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4 August 1966

TO: V. Webb
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THRU: [redacted]

FROM: [redacted]

SUBJECT: MISSION 1015-1 AND 1015-2 FINAL REPORT

Enclosed is the Final Performance Evaluation Report for Mission 1015-1 and 1015-2.

[redacted]
Manager
Advanced Projects

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CORONA J

PERFORMANCE EVALUATION REPORT

MISSION 1015-1 and 1015-2

FTV 1607, J-17

July 5, 1966

Approved: [redacted]
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FOREWORD

This report details the performance of the payload system during the operational phase of the Program [redacted] Flight Test Vehicle 1607.

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 1015-1 and 1015-2 which was launched on 19 December 1964.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

INTRODUCTION

This report presents the final performance evaluation of Missions 1015-1 and 1015-2 of the Corona Program. The purpose of this report is to define the performance characteristics of the J-13 payload system and to identify the source of in-flight anomalies.

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

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

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

SECTION 1

SYSTEM PERFORMANCE

A. MISSION OBJECTIVES

The payload section of Mission 1015, placed into orbit by Flight Test Vehicle #1607 and LV-2A booster #424, 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-17 payload system. This Corona "J" system is designed to acquire search and reconnaissance photography of selected areas of the earth from orbital altitudes. The flight was programmed for the following mission capability:

Mission "A" duration: 3/4/5 days
Mission "B" duration: 6/5/4/3 days
Deactivate - Reactivate: 72 Revs. active
110 Revs Inactive (Max.)
72 Revs. Reactivated

B. MISSION DESCRIPTION

The payload was launched from Vandenberg Air Force Base (VAFB) at 2110:17 Z (1310:17 PST) on 19 December 1964. Ascent and injection were normal and the achieved orbit was within nominal tolerances except for a low perigee altitude. Tracking and command support was effected by the Air Force Satellite Control Facility consisting of tracking and command stations at [redacted] under central control of the Satellite Test Center at Sunnyvale, California. Mission 1015-1 consisted of five days operation and was completed by air recovery on 24 December 1964. A deactivate - reactivate operation was successfully used over a period of 48 orbits. The 3 day "B" operation was air recovered on 30 December 1964. The "B" SRV was recovered 1 day early due to the questionable state of the pyro battery.

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

SCHEMATIC INBOARD PROFILE - CORONA J SYSTEM

MISSION 1015

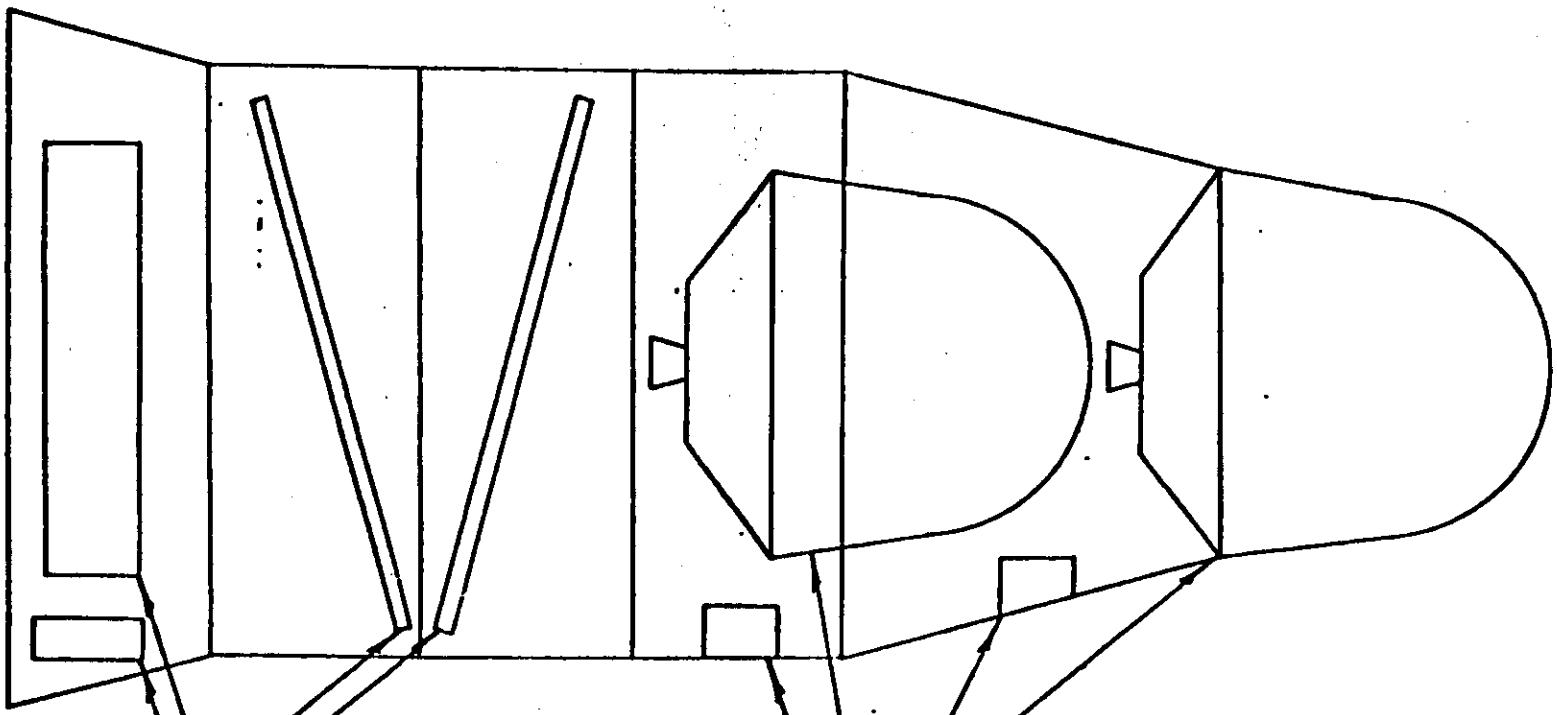


FIGURE 1-1

ORBITAL PARAMETERS

Parameter	Predicted	Orbit 1 Actuals
Period (Min.)	90.675	90.556
Perigee (N.M.)	100.02	96.72
Apogee (N.M.)	235.38	230.96
Inclination (Deg.)	75.003	74.971
Perigee Latitude (Deg.N.)	22.358	21.543
Eccentricity	0.018782	0.018614

SRV #1 contained 98% of the normal amount of payload. SRV #2 was filled with payload to approximately 88% of full capacity.

C. PANORAMIC CAMERAS

The Master and Slave panoramic cameras operated throughout both missions and produced excellent photographic coverage. The cloud cover observed in the photography averaged 42% for the entire flight. The instruments were operating as much as 4% slower than nominal at perigee.

D. STELLAR-INDEX CAMERAS

The Stellar-Index cameras operated satisfactorily on both missions. The stellar camera exhibited 50% baffle flare fog, however adequate star imagery was obtained. The photographic quality of the index camera film was excellent on both missions.

E. OTHER SUBSYSTEMS

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

SECTION 2

PRE-FLIGHT SYSTEMS TESTS

A. ENVIRONMENTAL TESTING

1. Test Objective

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

2. Test Summary

The Environmental Test on the J-17 payload system was conducted at the TASC Chamber in Sunnyvale during October 25 through 29, 1964. The test consisted of 2 days "A" operations; 1 day soak; and 1 day "B" operations.

The J-17 system subjected to this test consisted of panoramic instruments 138 and 139 and Stellar/Index cameras D61/61/61 and D58/58/58.

Panoramic instrument operation was satisfactory. Cycle period predictability was ± 2% and repeatability was ± 1%. The difference in cycle rates between the two instruments was within 1%.

Both "A" and "B" recovery sequences were satisfactory. Normal S/I slewing operations were obtained at "arm". Both instruments stowed properly during the "A" recovery cut and wrap operation.

A deactivate command was given between the "A" and "B" missions. The instruments operated for 5 cycles and stowed normally.

The corona marking level of the J-17 system met the corona criteria established for the J Program. J-17 is considered to have acceptable corona and is recommended for flight without further testing.

Clock performance was satisfactory. The IRIG was not available, but clock readings correlated within 1 second of the system time at which the clock was interrogated.

Following completion of the environmental test, the slave instrument 139 was transferred to the J-16 system. Instrument 141 from M-27 system replaced it.

3. Panoramic Instruments Dynamic Performance

Both instruments operated satisfactorily throughout the test as indicated by the center-of-format and lens rotation monitors. The monitors on the supply and take-up idlers indicated smooth film transport. Instrument start and shutdown was normal for each operation. Cycle rate data from each operation is summarized in Table 2-1.

The 99/101 percent clutch ratios were 5/5 and 6/6 for both instruments.

4. **Panoramic Instrument Corona Performance**

J-17 system was altitude tested for 4 days at pressures ranging between 0.3 to approximately 60 microns. Panoramic film was pre-dried 7 days in the Teal Chamber at 0.1 microns permitting pressures of 1 micron to be attained in the TASC Chamber at the end of the second day, at the start of instrument operation.

Film samples removed from instruments 138 and 139 exhibited up to 3 cycles of start-up corona to a density of 1.25 for internal camera pressures below 1.1 microns. Start-up corona marking was first observed after the 2-day non-operate soak period. Camera pressures prior to the 2-day soak ranged from 2.5 to 5.5 microns, but no corona marking was observed in this pressure range. Internal pressures above 5.5 microns did not induce corona.

Camera operations that employed the PMU system were all corona free.

J-17 CYCLE PERIOD DATA

RAT	TUR.*	INSTRUMENT #1 ACT.	INSTRUMENT #1 NOM.	INSTRUMENT #1 % DIFF.	INSTRUMENT #2 ACT.	INSTRUMENT #2 NOM.	INSTRUMENT #2 % DIFF.
			"A" MISSION				
R 7 - A 7	290	4.35	4.27	1.9 S	4.32	4.27	1.2 S
R 4 - A 1	1420	2.23	2.21	.9 S			
R 4 - A 1	1600				2.17	2.18	.5 F
R 4 - A 1	1900	2.19	2.180	.5 S	2.17	2.173	.1 F
R 5 - A 8	1540	2.38	2.39	.4 F	2.38	2.38	0
R 7 - A 7	2060	2.38	2.376	.2 S	2.36	2.366	.25 F
R 8 - A 2	1715	2.22	2.218	.1 S			
R 8 - A 2	2260				2.29	2.305	.65 F
R11 - A 1	2030	2.30			2.29		
R 5 - A 8	850	3.15	3.147	.1 S	3.12	3.145	.8 F
R 7 - A 7	1390	2.65	2.65	0	2.65	2.644	.23 S
R 7 - A 7	2410	2.61	2.607	.11 S	2.58	2.599	.73 F
R10 - A 1	1740	2.24	2.278	1.7 F			
R 4 - A 1	2635				2.50	2.524	.95 F
R 4 - A 1	2980	3.23	3.241	.34 F	3.22	3.240	.62 F
R11 - A 1	1770	2.31	2.329	.82 F	2.30	2.318	.78 F
			"F" MISSION				
R 7 - A 7	300	4.24	4.26	.47 F	4.22	4.27	1.2 F
R 4 - A 1	1420	2.21	2.213	.1 F			
R 4 - A 1	1600				2.15	2.18	1.4 F
R 4 - A 1	1900	2.17	2.18	.46 F	2.15	2.17	.9 F
R 5 - A 8	1540	2.35	2.39	1.7 F	2.33	2.38	2.1 F
R 7 - A 7	2060	2.35	2.376	1.1 F	2.37	2.366	.17 F

* TIME-UP-RAMP VALUES WERE NOT VERIFIED

TABLE 2-1

5. Stellar/Index Performance

S/I payload metering occurred normally at every 7th cycle of main instrument operation. Other S/I events as shutter and platen operation also occurred in the proper sequence. Meter ratios were 7/3 and 8/2 for S/I #1 and 7/2 and 8/4 for S/I #2.

6. Instrument Summary

Cycle counter readings for both instruments agreed exactly with the actual number of cycles metered during both "A" and "B" modes of operation. Reasonable correlation of the footage pots and cycle counters was obtained, considering the relative inaccuracy of the Sanborn calibrations and errors introduced in reading the Sanborn record. Footage pot and cycle counter readings from each operation are summarized in Table 2-2.

T/S 11 on Instrument #1 scan arm was indicating an abnormally low temperature throughout the test. A defective 2K resistor was the cause of the erroneous output.

7. Temperature Summary

Table 2-3 lists the average instrument temperature recorded during various times of "A" and "B" operations. Table 2-4 contains the self-heating corrections used for BN 2400 Type T/S. The "TIME" column represents the length of time in minutes that the TLM is on while the other columns represent the correction of ^{o}F applied to the recorded temperature values.

B. RESOLUTION TEST

The dynamic resolution test of the J-17 payload system was performed at the A/P facility on 10 November 1964. Each panoramic camera photographed high and low contrast resolution targets. The resulting through focus resolution data is shown in Figure 2-1 for the Master camera and in Figure 2-2 for the Slave camera.

[redacted]

J-17 TASC PAYLOAD CONSUMPTION

"A" MISSION Rev.	POT. Volts	POT. Cycles	CYCLE COUNTER Reading	CYCLE COUNTER Cycles
		Instrument #1		
Pre-TASC	4.85	2	1783	0
Conf.	4.65	44	1828	45
0	4.50	79	1873	90
1	4.35	121	1902	119
2	4.2	170	1958	175
2	4.05	222	2003	220
3	3.85	299	2095	312
4	3.7	366	2140	357
5	3.6	414	2197	414
5	3.4	514	2304	521
6	3.3	567	2344	561
7	3.2	619	2391	608
8	3.15	645	2429	646
8	3.1	672	2485	702
9	3.0	728	2516	733
10	2.95	757	2562	779
C & W			2566	783
		Instrument #2		
Pre-TASC	.05	4	2271	0
Conf.	.25	45	2316	45
0	.5	104	2361	90
1	.55	120	2390	119
2	.75	187	2449	178
2	.9	239	2495	224
3	1.1	317	2587	316
4	1.2	362	2633	362
5	1.35	433	2693	422
5	1.6	560	2800	529
6	1.65	587	2840	569
7	1.75	642	2887	616
8	1.8	671	2925	654
8	1.85	700	2966	695
9	1.9	729	2998	727
10	2.0	790	3044	773
C & W			3048	777

TABLE 2-2

"D" MISSION

Rev.	Pot. Reading	Cycles	C.C. Reading	Cycles
		Instrument #1		
0	.5	0	2566	0
1	.7	55	2616	50
2	.85	101	2672	106
2	1.0	154	2718	152
3	1.2	231	2811	245
4	1.3	273	2857	291
Post "D" Recovery	1.9	597	3159	593
		Instrument #2		
0	.5	1	3048	0
1	.7	56	3098	50
2	.85	100	3153	105
2	1.0	157	3200	152
3	1.2	237	3293	245
4	1.3	279	3339	291
Post "D" Recovery	1.9	587	3641	593

TABLE 2-3

AVERAGE INSTRUMENT TEMPERATURES

"A" MISSION

	Rev. 1	Rev. 10
Instrument #1	71	78
Instrument #2	76	88

"B" MISSION

	Rev. 1	Rev. 4
Instrument #1	86	75
Instrument #2	95	84

NOTE:

1) Temperature values corrected for self-heating per Table V.

2) Temperature values on the scan arms (T/S 11) were not included in the averages.

TABLE 2-3

VEHICLE 1607 PAYLOAD J-17 SELF HEATING TEST

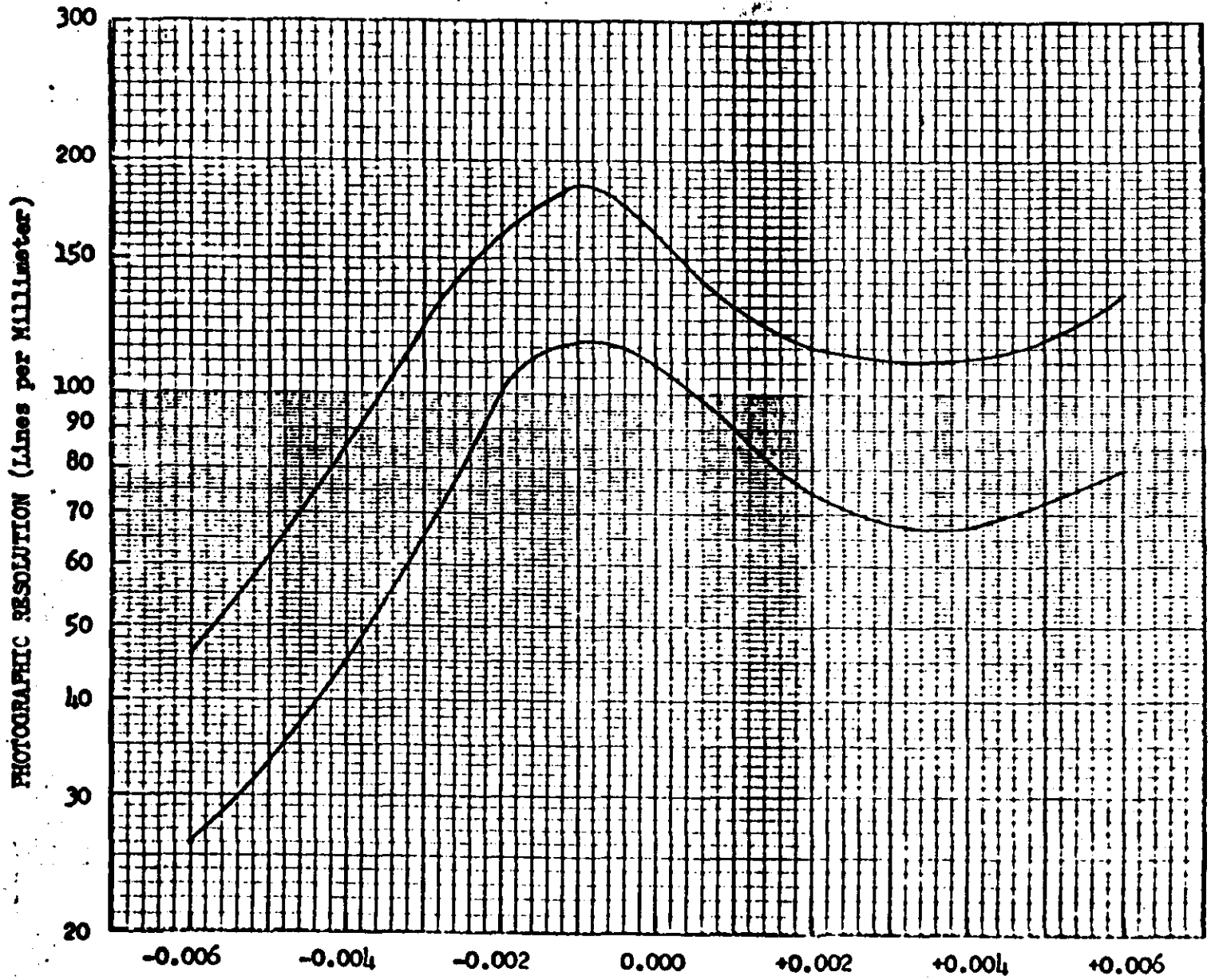
SUMMARY OF SELF HEATING CORRECTION CURVES

40 SS2 37 TC1 18 109 31 203 03 103 48 210 41 207 23 111
21 SS1 39 TC2 53 BAT 36 205 55 213 50 211
46 209 38 206 28 113
10 106 08 105 15 108
52 212 20 110
43 208 25 112
33 204
13 107
05 104

TIME	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO.
0.10	1.2	1.7	0.6	1.1	2.1	1.7	2.8	5.5	
0.13	1.3	1.7	0.7	1.2	2.3	1.9	3.2	4.2	
0.16	1.4	1.8	0.9	1.3	2.4	2.2	3.7	5.1	
0.20	1.5	1.8	1.1	1.5	2.6	2.5	4.2	6.2	
0.25	1.6	1.9	1.3	1.7	2.9	2.9	4.9	7.6	
0.32	1.8	1.9	1.6	1.9	3.2	3.4	5.8	9.4	
0.40	2.1	2.0	2.0	2.3	3.6	4.0	6.9	11.6	
0.50	2.4	2.1	2.5	2.7	4.2	4.9	8.3	14.4	
0.63	2.6	2.3	2.8	3.0	4.5	5.2	8.7	15.4	
0.79	2.8	2.5	3.1	3.3	4.8	5.7	9.3	16.5	
1.00	3.1	2.8	3.5	3.8	5.3	6.3	9.9	17.9	
1.26	3.3	3.0	3.8	4.1	5.6	6.7	10.3	18.7	
1.58	3.5	3.2	4.1	4.5	6.0	7.2	10.7	19.7	
2.00	3.8	3.5	4.5	4.9	6.5	7.8	11.3	21.0	
2.51	4.0	3.7	4.8	5.3	6.9	8.3	11.7	21.8	
3.16	4.2	4.0	5.1	5.7	7.3	8.8	12.2	22.7	
3.98	4.4	4.1	5.4	6.0	7.7	9.3	12.5	23.4	
5.01	4.6	4.4	5.7	6.4	8.2	9.8	13.0	24.3	
6.31	4.7	4.5	5.9	6.7	8.5	10.1	13.3	24.8	
7.94	4.8	4.7	6.1	7.0	8.8	10.6	13.8	25.3	
10.00	4.9	4.8	6.3	7.4	9.3	11.1	14.3	26.1	
12.59	4.9	4.9	6.4	7.5	9.5	11.3	14.5	26.3	
15.85	4.8	4.9	6.4	7.7	9.7	11.6	14.9	26.5	
19.95	4.7	4.9	6.5	7.9	10.0	12.0	15.3	26.8	
25.12	4.7	4.9	6.6	8.1	10.3	12.4	15.8	27.1	
31.62	4.6	4.9	6.6	8.3	10.7	12.8	16.4	27.4	
39.81	4.3	4.8	6.6	8.4	10.8	13.0	16.8	27.3	
50.12	4.0	4.7	6.4	8.4	11.0	13.3	17.3	27.3	
63.10	3.7	4.4	6.3	8.4	11.2	13.5	17.8	27.1	
79.43	3.3	4.2	6.0	8.3	11.3	13.6	18.3	26.8	
100.00	2.7	3.8	5.7	8.2	11.4	13.8	19.0	26.4	

TABLE 2-4

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 138

Payload No: J-17

Resolution (1/mm)

High Contrast: 185

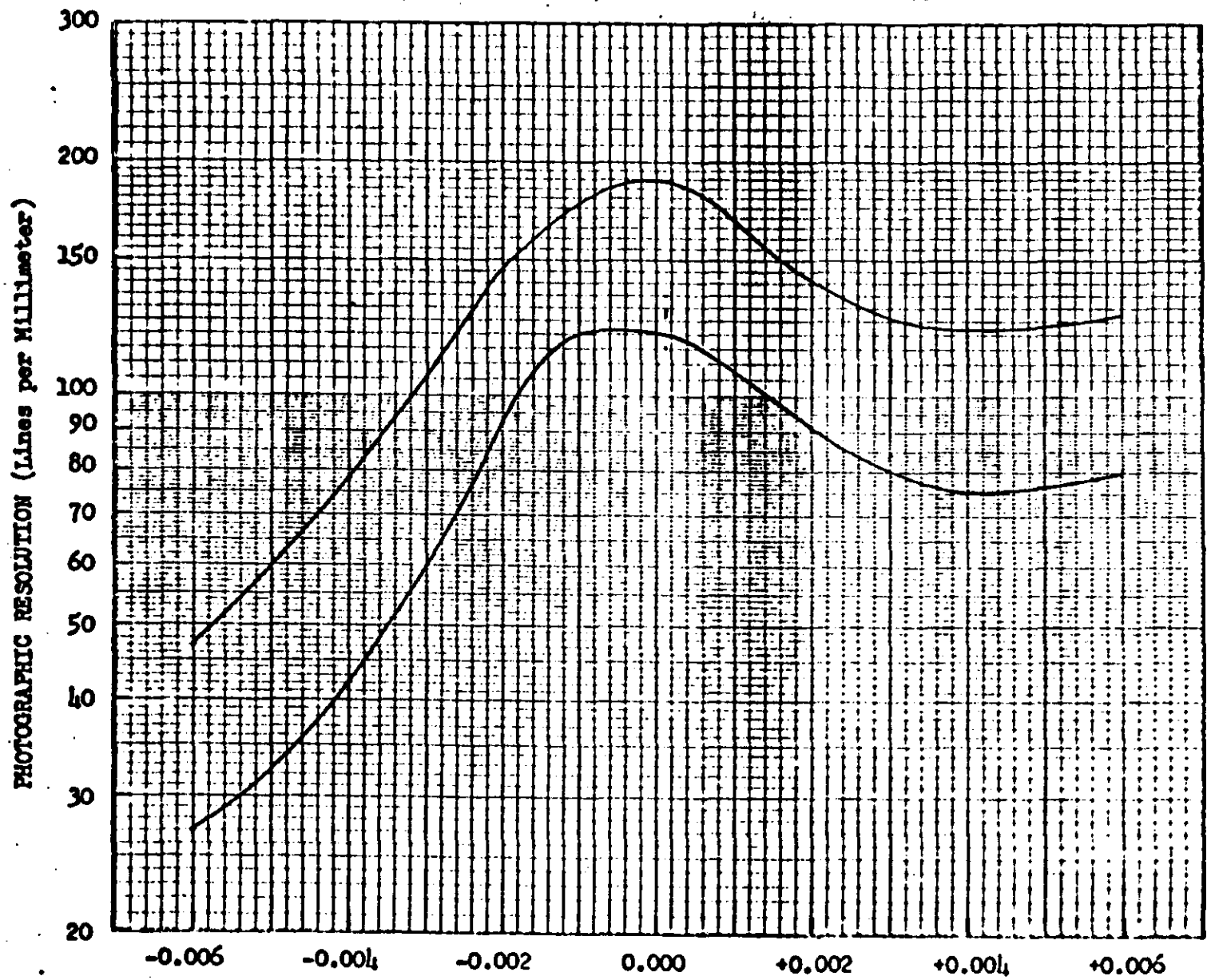
Low Contrast: 117

Film Type: 3404

Test Date: 11/10/64

FIGURE 2-1

PRE-FLIGHT DYNAMIC RESOLUTION



Camera No: 141

Payload No: J-17

Resolution (1/mm)

High Contrast: 139

Low Contrast: 121

Film Type: 3404

Test Date: 11/10/64

FIGURE 2-2

C. LIGHT LEAK TEST

The examination of the film threaded in the J-17 system during the light leak test determined that no film fogging was present. The light tight integrity of the system was considered acceptable for flight.

D. FLIGHT LOADING CERTIFICATION

The flight readiness test and final film loading operations were completed without incidence at VAFB. Film exhibits showed J-17 system to be acceptable for flight. All data recording was acceptable.

SECTION 3

FLIGHT OPERATIONS

A. SYSTEMS PERFORMANCE SUMMARY

The J-17 system performance was generally acceptable throughout the flight, which consisted of 5 days "A" operation; 3 days deactive; and 3 days "B" operations. The deactivate - reactivate capability was successfully used during 48 orbits following the "A" mission recovery.

Some difficulty was experienced in matching the V/h ramp to the orbit due to a low orbit perigee, and the instruments running up to 5% slower than nominal.

Other than the large cycle rate predicability error experienced the panoramic instrument operation was satisfactory.

Both Stellar/Index cameras operated satisfactorily as indicated by the shutter pulse and payload metering monitors on TLM.

The average instrument temperature environment decreased from 65 to 41°F during the eleven days (174 orbits) of both missions.

The clock performed satisfactorily. Good clock system time correlation was obtained throughout the flight.

The Pressure Make-up System (PMU) also performed satisfactorily throughout the flight.

Both "A" and "B" SRV units were recovered successfully. The "A" capsule was approximately 98% full and the "B" capsule was approximately 88% full at recovery. The impact points were down range approximately 50 miles for the "A" and 30 miles for the "B" from the predicted points.

B. INSTRUMENTATION AND COMMAND PERFORMANCE

The telemetry and command system performed satisfactorily throughout the flight. The events occuring during ascent are summarized as follows:

ASCENT SUMMARY

Event	Function	Remarks
Lift off		Normal
In-flight reset	Redundant door ejection, instrument standby power	All doors off O.K.
Ascent/Orbit Switchover	TLM Channel Switching	Channels switched O.K.
Energize continuity loop	Power to SRV continuity Monitor	Continuity O.K.

The cycle counters functioned properly. The payload consumption, as correlated with the counters agreed closely with the payload weight figures obtained after recovery of both buckets. The film footage pot data was reading low throughout the flight by approximately 100 cycles.

The deactivate/reactivate capability was used during the "B" mission and performed as expected.

The Agena vehicle was deactivated during Rev. 89, 12-25-64 and remained in this mode for 48 orbits. The vehicle was then successfully reactivated during Rev. 137, 12-28-64. All deactivate and reactivate functions performed normally. During the deactivate sequence the instruments operated for 5 cycles with the lens assembly stowing properly at shutdown.

C. THERMAL ENVIRONMENT

The temperatures monitored on TLM during the flight are listed on Table 3-1. Predicated and actual flight temperatures are compared in Figures 3-1 to 3-3.

Average instrument temperatures decreased approximately 24°F from orbit 9 to 174 due to normal orbit plane precession.

TABLE 3-1

J-17 TEMPERATURE SUMMARY

SENSOR	ORBITS ACQUIRED																
Master Camera	0	9	16	25	31	41	47	56	63	72	79	88	142	152	158	167	174
3	70	55	48	51	48	49	45	47	44	47	42	45	36	40	36	40	36
4	73	64	58	58	57	59	50	55	52	54	52	53	43	48	44	47	44
5	70	67	60	61	59	60	52	57	54	57	53	54	42	47	44	46	43
6	66	74	68	67	66	65	62	61	59	61	58	57	46	48	44	48	46
7	68	68	62	63	61	62	57	58	56	58	55	55	45	48	44	48	44
8	73	67	61	64	60	61	54	57	54	57	53	55	43	47	42	47	43
9	58	65	58	61	57	59	52	55	46	53	49	50	36	40	36	41	36
10	69	66	59	61	59	60	55	56	54	57	52	54	42	47	42	48	43
11 *	95	75	71	70	69	72	63	66	64	65	60	61	46	50	50	53	50
12	77	61	55	56	53	56	49	54	49	54	49	52	41	47	42	48	42
13	63	65	61	57	60	59	53	54	53	51	52	52	40	43	41	44	41
AVG		65	59	60	55	59	53	55	52	55	51	53	41	45	42	46	42
Slave Camera																	
3	66	68	60	62	59	62	53	57	51	55	48	50	32	38	32	38	32
4	71	68	58	61	56	60	53	57	51	53	48	55	34	40	35	40	35
5	68	63	55	56	55	55	49	55	48	53	48	50	35	40	37	41	37
6	66	58	53	53	53	51	48	50	47	50	46	47	36	40	36	41	39
7	65	64	58	58	57	52	52	55	51	55	49	51	39	43	38	45	40
8	69	61	53	54	54	56	48	53	47	52	46	49	34	39	35	40	36
9	-	55	47	50	48	51	44	47	43	47	41	45	31	38	32	39	35
10	68	64	58	59	57	55	54	56	51	54	50	52	40	44	39	44	40
11 *	92	58	53	51	50	56	49	51	49	50	47	46	34	38	36	38	35
12	71	67	61	62	56	62	51	57	49	56	47	51	32	39	32	40	34
13	75	61	58	54	57	59	52	54	53	53	51	50	40	42	41	43	41
AVG	-	62	56	57	55	56	50	54	49	53	47	50	35	40	36	41	37
Supply Spool																	
1	75	58	55	52	53	54	50	50	49	50	48	48	33	37	37	39	38
2	71	61	55	56	54	55	50	53	49	52	48	48	32	37	29	38	35

Note: All data corrected for self-heating, except injection.

* Not included in average

TABLE 3-1

J-17 TEMPERATURE SUMMARY

SENSOR	ORBITS ACQUIRED															
Fairing ("A") Barrel #1 ("B")	0	9	16	25	31	41	47	56	63	72	79	88	142	152	158	167	174
1		41	19	51	22	48	19	41	16	41	16	2	-5	2	-1	5	5
2		8	-5	11	-5	11	-8	8	-11	11	-8	9	-7	12	-1	16	6
3		6	2	6	-6	9	6	2	2	9	2	33	17	30	23	30	30
4	219	57	44	57	44	57	41	50	41	50	38	40	11	20	8	18	8
5	232	71	58	74	52	68	45	61	42	58	39	47	21	27	21	24	21
6	228	72	59	78	59	72	53	62	43	59	37	-	-	-			
Barrel #2																	
1	141	58	64	61	61	52	55	45	49	45	42	39	14	20	14	20	14
2	134	59	71	65	71	59	65	49	55	46	49	42	13	23	13	23	13
3	175	30	30	36	36	36	33	30	30	30	26	30	14	23	20	23	26
4	184	7	1	11	1	11	-3	11	-3	11	1	11	-3	14	4	17	11
5	178	97	15	15	15	18	11	15	12	15	12	12	2	12	5	15	8
Conic Adapter																	
1	156	62	56	66	53	59	46	53	43	49	36	40	10	23	10	20	10
Clock																	
1	97	65	61	61	58	63	56	61	54	61	54	56	41	50	45	50	43
2	93	63	56	58	56	61	52	56	52	56	54	54	39	46	39	48	41
Thrust Cone "A" To "B" SRV																	
1	84	44	39	41	38	41	37	39	33	39	33	50	42	41	40	46	39
2	109	59	52	54	48	50	40	46	41	45	41	53	44	44	44	44	49
Stellar/Index "A" to "B"																	
1	88	73	63	66	63	66	60	63	57	57	57	57	44	48	44	48	44
2	75	62	59	56	59	59	52	56	49	52	49	54	44	44	44	47	44
Recovery Battery "B" SRV																	
1	77	76	74	66	70	69	68	66	67	65	64	96	88	84	98	84	86
Master Cassette "A" SRV																	
2	95	69	63	55	61	60	60	59	60	61	59	-	-	-	-	-	-

Note: Only thrust cone data corrected for self-heating

J-17 PREDICTED AND ACTUAL TEMPERATURE

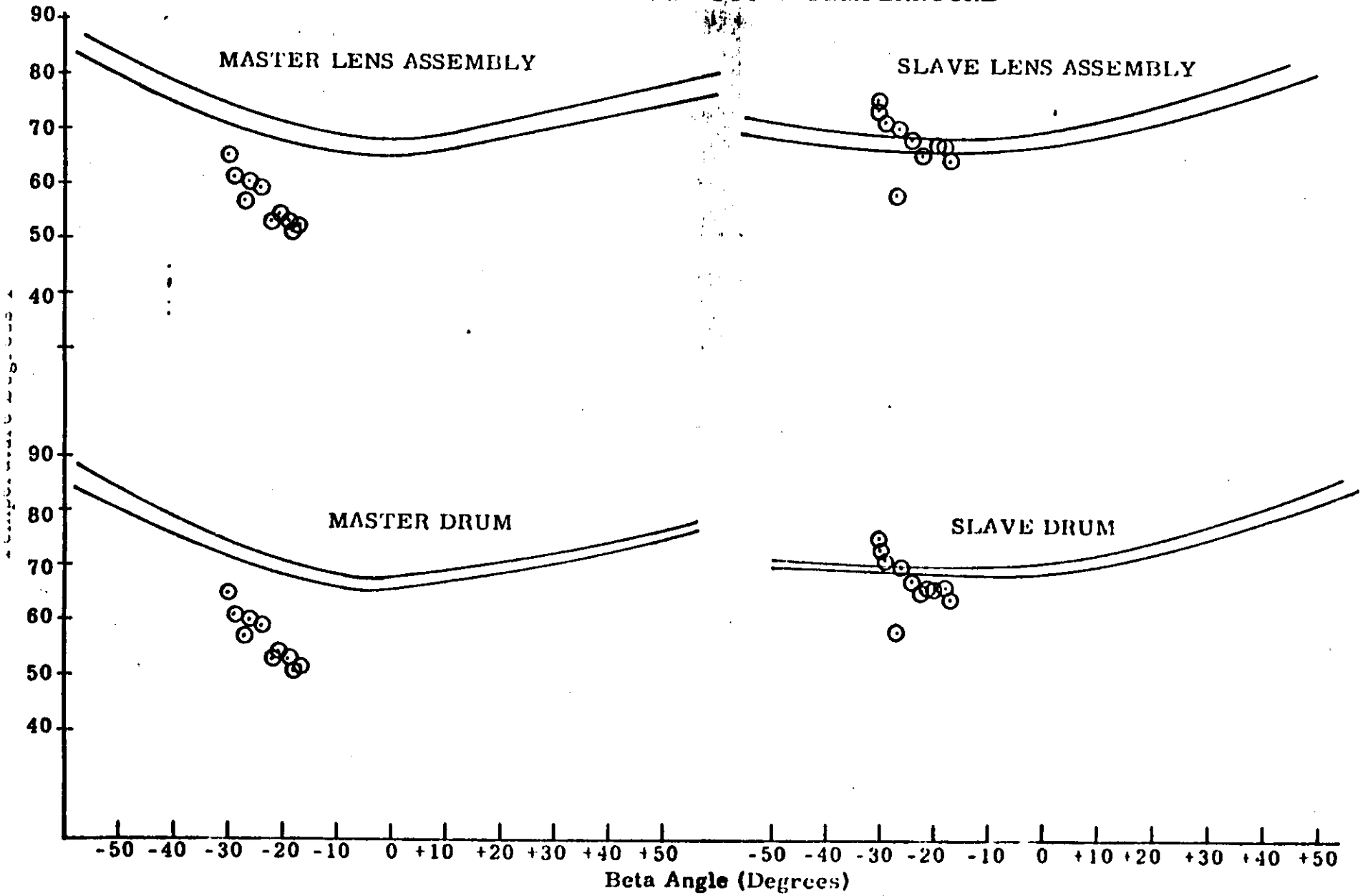
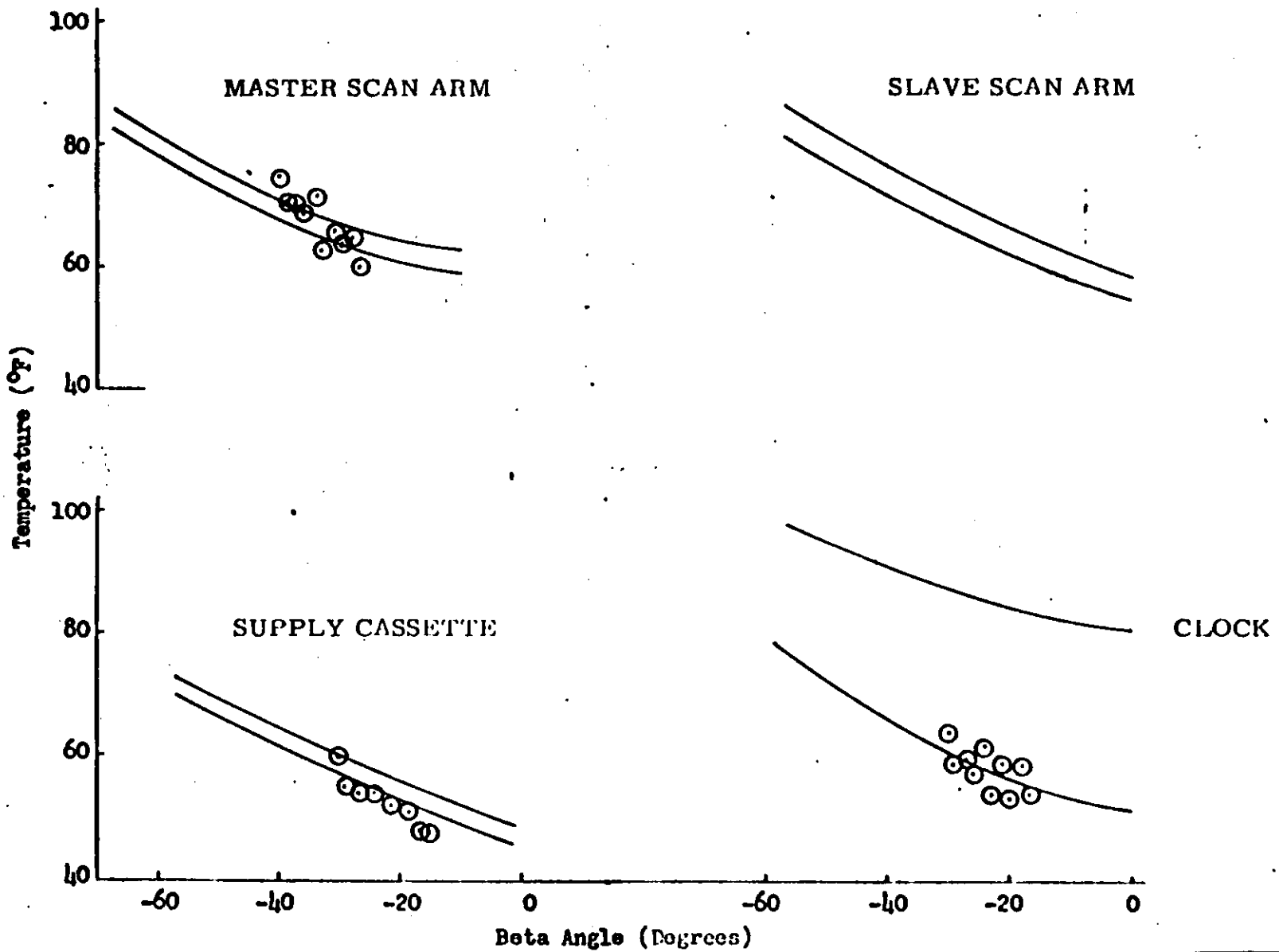


FIGURE 3-1

J-17 PREDICTED AND ACTUAL TEMPERATURE



[redacted]

J-17 PREDICTED AND ACTUAL TEMPERATURE

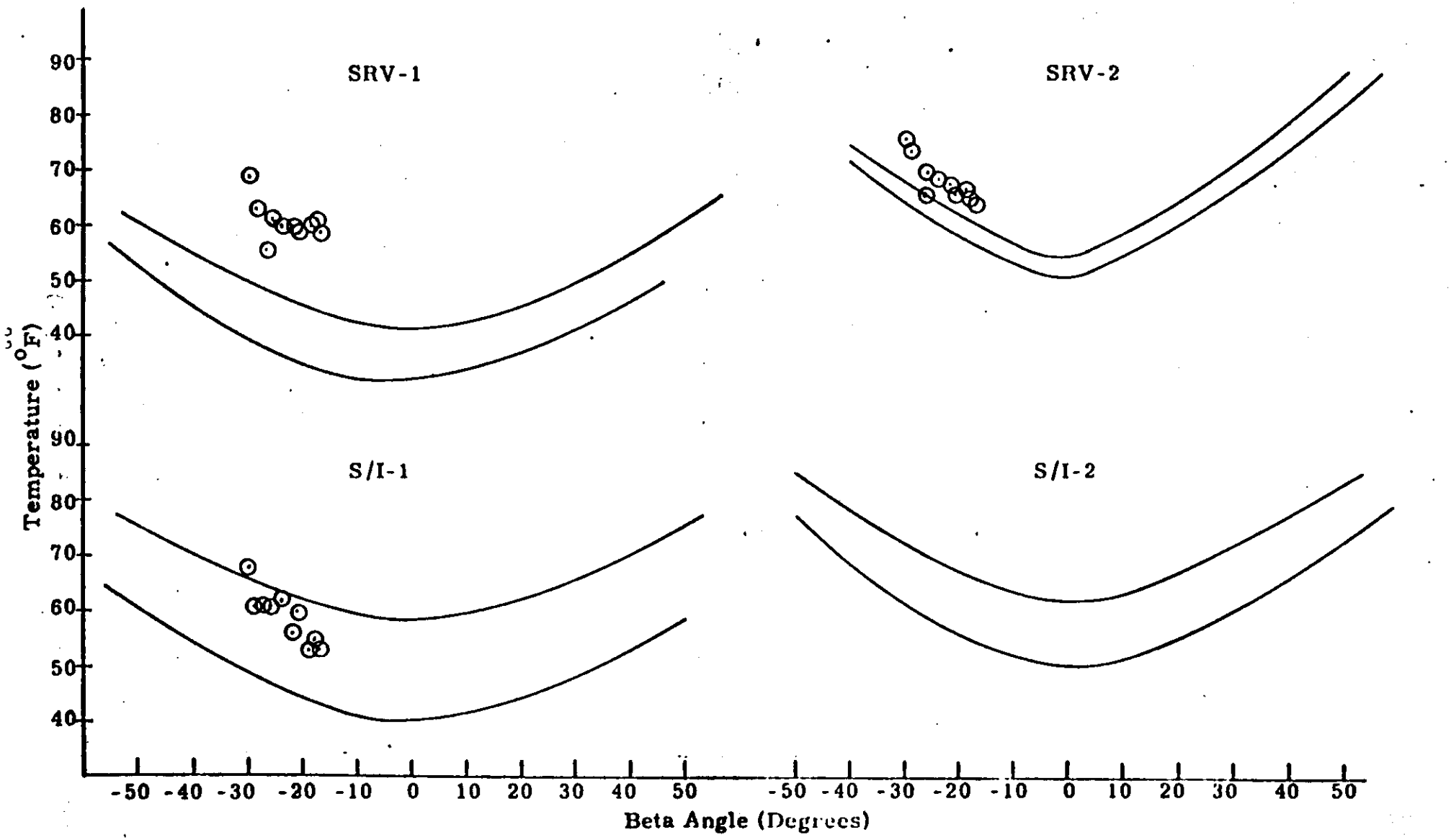


FIGURE 3-3

D. CLOCK PERFORMANCE

Satisfactory clock correlation was obtained for both active periods.

Table 3-2 contains clock/system time correlation data for the flight before and after the deactive period, respectively. The smoothed system time values are computed from the equation $y = A_2 x^2 + A_1 x + A_0$, where y = smoothed system time and x = clock time. The data from both portions of the flight were best fitted to this second order equation. The coefficients A_0, A_1 and A_2 are included on Table 3-2.

E. STELLAR/INDEX CAMERA PERFORMANCE

Normal payload metering was observed on TLM for both the "A" and "B" S/I cameras during all of the operations listed in Table 1. Metering ratios were 7/3, 8/3 for the "A" S/I and 7/4, 8/2 for the "B" S/I.

The shutter pulse was observed at the proper sequence for all day-time operations over [redacted] tracking station. These occurred during orbits 16, 31, 47, 63, 79, 142 and 174.

F. PANORAMIC CAMERA PERFORMANCE

Instrument operations were observed on the orbits listed in Table 3-3. TLM monitors for center-of-format, lens rotation and payload movement indicated smooth instrument dynamics and film movement during each of the operations observed.

Table 3-3 contains cycle period data of the operations observed on TLM. The instruments ran consistently slower than predicted throughout the flight. Ramp settings were changed several times during the flight to compensate for the discrepancies in cycle rate predicability errors which ran as high as 5%. The difference in operating rates between the instruments was within $\pm$ 1%.

Cycle rate predicability established from environmental test data was $\pm$ 2%, obtained when the J-17 system consisted of instruments 138 and 139. The slave instrument 139 was then replaced with instrument 141 which was part of the M-27 system. The separate Mag. Amp. calibrations from 138 and 141 were combined to obtain the cycle rate data used for matching the system with the flight orbit. These two instruments were not recalibrated as a system which probably accounts, in part, for the differences in cycle rate

CLOCK/SYSTEM TIME CORRELATION

PAYLOAD J-17 MISSIONS 1015-1 TIME CORRELATION

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
37345.257	102153.10490	37345.26380	-0.00564	9	1
76952.907	141760.76090	76952.90970	-0.00180	16	1
37526.884	188734.74490	37526.88180	0.00311	25	1
72101.597	223309.46590	72101.59410	0.00388	31	1
38229.084	275836.96690	38229.08180	0.00320	41	1
72574.358	310182.25090	72574.35700	0.00190	47	1
33457.124	357465.02990	33457.12410	0.00089	56	1
73025.176	397033.09590	73025.18000	-0.00308	63	1
33482.972	443890.89890	33482.97110	0.00180	72	1
73391.545	483799.48790	73391.55000	-0.00408	79	1

A0=-0.64807815260 05 A1= 0.999999746690 00

SIGMA=0.00310 NO. POINTS= 10

RATIO OF CLOCK TIME TO SYS TIME= 0.100000025353D 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
37345.257	102153.10490	37345.25960	-0.00166	9	1
76952.907	141760.76090	76952.90820	-0.00026	16	1
37526.884	188734.74490	37526.88260	0.00231	25	1
72101.597	223309.46590	72101.59500	0.00191	31	1
38229.084	275836.96690	38229.08460	0.00034	41	1
72574.358	310182.25090	72574.35990	-0.00096	47	1
33457.124	357465.02990	33457.12520	-0.00122	56	1
73025.176	397033.09590	73025.18080	-0.00388	63	1
33482.972	443890.89890	33482.96960	0.00333	72	1
73391.545	483799.48790	73391.54580	0.00010	79	1

A0=-0.64807829070 05 A1= 0.999999360638D 00
A2=-0.1948717952232D-12

SIGMA=0.00192 NO. POINTS= 10

TABLE 3-2

CLOCK/SYSTEM TIME CORRELATION

PAYLOAD J-17 MISSIONS 1015-2 TIME CORRELATION

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
69301.082	47947.79890	69301.08350	-0.00058	142	1
35453.016	100499.74490	35453.01360	0.00331	152	1
69484.506	134531.25190	69484.51030	-0.00339	158	1
30219.562	181666.31890	30219.56310	-0.00013	167	1
69659.462	221106.22990	69659.46220	0.00079	174	1

A0= 0.21353299080 05 A1= 0.9999996975250 00

SIGMA=0.00198 NO. POINTS= 5

RATIO OF CLOCK TIME TO SYS TIME= 0.1000000302480 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
69301.082	47947.79890	69301.08390	-0.00097	142	1
35453.016	100499.74490	35453.01340	0.00355	152	1
69484.506	134531.25190	69484.51000	-0.00302	158	1
30219.562	181666.31890	30219.56290	0.00002	167	1
69659.462	221106.22990	69659.46250	0.00042	174	1

A0= 0.21353300550 05 A1= 0.9999996704160 00
A2= 0.10040697893380-12

SIGMA=0.00196 NO. POINTS= 5

TABLE 3-2

J-17/1607 FLIGHT CYCLE RATE DATA INST. 133/141 3640

REV/MOD	RAMP	T.U.R.	INST 133 ACT.	INST 133 NOM.	INST 133 DEV.	INST 141 ACT.	INST 141 NOM.	INST 141 DEV.	133/141 DIFF.
1 A	7 5	1421	2.562	2.553	-0.37	2.578	2.520	-2.29	0.62
9 A	7 5	182	4.796	4.769	-0.56	4.832	4.743	-1.89	0.75
16 A	7 5	1683	2.360	2.318	-1.82	2.380	2.292	-3.84	0.85
31 A	7 4	1806	2.260	2.213	-2.12	2.275	2.186	-3.97	0.66
47 A	7 4	1046	2.268	2.212	-2.53	2.272	2.185	-3.93	0.18
56 A	6 4	298	4.624	4.567	-1.25	4.648	4.535	-2.50	0.52
63 A	6 4	1034	2.250	2.206	-2.02	2.260	2.180	-3.67	0.44
72 A	6 4	338	4.705	4.503	-4.49	4.710	4.469	-5.39	0.11
79 A	6 4	1792	2.246	2.207	-1.78	2.251	2.181	-3.22	0.22
88 B	6 4	346	4.566	4.489	-1.70	4.570	4.455	-2.58	0.09
142 B	4 5	1909	2.240	2.197	-1.95	2.240	2.173	-3.06	-0.
152 B	4 5	491	3.840	3.736	-2.79	3.835	3.691	-3.91	-0.13
167 B	4 5	533	3.768	3.670	-2.67	3.768	3.625	-3.95	-0.
174 B	4 5	2132	2.250	2.201	-2.22	2.245	2.177	-3.14	-0.22

DEV. AND DIFF. ARE IN PERCENT
THE (-) SIGN INDICATES THAT THE INST IS SLOWER THAN PREDICTED OR THAT INST 1 IS SLOWER THAN INST 2

TABLE 3-3

predictability between the environmental test and flight operations.

Payload consumption for the flight was as follows:

"A" MISSION

	Master	Slave
Cycles	2949	2908
Feet	7800	7692

"B" MISSION

Cycles	2660	2650
Feet	7036	7009

G. PRESSURE MAKE-UP SYSTEM PERFORMANCE

The PMU system operated satisfactorily throughout both missions of the flight.

The supply pressure history for the PMU system is shown on Figure 3-4, where the supply pressure decay is plotted as a function of total instrument operate time. The pressure values plotted were obtained from [redacted] acquisitions.

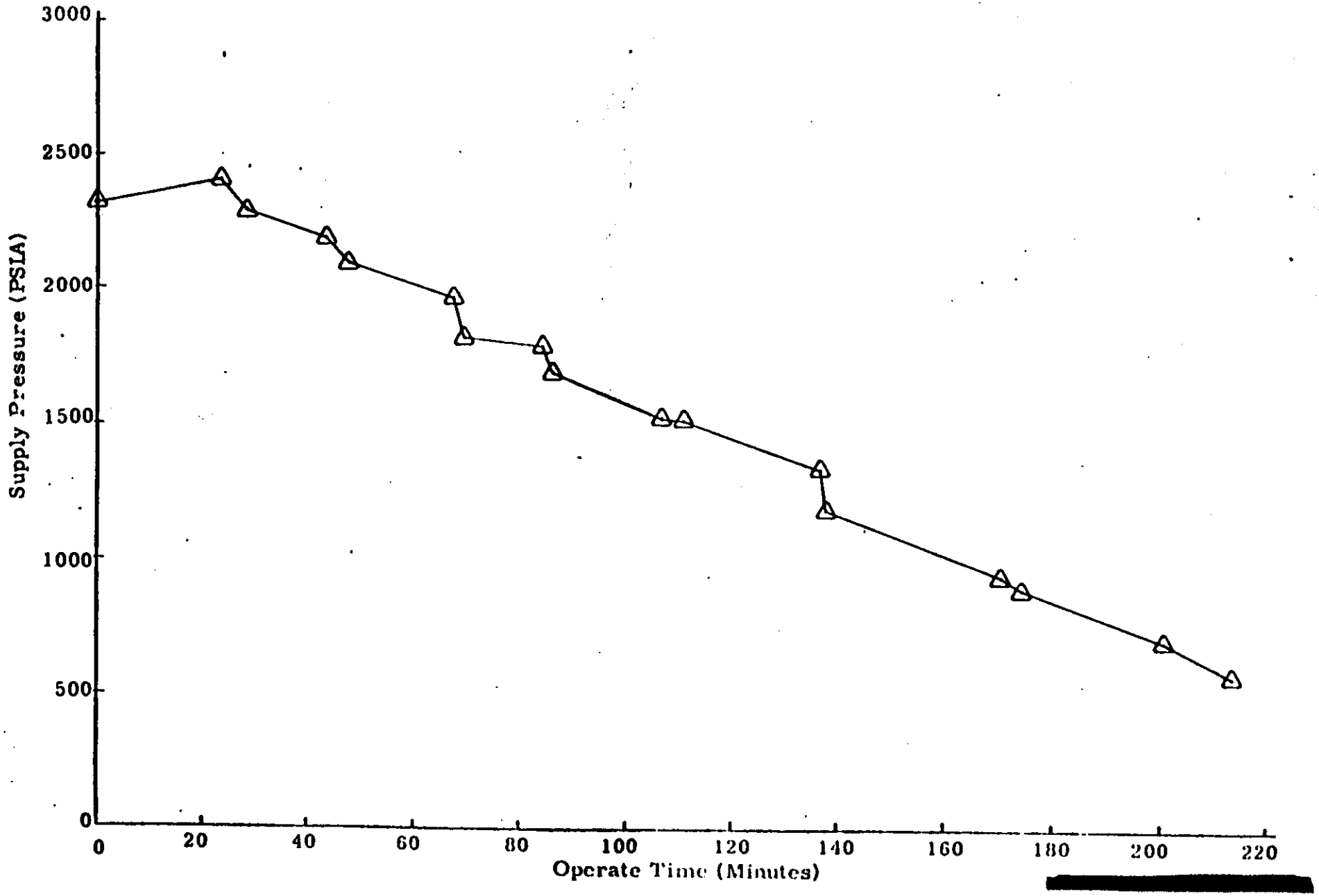
The irregular slope of the curve indicates that gas is passing through the PMU system when the instruments are inoperative.

