

TABLE OF CONTENTS - Volume 1

PLENARY SESSION 1: <i>International Programs & Experience</i>

Page

Fuel Development and Manufacturing Programme in India and Advanced Fuel Designs	1-1
- M. Das, S.A. Bhardwaj, A.K. Saxena, K. Anantharaman, B.P. Varma (India)	
Korea's CANDU Fuel R&D Program	1-7
- H.C. Suk, K.S. Sim, M.S. Yang, H.S. Park, B.K. Kim (Korea Atomic Energy Research Institute)	
Argentine Activities on Fuels for Nuclear Generation Stations	1-18
- R.L. Olezza, J. Valesi (CNEA, Argentina)	
Romanian-Canadian Joint Program for Qualification of FCN as a CANDU Fuel Supplier	1-24
- C.A. Galeriu, G. Andrei, A. Bailescu, A. Pascu, M.L. Iliescu (Nuclear Fuel Plant (FCN), Romanian Power Authority)	
Canadian Fuel Development Program and Recent Operational Experience	1-32
- D.S. Cox, E. Køhn, J.H.K. Lau, G.J. Dicke, N.N. Macici, R.W. Sancton (Canada)	
Experience in the Manufacture and Performance of CANDU Fuel for KANUPP	1-42
- M. Salim, I. Ahmed, P. Butt (Pakistan Atomic Energy Commission)	
A Feasible Approach to Implement a Commercial Scale CANDU Fuel Manufacturing Plant in Egypt	1-56
- I. El-Shehawy, M. El-Sharaky, K. Yasso, I. Selim, N. Graham, D. Newington (Egypt/Zircotec)	

TABLE OF CONTENTS - Volume 1

Session 2A: Performance Assessment

	<u>Page</u>
The Post-Irradiation Examination of CANDU Type Fuel Irradiated in the Institute for Nuclear Research TRIGA Reactor	2A-1
- I.L. Tuturici, M. Parvan, R. Dobrin, M.D. Popov, R. Radulescu, V. Toma (RENEL-ICN, Romania)	
Performance of Bruce Natural UO₂ Fuel Irradiated to Extended Burnups	2A-12
- Y.N. Zhou, M.R. Floyd, M.A. Ryz (AECL)	
The Post-Irradiation Examination of Fuel in Support of Bruce A Nuclear Division Fueling With Flow Program	2A-22
- J. Montin, S. Sagat, R. Day, J. Novak, H. Bromfield (AECL/Ontario Hydro)	
Post-Defect Deterioration of CANDU Fuel: What Have We Learned?	2A-34
- A.M. Manzer, D. Dennier (AECL)	
The Performance of T-Pad Bearing Pads, as a Remedy Against Pressure Tube Crevice Corrosion, on Bundles Irradiated at Bruce and Point Lepreau	2A-48
- M.A. Ryz (AECL)	

Session 2B: Licensing & Accident Analysis I

Simulation Codes and the Impact of Validation/Uncertainty Requirements	2B-1
- H.E. Sills (Ontario Hydro)	
Fuel Thermal/Mechanical Behaviour Under Loss of Coolant Accident Conditions as Predicted by the FACTAR Code	2B-11
- C.J. Westbye, A.C. Brito, J.C. Mackinnon, H.E. Sills, V.J. Langman (Ontario Hydro)	
FACTAR Validation	2B-22
- P.B. Middleton, S.L. Wadsworth, R.C. Rock H.E. Sills, V.J. Langman (Ontario Hydro)	
Qualitative Assessment of the Fission Product Release Capability of ELOCA.Mk5	2B-32
- M.E. Klein, L.N. Carlucci, V.I. Arimescu (AECL)	
Prediction of the Fuel Failure Following a Large LOCA Using Modified Gap Heat Transfer Model	2B-42
- K.M. Lee, N.H. Lee, J.Y. Huh, S.K. Seo, J.H. Choi (KAERI, Korea)	

TABLE OF CONTENTS - Volume 1

Session 3A: Design, Testing & Manufacturing

	<u>Page</u>
Quality Evaluations of the Fuel Bundle Welds and Brazed Joints by Acoustic Microscopy	3A-1
- M. Soare, C. Iordache, R. Ciocan, V. Revenco, V. Dragne, I. Popescu, R. Moscalu (RENEL-ICN, Romania)	
Pyrolytic Carbon Coating of Zircaloy-4 Clads at Relatively Low Temperatures	3A-20
- I.D. Abdelrazek, S.W. Sharkawy, H.A. El-Sayed (Atomic Energy Authority, Egypt)	
Advances in Appendage Joining Techniques for PHWR Fuel Cladding	3A-41
- P.B. Desai, T.K. Ray, V.G. Date, D.S. Purushotham (BARC, India)	
Improved Techniques for Appendage Attachment to PHWR Fuel Elements	3A-55
- R.N. Jaya Raj, B. Laxminarayana, P.S.A. Narayanan, U.C. Gupta, B.P. Varma, K.K. Sinha (Department of Atomic Energy, India)	
The Active "Ingredient" in CANLUB	3A-65
- P.K. Chan, K. Franklin, D.A. Guzonas, J. Halliday, K.J.W. Kaddatz (AECL)	
The Production, Characterization and Neutronic Performance of Boron Nitride Coated Uranium Dioxide Fuel	3A-75
- I. Uslu, U. Colak, M. Tombakoglu, G. Gunduz, (Turkish Atomic Energy Authority, Turkey)	
CANDU Fuel Qualification Testing in Coolant Pressure Pulse Conditions	3A-85
- E. Køhn, G.I. Hadaller, P.F. Sandig (Ontario Hydro/Stern Laboratories)	

