An effective policy is as follows:
  o The applicant may continue if the “problem” is corrected IMMEDIATELY after a warning. If a second warning is required, the test is stopped.
  o The applicant is given another chance at the test. While one evaluator resets the equipment, the other must address the problem directly with the applicant.
  o The second chance must commence as soon as possible after the equipment is reset. No additional rest is allowed.
  o The applicant must be aware that a further infraction will result in disqualification, which means failure on that test. A failure on any single test leads to an overall failure.

• Some applicants may be very tentative and this should also be corrected during the familiarization period. In this case, the evaluator must encourage the tentative applicant to work harder.

• For example, Applicant “A” picks up the hose, starts towards the finish line in a gait that is too slow to gain momentum. Evaluator “B” shouts immediately, “Pick it up...go harder!” If “A” reacts and increases the pace immediately, the problem is likely dealt with. If “A” doesn’t respond immediately, “B” should shout, “STOP”. The problem should be discussed, the hose reset and “A” given another chance to do it correctly. In this case, doing the task correctly involves gaining momentum to counter the increasing resistance of the hose.

• Some applicants may try to “short-circuit” the familiarization in an attempt to “save their energy for the real test”. It is essential that each applicant show a good effort during the familiarization period. **The familiarization period is compulsory, and non-compliance may lead to disqualification.**

• In any case where the applicant is not responsive to the instructions of the evaluator, the evaluator should immediately advise the supervisor, who in turn, should take appropriate action.

• In rare cases, an applicant will be unable to complete the familiarization. In such cases, the testing supervisor should take charge of the situation. In each case, the warm-up activity represents less than the actual test. If a physical limitation is identified during the familiarization, there is little point in continuing and the applicant should withdraw.
INDIVIDUAL TEST PROTOCOLS

63. The following section includes a description of each test that is illustrated with one or more photographs. Following the test description are specific notes on test administration and guidelines for what procedures should be completed during familiarization.

64. **Task # 1 Charged Hose Advance** - starting from an erect position facing forward, the applicant bends and picks up a nozzle connected to three 15.24 m (50’) lengths of charged 38 mm hose (Red Chief) that are flaked behind the start line.

65. With the nozzle and hose held securely over the preferred shoulder, the applicant advances the hose from the start line to the finish line. The hose is advanced a distance of 38.1 m (125’). This distance may be altered depending on the type of hose available (e.g., 44 mm) and the friction of the floor surface Annex G (Job-Related Task Calibration).

66. The applicant is encouraged to move as quickly as possible without running.

67. The test must be completed safely in less than 31 seconds.

![Figure 3-5. View of the Charged Hose Advance Test. The applicant has just picked up the hose and has taken the first step towards the finish line.](image)

68. **For the familiarization session:**

   - Review all instructions
   - Start the test in the normal manner
   - Stop the test after the applicant has advanced the hose approximately 2/3 of the test distance
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions
69. **Specific Instructions**
- Assume correct starting position, standing tall and facing forward.
- The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
- The test clock begins as soon as the applicant moves to pick up the hose.
- Carry the hose over the shoulder (as shown) and firmly secure it with **two hands** at all times.
- Carry the nozzle near waist level (Figure 5). If less hose than this is over the shoulder the applicant will struggle near the end of the test since the weight of the hose will pull the applicant backwards. This can result in a loss of balance or even a fall for smaller or less aggressive applicants.
- The applicant is instructed to move quickly (a very brisk walk) towards the finish line. By definition, running includes a "flight phase" where both feet are off the ground. In walking one foot is **always** in contact with the ground.
- After approximately 15.24 m (50’), the resistance is such that it is essential to "dig in" and "go hard" (smaller applicants must be encouraged to gain momentum at this point, or they will most likely "stall" with the weight of the hose before the finish line).
- Encourage the applicant to drive straight ahead. There is a tendency for the weight of the hose to "twist" the body off course.
- Optimal performance is achieved when the applicant "gets low" and drives forward hard to maintain momentum.
- The applicant must cross the finish line with both feet, going straight ahead. Twisting, turning, or backing across the finish line is not permitted.
- Record the elapsed time, Heart rate and start the 3-minute recovery period.

70. **Task # 2 Rope Pull** - starting from an erect position facing forward, straddling the rope on the floor, the applicant bends and picks up a length of static 16 mm (5/8”) nylon rope attached to a bundle of hose (typically, one 30.48 m (100’) length of 100 mm hose and one 15.24 m (50’) length of 65 mm; Red Chief, total weight is 56 kg (123 lb)). The test time begins when the applicant reaches for the rope.

71. Keeping the feet securely in place, the applicant uses the rope to pull the bundle over the floor a distance of 15.24 m (50’). The applicant then walks 15.24 m (50’) and repeats the pull, walks back 15.24 m (50’) and repeats the pull for the third and final time.

72. A second evaluator is required for this test. One evaluator should be at each end of the course to ensure that the hose bundle fully crosses the line and that test procedures are followed. Once the hose bundle is pulled the required distance, it should be reset to the starting position, and the rope should be pulled tight. No slack or knots should be present in the rope during the test.
73. The force required to move the hose bundle must be approximately 200 N, and depending on the friction of the floor surface, the weight of the hose bundle can be adjusted (see Annex G).

74. The test must be completed safely in less than 103 seconds.

75. **For the familiarization session:**
   - Review all instructions
   - Start the test in the normal manner
   - Stop the test after the applicant has pulled the hose bundle twice and walked once
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions

76. **Specific Instructions**
   - Assume correct starting position, standing tall and facing forward.
   - The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
   - The test clock begins as soon as the applicant moves to pick up the rope.
   - The applicant’s feet should remain in one spot and must not move excessively. Applicants may not hold the rope and move backwards to move the hose bundle.
• The applicant’s feet should remain firmly planted until the hose bundle is pulled the required distance. Applicants are not allowed to shift position for the last few pulls of the rope (gain speed advantage).
• Once the evaluator signals that the hose bundle has completely crossed the line, the applicant is instructed to move quickly (a brisk walk) towards the opposite end of the course, a distance of 15.24m (50’).
• Do not allow the applicant to proceed until the hose bundle is fully across the line. If the applicant does not fulfill this requirement, call them back to properly finish. This aspect of the test protocol should be explained to the applicant during the familiarization period.
• At the other end, the applicant should take up a position approximately 4’ behind the line, bend and pick up the rope and pull the bundle back.
• The total time to pull the hose bundle 3 times and walk twice should be recorded as well as record the heart rate.
• Record the elapsed time, heart rate and start the 3-minute recovery period.

77. **Task # 3 Forcible entry** - starting from an erect position, the applicant picks up the 4.0 kg (9 lb) plastic “dead-blow” sledge hammer (Stanley Tools) and uses it to move rubber tire (total weight 102 kg or 225 lb) a distance of 30.5 cm (12”) across a 76 cm high table.

78. The test clock starts as soon as the applicant reaches for the hammer (standing on the floor at the center of the tire), and stops as soon as the tire crosses the 30.5 cm (12”) line.

79. The table is made of steel and is placed against a wall for stability. The tabletop is “good one-side”, 19-mm plywood.

80. The test must be completed safely in less than 45 seconds.

**Figure 3-7.** View of the Forcible Entry Test. Note the “foot-stop” at the base of the table to prevent applicants from moving past the front plane of the table.
81. **For the familiarization session:**
   - Review all instructions
   - Start the test in the normal manner
   - Stop the test after the applicant has moved the tire approximately half (½) the required distance
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions

82. **Specific Instructions**
   - Assume correct starting position, standing tall and facing forward.
   - The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
   - The “leading edge” of the tire is aligned with the edge of the table, and that same part of the tire must completely cross the line before the test is finished.
   - The test clock begins as soon as the applicant moves to pick up the hammer.
   - The hammer should be placed in a neutral position (on the ground, in the middle of the table) in front of the tire. Applicants are not permitted to place the hammer in a favorable position.
   - The applicant’s feet must not move past the front edge of the table. To avoid this, the table must have a “foot-stop” at the base of the table to prevent applicants from moving past the front plane of the table.
   - The hammer must be used safely with two hands in contact with the shaft at all times.
   - The applicant should be encouraged to hit the tire “hard and fast” to move it across the line.
   - Identify different swing techniques. Grip on hammer (wide grip usually allows for more effective force transfer). “Baseball” swing technique is often inaccurate (much higher chance of hitting table), and tends to be less effective for smaller individuals. The “batting ram” technique is NOT allowed.
   - The applicant should continue hitting the tire until the evaluator indicates (in a very loud voice) to “stop”.
   - Once the evaluator signals that the tire has crossed the line, the applicant may put the hammer down on the floor.
   - Record the elapsed time, heart rate and start the 3-minute recovery period.

83. **Task # 4 Victim rescue** - starting from an erect position, the applicant lifts and drags a 68.2 kg (150 lb) mannequin (Rescue Randy 1434) while walking backwards a total distance of 30.48 m (100’) (15.24 m (50’) one way, around a pylon and then back 15.24 m (50’)).

84. The test must be completed safely in less than 49 seconds.
Figure 3-8. View of the Victim Rescue Test. The applicant has the choice of lifting the rescue mannequin with the arms around the mannequin’s torso or gripping a harness (as shown) while walking backwards. In this photograph, the applicant is approaching the pylons where the change of direction occurs. The first pylon is a “warning cone” and the second pylon is the “turning cone” (separated by a distance of 2 m). The applicant must drag the victim around the second pylon without touching it.

