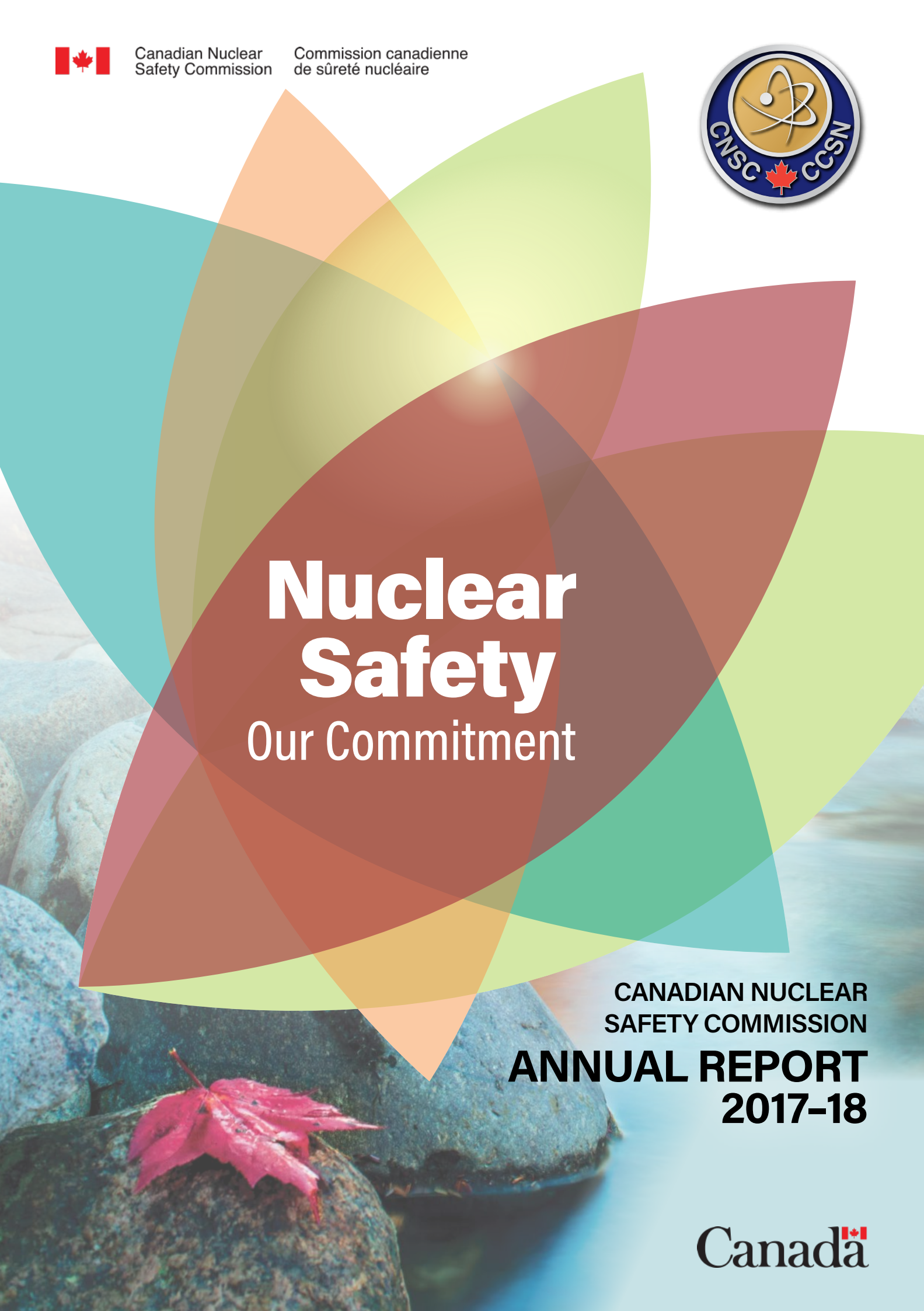
Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Nuclear Safety

Our Commitment



CANADIAN NUCLEAR SAFETY COMMISSION

ANNUAL REPORT 2017–18

Canada

The Canadian Nuclear Safety Commission regulates all nuclear facilities and activities in Canada from uranium mining to power generation, nuclear research, nuclear facilities and prescribed equipment, transportation of radiological substances, industrial and medical applications of nuclear materials, and waste disposal.

We strive to ensure that Canadian nuclear activities are among the safest and most secure in the world.

As leaders in our field, we are experts with a strong focus on action: We enforce our very strict regulatory requirements and vigilantly monitor licensees to verify they are following the rules.

VISION

To be the best nuclear regulator in the world.

MISSION

The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public.

We regulate the nuclear industry in Canada to keep Canada and Canadians safe.

LETTER TO THE MINISTER

THE HONOURABLE AMARJEET SOHI
MINISTER OF NATURAL RESOURCES
OTTAWA, ONTARIO

Sir:

I have the honour of presenting you with the Canadian Nuclear Safety Commission's annual report for the fiscal year ending March 31, 2018. The report has been prepared and tabled in accordance with section 72 of the *Nuclear Safety and Control Act*.

Michael Binder
President and Chief Executive Officer,
Canadian Nuclear Safety Commission

Table of Contents

MESSAGE FROM THE PRESIDENT 1

CANADA'S NUCLEAR REGULATOR 2

- Who we are 2
- What is the nuclear fuel cycle? 2
- How we work 3
- Where we work 3

THE CNSC'S REGULATORY OBJECTIVE 4

- Focus on the Environment – Independent Environmental Monitoring Program 5
- Nuclear Fuel Cycle Program 8
- Nuclear Reactors Program 14
- Nuclear Substances and Prescribed Equipment Program 22
- Nuclear Non-Proliferation Program 26
- Scientific, Technical, Regulatory and Public Information Program 30

FOCUS ON INDIGENOUS ENGAGEMENT AND CONSULTATION 36

COMMISSION MEMBERS 38

COMMISSION OPERATIONS 40

FINANCIAL REVIEW AND HIGHLIGHTS 41

CNSC MANAGEMENT TEAM 43

FINANCIAL STATEMENTS 44

ANNEX TO THE STATEMENT OF MANAGEMENT RESPONSIBILITY INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING 2017–18 60

ANNEX A: COMMISSION HEARINGS AND OPPORTUNITIES TO BE HEARD IN 2017–18 64

ANNEX B: REGULATORY FRAMEWORK PROJECTS PUBLISHED OR COMPLETED IN 2017–18 67

MESSAGE FROM THE PRESIDENT

After more than ten years as President and Chief Executive Officer of the Canadian Nuclear Safety Commission (CNSC), it is with a sense of pride that I present my final annual report.

In the past decade, the CNSC has achieved many accomplishments, and has evolved and grown as an organization. It has demonstrated its willingness and ability to consistently improve as a regulator, and has modernized its regulatory framework. It embraced a complete review of its regulatory work and of the safety systems of its licensees in response to the Fukushima accident in 2011.

The CNSC has proactively and successfully engaged in international assessments, such as the Integrated Regulatory Review Service mission, under the auspices of the International Atomic Energy Agency in 2009, and this past year, an assessment of the CNSC's safety culture, against the Nuclear Energy Agency's principles of safety culture for nuclear regulators.

In 2017–18, the CNSC provided regulatory oversight for major nuclear and uranium mining facilities in Canada, including licence renewals for the nuclear generating station at Point Lepreau in New Brunswick, the Chalk River Laboratories' nuclear research and test facility in Ontario and the McClean Lake uranium mining operation in Saskatchewan.

This past year the CNSC also continued environmental assessments of the Canadian Nuclear Laboratories' proposed major projects: Near Surface Disposal Facility at Chalk River Laboratories and the decommissioning of the Nuclear Power Demonstration at Rolphton, both in Ontario, and the decommissioning of Whiteshell Laboratories in Manitoba. We also provided regulatory oversight of the Pickering Nuclear Generating Station in preparation for the licence renewal public hearings in 2018.

The CNSC continues its growing work in vendor design reviews for new reactor concepts from vendors who have expressed an interest in obtaining the CNSC's feedback on how their designs are addressing Canadian regulatory requirements. These reviews do not result in the granting of a licence or certification, but will hopefully clarify discussions with future applicants.

After ten years as President and Chief Executive Officer of the Canadian Nuclear Safety Commission, I am grateful to have been given the opportunity to work with a dedicated group of professionals who are focussed and committed to ensuring the regulatory oversight of Canada's nuclear sector. I depart with the knowledge and confidence that nuclear safety in Canada remains in good hands.

Michael Binder

CANADA'S NUCLEAR REGULATOR

WHO WE ARE

The Canadian Nuclear Safety Commission (CNSC) regulates all nuclear facilities and activities in Canada, including the nuclear fuel cycle.

WHAT IS THE NUCLEAR FUEL CYCLE?

The nuclear fuel cycle starts with uranium mining, followed by the processing of uranium into fuel for nuclear power plants. After the fuel has been used in nuclear reactors, the CNSC also regulates the safe management of the nuclear waste. Beyond the fuel cycle, the CNSC monitors and ensures the safe use of nuclear materials in medicine, research and other industries.

CNSC REGULATES

- URANIUM MINES AND MILLS
- NUCLEAR PROCESSING AND RESEARCH
- NUCLEAR POWER GENERATION
- NUCLEAR MEDICINE
- NUCLEAR SUBSTANCES AND TRANSPORTATION
- WASTE MANAGEMENT
- THE ENVIRONMENT
- NATIONAL SECURITY & INTERNATIONAL COMMITMENTS

HOW WE WORK

The CNSC is Canada's nuclear regulator. It is composed of a Commission that is completely independent, and is supported by highly skilled, professional staff who are dedicated and committed to protecting health, safety, security and the environment with respect to all types of authorized nuclear activity.

SETTING REQUIREMENTS

Setting expectations, clarifying when needed and seeking feedback

Requirements are established through legislation, regulations, licences and licence conditions, and regulatory documents, with ongoing consultations with CNSC stakeholders.

LICENSING & CERTIFICATION

Reviewing and assessing applications to ensure that requirements are met

Reviews ensure that all those who carry out nuclear-related activities are qualified and capable of undertaking these activities safely.

OVERSEEING COMPLIANCE

Verifying that licensees are following the conditions of their licences

Inspections and reviews are conducted to monitor licensee activity, and to ensure that appropriate corrective measures are taken to address and correct deficiencies or non-compliances.

REPORTING

Publishing regulatory actions and reports

CNSC actions are widely communicated to the public, including government, licensees, stakeholders and Indigenous people.

Where we work

The CNSC's headquarters are in Ottawa and we have offices at each of Canada's four power reactor sites, a site office at Chalk River Laboratories and four regional offices across the country.

THE CNSC'S REGULATORY OBJECTIVE

Safe and secure nuclear installations and processes used solely for peaceful purposes and a public that is informed about the effectiveness of Canada's nuclear regulatory regime.

To support this objective, the CNSC has five regulatory programs:

- Nuclear Fuel Cycle Program
- Nuclear Reactors Program
- Nuclear Substances and Prescribed Equipment Program
- Nuclear Non-Proliferation Program
- Scientific, Regulatory and Public Information Program

Focus on the Environment – Independent Environmental Monitoring Program

Protecting the environment is an important part of the work at the Canadian Nuclear Safety Commission (CNSC).

The CNSC assesses the environmental effects of all nuclear facilities or activities at every phase of their lifecycle. This assessment is informed by the scale and complexity of the environmental risks associated with the facility or activity.

The CNSC has implemented its Independent Environmental Monitoring Program (IEMP) to verify that the public and the environment around licensed nuclear facilities are safe. It is separate from, but complementary to, the CNSC's ongoing compliance verification program. The IEMP involves taking samples from public areas around the facilities, and measuring and analyzing the amount of radiological (nuclear) and hazardous substances in those samples. CNSC staff collect the samples and send them to the CNSC's state-of-the-art laboratory for testing and analysis.

The IEMP process consists of developing site-specific sampling plans for each nuclear facility, and then processing and analyzing the samples collected. The sampling plans focus on measuring concentrations of contaminants in the environment at publicly accessible locations such as parks, residential communities and beaches, and in areas of interest identified in environmental risk assessments (ERAs). Samples may be taken for air, water, soil, sediment, vegetation such as grass and weeds, and some food, such as meat and produce.

Samples are analyzed at the CNSC's state-of-the art laboratory by highly qualified scientists using best industry practices. Samples are measured for both radiological and non-radiological contaminants related to the activities of the nuclear facility and as identified in the site-specific ERA. Contaminant levels are compared to those in applicable guidelines and/or natural background levels to confirm there is no impact on health or the environment. Conclusions and data are then published on the CNSC website. The following are IEMP results published in 2017-18:

Independent Environmental Monitoring Program Results for Various Nuclear Processing Facilities

- In July 2017, the CNSC released the 2017 Independent Environmental Monitoring Program results for the Deloro closed mine site. The results confirmed that the public and the environment around the facility are protected and that there are no expected health impacts. The Ontario Ministry of Environment and Climate Change assumed responsibility for the site and the required environmental cleanup in 1979, and ensures appropriate long-term management of the small quantities of low-level radioactive waste.

- In March 2018, the CNSC released the 2013, 2014 and 2017 Independent Environmental Monitoring Program results for Cameco's Blind River Refinery and in March 2018, the CNSC released the 2017 Independent Environmental Monitoring Program results for the Port Hope Conversion Facility (PHCF) and Cameco Fuel Manufacturing (CFM). The results confirmed that the public and the environment around these facilities are protected and that there are no expected health or environmental impacts. Cameco Blind River Refinery refines uranium concentrates (yellowcake) from uranium mines around the world, including northern Saskatchewan, to produce uranium trioxide (UO_3), an intermediate product of the nuclear fuel cycle. The UO_3 is then shipped to Cameco's Port Hope Conversion Facility for further processing. The PHCF converts uranium trioxide (UO_3) powder into uranium dioxide (UO_2) and uranium hexafluoride (UF_6). The UF_6 is exported for further processing into fuel for light-water reactors, while the UO_2 powder is shipped to CFM and BWXT Nuclear Energy Canada (located in Toronto), where it is pressed into pellets. The pellets are then fitted into zirconium tubes for use in CANDU reactor fuel bundles.

Independent Environmental Monitoring Program Results for Various Nuclear Power Plants

- In July 2017, the CNSC released the 2016 Independent Environmental Monitoring Program results for the Bruce A and B Nuclear Generating Stations and in February 2018, the CNSC released the 2017 Independent Environmental Monitoring Program results for the Pickering Nuclear Generating Station. The results confirmed that the public and the environment around the Pickering and Bruce sites are protected and that there are no expected health impacts.

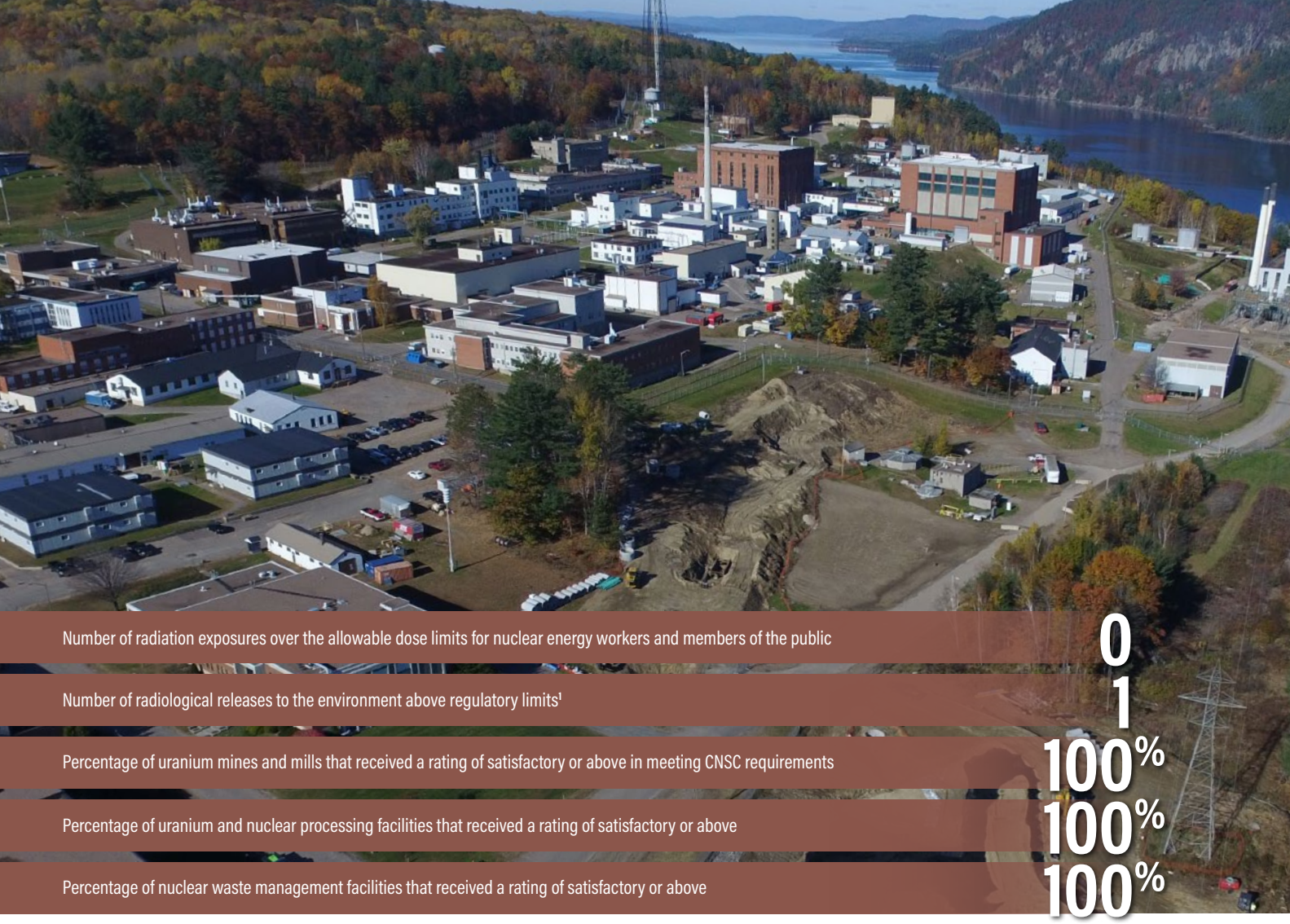
- In May 2017, the CNSC released the 2014 and 2015 Independent Environmental Monitoring Program results for the Point Lepreau Nuclear Generating Station. The results confirmed that the public and the environment around the Point Lepreau facility are protected and that there are no expected health impacts.

