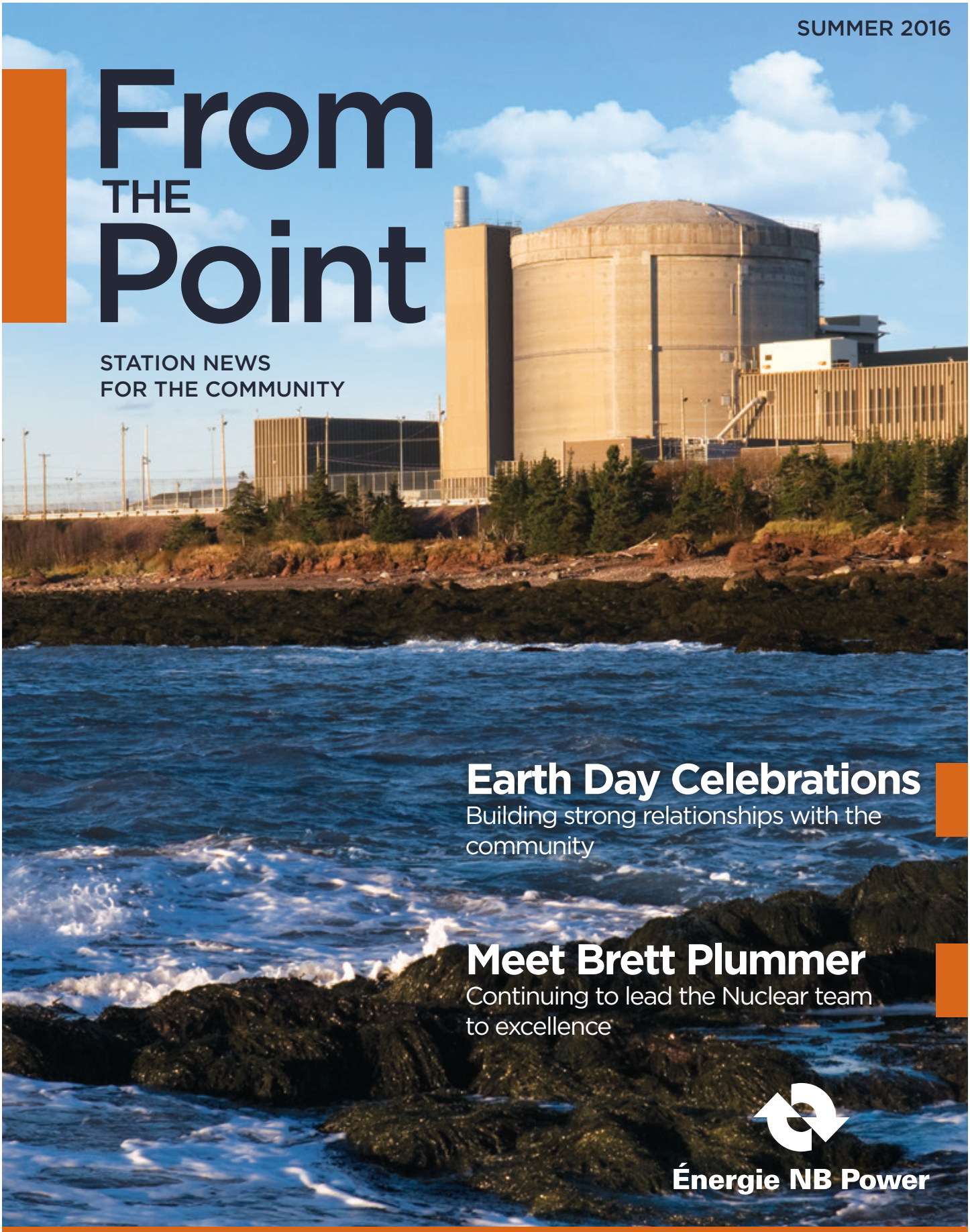
SUMMER 2016

From THE Point

STATION NEWS
FOR THE COMMUNITY



Earth Day Celebrations

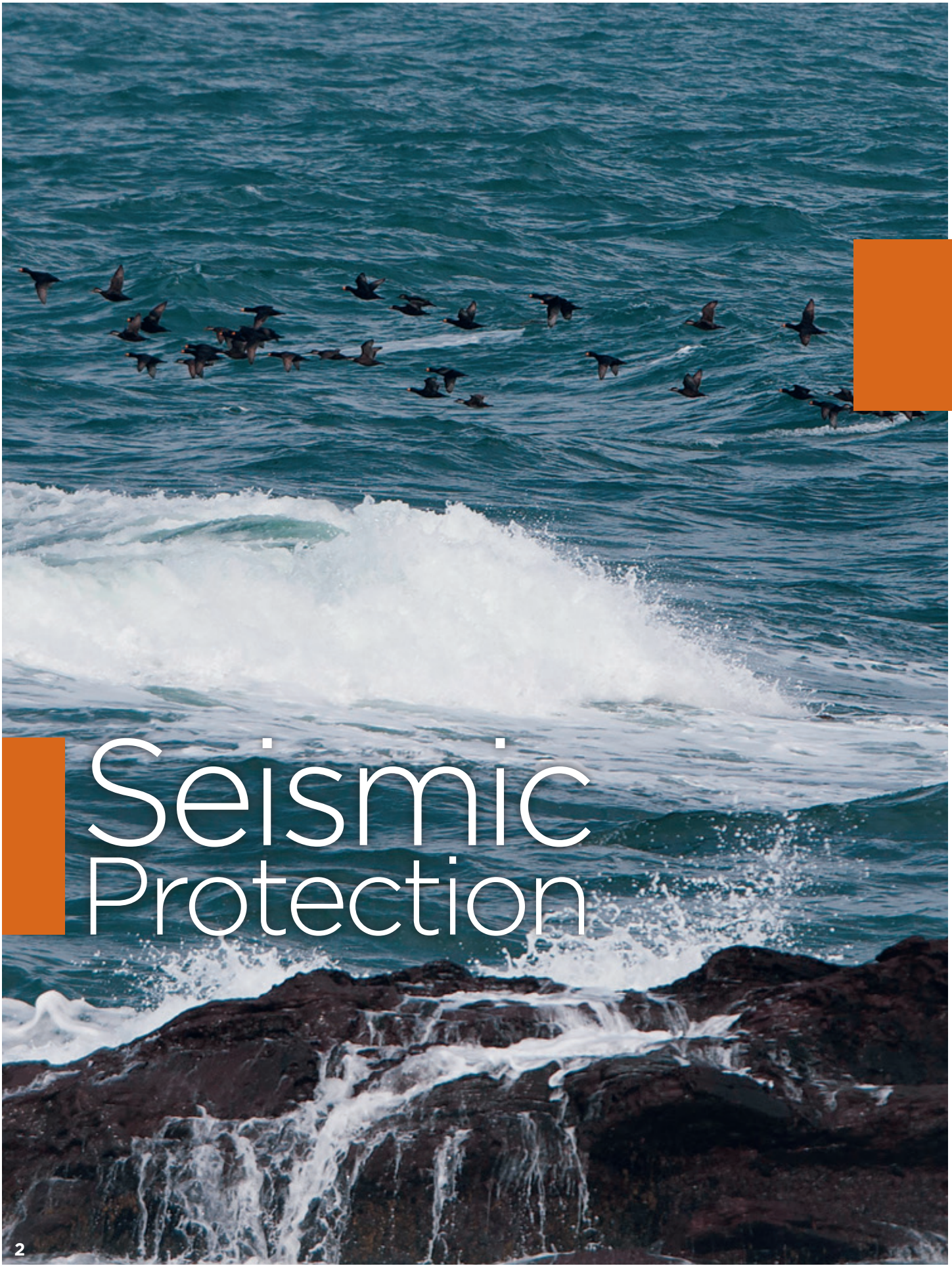
Building strong relationships with the community

Meet Brett Plummer

Continuing to lead the Nuclear team to excellence

Énergie NB Power

NB Power is pleased to re-introduce the From THE Point newsletter that will serve as an additional communication channel between NB Power and the Point Lepreau Generating Station communities.



