



Regulatory Document

RD-363

Nuclear Security Officer Medical, Physical, and Psychological Fitness

October 2008

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**NUCLEAR SECURITY OFFICER MEDICAL, PHYSICAL, AND
PSYCHOLOGICAL FITNESS**

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Nuclear Security Officer Medical, Physical, and Psychological Fitness

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Document availability

The document can be viewed on the CNSC Web site at www.nuclearsafety.gc.ca. Copies may be ordered in English or French using the contact information below:

Canadian Nuclear Safety Commission
P.O. Box 1046, Station B
280 Slater Street
Ottawa, Ontario, CANADA, K1P 5S9

Telephone: 613-995-5894 or 1-800-668-5284 (Canada only)

Facsimile: 613-992-2915

E-mail: info@cnsccsn.gc.ca

PREFACE

Regulatory document RD-363, *Nuclear Security Officer Medical, Physical, and Psychological Fitness*, was developed to address key considerations for licensees of nuclear power plants and nuclear facilities, who will be providing Nuclear Security Officer (NSO) authorization under the *Nuclear Security Regulations*.

This regulatory document sets out the expectations of the Canadian Nuclear Safety Commission (CNSC) concerning minimum requirements for Nuclear Security Officer (NSO) medical, physical, and psychological certificates. This regulatory document applies to all persons whom the licensee is considering authorizing or has authorized to act as an NSO at a high-security site as defined in the *Nuclear Security Regulations*.

This regulatory document aligns with relevant international and national documents including:

1. *Recruitment, Qualification and Training of Personnel for Nuclear Power Plants* (International Atomic Energy Agency);
2. *Physical Abilities Requirement Evaluation* (Royal Canadian Mounted Police); and
3. *Personnel Licensing Procedures Manual* (Transport Canada).

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NUCLEAR SECURITY OFFICER MEDICAL, PHYSICAL, AND PSYCHOLOGICAL FITNESS

1.0 PURPOSE

This regulatory document sets out the expectations of the Canadian Nuclear Safety Commission (CNSC) concerning minimum requirements for Nuclear Security Officer (NSO) medical, physical, and psychological certificates.

2.0 SCOPE

This regulatory document outlines the required documentation and necessary medical, physical, and psychological certification that a person must obtain before a licensee can authorize the person to act as an NSO. This regulatory document applies to all Nuclear Security Officers.

3.0 RELEVANT REGULATIONS

The provisions of the *Nuclear Security Regulations* relevant to this document include:

1. Subsection 18(2) of the *Nuclear Security Regulations*, which provides that, “Subject to section 18.6, no person shall act as a nuclear security officer without the recorded authorization of the licensee”;
2. Section 18.2 of the *Nuclear Security Regulations*, which provides that, “A licensee, before issuing an authorization referred to in subsection 18(2) to a person referred to in that subsection, shall satisfy the conditions set out in section 18.1 in respect of the person—other than the condition set out in paragraph 17(2)(b)—and shall obtain from the person...

(b) a certificate, signed by a duly qualified medical practitioner, certifying that the person does not have a medical condition that would prevent them from performing the tasks that are likely to be assigned by the licensee,

(c) a certificate, signed by a fitness consultant recognized by the Canadian Society for Exercise Physiology or a person with equivalent or higher qualifications, certifying that the person is physically able to perform tasks that are likely to be assigned by the licensee, and

(d) a certificate, signed by a duly qualified psychologist, certifying that the person is psychologically able to perform tasks that are likely to be assigned by the licensee”;

3. Section 18.4 of the *Nuclear Security Regulations*, which provides that, “An authorization referred to in section 18 may be issued for any term not exceeding five years and shall be subject to any terms and conditions necessary to minimize the risk to the security of the facility”;
4. Section 30 of the *Nuclear Security Regulations*, which provides that, “Every licensee shall at all times have available at a facility at which it carries on licensed activities a sufficient number of nuclear security officers to enable the licensee to comply with this Part and do the following:
 - (a) control the movement of persons, materials and land vehicles;
 - (b) conduct searches of persons, materials and land vehicles for weapons, explosive substances and Category I, II or III nuclear material;
 - (c) conduct preventive foot and land vehicle patrols of the facility and the perimeter of the protected area to inspect for security breaches and vulnerabilities;
 - (d) respond to and assess alarm incidents;
 - (e) apprehend and detain unarmed intruders;
 - (f) observe and report on the movements of armed intruders; and
 - (g) operate security equipment and systems.”

