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AUTHORS — MAY 1990

FISSION REACTORS

A DISTRIBUTION PARAMETER DERIVED FOR RECTANGULAR CHANNELS AND SIMULATED SUBCHANNEL GEOMETRY

Hasna J. Khan

Hasna J. Khan (PhD, nuclear engineering, University of Washington, 1986) worked at Centre d'Etudes Nucléaires de Grenoble, France, for 1 year before becoming a faculty member of the University of Maryland in 1988. Her research interests include two-phase flow modeling and noise analysis, cryogenic blowdown phenomenon, and multiphase jet dispersion.

NUCLEAR SAFETY

A THREE-DIMENSIONAL SPACE-TIME MODEL AND ITS USE IN PRESSURIZED WATER REACTOR ROD EJECTION ANALYSES

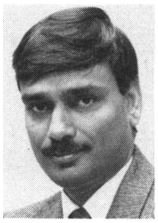
H. P. Chou
J. R. Lu
M. B. Chang

H. P. Chou (top) [BS, 1972, and MS, 1974, nuclear engineering, National Tsing-Hua University (NTHU), Taiwan; PhD, nuclear engineering, Purdue University, 1981] is an associate professor in the Department of Nuclear Engineering at NTHU. His current research activities include light water reactor (LWR) transient analysis, nuclear system failure detection and diagnostics, and nuclear instrumentation. **J. R. Lu** (bottom) (BS, 1983, and MS, 1985, nuclear engineering, NTHU) is an engineer at Chung-Shen Research Institute, Taiwan. His current research interests include dynamic system modeling and simulation, expert system design, and signal processing. **M. B. Chang** (no photograph available) (BS, 1982, and MS, 1986, nuclear engineering, NTHU)

was a research assistant in the Department of Nuclear Engineering at NTHU during the LWR safety evaluation project. He is currently a PhD candidate in the School of Electrical Engineering at Purdue University.

EVENT SEQUENCE OF A SEVERE ACCIDENT IN A SINGLE-UNIT CANDU REACTOR

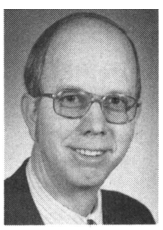
Jerry E. Dick
Vijay I. Nath
Erl Kohn
Thomas K. Min
Soedi Prawirosoehardjo

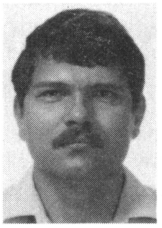


Jerry E. Dick (top right) (MESc, University of Western Ontario, Canda, 1972; Diploma, fluid dynamics, 1976, von Karman Institute, Belgium, 1976) is a senior engineer at Atomic Energy of Canada Limited (AECL) Canada deuterium uranium (CANDU) Operations. His current interests are thermohydraulic analysis and heat transfer computations in nuclear reactors and reactor components. **Vijay I. Nath** (top left) (BSc, mathematics, Utkal University, India, 1966; MSc, applied mathematics, University of Roorkee, India, 1968; MSc, mathematics, University of Windsor, Canada, 1970; PhD, applied mathematics, University of Windsor, Canada, 1973) is a safety analyst at AECL CANDU Operations. His primary interests are high-temperature fuel and CANDU fuel channels. **Erl Kohn** (center right) (BEngSci, materials engineering, University of Western Ontario, Canada, 1968; PhD, metallurgy, University of New South Wales, Australia) is a practicing professional engineer with AECL. He currently provides safety analysis and design support for advanced designs of the CANDU reactor. He has worked on the design and development of fuel and CANDU fuel channels and the safety analysis of the reactor, including assessment of severe core damage in CANDU plants. **Thomas K. Min** (bottom left) (PhD, nuclear engineering, University of California, Los Angeles, 1980) is a senior engineer at AECL CANDU Operations. His current areas of interest include CANDU reactor coolant and containment thermohydraulics, aerosol behavior, and hydrogen combustion. **Soedi Prawirosoehardjo** (bottom right) (BSc, 1958, and MSc, 1960, physics, Bandung Institute of Technology, Indonesia; PhD, nuclear engineering, The Pennsylvania State University, 1966) is a senior analyst in the Analysis and Design Branch, AECL CANDU Operations. His current interests include safety analysis and development research for CANDU reactors.

