



Human Performance Management **Personnel Certification, Volume III: Certification of Persons Working at Nuclear Power Plants**

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Certification of Persons Working at Nuclear Power Plants**
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Preface

This regulatory document was developed, pursuant to the *Nuclear Safety and Control Act* (NSCA) and the regulations made under the NSCA, to define requirements regarding certification of persons who work at Canadian nuclear power plants (NPPs) in positions that have a direct impact on nuclear safety. The document specifies the requirements to be met by persons working, or seeking to work, in the various positions for which a certification by the Canadian Nuclear Safety Commission (CNSC) is required. It also specifies the requirements regarding the programs and processes supporting certification of their workers that NPP licensees must implement to train and examine persons seeking or holding a certification delivered by the CNSC.

Consistent with the CNSC's regulatory philosophy and with international practice, licensees are first and foremost responsible for the safe operation of their respective NPPs. Consequently, NPP licensees are held entirely responsible for training and testing their workers to ensure that they are fully qualified to perform the duties of their position, in accordance with current regulatory requirements.

The CNSC will obtain assurance that each person it certifies is qualified to carry out the duties of the applicable position by means of a regulatory oversight regime of the licensees' training programs and certification examinations based on a combination of appropriate regulatory guidance and compliance activities.

Note: In 2013, the CNSC adopted a revised regulatory framework structure with a new system for naming and numbering regulatory documents. This document has been published as part of the CNSC's initiative to bring regulatory documents that were published before the current framework was adopted into the new system. The requirements and guidance in this document have not changed.

Table of Contents

1. Purpose.....1

2. Scope.....1

3. Relevant Legislation.....1

Part I 3

Program and Process Requirements To Support Certification3

4. Training and Qualification.....3

4.1 Policies and procedures 3

4.1.1 Training and qualifying for initial certification 3

4.1.2 Maintaining the qualification of certified persons 3

4.2 Training programs..... 3

4.2.1 Initial training programs 3

4.2.2 Continuing training programs..... 3

4.3 Systematic approach to training..... 3

5. Evaluation of Persons during Training.....4

6. Performing Duties under Supervision4

7. Nuclear Power Plant Management Interviews.....4

8. Examinations for Initial Certification.....4

9. Continuing Training Delivery.....4

9.1 Update training delivery for the senior health physicist 4

9.2 Refresher training delivery for certified shift personnel 5

9.3 Update training delivery for certified shift personnel 5

10. Requalification Tests5

11. Fitness-For-Duty Program.....5

11.1 Physical and mental limitations 5

11.2 Control of personal information..... 5

12. Removal of a Person from the Duties of a Position.....5

12.1 Requalification test failure..... 5

12.2	Failure to perform minimum shift duties	5
12.3	Inability to perform duties	6
12.4	Pending decertification	6
13.	Reinstatement of a Person to the Duties of a Position Following Absence or Removal from those Duties	6
13.1	Following absence from duties	6
13.1.1	Update training	6
13.1.2	Refresher training	6
13.1.3	Simulator-based training.....	7
13.1.4	Training period constraint.....	7
13.1.5	Simulator-based requalification tests.....	7
13.1.6	Written requalification test	7
13.1.7	Performing duties under supervision	7
13.1.8	Nuclear power plant management interview	7
13.2	Following removal from duties.....	7
13.2.1	Following a requalification test failure.....	7
13.2.2	Following failure to perform minimum shift duties	8
13.2.3	Following inability to perform duties	8
13.2.4	Following completion of a decertification hearing	8
14.	Temporary Assignment to Other Positions	8
14.1	Assignment to an operationally focused position	8
14.1.1	Minimum performance per calendar quarter	9
14.1.2	Minimum performance over a three-year period	9
14.1.3	Continuing training	9
14.1.4	Requalification tests.....	9
14.2	Assignment to a non-operationally focused position.....	9
14.2.1	Minimum performance per calendar quarter	9
14.2.2	Minimum performance after any three-year period.....	9
14.2.3	Continuing training	9
14.2.4	Requalification tests.....	9
14.3	Exemption by nuclear power plant management.....	10
15.	Simulator requirements.....	10
15.1	Full-scope simulator	10

15.1.1	Simulation capabilities.....	10
15.1.2	Functional devices	10
15.2	Data recording devices.....	10
15.2.1	Operator action monitor.....	10
15.2.2	Recording of system parameters.....	11
15.2.3	Video system	11
15.3	Location of the simulator operating facility.....	11
15.4	Control of data	11
16.	Availability of Documents	11
17.	Retention of Records.....	12
17.1	Training program records	12
17.1.1	Governing documentation.....	12
17.1.2	Responsibilities for training and qualification.....	12
17.1.3	Documentation of training programs	12
17.2	Personal records	13
17.2.1	Records of education	13
17.2.2	Records of experience.....	13
17.2.3	Training records.....	13
17.2.4	Records of evaluations and interviews	13
17.2.5	Temporary assignments to other positions	13
17.2.6	Temporary removals from the position.....	13
17.3	Certification examination records.....	13
17.4	Requalification test records.....	14
17.5	Fitness-for-duty records.....	14
Part II15		
Certification Requirements for the Senior Health Physicist.....		15
18.	Requirements for Initial Certification	15
18.1	Education	15
18.2	Minimum experience	15
18.3	Initial training requirements.....	15
18.4	Nuclear power plant management interview	16
18.5	CNSC examination	16

19.	Transfer to another Nuclear Power Plant	16
19.1	Training requirements.....	16
19.2	Nuclear power plant management interview	16
19.3	CNSC examination	16
20.	Continuing Training Requirements	17
20.1	Update training	17
20.2	Formal evaluations.....	17
20.3	Nuclear power plant management interview	17
21.	CNSC Requalification Test	17
22.	Certification Following Decertification.....	17
22.1	Requirements within three years.....	17
22.1.1	Update training	18
22.1.2	Refresher training	18
22.1.3	Nuclear power plant management interview	18
22.1.4	CNSC examination	18
22.2	Requirements after more than three years	18
Part III	19
Certification Requirements for Shift Personnel.....		19
Subpart A – Reactor Operators.....		19
23.	Requirements for Initial Certification	19
23.1	Requirements prior to initial training.....	19
23.1.1	Education	19
23.1.2	Minimum experience	19
23.2	Initial training requirements.....	19
23.2.1	General training	19
23.2.2	Radiation protection training	20
23.2.3	Nuclear power plant-specific training.....	20
23.2.4	Simulator-based training.....	20
23.2.5	On-the-job training	21
23.2.6	Prerequisite for the simulator-based certification examination	21
23.2.7	Performing duties under supervision	21

23.2.8	Nuclear power plant management interview	21
23.3	Certification examinations	21
23.3.1	General examination	22
23.3.2	Nuclear power plant-specific examination	22
23.3.3	Simulator-based examination	22
Subpart B – Unit 0 Operators.....		23
24.	Requirements for Initial Certification	23
24.1	Requirements prior to initial training.....	23
24.1.1	Education	23
24.1.2	Minimum experience	23
24.2	Initial training requirements.....	23
24.2.1	General training	23
24.2.2	Radiation protection training	23
24.2.3	Nuclear power plant-specific training.....	24
24.2.4	Simulator-based training.....	24
24.2.5	On-the-job training	25
24.2.6	Prerequisite for the simulator-based certification examination	25
24.2.7	Performing duties under supervision	25
24.2.8	Nuclear power plant management interview	25
24.3	Certification examinations.....	25
24.3.1	General examination	25
24.3.2	Nuclear power plant-specific examination	25
24.3.3	Simulator-based examination	26
Subpart C – Control Room Shift Supervisors.....		27
25.	Requirements for Initial Certification	27
25.1	Requirements prior to initial training.....	27
25.1.1	Education	27
25.1.2	Minimum experience	27
25.2	Initial training requirements.....	27
25.2.1	Reactor operator training	27
25.2.2	Supplementary nuclear power plant-specific training	28
25.2.3	Simulator-based training.....	29

25.2.4	On-the-job training	29
25.2.5	Prerequisite for the simulator-based certification examination	29
25.2.6	Performing duties under supervision	29
25.2.7	Nuclear power plant management interview	30
25.3	Certification examinations	30
25.3.1	General examination	30
25.3.2	Nuclear power plant-specific examination	30
25.3.3	Supplementary nuclear power plant-specific examination	30
25.3.4	Simulator-based examination	30
26.	Advancement from Reactor Operator to Control Room Shift Supervisor	31
26.1	Minimum experience prior to training	31
26.2	Supplementary nuclear power plant-specific training	31
26.3	Simulator-based training	31
26.4	On-the-job training	31
26.5	Prerequisite for the simulator-based certification examination	31
26.6	Certification examinations	32
26.7	Performing duties under supervision	32
26.8	Nuclear power plant management interview	32
	Subpart D – Plant Shift Supervisors at a Single-Unit Nuclear Power Plant.....	33
27.	Requirements for Initial Certification	33
27.1	Requirements prior to initial training	33
27.1.1	Education	33
27.1.2	Minimum experience	33
27.2	Initial training requirements	33
27.2.1	Reactor operator training	33
27.2.2	Supplementary nuclear power plant-specific training	34
27.2.3	Simulator-based training	34
27.2.4	On-the-job training	35
27.2.5	Prerequisite for the simulator-based certification examination	35
27.2.6	Performing duties under supervision	35
27.2.7	Nuclear power plant management interview	35
27.3	Certification examinations	35
27.3.1	General examination	36