4.0 CERTIFICATE REQUIREMENTS

As per section 18.2 of the *Nuclear Security Regulations*, before authorizing a person to act as an NSO, the licensee shall obtain from the person medical, physical, and psychological certificates.

Medical, physical, and psychological certificates shall be retained by the licensee. The licensee must permit the CNSC to have access to the certificates for review, inspection, or audit purposes when required to do so.

4.1 Medical Certificate

A medical assessment shall be undertaken to determine whether the person, from a medical perspective, is capable of performing the tasks that are likely to be assigned by the licensee and as such does not pose a risk to his or her own safety, the safety of others, or the facility.

The medical assessment shall include medical examination(s), vision test(s), and hearing test(s). The duly qualified medical practitioner shall determine the medical examination(s), vision test(s), and hearing test(s) to be used in the medical assessment.

When conducting the medical assessment, the medical practitioner may be guided by:

1. *Police health: A physician's guide for the assessment of police officers* [1];
2. Ontario Association of Chiefs of Police document titled *Constable Selection System: Guidelines for Examining Physicians – Medical Evaluation of Police Constable Applicants* [2];
3. Ontario Association of Chiefs of Police document titled *Constable Selection System: Guidelines for Examining Ophthalmologists / Optometrists* [3];
4. Ontario Association of Chiefs of Police document titled *Constable Selection System: Hearing Performance Standard* [4]; and
5. Other equivalent recognized guidelines for policing within the province of employment.

Subsequent to the medical assessment, a certificate, signed by a duly qualified medical practitioner, will certify that the person is medically capable of safely performing the tasks that are likely to be assigned by the licensee.

An NSO shall undergo the described medical assessment at least every two years.

The licensee is responsible for retaining medical certificates.

4.2 Physical Certificate

A physical fitness test shall be undertaken to determine whether the person, from a physical perspective, is capable of performing the tasks that are likely to be assigned by the licensee and as such does not pose a risk to his or her own safety, the safety of others, or the facility.

The physical fitness test shall be the CNSC-approved NSO Physical Fitness Test found in Appendix A, or equivalent. The physical fitness test shall be administered by a fitness consultant recognized by the Canadian Society for Exercise Physiology, or a person with equivalent or higher qualifications.

Subsequent to passing the physical fitness test, a certificate, signed by a fitness consultant recognized by the Canadian Society for Exercise Physiology or a person with equivalent or higher qualifications, will certify that the person is physically capable of safely performing the tasks that are likely to be assigned by the licensee.

An NSO shall undergo a physical fitness test every twelve months.

The licensee is responsible for retaining physical certificates.

4.3 Psychological Certificate

A psychological assessment shall be undertaken to determine whether the person from a psychological perspective, is capable of performing the tasks that are likely to be assigned by the licensee and as such does not pose a risk to his or her own safety, the safety of others, or the facility.

The psychological assessment shall include an interview and test(s). A duly qualified psychologist shall determine the interview and test(s) to use in the assessment. The interview and test(s), along with their interpretation, shall be conducted by the psychologist.

Subsequent to the psychological assessment, a certificate, signed by a duly qualified psychologist, will certify that the person is psychologically capable of safely performing the tasks that are likely to be assigned by the licensee.

The licensee is responsible for retaining psychological certificates.

5.0 SPECIAL CIRCUMSTANCES

NSO certificate requirements represent reasonable occupational and operational requirements for an NSO in the execution of their duties at high-security sites. Where a person obtains and maintains NSO certificate(s), the licensee may authorize the person to act as an NSO. The employer is responsible to assess the extent, where considered necessary, of the duty to accommodate. The licensee is also responsible to ensure that any duties assigned to a person do not pose a risk to his or her own health or safety, the health or safety of others, the safety of the facility, and do not impact the operational effectiveness of the licensee's operation.

