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17 April 1963

**MEMORANDUM FOR : Deputy for Technology/CSA**  
**SUBJECT : A Covert Reconnaissance Satellite**

1. Reconnaissance satellite systems currently under development are designed mainly to obtain increasingly higher resolution photography and, as a result, require increasingly heavier payloads and boosters and added communications. These systems, while certainly in response to consumer needs, are difficult, if not impossible, to conceal. Protection against a determined Soviet defense will certainly involve considerable loss or degradation of product, if, in fact, protection is at all possible for any extended period of time. This is to say nothing of the severe international climate likely to result from an active measure-countermeasure game played in space over Soviet territory.

2. In other words, if we rely solely on these high performance systems, an intense Soviet effort will seriously reduce our coverage and may deprive us of coverage completely. This, then, is the justification for development of a backup covert system which would rely, above all, on concealment. This system will be kept on the shelf until needed. The circumstances surrounding its use indicate the following system characteristics:

a. Concealment of the system and operations will be of paramount importance requiring:

- (1) A separate and tight security system.
- (2) Covert and at least portable launch and recovery, preferably mobile.
- (3) Silent launch, silent orbital operations, and, so far as possible, silent recovery.
- (4) Simplified check-out and handling procedures, requiring a minimum of personnel.

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(5) Reduction of radar and optical cross-sections below the detection threshold, as well as consideration of other detection vulnerabilities such as plasma perturbation.

(6) Covert operable prelaunch command channel.

b. System design for extended storage and establishment of a separate payload and maintenance facility.

3. There is no doubt that product quality from such a system will be seriously affected by the above considerations, particularly the launch restrictions. However, it is equally clear that, given the operating circumstances, useful coverage can be obtained. In the general environment postulated, the following assumptions can legitimately be made:

a. General coverage of the area from earlier systems will be available. This coverage may be one to three years old, but will assist in location of items of interest with relation to other, known points and in the identification of marginally resolved items.

b. An overt, pointing system will be available for high risk usage, for further analysis of critical items discovered.

An analysis is being made by NPIC on the intelligence available from various quality products. That is, what can be determined from "1 foot" resolution, "10 foot" resolution, "100 foot" resolution, etc. It is apparent that no hard and fast rules can be drawn, and that prior information on the area is of great assistance.

Lacking for the moment the NPIC analysis, it appears that a performance roughly equivalent to early CORONA systems (30' compared to present CORONA 10') may be on the margin of providing useful product. Payload limitations and intelligence needs probably require that the system be of the search type, while current experience also indicates that stereo systems are almost mandatory. Multiple image handling techniques presently under development may well indicate redundant coverage at "low" resolution rather than single coverage at higher quality.

4. As no vehicle to ground communications are permissible, any ground command system envisioned must operate without verification of commands received. Thus, it is desirable to have sufficient accuracy in the injection system, and orbital control system, to remove the necessity for ground control. This may require active v/h sensors, orbital period sensors, and self-correcting orbital programmers. The need for devices of this type will be determined by the photographic system and the film usage efficiency requirement. Attitude control on-orbit will be governed by photographic resolution requirements and by auxiliary data recording requirements.

5. The above considerations are intended to provide some rough bounds within which detailed system designs can be considered. It is recommended that this memorandum or some modification of it be used as a basis for feasibility studies to be performed by selected contractors over the next few months. These studies should provide a detailed analysis of alternative systems, their requirements and characteristics. By August or September, we should be in a position to specify the system in considerable detail and prepare cost estimates and a request for proposal.

SIGNED

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[REDACTED] and [REDACTED] (17 April 1963)

Distribution:

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