

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant General Electric Canada Company

Subject Application for the renewal of the operating
licence for General Electric Canada Company's
nuclear fuel facility in Toronto, Ontario

Date December 30, 2005

RECORD OF PROCEEDINGS

Applicant: General Electric Canada Company

Address/Location: 107 Park Street North, Peterborough, Ontario K9J 7B5

Purpose: Application for the renewal of the operating licence for General Electric Canada Company's nuclear fuel facility in Toronto, Ontario

Application received: April 12, 2005

Date(s) of hearing: September 14, 2005
December 1, 2005

Location: Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario

Members present: L.J. Keen, Chair A.R. Graham
C.R. Barnes M. J. McDill
J.A. Dosman

Secretary: M.A. Leblanc
Recording Secretary: P. Bourassa
General Counsel: J. Lavoie

Applicant Represented By	Document Number
<ul style="list-style-type: none">• P. Mason, Vice-President and General Manager• H. Hann, Manager of the Environmental Health and Safety Department• P. Desiri, Regulatory Compliance Leader• C. Greco, Legal counsel for GE Canada	CMD 05-H24.1 CMD 05-H24.1A CMD 05-H24.1B
CNSC staff	Document Number
<ul style="list-style-type: none">• H. Rabski• P. Thompson <ul style="list-style-type: none">• D. Werry• A. Nacic	CMD 05-H24 CMD 05-H24.A CMD 05-H24.B CMD 05-H24.C
Intervenors	
No Intervenors	

Licence: Issued
Date of Decision: December 1, 2005

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1. Introduction

General Electric Canada Company (GE) has applied to the Canadian Nuclear Safety Commission (CNSC¹) for the renewal of its Class IB Nuclear Fuel Facility Operating Licence for its facility located in Toronto, Ontario. The current operating licence (FFOL-3622.1/2005) expires on December 31, 2005. GE has requested a five-year licence term.

At that facility, GE produces uranium dioxide (UO₂) pellets from UO₂ powder. Most of the pellets are shipped to GE's other nuclear fuel facility in Peterborough, Ontario where they are assembled into nuclear fuel bundles for use in Canadian nuclear power reactors.

During the hearing, GE informed the Commission about a nation-wide corporate reorganization underway and requested that the Commission issue the new licence to an entity to be named General Electric Canada Company, as opposed to General Electric Canada Inc. which is the entity named on the current licence. The Commission is satisfied that General Electric Canada Company is an entity that can be licensed and that the corporate reorganization does not affect the qualifications of the licensee for the purpose of this application under the *Nuclear Safety and Control Act*.

Issues

In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*:

- a) if GE is qualified to carry on the activity that the licence would authorize; and
- b) if, in carrying on that activity, GE would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Public Hearing

The Commission, in making its decision, considered information presented for a public hearing held on September 14, 2005 and December 1, 2005 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*. During the public hearing, the Commission received written submissions and heard oral presentations from CNSC staff (CMD 05-H24, CMD 05-H24.A, CMD 05-H24.B and CMD 05-H24.C) and GE (CMD 05-H24.1, CMD 05-H24.1A and CMD 05-H24.1B).

¹ In this *Record of Proceedings*, the *Canadian Nuclear Safety Commission* is referred to as the "CNSC" when referring to the organization and its staff in general, and as the "Commission" when referring to the tribunal component.

2. Decision

Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that GE is qualified to carry on the activity that the licence will authorize. The Commission is also satisfied that GE, in carrying on that activity, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Fuel Facility Operating Licence for General Electric Canada Company' fuel facility located in Toronto, Ontario. The licence, No. FFOL-3622.0/2010, is valid from January 1, 2006 until December 31, 2010.

The Commission includes in the licence the conditions recommended by CNSC staff, as set out in the draft licence attached to CMD 05-H24.B.

With this decision, the Commission requests that CNSC staff present a status report to the Commission on the performance of the facility during the first half of the licence term. The status report will be presented at a public proceeding of the Commission as soon as practical after the mid-point of the licence term (i.e., approximately after June 2008).

3. Issues and Commission Findings

In making its licensing decision under section 24 of the *Nuclear Safety and Control Act*, the Commission considered a number of issues relating to GE's qualifications to carry on the proposed activities, and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

The findings of the Commission presented below are based on the Commission's consideration of all of the information and submissions available for reference on the record for the hearing.

The Commission noted that GE's nuclear fuel facilities in Toronto and Peterborough, Ontario are similar and share many of GE's policies, programs and processes for maintaining adequate protection of persons, the environment, national security and international obligations. Furthermore, because the Commission was holding its licensing hearings for the Toronto and Peterborough facilities on the same dates, the Commission took into account, for the record of the hearing for the Toronto facility, any other relevant information that formed part of the record for the licensing of the Peterborough facility. A *Record of Proceedings, including Reasons for Decision* on the matter of the Peterborough facility licence application is published separately by the Commission.

