

**14TH ANNUAL NUCLEAR SIMULATION SYMPOSIUM
1988 APRIL 25-26
ATOMIC ENERGY OF CANADA LIMITED
WHITESHELL NUCLEAR RESEARCH ESTABLISHMENT
PINAWA, MANITOBA ROE 1LO**

PROGRAM SCHEDULE

Sunday, 1988 April 24

7:30 p.m. Kelsey House, Pinawa
to
9:30 p.m. Registration
Wine and Cheese Reception

Monday, 1988 April 25 Kelsey House Conference Centre, Pinawa

8:00 a.m. Welcoming Address - W.T. Hancox
Vice President, Waste Management Program
Responsibility Centre

8:10 - 10:10 a.m.

Session 1 : CANDU Reactor physics

Chairpersons: A. Dastur (AECL-CANDU Operations)
and
K. Serdula, Serdula Systems Ltd.

- 1.1 Transdec: A Program to Calculate the Extra Decay Energy Generated in a Power Transient, C.R. Calabrese, C.R. Boss and B. Rouben, Atomic Energy of Canada Limited (CANDU Operations).
- 1.2 A Universal Driver for Collision Probability and Response Matrix Transport Codes, G. Marleau and A. Hebert, Groupe d'Analyse Nucleaire, Ecole Polytechnique de Montreal, 6600 Cotes-des-Neiges, Montreal, Quebec.
- 1.3 From Platinum to Mercury: The Alchemist's Nightmare, K.J. Serdula and G. Parent, Serdula Systems, Glendale Plaza, PO Box 1808, Deep River, Ontario.
- 1.4 Calculating Three-Dimensional Neutronic Transients on Microcomputers, B. Rouben and C.R. Calabrese, Atomic Energy of Canada Limited (Candu Operations).
- 1.5 A Method for Simulating Grey Slabs in CANDU Reactors, A.R. Dastur and D.B. Buss, Atomic Energy of Canada Limited (CANDU Operations).
- 1.6 DERREP: A Computer Code for the Calculation of Decay Heat in CANDU Reactor Nuclear Fuel, R.P. Steadman, J.V. Marczak and M.K. O'Neill, Ontario Hydro

10:10 - 10:25 a.m. Coffee

10:25 a.m. - 12:05 p.m.

Session 2: Thermalhydraulics I

Chairpersons: W.I. Midvidy, Ontario Hydro
and
H.M. Soliman, University of Manitoba

- 2.1 Simple Functions for the Fast Approximation of Light Water Thermodynamic Properties, W.J. Garland and B.J. Hand, Department of Engineering Physics, McMaster University, Hamilton, Ontario.
- 2.2 Piecewise Polynomial Approximation of Thermodynamic Properties of Heavy Water, Y. Liner, B.N. Hanna and D.J. Richards, Atomic Energy of Canada Limited (WNRE).
- 2.3 Modelling of Nonhomogeneous Nonequilibrium Critical Two-Phase Flow, S.M. Sami, Department of Mechanical Engineering, University of Sherbrooke, Sherbrooke, Quebec.
- 2.4 Numerical Predictions of Two-Phase Flow Parameters in Inverted U-tubes under Reflux Condensation, R. Girard and J.S. Chang, Department of Engineering Physics, McMaster University, Hamilton, Ontario.
- 2.5 Investigation of CCFL in Pipe Elbows, L. Thomson, M. Kawaji and V.S. Krishnan, Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario.

12:05 p.m. - 1:00 p.m. LUNCH1:00 p.m. - 3:00 p.m.

Session 3: Thermalhydraulics II

Chairpersons: J.M. Hopwood, AECL-CANDU Operations
and
M. Kawaji, University of Toronto

- 3.1 Prediction of Pressurizer Transient by the IDRIF Two-phase Simulation Code, R. Sollychin, J.S. Chang and W.J. Garland, McMaster University, Hamilton, Ontario.
- 3.2 The Dynamic Simulation of a Two-Node Non-Equilibrium 600MW CANDU Pressurizer System, H.O. Tezel and D.A. Menely, University of New Brunswick, Fredericton, New Brunswick.
- 3.3 MISSFINCH: Models for Steady Stratified Flow in CANDU Headers, P. Gulshani, Atomic Energy of Canada Limited (CANDU Operations).
- 3.4 Steady-State Two-Phase Header Flow Model, H.G.O. De Man, Y. Feyginberg and W.I. Midvidy, Ontario Hydro
- 3.5 GENHTP - A New Heat Transfer Package for CATHENA, J.P. Mallory, P. Yuen and C.B. So, Atomic Energy of Canada Limited (WNRE).

3:00 p.m. - 3:15 p.m. Coffee

3:15 p.m. - 5:15 p.m.

