CANADIAN NUCLEAR SOCIETY

www.cns-snc.ca

President's Message

Doddy Kastanya

Dear fellow CNS members,

Welcome to the first issue of the 2024 CNS Newsletter. As in the previous newsletter, I would like to use this opportunity to provide you with some updates related to activities around the CNS since November of last year as well as providing you with a sneak peek of what you should expect to see in this edition of the CNS Newsletter.

Since the last issue of the newsletter, the CNS council held the 214th and 215th council meetings on December 8th, 2023, and January 26th, 2024. I am pleased to let you know that the 2024 Sponsorship and Exhibitor packages have been delivered to many companies which have continuously supported the CNS over the years as well as some new players in the Canadian nuclear arena. At this point, the status of financial supports for our 2024 Annual Conference through the sponsorship commitments is very encouraging.

As usual, the period around the end of the year and the beginning of the next one is rarely filled with conferences and this year is not an exception. The next CNS organized course will be the CANDU Reactor Technology and Safety course which will be held at Courtyard by Marriott Downtown Toronto on March 18 through 20, 2024. Then it will be followed by an exciting 2024 Annual CNS Conference in June, and I would be saying a bit more about it in the next newsletter.

Concerning the contents of this edition of the CNS Newsletter, you will find the usual reminders of upcoming events that might interest you. A couple of short notices regarding new or developing divisions are also included here in. We are also showcasing a couple short writings contributed by our members. To complete this edition, we include the essay from the third-place winner of the 2023 Student Essay contest.

Finally, I would like to thank Cheryl Tasker-Shaw for her continued support during the preparation of our Newsletters. As I mentioned in the last newsletter, I am sure she will welcome any volunteers who want to share her joy through the journey. This is an opportunity to show your support to our organization and to serve the nuclear community in Canada.

Inclusion and Diversity

Special Committee on Diversity and Inclusion members needed!

The CNS received a report on membership last year from Redstone, CNS' account management company, and many gaps in diversity were noted. The special committee is being formed to help address those gaps and make the CNS a more diverse and inclusive organization. Recruitment and retention of diverse nuclear members in both the industry and the CNS as well as career support for all members will greatly benefit both the CNS and the nuclear industry.

The charter/terms of reference will be developed by this committee but is expected to include a review of the current state of diversity and inclusion in the CNS and form actions and initiatives to make CNS a more diverse and inclusive organization.

Please email tracy.primeau@gmail.com if interested.

