No. [redacted]

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CORONA J

PERFORMANCE EVALUATION REPORT

MISSION 1016-1 AND 1016-2

FTV 1608, J-18

31 October 1966

Approved: [redacted]
Manager
Advanced Projects

Approved: [redacted]
Manager
Program [redacted]

FOREWORD

This report details the performance of the payload system during the operational phase of the Program [redacted] Flight Test Vehicle 1608.

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 1016-1 and 1016-2 which was launched on 15 January 1965.

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INTRODUCTION

This report presents the final performance evaluation of Missions 1016-1 and 1016-2 of the Corona Program. The purpose of this report is to define the performance characteristics of the J-18 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 I

SYSTEM PERFORMANCE

A. MISSION OBJECTIVES

The payload section of Mission 1016, placed into orbit by Flight Test Vehicle # 1608 and LV-2A booster # 414, 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-18 payload system. This Corona "J" system is designed to acquire search and reconnaissance photography of selected areas of the earth from orbital altitudes. The planned mission was a 5 and a 6 day photographic period with no deactivate period.

B. MISSION DESCRIPTION

The payload was launched from Vandenberg Air Force Base (VAFB) at 2100:44 Z (1300:44 PST) on 15 January 1965. Ascent and injection were normal and the achieved orbit was within nominal tolerances. 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 1016-1 consisted of a 5 day operation and was completed by air recovery on 20 January 1965. Mission 1016-2 was completed with air recovery on 25 January 1965 following a 5 day photographic operation.

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

SCHEMATIC INBOARD PROFILE - CORONA J SYSTEM

MISSION 1016

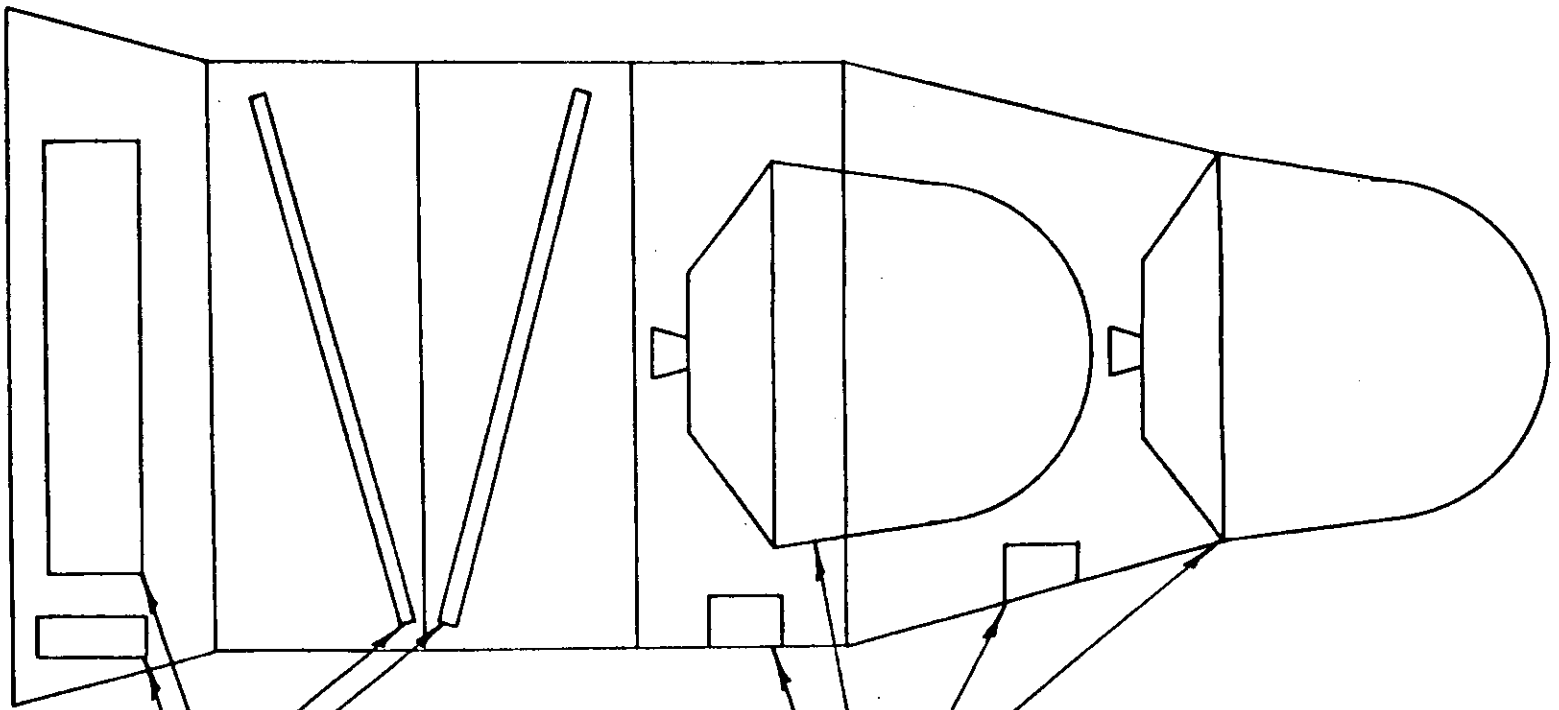


FIGURE 1-1

ORBITAL PARAMETERS

Parameter	Predicted	Orbit 32 Actuals
Period (Min.)	90.67	90.77
Perigee (N.M.)	99.3	95.12
Apogee (N.M.)	235.8	240.6
Inclination (Deg.)	75.00	74.98
Argument of Perigee	157	148.54
Eccentricity	0.0190	0.0189

C. PANORAMIC CAMERAS

Both instruments operated normally throughout both missions. The information content of the photography was considered excellent by the photo interpreters. The Master camera was rated better than the Slave. The 40% cloud cover and atmospheric haze produced the normal quality variations.

