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LMSC
ADVANCED PROJECTS
QUARTERLY REPORT
APRIL THROUGH JUNE 1969

Prepared: 15 July 1969

TABLE OF CONTENTS

ADVANCED PROJECTS QUARTERLY REPORT JUNE 1969

1.0 SUMMARY

1.1 MISSION SUMMARY 1051

1.1.1 Mission 1051 consisted of the J-44 payload, launched into orbit by the Agena 1649 on 01 May 1969. The first stage booster was a Thor, Serial 544.

1.1.2 Booster performance and separation events were normal.

1.1.3 Agena performance was normal.

1.1.4 The orbital parameters were as follows:

Inclination	64.99
Apogee	188.72
Perigee	98.37
Period	89.54
Perigee Location - Deg. N.	58.85

1.1.5 The first mission was 7 days, with 6119 frames exposed, returned by air catch on Rev. 113 on 09 May 1969. The second mission lasted 9 days, with 6182 frames exposed, with an air catch on Rev. 256 on 18 May 1969. Photographic performance of both panoramic cameras, for the entire mission was fair to poor with the MIP given a rating of 80 for both missions. Net quality of the material was somewhat below that for recent missions.

1.1.6 The A-to-B transfer occurred normally. The OSFG, PMU and clock system operation were all normal. The units digit of the master cycle counter in the command instrumentation system failed to advance for 101 frames. S/I camera operation was normal.

1.1.7 The average temperatures during the first mission were seen as 88°F on the master camera and 86°F on the slave camera. On the second mission, the master camera saw a temperature of 67°F and the average on the slave camera was 67°F. The thermal environment achieved with this system was near the pre-flight predictions.

1.1.8 The recovery performance of both missions was normal. The drogue chute release on the -1 mission was .03 seconds late causing an impact dispersion of 47 miles south.

2.0 J-1 SYSTEM STATUS

2.1 ENGINEERING SUMMARY

2.1.1 Updated schematics and instrumentation list for J-44. Made thermal mods, provided launch preps technical support, conducted customer buy-off audit meeting and presented R-1 briefing at the launch base. Supported J-44 launch and mission. Normal post-flight reports are in process.

2.1.2 Completed analysis of the environment tests on J-46 (refurbish) and conducted storage audit meeting with R.O. representatives. System proceeding toward 3 September launch.

2.2 J-1 PROBLEMS

2.2.1 Flight material from both J-44 cameras showed out-of-focus areas near the end of scan. A correlation was made to slight anomalies in the auxiliary data in each case. One of these auxiliary data anomalies was noted on J-46 test material. An Aschenbrenner Grid Test (AGT) for film dynamic flatness on J-46 verified a film buckle condition which shifted the film about 3 mils from the correct focal position. Corrective action is being taken and another AGT will be conducted.

2.2.2 J-44 and J-46 water seals had to be shifted on B SRV capsule cover to eliminate P/L rubbing.

2.3 MANUFACTURING STATUS AND PROBLEMS

2.3.1 J44 Replaced W/S aft cover and completed thermal striping. Rework aft cover.

J46 Reworked aft cover and replaced the W/S.

3.0 J-3 SYSTEM STATUS

3.1 ENGINEERING SUMMARY

3.1.1 Continued Systems Integration Audit of CR-7. Flight configuration review to be completed 10 July. Completed analysis of the third environmental tests. Updated functional schematics.

3.1.2 Updated T/M design notes for CR-7 and CR-8 and Up.

3.1.3 Commutated data programming chart completed for CR-7 and Up.

3.1.4 Installing Temp Sensor on DSR Command Box, CR-10 and Up.

3.1.5 Added information to drawings for refurbishment of electrical disconnect (spin off) at A/P rather than at vendor.

3.1.6 Completed QR-2 refurbishment.

3.1.7 Added LOL/LCL requirements to applicable engineering drawings.

3.1.8 Effect of vibration on Boston servo mods under study. Provided technical support for checkout of S/C Servo mods and began preparation of Engineering Analysis Report. Released letter of recommended change in launch mode configuration of S/C power and qualification.

