Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

CNSC ANNUAL REPORT

2003-2004

Results for Canadians

Canada

Contact Information

Canadian Nuclear Safety Commission
Communications and Information Management Directorate
280 Slater Street
P.O. Box 1046, Station B
Ottawa, Ontario K1P 5S9
Telephone: (613) 995-5894 or 1-800-668-5284 (within Canada)
Fax: (613) 992-2915
e-mail: info@cnsc-ccsn.gc.ca
Website: www.nuclearsafety.gc.ca

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Please note that the Canadian Nuclear Safety Commission Annual Report of the Commission Tribunal 2003-2004 is located on the reverse side of this document.

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2003-2004

Results for Canadians

Table of Contents

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

The Honourable John Efford
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, 2004. The report has been prepared and is submitted in accordance with Section 72 of the *Nuclear Safety and Control Act*.

Linda J. Keen
President and Chief Executive Officer

Canada

Linda J. Keen
President and Chief Executive Officer

Message from the Chief Executive Officer

I am pleased to present the 2003-2004 Annual Report of the Canadian Nuclear Safety Commission (CNSC).

In preparing this report, for the third year of my term as President and Chief Executive Officer, I have outlined the progress that we are making toward our vision of becoming one of the best nuclear regulators in the world. It is my firm belief that the activities articulated in this report are carrying us forward on this ambitious path.

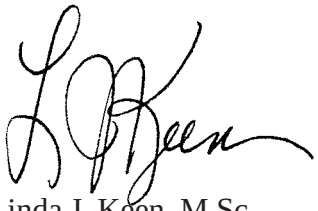
This year, our annual report focuses on 'Results for Canadians' and is based upon a new CNSC logic model that illustrates the difference the CNSC is making for Canadians. This model delineates the activity areas and outcomes which address how we deliver on our mandate.

As discussed in the report, the CNSC's five immediate outcomes stem from the legislated mandate given by Parliament to the CNSC through the *Nuclear Safety and Control Act* and respond to the priorities of the Government of Canada. These outcomes can be summarized as follows: a clear and pragmatic regulatory framework; safe operation of licensed activities with conformity to nuclear non-proliferation commitments; high levels of regulatory compliance; effective national and international cooperation; and stakeholder understanding of the regulatory program. As demonstrated in this report, these immediate outcomes deliver our ultimate outcome, as a key result for Canadians: ***safe and secure nuclear installations and processes solely for peaceful purposes; and public confidence in the nuclear regulatory regime's effectiveness.***

In ensuring the effectiveness of the nuclear regulatory regime, the CNSC remains committed to further modernizing its management practices. A Corporate Committee on Modern Management is implementing the CNSC's Management Model, based on the National Quality Institute's Canadian Quality Criteria for public sector excellence. As part of this model, the CNSC continues to formalize its risk management approaches for decisions on regulatory priorities. The CNSC has also made progress in implementing an integrated results-based planning and performance management process that links plans to budgets and results.

As I have stated in the past, the CNSC's achievements and activities are designed to address the challenges of nuclear regulation and to improve the regulatory regime. This report outlines the achievements and activities for the past year. In staying the course that has been set on behalf of our clients, the people of Canada, we remain committed to working with stakeholders, including licensees and the public, to deliver on our mandate to protect health, safety, security and the environment and to respect Canada's international commitments on the peaceful use of nuclear energy.

Sincerely,

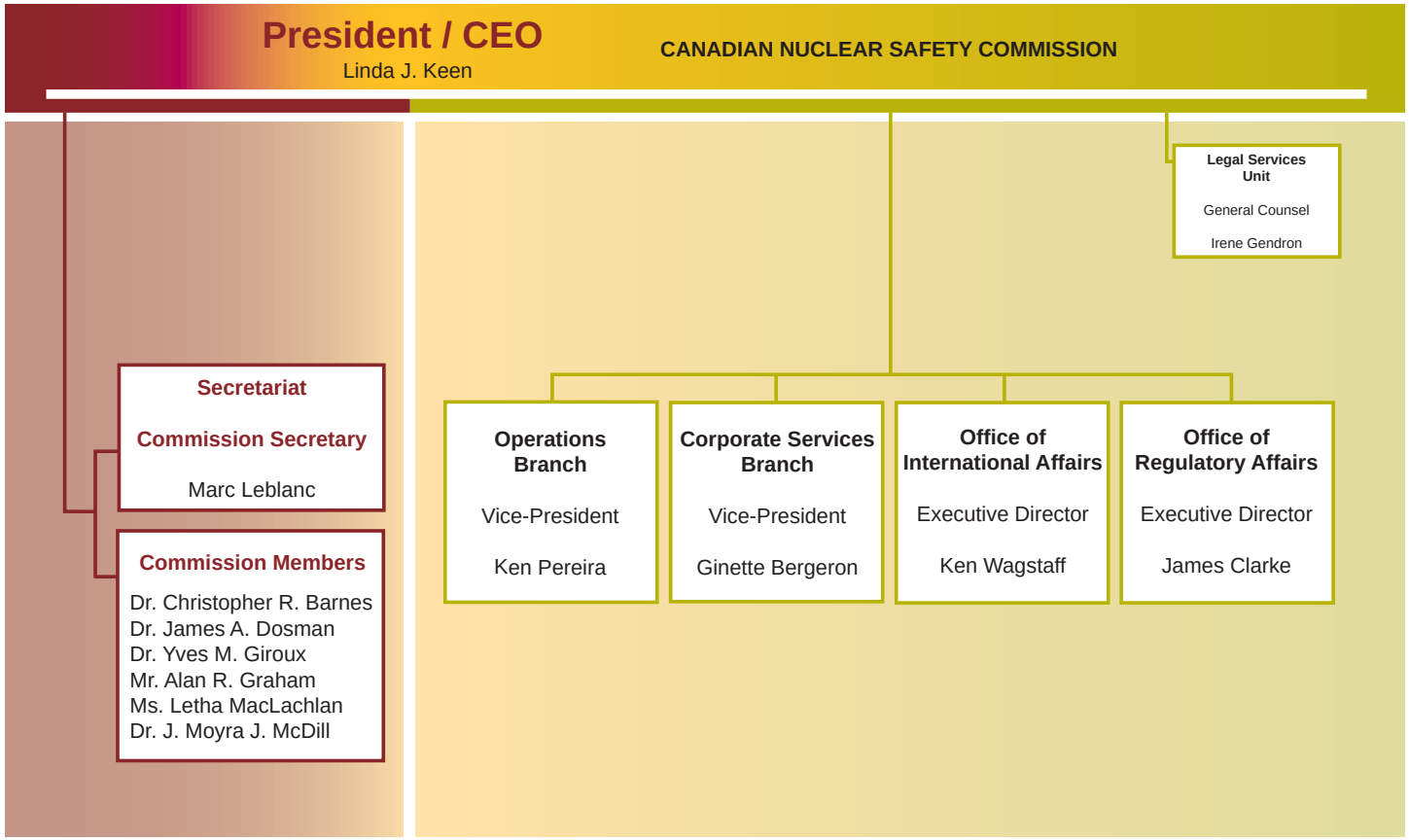


Linda J. Keen, M.Sc.

The Canadian Nuclear Safety Commission – Executive Management Team

The Canadian Nuclear Safety Commission (CNSC) staff organization is headed by a CEO who leads an Executive Committee comprised of executives who are the leaders of the agency.

(Figure 1)



Linda J. Keen
President and Chief
Executive Officer

Ken Pereira
Vice-President,
Operations

Ginette Bergeron
Vice-President,
Corporate Services

Marc Leblanc
Commission Secretary

Ken Wagstaff
Executive Director,
Office of International Affairs

James Clarke
Executive Director,
Office of Regulatory Affairs

Irene Gendron
General Counsel and
Manager, Legal Services Unit

The Canadian Nuclear Safety Commission – Context

Mission and Vision

It is the CNSC's mission *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 its mission, the CNSC is working toward its vision of *becoming one of the best nuclear regulators in the world*.

Jurisdiction

The *Nuclear Safety and Control Act* (NSCA) came into force May 31, 2000. The NSCA provides the Canadian Nuclear Safety Commission with its regulatory authority. Under the authority of the Act, the CNSC has put in place regulations.

The CNSC regulates the use of nuclear energy and nuclear materials in Canada. Its regulations apply to the following areas:

- Power reactors
- Non-power reactors
- Nuclear research and test establishments
- Uranium mines, mills, processing and fuel fabrication facilities
- Heavy water production plants
- Nuclear substance processing facilities
- Particle accelerators
- Waste management facilities

- Packaging and transportation of nuclear substances
- Nuclear substances and radiation devices
- Lands under evaluation (whether regulatory action is required)
- Irradiators
- Imports and exports of nuclear materials, equipment and technology
- Exports of nuclear related dual-use materials, equipment and technology
- Brachytherapy and teletherapy
- Dosimetry service providers

Corporate Challenges, Risks and Opportunities

The CNSC faces significant challenges now and in the future. Some of the challenges affecting the CNSC's work are as follows:

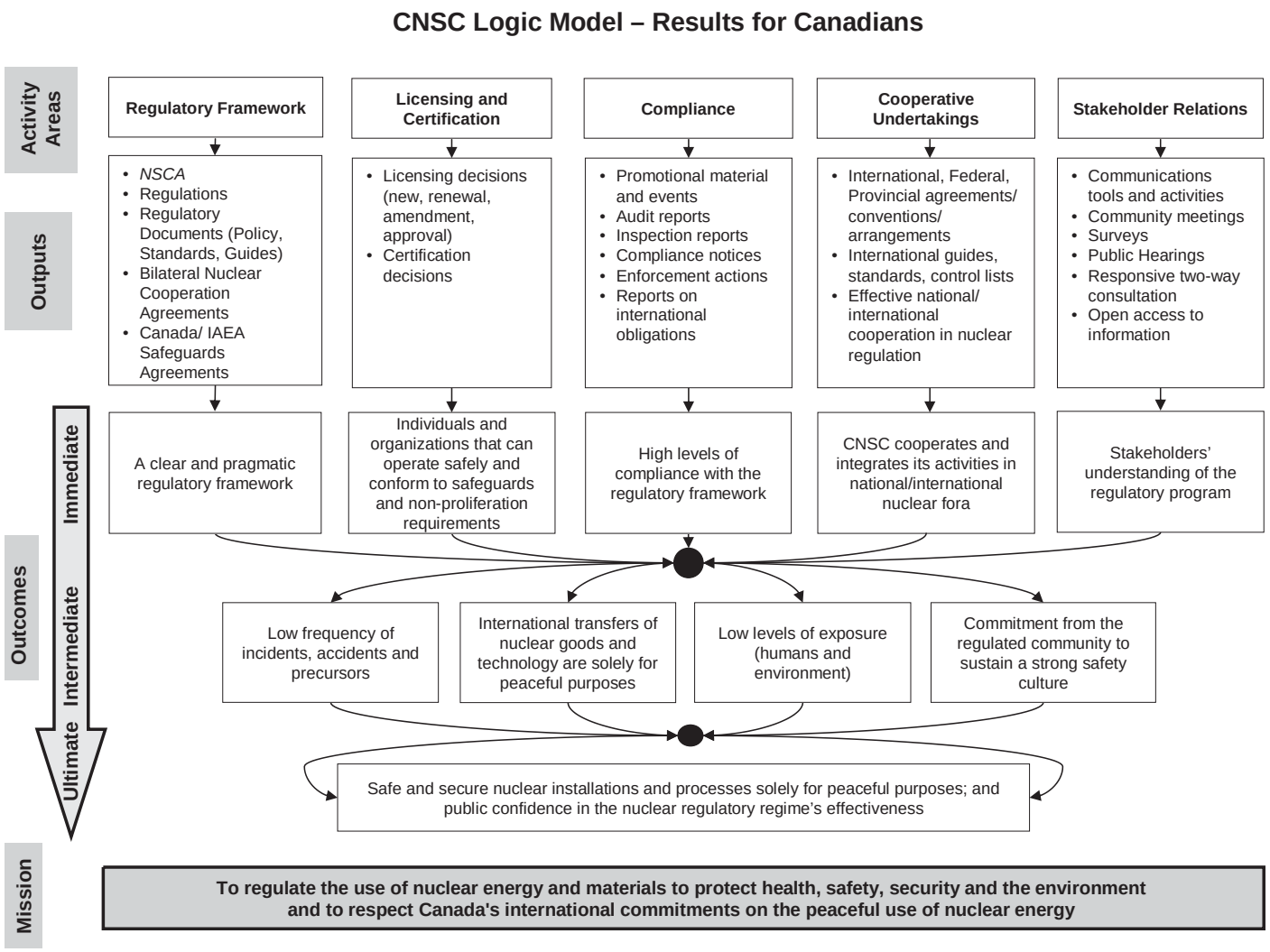
- the increasing demand for energy and the potential for refurbishment and possible new construction of nuclear power plants in Canada;
- the possibility of new uranium mining projects and processing activities;
- the expansion of waste management facilities;
- the expanded use of nuclear technology in medical applications;
- the unprecedented growth in demand for safety assurance internationally and the need for very tight safeguards enforcement; and
- the increasing need to assist international efforts to strengthen the nuclear non-proliferation regime.

