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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

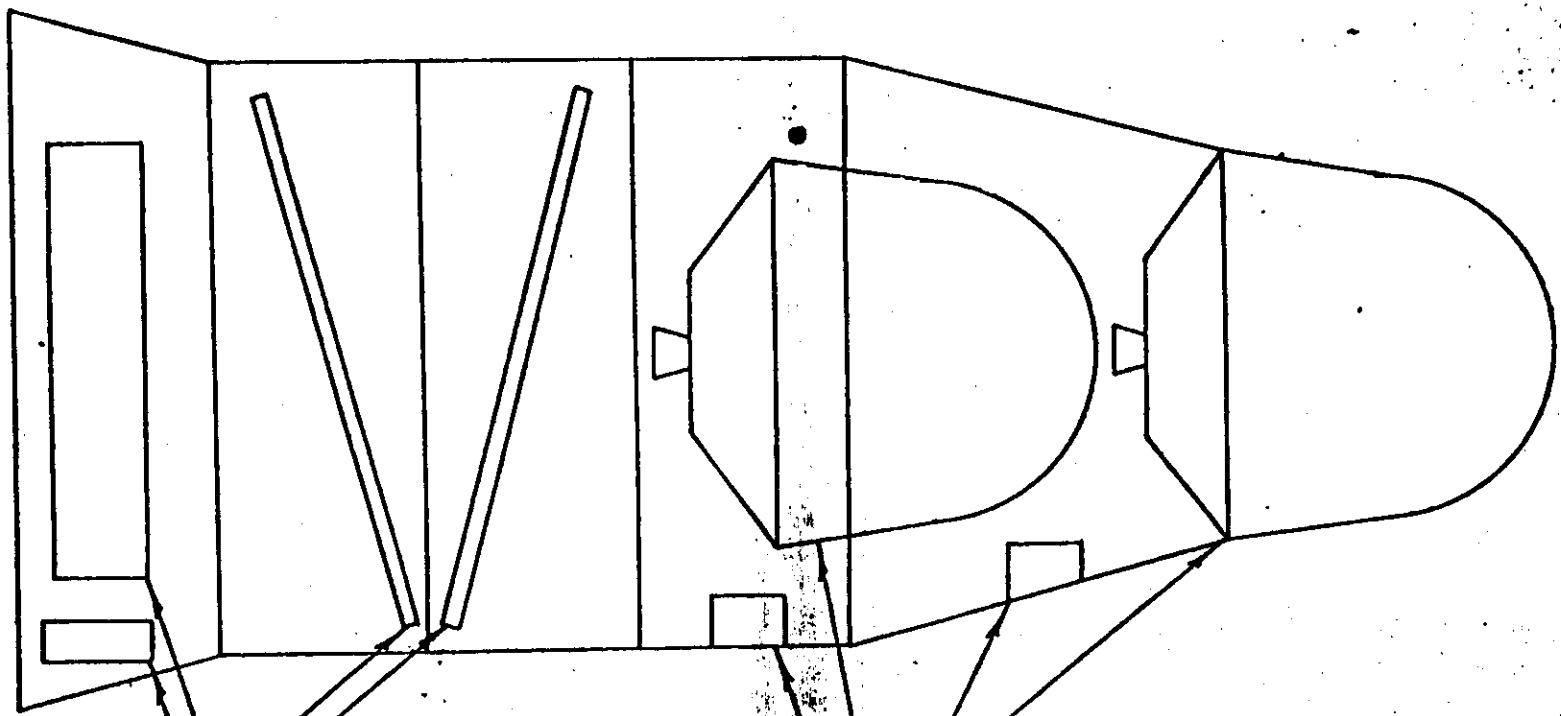


FIGURE 1-1

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.

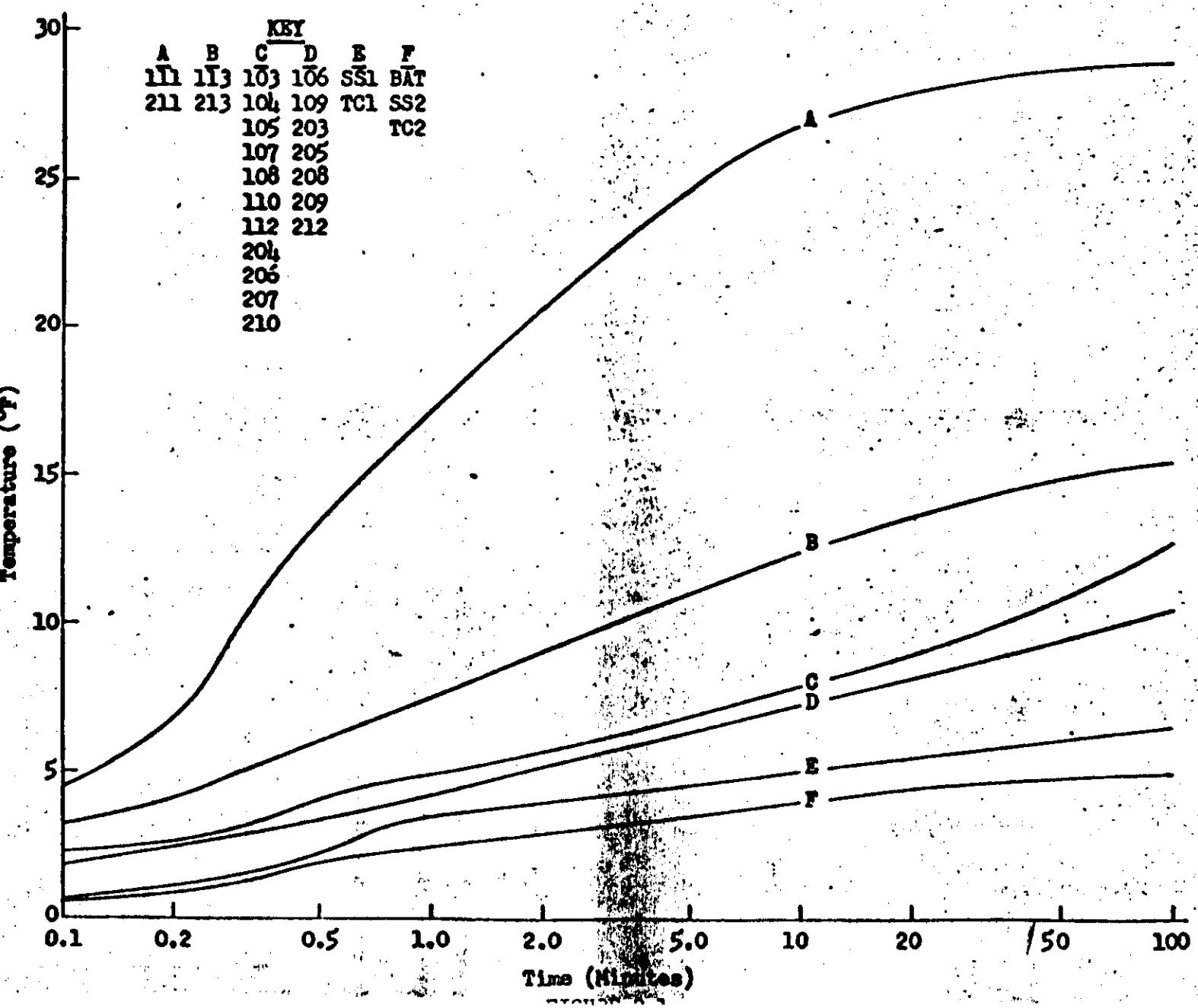
B. RESOLUTION TEST

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.

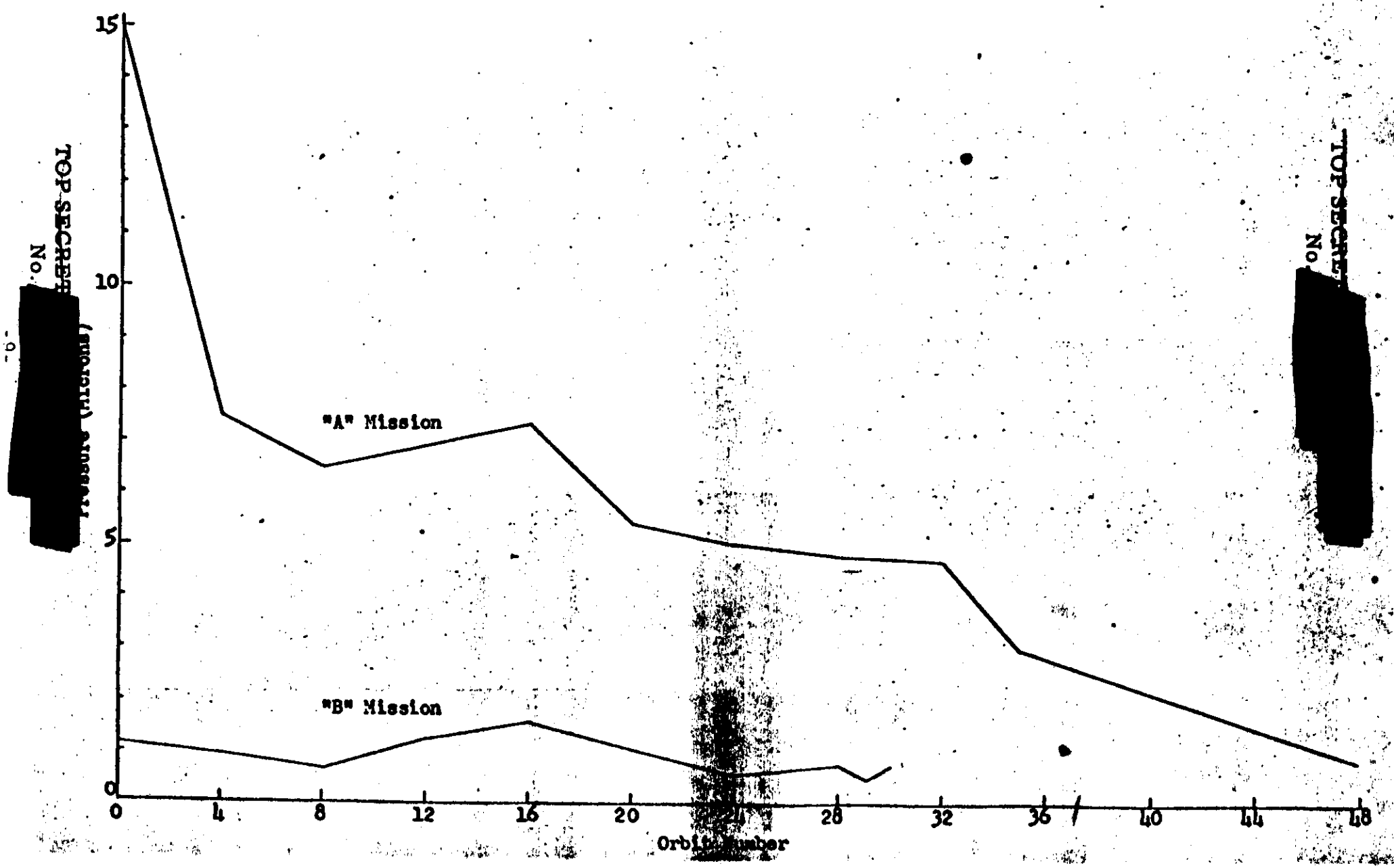
C. LIGHT LEAK TEST

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



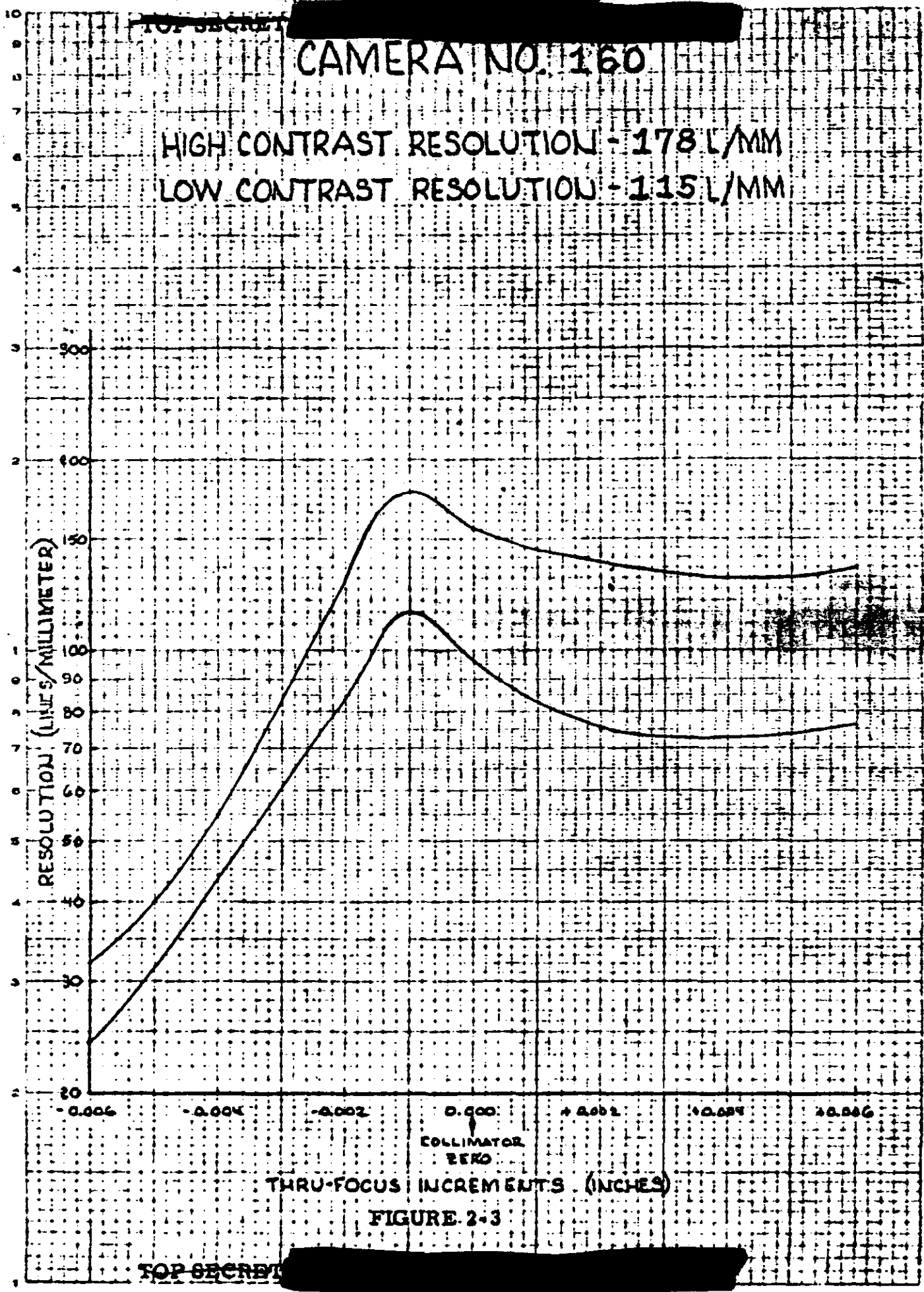


FIGURE 2-3

CAMERA NO. 161

HIGH CONTRAST RESOLUTION -173 L/MM

LOW CONTRAST RESOLUTION +120 L/MM

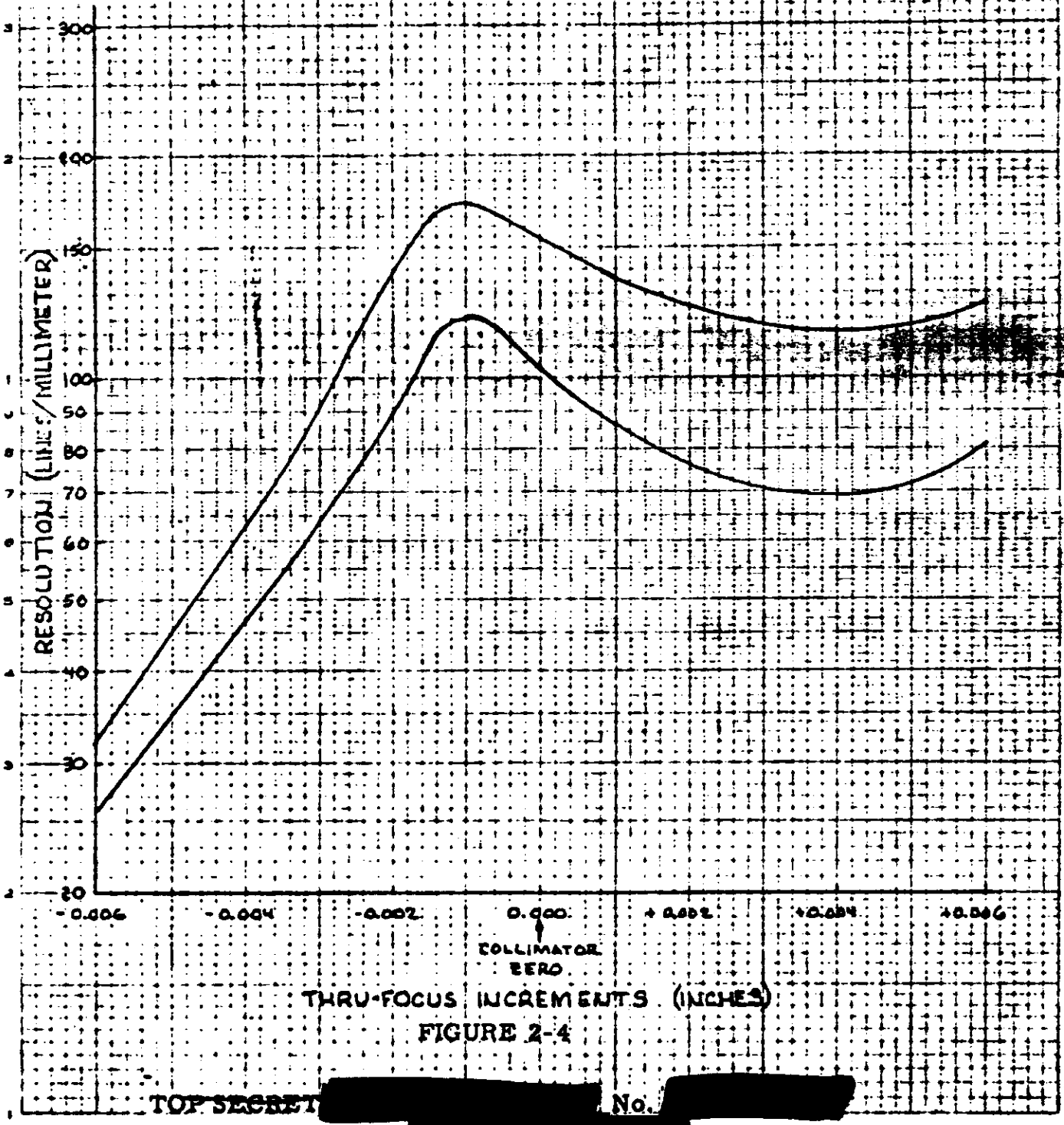


FIGURE 2-4

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.

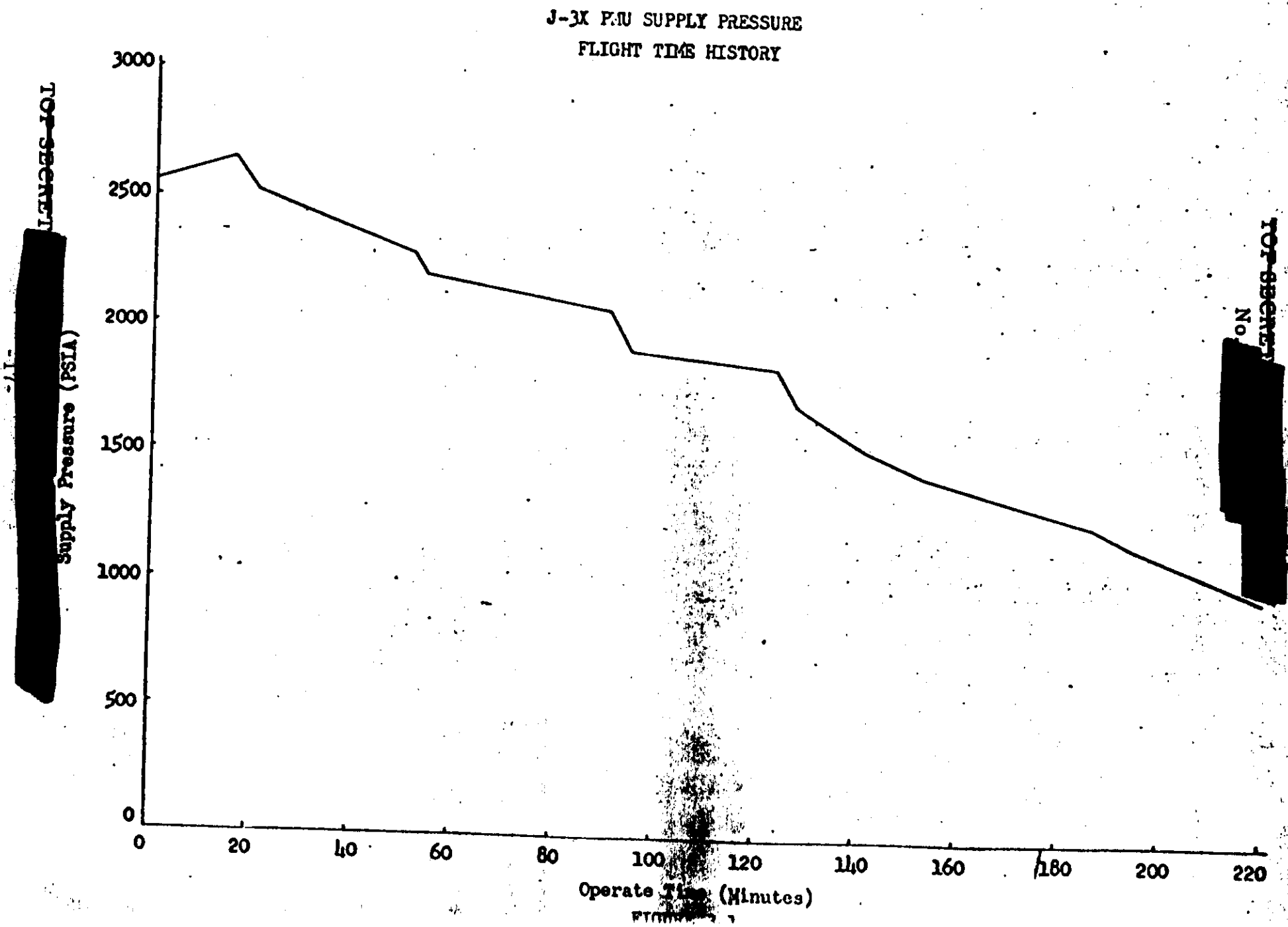
The internal pressure was monitored at the conic section, using a Pirani gage. Representative internal pressure histories of stereo operations for Orbits 9, 32, 72 and 95 are shown in Figures 3-2 to 3-5.

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)

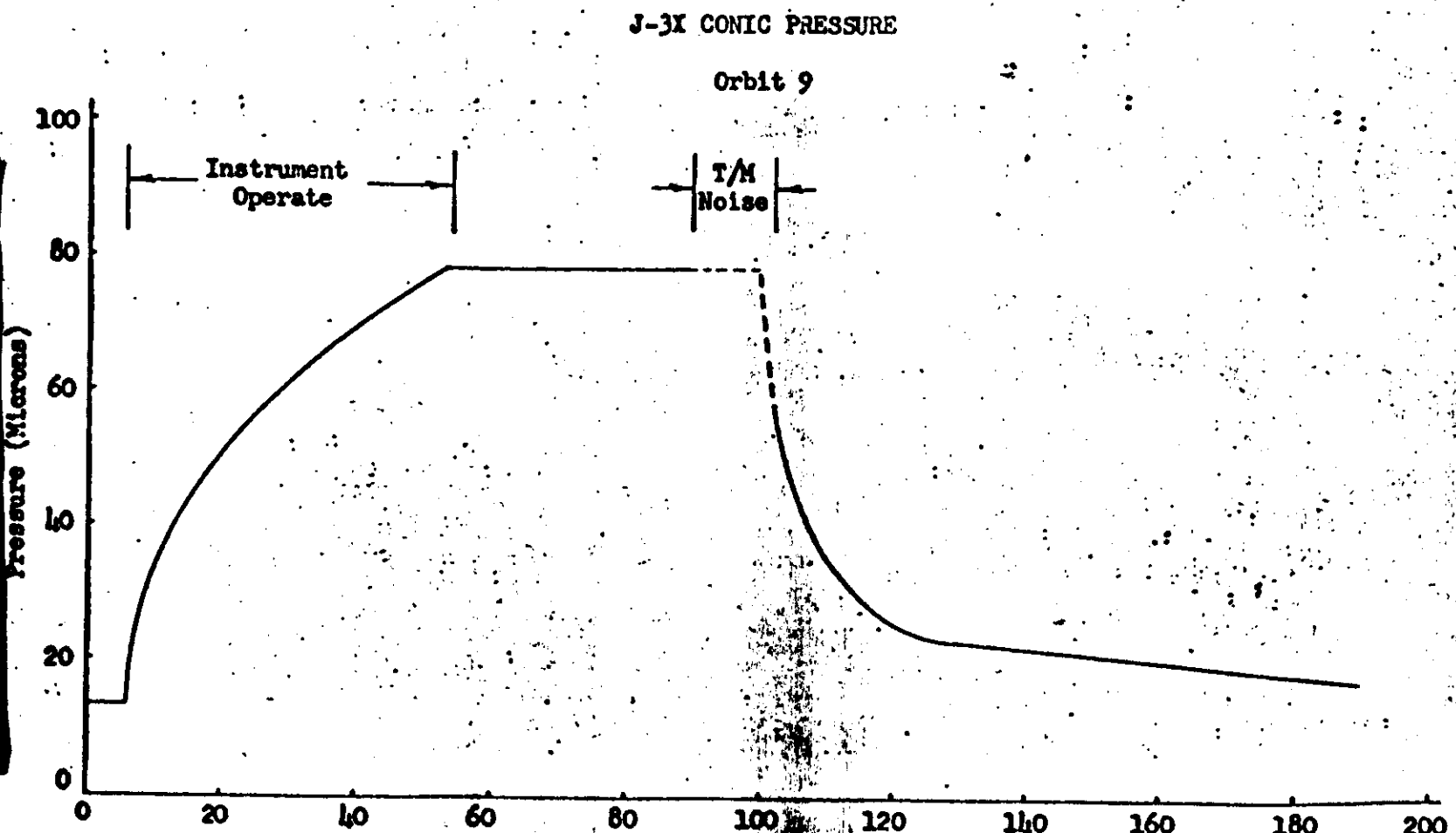

J-3X CONIC PRESSURE
Orbit 9
Instrument Operate
T/M Noise
Pressure (Microns)
Time (Seconds)
0
20
40
60
80
100
120
140
160
180
200