FREQUENCY AND CONSEQUENCES ASSOCIATED WITH A STEAM GENERATOR TUBE RUPTURE EVENT

James P. Adams
Martin B. Sattison

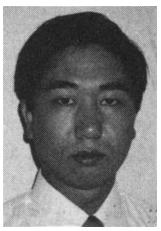




James P. Adams (top) (BS, physics, Brigham Young University, 1968; PhD, physics, Iowa State University, 1972) has been at the Idaho National Engineering Laboratory (INEL) since 1979, working in reactor safety research. His interests include integral pressurized water reactor response as well as fission product release and transport during design-basis and severe core damage accidents. He is currently a scientific specialist in the nuclear engineering group. **Martin B. Sattison** (BS, mechanical engineering, U.S. Naval Academy, 1977) started his nuclear career in Admiral Rickover's submarine program. Upon leaving the Navy, he joined the firm of Pickard, Lowe and Garrick, where he participated in several large commercial nuclear power plant probabilistic risk assessments (PRAs). For the past 3 years, he has been a senior engineering specialist at INEL, working on numerous PRA projects for the U.S. Nuclear Regulatory Commission.

NUCLEAR FUEL REPROCESSING OF $(U,Pu)O_2$ FUEL

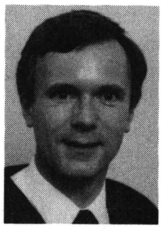
Akihiko Inoue



Akihiko Inoue (MS, nuclear engineering, Osaka University, Japan, 1977) has been a research scientist in the Department of Nuclear Fuels and Materials Research at the Japan Atomic Energy Research Institute since 1977. His current interest is in the chemistry of the dissolution process of nuclear fuels and nuclear fuel reprocessing.

A NONDESTRUCTIVE METHOD FOR LIGHT WATER REACTOR FUEL ASSEMBLY IDENTIFICATION

Hermann Würz
Werner Eyrich
Hans-Joachim Becker



Hermann Würz (top) [PhD, Technical University of Karlsruhe, Federal Republic of Germany (FRG), 1973] has been a member of the staff at Kernforschungszentrum Karlsruhe (KfK) since 1968. He was formerly involved in neutron thermalization, criticality safety analysis, and mineral exploration by capture gamma analysis. For the past 10 years, he has been engaged in the development of nondestructive assay methods for process control, plant safety, safeguards, and radioactive waste control. His current interests are in plasma physics and fusion technology. **Werner Eyrich** (center) (PhD, physics, Albert Ludwigs University, FRG, 1958) has been a member of the KfK staff since 1958, where he is a specialist in ion sources for pulsed neutron sources. He was previously engaged in the development of nondestructive assay systems for process control for safeguards, plant safety, and radioactive waste control. His more recent activities have been in fusion technology. **Hans-Joachim Becker** (bottom) (PhD, nuclear chemistry, Philipps University, FRG, 1977) has been in the research and development department at the WAK Reprocessing Company since 1978, where he has worked on instrumentation and on-line plant control. He is current technical manager of the TEKO test facility.

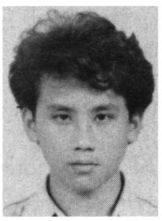
BRINE MIGRATION IN A SALT REPOSITORY

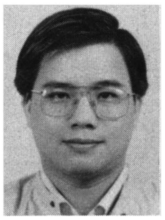
Yongsoo Hwang
P. L. Chambré
T. H. Pigford
W. W.-L. Lee

Yongsoo Hwang (top) (BE, Seoul National University, Korea, 1983; MS, University of California, 1986) is a graduate student in nuclear engineering at the University of California. His research interest is nuclear waste management. **P. L. Chambré** (no photograph available) (PhD, University of California, 1951) is a professor emeritus of mathematics and nuclear engineering at the University of California, where he has served on the faculty since 1951. He is a world-renown expert in analytic and numerical solution of differential equations. **T. H. Pigford** (center) (ScD, Massachusetts Institute of Technology, 1952) is a professor of nuclear engineering at the University of California and a principal investigator at Lawrence Berkeley Laboratory. A member of the National Academy of Engineering, he has been at Berkeley since 1959. His research interest is in nuclear safety and nuclear waste management. **W. W.-L. Lee** (bottom) (ScD, Massachusetts Institute of Technology, 1977) is a staff scientist at Lawrence Berkeley Laboratory, University of California. His current area of interest is nuclear waste management.

DERIVATION OF AN EQUATION FOR RADIONUCLIDE TRANSPORT IN POROUS MEDIA

Fu-Long Chen
Shih-Hai Li



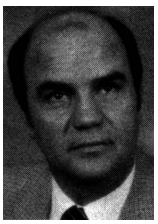


Fu-Long Chen (top) [BS, nuclear engineering, National Tsing-Hua University (NTHU), Taiwan, 1987] is a PhD candidate in the Department of Nuclear Engineering at NTHU. His research interests include geologic disposal concepts, radionuclide releasing model in the near field, radionuclide migration model in the far field, and health physics. **Shih-Hai Li** (PhD, nuclear engineering, Purdue University, 1985) is an associate professor in the Department of Nuclear Engineering and the head of the Nuclear Reactor Division at the Nuclear Science and Technology Development Center of NTHU. His research interests include radioactive waste management and disposal, radiation protection and measurement, and advanced reactor safety analysis.

