

## SCHRIEVER COURTYARD MONUMENTS - The Schriever Memorial

The third monument in the courtyard is a nine-foot bronze statue of General Bernard A. Schriever, known as the father of Air Force space and missile programs. It was commissioned and funded by the Air Force Association's Schriever Chapter 147 and created by San Pedro sculptor Eugene Daub. The statue is a tribute to Gen. Schriever's vision and leadership during the formative period of U.S. military space programs. It was unveiled in 2007 at its present location within the Space and Missile Systems Center headquarters at Los Angeles Air Force Base in El Segundo, Calif., and shows Gen. Schriever looking upward in the direction of a launch from Vandenberg Air Force Base, located in Santa Barbara County, representing his visionary spirit.

The 60th SMC Anniversary was chosen as the occasion to recognize some of the earliest pioneers who have made tremendous contributions to SMC's space and missile programs. Their names have been added to the Schriever Wall of Honor which stands behind the Schriever Statue. The 2014 Honorees are Mr. Karel Jan Bossart, Dr. Ivan Alexander Getting, Brigadier General William King Jr., Colonel Frederic C.E. Oder, Dr. Simon Ramo, and Major General Osmond Jay Ritland.

The following portion of this podcasts gives the biographies of the above mentioned Schriever Wall of Honor Honorees:

### **Mr. Karel J. "Charlie" Bossart**

Mr. Bossart graduated from the University of Brussels in 1925 with a degree in mining engineering and won a scholarship to the Massachusetts Institute of Technology. At MIT he studied aeronautics, specializing in structures. He remained in the United States working on several airplane projects and by 1945 was Chief of Structures at Consolidated-Vultee Aircraft (Convair) in California.

For Convair, he worked on a proposal for Project MX-774, the first U.S. study of the V-2 and long-range missiles. Mr. Bossart transformed the MX-774 from a study to a vehicle test program. The Air Force asked Convair to develop a rocket with an 8200-kilometer range, but the project was cancelled in 1947 due to budget restrictions.

In 1949, in response to the Soviet Union's detonation of its first atomic bomb, interest in the MX-774 project was rekindled. Bossart helped revive the program, and Convair was awarded the contract. Karel Bossart's team renamed the system "Atlas" in honor of the mythological being who bore the weight of the world on his shoulders.

In addition to the integral, pressurized, monocoque fuel tanks that supported the Atlas, Mr. Bossart conceived the gimbaling of the rocket engines, the method ultimately used to steer the Atlas. He also experimented with various means of separating the nose-cone as a solution to the reentry problem. The Atlas missile went into production in 1955, and its design descendants are the basis of an entire family of launch vehicles that are still successfully deploying many of the nation's spacecraft.

### **Dr. Ivan A. Getting**

Dr. Ivan A. Getting received his Ph.D. in astrophysics in 1935. During World War II, he served as an advisor to the U.S. Army in the use of radar. He became vice president for engineering and research at Raytheon in 1951 and contributed especially to the development of advanced navigation technology for Air Force ICBMs. He was selected to be the founding President of the Aerospace Corporation, established in 1960 as a non-profit organization at the request of the Secretary of the Air Force to apply “the full resources of modern science and technology to the problem of achieving those continued advances in ballistic missiles and space systems, which are basic to national security.”

Dr. Getting led Aerospace during its first two crucial decades, from 1960 to 1977. Under his direction, Aerospace engineers and scientists studied and experimented with the use of satellites as the basis for a navigation system for vehicles moving rapidly in three dimensions, a program known as 621B, which ultimately became a crucial stepping stone in developing the concept essential to GPS. Among the many other projects undertaken at the Aerospace Corporation under Dr. Getting's direction were planning for new ballistic missile systems, oversight of space launch systems, and the development of high-powered chemical lasers.

After retiring in 1977, Dr. Getting received the title of President Emeritus from the Aerospace Corporation. In 1997 he received the Department of Defense Medal for Distinguished Public Service. He was awarded the National Academy of Engineering's Charles Stark Draper Prize, one of the nation's highest engineering awards, in 2003. In 2004, he was elected posthumously to the National Inventors Hall of Fame.

### **Brigadier General William G. King, Jr.**

In January 1955, William King, Jr., then a lieutenant colonel, joined the Air Research and Development Command (ARDC), in the Weapon Systems Program Office at Wright-Patterson AFB, Ohio. There he led the establishment of the Air Force's Weapon System 117L satellite program, the ancestor of many later military space programs and mission areas. In 1955, he led the transfer of the program to General Schriever's organization, the Western Development Division in California, thereby laying the groundwork for all of the nationally important space programs later managed by SMC and its predecessors. After the program was transferred, he led the first competitive acquisition of a military space development program, known as the Advanced Reconnaissance System.

