REGDOC-2.2.2, Personnel Training, Version 2

Preface

This regulatory document is part of the CNSC's Human Performance Management series of regulatory documents, which also covers human performance programs and personnel certification. The full list of regulatory document series is included at the end of this document and can be found on the CNSC's website.

REGDOC-2.2.2, *Personnel Training*, sets out requirements and guidance for the analysis, design, development, implementation, evaluation, documentation and management of training at nuclear facilities within Canada, including the essential principles and elements of an effective training system.

As one of many sub-systems used within an organization's management system, the training system supports the organization's operational capability by training workers to perform their jobs effectively. A training system also permits organizations to respond rapidly when a performance or personnel issue can best be addressed by training.

In keeping with the CNSC's regulatory philosophy and international practice, licensees are responsible for the safe operation of their respective nuclear facilities. They are therefore responsible for training and assessing their workers to ensure they are fully qualified to perform their duties in accordance with current regulatory requirements.

REGDOC-2.2.2 is intended to form part of the licensing basis for a regulated facility or activity. It is intended for inclusion in licences as either part of the conditions and safety and control measures in a licence, or as part of the safety and control measures to be described in a licence application and the documents needed to support that application.

Guidance contained in this document exists to inform the applicant, to elaborate further on requirements or to provide direction to licensees and applicants on how to meet requirements. It also provides more information about how CNSC staff evaluate specific problems or data during their review of licence applications. Licensees are expected to review and consider guidance; should they choose not to follow it, they should explain how their chosen alternate approach meets regulatory requirements.

A graded approach, commensurate with risk, may be defined and used when applying the requirements and guidance contained in this regulatory document. The use of a graded approach is not a relaxation of requirements. With a graded approach, the application of requirements is commensurate with the risks and particular characteristics of the facility or activity.

Important note: Where referenced in a licence either directly or indirectly (such as through licensee-referenced documents), this document is part of the licensing basis for a regulated facility or activity.

The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and establishes the basis for the CNSC's compliance program for that regulated facility or activity.

Where this document is part of the licensing basis, the word "shall" is used to express a requirement to be satisfied by the licensee or licence applicant. “Should" is used to express guidance or that which is advised. "May" is used to express an option or that which is advised or permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.

Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.

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1. Introduction

The purpose of training in the nuclear industry is to ensure that workers are competent and qualified to perform the duties of their position. As required by the General *Nuclear Safety and Control Regulations*, workers shall be trained to carry on the licensed activity.

A training system provides the basis for the analysis, design, development, implementation, evaluation, documentation and management of training for workers at nuclear facilities. It provides a method for meeting the training needs of workers and ensuring that the right people receive the right training at the right time. With a training system as defined in this regulatory document, it can be demonstrated that all required knowledge, skills and safety-related attributes have been attained, through the process of performance-based assessment and program evaluation. Without a training system, there is a risk that important elements of training will be omitted and the operating state of the facility will not be reflected in the training programs.

1.1 Purpose

This regulatory document sets out the CNSC's requirements for licensees regarding the development and implementation of a training system. It also provides guidance on how these requirements should be met.

1.2 Scope

This regulatory document applies to workers engaged in licensed activities in nuclear facilities or where nuclear substances or prescribed equipment are produced, used, possessed, packaged or disposed of. This includes workers in positions where the consequence of human error poses a risk to the environment, the health and safety of persons, or to the security of the nuclear facilities and of nuclear substances. The licensees shall define these positions in their training system governing documents.

1.3 Relevant legislation

The provisions of the *Nuclear Safety and Control Act* and regulations that are relevant to this regulatory document include:

- paragraph 12(1)(a) of the *General Nuclear Safety and Control Regulations*, which states every licensee shall "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"
- paragraph 12(1)(b) of the *General Nuclear Safety and Control Regulations*, which states every licensee shall "train the workers to carry on the licensed activity in accordance with the Act, the regulations made under the Act and the licence"

2. Principles

The training system developed and implemented by each licensee shall adhere to the following two fundamental principles:

1. **Performance-oriented:** Training is preparation for performance on the job. All instruction that is subject to this regulatory document shall focus on essential knowledge, skills and safety-related attributes required to meet job requirements and nuclear-safety-specific needs throughout the lifecycle of the facility.
2. **Systematically developed:** Training shall be defined, produced and maintained through an iterative and interactive series of steps, leading from the identification of a training requirement to the confirmation that the requirement has been satisfied.

