

70 YEARS OF NUCLEAR SAFETY IN 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.

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

## 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.

# LETTER TO THE MINISTER

THE HONOURABLE JIM CARR  
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, 2016. The report has been prepared and tabled in accordance with section 72 of the *Nuclear Safety and Control Act*.

A handwritten signature in black ink that reads "M. Binder". The signature is written in a cursive style with a small initial "M." followed by the name "Binder".

**Michael Binder**

President and Chief Executive Officer,  
Canadian Nuclear Safety Commission

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# MESSAGE FROM THE PRESIDENT

It is my honour and pleasure to present the Canadian Nuclear Safety Commission (CNSC) Annual Report for 2015–16. This year we are celebrating 70 years of nuclear safety in Canada. 2016 marks the 70th anniversary of the creation of the CNSC's predecessor – the Atomic Energy Control Board (AECB). Much work and many events have taken place over the course of the past 70 years, but the underlying *raison d'être* of this organization – both as the AECB and the CNSC – has always been to ensure the safe use of nuclear energy and materials, and the protection of the health and safety of Canadians and of the environment.

Our commitment to this work continued this past year with Commission hearings for the renewal of the power reactor operating licences for the Bruce Nuclear Generating Station and the Darlington Nuclear Generating Station, both located in Ontario. The Commission also held public hearings for the renewal of nuclear substance processing facility operating licences for Nordion (Canada) and SRB Technologies (Canada) Inc., also located in Ontario.

This past year, the International Atomic Energy Agency completed an International Physical Protection Advisory Service (IPPAS) mission to review national nuclear security practices in Canada. The mission reviewed Canada's nuclear security-related legislative and regulatory regime for nuclear material and nuclear facilities, as well as the security arrangements applied to the transport of nuclear material, the security of radioactive material and associated facilities and activities, and the information and computer security systems in place. I am pleased to report that the IPPAS report concluded that Canada conducts mature, effective, strong and sustainable nuclear safety activities and operates a well-established nuclear security regime.



2016 marked the fifth anniversary since the Fukushima nuclear accident. I am pleased to confirm the completion of the CNSC's action plan on the lessons learned from the Fukushima accident. All short-, medium- and long-term action items for all Canadian nuclear power plants licensees were completed, and continuous monitoring by CNSC staff of station-specific action items are now part of the established verification program.

I invite you to read this annual report and discover facts about the CNSC's long history of safe nuclear regulation. It showcases the extensive everyday work of the Commission and staff in overseeing close to 1,700 licensees in our mission to ensure the health and safety of Canadians and the protection of our environment.

A handwritten signature in black ink that reads "M. Binder". The signature is written in a cursive, flowing style.

Michael Binder

# CNSC AT A GLANCE

## 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?

Nuclear safety means protecting Canadians at every stage in the nuclear fuel cycle – not just monitoring nuclear power stations. The CNSC regulates the entire process, from uranium mining, the collection of nuclear by-products for use in nuclear medicine

and research, to the management and disposal of nuclear waste. We also monitor for environmental impacts from nuclear activities, and our nation’s nuclear security and international commitments.



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

# 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.



# HOW WE WORK

The CNSC is Canada's nuclear regulator. It is composed of a Commission that is completely independent and is supported by a highly skilled, professional staff who are dedicated and committed

to protecting the health, safety, and security of Canadians and the environment with respect to all types of authorized nuclear activity.



# CNSC – OVERVIEW

## A REGULATORY AND OVERSIGHT ROLE

Under the *Nuclear Safety and Control Act* (NSCA), the Canadian Nuclear Safety Commission (CNSC) regulates all nuclear-related activities in Canada and sets out regulatory expectations for them.

Those wishing to carry out activities regulated under the NSCA must first obtain a licence or a certification from the CNSC.

The CNSC provides clarity on regulatory expectations and oversees licensed activities to ensure regulatory requirements are met. The Commission is the CNSC's decision-making body and makes licensing decisions, including those for all major nuclear facilities in Canada.

CNSC staff participate in many national and international technical projects and meetings to contribute to the safe and secure regulation of nuclear facilities and activities in Canada and around the world. These projects and meetings address areas ranging from the design of new nuclear reactors, aging facilities decommissioning and waste management practices, to the effects of radiation on people and the environment, and nuclear non-proliferation activities.

To ensure accountability and effective stewardship of resources, the CNSC has a Management Committee as well as two oversight committees – the Audit Committee and the Evaluation Committee. The Audit Committee, which serves as an advisory body to the president (with three external and two internal members), reinforces the effectiveness of internal audits, and oversees key areas and processes such as risk management, management control, accountability reporting, and values and ethics. The Evaluation Committee, whose members come from the management cadre, is also an essential component of the organization's governance structure. It serves as an advisory body to the president on the CNSC's evaluation plan and final evaluation reports.

## A MANDATE TO ENSURE SAFETY

The CNSC uses risk-informed regulatory approaches to plan and carry out licensing and compliance activities, in order to establish appropriate regulatory control that is commensurate with the activities and risk involved.

All major Canadian nuclear facilities are designed and operated with the “defence-in-depth” principle in mind. The CNSC requires licensees to implement multiple layers of defence in safety systems and programs, in order to keep facilities and workers safe, to keep the public safe, to protect the environment and to minimize consequences in case of a severe accident. The CNSC's rigorous, multi-faceted regulatory oversight, which includes onsite inspections, desktop reviews and annual oversight reports discussed in public, ensures licensees are operating safely and adhering to their licence conditions.

## A FOCUS ON SAFETY AND PREPAREDNESS

The CNSC makes safety its number-one priority and requires licensees to do the same. This includes being prepared to respond to events and emergencies, as well as continually evaluating and improving emergency response capabilities.

Canadian regulations require all licensees to demonstrate to the CNSC that their workers are fully trained to carry out their duties competently, and that they have comprehensive programs to mitigate any events and their potential consequences. The CNSC works with nuclear operators, federal and provincial government agencies, municipalities, first responders and international organizations, to be ready to respond to a nuclear emergency at any time.

## A HEALTHY INTERNAL SAFETY CULTURE

The CNSC is striving to foster a healthy internal safety culture, as derived from its organizational mission, programs and practices, along with employee and management actions and behaviours, which establish safety as an overriding priority. For the CNSC, this means embedding safety into everything it does.



# KEY ACHIEVEMENTS 2015–16

Major licensing activities	
<ul style="list-style-type: none"> <li>public hearings held in 2015–16 for the renewal of the power reactor operating licence for the Bruce A and B Nuclear Generating Stations and the Darlington Nuclear Generating Station</li> <li>public hearings held in 2015–16 for the renewal of the Class 1B nuclear substance processing facility operating licence for Nordion (Canada) Inc.'s facility and for SRB Technologies (Canada) Inc.'s gaseous tritium light source facility</li> <li>public hearing held in 2015 to remove the Gunnar Remediation Project Phase 2 hold point as it pertained to the remediation of the tailings deposits at the Gunnar Legacy Uranium Mine Site in northern Saskatchewan</li> <li>joint review panel report on Ontario Power Generation's Deep Geologic Repository submitted to the Minister of Environment for decision</li> <li>export licence provided for Canada's first uranium shipment to India</li> </ul>	
International Physical Protection Advisory Service mission: A review of nuclear security practices in Canada	Commission
<p>In October 2015, a team of 10 experts from 9 nations and the IAEA completed an <a href="#">International Physical Protection Advisory Service (IPPAS)</a> mission to review national nuclear security practices in Canada. Prime Minister Justin Trudeau at the <a href="#">2016 Nuclear Security Summit</a> in Washington, D.C., renewed Canada's commitment to take a leadership role in the fight against nuclear terrorism.</p> <p>Read the full <a href="#">IPPAS report</a></p>	<p>9 public proceedings 504 intervenors 9 abridged hearings</p>
Fukushima action items completed	Core licensing, compliance and verification activities
<p><b>Action items completed</b></p> <ul style="list-style-type: none"> <li>closure of all Fukushima action items for all Canadian nuclear power plant (NPP) licensees</li> </ul> <p><b>10 post-Fukushima safety improvements in Canada</b></p> <ul style="list-style-type: none"> <li>reassessment of hazards</li> <li>portable emergency equipment</li> <li>enhanced control of hydrogen</li> <li>emergency filtered venting</li> <li>pre-distribution of potassium iodide pills</li> <li>real-time radiation monitoring</li> <li>increased number of large-scale emergency exercises</li> <li>stronger regulations</li> <li>greater communications and public disclosure</li> <li>broader international involvement</li> </ul> <p>Read more details about these <a href="#">post-Fukushima safety improvements</a></p>	<ul style="list-style-type: none"> <li>conducted 1,450 inspections for nearly 2,400 licences held by almost 1,700 licensees</li> <li>issued 805 export and 162 import licences for nuclear substances, prescribed equipment and information</li> <li>issued 92 licensing decisions for new transport licences, revised transport licences and transport certificates for package design and for special-form radioactive material</li> <li>issued 573 licensing decisions related to new certificates and revised certificates for radiation devices and other prescribed equipment</li> <li>managed 3,071 CNSC certificates held by persons across Canada who are key operating personnel for power and research reactors; health physicists and radiation safety officers; and industrial radiography exposure device operators</li> <li>issued 23 orders to specific licensees using nuclear substances and 5 administrative monetary penalties</li> </ul>
	Workforce renewal
	<ul style="list-style-type: none"> <li>continued efforts on the CNSC's 10-year renewal plan, including workforce plans for the next three years</li> <li>identified the critical competencies needed to carry out regulatory work</li> <li>focused on addressing high attrition risks in the CNSC's workforce</li> <li>reprofiled the organization and ensured growth and development opportunities for current employees</li> <li>new talent recruiting and a pool of new graduates will be maintained to build capabilities and meet the CNSC's needs of the future</li> </ul>
Research and Support Program	Role in international nuclear safety
<ul style="list-style-type: none"> <li>\$3.3 million invested in 76 research projects</li> <li>35 contributions to international or national joint projects, and 14 grants</li> </ul> <p>Reports on these projects are available on the <a href="#">CNSC's website</a></p>	<p>Ramzi Jammal, the CNSC's Executive Vice-President and Chief Regulatory Operations Officer, was elected as the President of the Seventh Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, which will be held in Vienna in spring 2017. As President, Mr. Jammal will lead discussions among participating countries on how to improve nuclear safety worldwide through a constructive exchange of views.</p>



1946: General Andrew G.L. McNaughton is appointed the first President of the Atomic Energy Control Board.



1947: The National Research Experimental reactor starts operating at the Chalk River Laboratories in Ontario.



1952: The core of the National Research Experimental reactor at Chalk River Laboratories undergoes a partial meltdown.

## 70 YEARS OF NUCLEAR SAFETY IN CANADA

2016 marks the 70th anniversary of the CNSC and its predecessor, the Atomic Energy Control Board (AECB). For seven decades, the organization has overseen Canada's nuclear industry in areas such as uranium mining, nuclear power plants, nuclear substance processing, research, waste management, and production and use of medical isotopes.

# IN THE SHADOW OF WORLD WAR II

In January 1946, the General Assembly of the United Nations, by unanimous decision, created the Atomic Energy Commission, whose task was to prepare proposals for promoting the peaceful use of nuclear energy and to develop safeguards against the proliferation of nuclear weapons. However, discouragement followed as the U.S. and USSR were unable to reach accord on measures of control.

Photo: Canadian Prime Minister William Lyon Mackenzie King, President of the United States of America Franklin D. Roosevelt, and Prime Minister of the United Kingdom Winston Churchill agreed to cooperation on nuclear research during the Quebec Conference in August 1943.



## THE CNSC'S BEGINNINGS

In addition to the efforts for international control of atomic energy, individual countries like the U.S., Canada and Great Britain developed legislation for national control within their own borders. In Canada, the *Atomic Energy Control Act* was proclaimed in October 1946. Under the Act, the Government of Canada established the AECB as a regulatory agency to provide for control and supervision of the development, application and use of atomic energy and to enable Canada to participate effectively in measures of international control of atomic energy.

1956

58

60

62

64

1966



1957: The United Nations establishes the International Atomic Energy Agency.

1962: The Cuban Missile Crisis brings the world to the brink of nuclear war.



1965: The Government of Canada decides all exports of nuclear materials would be for peaceful purposes only.



## THE RISE OF THE INTERNATIONAL ATOMIC ENERGY AGENCY

The International Atomic Energy Agency (IAEA) was established by the United Nations in 1957. The agency's genesis was U.S. President Dwight D. Eisenhower's historic address, "Atomic Power for Peace", given to the General Assembly of the United Nations in December 1953, when he proposed an Atoms for Peace program and the establishment of an international agency to promote peaceful applications of nuclear energy. The positive response led to the first truly international meeting on the subject of atomic energy – the well-known Geneva Conference of August 1955.

Photo: Model of the Nuclear Power Demonstration reactor.



### CANADA'S NUCLEAR REGULATOR DEFINES SAFETY FOR RESEARCH AND ENERGY REACTORS

In 1959, the first university-based research reactor in the Commonwealth began operating at McMaster University in Hamilton, Ontario. At the time, the AECB oversaw the development and use of university-based facilities and the use of radioactive materials in research facilities.

In 1962, the Nuclear Power Demonstration (NPD) reactor near Rolphton, Ontario delivered Canada's first nuclear-generated electricity. NPD, a CANDU (Canada Deuterium Uranium) reactor prototype, demonstrated that nuclear power plants were a viable option for producing energy in Canada.

1966

68

70

72

74

1976

1968: Canada joins 58 nations in signing the international Nuclear Non-Proliferation Treaty.



1972: Canada is among the first countries to sign a comprehensive nuclear safeguards agreement with the International Atomic Energy Agency.



1974: India detonates a nuclear device, leading the Government of Canada to revise its nuclear export policy.

# CANADA'S NUCLEAR POWER REACTORS ARE BUILT

Building on the success of the Nuclear Power Demonstration in 1962, the AECB began licensing Canada's first commercial nuclear reactors. In 1966, the Douglas Point Nuclear Generating Station located in Douglas Point, Ontario began operating. It was Canada's first commercial-scale CANDU nuclear generating station (200 megawatts electric), and a prototype for today's larger nuclear power plants. In 1972, Unit 3 of the Pickering A Nuclear Generating Station began operation, producing power for Toronto and the surrounding area. At the time, it produced more electricity than any other nuclear power station in the world.



Photo: Construction of Pickering Nuclear Power Station, Ontario.

## CANADA CONTINUES TO PLAY A MAJOR ROLE IN NUCLEAR MEDICINE

In 1975, Canada's first positron emission tomography (PET) scanner was developed and installed at the Montreal Neurological Institute. PET is a nuclear medicine imaging technique that produces a three-dimensional image of functional processes in the body.

Also in 1975, AECL starts to produce molybdenum-99, which is used mainly for imaging in nuclear medicine. This Canadian expertise led to world leadership in isotope production for use in nuclear medicine.



1976

78

80

82

84

1986

1978: A USSR nuclear-powered satellite re-enters the atmosphere and spreads radioactive debris across the Northwest Territories.



1979: Equipment failure and human error contribute to an accident at the Three Mile Island nuclear reactor.

## RADIOACTIVE CONTAMINATION IS CLEANED UP

The AECB directed a large-scale radiation reduction program in the town of Port Hope, Ontario, and more than 100,000 tons of contaminated soil was transferred to a site at Atomic Energy Canada Ltd.'s Chalk River Laboratories. In addition, the Federal-Provincial Task Force on Radioactivity was set up to coordinate cleanup of radioactive contamination in communities throughout Canada. Major remedial work was started in the Ontario municipalities of Port Hope, Elliot Lake and Bancroft, as well as Uranium City, Saskatchewan.



Photo: Town of Port Hope, Ontario.

### AECB INCREASES COMMUNICATION WITH CANADIANS

The AECB expanded its commitment to greater transparency of its role as Canada's regulator for the nuclear industry, increasing its interactions with Canadians. A public access policy was put in place, allowing the public to read information about licensing applications. Under the new policy, the AECB also committed to work with media when it ordered corrective measures for nuclear facilities, or when significant public or environmental hazards existed. Building further on its commitment toward greater transparency, the AECB launched a public consultation program. All proposals for new or revised regulations, safety criteria, and regulatory policies and guides by the CNSC are now published for comment.



1986: Explosions at the Chernobyl Nuclear Power Plant in the Ukraine are considered the worst nuclear power plant accident in history.

1994: Canadian nuclear physicist Bertram N. Brockhouse shares the Nobel Prize in Physics for the development of neutron spectroscopy.



# INTERNATIONAL NUCLEAR AND RADIOLOGICAL EVENT SCALE IS DEVELOPED

In 1990, further to the Chernobyl nuclear accident, the IAEA and the Nuclear Energy Agency (of the Organization for Economic Co-operation and Development) led the development of the International Nuclear and Radiological Event Scale (INES). The INES was designed as a communications tool used to inform a broad public audience of the relative severity of nuclear and radiological events and their safety significance.

Photo: Dr. Agnes Bishop



## CANADA SIGNS THE CONVENTION ON NUCLEAR SAFETY

In 1994, Dr. Agnes Bishop, President of the AECS, signed the *Convention on Nuclear Safety (CNS)* on behalf of the Government of Canada. The Convention commits signatory countries to maintaining a high level of safety at nuclear power plants. Canada was the first country to sign the Convention and has long been one of the staunchest promoters and supporters of the Convention's objectives.



1996: The *Nuclear Safety and Control Act* is introduced in Parliament, eventually replacing the *Atomic Energy Control Act*.

2000: The Atomic Energy Control Board, Canada's nuclear regulator for more than 50 years, is replaced by the Canadian Nuclear Safety Commission.