The CNSC is conducting a review to fully detail potential future challenges. This review will provide substantive input into our planning process.

The CNSC Strategic Plan

The 2004-2005 CNSC Report on Plans and Priorities (RPP), developed in 2003-2004, serves as the CNSC's strategic plan. As part of this plan, a CNSC Logic Model was developed (see Figure 2). The model is a graphic representation of the logical linkages between CNSC activity areas and their outcomes. It is an important step in developing a results-based planning and performance management regime.

Figure 2



The CNSC's immediate outcomes, articulated in the logic model, are achieved by the CNSC's activities. While the CNSC can ensure its immediate outcomes are achieved, responsibility in achieving the intermediate and ultimate outcomes is shared to an increasing extent with other stakeholders. The CNSC's immediate outcomes are:

- A clear and pragmatic regulatory framework
- Individuals and organizations that can operate safely and conform to safeguards and non-proliferation requirements
- High levels of compliance with the regulatory framework
- CNSC cooperates and integrates its activities in national/international nuclear fora
- Stakeholders' understanding of the regulatory programs

From these immediate outcomes flow intermediate outcomes:

- Low frequency of incidents, accidents and precursors
- International transfer of nuclear goods and technology are solely for peaceful purposes
- Low levels of exposure (humans and environment)
- Commitments from the regulated community to sustain a strong safety culture

All of which lead to the ultimate outcome:

> *Safe and secure nuclear installations and processes solely for peaceful purposes; and public confidence in the nuclear regulatory regime's effectiveness*

Contributing to Canada's Performance

The CNSC's outcomes position it as a key contributor to the Government of Canada's overall performance. The Treasury Board of Canada's annual report to Parliament, entitled *Canada's Performance*, provides a government-wide view of results in key areas of federal responsibility as follows:

- the economy;
- health;
- the environment;
- communities;
- Canada and the world;
- Aboriginal communities; and
- effective government.

The CNSC contributes directly to assuring the **health** of Canadians, protection of the **environment** and protection of **communities** from potentially harmful effects of nuclear materials, substances or processes by regulating for safe and secure nuclear installations and processes. Most uranium mines and waste management facilities are in rural and northern Canadian communities. In addition, **Aboriginal communities** are considered important stakeholders in the CNSC processes. The CNSC consults regularly with communities through the Outreach program. Input from communities is welcome in the public hearing process and their confidence in the nuclear regulatory regime is important.

The CNSC also plays a significant role in bringing Canada's expertise and perspective to the **world** stage**,** particularly in its work with the International Atomic Energy Agency (IAEA) to ensure that nuclear goods and technology are used solely for peaceful purposes.

Finally, in providing a clear and pragmatic regulatory framework and in cooperating and integrating activities in national and international nuclear fora, the CNSC contributes to **effective government.**

The CNSC does not specifically support the key area of federal responsibility of 'the **economy**'; however, through its practice of smart regulation, the CNSC is key to Canadians' confidence in the safety of the nuclear industry by being an effective, transparent and trusted regulator to whom the public can look with assurance.

Performance Accomplishments –
Results for Canadians

The CNSC has developed plans for each of the five immediate outcomes of the CNSC Logic Model. Each outcome is achieved through activities in a respective activity area. By planning on the basis of outcomes, the CNSC ensures a consistent results-based approach to its activities across the organization and with stakeholders. The following section outlines the work the CNSC completed during 2003-2004 in support of each of its immediate outcomes.

Immediate Outcomes

Outcome: **A clear and pragmatic regulatory framework**

The CNSC ensures its licensees are aware of and comply with all requirements respecting the protection of Canadians and the peaceful use of nuclear energy and materials.

The CNSC's regulatory framework is composed of:

- the *Nuclear Safety and Control Act* (NSCA), regulations under the Act, and regulatory documents (policies, standards and guides);
- the *Safeguards Agreement and Additional Protocol* between Canada and the International Atomic Energy Agency (IAEA); and,
- Canada's bilateral Nuclear Cooperation Agreements.

The CNSC also administers the *Nuclear Liability Act* and, as a Responsible Authority under the *Canadian Environmental Assessment Act*, carries out environmental assessments for nuclear projects in accordance with this legislation.

The NSCA and associated regulations came into force on May 31, 2000. Since that date, the CNSC has gained several years of experience in implementing those regulations. The CNSC has completed a risk-based review of existing and potential new regulations. The CNSC now is focusing on amendments to those regulations which will deliver the greatest benefits for protecting health and safety, security and the environment, and for respecting Canada's international commitments on the non-proliferation of nuclear weapons.

Nuclear Security: A CNSC Priority

Following the events of September 11, 2001, the CNSC issued orders requiring all licensees to implement enhanced physical protection measures to strengthen security and adhere to IAEA recommendations with respect to physical protection set out in *The Physical Protection of Nuclear Material and Nuclear Facilities* document. The CNSC also undertook a complete review of its existing *Nuclear Security Regulations*.

Proposed Amendments

After holding extensive discussions and consultations with affected licensees, the CNSC is now proposing a number of amendments to the *Nuclear Security Regulations* and enhancements to physical protection programs, which reflect international standards, to permanently establish the security orders issued in 2001. The proposed amended regulations reflect risk-based security requirements for facilities or activities, and were published for comment in Part 1 of the *Canada Gazette* on October 25, 2003.

The proposed amendments include security measures put in place since 2001, and introduce a number of new measures that have strengthened, and will continue to strengthen security at nuclear facilities in Canada. These amendments address such areas as emergency response and preparedness, security clearance, power supply and risk assessment.

Implementation

The proposed amendments serve to strengthen the overall security at nuclear facilities. Canadians, as well as the international community, can be assured that Canadian nuclear facilities and nuclear substances are well protected, in accordance with international physical protection practices and standards recommended by the International Atomic Energy Agency.

The licensees affected by the CNSC's post-September 11 orders have either implemented or are in the process of implementing all of the physical protection measures stipulated in the orders and proposed amended regulations.

Legislative and regulatory initiatives

During the reporting period, the CNSC amended, with Governor in Council approval, the *CNSC Cost Recovery Fees Regulations* and the *Packaging and Transport of Nuclear Substances Regulations*. Proposed amendments to the *Nuclear Security Regulations* were also pre-published for public comment in Part 1 of the *Canada Gazette*.

CNSC Cost Recovery Fees Regulations

The CNSC first introduced licence fees in 1990. The CNSC replaced its *CNSC Cost Recovery Fees Regulations* on July 1, 2003. Licence fees are now charged according to these new fees regulations, and the CNSC equitably recovers the actual cost of regulating the nuclear industry.

The CNSC Cost Recovery Program:

- allows the CNSC to recover from its fee-paying licensees their portion of the actual cost of regulation;
- facilitates efficient allocation of CNSC resources, by using the cost information generated as a result of this program;
- promotes transparent and open relationships between the CNSC and its licensees, by sharing regulatory activity plans, and providing upfront fee estimates;
- enables the CNSC to charge fees on an annual basis in order for the costs to be recovered in the year costs are incurred; and
- applies fees only to those licensees designated as fee-paying; there is no charge for the licensees who are exempt. The costs associated with regulating licensees exempt from paying fees continue to be paid from the general revenues of the Government of Canada.

Packaging and Transport of Nuclear Substances Regulations

The CNSC also amended the *Packaging and Transport of Nuclear Substances Regulations* (PTNSR), effective February 2, 2004. The amendments to the PTNSR incorporate and update references to the current international standards established by the IAEA. As an original member state of the IAEA, Canada has been an active participant in the development of these international standards and regulations.

The amended PTNSR regulations aligns with the IAEA standards and recommendations implemented internationally in 2001, and increases the regulatory oversight to enhance safety. For example, the amended regulations require the use of Type C packages, a new and robust type of packaging, for shipping larger quantities of radioactive material by air. The Type C package is intended to withstand severe accidents throughout air transport without the loss of containment or a dangerous increase in external radiation levels.

Nuclear Security Regulations

In October 2003, the CNSC pre-published proposed amendments to the *Nuclear Security Regulations* in Part 1 of the *Canada Gazette*. The proposed amendments to these regulations detail the physical protection measures which licensees must establish to address security issues, including the theft of sensitive nuclear material and the protection of nuclear facilities from sabotage. The current Commission and Designated Officer Orders were issued in the fall of 2001 following the events of September 11. These orders will become permanent regulations once the amendment process is complete and the proposed regulations take into account the IAEA's recommendations with respect to physical protection set out in the most recent version of *The Physical Protection of Nuclear Material and Nuclear Facilities*.

Comments on these regulations were received by the CNSC, and are now being considered in drafting the final amendments to the *Nuclear Security Regulations*. These amendments will be introduced in 2005.

Regulatory documents

Regulatory documents provide clear and pragmatic information on nuclear regulatory requirements. During 2003-2004, a draft Regulatory Document Framework identifying the CNSC's high priority regulatory documents was issued for public comment, revised and then published. The document framework forms the basis for the CNSC regulatory document development program. High priority documents are now being developed in accordance with established processes and work plans.

In 2003-2004, the CNSC finalized and published 11 regulatory documents (policies, standards and guides). These documents cover matters ranging from licensees' public information programs (G-217), to transportation security plans for Category I, II or III nuclear material (G-208).

