

TRW AND THE AEROSPACE CORPORATION

Hughes Aircraft Company had emerged as a guided missile powerhouse and major defense contractor in the early 1950s. Disagreements with Howard Hughes led to resignation of two leading specialists Simon Ramo and Dean Wooldridge, who formed in September 1953, with the financial help of *Thompson Products Company*, a new company, the *Ramo-Wooldridge Corporation (R-W)*. R-W started with four employees, including the founders, and was located at first in a former barbershop on 92nd Street in Westchester near the Los Angeles airport. Thompson Products and R-W merged in 1958 to form *Thompson Ramo Wooldridge, Inc.*, the name officially shortened to *TRW, Inc.*, in 1965.

R-W became the main provider of system engineering and technical direction for the Air Force's Atlas ICBM. R-W's *Guided Missile Research Division (GMRD)* later expanded to provide system engineering for the Titan ICBM and Thor IRBM programs. After launch of *Sputnik*, GMRD was reorganized as a separate subsidiary corporation, the *Space Technology Laboratory (STL)*, with Simon Ramo as president, Louis Dunn as executive vice president and general manager, and James H. (Jimmy) Doolittle as chairman of board of directors.

The propriety of a for-profit company performing so exclusively services for the government was questioned by Congress. STL was in "an intimate and privileged position" for an Air Force contractor, being involved in evaluation of the bids from other companies. Internal barriers between STL and the parent company, TRW, did not prevent charges that such an arrangement gave TRW unfair competitive advantage. TRW was also not entirely happy because of the imposed limitations on the scope of hardware contracts the company could bid on. STL's rapid expansion, although being profit oriented, was perceived by many as inherently inappropriate for the technical direction of government programs.

Consequently the solution to the problem was found in the formation of a nonprofit institution, *the Aerospace Corporation*, in June 1960 with Ivan Getting as the first Aerospace's president. Getting served in this position until 1977. The mission of Aerospace, according to the letter of contract, was "to aid the U.S. Air Force in applying the full resources of modern science and technology to the problem of achieving those continuing advances in ballistic missile and military space systems which are basic to national security."

By the end of 1960, the Aerospace Corporation had bought the recently finished STL's research and development center on El Segundo Boulevard and hired more than 1700 employees, one-third being scientists and engineers. Many specialists came to Aerospace from TRW's STL. Technical functions of Aerospace concentrated on general system engineering and technical direction (GSE/TD) of the Air Force's ballistic missile and space systems. Today, Aerospace operates as Federally Funded Research and Development Center (FFRDC) for the Department of Defense.

TRW has evolved into a *Fortune 500* company, a major defense contractor specializing in missile and space systems and defense electronics. The company continues to this day its original work on maintaining readiness of the nation's ICBMs. TRW had become the first industrial company to build an exploratory spacecraft, *Pioneer 1*, for NASA. TRW designed and built numerous military and civilian space systems, including *Defense Support Program (DSP)*, *Tracking and Data Relay Satellite System*, deep space *Pioneer 10* and *11* spacecraft, and astrophysical space observatories *Compton* (γ -rays) and *Chandra* (X-rays). Northrop-Grumman acquired TRW in 2002, which became Northrop-Grumman Space Technology.