D. STELLAR-INDEX CAMERAS

The "A" S/I produced excellent photo data.

The stellar shutter malfunctioned throughout the "B" mission causing gross over-exposure.

E. OTHER SUBSYSTEMS

The clock, instrumentation, command and pressure make-up subsystems performed satisfactorily. The average instrument temperature decreased from 75°F to 57°F during the 159 orbits.

SECTION 2

PRE-FLIGHT SYSTEMS TEST

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 J-18 system contained a flight pressure make-up system and it operated satisfactorily. Telemetry data indicated the following abnormalities during the TASC test:

SRV-A Stellar/Index shutter fire pulse did not appear during the eight (8) orbits of the test.

SRV-B Stellar/Index indicated noise from the index idler at the initial contact of the T/M wiper with the long commutator segment of the index idler.

Telemetry data indicated a presence of noise on the supply idler of Instrument #1. The noise was predominant with faster cycle rates and more acute during the SRV-B Bucket operation.

The last center-of-format pulse before instrument shut-down on Instrument #2 had practically no pulse width (less than 40 milliseconds).

During Orbit #15, first day of the SRV-B operation, there was an unusual high noise level on Channel 13 - Pts. 34 and 44 during instrument operation. These points are the drive motor armature voltage monitors for Instruments 1 and 2 respectively.

During the SRV-B recovery sequence Channel 13 - Pt. 54 (continuity loop and water seal) changed voltage from 5.2 VDC to 2.16 VDC at the arm signal. However, at transfer signal Pt. 54 remained at 2.16 VDC rather than switching to 0.75 VDC. This indicates the S/I water seal was not activated.

3. Thermal Environment

The TASC chamber thermal environment was programmed to simulate the on-orbital temperature conditions that the J-18 payload system would experience in flight.

Average instrument temperatures during various times throughout the test are shown below. They are not corrected for self-heating characteristics.

	SRV-A		SRV-B	
	Orbit #1	Orbit #5	Orbit #10	Orbit #13
Instrument #1	79.7°	71.7°	81.1°	89.8°
Instrument #2	81.9	78.9	89.7	97.0

4. Pressure Environment

Telemetry pressure data were reduced. All operations were listed chronologically with each operation's starting and maximum pressure. The reduced data were tabulated, and presented to payload analysis for evaluation.

Pressures recorded on the SRV-B mission were two microns prior to operate command with a one micron increase with gas off. A forty micron increase was observed with gas on.

5. Instrument Performance

The instrument system operation was normal throughout the test, with the exception that the last center-of-format pulse before shutdown on Instrument #2 had practically no pulse width. At fastest cycle period this pulse width was recorded at less than 40 milliseconds.

Cycle rate errors were within normal tolerances, except for the first operation of the SRV-B mission. This first operation occurred after a twelve hour soak period. This condition after a "soak" period has been witnessed before.

Instrument #1 averaged 0.2% fast, and Instrument #2 averaged 0.5% fast. Table 2-1 shows cycle rate errors and averages.

	Max. Fast	Max. Slow
* Instrument #1	2.6%	1.4%
Instrument #2	4.0%	1.3%

*Does not include first operate of the SRV-B mission.

6. Stellar/Index Performance

The SRV-A mission stellar index operated satisfactorily, with the exception that the shutter fire pulse did not appear during the eight (8) orbits of the test. This abnormality will be corrected.

The SRV-B mission stellar index operation was satisfactory, with the exception that telemetry data indicated the presence of T/M noise on the index idler at the initial contact of the T/M wiper with the long commutator segment of the index idler. The processed film did not indicate any metering anomalies nor shutter failures.

7. Clock Performance

The clock operated throughout both SRV-A and SRV-B missions. The console power was turned off during the SRV-A mission. This prevented any clock correlation due to unscheduled clock restart. Three readings were taken from the SRV-B mission commencing with Orbit 9, Day 1. The second and third readings were taken at Orbit 16, Day 1; and Orbit 8, Day 2. They indicated the clock was running slow by .014 and .037 milliseconds respectively.

8. Instrumentation & Commanding System Performance

Telemetry data indicated that all brush commands were

acknowledged. On Orbit 15 of the SRV-B mission, data indicated that the drive motor armature voltage monitors (13 - 34 & 44) experienced an unusual high-noise level.

During the SRV-B recovery sequence telemetry data indicated that the S/I water seal was not activated. Water seal and telemetry monitors were tested by A/P Bucket Personnel and no abnormalities or failures were found. However, from the time of the failure to further tests, the bucket was jostled in removal from the chamber and in transportation to A/P. The seal or the TLM switch may have been freed during transportation.

9. Corona

The J-1 System was altitude tested from 6 thru 11 November 1964. Internal system pressures ranged from 0.3 to 50 microns during instrument operations. Approximately 2000 feet of 3404 type film was programmed into SRV #1 and 8000 feet into SRV #2. The test film was pre-dried 7 days to assist in achieving low pressures during the TASC testing. S/I #59 and #55 were also operated in the TASC environment. Examination of the film indicated that the system met the specifications for corona marking.

B. RESOLUTION TEST

Resolution and theodolite tests were performed on 17 November 1964. Results of the thru-focus resolution tests of pan instruments 132 and 133 show the following characteristics:

Master Pan Instrument No. 132

Maximum high contrast resolution 189 lines/mm at 0.000 focal position.

Maximum low contrast resolution 119 lines/mm at 0.000 focal position.

Slave Instrument No. 133

Maximum high contrast resolution 198 lines/mm at 0.000 focal position.

Maximum low contrast resolution 126 lines/mm at 0.000 focal position.

The test data for both instruments is shown in Figures 2-1 and 2-2. Both instruments met the system requirements specification.

C. LIGHT LEAK TEST

The examination of the film threaded in the J-18 system during the light leak test determined that the light tight integrity of the system was acceptable for flight.

