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BYE-108010-70
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31 July 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 51

I. CORONA

A. Accomplishments

1. The first half of Mission 1111 (CR-12) was recovered successfully at 1100 EST on 29 July 1970. The forward-looking camera film had been processed by early A.M. 31 July 1970. A look at low magnification, 7X, reveals no gross problems; however, weather was a little heavier than expected (about 70% cloud free). A quality assessment under high power magnification will be made this week-end. The aft looking camera film was in processing by 0600 today.

2. A small team is at EK to look at the results of the first half to see if any improvements are possible by use of alternate filters, 7 thousandths of an inch thick glass. The Itek Visual Edge Matching technique is being used for the first time operationally for this analysis. The glass filters were used on engineering passes during the first half; however, if improvement is noted, these filters may be used as primary during [redacted]-2.

3. The collimator has been moved to Building 152 and assembled. The optical equipment is being relocated. The estimate for checkout of alignment is by 3 September 1970. Estimated readiness following block calibration using CR-[redacted] is the week of 10 September. The shaker is ready for use. Weight and balance equipment is installed and checked out. AGE, test equipment, and miscellaneous fixtures are currently being moved.

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B. Problems/Planning

1. The dual data signal conditioner (DDSC) trouble was determined to be in the transistor. A new transistor will be installed. Circuit redesign has been completed. The redesigned circuit was verified on CR-13 DDSC sides 1 and 2. Drawings are being revised. This problem does not impact CR-13 or QR-2.

2. Following Mission 1111, the A/P personnel will be asked to review the OSTAMOD software used as a modular portion of the CASSANDRA software package. An attempt will be made to bring this software up to date based on current CORONA performance/specifications.

C. Projected Status

1. CR-13. Pre-storage preparation. Being prepared for shipment to Bldg. 152.

2. QR-2. Backup storage. Being prepared for shipment to Bldg. 152.

3. CR-14. Storage.

4. CR-15. Storage.

5. CR-16. Storage at Itek (Palo Alto). Being prepared for shipment to Bldg. 152.

6. CR-8. Being prepared for shipment to Bldg. 152. Buy-off is scheduled for 10-12 August 1970.

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SUBJECT: Photo Reconnaissance Systems Report No. 51

II. HEXAGON

A. General

1. A meeting was held at SAFSP on 27 July between the SPD, SPO, SSPO and Dr. Naka to assess the cost versus schedule risk of attempting to meet the 17 December 1970 first launch date, in view of the catastrophic failure of the original first flight camera. Gen. King succeeded in convincing Dr. Naka that the additional funding required to accommodate a three-shift, seven-day week was the correct trade-off. Accordingly, both the SPO and SSPO contractors will have to be granted additional FY 1970 funding by the NRO.

2. A meeting was held at EK on 30 July 1970 in a further attempt to resolve the film core pressure problems which have recently been plaguing the HEXAGON Program. The Project Office feels that insufficient management attention has been provided at EK to assure that the potential problems with winding large stacks of film would be minimized. Insight into the analytical and operational problems at EK by Project Office personnel has been spotty, at best, despite many efforts. Unless high level pressure is directed into this area at EK, further program impacting difficulties may be encountered.

3. The QA audits at Radiation and PE Aerospace have been completed by the special consultants group, and both companies received high marks. The Aerospace Division has no recommendations for improvement, whereas, Radiation is being requested to investigate four areas of possible future problems.

4. A series of meetings has been held between Headquarters and P.E. in an effort to agree upon the data reduction procedures to be employed in reducing the edge trace data from the focus target. The principle difficulty lies in the fact that the 3-D edge tragets used for assessment of dynamic focus are only marginally useful (if adequate at all) for a meaningful specification of focus position and the variability about that position.

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SUBJECT: Photo Reconnaissance Systems Report No. 51

An alternative target (100 c/mm periodic pattern inclined at a 13.5° angle) was included in the 0° collimator position for testing of S/N 002. Analysis of this target is currently in progress, and preliminary data indicates that the major problem of repeatability has been largely overcome. In addition, the basic configuration is inherently insensitive to most of the problems associated with the edge targets.

A third target configuration (narrow lines separated by large distances and inclinde) is currently being installed in the primary position of the A/45° and B/55° collimators for the Chamber "A" test of S/N 003. This target has the added advantage that, in addition to more accurately specifying focus position, it will provide test data with a target configuration similar to those to be deployed at the CORN sites during a mission.

Although work is continuing to draw out as much information as possible from the edge targets, Headquarters is working toward solving the problem through use of one of the new targets, thus ultimately avoiding the problem of agreeing on a technically unacceptable approach to the problem from lack of any other alternative.

5. EK rewound two SO-380 film rolls during the week which are scheduled for the Development Model (SDV-3) field testing. They are available 3 August for military airlift to the West Coast. The first calibration roll read approximately 600 ppi; the second, 500 psi; and the third, approximately 600 psi. The rewinds were, of course, sandwiched between the calibration rolls.

6. A take-up scheduled for use with the second flight unit was extensively damaged by the P.E. resident people at McDonnell. An "A" frame tipped over and fell on the take-up. SETS reviewed the accident and does not feel that there is any basic problem with the handling procedures or available space. The damaged take-up is being considered for use at Lockheed for R&I of the midsection until a Development Model take-up is available. It would then be returned to RCA for refurbishment.