3. Training Systems for Nuclear Facilities

Licensees shall ensure workers who carry on licensed activities are qualified to do the work assigned to them through the use of a training system to systematically analyze, design, develop, implement, evaluate, document and manage new training and the revision of existing training, including continuing training. It shall be used whether the training is defined, designed, developed, implemented, evaluated, recorded and managed internally by licensees or externally through vendors or contractors.

Requirements included in this section are to be applied in a manner that is commensurate with risk. All requirements shall apply but the associated training-related processes and procedures may vary depending upon the safety significance and complexity of the work being performed. In considering safety, factors to be examined include the relative importance to safeguards and security; the magnitude of any hazard involved; the lifecycle stage of the facility; the type of facility or licensed activity; the particular characteristics of the facility or licensed activity (e.g., remote location, densely populated areas with easy access to qualified workers); and any other relevant factors.

This regulatory document will serve as a performance-based guideline for licensees holding Class II Nuclear Facilities and Prescribed Equipment licences or Nuclear Substances and Radiation Devices licences.

Licensees shall:

1. identify all performance requirements of a job or duty area relating to licensed activities by conducting a job analysis to determine all of the tasks involved
2. define and document the necessary general worker training, initial job training and continuing training requirements for workers, based on a task analysis of the knowledge, and skills required to perform each task and the safety-related attributes required to perform their duties
3. ensure that appropriate training is designed, developed and implemented to meet the qualification requirements
4. ensure that trainers meet and maintain documented qualification requirements, particularly in the areas of subject matter expertise and instructional skills
5. ensure that formal evaluations are used to confirm and document that all trained workers are qualified to perform their duties
6. implement a training change-management process that will systematically analyze procedural and equipment changes, changes in job descriptions, and operating experience feedback (including facility and industry-wide events), in order to identify changes to the tasks and task lists and to assess potential training implications leading to training modifications
7. ensure continuing training is provided to workers as deemed necessary through the job and task analyses processes, and that it includes updates to training programs stemming from the change management process as identified through the training needs analysis process
8. evaluate training regularly and incorporate the results of the evaluations into a training improvement process
9. ensure that workers' records in support of training and qualifications are established and maintained
10. ensure that workers have a level of training related to nuclear safety corresponding to the duties of their position and employment, including but not limited to radiation safety, fire safety, onsite emergency arrangements, and conventional health and safety

4. Records Management for a Training System

Licensees shall develop and manage documentation related to all phases of their training including analysis, design, development, implementation and evaluation.

Licensees shall maintain records on the training and qualifications of all workers. These records shall be managed and controlled, and may be requested by CNSC staff at any time. Additionally, workers' supervisors and managers shall have immediate, unencumbered and readily available access to the workers' qualification records related to work being assigned or performed. The training record for each worker, including temporary workers and contractors, shall include all qualifications and certifications granted by or relied on by the licensee to fulfill requirements of this document and that are related to the duties of the worker at that facility. Records shall include expiration dates for time sensitive qualifications and certifications, and all requalification or recertification requirements.