An additional 16 draft regulatory documents were issued for trial use or public comment. These draft documents include P-299, "Regulatory Fundamentals", which articulates the roles and responsibilities of licensees and the CNSC with respect to protecting health, safety, security and the environment, and with respect to meeting Canada's international commitments on the peaceful use of nuclear energy. A revised guide on keeping radiation exposures and doses "as low as reasonably achievable (ALARA)" (G-129, Rev. 1) was also issued, as well as a series of guides outlining the annual compliance reporting for licensees holding nuclear substance and prescribed device licences (G-300-1.0 to G-300-3.5).

Other related initiatives

The CNSC regulatory program has been subject to a set of integrated changes that encompass risk-informed programs and initiatives. These include:

- improvement to the compliance program;
- risk-informed resource allocation;
- implementation of a cost recovery program;
- approval of longer licence periods;
- expanded evaluation of licensee performance; and,
- more effective approaches to licensing.

ACR-700: Planning Ahead

Atomic Energy of Canada Limited (AECL) is developing a new 700 Megawatt-electric Advanced CANDU® Reactor (ACR-700™). The ACR-700 is an evolutionary adaptation of current CANDU reactors; the design is based on the technology of current operating CANDU reactors, but introduces a number of design innovations to enhance reactor safety and economics.

AECL requested that the CNSC undertake licensability reviews of the proposed design. A contractual agreement between the organizations was reached in May 2003 when a Memorandum of Understanding for the pre-licensing review of the ACR-700 design was signed. It was agreed that the review will be conducted according to a three-year project plan that defines goals and milestones, activities, schedules and resource requirements.

CNSC Review

The CNSC has begun performing a pre-licensing review of the ACR-700 to determine whether there are fundamental barriers that would prevent licensing of the ACR-700 in Canada under the *Nuclear Safety and Control Act.* The CNSC's review has been divided into two phases: Early Identification of Issues for Resolution and Assessment of Licensability.

In the first phase, the CNSC will identify the key licensing issues by assessing AECL's plans in the areas of safety methodology, design requirements, and research and development. It will then prioritize these issues in order of importance, and subsequently produce an Interim Screening Report which identifies issues and (where possible) agreed success paths.

During the second phase of the review, a detailed review of the ACR-700 design from the perspective of potential licensing issues identified in the Interim Screening Report will be carried out, and a Final Design Assessment Report will be produced. The Report is not a licence nor does it legally obligate the CNSC to issue a licence. It is only intended to give AECL reasonable assurance, if supported by the review findings, that the design is licensable in Canada or under what condition it would be licensable.

While planning the pre-licensing review, it was recognized that it is a significant undertaking requiring experienced and dedicated project staff. To meet this requirement for additional resources, the CNSC underwent a rapid increase in staff in the fall of 2003 and formed an ACR Project Division to plan, organize and execute the review, direct the discipline reviewers, and report to a Steering Committee.

Simultaneous Review

AECL has simultaneously requested the United States Nuclear Regulatory Commission to perform a pre-application review of ACR-700. Although the objective of the review is the same as that initiated in Canada by the CNSC, the legal and technical frameworks in the United States are different.

The ACR-700 is unique among international reactor designs in that two mature and experienced regulatory bodies are reviewing it simultaneously. This provides a unique opportunity for regulatory co-operation in both technical and policy matters. This co-operation is expected to increase the efficiency of the reviews in both countries, and possibly enhance the safety of the design.

Outcome: **Individuals and organizations that can operate safely and conform to safeguards and non-proliferation requirements**

The CNSC ensures that licences and certifications are issued to those individuals or organizations who demonstrate they can operate safely and conform to international requirements. Activities such as public hearings, certification decisions and licence assessments help the CNSC ensure its licensees are qualified to carry out the activities for which they are seeking a licence. The Annual Report of the Commission Tribunal, available on the reverse side of this document, provides information on the Commission's licensing proceedings for 2003-2004.

Licensing

The CNSC has not licensed a new nuclear generating station since 1989. In preparation for the possibility of licensing new nuclear generating stations, in 2003-2004 the CNSC commenced the production of a Licensing Basis (LB) document that will be used to assess the licensability of new reactors in Canada. The LB document will be applied to the Advanced CANDU Reactor (ACR) being designed by Atomic Energy of Canada Limited and to any other proposed reactor designs.

The main objectives of the LB project are:

- closer alignment of Canadian requirements with international practices; and
- adoption of a more risk-informed approach to licensing.

The project also considers current regulatory and industry practices in Canada, and interacts with other concurrent CNSC projects.

Assessments

CNSC staff reviews applications for operating licences, including renewals and amendments, to assess licensees' qualifications to safely operate nuclear facilities. The Commission bases its decisions on the application by operators and assessments by the CNSC staff. CNSC staff provides research and analysis and makes licensing recommendations to assist the Commission in making sound licensing decisions. Licence proceedings during the reporting period are listed in the Canadian Nuclear Safety Commission Annual Report of the Commission Tribunal 2003-2004 on the reverse side of this document. Following the licensing decision, CNSC staff undertakes inspections, reviews reports on events, investigates licensee non-compliance and monitors the implementation of corrective actions to address any deficiencies.

In reviewing each licence application, CNSC staff measures each application against licensing requirements specified in the *Nuclear Safety and Control Act*, the accompanying regulations, and in CNSC regulatory documents. The requirements vary depending on the activity being licensed and to which regulations the activity being licensed must comply. Expectations are set within the requirements and CNSC staff assesses whether a licence application adequately addresses the expectations of the established requirements. Expectations may be set in such areas as radiation protection, environmental protection, nuclear security, waste management, safeguards or emergency preparedness. For licence renewals of nuclear generating stations, CNSC staff assesses the applicant's performance in established safety areas and other programs (see page 23 for more information). Information from the CNSC's regulatory activities is then factored in the staff recommendation to the Commission regarding licence renewal.

Another of the CNSC's requirements is for licence applicants and licensed operators of major nuclear facilities (Class I nuclear facilities, Class II nuclear facilities and uranium mines and mills) to inform citizens in the vicinity of the facility of the anticipated effects on health, safety and the environment from the licensed activity. In 2003-2004 the CNSC issued regulatory guide G-217 (Licensee Public Information Programs) which provides licensees with public information program requirements and the components against which their programs will be assessed.

During the reporting period, the CNSC staff and the Commission also began moving towards respectively recommending and granting longer licence periods for major nuclear facilities. Longer licence periods are only recommended and granted to those licensees who have demonstrated to the CNSC staff and the Commission's satisfaction their ability to meet all requirements and operate safely. Licence applications underwent in-depth reviews in order to ensure the issuing of licences with longer licence periods was suitable. Longer licence periods allow resources to be devoted to safety evaluation, performance assessment and compliance activities instead of administrative licensing activities. Licensees granted licences with longer licence periods in 2003-2004 include the five operators of the SLOWPOKE-2 non-power reactors who received ten-year licences.

Environmental Assessments

During 2003-2004, the CNSC continued, as a Responsible Authority, to carry out Environmental Assessments (EAs) under the *Canadian Environmental Assessment Act* (CEAA). EAs identify whether a specific project is likely to cause significant environmental effects. The preparation and approval of environmental assessment reports is required before an activity can proceed to the licensing phase.

In January 2004, the CNSC issued draft environmental guidelines regarding the scope and assessment of EA projects required under the CEAA. As well, the CNSC completed several EAs in 2003-2004, and issued eight scope of project and assessment guidelines to licensees who expressed interest in modifying or initiating new activities subject to CNSC regulation and to the CEAA.

Outcome: **High levels of compliance with the regulatory framework**

The CNSC rigorously enforces its regulatory framework through a variety of measures. Licensee compliance is verified through inspections, reviews, audits and assessments. The CNSC also requires any licensee found to be non-compliant with either its licence conditions or the regulatory framework to resolve the issue and demonstrate improvement by a specified deadline, or face enforcement action.

Compliance verification

In 2003-2004 the CNSC continued to perform compliance verification activities (site inspections and desktop reviews) and audits for quality assurance, radiation safety, security, fire protection, environmental protection and emergency preparedness programs at licensed major nuclear facilities. As a result of these activities the CNSC issued 10 directives to licensees regarding non-compliance. The licensees took immediate steps to address those issues of non-compliance. No worker or member of the public received a radiation dose in excess of the regulatory limit from licensed nuclear facilities, and all facilities met the regulatory limits for environmental releases during the reporting period. The CNSC's compliance verification activities are aligned with licensee performance in meeting regulatory requirements. The frequency of inspection is commensurate with the risk associated with licensees' activities; results from inspections are used for rating licensee performance and for determining the need for additional regulatory oversight and licence fees.

In the area of nuclear substance and radiation device operations, CNSC staff also conducted inspections during 2003-2004. Of the 3,402 active nuclear substance and radiation device operations licences at the close of the reporting period, there were 104 reportable occurrences recorded during 2003-2004. Two of the reportable occurrences were due to health and safety issues, and resulted in the issuance of orders for which the licensees took immediate action. The remaining reportable occurrences and issues of non-compliance were addressed by the licensees within the timeframes specified by the CNSC. The number of reportable occurrences in nuclear substance and radiation device operations continues to be extremely low.

The CNSC staff also conducted compliance inspections of licensees' transport operations. During 2003-2004, there were 15 reportable occurrences involving the transport of nuclear substances. All of the reportable occurrences were addressed by the licensee or carrier, and none resulted in the exposure of workers or the public to radiation doses exceeding regulatory limits, or releases to the environment in excess of regulatory limits.

CNSC staff also carried out three audits of dosimetry service providers in 2003-2004. Non-compliance issues were identified and the licensees addressed them promptly and within the timeframes specified by the CNSC staff.

Radiographic Cargo Inspection Systems: Scanning for Safety

With increasing concerns regarding border and port security, the Canada Border Services Agency (CBSA) and the United States Customs Service (USCS) are using radiographic cargo inspection systems to screen commercial trucks and cargo containers for contraband or other threats. While there are a number of radiographic cargo inspection systems on the market, CBSA and USCS are using the *Vehicle and Cargo Inspection System* (VACIS®), a technology developed and offered by Science Application International Corporation (SAIC).

The Canadian Nuclear Safety Commission (CNSC) has licensed the Canada Border Services Agency for the use of several mobile radiographic cargo inspection units. The systems are being used at land border crossings, marine ports and international airports throughout the country.

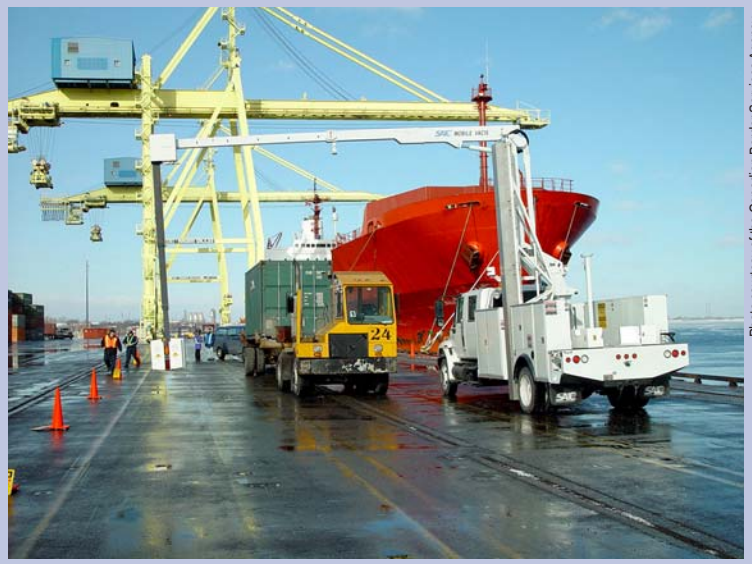


Photo courtesy of the Canadian Border Services Agency

Canadian Border Services Agency officers use the mobile VACIS unit to scan a shipping container at the Port of Montreal.

