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CORONA J

PERFORMANCE EVALUATION REPORT

MISSION 1011-1 and 1011-2

FTV 1170; J-3X

15 June 1965

[redacted]

Approved: [redacted]
Advanced Projects

Approved: [redacted]

TOP SECRET [redacted]

NO. [redacted]

FOREWORD

This report details the performance of the payload system during the operational phase of the Program [redacted] Flight Test Vehicle 1170.

Lockheed Missiles and Space Company has the responsibility for evaluating payload performance under the Systems Integration and "J" System contracts.

This document is the final payload test and performance evaluation report for Missions 1011-1 and 1011-2 which was launched on 5 October 1964.

[redacted]

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INTRODUCTION

This report presents the final performance evaluation of Missions 1011-1 and 1011-2 of the Corona Program. The purpose of this report is to define the performance characteristics of the J-3X payload system, to identify the source of in-flight anomalies and recommend the appropriate corrective action.

The performance evaluation was jointly conducted by representatives of Lockheed Missiles and Space Company (LMSC) and ITEK at the facilities of NPIC and AFSPPL. The off-line evaluation using Corona engineering photography acquired over the United States was performed at the individual contractors plants.

The quantitative data used for this report is obtained from government organizations. The diffuse density data, visual RES values and MTF/AIM resolution are produced by AFSPPL. The vehicle attitude error values, frame correlation times are made at NPIC who also supply the Processing Summary and MTF/AIM resolution reports published by [redacted]

Computer programs developed by A/P are utilized to calculate and plot the frequency distribution of the various contributors to image smear to permit analysis and correlation of the conditions of photography to the information content and quality of the acquired pictures. Computer analysis of the exposure, processing and illumination data provides the necessary data to analyze the exposure criteria selected for the mission.

SECTION 1

SYSTEM PERFORMANCE

A. MISSION OBJECTIVES

The payload section of Mission 1011, placed into orbit by Flight Test Vehicle #1170 and SLV-2A booster #421, consisted of two panoramic cameras, two Stellar-Index cameras, two Mark 5A recovery capsules and a space structure to enclose the cameras and provide mounting surfaces for all equipments. Figure 1-1 presents an inboard profile of the J-3X payload system. This Corona "J" system is designed to acquire search and reconnaissance photography of selected areas of the earth from orbital altitudes. The planned mission was two, four day photographic periods with no deactive period.

B. MISSION DESCRIPTION

The payload was launched from Vandenberg Air Force Base (VAFB) at 2150:15 Z (2:50:15 PDT) on 5 October 1964. Ascent and injection were normal and the achieved orbit within nominal tolerances. Tracking and command support was effected by the Air Force Satellite Control Facility [redacted] under central control of the Satellite Test Center at Sunnyvale, California. Mission 1011-1 consisted of four days operation and was completed by air recovery on 9 October 1964. The recovery sequence of Mission 1011-2 was attempted on pass D-112 however the decay of the unregulated power supply had reached a level that precluded recovery.

The comparison of the planned and actual orbit parameters is tabulated as follows:

ORBITAL PARAMETERS

Parameter	Predicted	Orbit 1 Actuals
Period (Min.)	90.87	90.80
Perigee (N. M.)	99.98	99.35
Apogee (N. M.)	244.86	242.68
Inclination (Deg.)	80.00	79.99
Perigee Latitude (Deg. N.)	22.14	20.90
Eccentricity	0.020	0.01989

SCHEMATIC INBOARD PROFILE - CORONA J SYSTEM

MISSION 1011

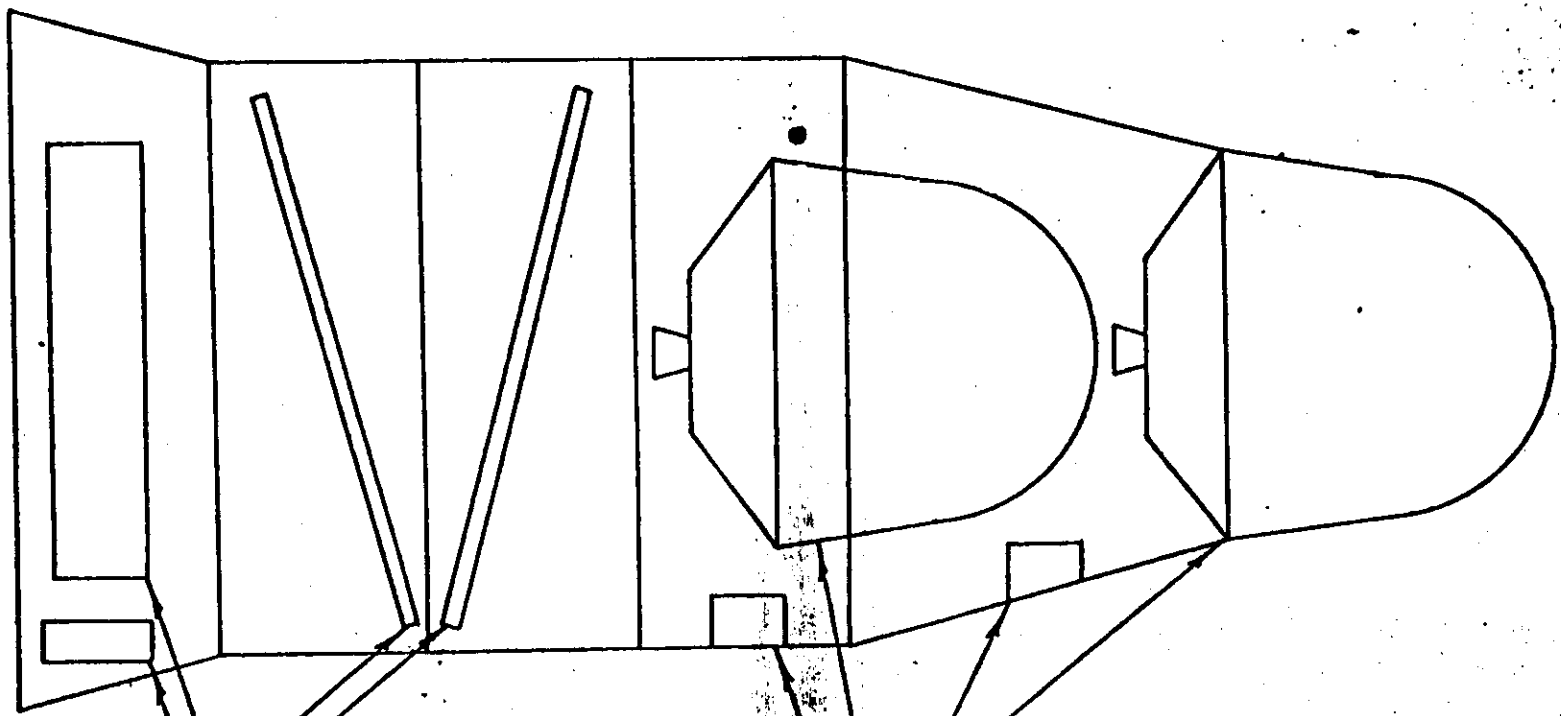


FIGURE 1-1

C. PANORAMIC CAMERAS

The Master and Slave panoramic cameras operated throughout both missions with no significant problems and Mission 1011-1 produced exceptionally good photographic coverage. The cloud cover and atmospheric haze observed in the photography was relatively high. A small area on the Slave camera formats during the majority of Mission 1011-1 contained a small soft focus area.

D. STELLAR-INDEX CAMERAS

The Mission 1011-1 Stellar-Index camera operated properly throughout the mission and produced very high quality photography. The Mission 1011-2 Stellar-Index camera operated properly during the mission except on pass D-110.

E. OTHER SUB-SYSTEMS

The clock, instrumentation, pressure make-up, command and thermal control sub-systems performed satisfactorily through both missions.

F. CONCLUSIONS

Mission 1011-1 achieved the objective of acquiring high quality search and reconnaissance photography from orbital altitudes.

G. RECOMMENDATIONS

The evaluation and analysis of the data produced by the mission has resulted in the following recommendations.

1. Continue the use of the nominal exposure criteria for full processing.

2. Determine the cause of the latitude mismatch between ephemeral data and photography.

SECTION 2

PRE-FLIGHT SYSTEMS TESTS

A. ENVIRONMENTAL TESTING

1. Test Objective

As a standard procedure, the J payload systems are subject to thermal/altitude environmental testing which simulates orbital environment. One of the purposes of this test is to demonstrate the system susceptability to corona discharge. Such discharge fogs the film thus degrading the operational photography.

2. Test Summary

The J-3X payload system was in the HIVOS chamber at LMSC, Sunnyvale for environmental test during July 24 through 30, 1964. The test consisted of 2 days operation in the "A" mode; 2 days of soak; 2 days of operation in the "B" mode. The system during the test was complete except for Stellar/Index cameras.

Results of the operation were generally satisfactory. Cycle rate predictability for the panoramic cameras was ± 1.5% for the master and ± 2.3% for the slave.

Clock performance was satisfactory. The error observed after 2 days each of "A" and "B" mission operation was -0.046 second and -0.039, respectively.

Both "A" and "B" recovery sequences indicated satisfactory performance. The instruments stowed properly during the "A" recovery cut and wrap operation.

3. Panoramic Camera Performance

Satisfactory instrument operation was observed throughout the test on channels 6, 8, 9 and 10, which monitor such functions as payload transport and clamping, 99/101 clutch operation, lens rotation, and center of format. Instrument operation at start and shutdown was normal.

