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BYE-109026-71
Copy // of 15
28 May 1971

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 94

I. CORONA

A. Accomplishments

1. CR-16 (Mission 1115) thermal taping was completed, and flight cams were installed.

2. LMSC personnel are providing normal mission preparation support for Mission 1115. This week has been spent in generation of camera operations for editing by the SOC. No problems have been encountered and none are anticipated.

B. Problems

The CR-15 SRV thrust cone disconnect was found to have a lanyard problem. The component was replaced and the discrepant part, along with a spare, was handcarried to the vendor's shop for disassembly and failure analysis.

C. Projected Status

1. CR-15. Flight preps.

2. CR-16. Pre-storage.

3. CR-8. Block preps.

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II. HEXAGON

A. Advanced Planning & Management Support Activities

1. Negotiations were conducted on 26 May with J. Ross, PE; [redacted], Headquarters, on the following cost associated CCR's: 174, 175, 181, 195, 196, 198, 201, and 203. The Headquarters offer was for $350K for all CCR's. The offer included $0 for CCR 174 (OB #14 Rework) and $240K for CCR 201 (level of effort to move two Chamber "B" collimators to Chamber A-2). The position was derived on the basis that the rework effort under #174 was within scope. Mr. Ross was not authorized to negotiate with zero allowance for CCR 174. Therefore, negotiations were broken off with the understanding that, if an internal PE agreement could be reached on CCR 174, the Headquarters offer would be acceptable to PE. Mr. Ross is to discuss the issue with M. Maguire.

2. Planning was completed for monitoring in the Control Room (6B02A) the SV-1 launch and initial orbital flight. Voice communication from the Vandenberg SLC-4E launch-pad control center will be provided. Display panels will include:

a. WTR activity status from R minus 14 through launch

b. Polar stereo maps depicting key orbit events from launch through first RV recovery

c. World map with tracking stations and path of first orbit with key events

d. Launch/ascent sequence

e. Recovery sequence of first RV

f. Booster and camera characteristics.

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B. Engineering

1. The Logistics Review at PSO was held on 26-27 May. Major conclusions were:

a. PE committed to have the spares financial picture completed by 15 June.

b. PE committed to have a schedule for spares reverification requirements documentation by 2 June.

c. PE will publish a plan for shelf life monitoring.

d. PSO is preparing to lay in the "consumables" to support the west coast operation.

2. RCA experienced additional film tracking problems and ran out of film. Kodak has responded by making five "squash" rolls and shipped them on 27 May.

C. WCPO

1. The fifth development rehearsal concluded on 23 May with SS activities concluding on 22 May, with vehicle and SS anomalies having been injected as part of the rehearsal. The problem solving teams, formed with the intent to coordinate this type activity, involved exceedingly large numbers of people, consumed much unproductive time, resulted in grossly inefficient and superficial analysis and produced late and, in cases, less than optimum recommendations and solutions. The above problems were recognized by all, and determination of appropriate procedures and coordination for problem solving activities is now being attempted.

2. The acceptance testing for the 'TUNITY modification for limiting the rewind velocity (RWV) to a specified range will be accomplished early next week. The output from the acceptance tests will be reviewed on 1 June.

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3. The PE/WCFO software personnel have concentrated their support this past week in providing the SN-004 MACFACT data to the government acceptance team at Westover and TRW personnel at Sunnyvale. No problems have been encountered.

C. Operations and Systems Analysis

Analysis results to date of the 70 degree Fahrenheit acceptance test on SN-004 in general indicate the photographic performance levels of SN-004 are not improved over past systems, particularly SN-002. There are specific performance anomalies that require further lanalysis to determine the effects upon performance acceptability.

The resolution data collected from CEI spec run 11 (V_x/h equals .052) with a slit width of 0.3 inches indicates that both cameras meet resolution requirements. The mean value data is as follows:

CAMERA A

	45°	0°	55°
IT	190 l/mm	238 l/mm	151 l/mm
CT	151 l/mm	194 l/mm	148 l/mm
GM	168 l/mm	214 l/mm	150 l/mm

CAMERA B

IT	192 l/mm	251 l/mm	126 l/mm
CT	181 l/mm	187 l/mm	188 l/mm
GM	186 l/mm	216 l/mm	154 l/mm

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The dynamic resolution data acquired during the thru-slit test sequence of run 14 is listed below to provide a basis for comparison with the above data. As is obvious, the purpose for the thru-slit test was to establish a data basis to assess quality degradation due to smear as the slit width was increased, particularly at the format position of both cameras requiring further analysis. This data shows that resolution improves significantly, with decreasing amounts of introduced smear. As the slit is progressively opened, both the in-track and cross-track resolution values decrease.