More information on the Independent Environmental Monitoring Program is available on the CNSC website.

Watch the IEMP information video

Environmental Protection of the Great Lakes

As environmental protection is a shared mandate, the CNSC works closely with Environment and Climate Change Canada (ECCC) through a formal memorandum of understanding (MOU). The CNSC, through this MOU as well as its participation on the Great Lakes Executive Committee under the Canada-United States Great Lakes Water Quality Agreement, was asked to assess whether radionuclides should be considered as potential chemicals of mutual concern in the Great Lakes. In fall 2017, the CNSC submitted its report to ECCC for consideration, demonstrating that the environment and the public surrounding the Great Lakes were protected and that a rigorous and public national regulatory framework was in place.



Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public	0
Number of radiological releases to the environment above regulatory limits[1]	1
Percentage of uranium mines and mills that received a rating of satisfactory or above in meeting CNSC requirements	100%
Percentage of uranium and nuclear processing facilities that received a rating of satisfactory or above	100%
Percentage of nuclear waste management facilities that received a rating of satisfactory or above	100%

NUCLEAR FUEL CYCLE PROGRAM

This program regulates facilities associated with the nuclear fuel cycle, specifically nuclear processing facilities, nuclear waste management facilities, and uranium mines and mills. The program regulates all the lifecycle stages for these facilities – from site preparation, construction and operation, to decommissioning (or long-term management, in the case of some nuclear waste facilities).

1 The reported exceedance was in relation to the monthly average discharge limit for Ra-226 at the Elliot Lake historic decommissioned uranium mine site for the month of January 2018. The value of the exceedance was below the federal drinking water standard and there were no radiological impacts to the public or the environment.

NUCLEAR FUEL CYCLE PROGRAM HIGHLIGHTS FOR 2017–18

Each year, the CNSC publishes a report on the performance of Canada's uranium and nuclear substance processing facilities.

The report focuses on the three safety and control areas (SCAs) of radiation protection, environmental protection, and conventional health and safety, as these are key performance indicators. It also tracks the ratings of the 11 other SCAs, including waste management, and emergency management and fire protection. The report is presented at a public Commission meeting, and the public is invited to make written interventions to the Commission and apply to the CNSC's Participant Funding Program to assist with those submissions.

Based on inspections and reviews conducted during the year, CNSC staff concluded that Canada's uranium and nuclear processing facilities operated safely. This conclusion was based on the following:

- Radiation protection measures were effective and doses remained as low as reasonably achievable (ALARA).
- No worker received a radiation dose that exceeded the regulatory limit.
- The frequency and severity of injuries/accidents involving workers were minimal.
- All conventional health and safety programs were effective in protecting workers.
- No member of the public received a radiation dose that exceeded the regulatory limit.
- All environmental protection programs were effective and their results were ALARA.
- Licensees complied with their licence conditions concerning Canada's international obligations.

NUMBER OF REGULATORY INSPECTIONS OF NUCLEAR FUEL CYCLE PROGRAM LICENSEES IN 2017–18

33

URANIUM MINES AND MILLS

47

URANIUM AND NUCLEAR PROCESSING FACILITIES

42

NUCLEAR WASTE MANAGEMENT FACILITIES AND MAJOR DECOMMISSIONING PROJECTS

URANIUM MINES AND MILLS

Uranium is a naturally occurring radioactive element used for fuel in nuclear power reactors. Canada is one of the world's largest uranium producers. The majority of Canada's production is exported.

Uranium is mined to provide uranium ore, which is processed at a milling facility to produce uranium concentrate. The uranium concentrate is then processed further to create fuel for nuclear reactors.

The CNSC is responsible for regulating and licensing all existing and proposed uranium mining and milling operations in Canada.

At this time, all operating uranium mines and mills in Canada are located in northern Saskatchewan. Orano Canada (formerly AREVA Resources Canada) and Cameco Corporation are the licensees of the active mining and milling facilities:

- Cigar Lake Mine
- Key Lake Mill (currently in suspended production)
- McArthur River Mine (currently in suspended production)
- McClean Lake Mill
- Rabbit Lake Mine and Mill (currently in suspended production)

To learn more about uranium mines and mills and their safe regulation, refer to the CNSC's online resources, including:

- Overview of Uranium Mining – How mines work and how the CNSC keeps them safe
- Life of a Uranium Mine in Canada – Safe and responsible mining operations
- Parts of a Uranium Mine – Explore a mine from top to bottom
- Fact or Fiction: Mining Edition – You don't know what you don't know till you know!

Licensing Activities at Canada's Nuclear Fuel Cycle Facilities

URANIUM MINES AND MILLS

McClean Lake Operation

In July 2017, following a public hearing, the Commission issued its decision to renew Orano Canada's (formerly AREVA) uranium mine operating licence for the McClean Lake Operation for a period of 10 years. The McClean Lake Operation is located in the Athabasca Basin in Saskatchewan and produces uranium concentrate (U_3O_8) and processes uranium ore slurry from the Cameco Corporation's Cigar Lake Operation.

NUCLEAR RESEARCH FACILITIES

Canadian Nuclear Laboratories

In March 2018, following a public hearing held on January 23–25, 2018 in Pembroke, Ontario, the CNSC announced its decision to renew Canadian Nuclear Laboratories' nuclear research and test establishment operating licence for the Chalk River Laboratories site, located near Chalk River, Ontario. The licence will be valid from April 1, 2018 until March 31, 2028.

NUCLEAR WASTE MANAGEMENT FACILITIES

Ontario Power Generation's Western Waste Management Facility

In May 2017, following a public hearing, the Commission issued its decision to renew Ontario Power Generation's waste facility operating licence for the Western Waste Management Facility (WWMF) for a period of 10 years. The WWMF is responsible for the safe handling, management and interim storage of low- and intermediate-level radioactive waste from the Bruce A and B reactors, as well as from the Pickering and Darlington nuclear generating stations. The facility also safely manages the used nuclear fuel from Bruce A and B along with refurbishment waste from Bruce A.

Ontario Power Generation's Pickering Waste Management Facility

In February 2018, following a public hearing, the Commission issued its decision to renew Ontario Power Generation's waste facility operating licence for the Pickering Waste Management Facility for a period of 10 years. The facility processes and stores dry storage containers of used nuclear fuel from the Pickering Nuclear Generating Station. The facility also stores intermediate-level waste from the refurbishment of Pickering A.

Chalk River Laboratories Near Surface Disposal Facility Project

The Near Surface Disposal Facility (NSDF) is a proposed engineered disposal facility for low-level radioactive waste by Canadian Nuclear Laboratories (CNL), planned for the Chalk River Laboratories site located in the Town of Deep River, Ontario.

In March 2017, the CNSC issued a decision on the scope of the environmental assessment for the project following public comments received for both the original project description and a revised project description. CNL subsequently submitted a licence application to the CNSC in March 2017 to construct a radioactive waste disposal facility that would operate for 50 years and, as proposed, would be an engineered mound built at near-surface level of the CRL site. The proposed project would also include a wastewater treatment plant, supporting facilities and site infrastructure.

In April 2017, the CNSC held open houses in the communities of Deep River and Sheenboro to provide information on the project and the process and held additional open houses in October 2017, again in the communities Deep River and Sheenboro and additionally in the community of Pembroke.

Following the receipt of the final environmental impact statement, the CNSC staff will produce a Commission member document (CMD) to the Commission with its assessment of the project. The CMD will be available to the public and Indigenous groups, at least 60 days prior to the Commission's public hearing, the date of which has not been set.

Learn more about the Near Surface Disposal Facility project.

Sixth Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

In October 2017, Canada submitted its report for international peer review to the Sixth Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The report demonstrates that Canada continues to meet its obligations under the terms of the Joint Convention and continues to maintain a consistently high level of safety in the management of spent fuel and radioactive waste, and to protect the health and safety of the public and the environment.

The report was presented in May 2018 by the Canadian delegation which was led by Ramzi Jammal, the Canadian Nuclear Safety Commission's Executive Vice-President and Chief Regulatory Operations Officer and included federal departments and agencies, as well as industry organizations, including Natural Resources Canada, Ontario Power Generation, Nuclear Waste Management Organization, Atomic Energy of Canada Limited, Canadian Nuclear Laboratories, and Hydro-Québec.

The delegation not only presented the Canadian national report but also reviewed other countries' spent fuel and radioactive waste management programs. The goal of the meeting is to challenge and learn from others in an effort to continuously strengthen nuclear waste management practices in Canada and around the world.

Read the Canadian delegation presentation:

nuclearsafety.gc.ca/eng/resources/presentations/2018.cfm#seniormanagement

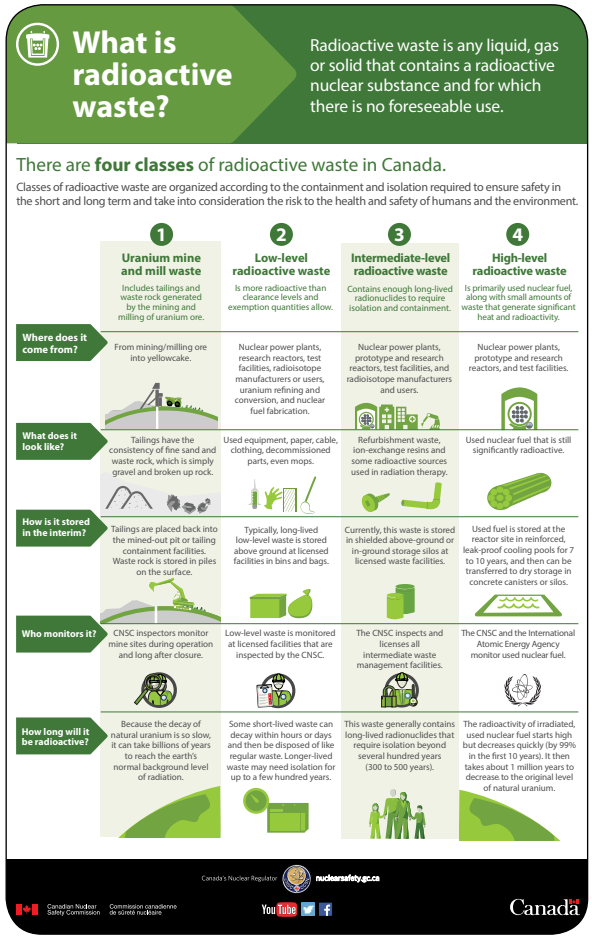
Read Canada's Sixth National Report and the responses to questions raised from peer review of Canada's Sixth National Report:

nuclearsafety.gc.ca/eng/resources/publications/reports/jointconvention/index.cfm#national

Learn about where radioactive waste comes from, what it looks like, and how it's stored.

Watch the video

This infographic features the definition of radioactive waste and describes different aspects of its four classifications.



View the Infographic

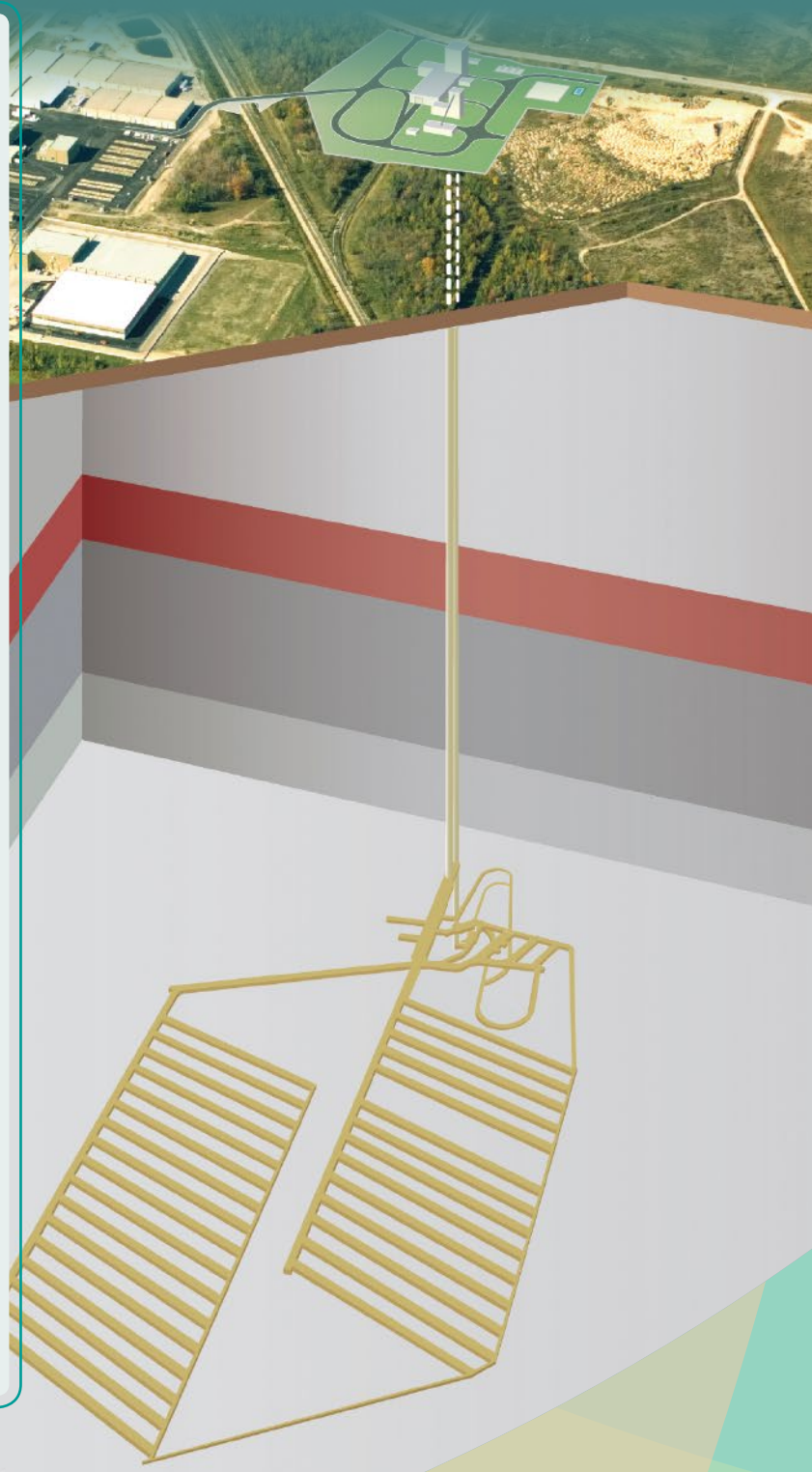
ONTARIO POWER GENERATION'S PROPOSED DEEP GEOLOGIC REPOSITORY (DGR) PROJECT FOR LOW- AND INTERMEDIATE-LEVEL WASTE

Ontario Power Generation (OPG) is proposing to construct a deep rock vault in clay-rich limestone more than 600 metres underground and over 400 metres below the bottom of Lake Huron. The vault is designed to be a long-term management facility for OPG's low- and intermediate-level radioactive waste.

The project was recommended in 2015 by an independent joint review panel appointed under the *Nuclear Safety and Control Act* (NSCA) and the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The panel concluded in its environmental assessment report to the federal Minister of Environment and Climate Change that "the project is not likely to cause significant adverse environmental effects, taking into account the implementation of the mitigation measures committed to by OPG together with the mitigations measures recommended by the panel". The minister requested that additional information from OPG be submitted to the Canadian Environmental Assessment Agency, which then invited public comment on the additional information.

If approved by the minister, the project will proceed to a licensing decision by the panel members, appointed as temporary Commission members, on whether to issue a CNSC licence to prepare a site for and construct the DGR.

Learn more about OPG's proposed Deep Geologic Repository and its current status, and about the safe regulation and oversight of radioactive waste in Canada, by visiting the CNSC website.



Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public	0
Number of radiological releases to the environment above regulatory limits	0
Percentage of nuclear power plant facilities that received a rating of satisfactory or above	100%
Percentage of research reactor facilities that received a rating of satisfactory or above	100%

NUCLEAR REACTORS PROGRAM

This program regulates nuclear power plants and research reactors over all lifecycle stages – from site preparation, construction and operation, to decommissioning and abandonment (once operations are ended).

NUCLEAR REACTORS PROGRAM HIGHLIGHTS FOR 2017–18

Each year, the CNSC publishes the *Regulatory Oversight Report for Canadian Nuclear Power Plants* and conducts related public proceedings, which provide an opportunity to intervene. The CNSC offers participant funding to assist Indigenous persons, members of the public and stakeholders in reviewing this regulatory oversight report and submitting comments, in writing, to the Commission.

The report focuses on the CNSC's 14 safety and control areas (SCAs). It outlines the CNSC's assessment of how well plant operators are meeting regulatory requirements and program expectations in all areas.

Showing comparisons and trends where possible, the report highlights emerging regulatory issues pertaining to the industry at large and to each licensed station.

Through site inspections, reviews and assessments, CNSC staff concluded that Canada's nuclear power plants (NPPs) operated safely during 2017. The regulatory oversight report on Canada's research facilities also concluded that Canada's research reactors operated safely during 2017. The evaluations of all findings for the SCAs show that, overall, licensees made adequate provisions for the protection of the health, safety and security of persons and the environment from the use of nuclear energy, and took the measures required to implement Canada's international obligations on the peaceful use of nuclear energy.

The following observations support the conclusion of safe operation:

- There were no serious process failures at the NPPs or research reactors.
- No member of the public received a radiation dose that exceeded the regulatory limit.
- No worker at any NPP or research reactor received a radiation dose that exceeded the regulatory limits.
- The frequency and severity of non-radiological injuries to workers were minimal.
- No radiological releases to the environment from the stations exceeded the regulatory limits.
- Licensees complied with licence conditions concerning Canada's international obligations.
- No NPP or research reactor events above Level 0 on the International Nuclear and Radiological Event Scale (INES) were reported to the International Atomic Energy Agency.

NUMBER OF REGULATORY INSPECTIONS OF NUCLEAR REACTORS PROGRAM LICENSEES IN 2017–18

109

NUCLEAR POWER PLANTS

23

RESEARCH REACTORS

CANADIAN NPP SAFETY PERFORMANCE RATINGS FOR 2017

Safety and control area	Bruce A	Bruce B	Darlington	Pickering	Point Lepreau
Management system	SA	SA	SA	SA	SA
Human performance management	SA	SA	SA	SA	SA
Operating performance	FS	FS	FS	FS	SA
Safety analysis	FS	FS	FS	FS	FS
Physical design	SA	SA	SA	SA	SA
Fitness for service	SA	SA	SA	SA	SA
Radiation protection	FS	FS	SA	SA	SA
Conventional health and safety	FS	SA	FS	FS	FS
Environmental protection	SA	SA	SA	SA	SA
Emergency management and fire protection	SA	SA	SA	SA	SA
Waste management	FS	FS	FS	FS	SA
Security	SA	SA	SA	SA	SA
Safeguards and non-proliferation	SA	SA	SA	SA	SA
Packaging and transport	SA	SA	SA	SA	SA
Overall rating	FS	SA	FS	FS	SA

FS Fully satisfactory SA Satisfactory BE Below expectations

Licensing Activities at Canada's Nuclear Power Plants

Darlington Nuclear Generating Station (Ontario)

In January 2016, the CNSC issued its decision to renew Ontario Power Generation's power reactor operating licence for the Darlington Nuclear Generating Station for a period of 10 years, encompassing the refurbishment project of the four reactor units. The first reactor unit refurbishment started in October 2016 and is currently in progress.

Pickering Nuclear Generating Station (Ontario)

The Commission held Part 1 of a public hearing in April 2018 on Ontario Power Generation's application for a 10-year renewal of its power reactor operating licence for the Pickering Nuclear Generating Station. Part 2 of the public hearing will be held in June 2018, and the Commission will make its determination and issue a decision accordingly.

Bruce A and B Nuclear Generating Stations (Ontario)

The Commission held Part 1 of a public hearing in March 2018 on Bruce Power's application for a 10-year renewal of its power reactor operating licence for the Bruce A and Bruce B Nuclear Generating Stations. Part 2 of the public hearing was held in May 2018, and the Commission will make its determination and issue a decision accordingly.

With this 10-year licence renewal application, Bruce Power has requested authorization to update the licensing basis in 2018 to include life-extension projects and future major component replacement work. Bruce Power completed a periodic safety review for the two stations in support of these activities and developed a supporting integrated implementation plan.

Point Lepreau Nuclear Generating Station (New Brunswick)

A two-part public hearing for the Point Lepreau licence renewal was held in January and May 2017. During the public hearing, the Commission received and considered submissions from New Brunswick Power Corporation (NB Power) and 95 intervenors. CNSC staff reviewed all submissions and presented recommendations to the Commission. In June 2017, the Commission issued its decision to renew NB Power's power reactor operating licence, valid from July 1, 2017 to June 30, 2022.

Gentilly-2 Nuclear Facility (Quebec)

In September 2017, the CNSC released the 2016 Independent Environmental Monitoring Program results for the Gentilly-2 Nuclear Facility (G-2). The results confirmed that the public and the environment around the facility are protected and that there are no expected health impacts. The G-2 facility was permanently shut down in December 2012. Since then, activities conducted by Hydro-Québec have been to stabilize and transition the G-2 facility to safe storage.

Periodic Safety Reviews

A periodic safety review (PSR) is an international best practice that was adopted by the CNSC in 2015 and described in *REGDOC-2.3.3 Periodic Safety Reviews*. One major activity of a PSR is to evaluate overall plant safety by integrating reviews of 15 safety factors covering elements related to the plant's design, condition, performance and operation, as well as to organizational and human performance. The PSR assesses the extent to which the nuclear power plant conforms to modern codes and standards, and identifies practicable physical or programmatic modifications to enhance safety and enable safe, long-term operation or until the end of commercial operation.

As part of licensing conditions set out by the CNSC, a PSR is conducted every 10 years at all Canadian nuclear power plants. The CNSC reviewed and accepted PSRs for the Pickering and the Bruce A and B Nuclear Generating Stations in 2017–18 in preparation for licensing hearings for both facilities that are to take place in 2018.

Emergency Preparedness

In December 2017, the CNSC participated in a full-scale, multi-jurisdictional nuclear exercise: Exercise Unified Control. The exercise's primary objective was to test the preparedness of Ontario Power Generation (OPG) and its partners in response to a nuclear emergency at the Pickering Nuclear Generating Station. Beyond assessing OPG's emergency plan for Pickering, the objectives included testing the ability to exchange and use information between organizations, the consultation process during decision making, and the coordination and effective delivery of messages to the public and media.

For the CNSC, this exercise tested its updated nuclear emergency response plan and recently renovated Emergency Operations Centre.

Research Reactors

Chalk River Laboratories – Chalk River (Ontario)

On March 31, 2018, Canadian Nuclear Laboratories (CNL) announced that the National Research Universal reactor had been shut down permanently. The reactor will be placed into a safe storage prior to decommissioning.

University of Alberta's SLOWPOKE-2 Non-Power Reactor (Alberta)

In September 2017, the Commission issued a decision in response to the licensee's request to amend the University of Alberta's non-power reactor licence for the decommissioning of the SLOWPOKE-2 reactor facility. The facility is located in Edmonton, Alberta.

Learn more about Canada's six research reactors by visiting the CNSC website.

Other Reactor Facilities

The Nuclear Power Demonstration (NPD) reactor in Rolphton, Ontario was Canada's first nuclear generating station and operated from 1962 until 1987.

Whiteshell Reactor #1 (WR-1) is an organically cooled research reactor located at Whiteshell Laboratories near Pinawa, Manitoba. WR-1 operated from 1965 until 1985 and was used for various nuclear research programs.

The NPD and WR-1 reactors are currently in safe storage and awaiting final decommissioning. Canadian Nuclear Laboratories (CNL) has proposed *in situ* (leaving in place) decommissioning of these two reactors. In March 2017, the Commission accepted the scope of environmental assessment for these two proposed projects, and in September 2017, CNL submitted licence applications for these two projects. For each of these proposed projects, environmental assessments are required under the *Canadian Environmental Assessment Act, 2012*. CNL's proposed *in situ* decommissioning approach for these two projects also requires approvals by the Commission.

Learn more about Canada's other reactor facilities by visiting the CNSC website.

Pre-Licensing Vendor Design Reviews of New Reactor Concepts

A number of reactor vendor companies, including small modular reactor (SMR) vendors, have expressed interest in obtaining the CNSC's feedback on how their designs are addressing Canadian regulatory requirements. The CNSC is able to provide such feedback in a select number of technical areas through an optional pre-licensing vendor design review process. This type of review does not result in the granting of a licence under the *Nuclear Safety and Control Act*, but vendors can use this feedback in discussions with future applicants for a licence. At the end of the reviews, executive summaries of the project reports are posted on the CNSC website.

Phase 1 of the process is estimated to take between 15 and 18 months to complete according to the proponent's schedule for submissions. It focuses on how the vendor is addressing Canadian requirements in its design and safety analysis processes as well as research and development program. Generally, the phase ends when the conceptual design is completed. In 2017, the CNSC completed a Phase 1 review for Terrestrial Energy's Integral Molten Salt Reactor and the executive summary was posted on the CNSC website.

Phase 2 of the process is estimated to take 24 months and is normally initiated when the reactor vendor has made significant progress in completing design activities at a system level. The review continues the work of Phase 1 in greater detail to confirm whether any fundamental barriers to licensing are emerging that could impact a future project referencing that reactor design.

Learn more about pre-licensing vendor design reviews.

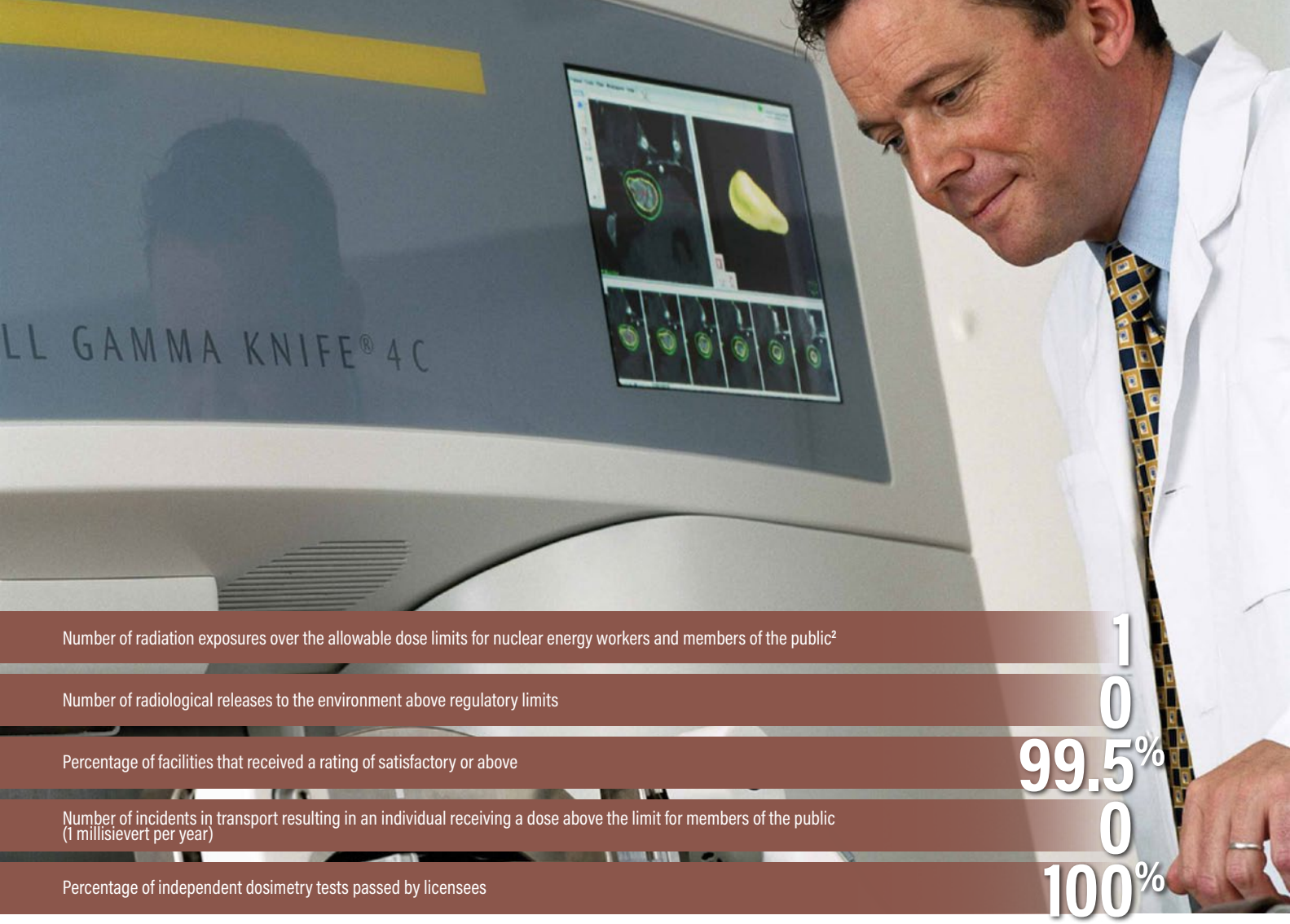
You can also review the most recent CNSC design requirements for new nuclear power plants in Canada as indicated in REGDOC-2.5.2, *Design Of Reactor Facilities: Nuclear Power Plants* or *Design of Small Reactor Facilities* .

The following table presents the status of in-progress reviews and new review applications received with pending project start dates where available.]

CURRENT PRE-LICENSING VENDOR DESIGN REVIEWS [AS OF MARCH 15, 2018]

Vendor	Name of design and cooling type	Approximate electrical capacity (MW electrical)	Review phase	Status
Terrestrial Energy Inc.	IMSR Integral Molten Salt Reactor	200	Phase 1	Completed
			Phase 2	Pending start of technical review
NuScale Power, LLC	NuScale Integral Pressurized Water Reactor	50	Phase 2	Pending start of technical review
Ultra Safe Nuclear Corporation / Global First Power	MMR-5 and MMR-10 High-Temperature Gas	5-10	Phase 1	In progress
			Phase 2	Pending start of technical review
Westinghouse Electric Company, LLC	eVinci Micro Reactor Solid Core and Heat Pipes	Various outputs up to 25 MWe	Phase 2	Pending start of technical review
LeadCold Nuclear Inc.	SEALER Molten Lead	3	Phase 1	On hold
Advanced Reactor Concepts Ltd.	ARC-100 Liquid Sodium	100	Phase 1	In progress
URENCO	U-Battery High-Temperature Gas	4	Phase 1	Application received
Moltex Energy	Moltex Energy Stable Salt Reactor Molten Salt	300	Series Phase 1 and 2	Phase 1 in progress
SMR, LLC. (A Holtec International Company)	SMR-160 Pressurized Light Water	160	Phase 1	Pending start of technical review
StarCore Nuclear	StarCore Module High-Temperature Gas	10	Series Phase 1 and 2	Application received

In February 2018, Ramzi Jammal, CNSC Executive Vice-President and Chief Regulatory Operations Officer, delivered a presentation at the Advanced Reactors Technical Summit IV & Technology Trailblazers Showcase held at Texas A&M University. The presentation, titled "Readiness for Regulating Advanced Reactor Projects," discussed the Canadian perspective on vendor design reviews conducted at the CNSC for SMRs.



Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public[2]	1
Number of radiological releases to the environment above regulatory limits	0
Percentage of facilities that received a rating of satisfactory or above	99.5%
Number of incidents in transport resulting in an individual receiving a dose above the limit for members of the public (1 millisievert per year)	0
Percentage of independent dosimetry tests passed by licensees	100%

NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM

This program regulates the use and transport of nuclear substances, prescribed equipment manufacturers and users, and dosimetry providers. It includes licensing the possession of nuclear substances and the delivery of dosimetry services, overseeing the safe transport of nuclear substances, certifying transport packages and prescribed equipment, and overseeing the certification of radiation safety officers for Class II nuclear facilities.

2 In February 2018, a nuclear medicine technologist at the Windsor Regional Hospital in Windsor, Ontario received a dose to the right wrist, in excess of the regulatory dose limit. An Event Initial Report was submitted to the CNSC by the licensee and presented at a Commission meeting in March 2018. No health effects have been noted since the incident and no physical effects of the exposure are expected.

NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM HIGHLIGHTS FOR 2017–18

Each year, CNSC staff assess licensees' overall safety performance with respect to the use of nuclear substances in Canada and publish regulatory oversight reports on the use of nuclear substances. Staff consider industry performance as a whole, as well as the performance of each sector (i.e., medical, industrial, academic and research, and commercial) separately. Safety performance is measured in terms of licensees' regulatory compliance and occupational doses. These reports also include a summary of reported events and orders issued by the CNSC.

