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Copy 10 of 14

4 September 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 56

I. CORONA

A. Accomplishments

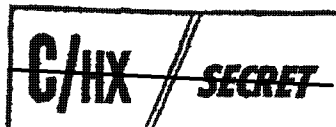
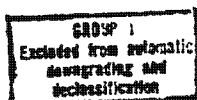
1. All systems now located at Bldg. 156 have acceptable Dual Data Signal Conditioners (DDSC's). The spare and CR-8's DDSC were completed on 3 September.
2. The DISIC/PMU Mods continue.
3. The collimator block is prepared for CR-13, the first system to be tested at Bldg. 152.
4. During ambient test, DISIC S/N 13 exhibited marks similar to the last two flight systems. This will definitely aid in determining the cause and providing corrective action. Film rub against the grid plate appears to be the primary cause.

B. Problems

None

C. Projected Status

1. CR-13. Review of Block results.
2. QR-2. Backup-holding.
3. CR-14. Block tests.

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4. CR-15. Functional tests.
5. CR-16. Acceptance tests.
6. CR-8 . CORONA test results acceptable; plan to ship 9 September.

II. HEXAGON

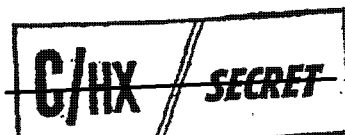
A. General

1. At an informal meeting with [redacted] SP-7, the WCPO described the desired sensor subsystem types of engineering operations and CORN target usage. A large number of engineering operations (with CORN support) is anticipated at the beginning of SV-1. The WCPO plans to send premission "CORN Alert" from Bldg. 156 after coordination with the STC; in-flight CORN traffic will come from the STC. At the same meeting, SP-7 summarized Col. Buzard's conclusions regarding SV-1's first full camera operation (Rev 16-COOK), and as a result the WCPO is preparing a set of proposed ground rules and a plan for sensor operations on the first flight. These will be sent to Headquarters for concurrence prior to further discussion with SP-7 personnel. There is general agreement between SP-7 and the WCPO on the first flight camera operations.

2. The FIDAP Software is being modified by the WCPO to better compensate for reader errors and film shrinkage in computing film velocity errors. The modified software is to be sent to Westover, Danbury, and Headquarters during the week of 11 September.

3. A meeting was held at the SCF with [redacted] personnel on 4 September at which was discussed the SCF ephemeris data available to support the HEXAGON pre-mission planning by the WCPO.

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4. Bob Gregory of IBM has been assigned to provide a software interface with the West Coast computer facility. His function is to work directly with the technical staff on 360 operating system problems. He will not be interfacing directly with computer facility users.

5. Version 18.6 of the 360 operating system has been installed and is performing satisfactorily. Release 19 has been announced by IBM. Version 19 has been ordered and will be system generated and tested in the next 45 days. Work will continue on Version 18.6.

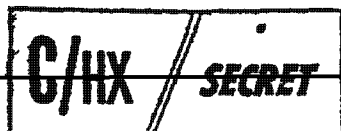
6. Messrs. [redacted] from OCS were given a tour of the West Coast computer facilities during this past week.

7. The high mean smear measured at the 55° collimator during chamber testing of S/N 003 was discussed with PE on 2 September. PE presented some data which they believe indicates that the mean smear did not, in fact, change, but was either a chance occurrence or something in the system that makes the error be at one end of its excursion at the 55° optical bar location. The amount of effort behind this analysis is unsatisfactory, and the explanation offered highly doubtful. The problem is that PE emphasis is being placed on the S/N 003 failure analysis, and the performance anomaly is being ignored. The Camera "A" platen has been replaced. If the cause of the problem was in the platen, it will not reappear.

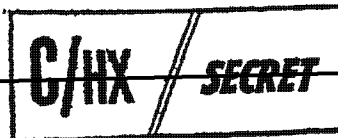
8. PE has been instructed to run a complete format illumination test on S/N 003. PE had proposed to run a reduced test to save schedule time. Inasmuch as the saving was only twelve (12) hours and the test was a CEI spec requirement, their proposal was not accepted.

9. PE presented their rationale behind recommending shifting the optical bar encoder (Type I) and the drive capstan encoder (Type III) from DRC (the present subcontractor) to Boller & Chivens for the follow-on procurement. DRC bid a fixed-price of approximately \$1.5M, while Boller & Chivens bid a cost-plus of approximately \$1.0M. Despite

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Project Office strong urging to retain at least the critical Type I encoder at the proven current vendor, PE persisted in their recommendation. The Project Office finally concurred, but will insist that the \$1.0M line item be used in the follow-on contract negotiation with PE.

B. Model Status

Development Model (SDV-III)

Testing has been at a standstill while troubleshooting of the Camera "A" takeup, film tracking, Camera "A" focal plane adjust, and Camera "B" platen problems took place. It was determined that a focal plane shift was definitely occurring on the "A" Camera due to spikes on the motor windings at camera power "off". It appears that this problem is caused by a power supply race situation similar to that identified on the DIU. SSC is investigating a possible design fix in the F and E Box. The Camera "B" film tracking was corrected by the addition of nylon bumpers to the crossover area. A broken wire was also located which had caused the Camera "B" platen to hit the stops. The Camera "A" forward film path was realigned and respliced and, in preliminary runs, tracked properly. The horizontal baseline test began on 3 September.