85. For the familiarization session:
   - Review all instructions
   - Start the test in the normal manner
   - The applicant should move the dummy approximately half the required distance (in practice, the evaluator can act as the turning marker)
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions

86. Note: The dummy may be lifted or alternately, may be dragged with the harness. Applicants must be made aware of both techniques and offered the chance to practice.

87. It is essential that the applicant make his/her own choices on technique. For example, most individuals will choose to drag the dummy with the harness. That should not be interpreted as “most people do better using this technique”. Evaluators must be extremely careful not to direct the applicant towards a particular technique.

88. Specific Instructions
   - Assume correct starting position, standing tall and facing forward.
   - The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
• The applicant’s feet are behind the start line facing the dummy. The head of the dummy is approximately 0.5 m behind the start/finish line.
• The test clock begins as soon as the applicant moves to cross the start/finish line.
• The applicant has the choice of lifting the rescue mannequin with the arms around the mannequin’s torso or gripping a harness (as shown) while walking backwards, applicant should be encouraged to attempt both methods in practice.
• If the dummy is dropped at any time during the test, the applicant must pick up the mannequin and continue.
• The applicant should be encouraged to walk backwards quickly, but must remain under control.
• Evaluators should guide applicants through the test so the cones are not touched. Verbal and visual instructions should be given. All instructions should be explained during the familiarization period.
• The applicant must turn safely at the halfway marker (second cone, as shown in Figure 3.8). The applicant must not touch any of the cones with either his/her own body or the dummy.
• Touching a cone results in a re-test. The dummy will be brought back to the starting line by the evaluator, and the applicant must begin the second test immediately. If a cone is touched a second time, the applicant is disqualified and fails this test.
• A “warning cone” is placed in front of the turning marker to inform applicants that they are approaching the halfway marker (first cone, as shown in Figure 3.8). Evaluators should remind applicants of this. Applicants can be advised to do a visual check while passing the “warning cone” for spatial awareness.
• Once past the warning cone, applicants should be advised to take a wide turn to avoid touching the “turning” cone. Evaluators should provide verbal and visual instructions at this time.
• It is important to remind the applicant that the dummy represents a “casualty”, and must be treated with respect.
• The test is over when the applicant moves the entire dummy over the finish line (when dummy’s feet completely cross the starting line).
• Once the evaluator signals that the dummy has crossed the line, the applicant may put the dummy down on the floor. The dummy must not be dropped!
• Record the elapsed time, heart rate and start the 3-minute recovery period.

89. **Task # 5 Ladder Climb** - starting from an erect position facing the ladder, the applicant climbs 10 rungs (3.45 m) up and down a 7.2 m (24’) ladder. This is repeated 5 times as quickly as possible.

90. A repetition begins with both feet on the floor at the base of the ladder. The applicant climbs and places two feet on the 10th rung, reverses direction and climbs down until both feet are again on the floor.

91. The test must be completed safely in less than 109 seconds.
Figure 3-9. View of the Ladder Climb Test. The applicant must maintain three-point contact (two feet and one hand, or one foot and two hands) at all times on the ladder.

92. Fall protection is provided by using a safety rope run through belay points overhead and near the floor. The applicant is "on belay" throughout the test. Alternately, a retractable lanyard can be used for fall protection (Figure H-10 of the equipment list).

93. For the familiarization session:
   - Review all instructions
   - Start the test in the normal manner
   - The applicant should complete two repetitions on the ladder
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions

94. Specific Instructions
   - Assume correct starting position, standing tall and facing the ladder.
   - The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
   - The test clock begins as soon as the applicant moves to start climbing the ladder.
   - The applicant must maintain three-point contact (two feet and one hand, or one foot and two hands) at all times on the ladder.
• A flight phase (both feet off the ladder at once, or a jump from one rung to the next) should be treated the same as running. The first time results in a warning, and the applicant must return to where he/she was prior to the offence and then continue the test. Continued non-compliance will result in failure or disqualification.
• The evaluator will call out each step in this fashion, "one-two-three-four-five-six-seven-eight-nine-ten-UP (second foot on the 10th rung)” followed by, “ten-nine-eight-seven-six-five-four-three-two-one-DOWN (second foot on the floor”).
• The second step at the top (10th rung) and bottom (floor) must be weight bearing. If the applicant fails to complete this requirement, instruct them to return to the top or bottom, and properly complete the step.
• The applicant should be encouraged to pace him/herself for the first two repetitions and then increase the pace if possible. This is a very challenging task for most people.
• The applicant must remain under control at all times. If the applicant misses a rung or slips, he/she must stop, go back to the point of error and start again.
• The test is over when both feet are solidly on the floor after the 5th repetition has been completed.
• Record the elapsed time, heart rate and start the 3-minute recovery period.

95. **Task # 6 Equipment Carry/Vehicle Extrication** - starting from an erect position facing the tools, the applicant lifts a 18 kg (40 lb) spreader tool, carries it 15.24 m (50’), sets it down, and then returns to the start to repeat the process with a 36 kg (80 lb) spreader tool.

96. The applicant then picks up the smaller tool, carries it 7.62 m (25’) and sets it down in front of a vehicle door mock-up.

![Figure 3-10. View of the large (left) and small (right) spreader tools used in the Equipment Carry/Vehicle Extrication Test.](image_url)

97. The tool must be held in a level position at right angles to the door mock-up with the "jaws" in firm contact with each of three flat metal discs that are similarly oriented to the three "pins" that must be broken to remove a car door.
98. The tool is held in the correct position for 30 s on each disc. (Figure 3.12)

99. The tool is set down between each hold and the applicant must stand erect before lifting the tool and moving on to the next point of contact.

100. After this sequence is completed, the applicant returns both tools to the starting point. First by Carrying the 18 kg (40 lb) tool back 7.62 m (25’), then continue the 15.24 m (50’) all the way back to the black mat it started on, return and retrieve the large spreader tool 36 kg (80 lb) carry it back to the starting point.

101. This test is scored on a pass-fail basis. In order to pass the test, the applicant must complete all aspects of the simulation safely and with correct form in less than 270 seconds.

**Figure 3-11.** Panel A shows the correct technique for carrying the spreader tools. Panel B shows correct technique for lifting and lowering the spreader tools during the Equipment Carry/Vehicle Extrication Test.

**Figure 3-12.** View of the Vehicle Extrication Test.
102. **Note** the orientation of the jaws of the spreader tool to the flat metal disk on the car-door mock-up. The spreader tool must be held in the correct orientation for 30 s at each of the three flat metal discs. The applicant must lift the tool from the floor and place the tool down on the floor before and after each “hold”.

103. **For the familiarization session:**

   - Review all instructions
   - Start the test in the normal manner
   - The applicant should lift and carry the small tool from the starting point to the door mockup.
   - The applicant should practice the sequence for correct procedures, holding the spreader tool for 10 sec. on each target
   - The applicant should practice lifting the large tool
   - This should be adequate for task-specific warm-up and familiarization with the difficulty of task completion
   - Correct any errors immediately
   - Repeat the practice if necessary
   - Ensure that the applicant understands the procedures
   - Allow the applicant an opportunity to ask questions

104. **Specific Instructions**

   - Assume correct starting position, standing tall and facing forward and facing the tools.
   - The evaluator indicates when the test is meant to begin and shortly thereafter, (up to 5 seconds delay is permitted) the applicant must start.
   - The test clock begins as soon as the applicant moves to pick up the small tool
   - The applicant must lift and carry the tools safely at all times. Most applicants are very tired at this point, and must be reminded about safe lifting and lowering technique. This is a point that should be emphasized during the practice.
   - The evaluator will instruct the applicant at each stage of the test. The applicant must listen carefully to the instructions, but is not expected to memorize the procedures.
   - The applicant should be encouraged to keep a steady pace. If the applicant moves through the sequence without stopping or making mistakes, there should be ample time to complete the test.
   - If the applicant is struggling, encourage them to “pick up the pace”, and match the evaluator’s speed, so they successfully complete the test.
   - Evaluators should inform applicants of their progression through the 30-second holds. For example, provide feedback at 10 and 20 seconds, and a countdown for the last few seconds of each 30-second hold.
   - During the “holds” the applicant should be reminded to “focus” on holding the tool in contact with the target.
   - The applicant should be encouraged to switch sides when moving from one target to the next. This provides some relief to tired muscles.
- The tool must never come into contact with the applicant’s body during the "holds".
- The applicant may not rest the tool or his/her arms on any part of the body.
- The applicant may not lean into the car-door mock-up for support at any time.
- Evaluators should monitor the applicant’s body position and the position of the tool throughout each hold. Verbal instructions can be given to applicants as cues for proper positioning. If the applicant cannot maintain the proper body positioning continually, tell him/her to set the tool down and re-start the 30-second hold.
- The test is over when both feet cross the finish after returning the large tool to the starting location.
- Advise the applicant to take a breath, and then put the tool down.
- Record the elapsed time and heart rate.
- The testing session is now complete. Most applicants will be very tired and hot. Have the applicant stand still while the evaluators help remove the PPE. Start with the helmet and flash-hood, then the SCBA, gloves and jacket.
- Move the applicant to a designated recovery area.

SECTION III - RECOVERY & COMPLETION OF DND 2485

105. The testing staff must bear in mind that the applicant has just completed approximately three hours of intermittent high-intensity activity and will be very hot and fatigued. It is essential to monitor the applicant during approximately 20 minutes of recovery.

106. Most applicants will need to cool down and re-hydrate. Applicants should be moved to a comfortable area where they can relax under supervision as required.