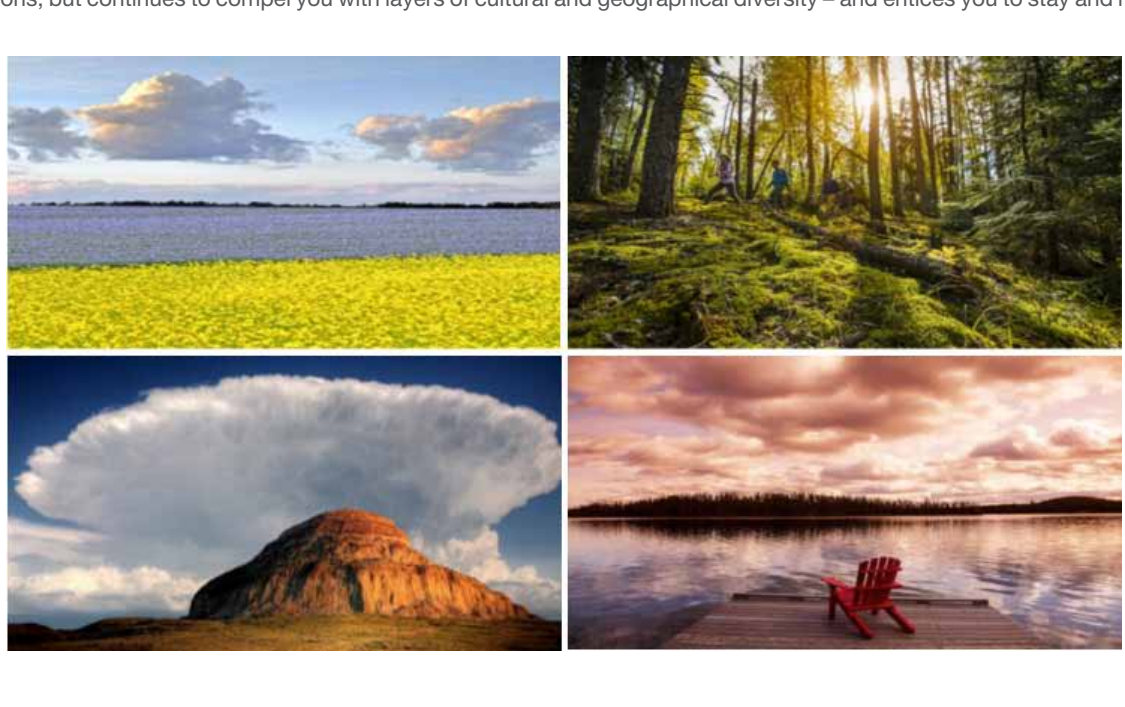
Recent and Upcoming Events

We are pleased to announce that the Canadian Nuclear Society (CNS) is organizing the

43rd Annual CNS Conference and 48th Annual CNS/CAN Student Conference

June 16th – 19th, 2024
Saskatoon, Saskatchewan
Sheraton Cavalier Hotel
www.cns-anncon24.ca

Saskatchewan is the kind of place that exists beyond the limits of expectation. Like our storytellers, Saskatchewan isn't phased by misperceptions, but continues to compel you with layers of cultural and geographical diversity – and entices you to stay and reconnect.



It's a place where grit and determination has helped people thrive through challenging circumstances and continue to grow, innovate and evolve. That tenacity comes through in how we speak and live our lives.

The 43rd Annual CNS Conference takes place over the course of three days with engaging topics, speakers, a student-based event, and a reception at the Remai Modern Gallery.

Conference topics may include:

- Enhancing Safety and Security
- Operations, Aging Management and Refurbishment
- Facilitating Energy Policy and Global Consensus
- Environmental Protection and Waste Management
- Deploying New Reactors such as SMRs and Building to Time
- Fuel Cycles
- Developing New Technology, Innovations and Applications
- Addressing Public Concerns about Radiation Impacts
- Facing Competitors and Reducing Cost
- Acquiring Medical (isotopes) and Biological Benefits from operating plants and research reactors

Conference Chair: Derek Mullin
Plenary Program Chair: Paul Thompson
Technical Program Chair: Paul Spekkens
Student Program Chair: Samantha Binkley

For more information, please visit the website: CNS Annual Conference 2024 (cns-anncon24.ca)
If you have any questions feel free to email Rebecca Colantonio, Event Manager at Rebecca.colantonio@quantumevents.ca

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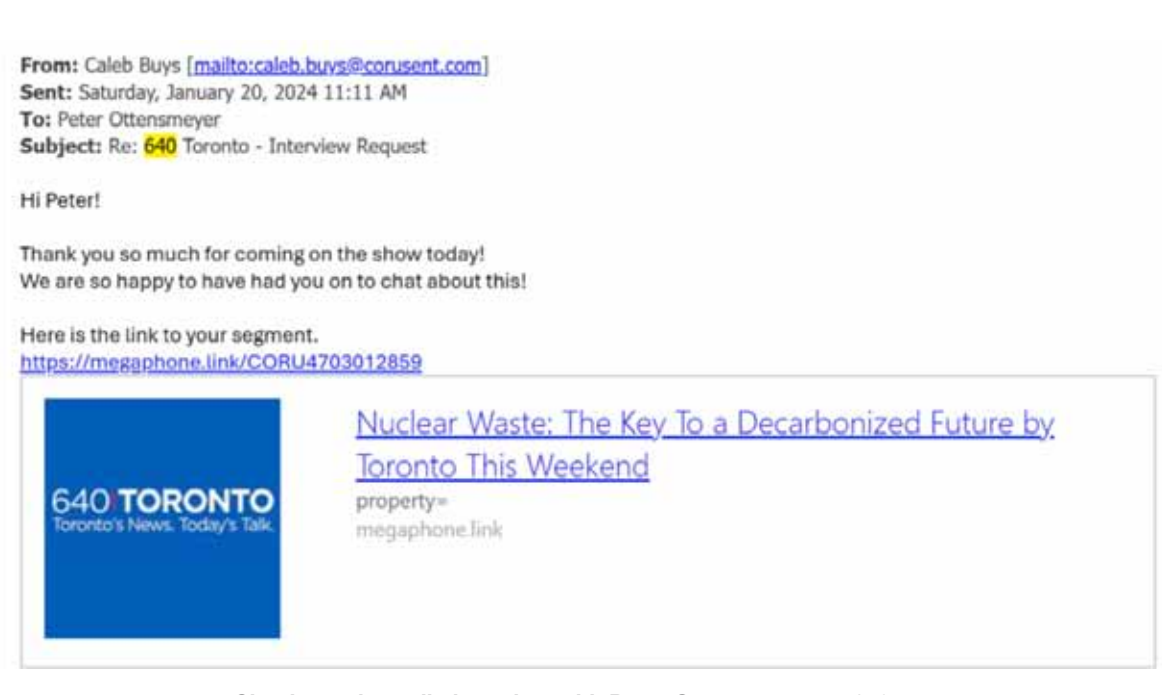

