



AUTHORS — OCTOBER 1976

REACTORS

POWER-DISTRIBUTION CONTROL BY ABSORBER DEFICIT COMPENSATION

*Herbert Finnemann
Helmut Moldaschl*

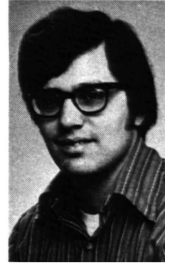
Herbert Finnemann (top) (MS, physics, Free University of Berlin, 1964; PhD, engineering science, Technical University Darmstadt, 1972) is a reactor physicist at Kraftwerk Union AG, Erlangen, Federal Republic of Germany. He is responsible for space-time kinetics methods development. His main interests are reactor dynamics and control. Helmut Moldaschl (PhD, physics, University of Vienna, 1968) is a physicist for the core physics section at the Kraftwerk Union AG, Erlangen, Federal Republic of Germany. His interests include methods development for reactor physics and core physics design and analysis.



LOAD-FOLLOW DEMONSTRATIONS EMPLOYING CONSTANT AXIAL OFFSET POWER-DISTRIBUTION CONTROL PROCEDURES

*P. J. Sipush
R. A. Kerr
A. P. Ginsberg
T. Morita
L. R. Scherpereel*

Paul J. Sipush (top left) (BS, electrical engineering, MS and PhD, nuclear engineering, Carnegie Mellon University, 1971) is a principal engineer in the Nuclear Fuel Division, Materials Engineering and Analysis Department, Westinghouse Nuclear Energy Systems (WNES). His current responsibilities include a variety of functions related to fuel rod performance. Formerly he was in the Nuclear Engineering Department of the Nuclear Fuel Division, WNES, and was responsible for the core physics design and analysis of specific cores including Indian Point, Unit 2. Robert A. Kerr (top right) (BS, nuclear engineering, Penn State University, 1972) is an engineer in the Nuclear Operations Group of the Systems Technology Department of the Pressurized Water Reactors-Service Division, WNES. For the past four years he has been involved in nuclear testing in both plant startups and research and development efforts. Arthur P. Ginsberg (center left) (PhD, nuclear engineering, Rensselaer Polytechnic Institute, 1974) works in the Reactor Fuels Division at Consolidated Edison. His activities include reactor physics and fuel management calculations, safety analyses, and reactor operation support. He has been involved in reactor startups including on-site test performance and evaluation. Previously he worked at Gulf United Nuclear Fuels Corporation in the Nuclear Development Section. Toshio Morita (bottom right) (Bachelor of Engineering, electrical engineering; Doctor of Engineering, nuclear engineering, Tokyo Institute of Technology, 1963) is a senior engineer in the Nuclear Engineering Department, WNES. His current interest is in power distribution control and power capability of the nuclear reactor. Larry R. Scherpereel (bottom left) (BS and MS, mechanical



engineering, University of Notre Dame, 1969) is currently manager, Nuclear Design V, Westinghouse Nuclear Fuel Division, WNES. In this position, his responsibilities include supervision of the core design of first and reload cycles for selected Westinghouse plants and the direction of programs related to the development of core operational strategies.

A COMPARISON OF THE DEUTERIUM-TRITIUM NEUTRON WALL LOAD DISTRIBUTIONS IN SEVERAL TOKAMAK FUSION REACTOR DESIGNS

*David L. Chapin
William G. Price, Jr.*

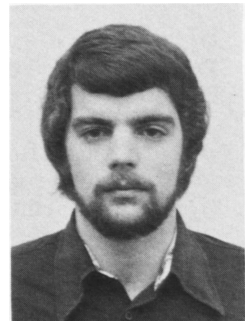
David L. Chapin (top) (PhD, nuclear engineering, University of Michigan, 1974) is currently a research associate with the Fusion Reactor Design Division of the Princeton Plasma Physics Laboratory. For the past two years he has been involved with fusion reactor blanket design, especially three-dimensional neutronics calculations, and is currently working on the design of a tokamak fusion-fission hybrid reactor. William G. Price, Jr. (PhD, nuclear science, University of Michigan, 1972) is a member of the professional staff of the Princeton Plasma Physics Laboratory. In the past four years he has been responsible for various nuclear engineering (principally neutronic) studies in support of the Fusion Technology Program of the Fusion Reactor Design Division. He is currently active in the design of a tokamak-based fusion-fission hybrid reactor.



EVALUATION OF SUBCOOLED WATER THRUST FORCES

Stephen W. Webb

Stephen W. Webb (BS, mechanical engineering, Clarkson College, 1971; PE, MS, nuclear engineering, Pennsylvania State University, 1972) primarily has been engaged in thermal-hydraulic analysis of nuclear power plants for the Applied Engineering Analysis Department of Gilbert Associates, Inc. His areas of interest include transient thrust and jet impingement methodology and containment safety analysis.