In July 1959, General King served as the Director of the SAMOS satellite program, the photographic reconnaissance satellite which electronically transmitted its photographs back to earth. In January 1969, General King became Assistant to the Director of Special Projects, Office of the Secretary of the Air Force, and in July 1969 he became its Director. He retired from the Air Force in April of 1971.

### **Colonel Frederic C.E. Oder**

After service in the Army Air Corps during World War II, Frederic C. E. Oder received a doctorate in meteorology and physics from UCLA in 1952. He worked as a research scientist at the Air Force's Cambridge Research Center and later as an intelligence officer with the CIA. In 1955, he was recruited by General Bernard A. Schriever for work on the earliest Air Force space efforts, which had recently come under Schriever's management. Colonel Oder organized and directed the first Air Force satellite development program under General Schriever at the Western Development Division during the mid to late 1950s, and it is especially for his work at the Western Development Division and the Ballistic Missile Division from August 1955 to September 1960 that Colonel Oder is recognized as a pioneer in the field of military space. As director of Weapon System 117L and as Schriever's assistant deputy commander for space systems, he provided leadership for the development and use of new concepts which fostered the evolution of missile warning, communications, meteorology, and advanced reconnaissance satellites.

Colonel Oder retired from the Air Force in September 1960. The Air Force awarded him the Legion of Merit for his contributions as the Program Director of the first Air Force space program. He worked at Eastman Kodak during the early 1960s, where he participated in NASA's lunar orbiter program to map the moon. In 1966, he became a Vice President of Lockheed Missiles and Space Company, where he managed its Space Systems Division and continued to contribute to pioneering military and civilian space efforts. The American Institute of Aeronautics and Astronautics presented the Goddard Astronautics Medal to him in 1985. In 1997, Air Force Space Command selected him as one of the first ten recipients of its Space and Missile Pioneers award.

### **Dr. Simon Ramo**

Simon Ramo and Dean Wooldridge established the Ramo-Wooldridge Corporation in 1953 to provide science and engineering analysis for the Air Force's strategic-missile effort. At the same time, they participated in the Air Force's Strategic Missiles Evaluation Committee, unofficially known as the "Teapot Committee," which provided overall guidance for the Air Force's early ballistic missile efforts. It concluded that an initial operational capability in long-range missiles could be attained in six years if the Air Force instituted proper management and priorities.

General Schriever's Western Development Division with the Ramo-Wooldridge Corporation as its first non-profit systems engineering partner led subsequent American efforts to develop land-based strategic missiles, achieving operational capability in five years instead of six. The endeavor was remarkably free of major cost overruns, schedule slippages, and waste. Schriever subsequently described Dr. Ramo as the architect of the Thor, Atlas, and Titan strategic missiles.

As CEO of Ramo-Wooldridge, Dr. Ramo was a major contributor to early Air Force space efforts as well as strategic missiles. He oversaw the programs to convert Thor and Atlas missiles into space launch vehicles. He also led the earliest Air Force space efforts to launch space probes using those launch vehicles. In 1958, Ramo-Wooldridge became part of TRW, which continued to develop many critical space efforts such as nuclear detection and missile detection programs.

Ramo-Wooldridge also became a prototype for later federally funded research and development centers such as the Aerospace Corporation, which replaced it in that role in 1960.

For his role as the leading civilian in the Air Force's ballistic missile program, the Air Force awarded him a special citation of honor. In 1983, President Reagan presented him with the Presidential Medal of Freedom. Air Force Space Command selected him as one of the first ten recipients of the Space and Missile Pioneers Award in 1997. The National Space Club awarded him the Goddard Trophy in 2011.

### **Major General Osmond J. Ritland**

Early in his career, Osmond J. Ritland became a distinguished test pilot and World War II flying hero. During the 1950s, he commanded the Air Force's first atomic test group and later supervised all atomic energy programs within the Air Force. He then became the project manager for development of the U-2 reconnaissance aircraft.

The Air Force assigned Maj Gen Ritland to the Western Development Division (WDD) as Vice Commander to General Schriever in April 1956. He was responsible for the day-to-day management of WDD and its ambitious Weapon System 117L satellite program, the forerunner of the entire Air Force space program. General Ritland guided the beginning of the program to develop an operational photographic reconnaissance satellite employing a recoverable capsule. After a series of failures, the program finally achieved its first phenomenal success in August 1960, proving that space-based data recovery would work.

In 1959, General Ritland became commander of the Ballistic Missile Division, overseeing the early successes of the MIDAS missile detection and Discoverer recoverable photoreconnaissance satellite programs. In 1961, General Ritland assumed command of the newly created Space Systems Division of the new Air Force Systems Command, a position he held until 1962. Later, until his retirement from the Air Force in 1965, he was responsible for all Air Force actions involved in the national manned space effort.