EA NEWS from Pickering B Nuclear

Neighbours

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Pickering B Refurbishment and Continued Operation Environmental Assessment

This is the third special Environmental Assessment Edition of Ontario Power Generation's Neighbours newsletter. This issue presents preliminary results of the Environmental Assessment (EA) studies in the areas of human health, socio-economic impacts and surface water resources. This issue also answers some of your frequently asked questions, lays out the next steps in the EA process and announces upcoming public open houses.

Hydro Marsh, neighbouring Pickering Nuclear, is a flourishing wildlife habitat.

Project Re-cap

To determine whether the four reactors at Pickering B should be refurbished to extend their operating lives, a number of studies including an Environmental Assessment (EA) are being undertaken. During the past year, OPG and its EA consultants have carried out extensive studies, field work, analysis and public consultation activities. At this point in the EA Study, subject area experts are beginning to identify possible areas where the project may have an adverse effect on the environment and mitigation measures to alleviate those effects.

To re-cap, the Pickering B project involves two phases; the Refurbishment Phase and the Continued Operation Phase.

Refurbishment Phase

The Refurbishment Phase would begin with site preparation (around 2010) and extend to the time the last reactor would be returned to service (around 2025). Prior to each refurbishment outage, each reactor would be defuelled and the used fuel removed from the reactor and transferred to the on-site fuel bay for wet storage. Heavy water would be drained from the reactor's moderator and heat transport system. The removed heavy water would be collected, stored at the Pickering Nuclear site and reused once refurbishment was completed. Additional heavy water storage capacity at the Pickering Nuclear site would be required and would meet all regulatory requirements.

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Feeder Pipe and Fuel Channel Assembly Replacement

During refurbishment, work would include: vault preparation; removal of fuel channels, calandria tubes and feeder pipes; installation of new fuel channels, calandria tubes and feeder pipes; and waste handling.

The fuel channel and feeder pipe replacement is expected to generate low and intermediate level radioactive waste. Volume reduction techniques such as cutting and crushing would be used. All radioactive waste materials would be loaded into specially shielded waste packages for transfer to the Pickering Waste Management Facility (PWMF) for storage or for further transport to OPG's Western Waste Management Facility (WWMF) in Kincardine, Ontario. New storage structures would be constructed in the East Complex of the Pickering Nuclear site for the interim storage of these wastes. Retube Waste Storage (RWS) containers would be initially housed in these structures until transport to the WWMF.

Steam Generator Replacement

Each of the four Pickering B reactors contains 12 steam generators. A steam generator is approximately 14m in length and 2m in diameter, each weighing approximately 90,000 kg. All of the steam generators in each reactor would be replaced during refurbishment. Holes would be cut in the concrete reactor building domes to provide access for a large crane to remove the old steam generators and replace them with new steam generators within the reactor building.

Removed steam generators would be sealed and the exterior decontaminated prior to removal from the reactor building. They would then be transported to the new waste storage structure in the East Complex of the Pickering site for interim storage and/or processing (to reduce volume) and would ultimately be transported to the WWMF.

Continued Operation Phase

For EA purposes, the Continued Operation Phase of the project would begin when all four reactors had been returned to service (around 2025). Operation would continue to the new predicted end of life of the station (estimated to be around 2060). This phase would include the following works and activities:

- Continued operation, maintenance and generation of power by the refurbished reactor units;
- Continued management of low and intermediate level radioactive waste from operations;
- Continued interim storage of used fuel at the PWMF;
- Ongoing maintenance and repair;
- Construction of additional storage capacity at the PWMF for the used nuclear fuel that would be produced by the proposed continued operation of the Pickering B units;
- Interim storage of the additional used nuclear fuel and the refurbishment waste at the PWMF; and
- Transport of routine operational low and intermediate level waste to the WWMF.

Used nuclear fuel dry storage at the Pickering Waste Management Facility

Operation of the refurbished Pickering B reactors would be similar to current operations. The refurbished units would require ongoing maintenance and upgrades to the end of the reactor service lives.

Assessment Methodology

In general, Environmental Assessment is a planning process to predict the environmental effects of proposed activities before they are carried out. The purpose is to minimize or avoid adverse environmental effects before they occur and to incorporate environmental factors into decision-making.

An Environmental Assessment does three main things:

- Identifies possible environmental effects of a proposed project;
- Proposes measures to mitigate adverse effects on the bio-physical and socio-economic environment; and
- Predicts whether there will be significant adverse environmental effects, even after the mitigation is implemented.

To identify possible environmental effects, we need to describe the project; describe the environment around the project; and identify areas where the project may interact with the environment.

We then identify possible mitigation measures and determine if there are any residual effects. Cumulative effects and effects of the environment on the project are also considered. Finally, we determine the significance of any residual effects.