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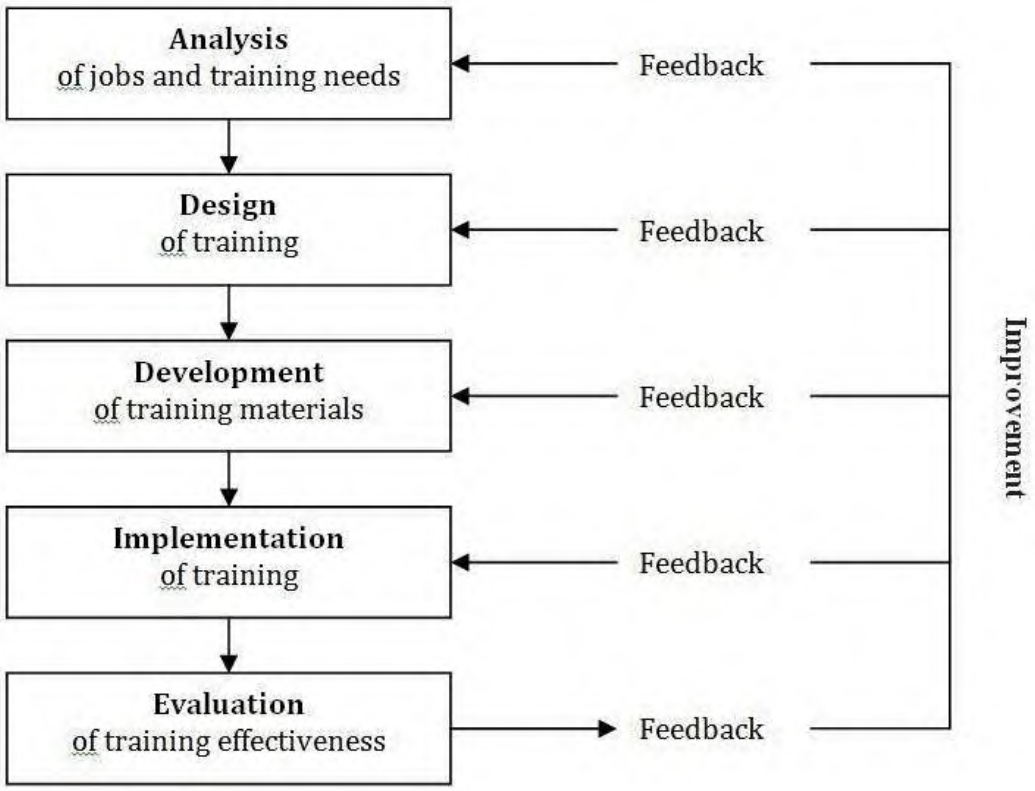
5. Guidance on the Systematic Approach to Training

The systematic approach to training (SAT) is a proven and highly successful education and training methodology, which licensees may adopt to meet the requirements in section 3 of this regulatory document. SAT is also widely known as the instructional systems design model (ISDM) or analysis, design, development, implementation and evaluation (ADDIE) model.

A SAT-based training system provides interdependent functions consisting of analysis, design, development, implementation and evaluation. This cyclic process (see figure 1) allows training to be systematically analyzed, defined, designed, developed, implemented, evaluated, documented and managed – in order to not only meet operational and organizational requirements, but also to react quickly to changes in those requirements.

Appendix A provides licensees with further guidance on using a systematic approach to training, particularly for the development of radiation safety training programs. The appendix contains a simple application of the process for developing a training program in accordance with section 5 of this regulatory document.

Figure 1: Overview of a systematic approach to training



▶ **Long Description - Figure 1**

5.1 Analysis phase

The analysis phase is the foundation of any training course or training program and includes inputs from operational staff, end-users, subject-matter experts and training development experts. Its purpose is to specify the required outcome of the training in terms of essential on-the-job performance as defined by role documents, procedures or written instructions. The analysis should consider the following points:

- rationale and purpose of training
- scope of the training
- target audience
- training method
- location of the training
- timeframe for completion of the training

The fundamental processes of the analysis phase are briefly described in the following paragraphs.

5.1.1 Training needs analysis

A training needs analysis (TNA) is often triggered by a performance gap or deficiency that has identified training as the solution. A TNA can be used to systematically assess job performance requirements against existing performance (gap analysis) and identify specific areas that require training. A TNA may also be used to assess skills and knowledge gaps created by engineering design and equipment changes, operational changes, revised procedures, and modifications to regulatory requirements.

