

Neighbours

A part of the community since 1978 • Volume 3 • Number 1 • Winter 2000

A piece of the past

“We are pleased to announce that Canada’s first electricity generated by the burning of nuclear fuel was sent into the transmission line of Ontario Hydro at 1:31 EDT today...”

— June 4, 1962 press release to
The Canadian Press

Almost 40 years ago, in a newly minted control room at the Nuclear Power Demonstration Generating Station near



Control room at NPD Generating Station start-up, April 11, 1962

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Rolphton, Ontario, plant superintendent Lorne McConnell’s announcement was accompanied by

cigars, champagne and general jubilation as dozens of people gathered to witness the small but mighty birth of nuclear power in Canada.

There was good reason to celebrate: the pioneering work that took place before, during and after the moment of criticality at NPD led to one of the most successful nuclear power programs in the world.

Built at a cost of \$33 million, and tiny compared to Darlington’s huge 935 MW reactors, the 20,000 kW plant on the Ottawa River was intended to demonstrate the potential of nuclear power as a competitive source of energy. As the Canadian nuclear program flourished in subsequent years, NPD faded from the spotlight and then closed in 1987 after 25 years of successful operation as both a generating station and a hands-on training centre for nuclear operators from around the world.

With preparations underway to dismantle the site, Darlington’s station manager at the time, H.L. (Vern) Austmann, ensured that some of the hardware from NPD’s control room was saved.

Continued on back page



Site
Vice
President

*I sometimes think that never blows so red
The Rose as where some buried Caesar bled;
That every Hyacinth the Garden wears
Dropt in its Lap by some once lovely Head.*

Omar Khayyam

We carry forward into the future the things which we have taken from the past. We move on in time but we build on the legacies of those before us. Although much of our focus at Darlington was on the Y2K issue for the end of 1999, it is a privilege to be able to witness the transition of the millennium and to look out into the new year with a sense of gratitude for what has been left to us to build on.

We had a number of events at Darlington in the fall, which are described in this newsletter. The rail crash on our property was a miracle in that no one was hurt, and we were pleased to be able to assist Clarington Fire Department and CN Rail with the emergency response.

We met a number of key targets by year-end, including installation of new software into the computers which control our reactor shutdown systems, and of course being fully prepared for Y2K. In addition we exceeded our target for the production of electricity for 1999. Our employees raised nearly a quarter of a million dollars for the United Way/Charity Trust, and we also contributed to local shelters and food banks for the holiday season.

Looking out into 2000 we have another busy year to continue improvements to the maintenance of our station, and in our human performance, while ensuring we meet our number one priority: the safety of the public and our staff. We intend to hold an open house this year, and we are also planning how best to support the local community through our various programs. But we have a strong past to build on, and a great team of staff whose efforts have made Darlington what it is. My best wishes for the New Year.

Massive Y2K effort pays off

Darlington is one of the largest, most computerized nuclear power stations in the world, supplying 20% of Ontario's electricity.

The station computers run millions of lines of code, and tens of thousands of pieces of electronic equipment contain embedded computer chips. Finding and fixing all of the Y2K items was a massive job, involving almost everyone at Darlington. The work was very thorough, and was often compared

to searching for needles in a haystack. The Y2K project was very challenging and involved developing procedures and processes for each phase of the work.

On New Year's Eve, there were 200 people on the Darlington site, poised with contingency plans for any possible Y2K situations. Year 2000 came in without incident and once comprehensive equipment checks were completed, the emergency organization stood down.

Gamma survey results released

A survey of gamma radiation sources near the Pickering and Darlington Nuclear Generating Stations, has found no unexpected sources of man-made gamma radiation, either inside or beyond the stations' boundaries.

The gamma ray survey, carried out in late September and early October of 1999 by Sander Geophysics Ltd., showed that natural sources of gamma radiation from potassium, uranium and thorium occurred throughout the survey area, which extended 10 kilometres beyond the boundaries of the two stations. Such natural radiation sources are present in all rocks and soil and were with-

in the normal values for Ontario, as reported by the Geological Survey of Canada.

An independent technical consultant analyzed the radioactivity maps created from the survey. The maps showed that the gamma radiation levels from man-made features such as roads, parking lots and buildings were significantly lower in intensity than open areas of farm and parkland. This difference is due to the shielding provided by materials used in road and building construction. Gamma radiation at the nuclear stations, created during normal operation, was contained within the stations' boundaries.

Facts on Earthquakes

While Southern Ontario is one of the more seismically stable areas of the world, some people have questioned the ability of our nuclear generating stations to survive an earthquake affecting the area. Ontario Power Generation's own evaluations and those of external experts confirm the stations' ability to withstand earthquakes of magnitudes likely in eastern North America.