FIGURE 3-2

J-3X CONIC PRESSURE

Orbit 32

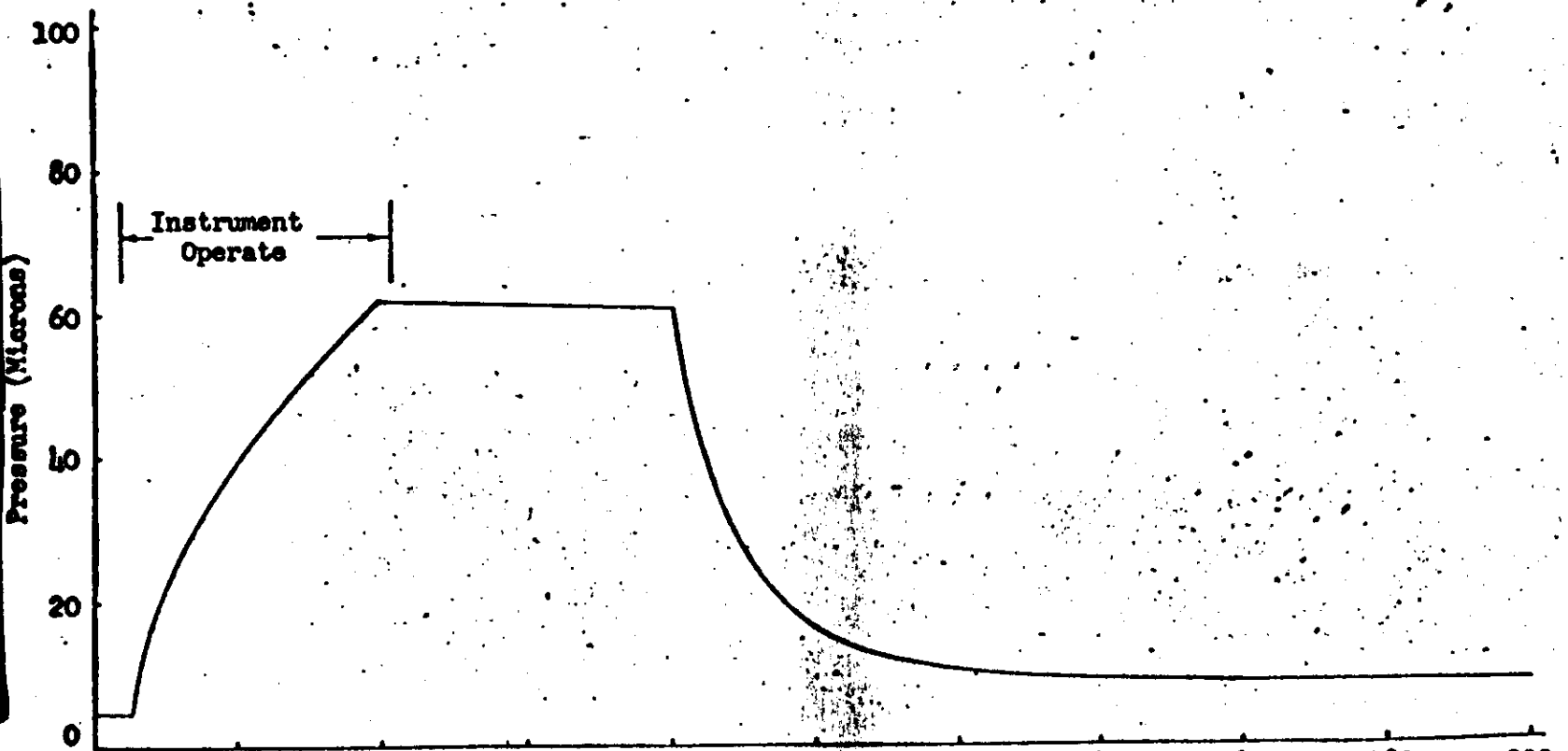


FIGURE 3-3

J-3X CONIC PRESSURE

Orbit 72

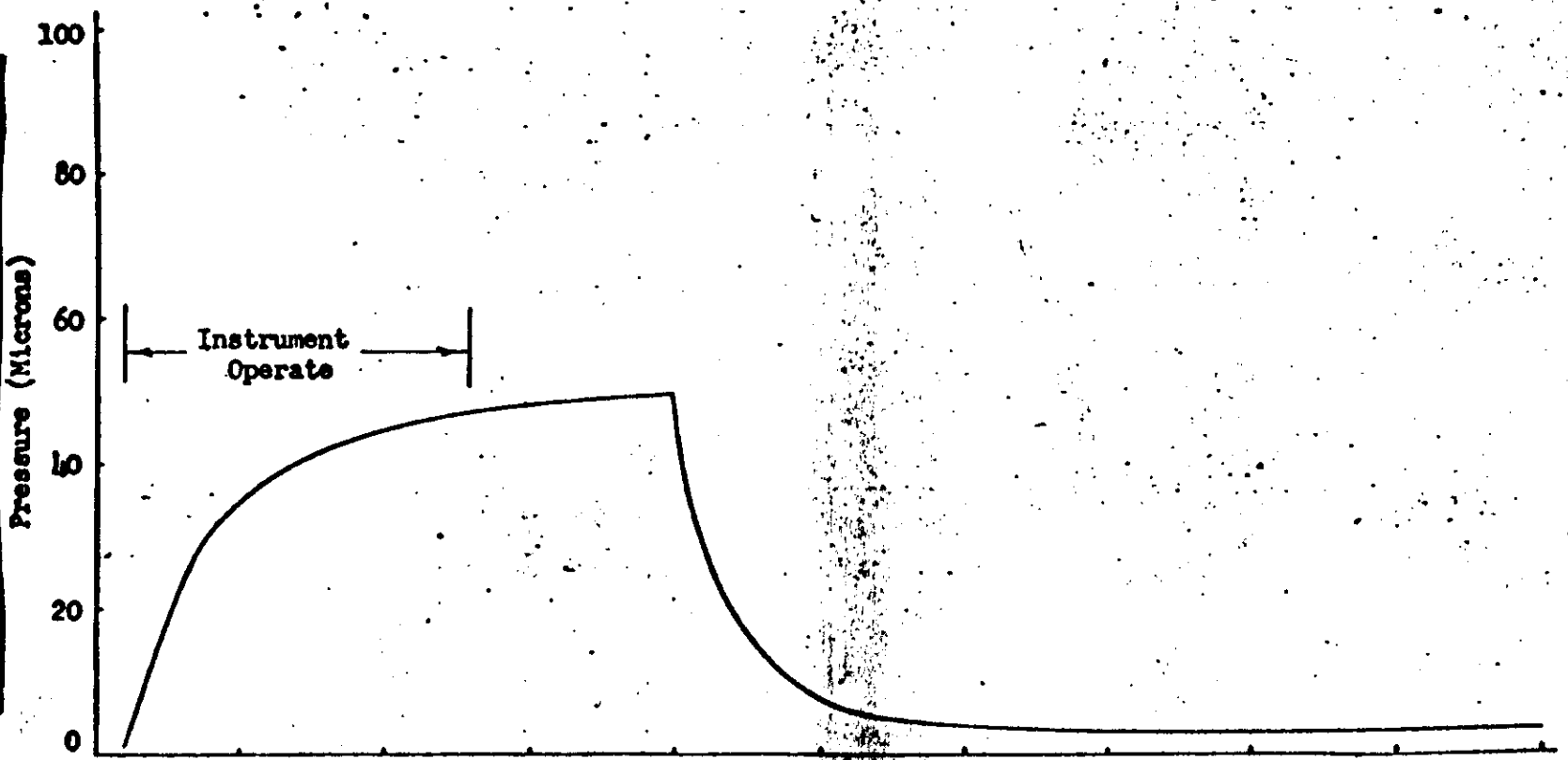


FIGURE 3-4

J-3X CONIC PRESSURE

Orbit 95

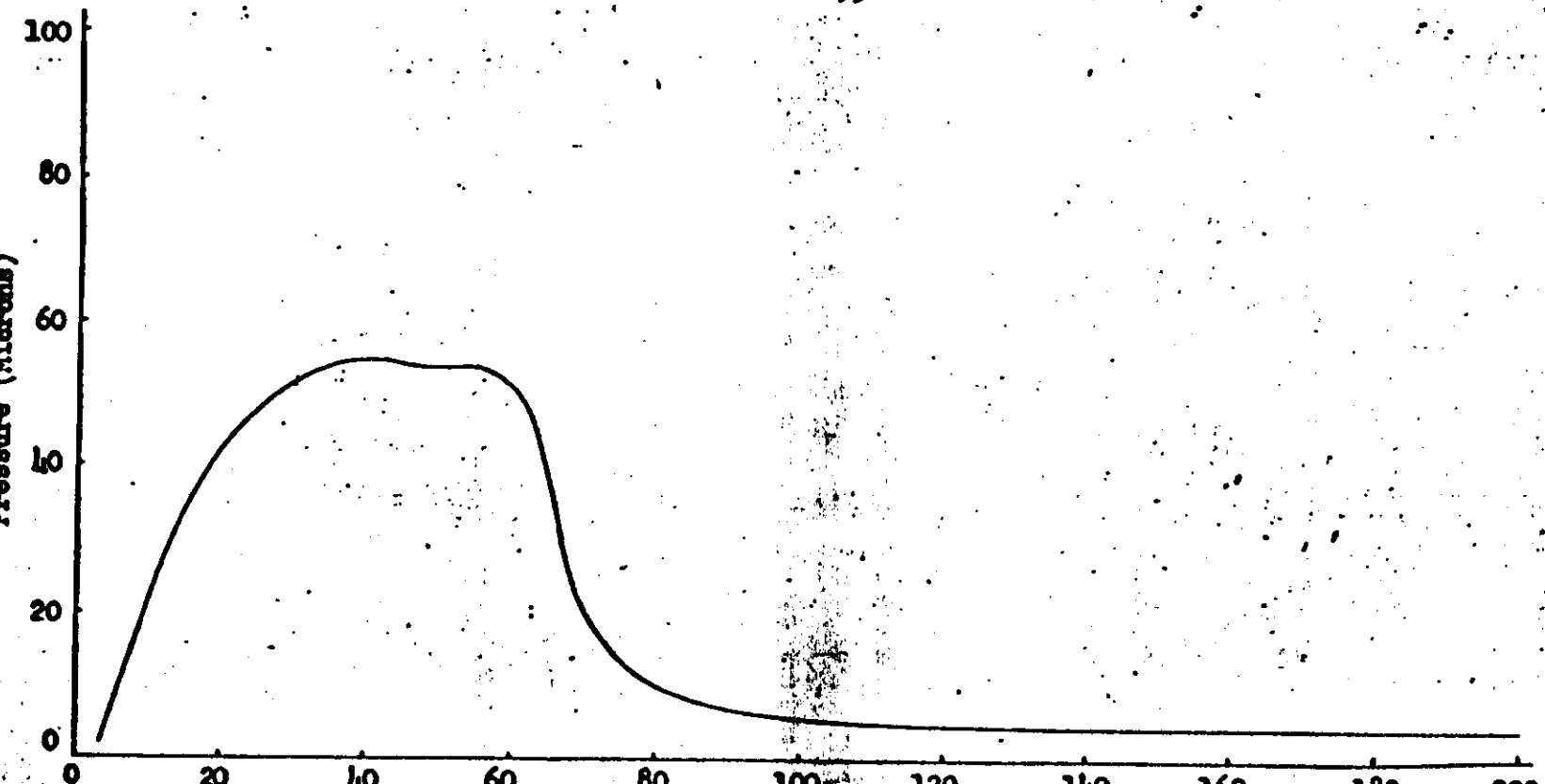


FIGURE 3-5

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

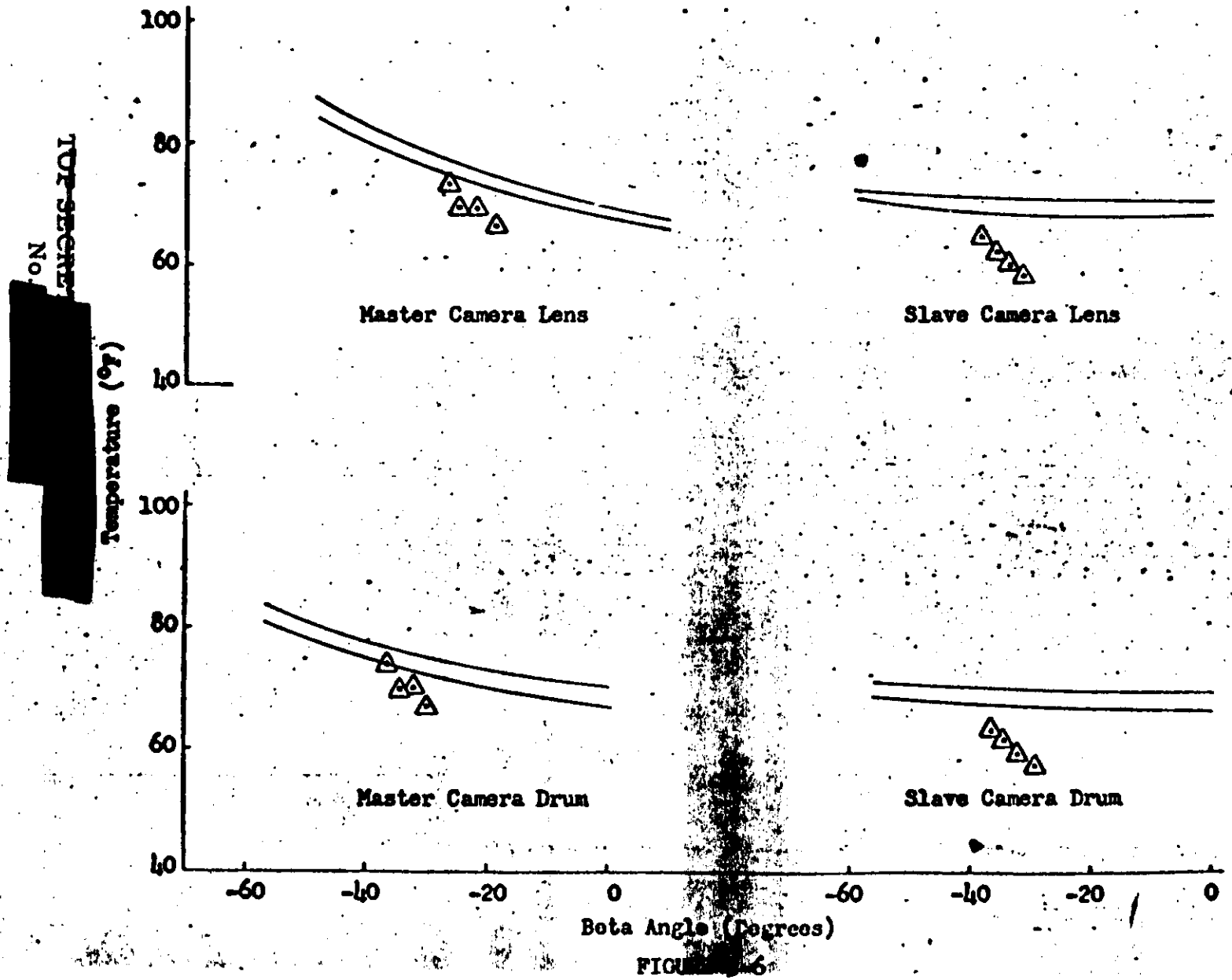


FIGURE 6

J-3X PREDICTED AND ACTUAL TEMPERATURES

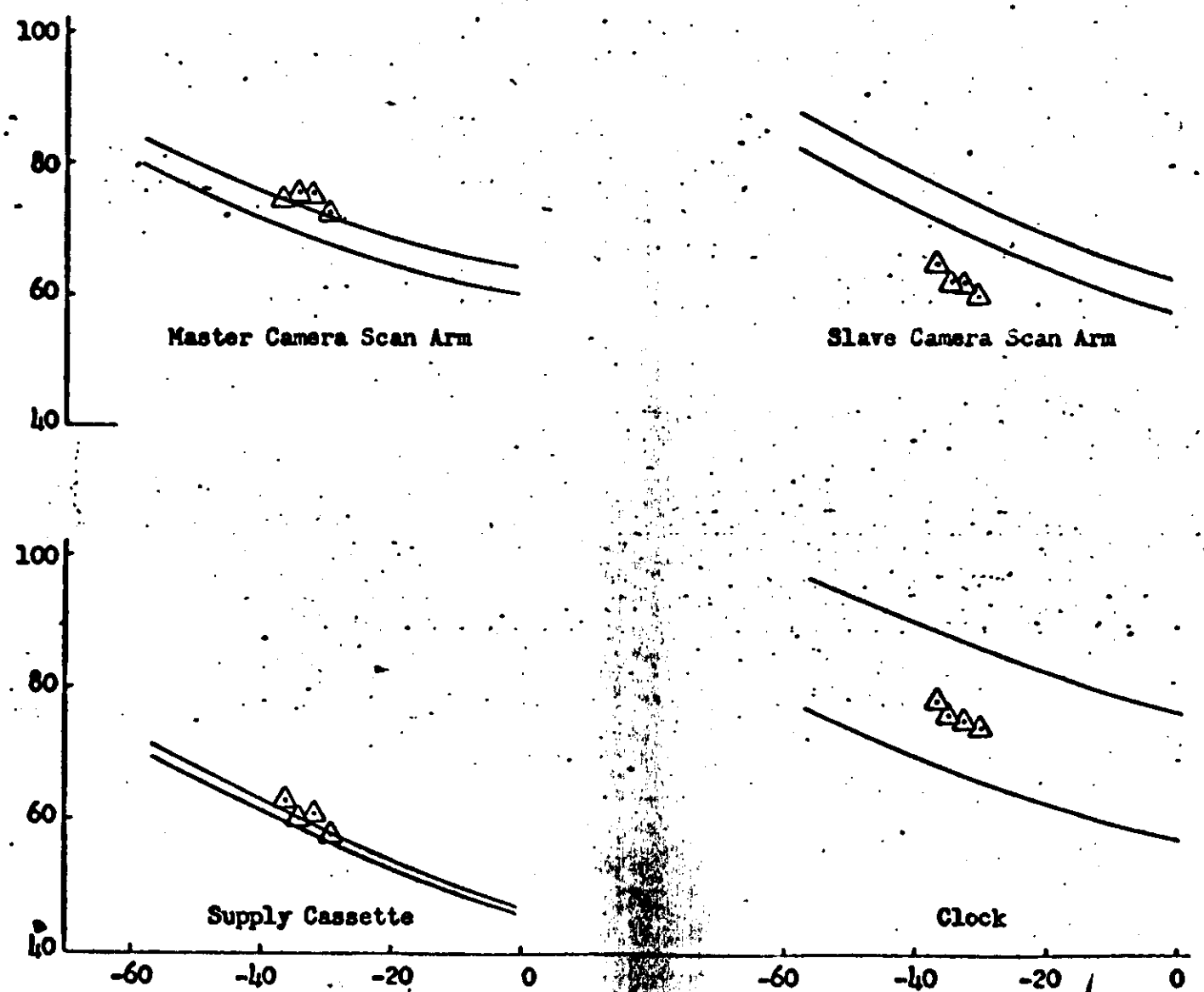


FIGURE 3-7

J-3X PREDICTED AND ACTUAL TEMPERATURES

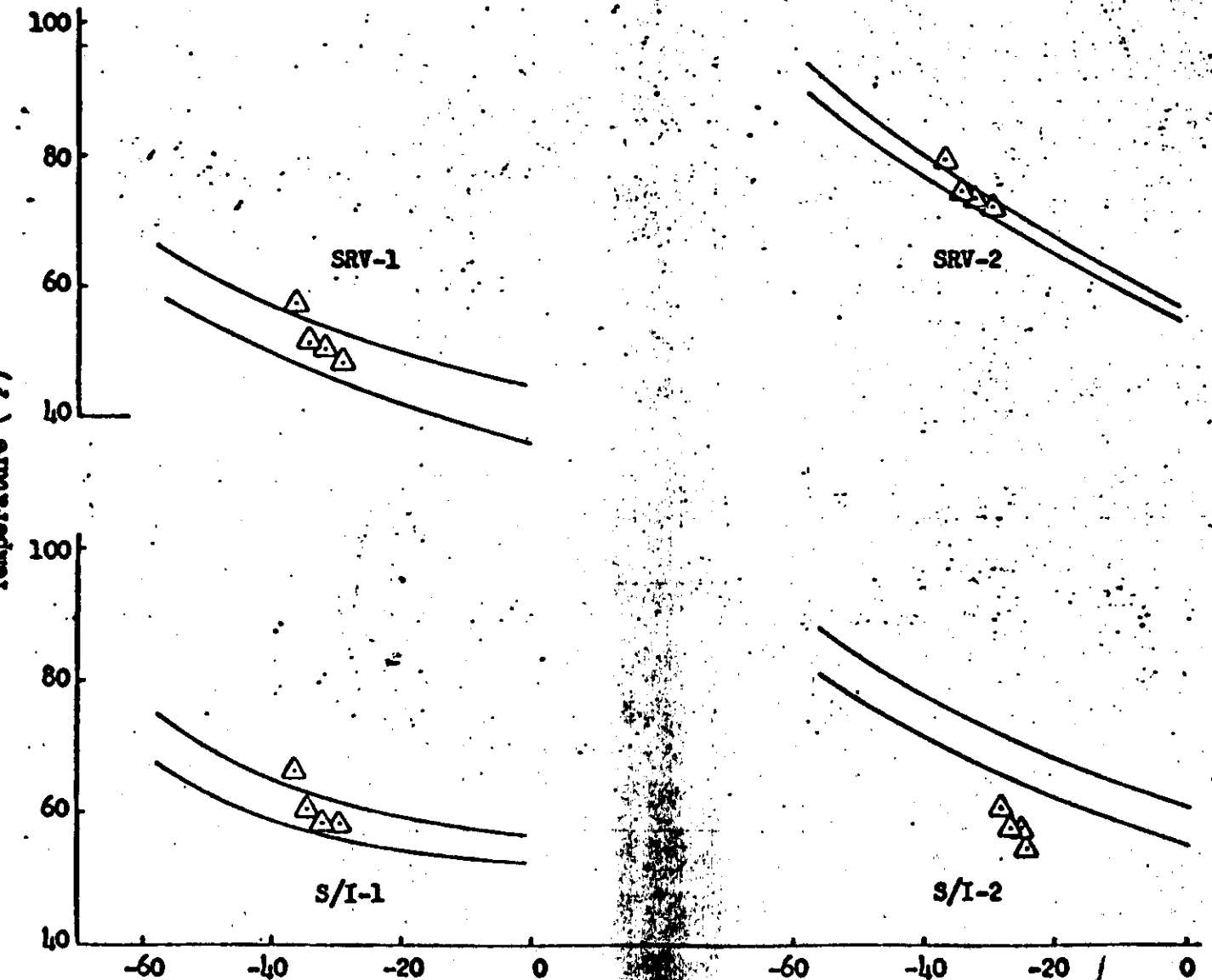


FIGURE 3-8

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.

SECTION 7

SLAVE (AFT) PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	161
Main Camera Lens	1332435
Supply Horizon Camera	175B
Supply Horizon Camera Lens	814027
Take-up Horizon Camera	175A
Take-up Horizon Camera Lens	814023
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 (Starboard) Horizon Camera:

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

Take-Up (Port) Horizon Camera:

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

C. POST FLIGHT PERFORMANCE EVALUATION

The quality of the photography produced by the Slave camera and the resulting information content was somewhat superior to the Master camera photography. A small, out-of-focus area was present near the supply end of most formats. The degree of degradation was small hence the area was difficult to detect where detailed ground objects were not present in the region of soft focus.

The 200 cycle time track lamp ran continuously during the first frames of pass D-36 through D-47E. Analyses has failed to specifically locate the source of this problem however it is probable that a chaffed wire on the camera stove shorted during camera start.

The photography was slightly degraded by the usual light leaks near the beginning and end of most operates, minor scratches below the binary data block and slight minus density streaks produced by foreign material on the field flattener.

SECTION 8

PANORAMIC CAMERA EXPOSURE

The exposure parameters of both the panoramic cameras were the normal 0.175 inch wide slit and Wratten 21 filter. These conditions place the nominal exposure between the intermediate and full level processing curves, as [redacted]

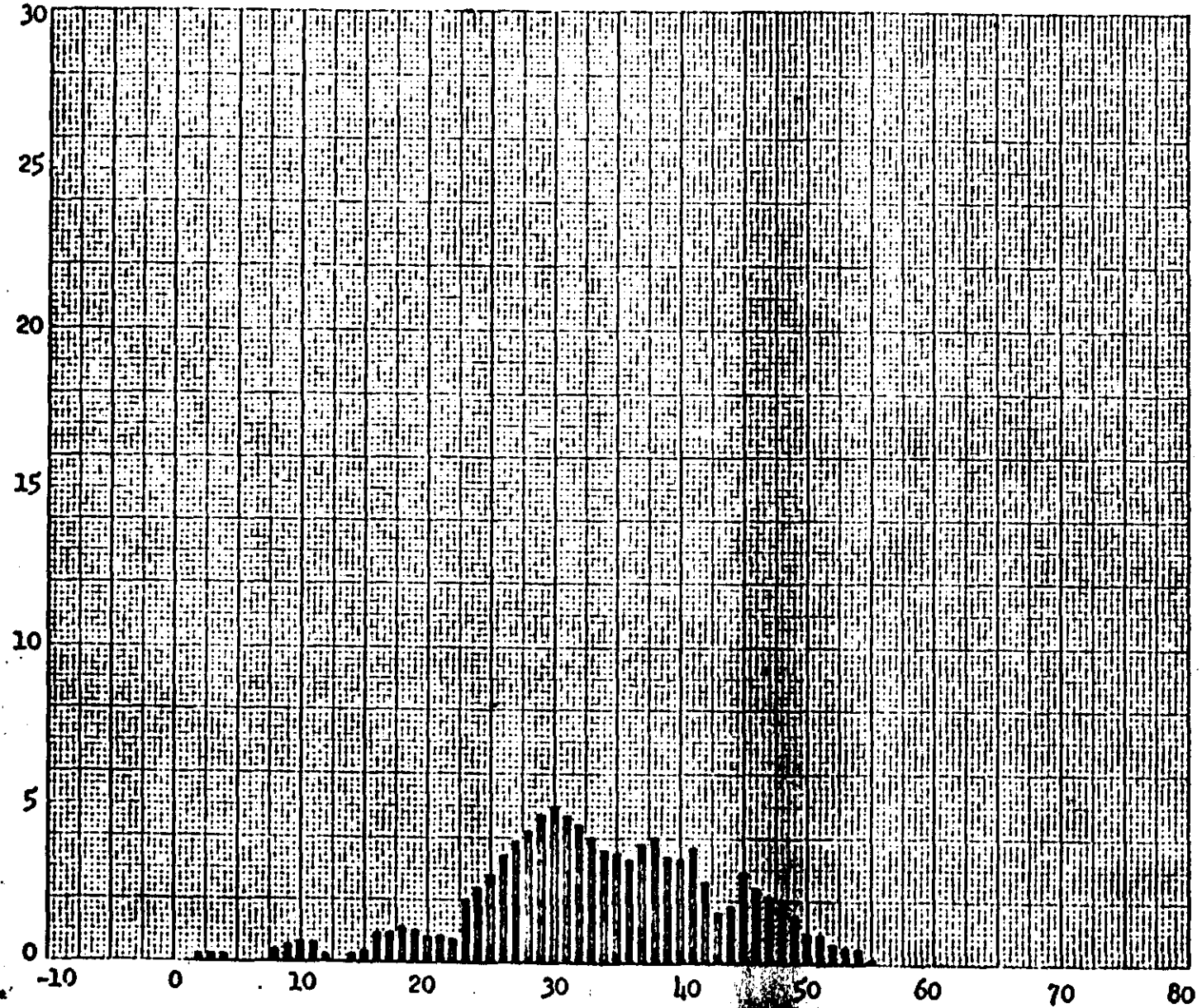
The illumination conditions during the mission were relatively broad as the flight was conducted near the autumnal equinox. The frequency distributions of the solar elevations and solar azimuths encountered during the photographic operations are shown in Figures 8-1 and 8-2.

The nominal exposure times are shown as a function of latitude for passes D-08 and D-56 in Figures 8-3 and 8-4. The predicted level of processing for the original negative is based on the in-flight performance estimate and is tabulated below with the processing levels reported [redacted]

Mission	Camera		Primary	Intermediate	Full
1011-1	FWD	Predicted	0	64	36
		Reported	2	23	75
1011-1	AFT	Predicted	0	67	33
		Reported	3	47	50

The variation in the predicted and reported processing levels is generally consistent with the data observed from recent missions. The use of greater percentages of full processing has been experienced throughout the Corona program. Further analysis and calculations are in process to attempt to ascertain the optimum exposure-processing conditions.

SOLAR ELEVATION FREQUENCY DISTRIBUTION



Mission No: 1011-1

Payload No: J-03

Camera No: 160

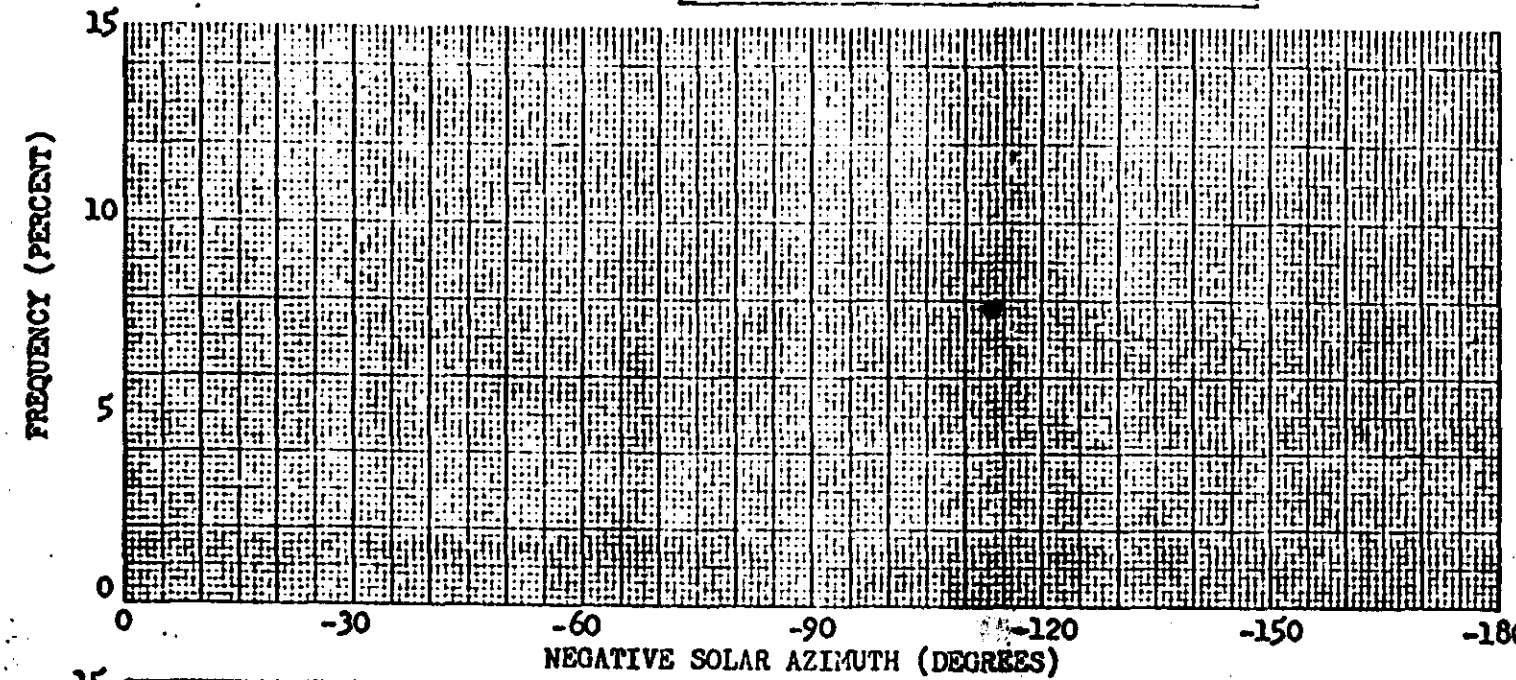
Launch Date: 10/5/64

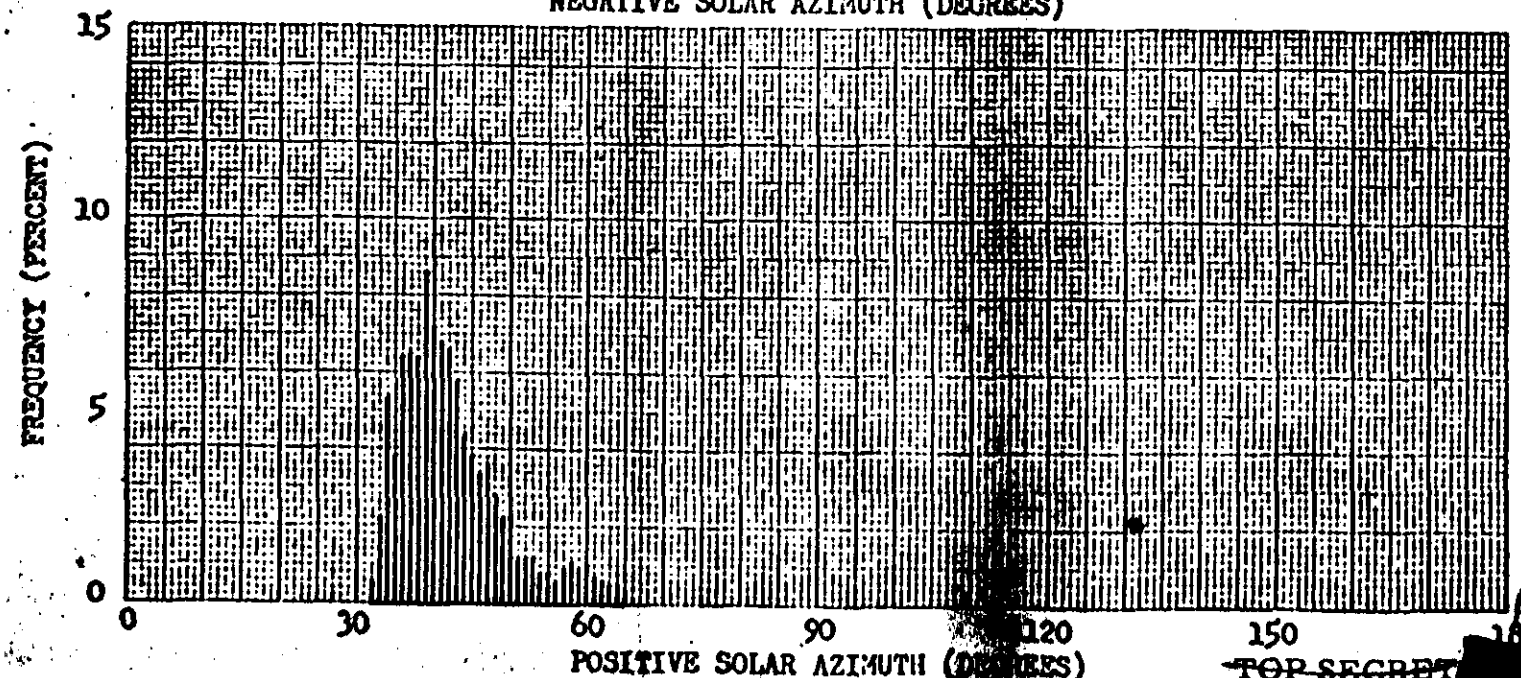
Launch Time: 2150 Z

Inclination: 79.9°

FIGURE 8-1

SOLAR AZIMUTH FREQUENCY DISTRIBUTION





Mission No: 1011-1

Payload No: J-03

Camera No: 160

Launch Date: 10/5/64

Launch Time: 2150 Z

Inclination: 79.9°

SIGN NOTATION

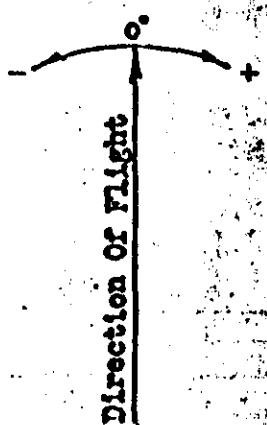
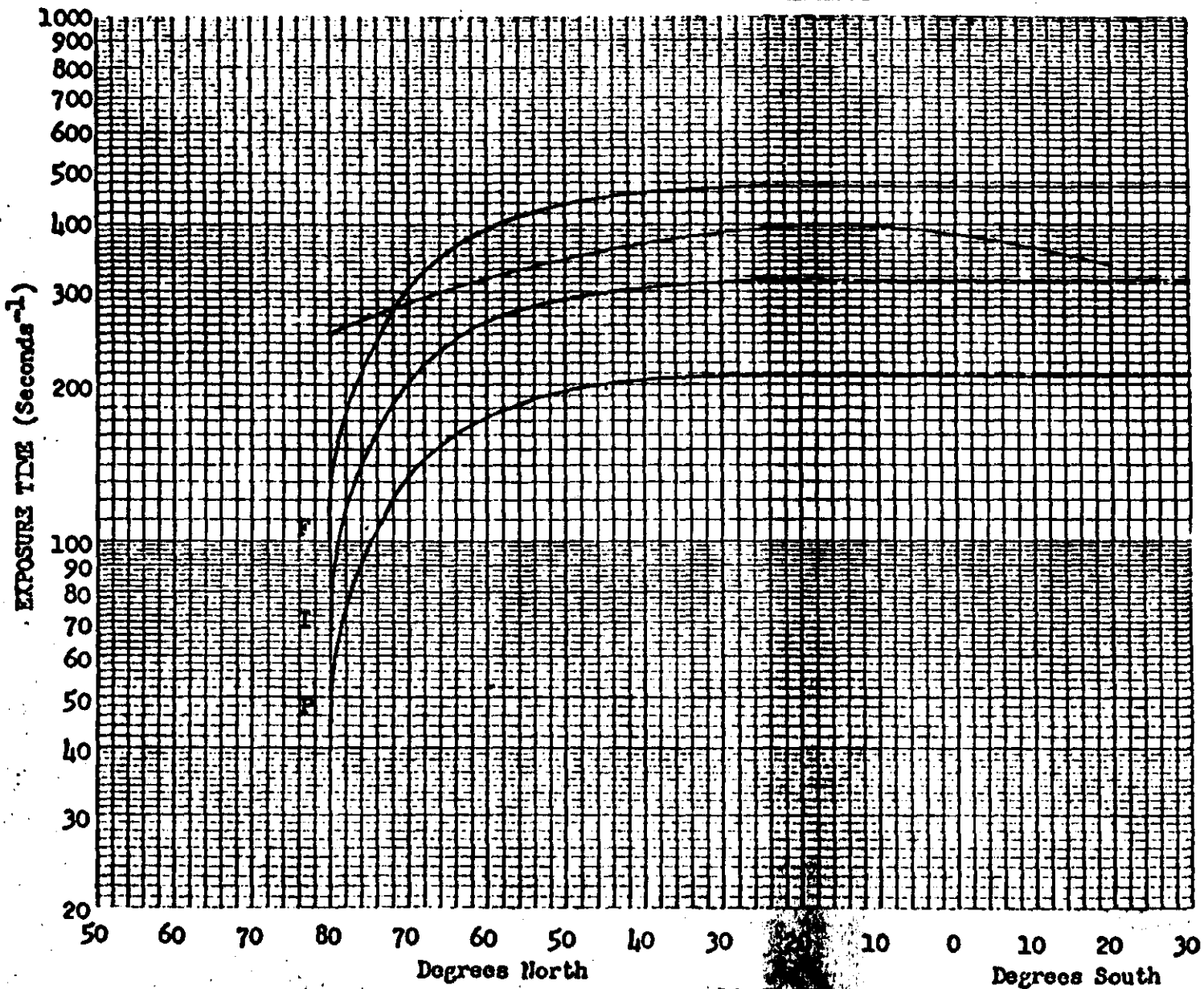


FIGURE 8-2

EXPOSURE POINTS



Mission No: 1011-1

Payload No: J-3X

Camera No: 160 & 161

Pass No: 8

Launch Date: 10/5/64

Launch Time: 2150 Z

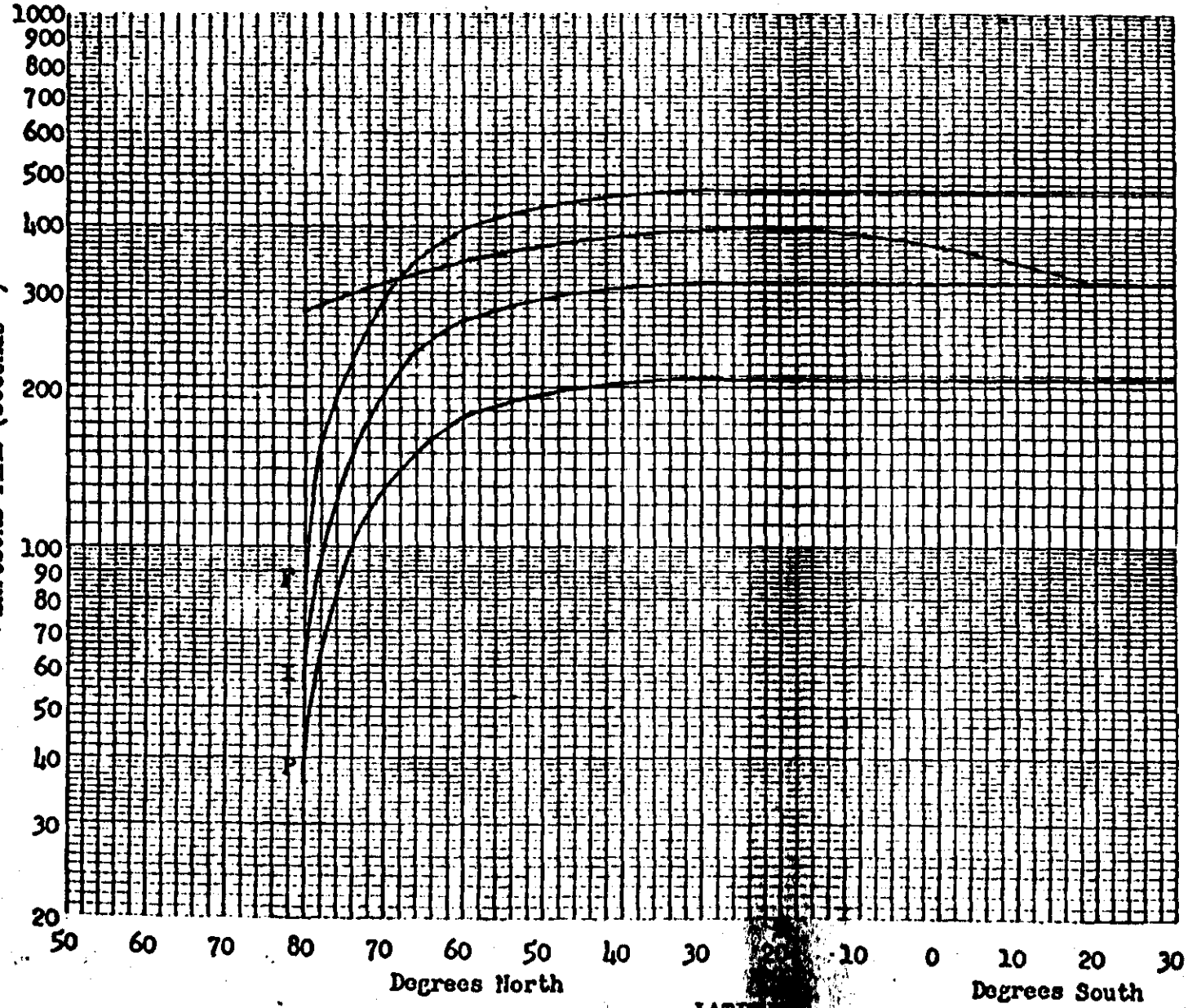
Slit Width: .175

Filter Type: Wratten 21

Film Type: 3404

FIGURE 8-3

EXPOSURE POINTS



Mission No: 1011-1

Payload No: J-3X

Camera No: 160 & 161

Pass No: 56

Launch Date: 10/5/64

Launch Time: 2150 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 3404

FIGURE 8-4

A comparison was made between the exposure time calculated from the time word displayed by the Binary Data Block and the exposure time derived from the 200 cycle time track. The exposure time from these two sources was determined for engineering pass D-47 and plotted on Figure 8-5.

The exposure time from the two sources parallel each other quite well however the FWD camera data shows that time track data results in an exposure time that is approximately 6% shorter than calculated from the binary time word. This effect on the exposure imparted to the original negative is insignificant. The shorter exposure time actually experienced does reduce the sensitivity of the camera system to image motion.

The cause of the variation in exposure time is attributed to the non-linear scan rate known to exist in the cameras. There is no evidence to indicate that the non-linear scan rate is in conjunction with a non-linear lens rotation which would produce image smear.

[redacted]

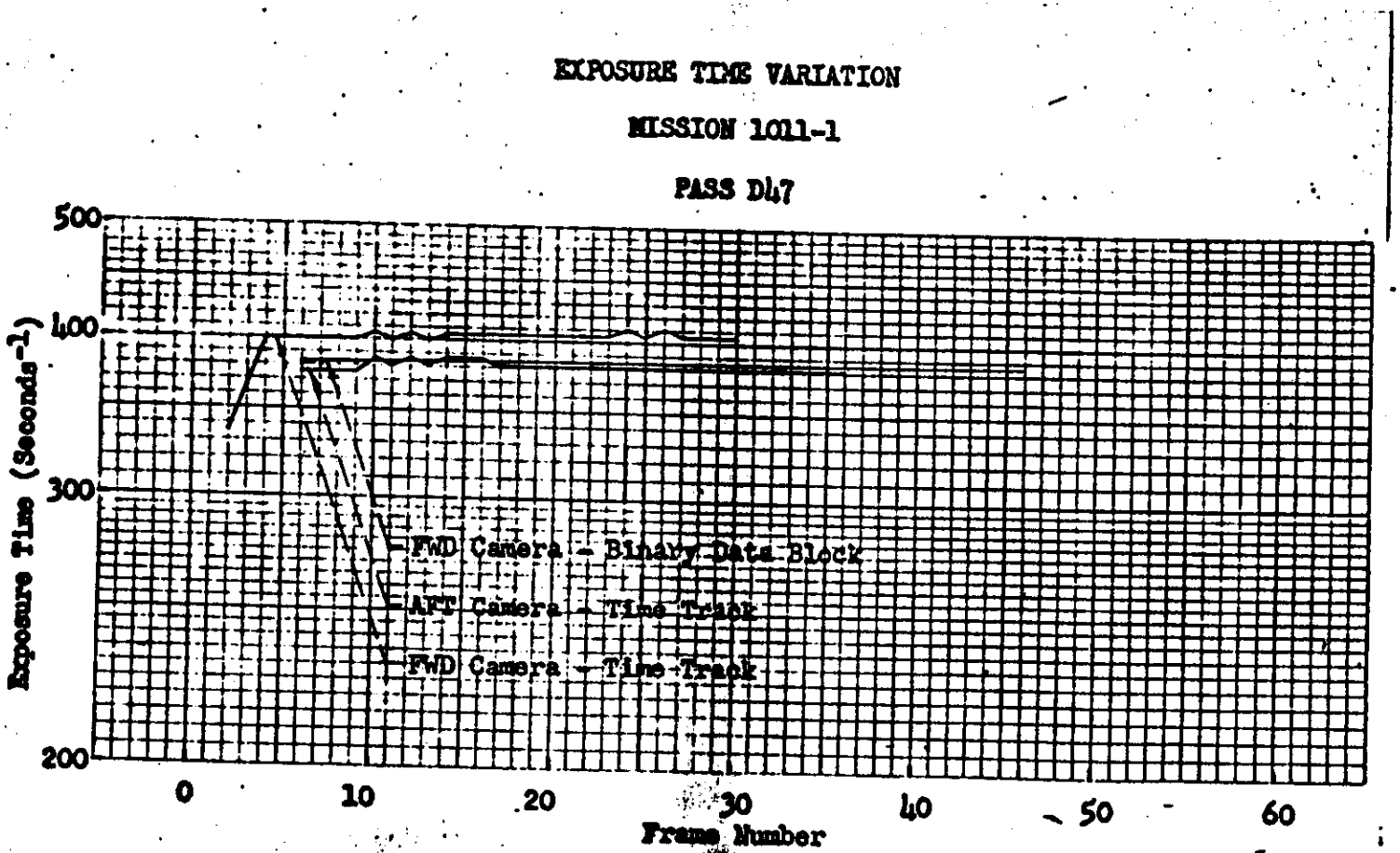

EXPOSURE TIME VARIATION
MISSION 1011-1
PASS D47
500
400
300
200
Exposure Time (Seconds^{-2})
FWD Camera - Binary Data Block
AFT Camera - Time Track
FWD Camera - Time Track
0
10
20
30
40
50
60
Frame Number

FIGURE 8-5

SECTION 9

DIFFUSE DENSITY MEASUREMENTS

Table 9-1 lists mission data supplied by AFSPPL. This data includes the visual Reciprocal Edge Spread (RES) values, the area on the format in which the value was obtained and the general characteristics of the edge as shown on the data key page. The densitometric measurements of the base plus fog, minimum and maximum terrain densities and the maximum cloud densities are also listed with other general data such as solar elevation, altitude and overlap.

The columns are arranged in the following order:

COLUMN NUMBER	HEADING	DATA
1	-	Ascending or Descending pass
2-4	Pas Nbr	Pass Number
5	-	FWD or AFT camera
6-8	Frm Nbr	Frame Number
9-17	Area 1 RES	RES data in area 1
9-11	WWW	With flight RES value
12-14	AAA	Across flight RES value
15	S	Subject - see key
16	T	Terrain - see key
17	Q	Qualifiers - see key
18-26	Area 2 RES	RES data in area 2
27-35	Area 3 RES	RES data in area 3
36-44	Area 4 RES	RES data in area 4
45-53	Area 5 RES	RES data in area 5
54-56	D min	Terrain minimum density
57-59	D max	Terrain maximum density
60-62	D B+F	Base plus fog density
63-65	LIM max	Cloud maximum density

COLUMN NUMBER	HEADING	DATA
66-68	LAT.	Latitude
68	T.	0 = North, 1 = South
69-71	Sun Ele	Solar Elevation
73-74	CLD	Percent cloud cover
75-76	OL	Percent overlap

The data key for the listings of the "Subject", "Terrain" and "Qualifiers" is shown below.