MATERIALS

REACTION BEHAVIOR OF B_4C ABSORBER MATERIAL WITH STAINLESS STEEL AND ZIRCALOY IN SEVERE LIGHT WATER REACTOR ACCIDENTS

Peter Hofmann
Mario Enrique Markiewicz
José Luis Spino



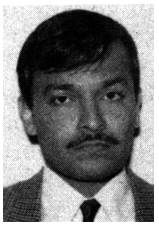
Peter Hofmann (top) (BS, mechanical enginering, 1964; MS, nuclear engineering, 1968; and PhD, materials science, 1974, University of Karlsruhe, Federal Republic of Germany) is a senior scientist at the Institute of Materials and Solid State Research at Kernforschungszentrum Karlsruhe. Since 1968, he has been engaged in research on the behavior of light water reactor (LWR) fuel elements under accident conditions, Zircaloy stress corrosion cracking (SCC) phenomena, physical chemistry of irradiated fuel rods, and compatibility behavior of fuel rod components. His current research interests include LWR fuel rod behavior under severe fuel damage conditions, core melt phenomena, and all related in-vessel material behavior processes. **Mario Enrique Markiewicz** (center) (MS, aeronautical engineering, Technical University of Buenos Aires, Argentina, 1982) is a research staff member of the Comisión Nacional de Energia Atómica (CNEA) in Buenos Aires. His current areas of interest include Zircaloy SCC phenomena and reaction behavior of reactor core components at high temperatures. **José Luis Spino** (bottom) (MS, physics, 1974, and PhD, material research, 1988, University of Cuyo, Argentina) has been a CNEA scientific staff member since 1974 and has worked in the fields of LWR fuel materials behavior under normal and off-normal operating conditions and core materials interactions under severe accident conditions. He is currently involved in the development of strong ceramic materials and high-strength steels.

A GENERALIZED METHODOLOGY FOR OBTAINING QUANTITATIVE CHARPY DATA FROM TEST SPECIMENS OF NONSTANDARD DIMENSIONS

Michael P. Manahan, Sr.
Christopher Charles

Michael P. Manahan, Sr. (right) (BS, mathematics, and BA, physics, Michigan State University, 1975; MS, reactor physics, Columbia University, 1978; ScD, nuclear materials engineering, Massachusetts Institute of Technology, 1982) is an associate professor of nuclear engineering at The Pennmsylvania State University (PSU). Before joining PSU in 1989, he was employed

by Battelle Columbus Laboratories. His research interests include plant life extension, miniaturized specimen technology, radiation damage in materials, radiation field measurement technology, radiation transport analysis, pressure vessel surveillance, and computer-based technology management. **Christopher Charles** (BS, nuclear engineering, Polytechnic Institute of New York, 1983; MS, nuclear engineering, Ohio State University, 1988) is a nuclear materials engineer with Roy F. Weston Consultants, working with the Office of Civilian Radioactive Waste Management Technical Support Team. Before joining Weston, he was involved in materials testing research at Battelle Columbus Laboratories. His interests include nuclear materials and high-level radioactive waste management.



EDUCATION

EDUCATION AND TRAINING AT THE PENNSYLVANIA STATE UNIVERSITY BREAZEALE REACTOR OVER THE PAST 20 YEARS

Samuel H. Levine
Marcus H. Voth

Samuel H. Levine (top) (PhD, nuclear physics, University of Pittsburgh, 1954) is a professor of nuclear engineering at The Pennsylvania State University (PSU). His current technical interests are in fuel management, neutron radiography, optimization techniques, beta dosimetry, reactor design, fast reactor physics, research reactor experiments, and neutron spectrum measurements and calculations. **Marcus H. Voth** (PhD, nuclear engineering, PSU, 1986) is director of the PSU Breazeale Reactor. Prior to this appointment, he worked as a power reactor station nuclear engineer, performed extensive reactor licensing work, and supervised the operation of a medical isotope production facility. In these capacities, he has worked with the entire reactor fuel cycle and with disposal of radioactive waste. His current technical interests include research reactor applications, implementation of nuclear technology in other disciplines, and radioactive waste disposal.