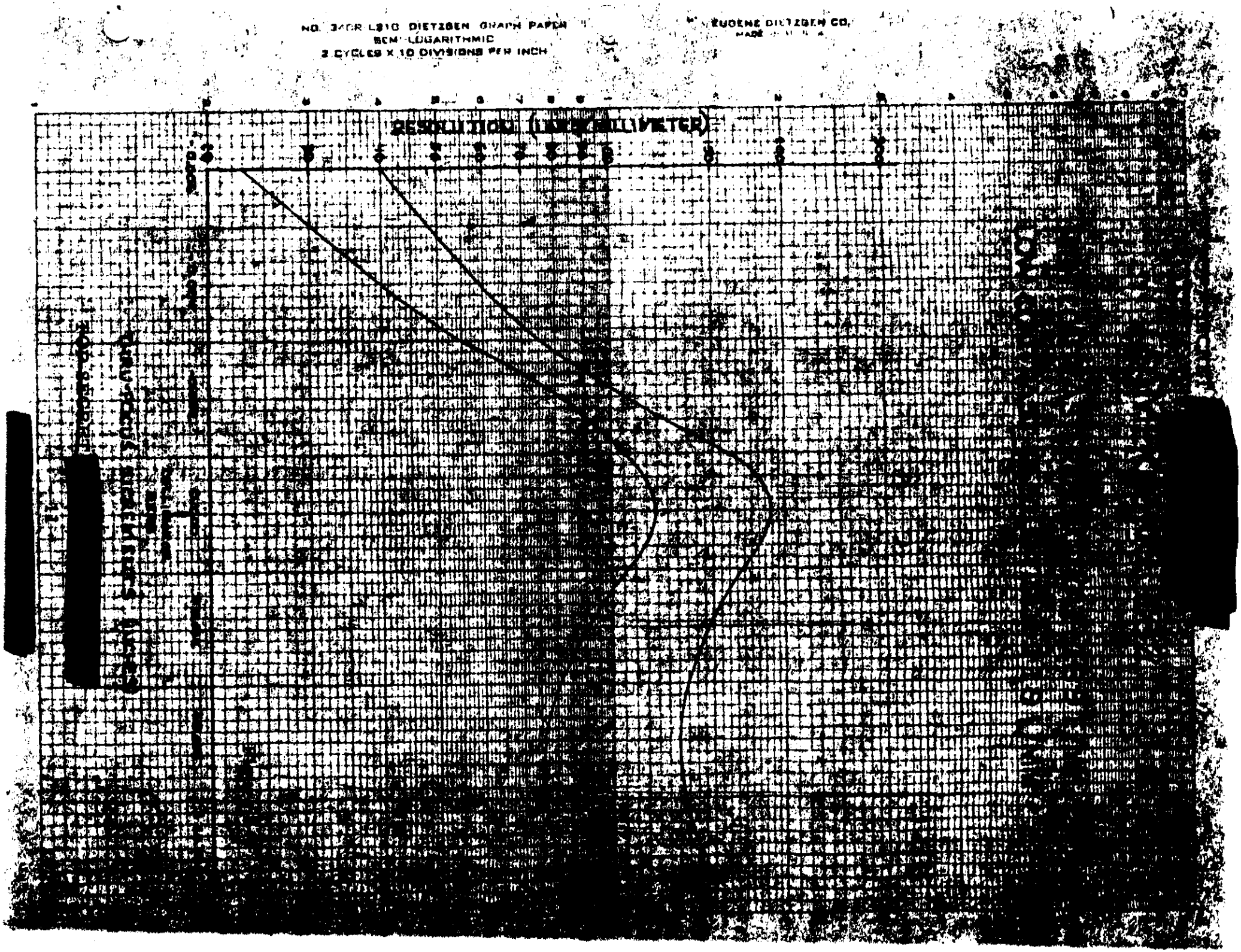
D. FLIGHT LOADING AND CERTIFICATION

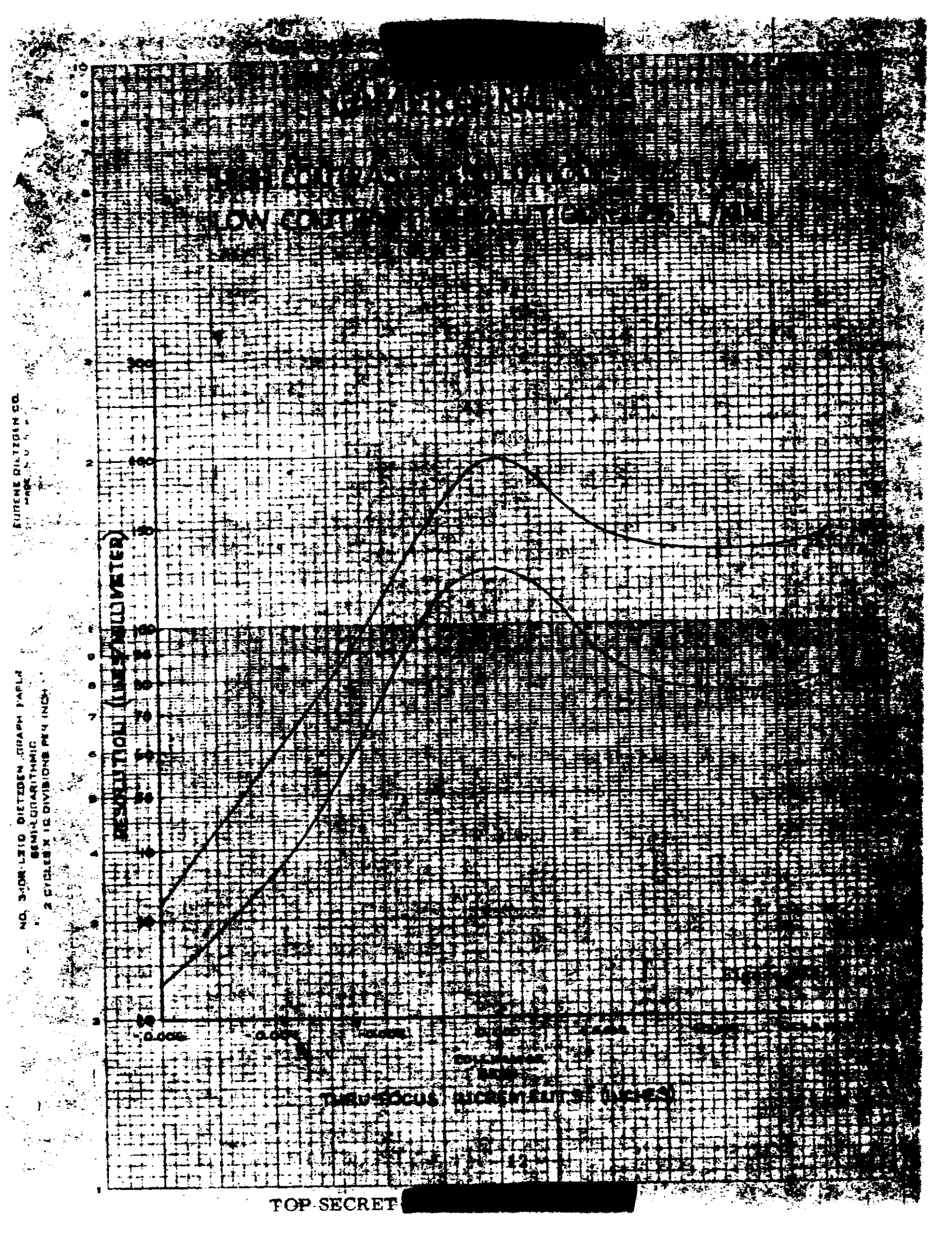
J-18 system was loaded with flight film on 12 January 1965. J-18 flight loading operations went well. Several faint minus density streaks were observed in the processed payload from both main instruments.