3.1.9 Provided technical direction for DSR analysis, troubleshooting and test requirements, and supported a two-day test of the DSR Command System with the Satellite Control Facility. All hardware and software sppear operational.

3.1.10 New wide-slot water seal design under study.

3.1.11 N_2 supply to S/C in work.

3.1.12 A draft report has been prepared on Corona system exposure criteria. The report presents twelve monthly exposure criteria as functions of solar elevation. These criteria are already in use for planning and flight purposes. The data are based on microdensitometer records of priority targets produced under Project Sunny I. Customer representatives have reviewed the draft and requested publication as soon as recently available additional data can be incorporated.

3.1.13 AGE and Test Equipment

a. TUNA tape trimmer details released. Assembly in check.

b. Master vibration fixture released.

c. J-3 tilt sling in work.

3.2 J-3 SYSTEM PROBLEMS

3.2.1 An AGT was performed on the CR-7 system where the third generation lens in the forward camera (#315) requires more critical focus. The film lift data on this camera has been accepted by the customer but is considered marginal. Out-of-focus imagery may occur along the time word side.

3.2.2 CR-7 PMU had wrong orifices during HIVOS test. This problem was corrected prior to HIVOS re-test. PMU circuit was also modified for reliability improvement.

3.3 MANUFACTURING

3.3.1 CR7 EO's were incorporated in the transfer box.

CR8 Aft T/M box tape recorder mods and servo interface mods were completed. Arc suppression diode mods were completed on the transfer box and Haydon Timer reliability mods were completed on the slope and switch programmers.

CR9 Aft T/M mods, arc suppression diode mods and Haydon Timer reliability mods were all completed.

CR10 Three boxes were completed for a total of eight boxes complete and delivered. Tape recorder mods were completed on the aft T/M box (new mods are pending). Main barrel mods were completed. Arc suppression diode mods and Haydon Timer reliability mods were completed.

CR11 One box was completed making a total of four now completed and installed. Eight boxes were in Functional Test at the end of the quarter.

CR12 Structures were completed, inspected and delivered to Elec. Mfg. All harnesses were completed and inspected. Installation of harnesses was virtually complete at the end of the quarter.

QR2 Structure mechanical work was completed and the units were in inspection. Except for three units in inspection, all harnesses were completed. Five boxes were complete and two were in inspection following refurbishment and updating. The aft T/M was in work, ECD is 26 Sept 1969.
The command box and transfer box are to be built new. The switch programmer and the SLP conditioner are to be refurbished. All have ECD's of 26 Sept. 1969.

3.3.2 AGE Barrel Dollies - new rubber rollers were installed.

Universal Handling Fixtures - One was modified to make clearance for the additional fairing access door. The remaining two will be modified when available from Test.

P/L Simulator, S/N 03 - CR6 and CR9 mods were completed and the unit went to inspection.

P/L Simulator, S/N 06 - Mods were completed.

S/N 01 J3 C/O Console - CR6 and CR9 mods were in work, ECD 21 Aug. 1969.

S/N 05 J3 C/O Console - Mods were completed.

3.4 TEST

3.4.1 SYSTEM STATUS

CR7 In pre-flight preparations. Completed system pyro loading - SRV 50% pyro loaded.

CR8 Reacceptance functional. Performing power distortion tests. DISIC live run evaluation and acceptance.

CR9 Environmental.

CR10 Acceptance.

CR11 Boston Mods.

3.4.2 COMPONENT STATUS

CR10 Units

Aft T/M Box	- In Mfg. for E.O. Work
Fwd T/M Box	- Complete
Aft Power Box	- Complete
Fwd Power Box	- Complete
Pyro Box	- Complete
Slope Programmer	- Complete
SLP Conditioner	- Complete
Cycle Counter	- Complete
Transfer Box	- Complete
Switch Programmer	- Complete
Command (DSR) Box	- Post shake completed.
	- At Base for CPX test.