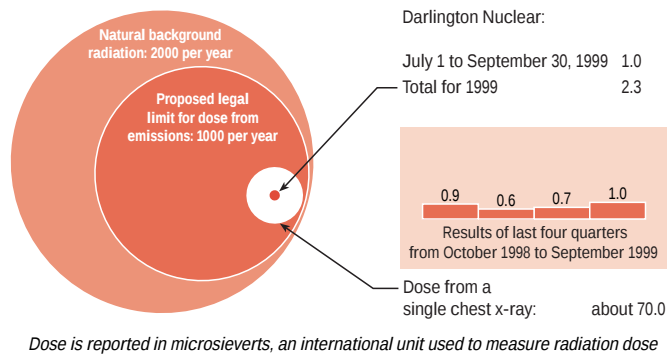
Designed for strength

Ontario Power Generation's CANDU nuclear plants are designed and built for strength. They are capable of withstanding a range of potential disasters, from hurricanes, to plane crashes, to earthquakes. Structures and components are robust (1.2 m

thick reinforced concrete walls) to withstand potential accidents. A seismic capacity assessment has demonstrated the earthquake resistance of the Pickering 'A' Station and state-of-the-art seismic design practices were followed for the other nuclear power stations. Design conservatism has resulted in Ontario Power Generation's nuclear power stations being capable of safely withstanding earthquakes greater than magnitude 6 in the region.

Is this an earthquake area?

Even though there are faults throughout the Canadian Shield that underlies the area, this does not mean there is an elevated risk of earthquakes. Earthquakes do occur here, but (continued on next page)



RADIATION INDEX

Ontario Power Generation issues a monthly Report Card that measures the performance of each nuclear generating station. The Report Card looks at key areas of station performance, and enables Ontario Power Generation to evaluate performance of its nuclear stations against nuclear industry standards. The fourth quarter results for Darlington Nuclear are on or better than target for most measures.

The Nuclear Performance Index, a weighted composite of eleven performance indicators, summarizes Darlington's operational performance over a rolling two-year period, and provides a measure with which we can compare our performance with the rest of the nuclear industry. The Q4 1999 result of 79.9 is an improvement of 6.5 points from the third quarter results, and exceeds the year-end target by 2.4 points. The most significant increases this quarter were in the areas of Unplanned Capability Loss Factor and Safety System Performance — Auxiliary Feedwater Unavailability.

All Public Safety measures on the Report Card either met or were better than target for 1999.

Electrical production performance in the fourth quarter was better than target, despite some unexpected unit outages. Planned outages on Unit 1 and Unit 4 early in the year, as well as on Unit 2 in the fall, were completed ahead of schedule, enabling the station to exceed all of its production targets for the year.

Darlington had one environmental measure that was worse than target at the end of 1999, as more radioactive waste was produced than planned during the year. The primary reason for exceeding the target was the unexpected high volume of waste generated during planned outages. An extensive waste-reduction program is being implemented for 2000 to help reduce the volume of radioactive waste produced by the station.

All three Employee Safety indicators on the Report Card show performance worse than target. There were three lost time accidents in the fourth quarter, contributing to a year-end total of ten and, as a result, both the Industrial Safety Accident Rate and the Accident Severity Rate are higher than planned. As well, Collective Radiation Exposure was also higher than expected, primarily due to the unplanned outage on Unit 3 late in the year. As a result of the poor performance in 1999, a high-profile station initiative is under way to improve Employee Safety.

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Earthquakes — continued

at about 1/10 the frequency that California feels them. Several earthquakes felt in the area recently do not indicate a change or an increase in regional earthquake activity.

Some researchers have claimed that fault zones intersecting in the area suggest the potential for earthquake activity. However, information collected in oil company exploration data discredits claims of major faults and rifting in Lake Ontario. A recent study for the Atomic Energy Control Board reviewed all available data and determined a very low probability that local fault zones are active. Ontario Power Generation is funding a specific investigation of the Rouge River Fault using internationally accepted evaluation methods, to determine whether local area faults could cause earthquakes.

Extensive seismic monitoring

The Geological Survey of Canada and Ontario Power Generation have monitored seismological activity in the region for many years — using seismometers

capable of locating even small magnitude earthquakes below the threshold of human perception.

Nonetheless, our nuclear stations are installing sophisticated seismic monitoring instrumentation in the stations and the surrounding area.

Recent events

A magnitude 5.2 earthquake centred in Ohio on September 25, 1998 was felt in parts of Southern Ontario. It barely registered at the nuclear power stations.

