



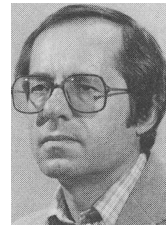
AUTHORS — JULY 1988

FISSION REACTORS

A MOVABLE BOUNDARY MODEL FOR ONCE-THROUGH STEAM GENERATOR ANALYSIS

Constantine P. Tzanos

Constantine P. Tzanos (Dipl., chemical engineering, National Technical University of Athens, Greece, 1968; ScD, nuclear engineering, Massachusetts Institute of Technology, 1971) is manager of the Operational Safety Section of the Reactor Analysis and Safety Division at Argonne National Laboratory. His current research activities involve development of methods for on-line data validation, system state verification, and fault identification as well as development of system models that run faster than real time for the implementation of these methods.

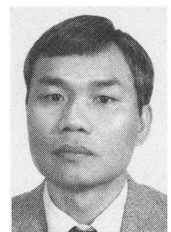


NUCLEAR SAFETY

TURBINE MISSILES ASSESSMENT

Truong V. Vo

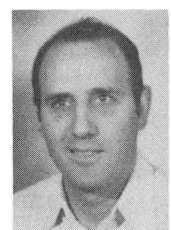
Truong V. Vo (MS, nuclear engineering, University of Missouri-Rolla, 1984) is a research staff member of the Office of Technology, Planning, and Analysis at Pacific Northwest Laboratory (PNL), operated by Battelle Memorial Institute. He worked at Argonne National Laboratory and Sargent & Lundy Engineers before joining PNL. His research interests are in nuclear system reliability, risk analysis, and human factors.



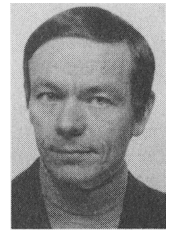
THE INTERCOMPARISON OF AEROSOL CODES

*Ian H. Dunbar
Jean Fermandjian
Jean Gauvain*

Ian H. Dunbar (top) (D. Phil., theoretical physics, Oxford University, United Kingdom, 1977) is a principal scientific officer at the United Kingdom Atomic Energy Authority's Safety and Reliability Directorate (SRD) in Culcheth, England. He worked for 5 years on theoretical high-energy physics at the Universities of Bristol and Sussex, United Kingdom. In 1981, he joined SRD and has worked on aerosol behavior modeling for reactor accident source term analysis. **Jean Fermandjian** (bottom) (PhD, aerosol physics, Université de Paris Val-de-Marne, France, 1981)



joined the Commissariat à l'Énergie Atomique (CEA) Institut de Protection et Sécurité Nucléaire (IPSN) in 1972, where he has worked in the field of safety analyses for nuclear reactors. He is currently a group leader for source term assessment (fission product release from reactor containment building) during severe pressurized water reactor accidents. **Jean Gauvain** (right) (Engineer, Ecole Centrale des Arts et Manufactures, France, 1973) joined the Institute for Technological Research and Development at CEA in 1975. He was in charge of numerical modeling of seismic behavior of structure, and after 1981, he was in charge of numerical modeling of fission product aerosol behavior. In 1986, he joined the IPSN of the CEA and is responsible for all fission product transfer analysis in severe nuclear accident studies.

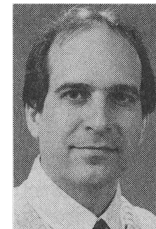


CHEMICAL PROCESSING

A THERMODYNAMIC MODEL OF NITRIC ACID EXTRACTION BY TRI-*n*-BUTYL PHOSPHATE

David J. Chaiko (top) (PhD, mineral processing, The Pennsylvania State University, 1986) is a chemical engineer in the Chemical Technology Division at Argonne National Laboratory (ANL). His areas of interest are in mineral processing, hydrometallurgy, and aqueous solution chemistry. He is working on the development of a computer model of the TRUEx solvent extraction process. **George F. Vandegrift** (PhD, inorganic chemistry, Iowa State University, 1971) is the group leader of the separation science and technology group in the Chemical Technology Division of ANL. His current activities are in developing separation processes important to cleanup, recycle, and disposal of nuclear and industrial waste and in developing technology for the substitution of low-enriched uranium for highly enriched uranium in targets for ⁹⁹Mo production.

