Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Written Submission from the Darlington and Pickering Nuclear Generating Stations

Mémoire des centrales nucléaires de Darlington et de Pickering

In the matter of the

Status of licensee research and development commitments on elevated hydrogen equivalent concentration in pressure tubes

À l'égard de l'

État des engagements en matière de recherche et développement de titulaires de permis sur les concentrations élevées d'hydrogène équivalent dans les tubes de force

Commission Meeting

Réunion de la Commission

March 2026

Mars 2026

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Canada

ONTARIO POWER GENERATION

1908 Colonel Sam Drive, Oshawa, ON L1H 8P7

OPG Proprietary

January 23, 2026

CD# N-CORR-00531-24908 P

Ms. Candace Salmon
Commission Registrar
Legal and Commission Affairs Branch
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario, K1P 5S9

Dear Ms. Salmon,

Darlington and Pickering NGS - Update to Commission on Activities Related to Elevated Hydrogen Equivalent Concentrations in Rolled Joints

The purpose of this letter is to provide an update to the Commission, regarding OPG's progress on the research and development (R&D) activities regarding elevated hydrogen equivalent concentrations ([H_{eq}]) in the inlet and outlet rolled joint (RJ) regions of the pressure tube (PT).

Attachment 1 provides background information on the elevated [H_{eq}] concentration observations in inlet and outlet rolled joints in Pickering 5-8 and the establishment of the R&D roadmap process, a recent status of the R&D roadmap activities which outlines all completed R&D roadmap activities scheduled for completion up to end of 2025, and supplemental information that further supports OPG's position that the PTs currently operating in Pickering 5-8 units remain fit-for-service.

As outlined in Attachment 1, work completed under the Industry R&D roadmap program has supported that observations of elevated [H_{eq}] regions in the inlet region of interest (IROI) are limited to a "blip", which remains on the PT outside diameter (OD) at a fixed axial location and circumferential range. Extensive inlet RJ modelling activities have shown that the presence of a blip on the PT OD has minimal impact on a postulated flaw tip hydrided region closer to the PT inner diameter (ID). This confirms that there is no interaction between a flaw on the PT ID and a blip on the PT OD. Volumetric inspections from Pickering 5-8 have continued to demonstrate that no flaws requiring disposition exist in the IROI providing additional assurance that the risk of crack initiation is very low.

For the outlet region of interest (OROI), data and RJ modelling activities demonstrate that the OROI will not expand to regions of the PT that are subject to active flaw formation mechanisms in Pickering 5-8 units. This is supported by PT surveillance and in-service scrape measurements that have demonstrated consistent observations of elevated [H_{eq}] regions in the OROI to be limited to 120 degrees on the upper half of the PT. These measurements and associated modelling support the mechanism of the circumferential redistribution of [H_{eq}] from the bottom of the PT to the top of the PT in the outlet RJs due to temperature gradients from top to bottom caused by PT diametral expansion. Extensive outlet RJ modelling activities demonstrate the ability to model the [H_{eq}] evolution in the outlet RJ with circumferential temperature gradients.

Industry R&D work has also further validated existing crack initiation models and has supported development of approaches for evaluating flaws for risk of crack initiation at elevated [H_{eq}]. Experiments have been completed on the crack initiation properties with low levels of bulk [H_{eq}] and high levels of bulk [H_{eq}] greater than 200 ppm in unirradiated and irradiated specimens. Based on the results of the experiments the industry has developed approaches for evaluating flaws for crack initiation due to delayed hydride cracking (DHC), hydrided region overloads, and fatigue with bulk [H_{eq}] up to 240 ppm.

Completion of these roadmap activities has provided OPG and industry partners an improved understanding of the mechanisms and influential parameters responsible for the elevated [H_{eq}] concentrations in the inlet and outlet RJ regions. As a result, this improved understanding is being incorporated into the comprehensive [H_{eq}] model, which is on track to be completed by Q2 2026 as scheduled and to be submitted to CNSC staff in the Q3 2026 semi-annual update.

OPG's current conclusions on PT fitness-for-service are not impacted by elevated [H_{eq}] in the rolled joint regions of interest, as supported by completed roadmap activities to date. OPG will continue to address PT fitness-for-service using evaluations in accordance with Licence Condition 6.1 and in-line with CNSC staff response (Reference 1) to OPG's latest submission on elevated [H_{eq}] (Reference 2).