Seismic Protection

The nuclear energy industry has a simple, yet effective, approach: expect the unexpected and prepare for it. That is why nuclear plants are designed and built with layer upon layer of protection against accidents, including earthquakes.

To support life extension activities performed as part of the refurbishment project, NB Power undertook planning studies that examined the response to events well beyond those considered in the original design.

to re-evaluate earthquake hazards. NB Power hired external experts to perform the seismic hazard assessment, a project that included a paleo seismology study involving field work by experts to identify if there is any evidence of large

PLNGS is designed and constructed to meet rigorous regulatory safety requirements.

In recent years, nuclear power plants in North America and throughout the world have been subjected to significant earthquakes and experience has confirmed the seismic robustness of North American nuclear plants.

There are numerous components to seismic protection in nuclear plants, including safety features in the reactor designs, rigorous engineering codes and standards, and specific requirements for the strength of steel and concrete used to build the plants. These design and construction practices are above and beyond the level of protection needed to safely withstand significant ground motion.

Based on knowledge of the region's potential earthquake hazard gathered in the mid-to-late 1970s, key systems, structures and components at the Point Lepreau Nuclear Generating Station (PLNGS) were designed to withstand significant seismic activity and ensure worker and public safety.

The plant can be safely shut down and maintained in the shutdown state for earthquakes of even larger size than those originally contemplated.

PLNGS is designed and constructed to meet rigorous regulatory safety requirements.

Specific enhancements were made to the Station as part of the refurbishment project. Additional portable emergency mitigating equipment was also installed. These enhancements bring a broader level of diversity into the protection system as well as response capability.

To address the topic of potential very large seismic events, a Probabilistic Safety Assessment to determine a seismic margin was performed. This assessment evaluated plant robustness and identified areas where improvements could be made to increase the likelihood of avoiding reactor core damage and large radioactive releases from containment caused by a very rare, large earthquake. The insights gained from this study were used to perform even more seismic upgrades at the plant during the refurbishment outage.

NB Power also committed to the Canadian Nuclear Safety Commission to perform a state-of-the-art seismic hazard assessment

earthquakes that may have occurred since the ice age and how long ago they may have occurred. This was done to add to the historical record of recorded earthquakes and to the geological study of faults.

The preliminary findings of the assessment showed that the earthquake hazard, or seismicity, for PLNGS had not changed substantially since the Station was built.

On April 29, 2016, NB Power posted its PLNGS seismic hazards summary update that provides further details on the evolution of seismic evaluation methodologies as well as the progress that NB Power has been making.

The 2015 probabilistic seismic hazard assessment has been reviewed and accepted by the Canadian Nuclear Safety Commission.

The ongoing Seismic work is being performed by PLNGS demonstrates NB Power's commitment to continuous improvement. PLNGS staff are well trained and fully prepared 24/7 to respond to any emergencies that may occur at the Station.

Environment in our community

Being involved in the community and stewards of the environment is important to staff at PLNGS. Every year, Station staff join students and teachers from the Fundy Shores School to promote awareness about the role and responsibility that everyone can play in helping to protect our natural habitat. That's why May and June are busy months for the students of the school with a community clean-up day, Earth Day celebration and annual marigold planting - traditions that everyone looks forward to.

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> - Sean Gorman, Principal of Fundy Shores School.