From: Caleb Buys [mailto:caleb.buys@corusent.com]
Sent: Saturday, January 20, 2024 11:11 AM
To: Peter Ottensmeyer
Subject: Re: 640 Toronto - Interview Request

Hi Peter!

Thank you so much for coming on the show today!
We are so happy to have had you on to chat about this!

Here is the link to your segment.
https://megaphone.link/CORU4703012859

640 TORONTO
Toronto's News. Today's Talk.
Nuclear Waste: The Key To a Decarbonized Future by Toronto This Weekend
property=
megaphone.link

Check out the radio interview with Peter Ottensmeyer on 640.

The Westin, Ottawa, Ontario

cna2024

CNS exhibited at the recent CNA conference.

The event had a record attendance of over 1,200 participants,
41 sponsoring companies and 27 additional exhibiting organizations.

Core Business Blog

by Neil Alexander

The winds have changed …and you can help keep it that way.

When I took on the role at CNS less than two years ago as Communications Director/Head of Communication, nuclear power was still unpopular. If there was an article in the media, it would typically have as its theme the fearmongering that had been popular for decades. Small Modular Reactors were beginning to get some positive media interest but the responses by anti-nuclear and alternative technology lobby groups was swift and dominating. Most of our media activity was correcting misinformation about nuclear technology and the effects of radiation. We barely dared to point out challenges facing other forms of clean power generation.

Roll forward to today and we see the media has made a complete about turn. Media reports about the advantages of nuclear are common and precipitate little if any blowback. Nuclear announcements are made, and people celebrate. The decision to extend the life of Pickering was met by almost universal acclaim and the Greenpeace statement that would previously have been the media's headline was almost completely blanked, gaining no airtime whatsoever.

Recently we even saw a small faction within the NDP try to set up an anti-nuclear event and have it swiftly reeled back in by the party. https://www.insauga.com/toronto-anti-nuclear-meeting-planned-by-ndp-mpps-pulled-after-blowback-from-partys-labour-support-base/

What I have learned from the speed of this switch is how fickle the media and public are. And it's not just nuclear power. I remember times when mentioning the carbon tax seemed to be punishable by death, followed by times when if you did not support it you were a social pariah. Today it appears we may be back to where we started from.

CNS has played a role in the change, but a lot of credit has to go to other organizations notably Canadians for Nuclear Energy (C4NE) and their enigmatic leader, Chris Keefer who overtly spoke positively about nuclear power at times when no one else was doing so. They enabled the backroom work done by many that has persuaded our governments to start talking positively about nuclear as well as investing in it.

Historically the conventional nuclear industry has got into the habit of only communicating when it absolutely has too. It's a Pavlovian response to the negative criticism of the past where anything we said would precipitate large volumes of dissent and when we did say anything no one listened anyway. If things were going our way we would just shut up and get on with the job. The misunderstandings about nuclear power remained but while they were not causing too many problems, we put up with them.

There is a risk that we do not recognize our new status and continue our historic behaviors. Things are going well at the moment we might think so let's not upset the applecart.

But one thing I am certain of is that the current popularity of nuclear is not a result of the public suddenly coming to understand it better. And I suspect that without that understanding the public could easily just change their sentiments again and governments would quickly follow, like they did in 2012.

So, I see this time as a great opportunity to lock in an improved understanding about the issues inoculating against any changing of the tide. People are listening and so we should be taking every opportunity to tell them the truth about nuclear and enabling them to understand radioactivity.

CNS as an organization can continue to do its bit. We will continue to correct misinformation about the perceived dangers of nuclear power, and we have also started to counter some of the outrageous claims made by some of the alternative technologies so that people will come to appreciate the real strengths of a nuclear based power system.

But you can do your bit as well and we want to help you do that. With people listening and interested you can now feel very comfortable talking about what you do and through our communications program we intend to ensure that you are informed about the industry so that you can confidently answer questions that you may be asked.

Now is our time. Let's make use of it.