107. Ensure that the applicant is not experiencing dizziness, nausea, muscle cramping etc. If so, do not leave them unattended. Once in the recovery area, encourage them to begin re-hydrating with water or a diluted sports drink such as Gatorade. Instruct them to take small sips of fluid. A light snack can be ingested if desired.

108. Encourage the applicants to continue walking slowly, after the test. Do not allow them to sit or lie down immediately following the test. Walking and light stretching will help facilitate recovery.

109. Normally, an applicant can be released after approximately 30 minutes of recovery.

BLOCK F - JOB RELATED TASK (DND 2485)

110. Evaluator must ensure that all sections of Block F, Job Related Task have been properly filled out. Comments must be added in each section indicated. Comments should reflect how the applicant is doing each task.
111. Time must be indicated in seconds, Heart Rate in BPM.

<table>
<thead>
<tr>
<th>Block F / Job Related Task</th>
</tr>
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<tbody>
<tr>
<td>Job related task - Practice session (30 min)</td>
</tr>
<tr>
<td>1. Hose drag comments:</td>
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<tr>
<td>3. Forcible entry comments:</td>
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<tr>
<td>5. Ladder climb comments:</td>
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</table>

Practice supervised by:

<table>
<thead>
<tr>
<th>Block G - POST TEST RECOVERY (DND 2485)</th>
</tr>
</thead>
<tbody>
<tr>
<td>112. Upon completion of the entire test, and after 20-30 minutes of recovery, measure the applicant’s resting heart rate, (using a 15 second x 4 count) and blood pressure. Enter in Block G.</td>
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</table>

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<tr>
<th>Block G - POST TEST RECOVERY (DND 2485)</th>
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<tbody>
<tr>
<td>113. The applicant’s blood pressure must be &lt;144/94 mm Hg and heart rate must be &lt;100 bpm. Before they can leave the evaluation area.</td>
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</tbody>
</table>

NOTE: Do not forget to collect heart rate monitors and bunker gear.
114. Check the boxes in this section indicating if the applicant has successfully met the standard for each component of the evaluation. Applicant must successfully pass all components of the evaluation to be successful. See Annex H, Canadian Forces Fire Marshal's Firefighter Pre-Entry Fitness Evaluation - Performance Standards for more information on selection.

115. In the description of each of the job-related tests, the minimum acceptable performance time is given. If the applicant is able to complete the task correctly and safely within the time limit, then he/she has passed the test. This is consistent with the concept of screening as discussed earlier.

116. Failure to meet 1 or more minimum acceptable performance time will result in an overall failure of this evaluation. Failure may also result from disqualification in the case where an applicant is not compliant with the rules, does not follow instructions or is judged to be unsafe.

117. For the purposes of selection, applicants may be rewarded for completing the task faster than the minimum acceptable time. This is not reflected on the DND 2485. The Fire Chief may like to rank his candidates, from highest score to lowest score. If this is requested, use Annex H, Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation - Performance Standards to calculate the points allocated to the applicant’s score of each task.

Example: result of the Victim Drag = 24.4 sec.
The applicant would receive 4 points for this task.

<table>
<thead>
<tr>
<th>Victim Drag</th>
<th>Time (s)</th>
<th>Points</th>
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<tr>
<td></td>
<td>&lt;23.0</td>
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<td></td>
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<td></td>
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<td></td>
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<td></td>
<td>Standard &gt;49.0</td>
<td>0</td>
</tr>
</tbody>
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BLOCK I - SIGNATURES (DND 2485)

Complete Block I and return the completed form along with the Consent for Test Form, and Medical Clearance to the Fire Chief of the respective base or the Recruiting Centre in charge.

At the completion of the evaluation protocol, the greeter should check all sections of the data forms to make sure that nothing has been overlooked and that all information is legible and has been verified.
ANNEXES

ANNEX A - CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION INFORMATION & INSTRUCTION FOR APPLICANTS

WHAT DO I NEED TO BRING?

MEDICAL CLEARANCE
You must bring your completed Medical Clearance form seen in ANNEX B. Your physician must complete this document. It provides medical clearance for you to undertake the specific evaluations in this program. You will not be permitted to do any component of the evaluation without a Medical Clearance document that has been signed by your physician.

You will later be asked to certify that you have discussed any doubts or concerns about taking the evaluation with your physician. You must take the opportunity to discuss any such concerns or doubts when you see your physician.

PRE-SCREENING:
On the day of your evaluation, you will complete a health appraisal questionnaire and a pre-evaluation vital signs check consisting of resting blood pressure and resting heart rate measurements taken by your evaluator.

INFORMED CONSENT: (ANNEX C)
You will be required to read and sign an informed consent form prior to performing the battery of tests.

DRESS REQUIREMENT:
Bring the following items of clothing with you: shorts, two T-shirts, running shoes, extra socks, warm-up clothing, PPE for the evaluation session, including boots. Your T-shirt will be wet from sweat after the treadmill evaluation. You should change into a dry shirt and then put on your warm-up gear to keep warm during the 60-minute rest period.

PRE-EVALUATION INSTRUCTIONS:
To ensure accurate fitness evaluation, please adhere to the following instructions:

- **Physical Exercise:**
  - No strenuous physical activity **minimum six hours (6hrs)** before the evaluation.
- **Food and Beverages:**
  - Do not eat for at least **two hours (2hrs)** before your evaluation.
  - Refrain from consuming alcohol for at least six hours (6hrs) before your evaluation.
  - Refrain from drinking caffeine beverages for at least two hours (2hrs) before your evaluation (tea, pop, coffee, etc.).
  - Refrain from smoking for at least **two hours (2hrs)** before your evaluation.
If your appointment is first thing in the morning, do not skip breakfast. You should eat a light meal (e.g., fruit, toast or cereal, and juice) about three hours before your evaluation.

You should bring a water bottle or sports drink (e.g., Gatorade). You may want to eat a small snack (e.g., banana or Power Bar) during the rest period between the treadmill evaluation and the job-related tasks. Do not try anything (Gatorade, Power Bar, etc.) for the first time during your fitness evaluation appointment. You should know how your body reacts to your nutritional plan well in advance of your appointment.

Be careful to practice in advance so that you know how much to eat and drink during 3+ hours of intermittent, extremely strenuous exercise. If you eat or drink too much you will feel sick and do poorly. If you eat and drink too little, you will get dehydrated and do poorly.

Optimal nutrition and hydration strategies tend to be very individual. Work this out for yourself. Don’t follow someone else’s advice unless you have had the chance to make sure it works for you under the kind of conditions you will experience during these evaluations.

*NOTE: The results of your evaluation may be negatively affected if the conditions concerning dress, food, smoking, beverages and exercise are not followed. If you clearly ignored these instructions, the evaluator may cancel your evaluation.*

**POST EVALUATION**
You will remain in the evaluation area until your post-exercise heart rate has decreased to less than 100 BPM.
ANNEX B - CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION - MEDICAL CLEARANCE FOR EVALUATION

Applicant name: ________________________________

This program is designed to evaluate the physical work capacities of healthy, physically active individuals. Each task requires a maximal effort. All of the tasks are completed while wearing firefighting personal protective equipment (PPE) that weighs approximately 22 kg (50 lb). This ensemble includes: helmet, flash-hood, gloves, pants, boots, jacket and self-contained breathing apparatus (SCBA). The applicant is not required to breathe from the SCBA, but must carry it. For safety during the treadmill evaluation, running shoes are substituted for firefighting boots. The evaluation is administered by qualified fitness evaluators from Canadian Forces Personnel Support Agency, and is not medically supervised. The evaluation procedures are described briefly below:

AEROBIC ENDURANCE
Maximal work capacity will be measured during a progressive, incremental exercise evaluation to exhaustion on a treadmill. During the evaluation, expired gases may be monitored with an automated metabolic measurement system, if available, to calculate the rate of oxygen consumption. Heart rate is monitored continuously with a telemetry system. Depending on fitness level and motivation, this evaluation normally requires the individual to walk on the treadmill for 10 - 20 minutes. Regardless of the fitness level of the individual, the evaluation normally involves a maximal effort and is terminated when the person is too fatigued to continue exercise. Combined with the exercise stress, the weight and heat retention properties of the PPE result in a significant level of fatigue. After completing the treadmill evaluation, the applicant will rest for 60 minutes before moving on to the job-related performance tasks.

JOB-RELATED PERFORMANCE TASKS EVALUATION

Prior to completing the job-related tasks evaluation, the applicant will complete a “walk-through” session where they are allowed to practice each of the tasks. This takes approximately 30 minutes and serves to familiarize the applicant with evaluation procedures and provides a suitable warm-up for the demanding evaluation that follows. Each task is followed by a rest period of 3 minutes for recovery and hydration. Applicants are not permitted to leave the evaluation area or remove the PPE during the rest periods.
Charged Hose Advance
The applicant will drag a charged (full of water) 38 mm (1.5 inch) hose a distance of 38.1 m (125’). Three 15.24 m (50’) lengths of hose are “snaked” behind the starting line. The nozzle is held over the shoulder and the applicant advances to the finish line as quickly as possible. This evaluation assesses lower body strength and anaerobic power.

High Volume Hose Pull
The applicant will pull a bundle of hose weighing approximately 56 kg (123 lb) a distance of 15.24 m (50’) over a smooth concrete floor using a rope. This task is repeated 3 times. During this evaluation, the applicant is stationary and must pull the hose bundle towards them using 16 mm (5/8”) rope. This evaluation assesses upper body strength, power, and endurance.