2002: The Nuclear Waste Management Organization is established to investigate approaches for long-term management of Canada's used nuclear fuel.

## THE CANADIAN NUCLEAR SAFETY COMMISSION IS CREATED

With 50 years since the establishment of the Atomic Energy Control Board, the face of the nuclear industry had changed significantly and Canada's nuclear regulator had to evolve with it to remain effective and relevant. Originally created to focus on matters of national security in atomic substances and technology, the AECB eventually saw its role develop to deal with concerns related to health and safety and the need for a more transparent regulatory regime. The *Nuclear Safety and Control Act* also granted the Canadian Nuclear Safety Commission enhanced regulatory power to protect the environment.

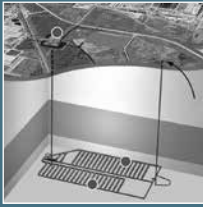
Photo: CNSC Headquarters in Ottawa, Ontario.



### NUCLEAR REACTOR FACILITIES ENHANCE SECURITY IN THE WAKE OF 9 11

In 2001, the Canadian Nuclear Safety Commission issued an emergency order to all Canadian nuclear reactor facilities to increase their security. The CNSC also immediately instructed major nuclear facilities to initiate enhanced security measures at their sites, which includes perimeter security and armed guards. The *Nuclear Security Regulations* were subsequently enacted in 2003.

2008: Ontario Power Generation proposes a long-term nuclear waste facility for low- and intermediate-level waste that would be located at the Bruce nuclear site.



2010: AECL's ZED-2 research reactor is named a historical landmark by the American Nuclear Society.



2011: A massive earthquake and tsunami off the coast of Japan lead to severe damage of the reactors at the Fukushima Daiichi nuclear power plant.

## THE CNSC RESPONDS TO NUCLEAR EVENTS IN JAPAN

On March 11, 2011, a magnitude 9.0 earthquake and subsequent tsunami struck Japan and led to an accident at the Fukushima Daiichi nuclear power plant. The CNSC drew on its staff's scientific, technical and communications expertise to report daily to Canadians on the situation, as well as on different aspects of radiation and the safety of Canada's nuclear power plants (NPPs). Shortly after the accident, the CNSC launched a review of all major nuclear facilities in Canada. Operators were asked to focus on external hazards (such as earthquakes, floods, fires and extreme weather events), measures to prevent and mitigate severe accidents, and emergency preparedness. The review, led by a CNSC task force, confirmed that nuclear facilities in Canada are able to withstand and respond to credible external events.



Photo: CNSC Commission holds public hearings on major licensing decisions.

### CANADA'S NUCLEAR REGULATOR PREPARES FOR TOMORROW'S CHALLENGES

The last decade of the CNSC/AECB's 70-year history has been one of responding to new and emerging challenges. These have included protection against acts of terrorism involving nuclear materials; the diversion, by some countries, of nuclear materials from their intended non-proliferation use; and the need to address the safe handling and long-term storage of nuclear waste; the implementation of the National Sealed Source Registry and online Sealed Source Tracking System; the implementation of an enhanced import and export control program for high-risk radioactive sealed sources, and; two long-term radioactive waste management initiatives: Ontario Power Generation's DGR to house low- and intermediate-level radioactive waste and the Nuclear Waste Management Organization's Adaptive Phased Management project for a deep geological repository to store Canada's used nuclear fuel.



# YEAR IN REVIEW

## SAFE URANIUM MINES AND MILLS

### A NATURAL RESOURCE

The Canadian Nuclear Safety Commission (CNSC) ensures that the health of workers, local residents and the surrounding environment at uranium mine and mill sites are protected.

### SAFETY SUMMED UP

- Personal dose records for operating mines and mills from 2010 to 2015 show that radiation doses to workers were at safe levels and well below regulatory limits.
- In 2015–16, effluent discharges to the environment from uranium mining were all below regulatory limits.
- The public, as well as the locally produced food supply in the Athabasca basin in Saskatchewan, continue to be protected.

Canada is the world's second-largest uranium producer and exports 85 percent of its uranium. Uranium mining creates about 5,000 direct jobs in Canada. Raw ore from uranium mines is processed at milling facilities to extract uranium, and the uranium concentrate is further processed to create fuel for nuclear reactors.

The CNSC conducts several inspections every year at Canada's uranium mines and mills. These inspections confirm that radiation levels are kept well below regulatory limits by the licensee, that workers and the public are protected from other potential hazards, and that all activities are environmentally safe. The CNSC also regulates the handling and transport of uranium in Canada.

CNSC inspectors work closely with provincial inspectors from the Saskatchewan Ministry of Labour Relations and Workplace Safety, and the Saskatchewan Ministry of Environment to monitor licensees' occupational health and safety programs, including those for radiation protection. Licensees are required to

notify the CNSC of events or situations outside normal operations, and the CNSC follows up to ensure the licensee has a plan in place to prevent such events from recurring.

### NEW URANIUM MINE PROJECTS

The CNSC participated as a technical expert in the environmental review process led by the Nunavut Impact Review Board (NIRB) for AREVA Resources Canada's proposed Kiggavik project. In 2014–15, the CNSC completed technical reviews of AREVA's environmental review report and supporting documents and gave a final written submission to the NIRB. In addition, the CNSC participated in the NIRB public hearings in March 2015. In May 2015, the NIRB provided its recommendation to the responsible federal ministers that the project should not proceed at this time. The decision on the project's future now rests with the Government of Canada.

# SAFE NUCLEAR PROCESSING AND RESEARCH

## AN IMPORTANT PART OF CANADA'S NUCLEAR SECTOR

Uranium processing plants and research facilities that use nuclear energy are carefully regulated and licensed by the Canadian Nuclear Safety Commission (CNSC) to protect Canadians and the environment.

## SAFETY SUMMED UP

- In 2015–16, there were no events with consequences to public health or the environment.
- Radiation doses to the public and to workers continued to be well below regulatory limits.

**Table 1: Radiation doses to members of the public, from Canadian nuclear processing and research facilities. All facilities reported doses that were below 10 percent of the regulated annual dose limit of 1 millisievert (mSv).**

Facility	Percentage of annual dose limit (%)				
	2011	2012	2013	2014	2015
Chalk River Laboratories (AECL)	7.4	6.3	6.4	8.1	8.1
Cameco Port Hope Conversion Facility	1.9	2.9	2.1	1.2	0.6
Cameco Blind River Refinery	0.6	1.2	1.2	0.5	0.5
Cameco Fuel Manufacturing Inc.	4.2	3.1	1.3	1.8	2.5
GEH-C Toronto	0.062*	0.08	0.03	0.52**	0.98**
GEH-C Peterborough	<0.001*	<0.1	<0.1	<0.1	<0.1

\* Before 2012, GEH-C did not report public dose results. The values reported here are based on CNSC staff calculations of GEH-C emissions with respect to the derived release limits.

\*\*Beginning in 2014, GEH-C Toronto implemented environmental gamma exposure monitoring using licensed dosimeters and began to include this result in the estimated annual public dose.

## THE GOVERNMENT OF CANADA'S PORT HOPE AREA INITIATIVE TO CLEAN UP HISTORIC LOW-LEVEL WASTE

Under the Port Hope Area Initiative, two new long-term waste management facilities – one in Port Hope (Port Hope Project) and one in Clarington (Port Granby Project) – are being constructed. State-of-the-art water treatment facilities to treat surface and ground water and release clean effluent to Lake Ontario were constructed in 2015. The commissioning of the plants is ongoing. Both facilities are licensed by the CNSC.

## THE TRANSFORMATION OF ATOMIC ENERGY OF CANADA LIMITED

In February 2013, the Government of Canada announced its decision to procure a private-sector contractor for the management and operation of AECL's nuclear laboratories, through a government-owned, contractor-operated business model.

In preparation for the transfer of operations to the private sector, AECL created Canadian Nuclear Laboratories Ltd. (CNL) as its wholly owned subsidiary. On November 4, 2014, AECL transferred to CNL virtually all of its employees as well as the necessary contracts, permits and licences with the approval of licensing and regulatory organizations for CNL to be fully operational.

In September 2015, the Government of Canada transferred ownership of CNL to the Canadian National Energy Alliance. CNL manages the following licensed sites: Chalk River Laboratories, Whiteshell Laboratories, the Nuclear Power Demonstration (NPD) Reactor, Douglas Point, Gentilly-1, and sites included in the Port Hope Area Initiative.

To date, CNL has submitted two regulatory applications for a Near Surface Disposal Facility on the Chalk River Laboratories site and the NPD closure project. The application for the Whiteshell Laboratories closure project is targeted for submission in May 2016.

Each project will be presented to the Commission for decision.

# SAFE NUCLEAR POWER GENERATION

The Canadian Nuclear Safety Commission (CNSC) regulates the nuclear sector in Canada, including nuclear power plants (NPPs), through licensing, reporting, verification and enforcement. For each NPP, CNSC staff conduct inspections, assessments, reviews and evaluations of licensee programs, processes and safety performance that provide assurance to the public that facilities operate safely.

## SAFETY SUMMED UP

For 2015, all Canadian NPPs obtained either “satisfactory” or “fully satisfactory” ratings in the CNSC’s 14 safety and control areas.

## SAFETY PERFORMANCE ASSESSMENT

The CNSC produces an annual report on the safety performance of Canada’s nuclear power plants. CNSC staff use 14 safety and control areas (SCAs) to evaluate each licensee’s safety performance. Table 2 summarizes the 2015 ratings for Canada’s NPPs.

**Table 2: Canadian nuclear power plant safety performance ratings for 2015**

Safety and control area	Bruce		Darlington	Pickering	Gentilly-2	Point Lepreau	Industry average
	A	B					
Management system	SA	SA	SA	SA	SA	SA	SA
Human performance management	SA	SA	SA	SA	SA	SA	SA
Operating performance	FS	FS	FS	FS	SA	SA	FS
Safety analysis	SA	SA	FS	FS	SA	SA	SA
Physical design	SA	SA	SA	SA	SA	SA	SA
Fitness for service	SA	SA	SA	SA	SA	SA	SA
Radiation protection	SA	SA	FS	FS	SA	SA	SA
Conventional health and safety	FS	FS	FS	FS	SA	FS	FS
Environmental protection	SA	SA	SA	SA	SA	SA	SA
Emergency management and fire protection	SA	SA	SA	SA	SA	SA	SA
Waste management	FS	FS	FS	FS	SA	SA	FS
Security	FS	FS	SA	SA	SA	SA	SA
Safeguards and non-proliferation	SA	SA	SA	SA	SA	SA	SA
Packaging and transport	SA	SA	SA	SA	SA	SA	SA
Integrated plant rating	FS	FS	FS	FS	SA	SA	SA

FS – fully satisfactory    SA – satisfactory    BE – below expectations



## RENEWAL OF BRUCE POWER'S OPERATING LICENCE

A two-part public hearing for the Bruce A and B licence renewal was held in February and April 2015. During the public hearing, the Commission received and considered submissions from Bruce Power and 144 intervenors. CNSC staff reviewed all submissions and presented recommendations to the Commission. In May 2015, the Commission renewed the operating licences issued to Bruce Power as a single licence for both Bruce A and B, valid from June 1, 2015 until May 31, 2020.

## RENEWAL OF THE DARLINGTON NUCLEAR POWER REACTOR OPERATING LICENCE

A two-part public hearing for the Darlington licence renewal was held in August and November 2015. The Commission received and considered submissions from 286 intervenors for this hearing. In December 2015, the Commission renewed the operating licence issued to Ontario Power Generation (OPG). With this licence renewal, the Commission authorized OPG to operate the Darlington Nuclear Generating Station from January 1, 2016 until November 30, 2025, and to undertake the refurbishment and life extension of Darlington's four reactor units.

OPG completed an integrated safety review (ISR) and integrated implementation plan (IIP) for refurbishment and life extension as part of this licence application. The IIP presents the proposed safety improvements resulting from the environmental assessment and the ISR and includes the timeframes for implementation. The Commission included the completion of the IIP actions as a licence condition in the approved power reactor operating licence.

The Darlington Nuclear Generating Station's performance and the status of the refurbishment project and emergency planning will be reported annually in the CNSC's regulatory oversight reports for Canadian nuclear power plants. During the licence term, the public will have several opportunities to participate in Commission proceedings for the Darlington facility.

## CONTINUED OPERATION OF PICKERING NUCLEAR GENERATING STATION

The Power Reactor Operation Licence for the Pickering NGS will expire in August 2018. OPG has notified the CNSC of its intent to apply to renew the operating licence and is conducting a periodic safety review (PSR) in accordance with CNSC REGDOC-2.3.3, *Periodic Safety Reviews*, to support its licence renewal application. A PSR is a systematic and comprehensive evaluation of the design, condition and operational elements of the plant that are considered important to nuclear safety. The objective is to identify practical nuclear safety enhancements of the facility to a level approaching that of modern requirements and practices. The Commission will consider the results of the PSR during the licence renewal hearings to take place in 2018.

## POINT LEPREAU EMERGENCY EXERCISE INTREPID

In November 2015, NB Power held a large-scale nuclear exercise called Exercise Intrepid. The purpose of this two-day exercise was to validate the preparedness of Point Lepreau, NB Power, various levels of governments, and non-government organizations and agencies to respond to a large-scale nuclear event. The exercise gave all players opportunities to test emergency response plans and measures, and to identify areas for improvement.

CNSC staff evaluated this exercise and concluded that there were no significant issues that would have impacted the operating unit or the completion of offsite actions. The validation of emergency plans and lessons learned provided valuable information and experience for the participating organizations. CNSC staff concluded that NB Power and other agencies continue to successfully demonstrate readiness to respond to a nuclear emergency.

## REVISED GENTILLY-2 DECOMMISSIONING PLAN

In March 2015, Hydro-Québec submitted a revised decommissioning plan and decommissioning cost study to reflect the decision to permanently shut down the Gentilly-2 reactor instead of refurbishing it. CNSC staff expect to complete their review and assessment of the revised decommissioning plan and financial guarantee in 2016. The revised decommissioning plan will then be presented to the Commission at a public hearing.

## COMPLETION OF FUKUSHIMA ACTION ITEMS

In August 2015, the Director General of the International Atomic Energy Agency (IAEA) published the [Report on the Fukushima Daiichi Accident](#), along with five technical volumes prepared by international experts. This material assessed the cause and consequences of the March 2011 accident at TEPCO's Fukushima Daiichi nuclear power plant in Japan. CNSC staff played key leadership roles preparing this publication, which brought together lessons learned and provided a valuable resource to all countries using or planning to use nuclear power. The report considered the accident itself, emergency preparedness and response, radiological consequences, post-accident recovery, and the IAEA's activities since the accident. The CNSC assessed the IAEA Director General's report, and used its review to benchmark

action items and ensure that all elements being considered by international peers were reflected in the Canadian review scope. The review demonstrated that the Canadian nuclear industry and the CNSC, as the nuclear regulator, have made significant progress in augmenting nuclear safety through continuous improvement.

During 2015, CNSC staff continued to verify that licensees are on track to implement safety enhancements in response to the Fukushima events. The Fukushima action items, as specified in the [CNSC Integrated Action Plan On the Lessons Learned From the Fukushima Daiichi Nuclear Accident](#), address safety improvements aimed at strengthening defence in depth and enhancing onsite emergency response. All Fukushima action items were closed for all Canadian NPP licensees, as per established closure criteria. CNSC staff will continue to monitor Fukushima action items at Canadian NPPs through related station-specific action items, as part of the CNSC's established program for verifying licensee compliance.

## PUBLICATION OF REGDOC-2.3.3, PERIODIC SAFETY REVIEWS

Following a public consultation period from August 6, 2014 to October 6, 2014, the CNSC published regulatory document REGDOC-2.3.3, *Periodic Safety Reviews*, in 2015.

REGDOC-2.3.3 sets out the CNSC's requirements and guidance for the conduct of a periodic safety review (PSR). A PSR is a comprehensive evaluation of an NPP's design, condition and operation, and is an effective way to obtain an overall view of plant safety and the quality of the safety documentation. It can also be used to determine reasonable and practical improvements to ensure continued safe operation until the next PSR or, where appropriate, until the end of commercial operation.

## PRE-LICENSING DESIGN REVIEWS OF SMALL MODULAR REACTORS

A number of small modular reactor (SMR) vendor companies have expressed interest in the CNSC's feedback on how their designs address Canadian regulatory requirements. The CNSC offers optional pre-licensing vendor design reviews, which give vendors high-level feedback on the acceptability of an NPP design with respect to Canadian requirements, codes and standards. Pre-licensing vendor design reviews can also identify fundamental barriers to licensing – or any issues for discussion with future licensees – before a licence application is actually submitted. This type of review does not result in the granting of a licence under the *Nuclear Safety and Control Act*, but future licence applicants can use the information to help develop their licence applications. In early 2016, the CNSC received requests from two vendors for Phase 1 vendor design reviews:

- Terrestrial Energy Inc. (Canada) – a molten salt reactor concept, with 400 megawatts thermal per unit (equivalent to about 190 megawatts electric [MWe] per unit. The review process is expected to begin in April 2016 and should take approximately 18 months, according to Terrestrial Energy's proposed submission schedule.
- UltraSafe Nuclear Corporation (USA) – a high-temperature, gas-cooled reactor with 5 MWe per unit. The review process is expected to begin in summer 2016 and should take a little over a year to complete, according to UltraSafe Nuclear Corporation's proposed submission schedule.