27.3.2	Nuclear power plant-specific examination	36
27.3.3	Supplementary nuclear power plant-specific examination	36
27.3.4	Simulator-based examination	36
28.	Advancement from Reactor Operator to Plant Shift Supervisor at a Single-Unit Nuclear Power Plant	36
28.1	Minimum experience prior to training	36
28.2	Supplementary nuclear power plant-specific training	36
28.3	Simulator-based training	37
28.4	On-the-job training	37
28.5	Prerequisite for the simulator-based certification examination	37
28.6	Certification examinations	37
28.7	Performing duties under supervision	37
28.8	Nuclear power plant management interview	37
	Subpart E – Plant Shift Supervisors at a Multi-Unit Nuclear Power Plant	38
29.	Requirements for Initial Certification	38
29.1	Minimum experience prior to advancement	38
29.2	On-the-job training	38
29.3	Performing duties under supervision	38
29.4	Nuclear power plant management interview	38
	Subpart F – Validity of Certification Examinations.....	39
30.	Extending the Validity Period of Certification Examinations	39
30.1	Conditions for extension	39
30.2	Required information	39
31.	Re-Establishing the Validity of Certification Examinations.....	39
	Subpart G – Renewal of Certification.....	40
32.	Continuing Training Requirements	40
32.1	Refresher training	40
32.2	Update training	40
32.3	Formal evaluations.....	40
33.	Requalification Tests	40

Subpart H – Certification Following Decertification41

34. Requirements Within Three Years41

 34.1 Update training 41

 34.2 Refresher training 41

 34.3 Simulator-based training..... 41

 34.4 Training period constraint..... 42

 34.5 Simulator-based requalification tests 42

 34.6 Written requalification test 42

 34.7 Performing duties under supervision 42

 34.8 Nuclear power plant management interview 42

35. Requirements After More Than Three Years.....42

Glossary43

Certification of Persons Working at Nuclear Power Plants

1. Purpose

This regulatory document defines requirements aiming to ensure that persons seeking a certification or renewal of a certification by the Canadian Nuclear Safety Commission (CNSC) for a position referred to in the licence of a nuclear power plant (NPP or plant) are qualified to carry out the duties of that position in accordance with the *Nuclear Safety and Control Act* (NSCA) and the regulations made under the NSCA.

2. Scope

This document, when incorporated in an NPP licence, sets out the obligations of the licensee with respect to the certification of its workers, including:

1. the programs and processes that the licensee must implement to train and examine persons seeking a certification or a renewal of certification;
2. the respective qualifications required of persons seeking a certification for those positions referred to in the licence; and
3. the respective training and requalification tests that certified persons seeking a renewal of certification must have completed.

3. Relevant Legislation

The provisions of the NSCA and its regulations relevant to this document are as follows:

1. Paragraph 21(1)(i) of the NSCA empowers the Commission to certify and decertify persons referred to in paragraph 44(1)(k) of the NSCA as qualified to carry out their duties.
2. Paragraph 44(1)(k) of the NSCA empowers the Commission to make regulations respecting the qualifications for, and the training and examination of, nuclear energy workers and other persons employed in a nuclear facility.
3. Subsection 24(5) of the NSCA empowers the Commission to impose any licence condition that the Commission considers necessary for the purposes of this Act
4. Paragraph 37(2)(b) of the NSCA states that the Commission may authorize a designated officer to certify and decertify persons referred to in paragraph 44(1)(k) of the NSCA as qualified to carry out their duties.
5. Subsection 24(4) of the NSCA prohibits the Commission from issuing, renewing, amending, replacing or authorizing the transfer of a licence, “unless, in the opinion of the Commission, the applicant
 - (a) is qualified to carry on the activity that the licence will authorize the licensee to carry on; and
 - (b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.”
6. Subsection 9(2) of the *Class I Nuclear Facilities Regulations* states that “The Commission or a designated officer authorized under paragraph 37(2)(b) of the Act may certify a person referred to in paragraph 44(1)(k) of the Act for a position referred to in a licence after receiving from the licensee an application stating that the person

- (a) meets the applicable qualification requirements referred to in the licence;
 - (b) has successfully completed the applicable training program and examination referred to in the licence; and
 - (c) is capable, in the opinion of the licensee, of performing the duties of the position.”
7. Subsection 9(3) of the *Class I Nuclear Facilities Regulations* states that “The Commission or a designated officer authorized under paragraph 37(2)(b) of the Act may renew a certification after receiving from a licensee an application stating that the certified person
- (a) has safely and competently performed the duties of the position for which the person was certified;
 - (b) continues to receive the applicable training referred to in the licence;
 - (c) has successfully completed the applicable requalification tests referred to in the licence for renewing the certification; and
 - (d) is capable, in the opinion of the licensee, of performing the duties of the position.”
8. Subsection 9(4) of the *Class I Nuclear Facilities Regulations* states that “A certification expires five years after the date of its issuance or renewal.”
9. Subsection 10(1) of the *Class I Nuclear Facilities Regulations* states that:
“If a licence requires a person to successfully complete an examination administered by the Commission in order to be certified, the person may take the examination after the Commission receives from the licensee an application that includes
- (a) the name of the person;
 - (b) the name of the applicable examination; and
 - (c) a statement that the person has successfully completed the applicable training program referred to in the licence.”
10. Paragraph 12(1)(a) of the *General Nuclear Safety and Control Regulations* obliges every licensee to “ensure the presence of a sufficient number of qualified workers to carry on the licensed activity safely and in accordance with the Act, the regulations made under the Act and the licence.”
11. Paragraph 12(1)(b) of the *General Nuclear Safety and Control Regulations* obliges every licensee to “train the workers to carry on the licensed activity in accordance with the Act, the regulations made under the Act and the licence.”

Part I

Program and Process Requirements To Support Certification

4. Training and Qualification

4.1 Policies and procedures

4.1.1 Training and qualifying for initial certification

The licensee shall establish and document policies and procedures for training and qualifying persons seeking certification for the positions listed below that are applicable to its nuclear power plants (NPPs):

1. senior health physicist;
2. reactor operator;
3. unit 0 operator;
4. control room shift supervisor; and
5. plant shift supervisor.

4.1.2 Maintaining the qualification of certified persons

The licensee shall establish and document policies and procedures for training and maintaining the qualification of persons holding a certification for the applicable positions listed in paragraph 4.1.1.

4.2 Training programs

4.2.1 Initial training programs

The licensee shall establish and document initial training programs, specific to each applicable position listed in paragraph 4.1.1, to address the training requirements specified in Part II and in Part III of this regulatory document.

4.2.2 Continuing training programs

The licensee shall establish and document continuing training programs, specific to each applicable position listed in paragraph 4.1.1, to address the training requirements specified in sections 20 and 32.

4.3 Systematic approach to training

The licensee shall establish and implement the initial and continuing training programs specified in Part II and in Part III of this regulatory document in accordance with the principles of a systematic approach to training.

5. Evaluation of Persons during Training

The licensee shall administer the formal evaluations specified in Part II and in Part III of this regulatory document in accordance with a documented process covering:

1. the requirements applicable to the different types of evaluations;
2. the number and scope of the evaluations associated with the different segments of training;
3. the procedures covering the preparation, conduct and grading of:
 - a) the written and oral evaluations associated with initial training;
 - b) the simulator-based evaluations associated with initial training;
 - c) the performance evaluations associated with initial on-the-job training;
 - d) the knowledge evaluations associated with continuing training; and
 - e) the performance evaluations associated with continuing training.
4. the requirements and procedures for ensuring the security of the evaluations; and
5. the qualification requirements of the persons responsible for the preparation, conduct and grading of:
 - a) the written and oral evaluations associated with initial training;
 - b) the simulator-based evaluations associated with initial training;
 - c) the performance evaluations associated with initial on-the-job training;
 - d) the knowledge evaluations associated with continuing training; and
 - e) the performance evaluations associated with continuing training.

6. Performing Duties under Supervision

The licensee shall establish and document, for each applicable shift personnel position listed in paragraph 4.1.1, procedures regarding the performance of the duties of the position under the supervision of a certified incumbent of that position, prior to certification.

7. Nuclear Power Plant Management Interviews

The licensee shall establish and document procedures for preparing and conducting the various NPP management interviews specified in Part II and in Part III of this document.

8. Examinations for Initial Certification

The licensee shall prepare, conduct and grade the certification examinations specified in Part III of this document in accordance with the conditions referred to in the NPP licence.

9. Continuing Training Delivery

9.1 Update training delivery for the senior health physicist

The licensee shall deliver the update training for the senior health physicist specified in subsection 20.1 promptly following the occurrence of the initiating change or event.

9.2 Refresher training delivery for certified shift personnel

The licensee shall deliver, on a regular basis, the refresher training for reactor operators, unit 0 operators, control room shift supervisors and plant shift supervisors specified in subsection 32.1.

The topics selected for refresher training shall be reviewed over a period not exceeding five years.

9.3 Update training delivery for certified shift personnel

The licensee shall deliver the update training for reactor operators, unit 0 operators, control room shift supervisors and plant shift supervisors specified in subsection 32.2 promptly following the occurrence of the initiating change or event.

10. Requalification Tests

The licensee shall prepare, conduct and grade the requalification tests required in section 33 in accordance with the conditions referred to in the NPP licence.

11. Fitness-For-Duty Program

11.1 Physical and mental limitations

The licensee shall have in place a documented fitness-for-duty program that provides confirmation that any person seeking a certification, holding a certification or seeking renewal of a certification does not have a physical or a mental limitation that would make the person incapable of performing the duties of the applicable position.

11.2 Control of personal information

The licensee shall establish and document policies and procedures controlling the use of the personal information related to fitness-for-duty and the access to that information.

12. Removal of a Person from the Duties of a Position

The licensee shall immediately remove a person from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor under the conditions specified in subsections 12.1 to 12.4.

12.1 Requalification test failure

The person has failed any of the requalification tests required in section 33.

12.2 Failure to perform minimum shift duties

The person, while temporarily assigned to another position at the NPP, has not acted as a responsible operator or supervisor in the position for which the person holds a certification for the minimum number of complete shifts specified in paragraph 14.1.1 or 14.2.1, as appropriate, for two consecutive calendar quarters.

12.3 Inability to perform duties

In the opinion of the licensee, the person is not capable, for any reason, of performing the duties of the position for which the person holds a certification, including a limitation identified by the fitness-for-duty program referred to in section 11.

12.4 Pending decertification

The person and the licensee have been informed in writing that the CNSC has initiated procedures for the decertification of the person.

