Langley Research Center

1917 ☆ FIFTY YEARS OF SERVICE TO THE NATION ☆ 1967

LANGLEY RESEARCH CENTER, BIRTHPLACE OF PROJECT MERCURY, CONTRIBUTES TO SUCCESS OF MANNED SPACE FLIGHT PROGRAM

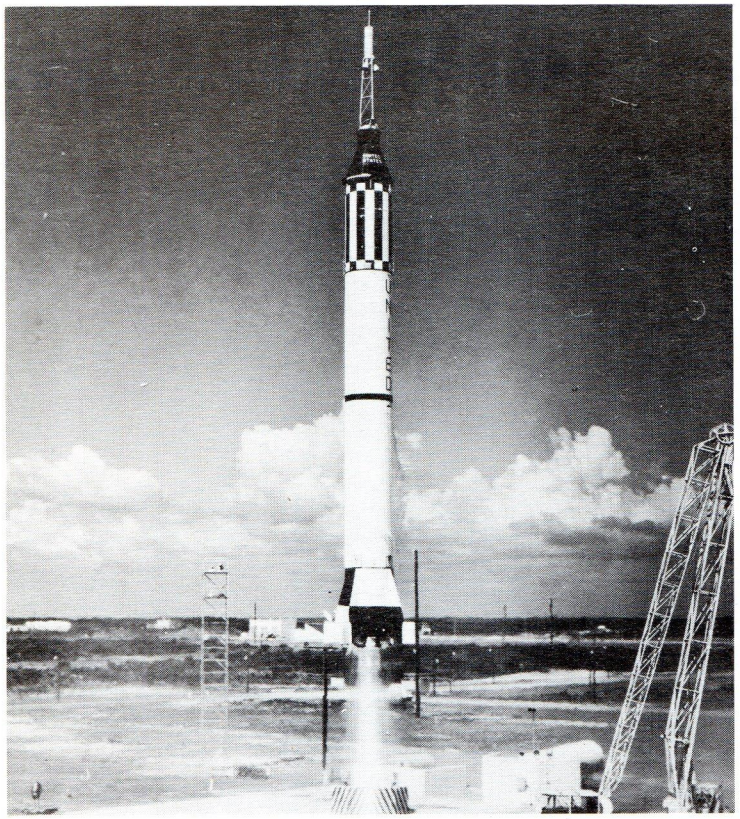
In addition to having the distinction of being the birthplace of the first United States manned space flight program-- Project Mercury-- the Langley Research Center has provided extensive support to help assure the success of the national effort.

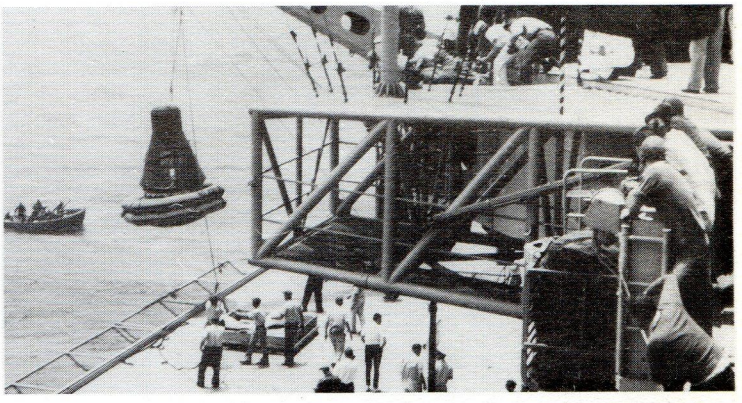
Langley research facilities were utilized in providing much of the science and technology needed for the development of the Mercury spacecraft and related systems, and the NASA worldwide tracking and ground instrumentation network for monitoring manned space flights was successfully completed under Langley direction.

