Work Capacity Test

Work Capacity Testing for Wildland Firefighters

Promoting Wildland Firefighter Safety

Wildland Firefighting and other forms of field work demand a high level of fitness to safely perform arduous, day-long work in difficult environmental conditions, including steep terrain, extreme temperatures, altitude, and smoke, and to meet unforeseen emergencies. When prolonged hard work is involved, fitness is the most important factor in work capacity.

Work capacity is a composite of fitness, acclimatization, nutrition, skill, experience, motivation, and intelligence. Fitness is the most important factor. Fitness has two components, aerobic and muscular strength.

Aerobic fitness is a measure of your ability to supply working muscles with the oxygen they need to perform vigorous day-long work. When you can deliver and use oxygen efficiently, you can do work without undue fatigue.

Muscular fitness includes strength, muscular endurance, and flexibility. Strong workers can lift and carry heavy loads with less fatigue or risk of injury. Muscular endurance enables you to continue working at otherwise fatiguing tasks. And flexibility means a better range of motion that lowers the risk of injury.

Work Capacity Tests

Some jobs, like firefighting, require passing a job-related Work Capacity Test to meet minimum qualifications. Such tests help ensure that prospective workers have the capacity to perform work without undue fatigue and without becoming a hazard to themselves or coworkers.

Most wildland firefighters must meet minimum levels of fitness requirements for the type of duties they are assigned:

Fitness Requirement	Test	Description
Arduous	Pack Test	3-mile hike with 45-pound pack in 45 min
Moderate	Field Test	2-mile hike with 25-pound pack in 30 min
Light	Walk Test	1-mile hike in 16 min no pack

Arduous work involves above average endurance (aerobic fitness), lifting more than 50 pounds (muscular fitness), and occasional demands for extraordinarily strenuous activities. All wildland firefighters perform arduous duty.

Moderate work involves lifting 25 - 50 pounds, and occasional demand for moderately strenuous activity. Safety officers and fire behavior officers perform moderate duty.

Light work involves mainly office-type work with occasional field activity.

The Pack Test

The Pack Test is a 4.83-km (3-mile) hike over level terrain carrying a 20.5kg (45 pound) pack. To qualify for arduous fireline work, you must complete the pack test in 45 minutes or less. Tests taken at altitude should be adjusted (see table).

Jogging during the test is not permitted. A score of 45 minutes correlates with a step test score of 45 or a 1.5 mile-run time of 11 minutes 40 seconds, the previous standard for wildland firefighters. The Pack Test is not a competition, it is pass/fail only.

The energy cost of the Pack Test is similar to fireline work. Pack Test performance relates directly to muscular fitness. Because of the test distance, the Pack Test is an excellent indicator of the capacity to perform prolonged arduous work under adverse conditions with a reserve to meet unforeseen emergencies.

Altitude Corrections:

Altitude (Feet)	Pack Test (Seconds)	Field Test (Seconds)	Walk Test (Seconds)
4,000 to 5,000	30	20	10
5,000 to 6,000	45	30	15
6,000 to 7,000	60	40	20
7,000 to 8,000	75	50	25
8,000 to 9,000	90	60	30

The First Step

Before you begin training or take the Work Capacity Test, all persons must fill out a Health Screening Questionnaire (HSQ). This must be done prior to conditioning for, or taking, any level of the Work Capacity Tests (WCT). The HSQ will be reviewed by a Servicing Human Resource Office prior to engaging in any of these activities. The Safety and Health Resource Office will determine whether a person is cleared to start conditioning, take a WCT, or will need further medical evaluation is needed.

People taking any of the Work Capacity Test (i.e., light duty, field test or the pack test) shall only take the test necessary for their red-carded position as described in the Wildland and Prescribed Fire Qualification System Guide (NWCG Publication PMS 310-1) and must be made available for fire assignment.

Training for the Work Capacity Test

Once you are cleared to begin training, here's what you'll need:

- Adequate footwear that will protect feet and ankles while testing.
- Comfortable clothing
- A comfortable, well-fitted pack
- A safe place to train

Start training a minimum of 4 weeks before you are scheduled to take the test. For work hardening, you may want to train in the boots you will wear on the job. Ankle-height hiking or sport shoes should be worn during the test for ankle protection.

For the Pack Test, begin by hiking a 3-mile flat course without a pack. When you can cover the course in less than 45 minutes, add a pack with about 25 pounds. Increase the weight until you can hike 3 miles in 45 minutes while carrying 45 pounds.

Also, hike hills with a pack to build leg strength and endurance. Jog the flat course without a pack to build aerobic fitness. Do overdistance training for stamina, and cross-train with mountain biking and weights to build endurance and strength.

