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BYE-108177-70
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28 August 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 55

I. CORONA

A. Accomplishments

1. The PET Team met at NPIC on 25 and 26 August to evaluate Mission 1111. The PEIR twx has been prepared. In summary, NPIC reported that the PI suitability for Mission 1111 ranged from good to poor with the larger portion in the good to fair category. NPIC stated that the image quality variability was attributable to the variations in acquisition altitude (88 nm to 147 nm) and to adverse weather conditions (cloud cover approximately 30%). The PET concurred with the NPIC comments and noted that Mission 1111, except for weather and altitude variations, produced the most consistently fine imagery of any CORONA system flown. A major contributor to the fine performance of this system was that the focus was extremely crisp on both cameras throughout the Mission. Clear weather imagery held together well at 100X magnification and CORN target readings were magnification limited at 100X by available increments of the light table microscopes. The MIP's of 105 assigned to both 1111-1 and 1111-2 were considered extremely good for the acquisition altitudes. An NPIC comparison of camera system resolution based on CORN analysis showed that Mission 1111 was equal to or superior, in achieved on-orbit resolution, to Mission 1104 and 1106. Those are the only two Missions which have achieved higher MIP's. The mean level on-orbit resolution of both forward and aft cameras was estimated at near the peak level of this system's (CR-12) capability (120 - 160 l/mm).

GROUP 1
Excluded from automatic downgrading and declassification

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2. The Dual Data Signal Conditioner (DDSC) mods are continuing. Four have been completed and the remaining units should be accomplished during the next reporting period.

3. DISIC/PMU mods are in progress.

4. Collimator block preparations are in final phases. Consoles are being installed and preliminary checkout of the block is in progress. Expected completion date is 1 September 1970.

B. Future Activities

Next flight date is scheduled for 18 November 1970.

C. Projected Status

1. CR-13. Block preps.

2. CR-2. Backup preps - holding.

3. CR-14. Storage preps.

4. CR-15. Functional preps.

5. CR-16. Receiving inspection.

6. CR-8. Still at Itek to negate corona discharge on one camera. Optimistic ship date is 4 September.

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II. HEXAGON

A. General

1. The thermal/dynamic tests of a film stack, which are designed to determine if a 250 psi core pressure will allow film stack deformation to occur during thermal/vac system tests, have been initiated. Preliminary results of the 40°F tests indicate no deformation beyond spec limits of the stack nor decrease of the core pressure. The stack will be returned to 70°F over the weekend, a complete configuration check will be made, and the high temp (100°F) test will be initiated. If this series of tests shows no deterioration because of temperature changes, the stack will be despooled to 25K feet and the test repeated. This latter configuration more accurately represents the film when 47°F system tests are conducted in Chamber "A".

2. The dynamic tests of an oversize (66.6"D) film stack with a core pressure of 520 psi have begun. A low level (0.25 "g") resonance search indicated a high level of structural integrity of the stack. A full configuration check will be made today and a qual level (2.5 "g") test will be conducted Monday. Successful completion of this test is considered as demonstration of feasibility of caging deletion. An overtest to determine margin (4 "g") will be take place by 4 September 1970.

3. The P3-1 take-up was bought off at RCA on 25 August. As a result of the Government refusal to accept this take-up several weeks ago, RCA has considerably improved their quality control organization. The head of quality control now reports to the vice-president, and RCA has improved their test coverage. A roller rundown test has also been implemented as part of acceptance.

4. The two film rolls for S/N 003 reload are planned for delivery 31 August. Delivery had been planned for 28 August, but a light streak which appeared after processing was discovered at two points in the second roll. The streak extended for the first 3,100 ft.

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and for about 1,000 ft. at the 85,000 ft. point. These defects will be cut out and the roll rewound. The first calibration roll was wound at 37 lbs. builder roller force and 7 lbs. film tension and has an average core pressure of 260 psi. The middle calibration roll was wound at 37 lbs. builder roller and 10 lbs. film tension and had an average pressure of 475 psi. At this writing the final calibration roll core pressure is not known. EK brought out that the film winding conditions are changed to tune the spooling machine rather than affect the core pressure.

5. The chemical waste disposal method at the West Coast processing was checked to ensure that a pollution problem similar to Danbury's would not occur. The waste in Danbury was dumped untreated into two ponds behind the building. The West Coast lab's waste is piped through an appropriate sewer system to a treatment plant. Several other labs in the LMSC complex use the same system. No problem is expected here.

6. HEXAGON Operations Performance Evaluation (HOPE) software specification has been completed and should be available for SETS early next week. Anticipated completion date for this software is Mid-November 1970.

7. Final HEXAGON Reports Control Manual (RCM) inputs are being prepared by WCPO personnel. These inputs will be transmitted to the SOC via courier not later than 3 September.

8. Version 18.6 of the 360 operating system has been in production since 24 August. Progress in converting to this system is highly satisfactory. Currently OSDEBE must be modified to operate in the new environment. The modification will be completed prior to 4 September. Until the modification is complete, IEBGENER will be used to copy magnetic tapes and to duplicate card decks.

9. Current dates for availability of the CALCOMP plotter:

Hardware - 4 September
Software - 18 September

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This should enable us to have a plotting capability by 22 September. A programming class to explain the plotter functions and the associated software will be conducted the week of 9 September.