Both of these vendor companies will be addressing requirements contained in the CNSC's existing regulatory framework for design and safety analysis. The CNSC's regulatory framework is technology-neutral and allows the use of alternative approaches to meet technical requirements. The CNSC will consider alternative approaches to these requirements, where:

- the alternative approach would result in an equivalent or superior level of safety
- the application of the requirements conflicts with other rules or requirements
- the application of the requirements would not serve the underlying purpose, or is not necessary to achieve the underlying purpose

An applicant proposing an alternative approach must demonstrate equivalence to the outcomes associated with the requirements set out in the regulatory framework.

# SAFE NUCLEAR MEDICINE

## DIAGNOSIS AND TREATMENT OF DISEASES THROUGH NUCLEAR MEDICINE

The Canadian Nuclear Safety Commission (CNSC) regulates the medical sector's use of nuclear substances and operation of accelerators and other equipment for diagnostic and therapeutic purposes in hospitals and medical clinics. Medical applications that use radiopharmaceuticals are designed to target specific tissues and organs, allowing nuclear substances to be delivered to specific areas of the body for diagnostic testing or treatment.

## SAFETY SUMMED UP

- The CNSC performed 221 inspections in the medical sector during 2015–16.
- In 2015–16, all medical-sector nuclear energy workers (NEWs) received radiation doses below the limit of 50 millisieverts (mSv)/year that applies to NEWs. Of these NEWs, 79.4 percent received less than the dose limit for members of the public of 1 mSv/year.
- All workers not designated as NEWs received less than the public dose limit of 1 mSv/yr.
- The CNSC did not issue any administrative monetary penalties to medical-sector licensees in 2015–16.

Nuclear medicine studies, based on the physiological functions of organs, tissues or bones, help diagnose medical conditions. Radiopharmaceuticals containing nuclear substances such as technetium-99m, gallium-67 and fluorine-18 are administered to patients for imaging purposes. Examples of common nuclear medicine diagnostic procedures include myocardial perfusion scans (to visualize heart function and blood flow), bone scans (to evaluate bone metabolism, infection or tumours) and renal scans (to evaluate kidney function).

Radioisotopes are also used in many therapeutic procedures. For example, iodine-131 is used to treat thyroid diseases, while other isotopes like yttrium-90 may be used in conjunction with antibodies for site-specific treatment of certain cancers.

Medical linear accelerators, teletherapy and brachytherapy equipment are also used for therapeutic procedures. These devices are used to treat cancer by delivering carefully controlled doses of radiation to cancerous tissue.

Veterinary nuclear medicine uses techniques similar to those employed in human nuclear medicine. Veterinary clinics across the country offer a wide range of

diagnostic and therapeutic nuclear medicine procedures and, in some cases, radiation therapy treatment using medical accelerators or teletherapy.

Historically, the Canadian medical sector represents around 20 percent of all CNSC licences.

## DEVELOPMENT OF GUIDANCE ON HANDLING THE REMAINS OF DECEASED PERSONS IMPLANTED WITH NUCLEAR SUBSTANCES

The CNSC is developing guidance for death care workers and licensees for handling the remains of deceased persons who had undergone radiation therapy with nuclear substances before their death. This guidance will address both therapeutic nuclear medicine and permanent implant brachytherapy for services including autopsy, embalmment, cremation and burial. This document is expected to be published for consultation in the fall of 2016. The guidance will inform readers of risks involved (minimal in all cases) and recommend best practices to minimize doses to workers, families and the public.



# SAFE NUCLEAR SUBSTANCES AND TRANSPORTATION

## EFFECTIVE OVERSIGHT OF NUCLEAR TECHNOLOGY

From licensing the possession of nuclear substances to overseeing the safe transport of nuclear material, the Canadian Nuclear Safety Commission (CNSC) ensures effective regulatory oversight of all uses of nuclear-related substances in industry, medical, academia and commercial sectors.

## SAFETY SUMMED UP

- In 2015–16, the CNSC performed 997 inspections in the academic, commercial and industrial sectors.
- In general, licensees across all sectors continued to show satisfactory compliance ratings for operating performance and radiation protection. Average compliance levels continued to trend towards higher satisfactory ratings.
- The CNSC issued 17 orders to licensees across the industrial and academic sectors during the reporting period. Four administrative monetary penalties were issued to the industrial and academic sectors in 2015–16.

## UPDATING THE PACKAGING AND TRANSPORT OF NUCLEAR SUBSTANCES REGULATIONS

The CNSC and Transport Canada jointly regulate the packaging and transport of nuclear substances. Packages used to transport nuclear substances must comply with the CNSC's [Packaging and Transport of Nuclear Substances Regulations, 2015](#) (PTNSR 2015) as well as Transport Canada's [Transportation of Dangerous Goods Regulations](#) and the [Regulations for the Safe Transport of Radioactive Material 2012 Edition](#) established by the International Atomic Energy Agency (IAEA Regulations).

In June 2015, the Government of Canada published the PTNSR 2015 in the *Canada Gazette, Part II*, as a revision to the previous PTNSR. The revised PTNSR align with the IAEA Regulations and include an ambulatory reference to them, to ensure continued alignment if the IAEA Regulations undergo future changes.

The PTNSR 2015 clarify radiation protection program requirements, reporting requirements, the transport of large objects, and the discovery of material containing unidentified nuclear substances. For example, the PTNSR 2015 include new provisions for the transport of material with unidentified nuclear substances discovered while in transit. Examples of these types of shipments include:

- shipments that contain naturally occurring nuclear substances in fertilizer
- shipments that contain scrap metal coming from oil-drilling operations
- domestic waste with medical isotopes from patients who have undergone medical procedures
- shipments of goods with contaminated material, such as metal shelving and kitchenware

## IMPLEMENTING A PORTABLE GAUGE STRATEGY

Since 2010, the CNSC has noted that licensee compliance in the portable gauge industry has been declining, and has issued most of its enforcement actions to licensees in this sector. To respond to this concern, the CNSC developed a strategy to promote compliance and safety culture by improving communication between CNSC staff and licensees of portable gauges.

In June 2014, the CNSC held a pilot workshop consisting of presentations delivered by CNSC staff, followed by a question-and-answer session and general discussion. In light of positive feedback on this session, a similar workshop was held in Calgary in February 2015. Based on the success of these pilot workshops,

CNSC staff offered 14 workshops across Canada in 2015. Positive results have already been observed: there has been marked improvement in licensee compliance, and the CNSC has taken fewer enforcement actions against licensees in the portable gauge sector.

### TRACKING LOST OR STOLEN NUCLEAR SUBSTANCES AND RADIATION DEVICES

The CNSC’s Sealed Source Tracking Program ensures that lost or stolen nuclear substances and radiation devices are tracked and recovered as soon as possible.

In 2015–16, there were 14 reported events involving missing, lost, stolen or found nuclear substances, of which 13 were reports of lost or stolen nuclear substances. The sealed sources or radiation devices were recovered in 3 instances; at year-end, 10 events remained under investigation. The remaining event was related to the discovery of a missing source during an inventory check by the licensee.

Table 3 shows the number of events from the [Reports on Lost or Stolen Sources and Radiation Devices](#) that were reported annually from 2012–13 to 2015–16.

**Table 3: Reported events for lost or stolen sealed sources or radiation devices**

	2012–13	2013–14	2014–15	2015–16
Number of reported events for lost or stolen sealed sources or radiation devices	16	14	14	13
Number of events where lost or stolen sealed sources were recovered	5	7	6	3
Number of events where lost or stolen sealed sources have not yet been recovered	11	7	8	10
Number of events where sealed sources or radiation devices lost or stolen from previous years were found	2	3	3	0

### MEETING SECURITY REQUIREMENTS FOR SEALED SOURCES

Mandatory compliance with [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources](#), came into effect on May 31, 2015 for licensees with Category 1 and 2 sealed sources, and will come into effect on May 31, 2018 for licensees with Category 3, 4 or 5 sealed sources. Although the *Nuclear Safety and Control Act* and the [General Nuclear Safety and Control Regulations](#) had already mandated licensees to ensure that their nuclear substances and prescribed

equipment were secure, REGDOC-2.12.3 provides additional instructions for meeting sealed-source security requirements. CNSC inspectors are also now conducting enhanced security inspections of licensees that possess Category 1 and Category 2 sealed sources.

The CNSC website contains more information about [sealed source tracking](#) and categorization of these sources.

# SAFE WASTE MANAGEMENT

## SECURE STORAGE FOR FUTURE GENERATIONS

The Canadian Nuclear Safety Commission (CNSC) regulates radioactive waste in Canada to ensure it poses no unreasonable risk to people or the environment.

## SAFETY SUMMED UP

- Doses to the public did not exceed the regulatory limit of 1 millisievert (mSv)/year.
- Doses to workers at waste management facilities did not exceed the regulatory limit of 50 mSv/year.
- No regulatory releases from nuclear waste management facilities exceeded regulatory limits.

## TWO GEOLOGICAL REPOSITORY PROJECTS

A geological repository is a nuclear waste repository constructed underground, usually at a depth of several hundred metres or more below the surface, in a stable rock formation. In Canada, two long-term radioactive waste management initiatives, which may result in geological repositories, are underway: the Deep Geologic Repository, proposed by Ontario Power Generation (OPG), to manage low- and intermediate-level radioactive waste; and the Adaptive Phased Management initiative for a deep geological repository for Canada's used nuclear fuel, led by the Nuclear Waste Management Organization (NWMO).

## ONTARIO POWER GENERATION'S PROPOSED DEEP GEOLOGIC REPOSITORY FOR LOW- AND INTERMEDIATE-LEVEL WASTE

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, which is designed to be a long-term management facility for its low- and intermediate-level radioactive waste.

In December 2011, Dr. Stella Swanson, Dr. James F. Archibald, and Dr. Gunter Muecke were appointed as temporary members of the Commission, under the

*Nuclear Safety and Control Act* (NSCA) to form an independent joint review panel (JRP) to examine OPG's environmental impact statement and licence application for the first phase and the environmental assessment (EA) information for all phases of the project.

On May 6, 2015, the panel submitted an EA report to the federal Minister of the Environment for a decision on its recommendations. The panel concluded "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 mitigation measures recommended by the panel". On February 18, 2016, after considering the JRP report, the Minister asked OPG to provide additional information on three aspects of the environmental assessment: alternate locations for the project, cumulative environmental effects of the project, and an updated list of mitigation commitments for each identified adverse effect under the *Canadian Environmental Assessment Act, 2012*. On April 15, 2016, OPG informed the Minister that it will complete further studies on its proposed DGR by December 31, 2016.

If approved by the Minister, the project would proceed to a decision by the JRP members, appointed as temporary members of the Commission, on whether to issue a CNSC licence to prepare a site for and construct the DGR.

## THE NUCLEAR WASTE MANAGEMENT ORGANIZATION'S INITIATIVE FOR A DEEP GEOLOGICAL REPOSITORY

The NWMO was established by the nuclear energy corporations, pursuant to the *Nuclear Fuel Waste Act*, with the mandate to develop and implement Canada's plan for the long-term management of used nuclear fuel.

Since 2010, the NWMO has been leading a site-selection process to identify an informed and willing community to host a deep geological repository for used nuclear fuel produced in Canada. The repository would be located in a suitable rock formation to contain and isolate the radioactive waste for an indeterminate period. As of May 1, 2016, nine communities were continuing to participate in the NWMO's "learn more" process. At this early stage of implementation, the CNSC has been meeting with the interested communities to help them better understand the safety and regulatory matters that would be examined for this repository, including information on the transport of used nuclear fuel as part of the overall project.

In 2015–16, at the request of community representatives, the CNSC met with the community of White River, Ontario, the Spanish Neighbouring Liaison Committee in Ontario, and the Métis Nation of Ontario. The CNSC also held three open houses in the Ontario communities of Blind River, Elliot Lake and White River.

## NUCLEAR LEGACY SITES

Legacy sites consist of outdated, unused research facilities and buildings, a wide variety of buried and stored radioactive waste, and affected lands. These sites have resulted from more than 60 years of nuclear research and development activities by the Canadian uranium industry, the National Research Council of Canada and Atomic Energy of Canada Limited.

The CNSC performs periodic inspections to evaluate if these sites and their safety documentation comply with regulatory and environmental requirements, as well as with the latest criteria for quality assurance, security, emergency preparedness and other protective measures.

## SASKATCHEWAN RESEARCH COUNCIL – REQUEST FOR APPROVAL TO PROCEED WITH REMEDIATION ACTIVITIES

The Gunnar legacy mine site, located in northern Saskatchewan, is managed by the Saskatchewan Research Council (SRC) – an agent of the Government of Saskatchewan. SRC's licence, valid from January 14, 2015 to November 30, 2024, allows it to continue activities for the Gunnar Remediation Project, under the CNSC's regulatory oversight. At the time the licence was issued, the Commission decided it would conduct proceedings to consider the release of hold points that had been placed on the project. Release of the hold points would allow SRC to proceed to Phases 2 and 3 of the remediation project.

The Commission held a public hearing in September 2015 to consider SRC's request for approval to proceed with remediation of the tailings area at the Gunnar legacy mine site. In its decision issued November 27, 2015, the Commission removed the Gunnar Remediation Project Phase 2 hold point for remediation of the tailings deposits.

SRC will remediate various site components of the 70-hectare former uranium mine and mill. Remediation efforts will include covering of tailings areas; waste rock management; and management of demolition debris.

Further Commission hearings are scheduled for September 2016 to address SRC's request for approval to proceed with remaining remediation activities.

# SAFE ENVIRONMENT

## PROTECTING THE ENVIRONMENT TODAY AND FOR FUTURE GENERATIONS

The Canadian Nuclear Safety Commission (CNSC) works hard to make sure that nuclear activities in Canada will not harm people or the environment.

## SAFETY SUMMED UP

The CNSC has a robust regulatory framework and mandate for the protection of the environment and people's health and safety.

## CONTINUING TO VERIFY PUBLIC SAFETY THROUGH THE INDEPENDENT ENVIRONMENTAL MONITORING PROGRAM

In 2014–15, the CNSC implemented its Independent Environmental Monitoring Program (IEMP) to verify that the public and the environment around licensed nuclear facilities are safe. The program complements existing and ongoing compliance activities.

In 2015, samples were collected in the public areas surrounding 10 licensed facilities in all segments of the nuclear fuel cycle. The samples were analyzed at the CNSC's state-of-the-art laboratory. Results can be viewed on the CNSC's [Independent Environmental Monitoring Program](#) Web page, via a user-friendly map as well as in tables. The IEMP results indicated that the public and the environment in the vicinity of the facilities were safe and that there were no health impacts. These results were consistent with the results submitted by the licensees, demonstrating that the licensees' environmental protection programs protect the health and safety of people and the environment.

The CNSC has been actively promoting the IEMP through outreach and presentations. CNSC staff spoke about the IEMP with councillors and community members from Bowmanville, Saugeen Shores and Arran-Elderslie, as well as representatives from Aboriginal groups including the Waban-Aki, the Métis Nation of Ontario Georgian Bay Traditional Territory Community Council, the Mississauga First Nation, the Hiawatha First Nation, the Historic Saugeen Métis, and the Saugeen Ojibway Nation.

The IEMP has also been promoted with other regulators and industry associations through presentations at workshops and meetings, where overall reception has been very positive. The success of this outreach work is reflected in Web traffic: there were 4,266 IEMP page views in the 2015–16 fiscal year.

## CONDUCTING JOINT STUDIES ON THE EFFECT OF CONTAMINANTS AND RADIONUCLIDES ON THE ENVIRONMENT

CNSC scientists continued to contribute to the scientific research community in 2015–16 by publishing scientific papers in refereed journals. One of the studies focused on determination of hydrazine from routine releases at Ontario nuclear power plant discharge points. The CNSC laboratory now has the capability to analyze water samples for hydrazine, to verify compliance with proposed federal water quality guidelines. Hydrazine concentrations in samples



collected at discharge points near the Bruce nuclear power plant and Lake Ontario were found to be comparable to background concentrations, and are not expected to pose a risk to the environment.

The CNSC carried out another study in collaboration with Health Canada scientists on radioactivity levels in fish samples from the experimental lakes area in Ontario. A total of 125 fish samples from three lakes were analyzed for both naturally occurring radionuclides (radium-226, lead-210 and polonium-210), and anthropogenic radionuclides (those resulting from human activities) – cesium-134 and cesium-137. The resulting radiation dose to people from fish consumption was found to be a very small fraction of the annual dose from exposure to natural background radiation in Canada. Results indicate that fish from inland lakes do not pose a radiological health concern to the population.

The CNSC carried out a third study through international collaboration with scientists from France's Institute for Radiological Protection and Nuclear Safety. The study aimed to measure and monitor tritium's behaviour in the terrestrial environments of two different experimental sites – one in Pembroke, Ontario and the other in northern France. Tritium was measured in air, soil and vegetation samples.

Data collected from these samples were used to better understand how tritium acts in these environments, with respect to the water cycle. In monitoring this behaviour, three different methods of calculating the rate of tritium evaporation and transpiration from grassland terrestrial environments were used. The study showed that each of these three methods produced similar results, which can be used to improve the entry parameters of tritium transfer models in the environment. This information will increase the international research community's understanding of how tritium gas released to the air moves through the environment.

# NATIONAL SECURITY AND INTERNATIONAL COMMITMENTS

## LEADING INTERNATIONALLY

Canada is a world leader in promoting the peaceful use of nuclear energy. To fulfill Canada's international obligations, the Canadian Nuclear Safety Commission (CNSC) supports and implements the country's international agreements on nuclear safety, non-proliferation and security.

## 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 2015–16, the CNSC conducted technical licensing assessments and made licensing decisions on applications for the export and import 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 805 export licences and 162 import licences were issued.

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 2015–16, the CNSC signed an amended administrative arrangement with the Republic of Korea's Nuclear Safety and Security Commission.