Session 3B: Licensing & Accident Analysis II

The BTF-104 Experiment: An In-Reactor Test of Fuel Behaviour, and Fission-Product Release and Transport Under LOCA/LOECC Conditions	3B-1
- L.W. Dickson, J.W. DeVaal, J.D. Irish, P.H. Elder, M.G. Jonckheere, A.R. Yamazaki (AECL)	
Relocation of Molten Zircaloy in a CANDU Subchannel Geometry	3B-11
- P.M. Mathew, D.G. Evans (AECL)	
CANDU Fuel Compression Tests at Elevated Temperatures	3B-21
- E. Køhn, J.K. Chan, V.J. Langman, G.I. Hadaller, R.A. Fortman (Ontario Hydro/Stern Laboratories)	
Post-Irradiation Examination of Overheated Fuel Bundles	3B-31
- D.F. Sears, M.F. Primeau, D.A. Leach (AECL)	
Fuel Sheath Integrity for Fuel Bundles at Decay Power Levels at 600°C in Steam	3B-41
- P.J. Reid, R.A. Gibb (New Brunswick Power)	
Effect of CANFLEX Bundle Design on CANDU-6 Reactor Safety	3B-55
- D.J. Oh, C.H. Cho, H.C. Suk (KAERI, Korea)	

TABLE OF CONTENTS - Volume 2

Session 4A: Advanced Fuel Cycles & Designs I

	<u>Page</u>
Plutonium Dispositioning in CANDU	4A-1
- P.G. Boczar, J.R. Hopkin, H. Feinroth, J.C. Luxat (AECL)	
Development of Inert-Matrix Carrier Fuels for Burning Plutonium or Actinide Waste	4A-13
- R.A. Verrall (AECL)	
Status of Irradiation Testing and PIE of MOX (Pu-Containing) Fuel	4A-25
- F.C. Dimayuga, Y.N. Zhou, M.A. Ryz, M.R. Floyd (AECL)	
Nuclear "Garbage" as a Source of Energy	4A-40
- O. Cristallini, D.F. Quilici (CNEA, Argentina)	
AECL's Progress in Developing the DUPIC Fuel Fabrication Process	4A-49
- J.D. Sullivan, D.S. Cox (AECL)	
Comparison of Refueling Schemes for DUPIC Core	4A-59
- H. Choi, B.W. Rhee, H. Park (KAERI, Korea)	
DUPIC Fuel Performance From Reactor Physics Viewpoint	4A-69
- H. Choi, B.W. Rhee, H. Park	

Session 4B: Behaviour Modelling

Transient Fission Product Release During Reactor Shutdown and Startup	4B-1
- C.E.L. Hunt, B.J. Lewis (Royal Military College)	
CANDU Type Fuel Behaviour Evaluation - A Probabilistic Approach	4B-15
- D.R. Moscalu, G. Horhoianu, I.A. Popescu, G. Olteanu (RENEL-ICN, Romania)	
Modelling Stable-Fission-Gas Diffusion Inside the Grain	4B-28
- V.I. Arimescu (AECL)	
Improvements, Verifications and Validations of the BOW Code	4B-38
- S.D. Yu, M. Tayal, P.N. Singh (AECL)	
Thermally-Induced Bowing of CANDU Fuel Elements	4B-52
- H.C. Suk, K.S. Sim, J.H. Park, G.S. Park (KAERI, Korea)	
Effect of Radial Power Profile on Endplate Integrity	4B-70
- M. Tayal, B. Wong, Y. Shudoh (AECL/EPDC-Japan)	