The cassette loading phase of the operation took 68 minutes. Green light was used for approximately the first 45 minutes of the cassette loading operation up to but not including the mating operation. Flight spools were protected from exposure to direct green light when not in use. This action reduced the exposure of the flight spools to direct green light to approximately 15 minutes. It is expected that only the outer wrap of flight film will be light fogged appreciably when exposed 15 minutes. The outer film wrap from each flight spool along with the adjacent 3 wraps were removed and used for film evaluation purposes.

Actual cassette mating and alignment functions were performed under bright yellow light over a period of 20 minutes. Actual direct yellow light exposure of the supply spools was 5 minutes. Direct yellow light exposure of the supply film is expected to fog the outer two to three film layers. Since approximately 16 layers of film are removed in the L Building subsequent to cassette loading, flight film is expected to contain no light fog.

The final J-18 system flight splices were made using white light according to the new procedure and based upon recommendations made by Performance Evaluation. Since approximately 30 layers of main supply film is removed subsequent to the 5 - 10 minute final splicing operation, flight film is expected to contain no light fog. J-18 system was certified for flight.


NO. 340R L810 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH
EUGENE DIETZGEN CO.
MADE
RESOLUTION (LINES/MILLIMETER)


RESOLUTION (LINES/MILLIMETER)
NO. 3-DR-LZ10 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH
EUGENE DIETZGEN CO.

CYCLE RATE ANALYSIS

LEVEL	AMP.	ORBIT	TUR	CP #1	NOM.	% ERROR	CP #2	NOM.	% ERROR
4	1	2 - A	1910	2.210	2.180	S 1.4%	2.220	2.192	S 1.3%
4	1	9 - B	2740	3.297	2.747	S 20.0%	3.250	2.744	S 19.1%
4	1	13 - B	2690	2.650	2.650	0.0%	2.630	2.645	? 0.6%
4	1	2 - B	1900	2.174	2.180	F 0.3%	2.120	2.192	? 0.6%
4	1	9 - B	3045	3.295	3.374	F 2.4%	3.290	3.377	F 2.6%
4	1	13 - B	2635	2.610	2.632	F 0.3%	2.605	2.627	F 0.8%
5	8	3 - A	1550	2.375	2.384	F 0.4%	2.365	2.376	F 0.5%
5	8	6 - A	865	3.095	3.121	F 0.3%	3.120	3.122	F 0.6%
5	8	3 - B	1550	2.375	2.384	F 0.4%	2.355	2.376	F 0.9%
7	7	1 - A	300	4.300	4.258	S 0.9%	4.290	4.266	S 0.6%
7	7	4 - A	2070	2.405	2.384	S 0.8%	2.375	2.376	0.0%
7	7	7 - A	1400	2.645	2.641	S 0.2%	2.640	2.639	0.0%
7	7	8 - A	2480	2.710	2.695	S 0.6%	2.725	2.690	S 1.3%
7	7	11 - B	1900	2.355	2.362	F 0.3%	2.325	2.354	F 1.2%
7	7	1 - B	300	4.275	4.258	S 0.4%	4.260	4.265	F 0.2%
7	7	4 - B	2075	2.370	2.386	F 0.7%	2.370	2.378	F 0.3%
7	7	7 - B	2075	3.100	3.105	F 0.2%	3.075	3.106	F 1.0%
7	7	8 - B	2500	2.710	2.711	F 0.4%	2.710	2.707	S 0.1%
7	7	11 - B	1975	2.360	2.365	F 0.2%	2.355	2.356	0.0%
8	2	5 - A	1725	2.235	2.217	S 0.9%			
8	2	5 - A	2250				2.325	2.303	S 0.9%
8	2	12 - B	575	4.750	4.739	S 0.2%	4.720	4.747	F 0.8%
8	2	15 - B	1825	2.210	2.210	0.0%	2.240	2.222	S 0.8%
8	2	16 - B	BOR	6.025	6.109	F 1.4%	5.975	6.111	F 2.2%
8	2	12 - B	630	4.550	4.565	F 0.3%	4.540	4.573	F 0.7%
11	1	10 - B	1775	2.355	2.340	S 0.6%	2.325	2.331	F 0.3%
11	1	14 - B	2920	4.250	4.275	F 0.6%	4.225	4.283	F 1.4%
11	1	5 - B	2035	2.310	2.329	F 0.8%	2.275	2.320	F 1.9%
11	1	6 - B	BOR	8.305	8.520	F 2.0%	8.140	8.482	F 4.3%
11	1	10 - B	2815	3.755	3.855	F 2.6%	3.275	3.860	F 3.5%

