NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: IMMEDIATE
November 12, 1968

RELEASE NO: 68-199

APOLLO 8 MOON ORBITAL FLIGHT

Launch no earlier than Dec. 21.

Crew: USAF Col. Frank Borman, Commander

USN Capt. James A. Lovell, Jr., Command Module Pilot

USAF Maj. William A. Anders, Lunar Module Pilot

An open-ended mission
Six-day minimum expected.

The National Aeronautics and Space Administration today announced that the Apollo 8 mission would be prepared for an orbital flight around the Moon.

This decision was reached following a thorough review of the Apollo Program and NASA's overall readiness to undertake the next step toward the national objective of a manned lunar landing next year.

Apollo 8 will be launched from Cape Kennedy no earlier than December 21. Timing of the "launch window" is solely dependent on technical considerations. Among these are the Moon's monthly swing around the Earth, launch restrictions at Cape Kennedy, daylight conditions in the launch and recovery areas, and preferred photographic lighting for sites of interest on the Moon.

Crewmen for the Apollo 8 mission are Commander Frank Borman, Command Module Pilot James A. Lovell, Jr., and Lunar Module Pilot William A. Anders. There will be no Lunar Module on this mission, but Anders will fly in the position reserved for the Lunar Module pilot on fully configured Apollo missions.

The Apollo 8 mission will be an "open-ended" mission conducted in steps referred to as "plateaus" or "commit points." Conducting the mission in this manner provides both maximum crew safety and maximum benefit through alternate flight mission selection as the flight proceeds.

Each plateau includes a thorough check of crew, system and equipment operations. Only when all conditions are satisfactory will the decision be made to commit to the next plateau. The commit points in the Apollo 8 mission are:

- Prelaunch checkout, terminating in launch.
- Earth parking orbit, which ends with translunar injection.
- Translunar coast, preceding lunar orbit injection.

Conducting Apollo 8 in this manner provides for various alternate missions, which include a low Earth orbit flight, a high apogee mission up to 60,000 miles, or a circumlunar operation.

Launch will be from Complex 39A at Kennedy Space Center on an easterly azimuth between 72 and 108 degrees. The Saturn V launch vehicle will place the spacecraft and the SIVB third stage into a 115-statute-mile high parking orbit around the Earth during which third stage and spacecraft checkout will be accomplished.

The third stage will then be reignited during the second or third parking orbit to inject the space vehicle into a translunar trajectory. The injection will provide a circumlunar "free return" to Earth if the decision is later made not to insert the spacecraft into lunar orbit.

Within two hours after translunar injection, the command and service module will separate from the rocket's third stage. Midcourse corrections may be made using the spacecraft's reaction control system. The translunar coast will take about 66 hours from Earth orbit to the Moon.

At translunar injection from Earth orbit the spacecraft speed will be increased from approximately 17,500 to about 24,200 miles per hour. During coast to the Moon the speed will decrease to about 2,120 mph when the spacecraft is about 30,000 miles from the Moon. At this point lunar gravity will cause the spacecraft to accelerate as it approaches the Moon.

The spacecraft service propulsion system will be used to slow the spacecraft from about 5,700 mph to 3,720 mph, inserting it into a 196 by 70 statute mile lunar orbit. Approximately two revolutions later the system will be fired again to circularize the orbit at 70 statute miles above the surface of the Moon.

Crew activities during lunar orbit will include navigation and landmark sightings and photography. After ten trips around the Moon (each orbit lasting about two hours) the service propulsion system will be fired again to boost the spacecraft out of lunar orbit onto a trans-Earth trajectory. The return flight from the Moon to Earth will take about 57 hours.

Prior to reentry into the Earth's atmosphere, the command module will be separated from the service module using the latter's reaction control system. Elapsed time from launch to landing in the Pacific Ocean will be about six days.

The decision to fly the lunar orbit mission followed a full review of the readiness of the hardware, crew and support systems by Dr. Thomas O. Paine, Acting Administrator of NASA.

The intensive review process has been underway since Aug. 19, when NASA announced that Lunar Module (LM) operations would be rescheduled from Apollo 8 to Apollo 9 because LM #3 had been delayed in checkout. LM #3 will now be flown next year on the fourth Saturn V (AS 504), which will be the first manned flight of the LM and third manned mission for the command and service modules.

In the announcement, Lt. Gen. Samuel C. Phillips, Apollo Program Director, said the purpose of the change in the flight schedule was to permit the program to make the maximum progress with the Apollo-Saturn V space system, while working out all problems encountered in the LM #3 checkout.

He said in the Aug. 19 announcement that the Apollo 8 flight would be prepared as an Earth orbital mission but that training and planning would include the possibility of a high Earth orbit, circumlunar or lunar orbit mission.

In recommending the selection of the lunar orbit mission for Apollo 8, Dr. George E. Mueller, Associate Administrator for Manned Space Flight, told Dr. Paine that it would advance the Apollo Program by:

- Providing valuable experience in validating the Apollo CSM communications and navigation systems at lunar distance.

- Completing the final verification of ground support elements and onboard computer programs.

- Increasing the understanding of environmental conditions in deep space and the proximity of the Moon.

- Confirming the ability of the crew to see, use and photograph landmarks during a lunar mission.

- Providing new measurements of variations in lunar gravitational potential discovered in NASA's lunar orbiter program.

The decision to undertake a flight around the Moon was reached after a long series of reviews which included:

- Final certification of solutions to the anomalies revealed during the unmanned Apollo 6 flight last Spring.

- Detailed analysis and review of the results of the Apollo 7 mission.

- Complete ground tests of Saturn V components, including insulation, structural and pressure tests, before the Apollo 8 command and service modules were certified ready for lunar flight.

- Complete design certification reviews of all launch vehicle and spacecraft subsystems.

The final review yesterday by Dr. Paine, with all top NASA officials participating, included an assessment of the total risks involved, readiness of all flight and support systems and the degree to which the recommended lunar orbit flight would advance the Apollo Program toward the nation's long-standing objective of a manned lunar landing and return by the end of next year.

"After a careful and thorough examination of all systems and the risks and benefits involved in each of the mission alternatives," Dr. Paine stated, "we have concluded that we are ready to fly this advanced mission around the Moon. Frank Borman and his crew are eager to proceed, our engineers unanimously recommend this mission, and, without being overconfident, we believe that we understand the hazards involved and are now ready to take this next step forward in the nation's space program."

-end-