H. FMC MATCH

Early in the flight it was discovered that the instruments were cycling approximately 3% slow when the V/h ramp was not on the limiter. It was also determined that the limiter was imposing a maximum cycle rate 2% lower than nominally calibrated.

The error imposed by the limiter could not be compensated, but it was determined that the 3% slow cycle rate error could be compensated for by

J-17 PRESSURE MAKE-UP SUPPLY CONSUMPTION



[redacted]

stepping to a reference level one higher than nominal calibration data indicated. This was done by switching to R-6, A-4 when nominal calibration data indicated ramp R-7, A-4 was necessary to match the orbit.

Due to perigee being below nominal, the greatest part of the photography was taken in the area in which the limiter was active. This area yielded indicated V/h errors up to 4% at perigee due to the limiter while areas not in the limiter experienced approximately 1% to 2% mismatch.

SECTION 4

MISSION 1015-1 RECOVERY SYSTEM

SRV #662 was received at A/P on 17 February 1964. The receiving weight was 150.04 pounds. After modifications and incorporation of outstanding Engineering Orders, the SRV was delivered to Systems Test for incorporation into the J-17 system.

The recovery system was shipped to VAFB on 16 November 1964.

A successful air catch was made during orbit 81 on 24 December 1964. The impact point was approximately 50 miles down range from the predicted point. Table 4-1 lists the available telemetry data on the sequence of recovery events.

The condition of the recovered capsule was satisfactory with damage limited to normal paint blistering.

MISSION 1015-1
RECOVERY SEQUENCE OF EVENTS

Event	Delta Time (Seconds) Actual	Nominal Events ± ΔT
Transfer	-	- -
Electrical Disconnect	1.14	0.900 + 0.430 - 0.400
* Separation	2.00	2.0 ± 0.250
** Spin	3.40	3.4 ± 0.30
Retro	7.60	7.55 ± 0.45
Despin	10.75	10.75 ± 0.54
T/C Separation	1.47	1.5 ± 0.15
Parachute Cover Off	34.20	34.0 ± 1.5
Drogue Chute Deployed	0.65	0.63 + .08 - .06
Main Chute Bag Separate	10.28	10.14 + .48 - .40
Main Chute Deployed	0.50	0.52 + 0.13 - 0.12
Main Chute Disreefed	4.60	4.46 + .49 - .29

* From Transfer
** From Electrical Disconnect

Spin Rate: 64.5 RPM
Despin Rate: N/A
Retro Velocities: 1024 Ft/Sec.

N/A: Not Avaialble

TABLE 4-1

SECTION 5

MISSION 1015-2 RECOVERY SYSTEM

SRV #663 was received at A/P on 10 June 1964. The receiving weight was 152.61 lbs. After modifications and incorporation of outstanding E.O's the SRV was delivered to systems test for incorporation into the J-17 System.

The capsule was shipped to VAFB on 16 November 1964.

The "B" SRV recovery system was successfully air recovered during orbit 175 on 30 December 1964. The available data for the re-entry events is listed in Table 5-1. The impact point was within tolerance for this recovery.

The "B" SRV system was recovered one day early due to the questionable state of the pyro battery. An unexplained current draw was experienced during orbits 144 and 169. This condition prompted the decision to recover before the unregulated supply dropped to the level where the pyro battery would be required for the recovery events.

The recovery bucket damage was limited to the normal paint blistering.

MISSION 1015-2
RECOVERY SEQUENCE OF EVENTS

Event	Delta Time (Seconds) Actual	Nominal Events + △T
Transfer	-	- -
Electrical Disconnect	N/A	0.900 $^{+0.430}_{-0.400}$
* Separation	N/A	2.0 ± 0.250
** Spin	N/A	3.4 ± 0.30
Retro	N/A	7.55 ± 0.45
Despin	N/A	10.75 ± 0.54
T/C Separation	N/A	1.5 ± 0.15
Parachute Cover Off	**33.83**	**34.0 ± 1.5**
Drogue Chute Deployed	0.59	0.63 $^{+.08}_{-.06}$
Main Chute Bag Separate	10.21	10.14 $^{+.48}_{-.40}$
Main Chute Deployed	0.59	0.52 $^{+.13}_{-.12}$
Main Chute Disreefed	4.48	4.46 $^{+.49}_{-.39}$

* From Transfer
** From Electrical Disconnect

Spin Rate: N/A
Despin Rate: N/A
Retro Velocity: N/A

No T/M Data available for Unit #2 Retro events.

TABLE 5-1

SECTION 6

MASTER PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	138
Main Camera Lens	1152435
Supply Horizon Camera	165B
Supply Horizon Camera Lens	813558
Take-up Horizon Camera	165A
Take-up Horizon Camera Lens	813525
Supply Cassette	SC-22

B. CAMERA DATA AND FLIGHT SETTINGS

Main Camera:

Lens	24" f/3.5
Slit Width	0.250
Filter Type	Wratten 25
Film Type	Eastman Type 4404

Supply (Port) Horizon Camera:

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

Take-up (Starboard) Horizon Camera:

Lens	55 mm f/6.8
Aperture Setting	f/3.0
Exposure Time	1/100 second
Filter Type	Wratten 25

C. POST FLIGHT PERFORMANCE EVALUATION

The camera produced 2690 frames of panoramic photography during Mission 1015-1 and 2664 frames during Mission 1015-2. The aggregate in-flight frame count from telemetry data agreed exactly with the post-flight frame count. The overall photographic quality was judged to be similar to Mission 1014. There was no variation in the quality of the photography produced during Mission 1015-1 and 1015-2 hence the temperature variations experienced during flight had no apparent affect on camera performance.

The information content of the photography was considered excellent by the photo interpreters. They felt that the quality was comparable to Mission 1006, considering the climatic variations, and that the Master camera photography was, in general, slightly superior to the Slave camera photography.

There were some minor light leaks in the first and last few frames of photography during most passes. The only light leak considered degrading was on the film sitting between the camera and the take-up during the three day deactivate period. There was no observed fogging from dendritic static or corona discharge.

The 200 cycle time track was clearly defined and imaged outside of the active format. The extended pulse denoting Stellar-Index camera exposure was approximately five inches long. This length is considered excessive as too many time track bits are unusable for the restoration of time of photography of discrete ground areas.

The horizon cameras and associated fiducials operated normally throughout both missions. Some under exposure was observed in both cameras as a result of operations at or near the day - night line.

The binary data block, camera serial number and end-of-pass lamps operated normally throughout the mission. No data block lamp failures were noted. The data block time word did show that the two panoramic cameras were approximately 500 milliseconds out of synchronization at the start of Mission 1015-1. The time word was not present in frame 102 of pass D147; a total of 106 frames were exposed during the operation. The cause of this drop-out is not known.

SECTION 7

SLAVE PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	141
Main Camera Lens	1182435
Supply Horizon Camera	155B
Supply Horizon Camera Lens	813534
Take-up Horizon Camera	150A
Take-up Horizon Camera Lens	813526
Supply Cassette	SC-22

B. CAMERA DATA AND FLIGHT SETTINGS

Main Camera:

Lens	24" f/3.5
Slit Width	0.175
Filter Type	Wratten 21
Film Type	Eastman Type 4404

Supply (Starboard) Horizon Camera:

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

Take-up (Port) Horizon Camera:

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

C. POST FLIGHT PERFORMANCE EVALUATION

The camera exposed 2690 frames of photography during Mission 1015-1 and 2654 frames during Mission 1015-2. The in-flight frame count was the same as the post-flight total.

The photographic image quality and information content was essentially identical to the Master camera however, as was previously noted, a general preference existed for the Master camera photography. It is of interest to note that the MIP frame for both missions was selected from the Slave camera photography.

Minor image degradation was caused by a small soft area at the supply end, data block edge of all frames after pass D06. The soft area was present but to a lesser degree during Mission 1015-2. The film also showed that the platen rails had severely scratched the emulsion outside of the active format. It is postulated that the resulting emulsion buildup on the ends of the rails produced a film lift greater than the lift of the scan head rollers and thus causing the out of focus area. A study has been proposed by the Customer to correlate the soft spots in all prior missions to observed system anomalies to determine if a trend can be found.

Density banding was observed near the start of scan on all frames. This anomaly had no affect on the image quality however it does indicate non-uniform scan arm velocity which may or may not have been in conjunction with non-uniform lens rotation. Further study will be made when the engineering photography is distributed.

The 200 cycle time track, horizon cameras and binary data block operation was normal throughout both missions with the exception of the absence of the time word on frame 27 of pass D167. The Slave camera contained the old type data block therefore the dot sizes were not as uniform as those produced in the Master camera.

SECTION 8

PANORAMIC CAMERA EXPOSURE

The Master camera contained a 0.250 inch wide slit and a Wratten 25 filter while the Slave camera contained a 0.175 inch wide slit and a Wratten 21 filter. These conditions place the nominal exposure between the intermediate and full level processing curves as published by [redacted] for 4404 emulsion.

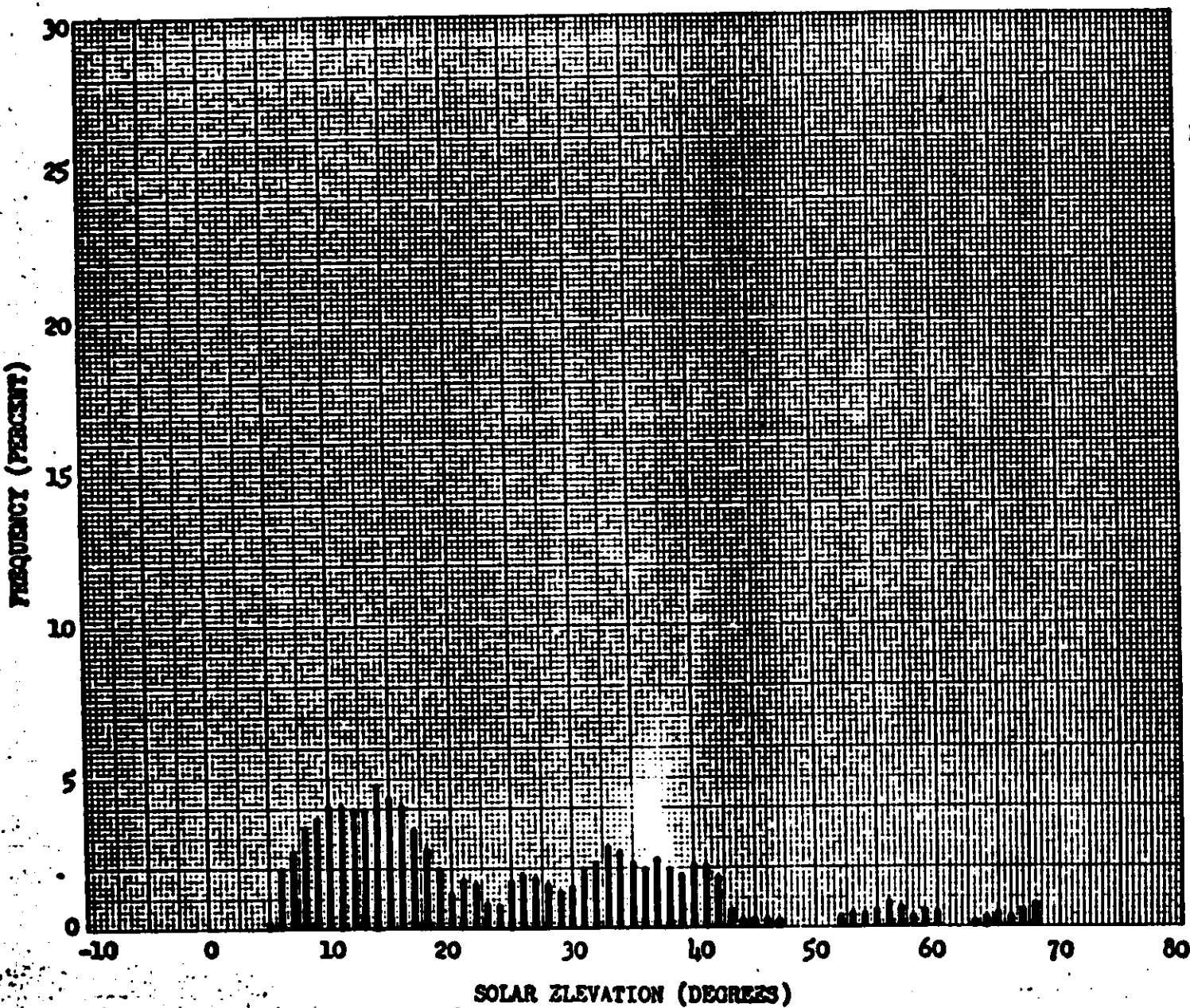
The frequency distributions of the solar elevations and solar azimuths encountered during the photographic operations are shown in Figures 8-1 to 8-4.

The nominal exposure times are shown as a function of latitude for passes D-8, D-80, and D-169 in Figures 8-5 to 8-10. The predicted level of processing for the original negative is based on the in-flight preformance estimate and is tabulated below with the processing levels reported by [redacted]

Mission	Camera		Primary	Intermediate	Full
1015-1	FWD	Predicted	0	8	92
		Reported	2	2	96
1015-1	AFT	Predicted	0	30	70
		Reported	0	5	95
1015-2	FWD	Predicted	0	10	90
		Reported	0	10	90
1015-2	AFT	Predicted	0	21	79
		Reported	0	9	91

An analysis was conducted independently by the evaluation team and photo interpreters to determine the solar elevation at which the image quality was reduced by underexposure. Both groups agreed that quality was adversely affected at solar elevations of 8 degrees or less by the reduction of contrast resulting from underexposure.

SOLAR ELEVATION FREQUENCY DISTRIBUTION



Mission No: 1015-1

Payload No: J-17

Camera No: 138

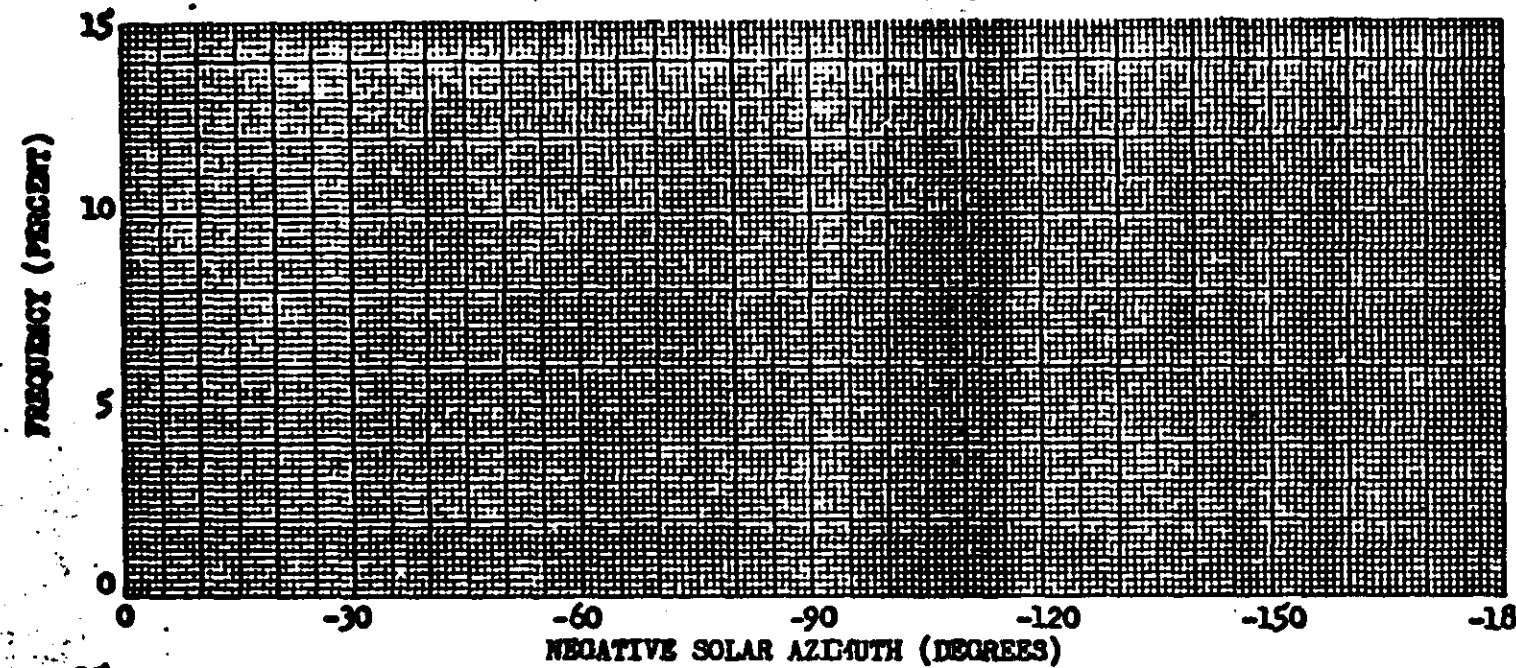
Launch Date: 12/19/64

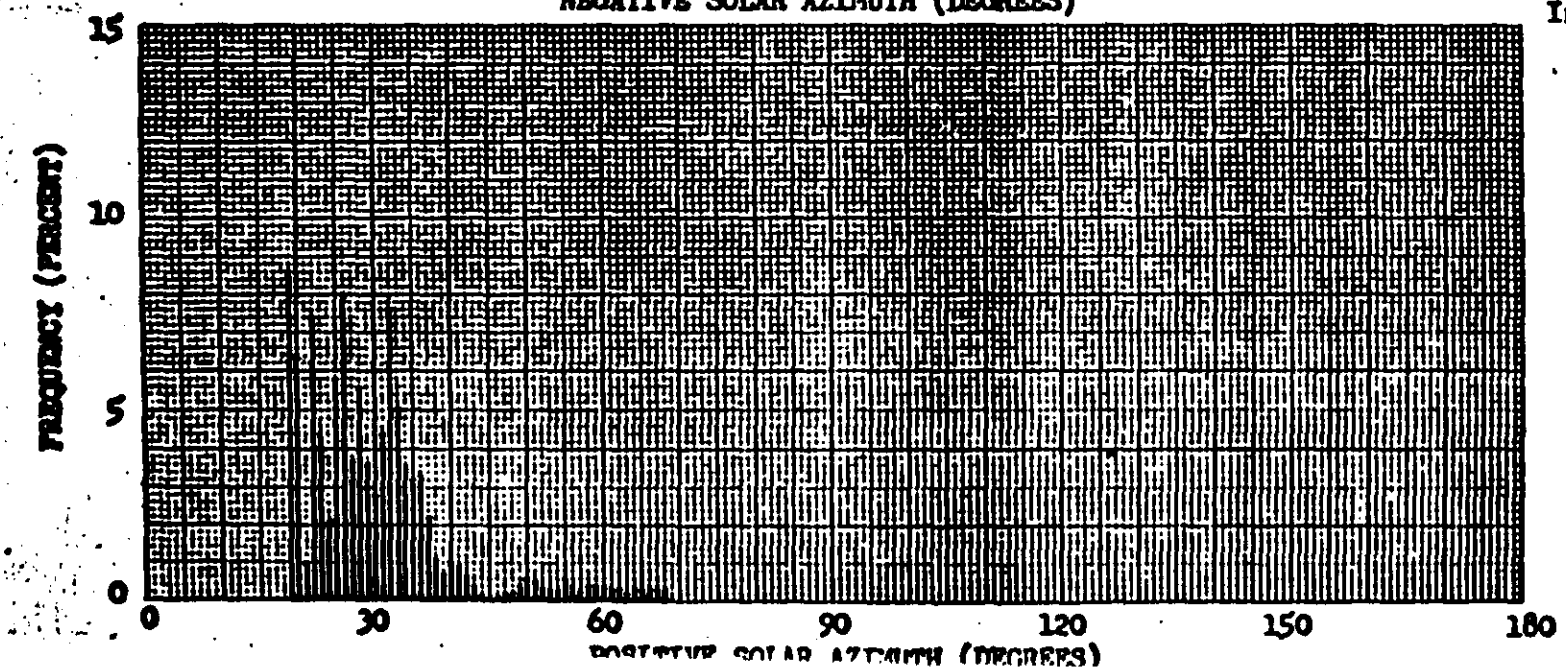
Launch Time: 2210 Z

Inclination: 75°

FIGURE 8-11

SOLAR AZIMUTH FREQUENCY DISTRIBUTION





Mission No: 1015-1

Payload No: J-17

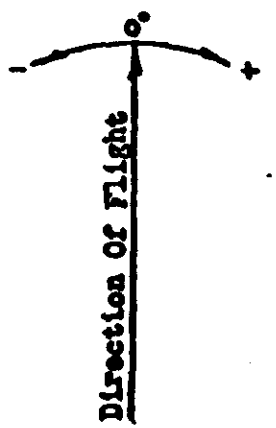
Camera No: 138

Launch Date: 12/19/64

Launch Time: 2110 Z

Inclination: 75°

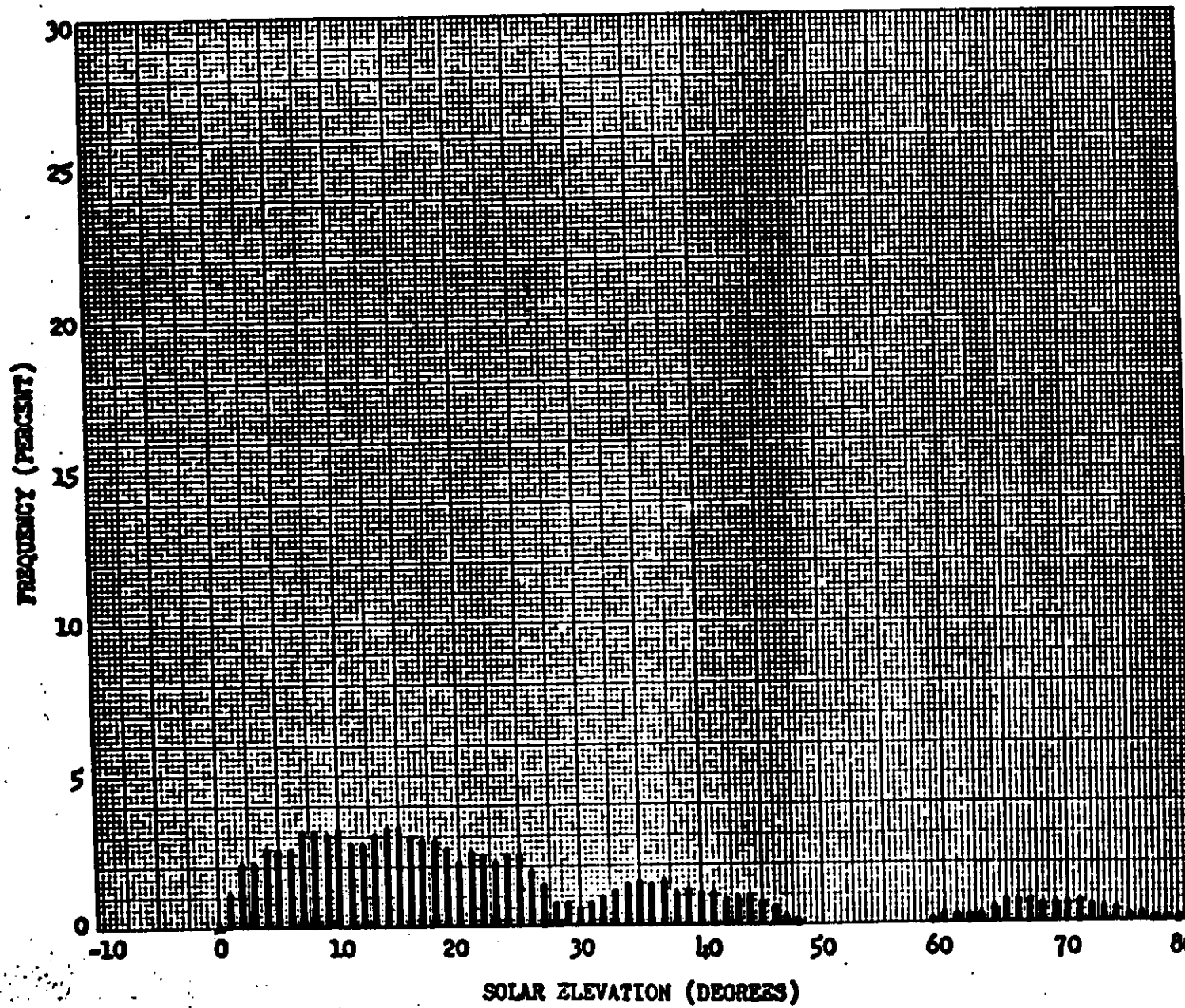
SIGN NOTATION



[redacted]

TOP SECRET [redacted]

SOLAR ELEVATION FREQUENCY DISTRIBUTION



Mission No: 1015-2

Payload No: J-17

Camera No: 138

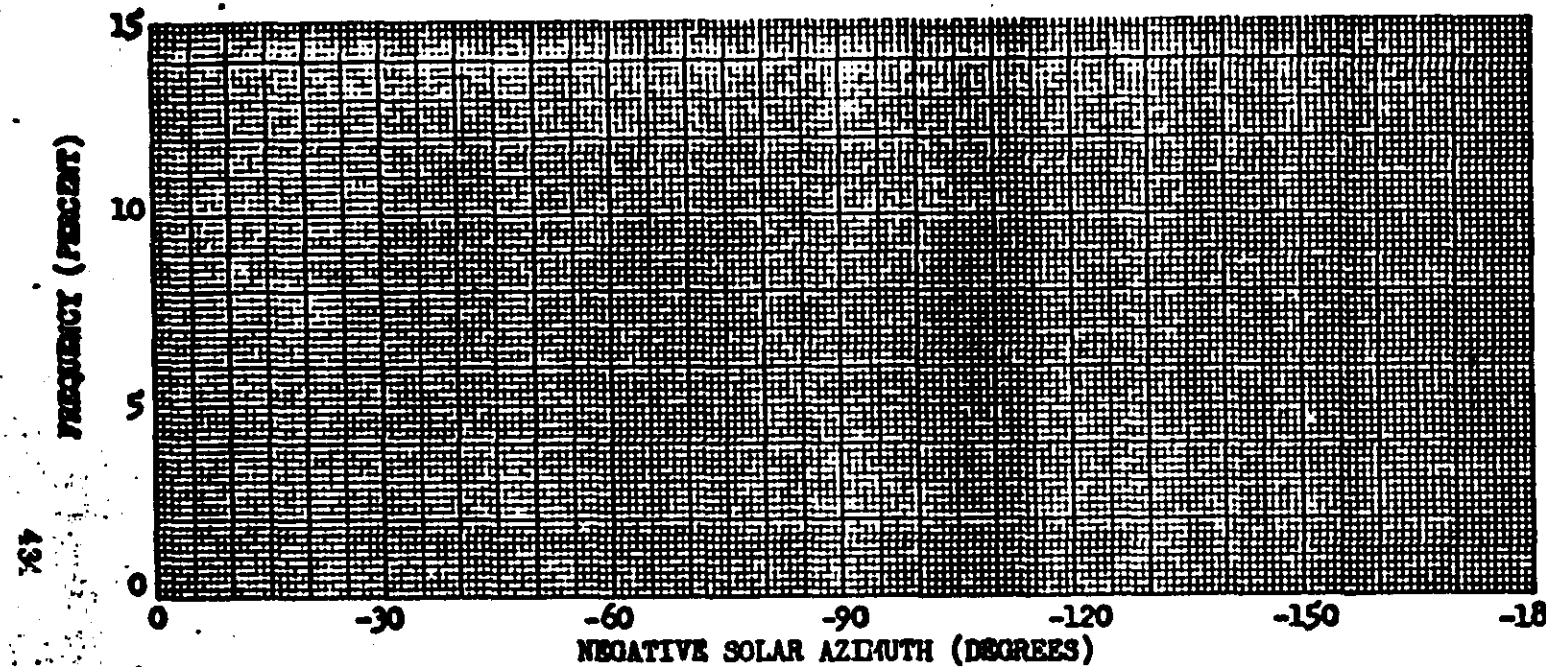
Launch Date: 12/19/64

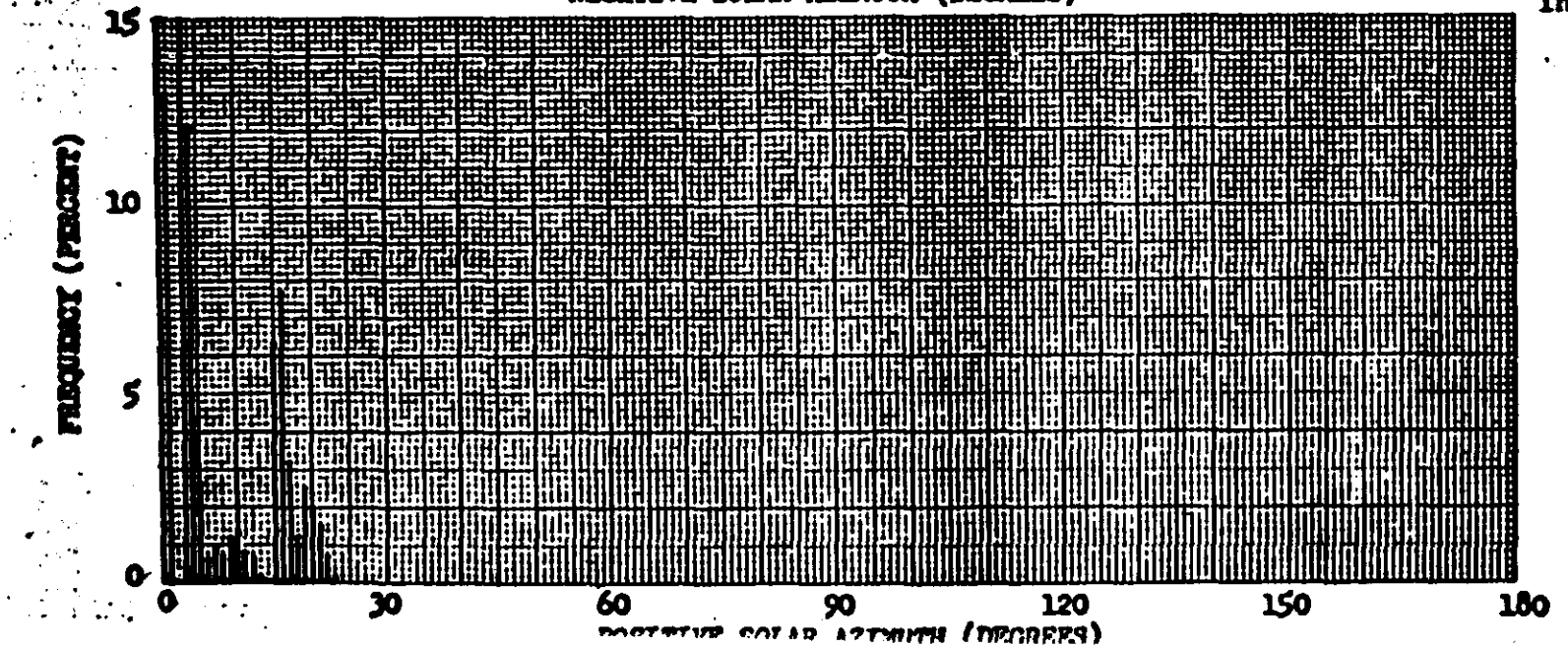
Launch Time: 2110 Z

Inclination: 75°

TOP SECRET [redacted]

SOLAR AZIMUTH FREQUENCY DISTRIBUTION





Mission No: 1015-2

Payload No: J-17

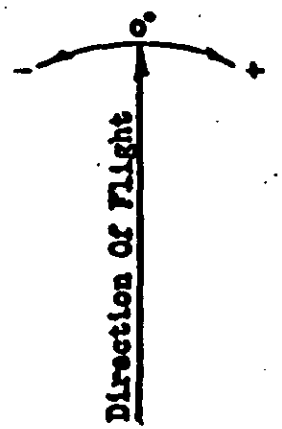
Camera No: 138

Launch Date: 12/19/64

Launch Time: 2110 Z

Inclination: 75°

SIGN NOTATION



[redacted]

~~TOP SECRET~~ [redacted]

EXPOSURE POINTS

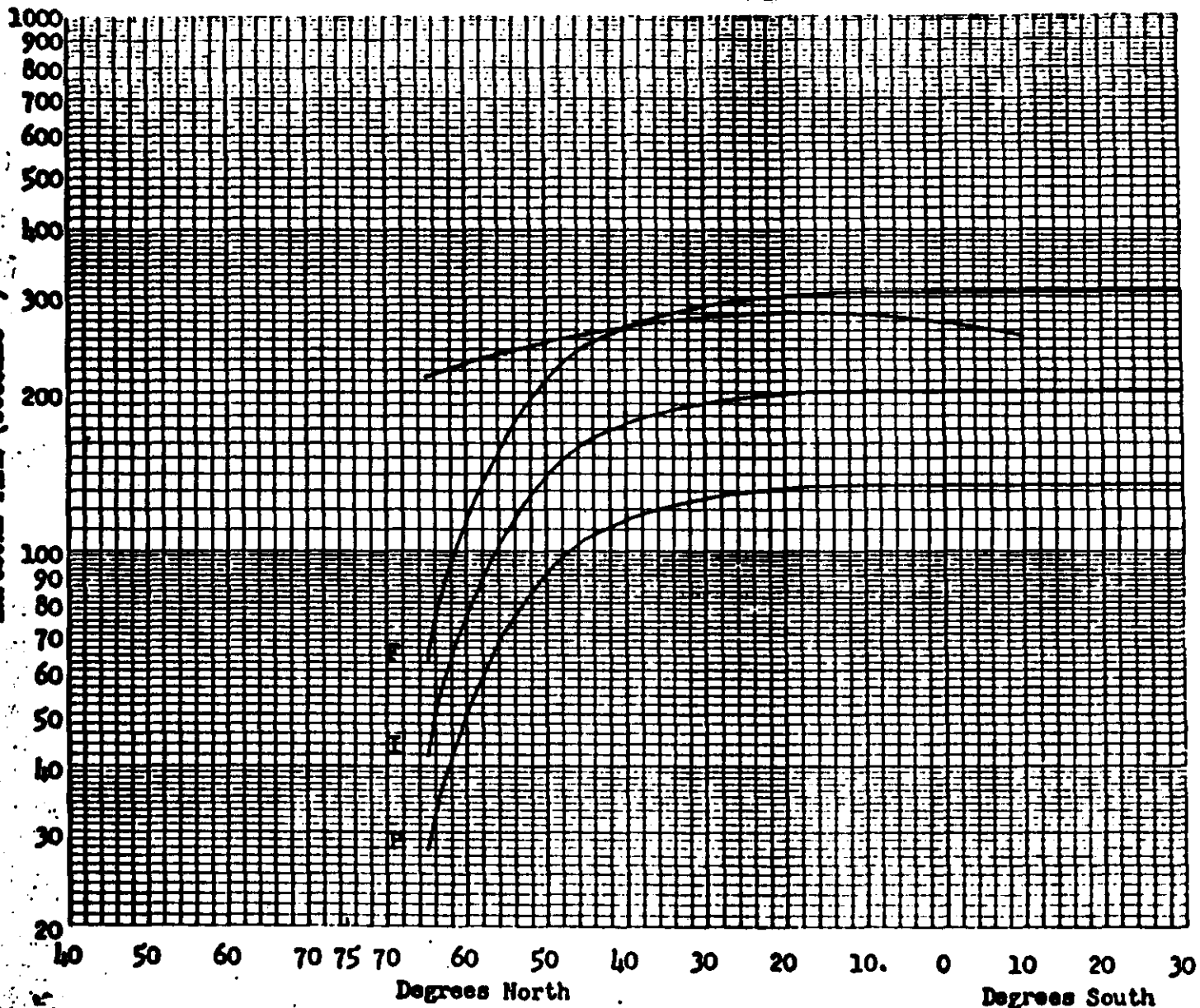


FIGURE 8-5

Mission No: 1015-1

Payload No: J-17

Camera No: 138

Pass No: 8

Launch Date: 12/19/64

Launch Time: 2110 Z

Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

EXPOSURE POINTS

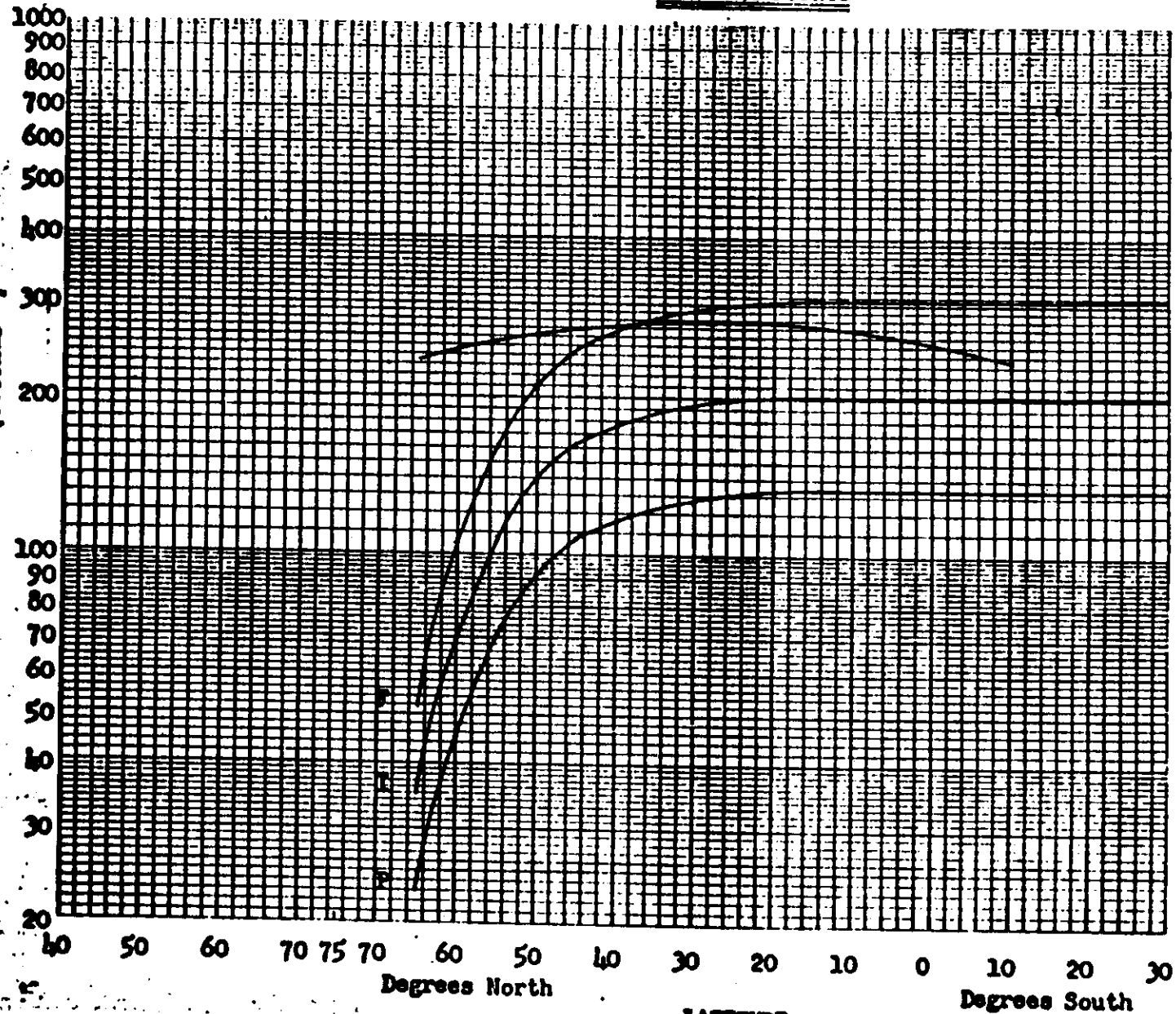


FIGURE 8-6

Mission No: 1015-1

Payload No: J-17

Camera No: 138

Pass No: 80

Launch Date: 12/19/64

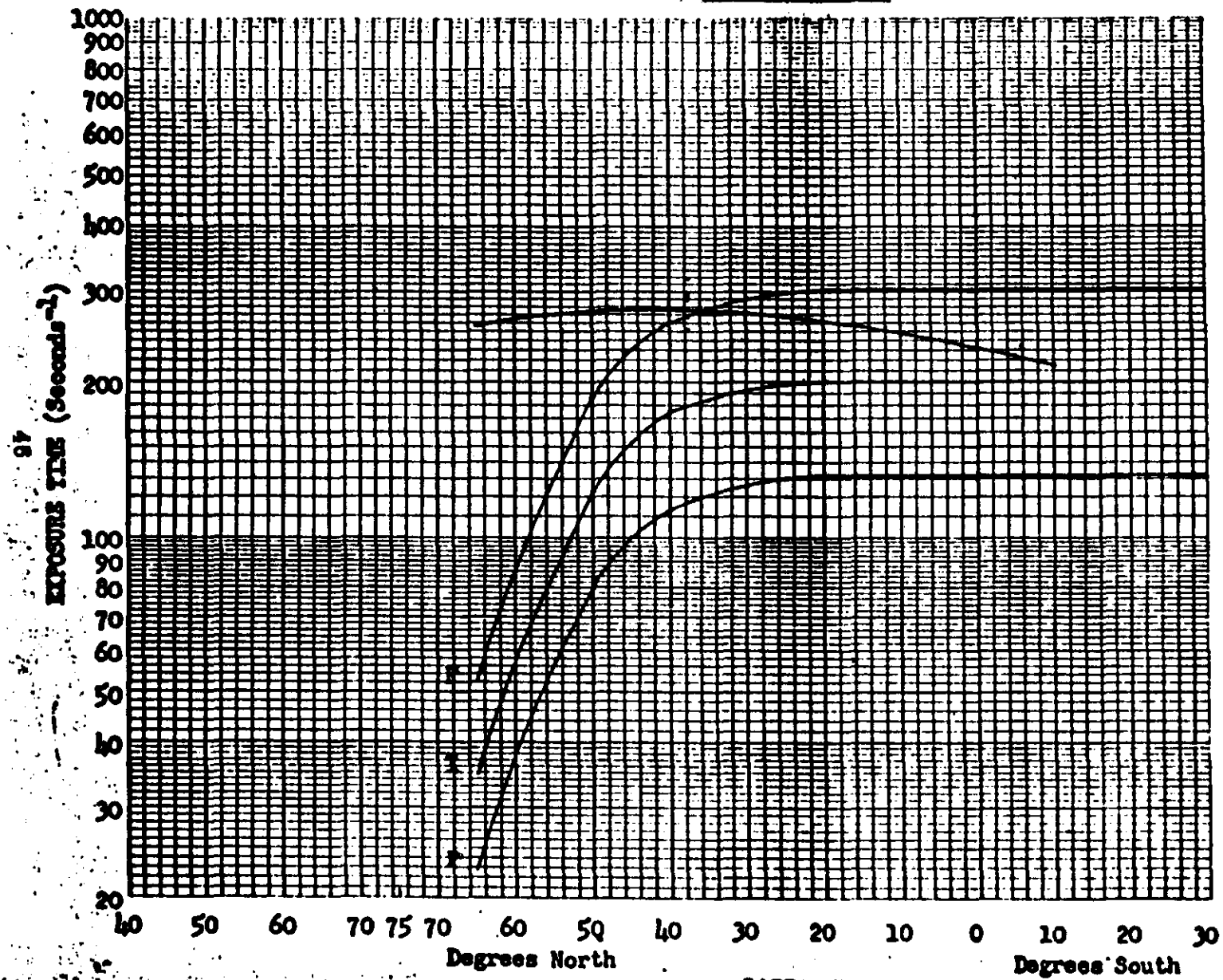
Launch Time: 2110 Z

Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

EXPOSURE POINTS



Mission No: 1015-

Payload No: J-17

Camera No: 138

Pass No: 169

Launch Date: 12/19/64

Launch Time: 2110 Z

Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

FIGURE 8-7

EXPOSURE POINTS

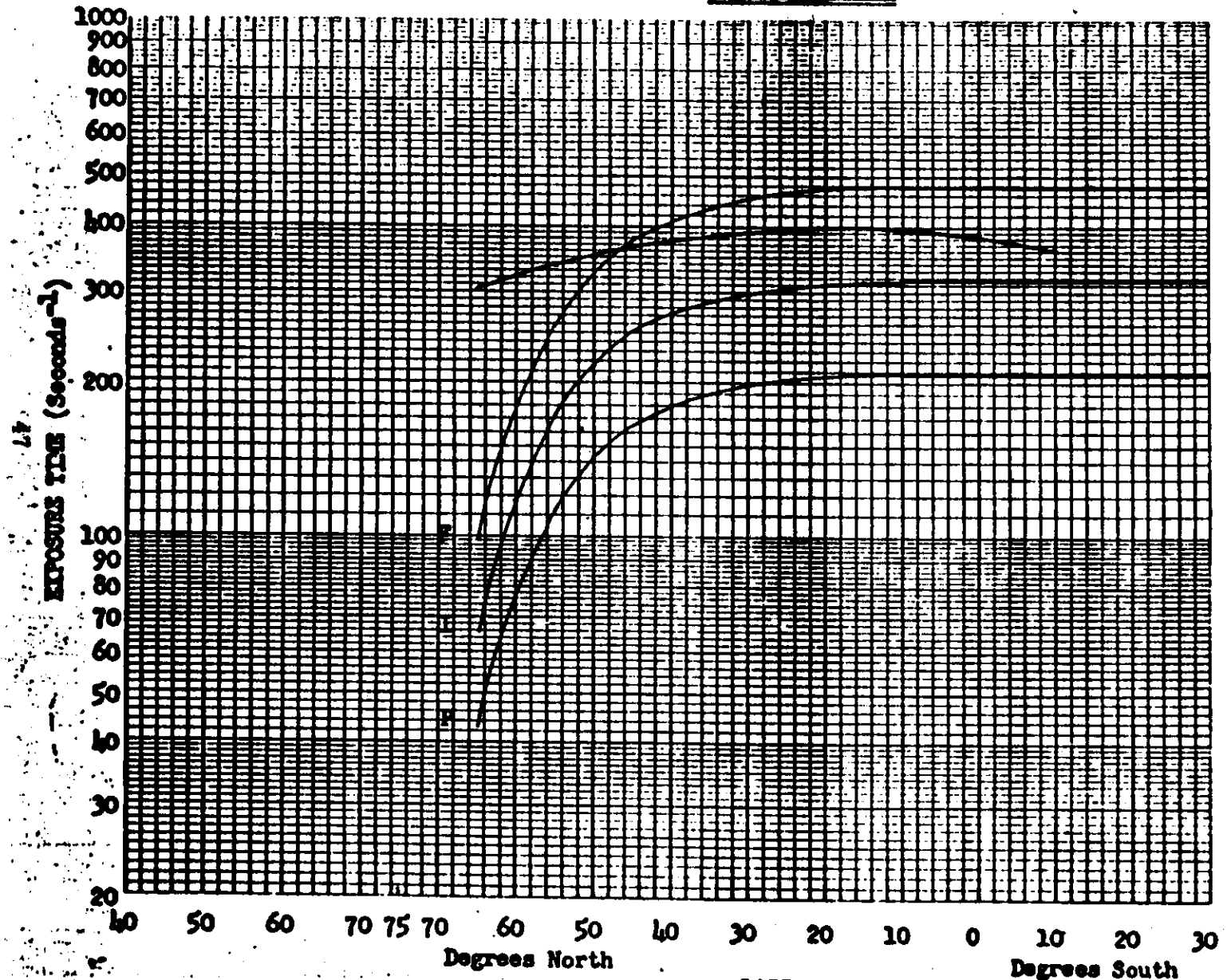


FIGURE 8-8

Mission No: 1015-1

Payload No: J-17

Camera No: 141

Pass No: 8

Launch Date: 12/19/64

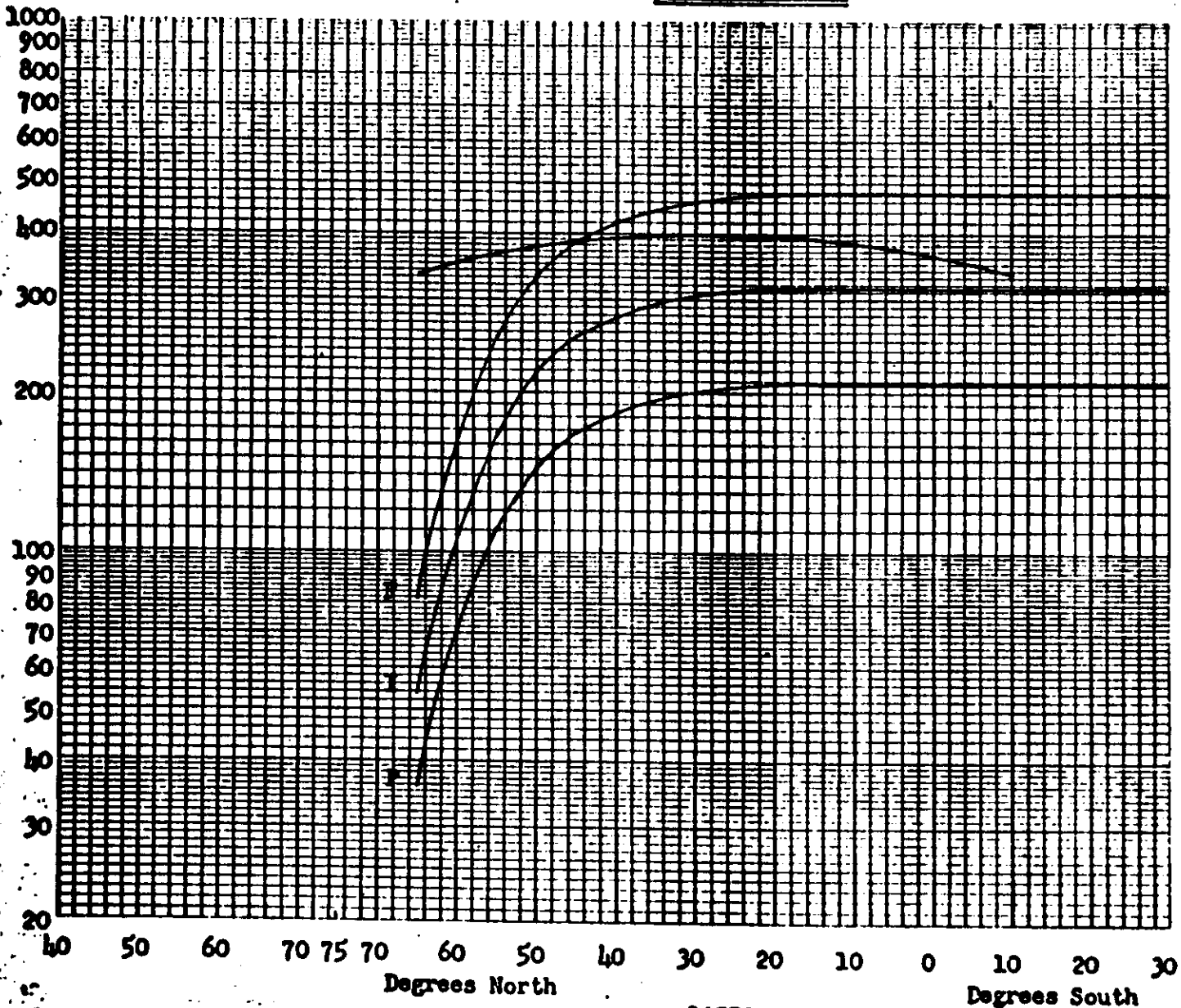
Launch Time: 2110 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

EXPOSURE POINTS



Mission No: 1015

Payload No: J-17

Camera No: 141

Pass No: 80

Launch Date: 12/19/64

Launch Time: 2110 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

FIGURE 8-9

EXPOSURE POINTS

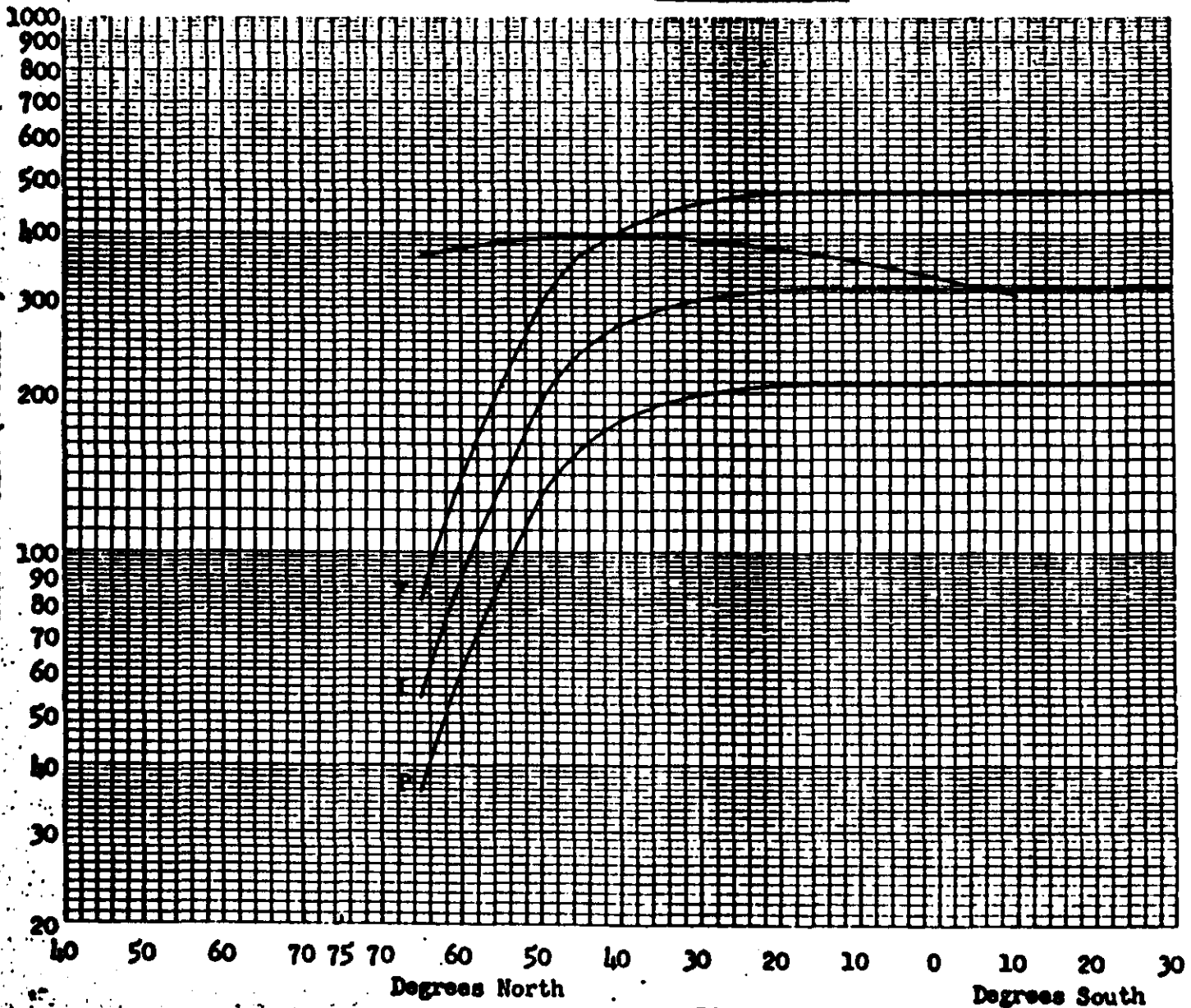


FIGURE 8-10

Mission No: 1015

Payload No: J-17

Camera No: 141

Pass No: 169

Launch Date: 12/19/64

Launch Time: 2110 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

SECTION 9

DIFFUSE DENSITY MEASUREMENTS

The diffuse density measurements made by AFSPPF 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 published by [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
1015-1	FWD	Predicted	0	8	92
		Reported	2	2	96
		Computed	0	2	98
1015-1	AFT	Predicted	0	30	70
		Reported	0	5	95
		Computed	0	4	96
1015-2	FWD	Predicted	0	10	90
		Reported	0	10	90
		Computed	0	15	85
1015-2	AFT	Predicted	0	21	79
		Reported	0	9	91
		Computed	0	9	91

The tabulations of density frequency distributions for Missions 1015-1 and 1015-2 are included in Appendix A, Table A-1 through A-4. The graphical presentation of the density distribution are computer plotted in Appendix A, Figure A-1 through A-36.