The CNSC also establishes and maintains regulatory cooperation arrangements with its international counterparts to share information and best practices, with a view of further enhancing nuclear safety and security in Canada and abroad. In 2015, the CNSC signed new international arrangements to cooperate and exchange nuclear regulatory information with India's Atomic Energy Regulatory Board, Japan's Nuclear Regulation Authority and the Swiss Federal Nuclear Safety Inspectorate. The arrangements

were signed during the 59th regular session of the International Atomic Energy Agency (IAEA) General Conference, held from September 14 to 18, 2015.

In addition, the CNSC also renewed bilateral memoranda of understanding for cooperation and exchange of information on nuclear regulatory matters with France's Institute for Radiological Protection and Nuclear Safety and the United Kingdom's Office for Nuclear Regulation, for another five years, respectively.

## SAFEGUARDS

The CNSC is Canada's designated safeguards authority, responsible for implementing Canada's international commitments on the peaceful uses of nuclear material. As Canada's safeguards authority, the CNSC also actively supports the IAEA in its ongoing efforts to enhance the effectiveness and efficiency of the safeguards system used both within Canada and abroad.

## ADVANCING SAFEGUARDS THROUGH THE CANADIAN SAFEGUARDS SUPPORT PROGRAM

The Canadian Safeguards Support Program (CSSP) continued to advance and improve the application of safeguards in Canada and abroad. Projects under the CSSP in 2015–16 contributed to these objectives through the development of new safeguards equipment, the promotion of safeguards compliance, safeguards capacity building and training, and the evaluation and maintenance of safeguards equipment in Canada. The CSSP continued its support of the development of laser-induced breakdown spectroscopy (LIBS) by the National Research Council of Canada as well as of the Next Generation Autonomous Data Acquisition Module

for safeguards applications. It also provided cost-free experts to the IAEA to support the use of satellite imagery and information management in safeguards, and funded the evaluation of 3D laser scanners to provide improved safeguards on bulk materials.

### PROMOTING NON-PROLIFERATION THROUGH REPATRIATION OF HIGHLY ENRICHED URANIUM

At the Nuclear Security Summit in April 2010, the Prime Minister of Canada and the President of the United States committed to repatriate highly enriched uranium (HEU) from Chalk River Laboratories to the United States, as part of a broad international effort to consolidate HEU inventories in fewer locations around the world. The commitment promotes non-proliferation by removing existing weapons-grade material from Canada. It also eliminates a nuclear liability for future generations of Canadians.

This project is a high priority for Canada and the IAEA, given the material involved, and effective safeguards are integral to assuring both the Canadian public and global community that HEU remains in peaceful uses. Efforts have included the CNSC’s work with the IAEA and Chalk River Laboratories in 2015–16 to develop and implement safeguards approaches for HEU shipments – resulting in an increase in safeguards activities for the year (see table 4).

### SUPPORTING NUCLEAR NON-PROLIFERATION INITIATIVES

The CNSC is committed to supporting the Government of Canada on safeguards issues in multilateral fora for nuclear non-proliferation. In 2015–16, the CNSC contributed its expertise on safeguards and verification to several meetings and international bodies including: the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons; the IAEA Board of Governors and General Conference; and working groups of the Preparatory Commission

for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO Preparatory Commission); and the International Partnership for Nuclear Disarmament Verification.

### INCREASED EFFICIENCY THROUGH ELECTRONIC SUBMISSION OF NUCLEAR MATERIAL REPORTS

As the responsible body for nuclear material accountancy in Canada, the CNSC tracks nuclear material inventories and transfers, and reports them to the IAEA. The CNSC collects this information from licensees, whose reporting requirements are articulated in [GD-336, Guidance for Accounting and Reporting of Nuclear Material](#). In 2013, the CNSC introduced the Nuclear Materials Accountancy Reporting online e-business system, which enables licensees to submit their nuclear material accountancy reports to the CNSC electronically in a secure, fast and convenient manner. At the end of 2015–16, licensees with nuclear materials in 32 out of 51 material balance areas (MBAs) within Canada were using the electronic system. (An MBA is a defined space in or outside of a facility where quantities of nuclear material being transferred can be determined, using specified procedures, so that material balances can be established.)

Tables 4 and 5 present data on safeguards activities and material accounting in Canada for the 2014–15 and 2015–16 periods.

**Table 4: Onsite safeguards activities in Canada for the 2014–15 and 2015–16 periods**

Activity type	Number of inspections	
	2015–16	2014–15
CNSC inspections	17	12
IAEA inspections	57	55
IAEA design information verifications	24	30
IAEA equipment installation and maintenance	69	52
Other	33	9

**Table 5: State accounting reports submitted by the CNSC to the IAEA for the 2014–15 and 2015–16 periods**

Type of report	Number of reports submitted	
	2015–16	2014–15
Inventory change report	369	350
Physical inventory listing	50	49
Material balance report	49	50

**Notes:**

- **Inventory change reports** are submitted monthly and cover all inventory changes over a one-month period for a material balance area (MBA).
- **Physical inventory listings** are submitted annually and summarize the inventory at a given MBA, as of the date of the inventory taking.
- **Material balance reports** are submitted monthly and show the beginning inventory, all increases, all decreases, and the ending inventory for the period between two inventory takings at an MBA.

### WELCOMING POSITIVE RESULTS FROM THE INTERNATIONAL PHYSICAL PROTECTION ADVISORY SERVICE MISSION

A team of IAEA experts conducted a two-week International Physical Protection Advisory Service (IPPAS) mission in Canada from October 19 to 30, 2015. This was further to both Canada’s commitment at the 2014 Nuclear Security Summit in The Hague, Netherlands and the Government of Canada’s request. The IPPAS was created by the IAEA in 1995 to help Member States strengthen their national nuclear security regimes. IPPAS teams provide peer advice on implementing international instruments and IAEA guidance on the protection of nuclear and other radioactive material and associated facilities.

The IPPAS mission team – composed of 10 experts from 9 nations and the IAEA – reviewed national nuclear security practices in Canada. They addressed Canada’s nuclear security legislative and regulatory

regime for nuclear material and facilities, as well as the security arrangements applied to the transport of nuclear material, the security of radioactive material and associated facilities and activities, and the information and computer security systems in place. Team members also visited several sites, where they reviewed physical protections systems, and met with various Canadian officials. The IPPAS team concluded that Canada conducts strong and sustainable nuclear security activities, which had been significantly enhanced in recent years. Moreover, the mission identified many good practices in the national nuclear security regime.

### TAKING A LEADING ROLE AT THE INTERNATIONAL REVIEW MEETING OF THE CONVENTION ON NUCLEAR SAFETY

Adopted in 1994, the *Convention on Nuclear Safety* (CNS) aims to maintain a high level of safety at nuclear power plants worldwide. The CNS sets international benchmarks to which Contracting Parties subscribe, and requires Contracting Parties to submit national reports that outline how they are meeting their obligations. These reports undergo peer review in meetings held every three years.

Ramzi Jammal, the CNSC’s Executive Vice-President and Chief Regulatory Operations Officer, was elected as the President of the Seventh Review Meeting of the Contracting Parties to the *Convention on Nuclear Safety*, which will be held in Vienna in spring 2017. As President, Mr. Jammal will lead discussions among participating countries on how to improve nuclear safety worldwide through a constructive exchange of views.

# STAKEHOLDER RELATIONS

## 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 how the CNSC regulates the nuclear industry. 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.

## SHARING EXPERTISE

The CNSC continued to promote face-to-face interaction with its nuclear safety experts. Interested stakeholders were encouraged to invite one of the many CNSC experts, from across the organization, to speak at their events. In 2015–16, CNSC experts participated in events, including open houses, CNSC 101 information sessions, and community meetings. CNSC specialists were also 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.

## ENGAGING WITH STAKEHOLDERS

The medical community was a key CNSC target audience in 2015–16, and the organization participated in many events aimed at engaging medical experts. Online products and resources were also expanded, to reach out to and educate this community on the safe use of nuclear substances in medicine.

The CNSC also continued outreach with nuclear host communities and had the chance to meet with many local residents. These valued opportunities allow the CNSC to discuss the safety performance of neighbourhood facilities, demystify nuclear science, and answer public questions about nuclear safety.

## KEEPING THE PUBLIC INFORMED

In 2015–16, the CNSC continued to oversee and enforce licensee compliance with RD/GD-99.3, *Public Information and Disclosure*. This document articulates requirements that put the onus on licensees to proactively inform stakeholders and the public on their safety records and nuclear activities. The CNSC is currently overseeing more than 40 licensee public information and disclosure programs for both high- and low-risk facilities. It has also begun conducting Type II inspections to ensure the development and ongoing maintenance of open communication channels between licensees and their stakeholders.

## COMMUNICATING ONLINE

Social media allows vast opportunities to learn, share knowledge, contribute ideas, stimulate debate and interact with the public. The CNSC uses social media to inform the public of activities across the regulatory lifecycle, to highlight its scientific, technical and regulatory expertise, to produce communications products in plain language, and to take advantage of opportunities to share information. In addition, Commission hearings and meetings can be viewed as webcasts on the CNSC website, and transcripts of public hearings and meetings are also available. Webcasts and transcripts are archived on the [CNSC website](#) for at least three months after the session.



The CNSC enhanced its online presence this year by launching a [Twitter](#) account in the spring of 2015. It began tweeting Commission proceedings in real time (“live tweeting”) to further reach out to Canadians.

The CNSC boosted its already established [YouTube](#) and [Facebook](#) presence in 2015–16, sharing video content, educational resources and interesting facts on nuclear safety.

The CNSC encourages its experts to share their knowledge in various ways. Staff prepare technical papers and presentations, as well as articles that are peer-reviewed before they are published in scientific journals. A total of 16 abstracts were published on the CNSC website in 2015–16.

The CNSC also launched its [Independent Environmental Monitoring Program](#) (IEMP) Web page, enabling stakeholders to interactively view environmental monitoring data based on samples from public areas around nuclear facilities. It won the Government of Canada’s Digital Communication Contest for the innovative use of digital media for the IEMP, which includes an interactive map, an overview video, and an active social media campaign.

## ANSWERING QUESTIONS

In its ongoing commitment to transparency and openness, CNSC staff are ready to respond to questions from the public on nuclear safety. In 2015–16, the CNSC received 1,500 email and telephone inquiries. The public can contact the CNSC at any time at [cnsccanada@canada.ca](mailto:cnsccanada@canada.ca) or by calling 613-995-5894 or 1-800-668-5284 (in Canada).

## CONSULTING WITH ABORIGINAL GROUPS

The CNSC is committed to upholding the honour of the Crown by building relationships, sharing information, and meeting its obligations under section 35 of the *Constitution Act, 1982*. In 2015–16, CNSC staff participated in over 20 engagement and consultation meetings with Aboriginal groups, engaging in dialogue on diverse topics that included: regulatory reviews; the operation of existing nuclear facilities; the IEMP; and the CNSC’s early role in the Nuclear Waste Management Organization’s Adaptive Phased Management Project for a deep geological repository for used nuclear fuel.

The CNSC demonstrated its commitment to Aboriginal consultation over the past year by engaging with potentially affected Aboriginal groups early in regulatory reviews, to ensure it upheld the honour of the Crown before the Commission made a decision. It also encouraged Aboriginal groups to participate in the reviews and public hearings, and continued building long-term relationships with Aboriginal communities interested in CNSC-regulated facilities. During 2015–16, more than 15 Aboriginal groups participated in meetings and workshops with CNSC staff, as well as many public hearings. Public hearings included those for the renewal of the Bruce Power and Darlington Nuclear Generating Station operating licences, Ontario Power Generation’s proposed Deep Geologic Repository for low- and intermediate-level radioactive waste, and the Blind River Refinery (all in Ontario); the continuation of the Gunnar remediation project in northern Saskatchewan; and the decommissioning of Gentilly-2 in Quebec. Throughout the year, CNSC staff also met with licensees, who provided updates on Aboriginal engagement activities they had conducted.

## CREATING AND IMPLEMENTING A REGULATORY DOCUMENT ON ABORIGINAL ENGAGEMENT

In 2015, CNSC staff completed a 120-day consultation period on draft REGDOC-3.2.2, *Aboriginal Engagement*. After continued consultation activities and resulting refinements, the document was presented to the Commission and approved in January 2016. REGDOC-3.2.2, *Aboriginal Engagement*, came into effect in February 2016. This regulatory document sets out requirements and guidance for licensees whose proposed projects may raise the Crown's duty to consult. While the CNSC cannot delegate its obligation to consult, it can require a licence applicant or licensee to engage with Aboriginal communities, collect information and propose measures to avoid, mitigate or offset adverse impacts of a project.

The implementation of REGDOC-3.2.2 is expected to lead to more effective and efficient Aboriginal engagement, strengthen relationships with Aboriginal communities, help the CNSC to meet its duty-to-consult obligations, and reduce the risk of delays in the regulatory review processes.

## OFFERING FUNDING TO ENCOURAGE PUBLIC AND ABORIGINAL PARTICIPATION

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

This past year, the PFP awarded more than \$100,000 to 18 recipients for 7 different projects. Of those 18 recipients, 12 were Aboriginal groups or organizations that received over \$68,000 in funding for their participation in CNSC regulatory processes.

# COMMISSION MEMBERS



**Mr. Michael Binder**

President and Chief Executive Officer, Canadian Nuclear Safety Commission  
Ottawa, Ontario

Named as a permanent member on January 15, 2008



**Dr. Ronald J. Barriault**

Physician, Restigouche Regional Health Authority  
Charlo, New Brunswick

Named as a permanent member on December 3, 2007 (term has expired, but authorized to complete two files seized of prior to term expiry)



**Mr. André Harvey**

Québec City, Quebec

Named as a permanent member on June 2, 2006



**Dr. J. Moyra J. McDill**

Professor Emeritus, Department of Mechanical and Aerospace Engineering, Carleton University  
Ottawa, Ontario

Named as a permanent member on May 30, 2002 (term has expired but authorized to complete two files seized of prior to term expiry)



**Mr. Dan D. Tolgyesi**

Québec City, Quebec

Named as a permanent member on May 30, 2008



**Ms. Rumina Velshi**

Toronto, Ontario

Named as a permanent member on December 15, 2011



**Dr. Alexander McEwan**

Professor and Chair, University of Alberta Cross Cancer Institute  
Edmonton, Alberta

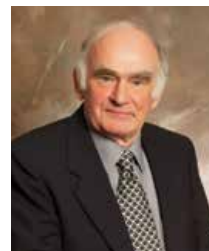
Named as a permanent member on March 7, 2013



**Dr. James F. Archibald**

Professor of mining engineering, Queen's University, Ontario

Named 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. Gunter Muecke**

Professional geologist

Named 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. Stella Swanson**

Environmental consultant

Named 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 makes independent, fair and transparent decisions on the licensing of major nuclear-related activities or facilities, and is central to the functioning of the Canadian Nuclear Safety Commission (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 peaceful uses 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, and that the environment and the health and safety of persons is protected. To promote openness and transparency, the Commission conducts its business where possible in public hearings and meetings and, where appropriate, in communities where activities take place. Aboriginal people and other members of the public can participate in public hearings via written submissions and oral presentations. Commission hearings and meetings can also be viewed as webcasts on the [CNSC website](#), and transcripts of public hearings and meetings are also available. Webcasts and transcripts are archived on the site for at least three months after the session.

## COMMISSION MEMBERSHIP

At year-end, the Commission had five permanent members and three temporary members (whose terms had expired, but are still seized of the DGR file), appointed by the Governor in Council and chosen according to their credentials. All are independent of political, governmental, special interest group or industry influences. Temporary members can be appointed by the Governor in Council whenever necessary. The CNSC president is the only full-time Commission member.

# MANAGEMENT DISCUSSION AND ANALYSIS

## FINANCIAL STATEMENTS FOR THE YEAR ENDING MARCH 31, 2016

This management discussion and analysis (MD&A) should be read in conjunction with the audited financial statements that follow.

### PURPOSE

The purpose of this MD&A is to provide management with the opportunity to explain, in narrative form, the CNSC's current financial situation and any significant variances. It aims to allow readers to look at the CNSC's operations through the eyes of management.

### RESULTS OF OPERATIONS

The CNSC's expenses totalled \$155.0 million in 2015–16, up from \$153.9 million a year earlier, for a total increase of \$1.1 million (0.7%). A total of \$106.5 million of expenses were paid for by earned revenues, while the CNSC's net cost of operations of \$48.5 million was funded through government funding.

### REVENUES

In Budget 2013, the CNSC received statutory authority – pursuant to subsection 21(3) of the *Nuclear Safety and Control Act* – to spend during a fiscal year any revenues that it receives in the current or previous fiscal year through the conduct of its operations. The CNSC collects regulatory fees in accordance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. In 2015–16, the CNSC funded approximately 69% of its total cost of operations from fees collected from licensees.

Revenues totalled \$106.5 million in 2015–16, an increase of \$1.7 million (1.6%) from \$104.8 million in 2014–15. Revenues continued to remain relatively stable from year to year. Revenues collected through regulatory activity plan (RAP) licences increased by \$1.3 million, which is consistent with the increase in

overall expenses observed from 2014–15 to 2015–16. As expected, revenue related to formula fees increased by \$0.4 million as the CNSC continues to implement a review of the charging formulas.

Revenues in 2015–16 of \$106.5 million were \$0.3 million (0.2%) lower than planned revenue of \$106.8 million reported in the future-oriented financial statements.

### 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 \$155.0 million in 2015–16, from \$153.9 million in 2014–15, for a net increase of \$1.1 million (0.7%). The net increase is mainly the result of increases in salaries and employee benefits expenses of \$2.4 million, accommodation expenses of \$0.6 million and other expenses of \$0.4 million offset by decreases in professional and special services expenses of \$0.8 million, furniture, repairs and rentals expenses of \$0.7 million and Amortization expenses of \$0.7 million.