Evaluation of the test film showed that the Master camera produced minor start-up corona marking which was well within the acceptance criteria. The J-3X system was recommended for flight. ●

4. Stellar-Index Camera Performance

Both Stellar-Index cameras were environmentally tested in the TEAL chamber as sub-systems. The cameras performed satisfactorilly and the corona discharge fogging on the metered film was within the acceptance criteria.

5. Instrumentation Performance

No valid correlation was obtained during the "A" mission operations between the footage pot calibrations and the cycle counter readings. Sanborn calibrations on commutated channel 11 were not sufficiently accurate to get reliable footage pot readings.

Master camera potentiometer readings did not exceed .8 volts throughout the "B" mission operations. Better correlation was obtained for Slave camera footage pot and cycle counter during this phase. Variations of 10 and 15 cycles were observed.

6. Temperature Environment

Typical instrument temperatures recorded through the test are as follows:

Mission	Orbit	Master Camera	Slave Camera
A	1	82°	75°
A	16	88°	88°
A	32	89°	87°
B	48	71°	66°
B	62	76°	63°

The self-heating characteristics of the temperature sensors were determined during the HIVOS test. Figure 2-1 shows this characteristic for the sensors.

7. Pressure Environment

The HIVOS test was conducted without a Pressure Make-Up system. The internal camera pressure data for the test is shown in Figure 2-2.

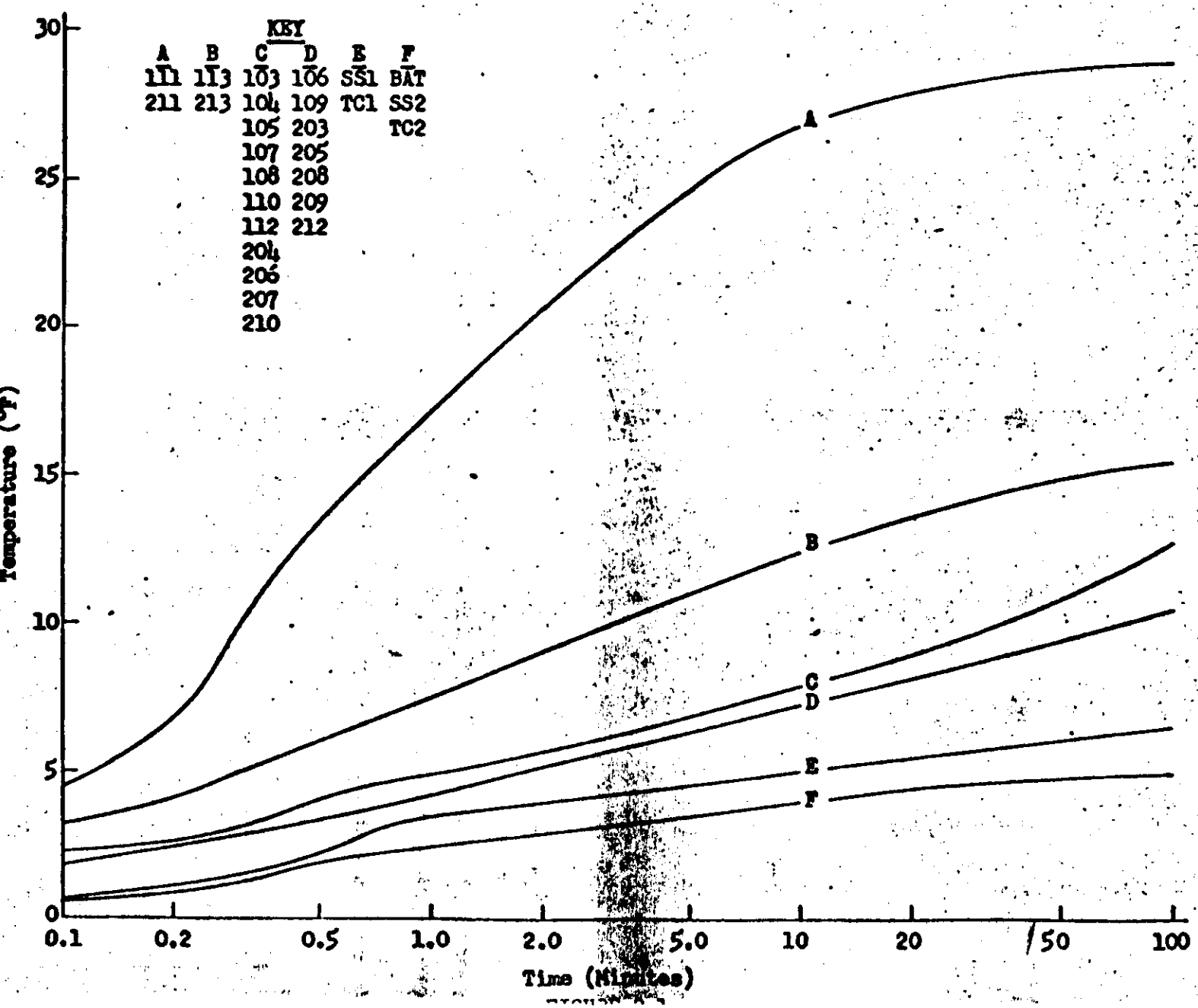
B. RESOLUTION TEST

The dynamic resolution test of the J-3X payload system was performed at the A/P facility on 13 August 1964. Each panoramic camera photographed high and low contrast resolution targets. The resulting through focus resolution data is shown in Figure 2-3 for the Master camera and in Figure 2-4 for the Slave camera.

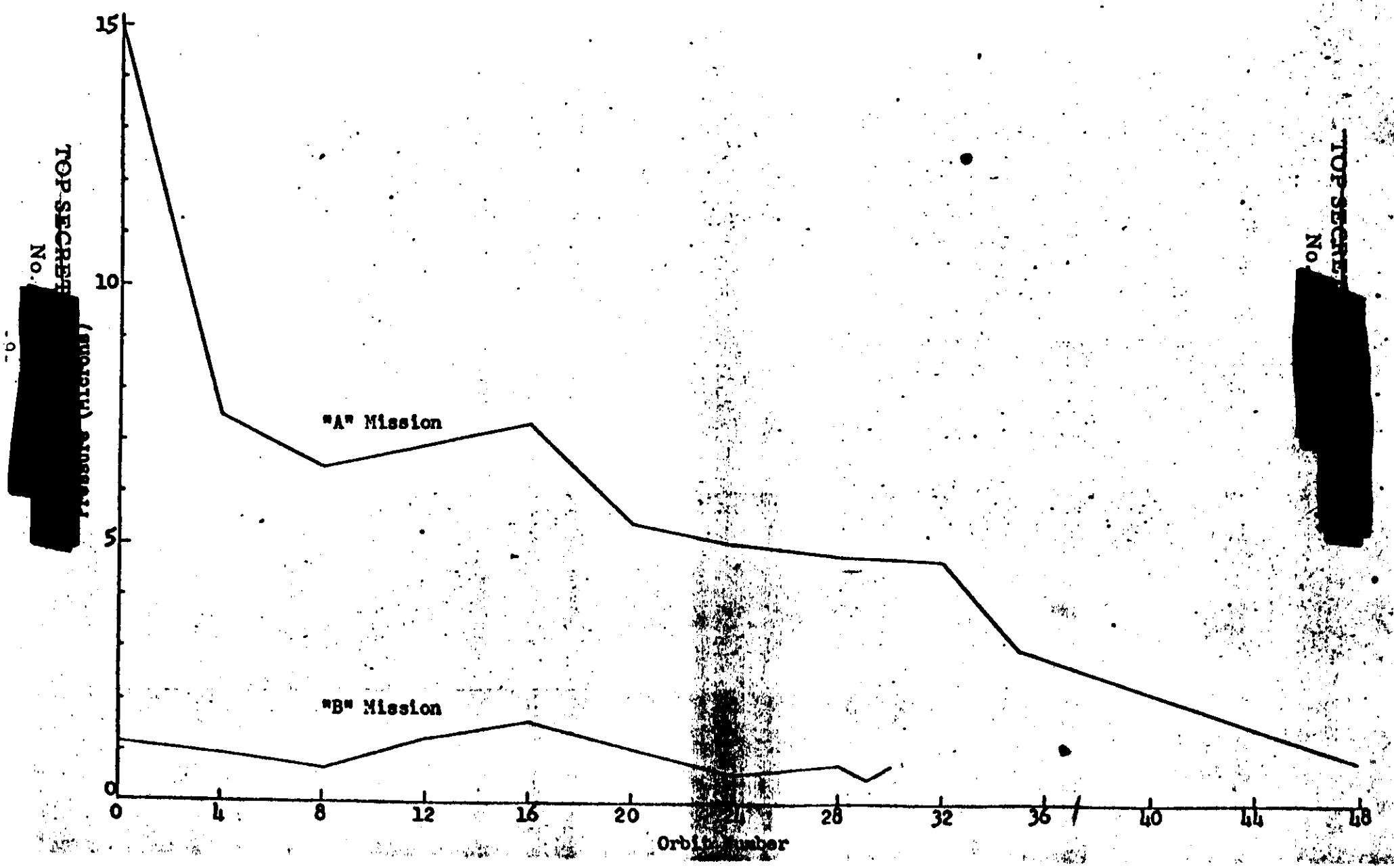
C. LIGHT LEAK TEST

The examination of the film threaded in the J-3X system during the light leak test determined that no film fogging was present. The light leak integrity of the system was considered acceptable for flight.