"NB Power's annual environmental awareness celebration with the employees of the Point Lepreau Nuclear Generating Station continues to be one of the most anticipated events for the students of Fundy Shores School. It's a wonderful opportunity for the students to learn about taking care of their community in a way that is not only instructional, but includes mentoring and hands on learning as well," said Sean Gorman, Principal of Fundy Shores School.

These events kicked off with discussions about the importance of protecting the environment. Then the students divided into groups with Station employees to collect litter and recyclables around the school property.

For the marigold planting activity, the younger students at the school plant marigold seeds in their classrooms and when they're ready to be transplanted, the older students come to the Station to plant the flowers in a garden at the front security gate.

"After months of watering and tending the flowers from seeds to full-grown plants, our students consider it a privilege to walk to the gates of the Station and to brighten the entrance with marigolds," said Sylvia Dell'Olio, a teacher at Fundy Shores School. "Our students enjoyed interacting with the workers from the Station and shared many laughs and camaraderie while working together. Through joint efforts such as this the bonds of community between the school and the plant are fostered."

Events like these provide NB Power with an opportunity to connect and build strong relationships with its youngest community members.

Engaging
with our community

SAVING MONARCH BUTTERFLIES

Members of the Saint John Naturalists' Club are tagging endangered Monarch butterflies at NB Power's Point Lepreau Nuclear Generating Station. The club started observing sea ducks in the spring of 1996. Since that time, the club and the utility have collaborated on collecting invaluable data about bird migration, as well as, since 2006, tagging butterflies.

Jim works quickly to catch a butterfly in his net. In the observatory, Jim softly grabs a Monarch by its robust wing. With a toothpick, he places the round, hole-punched-sized sticker in the middle of the wing. Once tagged, the butterfly orients itself for a few seconds on Jim's hand. Then, it flies out the open window, out of sight among the goldenrods, getting ready for its long flight.

future generations continue to fly north before the fourth generation flies back to Mexico. "Unfortunately, we still don't know what triggers this urge to migrate," says Jim.

Monarchs remain an endangered species, although researchers predict an increase in the numbers arriving this November. Illegal logging in Mexico, the use of herbicides in the United States, and

> "Point Lepreau is so important to the Monarch migration"
>
> - Jim Wilson

Club member Jim Wilson catches and tags this largest of North American butterflies around the lighthouse at Point Lepreau where goldenrod, aster and thistle bloom. "Point Lepreau is so important to the Monarch migration," says Jim. "It is arguably the best site in New Brunswick with undisturbed fields and the plants where they find just what they need."

Monarchs migrate more than 3,000 kilometers every fall to spend the winter in the South - but only one generation per year. In 2012, Jim tagged two butterflies at Lepreau that were found in Mexico - the furthest travel distance recorded. The black, orange and yellow insects cluster on trees in the 10,000-foot elevated Mexican Oyamel Fir Forests for protection and warmth. In spring, they fly to the next water source that tells their bodies to stop the semi-hibernation and find a mating partner. In fact, they can have up to eight!

Migrating north, the female lays eggs on milkweed, a green plant with over 100 species in North America, 30 of which are good for the insects. The plants are both home and food source for larvae and caterpillars. Once hatched, the

climate change have taken their toll on Monarchs. Last year, statistics showed a record low number of the butterflies.

The observatory at Point Lepreau is one of only two tagging stations in New Brunswick. It plays an essential part in helping organizations like Monarch Watch to encourage North Americans to take action to save the butterflies, and providing data for research and education.

"It has been a wonderful experience working with NB Power. We are very appreciative for this great relationship of more than 19 years," says Jim.

LINKS:

BEACON http://www.newbrunswickbeacon.ca/42968/tag-butterfly/

MONARCH WATCH http://www.monarchwatch.org/

SJ NATURALISTS CLUB http://www.saintjohnnaturalistsclub.org/

Meet Brett Plummer

Site Vice President and Chief Nuclear Officer

Brett Plummer became the Point Lepreau Nuclear Generating Station (PLNGS) Site Vice President and Chief Nuclear Officer on November 1, 2015. Leading up to that role, Brett served as a member of NB Power's Corporate Nuclear Oversight Team. With 35 years of commercial nuclear power plant experience, he will continue to lead the Nuclear team to excellence to ensure a safe, predictable, and reliable operation for the life of the plant.

