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Written submission from North American Young Generation in Nuclear (NAYGN)

Mémoire de North American Young Generation in Nuclear (NAYGN)

In the Matter of

À l'égard de

Application for a licence amendment to authorize activities related to the production and possession of Molybdenum-99 (Mo-99) at the Darlington Nuclear Generating Station (NGS)

Demande de modification de permis en vue d'obtenir l'autorisation de produire du molybdène 99 (Mo-99) à la centrale nucléaire de Darlington

Public Hearing - Hearing in writing based on written submissions

Audience Publique - Audience fondée sur des mémoires

September 2021

Septembre 2021

Canada

22-July-2021

Tribunal Officer, Secretariat
Canadian Nuclear Safety Commission
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Re: OPG DNGS Mo-99 Licence Amendment Application (September 23, 2021 Hearing in Writing)

Dear President and Commission Members,

I am representing North American Young Generation in Nuclear (NAYGN) as the NAYGN Canadian Operating Officer. NAYGN is an association of young professionals and students passionate about the nuclear industry and is focused on professional development, public relations, networking, and community outreach. There are currently over 100 chapters across North America with 14 chapters in Canada.

Ontario Power Generation and BWX Technologies, Inc. have been strong community supporters (including actively supporting non-profit organizations such as the NAYGN Durham and NAYGN BWXT chapters) and provide careers to many of our NAYGN members.

As demand for medical isotopes is expected to grow substantially in the next decade, there is a need for additional irradiation capacity. More than 10,000 hospitals around the world use medical isotopes for sterilization, diagnostic imaging and for various treatments. Canada's nuclear isotope program pioneered a number of medical applications which are used widely, and much of that work has been focused on the diagnosis and treatment of cancer. Approximately 80% of nuclear medical diagnostic

procedures rely on Technetium-99m (Tc-99m), the decay isotope of the Mo-99 radioisotope. This translates into over 30 million heart, cancer and bone diagnostic scans, which are performed annually using Tc-99m.

The production of Mo-99 from neutron irradiation in a CANDU reactor is considered a *first-of-a-kind* initiative that would place Darlington, and Canada, as a world leader to produce Tc-99m which will be used for medical diagnostic imaging. The application to produce Mo-99 would also be an ideal method utilizing neutron capture in the reactor as opposed to the current method of utilizing highly enriched U-235 targets in the National Research Reactor (which are subject to international safeguards when irradiated and which result in long-lived nuclear waste and fissile hazards). Furthermore, since the decision to shut down and decommission NRU in 2016, Mo-99 has been imported into Canada from reactor sites in Belgium, South Africa, Australia, and Netherlands. Numerous shortages have occurred since 2016 due to aging nuclear infrastructure in those countries or the inability of Canada to import sufficient supplies of Mo-99 when global stocks are low

The comprehensive CNSC staff review of this application determined that:

> "OPG would have adequate provisions in place to ensure the safe production of Mo-99. As a result, the production of Mo-99 would pose no substantive risk to the operation of the nuclear facility itself. The installation and operation of the Mo-99 IIS would not result in significant doses to workers or members of the public. Further, the emissions for Mo-99 production are expected to be minimal compared to overall station emissions and well below the Derived Release Limits (DRLs) for the site."

This strong CNSC review gives NAYGN, and its members, strong confidence in the ability for OPG to safely produce Mo-99.

In closing, I truly believe that OPG should be granted a licence amendment to produce Mo-99. I believe this isotope will have amazing health benefits and that OPG (and Canada) should step up to meet the growing isotope demands. OPG is a trusted community partner that has safely been delivering clean, reliable, low-cost nuclear power to families and businesses across the province and life-saving medical isotopes across the globe.

Thank you.

Matthew Mairinger