

# Protecting Canadians



## Canadian Nuclear Safety Commission 2006–2007 Annual Report



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

Canada



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*Please note that the Canadian Nuclear Safety  
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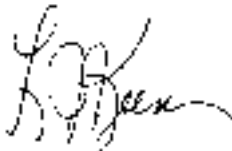
# I. The Canadian Nuclear Safety Commission

Letter to the Minister of Natural Resources Canada  
**The Honourable Gary Lunn**

The Honourable Gary Lunn  
Minister of Natural Resources Canada  
Ottawa, Ontario

Sir:

I have the honour of presenting you with the Annual Report of the Canadian Nuclear Safety Commission for the fiscal year ending March 31, 2007. The report has been prepared and is submitted in accordance with Section 72 of the *Nuclear Safety and Control Act*.



Linda J. Keen  
President



Canadian Nuclear Safety Commission  
Commission canadienne de sûreté nucléaire

Canada



## Protecting Canadians

The CNSC's regulatory regime requires that licensees design, construct and operate their facilities safely at all times.





## Protecting Canadians' Health

Increased demand and the development of new technologies in the fields of nuclear medicine and radiation therapy require constant vigilance on the part of the CNSC.





## Protecting Canadians' Security

To protect Canadians, the CNSC has initiated major new security initiatives that apply to nuclear facilities and substances.







## Protecting the Canadian Environment

Protecting the environment is of major importance in the work of the CNSC, through its environmental responsibilities under the *Nuclear Safety and Control Act* and other relevant legislation.







Message from the President  
Linda J. Keen

On behalf of Canadians, the Canadian Nuclear Safety Commission (CNSC) acts as Canada's independent nuclear regulator to oversee the requirements for safety, security, environmental protection and non-proliferation for all nuclear installations and materials in Canada.

This annual report outlines the work of the CNSC and its staff over the past year. I would like to highlight a few areas of priority action undertaken by our agency.

Our first priority area is a modern regulatory framework. The *Nuclear Safety and Control Act* (NSCA), which was promulgated in 2000, remains one of the most modern and comprehensive legislations in the world. Last year saw other countries, including France and Switzerland, moving toward similar independent oversight of their nuclear industries. The CNSC continues to review the NSCA and to modernize its regulations, regulatory requirements and guidance documents. This ongoing review will ensure rigorous and enforceable requirements for compliance as well as a clear regulatory direction, which will provide industry with the regulatory requirements to make their investment decisions, especially with respect to new nuclear power plants.

The second area of focus is building the capacity of the CNSC. We have benefited from clear support from the Government of Canada, which has allowed us to grow in order to meet a new workload in all areas of our regulatory mandate, spanning the entire nuclear cycle from uranium mining and power production to waste management. Almost 70% of the CNSC's activities are cost recovered, and the remaining areas, such as medical clinics, universities and emergency management, represent clear public policy decisions. We expect the CNSC to grow further as the industry we regulate declares its intentions to expand and have started *Vision 2020* to clearly outline the needs for the agency in the future.

The third priority that I would like to highlight is good governance. All federal agencies are required to adhere to strict and transparent governance and accountability. The CNSC has continued to work with the Treasury Board Secretariat, the Office of the Auditor General and other central oversight agencies, to assure the Government of Canada of our effectiveness, efficiency and transparency to Canadians. In parallel, the CNSC is committed to and is clearly articulating its independence regarding scientific integrity and decision making as a quasi-judicial administrative tribunal.

Finally, the CNSC is, and will continue to be, committed to continuous improvement and to working with our international counterparts to ensure Canada is a leading player in the areas of nuclear safety, security and non-proliferation as well as the protection of persons and the environment.

All of these efforts are to assure Canadians of the integrity, effectiveness and efficiency of the CNSC.

Sincerely,

Linda J. Keen, M.Sc.



Executive Management Team



Linda J. Keen  
*President*



Ken Pereira  
*Executive Vice President  
Operations*



Claude Caron  
*Vice President and  
Chief Financial Officer*



Patricia McDowell  
*Vice President  
Regulatory Affairs*



Jacques Lavoie  
*Director  
Legal Services and  
General Counsel*



Marc Leblanc  
*Commission Secretary*

# II. The Canadian Nuclear Safety Commission

## Overview

### Mission and Vision

The mission of the Canadian Nuclear Safety Commission<sup>1</sup> (CNSC) is to regulate the use of nuclear energy and materials to protect health, safety, security, and the environment and to respect Canada's international commitments on the peaceful use of nuclear energy.

In pursuing this mission, the CNSC is working toward realizing its vision of becoming one of the best nuclear regulators in the world. To this end, the CNSC is committed to four strategic objectives:

- ensuring the effectiveness of its regulatory regime
- operating with a high level of transparency
- attracting and retaining excellent staff
- maintaining efficiency of its regulatory regime

In carrying out its mandate, the CNSC upholds the values of quality, integrity, competence, dedication and respect for others.

The CNSC is an independent, quasi-judicial administrative tribunal and federal regulatory agency. As a departmental corporation under Schedule II of the *Financial Administration Act*, it reports to Parliament through the Minister of Natural Resources. Within its nuclear safety mandate, the Commission sets regulatory policy, makes regulations as required, and decides on major licence applications, renewals and related requests.

Members of the Commission, who are appointed by the Governor in Council at good behaviour, are separate from CNSC staff to maintain independence when making licensing and related decisions. CNSC staff function as expert advisors to the Commission and undertake the implementation of decisions made by the Commission, acting as Designated Officers for some licences.

### Regulatory Framework

The CNSC was created under the *Nuclear Safety and Control Act* and derives its mandate from the Act. The CNSC regulatory framework is an ever-green framework of regulations and associated regulatory policies, standards and guides that apply to all nuclear industries including, but not limited to:

- nuclear power reactors
- non-power nuclear reactors, including research reactors
- nuclear substances and radiation devices used in industry, medicine and research
- the nuclear fuel cycle, from uranium mining through to waste management
- the import and export of controlled nuclear and dual-use substances, equipment and technology identified as proliferation risks

The CNSC also has certain functions under the *Nuclear Liability Act*, conducts environmental assessments under the *Canadian Environmental Assessment Act*, and implements Canada's bilateral agreement with the International Atomic Energy Agency on nuclear safeguards verification. As a model of regulatory efficiency, the CNSC oversees the entire nuclear cycle and all aspects of nuclear safety in Canada.

### Funding of CNSC Operations

The CNSC's operations are funded through an annual appropriation from Parliament. The agency's workload, and therefore its resource requirements, is largely driven by the level of demand for licensing and regulatory oversight and by Canada's international commitments. The CNSC applies to the Treasury Board Secretariat to increase its cost-recoverable expenditures and related

<sup>1</sup> The Canadian Nuclear Safety Commission or CNSC refer to the total organization. The tribunal component is referred to as the Commission and the staff component as CNSC staff.



fee revenues or to receive new program funding when its workload increases.

The Government of Canada recovers most costs associated with the CNSC's regulatory activities from licensees, in accordance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (2003). The CNSC collects fees and deposits them to the Consolidated Revenue Fund. Some licensees, such as hospitals and universities, are exempt from paying fees. 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 the non-proliferation of nuclear weapons), public responsibilities such as emergency management and public information programs, and updating of the *Nuclear Safety and Control Act* and associated regulations as appropriate.

#### Additional Funding Resources Received for 2006–07

In 2005, the Treasury Board Secretariat provided additional short-term funding of \$14.5 million for 2006–07. For 2006–07, the CNSC's actual expenditures were \$85.3 million. Fees received were approximately \$58.3 million. The growth in the CNSC's regulatory oversight program, the emerging priorities and how this additional funding is being used to respond to the increased workload are discussed in greater detail in Part III – Priorities of this annual report.

As a result of growing activity in all areas of the nuclear sector over the past several years, the CNSC has experienced a substantial increase in its workload in most areas of its responsibility. In its 2006 budget, the Government of Canada recognized the CNSC's need to expand and allocated it additional funds of more than \$93 million, the majority of

which is cost-recoverable from licensees, to improve regulatory oversight over a five-year period. Of this funding, \$4.5 million was allocated to the plan for 2006–07. These additional resources enable the CNSC to fund growth of its regulatory program, including overseeing nuclear power reactor refurbishment projects, expansion of uranium mining, research facilities, waste management; and the use of nuclear substances, including health care facilities; and addressing risks to security of nuclear facilities while implementing numerous improvement initiatives. In addition, after the receipt of two applications for site licensing for construction of new power reactors in Canada, the CNSC requested and received incremental funding for \$1.6 million for 2006–07 and of \$6.1 million for 2007–08 to start to process these applications. These funds are also required to start to prepare a modern regulatory framework for the construction of new power reactors in Canada. The CNSC will continue to prepare to meet new demands with respect to new nuclear power plants and the domestic safeguards and non-proliferation regime.

#### The CNSC and Canada's Performance

The Treasury Board of Canada's annual report, *Canada's Performance*, provides a government-wide statement of Canada's performance in three policy areas. The CNSC aligns its activities under these policy areas:

##### **Economic Affairs**

- a clean and healthy environment

##### **Social Affairs**

- healthy Canadians with access to quality health care
- safe and secure communities

##### **International Affairs**

- a secure world through international cooperation

# III. The Canadian Nuclear Safety Commission

## Priorities

The CNSC identified, in a risk-informed manner, the following three priorities in its 2006–07 *Report on Plans and Priorities*.

1. Deliver an effective regulatory program for existing facilities

The CNSC's efforts to deliver an effective regulatory program for existing facilities and to implement improvement initiatives are discussed in greater detail, under Part IV—Program Activities and Contribution to the CNSC's Strategic Outcomes.

2. Effectively manage growth of the regulatory program

The CNSC has identified five major growth areas in its regulatory program:

1. Nuclear power reactor refurbishment projects
2. Uranium mining, research facilities and waste management
3. Licensing and compliance of the use of nuclear substances
4. Mitigation of risks to nuclear security
5. Creation of a modern regulatory framework for construction of new nuclear reactors in Canada

The increase in the CNSC's workload is the result of growing nuclear industry activity in four of the five areas listed above. The growth in the mitigation of risks to nuclear security is the result of increased national and international assessments of the measures required to ensure effective security at Canada's major nuclear installations.

3. Implement improvement initiatives

Several new initiatives were developed this past year as a result of the growth in the regulatory program. The following is a discussion of the emerging priorities, the initiatives and activities that were undertaken and the results achieved.

### a. Nuclear power reactor refurbishment projects

#### Protecting the Canadian public

The CNSC protects the Canadian public by requiring nuclear facilities to meet both modern, high-level safety goals and regulatory requirements for secure operation. A nuclear power plant licence is evaluated and, if appropriate, amended with specific conditions when the licensee undertakes a project to extend the life of a reactor. A licensee must adhere to the *Nuclear Safety and Control Act*, the *Canadian Environmental Assessment Act*, the associated regulations and licence conditions throughout a life extension project and subsequent reactor operation. Approval to return a reactor to service is contingent upon a licensee's demonstration that it has met relevant licence conditions.

In keeping with its regulatory mandate, the CNSC expects a licensee to demonstrate that it meets the following objectives for any life extension project:

1. Adequate determination of the technical scope of the project, through a safety improvement plan that considers results of an environmental assessment and an integrated safety review
2. Establishment of programs and processes that take into account any special considerations of the project
3. Appropriate project planning and execution

In May 2006, the CNSC issued the draft regulatory guide *Life Extension of Nuclear Power Plants (G-360)* for public consultation. The document includes information for licensees and other stakeholders on the licensing steps required to extend the operating life of a power reactor. In particular, the guide notes that a licensee wishing to refurbish a nuclear reactor should perform an integrated safety review based on the probabilistic safety assessment guidelines of the International Atomic Energy Agency.



Many of Canada's nuclear power plants are nearing the end of their designated operating lives. During 2005–06, the CNSC received incremental funding from the government to manage the increase in workload to regulate licensee refurbishments of power reactors — including those at Bruce and Point Lepreau — and to regulate aging nuclear reactors (specifically, Units 2 and 3 at Pickering A).

#### **Bruce Power**

Units 1 and 2 at Bruce Nuclear Power Development's Bruce A site are being refurbished. CNSC staff have reviewed the licensee's integrated safety review report and safety improvement plan and are monitoring the implementation of these plans by the licensee. The CNSC is also overseeing the secure disposal of obsolete equipment and contaminated parts being generated by the refurbishment program.

#### **Pickering Nuclear Generating Station**

Units 2 and 3 at the Pickering A Nuclear Generating Station are currently in a guaranteed shutdown state and will be placed in long-term safe storage. The licensee has decided that these units will not be refurbished. In 2006–07, CNSC staff were on site to verify that fuel and heavy water were removed from the reactors and stored according to IAEA standards. A number of licence amendments were required, due to the fact that some safety requirements, such as maintenance and testing, differ when units are operating versus when dormant.

During 2005–06, the CNSC received an application to undertake an environmental assessment for the proposed refurbishment of Pickering B's four reactors, that would extend their operating lives to 2060. As the sole responsible authority for the environmental assessment, the Commission reviewed the proposed approach and made a decision as to the scope of the project and the assess-

ment, in accordance with the requirements of the *Canadian Environmental Assessment Act*. The Commission first had to determine the scope of both the project and the assessment. CNSC staff also carried out and will continue to conduct public consultations, including workshops on the environmental effects of the proposed project, mitigation measures and on the follow-up program.

#### **Point Lepreau**

In July 2006, the Commission granted a five-year licence renewal to New Brunswick Power Nuclear's Point Lepreau Generating Station, which is in the early stages of refurbishment. CNSC staff has reviewed the licensee's Integrated Safety Review report. Point Lepreau is planning a 2009 outage to complete the refurbishment, and the CNSC has developed its project plan for regulatory oversight of the refurbishment to coincide with this timing.

During 2006–07, the CNSC oversaw the start of the expansion of Point Lepreau's solid waste management facility, which will store waste generated during refurbishment and throughout the extended life of the facility.

#### **Gentilly-2**

Hydro-Québec is reviewing the possibility of refurbishing its Gentilly-2 nuclear reactor to extend its life to 2035, but has not yet made a decision to do so. The CNSC staff directed the review of Hydro-Québec's Environmental Assessment Screening Report for proposed modifications to the Gentilly radioactive waste management facilities and refurbishment of the generating station, as a precursor to potential licensing of the refurbishment project. The Commission accepted the screening report in November 2006. CNSC staff also reviewed the licence amendments that would be required for any subsequent application to proceed with the refurbishment of the generating station.