The increase in salaries and employee benefits expenses is attributed to cost-of-living adjustments and implementation of the workforce renewal initiative, offset by a decrease in the provision for severance benefits. The increase in accommodation expenses is due to a temporary requirement to increase office space



as part of CNSC's initiative to consolidate headquarters in Ottawa's downtown core. The increase in other expenses is a result of an IT assets write-off. The decrease in professional and special services expenses is primarily due to a write-off in 2014–15 of software development costs. The decrease in furniture, repairs and rentals expenses is attributable to a change in the accounting process for prepaid expenses of software licenses. Amortization expenses decreased as specific IT assets had become fully amortized in 2014–15.

Total 2015–16 expenses of \$155.0 million were \$2.5 million (1.6%) less than planned expenses of \$157.5 million. The lower than planned expenses are mostly a result of lower spending on salaries and employee benefits expenses of \$3.0 million, professional and special services expenses of \$2.0 million, and accommodations expenses of \$0.6 million, offset by an increase of \$2.9 million on furniture, repairs and rentals expenses. As spending on both professional and special services and furniture, repairs and rentals may either be expensed or capitalized, the offsetting variances in these two areas are mainly a result of an overestimate in the original plans of the portion of the spending on furniture, repairs and rentals to be capitalized and an underestimate of the portion to be capitalized related to professional and special services.

## PARLIAMENTARY APPROPRIATIONS

### NET COST OF OPERATIONS

Parliamentary appropriations are used to fund some activities and certain type of licensees which are, by regulations, not subject to cost recovery. The regulations state that some licensees, such as hospitals and universities, are exempt from paying fees as these

entities 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 2015–16, the CNSC's net cost of operations funded by government funding and transfers, including voted appropriations (vote 1 – Program expenditures), was \$48.5 million, a \$0.5 million (1.1%) decrease over the previous year.

## OUTLOOK

The total projected revenues for 2016–17 are at \$114.5 million, up from \$106.5 million in 2015–16, for a net increase of \$8.0 million (7.5%), which represents increases in RAP, formula fees and special projects revenues. The total projected expenses for 2016–17 are \$163.8 million, up \$8.9 million (5.7%) from \$155.0 million spent in 2015–16, mainly due to projected increases in salaries and employee benefits expenses, including projection of collective agreement retroactive payments and implementation of the workforce renewal initiative.

Over the past year, the CNSC has undertaken an extensive review of its strategic planning framework to reflect changes taking place in the nuclear sector, in order to reflect and anticipate the needs of a changing industry. The outlook for CNSC regulatory oversight requirements is stable.

# CNSC MANAGEMENT TEAM



**Jason Cameron**  
Vice-President,  
Regulatory  
Affairs Branch,  
and Chief  
Communications  
Officer

**Marc Leblanc**  
Commission  
Secretary

**Lisa Thiele**  
Senior General  
Counsel and  
Director,  
Legal Services

**Michael Binder**  
President and  
Chief Executive  
Officer

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

**Ramzi Jammal**  
Executive  
Vice-President,  
Regulatory  
Operations  
Branch, and  
Chief Regulatory  
Operations  
Officer

**Terry Jamieson**  
Vice-President,  
Technical  
Support Branch

# FINANCIAL STATEMENTS

## 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, 2016, 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 Performance 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, 2016 was completed in accordance with the Treasury Board *Policy on Internal Control*, 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 Executive Officer

Ottawa, Canada  
July 18, 2016

## INDEPENDENT AUDITOR'S REPORT



Auditor General of Canada  
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 2016, 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 2016, 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

18 July 2016  
Ottawa, Canada

## STATEMENT OF FINANCIAL POSITION

AS AT MARCH 31

(in thousands of dollars)	2016	2015
<b>Liabilities</b>		
Accounts payable and accrued liabilities (note 4)	28,246	25,600
Vacation pay and compensatory leave	6,801	7,202
Deferred revenue (note 5)	2,782	2,548
Employee future benefits (note 6b)	6,129	5,911
Asset retirement obligation (note 7)	267	271
<b>Total liabilities</b>	<b>44,225</b>	<b>41,532</b>
<b>Financial assets</b>		
Due from the Consolidated Revenue Fund	28,437	25,865
Accounts receivable (note 8)	1,307	1,230
<b>Total net financial assets</b>	<b>29,744</b>	<b>27,095</b>
<b>Net debt</b>	<b>14,481</b>	<b>14,437</b>
<b>Non-financial assets</b>		
Prepaid expenses	607	355
Tangible capital assets (note 9)	10,874	9,700
<b>Total non-financial assets</b>	<b>11,481</b>	<b>10,055</b>
<b>Net financial position</b>	<b>(3,000)</b>	<b>(4,382)</b>

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

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



**Michael Binder**  
President and  
Chief Executive Officer



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

Ottawa, Canada  
July 18, 2016



## STATEMENT OF OPERATIONS AND NET FINANCIAL POSITION

FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)	Planned results* 2016	2016	2015
<b>Expenses</b>			
Salaries and employee benefits	112,811	<b>109,840</b>	107,432
Professional and special services	23,219	<b>21,198</b>	22,007
Accommodation	10,897	<b>10,288</b>	9,648
Travel and relocation	4,650	<b>4,877</b>	4,688
Furniture, repairs and rentals	206	<b>3,087</b>	3,748
Amortization	2,042	<b>1,927</b>	2,646
Grants and contributions	1,770	<b>1,637</b>	1,869
Communication and information	1,150	<b>1,113</b>	1,346
Utilities, materials and supplies	600	<b>694</b>	482
Other	150	<b>386</b>	3
<b>Total expenses (note 10)</b>	<b>157,495</b>	<b>155,047</b>	153,869
<b>Revenues</b>			
Licence fees	105,269	<b>105,197</b>	103,461
Special projects	1,514	<b>1,240</b>	1,254
Other	-	<b>111</b>	116
<b>Total revenues (note 10)</b>	<b>106,783</b>	<b>106,548</b>	104,831
<b>Net cost of operations before government funding and transfers</b>	<b>50,712</b>	<b>48,499</b>	49,038
<b>Government funding and transfers</b>			
Net cash provided by Government	36,862	<b>31,651</b>	34,944
Change in due from Consolidated Revenue Fund	(244)	<b>2,572</b>	(2,170)
Services provided without charge by other government departments (note 11a)	14,558	<b>15,673</b>	15,166
Transfer of the transition payments for implementing salary payments in arrears (note 12)	-	<b>(15)</b>	(3,098)
<b>Net (revenue) cost of operations after government funding and transfers</b>	<b>(464)</b>	<b>(1,382)</b>	4,196
<b>Net financial position - Beginning of year</b>	<b>(866)</b>	<b>(4,382)</b>	(186)
<b>Net financial position - End of year</b>	<b>(402)</b>	<b>(3,000)</b>	(4,382)

Segmented information (note 10)

\* Planned results amounts in the "Expenses" and "Revenues" sections as reported in the Future-Oriented Statement of Operations included in the 2015-16 *Report on Plans and Priorities*. The planned results amounts in the "Government funding and transfers" section have not been previously published.

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

## STATEMENT OF CHANGE IN NET DEBT

FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)	Planned results* 2016	2016	2015
<b>Net (revenue) cost of operations after government funding and transfers</b>	(464)	(1,382)	4,196
<b>Change due to tangible capital assets</b>			
Acquisition of tangible capital assets (note 9)	2,777	3,476	1,562
Amortization of tangible capital assets (note 9)	(2,042)	(1,927)	(2,646)
Proceeds from disposal of tangible capital assets	-	(28)	(30)
Loss on disposal of tangible capital assets including adjustments	-	(347)	(1,074)
<b>Total change due to tangible capital assets</b>	735	1,174	(2,188)
<b>Change due to prepaid expenses</b>	22	252	55
<b>Net increase in net debt</b>	293	44	2,063
<b>Net debt - Beginning of year</b>	11,951	14,437	12,374
<b>Net debt - End of year</b>	12,244	14,481	14,437

\* Planned results amounts in the Statement of Change in Net Debt have not been previously published.

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

## STATEMENT OF CASH FLOWS

FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)	2016	2015
<b>OPERATING ACTIVITIES</b>		
<b>Net cost of operations before government funding and transfers</b>	<b>48,499</b>	49,038
<b>Non-cash items:</b>		
Amortization of tangible capital assets (note 9)	(1,927)	(2,646)
Loss on disposal of tangible capital assets including adjustments	(347)	(1,074)
Services provided without charge by other government departments (note 11a)	(15,673)	(15,166)
<b>Variations in Statement of Financial Position:</b>		
Increase in accounts receivable	77	120
Increase in prepaid expenses	252	55
(Increase) decrease in accounts payable and accrued liabilities	(2,646)	2,136
Decrease (increase) in vacation pay and compensatory leave	401	(565)
Increase in deferred revenue	(234)	(202)
Increase in employee future benefits	(218)	(1,391)
Decrease in asset retirement obligation	4	9
Transition payments for implementing salary payments in arrears (note 12)	15	3,098
<b>Cash used in operating activities</b>	<b>28,203</b>	33,412
<b>CAPITAL INVESTING ACTIVITIES</b>		
Acquisitions of tangible capital assets (note 9)	3,476	1,562
Proceeds from disposal of tangible capital assets	(28)	(30)
<b>Cash used in capital investing activities</b>	<b>3,448</b>	1,532
<b>Net cash provided by Government of Canada</b>	<b>31,651</b>	34,944

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

## NOTES TO THE 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 have been prepared using the Government'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 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 3 provides a reconciliation between the bases of reporting. The planned results amounts in the "Expenses" and "Revenues" sections of the Statement of Operations and Net Financial Position are the amounts reported in the Future-Oriented Statement of Operations included in the 2015–16 *Report on Plans and Priorities*. In 2013–14, the CNSC was given the authority (pursuant to section 21(3) of the *Nuclear Safety and Control Act*) to spend revenue from fees it charges for licences in the fiscal year in which the revenues are received or in the next fiscal year.

#### b) Net cash provided by Government

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 is the difference between all cash receipts and all cash disbursements, including transactions between departments and agencies of the Government.

#### c) Due from 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.

**d) Revenue**

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.

**g) Vacation pay and compensatory leave**

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

**h) Grants and contributions**

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.

**i) Services provided without charge by other government departments**

Services provided without charge by other government departments are recorded as operating expenses at their estimated cost. These include accommodation provided by Public Works and Government Services Canada (also known as 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 Canada, and the costs of legal services provided by Justice Canada.

**j) Employee future benefits**

- *Pension benefits*: Eligible employees participate in the Public Service Pension Plan (PSPP), a multi-employer pension plan administered by the Government. The CNSC's contributions to the PSPP are charged to expenses in the year incurred and represent the total CNSC obligation to the PSPP. The CNSC's responsibility with regard to the PSPP is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the PSPP's sponsor.
- *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. The obligation relating to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole.



- *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.

#### k) 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.

#### l) Contingent liabilities

Contingent liabilities are potential liabilities that may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense recorded. 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.

#### m) Tangible capital assets

All tangible capital assets and leasehold improvements having an initial cost of \$10,000 or more are recorded at their acquisition cost. The development of software and leasehold improvements are recorded in work-in-progress until they become available for use and are not amortized. The costs are then transferred to the applicable capital asset class and are amortized accordingly.

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

#### n) 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. As the provision is recorded based on the discounted value of the projected future cash flows, it is increased annually to reflect the passage of time by removing one year's discount. The accretion is charged to the expense in the Statement of Operations and Net Financial Position. Details of the liability are provided in note 7 of these financial statements.

**o) Nuclear liability reinsurance account**

The CNSC administers the nuclear liability reinsurance account on behalf of the Government of Canada. The CNSC receives the premiums, paid by the operators of nuclear installations for the supplementary insurance coverage, and credits these to the nuclear liability reinsurance account in the Consolidated Revenue Fund. Since the CNSC does not have the risks and rewards of ownership, nor accountability for this account, it does not include any of the associated financial activity or potential liability in its financial statements. Financial activity and liability is, however, reported in note 15 of these financial statements.

**p) Measurement uncertainty**

The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. 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 the anticipated increase in salaries under the next collective agreement, 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. 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)	2016	2015
Net cost of operations before government funding and transfers	<b>48,499</b>	49,038
<i>Adjustments for items affecting net cost of operations but not affecting authorities:</i>		
Amortization of tangible capital assets	<b>(1,927)</b>	(2,646)
Increase in vacation pay, compensatory leave and accrued liabilities not charged to authorities	<b>(2,896)</b>	(565)
Services provided without charge by other government departments	<b>(15,673)</b>	(15,166)
<i>Revenues pursuant to paragraph 21(3) of the Nuclear Safety and Control Act</i>	<b>106,437</b>	104,715
Increase in employee future benefits	<b>(218)</b>	(1,391)
Refund of prior years' expenditures	<b>243</b>	406
Loss on disposal of capital assets	<b>(376)</b>	(1,099)
Other	<b>137</b>	133
	<b>85,727</b>	84,387
<i>Adjustments for items not affecting net cost of operations but affecting authorities:</i>		
Acquisitions of tangible capital assets	<b>3,476</b>	1,562
Transition payments for implementing salary payments in arrears	<b>15</b>	3,098
Increase in prepaid expenses	<b>252</b>	55
	<b>3,743</b>	4,715
<b>Current year authorities used</b>	<b>137,969</b>	138,140

**(b) Authorities provided and used**

(in thousands of dollars)	2016	2015
<b>AUTHORITIES PROVIDED:</b>		
Vote 1 – Program expenditures	41,651	42,749
<b>STATUTORY:</b>		
Spending of revenues pursuant to section 21(3) of the <i>Nuclear Safety and Control Act</i>	87,488	86,936
Spending of proceeds from the disposal of surplus assets	30	20
Contributions to employee benefit plans	13,364	13,658
	<b>142,533</b>	<b>143,363</b>
<b>LESS:</b>		
Authorities available for use in the subsequent year	2,748	2,526
Lapsed Vote 1 – Program expenditures	1,816	2,697
<b>Current year authorities used</b>	<b>137,969</b>	<b>138,140</b>

**4. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES**

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

(in thousands of dollars)	2016	2015
Other government departments and agencies	9,716	9,641
External parties	15,143	13,136
Licensees*	3,387	2,823
<b>Total accounts payable and accrued liabilities</b>	<b>28,246</b>	<b>25,600</b>

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

**5. DEFERRED REVENUE**

Deferred revenue represents the balance at year-end of unearned revenues stemming from amounts received from licensees that are restricted in order to fund the expenditures stemming from amounts received for fees 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)	2016	2015
Balance, beginning of year	2,548	2,346
Licence fee revenue recognized during the year	(2,514)	(2,324)
Licence fee received for future years	2,748	2,526
<b>Balance, end of year</b>	<b>2,782</b>	<b>2,548</b>

## 6. 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 percent 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 relates to existing plan members as of December 31, 2012; and Group 2 relates to members joining the Plan as of January 1, 2013. Each group has a distinct contribution rate.

The 2015–16 expense amounts to \$9,211,659 (\$9,336,573 in 2014–15). For Group 1 members, the expenses represent approximately 1.25 times (1.41 times in 2014–15) the contributions by employees. For Group 2 members, the expenses represent approximately 1.24 times (1.39 times in 2014–15) the contributions by employees.

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.

### (b) Severance benefits and parental leave benefits

The CNSC provided severance benefits to its employees based on eligibility, years of service and salary at termination of employment. These severance benefits are not pre-funded. Benefits will be paid from future authorities.

The accumulation of severance benefits under the employee severance pay program 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 on termination from the public service. The remaining balance represents the amounts employees will collect upon termination. The severance rate for estimating the remaining balance of the severance allowance is 7.51% (7.88% in 2014–15).

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)	2016	2015
Accrued severance benefit obligation, beginning of year	5,911	4,520
Increase for the year	365	2,051
Severance benefits paid during the year	(749)	(660)
Accrued severance benefit obligation, end of year	5,527	5,911
Maternity/Parental leave benefits	602	-
<b>Accrued benefit obligation, end of year</b>	<b>6,129</b>	<b>5,911</b>

## 7. ASSET RETIREMENT OBLIGATION

The asset retirement obligation is based on the current cost estimate of \$261,250 (\$261,250 in 2014–15) of the site restoration plan. A revision in the estimate has been recognized using the current cost estimate, which was indexed using the Bank of Canada's target inflation rate of 2% to reflect the estimated future cost of the site restoration plan. The CNSC recognizes the net present value, using the Government of Canada's 10-year benchmark bond yield rate of 1.54% (1.32% in 2014–15), of the estimated future cost of \$287,017 (\$292,757 in 2014–15), of restoring the leased premises at the expiry of the lease on March 31, 2020. As of March 31, 2016, the CNSC has an asset retirement obligation that can be reasonably estimated as follows:

(in thousands of dollars)	2016	2015
Balance, beginning of year	271	280
Revision in the estimate, timing and accretion of retirement expenditures	(4)	(9)
<b>Balance, end of year</b>	<b>267</b>	<b>271</b>

## 8. ACCOUNTS RECEIVABLE

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

(in thousands of dollars)	2016	2015
Receivables – Licence fees	1,025	1,018
Receivables – Others	200	250
Receivables – Other government departments and agencies	119	-
	<b>1,344</b>	<b>1,268</b>
Allowance for doubtful accounts on receivables	(37)	(38)
<b>Net accounts receivable</b>	<b>1,307</b>	<b>1,230</b>

## 9. TANGIBLE CAPITAL ASSETS

Cost	Opening balance	Acquisitions	Disposals / Write-offs	Work-in-progress transfers	Closing balance
(in thousands of dollars)					
Furniture and equipment	6,021	271	(230)	-	6,062
Informatics equipment and software	5,157	68	(25)	-	5,200
Leasehold improvements	13,883	-	-	578	14,461
Motor vehicles	613	128	(90)	-	651
Other vehicles	100	-	(23)	-	77
Work-in-progress – software	1,056	2,589	(277)	-	3,368
Work-in-progress – construction	598	420	-	(578)	440
<b>Total</b>	<b>27,428</b>	<b>3,476</b>	<b>(645)</b>	<b>-</b>	<b>30,259</b>



## TANGIBLE CAPITAL ASSETS (Cont'd)

**Accumulated amortization**

(in thousands of dollars)	Opening balance	Amortization	Disposals / Write-offs	Closing balance
Furniture and equipment	3,386	545	(152)	<b>3,779</b>
Informatics equipment and software	4,370	491	(25)	<b>4,836</b>
Leasehold improvements	9,596	822	-	<b>10,418</b>
Motor vehicles	353	65	(86)	<b>332</b>
Other vehicles	23	4	(7)	<b>20</b>
<b>Total</b>	<b>17,728</b>	<b>1,927</b>	<b>(270)</b>	<b>19,385</b>

**Net book value**

(in thousands of dollars)	2015	2016
Furniture and equipment	2,635	<b>2,283</b>
Informatics equipment and software	787	<b>364</b>
Leasehold improvements	4,287	<b>4,043</b>
Motor vehicles	260	<b>319</b>
Other vehicles	77	<b>57</b>
Work-in-progress – software	1,056	<b>3,368</b>
Work-in-progress – construction	598	<b>440</b>
<b>Total</b>	<b>9,700</b>	<b>10,874</b>

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, 2016, \$577,820 work-in-progress was completed and put into use.

