CORONA J

PERFORMANCE EVALUATION REPORT

MISSION 1024-1 and 1024-2

FTV 1619, J-24

16 February 1966

Approved: [redacted]
Manager
Advanced Projects

Approved: [redacted]
Program

~~TOP SECRET~~ [redacted]

NO. [redacted]

15 April 1966

TO: V. Webb —
C. Murphy
A. Johnson
[redacted]

THRU:

FROM:

SUBJECT: MISSION 1024-1 AND 1024-2 FINAL REPORT

Enclosed is the Final Performance Evaluation Report for Mission 1024-1 and 1024-2.

[redacted]
Manager
Advanced Projects
[redacted]

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~~TOP SECRET~~ [redacted]

FOREWORD

This report details the performance of the payload system during the operational phase of the Program [redacted] Flight Test Vehicle 1619.

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 1024-1 and 1024-2 which was launched on 22 September 1965.

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INTRODUCTION

This report presents the final performance evaluation of Missions 1024-1 and 1024-2 of the Corona Program. The purpose of this report is to define the performance characteristics of the J-24 payload system, and to identify the source of in-flight anomalies.

The performance evaluation was jointly conducted by representatives of Lockheed Missiles and Space Company (LMSC) and ITEK at the facilities of NPIC and AFSPPF. 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, and MTF/AIM resolution are produced by AFSPPF. 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 1024, placed into orbit by Flight Test Vehicle #1619 and LV-2A booster #458, 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-24 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 profile was two 5 day photographic missions with no deactivation. The predicted period was not achieved and certain pre-programmed target areas were not going to be covered. In the second mission a 1 orbit deactivation was successfully performed and the desired areas were covered.

B. MISSION DESCRIPTION

The payload was launched from Vandenberg Air Force Base (VAFB) at 2131:14Z (1431:14 PDT) on 22 September 1965. 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 1024-1 consisted of five days operation and was completed by air recovery on orbit 81, 27 September 1965. Mission 1024-2 was completed with an air recovery from orbit 161 on 2 October 1965 following five days of photographic operations.

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

SCHEMATIC INBOARD PROFILE - CORONA J SYSTEM

MISSION 1024

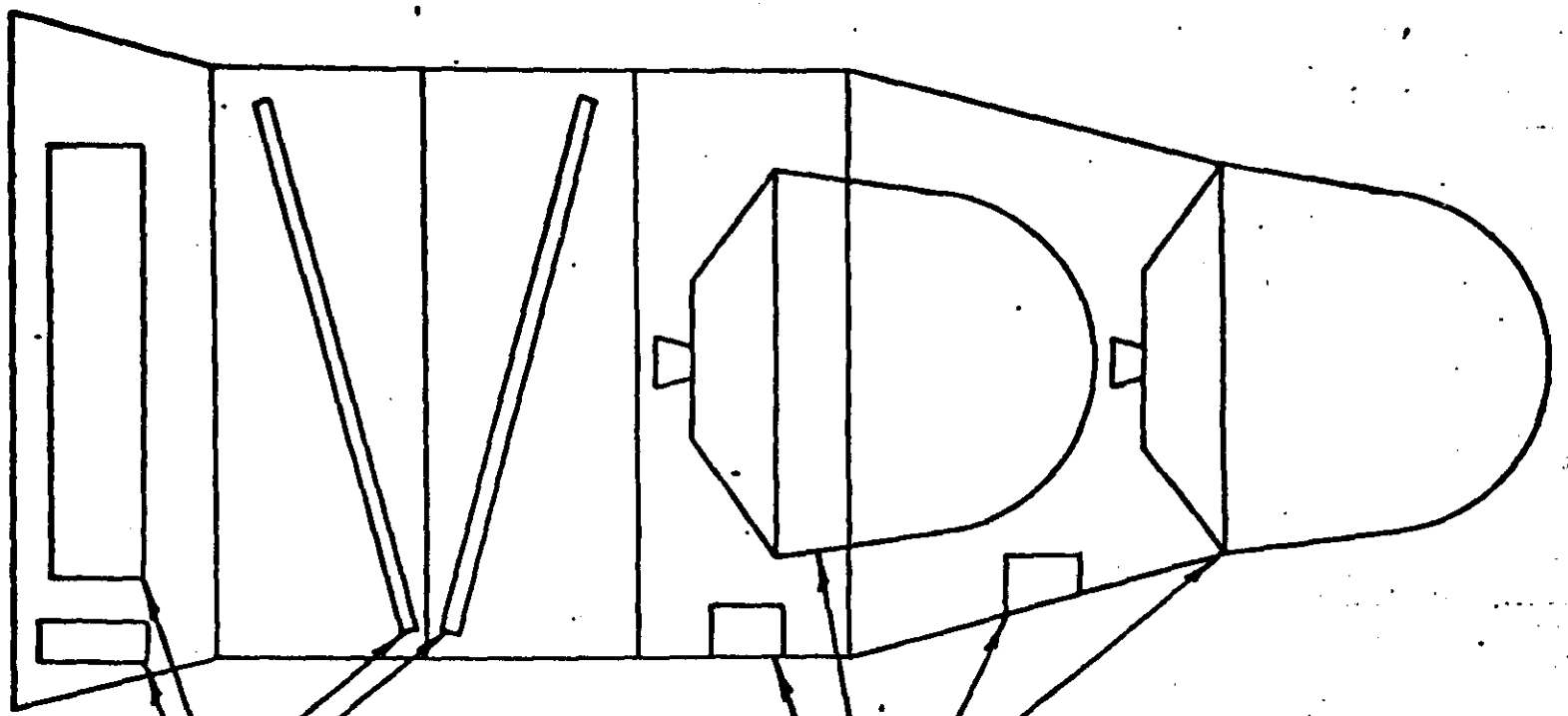


FIGURE 1-1

ORBITAL PARAMETERS

Parameter	Predicted	Orbit 1 Actuals
Period (Min.)	90.87 ± 0.20	90.16
Perigee (N. M.)	99.9 $^{+3.}_{-4.}$	95.97
Apogee (N. M.)	245.3 $^{+12.}_{-11.}$	207.89
Inclination (Deg.)	80.00 ± 0.10	80.06
Perigee Latitude (Deg. N.)	23. $^{+10.}_{-14.}$	8.25
Eccentricity	0.0202 $^{+0.0016}_{-0.0015}$	0.0156

SRV #1 and SRV #2 each contained 100% of the normal amount of payload expected from Mission 1024-1 and 1024-2 respectively.

C. PANORAMIC CAMERAS

The Master and Slave panoramic cameras operated throughout both missions with no significant problems and produced excellent photographic coverage. The cloud cover observed in the photography was the lowest of all missions to date during 1965 and averaged 35% for the entire flight.

D. STELLAR-INDEX CAMERAS

Stellar-Index camera D-69 used during Mission 1024-1 and S/I D 64 used during Mission 1024-2 operated normally. S/I D-69 acquired approximately 50 stars per frame while S/I D-64 recorded approximately 20 stars per frame.

E. OTHER SUBSYSTEMS

The telemetry instrumentation, command, thermal control, and pressure make-up subsystems performed satisfactorily throughout both missions.

With the exception of two incorrect time words, one recorded on frame 53, pass D-35 and the other recorded on frame 152, pass D-40, clock performance was excellent throughout both missions.

F. CONCLUSIONS

The panoramic and Stellar-Index photography was of high quality throughout Mission 1024-1 and 1024-2 and adequate to meet the search and surveillance objective of the "J" Program.

