Next: Apollo, and a Man on the Moon

WASHINGTON (UPI)—Gemini today, Apollo tomorrow.

The Gemini two-man flights now under way are limited to space trips close to the earth.

In Apollo, the United States has committed itself to send men to the moon and back.

The National Aeronautics and Space Administration (NASA) considers Gemini a vital testing and training exercise for the three-man Apollo program, scheduled to start with earth orbit flights in 1968.

The U.S. lunar commitment, bequeathed by President Kennedy, calls for landing two members of an Apollo space crew on the moon in 1969, only about four years from now.

It will cost about $20 billion.

What are the chances of completing preliminary Apollo flights this side of the moon and bringing off the lunar landing on schedule in 1969?

A year ago NASA Administrator James E. Webb and his chief associate, Dr. Robert C. Seamans Jr., were pessimistic. It looked then as though the first man-on-the-moon flight would have to be deferred to 1970.

In the past year, however, Webb and Seamans have switched from pessimism to optimism. And Dr. George E. Mueller, NASA associate administrator for manned space flight, has told congressional committees on several occasions this year that the 1969 schedule looks good again.

Why? Neither of the big rockets being developed for Apollo has yet been flown. The gigantic space ports for launching Apollo astronauts are not yet completed.

The Gemini program, with its 10 scheduled manned flights, is just getting off the ground.

And the unmanned Surveyor and lunar orbiter projects, which have to be carried out before moon landing targets can be picked, still lie in the future.

But in the past year all of the many projects which add up to Apollo have begun to come into focus, according to the program managers.

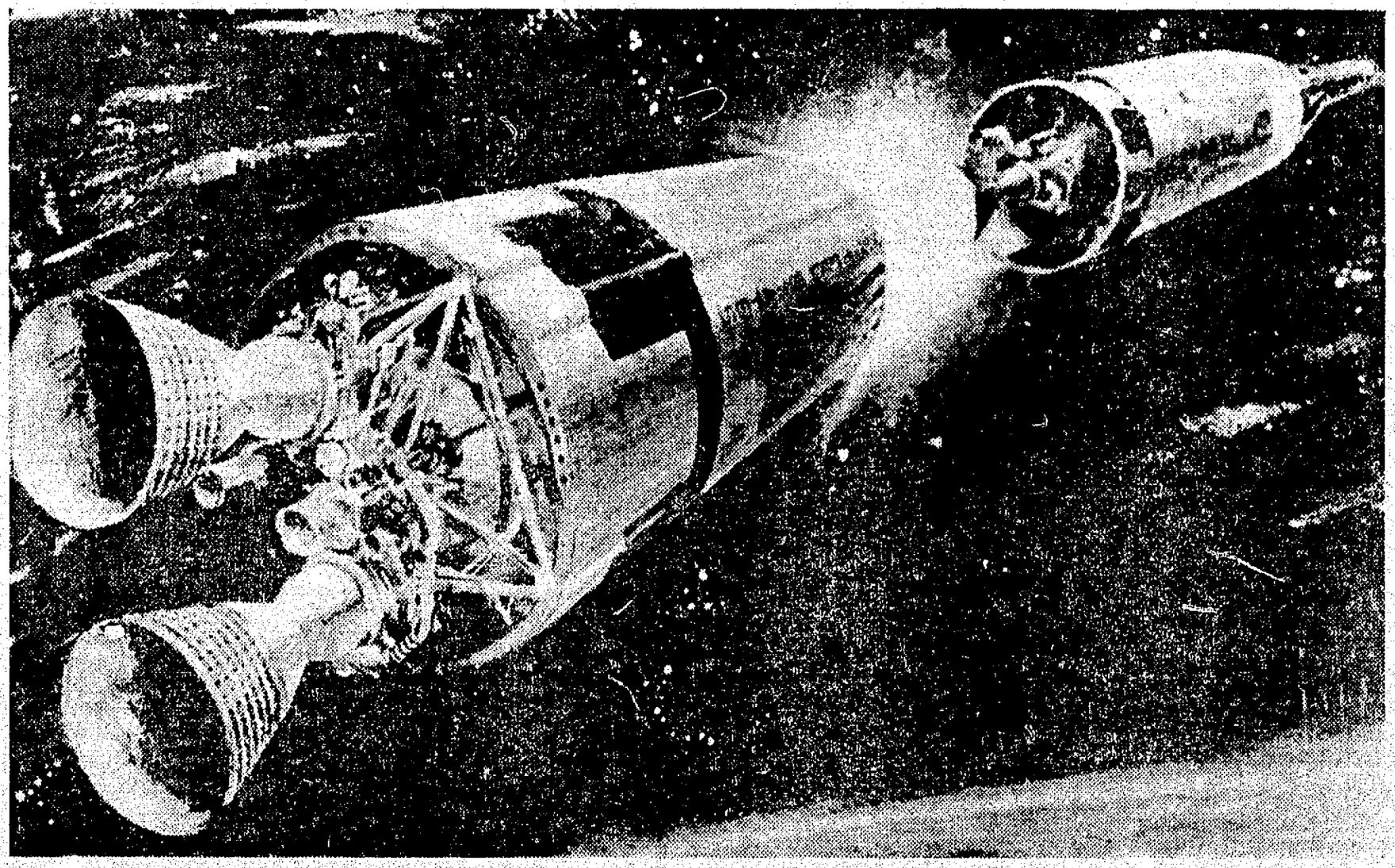
According to them, 1964 was the year when the hardware "pipelines" began to fill. This is the year of exhaustive ground testing. Flight tests will get underway in 1966.