What is a radiographic cargo inspection system?

To verify cargo contents, the system scans vehicles to reveal undeclared dangerous goods and contraband. In the case of VACIS, a cesium-137 or cobalt-60 sealed source is utilized to generate gamma rays which penetrate the cargo being inspected, similar to x-ray based systems. The gamma rays are emitted from a small radioactive pellet with an electronically controlled shutter. The rays penetrate material as they pass through the vehicle and are measured with a detector. A computer then generates an image of the interior of the vehicle; the inspection takes from one to three minutes.

Safety and Protection

Radiographic cargo inspection systems require a small amount of protection (called 'localized shielding') to minimize exposure and maintain protection. Operators are trained in radiation safety, and wear a badge (dosimeter) to measure any radiation exposure. To date, the dosimeters have indicated that Canadian operators have received very little or no dose associated with the operation of VACIS.

In the case of land border crossings, the CBSA requires the driver and any passengers to exit the vehicle and move to a safe area before scanning begins. The system operator then moves the mobile unit into position and scans the vehicle. Another procedure which allows the driver to remain in the vehicle may be used; however, the driver is positioned beyond the gamma ray scanning beam path. The system operator moves the mobile unit and scans only the container/cargo portion of the vehicle.

A study was conducted by British Columbia's Radiation Protection Services to determine if the scanning of the trucks has caused any appreciable radiation doses to Canadian drivers. The results indicate that, similar to the system operators, the drivers have received very little or no dose associated with VACIS. Given the measured levels of exposure, drivers and operators will not be likely to experience any health impact due to the scanning procedure.

The Risk-Based Regulatory Program

During the reporting period, the CNSC continued the implementation of its Risk-Based Regulatory Program. Phase 1, a new licence assessment and compliance program for nuclear substances, radiation devices and Class II particle accelerators, was substantially completed. Phases 2 and 3, involving power reactors, uranium mines, fuel fabrication facilities, non-power reactors and nuclear research facilities, continued to be implemented. The overall program involves assessment of the adequacy of licensees' programs, and evaluates licensee performance in safety areas and programs. In developing the risk-based program, the CNSC:

- develops a risk-based rating of each regulatory area or requirement for each nuclear facility or activity;
- determines the appropriate compliance verification method needed to validate the regulatory requirements; and,
- develops a risk-based process to determine the allocation of resources.

As the program matures, the CNSC has been refining the risk-based information used to determine resource allocations during the CNSC planning process. The CNSC's efforts were recognized beyond Canada's borders by other regulators such as the United States Nuclear Regulatory Commission (USNRC). USNRC staff members came to CNSC headquarters in September 2003 to learn about the program involving nuclear substances, radiation devices and Class II particle accelerators.

Nuclear Security

The CNSC monitors and assesses the effectiveness of licensees' physical protection measures for nuclear facilities and material to ensure compliance with the requirements of the *Nuclear Security Regulations* and other pertinent regulations.

The vulnerability to threats of Canadian nuclear facilities has been reduced as a result of the enhanced physical protection measures implemented by licensees. Over the past year, CNSC staff continued to monitor both potential threats and licensees' security programs, took appropriate measures to reduce the vulnerability to threats and worked to ensure the new security requirements are being implemented at major nuclear facilities. During the reporting period, CNSC staff conducted security inspections at nuclear power generating stations, nuclear research facilities, waste management areas, fuel fabrication facilities, tritium processing facilities, university research laboratories and radioisotope facilities. Overall, CNSC staff were satisfied that licensees met the requirements for the physical protection of their facilities.

International obligations

Pursuant to the *Nuclear Non-proliferation Import and Export Control Regulations* under the *Nuclear Safety and Control Act*, Canadian importers and exporters are required to obtain and comply with licences controlling the international transfer of nuclear and nuclear-related items that present a proliferation risk. CNSC review and authorization of export and import applications during the reporting period provided assurance that the international transfer of such items was for peaceful, non-explosive purposes only and in accordance with Canada's bilateral and multilateral nuclear non-proliferation obligations. These obligations are established in treaties, agreements and public declarations. As required under Canada's bilateral nuclear cooperation, the CNSC exchanged bilateral nuclear inventory reports with its counterparts.

The CNSC maintains a compliance program to ensure that Canadian facilities comply with regulatory requirements which reflect the obligations of the safeguards agreements between Canada and the International Atomic Energy Agency (IAEA). Canada is required to uphold international obligations regarding the use and handling of nuclear material. The CNSC must monitor the production, use, storage and flow of nuclear material at Canadian nuclear facilities. During the reporting period, CNSC staff conducted safeguards compliance activities, provided the IAEA with periodic nuclear material accounting reports and other information required under Canada/IAEA safeguards agreements. The CNSC also fulfilled the reporting requirements under Canada's *Additional Protocol* with the IAEA and facilitated access by IAEA safeguards inspectors to nuclear facilities and other locations in Canada. Pursuant to the Canada/IAEA safeguards agreements, the IAEA concluded that all nuclear material in Canada placed under safeguards was accounted for and used only in peaceful, non-explosive nuclear activities.

On May 5, 2003, the CNSC, on behalf of Canada and in collaboration with the Canadian nuclear industry, submitted its first *National Report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste*. The report, which describes Canada's activities with respect to the safe management of spent fuel and radioactive waste, was presented at the first review meeting held in Vienna, Austria on November 3-14, 2003. Canadian spent fuel and radioactive waste activities not only met the requirements of the Joint Convention but were acknowledged and commended by contracting parties. The Canadian delegation was headed by Linda Keen, President and CEO of the CNSC, and included representatives from the CNSC, government and nuclear industry. In addition, the CNSC and the Canadian nuclear industry participated in reviewing the programs and activities currently existing in member countries and offered suggestions and recommendations to achieve the requirements laid out by the Joint Convention. Canada's participation in the meeting contributed to global spent fuel and radioactive waste management safety.

Environmental protection

CNSC staff conducted an assessment in collaboration with Environment Canada and Health Canada during the reporting period, which indicated the potential for ecological effects to both wildlife and aquatic organisms exposed to uranium releases from the Rabbit Lake uranium mine and mill located in northern Saskatchewan. As a result, the CNSC required Cameco Corporation to develop and implement a plan to reduce the release of uranium to the environment at the Rabbit Lake facility. Cameco has developed a two-phase approach to identify, obtain regulatory approval for, and implement measures to prevent or control the amount of uranium released in the final treated effluent. The plan and schedule have been reviewed and accepted by both the CNSC and Environment Canada. The same assessment indicated that uranium released to the environment with treated effluent from the Key Lake, McArthur River and McClean Lake facilities, all located in northern Saskatchewan, were not likely to cause harm to aquatic organisms or wildlife

Nuclear Facilities

Licences issued to nuclear facilities include specified "action levels" beyond which corrective action must be taken to prevent undue impact on health, safety or the environment. The specification of these action levels brings about corrective action well before regulatory limits for release to the environment or doses to workers or the public are reached.

CNSC staff are permanently located at each nuclear generating station in Canada. Staff assess every nuclear generating station's performance against regulations and specific conditions of operating licences. During the reporting period, there were no serious process failures at any nuclear power plant, and operational performance continued to satisfy regulatory requirements. Assessments showed that the performance of all nuclear generating stations continued to be safe, and while some upgrades have been made, further improvement is still required in Performance Assurance programs such as Training and Quality management. No worker or member of the public received a dose in excess of the regulatory limit, and emissions to the environment were below permissible limits.

CNSC staff continued to assess industry performance on an ongoing basis, making comparisons where possible, showing trends and averages, and outlining significant issues that pertain to the industry at large. Staff review and rate licensees' program design and implementation in the following areas: Operating Performance, Performance Assurance, Design and Analysis, Equipment Fitness for Service, Emergency Preparedness, Environmental Performance, Radiation Protection, Site Security and Safeguards. CNSC staff use the CNSC performance rating system; these ratings are updated periodically and published on the CNSC Web site at http://www.nuclearsafety.gc.ca/eng/safety/RC_NPPP.cfm.

In 2003-2004, the CNSC directed licensees to expand the scope of their internal inspection programs and to further improve leak detection capabilities. In addition, the CNSC requested all nuclear power plant licensees to assess the susceptibility of carbon steel piping to stress corrosion cracking. These measures were taken following the detection of a leak in an outlet feeder pipe at the Gentilly-2 Nuclear Generating Station and the detection of cracks in the outlet feeder pipes at the Point Lepreau Nuclear Generating Station. Both Gentilly-2 and Point Lepreau replaced the feeder pipes in question. The CNSC will continue to follow-up on this issue.

In April 2003, CNSC staff responded to an emergency arising from a significant mine water inflow event at the McArthur River mine in northern Saskatchewan. The CNSC's response ensured the maintenance of human health, safety and protection of the environment under these adverse conditions. The response involved site inspections and information reviews by a response team consisting of CNSC staff from both the Saskatoon and Ottawa offices. This ensured licensee compliance with CNSC requirements regarding the protection of human health, safety and the environment.

2003 Power Outage

The Canadian and United States governments participated in a joint Task Force to investigate the cause of the August 14, 2003 power outage that affected Ontario and the Eastern United States. One of the conclusions reached by the Task Force's Nuclear Working Group is that the nuclear power plants in both countries did not trigger the power system outage or inappropriately contribute to its spread. It also concluded that safety functions were effectively accomplished, and the affected nuclear power plants were maintained in safe shutdown conditions until their restart.

It should be noted that equipment problems and design limitations at the Pickering B nuclear power plant resulted in a temporary reduction in the effectiveness of some of the multiple safety barriers during the blackout. The CNSC has since performed additional inspections and analyses, and the licensee, Ontario Power Generation, is now addressing the issues.

Other activities

The CNSC held a safety culture symposium in March 2004. The symposium brought together licensees with CNSC experts to discuss safety culture perspectives and experiences, help define the complex issue of safety culture and clarify respective safety culture roles.

In 2003-2004, the CNSC either delivered or began developing or enhancing a number of information technology systems that will contribute to ensuring consistent and high levels of compliance with the regulatory framework. These include, but are not limited to:

- **Advanced CANDU Reactor Tracking System** – an online system that tracks AECL Advanced CANDU design documents and facilitates the technical reviews of these documents.
- **Centralized Event Reporting Tracking System** – a centralized reporting tool designed to capture planned or unplanned events at nuclear facilities in Canada. This tool improved the timeliness of reporting and the subsequent management of events.
- **Nuclear Material Accounting System** – an improved computerized system that will maintain accounts of nuclear material in Canada, as well as ledgers of international transactions of Canadian nuclear material in the global nuclear fuel cycle. This new system will generate reports that will better enable the CNSC to fulfill Canada's international obligations under the *Safeguards Agreement* and *Additional Protocol* with the IAEA and under Canada's bilateral nuclear cooperation agreements with partner countries.

