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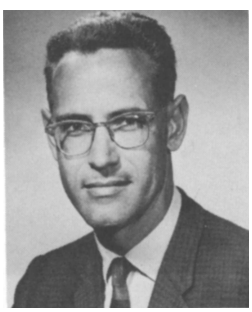
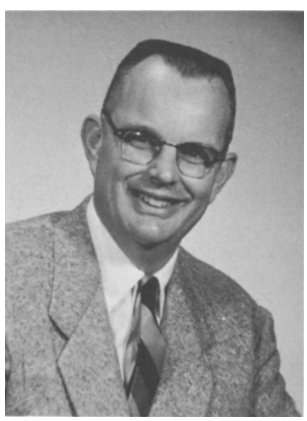
Paul Kruger, Chairman of the ANS Technical Group for Nuclear Explosives Engineering, is associate professor of nuclear science in the Civil Engineering Department at Stanford University, responsible for the teaching and research program in nuclear civil engineering.

NUCLEAR EXPLOSIVES



Joseph B. Knox has been associated with the Plowshare Program at the Lawrence Radiation Laboratory since 1960. His specific interests include development of fallout prediction models, prediction of atmospheric wind fields by dynamical methods, meteorological and geohydrological safety problems associated with engineering applications of nuclear explosives, and the mechanics of cratering. Since 1963, he has served as Group Leader for Plowshare Computational Physics.



Howard A. Tewes has been on the staff of the Lawrence Radiation Laboratory at Livermore since 1953. Since 1965, Tewes has been in charge of the Environmental Effects Group of K-Division. Recently, he has served as project scientist for both the Cabriolet and Schooner nuclear experiments in excavation at the Nevada Test Site.

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John Toman

John Toman has been actively engaged in the Plowshare Program since 1962, first as a founding member of the US Army Corps of Engineers Nuclear Cratering Group, and, since 1964, as a civil engineer with the University of California's Lawrence Radiation Laboratory. Most recently, he was the project scientist for Project Buggy, the first nuclear row-crater experiment, and since 1966 has served as the project scientist for Project Ketch, a proposed nuclear chimney-gas storage experiment.

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Walter C. Day

Walter C. Day (AB, physics, Earlham College, 1956, and radiological physics fellow, University of Washington, Seattle, 1956-57) is presently Technical Director of the US Army Engineer Nuclear Cratering Group, Livermore, California. From 1964 to 1967, Day served as chief of the radiological safety division of the US Army Engineer Nuclear Cratering Group. He was previously employed by Lawrence Radiation Laboratory, Livermore, California as a health and safety engineer.

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Luke J. Vortman

Luke J. Vortman, a pioneer in the field of cratering research, has been with the Test Sciences Department at Sandia since 1949. In 1956 his interest in explosive cratering, an outgrowth of his experience in nuclear weapons testing, turned toward the possible use of nuclear explosives for excavation of a sea-level interoceanic canal. His numerous chemical explosive experiments, the subject of this paper, are necessary prerequisites to nuclear cratering.

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Bernard C. Hughes

Lt. Colonel Bernard C. Hughes, US Army, Corps of Engineers (West Point, 1953; MS, Nuclear/Civil Engineering, University of Illinois, 1958), is Director, US Army Engineer Nuclear Cratering Group, Lawrence Radiation Laboratory, Livermore, California. Colonel Hughes was initially assigned to the US Army Engineer Nuclear Cratering Group as Deputy for Research in July 1963. He served in that capacity as Acting Deputy Director of the group until his departure for Vietnam in December 1965. While in Vietnam, he served as the Base Development Advisor to the Deputy Chief of Staff for Logistics of the Republic of Vietnam Armed Forces Joint General Staff. In June 1967, he returned to the Nuclear Cratering Group as Deputy Director, and he served in this capacity until January 1968 when he was appointed to the Director's post.