I SUBJECT

1. Buildings
2. Roads, runways
3. Tanks, A/C, other man-made
4. Non-cultural

II TERRAIN

1. Flat
2. Hilly
3. Mountains
4. Flat and snow
5. Hilly and snow
6. Mountains and snow

III EDGE QUALIFIERS

1. Clear
2. Snow
3. Hazy
4. Shadow
5. Snow and Haze
6. Snow and Shadow
7. Haze and Shadow
8. Snow, Haze and Shadow

PAS FRMAREA1 RESAREA2 RESAREA3 RESAREA4 RESAREA5 RES D D D LIM SUN
NBR NBRHWAAASTQHWAAASTQHWAAASTQHWAAASTQHWAAASTQMINMAXB+FMAXLATELECLDC
CCC1FC05 02021455N+26096
01 CCC5FC05 067075422 08615602622649N+31095
11 CC05FC15 05012602321848N+32040
21 CCC5FC25 C9CC85111 05912902423046N+33030
CC05FC35 06215902423044N+34020
CC05FC45 C78085111 06016002418743N+36001
CCC5FC55 04814302400041N+37000
CCC5FC65 072078211 04911602300039N+38000
CC05FC68 06711402200039N+38000
CCC6FC05 072078421 07220002208875N+ 5005
CCC6FC15 06509502117075N+ 9050
CC06FC31 C78090111 03510502100056N+25000
CCC6FC41 03009002200054N+26000
CC06FC51 094085431 03422002200053N+28000
CCC6FC61 03622002200051N+29000
CCC6FC71 C9CC90431 04621602200049N+31000
CCC6FC86 04017202200043N+36000
CC06FC96 104C90111 04015601200042N+37000
CCC6F1C6 03813001320039N+38001
CCC6F111 C94104111 03213801420639N+39005
CCC6F121 01221030N+43100
CCC6F131 00918428N+42100
CC06F141 [redacted]
CC06F155 C94094112 05208601221825N+[redacted]
CCC6F165 04217202223023N+39075
CCC6F173094104121 04616602223422N+38080
CCC7FCC8 082090112 08613002422655N+26095
CCC7FC18 09012902522053N+27095
CC07F028 078085111 06012902621052N+28015
CCC7FC38 04416901800046N+33000
CCC7FC48 090082111 05012901700045N+34000
CCC7FC58 06215001700043N+35000
CCC7FC68 C94104111 02622201600041N+36000
CCC7FC78 03515901700040N+38000
CCC7FC86 082094111 06014001800039N+39000
ACC9FCC5 01900041S-36000
CCC9FCC5 C72072111 03814002200053N+28000
CCC9FC15 03815802200052N+29000
CCC9FC25 C72075111 04016702200050N+30000
CCC9FC35 04612002200048N+31000
CCC9FC45 C75080111 04513602222047N+33005
CCC9FC55 05414802222745N+34005
CCC9FC65 02223043N+35005
CCC9FC75 02222642N+36020
12 CC14FCC5 072072412085163022230 23N+47070
11 CC14FC15 08713202023422N+48095
10 CC14FC23 C75072412 06511002023020N+49095
CC16FCC5 02022237N+39050
CC16FC11 02021637N+39040
CC19FCC5 02307880N+ 1015

TABLE 9-1

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES	O	D	D	LIM	SUN
NBR	NBRWWWAAASTQWWWAAASTQWWWAAASTQWWWAAASTQWWWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLD										
CC19FC15										02211378N+ 3015	
CC19FC25										02420267N+16098	
CC19FC35	082078422									08121201717465N+17045	
CC19FC45										04218101515664N+19005	
CC19FC55			C85082412							06422201720062N+20060	
CC19FC65										04322102321060N+22045	
CC19FC75										02322059N+23055	
CC19FC85					085090411					04709902422157N+25075	
CC19FC95										02122153N+28100	
CC19F105										02122852N+29100	
CC19F110										02223451N+30100	
CC20FC05		067[illegible]C411								04613802219660N+22060	
CC20FC15										02221059N+24100	
CC20FC29		085072432								06220202222456N+25095	
CC20FC39										04613402220057N+27070	
CC20FC49										02222553N+28100	
CC20FC59										02021651N+29100	
CC20FC65	C63C70412									09512802021650N+30095	
CC20FC75										07509802222248N+31100	
CC21FC05			C99C90111							04411702300060N+23000	
CC21FC15										03718202200059N+24000	
CC21FC25			C90090413							08622402200057N+25000	
CC21FC35										04522102200[illegible]	
CC21FC45			C78082411							03919002100053N+28000	
CC21FC55										03720002017552N+29001	
CC21FC65					085078411					04415202120550N+31040	
CC21FC75										05216502320648N+32050	
CC21FC85										02322830N+45100	
CC21FC95										02322928N+45100	
CC21F119			C78067212							09614002222024N+47095	
CC21F129										07911502322723N+48095	
CC21F137										05216002322822N+49090	
CC22FC05			C72085433							05021802317475N+ 8030	
CC22FC15										02318074N+ 9098	
CC22FC30										02321858N+24098	
CC22FC40						08208541205808002422056N+25090					
CC22FC50										06510602217255N+27060	
CC22FC60			085094121							04714002200053N+28000	
CC22FC70										03722002300051N+29000	
CC22FC80			C85078411							04221402200049N+31000	
CC22FC95										04021801800039N+38000	
CC22F105			C85072433							02822001500037N+39000	
CC22F115										03818801500036N+40000	
CC22F125			C85104433							03021201415434N+41001	
CC22F135										04423002422233N+41005	
CC22F145			C78078423							03423002422431N+42020	
CC22F155										05422802323030N+43060	
CC22F165			C63061432							06023202223028N+43050	
CC24FC05										02020469N+15060	
CC24FC17	082075412									06608002021567N+16080	

1011-1

PAS FRMAREA1 RESAREA2 RESAREA3 RESAREA4 RESAREA5 RES D D D LIM SUN
NBR NBRhhWAAASTQhWWAAASTQhhWAAASTQhhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLD(
CC24FC27 0421440202086 6N+18060
CC24FC37 C82085411 0400920222066 4N+19030
CC24FC47 0320900222126 2N+21030
CC24FC56 111104111 0320660222086 1N+22015
CC24FC66 0381000201625 1N+30005
CC24FC76 C85090111 0401180221904 9N+31010
CC24FC86 0561840222064 8N+32070
CC24FC96 0720634120981 4202221246N+33095
CC25F008104099112 0800940222055 6N+26070
CC25FC18 0451080230005 4N+27000
CC25F028 C78090111 0471360240005 3N+28000
CC25F038 0401620220005 1N+29C00
CC25FC48 1C4118111 0381450231875 0N+31005
CC25FC58 0321360220004 8N+32000
CC25FC68 111111111 0321560220004 7N+33000
CC25FC78 0341720240004 5N+34C00
CC25FC88 C94082111 0401000232164 4N+35065
CC25FC98 0701550242264 2N+37085
CC25F108 C99104412 0761560242324 1N+38080
CC25F113 0661540242254 0N+38040
CC30FCC5 C89099111 0471470240003 8N+39C00
CC30FC15 0441500240003 7N+40000
CC30FC25 C99095111 [redacted]
CC30FC35 [redacted]
CC30FC45 C85094311 0411710251142 9N+45020
CC30FC49 02412329N+46020
CC32FCC5 02019037N+40002
CC32FC11 02222636N+40002
CC36FCC5 C67063412 0531140172006 0N+23050
CC36FC15 0472000241865 9N+24005
CC36FC25 C72061412 0522120242025 7N+25030
CC36FC35 0532280252005 6N+26050
CC36FC45 C94094433 0341700240005 4N+28C00
CC36FC55 0441670252115 2N+29030
CC36FC65075085421 0521400252205 1N+30090
CC36FC75 0641040242274 9N+31090
CC36FC85 082075412 0681250252164 8N+33060
CC36FC95 02522746N+34098
CC36F105 C59104121 0631210252384 4N+35090
CC36F115 02421143N+36002
CC36F123 02620542N+37015
CC37FCC5 C59063412 0300800201107 4N+ 9060
CC37FC15 01916872N+11100
CC37FC25 01817269N+14100
CC37FC35 01819267N+16100
CC37FC45 01720265N+17100
CC37FC52104094422 0531410181976 4N+18095
CC37FC62 0501310181696 2N+20040
CC37FC72 C67070432 0392070190005 2N+29000
CC37FC82 0472070200005 1N+30000

PAS FRMAREA1 RESAREA2 RESAREA3 RESAREA4 RESAREA5 RES D O D LIM SUN
NBR NBRhWWAAASTQWhWAAASTQhhWAAASTQWhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLD
CC37F090 C85072432 03921401900049N+31000
CC37F100 07614501000043N+37000
CC37F110 104104111 02907600800041N+38000
CC37F120 05011400916039N+39010
CC37F130 111104111 02107000820538N+40035
CC37F140 01806300920236N+41040
CC37F150 104104111 02305600920435N+43020
CC37F160 01021823N+49100
CC37F170 00921222N+50100
CC37F180 00920820N+51100
CC38FC05 C70075422 03806001422057N+26085
CC38FC15 03808501422556N+26085
CC38F025 085078111 03009201421854N+28085
CC38FC35 04220601422349N+31050
CC38FC45 C85078311 03219701419447N+33005
CC38FC56 03414401415543N+36005
CC38FC66 C85080421 04617801416841N+38005
CC38FC76 08016001400039N+39000
CC38FC86 082088421 04016001400038N+40000
CC38F1C1 05015202423528N+47080
CC38F111 090075122 05209002422827N+48060
CC39FC05 085082412 06112402521268N+
CC39FC15 06618602420
CC39FC25 C90085422 05312902520564N+
CC39FC36 08412202422259N+23095
CC39FC46 C94099112 05011102522657N+25080
CC39FC56 06712002522255N+26095
CC39FC66 090082112 07412202522354N+27090
CC39FC76 05813402522552N+29080
CC39FC84 C85085411 06014202522451N+30075
CC39FC94 02522347N+33100
CC39F1C9 072078412 09919402521845N+35095
CC39F121 04617701600040N+38000
CC39F131 C82090111 03015001600039N+39000
CC39F141 07813001717837N+40090
CC4CFC05 104090112 05108802321360N+22040
CC4CFC15 03908402211659N+23002
CC4CFC25 C94078111 03710602100057N+24000
CC40FC35 03714502100056N+25000
CC40FC45 C94078111 03912202200054N+27000
CC40FC55 03812202200052N+28000
CC40FC65 C94094111 03712802300051N+29000
CC4CFC75 04415402200049N+30000
CC40FC85 104090111 05613902200048N+32000
CC40FC95 04813402200046N+33000
CC4CF1C5 085078111 03913202200044N+34000
CC4CF115 03723602300043N+35000
CC40F125 C99094111 03523602300041N+37000
CC4CF135 04222202300040N+38000
CC4CF145 C72075412 04315802300038N+39000

PAS FRMAREA1 RESAREA2 RESAREA3 RESAREA4 RESAREA5 RES D D D LIM SUN
NBR NBRhhWAAASTQhhWAAASTQhhWAAASTChhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLDC
CC41FC05 07207841208612002122052N+290909
CC41FC15 07212902121551N+300959
CC41FC25 07809011204612302222649N+310909
CC41FC35 06213202222847N+320509
CC41FC45 C9C090111 05013502221846N+34035C
CC41FC51 05014402321045N+340209
CC47FCC5 1C4094422 04220002200037N+40C000
CC47FC05 1C4094422 04220002200037N+400000
CC47FC15 05220002224036N+410109
CC47FC15 05220002224036N+410109
CC47FC25 C72C85112 05418201823835N+420050
CC47FC25 C72085112 05418201823835N+420050
CC47FC35 05215401420333N+430039
CC47FC35 05215401420333N+430039
CC47FC41 C78085432 06418201400032N+440000
CC47FC41 C78085432 06418201400032N+440000
CC52FC05 104090111 04319002500060N+220000
CC52FC15 04619402300059N+230009
CC52FC25 C78082421 06920502300057N+240001
CC52FC35 05021102100056N+260009
CC52FC45 C82075421 04320702216554N+270150
CC52FC55 06011002100052N+280009
CC52FC65 C99085111 06512402120151N+290021
CC52FC75 04413802100049N+310009
CC52FC85 C85078111 04012002100048N+320001
CC52FC95 03811002319046N+330109
CC52F1C5 C94078121 03908902316445N+350021
CC52F115 03614602300043N+360009
CC52F125 C82094121 03414202300041N+370001
CC52F135 04608902418140N+390049
CC52F145 02320638N+400509
CC52F154065072421 04207402223137N+410609
CC53FCC5 C78072411 04015901700042N+370000
CC53FC15 03415801500041N+380009
CC53FC25 C82C82211 03515101300039N+390000
CC53FC35 05715401220938N+400809
CC53FC45 C85078122 07313401220636N+420900
CC53FC55 04013001221835N+430809
CC53FC65 C85C82122 03806301321633N+440959
CC53FC75 03210901722432N+450609
CC53FC85 C88094121 03412502123030N+460100
CC53FC95 03511502122829N+470159
CC53F1C5 C85C94121 03613502122027N+480050
CC53F115 04014002222326N+490259
CC53F125 104104111 04814102120824N+500250
CC53F135 05615402122823N+510609
CC53F153078085212 04015002222620N+530859
CC53F163 02223518N+540809
CC53F173 02222517N+550159
CC54FCC5 C85094112 06911002022051N+290909

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S PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES D	D D	D LIM	SUN
NBR	NBRhhWAAASTQWWWAAASTQWWWAAASTQhWWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLDC								
CC54FC15						062124020218	50N+31085		
CC54FC25		094085111				050148020221	48N+32025		
CC54FC35						078174020224	47N+33095		
CC54FC45			C72075432			040150021210	45N+34002		
CC54FC55						040219021210	44N+35005		
CC54FC65			C61061432			058218022225	42N+37005		
CC54FC75						084160015000	41N+38000		
CC54FC85						062136014210	39N+39020		
CC54FC92		078075411				048146014198	38N+40005		
CC54F1C2						038217014000	36N+41000		
CC54F112			C72078411			C641480130C0	35N+42000		
CC54F122						058178013000	33N+43000		
CC54F132			C94085412			037174013000	32N+45000		
CC54F142						042130014205	30N+46005		
CC54F152			C85C99432			052118013211	29N+47065		
CC54F163						057132014218	27N+48020		
CC55FC05			C72078211			052162023200	60N+22075		
CC55FC15						C7418002221	59N+23095		
CC55FC37	C67082112					066130023217	55N+26095		
CC55FC47						023222	54N+27100		
CC55FC57			C82085111			037102022206	52N+28025		
CC55FC67						046128022000	51N+30000		
CC55FC77		082075212				08614602	[redacted]		
CC55FC87						062160022219	[redacted]		
CC55FC97			C90099421			052182022220	46N+34010		
CC55F107						048136017200	44N+35020		
CC55F117		085080122				035142016202	43N+36060		
CC55F127						036126014162	41N+38005		
CC55F137				085085111		038122010000	40N+39000		
CC55F147						066108010000	38N+40000		
CC55F157			104C99111			056146014000	36N+42000		
CC55F162						060153016000	36N+42000		
CC56FC05			C85078411			036062025143	62N+20003		
CC56FC15						038096024000	61N+21000		
CC56FC25			C99094111			037095024000	59N+23000		
CC56FC35						040096024176	57N+24002		
CC56FC45			104111111			042119025000	56N+26000		
CC56FC55						046118025216	54N+27020		
CC56FC65			104C90111			039140022200	53N+29005		
CC57FCC5						022206	54N+27098		
CC57FC15						022219	53N+28100		
CC57FC25						022224	52N+29093		
CC57FC35						022222	50N+31100		
CC57FC45						024218	49N+32100		
CC57FC47						023223	48N+33098		
CCC1ACC5						016196	56N+25085		
CCC5ACC5						064124018218	50N+30095		
CCC5AC13				072072431		088124020226	49N+31085		
CCC5AC23						062116026220	47N+33025		
CCC5AC33			C85094121			079134025226	46N+34020		

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES	D	D	D	LIM	SUN
NBR	NBRhhWAAASTQhhWAAASTQhhWAAASTChhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLDC										
	CCC5AC43									07813102522244N+350029	
01	CCC5AC53		C82072121							06914102500042N+360000	
11	CCC5AC63									05511702600041N+370009	
21	CCC6ACC5									02314777N+ 60509	
	CCC6AC1CC72078421									14821802310576N+ 70059	
	CCC6AC19									02415275N+ 90609	
	CCC6AC30	070065211								05209802400057N+250000	
	CCC6AC40									05712502400055N+260009	
	CCC6AC50		C78072421							04021302400054N+280000	
	CCC6AC60									04622402400052N+290009	
	CCC6AC70		C82C85431							04021802400050N+300000	
	CCC6AC85									07516801800043N+350009	
	CCC6AC95		C82075421							05411901600041N+360000	
	CCC6A105									05714201621240N+370059	
	CCC6A119									01220930N+421009	
	CCC6A129									01020528N+421009	
	CCC6A139									01020827N+411009	
	CCC6A149									01021025N+401009	
	CCC6A159		085094112							05009401122424N+390859	
	CCC6A169									03312701523222N+380609	
	CCC7AC05		C9C094111							03612801519075N+290100	
	CCC7AC15									06410501521235N+[redacted]	
	CC07AC25070072412									04012801[redacted]	
	CCC7AC37									05417301500[redacted]	
	CCC7AC47			090082121						05714601500046N+330000	
	CCC7AC57									06314301500044N+340009	
	CCC7AC67		118104111							05421301500042N+350000	
	CCC7AC77									03822501500041N+370009	
	CCC7AC83		C90082431							05718401500040N+370000	
	ACC9ACC5									02500395-370009	
	CCC9ACC5		C9104111							04615002417054N+270100	
	CCC9AC15									05016202400053N+280000	
	CCC9AC25		C90085111							04816402221851N+290100	
	CCC9AC35									05618402200049N+300000	
	CCC9AC45		C99082111							05515002200048N+320000	
	CCC9AC55									06418202221846N+330100	
	CCC9AC65									02322644N+340109	
	CCC9AC75									02422443N+350309	
	CC14ACC5078067412									12020202423424N+460909	
	CC14AC15									11612402323222N+470909	
	CC14AC24		111104111							10415002323721N+480750	
	CC16ACC5									02322538N+390959	
	CC19ACC5									02100080N+ 19995	
	CC19AC12	067070412								03208602107479N+ 20309	
12	CC19AC24									02020068N+151009	
11	CC19AC34	072085412								05621801417467N+160809	
10	CC19AC44									C9220501320565N+180309	
9	CC19AC54		C78090411							03421501318563N+190150	
8	CC19AC64									05221201319661N+210809	
7	CC19AC74	118118411								02605001321060N+230209	

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES	O	O	O	LIM	SUN
NBR	NBRWWAAASTQWWAAASTQWWAAASTQWWAAASTQWWAAASTQWWWAAASTQ									MINMAXB+F	MAXLATELECLO
CC19AC88											01321455N+27100
CC19AC98											01321853N+28100
CC19A105											02022452N+29100
CC20AC05			C94094421								06612202320661N+22050
CC20AC15											06010202222060N+23090
CC20AC35	072067421										08023002222856N+26095
CC20AC45											05621502222254N+27070
CC20AC55											02222553N+28100
CC20AC71		072070422									09216202222250N+31095
CC21AC05		085090211									05717502514561N+22010
CC21AC15											04616102400059N+23000
CC21AC25			C85C85431								07222702400058N+24000
CC21AC35											07723502400056N+26000
CC21AC45			C94104111								05021702400054N+27000
CC21AC55											04921802400052N+29000
CC21AC65			C94104111								05521102420450N+30010
CC21AC79											02023231N+44100
CC21AC89											01623130N+45100
CC21AC99											01623228N+46100
CC21A109											01221527N+47100
CC21A119											01220525N+48100
CC21A129											01622523N+48090
CC21A133			C90094111								0641200[redacted]
CC22AC05											[redacted]
CC22AC08		094082421									06514502714078N+ 7030
CC22AC18											02617374N+ 9090
CC22AC30				072065412							07711602821259N+24080
CC22AC40											02820957N+25098
CC22AC5C	094C99111										06911602721055N+26090
CC22AC60											06012502700054N+28000
CC22A070			C90094431								04514402700052N+29000
CC22AC8C											05123102800050N+30000
CC22AC95			C85075421								10117502000040N+37000
CC22A105											04423102000038N+38000
CC22A115			C82085431								08617202000036N+39000
CC22A125											07018301800034N+39000
CC22A135			104094433								03019201820632N+40005
CC22A145											03017001919830N+41010
CC22A155			C94090121								04013402023229N+41030
CC22A163											07023001822227N+42040
CC24ACC5	067085423										05017801418870N+14070
CC24AC15											01419068N+15100
CC24AC25									090094423	067	18801721066N+17090
CC24AC35											05210202221464N+18075
CC24AC45									094082111	063	10402221063N+20085
CC24AC55											03808802222061N+22020
CC24AC65				C78085111							04509802222651N+29040
CC24AC75											06013602218050N+30001
CC24AC85			C85094111								06816602219048N+32015
CC24AC95											11418002222047N+33080

~~TOP SECRET~~
No. [redacted]

1011-1

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES	D	D	D	LIM	SUN
NER	NBRhhWAAASTQWhWAAASTQhhWAAASTQhhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLDC										
CC25AC05		099104111									05811802220657N+240259
CC25AC15											09413202422056N+260259
CC25A025			085C94111								05813002400054N+270000
CC25AC35											06013102300052N+280009
CC25AC45			C59085111								05213702300051N+290000
CC25AC55											04814302400049N+310009
CC25AC65			104118121								04111902400047N+320000
CC25AC75											04416002400046N+330009
CC25AC85			C90104121								05613702400044N+340000
CC25AC95											08613902512842N+360709
CC25A105			C85082121								07814002523441N+370909
CC30AC05			C90082311								06516002200039N+390000
CC30AC15											05419302200037N+400009
CC30AC21			C94C99211								05614602200036N+410000
CC30AC31											05716502200032N+430009
CC30AC41			118125111								05217602200031N+440000
CC32AC10											02221737N+400109
CC36AC05						065085411					07413602319261N+220809
CC36AC15											07816402220060N+230600
CC36AC25		082078433									07022202220858N+240500
CC36AC35											06723402220656N+250400
CC36AC45			C82C85411								05616402200054N+270001
CC36AC55											[redacted]
CC36AC65		075082411									[redacted]
CC36AC75											[redacted]
CC36AC85	085070111										09413402222548N+320909
CC36AC95											10113402223446N+330900
CC36A107		09C085221									06011801522844N+350859
CC36A117											05006601922842N+360059
CC36A120											02222642N+360059
CC37AC05				072085413							05311802417875N+ 80959
CC37AC15											02516473N+101009
CC37AC27			C70C65412								10218602521369N+140950
CC37AC37											02319067N+161009
CC37AC47											01819965N+181009
CC37AC57			C82C85412								04916801720264N+190900
CC37AC67											05221702600054N+270000
CC37AC77			C78082111								05722102600052N+290000
CC37AC87											05421802500050N+310009
CC37AC97			C67063411								11917602000043N+350000
CC37A107											09315801800041N+370009
CC37A117			C85C82111								03815401800040N+380000
CC37A127											03716101823438N+390209
CC37A137			C9C090111								03913601823637N+410150
CC37A147											04015201722935N+420109
CC37A157											01422823N+501009
CC37A167											01422522N+511009
CC37A175											01422521N+511009
CC38AC05											01520858N+240109
CC38AC10				094082411							04909201521257N+240809

PAS FRMAREA1 RESAREA2 RESAREA3 RESAREA4 RESAREA5 RES D D D LIM SUN
NBR NBRhWAAASTQWhWAAASTQWWAAASTQhhWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLDC
CC38AC20 06110801522055N+260959
CC38AC32 059061422044198015220 51N+290759
CC38AC42 05921001522550N+300759
CC38AC52 C59C55412 04721001620740N+310050
CC38AC62 11017401600047N+320009
CC38AC72 C94094431 03321201600046N+330000
CC38AC82 04417401600045N+340009
CC38AC92 C72070411 07618501500044N+350000
CC38A1C2 09916901500042N+360009
CC38A122 C99111431 05622601600040N+380000
CC38A132 04922501500038N+390009
CC38A142 C85078412 06522501500037N+400000
CC38A152 05819601400036N+410009
CC38A162 C99078111 02421601421735N+420100
CC38A172 05022001523033N+420759
CC39AC05 C78070411 06017002821069N+140700
CC39AC15 08817502619467N+150609
CC39AC25 C85C90411 06212502621565N+170809
CC39AC36 07013102522259N+230909
CC39AC46 02021958N+241009
CC39AC47 C85C94112 05710601920957N+240909
CC39AC57 04511801822656N+260800
CC39AC67 C75085412 [redacted]
CC39AC77 [redacted]
CC39AC93 01922748N+331009
CC39A101078085412 09614501822046N+340909
CC39A118 07013001600041N+380009
CC39A128 C99104111 04012601500040N+390000
CC39A138 04616001800038N+400009
CC39A143 05213801900038N+410009
CC40AC05072085112 06507702222061N+210709
CC4CAC15 047C9202222860N+220109
CC40AC25 104094111 04810002200058N+230000
CC40AC35 04614202200056N+250009
CC40AC45 C94094111 06015002200055N+260000
CC40AC55 04610602200053N+270009
CC40AC65 C85094111 04812002200051N+290000
CC4CAC75 05416402200050N+300009
CC4CAC85 C85C90111 06815002200048N+320001
CC40AC95 06215602200046N+330009
CC4CA1C5 118099111 05315002200045N+340000
CC4CA115 05222802200043N+360009
CC4CA125 118104111 04620802200041N+370000
CC4CA135 06222802200040N+380009
CC40A142 C82090123 05621601800039N+390000
CC41AC05 072067111072C8201621853N+290989
CC41AC15 05210001521752N+300989
CC41AC25 063059112 09013301521850N+310989
CC41AC35 05307801522248N+320959
CC41AC45 C72072111 [redacted]

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES D	D	D	LIM	SUN
NBR	NBRhhWAAASTQhhWAAASTQhhWAAASTChhWAAASTQWWWAAASTQ					MIN	MAX	B+F	MAX	LATELECLDC
	CC47AC05		C63C59422					03818201622538	N+400	10S
01	CC47AC15							04018401520237	N+410	03S
11	CC47AC25		C94090421					C6018201522035	N+420	03C
21	CC47AC35							06217801522033	N+430	05S
	CC47AC40085C94112							09018601700033	N+440	00C
	CC52AC05		C78090411					06014802900061	N+210	00C
	CC52AC15							05315402600060	N+220	00S
	CC52AC25		C94104411					C6420102600058	N+230	00C
	CC52AC35							06222202600056	N+250	09
	CC52AC45		C94C85411					05718802600055	N+260	00C
	CC52AC55							06014702618553	N+270	02S
	CC52AC65		C78082412					08511502618151	N+290	85C
	CC52AC75							C6015002600050	N+300	00S
	CC52AC85		C85078121					05912302717248	N+310	03C
	CC52AC95							07012902622046	N+330	45S
	CC52A105		104C90111					06020402600044	N+340	00C
	CC52A115							05515302619243	N+360	01S
	CC52A125		104094121					04620802600041	N+370	00C
	CC52A135							05610302621439	N+380	03S
	CC52A145							02623338	N+400	25S
	CC52A150							02622038	N+400	30S
	CC53ACC5		C72078421					06617001600043	N+360	00C
	CC53AC15							[redacted]		
	CC53AC25		C99104111					[redacted]		
	CC53AC35							04416001522539	N+400	10S
	CC53AC45094090431							06313001521437	N+410	95S
	CC53AC55							05815201523035	N+420	60S
	CC53AC65		C85C82112					05813601422834	N+430	90S
	CC53AC75							08012401923232	N+440	80S
	CC53AC85		118104121					05014402222831	N+450	15C
	CC53AC95							C4212302223629	N+460	15S
	CC53A105		C94085121					04317302222227	N+470	05C
	CC53A115							05322502223226	N+480	25S
	CC53A125	104094111						04816802223424	N+490	45S
	CC53A135							05219002023223	N+500	70S
	CC53A146					062067212		10820201522621	N+510	75S
	CC53A156							01623019	N+520	95S
	CC53A166							01523018	N+530	40S
	CC54ACC5							01621052	N+281	00S
	CC54AC15	C90090112						04910101421251	N+300	90S
	CC54AC25							03511601321349	N+310	60C
	CC54AC35			085090111				05013401521248	N+320	60C
	CC54AC45							02818701420046	N+330	05C
	CC54AC55		C72075432					02618301400044	N+350	00C
12	CC54AC65							02920701420243	N+360	10C
11	CC54AC75	072075412						05515801400041	N+370	00C
10	CC54AC85							07716001221040	N+380	10C
9	CC54AC95			0C0075212				08017501420538	N+400	10C
8	CC54A105							03818701300036	N+410	00C
7	CC54A115		C78082411					07718201400035	N+420	00C

PAS	FRMAREA1	RESAREA2	RESAREA3	RESAREA4	RESAREA5	RES	D	D	D	LIM	SUN
NBR	NBRHWWAAASTQWWWAAASTQHWWAAASTQHWWAAASTQWWWAAASTQMINMAXB+FMAXLATELECLOC										
CC54A125										C4217801300033N+430000	
CC54A135		C78075411								06821701400032N+440000	
CC54A145										04723001521730N+460300	
CC54A155		C82085421								05422001322528N+470600	
CC54A160										06517501423028N+460809	
CC55AC05			118111111							02713801218561N+210409	
CC55AC15										03420201319860N+220759	
CC55AC25										01221058N+231009	
CC55AC35										01320856N+251009	
CC55A042094090112										031C7001521855N+260859	
CC55AC52										02222454N+271009	
CC55AC62		104C99111								04814202020652N+280159	
CC55AC72										06014002000050N+300009	
CC55AC82										02021549N+311009	
CC55AC84C85078412										07815602022349N+310909	
CC55AC94										06818201722647N+330309	
CC55A104			072085411							04015501421845N+340109	
CC55A114										03416501321244N+360409	
CC55A124					104094111					C4416601321442N+370209	
CC55A134										06817801300040N+380009	
CC55A144					090094111110164012000 39N+400009						
CC55A154										08520501600037N+410009	
CC56AC05		082072111								03807702617663N+200020	
CC56AC15										05108702[redacted]	
CC56AC25		C75075111								04209102600060N+220009	
CC56AC35										04810802600058N+240009	
CC56AC45		C82078111								04712702600057N+250000	
CC56AC55										05114902621955N+270059	
CC56AC65		C75072111								05715502517653N+280010	
CC57AC05C85090112										08012002021755N+270959	
CC57AC15										01521054N+281009	
CC57AC31C85078212										06610001221551N+300959	
CC57AC41										05207501221849N+310959	
CC57AC5209C090212										05020201321848N+330959	
CC57AC62										01323202S+600959	
CC57AC72		C94078212								05010301322804S+600250	
CC57AC82										07812201222506S+590400	
e F										N+-0	

The diffuse density measurements made by AFSPPL were computer sorted at A/P to permit analysis of the density ranges encountered at the three processing levels. A study of sorting techniques showed that no absolute method was available to separate the density values as the accuracy of the Processing History [redacted] appears rather low and processing transition phases are not accounted for. The sorting technique selected uses the base plus fog density values where measurements up to 0.09 density are considered as having received Primary processing, 0.10 to 0.17 as Intermediate and above 0.17 density as Full. The percentage of original negative that was processed at each level, based on the computer sort, is tabulated below with the predicted and reported processing percentages.

Mission	Camera		Primary	Intermediate	Full
1011-1	FWD	Predicted	0	64	36
		Reported	2	23	75
		Computed	2	23	75
1011-1	AFT	Predicted	[redacted]		
		Reported	3	47	50
		Computed	0	37	63

The correlation of the reported and computed percentages at the three processing levels is very good for Mission 1011-1 and is more consistent than the normal mission values.

The tabulations of density frequency distributions for Mission 1011-1 are shown in Tables 9-2 and 9-3. The graphical presentation of the density distribution are computer plotted in Figures 9-1 through 9-21. Analysis of these plots and the associated mean and median density values show that the Master camera density values were somewhat lower than the Slave camera however the density ranges of both cameras is within the nominal range. One significant anomaly is the highest value of minimum density recorded from the Master camera photography was 0.99 density. This value normally is 1.40 density or greater.

Table 9-4 shows the distribution of the minimum terrain density measurements that are within and outside of the desired control range of 0.40 to 0.90 density. The percentage of values below 0.30 density is

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DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
C.C1	C	C	0	C	C	0	0	C	0	0	0	0
C.C2	C	C	0	C	C	0	0	C	0	0	0	0
C.C3	C	C	0	C	C	0	0	C	0	0	0	0
C.C4	C	C	0	C	C	0	0	C	0	0	0	0
C.C5	C	C	0	C	C	0	0	C	0	0	0	0
C.C6	C	C	0	C	C	0	0	C	0	0	0	0
C.C7	C	C	0	C	C	0	0	C	0	0	0	0
C.C8	C	C	0	C	C	0	0	C	0	0	0	0
C.C9	C	C	0	C	C	0	0	C	0	0	0	0
C.10	C	C	0	C	C	0	0	C	0	0	0	0
C.11	C	C	0	C	C	0	0	C	0	0	0	0
C.12	C	C	0	C	C	0	0	C	0	0	0	0
C.13	C	C	0	C	C	0	0	C	0	0	0	0
C.14	C	C	0	C	C	0	0	C	0	0	0	0
C.15	C	C	0	C	C	0	0	C	0	0	0	0
C.16	C	C	0	C	C	0	0	C	0	0	0	0
C.17	C	C	0	C	C	0	0	C	0	0	0	0
C.18	1	C	0	C	C	0	0	C	0	1	0	0
C.19	C	C	0	C	C	0	0	C	0	0	0	0
C.20	C	C	0	C	C	0	0	C	0	0	0	0
C.21	1	C	0	C	C	0	0	C	0	1	0	0
C.22	C	C	0	C	C	0	0	C	0	0	0	0
C.23	C	C	0	C	C	0	0	C	0	0	0	0
C.24	C	C	0	C	C	0	0	C	0	0	0	0
C.25	C	C	0	C	C	0	0	C	0	0	0	0
C.26	C	C	0	1	C	0	0	C	0	1	0	0
C.27	C	C	0	C	C	0	0	C	0	0	0	0
C.28	1	C	0	C	C	0	0	C	0	1	0	0
C.29	C	C	0	C	C	0	0	C	0	0	0	0
C.30	1	C	0	3	C	0	0	2	0	5	0	0
C.31	C	C	0	C	C	0	0	C	0	0	0	0
C.32	C	C	0	3	C	0	0	4	0	7	0	0
C.33	C	C	0	C	C	0	0	C	0	0	0	0
C.34	C	C	0	2	C	0	0	6	0	8	0	0
C.35	C	C	0	1	C	0	0	3	0	4	0	0
C.36	C	C	0	C	C	0	0	C	0	0	0	0
C.37	C	C	0	1	C	0	0	4	0	5	0	0
C.38	C	C	0	7	C	0	0	9	0	10	0	0
C.39	C	C	0	C	C	0	0	7	0	14	0	0
C.40	C	C	0	4	C	0	0	8	0	8	0	0
C.41	C	C	0	C	C	0	0	13	0	17	0	0
C.42	C	C	0	3	C	0	0	1	0	1	0	0
C.43	C	C	0	C	C	0	0	8	0	11	0	0
C.44	C	C	0	C	C	0	0	4	0	4	0	0
C.45	C	C	0	C	C	0	0	9	0	9	0	0
C.46	C	C	0	2	C	0	0	3	0	3	0	0
C.47	C	C	0	C	C	0	0	11	0	13	0	0
C.48	C	C	0	2	C	0	0	6	0	6	0	0
C.49	C	C	0	C	C	0	0	3	0	5	0	0
C.50	C	C	0	1	C	0	0	1	0	1	0	0
SUBTOTAL	5	C	0	34	0	0	111	0	0	150	0	0

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DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
C.51	C	C	0	C	0	0	1	0	0	1	0	0
C.52	C	C	0	0	0	0	9	0	0	13	0	0
C.53	C	C	0	1	0	0	3	0	0	4	0	0
C.54	C	C	0	C	0	0	4	0	0	4	0	0
C.55	C	C	0	C	0	0	0	0	0	0	0	0
C.56	C	C	1	2	0	0	3	0	0	4	1	0
C.57	C	C	0	C	0	0	3	0	0	2	0	0
C.58	C	C	0	1	0	0	3	0	0	4	0	0
C.59	C	C	0	C	1	0	1	0	0	1	0	0
C.60	C	C	0	1	0	0	6	0	0	7	1	0
C.61	C	C	0	C	0	0	0	0	0	0	0	0
C.62	C	C	0	2	0	0	5	1	0	7	1	0
C.63	C	C	1	C	1	0	1	1	0	1	2	0
C.64	C	C	0	C	0	0	1	4	0	5	4	0
C.65	C	C	0	C	0	0	0	0	0	0	0	0
C.66	C	C	0	C	1	0	0	1	0	0	1	0
C.67	C	C	0	C	0	0	0	2	0	0	2	0
C.68	C	C	0	C	0	0	0	1	0	0	1	0
C.69	C	C	0	C	0	0	0	0	0	0	0	0
C.70	C	C	0	C	0	0	0	0	0	0	0	0
C.71	C	C	0	C	0	0	0	0	0	0	0	0
C.72	C	C	0	C	0	0	0	0	0	0	0	0
C.73	C	C	0	C	0	0	0	0	0	0	0	0
C.74	C	C	0	C	0	0	0	0	0	0	0	0
C.75	C	C	0	C	0	0	0	0	0	0	0	0
C.76	C	C	0	C	0	0	0	0	0	0	0	0
C.77	C	C	0	C	0	0	0	0	0	0	0	0
C.78	C	C	0	C	0	0	0	0	0	0	0	0
C.79	C	C	0	C	0	0	0	0	0	0	0	0
C.80	C	C	0	C	0	0	0	0	0	0	0	0
C.81	C	C	0	C	0	0	0	0	0	0	0	0
C.82	C	C	0	C	0	0	0	0	0	0	0	0
C.83	C	C	0	C	0	0	0	0	0	0	0	0
C.84	C	C	0	C	0	0	0	0	0	0	0	0
C.85	C	C	0	C	0	0	0	0	0	0	0	0
C.86	C	C	0	C	0	0	0	0	0	0	0	0
C.87	C	C	0	C	0	0	0	0	0	0	0	0
C.88	C	C	0	C	0	0	0	0	0	0	0	0
C.89	C	C	0	C	0	0	0	0	0	0	0	0
C.90	C	C	0	C	0	0	0	0	0	0	0	0
C.91	C	C	0	C	0	0	0	0	0	0	0	0
C.92	C	C	0	C	0	0	0	0	0	0	0	0
C.93	C	C	0	C	0	0	0	0	0	0	0	0
C.94	C	C	0	C	0	0	0	0	0	0	0	0
C.95	C	C	0	C	0	0	0	0	0	0	0	0
C.96	C	C	0	C	0	0	0	0	0	0	0	0
C.97	C	C	0	C	0	0	0	0	0	0	0	0
C.98	C	C	0	C	0	0	0	0	0	0	0	0
C.99	C	C	0	C	0	0	0	0	0	0	0	0
1.00	C	C	0	C	0	0	0	0	0	0	0	0
SUBTOTAL	C	4	0	23	5	0	74	23	2	97	32	2