5.1.2 Job and task analysis

To identify all performance requirements of a job or duty area, a job analysis should be conducted to determine all of the tasks involved with all states of the nuclear facility, including normal operations, accident conditions and emergencies. The end result of a job analysis is a list of tasks that should be completed to perform the job correctly. Task difficulty, importance and frequency (DIF) are considered to determine which tasks need to be part of training and to determine the initial and continuing training content. A task analysis is conducted to determine the method of task performance and associated knowledge, skills and safety-related attributes. While the knowledge and skills should be determined for each task, safety-related attributes need not be developed for each task but can be developed collectively and documented for a job or duty area.

5.1.3 Learning objectives

Terminal learning objectives (TLOs) are statements of the tasks that the workers must be able to demonstrate after completing the training. TLOs should be measurable and define exactly when, what and how well the trainee must be capable of performing on the job upon completion of the training.

A terminal learning objective should include the following:

- Performance statement: states the task to be performed
- Condition statement: describes conditions under which the performance must be completed

- Standards: state the measurable criteria that describe how well the performance should be completed

5.1.4 Target audience analysis

A target audience analysis determines the numbers and categories of workers to be trained and, where possible, the characteristics of the individuals who will receive the training (e.g., current job experience and prior background, experience, education and training). This information ensures that the training is designed, developed and implemented at the correct level, and assists with determining any necessary training prerequisites, including the minimum entry level education and training.

Appendix A contains a practical example of an analysis phase of SAT conducted in accordance with the principles of this regulatory document.

5.2 Design phase

The design phase should include the selection and description of the training and an environment that will enable the trainees to achieve the TLOs determined in the analysis phase. The design phase starts with the results of the analysis phase and ends with a plan for the development of the training. The design phase takes the output from the analysis phase and specifies how the information will be presented and how the knowledge, skills and safety-related attributes will be tested.

The fundamental processes of the design phase are briefly described in the following paragraphs.

5.2.1 Trainee characteristics

As a result of the analysis phase, the target audience should have been broadly defined. During this phase, the trainee characteristics should be further described in terms of their entry-level knowledge, skills and safety-related attributes, and those characteristics likely to affect their responses to particular instructional activities. Information obtained in this process will guide subsequent decisions such as those regarding appropriate instructional sequences, methods and media, and help tailor the training to trainees' needs and learning characteristics.

5.2.2 Instructional program design

The instructional program design determines the knowledge, skills and safety-related attributes required to perform a task. These knowledge, skills and safety-related attributes lead to enabling objectives (EOs), which document the knowledge, skills and safety-related attributes. These EOs are then grouped and sequenced into the order most suitable for learning.

5.2.3 Enabling objectives

EOs are the principal units of learning and constitute a major step towards achieving the associated TLOs. As sub-components of TLOs, EOs represent manageable units of work: units that are coherent in terms of logic, learning of work, and that have a suitable scope and are appropriate for testing learning progress. Like a TLO, an EO is composed of three essential parts:

- Performance statement: an observable action normally stated as one action associated with a single verb. If the action is complicated or if more than one verb is used, then the EO needs to be broken down further into other EOs with simple actions.
- Conditions statement: a description of the setting or conditions under which the task is to be performed. Ideally, the conditions should mirror those in the workplace where the operation is performed.
- Standard: one or more measurable criterion stating the level of acceptable performance of the task in terms of quantity, quality or time limitations. It should answer questions such as "How many?", "How fast?" or "How well?"

5.2.4 Learning assessment plan

A learning assessment plan describes the use of formal evaluations within the qualification program. The learning assessment plan determines how progress towards, and achievement of, the required performance is checked and verified. While an assessment should be based upon the performance defined in the TLOs or EOs, limiting factors (such as time) may not permit direct observation of the full range of desired performance. The assessment plan describes how a valid and reliable sample of trainee performance will be measured and evaluated.

5.2.5 Instructional strategies

The instructional strategy is the combination of media, methods and environment used in the delivery of training. The advantages and disadvantages of each instructional strategy, as applied to the TLOs and EOs, should be examined to ensure that the most effective solution is selected to produce graduates capable of performing tasks as indicated in the TLOs.

5.2.6 On-the-job training

On-the-job training (OJT) requirements should be considered when one or more of the TLOs may not be suitable for traditional instructional methods. If OJT is necessary, then OJT learning objectives, complete with performance statements, conditions and standards, should be produced. Subsequently, each OJT learning objective should be formally assessed using on-the-job evaluation.

