

AUTHORS — MARCH 1986

OVERVIEW

COST ASSESSMENT OF A GENERIC MAGNETIC FUSION REACTOR

J. Sheffield (top right) (PhD, London University, England, 1966) is associate director for confinement in the Fusion Energy Division of the Oak Ridge National Laboratory (ORNL). He works in the tokamak, bumpy torus, and stellarator confinement areas, in the heating and diagnostics of plasmas and on advanced fusion systems. **R. A. Dory** (top left) (PhD, University of Wisconsin, 1962) is head of the Theory Section of the Fusion Energy Division at ORNL. He has contributed to the theory and modeling of mirrors, bumpy tori, tokamaks, and stellarators, in the areas of magnetohydrodynamics, confinement, divertors, and advanced design. **S. M. Cohn** (bottom right) (MS, economics, University of Tennessee, 1977) is a staff member in the Energy Division of ORNL. He has worked on end-use models for the residential and commercial sectors, and on engineering-economic models in the conservation area. **J. G. Delene** (bottom left) (MS, nuclear science, University of Michigan, 1959) is a staff member in the Engineering Technology Division of ORNL. He has made contributions to the reactor core physics of a variety of fission reactor concepts, to the dynamic modeling of nuclear power plants. His current interests include economic studies of fission, fossil, and fusion systems. **L. F. Parsly** (photo not available) (PhD, University of Pennsylvania, 1948) has recently retired from the Engineering Technology Division of ORNL. He has contributed in the areas of nuclear reactor safety and reactor component design, in failure mode analysis and availability analysis. **D. E. T. F. Ashby** (photo not available) (graduate, University of London, 1951) is a staff member at the Culham Laboratory of the U.K. Atomic Energy Authority. He has contributed widely in fusion research, to the basic plasma physics of waves and shock waves, to diagnostics, to a variety of magnetic confinement devices, to inertial fusion, and to economic analysis. **W. T. Reiersen** (photo not available) (MS, engineering, University of Tennessee, 1983) is currently employed in the Analysis

J. Sheffield
R. A. Dory
S. M. Cohn
J. G. Delene
L. Parsly
D. E. T. F. Ashby
W. T. Reiersen



Division of the Princeton Plasma Physics Laboratory. He has worked for the Grumman Aerospace Corporation at the Fusion Engineering Design Center (ORNL) on fusion systems design and availability analysis.

DEUTERIUM-TRITIUM FUEL SELF-SUFFICIENCY IN FUSION REACTORS

M. A. Abdou (top right) (PhD, nuclear engineering, University of Wisconsin, 1973) is a professor in the mechanical, aerospace, and nuclear engineering department at the University of California, Los Angeles (UCLA). He is the principal investigator of FINESSE. **E. L. Vold** (top left) (MS, health physics, University of Wisconsin, 1977; MS, engineering, University of California, Davis, 1982) is in the TRW doctoral fellowship program at UCLA, majoring in applied plasma physics and fusion engineering. He is currently working in the Reactor Studies Group on tokamak plasma transient thermal analyses and is planning work on the UCLA Continuous Current Tokamak (CCT). **C. Y. Gung** (center right) (MS, nuclear engineering, Pennsylvania State University, 1983) is a PhD student at UCLA. He participated in the blanket comparison and selection study. His current research interests include nuclear analyses for blanket designs, tritium fuel self-sufficiency, engineering design window of deuterium-tritium fusion reactor systems, and nuclear simulations of fusion neutron source experiments at the Japan Atomic Energy Research Institute. **M. Z. Youssef** (bottom left) (PhD, nuclear engineering, University of Wisconsin, 1980) is currently a member of the research staff of the Fusion Engineering Program at UCLA. He spent one year at the Casaccia Nuclear Study Center in Italy. His research interests include pure fusion and hybrid engineering and technology, radioactivity and safety analysis, sensitivity and perturbation theory, and neutronics methods for fusion and fission reactors. **K. Shin** (bottom right) (BS, MS, and PhD, nuclear engineering, Kyoto University, Japan) is an assistant professor of nuclear engineering at Kyoto University. His main fields of research include fusion neutronics and radiation shielding for nuclear reactors and accelerators. He is interested in radiation transport theory and neutron and gamma-ray measurements.

*M. A. Abdou
E. L. Vold
C. Y. Gung
M. Z. Youssef
K. Shin*



UNCERTAINTIES IN PREDICTION OF TRITIUM BREEDING IN CANDIDATE BLANKET DESIGNS DUE TO PRESENT UNCERTAINTIES IN NUCLEAR DATA BASE

M. Z. Youssef (top) (PhD, nuclear engineering, University of Wisconsin, 1980) is currently a member of the research staff of the Fusion Engineering Program at the University of California, Los Angeles (UCLA). He spent one year at the Casaccia Nuclear Study Center in Italy. His research interests include pure fusion and hybrid engineering and technology, radioactivity and safety analysis, sensitivity and perturbation theory, and neutronics methods for fusion and fission reactors. **M. A. Abdou** (PhD, nuclear engineering, University of Wisconsin, 1973) is a professor in the mechanical, aerospace, and nuclear engineering department at UCLA. He is the principal investigator of FINESSE.