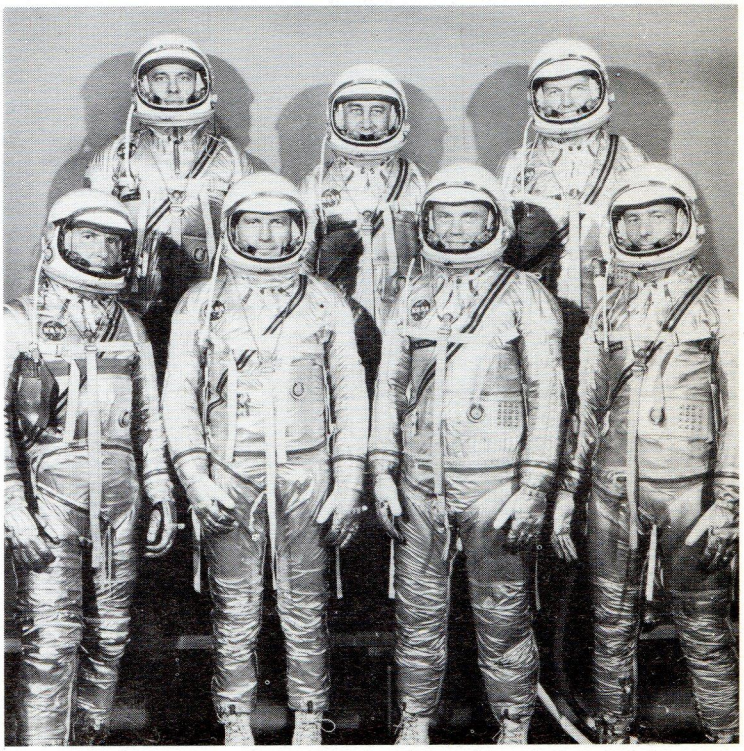
Project Mercury was officially established as an NASA program in early October 1958. Within a little more than four years and seven months of the date the project received official status, the Manned Spacecraft Center-- now located at Houston, Texas, brought Mercury to a successful conclusion. There were six manned space flights in the program, two sub-orbital and four orbital-- all stepping stones to future manned flights to the moon and beyond.

The first United States manned space flight was a sub-orbital mission by Alan B. Shepard on May 5, 1961, followed on July 21, 1961, by another sub-orbital journey by Virgil I. Grissom. Orbital flights followed in succession by John H. Glenn on February 20, 1962 (three orbits), M. Scott Carpenter on May 24, 1962 (three orbits), Walter M. Schirra on October 3, 1962 (six orbits), and climaxed by the 22-orbit flight of L. Gordon Cooper on May 15, 1963.

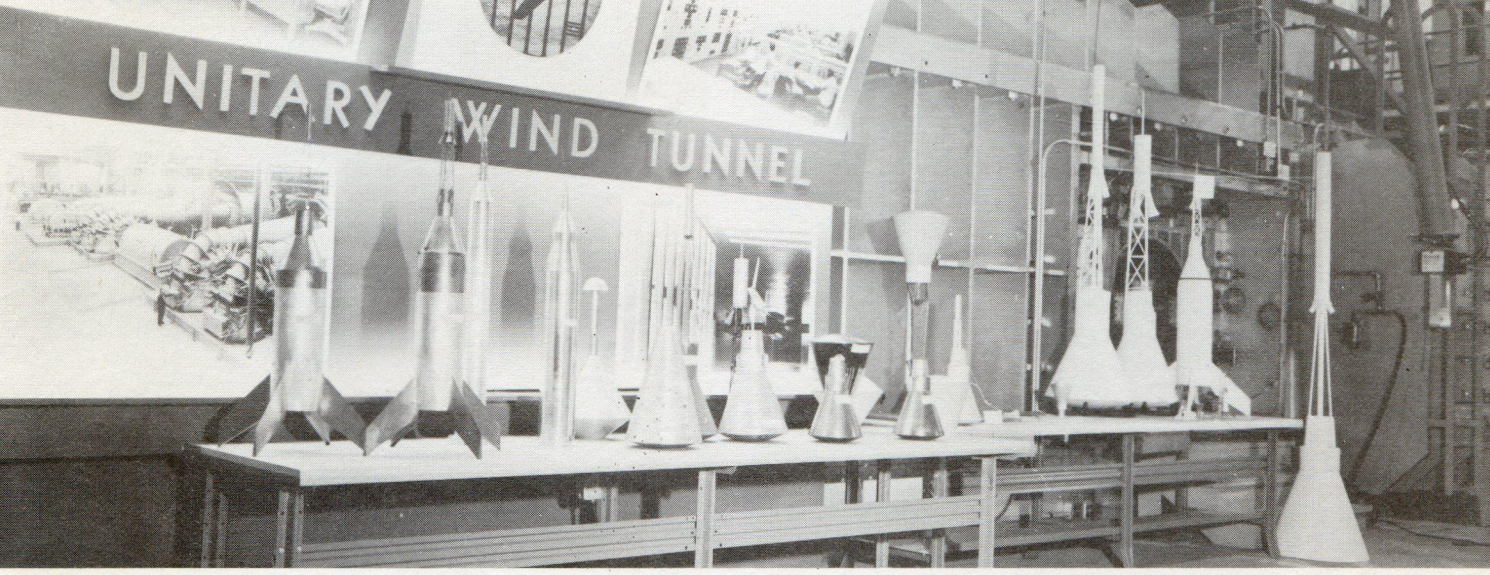
Some of Langley's early research in the area of manned space flight, and various scientific investigations in support of the development of the Mercury program are illustrated with the following photographs of laboratory, shop, and flight activities in the late Fifties and early Sixties.