FUEL CYCLES

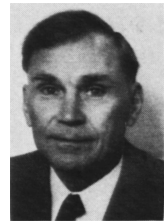
ECONOMIC ALTERNATIVES FOR THE LONG-TERM USE OF PLUTONIUM PRODUCED IN LIGHT WATER REACTORS

*K. Hnilica
H. P. Holley
K. Lahner
H. Schmale*

K. D. Hnilica (top) (MS, physics, Technische Hochschule, Vienna, 1968) is a reactor physicist at NIS, Nuklear-Ingenieur-Service GmbH, Hanau, Federal Republic of Germany (FRG). His experience includes analytical reactor physics, fuel design, and the development of nuclear fuel models for light water reactors and fast breeder reactors. H. P. Holley (center) (MS, physics, Technische Hochschule, Vienna, 1967; PhD, nuclear engineering, The Pennsylvania State University, 1971) is working in the area of reactor physics at NIS. His experience covers analytical reactor physics for boiling water reactors and pressurized water reactors. K. Lahner (bottom) (PhD, Technische Hochschule, Aachen) has been working in the field of reactor physics since 1962. He is presently manager of the Reactor Physics and Fuel Management Division at NIS.



H. Schmale (right) (MS, mechanical engineering) has been working in the nuclear field since 1955. He was responsible for the nuclear fuel cycle at Rheinisch-Westfälisches Elektrizitätswerk AG, Essen, FRG. He is presently president of Projektgesellschaft Wiederaufarbeitung von Kernbrennstoffen mbH, Essen, FRG.



FUELS

BEHAVIOR OF MOLYBDENUM IN MIXED-OXIDE FUEL

G. C. Giacchetti (top) (PhD, physical science, University of Milano, Italy) is employed at CISE and AGIP-Nucleare in Milano, working in neutron spectrometry and nuclear fuel development, respectively. Since 1964, he has worked at the plutonium facilities of Euratom in Karlsruhe. His interests include physical chemistry of irradiated fast breeder fuels. C. Sari (PhD, physical chemistry, University of Milano and Torino, Italy) is employed by IENGF-Centro Studi Elettrofisici in Torino working on solid chemistry. Since 1960, he has worked at the plutonium facilities of Belgonucléaire (Belgium), Hanford (U.S.), and Euratom (Karlsruhe, Germany). His interests include structures and thermodynamics of fast breeder reactor fuels.

*G. Giacchetti
C. Sari*



MATERIALS

CAUSTIC STRESS-CORROSION BEHAVIOR OF Fe-Ni-Cr NUCLEAR STEAM GENERATOR TUBING ALLOYS

I. L. W. Wilson (top left) (PhD, metallurgy, University of Manchester, England) is with Westinghouse Research Laboratories, Pittsburgh, Pennsylvania. He has worked for eight years on the stress-corrosion cracking and corrosion fatigue of alloys used for both nuclear and fossil power generation equipment. His current interests are physical metallurgy and stress-corrosion cracking. F. W. Pement (top right) (PhD, nuclear chemistry, University of Pittsburgh) is with Westinghouse Research Laboratories and has specialized in stress-corrosion cracking effects in nuclear power plant materials from both fundamental and applied aspects. He has worked with instrumental microanalytical techniques (SEM, electron-beam microprobe, spark source and direct imaging mass spectrometry) on stress corrosion of laboratory samples and in field failure analyses. R. G. Aspden (bottom left) (Dr. Sc., metallurgy, University of Pittsburgh) is with Westinghouse Research Laboratories and is manager of corrosion resistant materials research. His technical interests are composition and structure of materials to performance. Richard T. Begley (bottom right) (BS, metallurgy, Lehigh University) is with Westinghouse Research Laboratories and is responsible for directing basic and applied research in the areas of deformation and fracture, aqueous corrosion stress corrosion, oxidation and hot corrosion irradiation effects, metals joining, and deformation processing. At present, he is conducting research on materials for nuclear power generating systems, with emphasis on corrosion phenomena associated with materials utilized in light water reactors.

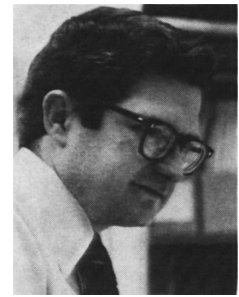
*I. L. W. Wilson
F. W. Pement
R. G. Aspden
R. T. Begley*



NOTCH EFFECT ON THE TENSILE PROPERTIES OF FAST-REACTOR-IRRADIATED TYPE 304 STAINLESS STEEL

R. L. Fish (MS, Oregon State University, 1969) is with the Mechanical Properties Section of Westinghouse Hanford Company. He is currently responsible for evaluating the effects of neutron irradiation on the tensile and creep properties of reactor core structural materials.