Q&A

Q. How do you think your military background helps you in your current role?

A. Working on a US Nuclear Navy submarine for almost five years in the early years of my career taught me the importance of procedural adherence. In that environment, you are living and sleeping right next to a nuclear reactor, which gives nuclear safety a whole new meaning and importance. We had to maintain really high standards and rigour in terms of the quality of how we did our work. This is something equally important at Point Lepreau and all nuclear power plants.

The other thing I took away is how important teamwork is. On a Sub, hierarchy didn't matter when it came to safety. Everyone's opinion mattered equally when concerns about nuclear or radiological safety came up. This is something I see demonstrated throughout NB Power – safety belongs to all of us.

Q. Tell us a bit about your commercial nuclear power experience.

A. I started at Seabrook Station Nuclear Power Plant in New Hampshire in Operations,

and became a certified staff member. I then worked at Maine Yankee Nuclear Power Plant for over a decade, in Operations on shift in the control room and eventually I became Operations Manager. When that plant decommissioned, I spent approximately a year and a half with the Institute of Nuclear Power Operators (INPO), visiting many nuclear plants, which gave me an opportunity to see the best and the worst of the industry.

I then returned to Seabrook, leading the Operations team and the station. We created a vision of what we wanted to become, and got everyone engaged and working towards common goals. In a relatively short time, we moved from the middle of the pack to become one of the top performing nuclear power plants in the world. In the years since, Seabrook has maintained this high level of performance.

Q. What are your focus areas for this year?

A. We're going to build on our Navigating for Excellence plan. To do this, we have rallied our team behind the common goals we need to achieve. We need everyone on board and doing their part to make the needed improvements.

We are focusing on improving our equipment reliability and predictability by getting ahead of challenges before they find us. We're reinforcing human performance tool use (tools that help workers prevent errors) and re-affirming our Station standards and expectations so everyone is clear on what excellence looks like. We're also working to improve our issue management process to more effectively manage emergent issues that pose threats to safety and/or generation.

Completing the 2016 planned maintenance outage safely and getting all of the required jobs completed has set us up for solid performance until the next planned outage.

Q. What are your long-term aspirations for PLNGS?

A. First off, we will run safely, predictably and reliably between our planned maintenance outages. We have a huge role to play in this province, and need to do our part to keep rates low and stable for customers. How we'll do that is by safely operating the unit with the best human performance in the industry.

I want to see PLNGS experience the kind of improvement trajectory that Seabrook went on. That was one of my proudest career accomplishments, and by far the most rewarding experience. Everyone there could see and feel the difference. I want PLNGS to be a learning and teaching organization that strives for excellence in every aspect of our operation.

It feels good to work at a high performing plant. Everyone's quality of life improves. Plus, best plants are also the safest and most economical plants, and I think we can all agree that keeping everyone safe and producing cost-effective power is what we're here to do.

Q. What do you think of New Brunswick?

A. I absolutely love it here. I'm living in Little Lepreau, only minutes from the plant. I am not a city person; rural coastal living in a small tight-knit community is exactly what I am used to. My home in Maine is on a small island named Westport. Little Lepreau is actually a step up from Westport since the roads are paved here!

I'd also like to acknowledge how welcoming and supportive people have been since I joined the team. The Lepreau community, the workforce and the rest of NB Power have all been great. I am excited to be part of such a strong and determined team.

Q. How do you spend your spare time?

A. I have two beautiful daughters who are grown up, and I am engaged to a nuclear professional in the US.

Lobster fishing is a passion of mine; I have a commercial lobster licence and my own boat since I was 16 years old. I also enjoy snowmobiling and spending time with my dog.