J-3X SELF-HEATING CURVES



J-3X INTERNAL CAMERA PRESSURE



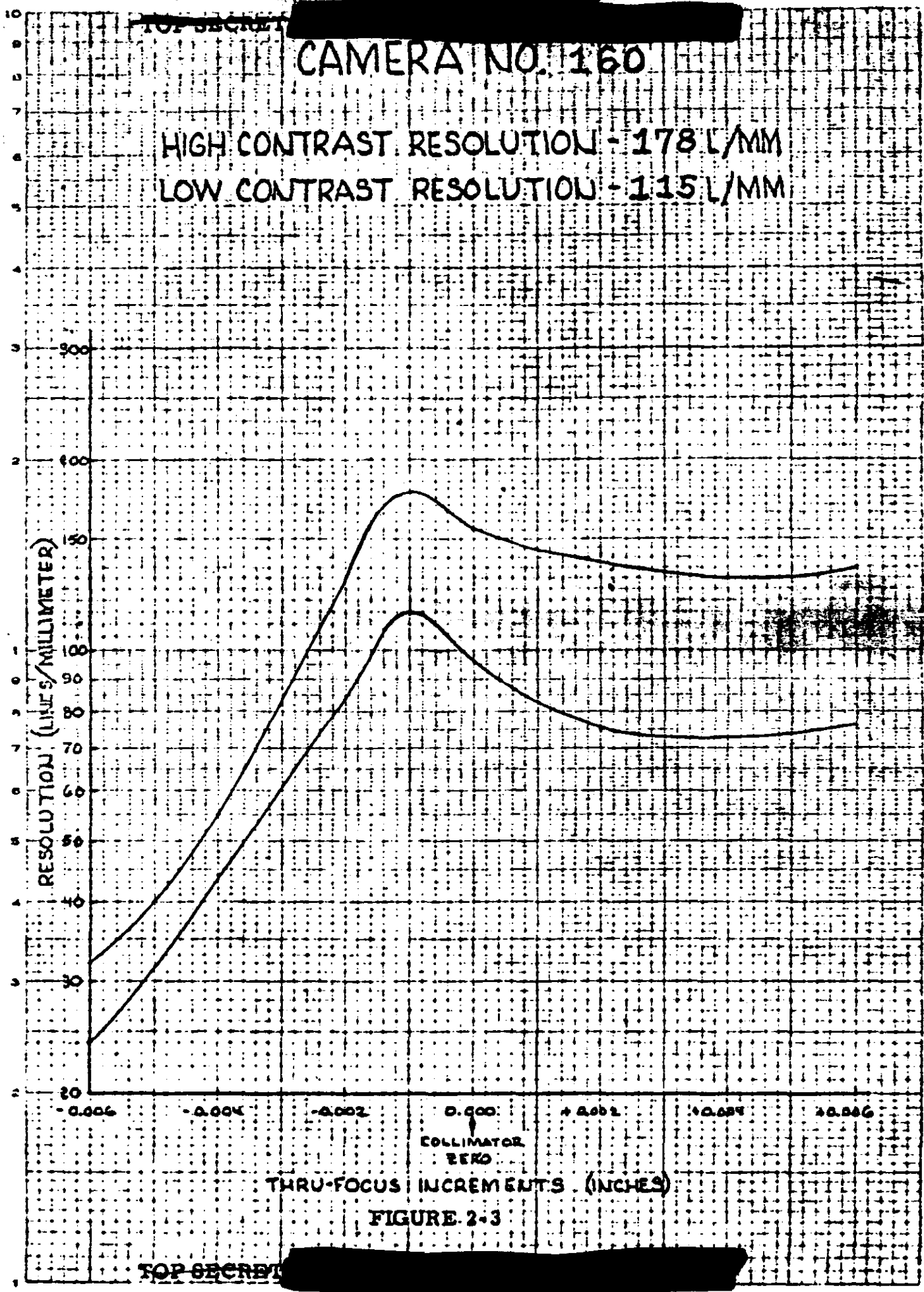


FIGURE 2-3

CAMERA NO. 161

HIGH CONTRAST RESOLUTION -173 L/MM

LOW CONTRAST RESOLUTION +120 L/MM

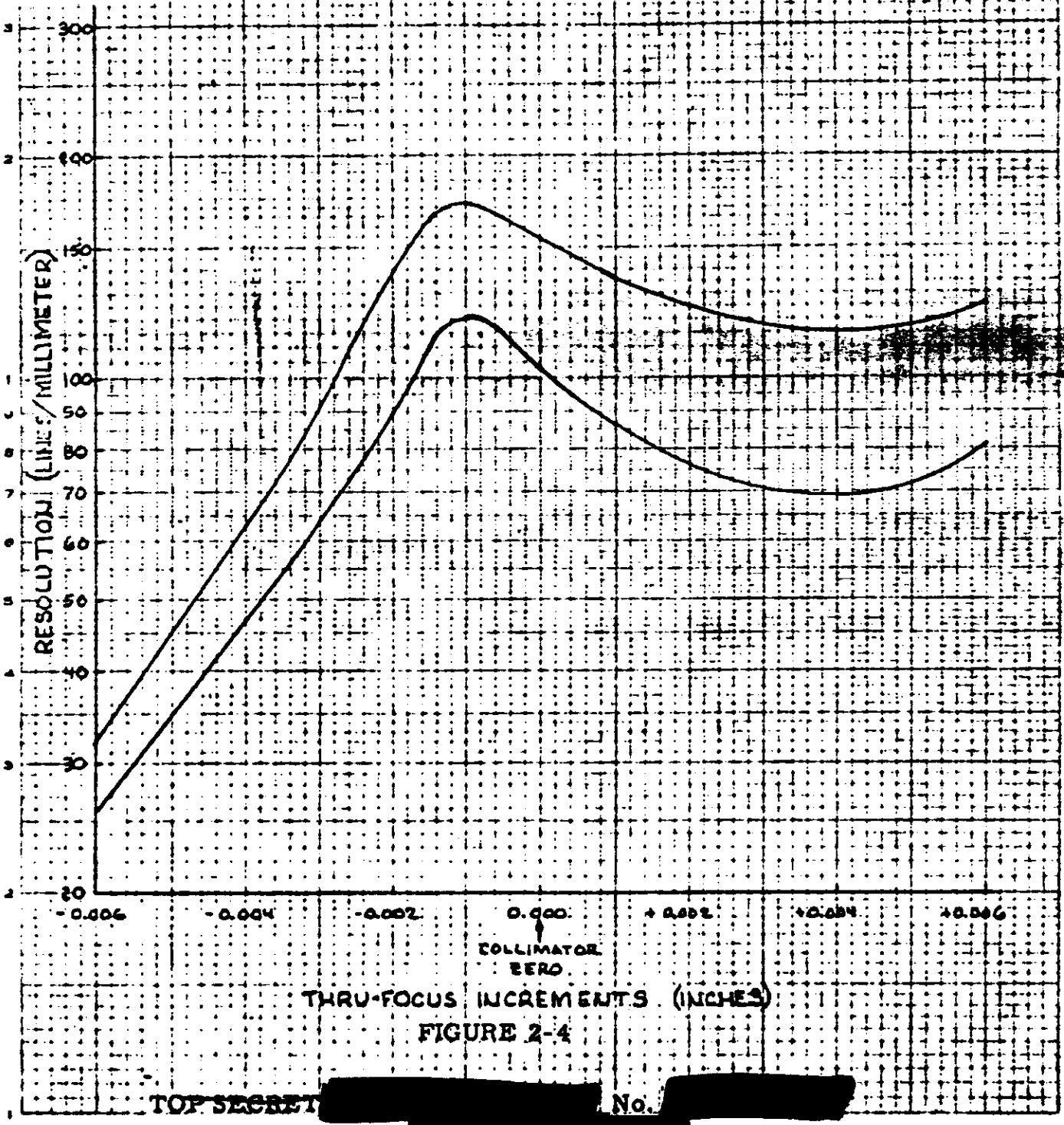


FIGURE 2-4

SECTION 3

FLIGHT OPERATIONS

A. INSTRUMENTATION AND COMMAND PERFORMANCE

All of the command functions performed properly during ascent. The RTC functions could not be commanded during several orbits late in Mission 1011-2. The unregulated power supply dropped to 18.5 V by orbit 103. The recovery commands were received during orbit 112 but power was insufficient at this point to effect the recovery events.

The telemetry performed satisfactorily with the exception of Points 40 and 41 on commutated Channel 11. These points were shorted together and read the same voltage levels throughout the flight. This condition was observed during the Task 3 phase of the countdown. Point 40 is "+24 Volt Unregulated Monitor". Point 41 is "Instrument ON/OFF Monitor".

B. PANORAMIC CAMERA PERFORMANCE

Engineering operations were programmed for acquisition over [redacted] during Orbits 9, 16, 32 and 37 of Mission 1011-1, and 72, 79, 95, 103 and 110 of Mission 1011-2.

Instrument operation and payload metering was satisfactory throughout both Missions 1011-1 and 1011-2 as indicated on TLM by the center-of-format, lens rotation, and payload supply and take-up monitors. Start-up and shut-down was normal.

Cycle rate data is tabulated on Table 3-1. The Master camera ran up to 4% faster than the Slave camera. The ramp reference level and amplitude setting was changed during both missions to compensate for the error in cycle rate predictability for the Slave camera. The cameras ran within 1% of each other during the environmental test.

TABLE 3-1

J-3X CYCLE RATE DATA

Orbit	Ramp	T.U.R.	Master Camera % Dev. *	Slave Camera % Dev. *
9	7-4	106	.5 F	2.12 S
16	7-4	1641	2.2 S	4.8 S
32	6-4	1687	1.2 S	4.0 S
47	6-4	1808	.1 S	3.0 S
72	6-4	149	.2 F	2.9 S
79	6-4	1672	1.4 S	4.0 S
95	5-4	1721	1.0 S	3.7 S
103	5-4	243	1.0 S	4.4 S
110	5-4	1845	1.3 S	4.5 S

* The values in these columns represent percent deviation of the actual instrument cycle period from nominal.

