

Synopsis of the Darlington Integrated Safety Review

The Darlington Integrated Safety Review (ISR) was submitted for technical review to the Canadian Nuclear Safety Commission staff on October 27, 2011. An ISR is a comprehensive assessment of plant design, condition and operation. The requirements for an ISR are identified by the Canadian Nuclear Safety Commission in Regulatory Document 360 (RD-360) "Life Extension of Nuclear Power Plants"¹. The ISR confirmed that the Darlington Nuclear Generation Station (DNGS) is well positioned for safe long-term operation.

The ISR involved an assessment of the design, condition, and operations of Darlington to determine current plant condition, the extent to which it conforms to modern standards and practices, and to confirm whether adequate arrangements are in place to ensure safe, long-term operation. OPG conducted the ISR for Darlington in a thorough and robust manner, utilizing third-party verification on the process and method used as well as the results of the studies. The 12-volume ISR report was completed over a three-year period and contained more than 10,000 pages.

The ISR demonstrates that Darlington has a high level of compliance with modern codes and standards. Identified discrepancies were of low or very low safety significance level and were primarily process-related. Through two addenda reports submitted in June and December 2013, OPG confirmed that updates in governance, completion of ongoing projects, and the provision of additional supporting information on compliance with national and international programs would address any remaining issues. The CNSC reported on the ISR review and OPG's addenda reports in their letters of July 2013, February 2014 and March 2014. CNSC staff accepted that the ISR met the expectations provided in RD-360.

The ISR did identify some enhancements to the design of the plant and to the processes used to operate it that will further reduce the extremely low risk to the safety of the public and the environment.

The actions OPG is taking in response to these findings have been documented in the Integrated Improvement Plan (IIP). The IIP contains the scope and timeframes for implementation of the safety improvements resulting from the EA and the ISR. The IIP will be updated as OPG continues to respond to the CNSC review.

In addition to the ISR and related addenda reports, OPG also submitted the DNGS Integrated Safety Review Emerging Issues Report to the CNSC on February 19, 2014. The Emerging Issues Report (with two of three supplemental reports submitted) provides an assessment of the changes that have been made to the applicable codes and standards and identifies and addresses any new significant industry Operating Experience (OPEX) since the original ISR was submitted.

¹ OPG established the objectives and requirements for the ISR in N-PROC-LE-0005 "Nuclear Refurbishment Integrated Safety Review – Darlington." This procedure 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-0005 was submitted to and accepted by the CNSC as the methodology for performing the ISR.

The assessment of the updates to the codes and standards did not identify any significant issues requiring further action. A few of the updates have resulted in OPG including additional procedural changes, additional analysis, or design changes in the IIP. The Emerging Issues Report also concluded that OPG has external safety OPEX review processes in place which are valid and effective.

The intent of the ISR and Emerging Issues Report is to ensure that DNGS, when the operating licence is renewed, has been fully reviewed against modern codes and standards, and that action plans are in place that will enhance future safe operation.

The ISR, an Environmental Assessment (EA), and a Global Assessment, together with the IIP, form the basis on which OPG has concluded that the Darlington station can safely operate for 30 years post-refurbishment.