CAMERA A (45 DEGREE COLLIMATOR)

SLIT WIDTH	IT	CT
.22 inch	190 l/mm	157 l/mm
.30 inch	190 l/mm	151 l/mm
.45 inch	158 l/mm	142 l/mm
.60 inch	160 l/mm	115 l/mm
.91 inch	138 l/mm	121 l/mm

CAMERA B (55 DEGREE COLLIMATOR)

.22 inch	157 l/mm	161 l/mm
.30 inch	126 l/mm	188 l/mm
.45 inch	113 l/mm	154 l/mm
.60 inch	77 l/mm	157 l/mm
.91 inch	73 l/mm	144 l/mm

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Several key observations can be made from the above resolution data:

a. There is an apparent large disparity between the position of best focus for both cameras as set by PE and the thru-focus plots of the Westover data. During the 70 degree Fahrenheit test in Chamber "A," camera "A" best focus position was set at 86 microns and camera "B" was set at 127 microns. However, the Westover focus data plots show camera "A's" best focus to be at 98 microns with camera "B's" at 119 microns.

b. The thru-slit test accomplished the designed purpose, that of highlighting the cross-track problem on camera "A" at the 45 degree collimator position and the severe in-track problem on camera "A" at the 55 degree position. These data are disturbing in that the same problem areas existed on SV-1 (SN-003) and SV-2 (SN-002). Additionally, this test has substantiated the noted improvement in resolution between $V/_h$'s of .052 and .036 of the previous camera systems tested with regards to the test slit width (0.3 vs. 0.2 inch, respectively).

As with past systems, the PE and Westover sync-flash data are in general agreement. The raw and gravity corrected (in parentheses) data for $V/_h$ equal to .052 are as follows (all values in inches/sec):

CAMERA A

	45°	0°	55°
IT (mean)	.016 (-017)	-.003 (.005)	-.052 (-.011)
IT (2 sigma)	.051 (.051)	.029 (.060)	.068 (.068)
CT (Mean)	-.085 (-.059)	-.031 (.032)	-.041 (-.013)
CT (2 sigma)	.074 (.074)	.062 (.063)	.066 (.066)

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CAMERA B

	45°	0°	55°
IT (mean)	.062 (.014)	.017 (.019)	-.206 (-.167)
IT (2 sigma)	.040 (.040)	.041 (.041)	.041 (.041)
CT (mean)	.022 (.054)	.024 (.003)	-.054 (-.040)
CT (2 sigma)	.056 (.056)	.051 (.051)	.048 (.048)

The above sync measurements verify the amount of image smear introduced into the degraded in-track resolution values for camera "B" at the 55 degree position.

Twister marks are evident on camera "A" at the start of each operation with the scuff marks of varying intensity continuing throughout the operations. Additionally, corona markings ranging from light to heavy exist throughout the dual-gamma processed film on both cameras.

D. Model Status

1. SV-1 (MS SN-003)

The "Super Managers'" preship meeting which was held on 26 May resulted in a ready-to-ship decision. The platens were cycled an additional five hundred times with no report of the erratic summed error signal. This totals 830 consecutive platen cycles without any anomalies. At the conclusion of the platen cycling during a constant velocity run, the system went into emergency shutdown due to a tension change on the "B" side. The cause of the problem was a failure in the hub electronics on the #1 RV. A comparable box from the SV-3 forward section take-ups has been selected as the

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replacement. Shipment to VAFB is now expected to be on Tuesday morning. The reference SPO plan for the booster velocity meter is to make it redundant and fly it rather than wait until mid- to late July for a redesigned unit.

2. SV-2 (MS SN-002)

The system is undergoing pre-acoustic preps in the VIS. System should be moved to the acoustic cell on 2 June.

3. SV-3

a. Forward Section

Buildup activities have been somewhat delayed this past week due to SBAC modifications on the F/S structure. The following assembly activities are now complete:

(1) R&I of three TUA's complete - R&I of last unit is in progress.

(2) RV/TUA installed in Bay 4.

(3) The articulated steerer is installed.

(4) All passive articulators have been suspended in the F/S structure.

(5) Builder roller shim mods are in TUA's 014 and 021; shim mod for TUA 018 is in process.

b. Midsection (SN-004)

See paragraph II. C.

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4. SV-4 (MS SN-005)

"B" side tracking tests were completed on 23 May and "A" side on 24 May. The supply was replaced on 25 May, and MFN 3.05 was finished on 28 May. The midsection is in preparation for MFN 3.09 which will commence after SSTC is repaired (SSTC #2 suffered a failure of a counter timer). An internal data review was held by PE on 27 May 1971. The system is currently scheduled to go into Chamber "A" on 4 June.

5. SV-5 (MS SN-006)

All TCA tests were completed on 25 May. Preparation for tracking tests are now in process.

III. Meetings Requiring Participation of Headquarters Personnel

Date	Subject	Attendees
PE		
1 June	Spares, Tech. Cert.	[redacted]
2 June	Monthly Technical Meeting	Staff
4 June	SN-004 Acceptance	Patterson and Acceptance Team
Westover AFB		
2-3 June	SN-004 Acceptance Data Review	Acceptance Team
Vandenberg AFB		
1 June	SSTC Reverification	[redacted]
2-4 June	SV-1 Testing	[redacted] [redacted] (2-3 only)

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HQ

3 June	Advanced HEXAGON Planning	Patterson.

AD/PRS/OSP

Distribution:
Cy 1 - D/OSP
Cy 2 - DD/OSP
Cy 3 - D/PRS/OSP
Cy 4 - EO/OSP
Cy 5 - SA/IS/OSP
Cy 6 - C/CS/OSP
Cy 7 - C/PAD/OSP
Cy 8 - C/SB/OSP
Cy 9 - C/SS/OSP
Cy 10 - DC/D&AD/OSP
Cy 11 - RB/OSP
Cy 12 - PRS/file
Cy 13 - PRS/chrono
Cy 14 - NEPO
Cy 15 - WCPO

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