A summary of the processing and exposure analysis is shown in Table 9-1. The terrain D-MIN criteria (range) for proper exposure and processing is 0.40 to 0.90 density units.

[redacted]

MISSION 1015-1 INSTR - FRWD 01/29/65 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	4	0 PC	0 PC	100 PC	0 PC	0 PC
FULL	226	29 PC	0 PC	64 PC	7 PC	0 PC
ALL LEVELS	230	28 PC	0 PC	65 PC	7 PC	0 PC

MISSION 1015-1 INSTR - AFT 01/29/65 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	9	0 PC	0 PC	56 PC	44 PC	0 PC
FULL	215	15 PC	0 PC	78 PC	7 PC	0 PC
ALL LEVELS	224	14 PC	0 PC	77 PC	8 PC	0 PC

MISSION 1015-2 INSTR - FRWD 01/29/65 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	29	0 PC	24 PC	76 PC	0 PC	0 PC
FULL	159	33 PC	0 PC	64 PC	3 PC	0 PC
ALL LEVELS	188	28 PC	4 PC	65 PC	3 PC	0 PC

MISSION 1015-2 INSTR - AFT 01/29/65 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	16	0 PC	13 PC	81 PC	6 PC	0 PC
FULL	163	18 PC	0 PC	69 PC	13 PC	0 PC
ALL LEVELS	179	17 PC	1 PC	70 PC	12 PC	0 PC

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	OVER EXPOSED
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	---------	0.91 AND UP
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AND UP
FULL	0.18 AND UP	0.01-0.39	---------	0.40-0.90	0.91-1.69	1.70 AND UP

[redacted]

TABLE 9-1

SECTION 10

PERFORMANCE MEASUREMENTS

The photography acquired by both panoramic cameras during Missions 1015-1 and 1015-2 received a MIP rating of 85. A summary is tabulated below of the average MTF/AIM resolution values measured by AFSPPF and [redacted]. The microdensitometer slit used by AFSPPF and [redacted] was 1 micron by 80 microns.

Mission	Camera	AFSPPF	[redacted]
1015-1	FWD	76	90
1015-1	AFT	73	97
1015-2	FWD	72	89
1015-2	AFT	72	90

The details of the measurement and computing techniques, targets measured and target locations are fully reported in the evaluation report published by AFSPPF and are not normally included in this report.

SECTION 11

OBSERVED DATA

The Edwards Air Force Base photographic resolution range was photographed on pass D63 of Mission 1015. Solid cloud cover was present a few thousand feet west of the range center and scattered clouds and haze over the target. The site manning report states that at time of passage there was heavy ground haze, blowing clouds and heavy blowing sand.

The resolution targets were less than one inch from the east end of the formats and therefore suffered loss of scale. In spite of these degrading factors, the forward camera resolved the 18 foot elements on the low contrast Type C target. The aft camera resolved 14 feet on the same target.

On the hi contrast Type B target, duplicate positive (DP) film from the forward camera could not be resolved on the largest element. The aft DP resolved the first three elements (9 feet) in the across-track direction only. Spurious resolution is suspected in this case.

No other ground resolution targets were covered on this mission that were suitable for evaluation purposes. Pahrump and Indian Springs (Nev.) were covered on pass D47. However, Indian Springs was not activated and could not be resolved. It was probably partly obscured by sand. Pahrump, though activated, appeared in the bonus area and could not be resolved.

Very little culture was photographed by engineering passes on this mission. D30 was nearly 100% clouds and water. Keywest and the dry Tortugas were the only land, but were degraded by haze and clouds. D31 was mostly desert wasteland and exhibited very low contrast.

D47, over Nevada and Arizona, appeared to be clear but the small amount of culture was not crisp and sharp and probably suffered from desert haze.

D63, though largely obscured by clouds, supplied a few objects with sufficient clarity to make qualified comparisons in a subjective sense. The small details of a sewage treatment plant, south of Ventura, California were compared with similar features of previous missions. The performance capability of forward and aft cameras was very nearly alike and Mission 1015 photography is considered superior to the previous three missions.

SECTION 12

MISSION 1015-1 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-61
Index Reseau	61
Stellar Reseau	61

B. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:	
Lens	85 mm f/1.8
Exposure Time	2 seconds
Filter Type	None
Film Type	Eastman Type 4401
Index Camera:	
Lens	38 mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 4400

C. POST FLIGHT EVALUATION

The Stellar and Index cameras both produced 384 frames of photography during the mission. The Index camera photography was excellent throughout with no observed equipment or photographic anomalies. There were no equipment problems noted on the Stellar camera film however there were several photographic problems.

All Stellar camera frames were, as expected, fogged over approximately half the format area. The fog level was higher than expected and was sufficient to illuminate the rear lens element by reflection from the emulsion and produce an image of this element on the format. A sketch of the Stellar format is shown in Figure 12-1.

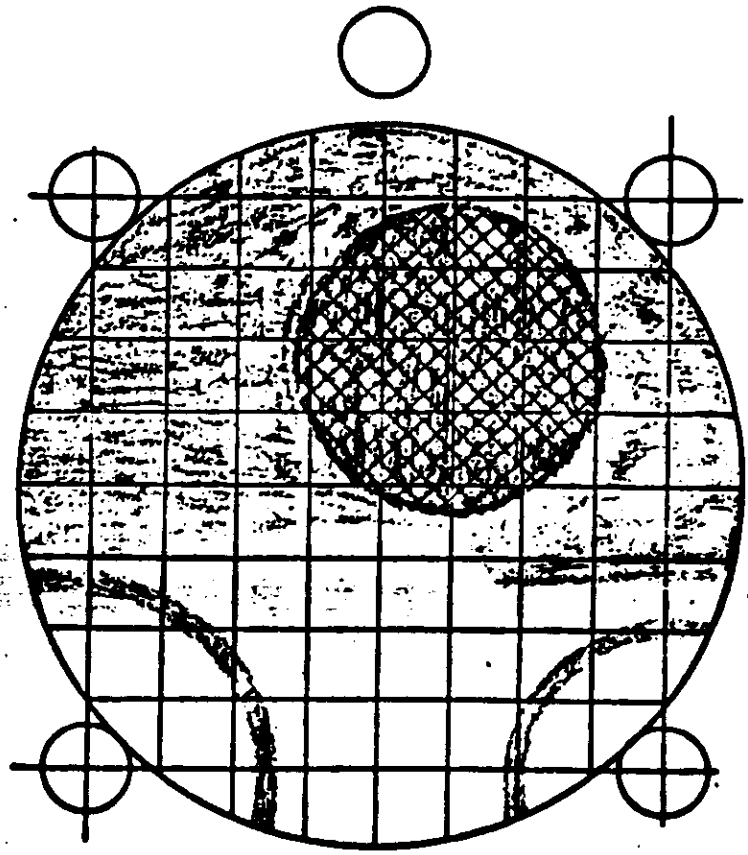
Adequate star images, in excess of 30, were recorded throughout the mission. Essentially all frames contained double or dumb-bell shaped stellar images. The effect on the reduction of attitude data is minor as the resulting measurement uncertainty is approximately 5 minutes of arc. The prime concern is, as reported in the evaluation of Mission 1010, the high rate of motion that must be present to produce the odd image shapes. A study is well underway using Mission 1010-1 photography to ascertain the cause and magnitude of the motion and the resulting effects on panoramic camera photography.

Fine emulsion cracks appeared on the title edge of the Stellar film after frame 50 and extended approximately 0.1 inches into the film. Fine emulsion cracks across the film width started at frame 160 and continued to the end. Intermittent, minor abrasion marks about 0.2 inches and 0.4 inches in from the title edge were noted throughout the mission. No pattern of occurrence could be determined. Some edge fogging was present intermittently during the mission.

[redacted]

MISSION 1015-1

STELLAR-INDEX CAMERA ØD 61/61/61



TYPICAL FLARE PATTERN

FIGURE 12-1

[redacted]

SECTION 13

MISSION 1015-2 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-58
Index Reseau	58
Stellar Reseau	58

B. CAMERA DATA AND FLIGHT SETTINGS

Stellar Camera:	
Lens	85 mm f/1.8
Exposure Time	2 seconds
Filter Type	None
Film Type	Eastman Type 4401
Index Camera:	
Lens	38 mm f/4.5
Exposure Time	1/500 second
Filter Type	Wratten 21
Film Type	Eastman Type 4400

C. POST FLIGHT EVALUATION

The cameras both produced 379 frames of photography during the mission. Both cameras operated normally throughout the mission displaying no equipment problems.

The first frame of both cameras was double exposed. This anomaly will occur at the start of the second phase of a mission if the camera programmer is in three of the seven possible positions at launch. It is, therefore, not considered a malfunction.

The photographic quality of the Index camera film was excellent with no observed anomalies. The Stellar camera photographic quality was similar to Mission 1015-1 as about one-half of the format was fogged but to a much lesser degree. The odd star image shapes continued throughout this mission. The intermittent edge fog and fine emulsion cracks across the film during the later portion of the mission were present. Some minor dendritic static was noted near the tail of the film.

SECTION 14

VEHICLE ATTITUDE

The vehicle attitude errors for both Mission 1015-1 and 1015-2 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 1015-1 and Figures 14-7 through 14-12 for Mission 1015-2.

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

	Mission 1015-1		Mission 1015-2	
Value	90%	Range	90%	Range
Pitch Error (^{o})	0.65	-1.4 to +1.6	0.50	-1.35 to +0.80
Roll Error (^{o})	0.38	-0.54 to +0.36	0.61	-1.20 to +o.60
Yaw Error (^{o})	0.53	-0.65 to +1.05	0.64	-1.45 to +1.0
Pitch Rate (^{o}/hr)	46.96	-95 to +80	39.14	-70 to +85
Roll Rate (^{o}/hr)	29.44	-50 to +100	27.08	-50 to +65
Yaw Rate (^{o}/hr)	38.17	-95 to +65	36.23	-80 to +70

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.

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OF UNRYED 90 PERCENT C

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

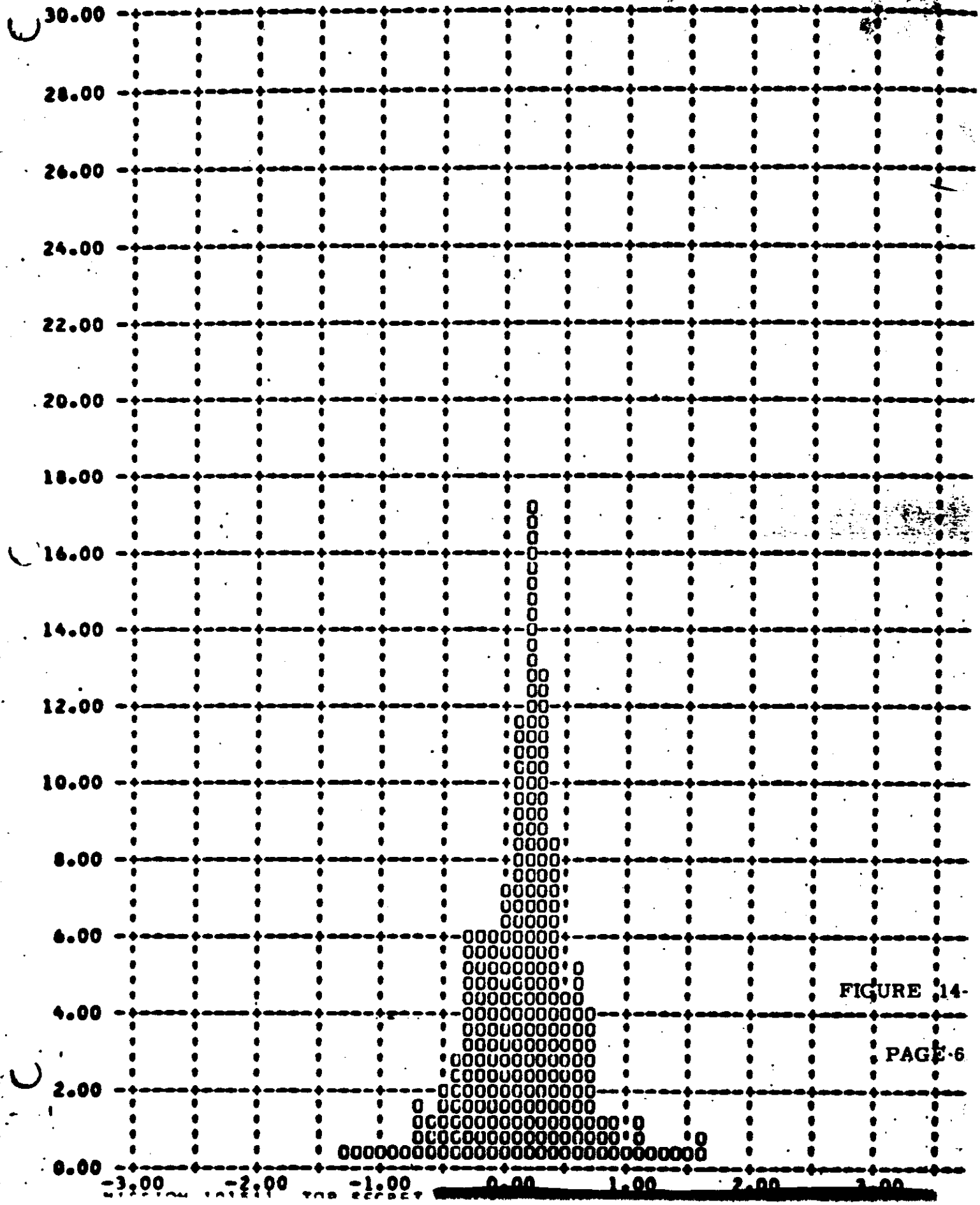


FIGURE 14-

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

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

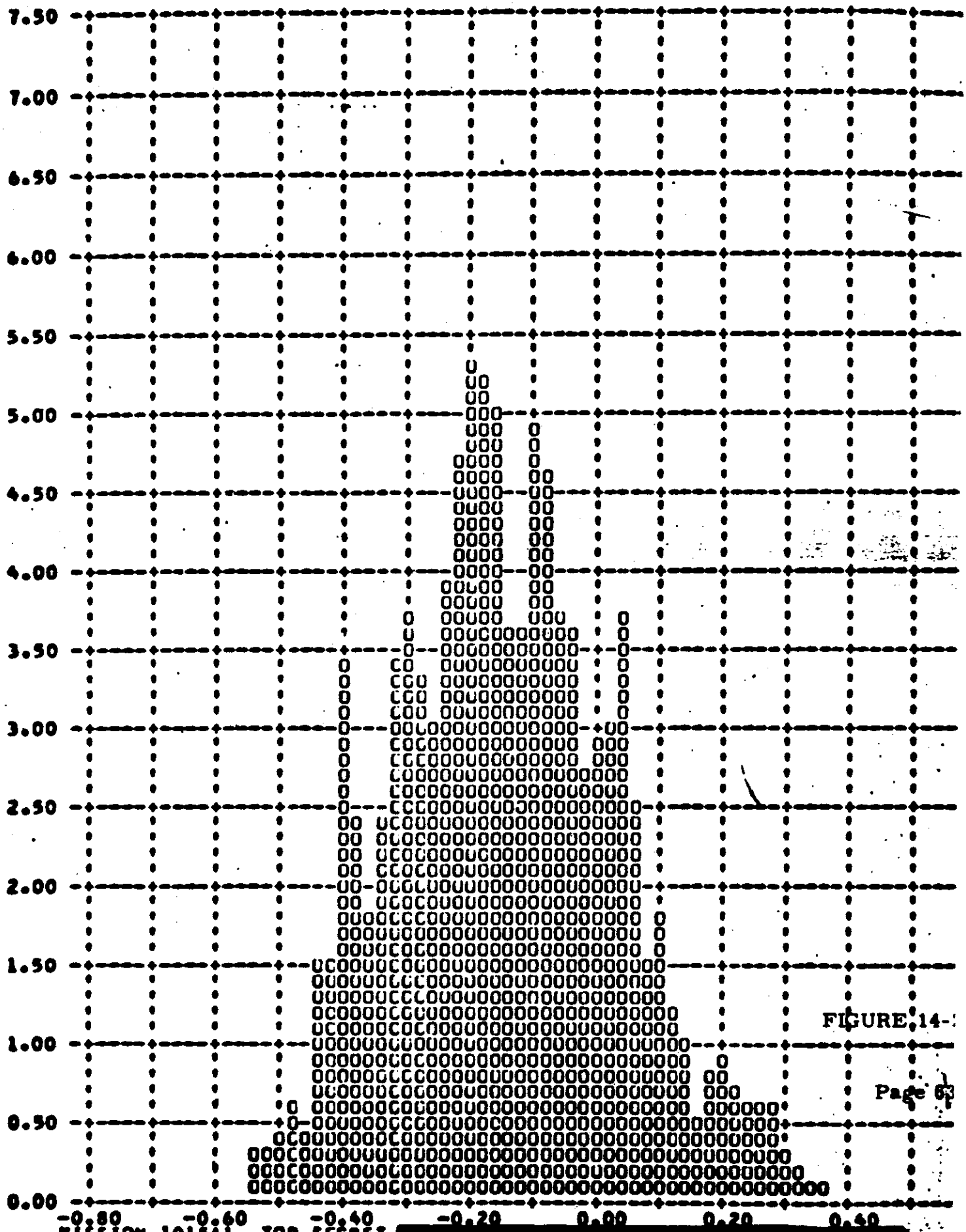


FIGURE 14-

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT

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

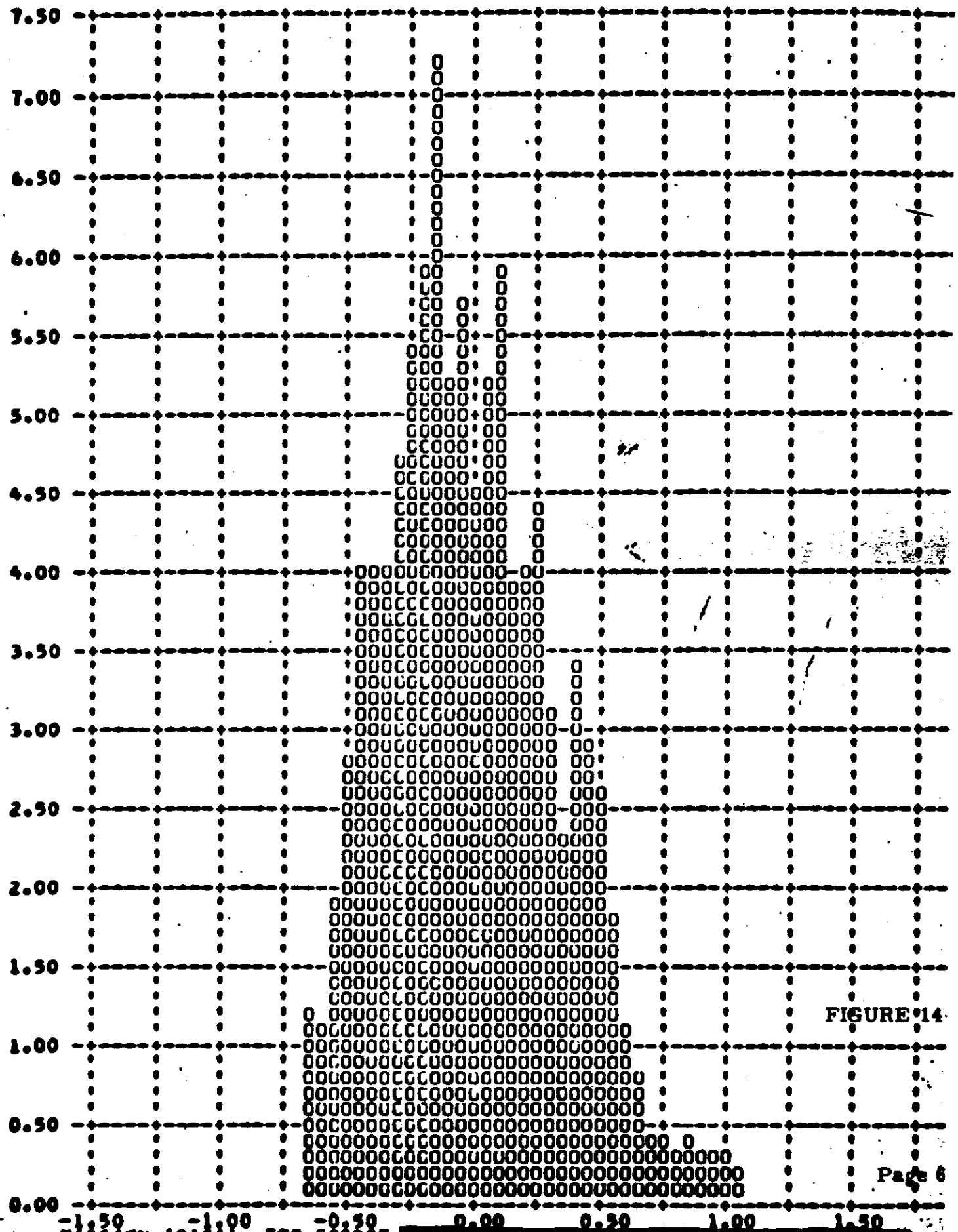


FIGURE 14

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 46

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

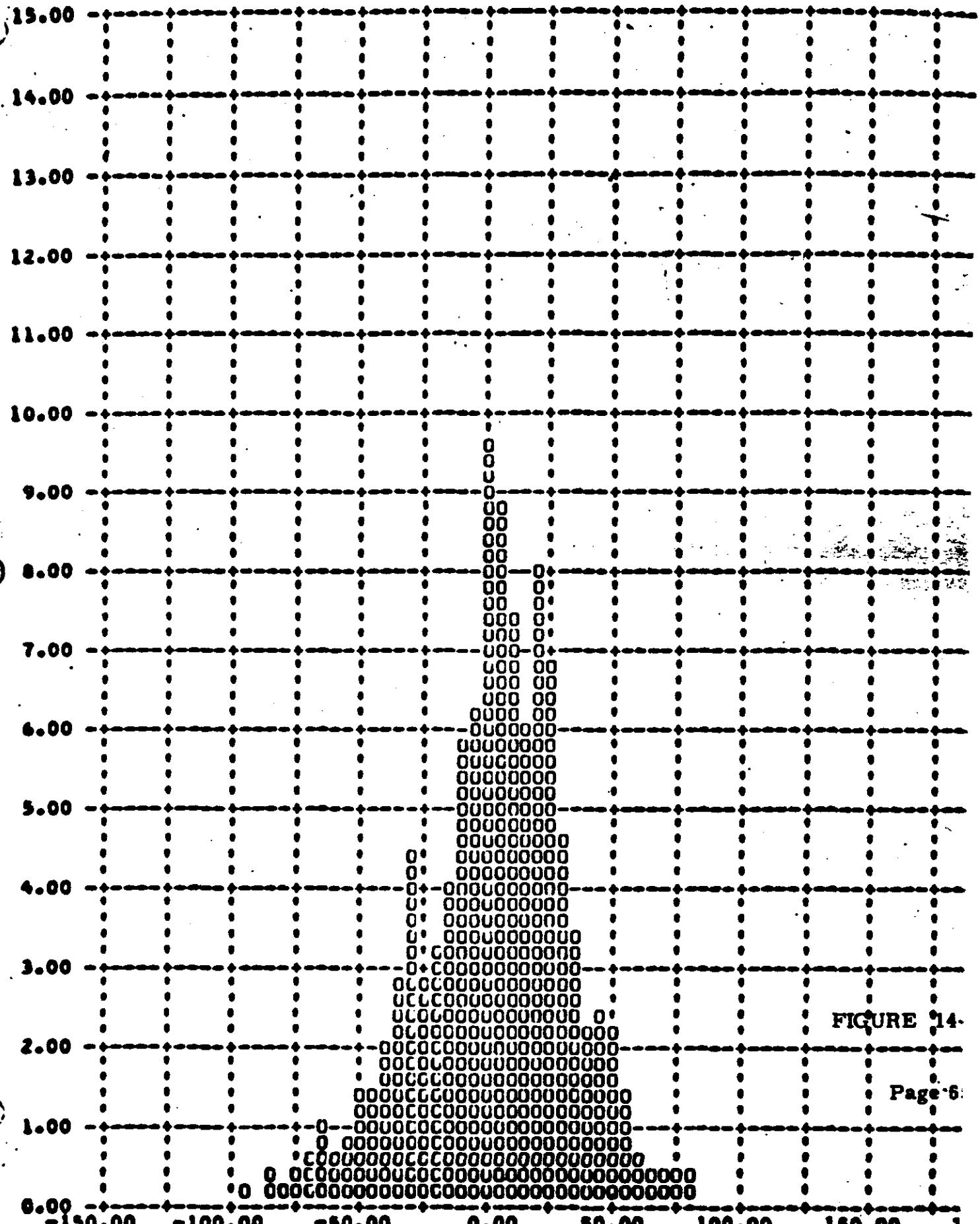


FIGURE 14-

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 29.

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

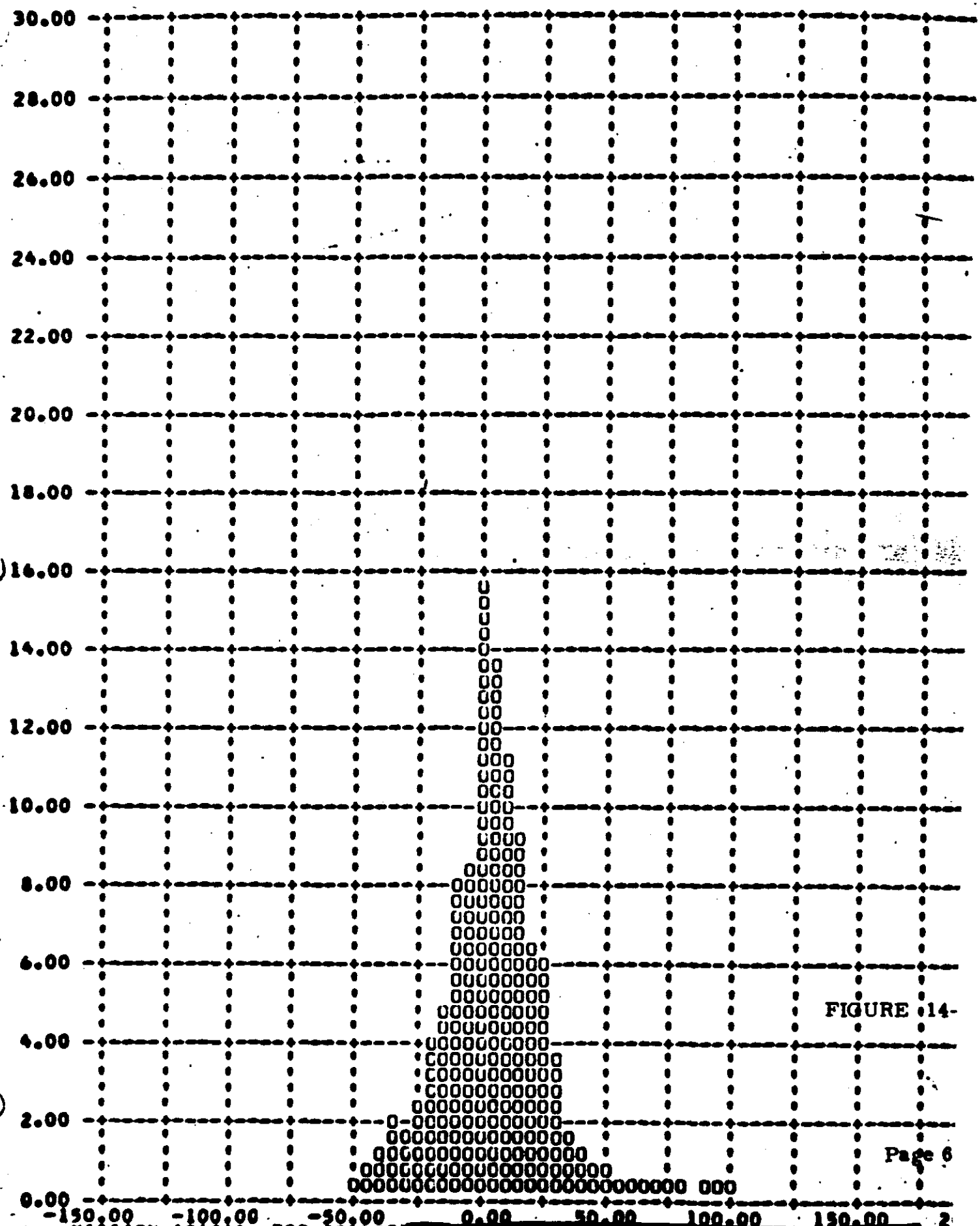


FIGURE 14-

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT • 38

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

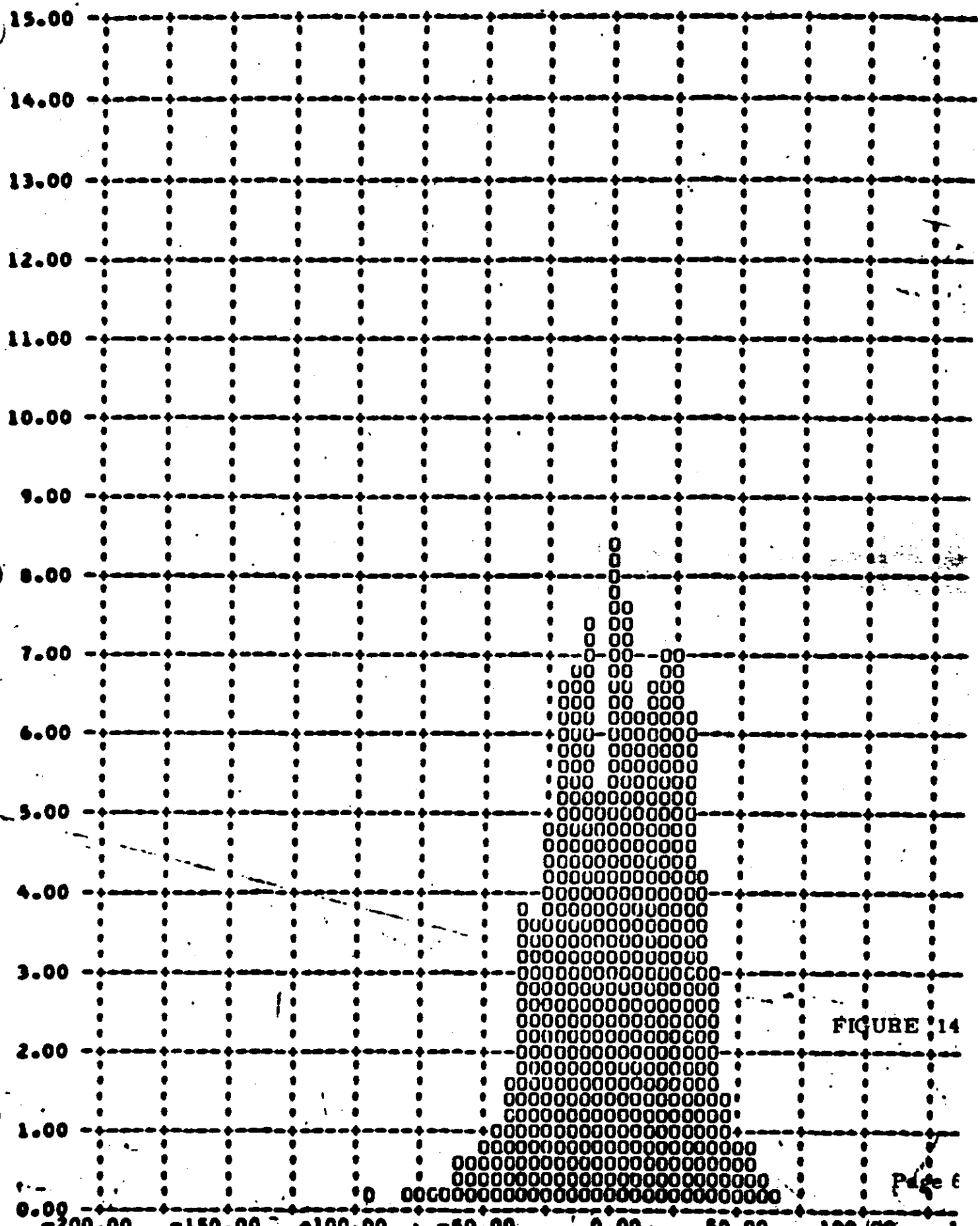


FIGURE 14

J17 8-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.

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

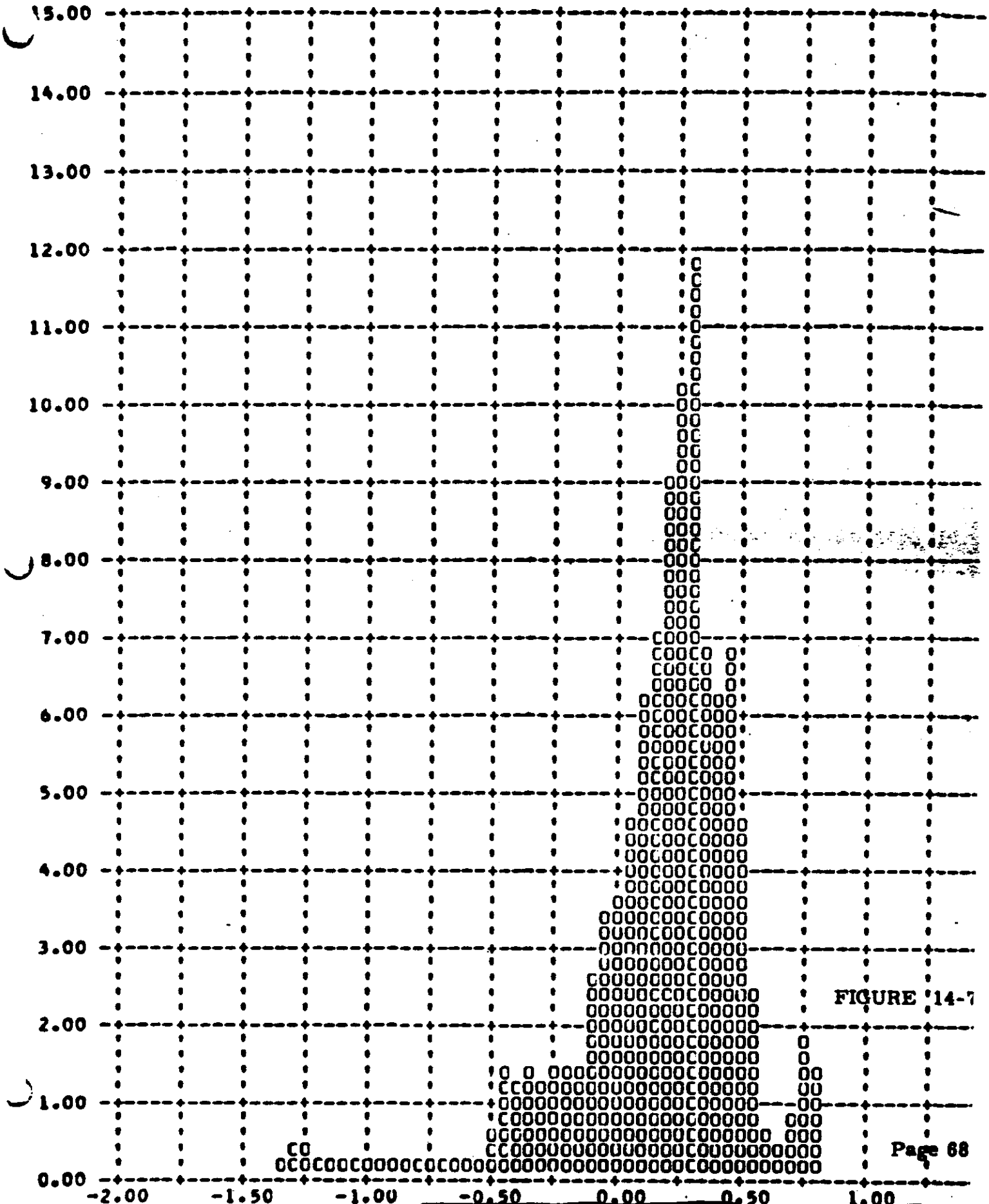


FIGURE 14-7

J17 B-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT =

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

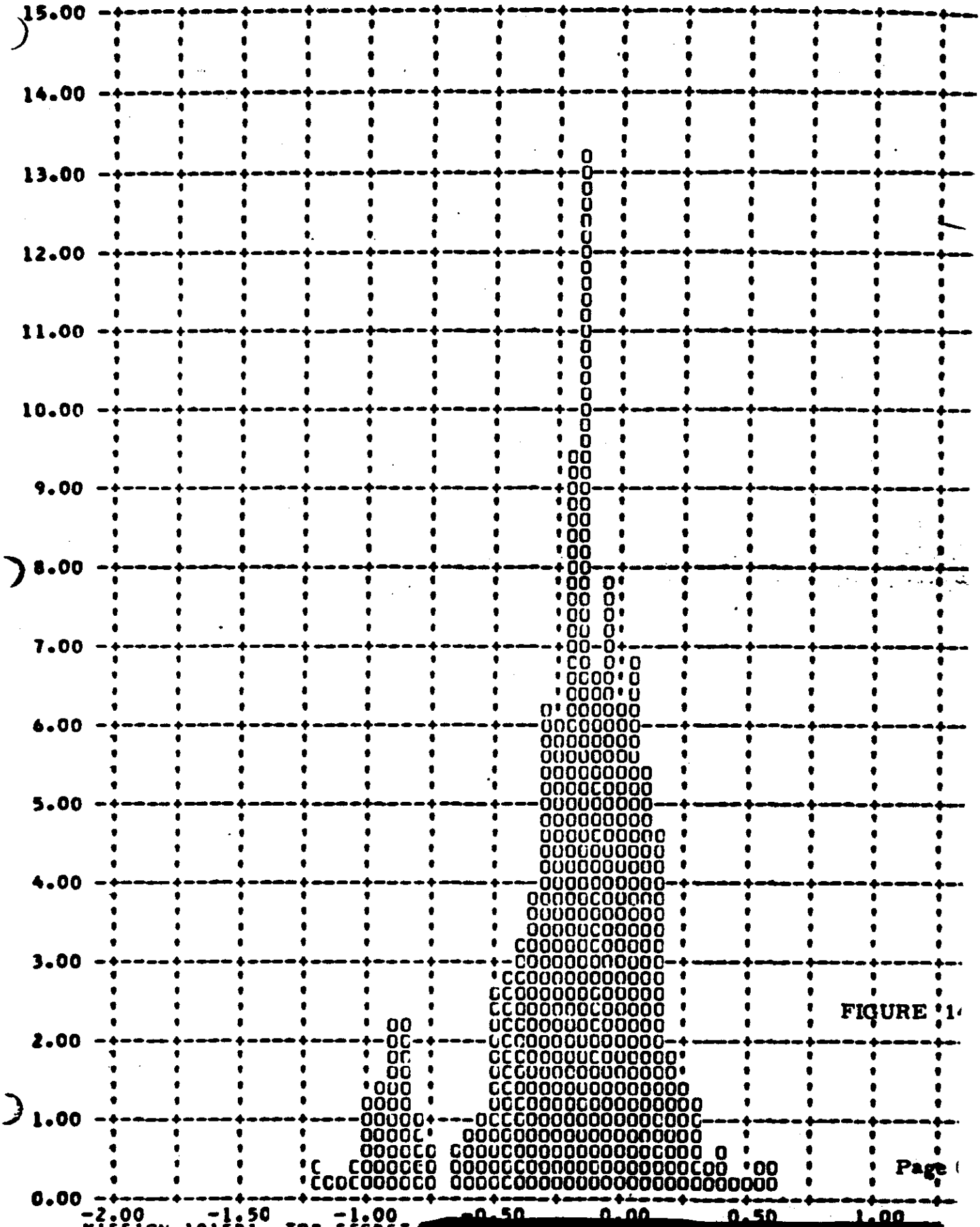


FIGURE 1

J17 B-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0

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

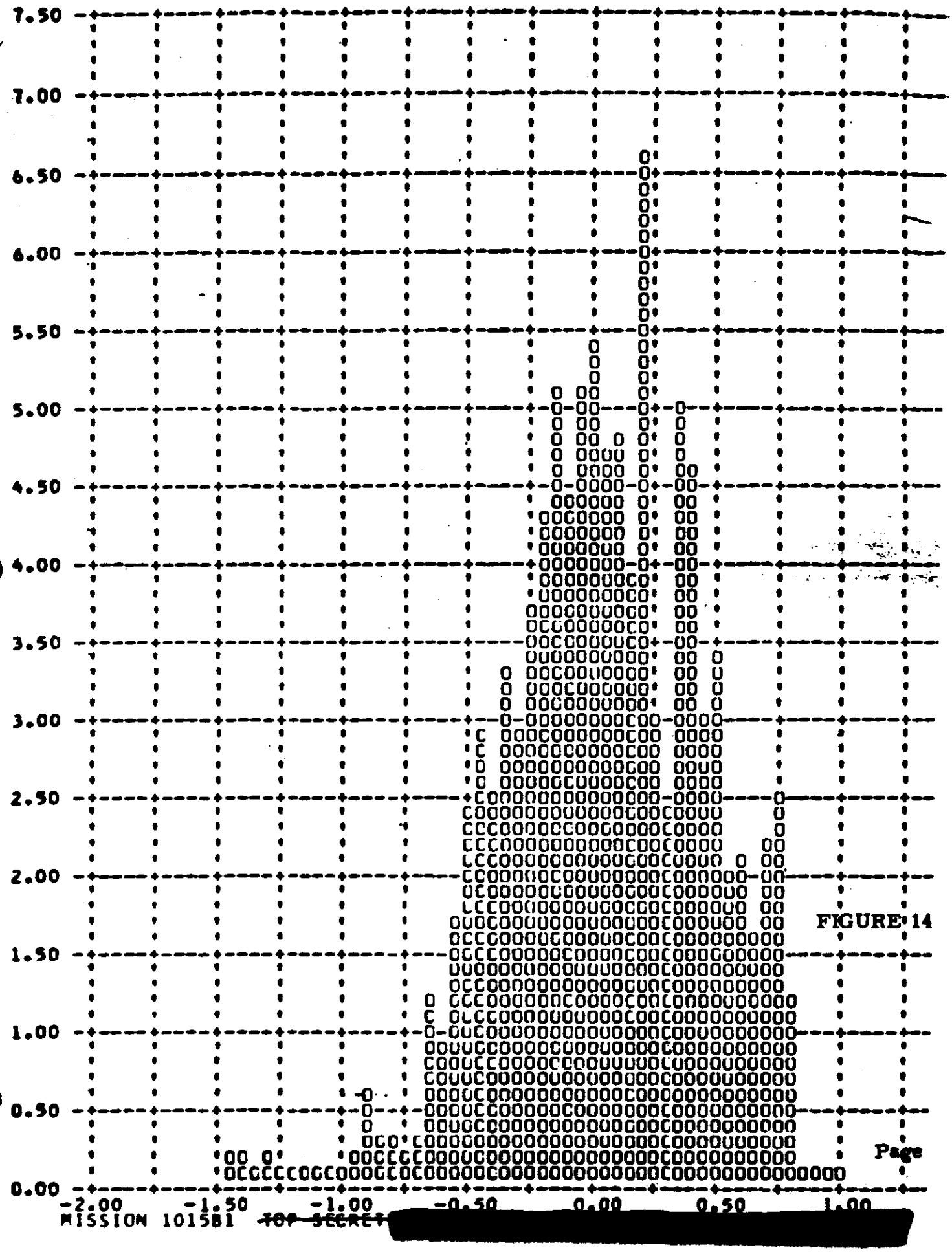


FIGURE 14

J17 B-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 39

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

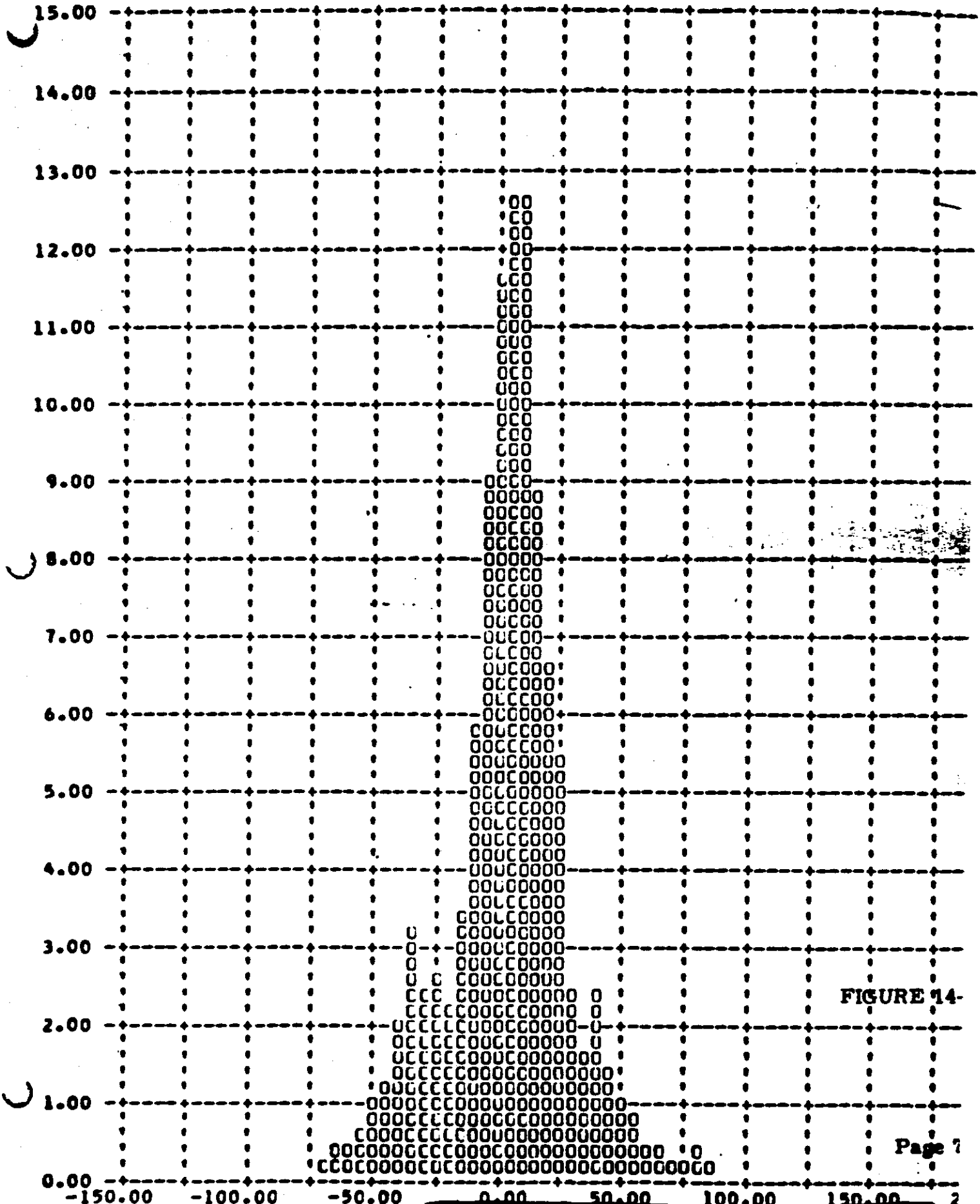


FIGURE 14-

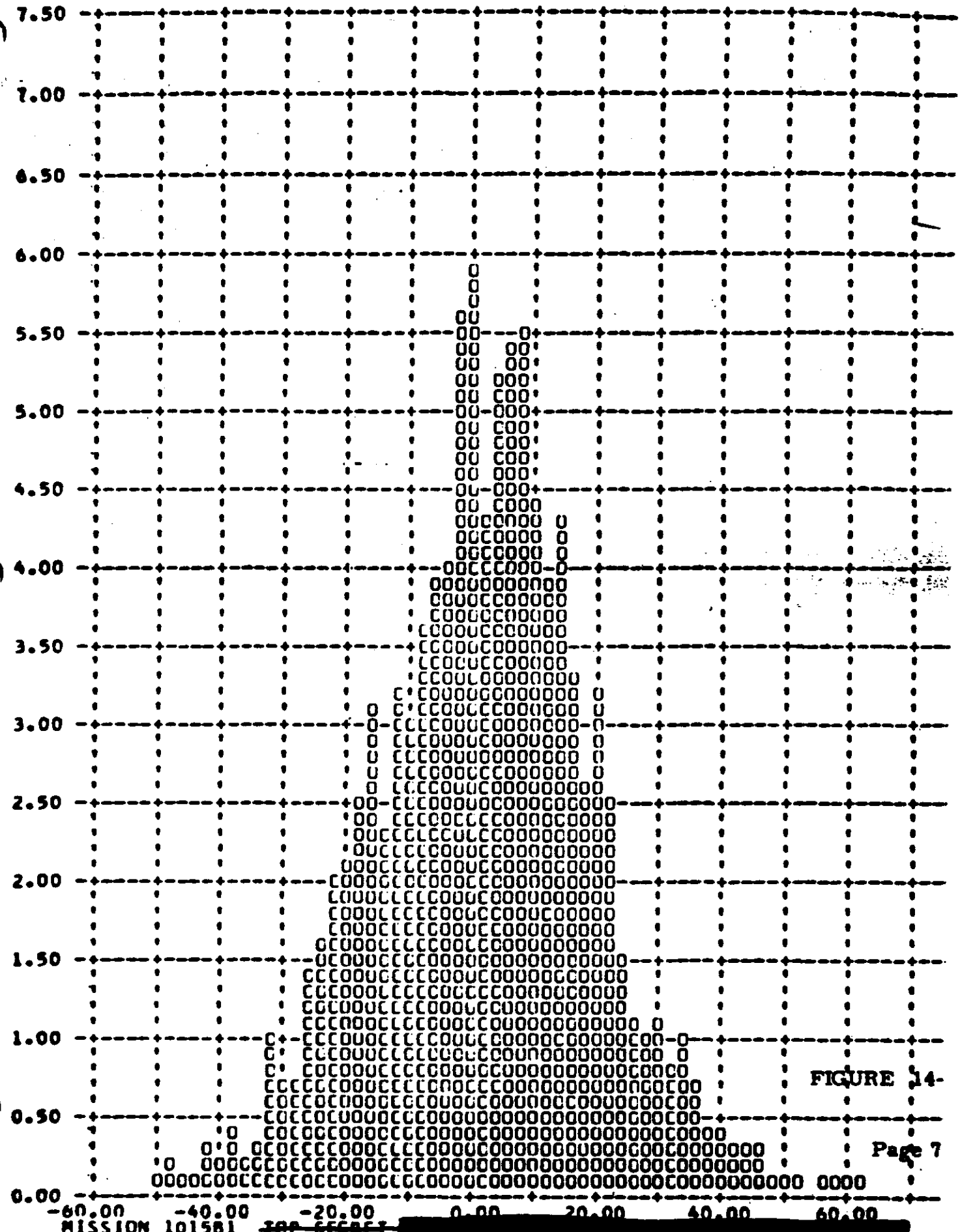

Y ROLL RATE ERROR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
-60.00
-40.00
-20.00
0.00
20.00
40.00
60.00

FIGURE 14-

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

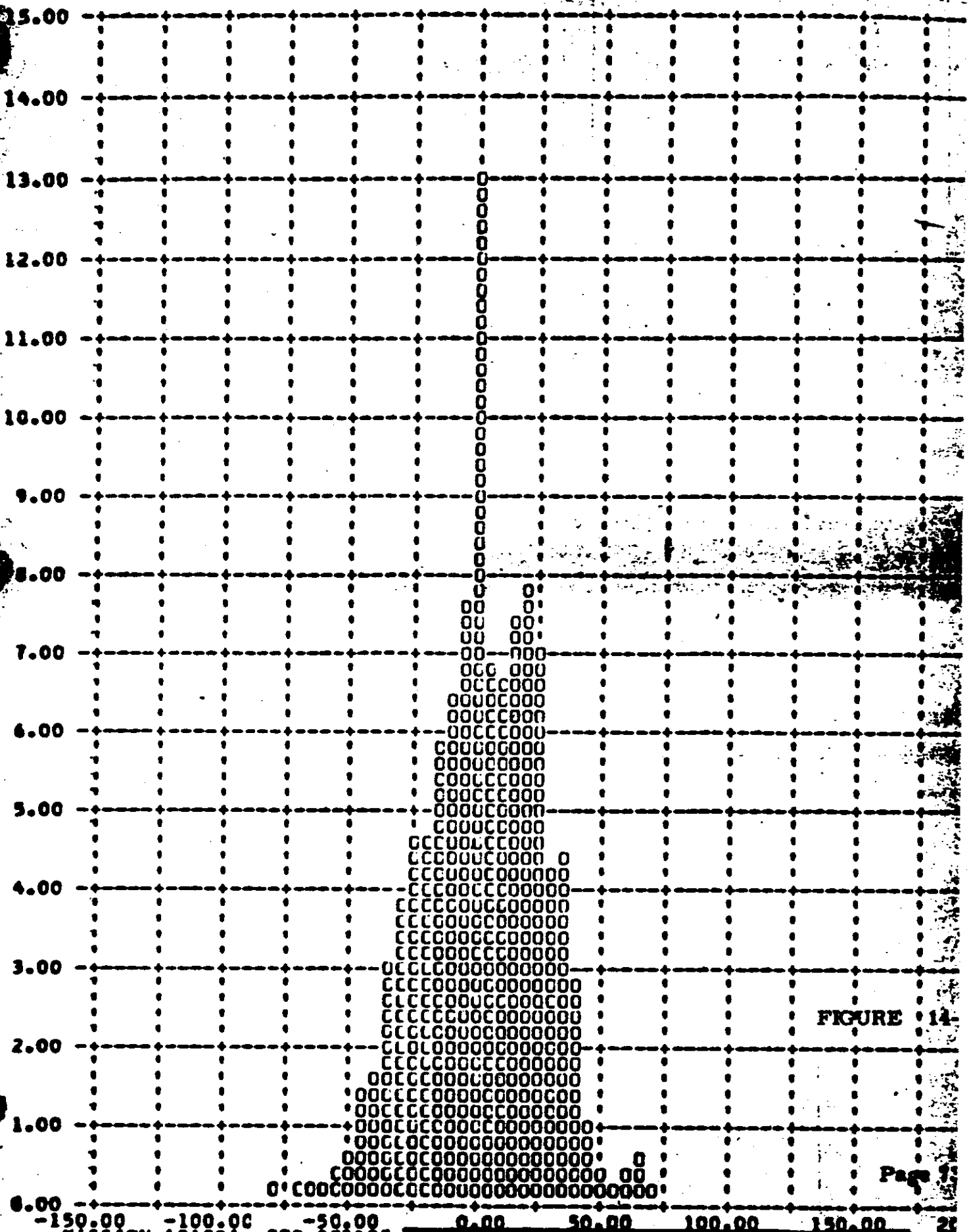


FIGURE 14

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 errors and resolution limits are computer plotted and are shown in Figures 15-1 through 15-12.