Staff conducted compliance verification activities consisting of field inspections, desktop reviews and technical assessments of licensee activities, and concluded that the use of nuclear substances in Canada was safe during 2017–18.

The evaluations of findings for the safety and control areas show that, overall, licensees made adequate provisions for the protection of the health, safety and security of persons and the environment from the use of nuclear substances, and took the measures required to implement Canada's international obligations.

There were approximately 2,230 active licences in the Nuclear Substances and Prescribed Equipment Program in 2017–18.

[Industrial uses of nuclear technologies video]

[Medical uses of nuclear technologies video]

NUMBER OF REGULATORY INSPECTIONS AND COMPLIANCE REVIEWS OF NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM LICENSEES IN 2017–18

820

NUMBER OF INSPECTIONS CONDUCTED

1,889

NUMBER OF ANNUAL COMPLIANCE REPORTS REVIEWED

National Sealed Source Registry and Sealed Source Tracking System Annual Reports

The CNSC was the first nuclear regulator among the G7 countries to develop a national registry and to implement a Web-based tracking system, along with enhanced import and export controls, for high-risk radioactive sealed sources.

The *National Sealed Source Registry and Sealed Source Tracking System 2016 Annual Report* provides information on sealed sources that were tracked in 2016.

Reports on Lost or Stolen Sealed Sources and Radiation Devices

The *Report on Lost or Stolen Sealed Sources and Radiation Devices* summarizes the information reported to the CNSC about the losses and thefts of licensable sealed sources and radiation devices.

This report provides a description for each event, the date the event occurred, the event location, the risk categorization, a brief summary and the recovery status. The risk categorization of the sealed source at the time of the event (Category 1 (highest risk) to Category 5 (lowest risk) is based on the IAEA document titled *Categorization of Radiation Sources*.

In 2017–18, nine Category 5 (lowest risk) sealed sources were lost. None have since been recovered. One Category 4 (lower risk) portable gauge was stolen, which has not yet been recovered. Up-to-date details of lost or stolen sealed sources and radiation devices are always available on the CNSC website.

RESPONDING TO EVOLVING TECHNOLOGY IN THE MEDICAL SECTOR

Certified Class II prescribed equipment, which includes accelerators, is commonly used for medical diagnosis and treatment. In August 2017, Colin Moses, Director General of the CNSC's Directorate of Nuclear Substance Regulation, presented at the 13th International Topical Meeting on Nuclear Applications of Accelerators, held in Québec City, Quebec. The presentation, titled "Regulatory Oversight of Rapidly Changing Technology: Case Studies in Regulating Accelerators", focused on the CNSC and its regulatory approach and responsive regulation, and concluded with considerations for regulators.

Canada maintains the International Atomic Energy Agency (IAEA) safeguards broader conclusion that there was no diversion of declared nuclear material, and no indication of undeclared nuclear material or nuclear activity	YES
Percentage of annual inventory reports of Canadian obligated nuclear goods and technology that were confirmed as meeting CNSC requirements	100%
Percentage of nuclear material reports submitted that were confirmed as meeting requirements of Canada's international commitments	98.2%
Percentage of goods exported solely for peaceful purposes	100%
Number of import and export licences issued in 2017 18	977

NUCLEAR NON-PROLIFERATION PROGRAM

This program provides assurance to both the Canadian public and the international community that the development, production and use of nuclear energy and nuclear substances, prescribed equipment and prescribed information are safe and conform with the control measures and international obligations to which Canada has agreed.

NUCLEAR NON-PROLIFERATION PROGRAM HIGHLIGHTS FOR 2017–18

International Safeguards

The International Atomic Energy Agency (IAEA) recognized the CNSC's Canadian Safeguards Support Program (CSSP) for 40 years of cooperative safeguards development at the IAEA biennial Member State Support Program Coordinators' Meeting. This makes the CSSP the second-longest-serving support program with the IAEA.

Following the decision of its Board of Governors, the IAEA is working with Member States to develop revised State-level approaches for safeguards implementation. In 2017–2018, the CNSC's Directorate of Security and Safeguards worked with the IAEA and Canadian nuclear operators to define updated safeguards measures for Canadian facilities and ensure that nuclear material inventories and transfers remain subject to robust verification. The new approach, which is expected to be fully implemented over the next two years, is anticipated to include additional equipment-based approaches for safeguards that will strengthen safeguards without additional inspector presence.

In addition, the Commission approved REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*, this past year. This new regulatory document consolidates existing safeguards requirements and guidance and will serve as a basis for the safeguards compliance program going forward.

REGULATORY INSPECTIONS OF NUCLEAR NON-PROLIFERATION PROGRAM LICENSEES IN 2017–18

Safeguards

53
NUMBER OF ADDITIONAL PROTOCOL DECLARATIONS

60
NUMBER OF INSPECTIONS LED BY THE IAEA

7
NUMBER OF INSPECTIONS LED BY THE CNSC

Import and Export

5
NUMBER OF INSPECTIONS CONDUCTED

Non-Proliferation and Import/Export Controls

The major elements of Canada's nuclear non-proliferation policy involve support to international non-proliferation initiatives and activities, regulatory import and export controls, implementation of international safeguards measures, and security commitments.

During 2017–18, the CNSC conducted technical licensing assessments and made licensing decisions on applications for the import and export of nuclear substances, prescribed equipment and prescribed information, in accordance with the *Nuclear Non-proliferation Import and Export Control Regulations* and the *General Nuclear Safety and Control Regulations*. A total of 977 import and export licences were issued.

Nuclear Forensics

The CNSC is currently leading two multi-departmental R&D and capability development projects aimed at enhancing and expanding Canada's national nuclear forensics capability. These projects are funded, in part, through the Canadian Safety and Security Program, which is managed by Defence Research and Development Canada's Centre for Security Science. The first of two projects, the Nuclear Forensics Capability Advancement Project, is scheduled to conclude by the end of March 2019. The second project, the Nuclear Material Signature and Provenance Assessment Capability Development Project, is scheduled to conclude in March 2020.

Canada, through the CNSC, is the current Chair of the Nuclear Forensics Working Group of the Global Initiative to Combat Nuclear Terrorism (GICNT). The GICNT is a voluntary international partnership of 88 nations and 5 international organizations that are committed to strengthening global capacity to prevent, detect and respond to nuclear terrorism. The GICNT works toward this goal by conducting multilateral activities that strengthen the plans, policies, procedures and interoperability of partner nations.

International Agreements

The CNSC implements the terms and conditions of Canada's bilateral nuclear cooperation agreements through administrative arrangements concluded with its counterparts in the partner country.

In September 2017, a memorandum of understanding (MOU) between the Government of Canada and the United Arab Emirates' Federal Authority for Nuclear Regulation was signed for the cooperation and exchange of information in nuclear regulatory matters. The MOU is a regulatory cooperation arrangement to share information and best practices, with a view to enhancing nuclear safety and security in Canada and abroad.

Additionally, in August 2017, the CNSC signed an MOU with the United States Nuclear Regulatory Commission for the exchange of technical information and cooperation in nuclear safety matters. The MOU provides for the exchange of technical information and cooperation in nuclear safety matters for unclassified safety-related information.

Visit the CNSC website to learn more about Canada's international commitments on non-proliferation and import/export controls and safeguards, including the CNSC's role and responsibilities, or to get detailed information on Canada's international agreements.

International Peer Reviews

CNSC management and staff participated in and led a number of IAEA peer review and advisory service missions. These review services compare Member States' practices against IAEA standards in the areas of nuclear safety, security, and safeguards. The CNSC participates in these missions to encourage international accountability and transparency to help strengthen the global nuclear safety regime. In 2016–17, the CNSC participated in Integrated Regulatory Review Service missions, International Physical Protection Advisory Service missions and other regulatory and technical missions. The CNSC uses the recommendations, suggestions and best practices from these review missions to help strengthen its own regulatory framework.

Number of research projects funded under the CNSC's Research and Support Program	17
Number of regulatory documents published or completed by the CNSC in 2017 18	12
Number of separate recipients awarded funding under the Participant Funding Program	34
Number of Indigenous groups that had meetings with the CNSC in 2017 18	20
Number of public inquiries to the CNSC's info account in 2017 18	1,400

SCIENTIFIC, REGULATORY AND PUBLIC INFORMATION PROGRAM

This program generates scientific and technical information, institutionalizes the information within the regulatory framework, and publicly disseminates objective scientific, technical and regulatory information.

SCIENTIFIC, REGULATORY AND PUBLIC INFORMATION PROGRAM HIGHLIGHTS FOR 2017–18

Scientific and Regulatory Information

The CNSC integrates the best available science with its decision making. The CNSC maintains research initiatives and programs to ensure that it keeps abreast of new scientific information, develops its own knowledge base and shares its research findings with stakeholders and scientists in Canada and abroad.

Research is carried out on a wide range of topics, from health studies on nuclear workers and host communities to research on the long-term management of nuclear waste in geological repositories.

Directed by CNSC staff, research initiatives and programs are often completed with the support of independent third parties and/or in collaboration with national and international partners, providing access to valuable expertise, state-of-the-art facilities and the best available data. The outcome of these research activities helps the CNSC understand and address new or emerging safety issues, gain third-party perspectives on nuclear science, and share scientific knowledge with the nuclear industry and the public at large. This research helps support the CNSC's mandate to disseminate objective scientific, technical and regulatory information to the public about the activities of the Commission and the industry it regulates.

The CNSC makes its extensive body of research available to the public

This CNSC offers the public a comprehensive list of all relevant scientific and technical information on its website. Topics can be searched according to CNSC's 14 safety and control areas (SCAs), which are used to assess, evaluate, review, verify and report on regulatory requirements and performance. The SCAs are presented in a comprehensive framework and grouped into three primary functional areas: management, facility and equipment, and core control processes.

The Science of Safety research reports share some of the key research activities facilitated and supported by the CNSC on a yearly basis. These reports are part of the CNSC's ongoing effort to ensure that Canadians have access to the science that informs the CNSC's work.

In 2017, CNSC scientific staff presented two science information Commission member documents (CMDs) during public Commission meetings:

- The biological mechanisms acting at low doses of radiation
- Update on the implementation of recommendations from the *Tritium Studies Project Synthesis Report*

The first was presented in response to a Commission request for a technical CMD and presentation on the effects associated with low doses of radiation. The CMD provided the following: a) an introduction to radiation biology, b) a presentation of the range of dose response models, c) the relationship between biological mechanisms and radiation exposure, d) the potential implications of multiple interactions operating together, and e) conclusions about the implications of the science of the application of the linear-non-threshold as the basis for the international radiation protection framework.

The Commission last received a science update on tritium in 2013, when the results of research initiated as a result of the multi-year Tritium Studies Project (initiated in 2007) was presented. CNSC scientific staff have continued to be actively involved, both nationally

and internationally, in environmental tritium research, with the latest results and continuing research activities provided in an October 2017 Commission meeting. The CMD, related presentations, and peer-reviewed scientific literature produced by CNSC staff are available on the CNSC's tritium studies Web page.

Health Studies

The CNSC continuously conducts and reviews health studies on a variety of areas associated with the production, possession or use of nuclear substances. The information gathered in these studies serves to guide the CNSC in decisions affecting its regulatory framework.

For example, in 2017, the CNSC joined Saskatchewan's Ministry of Environment and industry (Cameco Corporation and Orano Canada) in funding the Eastern Athabasca Regional Monitoring Program (EARMP). For more information, visit the EARMP website.

For more information on research conducted on health-related issues, visit the CNSC website.

Research and Support Program

The CNSC funds an external research program to obtain knowledge and information needed to support its regulatory mandate. The program provides the CNSC with access to independent advice, expertise, experience, information and other resources via contracts, grants and contributions placed in the private sector, and with other agencies and organizations in Canada and elsewhere. The program is compiled from project proposals submitted from across the CNSC. In 2017–18, $2.48 million was invested in 17 research projects, 10 contribution agreements totalling $0.86 million for international or national joint projects were signed, and 12 grants totalling 73 thousand were made.

To read research report summaries from the Research and Support Program, visit the CNSC website.

What Makes Up the CNSC'S Regulatory Framework?

The CNSC's regulatory framework consists of laws passed by the Parliament of Canada that govern the regulation of Canada's nuclear industry, along with regulations, licences and documents that the CNSC uses to regulate the industry.

In November 2017, the CNSC published its Regulatory Framework Plan 2017–22, setting out the regulations and regulatory documents that it plans to develop or amend in the coming five years. CNSC documents are reviewed periodically to determine if they are still appropriate or need to be updated. Aligned with the CNSC's corporate priorities, the plan considers current developments in the nuclear environment.

In 2017–18, the CNSC published or completed a total of 12 regulatory documents and 1 discussion paper, which are listed in annex B.

Consultation

Consultation with the public, indigenous groups, licensees and interested organizations is an important part of the process the CNSC uses to develop many of the regulatory tools within its framework. The CNSC welcomes input from the public and Indigenous groups on draft documents that are open for consultation.

Each document open for public comment is made available for a specified period of time (at least 30 days). At the end of the consultation period, CNSC staff review all public input and comments are then posted for feedback on the CNSC website. Comments submitted (including names and affiliations) are made public, in the official language in which they were received.

The consultation section of the CNSC website provides up-to-date information on current consultations for regulatory initiatives, the necessary information and guidance on how to participate.

In March 2018, the CNSC and the Canadian Radiation Protection Association co-hosted a technical information Webinar on the scientific basis for the recommended dose limits for the lens of the eye for nuclear energy workers, as set by the International Commission on Radiological Protection. The webinar presented expert opinions and perspectives behind the science, and provided Canadian stakeholders with the opportunity to engage in discussion and to pose questions to experts.

A complete overview of the CNSC's regulatory framework is available on the CNSC website.

Reaching Out To Canadians

Disseminating information is a large part of the CNSC's mandate. CNSC staff travel across the country to visit Canadians and answer questions on nuclear regulation. They participate in community meetings, town halls and open houses to build relationships with stakeholders. This ongoing dialogue is important for increasing public understanding and trust in the CNSC's role of protecting Canadians, their health and the environment. In 2017–18, the CNSC participated in 122 outreach events: Staff were invited to schools, conferences and special events to share their expertise in nuclear science and safety – helping to disseminate scientific, technical and regulatory information on CNSC activities.

The CNSC played a key role in last year's Canada-Wide Science Fair (CWSF), which brings science, technology, engineering and math (STEM) out of the classroom – engaging youth in STEM solutions to real world issues. The CWSF is a celebration of Canada's brightest young minds and an inspiring exploration of STEM for thousands of visitors.

The CWSF had 26 exhibiting organizations, including the National Research Council, the Natural Sciences and Engineering Research Council of Canada, Let's Talk Science, the University of Regina, and Carleton University. Over 500 student finalists and 300 judges participated, and 10,000 visitors attended the science fair. The CNSC showcased its educational CNSC 101 touchscreen resources, including "Nuclear in your Neighbourhood" – always a hit with audiences, who are engaged by the module's interactivity. Visitors also enjoyed the fun and educational radiation module, including an "Ionizing or Not?" radiation quiz. Teachers and students tested their knowledge against one another, resulting in friendly competition enjoyed by participants and observers alike.

Keeping the Public Informed

In its ongoing commitment to transparency and openness, CNSC staff continued to respond to public questions about nuclear safety. In 2017–18, the CNSC responded to 60 media calls and 1,400 public information inquiries. The CNSC posted 25 feature articles to its website, and disseminated 15 new publications and 3 new infographics and project posters.

Online Engagement

Disseminating information is part of the CNSC's mandate, but that information also has to be accessible and understood. One of the goals of the CNSC's social media platforms – YouTube, Facebook, and Twitter – is to provide technical information in plain language that explains complicated nuclear science in simple terms. In 2017–18, the CNSC sent 1,500 tweets, made 182 Facebook posts and uploaded 37 new YouTube videos.

The CNSC continues to invest resources in its social media engagement, not only by sharing information, but also by answering questions from its followers, often with the assistance of a subject-matter expert.

Interacting with and responding to people on social media helps humanize and validate the CNSC's online presence.

Regulating Public Information Compliance

The CNSC continues to promote licensee compliance with RD/GD99.3, *Public Information and Disclosure*, which articulates requirements for licensees to proactively inform stakeholders and the public about facility activities. The CNSC evaluates licensees' communication products and outreach activities to verify that there is two-way communication with stakeholders. In 2017–18, staff verified compliance with RD/GD-99.3 for all 4 operating nuclear power plants, 10 uranium processing facilities, 3 accelerators, and 1 uranium mine as part of relicensing activities.

Engaging Stakeholders Through "Meet the Nuclear Regulator" Sessions

From uranium mines to facilities for research and final waste disposal, Canada's nuclear facilities remain among the safest and most secure in the world. The CNSC offers opportunities throughout Canada to meet the experts who make that possible.

These dynamic sessions introduce the CNSC and its work to ensure that Canadian nuclear facilities and activities are safe. Through information sessions, CNSC staff strive to build understanding of and public confidence in Canada's nuclear regulatory regime, as well as to offer the public an opportunity to learn about how to participate in the licensing process.