The low cloud cover (35%) throughout the flight combined with consistently good system performance was responsible for providing the highest information content in Mission 1024 photography compared to any other flight made to date in 1965.

SECTION 2

PRE-FLIGHT SYSTEMS TESTS

A. ENVIRONMENTAL TESTING

1. Test Objective

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

2. Test Summary

The J-24 payload system completed a 4-1/2 day orbit simulation test at the Sunnyvale HIVOS chamber on 13 May 1965. The HIVOS test consisted of 2-1/2 days of SRV-"A" testing followed by one day of J-24 deactivate, and one day of SRV-"B" operation. Approximately 14,000 feet of 3404 type flight film was programmed thru panoramic cameras #172 and #173 during altitude testing. No corona discharge marks were present in either the Master or Slave film exhibits. S/I D-69, tested with SRV #1, demonstrated acceptable performance. S/I D-64, tested with SRV #2, was rated unacceptable for flight due to failure of the Index camera shutter in the open position. S/I D-64 shutter and shutter solenoid were replaced. Subsequent to installation of the new shutter and solenoid, 500 cycles of operation demonstrated S/I D-64 to be acceptable for flight.

3. Panoramic Camera Performance

Both panoramic cameras operated satisfactorily throughout the test with exception of the following:

The 99/101 clutch on the master camera exhibited an abnormal change during orbit 15 of the "A" phase. The normal clutch ratio was approximately 6/7 and changed to 8/9 during this time. Post test inspection revealed that the flanges of take-up cassette #2 were rubbing together causing a change in the camera tension.

Take-up cassette #2 was replaced and the system returned to the altitude chamber. Subsequent operation at altitude revealed acceptable system performance.

An instrument Off command occurred during the center of format pulse on the Master camera during the "A" phase and the camera operated one extra cycle. This suggested that the dwell time of switch S-107 was less than 10^{o}. It should be approximately 20^{o}.

A special mag amp up-ramp test was conducted prior to altitude test #2. The results showed that the mag amp of the Master camera reached 63% of steady state in 3.7 seconds. The mag amp of the Slave camera reached this level in 2.6 seconds. Both rates are acceptable for flight.

The cycle periods for the Master and Slave averaged 0.94% and 1.36% slower than the predicted values in the "A" phase. The cycle periods for the Master and Slave averaged 0.03% and 0.28% slower than the predicted values in the "B" phase.

The 99/101 percent clutch ratios averaged 6/7 for instrument No. 1 and 6/6 for instrument No. 2.

The cut and wrap operation was normal with both instruments operating 4 cycles and both lens stopping in the stowed position.

A deactivate sequence was performed between the "A" and "B" phase with both instruments operating 5 cycles and the lens stopping in the stowed position.

4. Stellar/Index Camera Performance

The Stellar/Index camera operated satisfactorily throughout the "A" phase with normal camera slewing during the cut and wrap operation.

The "B" phase Stellar/Index camera operated satisfactorily with normal camera slewing during the "B" recovery sequence.

5. Instrumentation Performance

Correlation between the film footage pots and the cycle counters during the "A" and "B" phase were as follows:

CYCLE COUNTERS VS. POTS

Rev.	Cycle Counter #1	Delta #1	Pot #1	Cycle Counter #2	Delta #2	Pot #2
1A	8757		116	5400		148
15 C&W	11527	2770	2959	8103	2703	2907
1B	11531			8107		
12B	14311	2780	2692	0904	2797	2850

The cycle counter on the master failed to advance properly when a center of format pulse occurred. The ten position commutator point was sloped during the "A" phase giving the indication of an open point.

The Phillips gauge read 0 volts throughout the test and also during pre-HIVOS tests. The gauge was replaced with an acceptable unit prior to flight.

Current transients were present on the continuous channels when real time commands were being given. This condition was observed on numerous occasions throughout the test and accepted for flight.

Current transients similar to the center of format pulse were observed during horizon camera shutter operation. Transients were also present on the continuous channels at instrument start up and instrument shut-down.

Sixty cycle noise was present on tape recorder track No. 1 during the cut and wrap operation.

6. Temperature Environment

A tabulation of the temperature environment is shown as follows:

AVERAGE TEMPERATURE ENVIRONMENT
(Degrees Fahrenheit)

"A" Phase	Orbit 1	Orbit 7	Orbit 15
Master	73	61	
Slave	75	61	60
"B" Phase	**Orbit 1**	**Orbit 6**	**Orbit 12**
Master	82	86	91
Slave	80	81	87

7. Clock Performance

The clock system operated satisfactorily through the "A" phase and through Rev. 6 of the "B" phase. An error of approximately 125 milliseconds was present between Rev. 6 and Rev. 7. Since the IRIG "C" standard time generator, used to calibrate the clock was not coorelated during this period of time, the cause of this anomaly was not apparent. Subsequent clock tests demonstrated acceptable performance. The following table shows clock performance during the altitude test.

Rev.	IRIG "C"				Clock Time	Error
	Days	Hours	Minutes	Seconds		
1A	129	07	07	07.215	51563.907	
12A	131	12	12	59.620	242716.255	-.057
1B	132	08	35	17.090	48326.985	
6B	133	08	16	32.280	133602.158	-.017
12B	133	17	32	22.660	166952.692	-.154

8. Pressure Make-Up System Performance

The pressure make-up system operated satisfactorily throughout the test. The average gas consumption was approximately 6.2 lbs./minute of operate time. The maximum pressure attained with the PMU on was approximately 86 microns during an instrument operation. The minimum pressure attained during the test was approximately 2.0 microns during a static condition.

STATIC PRESSURES - MICRONS

Day	Microns
1	33.0
2	8.0
3	2.0
4	2.0
5	2.0
6	2.0

No corona discharge marks were present on altitude test film from the master, slave or S/I #69 cameras. Test film from S/I #64 contained minor corona discharge fog that was within the flight acceptable requirements.

B. RESOLUTION TEST

The dynamic resolution test of the J-24 payload system was performed at the A/P facility on 4 June 1965. Each panoramic camera photographed high and low contrast resolution targets. The resulting through focus resolution data is shown in Figure 2-1 for the Master camera and in Figure 2-2 for the Slave camera.