Should you have any questions, please contact Mr. Alec MacDonald, Senior Manager, Major Components Engineering, at [redacted], or by e-mail at [redacted].

Sincerely,

Mark R. Knutson, P.Eng.
Senior Vice President Enterprise Engineering,

Chief Enterprise Engineer and Chief Nuclear Engineer
Ontario Power Generation Inc.

Attach or Encl

cc:

N. Kline	- CNSC (Ottawa)
B. Carr	- CNSC (Ottawa)
V. Tavasoli	- CNSC (Ottawa)
C. Chan	- CNSC Site Office (Darlington)
C. Krasnaj	- CNSC Site Office (Pickering)

Reference:

1. CNSC Letter, K. Lun and R. Richardson to M.R. Knutson, “Darlington and Pickering NGS: CNSC Staff Review of Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #6 (Quarter 3 2025) – Action Item 2023-OPG-27200”, December 5, 2025, eDoc 7608165, CD# N-CORR-00531-24875.

2. OPG Letter, M.R. Knutson to K. Lun and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #6 (Quarter 3 2025)”, September 30, 2025. CD# N-CORR-00531-24718.

ATTACHMENT 1

OPG letter, Mark R. Knutson to C. Salmon, “Darlington and Pickering NGS - Update to Commission on Activities Related to Elevated Hydrogen Equivalent Concentrations in Rolled Joints”

CD# N-CORR-00531-24908 P

Status Update on the Industry’s Elevated Hydrogen Equivalent Concentration Roadmap Activities in Inlet and Outlet Rolled Joint Regions

Prepared By: **M. Poloni**

Checked By: **J. Lam**

Status Update on the Industry’s Elevated Hydrogen Equivalent Concentration Roadmap Activities in Inlet and Outlet Rolled Joint Regions

Background

In July 2021, Bruce Power reported elevated [Heq] observations in the outlet RJ regions of surveillance PT B6S13 and from the 2021 Bruce Unit 3 (A2131) RJ scrape campaign. A review of the A2131 scrape measurements identified some PTs with a localized region in the upper half of the PT in the outlet RJ known as the outlet region of interest (OROI) with a large circumferential variation. In November 2021, elevated [Heq] observations were also reported in the inlet RJ region of PT B6S13, specifically a localized peak (i.e., blip) of [Heq] on the outside surface of the PT and 10 mm inboard of the burnish mark (BM) known as the inlet ROI (IROI). Subsequent in-service measurements and pressure tube material surveillance from Pickering 5-8 units identified similar outlet rolled joint behavior as was seen in B6S13 and A2131 scrape measurements.

Since its discovery, OPG and industry partners established an [Heq] concentration roadmap process to integrate industry efforts related towards a mechanistic understanding and predictive modelling of [Heq] in the inlet and outlet RJs through a number of activities. In July 2022, OPG provided a report to the Commission summarizing the activities to address elevated [Heq] in PT RJs in [A-1]. CNSC staff initiated Action Item 2023-OPG-27200, in [A-2], to track the semi-annual progress updates on elevated [Heq] concentration roadmap activities and address CNSC staff comments identified during their review of these updates. The Licence Condition Handbook (LCH) included a new Section 6.2, Fitness for-Service Program for Fuel Channels in Extended Operation which includes limits of applicability for [Heq] in the fitness-for-service assessment models.

Semi-annual updates on these [Heq] roadmap activities were submitted to CNSC staff in [A-3] through [A-8] with the most recent semi-annual update provided in Q3 2025 [A-8]. In January 2025, OPG also provided an update to the Commission on the R&D activities to address elevated [Heq] in the inlet PT RJs [A-10].

Annual industry workshops and technical meetings were held with CNSC staff since 2022 with the most recent workshop on October 30-31, 2025. Following the workshop, OPG provided additional information to CNSC staff [A-10] to support the conclusions of the Q3 2025 update.

Status Update on Industry Elevated [Heq] Roadmap Activities

Table A-1 below provides a status update on the elevated [Heq] concentration roadmap R&D activities.