This past year, 10 CNSC information sessions were delivered to a total of 310 participants, as shown in the following table.

MEET THE NUCLEAR REGULATOR SESSIONS HELD IN 2017–18

Location	Date	Number of participants
Pinawa, Manitoba	May 16–17, 2017	50
Lac du Bonnet, Manitoba	May 18, 2017	25
Winnipeg, Manitoba	May 18, 2017	30
Inuvik, Northwest Territories	June 13, 2017	15
Yellowknife, Northwest Territories	June 15-17, 2017	20
Pickering, Ontario	October 24-26, 2017	50
St. John's, Newfoundland	January 11, 2018	60
Kincardine, Ontario	February 7, 2018	20
Saugeen Shores, Port Elgin, Ontario	February 26, 2018	30
Pickering, Ontario	March 8, 2018	10

Learn how to participate in an upcoming "Meet the Regulator" session by visiting the CNSC website.

IN 2017–18, THE CNSC COMPLETED 113 OUTREACH ACTIVITIES, WHICH INCLUDED:

55
GENERAL PUBLIC EVENTS (including Indigenous Peoples, host and potential host communities and municipalities)

19
LICENSEE-RELATED EVENTS (including medical professionals and nuclear industry)

18
YOUTH AND TEACHER EVENTS (including university events)

21
OTHER TYPES OF EVENTS

Focus on Indigenous Engagement and Consultation

The CNSC recognizes that some Indigenous Peoples in Canada may have concerns about Canada's nuclear sector, and that it is important to seek opportunities to work together in ensuring the safe and effective regulation of nuclear energy and materials. The CNSC is committed to building and maintaining positive relationships with Indigenous Peoples with interests or concerns in CNSC-regulated facilities and activities. During the last fiscal year, the CNSC participated in over 40 meetings with more than 20 Indigenous communities and organizations. Many of these meetings were related to specific projects or applications, including licence renewals for the McClean Lake operation and Deloro mine decommissioning project; for the Point Lepreau, Pickering and Bruce nuclear generating stations; for Chalk River Laboratories; and for the Pickering and Western waste management facilities.

Meetings were also held in relation to environmental assessments for Canadian Nuclear Laboratories' Near Surface Disposal Facility, Nuclear Power Demonstration Closure, and Whiteshell Reactor #1 *In Situ* Decommissioning projects; Cameco's Blind River Refinery; the Nuclear Waste Management Organization's Adaptive Phased Management initiative; and the CNSC's Independent Environmental Monitoring Program. Many issues or concerns were discussed during these meetings: environmental impacts (including impacts to fish), environmental monitoring, the regulation of Canada's nuclear sector, the CNSC's approach to Indigenous engagement and consultation, transportation and storage of radioactive waste, the CNSC's independence, and legacy issues.

Funding to Enhance Indigenous and Public Participation

The CNSC continued to administer its Participant Funding Program (PFP), which was established in 2011 to enhance the participation of Indigenous peoples, the public and stakeholders in Commission proceedings and environmental assessments for major nuclear facilities.

This past year, the PFP awarded more than $650,000 to 34 different recipients. This included funding to 12 Indigenous communities or organizations to support participation in CNSC regulatory processes, to learn more about the CNSC's regulation of the nuclear sector in Canada and the performance of CNSC-regulated facilities, and to appear before the Commission to share their findings and perspectives.

Learn more about the CNSC's Participant Funding Program and watch a short CNSC information video about it by visiting the CNSC website.

COMMISSION MEMBERS

DR. MICHAEL BINDER
PRESIDENT AND CHIEF EXECUTIVE OFFICER, CANADIAN NUCLEAR SAFETY COMMISSION, OTTAWA, ONTARIO

Named as a permanent member on January 15, 2008. Term expired on May 8, 2018 and was extended for three months until August 8, 2018

DR. MARCEL LACROIX
PROFESSOR, UNIVERSITÉ DE SHERBROOKE, SHERBROOKE, QUEBEC

Appointed as a permanent, part-time member on March 12, 2018

MR. TIMOTHY BERUBE
BEN BERUBE HOLDINGS INTERNATIONAL INC., THUNDER BAY, ONTARIO

Appointed as a permanent, part-time member on March 12, 2018

MS. KATHY PENNEY
VICE-PRESIDENT AND OWNER OF SHEARWATER CONSULTING LTD., CALGARY, ALBERTA

Appointed as a permanent, part-time member on March 12, 2018

DR. SANDOR DEMETER
PHYSICIAN, NUCLEAR MEDICINE SECTION HEAD AT HEALTH SCIENCES CENTRE OF THE WINNIPEG REGIONAL HEALTH AUTHORITY, WINNIPEG, MANITOBA

Reappointed as a permanent, part-time member on March 12, 2018

MS. RUMINA VELSHI
TORONTO, ONTARIO

Reappointed as permanent, part-time member on March 12, 2018 (Ms. Velshi previously served as a permanent part-time member from 2011 to 2016)

DR. ALEXANDER MCEWAN
PROFESSOR AND CHAIR, UNIVERSITY OF ALBERTA CROSS CANCER INSTITUTE
EDMONTON, ALBERTA

Appointed as a permanent member in March 2013 (term expired March 6, 2018)

DR. GUNTER MUECKE
PROFESSIONAL GEOLOGIST

Appointed as a temporary member on December 1, 2011 to the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)

MR. ROB SEELEY
PRESIDENT OF E3MERGE CONSULTING, FERNIE, BRITISH COLUMBIA

Appointed as a permanent, part-time member in February 2017 (term expired February 16, 2018)

DR. JAMES F. ARCHIBALD
PROFESSOR OF MINING ENGINEERING, QUEEN'S UNIVERSITY, ONTARIO

Appointed as a temporary member on December 1, 2011 to the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)

DR. SOLIMAN A. SOLIMAN
MISSISSAUGA, ONTARIO

Appointed as a permanent, part-time member in February 2017 (term expired February 16, 2018)

DR. STELLA SWANSON
ENVIRONMENTAL CONSULTANT

Appointed as a temporary member on December 1, 2011, and currently Chair of the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)

COMMISSION OPERATIONS

MAKING INDEPENDENT AND TRANSPARENT DECISIONS

The Commission is an independent administrative, quasi-judicial tribunal that makes informed, fair and transparent decisions on the licensing of major nuclear-related activities or facilities, and is central to the functioning of the CNSC. It also establishes legally binding regulations, and sets regulatory policy on matters related to the protection of health, safety, security and the environment and to the implementation of international obligations respecting the peaceful use of nuclear energy.

Before the Commission decides whether to license nuclear-related activities, it considers applicants' proposals, recommendations from CNSC staff, and stakeholder views. Each licensing decision is based on information that demonstrates that the activity or the operation of a given facility can be carried out safely, that the environment and the health and safety of persons are protected, and the proposed licensee is qualified. To promote openness and transparency, the Commission conducts its business in public hearings and meetings and, where appropriate, in communities where activities take place. Indigenous Peoples and other members of the public can participate in public proceedings via written submissions and/or oral presentations. Commission hearings and meetings can also be viewed as live webcasts on the CNSC website, and transcripts of public hearings and meetings are also available. Webcasts are archived on the site for at least three months, and the transcripts are available for approximately two years after the session.

COMMISSION MEMBERSHIP

At year end, the Commission had six permanent members and three temporary members appointed by the Governor in Council for terms ranging from four to five years, with five of these members appointed on a part-time basis. All Commission members are chosen based on their qualifications and expertise. All are independent of political, governmental, special interest group or industry influences and have committed to the highest ethical and conflict-of-interest standards. The CNSC President is the only full-time Commission member. With President Binder completing his second five-year term in 2018, the search for a new president began in 2017–18.

FINANCIAL REVIEW AND HIGHLIGHTS

FINANCIAL STATEMENTS FOR THE YEAR ENDING MARCH 31, 2018

The CNSC's expenses totalled $163.1 million in 2017–18. A total of $113.3 million of expenses were funded by earned revenues and the balance of $49.8 million, the net cost of operations, was funded through government appropriations.

RESULTS

EXPENSES

The CNSC conducts an annual planning exercise and approves operating budget levels prior to the start of the fiscal year. Budget approval takes into account the expected revenues from planned regulatory activities that are subject to cost recovery and the available parliamentary funding.

Total CNSC expenses increased to $163.1 million in 2017–18, from $153.0 million in 2016–17, for a net increase of $10.1 million (6.6%). The net increase is mainly the result of:

- increases in salaries and employee benefits expenses of $6.6 million
- increases in amortization expenses of $1.7 million
- increases in professional and special services of $1.0 million
- increases in travel and relocation expenses of $0.8 million
- increases in grants and contributions expenses of $0.8 million
- decrease in accommodation expenses of $0.8 million

The salaries increase is a result of negotiated salary increases for 2017–18, adjustments to an estimated increase for 2014–2015 to 2016–2017, and an increase in the number of full-time equivalent employees. The increase in staff is in line with the CNSC's Workforce Strategic Plan, which includes the renewal of its workforce (e.g. hiring and development of science and engineering new graduates).

The amortization expenses increased as a result of developing and purchasing informatics software and implementing leasehold improvements. Professional and special services increase is associated to the costs of services provided without charge from Shared Services Canada (SSC). Travel and relocation expenses increased primarily due to increased costs for employee relocation to the National Capital Region (NCR) and for domestic travel for outreach activities. Grants and contributions expenses increased due to increased contributions related to both the Research and Support Program and the Participant Funding Program. Accommodation expenses decreased due to a reduction in office space leased in the NCR.

Total CNSC expenses of $163.1 million in 2017–18 were $0.7 million (0.4%) more than the planned expenses of $162.4 million as reported in the CNSC's future-oriented financial statements included in the *2017–18 Departmental Plan*. The higher than planned expenses are a net result of:

- lower spending on salaries and employee benefits expenses of $3.5 million due to staffing delays and lower contribution rates for employee benefits
- lower accommodation expenses of $1.0 million from reduced leased space
- higher than planned professional services of $1.5 million for information management/ technology consulting costs in support of a new departmental financial system and for an increase in the costs of services provided without charge from SSC

- higher amortization expenses of $1.2 million
- higher than planned expenses of $1.1 million on furniture, repairs and rentals for consolidated space
- higher than planned grants and contributions expenses of $0.8 million, and travel and relocation expenses of $0.3 million
- higher than planned expenses of $0.3 million in other expenditure categories

REVENUES

The CNSC collects regulatory fees in accordance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (the Regulations). In 2017–18, the CNSC funded approximately 70% of its total cost of operations from fees collected from licensees. Revenues totaled $113.3 million in 2017–18, an increase of $5.2 million (4.8%) from $108.1 million in 2016–17. Revenues collected through various types of licence fees increased by $4.4 million due to increases in regulatory oversight activity at higher costs, in part due to increases in salaries and wages, as well as an increase of fees for nuclear substances used for commercial and industrial activities as the CNSC continues to phased-in increases to fully recover the cost for these activities. Revenues collected through special projects increased by $0.8 million due to increased revenues from vendor design reviews.

The 2017–18 revenues of $113.3 million were $1.9 million (1.6%) lower than the planned revenue of $115.2 million reported in the CNSC's future-oriented financial statements included in the 2017–18 Departmental Plan. Revenues collected through special projects were $1.9 million lower than initially forecasted due to delays in vendor design reviews.

NET COST OF OPERATIONS

The Net Cost of Operations reflects the Parliamentary appropriations used to fund activities and certain types of licensees who are, under the Regulations, not subject to cost recovery. The Regulations state that licensees, such as hospitals and universities, are exempt from paying fees as they are entities that exist for the public good. In addition, fees are not charged for activities that result from CNSC obligations that do not provide a direct benefit to identifiable licensees. These include activities with respect to Canada's international obligations (including non-proliferation activities), public responsibilities such as emergency management and public information programs, and updating of the *Nuclear Safety and Control Act* and associated regulations as appropriate.

In 2017–18, the CNSC's net cost of operations funded by government funding and transfers, was $49.8 million, a $4.9 million (10.9%) increase from the previous year. The increase is mainly attributable to an increase in expenses for negotiated salary adjustments, initial costs related to the financial system replacement and increases in grants and contributions expenses due to increased contributions related to both the Research and Support Program and the Participant Funding Program.

OUTLOOK

The total 2018–19 projected revenues are $120.4 million, up from $115.2 million in 2017–18, for a net increase of $5.2 million (4.5%), which represents increases in regulatory activity plans, formula fees and special projects revenues. The total projected expenses for 2018–19 are $170.7 million, up $7.6 million (4.7%) from $163.1 million spent in 2017–18. The projected increase in expenses will mainly be driven by financial system replacements costs, cost-of-living adjustments, including salaries and wages, and costs for the CNSC's workforce renewal initiative.

CNSC MANAGEMENT TEAM

MICHAEL BINDER
PRESIDENT AND CHIEF EXECUTIVE OFFICER

RAMZI JAMMAL
EXECUTIVE VICE-PRESIDENT, REGULATORY OPERATIONS BRANCH, AND CHIEF REGULATORY OPERATIONS OFFICER

PETER ELDER
VICE-PRESIDENT, TECHNICAL SUPPORT BRANCH, AND CHIEF SCIENCE OFFICER

MARC LEBLANC
COMMISSION SECRETARY

JASON CAMERON
VICE-PRESIDENT, REGULATORY AFFAIRS BRANCH, AND CHIEF COMMUNICATIONS OFFICER

LISA THIELE
SENIOR GENERAL COUNSEL AND DIRECTOR, LEGAL SERVICES

STÉPHANE CYR
VICE-PRESIDENT, CORPORATE SERVICES BRANCH, AND CHIEF FINANCIAL OFFICER

FINANCIAL STATEMENTS

CANADIAN NUCLEAR SAFETY COMMISSION

Statement of Management Responsibility Including Internal Control Over Financial Reporting

Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2018, and all information contained in these statements rests with the management of the Canadian Nuclear Safety Commission (CNSC). These financial statements have been prepared by management using the Government's accounting policies, which are based on Canadian public sector accounting standards.

Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgment, and gives due consideration to materiality. To fulfill its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of the CNSC's financial transactions. Financial information submitted in the preparation of the Public Accounts of Canada, and included in the CNSC's *Departmental Results Report*, is consistent with these financial statements.

Management is also responsible for maintaining an effective system of internal control over financial reporting (ICFR) designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are properly authorized and recorded in accordance with the *Financial Administration Act* as well as all relevant CNSC policies, authorities and statutory requirements, including the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations.*

Management seeks to ensure the objectivity and integrity of data in its financial statements through careful selection, training and development of qualified staff; through organizational arrangements that provide appropriate divisions of responsibility; through communication programs aimed at ensuring that regulations, policies, standards, and managerial authorities are understood throughout the CNSC; and through conducting an annual risk-based assessment of the effectiveness of the system of ICFR.

The system of ICFR is designed to mitigate risks to a reasonable level based on an ongoing process to identify key risks, to assess effectiveness of associated key controls, and to make any necessary adjustments.

A risk-based assessment of the system of ICFR for the year ended March 31, 2018 was completed in accordance with the Treasury Board *Policy on Financial Management*, and the results and action plans are summarized in the annex.

The effectiveness and adequacy of the CNSC's system of ICFR is reviewed by the internal control staff, who conduct periodic monitoring assessments, and by the Departmental Audit Committee, which oversees management's responsibilities for maintaining adequate control systems and the quality of financial reporting, and recommends the financial statements to the president.

The Office of the Auditor General, the independent auditor for the Government of Canada, has expressed an opinion on the fair presentation of the financial statements of the CNSC which does not include an audit opinion on the annual assessment of the effectiveness of the CNSC's internal controls over financial reporting. At the CNSC's request, the Office of the Auditor General also audited and expressed an opinion on its compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations.*

Michael Binder
President and
Chief Executive Officer

Stéphane Cyr
Vice-President, Corporate Services Branch, and
Chief Financial Officer

Ottawa, Canada
July 16, 2018

INDEPENDENT AUDITOR'S LETTER

Office of the Auditor General of Canada
Bureau du vérificateur général du Canada

INDEPENDENT AUDITOR'S REPORT

To the Canadian Nuclear Safety Commission and the Minister of Natural Resources

Report on the Financial Statements

I have audited the accompanying financial statements of the Canadian Nuclear Safety Commission, which comprise the statement of financial position as at 31 March 2018, and the statement of operations and net financial position, statement of change in net debt and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Canadian Nuclear Safety Commission as at 31 March 2018, and the results of its operations, changes in its net debt, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Report on Other Legal and Regulatory Requirements

In my opinion, the Canadian Nuclear Safety Commission has complied, in all significant respects, with the *Canadian Nuclear Safety Commission Cost Recovery Fee Regulations* pursuant to the *Nuclear Safety and Control Act*.