## b. Uranium Mining, Research Facilities and Waste Management

Canada is the world's largest producer of uranium and there is increasing demand for production. There has been an increase in the number of new reactor projects throughout the world and a large number refurbishments of existing reactors that involve an increase in the total generating capacity of the reactors. This growth in activity and demand has resulted in a dramatic rise of the price of uranium on world markets. This growth in demand and rise in price has accelerated industry plans to expand existing mines and explore for new uranium sources. Although Canadian uranium is currently mined only in Saskatchewan, there are uranium exploration activities underway in virtually every region of the country, which are expected to lead to increased uranium mine applications.

With the potential for new uranium mining projects, the Canadian Nuclear Safety Commission developed and issued *Licensing Process for New Uranium Mines and Mills in Canada* (INFO-0759) in March 2007. This document provides an overview of the licensing process for new uranium mines and mills in Canada based on requirements of the *Nuclear Safety and Control Act* and its regulations, and it refers to the *Canadian Environmental Assessment Act*. It explains the major steps involved in the established regulatory process for licensing new uranium mines or mills. The document is aimed at a broad audience, encompassing those involved directly in uranium mine development as well as those with an interest in the federal regulatory regime that applies to uranium mining and milling. Probable timelines involved in the licensing process are described, as are the stages in the process where interested parties, including the public, can provide input in the decision-making process.

A major flood occurred in October 2006 at Cameco's Cigar Lake uranium mine in northern Saskatchewan. CNSC staff responded quickly during the incident to provide regulatory oversight

while the licensee managed the flood. CNSC staff has since been reviewing the circumstances surrounding the flood, and Cameco presented an initial report to the Commission in November 2006. Analysis of the root cause is ongoing, and CNSC staff has shifted some resources from oversight of the mine to focus on the recovery operations.

Also in 2006, the Commission decided that selenium, a contaminant in the effluent from Cameco's Key Lake Mill in Saskatchewan, was being released in concentrations and quantities that posed an unreasonable risk to the environment. CNSC environmental science experts determined through a scientific study, that cumulative releases of selenium exceeded those predicted in the licensing environmental assessment and posed a risk to the environment. This finding stopped a proposed expansion of the Key Lake facility and the Commission Tribunal ordered that mitigating measures be taken to control environmental impacts. The CNSC scientific study on selenium was peer reviewed in the U.S. and in Canada. The study's results has implications for the uranium mining industry as a whole and will influence the future regulation of the Canadian uranium mining industry.

### Nuclear waste management

The activities licensed by the CNSC generate the following types of waste, which are managed in various ways:

- Uranium mine waste rock and mill tailings are disposed of in above-ground facilities or in pits
- Low-level radioactive waste and radioactive waste requiring shielding, which arises from uranium processing plants, nuclear power plants, nuclear research facilities, and industrial and medical applications is stored in above-ground structures and in shallow in-ground structures
- Highly radioactive nuclear fuel waste (spent fuel) is stored in water-filled bays or in various dry storage structures (dry storage casks, above-ground and in-ground concrete canisters, and modular above-ground vaults)







## Monitoring the environmental effects of uranium mines

In 2002, the Government of Canada promulgated the *Metal Mining Effluent Regulations* (SOR/2002-22) under the *Fisheries Act*. The regulations set out requirements for mines to undertake environmental effects monitoring (EEM) to assess how mines affect fish, fish habitats and the usability of fisheries resources.

The CNSC is a member of Environment Canada's Metal Mining EEM Review Team consisting of experts from government, industry, environmental and aboriginal communities, to undertake a review based on experiences from the first phase of monitoring. Monitoring of radionuclides and hazardous substances contaminants and their potential biological effects on the environment, has been a CNSC requirement for uranium mines since the 1990s.

Environmental monitoring experience at Canadian uranium mines was instrumental in influencing two recommendations from the national review team: the need to further investigate selenium releases in mine effluents and include selenium as a monitored effluent variable; and the importance of coordinating and linking the Environmental Assessment process with the design, implementation and interpretation of the *Metal Mining Effluent Regulations* environment effects monitoring programs. The CNSC is one of the few regulators to have implemented such an integrated approach to environmental protection, where results of environmental assessments are used to design environmental and effluent monitoring programs and interpret their results.

In September 2006, the Ministers of Environment and Health published the final decision on the Assessment of Releases of Radionuclides from Nuclear Facilities (impact on non-human biota) in Part I of the *Canada Gazette*. The finding reported that uranium and uranium compounds, contained in effluent releases from uranium mines and mills, are entering the environment in quantities or concentrations or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity. The Ministers proposed to take no further action under the *Canadian Environmental Protection Act* in respect of this substance because the *Nuclear Safety and Control Act* enables the CNSC to protect non-human biota from such releases. A risk management process has been formalized in an annex to a memorandum of understanding negotiated between Environment Canada and the CNSC. CNSC environmental specialists have conducted numerous research studies to better understand the toxicity of uranium to aquatic organisms and to identify best available technologies for the treatment of uranium in effluent. The Commission required a licence condition in the Rabbit Lake Mine and Mill licence to identify and implement mitigation measures that would significantly reduce the amount of uranium discharged to the environment.

Additional possible approaches to long-term waste management include surface and near-surface facilities and deep geological facilities for disposal or long-term storage.

In addition to radioactive waste generated by licensed activities, legacy and historic waste from the early days of the nuclear industry (for example, closed uranium mines) falls under CNSC regulatory oversight and is subject to CNSC licensing requirements .

Waste management systems for long-term storage and disposal of waste refer to the combination of natural and engineered barriers and operational procedures used to manage waste safely. Long-term assessment of these systems can provide information for making decisions concerning the following:

1. Selection of an appropriate site (if more than one site is available)
2. Site characterization
3. Selection of a suitable design option during planning
4. Optimization of selected design(s), including the minimization of operational and post-operational impacts
5. Development of construction, operation, and decommissioning strategies and plans

Recent growth in number and size of waste management facilities has required the CNSC to engage additional resources to meet the demands of licensing analysis and subsequent compliance oversight.

During the year, the CNSC provided regulatory oversight as New Brunswick Power Nuclear commenced construction of a long-term storage facility to handle the waste from its upcoming refurbishment of the reactor at Point Lepreau. In addition, the CNSC reviewed the project plan for construction and operation of additional storage structures at Hydro-Québec's Gentilly Radioactive Waste Management Facility in Bécancour, Québec.

CNSC staff appeared before the Commission regarding this project at a hearing in March 2007, and a licence amendment was granted shortly thereafter in April. The Commission also considered Ontario Power Generation's licence renewal application for the Western Waste Management Facility, a dry storage facility that manages all of Ontario Power Generation's and Bruce Power's waste, including used reactor fuel, at the Bruce Power site in January 2007.

#### Port Hope Area Initiative

The environmental assessment for the Port Hope Area Initiative was approved. This is a Government of Canada initiative to clean up contaminated sites in the Port Hope Region by constructing facilities for long-term storage of historic low-level radioactive wastes.

#### Deep Geologic Repository

Ontario Power Generation has proposed a deep geologic repository that would be constructed within the Bruce Nuclear Power site in Kincardine, Ontario, and house low- and intermediate-level radioactive wastes. The project requires a comprehensive environmental assessment, and the CNSC, as the lead agency for the assessment, has been exploring the possible approaches. The Commission has announced its recommendation to the federal Minister of the Environment that the proposal be referred to a review panel. The Minister of the Environment will now decide on this recommendation. The CNSC consulted extensively on this project with the community, including the Saugeen Ojibway Nations.

#### New regulatory guide

In December 2006, the CNSC issued a regulatory guide to assist applicants for new licences and licence renewals in assessing the long-term safety of radioactive waste management. *Assessing the Long-Term Safety of Radioactive Waste Management* (G-320) describes approaches to assess the potential long-term impact of radioactive waste storage and disposal methods on the environment and on the health and safety of people.

The regulatory guide addresses the assessment of long-term safety to support licence applications, and includes discussion of assessment methodologies, structures, and approaches, which the CNSC will examine.

### c. Licensing and Compliance of the Use of Nuclear Substances

The CNSC continues to address a rapidly growing number of Class II nuclear facilities, principally those for cancer treatment that use radiation therapy. The CNSC received increased resources to improve capacity for regulatory oversight of this industry sector. However, growth has been greater than projected.

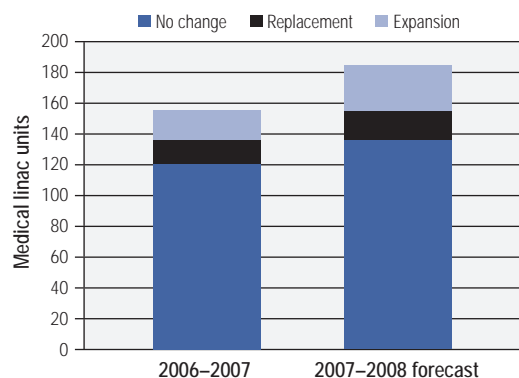
The total number of radiation therapy facilities under CNSC licence increased by 15% from the preceding year. A major trend among Canadian radiation therapy centres over the past year has been the replacement of existing radiation therapy accelerators with more technologically advanced ones. An estimated 10% of existing radiation therapy accelerators were replaced in this manner (see Figure 1). In addition to a continuation of this trend, the CNSC expects a significant increase in the number of new radiation therapy facilities in the upcoming fiscal year, with about 30 facilities expected to be in various stages of construction — most of which will begin routine operation towards the end of 2007–08 or early in the subsequent year.

During 2006–07, CNSC staff employed a systematic, risk-informed approach to balance its review of new licence applications and with ongoing compliance verification activities to ensure the safety of Canadians. Rigorous safety reviews and independent verification of licensee submissions were routinely performed for all new construction applications, with on-site follow-up taking place when major projects or issues were identified. For facilities under active clinical use, a program of comprehensive bi-annual compliance audits was launched in March 2006, and 54 facilities were inspected during the 2006–07 fiscal year. Ongoing compliance of all licensed facilities was assessed by reviewing the annual compliance reports submitted by licensees.

Through risk-informed licensing of nuclear substances and radiation devices, CNSC staff ensured effective regulatory control over the activities of all applicants and licensees. With this approach, CNSC staff continued to consistently apply regulatory requirements to the more than 2,500 licensees of this type across Canada. CNSC also provided ongoing written and verbal information about the CNSC’s expectations of applicants and licensees to ensure transparency and to promote understanding of regulatory obligations.

In July 2006, CNSC staff implemented a new licence format for nuclear substances and radiation devices and Class II facilities that standardized the layout and presentation of information in the licence. In addition to revising some licence conditions to increase clarity, new features were added, including the ability to reference licensee commitments as part of the licence itself. This change allowed licensees to propose alternate methods of achieving compliance with the regulatory framework and provided the basis for assessing compliance. Other changes were carried out to enhance

Figure 1.  
Medical Licences for Linear Accelerators (linac)



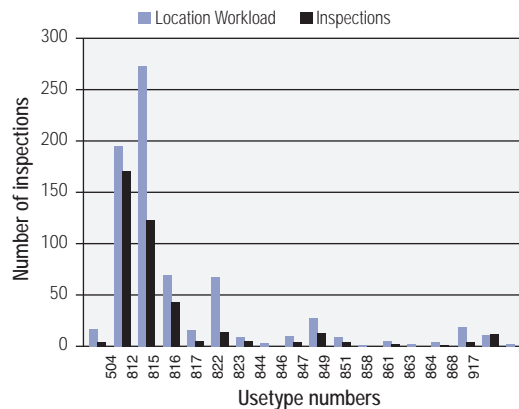


security of information and changes to annual compliance reports, including their incorporation as part of the licence, further streamlining the reporting process for all licensees. Licensees have generally embraced these changes and have taken the opportunity to include specific procedures as part of their licences.

The number of each type of CNSC licence varies slightly from year to year. Since the end of the 2005 fiscal year, the total number of licences issued through the CNSC’s Directorate of Nuclear Substance Regulation has increased more than 7%. This licensing work is directly influenced by changes and advances in various fields, such as medical diagnosis and therapy. The use of radiation devices in industrial radiography is profoundly influenced by work in the oil and gas sector, particularly in western Canada. While the number of industrial radiography licences has remained relatively stable, the need for regulatory oversight for this high-risk group continues to demand significant CNSC resources. As part of an overall strategy for ensuring continued effective control, the CNSC will be implementing a program to carry out an overall assessment and alignment of staff efforts in this area. This program aims to effectively coordinate work between CNSC staff and to provide additional measures to ensure the mandate of the CNSC is respected, through provisions for the health and safety of persons.

In high-risk uses or applications areas such as industrial radiography (usetype 812), the CNSC completed 100% of the planned annual regulatory compliance workload (see Figure 2).

Figure 2.  
2006–2007 Type II High-Risk Inspections vs Workload



\* Inspection data graphs represent the number of Type II<sup>3</sup> inspections and the percentage of annual workload completed by “usetype”. Each usetype has an assigned inspection frequency for Type II inspections, which when compiled, produces an annual workload figure. Almost all high risk usetypes undergo annual Type II inspections, except usetype 868 (borehole tube tagging), which has a two-year frequency; however, data in the graph has been normalized to show the workload for a single year.

Throughout the year, the CNSC staff continued to focus regulatory effort on radiography applications because these workers in this area continue to receive doses higher than other nuclear energy workers and have a track record of below-average compliance in the area of safety culture. CNSC regulatory efforts in the previous year have shown a decrease in the number of incidents and an associated reduction in radiation doses to workers. For portable gauge users, classified as medium risk, the CNSC completed 85% of its annual regulatory compliance workload. Portable gauge users were also targeted through outreach and an enhanced compliance

<sup>3</sup> Type II inspections are routine (item-by-item) checks and rounds that typically focus on the outputs, or performance of licensee programs, processes and practices. Findings from Type II inspections play a key role in identifying where a Type I inspection may be required to determine systemic problems in licensee programs, processes or practices.

program. These concentrated regulatory efforts produced results with individual licensees in addition to creating awareness within the industry.

The CNSC is also fostering compliance by engaging in dialogue with licensees through regulatory outreach. There are also regular meetings with radiographers that have resulted in increased attendance (more than 95% of CNSC radiography licensees) and enhanced participation. More than 90% of attendees asked for these meetings to continue.