*M. Z. Youssef
M. A. Abdou*



AN ASSESSMENT OF TRITIUM BREEDING REQUIREMENTS BASED ON THE TRITIUM FUEL CYCLE

J. Jung

J. Jung (PhD, nuclear engineering, Kyoto University, Japan, 1974) is with the Fusion Power Program at Argonne National Laboratory. His current activities include nuclear analyses for the ongoing Blanket Comparison and Selection Study, fusion materials recycle/waste management study, and lithium blanket neutronics/shielding experiment project. He is also responsible for general neutronics method/code development and nuclear data evaluation.



PLASMA ENGINEERING

LOW-TEMPERATURE PLASMA NEAR A TOKAMAK REACTOR LIMITER

*Bastiaan J. Braams
Clifford E. Singer*

Bastiaan J. Braams (top) (MSc, physics, University of Utrecht, The Netherlands, 1981) has been a physicist at the FOM Instituut voor Plasmafysica in the Netherlands since 1981 and has been attached to the Max-Planck-Institut für Plasmaphysik in the Federal Republic of Germany since 1983. His main interest is computational studies of tokamak equilibrium and transport. **Clifford E. Singer** (FBIS, PhD, University of California, Berkeley) has worked on the theory and applied physics of plasma transport in tokamak experiments and reactors at Princeton Plasma Physics Laboratory since 1977. He has published studies of space and planetary physics, interstellar propulsion and communication, and molecular biology and evolution.



REACTIVATION COEFFICIENT OF MUON-CATALYZED DEUTERIUM-TRITIUM FUSION AND ITS ENHANCEMENT

Hiroshi Takahashi

Hiroshi Takahashi (PhD, electrical physics, Waseda University, 1959) worked on physics and mathematics in the area of nuclear reactors at Brookhaven National Laboratory (BNL), Japan Atomic Energy Research Institute, and Euratom Research Center at Ispra and was a professor at the Tokyo Institute of Technology from 1974 to 1976. His current research interest at BNL is in accelerator reactors and the muon-catalyzed fusion reaction.



DIVERTOR SYSTEMS

SPUTTERING PERFORMANCE OF A PUMPED LIMITER FOR AN IGNITION TOKAMAK

Jeffrey N. Brooks

Jeffrey N. Brooks (PhD, electrical engineering, New York University, 1972) is a staff member in the Fusion Power Program at Argonne National Laboratory. His current interests are in fusion plasma engineering and fusion reactor design studies.



TRANSMISSION OF FAST NEUTRONS THROUGH AN IRON SPHERE

Nolan E. Hertel (top) (BS, 1973, and MS, 1975, nuclear engineering, Texas A&M University; PhD, nuclear engineering, University of Illinois, 1979) is an associate professor of mechanical engineering and a member of the Center for Fusion Engineering at the University of Texas at Austin. His interests are in the areas of radiation transport, measurement, and protection. He is currently involved in the measurement of neutron multiplication by beryllium assemblies and in the determination of neutron and gamma-ray spectra in liquid phantoms irradiated by neutrons of energies up to 50 MeV. **R. H. Johnson** (center) (BS, engineering physics, 1971; MS, nuclear engineering, 1972; and PhD, nuclear engineering, 1975, University of Illinois at Urbana-Champaign) is a group training supervisor in the production training department of Commonwealth Edison Company. He was an assistant professor in the School of Nuclear Engineering at Purdue University from 1975 to 1981. His activities have included neutron spectroscopy, fission-rate measurements, analysis of integral experiments, and the training of operations, engineering, quality control, and quality assurance personnel. **Bernard W. Wehring** (bottom) (BSE, engineering physics, 1959, and engineering math, 1959, University of Michigan; MS, physics, 1961, and PhD, nuclear engineering, 1966, University of Illinois) is professor of nuclear engineering and director of the Nuclear Reactor Program at North Carolina (NC) State University. Before joining NC State, he was assistant (1966 to 1970), associate (1970 to 1977), and professor (1977 to 1984) of nuclear engineering at the University of Illinois. His research interests are in providing new instruments, new experimental techniques, and new data needed to further the development of fission and fusion power. **John J. Dorning** (photo not available) (PhD, Columbia University, 1967) is Whitney Stone professor of nuclear engineering, professor of engineering physics, member of the Center for Advanced Computation, and member of the Center for Advanced Study at the University of Virginia.

*Nolan E. Hertel
R. H. Johnson
Bernard W. Wehring
John J. Dorning*



TAONIC AND MONOPOLIC EXOTIC SYSTEMS IN THE CONTEXT OF FUSION

Lali Chatterjee (top) (PhD, Jadavpur University, India, 1980) is a University Grants Commission Research Associate at the Department of Physics, Jadavpur University. She has worked extensively on various aspects of muon physics, quantum electrodynamics, and particle physics. She has been a visiting scientist at the International Center for Theoretical Physics, Trieste, Italy, in 1983, and at Fermilab in 1984. Her current research interests include muon-catalyzed fusion and particle physics. **V. P. Gautam** (MS and PhD, University of Allahabad, 1965) joined the Indian Association for the Cultivation of Science, Calcutta (IACS) in March 1965 as a research officer. From September 1966 to August 1968 he worked as a research associate with L. L. Foldy at Case-Western Reserve University, Cleveland, Ohio. He then resumed duties at IACS and was selected as a reader in the Department of Theoretical Physics. Since March 1984, he has been professor of physics. His interests include particle and nuclear physics.

*Lali Chatterjee
V. P. Gautam*

