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30 January 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT: Photo Reconnaissance Systems Report No. 25

I. CORONA

A. Accomplishments

1. The Thermal Meeting at Headquarters on 23 January finalized CR-11's UTB approach. The desired temperatures are expected to be maintained by trimming the thermal tape pattern and closing the launch window. Spacecraft heaters will not be installed for this mission. Additional thermal studies are continuing for any impact on future missions.

2. Mission 1109 orbit was selected, consistent with the desired thermal control. It will be a 19-day mission, at an inclination of 88°.

3. Dr. Martin, PSAC Secretary, received a CORONA briefing and a tour of the AP on 27 January.

4. Itek's recommendation to modify the constant tension assembly by incorporation of double negator spring was reviewed and approved.

B. Problems

1. Investigations of CR-10 slit width and "ramp up-ramp down" problems continue. Slit width problem was attributed to a faulty clutch assembly. The clutch is being replaced. "Ramp up-ramp down" time differential appears to result from the drive motor amplifiers.

2. CR-13 tracking tests reveal interference between the film path and the SRV "A" water seal and between the film path and the SRV "B"

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felt pad. The water seal position will be adjusted, and the felt pad will betrimmed to provide adequate clearance.

C. Projected Status

1. CR-10. The clutch is being replaced. High efficiency amplifiers are being evaluated as replacements for those in the drive motor.

2. CR-11. Flight Preps.

3. CR-12. Block Tests.

4. CR-13. Tracking.

5. OR-2. Acceptance at Itek.

II. HEXAGON

A. General

1. The collimators and associated equipment for the A-2 chamber arrived at Building 156 on 29 January.

2. Dr. Martin, PSAC Secretary, was briefed on the SBAC HEXAGON Program and toured Building 156.

3. The Project Office has established a team to independently assess the performance of the metering capstans tested by Perkin-Elmer to date. The primary objective of the team will be to verify the Perkin-Elmer claim that the metering capstan problems are now understood by Perkin-Elmer, and that the problem is under control. The team members are [redacted] Project Office; W. Brindley and D. Saulson, SETS. The review will be completed the week of 16 February.

The team met with Perkin-Elmer system analysis representatives on 29 January. Bench test data taken on the engineering, P-1 and P-2

model metering capstans, and development model system level data was reviewed. Copies of Perkin-Elmer memoranda describing the tests and the raw data are being made available for the team to evaluate.

The metering capstan bench test equipment was reviewed. The "test station" consists of a breadboard of the metering capstan servo electronics supported by standard test equipment (power supplies, bandpass filter, etc.) interconnected with clip leads. Flight metering capstan motors and encoders are tested at this station using a fly wheel inertia and by changing the gain in the breadboard electronics. In response to a question relevant to QC control, the responsible design engineer indicated that the test was run by design engineering and that QC "trusts them".

4. Perkin-Elmer recommended at a meeting on 29 January the deletion of some instrumentation on the follow-on procurement. The recommended deletions are the two multiplexers used to acquire ascent vibration data and the optical bar mounted DDAS used to acquire optical bar thermal data. The deletion of the vibration instrumentation assumes that some SBA vibration data at typical SS attachment points in the supply compartment, midsection, and forward section will be available. A few thermal sensors from each optical bar will be brought through optical bar slip rings. The deletion of the DDAS will reduce the number of thermal sensors on each bar from thirty to about three. The deletion of the above will result in a hardware subcontract cost saving of approximately $100,000 per system. Total cost savings will probably approach $200,000 per system.

5. Perkin-Elmer's redistribution of their disturbance budget was reviewed on 29 January. Perkin-Elmer had data only in those areas where an increase over the ICD limits was requested. No information was provided in those areas where a decrease is in order. In most instances this will not cause a problem as informal discussions between Perkin-Elmer and Lockheed indicated that Lockheed can accept the increases. The one exception is a large increase in pitch axis periodic torques resulting from film drag on the air bars. (The drag level will induce an offset on the supply tension dancer which will generate supply torque disturbances.) As SET's LIFTS analyses are not in agreement with Perkin-Elmer's, this problem will not be identified to Lockheed until the differences are resolved.

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6. The decision was made during the week to bring the two 40% film RH rolls back to Danbury from the West Coast in mid-February and reload the Development Model after the three axis vibration tests. This is necessary since Eastman-Kodak's delivery schedule was slipped because of a poor emulsion batch.

7. Perkin-Elmer's slow turn around of shipping containers and associated hardware for film deliveries is jeopardizing Eastman-Kodak delivery schedule. This problem has been repeatedly called to Perkin-Elmer's attention in hopes that they will do something about it. The first roll of P-1 test film is currently scheduled for delivery on 2 or 3 February, but this cannot be met unless Perkin-Elmer responds with the appropriate hardware by that time. The need date for this P-1 roll is scheduled for early March so no schedule slippage is expected.

B. Development Model

1. The film exit vestibule has been returned after a rework to stiffen the tension roller mount.

2. An erroneous reading is occurring on the looper position which is caused by oscillation of the looper and results in perturbation to the supply torque. The cause of the looper oscillation has not been identifted but several fixes are being considered. Among them are a cabling change to read the looper position at a different time, or the addition of a satellite box to smooth the looper signal. A decision is required by early next week.

3. If a satellite box is the fix to the above problem, the Development Model configuration will include two satellite boxes and ten cabling modifications (connector saver fixes) which are not flight type.

C. Flight Article #1

The midsection, two camera assembly and supply are all planned to be ready for start of system assembly on 20 February. Perkin-Elmer

expects the midsection back from SBAC on 2 February. Delivery date of the flight article is now planned for 30 May. This includes time for EMI qualification testing but does not include thermal vacuum qual testing in chamber A at 40 and 100°F.

III. Administrative

Meetings Requiring Participation of Headquarters Personnel

Date	Subject	Attendees
NPIC		
5 Feb (1000 hours)	COMIREX UTB Briefing	Staff
6 Feb	Color Task Force	Kohler
HEADQUARTERS		
3 Feb	Cost/Manpower Review	Patterson, [redacted]
4 Feb	Color Briefing to Mr. Duckett	Kohler
4 Feb	FACI Description	Patterson, [redacted]
EASTMAN-KODAK		
3 Feb	Color Task Force Review	Kohler
RCA		
3 Feb	RCA Program Review	[redacted], Crowley, [redacted]

Donald W. Patterson
D/PRS/OSP

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DDS&T/OSP/PRS/[redacted]/x5725 (30 January 1970)

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