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NASA News

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NASA Report

A brief history—the NASA began operations on Oct. 1, 1958. It absorbed the personnel and facilities of the National Advisory Committee for Aeronautics, consisting of the nearly 8,000 scientists, engineers and technical and administrative personnel in the Washington headquarters and five field laboratories. The field installations are: (1) High Speed Flight Station, Edwards, California; (2) Langley Research Center, Langley Field, Virginia; (3) Pilotless Aircraft Research Station, Wallops Island, Virginia; (4) Ames Research Center, Moffett Field, California; (5) and the Lewis Research Center, Cleveland, Ohio.

The NASA also has a new space projects center under construction at Beltsville, Maryland, near Washington, D.C. It is scheduled to go into operation in early 1960.

In addition to the program that the NASA was to implement after completion of its initial organization, the NASA took over direction of five projects that were already under way. These were:

(1) A number of Advanced Research Projects Administration and Air Force engine development research programs, including their work on nuclear and fluorine rocket engines and study and development of the 1.5 million-pound thrust single chamber rocket engine.

(2) Five space probes which were under direction of ARPA.

(3) Project Vanguard, including the 160 scientists of the Naval Research Laboratory, Washington, D.C.

(4) Three satellite projects: 12 foot and 100 foot diameter inflatable spheres and cosmic ray experiment.

(5) Certain other projects under construction by ABMA.

In the week of Oct. 20th, 1959, the NASA obtained the transfer of the Army Ballistic Missile Agency to the NASA. This takes the Army out of the space field and gives the NASA the most famous research team in the free world. This added facility should give the NASA the finest research teams in the world.

Objectives of NASA—the three most ambitious projects that the NASA is now undertaking are:

1.5 million pound thrust booster. The engine is a booster rocket of 1 million pounds of nominal thrust, capable of being developed to a 1.5 million-pounds-thrust. It will use liquid oxygen and hydrocarbon propellents but could be adapted for other fuels. Special attention will be placed on methods of simplifying directional thrust-control and of pressurizing propellant tanks.

The program will provide a booster of great size for payloads and experiments weighing several tons. The booster will eventually be used to propel manned satellites and space craft. It will also be clustered to provide large payloads.

Manned Satellites—Project Mercury. Project Mercury has a three-fold objective:

(1) to study man's capabilities for space flight, (2) to place a manned satellite in orbit around the earth, and (3) to recover the man safely.

The capsule will be conical, about seven feet in diameter at the base and ten feet high. The pilot will lie in a couch-like frame, his back supported against the intense gravity stresses of take-off and re-entry. The base of the capsule will be mounted on an Atlas rocket. A suitable shield will protect him from the high friction-induced heat of atmospheric re-entry.

The satellite capsule will be launched into a circular orbit 100 to 150 miles above the surface of the Earth at a speed of 18,000 miles per hour. During the landing or recovery phase, retro-rockets attached to the capsule will fire, slowing the capsule enough

to drop it out of orbit. The Earth's atmospheric blanket will brake the capsule even more. The last phase will take place when parachutes lower it to a landing. Escape mechanisms will be provided for emergency landings.

Careful selection and screening has reduced to seven the number of candidates for the capsule ride. Preliminary tests have revealed that the capsule into orbit and back will be a relatively safe journey.

Nuclear Energy Applications. The Atomic Energy Commission has longrange programs for developing nuclear reactors for application in spacecraft. The AEC also has under development small, light-weight nuclear power plants to provide electricity over long periods for satellite instrumentation and other space application—project SNAP (Systems for Nuclear Auxiliary Power). In addition to power from reactors, conversion of nuclear energy into electricity is being sought. The recently demonstrated SNAP III device which produces electricity by means of solid-state converters from the energy released by the radioactive decay of polonium or other radioisotopes. SNAP III has no moving parts, is very small and light, and has a long use-life.

The X-15 flight into space. The latest in a series of advanced research vehicles for high-speed, high-altitude experiments is the X-15 Rocket-Powered Research Aircraft. A joint undertaking of the Air Force, Navy, and NASA, the X-15 is expected to fly at speeds in excess of 3,600 miles per hour and to reach altitudes of 100 miles. It will be dropped from a B-52 bomber. The drop-launch will enable it to make a steep power climb toward the fringes of space, after which it will take a long glide back to earth.