CR11 Units

Pyro Box	- Complete
Aft T/M Box	- To Mfg. for flow coat and rework.
Forward T/M Box	- Complete
Aft Power Box	- Complete
Fwd Power Box	- Complete
SLP Conditioner	- Complete
Cycle Counter	- Complete
Transfer Box	- Complete
Slope Programmer	- In test post shake
Switch Programmer	- To Mfg. - Rework
Command (DSR) Box	- Card A2 is in pre pot test. Cards A3, A5, A6, A7, A8, A9, A11, A12 and A14 are complete. A4 in Mfg. for potting. A1 to Mfg. (FEDR) Motherboard is complete.

3.4.2 COMPONENT STATUS (cont'd)

CR12 Units

Aft Power Box	- In test - pre shake
Fwd T/M Box	- In post shake test
Fwd Power Box	- In post shake test
SLP Conditioner	- In test - pre shake
Cycle Counter	- Complete
Command (DSR) Box	- Cards A3, A5, A6, A7, A8, A9, A10, A11 and A12 are complete. - A1, A2, and A4 are in Mfg. for potting. - Chassis not yet received. - Motherboard is in test pre pot.

QR2 Units

Fwd T/M Box	- In test - flight refurbishment
Aft Power Box	- " " " "
Fwd Power Box	- " " " "
Cycle Counter	- " " " "
Command (DSR) Box	- Cards A1 thru 12 are in pre pot test.

4.0 J-3 PROBLEMS

4.1 TEST

4.1.1 Time Lost

P/L	Days Required	Problems
CR-7	56	Lost due to Corona on main instrument, A.O. failure, Scanhead re-shimming, Boston instrument modifications, Dr. A tests, Re-HIVOS test and Re-tracking tests due to T/U changes.

4.0 J-3 PROBLEMS (Cont'd)

P/L	Days Required	Problems
CR-8	80 47 127	The 80 day lost time was due to holding for UTB retrofit kits. Dynamic tensions were run on system due to U. T. B. requirement. Both T/U's sent to Boston for re-setting tension due to UTB requirement.
CR-9	55	Lost time due to Servo mods, sent S/C and I. R. assembly to Boston for servo mods. Sent both T/U's to Boston for resetting of tensions. Retracking of system due to T/U change.

4.2 AGE

4.2.1 Electrical AGE:

- P/L Simulator S/N 02 - Returned to Mfg. for diode replacement on 7-2-69.
- System C/O Console S/N 05 - to be checked out upon completion of P/L Simulator S/N 02.
- Both items have been modified for CR-9 and up.

5.0 PAYLOAD INTEGRATION

5.1 DESIGN AND TEST INTEGRATION

5.1.1 Conducted pre-chamber and post-chamber critiques for J-46 and CR-7. Released STI test plan for CR-7 retest.

5.1.2 Completed consolidation of all A/P work statements into single document for F/Y 70 and provided support documentation for contract negotiations.

5.1.3 Revised SOP Q-105 to include reporting of flight failures in the FEDR system.

5.1.4 Released SDRD 053-1 for CPX with A/P command box and vehicle simulator at VAFB. Provided coordination with SV to support the test.

5.1.5 Continued coordination with SV for resolution of Blossom T/M frequency allocation. Awaiting waiver from [redacted]

5.1.6 Completed review of emergency flight preparations and released letter recommending need for gas loading panel.

5.1.7 Participated in review of Boston procedure recommendations. Initiated procedure changes and requested detailed Boston procedures in A/P format for CR subsystem testing.

5.1.8 Released the following SDRD's:

067 - Compatibility Test with Agena/Transit

068 - SRV Component Exchange

069 - CR-7 Hardware Changes for Flight with Split Load

6.0 COMPUTER SOFTWARE DEVELOPMENT

6.1 [redacted]

6.1.1 POSTPAS - Data Base Updating, Reporting
A major re-design has been completed and checkout at Headquarters. A minor anomaly has been discovered in the HPA "look-ahead" subroutine; it will be corrected by 8 July, when a short CPX will be conducted to establish DSR support readiness.