13. Reinstatement of a Person to the Duties of a Position Following Absence or Removal from those Duties

13.1 Following absence from duties

The licensee may reinstate a person who has been absent from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor for more than two shift cycles, due to sickness, injury, pregnancy or other family-related responsibilities or a leave of absence, to the duties of that position if the person meets the requirements specified in paragraphs 13.1.1 to 13.1.8.

13.1.1 Update training

The person must have completed update training, appropriate to the knowledge and skill requirements of the position, covering changes or events that have occurred during the absence of the person from the position, including:

1. changes to NPP systems;
2. changes to licensee and NPP policies, standards and procedures;
3. changes to regulatory requirements;
4. changes to the NPP licence or to documents referenced in the licence; and
5. NPP and industry experience and operating events.

This training shall include formal knowledge and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

13.1.2 Refresher training

The person must have completed refresher training covering the topics from the initial training that must be reviewed and practiced to ensure that the person continues to have the knowledge and the skills required to work competently in the position. The selection of topics shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal written and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

13.1.3 Simulator-based training

The person must have completed simulator-based exercises that cover a sufficient number of varied situations that challenge the diagnostic and decision-making abilities of the person to ensure that the person has the knowledge and the skills required to work competently in the position. The selection of exercises shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required diagnostic and decision-making abilities to perform the duties of the position.

13.1.4 Training period constraint

The training requirements specified in paragraphs 13.1.1 to 13.1.3 must be met within the one-year period prior to the person being reinstated to the duties of the position by the licensee.

13.1.5 Simulator-based requalification tests

The person must have successfully completed simulator-based requalification tests equivalent in types and number to those referred to in the NPP licence that the person would have had to take during the period of absence, if the person had continued to work in the position.

13.1.6 Written requalification test

The person must have successfully completed, within the two-year period prior to being reinstated to the duties of the position, one written requalification test that meets the conditions referred to in the NPP licence.

13.1.7 Performing duties under supervision

The person must have performed the duties of the position under the supervision of a certified incumbent of the position for the number of shifts that the licensee considers necessary to confirm and document that the person can perform those duties competently and safely.

13.1.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the position. The person must complete this interview after having met the requirements specified in paragraphs 13.1.1 to 13.1.7.

13.2 Following removal from duties**13.2.1 Following a requalification test failure**

The licensee may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 12.1, to the duties of the position if the person has met the applicable conditions referred to in the NPP licence.

13.2.2 Following failure to perform minimum shift duties

The licensee may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 12.2, to the duties of the position if:

1. the circumstances that prevented the person from performing the duties of the position for which the person holds a certification for the applicable minimum number of shifts no longer exist; and
2. the person meets the requirements specified in paragraphs 13.1.1 to 13.1.8.

13.2.3 Following inability to perform duties

The licensee may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 12.3, to the duties of the position if:

1. the condition or limitation why the person was not capable of performing the duties of the position for which the person holds a certification has been rectified; and
2. the person meets the requirements specified in paragraphs 13.1.1 to 13.1.8.

13.2.4 Following completion of a decertification hearing

The licensee may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 12.4, to the duties of the position upon being informed in writing of the CNSC decision not to decertify the person after the person or the licensee has been heard in accordance with the procedure referred to in section 13 of the *Class I Nuclear Facilities Regulations*.

14. Temporary Assignment to Other Positions

The licensee shall ensure that each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor, who is temporarily assigned to another position at the NPP, maintains the competence necessary to perform the duties of the position for which the person holds a certification by confirming the person meets the requirements specified in subsection 14.1 or 14.2, as appropriate, during the period of temporary assignment.

14.1 Assignment to an operationally focused position

The licensee shall ensure that each certified operator or shift supervisor temporarily assigned to perform one of the activities listed below meets the requirements specified in paragraphs 14.1.1 to 14.1.4:

1. development and delivery of station-specific training for shift personnel seeking certification;
2. development and delivery of continuing training for shift personnel holding a certification;
3. preparation, conduct and grading of certification examinations and requalification tests for shift personnel seeking or holding a certification;
4. preparation and review of NPP operating documentation for use by certified shift personnel;
5. coordination or supervision of NPP operation and maintenance activities; or
6. coordination or supervision of commissioning activities or outages of reactor units or unit 0.

14.1.1 Minimum performance per calendar quarter

The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification for a minimum of three complete shifts per calendar quarter.

14.1.2 Minimum performance over a three-year period

The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification for a minimum of 50 complete shifts over a three-year period. This requirement does not apply to persons assigned as:

1. simulator instructor for shift personnel seeking or holding a certification; or
2. examiner for simulator-based certification examinations and simulator-based requalification tests for shift personnel seeking or holding a certification.

14.1.3 Continuing training

The licensee shall ensure that the person completes the continuing training applicable to the position for which the person holds a certification and successfully completes the corresponding knowledge and performance evaluations.

14.1.4 Requalification tests

The licensee shall ensure that the person successfully completes all the requalification tests applicable to the position for which the person holds a certification.

14.2 Assignment to a non-operationally focused position

The licensee shall ensure that each certified operator or shift supervisor temporarily assigned to perform activities other than those listed in subsection 14.1 meets the requirements specified in paragraphs 14.2.1 to 14.2.4.

14.2.1 Minimum performance per calendar quarter

The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification for a minimum of five complete shifts per calendar quarter.

14.2.2 Minimum performance after any three-year period

The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification on a full-time basis for a minimum of 80 complete shifts after any three-year period of assignment.

14.2.3 Continuing training

The licensee shall ensure that the person completes the continuing training applicable to the position for which the person holds a certification and successfully completes the corresponding knowledge and performance evaluations.

14.2.4 Requalification tests

The licensee shall ensure that the person successfully completes all the requalification tests applicable to the position for which the person holds a certification.

14.3 Exemption by nuclear power plant management

NPP management may, once in any 12-month period, allow a certified operator or shift supervisor to defer to the next quarter the completion of the required minimum number of shifts specified in paragraph 14.1.1 or 14.2.1 for a given quarter.

15. Simulator requirements

15.1 Full-scope simulator

The licensee shall ensure that each NPP has a full-scope simulator facility in service for training and examining persons seeking or holding a certification as reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor.

15.1.1 Simulation capabilities

The simulator shall be capable of simulating, realistically and in real time, all significant NPP manoeuvres and transients that may occur under normal and abnormal operating conditions, including:

1. NPP start-ups and shutdowns;
2. major NPP upsets and accident conditions; and
3. all significant failures of systems and their equipment and the consequences of such failures.

For conditions and failures that may vary in magnitude – such as pipe breaks, loss of inventory, loss of flow, loss of pressure, and loss of vacuum – the simulator shall have adjustable rates to simulate all possible degrees of severity of a condition or failure that impact unit response or operator actions.

15.1.2 Functional devices

The simulator shall be equipped with the following functional devices that replicate those of the NPP main control room:

1. telephone system;
2. radiation emergency warning siren;
3. fire emergency warning siren; and
4. public address system.

15.2 Data recording devices

In addition, for the simulator-based certification examinations and requalification tests for shift personnel specified in Part III, the simulator shall be equipped with data recording devices that meet the requirements specified in paragraphs 15.2.1 to 15.2.3. These devices must be capable of being synchronized to within two seconds of each other.

15.2.1 Operator action monitor

The simulator shall be equipped with an operator action monitor capable of printing in chronological order, with their respective time of occurrence, all malfunctions initiated by the simulator operator and all the actions performed on the control panels during an examination or test.

15.2.2 Recording of system parameters

The simulator shall have provisions for either:

1. tracing, with adequate precision, graphics of any selection of 48 system parameters versus time for up to two hours and for printing those graphics; or
2. storing and printing the values versus time of any selection of 48 system parameters sampled at an adequate frequency during a period of up to two hours.

15.2.3 Video system

The simulator shall be equipped with a video system that:

1. is capable of recording all the actions each person being evaluated performs in the control room during an examination or test;
2. has sufficient resolution to permit the examiners to identify, with the aid of the corresponding control panel photographs, the controls and instruments used by the persons being evaluated;
3. is capable of displaying time on the recordings;
4. is capable of recording clearly all verbal communications and telephone conversations between the persons being evaluated and other members of the operating team during an examination or test; and
5. allows for unequivocal identification of the voice of each person being evaluated.

15.3 Location of the simulator operating facility

The simulator operating facility shall be separated from the control room replica so that the persons being evaluated cannot become aware of the data recorded or of the inputs to the simulator being entered by the simulator operator.

15.4 Control of data

The licensee shall establish and document policies and procedures controlling the use of the data recorded by the video system specified in paragraph 15.2.3 and the access to those data.

16. Availability of Documents

The licensee shall make available to the CNSC a copy of the documents listed below, including the approved revisions of the documents:

1. the licensee's and NPP policies, standards and procedures related to the management and conduct of NPP operation, including the operating documentation available in the NPP control room;
2. the licensee's and NPP policies, standards and procedures related to radiation protection;
3. the licensee's and NPP policies, standards and procedures related to training and qualifying persons seeking a certification;
4. the licensee's and NPP policies, standards and procedures related to training and maintaining the qualification of persons holding a certification;
5. the documents used for the training of persons seeking a certification;
6. the documents used for the training of persons holding a certification;
7. the documents used for the training of non-certified operators on NPP systems; and
8. the documents used for the training of non-certified operators in radiation protection.

17. Retention of Records

17.1 Training program records

The licensee shall retain the training program records specified in paragraphs 17.1.1 to 17.1.3 for a minimum period of 10 years.

17.1.1 Governing documentation

The licensee shall retain the policies, standards and procedures for training and qualifying persons seeking a certification and for training and maintaining the qualification of persons holding a certification, including:

1. the procedures for reviewing and approving the outcome of each phase of the systematic approach to training;
2. the procedures for preparing, conducting and grading the formal evaluations that must be administered to persons seeking or holding a certification;
3. the procedures regarding the performance of the duties of a position under supervision by shift personnel seeking a certification;
4. the procedures for preparing, conducting and grading the certification examinations that must be administered to shift personnel seeking a certification;
5. the procedures for preparing and conducting the NPP management interviews that must be administered to persons seeking a certification, holding a certification or seeking renewal of a certification;
6. the procedures for preparing, conducting and grading the requalification tests that must be administered to shift personnel holding a certification; and
7. the procedures for the retention of training records for persons seeking or holding a certification.

