

Message from the President

Does the World Need Nuclear Power for a Better Future?



During the closing days of September, a number of significant developments occurred that answer the question posed in the title above with a resounding “yes”.

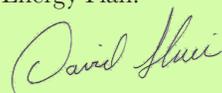
The first occurred on the 28th, when Ralph Keeling, Director of the Scripps CO₂ Program at the University of California-San Diego’s Scripps Institution of Oceanography, wrote that the world passed the 400 PPM Threshold permanently. This is the “red-line” that many scientists believe has dangerous climate change ramifications.

The second occurred the following day, when Agneta Rising, Director General of the World Nuclear Association, spoke to the 60th General Conference of the International Atomic Energy Agency in Vienna.

In her remarks, Ms. Rising noted that nuclear energy is relevant to almost all of the United Nation’s General Assembly’s 17 Sustainable Development Goals. In particular, nuclear energy can contribute in a major way to: Goal 7; access to affordable and clean energy; Goal 9; industry, innovation and infrastructure; and, Goal 13; climate action.

Reference was also made to the International Energy Agency’s 2 Degree Scenario. Nuclear energy plays the largest role and is the only one of three scenarios where the world survives. Rising noted that while the other low carbon technologies can do a lot more, they will have to increase 70 times to 700 times, depending on the technology. Nuclear power, already the second largest source of low carbon energy, would have to double or triple, something that is quite doable.

Here at home, we have a successful, robust nuclear technology and safe operating track record. The environmental and economic benefits are well known. Canada’s nuclear industry offers an advantage to be leveraged by our decision makers as they develop Canada’s response to the Paris Accord. It applies equally to the next iteration of Ontario’s Long-Term Energy Plan.



OPG On A Clear Mission

On May 10th, 2016, OPG announced a \$5 million partnership with Durham College and the University of Ontario Institute of Technology. The investment builds on a decade-long collaboration and will support capital expenditures, educational programs, scholarships and bursaries at both institutions. The partnership will help meet the needs for “career ready” workers in the Canadian nuclear industry as well as training opportunities for OPG employees.

OPG’s President and CEO appeared before the Senate Energy Committee on June 3rd, stressing the important role the company’s nuclear and hydroelectric generation will play in helping reduce GHG emissions.

On June 23rd, OPG announced that an international industry assessment had recognized the Darlington Station as one of the safest and best performing nuclear stations in the world for the third time in a row. The assessment team recognized a number of strengths including management and leadership, operator knowledge and skills and equipment performance and condition.

More good news was announced on August 18th. The *Canadian Nuclear Safety Commission’s 2015-16 Annual Report* gave the Pickering Nuclear station its best ever rating of “Fully Satisfactory” and the Darlington Station the same rating for the seventh year in a row. “Fully Satisfactory” is the highest standard.

On the first day of September, OPG released the latest in a series of performance reports on the Darlington refurbishment. In mid-October, the first of four units, Unit 2 will be shut down and the removal, replacement and overhauling of critical components will begin. OPG remains within the \$12.8 billion project estimate, worker training at the reactor mock up continues, and the detailed execution plan has been finalized. Recent polling results show that both the Darlington refurbishment project and the extension of Pickering operations have strong public support.

On September 19th, OPG’s Pickering Nuclear Station welcomed a team of nuclear experts led by the International Atomic Energy Agency. The CNSC put forward Pickering Nuclear for this review in 2014. This Operational Safety Review Team program has been providing member countries with the opportunity to share knowledge and support continuous improvements to their operations since 1982.

Bruce Power Accelerates The Pace

In early May, Bruce Power (BP) announced the beginning of a planned maintenance outage for Unit 3. Later in the week Units 1 and 4 were removed from service in preparation for a Station Containment Outage (SCO), a mandated requirement of the CNSC. The SCO was successfully completed on May 22nd. On June 3rd the company announced the return to service of Unit 2 following a planned maintenance and investment program. This coincided with the arrival of hot weather and the related increase in electricity demand.

On July 18th, BP announced the appointment of a new President and CEO, Michael W. Rencheck. With 33 years in the nuclear industry, Mr. Rencheck brings extensive international experience in nuclear operations and major capital projects. Bruce Unit 3 was reconnected to the grid on July 29th following the completion of its planned maintenance outage.



