



A Dedication

*From Polaris to Trident....
Strategic Leadership*



*Richard B. Kershner
1913–1982*



*Robert C. Morton
1915–1984*



*Robert K. Dahlstrom
1930–1992*



*Luciano P. Montanaro
1931–1996*



RICHARD B. KERSHNER was an extraordinary talent and an inspired leader. He received a Ph.D. in mathematics from The Johns Hopkins University (JHU) in 1936 at the age of 23 and taught mathematics at both the University of Wisconsin and JHU. During WW II, he was recruited to the National Defense Research Committee's Section H (later called the Allegany Ballistics Laboratory) to conduct research on solid-rocket propellants. He joined APL in 1946 to head the Bumblebee Program booster and launcher research before being assigned to lead the development of Terrier, the first antiaircraft missile to defend the Fleet. In 1957 the Navy approached APL to assist in developing the Polaris Fleet Ballistic Missile. Kershner became a consultant to the Polaris Technical Director, Captain Levering Smith, and was named the first Head of the APL Polaris Division. His co-invention of a novel thrust vector control system for advanced solid-propellant rockets provided a breakthrough vital to the Polaris and Minuteman strategic missile programs. However, Kershner is best known for his leadership of the APL Space Department, during which he managed the effort that turned Frank T. McClure's brilliant concept of Doppler satellite navigation into the Transit Navigation System (NAVSAT). Transit allowed Polaris submarines on patrol to periodically update their inertial navigation systems to maintain weapon system accuracy. He received an unprecedented three Navy Distinguished Public Service Awards, the highest award conferred by the government on a private citizen, for his contributions to Terrier, Polaris, and Transit.

ROBERT C. MORTON was the consummate systems engineer, an accomplished sailor, and a gifted leader. He graduated from the University of Rhode Island in 1937 with a B.S. in electrical engineering. After working in industry for several years, Morton became a research associate at the Harvard University Underwater Sound Laboratory and later the Assistant Director of Harvard Systems Engineering Laboratories. He joined APL in 1948 and was instrumental in convincing the Navy to turn the Terrier missile, originally intended to be only a test bed, into the first naval antiaircraft guided missile. As Supervisor of the Terrier Systems Group, Morton established the layout and requirements for the shipboard weapon subsystems, led the systems integration and testing, and participated in live-fire tests. When the APL Polaris Division was formed, he was asked to plan the operational test and evaluation programs needed to validate the Fleet Ballistic Missile weapon system design. Morton took over the reigns of the Polaris Division from Kershner in 1963. Under his strong and decisive leadership, this organization grew rapidly into our multifaceted Strategic Systems Department. He took on the evaluation of the Army Pershing weapon system, in addition to Polaris, and his love of the sea led directly to an expanded test and evaluation role for submarine sonar and the SSBN Security Program. Bob Morton received the Navy's Distinguished Public Service Award for his contributions to Terrier and the Meritorious Service Citation for Polaris.

ROBERT K. DAHLSTROM, "Kirk" or "Doctor D" to his colleagues, was a scientist, an internationally recognized authority on ramjet engine technology, a person possessed with remarkable inquisitiveness and insight, a mentor, and a role model. He received a B.S. in physics and mathematics in 1930 and a Ph.D. in physics in 1934, all from the University of Washington, Seattle. During WW II he joined the Department of Terrestrial Magnetism at the Carnegie Institute of Washington, DC, and participated in the development of the proximity (VT) fuze. Dahlstrom was a charter member of the staff when APL was created in 1942. He assisted in developing the Torpedo Influence Exploder and was part of the small APL team that developed the first supersonic ramjet engine. Dr. Dahlstrom was Supervisor of the Ramjet Development Group, which pioneered this propulsion technology for the Talos missile. He was the Assistant Supervisor of the Talos Division when APL was asked to participate in the Fleet Ballistic Missile Program. Dahlstrom was tasked to plan an independent evaluation of the Polaris missile developmental flight tests, and later to evolve the instrumentation requirements for the weapon system. He became Assistant Supervisor of the Polaris Division and the Strategic Systems Department as well as the department's Chief Analyst. His ability to interpret fragmented, obscure telemetry and explain the underlying phenomenon was legendary throughout the Navy. He developed innovative approaches for extracting crucial technical information from a wide range of instrumentation systems and evolved novel prototype instrumentation concepts. He mentored and inspired dozens of new engineers and analysts. In 1961 Doctor D was awarded the Navy Distinguished Public Service Award for "outstanding contributions in the successful development of the Fleet Ballistic Missile System, particularly the Polaris missile."

LUCIANO P. MONTANARO was an officer and a gentleman, as well as a stimulating and dedicated leader. He received a B.S. degree from the Maritime College, State University of New York, in 1952, served on active duty in the Navy for 12 years, and retired from the Naval Reserve in 1977 as a Captain. His Naval duty included assignments aboard USS *Gwin* (DM-33) and USS *Sea Fox* (SS-402) before becoming the Naval Ordnance Test Unit Test Engineer during the historic first at-sea test launches of the Polaris missile from USS *George Washington* (SSBN-598) on 20 July 1960. Lou went on to serve as the Polaris Weapons Officer on USS *Ethan Allen* (SSBN-608) from 1960 through 1963 before joining the APL Polaris Division. He brought a wealth of practical insight and expertise to the Polaris test and evaluation activities. Montanaro held numerous supervisory positions including the Polaris Missile Group, Demonstration and Shakedown Operations (DASO) Program, Deep Submergence Program, and Sonar Evaluation Program. In 1981, upon the retirement of Bob Morton, he became the second Head of the APL Strategic Systems Department and a member of the Navy's Polaris Steering Task Group. In 1989 he was named Assistant APL Director for Program Development, overseeing the Laboratory's technical program planning until his retirement in 1990. Lou Montanaro was the embodiment of the "independent" analysis spirit the Navy sought from APL. He was committed to excellence and to providing the Navy with technical advice of objective, unwavering technical integrity. He was awarded the Navy's Distinguished Public Service Award in 1990 for "extraordinary contributions in establishing and providing an independent operational evaluation capability for the Fleet Ballistic Missile Systems."