3.1 Radiation Protection

As part of its evaluation of the adequacy of the provisions for protecting the health and safety of persons, the Commission considered the past performance and future plans of GE in the area of radiation protection.

Worker Protection

GE reported that the radiation doses received by the Nuclear Energy Workers (NEW) at the facility during the current licence period have remained below the regulatory limit and internal action levels. GE briefly described its program for keeping radiation doses to the workers As Low As Reasonably Achievable (ALARA). As evidence of the program's effectiveness, GE pointed to a 51% reduction in whole body gamma dose to workers since 1996. GE further noted that a downward trend continues for workplace airborne uranium and external and internal radiation doses.

CNSC staff confirmed that no worker doses were in excess of regulatory limits, and that GE is adequately controlling worker exposures. CNSC staff noted that its inspections revealed no major deficiencies in the implementation of the *Radiation Protection Program*. CNSC staff also noted GE has taken immediate and appropriate action to address issues raised by CNSC staff on the Radiation Protection Manual, thereby assuring that the health and safety of workers would not be compromised. CNSC staff concluded that GE is effectively controlling radiation exposures to workers and that the program and its implementation meet regulatory requirements.

Noting an apparent slight upward trend in extremity doses for the current year, the Commission sought further information on what GE is doing to reduce this type of exposure, including looking at opportunities to further automate certain work processes. In response, GE reported that it has been examining the extremity dose issues in the context of ALARA and continuous improvement programs and it has concluded that further automation would not significantly reduce those doses. GE stated that it continues to look at other operational aspects for dose reduction. CNSC staff noted that the recorded extremity doses are well below the regulatory limit and are not unusual for this type of operation. As part of its monitoring of radiation doses on a quarterly and annual basis, CNSC staff also noted that it considers the magnitude of any upward trends and takes action with the licensee as appropriate.

Public Dose

GE reported that the radioactive emissions from the facility to air and water during the current licensing period have remained consistently below their respective Action Levels and corresponding regulatory limit of 1 millisievert per year. CNSC staff confirmed the above performance and noted that the radiation exposures to a hypothetical member of the public at the facility boundary would not be distinguishable from natural background radiation levels.

Conclusion on Radiation Protection

Based on the information received, the Commission is satisfied that GE has made, and will continue to make, adequate provisions for the protection of persons from radiation at its Toronto facility.

3.2 Environmental Protection

To determine whether GE will make adequate provisions to protect the environment while carrying on the proposed activities at its Toronto facility, the Commission considered the potential for the continued operation to adversely affect the environment.

GE reported that it maintains a comprehensive environmental protection program to identify, control and monitor all releases of nuclear and hazardous substances from its fuel facilities. GE further reported that the results of its environmental monitoring demonstrate that air emissions and liquid effluent discharges were consistently below the action levels and regulatory limits during the licensed period. Furthermore, as a direct result of its application of the ALARA principle in its environmental protection program, GE was successful in reversing an increasing trend in effluent releases observed in 2003. This was achieved by reconfiguring the wastewater monitoring system. GE further noted that it has significantly reduced its liquid effluent releases to the environment in 2005 as a result of program changes.

Based on its review of GE's program, CNSC staff concluded that the environmental performance at the facility meets CNSC requirements.

The Commission sought further information with respect to the air monitoring for uranium emissions. GE indicated that it has a comprehensive soil sampling program in place and that it verifies the concentration of uranium regularly to ensure there are no changes. CNSC staff noted that soil sampling at 51 locations both within and surrounding the facility show that concentration of uranium was indistinguishable from natural background levels. In response to the Commission's questions on why there is no off-site monitoring of air quality (i.e., as opposed to the monitoring of air emissions at the plant itself), CNSC staff indicated that, because the levels of release from the plant are so low, monitoring of ambient environmental air quality would not be meaningful. CNSC staff stated that, in this case, controlling and measuring the emissions at the source is a more effective approach.

In response to the Commission's question regarding solid waste management, GE indicated that its waste, including the HEPA filter waste, is collected and shipped to Chalk River Laboratories semi-annually. GE confirmed that applicable regulations are respected during the waste handling.

Based on the information received, the Commission is satisfied that GE has made, and will continue to make, adequate provision at the Toronto facility for the protection of the environment during the proposed licence period.

3.3 Conventional Health and Safety

Further with respect to the Commission's examination of GE's provisions for the protection of persons, the Commission considered information on the non-radiological health and safety of workers at the Toronto facility.