Michael Rencheck

BP announced on August 4th that it was teaming up with the County of Bruce to establish a new regional economic development and innovation initiative. The goal is to leverage economic opportunities for local communities that will result from the company's multi-billion dollar investment program at the Bruce Nuclear complex. BP released a report entitled "*Bruce Power's Role in Ontario: The Road Ahead – Our Relicensing and Environmental Activities*" on August 16. The report is intended to launch a community conversation about the company's future role in Ontario's electricity sector as its investment program proceeds. On the 24th, BP announced it would be partnering with four Ontario colleges on six diploma programs. This will help enable a steady flow of qualified workers for BPs' workforce.

Following 487 consecutive days of continuous operation, BP removed Unit 7 from service on September 9th. The unit will undergo a planned maintenance outage and Cobalt-60 will also be harvested from the reactor for processing by Nordion. On the 20th, BP released a collaborative report, "*Accelerating the Deployment of Plug-in Electric Vehicles in Canada and Ontario*" in Ottawa. Plug'n'Drive, Pollution Probe and the University of Waterloo's Chemical Engineering partnered with BP to develop the document which highlights opportunities to accelerate and optimize the capability of EVs.



Steve McCauley, Pollution Probe's Acting Chief Executive Officer, Carolyn Bennett, Federal Minister of Indigenous and Northern Affairs, James Scogack, Bruce Power's Vice President, Corporate Affairs, and Cara Clairman, Plug'n Drive's President and CEO. Courtesy of Bruce Power.

Cameco Reaches Agreements

On June 21st, 2016 Cameco and AREVA Resources Canada Inc. signed a collaboration agreement with seven First Nations communities regarding the development of uranium resources in the Athabasca Basin. The Ya'Thi Néné ("Lands of the North" in Dene) agreement builds on existing support of communities for the Cigar Lake, McClean Lake and Rabbit Lake mining operations. It also builds on the relationships and commercial agreements between the two companies and three First Nation communities at Black Lake, Fond du Lac and Hatchet Lake and the four communities of Stony Rapids, Wollaston Lake, Uranium City and Camsell Portage. The terms of the agreement include commitments to workforce development, business development, community engagement and environmental stewardship and community investment. The original agreement was signed in 1999.

On July 8th, 2016 workers represented by United Steelworkers locals 13173 and 8562, representing about 230 employees at the Port Hope Conversion Facility agreed to a 3-year contract. The new collective agreement includes a seven percent wage increase over the term of the agreement.

Cameco reported its second quarter financial results on July 28th, 2016. Company performance continues to be affected by a "quiet market, as well as a number of notable and one-time items".

On August 11th the company released its 2016 Sustainable Development Report. Highlights included: zero significant environmental incidents; continued low lost-time injury rate for both employees and contractors; and, high level of public support at locations hosting company operations.

What Others Are Saying

Energy Secretary Says Nuclear Needed to Achieve Decarbonized Electricity Sector

In recent testimony to a Senate Appropriations Committee hearing, Energy Secretary Ernest Moniz urged the U.S. to accelerate the development of more nuclear energy to meet its Paris climate agreement carbon reduction goals. Moniz acknowledged the competition presented by cheap natural gas, more efficient wind and solar generation and deregulated markets. With major nuclear plant retirements starting around 2030, he noted there was not a lot of time given the planning and permitting involved.

Moniz indicated that the Federal Energy Regulatory Commission is reviewing its regulations to potentially raise rates for nuclear power. He stated that "Having a strong, robust nuclear sector will be an important part of achieving a highly decarbonized electricity sector by mid-century."

Source: *Fuel Fix*, posted by James Osborne, September 14, 2016

Great News For Candu Technology

On September 22nd, SNC-Lavalin announced the signing of a deal with two Chinese companies, China National Nuclear Corp. and Shanghai Electric Group Co Ltd., to collaboratively design, market and build the Advance Fuel Candu Reactor (AFCR). The agreement in principle is expected to lead to the registration of a new company in China by mid-2017.

