Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant: Ontario Power Generation Inc.

Subject: Application for the renewal of the operating licence for the Pickering B Generating Station

Date: June 25, 2003
RECORD OF PROCEEDINGS

Applicant: Ontario Power Generation Inc.

Address/Location: 700 University Avenue, Toronto, Ontario M5G 1X6

Purpose: Application for the renewal of the operating licence for the Pickering B Generating Station

Application received: December 2, 2002

Date(s) of hearing: February 27, 2003 May 21, 2003

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. Barnes L.J. MacLachlan
J.A. Dosman J.M. McDill
Y.M. Giroux

Counsel: I.V. Gendron

Secretary: M.A. Leblanc

Recording Secretary: C.N. Taylor

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Licence: Issued
Date of Decision: May 21, 2003
1. Introduction

Ontario Power Generation Inc. (OPG) has applied to the Canadian Nuclear Safety Commission for the renewal of its Nuclear Power Reactor Operating Licence for the Pickering B Generating Station (NGS-B) for a period of five years. The current licence for Pickering NGS-B (PROL 08.06/2003) expires on June 30, 2003.

The Pickering NGS-B is located in the Province of Ontario on the north shore of Lake Ontario, in the City of Pickering in the Regional Municipality of Durham. The Pickering NGS-B nuclear facility comprises four 540-megawatts net electrical output CANDU reactors and their associated equipment. The separately licensed Pickering NGS-A, consisting of four similar reactor units, is located immediately adjacent to Pickering NGS-B and was the subject of a separate licensing hearing that was held on the same days.

Issues:

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

a) OPG is qualified to carry on the activity that the licence would authorize; and

b) if, in carrying on that activity, OPG 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 two-day public hearing held on February 27, 2003 and May 21, 2003 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 OPG (CMD 03-H8.1, CMD 03-H8.1A, CMD 03-H8.1B), CNSC staff (CMD 03-H8 and CMD 03-H8.A) and intervenors (CMD 03-H8.2 to CMD 03-H8.16). See Appendix A for a detailed list of interventions.

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 OPG is qualified to carry on the activity that the licence will authorize. The Commission also determined that OPG, 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, issues Nuclear Power Reactor Operating Licence PROL 08.00/2008 to Ontario Power Generating Inc., Toronto, Ontario, for the Pickering B Nuclear Generating Station. The licence is valid from July 1, 2003, to June 30, 2008, unless suspended, amended, revoked or replaced.

The Commission includes in the licence the conditions recommended by CNSC staff as set out in the draft licence attached to CMD 03-H8.A, and including the amendment made to the licence by decision of the Commission documented in the Record of Proceedings, Including Reasons for Decision dated May 14, 2003. In that decision, the Commission approved the financial guarantee for the decommissioning of Pickering NGS-B and amended the current operating licence for Pickering NGS-B accordingly.

The Commission requests CNSC staff to present a status report to the Commission on the performance at Pickering B-NGS at the approximate mid-point in the five-year term of the licence (the mid-point is approximately November 2005). The Commission would accept the presentation of the report at the same time as the Commission receives the CNSC staff’s annual report on the performance of the Canadian power reactor industry for the year 2005. The mid-term status report on Pickering B-NGS will be presented at a public proceeding of the Commission.

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 OPG’s qualifications to carry out 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 Commission’s findings on these issues are summarized in this section.

The Commission notes that many of the issues examined are interdependent. For example, determining the adequacy of performance in a specific safety area often requires an examination of the licensee’s past and current performance in that area, together with the relevant aspects of performance assurance and design adequacy that will affect future performance. As such, the findings of the Commission presented below are based on the Commission’s consideration of all the related issues and all of the information provided for and during the hearing.

The Commission further notes that because it was holding a public hearing on a similar application for the renewal of the operating licence for the adjacent Pickering NGS-A on the same days, and to avoid unnecessary repetition between the two hearings, the Commission also considered for the purpose of this hearing any relevant information that was provided on the record of the hearing for Pickering NGS-A. Pickering NGS-B and Pickering NGS-A share many common services, equipment and programs.
3.1 Radiation Protection

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

In this regard, CNSC staff reported that OPG’s radiation protection program exceeds CNSC expectations and that its implementation meets expectations. CNSC staff noted that recorded doses to Nuclear Energy Workers have remained, and are expected to remain consistently well below the regulatory limits. Similarly, CNSC staff reported that the estimated doses to the public are, and are expected to remain, well below the regulatory limit (below 1% of the limit of 1 mSv/a).

OPG added that it is taking aggressive measures to meet the CNSC’s expectations for reducing radiation exposures in accordance with the ALARA principle (as low as reasonably achievable). These measures include, for example, the creation of an ALARA Section in the organizational structure, the use of a new electronic radiation exposure permit system, and various other dose control, avoidance and reduction strategies that are employed in the planning and execution of work and monitoring of doses.

Further with respect to keeping doses to the public ALARA, OPG stated that it is continuing to enhance radioactive emission reduction methods, and to tighten controls on potentially contaminated materials leaving the site (e.g., scrap metal). As examples of emission reduction efforts, OPG noted that it has increased the efficiency of dryers used to remove tritium from air and that it has reduced tritium concentrations in the heat transport system. Furthermore, improvements to tritium off-gassing facilities will be complete in 2003.

Further with respect to public dose assessment and control, OPG noted that it is engaged in a substantive update of the human health pathways models used to calculate Derived Release Limits (DRLs). Conservative, interim DRLs are being used while the proposed revisions are under review by CNSC staff. In response to a question from the Commission on the need for this update of the DRLs, OPG stated that this was primarily in response to the lower public dose limit in the regulations under the Nuclear Safety and Control Act, as well as need to build additional human exposure pathways into the modelling. The Commission also questioned OPG on the reasons why the public dose estimates, while still below the limits, were relatively higher in the year 2001. OPG stated that it believes this was due to higher emissions during specific remediation work that was being done at Pickering NGS-A, and also to somewhat less favourable atmospheric dispersion conditions during that time. OPG noted that the emission rates and estimated public doses have since improved.

Refer to section 3.3 below for a further discussion of environmental protection measures that are also relevant to public dose control.

Based on this information, the Commission concludes that OPG has made, and will continue to make, adequate provision for the protection of persons from radiation at Pickering NGS-B.
3.2 Conventional Health and Safety

Further with respect to the protection of persons at Pickering NGS-B, CNSC staff reported that OPG’s conventional (non-radiological) health and safety performance meets CNSC expectations. OPG stated that it uses a variety of indices to help measure its performance in worker safety, including the 

**Industrial Safety Accident Rate**, the 

**High Maximum Reasonable Potential for Harm Incidents**, and the 

**Accident Severity Rate**. OPG also stated that it has established a 

**Risk Reduction Program** to focus on higher risk tasks and an 

**Industrial Ergonomics Program**, designed for improving the health of workers’ backs and upper extremities. OPG reported good performance and evidence of continuing improvement for all indicators. OPG noted that it has operated 3 million hours since its last lost-time accident at Pickering NGS-B and that the last such accident occurred over one year ago.