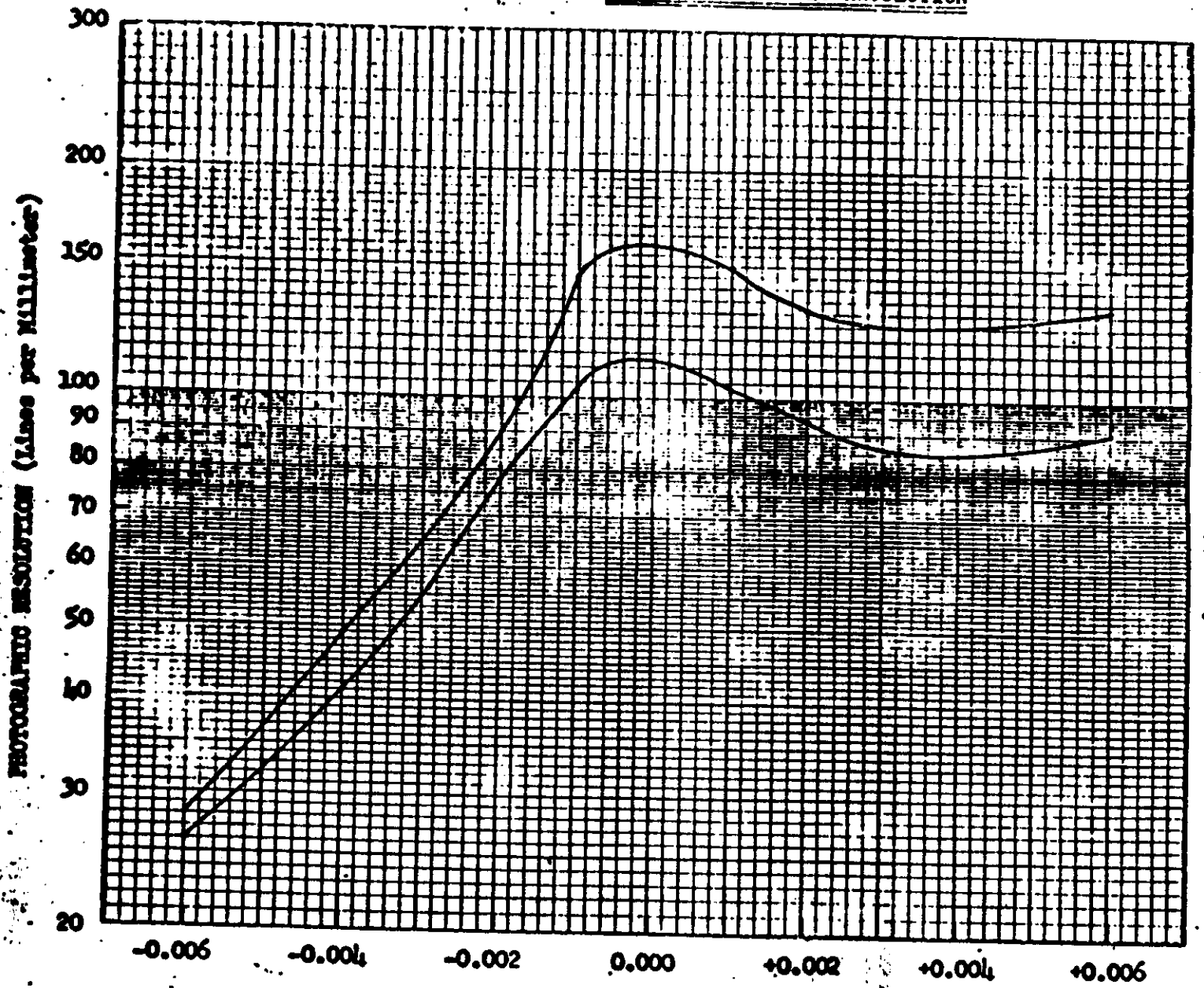
C. LIGHT LEAK TEST

J-24 System was tested and evaluated for light leaks on 23 and 26 June, 1965. A fog pattern on the test film indicated a light leak was present in the immediate vicinity of the interface between SRV #1 and the Fairing section, suggesting a forebody leak. A second fog pattern was present on the Master Instrument 1.5 frames from the platen and toward the take-up cassette suggesting a drum or horizon boot light leak.

After examination of SRV #1 forebody it was discovered that the light was leaking through the ablative shield. Additional black paint on the inside surface of the affected area eliminated the light leak.

Examination of the Master camera in the vicinity of the drum light leak revealed a punched hole in the boot of the output horizon camera. The boot was repaired and a second system light leak test performed. Evaluation of the film exhibit from the second light leak test showed no indication of light fog.

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 172

Payload No: J-24

Resolution (l/mm)

High Contrast: 15°

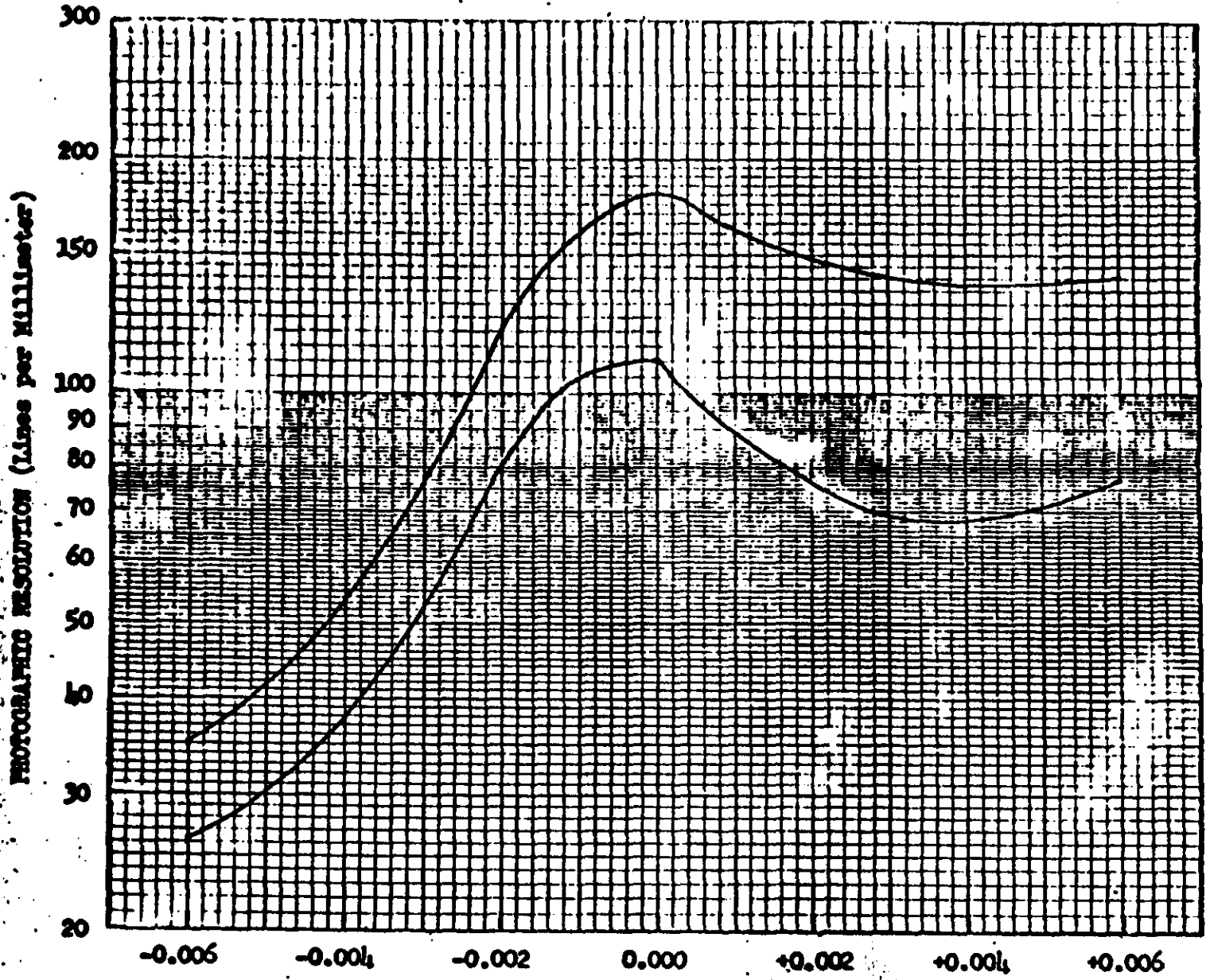
Low Contrast: 0°

Film Type: 3404

Test Date: 6/4/65

FIGURE 2-1

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 173

Payload No: J-24

Resolution (l/mm)

High Contrast: 15°

Low Contrast: 0°

Film Type: 3404

Test Date: 6/4/65

FIGURE 2-2

SECTION 3

FLIGHT OPERATIONS

A. INSTRUMENTATION AND COMMAND PERFORMANCE

The telemetry instrumentation system operation was satisfactory throughout the mission. Two temperature monitors (Fairing #4 and #5) malfunctioned during ascent. The points showed both out of band high and low, thus no conclusion can be made to pinpoint possible failure location. The most probable explanation is that the sensor was damaged from ascent heating. These points were switched in the transfer box at the first recovery and temp data on these points were good in Mission 1024-2. Normal response was obtained from all stored and real-time commands.

