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28 JUL 1969

MEMORANDUM FOR: Director, CIA Reconnaissance Programs

SUBJECT : OSP's NRO Quarterly Report on NRP Satellite Systems

Attached for your consolidation into an overall CIA Reconnaissance Report is OSP's NRO Quarterly Progress Report. Two additional copies are attached for Dr. McLucas and [redacted] and one copy each of CORONA and [redacted] is attached for forwarding to [redacted].

[redacted]
Director of Special Projects

Attachments: a/s

SUBJECT: OSP's NRO Quarterly Report on NRP Satellite Systems

Distribution:

[redacted]

DD/S&T/OSP/PAD/[redacted] (28 Jul 69)

CORONA [redacted]
~~TOP SECRET~~

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CONTROL SYSTEM ONLY

QUARTERLY PROGRESS REPORT

SATELLITE SYSTEMS

1 April 1969 through 30 June 1969

I. CORONA PROGRAM

A. General

Maintenance of system reliability is of continuing concern during the phase down period, as experienced industry personnel are being assigned out of the program. Positive steps are being taken to attempt to reduce or hopefully eliminate technical anomalies which have occurred with increased frequency during recent missions. Discussions have been initiated with contractors to establish a more conservative personnel reduction rate and to enhance quality control procedures. A special report on these efforts will be submitted under separate cover.

B. Open Items From Last Quarter

Digital Shift Register (DSR) - CR-6 Anomalies

It has been determined that the DSR malfunction which occurred during Mission 1106 on Rev 9 [redacted] and Rev 22 [redacted] is not a design deficiency. The contractor analysis indicates no circuit changes are required, and no hardware changes are being made. The DSR assigned to Mission 1107 was subjected to special tests to recognize the anomaly if it occurred and to establish flight ready confidence. Over 800 command loads were initiated successfully during these tests. Software changes were made so that in-flight command loads would be generated with other than a "200" word in the first position, to identify the anomaly more easily if it should occur. Retransmission of the load can then be accomplished to obtain correct operations. A further software and procedural change has been found necessary as a result of Mission 1107 to prevent occurrence of cases which can shift the "200" word into the first position and preclude the desired TM verification.

C. J-1 System Status

J-44 Flight Summary

1. On 2 May 1969 J-44 (Mission 1051) was successfully launched. This mission was only the second in the CORONA series that was flown using a low inclination orbit and permitting ascending and descending photography. This type of orbit provided saturation type coverage of specific denied areas.

2. The Mission lasted a total of 17 days (one day longer than nominal). This extra day was available due to an unexpected bonus from the Agena batteries. During the Mission the only hardware anomaly which occurred was that the Horizon Optics failed to operate for 20 frames during Rev 7. It is believed that a particle of dirt caused a relay to fail for this short period--no action is recommended.

3. Photographically, this system did not produce the results that were expected. The PEIR reported that the photography

> "exhibits extreme image variability with overall quality of forward camera being poorer than an average J-1 Mission. The overall image quality of the aft-looking camera is somewhat better than the forward and exhibits examples of imagery comparable to an average J-1 Mission. In general, the imagery of both pan cameras is soft and lacks crispness and overall edge sharpness.
>
> The PI comment on suitability of 1051-1 ranges from good to poor with the majority in the fair to poor category. The suitability of 1051-2 ranges from good to poor with the majority in the fair category. Weather is considered a major degrading factor, hindering the readout."

Efforts have been directed to test and evaluation of the dynamic film behavior of J-46, the single remaining J-1 system. This, it is believed, will reduce the probability of similar results from J-46.

D. Ultra Thin Base Film - Testing

1. Since CR-5 (Mission 1105) Itek has conducted studies of UTB handling characteristics. A brief description of these tests and results is given below:

a. Random flatness errors appear similar for 3404 and SO-380 films;

b. Average lift increases in vacuum from ambient levels, and SO-380 has a larger increase;

c. The increase in average lift seems to be larger the first two days, when the moisture content of the film is highest;

d. No definite relation of magnitude of random flatness errors is observed between ambient and vacuum conditions;

e. Average lift is characteristic of a particular instrument;

f. Higher tensions tend to stabilize the SO-380 film during the first two days while drying is occurring.

2. Itek, West Coast, has also begun a series of film thermal/vacuum tests. The purpose of this test series is to study the tension--curl relationship, sensitivity, and moisture characteristics of certain types of film as a function of tension, temperature, and vacuum, using interferometry to measure the film distortion quantitatively. The second group of tests will study the effects of environment on film speed and granularity. The last test will study the change in moisture content of the film under specified environmental conditions, using a microwave detector to measure the moisture content. These tests are under way and are scheduled to be completed in early August.

3. CR-8 will be subjected to a Dr. "A" test during its environmental test in the HIVOS chamber. If results are acceptable, the system will fly with SO-380 in late October 1969.

E. Proposals and Future Changes

1. Glass Filters - CR-14 and up will use glass filters.

2. Splices - Ultrasonic splices tested thus far have proved satisfactory. Testing will continue this summer with a decision to be made sometime this fall.

F. Itek has delivered the final J-3 systems and has shut down the manufacturing and test facility in Boston. The Program direction and engineering support will be located in the Palo Alto Directorate and A/P on the West Coast. The Photoscience Group will be maintained in Lexington providing support to the CORONA Program.

General Electric has delivered the final order of SRV's, with only 17 forebodies remaining to be manufactured and delivered to A/P. G. E. is maintaining engineering and management support in Philadelphia with two persons in the field at A/P.

G. Deliveries to A/P

Main Instrument Deliveries

330/331	-	20 May 1969
332/333	-	11 April 1969
300/301	-	9 May 1969

H. Mission Completed This Quarter

Mission No.	1051
Booster No.	69-037
Agena No.	1649
Payload No.	J-44
Instrument No.	212/213
SI No.	D-115/122
DRCG No.	617
Film Type	3404
Flight Date	2 May 1969
Feet Payload Flown	32, 600 feet
Feet Payload Recovered	32, 600 feet
Recovery Dates	9 May 1969
	18 May 1969

[redacted]

I. Missions Planned for Next Quarter

Date	23 July 1969	17 September 1969
Mission	1107	1052
Payload	CR-7	J-46

J. Meetings and Briefings

1. Dr. McLucas was given a CORONA briefing and tour of A/P on 22 April.

2. Mission 1051 PET Meeting was held 4-6 June 1969.

[redacted]

NOTICE OF REMOVED PAGES

Pages 5A through 23 are not provided because their full text does not contain CORONA, ARGON, LANYARD programmatic information.