Work Hardening

Work hardening is a gradual progression of work-specific activities designed to bring you to the job ready to deliver a good day's work. While fitness training provides the foundation for work capacity, it is no substitute for job-specific work hardening.

Prior to reporting for work applicants are strongly encouraged to train for the appropriate level work capacity test they need to take.

For more information:

Personal health, physical fitness, and work capacity all work towards making conditions safer for firefighters and the people they protect. Ask your local fire management office for more information.

See: Sharkey, Brian, Fitness and Work Capacity (NFES 1596), 1997.

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March 2002

USDA Forest Service/Department of the Interior FS-5100-31 (Rev 8/2009) OMB 0596-0164 (Expires1/2013)

WCT Level
__ Arduous
__Moderate
__Light

HEALTH SCREENING QUESTIONNAIRE (HSQ)

Assess your health needs by marking all true statements.

The purpose is to identif y individuals who may be at risk in tak ing the Work Capa city Test (WCT) and recom mend an exerc ise program and/or medical examination prior to taking the WCT.

Employees are required to answer the followi ng questions. The questions were designed , in consulta tion with occupa tional hea lth physicians, to identify individuals who may be at risk when taking a WCT. The HSQ is not a medical examination. Any medical concerns you have that place you or your health at risk should be reviewed with your personal physician prior to participating in the WCT.

Check 'Yes' or 'No' in response to the following questions:

[ ] Y [ ] N 1) During the past 12 months have you at an y time (during physical activity or while rest ing) experienced pain, discomfort or pressure in your chest.

[ ] Y [ ] N 2) During the p ast 12 months have you experienced d ifficulty breathing or sh ortness of breath, dizziness, fainting, or blackout?

[ ] Y [ ] N 3) Do you have a blood pressure with systolic (top #) greater than 140 or diastolic (bottom #) gr eater than 90?

[ ] Y [ ] N 4) Have you ever been diagnosed or treated for any heart disease, heart murmur, chest pain (angina), palpitations (irregular beat), or heart attack?

[ ] Y [ ] N 5) Have you ev er had hear t s urgery, ang ioplasty, or a p ace maker, va lve r eplacement, or heart transplant?

[ ] Y [ ] N 6) Do you have a resting pulse greater than 100 beats per minute?

[ ] Y [ ] N 7) Do you have any arthritis, back trouble, hip /knee/joint /pain, or any other bone or joint condition that could be aggravated or made worse by the Work Capacity Test?

[ ] Y [ ] N 8) Do you hav e personal experien ce or doctor's ad vice of an y o ther m edical or p hysical r eason t hat would prohibit you from taking the Work Capacity Test?

[ ] Y [ ] N 9) Has your personal physician recommended against taking the Work Capacity Test because of asthma, diabetes, epilepsy or elevated cholesterol or a hernia?

Regardless whether you are taking the Work Capacity test at the Arduous, Moderate or Light duty level, a "Yes" answer requires a determination from your personal physician stating that you are able to participate.

I understand that if I need to be evaluated by a physician, it will be based on the fitness requirements of the position(s) for which I am qualified.

Signature:_____ Printed Name _____ Date _____

Unit: _____ City _____ State _____

Mailing Address:_____

Phone Number:_____

Privacy Statement

The information obtained in the completion of this form is used to help determine whether an individual being considered for wildland firefighting can carry out those duties in a manner that will not place the candidate unduly at risk due to inadequate physical fitness and health. Its collection and use are covered under Privacy Act System of Records OPM/Govt-10 and are consistent with the provisions of 5 USC 552a

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Work Capacity Test: Informed Consent

- **Pack Test - Arduous** The 3-mile test with a 45 pound pack in 45 minutes is strenuous, but no more so than the duties of wildland firefighting.
- **Field Test-Moderate** The 2-mile test with a 25 pound pack in 30 minutes is fairly strenuous, but no more so than the field duties.
- **Walk Test-Light** The 1-mile walk in 16 minutes is moderately strenuous, but no more so than the duties assigned.

Risks

- There is a slight risk of injury (blisters, sore legs, sprained ankles) especially for those who have not practiced the test. If you have been inactive and have not practiced or trained for the test, you should engage in several weeks of specific training before you take the test. Be certain to warm up and stretch before taking the test, and to cool down after the test. The risk of more serious consequences (such as respiratory or heart problems) is diminished by completing the **(HSQ)** physical activity readiness questionnaire.

☐ **I have read the information on this form, the brochure "Work Capacity Test" and understand the purpose, instructions, and risks of the job related to work capacity test.**

☐ **I have read the information, understood, and truthfully answered the HSQ.**

Test to be Taken (check one) Pack test ☐ Field Test ☐ Walk Test ☐

Signature _____ Date _____

Printed Name _____

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