

SPACE SHUTTLE

X24A flight test

The X24A, a possible space shuttle prototype, has been power-tested for the first time by the Air Force at Edwards Air Force Base in California.

The rocket engine of the wingless bird ignited for 160 seconds after the craft separated from the B-52 carrier. It climbed to an altitude of 43,000 feet from its drop altitude of 40,000 feet, and reached a top speed of 530 miles per hour from the cruise speed of 400 miles per hour.

The performance goal of the craft is a maximum speed of MACH 2, or 1,350 miles per hour, and an altitude of 100,000 feet.

The aircraft is part of the advanced testing of different design possibilities of maneuverable reentry vehicles by the Air Force and the National Aeronautics and Space Administration. It is shaped like a flat-iron with angled fins on the sides and top. Unlike the cone-shaped Apollo vehicles, which are not maneuverable in the atmosphere, the space shuttle will be capable of controlling where and how it lands.

ION ROCKETS

Sert 2 passes test

The test of low-thrust, long duration engines NASA started with the launch of SERT 2 last month (SN: 2/14, p. 169) has run just over one of its six months and so far has proved the technology.

The one of SERT's two engines advanced to full thrust and was successfully restarted after a 17-hour shutdown during solar eclipse. It is expected to raise the satellite's orbit 60 miles in the six months it will run. The second engine is to be tested later.

In addition, so far, NASA has checked out SERT's accelerometer, determined that the 6.3 millipound-thrust ion engine would not interfere with radio transmission and found a minimum of satellite surface contamination from the engine.

The only problem to date is with the miniature electrostatic accelerometer, which has not responded after initial activation. It did measure the engine's thrust during the first days of engine turn-on.

LUNAR MODULE

Longer hover for LM

Modification to the Lunar Module for the flights of Apollos 16 through 19 will increase the hovering time for the astronauts as they search for landing spots. A 600-pound increase in the scientific payload, including 400 pounds for a rover vehicle, will also be possible.

Erosion caused by hot gases in the engine's combustion chamber and nozzle has limited the length of time the descent engine can fire. The engine's builder, TRW Inc., has replaced the silica lining of the engine's combustion chamber with a quartz lining, cutting the erosion rate by one-third to one-half.

Another design change substitutes a lightweight material in the liner of the engine's exit cone, saving 20 pounds.

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To supply fuel for the longer burning, Gruman Aerospace Corp., builder of the module, has increased the capacity of the propellant tanks by 6.3 percent, or 1,130 pounds.

BALLOON ASTRONOMY

Stratoscope II up and down

Stratoscope II, a three-ton, one-meter telescope, returned to earth March 27 after a night above the earth's atmosphere. The three-story-high optical telescope was launched by an unmanned 660-foot balloon from the National Scientific Balloon Flight Station in Palestine, Tex.

The largest telescope ever raised above most of the earth's atmosphere, it is a precursor of a planned three-meter telescope to be installed in the space station to be launched by the end of this decade. Its optics exceed any telescope ever in space, with a surface parabolic deviance of only one two-hundred millionths of an inch. The Orbiting Astronomical Observatory satellite has an 8-inch telescope.

A radio-television system was used to aim the telescope for visible-light photography of Uranus and Jupiter. Two kinds of nebulae—vast of interstellar dust and gas—were photographed, as well as a Seyfert galaxy.

COMMUNICATIONS

NATO satellite up

The first North Atlantic Treaty Organization communications satellite launching by NASA for the U.S. Air Force, gives NATO its first protected communications system for political and military crises.

The satellite should be working from a synchronous orbit of 22,000 miles over the equator in the Eastern Atlantic by April 10. Although it will be kept in position by the United States Air Force Satellite Control Facility in Sunnyvale, Calif., all NATO countries will share cost and operating responsibilities.

Ground terminals are being built in 12 NATO countries. The satellite has two channels for receiving, frequency translating, amplifying and retransmitting voice, wide-band data and telegraph data.

SATELLITES

End of a pathfinder

Explorer I, the first United States satellite, was expected to enter the earth's atmosphere around April 4 and disintegrate, according to tracking data of the Smithsonian Astrophysical Observatory.

Explorer I, launched Jan. 31, 1958, is credited with the first major discovery of the space age: the detection of the Van Allen radiation belts.

Although its radio transmitters quit 16 weeks after launch, the satellite, while logging more than 1.5 billion miles in space, provided data on the relationship between atmospheric variations and solar activity. Solar heat increases atmospheric density that eventually drags satellites into earth's lower atmosphere, where they disintegrate.