Table A-1: Status Update on Elevated [Heq] Concentration Roadmap R&D Activities

R&D Activity	Submission	Status of R&D Activities
Update finite element software to simulate outlet rolled joint [H_{eq}] evolution	Q1 2024	Complete. Development of the finite element outlet RJ [H_{eq}] model was documented and submitted in [A-5].
Develop finite element software to simulate inlet rolled joint [H_{eq}] evolution	Q1 2024	Complete. Development of the finite element software and procedure to simulate the inlet rolled joint [H_{eq}] evolution was completed in 2022 and first submitted in Update #1 [A-3]. Since then, improvements to the finite element analysis model have been incorporated; new models were resubmitted in Update #3 [A-5]. Documentation of the further improved finite element analysis models and simulation procedure were submitted in [A-7].
Perform evaluation to assess the potential impact of the high levels of [H_{eq}] on flaws at the inside surface of pressure tubes near the inlet region of interest.	Q1 2024	Complete. The evaluation results with the improved finite element analysis model and simulation procedure to assess the potential impact of high [H_{eq}] blip on a postulated flaw at the inside surface of the PT in the inlet RJ were submitted in [A-5].
Improve characterization of 'blip' and expected evolution of the inlet region of elevated [H_{eq}] with continued operation.	Q3 2024	Complete. Characterization of the elevated [H_{eq}] concentrations in the inlet RJs from surveillance and ex-service PTs from Bruce, Pickering B and Darlington fuel channels were completed. Reports documenting the characterization of the [H_{eq}] blip were provided in Updates #3 and #4 [A-5][A-6].
Confirm the potential roles of hydrogen isotope ingress and redistribution on the development of the inlet regions of elevated [H_{eq}]	Q4 2023	Complete. The report documenting the hydrogen/deuterium sampling results performed on removed pressure tubes was first submitted in Updates #2, and continuing work in Updates #3 and #4 [A-4][A-5][A-6].
Improve characterization of solubility behaviour of hydrogen isotopes in tubes with elevated [H_{eq}].	Q1 2024	Complete. The report documenting the results of hysteresis and thermal gradient testing was submitted in Update #3 [A-5].
Enhance modelling of temperature distributions near the outlet rolled joint region of pressure tubes	Q1 2024	Complete. A report summarizing the enhanced modelling of temperature distributions near the outlet RJ in PTs was provided in Update #3 [A-5].
Define input parameters required for interim updates to the [H_{eq}] model	Q3 2023	Complete. Documentation of the input parameters defined for outlet RJ modelling was provided in Update #2 [A-4]. Documentation of the input parameters defined for interim inlet RJ modelling was provided in Update #2 [A-4]

Develop interim [H_{eq}] model	Q1 2024	Complete. Reports documenting the interim inlet and outlet RJ [H_{eq}] models were submitted as part of Update #3 [A-5].
Validation activities for the interim [H_{eq}] model to support development of final comprehensive model	Q3 2025	Complete. Activities confirming the continued validity of the interim inlet RJ [H_{eq}] model (i.e., sensitivity cases to various parameters, benchmarking exercises with the outlet RJ [H_{eq}] model, and smaller time steps to achieve better convergence) were documented and submitted in [A-5] and [A-8]. For the interim outlet RJ [H_{eq}] model, periodic review confirming its continued validity were documented in reports submitted in References [A-5] and [A-8].
Define input parameters required for the final comprehensive [H_{eq}] model	Q3 2025	Complete. Documentation of the final inputs to the inlet and outlet RJ [H_{eq}] models to account for temperature, stress, ingress, and hydrogen isotope solubility impacts on [H_{eq}] evolution was submitted in [A-8].
Define the relative importance of variables influential to [H_{eq}] evolution	Q3 2025	Complete. The relative importance of variables influential to [H_{eq}] evolution was determined for both the inlet and outlet rolled joints through a sensitivity study and parametric study performed to the modelling. These sensitivity studies were included in Updates #3 and #6 for inlet RJ modelling [A-5][A-8] and Updates #2, #5, and #6 for outlet RJ modelling [A-4][A-7][A-8].
Develop the final comprehensive [H_{eq}] model	Q3 2026	During the industry workshop on elevated [H_{eq}] on October 30-31, 2025, a progress update on the comprehensive outlet RJ [H_{eq}] model was provided to CNSC staff. Development of the final comprehensive [H_{eq}] model is on track for completion by Q1 2026 followed by documentation of the model by Q2 2026. Submission of the comprehensive [H_{eq}] model to the CNSC is planned for Q3 2026.
Complete hydride related cracking experiments for unirradiated material at [H_{eq}] of 220 ppm or higher	Q3 2025	Complete. A report documenting the results from hydride related cracking experiments for unirradiated material at high [H_{eq}] is provided in [A-8].
Complete fatigue crack initiation experiments for unirradiated material at [H_{eq}] of 220 ppm or higher.	Q3 2025	Complete. A report documenting the results of the fatigue crack initiation experiments was provided in [A-8].
Complete crack initiation experiments for irradiated material with elevated [H_{eq}] without flaws present.	Q3 2025	Complete. A report documenting the results of the crack initiation experiments for irradiated material with elevated [H_{eq}] was provided in [A-8].
Complete crack initiation and crack growth experiments for irradiated material with elevated [H_{eq}] with flaws present.	Q3 2025	Complete. A report documenting the results of the crack growth experiments was submitted in [A-8].