The Digital Cerenkov Viewing Device: A Collaborative Creation

For more than ten years, the CNSC and the Swedish Nuclear Power Inspectorate (SKI) have collaborated in developing the Digital Cerenkov Viewing Device (DCVD). On September 17, 2003, Linda Keen, President and CEO of the CNSC, and Judith Melin, Director General of the SKI, officially presented the device at the International Atomic Energy Agency (IAEA) 47th General Conference.

Design Details

The DCVD is a new edition of an IAEA instrument that verifies irradiated nuclear fuel in storage pools. It is a portable camera system that captures still or moving ultraviolet images. The device can differentiate irradiated fuel items from non-fuel items, and verifies spent fuel with low burn-up or long cooling times. Irradiated fuel emits fast electrons that induce a characteristic blue glow in water, which the DCVD can observe.

The device's computer operates a camera and displays high-quality, digitally captured images. The collected images are displayed in real time, which enables IAEA inspectors to verify spent fuel immediately. The images are also stored for future retrieval and use.

The camera is aimed with the help of a laser, and a railing bracket gives steady support and control of the camera's position. The device mounts onto and operates from the bridge of a facility's fuel bay.

Photo courtesy of Dean Calma/International Atomic Energy Agency

Linda Keen, President and CEO of the Canadian Nuclear Safety Commission and Judith Melin, Director General of the Swedish Nuclear Power Inspectorate present the Digital Cerenkov Viewing Device to Pierre Goldschmidt, International Atomic Energy Agency Deputy Director for Safeguards.

Benefits and Beyond

The DCVD's benefits include the following:

1. it is a non-intrusive method of verification;
2. it is more sensitive and has a higher resolution than other systems, which means it can verify spent fuel with lower burn-ups and longer cooling times; and
3. it can detect missing rods in assemblies, thereby exposing whether materials are possibly being diverted for non-peaceful purposes.

The device was developed by the Safeguards Support Programs of the CNSC and SKI. The CNSC concentrated on the DCVD's hardware development, while the SKI focused on software. Both regulators will collaborate on device training and promotion.

The DCVD is expected to be accepted and put to use by the IAEA in 2004.

Outcome: **CNSC cooperates and integrates its activities in national/international nuclear fora**

To ensure the peaceful use of nuclear energy and materials, it is essential that Canada work with stakeholders at home and abroad. The CNSC is committed to domestic and international activities which work to further its mission and advance nuclear safety and safeguards worldwide. The CNSC is also actively involved with the IAEA in the development and promotion of international nuclear safety standards.

International, federal and provincial agreements, conventions and arrangements

The CNSC continued to work cooperatively with a number of provincial, national and international organizations during the reporting period. In 2003-2004, the CNSC and the Government of Saskatchewan began to implement an agreement, signed the previous year, intended to bring greater administrative efficiency in regulating the uranium industry. The CNSC staff also worked with the Canadian Border Services Agency (CBSA) on mechanisms the CBSA can develop and implement that support the CNSC's import and export licensing processes. Integrating CNSC and CBSA practices and processes works to enhance nuclear safety, security and control at Canadian border crossings. The CNSC also continued to collaborate with Foreign Affairs Canada in implementing Canada's international commitments on the peaceful use of nuclear energy, which includes measures respecting nuclear non-proliferation and safeguards obligations.

The CNSC is actively involved in the exchange of information with foreign nuclear regulators, most of which involve formal bilateral arrangements. The CNSC held discussions with foreign counterparts during the reporting period, including the United States, the United Kingdom, South Korea, China and Indonesia. Linda Keen, President and CEO of the CNSC, also chaired the International Nuclear Regulators Association, a group of nuclear regulators from countries with large nuclear programs. The association provides a forum where regulators gather to identify nuclear regulatory challenges, exchange views on broad regulatory policy issues and make recommendations to strengthen nuclear safety around the world.

Through the CNSC Research and Support Grants and Contributions (Gs&Cs) Program, the CNSC continued to participate in multilateral, multi-year projects; the development of standards; and projects accessing data not otherwise available. During the reporting period, the CNSC evaluated its grants and contributions program which permitted it to seek renewal of its Gs&Cs authority. Renewing the authority would allow the CNSC to continue to enter into grant and contribution agreements with other parties and permit the CNSC to receive data as well as benefit from developed standards. The CNSC expects the renewal approval in the next reporting period.

Memoranda of Understanding and Nuclear Cooperation Agreements

In 2003-2004, the CNSC signed a Memorandum of Understanding (MOU) with Environment Canada (EC), setting out a framework for cooperation and a commitment to develop joint programs and share information. This MOU is a jointly signed document formalizing roles, responsibilities, authorities and other common understandings of the participating organizations in laying the foundation for a cooperative arrangement, but is not intended to create a legally enforceable agreement. The objectives of the CNSC-EC MOU are to minimize regulatory and administrative duplication and to use government resources more effectively. The MOU reflects the changes in both the CNSC and EC's enabling legislation as well as the regulatory environment. In the fall of 2003, CNSC and EC staff participated in a two-day workshop to review the MOU terms and share information on their respective regulatory activities.

In addition, the CNSC completed an extensive review of all its active, expired and proposed domestic MOUs and related agreements. This initiated the CNSC's more systematic approach to tracking and managing its administrative arrangements with other federal and provincial departments and agencies. As a result of this review, the CNSC identified a number of arrangements that require revision or renegotiation, most notably arrangements with Health Canada, the Labour Program at Human Resources and Skills Development Canada, and the Ontario Ministry of Labour.

An international MOU was negotiated and implemented between the CNSC and the National Commission for Nuclear Activities Control of Romania for the cooperation and exchange of information in nuclear regulatory affairs.

In accordance with Canada's nuclear non-proliferation policy, major nuclear exports are subject to bilateral nuclear cooperation agreements (NCAs) between Canada and the importing country. NCAs establish reciprocal obligations that are designed to minimize the risk of proliferation. The CNSC continued to collaborate with Foreign Affairs Canada in negotiating bilateral NCAs and implementing administrative arrangements with its foreign counterparts during the reporting period. In this regard, the CNSC participated in technical consultations with Foreign Affairs Canada to establish a nuclear cooperation agreement between Canada and Bulgaria. CNSC staff also participated in policy and technical consultations on the implementation of bilateral agreements with the United States, Australia, the Czech Republic, China, Japan and the European Community.

Training

In February 2004 the CNSC received a request and began preparations to provide training on the Systems Approach to Training to IAEA member states on behalf of the IAEA. The CNSC has previously provided this training to Russia, Romania and Ukraine. The Systems Approach to Training is a five-step model comprised of analysis, design, development, implementation and evaluation. During this program, the CNSC staff instructs trainers on how to develop training programs in their home countries. Training courses developed by other countries most often involve nuclear training for operators and engineers at power plants.

As part of the Chemical, Biological, Radiological and Nuclear Training for First Responders Initiative, the CNSC delivered the radiological and nuclear training components for training courses in the summer and fall of 2003. Under the program leadership of Public Safety and Emergency Preparedness Canada, the CNSC continues to develop and deliver the radiological and nuclear portion of the training program. The CNSC also planned to undertake an evaluation of its contributions to first responders training to ensure program success and the appropriate implementation of contributions. This also raises Canada's international profile and works to enhance nuclear safety in other countries.

Effective national and international cooperation in nuclear regulation

In 2003-2004, the CNSC initiated a project to amend Canada's *Nuclear Non-Proliferation Import and Export Control Regulations*. Updated regulations will ensure that a primary statutory mechanism to fulfill Canada's bilateral and multilateral international commitments on non-proliferation and safeguards is both comprehensive and current.

CNSC staff also made significant contributions at IAEA meetings to develop international safeguards and guides, including the revision of a document providing guidance on reporting pursuant to the *Additional Protocol* to Canada's *Safeguards Agreement*. The CNSC also made contributions to an IAEA guidance document on spent fuel verification methods.

Safeguards

The CNSC continued to work with the IAEA in strengthening its international safeguards regime, in large part through the Canadian Safeguards Support Program (CSSP), which is managed and funded by the CNSC. Through the CSSP, the CNSC collaborates with the safeguards support programs of other IAEA member states to develop technology for the international safeguards community. In undertaking its mandate, the CSSP leverages funding through cooperation with national and international organizations, resulting in several achievements over the past year, two of which are highlighted below.

The prototype Digital Cerenkov Viewing Device, a verification device for long-cooled, low burn-up spent fuel in storage pools, jointly developed with the Swedish Nuclear Power Inspectorate, was presented at the IAEA General Conference in Vienna in September 2003 (for details, see page 26). The installation of critical safeguards equipment was also completed at a multi-unit CANDU station in Ontario with assistance from the CSSP, thereby completing a significant improvement to the application of IAEA safeguards at Canadian CANDU facilities. This resulted in the full implementation of the preferred IAEA safeguards approach for the facility.

The CNSC began working with the IAEA and Ontario Power Generation on developing a more cost-effective approach to safeguarding transfers of spent fuel to dry storage at multi-unit reactors. The CNSC's experience in this area led to an invitation from the Republic of Korea to participate in a meeting on the ongoing development of a new safeguards approach for spent fuel transfers at single-unit CANDU stations. The CNSC's participation in the meeting is part of its continued efforts to optimize the national and international implementation of safeguards to benefit the Canadian industry, the IAEA and the CNSC. The meeting was an exchange of ideas between two expert groups on developing more efficient approaches for transfers to dry storage.

Improved safeguards efficiency and effectiveness at Canadian facilities was also achieved during the reporting period. Notably, at the Chalk River Laboratory, the provision of electronic nuclear material accountancy information (which enables the IAEA to perform automated audits of the accounts), and the installation of a new monitoring system should increase inspection efficiency at that facility.

During the reporting period, the CNSC consulted with the IAEA on the development of an integrated safeguards approach for Canada. An integrated safeguards approach will join together traditional safeguards and additional protocol measures to achieve the optimum combination of all safeguards measures for maximum effectiveness and efficiency.

International nuclear fora

The CNSC continued to participate in a number of international nuclear fora, including the IAEA, the Nuclear Energy Agency (NEA) of the Organization for Economic Co-operation and Development (OECD), and the United Nations Scientific Committee on the Effects of Atomic Radiation. The CNSC also participated in several international meetings, research projects and working groups committed to the safe and secure use of nuclear material and technology. CNSC staff also continued developing Canada's National Report for the Third Review Meeting of the Convention on Nuclear Safety. Significant advances were made in enhancing international nuclear safety and security standards, guidelines and practices through targeted involvement in these international programs. Canada's participation in various international nuclear fora ensures Canada's position on nuclear matters is heard.

The CNSC continued to participate in two multilateral nuclear export control mechanisms, the Nuclear Suppliers Group and the Zangger Committee. The CNSC contributes technical and policy expertise in meetings and working groups of these committees to ensure that the guidelines established by these bodies relating to conditions of nuclear supply effectively address proliferation threats, and to ensure that the lists of controlled items take into account advances in nuclear and nuclear-related technology. The development of sound multilateral guidelines for nuclear export controls contributes directly to the effective achievement of the CNSC's statutory responsibilities for the regulation of Canadian exports.

