



Stakeholder Session Notes

OPG's Darlington Power Reactor Operating Licence Renewal Application

February 19, 2015

Mini Auditorium
Mezzanine Level
700 University Avenue, Toronto

Table of Contents

#	Section	Page
1.0	Introduction	3
2.0	Application Overview	3
3.0	Environmental Protection	6
4.0	Emergency Management	9
5.0	Refurbishment RD360 Requirements	11
6.0	Stakeholder Issues/Discussion	13
7.0	Session Agenda	16
8.0	Participants	17

1. Welcome and Introductions, Laurie Swami, Senior Vice President, Decommissioning and Nuclear Waste Management

Laurie Swami, Senior Vice President, Decommissioning and Nuclear Waste Management at OPG welcomed participants and provided context for the day's session. She explained that the licence renewal application is for the Darlington Nuclear Generating Station and that OPG is taking the opportunity to ensure stakeholders are informed and have the opportunity to ask questions about the application early in the licensing review process.

All participants were provided a binder which contained a copy of the licence application and addendum, the Integrated Improvement Plan and copies of the presentation materials. Session notes will be prepared, circulated and when finalized posted.

A stakeholder commented that it would be good for the session notes to be circulated to OPG senior management so that they would be aware of the stakeholder's perspectives.

Kevin Powers of OPG, in his capacity as Facilitator, outlined the logistics and round-table format for the session. Brief self-introductions, i.e. name and affiliation, followed.

2. Application Overview, Robin Manley, Director, Nuclear Regulatory Affairs and Stakeholder Relations

Mr. Manley provided an overview of the Canadian Nuclear Safety Commission (CNSC) licence renewal process, as well as the structure and content of OPG's licence renewal application materials (original submission and addendum). He noted that OPG is seeking a 13 year licence term.

He stated that OPG relies on a managed system to ensure Darlington is operated and maintained using sound nuclear safety and defence-in-depth practices and to ensure radiological risks to workers, the public, and environment are low. He noted that the application and supporting documentation demonstrates that OPG has a robust managed system in place to ensure Darlington is safe today and will remain so throughout requested licence term.

He explained that the CNSC is in the process of implementing new regulatory requirements for longer term licences based on Periodic Safety Reviews (consistent with international practice). The governing documentation "Reg Doc 2.3.3 *Integrated Safety Reviews*" is expected to come into effect in 2015, and was published in draft form for public review and comment in 2014. OPG is relying on the draft for its planning purposes.

He provided a high level overview of two areas in the application:

- Safety Analysis – in this area Mr. Manley discussed the differences between Deterministic Safety Analysis (Safety Report) and Probabilistic Safety Analysis (PSA), and noted that an updated Darlington PSA would be prepared and a summary version published; and
- Fitness for Service – in this area Mr. Manley discussed the process used to inspect Major Components (Fuel Channels, Feeders, and Steam Generators) and how that helped determine which components required replacement.

He noted that separate presentations will be provided on two areas Environmental Protection and Emergency Management as they are areas of much stakeholder interest. Mr. Manley was

asked by Ms. Swami to discuss the nature of the directive that OPG received, following events at Fukushima, which he did.

There was considerable discussion regarding the Canadian Nuclear Safety Commission and the role of the inspectors including:

- whether the inspectors rotated between plants and/or between operators;
- how often OPG would meet with the inspectors before the CNSC would issue a letter or directive;
- whether an operator had ever had a licence suspended or revoked;
- whether an OPG plant had ever been de-rated/had its output reduced by the regulator;
- the types of compliance actions OPG had received from the CNSC for Darlington;
- the nature of the actions included in the CNSC 12.2 directive that OPG received post-Fukushima; and
- Whether a flooding assessment was required and plant upgrades made.

OPG provided the following answers (note OPG does not speak for the CNSC):

- the inspectors have rotated between plants and between operators;
- OPG meets with inspectors regularly, if the inspectors find a situation they will review the facts with OPG to see if there is any other information that OPG can share, however OPG does not have an opportunity to review the CNSC letter or directive before it is issued;
- there are licensees who have had their licence suspended or revoked, however no power reactor operator licence has ever been suspended or revoked;
- there had been a time when OPG's plants had been de-rated;
- an example of a compliance action that OPG had to address was with respect to radiation monitoring devices, the CNSC inspectors found that they weren't calibrated to the frequency needed and OPG was required to adjust the frequency of calibrations; and
- an example of an action in the 12.2 directive following Fukushima included an immediate action for all licensees to evaluate safety against more extreme scenarios and develop action plans, it included a flood assessment and upgrades were made to the plant, certain areas needed a flood barrier.