The Power Workers Union (PWU) and Canadian Workers Council (CWC), in their interventions, attested to what they view as the effective operation of the 

**Joint Health and Safety Committee** at Pickering NGS. These intervenors expressed the view that all safety issues raised are treated seriously and that there is a good record of cooperation with the employer. The PWU and CWC also noted that the safety programs at the station emphasize continuous improvement and learning from all issues and incidents that arise in the workplace. As part of this continuous improvement, the PWU and CWC noted that there is a positive and healthy use of work refusal provisions. The PWU and CWC view this as a demonstration of a positive questioning attitude in the safety culture. The unions also expressed support in their interventions for OPG’s 

**Target Zero** program - a program aimed at preventing all personal injury accidents.

In response to the Commission’s questions on the use of work refusals, the PWU stated that in most instances the issues are resolved immediately on the work site; there have been only a few occasions when the Ministry of Labour was contacted. OPG added that it actively encourages all workers on the site to raise safety concerns when they arise and to proceed with work only when it is safe to do so. OPG also stated that it strives to resolve all safety concerns and work refusals promptly in the workplace, and that the involvement of the Ministry of Labour is viewed by OPG management as a failure on its part to manage the issue adequately.

The Society of Energy Professionals (SEP), in its intervention, expressed its continuing concern about workplace health and wellness issues at Pickering NGS. These concerns, however, relate more to OPG’s management practices than, for example, to the hazards in the work place. The SEP is of the view that those management practices are having a negative effect on the morale and performance of workers at Pickering NGS which could affect safety. The SEP noted that progress is being made with OPG on these issues and that there is no evidence to date that safety has been compromised. The Society of Energy Professionals also attested to the general effectiveness of the Joint Health and Safety Committee on the site.

Based on this information, the Commission concludes that OPG has made, and will continue to make, adequate provision for the protection of persons from conventional hazards at Pickering NGS-B. The issues of staff morale identified by the Society of Energy Professionals, and their
potential impact on safety culture and human performance are discussed further below in section 3.5.2 (Human Performance).

3.3 Environmental Protection

To determine whether OPG will make adequate provisions to protect the environment while carrying out the proposed activities at Pickering NGS-B, the Commission considered the potential for the facility to adversely affect the environment.

In this regard, CNSC staff reported that OPG’s environmental protection program at Pickering NGS-B, and its implementation, meets CNSC requirements and expectations.

CNSC staff reported that radiological releases to the environment have consistently been a small fraction of the DRLs and that no planned releases occurred during the current licensing period.

With respect to the off-site radiological environmental conditions (which includes the combined effects of Pickering NGS-B and the currently shutdown Pickering NGS-A), CNSC staff reported that the concentrations of radioactive substances in local municipal water supplies, air, milk, sediment, soils, fish and terrestrial biota are all at very low and acceptable levels.

With respect to these off-site radiological conditions, the Commission noted the concerns expressed by the Citizens for Renewable Energy and Great Lakes United in their interventions. These intervenors are particularly concerned that the reported air emission data shows releases that are consistently in excess of the 1% Derived Release Limits (DRLs). In response to questions from the Commission on those emission data, OPG stated that this is a function of the sensitivity of the emission monitoring equipment which cannot measure below the 1% of DRL equivalent. To be conservative, when the emissions are below the minimum detection level (MDL) of the instruments, the MDL is recorded as the assumed level of emission. OPG noted that it is replacing the emission monitoring instruments with more sensitive devices. OPG further noted that, for the purpose of estimating public dose, it relies on the more sensitive monitoring that it does in the surrounding ambient environment. OPG reported that those environmental measurements indicate potential radiation doses to individual members of the public that are consistently below 1% of the DRL.

With respect to non-radiological emissions, OPG noted that it is implementing Environment Canada’s National Pollutant Release Inventory process. OPG also stated that it continues to report and take corrective action on all releases and any monitoring data irregularities under the Ontario MISA (Municipal Industrial Strategy for Abatement) program. In response to a question from the Commission on the monitoring for non-radiological contaminants in groundwater, OPG confirmed that the groundwater monitoring program includes non-radiological parameters and that action plans are in development to address some areas of historical fuel oil and solvent contamination in the vicinity of Pickering NGS-A. There is also some radiological contamination of groundwater in the form of tritium at Pickering NGS-A. The Commission’s findings on that tritium contamination are discussed in the Record of Proceedings, Including Reasons for Decision for the hearing held by the Commission on the proposed renewal of the
operating licence for Pickering NGS-A facility on the same days as this hearing. OPG concluded that the groundwater contamination at Pickering NGS does not pose a significant risk to the environment.

OPG also reported that it continues to address the issues raised in a comprehensive environmental review of the Pickering NGS that was conducted in 1998 with the involvement of the local community. OPG noted that the Action Plan stemming from that review is now approximately 80% complete. As part of that environmental review, a more detailed, tiered Ecological Risk Assessment was initiated. The third tier report, concluding that there are no significant ecological impacts from the operations at Pickering NGS, was submitted to the CNSC in late 2002. OPG is currently developing a program for the long-term verification monitoring of that finding.

As further evidence of its commitment to environmental protection at Pickering NGS, OPG noted that it received ISO 14001 certification of its Environmental Management System in 1999. OPG also received the Corporate Habitat of the Year award from the Wildlife Habitat Council for commitment to environmental stewardship and increasing native biodiversity. OPG also noted that, in 2001, it received the City of Pickering’s Civic Award for the Environment.

Based on this information, the Commission is satisfied that OPG has made, and will continue to make, adequate provision at Pickering NGS-B for the protection of the environment during the proposed licence period.

3.4 Operating Performance

The Commission considered the operating performance at Pickering NGS-B as a further indication of OPG’s qualifications to continue operating the plant and, in doing so, provide adequate protection for the environment, and the health and safety of persons. In the area of operating performance, the Commission examined: the occurrence of incidents and transients; the general conduct of operations; technical surveillance; regulatory reporting; outage management, and the facility management and organizational structure.

3.4.1 Incidents and Transients

CNSC staff described a number of incidents and transients at Pickering NGS-B during the current licence period that have lead to either an automatic or manual shutdown of one or more reactor units. While CNSC staff expressed its general satisfaction with OPG’s efforts to reduce such incidents and transients, including a record of zero events in 2002, CNSC staff expressed concern that there have been three such events at Pickering NGS-B in the spring of 2003. None of the recent events posed a significant risk to the public or the environment.

With respect to one of the events in which OPG manually shutdown all the remaining operating units at Pickering NGS-B to repair a leak in the demineralized water supply system, the Commission questioned OPG on whether it is reviewing the plant design to reduce the potential for future significant station-wide outages of this nature. In response, OPG acknowledged that it
had not fully appreciated the vulnerability of its electricity production to problems in this system, and that it is exploring the possibility of adding a water treatment plant at the other end of the site to mitigate that vulnerability.