Session 4: Thermalhydraulics III

Chairpersons: J-S. Chang, McMaster University
and
N.J. Spinks, AECL-CRNL

- 4.1 Reactor Operator Companion for CANDU Heat Transport Systems, W.J. Garland, J.W.D. Anderson and J.D. Hoskins, McMaster University, Hamilton, Ontario.
- 4.2 CATHENA Study of Large LOCA Channel Behaviour, S.D. Grant and R.L. Dasilva, Atomic Energy of Canada Limited (CANDU Operations).
- 4.3 The Effect of Fuel Heat Transfer on Early Void Production Following a Large Pipe Break in CANDU Reactors, S.D. Grant and J.M. Hopwood, Atomic Energy of Canada limited (CANDU Operations).
- 4.4 Large Outlet Header Break Experiments in a CANDU-Type Heat Transport Loop, P.J. Ingham, Atomic Energy of Canada Limited (WNRE).
- 4.5 Implementation of a Post-Dryout Model in the ASSERT Subchannel Code, A. Tahir, S. Robinovitch and P.R. Thibeault, Atomic Energy of Canada Limited (CRNL).
- 4.6 Thermalhydraulic Plant Modelling of a CANDU Reactor Including Plant Control Systems using CATHENA, F.W. Barclay and D.J. Richards, Atomic Energy of Canada Limited (WNRE).

7:30 - 9:30 p.m. Banquet: Kelsey House
Guest Speaker: S.L. Iverson, Manager
Radiation Applications Research Branch

Tuesday, 1988 April 26 Kelsey House Conference Centre

8:00 a.m. - 9:40 a.m.

Session 5: Small Reactor Physics

Chairpersons: B. Rouben (AECL-CANDU Operations)
and
A. Hebert, Ecole Polytechnique

- 5.1 Safety Aspects of Nuclear Battery Reactor Design, J.V. Donnelly, Atomic Energy of Canada Limited (WNRE).
- 5.2 Some Aspects of MAPLE-10 Fuel Performance During Normal Operation, S. Girgis, I.E. Oldaker and G.E. Gillespie, Atomic Energy of Canada Limited (CANDU Operations).
- 5.3 Recent Developments in Static Reactor Physics Modeling Techniques used for the Maple Research Reactor Program, P.A. Carlson, H.J. Smith, R.J. Ellis and A.G. Lee, Atomic Energy of Canada Limited (WNRE).
- 5.4 Comparisons of the Steady-State and Transient Thermal Behaviours of UO_2 , U-Al and U_3Si-Al MAPLE Research Reactor Fuels, R.J. Ellis, P.A. Carlson and H.J. Smith, Atomic Energy of Canada Limited (WNRE).

- 5.5 The Sensitivity of MAPLE-X10 Core Reactivity to Variations in the Three-Dimensional Coolant Void Distribution, H.J. Smith, Atomic Energy of Canada Limited (WNRE).

9:40 a.m. - 9:55 a.m. Coffee

9:55 a.m. - 11:15 a.m.

Session 6: Aerosol Transport and Containment Behaviour

Chairpersons: J.Q. Howieson, AECL-CANDU Operations
and

J. Marczak, Ontario Hydro

- 6.1 Upper Bound Calculations of Aerosol Vapour Mass Concentrations in a CANDU Fuel Channel during Severe Fuel Damage Accidents, S.R. Mulpuru, Atomic Energy of Canada Limited (WNRE).
- 6.2 Pressure Challenges to CANDU Containment due to Hydrogen Combustion during Accidents, P. Klazek, Ontario Hydro.
- 6.3 A Solution Scheme for Aerosol Transport Models, S.R. Vatsya and M. Razzaghi, Atomic Energy of Canada Limited (WNRE).
- 6.4 Integrated Aerosol and Thermalhydraulic Modelling, B.H. McDonald, Atomic Energy of Canada Limited (WNRE).

11:15 a.m. - 12:55 a.m.

Session 7: Thermalhydraulics IV

Chairperson: W.J. Garland, McMaster University
and

P. Gulshani, AECL-CANDU Operations

- 7.1 Effects of Antivibration Bars on the U-Bend Flow Distribution in Recirculating Steam Generators, L.N. Carlucci and J.M. Pietralik, Atomic Energy of Canada Limited (CRNL).
- 7.2 Techniques for the Estimation of Pressure Loss Coefficients of Bundle Junctions, Grid Spacers and Bearing Pads, S.C. Sutradhar and A. Tahir, Atomic Energy of Canada Limited (CRNL)
- 7.3 Simulation of the SPEL Small Scale Moderator Experiments Using the General Purpose Fluid-Flow Heat Transfer Code Phoenix, W.M. Collins, Atomic Energy of Canada (CANDU Operations).
- 7.4 Thermalhydraulic Simulations for Plate-Type Nuclear Fuel Elements, H.E.C. Rummens, J.S. Chang and P. Ernst, McMaster University, Hamilton, Ontario.

12:55 p.m. - 1:45 p.m. LUNCH

2:00 p.m. - 4.30 p.m. Tour of WNRE Research Facilities