TABLE 2-1

SECTION 3

FLIGHT OPERATIONS

A. SYSTEMS PERFORMANCE SUMMARY

Performance of the J-18 system was acceptable throughout the flight. Cycle rate errors ranged from 1% slow during the "A" operation, to 2% slow during the "B" operation. Both panoramic instruments operated satisfactorily during both "A" and "B" operations.

Stellar/Index camera operation was satisfactory as indicated by shutter pulse and payload metering monitors on TLM.

Average instrument temperature environment decreased from 75° to 57° during the ten days (159 orbits) of both missions.

Clock performance was satisfactory. 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 contained 2879 cycles of the master camera payload and 2865 cycles of the slave camera payload. The "B" capsule contained 3020 cycles of "Master" payload and 3022 cycles of "Slave" payload.

The impact points for both the "A" SRV and the "B" SRV were within tolerance.

B. INSTRUMENTATION AND COMMAND PERFORMANCE

The telemetry and command system performed satisfactorily throughout the flight. However, three spurious commands were received. U4 and U1 commands were received on orbit 92, demobilizing the beacon. On Orbit 93 the beacon was recommanded on. During Orbit 109 another U4 was received and the beacon was again turned off. On Orbit 110 the beacon was again re-commanded and no further spurious commands were received.

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 read low throughout the flight by approximately 50 cycles except for the master instrument during "A" operation which read high by approximately 30 cycles.

The cut and wrap sequence performed satisfactorily between the "A" mission - "B" mission switchover.

C. PANORAMIC CAMERA PERFORMANCE

Instrument operations were observed on orbits listed in Table 3-1. Telemetry monitors for center-of-format, lens rotation, and payload movement indicated smooth instrument dynamics and film movement during each operation observed.

Table 3-1 contains cycle period data of operations observed on TLM. The master and slave instruments ran approximately 1% and 2% slow respectively during the "A" mission. During the "B" mission both instruments ran approximately 2% slow. The difference in operating rates between instruments was within ± 1%.

Payload consumption for the flight was as follows:

	Master	Slave
"A" MISSION		
Cycles	2879	2865
Feet	7950	7887
"B" MISSION		
Cycles	3020	3022
Feet	7977	8005

FMC Match

The FMC match was well within specifications during the flight with the exception of one operation on orbit 89; V/H programmer start times had been programmed with a transition after orbit 88 to allow for possible de-activation. Since the vehicle was not de-activated, there should have been a change in the nominal start time selector switch setting after Rev. 88. The change was not initiated until orbit 95 which instigated a slightly higher FMC mismatch than desirable. The only significant error occurring during this period was on Rev. 89 when the estimated error in matching the calibrated ramp to the actual orbit was about 12-13% on the slow side. This anomaly also should have resulted in loss of endlap for this one operation.

D. CLOCK PERFORMANCE

Satisfactory clock correlation was obtained for both operations. Table 3-2 contains clock/system time correlation data for both operations. 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 operations were best fitted to this second order equation by an IBM 7040 digital computer using double precision. The coefficients A_0, A_1, and A_2 are included in Tables 3-2.

E. STELLAR/INDEX CAMERA PERFORMANCE

Normal payload metering was observed on TLM for both "A" and "B" S/I cameras during all operations listed in Table 3-1. Metering ratios were 8/3, 6/3 for the "A" S/I; and 6/3, 8/2 for the "B" S/I.

The shutter pulse was observed at proper sequence for all daytime operations over VAFB tracking station. These occurred during orbits 16, 32, 47, 63, 79, 94, 110, 126, 142, and 158.

F. THERMAL ENVIRONMENT

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

Average instrument temperatures decreased approximately 18° F from orbit 9 to orbit 158 due to normal orbit plane precession. Instrument temperatured dropped below the 70° F ± 10° by 5° during the "B" operation.

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 was passing through the PMU system when the instruments were inoperative.

J-18/1608 FLIGHT CYCLE RATE DATA INSTS. 132/133

REV/MODE	RAMP	T.U.R.	INST 132 ACT.	NOM.	DEV.	INST 133 ACT.	NOM.	DEV.	132/13 DIFF.
9 A	7 4	212	4.920	4.947	0.55	4.920	4.956	0.72	-0.
16 A	7 4	1714	2.262	2.249	-0.58	2.250	2.239	-0.50	-0.53
32 A	7 4	1745	2.270	2.235	-1.56	2.285	2.229	-2.52	0.66
47 A	7 4	1774	2.250	2.224	-1.16	2.270	2.227	-1.91	0.89
63 A	7 4	1835	2.249	2.214	-1.60	2.280	2.225	-2.45	1.38
79 A	7 4	1870	2.260	2.213	-2.13	2.280	2.225	-2.48	0.88
88 B	7 4	417	4.680	4.579	-2.21	4.640	4.587	-1.15	-0.85
94 B	7 4	2157	2.320	2.265	-2.42	2.320	2.255	-2.87	-0.
110 B	7 4	1923	2.252	2.212	-1.79	2.274	2.224	-2.23	0.98
126 B	6 5	1935	2.230	2.211	-0.87	2.270	2.223	-2.13	1.79
142 B	6 5	1974	2.260	2.211	-2.21	2.280	2.223	-2.56	0.88
158 B	6 5	2009	2.310	2.212	-4.44	2.300	2.224	-3.43	-0.43