In response to further questions from the Commission on why there were a relatively high number of incidents in 2001, OPG stated that these types of incidents are normally directly related to the material condition of the plant and human performance. OPG reported that it is addressing these areas with a variety of initiatives, including: a material condition improvement plan; a work management improvement plan; rigorous operational decision making processes; rigorous troubleshooting processes; and the promotion of event-free tools. Despite the recent events, OPG reported that, compared to previous years, it has made significant progress in reducing the number of incidents and transients at Pickering NGS-B.

### 3.4.2 Conduct of Operations

CNSC staff reported that the conduct of operations at Pickering NGS-B is currently meeting CNSC requirements and is improving. CNSC staff reported that action items were raised during regular CNSC inspections, and that OPG has kept its operating procedures and documents up-to-date.

OPG provided a further description of its *Conduct of Operations Program*, including how it has helped reduce the number of transients as discussed above. OPG also indicated how its operating performance rating using the *Nuclear Performance Index* system employed by the World Association of Nuclear Operators (WANO) has shown significant improvement in recent years. OPG also pointed to its *Work Protection Code* (designed to identify, mitigate and verify that equipment is in a safe state prior to carrying out maintenance) and to its chemistry control measures (designed to minimize degradation of materials).

Based on this information, the Commission concludes that the conduct of operations at Pickering NGS-B has been, and will continue to be satisfactory during the proposed licence period.

### 3.4.3 Technical Surveillance

CNSC staff reported its satisfaction with the *Technical Surveillance Program* at Pickering NGS-B. The program involves monitoring to ensure the continuous readiness of safety-important equipment. CNSC staff reported that the program meets CNSC requirements and continues to improve.

OPG added that, within the *Technical Surveillance Program*, 48 systems are monitored on defined performance goals using a variety of trend data. The cumulative assessment of the results is summarized in a *Plant Condition Index*. By feeding the results into the *Material Condition Improvement Plan* and project improvements, OPG reported that it has significantly reduced unplanned maintenance and operator challenges, and has improved the overall *Plant Condition Index*. OPG further reported that there are no systems that require significant compensatory action to meet the design intent.
Based on this information, the Commission concluded that technical surveillance at Pickering NGS-B has been, and will continue to be satisfactory during the proposed licence period.

3.4.4 Reporting

CNSC staff also reported its general satisfaction with OPG’s reporting to the CNSC. CNSC staff noted that, while there have been some problems with late and incomplete reporting, OPG’s performance has been acceptable overall. CNSC staff noted that OPG has been generally conservative in its initial reporting practices; as evidenced by a number of reports being subsequently retracted by OPG on the bases that the reported events, on further investigation, were not of a type that requires reporting to the CNSC.

Based on this information, the Commission is satisfied that OPG is meeting, and, during the proposed licence period, will continue to meet the CNSC’s requirements for reporting at Pickering NGS-B.

3.4.5 Outage Management

With respect to OPG’s management of maintenance outages, CNSC staff reported that, due to difficulties encountered during the outages on Units 5 and 6, OPG did not meet CNSC expectations for the current licence period. CNSC staff noted that, while OPG’s pre-approval management of outages is improving, more attention is needed in the areas of dose management, human performance, rework due to quality issues, and maintenance backlog reduction.

In its acknowledgement of, and response to these concerns expressed by CNSC staff, OPG reported that it has made a number of improvements which have shown steady improvement in the number of tasks completed during outages and in the control of worker dose.

In response to the Commission’s questions on the importance and normal level of maintenance backlogs, CNSC staff stated that the backlog at the end of an outage is a key performance indicator. This is because many important maintenance activities can only be completed during an outage, the next of which may not occur for another 18 months. With respect to an expected or optimum post-outage backlog, CNSC staff stated that a figure somewhere below 250 items would typically be considered good. In that regard, CNSC staff reported that the backlog following the most recent outage at Unit 5 was between 250 and 300 items. OPG further noted that, while there is no defined optimum for a post-outage unit backlog, OPG recognizes that it still has room for improving its management of outages. Furthermore, OPG stated that it continues to set challenging targets for its outages and has realized continuing improvements in performance.

Based on this information, the Commission is satisfied that OPG is taking the appropriate steps to meet CNSC expectations for the management of outages, and to continue to improve in this area. The Commission notes that, while the CNSC staff’s rating for OPG’s outage management during the current licence period is “below expectations”, the Commission is satisfied that OPG will meet the CNSC’s expectations in the proposed licence period.
3.4.6 Management and Organizational Structure

With respect to OPG’s organization and management structure at Pickering NGS-B, CNSC staff noted that OPG’s restructuring (and related downsizing) has not resulted in any significant short-term safety issues arising; however, some process recommendations were raised by CNSC staff and OPG’s responses to those recommendations are under review. OPG added that it has responded to the CNSC staff’s evaluation and has fully implemented all of the recommendations.

OPG added that it has a program in place to recruit, hire and train staff as necessary. That program includes a number of partnerships with colleges and universities.

Based on this information, the Commission is satisfied that OPG has appropriate organization and management structures in place for the return-to-service project and future reactor operations.

3.4.7 Conclusions on Operating Performance

Based on the above information and considerations, the Commission concludes that the operating performance at Pickering NGS-B provides a positive indication of OPG’s qualifications to adequately carry out the proposed activities under the licence. The Commission notes that operating performance can be affected over time by changes in quality assurance, safety culture and the qualifications of the work force. These factors are addressed further in section 3.5.2 below (Performance Assurance) and will continue to be monitored as part of the CNSC compliance program.

3.5 Performance Assurance

The Commission examined performance assurance, including aspects of quality assurance, human performance and training, as a further indication of the adequacy of OPG’s qualifications and protection measures.

3.5.1 Quality Assurance

With respect to quality assurance, CNSC staff reported that, while the defined quality assurance program at Pickering NGS-B meets CNSC expectations, problems remain in the implementation of the program. In its report to the Commission for the hearing, CNSC staff rated the quality assurance program as “below expectations” with a deteriorating trend. In particular, CNSC staff pointed to several long-standing, organization-wide inadequacies in the implementation of quality assurance on pressure boundary issues.

CNSC staff noted that, to compensate for this, the pressure boundary work is being completed by contractors who have the necessary certification. OPG noted that, as a further short-term response to the identified deficiencies, OPG has removed from storage all materials that do not meet requirements and has instituted an extensive review of all materials against the applicable CSA standards prior to their installation. OPG stated that it expects to resolve the remaining
pressure boundary quality assurance issues and renew its certification later in 2003. OPG stated that, although there are deficiencies in the implementation of the pressure boundary quality assurance, the program documentation aspects have been accepted by CNSC staff, as has OPG’s overall and other element-specific quality assurance programs.

OPG also explained how its Corrective Action Program and Operating Experience Program, both of which were developed in consultation with CNSC staff, contribute to quality and continuous improvement at Pickering NGS-B.

In response to follow-up questions from the Commission on OPG’s quality assurance program in general, OPG described how the program is defined in high-level governing documents that have been approved by CNSC staff. OPG restated its commitment to correct the remaining deficiencies in a timely manner and in accordance with CNSC requirements. CNSC staff acknowledged that OPG has expended considerable effort on, and has made significant progress over the past year in the area of quality assurance. CNSC staff confirmed that, where necessary, compensating measures, such as the use of contractors that have the necessary quality assurance certification, have been effective.