B. PANORAMIC CAMERA PERFORMANCE

Instrument system dynamics were observed on telemetry during several [redacted] Tracking Station acquisitions. Instrument dynamic operation was good on all engineering operations observed. Payload transport was smooth as indicated by the supply and horizon idler monitors. Instrument startup and shutdown was normal in each case. The 99/101 clutch ratio averaged 6/6 for both instruments.

Cycle rate data obtained from engineering operations showed that the instrument cycle rate errors averaged less than 1% from the calibrated values as shown in Table 3-1.

C. STELLAR/INDEX CAMERA PERFORMANCE

Mission 1024-1 and 1024-2 Stellar/Index cameras operated properly during the entire mission. Stellar/Index events were observed on all of the engineering operations at [redacted] Tracking Station. Metering was normal for both units. Shutter pulses were observed on all daytime engineering passes. Mission 1024-1 index payload was depleted during the cut and wrap sequence while the stellar/index was slewing. Mission 1024-2 index payload was depleted on orbit 159 engineering operation at [redacted] This depletion was expected based on the load length and number of cycles taken by the panoramic instruments.

TABLE 3-1

CYCLE PERIOD DATA (Minutes)

Orbit	Time Up Ramp (Sec.)	FORWARD Actual	FORWARD CAL.	FORWARD %Error	AFT Actual	AFT CAL.	AFT % Error
9	10	4.170	4.222	1.22F	4.175	4.197	0.54F
16	1530	2.320	2.314	0.24S	2.325	2.314	0.49S
32	1575	2.300	2.280	0.86S	2.302	2.280	0.97S
47	1653	2.274	2.255	0.86S	2.269	2.250	0.84S
63	1685	2.267	2.252	0.68S	2.260	2.248	0.54S
88	269	3.661	3.654	0.18S	3.650	3.641	0.26S
95	1865	2.244	2.242	0.10S	2.240	2.240	0.01F
111	1839	2.260	2.242	0.78S	2.250	2.241	0.42S
127	1905	2.263	2.241	0.97S	2.249	2.240	0.41S
143	1770	2.264	2.245	0.86S	2.249	2.242	0.29S

F = Fast
S = Slow
CAL. = Calibrated

The main plate temperature averages showed a decrease of 15° through the duration of the flight.

During Mission 1024-1, 3035 frames were taken in the Master camera and 3055 frames in the slave camera. Master and Slave cameras produced 2895 and 2872 frames respectively during Mission 1024-2 based on cycle counter data.

D. CLOCK PERFORMANCE

Good correlation was obtained between the clock and [redacted] system time. Table 3-2 contains clock/system time correlation. Two incorrect time words were recorded during Mission 1024-1; one for frame 53, pass D-35, the other on frame 152 pass D-40. The test history of the flight clock was investigated and no such anomalies were detected in either component or system test. No anomaly of this type has occurred since the inception of the digital clock effort. Investigation has revealed no indication of the source of the anomaly and it remains an unknown phenomena.

E. PRESSURE MAKE-UP (PMU) SYSTEM PERFORMANCE

The T/M data indicated satisfactory performance by the pressure make-up system throughout Mission 1024-1 and 1024-2

The PMU supply consumption vs. camera operate time is plotted in Figure 3-1. The overall average consumption rate was 7.48 PSIA per minute of operate time.

The Phillips pressure gauge operated properly throughout the mission. Figure 3-2 shows the conic chamber pressure vs. days on orbit. Included in the plot is a typical pressure profile recorded from a Pirani gauge flown on J-03, J-11, J-12 and J-13 systems.

F. TEMPERATURE ENVIRONMENT

All thermal data from the [redacted] Tracking Station are presented in Tables 3-3 and 3-4. The panoramic camera temperature sensors are corrected for self-heating, all other payload temperature sensors are not corrected for self-heating.

Figures 3-3, 3-4 and 3-5 show the in-flight predicted and actual temperatures. Predicted temperatures for the instrument scan arm sensors, drum sensors, and lens assembly sensors are based on the scan arm in line with the center of format.

CLOCK SUMMARY

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
77909.957	103197.51990	77909.96090	-0.00295	0	1
38452.145	150139.70990	38452.14800	-0.00202	9	1
77824.792	189512.35290	77824.78850	0.00443	16	1
33158.697	231246.26390	33158.69690	0.00104	24	1
77923.647	276011.22490	77923.65510	-0.00717	32	1
33248.947	317736.51590	33248.94350	0.00443	40	1
38653.047	323140.61490	38653.04620	0.00177	41	1
72504.107	356991.68390	72504.10910	-0.00112	47	1
33217.050	404104.62690	33217.04910	0.00182	56	1
72640.779	443528.35790	72640.77770	0.00228	63	1
33342.682	490630.27090	33342.68770	-0.00478	72	1
72725.187	530012.75690	72725.17130	0.01667	79	1
33357.685	40174.37690	33357.70030	-0.01440	88	1

A0=-0.25287552620 05 A1= 0.999999937631D 00
SIGMA=0.00668 NO. POINTS= 13
RATIO OF CLOCK TIME TO SYS TIME= 0.10000000623700 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
77909.957	103197.51990	77909.95770	0.00025	0	1
38452.145	150139.70990	38452.14550	-0.00059	9	1
77824.792	189512.35290	77824.78830	-0.00468	16	1
33158.697	231246.26390	33158.69760	0.00032	24	1
77923.647	276011.22490	77923.65650	-0.00857	32	1
33248.947	317736.51590	33248.94520	0.00271	40	1
38653.047	323140.61490	38653.04790	0.00003	41	1
72504.107	356991.68390	72504.11080	-0.00287	47	1
33217.050	404104.62690	33217.05050	0.00040	56	1
72640.779	443528.35790	72640.77850	0.00144	63	1
33342.682	490630.27090	33342.68750	-0.00458	72	1
72725.187	530012.75690	72725.16990	0.01805	79	1
33357.685	40174.37690	33357.69720	-0.01126	88	1

A0=-0.25287561060 05 A1= 0.999999947594D 00
A2=-0.87973442394700-13
SIGMA=0.00648 NO. POINTS= 13

TABLE 3-2

MISSION CLOCK SYSTEM TIME CORRELATION

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
72728.632	46919.83390	72728.63230	0.00062	95	1
33223.942	93815.15790	33223.94950	-0.00658	104	1
72660.610	133251.81890	72660.60480	0.00614	111	1
33233.607	180224.82990	33233.60900	-0.00105	120	1
72560.177	219551.40390	72560.17730	0.00065	127	1
33116.697	266507.92590	33116.69250	0.00546	136	1
72337.869	305729.11290	72337.87380	-0.00385	143	1
32964.647	352755.89590	32964.65000	-0.00203	152	1
72170.423	391961.67490	72170.42330	0.00065	159	1