A stakeholder asked about the procedure to notify CNSC, specifically what determines when OPG needs to inform the CNSC about a safety related issue and whether it was expert judgement or actual triggers. OPG indicated that Regulatory Document 3.1.1 has replaced S-99; it requires OPG to inform the CNSC about various matters, within certain time frames, including matters that put the plant outside of the safety case. For example if there was a research finding that demonstrates less safety margin on a Large Break Loss of Coolant Accident, OPG would have to tell the CNSC pursuant to Reg Doc 3.1.1.

A concern was raised that all of the correspondence between OPG and the regulator are part of the licensing basis however it is not consolidated – why not translate all of the correspondence into a consolidated set of requirements that would make it more transparent and make this available for plant operators. The stakeholders noted that this is an ongoing issue for hearings, the logic in some of the discussion is not easily found. One stakeholder mentioned that even the CNSC couldn't find a footnote in a licensee submission. It was suggested that perhaps making the Operating Policies and Principles available to stakeholders or something in a more concise form would help address concerns in this area.

Regarding plant operators, Ms. Swami explained that nuclear power plants are regulated on the basis of a managed system which include policies and procedures, training, and guides for staff (which they are required to follow), among other things.

Mr. Manley further noted that OPG seeks to continually improve in this regard, but may not meet the full expectations of the stakeholders. He noted that for the Pickering relicensing hearing more documentation was made available than ever before, and for Darlington relicensing OPG is going an order of magnitude higher in providing not only the application but all of the reference materials cited in the application (except where proprietary, prescribed or personal).

In OPG's judgement the documents that are being referenced are the ones that are most relevant. OPG is attempting to not bury stakeholders under mounds of useless information, but ensure that the most relevant and important information is available.

There was discussion regarding the need to purchase CSA Standards. It was clarified that the CSA has a policy where you can register as a non-governmental organization and receive the CSA Standards free of charge.

A stakeholder noted that there is a sense of lack of transparency, a sense of secrecy and if that sense or perception exists it doesn't bode well for the 'social licence' that OPG seeks. Another stakeholder noted that it is not clear what the requirements and margins are.

In that regard a stakeholder recommended that it would be most helpful if the references were hyperlinked in the application.

Another stakeholder added that while OPG and the CNSC may be doing their best to make information available, another layer/area is with respect to the key trade-offs that need to be made as these are not shared publicly. It would be helpful to have a short summary type document that speaks to the levels of protection provided, what they are, and what has to be done at certain points, something like metrics. This type of transparency in decision-making would open the eyes of many including OPG's senior management.

Discussion moved to Nuclear Safety Culture (NSC). It was noted that OPG does its own NSC assessment, a summary of which is provided the CNSC. The CNSC is also preparing a new regulatory document which would require licencees to do NSC assessments, so while OPG has been doing them there will be more regulatory requirements than there has been. OPG notes matters when there are safety culture implications, and depending on the nature of the event takes appropriate action; larger matters require a more formal corrective action plan and a safety culture check, smaller ones are watched and trended to see if they are likely to escalate. Here it was noted by OPG that a key part of Safety Culture is making sure employees are comfortable raising issues and concerns – this requires some degree of anonymity and freedom from repercussion.

Discussion then moved to CNSC Reg. Doc. 2.3.3.

- Whether it is meant to replace RD360;
- Whether it had already been published;
- Whether it required a Integrated Safety Review or a Periodic Safety Review;
- Whether the safety reviews would be retrospective (against code changes over the past 30 years) or forward looking (over the upcoming 10 years), it appears the regulatory requirements keep changing.

OPG provided the following answers (but does not speak for the CNSC):

- OPG understands that it is meant to replace RD360 but would defer to the CNSC;
- A draft was posted in 2014 for public/stakeholder review, OPG was not sure as to its current status;
- Reg Doc 2.3.3 requires an Integrated Safety Review, which is updated periodically and graduated;
- The relevant components of the integrated safety review include:
 - Codes and Standards Reviews which examine whether the plant can meet current codes and standards regardless of when constructed;
 - Component Condition Assessments (CCA's) which look at the expected operating life (whether 10 or 30 years) of the components, and what work is required to ensure they meet the expected operating life; and
 - Environmental Assessments which look at the expected environmental effects.