**10. 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 16)	2016 total value of licences and other revenue	2015 total value of licences and other revenue	2016 cost of operations	2015 cost of operations
<b>LICENCE FEES</b>						
Power reactors	68,608	-	68,608	66,756	68,608	66,756
Non-power reactors	-	2,174	2,174	2,348	2,174	2,348
Nuclear research and test establishments	11,591	-	11,591	10,211	11,591	10,211
Particle accelerators	-	646	646	623	646	623
Uranium processing facilities	4,634	-	4,634	3,467	4,634	3,467
Nuclear substance processing facilities	1,447	-	1,447	1,242	1,447	1,242
Heavy water plants	-	-	-	-	-	-
Radioactive waste facilities	3,871	-	3,871	6,628	3,871	6,628
Uranium mines and mills	7,647	517	8,164	9,218	8,164	9,218
Waste nuclear substance	901	2,310	3,211	2,011	3,211	2,011
<b>Total regulatory activity plan fees</b>	<b>98,699</b>	<b>5,647</b>	<b>104,346</b>	<b>102,504</b>	<b>104,346</b>	<b>102,504</b>
Nuclear substances and Class II nuclear facilities						
Academic and research	232	2,405	2,637	2,747	2,906	2,095
Commercial	966	581	1,547	1,670	2,699	2,404
Industrial radiography	4,146	109	4,255	3,887	9,284	8,975
Medical	471	4,466	4,937	5,050	5,210	5,154
Dosimetry services	240	12	252	184	932	882
<b>Total formula fees</b>	<b>6,055</b>	<b>7,573</b>	<b>13,628</b>	<b>13,538</b>	<b>21,031</b>	<b>19,510</b>
Transport licences and transport package certificates	121	5	126	257	434	620
Radiation device and prescribed equipment certificates	186	-	186	82	524	570
Exposure device operator certificates	136	-	136	165	796	1,005
<b>Total fixed fees</b>	<b>443</b>	<b>5</b>	<b>448</b>	<b>504</b>	<b>1,754</b>	<b>2,195</b>
<b>TOTAL LICENCE FEES</b>	<b>105,197</b>	<b>13,225</b>	<b>118,422</b>	<b>116,546</b>	<b>127,131</b>	<b>124,209</b>
<b>NON-LICENCE FEES</b>						
Stakeholder relations and regulatory framework	111	-	111	116	26,823	28,619
Special projects, other revenue and related expenses	1,240	-	1,240	1,254	1,093	1,041
<b>TOTAL NON-LICENCE FEES</b>	<b>1,351</b>	<b>-</b>	<b>1,351</b>	<b>1,370</b>	<b>27,916</b>	<b>29,660</b>
<b>TOTAL</b>	<b>106,548</b>	<b>13,225</b>	<b>119,773</b>	<b>117,916</b>	<b>155,047</b>	<b>153,869</b>

## 11. RELATED PARTY TRANSACTIONS

The CNSC is related as a result of common ownership to all government departments, agencies and Crown corporations. The CNSC enters into transactions with these entities in the normal course of business and on normal trade terms.

### (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 in the CNSC's Statement of Operations and Net Financial Position as follows:

(in thousands of dollars)	2016	2015
Accommodation provided by Public Works and Government Services (also known as Public Services and Procurement Canada)	6,266	6,258
Contributions for employer's share of employee benefits provided by the Treasury Board Secretariat	7,486	7,067
Salary and associated costs of services provided by Shared Services Canada	1,568	1,568
Audit services provided by the Office of the Auditor General of Canada	170	137
Other	183	136
<b>Total</b>	<b>15,673</b>	<b>15,166</b>

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) Other transactions with related parties

(in thousands of dollars)	2016	2015
Accounts receivable – Other government departments and agencies	119	-
Accounts payable – Other government departments, agencies and Crown corporations	10,953	9,950
Expenses – Other government departments and agencies	24,932	24,647
Revenues – Other government departments and agencies	11,919	10,559

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

## 12. TRANSFER OF THE TRANSITION PAYMENTS FOR IMPLEMENTING SALARY PAYMENTS IN ARREARS

The Government of Canada implemented salary payments in arrears in 2014–15. As a result, a one-time payment was issued to employees and will be recovered from them in the future. Employees that were on leave without pay when the initial one-time payments were issued will receive the transition payment shortly after their return to work from their leave without pay. The transition to salary payments in arrears forms part of the transformation initiative that replaces the pay system and also streamlines and modernizes the pay processes. This change to the pay system had no impact on the expenses of the CNSC. However, it did result in the use of additional spending authorities by the CNSC. Prior to year-end, the transition payments for salary payments in arrears were transferred to a central account administered by Public Works and Government Services Canada (also known as Public Services and Procurement Canada), the department responsible for the administration of the Government pay system.

### 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)	2017	2018	2019	2020 and thereafter	Total
Acquisitions of goods and services	6,502	825	34	-	7,361
Transfer payments	1,321	704	575	-	2,600
Operating leases	537	56	2	-	595
<b>Total</b>	<b>8,360</b>	<b>1,585</b>	<b>611</b>	<b>-</b>	<b>10,556</b>

The CNSC has multi-year contracts with related parties in the amount of \$1,077,681.

### 14. CONTINGENT LIABILITIES

Claims have been made against the CNSC in the normal course of operations. While the total amount claimed in these actions is significant, management has determined that unfavourable outcomes are unlikely. Therefore, the CNSC has not recorded a liability for these claims at this time. If it becomes likely that there will be a future payment and a reasonable estimate of the loss can be made, the CNSC will record a liability for claims and litigations.

### 15. NUCLEAR LIABILITY REINSURANCE ACCOUNT

Under the *Nuclear Liability Act* (NLA), operators of designated nuclear installations are required to possess basic and supplementary insurance of \$75,000,000 per installation for specified liabilities. The Government of Canada has designated the Nuclear Insurance Association of Canada (NIAC) as the sole provider of third-party liability insurance and property insurance for Canada's nuclear industry. The NIAC provides insurance to nuclear operators under a standard policy that consists of two types of coverage: Coverage A, which covers only those risks that are accepted by the insurer (i.e., bodily injury and property damage); and Coverage B, which covers personal injury that is not bodily (e.g., psychological injury), damage arising from normal emissions and damage due to acts of terrorism.

The NIAC receives premiums from operators for both coverage types. However, premiums for Coverage B risks are remitted to the Government of Canada, which reinsures these risks under its reinsurance agreement with the NIAC. Through this agreement, the Government of Canada assumes the liability associated with the difference between the basic insurance coverage provided by the NIAC and the full \$75,000,000 of liability imposed by the NLA, as well as for events listed under Coverage B. As of March 31, 2016, the total supplementary insurance coverage is \$510,000,000 (\$510,000,000 in 2014–15).

All premiums paid by the operators of nuclear installations for the supplementary insurance coverage are credited to a nuclear liability reinsurance account (account) in the CRF. Premiums received in respect of Coverage B amount to \$197,489 (\$231,035 in 2014–15). Claims against the supplementary insurance coverage are payable out of the Consolidated Revenue Fund and charged to the account. There have been no claims against – or payments out of – the account since its creation.

As explained in note 2(o), the CNSC administers the nuclear liability reinsurance account on behalf of the Government of Canada through a specified purpose account. This account is consolidated in the *Public Accounts of Canada*. As of March 31, 2016, the closing balance of the account is \$3,819,245 (\$3,621,756 in 2014–15).

**16. 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 health care institutions, not-for-profit emergency response organizations, and federal government departments and agencies. The total value of these licences amounted to \$13,225,316 (\$13,085,185 in 2014–15). The foregone revenue is not included in the Statement of Operations and Net Financial Position.

# ANNEX TO THE STATEMENT OF MANAGEMENT RESPONSIBILITY INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING 2015–16

## 1. INTRODUCTION

This annex 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 Performance Report](#) and [Report on Plans and Priorities](#). The [CNSC 2015-16 audited financial statements](#) 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.

### 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 Works and Government Services Canada (also known as 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 the CNSC with information used to calculate various accruals and allowances, such as the accrued severance liability
- Shared Services Canada is responsible for managing and maintaining the CNSC's information technology infrastructure

## 3. DEPARTMENTAL ACTION PLAN

### 3.1 PROGRESS DURING FISCAL YEAR 2015–16

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



PROGRESS DURING FISCAL YEAR 2015 16	
Key control areas	Status
Purchase to payment	Completed as planned; remedial actions started (see section 3.2 for additional information).
Payroll	Completed as planned; remedial actions started (see section 3.2 for additional information).
Revenue	Completed as planned; remedial actions complete (see section 3.2 for additional information).

### 3.2 ASSESSMENT RESULTS FOR FISCAL YEAR 2015–16

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

**Ongoing monitoring program:** As part of its rotational ongoing monitoring plan, the department completed its reassessment of payroll and purchase to payment processes. For the most part, the key controls that were tested performed as intended, with remediation required for the following items:

#### Purchase to payment

- Lack of documented account verification procedures
- Lack of evidence to support the performance of monitoring of acquisition card transactions
- Lack of evidence to support secondary review of changes to the vendor master database
- Lack of a formalized process to periodically review and modify, as required, the vendor master database

#### Payroll

- Forecast analysis of salary costs, in support of account verification, not performed on a consistent basis
- Lack of a formalized process of section 33 post-payment verification procedures

#### Revenue

- Access to create sales invoices not limited to appropriate employees
- Update of revenue procedures documentation

### 3.3 PROGRESS AGAINST FISCAL YEAR 2014–15 ITEMS

In addition to the progress made in ongoing monitoring; the department conducted follow-up of the following outstanding<sup>1</sup> 2014–15 remediation items:

#### Grants and contributions

- Update policy and procedures documentation to incorporate allowable exceptions to the current approval process for grants and contributions

#### Year-end financial close and statement preparation

- Enhancement of procedures to make modifications to the CNSC's chart of accounts
- Clarify analysis and supporting documentation requirements used to prepare financial statements

<sup>1</sup> Outstanding at the beginning of fiscal 2015/16

### IT general controls

- Reduce reliance on generic and shared accounts
- Ensure more timely user access reviews and maintenance of user access
- Update procedures documentation
- Retain documentation for audit trail purposes
- Enhance procedures for tracking threat and risk assessments

All of the above items were remediated, as planned, with the exception of updating procedures documentation (specifically change management procedures) for the IT general controls. This remaining item is scheduled for completion in 2016–17.

### 3.4 ACTION PLAN FOR THE NEXT FISCAL YEAR 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 2016–17	Fiscal year 2017–18	Fiscal year 2018–19
Entity-level controls	Yes	No	No
IT general controls (under management of the CNSC)	Yes	No	Yes
Capital assets	Yes	No	No
Purchase to payment	No	No	Yes
Payroll	Yes <sup>5</sup>	No	No
Grants and contributions	Yes	No	No
Revenue	No	Yes	No
Year-end financial close and statement preparation	No	Yes	No

<sup>5</sup> In addition to the ongoing monitoring rotational plan, CNSC plans to conduct a monitoring assessment of Payroll due to the implementation of a new system, Phoenix.

# ANNEX A: COMMISSION HEARINGS AND OPPORTUNITIES TO BE HEARD IN 2015–16

## PUBLIC HEARINGS

### NUCLEAR POWER PLANTS

#### **Bruce Power:**

- Decision to renew the reactor operating licence for the Bruce A and B Nuclear Generating Stations – Public hearing, Part 2 (April 13–16, 2015) [English Decision](#)

#### **Ontario Power Generation:**

- Decision to renew the reactor operating licence for the Darlington Nuclear Generating Station – Public hearing, Part 1 and Part 2 (August 19 and November 2–5, 2015) [English Decision](#)

### NUCLEAR SUBSTANCE PROCESSING FACILITIES

#### **SRB Technologies (Canada) Inc.:**

- Decision to renew the Class 1B nuclear substance processing facility operating licence for the Gaseous Tritium Light Source Facility – Public hearing (May 14, 2015) [English Decision](#)

#### **Nordion (Canada) Inc.:**

- Decision to renew the Class 1B nuclear substance processing facility operating licence – Public hearing (August 19, 2015) [English Decision](#)

### WASTE SUBSTANCES

#### **Saskatchewan Research Council:**

- Decision to remove the Gunnar Remediation Project Phase 2 hold point as it pertains to the remediation of the tailings deposits at the Gunnar legacy uranium mine site for its Gunnar Remediation Project in northern Saskatchewan – Public hearing (September 30, 2015) [English Decision](#)

## HEARINGS

#### **Canadian Nuclear Laboratories:**

- Request from Canadian Nuclear Laboratories to the Commission to prescribe the amount of basic insurance pursuant to the *Nuclear Liability Act* for the following nuclear installations: Chalk River Laboratories, Whiteshell Laboratories, the Douglas Point Waste Management Facility, and the Gently-1 Waste Management Facility (April 27, 2015) [English Decision, Erratum](#)
- Decision to approve the request from Canadian Nuclear Laboratories to decommission the fuel rod storage and handling bays facility in Building 204 A/B and the plutonium recovery laboratory in Building 220 at Chalk River Laboratories (May 21, 2015) [English Decision](#)

#### **Hydro-Québec:**

- Amendment to the Gently-2 Nuclear Generating Station operating licence, to replace the reference to S-99, *Reporting Requirements for Operating Nuclear Power Plants*, with the new REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants*; decision to relax REGDOC-3.1.1's requirements for certain periodic reports and safety performance indicators, given the decrease in risk associated with the Gently-2 nuclear generating station, which is in a safe storage state and moving toward decommissioning (June 5, 2015) [English Decision](#)

#### **Ontario Ministry of the Environment:**

- Review of the designated officer order issued on June 3, 2015, with respect to the Deloro Mine Site Cleanup Project (June 30, 2015) [English Decision](#)

#### **Best Theratronics Ltd.:**

- Review of the designated officer order issued to Best Theratronics Ltd. on August 24, 2015, confirmation of conditions 2, 3 and 6 of the order, and amendment of conditions 1, 4 and 5 of the order (September 10, 2015) [English Decision](#)

#### **Ontario Power Generation:**

- Amendments to the Pickering Nuclear Generating Station operating licence, to replace the reference to RD-310, *Safety Analysis for Nuclear Power Plants*, with REGDOC-2.4.1, *Deterministic Safety Analysis*, and to replace the reference to regulatory standard S-294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, with REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* (December 18, 2015) [English Decision](#)

#### **Canadian Nuclear Laboratories:**

- Amendment of the Whiteshell Laboratories nuclear research and test establishment decommissioning licence, to reissue the licence in an updated format with an associated licence conditions handbook (January 26, 2016) [English Decision](#)

#### **Best Theratronics Ltd.:**

- Amendment by the Commission, on its own initiative, to the order issued to Best Theratronics Ltd. on September 28, 2015 (February 29, 2016) [English Decision](#)

#### **Ontario Power Generation:**

- Amendments to the Darlington Waste Management Facility's waste facility operating licence to remove condition 17.4, Environmental Assessment Follow-up Programs, to modify the operational performance reporting transmittal period to align the reporting timeline with all other Ontario Power Generation Class I nuclear facilities, and to update the licence format to align with standardized CNSC licence conditions (March 30, 2016) [English Decision](#)

## MEETINGS

### **Opportunities to be heard**

- The public was invited to comment, in writing, on the consolidated interim status report for Ontario Power Generation's Darlington, Pickering and Western Waste Management Facilities – Commission meeting (June 17, 2015)
- The public was invited to comment, in writing, on the *Regulatory Oversight Report for Canadian Nuclear Power Plants: 2014* (2014 NPP Report) – Commission meeting (August 20, 2015)
- The public was invited to comment, in writing, on the *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014* and the *Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014* – Commission meeting (September 30, 2015)
- The public was invited to comment, in writing, on the *Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014* – Commission meeting (October 1, 2015)

# ANNEX B: REGULATORY FRAMEWORK PROJECTS PUBLISHED OR COMPLETED IN 2015–16

## [PACKAGING AND TRANSPORT OF NUCLEAR SUBSTANCES REGULATIONS, 2015](#)

In April 2015, the CNSC made the *Packaging and Transport of Nuclear Substances Regulations, 2015* as an update and replacement to the *Packaging and Transport of Nuclear Substances Regulations* (PTNSR). The PTNSR 2015 clarify existing PTNSR requirements, align with the revised International Atomic Energy Agency *Regulations for the Safe Transport of Radioactive Material*, and ensure continued safe and efficient transport of nuclear substances. His Excellency the Governor General in Council, on the recommendation of the Minister of Natural Resources, approved the Regulations made by the Commission. They were published in the *Canada Gazette, Part II*, and came into force in June 2015.