The summary Table 15-1 presents the maximum V/h ratio errors and resolution limits that existed during 90% of the photographic operations and the total range of values during all operations that were computed.

The high range of the along and cross track resolution limit was broader than normal. Passes 148 and 168 contained photography in quadrant II and III. The V/h programmer in this situation cannot match completely the orbital V/h.

J-17 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3

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

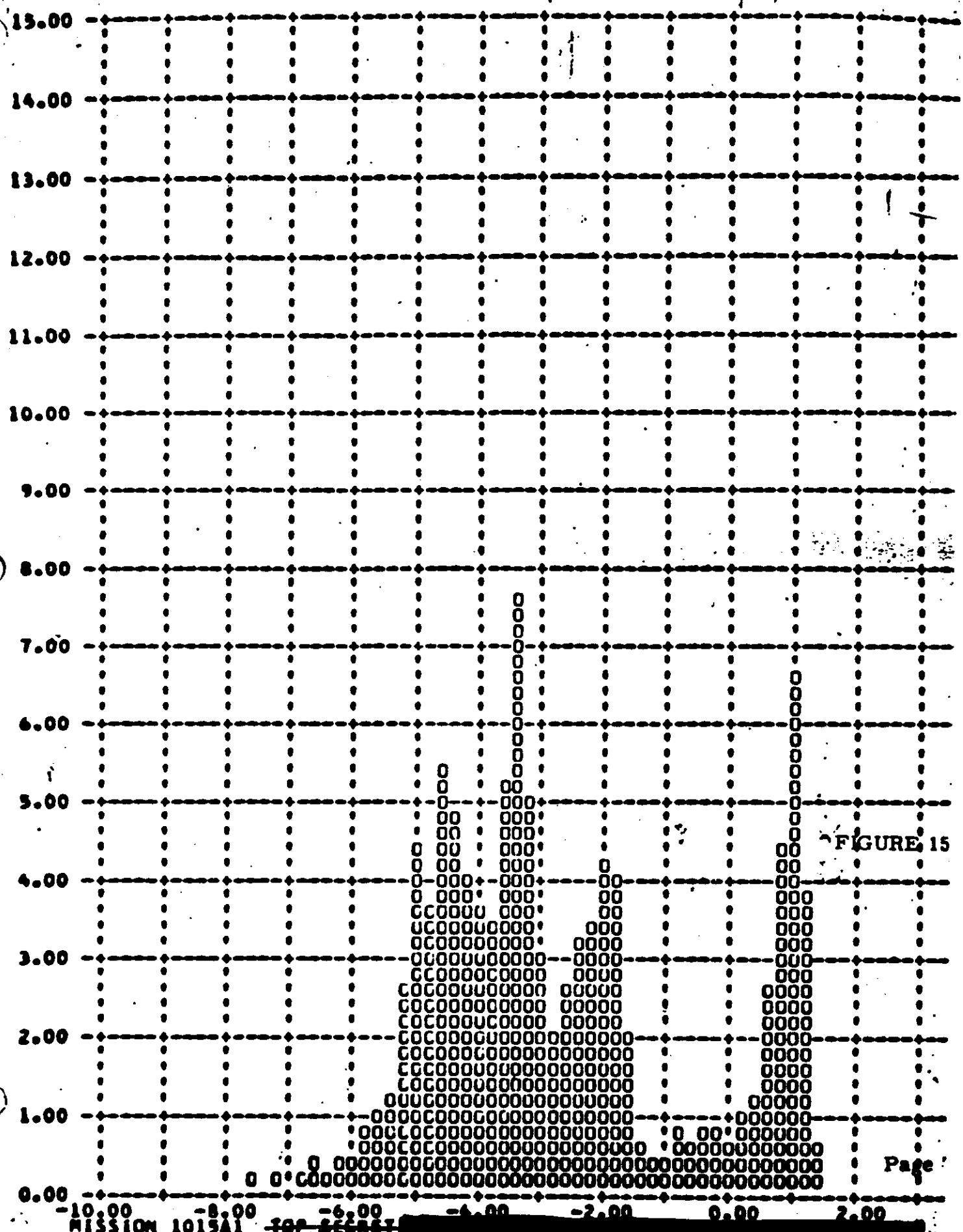


FIGURE 15

J-17 A BUCKET - FWD INSTR : FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT

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

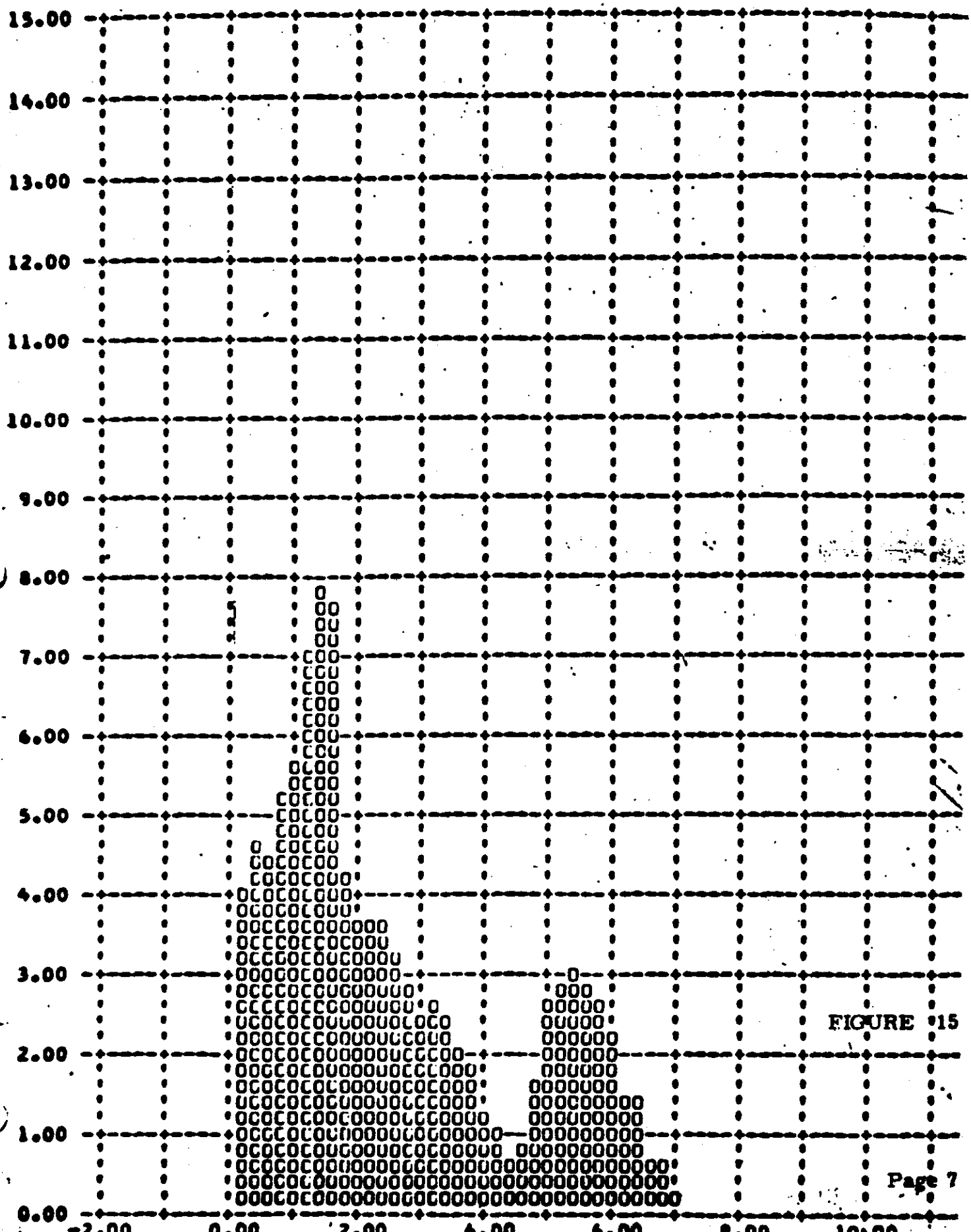


FIGURE 15

J-IT A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OF UNITED 90 PERCENT =

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

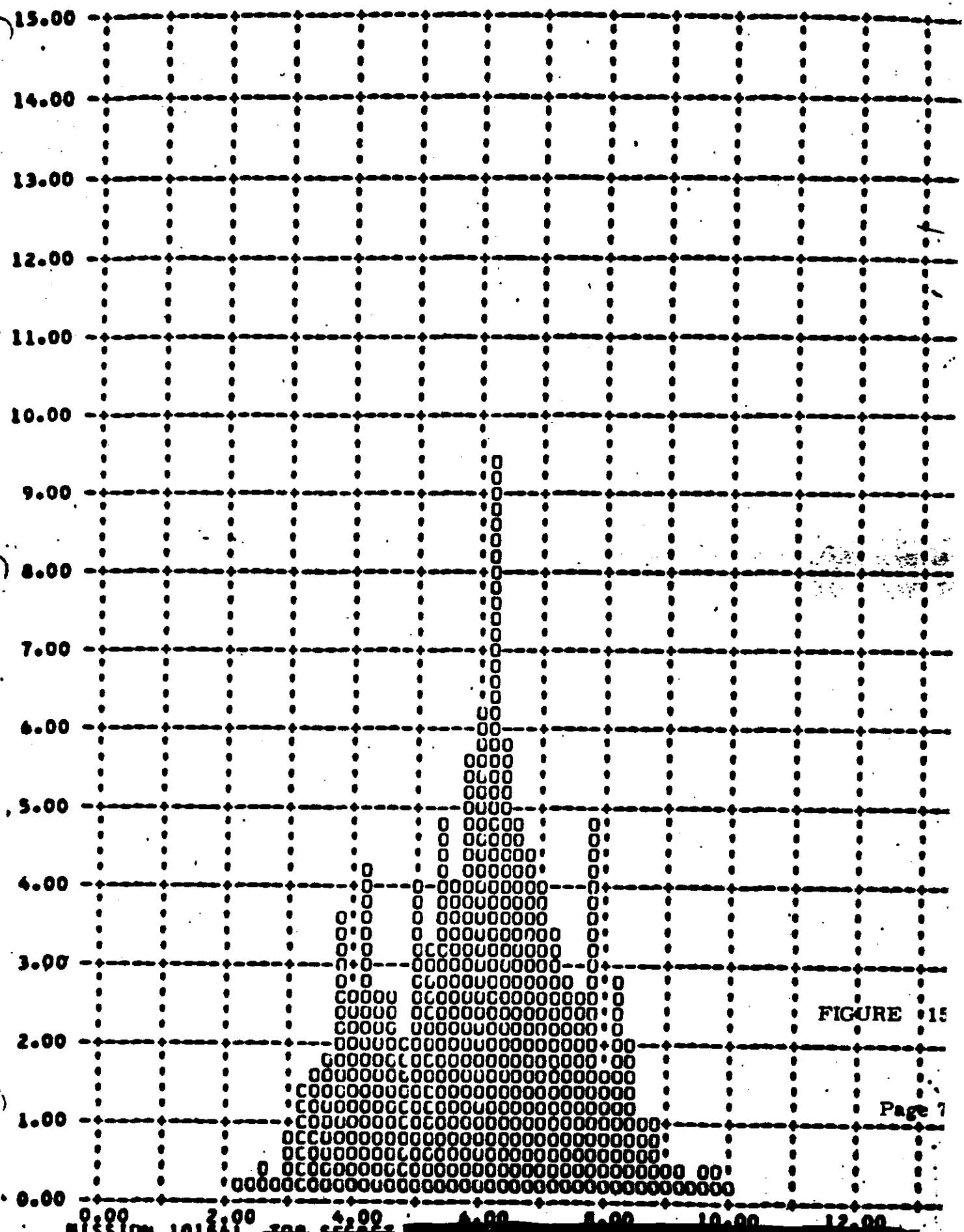


FIGURE 15

J-17 A BUCKET - AFT INSTR FRAMES [illegible]

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

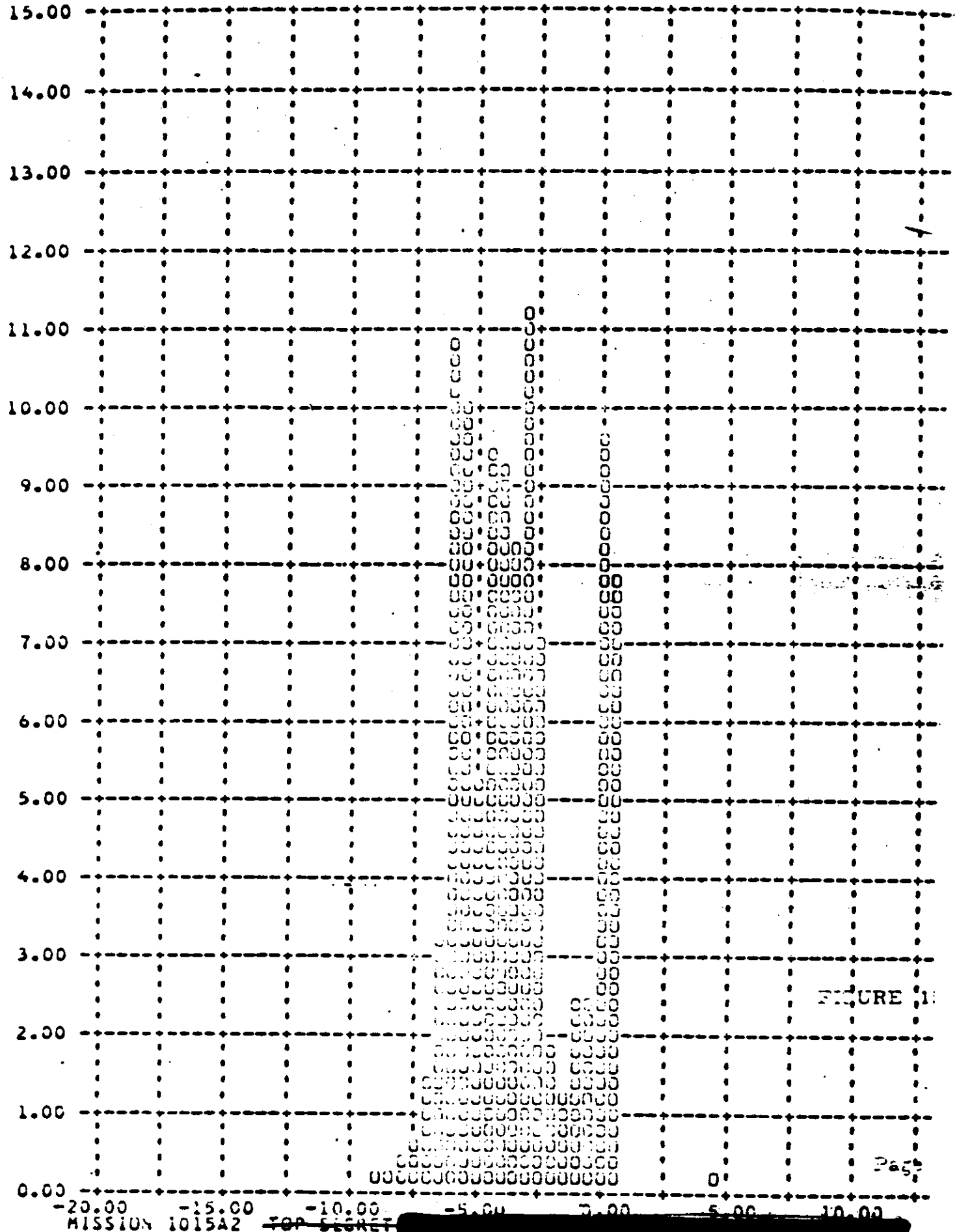


FIGURE 1

J-17 A BUDGET - API INSTR FRAMES 1-8 OF EACH OF UNTITLED 90 PERCENT

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

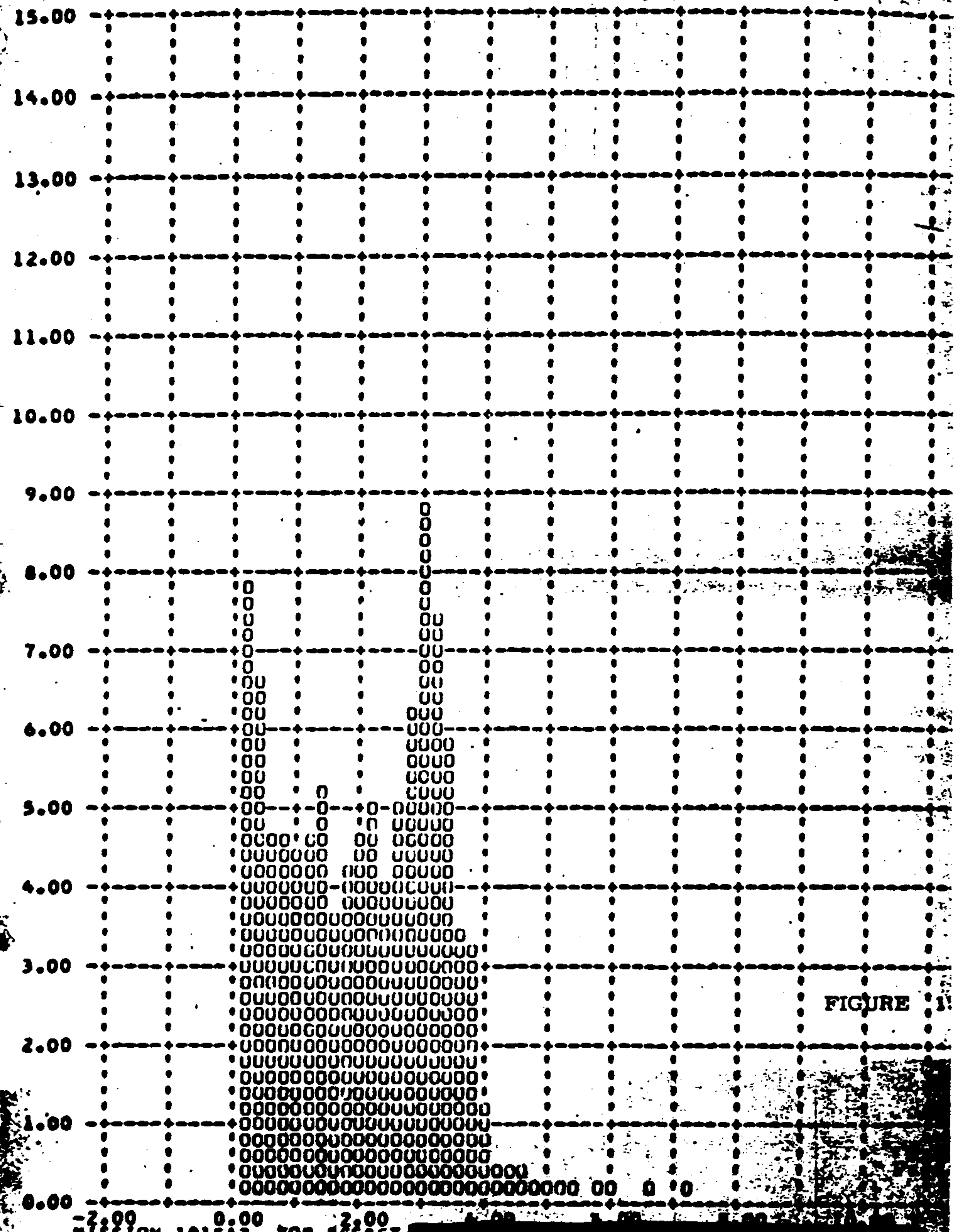


FIGURE 1

MISSION 1015A2 ~~TOP SECRET~~ [redacted]

J-17 A BUCKET - AFT INSTR FRAMES 1-8 OF EACH OF UNITED 90 PERCENT

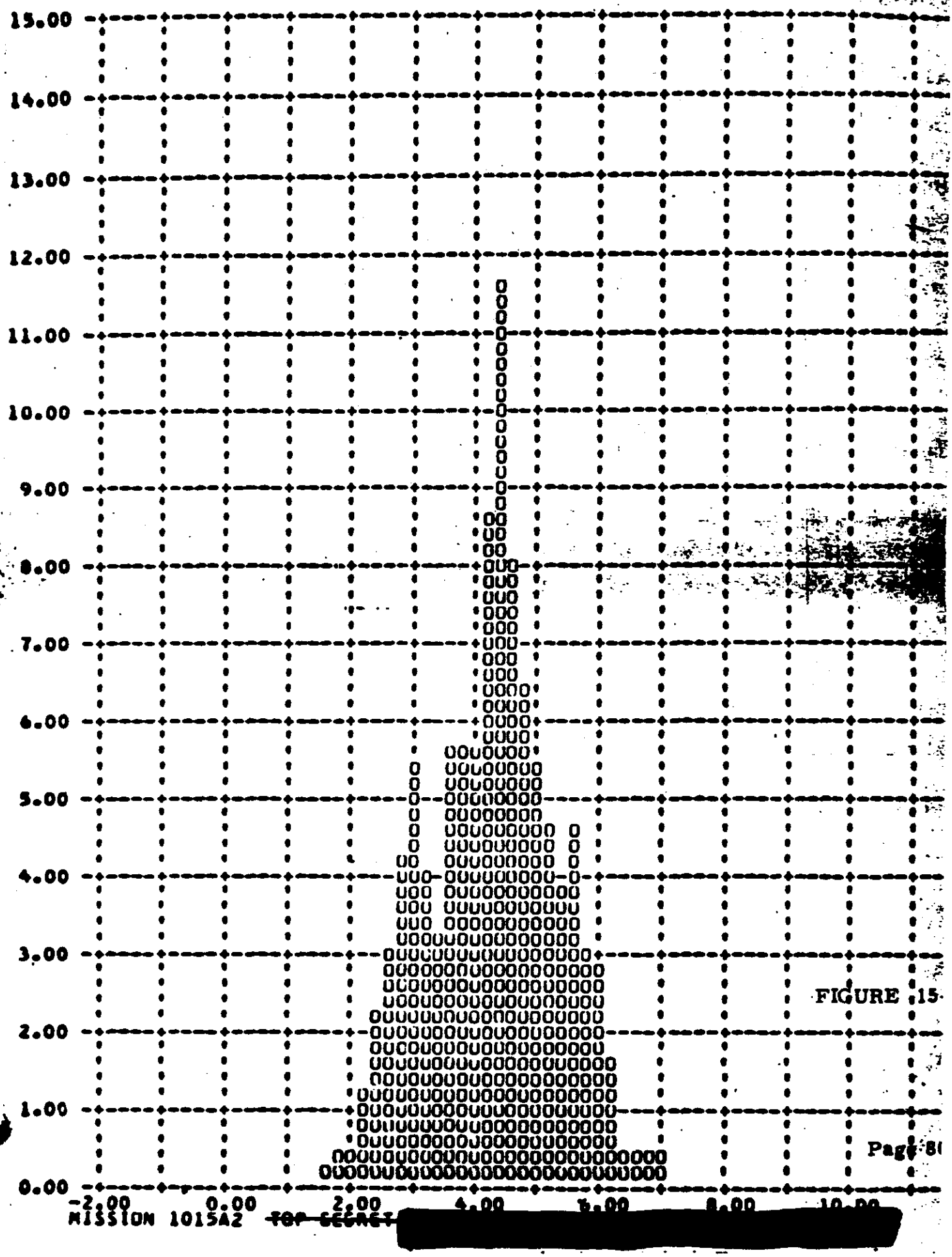


FIGURE 15

[redacted]

B-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT

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

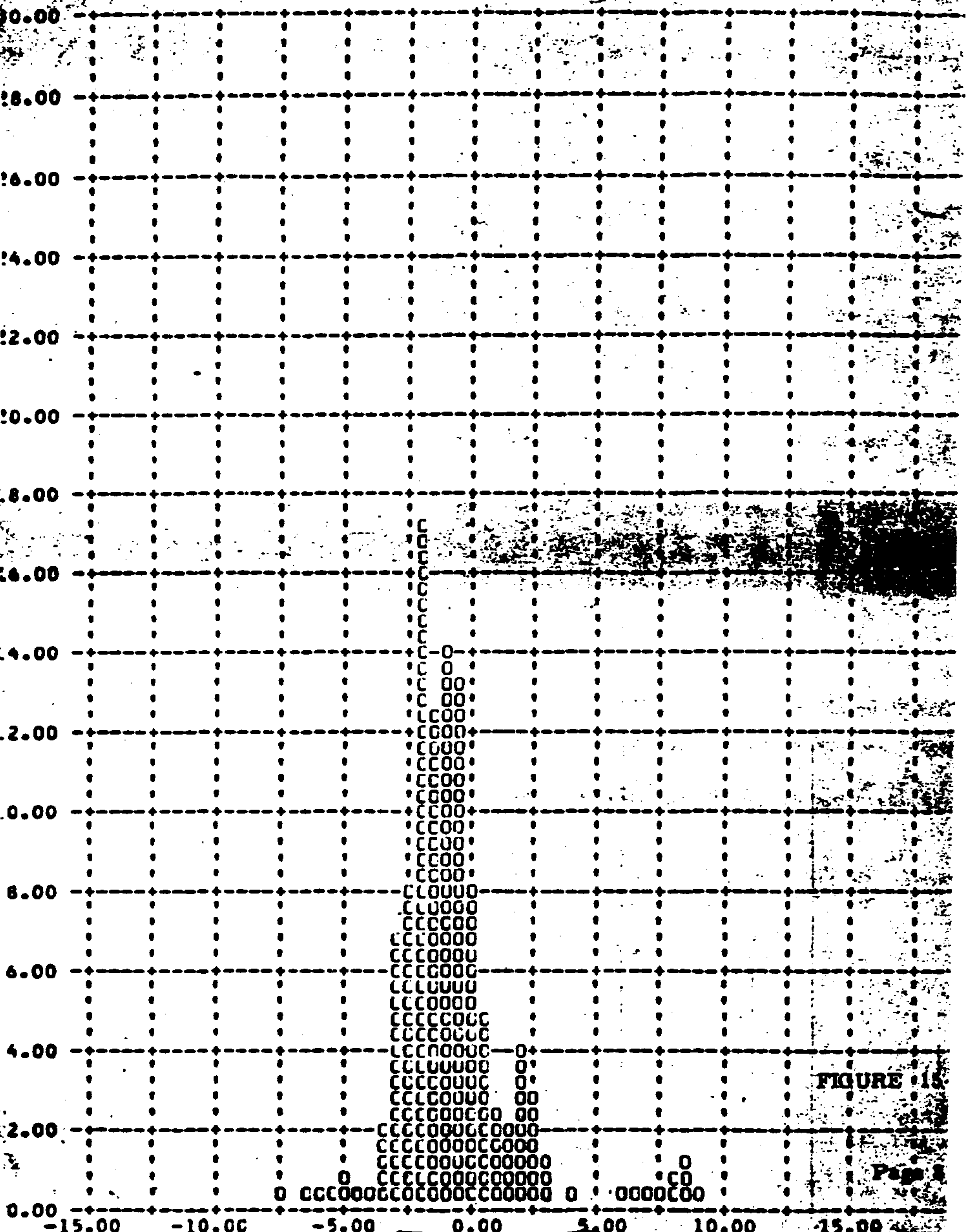


FIGURE 15

Page

MISSION 1015B1 ~~TOP SECRET~~ [redacted]

8-BUCKET FORWARD INSTRUMEN FRAMES 1-8 OF EACH OF UPDATED ... PERCENT - 0

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

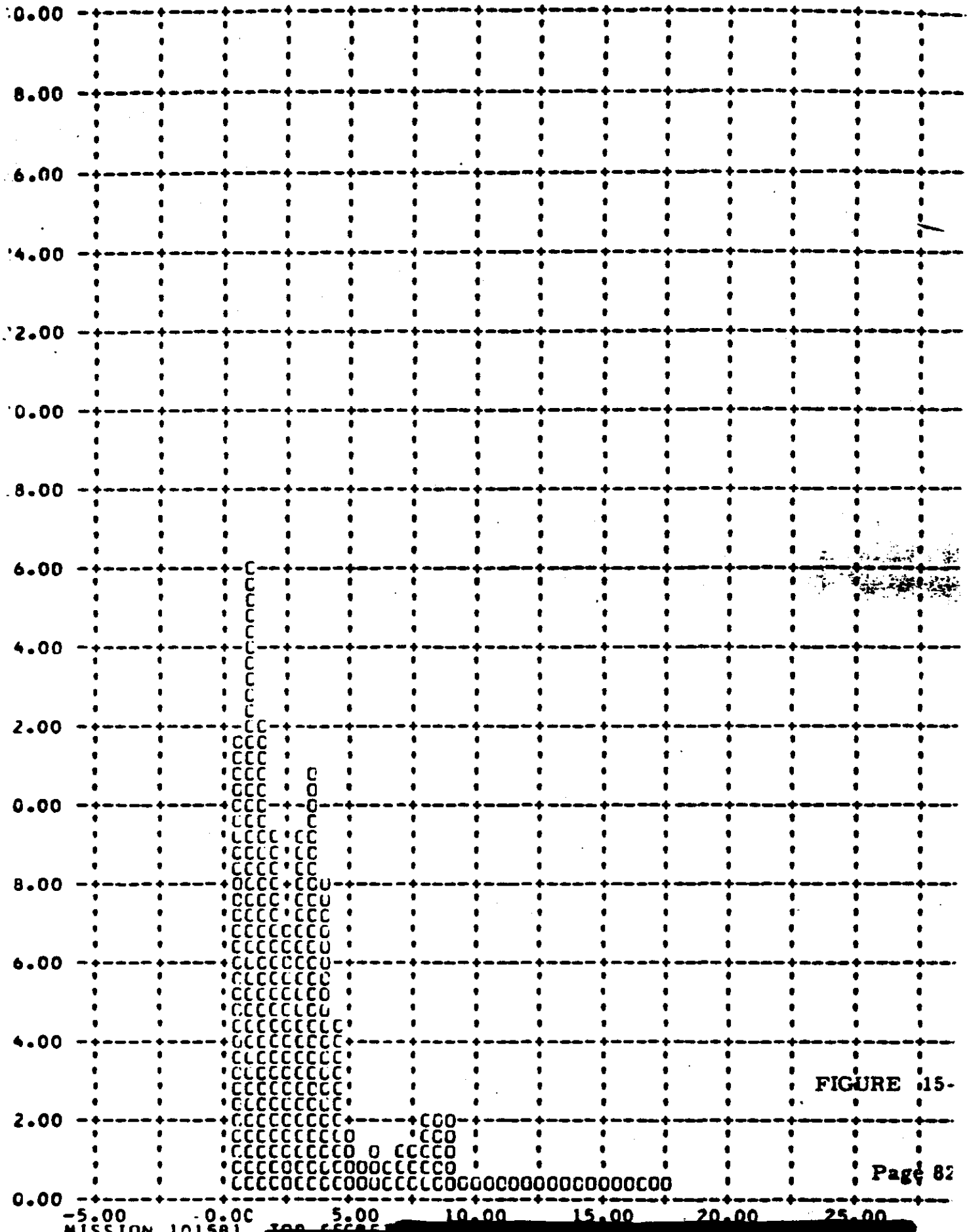


FIGURE 15-

MISSION 1015B1 ~~TOP SECRE~~ [redacted]

B-BUCKET FORWARD INSTRUMEN FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT =

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

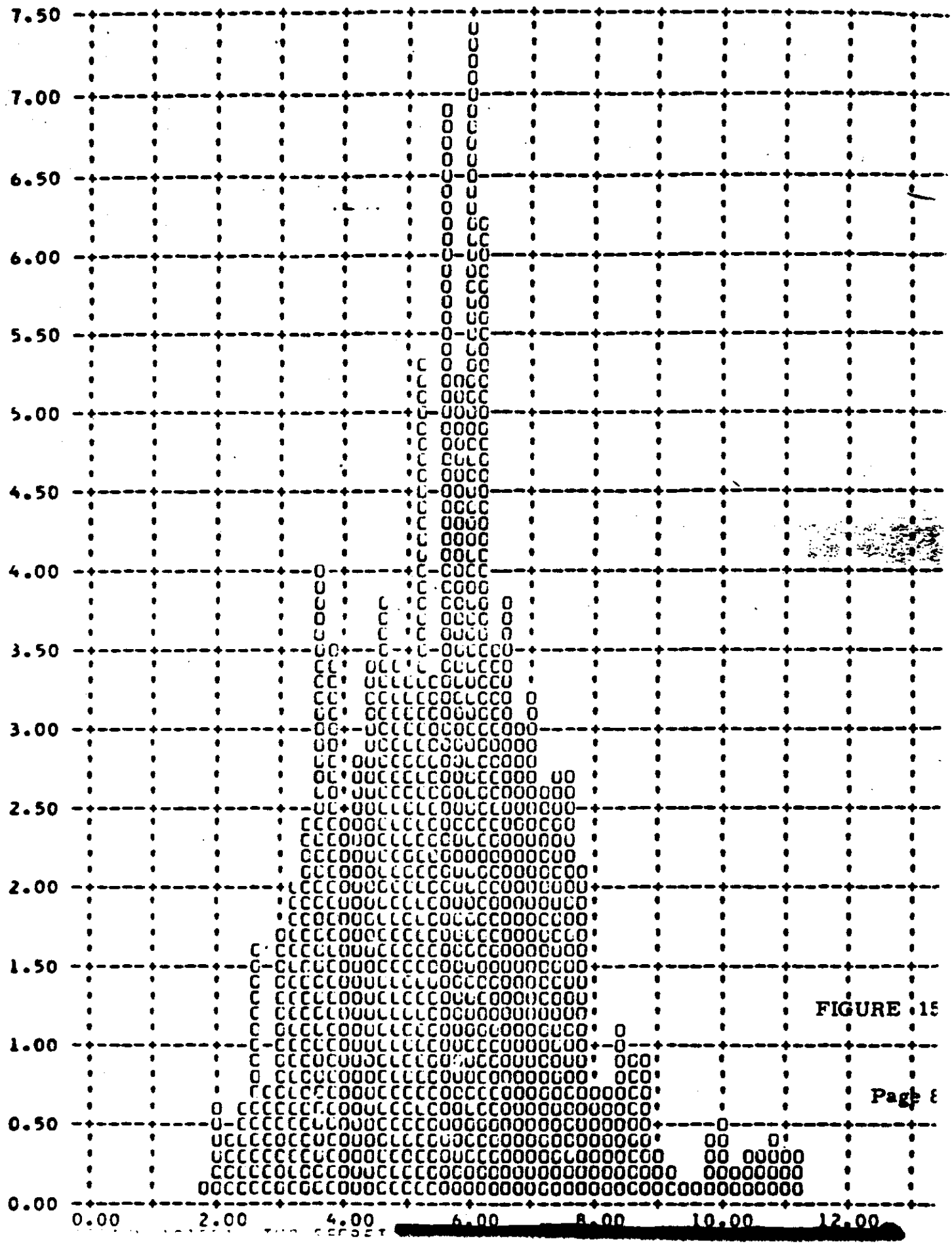


FIGURE 15

J17 B-BUCKET AFT INSTRUMENT FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3

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

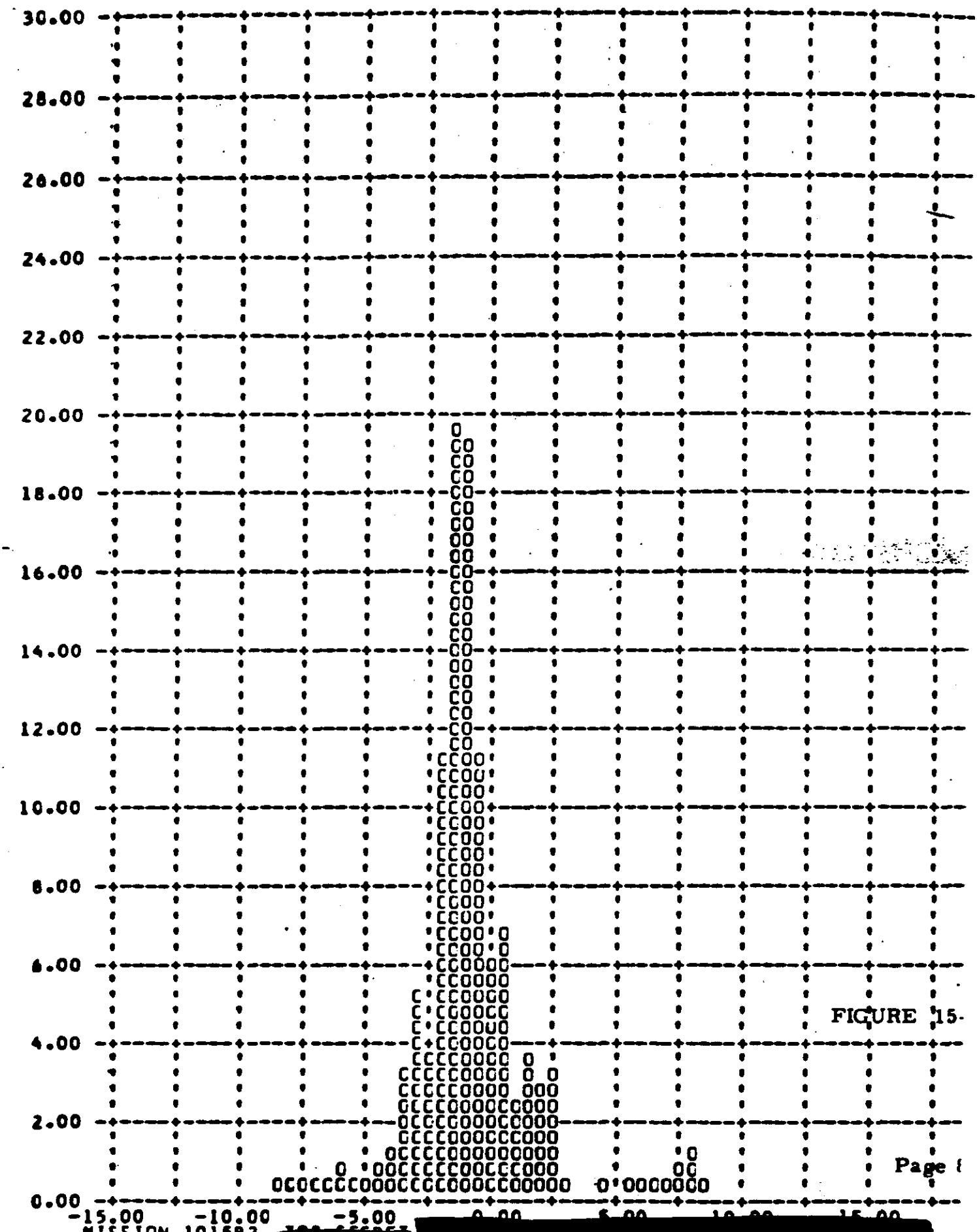


FIGURE 15-

J17 8-BUCKET AFT INSTRUMENT FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT =

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

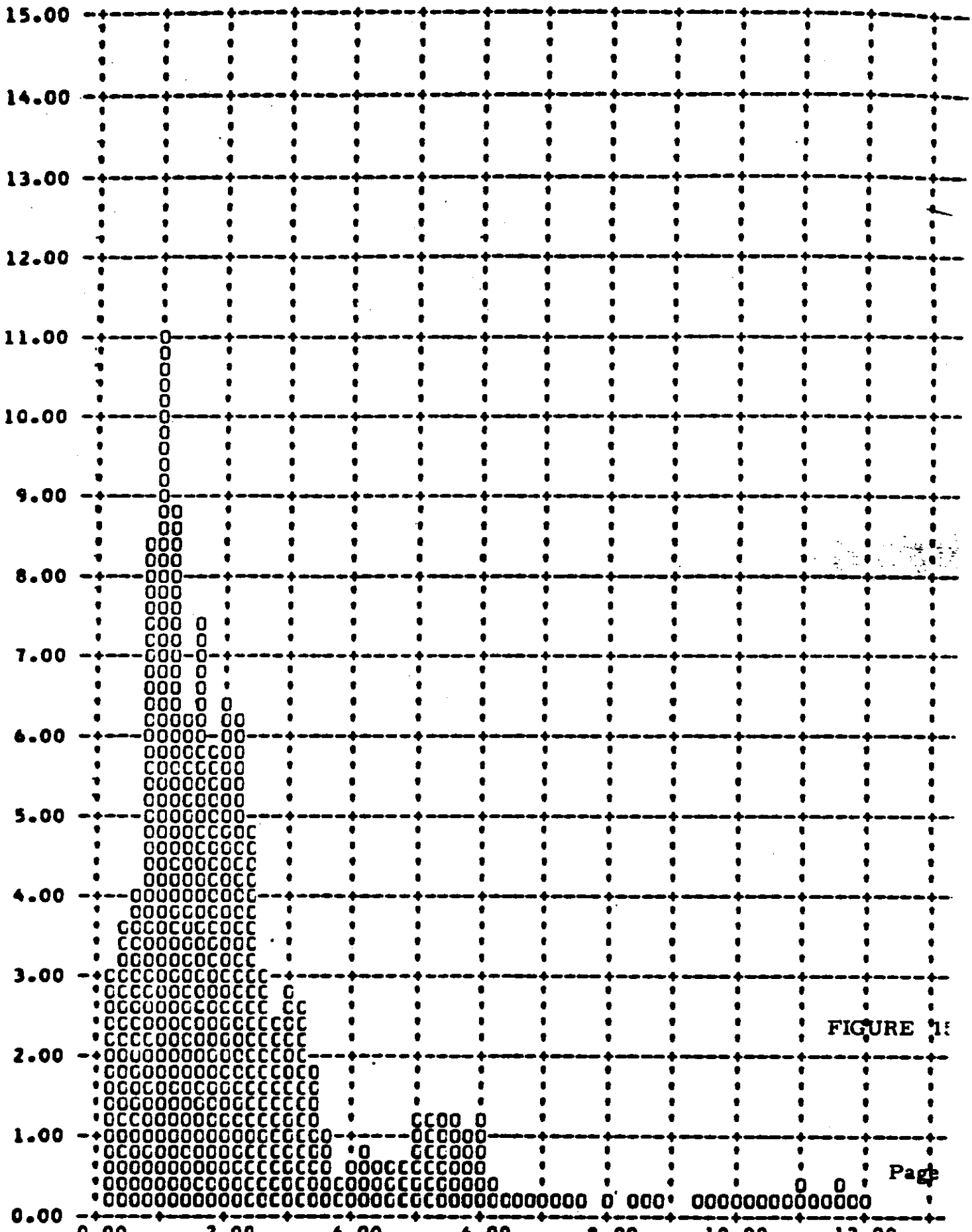


FIGURE 1

J17 B-BUCKET AFT INSTRUMENT FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 5

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

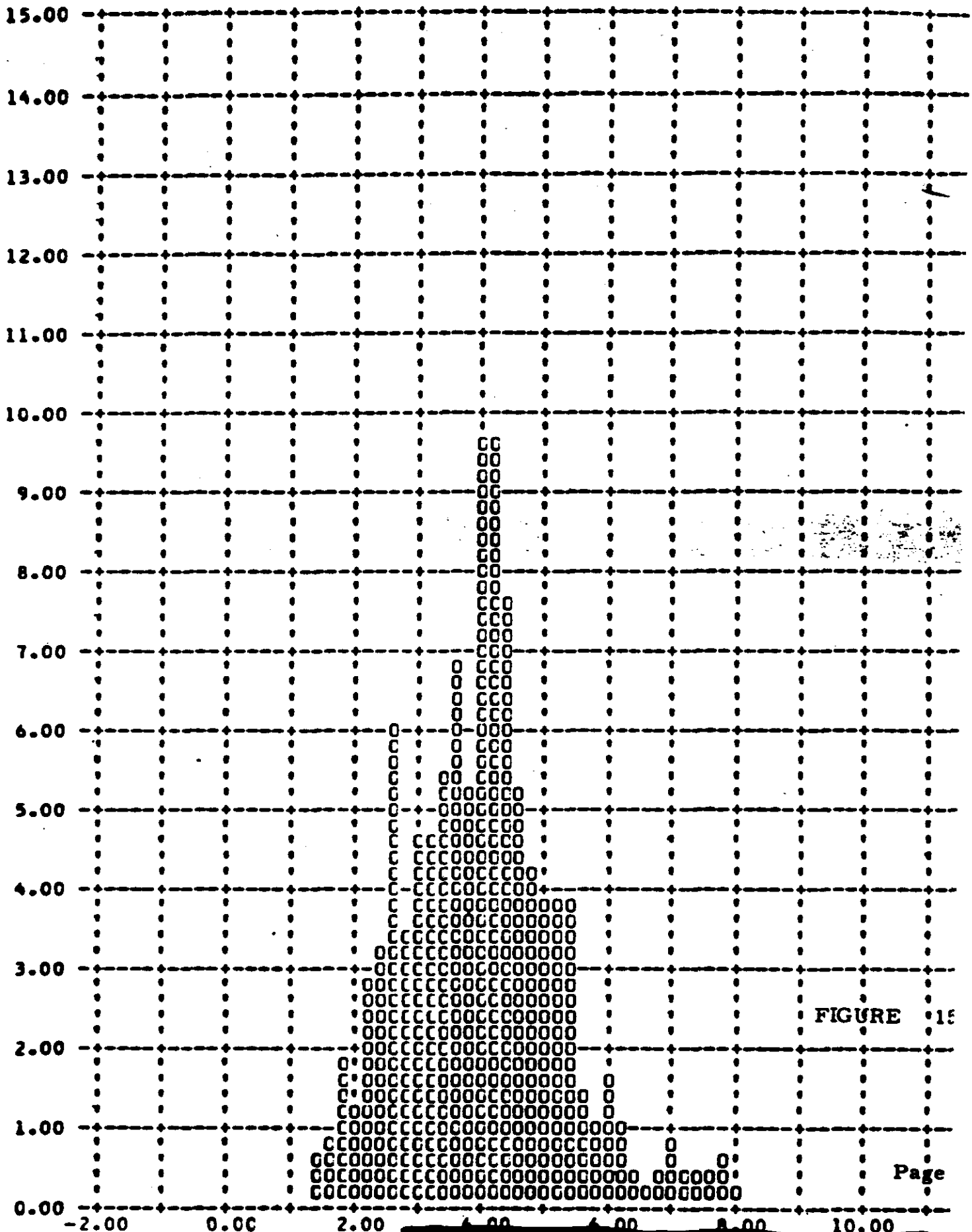


FIGURE 15

MISSION 1015
V/h RATIO AND RESOLUTION LIMITS

Value	Units	Camera	Mission 1015-1 90%	Mission 1015-1 Range	Mission 1015-2 90%	Mission 1015-2 Range
V/h Ratio Error	%	FWD	5.03	-7.6 to +1.4	3.18	-7.5 to +9.0
		AFT	6.27	-9.0 to +4.5	3.29	-8.5 to +8.5
Along Track Resolution Limit	Feet	FWD	5.45	0.2 to 7.0	6.76	0.5 to 17.5
		AFT	3.37	0.2 to 7.2	4.60	0.2 to 12.0
Cross Track Resolution Limit	Feet	FWD	7.76	2.2 to 10.0	7.52	1.8 to 11.2
		AFT	5.53	1.6 to 7.0	5.28	1.4 to 8.0

TABLE 15-1

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 1015-1		Mission 1015-2	
Emulsion	B + F Density	Radiation	B + F Density	Radiation
Type 3401	0.21	0.8 R	0.20	0.7 R
Royal X Pan	0.25	0.5 R	0.24	0.4 R

The mean total radiation seen by the take-up cassettes during both missions was approximately 0.6 roentgens. This level 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. A summary of estimated reliability is shown in Table 17-1.

Panoramic Camera Reliability

Sample Size - 86 opportunities to operate.
One failure - capping shutter on slave instrument on system M-7.
Assume - 3000 cycles per camera per mission.
Estimated Reliability = 98.0% at 50% confidence level.

Main Camera Door Reliability

Sample Size - 33 vehicles x 2 doors = 66 opportunities to operate
Estimated Reliability = 99.0% at 50% confidence level.

Payload Command and Control

Sample Size - 4320 hours operation in sample
One failure
Estimated Reliability = 96.3% at 50% confidence level

Payload Clock Reliability

Sample Size - 4320 hours operation in sample.
No failures
Estimated Reliability = 98.4% at 50% confidence level.

Estimated Reliability of Payload Functioning on orbit = 96.1% at 50% confidence level.

Recovery System Reliability

32 opportunities to recover
1 failure - improper separation due to water seal-cutter failures
Estimated Reliability = 94.8% at 50% confidence level.

Stellar-Index Camera Reliability

Sample begins with J5
Sample Size = 7225 cycles
One failure
Estimated Reliability = 90.4% at 50% confidence level.

Horizon Camera Reliability

Sample begins with J5
Sample Size = 31,500 cycles
Estimated Reliability of Single Camera = 96.7% at 50% confidence level.
Estimated Reliability of Four Horizon Cameras at a Parallel Redundant System = 99.9% at 50% confidence level.

~~TOP SECRET~~ [redacted]

ESTIMATED RELIABILITY SUMMARY

(AT 50% CONFIDENCE LEVEL)

MISSION NUMBER	PRIMARY FUNCTIONS						SECONDARY FUNCTIONS	
	PANORAMIC CAMERA	PANORAMIC CAMERA DOORS	COMMAND & CONTROL SYSTEM	PAYLOAD CLOCK	ON-ORBIT FUNCTIONS	RECOVERY SYSTEM	STELLAR-INDEX CAMERAS	HORIZON CAMERAS
	SAMPLE / FAILURES / RELIABILITY	SAMPLE / FAILURES / RELIABILITY	SAMPLE / FAILURES / RELIABILITY	SAMPLE / FAILURES / RELIABILITY	RELIABILITY	SAMPLE / FAILURES / RELIABILITY	SAMPLE / FAILURES / RELIABILITY	SAMPLE / FAILURES / RELIABILITY
9038 TO 1008	60 OPERATIONS / 1 / 97.5	52 DOORS / 0 / 98.6	3124 HOURS / 0 / 98.0	3124 HOURS / 0 / 95.0	96.1	18 EXPOSURES / 1 / 90.7	3400 CYCLES / 3 / 83.1	12,000 CYCLES / 0 / 91.7
1009	64 / 1 / 97.4	54 / 0 / 98.7	3216 / 0 / 98.0	3216 / 0 / 98.0	96.2	20 / 1 / 91.5	4250 / 3 / 88.3	16,000 / 0 / 93.4
1010	68 / 1 / 97.6	56 / 0 / 98.8	3432 / 0 / 98.1	3432 / 0 / 98.1	96.4	22 / 1 / 92.8	5100 / 3 / 73.7	18,000 / 0 / 94.4
1011	72 / 1 / 97.7	58 / 0 / 98.9	3600 / 0 / 98.1	3600 / 0 / 98.1	96.8	24 / 1 / 93.0	3525 / 0* / 94.7	21,000 / 0 / 98.2
1012	76 / 1 / 97.8	60 / 0 / 98.9	3720 / 0 / 98.2	3720 / 0 / 98.2	96.9	26 / 1 / 93.5	3825 / 0 / 94.7	24,000 / 0 / 98.5
1013	78 / 1 / 97.8	62 / 0 / 99.0	3940 / 1 / 96.9	3940 / 0 / 98.3	96.0	28 / 1 / 94.0	3950 / 0 / 96.1	25,500 / 0 / 98.0
1014	82 / 1 / 97.9	64 / 0 / 99.0	4046 / 1 / 96.1	4046 / 0 / 98.3	96.1	30 / 1 / 94.4	4375 / 1 / 89.6	28,500 / 0 / 98.4
1015	86 / 1 / 98.0	66 / 0 / 99.0	4320 / 1 / 96.3	4320 / 0 / 98.4	96.1	32 / 1 / 94.8	7225 / 1 / 90.4	31,500 / 0 / 98.7

16

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.