S = Slow and F = Fast.

Film consumption for the flight was as follows:

MISSION 1011-1

	Master	Slave
Cycles	3046	3061
Feet	8057	8100

MISSION 1011-2*

Cycles	2711	2625
Feet	7171	6942

*The values given for the 1011-2 Mission represent the amount of payload in the capsule at the time that recovery was attempted.

C. STELLAR-INDEX PERFORMANCE

Normal Stellar-Index film metering was observed by TLM for each operation over [redacted] except Orbit 110. During Orbit 110 neither the Stellar nor Index unit metered during any portion of the 55 cycles of panoramic camera operation. The unregulated and regulated supply was 19.1 V and 27.5 V, respectively, at this time. Normal S/I operation was observed during Orbit 103 with 18.9 V unregulated and 27.5 V regulated supply.

The shutter pulse was observed at the proper sequence for all daytime operations over [redacted] These occurred during orbits 16, 32, 48, 79, 95 and 110.

D. CLOCK PERFORMANCE

Satisfactory clock correlation was obtained for both missions. Clock/System time correlation data is contained in Table 3-2. The system time is fitted to a best fit curve of clock versus system times which is represented by a second order equation in this case. The table includes the amounts that the recorded values of system time deviate from the corrected values.

TABLE 3-2

CLOCK/SYSTEM TIME CORRELATION

Orbit			Deviation
9	397,100.629	39916.195	+ .005
16	436,880.744	79696.309	- .003
25	484,236.357	40651.921	+ .002
31	518,472.845	74888.408	- .002
32	523,917.150	80332.713	- .002
40	28,855.179	35741.653	- .006
47	68,794.847	75681.319	+ .003
56	116,133,480	36619.950	+ .003
63	155,731.760	76218.228	- .002
71	197,673.666	31760.132	+ .003
79	242,847.431	76933.893	+ .003
88	290,251.448	37937.908	- .001
95	329,880.561	77567.018	- .001
103	371,832.762	33119.215	+ .001
110	411,382.169	72668.619	- .002

Coefficients for second order equation used to compute corrected system times are:

$$a_o = -357184.44098$$

$$a_1 = 1.00000045985$$

$$a_2 = 0.7235776015341220 \times 10^{-13}$$

NOTE: 3.5 m.s. was subtracted from the raw systems time as an approximate compensation for TLM transmission time.

The corrected system time values are computed from the equation - $y = a_2x^2 + a_1x + a_o$, where y = corrected system time and x = clock time.

E. PRESSURE MAKE-UP SYSTEM PERFORMANCE

Supply pressure history for the PMU system is shown on Figure 3-1, where the supply pressure decay is plotted as a function of the total instrument operate time. The irregular slope of the curve indicates that gas is passing through the PMU system at times other than when the instruments are operating.

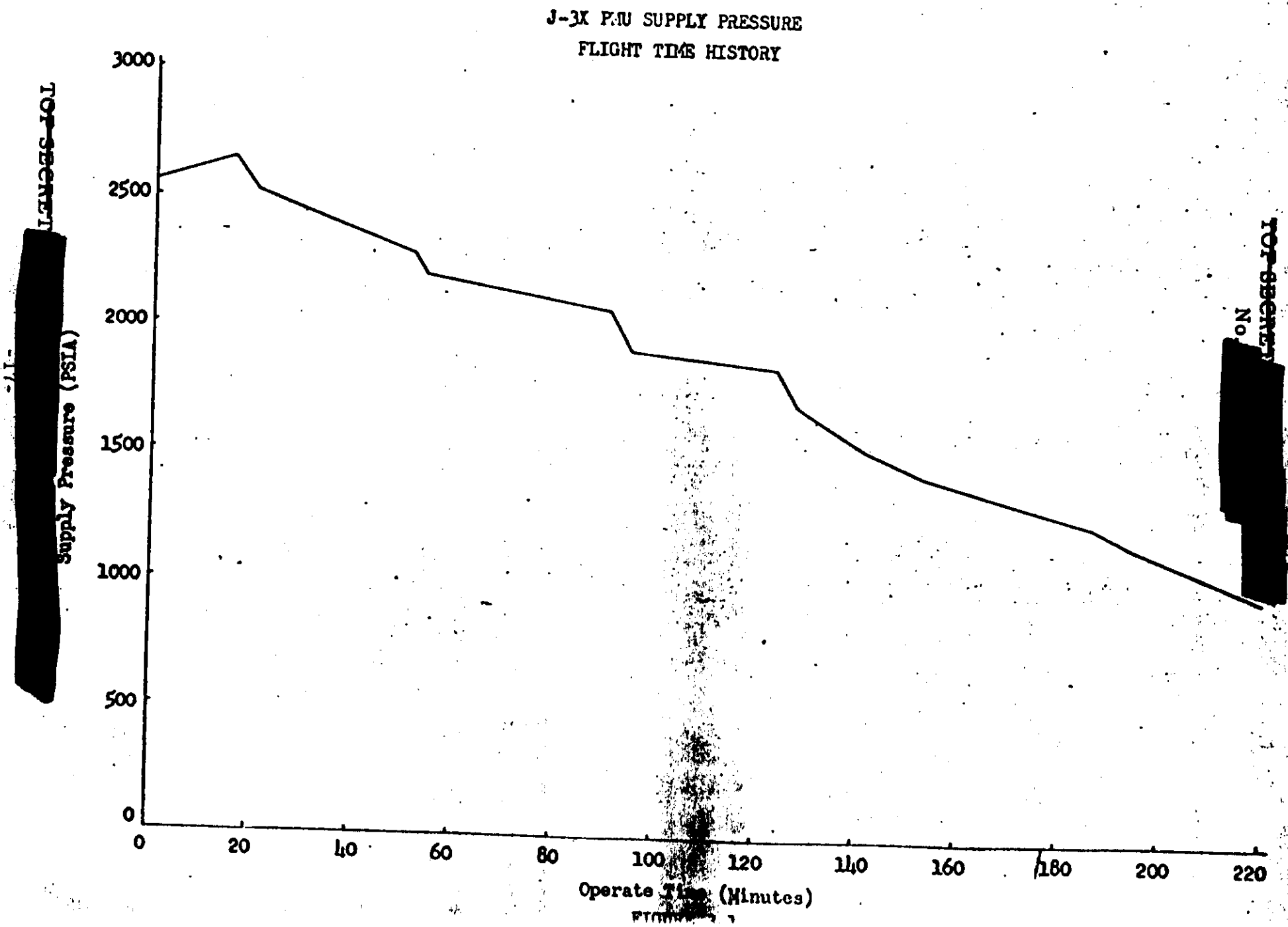
The internal pressure was monitored at the conic section, using a Pirani gage. Representative internal pressure histories of stereo operations for Orbits 9, 32, 72 and 95 are shown in Figures 3-2 to 3-5.

F. TEMPERATURE ENVIRONMENT

The temperatures monitored during flight are shown in Tables 3-3 and 3-4. Average camera temperatures decreased 14°F from pass D-09 to D-95.

Temperatures were not read for Orbits 103 and 110. The bias between the +28 V and -28 V TLM voltages was approximately 2 volts and no temperature calibrations were available for this much bias. The unregulated voltage had decreased to 18.9 V by Orbit 103.

The temperature values for both instruments, the supply spool and the dreamboat battery, are corrected for self-heating effects. Predicted and actual flight temperatures are compared in Figures 3-6 through 3-8.


J-3X P.U SUPPLY PRESSURE
FLIGHT TIME HISTORY
Supply Pressure (PSIA)
3000
2500
2000
1500
1000
500
0
0
20
40
60
80
100
120
140
160
180
200
220
Operate Time (Minutes)