The CNSC also participated in many international committees that develop international standards and guidance for the safe management of radioactive waste. The CNSC amended Canada's *Packaging and Transport of Nuclear Substances Regulations* to align them with IAEA standards and regulations.

CNSC Outreach: Connecting with Canadians

A CNSC strategic objective is to operate with a high level of transparency. This involves engaging stakeholders through a variety of appropriate consultation processes, effective information sharing and communications. These activities aim to enhance stakeholder understanding of the CNSC's regulatory regime, instill public confidence in the CNSC as Canada's nuclear regulator, as well as discern issues and concerns stakeholders have that relate to the CNSC's role or regulatory regime.

The CNSC's key stakeholders consist of individuals or groups the CNSC regularly or periodically interacts with that have a general knowledge of the CNSC and its roles and responsibilities. General stakeholders are individuals or groups from the Canadian public in whose interest the CNSC regulates the Canadian nuclear industry, but who are largely unaware of the CNSC and its roles and responsibilities.

In 2003-2004 the CNSC interacted with stakeholders on numerous occasions. Examples of these outreach activities include:

April 2003
- CNSC participation in separate public meetings of the Pickering and Ajax town councils regarding the relicensing of the Pickering Nuclear Generating Station A and B.

August 2003
- CNSC participation in separate public meetings of the Saugeen Shores Municipal Council and the Kincardine Municipal Council regarding the relicensing of the Bruce Nuclear Generating Station reactors.

October 2003
- CNSC provided a display booth, instrumentation and handout information regarding the CNSC's regulatory role, its environmental assessment and licensing processes and radiation in general at Port Hope Expo 2003.

November 2003
- CNSC staff toured the Elliot Lake area at the city's request after the Westnar Lake beaver dam failed, in order to ensure there was no impact on nearby licensed facilities. The CNSC concluded that the dam failure did not affect nearby licensed facilities.
- A CNSC staff member gave an interview on the Missinipi Broadcasting Corporation (MBC) regarding the McArthur River Mine water in-flow. A request was made to the CNSC by MBC to communicate to Northerners the facts of the event with the goal of alleviating any misunderstandings regarding exposures to workers. The MBC radio station is a widely used and accepted media source in Northern Saskatchewan and broadcasts information in Cree, Dene, and English.

The CNSC's outreach program will continue to develop in upcoming years. Future outreach plans include a survey of key stakeholders to learn how aware stakeholders are of the CNSC, and how confident they are in the CNSC as the Canadian nuclear regulator. As well, the CNSC plans to develop a variety of tools such as brochures, presentations and speeches that can be used in a variety of outreach initiatives.

Outcome: **Stakeholders' understanding of the regulatory program**

The CNSC is committed to being open and transparent. Openness and transparency requires the CNSC to engage stakeholders above and beyond the public hearings and meetings process, through a variety of appropriate consultation processes, effective information sharing and communication.

Outreach

In 2003-2004, the CNSC made significant progress in the development of a corporate-wide outreach program. The CNSC created and approved a framework that includes a logic model linking outreach-related activities to the CNSC's longer-term objective of improving the public's understanding of, and confidence in, Canada's nuclear regulatory regime. The outreach program, which will be implemented in the 2004-2005 fiscal year, will provide the CNSC with both a coordinated structure and the support material to help ensure the CNSC's outreach activities are focused, effective and make the best use of limited resources.

CNSC staff and management continued to initiate and participate in various outreach activities with stakeholders during the reporting period. These activities included:

- meeting with municipal officials and community groups near key nuclear facilities;
- speeches and presentations at various international and domestic conferences and events;
- non-licence specific meetings with licensees; and
- a survey assessing Canadians' awareness and confidence in nuclear regulation in Canada.

An additional survey was developed and will target select stakeholders in the fall of 2004. The survey will aim to determine the level of awareness and confidence in the CNSC as a nuclear regulator, as well as the satisfaction with the CNSC's communication and consultation efforts.

The CNSC participated in the federal government's multi-departmental outreach initiatives aimed at clarifying issues with exporters on matters of nuclear and nuclear-related dual-use item exports. Outreach presentations were held at several locations across Canada (Vancouver, Edmonton, Saskatoon, Winnipeg, Toronto, Ottawa, Montreal and Halifax) to allow attendance by as many affected exporters as possible.

Stakeholders' understanding of the regulatory program also depends, in large part, on effective communications. During the reporting period, the CNSC maintained its efforts to proactively communicate with its licensees and various stakeholders, including the general public. Communications initiatives included ongoing media relations and media briefings, and the dissemination of information to various stakeholders through the CNSC's publishing program, Web site and public enquiries service. Such initiatives support the CNSC's outreach program and contribute to raising awareness and generating understanding of the CNSC's work.

In order to ensure licensees fully understand the regulatory framework, the CNSC continued to offer training on the regulations associated with the *Nuclear Safety and Control Act* to licensees and staff.

Acquiring CNSC information

Pursuant to the *Access to Information Act*, the public has a legal right of access to government records under the control of government institutions, including the CNSC. In 2003-2004, the CNSC responded to formal requests made under the Act and ensured the appropriate information was released in accordance with legislated procedures. In addition, whenever possible, the CNSC strives to be proactive in providing information to the public which helps eliminate formal Access to Information requests.

The CNSC also improved the understanding of the regulatory program by enhancing accessibility to CNSC policies, procedures and supporting documentation for Commission members and CNSC employees via secure remote access through the Internet.

The Canadian Nuclear Safety Commission – Management and Enabling Infrastructure

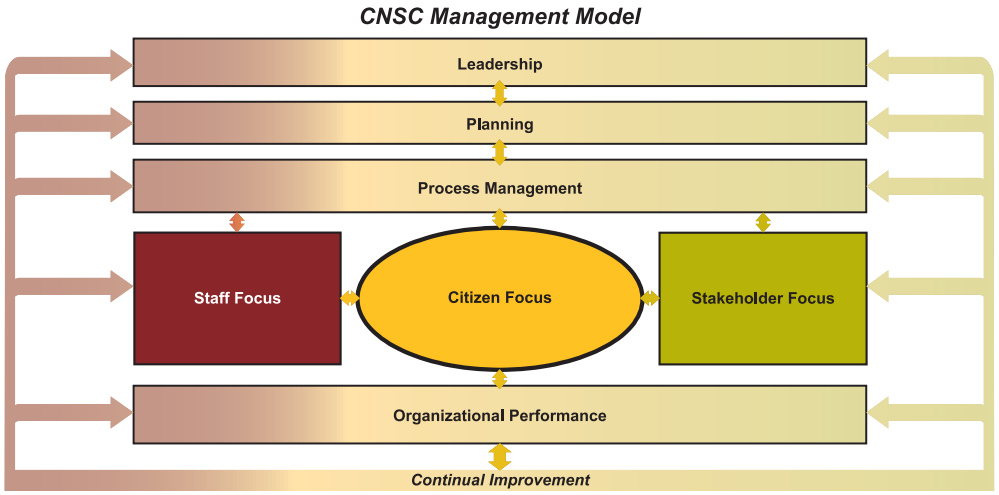
Modern Management

The CNSC has embarked on a journey of continuous improvement which involves setting a quality foundation and infrastructure for sound decision-making in order to achieve better results for Canadians.

A new planning and budgeting process was established to enable the CNSC to properly align resource plans, budgets and forecasts with corporate objectives and organizational strategies. CNSC plans and budgets are reviewed regularly to monitor spending and reallocate resources from lower to higher priority initiatives. Planning, reporting and budgeting align with results-based planning and performance management to provide managers with solid tools and good, usable information with which to make decisions.

In 2003, the CNSC developed a Modern Management Improvement Plan. The plan outlines the priority projects the CNSC will undertake to improve practices in elements of the management model adopted in 2002-2003 (see Figure 3). The model is based on the National Quality Institute's Canadian Quality Criteria for public service excellence. At the model's core is an integrated compilation of sound management practices. The management model guides the CNSC in being effective and efficient in pursuing its immediate outcomes as stated in the logic model (see page 8).

Figure 3



Implementing the improvement plan moves the CNSC toward achieving organizational excellence in line with the elements of Treasury Board Secretariat's Management Accountability Framework. The adopted CNSC management model is consistent with Treasury Board's framework. Therefore, the CNSC is well positioned to demonstrate accountability to the government against the Treasury Board's framework.

The CNSC is also benchmarking its corporate services against those of other federal departments and international regulators in order to examine and compare its use of resources. The results of the benchmarking study will be released in the upcoming fiscal year.

CNSC Organization

The CNSC is a federal government agency reporting to Parliament through the Minister of Natural Resources Canada. It is composed of a Commission of up to seven members and a staff of over 500 employees. One member of the Commission is designated as both the President of the Commission and Chief Executive Officer of the staff organization. Ms. Linda J. Keen currently holds this position. Employees are located at headquarters in Ottawa as well as at five regional offices and six nuclear generating station site offices across Canada.

The Commission functions as a quasi-judicial administrative tribunal that establishes regulatory policy on matters related to its mission; makes legally binding decisions and regulations; and makes licensing decisions based on statutory requirements and submissions made at public hearings by proponents (licence applicants), CNSC staff, the public and other stakeholders. The Commission also delegates licensing and other decisions as appropriate to designated CNSC staff. The Annual Report of the Commission Tribunal 2003-2004 is on the reverse side of this document.

The CNSC staff organization prepares recommendations on licensing decisions, presents them to the Commission for consideration during public hearings and subsequently implements the Commission's decisions. It also provides the underlying structures that enable regulatory activities to function effectively.

The daily operations of the CNSC are managed by seven different components.

- Operations Branch
  - Directorate of Power Reactor Regulation
  - Directorate of Nuclear Cycle and Facilities Regulation
  - Directorate of Nuclear Substance Regulation
  - Directorate of Assessment and Analysis
  - Directorate of Operational Strategies

- Office of International Affairs
  - Non-Proliferation and International Relations Division
  - International Safeguards Division
  - Technical Development and Services Division
- Office of Regulatory Affairs
  - Regulatory Management and Government Relations Division
- Corporate Services Branch
  - Human Resources Directorate
  - Finance and Administration Directorate
  - Information Technology and Services Directorate
  - Communications and Information Management Directorate
  - Strategic Planning and Modern Management Division
- Legal Services
- Audit and Ethics Group
- Secretariat

Operations Branch

The mandate of the Operations Branch is to regulate the development, production and use of nuclear energy, as well as the production, possession, transport and use of nuclear substances and radiation devices in accordance with the requirements of the *Nuclear Safety and Control Act* and associated regulations.

The Branch is organized to provide focus on the regulation of different sectors of the nuclear industry and to support the implementation of consistent regulatory and business processes. The management and mandate of the Branch establish accountability and authority for leadership of regulatory activities.

To fulfill its responsibilities, the Branch:

- implements a regulatory program that provides assurance that activities in the nuclear industry in Canada are conducted in a manner that protects the health and safety of industry workers and the public, security and the environment;
- utilizes defined business and regulatory process management practices;
- develops and maintains requisite regulations and regulatory documents;
- implements integrated licensing and compliance processes;
- maintains technical capability for assessment of health, safety, security and environmental protection;
- establishes requirements for security and emergency preparedness and response; and,
- shares information and experience with stakeholders in Canada and in other countries.