Dispatch from the Danube

Canada's big modular reactor

Jeremy Whitlock
Feb 20, 2024

Canada is a big country.

It has big energy needs, big natural resources, big environmental challenges – and big ideas.

One of the biggest came as the country emerged from WWII, punching well above its weight on several fronts (manufacturing, science and engineering among them) – and looking increasingly outward to the needs of global peace and sustainable development.

At the time Canada boasted the world's second-largest nuclear program – birthed in fire with the Manhattan Project as midwife, now unleashed as an unprecedented force for global good.

The big idea was to make electricity from a nuclear reactor that Canada could design and build, and to do this cheaper (and of course cleaner) than fossil fuels.

It had to run on natural uranium, since Canada has a lot of that, and no enrichment capability.

It had to use pressure tubes instead of pressure vessels, partly since Canada lacked a large steel forging capability.

The result, by the early 1960s, was CANDU: a reactor that any country could build and fuel if it had the medium-scale industrial capacity of Canada circa 1950s, and access to natural uranium (conveniently one of earth's abundant elements).

The name recalls the spirit of Canadian engineers at the time: not only was this 'hewer of wood, drawer of water' nation now a splitter of atoms (and one of the first), but it was doing so on its own terms, keeping pace with the giant to the south despite that nation's head start through its nuclear navy program.

Canada's was the nuclear road less travelled: it's actually very hard to make a reactor work with natural uranium, and maintain commercial viability – the machine has to be comparatively huge, filled with exotic heavy water, and refuelled every day without shutting down.

The heavy water can't leak, the fuel must be extra robust, and the control and safety systems demand numerous in situ detectors and devices – all while minimizing extra materials in the core.

But the genius of it all is the pressure-tube design, and the robotic fuelling system that feeds it: hundreds of subcritical microreactors linked to each other by a bath of low-temperature, low-pressure heavy water.

The fuelling system must latch to these pressure tubes – daily, at 300 degrees and 100 atmospheres, keeping the coolant flowing while swapping fuel bundles.

More power? More pressure tubes: CANDU designs range from 20 to over 1000 megawatts, mainly by adding more pressurized fuel channels.

In some ways, it was the world's first commercial modular reactor.

The many side benefits include passive safety: that large heavy-water inventory makes any change to the fission process naturally sluggish, and absorbs excess heat when needed. Both features translate to more time, and time is your friend when managing enormous flows of energy.

The design also enables refurbishment – an option now exercised throughout Canada's nuclear fleet with the recent announcement of an overhaul at the Pickering station near Toronto. Like swapping out the engine of a classic car, new life can be bestowed upon aging but still elegant bodies, rather than starting from scratch.

Perhaps the most interesting benefit is CANDU's ability to run on different fuels, including thorium – more abundant than uranium, and able to 'breed' uranium fuel while in the reactor.

These things – passive safety, fuelling flexibility, extendable core life – are the stuff of advanced reactors today, and CANDU does this all without needing enrichment of its uranium fuel (presenting both fuel-efficiency and nonproliferation benefits).

Small modular reactors are the rage and have their place – small grids, load following, integration with renewables, remote and off-grid locations, industrial applications, newcomer countries.

But the big need for big reactors in a big country with big energy needs has not gone away – and Canadians spent billions over 80 years perfecting a big answer to this need.

With energy flexibility and sustainable development as its calling cards, nuclear's time has finally come: whether big or small, we'll need them all.

A Canadian Nuclear Safeguards Invention

By Mike Attas

You know that eerie blue glow, indicating highly radioactive material? It's called Cherenkov light, and it's behind the success of a Canadian invention used around the world. Inspectors from the International Atomic Energy Agency (IAEA) carry the invention, called the Cherenkov Viewing Device, or CVD, to observe the glow produced by used nuclear fuel rods. After the rods have produced power in the reactor, they don't look very different, but they are so highly radioactive they need to be stored five to ten metres under water for shielding and cooling. They also contain plutonium, which illicit groups could use to try to make a nuclear weapon. So the IAEA inspectors check the rods to make sure they are the Real McCoy, not fake or "dummy" rods substituted for the real ones. How is this done? Well, the old way would have been to lower a radioactivity meter into the water to take a measurement, a tricky and slow process, especially when there are hundreds of fuel bundles to be checked. Enter the CVD.