Supplemental Information Supporting Closure of Action Item 2023-OPG-27200 and Demonstration of Pressure Tube Fitness-for-Service with Elevated [Heq] in the Inlet and Outlet Rolled Joint Regions

Key observations and results from the roadmap activities in Table A-1 are summarized as follows:

Inlet Region of Interest (IROI)

- PT surveillance has demonstrated observations of elevated [Heq] regions in the IROI to be limited to a “blip”, which is on the PT outside diameter (OD). This observation is consistent with finite element modelling which has reproduced blip observations across a range of sensitivity cases.
- Extensive inlet RJ modelling activities have shown that the presence of a blip on the PT OD has minimal impact on a postulated flaw tip hydrided region closer to the PT inner diameter (ID). This supports that there is no interaction between a flaw on the PT ID and a blip on the PT OD and demonstrates a low risk of crack initiation in the IROI.
- For Pickering 5-8, volumetric inspections performed to date have not detected any dispositionable flaws in the IROI; this is due to the placement of Pickering 5-8 shield plugs in this region mitigating active flaw formation mechanisms associated with debris or fuel bundle fretting.

Outlet Region of Interest (OROI)

- PT surveillance and in-service scrape measurements have demonstrated consistent observations of elevated [Heq] regions in the OROI to be limited to 120 degrees on the upper half of the PT.
- Similarly to the IROI, volumetric inspections performed to date continue to support that the risk of flaw formation mechanisms in the OROI region is low due to the placement of Pickering 5-8 shield plugs.
- Evidence of the circumferential redistribution of [Heq] from the bottom of the PT to the top of the PT in the outlet RJs was observed due to PT diametral expansion and associated circumferential gradients in temperature.
- Extensive outlet RJ modelling activities demonstrated the ability to model the [Heq] concentrations in the outlet RJ with the circumferential temperature gradients.

OPG and industry partners have completed all R&D roadmap activities scheduled for completion up to the end of 2025. The remaining item from the elevated [Heq] roadmap is the documentation of the comprehensive [Heq] model which remains on track to be completed by Q2 2026 and included in the Q3 2026 semi-annual update.

Supplemental Information Supporting Closure of Action Item 2023-OPG-27200 and Demonstration of Pressure Tube Fitness-for-Service with Elevated [Heq] in the Inlet and Outlet Rolled Joint Regions

OPG and industry submitted the following documentation in the 2025 Q3 semi-annual update in [A-8] to demonstrate that the PTs currently operating in OPG units remain fit for service and safe for operation with elevated [Heq] in the inlet and outlet RJs to support closure of Action Item 2023-OPG-27200.

- Industry position paper on the approach for modelling [H_{eq}] in the inlet and outlet RJs and providing conservative bounding RJ predictions of [H_{eq}] for end-of-life conditions for Pickering B.