A0= 0.25808805190 05 A1= 0.9999998549790 00
SIGMA=0.00363. NO. POINTS= 9
RATIO OF CLOCK TIME TO SYS TIME= 0.1000000145020 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
72728.632	46919.83390	72728.63110	0.00186	95	1
33223.942	93815.15790	33223.94930	-0.00633	104	1
72660.610	133251.81890	72660.60520	0.00580	111	1
33233.607	180224.82990	33233.60980	-0.00181	120	1
72560.177	219551.40390	72560.17820	-0.00022	127	1
33116.697	266507.92590	33116.69320	0.00474	136	1
72337.869	305729.11290	72337.87420	-0.00421	143	1
32964.647	352755.89590	32964.64960	-0.00168	152	1
72170.423	391961.67490	72170.42210	0.00184	159	1

A0= 0.25808802650 05 A1= 0.9999998858850 00
A2=-0.70079225416440-13
SIGMA=0.00356 NO. POINTS= 9

TABLE 3-2

MISSION CLOCK SYSTEM TIME CORRELATION

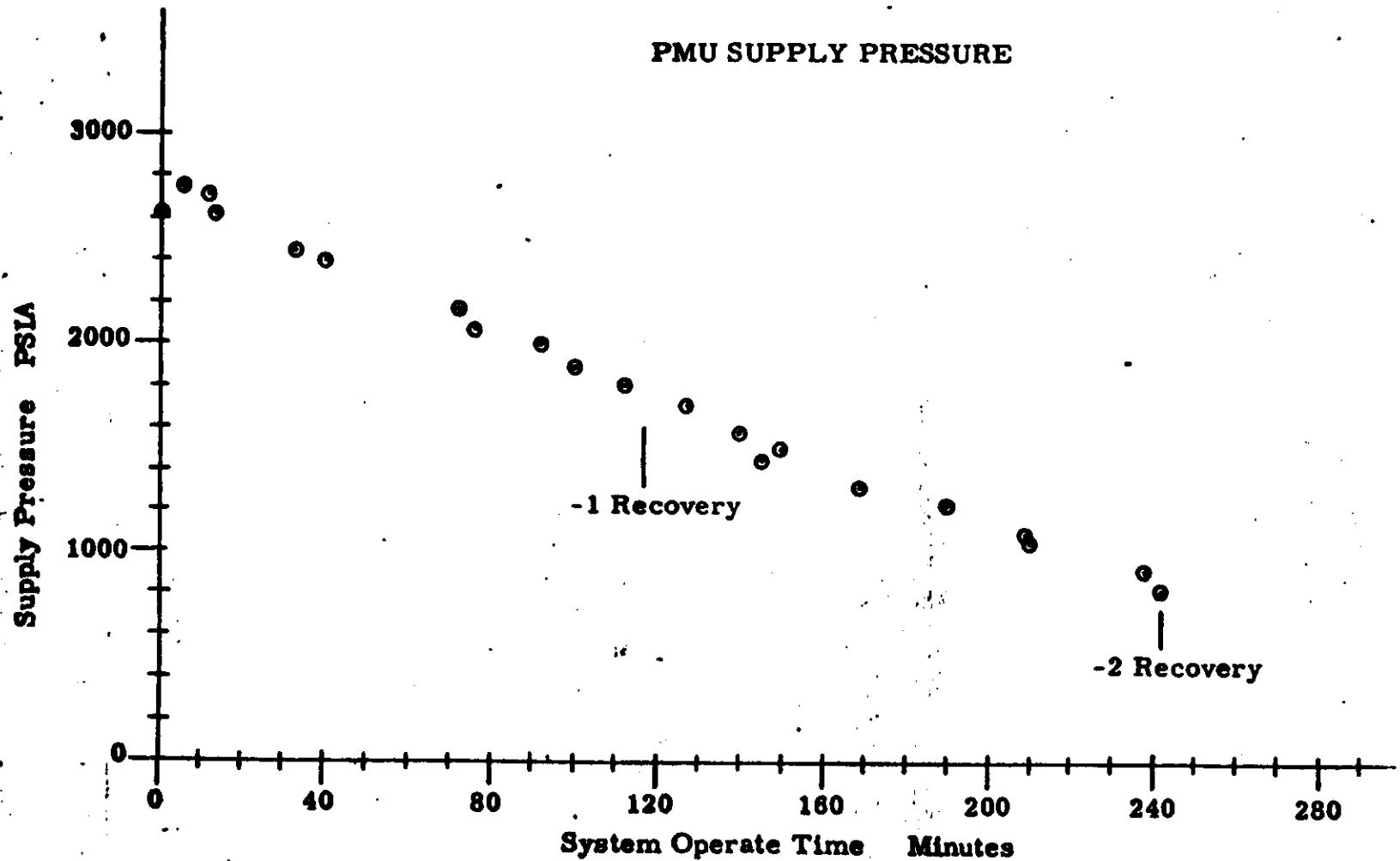

PMU SUPPLY PRESSURE
Supply Pressure PSIA
3000
2000
1000
0
-1 Recovery
-2 Recovery
0
40
80
120
160
200
240
280
System Operate Time Minutes