In response to the Commission’s questions on the declining performance trend assigned by CNSC staff to quality assurance at Pickering NGS-B overall, OPG stated that it believes it has turned its performance around and that it is doing everything appropriate to meet the CNSC’s quality assurance implementation requirements. OPG noted that it has already seen notable changes in the behavior and performance of its staff with respect to quality matters. OPG also stated that there is a much better monitoring of this area by senior management.

Based on this information, the Commission concludes that OPG is taking the appropriate action to meet the CNSC’s expectations for quality assurance at Pickering NGS-B. However, until the implementation of the quality assurance programs is fully acceptable, the Commission requests CNSC staff to continue to pay particular attention to quality issues at Pickering NGS-B.

3.5.2 Human Performance

Also in regard to performance assurance, CNSC staff reported that OPG’s human performance program and its implementation currently meet CNSC expectations and continue to improve.

OPG stated that it places a very high level of importance on human performance issues. In this regard, OPG noted that it has developed and is implementing a Human Performance Improvement Program, including the hiring of a Human Performance Director. The program is based on the Nuclear Power Operators Human Performance Leadership Framework. Under that framework, OPG noted that it is raising worker awareness, developing training on event causes, and promoting the use of event-free tools (i.e., work planning and worker self-assessment and procedural compliance practices that are designed to prevent human performance incidents). All staff at Pickering NGS-B now receives training in human performance. OPG further stated that it now explicitly integrates human factors in its engineering design processes. As a result of these program improvements, OPG reported that the number of human performance events has significantly decreased.
Human Performance as a Function of Safety Culture:

Noting the linkage between human performance and the safety culture in an organization, the Commission questioned OPG on its vision for safety culture at Pickering NGS-B and what steps it is taking to realize that vision.

In response, OPG stated that safety is continuously reinforced as the top priority for all managers, and that safety is discussed with the site staff at every opportunity (such as at regular safety meetings and pre-job briefings). OPG also noted that it has a policy of analyzing, learning from, and making appropriate adjustments in response to every incident. Specifically on the cultural aspects of safety, OPG described how it has engaged a specialist and psychologist to attempt to measure the current safety culture at Pickering NGS through the use of specially designed questionnaires. OPG reported that, to date, this exercise has produced several positive indications that a good safety culture exists at Pickering NGS. For example, it appears workers feel neither pressure to compromise safety, nor reluctance to raise safety concerns. The surveys also revealed a strong sense of social responsibility for safety in the nuclear industry. OPG also noted that the surveys have identified areas for improvement, such as the need for better communications and feedback from management on both positive and negative performance issues. OPG stated its intent to periodically re-sample the safety culture in this way to gauge progress. The Commission acknowledged OPG’s progressive and innovative approach to the assessment and monitoring of safety culture through the use of this tool.

Further on the matter of safety culture at Pickering NGS-B, the Commission took note of the interventions by the unions. In this regard the Canadian Workers Council expressed support for what it described as an active and healthy safety culture at Pickering NGS-B. The Society of Energy Professionals (SEP), however, expressed concern about what it views as low morale at Pickering NGS that has resulted from a variety of OPG’s management practices. In particular, the SEP is concerned that OPG’s practice of contracting out work could result in contract workers being more reluctant to raise safety concerns for fear of a negative response from their employers (not from OPG). SEP pointed to a recent example of a contract worker that was found to have falsified a work reconciliation document due to what SEP described as time pressures.

In response to questions from the Commission on the alleged low morale of workers, the SEP noted that, while it does not consider that the morale issue is having a significant impact on safety at Pickering NGS, SEP does believe it is limiting maximum performance. SEP is of the view that the issue warrants more detailed study and auditing. SEP noted that it has recently made significant progress with OPG on its concerns and that it will continue to work with OPG. SEP also indicated its desire to engage CNSC staff at the site in further discussion of their concerns.

On the matter of the specific incident referred to by the SEP above (involving a contract worker who allegedly falsified a document), the Commission sought a further explanation and assessment of the consequences from OPG. The Commission notes that, while the event occurred at Pickering NGS-A, it may be relevant to the Pickering NGS site in general. In
response, OPG explained that the person, when questioned, did not appear to have fully understood what he had signed for. An investigation was initiated and the group that was doing the reconciliation documentation was stood down while the standards for that work were reviewed with the group. OPG added that the event had no safety consequence as the person had signed for something that was actually not required in the circumstances. OPG noted that the event was discovered and reported by the contractor, which, in OPG’s view, is indicative of an open and appropriate behavior on the part of the contractor towards safety.

While the Commission saw no evidence that the morale issues reported by the SEP are having a material impact on safety at Pickering NGS, the Commission takes the statements of the SEP seriously – poor worker morale can ultimately affect safety culture and safety performance. The Commission therefore encourages OPG and the SEP to continue to work together to better understand the nature and extent of these issues and to seek to resolve them to the extent possible. While the Commission also welcomes the SEP’s desire to engage CNSC staff in these discussions, the Commission notes that the CNSC will not become involved in matters related to collective bargaining. CNSC staff will limit its involvement to matters within the CNSC’s mandate of safety, environment and security.

Based on this information, the Commission is satisfied that OPG is taking the appropriate steps to develop, foster and monitor a positive safety culture at Pickering NGS. However, the Commission is concerned about the issues raised by the SEP in this regard. The Commission appreciates that the SEP has come forward with their views, and is encouraged by the statements of OPG regarding its commitment to address the concerns raised in an open and professional manner. However, in light of the concerns raised, the Commission requests CNSC staff, in carrying out its compliance activities at Pickering NGS-B, to maintain a vigilant watch for any evidence of an eroding safety culture that could negatively affect safety performance. The Commission will examine this area at the time of CNSC staff annual reporting on the power reactor industry performance, in the mid-term performance status report (see sections 3.14 and 4 below), and in the context of any Significant Development Reports at Commission Meetings should the need arise.

3.5.3 Training, Examination and Certification

The Commission considered the adequacy of OPG’s programs for personnel training, examination and certification as a further indication of OPG’s qualification to carry out the proposed activities under the licence, and to maintain that qualification.

In this regard, CNSC staff reported its satisfaction with OPG’s training, examination and certification programs; however, CNSC staff considers that the implementation of the training program, although improving, does not meet expectations. Implementation of the examination and certification aspects is acceptable in CNSC staff’s view. OPG stated that it fully understands the weaknesses in its training program implementation as pointed out by CNSC staff, and that it is committed to correcting the deficiencies as quickly as practicable. OPG summarized a number of the specific initiatives underway in this regard.
CNSC staff stated that OPG has made good progress in designing its training programs using the Systematic Approach to Training (SAT) which is now required by the CNSC. As an example, CNSC staff identified OPG’s training for Authorized Nuclear Operators which will begin in 2003.