*David J. Chaiko
George F. Vandegrift*

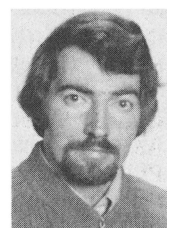


RADIOACTIVE WASTE MANAGEMENT

GAS MIGRATION FROM LOW-LEVEL RADIOACTIVE WASTE REPOSITORIES IN HARD ROCKS

Carol Braester (top) (PhD, technical sciences, Technion-Israel Institute of Technology, Israel, 1971) is a professor of numerical methods for the solution of flow problems, with application to groundwater hydrology and petroleum engineering. From 1976 to 1978, he was a visiting professor of reservoir engineering at the Norwegian Institute of Technology, and from 1983 to 1984, he was a visiting professor in the Royal Institute of Technology, Stockholm. His fields of interest include simulation of flow and heat processes related to radioactive waste repositories. **Roger Thunvik** (PhD, Royal Institute of Technology, Sweden) is a research fellow at the Swedish Natural Science Research Council and is engaged in research at the Royal Institute of Technology. His interests include flow through fractured rocks and numerical modeling.

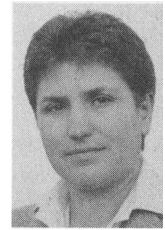
*Carol Braester
Roger Thunvik*



MODEL CALCULATIONS OF THE THERMOMECHANICAL EFFECTS IN THE NEAR FIELD OF A HIGH-LEVEL RADIO-ACTIVE WASTE REPOSITORY

Alexandra Pudewills (top) (Dipl. Ing., geological and geophysical engineering, University of Bucharest, Romania, 1975) worked from 1976 to 1978 as a research geophysicist in the Institute of Meteorology and Geophysics at the University of Frankfurt. In 1978, she joined Kernforschungszentrum Karlsruhe (KfK) and now works on the numerical modeling of the geomechanical problems of nuclear waste repository in salt. **Ekkehard Korthaus** (center) [Dipl.-Phys., Dr. Ing., reactor physics, Technical University of Karlsruhe, Federal Republic of Germany (FRG), 1970] has worked as a research physicist in the final disposal section of KfK since 1972. His main activities include thermal and thermomechanical near-field analyses for repositories in rock salt. **Rainer H. Köster** (bottom) (Dipl. Chem., Dr. rer. nat., physical chemistry and radiation chemistry, Technical University of Berlin, FRG, 1971) is a research chemist and head of the final disposal section at KfK. He specializes in near-field phenomena in geologic disposal, including waste product properties, waste packaging, waste/rock interaction, and modeling of release scenarios.

*Alexandra Pudewills
Ekkehard Korthaus
Rainer H. Köster*

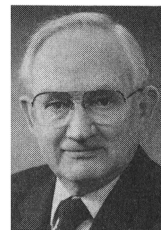


RADIOISOTOPES AND ISOTOPE SEPARATION

PILOT TESTING OF RADIOLUMINESCENT LIGHTS FOR REMOTE AIRFIELDS

George A. Jensen (top) (BS, 1958, and MS, 1965, chemical engineering; PhD, engineering science, Washington State University) is employed by Battelle Northwest Laboratories (BNL). His interests have included nuclear fuel reprocessing, biofouling and corrosion in ocean thermal power plants, developing corrosion-control instrumentation for geothermal systems, and developing uses for solvent-refined coal minerals. His recent interests are related to the recovery of platinum group metals and other products from spent nuclear fuels and research, development, and testing of radioluminescent lighting systems. **R. F. Hazelton** (bottom) (BChE, Ohio State University, 1952) is employed by BNL. His interests before joining BNL in 1981 were in the areas of petroleum processes and products. He is currently working in the U.S. Department of Energy Advanced Radiation Technology Program at BNL. **R. G. Moles** (photo not available) was a senior specialist at BNL until his retirement in 1984. He participated in many programs related to corrosion, ocean thermal power production, and by-product recovery.