5.2.7 Training development plan

The training development plan documents the decisions made during the design phase. Outcomes and decisions regarding items covered in sections 5.2.1 through 5.2.6 should be documented and used during the development phase.

5.3 Development phase

The development phase involves the procurement or production of effective instructional materials in accordance with the training development plan.

The fundamental processes of the development phase are briefly described in the following paragraphs.

5.3.1 Procurement/production of instructional materials

Instructional materials should support the learning activities. Such items include instructor lesson plans, interactive courseware such as computer-based training and training aids of all types including equipment, references, job aids and testing materials. The instructional materials should include the following, where necessary:

- Trainee manuals: These are reference handbooks to be used and often retained by the trainees.
- Instructor guides: These are instructional specifications for use by the instructor during training preparation and delivery. They outline the specific training steps that must be used to satisfy the training development plan.
- Handouts: These additional aids can supplement the trainee manuals in areas identified as difficult and/or particularly important.
- Computer-based training or other media: These are to be used where they are the recommended solution based on the instructional analysis and the selection of the instructional strategy.
- Question banks and some sample tests: When used during the training, these should include guidance on where and when they should be used.

5.3.2 Assessment tests

Assessment tests, which address the requirement for formal evaluation, cover both progress and final testing. In general, there are two types and both should be developed.

Knowledge or cognitive assessments: Usually written, these tests can include multiple choice, multiple response, dichotomous or binary (e.g., yes/no; true/false), matching, resequencing, and open-ended questions.

Performance or skill-based assessments: These are practical tests based on realistic scenarios of the most important and significant skills and safety-related attributes derived from the TLOs and EOs.

5.3.3 Conduct of trials (pilot courses)

To assess the effectiveness of the training and related materials, these materials should be reviewed by subject-matter experts, tested with individuals who are representative of the target training audience, and approved by the appropriate managers. The training and instructional materials should be revised according to the findings of the trials.

5.4 Implementation phase

The implementation phase is to enable the trainees to successfully perform the tasks to the standards defined in the TLOs. This phase encompasses both the instructor preparation phase as well as the actual delivery of the training.

It should include:

- lesson plans based on the training development plan and the instructor guides prepared during the development phase
- set-up of the training environment

- continual monitoring to ensure that learning is taking place
- arrangements for follow-on training, where necessary

5.5 Evaluation phase

The evaluation phase involves the assessment of the effectiveness and efficiency of the training as delivered and verification of whether the trainees have mastered the TLOs and acquired the competence needed to perform the job safely.

The evaluation phase includes the following:

- Formal trainee evaluation: The trainees' abilities to perform the tasks, as defined in the TLOs, should be measured through tests and assessments. This activity can be included as a process within the implementation phase.
- Content and delivery: All course content and instructional strategies, methodologies and activities, including trainee evaluations, are monitored and assessed so that corrective actions can be taken if necessary. Sources of feedback include the trainees, the instructors, the support staff and the responsible managers and supervisors.
- Effectiveness: This means the graduates' ability to perform, in the workplace, the tasks for which they were trained. The primary sources of this information are the graduates and their supervisors. Additionally, information may be available through various sources ranging from needs assessments and lessons-learned reports to incident reports and rework statistics. Managers and supervisors should have continuous input to the training.
- Change management: In accordance with the principles of a SAT methodology, inputs such as new or revised regulatory requirements, engineering design and equipment changes, operational changes, revised procedures, modifications and operating experience feedback (including facility and industry-wide events) should be regularly fed into the appropriate processes through the analysis phase.

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Appendix A – Additional Guidance for Using REGDOC-2.2.2 to Develop Radiation Safety Training Programs for Workers Involved in Licensed Activities with Nuclear Substances and Radiation Devices, and with Class II Nuclear Facilities and Prescribed Equipment

An effective radiation safety training program is essential to protecting health, safety, security and the environment, and is considered part of a comprehensive occupational health and safety program.