Vicki Clement, CPA, CA
Principal
for the Auditor General of Canada

16 July 2018
Ottawa, Canada

Statement of Financial Position

As at March 31

(in thousands of dollars)	**2018**	2017
Liabilities		
Accounts payable and accrued liabilities (note 5)	**26,136**	33,945
Vacation pay and compensatory leave	**8,536**	7,491
Deferred revenue (note 6)	**3,523**	3,298
Employee future benefits (note 7b)	**3,983**	4,501
Asset retirement obligation (note 8)	**339**	266
Total liabilities	**42,517**	49,501
Financial assets		
Due from the Consolidated Revenue Fund	**26,113**	33,984
Accounts receivable (note 9)	**1,352**	1,612
Total net financial assets	**27,465**	35,596
Net debt	**15,052**	13,905
Non-financial assets		
Prepaid expenses	**777**	741
Tangible capital assets (note 10)	**12,836**	12,975
Total non-financial assets	**13,613**	13,716
Net financial position	**(1,439)**	(189)

Contractual obligations (note 13) and contingent liabilities (note 14)

The accompanying notes form an integral part of these financial statements.

Michael Binder
President and
Chief Executive Officer

Stéphane Cyr
Vice-President, Corporate Services Branch, and
Chief Financial Officer

Ottawa, Canada
July 16, 2018

Statement of Operations and Net Financial Position

For the year ended March 31

(in thousands of dollars)	Planned results* 2018	**2018**	2017
Expenses			
Salaries and employee benefits	119,365	**115,839**	109,203
Professional and special services	18,421	**19,899**	18,937
Accommodation	10,615	**9,644**	10,439
Travel and relocation	5,100	**5,423**	4,645
Amortization	3,021	**4,265**	2,528
Furniture, repairs and rentals	2,107	**3,177**	3,356
Grants and contributions	1,770	**2,603**	1,830
Communication and information	1,300	**1,275**	1,195
Utilities, materials and supplies	700	**598**	692
Other	15	**415**	176
Total expenses (note 11)	162,414	**163,138**	153,001
Revenues			
Licence fees	110,626	**110,621**	106,138
Special projects	4,573	**2,663**	1,864
Other	-	**38**	63
Total revenues (note 11)	115,199	**113,322**	108,065
Net cost of operations before government funding and transfers	47,215	**49,816**	44,936
Government funding and transfers			
Net cash provided by Government of Canada	32,985	**38,521**	26,244
Change in due from Consolidated Revenue Fund	(616)	**(7,871)**	5,547
Services provided without charge by other government departments (note 12a)	16,690	**17,876**	15,961
Transfer of assets and liabilities from (to) other government departments	-	**40**	(5)
Net (revenue) cost of operations after government funding and transfers	(1,844)	**1,250**	(2,811)
Net financial position - Beginning of year	(1,098)	**(189)**	(3,000)
Net financial position - End of year	746	**(1,439)**	(189)

Segmented information (note 11)

*Planned results amounts in the "Expenses" and "Revenues" sections as reported in the Future-Oriented Statement of Operations included in the *2017–18 Departmental Plan* . The planned results amounts in the "Government funding and transfers" section have not been previously published.

The accompanying notes form an integral part of these financial statements.

Statement of Change in Net Debt

For the year ended March 31

(in thousands of dollars)	Planned results* 2018	**2018**	2017
Net (revenue) cost of operations after government funding and transfers	(1,844)	**1,250**	(2,811)
Change due to tangible capital assets			
Acquisition of tangible capital assets (note 10)	5,574	**4,029**	4,634
Amortization of tangible capital assets (note 10)	(3,021)	**(4,265)**	(2,528)
Transfer from other government departments	-	**40**	-
Proceeds from disposal of tangible capital assets	-	**(11)**	(24)
Gain on disposal of tangible capital assets including adjustments	-	**68**	19
Total change due to tangible capital assets	2,553	**(139)**	2,101
Change due to prepaid expenses	-	**36**	134
Net (decrease) increase in net debt	709	**1,147**	(576)
Net debt - Beginning of year	14,708	**13,905**	14,481
Net debt - End of year	15,417	**15,052**	13,905

*Planned results amounts have not been previously published.

The accompanying notes form an integral part of these financial statements.

Statement of Cash Flows

For the year ended March 31

(in thousands of dollars)	**2018**	2017
Operating activities		
Net cost of operations before government funding and transfers	**49,816**	44,936
Non-cash items:		
Amortization of tangible capital assets (note 10)	**(4,265)**	(2,528)
Gain on disposal of tangible capital assets including adjustments	**68**	19
Services provided without charge by other government departments (note 12a)	**(17,876)**	(15,961)
Transition payments for implementing salary payments in arrears	**-**	5
Variations in Statement of Financial Position:		
(Decrease) increase in accounts receivable	**(260)**	305
Increase in prepaid expenses	**36**	134
Decrease (increase) in accounts payable and accrued liabilities	**8,236**	(5,311)
Increase in vacation pay and compensatory leave	**(1,045)**	(690)
Increase in deferred revenue	**(225)**	(516)
Decrease in employee future benefits	**518**	1,628
(Increase) decrease in asset retirement obligation	**(73)**	1
Cash used in operating activities	**34,930**	22,022
Capital investing activities		
Acquisitions of tangible capital assets (note 10)	**3,602**	4,246
Proceeds from disposal of tangible capital assets	**(11)**	(24)
Cash used in capital investing activities	**3,591**	4,222
Net cash provided by Government of Canada	**38,521**	26,244

The accompanying notes form an integral part of these financial statements.

1. Authority and objectives

The Canadian Nuclear Safety Commission (CNSC) was established in 1946 by the *Atomic Energy Control Act* . It was known as the Atomic Energy Control Board until May 31, 2000, when the *Nuclear Safety and Control Act* (NSCA) came into effect. The CNSC is a departmental corporation listed in Schedule II of the *Financial Administration Act* and reports to Parliament through the Minister of Natural Resources.

To protect the health, safety and security of people and the environment, the NSCA provides comprehensive powers to the CNSC to establish and enforce national standards on the use of nuclear energy and materials. As part of this mandate, the CNSC is responsible for disseminating objective scientific, technical and regulatory information to the public. The NSCA establishes a basis for implementing Canadian nuclear policy and fulfilling Canada's international commitments on the peaceful use of nuclear energy. It also empowers the CNSC to require financial guarantees, order remedial action in hazardous situations, and require responsible parties to bear the costs of decontamination and other remedial measures.

Under the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (2003), the CNSC recovers costs related to its regulatory activities from users licensed under the NSCA. These activities include conducting technical assessments of licence applications, performing compliance inspections and developing licensing standards.

2. Summary of significant accounting policies

These financial statements are prepared using the CNSC's accounting policies stated below, which are based on Canadian public sector accounting standards. The presentation and results using the stated accounting policies do not result in any significant differences from Canadian public sector accounting standards.

Significant accounting policies are as follows:

(a) Parliamentary authorities and revenue spending authority

The CNSC is financed by the Government of Canada through Parliamentary and statutory authorities. Included in the statutory appropriation is a revenue-spending authority, which allows the CNSC to spend licence fee revenue. Financial reporting of authorities provided to the CNSC do not parallel financial reporting according to generally accepted accounting principles since authorities are primarily based on cash flow requirements. Consequently, items recognized in the CNSC Statement of Operations and Net Financial Position and in the Statement of Financial Position are not necessarily the same as those provided through authorities from Parliament. Note 4 provides a reconciliation between the bases of reporting. The planned results amounts in the "Expenses" and "Revenues" sections of the CNSC Statement of Operations and Net Financial Position are the amounts reported in the Future-Oriented Statement of Operations included in the *2017–18 Departmental Plan* . The planned results amounts in the "Government funding and transfers" section of the CNSC Statement of Operations and Net Financial Position and in the CNSC Statement of Change in Net Debt were prepared for internal management purposes and have not been previously published.

(b) Net cash provided by Government of Canada

The CNSC operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by the CNSC is deposited to the CRF, and all cash disbursements made by the CNSC are paid from the CRF. The net cash provided by Government of Canada is the difference between all cash receipts and all cash disbursements, including transactions between departments and agencies of the Government.

(c) Amounts due from or to the Consolidated Revenue Fund

Amounts due from or to the CRF are the result of timing differences at year-end between when a transaction affects authorities and when it is processed through the CRF. Amounts due from the CRF represent the net amount of cash that the CNSC is entitled to draw from the CRF without further authorities to discharge its liabilities.

2. Summary of significant accounting policies (continued)

(d) Revenues

Revenues from regulatory fees are recognized based on the services provided in the year. Revenue is recognized in the period in which the underlying transaction or event that gave rise to the revenue takes place. Licence fee revenue is recognized on a straight-line basis over the period to which the fee payment pertains (normally three months or one year). Licence fees received for future year licence periods are recorded as deferred revenue.

Certain educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded healthcare institutions, not-for-profit emergency response organizations and federal government departments and agencies are not subject to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations.* The CNSC provides licences to these organizations free of charge. The value of licences provided free of charge is calculated on the same basis as licence fees for organizations subject to the Regulations. The CNSC does not include the foregone revenue associated with these licences in the Statement of Operations and Net Financial Position.

(e) Accounts payable and accrued liabilities

- Accounts payable and accrued liabilities are measured at cost and represent obligations of the CNSC for salary and wages, for material and supply purchases and for the cost of services rendered to the CNSC.
- Salary-related accrued liabilities are determined using the employees' salary levels at year-end.

(f) Expenses

Expenses are recorded on an accrual basis. The cost of goods and services are expensed as they are incurred.

The CNSC provides grants and contributions to enable the development and management of activities of its Research and Support Program and the Canadian Safeguards Support Program. Grants are recognized in the year in which the conditions for payment are met. Contributions are recognized in the year in which the recipient has met the eligibility criteria or fulfilled the terms of a contractual transfer agreement, provided that the transfer is authorized and a reasonable estimate can be made.

Vacation pay and compensatory leave are accrued as the benefits are earned by employees under their respective terms of employment.

Services provided without charge by other government departments are recorded as operating expenses at their carrying amount. These include accommodation provided by Public Services and Procurement Canada, contributions covering the employer's share of employees' insurance premiums and other costs paid by the Treasury Board Secretariat, services provided by Shared Services Canada, audit services provided by the Office of the Auditor General, workers' compensation benefits provided by Employment and Social Development, and the costs of legal services provided by Justice Canada.

(g) Related party transactions

Related party transactions, other than inter-entity transactions, are recorded at the exchange amount. Related parties include individuals who are members of key management personnel (KMP) or close family members of those individuals, and entities controlled by, or under shared control of, a member of KMP or a close family member of that individual. The CNSC has defined its KMP to be the president, the vice-presidents, the commission secretary and the senior general counsel.

Inter-entity transactions are transactions between commonly controlled entities which includes all government departments, agencies, and Crown corporations. Inter-entity transactions that are undertaken on similar terms and conditions to those adopted if the entities were dealing at arm's length are recorded on a gross basis and are measured at the exchange amount, with the exception of services received without charge between commonly controlled entities used in the normal course of the operations, which have been recorded as expenses at the carrying amount.

(h) Employee future benefits

- **Pension benefits:** Eligible employees participate in the Public Service Pension Plan (the Plan), a multi-employer pension plan administered by the Government. The CNSC's contributions to the Plan are charged to expenses in the year incurred and represent the total CNSC obligation to the Plan. The CNSC's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the Plan's sponsor.

2. Summary of significant accounting policies (continued)

(h) Employee future benefits (continued)

- **Severance benefits**: Employees entitled to severance benefits under labour contracts or conditions of employment earn these benefits as services necessary to earn them are rendered. As of 2013–14 the benefits accumulated under the employee severance pay program ceased for all employees. Previously, the obligation relating to the benefits earned by employees was calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole. As of 2016–17, the CNSC has refined its estimate of the obligation using employee-specific data to improve the accuracy of the amount that will be due to employees upon departure from the public service.

- **Maternity/parental leave**: Employees are entitled to maternity/parental leave benefits as provided for under labour contracts and conditions of employment. The benefits earned are event driven, meaning the CNSC's obligation for the cost of the entire benefit arises upon occurrence of a specific event being the commencement of the maternity/parental leave. Management has determined the accrued benefit obligation and benefit expenses based on its best estimates. The unpaid portions of maternity/parental leave at year-end are expected to be paid from future parliamentary authorities.

(i) Accounts receivable

Accounts receivable are stated at the lower of cost and net recoverable value. A valuation allowance is recorded for receivables where recovery is considered uncertain.

Credit risk refers to the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The CNSC is not exposed to significant credit risk as all debtors require CNSC licences for their continued operation. The maximum exposure the CNSC has to credit risk is equal to the carrying value of its accounts receivable.

(j) Contingent liabilities

Contingent liabilities are potential liabilities that may become actual liabilities when one or more future events occur or fail to occur. If the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, a provision is accrued and an expense recorded to other expenses. If the likelihood is not determinable or if an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

(k) Tangible capital assets

The costs of acquiring equipment and other capital property are capitalized as tangible capital assets and are amortized to expense over the estimated useful lives of the assets, as described in note 10. All tangible capital assets and leasehold improvements having an initial cost of $10,000 or more are recorded at their acquisition cost.

Amortization of tangible capital assets is calculated on a straight-line basis over the estimated useful life of the asset as follows:

Asset class	Amortization period
Leasehold improvements	Lesser of the remaining term of lease or useful life of the improvement
Motor vehicles	7 years
Other vehicles	10 to 20 years
Furniture and equipment	5 to 20 years
Informatics equipment and software	2 to 5 years

2. Summary of significant accounting policies (continued)

(l) Asset retirement obligation

The CNSC provides for its legal obligation, under a lease agreement, to return the premises to their original state. The asset retirement obligation is recognized in the year in which the associated leasehold improvement capital asset is put into use. The obligation is recorded at the net present value of the estimated future cost of retiring the capital asset at the expiry of the lease period. The estimated cost of retirement is added to the carrying amount and amortized over the related assets' useful life. The cost estimate is subject to periodic review, and any material changes in the estimated amount or timing of the underlying future cash flow are recorded as an adjustment to the provision. Upon settlement of the liability, a gain or loss will be recorded. The estimated future cash flows are adjusted for inflation using a rate that is derived on the basis of consensus forecasts and Bank of Canada historical and target inflation rates. The discount rate is a weighted average rate reflecting the Government of Canada's cost of borrowing on initial recognition and on subsequent changes to expected cash flows, which is most closely associated with the period to settlement of the obligation. Change to the liability recognized due to discounting is recognized as accretion expense on the Statement of Operations and Net Financial Position. Details of the liability are provided in note 8 of these financial statements.

(m) Measurement uncertainty

The preparation of these financial statements requires management to make estimates and assumptions that affect the reported and disclosed amounts of assets, liabilities, revenues and expenses reported in the financial statements and accompanying notes at March 31. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are contingent liabilities, the liability for employee future benefits and the useful life of tangible capital assets. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Adoption of new accounting standards

The CNSC adopted the new accounting standards issued by the Public Sector Accounting Board (PSAB) that were effective for fiscal years beginning on or after April 1, 2017. Of these pronouncements, PS 2200 *Related Party Disclosures* , PS 3320 *Contingent Assets* , PS 3380 *Contractual Rights* and PS 3420 *Inter-entity Transactions* provide guidance on disclosure requirements only. PS 3210 *Assets* provides additional guidance on the definition of assets as well as disclosure. These standards have been applied on a prospective basis, and did not result in any significant changes to these financial statements other than the related party and inter-entity transaction disclosures in Note 2(g) and 12.

4. Parliamentary authorities

The CNSC receives most of its funding through annual parliamentary authorities. Items recognized in the Statement of Operations and Net Financial Position and the Statement of Financial Position in one year may be funded through parliamentary authorities in prior, current or future years. Accordingly, the CNSC has different net results of operations for the year on a government funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) Reconciliation of net cost of operations to current year authorities used

(in thousands of dollars)	2018	2017
Net cost of operations before government funding and transfers	**49,816**	44,936
Adjustments for items affecting net cost of operations but not affecting authorities:		
Amortization of tangible capital assets	**(4,265)**	(2,528)
Decrease (increase) in vacation pay, compensatory leave and accrued liabilities	**3,931**	(4,255)
Services provided without charge by other government departments	**(17,876)**	(15,961)
Revenues pursuant to paragraph 21(3) of the *Nuclear Safety and Control Act*	**113,284**	108,002
Decrease in employee future benefits	**518**	1,628
Refund of prior years' expenditures	**444**	417
Gain on disposal of tangible capital assets including adjustments	**68**	19
Other	**(371)**	(12)
	95,733	87,310
Adjustments for items not affecting net cost of operations but affecting authorities:		
Acquisitions of tangible capital assets	**4,029**	4,634
Transition payments for implementing salary payments in arrears	**-**	5
Salary overpayment	**179**	107
Increase in prepaid expenses	**36**	134
	4,244	4,880
Current year authorities used	**149,793**	137,126

(b) Authorities provided and used

(in thousands of dollars)	2018	2017
AUTHORITIES PROVIDED:		
Vote 1 – Program expenditures	**43,677**	40,671
STATUTORY:		
Spending of revenues pursuant to section 21(3) of the *Nuclear Safety and Control Act*	**98,069**	89,294
Spending of proceeds from the disposal of surplus assets	**-**	56
Contributions to employee benefit plans	**13,578**	13,104
	155,324	143,125
LESS:		
Authorities available for use in the subsequent year	**3,478**	3,267
Lapsed Vote 1 – Program expenditures	**2,053**	2,732
Current year authorities used	**149,793**	137,126

5. Accounts payable and accrued liabilities

The following table presents details of the CNSC's accounts payable and accrued liabilities:

(in thousands of dollars)	**2018**	2017
Other government departments and agencies	**9,694**	8,740
External parties	**15,879**	18,937
Licensees*	**563**	6,268
Total accounts payable and accrued liabilities	**26,136**	33,945

*Payable to licensees represents the calculation of the excess of collection of fees charged over the actual fees earned as at year-end.

