National Aeronautics and
Space Administration

Langley Research Center

NASA

Langley Researcher

SPECIAL ISSUE

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Happy Anniversary

This week NASA celebrates its 20th anniversary.

Historically, that's a very short period of time. In the life of an individual or an organization, however, it can be a significant milestone. It's a convenient time to look back through two decades and hope to find worthwhile accomplishments, not too many mistakes, and some hope for the future.

For NASA, such a backward glance is full of good memories. The agency's accomplishments have been spectacular and awesome, its mistakes have been few, and its future looks good; not as spectacular as its past, perhaps, but solid and steady.

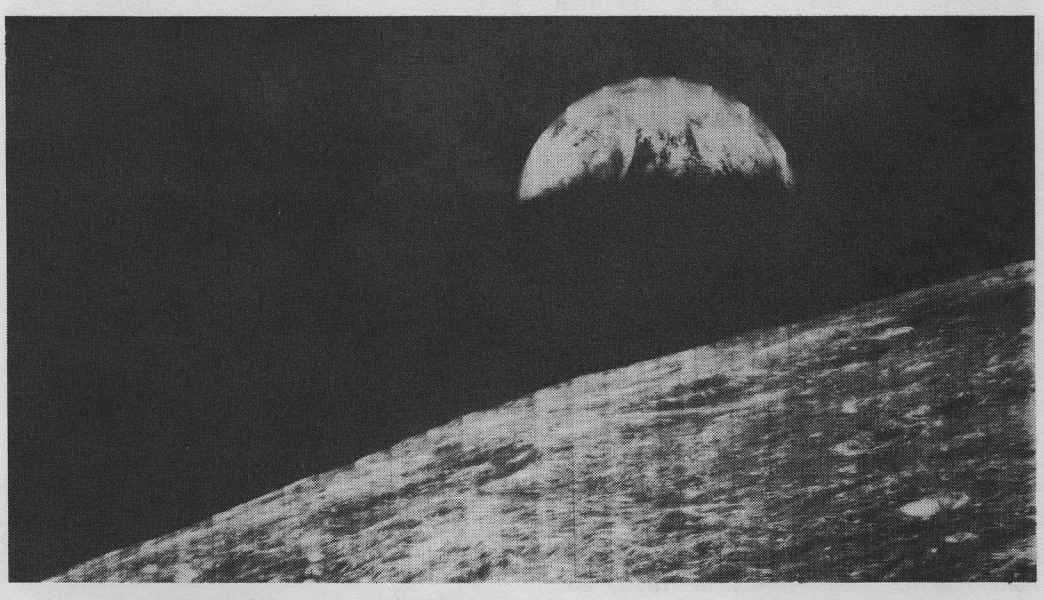
A quick look at some of the highpoints of NASA's first 20 years should stir some memories of many of the accomplishments--and a few of the mistakes.

During its first five years, from 1958 to 1963, NASA was busy getting organized; establishing new operational centers; sending probes to other planets; and putting satellites, animals and men into Earth orbit.

Alan Shepard was the first American in space, in May 1961, when he took a 15-minute suborbital ride, jammed inside his form-fitting Mercury capsule. Gus Grissom followed Shepard in July of that year, and John Glenn became the first American to orbit the Earth when he made three passes in February 1962. Walter Schirra, Scott Carpenter and Gordon Cooper closed out Mercury's six successful manned flights.

Langley researchers planned the world-wide tracking network for Mercury, and the Jet Propulsion Laboratory sent the first of several Mariner spacecraft to explore Venus.

Meanwhile, NASA test pilots like Joe Walker and Neil Armstrong were making records with the X-15, and the first of many lifting body flights took place, all at the Flight Research Center.



Lunar Orbiter photo of Earth rise over Moon.

The Scout launch vehicle made its first test flight in July 1960. Little more than a month later, on August 12, Echo I, the first passive communications satellite, reflected a message from President Eisenhower across the nation.

By the beginning of NASA's sixth year, 23 more astronauts joined the original seven, and all began training for the two-man Gemini Program.

Langley researchers were making large contributions to the new space effort, while continuing to conduct aeronautical research. Some workers switched back and forth between space tasks and aeronautical problems almost from week to week, and they hardly missed a beat.

During the second five years of NASA, Langley scientists established the value of lunar orbit rendezvous as the most feasible way of reaching the Moon. Projects Fire and RAM studied the re-entry problems of space vehicles returning to Earth, and NASA launched scores of weather and communications satellites.