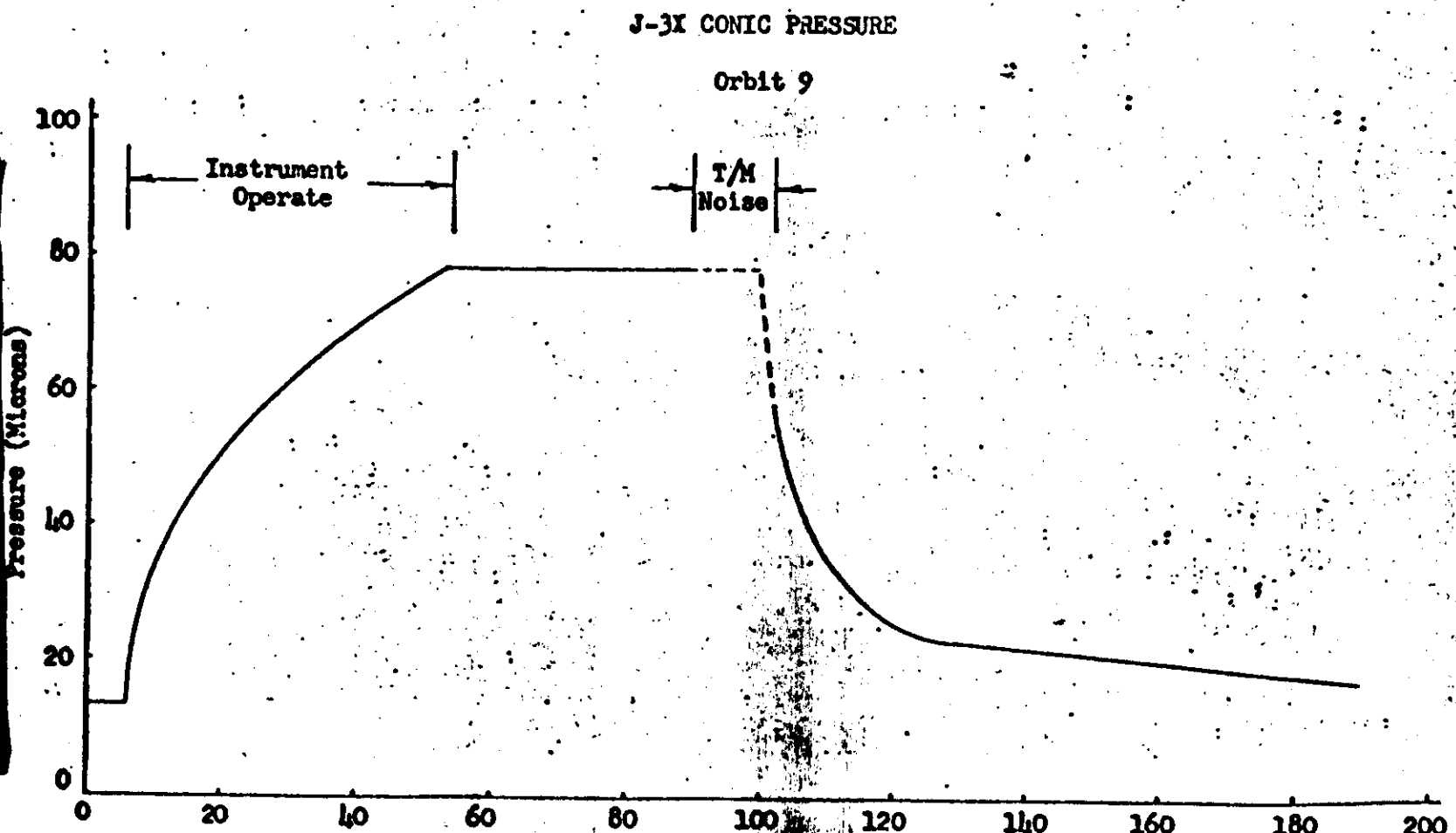

J-3X CONIC PRESSURE
Orbit 9
Instrument Operate
T/M Noise
Pressure (Microns)
100
80
60
50
20
0
0
20
40
60
80
100
120
140
160
180
200
Time (Seconds)