6.1.2 SETUP - Cell Acquisition Computations
Modifications to allow ascending operation cell-content determination are now in progress, due August 10th. No problems are apparent in meeting schedule.

6.1.3 SSWAP, SELECT
Ascending capability imposed minor modifications. These are complete, awaiting integration runs with SETUP.

6.1.4 WXEVAL - Cloud-cover Correlation
This program is designed to provide correlated forecast, verified (post-cast) and climatological cloud-cover probabilities as well as post-recovery photographic assessment data - "excellent" or "poor" evaluation - for all WAC 1:50,000 cells involved.

6.2 AREA HISTORY FILE (AHF)

6.2.1 Mission Contribution Summary

This AHF reporting function is still in design phase. Some schedule problem may arise.

6.2.2 Remaining reporting programs, on schedule. No problems so far.

6.2.3 File data anomalies (due either to design or usage) have been encountered; AHF overall will be affected unless this is found fairly soon.

6.2.4 A program to scan the History File and inventory its contents to detect contents destruction as quickly as possible has been produced and delivered.

6.3 MISSION SIMULATION PROGRAM, POINT HISTORY FILE

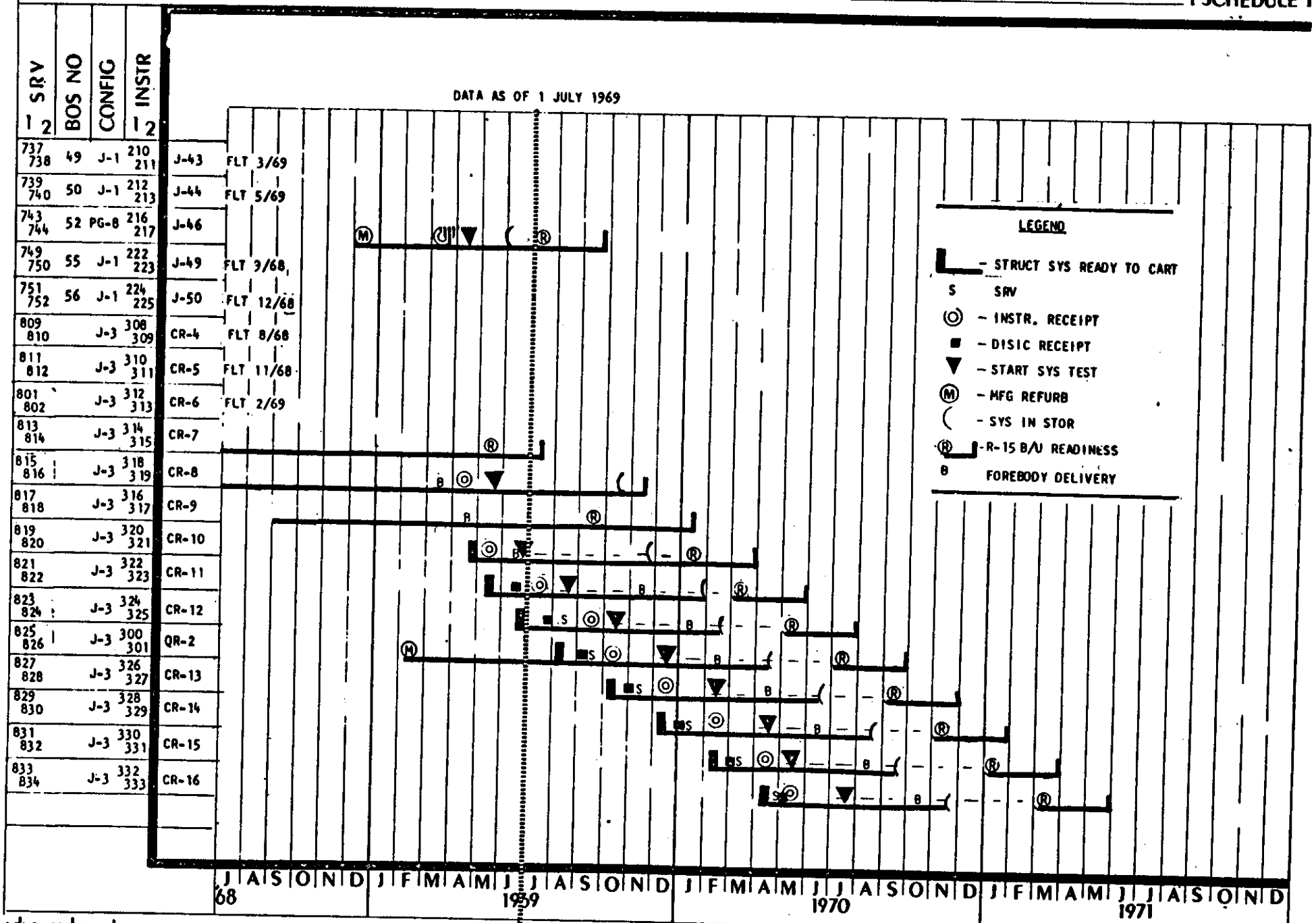
Although the requirement for a simulation program has not been defined (and apparently won't be), the effort is being continued in anticipation of its use if available.

