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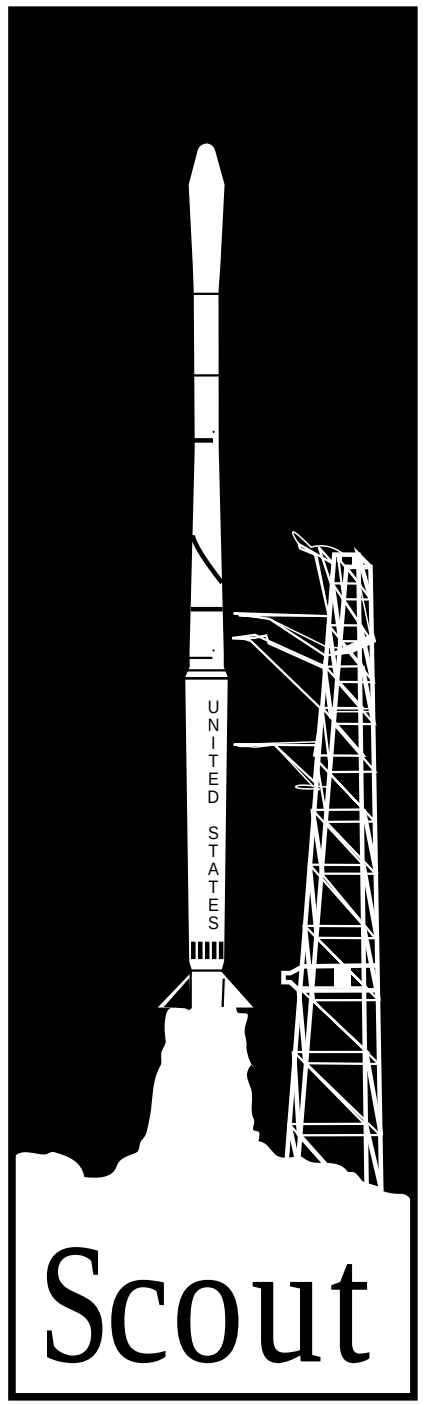

Scout Launch Vehicle Program

Since 1959, NASA's Langley Research Center in Hampton, Virginia, has managed one of the nation's most successful and reliable launch vehicles, known as Scout. Scout, an acronym for Solid Controlled Orbital Utility Test system, is a four-stage solid fuel satellite system capable of launching a 385-pound satellite into a 500-mile orbit. There have been 114 Scout launches, and its overall 96 percent success rate has earned this workhorse a spot in the National Air and Space Museum, where it stands beside other veterans of America's space program, such as Jupiter, Aerobee and Vanguard rockets. Scout's honor roll includes 23 satellites launched for international space organizations. Payloads have been launched for the European Space Research Organization, for Germany, for the Netherlands, for France, for Italy, and for the United Kingdom. Through the years, Scout has launched 94 orbital missions, (27 Navy navigational and 67 scientific satellites), seven probe missions and 12 reentry missions.

On January 1, 1991, after more than 30 years, NASA Langley transferred the management of the Scout Project to the NASA Goddard Space Flight Center, Greenbelt, Maryland.

Those who have worked on the Scout program have made a unique contribution to the U.S. space program. They have created a launch vehicle system that set a standard for simplicity, productivity and reliability. They did it by establishing uncompromising standards of exactness and by an unwavering pursuit of excellence. In these

accomplishments, they created an atmosphere of teamwork and mutual respect that those who worked on Scout will never forget.

The Scout team has consisted not only of NASA Langley employees but a group of employees from the LTV Missiles and Electronics Group of Dallas, prime contractor for the development of Scout systems. In 1959, Langley Research Center awarded the contract to LTV to develop the air-frame and launcher. This began a partnership between NASA Langley and LTV that has lasted for over thirty years. Scout's reliability stems from a sense of teamwork and cooperation between government agency and contractor. Together, these people shared success and failure—some of whom spent an entire career on the project. Ultimately, Scout is a vehicle that proved itself, over and over, to be reliable and dependable.

Scout's reliability also stems from standardized procedures and configuration control and from its simple, old-fashioned technology. The vehicle was built with off-the shelf hardware. Designers selected from an inventory of solid-fuel rocket motors produced for military programs: the first stage motor was a combination of the Jupiter Senior and the Navy Polaris; the second stage came from the Army Sergeant; and the third and fourth stage motors were designed by Langley engineers who adapted a version of the Navy Vanguard. The heatshield and fins are insulated with cork. The guidance system uses simple gryos that cannot be reprogrammed after launch. But this old-fangled technology makes Scout reliable and predictable.

Since its early development, the configuration of Scout has continued to evolve. Each of the motors has been upgraded at least twice, and improvements in rocket engine design have enabled the rocket to carry larger payloads. Even so, the current Scout G-1 configuration is very similar in appearance to that of the original vehicle—a testimony to the soundness of the original design.

Scout is 76 feet long, 45 inches in diameter and weighs 48,600 pounds. Its four solid propulsion rockets are joined by transition sections containing guidance, ignition, spin up motors and separation instrumentation necessary for flight.

The first stage is the Algol. It is 30 feet long and 45 inches in diameter. The motor burns for an average of 82 seconds with a maximum thrust of 140,000 pounds. At the bottom of this motor are the first stage altitude control jet vanes and fin tips, which steer the vehicle during initial launch.

The second stage, Castor, is 20 feet long and 30 inches in diameter. This stage fires for 41 seconds and develops 60,000 pounds of thrust.

Stage three rocket motor, the Antares, is 10 feet long and 30 inches in diameter. It burns for 48 seconds at 18,000 pounds of thrust. The second and third stage control is provided by hydrogen peroxide jets.

The fourth stage, Altair, is a mere five feet long and 20 inches in diameter. It burns for 34 seconds and develops 6000 pounds of thrust. Its control is provided by spin stabilization.

The heat shield covering the fourth stage and payload section is made of cork and fiberglass laminate. Launch sites for this nation's work-horse are located at the NASA Wallops Flight Facility, Wallops Island, Virginia; at the Western Test Range, Vandenberg Air Force Base, California; and at Kenya, Africa.

The NASA space program has given us images that have become imprinted on the national consciousness as icons of success. Here is one more to consider: our nation's workhorse—Scout.

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