

FRANÇOIS J. LEMAY

University of Birmingham (UK)	Ph.D. Physics, Physics of Nuclear Reactors
University of Birmingham (UK)	M.Sc. Physics, Physics and Technology of Nuclear Reactors
Ecole Polytechnique de Montreal	B.Eng. Engineering Physics
University of Montreal	B.Sc. Physics

Professional summary

Dr. Francois Lemay is a professional engineer in the provinces of Ontario and Quebec. His experience with MACCS consists of using the code to calculate the consequences to the population for several accidents scenarios in the context of the Nanticoke New Build Project for Bruce Power. With COSYMA, (a derivative of MACCS), similar calculations for ESKOM (South Africa), Hydro-Quebec (Canada), and the Canadian Navy were performed. He also used COSYMA to calculate the cost of accidents near Darlington and Gentilly for the Department of Natural Resources (NRCAN).

Dr. Lemay instructs an advance level COYMA and MACCS course to Health Physicists and engineers..

Dr. Lemay has 27 years experience in:

- Environmental Assessment
 - Authored shielding assessments, derived release limit calculations, dose assessment, risk assessment, project descriptions, technical support document for the radioactivity environmental component in support of the EA for the refurbishment of Gentilly-2, the new build projects at Bruce Power.
- Operational Safety Assessments
 - Performed due diligence audit of Point Lepreau Nuclear Generating Station waste management program, including the SRWMF and the dry storage facility for the sale of Point Lepreau to Hydro Quebec;
 - Conducted integrated safety review (ISR) for Gentilly-2;
 - Conducted Operational Safety Review Team (OSART) audits of Forsmark Nuclear Power Station (Sweden);
- Hazard Identification and Risk Assessment
 - Authored the risk assessment report for the transfer of spent fuel to the dry storage facility for the Spent Fuel Dry Storage Facility at Gentilly-2 nuclear generating station;
 - Authored the risk assessment report for the transfer of spent fuel to the dry storage facility at the Spent Fuel Dry Storage Facility at Cernavoda nuclear generating station. Also performed the shielding analysis for the CANSTOR modules and the consequence assessment for the crash of an aircraft on the storage facility.
 - Authored the risk assessment report for the transfer of refurbishment waste to the storage facility for the expansion of the LLW and ILW waste storage facility for refurbishment waste at Gentilly-2 nuclear generating station. Performed

- shielding assessment for the refurbishment waste storage silos and transfer casks. Performed assessment of the degradation of the spent resin waste during 50 years of storage.
- Authored the risk assessment report for the refurbishment and continued operation of the Gentilly-2 nuclear generating station. This included an assessment of the risk from normal operation and accident situations.
- Licensing
 - Contributor to Preliminary Safety Reports and Final Safety Reports for Gentilly-2, Chalk River reactors and isotope storage facilities;
 - Review of licensing submissions from Bruce for the CNSC
- Audits and evaluations
 - Conducted audits of emergency response plans and procedures for Gentilly-2, Point Lepreau, Durham region, Koeberg (South Africa);
- Safety analysis and risk assessment
 - Conducted several deterministic safety studies and probabilistic safety assessments for the Canadian nuclear industry, including Gentilly-2, Point Lepreau, and Bruce.
 - Member of the CSA Technical Committee for the revision of the N288 series of standards.

Language

- English
- French

Security clearance

- NATO Secret (level 2)

Selected experience by functional area

Date	Title	Risk assessment
2006-2009	Environmental Assessment of the New Reactor Project at the Bruce Power site	Prepared the Radioactivity technical support document for the environmental assessment. Performed risk assessment for normal operations and accident conditions.
2009	Environmental Assessment of the New Reactor Project at the Nanticoke site	Prepared the Radioactivity technical support document for the environmental assessment. Performed risk assessment for normal operations and accident conditions.
2005-2006	Safety review of French nuclear powered vessels	Co-author of the Technical Safety Review for the visits of nuclear powered vessel to Canadian harbors. This included a level 3 assessment of the consequences of severe accidents and an evaluation of the safety program of the French Navy.
2006	Source term estimation methods for Candu-6	Prepared and delivered a four day course on source term estimation methods for severe accidents situation in Candu-6 reactors.

2004-2006	Environmental Assessment for the continued operation of Gentilly-2	Prepared a risk assessment for the continued operation of the Gentilly-2 nuclear generating station, derived release limit calculations, shielding calculations and consequence assessment for accident situations.
2001	AECL Cernavoda risk analysis	Performed a risk analysis for the spent fuel dry storage facility at the Cernavoda Nuclear Generating Station in Romania.
1993	Dry storage facility at the Gentilly nuclear generating station	Involved in the design and licensing of a dry storage facility for spent fuel at the Gentilly Nuclear Generating Station. Prepared the Risk Analysis, contributed sections of the Environmental Impact Statement, authored the Shielding Analysis, and was co-author of the Safety Analysis Report. Expert witness on the radiological impact of the project during the public hearings.
Date	Title	Reactor physics
2010	Activation calculation for Bruce Power	Performed activation calculations for the end-shield components in support of the calandria replacement project at Bruce Power. Used MCNP to obtain the neutron flux and the reaction rates in the activated components.
2009	Activation calculation for Bruce Power	Performed activation calculations for the calandria replacement project. Created a full core model of the Bruce A reactors. Performed criticality calculation and obtained the activation products in the calandria.
2005	Burn up calculations	Performed burnup calculations for French nuclear powered aircraft carrier Charles-de-Gaulle and the attack submarine Améthiste using the ORIGEN code.
2000	Reactivity feedback calculation for RMC slowpoke reactor	Performed MCNP calculations for calibrating the model of the reactivity feedback of the RMC slowpoke reactor using rhodium foil activation.
Date	Title	Radiation transport
2010	Shielding calculations for the shield tank and the end shield at Bruce Power	Performed shielding calculations for the shield tank, the end shield and shield tank storage building using MCNP.
2009	Shielding calculations for the calandria replacement project at Bruce Power	Performed shielding calculations for the replacement of the calandria for the Bruce A Unit 1&2 reactors using MCNP.
2006	Shielding calculations for French nuclear powered vessel	Performed shielding calculations for the hullshine in severe accident conditions from the attack submarine Améthiste using MCNP.

2001	Shielding calculations for Cernavoda (Romania) spent fuel storage facility	Performed shielding calculations for the Spent Fuel Dry Storage Area at the Cernavoda Nuclear Generating Station in Romania using MCNP.
1998	Consequences of severe accidents in CANDU-600 reactors	Invited as an expert at the IAEA for the preparation of a technical guide on consequences of severe accidents in CANDU-600 reactors.