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BYE-107696-70
Copy 1 of 14
26 June 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 46

I. CORONA

A. Accomplishments

1. Negotiations with G.E. and Itek were completed.

2. CR-14 post-HIVOS review accomplished.

3. QR-2 resolution block test completed.

4. CR-12 flight preparation initiated for 22 July launch of Mission 1111.

5. Building 152 is approximately 80% complete and movement of people and hardware will commence during July. Additional people will be moved to Bldg. 156 within the next several weeks.

B. Problems

Ripple filters are still being tested.

C. Future Activities

[redacted] will be on annual leave the week of 29 June 1970.

D. Projected Status

1. CR-12. Flight preps.

2. CR-12. Storage preps.

GROUP 1
Excluded from automatic downgrading and declassification

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3. QR-2. Storage preps.

4. CR-14. Block preps.

5. CR-15. Storage.

II. HEXAGON

A. General

1. SDV-III mating (forward to midsection) was completed on 21 June. The interface check using the SSES/ADPACS/Aft Section was successfully completed on 24 June, a day late due to ADPACS being down. The payload creep which will be followed by the SS vertical baseline is scheduled to begin on 29 June.

2. Preparations for the buildup of the P-1 forward section are underway.

3. Drs. McLucas, Naka, and Steininger toured Bldg. 156 on 25 June 1970.

4. [redacted] of NPIC visited the WCPO on 25 and 26 June. Discussions were held with SVIC, SETS and WCPO personnel regarding resolution capability of the HEXAGON Attitude Control System. [redacted] plans to discuss the NPIC requirements with the SPO next week. These discussions are intended to lead to an analysis by SVIC of the best method for reduction of attitude data to be used by WCPO in support of NPIC.

5. The status of the Design Improvement Studies was reviewed at P.E. on 23 June with the following highlights:

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a) Emergency Shut Down - P.E. had studied the problem of turning off system power at the completion of the emergency shut down and recommended that the power not be turned off until the normal time that the sequencer would do so. There was concern on the part of SETS and the Project Office that this would result in overstressing and overheating of the capstan BME. P.E. was requested to provide further information on this point at the next review.

At the last review P.E. had been requested to study the possibility of having a mono ESD capability (shut down of only that side of the system which had a failure). Their conclusion was that this would require major hardware changes to components used in the normal operation of the system. This would decrease the operational reliability of the system and is undesirable. Another alternative is based upon stereo ESD but provides the capability for subsequent mono operation in the same pass. Again, the result was that extensive hardware changes (i.e., the inhibit circuitry) would be required. P.E. is not to pursue the mono ESD studies any further.

b) Because of envelope constraints, P.E. has reduced the size of the "Super Looper" from 400 to 250 foot capacity. This will satisfy the requirements for eliminating rewinding of the system and will also provide the capability for changing scan modes during an operation. P.E. indicated that they are putting most of their effort into a mechanical looper rather than a slack box as they felt that their knowledge of the slack box problems was much less and would probably entail a greater lead time for incorporation into the system. P.E. was requested to maintain the present level of activity on the slack box design for the remainder of this phase of the Design Improvement Studies. This will provide the Project Office with the information necessary to decide which, if any, design will be incorporated into the system. On this point, a meeting was held at EK on 25 June to review the operating parameters and problemsareas encountered by EK in their earlier slack box experiments.

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c) P.E. recommended that a direct measurement technique be used for the new supply radius sensor device. An undesirable feature of this device is that it will only be capable of being caged for ascent with a full or nearly full supply. This would not allow a system to be launched with a partial (85,000 ft. or less) load of film. The alternative is to incorporate a more complex, heavier caging mechanism. P.E. is proceeding with the limited caging radius design.

d) The present phase on the brush type motor has been completed. The results show that the hybrid design is feasible. However, a potential interference problem exists on the Platen and Metering Capstan designs. A more detailed design analysis will be required in the next phase of this study. The results of the brush material studies, although they were promising, are invalidated because a material analysis showed that niobium was not present. These tests will be redone in a later phase of this study with the correct materials. It is anticipated that the results will be better, as niobium is known to increase the wear characteristics of the brushes being considered.