FIGURE 3-1

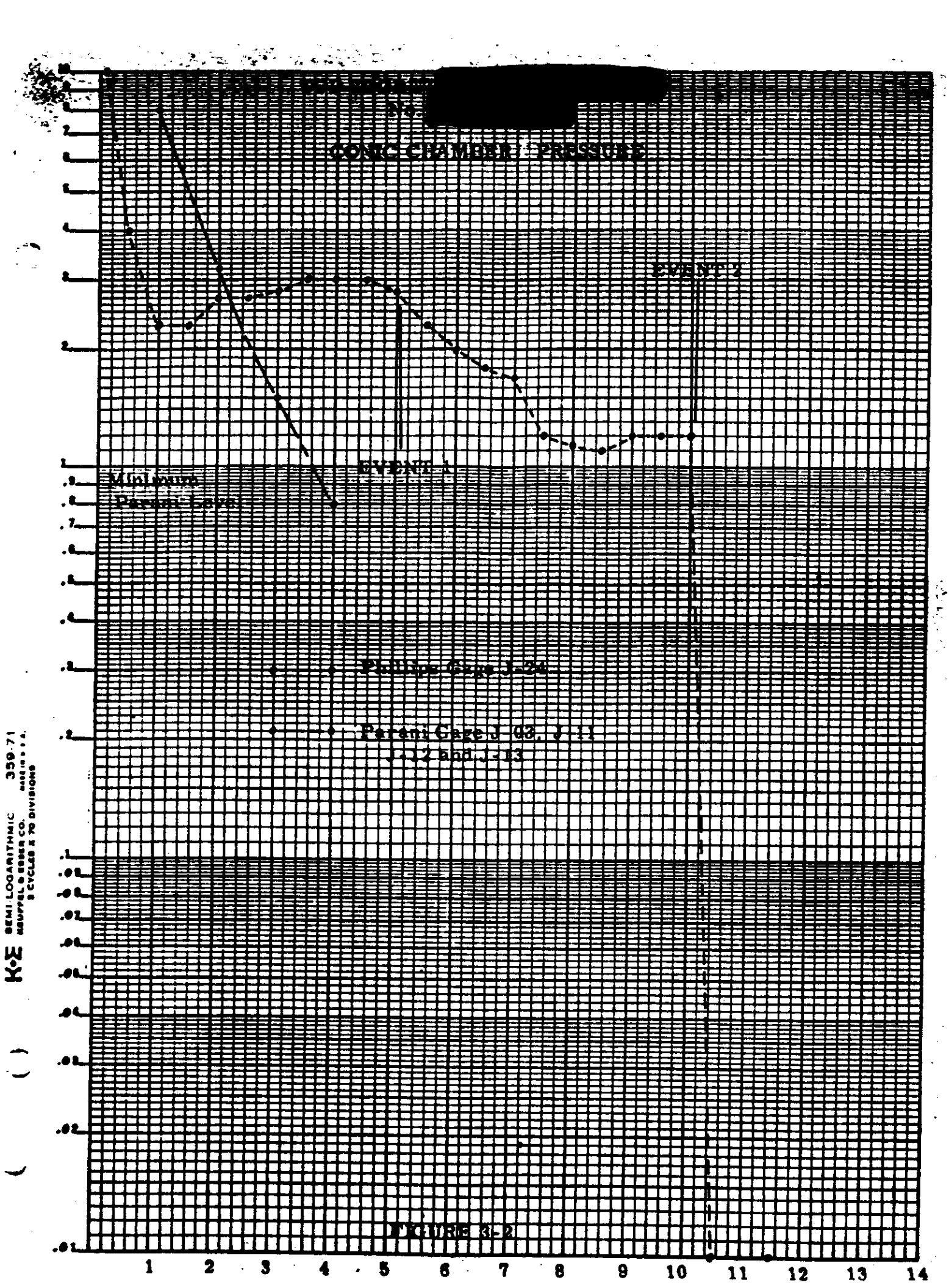

CONC CHAMBER PRESSURE
EVENT 2
EVENT 1
Minimum
Parent Level
Pulse Cage 3-24
Parent Cage J-03, J-11
J-12 and J-13
1
2
3
4
5
6
7
8
9
10
11
12
13
14

FIGURE 3-2

TABLE 3-3

MISSION 1024-1 TEMPERATURE SUMMARY

ORBITS ACQUIRED

SENSOR										
Master Camera	9	16	24	32	40	47	56	63	72	79
3	73	72	74	72	74	74	74	70	73	70
4	79	77	80	76	78	75	78	75	78	73
5	86	83	86	82	85	81	84	80	83	79
6	85	81	84	81	82	80	81	78	79	77
7	81	80	82	79	80	79	79	78	78	76
8	85	81	84	80	83	79	82	77	81	77
9	87	84	88	83	86	82	85	79	84	78
10	-	-	-	-	-	-	-	-	-	-
11	92	90	92	88	89	86	88	84	86	83
12	81	76	80	76	79	75	79	74	79	73
13	79	77	78	76	75	74	75	72	73	72
AVG.	83	80	83	80	81	78	80	77	79	76
Slave Camera										
3	79	78	79	76	78	76	76	73	74	71
4	75	72	76	71	75	70	73	69	72	67
5	80	80	82	79	81	79	81	77	80	76
6	75	74	76	74	75	73	74	71	73	72
7	81	80	83	80	80	79	79	78	78	77
8	79	74	78	74	78	74	77	73	76	72
9	83	79	84	80	83	80	82	79	82	78
10	-	-	-	-	-	-	-	-	-	-
11	71	69	71	71	70	68	70	68	69	68
12	81	75	81	75	79	75	79	73	77	71
13	73	73	74	75	72	72	72	71	71	70
AVG.	78	76	78	76	77	75	76	72	75	72

TABLE 3-3
MISSION 1024-1 TEMPERATURE SUMMARY
ORBITS ACQUIRED

SENSOR										
Supply Spool	9	16	24	32	40	47	56	63	72	79
1	59	60	62	61	63	62	64	62	63	61
2	67	65	68	65	68	65	68	65	67	67
Fairing/Barrel #1 ("A") ("B")										
1	42	53	42	50	42	50	47	47	44	50
2	5	-2	5	-5	9	-1	09	-5	9	-5
3	16	22	14	22	16	22	16	21	16	22
4	N	NG	-	-	-	OBL	-		-	-
5	N	NG	-	-	-	OBL	-		-	-
6	62	80	59	77	56	71	59	65	53	62
Barrel No. 2										
1	51	70	49	65	49	62	49	57	49	51
2	53	93	53	86	51	86	48	76	48	74
3	61	103	64	99	64	103	66	99	66	107
4	58	53	64	55	61	55	64	55	64	58
5	56	61	54	61	56	61	56	61	56	59
Conic Adapter										
1	52	58	47	52	49	52	49	47	47	41
Clock										
1	63	63	63	61	63	61	63	61	63	59
2	63	63	66	61	63	63	63	61	63	59
Thrust Cone "A" to "B" SRV										
1	41	38	40	37	39	37	39	37	40	36
2	63	58	60	54	57	54	57	53	54	51
Stellar/Index "A" to "B"										
1	53	56	53	50	50	50	50	49	53	46
2	57	53	53	45	49	45	49	49	49	41
Recovery Batt. "B" SRV										
1	72	71	70	70	70	70	70	70	68	67
Master Cassette "A" SRV										
2	71	72	72	70	70	68	69	67	67	68

TABLE 3-4

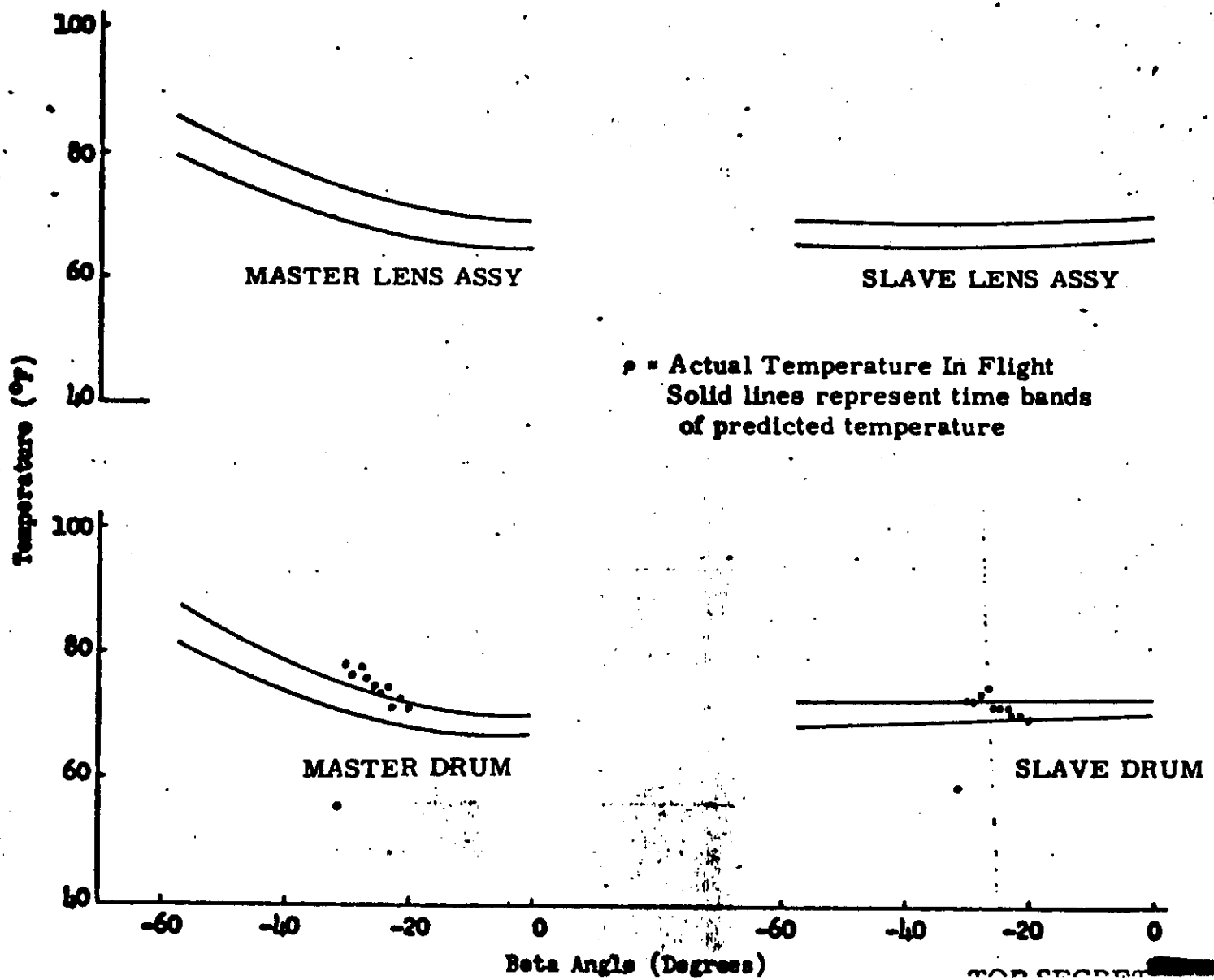
MISSION 1024-2 TEMPERATURE SUMMARY
ORBITS ACQUIRED