The specific areas of study and the full description of what is required in the EA are identified in the EA Guidelines issued by the Canadian Nuclear Safety Commission (CNSC). The CNSC is the responsible authority for this EA.

Preliminary Findings

Human Health

The potential effects of the proposed refurbishment project on human health have been a key consideration. OPG has adopted the World Health Organization's definition of human health as "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

Like other aspects of the environment, OPG has studied the potential pathways where human health could be affected by changes to the environment linked to the project. Potential changes to physical health or well-being could arise from:

- Exposures from atmospheric emissions;
- Potential effects on drinking water;
- Increased radiation dose to workers and/or members of the public;
- Effects of an accident or malfunction.

Social effects of the project that may affect people's sense of well-being are also being considered. The social interactions identified include changes in local employment, tax revenue and access to services that are important to members of the community.

Using the World Health Organization's definition, mental well-being is also an important aspect of health. OPG has measured the potential effect of the refurbishment project on the surrounding community's level of satisfaction, people's sense of personal security and any feelings of stigma attached to the neighbourhoods in proximity to the nuclear station.

All of the potential interactions of the project with these aspects of human health will be documented in a separate concluding section of the EA Study Report.

Socio-Economic Conditions

To assess the socio-economic environment, existing information and data on population, employment, business activity, tourism and economic development has been compiled. Preliminary assessments suggest the project, should refurbishment proceed, could create new employment opportunities, new business activity and increase the attractiveness of Durham Region to leading-edge industry and research organizations involved in the energy sector.

Preliminary assessments also suggest there may be some increased competition for construction labour and short-term increases in community service requirements due to the large number of temporary workers anticipated during the Refurbishment Phase. To help address these types of effects, possible mitigation measures include continuing communication with community services to ensure that they are aware of the number of new employees and temporary workers on site.

There is also the possibility of reduced accessibility to local recreation areas (such as Alex Robertson Park) due to increased traffic in the vicinity of the plant. OPG anticipates working with the City of Pickering, our employees, neighbours, and contractors to ensure local traffic, parking and safety are not negatively affected by the refurbishment activities. Also during the Refurbishment Phase, it is anticipated that there may be some increased traffic, which may reduce resident's enjoyment of their property and the Waterfront Trail adjacent to the Pickering Nuclear site. Again, appropriate measures to help mitigate these effects would be developed.

Surface Water

Construction activities during both the Refurbishment and Continued Operation Phases could create an increase in dust and sediment collecting in rainwater. Implementation of sediment control measures during construction activities will mitigate this potential effect.

Studies of near shore lake currents and lake temperature and a detailed assessment of liquid effluents and lake water quality are being conducted. Preliminary assessments suggest that it is unlikely there will be any adverse effects

on lake water quality or drinking water quality. Pickering B currently operates within applicable operational and regulatory requirements, which would continue after refurbishment.

The next steps in the EA process are:

- OPG completes the EA studies as per the final EA Guidelines;
- OPG submits a draft Environmental Assessment Study Report (EASR) to the CNSC, and makes it publicly available at the same time;
- CNSC staff and technical specialists from federal, provincial and municipal government agencies review the draft EASR;
- OPG responds to technical review and any additional public input and finalizes the EASR;
- OPG submits the final EASR to the CNSC;
- CNSC prepares and releases a draft Screening Report for public review;
- CNSC holds Commission Hearings on the Screening Report; and
- The Commission releases a decision on the EA.

QUESTIONS YOU'VE SHARED WITH US

Throughout the second round of public consultation, questions regarding nuclear waste management and emergency preparedness were raised. In response, we've dedicated this section to answering some of those questions.

Nuclear Waste Management

- ***Is it safe to store radioactive waste at the Pickering site?***
- ***What is the long-term plan for used nuclear fuel?***

Currently, used nuclear fuel as well as reactor retube components from Pickering A are stored on the Pickering site in the Pickering Waste Management Facility (PWMF). The PWMF consists of structures designed to safely store used nuclear fuel from Pickering Nuclear in dry storage containers and the reactor re-tubing components from Pickering A in dry storage modules.

OPG's Nuclear Waste Management staff are well trained and regard safety and the environment as their top priority. Safe work planning, following safe work practices, paying particular attention to detail and a safety conscious work attitude has led to excellent safety performance at the facility. The Canadian Nuclear Safety Commission (CNSC) also monitors all activities at the PWMF to ensure that the operations pose no undue risk to people or the environment.

As part of refurbishment activities, wastes (such as steam generators and fuel channel assemblies) would be generated and new storage structures would need to be constructed at the Pickering site for the interim storage of these wastes.

Other low and intermediate level radioactive wastes (including mop heads, rags, resins and filters) that are generated during regular station operations will continue to be transported, in CNSC licensed containers, to OPG's Western Waste Management Facility (WWMF) in Kincardine, Ontario for interim storage. This facility is also licenced by the CNSC.