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 [illegible]

[redacted]

CLOCK/SYSTEM TIME CORRELATION

PAYLOAD J-18 VEH 1608 MISSION 1016-1

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
36932.055	215619.82890	36932.05390	0.00183	9	1
76481.012	255168.79190	76481.01320	-0.00042	16	1
37537.861	302625.64590	37537.86270	-0.00075	25	1
77078.281	342166.06590	77078.27900	0.00218	32	1
38125.745	389613.53890	38125.74750	-0.00213	41	1
72224.753	423712.54790	72224.75330	-0.00003	47	1
33263.768	471151.56890	33263.76980	-0.00117	56	1
72786.652	510674.45990	72786.65710	-0.00476	63	1
33816.371	21233.26390	33816.36860	0.00306	72	1
73347.239	60764.13590	73347.23690	0.00220	79	1

A0=-0.17868775470 06 A1= 0.9999999057330 00

SIGMA=0.00217 NO. POINTS= 10

RATIO OF CLOCK TIME TO SYS TIME= 0.1000000094270 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
36932.055	215619.82890	36932.05580	-0.00003	9	1
76481.012	255168.79190	76481.01390	-0.00111	16	1
37537.861	302625.64590	37537.86230	-0.00040	25	1
77078.281	342166.06590	77078.27800	0.00311	32	1
38125.745	389613.53890	38125.74620	-0.00086	41	1
72224.753	423712.54790	72224.75200	0.00124	47	1
33263.768	471151.56890	33263.76890	-0.00024	56	1
72786.652	510674.45990	72786.65670	-0.00441	63	1
33816.371	21233.26390	33816.36930	0.00236	72	1
73347.239	60764.13590	73347.23870	0.00034	79	1

A0=-0.17868774170 06 A1= 0.9999998355130 00
A2= 0.86343391711050-13

SIGMA=0.00187 NO. POINTS= 10

[redacted]

[redacted]

CLOCK/SYSTEM TIME CORRELATION

PAYLOAD J-18 VEH 160R MISSION 1016-2

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
34356.167	108173.07190	34356.16260	0.00440	88	1
68521.208	142338.12290	68521.20950	-0.00139	94	1
34875.884	195092.80690	34875.88710	-0.00261	104	1
69034.484	229251.40890	69034.48500	-0.00059	110	1
29946.130	276563.05990	29946.13040	0.00005	119	1
30422.236	363439.17790	30422.23790	-0.00143	135	1
69895.[illegible]	402912.14890	69895.20420	-0.00065	142	1
30880.921	450297.87290	30880.92250	-0.00114	151	1
70364.352	489781.30390	70364.34870	0.00337	158	1

A0=-0.7381689634D 05 A1= 0.999999879748D 00

SIGMA=0.00209 NO. POINTS= 9

RATIO OF CLOCK TIME TO SYS TIME= 0.100000012025D 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
34356.167	108173.07190	34356.16490	0.00206	88	1
68521.208	142338.12290	68521.21040	-0.00232	94	1
34875.884	195092.80690	34875.88640	-0.00190	104	1
69034.[illegible]	229251.40890	69034.48360	0.00082	110	1
29946.[illegible]	276563.05990	29946.12840	0.00198	119	1
30422.236	363439.17790	30422.23640	0.00007	135	1
69895.203	402912.14890	69895.20340	0.00007	142	1
30880.921	450297.87290	30880.92320	-0.00185	151	1
70364.352	489781.30390	70364.35100	0.00106	158	1

A0=-0.7381688771D 05 A1= 0.999999808715D 00
A2= 0.11866760166740-12

SIGMA=0.00150 NO. POINTS= 9

TABLE 3-3

J-18 TEMPERATURE SUMMARY

SENSOR		ORBITS ACQUIRED																			
Master Camera	Launch + 440	ϕ 09	ϕ 16	ϕ 25	ϕ 32	ϕ 41	ϕ 47	ϕ 56	ϕ 63	ϕ 72	79	88	94	104	110	119	126	135	142	151	158
3	75	70	67	70	64	69	64	67	62	66	62	60	57	58	55	57	56	57	56	59	57
4	76	73	70	74	68	73	68	70	66	68	65	62	60	61	59	59	55	59	59	62	59
5	75	77	74	77	72	75	70	72	68	71	67	63	62	62	61	59	55	59	59	61	59
6	71	80	76	79	74	76	73	73	70	72	68	64	62	61	60	58	59	58	57	58	57
7	73	77	74	76	74	75	70	72	68	70	67	63	63	61	60	59	59	59	59	60	59
8	77	77	74	77	72	77	70	73	68	72	68	65	63	63	61	61	55	59	59	62	60
9	75	83	78	81	75	80	74	76	71	75	69	67	64	65	61	61	61	61	60	61	60
10	74	73	70	73	68	72	67	69	64	68	63	61	60	59	56	58	55	57	56	58	55
11	100	76	73	78	70	76	68	73	66	71	64	61	57	61	57	59	55	59	55	59	55
12	82	75	70	74	70	74	68	72	67	71	65	65	61	64	61	62	60	63	60	64	61
13	77	75	74	74	72	73	70	69	69	68	66	60	62	58	58	56	59	55	58	55	57
AVG	78	76	73	76	71	75	70	71	67	70	66	63	61	61	59	59	57	59	58	60	58
Slave Camera																					
3	75	79	74	79	72	76	70	73	67	71	65	62	58	58	56	56	52	55	53	53	51
4	76	77	73	77	71	77	71	72	67	71	65	62	59	58	56	56	53	55	53	55	52
5	58																				
6	76	77	74	76	72	75	72	72	69	71	68	65	63	63	61	62	60	60	61	62	61
7	73	76	73	75	70	74	69	72	67	71	67	63	61	62	59	59	59	59	58	59	58
8	77	73	70	73	69	73	68	70	65	68	65	61	59	59	60	57	57	57	56	57	55
9	76	73	70	74	70	74	69	72	67	71	67	64	62	63	59	62	60	62	60	62	60
10	75	71	69	72	68	72	66	68	65	66	64	60	59	58	56	57	55	56	54	56	53
11	98	66	63	67	63	67	63	66	61	65	60	57	54	57	54	54	52	55	52	55	52
12	79	75	69	74	69	73	66	70	64	68	62	60	54	58	54	54	52	53	50	53	49
13	75	66	66	66	65	67	64	63	63	62	61	53	56	53	52	51	52	50	51	51	51
AVG	76	74	71	74	70	73	69	70	66	68	65	61	59	59	57	57	56	56	55	57	55
Supply Spool																					
1	72	62	62	64	62	64	62	61	60	60	59	52	53	50	51	48	50	47	48	48	50
2	76	69	67	70	70	68	66	67	63	62	62	57	55	53	52	51	41	50	51	50	50