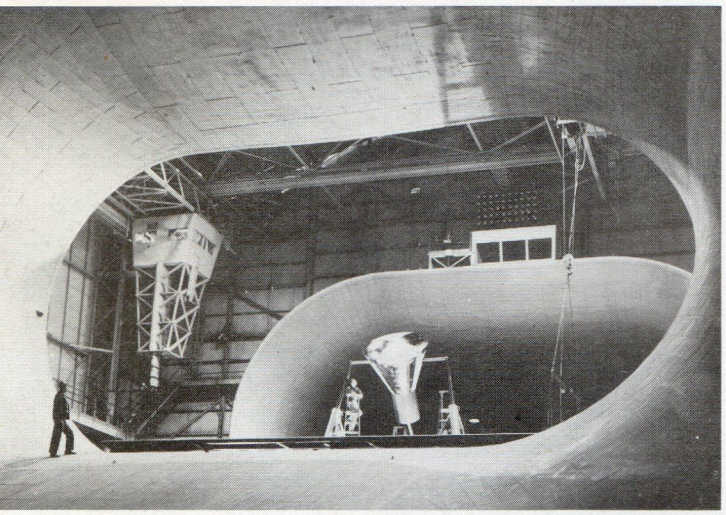


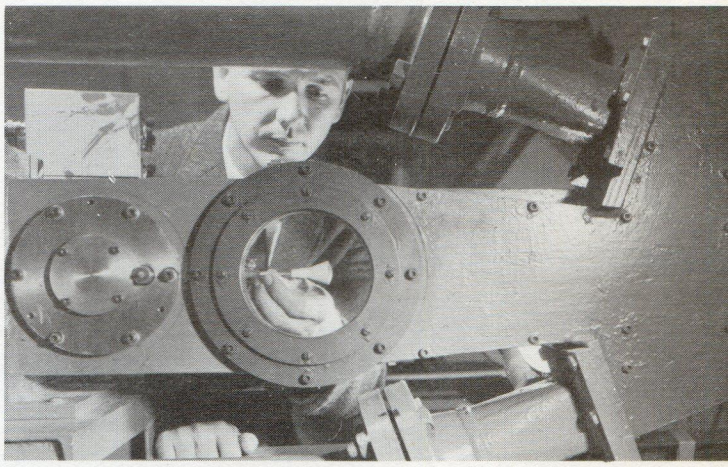


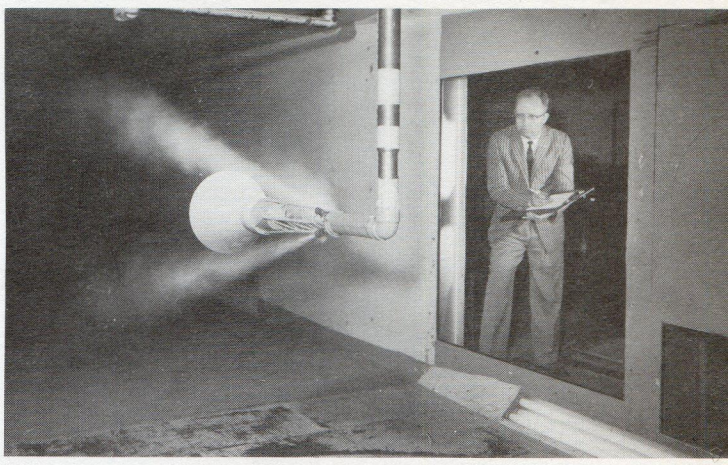


MERCURY-REDSTONE-3 (above) climbs from launching pad at Cape Canaveral, Florida, May 5, 1961, as Alan B. Shepard becomes America's first man in space. Mercury program was climaxed two years later with flight of L. Gordon Cooper aboard Mercury-Atlas-9 on May 15, 1963. Cooper's spacecraft (top right) is lowered to the deck of the carrier Kearsarge southeast of Midway Island in the Pacific Ocean after the dramatic flight. NASA Mercury astronauts (right) include (from left): Front row - Walter M. Schirra, Donald K. Slayton, John H. Glenn, and M. Scott Carpenter; back row - Shepard, Virgil I. Grissom, and Cooper.