By 1967, Apollo astronauts will be soaring into orbit for the first time, and in 1969 they will be ready to invade the moon.

Unmanned Surveyor craft, starting late this year, will deposit instruments to determine whether the lunar surface is strong enough to support a spacecraft's weight.

Next year will see the launch of lunar orbiter spacecraft capable of photographing details as small as a yard across.

Meanwhile, great industrial plants have been created to manufacture and test Apollo spacecraft and boosters, and the 88,000-acre moonport adjacent to Cape Kennedy, known as Launch Complex 39, is nearing completion.



Artist's concept of a first in U.S. manned spacecraft travel—the starting of a second-stage liquid rocket engine 45 miles above the earth. The new method was used during the two-man Gemini flight. (AP Radiophoto)

Military's Key Role In Gemini

CAPE KENNEDY, Fla. (UPI)—A fleet of 14 warships and six supporting vessels led by the 33,000-ton aircraft carrier Intrepid was assigned the task of recovering the first two-man Gemini capsule from the Atlantic.

In addition, 48 Air Force planes were standing by around the world for recovery efforts in case a mishap brought the capsule down far from the primary landing zones.

A total of 6,400 Navy and 500 Air Force men were given roles in the operation.

The Intrepid itself was assigned to a spot 150 miles north of the Dominican Republic.

Astronauts Virgil (Gus) Grissom and John W. Young were scheduled to splash down there after a three-and-a-half orbit flight around the earth.

The recovery fleet, designated Task Force 140 and placed under the over-all command of Rear Adm. Ben W. Sarver at Mission Control Center in Cape Kennedy, Fla., was broken down into six task groups:

—Task Group 140.7, commanded by Rear Adm. D.M. White aboard the Intrepid and including the destroyers Mullinnix and Douglas H. Fox, the Coast Guard cutters Diligence and Vigilant, most of the 69 planes and jet helicopters assigned to the fleet and a team of skin divers set to attach the flotation collar around the spacecraft.

Task Group 140.2 stationed moderately seaward of Cape Kennedy, in case of an abort requiring use of the escape mechanism.

—Task Group 140.3 stationed along 1,600 miles of the Gemini's path over the western Atlantic, for use in case of failure during the powered flight phase.

—Task Group 140.4 deployed over 2,050 miles from mid-Atlantic to the Canary Islands to cover failure at the end of powered flight.

—Task Group 140.5 stationed 50 miles south of the initial flight path and 200 miles west of Bermuda for use in case of flight termination after one orbit.

—Task Group 140.6 deployed 300 miles south of Bermuda in the zone for landing if necessary after the second orbit.

Some of the ships left their berths as early as March 9 while others waited until the day before the shot.

