

# TRW: Probing the Unknown, Changing the Known

From its beginning in 1901 when Charles E. Thompson's Cleveland Cap Screw Co. started making bolts by welding the head to a stem, TRW Inc. has grown to some 70,000 people at some 250 locations around the world who are applying advanced technology to electronics, space, defense, aircraft, automotive and related industrial markets.

The company as it is today began in 1958 when Thomp-

son Products of Cleveland and Ramo-Woodridge Corp. of Los Angeles merged to form Thompson Ramo Woodridge, Inc., a name that was shortened to TRW Inc. in 1965.

Today, 16,499 TRW employees work and live in California. Most of these are in TRW Systems Group, a major operating unit of the parent corporation. More than 14,000 TRW Systems Group employees work in this area, with the majority

located at the company's Space Park facility in Redondo Beach. A second major facility is now under construction in Manhattan Beach.

☆☆☆

In its early years, what is now TRW Systems Group provided systems engineering and technical direction for the development of U.S. Air Force ballistic missile force—Atlas, Thor, Titan, and Minuteman. With the launch of Sputnik 1 in 1957,

the United States found itself faced with a new challenge. TRW, as a leader in the missile field, was asked to apply its talents to many of America's early satellites.

From this twin base as a technological leader in the missile and space industries, TRW Systems Group has grown to be one of America's outstanding research and development organizations. Today it builds more different kinds of spacecraft than any other industrial firm. Current projects include the Orbiting Geophysical Observatory scientific spacecraft, and additional Pioneer interplanetary satellites for NASA, Vela nuclear detection satellites and Environmental Research Satellites for the Air Force, and Intelsat III communication satellites for COMSAT Corp.

Two areas of technology basic to both missiles and space—electronics and propulsion—have developed into major product lines. For the Apollo program, TRW is providing the throttleable engine that will soft land American astronauts on the moon, an abort guidance system for Apollo's Lunar Module, and demodulating equipment for Apollo tracking stations.

☆☆☆

TRW Systems Group's computing center, one of the largest in the U.S., provides support for projects such as planning the Apollo spacecraft trajectories required to reach the moon. Laser technology is an active field and includes research in holography, the use of the laser in three-dimensional lensless photography.

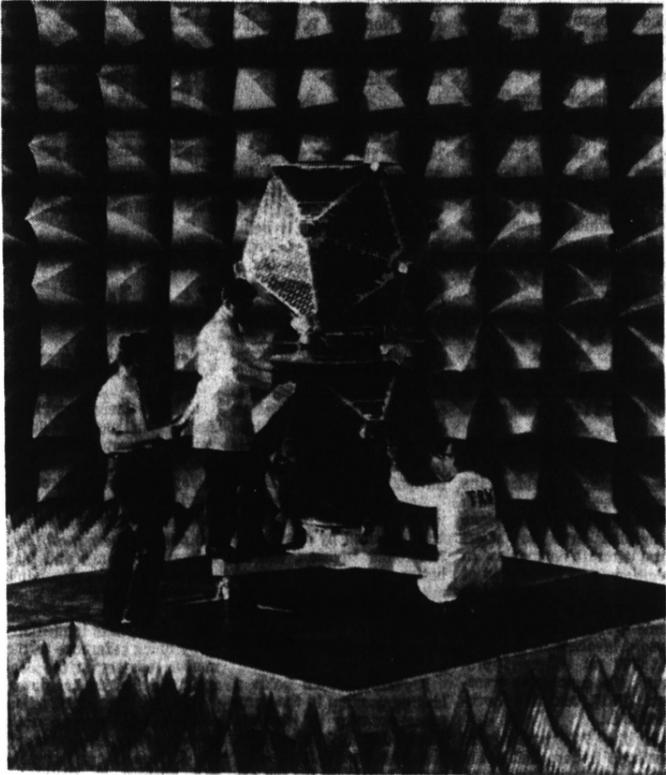
TRW continues as systems engineer of the Minuteman II and has found new fields for its systems engineering capabilities. TRW is providing this kind of support for the Navy on the anti-submarine warfare program, and for the Army on the Cheyenne helicopter effort.

Perhaps the most interest-

ing application of TRW to the study of high speed ground transportation recalls "civil systems." TRW's projects in this area range from the design of a \$100 million hospital complex in Edmonton, Alberta, Canada.

It has been estimated that approximately one trillion dollars will be spent in the U.S. in the next ten years to help solve the community and regional problems that are by-products of the population explosion and the widening gap between scientific

advances and lagging social progress. Applying advanced technology to the practical solutions of social problems is one of the challenging opportunities for TRW in the years ahead.



Check Satellites

Technicians at TRW Systems Group in Redondo Beach check out a pair of Vela nuclear detection satellites designed to monitor atomic tests in the earth's atmosphere and in deep space. The Vela satellite is just one of several which TRW has built since the Space Age was launched in 1957.



TRW Headquarters

This 11-story building at TRW's Space Park facility in Redondo Beach has become a landmark for Torrance-South Bay area motorists using the San Diego

Freeway. The building serves as administrative headquarters for TRW's operations in the area.

## THE ARMCO IRON MAN



"The Straight Thinking Man Respects Safety." These are the words inscribed on Armco Steel Corporation's safety award, the "Big Iron Man"; one of the most respected safety symbols in industry. Created in 1926, this trophy is awarded annually to the Armco plant with a million or more man-hours of operation and the best safety record. The Iron Man award is an honor not easily won nor easily earned, and is a matter of great pride to the plant which receives it. This year's winner of the "Big Iron Man" is National Supply Division's Torrance Plant.

**ARMCO National Supply Division**

### Where do we go from here?



(One of a series)

### TRW In California Is working on the answers

Snarled freeways. Foul air. Polluted water. Crime in the streets. Soaring medical costs. Overcrowded, understaffed hospitals.

Solving top priority social, economic and environmental problems is a TRW specialty.

Here in California, TRW has developed a statewide land use information system. We are working on a prison security system for the State, urban renewal for Fresno, data systems for Redondo Beach, water resources for the Santa Ana River Basin and the San Bernardino Valley, patient information systems to be used by the Kaiser Hospital in Bellflower, and a master communications system for the City of Los Angeles.

In Canada we have already saved the Province of Alberta over \$6 million in planning its new \$100 million Edmonton Health Sciences Centre. We are working

with the Department of Transportation on high speed ground transportation systems for use between Boston and Washington. Our engineers and scientists are also busy with freeway improvement, traffic control, automobile inspection, public safety, air and water pollution, flood control, and Southern California's urgent airport needs.

For more information about TRW, contact Public Relations, TRW Systems Group, One Space Park, Redondo Beach, California 90278.

**TRW**

TRW INC. (Formerly Thompson Ramo Woodridge Inc.) is more than 70,000 people at over 250 locations around the world who are applying advanced technology to electronics, space, defense, automotive, aircraft and selected commercial and industrial markets.

OPPORTUNITIES FOR ENGINEERS AND SCIENTISTS.  
PLEASE WRITE PROFESSIONAL PLACEMENT AT ABOVE ADDRESS