Forcible Entry Simulation
Using a 4 kg (9 lb) "dead blow" sledgehammer, the applicant moves a weighted truck tire 102 kg (225 lb) a distance of 30.5 cm (12”) as rapidly as possible. This evaluation assesses muscle strength, power and endurance, particularly in the upper body.

Victim Drag
The applicant will drag a mannequin weighing 68.2 kg (150 lb) a total distance of 30.48 m (100’). The evaluation starts with the mannequin lying "face-up" on the floor and the applicant standing. The applicant lifts the mannequin and walks backwards for 15.24 m (50’), turns around a traffic cone and returns to the start line as quickly as possible. This evaluation assesses strength, power, and agility.

Ladder Climb
The applicant will climb a 7.3 m (24’) ladder to the 10th rung and returns to the floor as quickly as possible. This task will be repeated five times. This evaluation assesses muscle strength, endurance, and anaerobic capacity.

Equipment Carry/Vehicle Extrication
The applicant will carry small 18 kg (40 lb) and large 36 kg (80 lb) vehicle extrication tools (the "Jaws of Life") a total distance of 76 m (250’). In addition, the applicant will lift and hold the 18 kg (40 lb) tool in specific positions that simulate the work required to remove a vehicle door. The tools will then be returned to the starting line. This task is designed to evaluate the strength required to lift, carry and use heavy tools in rescue situations.
Verification of Medical information

Is this individual taking any medication that could affect normal physiological responses to exercise? No____ Yes___ If yes, please explain.

Is there any medical reason that this individual should not undertake very strenuous exercise? No____ Yes___ If yes, please explain.

I certify that this applicant has been given a medical examination and is medically fit to undertake the Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation described above.

Physician’s name: ______________________________
Date:___________________

Address: ________________________________
(or stamp) ________________________________
_______________________________
Telephone: ___________

Signature: ________________________________
ANNEX C - CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION - INFORMED CONSENT - ADULT (AGE OF MAJORITY)

NAME: ______________________________

The evaluations in this program involve very strenuous exercise and maximal effort. There may be some health risk with this type of exercise. During and after the evaluation it is possible to experience symptoms such as abnormal blood pressure, fainting, lightheadedness, muscle cramps or strain, nausea, and in very rare cases, heart rhythm disturbances or heart attack. There is also some risk of musculo-skeletal injury from falling or lifting heavy objects during the job-related performance tasks. While serious risk to healthy individuals is unlikely, it is important to acknowledge that you have been informed of these possibilities and willfully assume the risks of participation.

Copies of your results will be distributed as follows:
Copy 1 - Applicant
Copy 2 - Fire Hall Chief or Recruiting Centre
Copy 3 - DGPSS
Copy 4 - Evaluator
Copy 5 - Base Surgeon (CF members only)

Before each evaluation, full instructions on procedures and safety will be provided. You will also have the opportunity to practice and perform warm-up exercises before the evaluations. You may ask questions on evaluation procedures at any time. The tasks are described briefly below:

1. Aerobic Endurance
Maximal work capacity will be measured during a progressive, incremental exercise evaluation to exhaustion on a treadmill. After a standard warm-up, you will walk at 3.5 mph and 10% grade for 8 minutes. After this phase is completed, the grade (and if necessary, speed) will be increased every minute until you are too tired to continue. Depending on your fitness level and motivation, the actual evaluation lasts between 10-20 minutes. During the evaluation, expired gases may be monitored with an automated metabolic measurement system, if available, to calculate the rate of oxygen consumption. Heart rate is monitored continuously with a telemetry system.

2. Charge Hose Advance
You will drag a charged (full of water) 38 mm (1.5 inch) hose a distance of 38.1 m (125’). Three 15.24 m (50’) lengths of hose are “snaked” behind the starting line. The nozzle is held over the shoulder and you advance to the finish line as quickly as possible (running is not permitted). This evaluation assesses lower body strength and power.
3. High Volume Hose Pull
You will pull a bundle of hose weighing approximately 56 kg (123 lb) a distance of 15.24 m (50’) over a smooth concrete floor using a rope. This task is repeated 3 times. During this evaluation, you must stand still and pull the hose bundle towards you using 16 mm (5/8”) rope. This evaluation assesses upper body strength, power, and endurance.

4. Forcible Entry Simulation
You will use a 4 kg (9 lb) “dead blow” sledgehammer to move a weighted truck tire, 102 kg (225 lb) a distance of 30.5 cm (12”) as rapidly as possible. This evaluation assesses muscle strength, power and endurance, particularly in the upper body.

5. Victim Drag
You will drag a mannequin weighing 68.2 kg (150 lb) a total distance of 30.48 m (100’). The evaluation starts with the mannequin lying “face-up” on the floor. You will lift the mannequin and walk backwards for 15.24 m (50’), turn around a traffic cone and return to the start line as quickly as possible. This evaluation assesses muscle strength and endurance.

6. Ladder Climb
You will climb a 7.3 m (24’) ladder to the 10th rung and return to the floor as quickly as possible. This task will be repeated five times. You must step on every rung on the way up and down the ladder. You must maintain ”3-point” contact with the ladder at all times for safety. This evaluation assesses muscle strength, endurance, and anaerobic capacity.

7. Equipment Carry/Vehicle Extrication
You will carry small 18 kg (40 lb) and large 36 kg (80 lb) vehicle extrication tools (the “Jaws of Life”) a total distance of 76 m (250’). In addition, you will lift and hold the 18 kg (40 lb) tool in specific positions that simulate the work required to remove a vehicle door. This evaluation is designed to evaluate the strength and endurance required to lift, carry and use heavy tools in rescue situations.
INFORMED CONSENT
Your signature below confirms that you:

- voluntarily agree to participate in the fitness evaluation as described;
- understand that you can ask questions at any time;
- understand that you can stop any evaluation procedure at any time;
- understand that the fitness evaluator may stop any evaluation at their discretion;
- understand the risk of this activity;
- Are aware of no medical condition that puts you at unusual risk for this activity and that you have discussed any doubts or concerns with a physician;
- agree to inform the fitness evaluator of any pain, discomfort or unusual fatigue or any other symptoms experienced during or after the evaluation; and
- understand who will have access to your evaluation results.

SIGNATURES

Applicant: ___________________________ Date: ________________

Evaluator: __________________________ Date: ________________
ANNEX D – CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION – EVALUATION DESCRIPTION

To ensure that you are ready for the demands of the firefighter trade, you will be asked to undergo a Physical Fitness Evaluation as a part of the recruiting process. Successful completion of this evaluation is a necessary step toward being accepted into the firefighter training.

DESCRIPTION OF THE PHYSICAL FITNESS EVALUATIONS

This program is designed to evaluate the physical work capacities of healthy, physically active individuals. Each task requires a maximal effort. All of the tasks are completed while wearing firefighting personal protective equipment (PPE) that weighs approximately 22 kg (50 lb). This ensemble includes: helmet, flash-hood, gloves, pants, boots, jacket and self-contained breathing apparatus (SCBA). You will not breathe from the SCBA, but you must carry it. For safety during the treadmill evaluation, running shoes are substituted for firefighting boots.

The first component is a treadmill work capacity evaluation. After completing the treadmill evaluation, you will rest for 60 minutes before starting an orientation to the job-related performance tasks. The orientation to the job-related evaluation consists of a “walk-through” session to practice each of the tasks. This will take approximately 30 minutes and will familiarize you with evaluation procedures as well as provides a suitable warm-up for the demanding evaluation that follow.

Each task is followed by a rest period of 3 minutes for recovery and hydration. You are not permitted to leave the evaluation area or remove the PPE during the rest periods. The tasks are described briefly in the following pages.

1. Aerobic Endurance

Maximal work capacity is measured during a progressive, incremental exercise evaluation to exhaustion on a treadmill. After a standard 5-minute warm-up, you will walk at 3.5 mph and 10% grade for 8 minutes. After this phase is completed, the grade (and if necessary, speed) will be increased every minute until you are too tired to continue. The applicant can shuffle or lightly jog if necessary, once the speed increases. In order to pass the treadmill evaluation, you MUST complete the 5-minute warm-up, the 8-minutes constant work rate phase and the 5-minute cool-down (for a total of 18 minutes). After the treadmill evaluation, you will rest for 60 minutes before starting an orientation to the job-related performance evaluation. Note: During the evaluation, expired gases MAY BE monitored with an automated metabolic measurement system, if available, to calculate the rate of oxygen consumption. Heart rate is also monitored continuously.
2. Charged Hose Advance

You will drag a charged (full of water) 38 mm (1.5 inch) hose a distance of 38.1 m (125’). Three 15.24 m (50’) lengths of hose are “snaked” behind the starting line. The nozzle is held over the shoulder and you advance to the finish line as quickly as possible (running is not permitted). This evaluation assesses lower body strength and power and must be completed safely in less than 31 seconds.

3. High Volume Hose Pull

You will pull a bundle of hose weighing approximately 56 kg (123 lb) a distance of 15.24 m (50’) over a smooth concrete floor using a rope. This task is repeated 3 times. During this evaluation, you must stand still and pull the hose bundle towards you using 16 mm (5/8”) rope. This evaluation assesses upper body strength, power, and endurance and must be completed safely in less than 103 seconds.

4. Forcible Entry Simulation

You will use a 4.0 kg (9 lb) “dead blow” sledge hammer to move a weighted truck tire 102 kg (225 lb) a distance of 30.5 cm (12”) as rapidly as possible. This evaluation assesses muscle strength, power and endurance, particularly in the upper body and must be completed safely in less than 45 seconds.
5. Victim Drag

You will drag a mannequin weighing 68.2 kg (150 lb) a total distance of 30.48 m (100’). The evaluation starts with the mannequin lying “face-up” on the floor. You will lift the mannequin and walk backwards for 15.24 m (50’), turn around a traffic cone and return to the start line as quickly as possible. This evaluation assesses muscle strength and endurance and must be completed safely in less than 49 seconds.