The CNSC operations inspections division has trained or is in the process of training seven new inspectors and has therefore concentrated on Type II inspections. As staff is trained, a more balanced distribution of Type I and Type II inspections across usetypes can be maintained.

The CNSC's Directorate of Nuclear Substance Regulation tracks all licensing and certification activities. The following table summarizes the licensing and certification regulatory process for 2006–07.

Licensing and Certification Regulatory process: 2006–07

Licences	Application Received	913
	Renewed	728
	Revised	925
	Revoked	160
	New	179
Device Certificates	New	15
	Renewed	1
	Revised	20
Transport	New Licence	154
	Revised Licence	15
	Certificate	53
Annual Compliance Report	Received	2595

To monitor program effectiveness, CNSC performance standards were measured for each licensing and compliance program area. The target was to achieve 80% of these activities within published CNSC performance standards. Results are outlined in section 3 within Part IV of this report.

### Nuclear substance events program

“Events” are unusual or unplanned occurrences with radioactive nuclear substances or prescribed equipment, which licensees must report to the CNSC within specific timeframes to comply with regulations or licence conditions. Some events, such as waste radiation alarms and scrap metal radiation alarms, are reported by non-licensees. The following table shows the number of events by type reported in each of the past three fiscal years.

Nuclear Substances Events by Fiscal Year

Event type	2004–05	2005–06	2006–07
Action Level Exceeded <sup>1</sup>	0	1	3
Bankruptcy	0	1	0
Breach of Security <sup>2</sup>	2	1	1
Contamination Incident	5	10	6
Device Damaged	16	31	22
Device Malfunction	12	11	10
Dose Limit Exceeded to Nuclear Energy Worker	5	4	4
Dose Limit Exceeded to Non-Nuclear Energy Worker	3	2	5
Failed Leak Test	1	3	3
Fire or Explosion	4	0	3
Found Nuclear Substance	5	2	1
Loss <sup>3</sup>	13	12	11
Other	3	6	6
Procedure Error	5	3	4
Scrap Metal Alarm	37	14	14
Spill	2	8	4
Stolen <sup>4</sup>	7	7	6
Transportation Incident/MVA	19	12	27
Unauthorized Possession	0	1	0
Unauthorized Use	1	1	1
Waste Alarm	3	13	119
Work Disruption	0	3	2
<b>Grand Total</b>	<b>143</b>	<b>146</b>	<b>252</b>

<sup>1</sup> An action level is an administrative control level defined in the *Radiation Protection Regulations* that calls for investigation by the licensee and a report to the CNSC.

<sup>2</sup> For the purposes of nuclear substances events, a breach of security is an event where workers or the public entered a controlled radiation area without authorization. No dose was received.

<sup>3</sup> The 11 events were mitigated, except for 4 low-risk sources and 1 medium-risk device that were not recovered.

<sup>4</sup> The 6 events involved 9 radioactive sources, of which 3 were low-risk nuclear gauges that have not been recovered.

The preceding table shows a significant increase in the number of waste alarms in during 2006–07. The CNSC investigated the reasons for the increase in waste alarms, the majority of which originated in Southern Ontario. The reasons appeared to be as follows:

- An increased awareness by waste site operators of CNSC regulatory jurisdiction over radioactive nuclear substances due to a CNSC outreach campaign of posters and pamphlets.
- An increased number of municipal waste facilities and transfer stations (especially in the Toronto area) that have installed sensitive portal vehicle radiation monitoring systems.
- An improvement in the quality and detection ability of the monitoring systems resulting in more alarms.

Once nuclear substances are detected, the facility operator informs the CNSC. In the rare event of a high level radiation alarm, an inspector will visit the site to investigate. More than 75% of waste alarms are due to the presence of small quantities of short-lived radioactive nuclear substances of medical origin, which pose little or no risk.

The CNSC has initiated a research study to establish a risk-informed intervention strategy for the waste alarms.

#### **d. Mitigating Risks to Nuclear Security**

##### *Amended Nuclear Security Regulations*

The Commission introduced amendments to the *Nuclear Security Regulations* in Fall 2006. These amendments were based on previous documentation of best practices by the International Atomic Energy Agency (IAEA), along with CNSC consultation with licensees (through the Inter-Utility Security Working Group established in 2002), law enforcement and intelligence agencies and government. The amendments gave permanent codification to the requirements that were established after the terrorist events of September 2001, along with

additional licensee security requirements. Principal security requirements resulting from the amendments, which apply to all nuclear power plants and high-risk facilities, were as follows:

- **Design basis threat analysis** – to consider the postulated threat definition in the design of a licensee’s physical protection system.
- **Threat and risk assessment** – to evaluate local threats to a licensee’s facility and to account for any credible threats in the design of their physical protection system.
- **Identification and protection of vital areas** – to identify and apply physical protection measures to a nuclear facility’s high-risk areas.
- **On-site nuclear response force** – to establish an armed, on-site response force that is available at all times for immediate and effective intervention.
- **Predetermination of trustworthiness** – requires unescorted employees to have a security clearance or an authorization appropriate to their level of access, including police and intelligence background checks.
- **Responsibility for granting authorizations** – to define the licensee’s responsibility in authorization of access to facilities.
- **Access control** – to have appropriate procedures and devices in place to positively identify and screen persons entering a nuclear facility.
- **Uninterrupted power supply (UPS)** – to have an uninterrupted power supply (for example, back-up battery power) in place to maintain the operation of alarm systems, alarm assessment systems and various essential functions of the security monitoring room.
- **Contingency planning, drills and exercises** – to validate physical protection systems through regular drills, and to develop and exercise contingency plans to manage anticipated security related emergencies.
- **Vehicle barriers and portals** – to reduce the risk of forced vehicle penetration into a nuclear facility through physical measures.





## Sealed Source Tracking System

The CNSC is responsible for ensuring the safety and security of high-risk radioactive sources and it strengthened regulatory controls in 2006 by implementing a Sealed Source Tracking System within an upgraded national sealed source registry. Using a secure system, licensees must now report possession of and transactions involving sealed sources. Canada is the first country with such robust inventory tracking controls, and several countries are choosing to learn from the Canadian experience.

The tracking system has been a great success in ensuring that high-risk radioactive sources are used only for peaceful purposes. Canada is one of the world's largest suppliers of sealed sources. Licensees must report to the CNSC all imports, exports, receipts and transfers. The number of sources in the new registry exceeds 30,000, far greater than projected, and there have been over one million transfers of these goods. Resources were allocated in 2006–07 to educate holders of these sources in using an electronic tracking system that was introduced in July 2006. During 2006–07, 90% of the transactions were paper based, and more licensees are expected to use the electronic system in the future. Another element of the tracking is in export controls. At the end of 2006–07, the CNSC launched an enhanced Risk-Significant Sealed Sources Export and Import Controls Program, which enhanced the program for licensees wishing to export certain risk-significant radioactive sealed sources and the requirement to obtain transaction-specific export licences from the CNSC.

The implementation of the strengthened export and import controls program, together with an enhanced National Sealed Source Registry, assures Canadians and the global community that international transfers of risk-significant sealed sources are conducted and regulated appropriately for safety and security.

- Supervisor awareness program – to train supervisors to recognize behavioural changes in all facility personnel, including contractors, that may indicate an increase in risk to the security of the facility.

#### Increased CNSC security staff

Over the last five years since the terrorist attacks on September 11, 2001, the CNSC has increased its security staff, who include security inspectors and specialists who monitor and verify compliance in areas such as tactical response, security systems, personal security, and intelligence analysis. Implementation costs, the majority of which are borne by licensees, were significant.

#### Further steps

The adaptation of Canadian nuclear security to the post-9/11 world is continuing, and next steps include performance testing of security personnel and systems under realistic conditions, expanding internal intelligence analysis capabilities to relay information to licensees in a timely manner, and corollary technical standards and guidelines based on the amended security regulations.

The CNSC continues to receive information from CSIS, the RCMP, the Integrated Threat Assessment Centre and others. The CNSC followed potential threats to ensure effective response. This ongoing information, along with the international standards, is driving further security improvements for Canada's nuclear industry.

#### **e. Creation of a Modern Regulatory Framework for Construction of New Nuclear Reactors in Canada**

Given the receipt of two applications from Bruce Power and Ontario Power Generation for licences to prepare sites to build new power reactors, the CNSC was allocated funding to establish a New Reactor Licensing Division in 2006. These resources will enable the CNSC to develop the modern regulatory framework for licensing new reactors. Staff commenced preparation of the necessary framework and are working to document licensing requirements and provide guidelines to meet these requirements. This material builds upon many years of licensing and compliance experience with Canada's aging reactors and on international guidelines and experience in such areas as design, acceptable doses, failure processes and shutdown systems.

In February 2006, the CNSC issued *Licensing Process for New Nuclear Power Plants in Canada* (INFO-0756) to explain the key steps in licensing a new reactor, taking into consideration the requirements of the NSCA and its regulations. In March 2007, a supplementary document was published to elaborate upon the review of reactor designs within the licensing and environmental assessment processes for new nuclear power plants in Canada. Also in development are the design and siting requirements for new reactors that will be issued for public comment in 2007.

Many environmental assessments (EAs) in the coming years will be conducted as part of applications to construct new nuclear power reactors. In a document released in February 2006, the CNSC clarified the EA process associated with the estab-

ishment new nuclear power plants. When the CNSC receives an application to prepare a site, this will trigger an EA under the *Canadian Environmental Assessment Act* to determine if the project may cause significant, adverse environmental effects, taking into account available mitigating measures. The Commission will not issue any licence until an EA is complete and has reached a positive decision. The EA will include consideration of potential environmental effects throughout the plant's life cycle. If an EA results in a negative decision, the licensing process for that project will stop.

The recent applications for licences to prepare a site for new reactors triggered environmental assessments that will require several years to complete. Site preparation will not commence until 2009, contingent upon assessment results. Bruce Power also submitted a project description in January 2007, which the CNSC has begun reviewing. Ontario Power Generation was expected to submit a similar document by April 2007.

The CNSC is also participating in the Multinational Design Evaluation Program, which is considering the extent to which regulators can cooperate in evaluating reactor designs. This is a pilot project, limited to a few technical areas, that is comparing the regulatory requirements from each of the participating countries and the regulatory activities that would be undertaken to verify the requirements have been met. The program's long-term goal is to harmonize regulatory requirements and regulatory practices. The group, which has representatives from 12 countries, is set up under the Nuclear Energy Agency.

Linda Keen, CNSC President and current President of the Convention on Nuclear Safety, met with the Governing Board of the World Association of Nuclear Operators (WANO) during its meeting in Québec City, Quebec, in October 2006. This invitation from WANO, an industry organization created to improve safety at nuclear power plants around the world, was significant, as regulatory authorities do not attend the organization's events. It afforded an exchange on the importance of considering safety in the operation of existing nuclear power plants and of modern regulatory frameworks in considering new nuclear power plants.

Through its continued role with the IAEA's Commission on Safety Standards, the CNSC's Executive Vice-President Ken Pereira advised on the finalization of the IAEA's Safety Fundamentals document that sets the umbrella framework for the IAEA's suite of safety standards and documentation. This material is structured upon the following 10 safety principles: responsibility for safety; role of government; leadership and management for safety; justification of facilities and activities; optimization of protection; limitation of risk to individuals; prevention of accidents; emergency preparedness and response; and protective actions to reduce existing or unregulated radiation risks. In September 2006, the IAEA's General Conference approved the publication, which will be significant to all of the world's regulators, including the CNSC, which has a commitment to adopting and adapting its regulatory framework to international standards. This commitment is in line with the Government of Canada's policy on regulatory streamlining.



# IV. The Canadian Nuclear Safety Commission

## Program Activities and Contributions to CNSC Strategic Outcomes

This section of the report discusses key results achieved by the CNSC under its five program activity areas (Regulatory Framework, Licensing and Certification, Compliance, Cooperative Undertakings, and Stakeholder Relations) as well as its enabling infrastructure.

### 1. Regulatory Framework

The CNSC's regulatory framework is composed of:

- *The Nuclear Safety and Control Act* (NSCA), regulations and regulatory documents
- *The Safeguards Agreement and Additional Protocol* between Canada and the International Atomic Energy Agency, and Canada's bilateral and multilateral nuclear cooperation agreements
- *The Canadian Environmental Assessment Act*
- *The Nuclear Liability Act*

The activity area encompasses development of a modern, evergreen Canadian regulatory regime that considers all available science as well as operating experience and input of Canadian operators, other stakeholders and the international community to develop new and amend existing CNSC regulations and to create regulatory policies, standards and guides that set out the CNSC's regulatory criteria and expectations of staff.

The expected result is a clear and pragmatic regulatory framework for Canadians. The following are currently the CNSC's performance measures for this objective:

- percentage of regulations under review/revision in each year (target of 20% per year will ensure a complete rolling review over a 5-year period)
- number of regulations published in *Canada Gazette*, Part I (for consultation)
- number of regulatory documents finalized and published
- Number of new or amended regulations finalized and published in Part II of the *Canada Gazette*

### 2006–07 Regulatory Program

During 2006–07, the CNSC made progress in strengthening its regulatory framework under the *Nuclear Safety and Control Act*. Over the last year, the government approved new security regulations and three more regulations were drafted and are to be submitted for amendments. The CNSC also established a new Regulatory Policy Committee to provide improved consistency to the regulatory process from concept to the approval process for the Commission.

The regulatory program consists of regulations and regulatory documents — standards, guides and policies.

#### Regulations

##### • *Nuclear Security Regulations*

The updated *Nuclear Security Regulations*, which introduced heightened safety measures for nuclear facilities, came into force in November 2006.

##### • *Nuclear Substances and Radiation Devices Regulations*

##### • *Class II Nuclear Facilities and Prescribed Equipment Regulations*

##### • *Nuclear Non-Proliferation Import and Export Control Regulations*

Amendments for these three sets of regulations have been prepared and will be published in the *Canada Gazette* in 2007–08.

##### • *Canadian Nuclear Safety Commission Rules of Procedure*

##### • *Canadian Nuclear Safety Commission By-laws*

The CNSC Secretariat continued work to amend the *Canadian Nuclear Safety Commission Rules of Procedure* and the *Canadian Nuclear Safety Commission By-laws*.