GE reported to the Commission that it has maintained a high level of safety at the facility with no lost time injuries in the last two years. GE also indicated that all of its employees actively embrace and foster an environment of compliance and continuous improvement in safety. In letters included in GE's submission, the workers' unions noted the critical role that the Joint Health & Safety Committees have in the identification and resolution of safety issues and in continuous improvement in plant safety. The unions further attested to the good safety performance of the operation at the facility.

CNSC staff noted that during the licensed period there was only one lost time incident which occurred in 2002. CNSC staff also noted that GE's Environmental, Health and Safety (EHS) Management System is a good internal control system that provides a framework to organize, implement and measure management processes to assure the maintenance of safe and healthy workplaces.

Based on the information considered, the Commission is satisfied that GE has made, and will continue to make, adequate provision for the protection of persons from conventional (non-radiological) hazards at the facility.

3.4 Performance Assurance

The Commission examined performance assurance, including aspects of quality assurance, organizational structure and safety culture, as a further indication of the adequacy of GE's qualifications and protection measures.

Overall, CNSC staff noted that it inspects the facility on a quarterly basis and that there had been no instances of non-compliance with regulatory requirements during the licensed period. The following aspects were examined by the Commission to provide assurance that GE's performance in this regard would continue during the proposed licence period.

Quality Assurance

GE expressed its commitment to corporate quality assurance and described its Quality Assurance (QA) program established in accordance with CNSC requirements. CNSC staff noted that the QA manual had been reviewed since January 2005 with respect to current CNSC requirements. CNSC staff indicated that the program would be assessed once the documentation was complete; however, it was able to assess the implementation of the program as meeting requirements based on past results and on-going assessments performed during quarterly inspections.

In response to the Commission's question on when the remaining documentation would be completed, GE noted that it has now completed all the documentation and was waiting for CNSC staff's review and follow-up audit. GE further noted that it felt confident that it could revise the program and documentation as necessary following the planned CNSC's audit and prior to the proposed mid-term performance report to the Commission.

As part of its commitment to promote best practices within the industry, GE stated that it would seek opportunities to discuss with CNSC staff how performance ratings of "exceeds requirements" may be achieved. The Commission noted that, while the CNSC encourages licensees to seek excellence and to strive to perform beyond the regulatory requirements, performance that meets the regulatory requirements is fully satisfactory for the purpose of licensing under the *Nuclear Safety and Control Act*.

Management Structure and Safety Culture

GE described its management structure which includes links to the various levels of the Environmental Health & Safety positions within the organization. In response to the Commission's question on how GE management views the importance of fostering and maintaining a good safety culture, GE noted that safety culture at GE is driven by top management who engage employees in the realization of continuous improvement. As part of its communication and culture change program, GE further noted it had conducted special sessions on safety culture with its employees. CNSC staff noted that, although no formal assessment was performed regarding the safety culture at this facility, it does take account of employees' comments and leadership responses when CNSC staff is performing its periodic inspections.

With respect to management responsibilities assigned during the various work shifts, GE noted that there is always a minimum complement of qualified employees for all shifts and that there is a responsible production supervisor on-call at all times. A senior person is always on site to act as the group leader. CNSC staff confirmed that this level of supervision is an adequate measure for this type of operation. CNSC staff also indicated that as part of its regulatory oversight, it looks for well-documented programs including procedure adherence for all operational staff and is satisfied with the measures in place at this facility.

Conclusion on Performance Assurance

Based on the information received, the Commission concludes that the operating performance at GE's Toronto facility provides a positive indication of GE's ability to adequately carry on the proposed activities under the licence and that GE has in place the necessary programs to assure continued acceptable performance at the facility.

3.5 Emergency Preparedness and Fire Protection

As part of its fire protection program, GE noted that its fire safety plan has been approved by the Toronto Fire Department and that, with the Fire Department's participation, GE conducts fire

drills each quarter. GE further noted that third-party fire safety reviews are conducted annually at the facility.

CNSC staff reported that, in 2004, it issued 17 action notices and made two recommendations concerning fire protection at GE's facility in Toronto. Two action notices remain open. CNSC staff explained, however, that the issues raised are relatively minor and that it is satisfied that the fire protection program and its implementation meet requirements. CNSC staff recommended that the Commission add a licence condition to reference the National Fire Protection Association Standard NFPA-801 (2003 edition) to establish a minimum fire protection program and require annual assessments by an independent party.

The Commission sought assurances that the fire department was trained to handle emergencies on site, including the handling of hazardous and radioactive materials. In response, GE indicated that it conducts exercises at least once a year and provides relevant on-site training to the fire department and emergency response team typically three times a year.