This appendix provides additional guidance on the implementation of the requirements of REGDOC 2.2.2, *Personnel Training*. The high-level process diagram presented on the following page and the subsequent supporting descriptions provide guidance regarding how SAT-based processes and

procedures could be applied for developing radiation safety training programs. A practical example of the analysis phase of SAT is also provided for information purposes.

Licensees with relatively few worker categories performing relatively few or straightforward tasks may determine that a simplified training program is adequate to meet the need of their workers. The CNSC requires that each of the process steps be included to the appropriate degree in developing even the simplest radiation safety training program.

The topics to be covered by a training program, and the depth to which they should be addressed, will depend on the complexity of the licensed activity, the specific duties of workers, the radiological risk associated with those duties, and previous training and experience.

Simplified process for developing a radiation safety training program in accordance with the Principles of REGDOC 2.2.2

Step 1: Analysis Phase* (Section 5.1 of REGDOC-2.2.2)	Identify jobs with potential radiological risk. Is there a training need?	Define worker categories and worker characteristics involved with the identified jobs.	For each identified job, create a task list.	Identify the knowledge, skills and safety related attributes associated with each task.	Objectively determine how difficult, the importance to safety and how frequently the tasks are performed (DIF).	Based on DIF of each task, determine whether training will be initial or initial and continuing. If continuing training is deemed appropriate assign a frequency. (ex: every year)	Link each task to appropriate training references and define exactly, what, when and how the trainee should be able to perform the task at the conclusion of training. (terminal learning objectives-TLOs)
Step 2: Design Phase (Section 5.2 of REGDOC-2.2.2)	Based on TLOs, Organize training into discrete topics and ensure a logical sequence.	Determine appropriate training delivery method. (classroom, on-the job, computer based)	Define and document test items for assessment of workers.	Determine if testing/ assessment will be written, practical or a combination.			
Step 3: Development Phase (Section 5.3 of REGDOC-2.2.2)	Create lesson plans for each topic. Review existing training material to determine suitability.	Create a training manual for trainees. (if applicable)	Create formal assessment material linked to TLOs. (written, oral or on-the-job)	Create a feedback form to be completed by workers once training is complete.			
Step 4: Implementation Phase (Section 5.4 of REGDOC-2.2.2)	Assign an appropriate instructor(s) for all topics.	Deliver training according to lesson plans. Continually assess to ensure learning is taking place.	Conduct formal assessments. (written, oral or on-the job)	Grade and review formal assessments. (written, oral or on-the-job) Identify common errors.	If common errors or or weaknesses in assessments are identified determine why and which phases of SAT process must be improved.		
Step 5: Evaluation Phase (Section 5.5 of REGDOC-2.2.2)	Gather feedback from trainees and supervisors regarding the training and worker performance.	If feedback indicates problems, analyze to identify the cause and improve applicable SAT phase.	Any changes in regulatory requirements, engineering changes, new equipment and operating experience should be regularly incorporated into the Analysis Phase.				

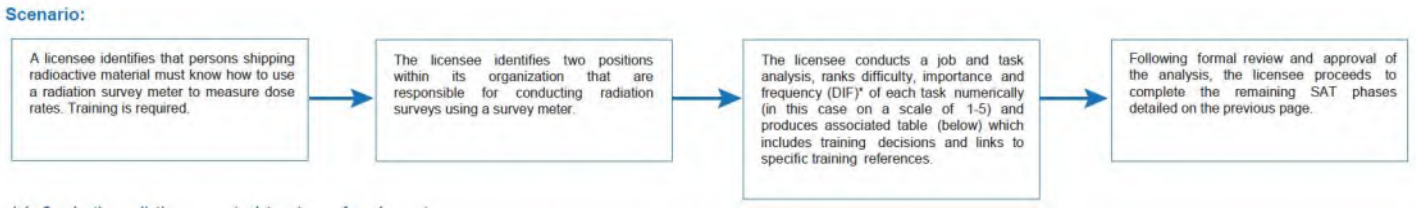
* An example of a completed analysis phase (job and task analysis) is provided on the next page.

