

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.

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Blazing the Trail

The Early History of Spacecraft and Rocketry

Mike Gruntman

AIAA, Reston, Va., 2004

ISBN 156347705X; 978-1563477058

505 pages with 340 figures

Index: 2750+ entries, including 650 individuals

This book presents the fascinating story of the events that paved the way to space. It introduces the reader to the history of early rocketry and the subsequent developments which led into the space age. People of various nations and from various lands contributed to the breakthrough to space, and the book takes the reader to far away places on five continents.

This world-encompassing view of the realization of the space age reflects the author's truly unique personal experience, a life journey from a child growing on the Tyuratam launch base in the 1950s and early 1960s, to an accomplished space physicist and engineer to the founding director of a major U.S. nationally recognized program in space engineering in the heart of the American space industry.

Most publications on the topic either target narrow aspects of rocket and spacecraft history or are popular books that scratch the surface, with minimal and sometimes inaccurate technical details.

This book bridges the gap. It is a one-stop source of numerous technical details usually unavailable in popular publications. The details are not overbearing and anyone interested in rocketry and space exploration will navigate through the book without difficulty. The book also includes many quotes to give readers a flavor of how the participants viewed the developments. There are 340 figures and photographs, many appearing for the first time.

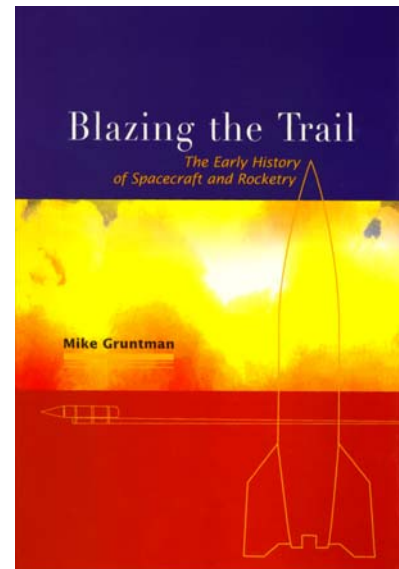


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Book details (including **index** and **reviews**) at: <http://astronauticsnow.com/blazingthetrail/>

About the author. Dr. Mike Gruntman is professor of astronautics at the University of Southern California. Accomplished physicist, Mike is actively involved in research and development programs in space science and space technology. He has authored and co-authored nearly 300 publications, including 4 books.