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**Royal Military College of Canada**

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- 14:50-15:15                      *On the Other Properties of Quadruple Melted Zr-2.5 Nb Pressure Tubes*  
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- 15:45-16:10                      *Installation of a Second Trip System*  
by E. Bessada (Atomic Energy of Canada Limited)
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by J.E. Harber, M.K. Kattan (Atomic Energy of Canada Limited) and M.J. MacBeth (Institute for Advanced Engineering - Ajou University (Korea))
- 16:35-17:00                      *Mechanisms for Preventing Deuterium Ingress at Rolled Joints in CANDU Fuel Channels*  
by A.J. White, H.R. Balness, T. Beres, A.A. Bahurmuz (Atomic Energy of Canada Limited)

**Session 1B**                      **Instrumentation**                      **Chair: K. Serdula**  
**Serdula Systems**

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by E. Lopez (Ontario Hydro)
- 14:25-14:50                      *Reactor Noise Analysis Applications in Ontario Hydro: A Statistical Technique Used for Systems Surveillance and Condition Assessment*  
by O. Glöckler, D. Cooke, G. Czuppon, K. Kapoor (Ontario Hydro Nuclear)
- 14:50-15:15                      *Instrumentation Monitoring Using Multivariate Statistical Projection Methods*  
by R.P. Leger, Wm.J. Garland (MacMaster University), and J. Popovic, C. Bailey, H.W. Hinds (Atomic Energy of Canada Limited)
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by O. Glöckler, D. Cooke, G. Czuppon, K. Kapoor (Ontario Hydro)
- 16:10-16:35                      *Investigation into Anomalous Lead-Cable Responses in Vanadium SIR Detectors in Pt. Lepreau and Gentilly-2*  
by B. Sur, D.P. McAllindon, C.M. Bailey (Atomic Energy of Canada Limited)
- 16:35-17:00                      *A Process to Evaluate Lead Current Responses*  
by J. Handbury (Atlantic Nuclear Services Ltd.)

**Session 1C****New Technology****Chair: J. Hopwood  
Atomic Energy of Canada Limited**

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by J.R. Webb, V.G. Snell (Atomic Energy of Canada Limited)
- 14:25-14:50      *Safety Design Implementation for the International Thermonuclear Experimental Reactor*  
by C.W. Gordon, A.E. Poucet, G. Saji (ITER Joint Central Team)
- 14:50-15:15      *CANDU 6 Evolution*  
by J.M. Hopwood, P.J. Allen (Atomic Energy of Canada Limited)
- 15:45-16:10      *Ignition of a Magnetically Confined D-T Plasma*  
by E. Panarella (Advanced Laser and Fusion Technology Inc.)
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by N. Spinks (Atomic Energy of Canada Limited)
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by D.R. Kingdon (McMaster University), K.P. Schoepf, T.K. Hladschik (University of Innsbruck) and A.A. Harms (McMaster University)

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Ontario Hydro**

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by S.-R. Peterson (Atomic Energy of Canada Limited)
- 14:25-14:50      *Establishing Credibility in the Environmental Models Used for Safety and Licensing Calculations in the Nuclear Industry*  
by P.A. Davis (Atomic Energy of Canada Limited)
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by N.E. Gentner (Atomic Energy of Canada Limited)
- 15:45-16:10      *Tritium Beta-Radiation Induction of Chromosomal Damage: A Calibration Curve for Low-Dose, Low-Dose-Rate Exposures of Human Cells to Tritiated Water*  
by D.P. Morrison, K.L. Gale (Atomic Energy of Canada Limited), and J.N. Lucas, F.S. Hill, T. Straume (University of California and Lawrence Livermore Laboratory)
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by D.R. Boreham, M.E. Bahen, J.-A. Dolling, R.E.J. Mitchel (Atomic Energy of Canada Limited)
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by R.E.J. Mitchel, J.S. Jackson (Atomic Energy of Canada Limited)