The Point History File is suspended, due to lack of contents definition by the using community. In the event that the required definition is given at some later date, the programs and analyses can be continued from their present (preliminary) status.

6.4 Developed software program to automatically process and analyze the thermocouple data from the HIVOS chamber.

Manufacturing & System Test

SCHEDULE



J1-J3 Flight Schedule - contracted

FLIGHT SYSTEM		CR-6 FLOWN	J-43 FLOWN		J-44 FLOWN		CR-7		J-46	CR-8			CR-9		CR-10			
R-15 BACKUP							J-46	J-46	CR-8	CR-9	CR-9	CR-9	CR-10	CR-10	CR-11	CR-11		
STORAGE										CR-10			CR-11		CR-12			
MISSION		1106	1050		1051		1107		1052									
VEHICLE		1650	1651		1649		1652		1653	1655			1654		1656			
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A		
	1969																	

CR-11		CR-12		QR-2		CR-13		CR-14		CR-15		CR-16						
CR-12	CR-12	QR-2	QR-2	CR-13	CR-13	CR-14	CR-14	CR-15	CR-15	CR-16	CR-16	XX						
QR-2		CR-13		CR-14		CR-15 CR-16		CR-16		XX		XX						
1657		1658		1659		1660		1661		1662		1663						
M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1970								1971										

NOTES
1. 1652 AND UP REQUIRE TRANSFER TO EXPERIMENT 2 CAPABILITY
2. 1648 AND UP COMPATIBLE WITH NEW COM.SYS. (CR-6 & UP + ALL J-1 SYS.)
3. 1655/UP NOT COMPATIBLE WITH J1 SYSTEMS

40 - 50 estimated cost and fee - negotiated

[redacted]

[CUMULATIVE]