## [RECDOC-1.6.1, LICENCE APPLICATION GUIDE: NUCLEAR SUBSTANCES AND RADIATION DEVICES](#)

RECDOC-1.6.1, *Licence Application Guide: Nuclear Substances and Radiation Devices*, was published in October 2015. It 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 in accordance with the *Nuclear Safety and Control Act* and the regulations made under it.

RECDOC-1.6.1 supersedes RD/GD-371, *Licence Application Guide: Nuclear Substances and Radiation Devices* (published in November 2011).

## [REGDOC-2.3.1, CONDUCT OF LICENSED ACTIVITIES: CONSTRUCTION AND COMMISSIONING PROGRAMS](#)

REGDOC-2.3.1, *Conduct of Licensed Activities: Construction and Commissioning Programs*, was published January 2016. It sets out requirements and guidance for the construction and commissioning of nuclear facilities in Canada that use nuclear reactors. These facilities include nuclear power plants or small reactors for the generation of power or heat for industrial processes and small reactors for non-power-generation uses (e.g., isotope production, and research and development activities).

## [REGDOC-2.3.2, ACCIDENT MANAGEMENT](#)

REGDOC-2.3.2, *Accident Management*, version 2 was published in September 2015. It sets out requirements for the development, implementation and validation for integrated accident management at reactor facilities, and provides guidance on how these requirements should be met. The document assists licensees with implementing and maintaining operational procedures, guidelines and adequate capabilities to deal with abnormal situations and accidents, including severe accidents. It includes amendments to reflect lessons learned from the Fukushima nuclear event of March 2011, and addresses findings from the CNSC *Fukushima Task Force Report*.

## [REGDOC-2.3.3, PERIODIC SAFETY REVIEWS](#)

REGDOC-2.3.3, *Periodic Safety Reviews*, was published in April 2015. It sets out the requirements and guidance for conducting a periodic safety review of a nuclear power plant. A periodic safety review is a comprehensive evaluation of the design, condition, and operation of a nuclear power plant.

REGDOC-2.3.3 supersedes RD-360, *Life Extension of Nuclear Power Plants* (published in February 2008).

### REGDOC-2.10.1, NUCLEAR EMERGENCY PREPAREDNESS AND RESPONSE

REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*, version 2 was published in February 2016. REGDOC-2.10.1 aligns with REGDOC-2.3.2, *Accident Management*, version 2, which had been updated to clarify requirements.

This document sets out the CNSC's emergency preparedness requirements and guidance for the development of emergency measures for licensees and licence applicants of Class I nuclear facilities and uranium mines and mills. It also contains stronger emergency preparedness requirements and guidance that cover all aspects of emergency preparedness developed as part of the *CNSC Integrated Action Plan on the Lessons Learned From the Fukushima Daiichi Nuclear Accident*.

REGDOC-2.10.1 supersedes the following documents: REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response* (published in October 2014); regulatory guide G-225, *Emergency Planning at Class I Nuclear Facilities and Uranium Mines and Mills* (published in August 2001); and regulatory document RD-353, *Testing the Implementation of Emergency Measures* (published in October 2008).

### REGDOC-2.14.1, INFORMATION INCORPORATED BY REFERENCE IN CANADA'S PACKAGING AND TRANSPORT OF NUCLEAR SUBSTANCES REGULATIONS

REGDOC-2.14.1, *Information Incorporated by Reference in Canada's Packaging and Transport of Nuclear Substances Regulations*, was published in February 2016. This document helps the regulated community comply with the *Packaging and Transport of Nuclear Substances Regulations, 2015* by linking regulations' provisions to relevant content in the International Atomic Energy Agency's *Regulations for the Safe Transport of Radioactive Material*, the *Nuclear Safety and Control Act*, other CNSC regulations, and other related information.

### REGDOC-3.2.2, ABORIGINAL ENGAGEMENT

REGDOC-3.2.2, *Aboriginal Engagement*, was published in February 2016. It sets out requirements and guidance for licensees whose proposed projects may raise the Crown's duty to consult.

REGDOC-3.2.2 supersedes *Supplementary Information for Licensees: Aboriginal Consultation* (published in April 2011). The requirements in REGDOC-3.2.2 are in addition to those found in RD/GD-99.3, *Public Information and Disclosure* (published in March 2012).

### REGDOC-3.5.1, LICENSING PROCESS FOR CLASS I NUCLEAR FACILITIES AND URANIUM MINES AND MILLS

REGDOC-3.5.1, *Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills*, was published in April 2015. It 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. This document provides information on the licensing process for all stages of licensing, from initial application to abandonment.

REGDOC-3.5.1 supersedes INFO-0756, *Licensing Process for New Nuclear Power Plants in Canada* (published in May 2008) and INFO-0759, Revision 1, *Licensing Process for New Uranium Mines and Mills in Canada* (published in August 2010).



[REGDOC-3.5.2, COMPLIANCE AND ENFORCEMENT: ADMINISTRATIVE MONETARY PENALTIES](#)

REGDOC-3.5.2, *Compliance and Enforcement: Administrative Monetary Penalties*, version 2 was published in August 2015. It provides updated information about the CNSC's administrative monetary penalties (AMPs) program. It provides an overview of how and where AMPs fit into the CNSC's approach to graduated enforcement, and describes penalty amounts. This document complements the *Administrative Monetary Penalties Regulations (Canadian Nuclear Safety Commission)*, which came into force in July 2013.

[DIS-15-02, REVIEW OF CNSC DOCUMENTATION ON THE SECURITY OF NUCLEAR MATERIAL](#)

In September 2015, the CNSC published discussion paper DIS-15-02, *Review of CNSC Documentation on the Security of Nuclear Material*. The paper summarized the CNSC's proposed changes to the guidance information in regulatory guide G-208, *Transportation Security Programs for Category I, II or III Nuclear Material* and regulatory guide G-274, *Security Programs for Category I or II Nuclear Material or Certain Nuclear Facilities*. DIS-15-02 sought feedback from licensees, the Canadian public and other stakeholders on proposed changes to these regulatory guides, which are being updated and integrated into the CNSC's regulatory framework.

[DIS-16-01, HOW THE CNSC CONSIDERS INFORMATION ON COSTS AND BENEFITS: OPPORTUNITIES TO IMPROVE GUIDANCE AND CLARITY](#)

In February 2016, the CNSC published discussion paper DIS-16-01, *How the CNSC Considers Information on Costs and Benefits: Opportunities to Improve Guidance and Clarity*. The paper – for which the consultation period is open until June 2016 – provides an overview of the CNSC's current policy on cost-benefit information, and describes examples of how the CNSC has previously considered cost-benefit information. The paper also proposes guidance for stakeholders on how they can ensure that the cost-benefit information they submit to the CNSC is fit for purpose and of high quality.

# ANNEX C: ORDERS AND ADMINISTRATIVE MONETARY PENALTIES ISSUED TO LICENSEES IN 2015–16

## ORDERS

DATE ISSUED: MAY 26, 2015

**Date resolved:** June 23, 2015

**Licensee:** All Test International Inc.

**Issue:** The CNSC issued an order to All Test International Inc., a company based in Brooks, AB that provides testing services to the industrial sector. The company holds a CNSC licence authorizing the possession and use of nuclear substances contained in industrial radiography exposure devices, for the purpose of materials testing.

The order was issued after a CNSC inspection at the company's Brooks location. During the inspection, deficiencies in the radiation protection and dose monitoring programs were identified, requiring the company to place all nuclear substances in secure storage. The order required All Test International Inc. to implement corrective measures and address all non-compliances.

DATE ISSUED: MAY 28, 2015

**Date resolved:** June 23, 2015

**Licensee:** Baker Hughes Canada Company

**Issue:** The CNSC issued an order to this licensee (based in Calgary, AB) following an inspection at its location in Redcliff, AB. The company, which services the oil and gas industry, holds a CNSC licence authorizing the possession and use of nuclear substances in fixed gauges mounted on vehicles to monitor physical properties of cement used in drilled oil wells.

The order required the company to stop using vehicles on which fixed nuclear gauges had been attached until it had labelled these gauges with the correct safety marks and labels, and its vehicles displayed appropriate transport placarding. The company was also required to its transport documentation with corrected information about the gauges.

The CNSC required these measures in order to protect the health and safety of workers and the public, as well as the environment.

DATE ISSUED: JUNE 5, 2015

**Date resolved:** April 18, 2016

**Licensee:** Ontario Ministry of Environment and Climate Change

**Issue:** The CNSC issued an order to the Ontario Ministry of the Environment and Climate Change (MOECC), which holds a CNSC licence authorizing the cleanup of the Deloro closed mine site.

The order was issued following a CNSC inspector's follow-up visit after an unplanned release of construction wastewater at the Deloro closed mine site located in Deloro, ON. The CNSC required the MOECC to immediately cease any remediation activities that may have increased environmental risk from cleanup work at the Young's Creek area project. The department also had to immediately develop and implement a contingency plan to address the current circumstances, to prevent the release of the construction wastewater held onsite to the local environment.

DATE ISSUED: JUNE 25, 2015

**Date resolved:** November 18, 2015

**Licensee:** Richmond Metals Recycling Inc.

**Issue:** The CNSC issued an order to Richmond Metals Recycling Inc., a company in Mississauga, ON that holds a CNSC licence authorizing the cleaning of metal tubes contaminated with natural uranium.

The order was issued on June 25, 2015, after the licensee failed to adequately respond to the CNSC's repeated requests for information.

The order required the company to immediately cease all operations authorized under its licence. It also required the licensee to place all drums containing contaminated zirconium tubes into safe storage until there were a sufficient number of qualified workers to carry on the licensed activity safely, in accordance with its licence as well as the *Nuclear Safety and Control Act* and the regulations made under it. Richmond Metals also had to provide a satisfactory response to the CNSC's Type II inspection report of November 17, 2014, and to submit reports as required by the licence. The CNSC required these measures to protect the health and safety of workers and the public, as well as the environment.

**DATE ISSUED:** JULY 29, 2015

**Date resolved:** August 28, 2015

**Licensee:** J.K. Metals Ltd.

**Issue:** The CNSC issued an order to J.K. Metals Ltd. to cease using and secure its licensed radiation device. The company, based in Broadview, SK, collects scrap metals and previously held a CNSC licence to possess an X-ray fluorescence radiation device (a low-risk device used for metal and alloy analysis, identification and testing). However, this licence had expired.

The order was issued following a CNSC inspection at the company's Broadview location, where it was confirmed that J.K. Metals Ltd. remained in possession of a nuclear device without a valid CNSC licence. The order required J.K. Metals Ltd. to place the device in secure storage, and CNSC inspectors confirmed that this was done. The order also stated that "the licensee shall obtain a valid CNSC licence allowing possession of the device or transfer the device to a licensed person". J.K. Metals Ltd. was required to take these actions within 30 days of the order.

**DATE ISSUED:** AUGUST 7, 2015

**Date resolved:** August 31, 2015

**Licensee:** Groupe ABS Inc.

**Issue:** The CNSC issued an order to Groupe ABS Inc., a company based in Saint-Rémi, QC that offers geotechnical, environmental, civil and materials engineering services. The company holds a CNSC licence that authorizes the possession, transfer, use and storage of portable nuclear gauges.

The order was issued following a CNSC inspection at a work site in Ottawa, ON. The inspection identified non-compliances related to the transport of a portable nuclear gauge used at the site. The inspection also identified that the worker operating and transporting the portable nuclear gauge was not adequately trained to conduct the activities authorized under the licence.

The order required the worker to immediately cease using and transporting portable nuclear gauges until the licensee could demonstrate, to the CNSC's satisfaction, that the worker was adequately trained in these activities.

**DATE ISSUED:** AUGUST 12, 2015

**Date resolved:** September 21, 2015

**Licensee:** Labo S.M. Inc.

**Issue:** The CNSC issued an order to Labo S.M. Inc., a company based in Sherbrooke, QC that offers geotechnical, environmental, civil and materials engineering services. The company currently has a CNSC licence that authorizes the possession, transfer, use and storage of portable nuclear gauges.

The order was issued following a CNSC inspection at a work site in Laval, QC. The inspection identified non-compliances related to the security of a portable nuclear gauge used at the work site. The inspection also identified that the worker operating the portable nuclear gauge was not adequately trained and did not follow company procedures to conduct the activities authorized under the licence.

The order required the worker to immediately cease using portable nuclear gauges until the licensee could demonstrate, to the CNSC's satisfaction, that the worker was adequately trained to do so.

**DATE ISSUED: AUGUST 19, 2015**

**Date resolved: September 30, 2015**

**Licensee:** Stasuk Testing and Inspection Ltd.

**Issue:** The CNSC issued an order to Stasuk Testing and Inspection Ltd., a company based in Burnaby, BC that provides testing services to the industrial sector. The company holds a CNSC licence authorizing the possession and use of nuclear substances contained in industrial radiography exposure devices, for the purpose of materials testing.

The order was issued following a CNSC inspection at a work site in Maple Ridge, BC. The inspection identified that one of the company's workers (a certified exposure device operator) was not fulfilling his obligations for radiation protection and dose monitoring. The order prohibited the worker from operating an exposure device, or supervising a trainee operating an exposure device, until the licensee implemented corrective measures and addressed all non-compliances.

**DATE ISSUED: AUGUST 24, 2015**

**Date resolved:** Unresolved as of March 31, 2016

**Licensee:** Best Theratronics Ltd.

**Issue:** The CNSC issued an order to Best Theratronics Ltd., a company based in Ottawa, ON that manufactures external beam therapy units and self-contained blood irradiators. The company holds a CNSC licence that authorizes the possession, use, management, storage, transfer, import, export and disposal of nuclear substances and prescribed equipment.

The order was issued following the company's failure to comply with a condition of its licence that required it to provide an acceptable financial guarantee by July 31, 2015.

The order required Best Theratronics Ltd. to dispose of or transfer all depleted uranium, sealed sources and prescribed equipment in its possession; cease all imports and increases to its current inventory of sealed sources and prescribed equipment containing radioactive sources or depleted uranium; and limit the operation of particle accelerators. The order also required the company to report monthly to the CNSC on the disposal status, and to provide the CNSC with a revised preliminary decommissioning plan and financial guarantee update.

**DATE ISSUED: SEPTEMBER 15, 2015**

**Date resolved:** November 18, 2015

**Licensee:** Richmond Metals Recycling Inc.

**Issue:** The CNSC issued an order to Richmond Metals Recycling Inc., in Mississauga, ON. The company holds a CNSC licence authorizing the cleaning of metal tubes contaminated with natural uranium.

The order was issued on September 15, 2015, after a CNSC inspection found small amounts of radioactive contamination in the facility, in areas that should not have any had radioactive substances. The contamination found was of low level and posed no immediate risk.

The order required the licensee to check all items before they could be removed from the facility, to submit a facility decommissioning plan for CNSC approval, to decommission the facility and to submit a decommissioning report. CNSC inspectors were to visit the site to verify that the facility had been decommissioned according to the approved plan.

**DATE ISSUED:** SEPTEMBER 15, 2015

**Date resolved:** November 18, 2015

**Licensee:** Richmond Metals Recycling Inc.

**Issue:** The CNSC revoked Richmond Metals Recycling Inc.'s licence, effective November 18, 2015. Richmond Metals Recycling Inc. was an industrial metal recycling company based in Mississauga, ON that specialized in recycling zirconium tubes. The licensee had been authorized to clean metal tubes contaminated with natural uranium.

The CNSC confirmed that Richmond Metals Recycling Inc. complied with all of the terms and conditions of an order issued on September 15, 2015. This order required the company to submit a decommissioning plan for approval by the CNSC, to safely decommission the facility and to submit a report on the decommissioning activities. All of this work had been completed to the CNSC's satisfaction, and CNSC staff and a qualified independent third party tested the site for contamination. All results demonstrated that the site posed no risk to the health and safety of the public or the environment, and that the site could be used for other industrial purposes.

**DATE ISSUED:** OCTOBER 6, 2015

**Date resolved:** November 17, 2015

**Licensee:** Best Theratronics Ltd.

**Issue:** The CNSC issued an order to Best Theratronics Ltd., a company based in Ottawa, ON that holds a Class 1B nuclear substance processing facility operating licence. The licence authorizes the operation of cyclotrons, a nuclear substance processing facility, and a radioactive source teletherapy machine.

After reviewing a fire hazard analysis submitted by the company as a requirement of its licence, a CNSC inspector visited the site. The order was issued on October 6, 2015, after the inspector found that a dust collector machine in the carpentry shop was not in compliance with the *National Fire Code of Canada* (NFC).

The order required Best Theratronics Ltd. to stop operating the dust collector and to ensure that it complied with the NFC before using the machine again. CNSC staff planned to inspect the facility again, to ensure that the company complied with the order's conditions.

