[redacted]

21 March 1967

MEMORANDUM FOR: Director of Special Projects

SUBJECT : EKIT Test Plan Summary

REFERENCE : a) EKIT Plan- Test 15
b) EKIT Plan- Test 16, 17
c) EKIT Plan- Test 2

1. Some time ago you asked me to comment on several EKIT test plans. I subsequently reviewed the test plans and discussed them with [redacted] He indicated that all of them were obsolete, but for your information, this memorandum summarizes my view of these plans.

2. In general I strongly endorse vigorous laboratory programs for evaluating the performance of camera systems under various conditions for various film types. In the past there has been too little of this kind of work, and therefore, many areas of our understanding in photographic reconnaissance are surprisingly backward. However, most experience to date has indicated that such tests must be conducted very carefully in order to come to meaningful and quantitative conclusions. It is very easy to perform tests which are so qualitative and uncontrolled in character that the conclusions are not definitive. Laboratory phases of the test plan in question, however, seem to be sound.

3. My general position with respect to flight test programs is exactly the reverse. All our experience to date has tended to emphasize the extreme difficulty of structuring meaningful simulations of satellite conditions using aircraft platforms. First, aircraft

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SUBJECT: EKIT Test Plan Summary

platform dynamics do not model satellite platform dynamics. Further, most experiments performed with aircraft platforms are not sufficiently well instrumented so that the dynamic state is known quantitatively. Second, even using high-altitude aircraft such as the U-2, there is something like a ten-to-one scale differential to be contended with. Thus simulations of the CORONA system using the DELTA configuration are liable to lead to erroneous conclusions concerning the utility of a particular technique. If the scale differential problem is circumvented by using a camera configuration with a ten-to-one ratio of focal lengths, then the problem of extrapolating performance from one camera to an entirely different type of camera must be solved. While I think it is possible to use aircraft material to conduct generic experiments on PI performance as a function of image characteristics, it is not possible to conduct engineering evaluations of particular satellite cameras in this manner.

4. The flight test portion of EKIT Test 15, which has as its objective a comparison of 3404 with SO-230, runs afoul of the dynamic problem mentioned above. However, the laboratory phase of this test is of definite importance and should be conducted. [redacted] indicated that there is currently no plan to conduct the proposed flight test portion of this experiment. Parallel tests are being conducted at [redacted] and I will insure that the Project Office gets the data.

5. EKIT Tests 16, 17 which are intended to test the utility of night light pattern photography, suffer from a ten-to-one scale differential problem. I can see little value in proceeding with these tests using aircraft platform; however, incorporating a small amount of high-speed film in the initial J-3 flight experiments for a night photography experiment might be of some interest.

SUBJECT: EKIT Test Plan Summary

6. EKIT Test 2 is a flight test with the objective of testing the practicability of the bicolor technique in a stereo-panoramic system. It would seem to me much more useful to conduct a series of tests with the Itek model prior to any flight experiments using the bicolor technique. I have discussed this test with [redacted]

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