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DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
1.01	0	0	0	0	0	0	0	0	0	0	0	0
1.02	0	0	0	0	0	0	0	1	0	0	1	0
1.03	0	0	0	0	0	0	0	1	0	0	1	0
1.04	0	0	0	0	0	0	0	1	1	0	1	0
1.05	0	0	0	0	0	0	0	1	2	0	1	0
1.06	0	0	0	0	0	0	0	2	0	0	2	0
1.07	0	0	0	0	0	0	0	2	1	0	2	0
1.08	0	0	0	0	0	0	0	2	2	0	2	0
1.09	0	0	0	0	0	0	0	3	1	0	3	0
1.10	0	0	0	0	0	0	0	3	2	0	3	0
1.11	0	0	0	0	0	0	0	4	1	0	4	0
1.12	0	0	0	0	0	0	0	4	2	0	4	0
1.13	0	0	0	0	0	0	0	5	1	0	5	0
1.14	0	0	0	0	0	0	0	5	2	0	5	0
1.15	0	0	0	0	0	0	0	6	1	0	6	0
1.16	0	0	0	0	0	0	0	6	2	0	6	0
1.17	0	0	0	0	0	0	0	7	1	0	7	0
1.18	0	0	0	0	0	0	0	7	2	0	7	0
1.19	0	0	0	0	0	0	0	8	1	0	8	0
1.20	0	0	0	0	0	0	0	8	2	0	8	0
1.21	0	0	0	0	0	0	0	9	1	0	9	0
1.22	0	0	0	0	0	0	0	9	2	0	9	0
1.23	0	0	0	0	0	0	0	10	1	0	10	0
1.24	0	0	0	0	0	0	0	10	2	0	10	0
1.25	0	0	0	0	0	0	0	11	1	0	11	0
1.26	0	0	0	0	0	0	0	11	2	0	11	0
1.27	0	0	0	0	0	0	0	12	0	0	12	0
1.28	0	0	0	0	0	0	0	3	0	0	3	0
1.29	0	0	0	0	0	0	0	5	1	0	6	0
1.30	0	0	0	0	0	0	0	5	2	0	6	0
1.31	0	0	0	0	0	0	0	1	3	0	1	0
1.32	0	0	0	0	0	0	0	1	4	0	1	0
1.33	0	0	0	0	0	0	0	0	3	0	0	0
1.34	0	0	0	0	0	0	0	0	4	0	0	0
1.35	0	0	0	0	0	0	0	2	3	0	2	0
1.36	0	0	0	0	0	0	0	2	4	0	2	0
1.37	0	0	0	0	0	0	0	3	0	0	3	0
1.38	0	0	0	0	0	0	0	2	1	0	2	0
1.39	0	0	0	0	0	0	0	1	8	0	1	0
1.40	0	0	0	0	0	0	0	2	3	0	2	0
1.41	0	0	0	0	0	0	0	1	3	0	1	0
1.42	0	0	0	0	0	0	0	1	4	0	1	0
1.43	0	0	0	0	0	0	0	3	2	0	3	0
1.44	0	0	0	0	0	0	0	2	2	0	2	0
1.45	0	0	0	0	0	0	0	4	1	0	4	0
1.46	0	0	0	0	0	0	0	3	0	0	3	0
1.47	0	0	0	0	0	0	0	2	0	0	2	0
1.48	0	0	0	0	0	0	0	1	2	0	1	0
1.49	0	0	0	0	0	0	0	2	0	0	2	0
1.50	0	0	0	0	0	0	0	3	0	0	3	0
SUBTOTAL	0	1	0	0	24	0	0	87	6	0	112	6

MISSION = 1011-1 * INSTRUMENT * FWD 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
1.51	0	0	0	0	1	0	0	0	0	0	1	0
1.52	0	0	0	0	0	0	0	2	0	0	2	0
1.53	0	0	0	0	1	0	0	0	0	0	1	0
1.54	0	0	0	0	3	0	0	0	0	0	3	0
1.55	0	0	0	0	0	0	0	1	0	0	1	0
1.56	0	0	0	0	1	0	0	0	0	0	1	0
1.57	0	0	0	0	0	0	0	3	0	0	3	0
1.58	0	0	0	0	1	0	0	0	0	0	1	0
1.59	0	0	0	0	0	0	0	1	0	0	1	0
1.60	0	0	0	0	3	0	0	0	0	0	3	0
1.61	0	0	0	0	0	0	0	3	0	0	3	0
1.62	0	0	0	0	0	0	0	0	0	0	0	0
1.63	0	0	0	0	1	0	0	2	0	0	2	0
1.64	0	0	0	0	0	0	0	1	0	0	1	0
1.65	0	0	0	0	0	0	0	0	0	0	0	0
1.66	0	0	0	0	0	0	0	1	0	0	1	0
1.67	0	0	0	0	0	0	0	2	0	0	2	0
1.68	0	0	0	0	1	0	0	0	0	0	1	0
1.69	0	0	0	0	0	0	0	1	0	0	1	0
1.70	0	0	0	0	0	0	0	1	0	0	1	0
1.71	0	0	0	0	0	0	0	1	0	0	1	0
1.72	0	0	0	0	0	0	0	3	0	0	3	0
1.73	0	0	0	0	0	0	0	0	0	0	0	0
1.74	0	0	0	0	0	0	0	2	0	0	2	0
1.75	0	0	0	0	1	0	0	0	0	0	1	0
1.76	0	0	0	0	0	0	0	1	0	0	1	0
1.77	0	0	0	0	0	0	0	0	0	0	0	0
1.78	0	0	0	0	1	0	0	2	0	0	2	0
1.79	0	0	0	0	0	0	0	0	0	0	0	0
1.80	0	0	0	0	0	0	0	1	0	0	1	0
1.81	0	0	0	0	1	0	0	0	0	0	1	0
1.82	0	0	0	0	0	0	0	1	0	0	1	0
1.83	0	0	0	0	0	0	0	0	0	0	0	0
1.84	0	0	0	0	0	0	0	1	0	0	1	0
1.85	0	0	0	0	0	0	0	0	0	0	0	0
1.86	0	0	0	0	0	0	0	0	0	0	0	0
1.87	0	0	0	0	0	0	0	1	0	0	1	0
1.88	0	0	0	0	1	0	0	0	0	0	1	0
1.89	0	0	0	0	0	0	0	0	0	0	0	0
1.90	0	0	0	0	0	0	0	2	0	0	2	0
1.91	0	0	0	0	0	0	0	0	0	0	0	0
1.92	0	0	0	0	0	0	0	0	0	0	0	0
1.93	0	0	0	0	0	0	0	0	0	0	0	0
1.94	0	0	0	0	0	0	0	2	0	0	2	0
1.95	0	0	0	0	0	0	0	0	0	0	0	0
1.96	0	0	0	0	1	0	0	0	0	0	1	0
1.97	0	0	0	0	0	0	0	0	0	0	0	0
1.98	0	0	0	0	0	0	0	0	0	0	0	0
1.99	0	0	0	0	0	0	0	0	0	0	0	0
2.00	0	0	1	0	0	4	0	7	4	0	7	9
SUBTOTAL	0	0	3	0	21	13	0	47	26	0	68	42

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DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
2.01	0	0	0	0	0	0	0	0	1	0	0	1
2.02	0	0	0	0	0	2	0	0	2	0	0	2
2.03	0	0	0	0	0	2	0	0	1	0	0	2
2.04	0	0	0	0	0	1	0	0	1	0	0	1
2.05	0	0	0	0	0	1	0	0	1	0	0	1
2.06	0	0	0	0	0	2	0	0	2	0	0	2
2.07	0	0	0	0	0	2	0	0	2	0	0	2
2.08	0	0	0	0	0	1	0	0	1	0	0	1
2.09	0	0	0	0	0	2	0	0	2	0	0	2
2.10	0	0	0	0	0	1	0	0	1	0	0	1
2.11	0	0	0	0	0	2	0	0	2	0	0	2
2.12	0	0	0	0	0	1	0	0	1	0	0	1
2.13	0	0	0	0	0	1	0	0	1	0	0	1
2.14	0	0	0	0	0	1	0	0	1	0	0	1
2.15	0	0	0	0	0	1	0	0	1	0	0	1
2.16	0	0	0	0	0	1	0	0	1	0	0	1
2.17	0	0	0	0	0	1	0	0	1	0	0	1
2.18	0	0	0	0	0	1	0	0	1	0	0	1
2.19	0	0	0	0	0	1	0	0	1	0	0	1
2.20	0	0	0	0	0	1	0	0	1	0	0	1
2.21	0	0	0	0	0	1	0	0	1	0	0	1
2.22	0	0	0	0	0	1	0	0	1	0	0	1
2.23	0	0	0	0	0	1	0	0	1	0	0	1
2.24	0	0	0	0	0	1	0	0	1	0	0	1
2.25	0	0	0	0	0	1	0	0	1	0	0	1
2.26	0	0	0	0	0	1	0	0	1	0	0	1
2.27	0	0	0	0	0	1	0	0	1	0	0	1
2.28	0	0	0	0	0	1	0	0	1	0	0	1
2.29	0	0	0	0	0	1	0	0	1	0	0	1
2.30	0	0	0	0	0	1	0	0	1	0	0	1
2.31	0	0	0	0	0	1	0	0	1	0	0	1
2.32	0	0	0	0	0	1	0	0	1	0	0	1
2.33	0	0	0	0	0	1	0	0	1	0	0	1
2.34	0	0	0	0	0	1	0	0	1	0	0	1
2.35	0	0	0	0	0	1	0	0	1	0	0	1
2.36	0	0	0	0	0	1	0	0	1	0	0	1
2.37	0	0	0	0	0	1	0	0	1	0	0	1
2.38	0	0	0	0	0	1	0	0	1	0	0	1
2.39	0	0	0	0	0	1	0	0	1	0	0	1
2.40	0	0	0	0	0	1	0	0	1	0	0	1
2.41	0	0	0	0	0	1	0	0	1	0	0	1
2.42	0	0	0	0	0	1	0	0	1	0	0	1
2.43	0	0	0	0	0	1	0	0	1	0	0	1
2.44	0	0	0	0	0	1	0	0	1	0	0	1
2.45	0	0	0	0	0	1	0	0	1	0	0	1
2.46	0	0	0	0	0	1	0	0	1	0	0	1
2.47	0	0	0	0	0	1	0	0	1	0	0	1
2.48	0	0	0	0	0	1	0	0	1	0	0	1
2.49	0	0	0	0	0	1	0	0	1	0	0	1
2.50	0	0	0	0	0	1	0	0	1	0	0	1
SUBTOTAL	0	0	5	0	7	21	0	28	125	0	35	151

[redacted]

TABLE 9-2

MISSION • 1011-1 • INSTRUMENT • FWD 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
2.51	C	C	0	C	C	0	0	0	0	0	0	0
2.52	C	C	0	C	C	0	0	0	0	0	0	0
2.53	C	C	0	C	C	0	0	0	0	0	0	0
2.54	C	C	0	C	C	0	0	0	0	0	0	0
2.55	C	C	0	C	C	0	0	0	0	0	0	0
2.56	C	C	0	C	C	0	0	0	0	0	0	0
2.57	C	C	0	C	C	0	0	0	0	0	0	0
2.58	C	C	0	C	C	0	0	0	0	0	0	0
2.59	C	C	0	C	C	0	0	0	0	0	0	0
2.60	C	C	0	C	C	0	0	0	0	0	0	0
2.61	C	C	0	C	C	0	0	0	0	0	0	0
2.62	C	C	0	C	C	0	0	0	0	0	0	0
2.63	C	C	0	C	C	0	0	0	0	0	0	0
2.64	C	C	0	C	C	0	0	0	0	0	0	0
2.65	C	C	0	C	C	0	0	0	0	0	0	0
2.66	C	C	0	C	C	0	0	0	0	0	0	0
2.67	C	C	0	C	C	0	0	0	0	0	0	0
2.68	C	C	0	C	C	0	0	0	0	0	0	0
2.69	C	C	0	C	C	0	0	0	0	0	0	0
2.70	C	C	0	C	C	0	0	0	0	0	0	0
SUBTOTAL	C	C	0	C	C	0	0	0	0	0	0	0
TOTAL	5	5	8	57	57	34	185	185	159	247	247	201

MISSION 1011-1 INSTR - FWD 2-09-64 PROCESSING AND EXPOSURE ANA

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OV EXPOS
PRIMARY	5	C PC	80 PC	20 PC	0 PC	0
INTERMEDIATE	57	C PC	39 PC	61 PC	0 PC	0
FULL	185	23 PC	0 PC	75 PC	2 PC	0
ALL LEVELS	247	17 PC	11 PC	70 PC	2 PC	0

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OV EXPOS
PRIMARY	0.01-0.15	0.01-0.13	0.14-0.39	0.40-0.90	----------	0.91 AN
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AN
FULL	0.18 AND UP	0.01-0.35	----------	0.40-0.90	0.91-1.69	1.70 AN

TABLE 9-2

MISSION = 1011-1 • INSTRUMENT • AFT 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMECIATE MIN	INTERMECIATE MAX	INTERMECIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
C.01	C	C	0	C	C	0	0	0	0	0	0	0
C.02	C	C	0	C	C	0	0	0	0	0	0	0
C.03	C	C	0	C	C	0	0	0	0	0	0	0
C.04	C	C	0	C	C	0	0	0	0	0	0	0
C.05	C	C	0	C	C	0	0	0	0	0	0	0
C.06	C	C	0	C	C	0	0	0	0	0	0	0
C.07	C	C	0	C	C	0	0	0	0	0	0	0
C.08	C	C	0	C	C	0	0	0	0	0	0	0
C.09	C	C	0	C	C	0	0	0	0	0	0	0
C.10	C	C	0	C	C	0	0	0	0	0	0	0
C.11	C	C	0	C	C	0	0	0	0	0	0	0
C.12	C	C	0	C	C	0	0	0	0	0	0	0
C.13	C	C	0	C	C	0	0	0	0	0	0	0
C.14	C	C	0	C	C	0	0	0	0	0	0	0
C.15	C	C	0	C	C	0	0	0	0	0	0	0
C.16	C	C	0	C	C	0	0	0	0	0	0	0
C.17	C	C	0	C	C	0	0	0	0	0	0	0
C.18	C	C	0	C	C	0	0	0	0	0	0	0
C.19	C	C	0	C	C	0	0	0	0	0	0	0
C.20	C	C	0	C	C	0	0	0	0	0	0	0
C.21	C	C	0	C	C	0	0	0	0	0	0	0
C.22	C	C	0	C	C	0	0	0	0	0	0	0
C.23	C	C	0	C	C	0	0	0	0	0	0	0
C.24	C	C	0	1	C	0	0	0	0	1	0	0
C.25	C	C	0	C	C	0	0	0	0	0	0	0
C.26	C	C	0	2	C	0	0	0	0	2	0	0
C.27	C	C	0	1	C	0	0	0	0	1	0	0
C.28	C	C	0	1	C	0	0	0	0	1	0	0
C.29	C	C	0	1	C	0	0	0	0	1	0	0
C.30	C	C	0	C	C	0	2	0	0	2	0	0
C.31	C	C	0	1	C	0	0	0	0	1	0	0
C.32	C	C	0	C	C	0	1	0	0	1	0	0
C.33	C	C	0	2	C	0	0	0	0	2	0	0
C.34	C	C	0	3	C	0	0	0	0	3	0	0
C.35	C	C	0	1	C	0	0	0	0	1	0	0
C.36	C	C	0	1	C	0	0	0	0	1	0	0
C.37	C	C	0	C	C	0	1	0	0	1	0	0
C.38	C	C	0	3	C	0	3	0	0	6	0	0
C.39	C	C	0	C	C	0	1	0	0	1	0	0
C.40	C	C	0	5	C	0	3	0	0	8	0	0
C.41	C	C	0	C	C	0	2	0	0	2	0	0
C.42	C	C	0	1	C	0	3	0	0	4	0	0
C.43	C	C	0	C	C	0	1	0	0	1	0	0
C.44	C	C	0	4	C	0	3	0	0	7	0	0
C.45	C	C	0	C	C	0	3	0	0	3	0	0
C.46	C	C	0	1	C	0	8	0	0	9	0	0
C.47	C	C	0	2	C	0	2	0	0	4	0	0
C.48	C	C	0	4	C	0	1	0	0	5	0	0
C.49	C	C	0	C	C	0	0	0	0	0	0	0
C.50	C	C	0	6	1	0	4	0	0	10	1	0
SUBTOTAL	C	C	0	40	1	0	45	0	0	85	1	0

TABLE 9-3

MISSION • 1011-1 • INSTRUMENT • AFT 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
C.51	C	C	0	C	0	0	2	0	0	2	0	0
C.52	C	C	0	3	0	0	8	0	0	11	0	0
C.53	C	C	0	1	0	0	4	0	0	5	0	0
C.54	C	C	0	4	0	0	3	0	0	7	0	0
C.55	C	C	0	1	0	0	4	0	0	5	0	0
C.56	C	C	0	2	0	0	7	0	0	9	0	0
C.57	C	C	0	3	0	0	7	0	0	10	0	0
C.58	C	C	0	3	0	0	3	0	0	6	0	0
C.59	C	C	0	1	0	0	1	0	0	2	0	0
C.60	C	C	0	2	0	0	11	0	0	13	0	0
C.61	C	C	0	1	0	0	5	0	0	6	0	0
C.62	C	C	0	1	0	0	5	0	0	6	0	0
C.63	C	C	0	2	0	0	4	0	0	6	0	0
C.64	C	C	0	2	0	0	3	0	0	5	0	0
C.65	C	C	0	2	0	0	1	0	0	3	0	0
C.66	C	C	0	1	0	0	1	0	0	2	0	0
C.67	C	C	0	1	0	0	2	0	0	3	0	0
C.68	C	C	0	3	0	0	2	0	0	5	0	0
C.69	C	C	0	1	0	0	5	0	0	6	0	0
C.70	C	C	0	1	0	0	1	0	0	2	0	0
C.71	C	C	0	1	0	0	1	0	0	2	0	0
C.72	C	C	0	C	0	0	1	0	0	1	0	0
C.73	C	C	0	C	0	0	1	0	0	1	0	0
C.74	C	C	0	C	0	0	1	0	0	1	0	0
C.75	C	C	0	1	0	0	1	0	0	2	0	0
C.76	C	C	0	1	0	0	2	0	0	3	0	0
C.77	C	C	0	1	0	0	4	0	0	5	0	0
C.78	C	C	0	C	0	0	1	0	0	1	0	0
C.79	C	C	0	C	0	0	3	0	0	5	0	0
C.80	C	C	0	C	0	0	0	0	0	0	0	0
C.81	C	C	0	C	0	0	0	0	0	0	0	0
C.82	C	C	0	C	0	0	0	0	0	0	0	0
C.83	C	C	0	C	0	0	0	0	0	0	0	0
C.84	C	C	0	1	0	0	1	0	0	2	0	0
C.85	C	C	0	1	0	0	2	0	0	3	0	0
C.86	C	C	0	1	0	0	1	0	0	2	0	0
C.87	C	C	0	C	0	0	1	0	0	1	0	0
C.88	C	C	0	C	0	0	1	0	0	1	0	0
C.89	C	C	0	C	0	0	0	0	0	0	0	0
C.90	C	C	0	2	0	0	0	0	0	2	0	0
C.91	C	C	0	1	0	0	1	0	0	2	0	0
C.92	C	C	0	1	0	0	1	0	0	2	0	0
C.93	C	C	0	C	0	0	1	0	0	1	0	0
C.94	C	C	0	C	0	0	1	0	0	1	0	0
C.95	C	C	0	C	0	0	0	0	0	0	0	0
C.96	C	C	0	C	0	0	1	0	0	1	0	0
C.97	C	C	0	1	0	0	0	0	0	1	0	0
C.98	C	C	0	C	0	0	0	0	0	0	0	0
C.99	C	C	0	C	0	0	2	0	0	2	0	0
1.00	C	C	0	C	0	0	1	0	0	1	0	0
SUBTOTAL	C	C	0	48	8	0	98	13	1	146	21	1

MISSION = 1011-1 • INSTRUMENT • AFT 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
1.C1	C	C	0	C	1	0	2	0	0	2	1	0
1.C2	C	C	0	C	1	0	1	0	0	1	2	0
1.C3	C	C	0	C	1	0	1	1	0	1	2	0
1.C4	C	C	0	C	1	0	1	2	0	1	2	0
1.C5	C	C	0	C	1	0	0	2	0	1	2	0
1.C6	C	C	0	C	1	0	0	2	0	1	2	0
1.C7	C	C	0	C	1	0	0	2	0	1	2	0
1.C8	C	C	0	C	1	0	0	1	0	1	2	0
1.C9	C	C	0	C	1	0	0	1	0	1	2	0
1.10	C	C	0	C	2	0	0	0	0	0	2	0
1.11	C	C	0	C	0	0	0	0	0	0	0	0
1.12	C	C	0	C	0	0	0	0	0	0	0	0
1.13	C	C	0	C	0	0	0	0	0	0	0	0
1.14	C	C	0	C	0	0	1	0	0	1	0	0
1.15	C	C	0	C	0	1	0	1	0	0	1	0
1.16	C	C	0	C	1	0	1	3	0	1	4	0
1.17	C	C	0	C	1	1	0	3	0	0	4	0
1.18	C	C	0	C	1	1	0	3	0	0	4	0
1.19	C	C	0	C	1	1	1	2	0	1	3	0
1.20	C	C	0	C	1	1	0	2	0	0	3	0
1.21	C	C	0	C	1	0	0	1	0	0	2	0
1.22	C	C	0	C	0	1	0	1	0	0	2	0
1.23	C	C	0	C	1	0	0	2	0	0	2	0
1.24	C	C	0	C	0	0	0	4	0	0	4	0
1.25	C	C	0	C	0	1	0	3	0	0	4	0
1.26	C	C	0	C	1	1	0	1	0	0	2	0
1.27	C	C	0	C	1	1	0	1	0	0	2	0
1.28	C	C	0	C	1	1	0	1	0	0	2	0
1.29	C	C	0	C	1	1	0	1	0	0	2	0
1.30	C	C	0	C	2	0	0	1	0	0	3	0
1.31	C	C	0	C	2	0	0	1	0	0	3	0
1.32	C	C	0	C	0	1	0	1	0	0	3	0
1.33	C	C	0	C	1	0	0	1	0	0	3	0
1.34	C	C	0	C	1	0	0	4	0	0	5	0
1.35	C	C	0	C	0	0	0	3	0	0	4	0
1.36	C	C	0	C	1	0	0	3	0	0	4	0
1.37	C	C	0	C	1	0	0	2	0	0	3	0
1.38	C	C	0	C	1	0	0	2	0	0	3	0
1.39	C	C	0	C	1	0	0	1	0	0	2	0
1.40	C	C	0	C	0	0	0	2	0	0	2	0
1.41	C	C	0	C	0	2	0	2	0	0	2	0
1.42	C	C	0	C	2	0	0	2	0	0	2	0
1.43	C	C	0	C	2	0	0	2	0	0	2	0
1.44	C	C	0	C	0	2	0	2	0	0	4	0
1.45	C	C	0	C	0	1	0	2	0	0	3	0
1.46	C	C	0	C	1	0	0	2	0	0	3	0
1.47	C	C	0	C	1	0	0	1	0	0	2	0
1.48	C	C	0	C	0	0	0	1	0	0	1	0
1.49	C	C	0	C	0	0	0	1	0	0	1	0
1.50	C	C	0	C	0	0	0	7	0	0	7	0
SUBTOTAL	C	C	0	3	23	0	9	70	5	12	93	5

TABLE 9-3

[redacted] TOP SECRET [redacted]

No. [redacted]

MISSION • 1011-1 • INSTRUMENT • AFT 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
1.51	0	0	0	0	0	0	0	0	0	0	0	0
1.52	0	0	0	0	2	0	0	0	1	0	2	1
1.53	0	0	0	0	0	0	0	1	0	0	1	0
1.54	0	0	0	0	0	0	0	2	0	0	2	0
1.55	0	0	0	0	1	0	0	1	0	0	2	0
1.56	0	0	0	0	0	0	0	2	0	0	2	0
1.57	0	0	0	0	0	0	0	0	1	0	0	1
1.58	0	0	0	0	1	0	0	1	0	0	2	0
1.59	0	0	0	0	0	0	0	0	0	0	0	0
1.60	0	0	0	0	2	0	0	3	2	0	5	2
1.61	0	0	0	0	0	0	0	0	0	0	0	0
1.62	0	0	0	0	0	0	0	2	0	0	2	0
1.63	0	0	0	0	1	0	0	0	1	0	1	0
1.64	0	0	0	0	1	0	0	4	1	0	5	2
1.65	0	0	0	0	0	0	0	0	0	0	0	0
1.66	0	0	0	0	1	0	0	2	0	0	3	1
1.67	0	0	0	0	0	0	0	0	0	0	0	0
1.68	0	0	0	0	1	0	0	1	0	0	2	0
1.69	0	0	0	0	0	0	0	0	0	0	0	0
1.70	0	0	0	0	1	0	0	2	0	0	3	1
1.71	0	0	0	0	0	0	0	0	0	0	0	0
1.72	0	0	0	0	1	0	0	1	0	0	2	0
1.73	0	0	0	0	0	0	0	0	0	0	0	0
1.74	0	0	0	0	1	0	0	1	0	0	2	0
1.75	0	0	0	0	0	0	0	0	0	0	0	0
1.76	0	0	0	0	2	0	0	2	0	0	4	0
1.77	0	0	0	0	0	0	0	0	0	0	0	0
1.78	0	0	0	0	3	0	0	2	0	0	5	2
1.79	0	0	0	0	0	0	0	0	0	0	0	0
1.80	0	0	0	0	4	0	0	2	0	0	6	2
1.81	0	0	0	0	0	0	0	0	0	0	0	0
1.82	0	0	0	0	4	0	0	3	0	0	7	2
1.83	0	0	0	0	0	0	0	0	0	0	0	0
1.84	0	0	0	0	3	0	0	2	0	0	5	2
1.85	0	0	0	0	1	0	0	0	1	0	1	0
1.86	0	0	0	0	2	0	0	0	1	0	2	0
1.87	0	0	0	0	0	0	0	0	0	0	0	0
1.88	0	0	0	0	1	0	0	0	1	0	1	0
1.89	0	0	0	0	0	0	0	0	0	0	0	0
1.90	0	0	0	0	2	0	0	0	1	0	2	0
1.91	0	0	0	0	0	0	0	0	0	0	0	0
1.92	0	0	0	0	2	0	0	0	2	0	2	0
1.93	0	0	0	0	0	0	0	0	0	0	0	0
1.94	0	0	0	0	1	0	0	0	1	0	1	0
1.95	0	0	0	0	0	0	0	0	0	0	0	0
1.96	0	0	0	0	2	0	0	0	1	0	2	0
1.97	0	0	0	0	0	0	0	0	0	0	0	0
1.98	0	0	0	0	1	0	0	0	1	0	1	0
1.99	0	0	0	0	0	0	0	0	0	0	0	0
2.00	0	0	0	0	1	0	0	0	1	0	1	0
SUBTOTAL	0	0	0	0	37	10	0	40	21	0	77	31

[redacted] TOP SECRET [redacted]

No. [redacted]

TABLE 9-3

[redacted] TOP SECRET [redacted] No. [redacted]

MISSION • 1011-1 • INSTRUMENT • AFT 2-09-64 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY MIN	PRIMARY MAX	PRIMARY LIM	INTERMEDIATE MIN	INTERMEDIATE MAX	INTERMEDIATE LIM	FULL MIN	FULL MAX	FULL LIM	ALL LEVELS MIN	ALL LEVELS MAX	ALL LEVELS LIM
2.51	C	C	0	C	C	0	0	0	0	0	0	0
2.52	C	C	0	C	C	0	0	0	0	0	0	0
2.53	C	C	0	C	C	0	0	0	0	0	0	0
2.54	C	C	0	C	C	0	0	0	0	0	0	0
2.55	C	C	0	C	C	0	0	0	0	0	0	0
2.56	C	C	0	C	C	0	0	0	0	0	0	0
2.57	C	C	0	C	C	0	0	0	0	0	0	0
2.58	C	C	0	C	C	0	0	0	0	0	0	0
2.59	C	C	0	C	C	0	0	0	0	0	0	0
2.60	C	C	0	C	C	0	0	0	0	0	0	0
2.61	C	C	0	C	C	0	0	0	0	0	0	0
2.62	C	C	0	C	C	0	0	0	0	0	0	0
2.63	C	C	0	C	C	0	0	0	0	0	0	0
2.64	C	C	0	C	C	0	0	0	0	0	0	0
2.65	C	C	0	C	C	0	0	0	0	0	0	0
2.66	C	C	0	C	C	0	0	0	0	0	0	0
2.67	C	C	0	C	C	0	0	0	0	0	0	0
2.68	C	C	0	C	C	0	0	0	0	0	0	0
2.69	C	C	0	C	C	0	0	0	0	0	0	0
2.70	C	C	0	C	C	0	0	0	0	0	0	0
SUBTOTAL	C	C	0	0	0	0	0	0	0	0	0	0
TOTAL	0	C	0	91	91	84	152	152	105	243	243	189

MISSION 1011-1 INSTR - AFT 2-09-64 PROCESSING AND EXPOSURE ANA

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OV EXPOS
PRIMARY	C	C PC	0 PC	0 PC	0 PC	0
INTERMEDIATE	91	C PC	19 PC	75 PC	7 PC	0
FULL	152	5 PC	0 PC	86 PC	9 PC	0
ALL LEVELS	243	3 PC	7 PC	81 PC	8 PC	0

PROCESS LEVEL	BASE • FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OV EXPOS
PRIMARY	0.01-C.19	0.01-C.13	0.14-0.39	0.40-0.90	----------	0.91 AN
INTERMED	C.1C-C.17	0.01-C.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AN
FULL	0.18 AND UP	0.01-C.39	----------	0.40-0.90	0.91-1.69	1.70 AN

[redacted] TOP SECRET [redacted] No. [redacted]

TABLE 9-3

[redacted]

[redacted]

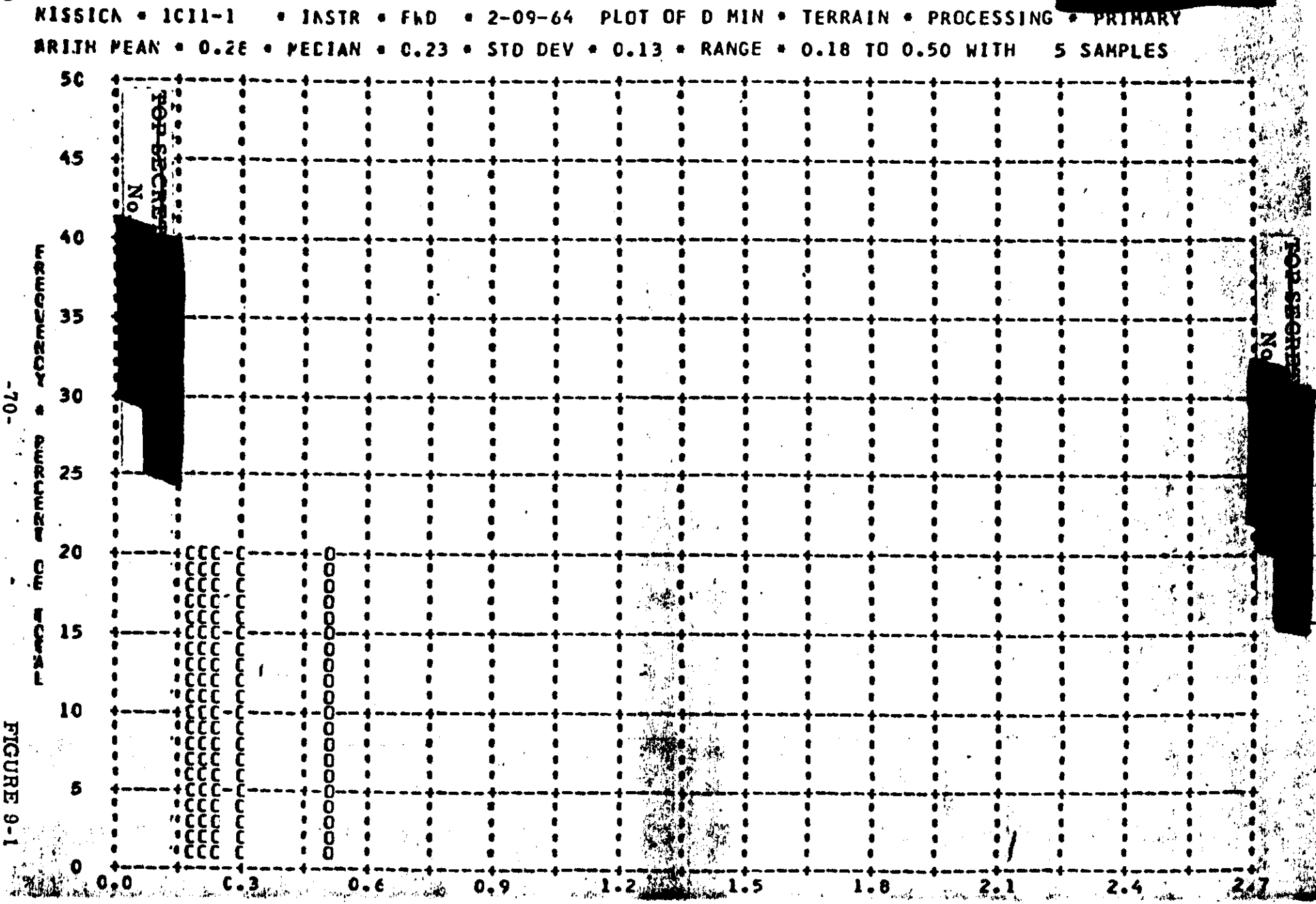


FIGURE 9-1

[redacted]

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • PRIMARY

ARITH MEAN • 0.76 • MEDIAN • 0.70 • STD DEV • 0.23 • RANGE • 0.56 TO 1.14 WITH 5 SAMPLES

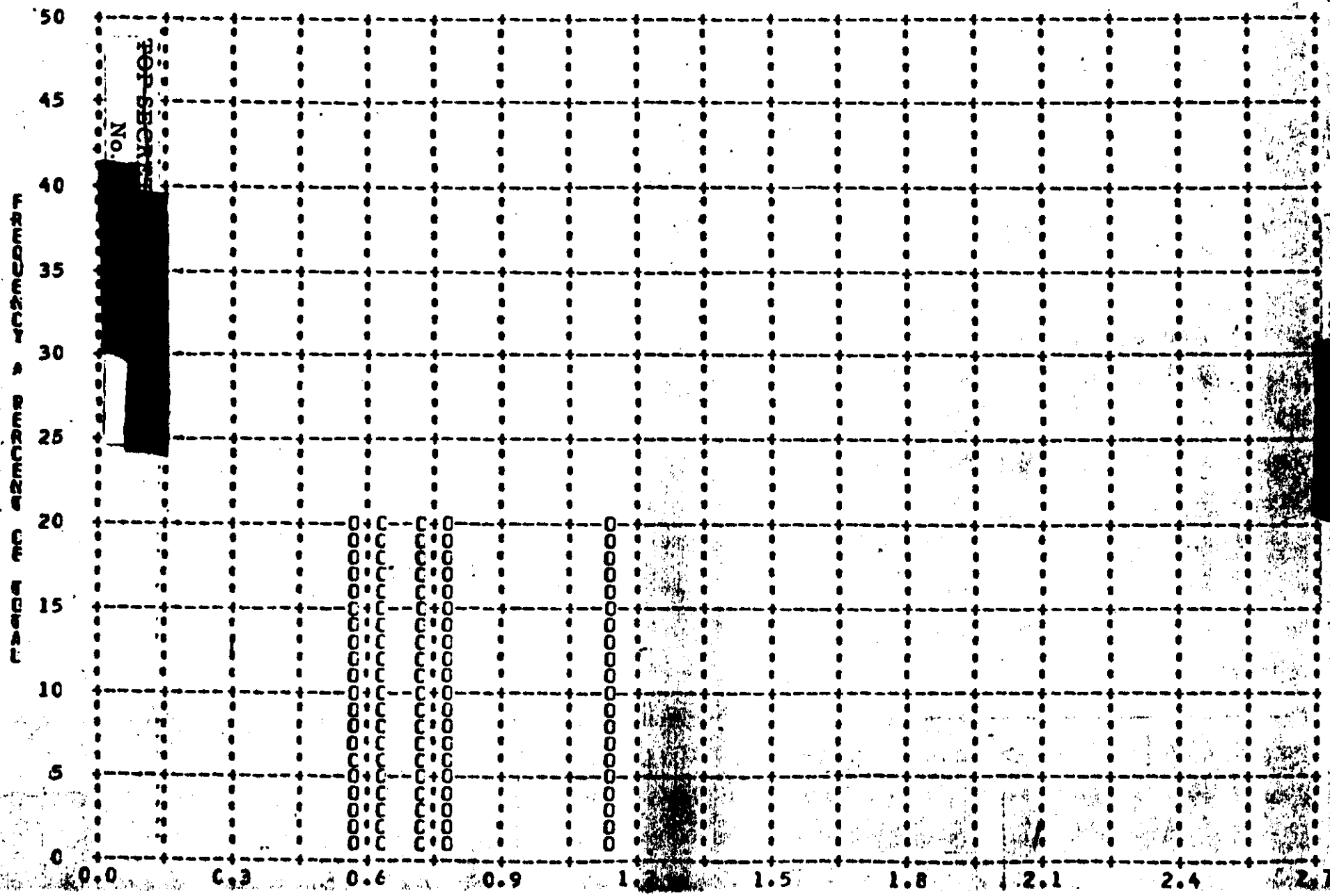


FIGURE 9-2

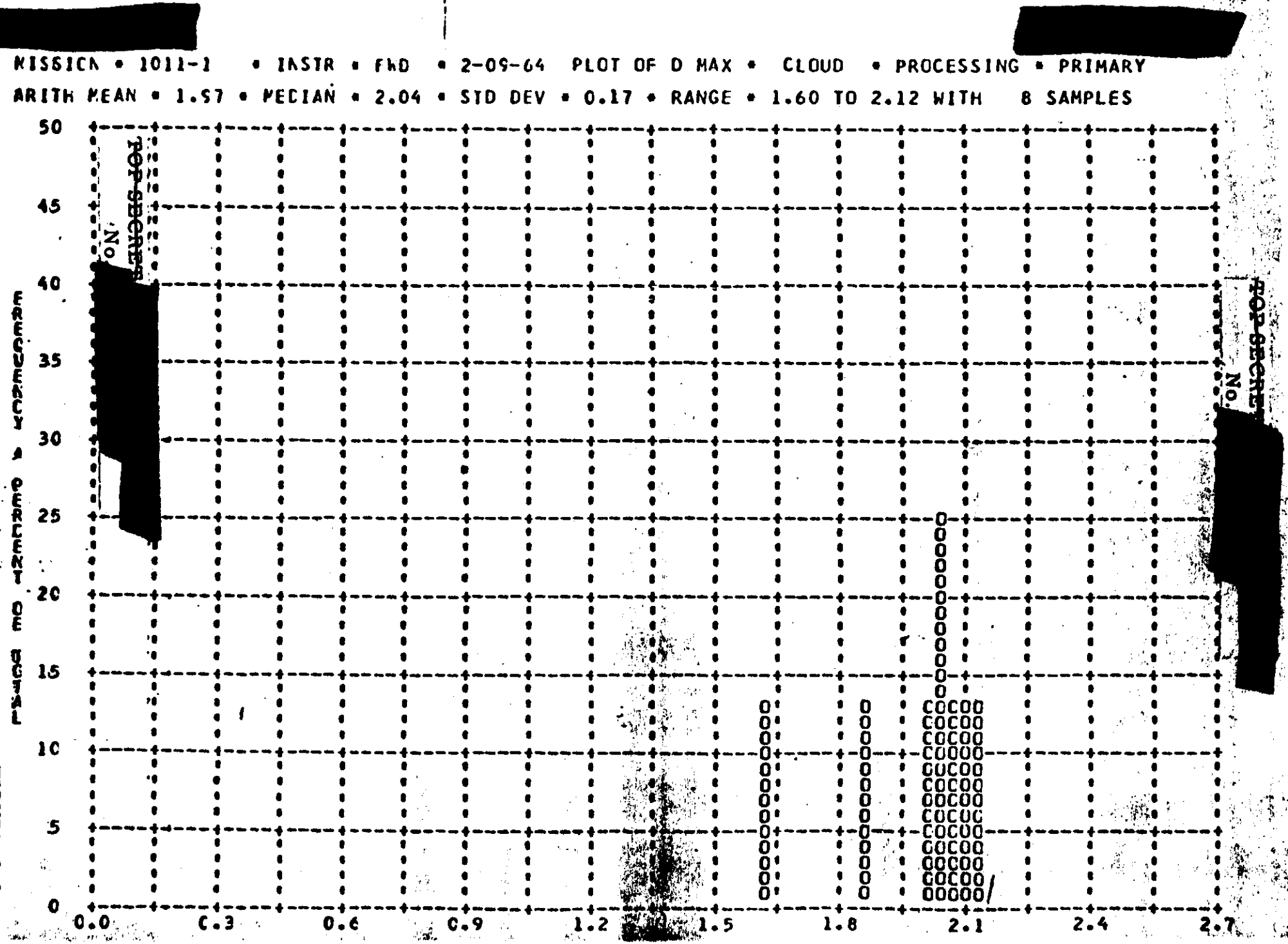

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • PRIMARY
ARITH MEAN • 1.57 • MEDIAN • 2.04 • STD DEV • 0.17 • RANGE • 1.60 TO 2.12 WITH 8 SAMPLES
[redacted] No.
[redacted] No.
NUMBER OF OCCURRENCES PER BIN
50
45
40
35
30
25
20
15
10
5
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 9-3