17.1.2 Responsibilities for training and qualification

The licensee shall retain records of the responsibilities of line management and those of personnel in the training organization with respect to training and qualification of persons seeking or holding a certification.

17.1.3 Documentation of training programs

For each position that requires a certification, the licensee shall retain records of:

1. the outcome of the analysis performed to identify training needs, including:
 - a) a description of the process followed to conduct the analysis;
 - b) the names and qualifications of the persons who participated in the analysis;
 - c) the task list obtained from the analysis;
 - d) the criteria used in selecting tasks for training; and
 - e) the list of the knowledge and skills required to perform the selected tasks.
2. the outcome of the design of training programs, including the training objectives;
3. the outcome of the development of training programs, including:
 - a) the lesson plans, simulator training guides and other training guides; and
 - b) the training manuals and any other training material used by the trainers and the trainees;
4. the outcome of the implementation of training programs, including for each course or session in a program:
 - a) the name and employee number of each trainee;

- b) the dates when the training was delivered;
 - c) the names and positions of the persons who delivered the course or session;
 - d) a copy of all formal knowledge and performance evaluations conducted, with the expected answers or performance, as applicable; and
 - e) the names and positions of the persons who prepared, conducted and graded the formal evaluations of trainees;
 - f) a copy of all NPP management interviews conducted, with the expected answers; and
 - g) the names and positions of the persons who prepared and conducted the NPP management interviews; and
5. the outcome of the formal evaluations of training programs conducted by the licensee or by external organizations.

17.2 Personal records

The licensee shall retain the records specified in paragraphs 17.2.1 to 17.2.6 for each person seeking or holding a certification. These records shall be kept for the period that the worker is employed by the licensee and for five years after the worker ceases to be employed, as specified in subsection 14(5) of the *Class I Nuclear Facilities Regulations*.

17.2.1 Records of education

The licensee shall retain the name and address of the educational establishments where the diplomas, degrees or certificates required for the position were obtained.

17.2.2 Records of experience

The licensee shall retain the name and address of the facilities where the experience required for the position was obtained, indicating the type and the number of years of experience.

17.2.3 Training records

The licensee shall retain records of the initial training and continuing training received, including the dates when training was received.

17.2.4 Records of evaluations and interviews

The licensee shall retain the dates and the results of all formal evaluations and interviews required for the position.

17.2.5 Temporary assignments to other positions

The licensee shall retain records of any temporary assignment referred to in section 14 that exceeds one shift cycle, including the nature and dates of the assignment.

17.2.6 Temporary removals from the position

The licensee shall retain records of any temporary removal of the person from the position by the licensee, including the reasons for the removal and actions taken to reinstate the person in the position.

17.3 Certification examination records

The licensee shall retain the certification examination records referred to in the NPP licence.

17.4 Requalification test records

The licensee shall retain the requalification test records referred to in the NPP licence.

17.5 Fitness-for-duty records

The licensee shall retain, for a minimum of 10 years, records of:

1. the fitness-for-duty program for persons seeking a certification, holding a certification or seeking renewal of a certification; and
2. the policies and procedures controlling the use of the personal information related to fitness-for-duty and the access to that information.

Part II

Certification Requirements for the Senior Health Physicist

18. Requirements for Initial Certification

A person seeking certification as senior health physicist shall, at the time of certification at a given nuclear power plant (NPP), meet the requirements specified in subsections 18.1 to 18.5.

18.1 Education

The person must have a degree in health physics from a recognized university. An acceptable alternative to this degree is a Baccalaureate in engineering or science from a recognized university and the successful completion of specialized courses, taken at a recognized educational institution or university, covering current radiation protection principles, methods and practices related to the operation of an NPP.

18.2 Minimum experience

The person must have a minimum of four years related experience at a nuclear facility. At least two years of this experience must be at an NPP with at least six months at the NPP where certification is sought.

18.3 Initial training requirements

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. the relevant provisions of the *Nuclear Safety and Control Act* (NSCA);
2. the regulations made pursuant to the NSCA and, specifically the:
 - a) *General Nuclear Safety and Control Regulations*;
 - b) *Radiation Protection Regulations*;
 - c) *Class I Nuclear Facilities Regulations*;
 - d) *Nuclear Substances and Radiation Devices Regulations*; and
 - e) *Packaging and Transport of Nuclear Substances Regulations, 2015*;
3. safety culture;
4. the responsibilities and authority of the senior health physicist;
5. the responsibilities and authority of persons who interact with the senior health physicist;
6. the NPP licence and documents referenced in the licence;
7. the licensee's and NPP policies, standards and procedures; and
8. NPP design, operation and maintenance.

This training shall include a formal evaluation that confirms and documents that, at the completion of the training, the person has the required knowledge to perform the duties of the senior health physicist.

18.4 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the senior health physicist. The person must complete this interview after having met the requirements specified in subsection 18.3 and before taking the CNSC examination specified in subsection 18.5.

18.5 CNSC examination

The person must have successfully completed an oral examination administered by CNSC staff that samples the topics specified in subsection 18.3, and current radiation protection principles, methods and practices related to the operation of the NPP.

19. Transfer to another Nuclear Power Plant

A person, who holds a certification as senior health physicist at a given Canadian NPP, seeking certification for the same position after transferring to another NPP shall, at the time of certification at this NPP, meet the requirements specified in subsections 19.1 to 19.3.

19.1 Training requirements

The person must have completed training, appropriate to the knowledge requirements of the position at the NPP where certification is sought, covering:

1. the responsibilities and authority of the senior health physicist;
2. the responsibilities and authority of persons who interact with the senior health physicist;
3. the NPP licence and documents referenced in the licence;
4. the licensee's and NPP policies, standards and procedures; and
5. NPP design, operation and maintenance.

This training shall include a formal evaluation that confirms and documents that, at the completion of the training, the person has the required knowledge to perform the duties of the senior health physicist at the NPP where certification is sought.

19.2 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the senior health physicist at the NPP. The person must complete this interview after having met the requirements specified in subsection 19.1 and before taking the CNSC examination specified in subsection 19.3.

19.3 CNSC examination

The person must have successfully completed an oral examination administered by CNSC staff that samples the topics specified in subsection 19.1, and current radiation protection principles, methods and practices related to the operation of the NPP where certification is sought.

20. Continuing Training Requirements

A person who holds a certification as senior health physicist at a given NPP shall, during the period of certification, meet the requirements specified in subsections 20.1 to 20.3.

20.1 Update training

The person must complete update training appropriate to the knowledge requirements of the position, covering:

1. changes to NPP systems;
2. changes to licensee's and NPP policies, standards and procedures;
3. changes to regulatory requirements;
4. changes to the NPP licence or to documents referenced in the licence; and
5. NPP and industry experience and operating events.

20.2 Formal evaluations

The person must complete formal knowledge evaluations that confirm and document that the person has the required knowledge of the topics covered during update training.

20.3 Nuclear power plant management interview

The person must complete an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the senior health physicist. The person must complete this interview within the six months prior to the expiry date of the person's certification and before taking the CNSC requalification test specified in section 21.

21. CNSC Requalification Test

At the time of renewal of certification at a given NPP, a senior health physicist shall have successfully completed an oral requalification test administered by CNSC staff that samples the topics specified in subsection 18.3, and current radiation protection principles, methods and practices related to the operation of the NPP.

22. Certification Following Decertification

22.1 Requirements within three years

Within the three-year period following a decertification as senior health physicist at a given NPP, a person may be certified again as senior health physicist at the same NPP if:

1. the basis for the decertification of the person is no longer applicable; and
2. the person meets the requirements specified in paragraphs 22.1.1 to 22.1.4.

22.1.1 Update training

The person must have completed update training, appropriate to the knowledge requirements of the position, covering changes or events that have occurred during the absence of the person from the position, including:

1. changes to NPP systems;
2. changes to licensee's and NPP policies, standards and procedures;
3. changes to regulatory requirements;
4. changes to the NPP licence or to documents referenced in the licence; and
5. NPP and industry experience and operating events.

This training shall include a formal evaluation that confirms and documents that, at the completion of the training, the person has the required knowledge to perform the duties of the senior health physicist.

22.1.2 Refresher training

The person must have completed refresher training covering the topics from the initial training specified in subsection 18.3 that must be reviewed to ensure that the person has the knowledge required to work competently in the position. The selection of the topics shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include a formal evaluation that confirms and documents that, at the completion of the training, the person has the required knowledge to perform the duties of the senior health physicist.

22.1.3 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the senior health physicist. The person must complete this interview after having met the requirements specified in paragraphs 22.1.1 and 22.1.2, and before taking the CNSC examination specified in paragraph 22.1.4.

22.1.4 CNSC examination

The person must have successfully completed an oral examination administered by CNSC staff covering the topics specified in subsection 18.3, and current radiation protection principles, methods and practices related to the operation of the NPP.

22.2 Requirements after more than three years

After more than three years following a decertification as senior health physicist at a given NPP, a person may be certified again as senior health physicist at any NPP if:

1. the basis for the decertification of the person is no longer applicable; and
2. the person meets the requirements for initial certification specified in subsections 18.3 to 18.5.

Part III

Certification Requirements for Shift Personnel

Subpart A – Reactor Operators

23. Requirements for Initial Certification

23.1 Requirements prior to initial training

A person seeking certification as reactor operator at a given NPP shall meet the requirements specified in paragraphs 23.1.1 and 23.1.2 prior to beginning the initial training for the reactor operator position specified in subsection 23.2.

23.1.1 Education

The person must have a high school diploma obtained from a recognized educational institution that includes course credits in both science and mathematics.