TABLE OF CONTENTS - Volume 2

Session 5A: Advanced Fuel Cycles & Designs II

	<u>Page</u>
Bringing the CANFLEX Fuel Bundle to Market	5A-1
- A.D. Lane, D.F. Sears, I.E. Oldaker, A. Celli, G.R. Dimmick (AECL), H.C. Suk, K.S. Sim, C.H. Chung, C.B. Choi (KAERI, Korea)	
The Use of Graphite for the Reduction of Void Reactivity in CANDU Reactors	5A-10
- B.J. Min, B.G. Kim, K-S. Sim, H.C. Suk (KAERI, Korea)	
A 61-Element Fuel Design (HAC) for Very High Burnups	5A-20
- M. Tayal, J.W. Love, D. Dennier, M. Gacesa, S. Sato, J. MacQuarrie, B.A.W. Smith, S-D. Yu, M. Tanaka, B. Wong, C. Manu (AECL/EPDC-Japan)	
Combined Effects of Graphite Discs and Central Holes on Pellet Temperatures in CANDU Fuel	5A-31
- K.A. Yasso, I.A. El-Osery, M. Tayal (Egypt/IAEA/AECL)	
MOX Fuel Fabrication at AECL	5A-47
- F.C. Dimayuga, A.T. Jeffs (AECL)	
The "Equivalent Plutonium" Concept and its Application to Synergetic Fuel Cycles Calculation	5A-56
- L.L. Perez Tumini, M.M. Sbaffoni, M.J. Abbate, P.C. Florido (CNEA, Argentina), L.A. Mai, J.R. Maiorino (IPEN, Brazil)	
Recent Findings on the Oxidation of UO₂ Fuel Under Nominally Dry Storage Conditions	5A-66
- P. Taylor, R.J. McEachern, S. Sunder, K.M. Wasywich, N.H. Miller, D.D. Wood (AECL)	

Session 5B: Licensing & Accident Analysis III

Modelling of Phenomena Associated with High Burnup Fuel Behaviour During Overpower Transients	5B-1
- H.E. Sills, V.J. Langman, F.C. Iglesias (Ontario Hydro)	
AX_LOAD: A Computer Code to Model Constrained Fuel String Axial Expansion	5B-13
- J.K. Chan, H.E. Sills, V.J. Langman (Ontario Hydro)	
Fission Product Release Mechanisms and Groupings	5B-23
- F.C. Iglesias, A.C. Brito, Y. Liu, M.A. Petrilli, R. Hu, M.J. Richards, R.A. Gibb, P.J. Reid, P. Elder, D.S. Cox, B.J. Lewis (Canada)	
SOURCE 2.0: A Computer Program to Calculate Fission Product Release from Multiple Fuel Elements for Accident Scenarios	5B-45
- A.C. Brito, F.C. Iglesias, Y. Liu, M.A. Petrilli, M.J. Richards, R.A. Gibb, P.J. Reid (Canada)	
A Model for Fuel Oxidation and Diffusion-Based Fission Product Release Under Severe Nuclear Reactor Accident Conditions	5B-57
- P.L. Purdy, B.J. Lewis, W.S. Andrews, D.S. Cox, F.C. Iglesias (Canada)	
Modelling the Release Behaviour of Cesium During Severe Fuel Degradation	5B-74
- B.J. Lewis, B. Andre, B. Morel, P. Dehaut, D. Maro, M.F. Osborne, R.A. Lorenz (RMC/CEA-France /Oak Ridge National Labs)	
A Model for Non-Volatile Fission Product Release During Reactor Accident Conditions	5B-100
- B.J. Lewis, B. Andre, G. Ducros, D. Maro (RMC/CEA-France)	

TABLE OF CONTENTS - Volume 2

Session 6A: CANDU Fuel - General

	<u>Page</u>
Hydrogen in CANDU Fuel Elements	6A-1
- R. Sejnoha, A.M. Manzer, B.A. Surette (AECL)	
Determination of the Hydrogen Content of Fuel Elements	6A-16
- M. Soare, F. Petriu, V. Toma, A. Calinescu, V. Dragne, I. Popescu, V. Revenco (RENEL-ICN, Romania), I. Pavel, G. Tatu, M. Butnaru (RENEL - NFP, Romania)	
AECL Hot-Cell Facilities and Post-Irradiation Examination Services	6A-34
- M.H. Schankula, E.L. Plaice, L.G. Woodworth (AECL)	
Fuel Performance Evaluation Through Iodine Activity Monitoring	6A-46
- K. Anantharaman, R. Chandra (BARC, India)	

Session 6B: Fuel Properties

Sensitivity of Cesium Chemistry to the O/U Ratio in UO_{2+x}	6B-1
- J. McFarlane, J.C. LeBlanc, D.G. Owen (AECL)	
The Stoichiometry and the Oxygen Potential Change of Urania Fuels During Irradiation	6B-11
- K. Park, M-S. Yang, H-S. Park (Kyunghee Univ/KAERI, Korea)	
Grain-Boundary Oxidation of Used CANDU Fuel Exposed to Dry Air at 150°C for a Prolonged Period	6B-20
- W.H. Hocking, R. Behnke, A.M. Duclos, A.F. Gerwing, K.M. Wasywich (AECL)	
Development of a Fuel Thermal Diffusivity Measurement Technique Using Pulsed Electron Beams	6B-39
- M.S. de Jong, F.P. Adams, R.M. Hutcheon, P.G. Lucuta, R.A. Verrall (AECL)	
Measurement of Krypton Grain-Boundary Inventories in CANDU Fuel	6B-48
- P.H. Elder, D.S. Cox, Z. Liu, R.S. Dickson, Z. Bilanovic (AECL)	