**Session 2A****Safety Analysis Methods****Chair: P.D. Thompson  
New Brunswick Power**

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- 08:30-08:55      *Improving Configuration Management of Thermalhydraulic Analysis by Automating the Linkage Between Pipe Geometry and Plant Idealization*  
by R. Gibb, R. Girard (New Brunswick Power) and W. Thompson, S. Wanyeki, L. Coltatu (Atlantic Nuclear Services Ltd.)
- 08:55-09:20      *Role of Safety Analysis in Establishing Containment Operating Limits*  
by P.R. Gomes-Feder, J. Low (Ontario Hydro)
- 09:20-09:45      *Methodology for Fuel Channel Integrity in Large Break Loss of Coolant Accident*  
by M.H. Bayoumi, W.C. Muir (Ontario Hydro)
- 10:15-10:40      *Application of Configuration Management to Nuclear Safety Analysis Tools and Analysis Results*  
by F. Kanji, K.R. Weaver (Ontario Hydro)
- 10:40-11:05      *Recent Developments in the Detailed Modelling of Powerhouse Environmental Conditions Using GOTHIC*  
by R.C. Wong, R.J. Fluke, K. Yim, B.G. Rossiter (Ontario Hydro)

**Session 2B****Nuclear Waste Management****Chair: D. Lister  
University of New Brunswick**

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- 08:30-08:55      *High Polymer Composites for Containers for the Long-Term Storage of Spent Nuclear Fuel and High Level Radioactive Waste*  
by H.W. Bonin, V.T. Bui, J.-F. Legault, A.R. Davey, T.D. Douglas, C.C.S. Duriez, G.B. MacGregor (Royal Military College of Canada)
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by I.G. Fearnley (British Nuclear Fuels plc. (England))
- 09:20-09:45      *Evaluation of Thin-Film Evaporation for Decontamination and Immobilization of Aqueous Nuclear Waste*  
by S.K. Sen Gupta (Government of Canada)
- 10:15-10:40      *Liquid Radwaste Processing with Spiral Wound Reverse Osmosis*  
by S.K. Sen Gupta (Government of Canada)
- 10:40-11:05      *Neutron and Gamma Radiation Effects on the Viscoelastic Behaviour of Poly (Aryl Ether Ether Ketone)*  
by J.Y.S.D. Pagé, H.W. Bonin, V.T. Bui, P. Bates (Royal Military College of Canada)
- 11:05-11:30      *Evaluation of Spiral Wound Reverse Osmosis for Four Radioactive Waste Processing Applications*  
by S.K. Sen Gupta (Government of Canada)

**Session 2C****Reactor Physics****Chair: A. Baudouin  
Hydro-Québec**

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- 08:30-08:55 *DRAGON Modelling of the SLOWPOKE-2 Reactor at École Polytechnique*  
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- 08:55-09:20 *RFSP Simulations of Darlington FINCH Refuelling Transient*  
by E.V. Carruthers, H.C. Chow (Atomic Energy of Canada Limited)
- 09:20-09:45 *SLOWKIN: A Simplified Model for the Simulation of Reactor Transients in SLOWPOKE-2*  
by D. Rozon, S. Kaveh (École Polytechnique de Montréal)
- 10:15-10:40 *Neutron Overpower (NOP) System Coverage During Bruce NGS A Channel Turn-Around*  
by E.A. Attia, A. Adebisi, J. Duan (Ontario Hydro)
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by G. Marleau, X. Grammont (École Polytechnique de Montréal)

**Session 2D****Operator Interface and Plant  
Monitoring****Chair: M. Saari  
Atomic Energy of Canada Limited**

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by R. Trueman, A. Webster (Atomic Energy of Canada Limited) and M.J. MacBeth (Institute for Advanced Engineering - Ajou University (Korea))
- 08:55-09:20 *A Human Reliability Assessment Screening Method for the NRU Upgrade Project*  
by F.M. Bremner, C.J. Alsop (Atomic Energy of Canada Limited)
- 09:20-09:45 *Retrofitting Alarm Prioritization at Bruce A: Strategy Development and Implementation Experience*  
by E. Davey, D. Hickey (Atomic Energy of Canada Limited) and B. Babcock, G. Schildroth, J. McAuley (Ontario Hydro)
- 10:15-10:40 *Operator Performance and Annunciation Sounds*  
by B.K. Patterson, M.T. Bradley, W.G. Artiss (Human Factors Practical)
- 10:40-11:05 *An Automated Test Facility for Neutronic Amplifiers*  
by W.J. Beattie (Atomic Energy of Canada Limited)
- 11:05-11:30 *Using the PAW/PEM Monitoring Systems to Support Operations at Point Lepreau*  
by S. MacDonald (New Brunswick Power), M. McIntyre, H. Dai, W. Thompson (Atlantic Nuclear Services Ltd.) and G. MacDonald (Atomic Energy of Canada Limited)