6. Ladder Climb

You will climb a 7.3 m (24’) ladder to the 10th rung and return to the floor as quickly as possible. The applicant must touch each rung on the way up and down. This task will be repeated five times. This evaluation assesses muscle strength, endurance, and anaerobic capacity and must be completed safely in less than 109 seconds.

7. Equipment Carry/Vehicle Extrication

You will carry small 18 kg (40 lb) and large 36 kg (80 lb) vehicle extrication tools (the "Jaws of Life") a total distance of 76 m (250’). You will lift and hold the 18 kg (40 lb) tool in specific positions that simulate the work required to remove a vehicle door. This evaluation is designed to evaluate the strength and endurance required to lift, carry and use heavy tools in rescue situations. This evaluation must be completed safely in less than 270 seconds.
ANNEX E - TREADMILL DATA FORM

TREADMILL DATA FORM
GRADED EXERCISE EVALUATION WORKSHEET

Name________________________________ Date_____________________
Total Wt_______kg  Evaluation start time________ Evaluation End Time________

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Speed (mph)</th>
<th>Grade %</th>
<th>HR (bpm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>3.5</td>
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<td></td>
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</tr>
<tr>
<td>4-5</td>
<td>2.0 - 2.5</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VO2peak __________ ml/kg/min    HR max __________ bpm

Total Exercise Time (not including cool-down)_______________ (min)

<table>
<thead>
<tr>
<th>O2 pre</th>
<th>CO2 pre</th>
</tr>
</thead>
<tbody>
<tr>
<td>O2 post</td>
<td>CO2 post</td>
</tr>
</tbody>
</table>

Treadmill evaluator_______________  Metabolic Cart ______________

Comments
Treadmill Calibration
The treadmill should be checked each evaluation day to ensure that the speed and grade are correct. This is essential since the criteria for passing the evaluation requires that the applicant complete 13 minutes of exercise that consists of specific speed and grade settings. If the speed and/or grade are incorrect, then it is possible that individuals who should fail will pass, or alternately, individuals who should pass will fail.

This section provides simple guidelines for checking the calibration of the treadmill. Actual adjustment of the settings to ensure proper calibration may require service by a qualified treadmill technician. Check the manual for the treadmill to see if adjustment is possible. Alternately, the steps described below allow evaluators to check for calibration errors and compensate for them.

Treadmill Speed
The speed of the treadmill is typically reported on the display in miles per hour (mph). If a treadmill display is in kilometers per hour (kph), see treadmill’s operation manual or visit the manufacture website on how to change the display or you can use this simple calculation to convert from metric to English units. Helpful conversions are:

\[
\text{Speed in kilometers per hour} \times 0.62 = \text{speed in miles per hour}
\]

\[
\text{Speed in miles per hour} \times 26.82 = \text{speed in meters per minute}
\]

The majority of the evaluation is completed at 3.5 mph and therefore, this is the most important speed to calibrate. In most cases, calibration should be robust for a range of speeds, and it should not be necessary to calibrate for all possible speeds. For example, if the treadmill is correct at 3.5 mph, then it will also be correct throughout the range between about 3.0 and 5.0 mph. This can be verified on an individual basis if necessary.

To check the calibration of the treadmill, the following equipment is required:
- Measuring tape (long enough to measure the length of the belt)
- Marking tape (athletic tape or duct tape)
- Stop-watch
- Calculator

First, determine the length of the treadmill belt. This may be available from a technical manual, but is easily measured.

Next, calculate the number of belt revolutions expected at 3.5 mph (93.9 m/min). For example, if the belt length is 4.3 m, then at 3.5 mph, your calculations will reveal:
- 21.8 revolutions per minute
- 2.75 seconds per revolution
- 55.1 seconds for 20 revolutions
Once these calculations are complete, it is a relatively simple matter to verify the calibration by following the steps below:

- Place a piece of marking tape on the treadmill belt and a second piece of tape on the deck beside the belt.

- Set the treadmill at 3.5 mph and have one evaluator walk on the belt (this is important as the belt speed is often different when the treadmill is loaded or unloaded)

- The second evaluator should measure the elapsed time for a given number of revolutions, noting each complete revolution the marking tape passes the tape on the treadmill deck (see Figure G-2).

- In theory, you could measure the elapsed time for one revolution, however the "experimental time" is short (2.75 s) and the influence of reaction time and movement time could result in a significant error. Timing a reasonably large number of revolutions (e.g., 20) diminishes this error significantly. Reaction and movement time are now very small compared to a relatively large "experimental time". Your accuracy may be improved by practice, by doing several repetitions, or having more than one timer.

- If the actual elapsed time is the same as the predicted elapsed time, then the treadmill speed display is accurate and nothing further is required.

- If the actual elapsed time differs from the predicted time, then adjust the speed control up or down slightly to compensate for the difference, and repeat the timing procedure. This may have to be done several times.

- For example, you may find that when the speed control displays 3.6 mph that the belt speed is actually 3.5 mph.

- Bear in mind that by following the above steps, you have not calibrated the treadmill speed. However, you have checked the speed and taken steps to compensate for any difference between the display on the speed controller and the actual speed of the belt.

- If required, contact a technician to properly calibrate the treadmill.

Figure G-1. Set controller to desired speed
Figure G-2. Checking speed of the treadmill belt requires accurate timing of belt revolutions. Note that the tape mark on the belt is approaching the mark on the treadmill deck. Each pass of the tape on the belt counts as one revolution. See text for details. It is essential that an assistant is walking on the treadmill while the belt speed is checked.

Treadmill Grade
The slope of the treadmill is expressed as percent grade, which is easily calculated by the vertical rise for a given amount of horizontal distance. Typically, we are interested in the amount of vertical "rise" for 1 meter of horizontal distance (or "run"). Therefore, for a 10% grade, the rise will be 10 cm over a run of 100 cm (or 1 m).

To check the calibration of the grade, the following equipment is required:
- An accurate measuring tape (a steel anthropometric tape is best)
- Marking tape (athletic tape or duct tape)
- Carpenter’s level
Follow the steps below:

- Turn on the treadmill and set the grade display to "0".

- Use the carpenter’s level to ensure that the treadmill is level front-to-back and side-to-side. Laboratory floors are not always level, so don’t be surprised to find that the treadmill is not level. Minor adjustments can be made by repositioning the treadmill, adjusting the leveling feet (if applicable) or by using shims (small pieces of linoleum flooring work well).

- Carefully measure a one-meter distance along the side of the treadmill and mark with marking tape (see Figure G-3).

- Adjust the grade display to read 10%.

- Measure the distance between the floor and the treadmill deck at each end of the one-meter distance marked out earlier (see Figure G-3).

- If the treadmill grade display is correct, the distance at the front mark (closer to the front of the treadmill) should be exactly 10 cm greater than the distance at the back mark. If so, the grade is correct and no further steps are required.

- If the distance is not correct, adjust the treadmill grade controller up or down as required until the difference is 10 cm. Whatever the display reads is actually equivalent to 10%. For example, you may find that when the display reads 11%, the actual grade is 10%. You can then make up a “correction table” with displayed and actual values to be used during testing.

- Bear in mind that by following the above steps, you have not calibrated the treadmill grade. However, you have checked the grade and taken steps to compensate for any difference between the display on the grade controller and the actual slope of the belt.

- If required, contact a technician to properly calibrate the treadmill
The diagram below illustrates the simple method of checking the grade on the treadmill.

**Figure G-3**

Top panel: Turn the treadmill power on and set the grade controller at 0%. Use a carpenter’s level to make sure that the treadmill is level both front-to-back and side-to-side. Measure off a distance of 1 meter (distance between points “a” and “b” on the diagram). The distance from points “a” and “b” to the floor will be exactly the same if the treadmill is level (grade = 0%).

Bottom panel: The treadmill grade controller should be set at 10%. Now the distance between point “b” to the floor should be 10 cm greater than the distance between point “a” and the floor. Remember that percent slope is simply “rise” over “run”, so a rise of 10 cm over a run of 100 cm equals 10%.
ANNEX G - JOB RELATED TASK CALIBRATION

Calibration
The weight of most equipment should not be expected to change from day to day. However, some equipment may vary (e.g., ballast could be added or taken away from the tire) and thus, the specifications should be checked from time to time as necessary. If the equipment is borrowed from local fire departments, there may be some variability between sessions (e.g., different spreader tools) and this requires that the weight be verified. Annex G (Job-Related Task Calibration).

The distance for each test should be measured each day (or as often as necessary) to ensure accuracy. In some cases, marks may be placed on the floor to designate start and stop lines. Unless these are permanent marks, the actual distance should be verified each time the test is set up. When using a cone, make sure the proper location is marked with tape on the floor. If the cone is knocked over during the test, no re-measurement is required.

Charged Hose Advance
The force required to move the charged hose results from the weight of the hose and water combined with the friction characteristics of the floor surface. Variations in weight and or friction may have a significant effect on the total work done during the evaluation. A cable tensiometer should be used to verify the force requirements as shown in Figure I-1. The force readings should be consistent with the values shown in Table I-1.