Five Lunar Orbiters, following Ranger and Surveyor spacecraft to the Moon, mapped the surface to pinpoint safe and interesting landing sites for Apollo astronauts.

In aeronautics, Langley researchers were busy studying supersonic transport concepts, helping develop the variable-sweep wing, working on the supercritical wing, and ironing out problems of vertical/short take-off aircraft, both fixed and rotary wing.

The Gemini Program completed 10 successful two-man flights that proved the rendezvous and docking concept, which had been tested in strange contraptions at Langley.

Despite a tragic setback caused by the deaths of astronauts Gus Grissom, Ed White and Roger Chaffee in January 1967, in an Apollo capsule fire at the Kennedy Space Center, the first manned Apollo mission was successfully flown in October 1968, just after NASA's 10th birthday.

That first Apollo flight was followed in December by the Apollo 8 mission, which took astronaut Frank Borman and crew circling around the Moon on Christmas Eve.

The following year saw four more Apollo missions, including the wonder of seeing Neil Armstrong and Ed Aldrin first step onto the Moon in July 1969.

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Apollo 17 closed out 1972 and a program that put 12 astronauts on the surface of the Moon, gathering scientific data that are still being analyzed.

Even before Apollo ended, however, NASA was already working on Skylab. During three long-duration missions, nine astronauts lived in a gravity-free environment for more than 171 days.

NASA also began planning for the Space Shuttle, now one of the agency's most important projects.

Mariner 6 sent to Earth the first pictures of Mars in mid-1969, and Explorer 1, the first U.S. satellite, re-entered Earth's atmosphere in March 1970, just over 12 years old.

ERTS 1 (now Landsat 1) was launched in July 1972 to monitor Earth's agriculture, forests, minerals, and other resources. NASA was also launching payloads for other countries, and officials were talking with the Soviets about a joint space mission.

Development of the supercritical wing was completed in 1969, and flight tests began. In 1971 the U.S. decided to get out of the SST business, at least for the forseeable future, but Langley researchers continued studies in SST technology.

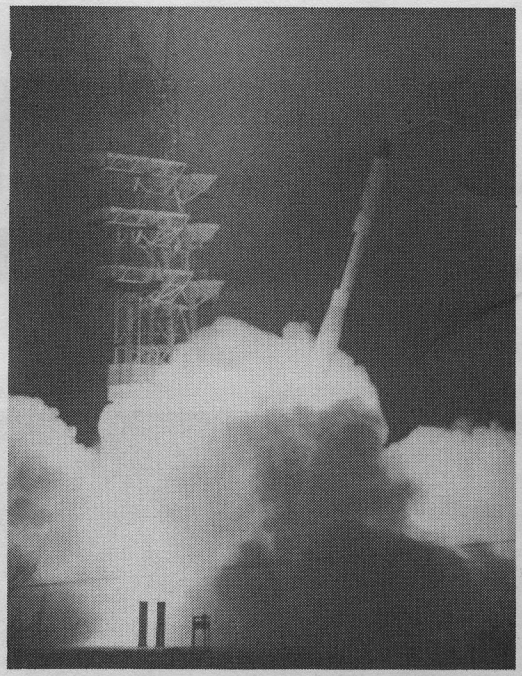
During the past five years, the U.S.-Soviet joint mission became the Apollo-Soyuz Test Project in 1975, and two Viking spacecraft were launched on their year-long journeys to Mars.

Part of the U.S. Bicentennial Year became the Viking Summer as two unmanned craft circled and landed on Mars to begin extensive photography and scientific investigations. Pioneer 10 had earlier crossed the rings of Saturn and continued its trip toward Pluto.

In 1977 were the first free flights and landings of the Shuttle Orbiter, and the launches of two Voyager spacecraft to Jupiter and Saturn. The year 1978 began with NASA selecting 35 Shuttle astronaut candidates, including six women and four minority members.

And here we are today at Langley, crashing and spinning light airplanes to make them safer, building one of the first Shuttle payloads, improving aircraft efficiency and air terminal operations, designing instruments for satellites, planning gigantic structures for Earth orbit, building a new kind of wind tunnel, and studying ways to improve our air and water environment.

There is a lot of work to do, and it continues to be important to the people of the world. As Director Don Hearth recently told employees, "We have a good product for the public."



Scout I launch in 1960.

Early NASA Milestones

1957

Oct. 4: The Soviet Union launches the first man-made satellite, Sputnik I, which seriously challenges the United States' reputation for technical superiority.

Nov. 21: NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA), appoints a special committee on space technology to supervise and help form a space research program.