- *New Nuclear Safeguards Regulations*  
The CNSC staff continued to work on new *Nuclear Safeguards Regulations* to clarify and consolidate measures to be undertaken by licensees to meet the requirements of the NSCA and the *Safeguards Agreement and Additional Protocol* between Canada and the IAEA.

#### Regulatory Documents

- *S-337 Design Requirements for Nuclear Power Plants*

This document provides new design categorization information based on years of regulatory experience and international information. The contents of this document were a priority in 2006–07 and the document will be released for consultation in the first quarter of 2007–08.

- *S-336 CNSC Safeguards and Nuclear Non-Proliferation Reporting Requirements*

This document describes the reporting requirements to attain uniformity of licensee accounting records and reports of controlled nuclear substances, including special fissionable and source material, equipment and information. This draft regulatory standard was issued in September 2006 for public comment, and the comment period closed in December 2006. Issuance is planned for early 2008.

- *G-320 Assessing the Long-Term Safety of Radioactive Waste Management*

This document was issued in 2006 and assists applicants for new licences and for licence renewals in assessing the long-term safety of radioactive waste management on the environment and on the health and safety of people. The document addresses long-term care and maintenance considerations, post-decommissioning objectives, assessment criteria, assessment strategies and level of detail, the selection of time frames and definition of assessment scenarios, and identification of receptors and critical groups.

- *G-144 Trip Parameter Acceptance Criteria for Safety Analysis of CANDU Nuclear Power Plants*  
This document was issued in May 2006. It provides guidance to licensees who operate CANDU nuclear power plants regarding reactor trip parameters to preclude direct or consequential failures of reactor fuel or reactor pressure tubes.

- *G-306 Severe Accident Management Program for Nuclear Reactors*

This document was issued in May 2006 and provides guidance to licensees on the development and implementation of a severe accident management program.

The following other documents were in development during 2006–07:

- *G-360 Life Extension of Nuclear Power Plants*

This document informs licensees about the steps and phases to consider when undertaking a project to extend the life of a nuclear power plant. The document addresses key considerations for establishing project scope, as well as managing and executing the project. It was issued for public comment in May 2006 and the comment period closed in July 2006. The document is scheduled for issuance in early 2008.

- *G-341 Control Of The Export And Import Of Risk-Significant Sealed Sources*

The CNSC implemented an enhanced export and import control program for risk-significant sealed sources at the end of 2006–07. The CNSC issued this regulatory document in February 2007 for consultation and will accept comments until December 2007. The document is scheduled for publication by the end of 2007–08.

- *P-325 Nuclear Emergency Management*

This regulatory policy was issued in May 2006. It provides guiding principles and direction for CNSC staff activities relating to nuclear emergency management.

### **Towards a Modernized Safeguards Framework**

The CNSC, in cooperation with the International Atomic Energy Agency (IAEA), has been actively preparing for the implementation of a state-level integrated safeguards program to meet Canada's strengthened international safeguards obligations, with the purpose of enhancing the efficiency of IAEA safeguards implementation. In 2006–07, agreement was reached with the IAEA on the implementation of the State-level Integrated Safeguards Approach (SLA) for Canada, based upon agreed priorities and available resources. On January 1, 2007, implementation of the SLA was achieved for that sector of the nuclear program, which includes research reactors and static dry storage facilities. Following this, the SLA was applied to the transfer of spent fuel to dry storage facilities at multi-unit CANDU reactors on March 1, 2007. The latter achievement was the culmination of over two years of intensive effort on the part of the IAEA, the CNSC, and affected licensees to address an issue that was consuming a significant portion of the IAEA safeguards resources under the traditional approach.

In addition, the CNSC continued to work towards developing an effective national safeguards program focused on regulatory compliance with domestic requirements for nuclear material control. The program will also complement the CNSC's efforts to discharge its responsibilities for implementing the safeguards agreements between Canada and the IAEA. To that end, the CNSC initiated inter-departmental discussions on the rationale for this initiative and began work on defining the requirements for a National Safeguards Authority.

## 2. Licensing and Certification

This activity area covers issuance of licences or certification of persons to conduct nuclear-related activities in Canada and the certification of prescribed equipment. To issue a licence or a certificate, the CNSC must obtain evidence of the applicant's ability to operate safely and conform to safeguards and non-proliferation obligations.

The result is that licences or certificates will be issued only to individuals and organizations that operate safely and conform to safeguards and non-proliferation requirements, or that prescribed equipment will be safe for use.

Achievement of this result is determined based upon delays in implementing effective regulatory control (licensing action) pursuant to the NSCA or if Significant Development Reports require regulatory oversight.

The CNSC continued its initiative to improve the certification process for radiation devices. The result will be to have better policy direction regarding certification of radiation devices, documented and streamlined process functions, sound assessment criteria, consistency throughout process implementation and clear expectations.

### **Licence Renewals**

In July 2006, the Commission granted a five-year licence renewal to New Brunswick Power Nuclear's Point Lepreau Generating Station.

The operating licence for Hydro-Québec's Gentilly-2 reactor in Bécancour, Québec, was renewed in December 2006.

In July 2006, the CNSC announced its decision to renew the nuclear research and test establishment operating licence for Chalk River Laboratories until October 31, 2011.



The CNSC has begun the regulatory work associated with oversight of the renewal of the operating licences for the reactors at Pickering and Darlington, which will expire in 2008.

#### **Licensing of New Build Reactors**

The CNSC published *Licensing Process for New Nuclear Power Plants in Canada* (INFO-0756) in February 2006. This document represented a step forward by setting the stage for work on a series of regulatory documents related to the licensing of proposed new reactors. In March 2007, the CNSC also released an additional document, *Supplementary Information on the Design Review Process for New Build*, which elaborated on new build licensing. In 2006, the CNSC received two applications, one from Bruce Power and one from Ontario Power Generation, to prepare sites for new reactors.

#### **Licensing of Uranium Mines and Mills**

The CNSC issued *Licensing Process for New Uranium Mines and Mills in Canada* (INFO-0759) in March 2007. The document provides an overview of the licensing process for new uranium mines and mills in Canada based on requirements of the *Nuclear Safety and Control Act* and its regulations, and it refers to the *Canadian Environmental Assessment Act*.

#### **Examination Transfer Project**

The CNSC currently reviews and approves examination packages that licensees prepare pursuant to the certification of nuclear power plant operators, but is planning to transfer the responsibility of examination preparation and conduct entirely to licensees. In the future, the CNSC will continue to certify individuals in designated nuclear power plant operations positions but will no longer be involved in approving the written and simulator based examinations. Consequently, the CNSC is in the process of developing an effective compliance program to support an effective regulatory regime post-exam transfer.

#### **Designated Officers**

In licensing and personnel certification, CNSC staff analyzed licensing submissions from applicants and prepared licensing recommendations for Commission hearings or for consideration by Designated Officers. During the year, a number of licence renewals or amendments were completed. In certification of prescribed equipment, CNSC staff evaluated submissions from applicants and prepared recommendations for consideration by Designated Officers, and several certificates for prescribed equipment were issued during the year. Licensing analysis has increased considerably in the face of expansions in all sectors of the use of nuclear materials and processes. In the health care industry, licensee facilities are expanding and new facilities are being licensed. Rapidly changing cancer treatment technologies are also increasing the CNSC's workload in both licensing and compliance work.

#### **Certification of Radiation Safety Officers and Exposure Device Operators**

Amendments were introduced to the *Class II Nuclear Facilities and Prescribed Equipment Regulations*, which will impose certification requirements for radiation safety officers in Class II nuclear facilities. The majority of these facilities are cancer clinics that use a wide variety of radioactive nuclear substances, together with particle accelerators, to treat cancer.

The CNSC staff initiated a comprehensive review of the processes for certification of exposure device operators. Following meetings with the radiography industry and Natural Resources Canada, a CNSC working group prepared a report containing numerous recommendations to improve the certification process for these operators, who had previously been granted lifetime certification.

### **New Export Licences for Sealed Sources**

As of April 1, 2007, those wishing to export Category 1 or Category 2 sealed sources need to obtain transaction-specific export licences from the CNSC. These sources are listed in Table I of the International Atomic Energy Agency's (IAEA) *Code of Conduct on the Safety and Security of Radioactive Sources*. Canada is one of 88 countries to sign on to this Code.

These new licence requirements stem from an enhanced export and import control program for risk-significant sealed sources, which the CNSC implemented at the end of 2006–07. With this step, the CNSC completed the second of two initiatives to adopt the *Code of Conduct on the Safety and Security of Radioactive Sources* and its supplementary *Guidance on the Import and Export of Radioactive Sources*. The implementation of the new control program, together with an enhanced National Sealed Source Registry will assure Canadians and the international community that international transfers of risk-significant sealed sources are conducted solely for beneficial and peaceful purposes.

### **3. Compliance**

Achieving high levels of compliance with the nuclear regulatory framework is critical to the CNSC's work and assuring the safety of nuclear installations and processes. The CNSC's compliance work also involves making sure that Canada complies with its international commitments.

The expected result is a high level of compliance with the regulatory framework, assessed through the following measures:

- level of licensee performance ratings assessed by the CNSC on each of the power reactors, as per the CNSC Report Card on Nuclear Power Plant Performance.

- levels of performance of non-power reactor licensees as measured by the CNSC through inspections, events, assessments, and evaluations of compliance with licence requirements. Performance ratings are recorded in formal licensing documents.
- annual IAEA statement indicating Canada's compliance with international standards with respect to safeguards.
- 100% provision by the CNSC of nuclear transfer notifications and reports pursuant to bilateral administrative arrangements.

CNSC staff report on licensee operations via numerous reporting documents (mid-term performance reports, status reports, significant development reports and annual industry reports) along with performance information given in licensing hearings.

The CNSC strictly enforces its regulatory requirements through a variety of measures, including staff inspections, reviews, audits and assessments, and will take action to rectify any discovered non-compliance among licensees by a specified deadline.

### **Chalk River Laboratories**

During the year, licensing staff at the CNSC head office reviewed and prepared recommendations to the Commission on matters that included the handling of legacy waste and the decommissioning of certain facilities. In addition, CNSC staff presented its midterm report on AECL's MAPLE (Multipurpose Applied Physics Lattice Experiment) reactors to the Commission. The presentation included a summary of activities since the licence was issued, the status of improvements to regulatory programs that had not fully met regulatory requirements when the licence was renewed, other relevant information, and staff conclusions regarding AECL's operating performance for the MAPLE reactors. CNSC staff had paid specific attention to two areas: monitoring licensee progress in addressing weaknesses in the implementation of programs concerning operational performance, performance

assurance and environmental protection; and evaluating progress in commissioning and resolving issues outstanding at the time of licence renewal. CNSC staff concluded that AECL had operated the MAPLE reactors according to regulatory requirements.

The Atomic Energy of Canada Ltd. (AECL) Chalk River Laboratories site is Canada's oldest and most complex nuclear facility, which delivers a range of nuclear services — from research and development support, construction management and design and engineering to specialized technology, waste management and decommissioning to support CANDU reactor products. To effectively monitor these activities, the CNSC established an on-site office at Chalk River with four CNSC staff to oversee licensee compliance and to communicate with licensee staff to improve their understanding of regulatory requirements. A full-time Safeguards Officer has also been assigned to this site office to assist in the implementation of safeguards at this facility.

### **New Environmental Assessment and Protection Directorate**

To better address the growing workload in its mandate in the area of environmental assessments, the CNSC created an Environmental Assessment and Protection Directorate — the first of its kind among nuclear regulatory agencies and a major step toward maintaining effective oversight of a complete approach to licensing and compliance.

### **Performance measures**

The CNSC implemented a new standard regarding inspections, whereby an inspector will produce a report, send it to the licensee and resolve it within 60 business days of an inspection. This condition was met in 90% of Type II<sup>4</sup> inspections of high-risk licensees during 2006–07.

Type I inspections have presented a challenge because of rapid expansion at nuclear medicine facilities at Canadian hospitals and an associated increase in regulatory work. Some provinces have seen a consolidation of cancer clinics that used to be managed by individual licensees and are now being controlled by central boards or provincial agencies. Although the number of licensees has slightly decreased, the rapid expansion of nuclear medicine facilities and cancer clinics has increased the overall workload for CNSC staff.

Mitigating strategies have been put in place, enabling the CNSC to identify potential risks early in the process and to ensure the safety of the Canadian public despite limited resources. As cancer clinics go through construction, commissioning and operation stages, regulatory verifications are made to identify potential risks. Once a discrepancy is identified, an inspection is automatically triggered to ensure compliance.

### **2006–07 Performance Standard Report**

	Annual Type I Inspections	Assess- ments	Type II Inspections	Compliance Reports
Risk Category				
High	45	104	408	314
Medium	20	525	779	1448
Low	0	46	4	370
Total	65	675	1191	2132
Percentage Within Standard	46.15%	93.48%	88.33%	72.51%

<sup>4</sup> Type I inspections are on-site audits and evaluations of a licensee's programs, processes and practices. Type II inspections are routine (item-by-item) checks and rounds that typically focus on the outputs, or performance of licensee programs, processes and practices. Findings from Type II inspections play a key role in identifying where a Type I inspection may be required to determine systemic problems in licensee programs, processes or practices.



### **Baseline compliance program**

Progress was made in documenting a consistent baseline compliance program for major nuclear facilities, which articulates minimum standards of compliance verification for a facilities that represent normal risk. The CNSC increases its compliance oversight above the baseline depending upon licensee performance and other factors informed by risk.

### **Orders issued**

The Commission issued or confirmed orders to licensees that included Enviropac, ESI Resources Limited, and SRBT Technologies (Canada) Inc.

### **Compliance among industrial radiography licensees**

The CNSC is working with the industrial radiography community to educate licensees about the impact of radioactive materials. Staff has noted improved licensee compliance in the safe use of radiography equipment.

### **Maintaining a positive IAEA conclusion**

In its Safeguards Implementation Report for 2006, the IAEA again concluded that all nuclear material in Canada remained in peaceful activities. It is based on the provision of credible assurance that all declared nuclear material in the country is for peaceful, non-explosive uses, and that there is no undeclared nuclear material or activity. Canada is one of only 24 states (of 162 countries) that has received and maintained this conclusion.

The Canada-Agency Safeguards Implementation Consultation (CASIC) mechanism is an essential element for ensuring compliance with the Canada-IAEA safeguards agreements.

As the designated authority for implementing these agreements the CNSC is the lead participant for Canada. A CASIC meeting was held in November 2006, and several working-level meetings were held with the IAEA to discuss specific implementation issues.