SENSOR Master Camera	88	95	104	111	120	127	136	143	152	159
3	68	64	64	62	64	61	64	61	64	62
4	74	68	69	67	69	66	69	66	69	66
5	79	74	75	72	74	70	74	70	73	70
6	74	71	71	69	70	67	68	67	68	66
7	74	71	70	69	69	68	69	69	68	67
8	77	72	74	69	73	68	71	68	72	67
9	79	74	76	72	75	70	74	70	74	69
10	-	-	-	-	-	-	-	-	-	-
11	80	76	76	73	75	72	73	70	72	69
12	74	69	71	68	70	66	70	67	71	68
13	68	65	63	62	63	62	62	61	61	61
AVG.	75	70	71	68	70	67	69	67	69	67
Slave Camera										
3	69	66	65	63	63	60	63	59	61	57
4	69	62	65	61	62	58	62	58	61	56
5	75	71	72	70	71	69	70	68	70	68
6	69	66	65	61	65	63	63	63	64	63
7	75	71	70	69	68	68	68	67	68	67
8	72	67	69	65	69	64	67	64	67	63
9	78	73	74	71	74	70	73	70	74	70
10	-	-	-	-	-	-	-	-	-	-
11	64	63	62	59	62	58	61	58	60	58
12	73	66	69	64	67	62	66	62	65	61
13	65	64	60	61	60	60	60	60	60	60
AVG.	71	67	67	65	66	63	65	63	65	62

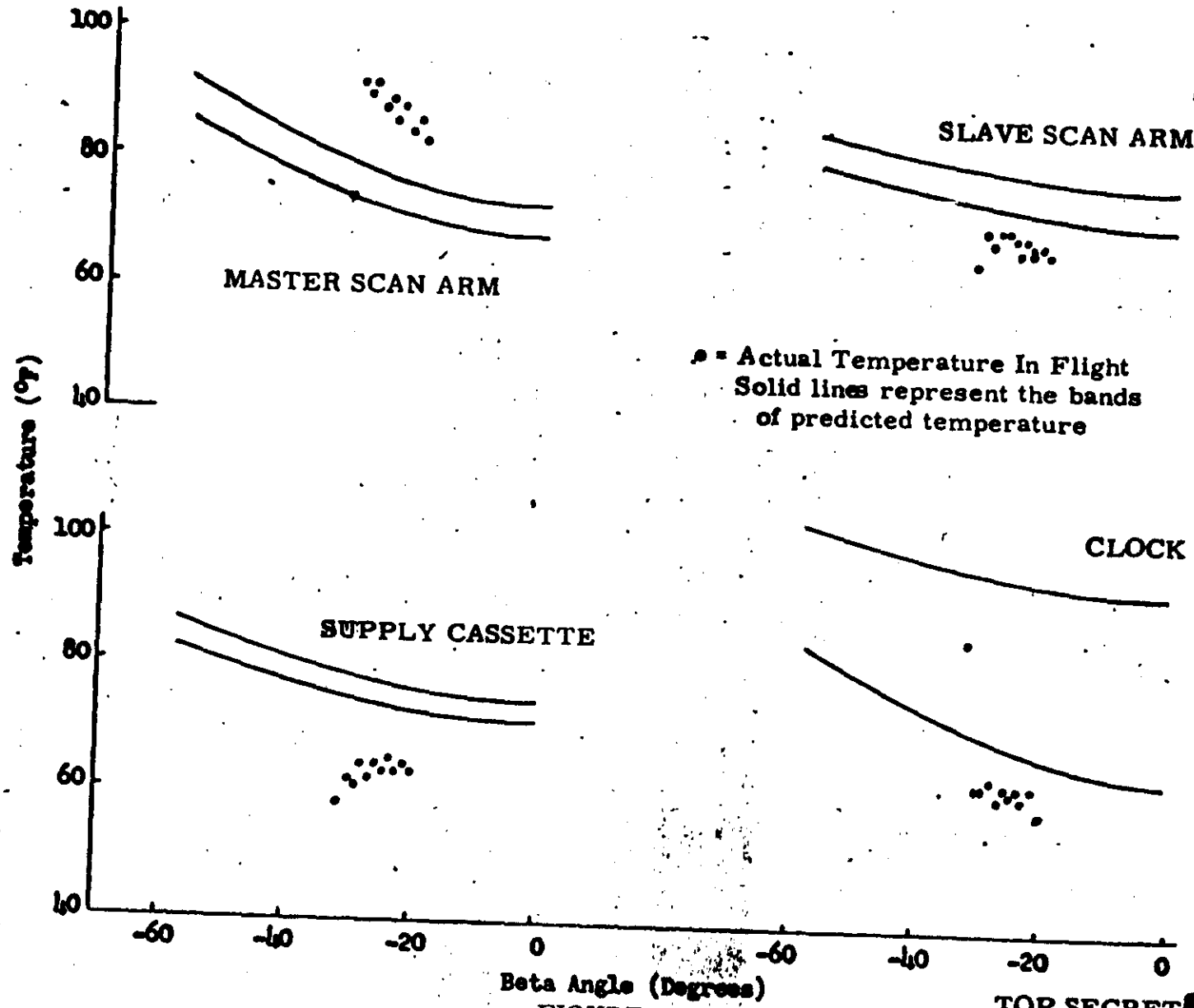
TABLE 3-4
MISSION 1024-2 TEMPERATURE SUMMARY
ORBITS ACQUIRED

SENSOR										
Supply Spool	88	95	104	111	120	127	136	143	152	159
1	60	56	55	54	54	53	55	53	54	53
2	64	59	59	57	58	56	58	56	57	55
Fairing/Barrel #1 ("A") ("B")										
1	29	43	26		26	38	32	35	29	35
2	64	59	61		61	61	64	61	66	64
3	71	114	71		71	108	71	99	71	96
4	47	75	47		32	65	42	57	42	50
5	46	54	43		43	49	40	43	37	54
6	29	43	26		-	-	-	-	-	-
Barrel No. 2										
1	38	46	35	44	35	41	35	35	33	33
2	45	71	40	66	40	61	40	51	37	48
3	61	45	61	107	61	99	61	87	61	87
4	61	55	61	58	61	58	64	61	64	61
5	46	54	40	51	43	48	48	48	46	48
Conic Adapter										
1	35	35	32	32	32	26	32	23	26	23
Clock										
1	55	51	51	51	53	48	53	48	51	48
2	55	51	51	51	51	48	53	48	51	48
Thrust Cone "A" to "B" SRV										
1	63	60	60	59	60	57	60	57	59	56
2	75	72	70	70	68	67	67	64	66	65
Stellar/Index "A" to "B"										
1	60	57	54	57	54	54	54	51	51	51
2	59	57	57	57	57	54	54	54	54	54
Recovery Batt. "B" SRV										
1	84	77	74	87	85	78	76	84	78	82
Master Cassette "A" SRV										
2	-	-	-	-	-	-	-	-	-	-