1958

Jan. 14: NACA issues a staff study titled "A National Research Program for Space Technology."

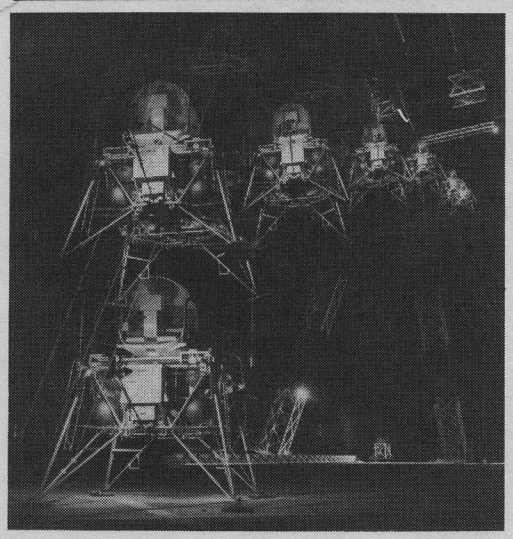
Jan. 31: Explorer I, America's first satellite, is launched into Earth orbit. It was developed by the von Braun group for the U.S. Army.

July 29: President Dwight Eisenhower signs the National Aeronautics and Space Act of 1958, stating "the present (NACA), with its large and competent staff and well-equipped laboratories, will provide the nucleus for NASA. The NACA has an established record of research performance and of cooperation with the armed services. The coordination of space exploration responsibilities with NACA's traditional aeronautical research functions is a natural evolution . . . (which) should have an even greater impact on our future."

July 30: President Eisenhower requests $125 million to initiate NASA.

"The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind . . ."

President Dwight D. Eisenhower
July 29, 1958



Lunar landing simulator.

Aug. 19: Dr. T. Keith Glennan is sworn in as NASA Administrator, and Dr. Hugh L. Dryden, NACA Director, becomes NASA Deputy Administrator.

Aug. 31: NACA holds its final meeting.

BEGINNINGS

Oct. 1: First official day for NASA. Existing NACA facilities, people, policies, and advisory committees are transferred to NASA, and the NACA laboratories are renamed Research Centers.

Oct. 7: NASA formally organizes Project Mercury to place a manned space capsule in orbit around Earth; investigate man's reactions to this environment; and safely recover the pilot and capsule. A Space Task Group is organized at Langley to manage the project.

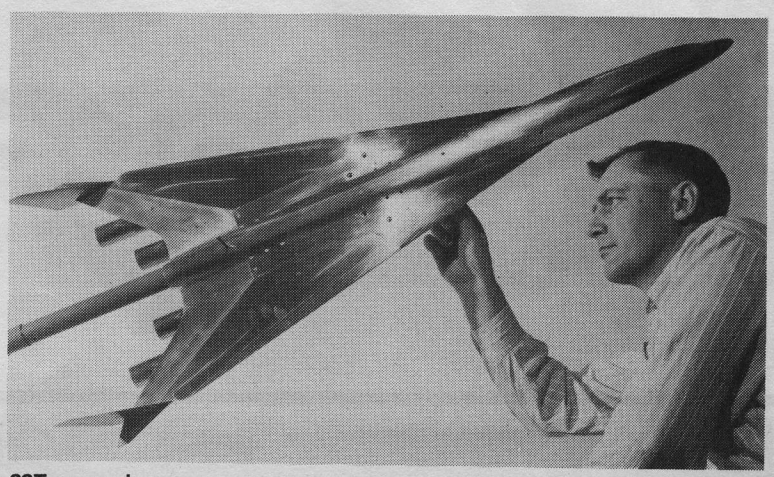
1959

Mar. 1: The Scout launch vehicle development project is jointly announced by NASA and the Air Force. The Scout concept originated at Langley during 1958.

Apr. 2: Seven astronauts are selected for Project Mercury. They soon begin training at Langley.

Dec. 14: Little Joe 3, part of the Mercury test program, is sent 55 miles into space with a monkey on board; safely recovered.

HL-10 lifting body.



SST research.

A Past To Be Proud Of, A Future To Look Forward To

Director's Comments

As we observe NASA's 20th anniversary this week, we recall the Agency's founding and take note of its outstanding record of achievements. Many of those contributions were made by the people of Langley and we can all be proud of them.

As NASA begins its third decade, it seems appropriate to outline my thoughts on Langley's future. (These remarks are from my talk to the Center of a few weeks ago.)

In terms of the Center's program, I expect the following:

- An emphasis on innovative research, moving toward somewhat more fundamental and long term work.

