NAE Elects New Members

The National Academy of Engineering has elected 67 new members and 5 foreign associates. This brings the total U.S. membership to 1238, with 108 foreign associates. The new members are as follows:

Richard E. Adams, General Dynamics Corp., St. Louis, Mo.; **Klaus D. Bowers**, AT&T Bell Laboratories, Murray Hill, N.J.; **Sol Burstein**, Wisconsin Electric Power Co., Milwaukee; **John C. Calhoun, Jr.**, Texas A&M University System, College Station; **Alfred Y. Cho**, electronics and photonics materials research, AT&T Bell Laboratories, Murray Hill, N.J.; **John V. Christiansen**, consulting engineer, Skilling, Helle, Christiansen, Robertson, Bainbridge Island, Wash.; **Philip M. Condit**, Boeing Commercial Airplane Co., Seattle; **Paul M. Cook**, Raychem Corp., Menlo Park, Calif.; **William E. Cooper**, Teledyne Engineering Services, Waltham, Mass.

George B. Dantzig, Stanford University; **James M. Duncan**, civil engineering, University of California, Berkeley; **Richard E. Emmert**, photo systems and electronics products, E. I. du Pont de Nemours & Co., Wilmington, Del.; **Charles A. Fowler**, MITRE Corp., Bedford, Mass.; **Donald C. Fraser**, Charles Stark Draper Laboratory, Inc., Cambridge Mass.; **Robert B. Fridley**, Weyerhaeuser Co., Tacoma, Wash.; **Leslie A. Geddes**, biomedical engineering center, Purdue University; **Richard J. Goldstein**, mechanical engineering, University of Minnesota, Minneapolis; **James P. Gordon**, electronics research laboratory, AT&T Bell Laboratories, Holmdel, N.J.; **Herrmann K. Gummel**, computer-aided design and test laboratory, AT&T Bell Laboratories, Murray Hill; **Robert C. Hawkins**, General Electric Aircraft Engine Group, Evendale, Ohio.

Allan F. Henry, nuclear engineering, Massachusetts Institute of Technology; **Lawrence H. Hodges**, private consultant (technical affairs), Racine, Wis.; **William G. Howard, Jr.**, research and development, Motorola, Inc., Schaumburg, Ill.; **Erich P. Ippen**, electrical engineering, Massachusetts Institute of Technology; **Howard H. Kehrl**, General Motors Corp., Detroit; **James F. Lardner**, Deere & Co., Moline, Ill.; **Thomas D. Larson**, Pennsylvania Department of Transportation, Harrisburg; **Ronald M. Latanision**, materials science, Massachusetts Institute of Technology; **Shih-Ying Lee**, Setra Systems, Inc., Acton, Mass.; **Frederick E. Luborsky**, General Electric Corporate Research and Development Center, Schenectady, N.Y.; **John W. Lyons**, national engineering laboratory, National Bureau of Standards, U.S. Department of Commerce.

John B. MacChesney, AT&T Bell Laboratories, Murray Hill; **Craig Marks**, engineering, TRW Inc., Solon, Ohio; **Charles S. Matthews**, petroleum engineering consultant, Shell Oil Co., Houston, Texas; **Sanford N. McDonnell**, McDonnell Douglas Corp., St. Louis, Mo.; **Richard C. Messinger**, Cincinnati Milacron Inc.; **Philip M. Morse**, physics, Massachusetts Institute of Technology; **Warren H. Owen**, Duke Power Co., Charlotte, N.C.; **Yih-Hsing Pao**, theoretical and applied mechanics, Cornell University; **George P. Peterson**, Air Force Wright Aeronautical Laboratories, Wright-Patterson AFB, Ohio; **Robert Price**, M/A Linkabit, Inc., Lexington, Mass.; **A. Alan B. Pritsker**, Pritsker and Associates, Inc., West Lafayette, Ind.; **Robert O. Reid**, oceanography, Texas A&M University, College Station; **Allen F. Rhodes**, Anglo Energy Ltd., New York City; **Ronald S. Rivlin**, Lehigh University; **Ronald E. Rosensweig**, Exxon Research and Engineering Co., Annadale, N.J.