## **4. Cooperative Undertakings**

The CNSC participates in many domestic and international fora to advance nuclear safety and security both at home and abroad. Its participation also provides opportunities to share best practices and benchmarks with counterparts and other agencies. The expected result of this area is that the CNSC cooperates and integrates its activities in national/international nuclear fora.

### **International Commitments to Advance Nuclear Safety**

- **Convention on Nuclear Safety**  
At the third review meeting of the Convention on Nuclear Safety (CNS), held in Vienna, April 2005, Canada presented its report to an audience of more than 34 participants representing 18 countries. Canada committed to numerous follow-up actions:
  - development of the regulatory approach for refurbishment and life extension of nuclear power plants
  - modernization of the regulatory framework for licensing new reactor projects
  - maintaining safety competence in the nuclear industry and regulatory body
  - completing the quality management program implementation in regulatory body
  - improving the rating system used to evaluate licensees' performance
  - finalizing the Power Reactor Regulation Improvement Project
  - evaluating the use of periodic safety review in Canada



## Implementation of the IAEA *Code of Conduct on the Safety and Security of Radioactive Sources*

In January 2004, Canada had committed to implementing the International Atomic Energy Agency (IAEA)'s new *Code of Conduct on the Safety and Security of Radioactive Sources*. In 2006, Canada was among the first countries to announce its commitment to full implementation of the Code.

The Code of Conduct was created to address growing international concern over the safety of radiation sources, including the potential that sources could be used as radioactive dispersal devices or “dirty bombs”. It outlines the need for participating countries to address five basic and mutually agreed upon requirements: a legislative framework, an independent regulator, a regulatory system for authorizations, trained and qualified personnel, and controls on the import and export of risk significant radioactive sources.

Two major regulatory improvements initiatives were needed in order to have the Canadian regulatory framework meet the provisions of the Code in full. These were a sealed source tracking system (SSTS) conceived as part of an updated national registry for all radioactive sources; and enhanced import and export controls on risk-significant sources. The SSTS has enabled the CNSC to create a full inventory listing of high-risk radioactive sealed sources in Canada and to track possession of a source, its movements and any related developments (theft, damage, etc.) within strict reporting timeframes. These regulatory improvements have now been fully implemented by the CNSC: the introduction of the tracking system on January 1, 2006 was followed by the launch of the new import/export control program at the end of 2006–07.

- enhancement of a risk-informed performance-based regulatory approach
- continuing the program to improve safety margin for large loss of coolant accidents
- continuing the project on Safe Operating Envelope
- consideration of hosting an International Regulatory Review Team mission

The CNSC provided a status update on each of these elements in the first anniversary report on the CNS, which it issued in April 2006. Canada has instituted these reports to monitor progress over the three years in a public manner. CNSC President Linda Keen continued her role as President of the third review meeting of the CNS, which will continue to the naming of the President for the Fourth Review Meeting to be held in 2008.

- *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*

The *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (Joint Convention) aims to ensure worldwide safety of spent fuel and radioactive waste management, including the use of protective measures and mitigation. These objectives are achieved through the peer review of the contracting parties' national programs for spent fuel and radioactive waste management. The Government of Canada has delegated the responsibility for the Joint Convention to the CNSC.

The second review meeting of the Joint Convention took place at the IAEA Headquarters in Vienna, Austria, from May 15 to 24, 2006. Forty-one contracting parties participated in the peer review process. Canada was recognized as having the following good practices:

- safe management of a very wide variety of wastes types
- excellent stakeholder consultation supported by policies that promote openness and transparency
- competent regulatory system with clear responsibilities
- mechanisms in place to secure funding for long term liabilities
- implementation of Sealed Source Tracking System

Canada was highly praised for its inclusive, balanced approach to field a delegation comprising the regulator, government and industry and was seen to be a demonstration that the approach to waste management in Canada is integrated. The feedback Canada received also pointed out some opportunities for improvement, including continued attention to regulatory documents and demonstration of progress on major initiatives.

#### **Bilateral relations with nuclear regulatory counterparts**

The CNSC maintains a network of memoranda of understanding with nuclear regulatory counterparts around the world with the objective of strengthening nuclear safety standards with respect to nuclear facilities and activities through technical cooperation and information exchanges in nuclear regulatory matters. An important milestone was achieved in 2006–2007, in this regard, when the CNSC renewed its memorandum of understanding with the United States Nuclear Regulatory Commission (USNRC), for implementation in



April 2007. The renewal of this umbrella agreement with the USNRC creates a foundation that enables the two organizations to engage in a host of regulatory cooperation initiatives, including nuclear safety of existing and new nuclear facilities, nuclear security and emergency preparedness. A second agreement between the CNSC and USNRC will allow exchange of information on the import and export of radioactive sources and will also permit USNRC inspectors to accompany CNSC staff on Canadian inspections (and vice versa) in order to enable the two regulating bodies to promote and share best practices.

In August 2006, CNSC President Keen hosted an official delegation from the Autorité de sûreté nucléaire (ASN), the CNSC's nuclear regulatory counterpart agency in France. The delegation was visiting the CNSC to learn about the implementation of the *Nuclear Safety and Control Act* (NSCA) as part of their preparations to implement their new legislation, "Transparency and Security in the Nuclear Field," which was enacted on June 13, 2006. The new legislation, which considered the NSCA in its drafting, modernizes France's nuclear regulatory framework. The exchange of information between the CNSC and the ASN focused on regulating nuclear power plants and other nuclear fuel cycle facilities as well as the implementation of Commission and public hearing processes.

The CNSC also routinely met with regulatory counterparts to exchange information. In 2006–07, meetings with regulatory counterparts from the Republic of Korea on the management of aging nuclear reactors. The CNSC also conducted workshops involving regulatory counterparts from the United States and Sweden regarding robustness of nuclear facilities and loss of coolant accident scenarios.

### **Multilateral relations and international cooperation**

The CNSC continued to closely manage its engagement with international organizations and in multilateral environments to advance nuclear safety and security as well as safeguards and non-proliferation objectives.

- **International Nuclear Regulators Association**  
The CNSC continued its involvement in the International Nuclear Regulators Association (INRA) in 2006–2007. The focus of the 2006–07 meetings included the exchange of best practices on waste management and improvement strategies for the Convention on Nuclear Safety. The INRA, established to influence and enhance nuclear safety from a regulatory perspective among its members, is comprised of the most senior regulatory authorities from Canada, France, Germany, Japan, Spain, Sweden, the United Kingdom and the United States. In 2006–2007, The association expanded its membership to include the Republic of Korea, a move which was orchestrated and strongly supported by the CNSC.
- **CANDU Senior Regulators meeting**  
Canada continued to play a key role in the CANDU Senior Nuclear Regulators organization, which is organized under the umbrella of the IAEA. The CNSC participated in the meeting of the CANDU Senior Regulators held in Karachi, Pakistan, in November 2006. This group is comprised of regulatory authorities from countries operating CANDU reactors including Argentina, Canada, China, India, Pakistan, Romania, and South Korea. The CNSC is making arrangements to host the next meeting in late 2007.

- **International Commission on Radiological Protection**

Over the past several years, the International Commission on Radiological Protection (ICRP) has been conducting worldwide public consultations on its new fundamental recommendations. In August 2006, the CNSC held a workshop to discuss the draft ICRP recommendations, recognizing the need to bring together the views of various Canadian stakeholders. The objective was to develop an overall Canadian statement on key sections of the draft recommendations. The results influenced regional and international discussions on the ICRP recommendations, allowing the collective Canadian viewpoint to be represented, rather than just that of a single individual or organization. The Canadian position covered many detailed technical issues. One significant focus was the concept of dose and risk constraints, both with respect to clearly defining their role in the system of radiation protection and on how to implement them.

The ICRP Main Commission approved its 2007 Fundamental Recommendations on Radiological Protection on March 21, 2007, and expects to publish them in the Fall 2007 issue of the *Annals of the ICRP*. This will mark the first publication of ICRP fundamental recommendations since 1990. The new recommendations take account of new biological and physical information and trends in setting radiation standards. They also feature an improved and streamlined presentation, give more emphasis to environmental protection, and provide a platform for developing an updated strategy to handle emergencies and situations of pre-existing radiation exposure. The CNSC will be analyzing the Final Recommendations for their applicability in the Canadian regulatory framework.

- **OECD Nuclear Energy Agency**

The CNSC continued its involvement in 2006–2007 with the OECD Nuclear Energy Agency (NEA) Committee's on the Safety of Nuclear Installations and the Committee on

Nuclear Regulatory Activities. It also provided representation to the Committee on Radiation Protection and Public Health, an international forum to address issues related to enhancing radiation protection regulation and implementation. The CNSC also participated in the Multinational Design Evaluation Program under the NEA. In May 2006, the CNSC hosted the NEA's Eighth Nuclear Regulatory inspection Workshop in Toronto. The workshop enabled exchange of information of current inspection issues and best practices among the world's nuclear regulatory bodies.

- **International Atomic Energy Agency**

The CNSC continued supporting the IAEA, which will mark its fiftieth anniversary in 2007. In 2006–2007, the CNSC provided expertise to Canada's Permanent Mission in Vienna and assisted in Canadian delegations to IAEA Board of Governors meetings and the agency's general conference, held in September 2006. The CNSC also provides expertise to three important advisory committees under the IAEA, namely the Commission on Safety Standards and its sub-committees, the Standing Advisory Group on Safeguards Implementation and the Advisory Committee on Security.

**Commission on Safety Standards**

The CNSC provides Canada's representative to the IAEA Director General's Commission on Safety Standards (CSS), which has a special overview role with regard to the Agency's safety standards and provides advice to the Director General on the overall program on regulatory aspects of safety. The CSS provides guidance on the approach and strategy for establishing the Agency's safety standards, particularly in order to ensure coherence and consistency between standards. It also endeavours to provide general advice and guidance on safety standards issues, relevant regulatory issues and the Agency's safety standards activities and related programs, including those to promote worldwide application of the standards. As discussed in

Part III, the CSS achieved a major milestone in September 2006 with the approval of its *Safety Fundamentals Principles*. With its commitment to adopt and adapt international standards, where applicable, in developing the necessary modern regulatory framework for Canada, the CNSC attaches great importance to the Commission on Safety Standards and its sub-committees, covering safety standards, radiation safety, transport safety and waste safety.

#### IAEA Standing Advisory Group on Safeguards Implementation

The CNSC provides Canada's representative to the IAEA Director General's Standing Advisory Group on Safeguards Implementation (SAGSI), which provides advice on the technical objectives and implementation parameters of IAEA safeguards and on the effectiveness and efficiency of specific implementation practices. A particular focus for SAGSI is further development of the state-level approach to safeguards implementation and evaluation. SAGSI also examined issues that included the evaluation of safeguards effectiveness and performance, guidelines for state systems of accounting for and control of nuclear material, and the safeguards research and development program. The Canadian representative to this group was appointed by the Director General as SAGSI chair as of January 1, 2007.

#### IAEA Advisory Committee on Security

The CNSC provides Canada's representative to the Advisory Committee on Nuclear Security (AdSec), which advises the Agency on its role regarding nuclear security, nuclear security priorities, and the Agency's nuclear security program.

Over the past year, the AdSec has provided recommendations on the balance of devoting resources to technical support to improve nuclear security in developing countries, ver-

sus investing in technical development, versus development of the international legal framework. The Committee also reviewed the need for updated guidelines from the Agency in areas such as physical security, security fundamentals and security culture, and it discussed the Agency's role in security information sharing, particularly with respect to illegal trade and cross-border movement of nuclear substances. It also reviewed the Agency's current security program and associated priorities.

#### • Canadian Safeguards Support Program

The Canadian Safeguards Support Program, managed and funded by the CNSC, provides assistance to the IAEA to enhance its safeguards regime. During the year, the program assisted the IAEA in developing a secure electronic mailbox building on the public key infrastructure activities that the CSSP had initiated with the IAEA in the previous year. The mailbox process is one that the IAEA can use with other countries and that will play a role in the safeguards state-level approach for Canada.

The program has also continued its subprogram of equipment development for the IAEA and has made several advances. The software for irradiated fuel monitoring equipment, (for example, core discharge monitors and bundle counters used in safeguarding CANDU reactors) has been upgraded to include remote monitoring, whereby data is transmitted securely to the IAEA from facilities. This system offers increased efficiency for the IAEA and more timely evaluation of data. At the request of the IAEA, the Canadian Safeguards Support Program made numerous improvements to the Digital Cerenkov Viewing Device — a device is used to verify spent nuclear fuel — that will increase its usability. The program also assisted the IAEA with the installing the core discharge monitor for Unit 2 at the Bruce A Nuclear Generating Station, as a result of the decision to restart this reactor.



## 5. Stakeholder Relations

This area focuses on the commitment to develop and maintain public confidence in Canada's nuclear regulatory regime through working openly and transparently with stakeholders to achieve this goal. The expected outcome of stakeholder understanding of the regulatory program is measured through the level of stakeholder confidence in the CNSC's ability to regulate the use of nuclear energy and materials and the level of stakeholder participation in the CNSC's decision-making process.

### **Strategic communications plan**

The CNSC strategic communication plan provides a detailed approach of how to communicate and consult with stakeholders on the CNSC regulatory policies and program.

The plan involves a three-year phased approach. During 2006–07, the CNSC focused its outreach activities in 2006–2007 on heightening public awareness and understanding of its role and in regulating nuclear activities. The last year saw enhanced engagement with diverse stakeholders, including municipal governments in the region of major facilities, media, provincial officials, professional associations and non-government organizations (NGOs).

The CNSC meets periodically with representatives from the Canadian Nuclear Association through the Canadian Nuclear Association Regulatory Affairs Committee, which enables industry representatives to provide input and advice to the CNSC on broader issues relating to nuclear regulation in Canada. The committee also provides a forum for the industry association and the CNSC to indicate priorities, directions being taken, or factors that are influencing their respective operations.

In November 2006, CNSC staff established a Non-Governmental Organization Regulatory Affairs Committee to serve as a mechanism for the

CNSC to communicate and consult with NGOs on nuclear regulatory and policy matters within the mandate of the CNSC. Co-chaired by a member of the NGO community, the committee is a forum for exchanging and clarifying information to promote common understanding of issues, allowing the CNSC to better respond to the information needs of the NGO community. It also enables NGO members to provide input and advice to the CNSC on broader issues relating to nuclear regulation in Canada.