Emergency Preparedness

Intrepid 2015 Highlights

The 2015 Intrepid Emergency Exercise was a great success for NB Power and the Province of New Brunswick. It was the largest non-military emergency exercise ever to be conducted in this province. In compliance with regulatory requirements to operate the Point Lepreau Nuclear Generating Station (PLNGS), the exercise was evaluated by the Canadian Nuclear Safety Commission (CNSC) and observed by national and international counterparts.

Approximately 1500 people participated in the exercise with NB Power, including local residents, emergency response personnel, municipal, provincial and federal agencies and organizations. A special thanks to our Lepreau Warden service, Fundy Shores School, evacuees from all communities in the 20 km radius of the Station, and all government and non-government response partners.

Many industry best practices were observed in our performance and processes, validating our continuous improvement efforts. The report also noted valuable opportunities for improvement that are currently being assessed.

For example - The Lepreau Wardens at the Off-site Emergency Operation Center were a great asset due to their knowledge of the community.

An exercise of this magnitude requires a great deal of planning and preparation. While NB Power and the New Brunswick Emergency Measures Organization exercised emergency response plans, Intrepid also gave us an opportunity to work together with the Province of New Brunswick to test our collaborative effectiveness in responding to and managing a highly unlikely nuclear emergency. This rehearsal will certainly help us in other times of emergency such as major storms and outages when we need to work together for the people of New Brunswick.

Over the past several years, the Station has invested in a number of enhancements to our site to comply with new regulatory requirements, and to ensure that we continue to get safer and stronger. Some of these enhancements include:

- Dedicated emergency response team of highly trained people in safety and emergency preparedness.
- A diesel driven water pump that will put cold water into the reactor core to cool the fuel in the unlikely case that our multiple layers of safety systems are challenged.
- Additional diesel generators that provide necessary back-up power in the event of a station blackout.

By taking an active role in your community, you are helping to build a culture of preparedness in New Brunswick. Everyone has a role to play in being prepared for an emergency.

CLIMATE CHANGE

Did you know? PLNGS plays an essential role in ensuring that 75 per cent of New Brunswick's electricity demand is met by non-emitting or renewable energy sources by year 2020.

The output of PLNGS is combined with the Government of New Brunswick's Renewable Portfolio Standard to enable NB Power to achieve this goal.

SAFETY

At NB Power and PLNGS, safety is everyone's responsibility. It is fundamental to our success and essential to achieving our long-term business goals. A strong safety culture and healthy workplace environment are at the heart of everything we do - our employees reached over 4.8 million person-hours without a lost-time accident. This is an example of our commitment to safety.

Safe work behaviour reflects a risk minimization philosophy that applies to the public, visitors, contractors and our employees. Effective hazard management systems are embedded into our business planning and work activities.

PLNGS has a goal of zero industrial safety events and full compliance with environmental safety criteria. We also set improvement targets for radiological safety to ensure that our behaviour in this aspect of work is linked to our current Station business improvement program. In striving for excellence, legal requirements are considered the minimum standard. We adopt proven and effective best-in-class practices to provide enhanced safeguards vital to achieving sustainable, top-quartile performance.

The participation of all employees in identifying and effectively resolving safety issues is crucial to successfully upholding health and safety in the workplace.

OUTAGE

A planned maintenance outage started on April 1, 2016. As a base load plant for the province, PLNGS plays a pivotal role in providing safe, reliable and emission-free electricity to our customers. Our scheduled maintenance outages are a key investment in ensuring the long-term ability to dependably meet the energy needs of New Brunswickers.

The outage was timed to coincide with seasonal increases in water flows in the hydro system and with lower seasonal electricity demand to help offset the temporary loss of our Station's contribution to provincial energy needs.