The November 26, 1999 magnitude 3.8 earthquake in Lake Ontario surprised area residents. Regional seismic monitoring has confirmed historical earthquake patterns of occurrence and shows that small earthquakes like this occur comparatively frequently. OPG is monitoring a cluster of small magnitude earthquakes near Hamilton to quantify possible effects on Pickering and Darlington. This earthquake was recorded by Pickering's in-plant seismic monitoring at the threshold of felt effects.

Inspections in the stations confirmed that no damage occurred. Magnitude 5 (Ohio, Sept. 25, 1998 and North Bay, Jan. 1, 2000) earthquakes also had no effect on the stations.

Building a better understanding

During the design and construction of its nuclear plants, extensive geological geophysics investigations of station sites and surrounding regions were conducted.

In addition, Ontario Power Generation has continued to fund research on regional seismic activity and potential hazards to its generating stations. We maintain a seismic monitoring network in Southern Ontario to define locations and characteristics of regional earthquakes.

For more information

To learn more about Ontario Power Generation's program, or about other aspects of nuclear energy, call Darlington Information Centre at (905) 623-7122 or 1-800-461-0034.

A PIECE OF THE PAST CONTINUED FROM PAGE 1

"I was told that the control room at NPD was about to be torn apart," says Austman, who retired from Ontario Hydro in 1992 after more than 30 years of service. "I thought it would be a shame to lose such an important piece of our nuclear history. There was space at a nearby Hydro-owned facility, and so the panels were crated and sent there for storage."

Recently, that storage space was earmarked for other materials, and the NPD control room appeared destined for the scrap heap. That was until the director of a small nuclear and mining museum in Elliot Lake happened to stop by. When Fred Mann met with Darlington

Information Centre's Brian Jarvis in May, 1998 to discuss possible donations of archival materials, it's likely he was hoping for some scrapbooks, or perhaps some old photos. When Jarvis unveiled his pièce de resistance — the dusty crates full of NPD's control room hardware — Mann was immediately enthralled.

In the end, it was Elliot Lake Chamber of Commerce president Ray Ethelston who took possession of the crates. While council had considered putting them into the existing museum of nuclear and mining history, Ethelston envisions the re-assembled control room on a grander scale, as a central feature in an ambi-

tious project to build an attraction that would take visitors to Elliot Lake through the various stages of uranium mining, from exploration to final decommissioning. He remains hopeful that the Chamber's applications for heritage funding will continue to move forward, and the Mining Theme Tour will become a reality for Elliot Lake, where more tourist dollars would be most welcome.

"This is a piece of Canadian history," Ethelston says, "the first reactor that ever put power on the grid. We might forget that for a while, but sooner or later someone's going to be looking for it, and I think everybody will be glad that it's still around."

March break activities at Darlington Nuclear Information Centre

Activities will focus on native history and the evolution of our needs for electricity.

- **Monday, March 13**, Chief Top Leaf will provide presentations on how we lived 500 years ago.
- **Wednesday**, Charles Taws, Curator, Bowmanville Museum will talk about pioneer life in Durham Region and Pickering Museum staff will demonstrate candle making.
- **Thursday** we will feature transportation and communication developments over the 20th century.

All activities are free. Children must be accompanied by an adult. Darlington Nuclear Information Centre is open Monday to Friday from 8:30 a.m. to 4:00 p.m. For additional information or to book a tour, please call us at 1-800-461-0034.

Our employees care



Employee volunteers organize the annual food and toy drive at Darlington. L-R: Wendy Patnam, Julia Lindsay, Linda Maycock, Kim Doyle, Jane Gray, Pam Fleury

Darlington employees care about the community in which they live and work. Not only did their contributions to the 1999 United Way/Charity Trust surpass previous years, they contributed generously to the annual Durham Regional Police Food and Toy Drive. For the past two years, some of the Christmas donations have been distributed to local seniors who reside at Strathaven and Marnwood Seniors residences.

Supporting the community

Ontario Power Generation, Darlington was a major sponsor of this year's Big Brothers of Clarington Bowl for Millions event, held February 18 - 26 at Liberty Bowl in Bowmanville. "Bowl for millions is Big Brothers largest fundraising event, with a goal for this year of \$25,000", says Big Brothers Executive Director, Jenny Walhout.

Photo back row: President Don Samis, received a \$5,000 cheque from Darlington Communications Specialist Penny Waghorne, Board Member Harold Yellowlees. Middle row: Big Brothers Executive Director Jenny Walhout. Front row L-R: Kyle Purdy, Nicholas Purdy, Ashley Connors and Aleesha Ferencz



Neighbours

Darlington Neighbours is published four times a year for the neighbours of Ontario Power Generation, Darlington Nuclear.

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