The APCR will use recycled uranium fuel from existing reactors. Today China has over 33 light-water reactors in operation and 23 under construction. Two design centres are expected to be established - one in Canada and the other in China. The agreement is subject to government and regulatory approval.

Decommissioning Continues at Gentilly-2

The CNSC issued a decommissioning license to Hydro Quebec on June 22nd, 2016. The decision followed a public hearing held in Ottawa on May 5th, 2016 at which submissions by Hydro-Quebec and five other intervenors were received as well as recommendations from CNSC staff. Environmental groups expressed concerns about the resulting management radioactive wastes, excluding spent fuel. The power reactor decommissioning licence is valid from July 1, 2016 to June 30, 2026.

The decommissioning period will extend over a 40-year period. Hydro Quebec's plan submitted to the Commission included costs of decommissioning and financial assurance. Radioactive waste will be stored on site and be managed by Hydro Quebec until a central Canadian facility is in place by 2050. The CNSC's decision noted that "Hydro Quebec is qualified to carry on the activity in the proposed licence, and as part of these activities, make adequate provision for the health, safety and the safety of persons, to protect the environment, the maintenance of national security and international obligations to which Canada has agreed."

On July 12th, 2016 media were allowed to tour the site for the first time since the 2012 closure of the station. On August 23rd, Hydro Quebec transferred approximately 6,000 fuel bundles from the pool to dry concrete storage units. All 27,000 bundles are expected to be in dry storage units by 2020.

Improved Point Lepreau Performance

Following regularly scheduled maintenance that commenced April 1st, the Point Lepreau Nuclear Generating Station (PLNGS) was reconnected to the provincial grid on June 13th, 2016. Over 600 contractors and tradespeople from across New Brunswick and NB Power staff were involved in the 72-day outage. As part of the work, improvements were made to the conventional side of the plant including the replacement of two low pressure turbine rotors and

installation of new switchyard equipment. On the nuclear side repairs, modifications and inspections were completed on multiple systems including the primary heat transport system. In all, about 15,000 planned technical activities were completed during the outage.

NB Power announced on July 7th that PLNGS had been operating at high power for 25 consecutive days and was then operating at a 100 percent reactor power. The station was producing approximately 34 percent of the total generation from NB Power generating stations during June. NB Power also indicated that it would be adjusting its multi-year maintenance strategy with a focus on equipment reliability to ensure safe and predictable station performance going forward.

On August 11th, the company announced that PLNGS had been operating at high power for 60 consecutive days. During July, the station produced about 50 percent of NB's total net generation. By September 16th, the station had been operating at high power for 96 consecutive days and had achieved a net capacity factor of 99.9 percent for the month of August.

Worth Repeating....

"The government of Ontario's initiation of these studies is a further sign that it sees the potential of nuclear to help meet environmental and economic goals. It is widely expected that small modular reactors will be an important part of the future of nuclear technology and will expand nuclear's huge potential to displace fossil fuels and mitigate GHG emissions. The work on fuel recycling addresses one of the CANDU reactor technology's great selling points. CANDU reactors have the potential to further reduce the nuclear waste stream, including used fuel volume and toxicity."

Remarks by Dr. John Barrett, CNA Press Release, June 13, 2016 responding to the release of two studies commissioned by the Ontario Government. The two studies were: "*Feasibility of the Potential Deployment of Small Modular Reactors (SMRs) in Ontario*" and "*A Feasibility Study on the Recycling of Used CANDU Fuel.*" Both studies have been released to the public by Ontario, and are online at <http://ontarioenergyreport.ca>



Point Lepreau NGS
Courtesy of CNSC

In short...

North American Clean-Power Pact Includes Nuclear

On June 29th, Canada, Mexico and the United States issued a statement regarding their partnership on climate, clean energy and the environment. The three nations pledged to generate fifty percent of their electricity from clean sources by 2025. Several initiatives underpinned this goal including, the alliance of ten appliance efficiency standards by 2019, new cross-border transmission projects, promotion of renewable energy projects and the greening of government operations. Nuclear power and carbon capture and storage are also included.