One stakeholder noted that the CNSC had not communicated this sufficiently, and another asked what the public role would be in a longer term/10 year licensing process. A third noted that in future sessions it would be helpful to have CNSC staff in attendance to address these types of matters, as is done with the Ontario Energy Board stakeholder sessions.

Regarding the Probabilistic Safety Assessment (PSA), the stakeholders noted that the safety improvement opportunities were included in the 2012 Darlington's risk assessment. OPG stated that it was in the process of updating the 2012 Darlington risk assessment and that a summary report would be made public in 2015 and prior to the part two hearing. OPG expects to release the PSA in August and post it on their web site.

A stakeholder asked whether the current update was a regulatory requirement since it had taken 20-30 years to update the original. The response was it is a new Regulatory Document that requires 5 year updates to the PSA.

Regarding Fitness for Service, a stakeholder asked about the consequences of corrosion in the Steam Generators and whether all of the Steam Generator tubes would be inspected. It was explained that leaks in the boiler tubes are not desirable as the Steam Generators separate the tritiated heat transport water from the 'clean water' forming a barrier to a release to the environment.

A stakeholder was interested in the 60 year design life and whether that was the original expectation and/or had been communicated back when the station was being built. The nature of the question went to whether refurbishment and life extension was more of an experiment, rather than a planned aspect of the design. OPG stated that mid-life refurbishment is a planned aspect of the CANDU design, it has been done before elsewhere, and that there are continual inspections and monitoring to assess plant condition. However decisions on whether to proceed with refurbishment and life extension are influenced by other matters, such as the economics of continued operation, among others.

3. Environmental Protection, Raphael McCalla, Director Environment Operational Support

Mr. Raphael McCalla, as Director of Environment Operational Support provided an overview of the key policies and programs relevant to this managed system, including OPG's Environmental Policy, Corporate-wide Environmental Management System (EMS) and Environmental Protection Program.

He discussed the framework to control emissions and provided details on the following program areas:

- Ground water Monitoring;
- Radiological Releases;
- Conventional Releases; and
- Unplanned Releases.

Mr. McCalla reviewed Program Improvements including reference to:

- A de-chlorination system that ensures the final discharge from the condenser cooling water system does not exceed limits
- A repeat of the 1980's round whitefish study; the results confirm low (and lower) risk on round whitefish eggs and larvae from normal operation of the plant.

He closed with a discussion of the Refurbishment program and the expectations that had been sent for all workers, including contractors, regarding the Environmental Management Program and Control and Monitoring of Releases of Nuclear Substances and Hazardous Substances.

Stakeholders asked for information regarding the tritium plume under Darlington station, what the values are, what the source and/or contributors are, and the role of the irradiated fuel bay. Mr. McCalla noted that the Darlington tritium plume is not significant, it is not impacting on sources of drinking water and that the primary source was the 2009 IWST (water storage tank) event and that other sources are not considered major contributors. He noted that an annual groundwater monitoring report is submitted to the regulator. OPG offered to assess the feasibility of posting this report on its website. Stakeholders felt that groundwater plumes are difficult to predict and made reference to a CNSC report on the challenges of groundwater predictions.

In response to a question Mr. McCalla described the location of the monitoring wells in both the protected and controlled area. In 2013 OPG sampled and analyzed a total of 94¹ wells in the Controlled and Protected Areas (access controlled) of the Darlington Site. This included 48 wells in the Protected Area and 46 in the Controlled Area. Within the Protected and Controlled Areas, the tritium concentration ranges were within regulatory limits (i.e. from $<1.00 \times 10^2$ Bq/L – 3.82×10^4 Bq/L and $<1.00 \times 10^2$ Bq/L – 6.31×10^2 Bq/L respectively).

Regarding radiological emissions, Mr. McCalla indicated that the totals presented were the totals for the reporting year, and that OPG has never exceeded a Derived Release Limit. Any releases have been a small fraction of the legal limit. He indicated that the tritium releases to water were to the lake, not the groundwater.