23.1.2 Minimum experience

The person must have a minimum of two years of plant experience at the NPP where certification is sought, or an acceptable alternative to this experience. Acceptable alternatives are:

1. two years of plant experience at a similar NPP on the same site and at least six months of additional plant experience at the NPP where certification is sought; or
2. two years of plant experience at any NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought; or
3. two years of plant experience at an NPP of a different type, and at least one and a half years of additional plant experience at the NPP where certification is sought.

23.2 Initial training requirements

A person seeking certification as reactor operator at a given NPP shall, at the time of certification, meet the requirements specified in paragraphs 23.2.1 to 23.2.8.

23.2.1 General training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. science fundamentals relevant to the operation of the NPP where certification is sought; and
2. principles of operation of the equipment at that NPP.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a reactor operator. The person must complete this training before taking the certification examination specified in paragraph 23.3.1.

23.2.2 Radiation protection training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. radiation fundamentals;
2. radiation hazards;
3. radiation protection theory and practices; and
4. radiation protection procedures used during normal, abnormal and emergency operation of the NPP.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a reactor operator. The person must complete this training before taking the certification examination specified in paragraph 23.3.2.

23.2.3 Nuclear power plant-specific training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. design and operation of NPP systems;
2. integrated operation of NPP systems including, where applicable, interactions between the systems of a reactor unit and those of other reactor units and of unit 0;
3. expected response of NPP systems and units to accident conditions;
4. technical bases for emergency operating procedures;
5. diagnosis of equipment failures and assessment of abnormal plant conditions;
6. phenomena that may significantly affect reactor core reactivity and neutron flux shape;
7. reactor fuelling, fuelling limitations, fuel handling and storage, and irradiated fuel cooling;
8. configuration of systems and equipment isolation required for maintenance activities;
9. safety culture;
10. principles of nuclear safety and their application;
11. the NPP licence and documents referenced in the licence;
12. situations that may result in the violation of conditions in the NPP licence and operating policies and principles;
13. administrative procedures related to NPP operation and maintenance; and
14. the responsibilities and authority of a reactor operator and of other NPP personnel who interfaces with the reactor operator.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a reactor operator. The person must complete this training before taking the certification examination specified in paragraph 23.3.2.

23.2.4 Simulator-based training

The person must have completed training on the NPP full-scope simulator, appropriate to the knowledge and skill requirements of the position, covering:

1. operation and monitoring of NPP systems under normal, abnormal and emergency conditions, including where applicable:
 - a) the effects that operation of a reactor unit may have on other reactor units and on unit 0; and

- b) the effects that operation of unit 0 may have on the reactor units;
2. independent diagnosis and decision-making by the reactor operator; and
3. interaction with other members of the shift crew.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of a reactor operator.

23.2.5 On-the-job training

The person must have completed on-the-job training, appropriate to the knowledge and skill requirements of the position, covering:

1. standard control room operating practices;
2. operation and monitoring of NPP systems from the main control room that cannot be performed on the NPP full scope simulator;
3. operations and monitoring performed in the control equipment room;
4. operation and monitoring of NPP systems from the emergency control room; and
5. authorization of maintenance and repair of NPP systems.

This training shall include formal performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of a reactor operator.

23.2.6 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in paragraphs 23.2.1 to 23.2.5 before taking the certification examination specified in paragraph 23.3.3.

23.2.7 Performing duties under supervision

The person must have performed the duties of a reactor operator under the supervision of a certified incumbent of the position for a minimum of 480 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 360 of those hours must have been worked after the person has met the requirements specified in paragraphs 23.2.1 to 23.2.5.

23.2.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of a reactor operator. The person must complete this interview after having met the requirements specified in paragraph 23.2.7 and those regarding certification examinations specified in subsection 23.3.

23.3 Certification examinations

A person seeking certification as reactor operator at a given NPP shall, at the time of certification, meet the requirements specified in paragraphs 23.3.1 to 23.3.3.

23.3.1 General examination

The person must have successfully completed the general examination for reactor operators before taking the certification examination specified in paragraph 23.3.2 and, subject to the provisions of section 30, within the four-year period prior to certification. This knowledge-based examination samples topics covered in the training specified in paragraph 23.2.1.

23.3.2 Nuclear power plant-specific examination

The person must have successfully completed the NPP-specific examination for reactor operators before taking the certification examination specified in paragraph 23.3.3 and, subject to the provisions of section 30, within the two-and-a-half-year period prior to certification. This knowledge-based examination samples topics covered in the training specified in paragraph 23.2.3 and those aspects of reactor unit operation, under normal, abnormal and emergency conditions, that may result in the discharge of radioactivity to the environment, or that could affect the safety of NPP personnel or of members of the public.

23.3.3 Simulator-based examination

Subject to the provisions of section 30, the person must have successfully completed the simulator-based examination for reactor operators within the one-year period prior to certification. This performance-based examination covers operation of a reactor unit under abnormal and emergency conditions.

Subpart B – Unit 0 Operators

24. Requirements for Initial Certification

24.1 Requirements prior to initial training

A person seeking certification as unit 0 operator at a given multi-unit NPP shall meet the requirements specified in paragraphs 24.1.1 and 24.1.2, prior to beginning the initial training for the unit 0 operator position specified in subsection 24.2.

24.1.1 Education

The person must have a high school diploma obtained from a recognized educational institution that includes course credits in both science and mathematics.

24.1.2 Minimum experience

The person must have a minimum of two years of plant experience at the NPP where certification is sought, or an acceptable alternative to this experience. Acceptable alternatives are:

1. two years of plant experience at a similar NPP on the same site and at least six months of additional plant experience at the NPP where certification is sought; or
2. two years of plant experience at any NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought; or
3. two years of plant experience at an NPP of a different type and at least one and a half years of additional plant experience at the NPP where certification is sought.

24.2 Initial training requirements

A person seeking certification as unit 0 operator at a given multi-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 24.2.1 to 24.2.8.

24.2.1 General training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. science fundamentals relevant to the operation of the NPP where certification is sought; and
2. principles of operation of the equipment at that NPP.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a unit 0 operator. The person must complete this training before taking the certification examination specified in paragraph 24.3.1.

24.2.2 Radiation protection training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. radiation fundamentals;
2. radiation hazards;

3. radiation protection theory and practices; and
4. radiation protection procedures used during normal, abnormal and emergency operation of the NPP.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a unit 0 operator. The person must complete this training before taking the certification examination specified in paragraph 24.3.2.

24.2.3 Nuclear power plant-specific training

The person must have completed training, appropriate to the knowledge requirements of the position, covering:

1. design and operation of NPP systems;
2. integrated operation of NPP systems, including interactions between the systems of the reactor units and those of unit 0;
3. expected response of NPP systems and units to accident conditions;
4. technical bases for emergency operating procedures;
5. diagnosis of equipment failures and assessment of abnormal plant conditions;
6. fuel storage and irradiated fuel cooling;
7. configuration of systems and equipment isolation required for maintenance activities;
8. safety culture;
9. principles of nuclear safety and their application;
10. the NPP licence and documents referenced in the licence;
11. situations that may result in the violation of conditions in the NPP licence and operating policies and principles;
12. administrative procedures related to NPP operation and maintenance; and
13. the responsibilities and authority of a unit 0 operator and of other NPP personnel who interfaces with the unit 0 operator.

This training shall include formal written evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of a unit 0 operator. The person must complete this training before taking the certification examination specified in paragraph 24.3.2.

24.2.4 Simulator-based training

The person must have completed training on the NPP full-scope simulator, appropriate to the knowledge and skill requirements of the position, covering:

1. operation and monitoring of unit 0 systems under normal, abnormal and emergency conditions, including:
 - a) the effects that operation of unit 0 may have on the reactor units; and
 - b) the effects that operation of the reactor units may have on unit 0;
2. independent diagnosis and decision-making by the unit 0 operator; and
3. interaction with other members of the shift crew.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of a unit 0 operator.

24.2.5 On-the-job training

The person must have completed on-the-job training, appropriate to the knowledge and skill requirements of the position, covering:

1. standard control room operating practices;
2. operation and monitoring of unit 0 systems from the main control room that cannot be performed on the NPP full scope simulator;
3. operations and monitoring performed in the control equipment room;
4. operation and monitoring of unit 0 systems from the emergency control room; and
5. authorization of maintenance and repair of unit 0 systems.

This training shall include formal performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of a unit 0 operator.

24.2.6 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in paragraphs 24.2.1 to 24.2.5 before taking the certification examination specified in paragraph 24.3.3.

24.2.7 Performing duties under supervision

The person must have performed the duties of a unit 0 operator under the supervision of a certified incumbent of the position for a minimum of 300 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 228 of those hours must have been worked after the person has met the requirements specified in paragraphs 24.2.1 to 24.2.5.

24.2.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of a unit 0 operator. The person must complete this interview after having met the requirements specified in paragraph 24.2.7 and those regarding certification examinations specified in subsection 24.3.

24.3 Certification examinations

A person seeking certification as unit 0 operator at a given multi-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 24.3.1 to 24.3.3.

24.3.1 General examination

The person must have successfully completed the general examination for unit 0 operators before taking the certification examination specified in paragraph 24.3.2 and, subject to the provisions of section 30, within the four-year period prior to certification. This knowledge-based examination samples topics covered in the training specified in paragraph 24.2.1.

24.3.2 Nuclear power plant-specific examination

The person must have successfully completed the NPP-specific examination for unit 0 operators before taking the certification examination specified in paragraph 24.3.3 and, subject to the provisions of section 30, within the two-and-a-half-year period prior to certification. This

knowledge-based examination samples topics covered in the training specified in paragraph 24.2.3 and those aspects of unit 0 operation, under normal, abnormal and emergency conditions, that may result in the discharge of radioactivity to the environment, or that could affect the safety of NPP personnel or of members of the public.

24.3.3 Simulator-based examination

Subject to the provisions of section 30, the person must have successfully completed the simulator-based examination for unit 0 operators within the one-year period prior to certification. This performance-based examination covers the operation of unit 0 under abnormal and emergency conditions.