~~TOP SECRET~~ [redacted]

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-05	1174	8/13/64	2138 Z	74.9	99.9	29.0	49/112	124	0.250	W-21	125	0.250	W-21	029/29/29 042/42/37
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	045/47/45 049/53/42
1007	J-07	1609	8/19/64	2318 Z	65.0	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	150	0.200	W-21	151	0.200	W-21	048/45/48 033/28/33
1009	J-12	1605	8/5/64	2316 Z	80.1	99.6	39.9	49/128	154	0.200	W-21	155	0.200	W-21	036/34/36 038/38/34
1010	J-11	1178	9/14/64	2254 Z	84.9	97.4	42.5	65/144	152	0.175	W-21	153	0.175	W-21	041/41/41 044/48/44
1011	J-3X	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
1012	J-13	1179	10/17/64	2200 Z	79.0	96.2	32.4	49/81	156	0.200	W-21	157	0.200	W-21	051/51/47 048/52/53
1013	J-15	1173	11/2/64	2130 Z	80.0	100.0	25.0	65/81	158	0.225	W-21	159	0.225	W-21	052/49/55 047/48/54
1014	J-16	1180	11/18/64	2036 Z	70.0	103.2	65.6	81/145	162	0.250	W-25	139	0.175	W-21	053/59/49 050/44/46
1015	J-17	1607	12/19/64	2110 Z	74.9	96.7	21.8	81/175	138	0.250	W-25	141	0.175	W-21	061/61/61 058/58/58

~~TOP SECRET~~ [redacted]

PERFORMANCE SUMMARY

MISSION NUMBER	CAMERA	SERIAL NUMBER	M I P VALUE	VISUAL RES	AFSPOL MTF/AIM SLIT (μ)	AFSPOL MTF/AIM AVERAGE	MTF/AIM SLIT (μ)	MTF/AIM AVERAGE	[redacted] SLIT (μ)	[redacted] MTF/AIM AVERAGE ALL	[redacted] MTF/AIM AVERAGE HIGH	90% ATTITUDE ERROR (°) PITCH	90% ATTITUDE ERROR (°) ROLL	90% ATTITUDE ERROR (°) YAW	90% ATTITUDE RATES (°/HR) PITCH	90% ATTITUDE RATES (°/HR) ROLL	90% ATTITUDE RATES (°/HR) YAW	90% V/H ERROR (%)	90% RESOLUTION LIMIT (FEET) ALONG TRACK	90% RESOLUTION LIMIT (FEET) 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	8.1	7.7	8.1
1004-2	AFT			86		80		96		117	124									
	FWD	125	85	74		88		113		82	90	0.74	0.50	0.91	44.0	30.0	29.0	4.9	6.8	6.8
	AFT			73		83		106		89	95									
1006-1	FWD	148	90	78	350	69	43	88	320	84	97	0.41	0.42	1.14	26.8	28.5	27.8	18.4	13.8	6.7
1006-2	AFT			74		71		90		87	92									
	FWD	149	90	83		64		81		84	90	0.49	0.40	1.09	31.1	27.9	30.0	11.8	10.1	7.8
	AFT			83		72		90		87	94									
1007-1	FWD	144	85	80	350	80	43	87	320	82	91	0.58	0.46	1.43	37.6	23.9	29.9	3.6	3.1	9.4
	AFT			86		63		83		97	110							4.6	8.1	7.6
1007-2	FWD	145	85	79		72		61		68	74	0.64	0.47	——	43.0	25.8	——	3.2	8.4	——
	AFT			81		77		92		74	81							4.2	1.8	——
1008-1	FWD	150	85	80	350	80	43	95	320	81	89	0.59	0.39	0.94	43.8	23.9	29.8	2.9	4.9	8.9
	AFT			78		73		89		86	93									
1008-2	FWD	151	85	82		64		96		83	92	0.63	0.36	0.71	42.9	24.0	32.8	2.8	4.2	8.4
	AFT			79		91		83		85	91									
1009-1	FWD	154	85	92	350	80	—	——	80	75	88	0.65	0.65	0.71	29.2	22.7	27.6	3.3	6.3	9.8
	AFT			89		85				75	83									
1009-2	FWD	155	85	94		85				76	84	0.48	0.65	0.59	33.6	23.9	27.2	2.8	4.9	9.9
	AFT			87		87				72	79									
1010-1	FWD	152	85	90	350	90	80	88	80	87	96	0.93	0.30	0.87	39.1	23.6	30.6	4.5	2.3	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	7.5	8.8
	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	8.8
	AFT	161		84		77		86		83	93									
1012-1	FWD	156	85	92	—	—	80	91	80	84	98	0.65	0.51	——	47.1	33.2	——	1.8	4.8	——
	AFT			91				87		89	100									
1012-2	FWD	157	85	91				89		84	91	0.97	0.77	0.81	48.2	30.7	20.4	8.9	3.3	8.9
	AFT			89				96		85	98									
1013-1	FWD	158	85	89	—	—	80	94	80	85	99	0.64	0.32	1.34	38.9	22.0	32.3	3.7	7.8	8.2
	AFT	159		77				97		81	103	0.64	0.32	1.34	36.9	29.0	32.3	4.3	6.8	8.2
1014-1	FWD	162	80	87	—	—	80	78	80	74	86	0.62	0.41	1.46	35.0	36.1	38.8	2.8	6.2	8.8
	AFT			83				80		95	107	0.62	0.41	1.44	34.8	36.0	38.3	3.3	8.8	8.3
1014-2	FWD	139	80	83				75		70	77	1.06	0.98	——	38.4	38.4	——	1.4	6.4	——
	AFT			86				84		80	88	1.06	0.89	——	36.1	36.0	——	3.2	2.2	——
1015-1	FWD	138	85	87	—	—	80	76	80	90	—	0.65	0.38	0.53	47.0	29.4	38.2	8.0	8.8	7.8
	AFT			87				73		97		0.64	0.39	0.53	46.9	29.2	38.2	6.3	3.4	8.8
1015-2	FWD	141	85	83				72		89										
	AFT			82				72		90										

* DATA NOT PRESENTLY AVAILABLE

~~TOP SECRET~~ [redacted]

EXPOSURE - PROCESSING SUMMARY

MISSION NUMBER	CAMERA	SOLAR ELEVATION RANGE (°)		SOLAR AZIMUTH RANGE (°)		PREDICTED PROCESSING (%)			REPORTED PROCESSING (%)			COMPUTED PROCESSING (%)			TERRAIN D-MIN RANGE				TERRAIN D-MAX RANGE				CLOUD D-MAX RANGE				UNDER EXPOSED (%)	UNDER PROCESSED (%)	NOMINAL EXP & PRO (%)	OVER PROCESSED (%)	OVER EXPOSED (%)	CLOUD COVER (%)
		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	78	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	81	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	5	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 36	2 39	1.89	1.99	0 43	2.46	1 89	1.98	0	4	67	20	9	35
1006-1	FWD	38	56	52	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	80
	AFT	38	56	52	140	1	99	0	0	23	77	0	24	76	0 36	1 66	0 87	0.84	0 96	2 35	1 72	1.72	1 14	2.40	2 24	2 28	0	1	58	40	1	80
1006-2	FWD	32	64	36	147	2	98	0	30	41	29	11	59	30	0 21	1 14	0 53	0.50	0 56	2 28	1.46	1.50	1 30	2.33	2.11	2.16	2	21	72	4	0	48
	AFT	32	64	36	147	2	98	0	35	40	25	21	54	25	0 26	1 34	0 62	0.58	0 65	2 19	1.48	1.47	1 56	2.50	2 12	2.16	0	11	77	9	3	48
1007-1	FWD	12	49	50	103	0	5	95	1	20	79	0	25	75	0 26	1 22	0 52	0.47	0 62	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	6	77	17	0 26	1 76	0 58	0.55	0 78	2 31	1.52	1.52	1 54	2.39	2 20	2.24	1	13	80	5	1	80
1007-2	FWD	32	57	43	112	0	25	75	3	28	69	0	26	74	0 26	1 23	0 51	0.48	0 70	2 32	1.44	1.40	0 90	2.37	2.15	2.20	18	9	71	2	0	88
	AFT	31	57	38	111	0	100	0	19	41	40	3	88	9	0 24	1.56	0.60	0.58	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	51	50	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	45
	AFT	30	51	50	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	45
1008-2	FWD	29	56	42	105	0	100	0	3	31	66	0	27	73	0 14	1 81	0 76	0.72	0 57	2 10	1 54	1.55	1 09	2.40	2.20	2.25	2	1	73	23	1	85
	AFT	29	56	42	105	0	100	0	3	30	67	0	29	71	0 32	1 64	0 77	0.76	0 73	2.10	1 85	1.55	1 10	2 35	2.18	2.22	1	3	69	27	0	85
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 85	2 41	1 83	1.52	0 83	2.51	2 30	2.36	5	4	77	14	0	50
	AFT	12	49	42	132	0	100	0	0	40	60	0	45	55	0 28	1 42	0 70	0.64	0 92	2 28	1 58	1.55	0 63	2.51	2 32	2.36	1	5	73	20	0	80
1009-2	FWD	23	58	35	138	2	98	0	3	21	76	0	40	60	0 29	1 55	0 69	0.64	0 73	2 37	1 53	1.53	1 06	2.45	2.25	2.30	4	4	74	17	0	85
	AFT	23	58	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 43	2.32	1.38	1.32	1 11	2.42	2 16	2.20	18	3	75	4	0	40
	AFT	18	47	45	83	0	21	79	0	19	81	0	16	84	0 27	1 25	0 57	0.52	0 78	2 42	1 45	1 41	0 96	2 46	2 20	2 28	9	4	81	6	0	40
1010-2	FWD	15	52	38	76	0	50	50	0	16	84	0	13	87	0 26	1 51	0 55	0.50	0 52	2 36	1 41	1.38	1 00	2 44	2 14	2 20	22	4	67	6	0	40
	AFT	15	52	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	45
1011-1	FWD	2	55	33	66	0	64	36	2	23	75	2	23	75	0 18	0 99	0 50	0 46	0 56	2 36	1 48	1 43	0 78	2 40	2 07	2 16	17	11	70	2	0	40
	AFT	2	55	33	66	0	67	33	3	47	50	0	37	63	0 24	1 48	0 60	0 58	0 90	2 35	1 87	1 55	0 74	2 37	2 11	2 18	3	7	81	8	0	40
1012-1	FWD	0	45	38	71	0	64	36	7	56	37	0	65	35	0 25	1 30	0 59	0 53	0 54	2 39	1 40	1 42	0 90	2 39	1 93	2 00	6	17	68	10	0	80
	AFT	0	45	38	71	0	64	36	0	33	67	0	49	51	0 26	1 40	0 61	0 58	0 47	2 27	1 44	1 40	0 72	2 32	1 89	1 96	5	10	74	11	0	80
1012-2	FWD	0	57	34	106	0	77	23	6	44	50	0	49	51	0 30	1 20	0 58	0 55	0 73	2 32	1 49	1 42	0 67	2 34	1 91	2 00	4	9	80	7	0	40
	AFT	0	57	34	106	0	77	23	3	15	82	0	10	90	0 30	1 27	0 68	0 62	0 48	2 33	1 55	1 58	0 70	2 38	1 96	2 02	4	0	72	23	0	40
1013-1	FWD	0	56	28	83	0	64	36	0	42	58	0	55	45	0 20	1 66	0 56	0 36	0 52	2 29	1 56	1 59	1 21	2 41	2 03	2 10	7	13	76	4	0	47
	AFT	0	56	28	82	0	64	36	2	7	91	0	33	67	0 28	1 56	0 66	0 48	0 64	2 28	1 59	1 63	1 10	2 36	1 97	2 03	5	5	74	16	0	47
1014-1	FWD	0	59	15	71	0	21	79	1	38	61	0	63	37	0 17	0 99	0 40	0 36	0 26	2 36	1 40	1 42	1 01	2 38	1 94	2 05	27	33	39	1	0	40
	AFT	0	59	14	69	0	31	69	0	13	87	0	36	64	0 18	1 26	0 51	0 48	0 25	2 38	1 42	1 49	0 42	2 43	1 91	2 00	19	12	64	5	0	40
1014-2	FWD	0	77	0	36	0	21	79	0	26	74	0	61	39	0,17	1 06	0 36	0 31	0 23	2 32	1 30	1 36	0 42	2 36	1 72	1 80	31	40	27	2	0	40
	AFT	0	76	0	34	0	29	71	0	5	95	0	68	32	0 18	1 49	0 44	0 40	0 27	2 28	1 34	1 45	0 26	2 44	1 71	1 84	19	29	50	2	0	40
1015-1	FWD	5	68	19	68	0	8	92	2	2	96	0	2	98	0 25	1 70	0 54	0 47	0 54	2 28	1 44	1 46	0 46	2 41	1 86	1 90	28	0	68	7	0	45
	AFT	4	68	18	67	0	30	70	0	5	95	0	4	96	0 29	1 20	0 60	0 56	0 46	2 28	1 49	1 50	0 80	2 36	1 86	1 93	14	0	77	8	0	45
1015-2	FWD	0	80	-2	71	0	10	90	0	10	90	0	11	89	0 22	1 10	0 50	0 46	0 34	2 07	1 29	1 30	0 28	2 34	1 69	1 78	28	4	68	3	0	40
	AFT	0	79	-2	71	0	21	79	0	9	91	0	9	91	0 26	1 21	0 59	0 52	0 36	2 22	1 37	1 38	0 38	2 40	1 74	1 80	17	1	70	12	0	40

[redacted]

SECTION A

APPENDIX

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 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
[redacted]												
128							0	0	1	128	0	1

TABLE A-1

[redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 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
[redacted]	0	0	0	4	1	0	88	35	2	92	36	2

TABLE A-1

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 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
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	1	1	0	1	1	0
[illegible]	0	0	0	0	1	0	0	2	0	0	3	0
[illegible]	0	0	0	0	0	0	0	3	0	0	3	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	3	0	0	3	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	2	1	0	2	1
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	0	6	0	0	6	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	5	1	0	5	1
[illegible]	0	0	0	0	0	0	0	1	1	0	1	1
[illegible]	0	0	0	0	0	0	1	2	0	1	2	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	1	2	0	1	2	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	3	0	0	3	0
[illegible]	0	0	0	0	0	0	1	2	1	1	2	1
1.24	0	0	0	0	0	0	1	3	2	1	3	2
[illegible]	0	0	0	0	0	0	0	2	0	0	2	0
[illegible]	0	0	0	0	0	0	0	3	1	0	3	1
[illegible]	0	0	0	0	0	0	1	0	0	1	0	0
[illegible]	0	0	0	0	0	0	0	3	0	0	3	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	4	1	0	4	1
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	1	3	5	1	3	6
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	0	2	0	0	2
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	1	1	1	1	1	1
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	4	0	0	4	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	3	2	0	3	2
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	8	1	0	8	1
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	1	4	1	1	4	1
[illegible]	0	0	0	0	0	0	0	0	1	0	0	1
[illegible]	0	0	0	0	0	0	0	5	1	0	5	1
[illegible]	0	0	0	0	0	0	0	3	0	0	3	0
[illegible]	0	0	0	0	0	0	0	1	4	0	1	4
[illegible]	0	0	0	0	0	0	0	1	1	0	1	1
[illegible]	0	0	0	0	0	0	0	2	3	0	2	3
[illegible]	0	0	0	0	1	1	9	87	30	9	88	31

[redacted] [redacted] [redacted]

TABLE A-1

[redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 DENSITY FREQ DISTR

DENSITY VALUE	PRIMARY			INTERMEDIATE			FULL			ALL LEVELS		
	MIN	MAX	LIM	MIN	MAX	LIM	MIN	MAX	LIM	MIN	MAX	LIM
1.51	0	0	0	0	0	0	0	3	0	0	3	0
1.52	0	0	0	0	1	0	0	0	2	0	1	2
1.53	0	0	0	0	0	0	0	0	0	0	0	0
1.54	0	0	0	0	0	1	0	5	1	0	5	2
1.55	0	0	0	0	0	0	0	0	1	0	0	1
1.56	0	0	0	0	0	0	0	5	3	0	5	3
1.57	0	0	0	0	0	0	0	0	0	0	0	0
1.58	0	0	0	0	0	0	0	0	1	0	0	1
1.59	0	0	0	0	0	0	0	1	0	0	1	0
1.60	0	0	0	0	0	0	0	5	2	0	5	2
1.61	0	0	0	0	0	0	0	0	1	0	0	1
[illegible]	0	0	0	0	0	0	0	2	1	0	2	1
[illegible]	0	0	0	0	0	0	0	2	0	0	2	0
[illegible]	0	0	0	0	0	0	0	4	3	0	4	3
[illegible]	0	0	0	0	0	0	0	1	1	0	1	1
[illegible]	0	0	0	0	0	0	0	4	2	0	4	2
[illegible]	0	0	0	0	0	0	0	2	0	0	2	0
[illegible]	0	0	0	0	0	0	0	2	2	0	2	2
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
1.70	0	0	0	0	0	0	1	8	3	1	8	3
1.71	0	0	0	0	0	0	0	0	0	0	0	0
1.72	0	0	0	0	0	0	0	3	4	0	3	4
1.73	0	0	0	0	0	0	0	2	1	0	2	1
1.74	0	0	0	0	0	0	0	2	2	0	2	2
1.75	0	0	0	0	0	0	0	2	0	0	2	0
[illegible]	0	0	0	0	0	0	0	4	2	0	4	2
[illegible]	0	0	0	0	0	1	0	1	0	0	1	1
[illegible]	0	0	0	0	1	0	0	2	3	0	3	3
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	1	0	3	4	0	3	5
[illegible]	0	0	0	0	0	0	0	0	1	0	0	1
[illegible]	0	0	0	0	0	0	0	2	3	0	2	3
[illegible]	0	0	0	0	0	0	0	0	2	0	0	2
[illegible]	0	0	0	0	0	0	0	2	4	0	2	4
[illegible]	0	0	0	0	0	0	0	0	1	0	0	1
[illegible]	0	0	0	0	0	1	0	1	0	0	1	1
[illegible]	0	0	0	0	0	0	0	4	1	0	4	1
[illegible]	0	0	0	0	0	0	0	1	4	0	1	4
[illegible]	0	0	0	0	0	0	0	2	3	0	2	3
[illegible]	0	0	0	0	0	2	0	4	8	0	4	10
[illegible]	0	0	0	0	0	0	0	1	1	0	1	1
[illegible]	0	0	0	0	0	0	0	4	1	0	4	1
[illegible]	0	0	0	0	0	0	0	1	0	0	1	0
[illegible]	0	0	0	0	0	0	0	2	1	0	2	1
[illegible]	0	0	0	0	0	0	0	1	2	0	1	2
[illegible]	0	0	0	0	0	0	0	2	3	0	2	3
[illegible]	0	0	0	0	0	0	0	2	1	0	2	1
[illegible]	0	0	0	0	0	0	0	1	3	0	1	3
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	1	0	3	5	0	3	6
TOTAL	0	0	0	0	2	7	1	96	83	1	98	90

[redacted]

TABLE A-1

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 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
2.01	0	0	0	0	0	0	0	0	3	0	0	3
2.02	0	0	0	0	0	0	0	0	3	0	0	3
2.03	0	0	0	0	0	0	0	0	1	0	0	1
2.04	0	0	0	0	0	1	0	1	2	0	1	3
2.05	0	0	0	0	0	0	0	0	1	0	0	1
2.06	0	0	0	0	0	0	0	0	4	0	0	4
2.07	0	0	0	0	0	0	0	0	1	0	0	1
2.08	0	0	0	0	0	0	0	1	4	0	1	4
2.09	0	0	0	0	0	0	0	0	0	0	0	0
2.10	0	0	0	0	0	0	0	0	10	0	0	10
2.11	0	0	0	0	0	0	0	1	3	0	1	3
2.12	0	0	0	0	0	0	0	0	6	0	0	6
2.13	0	0	0	0	0	0	0	0	2	0	0	2
2.14	0	0	0	0	0	0	0	0	4	0	0	4
2.15	0	0	0	0	0	0	0	0	0	0	0	0
2.16	0	0	0	0	0	0	0	0	2	0	0	2
2.17	0	0	0	0	0	0	0	0	1	0	0	1
2.18	0	0	0	0	0	0	0	0	2	0	0	2
2.19	0	0	0	0	0	0	0	0	0	0	0	0
2.20	0	0	0	0	0	0	0	0	6	0	0	6
2.21	0	0	0	0	0	0	0	2	2	0	2	2
2.22	0	0	0	0	0	0	0	0	4	0	0	4
2.23	0	0	0	0	0	0	0	2	3	0	2	3
2.24	0	0	0	0	0	0	0	0	3	0	0	3
2.25	0	0	0	0	0	0	0	0	2	0	0	2
2.26	0	0	0	0	0	0	0	0	1	0	0	1
2.27	0	0	0	0	0	0	0	0	1	0	0	1
2.28	0	0	0	0	0	0	0	1	2	0	1	2
2.29	0	0	0	0	0	0	0	0	0	0	0	0
2.30	0	0	0	0	0	0	0	0	1	0	0	1
2.31	0	0	0	0	0	0	0	0	1	0	0	1
2.32	0	0	0	0	0	0	0	0	0	0	0	0
2.33	0	0	0	0	0	0	0	0	1	0	0	1
2.34	0	0	0	0	0	0	0	0	1	0	0	1
2.35	0	0	0	0	0	0	0	0	0	0	0	0
2.36	0	0	0	0	0	0	0	0	2	0	0	2
2.37	0	0	0	0	0	0	0	0	0	0	0	0
2.38	0	0	0	0	0	0	0	0	0	0	0	0
2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40	0	0	0	0	0	0	0	0	2	0	0	2
2.41	0	0	0	0	0	0	0	0	0	0	0	0
2.42	0	0	0	0	0	0	0	0	0	0	0	0
2.43	0	0	0	0	0	0	0	0	0	0	0	0
2.44	0	0	0	0	0	0	0	0	0	0	0	0
2.45	0	0	0	0	0	0	0	0	0	0	0	0
2.46	0	0	0	0	0	0	0	0	0	0	0	0
2.47	0	0	0	0	0	0	0	0	0	0	0	0
2.48	0	0	0	0	0	0	0	0	0	0	0	0
2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	1	0	8	81	0	8	82

[redacted] [redacted] [redacted]

TABLE A-1

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTRUMENT • FRWD 01/29/65 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	0	0	0	0	0	0	0	0	0	0	0	0
2.52	0	0	0	0	0	0	0	0	0	0	0	0
2.53	0	0	0	0	0	0	0	0	0	0	0	0
2.54	0	0	0	0	0	0	0	0	0	0	0	0
2.55	0	0	0	0	0	0	0	0	0	0	0	0
2.56	0	0	0	0	0	0	0	0	0	0	0	0
2.57	0	0	0	0	0	0	0	0	0	0	0	0
2.58	0	0	0	0	0	0	0	0	0	0	0	0
2.59	0	0	0	0	0	0	0	0	0	0	0	0
2.60	0	0	0	0	0	0	0	0	0	0	0	0
2.61	0	0	0	0	0	0	0	0	0	0	0	0
2.62	0	0	0	0	0	0	0	0	0	0	0	0
2.63	0	0	0	0	0	0	0	0	0	0	0	0
2.64	0	0	0	0	0	0	0	0	0	0	0	0
2.65	0	0	0	0	0	0	0	0	0	0	0	0
2.66	0	0	0	0	0	0	0	0	0	0	0	0
2.67	0	0	0	0	0	0	0	0	0	0	0	0
2.68	0	0	0	0	0	0	0	0	0	0	0	0
2.69	0	0	0	0	0	0	0	0	0	0	0	0
2.70	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	4	4	9	226	226	197	230	230	206

MISSION 1015-1 INSTR - FRWD 01/29/65 PROCESSING AND EXPOSURE A

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EXF
PRIMARY	0	0 PC	0 PC	0 PC	0 PC	
INTERMEDIATE	4	0 PC	0 PC	100 PC	0 PC	
FULL	226	29 PC	0 PC	64 PC	7 PC	
ALL LEVELS	230	28 PC	0 PC	65 PC	7 PC	

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EXF
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	---------	0.91
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35
FULL	0.18 AND UP	0.01-0.39	---------	0.40-0.90	0.91-1.69	1.70

[redacted] [redacted] [redacted]

TABLE A-1

[redacted] [redacted] [redacted]

[illegible] • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

[illegible] • 0.71 • [illegible] • 0.77 • STD DEV • 0.07 • RANGE • 0.59 TO 0.79 WITH 4 SAMPLES

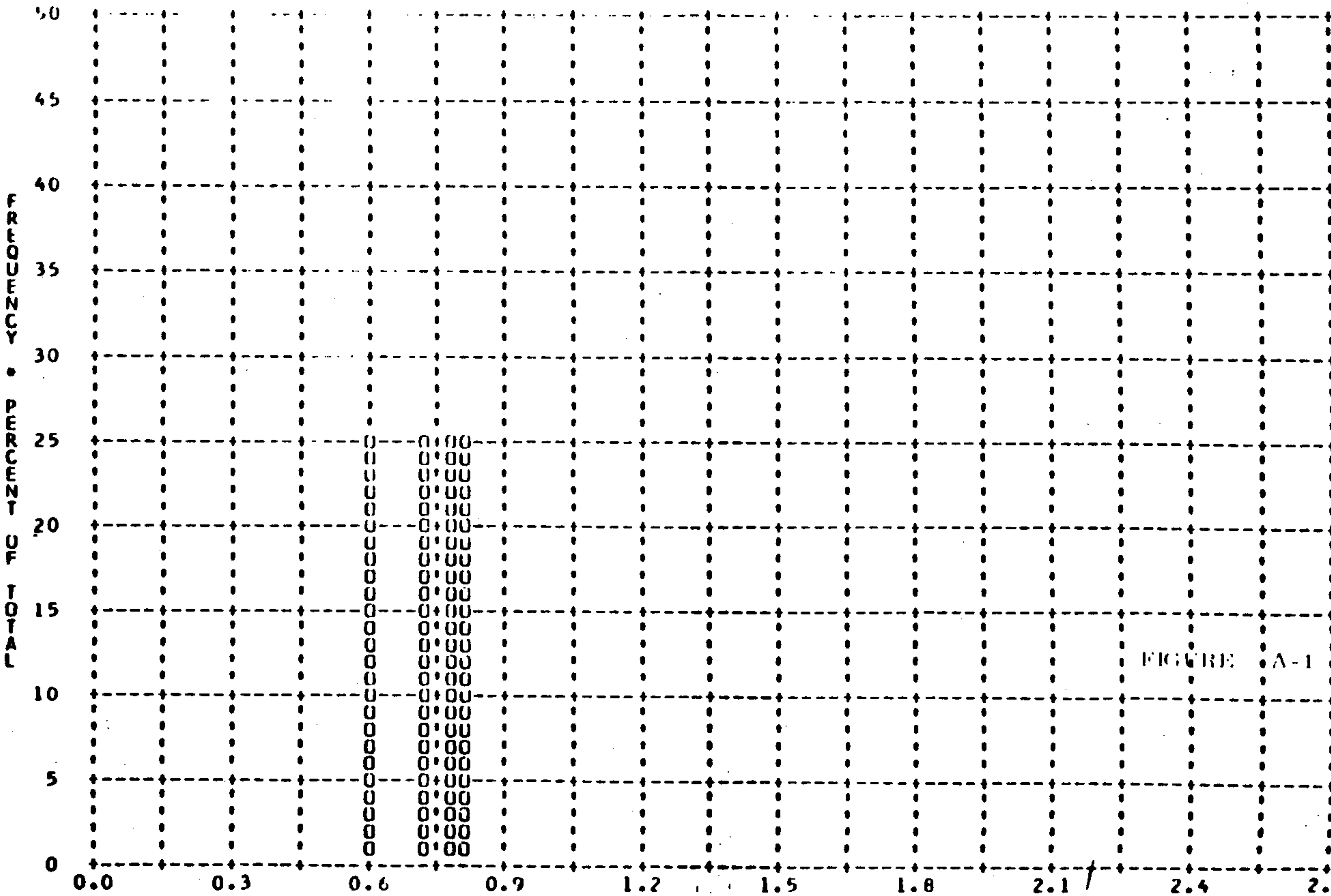


FIGURE A-1

[redacted]

[redacted] [redacted] [redacted]

[redacted] • [redacted] • [redacted] • [redacted] • SIZE/SIZE PERCENT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.41 • [redacted] • 1.52 • STD DEV • 0.41 • RANGE • 0.90 TO 1.78 WITH 4 SAMPLES

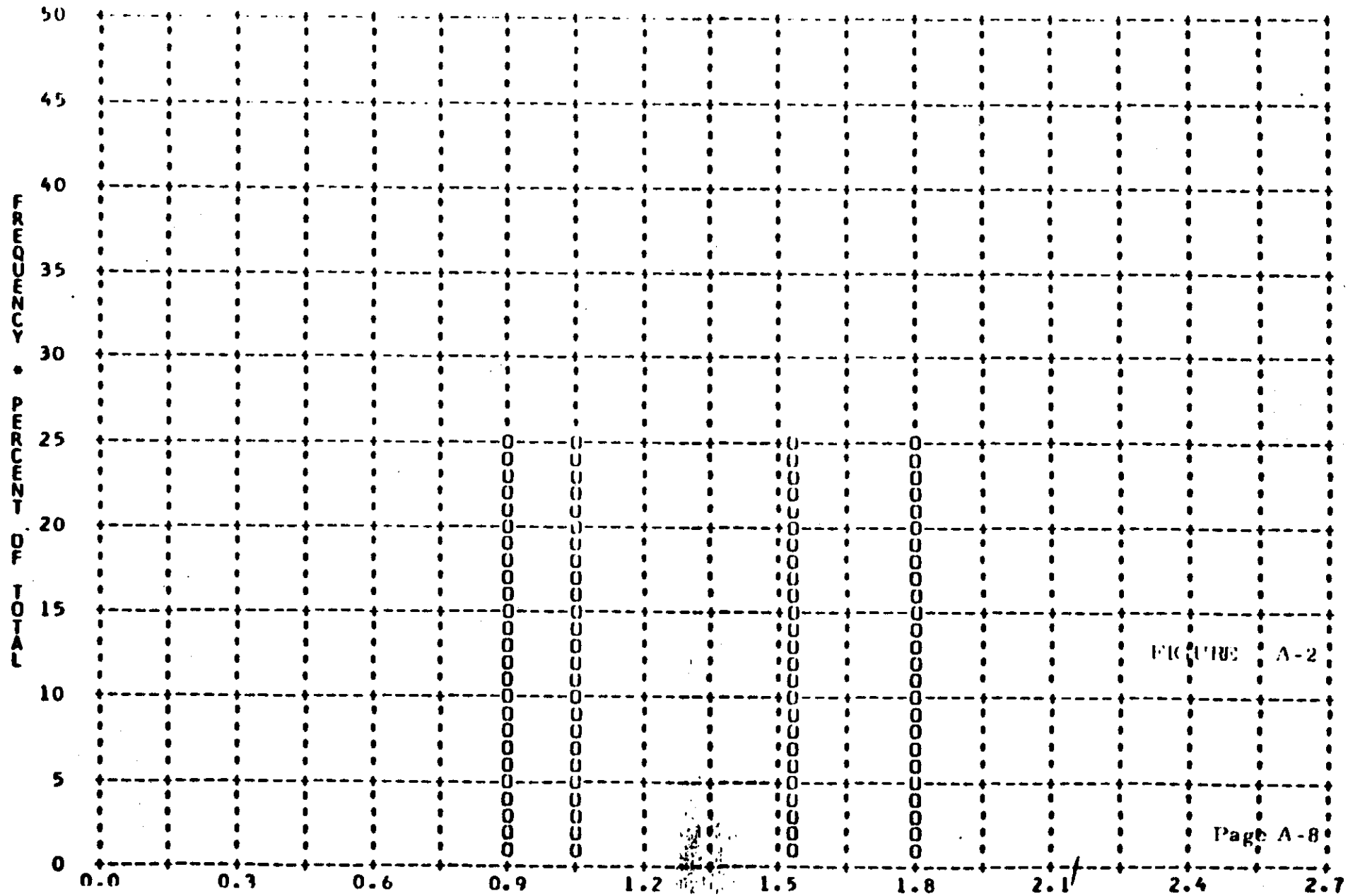


FIGURE A-2

[redacted] [redacted] [redacted]

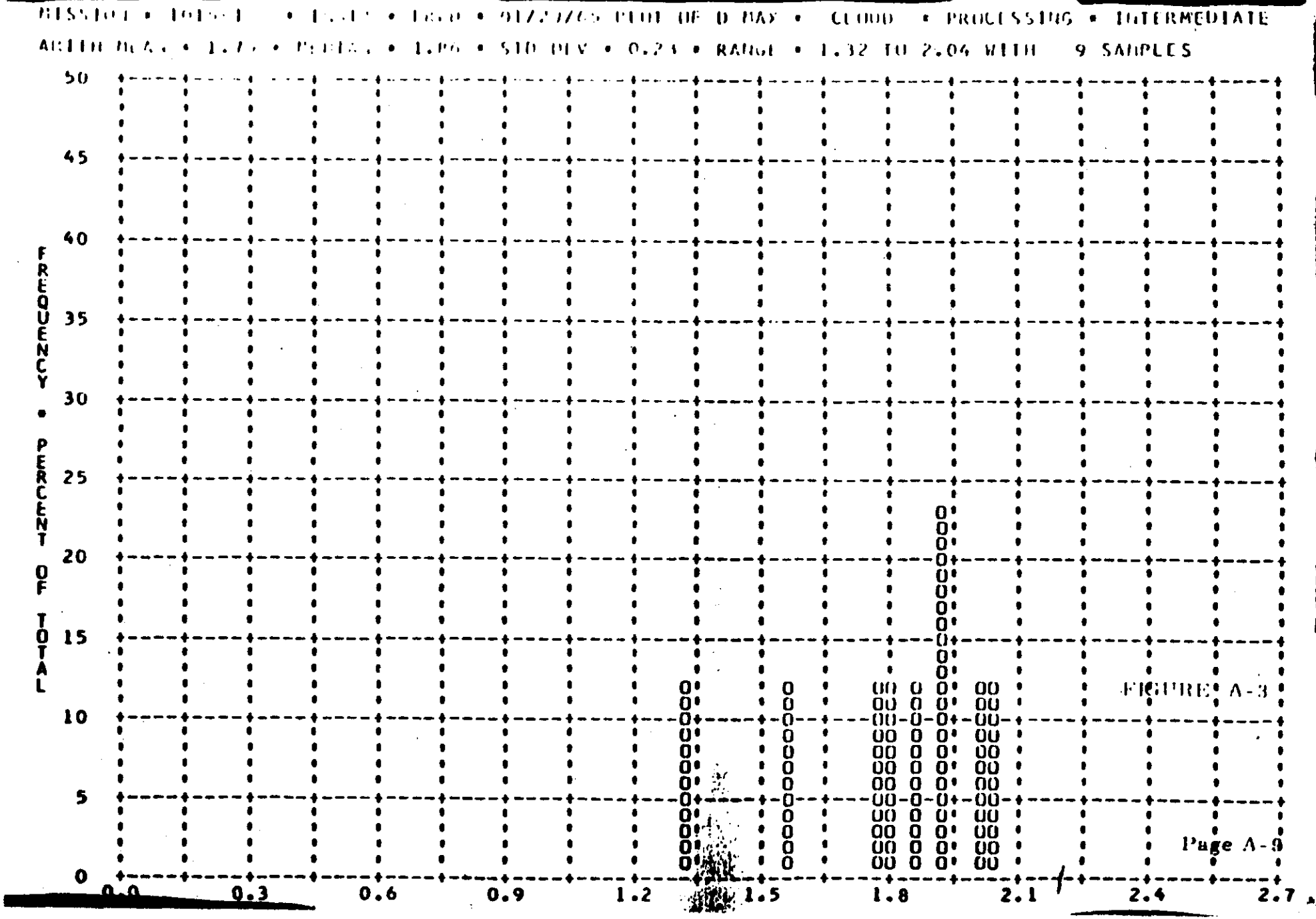


FIGURE A-3

[redacted] TOP SECRET [redacted] [redacted]

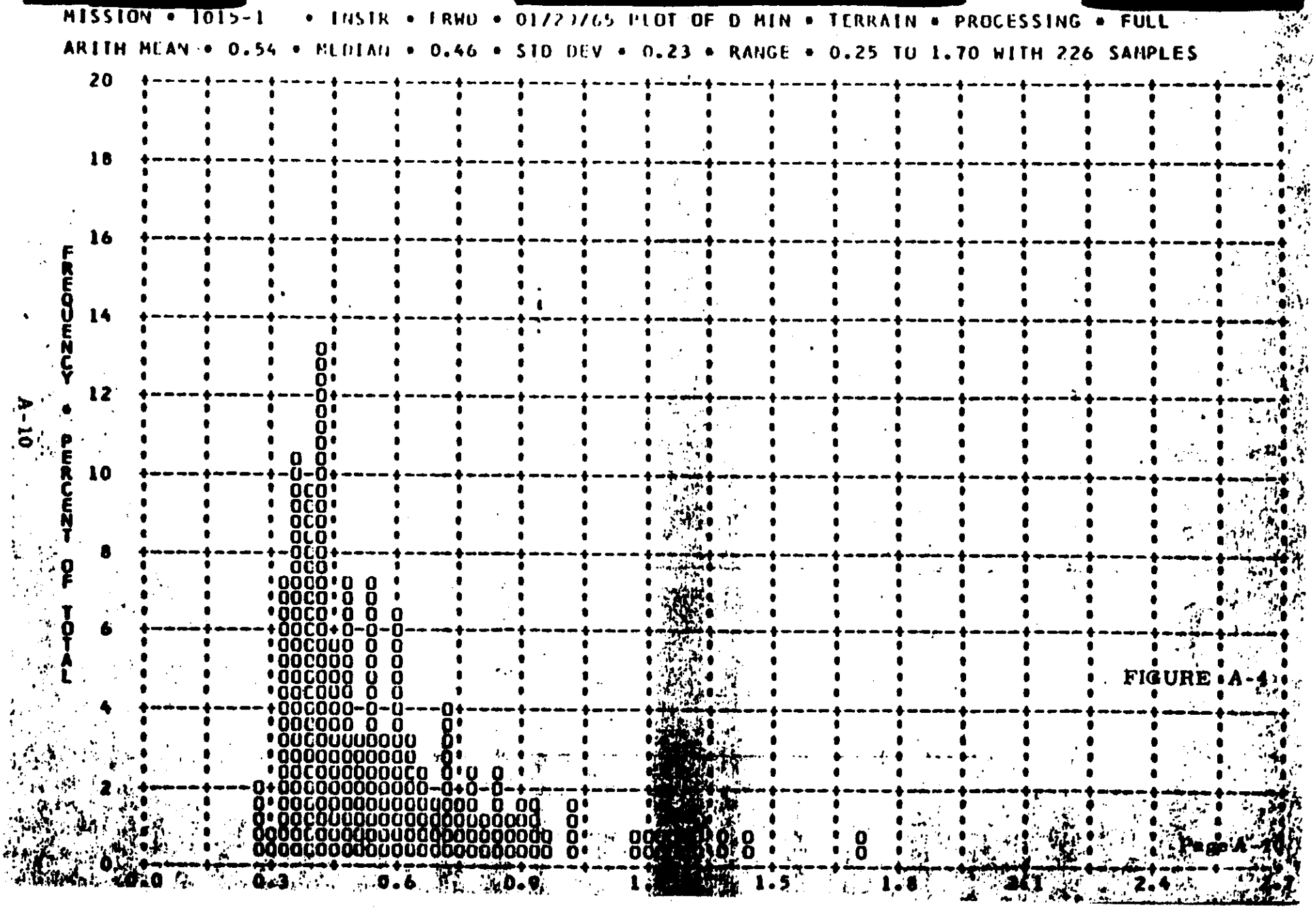


FIGURE A-4

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTR • FRWD • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • FULL

ARITH MEAN • 1.44 • MEDIAN • 1.46 • STD DEV • 0.38 • RANGE • 0.54 TO 2.28 WITH 226 SAMPLES

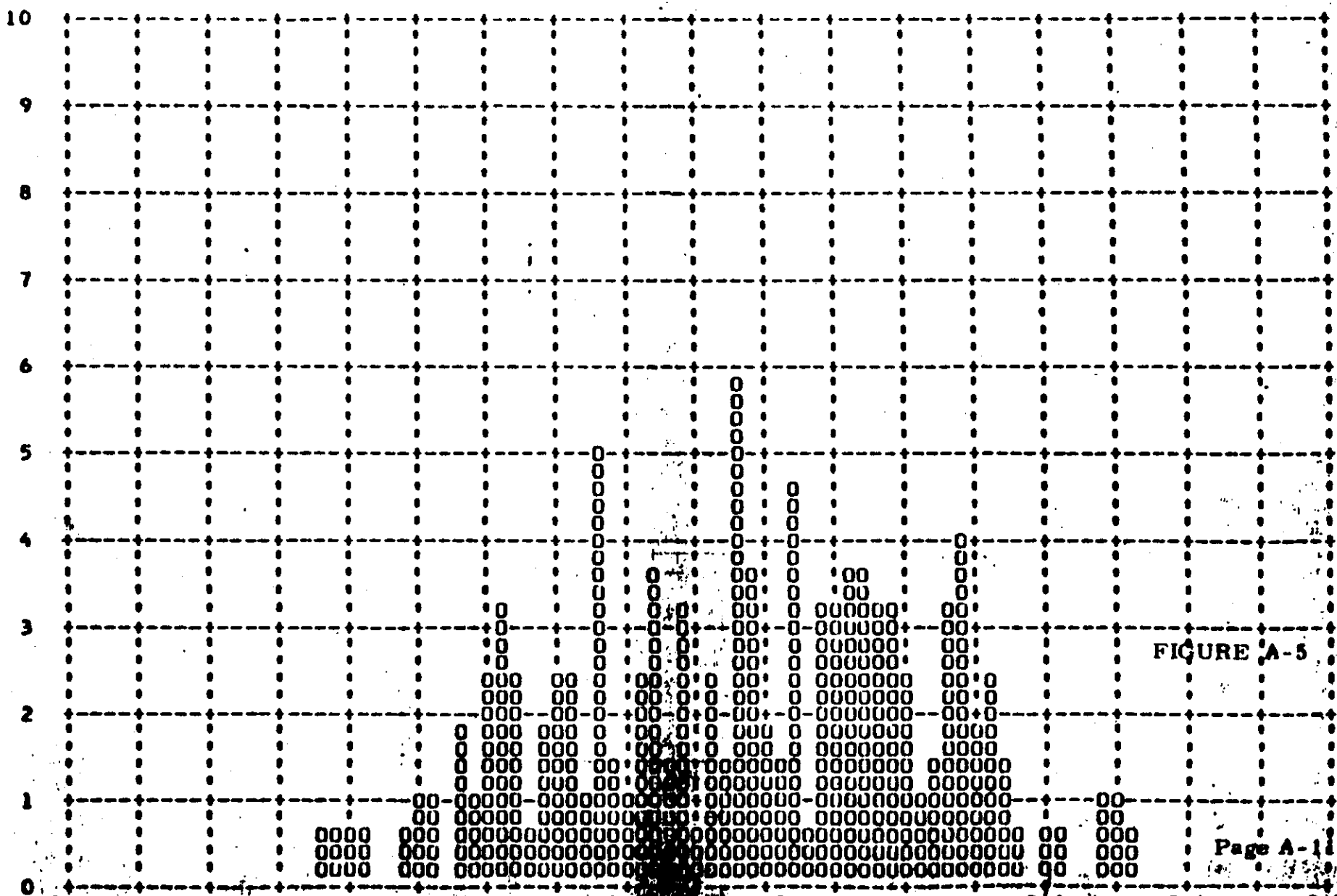


FIGURE A-5

[redacted] TOP SECRET [redacted] [redacted]

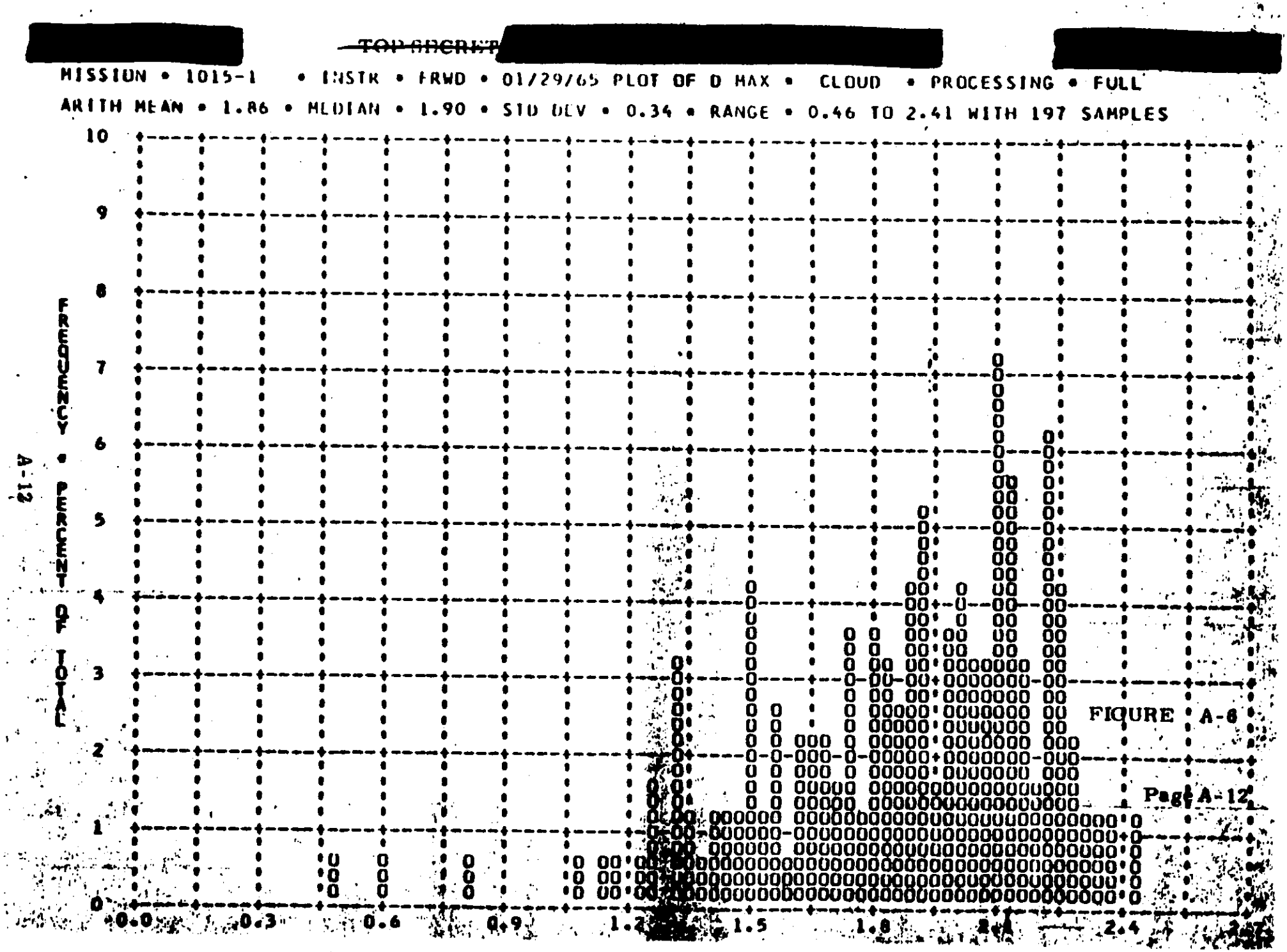


FIGURE A-6

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTR • IRWD • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.54 • MEDIAN • 0.47 • STD DEV • 0.23 • RANGE • 0.25 TO 1.70 WITH 230 SAMPLES

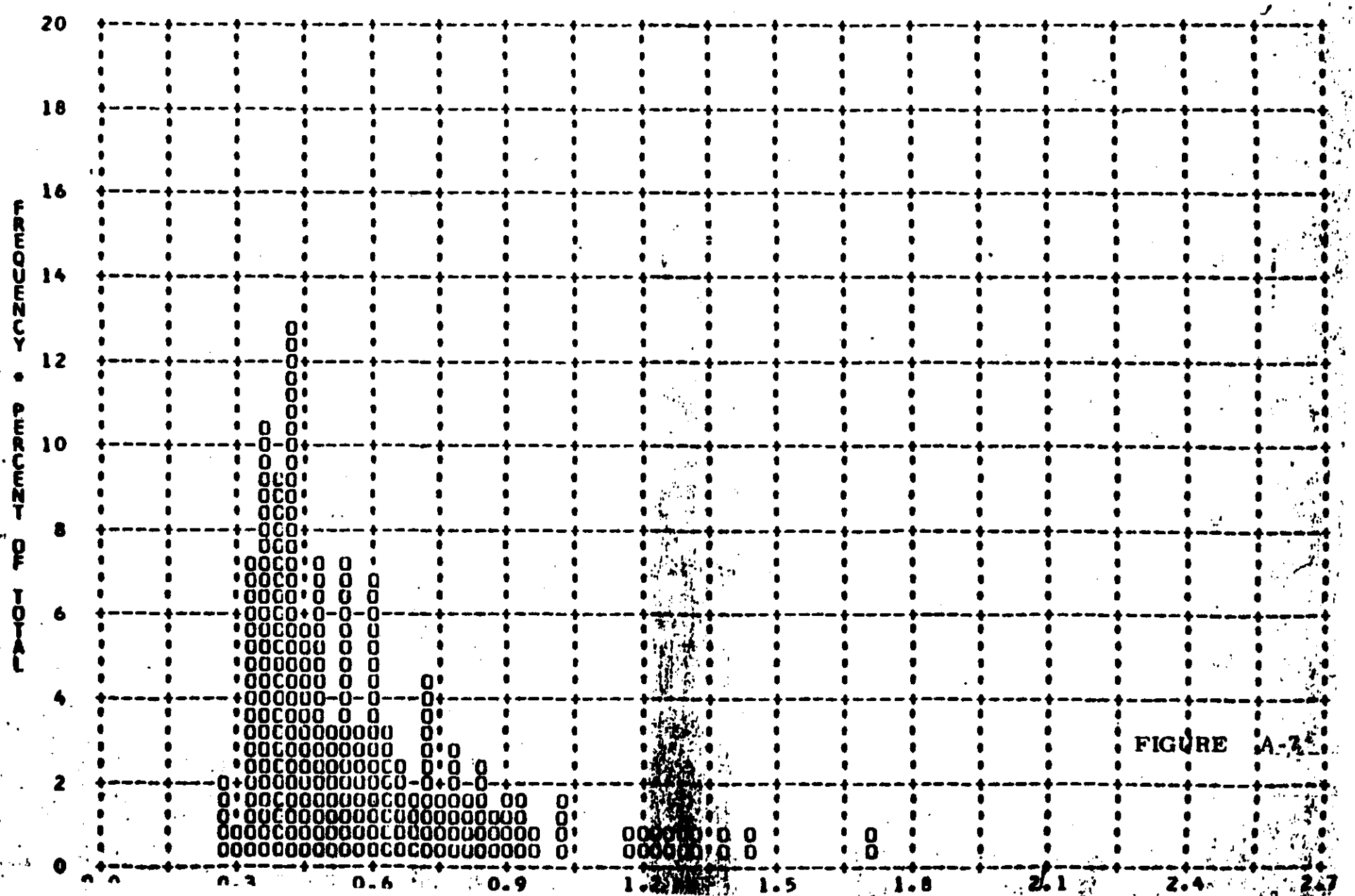


FIGURE A-7

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-1 • INSTR • FRWD • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.44 • MEDIAN • 1.46 • STD DEV • 0.38 • RANGE • 0.54 TO 2.28 WITH 230 SAMPLES

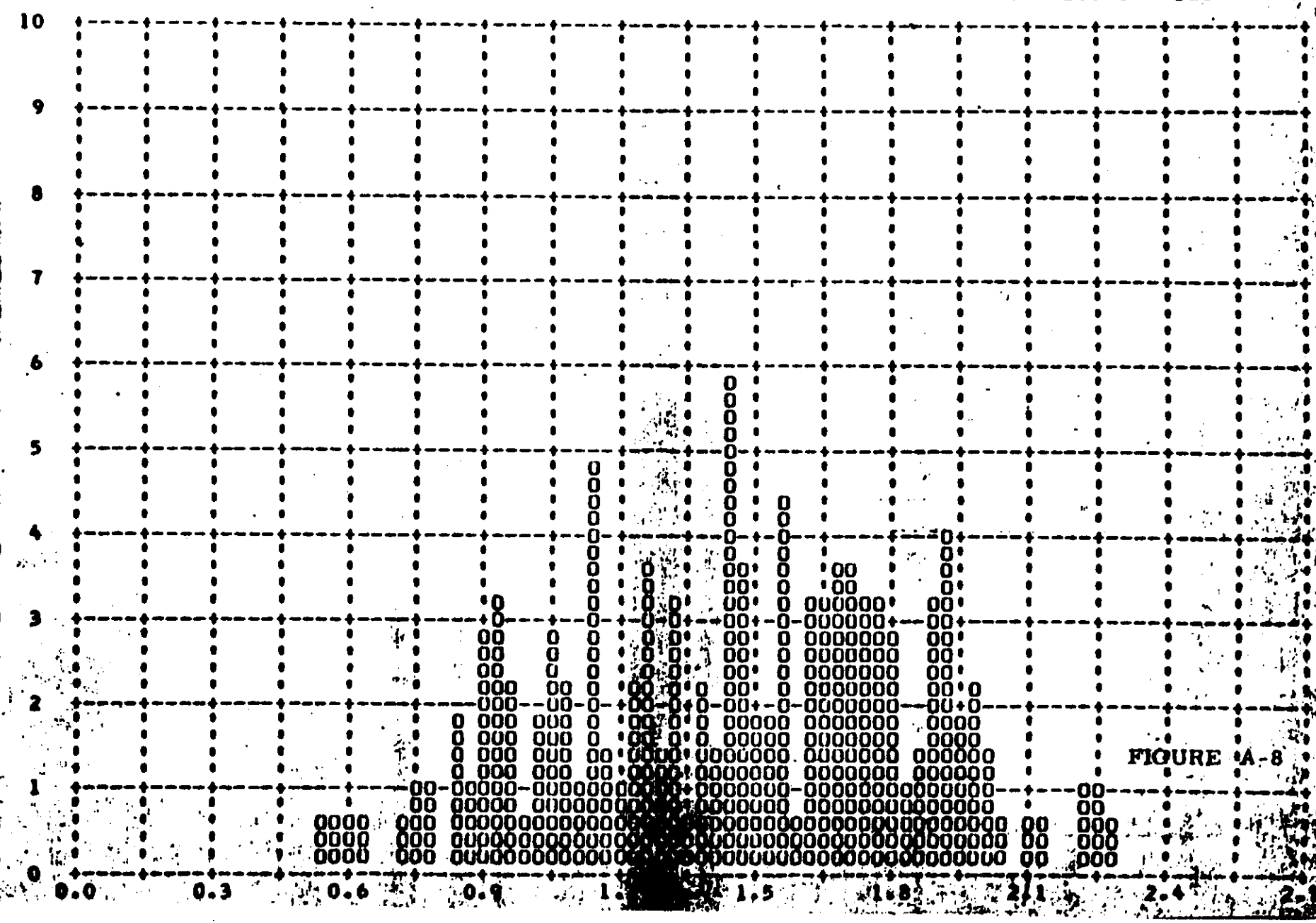


FIGURE A-8

[redacted] TOP SECRET [redacted] [redacted]