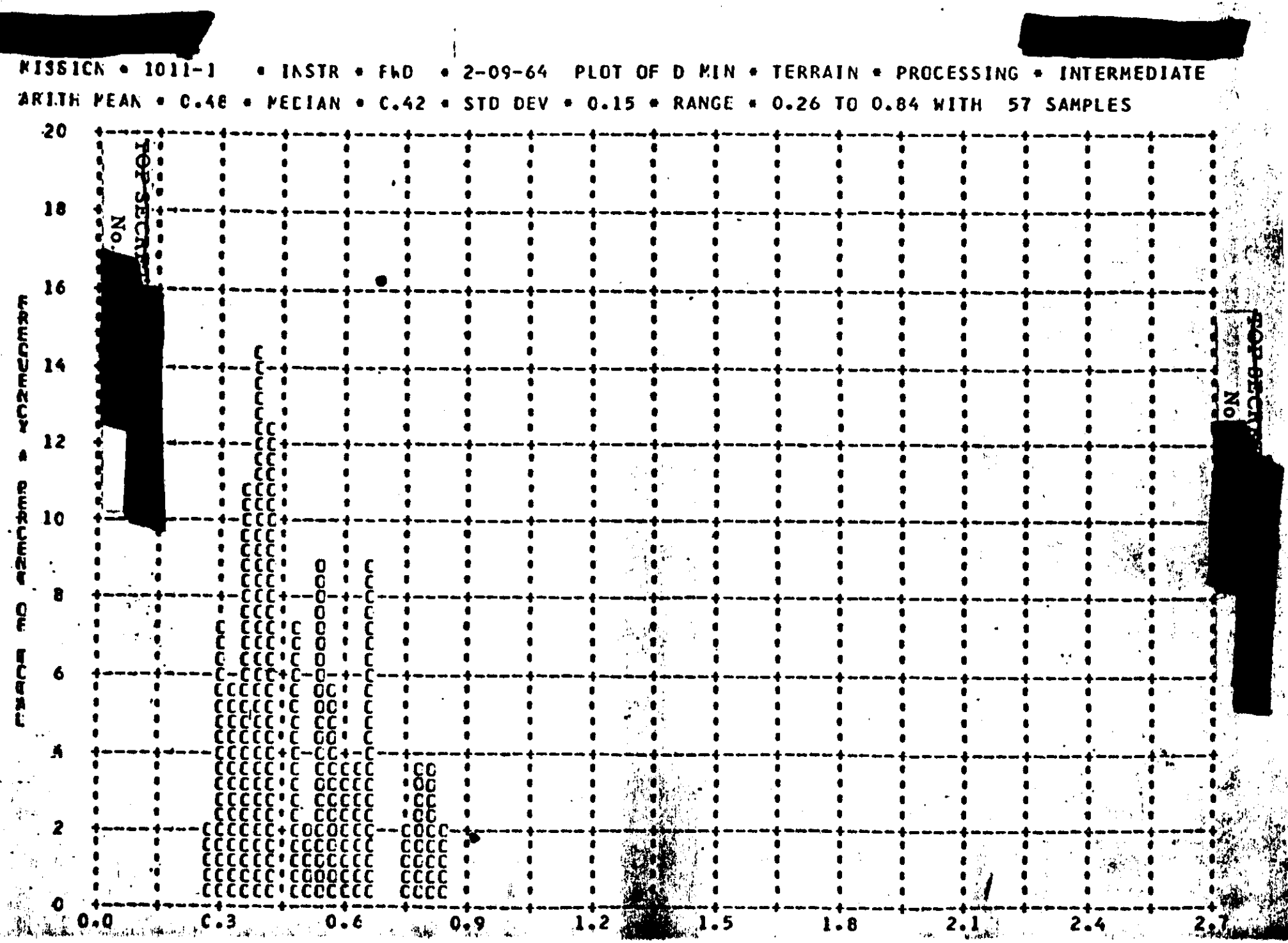

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE
ARITH MEAN • 0.48 • MEDIAN • 0.42 • STD DEV • 0.15 • RANGE • 0.26 TO 0.84 WITH 57 SAMPLES
[redacted]
No.
[redacted]
NO
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7
0
2
4
6
8
10
12
14
16
18
20

FIGURE 9-4

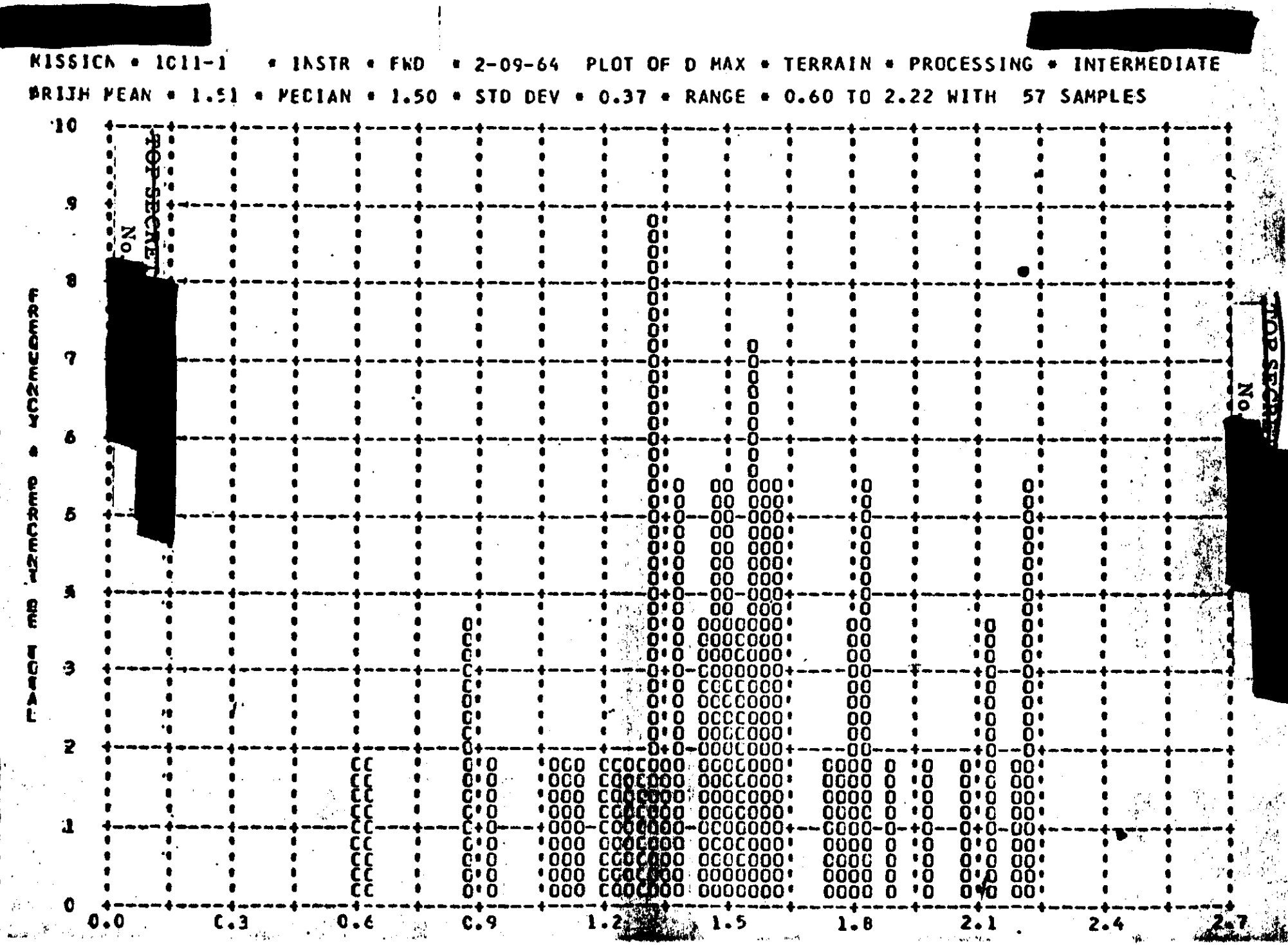

KISSICK • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE
BRIJH MEAN • 1.51 • MEDIAN • 1.50 • STD DEV • 0.37 • RANGE • 0.60 TO 2.22 WITH 57 SAMPLES
FREQUENCY • OCCURRENCE OR TOTAL
10
9
8
7
6
5
4
3
2
1
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7
TOP SECRET
No

FIGURE 9-5

[redacted]

[redacted]

MISSION • 1011-1 • INSTR • FHD • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

BRITH MEAN • 2.CC • MEDIAN • 2.05 • STD DEV • 0.21 • RANGE • 1.54 TO 2.25 WITH 34 SAMPLES

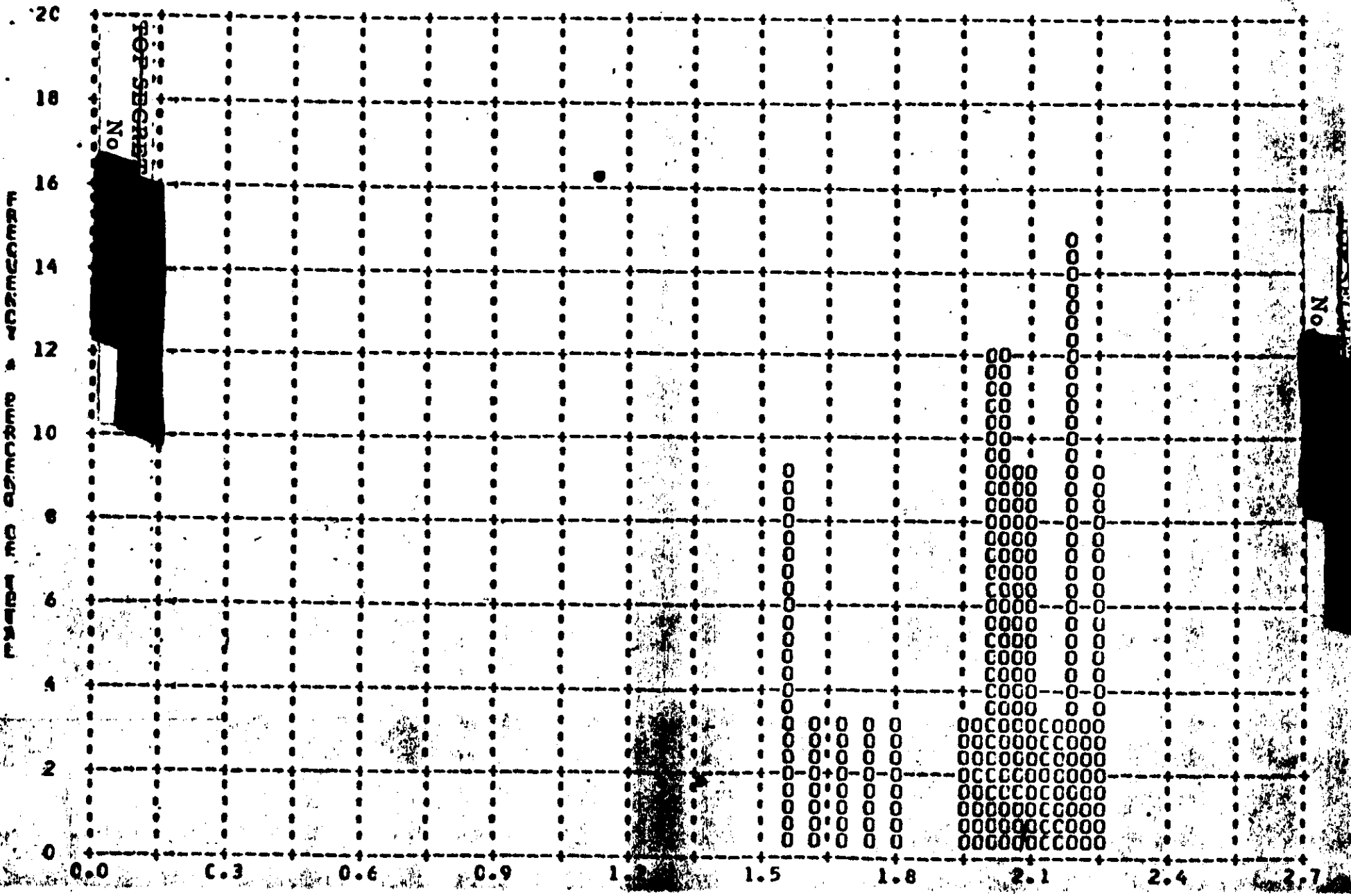


FIGURE 8-6

[redacted]

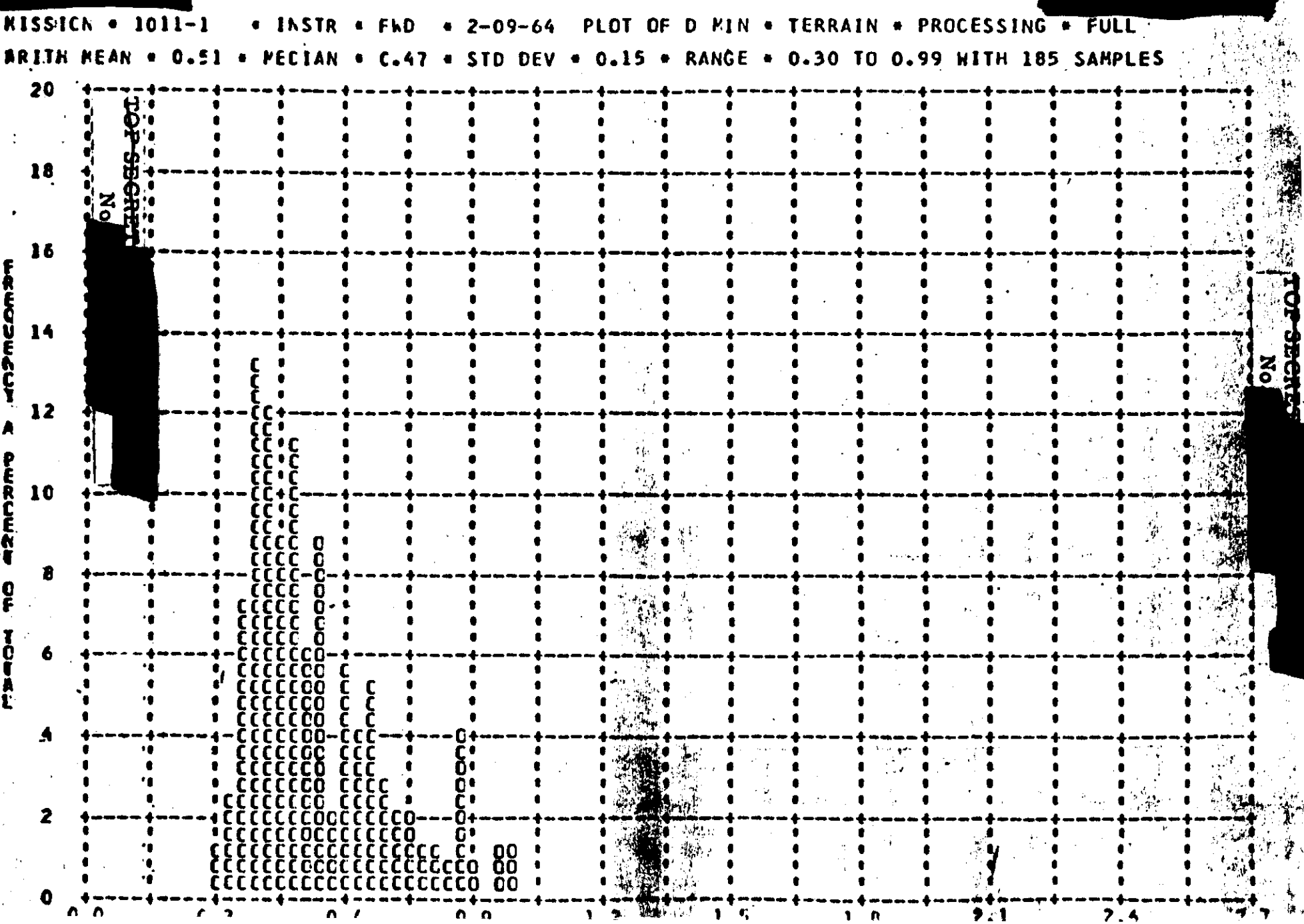


FIGURE 9-7

[redacted]

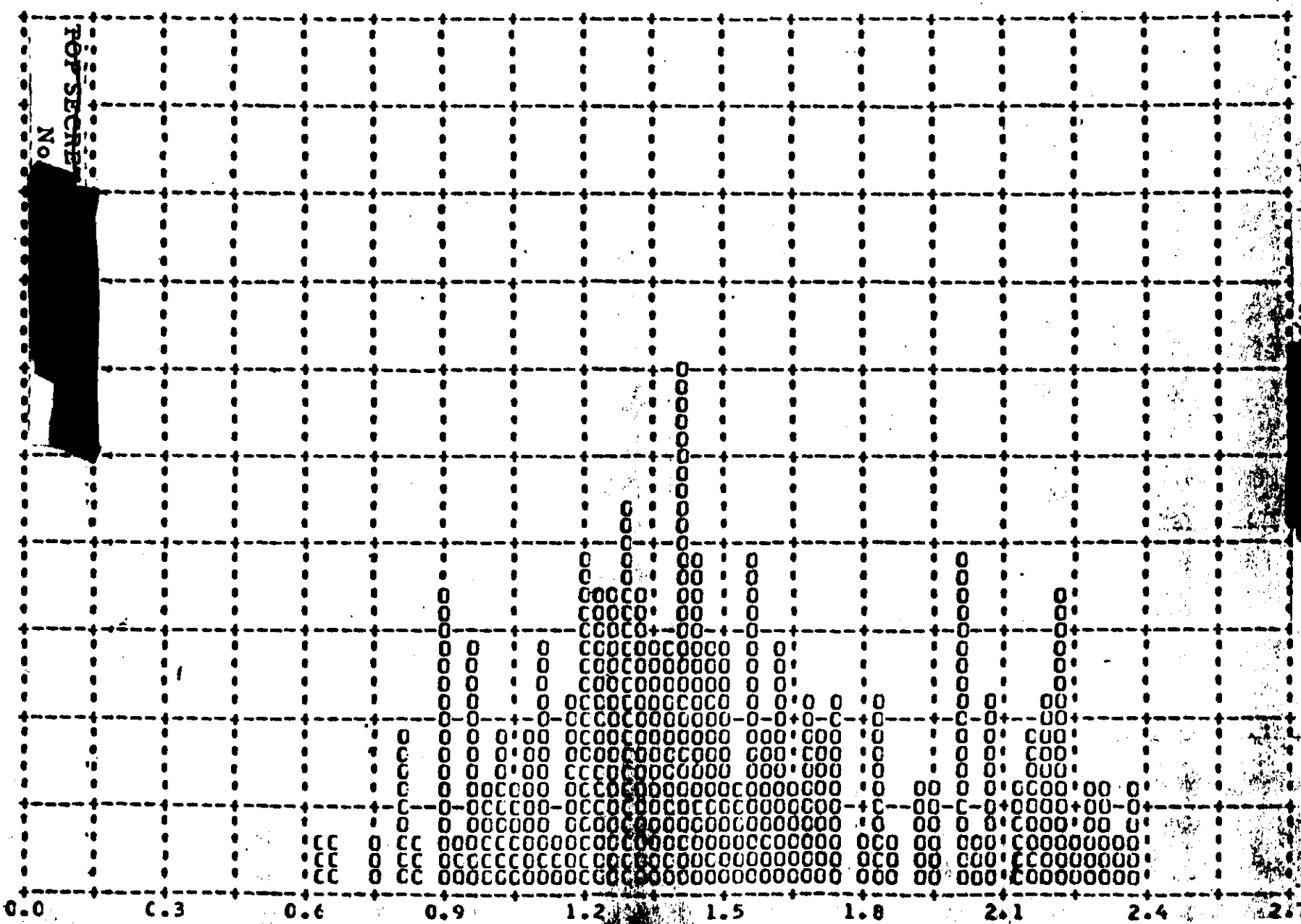


FIGURE 9-8

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • FULL
ARITH MEAN • 2.05 • MEDIAN • 2.18 • STD DEV • 0.29 • RANGE • 0.78 TO 2.40 WITH 159 SAMPLES

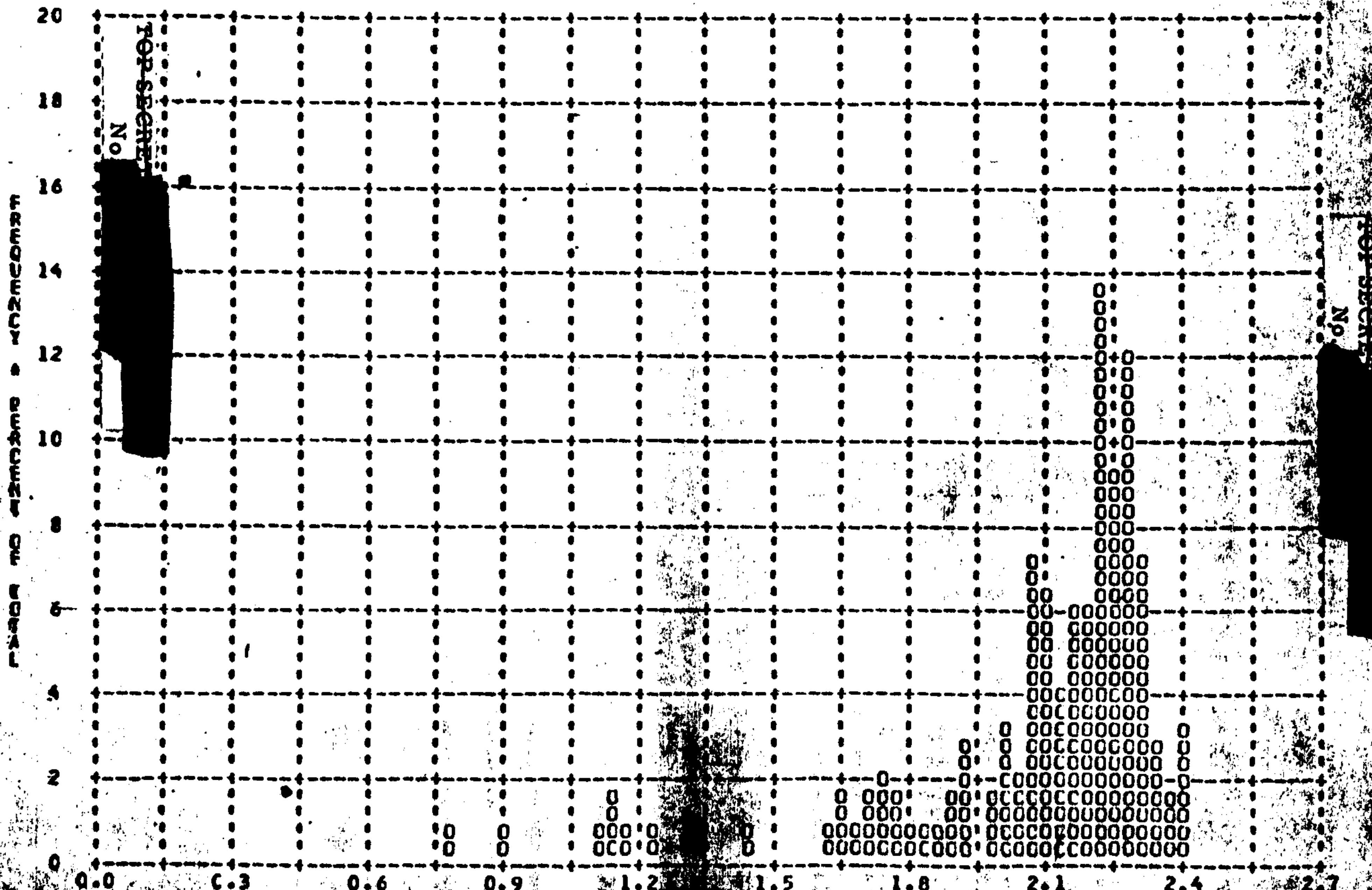


FIGURE 9-9

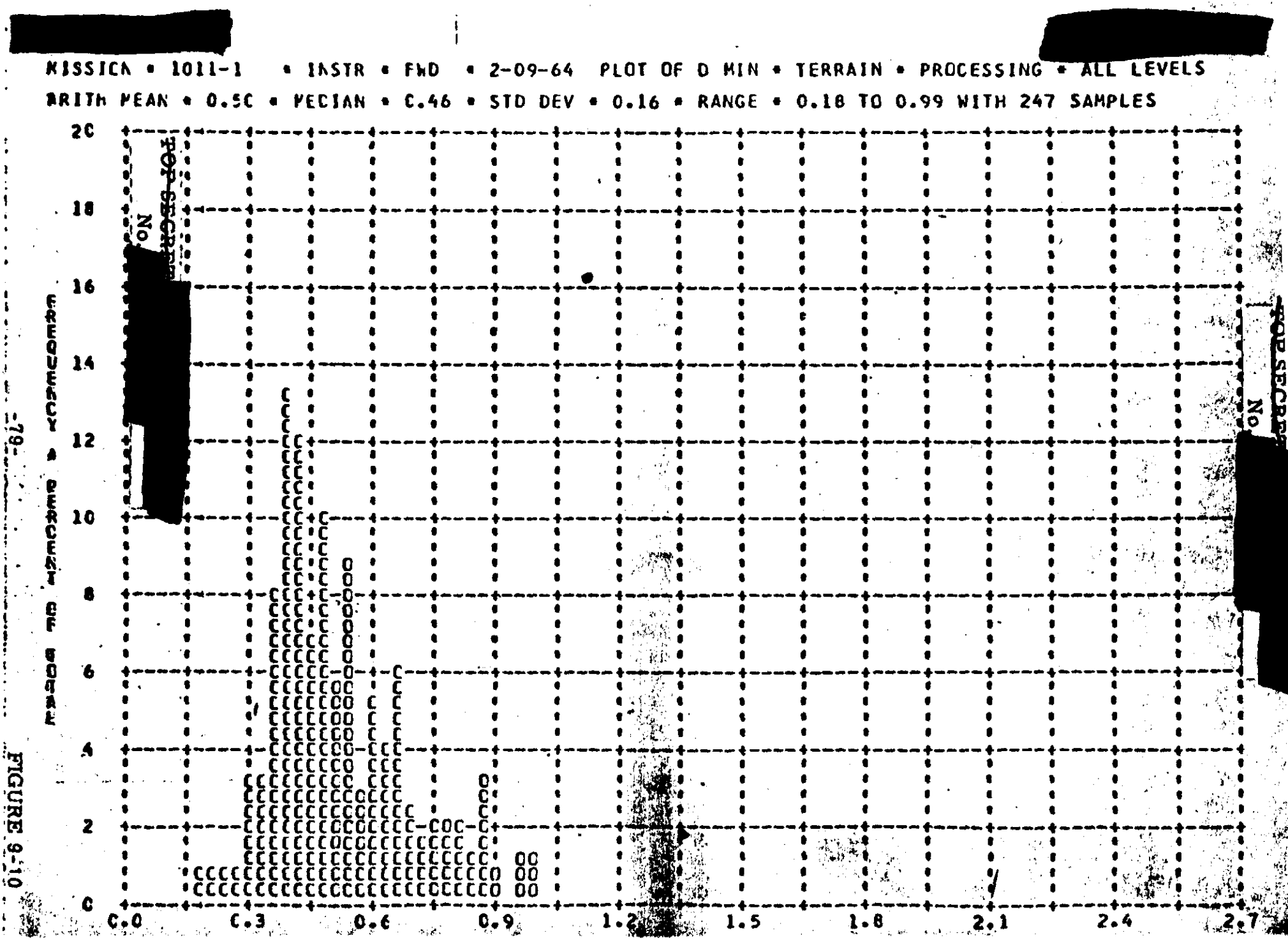

MISSICA • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS
BRITh MEAN • 0.5C • MECIAN • C.46 • STD DEV • 0.16 • RANGE • 0.18 TO 0.99 WITH 247 SAMPLES
20
18
16
14
12
10
8
6
4
2
0
C.0
C.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 9-10

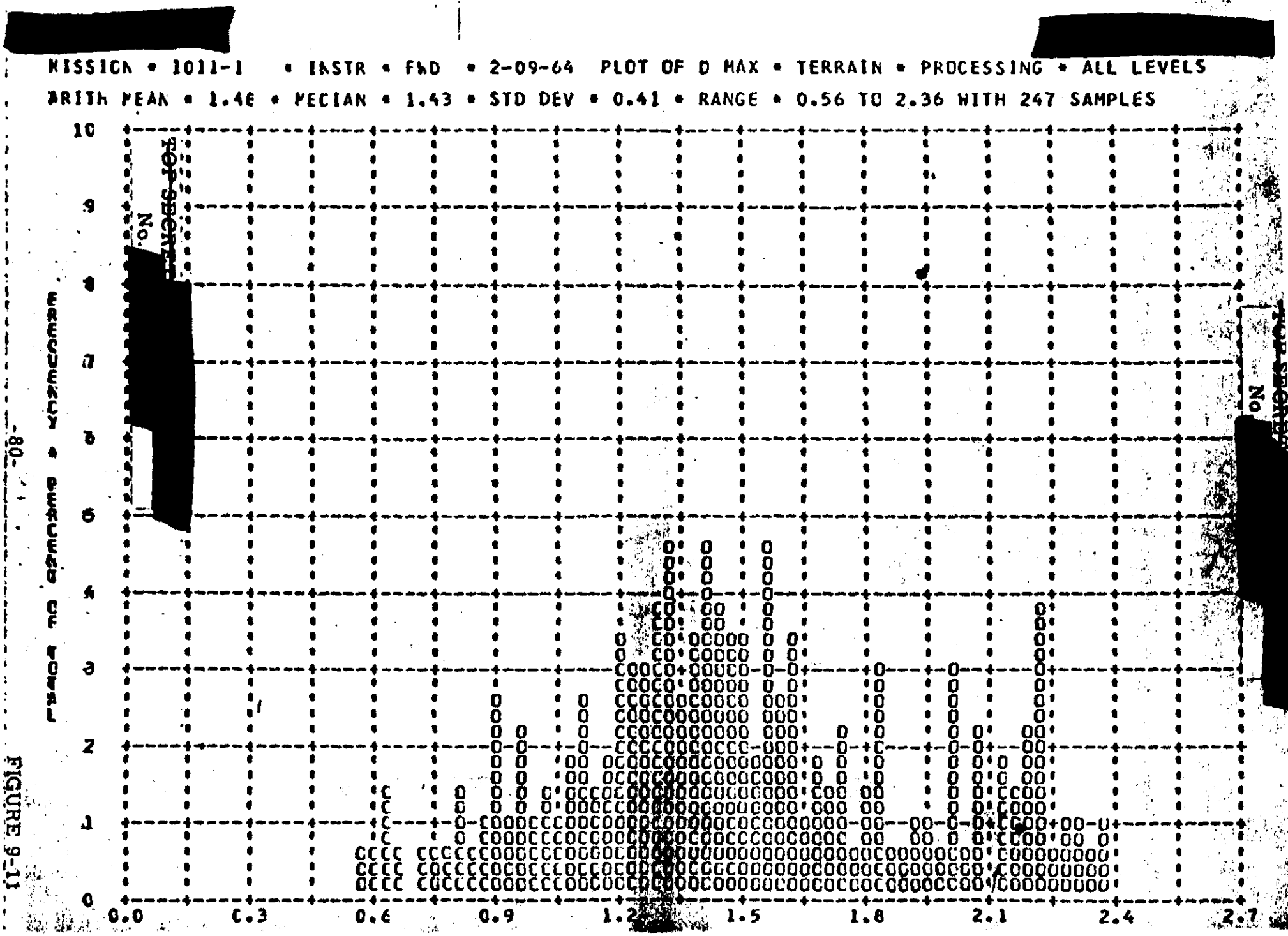

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS
ARITH MEAN • 1.48 • MEDIAN • 1.43 • STD DEV • 0.41 • RANGE • 0.56 TO 2.36 WITH 247 SAMPLES
NUMBER OF OBSERVATIONS
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 9-11

[redacted]

[redacted]

MISSION • 1011-1 • INSTR • FWD • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 2.07 • MEDIAN • 2.16 • STD DEV • 0.27 • RANGE • 0.78 TO 2.40 WITH 201 SAMPLES

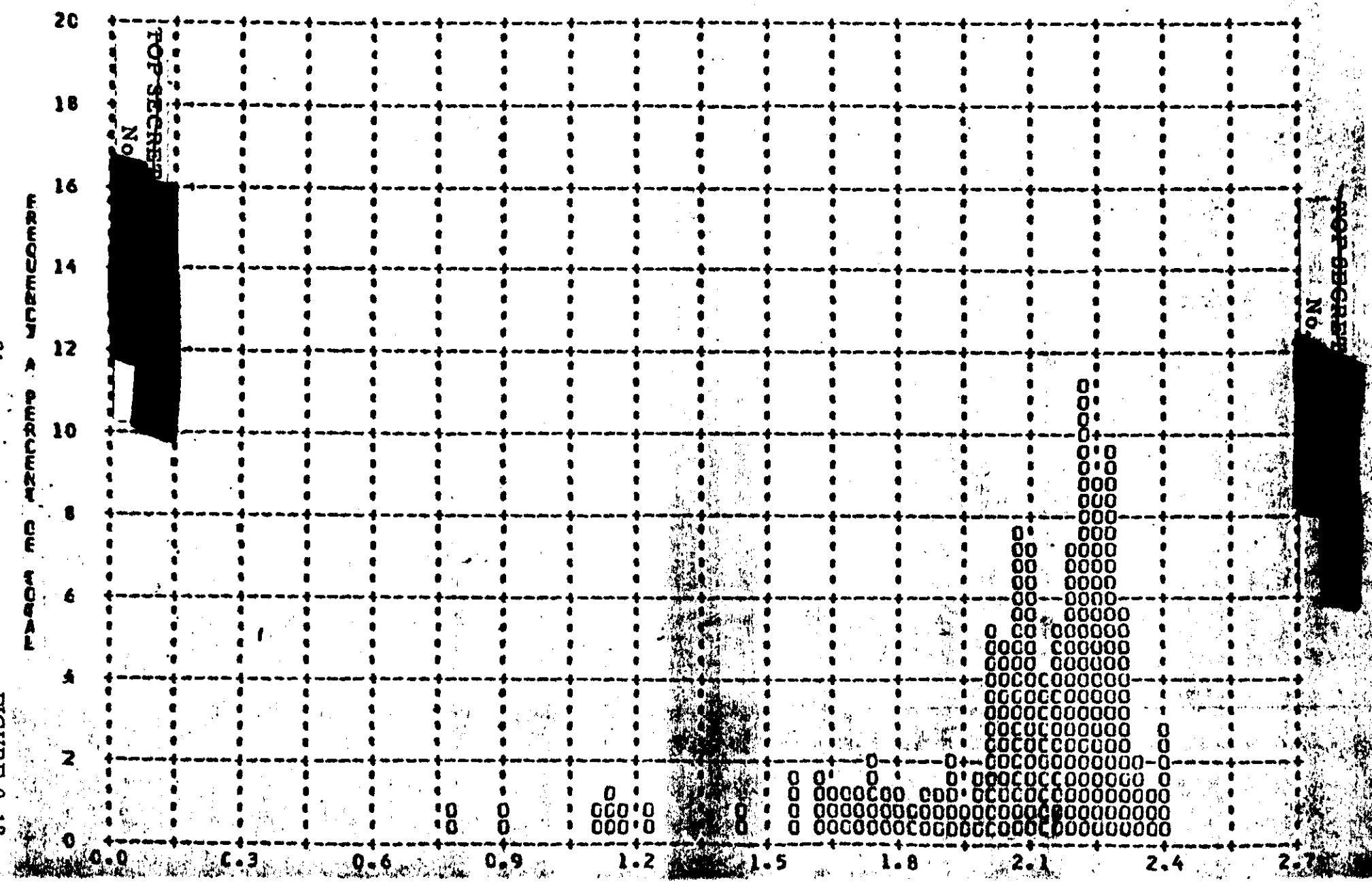


FIGURE 9-12

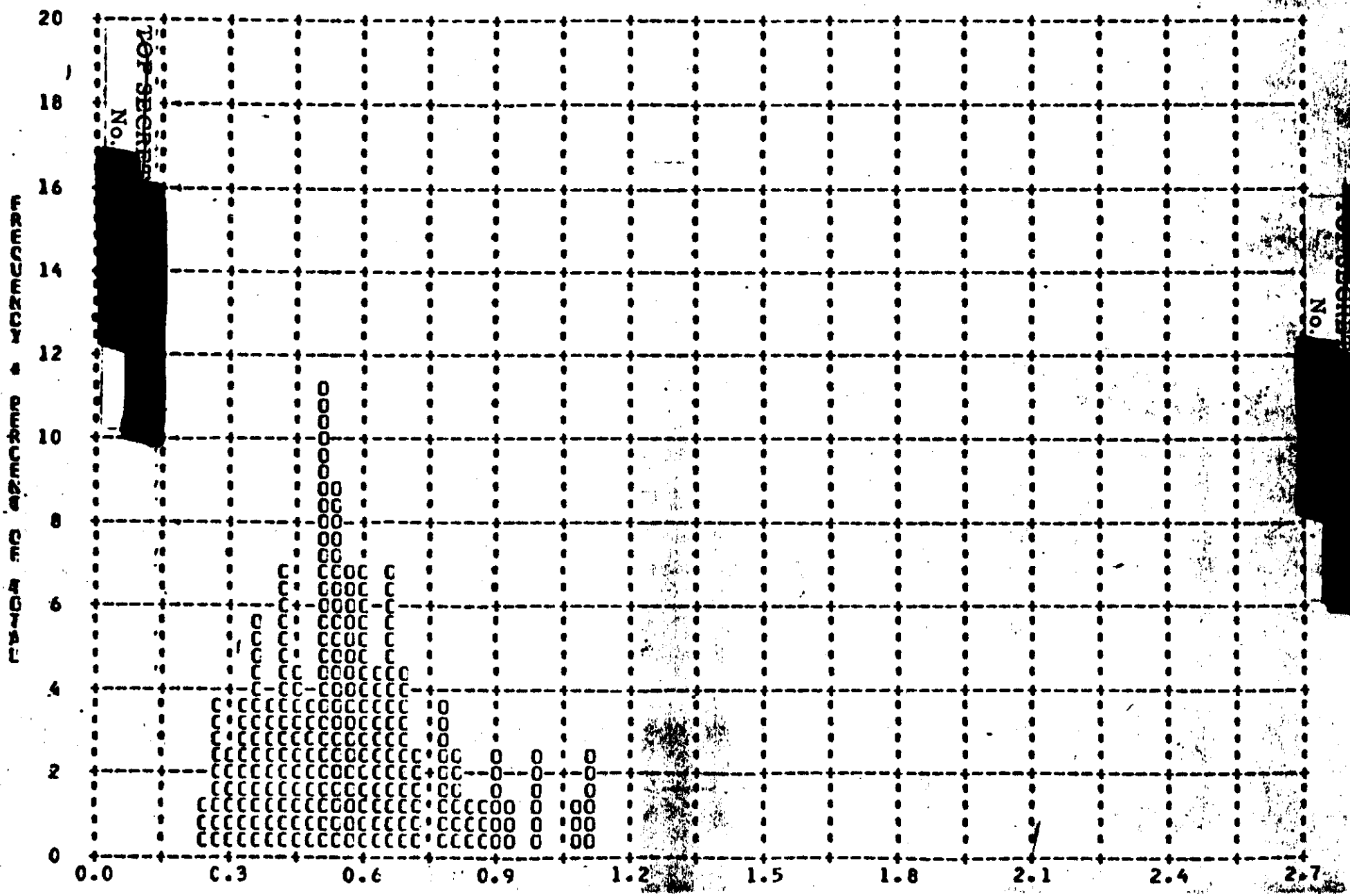

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE
WRITH MEAN • 0.56 • MEDIAN • 0.54 • STD DEV • 0.20 • RANGE • 0.24 TO 1.10 WITH 91 SAMPLES
Top Secret
No.
No.
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 9-13