Subpart C – Control Room Shift Supervisors

25. Requirements for Initial Certification

25.1 Requirements prior to initial training

A person seeking certification as control room shift supervisor at a given multi-unit NPP shall meet the requirements specified in paragraphs 25.1.1 and 25.1.2, prior to beginning the initial training for the control room shift supervisor position specified in subsection 25.2.

25.1.1 Education

The person must have a Baccalaureate in engineering or science from a recognized university, or an acceptable alternative to this university degree. Acceptable alternatives are:

1. a current or expired certification as reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor at a Canadian NPP; or
2. a current or expired certificate of qualification as stationary engineer second class or operating engineer second class obtained in Canada; or
3. a two-year technician or technologist diploma from a recognized educational institution in a discipline relevant to power engineering, with three years of experience in that discipline; or
4. a three-year technologist diploma from a recognized educational institution in a discipline relevant to power engineering, with two years of experience in that discipline; or
5. academic qualifications that meet the requirements for registration as a professional engineer in Canada.

25.1.2 Minimum experience

The person must have a minimum of two years of plant experience at the NPP where certification is sought, or an acceptable alternative to this experience. Acceptable alternatives are:

1. two years of plant experience at a similar NPP on the same site and at least six months of additional plant experience at the NPP where certification is sought; or
2. two years of plant experience at any NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought; or
3. two years of plant experience at an NPP of a different type and at least one and a half years of additional plant experience at the NPP where certification is sought; or
4. three years of experience in a technical support position related to the operation of an NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought.

25.2 Initial training requirements

A person seeking certification as control room shift supervisor at a given multi-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 25.2.1 to 25.2.7.

25.2.1 Reactor operator training

The person must have completed the training for reactor operators specified in paragraphs 23.2.1 to 23.2.3.

25.2.2 Supplementary nuclear power plant-specific training

The person must have completed training, appropriate to the knowledge requirements of the control room shift supervisor and of the plant shift supervisor that are in addition to those of a reactor operator, covering:

1. reactor physics, principles of reactor operation and fuelling strategies;
2. phenomena that may significantly affect reactor core reactivity and neutron flux shape;
3. properties of irradiated fuel, principles of fuel cooling and physics of fuel failures;
4. operating constraints and limits associated with reactor fuelling and irradiated fuel cooling;
5. reactor safety, heat transfer mechanisms and fluid mechanics;
6. primary and back-up heat sinks;
7. conventional and radiation hazards to NPP personnel and to the public, including hazards from postulated accident conditions;
8. handling of conventional and radiation emergencies;
9. handling of an intruder or of a terrorist attack;
10. design requirements of safety-related equipment and systems;
11. design features and limitations of NPP equipment and systems;
12. chemical control of systems;
13. diagnosis of equipment failures and assessment of abnormal plant conditions;
14. expected response of NPP systems and units to accident conditions;
15. operating strategies;
16. NPP safety analyses, including major assumptions in the NPP accident analyses and technical bases for emergency operating procedures;
17. configuration of systems and equipment isolation required for maintenance activities;
18. design and operation of NPP systems for which the reactor operators do not have direct operational control, including unit 0 and fuel handling systems;
19. the licensee's policies, standards and procedures;
20. the NPP licence and documents referenced in the licence;
21. situations that may result in the violation of conditions in the NPP licence and operating policies and principles;
22. requirements pertaining to NPP operation in federal and provincial acts and regulations, and in relevant standards and codes;
23. responsibilities and authority of the control room shift supervisor, of the plant shift supervisor and of other facility personnel who reports to or interfaces with the control room shift supervisor and the plant shift supervisor; and
24. qualification requirements of NPP personnel who reports to the control room shift supervisor and the plant shift supervisor.

This training shall include formal written evaluations and, if required, formal oral evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of the control room shift supervisor. The person must complete this training before taking the certification examination specified in paragraph 25.3.3.

25.2.3 Simulator-based training

The person must have completed training on the NPP full-scope simulator, appropriate to the knowledge and skill requirements of the control room shift supervisor and of the plant shift supervisor, covering:

1. operation and monitoring of NPP systems by the operators under normal, abnormal and emergency conditions;
2. independent monitoring of NPP systems by the control room shift supervisor and the plant shift supervisor under normal, abnormal and emergency conditions;
3. independent diagnosis and decision-making by the control room shift supervisor and the plant shift supervisor;
4. supervision and direction of NPP operations by the control room shift supervisor and the plant shift supervisor under normal, abnormal and emergency conditions; and
5. interaction between the control room shift supervisor, the plant shift supervisor and other members of the shift crew.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the control room shift supervisor.

25.2.4 On-the-job training

The person must have completed on-the-job training, appropriate to the knowledge and skill requirements of the control room shift supervisor, covering:

1. standard control room operating practices;
2. operation and monitoring of NPP systems by the fuel handling operators under normal, abnormal and emergency conditions;
3. operation and monitoring of reactor unit and unit 0 systems from the main control room that cannot be performed on the NPP full scope simulator;
4. where applicable, interfacing with the operators of the tritium removal facility under normal, abnormal and emergency conditions;
5. supervision and direction of NPP operations in the main control room, in the control equipment rooms and in the emergency control rooms, under normal, abnormal and emergency conditions; and
6. authorization of maintenance and repair of NPP systems.

This training shall include formal performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the control room shift supervisor.

25.2.5 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in paragraphs 25.2.1 to 25.2.4 before taking the certification examination specified in paragraph 25.3.4.

25.2.6 Performing duties under supervision

The person must have performed the duties of the control room shift supervisor under the supervision of a certified incumbent of the position for a minimum of 480 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 360 of those hours must have been worked after the person has met the requirements specified in paragraphs 25.2.1 to 25.2.4.

25.2.7 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the control room shift supervisor. The person must complete this interview after having met the requirements specified in paragraph 25.2.6 and those regarding certification examinations specified in subsection 25.3.

25.3 Certification examinations

A person seeking certification as control room shift supervisor at a given multi-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 25.3.1 to 25.3.4.

25.3.1 General examination

The person must have successfully completed the general examination for reactor operators specified in paragraph 23.3.1 before taking the certification examination specified in paragraph 25.3.2 and, subject to the provisions of section 30, within the four-year period prior to certification.

25.3.2 Nuclear power plant-specific examination

The person must have successfully completed the NPP-specific examination for reactor operators specified in paragraph 23.3.2 before taking the certification examination specified in paragraph 25.3.3 and, subject to the provisions of section 30, within the two-and-a-half-year period prior to certification.

25.3.3 Supplementary nuclear power plant-specific examination

The person must have successfully completed the supplementary NPP-specific examination for control room shift supervisors before taking the certification examination specified in paragraph 25.3.4 and, subject to the provisions of section 30, within the two-year period prior to certification. This knowledge-based examination samples topics covered in the training specified in paragraph 25.2.2.

25.3.4 Simulator-based examination

Subject to the provisions of section 30, the person must have successfully completed the simulator-based examination for control room shift supervisors, within the one-year period prior to certification. This performance-based examination covers:

1. independent monitoring of NPP systems by the control room shift supervisor under abnormal and emergency conditions;
2. independent diagnosis and decision-making by the control room shift supervisor; and
3. supervision and direction of NPP operations by the control room shift supervisor under abnormal and emergency conditions.

26. Advancement from Reactor Operator to Control Room Shift Supervisor

A person, who holds a certification as reactor operator at a given multi-unit NPP, seeking certification as control room shift supervisor at the same NPP shall, at the time of certification as control room shift supervisor, meet the requirements specified in subsections 26.1 to 26.8.

26.1 Minimum experience prior to training

The person must have safely and competently performed the duties of a reactor operator at the NPP for a minimum of one year, immediately prior to beginning training as control room shift supervisor.

26.2 Supplementary nuclear power plant-specific training

The person must have completed the training for control room shift supervisors specified in paragraph 25.2.2.

26.3 Simulator-based training

The person must have completed, on the NPP full-scope simulator, the components of the training for control room shift supervisors specified in paragraph 25.2.3 covering:

1. operation and monitoring of NPP systems by the operators under normal, abnormal and emergency conditions, for those systems for which the reactor operators do not have direct operational control;
2. independent monitoring of NPP systems by the control room shift supervisor and the plant shift supervisor under normal, abnormal and emergency conditions;
3. independent diagnosis and decision-making by the control room shift supervisor and the plant shift supervisor;
4. supervision and direction of NPP operations by the control room shift supervisor and the plant shift supervisor under normal, abnormal and emergency conditions; and
5. interaction between the control room shift supervisor, the plant shift supervisor and other members of the shift crew.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the control room shift supervisor.

26.4 On-the-job training

The person must have completed the on-the-job training for control room shift supervisors specified in paragraph 25.2.4.

26.5 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in subsections 26.2 to 26.4 before taking the certification examination specified in paragraph 25.3.4.

26.6 Certification examinations

The person must have met the requirements regarding certification examinations for control room shift supervisors specified in paragraphs 25.3.3 and 25.3.4.

26.7 Performing duties under supervision

The person must have performed the duties of the control room shift supervisor under the supervision of a certified incumbent of the position for a minimum of 480 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 360 of those hours must have been worked after the person has met the requirements specified in subsections 26.2 to 26.4.

26.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the control room shift supervisor. The person must complete this interview after having met the requirements specified in subsections 26.6 and 26.7.

Subpart D – Plant Shift Supervisors at a Single-Unit Nuclear Power Plant

27. Requirements for Initial Certification

27.1 Requirements prior to initial training

A person seeking certification as plant shift supervisor at a given single-unit NPP shall meet the requirements specified in paragraphs 27.1.1 and 27.1.2, prior to beginning the initial training for the plant shift supervisor position specified in subsection 27.2.

27.1.1 Education

The person must have a Baccalaureate in engineering or science from a recognized university, or an acceptable alternative to this university degree. Acceptable alternatives are:

1. a current or expired certification as reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor at a Canadian NPP; or
2. a current or expired certificate of qualification as stationary engineer second class or operating engineer second class obtained in Canada; or
3. a two-year technician or technologist diploma from a recognized educational institution in a discipline relevant to power engineering, with three years of experience in that discipline; or
4. a three-year technologist diploma from a recognized educational institution in a discipline relevant to power engineering, with two years of experience in that discipline; or
5. academic qualifications that meet the requirements for registration as a professional engineer in Canada.