He also explained that when systems are opened there is a potential for radiological releases. OPG expects to see higher tritium emissions at the beginning of the outages but still within regulatory requirements.

With respect to radiological emissions to the air from the Tritium Removal Facility Mr. McCalla described that elemental tritium results from operations challenges from this facility and is only present at the Darlington station.

A stakeholder noted that the regulatory framework is old, from a regulatory standpoint the emission levels are basically zero because every element of tritium is oxidized prior to hitting the critical group. The stakeholder noted that if OPG's environmental policy is to simply meet the

¹ During the meeting OPG referenced 96 wells but subsequently confirmed there are 94 wells recorded with data.

regulatory requirements and only take additional action where it makes business sense, then there will never be improvement because it never makes business sense to go beyond the regulatory requirements – that is old school environmental policy. OPG indicated that there are many areas where the company goes beyond requirements, worker radiation protection is one, and biodiversity is another. The stakeholders noted it appears that OPG goes beyond in just about every area except the environment.

There was discussion regarding OPG's earlier commitment to keep tritium releases below 100 Bq/L, even though the regulatory requirement is 7,000 Bq/L. A stakeholder noted that OPG could be tremendously helpful by either not opposing or actively supporting or even better, strenuously encouraging the Province/Fed's to adopt the ODWAC limits. This is a matter that environmental interests will continually raise, and OPG assistance would be appreciated.²

Questions were asked about the Bruce Nuclear site, and OPG's interests there. It was explained that OPG relies on the Bruce Nuclear environmental monitoring program for the OPG operated facilities at that site.

Clarification was sought on whether OPG reports 'spikes' or just averages. OPG replied that daily samples are taken at a minimum of twice per day and a weekly composite analyzed. The data is reported annually as a rolling average in the Environmental Monitoring Program report.

Clarification was sought on the last time the regulatory requirements were changed or updated. OPG replied that the Derived Release Limits were revised in 2012 to be compliant to CSA standard (N288.1, Guideline for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities). The Standard was revised in 2014 and OPG is in the process of revising the Derived Release Limits (DRLs) to align with the new 2014 standard.

Stakeholder concerns were expressed regarding the role of the public in the reviews of the CSA standards. In their view the CSA is independently controlled, it is not transparent and it is not inclusive of the public. The difficulty is in accessing draft documents. The stakeholders suggested that OPG may be able to influence this process.

OPG noted that it appears the CNSC has heard this concern, and now flags when the CSA standards are up for review. The stakeholders indicated that the issue is more fundamental than that, the CNSC has improved tremendously however the CSA is very problematic – it is never clear how something 'meets the CSA standard', this breeds mistrust.

Concern was expressed regarding the way information was portrayed in the OPG slides, in particular the scales used on the graphs. For one stakeholder it appeared that OPG was using scales that would intentionally highlight how low the releases are, and reports averages rather than spikes. The concern was that OPG had oversimplified and exaggerated the results, it would be better if OPG included specific data in the reports where there are spikes. Stakeholders expressed concern that composites and averages do not communicate spikes and "upset incidents", which are matters of public concern and should be documented by OPG and that documentation, should be publicly available.

Regarding public dose, OPG explained that even if the public dose were doubled during refurbishment, it would still be well below the regulatory limits. In response to a question about

² This matter was referenced a number of times over the course of the stakeholder session.

whether the DRLs account for gender differences, OPG answered that it is based on a generic male however actual results are modeled for various critical groups.

Regarding unplanned releases, OPG explained that the IWSST spill was not included in the graph because it occurred in 2009. OPG also explained that there is an even lower ("D") category of spill, which is not publicly reported because they are so insignificant, but which are tracked to capture the events and to improve OPG performance. These include events such as a 1 litre container spilled on the pavement or gravel – the clean up would ensure no harm to the environment and the materials would be disposed of properly.

The next area of discussion was with respect to worker radiation exposure. Questions included:

- Whether contract workers receive greater dose than regular nuclear workers;
- Whether contract workers are tracked after they finish the job;
- Whether worker dose limits are ever included in labour negotiations – and whether these have resulted in different dose limits for different workers; and
- To what extent are there provisions that apply to radiation workers vs. casual workers? The concern was that contract workers do not have any negotiating power.