With reference to CNSC staff’s rating of “below expectations” for the implementation of the training program, and the fact that the corresponding program implementation at the adjacent Pickering NGS-A is meeting expectations, the Commission asked OPG if this was due to any problem with safety culture at Pickering NGS-B in particular. In response, OPG stated that the difference in the ratings is a function of the fact that different training programs were being looked at for different training groups. OPG stated that it believes it has the right culture at both stations and that the workers have demonstrated a keen interest in, and are eager to receive, high-quality training relevant to their work.

The Power Workers Union, in its intervention, also attested to the quality and effectiveness of OPG’s training program and, in particular, the skill broadening initiatives.

Based on this information, the Commission is satisfied that OPG has adequate examination and certification processes in place for the purpose of maintaining its qualifications during the proposed licence period. The Commission is also satisfied that OPG understands and is taking the necessary steps to make the necessary improvement to the implementation of its training programs. Until the deficiencies in the training program implementation are corrected, the Commission requests that CNSC staff continue to monitor this area closely and take appropriate regulatory action as necessary.

3.5.4 Conclusions on Performance Assurance

Based on the above information and considerations, the Commission concludes that OPG generally has in place the necessary programs to assure continued acceptable performance at Pickering NGS-B. While the Commission is concerned that all aspects of the quality assurance program and training program implementation are not yet meeting CNSC requirements, and that issues have been raised concerning possible safety culture problems in some areas of OPG’s organization, the Commission is satisfied that OPG understands, and is responding proactively to those issues. CNSC staff will continue to closely monitor performance assurance issues in carrying out its compliance activities at Pickering NGS-B and report its findings to the Commission as necessary.

3.6 Design Adequacy

Many aspects of assured safety performance at a nuclear facility are inherent in the design of the facility and the ability of plant systems to continue to meet the design intent in light of new information, operating experience, revised safety analyses, and continuing research on standing safety issues. The objective is to assess the remaining adequacy of the safety margins afforded by the design. In this regard, the Commission examined during the hearing issues related to the
Safety Analysis, the progress in resolving Generic Action Items (safety issues), and the adequacy of the design and design modifications.

3.6.1 Safety Analysis

CNSC staff reported that the recently updated Safety Analysis for Pickering NGS-B meets the CNSC’s requirements and expectations.

CNSC staff summarized the work that was done, and which continues to be done, on key postulated accidents and plant conditions, including: sustained loss of all heat sinks, large loss of coolant accident, and pressure tube creep and its effect on safety system trip coverage. CNSC staff also noted that it is continuing to examine issues related to the possible return to commercial production of Cobalt-60 at Pickering NGS-B and the research and development that is being carried out on this in relation to the Safety Analysis. OPG also provided information on what is being done in respect of these and other safety analysis issues.

The Commission sought further information on how the pressure tube creep issue has been accommodated in the Safety Analysis. In response, OPG stated that the revised Safety Analysis takes into account a certain amount of damage or creep and therefore this phenomenon is now fully bounded within the Safety Analysis. OPG added that it is currently working to find a long-term solution. CNSC staff indicated that it continues to closely monitor this work.

In response to a question from the Commission on the evolution of the research and development program related to the Safety Analysis, and to the CNSC staff’s reported concern about the need for regular reporting to the regulator, OPG stated that the research has recently shifted from a focus on computer code validation to matters pertaining to fitness-for-service and life-cycle management. OPG also acknowledged, and is taking steps to address the CNSC staff’s requirements for more formal reporting on the research program.

Based on this information, the Commission concludes that the Safety Analysis for Pickering NGS-B is acceptable for the purpose of the licence renewal and that the processes for maintaining the Safety Analysis are acceptable.

3.6.2 Safety Issues

With respect to the remaining industry-wide safety issues (referred to as Generic Action Items - GAIs), CNSC staff reported its satisfaction with how these issues are being addressed by OPG at Pickering NGS. CNSC staff noted that, while work continues on a number of the GAIs, the risks associated with these issues are low and not such that the continued facility operation would be considered unacceptable. CNSC staff noted that compensating measures have been taken where appropriate to maintain adequate safety margins in the facility operation. OPG provided the Commission with a summary of the work being done on each of the remaining GAIs.

With reference to the issues concerning the revision and replacement of analytical computer codes, the Commission questioned whether the new codes were being developed in-house (i.e., as opposed to commercial products) and whether they have been properly validated. In response,
CNSC staff stated that the codes now in use are a combination of in-house and commercial products and that CNSC staff is satisfied that they have been properly validated.

The Citizens for Renewable Energy and Great Lakes United expressed concern in their interventions about the number of GAIs that remain open and the long period of time that it is taking to resolve them. These intervenors are of the view that the remaining GAIs represent high-priority and serious safety issues that should be resolved quickly. In response to these concerns and related follow-up questions from the Commission, CNSC staff reiterated its view that the remaining GAIs represent very low-probability events that pose a low risk to facility operations. With respect to the length of time that the issues have been open, CNSC staff noted that the issues involve complex questions that require lengthy research programs. CNSC staff expressed its general satisfaction with the progress that is being made on priority areas, such as in the above-noted code validation work.

Noting that OPG previously reduced its research funding, the Commission questioned OPG on the status of its research funding in this area. In response, OPG stated that its research funding has been restored to previous levels and that it remains stable.

Based on this information, the Commission is satisfied that the remaining GAIs do not represent an impediment to the granting of the proposed licence renewal. The Commission expects, however, that the industry will maintain a concerted and sustained level of effort in resolving these important issues.

3.6.3 Plant Design Upgrades

The Commission notes that it is important to keep the design of a facility in line with modern standards and practices and to correct deficiencies that become apparent over time. In this regard, CNSC staff reported that the design of Pickering NGS-B meets the CNSC’s requirements. CNSC staff and OPG provided summaries of the principal design upgrades that were recently initiated and their status of completion.

With reference to the upgrades to the emergency coolant injection system strainers, the Commission sought further information on the expected reliability and performance of the modified system. OPG explained that, in designing the upgrades, it used highly conservative assumptions concerning all of the factors that could contribute to the clogging of the system during an accident. OPG stated that it is confident that the redesigned strainers would remain operational at least three months following an accident.

Based on this information, the Commission is satisfied that OPG is making appropriate changes to the design of Pickering NGS-B as needed.
3.6.4 Environmental Qualification

It is important to continually assess and verify that important safety equipment in the plant will function as designed in the harsh environments that could arise during accident conditions. In this respect, CNSC staff reported that OPG’s environmental qualification program is acceptable, although it is behind schedule in some areas. CNSC staff recommended that a condition be added to the licence requiring that the environmental qualification program be complete by June 30, 2004. OPG stated that it is committed to qualifying all remaining items by the proposed June 30, 2004 deadline.

Based on this information, the Commission is satisfied with the environmental qualification process at Pickering NGS-B. However, the Commission concurs with CNSC staff that the proposed licence condition is necessary to ensure that progress towards completion of this important design program area is maintained.