**Session 3A      Plant Simulators**

**Chair: S.K. Sood  
Ontario Hydro**

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by M. MacLean, J. Hogg, H. Newman (New Brunswick Power)
- 14:10-14:35      *Human Error in the Simulator Testing Environment for Operator Accreditation*  
by B.K. Patterson, M.T. Bradley, W.G. Artiss (Human Factors Practical)
- 14:35-15:00      *Full-Scope Nuclear Training Simulator -Brought to the Desktop*  
by D.J. LaPointe, A. Manz, G.S. Hall (Ontario Hydro)
- 15:30-15:55      *Heavy Water Upgrader Dynamic Simulation (UGDYNMIM)*  
by K.M. Kalyanam, S.K. Sood, F. Fusca (Ontario Hydro) and A. Busigin (NITEK Corporation)
- 15:55-16:20      *SSCI 125 Emulation at Point Lepreau G.S.*  
by M. MacLean, J. Hogg, H. Newman, H. Thompson (New Brunswick Power)

**Session 3B      Computer Code Validation**

**E. Moeck  
Atomic Energy of Canada Limited**

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- 13:45-14:10      *Validation of the RALOC-mod.4 Thermal-hydraulics Code on Evaporation Transients in the PHEBUS Containment*  
by P.B. Spitz, F. Lemoine (Institut de Protection et de Sûreté Nucléaire (France)), S. Tirini, (ENEA (Italy)), and B. Schwinges (Gesellschaft für Anlagen und Reaktorsicherheit, (Germany))
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by J. Pitre, F. Laratta (Atomic Energy of Canada Limited)
- 14:35-15:00      *Status of Validation Matrices for CANDU<sup>®</sup> Power Plants*  
by E.O. Moeck (Atomic Energy of Canada Limited), J.C. Luxat (Ontario Hydro Nuclear), M.-A. Petrilli (Hydro-Québec) and P.D. Thompson (New Brunswick Power)
- 15:30-15:55      *Validation of SOPHAEROS V1.3 Code Based on FALCON Experiments*  
by M. Missirlan, G. Lajtha (Institut de Protection et de Sûreté Nucléaire (France))
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by W.K. Liauw, W.S. Liu, R.Y. Chu, R.K. Leung (Ontario Hydro)

**Session 3C****Reactor Safety Research and Development****Chair: L. Simpson  
Atomic Energy of Canada Limited**

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- 13:45-14:10      *Experimental Investigation of Coolant and Poisoned Moderator Mixing Due to a Simulated PressureTube/Calandria Tube Fishmouth Rupture During an Overpoisoned Guaranteed Shutdown State*  
by J.C. Mackinnon (Ontario Hydro) and R.A. Fortman, G.I. Hadaller (Stern Laboratories Inc.)
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by C.K. Chan, S.C. Jones (Atomic Energy of Canada Limited)
- 14:35-15:00      *Pressure Tube Ballooning Experiments Analysis*  
by J.R. Riznic, L.D. MacDonald (Atomic Energy of Canada Limited)
- 15:30-15:55      *Review of Two-Phase Water Hammer*  
by T.G. Beuthe (Atomic Energy of Canada Limited)
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by N.N. Wahba, V.J. Langman, J.C. Luxat (Ontario Hydro)

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MacMaster University**

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by O.S. Eiff, M.F. Lightstone (University of Toronto)
- 14:35-15:00      *Some Ideas on Thermosiphoning in a Heat Transport Loop*  
by P.T. Wan (Ontario Hydro), J.C. Amrouni (ENAQ), J.W.D. Anderson, A.J. Melnyk (Atomic Energy of Canada Limited) and R.K. Leung (Ontario Hydro)
- 15:30-15:55      *TUF Assessment of an Abnormal Load Rejection Event at Darlington NGS*  
by W.K. Liauw, W.S. Liu (Ontario Hydro)