27.1.2 Minimum experience

The person must have a minimum of two years of plant experience at the NPP where certification is sought, or an acceptable alternative to this experience. Acceptable alternatives are:

1. two years of plant experience at any NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought; or
2. two years of plant experience at an NPP of a different type and at least one and a half years of additional plant experience at the NPP where certification is sought; or
3. three years of experience in a technical support position related to the operation of an NPP of the same type and at least one year of additional plant experience at the NPP where certification is sought.

27.2 Initial training requirements

A person seeking certification as plant shift supervisor at a given single-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 27.2.1 to 27.2.7.

27.2.1 Reactor operator training

The person must have completed the training for reactor operators specified in paragraphs 23.2.1 to 23.2.3.

27.2.2 Supplementary nuclear power plant-specific training

The person must have completed training, appropriate to the knowledge requirements of the position that are in addition to those of a reactor operator, covering:

1. reactor physics, principles of reactor operation and fuelling strategies;
2. phenomena that may significantly affect reactor core reactivity and neutron flux shape;
3. properties of irradiated fuel, principles of fuel cooling and physics of fuel failures;
4. operating constraints and limits associated with reactor fuelling and irradiated fuel cooling;
5. reactor safety, heat transfer mechanisms and fluid mechanics;
6. primary and back-up heat sinks;
7. conventional and radiation hazards to NPP personnel and to the public, including hazards from postulated accident conditions;
8. handling of conventional and radiation emergencies;
9. handling of an intruder or of a terrorist attack;
10. design requirements of safety-related equipment and systems;
11. design features and limitations of NPP equipment and systems;
12. chemical control of systems;
13. diagnosis of equipment failures and assessment of abnormal plant conditions;
14. expected response of NPP systems to accident conditions;
15. operating strategies;
16. NPP safety analyses, including major assumptions in the NPP accident analyses and technical bases for emergency operating procedures;
17. configuration of systems and equipment isolation required for maintenance activities;
18. design and operation of fuel handling systems;
19. the licensee's policies, standards and procedures;
20. the NPP licence and documents referenced in the licence;
21. situations that may result in the violation of conditions in the NPP licence and operating policies and principles;
22. requirements pertaining to NPP operation in federal and provincial acts and regulations, and in relevant standards and codes;
23. responsibilities and authority of the plant shift supervisor and of other NPP personnel who reports to or interfaces with the plant shift supervisor; and
24. qualification requirements of NPP personnel who reports to the plant shift supervisor.

This training shall include formal written evaluations and, if required, formal oral evaluations that confirm and document that, at the completion of the training, the person has the required knowledge to perform the duties of the plant shift supervisor. The person must complete this training before taking the certification examination specified in paragraph 27.3.3.

27.2.3 Simulator-based training

The person must have completed training on the NPP full-scope simulator, appropriate to the knowledge and skill requirements of the position, covering:

1. operation and monitoring of NPP systems by the operators under normal, abnormal and emergency conditions;
2. independent monitoring of NPP systems by the plant shift supervisor under normal, abnormal and emergency conditions;
3. independent diagnosis and decision-making by the plant shift supervisor;
4. supervision and direction of NPP operations by the plant shift supervisor under normal, abnormal and emergency conditions;

5. interaction with other members of the shift crew; and
6. operation and monitoring of systems when replacing the reactor operator.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the plant shift supervisor.

27.2.4 On-the-job training

The person must have completed on-the-job training, appropriate to the knowledge and skill requirements of the position, covering:

1. standard control room operating practices;
2. operation and monitoring of NPP systems by the fuel handling operators under normal, abnormal and emergency conditions;
3. operation and monitoring of NPP systems from the main control room that cannot be performed on the NPP full scope simulator;
4. supervision and direction of NPP operations in the main control room, in the control equipment room, in the emergency control room and in the field, under normal, abnormal and emergency conditions; and
5. authorization of maintenance and repair of NPP systems.

This training shall include formal performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the plant shift supervisor.

27.2.5 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in paragraphs 27.2.1 to 27.2.4 before taking the certification examination specified in paragraph 27.3.4.

27.2.6 Performing duties under supervision

The person must have performed the duties of the plant shift supervisor under the supervision of a certified incumbent of the position for a minimum of 480 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 360 of those hours must have been worked after the person has met the requirements specified in paragraphs 27.2.1 to 27.2.4.

27.2.7 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the plant shift supervisor. The person must complete this interview after having met the requirements specified in paragraph 27.2.6 and those regarding certification examinations specified in subsection 27.3.

27.3 Certification examinations

A person seeking certification as plant shift supervisor at a given single-unit NPP shall, at the time of certification, meet the requirements specified in paragraphs 27.3.1 to 27.3.4.

27.3.1 General examination

The person must have successfully completed the general examination for reactor operators specified in paragraph 23.3.1 before taking the certification examination specified in paragraph 27.3.2 and, subject to the provisions of section 30, within the four-year period prior to certification.

27.3.2 Nuclear power plant-specific examination

The person must have successfully completed the NPP-specific examination for reactor operators specified in paragraph 23.3.2 before taking the certification examination specified in paragraph 27.3.3 and, subject to the provisions of section 30, within the two-and-a-half-year period prior to certification.

27.3.3 Supplementary nuclear power plant-specific examination

The person must have successfully completed the supplementary NPP-specific examination for plant shift supervisors at single-unit NPPs before taking the certification examination specified in paragraph 27.3.4 and, subject to the provisions of section 30, within the two-year period prior to certification. This knowledge-based examination samples topics covered in the training specified in paragraph 27.2.2.

27.3.4 Simulator-based examination

Subject to the provisions of section 30, the person must have successfully completed the simulator-based examination for plant shift supervisors at single-unit NPPs, within the one-year period prior to certification. This performance-based examination covers:

1. independent monitoring of NPP systems by the plant shift supervisor under abnormal and emergency conditions;
2. independent diagnosis and decision-making by the plant shift supervisor;
3. supervision and direction of NPP operations by the plant shift supervisor under abnormal and emergency conditions; and
4. operation and monitoring of systems under abnormal and emergency conditions when replacing the reactor operator.

28. Advancement from Reactor Operator to Plant Shift Supervisor at a Single-Unit Nuclear Power Plant

A person who holds a certification as reactor operator at a given single-unit NPP seeking certification as plant shift supervisor at the same NPP shall, at the time of certification as plant shift supervisor, meet the requirements specified in subsections 28.1 to 28.8.

28.1 Minimum experience prior to training

The person must have safely and competently performed the duties of a reactor operator at the NPP for a minimum of one year, immediately prior to beginning training as plant shift supervisor.

28.2 Supplementary nuclear power plant-specific training

The person must have completed the plant shift supervisor training specified in paragraph 27.2.2.

28.3 Simulator-based training

The person must have completed, on the NPP full-scope simulator, the components of the plant shift supervisor training specified in paragraph 27.2.3 covering:

1. independent monitoring of NPP systems by the plant shift supervisor under normal, abnormal and emergency conditions;
2. independent diagnosis and decision-making by the plant shift supervisor;
3. supervision and direction of NPP operations by the plant shift supervisor under normal, abnormal and emergency conditions; and
4. interaction with other members of the shift crew.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the plant shift supervisor.

28.4 On-the-job training

The person must have completed the on-the-job training for plant shift supervisors specified in paragraph 27.2.4.

28.5 Prerequisite for the simulator-based certification examination

The person must have met the requirements specified in subsections 28.2 to 28.4 before taking the certification examination specified in paragraph 27.3.4.

28.6 Certification examinations

The person must have met the requirements regarding certification examinations for plant shift supervisors specified in paragraphs 27.3.3 and 27.3.4.

28.7 Performing duties under supervision

The person must have performed the duties of the plant shift supervisor under the supervision of a certified incumbent of the position for a minimum of 480 hours on shift to confirm and document that the person can perform those duties competently and safely.

At least 360 of those hours must have been worked after the person has met the requirements specified in subsections 28.2 to 28.4.

28.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the plant shift supervisor. The person must complete this interview after having met the requirements specified in subsections 28.6 and 28.7.

Subpart E – Plant Shift Supervisors at a Multi-Unit Nuclear Power Plant

29. Requirements for Initial Certification

Only a person who holds a certification as control room shift supervisor at a given multi-unit NPP may seek certification as plant shift supervisor at the same NPP. At the time of certification as plant shift supervisor, the person shall meet the requirements specified in subsections 29.1 to 29.4.

29.1 Minimum experience prior to advancement

The person must have safely and competently performed the duties of the control room shift supervisor at the NPP where certification is sought for a minimum of 80 complete shifts immediately prior to being selected for advancement from control room shift supervisor to plant shift supervisor.

29.2 On-the-job training

The person must have completed on-the-job training, appropriate to the knowledge and skill requirements of the plant shift supervisor, covering:

1. where applicable, operation and monitoring of the systems of the tritium removal facility by the operators of the facility under normal, abnormal and emergency conditions;
2. supervision and direction of NPP operations in the field under normal, abnormal and emergency conditions;
3. where applicable, supervision and direction of operations at the tritium removal facility under normal, abnormal and emergency conditions; and
4. authorization of maintenance and repair of NPP systems.

This training shall include formal performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the plant shift supervisor.

29.3 Performing duties under supervision

The person must have performed the duties of the plant shift supervisor under the supervision of a certified incumbent of the position for a minimum of 168 hours on shift to confirm and document that the person can perform those duties competently and safely.

Those hours must have been worked after the person has met the requirements specified in subsection 29.2.

29.4 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the plant shift supervisor. The person must complete this interview after having met the requirements specified in subsection 29.3.

