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MEMORANDUM FOR: Chairman, COMOR

25 JUL 1964

SUBJECT: Comments on Future Requirements for Photo
Satellite Reconnaissance Systems

REFERENCE: [REDACTED]

This memorandum sets down the observations of SAS/DDS&T on the directive to your organization referred above. You will quickly note that our comments are largely precautionary; we feel strongly that some of the questions raised deserve an honest technical appraisal, which simply is not possible in the time allotted.

1. We agree that an NPIC effort which examines CORONA photography, [REDACTED] photography, and U-2 112A photography (as representative of [REDACTED] is as useful a thing as can be accomplished in the time allowed. We caution, however, that such an examination should include a sufficient sample of both target types and interpretation tasks to allow meaningful generalization to be made. We still insist however, that the relationship between minimum detectable object and mil. std. 150-A resolution is a tenuous one indeed. The point being that choosing samples of photography for this task must be done with some care. Finally, we re-raise the issue of the relation between resolution and photo-interpretability, especially when one is inferring differences between 3 and 1 foot.

2. [REDACTED]

3. Concerning the question of advantages of improvements in [REDACTED], we are informally aware of an effort to improve camera design performance by some 20%. We have no

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information on which to base a judgement on whether this will succeed, nor how much it will cost. We point out, however, that these systems all exhibit a distribution of quality, and that a 20% improvement in the limiting performance is not necessarily a 20% improvement in the "average" quality. It may, in fact be insignificant, since quality is made up of many things other than camera performance itself.

4. As you know, a starting point in our derivation of the [REDACTED] system was an examination of intelligence needs, albeit informal. Problems such as ground forces, arms control verification, etc. convinced us of the need for a system of CORONA quality and [REDACTED] resolution. We have no other comments on this paragraph except to encourage your committee to reflect on our cost analysis, and to remember that the major fraction of those costs is boosters.

5. It has been suggested that a useful step forward could be made by constructing a system using developed cameras such as LANYARD and CORONA. It should be pointed out that such a system is not immediately available, and considerable effort and funds must be expended in developing a spacecraft to contain and control any combination of such cameras. However, one might expect the development time to be somewhat less than that for a completely new system. It seems clear at this point that the LANYARD camera will not provide [REDACTED] quality resolution and certainly not [REDACTED] coverage. It may well be, however, that from a utility point-of-view the difference between LANYARD quality, [REDACTED] quality, and [REDACTED] quality will be very subtle indeed. From a targeting point-of-view, however, the LANYARD cameras are better than the [REDACTED] cameras but certainly not nearly so advantageous as the [REDACTED] camera. Unless such substantial modification to the LANYARD camera system is proposed, [REDACTED] will give at least an order of magnitude more coverage per mission than LANYARD. It is clear that a very detailed study must be made of what combinations of CORONA cameras and LANYARD cameras are actually feasible and then and only then will it be possible to generate a meaningful comparison with other possibilities.

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6. [REDACTED]

Original signed by [REDACTED]

FOR [REDACTED]
Chief, Systems Analysis Staff
DD/S&T

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