**Session 4A****Safety Analysis and Assessment I****Chair: K. Dinnie  
Ontario Hydro**

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- 09:00-09:25      *Consequence Analysis of Core Damage States Following Severe Accidents for the CANDU Reactor Design*  
by N.N. Wahba (Ontario Hydro), Y.T. Kim (Atomic Energy of Canada Limited) and S.G. Lie, K.S. Dinnie (Ontario Hydro)
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by G. Sabourin (Atomic Energy of Canada Limited) and H.M. Huynh (Hydro-Québec)
- 09:50-10:15      *Ultimate Pressure Capacity of CANDU 6 Containment Structures*  
by J.P. Radulescu, L. Pradolin, J.C. Mamet (Canatom Inc.)
- 10:45-11:10      *An Accurate Measurement of the Rosemount 1152 Differential Pressure Cell Response Time*  
by H.W. Hinds, Y. Gao, P.D. Tonner (Atomic Energy of Canada Limited)

**Session 4B****Radiation Transport and Radionuclides****Chair: C. Morrison  
Ontario Hydro**

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- 09:00-09:25      *Recent Advances in Radiation Transport Simulation Capabilities at Point Lepreau Generating Station*  
by G.T. Pepper, J.W. Thompson (Atlantic Nuclear Services Ltd.) and R. Gibb (New Brunswick Power)
- 09:25-09:50      *A Two-Dimensional Discrete-Ordinates Analysis of the CANDU<sup>®</sup> 9 End-Shield Penetrations*  
by K.M. Aydogdu, C.R. Boss (Atomic Energy of Canada Limited)
- 09:50-10:15      *Prediction of Decay Heat Power in Ontario Hydro CANDU Reactors During Prolonged Outages*  
by S.D. Arguner, C.A. Morrison (Ontario Hydro)
- 10:45-11:10      *Annual Dose at the Exclusion Area Boundary of a Multi-Unit CANDU<sup>®</sup> Site*  
by N. Gagnon, C.R. Boss, K.T. Tsang (Atomic Energy of Canada Limited)
- 11:10-11:35      *The Effect of Fog on Radionuclide Deposition Velocities*  
by R. Gibb (New Brunswick Power) and P. Carson, W. Thompson (Atlantic Nuclear Services Ltd.)
- 11:35-12:00      *A Compact, Low Cost, Tritium Removal Plant for CANDU 6 Reactors*  
by S.K. Sood, C. Fong, K.M. Kalyanam, K.B. Woodall (Ontario Hydro)

**Session 4C****Applied Nuclear Research and  
Development****Chair: K. Weaver  
Ontario Hydro**

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- 09:00-09:25 *Qualification of Passive Autocatalytic Recombiners for Post-LOCA Hydrogen Mitigation in CANDU® Stations*  
by J.V. Loesel Sitar, R. Moffett, G.W. Koroll, W.A. DeWit (Atomic Energy of Canada Limited)
- 09:25-9:50 *Determining the Effect of Turbulent Shear on Containment Aerosol Dynamics Using Microgravity Experiments*  
by C.K. Scott, M. Abdelbaky (Atlantic Nuclear Services Ltd.)
- 09:50-10:15 *The Carbon Filter Programme: An Example of Success in Applied Nuclear R&D*  
by J.C. Wren (Atomic Energy of Canada Limited) and K.R. Weaver (Ontario Hydro)
- 10:45-11:10 *Effects of Gamma and Thermal Neutron Radiation on Nitrocellulose*  
by K. Heppell-Masys, H.W. Bonin, V.T. Bui, M. Bickerton, D. Murphy (Royal Military College of Canada)
- 11:10-11:35 *Fission Products Measurements in the Slowpoke-2 Reactor at the University of Toronto*  
by S. Sonoc, G.J. Evans (University of Toronto)
- 11:35-12:00 *Engineering Progress of CNS Concept in HANARO*  
by C.O. Choi, K.N. Park, S.H. Park, J.M. Sohn, M.S. Cho (Korea Atomic Energy Research Institut)

**Session 4D****Reactor Performance Assessment  
and Life Cycle Management****Chair: E. Price  
Atomic Energy of Canada Limited**