Office of International Affairs

The mandate of the Office of International Affairs is to coordinate the CNSC's international undertakings and activities with respect to Canada's international commitments on the peaceful use of nuclear. The Office licenses the export and import of controlled nuclear and nuclear-related dual-use items. Licences are granted in accordance with the NSCA and its associated regulations and international obligations to which Canada has agreed. The Office implements Canada's bilateral nuclear cooperation agreements and safeguards agreements, including the *Additional Protocol*, with the IAEA, and manages a research and development program in support of IAEA safeguards. The Office also provides authoritative advice on the development and application of Canada's nuclear non-proliferation and safeguards policy, including multilateral nuclear non-proliferation issues.

Office of Regulatory Affairs

The mandate of the Office of Regulatory Affairs is to enhance the CNSC's regulatory performance through the analysis and development of policy; the establishment and maintenance of domestic intergovernmental and interdepartmental relations; the coordination and management of legislative initiatives and the regulatory process; and the development, implementation and management of the CNSC's Outreach Program.

Corporate Services Branch

The mandate of the Corporate Services Branch is to develop and implement policies and programs related to the management and administration of the CNSC. The branch provides key corporate support, which enables the CNSC's regulatory activities to function effectively. Its services are an integral part of the CNSC's management and enabling infrastructure; this infrastructure ensures the Commission Tribunal and CNSC staff organization have the necessary services to fulfill their mandates in the most effective and efficient manner. It also helps ensure the CNSC has a qualified and motivated workforce now and in the future. The infrastructure must ensure the CNSC meets or exceeds accountability requirements of central and parliamentary agencies and adopts best corporate practices.

The Corporate Services Branch manages the CNSC's finances and administration, communications and information management, human resources, information technology, strategic planning and modern management. Financial and administrative activities ensure the CNSC can fulfill its mission by providing and acquiring the necessary resources the CNSC requires. These activities include facility management and support, contracting and procurement, multimedia and telecommunications, fleet and material management and public hearings support. Proactive communications activities support the CNSC's outreach activities and contribute to raising awareness and generating understanding of the CNSC's work among licensees, various stakeholders and the public. Information management activities ensure the information needs of the staff and public are met, maintained and protected.

Successful recruitment and retention of excellent staff are fundamental to ensuring effective program delivery. Human resource management activities ensure competitive compensation and benefits programs exist, training and learning initiatives are in place, and human resource policies and programs support and ensure equitable treatment of staff. Program delivery also depends on the availability of the necessary technology tools in order to work efficiently and effectively. The CNSC also delivers and sustains an information technology infrastructure to fulfill the needs of staff and licensees. Access to information, seamless communication and strict security and privacy policy adherence are the foundations upon which all information technology services are provided to the CNSC, its licensees and the public. Strategic planning activities lead the development and implementation of integrated results-based planning and accountability, providing the tools to improve the CNSC's ability to achieve its outcomes.

Legal Services

The mandate of Legal Services is to support the CNSC and Commission in meeting their outcomes and fulfilling its mission by providing legal advice in all activity areas. Legal Services is staffed by Department of Justice lawyers.

Audit and Ethics Group

The mandate of the Audit and Ethics Group (AEG) is to examine corporate management accountability and program performance, carry out internal audits and evaluations, and make improvement recommendations. The AEG provides independent assurance that the CNSC is well managed and is accomplishing its mandate, thereby contributing directly to the CNSC's mission. This group will develop the new values and ethics approach of the Commission in the upcoming years.

Secretariat

Information pertaining to the Secretariat can be found in the Annual Report of the Commission Tribunal 2003-2004 on the reverse side of the document.

Delivering Results for Canadians

The 2003-2004 CNSC Annual Report provides examples of how we contribute to the federal government's performance and the lives of Canadians. During the reporting period, the CNSC continued its efforts to put into place the mission-critical and modern management processes needed to achieve its immediate goals.

By focusing on achieving its five immediate outcomes through all of its activities and efforts, the CNSC is working to ensure it will deliver to all Canadians on its mission:

> **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.**

Financial Statements

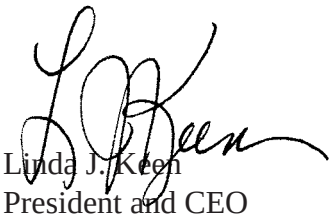
Management Responsibility for Financial Statements

The accompanying financial statements of the Canadian Nuclear Safety Commission (CNSC) for the year ended March 31, 2004 and all information included in its annual report are the responsibility of management.

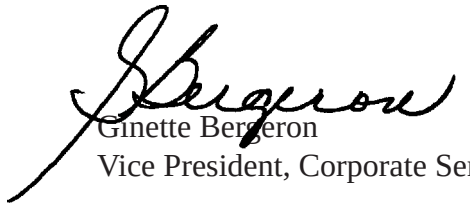
These financial statements have been prepared by management in accordance with Canadian generally accepted accounting principles and, where appropriate, they include amounts that have been estimated according to management's best estimates and judgement. Management has prepared the financial information presented elsewhere in the annual report and has ensured that it is consistent with that provided in the financial statements.

Management has developed and maintains books, records, financial and management controls and information systems. They are designed to provide reasonable assurance that the Government's assets are safeguarded and controlled, that resources are managed economically and efficiently in the attainment of corporate objectives, 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.*

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



Linda J. Keen
President and CEO



Ginette Bergeron
Vice President, Corporate Services Branch

Ottawa, Canada
June 4, 2004

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, 2004 and the statements of operations, deficit and cash flows for the year then ended. These financial statements are the responsibility of the Commission's management. My responsibility is to express an opinion on these financial statements based on my audit.

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

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 2004 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
June 4, 2004

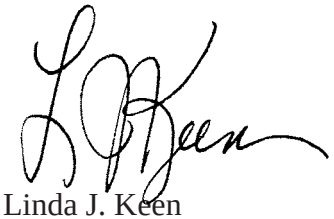
Statement of Financial Position as at March 31

	2004	2003
Assets		
Current assets:		
Due from the Consolidated Revenue Fund	$5,141,024	$3,821,985
Accounts receivable (Note 4)	2,630,536	2,727,582
Prepaid expenses	269,569	171,192
	8,041,129	6,720,759
Non-current assets:		
Capital assets (Note 5)	1,395,878	1,234,493
Total Assets	$9,437,007	$7,955,252
Liabilities and Deficit		
Current liabilities:		
Accounts payable and accrued liabilities	$5,141,024	$5,045,703
Vacation pay	3,136,267	2,803,198
Deferred revenue (Note 6)	6,445,602	10,210,591
Employee severance benefits (Note 12)	468,705	680,182
	15,191,598	18,739,674
Non-current liabilities:		
Employee severance benefits (Note 12)	7,264,144	6,245,057
	22,455,742	24,984,731
Deficit	(13,018,735)	(17,029,479)
Total Liabilities and Deficit	$9,437,007	$7,955,252

Commitments and Contingencies (Note 11)

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

Approved by:



Linda J. Keen
President and CEO

Ginette Bergeron
Vice President, Corporate Services Branch

Statement of Operations for the year ended March 31

	2004	2003
Revenues		
Licence fees	$38,010,204	$37,477,003
Special projects	4,122,783	732,413
Other	16,336	148,859
Total revenues (Note 7)	42,149,323	38,358,275
Expenses		
Salaries and employee benefits	51,330,580	47,403,567
Professional and special services	9,818,998	8,860,960
Accommodation	4,288,523	4,014,977
Travel and relocation	4,084,327	3,692,544
Furniture, equipment repairs and rental	3,699,189	2,683,118
Communication and information	1,574,955	1,666,110
Utilities, materials and supplies	742,353	735,869
Grants and contributions	448,976	779,038
Other	486,072	382,436
Total expenses (Note 7)	76,473,973	70,218,619
Net cost of operations	$34,324,650	$31,860,344

Statement of Deficit for the year ended March 31

	2004	2003
Balance at beginning of year	($17,029,479)	($26,120,256)
Net cost of operations	(34,324,650)	(31,860,344)
Services provided without charge (Note 9)	7,783,155	6,959,820
Net cash provided by government (Note 3 c)	29,233,200	34,121,974
Change in due from Consolidated Revenue Fund	1,319,039	(130,673)
Balance at end of year	($13,018,735)	($17,029,479)

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

Statement of Cash Flows for the year ended March 31

	2004	2003
Operating Activities		
Net cost of operations	$34,324,650	$31,860,344
Non-cash items		
Amortization of capital assets (Note 5)	(408,792)	(352,829)
Services provided without charge by other Government departments and agencies (Note 9)	(7,783,155)	(6,959,820)
Net gain on disposal of surplus assets	984	14,394
Net change in non-cash working capital balances	3,549,407	9,756,973
Change in non-current employee severance benefits	(1,019,087)	(598,703)
Cash used in operating activities	28,664,007	33,720,359
Investing Activities		
Acquisitions of, and improvements to, capital assets	571,212	416,009
Proceeds on disposal of surplus assets	(2,019)	(14,394)
Cash used in investing activities	569,193	401,615
Net cash provided by government (Note 3c)	$29,233,200	$34,121,974

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

Notes to Financial Statements as at March 31, 2004

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 *Nuclear Safety and Control Act* 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 NSCA also provides CNSC compliance inspectors with clearer, fuller powers and brings penalties for infractions in line with current legislative practices. 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. The sum of the basic insurance and supplementary insurance totals $75 million for each designated installation (Note 13). The number of installations requiring insurance coverage is 14 (2003 – 14).

The CNSC's expenditures are funded by a budgetary lapsing authority. Employer contributions to employee pension and non-pension benefits are authorized by a statutory authority.

The CNSC established a cost recovery program as provided for by the NSCA. The intent of the program is the recovery of CNSC's expenditures related to its regulatory activities from users licensed under the Act. These expenditures include the technical assessment of licence applications, compliance inspections and the development of licence standards. On July 1, 2003 new *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* were implemented which replace the former *AECB Cost Recovery Fees Regulations 1996*. The new fees are being phased in over a three-year period through application of fee reductions amounting to 15% in the first year, 10% in the second year and 5% in the third year.

2. Significant Accounting Policies

a) Parliamentary appropriations
Appropriations are based in large part on cash flow requirements. Consequently, items recognized in the statement of deficit and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 shows the reconciliation of net cost of operations, parliamentary appropriations voted and net cash provided by government to parliamentary appropriations used.

b) Due from the Consolidated Revenue Fund
The CNSC operates within the Consolidated Revenue Fund (CRF). The CRF 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. 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.

c) 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). All other revenue is recognized in the period in which the underlying transaction or event occurred that gave rise to the revenue. Licence fees received for future year licence periods are recorded as deferred revenue. Revenue from licence fees, contract 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.

d) Vacation pay
Vacation pay is expensed as the benefit accrues to employees under their respective terms of employment using the salary levels at year end. Vacation pay liability payable on cessation of employment represents obligations of the CNSC that are normally funded by appropriation when paid.

e) Pension benefits
The CNSC’s eligible employees participate in the Public Service Superannuation Plan administered by the Government of Canada. The employees and the CNSC contribute to the cost of the Plan. Contributions by the CNSC are expensed in the period incurred and represent the total cost to the CNSC under the Plan. The CNSC is not required under present legislation to make contributions with respect to actuarial deficiencies of the Public Service Superannuation Account.

f) Employee severance benefits
The CNSC’s liability for employee severance benefits is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole. Employee severance benefits on cessation of employment represent obligations of the CNSC that are normally funded by appropriation when the benefits are paid.