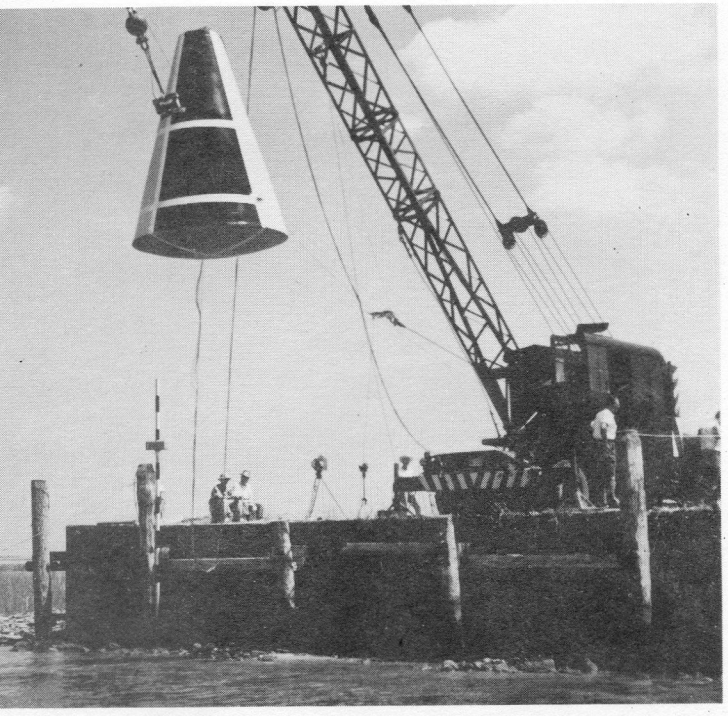


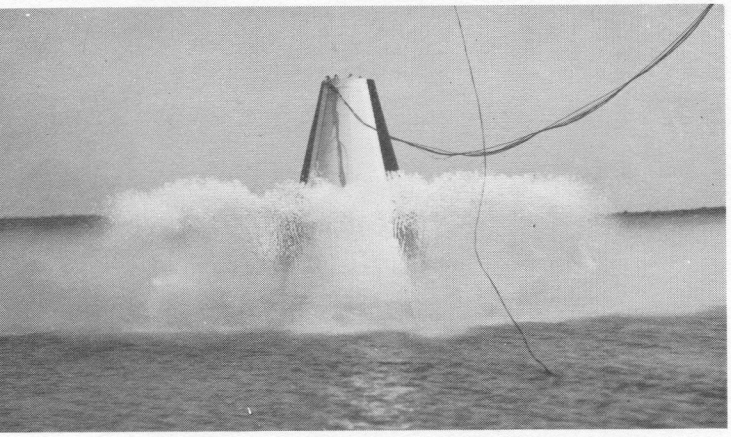


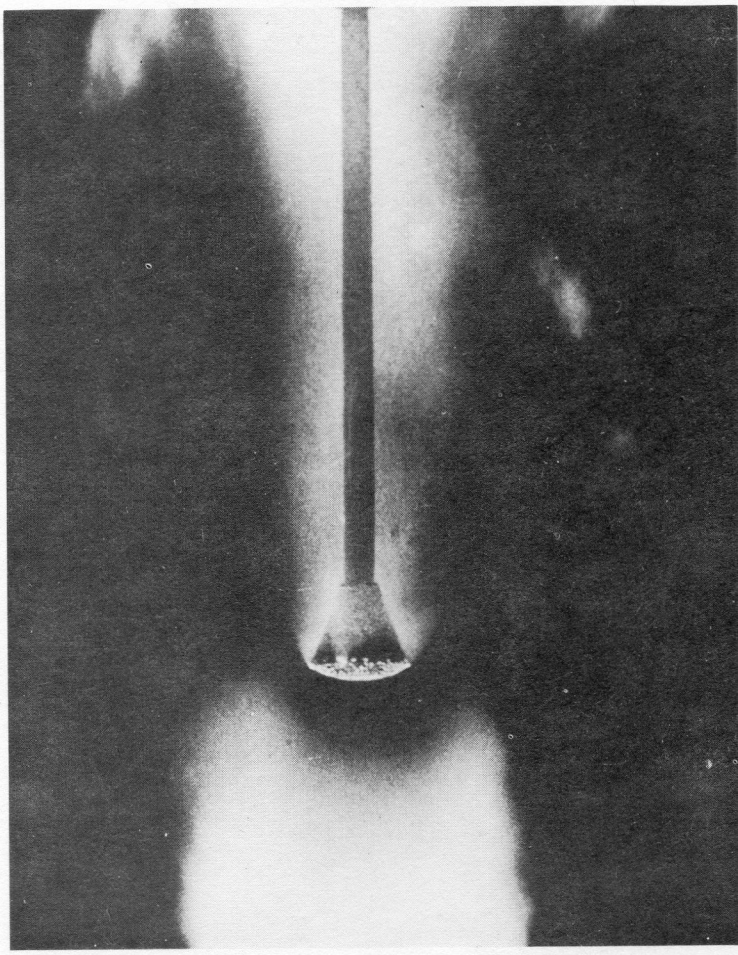


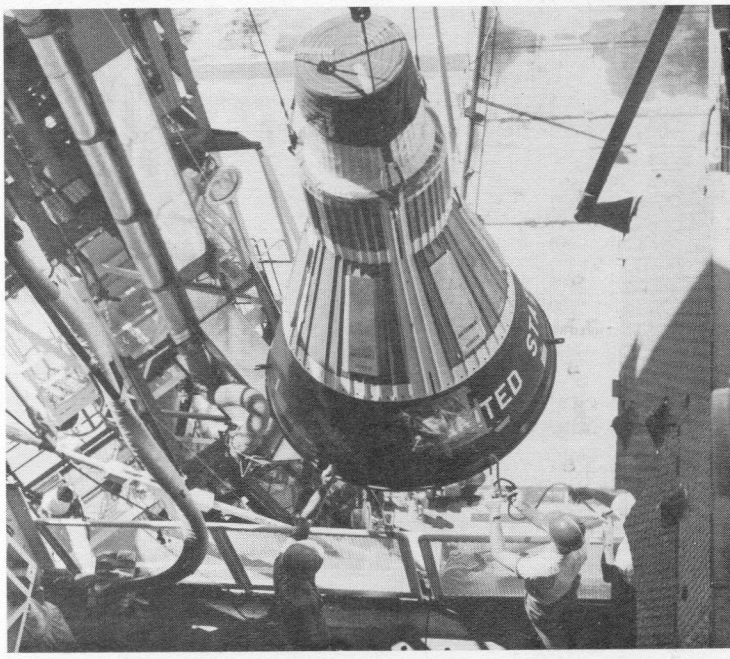


SOME OF THE Mercury models (top) used in wind tunne research at Langley include early versions of the manne spacecraft concept. Models of various sizes were used i Langley research. A full-size model (upper left) is pre- pared for static stability studies, while a tiny model (uppe right) weighing less than a ping-pong ball is installed in a shock tunnel for drag and heat transfer investigations. A one-sixth-scale model (above) shows water being force through nozzles to aid scientists in visual observation dur- ing tests to determine the effect of escape system power o spacecraft stability. Ability of the drogue chute to stabilize the spacecraft is determined by releasing a model (left)