6. Deferred revenue

Deferred revenue represents the balance at year-end of unearned revenues from amounts received from licensees for fees charged prior to services being performed. Revenue is recognized in the period in which these expenditures are incurred or in which service is performed. Details of the transactions related to this account are as follows:

(in thousands of dollars)	**2018**	2017
Balance, beginning of year	**3,298**	2,782
Licence fee revenue recognized during the year	**(3,253)**	(2,751)
Licence fee received for future years	**3,478**	3,267
Balance, end of year	**3,523**	3,298

7. Employee future benefits

(a) Pension benefits

CNSC employees participate in the Public Service Pension Plan (the Plan), which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2% per year of pensionable service, times the average of the best five consecutive years of earnings. The benefits are integrated with Canada/Quebec Pension Plan benefits and they are indexed to inflation.

Both the employees and the CNSC contribute to the cost of the Plan. Due to the amendment of the *Public Service Superannuation Act* following the implementation of provisions related to Economic Action Plan 2012, employee contributors have been divided into two groups: Group 1 consists of existing plan members as of December 31, 2012; and Group 2 consists of members joining the Plan as of January 1, 2013. Each group has a distinct contribution rate.

The 2017–18 expense amounts to $9,246,343 ($9,129,454 in 2016–17). For Group 1 members, the expenses represent approximately 1.01 times (1.12 times in 2016–17) the employee contributions and, for Group 2 members, approximately 1.00 times (1.08 times in 2016–17) the employee contributions.

The CNSC's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the Consolidated Financial Statements of the Government of Canada, as the Plan's sponsor.

7. Employee future benefits (continued)

(b) Severance benefits and parental leave benefits

The CNSC previously provided severance benefits to its employees based on eligibility, years of service and salary at termination of employment.

The accumulation of severance benefits for voluntary departures ceased for all employees in 2013–14. Employees were given the option to be immediately paid the full or partial value of benefits earned to date, or collect the full or remaining value of benefits upon departure from the public service. The remaining balance represents the estimated obligation due to employees as at the reporting date. These severance benefits are not pre-funded, and consequently the outstanding obligation will be paid from future authorities.

The CNSC provides maternity/parental leave benefits as provided for under labour contracts and conditions of employment. Management determined the accrued benefit obligation and benefit expenses based on the difference between 93% of the employee's weekly rate of pay and the maternity/parental leave benefit they are entitled to receive under the Employment Insurance or the Québec Parental Insurance Plan.

Information about the future benefits, measured as at March 31, is as follows:

(in thousands of dollars)	**2018**	2017
Accrued severance benefit obligation, beginning of year	**4,173**	6,129
Increase (decrease) in employee future benefits	**269**	(1,385)
Severance benefits paid during the year	**(694)**	(571)
Accrued severance benefit obligation, end of year	**3,748**	4,173
Maternity/Parental leave benefits	**235**	328
Accrued benefit obligation, end of year	**3,983**	4,501

8. Asset retirement obligation

The asset retirement obligation is based on the current cost estimate of $338,150 ($261,250 in 2016–17) of the site restoration plan. An increase of $78,686 has been recognized in 2017–18 to reflect a revision in the cost estimate. The estimate has been indexed for inflation using the forecasted Consumer Price Index rate of 1.90% to reflect the estimated future cost of the site restoration plan. The CNSC recognizes the net present value, using the actual zero-coupon yield curve for Government of Canada bonds of 1.79% (1.50% in 2016–17), of the estimated future cost of $351,122 ($281,389 in 2016–17), of restoring the leased premises at the expiry of the lease on March 31, 2020. As of March 31, 2018, the CNSC has an asset retirement obligation that can be reasonably estimated as follows:

(in thousands of dollars)	**2018**	2017
Balance, beginning of year	**266**	267
Revision in estimate	**79**	-
Accretion expense	**(6)**	(1)
Balance, end of year	**339**	266

9. Accounts receivable

The following table presents details of the CNSC's accounts receivable:

(in thousands of dollars)	**2018**	2017
Receivables – Licence fees	**1,107**	1,081
Receivables – Other government departments and agencies	**236**	237
Receivables – Others	**221**	485
	1,564	1,803
Allowance for doubtful accounts on receivables	**(212)**	(191)
Net accounts receivable	**1,352**	1,612

10. Tangible capital assets

Cost (in thousands of dollars)	**Opening balance**	**Acquisitions**	**Adjustments[1]**	**Disposals / Write-offs**	**Work in progress transfers**	**Closing balance**
Furniture and equipment	6,428	318	40	-	-	**6,786**
Informatics equipment and software	7,277	-	-	-	4,556	**11,833**
Leasehold improvements	15,933	-	79	-	291	**16,303**
Motor vehicles	715	147	-	(43)	-	**819**
Other vehicles	77	-	-	-	-	**77**
Work-in-progress – software	4,327	3,241	-	(22)	(4,556)	**2,990**
Work-in-progress – construction	19	323	-	-	(291)	**51**
Total	34,776	4,029	119	(65)	-	**38,859**

Accumulated amortization (in thousands of dollars)	**Opening balance**	**Amortization**	**Adjustments[1]**	**Disposals / Write-offs**	**Closing balance**
Furniture and equipment	4,324	557	-	-	**4,881**
Informatics equipment and software	5,718	1,881	-	-	**7,599**
Leasehold improvements	11,404	1,733	-	-	**13,137**
Motor vehicles	331	90	-	(43)	**378**
Other vehicles	24	4	-	-	**28**
Total	21,801	4,265	-	(43)	**26,023**

Net book value (in thousands of dollars)	2017	**2018**
Furniture and equipment	2,104	**1,905**
Informatics equipment and software	1,559	**4,234**
Leasehold improvements	4,529	**3,166**
Motor vehicles	384	**441**
Other vehicles	53	**49**
Work-in-progress – software	4,327	**2,990**
Work-in-progress – construction	19	**51**
Total	12,975	**12,836**

The capital costs associated with the in-house development of software and improvements to leased accommodations are recorded as work-in-progress until they are completed and put into use. During the year ended March 31, 2018, $4,846,504 work-in-progress was completed and put into use.

The acquisition of tangible capital assets and the increase in accounts payables and accrued liabilities presented in the Statement of Cash Flows excludes an amount of $427,116 ($387,569 in 2016–17) in relation to the acquisition of tangible capital assets, as the amount relates to capital investing activities in 2017–18 that remain to be paid as at March 31, 2018.

[1] The adjustments reflect the transfer of an asset to the CNSC from another government department in the amount of $40,000 as well as an adjustment of $78,686 due to the revision of management's estimate of the Asset Retirement Obligation disclosed in note 8.

11. Summary of segmented expenditures and revenues by cost recovery fee category

The following table presents the expenses incurred and revenues generated for the CNSC's main business lines. It follows the same accounting policies described in note 2. The segment results for the period are as follows:

(in thousands of dollars)	Revenue	Licences provided free of charge (note 12(b) and note 15)	2018 total value of licences and other revenue	2017 total value of licences and other revenue	2018 cost of operations	2017 cost of operations
LICENCE FEES						
Power reactors	**70,587**	**-**	**70,587**	68,118	**70,587**	68,118
Non-power reactors	**-**	**1,712**	**1,712**	1,764	**1,712**	1,764
Nuclear research and test establishments	**14,327**	**-**	**14,327**	13,340	**14,327**	13,340
Particle accelerators	**-**	**612**	**612**	535	**612**	535
Uranium processing facilities	**3,855**	**-**	**3,855**	3,833	**3,855**	3,833
Nuclear substance processing facilities	**971**	**-**	**971**	1,126	**971**	1,126
Radioactive waste facilities	**4,948**	**-**	**4,948**	4,602	**4,948**	4,602
Uranium mines and mills	**6,875**	**289**	**7,164**	7,154	**7,164**	7,154
Waste nuclear substance	**729**	**2,801**	**3,530**	3,260	**3,530**	3,260
Total regulatory activity plan fees	**102,292**	**5,414**	**107,706**	103,732	**107,706**	103,732
Nuclear substances and Class II nuclear facilities						
Academic and research	**186**	**2,095**	**2,281**	2,506	**2,468**	1,893
Commercial	**1,287**	**625**	**1,912**	1,782	**3,087**	2,947
Industrial radiography	**5,573**	**175**	**5,748**	5,081	**10,792**	9,728
Medical	**550**	**4,841**	**5,391**	4,912	**6,052**	5,565
Dosimetry services	**278**	**15**	**293**	262	**593**	567
Total formula fees	**7,874**	**7,751**	**15,625**	14,543	**22,992**	20,700
Transport licences and transport package certificates	**159**	**1**	**160**	131	**712**	500
Radiation device and prescribed equipment certificates	**207**	**-**	**207**	256	**1,903**	980
Exposure device operator certificates	**89**	**4**	**93**	98	**1,753**	1,349
Total fixed fees	**455**	**5**	**460**	485	**4,368**	2,829
TOTAL LICENCE FEES	**110,621**	**13,170**	**123,791**	118,760	**135,066**	127,261
NON-LICENCE FEES						
Other non-licence fees	**38**	**-**	**38**	63	**25,481**	24,097
Special projects and related expenses	**2,663**	**-**	**2,663**	1,864	**2,591**	1,643
TOTAL NON-LICENCE FEES	**2,701**	**-**	**2,701**	1,927	**28,072**	25,740
TOTAL	**113,322**	**13,170**	**126,492**	120,687	**163,138**	153,001

12. Related party transactions

The CNSC had the following transactions with related parties in addition to those disclosed elsewhere in these financial statements.

(a) Common services provided without charge by other government departments

During the year, the CNSC received services without charge from certain common service organizations, related to accommodation, legal services, the employer's contribution to the health and dental insurance plans and worker's compensation coverage. These services provided without charge have been recorded at the carrying value in the CNSC's Statement of Operations and Net Financial Position as follows:

(in thousands of dollars)	**2018**	2017
Accommodation provided by Public Services and Procurement Canada	**6,012**	6,011
Contributions for employer's share of employee benefits provided by the Treasury Board Secretariat	**9,059**	8,018
Salary and associated costs of services provided by Shared Services Canada	**2,246**	1,568
Audit services provided by the Office of the Auditor General of Canada	**203**	171
Other	**356**	193
Total	**17,876**	15,961

The Government of Canada has centralized some of its administrative activities for efficiency, cost-effectiveness purposes and the economic delivery of programs to the public. As a result, the Government uses central agencies and common service organizations so that one department performs services for all other departments and agencies without charge.

(b) Licences provided without charge to other federal government departments and agencies

The CNSC provided licences free of charge to other federal government departments and agencies in the amount of $2,585,947 ($2,568,492 in 2016–17). The forgone revenue is not included in the Statement of Operations and Net Financial Position.

(c) Other transactions with related parties

The CNSC enters into transactions with these entities in the normal course of business and on normal trade terms. These transactions are measured at the exchange amount.

(in thousands of dollars)	**2018**	2017
Accounts receivable – Other government departments and agencies	**236**	237
Accounts payable – Other government departments, agencies and Crown corporations	**9,738**	9,625
Expenses – Other government departments and agencies	**25,955**	24,680
Revenues – Other government departments and agencies	**15,589**	14,147

Expenses and revenues disclosed in (c) exclude common services provided without charge, which are already disclosed in (a).

13. Contractual obligations

The nature of the CNSC's activities can result in some large multi-year contracts and obligations whereby the CNSC will be obligated to make future payments in order to carry out its transfer payment programs or when services and goods are received. Significant contractual obligations that can be reasonably estimated are summarized as follows:

(in thousands of dollars)	**2019**	**2020**	**2021**	**2022 and subsequent**	**Total**
Acquisitions of goods and services	7,750	880	117	69	8,816
Transfer payments	1,194	288	133	-	1,615
Operating leases	970	155	155	155	1,435
Total	**9,914**	**1,323**	**405**	**224**	**11,866**

The CNSC has multi-year contracts with related parties in the amount of $2,958,824.

14. Contingent liabilities

Claims have been made against the CNSC in the normal course of operations. These claims include items with pleading amounts and other for which no amount is specified.

15. Other licences provided free of charge by the CNSC

The CNSC provides licences free of charge to educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded healthcare institutions and not-for-profit emergency response organizations. The total value of these licences amounted to $10,584,288 ($10,053,982 in 2016–17). The foregone revenue is not included in the Statement of Operations and Net Financial Position.

16. Comparative information

Comparative figures have been reclassified to conform to the current year's presentation.

ANNEX TO THE STATEMENT OF MANAGEMENT RESPONSIBILITY

INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING 2017–18

1. INTRODUCTION

This document provides summary information on the measures taken by the Canadian Nuclear Safety Commission (CNSC) to maintain an effective system of internal control over financial reporting including information on internal control management, assessment results and related action plans.

Detailed information on the CNSC's authority, mandate and program activities can be found in the most recent Departmental Results Report[1] and Departmental Plans.[2] The CNSC 2017–18 audited financial statements[3] are available on the CNSC website.

2. SYSTEM OF INTERNAL CONTROL OVER FINANCIAL REPORTING

2.1 Internal control management

The CNSC has a well-established governance and accountability structure to support efforts to evaluate and monitor its internal control system. An internal control management framework, approved by the president, is in place, and includes:

- organizational accountability structures as they relate to internal control management to support sound financial management, including roles and responsibilities of senior managers in their areas of responsibility
- an Office of Audit and Ethics that manages values and ethics programs, internal disclosure, the *Public Servants Disclosure Protection Act*, and conflict of interest and post-employment policies
- ongoing communication and training on statutory requirements, and policies and procedures for sound financial management and control
- monitoring of and regular updates on internal control management, as well as the provision of related assessment results and action plans to the president, and, as applicable, the Audit Committee

The Audit Committee provides advice to the president on the adequacy and functioning of the CNSC's risk management, control and governance frameworks and processes.

1 tbs-sct.gc.ca/dpr-rmr/index-eng.asp

2 tbs-sct.gc.ca/rpp/index-eng.asp

3 nuclearsafety.gc.ca/eng/resources/publications/reports/annual-reports/index.cfm

2.2 Service arrangements relevant to financial statements

The CNSC relies on other organizations for the processing of certain transactions that are recorded in its financial statements, as follows:

COMMON ARRANGEMENTS

- Public Services and Procurement Canada centrally administers the payments of salaries and the procurement of goods and services in accordance with the CNSC's delegation of authority, and provides accommodation services.
- The Treasury Board of Canada Secretariat provides services related to public sector insurance for CNSC employees and centrally administers payment of the employer's share of contributions toward statutory employee benefit plans (i.e., the Public Service Pension Plan, Employment Insurance Plan, Canada Pension Plan, Quebec Pension Plan and Public Service Supplementary Death Benefit Plan) on behalf of the CNSC.
- Shared Services Canada is responsible for managing and maintaining the CNSC's information technology infrastructure.

Readers of this annex may refer to the annexes of the above-noted organizations for a greater understanding of the systems of internal control over financial reporting related to these specific services.

3. DEPARTMENTAL ACTION PLAN

3.1 Progress during fiscal year 2017–18

The CNSC continued to conduct its ongoing monitoring according to the established rotational plan, as shown in the following table.

PROGRESS DURING FISCAL YEAR 2017–18

Key control areas	Status
Revenue	Completed as planned; remedial actions complete (see section 3.2 for additional information)
Year-end financial close and statement preparation	Completed as planned; remedial actions complete (see section 3.2 for additional information)
Payroll	Due to changes in process and continuing challenges with the Phoenix pay system, the assessment was postponed until 2018–19

3.2 Assessment results for fiscal year 2017–18

New or significantly amended key controls: In the current year, there were no significantly amended key controls in existing processes which required reassessment.