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 fair value. These include services such as: accommodation provided by Public Works and Government Services Canada, contributions covering employers' share of employees' insurance premiums and costs paid by 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 Development Canada. A corresponding amount is credited directly to the Deficit.

h) Grants and contributions

Grants are recognized in the year in which entitlement of recipients has been established, while contributions are recognized in the year in which the conditions for payment are met.

i) Capital assets

Capital assets with an acquisition cost of $10,000 or more are recorded at cost less accumulated amortization. Amortization commences on the first day of the month following the month of acquisition and is calculated on a straight-line basis over the estimated useful life of the asset as follows:

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

j) 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 13 of these financial statements.

k) Use of estimates

These financial statements are prepared in accordance with Canadian generally accepted accounting principles. The preparation of accrual financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, expenses and contingencies during the reporting period. Actual results could differ from the estimates. The most significant items where estimates are used are employee severance liabilities and amortization of capital assets.

3. Parliamentary Appropriations

The CNSC receives its funding through parliamentary appropriations, which are based primarily on cash flow requirements. Items recognized in the statement of operations and the statement of deficit in one year may be funded through parliamentary appropriations in prior and future years. Accordingly, the CNSC has different net results of operations for the year on a government funding basis than on a Canadian generally accepted accounting principles basis. These differences are reconciled below.

a) Reconciliation of net cost of operations to total parliamentary appropriations used

	2004	2003
Net cost of operations	$34,324,650	$31,860,344
Items not affecting appropriations:		
Amortization of capital assets	(408,792)	(352,829)
Vacation pay – accrual	(333,069)	(225,466)
Services provided without charge by other Government departments and agencies	(7,783,155)	(6,959,820)
Revenue (non respendable)	42,149,323	38,358,275
Change in employee severance benefits	(807,610)	524,348
Other expenses	(394,164)	19,276
	32,422,533	31,363,784
Items affecting appropriation:		
Capital asset acquisitions	571,212	416,009
Prepaids (excluding accountable advances)	262,707	161,397
	833,919	577,406
Total parliamentary appropriations used	$67,581,102	$63,801,534

b) Reconciliation of parliamentary appropriations voted to total parliamentary appropriations used

	2004	2003
Parliamentary appropriations voted:		
Vote 20 - CNSC Operating expenditures	$53,241,000	$52,580,000
Supplementary Vote 20a	6,743,500	4,977,837
Supplementary Vote 20b	2,553,472	—
Transfer from Treasury Board Vote 10	120,000	180,000
Transfer from Treasury Board Vote 15	940,000	1,013,000
	63,597,972	58,750,837
Less: lapsed appropriation	3,026,176	1,869,551
	60,571,796	56,881,286
Statutory		
Spending of proceeds from disposal of surplus assets	9,981	23,808
Contributions to employee pension and non-pension benefit plans	6,999,325	6,896,440
Total parliamentary appropriations used	$67,581,102	$63,801,534

c) Reconciliation of net cash provided by government to total parliamentary appropriations used

	2004	2003
Net cash provided by government	$29,233,200	$34,121,974
Revenue (non-respendable)	42,149,323	38,358,275
Net change in non-cash working capital balances charged to Vote	(3,920,615)	(8,695,754)
Refunds of prior years' expenditures	119,194	17,039
Total parliamentary appropriations used	$67,581,102	$63,801,534

4. Accounts Receivable

	2004	2003
Licence fees	$2,218,096	$1,844,474
Contract Project	377,630	2,513
Other	34,810	1,104,666
Gross receivables	2,630,536	2,951,653
Allowance for doubtful accounts	—	224,071
Net receivables	$2,630,536	$2,727,582

The CNSC deleted from its accounts receivable a debt of $224,071 (2003 - nil). This debt arose in 1994 and was declared legally uncollectible in 1995.

5. Capital Assets

	2004				2003
Capital asset class	Opening Balance	Additions (disposals) for the year	Accumulated Amortization	Net book value	Net book value
Informatics equipment and software	$848,212	($130,940)	$329,049	$388,223	$363,851
Motor vehicles	427,657	29,935	337,894	119,698	138,957
Furniture and equipment	1,044,973	370,821	527,837	887,957	731,685
Total	$2,320,842	$269,816	$1,194,780	$1,395,878	$1,234,493

Amortization for the current year amounts to $408,792 (2003 - $352,829) and is included in other expenses on the statement of operations.

6. Deferred Revenue

Generally, licence fees are paid in advance of the fee period. Since revenue is recognized over the duration of the fee period, fees received for future year licence periods are recorded as deferred revenue.

	2004	2003
Balance at beginning of year	$10,210,591	$19,210,186
Less: revenue included in licence fees in the year	(9,163,830)	(17,406,524)
Add: fees received in the year for future year licence periods	5,398,841	8,406,929
Balance at end of year	$6,445,602	$10,210,591

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

	Revenue	Licences Provided Free of Charge (Note 10)	2004 Total Value of Licences and Other Revenue	2003 Total Value of Licences and Other Revenue	2004 Cost of Operations	2003 Cost of Operations
Licensing, Certification & Compliance						
Regulatory Plan Activity Fees						
Power reactors	$26,428,275	$ —	$26,428,275	$26,815,433	$32,148,743	$30,574,401
Non-power reactors	900,147	242,501	1,142,648	946,112	1,415,411	1,741,702
Nuclear research & test establishments	1,580,560	—	1,580,560	1,496,932	1,937,790	2,468,127
Particle accelerators	25,006	202,696	227,702	100,300	385,724	305,872
Uranium processing facilities	923,614	—	923,614	863,083	1,113,162	1,096,460
Nuclear substance processing facilities	430,034	—	430,034	239,999	581,857	461,594
Heavy water plants	133,426	—	133,426	247,677	112,698	52,777
Radioactive waste facilities	896,937	—	896,937	428,405	1,251,051	1,217,980
Fusion facilities	9,387	—	9,387	65,737	10,366	82,342
Uranium mines & mills	3,136,572	—	3,136,572	2,679,345	3,914,313	2,942,959
Waste nuclear substance licences	187,098	240,567	427,665	430,138	489,984	458,923
Total Regulatory Plan Activity Fees	**34,651,056**	**685,764**	**35,336,820**	**34,313,161**	**43,361,099**	**41,403,137**
Formula Fees						
Nuclear substances	2,767,263	3,157,244	5,924,507	4,447,108	7,321,967	7,539,156
Class II nuclear facilities	90,303	1,646,008	1,736,311	826,852	2,070,465	1,029,770
Dosimetry services	78,789	12,048	90,837	182,138	537,046	439,698
Total Formula Fees	**2,936,355**	**4,815,300**	**7,751,655**	**5,456,098**	**9,929,478**	**9,008,624**
Fixed Fees						
Transport licences and transport package certificates	291,585	3,048	294,633	213,534	692,018	806,597
Radiation device and prescribed equipment certificates	92,108	76,208	168,316	31,470	167,756	761,024
Exposure device operator certificates	39,100	—	39,100	—	138,198	90,015
Total Fixed Fees	**422,793**	**79,256**	**502,049**	**245,004**	**997,972**	**1,657,636**
Total Licensing, Certification & Compliance	**38,010,204**	**5,580,320**	**43,590,524**	**40,014,263**	**54,288,549**	**52,069,397**
Non-Licensing and Non-Certification						
Co-operation undertakings	—	—	—	—	11,162,148	10,693,194
Stakeholder relations	—	—	—	—	6,051,862	5,135,254
Regulatory framework	—	—	—	—	894,826	1,293,012
Special projects, other revenue and related expenses	4,139,119	—	4,139,119	881,272	4,076,588	1,027,762
Total Non-Licensing and Non-Certification	**4,139,119**	**—**	**4,139,119**	**881,272**	**22,185,424**	**18,149,222**
Total	**$42,149,323**	**$5,580,320**	**$47,729,643**	**$40,895,535**	**$76,473,973**	**$70,218,619**

8. Related Party Transactions

The CNSC is related in terms of common ownership to all Government of Canada departments, agencies, and Crown corporations. The CNSC enters into transactions with these entities in the normal course of business. Certain of these transactions are on normal trade terms applicable to all individuals and enterprises, while others are services provided without charge to the CNSC. All material related party transactions are disclosed below.

During the year, the CNSC expensed $17,025,131 (2003 - $16,106,893) which include services provided without charge of $7,783,155 (2003 - $6,959,820) as described in Note 9. The CNSC recognized revenue of $7,508,925 (2003 - $3,394,994) which include accounts receivables in the amount of $745,842 (2003 - $344,353).

9. Services Provided Without Charge

During the year, the CNSC received services that were obtained without charge from other government departments and agencies. These are recorded at fair value in the financial statements as follows:

	2004	2003
Accommodation provided by Public Works and Government Services Canada	$4,149,585	$3,741,909
Contributions for employer's share of employee benefits provided by the Treasury Board Secretariat	3,232,418	2,870,657
Salary and associated costs of legal services provided by Justice Canada	207,996	223,000
Audit services provided by the Office of the Auditor General of Canada	106,221	56,000
Other	86,935	68,254
	$7,783,155	$6,959,820

10. 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 of these licences amounted to $5,580,320 (2003 - $2,537,260).

11. Commitments and Contingencies

a) Commitments

The CNSC has future years contractual obligations for operating leases, of approximately $419,919 (2003 - $246,924).

b) Contingencies

Claims have been made against the CNSC in the normal course of operations. Legal proceedings for claims totaling approximately $55,250,000 (2003 - $55,250,000) were still pending at March 31, 2004. The final outcome is presently not determinable and, accordingly, no provision has been recorded in the accounts for these contingent liabilities. Settlements, if any, resulting from the resolution of these claims will be accounted for in the year in which the liability is considered likely and the cost can be reasonably estimated.

12. Employee Future Benefits

a) Pension Benefits

Both the CNSC and its eligible employees contribute to the Public Service Superannuation Plan administered by the Government of Canada. The CNSC's contribution is currently based on a multiple of the employee's required contributions and may change over time. These contributions represent the total pension obligations of the CNSC and are recognized in the accounts on a current basis. The CNSC's contribution to the plan was $4,983,519 (2003 - $4,844,416).

b) Employee Severance Benefits

The CNSC provides post-retirement and post-employment benefits to its employees through a severance benefit plan. These benefits are not pre-funded and therefore, have no assets.

	2004	2003
Employee severance benefits, beginning of year	$6,925,239	$7,449,587
Expense for the year	1,254,449	1,193,521
Benefits paid during the year	(446,839)	(1,717,869)
Employee severance benefits, end of year	$7,732,849	$6,925,239

13. 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. 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, damages 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.

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 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, 2004 the total supplementary insurance coverage is $584,500,000 (2003 - $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 $134,055 (2003 - nil). 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 j), 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:

	2004	2003
Opening balance	$554,921	$553,421
Receipts deposited	135,555	1,500
Closing balance	$690,476	$554,921

14. Comparative Figures

Certain comparative figures have been reclassified to conform to the presentation adopted in the current year.