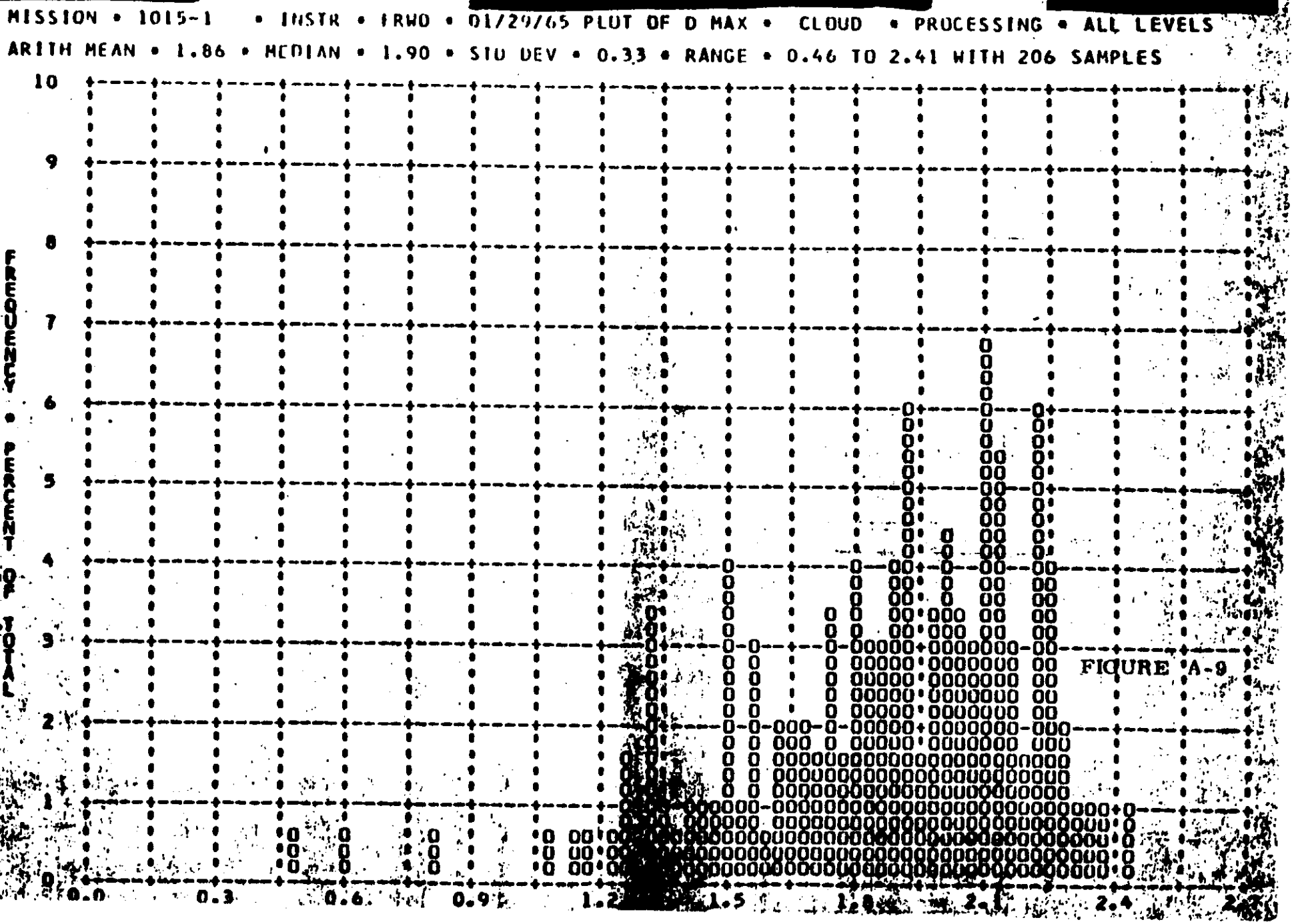


FIGURE A-9

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 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.
0.01	0	0	0	0	0	0	0	0	0	0	0	0
0.02	0	0	0	0	0	0	0	0	0	0	0	0
0.03	0	0	0	0	0	0	0	0	0	0	0	0
0.04	0	0	0	0	0	0	0	0	0	0	0	0
0.05	0	0	0	0	0	0	0	0	0	0	0	0
0.06	0	0	0	0	0	0	0	0	0	0	0	0
0.07	0	0	0	0	0	0	0	0	0	0	0	0
0.08	0	0	0	0	0	0	0	0	0	0	0	0
0.09	0	0	0	0	0	0	0	0	0	0	0	0
0.10	0	0	0	0	0	0	0	0	0	0	0	0
0.11	0	0	0	0	0	0	0	0	0	0	0	0
0.12	0	0	0	0	0	0	0	0	0	0	0	0
0.13	0	0	0	0	0	0	0	0	0	0	0	0
0.14	0	0	0	0	0	0	0	0	0	0	0	0
0.15	0	0	0	0	0	0	0	0	0	0	0	0
0.16	0	0	0	0	0	0	0	0	0	0	0	0
0.17	0	0	0	0	0	0	0	0	0	0	0	0
0.18	0	0	0	0	0	0	0	0	0	0	0	0
0.19	0	0	0	0	0	0	0	0	0	0	0	0
0.20	0	0	0	0	0	0	0	0	0	0	0	0
0.21	0	0	0	0	0	0	0	0	0	0	0	0
0.22	0	0	0	0	0	0	0	0	0	0	0	0
0.23	0	0	0	0	0	0	0	0	0	0	0	0
0.24	0	0	0	0	0	0	0	0	0	0	0	0
0.25	0	0	0	0	0	0	0	0	0	0	0	0
0.26	0	0	0	0	0	0	0	0	0	0	0	0
0.27	0	0	0	0	0	0	0	0	0	0	0	0
0.28	0	0	0	0	0	0	0	0	0	0	0	0
0.29	0	0	0	0	0	0	3	0	0	3	0	0
0.30	0	0	0	0	0	0	3	0	0	3	0	0
0.31	0	0	0	0	0	0	3	0	0	3	0	0
0.32	0	0	0	0	0	0	0	0	0	0	0	0
0.33	0	0	0	0	0	0	1	0	0	1	0	0
0.34	0	0	0	0	0	0	4	0	0	4	0	0
0.35	0	0	0	0	0	0	3	0	0	3	0	0
0.36	0	0	0	0	0	0	3	0	0	3	0	0
0.37	0	0	0	0	0	0	2	0	0	2	0	0
0.38	0	0	0	0	0	0	8	0	0	8	0	0
0.39	0	0	0	0	0	0	2	0	0	2	0	0
0.40	0	0	0	0	0	0	8	0	0	8	0	0
0.41	0	0	0	0	0	0	4	0	0	4	0	0
0.42	0	0	0	0	0	0	4	0	0	4	0	0
0.43	0	0	0	0	0	0	5	0	0	5	0	0
0.44	0	0	0	0	0	0	8	0	0	8	0	0
0.45	0	0	0	0	0	0	1	0	0	1	0	0
0.46	0	0	0	0	0	0	6	1	0	6	1	0
0.47	0	0	0	0	0	0	3	0	0	3	0	0
0.48	0	0	0	0	0	0	7	0	0	7	0	0
0.49	0	0	0	0	0	0	5	0	0	5	0	0
0.50	0	0	0	0	0	0	5	0	0	5	0	0
SUBTOTAL	0	0	0	0	0	0	88	1	0	88	1	0

[redacted]

TABLE A-2

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 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
0.51	0	0	0	0	0	0	3	0	0	3	0	0
0.52	0	0	0	0	0	0	4	0	0	4	0	0
0.53	0	0	0	0	0	0	3	0	0	3	0	0
0.54	0	0	0	0	0	0	10	0	0	10	0	0
0.55	0	0	0	0	0	0	4	0	0	4	0	0
0.56	0	0	0	0	0	0	4	0	0	4	0	0
0.57	0	0	0	0	0	0	2	0	0	2	0	0
0.58	0	0	0	0	0	0	5	0	0	5	0	0
0.59	0	0	0	0	0	0	3	0	0	3	0	0
0.60	0	0	0	1	0	0	8	1	0	9	1	0
0.61	0	0	0	0	0	0	1	0	0	1	0	0
0.62	0	0	0	0	0	0	5	2	0	5	2	0
0.63	0	0	0	0	0	0	2	0	0	2	0	0
0.64	0	0	0	0	0	0	6	0	0	6	0	0
0.65	0	0	0	0	0	0	3	0	0	3	0	0
0.66	0	0	0	0	0	0	2	1	0	2	1	0
0.67	0	0	0	0	0	0	1	0	0	1	0	0
0.68	0	0	0	0	0	0	2	2	0	2	2	0
0.69	0	0	0	0	0	0	2	2	0	2	2	0
0.70	0	0	0	0	0	0	2	0	0	2	0	0
0.71	0	0	0	0	0	0	1	0	0	1	0	0
0.72	0	0	0	1	0	0	1	0	0	2	0	0
0.73	0	0	0	1	0	0	2	0	0	3	0	0
0.74	0	0	0	0	0	0	2	0	0	2	0	0
0.75	0	0	0	1	0	0	2	0	0	3	0	0
0.76	0	0	0	0	0	0	4	0	0	4	0	0
0.77	0	0	0	0	0	0	4	1	0	4	1	0
0.78	0	0	0	0	0	0	1	0	0	1	0	0
0.79	0	0	0	0	0	0	5	0	0	5	0	0
0.80	0	0	0	1	0	0	5	0	0	6	0	0
0.81	0	0	0	0	0	0	1	0	0	1	0	0
0.82	0	0	0	0	0	0	1	0	0	1	0	0
0.83	0	0	0	0	0	0	2	0	0	2	0	0
0.84	0	0	0	0	0	0	4	0	0	4	0	0
0.85	0	0	0	0	0	0	0	0	0	0	0	0
0.86	0	0	0	0	0	0	1	0	0	1	0	0
0.87	0	0	0	0	0	0	0	1	0	1	1	0
0.88	0	0	0	0	0	0	1	0	0	1	0	0
0.89	0	0	0	0	0	0	4	0	0	4	0	0
0.90	0	0	0	0	0	0	1	1	0	1	1	0
0.91	0	0	0	0	0	0	1	0	0	1	0	0
0.92	0	0	0	0	0	0	1	0	0	1	0	0
0.93	0	0	0	0	0	0	0	1	0	0	1	0
0.94	0	0	0	0	0	0	2	0	0	2	0	0
0.95	0	0	0	1	0	0	0	0	0	1	0	0
0.96	0	0	0	0	0	0	2	0	0	2	0	0
0.97	0	0	0	0	0	0	0	0	0	0	0	0
0.98	0	0	0	0	0	0	0	1	0	0	1	0
0.99	0	0	0	0	0	0	1	0	0	1	0	0
1.00	0	0	0	0	0	0	1	2	0	1	2	0
SUBTOTAL	0	0	0	6	0	0	120	19	7	126	19	7

[redacted]

TABLE A-2

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 DENSITY FREQ DISTI

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	1	0	0	1	0	0	2	0	0
1.02	0	0	0	0	0	0	0	2	0	2	0	0
1.03	0	0	0	0	0	0	0	1	0	1	0	0
1.04	0	0	0	0	0	0	1	2	0	1	2	0
1.05	0	0	0	0	0	0	0	1	0	0	1	0
1.06	0	0	0	0	0	0	0	1	0	0	1	0
1.07	0	0	0	0	0	0	0	1	0	0	1	0
1.08	0	0	0	1	0	0	0	1	0	1	0	0
1.09	0	0	0	1	0	0	0	1	0	1	0	0
1.10	0	0	0	0	0	0	0	2	0	0	2	0
1.11	0	0	0	0	0	0	1	3	0	1	3	0
1.12	0	0	0	0	0	0	0	1	0	0	1	0
1.13	0	0	0	0	0	0	0	2	0	0	2	0
1.14	0	0	0	0	0	0	0	3	1	0	3	1
1.15	0	0	0	0	0	0	0	1	1	0	1	1
1.16	0	0	0	0	0	0	0	1	1	0	1	1
1.17	0	0	0	0	0	0	0	2	1	0	2	1
1.18	0	0	0	0	0	0	1	1	1	1	1	1
1.19	0	0	0	0	0	0	0	1	0	0	1	0
1.20	0	0	0	1	0	0	0	2	1	1	2	1
1.21	0	0	0	0	0	0	0	1	0	0	1	0
1.22	0	0	0	0	0	0	0	2	1	0	2	1
1.23	0	0	0	0	0	0	0	4	3	0	4	3
1.24	0	0	0	0	0	0	0	3	2	0	3	2
1.25	0	0	0	0	0	0	0	3	0	0	3	0
1.26	0	0	0	0	0	0	0	3	1	0	3	1
1.27	0	0	0	0	0	0	0	4	0	0	4	0
1.28	0	0	0	0	0	0	0	2	1	0	2	1
1.29	0	0	0	0	0	0	0	1	3	0	1	3
1.30	0	0	0	0	0	0	0	3	0	0	3	0
1.31	0	0	0	0	0	0	0	1	1	0	1	1
1.32	0	0	0	0	0	0	0	1	1	0	1	1
1.33	0	0	0	0	0	0	0	1	1	0	1	1
1.34	0	0	0	0	0	0	0	1	3	0	1	3
1.35	0	0	0	0	1	0	0	2	1	0	3	1
1.36	0	0	0	0	1	0	0	5	0	0	6	0
1.37	0	0	0	0	0	0	0	4	1	0	4	1
1.38	0	0	0	0	0	0	0	1	4	0	1	4
1.39	0	0	0	0	0	0	0	1	4	0	1	4
1.40	0	0	0	0	0	0	0	3	0	0	3	0
1.41	0	0	0	0	0	0	0	2	1	0	2	1
1.42	0	0	0	0	0	0	0	2	2	0	2	2
1.43	0	0	0	0	0	0	0	2	1	0	2	1
1.44	0	0	0	0	0	0	0	1	2	0	1	2
1.45	0	0	0	0	0	0	0	1	2	0	1	2
1.46	0	0	0	0	0	0	0	2	0	0	2	0
1.47	0	0	0	0	0	0	0	2	2	0	2	2
1.48	0	0	0	0	0	0	0	2	2	0	2	2
1.49	0	0	0	0	0	0	0	2	2	0	2	2
1.50	0	0	0	0	0	0	0	2	2	0	2	2
SUBTOTAL	0	0	0	3	4	2	7	89	27	10	93	29

[redacted]

TABLE A-2

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 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	0	0	0	3	1	0	3	1
1.53	0	0	0	0	0	1	0	5	1	0	5	1
1.54	0	0	0	0	0	0	0	3	1	0	3	1
1.55	0	0	0	0	0	1	0	0	0	0	0	0
1.56	0	0	0	0	0	0	0	7	2	0	7	2
1.57	0	0	0	0	0	0	0	0	0	0	0	0
1.58	0	0	0	0	0	0	0	7	2	0	7	2
1.59	0	0	0	0	0	0	0	1	1	0	1	1
1.60	0	0	0	0	0	0	0	2	1	0	2	1
1.61	0	0	0	0	0	0	0	3	1	0	3	1
1.62	0	0	0	0	0	0	0	1	0	0	1	0
1.63	0	0	0	0	0	0	0	2	1	0	2	1
1.64	0	0	0	0	0	1	0	4	1	0	4	1
1.65	0	0	0	0	0	0	0	1	0	0	1	0
1.66	0	0	0	0	0	0	0	4	1	0	4	1
1.67	0	0	0	0	0	0	0	0	0	0	0	0
1.68	0	0	0	0	0	0	0	8	2	0	8	2
1.69	0	0	0	0	0	0	0	1	0	0	1	0
1.70	0	0	0	0	0	1	0	7	2	0	7	2
1.71	0	0	0	0	0	0	0	1	0	0	1	0
1.72	0	0	0	0	0	0	0	0	0	0	0	0
1.73	0	0	0	0	0	0	0	2	1	0	2	1
1.74	0	0	0	0	0	0	0	1	0	0	1	0
1.75	0	0	0	0	0	0	0	0	0	0	0	0
1.76	0	0	0	0	0	0	0	2	1	0	2	1
1.77	0	0	0	0	0	0	0	1	0	0	1	0
1.78	0	0	0	0	0	0	0	3	1	0	3	1
1.79	0	0	0	0	0	0	0	1	0	0	1	0
1.80	0	0	0	0	0	0	0	1	0	0	1	0
1.81	0	0	0	0	0	0	0	3	1	0	3	1
1.82	0	0	0	0	0	0	0	1	0	0	1	0
1.83	0	0	0	0	0	0	0	1	0	0	1	0
1.84	0	0	0	0	0	0	0	3	1	0	3	1
1.85	0	0	0	0	0	0	0	0	0	0	0	0
1.86	0	0	0	0	0	0	0	1	0	0	1	0
1.87	0	0	0	0	0	0	0	1	0	0	1	0
1.88	0	0	0	0	0	0	0	3	1	0	3	1
1.89	0	0	0	0	0	0	0	0	0	0	0	0
1.90	0	0	0	0	0	0	0	1	0	0	1	0
1.91	0	0	0	0	0	0	0	0	0	0	0	0
1.92	0	0	0	0	0	0	0	1	0	0	1	0
1.93	0	0	0	0	0	0	0	0	0	0	0	0
1.94	0	0	0	0	0	0	0	1	0	0	1	0
1.95	0	0	0	0	0	0	0	0	0	0	0	0
1.96	0	0	0	0	0	0	0	1	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	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	5	8	0	85	63	0	90	71

[redacted]

TABLE A-2

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 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
2.01	0	0	0	0	0	1	0	0	2	0	0	3
2.02	0	0	0	0	0	0	0	2	1	0	2	1
2.03	0	0	0	0	0	0	0	2	2	0	2	2
2.04	0	0	0	0	0	1	0	3	1	0	3	1
2.05	0	0	0	0	0	1	0	0	1	0	0	2
2.06	0	0	0	0	0	0	0	1	2	0	1	2
2.07	0	0	0	0	0	0	0	1	2	0	1	2
2.08	0	0	0	0	0	0	0	1	4	0	1	4
2.09	0	0	0	0	0	0	0	1	0	0	1	0
2.10	0	0	0	0	0	0	0	1	4	0	1	4
2.11	0	0	0	0	0	0	0	1	1	0	1	1
2.12	0	0	0	0	0	0	0	0	1	0	0	1
2.13	0	0	0	0	0	0	0	1	4	0	1	4
2.14	0	0	0	0	0	0	0	1	5	0	1	5
2.15	0	0	0	0	0	0	0	0	2	0	0	2
2.16	0	0	0	0	0	0	0	2	2	0	2	2
2.17	0	0	0	0	0	0	0	2	0	0	2	0
2.18	0	0	0	0	0	0	0	0	5	0	0	5
2.19	0	0	0	0	0	0	0	0	5	0	0	5
2.20	0	0	0	0	0	0	0	0	5	0	0	5
2.21	0	0	0	0	0	0	0	1	2	0	1	2
2.22	0	0	0	0	0	0	0	1	2	0	1	2
2.23	0	0	0	0	0	0	0	1	1	0	1	1
2.24	0	0	0	0	0	0	0	1	5	0	1	5
2.25	0	0	0	0	0	0	0	0	2	0	0	2
2.26	0	0	0	0	0	0	0	1	3	0	1	3
2.27	0	0	0	0	0	0	0	1	1	0	1	1
2.28	0	0	0	0	0	0	0	1	2	0	1	2
2.29	0	0	0	0	0	0	0	1	1	0	1	1
2.30	0	0	0	0	0	0	0	0	5	0	0	5
2.31	0	0	0	0	0	0	0	0	2	0	0	2
2.32	0	0	0	0	0	0	0	0	3	0	0	3
2.33	0	0	0	0	0	0	0	0	2	0	0	2
2.34	0	0	0	0	0	0	0	0	2	0	0	2
2.35	0	0	0	0	0	0	0	0	3	0	0	3
2.36	0	0	0	0	0	0	0	0	1	0	0	1
2.37	0	0	0	0	0	0	0	0	0	0	0	0
2.38	0	0	0	0	0	0	0	0	0	0	0	0
2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40	0	0	0	0	0	0	0	0	0	0	0	0
2.41	0	0	0	0	0	0	0	0	0	0	0	0
2.42	0	0	0	0	0	0	0	0	0	0	0	0
2.43	0	0	0	0	0	0	0	0	0	0	0	0
2.44	0	0	0	0	0	0	0	0	0	0	0	0
2.45	0	0	0	0	0	0	0	0	0	0	0	0
2.46	0	0	0	0	0	0	0	0	0	0	0	0
2.47	0	0	0	0	0	0	0	0	0	0	0	0
2.48	0	0	0	0	0	0	0	0	0	0	0	0
2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	2	0	21	81	0	21	83

[redacted]

TABLE A-2

[redacted]

MISSION • 1015-1 • INSTRUMENT • AFT 01/29/65 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	0	0	0	0	0	0	0	0	0	0	0	0
2.52	0	0	0	0	0	0	0	0	0	0	0	0
2.53	0	0	0	0	0	0	0	0	0	0	0	0
2.54	0	0	0	0	0	0	0	0	0	0	0	0
2.55	0	0	0	0	0	0	0	0	0	0	0	0
2.56	0	0	0	0	0	0	0	0	0	0	0	0
2.57	0	0	0	0	0	0	0	0	0	0	0	0
2.58	0	0	0	0	0	0	0	0	0	0	0	0
2.59	0	0	0	0	0	0	0	0	0	0	0	0
2.60	0	0	0	0	0	0	0	0	0	0	0	0
2.61	0	0	0	0	0	0	0	0	0	0	0	0
2.62	0	0	0	0	0	0	0	0	0	0	0	0
2.63	0	0	0	0	0	0	0	0	0	0	0	0
2.64	0	0	0	0	0	0	0	0	0	0	0	0
2.65	0	0	0	0	0	0	0	0	0	0	0	0
2.66	0	0	0	0	0	0	0	0	0	0	0	0
2.67	0	0	0	0	0	0	0	0	0	0	0	0
2.68	0	0	0	0	0	0	0	0	0	0	0	0
2.69	0	0	0	0	0	0	0	0	0	0	0	0
2.70	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	9	9	12	215	215	178	224	224	190

MISSION 1015-1 INSTR - AFT 01/29/65 PROCESSING AND EXPOSURE /

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EXI
PRIMARY	0	0 PC	0 PC	0 PC	0 PC	
INTERMEDIATE	9	0 PC	0 PC	56 PC	44 PC	
FULL	215	15 PC	0 PC	78 PC	7 PC	
ALL LEVELS	224	14 PC	0 PC	77 PC	8 PC	

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EXI
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	----------	0.91
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35
FULL	0.18 AND UP	0.01-0.39	----------	0.40-0.90	0.91-1.69	1.70

[redacted]

TABLE A-2

[redacted] TOP SECRET [redacted] [redacted]

MISSION • 1019-1 • INSTR • AFT • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.87 • MEDIAN • 0.80 • STD DEV • 0.20 • RANGE • 0.60 TO 1.20 WITH 9 SAMPLES

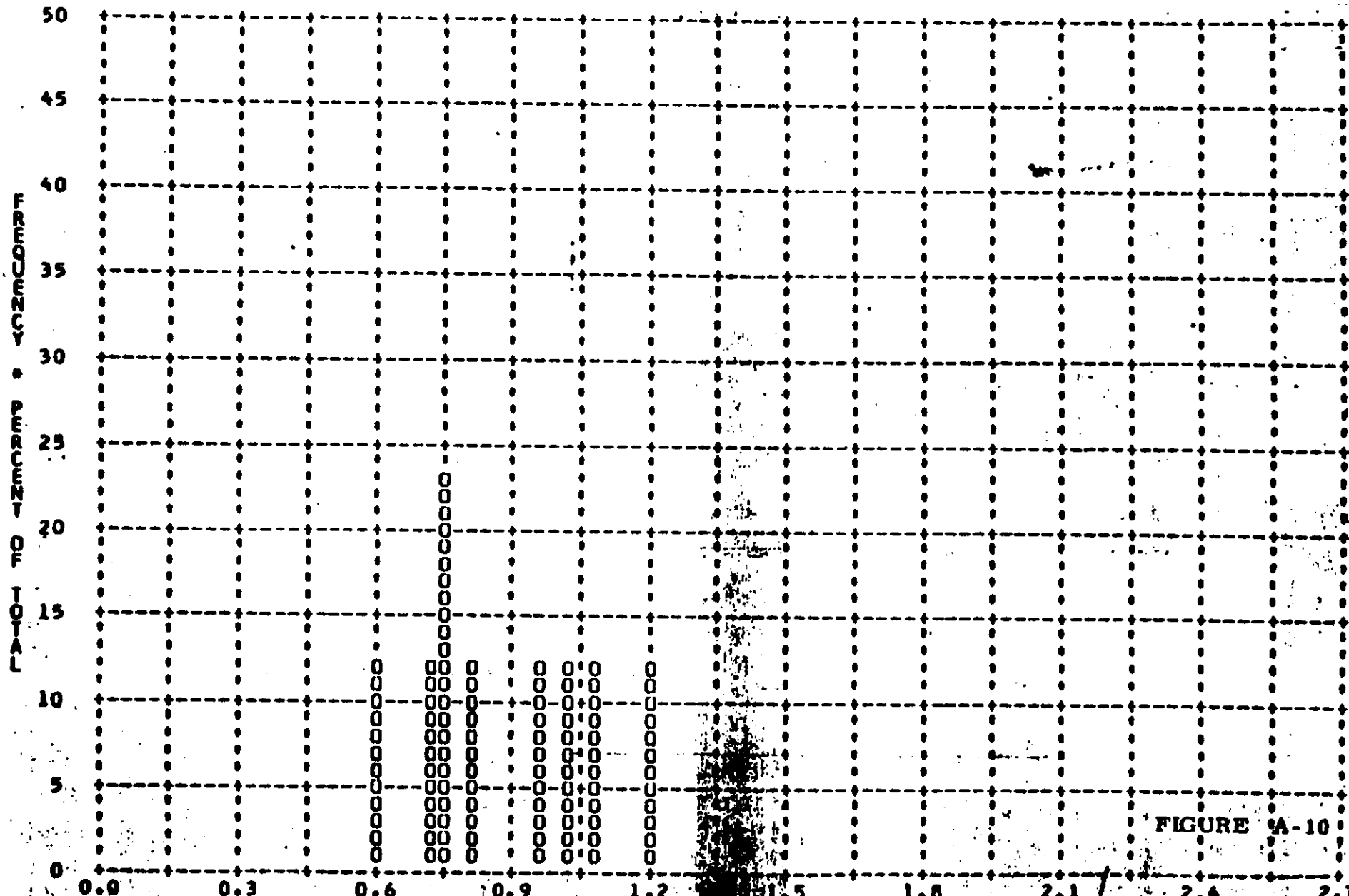


FIGURE A-10

[redacted] TOP SECRET [redacted] [redacted]

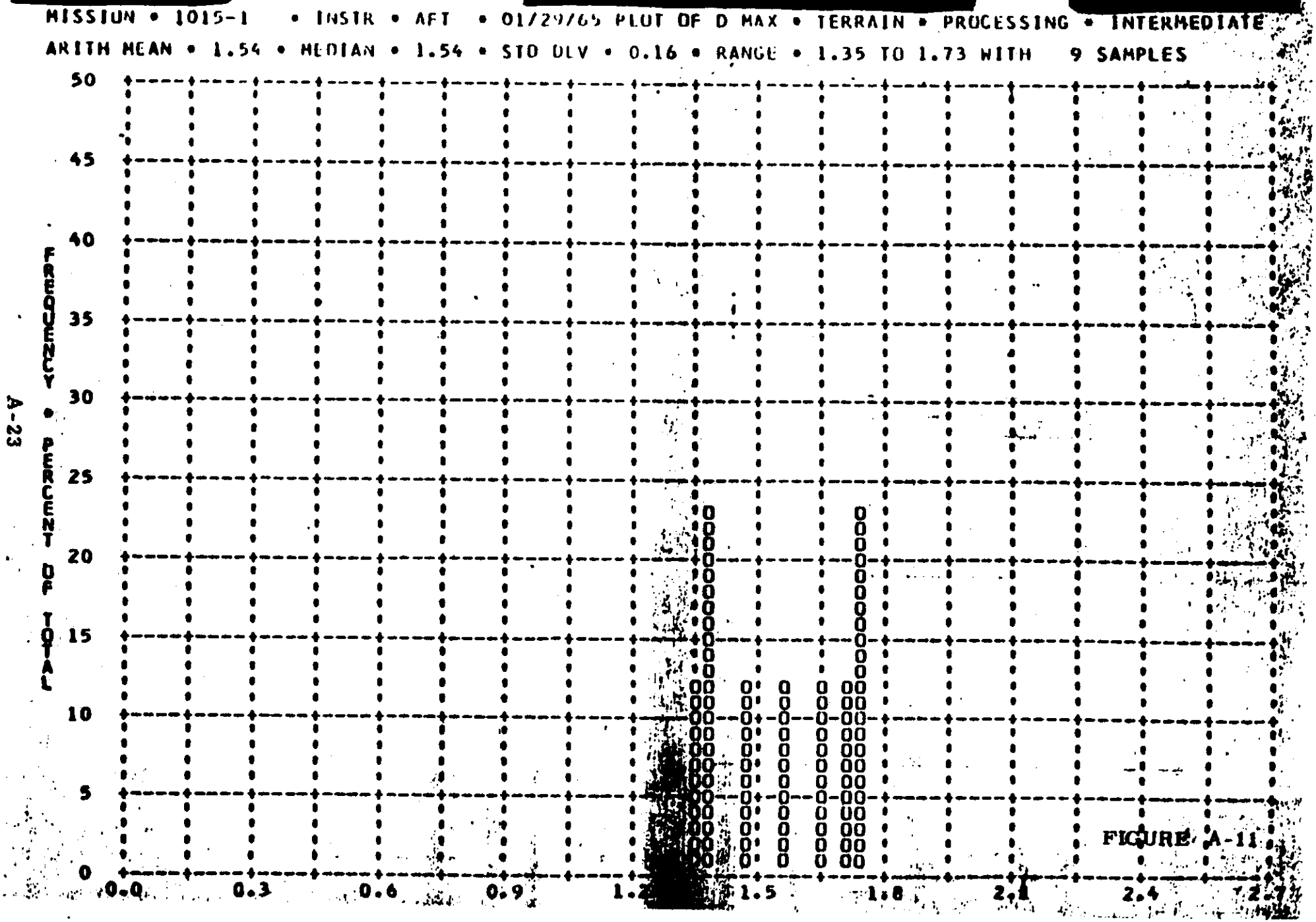


FIGURE A-11

[redacted] TOP SECRET [redacted] [redacted]

MISSION • 1015-1 • INSTR • AFT • 01/29/65 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.74 • MEDIAN • 1.80 • STD DEV • 0.19 • RANGE • 1.44 TO 2.05 WITH 12 SAMPLES

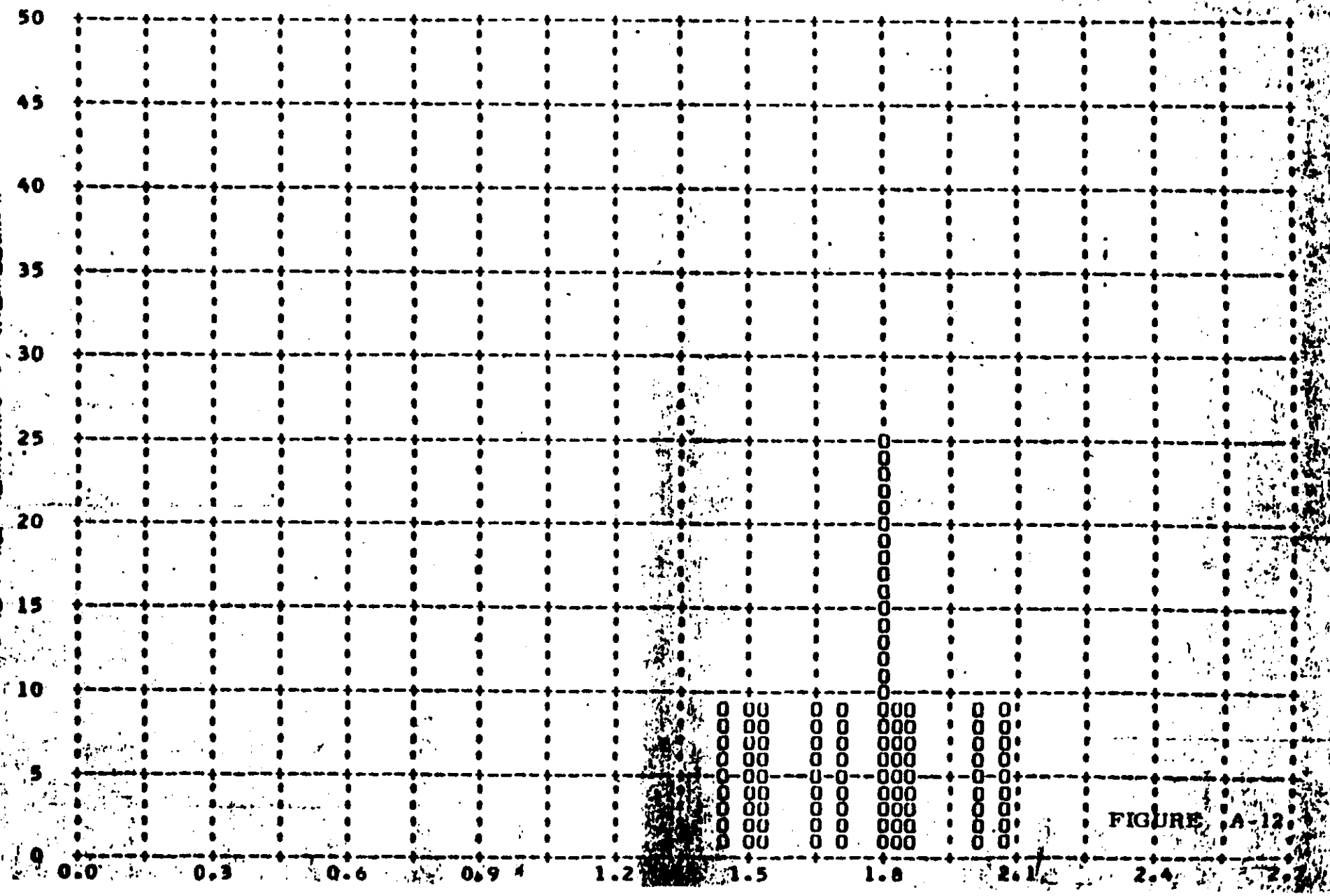


FIGURE A-12

[redacted] TOP SECRET [redacted] [redacted]

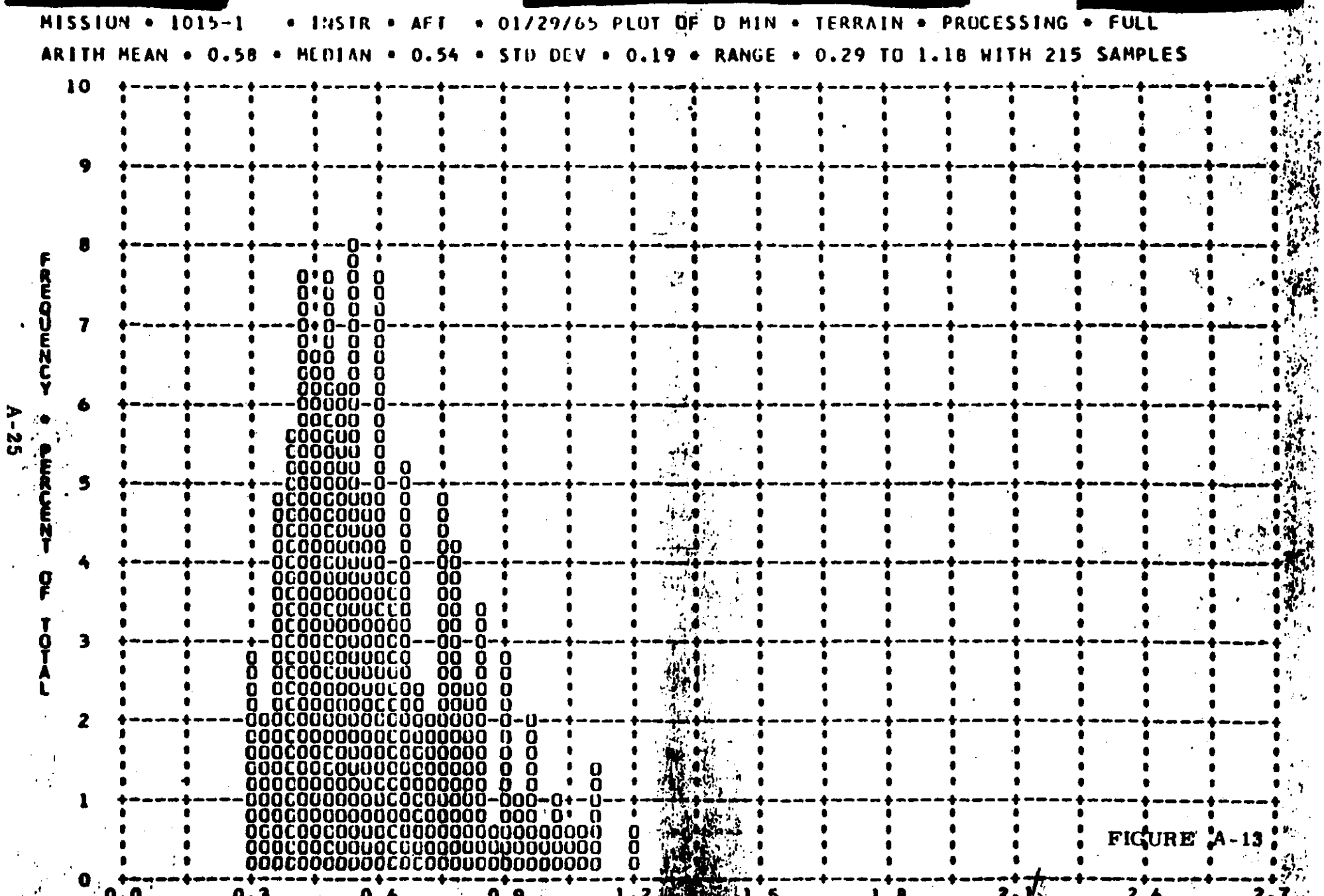


FIGURE A-13

[redacted] TOP SECRET [redacted] [redacted]

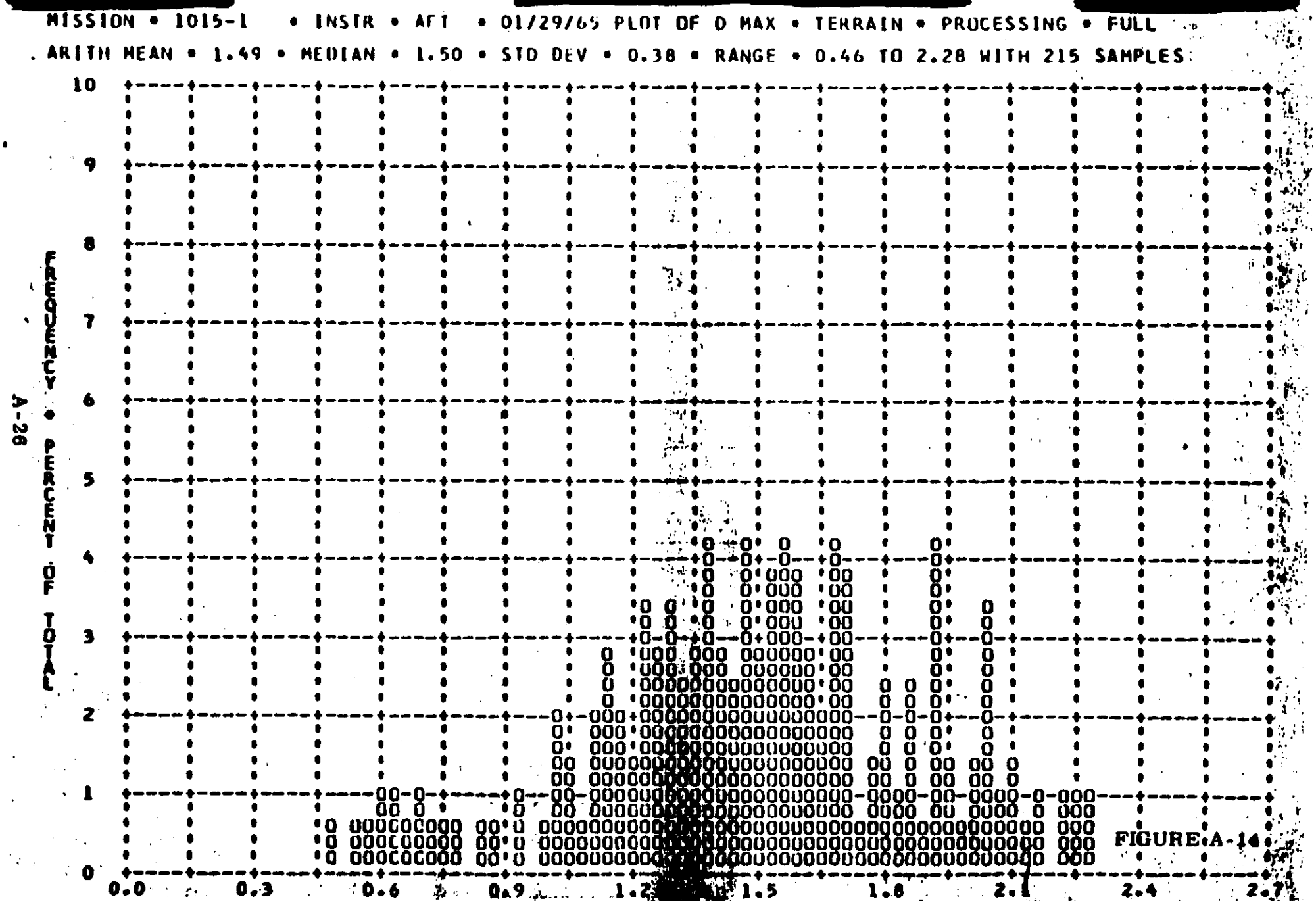
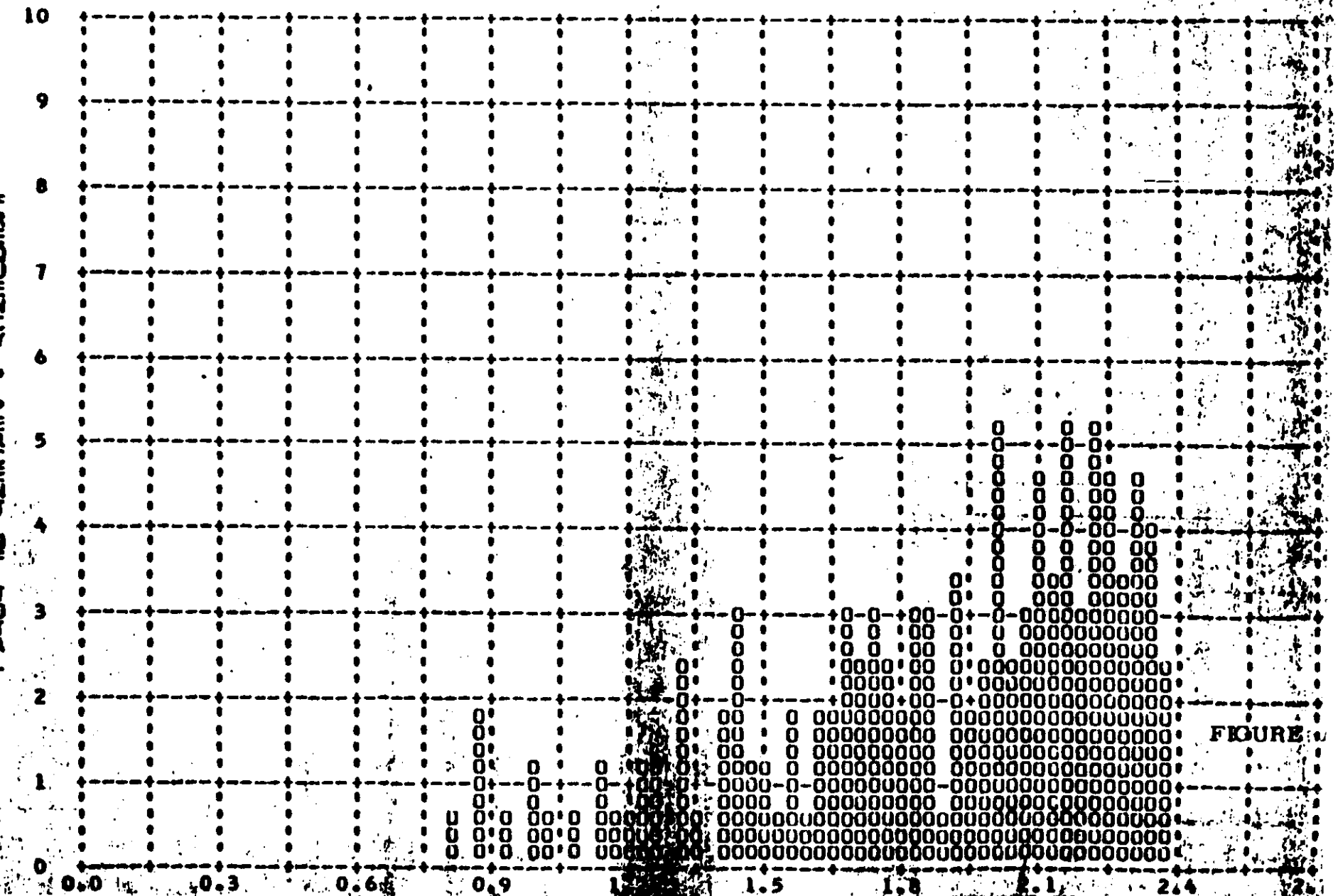


FIGURE A-14

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-1 • INSTR • AFT • 01/29/65 PLOT OF D MAX • CLOUD • PROCESSING • FULL

ARITH MEAN • 1.07 • MEDIAN • 1.98 • STD DEV • 0.39 • RANGE • 0.80 TO 2.36 WITH 178 SAMPLES



FIGURE

A-27

[redacted] [redacted] [redacted]

MISSION • 1015-1 • INSTR • AFT • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.60 • MEDIAN • 0.56 • STD DEV • 0.20 • RANGE • 0.29 TO 1.20 WITH 224 SAMPLES

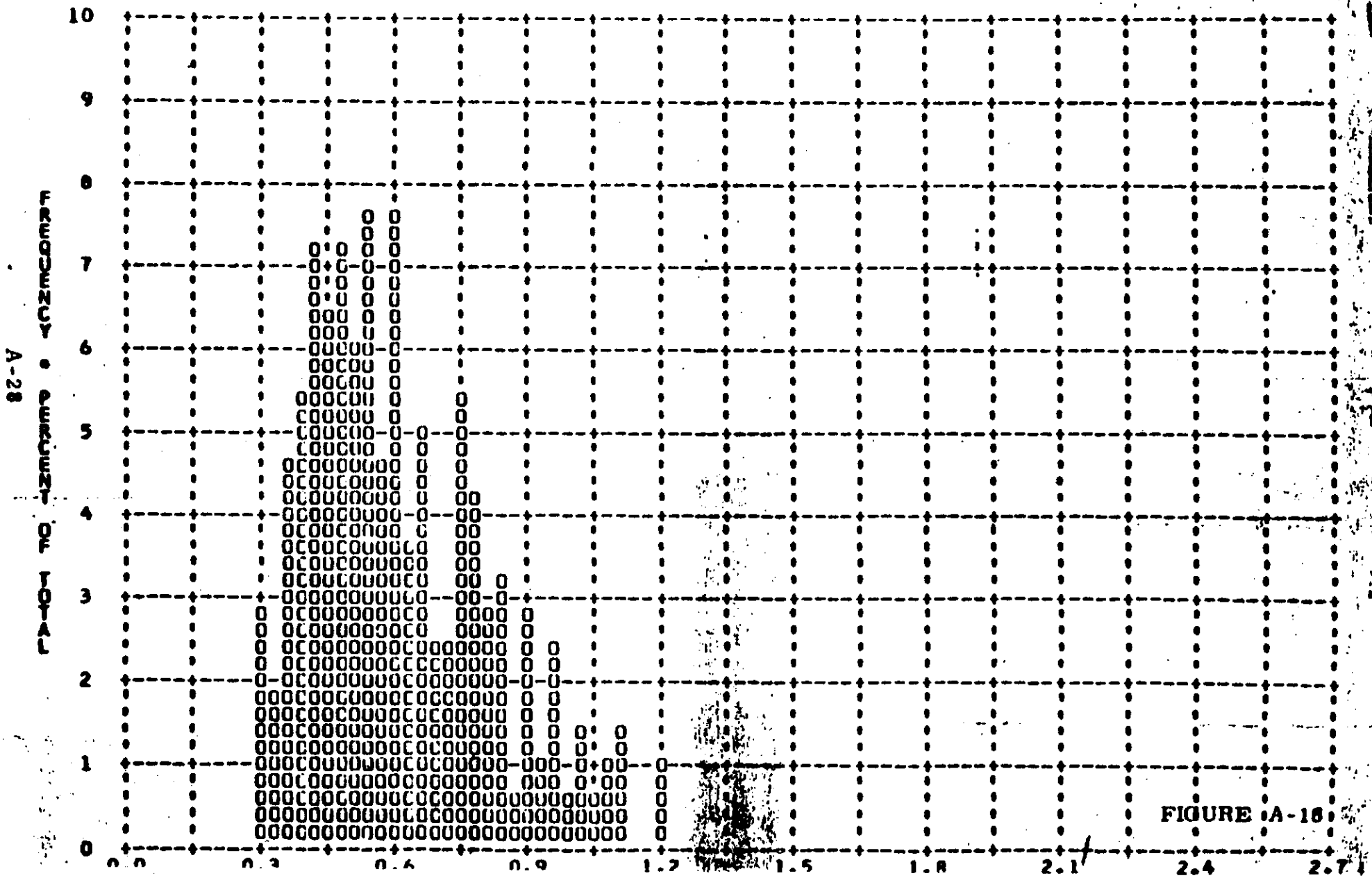


FIGURE A-16

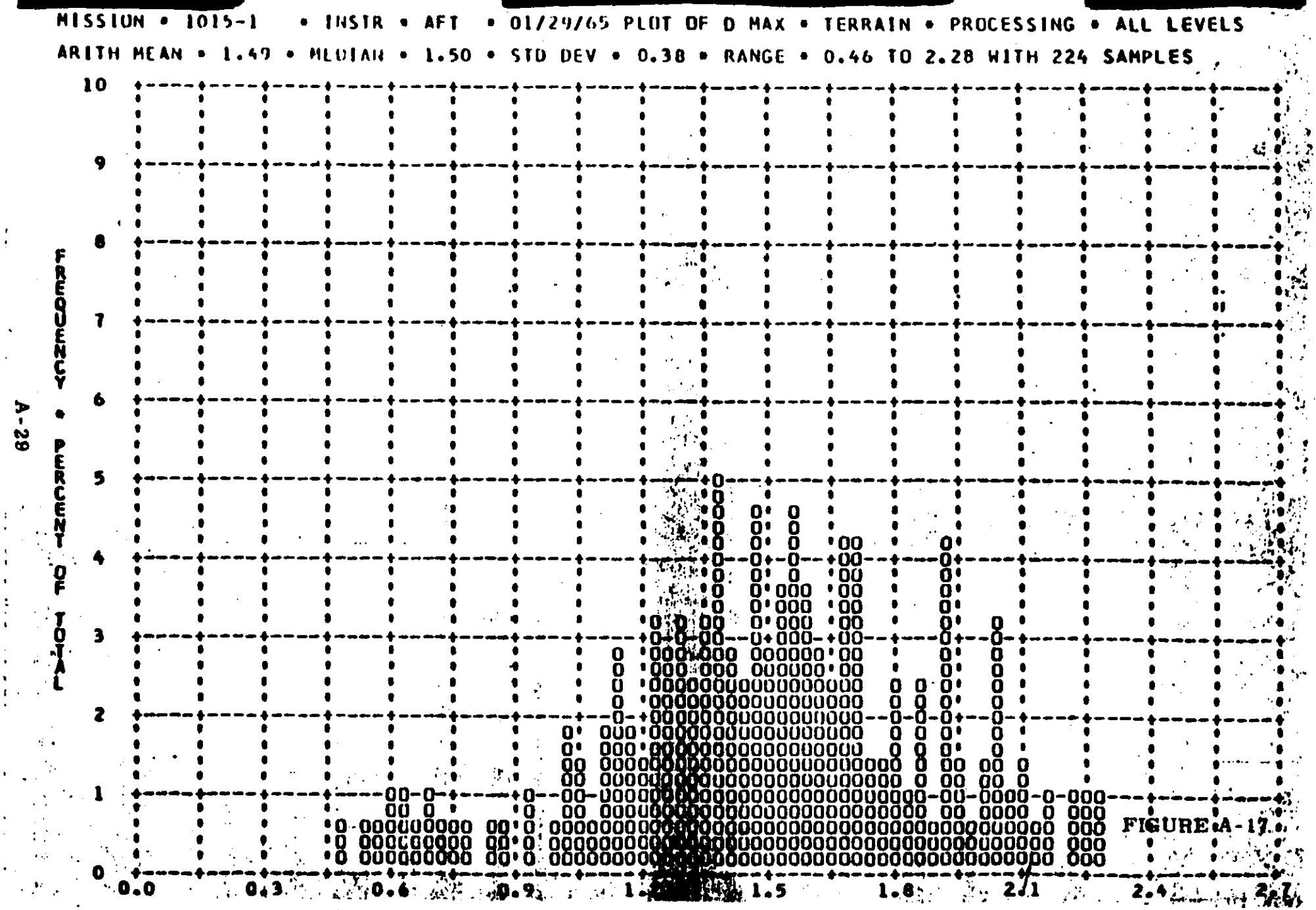

MISSION • 1015-1 • INSTR • AFT • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS
ARITH MEAN • 1.49 • MEDIAN • 1.50 • STD DEV • 0.38 • RANGE • 0.46 TO 2.28 WITH 224 SAMPLES
FREQUENCY • PERCENT OF TOTAL
10
9
8
7
6
5
4
3
2
1
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7

FIGURE A-17

[redacted] TOP SECRET [redacted]

MISSION • 1015-1 • INSTR • ACT • 01/22/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.86 • MEDIAN • 1.95 • STD DEV • 0.38 • RANGE • 0.80 TO 2.36 WITH 190 SAMPLES

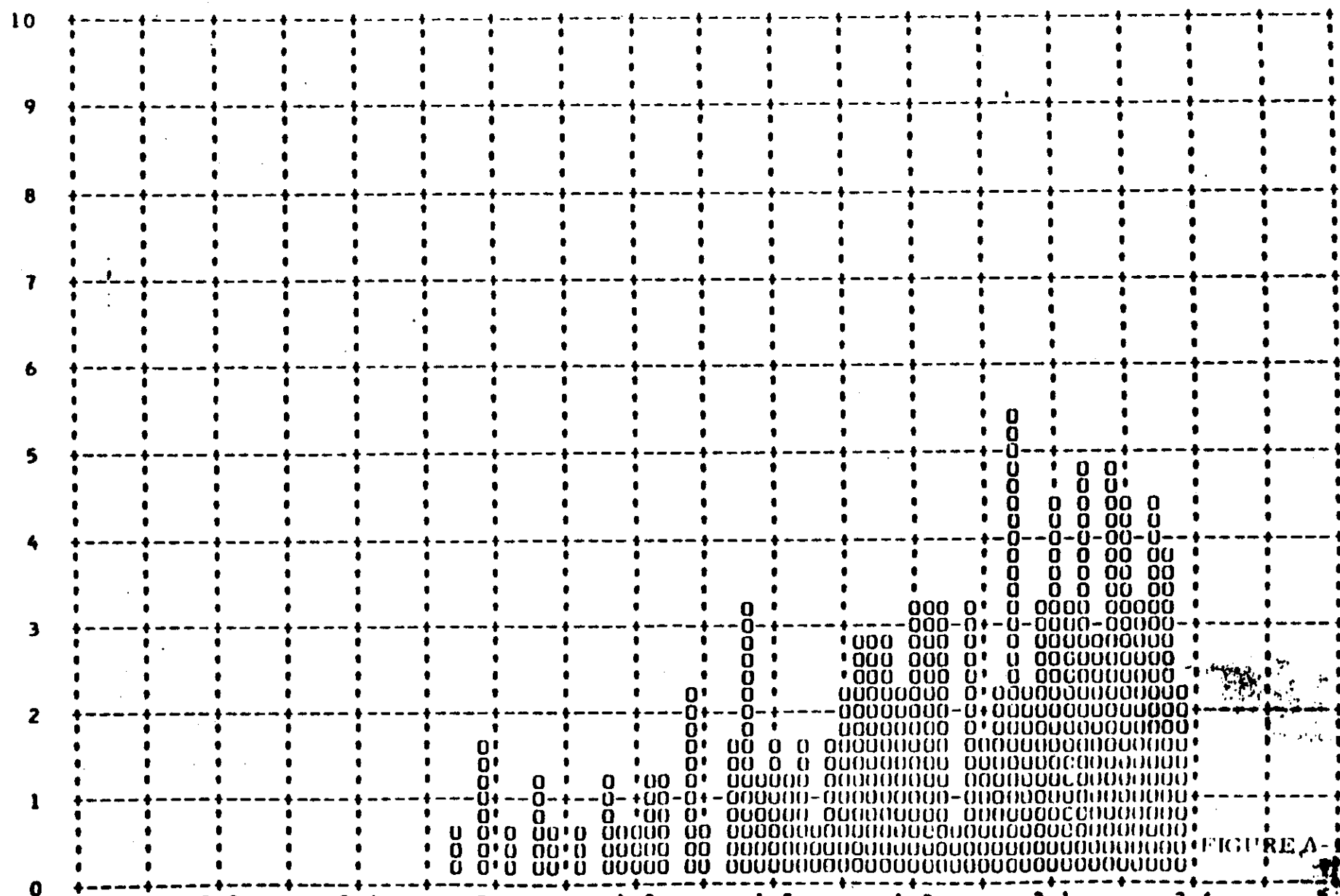


FIGURE A-18

[redacted] TOP SECRET [redacted]

