



**Written submission from  
TRIUMF**

**Mémoire de  
TRIUMF**

In the Matter of

À l'égard de

**McMaster University**

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**Université McMaster**

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Application to renew its McMaster Nuclear  
Reactor Class IA non-power reactor operating  
licence

Demande concernant le renouvellement de son  
permis d'exploitation d'un réacteur de catégorie  
IA non producteur de puissance pour le réacteur  
nucléaire McMaster

Public Hearing - Hearing in writing based on  
written submissions

Audience publique - Audience fondée sur des  
mémoires

**April 2024**

**Avril 2024**

**RE: McMaster University Research Reactor Licence Renewal (Licence #NPROL-01)**

Dear Canadian Nuclear Safety Commission Members,

I am writing in support of the McMaster University Research Reactor Licence renewal (#NPROL-01).

The McMaster Nuclear Reactor (MNR) has been operational since 1959, and in the past 64 years its flexible design with its end use as a multi-purpose research facility in mind, has propelled McMaster to become Canada's Nuclear University. Its suite of nuclear facilities is one of a kind in an educational institution setting.

The MNR:

- Is a world leader in the production of iodine-125, a radioactive isotope that is used in the treatment of prostate cancer, with 70,000 treatments a year being sent around the world. McMaster continues to be a leader in isotope production and research and most recently manufactured and packaged its first patient dose of holmium-166 for liver cancer treatment trials.
- Is a world leader in neutron beam research and development leading the way in research and development of new materials and technology.
- Conducts hundreds of thousands of neutron irradiations every year, many in support of industry (mining exploration, environmental samples etc.).

In addition, as an active contributor to the Federal governments Small Modular Reactor (SMR) Action Plan, McMaster University has proven itself to be a national leader in SMR research with its commitment to clean energy. SMRs have the potential to change the future of clean energy production in Canada (and around the world) and experts at McMaster are spearheading research in SMR design, deployment and safety. SMR technology will be a key driver in the ability to transform communities with the abundance of clean energy.

From our outlook at TRIUMF, the McMaster Nuclear Reactor also plays an important role in neutron scattering in Canada. Neutron scattering is a non-destructive technique that is used to probe the structure of materials at the atomic level. The MNR is currently home to two neutron scattering beamlines, the McMaster Alignment Diffractometer (MAD), and the McMaster Small Angle Neutron Scattering (MacSANS) Beamline, which is currently under construction. These two beamlines are to open as user facilities soon, with three more to be completed over the next several years. The latter three are funded through the CFI 2020 Innovation Fund project "Building a Future for Canadian Neutron Scattering," proposed by a collaboration of 17 universities. These facilities are important in building up a domestic neutron scattering capability.

The MNR is also currently home to the McMaster Intense Positron Beam Facility, which will enable new discoveries in nanomaterials and fundamental atomic science using positron annihilation

spectroscopy. Furthermore, The McMaster Nuclear Reactor is an important partner in the Canadian Medical Isotope Ecosystem funded by the federal Strategic Innovation Fund.

Canada is a tier-1 Nuclear nation, and it can only remain so with institutions such as McMaster who can support the growing demands of research, education, and expertise in the nuclear field. McMaster is a valuable collaborator to industry and research partners across Canada and internationally. Renewing McMaster's Licence will ensure its continued success in these important areas and ensure that Canada continues to be a nuclear leader.

Sincerely,

A handwritten signature in black ink, appearing to read "N. Smith", with a stylized flourish at the end.

Nigel Smith

Executive Director & CEO  
TRIUMF