



**Written submission from
Michael LaFontaine**

**Mémoire de
Michael LaFontaine**

In the Matter of

À l'égard de

McMaster University

Université McMaster

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

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

Dear Commission member,

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

The McMaster Nuclear Reactor (MNR), operating under the direction of Nuclear Operations & Facilities (NOF) at McMaster University, Hamilton, Ontario, is the premier research reactor operating in North America that has been approved since 2011 for the calibration of in-core self-powered neutron (thermal) flux detectors (SPDs). Each calibration run at MNR involves the activation of multiple copper activation wires (and cobalt activation wires as required). The activities of all activation wires are measured at NOF's Centre for Neutron Activation Analysis (conveniently located in close proximity to the MNR).

Over the intervening years since 2011, I've performed over one thousand flux detector near-core calibrations at MNR. The calibrated detectors, when combined with calibrated type K thermocouples in an in-core instrument (ICI) assembly, become part of a pressurized water reactor's (PWR) Class 1E instrumentation package. In a PWR, multiple ICI assemblies, typically comprise SPDs covering 0 - 20, 20 - 40, 40 - 60, 60 - 80, & 80 - 100% (or centred at 20, 40, 60 & 80%) of core height. In addition to measuring localized thermal neutron flux, the SPDs also track fuel burn-up and provide core management information.

SPDs calibrated at MNR are used in Westinghouse- designed PWRs worldwide, South Korean PWRs, and the Soviet VVER-style Loviisa 1 & 2 NPPs in Finland.

I have also used the MNR and facilities to:

- Characterize passive electret ion chamber (EIC)-based area gamma monitors.
- Characterize and calibrate SPDs designed for SMR use as in-core neutron flux / fuel burn-up monitors.
- Characterization and First Article Testing of SMR in-core SPD signal amplifier / flux monitoring / trip-test front end electronics, i.e., SMR control instrumentation.

Over the years, the professional and capable operations and facilities personnel at NOF could always be relied upon to assist with my endeavours as required. I look forward to continued use of MNR.

Sincerely,



Michael LaFontaine, P.Phys., RSO

U.S. Technical Advisory Group Chair & Head of Delegation to ISO/TC 85/SC 6 (Reactor Technology)
Consulting Physicist & Radiation Safety Officer