[redacted]

[redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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
0.01	0	0	0	0	0	0	0	0	0	0	0	0
0.02	0	0	0	0	0	0	0	0	0	0	0	0
0.03	0	0	0	0	0	0	0	0	0	0	0	0
0.04	0	0	0	0	0	0	0	0	0	0	0	0
0.05	0	0	0	0	0	0	0	0	0	0	0	0
0.06	0	0	0	0	0	0	0	0	0	0	0	0
0.07	0	0	0	0	0	0	0	0	0	0	0	0
0.08	0	0	0	0	0	0	0	0	0	0	0	0
0.09	0	0	0	0	0	0	0	0	0	0	0	0
0.10	0	0	0	0	0	0	0	0	0	0	0	0
0.11	0	0	0	0	0	0	0	0	0	0	0	0
0.12	0	0	0	0	0	0	0	0	0	0	0	0
0.13	0	0	0	0	0	0	0	0	0	0	0	0
0.14	0	0	0	0	0	0	0	0	0	0	0	0
0.15	0	0	0	0	0	0	0	0	0	0	0	0
0.16	0	0	0	0	0	0	0	0	0	0	0	0
0.17	0	0	0	0	0	0	0	0	0	0	0	0
0.18	0	0	0	0	0	0	0	0	0	0	0	0
0.19	0	0	0	0	0	0	0	0	0	0	0	0
0.20	0	0	0	0	0	0	0	0	0	0	0	0
0.21	0	0	0	0	0	0	0	0	0	0	0	0
0.22	0	0	0	1	0	0	0	0	0	1	0	0
0.23	0	0	0	0	0	0	0	0	0	0	0	0
0.24	0	0	0	0	0	0	[redacted]					
0.25	0	0	0	0	0	0						
0.26	0	0	0	0	0	0						
0.27	0	0	0	0	0	0	0	0	0	0	0	0
0.28	0	0	0	1	0	0	3	0	1	4	0	1
0.29	0	0	0	1	0	0	3	0	1	4	0	1
0.30	0	0	0	1	0	0	5	0	1	6	0	1
0.31	0	0	0	1	0	0	1	0	0	1	0	0
0.32	0	0	0	1	0	0	6	0	1	7	0	1
0.33	0	0	0	1	0	0	0	0	0	1	0	0
0.34	0	0	0	1	0	0	10	1	0	11	1	0
0.35	0	0	0	1	0	0	2	0	0	3	0	0
0.36	0	0	0	1	0	0	5	1	0	6	1	0
0.37	0	0	0	1	0	0	2	0	0	3	0	0
0.38	0	0	0	1	0	0	11	1	0	12	1	0
0.39	0	0	0	2	0	0	5	0	0	7	0	0
0.40	0	0	0	2	0	0	5	0	0	7	0	0
0.41	0	0	0	4	0	0	5	0	0	9	0	0
0.42	0	0	0	4	0	0	5	0	0	9	0	0
0.43	0	0	0	4	0	0	5	0	0	9	0	0
0.44	0	0	0	4	0	0	5	0	0	9	0	0
0.45	0	0	0	1	0	0	4	0	0	5	0	0
0.46	0	0	0	1	1	0	11	1	0	12	1	0
0.47	0	0	0	1	0	0	1	0	0	2	0	0
0.48	0	0	0	1	0	0	5	0	0	6	0	0
0.49	0	0	0	0	0	0	3	0	0	3	0	0
0.50	0	0	0	1	0	0	6	2	0	7	2	0
SUBTOTAL	0	0	0	21	1	0	100	5	3	121	6	3

[redacted]

TABLE A-3

[redacted] [redacted] [redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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
0.51	0	0	0	0	0	0	0	0	0	0	0	0
0.52	0	0	0	0	0	0	5	0	0	5	0	0
0.53	0	0	0	0	0	0	1	5	0	1	6	0
0.54	0	0	0	1	0	0	5	0	0	6	0	0
0.55	0	0	0	0	0	0	3	0	0	3	0	0
0.56	0	0	0	0	0	0	1	0	0	1	0	0
0.57	0	0	0	0	0	0	1	1	0	1	1	0
0.58	0	0	0	0	0	0	1	1	0	1	1	0
0.59	0	0	0	0	0	0	1	1	0	1	1	0
0.60	0	0	0	0	1	0	6	2	0	6	3	0
0.61	0	0	0	0	0	0	2	0	0	2	0	0
0.62	0	0	0	2	0	0	2	1	0	4	1	0
0.63	0	0	0	0	0	0	0	1	0	0	1	0
0.64	0	0	0	1	0	0	2	1	0	3	1	0
0.65	0	0	0	0	0	0	0	1	0	0	1	0
0.66	0	0	0	2	0	0	1	0	0	3	0	0
0.67	0	0	0	0	0	0	2	0	0	2	0	0
0.68	0	0	0	0	0	0	1	1	0	1	1	0
0.69	0	0	0	0	0	0	3	0	0	3	0	0
0.70	0	0	0	0	0	0	3	0	0	3	0	0
0.71	0	0	0	0	0	0	1	0	0	1	0	0
0.72	0	0	0	0	0	1	0	2	0	0	2	1
0.73	0	0	0	0	0	0	1	0	0	1	0	0
0.74	0	0	0	0	0	0	0	1	0	0	1	0
0.75	0	0	0	0	0	0	0	1	0	0	1	0
0.76	0	0	0	0	0	0	2	0	0	2	0	0
0.77	0	0	0	0	1	0	1	0	0	1	1	0
0.78	0	0	0	0	0	0	1	0	0	1	0	0
0.79	0	0	0	0	1	0	1	2	0	1	3	0
0.80	0	0	0	0	0	0	2	8	0	2	8	0
0.81	0	0	0	0	0	0	0	2	0	0	2	0
0.82	0	0	0	1	0	0	1	0	0	1	0	0
0.83	0	0	0	0	0	0	0	1	0	0	1	0
0.84	0	0	0	0	0	0	0	1	0	0	1	0
0.85	0	0	0	0	0	0	0	1	0	0	1	0
0.86	0	0	0	1	0	0	1	0	0	2	0	0
0.87	0	0	0	0	0	0	1	0	0	1	0	0
0.88	0	0	0	0	0	0	0	1	0	0	1	0
0.89	0	0	0	0	0	0	0	1	0	0	1	0
0.90	0	0	0	0	0	0	0	1	0	0	1	0
0.91	0	0	0	0	0	0	0	1	0	0	1	0
0.92	0	0	0	0	1	0	0	2	0	0	3	0
0.93	0	0	0	0	0	0	0	1	0	0	1	0
0.94	0	0	0	0	0	0	0	2	0	0	2	0
0.95	0	0	0	0	0	0	0	1	0	0	1	0
0.96	0	0	0	0	1	0	0	1	0	0	1	0
0.97	0	0	0	0	0	0	0	1	0	0	1	0
0.98	0	0	0	0	0	0	0	1	0	0	1	0
0.99	0	0	0	0	0	0	0	1	0	0	1	0
1.00	0	0	0	0	0	0	0	2	2	0	2	2
SUBTOTAL	0	0	0	8	6	1	58	30	13	66	36	14

[redacted] [redacted] [redacted]

TABLE A-3

[redacted] [redacted] [redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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
1.01	0	0	0	0	0	0	0	1	0	0	1	0
1.02	0	0	0	0	0	1	0	1	3	0	1	0
1.03	0	0	0	0	0	1	0	1	0	0	1	0
1.04	0	0	0	0	0	1	0	2	0	0	2	0
1.05	0	0	0	0	0	0	0	2	0	0	2	0
1.06	0	0	0	0	0	0	0	2	1	0	2	1
1.07	0	0	0	0	0	0	0	2	0	0	2	0
1.08	0	0	0	0	0	0	0	3	1	0	3	1
1.09	0	0	0	0	0	0	0	1	9	0	1	2
1.10	0	0	0	0	0	3	0	1	0	0	1	0
1.11	0	0	0	0	0	1	0	1	0	0	1	0
1.12	0	0	0	0	0	1	0	2	0	0	2	0
1.13	0	0	0	0	0	0	0	2	0	0	2	0
1.14	0	0	0	0	0	2	0	1	0	0	2	0
1.15	0	0	0	0	0	0	0	1	0	0	2	0
1.16	0	0	0	0	0	1	0	2	0	0	2	0
1.17	0	0	0	0	0	0	0	1	1	0	1	1
1.18	0	0	0	0	0	1	0	1	3	0	1	2
1.19	0	0	0	0	0	0	0	1	0	0	1	0
1.20	0	0	0	0	0	0	0	0	5	0	0	5
1.21	0	0	0	0	0	0	0	0	5	0	0	5
1.22	0	0	0	0	0	0	0	0	2	0	0	2
1.23	0	0	0	0	0	0	0	0	2	0	0	2
1.24	0	0	0	0	0	0	0	0	1	0	0	1
1.25	0	0	0	0	0	0	0	0	1	0	0	1
1.26	0	0	0	0	0	0	0	0	2	0	0	2
1.27	0	0	0	0	0	0	0	0	2	0	0	2
1.28	0	0	0	0	0	1	0	0	3	0	0	3
1.29	0	0	0	0	0	0	0	0	1	0	0	1
1.30	0	0	0	0	0	1	0	0	3	0	0	3
1.31	0	0	0	0	0	0	0	0	1	0	0	1
1.32	0	0	0	0	0	1	0	0	2	0	0	2
1.33	0	0	0	0	0	0	0	0	1	0	0	1
1.34	0	0	0	0	0	0	0	0	1	0	0	1
1.35	0	0	0	0	0	1	0	0	0	0	0	1
1.36	0	0	0	0	0	2	0	0	2	0	0	2
1.37	0	0	0	0	0	0	0	0	0	0	0	0
1.38	0	0	0	0	0	0	0	0	1	0	0	1
1.39	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	3	0	0	3
1.41	0	0	0	0	0	0	0	0	0	0	0	0
1.42	0	0	0	0	0	0	0	0	4	0	0	4
1.43	0	0	0	0	0	0	0	0	2	0	0	2
1.44	0	0	0	0	0	1	0	0	1	0	0	1
1.45	0	0	0	0	0	0	0	0	0	0	0	0
1.46	0	0	0	0	0	1	0	0	1	0	0	1
1.47	0	0	0	0	0	0	0	0	0	0	0	0
1.48	0	0	0	0	0	1	0	0	0	0	0	1
1.49	0	0	0	0	0	0	0	0	0	0	0	0
1.50	0	0	0	0	0	1	0	0	1	0	0	1
SUBTOTAL	0	0	0	0	15	6	1	76	46	1	91	52

[redacted] [redacted] [redacted]

TABLE A-3

[redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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	1	0	0	1
1.52	0	0	0	0	0	0	0	2	0	0	3	0
1.53	0	0	0	0	0	0	0	1	0	0	1	0
1.54	0	0	0	0	0	0	0	4	0	0	5	0
1.55	0	0	0	0	0	0	0	0	1	0	0	1
1.56	0	0	0	0	0	0	0	1	0	0	1	0
1.57	0	0	0	0	0	0	0	0	1	0	0	1
1.58	0	0	0	0	0	0	0	2	0	0	2	0
1.59	0	0	0	0	0	0	0	1	0	0	1	0
1.60	0	0	0	0	0	0	0	3	0	0	3	0
1.61	0	0	0	0	0	0	0	0	1	0	0	1
1.62	0	0	0	0	0	0	0	3	0	0	3	0
1.63	0	0	0	0	0	0	0	0	1	0	0	1
1.64	0	0	0	0	0	0	0	1	0	0	1	0
1.65	0	0	0	0	0	0	0	1	1	0	1	1
1.66	0	0	0	0	0	0	0	1	0	0	1	0
1.67	0	0	0	0	0	0	0	0	1	0	0	1
1.68	0	0	0	0	0	1	0	3	0	0	3	0
1.69	0	0	0	0	0	0	0	0	1	0	0	1
1.70	0	0	0	0	0	0	0	4	0	0	4	0
1.71	0	0	0	0	0	0	0	1	1	0	1	1
1.72	0	0	0	0	0	1	0	2	0	0	2	0
1.73	0	0	0	0	0	0	0	0	1	0	0	1
1.74	0	0	0	0	1	0	0	1	0	0	2	0
1.75	0	0	0	0	0	0	0	0	1	0	0	1
1.76	0	0	0	0	0	0	0	0	0	0	0	0
1.77	0	0	0	0	0	0	0	0	1	0	0	1
1.78	0	0	0	0	0	1	0	0	0	0	1	0
1.79	0	0	0	0	0	0	0	1	0	0	1	0
1.80	0	0	0	0	1	0	0	0	1	0	1	1
1.81	0	0	0	0	0	0	0	0	0	0	0	0
1.82	0	0	0	0	0	0	0	0	1	0	0	1
1.83	0	0	0	0	0	0	0	0	0	0	0	0
1.84	0	0	0	0	0	0	0	0	1	0	0	1
1.85	0	0	0	0	0	0	0	0	0	0	0	0
1.86	0	0	0	0	0	0	0	0	1	0	0	1
1.87	0	0	0	0	0	0	0	0	0	0	0	0
1.88	0	0	0	0	0	1	0	0	1	0	0	1
1.89	0	0	0	0	0	0	0	0	0	0	0	0
1.90	0	0	0	0	0	0	0	0	1	0	0	1
1.91	0	0	0	0	0	0	0	0	0	0	0	0
1.92	0	0	0	0	0	0	0	0	1	0	0	1
1.93	0	0	0	0	0	0	0	0	0	0	0	0
1.94	0	0	0	0	0	1	0	0	1	0	0	1
1.95	0	0	0	0	0	0	0	0	0	0	0	0
1.96	0	0	0	0	0	0	0	0	1	0	0	1
1.97	0	0	0	0	0	0	0	0	0	0	0	0
1.98	0	0	0	0	0	0	0	0	1	0	0	1
1.99	0	0	0	0	0	0	0	0	0	0	0	0
2.00	0	0	0	0	0	1	0	0	1	0	0	1
SUBTOTAL	0	0	0	0	5	9	0	44	58	0	49	67

[redacted]

TABLE A-3

[redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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
2.01	0	0	0	0	0	0	0	0	0	0	0	0
2.02	0	0	0	0	0	1	0	0	2	0	0	3
2.03	0	0	0	0	0	0	0	1	2	0	1	2
2.04	0	0	0	0	0	0	0	1	2	0	1	2
2.05	0	0	0	0	0	1	0	1	2	0	1	2
2.06	0	0	0	0	0	1	0	1	2	0	1	2
2.07	0	0	0	0	0	1	0	1	2	0	1	2
2.08	0	0	0	0	0	1	0	1	2	0	1	2
2.09	0	0	0	0	0	1	0	1	2	0	1	2
2.10	0	0	0	0	0	1	0	1	2	0	1	2
2.11	0	0	0	0	0	1	0	1	2	0	1	2
2.12	0	0	0	0	0	1	0	1	2	0	1	2
2.13	0	0	0	0	0	1	0	1	2	0	1	2
2.14	0	0	0	0	0	1	0	1	2	0	1	2
2.15	0	0	0	0	0	1	0	1	2	0	1	2
2.16	0	0	0	0	0	1	0	1	2	0	1	2
2.17	0	0	0	0	0	1	0	1	2	0	1	2
2.18	0	0	0	0	0	1	0	1	2	0	1	2
2.19	0	0	0	0	0	1	0	1	2	0	1	2
2.20	0	0	0	0	0	1	0	1	2	0	1	2
2.21	0	0	0	0	0	1	0	1	2	0	1	2
2.22	0	0	0	0	0	1	0	1	2	0	1	2
2.23	0	0	0	0	0	1	0	1	2	0	1	2
2.24	0	0	0	0	0	1	0	1	2	0	1	2
2.25	0	0	0	0	0	1	0	1	2	0	1	2
2.26	0	0	0	0	0	1	0	1	2	0	1	2
2.27	0	0	0	0	0	1	0	1	2	0	1	2
2.28	0	0	0	0	0	1	0	1	2	0	1	2
2.29	0	0	0	0	0	1	0	1	2	0	1	2
2.30	0	0	0	0	0	1	0	1	2	0	1	2
2.31	0	0	0	0	0	1	0	1	2	0	1	2
2.32	0	0	0	0	0	1	0	1	2	0	1	2
2.33	0	0	0	0	0	1	0	1	2	0	1	2
2.34	0	0	0	0	0	1	0	1	2	0	1	2
2.35	0	0	0	0	0	1	0	1	2	0	1	2
2.36	0	0	0	0	0	1	0	1	2	0	1	2
2.37	0	0	0	0	0	1	0	1	2	0	1	2
2.38	0	0	0	0	0	1	0	1	2	0	1	2
2.39	0	0	0	0	0	1	0	1	2	0	1	2
2.40	0	0	0	0	0	1	0	1	2	0	1	2
2.41	0	0	0	0	0	1	0	1	2	0	1	2
2.42	0	0	0	0	0	1	0	1	2	0	1	2
2.43	0	0	0	0	0	1	0	1	2	0	1	2
2.44	0	0	0	0	0	1	0	1	2	0	1	2
2.45	0	0	0	0	0	1	0	1	2	0	1	2
2.46	0	0	0	0	0	1	0	1	2	0	1	2
2.47	0	0	0	0	0	1	0	1	2	0	1	2
2.48	0	0	0	0	0	1	0	1	2	0	1	2
2.49	0	0	0	0	0	1	0	1	2	0	1	2
2.50	0	0	0	0	0	1	0	1	2	0	1	2
SUBTOTAL	0	0	0	0	2	14	0	4	58	0	6	72

[redacted]

TABLE A-3

[redacted] [redacted] [redacted]

MISSION • 1015-2 • INSTRUMENT • FRWD 01/29/65 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	0	0	0	0	0	0	0	0	0	0	0	0
2.52	0	0	0	0	0	0	0	0	0	0	0	0
2.53	0	0	0	0	0	0	0	0	0	0	0	0
2.54	0	0	0	0	0	0	0	0	0	0	0	0
2.55	0	0	0	0	0	0	0	0	0	0	0	0
2.56	0	0	0	0	0	0	0	0	0	0	0	0
2.57	0	0	0	0	0	0	0	0	0	0	0	0
2.58	0	0	0	0	0	0	0	0	0	0	0	0
2.59	0	0	0	0	0	0	0	0	0	0	0	0
2.60	0	0	0	0	0	0	0	0	0	0	0	0
2.61	0	0	0	0	0	0	0	0	0	0	0	0
2.62	0	0	0	0	0	0	0	0	0	0	0	0
2.63	0	0	0	0	0	0	0	0	0	0	0	0
2.64	0	0	0	0	0	0	0	0	0	0	0	0
2.65	0	0	0	0	0	0	0	0	0	0	0	0
2.66	0	0	0	0	0	0	0	0	0	0	0	0
2.67	0	0	0	0	0	0	0	0	0	0	0	0
2.68	0	0	0	0	0	0	0	0	0	0	0	0
2.69	0	0	0	0	0	0	0	0	0	0	0	0
2.70	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	29	29	30	159	159	178	188	188	208

MISSION 1015-2 INSTR - FRWD 01/29/65 PROCESSING AND EXPOSURE

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EX
PRIMARY	0	0 PC	0 PC	0 PC	0 PC	
INTERMEDIATE	29	0 PC	24 PC	76 PC	0 PC	
FULL	159	33 PC	0 PC	64 PC	3 PC	
ALL LEVELS	188	28 PC	4 PC	65 PC	3 PC	

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EX
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	----------	0.91
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35
FULL	0.18 AND UP	0.01-0.39	----------	0.40-0.90	0.91-1.69	1.70

[redacted] [redacted] [redacted]

TABLE A-3

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-2 • INSTR • FRWD • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.47 • MEDIAN • 0.44 • STD DEV • 0.15 • RANGE • 0.22 TO 0.86 WITH 29 SAMPLES

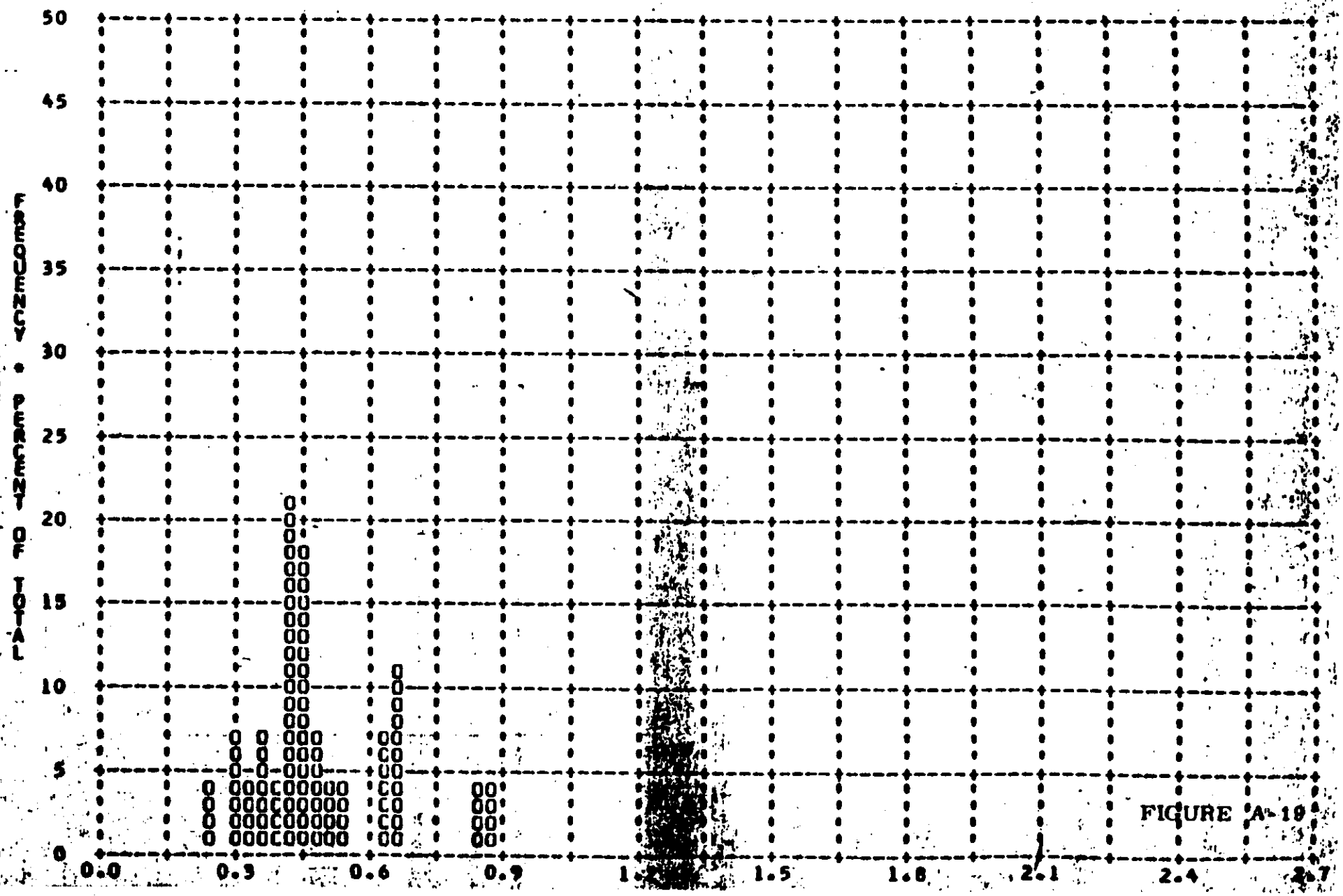


FIGURE A-10

[redacted] TOP SECRET [redacted] [redacted]

MISSION • 1015-2 • INSTR • FRWD • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.28 • MEDIAN • 1.30 • STD.DEV • 0.41 • RANGE • 0.46 TO 2.07 WITH 29 SAMPLES

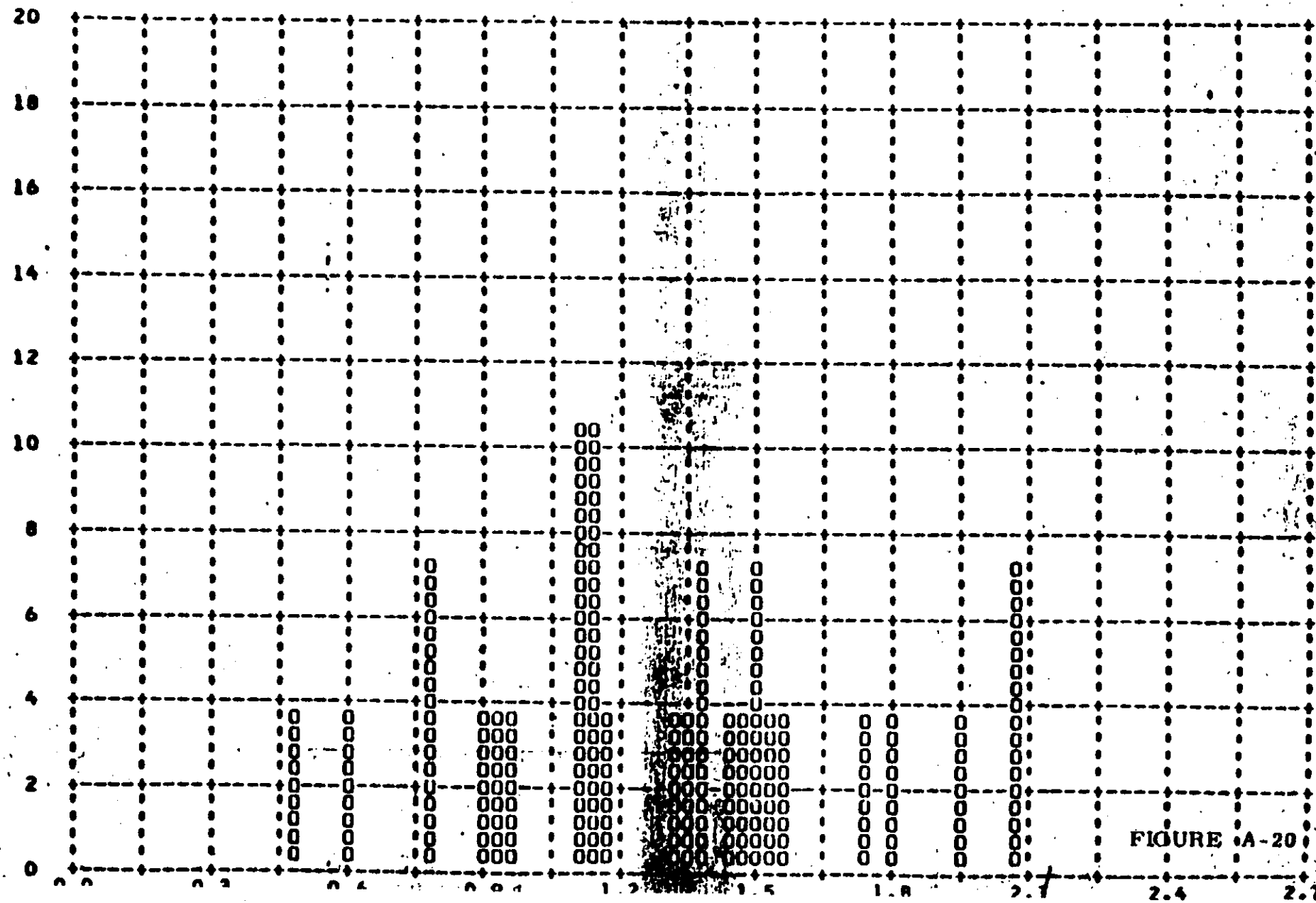


FIGURE A-20

[redacted] TOP SECRET [redacted] [redacted]

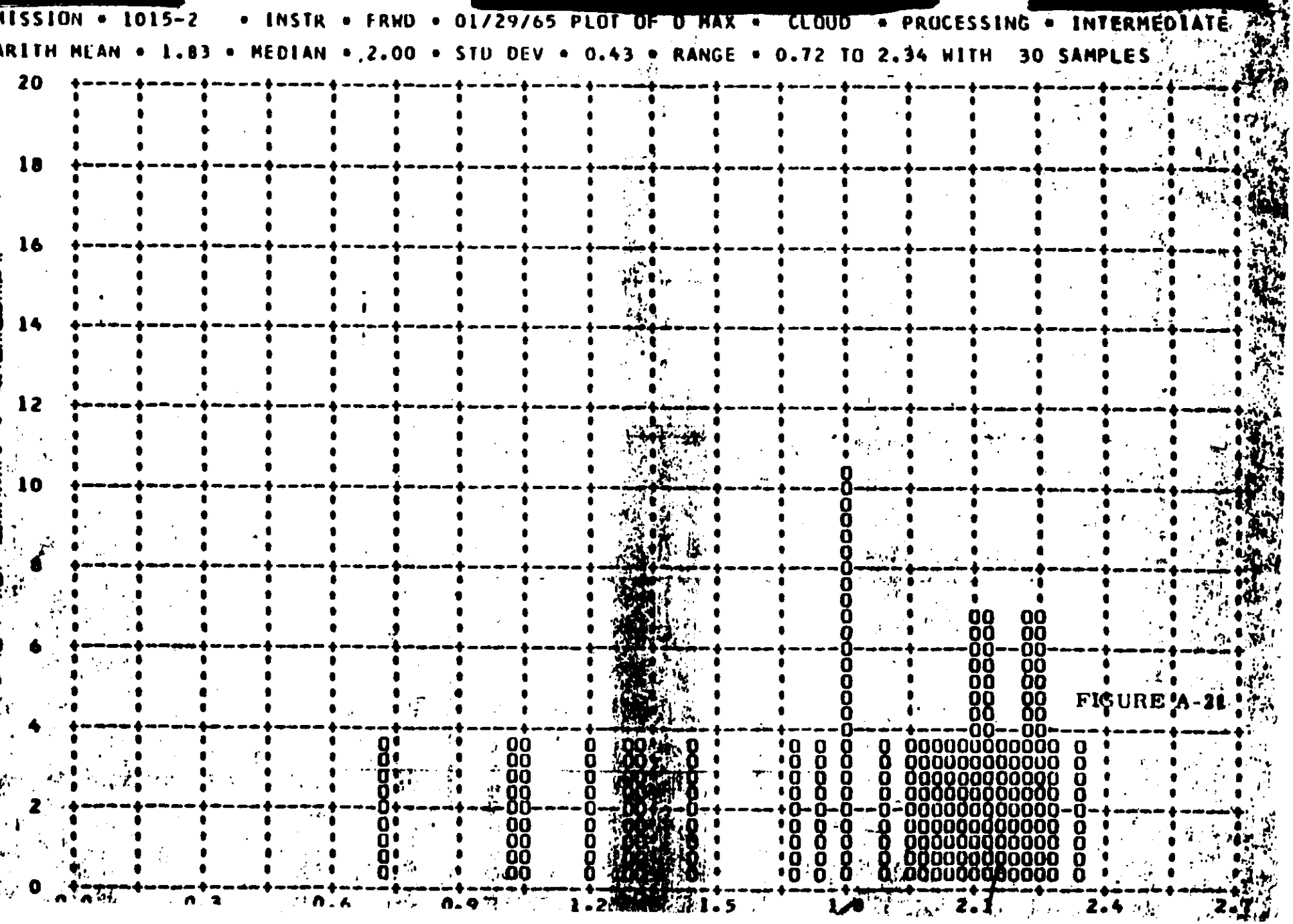


FIGURE A-21

[redacted] TOP SECRET [redacted] [redacted]

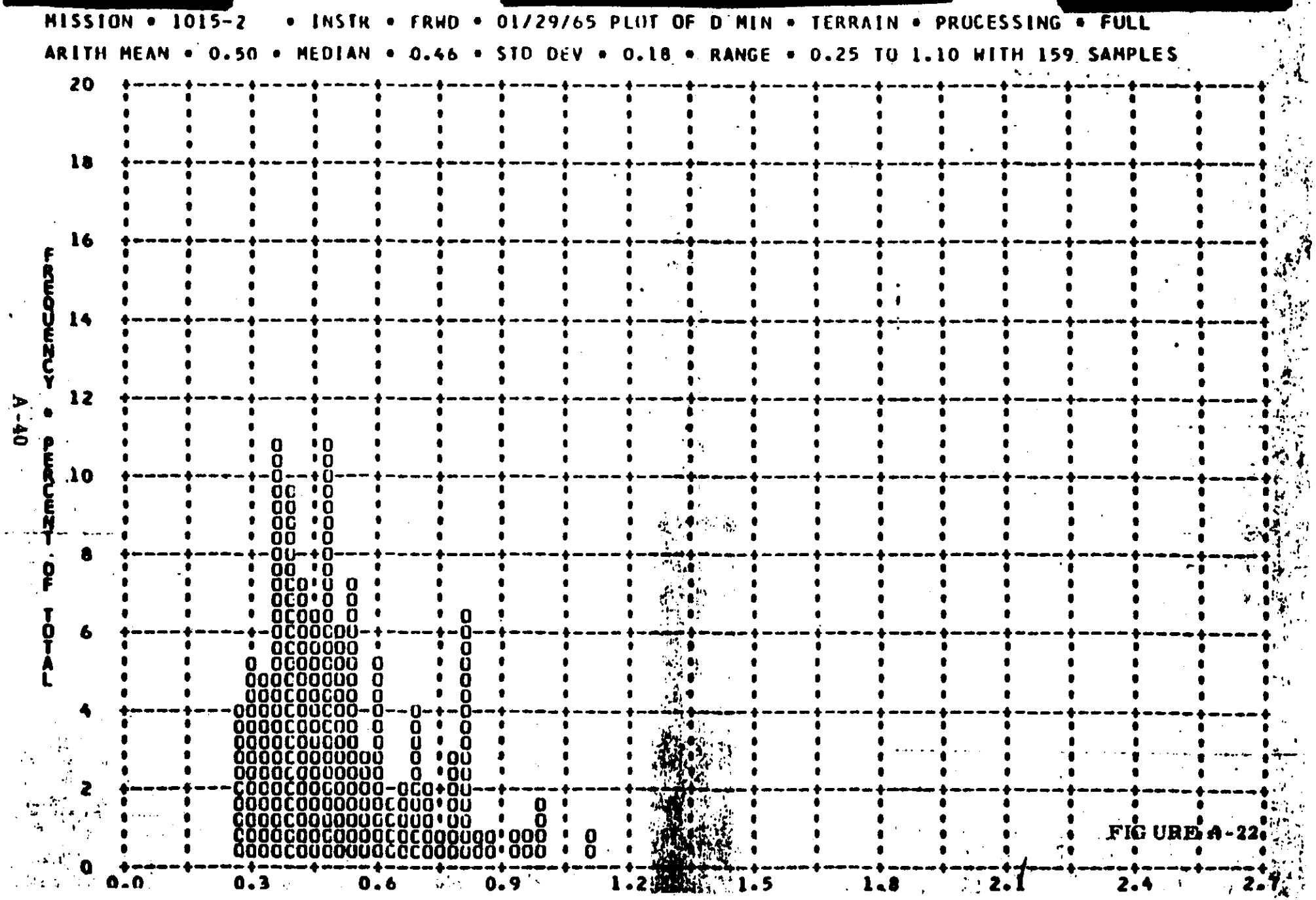


FIGURE A-22.

[redacted] TOP SECRET [redacted] [redacted]

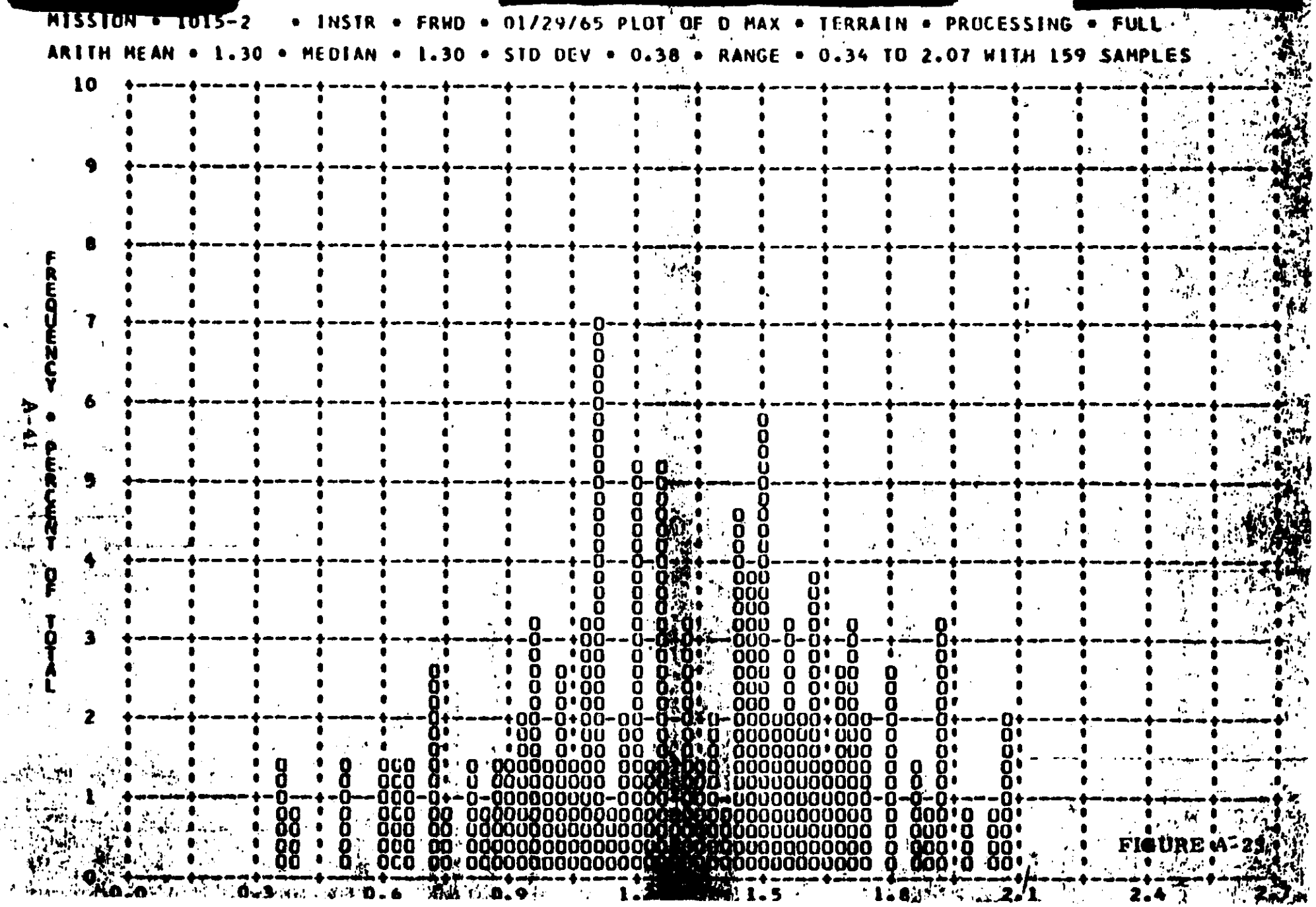


FIGURE A-23

[redacted] TOP SECRET [redacted] [redacted]

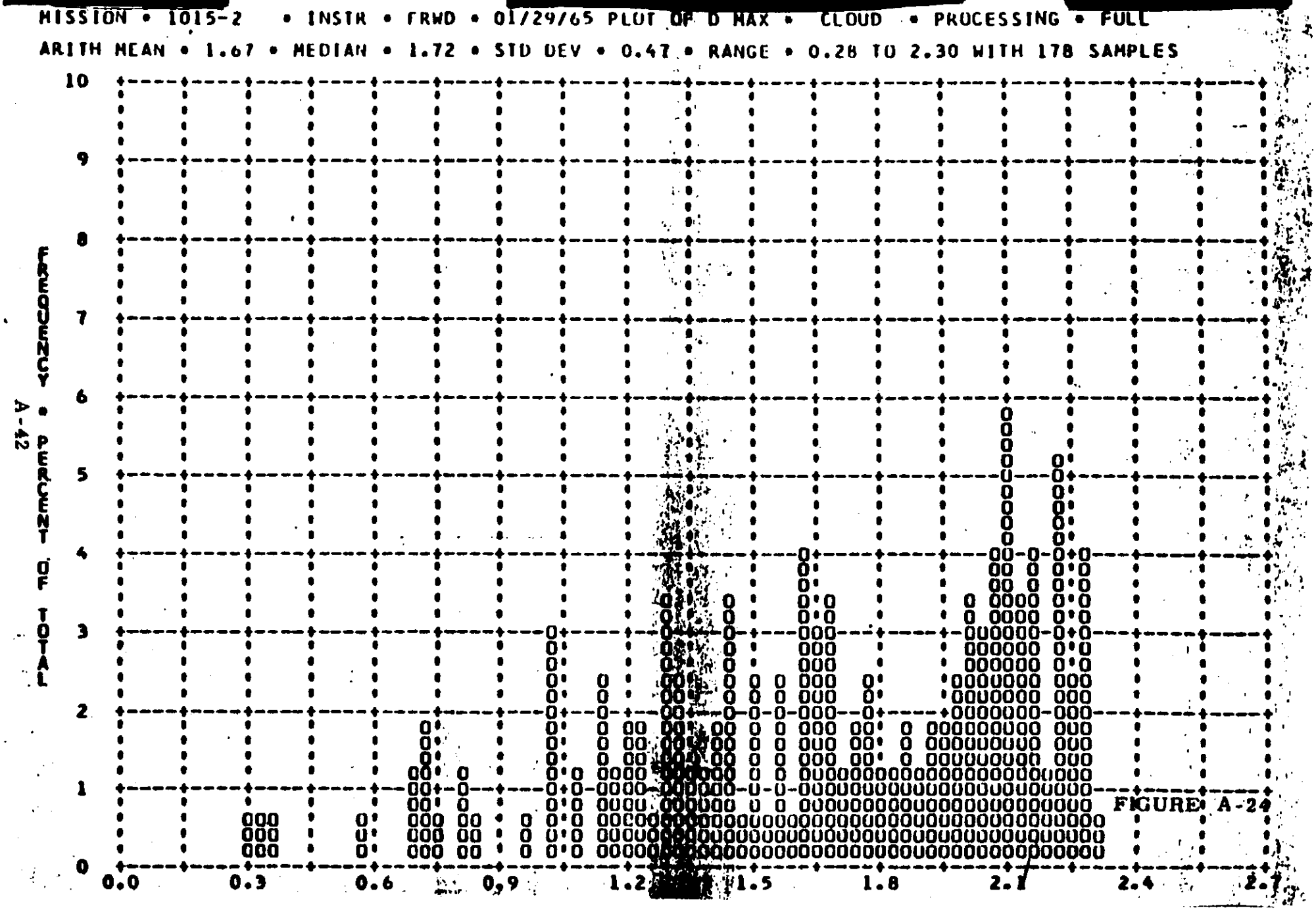


FIGURE A-24

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-2 • INSTR • FRWD • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.50 • MEDIAN • 0.46 • STD DEV • 0.17 • RANGE • 0.22 TO 1.10 WITH 188 SAMPLES

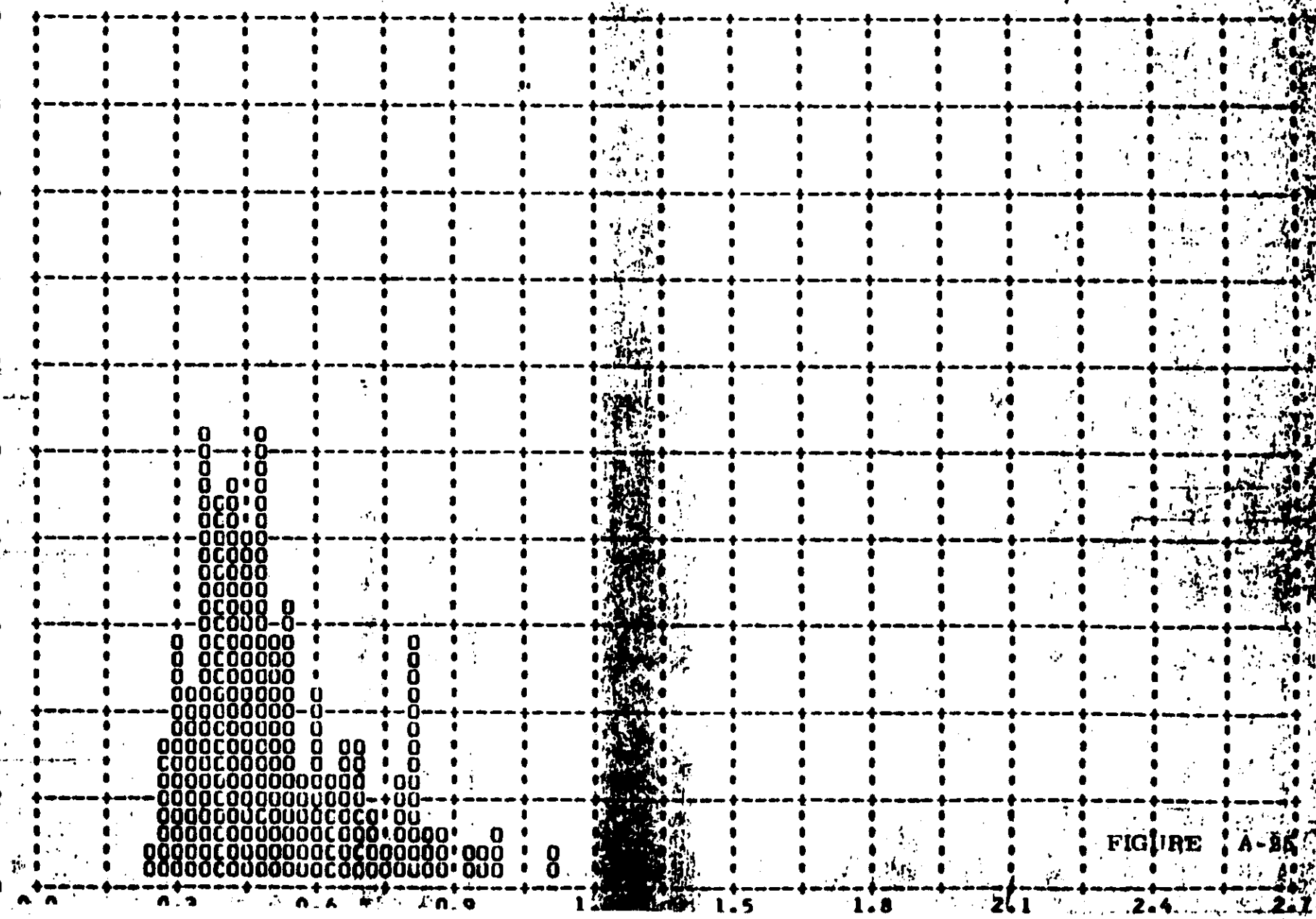


FIGURE A-8A

[redacted] TOP SECRET [redacted] [redacted]

MISSION • 1015-2 • INSTR • FRWD • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.29 • MEDIAN • 1.30 • STD DEV • 0.39 • RANGE • 0.34 TO 2.07 WITH 188 SAMPLES

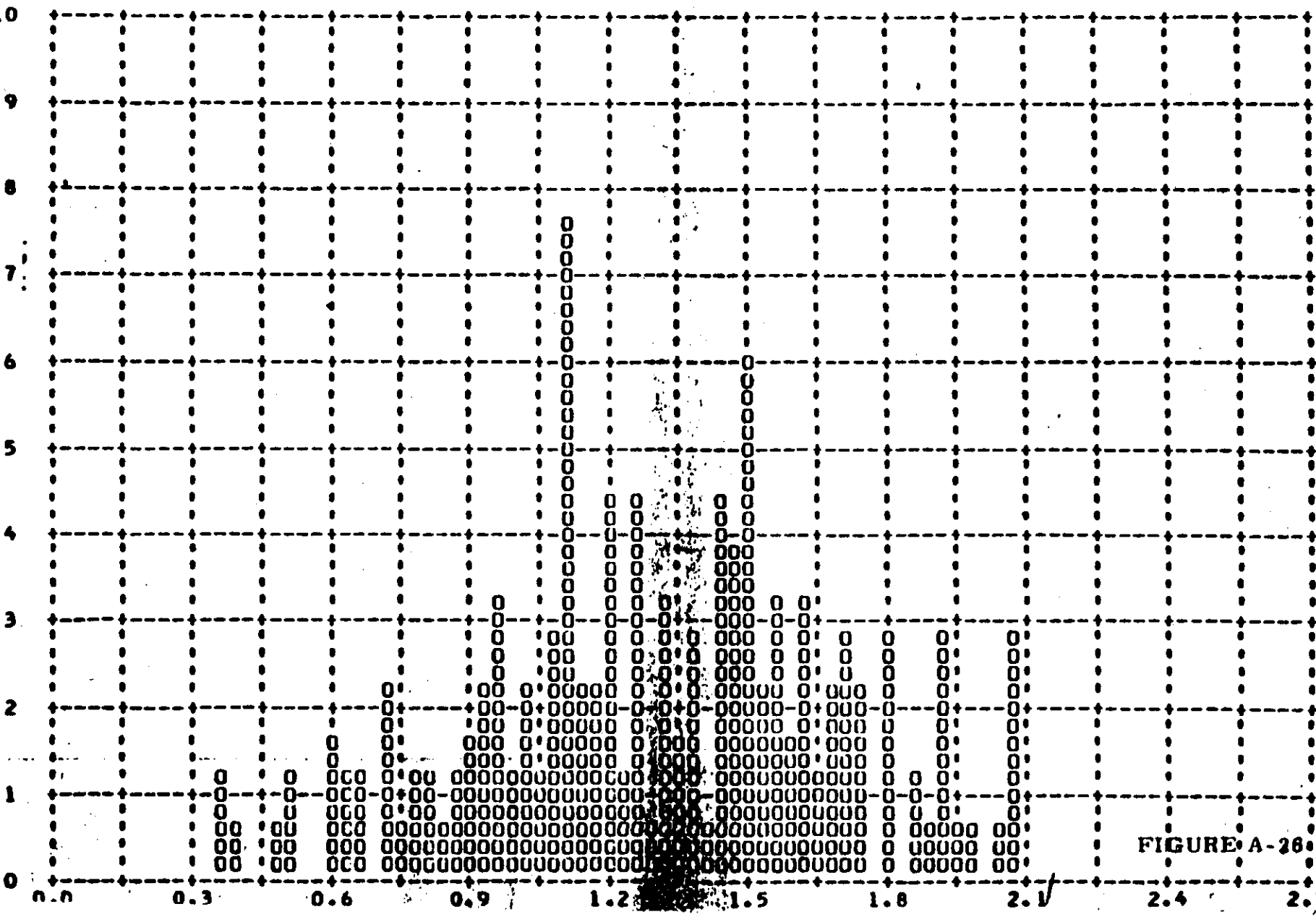


FIGURE A-26

MISSION • 1015-2 • INSTR • FRWD • 01/29/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.69 • MEDIAN • 1.78 • STD DEV • 0.47 • RANGE • 0.28 TO 2.34 WITH 208 SAMPLES