[redacted]

[redacted]

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.63 • MEDIAN • 1.74 • STD DEV • 0.43 • RANGE • 0.50 TO 2.30 WITH 91 SAMPLES

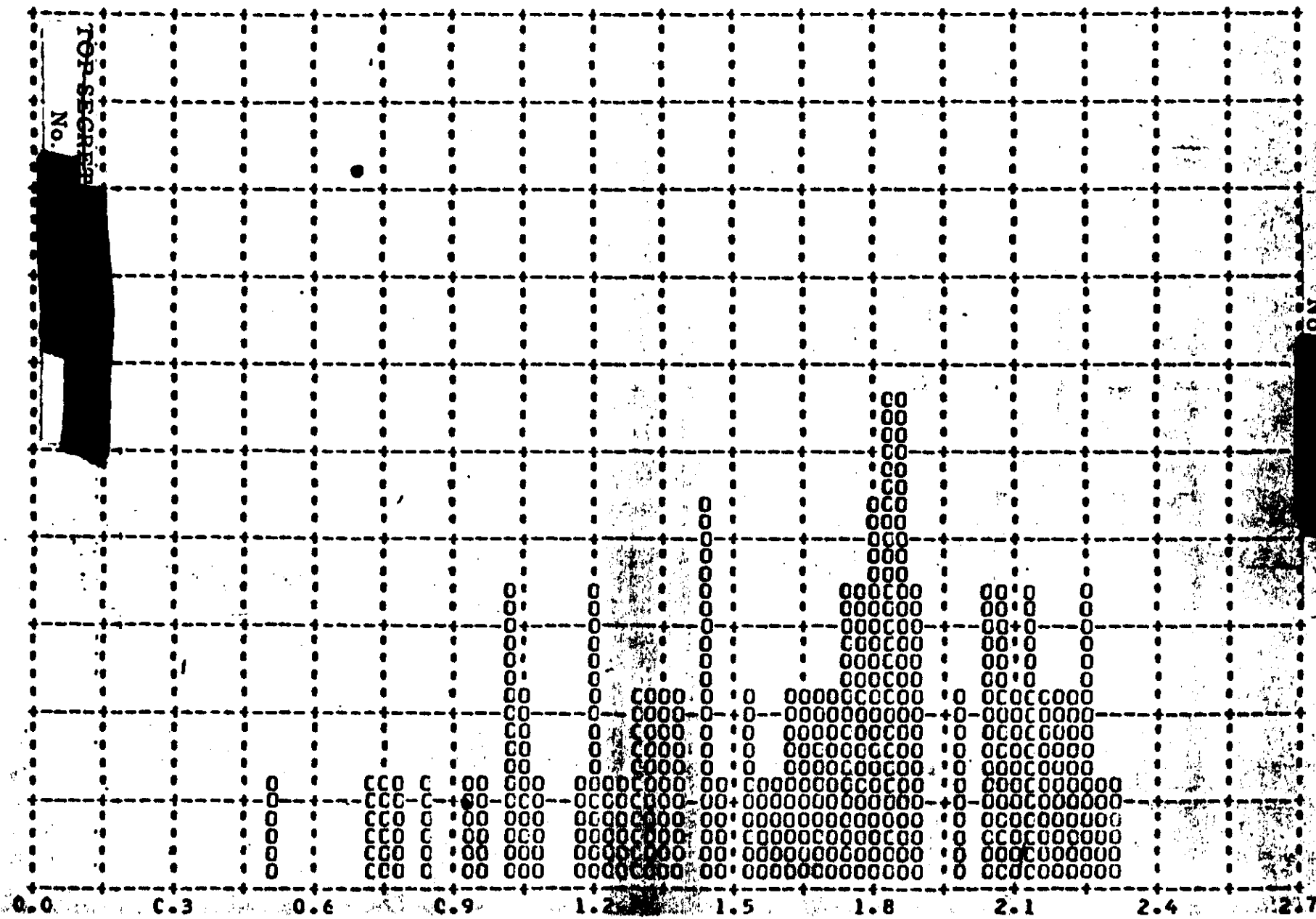


FIGURE 8-14

[redacted]

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

ARITH MEAN • 2.15 • MEDIAN • 2.17 • STD DEV • 0.12 • RANGE • 1.74 TO 2.32 WITH 84 SAMPLES

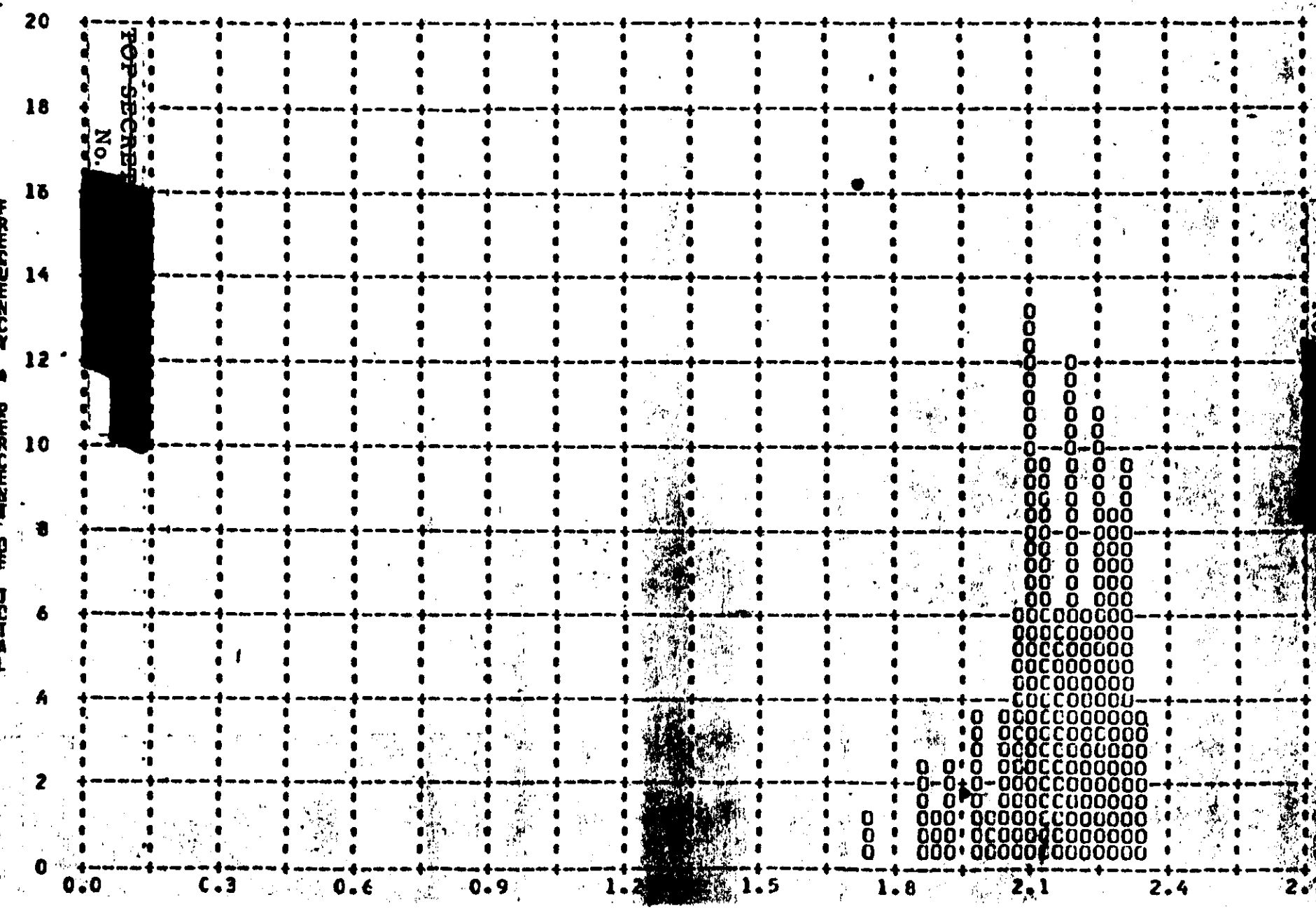


FIGURE 9-15

[redacted]

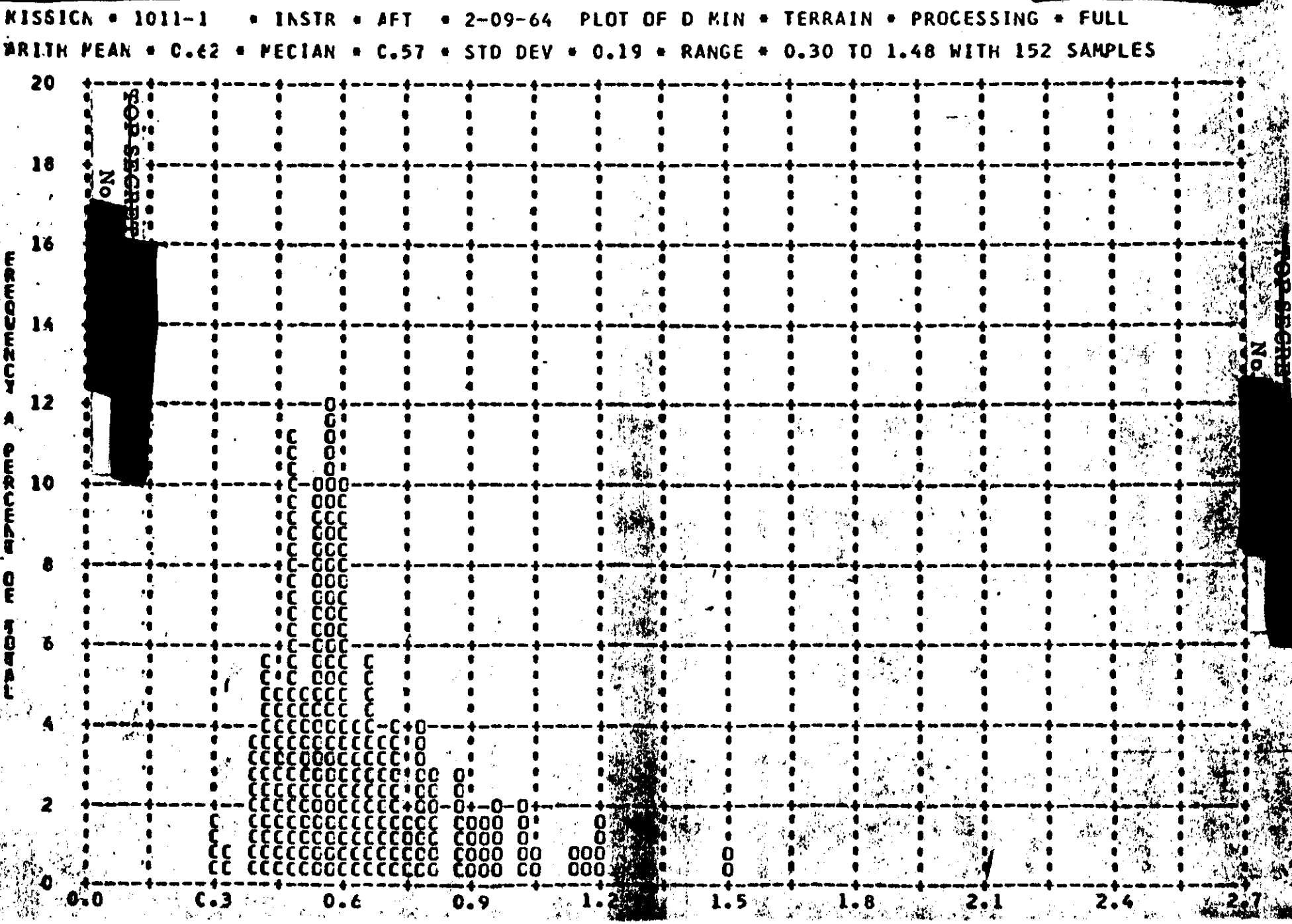


FIGURE 9-16

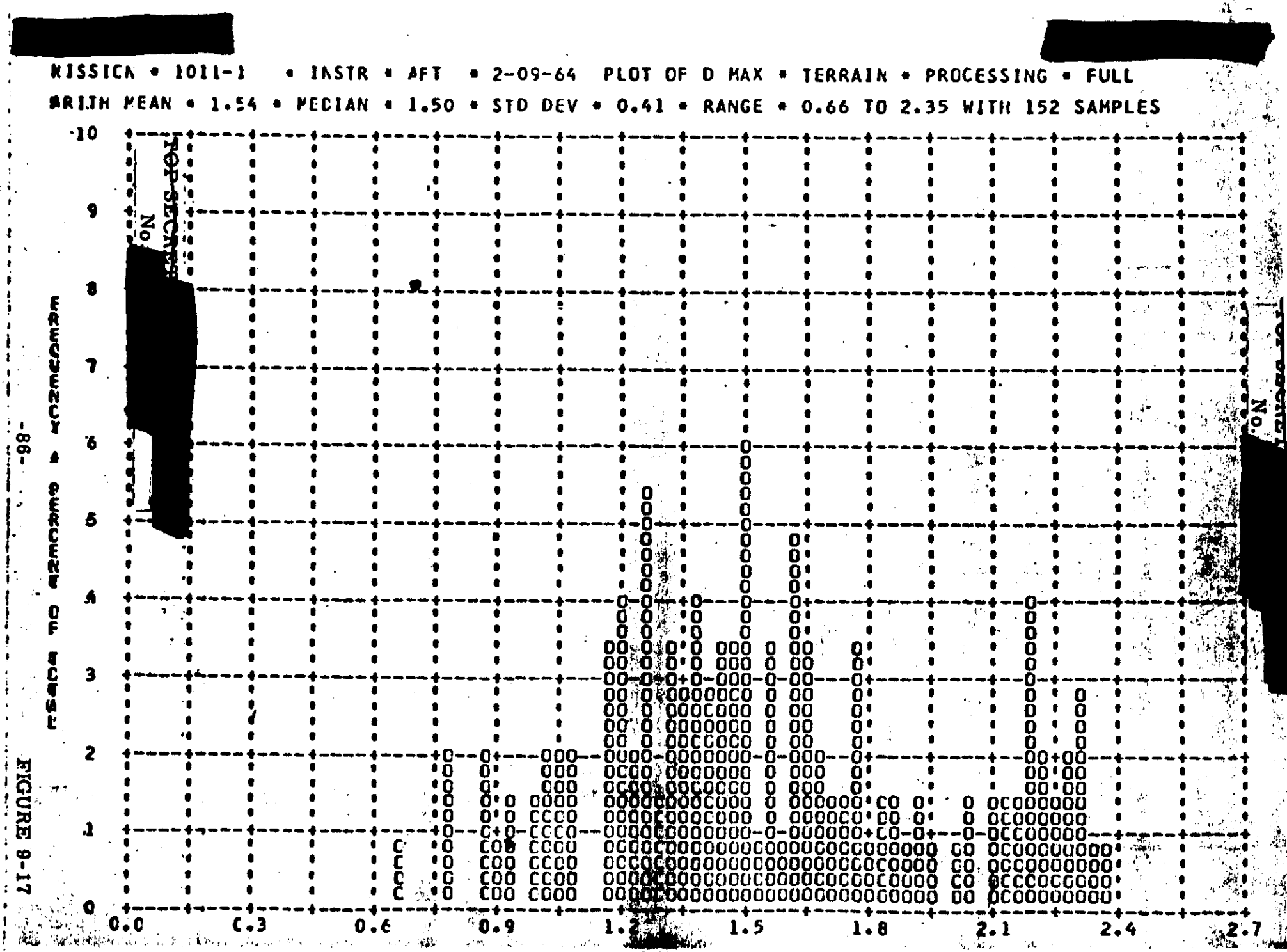

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • FULL
BRITH MEAN • 1.54 • MEDIAN • 1.50 • STD DEV • 0.41 • RANGE • 0.66 TO 2.35 WITH 152 SAMPLES
[redacted] No.
[redacted] No.
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 8-17

[redacted]

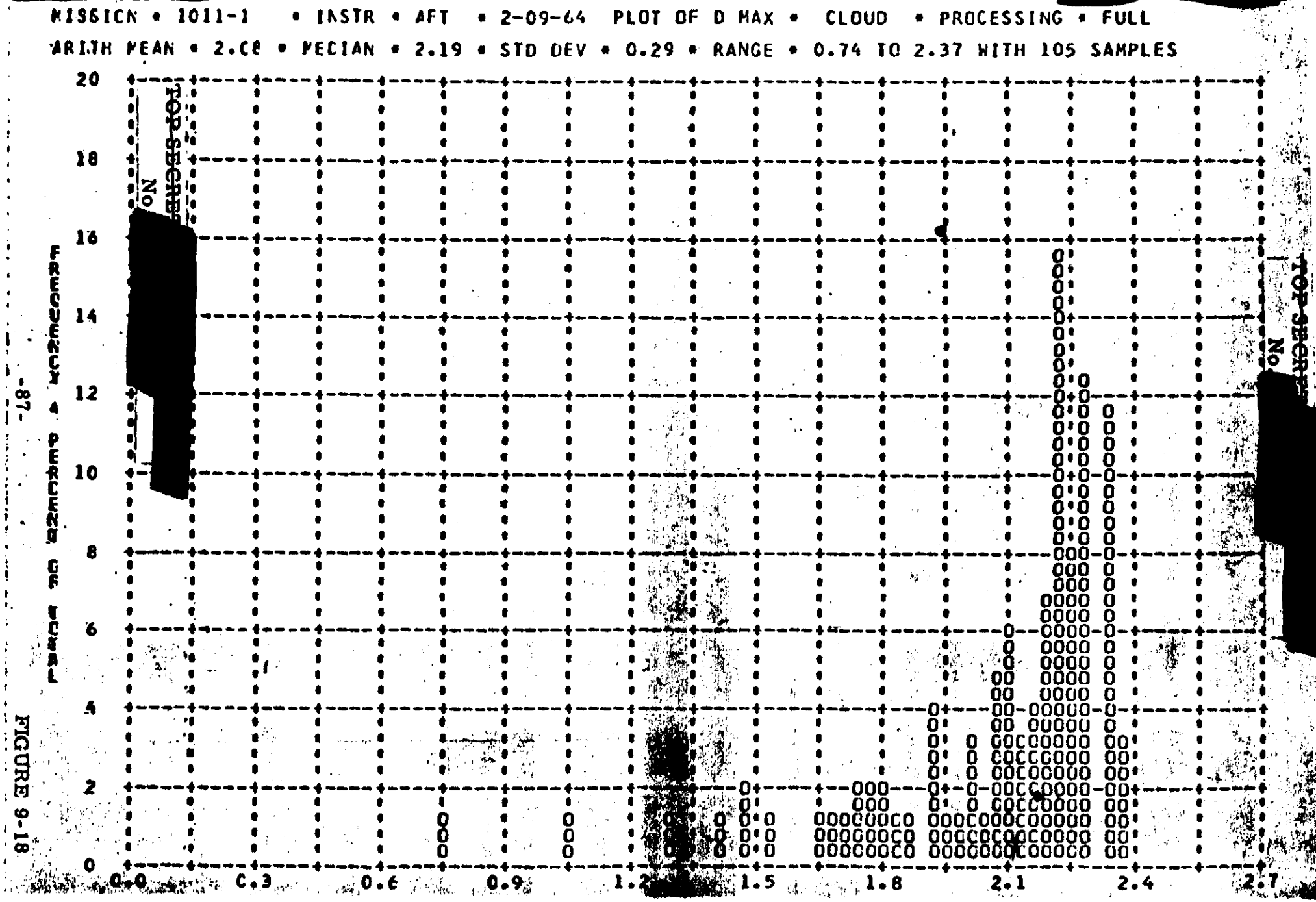


FIGURE 9-18

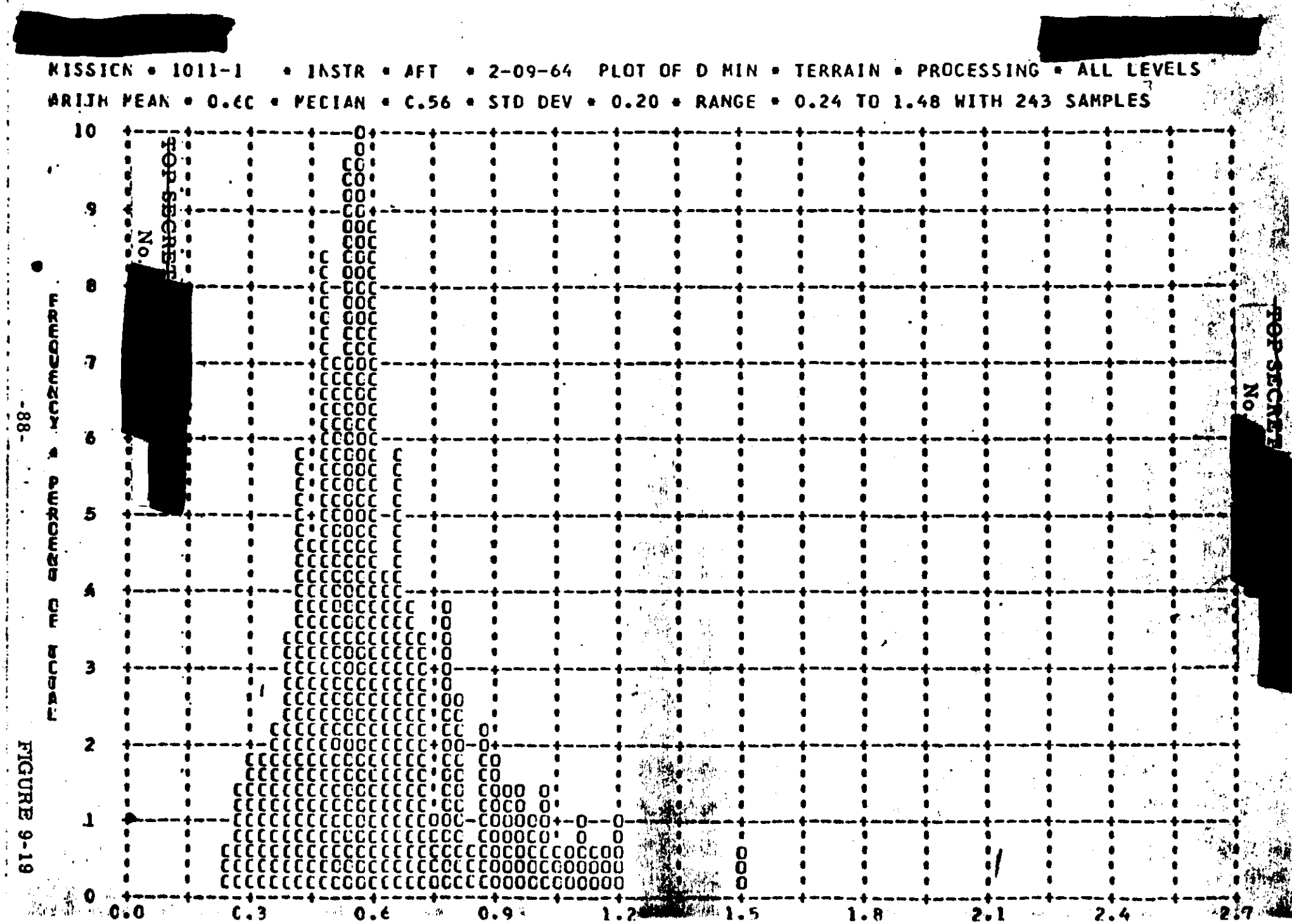

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS
ARITH MEAN • 0.60 • MEDIAN • 0.56 • STD DEV • 0.20 • RANGE • 0.24 TO 1.48 WITH 243 SAMPLES
FREQUENCY OF OCCURRENCE
10
9
8
7
6
5
4
3
2
1
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7
TOP SECRET
No.
TOP SECRET
No.

FIGURE 9-19

[redacted]

[redacted]

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.57 • MEDIAN • 1.55 • STD DEV • 0.42 • RANGE • 0.50 TO 2.35 WITH 243 SAMPLES

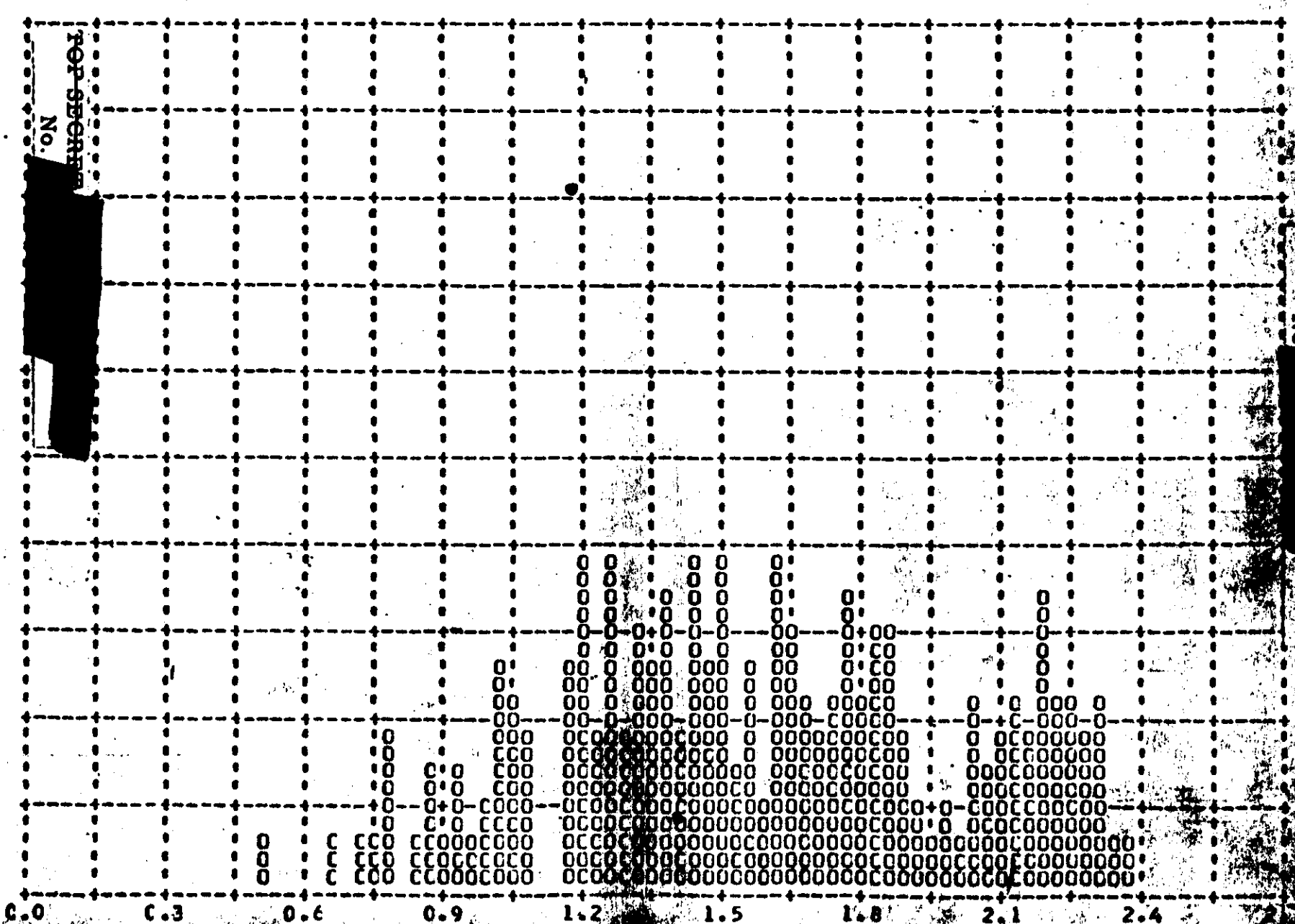


FIGURE 8-20

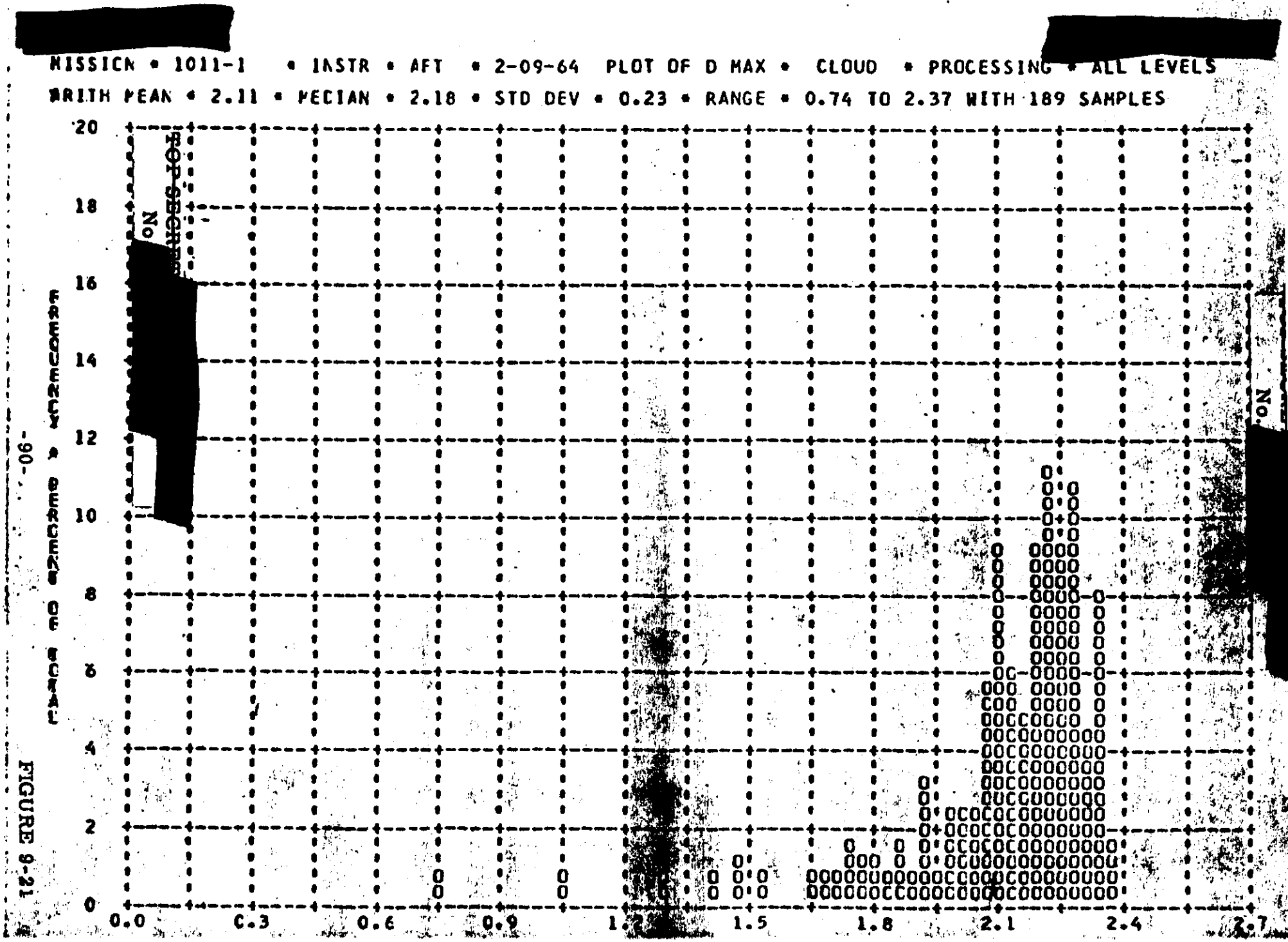

MISSION • 1011-1 • INSTR • AFT • 2-09-64 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS
WITH MEAN • 2.11 • MEDIAN • 2.18 • STD DEV • 0.23 • RANGE • 0.74 TO 2.37 WITH 189 SAMPLES
20
18
16
14
12
10
8
6
4
2
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE 9-21

MISSION 1011-1 INSTR - FWC 2-09-64 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	5	0 PC	80 PC	20 PC	0 PC	0 PC
INTERMEDIATE	57	0 PC	39 PC	61 PC	0 PC	0 PC
FULL	185	23 PC	0 PC	75 PC	2 PC	0 PC
ALL LEVELS	247	17 PC	11 PC	70 PC	2 PC	0 PC

MISSION 1011-1 INSTR - AFT 2-09-64 PROCESSING AND EXPOSURE ANALYSIS

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0	0 PC	0 PC	0 PC	0 PC	0 PC
INTERMEDIATE	91	0 PC	19 PC	75 PC	7 PC	0 PC
FULL	152	5 PC	0 PC	86 PC	9 PC	0 PC
ALL LEVELS	243	3 PC	7 PC	81 PC	8 PC	0 PC

TABLE 9-4

approximately 2%. The percentage of Master camera photography that was nominally processed is quite low and since essentially all other film falls below nominal it is understandable why the highest value of minimum density is so low.

An extensive study is in process to ascertain the inter-relationship of the conditions of illumination, resulting densities and exposure-processing parameters. The apparent low density of the Master camera photography is of some concern however the high information content rating for the camera indicates that this approach to exposure is valid. It is also noteworthy that no information was lost in shadow areas.

SECTION 10

PERFORMANCE MEASUREMENTS

The photography acquired by both panoramic cameras during Mission 1011-1 received an initial MIP rating of 85 which was later revised to 90. A summary is tabulated below of the average visual RES values and MTF/AIM resolution values measured by AFSPPL and the MTV/AIM resolution values made by [redacted] The length of the microdensimeter slit used by AFSPPL was 350 and 80 microns whereas [redacted] used an 80 micron slit; both slits were one micron wide.

Mission	Camera	Visual RES	AFSPPL 350μ	AFSPPL 80μ	[redacted] An	[redacted] High
1011-1	FWD	84	76	96	78	87
1011-1	AFT	84	77	86	83	93

The [redacted] data normally contains two readings of the same edge the tabulation shows both the average of all the readings and the average of the highest readings of each edge. The value of the average of all readings is questionable as no valid reason can be ascertained for a measurement being greater than the resolution recorded however many factors can reduce the reading.

The details of the measurement and computing techniques, targets measured and target locations are fully reported in the evaluation report published by AFSPPL and are not normally included in this report. [redacted] has recently completed the re-calculation of the MTF/AIM values from Mission 1007-2 and up. Since this data has not been published in a previous report the corrected measurements for Mission 1011-1 are included in this report.