The Canadian Nuclear Association (CNA) commented that the agreement recognizes that all-low carbon technologies will be needed to achieve the goals of the COP21 Paris Agreement. As well, the CNA noted that “Canadians should know that their own home-grown, clean, affordable and reliable nuclear technology –along with this country’s untapped hydroelectric potential – can meet our whole continent’s pressing need for clean energy.”

BWXT Canada Ltd. And GE Hitachi Nuclear Energy Canada Inc. Combine

On August 19th, 2016, GE and Hitachi Alliance announced an agreement for the sale of GE Hitachi Nuclear to BWXT Canada, a subsidiary of BWX Technologies Inc. The agreement, expected to close by the end of this year, will combine the knowledge and expertise of the two companies.

For over sixty years, GE Hitachi Inc. has supplied nuclear fuel, fuel channel components, services, equipment and

parts for the CANDU® nuclear industry. The company employs a total of about 350 people located in Peterborough, Toronto and Arnprior. BWXT Canada is headquartered in Cambridge, Ontario and designs, manufactures, commissions and services nuclear power generation equipment.

Study Says Electricity Imports From Quebec Expensive for Ontario

On July 13th, the Power Workers’ Union released a study by Strapolec that showed increasing firm electricity imports from Quebec would be an imprudent and expensive option for Ontario.

The firm import option, identified in the province’s 2013 Long-Term Energy Plan, has been advocated by some parties as a better way to meet Ontario’s future needs.

Proponents suggest this option would: provide peak capacity reserve exchanges to balance the seasonal needs of the two provinces; smooth the intermittency of Ontario’s wind generation by leveraging the storage capacity of Quebec’s large hydro reservoirs; and, source low carbon-electricity imports from Quebec thereby lessening Ontario’s increasing dependence on higher carbon-emitting natural gas-fired generation.

Strapolec’s assessment showed that continuing to rely on low-cost, low-carbon based nuclear energy was the best option for Ontario. The study can be found at www.pwu.ca.

CNSC Rejects Anonymous Letter Allegations

An unsigned letter sent to the CNSC in May 2016 alleged that CNSC commissioners were not given key

information during the 2015 licensing process for the Darlington and Bruce Power stations. Five specific examples were cited, most dealing with “probabilistic safety assessments (PSA)” one of a number of tools used to evaluate risk.

An internal technical review was undertaken by Mr. Peter Elder, a strategic advisor in the CNSC’s regulatory operations branch. The review completed in early August found no evidence that the CNSC’s commissioners had not received the necessary information to make balanced judgments. Elder’s review concluded that the letter had overstated the importance of the overall safety case and that a PSA was not designed to be used in isolation of other types of safety analyses. Additionally, the CNSC staff position presented to the Commission during the public hearings were well supported evidence based recommendations.

CNL Plan to Deal With Two Legacy Issues

On July 9th, 2016 Canadian Nuclear Laboratories (CNL) held an open house in Pembroke to explain their plan to revitalize the Chalk River site. CNL intends to construct a Near Surface Disposal Facility, to provide a way of permanently disposing of a variety of low level waste materials. Much of this will be demolition debris from more than 120 buildings and labs on site. The second initiative will focus on the decommissioning of the Nuclear Power Demonstration reactor site.

CNL will be seeking approval from the Canadian Nuclear Safety Commission. Both projects are expected to be complete by 2020.

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The Canadian Nuclear Workers Council is an organization of workers represented by unions working in various areas of the Canadian nuclear industry which includes uranium mining, nuclear fuel processing, nuclear power stations, radio isotope production for medical and industrial purposes, and nuclear research.

The member groups are:
District Labour Councils (Grey/Bruce, Durham, Northumberland) • International Association of Firefighters (160) • International Association of Machinists & Aerospace Workers (608) • International Brotherhood of Electrical Workers (37) • Power Workers’ Union • Professional Institute of The Public Service • Society of Energy Professionals Union • Society of Professional Engineers and Associates Union • UNIFOR (The Union for Canada) (S-48, O-599, & O-252) • United Steel Workers (14193, 13173, 8562, 8914, & 7806) • International Federation of Professional & Technical Engineers Union • Provincial Building and Construction Trades Council of Ontario • International Union of Operating Engineers