The Cherenkov light is faint, and it gets fainter as the rods' radioactivity decays. As well, most of the emission is ultraviolet light, which we can't see. So the CVD has been designed to capture that faint UV light, convert it into visible light after amplifying it, and displaying it in a viewer to the inspector. A team led by Dennis Chen at AECL's Whiteshell Laboratories developed the CVD in the late 1980s, and it has gone on to be the IAEA's most successful instrument for used-fuel verification. AECL built dozens of the latest model, the Mark IV, serviced them, and provided training courses to the IAEA inspectors. Canada's technical contribution to the IAEA, the Canadian Safeguards Support Program, financed the R&D and training components for this instrument.

As inspectors gained experience with the CVD, they asked for improvements of various sorts. AECL let a contract to design and build a telephoto lens optimized for ultraviolet light, and fitted it to the Mark IV CVD. Greater sensitivity and resolution were also needed, to assess fuel of different types, including old fuel with weaker radioactivity. To meet this need, the emerging technology of digital imaging was investigated by the Whiteshell Labs team during the 1990s. In collaboration with Sweden, they designed a very sensitive digital CVD which was also capable of saving and processing the images collected at the reactor sites. Channel Systems, Inc., a small company in Pinawa, Manitoba, completed the design and has been manufacturing DCVDs for the IAEA and other customers around the world. Truly a Canadian success story!

P.S. The Society for the Preservation of Canada's Nuclear Heritage does not yet have a CVD in its collection, but we're looking!

A new CNS Technical Division – Space Nuclear Applications Division (CNS-SNAP-D)

By Blair Bromley

On January 26, 2024, the Canadian Nuclear Society (CNS) Council approved a proposal by Dr. Blair P. Bromley (Co-Chair of the Fusion Energy and Accelerator Science and Technology Division, CNS-FEASTD), to create a new technical division within the CNS – the Space Nuclear Applications Division (SNAP-D), also known affectionately as the Space Nuclear Power and Propulsion for Exploration Division (SNUPPE-D, pronounced "Snoopy-D").

The creation of this new technical division is considered timely, and it is expected to help provide a forum and focus for professionals and enthusiasts across Canada to better communicate and cooperate on developing the use of nuclear energy for space exploration applications.

It is anticipated that CNS-SNAP-D will be highly useful and beneficial to the CNS and to all stakeholders and individuals in Canada who have an interest in the use of nuclear energy for space exploration.

The initial co-chairs for CNS-SNAP-D will be Blair Bromley (also co-chair of CNS-FEASTD), and Dr. Justin Spencer (Canadian Nuclear Laboratories, CNL). Efforts are underway to develop the CNS-SNAP-D website, and also to recruit volunteers to serve on its Division Executive / Program Committee.

Current and renewing CNS members are encouraged to update their membership profiles, and to add CNS-SNAP-D to their list of division memberships.

Background

Given the increased government, public, and private sector interest and investment in space exploration initiatives, infrastructure, and technologies over the last 10 years, particularly with the Artemis Lunar Exploration program in the United States of America (USA), and other space programs within the international community (Canada, Japan, Korea, Europe, China, India, Russia, and others (see https://en.wikipedia.org/wiki/List_of_government_space_agencies)), the time has now come where it is advantageous to establish a new technical division within the Canadian Nuclear Society – the Space Nuclear Applications Division (CNS-SNAP-D). This new division can help coordinate and facilitate education, communication, and cooperation between different stakeholder groups in Canada with regards to the use of nuclear energy for space exploration applications.

There is growing interest and recognition within Canada and within the international community of the need to develop nuclear reactor technologies that could be used to provide power and propulsion capabilities to support space exploration efforts, given the limitations of other power and propulsion options.

Reliable power and propulsion is needed for establishing and maintaining robotic and human outposts on various planetary bodies (such as the Moon, Mars, moons of Jupiter/Saturn/Uranus/Neptune), and for supporting the operation of exploratory spacecraft and probes (for all planets, moons, and asteroids within the Solar System).

Reliable and compact power and propulsion systems are also needed for lower-cost and more rapid interplanetary space travel, and also for the potential exploration of space beyond the confines of Earth's solar system. It is recognized that for most space exploration activities beyond Low Earth Orbit (LEO), or perhaps beyond the inner part of the Solar System, the use of nuclear energy is the only viable option. The sole use of solar photovoltaic panels is impractical, given its very low energy and power density, and limited capabilities, especially during extended periods of darkness.

