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MEMORANDUM FOR : Deputy Director (Research)

SUBJECT : Initial Evaluation of ARGON Mission 9034A

1. A mission was launched the 15th of May at 1930Z and successfully orbited for four days with an air recovery.

2. A problem became evident with the internal camera pressure from telemetry data early in the mission. The ARGON system, unlike CORONA, is a pressurized envelope during orbit. The purpose of this pressure is to permit the use of a vacuum platen to keep the film absolutely flat during exposure. The pressure appeared to be adequate through pass 42. At that time, streaks and several overexposures began to appear in the film which indicates a possible dragging across the platen and various rollers caused by operating at ambient conditions in orbit. Upon recovery it was learned that a valve had been inadvertently left off of the recovery cassette side of the camera system. This caused a slow pressure leak. This was a human error according to LMSC and action is being taken to insure no reoccurrence of this type.

3. In attempting to process the material at [redacted] in a manner as to retain the stellar images, it was found that the stellar images on all passes except those on the dark side were greatly overexposed. This phenomena was not expected and the stellar had been purposely set at a 2 second exposure time based on considerable study of the anticipated exposure conditions for best stellar photography. All of the current theories have lead us to believe that outer space, even during daylight hours, is dark. This is evidently not the case. The angle of the sun was never closer then 90° to the stellar lens and since it is recessed into the natural fairing, it provides its own sun shade. Development Branch, DPD, is proposing to allocate two of the four horizon cameras in an early CORONA/MURAL mission to the role of stellar photography studies. Through a simple mirror arrangement, it is believed that we could redirect the horizon camera into a stellar mode to gain useful data for future stellar camera settings not only for ARGON but for the indexing stellar camera for both MURAL and LANYARD.

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4. It is believed from initial investigations of the ARGON terrain photography, that ACIC and [redacted] can utilize this material for some basic exploitations in target positioning through brute force techniques rather than stellar positioning.

5. Through about the first 42 passes, the average resolutions over the area of interest on the terrain photography was about 20 l/mm. Major roads, shorelines, and drainage patterns are well defined but are generally grainy.

6. Actions being taken:

A. DB/DPD is coordinating the requirement to use two horizon optics on an early CORONA/MURAL mission for stellar exposure studies with NPIC. Two sets of optics would be left for the primary mission tip and tilt determination.

B. Itek has been requested to investigate design of a simple mirror or prism to redirect the horizon optics mentioned in Paragraph 6A to stellar orientation. This action has been informally coordinated with the Systems Engineering group at LMSC and with [redacted] Final approval would require Configuration Control Board approval.

C. A request has been made through [redacted] for the reports and photographs taken by [redacted] during the flight of Aurora 7. Hopefully we may get an opportunity to talk to [redacted]

D. It has not been definitely determined that the problem is one of exposure, film type, optics orientation or a combination of the factors, but Development Branch, DPD, is planning several meetings with those concerned as soon as additional data is available. It is possible to reorient the port or starboard view of the stellar camera by programming a vehicle turn around prior to reentry rather than just after injection, if this is determined the proper approach. Also, it is simple to change the shutter speed of the stellar camera, but we want to thoroughly investigate all the facts and obtain whatever data is available before a definite step is taken. To change the angular relationship of the stellar lens to the terrain lens would be a major redesign we would hope to avoid.

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[redacted]

(28 May 1962)

Colonel USAF
Acting Chief, DPD

Distribution:

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