Table I-1
Force and distance specifications for the Charged Hose Advance Test

<table>
<thead>
<tr>
<th>Distance</th>
<th>Force (lb)</th>
<th>Force (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.48 m (100 ft)</td>
<td>33</td>
<td>147</td>
</tr>
<tr>
<td>38.1 m (125 ft)</td>
<td>50</td>
<td>222</td>
</tr>
</tbody>
</table>

Figure I-1. General view of the set-up for calibration of the force required to move the charged 38 mm hose at selected distances.

Rope Pull Test
The cable tensiometer should be used to verify the force required to move the hose bundle. Attach the tensiometer cable to the rope at approximately 15.24 m (50’) from the attachment to the hose bundle.

The force required to move the bundle should be 40-45 lb or 200 N.
If the force is greater than above, it will be necessary to remove weight. If the force is less than above, weight must be added to the bundle until the force readings match.

**Forcible Entry Test**
The cable tensiometer should be used to verify the force required to move the tire on the table.

The force required to move the tire should be 80 lb or 355 N.

If the force is greater than above, it will be necessary to remove weight. If the force is less than above, weight must be added to the tire until the force readings match.

**Victim Rescue Test**
The weight of the rescue mannequin must be 68.2 kg or 150 lb.

**Ladder Climb Test**
The ladder must be set up at the correct angle.

**Equipment Carry/Vehicle Extrication**
The weight of the smaller spreader tool is 18 kg or 40 lb.

The weight of the larger spreader tool is 36 kg or 80 lb.

The layout for the car door mock-up is shown below in Figure I-2

**Figure I-2.** Schematic for the car door mock-up. The “targets” used can be flat metal discs (11 cm in diameter) attached to 19 mm plywood (see Figure H-12).

Note: Measurements are taken from floor to the middle of the “targets” and middle to middle of the “targets”.
# ANNEX H - CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION - PERFORMANCE STANDARDS

## Table K-1
Treadmill Evaluation Scores

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>VO\textsubscript{2max} (ml/kg/min)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard &lt;13:00</td>
<td>&lt;36.0</td>
<td>0</td>
</tr>
<tr>
<td>13:00 - 14:59</td>
<td>36.0 - 40.0</td>
<td>1</td>
</tr>
<tr>
<td>15:00 - 16:59</td>
<td>40.1 - 44.1</td>
<td>2</td>
</tr>
<tr>
<td>17:00 - 18:59</td>
<td>44.2 - 48.2</td>
<td>3</td>
</tr>
<tr>
<td>19:00 - 21:00</td>
<td>48.3 - 52.3</td>
<td>4</td>
</tr>
<tr>
<td>≥21:00</td>
<td>&gt;52.3</td>
<td>5</td>
</tr>
</tbody>
</table>

## Table K-2
Job-Related Performance Scores

### Hose Drag

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;14.0</td>
<td>5</td>
</tr>
<tr>
<td>14.0 - 18.4</td>
<td>4</td>
</tr>
<tr>
<td>18.5 - 22.9</td>
<td>3</td>
</tr>
<tr>
<td>23.0 - 27.4</td>
<td>2</td>
</tr>
<tr>
<td>27.5 - 30.9</td>
<td>1</td>
</tr>
<tr>
<td>Standard &gt;31.0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Rope Pull

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>50.0 - 62.9</td>
<td>4</td>
</tr>
<tr>
<td>63.0 - 75.9</td>
<td>3</td>
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<tr>
<td>76.0 - 88.9</td>
<td>2</td>
</tr>
<tr>
<td>89.0 - 102.9</td>
<td>1</td>
</tr>
<tr>
<td>Standard &gt;103.0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Forcible Entry

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>17.0 - 25.9</td>
<td>3</td>
</tr>
<tr>
<td>26.0 - 34.9</td>
<td>2</td>
</tr>
<tr>
<td>35.0 - 44.9</td>
<td>1</td>
</tr>
<tr>
<td>Standard &gt;45.0</td>
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</tr>
</tbody>
</table>

### Victim Drag

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;23.0</td>
<td>5</td>
</tr>
<tr>
<td>23.0 - 29.4</td>
<td>4</td>
</tr>
<tr>
<td>29.5 - 35.9</td>
<td>3</td>
</tr>
<tr>
<td>36.0 - 42.4</td>
<td>2</td>
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<tr>
<td>42.5 - 48.9</td>
<td>1</td>
</tr>
<tr>
<td>Standard &gt;49.0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Ladder Climb

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>54.0 - 67.4</td>
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<tr>
<td>67.5 - 80.9</td>
<td>3</td>
</tr>
<tr>
<td>81.0 - 94.4</td>
<td>2</td>
</tr>
<tr>
<td>94.5 - 108.9</td>
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</tr>
<tr>
<td>Standard &gt;109.0</td>
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</tr>
</tbody>
</table>
ANNEX I - SAMPLE TIMELINE FOR COMPLETION OF THE APPLICANT PROTOCOL

The following sequence of events and associated time guidelines are most appropriate for the Applicant Evaluation Protocol. For the purposes of illustration, assume that the applicant has an appointment scheduled for 0900.

<table>
<thead>
<tr>
<th>Time</th>
<th>Stage of Protocol</th>
<th>Event or Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900</td>
<td>Check-in</td>
<td>Fill out Block A through D of the DND 2485</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collect Medical Clearance form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Informed consent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measure height, weight, etc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Issue &amp; or confirm fit of FF clothing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Issue heart rate (HR) monitor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete preparation for treadmill</td>
</tr>
<tr>
<td>0930</td>
<td>Aerobic Evaluation</td>
<td>Complete treadmill evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill out Block E of DND 2485</td>
</tr>
<tr>
<td>1000</td>
<td>Rest Period</td>
<td>Change into dry t-shirt, put on sweats</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Move to rest area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-hydrate</td>
</tr>
<tr>
<td>1100</td>
<td>Walk-through</td>
<td>Dress in partial PPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Walk-through job-related test area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applicant is informed of all evaluation procedures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applicant practices each evaluation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applicant asks questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill out top portion of Block F</td>
</tr>
<tr>
<td>1130</td>
<td>Job-related Tests</td>
<td>Dress in complete PPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hose Drag Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rope Pull Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forcible Entry Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Victim Rescue Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladder Climb Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equipment Carry/Vehicle Extrication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 min recovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill out bottom portion of Block F of DND 2485</td>
</tr>
<tr>
<td>1200</td>
<td>Recovery</td>
<td>Remove PPE, re-hydrate, cool-down under supervision</td>
</tr>
<tr>
<td>1230</td>
<td>Check out</td>
<td>Fill out Block G of DND 2485, Resting blood pressure and HR must meet guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Return Heart Rate monitor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Debrief applicant as appropriate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill in Block H &amp; I of DND 2485</td>
</tr>
</tbody>
</table>
ANNEX J - SAMPLE TESTING SCHEDULE AND CREW ORGANIZATION

The specifics of the evaluation schedule will be determined by factors such as the number of applicants and the size of the testing crew. The following schedule is based on 12 applicants per testing day.

One of the important responsibilities of the evaluators is to keep a smooth flow of applicants through the system. In ideal testing conditions, applicants can be scheduled to start on 30 min intervals. However, in order to allow for minor disruptions and delays, insert a slightly longer interval (e.g., 45 min) every few evaluations to make the day go much smoother.

At any given time during the day when all testing stations are active, a minimum of five evaluators should be present:

- Supervisor / Greeter / Treadmill evaluator #1
- Treadmill evaluator #2
- Job-related evaluator #1
- Job-related evaluator #2
- Job-related evaluator #3

This information is intended to serve as a guideline. Actual schedules and staff allocations are left to individual testing sites.

Sample Evaluation Schedule for 12 Applicants

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>SN</th>
<th>Contact Information</th>
<th>In</th>
<th>Out</th>
</tr>
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<tbody>
<tr>
<td>0800</td>
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<td></td>
<td></td>
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</tr>
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<td>0900</td>
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</tr>
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<td>0945</td>
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<td></td>
</tr>
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<td>1015</td>
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</tr>
<tr>
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</tr>
<tr>
<td>1130</td>
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<tr>
<td>1230</td>
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<tr>
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</tr>
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<td>1415</td>
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<td></td>
</tr>
<tr>
<td>1445</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note that most intervals are 30 minutes. 3 appointments were extended to 45 min. intervals, as well as a 1-hour break to facilitate lunch breaks for evaluators.
ANNEX K - TREADMILL TEST PROCEDURES WITH METABOLIC CART

The treadmill test procedures explained in Chapter 3, section I without measurement of respiratory gas exchange, should be followed, with these few additional points.

**Figure 1.** The treadmill test for aerobic fitness of firefighter applicants with measurement of respiratory gas exchange data.

A simple modification can be made to most firefighting helmets to support the breathing valve. The visor is removed and replaced with plastic support arms (Hans Rudolph part number 112151 for the 2700 series valve) as shown in Figure 3.

**Figure 3.** Modified helmet with supports for Hans Rudolph breathing valve.

**Selection Phase**

Applicants can be ranked on the peak VO2 value observed during the test. It is important to express the gas exchange data in 30-s bins in order to compare the values obtained during the test to the norms for this aspect of the test.

At the test end-point, the applicant should be instructed to use the handrails for support while the speed and grade are decreased rapidly to the recovery settings (2.0 mph or 53.6 m.min-1 and 0% grade).
The overall test time is recorded, as well as final HR and RPE values. The metabolic system should be stopped.