Within Canada, there are new initiatives at various agencies (such as the Canadian Space Agency (CSA), government-funded laboratories, universities, and private sector companies to investigate, assess, and/or develop nuclear technology options to support space exploration efforts. Many of these efforts in Canada are in collaboration / cooperation with other nations, agencies, and programs, such as the Artemis Program in the USA with NASA (National Aeronautics and Space Administration) (see https://en.wikipedia.org/wiki/Artemis_program).

Motivation

There are a number of strong motivating factors for creating CNS-SNAP-D including:

- In accordance with the mission of the CNS, to help educate and inform its members, the public, government, policy makers, and various stakeholders about the science and technology of nuclear energy for different applications, including space exploration.
- To serve as an independent and objective source of information to help provide guidance and advice to government, policy makers, private industry, and the public on nuclear energy for space exploration applications.
- To help organize technical sessions and plenary sessions at the CNS Annual Conference and other stand-alone CNS seminars/webinars, workshops and topical meetings to help facilitate better communication and cooperation between different stakeholder groups in Canada that have an interest in nuclear energy for space exploration applications.
- Many individuals, but particularly students and the younger generation, who have an interest in space exploration, could be attracted and drawn to learn more about nuclear energy through the logical intersection of these two topics (nuclear energy / space exploration). Thus, there could also be an opportunity to attract more people to join as members of the Canadian Nuclear Society, through the initial, entry-level interest in the activities of CNS-SNAP-D.
- Interest in space exploration is a gateway for developing more interest in nuclear energy. There is a precedent for this initiative.
  - Within the American Nuclear Society (ANS), the Aerospace Nuclear Science and Technology Division (ANSTD) has existed for nearly 15 years (founded in 2008), and its existence has helped attract and maintain new ANS members, while providing a forum and organization for sustaining continued educational and professional development activities and topical meetings (such as the biennial topical meeting Nuclear and Emerging Technologies for Space (NETS).
  - More information on ANSTD at: https://anstd.ans.org/
  - More information on NETS at: https://www.ans.org/meetings/nets2023/
- The activities and "added value" by CNS-SNAP-D will augment and complement those of other CNS Technical Divisions, attracting more participants and more CNS members.

Objectives:

The following points highlight the key objectives for CNS-SNAP-D. These points are similar to those that have been made for the creation of other technical divisions within the CNS:

- Having a dedicated division in CNS for space nuclear power and propulsion for exploration that will focus on providing a platform for exchange of knowledge and information.
- Such a division can engage in the following activities:
  - Organize technical sessions, plenary sessions, and panel discussions for the CNS Annual Conference.
  - Organize seminars/webinars at the branch or national level.
  - Organize stand-alone workshops and topical meetings.
  - Provide information and news stories to its membership on a periodic basis.
  - Serve as an information source for identifying subject matter experts (SME) in the topics of space nuclear power and propulsion.
  - Provide advice/guidance to the individuals who want to learn more about space nuclear power and propulsion.
  - Facilitating communication and networking.
  - Maintain and populate a division website with relevant information of interest.
  - Facilitate the development of position statements and whitepapers, as appropriate.
- This division will focus on how individuals, groups and companies in the nuclear industry are turning to innovative nuclear energy technologies and methodologies to support space exploration initiatives.
- A key objective of CNS-FEASTD is to provide a forum for exchanging views, ideas and information relating to all aspects of the use of nuclear energy for space exploration applications. It is also noted and recognized that such activities could encompass the issues of radiation protection and shielding in space environment, and the development and use of advanced power and propulsion technologies (such as fusion energy, and propellant-free propulsion systems)

Final Statements:

Many CNS members are excited and enthusiastic about the potential for CNS-SNAP-D.
The creation of this new technical division is timely, and it is anticipated that CNS-SNAP-D will help attract and retain many new CNS members.

CNS-SNAP-D will serve its members as an effective forum for promoting better knowledge and understanding of how nuclear energy can be applied to space exploration.

CNS-SNAP-D has the potential to facilitate better communication and cooperation by all professionals, enthusiasts and stakeholders in Canada who have an interest harnessing nuclear energy to support space exploration.

Screenshot: MGM

Why Canada should consider building SMRs

Nikki Shahram
Grade 12, École Dr. Charles Best Secondary School
Third-place Winner for the 2023 Essay Contest

Nuclear energy is one of the cleanest and most efficient energy sources. Though this is a well-known fact, the general population continues to exhibit fear regarding this topic. In the past fifty years, there have been various calamities linked to nuclear power plants, such as the disaster in Chernobyl and Three Mile Island. Fortunately, we may be able to accommodate for this fear by using small modular reactors. Otherwise known as SMRs, this technology is rising in popularity around the globe as our scientific knowledge continues to advance. I will be discussing how SMRs function and the benefits of building them in Canada.