Analysis of Photographic Image to Evaluate System Performance

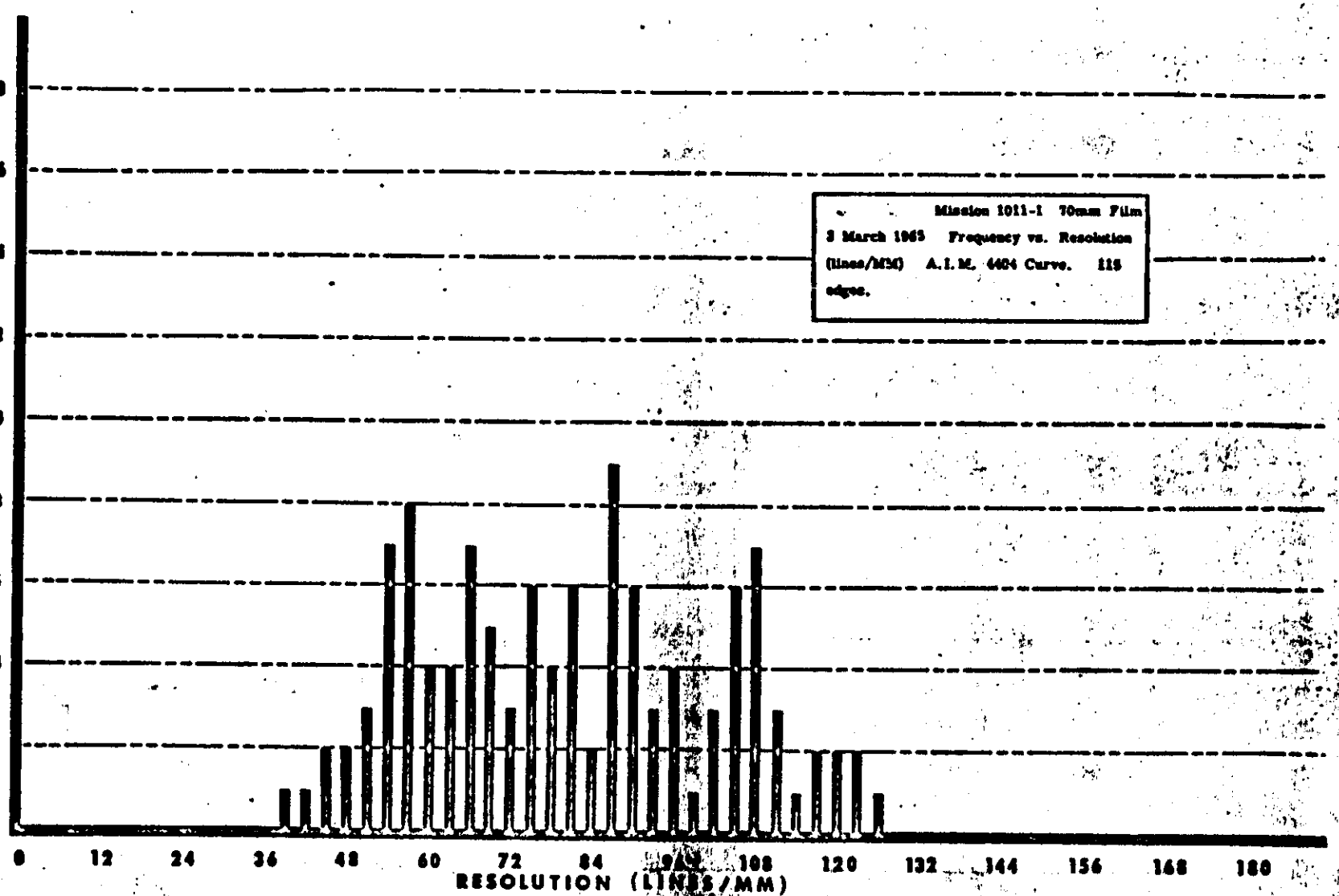
Mission 1011-1

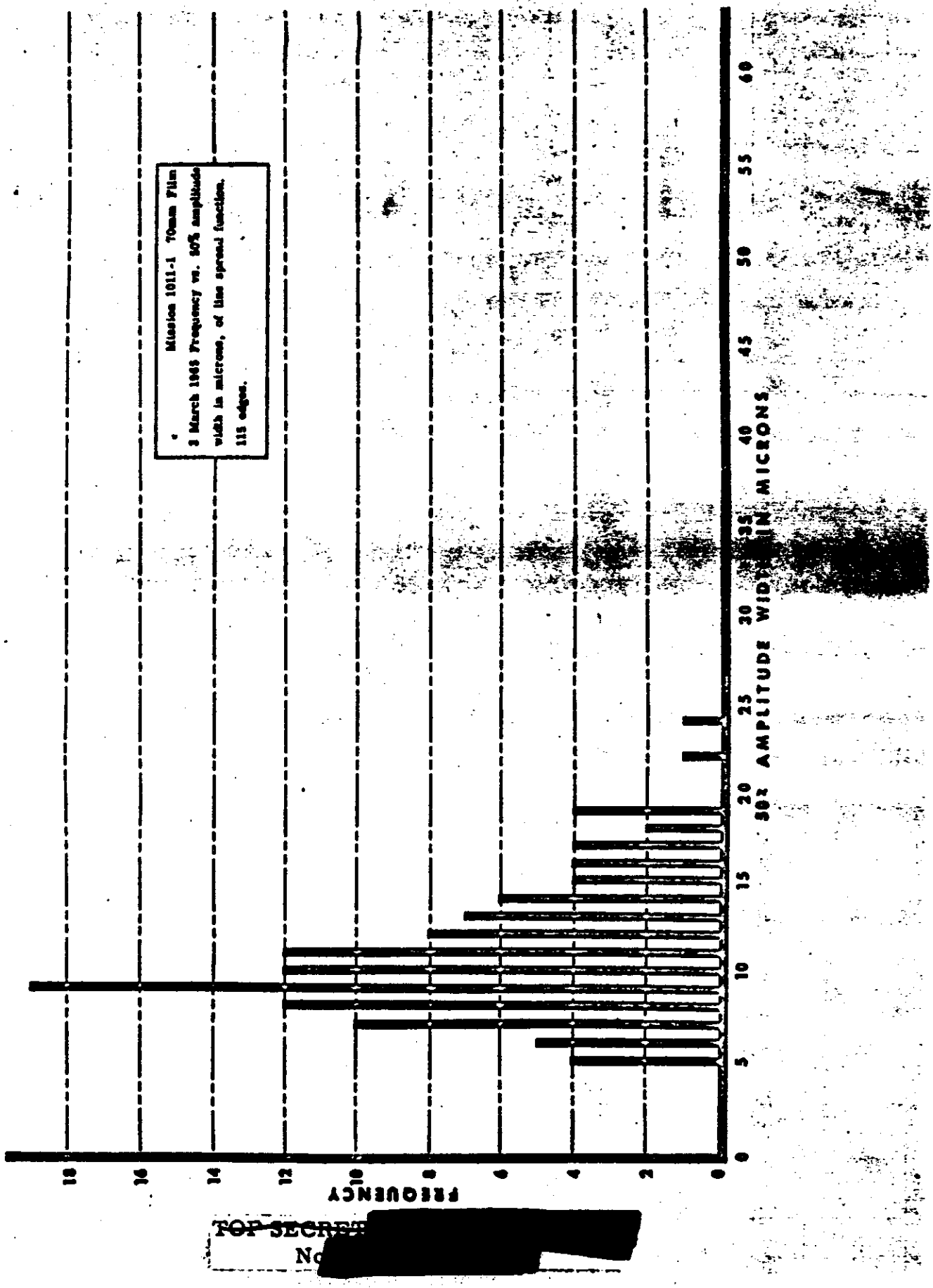
Resolution in lines/mm based on the aerial image modulation - 4404 curve from edge trace data reduced by computer techniques.

Arithmetic Mean	80.5 l/mm
Standard Deviation	21.6 l/mm
Coefficient of Dispersion	27%
Number of Edges	115
M.I.P. Frame	113 l/mm

Spread function width at 50% amplitude in microns from edge trace data reduced by computer techniques.

Arithmetic Mean	10.9 μ
Standard Deviation	3.8 μ
Coefficient of Dispersion	35%
Number of Edges	115
M.I.P. Frame	6.3 μ


Mission 1011-1 70mm Film
3 March 1965 Frequency vs. Resolution
(lines/MM) A.I.M. 4404 Curve. 11S
edges.
FREQUENCY
0
2
4
6
8
10
12
14
16
18
0
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
RESOLUTION (LINES/MM)


Mission 1011-1 70mm Film
3 March 1965 Frequency vs. 80% amplitude width in microns, of line spread function.
11S edges.
FREQUENCY
80% AMPLITUDE WIDTH IN MICRONS
0
2
4
6
8
10
12
14
16
18
0
5
10
15
20
25
30
35
40
45
50
55
60

Analysis of Photographic Image to Evaluate System Performance

Mission 1011-1

FORWARD CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-05	040	X61.6 Y12.6	060	Airfield	17.2	52
D-05	040	X61.6 Y12.6	060	Airfield	17.1	53
D-05	047	X64.6 Y13.5	130	Airfield	13.7	64
D-05	047	X64.6 Y13.5	130	Airfield	15.3	56
D-05	050	X48.0 Y11.0	115	Airfield	7.7	105
D-05	050	X48.0 Y11.0	115	Airfield	9.3	93
D-05	051	X48.3 Y12.3	090	Buildings	10.5	80
D-05	051	X48.3 Y12.3	090	Buildings	12.2	[redacted]
D-05	051	X48.3 Y12.3	090	Buildings	11.0	80
D-06	034	X33.3 Y13.2	075	2 long bldgs.	11.3	106
D-06	034	X33.3 Y13.2	075	2 long bldgs.	7.9	117
D-06	034	X53.4 Y10.3	040	Buildings	7.7	106
D-06	034	X53.4 Y10.3	040	Buildings	9.3	89
D-06	102	X20.7 Y11.3	145	Airfield	7.4	122
D-06	102	X20.7 Y11.3	145	Airfield	7.1	108
D-06	165	X24.0 Y12.6	065	Airfield	12.3	59
D-06	165	X24.0 Y12.6	065	Airfield	7.3	102
D-09	010	X63.5 Y12.2	015	Airfield	13.8	58
D-09	010	X63.5 Y12.2	015	Airfield	16.3	50
D-09	026	X67.2 Y13.5	075	Airfield	18.2	55
D-09	026	X67.2 Y13.5	075	Airfield	17.0	62
D-09	027	X64.3 Y12.2	065	Airfield	11.8	69
D-09	027	X64.3 Y12.2	065	Airfield	14.8	57
D-09	029	X25.3 Y10.8	070	Airfield	16.7	67
D-09	029	X25.3 Y10.8	070	Airfield	8.5	90

Mission 1011-1

FORWARD CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-09	030	X64.0 Y14.0	135	Airfield	6.3	109
D-09	030	X64.0 Y14.0	135	Airfield	9.0	86
D-09	046	X50.0 Y10.5	125	Airfield	16.2	49
D-09	046	X50.0 Y10.5	125	Airfield	11.1	75
D-09	047	X33.8 Y13.2	105	Airfield	9.2	74
D-09	047	X33.8 Y13.2	105	Airfield	8.4	97
D-09	050	X17.4 Y11.0	115	Airfield	7.3	111
D-09	050	X17.4 Y11.0	115	Airfield	4.7	122
D-24	070	X40.8 Y10.4	060	Airfield	19.4	[redacted]
D-24	070	X40.8 Y10.4	060	Airfield	8.9	[redacted]
D-24*	071	X41.7 Y13.4	100	Airfield	10.8	92
D-24	071	X41.7 Y13.4	100	Airfield	10.1	78
D-24*	071	X47.0 Y11.8	025	Airfield	12.3	65
D-24	071	X47.0 Y11.8	025	Airfield	8.9	93
D-24	077	X19.4 Y10.3	055	Airfield	7.7	107
D-24	077	X19.4 Y10.3	055	Airfield	19.3	49
D-40	031	X25.5 Y11.3	090	Airfield	10.1	82
D-40	031	X25.5 Y11.3	090	Airfield	4.5	116
D-40	034	X23.3 Y12.6	150	Airfield	19.3	42
D-40	034	X23.3 Y12.6	150	Airfield	5.5	103
D-40	039	X43.0 Y11.5	030	Airfield	23.5	40
D-40	039	X43.0 Y11.5	030	Airfield	21.5	44
D-40	045	X18.5 Y13.5	035	Large Bldg.	10.0	81
D-40	047	X50.3 Y10.8	115	Airfield	15.6	55
D-40	047	X50.3 Y10.8	115	Airfield	8.7	91

*M.I.P. Frame

Mission 1011-1

FORWARD CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-40	049	X13.5 Y15.8	115	Airfield	12.2	66
D-40	049	X13.5 Y15.8	115	Airfield	12.5	66
D-40	053	X32.0 Y12.5	028	Airfield	16.0	53
D-40	053	X32.0 Y12.5	028	Airfield	6.3	99
D-40	055	X67.5 Y13.5	095	Airfield	13.4	57
D-40	055	X67.5 Y13.5	095	Airfield	15.1	52

[redacted]

Mission 1011-1

AFT CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-05	045	X29.0 Y11.8	105	Airfield	11.3	78
D-05	045	X29.0 Y11.8	105	Airfield	13.7	65
D-05	055	X42.4 Y10.6	115	Airfield	9.5	83
D-05	055	X42.4 Y10.6	115	Airfield	9.1	90
D-05	056	X42.0 Y 9.8	090	Buildings	9.7	86
D-05	056	X42.0 Y 9.8	090	Buildings	9.9	95
D-05	056	X42.0 Y 9.8	090	Buildings	9.7	88
D-06	039	X33.0 Y11.0	040	Buildings	7.8	96
D-06	039	X33.0 Y11.0	040	Buildings	9.7	[redacted]
D-06	105	X70.5 Y13.5	150	Airfield	9.3	106
D-06	105	X70.5 Y13.5	150	Airfield	10.1	78
D-06	166	X66.6 Y13.0	065	Airfield	9.7	75
D-06	166	X66.6 Y13.0	065	Airfield	12.4	61
D-09	031	X56.5 Y10.6	130	Airfield	6.8	107
D-09	031	X56.5 Y10.6	130	Airfield	8.2	121
D-09	034	X65.6 Y12.5	070	Airfield	9.4	75
D-09	034	X65.6 Y12.5	070	Airfield	10.8	74
D-09	048	X25.5 Y11.5	055	Airfield	18.5	44
D-09	048	X25.5 Y11.5	055	Airfield	12.8	90
D-09	049	X36.5 Y14.5	100	Airfield	9.2	82
D-09	049	X36.5 Y14.5	100	Airfield	14.8	58
D-09	051	X56.5 Y13.6	115	Airfield	9.1	78
D-09	051	X56.5 Y13.6	115	Airfield	5.4	119
D-09	055	X73.4 Y10.5	135	Airfield	11.8	61
D-09	055	X73.4 Y10.5	135	Airfield	14.1	55

Mission 1011-1

AFT CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-24*	074	X48.8 Y12.9	105	Airfield	17.8	54
D-24	074	X48.8 Y12.9	105	Airfield	5.7	103
D-24*	074	X43.5 Y14.5	140	Airfield	6.3	113
D-24	081	X71.5 Y10.5	035	Airfield	13.8	58
D-24	081	X71.5 Y10.5	035	Airfield	9.1	82
D-25	023	X66.0 Y13.4	092	Airfield	12.8	61
D-25	023	X66.0 Y13.4	092	Airfield	7.0	106
D-25	025	X68.5 Y12.5	092	Airfield	13.1	[redacted]
D-25	025	X68.5 Y12.5	092	Airfield	7.3	[redacted]
D-25	042	X44.0 Y12.8	080	Airfield	8.1	86
D-25	042	X44.0 Y12.8	080	Airfield	14.0	56
D-25	043	X70.8 Y13.7	055	Airfield	11.2	70
D-25	043	X70.8 Y13.7	055	Airfield	8.8	96
D-30	011	X61.3 Y14.4	145	Airfield	10.4	83
D-30	011	X61.3 Y14.4	145	Airfield	13.2	64
D-30	021	X54.2 Y13.9	130	Airfield	11.2	69
D-30	021	X54.2 Y13.9	130	Airfield	8.4	72
D-30	025	X45.8 Y12.3	065	Buildings	9.2	73
D-30	025	X45.8 Y12.3	065	Buildings	8.5	75
D-30	038	X46.8 Y12.2	070	Buildings	7.5	107
D-30	043	X66.6 Y13.2	130	Bridge	8.3	87
D-30	043	X66.6 Y13.2	130	Bridge	10.8	88
D-30	045	X55.5 Y12.5	015	Bridge	4.9	127
D-30	045	X55.5 Y12.5	015	Bridge	8.7	87
D-40	036	X65.1 Y12.3	095	Airfield	8.4	89
D-40	036	X65.1 Y12.3	095	Airfield	11.7	67

*M.I.P. Frame

Mission 1011-1

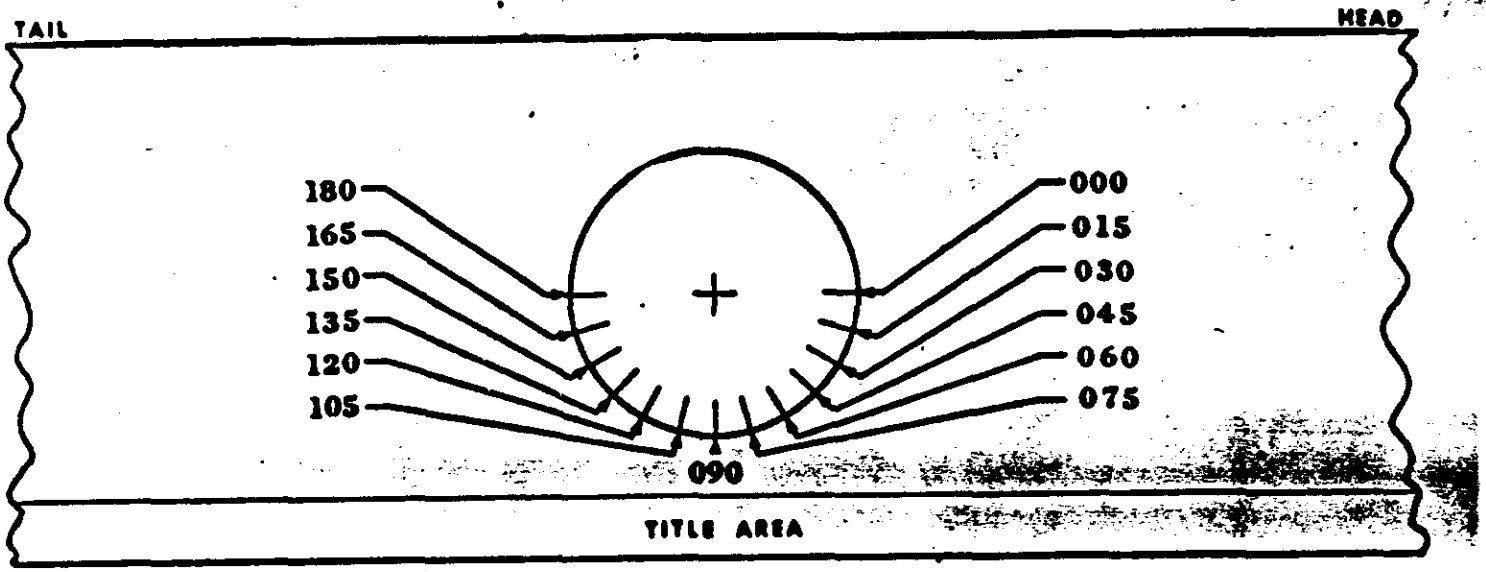
AFT CAMERA

Pass	Frame	Location	Orientation	Subject	50% Amplitude Spread Function Width (Microns)	A.I.M. Resolution
D-40	039	X67.5 Y10.5	145	Airfield	12.7	57
D-40	039	X67.5 Y10.5	145	Airfield	10.6	68
D-40	046	X40.2 Y11.6	090	Airfield	9.5	73
D-40	046	X40.2 Y11.6	090	Airfield	7.4	110
D-40	049	X72.7 Y13.3	035	Large Bldgs.	8.9	104
D-40	052	X40.2 Y11.2	110	Airfield	11.2	68
D-40	052	X40.2 Y11.2	110	Airfield	6.9	108

[redacted]

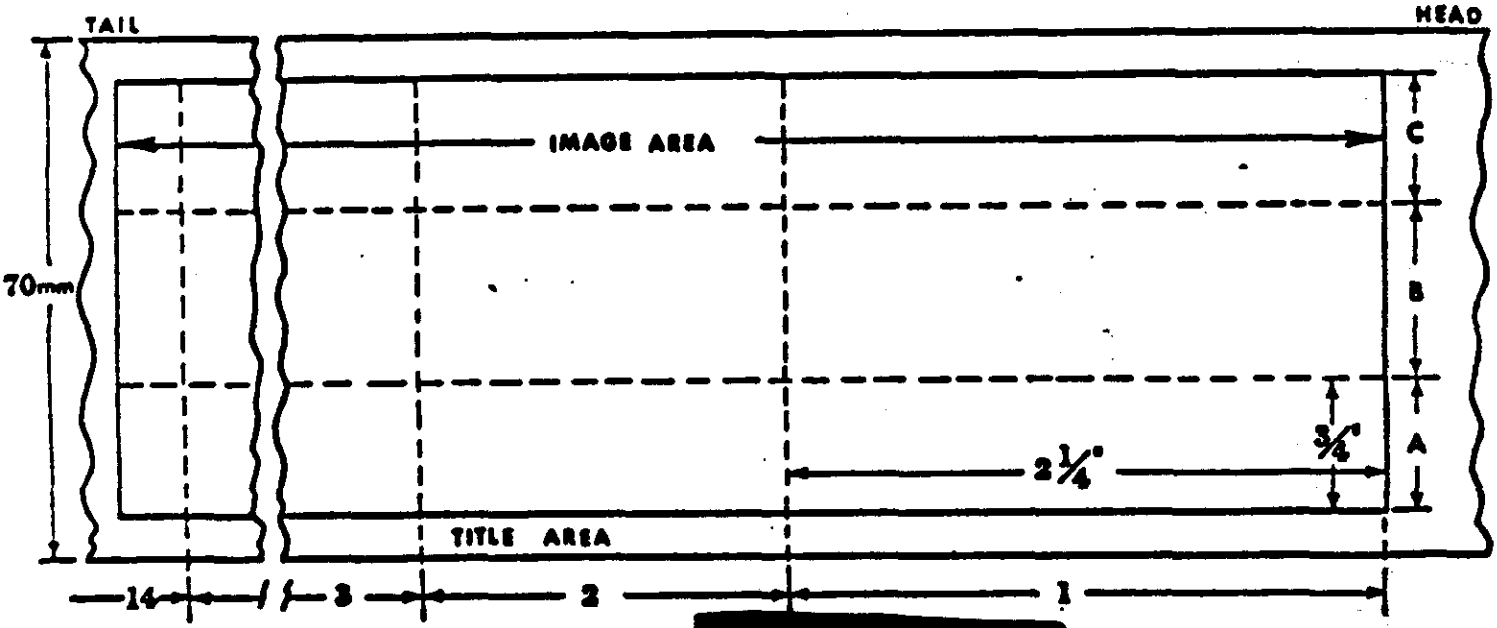
Reference System For Orientation Of C/M/J Mission Edges

original negative - - emulsion up



Grid For Position Of C/M/J Mission Edges

original negative - - emulsion up



SECTION 11

OBSERVED DATA

Operation one of engineering Pass D-30 centered on western Indiana, Kentucky and Tennessee. No clouds or detectable haze was present and the character of the terrain was nearly ideal for the evaluation of system performance. Motor vehicles were detectable across the entire format. In most places, except for the ends of the format, cars could be distinguished from trucks and busses. The 5 foot bars of runway numbers could be seen at most standard marked airports.

At Sewart AFB, KC 130's were identified and nacells seen. The 3 foot wide runway center and edge stripes, light on dark, were clearly seen and also the 3 foot wide spaces in the threshold markers dark on light. The 6 foot stripes with 5 foot spacing of the landing area marks could be identified where painted on black top. These same patterns could be located where painted on concrete, but lines and spaces could not be resolved.

Many bridges were studied for the fine detail of fabricated steel truss types. The sharpest example found; across the Ohio River at Owensboro, Kentucky, was in FWD 8 and AFT 14, 2 inches west of C/F. Main trusses and cross bracing were visable both fore and aft.

Operation 2 of Pass D-30 was over Alabama and the Florida panhandle. Forward 38 and aft 42 contained the fixed CORN target at Eglin AFB. Here the 5th group could be resolved along track and the 4th group cross track. This corresponds to ground resolution of 10 - 12 feet.

Pass D-47 over Nevada and the Colorado River Valley, contained Indian Springs CORN target in FWD frame 5 and AFT frame 11. Resolution of the third group here indicates about 10 foot ground resolution. Also, the Pahrump target appeared in FWD 7 and AFT 2, 12 1/2" west of C/F. Because of excessive scene brightness, the largest group could not be resolved in the FWD photo. The AFT photo brightness was somewhat lower and the 3rd group was resolved (10').

South and east of the above, and near the center of format, 3 rows of high voltage transmittion line towers lead across the desert from Hoover Dam.

In FWD 12 or AFT 17 it is difficult to tell whether one is seeing the towers or their shadows. However, upon viewing the same area in stereo, both towers and shadows are distinguished, a striking example of the contribution of stereo photography to the discernable information content over mono photography.

In analyzing the engineering pass photography of this mission, ground tracks were plotted, using ON and JNC maps. Actual latitude and longitude points were determined for "center of formats" and compared to the frame ephemeris. A 9 to 12 mile latitude northward displacement was found throughout. The source of this discrepancy has not been determined at this time. Some previous missions have shown the same sort of error. Further investigation is recommended.

SECTION 12

MISSION 1011-1 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D 30
Index Reseau	30
Stellar Reseau	30

B. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:

Lens	85mm f/1.8
Exposure Time	2 seconds
Filter Type	None
Film Type	Eastman Type 3401

Index Camera:

Lens	38mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 3400

C. POST FLIGHT EVALUATION

The camera functioned properly throughout the mission with no observed equipment or photographic anomalies. The presence of double stellar images lead to the preliminary conclusion that the Stellar camera shutter had double exposed during 10% of the mission. Further analysis has shown that this problem is caused by the residual unbalance in the panoramic cameras.

The stellar formats contained approximately 20 star images within the usable area in each frame. The normal 30% of each frame was unusable due to the vignetting and flare caused by the eleven inch extended baffle.

Static discharge patterns were originally reported being present between all frames of stellar photography and being very heavy during the last ten to twelve frames. Further analysis has shown that the observed patterns were produced by emulsion cracking which has normally occurred with the thick emulsion material used in the Stellar camera.

The Index camera photography was free of all anomalies. It was the best quality product obtained to date.

SECTION 13

MISSION 1011-2 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D 57
Index Reseau	57
Stellar Reseau	57

B. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:

Lens	85mm f/1.8
Exposure Time	[redacted] seconds
Filter Type	None
Film Type	Eastman Type 3401

Index Camera:

Lens	39mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 3400

C. POST FLIGHT EVALUATION

Telemetry data indicated that the camera operated satisfactorily during the mission up to pass D-110. The unregulated and regulated power supplies were 19.1 volts and 27.5 volts, respectively, at this time. The unregulated power supply was 18.9 volts during pass D-103 where normal metering was observed. It is assumed that the metering solenoid was not functioning properly after pass D-103.

SECTION 14

VEHICLE ATTITUDE

The vehicle attitude errors for Mission 1011-1 were derived from the reduction of the stellar camera photography. This attitude data is supplied to A/P by NPIC..

The attitude errors for each frame and the attitude control rates are calculated at the A/P computer facility. The computer also plots the frequency distribution of the rates and errors. Figures 14-1 through 14-6 show these distributions for Mission 1011-1.

The summary table below lists the maximum attitude errors and rates that were experienced during 90% of the photographic operations, excluding the first six frames of each operation, and the total range of the errors and rates.

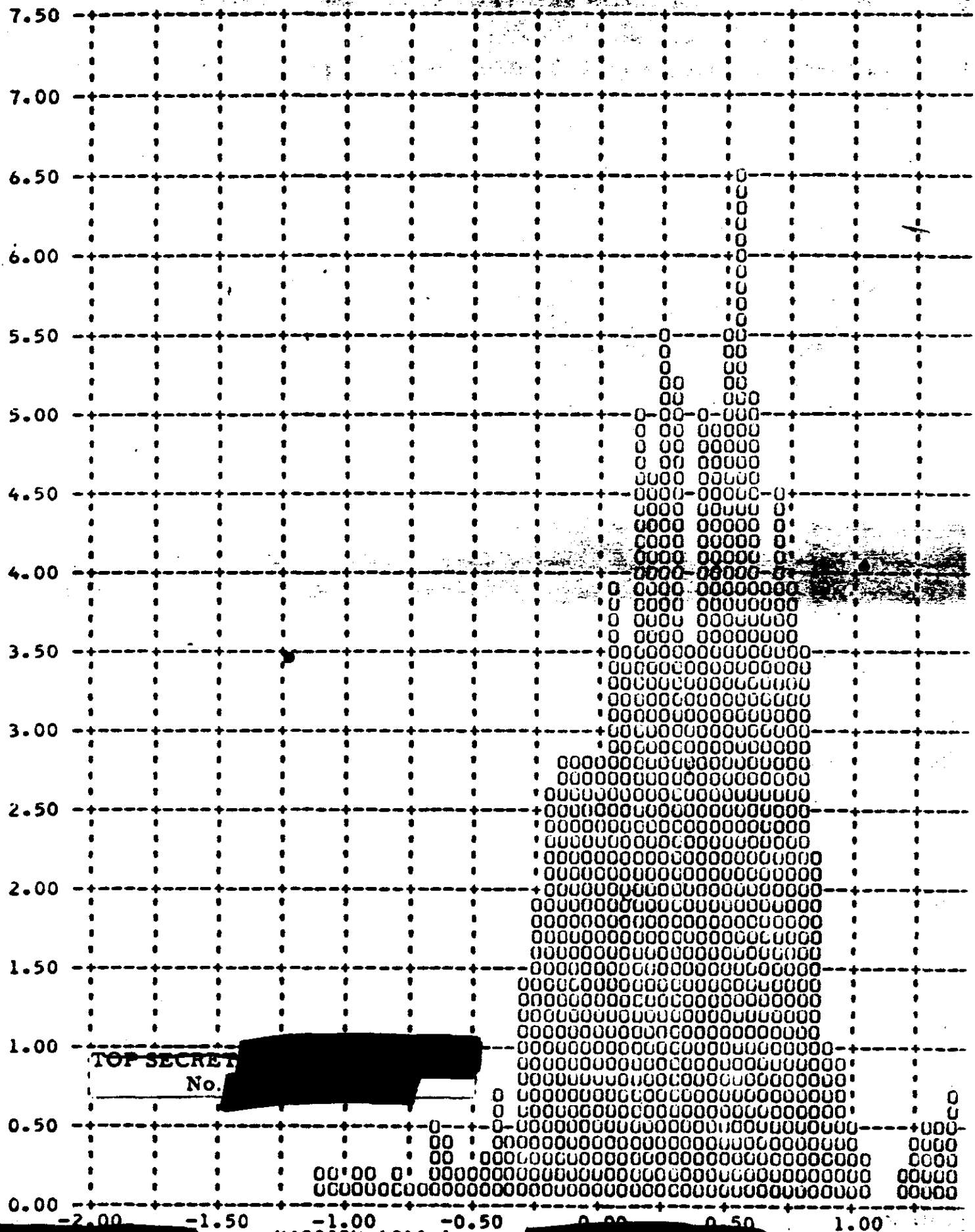
	Mission 1011-1	
Value	90%	Range
Pitch Error (^{o})	0.77	-1.10 to +1.40
Roll Error (^{o})	0.39	0 to +0.76
Yaw Error (^{o})	0.97	-1.60 to +0.50
Pitch Rate (^{o}/hr)	43.1	-65 to +100
Roll Rate (^{o}/hr)	28.9	-75 to +70
Yaw Rate (^{o}/hr)	31.1	-6 to +

The performance of the attitude control system is comparable to the control systems used on recent missions. The panoramic photography was not degraded by the attitude control system.

[redacted] No. [redacted]

J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

Y PITCH ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



TOP SECRET [redacted]

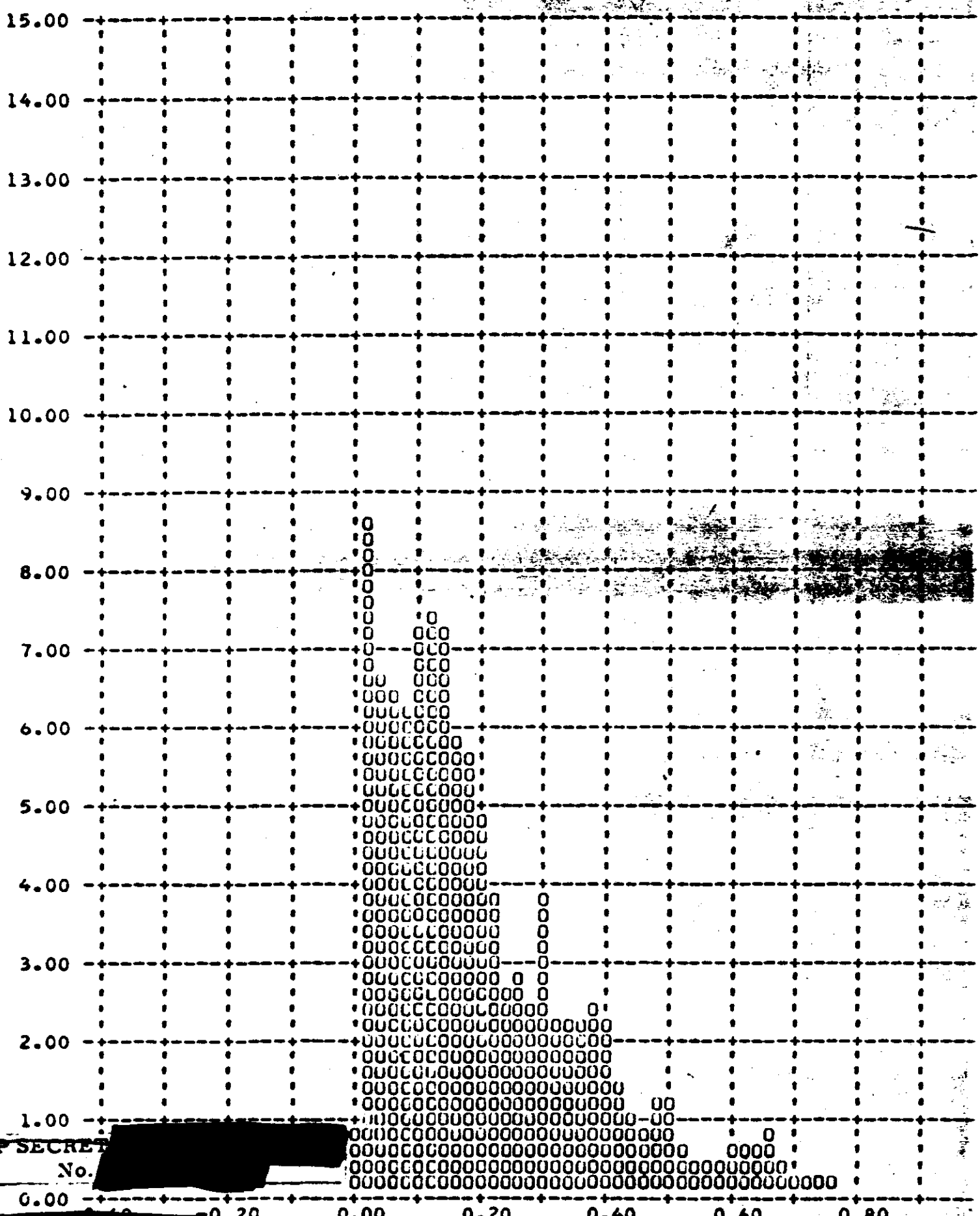
No. [redacted]

[redacted] MISSION 1011-1 [redacted] MISSION 10

FIGURE 14-1

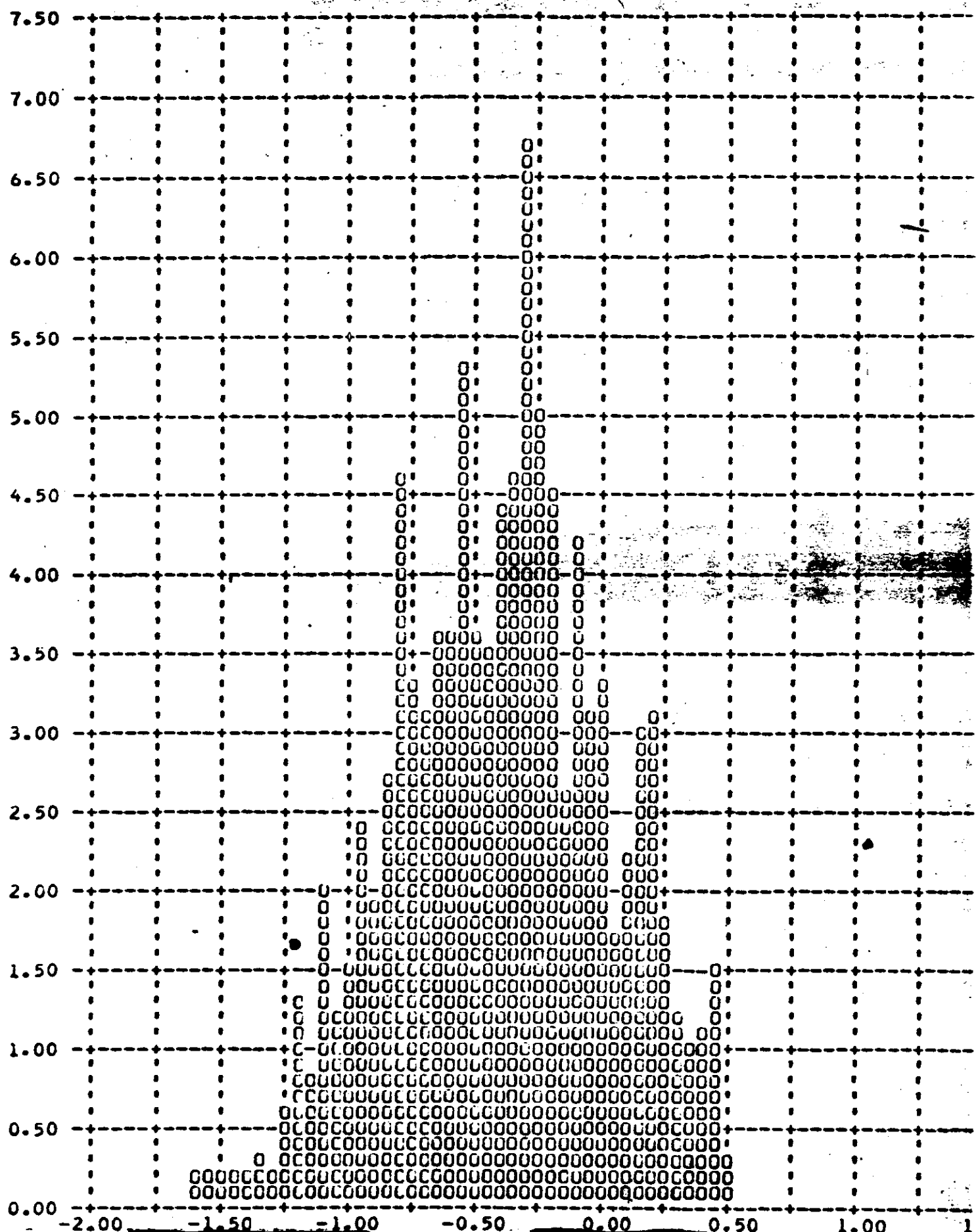
J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED - 90 PERCENT = 0.