### **Community outreach**

The CNSC understands that Canadians are concerned by nuclear activities in their regions and it therefore focused on outreach over the past year and held numerous hearings in communities most affected by the Commission's work. The Commission conducted hearings in Port Hope for the renewal of licences held by Cameco and Zircotec Precision Industries. It also held hearings in Kincardine regarding Ontario Power Generation's proposed deep geological repository, as well as in Bécancour, Québec, with respect to the Gentilly-II generating station licensees.

The CNSC has been consulting extensively with First Nations peoples in northern Saskatchewan and with host communities of mines and legacy waste facilities.

The CNSC has also been working with the Government of Nunavut pending development of an energy policy. Staff has been commenting on draft policy documents.

As part of licensing and compliance monitoring of closed uranium mines in the Northwest Territories, CNSC staff maintains regular communications with government, aboriginal and community representatives. CNSC staff also meet periodically with communities potentially affected by the historic transportation of uranium ore from the northern mines to processing facilities in the south.

In February 2007, CNSC representatives engaged representatives from approximately 13 regulatory boards and agencies of the Northwest Territories by participating in a workshop on “Uranium and the North.” The CNSC used this opportunity to share information on what environmental assessment and regulatory reviews might be expected if uranium development activities occurred, and to provide information on the CNSC’s role in regulating uranium mines in Canada. Workshop attendees agreed on the importance of learning more about and establishing better connections with the CNSC. The CNSC will follow up with participants to maintain open, transparent and effective relationships with representatives from the Northwest Territories.

## 6. Management and Enabling Infrastructure

### Management system

In September 2005, the CNSC committed to the implementation of a management system that would conform to Government of Canada requirements and is modeled on International Atomic Energy Agency (IAEA) management system standards for nuclear regulatory bodies.

The management system, when fully implemented, will assure that integrated, standardized and consistent practices, principles and processes are in place to support the CNSC in achieving its regulatory mandate and objectives.

In May 2006, the CNSC completed a self-assessment of the organization against the IAEA standard. This resulted in a number of recommendations and suggestions for possible improvement.

In response to this and in line with the recommendations from earlier Auditor General’s reports, the organization broadened the scope of existing projects and initiated new projects to drive further improvements in our key regulatory processes and to implement integrated information technology to support these processes.

These projects were integrated in November 2006 under the umbrella of the Integrated Improvement Initiatives Program, an overriding program comprising improvement initiatives/projects in five key areas:

- a. Management system implementation
- b. Integrated planning and performance management
- c. Compliance
- d. Licensing
- e. Leadership development

In November 2006, the Integrated Improvement Initiative Program (I3P) was created to enhance integration between these initiatives, and the management system was established as the lead initiative to provide the overall framework.

The I3P made progress during 2006–07. As of the end of the fiscal year, program preparation activities and objectives were complete. Among these were the creation of a formal program to manage the projects in an integrated fashion; the hiring of a program director and Project Manager for the Integrated Systems Project; approval of the I3P Integrated Program Charter, which included a revised governance structure; approval of a change management strategy; and the development of level 1 and 2 process maps for the re-engineering of the licensing and compliance processes within the CNSC. Stage 2 (business blueprint) work commenced in April 2007, with objectives of developing the detailed Level 3 process maps and identifying the business and integration requirements for licensing and compliance; integrating the project management of the planning and performance measurement modules of the Integrated Planning and Performance Management initiative under the I3P; and securing long-term professional services support by December 2007. Key to success of stage 2 will be a comprehensive and continuous change management and communications effort to engage stakeholders and keep them informed.

### **Values and ethics**

During 2005–06, the CNSC began implementing a values and ethics strategy that provides standards for ethical expectations and guidance for ethical decision-making, leadership and conduct for all CNSC staff. Continuing implementation of the strategy is focused on promoting opportunities for all leaders and staff to discuss values and ethics. A process has also been put in place to allow staff to disclose wrongdoing in a manner that is safe and free from reprisals. With the passage of the *Public Servants Disclosure Protection Act*, the CNSC is in the process of aligning its existing processes with new legislative requirements.

### **Leadership and learning**

Current and expected growth at the CNSC and the need for excellence in leadership capabilities necessitate a strategic, cohesive approach to leadership development. The CNSC has established a number of elements that support the development of leadership skills and provides management and staff with information on a variety of courses, symposia, tests and other means. During the 2006–07 fiscal year, the CNSC began updating its Leadership Development Program, which will ensure that current and future CNSC leaders have competencies, behaviours and attitudes consistent with the organization's values and commitment to excellence.

### **Sustained proactive recruitment**

In 2006, the CNSC identified actions that will promote successful recruitment. These actions were sorted into five pillars that have become the foundation for the Recruitment and Retention Initiative, including internal assessment, general recruitment, international recruitment, university partnerships and employee retention.

#### **a) Internal assessment**

It is essential for the CNSC to examine its organizational design and remuneration as part of its recruitment initiatives. This internal assessment and corresponding needs identification will assist the organization in competing effectively for talent.

#### *Accomplishments to date:*

- Task force met through May and June 2006 to review and provide feedback on elements of the Recruitment and Retention Initiative
- Information meetings with Directors General have been completed by the CNSC's Client Services and Operations Division
- CSNC compensation research is ongoing.
- Headlines and advertisement text developed for general and university campaigns
- New hire questionnaire launched in Fall 2006

#### **b) General recruitment**

The CNSC's general recruitment efforts will continue throughout this recruitment and retention initiative. Along with day-to-day advertising, these include targeted advertising strategies for hard-to-fill positions, proactive communications with employment equity groups, and investigating the potential for an employee referral program.

#### *Accomplishments to date:*

- Hard-to-fill positions identified and reviewed on an on-going basis
- Applicant tracking system media list updated
- Employment equity action plan in development
- Day-to-day recruitment efforts continue

#### **c) International recruitment**

As the Canadian labour pool becomes smaller, the CNSC will turn its attention to overseas markets for qualified and bilingual candidates.

#### *Accomplishments to date:*

- The CNSC's first international campaign targeting the United Kingdom, France, Germany and Sweden launched in Fall 2006
- Positions were posted to careers Web sites in selected countries
- A campaign targeting the United States also took place in early 2007

d) **University partnerships**

By strengthening existing university partnerships, and establishing new ones, the CNSC will connect with an important source of new candidates and play a role in their training.

*Accomplishments to date:*

- Contacted 80 universities across Canada to discuss opportunities for partnerships
- Held information sessions at 13 universities in Ontario, Québec and the Maritimes during the fall of 2006, to promote the CNSC to new and recent grads and better brand the organization; a second campaign was done in early 2007
- Sponsored the 2007 Jeux de Génie du Québec held at Université du Sherbrooke

e) **Employee retention**

Employee retention begins the moment a candidate accepts an offer of employment from the CNSC. It should be approached as an ongoing process to ensure employee engagement and satisfaction with the organization.

Moreover, the CNSC faces a workforce approaching retirement age and therefore has a responsibility to train the next generation of managers. It must ensure that current managerial knowledge managers is not lost to retirement.

*Accomplishments to date:*

- Completed an assessment of the existing employee orientation program and developed recommendations for revisions to the program

**Implementation of the first collective agreement**

The CNSC is a separate employer from the Government of Canada and entered into a collective agreement with its represented employees for the period of June 14, 2006 to March 31, 2008. An arbitration award took effect November 20, 2006.

**Improvement in human resources (HR) planning**

A dedicated HR planning resource was added to the CNSC's Human Resources Directorate to better support organizational HR planning. The Management Accountability Framework – People Component (MAFPC) was finalized in 2006. In addition to the MAFPC, Directors General have been canvassed regarding their current vacancies, staffing actions, and demographic data to help understand future HR requirements.

**Informal Conflict Management System**

As a separate employer, the CNSC is not obliged under the *Public Service Labour Relations Act* to establish an informal conflict resolution management system. However, the CSNC views such a system as necessary for sound management and is working to implement one. The system's purpose will be to facilitate early resolution of workplace conflicts and to reduce the need for formal grievances and complaints. Development and implementation of the system, in consultation with the employees' bargaining agent, is expected to continue through 2007.



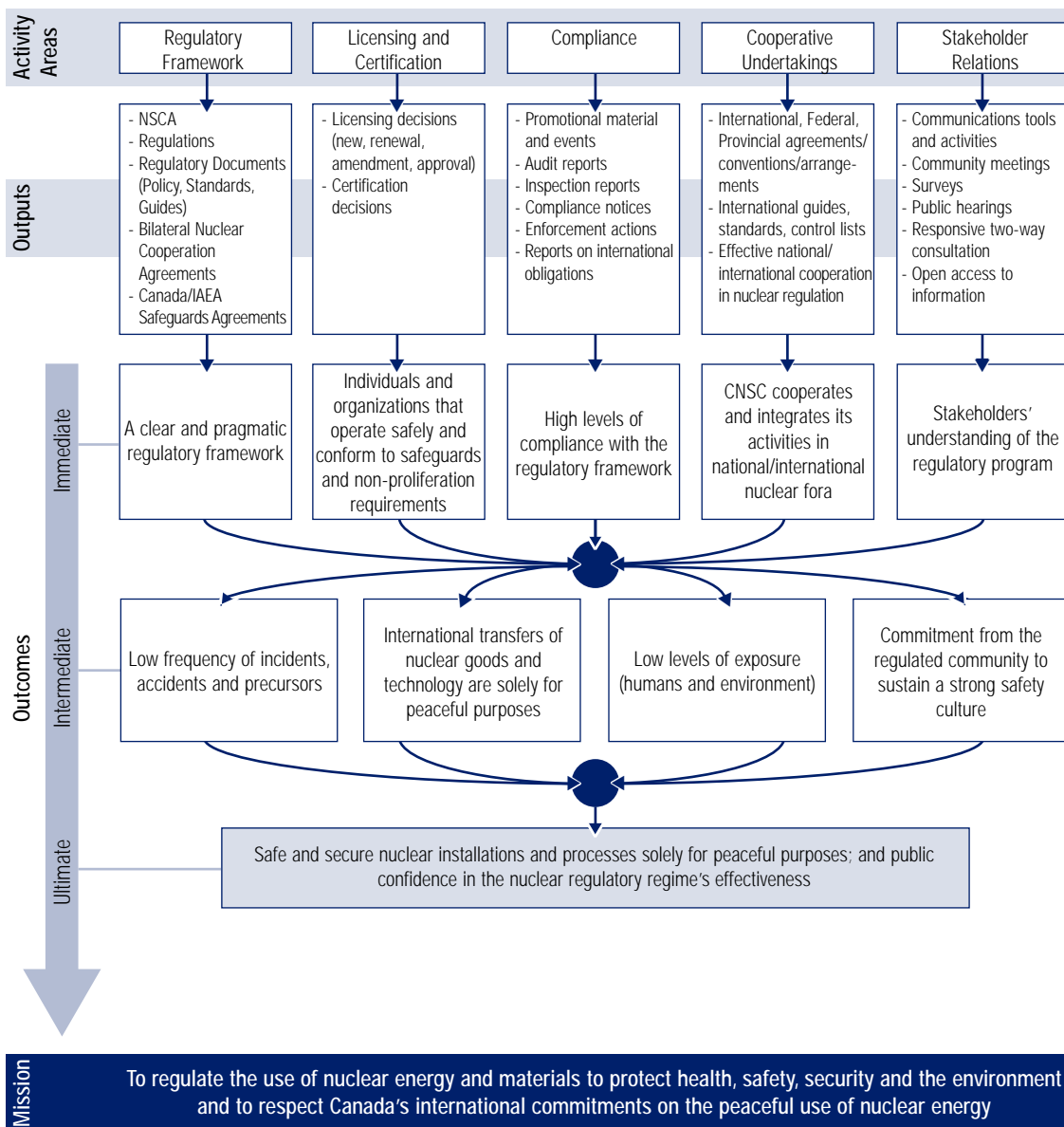
# V. The Canadian Nuclear Safety Commission

## Operating Context

### The CNSC Strategic Framework

The CNSC Strategic Framework uses this logic model for planning, focusing activities and programs, evaluating the contribution of initiatives to CNSC outcomes and illustrating the role of the CNSC as an agency committed to achieving results for Canadians.

### CNSC Logic Model – Results for Canadians



## Organizational Information

The CNSC operates as two separate organizations:

- (i) a Commission of up to seven members
- (ii) a staff organization of approximately 650 people

### (i) Commission

The *Nuclear Safety and Control Act* (NSCA) provides for the appointment of up to seven Commission members by the Governor in Council. Members serve for a term not exceeding five years. One member of the Commission is designated as the President of the Commission. This position is currently held by Linda J. Keen.

Supported by the Secretariat, the Commission functions as an independent, quasi-judicial administrative tribunal and court of record and sets regulatory policy direction on matters relating to health, safety, security and environmental issues affecting the Canadian nuclear industry. It also makes independent decisions on the licensing of nuclear-related activities in Canada as well as legally binding regulations. The Commission holds public hearings, in accordance with the CNSC Rules of Procedure when considering licensing matters related to major nuclear facilities. When making decisions, the Commission takes into account the views, concerns and opinions of interested parties and intervenors. The Commission delegates to Designated Officers the authority to render licensing decisions for certain categories of nuclear facilities and activities in accordance with the requirements of the NSCA and its associated regulations.

### (ii) CNSC Staff

CNSC staff are located at headquarters in Ottawa, site offices at each of the five nuclear power plants in Canada, at the Chalk River facility of Atomic Energy of Canada Limited, and five regional offices. CNSC staff at site offices assess performance against regulations and specific conditions of operating licences. Regional offices conduct compliance activities for nuclear substances, transportation, radiation devices and equipment containing nuclear substances. They also respond to unusual events involving nuclear substances.

CNSC staff support the Commission by:

- developing regulatory frameworks
- carrying out licensing, certification, compliance inspections and enforcement actions
- coordinating the CNSC's international undertakings
- developing CNSC-wide programs in support of regulatory effectiveness
- maintaining relations with stakeholders
- providing administrative support

Staff also prepare recommendations on licensing decisions, present them to the Commission for consideration during public hearings and subsequently administer the Commission's decisions. Where so designated, staff also render licensing decisions.

