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CORONA

HEX-10697-69
Copy 10 of 14
31 October 1969

MEMORANDUM FOR: Director of Special Projects

SUBJECT: Photo Reconnaissance Systems Report No. 12

I. CORONA

A. Accomplishments

1. CR-9. The V/H problem which appeared in early September recurred. The problem was attributed to the Hayden Timer in the V/H programmer. The timer was replaced, and the programmer was satisfactorily checked out in the thermal vacuum chamber at AP. The slit width programmer also timed out incorrectly. This anomaly was attributed to its Hayden Timer. The timer was replaced, and the new timer satisfactorily checked out. In view of these two cases, a review of Hayden Timer failures is being conducted. This review will include past data as well as recommendations for using a different supplier for the timers.

2. J-46 PET meeting was held 28 and 29 October. [redacted] and [redacted] represented the West Coast Project Office.

3. L/G R. E. Cushman was given briefings and tours at the STC, Building 156 and the AP. He was accompanied by J. J. Crowley, R. Singel and [redacted]

B. Problems

1. During CR-11 tracking tests, problems were experienced during the cut and wrap sequence; a buckle in the "B" take-up flange was the cause. Evaluation is being conducted to determine corrective action. "B" take-up flanges for all systems will be checked for flatness.

[redacted]

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2. In operating the supply cassette constant tension (CT) assembly it was noted that side loading was produced on the linear bearings which resulted in clattering of the CT assembly. A simple fix of repositioning the spring to eliminate the side load is underway. It will be tested in CR-2 and installed in CR-9, if tests are satisfactory. There should be no impact on the 26 November flight date.

C. Projected Status

1. CR-9. Flight Preps.

2. CR-10. HIVOS evaluation.

3. CR-11. Tracking Tests.

4. CR-12. Being readied for system tests.

5. CR-13. Main instrument mods.

II. HEXAGON

A. General

1. LMSC has commenced testing of SDV-1 and is currently debugging the software. The sensor subsystem electrical simulator (ES) is electrically mated to SDV-1 and is compatible. However, functional compatibility of the ES and SDV-1 has yet to be demonstrated. It is expected that the ES will be used functionally for the first time early next week (3-4 November).

2. SSTC #2 was bought off by P.E. at AC Electronics the week of 20 October 1969, and delivered to P.E. Danbury on 27 October 1969. Receiving inspection is in progress.

3. The EM #3 take-up now at McDonnell has significant EMC problems and has failed EMC qual tests. It is probable that it would affect system performance if it was run with a camera system. EM #1 is running with

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the engineering model and appears to be better. DM #1 does not have an EMC acceptance test, so if there is a problem, it may not show up until systems testing at SVIC.

4. A draft copy of the film specification was agreed upon this week at the working level among SSC, SSPO, SETS and E.K. It is now being rewritten at the Project Office for formal sign-off and issuance. Only two items are TBD--the products of inertia of each roll and the builder roller force vs. core pressure.

a. The products of inertia issue cannot be resolved without some additional testing. The testing done at E.K. on the Pelton machine on two rolls yielded inconclusive widespread data. The product of inertia is probably small enough to be lost in the experimental error of the measuring equipment and the instrumentation, but E.K. will not commit to any number without running a large statistical sample of tests, which is out of the question. SETS is studying the situation and trying to locate equipment other than the Pelton on which to run additional tests. There is still one qual roll left, so hopefully no more film will be needed.

b. The recent measurements of builder roller force (of the film spooling machine) vs. supply core pressure indicate no repeatibility but showed that the core pressure in some cases was significantly beyond the 550 psi limit specified by SSC. The highest core pressure measured so far is about 950 psi. As many as 3 cores may have taken a "set" because of excessive core pressure. The E.K. spooling team will begin next week to isolate and control all the variables in the winding process and will follow the matrix below to try and get some repeatibility:

Core No. 5021	Two windings at 10 lbs. tension, 50 lbs. BR force
Core No. 5002	Two windings at 10 lbs. tension, 50 lbs. BR force
Core No. 5021	Two windings at 5 lbs. tension, 15 lbs. BR force
Core No. 5002	Two windings at 5 lbs. tension, 15 lbs. BR force

Winding speed and tension will be constant. Lengths will be about 40,000' (with no splicing stops) to see if the pressure buildup is in the early portion of stack buildup.

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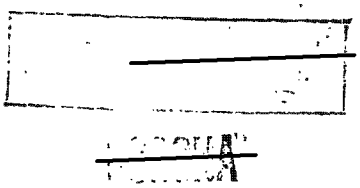
c. The cores and rolls which will be used in the supply qualification tests do not have core pressure data since they were spooled prior to the development of the measurement technique. The schedule is being examined to see what alternatives are available.

5. Since SSC has been experiencing an increase in film speed during processing, E.K. has been investigating MX 641, a chemistry which is thought to be more suitable for the test operation than the modified Versamat B chemistry currently being used. Additional analysis is necessary before E.K. is ready to nail down the exact formula and define the exact processing characteristics. In general, the 641 is cleaner, simpler and better suited to low imagery exposure, but the exact tradeoffs in speed and gamma are not yet known. The crossover characteristics between 641 and the operational (dual gamma) processing will also be defined. E.K. also agreed to include 1500 ft. of film in the same container as the large stack so that processing control strips of the same emulsion batch will be available for testing prior to supply loading.

