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Written submission from the Canadian Nuclear Association

Mémoire de l'Association nucléaire canadienne

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

canadian nuclear association cna anc association nucléaire canadienne

August 15, 2021

Canadian Nuclear Safety Commission
c/o Louise Levert, Secretariat
280 Slater St. PO Box 1046
Ottawa, Ontario K1P 5S9

Subject: Canadian Nuclear Association intervention in support of Ontario Power Generation's application for a licence amendment to authorize activities related to the production and possession of Molybdenum-99 at the Darlington Nuclear Station.

The Canadian Nuclear Association (CNA) has over 120 members representing over 76,000 Canadians employed directly or indirectly in generating clean electricity, researching and producing nuclear medicine, exploring and mining uranium and promoting Canada's worldwide leadership in science and technology innovation. Our members are committed to safety throughout the entire life-cycle of the nuclear industry and as such are supportive of Ontario Power Generation's (OPG) application to produce Molybdenum-99 (Mo-99) at the Darlington Nuclear Station.

Every year in Canada, nuclear technology helps avoid 80 million tonnes of carbon dioxide emissions by displacing fossil fuels, supplies 70% of the global supply of cobalt-60 radioisotopes that are used to treat cancer and sterilize medical equipment, as well as supplying other live saving medical isotopes. OPG is a critical part of this important industry and the production of Mo-99 is another contribution to the increasingly important role nuclear medicine plays in the health of Canadians.

This project is of vital importance to the nuclear industry and the medical community. Approximately 80% of nuclear medical procedures rely on Technetium-99m (Tc-99m). which is a decay isotope of Mo-99. Virtually all major hospitals in Canada have a nuclear medicine department where Mo-99 and Tc-99m are used daily by doctors to diagnose patients. Almost one-third of hospital admissions will involve nuclear medicine in the patient's diagnosis or treatment.

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For decades, Canada was by far the largest global supplier of Mo-99 which was made from highly enriched uranium targets at the NRU in Chalk River and processed by Nordion in Kanata. However, the NRU was shut down in 2016. Since then, Canada has had to import Mo-99 and there have been numerous shortages.

It should also be noted, that while very efficient, Mo-99 production from HEU creates long-lived nuclear waste and is subject to international safeguards as a duel use defence material. To solve the supply issue, BWXT-Technologies (BWXT) has developed a novel breakthrough technology that does not require the use of either HEU or high-flux reactors like the NRU.

BWXT's innovative method uses naturally occurring Molybdenum metal as the target material for use in CANDU reactors owned and operated by OPG. One of the key features of a CANDU unit is a relatively low Moderator operating temperature and the pressure is well suited for target irradiation. The resulting targets do not create the fission-product nuclear waste that HEU targets produce.

In short, the new "made in Ontario" approach to producing Mo-99 is more efficient, more reliable and does not produce fission-product nuclear waste. This is a very positive breakthrough for nuclear medicine in Canada and ultimately the world.

Notwithstanding the important medical benefits, the CNSC's mandate is to ensure the safe operation of nuclear plant and that any products including life-saving isotopes must be generated in a manner that protects workers, the public and the environment. The Canadian nuclear industry fully supports this mandate and operates on a safety-first principle.

OPG has demonstrated its' commitment to that principle through its' strong safety and operational performance over the past 50 years. The necessary modifications to produce Mo-99 will be implemented based on a robust safety case supported by safety assessments that demonstrate continued safe reactor operation, public safety and environmental protection.

Like all CNA members, OPG values the relationships it has with Indigenous communities, the public and stakeholders. OPG emphasizes open and ongoing communications and operates active engagement programs with the public and stakeholders in all the communities where it has facilities and has actively communicated information regarding the production of Mo-99 at the Darlington facility.

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For these reasons, the Canadian Nuclear Association is pleased to support Ontario Power Generation's application for a licence amendment to authorize activities related to the production and possession of Molybdenum-99 at the Darlington Nuclear Station.

If you have questions or require additional information, please do not hesitate to contact me.

Sincerely,

Steve Coupland
Director, Regulatory and Environmental Affairs
Canadian Nuclear Association

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