3.6.5 Configuration Management

An important part of maintaining the adequacy of the facility design is ensuring that the design documentation accurately reflects the actual physical conditions in the field over time. CNSC staff reported that problems with configuration management arose at Pickering NGS-B due to the design basis documents not being maintained up-to-date. In order to catch up in this work, CNSC staff reported that OPG initiated a Configuration Restoration Project in 1999. CNSC staff also indicated that OPG’s Configuration Management Closure Project, aimed at 15 selected systems) is expected to be completed by the end of 2004. CNSC staff is closely monitoring progress on these projects.

OPG acknowledges that the schedule for the configuration management projects has slipped recently and reported that a recovery plan has been prepared and submitted to CNSC staff.

The Commission asked OPG if the project included addressing of all the historic engineering change notices and configuration discrepancy reports by the end of 2004. OPG responded that this was its intent.

Based on this information, the Commission is satisfied that OPG is taking the appropriate steps to restore and maintain an acceptable configuration management for Pickering NGS-B.

3.6.6 Fire Protection

With respect to fire protection in the design of the facility, CNSC staff reported that a fire protection improvement program is proceeding at what CNSC staff considers to be an acceptable pace. Completion of all improvements is expected by December 31, 2005. OPG identified some of the main improvements completed to date, including improvement to the fire detection and alarm systems in the control room, control equipment room and cable spreading areas. OPG also noted that a Memorandum of Understanding is in place with the City of Pickering Fire
Department concerning integrated response, special training, coordinated drills, and inspections. OPG reported that the City of Pickering staff has no major issues on this at this time.

OPG reported, however, that the planned upgrades to the fire suppression system in the turbine-generator area will not be completed by the end of 2003 as originally planned. This delay is due to the need to build a large amount of scaffolding to mitigate conventional safety issues. As a result, the revised completion date for this work is November 2004. The Commission sought the views of CNSC staff concerning this delay. CNSC staff stated that, while they are concerned with the initial poor planning of this task, it believes that the conventional safety issues are legitimate and that the compensatory measures that OPG has in place will provide adequate protection in the interim. CNSC staff also noted that OPG has consulted appropriately with the City of Pickering and the Ontario Fire Commissioner’s Office on the matter.

Citizens for Renewable Energy and Great Lakes United, in their interventions, expressed concern that some fire protection upgrades may be delayed until December 31, 2005 and suggest that the delay may be driven by budgets rather than safety. In response, CNSC staff stated that the fire protection measures will be completed on the basis of when they are needed and that other temporary compensating measures will be maintained where necessary.

Further with respect to fire protection, Citizens for Renewable Energy and Great Lakes United expressed concern that issues arising from fire drills with the City of Pickering remain outstanding. In response to the Commission’s questions on the nature and status of these issues, OPG summarized the issues and reported that is has addressed, or is in the process of addressing, all of the issues to the satisfaction of the City officials. CNSC staff also stated that it has continued to follow up with the City to ensure that satisfactory progress is being made. CNSC staff further noted that OPG has engaged qualified experts to assist in these matters. The Commission’s findings on emergency preparedness and response provisions are discussed further in section 3.8 (Emergency Preparedness).

Based on this information, the Commission is satisfied that adequate design provisions are being made to ensure that Pickering NGS-B has the necessary fire protection measures.

3.6.7 Conclusions on Design Adequacy

On the basis of the information and reasons stated above, the Commission concludes that the design of Pickering NGS-B is adequate. The Commission is also satisfied that OPG has continued to modify the facility design in an appropriate and timely manner in response to new issues and as new information becomes available. Where deficiencies currently exist, the Commission is satisfied that appropriate compensating measures are in place.

3.7 Fitness for Service

In addition to considering the adequacy of the facility design (as discussed in the foregoing section), the Commission also considered whether OPG is maintaining the critical components of that design fit-for-service. This includes an examination of OPG’s maintenance program, the
monitoring and maintenance of the structural integrity of key components, and the reliability of special safety systems.

3.7.1 Maintenance

CNSC staff reported that, in its view, OPG’s maintenance program, and its implementation, meets CNSC requirements and expectations and continues to improve. CNSC staff had identified concerns in a few specific areas and OPG is preparing an action plan to address this.

OPG reported that, due to a number of program improvements, it has been successful in markedly reducing the backlog of preventative, corrective and on-line normal maintenance items. OPG further described some of the key features of its improved maintenance program, including: a work management system; accurate and up-to-date maintenance procedures; the use of a Fix-it-Now Team; in-service inspection and predictive maintenance programs; and the implementation of a Preventative Maintenance Optimization Program that has been applied and proven at other stations. OPG further noted that 33 systems are currently subject to a comprehensive integrated aging management program.

Based on this information, the Commission concludes that OPG has an acceptable maintenance program in place to help maintain the systems and equipment at Pickering NGS-B fit-for-service.

3.7.2 Structural Integrity

As a facility ages, it is important to continually assess the structural integrity of components that are important to safe operations. CNSC staff noted that the structural integrity assessment program at Pickering NGS-B focuses primarily on pressure tubes, feeder pipes and steam generator tubes. CNSC staff stated that, overall, OPG’s structural integrity program and its implementation meet the CNSC’s requirements and continue to improve.

Pressure Tubes:

Specifically with respect to reactor pressure tube integrity, CNSC staff reported that it is currently reviewing OPG’s revised Fuel Channel Aging and Life Cycle Management Strategy and Plan. CNSC staff also indicated that it continues to work with industry on a variety of initiatives aimed at refining the pressure tube fitness for service criteria and generally improving the management of fuel channel aging issues.

OPG added that it now has a better understanding of the mechanisms affecting pressure tube aging. OPG stated that its annually updated Fuel Channel Life Cycle Management Strategy and Plan (including inspections, surveillance, research and development, maintenance, operational experience, chemistry control and strict adherence to applicable CSA standards) continues to help improve that understanding. OPG expressed confidence in its current safety assessments.

OPG reported that it has completed full length inspections and deuterium content testing on a number of pressure tubes on each of Units 5, 6 and 8, and has recently completed Spacer
Location and Repositioning (SLAR) on Unit 5 to prevent calandria and pressure tube contact. OPG noted that all indications of flaws were adequately dispositioned.

Based on this information, the Commission is satisfied that the structural integrity of the pressure tubes at Pickering NGS-B is being adequately assessed and maintained.

**Feeder Pipes:**

With respect to the integrity of feeder pipes at Pickering NGS-B, CNSC staff expressed its satisfaction with OPG’s *Feeder Pipe Management and Aging Strategy* and fitness-for-service guidelines that were developed by the industry. CNSC staff noted that in-service inspection and engineering assessments of the remaining life of the feeder pipes were completed and that low rates of flow-assisted corrosion (FAC) were found. Also no cracks were detected.

OPG reported that pipe wall thinning rates at the Pickering NGS-B have historically been low; however, some recent indications of thinning were detected at Units 6 and 8. At present, OPG estimates that a small number of 2-inch diameter feeder pipes may need replacement prior to the end of the station life. OPG further noted, that while the feeder pipes were manufactured using a cold-bending method without stress relief (a process that creates a higher potential for stress corrosion cracking (SCC)), no cracks have been identified to date.