6. Discussions were held with Col. Buzard regarding the quantity of the follow-on procurement. It was recommended to Col. Buzard that the follow-on procurement consist of six systems to permit time for the development and incorporation of Block II changes. This would then permit major changes to be made in System No. 13. Col. Buzard had originally planned to go out for procurement of ten systems, but agreed that because of interface implications in block changes six systems would be a more appropriate number. This will be discussed with General King at a meeting on 31 October.

7. P.E. reviewed their cost submissions for the FY 1972 through 1975 program costs. Their review showed that the costs which were originally submitted for these fiscal years were valid with the exception of a small mistake in the cost of subcontracts which amounted to a reduction of about $900,000. P.E. submitted a number of cost reduction items which would provide total program cost reductions over the period of the submission of approximately $54,000,000. These items are (1) the refurbishment of the take-up units; (2) the use of a CORONA vehicle after the third HEXAGON flight to allow for the early attainment of a



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backup vehicle which would permit the use of the next-in-line philosophy for spares; (3) a change in the "buy" to a "make" decision for all electronics; and (4) a reduction in subcontract management effort associated with a greater in-house effort.

8. A memorandum was prepared for transmittal to the NRO/Comptroller justifying a funding approval for facility funds. Present NRO approval is for $190,000 for liquid nitrogen. The Agency's initial request was for $1.75 million to cover not only the liquid nitrogen but also facilities maintenance and spare parts for facility items.

9. The new version of the SSC MTF program (not IBM compatible) has been converted and implemented on the Headquarters IBM 360/67 and 65. The program was further modified by Headquarters for implementation on the IBM 360/30 at Westover Air Force Base. The program has been successfully run at WAFB. The SSC CRYSPER program (not IBM compatible) has been converted by Headquarters and implemented on the Headquarters IBM 360/67 and 65. A listing of the IBM 360 version has been sent to E.K. for validation of Headquarters application of CRYSTAL BALL. Headquarters is now in the process of replacing the SSC elementary orbit determination routine with OSTAMOD so that the STC orbital elements can be used. Several runs have been made to generate data in support of SSPO studies. The CRYSTAL BALL program received from E.K. and the SSC performance prediction program continue to be used at Headquarters to generate data in support of the SSPO studies.

10. A total of 21 interferograms from the EM and DM (same ones have also been sent to Westover) along with the corresponding optical path difference (OPD) maps have been received from SSC. All of these have been processed by the OPD and MTF programs at Headquarters and are being compared with SSC results.

11. Considerations are continuing for incorporating the SSC Qualification Test Program Document (PM-1188-X) into the revised system performance specification qualification test requirements (SP-621-0001-C Appendix F). Direct substitution is not possible, pending incorporation of Headquarters comments and policy into the revised PM-1188-X as well as the retention of significant policy statements in the basic specification.

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B. Engineering Model

1. The engineering model continues to exhibit problems due, in part, to short cuts taken in the earlier stages of assembly. P.E. is, consequently, avoiding this same approach with the development and flight models.

2. A severe leakage problem in the film path detected earlier in the week raised doubts as to the ability of the engineering model to run a meaningful film sticking test. The leakage has been decreased considerably through patching of a hole in the tangential link housing and film drive and tightening of joints in the supply and film exit vestibule. This effort is continuing, and the probability is high that the sticking tests will be conducted.

C. Development Model

The development model is continuing to have problems. The A camera does not function correctly since the clean up of the harnesses. It is now showing negative slack against the delivery date. P.E. agreed to submit immediately a get-well plan for eliminating the negative slack, for Project Office review.

D. Flight Article #1

Optical Bar A is scheduled to be in the frame by 7 November. Sealing of the bar is the critical path. Looper B, Platen A, and Film Drive A are also planned to be completed by 7 November 1969. Optical Bar B went into Chamber D for final test on 29 October. The TCA is on schedule to a 2 December completion.

III. ADMINISTRATIVE

A. Personnel

1. [redacted] reported for duty on 27 October 1969. He will EOD at West Coast Project Office approximately 26 November 1969.

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2. The following personnel will be on annual leave:

a. Mr. [redacted] - 3-4 November.
b. Mr. Burks - 4-7 November.

B. Meetings Requiring Participation by Project Personnel

Date	Subject	Attendees
PERKIN-ELMER		
5 Nov	ITT Test Sequence Review	[redacted]
5-6 Nov	EMC Coordination Meeting	
LMSC		
5 Nov	Elec. Distribution and Power CDR	
EK		
4 Nov	Despooling Review	
WESTOVER AIR FORCE BASE		
5 Nov	Development Model, Chamber D Test Results Meeting	Kohler
ITEK		
3 Nov	"C" contract negotiations (CR-8 Refurbishment)	[redacted]
HEADQUARTERS		
5 Nov	Management Discussions	Patterson, [redacted]

[redacted]

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Date	Subject	Attendees
HEADQUARTERS (continued)		
6 Nov (AM)	Super Looper & Caging Proposal Meeting	Patterson, [redacted]
6 Nov (PM)	SETS Block II Concept Review	Patterson, [redacted]
MWC		
6 Nov	EMC Testing Review	[redacted]

[redacted]
PMO/PRS/OSP

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cy 12 - OSP/PRS Chrono
cy 13 - [redacted]
cy 14 -

DDS&T/OSP/PRS/[redacted] X5725 (31 October 1969)

[redacted]