Y ROLL ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

Y YAW ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 43

Y PITCH RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)

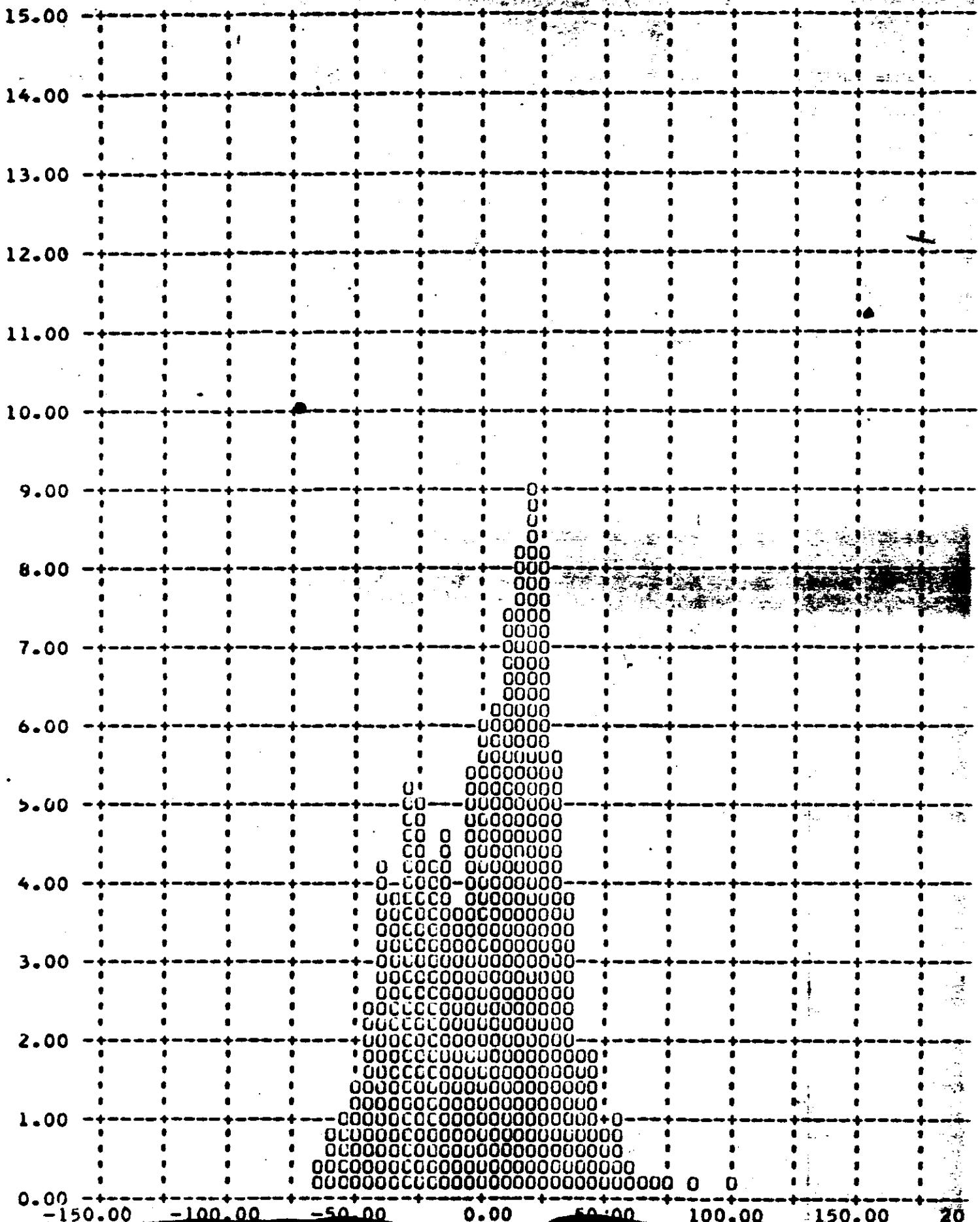


FIGURE 14-4

J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH UP UNITTED 90 PERCENT = 28.

Y ROLL RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)

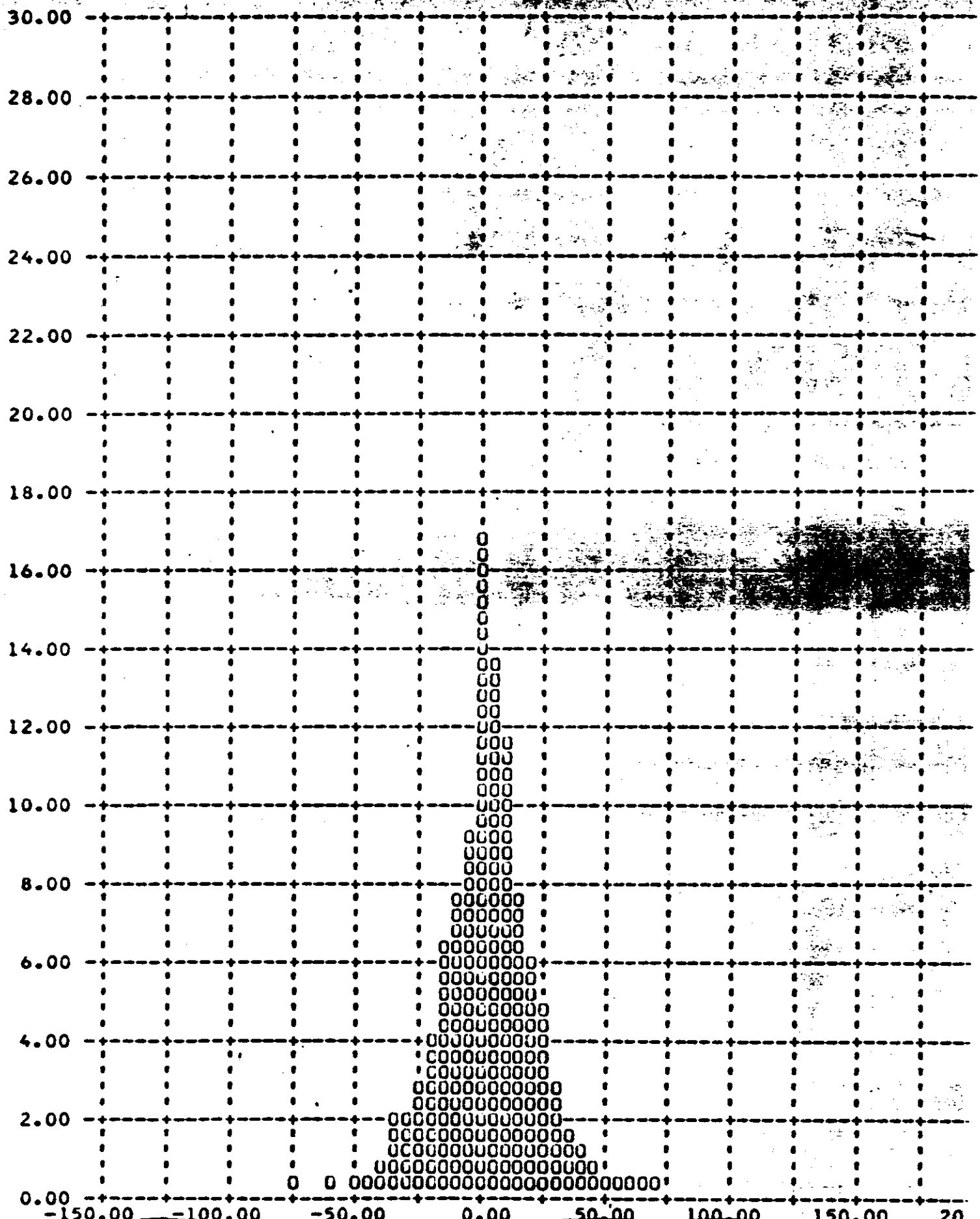


FIGURE 14-5

J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 31.

Y YAW RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)

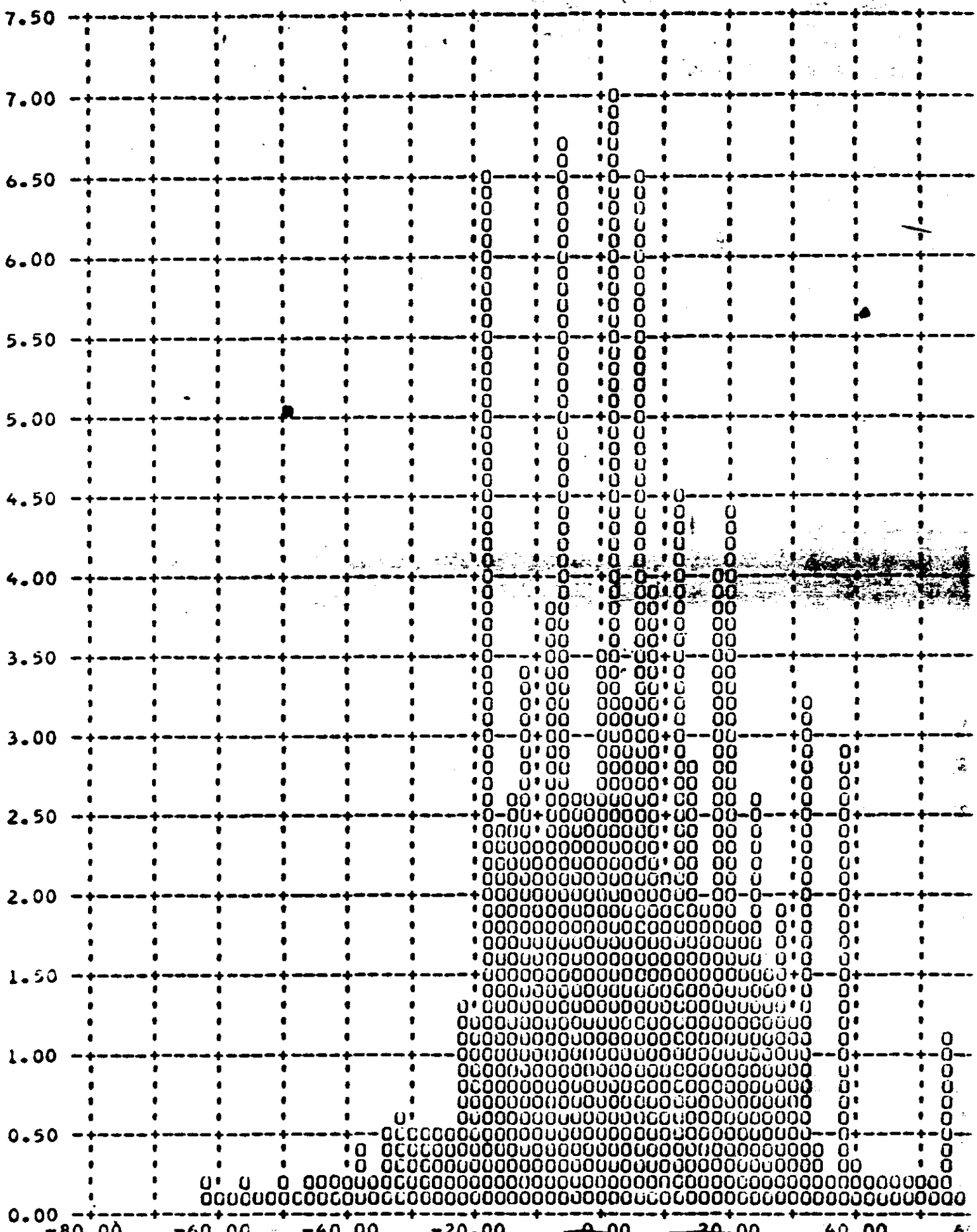


FIGURE 14-8

SECTION 15

IMAGE SMEAR ANALYSIS

The frame correlation tape supplied to A/P by NPIC contains the binary time word of each frame of photography. A computer program has been assembled at A/P which calculates the exposure time of each frame and compares the camera cycle rate with the ephemeris to calculate the V/h mismatch. This data is combined with the vehicle attitude error and rate values of each frame and the crab error caused by earth rotation at the latitude of each frame. The program outputs the total along track and cross track IMC error and the limit of ground resolution that can be acquired by a camera regardless of focal length and system capabilities.

The computer rejects the first six frames of all operations as the large V/h error induced by camera start-up is not representative of the overall system operations. The frequency distribution of the V/h error and resolution limits are computer plotted and are shown in Figures 15-1 through 15-3.

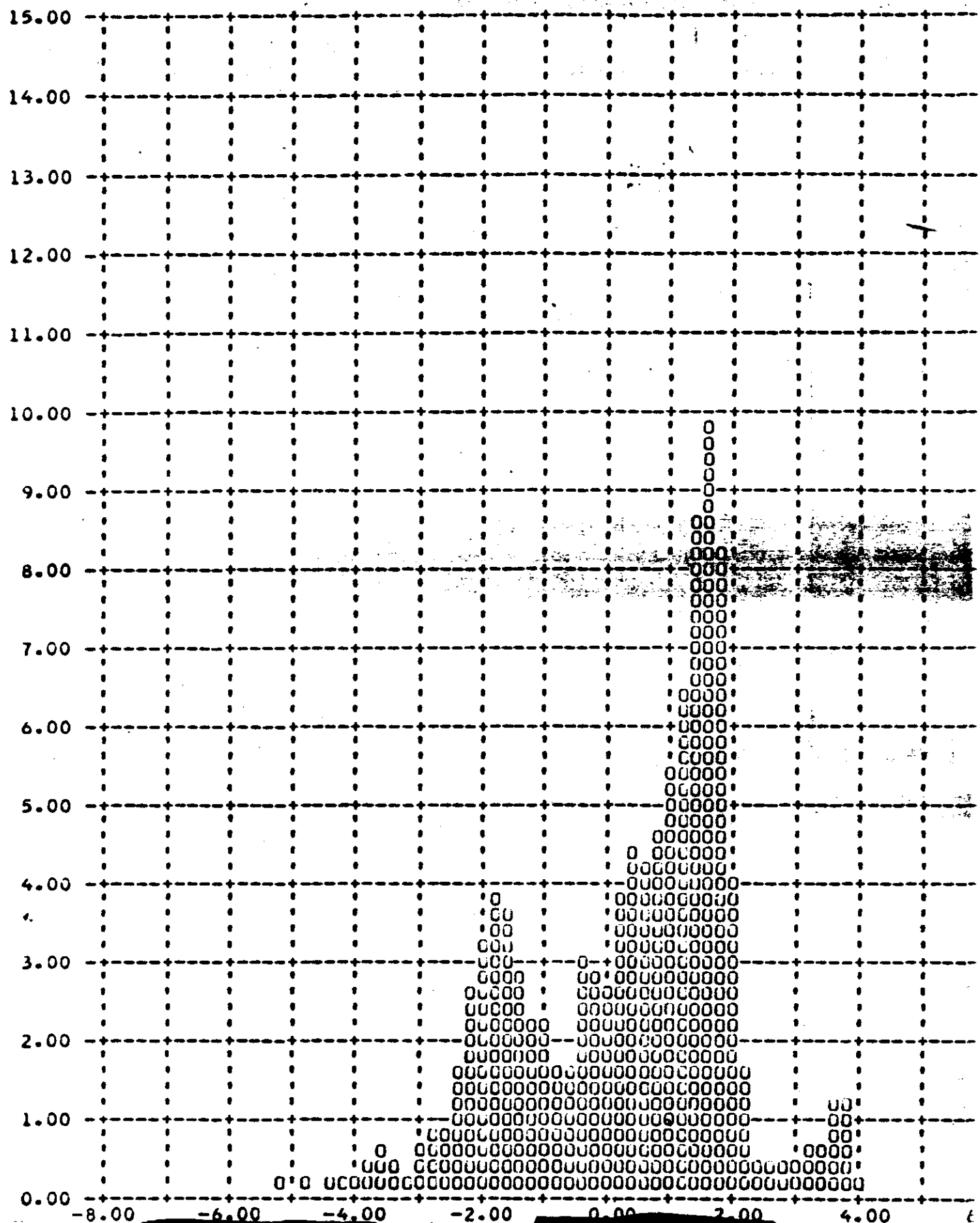
The summary table below presents the maximum V/h ratio error and resolution limits that existed during 90% of the photographic operations and the total range of values during all operations that were computed.

	Mission 1011-1	
Value	90%	Range
V/h Ratio Error (%)	2.3	-5.2 to +4.0
Along Track Resolution Limit (ft.)	5.3	0 to 6.8
Cross Track Resolution Limit (ft.)	5.6	0.8 to 6.6

The calculations show that the panoramic cameras were not smear limited during the mission. It should be noted that the 90% V/h mismatch value is the lowest that has been experienced during the last several missions.

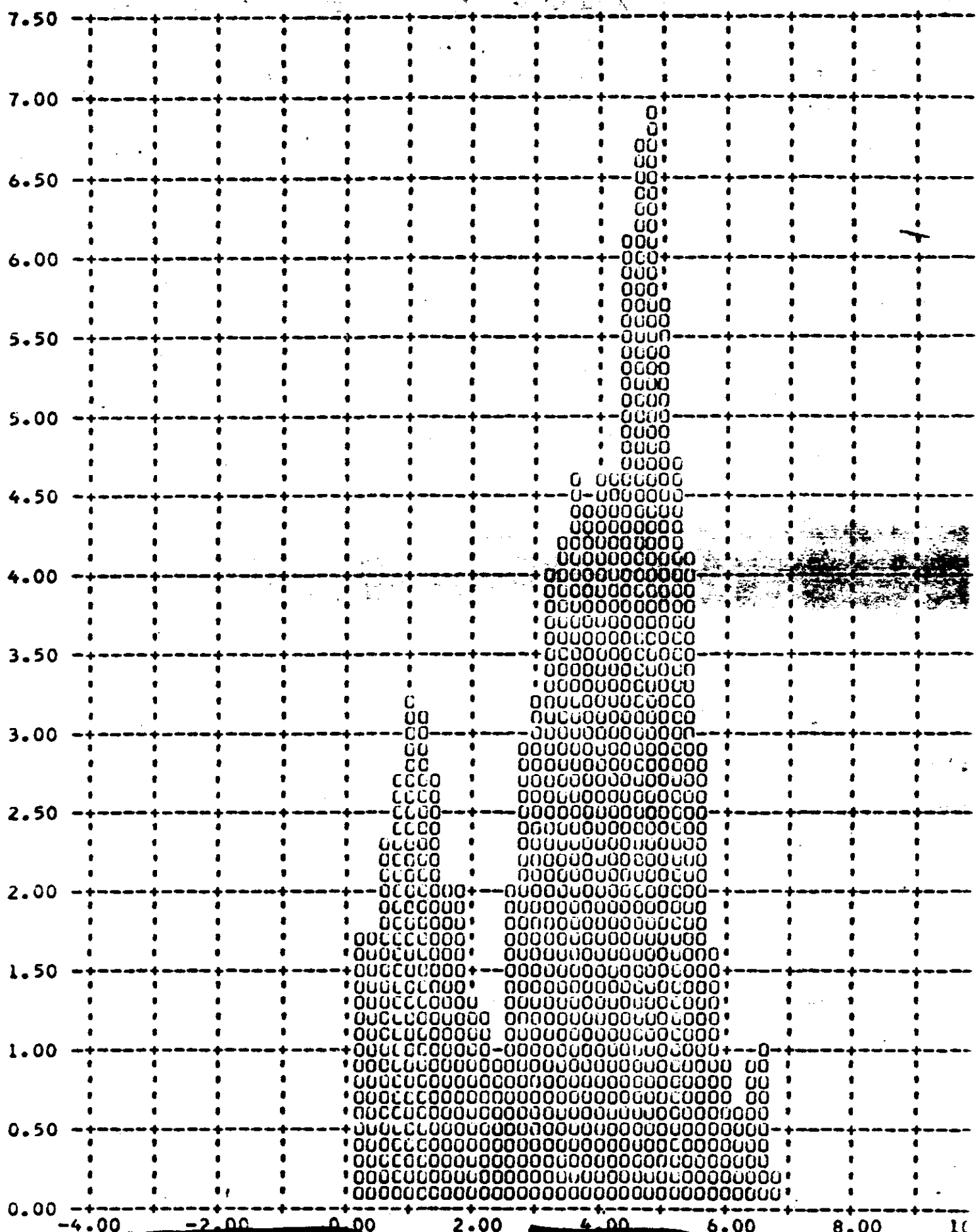
J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 2.

Y V/H RATIO ERROR - PERCENT (X) VERSUS FREQUENCY - PERCENT (Y)



J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 5.

Y ALONG TRACK RESOLUTION LIMIT - FEET (X) VERSUS FREQUENCY - PERCENT (



J3XA 1170 LAUNCH 10/05/64 FRAMES 1-6 OF EACH UP UNITED 90 PERCENT = 5

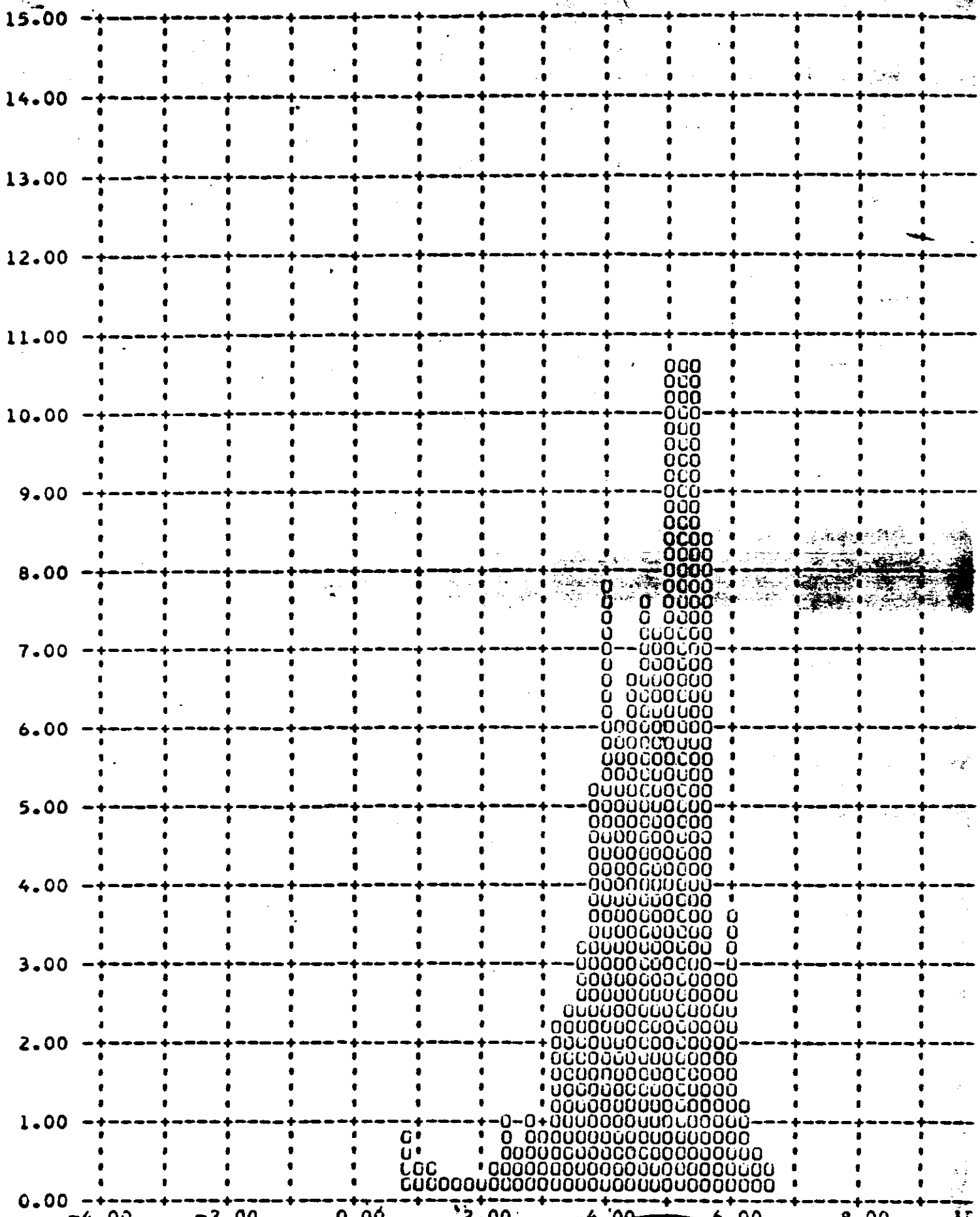


FIGURE 15-3

SECTION 16

RADIATION DOSAGE

Each recovery system flown on a Corona mission contains a sealed packet of Eastman Type 3401 and Royal X Pan emulsions to determine the total radiation received at the take-up cassette. Both film types have been irradiated by LMSC at various levels and the base plus fog densities recorded after controlled processing.

Following recovery the film dosimeter packets are removed at A/P and processed with a pre-flight sample of the same film type and sensitometric control film. The resulting base plus fog density measurement of the dosimeter strips is used to ascertain the total radiation level. The table below presents the base plus fog readings for the dosimeter strips and the radiation level equivalents.

Mission 1011-1

Emulsion	B + F Density	Radiation
Type 3401	0.19	0.6 R
Royal X Pan	0.25	0.4 R

The mean total radiation seen by the take-up cassettes during both missions was approximately 0.5 roentgens. This level is essentially the same as received during recent missions and is below the level that will degrade the panoramic photography.

SECTION 17

SYSTEM RELIABILITY

Reliability calculations for the payload are based on a sample beginning with M-7. Hence both the major part of the Mural Program and the "J" Program are covered in the calculation. For certain auxiliaries, i. e., the stellar-index camera and the horizon cameras, the sample size is changed to recognize incorporation of modified equipment or new designs where reliability was one of the principal reasons for the modification. However, for primary mission function, the sample size is consistent with reliability reporting for the vehicle.

The reliability estimates of this section deal exclusively with the payload. Failures to achieve orbit or vehicle induced failures are thereby excluded. Recoveries before a complete mission has been completed are considered as full missions providing that early termination was caused by reasons not connected with payload operation. Film quality is not considered in the reliability estimate calculation. Hence, only electrical and mechanical functioning are considered.

The reliability estimate is also divided into primary and secondary functions. The primary functions are operation of the panoramic cameras, main camera door operation, operation of the payload clock, and recovery operations. The secondary mission functions are horizon camera operation excluding catastrophic open shutter failure mode, auxiliary data recording, and stellar-index camera operation.

Panoramic Camera Reliability

Sample Size - 66 opportunities to operate.
One failure - capping shutter on slave instrument on system M-7.
Assume - 3000 cycles per camera per mission.
Estimated Reliability = 98.5% at 50% confidence level.

Main Camera Door Reliability

Sample Size - 33 vehicles x 2 doors = 66 opportunities to operate
1 major malfunction, door failed to eject for 7 passes, Mission 9048.
1 minor malfunction, door failed to eject for 2 passes, Mission 1006.
Estimated Reliability = 97.6% at 50% confidence level.

Payload Clock Reliability

Sample Size - 37 completed missions in sample.
No failures
Estimated Reliability = 98.2% at 50% confidence level.

Estimated Reliability of Payload Functioning on orbit
98.5 x 97.6 x 98.2 = 94.4%

Recovery System Reliability

33 opportunities to recover
1 failure - improper separation due to water seal - cutter failure.
Estimated Reliability = 94.9% at 50% confidence level.

Stellar-Index Camera Reliability

Sample begins with M-13
Sample size = 25
Number of failures = 7
Estimated Reliability = 75.5% at 50% confidence.

Horizon Camera Reliability

Sample includes M27, J5A, J9A, J9B, and up; 14 samples
1 failure - center of format switch, Mission 1006
Estimated Reliability of Single Camera = 93.3% at 50% confidence level.
Estimated Reliability of Four Horizon Cameras at a Parallel Redundant System = 99.5% at 50% confidence level.

Horizon Camera Door Reliability

Sample size = 33 x 4 = 132 opportunities to operate.
No failures have occurred.
Estimated Reliability = 99.5% reliability at 50% confidence level.

Stellar-Index Camera Door Reliability

Terrain Door, Stellar Door, and deployment of Stellar Baffle are functions considered.
Sample size = 22 x 3 = 66 chances to operate.
One failure - stellar baffle failed to deploy.
Estimated Reliability = 97.5% at 50% confidence level.

SECTION 18

SUMMARY DATA

The comparison of the operating parameters and the performance achieved by previous missions has been difficult due to the large volume of data that results from each mission. Some of the pertinent characteristics from prior missions have been summarized in Tables 18-1 through 18-3.

The summary data was started with Mission 1004 as the J-05 camera system was the first to incorporate the major modifications of the titanium drum and scan arm, four roller scan head and Corona J capabilities. Only those missions that culminated in the recovery of some photography have been listed, therefore Missions 1003 and 1005 are deleted.

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No.

MISSION SUMMARY

MISSION NUMBER	PAYLOAD NUMBER	VEHICLE NUMBER	LAUNCH DATE	LAUNCH TIME	ORBIT INCLINATION (°)	PERIGEE ALTITUDE (NM)	PERIGEE LOCATION (°N)	RECOVERY PASS	MASTER CAMERA CAMERA NUMBER	MASTER CAMERA SLIT (")	MASTER CAMERA FILTER TYPE	SLAVE CAMERA CAMERA NUMBER	SLAVE CAMERA SLIT (")	SLAVE CAMERA FILTER TYPE	STELLAR-INDEX CAMERA NUMBER
1004	J-06	1174	8/15/64	2138 Z	74.9	99.9	29.0	49 / 112	124	0.250	W-21	125	0.250	W-21	029/29/29 / 042/42/45
1006	J-09	1176	8/4/64	2259 Z	79.9	84.0	63.2	65 / 128	148	0.200	W-21	149	0.200	W-21	049/53/42 / 045/47/45
1007	J-07	1609	8/19/64	2318 Z	85.0	99.2	41.5	65 / 128	144	0.250	W-25	145	0.200	W-21	043/43/43 / 034/36/31
1008	J-10	1177	7/10/64	2314 Z	85.0	99.4	40.8	49 / 112	1[redacted]	0.200	W-21	151	0.200	W-21	048/48/48 / 033/28/33
1009	J-12	1606	8/8/64	2316 Z	80.1	99.6	39.8	49 / 128	154	0.200	W-21	155	0.200	W-21	056/54/56 / 038/38/34
1010	J-11	1178	9/14/64	2254 Z	84.9	97.4	42.8	65 / 144	152	0.175	W-21	153	0.175	W-21	041/41/41 / 044/46/44
1011	J-05	1170	10/5/64	2150 Z	79.9	99.3	20.9	65 / —	160	0.175	W-21	161	0.175	W-21	030/30/30 / 037/37/37

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No. [redacted]

PERFORMANCE SUMMARY

MISSION NUMBER	CAMERA	SERIAL NUMBER	M I P VALUE	VISUAL RES	AFSPPL MTF/AIM				[redacted] MTF/AIM			90% ATTITUDE ERROR (°)			90% ATTITUDE RATES (°/HR)			90% V/H ERROR (%)	90% RESOLUTION LIMIT (FEET)	
					SLIT (μ)	AVERAGE	SLIT (μ)	AVERAGE	SLIT (μ)	AVERAGE ALL	AVERAGE HIGH	PITCH	ROLL	YAW	PITCH	ROLL	YAW		ALONG TRACK	CROSS TRACK
1004-1	FWD	124	85	78	350	97	43	109	320	115	127	0.48	0.42	1.08	30.0	25.0	21.0	5.1	7.7	6.1
	AFT			86		80		96		117	124									
1004-2	FWD	125	85	76		88		113		82	90	0.74	0.50	0.91	44.0	30.0	29.0	4.9	6.6	6.8
	AFT			73		83		106		89	95									
1006-1	FWD	148	90	78	350	85	43	88	320	84	97	0.41	0.42	1.14	26.8	28.5	27.8	15.4	13.6	6.7
	AFT			74		71		90		87	92									
1006-2	FWD	149	90	85		64		81		84	90	0.49	0.40	1.08	31.1	27.9	30.0	11.6	10.1	7.0
	AFT			83		72		90		87	94									
1007-1	FWD	144	85	80	350	60	43	87	320	82	91	0.88	0.46	1.43	37.6	23.9	29.9	3.6	3.1	9.4
	AFT			86		63		83		97	110							4.6	2.1	7.6
1007-2	FWD	145	85	79		72		81		68	74	0.64	0.47	—	43.0	25.8	—	3.2	2.4	—
	AFT			81		77		92		74	81							4.2	1.8	—
1008-1	FWD	150	85	80	350	80	43	95	320	81	89	0.89	0.39	0.94	43.8	23.9	29.6	2.9	4.9	8.9
	AFT			76		73		89		86	95									
1008-2	FWD	151	85	82		84		96		83	92	0.63	0.36	0.71	42.9	24.0	32.5	2.8	4.2	8.4
	AFT			79		91		83		85	91									
1009-1	FWD	154	85	92	350	80	—	—	80	75	88	0.68	0.65	0.71	29.2	22.7	27.6	5.3	8.3	9.8
	AFT			89		85				75	83									
1009-2	FWD	155	85	94		85				76	84	0.46	0.65	0.59	33.6	23.9	27.2	2.6	4.9	8.9
	AFT			87		87				72	79									
1010-1	FWD	152	85	90	350	90	80	88	80	87	96	0.85	0.30	0.87	39.1	23.6	30.8	4.8	8.3	4.4
	AFT			88		86		80		92	103									
1010-2	FWD	153	85	92		81		82		82	93	0.89	0.70	1.21	45.4	23.6	30.7	4.6	7.8	3.8
	AFT			90		82		85		87	98									
1011-1	FWD	160	90	84	350	76	80	96	80	78	87	0.77	0.39	0.97	43.1	28.9	31.1	2.3	5.3	8.6
	AFT	161		84		77		86		83	93									

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TABLE 10-2

EXPOSURE - PROCESSING SUMMARY

MISSION NUMBER	CAMERA	SOLAR ELEVATION RANGE (°)		SOLAR AZIMUTH RANGE (°)		PREDICTED PROCESSING (%)			REPORTED PROCESSING (%)			COMPUTED PROCESSING (%)			TERRAIN D-MIN				TERRAIN D-MAX				CLOUD D-MAX				UNDER EXPOSED (%)	UNDER PROCESSED (%)	NOMINAL EXP & PRO (%)	OVER PROCESSED (%)	OVER EXPOSED (%)	CLOUD COVER (%)
															RANGE				RANGE				RANGE									
		LOW	HIGH	LOW	HIGH	P	I	F	P	I	F	P	I	F	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN	LOW	HIGH	MEAN	MEDIAN						
1004-1	FWD	-3	61	25	124	5	76	19	4	79	17	0	79	21	0.26	1.89	0.83	0.78	0.43	2.43	1.97	2.02	1.00	2.43	2.04	2.08	0	4	60	31	5	35
	AFT	-3	61	25	124	5	74	21	4	79	17	0	80	20	0.22	1.56	0.76	0.70	0.93	2.45	1.92	1.94	1.08	2.43	1.98	2.03	1	4	67	26	3	35
1004-2	FWD	-4	68	10	131	7	76	17	37	50	13	4	83	13	0.29	1.80	0.83	0.78	0.36	2.30	1.84	1.90	0.41	2.37	1.87	1.93	0	4	59	27	9	35
	AFT	-4	68	10	131	7	76	17	37	50	13	4	77	19	0.29	1.91	0.81	0.73	0.56	2.38	1.89	1.99	0.43	2.46	1.89	1.98	0	4	67	20	9	35
1006-1	FWD	38	86	82	140	1	99	0	1	51	48	0	51	49	0.23	1.81	0.71	0.68	0.80	2.31	1.58	1.52	1.31	2.40	2.20	2.24	0	5	72	21	1	60
	AFT	38	86	82	140	1	99	0	0	23	77	0	24	76	0.36	1.66	0.87	0.84	0.98	2.38	1.72	1.72	1.14	2.40	2.24	2.28	0	1	58	40	1	60
1006-2	FWD	32	84	36	147	2	98	0	30	41	29	11	59	30	0.21	1.14	0.53	0.50	0.86	2.28	1.49	1.50	1.30	2.33	2.11	2.16	2	21	72	4	0	48
	AFT	32	84	36	147	2	98	0	35	40	25	21	54	25	0.26	1.34	0.62	0.58	0.65	2.33	1.46	1.47	1.86	2.50	2.12	2.16	0	11	77	9	3	48
1007-1	FWD	12	49	80	103	0	5	95	1	20	79	0	25	75	0.26	1.22	0.52	0.47	0.82	2.20	1.44	1.40	1.22	1.38	2.17	2.21	20	8	67	5	0	80
	AFT	11	49	48	102	0	100	0	10	42	48	8	77	17	0.26	1.76	0.58	0.55	0.78	2.31	1.82	1.52	1.54	2.39	2.20	2.24	1	13	80	5	1	80
1007-2	FWD	32	87	43	112	0	25	75	3	28	69	0	26	74	0.26	1.23	0.51	0.48	0.78	2.32	1.44	1.40	0.90	2.37	2.15	2.20	18	9	71	2	0	65
	AFT	31	87	38	111	0	100	0	15	41	40	3	88	9	0.24	1.56	0.60	0.56	0.44	2.27	1.50	1.52	0.84	2.41	2.17	2.25	1	16	74	9	1	65
1008-1	FWD	30	81	80	102	0	100	0	4	32	64	1	35	64	0.32	1.48	0.66	0.62	0.78	2.24	1.55	1.54	1.46	2.35	2.21	2.24	2	2	86	8	1	48
	AFT	30	81	80	102	0	100	0	4	27	69	0	34	66	0.32	1.57	0.71	0.69	0.81	2.21	1.57	1.58	1.08	2.37	2.21	2.24	1	1	84	13	0	48
1008-2	FWD	29	86	42	105	0	100	0	3	31	66	0	27	73	0.14	1.81	0.76	0.72	0.87	2.10	1.84	1.55	1.09	2.40	2.20	2.25	2	1	73	23	1	65
	AFT	29	86	42	105	0	100	0	3	30	67	2	29	71	0.32	1.64	0.77	0.76	0.73	2.10	1.85	1.55	1.10	2.38	2.18	2.22	1	3	69	27	0	65
1009-1	FWD	12	49	42	132	0	100	0	1	26	73	0	34	66	0.32	1.40	0.65	0.62	0.88	2.41	1.53	1.52	0.83	2.31	2.30	2.36	5	4	77	14	0	80
	AFT	12	49	42	132	0	100	0	0	40	60	0	45	55	0.28	1.42	0.70	0.64	0.96	2.28	1.88	1.55	0.63	2.51	2.32	2.36	1	5	73	20	6	80
1009-2	FWD	23	88	35	138	2	98	0	3	21	76	0	40	60	0.29	1.55	0.68	0.64	0.73	2.27	1.83	1.53	1.06	2.45	2.25	2.30	4	4	74	17	0	85
	AFT	23	88	35	138	2	98	0	4	47	49	0	56	44	0.26	1.47	0.69	0.64	0.44	2.42	1.61	1.60	1.61	2.50	2.31	2.34	1	4	77	18	0	85
1010-1	FWD	18	47	45	83	0	21	79	0	13	87	0	9	91	0.28	1.14	0.52	0.47	0.62	2.32	1.38	1.32	1.11	2.42	2.16	2.20	18	3	75	4	0	48
	AFT	18	47	45	83	0	21	79	0	19	81	0	16	84	0.27	1.25	0.57	0.52	0.70	2.42	1.45	1.41	0.96	2.46	2.20	2.26	9	4	81	6	0	48
1010-2	FWD	15	82	38	76	0	50	50	0	18	84	0	13	87	0.26	1.91	0.55	0.50	0.46	2.38	1.41	1.38	1.00	2.44	2.14	2.20	22	4	67	6	0	48
	AFT	15	82	38	76	0	50	50	0	23	77	0	25	75	0.20	1.48	0.59	0.56	0.30	2.40	1.47	1.45	1.29	2.48	2.18	2.22	13	3	76	8	0	48
1011-1	FWD	2	85	35	66	0	64	36	2	23	75	2	23	75	0.18	0.99	0.50	0.46	0.86	2.36	1.48	1.43	0.78	2.40	2.07	2.16	17	11	70	2	0	40
	AFT	2	88	33	66	0	67	33	3	47	50	0	37	63	0.24	1.48	0.60	0.56	0.50	2.38	1.57	1.55	0.74	2.37	2.11	2.18	3	7	81	8	0	40

TABLE 18-2

Distribution-

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