The Plan For Gemini

CAPE KENNEDY, Fla. (UPI) — Other earth orbital flights scheduled in U.S. Project Gemini, at-a-glance:

—Four-day flight by astronauts James A. McDivitt and Edward White II, expected in the summer of 1965.

—Seven-day flight by astronauts Charles (Pete) Conrad and L. Gordon Cooper Jr., expected in the fall of 1965.

—Two-day flight, first attempt to link up Gemini capsule with Agena upper stage orbited 24 hours earlier, expected in late 1965 or early in 1966. Pilots are expected to be Walter M. Schirra Jr. and Thomas P. Stafford.

—Long-duration flight, possibly ranging up to Gemini maximum of 14 days in space, is expected in the spring of 1966.

—Two-day flight, second attempt of Gemini capsule to "rendezvous" in space with Agena stage, expected in mid-1966.

—Two-day flight marked by first attempt with Gemini capsule to rendezvous and link up with Agena craft on the same day, expected in mid- to late-1966.

—Two-day flight marked by first attempt by Gemini capsule to rendezvous and link up with Agena capsule immediately after lift-off. Expected in late 1966.

—Two-day flight, to simulate rendezvous maneuvers that will be used in later manned flight to moon. Scheduled for early 1967.

—Two-day flight, last in Project Gemini, to simulate techniques to be used in Apollo man-to-moon flights. Expected in early to mid-1967.

Scholar-Astronauts To Be Needed on Moon

WASHINGTON (UPI)—Want to explore the moon or perhaps a planet? Buckle down then and get yourself a Ph.D. degree in science.

The first U.S. astronauts to land on the moon won't be doctors of philosophy. But some members of subsequent landing crews certainly will be. A new kind of space man will be joining the nation's astronaut pool in late summer or early fall.

Among his other qualifications, he will hold a Ph.D. degree or the equivalent in geology or some other natural science, in medicine, or in engineering.

The National Aeronautics and Space Administration (NASA) plans to train 10 to 20 highly educated but perhaps hitherto flightless young men in the arts and rigors of space travel to make certain it gets its scientific money's worth out of the Apollo moon program.

Applications for this first group are closed. But lunar and planetary exploration has a long future and new classes of space-going scientists undoubtedly will be recruited in years to come.

NASA started recruiting prospective scientist-astronauts in 1964. In addition to being scientists, candidates had to be young—born on or after Aug. 1, 1930; U.S. citizens; not taller than 6 feet; healthy; and blessed with 20/20 vision.

By the time applications closed Dec. 31, 1964, the agency had received bids from 1,500 persons, including four women.

At any rate, the agency has turned over the list to the National Academy of Sciences for screening as to educational attainments. The academy will make its report this spring to NASA.

Space Can Give Astronauts a 'Lazy Heart'

CAPE KENNEDY, Fla. (AP)—A trip into space can make your heart grow lazy.

And this is a main health concern of doctors in the Gemini program, the second phase of U.S. manned space travel.

On earth your heart pumps blood against the force of gravity.

But in space blood has no weight. The heart doesn't have to work so hard. It can let up a little. So can the blood vessels whose muscular walls help return blood to the heart.

But on sudden return to earth, the lazy heart and vessels—if they've let up long enough—are slow getting back into their old swing.

As a result, blood can pool in the legs, with blood pressure decreased, and the pulse rate speeding up.

American doctors first noticed this effect when astronauts Walter M. Schirra Jr. and L. Gordon Cooper returned after their flights of 6 and 22 orbits. Cooper almost fainted when he climbed from his spacecraft, and the blood pressure effects lingered for 19 hours.

Soviet doctors have indicated keen concern for the "lazy heart" symptoms, particularly after one astronaut rode around the earth for five days.

Will the lazy heart phenomenon forbid prolonged space flights?

Dr. Charles Berry, medical director of manned flight, says he thinks not—that if it is a serious matter, protective measures can probably be devised.

"In Mercury (single man) flights, the only change that showed up was in the cardiovascular system," he said in an interview. "It appeared only after flights lasting more than three orbits."

It isn't certain that the difficulty stems just from weightlessness, Berry added. The fact that men are confined in the spacecraft, that they can become hot or tired, dehydrated, or even seasick after landing in the ocean, might be influences, too.