OPG noted that:

- There is a radiation protection program in place for all workers which includes dosimetry;
- The lessons learned from the Bruce Power alpha event have been implemented;
- All radiation workers are monitored over the long term and have their data tracked by the federal government for life;
- Past negotiations with represented employees may have covered areas in how to do work better but rarely involved dose limits; and
- The company does not assign more hazardous work specifically to contractors – rather, regardless of employment status, OPG adds additional controls and safety barriers for anyone working in more hazardous areas.

The final area of discussion was with respect to DFO and the Fisheries Authorizations. OPG explained that the Fisheries Act has changed in some ways such as the addition of "serious harm to a fish or fishery" as it applies to Commercial, Recreational or Aboriginal concerns, accordingly OPG has applied for a DFO Fisheries Authorization and had made that commitment at the last (2012) Darlington hearing.

Regarding storm water management one stakeholder noted that their organization had expertise in this area and would be willing to provide guidance in study design, or with respect to site improvements. OPG acknowledged this offer.

4. PROL – Emergency Preparedness, Steve LESIUTA, acting Director, Emergency Management and Fire Protection

Mr. Steve Lesiuta, acting Director, Emergency Management and Fire Protection noted that Darlington's emergency response plans meet and exceed Regulatory requirements. The plans are robust and frequently exercised, the staff is well trained, and the equipment and facilities required to respond are poised. He provided an overview of the Onsite Emergency Response and Emergency Notifications steps and discussed the nature of Radiological Surveys that would be undertaken during certain types of emergencies.

Mr. Lesiuta discussed the new requirements for potassium iodide (KI) pre-distribution to all households, businesses, and institutions in the 10 km radius of the nuclear facilities by the end of

2015. OPG is working with the Region of Durham, the City of Toronto, Office of the Fire Marshal & Emergency Management (OFMEM), Ministry of Health and Long Term Care (MOHLTC), Health Canada, and others.

He noted that in May 2014 new 'Flashlight' public information brochures were distributed to households in the primary zone, and that additional public information including specific information on KI will accompany the KI distribution in 2015.

Mr. Lesiuta closed his presentation with an overview of the Exercise Unified Response (ExUR) which took place in May 2014, a three day full scale nuclear emergency response exercise the purpose of which was to test the preparedness and integration of the nuclear emergency plans including over 50 agencies. The response demonstrated that the plans are robust, and that the agencies are able to respond to a significant nuclear event in Ontario. Lessons learned will be used to improve plans and overall interoperability.

Stakeholders asked why 10K was selected. Some stakeholders felt that the pre-distribution of KI pills should be for all residents who reside between the Pickering and Darlington stations, that there is nothing that 'magically happens' at 10 km, that there is a flow of traffic (e.g. trains) that go beyond 10 km. Mention was made by a stakeholder about selective 50K pre-distribution of KI around the Bruce plant & the question was asked whether Ontario could wind up with a 2-tiered system. A stakeholder mentioned there are limits to the efficacy of "sheltering in place".

There was some discussion around meteorology, OPG noted that it uses its in house expertise in collecting the data, but then provides it to the other experts who make decisions on what to do.

A question was raised about multi-stakeholder advisory committees. In follow up, it was confirmed that there is a Nuclear Emergency Management Coordinating Committee led by OFMEM. It is comprised of representatives from various provincial ministries, federal agencies, municipalities, and utilities. There is also a provincial Emergency Management Coordinating Committee for non-nuclear; and local Nuclear Public Education committees that OFMEM leads that is made up of representatives from numerous organizations.

Considerable discussion was held on whether the Exercise Unified Response (ExUR) addressed a sufficiently catastrophic event to test the capacity of the system, and whether there are reports and recommendations arising from the ExUR. OPG replied that the purpose of the exercise was to demonstrate the inter-operability of the over 50 different agencies that are responsible for emergency management and that was achieved. Many of the agencies are responsible for emergency management regardless of cause and work in real life emergencies regularly. Four different observers that monitored the event have reported their findings to the CNSC.

A stakeholder suggested that OPG include reference to the appropriate International Nuclear Event Scale (INES) when presenting material on exercises, as that will help everyone understand the severity of the event.

A stakeholder asked to read a quote from *Fukushima – The Story of a Nuclear Disaster*, by David Lochbaum, Edwin Lyman, Susan G. Stranahan and the Union of Concerned Scientists, page 152-153. It was read aloud.