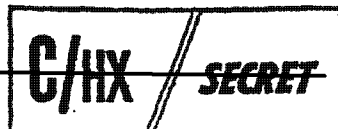
SV-1 (S/N 003)

Midsection

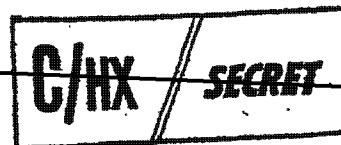
The symptoms of the same tracking problem which resulted in the S/N 003 Chamber A failure have reoccurred. Specifically, the Camera "A" supply steerer is going into saturation. The symptoms are intermittent. Isolating the problem will, therefore, be difficult. However, it would appear to be obvious that the tracking problem must now be found and corrected.

The only possible fix which has been identified is to restrict the motion of the crossover air bars in the supply exit vestibule. PE was able to force the crossover air bar to lock at the end of its travel

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by displacing the film about 0.2 inches as it came off the supply stack. The supply steerer output went into saturation when the crossover went into its stop. This may have been what happened when 003 failed in the chamber. However, a forcing function, which would cause the film to displace 0.2 inches, has not yet been identified.

PE is building up the supply, now scheduled for S/N 002, with stops to restrict crossover motion. This supply may be put on S/N 003 in an attempt to eliminate the tracking problem.

Forward Section

Preparations are underway for the functional testing of RV/TUA #4 which is installed in the F/S structure. Film stacking tests began on 4 September. R&I of TUA has been completed. Several system anomalies including brake drag, a builder roller malfunction, and possible misalignment of the roller assembly have necessitated the return of this takeup to RCA (via the MWC) scheduled for 8 September. A P-2 takeup now at the MWC and its associated RV will replace this rejected unit.

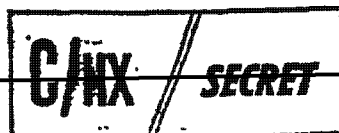
SV-2 (S/N 002)

The contamination (sand) problem appears to be under control. Contamination was found in the loopers, crossovers, and articulators. All rollers in the loopers and crossovers have been removed, cleaned, and replaced.

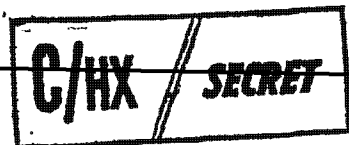
The metering capstan twice-per-revolution error has appeared. When good fine-tension-sensor rollers were put into the platen, the metering capstan error was unacceptably large. The runout on these rollers is on the order of 30 to 40 millionths, which should have eliminated the error. However, for schedule reasons, these rollers were not statically balanced at the vendor. If a large mass imbalance exists, the problem should, and apparently has, reoccurred. As confirmation, PE introduced a mass imbalance on one of the rollers and the error increased. The rollers have been sent back to the vendor to be statically balanced.

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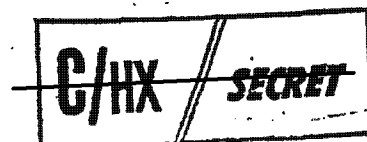
PE is now working two (2) full eight-hour shifts, five (5) days per week on this model. They had previously been working twenty-four (24) hours a day, seven (7) days a week. As a result of this and the continuing metering capstans problem, the ship date has slipped to 15 December.

III. ADMINISTRATIVE

A. Meetings Requiring Participation of Headquarters Personnel

<u>Date</u>	<u>Subject</u>	<u>Attendees</u>
<u>LMSC</u>		
8 Sept.	Contamination Sampling Meeting	Burks
9-10 Sept.	A&T IFWG	Burks
10 Sept.	SCF/PAD Interface Sub Group	[Redacted]
11 Sept.	Operations IFWG	[Redacted] Johnson
<u>WCPO</u>		
10 Sept.	Data Link Discussions	[Redacted]
10 Sept.	MACFACT Discussions	Burks, [Redacted]
<u>SCF</u>		
8-11 Sept.	HEXAGON Software Mission Planning	B. Johnson, T. Johnson, [Redacted] McMillan, [Redacted]

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<u>Date</u>	<u>Subject</u>	<u>Attendees</u>
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P. E.

Week of	Monitor S/N 003 Chamber "A"	
6 Sept.	Acceptance Tests	Various

B. Training

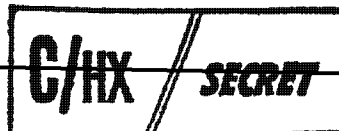
1. [] will attend the "Decision Theory Course" at Site A 8-11 Sept.
2. [] is attending the Mid Career Executive Development Course through 9 October.

[]
TPS/PRS/OSP

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Cy 12 - PRS/Chrono
Cy 13 - Mr. []
Cy 14 - Mr. []

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