As rapidly as possible, the following steps should be completed:
- Removal of the helmet, mouth-piece and breathing valve
- Removal of gloves and flash-hood
- Loosening of the jacket collar
- Providing the applicant with water and a towel

When the test is conducted with collection of expired gases, the applicant cannot speak to the evaluators, and it is mandatory to also use a simple system of hand signals for communication

Section to add in the Treadmill Script, Annex L

- Have applicant put on helmet that is adapted for the mouthpiece.
- Wipe down applicant’s nose with alcohol swab, and once dry place a white tape strip over the nose.
- Connect mouthpiece into the holes in the plastic pieces on the helmet: make sure the “out valve” on the mouthpiece is facing the applicant’s right side.
- Have the applicant put the mouthpiece into their mouth and adjust the plastic screws on the helmet so that the mouthpiece is in a comfortable position.
- Have applicant step up onto the treadmill and put the static guard strap on their left wrist.
- Have the applicant put on the nose piece and adjust so that they cannot breathe through their nose.
- Treadmill operator will start the treadmill; cart operator will synchronize the 'official time' with the cart time once the applicant has let go of the front bar of the treadmill.
Explanation of the Treadmill VO₂ max Test

- EXPLAIN THE TREADMILL TEST TO THE APPLICANT BEFORE THEY GET DRESSED
- Warm up is five minutes long: speed is maintained at 3.5 mph for the entire 5 minutes and the grade starts at 0% and is increased to 2% at 3 minutes and 6% at 4 minutes
- At minute 5, the grade is increased to 10%, while speed is maintained at 3.5 mph: this speed and grade is maintained for 8 minutes
- Starting at minute 13, the grade is increased by 1% every minute up to 15% at minute 17 (the grade is then maintained at 15% for the remainder of the test); speed is maintained at 3.5 mph while grade increases
- Starting at minute 18, the speed is increased by 0.5 mph every minute up 6.0 mph at minute 23 (the last minute of the test)
- Explain the rate of perceived exertion (RPE) chart: a 6 would be equivalent to very very light activity while 20 would be equivalent to the most difficult activity possible
- RPE will be asked every two minutes during the test: the evaluator will point to the RPE number and the applicant can give hand signals to indicate if it is the correct number (Thumbs up at correct number)
- Before the test starts, have the applicant straddle the treadmill and hold onto the railing: start up the treadmill at 3.5 mph and 0% grade and have the applicant step onto the treadmill
- The applicant may only hold the hand rail until they are comfortable with the treadmill
- Explain that when the applicant feels they will be able to continue the test for only another 30 seconds that they should tap the hand railing
- When the applicant can not continue the test at all, they should grab the hand rail with both hands and KEEP WALKING
- 5 minute cool down at end of test.
ONE hour break between the TM test and the 6 tasks.

Once the explanations have been given:

- Have the applicant put on pants, coat, and balaclava (if the pants are too long, tape them with athletic tape)
- Have applicant put on tank, and adjust straps for comfort: make sure the hip belt is resting on the hips and not below
- Have applicant hold helmet (with the visor and gloves), and measure total gear weight: record Block E of DND 2485
- Make sure that the tank, helmet, and gloves used for total gear weighing are the same for each applicant
- Do up the helmet and coat straps
- Have the applicant put on gloves
➢ Make sure the heart rate monitor is picking up the heart rate
➢ Treadmill operator will start the treadmill, synchronize the ‘official time’ once the applicant has let go of the front bar of the treadmill

6 Task testing - General Overview

- You will be completing six events.
- You will want to put in your best times on events 1-5.
- The sixth event is pass/fail; you have 4.5 minutes to complete the event.
- During the practical test you will be wearing bunker gear, rubber boots, SCBA, helmet (visor down) and gloves.
- Gloves must be leatherwork gloves (NO gloves with rubber palms).
- Between each event you will get 3 minutes of rest.
- You can take off the gloves and raise the visor between events, however all other gear must remain in place.
- Gloves on, visor down applicant ready to go 30 seconds prior to the end of the rest period.
- Applicant must start the event within 5 seconds of the end of the rest time or the test is OVER.
- NO RUNNING! Safe and effective.
- Cones should be treated as simulated hazards - neither they nor any of the equipment should touch any of the cones.
  [There is an unofficial ‘one strike’ policy for the 6 tasks. If anything happens it is at the evaluator’s discretion to reset a test and have the applicant re-do the test immediately. HOWEVER if you feel that it is too unsafe to allow the applicant to continue, you may call the test for safety reasons at any time]

EVENT #1 - Hose Drag
- Applicant will start standing upright.
- Time starts when the applicant MOVES to pick up the hose.
- Hose is carried over the shoulder with a kink in it and the nozzle should be no lower than the waist. Use 2 hands.
- NO RUNNING, one foot on the ground at all times!
- The weight will start to increase the farther you move, lean into the weight, and shorten strides to keep momentum.
- Time stops when applicant crosses the finish line with both feet.
- DON’T DROP THE NOZZLE AT END! Hand it to the evaluator or set it down on the floor.

PRACTICE: Use jacket for this event.
- Drag hose 2/3 of the way to get a feel for the weight, do it like you will for the test.

NB: Applicant can take off the jacket for the rest of the practice.
EVENT #2 - Rope Pull
- Start standing upright behind the start line.
- Time starts when applicant moves to pick up the rope.
- FEET REMAIN PLANTED! No walking back while pulling rope.
- Pull rope quickly until the entire coiled hose passes the front plane of the start line.
- Speed walk (NO RUNNING!) to the other end and repeat pulling.
- Hose should be pulled three times - pull, walk, pull, walk, pull.
- Time stops when the entire hose pack passes the start line for the third and final time.

PRACTICE:
- For the pulling, some people like to use short quick arm pulls, while others like to take larger pulls using the turn of their body to help. Try both.
- It’s important to keep your eyes and hands on the rope, don’t worry about the hose.
- Try to keep the hose moving.
- 2 full pulls with one walk at competition speed
- Keep pulling until an evaluator tells you to stop.

EVENT #3 - Forced Entry
- Starting position is standing straight up.
- Time starts when applicant moves to pick up the hammer (don’t waste time, just go straight into back swing).
- Keep hitting until the evaluator tells you to stop.
- Time stops when the tire completely passes the black line on the table.
- Wide grip on hammer works best with short fast hits. (Big baseball hits just bounce off).

PRACTICE:
- Try hitting the tire with big hits and then try the smaller fast hits.
- Find which side you like best.
- Hit tire at least 1/2 of the way

EVENT #4 - Victim Rescue
- Applicant starts one pace back from the dummy, standing upright.
- Time starts when applicant moves to pick up the dummy.
- Applicant can use the harness to pull the dummy, or wrap arms around the body and pick it up.
- Grab harness close to shoulders and raise dummy off your thighs, back straight, take small fast steps.
- DO NOT TOUCH THE PYLONS with the dummy or with your body! They are simulated hazards and it can count as a fail.
- Pass the first pylon; it’s a warning pylon.
- Turn around the second pylon and move right back towards the wall. Drag the dummy back past the starting cones.
• Time stops when the dummy’s feet pass the starting line.
• DO NOT DROP THE DUMMY! At the end, put it down gently, it will break.

NOTE: if you fall, get up and keep going

PRACTICE:
• Try both grips on the dummy. The floor is very smooth, so dragging it can save time, especially if you are tired.
• Drag down to ½ way, evaluator will act as turn point, return dummy to start

EVENT #5 - Ladder Climb
• Climb up and down ten rungs FIVE times.
• Both feet must touch the top rung before descent each time.
• Both feet must touch the floor before ascent each time.
• There must be three points of contact at all times, which means, no hopping up or down rungs.
• Do not slide down any rungs, especially at the end.
• If you miss any steps, you will have to repeat them
• Applicant starts standing upright facing the ladder, with hands on the ladder.
• Time starts when applicant moves to start climbing.
• Hands can slide up the side or grasp each rung.
• Evaluators will count 1…2…3…4…5…6…7…8…9…10…UP (when 2nd foot touches top rung) 1…2…3…4…5…6…7…8…9…10…DOWN! (When 2nd foot touches the floor)
• Applicants should be careful on the way down if and when the ladder switches from double to single rung.

PRACTICE:
• Complete at least 2 two repetitions of the climb.

EVENT #6 - VE/Equipment Carry
• PASS/FAIL: Need time under 4.5 minutes.
• No extra points for going faster.
• Starting position is standing up straight facing the tool, time starts when you reach to pick up the small tool.

TASKS:
A) Carry small tool to the black mat, 15.24 m (50’) and place it down on its butt end.
Come back for the big tool. Carry it down to the black mat and place it down on its butt end beside the small tool.
Note: Some tools may not be able to stand on its butt end; for those tools only, they may be placed lying down.
B) Pick up the small tool and carry it 7.62 m (25’) to the car door simulation. Place the tool down flat facing the car door. Stand up straight.
• When you are ready, pick up the tool by the handles and place the jaws on the very top metal button.
• You will hold this for 30 seconds.
• The tool must be flat and not moving. It must stay in constant contact with the pin.
• The tool cannot be resting on your body
• Your arms cannot be resting on your body, legs or against the wall.
• When the evaluator indicates that the time is completed, put the tool down.
• Stand up straight, feel free to switch sides
• When you are ready, pick the tool up again, and repeat the above protocol for the very bottom pin.
• Put the tool down, stand up straight
• The last pin is on the other side, when you are ready hold the tool to the last pin.
• Put the tool down, stand up straight, and when you are ready pick to tool up again.

C) Carry the tool back 7.62 m (25’), then continue the 15.24 m (50’) all the way back to the black mat it started on.
• Place the tool down on the butt end and go back for the big tool.
• Carry the big tool back to the start mat.
• Time stops when applicant places both feet on the black mat. NOT WHEN YOU PUT THE TOOL DOWN!
• DO NOT DROP THE TOOL! Place is carefully on the ground.