Another stakeholder noted that the involvement of more than 50 agencies merely represents more than 50 opportunities for things to fall through the cracks.

A few stakeholders felt there would be value in working towards an arrangement where protective actions could be communicated jointly, by OPG and the stakeholders, as this would be reassuring to residents rather than have differing views on protective actions during an emergency. OPG reflected that such an arrangement would require upfront agreement on protective actions, as it would be inappropriate to argue them during an emergency. This may be difficult because there are certain areas where there is no agreement, e.g. on the utility of sheltering. The current studies show that in certain situations sheltering is the best protective action (for many events) whilst others suggest sheltering is not effective. The stakeholders' concern is with respect to the issuance of incorrect information, or misrepresentation of the severity of an event, which could lead to higher exposure than is necessary. Stakeholders indicated a need for access to OPG's and the CNSC's environmental modelling and data, because without it, there would continue to be conflicts.

5. Darlington Refurbishment – OPG Response to Regulatory Requirements, Robin Manley, Director, Nuclear Regulatory Affairs and Stakeholder Relations

Mr. Manley began this section by providing an overview of the timelines and milestones associated with refurbishment work, including four milestones where OPG would provide updates to the Commission.

He then provided a high level description of the regulatory requirements for Life Extension of a Nuclear Power Plant, as described in the CNSC Regulatory Document RD-360, "*Life Extension of Nuclear Power Plants*" and the status of OPG's submissions including:

- An Environmental Assessment (EA) which assessed the environmental effects of refurbishment and continued operation. The EA concluded that the project, taking into account the mitigation measures identified in the EA, is not likely to cause significant adverse environmental effects. Mitigation measures & Follow-up Monitoring Program Activities have been identified, including design enhancements (i.e., Safety Improvement Opportunities) to mitigate severe accidents.
- An Integrated Safety Review (ISR), which was a systematic assessment of the existing plant to determine if the plant conforms to modern codes, standards and practices. The work demonstrated that Darlington complies closely with modern codes and standards and identified activities to enhance components and station conditions.
- A Global Assessment Review (GAR), which provides an overall risk judgment on the acceptability of continued operation, and includes an assessment to determine the extent to which the safety requirements of Defence in Depth identified in RD337 have been fulfilled. It verified the existence of multiple levels of barriers between radioactive materials and the environment
- An Integrated Implementation Plan (IIP) which identifies the schedule for implementation of the safety improvements from the EA and ISR. It describes the work that will be implemented during the Refurbishment Outages and during normal plant operation during the Life Extension period, and
- A Return to Service Plan, which covers the range of activities from completion of installation work to reactor power at 100% including modification commissioning and system restart activities. The "Return to Service Management Plan" outlines the processes that will be used to manage the commissioning and restart activities and demonstrate that all licence conditions have been met.

He noted that OPG as the licensee is required to obtain approval prior to the removal of established regulatory hold points, of which there are four:

- Phase A – Prior to Fuel Load;
- Phase B – Prior to removal of Guaranteed Shutdown State;
- Phase C – Prior to exceeding 1% Full Power; and
- Phase D – Prior to exceeding 35% Full Power.

There was some confusion between the identified Commission updates and the regulatory hold points. OPG clarified that the Commission updates were not regulatory hold points, rather they were milestones recommended by OPG. Whether the hold points would be accepted by the Commission and if so whether they would be delegated to CNSC staff would not be known until the hearing was complete. The work underlying the regulatory hold points (e.g. commissioning and testing at various stages) are part of a unit's return to service, and typically takes months to accomplish.

Stakeholders asked questions regarding the Safety Improvement Opportunities

- Where EPG #1 and #2 are located;
- Where the EME's (emergency mitigation equipment) are located;
- The purpose of the EHS;
- Why diesel pumps are important;
- Whether there is redundancy in the 'hook ups'; and
- How the EME and EHS keeps pumping in an emergency.

OPG explained that.

- EPG #1 and #2 are near #12 on the map;
- The EME's are located further away, up the hill and are not visible on the map, also that another set of EME's are located at Pickering approximately 30 km away;
- The EHS is a separate set of diesel pumps which are yet another backup system to keep the core cool;
- Diesel is used because it doesn't require the electrical system to operate, it is independent;
- There are multiple hook ups which can function to put cooling water in various different parts of the reactor, to make the options as flexible as possible; and
- In an emergency the capability to use lake water is there, it could be straight from the fore bay – the intent of the EME is that they provide flexibility to the operators to make decisions as needed.