(Click on the image for a larger view)

▶ **Long description of the simplified process**

Practical example of analysis phase of SAT conducted in accordance with the principles of REGDOC 2.2.2

This example is provided for information purposes only.



(Click on the image for a larger view)

▶ **Long description of the analysis phase of SAT**

Job: Conducting radiation survey to determine surface dose rate

Task #	Task statement	DIF			Training decision	Conditions	Standards	Knowledge, skills safety-related attributes	Training Methods
		D	I	F					
1	Conduct pre-operation checks of survey meter – battery, calibration date, manufacturer's recommended functional checks, response check using a check source (as applicable)	2	2	2	Initial training	Given references, without assistance or coaching	Device must pass pre-operation checks in accordance with operating manual XYZ (section X)	• Basic radiation protection • Survey meter model XYZ operation • Using and accounting for check sources	(1) Classroom – radiation protection, operating manual XYZ (2) On the job – "pre-operations check" document YYYYY + assessment
2	Execute measurement procedure – how to orient survey meters, where to measure, how many points, recording data	3	3	2	Initial training	Given references, without assistance or coaching	Operator must perform survey in accordance with radiation survey procedure XYZ	• Basic radiation protection • Survey meter model XYZ operation • Conservative decision making	(1) Classroom – radiation protection, operating manual XYZ (2) On the job – "conducting survey" document Y + assessment

3	Execute safety protocol X given a reading of xxx µSv/h or higher. **(*task critical to safety)**	3	5	5	**Initial & continuing training** (task is highly important to safety and performed infrequently thus continuing training is needed)	Given references, without assistance or coaching	Operator must take appropriate action in accordance with safety protocol X	• Basic radiation protection • Survey meter model XYZ operation • Conservative decision making • Safety protocol X	(1) Classroom – radiation protection, operating manual XYZ, safety protocol (2) On the job – "safety protocol" document Z + assessment (3) Continuing training – yearly

* DIF is used to rank tasks to determine the level of training required. For difficulty and importance, a higher number indicates greater difficulty or importance. For frequency, a higher number indicates an infrequent task. Tasks with a high sum of DIF have greater training needs, marking the potential for continuing training. The numbers provided in the table are examples only and may differ from those produced by a licensee for a job, or a task analysis of a similar job.

Abbreviations

CNSC	Canadian Nuclear Safety Commission
DIF	difficulty, importance and frequency
EO	enabling objective
OJT	on-the-job training
SAT	systematic approach to training
TLO	terminal learning objective
TNA	training needs analysis

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Glossary

continuing training
A structured curriculum that maintains and enhances knowledge, skills and safety-related attributes, and that addresses areas such as equipment changes and procedure changes; skill weaknesses; infrequently used and difficult knowledge and skills, and lessons learned from operating experiences. Update training, requalification training and refresher training are also considered continuing training.

duty area

One of the job incumbent's main areas of activity, or a grouping of closely related tasks.

enabling objective

A principal unit of learning that constitutes a major step towards achieving associated terminal learning objective(s). It consists of a performance statement, condition statement and a standard.

instructional strategy

The combination of media, methods and environment used in the delivery of training:

- method: the type of learning activity or instructional event
- media: the means of delivering instructional activities to the trainee, such as computers or printed texts
- environment: where learning activities take place; e.g., classroom, workplace, home

job

The work performed by the incumbent in a position, or by a group of incumbents in a position who perform essentially the same duties and tasks and require similar knowledge, skills and safety-related attributes to perform those tasks.

knowledge

The theoretical and/or practical understanding of a subject matter required to perform work.

learning

A change in behaviour that occurs as a result of the acquisition of knowledge, skills or safety-related attributes.

lesson plan

A guide used by instructors to ensure that training is specific and goal oriented.

licensed activity

An activity described in any of paragraphs 26(*a*) to (*f*) of the *Nuclear Safety and Control Act* that a licence authorizes the licensee to carry on.

licensing basis

A set of requirements and documents for a regulated facility or activity comprising:

- the regulatory requirements set out in the applicable laws and regulations
- the conditions and safety and control measures described in the facility‘s or activity's licence and the documents directly referenced in that licence
- the safety and control measures described in the licence application and the documents needed to support that licence application

nuclear facility

A facility as defined in the *Nuclear Safety and Control Act*.