REFERENCES

1. A. Trottier and J. Brown, *Police Health: Physician's Guide for the Assessment of Police Officers*, Canada Communication Group, 1994. Ottawa.
2. Ontario Association of Chiefs of Police, *Constable Selection System: Guidelines for Examining Physicians – Medical Evaluation of Police Constable Applicants*, Ontario Association of Chiefs of Police, 2006. Toronto.
3. Ontario Association of Chiefs of Police, *Constable Selection System: Guidelines for Examining Ophthalmologists/Optometrists – Vision Assessment of Police Constable Applicants*, Ontario Association of Chiefs of Police, 2006. Toronto.
4. Ontario Association of Chiefs of Police, *Constable Selection System: Hearing Performance Standard*, Ontario Association of Chiefs of Police, 2006. Toronto.

ADDITIONAL INFORMATION

1. International Atomic Energy Agency, *Recruitment, Qualification and Training of Personnel for Nuclear Power Plants: Safety Guide*, Safety standards series, NS-G-2.8, December 2002. Vienna.
2. Royal Canadian Mounted Police, *Physical Abilities Requirement Evaluation (PARE)*, 2007. Ottawa.
3. Transport Canada, TP 2943, *Personnel Licensing Procedures Manual*, 2006. Ottawa.

APPENDIX A

NSO PHYSICAL FITNESS TEST

A.1 Background

Physiology is the identification of physiological mechanisms underlying physical activity, thereby enabling comprehensive delivery of treatment services concerned with the analysis, improvement, and maintenance of health and fitness. The Canadian Society for Exercise Physiology is a voluntary organization composed of professionals involved in the scientific study of exercise physiology, exercise biochemistry, fitness, and health. The Canadian Society for Exercise Physiology (then known as the Canadian Association of Sport Sciences), was founded at the 1967 Pan American Games, in Winnipeg, Manitoba – the result of four years of cooperative efforts by the Canadian Medical Association and the Canadian Association for Health, Physical Education, Recreation and Dance.

A physical fitness assessment is a snapshot of a person's current physical fitness level. The Canadian Society for Exercise Physiology sets national standards of practice required for validity, accuracy, and reliability in physical fitness assessments. These standards must be met in order for an organization to be designated as an Accredited Fitness Appraisal Centre (AFAC). This designation demonstrates meeting required criteria for direct physiological exercise assessments, thereby ensuring accurate, valid, and reliable data.

Alfred Reed, PhD, is a member of The Peak Centre for Human Performance, which holds an AFAC designation. Dr. Reed developed this physical fitness test under contract to the Canadian Nuclear Safety Commission. Dr. Reed is a national award winning career sports scientist whose work with Canadian and American sports teams has been well recognized for three decades. He has gained recognition as an exceptional teacher at the University of Ottawa and with the Canadian National Coaching Certification Program. Dr. Reed has developed dozens of national team training programs and sport specific fitness tests in use today. For the past 20 years, Dr. Reed has been engaged by 10 federal, provincial, and private sector agencies to assist them with physical fitness standards for their workers.

A.2 Objectives

This physical fitness test is designed to assess the following:

1. Static balance in three planes of motion, proprioception, and flexibility;
2. Base aerobic fitness and agility; middle aerobic fitness; and
3. Core strength, grip strength, and force discrimination.

A.3 The Test

This physical fitness test involves a series of stations, as described below. In order to pass the physical fitness test, the individual must obtain a pass mark at each station. The individual must complete each station in the order they appear below. If the individual fails to pass any station, the entire test must be repeated.

Station 1—SEARCH STATION

Station 1 is a series of traffic cones set in line with a 60.96 centimetre (two-foot) separation between each cone. A symbol in six hundred (600) font size (or shape or other identifiable item) is concealed by the bottom of the cone.

At the first cone, raise both arms overhead, go up on tiptoes and hold the position for two seconds. Return to original stance.

Move to second cone, stand at arm's length from cone, lower into a squat position, tip the cone and report the symbol seen, return the cone to its original position, stand up and return to the start position.

Move to the third cone, stand at arm's length with the cone to your left, lower body until the left hand contacts the top of the cone, tip the cone with one hand and report the symbol seen, return the cone to its original position, stand up and return to the start position.