A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1966 1967 1968 1969

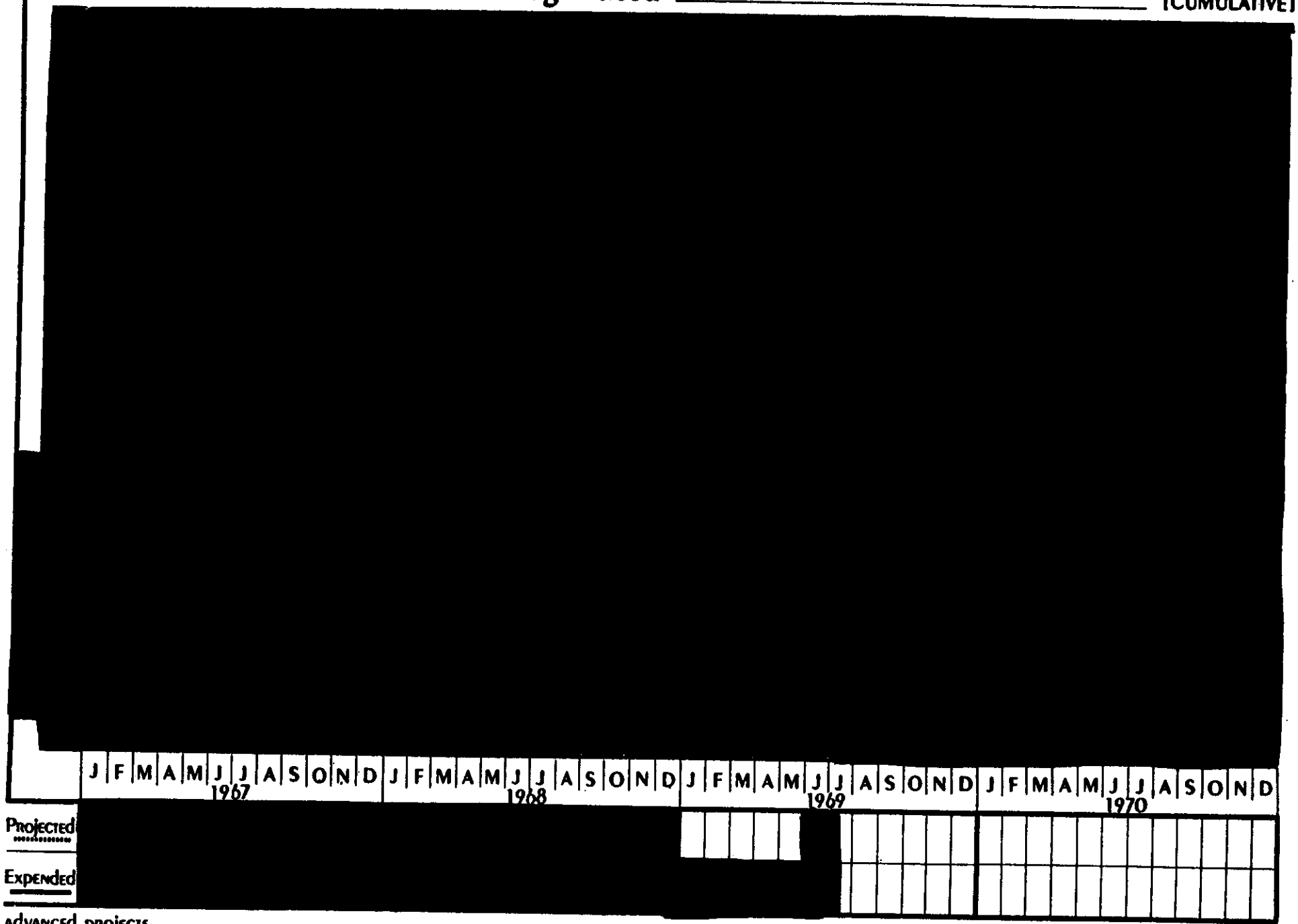
Projected

Expended

ADVANCED PROJECTS

ADMINISTRATION AND CONTROLS

J3 estimated cost and fee – negotiated [CUMULATIVE]



[redacted]

[redacted]

J3 FOLLOW-ON estimated cost and fee

[CUMULATIVE]

[redacted]

A | S | O | N | D (1967) | J | F | M | A | M | J | J | A | S | O | N | D (1968) | J | F | M | A | M | J | J | A | S | O | N | D (1969) | J | F | M | A | M | J | J | A | S | O | N | D (1970)

Projected [redacted]

Expended [redacted]

ADVANCED PROJECTS — ADMINISTRATION AND CONTROLS

JULY 1, 1969

LEVEL of EFFORT cost and fee - negotiated [CUMULATIVE]