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

TABLE 3 - 3

J-18 TEMPERATURE SUMMARY

SENSOR		ORBITS ACQUIRED																			
Fair ("A") Barrel #1 ("B")	Launch + 440	09	16	25	32	41	47	56	63	72	79	88	94	104	110	119	126	135	142	151	158
1	OHB	56	33	61	29	58	29	58	26	58	26	27	30	27	27	27	23	30	23	33	27
2	OHB	26	06	34	06	31	06	34	3	34	6	70	58	74	58	74	58	77	61	83	64
3	OHB	08	04	19	08	16	04	16	4	19	4	86	83	86	80	86	71	86	71	89	71
4	221	61	48	66	45	63	45	60	41	60	41	45	48	42	38	38	28	32	25	32	19
5	227	72	56	77	50	74	46	68	43	68	40	31	28	25	22	22	15	19	12	19	12
6	234	71	61	76	49	73	49	70	39	67	36	--	--	--	--	--	--	--	--	--	--
Barrel No. 2																					
1	142	57	63	62	60	59	54	56	47	53	41	31	31	28	25	25	18	22	15	22	12
2	140	66	75	68	72	65	66	62	60	59	53	43	47	40	37	37	27	30	24	30	17
3	205	88	82	96	82	93	82	93	79	93	82	82	82	85	76	82	73	82	70	85	70
4	227	72	56	81	56	77	59	77	56	81	62	72	59	75	59	75	62	79	66	85	72
5	221	56	50	65	50	62	50	62	53	62	50	50	47	50	40	50	43	53	43	59	47
Conic Adapter																					
1	155	75	69	80	65	77	59	74	53	68	50	40	30	37	24	34	21	27	17	24	14
Clock																					
1	88	68	61	71	61	71	59	69	59	67	57	53	46	53	44	51	44	49	44	51	42
2	94	72	63	75	65	73	59	71	61	71	61	57	51	55	46	55	46	53	46	55	44
Thrust Cone "A" to "B" SRV																					
1	OBH	54	48	46	42	45	42	44	41	44	39	61	59	60	61	59	61	58	58	60	58
2	85	65	64	59	56	57	56	54	53	52	52	63	62	60	64	58	63	57	58	57	58
Stellar/Index "A" to "B"																					
1	85	63	57	68	54	68	54	62	50	62	50	55	55	55	51	51	48	51	48	55	48
2	78	65	60	67	55	64	55	64	52	64	52	55	52	55	49	52	49	52	49	52	46
Recovery Batt. "B" SRV																					
1	77	67	73	75	72	74	70	71	68	70	65	88	88	83	83	83	84	86	86	88	87
Master Cassette "A" SRV																					
2	93	66	57	63	57	63	59	60	59	60	57	--	--	--	--	--	--	--	--	--	--

NOTE: Only Thrust Cone Data corrected for self-heating (exception launch).