During the outage there were more than 13,000 activities performed. Over 600 contractors and tradespeople from New Brunswick and beyond came to the Station to work alongside our employees.

One of the big jobs completed during the outage was the replacement of two of the three low pressure turbine rotors with new ones from Siemens, the equipment manufacturer. You may recall the transportation of the new rotors via massive tractor-trailers in early 2014.

The rotors, which weigh about 110 metric tonnes each, were prepared for installation through inspections and cleaning with a high pressure system. In parallel with the installations, technical inspections, along with maintenance and cleaning, were completed on the turbine system. The job was completed safely and with quality.

Another major job completed during the outage was the installation and commissioning of a new breaker in the Point Lepreau switchyard. This addition improves electrical grid reliability and is projected to save NB Power approximately $3 million annually in operating costs.

Other important maintenance and inspections were completed during the outage, on both the nuclear and conventional parts of the plant.

PLNGS - POWER REACTOR OPERATING LICENCE RENEWAL (PROL)

NB Power is seeking a five-year power reactor operating licence renewal for the Point Lepreau Nuclear Generating Station (PLNGS). The current PROL is for the period of June 2012 to June 2017.

The first of the public hearings for NB Power is scheduled for January 26, 2017 in Ottawa, Ontario. During this part of the hearing, the Canadian Nuclear Safety Commission (CNSC) will hear from NB Power and CNSC staff.

Part two of the public hearings will be scheduled to take place in Saint John in early Spring 2017. This licensing process provides many opportunities for public participation. Members of the public can observe the hearings or formally participate as intervenors. The CNSC assesses the licence application to ensure safety measures are in place, requirements are met and the appropriate safety systems are in place to protect the staff, the public and the environment. As we get closer to the Point Lepreau licence renewal hearings, information will be available on the NB Power website www.nbpower.com as well as on the CNSC website www.nuclearsafety.gc.ca/eng/

2015 REGULATORY OVERSIGHT REPORT FOR CANADIAN NUCLEAR POWER PLANTS

Each year, the CNSC produces a report on the safety performance of Canada's nuclear power plants. The report assesses how well plant operators are meeting regulatory requirements and program expectations in areas such as human performance, radiation and environmental protection, and emergency management and fire protection. The 2015 report highlights the nuclear power industry's safety performance during 2015 and details the progress of compliance and regulatory issues up to April 2016.

Through site inspections, reviews and assessments, CNSC staff concluded that PLNGS operated safely. Evaluation of all findings for the safety and control areas show that, overall, Nuclear Power Plant licensees made adequate provisions for the protection of the health, safety and security of persons and the environment from the use of nuclear energy, and took the measures required to implement Canada's international obligations on the peaceful use of nuclear energy.

"This is a good process to review, document and openly report the status of the safety of power reactors in Canada," says Brett Plummer, Site Vice President and Chief Nuclear Officer. "This is one of many strengths of the Canadian Nuclear regulatory process". The draft report was released in June 2016 and it summarizes CNSC staff's assessment of how well licensees are meeting regulatory safety requirements. The Station's overall CNSC assessment was satisfactory, with the highest rating of Fully Satisfactory declared for the area of Conventional Health and Safety. The integrated plant rating positioned the Station at the industry average level of performance addressed by the CNSC for 2015.

On August 17-18, 2016, employees from the PLNGS will participate in a public CNSC meeting in Ottawa where the 2015 Regulatory Oversight Report for Canadian Nuclear Power Plants will be discussed. The public meeting will be webcasted live on the CNSC website at nuclearsafety.gc.ca.

"We are pleased with this report from our regulator," said Mr. Plummer. "We are also pleased with our fully satisfactory rating of our Conventional Health and Safety performance as this is a reflection of the hard work from our employees and the strong emphasis NB Power places on industrial and workplace safety culture throughout the organization."

The Point Lepreau Nuclear Generating Station continues to operate safely and provides a major contribution to power generation in the province of New Brunswick.

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