A question was raised regarding any special constraints that may apply when 2 units are out of service and 1 unit goes down (is taken out of service). OPG noted that offsite power would continue to be available to the 1 remaining unit and that the Darlington configuration is different from that at Pickering.

A stakeholder asked how the station would compare to Fukushima after the final product. OPG described the follow up to Fukushima, and noted that all the Chief Nuclear Officers had agreed a set of principles to establish all of the safety measures needed to provide enough power/cooling to the reactor core and ensure it is never exposed to the public. In effect, the utilities have all looked at the Black Swan³ type event.

A question was asked regarding the length of time the station could cool the core, if the station were effectively "islanded" with no external resources available. OPG replied that the intent is indefinitely. There is a lot of water at the site, OPG estimates up to 1-2 weeks depending on the

³ A Black Swan event is an event in human history that was unprecedented and unexpected at the point in time it occurred

situation. OPG is also well established with external agencies that could bring supplies in. Stakeholders expected a more precise answer to this question.

A question was then asked about EME's and their timeline. In particular, there is a concern that in the Probabilistic Risk Assessments for multi-unit stations there is a potential for by-pass accidents within the first 24 hours. The question was what treatment is given to the EME's in such a scenario? OPG indicated that the question was really about the modelling that is used in predicting events, the fault trees that are employed, and the value ascribed to the EME's which is a highly technical area that no one in the room could answer.

A clarification question was asked regarding 'hook ups' and why there wasn't already mobile capability for hook ups. The answer was that prior to Fukushima there was no expected need for mobile EME. All safety features, including those mitigating Severe Accidents were engineered features of the station and therefore did not require external 'hook-ups'.

A further question was raised regarding the commitment to multi-unit Probabilistic Risk Assessment (PRA) work. OPG indicated that it would provide an update on the plans for the DNGS multi-unit Probabilistic Safety Assessment (PSA) as part of this relicensing process. OPG continues to work with international organizations to establish a methodology for multi-unit PSA's. OPG stated that it was not making a commitment at this moment that by such and such a year it would be done.

OPG was asked if it would provide the following:

- A clause by clause assessment of DNGS compliance against modern codes and standards (which would have preceded the ISR, the stakeholder offered to share a version from another licensee as an example of what they were looking for); and
- The cost benefit analysis that was used for the SIO's.

6. Stakeholder Issues / Discussion / Wrap Up, Facilitator

Stakeholders were asked to provide any further questions, comments or feedback regarding the day's session, in particular whether they found the day useful and whether they had any particular issues or concerns with the requested licence term. Where applicable, the questions and answers have been moved into the sections of the notes that related to the subject of the questions.

Regarding further questions:

- Two stakeholders indicated that nuclear waste management should be addressed in a more robust manner; specifically the application requires a discussion regarding irradiated fuel management.
 - There was a brief discussion of the written questions and document requests that a stakeholder had provided in advance of the meeting. The stakeholder clarified that their interest is in the design and safety of the Irradiated Fuel Bays (IFB's) over the longer term should the reactors' operating period be extended; they sought to review the requested reports with an interest in determining if the design demonstrates that the IFBs have 30 more years of operating life and also have an independent, 3rd party review those reports. In part, they sought to be assured that the problems that exist at Pickering do not exist at Darlington.
 - OPG responded that the request would be reviewed after the meeting and responded to.

- An additional request was made in follow-up to discussions during the stakeholder's session, for the safety reports for the IFBs, ones that demonstrate whether the IFB have 30 more years of operating life.
 - OPG responded that they would look at the safety reports to consider what might be missing with respect to irradiated fuel bays
- A second area of interest was with respect to the length of time the fuel remains in the fuel bay, there seems to be some industry discrepancy – is it 8-10 years, 6-8 years, or can it be longer than that. It is important to understand the determinants of how and why the fuel is removed.
 - OPG noted that the current requirement in the safety report is the fuel remains a minimum of 10 years in the fuel bay before it can be removed because the approved design for the Dry Storage Containers is that the fuel must be at least 10 years old to retain the integrity of the DSCs. There are other factors that are considered, such as the capacity of the fuel bay, but unless the analysis is done and the safety report is updated it has to be a minimum of 10 years old.
- A stakeholder requested that OPG provide a copy of the "Approved Safety Design for Dry Cask Storage";
 - OPG agreed to review the documents and release those documents/ document portions which are not proprietary.