Firstly, what are small modular reactors? Small modular reactors are essentially a compact version of a traditional nuclear reactor. Both use fission to create energy. Fission is the splitting of an atom by colliding its nucleus with a high-speed neutron. When the atom splits apart, it expels neutrons that collide with other atoms. This process is called a chain-reaction. When we want to extract nuclear energy, we manually strike an atom with a neutron using an accelerator. Note that this is only possible with a neutron. A proton would be repelled by the positive charge of the nucleus and an electrons mass is too little to split an atom apart, even at high speeds. As of now, this only works with radioactive elements, such as uranium because they are the only elements that naturally expel neutrons from their nucleus, causing the high energy chain reaction. Yet, if SMRs and traditional nuclear plants use the same technology, how does this address the safety concerns? Hence their name, SMRs are many times smaller than regular nuclear reactors. The Chernobyl and Three Mile Island disasters were caused by a common error: a core meltdown. SMRs have a much smaller core, meaning they are less likely to overheat and meltdown. In addition, most nuclear plants were post World War Two designs, denoting that our general understanding of science has substantially improved. Our current technology allows us to implement cutting-edge cooling and emergency shut down systems. Therefore, in case of an emergency, advanced SMRs can shut down autonomously.

Canada is a predominantly rural country. Having many small, remote communities means it can be difficult for power to reach all of them. For example, many Indigenous reserves lack reliable sources of energy. According to EcoTrust Canada, only 40% of people living on BC reserves have access to heat in their homes, compared to 95% of other BC residents. SMRs would allow for reserves to easily access a dependable electricity source. This would bring Canada one step closer to reconciliation. Similarly, we could also provide other countries with this technology. For countries who are facing repercussions of natural disasters, SMR's would be a temporary solution for electricity loss. A region facing the fallout of an earthquake or hurricane does not have the time or strength to repair traditional power plants. These structures, which are about ten times greater than SMRs, require a minimum of six years to build. Small modular reactors can be mass produced in factories, allowing for easy distribution. In both cases, this would directly provide communities with warmth, light, and working appliances.

A common argument against nuclear energy is that solar and wind are better alternatives because they are renewable and natural. While these sources are very clean, they are not as reliable as nuclear. Solar energy only works in very sunny regions, unlike Canada. In addition, they do not work at night, which means all the energy must be gained and stored throughout the day. Wind energy only works in windy regions. Even though Canada is a windy country, this source will not work all the time, depending on weather situations. Nuclear energy beats both concerns, as they function tirelessly, no matter the conditions. So, if nuclear is the best option, why not just build power plants instead of SMRs? A common issue between wind, solar, and traditional power plants is that they are built above the ground, making them susceptible to damage. If these sources are destroyed, we will be left without electricity until they are repaired or even rebuilt. This process can take years. New technology allows for SMRs to be chiefly built underground, making them impenetrable against most natural disasters.

Our rapidly advancing scientific knowledge continues to improve our current SMR designs. Their popularity is propagating as more people realize that building them in Canada will have a positive societal and environmental impact. Not only are SMRs transportable, but they are much safer in comparison to traditional nuclear reactors. Considering to build this new technology sooner than later will allow Canada to help communities around that globe, while also providing aid to its own Indigenous population.

Citations

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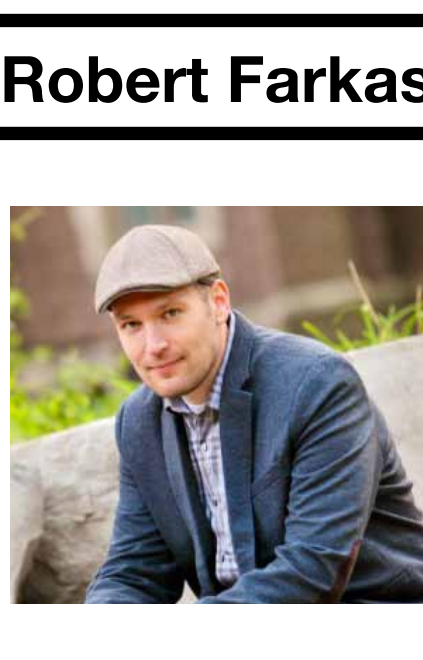
Congratulations Peter Ozemoyah!