Robert L. Fish



RESIDUAL COLD WORK AND ITS INFLUENCE ON TENSILE AND CREEP PROPERTIES OF TYPES 304 AND 316 STAINLESS STEEL

V. K. Sikka (center) (PhD, metallurgical engineering, University of Cincinnati, 1973) worked with radiation damage in body-centered cubic metals and alloys. He joined Oak Ridge National Laboratory (ORNL) in March 1974, and has been working on heat-to-heat variation in tensile and creep properties and the effect of aging on tensile and creep properties of Types 304 and 316 stainless steels. R. W. Swindeman (left) (MS, University of Notre Dame) joined the Metals and Ceramics Division at ORNL in 1957. Since then, he has been involved with the investigation of the mechanical behavior of high-temperature structural materials for use in nuclear power and propulsion systems. T. L. Hebble (right) (MS, statistics, Florida State University, 1964) has been a consultant in the Mathematics and Statistics Research Department of Union Carbide's Nuclear Division since 1964. His current interests include the application of statistical methodology to experimental programs in the physical sciences. C. R. Brinkman (second from right) (PhD, University of Utah) has worked in the Metals and Ceramics Division at ORNL since 1973. His major fields of interest include fatigue and creep behavior of materials. He is presently the group leader of the Mechanical Properties Group in the Metals and Ceramics Division. M. K. Booker (second from left) (BA, physics and mathematics, Vanderbilt University, 1974) is currently a graduate student in metallurgical engineering at the University of Tennessee. Since joining ORNL in May 1974, his work has involved correlation and analysis of mechanical properties data for elevated temperature structural materials.

*V. K. Sikka
R. W. Swindeman
T. L. Hebble
C. R. Brinkman
M. K. Booker*



TEMPERATURE AND FLUENCE LIMITS FOR A TYPE 316 STAINLESS-STEEL CONTROLLED THERMONUCLEAR REACTOR FIRST WALL

Authors (left to right) are P. J. Maziasz (MS, University of Michigan, 1974), F. W. Wiffen (PhD, Northwestern University, 1967) J. O. Steigler (PhD, University of Tennessee, 1971) and E. E. Bloom (PhD, University of Tennessee, 1970). Steigler is group leader and the other authors are members of the Radiation Effects and Microstructural Analysis Group of the Metals and Ceramics Division at Oak Ridge National Laboratory. The authors combine more than 40 years of experience in the evaluation of radiation effects in metals, in fundamental research, and in fission reactor applications. They are currently focusing this experience on the evaluation of radiation effects to be anticipated in future fusion reactors.

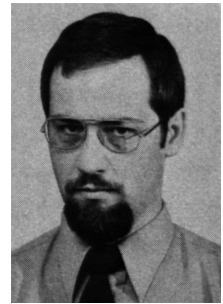
*E. E. Bloom
F. W. Wiffen
P. J. Maziasz
J. O. Steigler*



DETECTION OF SODIUM BOILING IN LIQUID-METAL FAST BREEDER REACTORS BY MONITORING NEUTRON NOISE SIGNALS FOR OSCILLATORY COMPONENTS

Joachim Ehrhardt

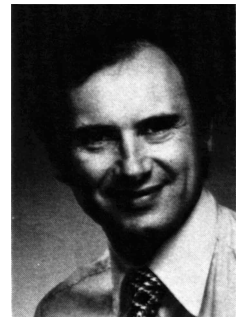
Joachim Ehrhardt (PhD, University of Karlsruhe, 1975) is a physicist at the Institut für Neutronenphysik und Reacktor-technik, Kernforschungszentrum Karlsruhe, West Germany. He works in the area of reactor noise analysis, especially in investigating methods for the detection of reactor malfunctions.



PREDICTION OF TIME-DEPENDENT NEUTRON FLUXES ENCOUNTERED IN PULSED-NEUTRON URANIUM LOGGING EXPERIMENTS

James H. Renken

James H. Renken (BSc, MSc, physics, The Ohio State University, 1958; PhD, physics, California Institute of Technology, 1963) is supervisor of the Theoretical Division at Sandia Laboratories. His interests include the development and application of computational methods for radiation shielding and interaction problems and the study of cross-section representation and processing techniques.



SOME EFFECTS OF PREINJECTED HELIUM AND IRRADIATION TEMPERATURE IN VOID FORMATION IN ALUMINUM IRRADIATED WITH ALUMINUM IONS

*M. L. Sundquist
J. M. Donhowe*

M. L. Sundquist (top) (PhD, nuclear engineering, University of Wisconsin, 1974) is presently on the senior engineering staff at the National Electrostatics Corporation in Middleton, Wisconsin, working in the design and sales of electrostatic particle accelerators. J. M. Donhowe (PhD, physics, University of Wisconsin at Madison, 1965) is an associate professor of nuclear engineering at the University of Wisconsin, Madison, Wisconsin. His major research interests are in the areas of materials studies, microanalysis using ion beams, radiation damage, charged-particle irradiation, electron and ion optics, high-voltage accelerator design, and structure of light nuclei.