Move to the fourth cone, stand at arm's length with the cone to your left, lower body while twisting until the right hand contacts the top of the cone, tip the cone with one hand and report the symbol seen, return the cone to its original position, stand up and return to the start position.

Move to the fifth cone, stand at arm's length with the cone to your right, lower body while twisting until the left hand contacts the top of the cone, tip the cone with one hand and report the symbol seen, return the cone to its original position, stand up and return to the start position.

Move to the sixth cone, stand at arm's length with the cone to your right, lower body until the right hand contacts the top of the cone, tip the cone with one hand and report the symbol seen, return the cone to its original position, stand up and return to the start position.

Return to the first cone wearing a nine kilogram vest. Perform the above Station 1 series again wearing the nine kilogram vest. The vest will be worn for all subsequent stations in the test.

Station 1—PASS MARK

The individual must complete Station 1 with a maximum of one fault permitted when not wearing a vest, and a maximum of two faults permitted when wearing a vest. Faults are defined as: losing balance or falling; moving feet after arriving at the cone; knocking over or moving cone beyond tipping needed to identify hidden symbol; or an error in reporting symbol. This station is not timed.

Station 2A—SPEED WALK STATION

Station 2A is a series of eight speed walks conducted around a rectangular perimeter with 27.43 metre (90 feet) sides and 13.72 metre (45 feet) ends, demarcated by perimeter tape circumscribing the perimeter at a 1.22 metre (four feet) height. At the command “go,” walk clockwise around the circuit at sufficient speed to complete the circuit around the perimeter in less than 51 seconds while under control and without touching the perimeter boundary line. Upon return to the start point, rest for ten seconds. This circuit is then repeated seven more instances in a time of less than 51 seconds per circuit, with a ten-second rest permitted after each lap. Each alternate lap is to be conducted counter clockwise.

Station 2A—PASS MARK

The individual must complete Station 2A in the prescribed time and without any faults. Faults are defined as: tripping; falling or striking the perimeter tape or the tape support at the corners; or not completing the circuit in less than 51 seconds. While no faults are permitted, one restart is permitted immediately after the first lap only if the first lap speed exceeds 51 seconds.

Station 2B—STAIR CLIMB STATION

Station 2B is a series of eight stair climbs and descents on a stairway with a 3.66 metre (12 feet) vertical rise of continuous stairs. At the command “go,” climb the stairs using the same size step (one stair or two at a time) throughout the climb without using the railing until reaching the top. The stair climb must be completed in less than seven seconds. Turn about and immediately descend the stairs under control to the start point. Upon return to the start point, rest for ten seconds. The stair climb is then repeated seven more instances in a time of less than seven seconds per climb with a ten-second rest after each return to the start point.

Station 2B—PASS MARK

The individual must complete Station 2B in the prescribed time and without any faults. Faults are defined as: tripping; falling; grabbing the railing during the stair climb; pace change (one stair climb to two stairs or vice versa); or not completing the climb in less than seven seconds.

Station 3—LIFT/CARRY FOR CONTROL STATION

Station 3 involves a series of movements of a 34.07 litre (36 quart) container loaded with an unstable weight load (water) of 12 kilograms contained freely within the container. The individual stands facing a 1.83 metre by 0.91 metre (six feet by three feet) table, with the waist touching the table edge. The table is circumscribed by a .91 meter (three-foot) border outward from the table. The individual is required to lift the container until it is in contact with their chest. The individual moves to the end of the table, maintaining the container in contact with the chest, tilts the container right 30 degrees and returns the container to the centre balanced position. The individual then moves, carrying the container in contact with the chest to the opposite end of the table, maintaining the container in contact with the chest. The individual then tilts the container left 30 degrees and returns the container to the centre balanced position.

The individual then moves, carrying the container in contact with the chest, to the original start position and places the container back in its original position which is marked on the table with a rectangular border area 2.54 centimetres (one inch) larger on each side in comparison to the container.

Station 3—PASS MARK

The individual must complete Station 3 with a maximum of one fault permitted. Faults are defined as: dropping the container; losing control of the container as evidenced by the need to re-grip the container; failure to maintain the container in contact with the chest while walking; stepping out of the station path boundary; or failure to return the container to the target area.

The physical fitness test is complete at this point.