Peter Ozemoyah has been selected as one of the 100 Most Influential Black Canadians for 2023-2024, due to his remarkable achievements and for being a game-changer and role model for our youth. Peter will be celebrated as part of the upcoming Black History Showcase, presented by the 24-hour Afroglobal Television channel.

Leaders on the influence list include The Rt Hon.Michaëlle Jean, Canada's 27th Governor General; Black North Founder Wes Hall; TVO CEO Jeffrey Orridge; RBC Social Impace and Innovation VP Mark Beckles; Toronto Raptors President Masai Ujiri; CIBC's EVP and Chief Legal Officer Kikelomo Lawal; Canadian Senator Paulette Senior; and TIFF CEO Cameron Bailey.

Obituary

Robert Farkas



Robert Farkas, 42, a CNS long time member, was unexpectedly taken from us on January 21 by an undiagnosed heart condition. Robert has been a prominent reactor physicist for 18 years and most recently was the manager of CEI's Reactor Physics, Fuel and Safety Branch. Over his career he has made contributions to landmark projects such as the Bruce refurbishment and restart and Darlington refurbishment and restart. Robert was also involved in the design work for the Advanced CANDU Reactor, was the code holder for the CANDU industry standard toolset code RFSP and was a contributor to the IAEA's Numerical Benchmark for Multiphysics Simulation of Pressurized Heavy Water Reactor Transients. While working with the physics team for the ACR-1000, he developed optimization routines to automate the calculations of the fuelling of the initial core of the reactor and also automated core following simulations in RFSP.

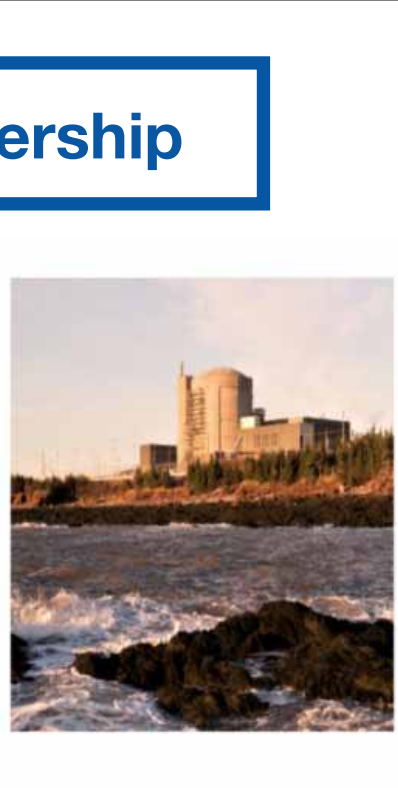
Robert was born and raised in Hamilton, Ontario. He obtained an Engineering Physics degree from McMaster University in 2004, an MASc in Nuclear Engineering from Ontario Tech University in 2014, and was near completion of a Nuclear Engineering PhD, also from Ontario Tech University.

Robert's first appointment was as an Instrumentation and Control Engineer at AECL in 2005, becoming a Junior Reactor Physicist in 2006. After AECL became CANDU Energy Inc., Robert became a Senior Reactor Physicist in 2015 and eventually Manager of the Reactor Core Physics Department in 2022 and Manager of Fuel and Physics in 2023. He helped organize several CNS events, most recently the prominent International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering, in Niagara Falls in the summer of 2023.

Robert was thorough, tireless and enthusiastic, always pushing the boundaries of what was achievable by the project he worked on; and supporting everybody on the team in the process. His energy and enthusiasm extended beyond his professional life. He enjoyed hiking and biking along local trails in the company of friends, and he was known to skate as well as play squash and soccer. His friends and colleagues will remember him affectionately.

Join or Renew CNS Membership

Reasons to become a member of the CNS



- Take advantage of many excellent opportunities to grow professionally by meeting and networking with colleagues in Canada and internationally.
- Many volunteer positions are available which offer opportunities to grow personally by learning and networking with others in Canada's nuclear field.
- Receive special member registration fees to CNS Conferences and Courses.
- Membership is free for students and discounted rates are available for retirees and recent graduates!
- Receive early notices by e-mail of many other items of interest

Membership fees:

- $92.00 for regular members, and $86.40 for each additional year
- $54.10 for retiree members, and $48.40 for each additional year
- $31.00 for student members from outside Canada
- **Free for Canadian students! As part of the registration process, you will be asked to confirm your full-time-student status (student card or other institution documents) in the current year. Once that confirmation is received, your membership will be approved.**
  Note: to be eligible for the student fee for CNS conferences and courses, you must be a CNS student member in good standing.

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