on-the-job evaluation

Performance demonstration by a trainee of knowledge, skills, safety-related attributes and work practice standards required to perform a task using the approved procedure and the prescribed standards. The evaluation is conducted on the job.

on-the-job training

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

pilot course

A trial of an instructional program before it is implemented in training.

program evaluation

An assessment of the merit or value of an instructional program. Program evaluation is a systematic process designed to collect data to assess if instruction has satisfied the objectives of the instructional program in the most effective and efficient manner

qualification

A recognized level of mastery of task performance in a work-related field, which is normally acquired through successful completion of training. It involves mastery of all the knowledge, skills and safety-related attributes required for successful task performance on the job.

safety-related attributes

Observable attributes of safety that reflect an organization's values and behaviors related to safety that each worker is expected to exhibit consistently on the job.

skill

A mental and/or physical activity that requires a measured degree of proficiency. The words "skill" and "ability" are often used interchangeably.

task

A discrete segment of work having two or more steps, performed by an individual, which has a definite beginning and end, and which constitutes a logical and necessary part of a duty and/or job.

task list

The list of tasks that make up the requirements in a job or duty area. The list should also include critical supporting references that provide insight into the scope and difficulty of the tasks.

teaching points

The elements that make up an evaluation objective: discrete steps, skills, factors or concepts requiring separate demonstration or explanation that the trainee must master, learn or do.

terminal learning objective

A statement that describes the expected performance upon completion of the training. It includes a description, in operational terms, of what the individual must do, the condition under which the performance must be completed, and the standard to which the performance must conform.

trainee characteristics

The target population for whom the proposed training is intended as well as relevant information about the trainees concerned, such as the aptitudes, special skills, education, previous related training and personal data (e.g., age). Defining trainee characteristics is a component of a training system.

trainee evaluation

The assessment of progress made by participants during an instructional program (formative evaluation) and of their achievement at the end of the program (summative evaluation).

training/instruction

A combination of activities with the purpose of providing the knowledge, skills and attitudes to individuals or teams in order to allow performance of activities in an effective and efficient manner and to identified criteria.

training development plan (often referred to as the training plan)

A document that describes how the output of the analysis and design phases is intended to be used during the development to meet the requirements of the terminal learning objectives and enabling objectives.

training program

A structured collection of courses required to achieve a qualification or certification to perform work.

training system

A series of training-related processes and procedures that provides the basis for the analysis, design, development, implementation, evaluation, documentation and management of training programs and courses.

vendor/contractor

A person who is either contracted by a licensee to develop or deliver training, or who delivers training to a licensee's staff with the intent that a required qualification would be granted upon completion of the training.

Additional Information

The following documents contain additional information that may be of interest to persons involved in training systems for nuclear facilities.

1. Canadian Nuclear Safety Commission (CNSC), RD-204, *Certification of Persons Working at Nuclear Power Plants*, Ottawa, Canada, 2008.
2. CNSC, G-229, *Certification of Exposure Device Operators*, Ottawa, Canada, 2004.
3. CNSC, G-313, *Radiation Safety Training Programs for Workers Involved in Licensed Activities with Nuclear Substances and Radiation Devices, and with Class II Nuclear Facilities and Prescribed Equipment*, Ottawa, Canada, 2006.
4. CSA Group, N286-12, *Management system requirements for nuclear facilities*, Toronto, Canada, 2012.
5. International Atomic Energy Agency, TECDOC-1057 *Experience in the use of Systematic Approach in Training (SAT) for Nuclear Power Plant Personnel*, Vienna, 1999.
6. United States Nuclear Regulatory Commission (U.S. NRC), Regulatory Guide 1.8, *Qualification and Training of Personnel for Nuclear Power Plants*, Washington, D.C.,2000.
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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 Aboriginal engagement
  - 3.3 Financial guarantees
  - 3.4 Commission proceedings
  - 3.5 CNSC Processes and Practices

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.

Date modified:

2016-12-06