Ongoing monitoring program: As part of its rotational ongoing monitoring plan, the department completed its reassessment of revenue and year-end financial close and statement preparation. For the most part, the key controls that were tested performed as intended, with follow-up actions required for the following items:

Revenue

- Complete a review of segregation of duties in the revenue process and make adjustments as required (medium risk)

Year-end financial close and statement preparation

- Review year-end procedures and key controls and ensure that roles and responsibilities are clear and understood (medium risk)

3.3 Progress against fiscal year 2016–17 items

In addition to the progress made in ongoing monitoring, the department conducted a follow-up of the outstanding 2016–17 action items:

Entity-level controls

- Increase awareness of a directive for the external communication of financial information (low risk)
- Enhance reporting and communication of exit interview results (low risk)

IT general controls

- Completion of user reviews on a more regular basis (medium risk)
- Enhance segregation of duties for one application (an in-house developed time reporting system) (high risk)
- Improve documentation within the change management process (low risk)

Capital assets

- Improve information sharing related to IT software project costs that require capitalization (high risk)
- Support a more consistent application of key requirements related to month-end processes and approval of disposed assets (medium risk)

Grants and contributions

- Better align approvals of grants and contributions with the CNSC's delegation matrix (medium risk)

Payroll

- Enhance the post-payment verification process (medium risk)
- Complete the quarterly payroll variance analysis on a more consistent basis (high risk)
- Enhance the review of overtime (medium risk)

All entity-level controls, IT general controls, capital assets, and grants and contributions items were remediated, as planned. Due to changes in process and continuing challenges with the Phoenix pay system, actions related to payroll are ongoing, with planned completion in 2018–19.

3.4 Monitoring plan for fiscal year 2018–19 and subsequent years

The CNSC's rotational ongoing monitoring plan over the next three years, based on an annual validation of the high-risk processes and controls, and related adjustments to the ongoing monitoring plan as required, is shown in the following table.

ROTATIONAL ONGOING MONITORING PLAN

Key control areas	Fiscal year 2018–19	Fiscal year 2019–20	Fiscal year 2020–21
Entity-level controls	No	Yes	No
IT general controls (under management of the CNSC)	No[4]	Yes	No
Capital assets	No	Yes	No
Purchase to payment	Yes	No	No
Payroll	Yes[5]	No	No
Revenue	No	No	Yes
Year-end financial close and statement preparation	Yes[6]	No	Yes

4 The Information Technology General Controls (ITGC) assessment planned for FY 18/19 will be postponed until FY 2019/20 due to the implementation of a new financial system, SAP, in April 2019.

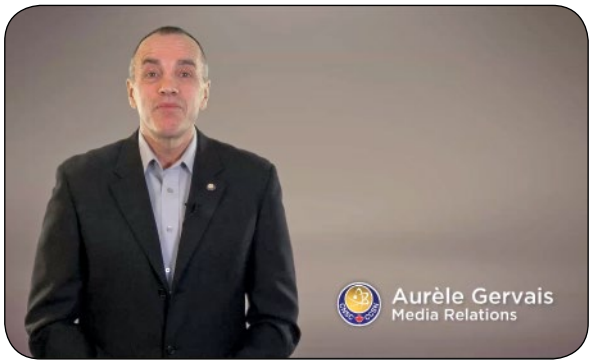
5 Due to the ongoing issues with the payroll system, Phoenix, the payroll assessment, planned for 2017–18, will now be completed in 2018–19.

6 An interim assessment of the year-end and financial close process was added to the 2018–19 monitoring plan as a result of reorganization with the Financial Administration Directorate including changes to roles and responsibilities.

ANNEX A:

COMMISSION HEARINGS AND OPPORTUNITIES TO BE HEARD IN 2017–18

[CNSC hearing process video]



PUBLIC HEARINGS

Nuclear Research and Test Establishments

CANADIAN NUCLEAR LABORATORIES (CNL): DECISION

- Decision to renew the nuclear research and test establishment operating licence issued to Canadian Nuclear Laboratories for the Chalk River Laboratories site for a 10-year period – Public hearing (January 23–25, 2018)

Nuclear Power Plants

NEW BRUNSWICK POWER CORPORATION (NB POWER): DECISION

- Decision to renew the nuclear power reactor operating licence issued to NB Power for the Point Lepreau Nuclear Generating Station for a five-year period – Public hearing, Part 1 (January 26, 2017) and Part 2 (May 9–11, 2017)

ONTARIO POWER GENERATION INC. (OPG): DECISION

- Decision to accept OPG's proposed revised financial guarantee for the future decommissioning of its facilities in Ontario - Public hearing (October 11, 2017)

BRUCE POWER INC. (BRUCE POWER): DECISION

- Application from Bruce Power to renew its nuclear power reactor operating licence for the Bruce A and B Nuclear Generating Stations for a 10-year period – Public hearing, Part 1 (March 14, 2018) and Part 2 (May 30–31, 2018)

Uranium Mines and Mills

ORANO CANADA (FORMERLY AREVA RESOURCES CANADA INC.): DECISION

- Decision to renew the uranium mine operating licence issued to AREVA Resources Canada Inc. for its McClean Lake Operation for a 10-year period – Public hearing (June 7–8, 2017)

Waste Substances

ONTARIO POWER GENERATION INC. (OPG): DECISION

- Decision to renew the waste facility operating licence issued to OPG for its Western Waste Management Facility located in Kincardine, Ontario for a 10-year period – Public hearing (April 12, 2017)

ONTARIO POWER GENERATION INC. (OPG): DECISION

- Decision to renew the waste facility operating licence issued to OPG for its Pickering Waste Management Facility located in Kincardine, Ontario for a 10-year period – Public hearing (April 13, 2017)

Hearings in Writing (Based Solely on Written Submissions)

BEST THERATRONICS LIMITED (BTL): DECISION

- Decision to amend the nuclear substance processing facility licence issued to BTL to modify the licence condition related to its financial guarantee (July 14, 2017)

HYDRO-QUÉBEC: DECISION

- Decision to accept the revised value of the financial guarantee submitted by Hydro-Québec for the future decommissioning of the Gentilly-2 nuclear reactor and nuclear waste facilities (August 25, 2017)

UNIVERSITY OF ALBERTA: DECISION

- Decision to amend the non-nuclear power reactor licence issued to the University of Alberta for its SLOWPOKE-2 reactor facility to authorize its decommissioning (September 22, 2017)

ONTARIO POWER GENERATION INC. (OPG): DECISION

- Decision to amend the nuclear power reactor operating licences issued to OPG for its Darlington Nuclear Generating Station and Pickering Nuclear Generating Station and to revoke the nuclear substance and radiation device licence issued to OPG (October 26, 2017)

CAMECO CORPORATION: DECISION

- Decision to accept Cameco Corporation's revised financial guarantee for the future decommissioning of the Blind River Refinery (November 16, 2017)

CAMECO FUEL MANUFACTURING INC. (CFM): DECISION

- Decision to accept CFM's updated financial guarantee for the future decommissioning of the CFM facility located in Port Hope, Ontario (November 16, 2017)

CANADIAN NUCLEAR LABORATORIES (CNL): DECISION

- Decision to amend the Waste Nuclear Substance Licence issued to CNL for its Port hope Long-Term Low-Level Radioactive Waste Management Project (November 29, 2017)

CANADIAN LIGHT SOURCE INC. (CLSI): DECISION

- Request for a change in licensing basis to allow for continuous electron top-up mode of operation (February 20, 2018)

REVIEW OF DESIGNATED OFFICER ORDERS

NEWFOUNDLAND RECYCLING LIMITED: DECISION

- Decision to confirm the designated officer order issued on February 16, 2017 to Newfoundland Recycling Limited, based in Conception Bay South, NL, in regard to the improper transfer of prescribed equipment (radiation device) to a person who was not authorized by the CNSC to possess the device. The Commission's review of the order was held in Ottawa, Ontario on February 20, 2018.

ROCK TECH LITHIUM INC.: DECISION

- Decision to confirm the designated officer order issued on November 30, 2015 to Rock Tech Lithium Inc., based in Vancouver, British Columbia, with respect to the improper transfer of prescribed equipment (radiation device) to a person who was not authorized by the CNSC to possess the device. The Commission's review of the order was held in Ottawa, Ontario on February 26, 2018.

Number of intervenors at Commission hearings and meetings from April 1, 2017 to March 31, 2018

Date	Subject	Oral	Written
April 12, 2017	**Hearing/meeting**	12	19
May 10, 2017	**Hearing Point Lepreau Part 2**	38	56
June 7, 2017	**Hearing La Ronge**	10	1
August 16, 2017	**Meeting**	0	7
October 11, 2017	**Hearing/meeting**	3	4
October 26, 2017	**Hearing in writing**	0	18
November 9, 2017	**Meeting**	0	0
November 29, 2017	**Hearing in writing**	0	2
December 13, 2017	**Meeting**	0	11
January 23, 2018	**Hearing CNL/meeting**	51	37
March 14, 2018	**Hearing Bruce Part 1/meeting**	0	0
TOTAL		**114**	**155**

ANNEX B:

REGULATORY FRAMEWORK PROJECTS PUBLISHED IN 2017–18

REGDOC-1.1.3, *LICENCE APPLICATION GUIDE: LICENCE TO OPERATE A NUCLEAR POWER PLANT*

REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant*, was published in September 2017. This document sets out requirements and guidance on submitting a formal application to the CNSC to obtain a licence to operate a nuclear power plant in Canada, and identifies the information that should be included in the application.

This document supersedes RD-346, *Site Evaluation for Nuclear Power Plants*, published in November 2008.

REGDOC-1.6.1, *LICENCE APPLICATION GUIDE: NUCLEAR SUBSTANCES AND RADIATION DEVICES*, VERSION 2

REGDOC-1.6.1, *Licence Application Guide: Nuclear Substances and Radiation Devices*, Version 2, was published in May 2017. This document sets out guidance for applicants in the preparation and submission of an application for a licence to carry out activities related to nuclear substances and radiation devices.

This document supersedes Version 1, which was published in October 2015. The changes in Version 2 do not result in new or increased obligations for licensees.

REGDOC-2.2.4, *FITNESS FOR DUTY, VOLUME II: MANAGING ALCOHOL AND DRUG USE*, VERSION 2

REGDOC-2.2.4, *Fitness for Duty, Volume II: Managing Alcohol and Drug Use*, Version 2, was published in December 2017. This document sets out requirements and guidance for managing fitness for duty of workers in relation to alcohol and drug use at all high-security sites, as defined in the *Nuclear Security Regulations*. Human performance is a key contributor to the safety and security of nuclear facilities. One factor that affects human performance is fitness for duty. The adoption of measures that monitor alcohol and drug use is a key component of ensuring worker fitness for duty.

REGDOC-2.5.4, *DESIGN OF URANIUM MINES AND MILLS: VENTILATION SYSTEMS*

REGDOC-2.5.4, *Design of Uranium Mines and Mills: Ventilation Systems*, was published in March 2018. This document is a guide to help persons meet the requirements for submitting ventilation-related information when applying for a CNSC licence to prepare a site for and construct, operate or decommission a uranium mine or mill.

This document supersedes regulatory document G-221, *A Guide to Ventilation Requirements for Uranium Mines and Mills*, published in June 2003.

REGDOC-2.5.5, *DESIGN OF RADIOGRAPHY INSTALLATIONS*

REGDOC-2.5.5, *Design of Industrial Radiography Installations*, was published in March 2018. This document provides guidance for the design of radiography installations. This information will assist individuals in the design and construction of installations that are safe to use, and that ensure that doses to certified exposure device operators, workers and all persons in the vicinity of the work being performed are within regulatory limits and are kept as low as reasonably achievable.

REGDOC-2.5.7, *DESIGN, TESTING AND PERFORMANCE OF EXPOSURE DEVICES*

REGDOC-2.5.7, *Design, Testing and Performance of Exposure Devices*, was published in August 2017. This document provides guidance in the design, testing and performance of exposure devices, in order to apply for the certification of the radiation device under section 12 of the *Nuclear Substances and Radiation Devices Regulations*. Persons applying for certification of such devices must thoroughly demonstrate that the exposure device and related accessories are designed to operate in a safe manner.

REGDOC-2.6.1, *RELIABILITY PROGRAMS FOR NUCLEAR POWER PLANTS*

REGDOC-2.6.1, *Reliability Programs for Nuclear Power Plants*, was published in August 2017.

This document sets out the requirements and guidance for the development and implementation of a reliability program for a nuclear power plant in Canada. The essential elements of a reliability program, including reliability assessment, modelling, evaluation and monitoring, are also described in this document.

This document supersedes RD/GD-98, *Reliability Programs for Nuclear Power Plants*, published in June 2012.

REGDOC-2.6.2, *MAINTENANCE PROGRAMS FOR NUCLEAR POWER PLANTS*

REGDOC-2.6.2, *Maintenance Programs for Nuclear Power Plants*, was published in August 2017.

This document sets out the requirements and guidance for maintenance programs for nuclear power plants in Canada. A nuclear power plant maintenance program consists of policies, processes and procedures that provide direction for maintaining structures, systems and components of the plant.

This document supersedes RD/GD-210, *Maintenance Programs for Nuclear Power Plants*, published in December 2012.

REGDOC-2.9.1, *ENVIRONMENTAL PROTECTION: ENVIRONMENTAL PRINCIPLES, ASSESSMENTS AND PROTECTION MEASURES*, VERSION 1.1

REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, Version 1.1, was published in April 2017. This document provides information to applicants and licensees on protecting the environment and the health of persons, including:

- the CNSC's principles for environmental protection
- for all nuclear facilities or activities, the scope of an environmental assessment (EA) and the roles and responsibilities associated with an EA
- the CNSC's requirements and guidance to applicants and licensees for developing environmental protection measures, including an environmental risk assessment where required, for both new and existing facilities or activitiesVersion 1.1 includes administrative updates to sections 2.1 (to match the French document) and 3.2.4, and to the definition of environmental effects.

This document supersedes P-223, *Protection of the Environment*, and REGDOC-2.9.1, *Environmental Protections: Policies, Programs and Procedures*. It provides all environmental principles, assessments and protection measures in a single environmental protection regulatory document.

REGDOC-2.13.1, *SAFEGUARDS AND NUCLEAR MATERIAL ACCOUNTANCY*

REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*, was published in February 2018. This document sets out requirements and guidance for safeguards programs for applicants and licensees who possess nuclear material, carry out specified types of nuclear fuel-cycle related research and development work, or carry out specified types of nuclear-related manufacturing activities.

REGDOC-2.13.1 aims to establish a common understanding of the information, access and support licensees are to provide to the CNSC and to the International Atomic Energy Agency, to facilitate Canadian compliance with safeguards agreements, and with licensee obligations established in the *General Nuclear Safety and Control Regulations*.

REGDOC-2.13.1 supersedes RD-336, *Accounting and Reporting of Nuclear Material*, and GD-336, *Guidance for Accounting and Reporting of Nuclear Material*.

REGDOC-3.1.2, *REPORTING REQUIREMENTS, VOLUME I: NON-POWER REACTOR CLASS I NUCLEAR FACILITIES AND URANIUM MINES AND MILLS*

REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills*, was published in January 2018. This document is part of the reporting requirements series of the CNSC's regulatory framework, which also covers reporting requirements for operating nuclear power plants.

REGDOC-3.1.2, Volume I supersedes the following regulatory documents:

- R-89, *The Preparation of Reports of a Significant Event at a Uranium Processing or Uranium Handling Facility*
- R-27, *Preparation of an Annual Compliance Report for a Uranium Fuel Fabrication Plant*
- R-26, *Preparation of a Quarterly Health Physics Compliance Report for a Uranium Fuel Fabrication Plant*
- R-25, *Preparation of a Quarterly Report on the Operation of a Uranium Refinery or Uranium Chemical Conversion Facility*

REGDOC-3.5.1, *LICENSING PROCESS FOR CLASS I NUCLEAR FACILITIES AND URANIUM MINES AND MILLS*, VERSION 2

REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills*, Version 2, was published in May 2017. This document provides an overview of the licensing process for Class I nuclear facilities and uranium mines and mills in Canada, taking into consideration the requirements of the *Nuclear Safety and Control Act* and associated regulations.

Version 1 of this document replaced S-99, *Reporting Requirements for Operating Nuclear Power Plants*, published in March 2003. Version 2 of this document includes the following revisions:

- Removal of the performance indicator data sheets from appendix B (these are now available on the CNSC's website)
- Inclusion of references to the *Packaging and Transport of Nuclear Substances Regulations, 2015* for requirements for packaging and transport of nuclear substances

DIS-17-01, *FRAMEWORK FOR RECOVERY IN THE EVENT OF A NUCLEAR OR RADIOLOGICAL EMERGENCY*

In August 2017, the CNSC published discussion paper DIS-17-01, *Framework for Recovery in the Event of a Nuclear or Radiological Emergency*. The paper, for which the consultation period closed in January 2018, sought to establish a framework for recovery following a nuclear or radiological emergency. It describes the measures that decision makers may need to consider prior to, or following, the response to an emergency, to protect the public from potential health effects of long-term exposure to radiation, while taking into account any economic, political, environmental, cultural, ethical, psychological, and social factors.

CANADIAN NUCLEAR SAFETY COMMISSION

280 SLATER STREET, BOX 1046, STATION B
OTTAWA, ONTARIO K1P 5S9

Telephone: 613-995-5894 or
1-800-668-5284 (Canada only)
Fax: 613-995-5086

Email: cnsc.info.ccsn@canada.ca
Website: nuclearsafety.gc.ca

Facebook: facebook.com/CanadianNuclearSafetyCommission
YouTube: youtube.com/cnscccsn
Twitter: @CNSC_CCSN

Catalogue number: CC171E-PDF
ISSN: 1912-0753
Published by authority of the Honourable Amarjeet Sohi, P.C., M.P., Minister of Natural Resources