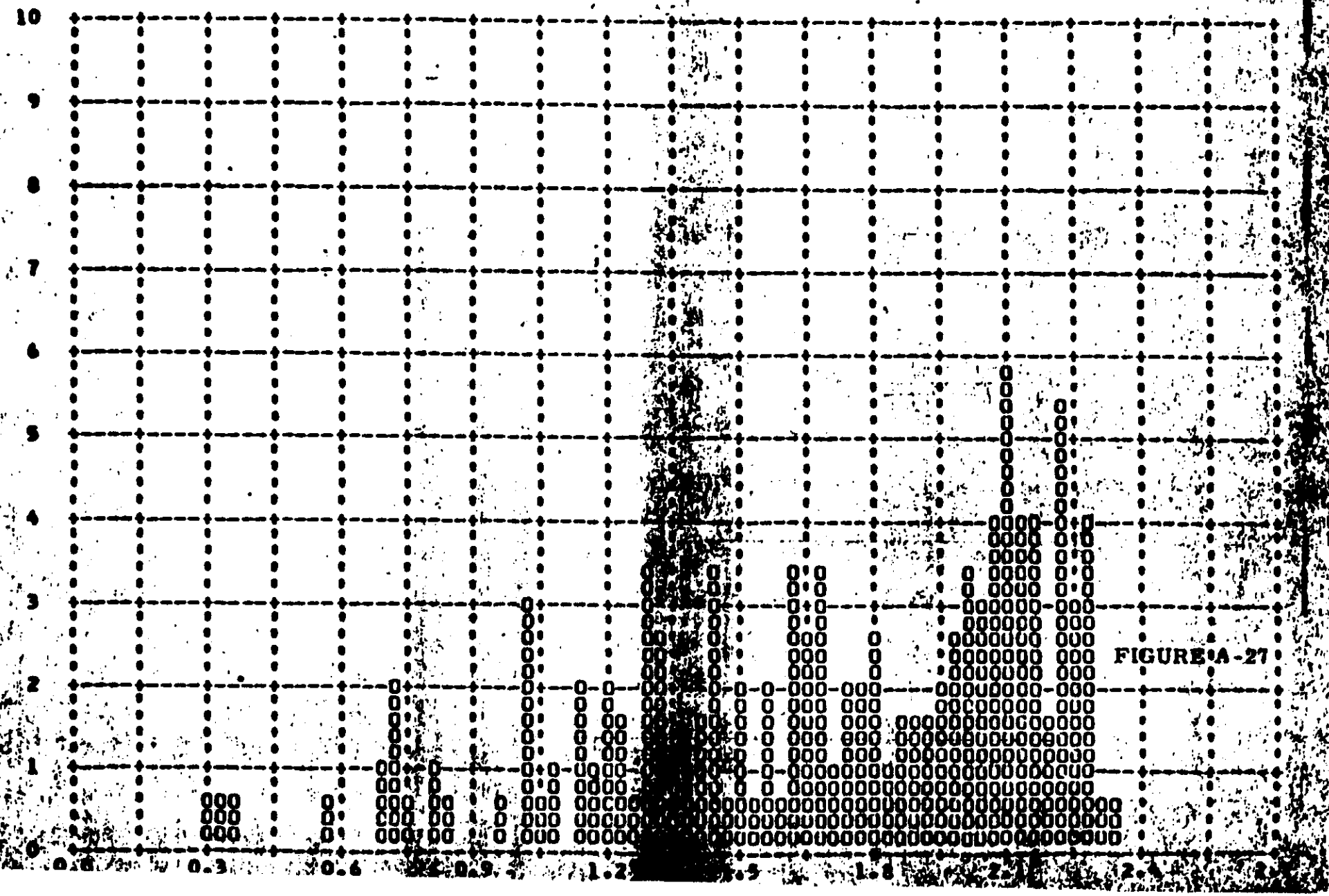


FIGURE A-27

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 DENSITY FREQ DIST

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
0.01	0	0	0	0	0	0	0	0	0	0	0	0
0.02	0	0	0	0	0	0	0	0	0	0	0	0
0.03	0	0	0	0	0	0	0	0	0	0	0	0
0.04	0	0	0	0	0	0	0	0	0	0	0	0
0.05	0	0	0	0	0	0	0	0	0	0	0	0
0.06	0	0	0	0	0	0	0	0	0	0	0	0
0.07	0	0	0	0	0	0	0	0	0	0	0	0
0.08	0	0	0	0	0	0	0	0	0	0	0	0
0.09	0	0	0	0	0	0	0	0	0	0	0	0
0.10	0	0	0	0	0	0	0	0	0	0	0	0
0.11	0	0	0	0	0	0	0	0	0	0	0	0
0.12	0	0	0	0	0	0	0	0	0	0	0	0
0.13	0	0	0	0	0	0	0	0	0	0	0	0
0.14	0	0	0	0	0	0	0	0	0	0	0	0
0.15	0	0	0	0	0	0	0	0	0	0	0	0
0.16	0	0	0	0	0	0	0	0	0	0	0	0
0.17	0	0	0	0	0	0	0	0	0	0	0	0
0.18	0	0	0	0	0	0	0	0	0	0	0	0
0.19	0	0	0	0	0	0	0	0	0	0	0	0
0.20	0	0	0	0	0	0	0	0	0	0	0	0
0.21	0	0	0	0	0	0	0	0	0	0	0	0
0.22	0	0	0	0	0	0	0	0	0	0	0	0
0.23	0	0	0	0	0	0	0	0	0	0	0	0
0.24	0	0	0	0	0	0	0	0	0	0	0	0
0.25	0	0	0	0	0	0	0	0	0	0	0	0
0.26	0	0	0	0	0	0	2	0	0	2	0	0
0.27	0	0	0	0	0	0	1	0	0	1	0	0
0.28	0	0	0	0	0	0	2	0	0	2	0	0
0.29	0	0	0	0	0	0	0	0	0	0	0	0
0.30	0	0	0	0	0	0	4	0	0	4	0	0
0.31	0	0	0	0	0	0	2	0	0	2	0	0
0.32	0	0	0	0	0	0	3	0	0	3	0	0
0.33	0	0	0	0	0	0	0	0	0	0	0	0
0.34	0	0	0	0	0	0	3	0	0	3	0	0
0.35	0	0	0	0	0	0	2	0	0	2	0	0
0.36	0	0	0	0	0	0	2	1	0	2	1	0
0.37	0	0	0	1	0	0	2	1	0	2	1	0
0.38	0	0	0	1	0	0	9	1	0	10	1	0
0.39	0	0	0	0	0	0	7	0	0	7	0	0
0.40	0	0	0	0	0	0	7	1	0	7	1	0
0.41	0	0	0	0	0	0	7	0	0	7	0	0
0.42	0	0	0	1	0	0	7	0	0	8	0	0
0.43	0	0	0	0	0	0	1	0	0	1	0	0
0.44	0	0	0	0	0	0	6	1	0	6	1	0
0.45	0	0	0	1	0	0	4	0	0	5	0	0
0.46	0	0	0	0	0	0	8	0	0	8	0	0
0.47	0	0	0	0	0	0	1	0	0	1	0	0
0.48	0	0	0	1	0	0	5	1	0	6	1	0
0.49	0	0	0	0	0	0	0	0	0	0	0	0
0.50	0	0	0	1	0	0	11	0	0	12	0	0
SUBTOTAL	0	0	0	6	0	0	80	5	1	86	5	1

[redacted]

TABLE A-3

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 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
0.51	0	0	0	0	0	0	0	0	0	0	0	0
0.52	0	0	0	0	0	0	0	0	2	0	0	2
0.53	0	0	0	0	0	0	0	0	2	0	0	2
0.54	0	0	0	1	0	0	0	0	0	0	0	0
0.55	0	0	0	0	0	0	0	0	0	0	0	0
0.56	0	0	0	1	0	0	0	0	0	0	0	0
0.57	0	0	0	0	0	0	0	0	0	0	0	0
0.58	0	0	0	0	0	0	0	0	0	0	0	0
0.59	0	0	0	1	0	0	0	0	0	0	0	0
0.60	0	0	0	0	0	0	0	0	0	0	0	0
0.61	0	0	0	1	0	0	0	0	0	0	0	0
0.62	0	0	0	0	0	0	0	0	0	0	0	0
0.63	0	0	0	0	0	0	0	0	0	0	0	0
0.64	0	0	0	0	0	0	0	0	0	0	0	0
0.65	0	0	0	0	0	0	0	0	0	0	0	0
0.66	0	0	0	0	0	0	0	0	0	0	0	0
0.67	0	0	0	0	0	0	0	0	1	0	0	1
0.68	0	0	0	1	0	0	0	0	0	0	0	0
0.69	0	0	0	0	0	0	0	0	0	0	0	0
0.70	0	0	0	0	0	0	0	0	0	0	0	0
0.71	0	0	0	0	0	0	0	0	0	0	0	0
0.72	0	0	0	1	0	0	0	0	0	0	0	0
0.73	0	0	0	0	0	0	0	0	0	0	0	0
0.74	0	0	0	0	0	0	0	0	0	0	0	0
0.75	0	0	0	1	0	0	0	0	0	0	0	0
0.76	0	0	0	0	0	0	0	0	1	0	0	1
0.77	0	0	0	0	0	0	0	0	2	0	0	2
0.78	0	0	0	0	0	0	0	0	5	0	0	5
0.79	0	0	0	0	0	0	0	0	2	0	0	2
0.80	0	0	0	1	0	0	0	0	3	0	0	3
0.81	0	0	0	0	0	0	0	0	1	0	0	1
0.82	0	0	0	0	0	0	0	0	3	0	0	3
0.83	0	0	0	0	0	0	0	0	1	0	0	1
0.84	0	0	0	0	0	0	0	0	1	0	0	1
0.85	0	0	0	0	0	0	0	0	0	0	0	0
0.86	0	0	0	0	0	0	0	0	0	0	0	0
0.87	0	0	0	0	0	0	0	0	0	0	0	0
0.88	0	0	0	1	0	0	0	0	1	0	0	1
0.89	0	0	0	0	0	0	0	0	2	0	0	2
0.90	0	0	0	0	0	0	0	0	1	0	0	1
0.91	0	0	0	0	0	0	0	0	2	0	0	2
0.92	0	0	0	0	0	0	0	0	2	0	0	2
0.93	0	0	0	0	0	0	0	0	1	0	0	1
0.94	0	0	0	0	0	0	0	0	1	0	0	1
0.95	0	0	0	0	0	0	0	0	2	0	0	2
0.96	0	0	0	0	0	0	0	0	3	0	0	3
0.97	0	0	0	0	0	0	0	0	1	0	0	1
0.98	0	0	0	0	0	0	0	0	4	0	0	4
0.99	0	0	0	0	0	0	0	0	2	0	0	2
1.00	0	0	0	0	0	0	0	0	3	0	0	3
SUBTUTAL	0	0	0	9	1	0	74	29	13	83	30	13

[redacted]

TABLE A-4

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 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
1.01	0	0	0	0	0	0	0	0	0	0	0	0
1.02	0	0	0	0	0	0	2	4	1	2	4	1
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	1
1.05	0	0	0	0	0	0	0	1	0	0	1	0
1.06	0	0	0	0	0	0	0	1	1	0	1	1
1.07	0	0	0	0	0	0	0	1	0	0	1	0
1.08	0	0	0	0	0	0	1	2	1	1	2	1
1.09	0	0	0	0	0	0	0	2	0	0	2	0
1.10	0	0	0	1	1	0	2	4	3	3	5	3
1.11	0	0	0	0	0	0	1	4	0	1	5	0
1.12	0	0	0	0	0	0	1	3	0	1	3	0
1.13	0	0	0	0	0	0	0	1	0	0	1	0
1.14	0	0	0	0	1	0	0	1	1	0	2	1
1.15	0	0	0	0	0	0	0	1	0	0	1	0
1.16	0	0	0	0	0	0	1	1	0	1	1	0
1.17	0	0	0	0	0	0	1	2	1	1	2	1
1.18	0	0	0	0	0	0	0	2	0	0	2	0
1.19	0	0	0	0	0	0	0	4	1	0	4	1
1.20	0	0	0	0	0	0	1	4	0	1	4	0
1.21	0	0	0	0	0	0	0	2	1	0	2	1
1.22	0	0	0	0	0	0	0	3	0	0	3	0
1.23	0	0	0	0	0	0	0	3	1	0	3	1
1.24	0	0	0	0	0	0	0	2	0	0	2	0
1.25	0	0	0	0	0	0	0	2	1	0	2	1
1.26	0	0	0	0	0	0	0	2	1	0	2	1
1.27	0	0	0	0	0	0	0	1	1	0	1	1
1.28	0	0	0	0	0	0	1	3	1	1	3	1
1.29	0	0	0	0	0	0	0	3	0	0	3	0
1.30	0	0	0	0	0	0	0	5	1	0	5	1
1.31	0	0	0	0	0	0	0	5	0	0	5	0
1.32	0	0	0	0	0	0	0	2	1	0	2	1
1.33	0	0	0	0	0	0	0	2	0	0	2	0
1.34	0	0	0	0	0	0	0	1	1	0	1	1
1.35	0	0	0	0	0	0	0	3	1	0	3	1
1.36	0	0	0	0	0	0	0	4	0	0	4	0
1.37	0	0	0	0	0	0	0	4	1	0	4	1
1.38	0	0	0	0	0	0	0	4	0	0	4	0
1.39	0	0	0	0	0	0	0	4	0	0	4	0
1.40	0	0	0	0	0	0	0	6	0	0	6	0
1.41	0	0	0	0	0	0	0	3	0	0	3	0
1.42	0	0	0	0	0	0	0	3	0	0	3	0
1.43	0	0	0	0	0	0	0	2	0	0	2	0
1.44	0	0	0	0	1	0	0	2	0	0	2	0
1.45	0	0	0	0	0	0	0	1	1	0	1	1
1.46	0	0	0	0	1	0	0	1	1	0	2	1
1.47	0	0	0	0	0	0	0	1	0	0	1	0
1.48	0	0	0	0	1	0	0	4	0	0	5	0
1.49	0	0	0	0	0	0	0	1	0	0	1	0
1.50	0	0	0	0	0	0	0	2	1	0	2	1
SUBTOTAL	0	0	0	1	5	1	9	74	47	10	79	48

[redacted]

TABLE A-4

[redacted]

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 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	2	0	0	2
1.52	0	0	0	0	0	0	0	5	2	0	5	2
1.53	0	0	0	0	0	0	0	0	0	0	0	0
1.54	0	0	0	0	0	0	0	4	0	0	4	0
1.55	0	0	0	0	0	0	0	0	1	0	0	1
1.56	0	0	0	0	0	0	0	2	0	0	2	0
1.57	0	0	0	0	0	0	0	0	3	0	0	3
1.58	0	0	0	0	0	0	0	4	0	0	4	0
1.59	0	0	0	0	0	0	0	2	0	0	2	0
1.60	0	0	0	0	0	0	0	0	5	0	0	5
1.61	0	0	0	0	0	0	0	0	1	0	0	1
1.62	0	0	0	0	2	0	0	0	0	0	2	0
1.63	0	0	0	0	0	0	0	0	2	0	0	2
1.64	0	0	0	0	0	1	0	0	0	0	0	1
1.65	0	0	0	0	1	0	0	0	2	0	1	2
1.66	0	0	0	0	0	0	0	0	1	0	0	1
1.67	0	0	0	0	0	0	0	0	0	0	0	0
1.68	0	0	0	0	0	0	0	2	0	0	2	0
1.69	0	0	0	0	0	0	0	0	4	0	0	4
1.70	0	0	0	0	0	0	0	3	0	0	3	0
1.71	0	0	0	0	0	0	0	0	5	0	0	5
1.72	0	0	0	0	0	0	0	1	0	0	1	0
1.73	0	0	0	0	0	0	0	0	2	0	0	2
1.74	0	0	0	0	0	0	0	2	0	0	2	0
1.75	0	0	0	0	0	0	0	0	1	0	0	1
1.76	0	0	0	0	0	0	0	1	0	0	1	0
1.77	0	0	0	0	0	0	0	0	2	0	0	2
1.78	0	0	0	0	0	1	0	1	0	0	1	0
1.79	0	0	0	0	0	0	0	2	0	0	2	0
1.80	0	0	0	0	0	1	0	1	3	0	1	3
1.81	0	0	0	0	0	0	0	3	0	0	3	0
1.82	0	0	0	0	0	1	0	0	1	0	0	1
1.83	0	0	0	0	0	0	0	1	0	0	1	0
1.84	0	0	0	0	0	0	0	0	3	0	0	3
1.85	0	0	0	0	0	0	0	3	0	0	3	0
1.86	0	0	0	0	0	0	0	1	0	0	1	0
1.87	0	0	0	0	0	0	0	0	2	0	0	2
1.88	0	0	0	0	0	0	0	0	0	0	0	0
1.89	0	0	0	0	0	0	0	0	1	0	0	1
1.90	0	0	0	0	1	0	0	0	0	0	1	0
1.91	0	0	0	0	0	0	0	1	0	0	1	0
1.92	0	0	0	0	0	0	0	0	2	0	0	2
1.93	0	0	0	0	0	0	0	1	0	0	1	0
1.94	0	0	0	0	0	0	0	0	3	0	0	3
1.95	0	0	0	0	0	1	0	1	0	0	1	1
1.96	0	0	0	0	1	0	0	1	0	0	1	0
1.97	0	0	0	0	0	1	0	0	4	0	0	5
1.98	0	0	0	0	0	0	0	1	0	0	1	0
1.99	0	0	0	0	0	0	0	1	3	0	1	3
2.00	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	6	4	0	46	59	0	52	63

[redacted]

TABLE A-4

[redacted]

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 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
2.01	0	0	0	0	0	0	0	0	0	0	0	0
2.02	0	0	0	0	1	0	0	0	4	0	1	4
2.03	0	0	0	0	1	0	0	0	4	0	1	4
2.04	0	0	0	0	1	0	0	0	1	0	1	1
2.05	0	0	0	0	1	0	0	0	2	0	1	2
2.06	0	0	0	0	1	0	0	0	2	0	1	2
2.07	0	0	0	0	1	0	0	0	1	0	1	1
2.08	0	0	0	0	0	0	0	0	1	0	0	1
2.09	0	0	0	0	0	0	0	0	1	0	0	1
2.10	0	0	0	0	0	0	0	0	4	0	0	4
2.11	0	0	0	0	0	0	0	0	0	0	0	0
2.12	0	0	0	0	0	2	0	0	2	0	0	2
2.13	0	0	0	0	0	0	0	0	1	0	0	1
2.14	0	0	0	0	0	0	0	0	4	0	0	4
2.15	0	0	0	0	0	0	0	0	2	0	0	2
2.16	0	0	0	0	0	1	0	0	3	0	0	4
2.17	0	0	0	0	0	0	0	0	0	0	0	0
2.18	0	0	0	0	0	0	0	0	4	0	0	4
2.19	0	0	0	0	0	0	0	0	5	0	0	5
2.20	0	0	0	0	0	0	0	0	0	0	0	0
2.21	0	0	0	0	0	0	0	0	5	0	0	5
2.22	0	0	0	0	0	0	0	0	0	0	0	0
2.23	0	0	0	0	0	0	0	0	0	0	0	0
2.24	0	0	0	0	0	0	0	0	0	0	0	0
2.25	0	0	0	0	0	0	0	0	5	0	0	5
2.26	0	0	0	0	0	2	0	0	5	0	0	7
2.27	0	0	0	0	0	0	0	0	0	0	0	0
2.28	0	0	0	0	0	0	0	0	2	0	0	2
2.29	0	0	0	0	0	1	0	0	1	0	0	2
2.30	0	0	0	0	0	0	0	0	2	0	0	2
2.31	0	0	0	0	0	0	0	0	1	0	0	1
2.32	0	0	0	0	0	1	0	0	0	0	0	1
2.33	0	0	0	0	0	0	0	0	0	0	0	0
2.34	0	0	0	0	0	0	0	0	1	0	0	1
2.35	0	0	0	0	0	0	0	0	0	0	0	0
2.36	0	0	0	0	0	0	0	0	0	0	0	0
2.37	0	0	0	0	0	0	0	0	0	0	0	0
2.38	0	0	0	0	0	0	0	0	0	0	0	0
2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40	0	0	0	0	0	0	0	0	1	0	0	1
2.41	0	0	0	0	0	0	0	0	0	0	0	0
2.42	0	0	0	0	0	0	0	0	0	0	0	0
2.43	0	0	0	0	0	0	0	0	0	0	0	0
2.44	0	0	0	0	0	0	0	0	0	0	0	0
2.45	0	0	0	0	0	0	0	0	0	0	0	0
2.46	0	0	0	0	0	0	0	0	0	0	0	0
2.47	0	0	0	0	0	0	0	0	0	0	0	0
2.48	0	0	0	0	0	0	0	0	0	0	0	0
2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	4	11	0	9	63	0	13	74

[redacted]

TABLE A-4

[redacted]

[redacted]

MISSION • 1015-2 • INSTRUMENT • AFT 01/29/65 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	0	0	0	0	0	0	0	0	0	0	0	0
2.52	0	0	0	0	0	0	0	0	0	0	0	0
2.53	0	0	0	0	0	0	0	0	0	0	0	0
2.54	0	0	0	0	0	0	0	0	0	0	0	0
2.55	0	0	0	0	0	0	0	0	0	0	0	0
2.56	0	0	0	0	0	0	0	0	0	0	0	0
2.57	0	0	0	0	0	0	0	0	0	0	0	0
2.58	0	0	0	0	0	0	0	0	0	0	0	0
2.59	0	0	0	0	0	0	0	0	0	0	0	0
2.60	0	0	0	0	0	0	0	0	0	0	0	0
2.61	0	0	0	0	0	0	0	0	0	0	0	0
2.62	0	0	0	0	0	0	0	0	0	0	0	0
2.63	0	0	0	0	0	0	0	0	0	0	0	0
2.64	0	0	0	0	0	0	0	0	0	0	0	0
2.65	0	0	0	0	0	0	0	0	0	0	0	0
2.66	0	0	0	0	0	0	0	0	0	0	0	0
2.67	0	0	0	0	0	0	0	0	0	0	0	0
2.68	0	0	0	0	0	0	0	0	0	0	0	0
2.69	0	0	0	0	0	0	0	0	0	0	0	0
2.70	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	16	16	16	163	163	183	179	179	199

MISSION 1015-2 INSTR - AFT 01/29/65 PROCESSING AND EXPOSURE

PROCESS LEVEL	SAMPLE SIZE	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EX
PRIMARY	0	0 PC	0 PC	0 PC	0 PC	
INTERMEDIATE	16	0 PC	13 PC	81 PC	6 PC	
FULL	163	18 PC	0 PC	69 PC	13 PC	
ALL LEVELS	179	17 PC	1 PC	70 PC	12 PC	

PROCESS LEVEL	BASE + FOG	UNDER EXPOSED	UNDER PROCESSED	CORRECT EXP+PROC	OVER PROCESSED	EX
PRIMARY	0.01-0.09	0.01-0.13	0.14-0.39	0.40-0.90	———	0.91
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35
FULL	0.18 AND UP	0.01-0.39	———	0.40-0.90	0.91-1.69	1.70

[redacted]

TABLE A-4

[redacted]

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-2 • INSTR • AFT • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.61 • MEDIAN • 0.59 • STD DEV • 0.20 • RANGE • 0.37 TO 1.10 WITH 16 SAMPLES

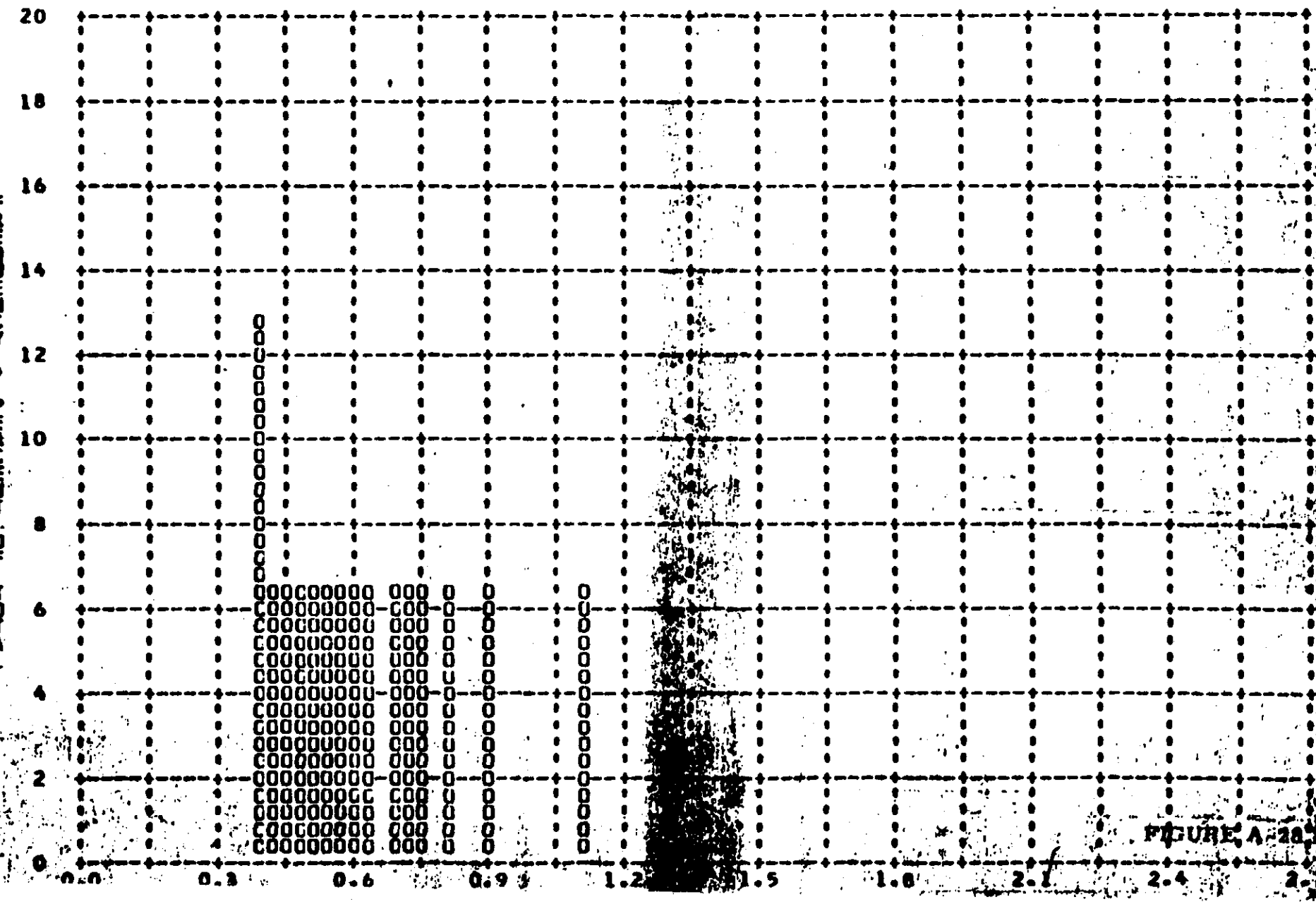


FIGURE A-20

[redacted] TOP SECRET [redacted] [redacted]

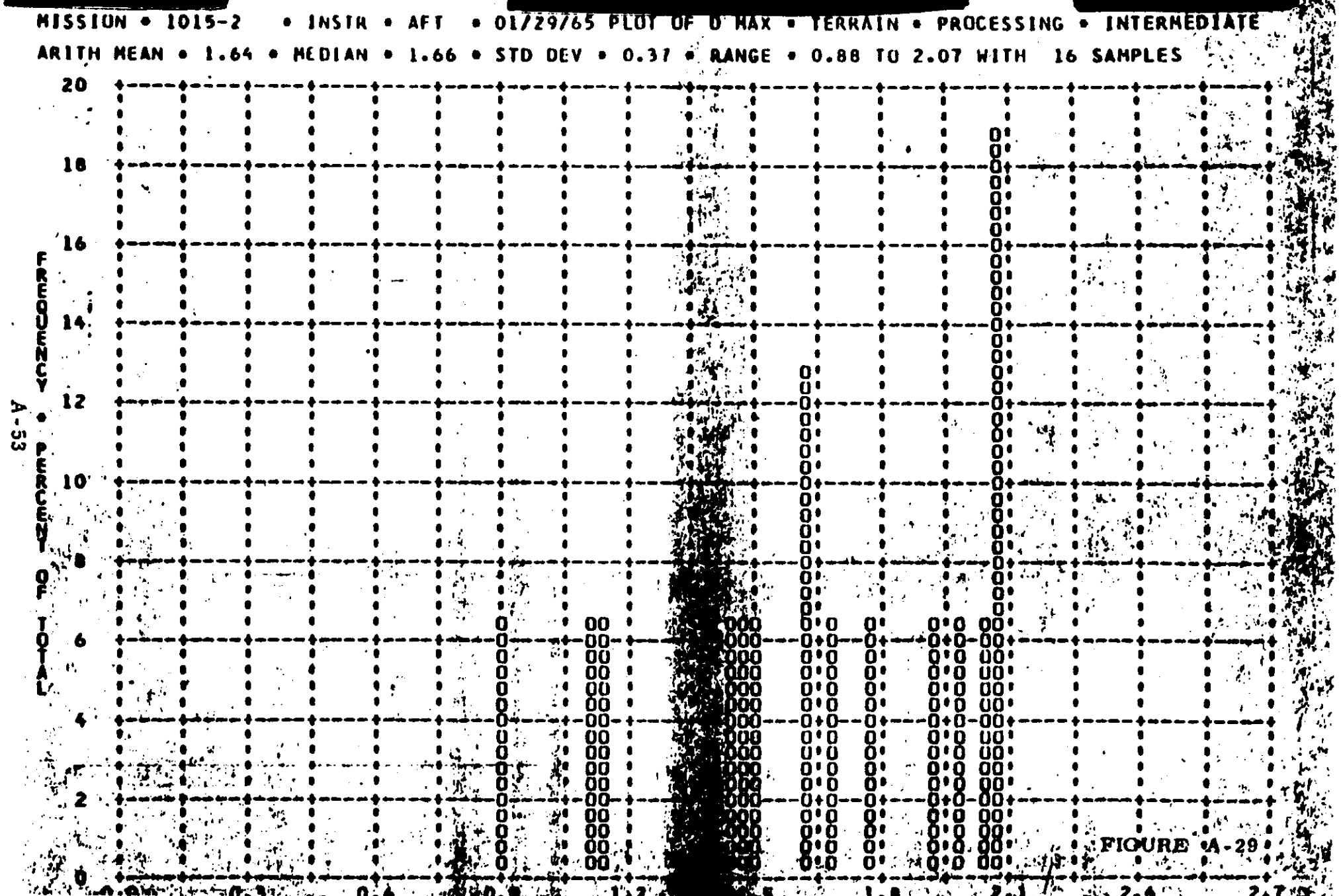


FIGURE A-29

[redacted] TOP SECRET [redacted] [redacted]

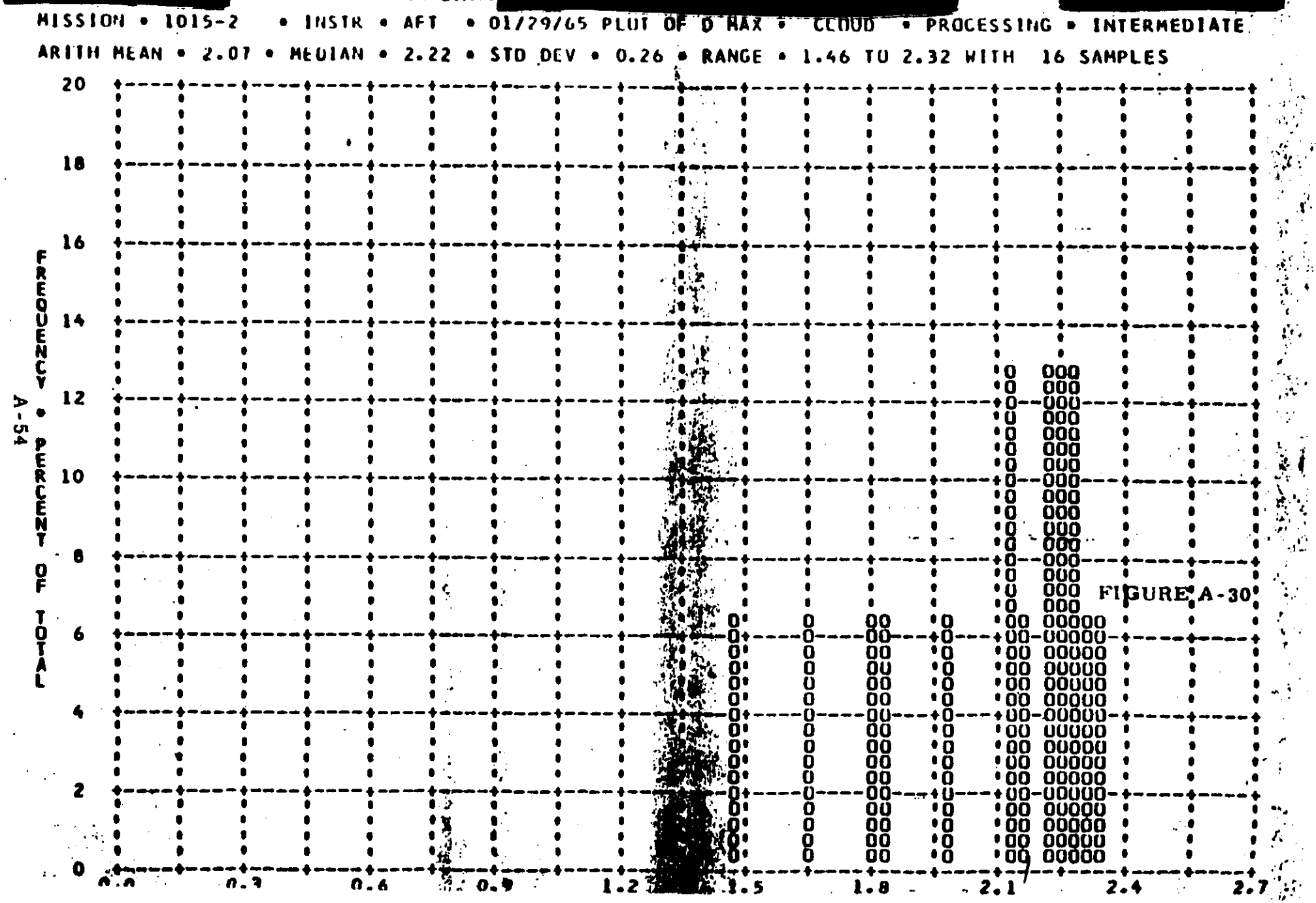


FIGURE A-30

[redacted] [redacted] [redacted]

MISSION • 1015-2 • INSTR • AFT • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • FULL

ARITH MEAN • 0.59 • MEDIAN • 0.52 • STD DEV • 0.23 • RANGE • 0.26 TO 1.28 WITH 163 SAMPLES

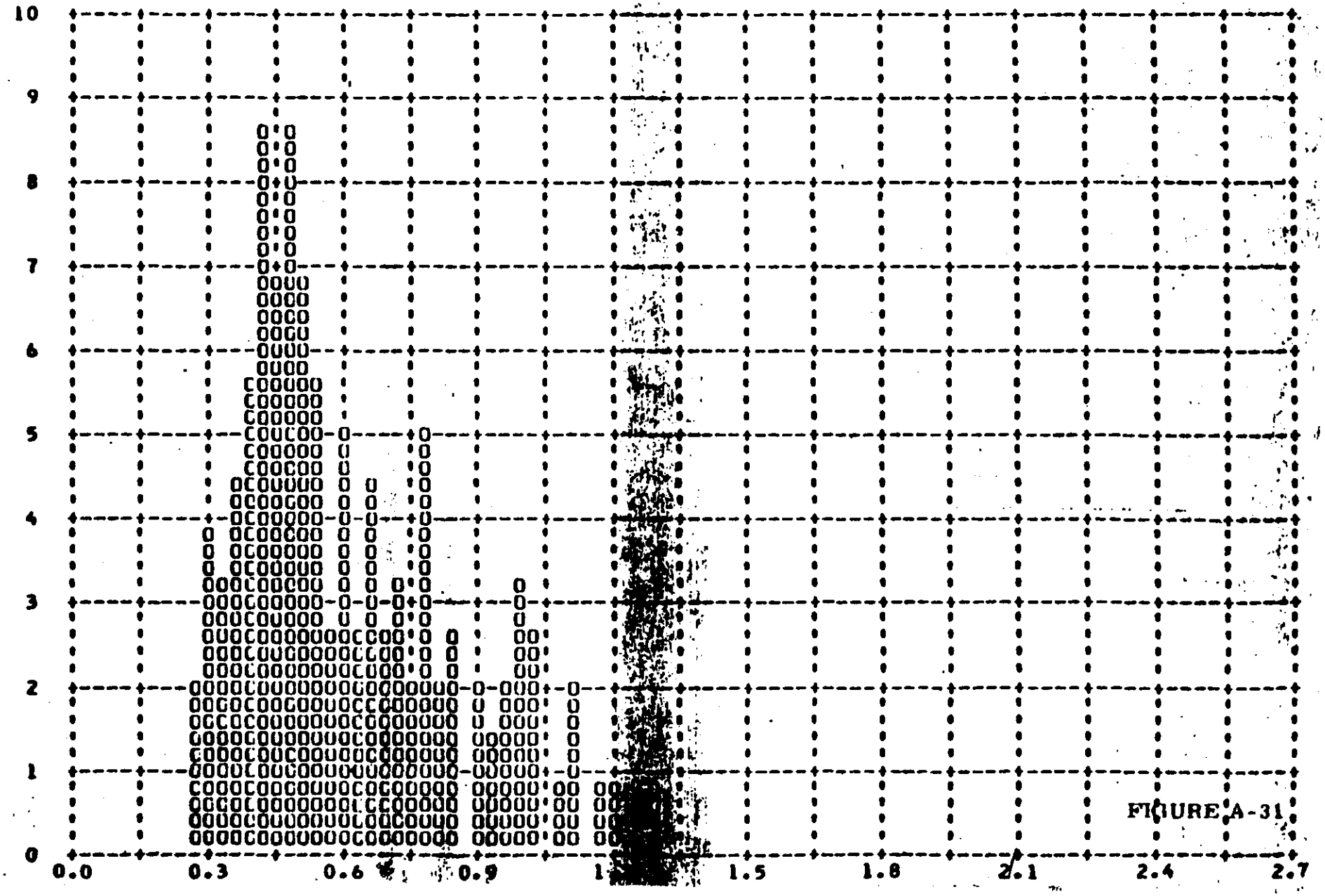


FIGURE A-31

[redacted] TOP SECRET [redacted] [redacted]

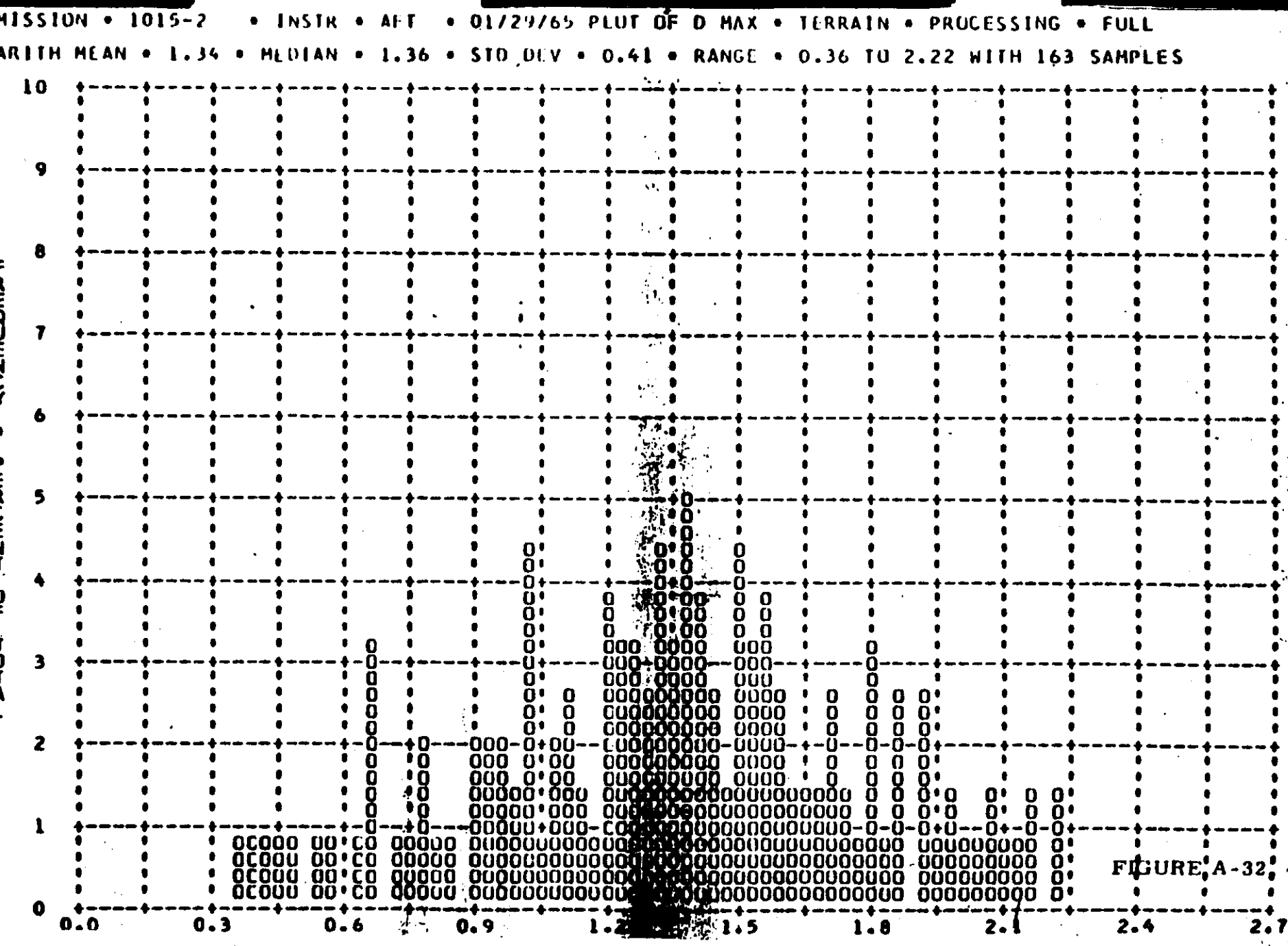


FIGURE A-32

[redacted] TOP SECRET [redacted] [redacted]

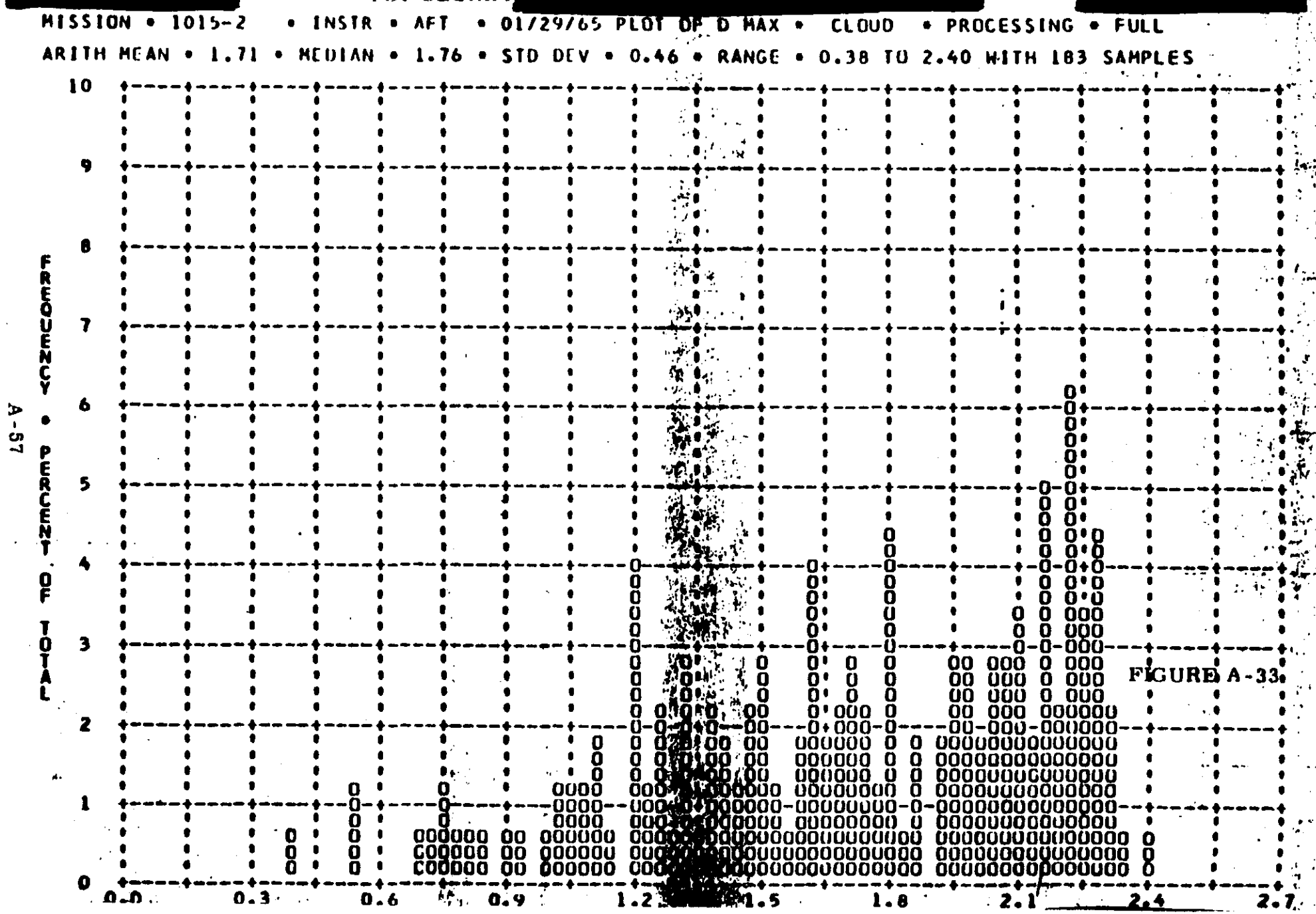


FIGURE A-33.

[redacted] [redacted] [redacted]

MISSION • 1015-2 • INSTR • AFT • 01/29/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.59 • MEDIAN • 0.52 • STD DEV • 0.23 • RANGE • 0.26 TO 1.28 WITH 179 SAMPLES

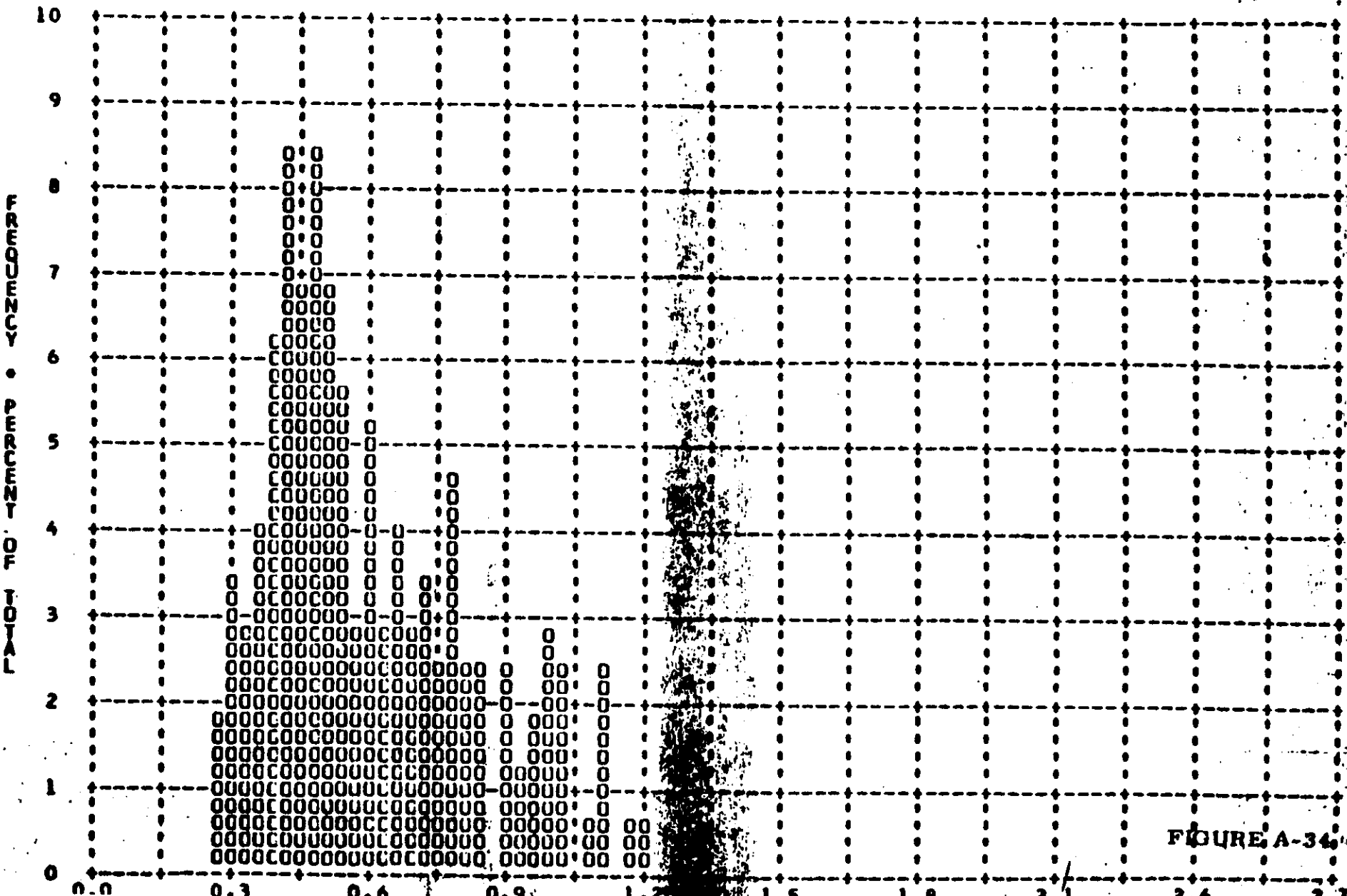


FIGURE A-34

[redacted] TOP SECRET [redacted] [redacted]

MISSION • 1015-2 • INSTR • AFT • 01/29/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.37 • MEDIAN • 1.38 • STD DEV • 0.42 • RANGE • 0.36 TO 2.22 WITH 179 SAMPLES

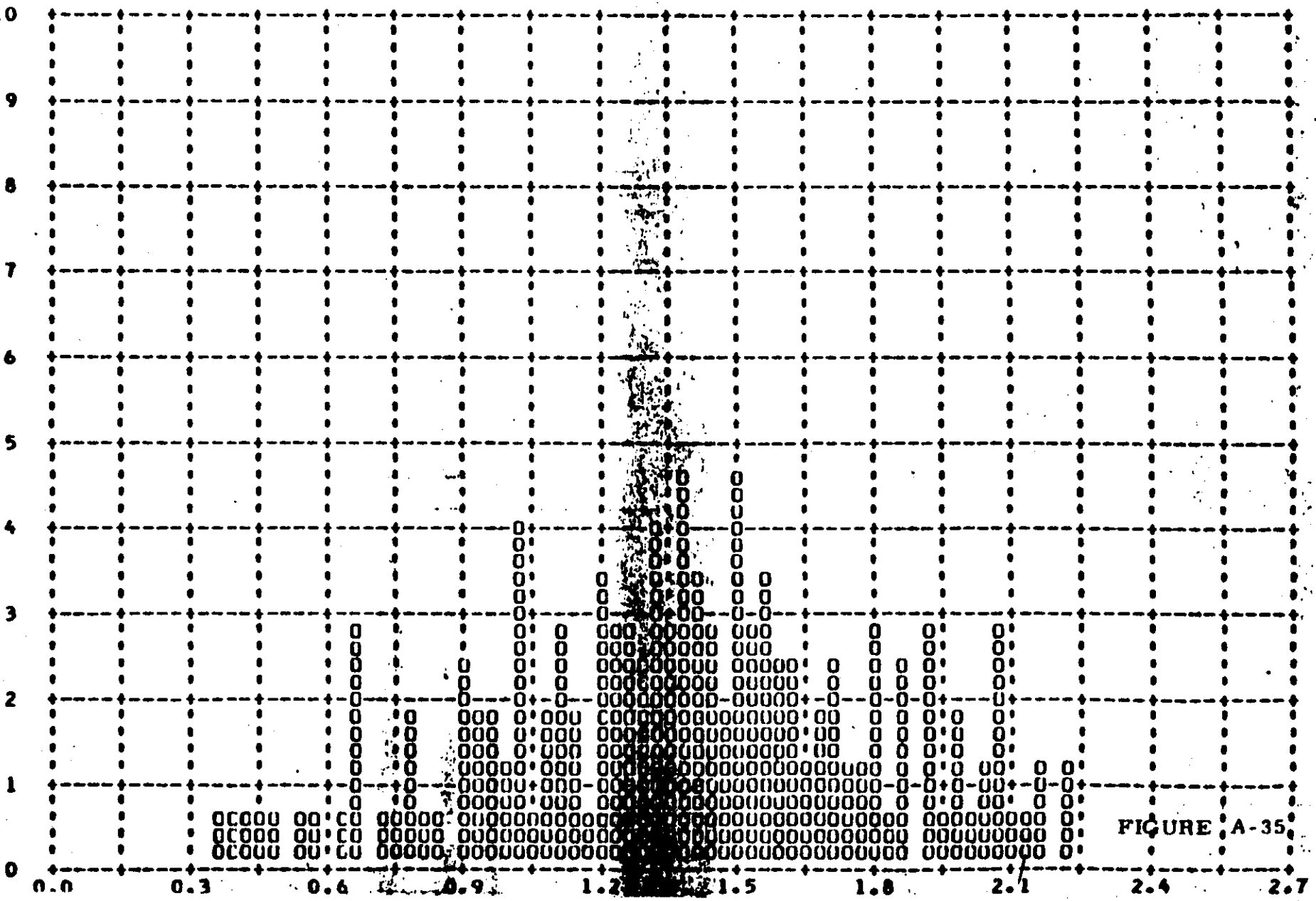


FIGURE A-35

[redacted] ~~TOP SECRET~~ [redacted] [redacted]

MISSION • 1015-2 • INSTR • AFT • 01/29/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.74 • MEDIAN • 1.80 • STD DEV • 0.46 • RANGE • 0.38 TO 2.40 WITH 199 SAMPLES

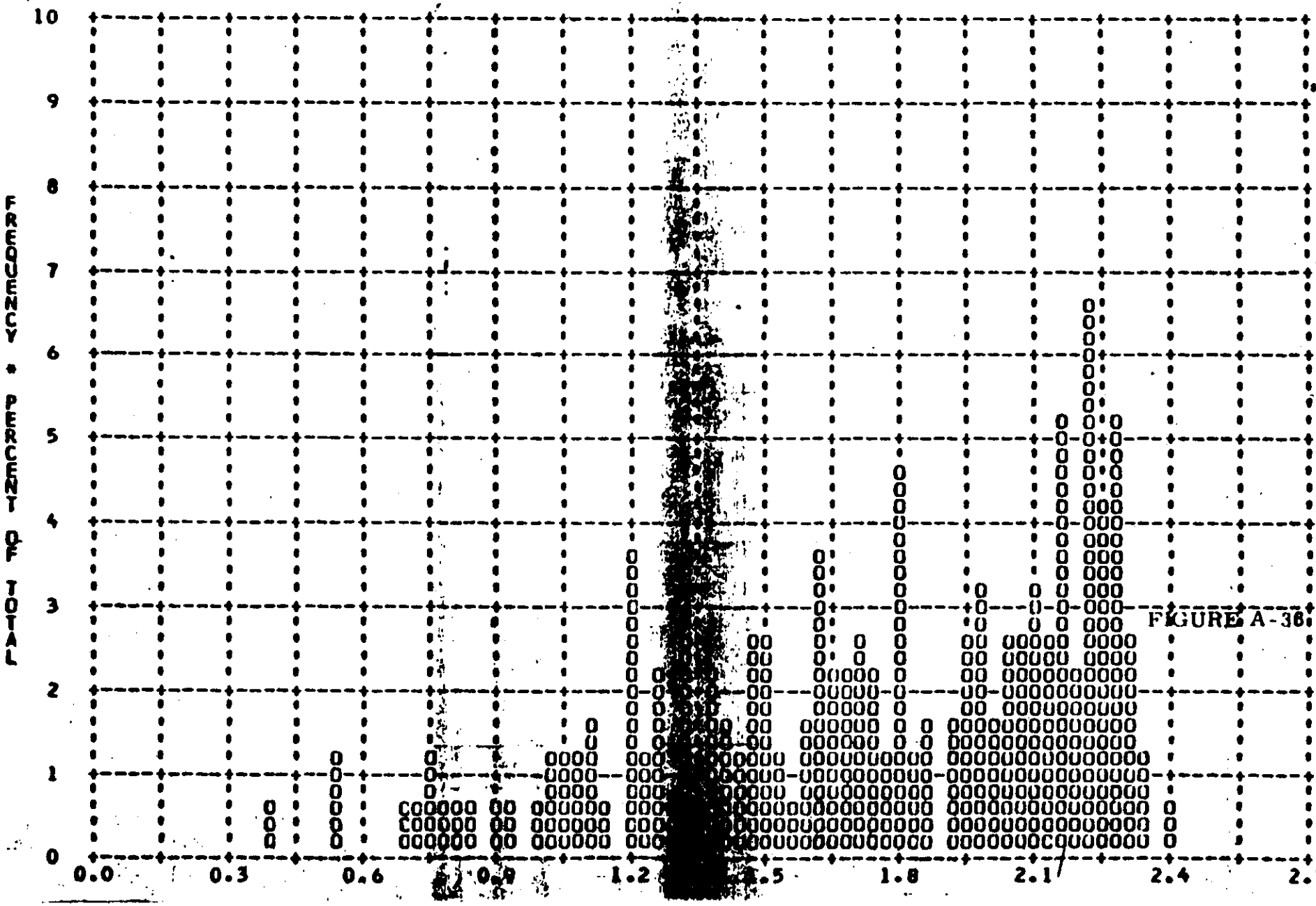


FIGURE A-36

Distribution:

[redacted]