In response to the Commission’s questions to CNSC staff on FAC and SCC at Pickering NGS-B, CNSC staff stated that, although thinning is an issue, the pipes remain within the requirements of the applicable codes. CNSC staff also attested to OPG’s thorough level of inspection for cracking (every feeder pipe has been checked) and noted that inspections will continue to be done at each outage.

Based on the above information and considerations, the Commission concludes that the feeder pipes at Pickering NGS-B are fit-for-service and that appropriate steps are being taken by OPG and CNSC staff to verify that they remain so during the proposed licence period.

**Steam Generators:**

With respect to the integrity of the steam generators, CNSC staff reported that full inspections of the generators on all four units were completed during the current licence period. Water lancing and chemical cleaning was also completed on the steam generators at Units 5, 6 and 8. OPG noted that cleaning of the generators at Unit 7 is being done as part of the current outage. CNSC staff stated that, while the condition of the steam generators is favourable, continued monitoring is required as the equipment ages.

The Commission sought clarification on what is meant by the 100-tube limit and how it relates to the aging management strategy. In reply, OPG explained that 100 is the maximum acceptable number of tubes likely to develop leaks at the sites of pitting following a worse-case accident that causes an over-pressurization of the generators. The limit assures that the radioactive emission resulting from the leaks would still be within the regulatory derived release limits. OPG noted that, during its periodic inspections of the tubes, it plugs the tubes that do not meet
the requirements as a means of controlling the degradation of the steam generator overall. CNSC staff added that OPG’s plan and schedule for steam generator tube consequential leakage assessment is acceptable.

Based on this information, the Commission concludes that the steam generators at Pickering NGS-B are fit for service until at least the next scheduled maintenance outage. The Commission is satisfied that OPG has the necessary programs in place to continually reassess and maintain the integrity of the steam generators over time.

3.7.3 Reliability

As part of general fitness for service, it is important that key safety related systems not be unavailable for significant periods of time during operation. In this regard, CNSC staff reported that OPG is meeting requirements and improving. Although there were four short intervals of unavailability for site electrical systems, the unavailability targets were met for all safety systems. CNSC staff also reported that OPG has taken appropriate action to address issues concerning degrading equipment on safety-related systems.

The Commission noted the concerns of Citizens for Renewable Energy and Great Lakes United about the reported intervals of safety system unavailability.

OPG added that, during the past 11 years at Pickering NGS-B, there have been no instances where special safety systems have exceeded their annual unavailability targets. Safety-related system testing also continues to meet objectives and schedules.

Based on this information the Commission is satisfied with the reliability of the special safety systems at Pickering NGS-B.

3.7.4 Conclusions on Fitness for Service

Based on the above information, considerations and reasons, the Commission concludes that Pickering NGS-B is fit for service. The Commission notes that fitness for service will be continually reassessed at each maintenance outage. In this regard, the Commission is satisfied with the programs in place for the inspection and life-cycle management of safety-critical systems.

3.8 Emergency Preparedness

The CNSC requires that licensees, as part of their provisions for protection of persons and the environment in the conduct of their operations, be prepared to deal effectively with emergencies that may arise. In this regard, CNSC staff reported that it finds emergency preparedness at Pickering NGS-B (both the program and its implementation) to exceed CNSC expectations.
CNSC staff noted that OPG has updated its Consolidated Nuclear Emergency Plan and has reorganized the Emergency Preparedness Group to centralize key aspects of the plan that are applicable to both Pickering NGS and Darlington NGS.

CNSC staff indicated that the program was not formally evaluated in the current licence period, but that a major provincial exercise is planned for 2003. The exercise, originally planned for April 2003, was delayed until the fall of 2003 by Emergency Management Ontario due to other competing priorities. OPG stated that smaller on-site exercises are done regularly and that the emergency plan has been updated three times in the past licence period in response to findings. OPG also noted that it continues to consult regularly with local officials on the coordination of emergency response, including for example, the public alerting systems.

Citizens for Renewable Energy and Great Lakes United, in their interventions, expressed concern that the emergency plan had not been evaluated in a full-scale exercise since the last licence renewal. These intervenors questioned how CNSC staff could, as a consequence, rate the plan as “exceeding expectations”. Citizens for Renewable Energy and Great Lakes United recommend that a full-scale exercise be carried out as soon as possible and that such exercises be repeated at more regular intervals. In response to the Commission’s questions on these concerns of the intervenors, CNSC staff stated that, while there was no formal large-scale exercise of the plan in the current licence period, staff has undertaken a number of evaluations of the plan, including: various desk-top reviews; comparisons to applicable standards; formal and informal discussions with the various responsible parties; and examination of inspection results, performance indicators and minor events. CNSC staff noted that, although the full-scale exercise planned for April 2003 was deferred, OPG did carry out a partial rehearsal at which CNSC staff was present. CNSC staff’s expectations were met in that rehearsal. CNSC staff expressed its satisfaction with OPG’s state of readiness in terms of both people and equipment.

Citizens for Renewable Energy and Great Lakes United also expressed concern with OPG’s decision to centralize aspects of its emergency response capability. These intervenors are concerned that this may weaken the ability to respond to an emergency at the individual stations and questioned whether this was done to save money at the expense of safety. In response to the Commission’s questions on the rationale for the centralization, OPG explained that the centralization was not an amalgamation of the Darlington, Pickering and Head Office programs for the purpose of downsizing. OPG stated that the groups were integrated for effectiveness and efficiency and that each station continues to have dedicated emergency response teams on site.

In response to questions from the Commission concerning how OPG’s emergency plan is integrated with the off-site emergency response plans, a representative from Emergency Measures Ontario (EMO) stated that the plans are well integrated with the Ontario Nuclear Emergency Response Plan and that the plans are tested and exercised frequently at various levels. A major exercise is planned for 2003. EMO noted that there are quarterly meetings of the Nuclear Emergency Management Coordination Committee, on which OPG and the various other parties actively participate. EMO expressed confidence that the community surrounding Pickering NGS is prepared for nuclear emergencies and is satisfied that OPG is fully involved with the community in attaining a good standard of nuclear emergency preparedness.
As an example of emergency plan integration, OPG noted how OPG and Emergency Management Ontario collaborated to assist Durham Region with a communications plan related to the installation of a public alerting system within 3 kilometres of Pickering NGS.

Further on the matter of emergency plan integration, CNSC staff noted that it had recently hosted a series of multi-jurisdictional workshops on nuclear emergency preparedness and response, one of which focused on the nuclear generating stations in Ontario. The results of the workshop were presented to the Commission at a meeting of the Commission on May 21, 2003.

With reference to the reported personnel assembly and accounting drill that was done in October 2002, the Commission asked whether everyone was accounted for, including contractors’ staff. In response, OPG reported that all persons, including contractors’ staff, were accounted for during the drill. OPG noted, however, that there were some difficulties experienced in evacuating the large number of people from the site. This finding is being assessed for possible improvements.