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- 09:00-09:25 *Meeting the Challenge of BNFL's Decommissioning Programme*  
by A.E. Sheil (British Nuclear Fuels plc. (England))
- 09:25-09:50 *Reactor Safety Review of Permanent Changes*  
by K.F. Lam (Ontario Hydro)
- 09:50-10:15 *Investigation of the Root Cause of Flow Dips at Pickering B*  
by H.W. Hinds (Atomic Energy of Canada Limited)
- 10:45-11:10 *Power Raise Through Improved Reactor Inlet Header Temperature Measurement at Bruce A Nuclear Generating Station*  
by S. Basu, D. Bruggeman (Ontario Hydro)



**Session 5A****System and Component Simulation  
and Design****Chair: K. Scott  
Atlantic Nuclear Services Limited**

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- 14:00-14:25      *An Improved Model to Predict Non Uniform Deformation of Zr-2.5 Nb Pressure Tubes*  
by Q.M. Lei, H.Z. Fan (Atomic Energy of Canada Limited)
- 14:25-14:50      *Tensile Properties of Irradiated Calandria Tubes at Low to High Rates of Strain*  
by R.W.L. Fong, C.E. Coleman, R. Shewfelt (Atomic Energy of Canada Limited), P.J. Ellis (Ontario Hydro), Y. Tsuchimoto (Electric Power Development Co. Ltd. (Japan)), S. Yoshie (Kawasaki Heavy Industries Ltd. (Japan)), Y. Morishita (Power Reactor & Nuclear Fuel Development Corporation (Japan)), and E.V. Pizzinato, C. Albertini (JRC Safety Technology Institute (Italy))
- 14:50-15:15      *Improving the Calandria Tubes for CANDU Reactors*  
by C.E. Coleman, R.W.L. Fong, G.L. Doubt, D.B. Sanderson (Atomic Energy of Canada Limited)
- 15:15-15:40      *Qualification of Alternate Suppliers for Zr-2.5Nb Material for CANDU Pressure Tubes*  
by J.R. Theaker, C.E. Coleman, B.A. Cheadle, E.G. Price, D. Moan (Atomic Energy of Canada Limited)

**Session 5B****Safety Analysis and Assessment II****Chair: V.S. Krishnan  
Atomic Energy of Canada Limited**

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- 14:00-14:25      *Evaluation of Severe Accident Risk in the Pickering A Risk Assessment*  
by K.S. Dinnie, V.M. Raina (Ontario Hydro)
- 14:25-14:50      *Safety Assessment for LOCA in CANDU Reactor Loaded with CANFLEX-NU Fuel Bundles*  
by D.J. Oh, M.Y. Ohn, K.M. Lee, H.C. Suk (Korea Atomic Energy Research Institute) and J. Lau (Atomic Energy of Canada Limited)
- 14:50-15:15      *Effect of Channel Thermal Hydraulic Conditions on Bundle Motion Due to Reverse Flow*  
by N.N. Wahba (Ontario Hydro)
- 15:15-15:40      *CATHENA Simulations of Steam Generator Tube Rupture*  
by A. Abdul-Razzak, M.R. Lin, A.C.D. Wright (Atomic Energy of Canada Limited)

**Session 5C****Small-Reactor Analysis****Chair: A. Lee  
Atomic Energy of Canada Limited**

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14:00-14:25

*Refuelling the SLOWPOKE-2 Reactor at École Polytechnique: Procedure and Proposed Experiments*  
by G. Kennedy, G. Marleau (École Polytechnique de Montréal)

14:25-14:50

*On the Use of Dynamic Modelling for the Design of IRF*  
by H.W. Hinds (Atomic Energy of Canada Limited)

14:50-15:15

*Diffusion Calculations for the SLOWPOKE-2 Reactor Using DONJON*  
by S. Noceir, O. El Hajjaji, E. Varin, R. Roy, D. Rozon (École Polytechnique)

**Session 5D****Desktop Nuclear Plant Simulator  
Demonstration****Chair: Ontario Hydro Staff**

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14:00-15:30

*Desktop Nuclear Plant Simulator Demonstration*  
by Staff of the Simulator Services Dept. (Ontario Hydro)