- Documentation of the industry’s current understanding of delayed hydride cracking (DHC), hydrided region overloads, and fatigue for high levels of bulk [H_{eq}] based on the experiments completed in the elevated [H_{eq}] roadmap process. Recommended approaches for evaluating flaws for crack initiation due to DHC, hydrided region overloads, and fatigue for bulk [H_{eq}] values of between 120 and 240 ppm and for bulk [H_{eq}] values greater than 240 ppm were documented.

- Documentation of the industry’s current understanding of DHC, hydrided region overloads, and fatigue for through-wall gradients of high [H_{eq}].

The industry position paper on elevated [Heq] and associated supplemental information concluded that:

1. In modelling cases with bounding inputs, the inlet ROI remains limited to the “blip” on the pressure tube outside diameter, and this blip remains confined axially and circumferentially, with this behavior validated across a range of sensitivity cases exploring effects of various parameters. Therefore, the existing ROI definition for the IROI was assessed to remain adequate.
2. There is low risk of crack initiation in the inlet ROI due to the absence of any flaws of significance in this region for Pickering 5-8. In the very unlikely situation of a flaw existing in this region, there is limited impact of the presence of a blip on a postulated flaw tip hydrided region and thus the risk of crack initiation remains low. Evaluation methods to conservatively account for potential [Heq] effects are available to evaluate flaws, if necessary.
3. Modelling using very conservative inputs confirm that for Pickering 5-8 the outlet ROI (defined against the currently accepted limit for fracture toughness models) would be limited to a maximum circumferential extent of 120 degrees (+/- 60 degrees from top of tube) on the upper portion of the pressure tube at the burnish mark and an axial extent of 149 mm from the end of the pressure tube (79 mm inboard of the burnish mark) and thus would remain confined to the region covered by the shield plugs.

4. The risk of a crack initiation in the OROI is very low due to the absence of active in-service flaw formation mechanisms in this region and the limited extent of the region in Pickering 5-8 units.

Additional information provided in the Q3 2025 submission and additional supplemental information provided to support CNSC staff review addressed the following

For the inlet ROI:

- A technical basis report supporting the industry position paper submitted in [A-10] provided inlet RJ [Heq] bounding predictions for Pickering 5-8 (1) with and without a blip and (2) with and without a postulated flaw. Additional details were provided in the technical basis report on the finite element simulation procedure, the evaluation matrix, justification of the selection of input parameters for each of the finite element simulation cases and discussion of the Pickering 5-8 stress, temperature and simulation results.
- A sensitivity study has been performed to demonstrate fracture protection even in an unlikely scenario where a flaw on the pressure tube inside diameter grows through-wall and intersects with a blip on the pressure tube outside diameter. The sensitivity study used different combination of postulated through-wall flaw lengths and locations of the flaw and the blip; for a crack initiating at the burnish mark, the crack intersecting regions of high [H_{eq}] would be expected to be 14 mm in length or less. Using 97.5 percentile lower bound fracture toughness, flaw stability would be predicted for all Service Level transients for a 14 mm crack.

For the outlet ROI:

- A technical basis report supporting the industry position paper submitted in [A-10] provided the bounding outlet RJ [Heq] profile for Pickering 5-8 PTs using Pickering 7 at end-of-life conditions as the bounding unit. Additional details were provided in the technical basis report on the ORJ [Heq] prediction methodology using the interim outlet RJ [Heq] model, and justification of the selection of analysis inputs to generate the conservative bounding ORJ [Heq] predicted profile at end of-life conditions for Pickering 5-8 PTs. These predictions utilized a number of bounding and conservative assumptions that together resulted in significant overpredictions of some measured data (particularly inboard of the burnish mark), but provided a worst-case scenario for ORJ [Heq] levels.
- A report documenting refinements to the outlet RJ modelling resulting in predictions that more accurately reflected bounding measurements in outlet RJ [Heq] profiles for Pickering 5-8 was also provided in [A-10]. This refined bounding ORJ [Heq] profile generated for Pickering 5-8 provided a more realistic but still conservative bounding profile compared to the bounding ORJ [Heq] profile in the industry position paper. This refined profile is still expected to bound any future measurements prior to Pickering 5-8 end-of-life.