e) The fixture for the vibration test of an uncaged supply is being manufactured. The tests are now scheduled to be conducted the week of 6 July.

f) The engineering model for the in-flight changeable filter is 95% complete. This model will be used for qualification testing upon completion. The results of a qualification test using a welded housing versus a casting as the flight hardware was questioned. P.E. stated that they will do an additional vibration test on the filter assembly to cover this question. The film change detector approach has again changed since the last reporting period. The concept now employs a film leader consisting of two sections of film -- one opaque and one transparent -- to the IR spectrum. The logic circuit has been modified from the original concept to correct the problem resulting from black-and-white film and color film having different transmissibility characteristics.

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6. P.E. has compiled a new list of design changes for simplification of the mechanical aspects of the system. This will be reviewed at P.E. the week of 29 June.

7. A briefing was given by Mr. Ordway Gates of G.E. at Headquarters on the capabilities of the General Electric Company to expand from an RV contractor to a systems capability. (Messrs. and were also present.) The briefing was oriented from a technical viewpoint with no information on cost or schedule control or overall management capabilities.

8. P.E. has engaged in several parallel studies to determine the cause of the degraded performance of P-1 in Chamber "A". The apparent fixed offset, which generates in-track smear, has not yet been explained. The cause of the variable offset, which again contributes to in-track smear, has apparently been located. Tests, with a rotating optical bar in the balancing stand, have shown that motion exists in the folding flat of the correct magnitude to explain the problem. Further tests of a flat on its mount are being defined to identify the necessary design changes.

9. SBAC has shown concern that the shipment of the SV from Sunnyvale to Vandenberg AFB could expose the camera to an adverse pressure gradient greater than the 0.12 psi agreed to in the ICD. There is no structural problem, as the system has two exceedingly large bleed valves (the OB seals), but a cleanliness question does exist. P.E. is defining a test to evaluate this problem.

B. Flight Unit No. 1

Testing of P-1 in Chamber "A" is in process. Tests 7, 8, 9, and 10 of Attachment I to the CEI Spec have been completed and formal acceptance testing will commence on 27 June. The system has a fixed in-track smear component which has not been explained but was compensated for by electrical biasing of the platen. Failure to correct this prior to flight will require that a Kluge box be flown. A variable in-track smear (discussed in the general section of the report) also exists which has not been

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corrected, but has been averaged. The metering capstan on OB B has a smear component of 6 to 7 times specification. When a better capstan is available, it will be retrofitted into the system and, at the minimum, in-air photographic performance will be evaluated.

C. Flight Unit No. 2

1. TCA retrofitting has been completed. The supply has been loaded with the Chamber "A" test film and is in the midsection.

2. A special series of tests is being conducted on 26 and 27 June at the TCA level to determine the extent of smear, if any. Early results are expected 29 June. Smear has been exhibited in boththe Development Model and P-1.

3. P-2 is in Ready Room B. Both platens have been modified and installed. The P-3 sequencer has been installed in P-2. Type 1414 film is being used. Verification of the platen modification is underway.

III. Meetings Requiring Participation of Headquarters Personnel

Date	Subject	Attendees
P.E.		
30 Jun - 1 Jul	FACI Review	
30 Jun	Focus Target Discussions	
1 July	Color Processing Installation Meeting	
7-8 July	TCA FACI Meeting	Kohler, Burks
14 ~~9~~ July	Technical Advisory Board Pre-Meeting	Patterson

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Date	Subject	Attendees
RCA		
29 June	TU 2, 3, & 4 Buy-Off	
Westover AFB		
1 July	Focus Target Data Reduction Meeting	

[redacted]
AD/PRS/OSP

Distribution:
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Cy 7 - C/PAD/OSP
Cy 8 - C/SB/OSP
Cy 9 - C/SS/OSP
Cy 10 - RB/OSP
Cy 11 - PRS/File
Cy 12 - PRS/Chrono
Cy 13 [redacted]
Cy 14

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