# VI. The Canadian Nuclear Safety Commission

## Outcome Measures and Performance Standards

### Outcome Measures

The CNSC's outcome measurement framework is derived from the CNSC Logic Model (see Part V). During the year, the CNSC sought to implement the initial set of outcome measures it initially published in its 2005–06 Annual Report. Some of the CNSC's outcome measures indicate licensee performance within the regulatory framework: These measurements inform the licensee and the CNSC on licensee performance, as well as indicate to the CNSC the overall effectiveness of the regulatory framework. The outcome measurement framework was given increased emphasis in 2006–07, and the following table presents a revised list of outcome measures for which information will be gathered in 2007–08.

	Outcome	Outcome Measure
1.	A clear and pragmatic regulatory framework	Percentage of regulations under review/revision in each year (this will ensure a complete rolling review over five years) Number of regulations published in <i>Canada Gazette</i> Number of regulatory documents finalized and published
2.	Individuals and organizations that operate safely and conform to safeguards and non-proliferation requirements	Number of cases of delays in implementing effective regulatory control (licensing action) pursuant to the NSCA or Significant Development Reports subsequent to licence approval
3.	High levels of compliance with the regulatory framework	Level of licensee performance ratings assessed by the CNSC on each of the power reactors, as per the CNSC Report Card on Nuclear Power Plant Performance. The CNSC gives separate ratings to (i) the quality of the existing safety program and (ii) its implementation. The ratings provided are as follows: <ul style="list-style-type: none"> <li>• A = Exceeds requirements</li> <li>• B = Meets requirements</li> <li>• C = Below requirements</li> <li>• D = Significantly below requirements</li> <li>• E = Unacceptable</li> </ul> Annual IAEA statement indicating Canada's compliance with international standards with respect to safeguards and non-proliferation 100% provision by the CNSC of nuclear transfer notifications and reports pursuant to bilateral administrative arrangements
4.	CNSC cooperates and integrates its activities in national/international nuclear fora	100 % verification by the CNSC of bilateral nuclear material inventory reports, annually
5.	Stakeholder understanding of the regulatory program	Level of stakeholder confidence in the CNSC's ability to regulate the use of nuclear energy and materials  To obtain this information, the CNSC will conduct a survey of stakeholders every three years and will publish the results





Table 1 – Immediate Outcome Measures (continued)

	Immediate Outcome	Outcome Measure	Performance 2005–06	Performance 2006–07
4.	CNSC cooperates and integrates its activities in national/international nuclear fora	100% verification by the CNSC of bilateral nuclear material inventory reports, annually	Achieved	Achieved
5.	Stakeholder understanding of the regulatory program	Level of stakeholder confidence in the CNSC's ability to regulate the use of nuclear energy and materials.  To obtain this information, the CNSC will conduct a survey of stakeholders every three years and will publish the results.	Survey to be conducted every three years	Survey to be conducted every three years
		Level of stakeholder participation in the CNSC's decision-making process.	Under development	Under development

Table 2 – External performance standards to be reported against during the planning period include:

Activity	Performance standard	Performance 2005–06	Target 2006–07	Performance 2006–07
<b>Compliance<sup>1</sup></b>				
<b>Verification:</b> upon completion of the verification activity, the CNSC will:				
Issue Type I Inspection Report <sup>2,3</sup>	Within 60 business days	50%	80%	58%
Issue Type II Inspection Report <sup>4</sup>	Within 40 business days	86%	80%	90%
Issue Desktop Review Report <sup>2</sup>	Within 60 business days	70%	90%	79%
<b>Enforcement:</b> upon an Order being made, the CNSC will:				
Confirm, amend, revoke or replace the Order (see Regulatory Guide G-273)	Within 10 business days	100%	100%	100%
<b>Licensing<sup>1</sup>:</b> for requests pertaining to an existing licence, the CNSC will:				
Screen the request for completeness and issue notification that the licensing request is / is not complete <sup>5</sup>	Within 20 business days	100%	90%	97%
Issue a licensing decision when a public hearing is not required (assuming an environmental assessment under the CEAA is not required)	Within 80 business days	97%	80%	98%
Issue a licensing decision when a public hearing is required (assuming an environmental assessment under the CEAA is not required) (see INFO-0715) <sup>5,6</sup>	Within 160 business days	100%	90%	83%
Publish the Records of Proceedings, including Reasons for Decisions, upon conclusion of the public hearing	Within 30 business days	78%	90%	73%
<b>Access to Information (ATI)</b>				
Respond to requests under the ATI and Privacy Acts	Within legislated time periods as stated in the Acts	94%	90%	ATI – 82% Privacy – 100%
<b>External Communications</b>				
Place public hearings advertisements	Within deadlines stipulated in the regulations	95%	100%	100%
Response time to public inquiries	Same-day acknowledgement with response time for completion of request depends on complexity	100%	100%	100%
	Low – same day	100%		100%
	Medium – within 5 business days	95%		95%
	High – within 10 business days	80%		75%
<b>External Reporting to Central Agencies</b>				
File annual <i>Report on Plans and Priorities</i> and <i>Departmental Performance Report</i> (Annual Report on Performance)	Within required timelines	100%	100%	0% <sup>7</sup>

Notes:

1. Compliance and licensing results are based on a subset of the performance data available.
2. Using the CNSC's risk-informed approach to regulation, initial priority was given to the completion of reports whose results were of greater significance.
3. CNSC workload increases were observed as a result of the rapid expansion of nuclear medicine facilities in Canadian hospitals.
4. For power reactors, unless major issues arise, findings from field inspections and control room inspections will be reported on a quarterly basis, within 40 business days of end of quarter.
5. The screening and hearing processes do not apply to Directorate of Nuclear Substances Regulation operations.
6. The magnitude of public interventions in some licensing decisions required an extension of the time required to complete the hearing process.
7. All reports experienced delays of a few days due to delays in final approvals and in document production. All delays were pre-cleared and were acceptable to the Treasury Board Secretariat.

**Table 3 – Commission decisions during 2006–07**

Number of decisions made in 2006–07 <sup>1</sup>	49	
Average days to release decision <sup>2</sup>	18	
Decisions released within 30 days	36	
Decisions released after 30 days	13	
Longest decision to release (number of days) <sup>3</sup>	60	Cameco, Port Hope

The following circumstances affected the results presented in Table 3:

- Volume of activity was significantly higher during the past year (49 decisions versus 29 the previous year, representing a 69% increase)
- The number of complex hearings in the third quarter, representing more than 40% of public hearings and putting a strain on the ability to get decisions released

Notes:

<sup>1</sup> Decisions following hearings held in December, 2006, February 2007 and May 2007 regarding ESI Resources Limited and Enviropac were not made in 2006–07 and thus are not counted in this report.

<sup>2</sup> Average time to release a decision was significantly below the performance standard (18 vs. 30 days, recognizing many decisions were from one-member panels).

<sup>3</sup> Decisions that took the longest time (60 days) were issued prior to their expiry dates, as the hearing schedule had been planned to factor in that these decisions would require more time based on their complexity, level of public interest, and that these matters were heard during the peak third-quarter period.

# VII. The Canadian Nuclear Safety Commission

## Report Card on Nuclear Power Plant

### Performance as of January 2007

CNSC staff assesses licensee programs ("P") and their implementation ("I") separately, according to five ratings. Grades are assigned for both design of the program and its implementation and performance for each safety area and for programs within the safety area.

**Legend:**

A = Exceeds requirements    B = Meets requirements    C = Below requirements  
D = Significantly below requirements    E = Unacceptable

Safety Area/Program	P / I	Bruce		Darlington	Pickering		Gentilly-2	Point Lepreau
		A	B		A	B		
Operating Performance	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Organization & Plant Management	P	B	B	B	B	B	B	B
	I	A	A	B	C	B	B	B
Operations	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Occupational Health & Safety (non-radiological)	P	B	B	B	B	B	B	B
	I	A	B	B	B	B	B	B
Performance Assurance	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Quality Management	P	C	C	B	B	B	B	B
	I	C	B	B	B	B	B	B
Human Factors	P	B	B	B	B	B	B	C
	I	B	B	B	C	B	B	C
Training, Examination, and Certification	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Design & Analysis	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Safety Analysis	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Safety Issues	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Design	P	B	B	B	B	B	B	B
	I	B	B	B	B	C	B	B
Equipment Fitness for Service	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Maintenance	P	B	B	B	B	B	B	B
	I	C	B	B	B	C	B	B
Structural Integrity	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Reliability	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Equipment Qualification	P	B	B	B	B	B	B	B
	I	B	B	C	B	B	B	B
Emergency Preparedness	P	A	A	A	A	A	A	A
	I	A	A	A	A	A	B	B
Environmental Protection	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Radiation Protection	P	B	B	B	B	B	B	B
	I	B	B	A	B	B	B	B
Site Security	P	Secret						
	I	Secret						
Safeguards	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B

Note: "C" grades are highlighted.



## VIII. The Canadian Nuclear Safety Commission

# Management Responsibility for Financial Statements

The integrity and objectivity of the accompanying financial statements of the Canadian Nuclear Safety Commission (CNSC) for the year ended March 31, 2007 and all information included in its annual report are the responsibility of CNSC management.

These financial statements have been prepared by management in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector. Some of the information in the financial statements is based on management's best estimates and judgement and gives due consideration to materiality. To fulfil 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 to the *Public Accounts of Canada* and included in this annual report and the CNSC's *Departmental Performance Report* is consistent with these financial statements.

Management maintains a system of financial management and internal control designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are in accordance with the *Financial Administration Act* and regulations as well as CNSC policies and statutory requirements such as the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. Management also seeks to ensure the objectivity and integrity of data in its financial statements by careful selection, training and development of qualified staff, by organizational arrangements that provide appropriate divisions of responsibility, and by communication programs aimed at ensuring that regulations, policies, standards and managerial authorities are understood throughout the CNSC.

The CNSC's external auditor, the Auditor General of Canada, has audited the financial statements and, at the specific request of the CNSC, compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. The Auditor General has reported on her audit and compliance findings to the CNSC and to the Minister of Natural Resources.



Linda J. Keen, M. Sc.  
President and CEO



Claude Caron  
Vice President and CFO  
Corporate Services Branch

Ottawa, Canada  
June 1, 2007

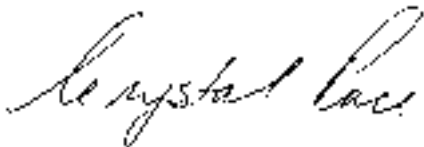
# Auditor's Report

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

I have audited the statement of financial position of the Canadian Nuclear Safety Commission as at March 31, 2007 and the statements of operations, equity of Canada and cash flows for the year then ended and the Commission's compliance with the *Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*. These financial statements and compliance with the *Cost Recovery Fees Regulations* are the responsibility of the Commission's management. My responsibility is to express an opinion, based on my audit, on these financial statements and compliance with the *Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement and whether the Commission has complied with the *Cost Recovery Fees Regulations*. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements and evidence supporting compliance. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation and compliance with the *Cost Recovery Fees Regulations*.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 2007 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles. Further, in my opinion, the Canadian Nuclear Safety Commission has complied, in all significant respects, with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*.



Crystal Pace, CA  
Principal  
for the Auditor General of Canada

Ottawa, Canada  
July 25, 2007

# Statement of Financial Position


## as at March 31

	2007	2006
<b>Assets</b>		
Financial assets:		
Due from the Consolidated Revenue Fund	\$8,406,396	\$8,309,921
Accounts receivable (Note 4)	<u>8,324,188</u>	<u>5,581,161</u>
	16,730,584	13,891,082
Non-financial assets:		
Prepaid expenses	582,032	344,367
Tangible capital assets (Note 5)	<u>3,428,462</u>	<u>3,138,646</u>
<b>Total Assets</b>	<u>\$20,741,078</u>	<u>\$17,374,095</u>
<b>Liabilities</b>		
Accounts payable and accrued liabilities	\$8,406,396	\$8,309,921
Vacation pay and compensatory leave	3,992,297	3,617,848
Deferred revenue (Note 6)	6,461,887	3,443,184
Employee severance benefits (Note 9b)	<u>11,524,621</u>	<u>9,145,863</u>
	30,385,201	24,516,816
<b>Equity of Canada</b>	<u>(9,644,123)</u>	<u>(7,142,721)</u>
<b>Total Liabilities and Equity of Canada</b>	<u>\$20,741,078</u>	<u>\$17,374,095</u>

Contractual obligations and contingent liabilities (Note 10)

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

Approved by:



Linda J. Keen, M.Sc.  
President and CEO



Claude Caron  
Vice President and CFO  
Corporate Services Branch

# Statement of Operations

## for the year ended March 31

	2007	2006
<b>Revenues</b>		
Licence fees	\$58,253,077	\$49,336,934
Special projects	1,695,707	3,206,374
Other	34,343	34,190
<b>Total revenues (Note 7)</b>	<b>59,983,127</b>	<b>52,577,498</b>
<b>Expenses</b>		
Salaries and employee benefits	65,525,990	55,383,938
Professional and special services	13,687,346	10,993,080
Accommodation	4,696,942	4,630,628
Travel and relocation	4,168,898	3,555,388
Furniture, equipment repairs and rental	4,077,910	7,083,812
Communication and information	2,292,936	1,946,908
Utilities, materials and supplies	809,218	773,027
Grants and contributions	239,226	333,962
Other	789,147	499,206
<b>Total expenses (Note 7)</b>	<b>96,287,613</b>	<b>85,199,949</b>
<b>Net cost of operations</b>	<b>\$36,304,486</b>	<b>\$32,622,451</b>

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

# Statement of Equity of Canada

## for the year ended March 31

	2007	2006
Equity of Canada at beginning of year	(\$7,142,721)	(\$8,574,664)
Net cost of operations	(36,304,486)	(32,622,451)
Services provided without charge (Note 12a)	8,629,299	8,195,630
Net cash provided by government (Note 3c)	25,077,310	23,822,675
Change in due from Consolidated Revenue Fund	96,475	2,036,089
<b>Equity of Canada at end of year</b>	<b>(\$9,644,123)</b>	<b>(\$7,142,721)</b>

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



# Statement of Cash Flows

## for the year ended March 31

	2007	2006
<b>Operating Activities</b>		
Net cost of operations	\$36,304,486	\$32,622,451
Non-cash items		
Amortization of tangible capital assets (Note 5)	(523,429)	(485,052)
Write-down of tangible capital assets	—	(20,316)
Services provided without charge by other Government departments and agencies (Note 12a)	(8,629,299)	(8,195,630)
Net gain on disposal of surplus assets	25,301	7,276
Variations in Statement of Financial Position:		
Increase in accounts receivable	2,743,027	915,564
Increase in prepaid expenses	237,665	87,878
Increase in liabilities	(5,868,385)	(1,437,211)
Cash used by operating activities	24,289,366	23,494,960
<b>Capital Investment Activities</b>		
Acquisitions of tangible capital assets (Note 3a)	813,245	335,550
Proceeds on disposal of surplus assets	(25,301)	(7,835)
Cash used by capital investment activities	787,944	327,715
<b>Net cash provided by government (Note 3c)</b>	<b>\$25,077,310</b>	<b>\$23,822,675</b>

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

# Notes to Financial Statements

## as at March 31, 2007

### 1. Authority and Objectives

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

The NSCA provides comprehensive powers to the CNSC to establish and enforce national standards for nuclear energy in the areas of health, safety and environment. It establishes a basis for implementing Canadian policy and fulfilling Canada's obligations with respect to the non-proliferation of nuclear weapons. The CNSC is empowered to require financial guarantees, order remedial action in hazardous situations and require responsible parties to bear the costs of decontamination and other remedial measures.