**DATE ISSUED:** NOVEMBER 9, 2015

**Date resolved:** December 16, 2015

**Licensee:** Elekta, Inc.

**Issue:** The CNSC issued an order to Elekta, Inc., a company based in Atlanta, Georgia that holds a Class II prescribed equipment independent service provider licence. A licence to service Class II prescribed equipment is required to install, upgrade and maintain prescribed equipment, and under this licence, Elekta, Inc. is authorized to service such equipment – which is typically installed in radiation therapy clinics throughout Canada.

The order was issued following a notification by the licensee that it had performed unauthorized installation and upgrades of Class II prescribed equipment, rendering it uncertified and therefore contrary to section 10(a) of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*.

The order directed Elekta, Inc. to immediately stop installation of uncertified configurations of medical linear accelerators; stop performing upgrades; apply for certification of its equipment to reflect new upgraded configurations; establish procedures for performing the upgrades in Canada; notify the CNSC of locations where the installations had taken place in Canada; and notify the affected Canadian operators.

The prescribed equipment had been operated in a manner that posed no risk to the health and safety of workers, the public or the environment.

**DATE ISSUED: NOVEMBER 18, 2015**

**Date resolved:** Unresolved as of March 31, 2016

**Licensee:** Nasiruddin Engineering Limited

**Issue:** The CNSC issued an order on November 18, 2015 to Nasiruddin Engineering Limited, a company based in Mississauga, ON that offers geotechnical, environmental, civil and materials engineering services. The company holds a CNSC licence that authorizes the possession, transfer, use and storage of portable nuclear gauges.

The order was issued following a CNSC inspection at a work site near Aurora, ON. The inspection identified non-compliances related to the security of a portable nuclear gauge used at the work site. The inspection also identified that the worker operating the portable nuclear gauge was not adequately trained and did not take reasonable steps to secure the gauge while on a job site.

The order required the worker to immediately stop using portable nuclear gauges until the licensee could demonstrate, to the CNSC's satisfaction, that the worker was adequately trained to do so.

**DATE ISSUED: NOVEMBER 30, 2015**

**Date resolved:** Unresolved as of March 31, 2016

**Licensee:** Rock Tech Lithium Inc.

**Issue:** The CNSC issued an order to Rock Tech Lithium Inc., a mineral exploration company based in Vancouver, BC. The company held a CNSC licence that authorized the possession, transfer, use and storage of an X-ray fluorescence radiation device that uses nuclear substances.

The order was issued following a discovery by CNSC staff that the radiation device had been transferred to another person who was not authorized by the CNSC to possess it.

The order required the company to recover the radiation device, and to properly transfer it to a person authorized by the CNSC to possess it.

**DATE ISSUED: DECEMBER 4, 2015**

**Date resolved:** January 12, 2016

**Licensee:** GEM Testing Ltd.

**Issue:** The CNSC issued an order to GEM Testing Ltd., a company based in Dunmore, AB that offers geotechnical, environmental, civil and materials engineering services. The company holds a CNSC licence that authorizes the possession, transfer, use and storage of portable nuclear gauges.

The order was issued following a CNSC inspection at the licensee's head office in Dunmore, during which the CNSC noted deficiencies in how the company was managing its radiation protection program. The order required GEM Testing Ltd. to cease using the radiation devices prescribed in its licence until it addressed the non-compliances to the CNSC's satisfaction.



**DATE ISSUED: DECEMBER 8, 2015**

**Date resolved:** January 15, 2016

**Licensee:** Englobe Corp.

**Issue:** The CNSC issued an order to Englobe Corp., a company based in Laval, QC that offers geotechnical, environmental, civil and materials engineering services. The company holds a CNSC licence that authorizes the possession, transfer, use and storage of portable nuclear gauges.

The order was issued following a CNSC inspection at a work site in Laval. The inspection identified that portable nuclear gauge was being used in a manner that did not comply with security requirements. The inspection also identified that the worker operating the portable nuclear gauge was not adequately trained and did not follow company procedures to conduct the activities authorized under the licence.

The order required the worker to immediately cease using portable nuclear gauges until the licensee could demonstrate, to the CNSC's satisfaction, that the worker was adequately trained to use these devices.

**DATE ISSUED: DECEMBER 9, 2015**

**Date resolved:** January 27, 2016

**Licensee:** Ontario Ministry of Northern Development and Mines

**Issue:** The CNSC issued an order to the Ontario Ministry of Northern Development and Mines. This provincial government agency is directing activities for implementing an environmental remediation plan for First Nickel Inc.'s Lockerby Mine site, located near Sudbury, ON. First Nickel Inc. had previously held a CNSC licence to possess and use fixed nuclear gauges in the mine's backfill plant.

The order was issued on December 9, 2015, after a CNSC inspection identified a lack of radiation safety and security measures for the nuclear gauges onsite. The CNSC also identified a lack of regulatory control over the nuclear gauges.

The order required the Ministry of Northern Development and Mines to begin making immediate arrangements to transfer the nuclear gauges to a CNSC-licensed recipient. It also required the Ministry of Northern Development and Mines to implement specific measures for the safety and security of the gauges while they are in its care and control. To date, no person has applied for the appropriate licence to possess the gauges.

**DATE ISSUED: DECEMBER 17, 2015**

**Date resolved:** January 25, 2016

**Licensee:** Porocel of Canada Ltd.

**Issue:** The CNSC issued an order to Porocel of Canada Ltd., a company based in Medicine Hat, AB that provides products and services to the refining and petrochemical industries. The company holds a CNSC licence authorizing the possession and use of nuclear substances in fixed gauges, which it uses to monitor operations at its plant.

The order was issued after an audit conducted by the company. This audit was triggered by a CNSC inspection on December 3, 2015, and identified that the company's workers had used a procedure that the CNSC had not authorized when they partially entered a vessel fitted with a nuclear gauge.

The order required Porocel of Canada Ltd. to immediately cease any activities requiring entry into a vessel or hopper fitted with a radiation device until the company had conducted a full investigation of all vessel entries, including radiation dose estimates; retrained its workers; and effectively implemented a radiation protection program.

DATE ISSUED: MARCH 10, 2016

**Date resolved:** March 21, 2016

**Licensee:** PML Inspection Services Ltd.

**Issue:** The CNSC issued an order on March 10, 2016 to PML Inspection Services Ltd., a company based in Fort Saskatchewan, AB that provides testing services to the industrial sector. The company holds a CNSC licence authorizing the possession and use of nuclear substances contained in industrial radiography exposure devices, for the purpose of materials testing.

The order was issued following a CNSC inspection at a Fort Saskatchewan work site. The inspection identified that the licensee was not complying with requirements for its radiation protection program, including those for providing required safety equipment to workers and appropriately maintaining exposure devices.

The order prohibited PML Inspection Services Ltd. from operating its exposure devices until it had implemented corrective measures and addressed all non-compliances.

DATE ISSUED: MARCH 11, 2016

**Date resolved:** March 16, 2016

**Licensee:** Tomlinson Enterprises Ltd.

**Issue:** The CNSC issued an order on March 11, 2016 to Tomlinson Enterprises Ltd., a company based in Sarnia, ON that provides testing services to the industrial sector. The company holds a CNSC licence authorizing the possession and use of nuclear substances contained in industrial radiography exposure devices, for the purpose of materials testing.

The order was issued following a CNSC inspection at a Sarnia work site. The inspection identified the licensee was not complying with requirements for its radiation protection program, including those for providing required worker training and appropriately maintaining exposure devices.

The order prohibited Tomlinson Enterprises Ltd. from operating its exposure devices until it had implemented corrective measures and addressed all non-compliances.

DATE ISSUED: MARCH 18, 2016

**Date resolved:** May 2, 2016

**Licensee:** Nuclear Services Canada Inc.

**Issue:** The CNSC issued an order on March 18, 2016 to Nuclear Services Canada Inc., a company based in Merlin, ON that provides calibration services to licensees that possess nuclear substances. The company holds a CNSC licence authorizing the possession and use of nuclear substances for the purposes of calibrating radiation detection equipment.

The order was issued following a CNSC inspection at the company headquarters in Merlin. The inspection identified that the licensee was not complying with requirements for its radiation safety manual, radiation protection program and worker training.

The order required Nuclear Services Canada Inc. to cease all activities under the calibration licence. This involved placing all nuclear substances into safe storage until the licensee had implemented corrective measures and addressed all non-compliances.

DATE ISSUED: MARCH 24, 2016

**Date resolved:** April 20, 2016

**Licensee:** Canadian Tower Scanning Inc.

**Issue:** The CNSC issued an order on March 24, 2016 to Canadian Tower Scanning Inc., a company based in Sarnia, ON that provides well logging services to the oil and gas sector. The company holds a CNSC licence authorizing the possession and use of nuclear substances for use in well logging.

The order was issued following a CNSC inspection at the company headquarters in Sarnia. The inspection identified that the licensee was not complying with requirements for the implementation of its radiation protection program, as well those for worker training in this program's safety procedures.

The order required Canadian Tower Scanning Inc. to cease all activities, which involved placing all nuclear substances into safe storage, until it could demonstrate, to the CNSC's satisfaction, that required training was provided to workers; work was being conducted in accordance with all CNSC regulations and the licence; a radiation dose assessment was completed for any workers who had handled the sources by hand; and that all items of non-compliance in the inspection report were corrected.

## ADMINISTRATIVE MONETARY PENALTIES (AMP)

**DATE ISSUED:** JUNE 3, 2015

**Date resolved:** July 2, 2015

**Licensee:** Mr. Mario Mignault

**Issue:** On June 3, 2015, the CNSC announced it had issued an AMP to Mr. Mario Mignault of Pro Rayons-X Inc. The AMP was in the amount of \$23,149 for illegally removing and using a prescribed quantity of a nuclear substance (technetium-99m), on seven separate occasions in 2014 and 2015, from the Centre hospitalier universitaire de Québec. These actions were done without a CNSC licence to possess, use, transport and store this nuclear substance, and they constituted a violation under section 26 of the *Nuclear Safety and Control Act* (carrying on a prescribed activity without a licence).

**DATE ISSUED:** NOVEMBER 9, 2015

**Date resolved:** December 16, 2015

**Licensee:** Elekta, Inc.

**Issue:** The CNSC issued an AMP to Elekta, Inc. in the amount of \$15,820. This AMP was issued for the licensee's failure to comply with paragraph 10(a) of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*, and in light of the fact that this was the licensee's second violation related to the use of uncertified equipment (the CNSC previously issued an order to this licensee on June 1, 2010). It was the CNSC's belief that such violations would continue to recur, unless it took strong regulatory action.

**DATE ISSUED:** JANUARY 12, 2016

**Date resolved:** June 28, 2016

**Licensee:** Ontario Power Generation

**Issue:** On January 12, 2016, the CNSC announced it had issued an AMP to Ontario Power Generation in the amount of \$31,960. The licensee failed to comply with conditions of the Pickering Nuclear Generating Station licence, contrary to paragraph 48(c) of the *Nuclear Safety and Control Act*.

Further details are prescribed information and cannot be released in accordance with subsection 23(1) of the *General Nuclear Safety and Control Regulations*.

**DATE ISSUED:** FEBRUARY 4, 2016

**Date resolved:** February 10, 2016

**Licensee:** Nasiruddin Engineering Ltd.

**Issue:** The CNSC issued an AMP to Nasiruddin Engineering Ltd. in the amount of \$3,730. The licensee had failed to keep radiation exposure to persons as low as reasonably achievable through implementing management control over work practices, resulting in failure to comply with subparagraph 4(a)(i) of the *Radiation Protection Regulations*.

**DATE ISSUED:** FEBRUARY 25, 2016

**Date resolved:** March 16, 2016

**Licensee:** City of Ottawa

**Issue:** The CNSC issued an AMP to the City of Ottawa in the amount of \$7,930. In October 2015, the licensee had stored a radiation device that was not in the proper shielded configuration. In December 2015, the licensee had failed to ensure that the radiation device was in the proper shielded configuration when preparing it for transport and – once aware of that fact – failed to immediately notify the CNSC as required under its licence. While there was no impact to the health of workers, the public or the environment, the City of Ottawa had failed to comply with its licence conditions and was issued the AMP for its contravention of paragraph 48(c) of the *Nuclear Safety and Control Act*.

# ANNEX D: STAKEHOLDER ENGAGEMENT ACTIVITIES

Under the *Nuclear Safety and Control Act*, the Canadian Nuclear Safety Commission (CNSC) has a mandate to disseminate objective, scientific and technical information. The CNSC fulfills this objective by engaging stakeholders in meaningful dialogue on issues such as relicensing and waste, and by reaching out to new audiences to build their knowledge of the organization and its regulatory mandate. Whether they are classroom presentations, conferences or meetings with licensees, the CNSC's outreach activities aim to demystify nuclear science, describe the CNSC's role as Canada's nuclear regulator and bring a "CNSC face" into communities across the country.

In 2015–16, the CNSC actively participated in 179 outreach activities from coast to coast to coast that involved current stakeholders and focused on informing Canada's youth about the importance of nuclear safety.

## OVERVIEW OF OUTREACH ACTIVITIES IN 2015–16

This year, the CNSC completed 179 outreach activities, which included:

- 10 youth-related events
- 12 waste-related events
- 36 events that focused directly on CNSC licensees
- 18 events that focused on communities with nuclear facilities
- 11 events related to environmental issues
- 13 medical-related events

## OUTREACH HIGHLIGHTS

### ENGAGING STAKEHOLDERS AT CNSC 101 SESSIONS

The CNSC 101 program strives to build understanding of and public confidence in Canada's nuclear regulatory regime, through information sessions delivered to diverse audiences in selected locations. The CNSC is particularly interested in providing information about participating in public hearings, and welcomes requests from Canadians for a CNSC 101 session in their community. This past year, 7 CNSC information sessions were delivered to a total of 136 participants, as shown in the following table.

Session location	Number of participants
Toronto, ON	14
Nunavut Mining Symposium (Iqaluit, NU)	30
Bowmanville, ON	16
Edmonton, AB	19
Alberta Health Services (Edmonton, AB)	14
Saskatoon, SK	28
Canadian Nuclear Workers Council (Toronto, ON)	15

### NEW PUBLICATIONS AND INFORMATION PRODUCTS

In addition to regulatory and licensing process documents aimed toward licensees, the CNSC publishes a wide range of other documents and information products. The following documents, information and multimedia products were published in 2015–16 and can be found on the [CNSC website](#).

## NEW PUBLICATIONS

[Regulatory Oversight Report for Canadian Nuclear Power Plants: 2014](#)

[Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014](#)

[Nuclear Substances in Canada: A Safety Performance Report for 2013](#)

[National Sealed Source Registry and Sealed Source Tracking System Annual Report 2014](#)

[Responses to Questions Raised From Peer Review of Canada's Fifth National Report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management](#)

[Study of Consequences of a Hypothetical Severe Nuclear Accident and Effectiveness of Mitigation Measures](#)

[Participant Funding Program Evaluation: Final Report](#)

[The Science of Safety: CNSC Research Report 2014-15](#)

[Canadian Nuclear Safety Commission 2014-15 Annual Report: Regulating Nuclear Safety in Canada](#)

[Canadian Nuclear Safety Commission 2014-15 Departmental Performance Report](#)

[Canadian Nuclear Safety Commission 2016-17 Report on Plans and Priorities](#)

## VIDEOS

[Independent Environmental Monitoring Program](#)

[Participant Funding Program](#)

[The CNSC's Hearing Process](#)

[Positive Void Coefficient of Reactivity and CANDUs](#)

[How the CNSC Regulates](#)

## FACT SHEETS

[Reference levels for nuclear emergency response and post-accident recovery](#)

[Managing public doses during a nuclear emergency](#)

[Health effects of the Chernobyl accident](#)

## INFOGRAPHICS

[Medical imaging and radiotherapy](#)

[Diagnostic imaging and ionizing radiation](#)

[Radiation in action](#)

[Top 10 nuclear-related news stories for 2015](#)

[The CNSC... By the Numbers](#)

## FEATURE ARTICLES

[IAEA DG Amano visits CNSC President Michael Binder in Ottawa](#)

[Commemorating the 5th anniversary of the Fukushima Daiichi accident](#)

[Robotic technologies at nuclear facilities](#)

[Ramzi Jammal selected as President of International Review Meeting](#)

[Probabilistic safety assessment: A tool to estimate risk and drive safety improvement](#)

[Managing chemical, biological, radiological and nuclear risks](#)

[Positive void coefficient of reactivity and CANDUs](#)

[Nuclear forensics at the CNSC](#)

[Young professionals at the CNSC](#)

[Safety cases and probabilistic safety assessments](#)

[Relicensing hearing for the Darlington Nuclear Generating Station](#)

[Nuclear Cooperation Agreement between Canada and India](#)

[The CNSC and CSA Group](#)

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: [cnscccsn@canada.ca](mailto:cnscccsn@canada.ca)

Website: [nuclearsafety.gc.ca](http://nuclearsafety.gc.ca)

Facebook: [facebook.com/CanadianNuclearSafetyCommission](https://facebook.com/CanadianNuclearSafetyCommission)

YouTube: [youtube.com/cnscccsn](https://youtube.com/cnscccsn)

Twitter: [@CNSC\\_CCSN](https://twitter.com/CNSC_CCSN)

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For more information about the Canadian nuclear sector, visit the CNSC website, where you'll find:

- more about the CNSC and its role in nuclear safety
- links to laws and regulations governing Canada's nuclear sector
- information about nuclear facilities in Canadian communities
- news releases and updates on important issues affecting the nuclear sector
- fact sheets on nuclear-related topics
- how to get involved in public hearings or environmental assessments
- CNSC publications and reports
- information bulletins about regulatory documents
- technical and scientific papers

On the website, you can also subscribe to receive email notifications about:

- Commission decisions, hearing documents, meeting notices and agendas
- news releases
- updates to regulatory document comment periods and publications
- presentations
- content updates

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