FIGURE 3-2

J-3X CONIC PRESSURE

Orbit 32

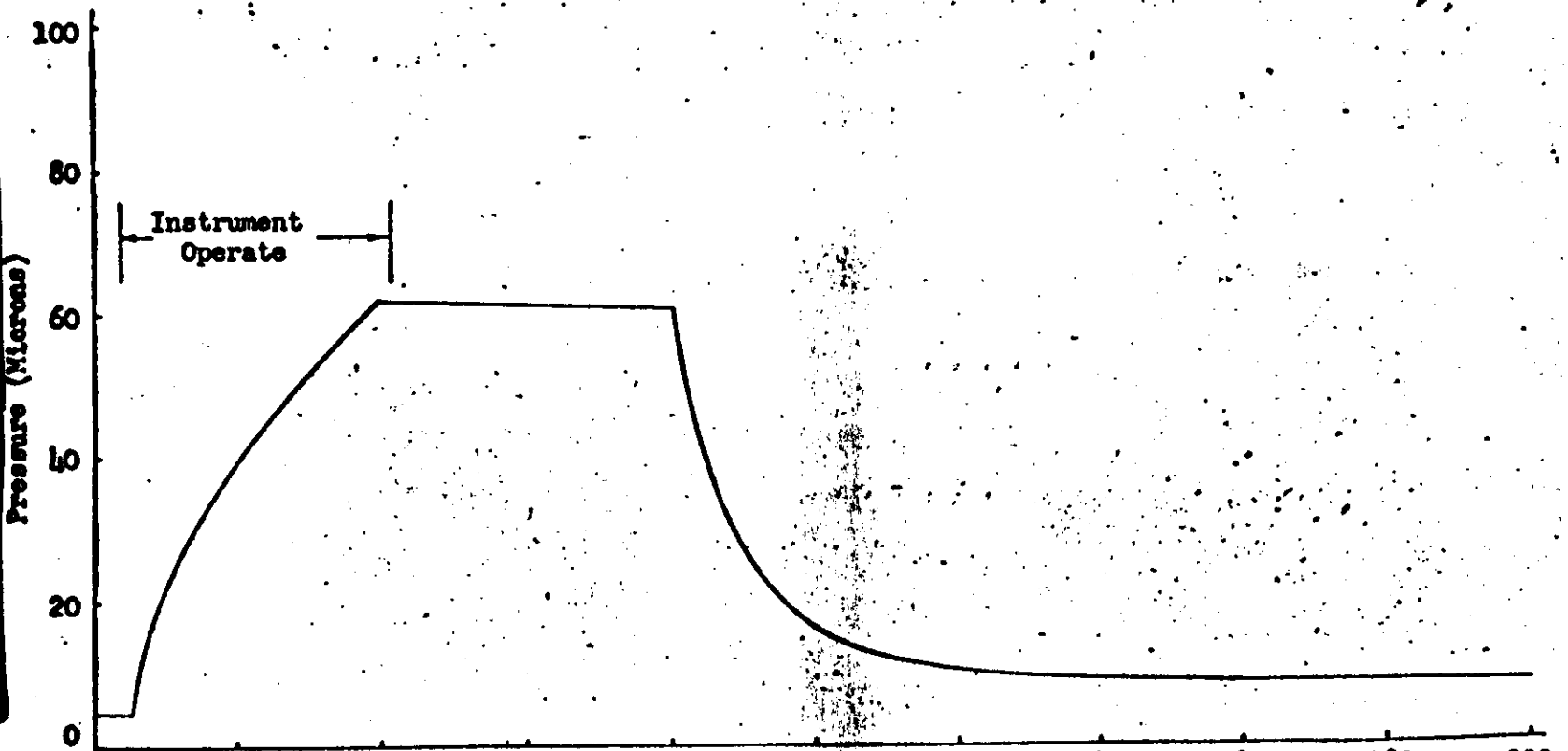


FIGURE 3-3

J-3X CONIC PRESSURE

Orbit 72

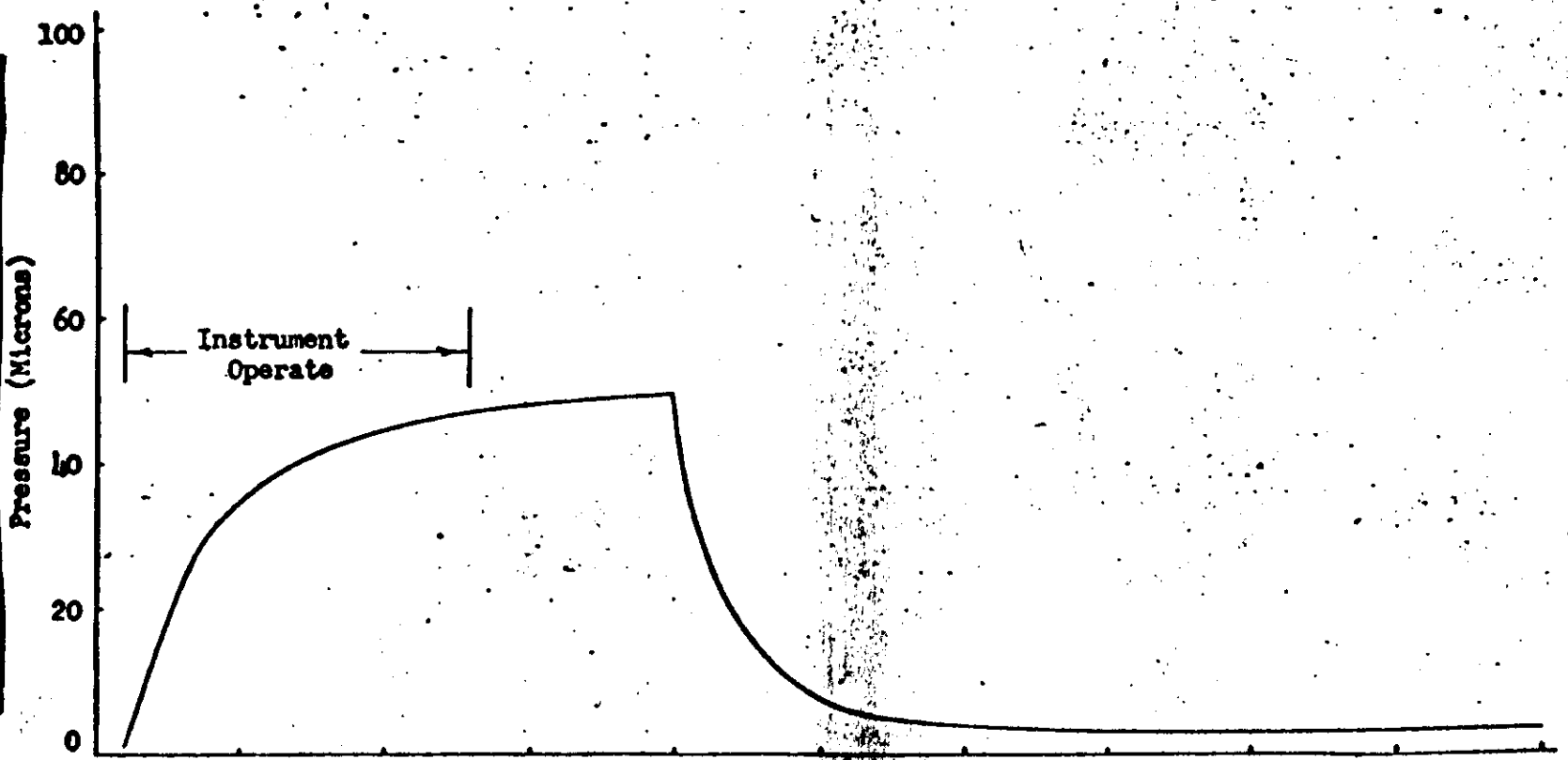


FIGURE 3-4

J-3X CONIC PRESSURE

Orbit 95

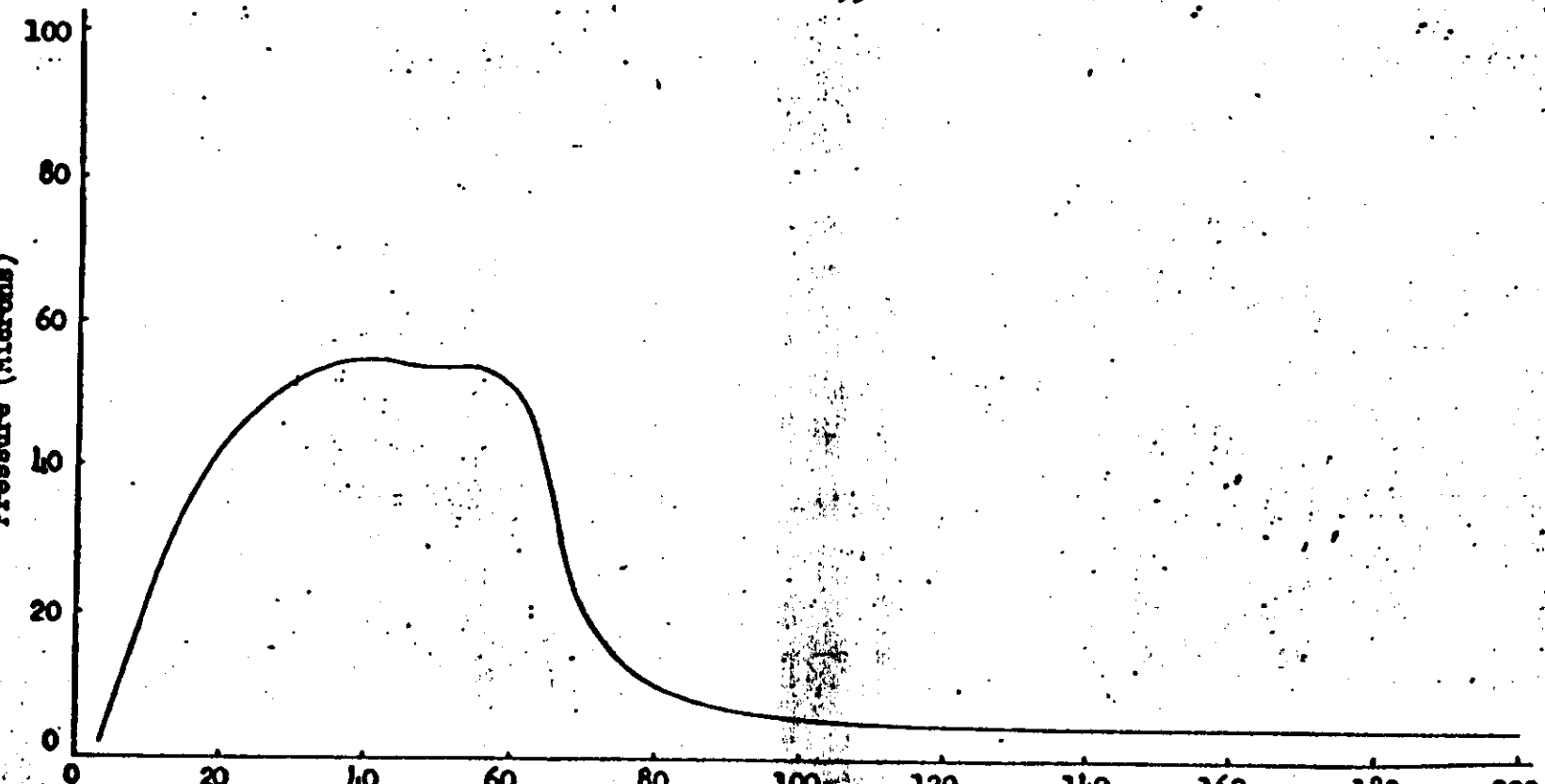


FIGURE 3-5

TABLE 3-3

J-3X TEMPERATURE SUMMARY

SENSOR	ORBITS ACQUIRED												
Master Camera	0	9	16	25	31	40	47	56	63	71	79	88	95
3	69	57	53	53	52	53	51	51	50	47	46	46	43
4	66	63	64	60	63	60	61	58	57	54	54	54	52
5	71	68	65	66	64	65	62	62	60	58	58	57	54
6	68	75	72	72	69	70	68	67	66	65	64	61	59
7	69	71	68	67	66	67	65	65	64	61	61	59	59
8	68	71	66	67	65	67	64	65	61	61	59	59	56
9	70	75	71	71	68	69	66	68	65	66	61	62	58
10	70	68	65	65	64	65	62	61	60	59	58	57	55
11	95	74	73	75	74	75	68	72	67	67	62	63	59
12	77	62	59	60	58	60	55	58	56	55	62	52	49
13	73	74	72	70	70	70	67	67	65	63	61	60	58
AVG.	-	69	65	66	65	66	62	63	61	60	59	57	55
Slave Camera													
3	68	73	71	69	68	69	65	66	65	62	61	59	57
4	68	71	66	67	62	65	61	65	60	61	57	58	53
5	70	67	62	62	61	62	59	60	59	58	62	54	52
6	64	60	58	57	55	56	55	54	53	52	51	50	48
7	66	65	61	61	60	61	59	59	58	57	56	54	52
8	68	64	61	61	60	60	58	59	57	56	53	53	50
9	70	58	55	55	55	55	53	54	53	52	50	50	47
10	69	65	63	61	60	61	60	59	58	57	56	55	52
11	96	64	59	61	60	61	57	59	60	55	52	55	49
12	73	71	66	67	63	65	62	65	62	62	58	59	54
13	71	63	60	61	60	59	57	57	60	54	53	53	51
AVG.	-	65	63	62	60	61	58	60	59	57	56	54	51
Supply Spool													
1	69	58	57	55	55	57	55	56	54	53	52	50	49
2	70	67	62	63	61	64	59	58	58	58	55	56	51

Note: All data corrected for self heating except orbit 0 (injection).

TABLE 3-4

J-3X TEMPERATURE SUMMARY

SENSOR	ORBITS ACQUIRED												
Fairing ("A") Barrel #1 ("B")	0	9	16	25	31	40	47	56	63	71	79	88	95
1	OBH	43	46	39	43	46	49	39	33	7	16	3	16
2	OBH	16	6	13	3	16	3	13	3	5	-2	2	-2
3	OBH	10	10	4	7	7	10	4	7	25	44	22	44
4	230	63	59	56	56	59	56	56	53	43	77	36	68
5	OBH	87	87	78	78	84	74	74	68	53	69	47	63
6	OBH	77	97	70	92	77	92	70	77	-	-	-	-
Barrel #2													
1	155	64	83	58	74	61	71	55	68	48	61	45	58
2	157	62	101	59	98	62	98	55	87	55	84	49	78
3	194	28	47	24	47	28	54	24	41	28	44	21	44
4	205	8	1	4	1	8	1	4	1	4	1	1	-2
5	182	21	21	15	18	15	18	15	18	12	15	8	15
Conic Adapter													
1	179	75	96	72	90	72	87	69	78	59	69	53	66
Clock													
1	100	75	71	73	71	71	69	71	67	65	60	60	58
2	106	80	77	77	75	77	73	75	73	71	65	67	65
Thrust Cone "A" to "B" SRV													
1	116	44	38	40	35	38	38	36	34	56	53	53	52
2	79	71	62	62	59	63	61	61	57	69	67	66	65
Stellar-Index Camera													
1	88	65	58	58	55	55	52	55	52	57	53	53	50
2	82	67	64	61	58	61	58	61	58	63	60	60	57
Recovery Battery "B" SRV													
1	79	79	78	74	75	73	74	72	73	89	92	93	92
Master Cassette													
2	101	57	51	52	50	51	51	51	50	-	-	-	-

Note: Only Thrust Cone and Recovery Battery data corrected for self heating.