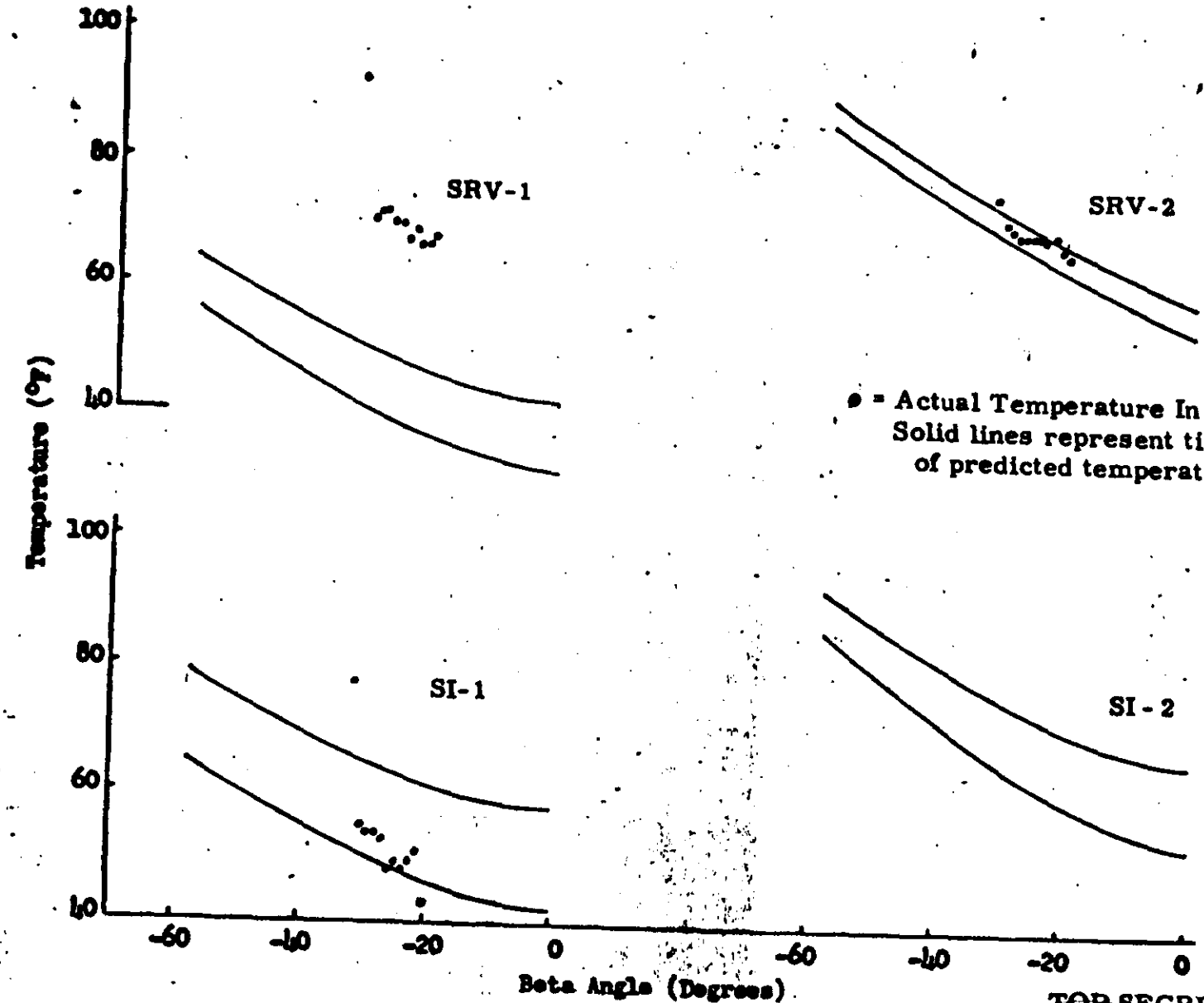
MISSION 1024 PREDICTED AND ACTUAL TEMPERATURES



MISSION 1024 PREDICTED AND ACTUAL TEMPERATURES



MISSION 1024 PREDICTED AND ACTUAL TEMPERATURES



SECTION 4

MISSION 1024-1 RECOVERY SYSTEM

SRV #622 was received at A/P on 21 March 1963. The receiving inspection weight was 149.9 pounds. After modifications and incorporation of outstanding Engineering orders, the SRV was delivered to Systems Test for incorporation into the J-24 system.

The Recovery System was shipped to VAFB on 26 June 1965.

A successful air catch was made during orbit 81 on 27 September 1965. The impact point was within predicted tolerances as follows:

Predicted Impact	26° 01'N, 155° 38' W
Actual Impact	25° 58'N, 155° 44' W

All recovery event times were within the required tolerances. Table 4-1 shows the time sequence of recovery events.

The condition of the recovered capsule was satisfactory. A complete post flight recovery sequence was conducted on the recovered capsule and all parameters were within specification.

MISSION 1024-1 RE-ENTRY SEQUENCE OF EVENTS

Event	Delta Time (Seconds) Actual	Nominal
Transfer		
Electrical Disconnect	1.00	$+0.900^{+0.430}_{-0.400}$
*Separation	2.00	$+2.0 \pm 0.250$
**Spin	3.43	$+3.4 \pm 0.30$
Retro	7.50	$+7.55 \pm 0.45$
Despin	10.31	$+10.75 \pm 0.54$
T/C Separation	1.62	$+1.5 \pm 0.15$
"G" Switch Open	482.43	483.1 to 486.9
Parachute Cover Off	34.35	$+34.0 \pm 1.5$
Drogue Chute Deployed	0.64	$+0.63 \pm 0.08$
Main Chute Deployed	.56	$+0.52 \pm 0.13$
Main Chute Disreefed	4.64	$4.46^{+0.49}_{-0.29}$

* From Transfer
** From Electrical Disconnect

Spin Rate: 66.6 RPM
Despin Rate: 10.6 RPM
Retro Velocities: 1048 Ft/Sec.

TABLE 4-1

SECTION 5

MISSION 1024-2 RECOVERY SYSTEM

The capsule was shipped to VAFB on 25 June 1965.

A successful air catch was made during orbit 161 on 2 October 1965. The impact point was within predicted tolerances as follows:

Predicted Impact	24° 43'N, 165° 40' W
Actual Impact	24° 52'N, 165° 42' W

All event times were within the required tolerances except thrust cone separation. This event was initiated on time but the separation switches opened 0.33 seconds later. Table 5-1 shows the time sequence of recovery events.

The condition of the recovered capsule was satisfactory. A complete post flight recovery sequence was conducted on the recovered capsule and all parameters were within specification.