10. A meeting was held at SSC on 27 August to review the problems associated with the latest 003 failure and to establish a course of action. After reviewing the situation, P.E. was instructed to proceed with the following:

a) Replace 003 Side "A" platen with Side "A" platen from 002. This will provide an improvement in smear performance of about 4 to 1.

b) Replace all black boxes except the MFA box, which was scheduled for replacement after Chamber "A" tests. These boxes will be replaced and tested prior to commencing acceptance tests.

c) Replace the 003 supply with the 002 supply.

d) Rerun all chamber acceptance tests at 70°, 47°, and 93°.

Based upon the above changes, a revised schedule was prepared which indicates time lines through 26 October for the shipment date.

11. A review was held with [redacted] of SSC on the Field Inspection Reports listed in the West Coast Project Office report on QA problems in the field. The review indicated that there were some problems between the QA organization at Danbury and the QA organization in the field in the way of assuring adequate communication of changes. Many of the items reported by the field were, in fact, changes or information on drawings which had not been followed by the field but which were correct according to the drawings. A number of the items were an engineering problem rather than a QA problem; i.e., the items were in accordance with the drawings which were provided to QA for audit but were not consistent with the configuration of the system. These have all been corrected through ECO's.

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12. SSC stated that they were planning to go to Boller & Chivens for encoders 1 and 3 vice continuing with the DRC contract. This decision was based on evaluation of proposals submitted by B&C and DRC which indicated that B&C could manufacture and deliver the follow-on encoders for approximately on-half million dollars less than DRC. It is planned to authorize P.E. to proceed with this change in make/buy.

III. MODEL STATUS

A. Development Model (SDV-III)

1. After a delayed start due to supply loading (into the MS) problems, an attempt was made to run the creep test to pull the splice through. The system tracking had to be controlled by hand (to prevent ESD). The film path was inspected and the film was found to be leaving the supply exit vestibule in an offset condition on the "A" side. However, after several creep runs the offset coming out of the supply disappeared and tracking during two subsequent creep runs was O.K. The next test scheduled was the horizontal baseline. The system entered an ESD condition on the "A" side after the second sequence due to a tension problem. A review of the T.M. data indicated a take-up problem. The forward most RV heat shield and cannister were removed, and the film was observed to have jammed against the side of the take-up. After documenting the condition of the film, the film was removed from the TU. Roller alignments were checked, and another attempt was made to run the system. The film started to mistrack and the system was shut down.

2. After a review of the test data, another run was made; this time the system tracked properly. It should be noted that mistracking occurred in this same TU during FS buildup. The WCPO is concerned over the system tracking problems and no one answer can explain the various problems encountered during FS buildup and system test. Several potential contributors are listed below:

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a) steerer malfunctions
b) roller alignments
c) film stack problems
d) builder roller parallelism and pressure
e) roller wrap angles
f) splice problems

13. Perkin-Elmer is investigating the cause of the large mean smear at the 55° collimator during tests of S/N 003. One possible cause is the modulation computer (1A2). The cause needs to be determined and corrective action taken before chamber testing recommences.

B. SV-1 (S/N 003)

Midsection

1. S/N 003 has been removed from the chamber. Electronic box and supply replacement is underway. The acceptance test sequence will be rerun. The following electronic boxes will be replaced:

2A1	-	Platen Servo Recycle
2A3	-	Metering Capstan Electronics
3A1 A & B	-	Film Drive Capstan Elec.
6A2	-	Supply Servo
8A1	-	Uncage Command and Control
15A1	-	Interface Sig. Condit. & Control Unit (ISCCU)
16A1	-	Data Logic and Fuse Box
13A1	-	Sequencer

P.E. does not now plan to change the 1A1 box for reasons that the Project Office feels are invalid. This change is necessary to control phasing of the Optical Bars. Unless a valid reason is presented to the P.O. by COB todya for not changing this box, they will be directed to make the change.

The 17A1 (Measurement Filter Assembly) will not be available until 15 Sept., which means it must be retrofitted after chamber tests.

The "A" side platen is being taken from S/N 002 and will be put in S/N 003.

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2. Current schedule shows P.E. will commence in-air tests on 8 September.

3. The two film roll remnants in S/N 003 were examined and found to be in very good shape.

Forward Section

Assembly of the S/N 003 forward section is underway with RV No. 4 and articulator no. 3 now installed in the F/S structure. Retrofit of active articulator is in progress. MWC has completed RV retrofits and TUA's have been reinstalled in RV's.

C. SV-2 (S/N 002)

1. Acoustic testing of the TCA was completed this week. During the past test inspection of the TCA, Perkin-Elmer found a significant amount of what appear to be sand in one of the crossovers and looper. The thought is that sand was introduced when looper covers were sand-blasted during a rework cycle. They have not found any sand in bearings which have been examined. P.E. is cleaning the elements of the TCA and they feel they can successfully do so and proceed with a minimum impact.

2. Both the supply assembly and platen "A" are being removed from S/N 002 for use in S/N 003. The schedule impact has not yet been determined.

IV. Meetings Requiring Participation of Headquarters Personnel

Date	Subject	Attendees
SBAC		
4-11 Sept	SDV III Testing	
10 Sept	SCF/PAD Interface Subgroup Meeting	

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Date	Subject	Attendees
WCPO		
3 Sept	HSSOP Review	[redacted]
EK		
3 Sept	Chemistry Review	
P.E.		
2 Sept	Chamber "A" Data Review	[redacted]
Hqs.		
31 Aug	Test Program Review	[redacted]
2 Sept	Test Program Review	

[redacted]
TPA/PRS/OSP

Distribution:
Cy 1 - D/OSP
Cy 2 - DD/OSP
Cy 3 - D/PRS/OSP
Cy 4 - EO/OSP
Cy 5 - C/D&AD/OSP
Cy 6 - CS/OSP
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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