The Federal Nuclear Fuel Waste Act (2002) mandated the formation of a national Nuclear Waste Management Organization (NWMO). The objectives of the NWMO are to review the approaches for long-term management of used fuel in Canada and make a recommendation to the federal government on the path for Canada; and then implement the approach that is selected by the federal government. In November 2005, the NWMO submitted its report and recommendations for "Adaptive Phased Management of Canada's Used Nuclear Fuel".

OPG plans to continue safely storing all Pickering used fuel at the reactor site until the government decides on the path forward and the NWMO have been given the approval to proceed with siting a national repository for used nuclear fuel.

Emergency Preparedness

- ***Who is responsible for emergency response?***
- ***What are OPG's responsibilities?***

The Province of Ontario has the overall responsibility for managing the off-site response to nuclear emergencies. Ontario Power Generation, Emergency Measures Ontario (part of the Ontario Ministry of the Solicitor General and Correctional Services) and the regional and local governments work together to protect the public. Each organization has responsibility for a distinct area of the emergency response. The people, plans and procedures that are put in place for a nuclear emergency response can also be called upon during more common emergencies like ice storms, train derailments or industrial accidents. Briefly, the nuclear emergency response is divided into three areas of responsibility.

- OPG's first responsibility is to make sure our reactors are operated, maintained and designed in such a way that accidents won't happen. In the highly unlikely event of an accident, our responsibility is to make sure it is controlled and radiation releases are minimized. We are also responsible for the safety of our employees. OPG also assists the Province and local municipalities with funding and planning support for their emergency programs.
- Emergency Measures Ontario, an agency of the provincial government, is responsible for the overall Provincial Nuclear Emergency Plan and public safety during nuclear emergencies. If a nuclear emergency were to take place the provincial government takes over the off-site response. It has responsibility for making decisions on the proper level of public action.
- Regional and local municipalities all have emergency plans in place. But more importantly, it is their emergency responders; the police, fire and ambulance crews, with support from a host of other groups, who make sure the emergency plans are implemented properly. Plans are important, but it is trained people that make them work!

STAFF SPOTLIGHT

Laurie Swami

Director of Licensing, Nuclear Generation Development

As Director of Licensing for the Nuclear Generation Development Group at OPG, Laurie Swami has responsibility for communication with the Canadian Nuclear Safety Commission and OPG submissions in support of the Pickering B Refurbishment and Continued Operation Project, the Darlington Refurbishment Project as well as the New Nuclear Generation at the Darlington Site Project. Currently, Laurie is focused on completing the EA for Pickering B Refurbishment and initiating the EA for new nuclear generation at Darlington, in response to the directive given from the Ontario Minister of Energy.

An OPG veteran of 20 years, Laurie has held a variety of engineering roles and managerial positions including Radiation Protection Manager for Pickering B, Chemistry Manager for Pickering Nuclear and Nuclear Director, Environment.

Laurie lives with her family in Pickering, and is an active member of Women In Nuclear, a world-wide association of women working professionally in the fields of nuclear energy and application of radiation.

Recent Consultation Activities

Recently, the EA team has been busy at community events sharing information on the Pickering B project. Throughout February and early March the team participated in the third annual Pickering – Ajax – Uxbridge Energy Forum, the Metro East Home and Garden Show, and had a display booth at the Pickering Town Centre. Activities throughout the local community will continue in the coming months.

Upcoming Open Houses

The third round of open houses for this project will be held in May 2007. At the open houses, the project team will present some preliminary findings from our EA studies, answer questions about the project and continue discussions with the public and stakeholders. At every open house, a presentation will be given at 7 p.m. Open house venues, times and dates are shown below.

Whitby – Tuesday May 1st
Centennial Community Centre (Regal Room, Upper Level), 416 Centre Street, Whitby, ON L1N 4W2
3 – 9 p.m.

Pickering – Wednesday May 2nd
Ontario Power Generation, 889 Brock Road (Cafeteria – Main Floor), Pickering, ON L1W 3J2
3-9 p.m.

Ajax – Thursday May 3rd
Ajax Community Centre (HMS Room, South Entrance) 75 Centennial Road, Ajax, ON L1S 4S4
3-9 p.m.

Toronto East – Monday May 7th
Scarborough Civic Centre (Council Chambers) 150 Borough Drive, Scarborough, ON M1P 4N7
3-9 p.m.

Scarborough – Wednesday May 9th
Royal Canadian Legion, Branch 258, (Banquet Hall), 45 Lawson Road, Scarborough, ON M1C 2J1
3-9 p.m.

How to Reach Us

Public input on this EA is important and welcome. We would like to continue our dialogue with you on this project and hear your input. There are many ways you can reach the EA team.

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