Based on this information, the Commission concludes that emergency preparedness at Pickering NGS-B is adequate for the proposed licence renewal.

### 3.9 Security

CNSC staff reported that the security program at Pickering NGS-B and its implementation meet CNSC expectations, including compliance with the *Nuclear Security Regulations* and Commission Order 01-1. CNSC staff noted, however, that more effort is required by OPG in the area of preventative maintenance of security equipment. In response to a question from the Commission on this observation of CNSC staff, OPG indicated that it has reexamined its maintenance program and that it will replace equipment as required.

CNSC staff reported that a security exercise carried out in 2001 generally met the objective with only minor issues identified. The next exercise is planned for 2003.

OPG noted that since the events of September 11, 2001, security at Pickering NGS-B remains at an enhanced alert level.

Based on OPG’s performance, the Commission concludes that OPG has made, and will continue to make, adequate provisions for ensuring the physical security of Pickering NGS-B.

### 3.10 Non-Proliferation and Safeguards

CNSC staff reported that OPG’s program for the safeguarding of material and non-proliferation meets and, in several respects, exceeds expectations.

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

### 3.11 Decommissioning and Financial Guarantees

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 Pickering NGS-B, 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 it finds OPG’s Preliminary Decommissioning Plan and related Decommissioning Cost Study for Pickering NGS-B to be acceptable. To ensure the matter of the financial guarantee is resolved in a timely manner, CNSC staff recommended at the commencement of the hearing that the Commission add a condition to the licence which requires that a satisfactory financial guarantee be in place by July 31, 2003. During the course of this hearing on the proposed renewal of Pickering NGS-B operating licence (in the period between day-1 and day-2), the Commission considered, at a separate public hearing, the proposed financial guarantee for decommissioning for all of the Class I Nuclear Facilities operated by OPG and Bruce Power Inc. in Ontario, including for Pickering NGS-B. As documented in the Record of Proceedings, Including Reasons for Decision from that hearing (dated May 14, 2003), the Commission approved the financial guarantee and amended the current operating licence for Pickering NGS-B accordingly.

### 3.12 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 issuance of the licence to continue operations at Pickering NGS-B is not a trigger for such an assessment under the CEAA.

The Commission accepts this interpretation of the CEAA and therefore concludes that no further environmental assessment of the proposed operation of the Pickering NGS-B, pursuant to the CEAA, is required before the Commission may consider and make a decision on this licence application under the NSCA.

### 3.13 Public Information Program

CNSC staff noted that it continues to be satisfied that OPG’s public information program at Pickering NGS-B meets the applicable regulatory requirements. OPG outlined the various aspects of its public information program, including public presentations, meetings, performance
report cards, newsletters, education programs, and a Community Advisory Council with community representation.

The Canadian Workers Council and the MP for Whitby-Ajax (Ms. Judi Longfield), in their interventions, both attested to the high quality of OPG public information program.

Based on this information, the Commission is satisfied that the information program operated by OPG meets the regulatory requirements and is effective in keeping the public in the vicinity informed of the effects of the facility operations.

3.14 Licence Length and Interim Reporting

OPG is seeking a 5-year renewal of its operating licence. CNSC staff, with reference to its criteria for recommending licence lengths to the Commission (CMD 02-M12), recommended acceptance of a 5-year licence term.

Ms. Marian Martin, in her intervention, expressed concern over CNSC staff’s recommendation for a 5-year licence. Ms. Martin expressed concern about the age of the facility, its proximity to large populations and the incidents that have occurred during its operating history. Ms. Martin is of the view that a longer licence period has not been earned by OPG in this case and that the CNSC should not grant 5-year licences unless all performance evaluation areas are rated as “exceeding expectations”. In its consideration of Ms. Martin’s concerns, the Commission sought the views of CNSC staff on the list of safety-related incidents identified in her intervention. In response, CNSC staff confirmed that the incidents listed by Ms. Martin did occur, but that CNSC staff does not share Ms. Martin’s view with respect to their safety consequence and relevance to the current licensing recommendation.

The Citizens for Renewable Energy and Great Lakes United, in their interventions, expressed the view that a 5-year licence is too long. These intervenors recommended that the licence term be no longer than two years.

The Commission also noted the interventions by the Councils of the City of Pickering and the Town of Ajax. These neighbouring municipalities stated that they do not object to a 5-year licence, providing that they have an opportunity to provide their comments on the performance of the facility to the Commission at the time of the proposed mid-term CNSC staff report. The Commission noted that, while it is requiring CNSC staff to present a mid-term status report on performance at Pickering NGS-B at a public proceeding of the Commission, the procedures for this will be decided by the Commission at a future date. The Commission does, however, recognize and appreciate the desire of the local municipalities to be able to openly communicate their views to the CNSC. To assist in this regard, CNSC staff stated that it recently made presentations to the Councils and to the Pickering Finance and Operations Committee. CNSC staff stated that it is offering to make similar reports to the City of Pickering and the Town of Ajax on an annual basis.
The Commission considered the recommendations and views of CNSC staff and intervenors and decided that a 5-year licence is appropriate in the circumstances. With respect to interim reporting, the Commission requests that CNSC staff present a status report to the Commission on performance at Pickering NGS-B at the approximate mid-point during the term of the licence (the approximate mid-point is November 2005). The mid-term status report will focus on, but will not necessarily be limited to, those areas where OPG is currently not meeting CNSC expectations. The mid-term report will be presented at a public proceeding of the Commission. The Commission notes that it would accept the receipt and presentation of that report from CNSC staff at the same time that CNSC staff presents its regular annual report on the performance of the power reactor industry for the year 2005. The Commission further notes that, should a significant event or safety concern arise at Pickering NGS-B in the interim, CNSC staff will report this to the Commission at a public meeting in the form of a Significant Development Report. CNSC staff and the Commission are able to take regulatory actions at any time to address an immediate safety concern.

4. Conclusion

The Commission has considered the information and submissions of the applicant and CNSC staff as presented in the material available for reference on the record, as well as the oral and written submissions of intervenors provided at the hearing.

The Commission concludes that OPG is qualified to carry on the activity that the licence will authorize. The Commission also determined that OPG, 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.

The Commission therefore issues, pursuant to section 24 of the Nuclear Safety and Control Act, Nuclear Power Reactor Operating Licence PROL 08.00/2008 to Ontario Power Generation Inc. The licence is valid from July 1, 2003 to June 30, 2008, unless suspended, amended, revoked or replaced.
With this decision, the Commission requests that CNSC staff present a status report to the Commission on performance at Pickering NGS-B at the approximate mid-point during the term of the licence (the approximate mid-point is November 2005). The mid-term status report will focus on, but will not necessarily be limited to, those areas where OPG is currently not meeting CNSC expectations. The mid-term report will be presented at a public proceeding of the Commission.

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: May 21, 2003
Date of release of Reasons for Decision: June 25, 2003
### Intervenors

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<th>Intervenors</th>
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<td>Dan McTeague, M.P. Pickering-Ajax-Uxbridge</td>
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