*George A. Jensen
R. F. Hazelton
R. G. Moles*



HEAT TRANSFER AND FLUID FLOW

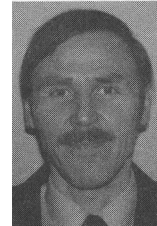
A COMPARISON OF TWO EFFICIENT NONLINEAR HEAT CONDUCTION METHODOLOGIES USING A TWO-DIMENSIONAL TIME-DEPENDENT BENCHMARK PROBLEM

Gary L. Wilson (right) (M. Engr., nuclear engineering, Texas A&M University; MSc, mathematics, Western Illinois University; PhD, nuclear engineering, University of Virginia, 1987) is currently interested in coarse-mesh numerical methods with applications in heat transfer, natural convection, and crystal growing.

*Gary L. Wilson
Roger A. Rydin
Seppo Orivuori*



Roger A. Rydin (top) (BS, electrical engineering, Northwestern University, 1957; SM, 1958, and ScD, 1964, nuclear engineering, Massachusetts Institute of Technology) is an associate professor of nuclear engineering at the University of Virginia. His research interests include reactor physics design, computational methods, and system dynamics. He has been a visiting scientist at Kernforschungsanlage Jülich, the Joint Research Center, Ispra, and Oak Ridge National Laboratory. **Seppo Orivuori** (bottom) (MSc, technical mathematics, 1970; Licentiate in Technology, structural mechanics, Helsinki University of Technology, Finland, 1977) has worked at the Finnish state-owned energy utility Imatran Voima Oy since 1968. He has been engaged in the development of finite element programs for structural and fluid problems. He has also given lectures at Helsinki University of Technology on numerical methods in structural mechanics since 1972. He is currently a senior advisor in finite element methods.



**RADIOACTIVE WASTE
MANAGEMENT**

RADIATION DOSE IMPACTS RESULTING FROM VARIATIONS IN THE TRANSPORTATION-RELATED ACTIVITIES IN A SYSTEM FOR MANAGEMENT OF SPENT NUCLEAR FUEL

Kenneth J. Schneider (top right) (professional engineering degree, Colorado School of Mines, 1950) is a staff engineer at the Pacific Northwest Laboratory (PNL). He has worked on all aspects of the back end of the nuclear fuel cycle, including waste management, process technology, fuel reprocessing, safety analysis, decommissioning, and transportation. Between 1978 and 1980 he was a senior officer in the International Atomic Energy Agency's waste management activities. He is currently working in PNL's International Support Office for radioactive waste management support to the U.S. Department of Energy. **Peter J. Pelto** (top left) (MS, chemical engineering, University of Washington, 1980) is a group leader at PNL. He joined PNL in 1973 and his primary areas of responsibility have been safety and reliability studies of nuclear fuel cycle facilities. He is currently leader of the Risk and Safety Analysis Group at PNL. **Jay C. Lavender** (center right) (BA, industrial technology, Washington State University, 1984) is a technical specialist at PNL. He has performed technical studies in the areas of occupational and public risk, and in safety and risk analysis using fault tree, PHA, MNEA, and event tree methodologies. He is currently involved in a risk characterization program of the radioactive waste management system. **Philip M. Daling** (bottom left) (BS, physical metallurgy, Washington State University, 1981) is a senior research engineer at PNL. His general areas of responsibility have included risk and safety analysis of energy material facilities and transportation systems. His current responsibilities include risk analysis of the civilian radioactive waste disposal system, and prioritization of safety issues that could improve the safety of commercial nuclear power plants. **Barbara A. Fecht** (bottom right) (MS, bioengineering, and MS, mechanical engineering, University of Michigan, 1980) is a senior research engineer at PNL. Since joining PNL she has been involved in areas of structural mechanics, risk and safety analysis and human factors engineering, with a special emphasis in the application of remote systems and robotics to hostile environments. She is currently working on numerous aspects of remote systems and robotics.

*Kenneth J. Schneider
Peter J. Pelto
Jay C. Lavender
Philip M. Daling
Barbara A. Fecht*