Regarding the licence term:

- OPG had not been clear why a 13 year licence term was needed – particularly since OPG had to report to the Commission on a regular basis anyway;
 - OPG indicated that the rationale had to do with certainty; refurbishment comprises a very large and complex scope of work that must be executed within a certain schedule and within a cost envelope. Things that change may appear small but can have significant effects on schedule and cost. The CNSC can put requirements on the licensee at any time, it does not need to go through a complex license renewal process to do so, and any significant safety improvements would be inherent. However a 13 year term provided OPG with regulatory certainty;
- The stakeholder noted that their concerns are at the opposite end of the spectrum – their expectation is that OPG would be doing the latest and greatest work by the 4th unit. In their view OPG's regulatory certainty is the Stakeholder's regulatory risk.
- All participants indicated concern with the 13 year licence term because it:
 - didn't appear to provide any opportunity for meaningful engagement and dialogue
 - precluded public oversight; and
 - Undid the lessons learned from Fukushima.
- The annual reporting would need to be more meaningful if it is to be used as a replacement for the licensing process and
- The proposed Commission Update milestones should be a licence renewal. Or, as a compromise, maybe around the six year mark that would be licence renewal.
- That would also make it more consistent with other licensees.

Regarding the utility of the day, all of the stakeholders indicated that it was useful, appreciated, and a good opportunity to have a conversation in a less formal environment than a hearing. One stakeholder remarked that it was a sincere and constructive attempt to address public concern, a good step forward.

Ms. Swami thanked all attendees for their participation and the meeting adjourned.

All presentations used at this Stakeholder Consultation are posted on the OPG Darlington Licence Renewal website at:

<http://www.opg.com/generating-power/nuclear/stations/darlington-nuclear/Pages/Darlington-Nuclear-Licence-Renewal.aspx>

7. Session Agenda

DARLINGTON LICENCE RENEWAL Stakeholder Session/Technical Briefing Agenda Thursday February 19, 2015	
Time	Topic
8:30 – 9:00 AM	Continental Breakfast
9:00 – 9:15 AM	Welcome, Greetings, Purpose
9:15 – 9:30 AM	Introductions, Agenda and Facilitation
9:30 – 10:45 AM	Summary of Darlington Licence Renewal Application including question period
10:45 – 11:00 AM	Break
11:00 – 11:45	<ul style="list-style-type: none"> • Safety Control Area : Environmental Protection incl. Questions
11:45 – 12:30	<ul style="list-style-type: none"> • Safety Control Area: Emergency Management incl. Questions
12:30 – 1:00 PM	Buffet Lunch
1:00 – 1:30 PM	Darlington Refurbishment RD-360 Requirements (including Q&A) <ul style="list-style-type: none"> • Environmental Assessment, Integrated Safety Review, Global Assessment Report, Safety Improvement Opportunities
1:30 – 2:00	<ul style="list-style-type: none"> • Scope of Work and Implementation Plan
2:00 – 2:30	<ul style="list-style-type: none"> • Return to Service Plan/Regulatory Hold Points
2:30 – 2:45	Break
2:45 – 3:15 PM	Feedback: <ul style="list-style-type: none"> • What concerns do you have, if any, over the licence term?
3:15 – 3:30 PM	Conclusions/Adjourn

8. Participants

Organization	Participant
Canadian Environmental Law Association	Theresa McClenaghan
Greenpeace	Shawn-Patrick Stensil
Durham Nuclear Awareness	Janet McNeil
International Institute of Concern for Public Health	Anna Tilman (by phone/part time)
Northwatch	Brennain Lloyd
Canadian Association of Physicians for the Environment	Gideon Forman
Lake Ontario Waterkeeper	Pippa Feinstein
Energy Probe	Norm Rubin
Central Lake Ontario Conservation Authority	Chris Jones
Ontario Power Generation	Laurie Swami
	Robin Manley
	Raphael McCalla
	Steve Lesiuta
	Roy Martin
	Donna Pawlowski
	Kevin Powers