Lucien A. Schmit, Jr., mechanics and structures, School of Engineering and Applied Science, University of California, Los Angeles; **A. Richard Seebass**, College of Engineering and Applied Science, University of Colorado, Boulder; **Eugene Sevin**, Defense Nuclear Agency, Washington, D.C.; **Claude E. Shannon**, Massachusetts Institute of Technology; **Shan-Fu Shen**, Sibley School of Mechanical and Aerospace Engineering, Cornell University; **Reuel Shinnar**, City University of New York; **Franklin F. Snyder**, private consultant (hydrologic engineering), McLean, Va.; **Ponisseril Somasundaran**, Henry Krumb School of Mines, Columbia University; **Fred N. Spiess**, Institute of Marine Resources, University of California, San Diego; **Robert C. Sprague**, Sprague Electric Co., North Adams, Mass.; **Charles W. Stephens**, TRW Electronic Systems Group, Redondo Beach, Calif.; **Gregory E. Stillman**, University of Illinois, Urbana-Champaign; **Eric E. Sumner**, AT&T Bell Laboratories, Summit, N.J.

Joseph F. Traub, computer science, Columbia University; **George L. Turin**, School of Engineering and Applied Science, University of California, Los Angeles; **Willis H. Ware**, Rand Corp., Santa Monica, Calif.; **Walter J. Weber, Jr.**, civil and water resources engineering, University of Michigan, Ann Arbor; **Vern W. Weekman**, Mobil Solar Energy Corp., Waltham, Mass.; **Sheila E. Widnall**, aeronautics and astronautics, Massachusetts Institute of Technology; **Edward L. Wilson**, civil engineering, University of California, Berkeley; **Michael Yachnis**, Naval Facilities Engineering Command, Alexandria, Va.

The new foreign associates are:

Jozsef Hatvany, Computer and Automation Institute, Hungarian Academy of Sciences, Budapest; **Hiroshi Inose**, University of Tokyo; **Francis L. LaQue**, International Organization for Standardization, Ontario, Canada; **Robert Malpas**, British Petroleum Company p.i.c., London, England; **Michiyuki Uenohara**, NEC Corp., Tokyo, Japan.

"consideration of all the factors apt to influence a Soviet decision to abandon the ABM [or SALT I] treaty reveals few powerful incentives for them to do it in the near term. While the Soviet BMD program has momentum and has made significant technological progress over the past decade, it has really only now achieved the level of technology that was available to the United States ten years ago. . . . The Soviet Union continues to fear the consequences of turning U.S. technology loose and probably still finds the ABM treaty desirable as a means of constraining the application of U.S. prowess to BMD."

Thus far at meetings of the SCC, says Robert Dean, deputy director of the State Department's bureau of politico-military affairs, the United States has asked the Soviets "to acknowledge that radar has important battle-management capabilities; that it violates the ABM treaty; and that it ought to come down, or ought to be altered or rendered incapable of performing the mission that it's clearly capable of performing now." A similar request will be made at the comprehensive negotiations on space and nuclear arms in Geneva.

Such a demand clearly puts the Soviets in a difficult spot. To modify or destroy the radar would be to acknowledge that the Politburo made a conscious decision to skirt the SALT I accord by authorizing construction in its present form. Yet virtually everyone on the American side firmly believes this is what they must do. "They should say, 'we don't believe it's a violation, but in the interests of preserving arms control, we're going to undertake unilateral measures to make clear what this thing really is,' " Meyer says. The absence of such an effort only fuels dark U.S. interpretations.

In addition, many experts agree, both nations should reach an understanding about the precise distinctions between permitted and prohibited phased-array radars. "We should recognize that treaties are living documents," Buchheim says. "The architects of the ABM treaty knew full well that there [is no] single function large phased-array radar" and that the treaty's loose language would eventually need repair. Gaffney of DOD says "we would be prepared to consider such an understanding," but that no such effort has been made by the United States to date.—**R. JEFFREY SMITH**

This is the second in a series of articles on U.S.–Soviet treaty compliance. The next will examine U.S. allegations of Soviet cheating on SALT II.