J-3X PREDICTED AND ACTUAL TEMPERATURES

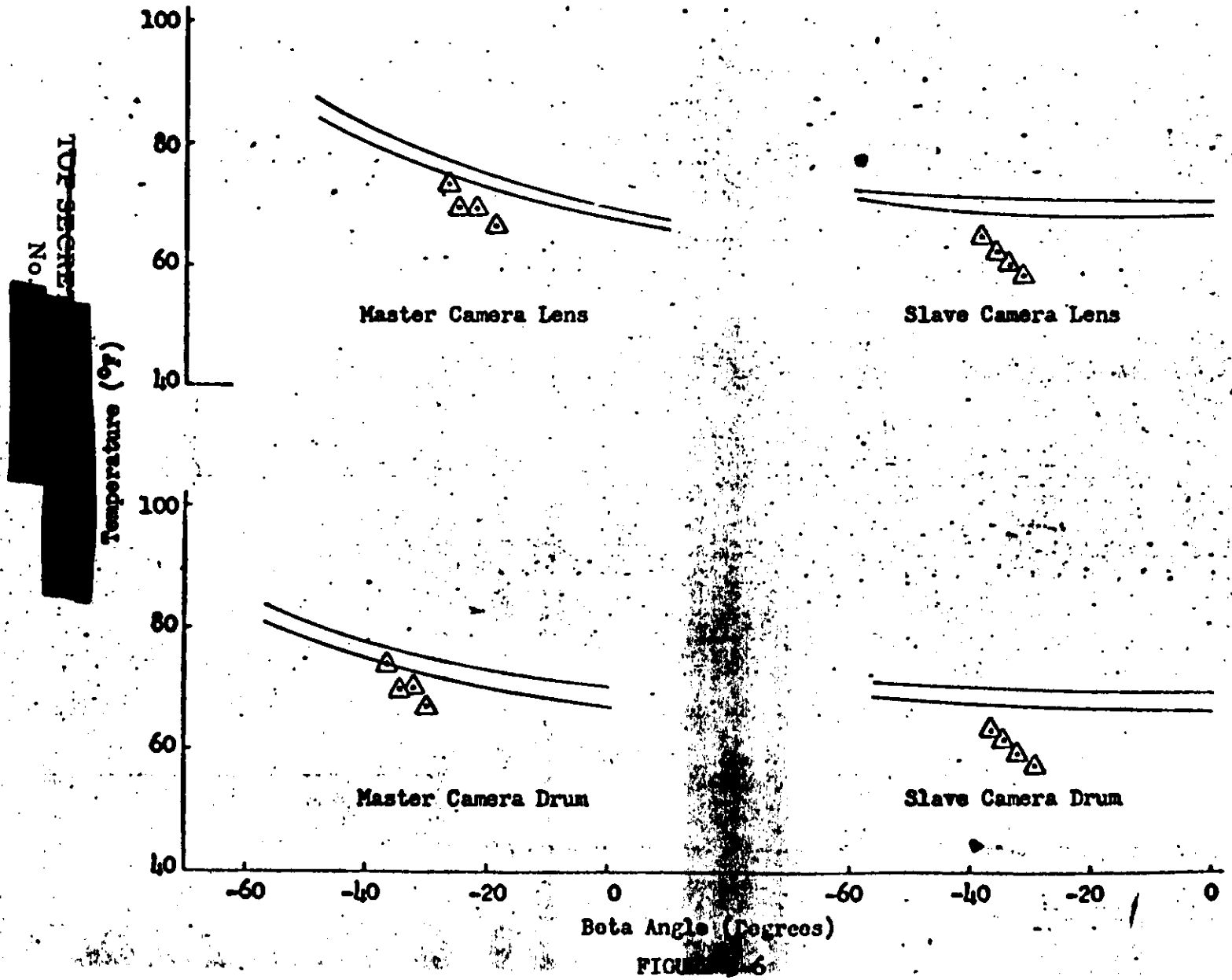


FIGURE 6

J-3X PREDICTED AND ACTUAL TEMPERATURES

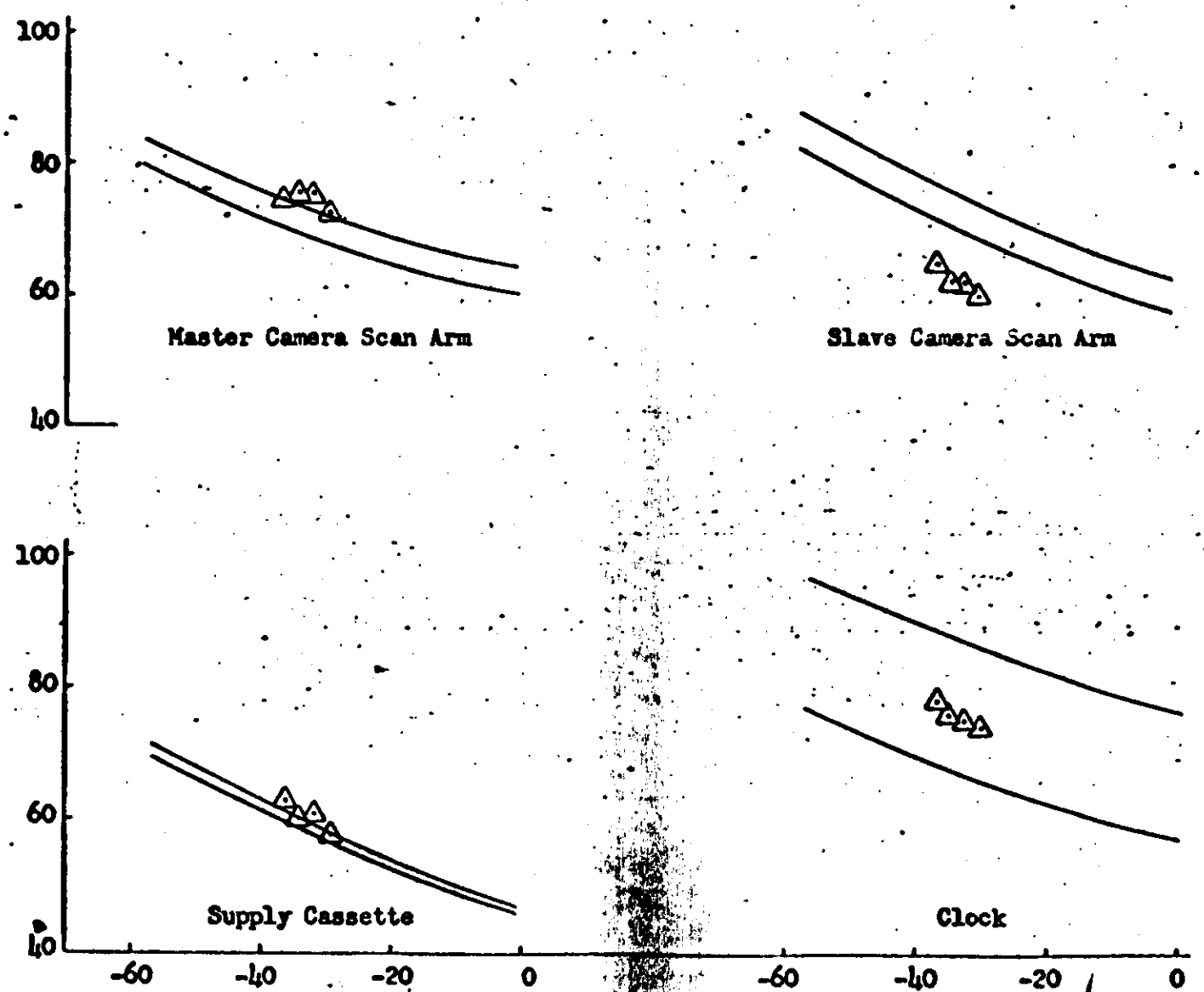


FIGURE 3-7

J-3X PREDICTED AND ACTUAL TEMPERATURES

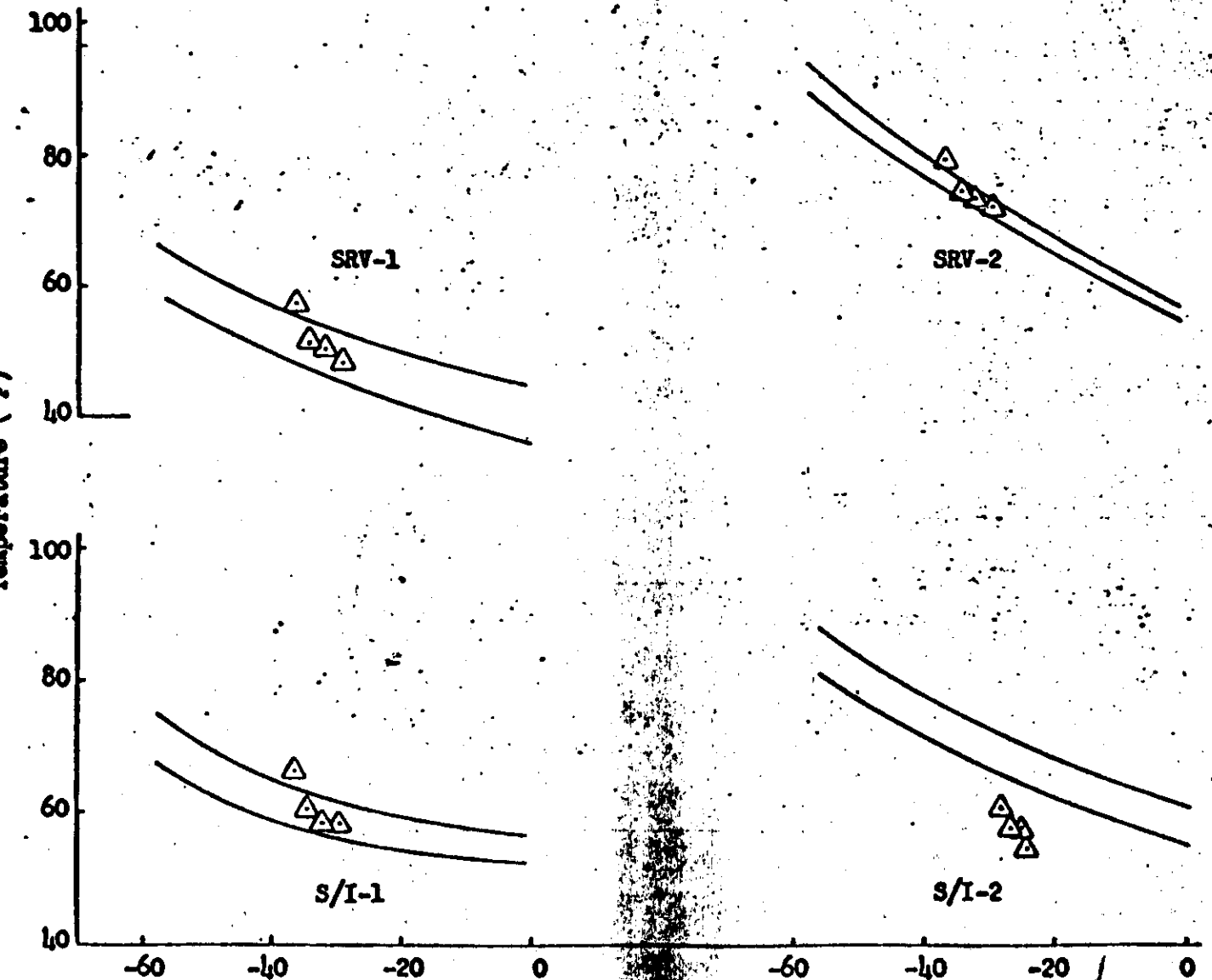


FIGURE 3-8

TOP SECRET
No.