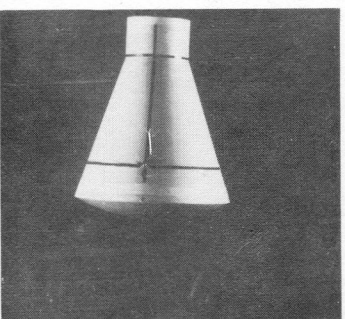


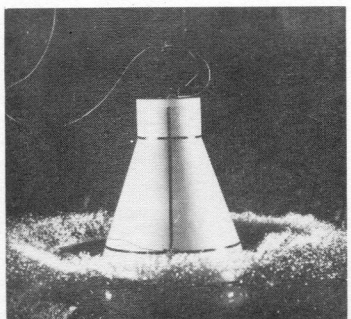


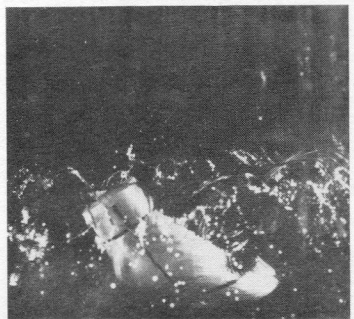


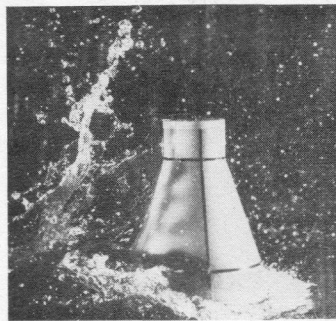


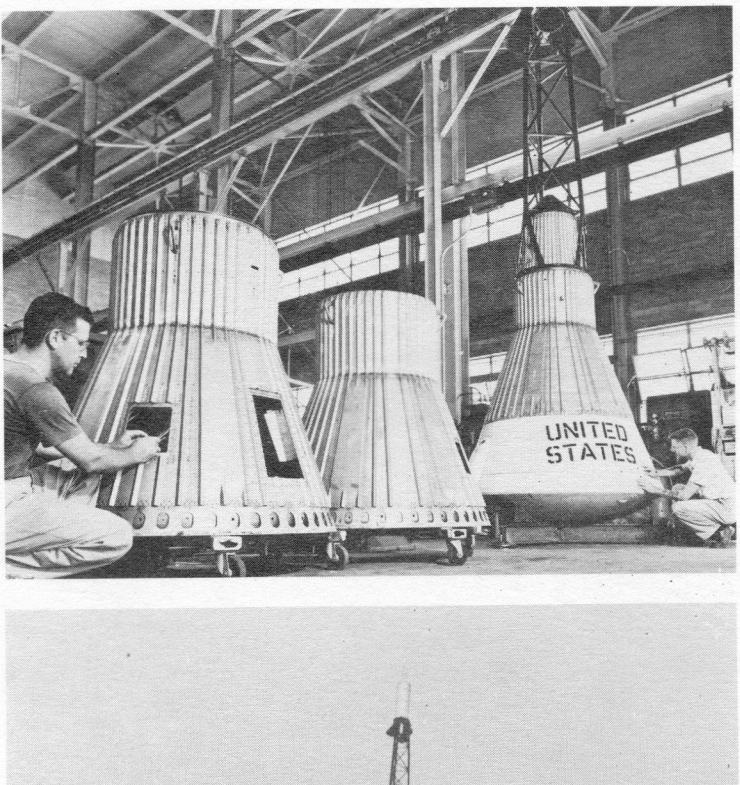
EARLY TESTS (above) in 1958 utilized an instrumented model which recorded water-landing characteristics as the spacecraft was dropped from a crane boom. Sequence photographs (below) made in 1959 show a Mercury model being dropped in a water tank to simulate landing in the ocean at 30 feet a second (about 20 miles an hour). A small model (top right) is exposed to the 5,000-degree F. air stream of an electric arc-heated air jet in one of a series of tests of various materials considered for use as Mercury heat shields. Langley assisted in many flight programs, including Big Joe (lower right), being readied for launch atop an Atlas booster on September 9, 1959, at Cape Canaveral, Florida. The spacecraft heat shield reached temperatures approaching 3,000-degrees F. in the Big Joe ballistic flight, which verified the validity of the Mercury design concept.











LANGLEY IMPLEMENTED the Little Joe program for launching several full-scale Mercury spacecraft to varying altitudes to obtain extensive flight data before sending man aloft. Technicians (top Left) check Little Joe spacecraft in a Langley fabrication shop, and a Little Joe booster (lower left) lifts off its Wallops Island, Virginia, launch pad in a research flight. Langley shops built human support systems

ered in manned space flight. The form-fitting couches, wi elevated leg rest, were contoured in accordance with phys ical characteristics of the persons using them as researc vehicles. Such a system permits an astronaut to withsta high acceleration forces. One-third-scale Mercury mode (lower right) have escape rocket nozzles installed at variou angles to study the effect of nozzle cant on spacecraft st