We must keep clearly in mind that research is Langley's basic role and that a mix of long-term and short-term work is necessary.

- A continued mix of aeronautics and space research.

While there will be continued emphasis on aeronautics, in terms of the application of manpower, space research will be of equal priority. I believe there are excellent opportunities for Langley to make major contributions in both aeronautics and space.

- Within aeronautics, emphasis on the disciplines of acoustics and noise reduction, aeroydnamics, aeroelasticity, avionics, flight dynamics and control, materials and structures and to the applications of general aviation, long haul commercial, and military aircraft.

Thus, I anticipate a continuation of the Center's broad based aeronautics program. It is also my intent to maintain a strong in-house character of the program.

- Within space, emphasis on environmental quality and the disciplines of aerothermodynamics, electronics, materials and structures.

This work is equal in importance to aeronautics. The disciplines are those which have a close relationship to our aeronautics work and/or are based upon a unique Langley capability.

- Space flight experiments in the above areas conducted by Langley.

Our role will include the development of R&D hardware and the management of flight experiments from concept through data analysis. As is true in aeronautics, some aspects of space research require flight.

- A phase out of Scout launch vehicle project management.

If Scout is phased out of the nation's vehicle stable as Shuttle becomes fully operational, Langley will manage it until completion. If Scout is not phased out, I believe management responsibility should be transferred from Langley after 1981.

- Langley management of selected aeronautics and space projects that are closely related to our research disciplines.

While research is our basic role, it is important that we manage those projects, such as ACEE and Large Space Systems Technology, that encompass Langley's research disciplines.

- The pursuit, at a low level, of attractive ideas which are outside the Center's official Roles & Missions.

A research laboratory, such as Langley, should not be overly constrained.

- A continued effort toward the application of aerospace technology and Langley capability to nonaerospace uses.

This means an active Technology Utilization program and the type of assistance Langley is currently providing to development of the Virginia Resources Information System and our planning toward expanded cooperative programs with Hampton Institute.

In terms of people related matters, I expect the following:

- A ceiling of 3065 (our current on-board complement), at least for the next year.

There will be continued pressure on the size of all NASA Centers. Thus, while we are planning on stability in the size of the Center for the next several years, we must recognize the uncertainty in this forecast.

- Hiring at a level to fully replace our attrition while maintaining today's skill mix.

Our future plans assume today's skill mix. In FY '79 we will hire, for example, about 45 S&E's and 70 technicians. Emphasis will be placed on recent college graduates and apprentice technicians although some high grade hiring will be necessary. If the Center's ceiling stays at 3065 after FY '79, we will continue this pattern for the foreseeable future.