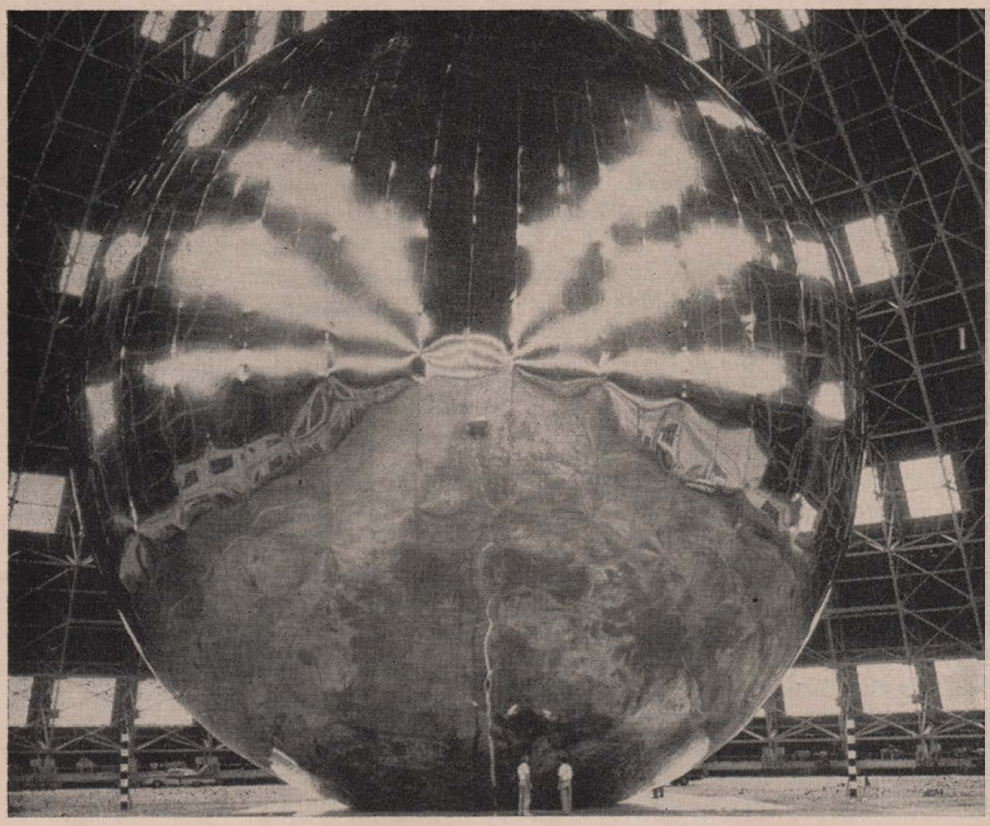
Through the flights of the X-15 the NASA will gather information about: (1) pilot reaction to flight during short periods of weightlessness; (2) severe aerodynamic heating caused by air friction at hypersonic speeds; (3) airplane stability and new types of aerodynamic control surfaces to keep the airplane flying on course at these great speeds; (4) rocket reaction control systems when the airplane is too high for aerodynamic forces to be sufficient; and (5) many of the exit, re-entry, and landing problems that spacecraft will encounter. Results of flights by the X-15 will have an important bearing on the manned space vehicle projects.

Space Sphere. At 5:45 p.m. EST, a 100 foot sphere was launched from the Wallops Island facility of the National Aeronautical and Space Administration. The launching, which took place on October 28, 1959 was to, in part, test the spheroid's ability to reflect the rays of the sun as it set.

As the ballon descended from clear skies into the Atlantic Ocean, it was reported from Maine to South Carolina. It was visible for about ten minutes before it was lost behind the horizon and fell about 500 miles due east of Wallops Island.

The launching was a test of the inflatable satellites which are to be used in communications experiments, as reflectors of radio and radar beams in space.

Professor Robert Brown, director of the New Haven, Conn., moon-watch station, followed the sphere and, before he learned what it was, said "it was the craziest thing in the world."



The sphere was launched by a two-stage rocket that was 32 ½ feet high and weighed 5 ½ tons at take-off. With an initial thrust of 130,000 pounds, this was the largest vehicle yet fired at Wallops Island.

Standing as high as a ten story building when inflated, the ballon was packed into a 26 ½ sphere for its ride aloft. The sphere was made of a mylar plastic coated with aluminum half of one thousandth of an inch thick. Upon ejection from its container, the sphere started inflating from the residual air inside it. Inflation was completed by the release of four pounds of water that was in plastic bags. The water vaporized inside the sphere and inflated it to 523,598 cubic feet.

It reached a peak altitude of 253 statue miles, and was tracked for ten minutes by radar at several stations. It was tracked optically by the Linclon laboratory station near Boston.

A telemetry radio transmitter was inside the sphere to record its performance, but the information it broadcast is not yet available.