BYE-108010-70
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SUBJECT: Photo Reconnaissance Systems Report No. 51

7. A review of the thermal testing in Chamber A-1 on the West Coast was held at SBAC on 28 July 1970. The 21-day SDV-III test, now planned, is adequate for confirming the SBA design and analysis. A problem was identified in that the acceptance test now planned for the Chamber A-1 is a 5-day test where the mid-and forward sections would be exposed to 70° only. The reductions of this test to this single temperature has an effect on the planning for the follow-on test programs at SSC. Discussions had been held concerning reductions of the Chamber "A" test at SSC to 70° only where it was assumed that the A-1 test be held over the entire temperature range. This test in Chamber A-1 would be a more meaningful test if the SS would be exposed to the entire flight and not just the TCA. Both SBAC and SPO indicated that the temperature level was open for discussion, but the length of the test, five days, was a firm number. PRS will develop an office position on whether to maintain our present Chamber "A" tests or whether to request a modification in the Chamber A-1 test and approach the SPO with this, if the latter alternative is a result.

8. A review of the horizontal baseline test run on S/N 003 at SSC was held on 31 July 1970. The presentation was not complete, as modifications for the test procedure had eliminated some tests and the review of earlier data on the same parameters had not been made. The major anomalies identified at this meeting were that the metering capstan velocities are still as much as three times the spec limit. SSC indicated that they have not defined their position on whether the fine tension rollers will be changed in this model to correct this problem (provided that this fix is positively identified). A second problem is that the present sequencer has one side out, and SSC intends to replace it after the Chamber "A" test. It was pointed out that in this event, the reverification test procedures must be approved by the Government in order for the vehicle to be acceptable. The raw data used in the evaluation of the horizontal baseline is now presently being reviewed by Project Office engineers.

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SUBJECT: Photo Reconnaissance Systems Report No. 51

9. A meeting was held between WCPO, Aerospace, [redacted] and SVIC personnel to discuss the form of equations to be used for providing NPIC with reduced vehicle attitude data. Final equations and methodology will be provided by SVIC on approximately 15 August 1970. Requirements and methodology of HEXAGON operations performance estimate software were discussed with SETS on Monday, 27 July. Initial software design and data management planning will begin on approximately 10 August 1970.

10. FIDAP software for smear analysis was successfully run at the West Coast Project Office using the auto-microdensitometer data from Dnabury and the microcomparator data from Westover.

III. MODEL STATUS

A. Development Model (SDV-III)

SDV-III was moved to the acoustic cell during the past week. Many minor problems were subsequently encountered in attempting to run the pre-acoustic vertical baseline, but were mostly associated with ADPACS and telemetry, and not vehicle hardware. The initial four sequences of the vertical baseline, which began on 30 July, look good from preliminary data. Acceptance and qual level acoustic tests are expected to be run on 31 July.

B. SV-1 (S/N 003)

Midsection

Chamber test preparations are underway. Several small problems came up during the week involving the 2A1 boxes and a slit and shutter cam follower bearing in Camera "A". Both 2A1 boxes which had an improper resistor in them (this was reported last week) were replaced on 29 July. The bearing failure occurred as a result of a LSFS connector being improperly installed. This bearing repair cost about 24 to 30 hours in the schedule. The sequencer must be repaired and is scheduled for 1 August.

C/HX // SECRET

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SUBJECT: Photo Reconnaissance Systems Report No. 51

Forward Section

Checkout of AVE cables continues. Six cables have completed R&I and three cables have been installed in the F/S structure. R&I has been completed on the active articulator. Completion of passive articulator R&I temporarily delayed while awaiting instructions from Danbury for retrofit of tray.

C. SV-2 (S/N 002)

1. There have been delays in selecting rollers for the fine tension sensors to improve the metering capstan performance. As a result, the model has been rescheduled. Ready Room "A" tests are now scheduled to start on 15 August with a projected ship date of 6 October, vice the previous ship date of 27 September.

2. A 300 arc second error has been found in the pin alignment on OB "A". The cause has not yet been determined. It appears that the cause of the in-track smear bias has been identified.

IV. Meetings Requiring Participation of Headquarters Personnel

Date	Subject	Attendees
P.E.		
5 Aug	ULE and VLR Coatings	
5 Aug	Spares Acceptance Meeting	
6 Aug	Film/Core Pressure Interface	

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SUBJECT: Photo Reconnaissance Systems Report No. 51

Date	Subject	Attendees
HORIZONS		
5 Aug	Contract Review (JC-3416)	Kohler
ITEK		
6 Aug	Contract Review (GP-607)	
RCA		
5 Aug	Buy-Off Take-Ups P3-1, P3-2	
NRO		
7 Aug	Color Task Force and GAMBIT Night Photography Briefing to Dr's. McLucas and Naka	
STC		
3 Aug	OOPS Meeting	
LMSC		
4 Aug	[redacted]-Day Countdown Meeting	
HQS		
4 Aug	ITT Briefing on Near Real Time	Patterson,
6 Aug	P.E. Briefing on Near Real Time	Crowley, McMahon, Patterson

/s/

AD/PRS/OSP

BYE-108010-70
Page Eight

~~C/HX~~ ~~SECRET~~

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SUBJECT: Photo Reconnaissance Systems Report No. 51

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