The objectives of the CNSC are to:

- regulate the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and information in order to: a) prevent unreasonable risk to the environment, to the health and safety of persons and to national security; and b) achieve conformity with measures of control and international obligations to which Canada has agreed; and
- disseminate scientific, technical and regulatory information concerning: a) the activities of the CNSC; b) the development, production, possession, transport and use of nuclear energy and substances; and c) the effects of nuclear energy and substances use on the environment and on the health and safety of persons.

The CNSC also administers the *Nuclear Liability Act*, including designating nuclear installations and prescribing basic insurance to be carried by the operators of such nuclear installations, and the administration of supplementary insurance coverage premiums for these installations.

Pursuant to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*, the CNSC recovers costs related to its regulatory activities from users licensed under the Act. These costs include the technical assessment of licence applications, compliance inspections and the development of licence standards.

### 2. Significant Accounting Policies

These financial statements have been prepared in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector. The significant accounting policies are as follows:

#### **a) Parliamentary appropriations**

The CNSC is financed by the Government of Canada through Parliamentary appropriations. Appropriations provided to the CNSC do not parallel financial reporting according to generally accepted accounting principles since appropriations are primarily based on cash flow requirements. Consequently, items recognized in the statement of operations and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 provides a high-level reconciliation between the two bases of reporting.

### **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 of the federal government.

### **c) Due from the Consolidated Revenue Fund**

Due from the Consolidated Revenue Fund represents the amount of cash that the CNSC is entitled to draw from the Consolidated Revenue Fund, without further appropriations, in order to discharge its liabilities.

### **d) Revenue**

Revenue is recognized in the period in which the underlying transaction or event occurred that gave rise to the revenue. 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. Revenue from licence fees, special projects and other sources is deposited to the Consolidated Revenue Fund and is not available for use by the CNSC. Legislative authority allows for the respending of amounts received on the disposal of surplus assets.

Certain 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 are not subject to the *Cost Recovery Fees Regulations*. 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*.

### **e) Vacation pay and compensatory leave**

Vacation pay and compensatory leave are expensed as the benefits accrue to employees under their respective terms of employment.

### **f) Grants and contributions**

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.

### **g) Services provided without charge by other Government departments and agencies**

Services provided without charge by other Government departments and agencies are recorded as operating expenses at their estimated cost. These include services such as: accommodation provided by Public Works and Government Services Canada, contributions covering employer's share of employees' insurance premiums and costs paid by the Treasury Board Secretariat, salaries and associated legal costs of services provided by Justice Canada, audit services provided by the Office of the Auditor General, and workers' compensation benefits provided by Human Resources and Social Development Canada.

### **h) Pension benefits**

All eligible employees participate in the Public Service Pension Plan, a multi-employer plan, administered by the Government of Canada. The CNSC's contributions to the Plan are charged to expenses in the year incurred and represent the total CNSC obligation to the Plan. Current legislation does not require the CNSC to make contributions for any actuarial deficiencies of the Plan.

**i) Employee severance benefits**

Employees are entitled to severance benefits, as provided for under their respective terms of employment. The cost of these benefits is accrued as employees render the services necessary to earn them. 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.

**j) Accounts receivable**

Accounts receivable are stated at amounts expected to be ultimately realized; a provision is made for receivables where recovery is considered uncertain.

**k) Contingent liabilities**

Contingent liabilities are potential liabilities which 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 an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

**l) Tangible capital assets**

Tangible capital assets with an acquisition cost of \$10,000 or more are recorded at their acquisition cost. Amortization is calculated on a straight-line basis over the estimated useful life of the asset as follows:

Asset Class	Amortization Period
Furniture and equipment	5 to 20 years
Informatics equipment and software	2 to 5 years
Motor vehicles	4 years

**m) Nuclear Liability Reinsurance Account**

The CNSC administers the Nuclear Liability Reinsurance Account on behalf of the federal government. The CNSC receives 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 does it have 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 11 of these financial statements.

**n) Measurement uncertainty**

The preparation of these financial statements in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector, 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 contingent liabilities, the liability for employee severance 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 Appropriations

The CNSC receives its funding through Parliamentary appropriations. Items recognized in the statement of operations and the statement of financial position in one year may be funded through parliamentary appropriations in prior, current and 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. These differences are reconciled below.

#### a) Reconciliation of net cost of operations to current year appropriations used

	2007	2006
Net cost of operations	\$36,304,486	\$32,622,451
Adjustments for items affecting net cost of operations but not affecting appropriations: Add (Less)		
Amortization of tangible capital assets	(523,429)	(485,052)
Vacation pay and compensatory leave	(374,449)	(267,738)
Services provided without charge by other Government departments and agencies	(8,629,299)	(8,195,630)
Revenue not available for spending	59,983,127	52,577,498
Employee severance benefits	(2,378,758)	(634,887)
Other expenses	<u>(170,747)</u>	<u>(490,372)</u>
	47,906,445	42,503,819
Adjustments for items not affecting net cost of operations but affecting appropriations: Add (Less)		
Acquisition of tangible capital assets	813,245	335,550
Variation in prepaid expenses	<u>237,665</u>	<u>87,878</u>
	1,050,910	423,428
Current year appropriations used	<u>\$85,261,841</u>	<u>\$75,549,698</u>

#### b) Appropriations provided and used

	2007	2006
Parliamentary appropriations voted:		
Vote 20 – CNSC Operating expenditures	\$84,035,099	\$71,034,019
Less: Lapsed appropriation	<u>6,954,701</u>	<u>3,383,949</u>
	77,080,398	67,650,070
Statutory		
Spending of proceeds from disposal of surplus assets	—	6,311
Contributions to employee benefit plans	8,181,443	7,893,317
Current year appropriations used	<u>\$85,261,841</u>	<u>\$75,549,698</u>





## 7. Summary of Expenditures and Revenues by Cost Recovery Fee Category

	Revenue	Licences Provided Free of Charge (Note 8)	2007 Total Value of Licences and Other Revenue	2006 Total Value of Licences and Other Revenue	2007 Cost of Operations	2006 Cost of Operations
<b>Licensing, Certification and Compliance</b>						
<b>Regulatory plan activity fees</b>						
Power reactors	\$38,029,224	\$ —	\$38,029,224	\$33,045,840	\$38,510,606	\$35,248,916
Non-power reactors	1,269,579	708,609	1,978,188	1,290,865	2,003,228	1,376,944
Nuclear research & test establishments	4,139,206	—	4,139,206	3,598,612	4,191,601	3,838,494
Particle accelerators	—	623,235	623,235	362,500	631,124	386,672
Uranium processing facilities	2,873,812	—	2,873,812	1,817,970	2,910,190	1,939,189
Nuclear substance processing facilities	1,030,886	—	1,030,886	577,075	1,043,935	615,560
Heavy water plants	74,212	—	74,212	35,055	75,151	37,396
Radioactive waste facilities	1,781,286	—	1,781,286	1,128,870	1,803,834	1,204,156
Uranium mines & mills	4,162,576	44,074	4,206,650	3,662,358	4,259,898	3,898,645
Waste nuclear substance licences	279,086	1,160,087	1,439,173	777,785	1,457,917	829,745
<b>Total Regulatory plan activity fees</b>	<b>53,639,867</b>	<b>2,536,005</b>	<b>56,175,872</b>	<b>46,296,930</b>	<b>56,887,484</b>	<b>49,375,717</b>
<b>Formula fees</b>						
Nuclear substances	3,801,142	4,244,441	8,045,583	7,721,695	9,069,086	7,115,805
Class II nuclear facilities	218,959	1,815,860	2,034,819	2,057,959	3,198,448	2,290,562
Dosimetry services	45,949	3,108	49,057	32,769	724,989	757,378
<b>Total Formula fees</b>	<b>4,066,050</b>	<b>6,063,409</b>	<b>10,129,459</b>	<b>9,812,423</b>	<b>12,992,523</b>	<b>10,163,745</b>
<b>Fixed fees</b>						
Transport licences and transport package certificates	261,159	1,000	262,159	198,125	542,437	456,121
Radiation device and prescribed equipment certificates	121,135	3,850	124,985	159,522	493,603	583,297
Exposure device operator certificates	164,866	—	164,866	59,115	130,092	125,639
<b>Total Fixed fees</b>	<b>547,160</b>	<b>4,850</b>	<b>552,010</b>	<b>416,762</b>	<b>1,166,132</b>	<b>1,165,057</b>
<b>Total Licensing, Certification and Compliance</b>	<b>58,253,077</b>	<b>8,604,264</b>	<b>66,857,341</b>	<b>56,526,115</b>	<b>71,046,139</b>	<b>60,704,519</b>
<b>Non-Licensing and Non-Certification</b>						
Co-operation undertakings	34,343	—	34,343	34,190	15,948,817	14,208,185
Stakeholder relations	—	—	—	—	6,100,717	6,064,706
Regulatory framework	—	—	—	—	910,126	616,564
Special projects, other revenue and related expenses	1,695,707	—	1,695,707	3,206,374	2,281,814	3,605,975
<b>Total Non-Licensing and Non-Certification</b>	<b>1,730,050</b>	<b>—</b>	<b>1,730,050</b>	<b>3,240,564</b>	<b>25,241,474</b>	<b>24,495,430</b>
<b>Total</b>	<b>\$59,983,127</b>	<b>\$8,604,264</b>	<b>\$68,587,391</b>	<b>\$59,766,679</b>	<b>\$96,287,613</b>	<b>\$85,199,949</b>

## 8. 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 departments. The total value of these licences amounted to \$8,604,263 (2006 - \$7,189,181).

## 9. Employee Future Benefits

### a) Pension Benefits

The CNSC and all eligible employees participate in the Public Service Pension 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/Québec Pension Plans and they are indexed to inflation. The employer's and employees' contributions to the plan were as follows:

	2007	2006
CNSC's contributions	\$6,029,723	\$5,841,054
Employees' contributions	\$2,970,173	\$2,247,601

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) Employee Severance Benefits

The CNSC provides severance benefits to its employees based on eligibility, years of service and final salary. This benefit plan is not pre-funded. Benefits will be paid from future appropriations. Information about the severance benefits, measured as at March 31 is as follows:

	2007	2006
Accrued benefit obligation, beginning of year	\$9,145,863	\$8,510,976
Expense for the year	3,298,366	1,477,249
Benefits paid during the year	(919,608)	(842,362)
Accrued benefit obligation, end of year	\$11,524,621	\$9,145,863

## 10. Contractual Obligations and Contingent Liabilities

### a) Contractual Obligations

The nature of the CNSC's activities results in some multi-year contracts and obligations whereby the CNSC will be committed to make some future payments when the services and goods are received. As of March 31, 2007, the CNSC has significant future years' contractual obligations for the following:

	2008	2009	2010	2011	2012 and thereafter	Total
Acquisitions of goods and services	\$4,013,288	\$78,209	\$26,686	\$26,673	\$6,835	\$4,151,394
Operating leases	62,701	62,876	60,933	59,184	13,274	258,968
Total	\$4,075,989	\$141,085	\$87,619	\$85,560	\$20,109	\$4,410,362

**b) Contingent Liabilities**

Claims have been made against the CNSC in the normal course of operations. Legal proceedings for claims totaling approximately \$55,250,000 (2006 - \$55,250,000) were still pending at March 31, 2007. Some of these potential liabilities 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 in the financial statements.

**11. Nuclear Liability Reinsurance Account**

Under the *Nuclear Liability Act* (NLA), operators of designated nuclear installations are required to possess basic and/or supplementary insurance of \$75 million per installation for specified liabilities. The federal government has designated the Nuclear Insurance Association of Canada (NIAC) as the sole provider of third party liability insurance and property insurance for the nuclear industry in Canada. The NIAC provides insurance to nuclear operators under a standard policy.

The policy consists of two types of coverage: Coverage A and Coverage B. Coverage A includes only those risks that are accepted by the insurer, that is, bodily injury and property damage. Coverage B risks include personal injury that is not bodily, for example psychological injury, damage arising from normal emissions and damage due to acts of terrorism. Effective in 2003, the federal government agreed to provide coverage for damage due to acts of terrorism which was previously provided under Coverage A.

The NIAC receives premiums from operators for both coverages, however, premiums for Coverage B risks are remitted to the federal government which reinsures these risks under a Reinsurance Agreement between the NIAC and the federal government. The federal government, through the Reinsurance Agreement also pays the difference (supplementary insurance) between the basic insurance amount set by the CNSC and the full \$75 million of liability imposed by the NLA. As of March 31, 2007 the total supplementary insurance coverage is \$584,500,000 (2006 - \$584,500,000).

All premiums paid by the operators of nuclear installations for the supplementary insurance coverage are credited to a Nuclear Liability Reinsurance Account in the Consolidated Revenue Fund. Premiums received in respect of coverage for damage due to acts of terrorism amount to \$280,592 (2006 - \$273,154). 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 m), the CNSC administers the Nuclear Liability Reinsurance Account on behalf of the Government of Canada through a specified purpose account consolidated in the Public Accounts of Canada. During the year, the following activity occurred in this account:

	2007	2006
Opening balance	\$1,107,553	\$832,799
Receipts deposited	282,192	274,754
Closing balance	\$1,389,745	\$1,107,553