Subpart F – Validity of Certification Examinations

30. Extending the Validity Period of Certification Examinations

30.1 Conditions for extension

Where a person seeking certification for a given position cannot be certified within the validity period specified after successfully completing an applicable certification examination, that validity period may, on application to the CNSC by the licensee, be extended by a maximum of one year in the case of the simulator-based examination, or three years in the case of a knowledge-based examination, under one or more of the following conditions:

1. the person's training was delayed due to sickness, injury, pregnancy or other family-related responsibilities;
2. the person's training was delayed or extended due to exceptional circumstances that were outside of the person's control;
3. the person had to retake a certification examination;
4. the person had to complete additional training; and
5. the person had to perform the duties of the position under supervision for longer than the minimum time specified for the position.

30.2 Required information

When applying for an extension pursuant to subsection 30.1, the licensee shall submit to the CNSC a request that includes:

1. the name of the person;
2. the name of the relevant certification examination;
3. the conditions of subsection 30.1 that apply; and
4. the measures taken to ensure that the person has maintained the knowledge and skills required to work competently in the position.

31. Re-Establishing the Validity of Certification Examinations

Where a person seeking certification for a given position cannot be certified within the validity period specified after successfully completing an applicable certification examination, even with the provisions of section 30 taken into account, the person shall successfully complete another certification examination of the same type to demonstrate, prior to certification, that the person still has the knowledge and skills required to work competently in the position.

Subpart G – Renewal of Certification

32. Continuing Training Requirements

During the period of certification, each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall meet the requirements specified in subsections 32.1 to 32.3.

32.1 Refresher training

Each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor must complete, on a regular basis, refresher training appropriate to the knowledge and skill requirements of the applicable position, covering:

1. a review of the knowledge acquired during initial training that is not maintained through the day-to-day operation of the NPP and that is required to work competently in the applicable position;
2. simulator-based exercises that cover infrequent normal NPP manoeuvres;
3. simulator-based exercises that cover a varied number of situations that challenge the diagnostic and decision-making abilities of the person and ensure the person is, at all times, proficient in selecting and using abnormal and emergency operating procedures; and
4. exercises and drills conducted at the NPP on a regular basis to ensure the person is, at all times, ready to respond to accidents and emergencies.

32.2 Update training

Each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor must complete update training appropriate to the knowledge and skill requirements of the applicable position, covering:

1. changes to NPP systems;
2. changes to licensee's and NPP policies, standards and procedures;
3. changes to regulatory requirements;
4. changes to the NPP licence or to documents referenced in the licence; and
5. NPP and industry experience and operating events.

32.3 Formal evaluations

Each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor must complete, on a regular basis, formal knowledge and performance evaluations that confirm and document that the person possesses the knowledge and the skills covered during continuing training.

33. Requalification Tests

During the period of certification, each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall complete the written and simulator-based requalification tests referred to in the NPP licence.

Subpart H – Certification Following Decertification

34. Requirements Within Three Years

Within the three-year period following a decertification as reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, a person may be certified again in the same position at the same NPP if:

1. the basis for the decertification of the person is no longer applicable; and
2. the person meets the requirements specified in subsections 34.1 to 34.8.

34.1 Update training

The person must have completed update training, appropriate to the knowledge and skill requirements of the position, covering changes or events that have occurred during the absence of the person from the position, including:

1. changes to NPP systems;
2. changes to licensee's and NPP policies, standards and procedures;
3. changes to regulatory requirements;
4. changes to the NPP licence or to documents referenced in the licence; and
5. NPP and industry experience and operating events.

This training shall include formal knowledge and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

34.2 Refresher training

The person must have completed refresher training covering the topics from the initial training that must be reviewed and practiced to ensure that the person has the knowledge and the skills required to work competently in the position. The selection of the topics shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal written and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

34.3 Simulator-based training

The person must have completed simulator-based exercises that cover a sufficient number of varied situations that challenge the diagnostic and decision-making abilities of the person to ensure that the person has the knowledge and the skills required to work competently in the position. The selection of exercises shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required diagnostic and decision-making abilities to perform the duties of the position.

34.4 Training period constraint

The training requirements specified in subsections 34.1 to 34.3 must be met within the one-year period prior to obtaining the new certification.

34.5 Simulator-based requalification tests

The person must have successfully completed simulator-based requalification tests equivalent in types and number to those referred to in the NPP licence that the person would have had to take during the period of decertification, if the person had remained certified.

34.6 Written requalification test

The person must have successfully completed, within the two-year period prior to obtaining the new certification, one written requalification test that meets the conditions referred to in the NPP licence.

34.7 Performing duties under supervision

The person must have performed the duties of the position under the supervision of a certified incumbent of the position for the number of shifts that the licensee considers necessary to confirm and document that the person can perform those duties competently and safely.

34.8 Nuclear power plant management interview

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the position. The person must complete this interview after having met the requirements specified in subsections 34.1 to 34.7.

35. Requirements After More Than Three Years

After more than three years following a decertification as reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, a person may be certified again in the same position at any NPP if:

1. the basis for the decertification of the person is no longer applicable; and
2. the person meets the requirements for initial certification regarding initial training and certification examinations for the applicable position.

Glossary

Certification

A written attestation from the Commission, or from a Designated Officer authorized by the Commission, that a person is competent to carry out the duties of a given position referred to in an NPP licence.

CNSC

The Canadian Nuclear Safety Commission. The CNSC refers to the organization generally, including both its staff and the Commission members.

Commission

The members of the Commission in their capacity as members of the tribunal component of the CNSC.

Control Room Shift Supervisor

The person in a multi-unit NPP who is responsible to the plant shift supervisor for ensuring that the main control room staff functions safely within their authority limits, and that the conduct of operations within the main control room is performed in accordance with the NPP licence, policies and procedures.

Full Scope Simulator

A simulator capable of performing detailed modeling of the response of the systems of a given NPP under normal, abnormal and accident conditions. The simulator is equipped with a replica of the NPP main control room panels where operators can interface with the simulated plant systems in the control room environment.

Licence

A licence issued by the Commission to construct, operate or decommission a nuclear power plant.

Licensee

The holder of a licence issued by the Commission to construct, operate or decommission a given NPP.

NSCA

The *Nuclear Safety and Control Act*.

Nuclear Facility

A facility included in the definition “Nuclear Facility” given in section 2 of the *Nuclear Safety and Control Act*.

Nuclear Power Plant (NPP), also plant

Any fission reactor installation that has been constructed to generate electricity on a commercial scale. An NPP is a Class IA nuclear facility, as defined in the *Class I Nuclear Facility Regulations*. Where a licence is issued for multiple reactors, NPP means all the reactors identified in the licence.

On-the-job Training

The training undertaken in the actual work environment to obtain required job-related knowledge and skills.

Plant Experience

The experience gained in an NPP during commissioning, start-up testing or operation that is relevant to the position for which a person seeks certification.

Plant Shift Supervisor

The person in an NPP who is responsible for the direct supervision of the operation of the NPP and for ensuring that operations and maintenance are conducted in accordance with the NPP licence, policies and procedures, and with the applicable requirements specified in Federal and Provincial Acts and Regulations, and in other relevant standards and codes. The plant shift supervisor is the NPP management's representative on shift.

Reactor Operator

The person in an NPP plant who is responsible for operating and monitoring the systems of a reactor unit from the main control room, in accordance with the NPP licence, policies and procedures.

Recognized Educational Institution

A Canadian educational institution with a federal or provincial charter, or a foreign educational institution whose diplomas are accepted by a recognized Canadian institution or university.

Recognized University

A Canadian university with a federal or provincial charter, or a foreign university whose degrees are accepted by a recognized Canadian university.

Related Experience

The experience gained in performing duties related to those of the position for which a person seeks certification.

Senior Health Physicist

The person in a nuclear power plant who is responsible for interpreting the regulations, policies and procedures applicable to radiation protection, and for providing procedure-related approvals where required.

Systematic Approach to Training

A logical approach to training that consists of the following phases:

- (1) the analysis phase during which the competencies in terms of knowledge and skills required to work in a position are identified;
- (2) the design phase during which the competency requirements for a position are converted into training objectives and a training plan is produced;
- (3) the development phase during which the training material needed to meet the training objectives is prepared;
- (4) the implementation phase during which the training is conducted using the material developed; and
- (5) the evaluation phase during which data regarding each of the above phases are collected and reviewed to determine the effectiveness of training, and appropriate actions are taken to improve training effectiveness.

Unit 0 Operator

The person in a multi-unit NPP who is responsible for operating and monitoring a group of safety and process systems common to all reactor units from the main control room unit 0 panels, in accordance with the NPP licence, policies and procedures.

CNSC Regulatory Document Series

Facilities and activities within the nuclear sector in Canada are regulated by the Canadian Nuclear Safety Commission (CNSC). In addition to the *Nuclear Safety and Control Act* and associated regulations, these facilities and activities may also be required to comply with other regulatory instruments such as regulatory documents or standards.

Effective April 2013, the CNSC's catalogue of existing and planned regulatory documents has been organized under three key categories and twenty-five series, as set out below. Regulatory documents produced by the CNSC fall under one of the following series:

1.0 Regulated facilities and activities

Series	1.1	Reactor facilities
	1.2	Class IB facilities
	1.3	Uranium mines and mills
	1.4	Class II facilities
	1.5	Certification of prescribed equipment
	1.6	Nuclear substances and radiation devices

2.0 Safety and control areas

Series	2.1	Management system
	2.2	Human performance management
	2.3	Operating performance
	2.4	Safety analysis
	2.5	Physical design
	2.6	Fitness for service
	2.7	Radiation protection
	2.8	Conventional health and safety
	2.9	Environmental protection
	2.10	Emergency management and fire protection
	2.11	Waste management
	2.12	Security
	2.13	Safeguards and non-proliferation
	2.14	Packaging and transport

3.0 Other regulatory areas

Series	3.1	Reporting requirements
	3.2	Public and Indigenous engagement
	3.3	Financial guarantees
	3.4	Commission proceedings
	3.5	CNSC processes and practices
	3.6	Glossary of CNSC terminology

Note: The regulatory document series may be adjusted periodically by the CNSC. Each regulatory document series listed above may contain multiple regulatory documents. For the latest list of regulatory documents, visit the [CNSC's website](#).