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Synopsis of the Pickering B Integrated Safety Review Report

Ontario Power Generation (OPG) has completed the final Integrated Safety Review (ISR) report for the Pickering B station. The report concluded that the existing Pickering B station demonstrates a high level of compliance with modern codes and standards. The following is a synopsis of the ISR and its findings.

The objective of the ISR was to determine, by means of a comprehensive assessment of Pickering B Station, the following:

- Extent to which the plant conforms to modern high-level safety goals and requirements;
- Extent to which the licensing basis remains valid;
- Adequacy and effectiveness of the arrangements that are in place to maintain plant safety for long-term operation;
- Design and operational improvements required to address gaps with respect to modern safety requirements identified by the ISR process.

OPG established the objectives and requirements for the ISR in procedure N-PROC-LE-0001 "Pickering B Station Integrated Safety Reviews," which was written with consideration for the requirements of the Canadian Nuclear Safety Commission (CNSC) as documented in CNSC Regulatory Document, RD-360 "Life Extension of Nuclear Power Plants." RD-360 identifies that licensees are required to perform an ISR in accordance with International Atomic Energy Agency (IAEA) Safety Standards Series, Safety Guide No. NS-G-2.10 "Periodic Safety Reviews of Nuclear Power Plants." N-PROC-LE-0001 has been previously submitted to and accepted by the CNSC as the methodology for performing the ISR.

The 20-volume ISR report, completed over a three-year period and spanning more than 5,000 pages, is a comprehensive assessment of plant design, condition and operation. To facilitate the review, the ISR is divided into seventeen Safety Factors which ensure that all the CNSC Safety Areas identified in the RD-360 are addressed. Safety Factor reports were produced to document the methodology, assumptions, and findings of each review. In some cases, several Safety Factors were grouped together and reported in one safety factor report. Below is a listing of the Safety Factors:

- Plant Design
- Actual Condition of Systems, Structures, and Components
- Equipment Qualification
- Ageing
- Deterministic Analysis
- Probabilistic Analysis
- Hazard Analysis
- Safety Performance
- Use of Experience from other Plants and Research Findings
- Emergency Planning
- Environment
- Safeguards

- Security

Third-Party Verifications

At the request of OPG, the International Atomic Energy Agency (IAEA) performed a Technical Support Mission to review the OPG ISR process. The IAEA is the world's nuclear inspectorate, with more than four decades of verification experience. Their objective was to review the ISR process, completeness, and comprehensiveness of ISR Reports against NS-G-2.10 and other IAEA Safety Standards. The IAEA report stated that the Pickering B station ISR is a comprehensive review of all aspects of nuclear safety. Furthermore, the IAEA report stated that the Pickering B station ISR process:

- "...represents a good example of performing a systematic integrated safety review in full accordance with the IAEA Safety Guide NS-G-2.10 for assessing the extension of the station life beyond the predicted current end of service life and for identifying measures for the necessary refurbishment."

OPG's ISR process was demonstrated to be effective and in compliance with NS-G02.10 and hence complies with the requirements of RD-360.

In addition, an ISR Global Assessment was performed by a team of external nuclear power industry experts and represents a high-level horizontal analysis of the ISR results. The ISR Global Assessment also addressed the acceptability of associated risks for Pickering B station refurbishment study.

An initial assessment was performed in 2008, with a follow-up reassessment in 2009. The external team performed an assessment on the prioritizations, dispositions, and proposed corrective actions of individual gaps. In addition, an aggregate assessment was conducted of gaps that were identified in more than one Safety Factor.

Overall, the Global Assessment did not identify any significant issues that would limit the safe operation through extended life.

Summary

OPG has performed an ISR and prepared a Final ISR report for submission to the CNSC. The Pickering B stations ISR demonstrates a high level of compliance with modern codes and standards.

The Safety Factor reviews did not identify any issues that would limit safe long-term operation; no gaps were identified that would affect current safe operation. There were also no discrepancies identified in this report that require additional modifications to the plant to meet current safety standards.

All identified discrepancies have "low" or "least significant" safety significance level and were primarily process-related. OPG has practical strategies in place for all discrepancies.

Any proposed discrepancy resolutions represent safety enhancements, are not requirements, and will only be undertaken for the refurbishment scope.