The Commission also sought further information with respect to procedures that would be followed in the event of a fire during non-operating hours. GE indicated that as part of its emergency preparedness plan, there would be an automatic notification to responders and activation of the emergency response plan. CNSC staff noted that it is satisfied with the adequacy of the response plan, training and equipment to deal with emergencies at any time.

The Commission sought further information on the potential impact that a flood would have on the facility, including the potential for release of contaminated water to the environment. GE indicated that its site emergency response plan includes scenarios for all credible accidents, including flooding from all sources. In this regard, GE noted that the water retaining capacity in the building basement is sufficient for all documented scenarios and that procedures are in place to test and treat flood water prior to discharge. In the event it is necessary, GE also noted that it has retained a contractor to provide emergency spill response and clean-up. CNSC staff indicated it has reviewed the GE emergency management plan and confirmed that measures are in place to control potential water contamination. CNSC staff further noted that in the event of flooding (including from fire suppression sprinklers), the water would be collected, analyzed and treated before release under the same environmental standards for release that are applied during normal operation.

Based on the information received, the Commission concludes that emergency preparedness and fire protection at GE's fuel facility in Toronto is adequate for the proposed licensing.

3.6 Security

CNSC staff reported that the security program and its implementation meet CNSC expectations.

Based on this information, the Commission concludes that GE has made, and will continue to make, adequate provisions for ensuring the physical security of the Toronto facility.

3.7 Decommissioning Plan and Financial Guarantee

In order to ensure that adequate resources will be available to meet the same regulatory requirements for safety, environmental protection and security during the future decommissioning of GE's fuel facility in Toronto, the Commission requires that adequate plans and financial guarantees for decommissioning and long-term management of waste be put in place and maintained acceptable to the CNSC.

In this regard, CNSC staff stated that the preliminary decommissioning plan and financial guarantee submitted by GE in 2003 continues to be acceptable for the proposed licence period.

The Commission therefore concludes that the preliminary decommissioning plan and financial guarantee for GE's fuel facility in Toronto remains acceptable for the purpose of the proposed licence renewal.

3.8 Public Information

With respect to the requirement for an acceptable public information program, CNSC staff reported that it conducted a review of GE's program in early 2005 using CNSC Regulatory Guide G-217, *Licensee Public Information Programs* as a basis. CNSC staff concluded that the program meets the CNSC's requirements.

The Commission is therefore satisfied that GE's public information program for its facility in Toronto is adequate.

3.9 Safeguards and Non-Proliferation

CNSC staff indicated that GE's program complies fully with the International Atomic Energy Agency (IAEA) and CNSC requirements. GE also noted that it maintains a comprehensive natural uranium inventory system that is subject to periodic audits by the IAEA and CNSC.

Based on the information received, the Commission is satisfied that GE has made, and will continue to make, adequate provisions in the areas of safeguards and non-proliferation at its facility in Toronto that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

3.10 Canadian Environmental Assessment Act

Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act* (CEAA) have been fulfilled. In this case, no environmental assessment is required under the CEAA as the renewal of the licence to

continue operations is not considered a trigger for such an assessment under section 5 of the CEAA.

The Commission therefore concludes that an environmental assessment of the proposed operations of GE's facility in Toronto, pursuant to the CEAA, is not required before the Commission may make a decision on the licence application.

3.11 Licence Length and Interim Reporting

GE applied for a five-year renewal of its licence. CNSC staff recommended that the Commission accept and grant the proposed five-year term. CNSC staff also offered to present a status report on the performance of GE to the Commission following the approximate mid-point in the five-year licence term.

Although the worker unions did not intervene directly during the hearing, GE's submission included two letters of support for a five-year licence from the workers' unions.

Based on the information received, the Commission decided that a five-year licence term would be appropriate in this case. The Commission also decided that the proposed mid-term performance report recommended by CNSC staff would be appropriate.

4. Conclusion

The Commission has considered the information and submissions of GE and CNSC staff as presented in the material available for reference on the record.

The Commission concludes that GE is qualified to carry on the activities that will be permitted under the licence. Furthermore, the Commission concludes that in carrying on those activities, GE will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

The Commission therefore issues, pursuant to section 24 of the *Nuclear Safety and Control Act*, the Fuel Facility Operating Licence No. FFOL-3622.0/2010 to General Electric Canada Company. The licence is valid from January 1, 2006 until December 31, 2010.

The Commission includes in the licence the conditions recommended by CNSC staff, as set out in the draft licence attached to CMD 05-H24.B.

With this decision, the Commission requests that CNSC staff provide the Commission with a report on the performance of the facility following the approximate mid-point in the term of the licence. The mid-term performance report will be presented at a public proceeding of the Commission.

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: December 1, 2005

Date of release of Reasons for Decision: December 30, 2005