PRACTICE:
• Good lifting technique should be used (lift with the legs, not the back!!!!)
• Hold the tool closely to upper body, above from the moving legs.
• Try lifting the big tool.
• Carry the small tool to the car door simulation and try holding it to the pegs for 10 seconds each.
• Feel free to switch sides.
**ANNEX M - RATE OF PERCEIVED EXERTION**

**BORGS SCALE OF PERCEIVED EXERTION**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Very, very light</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Very light</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fairly light</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Somewhat hard</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Hard</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Very hard</td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Very, very hard</td>
</tr>
<tr>
<td>20</td>
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</tr>
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</table>
ANNEX N - MEDICAL REFERRAL FORM (DND 582)
ANNEX O – MEDICATION LIST

Applicants reporting for evaluation could be on a wide variety of medications. To complicate matters many medications are known by several different “Brand” names. The following list includes medications that are known to significantly hinder heart rate response to exercise and therefore make the interpretation of fitness testing results more difficult. The “Brand names” are in bold and listed in alphabetical order for ease of reference. The non-proprietary names are shown in brackets ( ) after each brand name. Anyone on the medications should be referred to his or her medical staff or family physician prior to any fitness assessment or exercise prescription.

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Non-proprietary Name</th>
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</thead>
<tbody>
<tr>
<td>Apo-Acebutolol</td>
<td>(Acebutolol hydrochloride)</td>
</tr>
<tr>
<td>Apo-Atenolol</td>
<td>(Atenolol)</td>
</tr>
<tr>
<td>Apo-Metoprolol</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>Apo-Metoprolol-Type L</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>Apo-Nadolol- Nadolol</td>
<td></td>
</tr>
<tr>
<td>Apo-Pindol-</td>
<td>(Pindolol)</td>
</tr>
<tr>
<td>Apo-Propranolol-</td>
<td>(Propranolol hydrochloride)</td>
</tr>
<tr>
<td>Apo-Timol- (Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Apo-Tomop-(Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Betaloc-</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>Betaloc Durules -</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>Betapace - (Sotalol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Beta-Tim- (Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Blocadren- (Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Corgard - (Nadolol)</td>
<td></td>
</tr>
<tr>
<td>Corzide- (Nadolol- Bendroflumethiazide)</td>
<td></td>
</tr>
<tr>
<td>Dentosol- (Propranolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Gen-Atenolol -</td>
<td>(Atenolol)</td>
</tr>
<tr>
<td>Gen-Pindolol -</td>
<td>(Pindolol)</td>
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<tr>
<td>Gen-Timolol - (Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Indéral - (Propranolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Indéral-LA - (Propranolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Indéride - (Propranolol hydrochloride/ hydrochlorothiazide)</td>
<td></td>
</tr>
<tr>
<td>Lopresor - (Metoprolol tartate)</td>
<td></td>
</tr>
<tr>
<td>Monitan - (Acebutolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Novo-Atenolol -</td>
<td>(Atenolol)</td>
</tr>
<tr>
<td>Novo-Metoprol -</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>Novo-Nadolol -</td>
<td>(Nadolol)</td>
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<tr>
<td>Novo-Pindol -</td>
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<tr>
<td>Novo-Pranol -</td>
<td>(Propranolol hydrochloride)</td>
</tr>
<tr>
<td>Novo-Timol - Timolol maleate</td>
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<tr>
<td>Nu-Atenolol -</td>
<td>(Atenolol)</td>
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<tr>
<td>Nu-Metop - (Metoprolol tartate)</td>
<td></td>
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<tr>
<td>Nu-Pindol - (Pindolol)</td>
<td></td>
</tr>
<tr>
<td>Nu-Propranolol -</td>
<td>(Propranolol hydrochloride)</td>
</tr>
<tr>
<td>Nu-Timolol - (Timolol maleate)</td>
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</tr>
<tr>
<td>PMS-Metoprolol-B -</td>
<td>(Metoprolol tartate)</td>
</tr>
<tr>
<td>PMS-Propranolol -</td>
<td>(Propanolol hydrochloride)</td>
</tr>
<tr>
<td>Rhotral - (Acebutolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Sectral - (Acebutolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Slow-Trasicor (Oxprenolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Sotacor - (Sotalol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Syn-Nadolol -</td>
<td>(Nadolol)</td>
</tr>
<tr>
<td>Syn-Pindolol -</td>
<td>(Pindolol)</td>
</tr>
<tr>
<td>Taro-Atenolol -</td>
<td>(Atenolol)</td>
</tr>
<tr>
<td>Tenoretic - (Atenolol/hlorthalidone)</td>
<td></td>
</tr>
<tr>
<td>Tenormin - (Atenolol)</td>
<td></td>
</tr>
<tr>
<td>Tim-Ak - (Timolol maleate)</td>
<td></td>
</tr>
<tr>
<td>Timolide - (Timolol maleate/ hydrochlorothiazide)</td>
<td></td>
</tr>
<tr>
<td>Trasicor - (Oxprenolol hydrochloride)</td>
<td></td>
</tr>
<tr>
<td>Viskazide - (Pindolol/hydrochlorothiazide)</td>
<td></td>
</tr>
<tr>
<td>Visken - (Pindolol)</td>
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</table>
### Canadian Forces Fire Marshal’s Firefighter Pre-Entry Fitness Evaluation - (DND 2485-E)

**Block A / Applicants particulars**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
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<tbody>
<tr>
<td>Family name</td>
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<tr>
<td>First name</td>
<td></td>
</tr>
<tr>
<td>SN or AN</td>
<td></td>
</tr>
<tr>
<td>Fire Hall / Recruiting Centre</td>
<td></td>
</tr>
<tr>
<td>Emergency / Contact</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
</tr>
<tr>
<td>Fire service</td>
<td></td>
</tr>
<tr>
<td>DOB (yyyy-mm-dd)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<tr>
<td>Weight</td>
<td>Kg</td>
</tr>
<tr>
<td>Height</td>
<td>cm</td>
</tr>
<tr>
<td>Photo D</td>
<td></td>
</tr>
<tr>
<td>Informed consent form</td>
<td></td>
</tr>
<tr>
<td>Medical clearance form (or only)</td>
<td></td>
</tr>
<tr>
<td>Time in:</td>
<td></td>
</tr>
<tr>
<td>Payment</td>
<td></td>
</tr>
</tbody>
</table>

**Block B / Health appraisal questionnaire**

This questionnaire is a screening device to identify personnel for whom fitness evaluations and physical activity might be inappropriate at this time.

To the best of your knowledge:

1. Do you have a medical condition which restricts you from participating in a fitness evaluation or a progressive training program?
2. Do you have arthritis or any other recurring problems with your shoulders, elbows, wrists, pelvic bones, hips, knees, ankles or feet which may prevent you from participating in a fitness evaluation or a progressive training program?
3. Do you experience pain, tightness, squeezing or a heaviness in your chest when you exercise?
4. Do you ever get dizzy or faint when you exercise?
5. Have you ever had a heart attack, a stroke or other heart-related problems?
6. Do you suffer from such things as asthma, bronchitis, emphysema, diabetes, hypertension, epilepsy, high blood pressure or cancer?
7. Are you pregnant or do you believe that you might be?
8. Are you taking medication (prescribed or otherwise) that could affect your ability to undertake a fitness evaluation?
9. Is there any other reason you would like to talk to a physician prior to your fitness evaluation or training program?

**Block C / Evaluator’s observation**

<table>
<thead>
<tr>
<th>Observation</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty breathing at rest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persistent cough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower extremity swelling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Followed preliminary instructions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
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</tr>
</tbody>
</table>

**Block D / Vital signs**

- **Resting heart rate (bpm):**
- **Resting blood pressure:**
  - Systolic
  - Diastolic

Heart rate monitor: [ ]

**Fitness Assessment**

**Block E / Cardiorespiratory fitness**

<table>
<thead>
<tr>
<th>Test start time:</th>
<th>Total weight with equipment Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test end time:</td>
<td>Total exercise time (not including cool down) min.</td>
</tr>
<tr>
<td>Minimum score:</td>
<td>13 min</td>
</tr>
</tbody>
</table>

**Block F / Job Related Task**

1. Hose drag comments:
2. Rope pull comments:
3. Forcible entry comments:
4. Victim rescue comments:
5. Ladder climb comments:
6. Equipment carry / VE comments:

**Block G / Post test recovery**

- Vital signs:
  - Resting pulse (bpm): ________________
  - Resting blood pressure: Systolic ____________ Diastolic ____________

**Fitness summary**

**Block H / Physical fitness evaluation**

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerobic fitness</td>
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<td></td>
</tr>
<tr>
<td>Hose drag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rope pull</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forcible entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victim rescue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ladder climb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle extiction equipment carry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Block I / Signatures**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Evaluator's signature</td>
<td></td>
</tr>
<tr>
<td>Applicant's signature</td>
<td>Date</td>
</tr>
<tr>
<td>CRIFC representative / Fire Chief signature</td>
<td>Date</td>
</tr>
</tbody>
</table>
ANNEX Q - CANADIAN FORCES FIRE MARSHAL’S FIREFIGHTER PRE-ENTRY FITNESS EVALUATION - (DND 2485-F)
Copy 1 - Applicant

Copy 2 - Fire Chief or Recruiting Centre

Copy 3 - DGPFSS DFit for research purposes

Copy 4 - PSP Fitness and Sports Section

Copy 5 - Base Surgeon (CF members only)