For the outlet ROI, [Heq] is not expected to exceed 140 ppm (the currently accepted validity limit for fracture toughness models) beyond 96 mm from the end of the pressure tube (or 26 mm beyond the burnish mark), and thus remains well within previous definitions of the OROI set by CNSC staff. For Pickering 5-8, there are no regions within tensile portions of the pressure tube expected to exceed the new applicability limits for revised crack initiation procedures to address elevated [Heq].

Within the industry position paper submitted as part of [A-8], a comparison between bounding worst-case predictions and the locations of pressure tube flaws was included. These comparisons demonstrated that the risk of either the IROI or OROI interacting with regions with active in-service flaw formation mechanisms remains very low.

Based on the combined consideration of the measured values of [Heq] from in-situ scrapes and surveillance pressure tubes, the conservatism of the predicted bounding [Heq] profiles, applicability and validity limits of the engineering models for evaluation of crack initiation and fracture toughness (irrespective of the circumferential position of the blip), and the regions of the pressure tube free from inspected dispositionable flaws, OPG maintains that pressure tube structural integrity for high levels of [Heq] in the inlet and outlet ends of Pickering 5-8 units has been demonstrated to the target end of life.

References

[A-1] OPG Letter, M. R. Knutson to D. Saumure and A. Viktorov, “OPG Response – Darlington and Pickering NGS – Request for an Update to the Commission on Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration (Heq) – New Action Item 2022-OPG-23135”, July 19, 2022, CD# N-CORR-00531-08536.

[A-2] CNSC Letter, A. Mathai and R. Richardson to M. R. Knutson, “Darlington NGS and Pickering NGS – Detailed Plan to Further Evaluate the Effect of Elevated Hydrogen Equivalent Concentration on Pressure Tube Fitness for Service – New Action Item 2023-OPG-27200”, March 14, 2023, e-Doc# 6956470, CD# N-CORR-00531-23623.

[A-3] OPG Letter, M. R. Knutson to A. Mathai and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #1 (Quarter 1 2023)”, March 27, 2023, CD# N-CORR-00531-23603.

[A-4] OPG Letter, M. R. Knutson to A. Mathai and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #2 (Quarter 3 2023)”, September 29, 2023, CD# N-CORR-00531-23799.

[A-5] OPG Letter, M. R. Knutson to A. Mathai and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #3 (Quarter 1 2024)”, March 28, 2024, CD# N-CORR-00531-23960.

[A-6] OPG Letter, M. R. Knutson to A. Mathai and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #4 (Quarter 3 2024)”, September 27, 2024, CD# N-CORR-00531-23913.

[A-7] OPG Letter, M. R. Knutson to A. Mathai and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #5 (Quarter 1 2025)”, March 31, 2025, CD# N-CORR-00531-24453.

[A-8] OPG Letter, M. R. Knutson to K. Lun and R. Richardson, “Darlington and Pickering NGS – Activities Related to the Discovery of Elevated Hydrogen Equivalent Concentration Semi-Annual Update #6 (Quarter 3 2025)”, September 30, 2025, CD# N-CORR-00531-24718.

[A-9] OPG Letter, M. R. Knutson to A. Viktorov and C. Salmon, “Darlington and Pickering NGS – Progress Update on Industry R&D Plan for Elevated Hydrogen Equivalent Concentrations in the Inlet Rolled Joint Region, Action Item 2023-OPG-27200”, January 27, 2025, CD# N-CORR-00531-24390.

[A-10] OPG Email, S. Reid to N. Kline, “Submission of Supplemental Information Supporting OPG Q3 2025 Semi-Annual Update on Elevated [Heq]”, November 21, 2025, CD# N-CORR-00531-24828.

Summary of Regulatory Commitments, Regulatory Obligations and Regulatory Management Actions Made/Concurrence Requested

CD# N-CORR-00531-24908 P

Submission Title: **Darlington and Pickering NGS - Update to Commission on Activities Related to Elevated Hydrogen Equivalent Concentrations in Rolled Joints**

Regulatory Commitments (REGC):

No.	Description	Date to be Completed
	None	

Regulatory Management Action (REGM):

No.	Description	Date to be Completed
	None	

Regulatory Obligation Action (REGO):

No.	Description	Date to be Completed
	None	

Concurrence Requested: None