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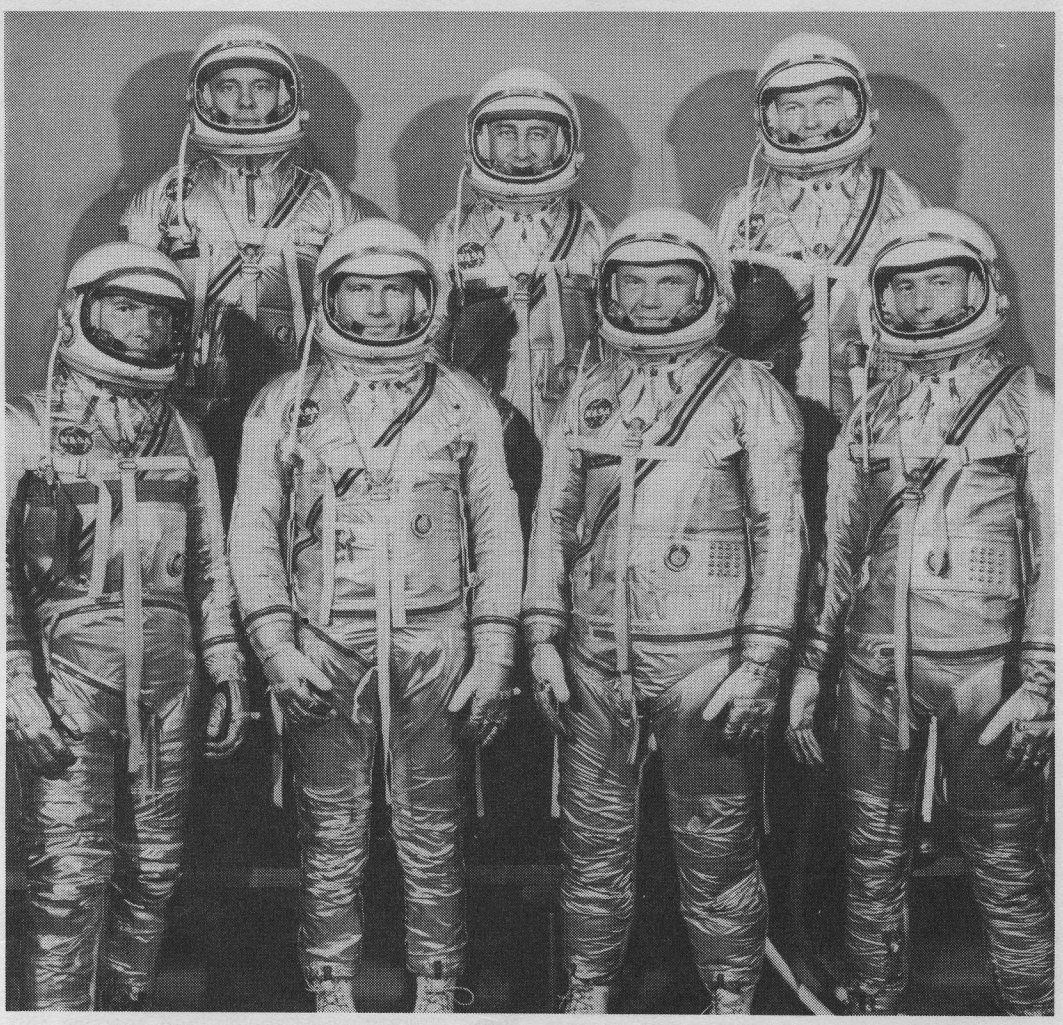
- The use of a portion of the Center's Administrative Professional hiring capability for Upward Mobility.
- A continuation of a promotion rate of 12% until the Center's average grade is reduced to 10.46.
- An increase in growth opportunities for Langley people over what there has been in the past few years.

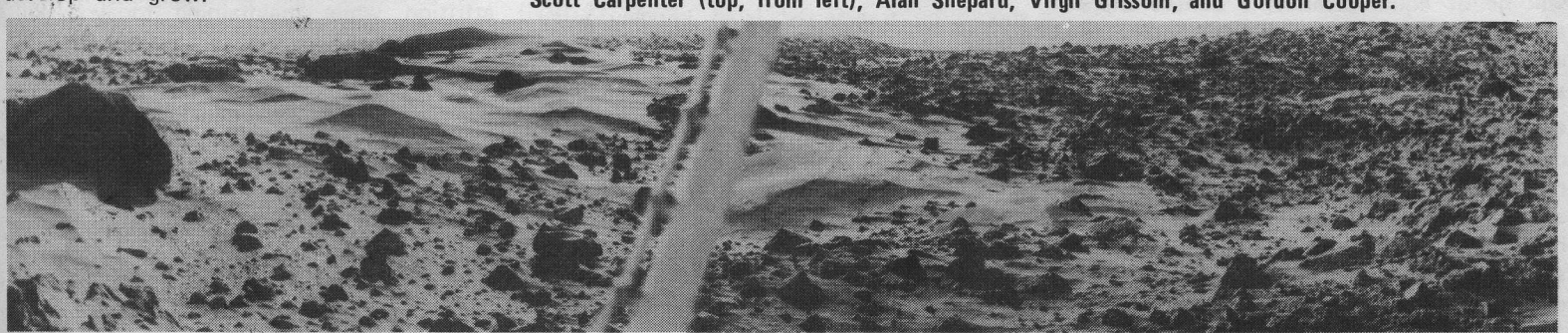
Stability in the size of the workforce is important in this regard. In addition, our projections indicate an increase in retirements in a few years. We will also continue to emphasize the "dual ladder" to provide nonsupervisory opportunities.

- Continued emphasis on Equal Opportunity with increased attention to the representation of minorities and women in high grade and/or supervisory positions.
- Continued improvement in the work environment at Langley for innovative research.

As noted in my talk to the Center of a few weeks ago, I think that the future for Langley looks very good. I do not expect the major program changes that have occurred in the past 20 years at Langley. I do expect many new, exciting and important research programs. In addition, there will be many opportunities for technical contributions and many opportunities for people to develop and grow.



Original seven NASA astronauts (front, from left) Walter Schirra, Donald Slayton, John Glenn, Scott Carpenter (top, from left), Alan Shepard, Virgil Grissom, and Gordon Cooper.



Viking panorama of Mars.