SECTION 4

MISSION 1011-1 RECOVERY SYSTEM

SRV #653 was received at A/P on 30 December 1963. After modifications and incorporation of outstanding E.O.'s, the SRV was delivered to systems test for incorporation into the J-14 system. The SRV was transferred to the J-3X system following the environmental damage to J-03 prior to launch at VAFB.

The following major modifications were made to SRV #653 during the testing phase at A/P:

1. FEDR 1337; 3 August 1964. The forebody was found to be cracked and replaced.

2. FEDR 1340; 4 August 1964. The W5 cable was replaced as the rubber insert was torn.

The capsule was delivered for shipment to VAFB on 14 August 1964. The idler roller was replaced at VAFB on 27 August 1964 as it was dented by the payload weight simulator.

A successful air catch of the capsule was made on orbit 65. The impact was within normal tolerances. Table 4-1 lists the sequence of monitored re-entry and recovery event times. The following anomalies were observed from orbit 65 [redacted] telemetry data:

1. The deceleration chute deployed within the time tolerance, but did not blossom.

2. The nominal time from "deceleration chute deployment" to "chute release" was exceeded by approximately 2.8 seconds. This correlates with the above anomaly.

3. At "main chute dereef" the accelerometer indicated an increased load to approximately 4.6 g with no reaction from the G-Switch.

The switch closed after the load decreased to 1.4 g and opened 13.6 seconds later when the load reached 1.2 g. This anomaly occurred after the switch was subjected to approximately 20 g load when the main chute deployed without normal deceleration.

The condition of the recovered capsule was satisfactory with damage limited to normal paint blistering. Post flight inspection and test showed no anomalies.

MISSION 1011-1

RE-ENTRY SEQUENCE OF EVENTS

EVENT	SYSTEM TIME	DELTA TIME	
		Actual	Nominal
Transfer	479.87	--	--
Electrical Disconnect	480.81	.94	.90 $^{+.43}_{-.40}$
*Separation	481.89	2.02	2.0 ± .25
**Spin	484.24	3.43	3.4 ± .30
Retro	491.75	7.51	7.55 ± .45
Despin	502.5 ± .2	10.75	10.75 ± .54
T/C Separation	504.0 ± .2	1.50	1.5 ± .15
"G" Switch Open	972.65	468.6	--
Parachute Cover Off	1006.68	34.03	34.0 ± 1.5
Drogue Chute Deployed	1007.49	.81	.75 ± .08
Drogue Chute Release	1020.40	12.91	10.05 ± 1.0
Main Chute Deployed	1021.05	.65	.80 ± .20
Main Chute Disreefed	1025.85	4.80	4.0 ± 1.7

* From Transfer

** From Elect. Disc.

TABLE 4-1

SECTION 5

MISSION 1011-2 RECOVERY SYSTEM

SRV #654 was received at A/P on 30 December 1963 at a receiving weight of 152 pounds. After modification and incorporation of outstanding E.O.'s the capsule was delivered to systems test for incorporation into the J-12 system. This SRV was transferred to the J-3X system following the environmental damage to J-03 prior to launch at VAFB.

The following major modifications were made to SRV #654 during the testing phase at A/P.

1. FEDR 1255; 14 February 1964. The transistor mounting plate was replaced as the result of a loose rivet.

2. FEDR 1290; 6 May 1964. The programmer was returned to the manufacturer because of a faulty capacitor.

3. FEDR 1309; 24 May 1964. An open pot on the S/I take-up brush was replaced.

4. FEDR 1339; 3 August 1964. The forebody was found to be cracked and was replaced.

The capsule was delivered for shipment to VAFB on 14 August 1964. The hot wire cutter was damaged at VAFB and was replaced.

The depletion of the unregulated power supply precluded recovery of Mission 1011-2. Recovery attempts were made on orbits 112 and 128 but were unsuccessful. Table 5-1 lists the recovery sequence.

MISSION 1011-2

RECOVERY SEQUENCE OF EVENTS

TIME	EVENT	POWER REQUIRED	SYSTEM TIME	VERIFIED BY
X = 0	D-Timer Start		83240.5	112[redacted] TLM Enable of A/P Channels 6, 8 & 10 on Link I.
	Fairing Seperate	39.2 amps 25 mms	83253.32	Pt. 11-1-49 stepped from 1.3v to 4.7v indicating fairing off.
	Destruct Timer started.	50 ma & SRV battery	See X + 180.	Did not function. W2J1 still connected as verified by 8-2-47, 8-2-56 & 13-1-53. Still connected at 112[redacted]
	S/I Slew start.	4 amp apx.	-	No verification possible.
	T/C Relay Close.	1 amp 184 mms.	-	No verification was obtained.
	REC TLM Batteries Activated	7 amp spike	83254 (Voice) 83253.32 83280	RF Scotch Delta 11-1-53 at 5.1v 11-1-55 at 4.8v RF Scotch Delta[redacted]
	REC Capsule Beacon Energized.	100 ma	83264 & 83280 83253.3	RF Scotch Charlie
	REC Timer Relay	-	-	11-1-53 at 5.1v 11-1-55 at 4.8v
	TLM Transducers Switch.	-	-	Change in oscillator frequency of BLOSSOM TLM. Channel 7 at 1.4v and Channel 9 at 0v, indicating relay switched.
	Main Camera Water Seal Close.	10.7 amp	83253.3[redacted]	11-1-54 stepped from 5.4v to 2.15v indicating seal closed at 11[redacted]

TABLE [redacted]-1

RECOVERY SEQUENCE OF EVENTS (Cont)

TIME	EVENT	POWER REQUIRED	SYSTEM TIME	VERIFIED BY
X + 6.0	Start Pitch Down.	-	83976	Three Guidance Monitors.
X + 81.0	S/I Water Seal Close	10.4 amp 20 ms apx.	Did not occur.	11-1-54; 13-1-37, -39, -53; 8-2-47, -56 showed no seperation.
	T/C Thermal Battery Activated.	10.4 amp 20 ms apx.	Did not occur.	Same as above.
X + 81.9	T/C Electrical Disconnect	10.4 amp 20 ms apx.	Did not occur.	Plug still connected at 112 [redacted] but not at 117 [redacted]
X + 83.0	SRV Seperation	15.4 amp 30ms apx.	Did not occur.	Capsule and vehicle beacon tracked together over 112 [redacted] 16-1-25 verifies that capsule still mated.
X + 85.3	Spin-Up	REC Battery	Did not occur.	Stove T/S on main camera intact indicating this did not occur.
X + 92.8	Retro	Same.	Same.	Same.
X + 103.6	De-Spin	Same.	Same.	Same.
X + 105.1	T/C Seperate	Same.	Same.	TLM points intact at 112 [redacted]
	Capsule Cover Electrical Disconnect.	Same.	Same.	Same.
	T/C Bolts Fire.	Same.	Same.	Same.
X + 180.0	Destruct Timer Switch Close.	Same.	Same.	Same.
X + 2100.0	Destruct Activate.	Same.	Same.	No verification possible.

SECTION 6

MASTER (FWD) PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	160
Main Camera Lens	1352435
Supply Horizon Camera	174B
Supply Horizon Camera Lens	814028
Take-up Horizon Camera	174A
Take-up Horizon Camera Lens	814025
Supply Cassette	SC-16

B. CAMERA DATA AND FLIGHT SETTINGS [redacted]

Main Camera:

Lens	24" f/3.5
Slit Width	0.175"
Filter Type	Wratten 21
Film Type	Eastman Type 3404

Supply (Port) Horizon Camera:

Lens	55mm f/6.8
Aperture Setting	f/6.8
Exposure Time	1/100 second
Filter Type	Wratten 25

Take-Up (Starboard) Horizon Camera:

Lens	55mm f/6.8
Aperture Setting	f/8.0
Exposure Time	1/100 second
Filter Type	Wratten 25

C. POST FLIGHT PERFORMANCE EVALUATION

The quality of the photography produced by the Master camera was excellent. The photographic information content was considered to be among the best yet produced by a Corona mission.

Dendritic static marked a small area at the take-up end of the second from the last frame of most camera operations. The usual light leaks were present near the start and end of most camera operations. The electro-mechanical operation of the camera was normal during Mission 1011-1.

Telemetry data acquired during Mission 1011-2 indicated that the camera operated properly. The inability to recover this mission made any further evaluation and analysis impossible.