RAR-B-10

~~TOP SECRET~~ GAMBIT/CORONA/ UPWARD

HANDLE VIA BYEMAN CONTROL SYSTEM

~~1ST~~ NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

[redacted]

THE NRO STAFF

3 February 1967

MEMORANDUM FOR DR. FOSTER
MR. FINK

SUBJECT: NASA Plans Regarding UPWARD

Dr. Flax has asked that I furnish you the attached information in anticipation of discussion of this subject at the Manned Space Flight Policy Committee Meeting scheduled for February 9, 1967.

David L. Carter
DAVID L. CARTER
Colonel, USAF

Attachment

cc: 10 USC [redacted]
LtCol Yost

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GAMBIT/CORONA/UPWARD

HANDLE VIA BYEMAN CONTROL SYSTEM

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NASA PLANS REGARDING UPWARD

UPWARD is the BYEMAN codeword under which the lunar mapping and survey system (LM&SS) is being developed for NASA by the NRO. The survey camera is a modification of GAMBIT hardware and the mapping camera is a version of the 1½ inch focal length terrain camera used on CORONA and GAMBIT.

NASA has recently revised the schedule for flight test of the LM&SS. The key paragraph in the letter from Dr. Mueller to Dr. Gilruth which revised the schedule is quoted as follows:

> "It now appears that the Surveyor and Lunar Orbiter data will probably support the selection of safe sites for the initial lunar landings. Thus, the demanding LM&SS schedule requirements for the initial landing site survey mission can now be relaxed. Therefore, to make possible the development of an earth and lunar orbital sensor capability capitalizing on the investment to date in the LM&SS, you are hereby requested to reschedule development to support a first possible lunar orbital mission on or after June 1, 1968, and also to plan for an earth orbital test mission with the LM&SS on the AAP-1 launch in June 1968. These schedules will be reflected in forthcoming changes to flight mission assignments and to Apollo Program Directive 16A."

This schedule revision does not include the possible impact of the recent fatal accident in the Apollo I.

The June 1968 flight in earth orbit is the first in a series of 4 orbital flights now designated AAP-1 through 4. NASA's plans for these flights are as follows:

a. Launch vehicle AAP-1 into an earth orbit of about 120 n.m. in mid-1968. The primary payload will be LM&SS hardware and the purpose of this flight is to exercise this system and the procedures for its use. The exact test program has yet to be defined.

b. After 4 or 5 days, a second vehicle, AAP-2 (unmanned) would be launched into a 260 n.m. orbit. AAP-1 would then increase its orbital altitude to 260 n.m. and dock with AAP-2. The 2 additional vehicles would remain in orbit an additional 23 days, whereupon the astronauts will return to earth with the data acquired. The two docked modules would be left in orbit.

c. About six months later, the mission would be repeated in vehicles AAP-3 and AAP-4, except that all 4 vehicles would be joined together and would result in a workshop in space composed of these four vehicles. A NASA picture depicting this configuration is attached. Experiments that are planned for the second series of flights include re-exercise of the LM&SS camera and operation of the manned Apollo telescope (ATM); ATM is a combination of experiments involving solar observation.

NASA states that the purpose of re-operating the LM&SS camera after a 6-months inactive period, is to demonstrate the capability to remain in lunar orbit for long periods of time and then to operate; such an operational concept may be desirable in order to get full coverage of the moon. NASA has asked the NRO to study the impact and tradeoffs involved in reconfiguring LM&SS hardware for storage in space, and subsequent reactivation.

In recent meetings of elements of the NASA Apollo Applications Working Group (for example, at Houston on December 6-9 1966) a variety of additional image forming sensors have been considered for flight on AAP-1 through 4. Sensors considered include:

a. A camera from the unmanned lunar orbiter

b. 12 inch focal length panoramic camera

c. The multispectral experiment reviewed earlier by the DOD

d. 6 inch focal length mapping camera

e. Telescope using Questar lens (56 inch focal length) and with simplified tracking and focusing device.

f. An imaging radiometer.

At the most recent meeting of the DOD-NASA Survey Applications Coordinating Committee, these additional sensors were discussed, and NASA stated that as of that date (January 31, 1967) there were no sensors other than the LM&SS approved for flight on AAP-1.

NASA's current plans do involve extensive flight test of LM&SS hardware in earth orbit beginning in mid-1968. NASA may be required to discuss these plans in an unclassified fashion during the forthcoming cycle of Congressional and Budget Hearings.

This subject has been placed on the agenda for the Manned Space Flight Policy Committee for the meeting of February 9, 1967.

EQUIPMENT IN ORBIT AT END OF 1968