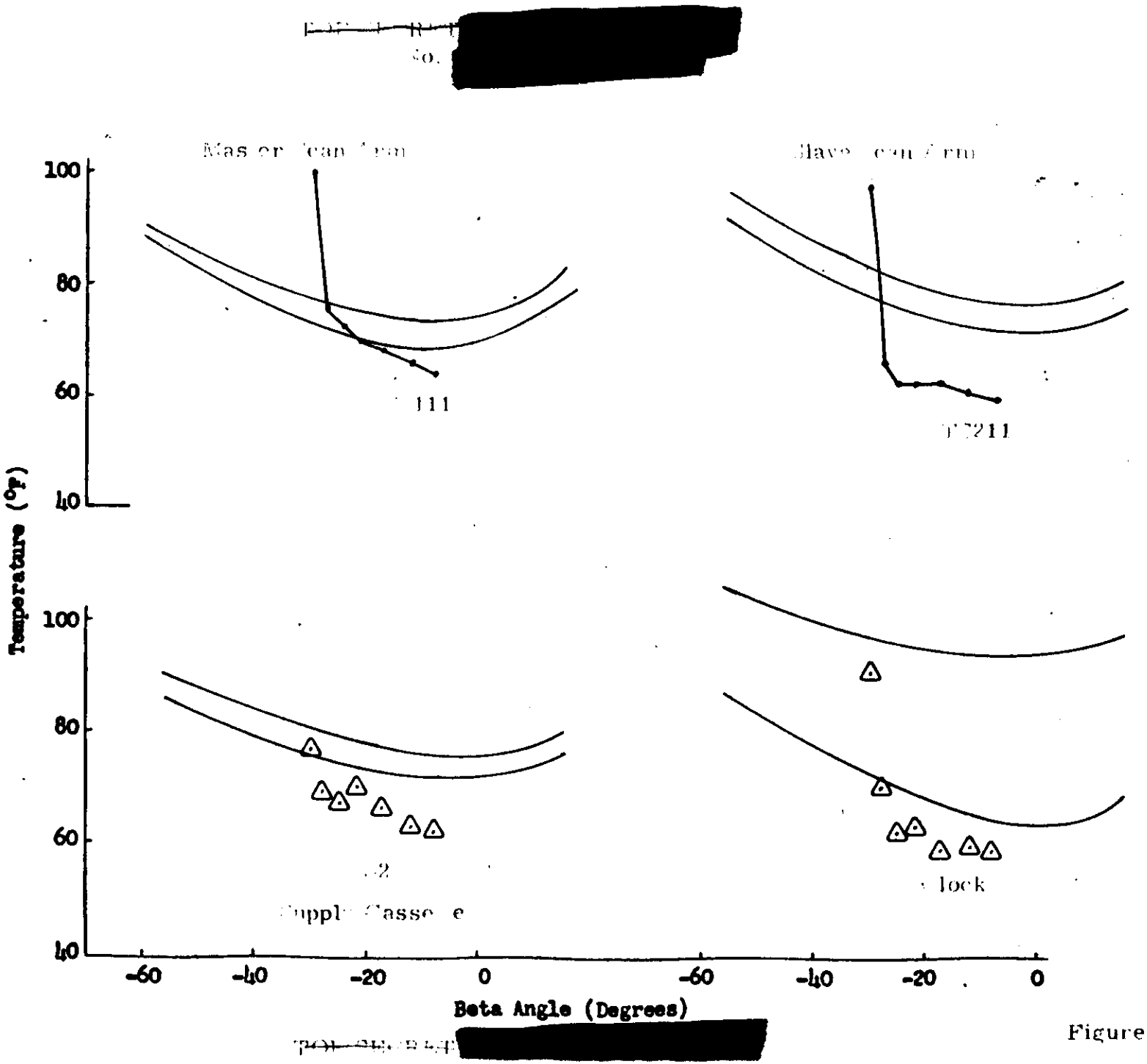

100
80
60
40
Temperature (°F)
111
211
-60
-40
-20
0
Beta Angle (Degrees)

Figure 3-1

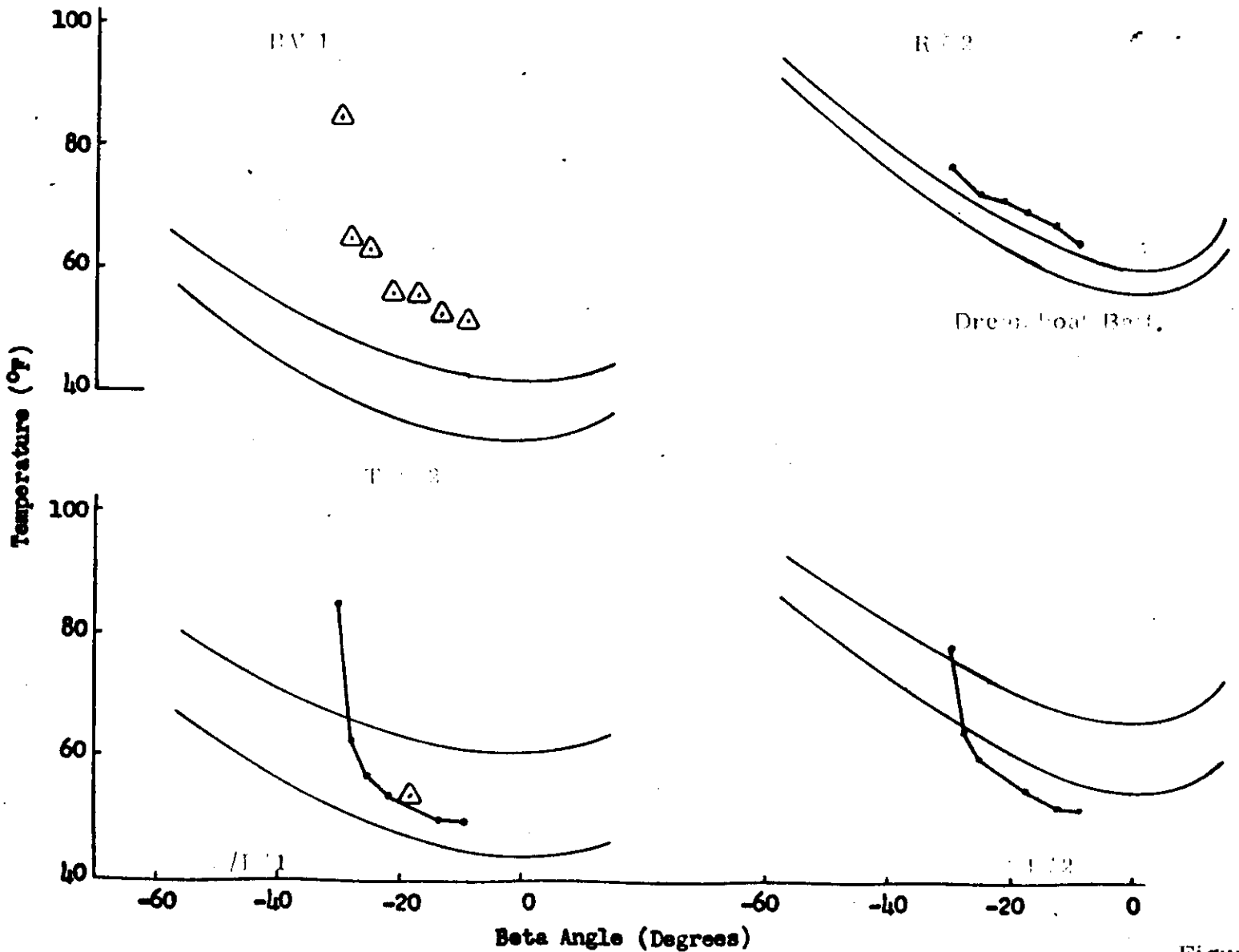


Figure 3-2

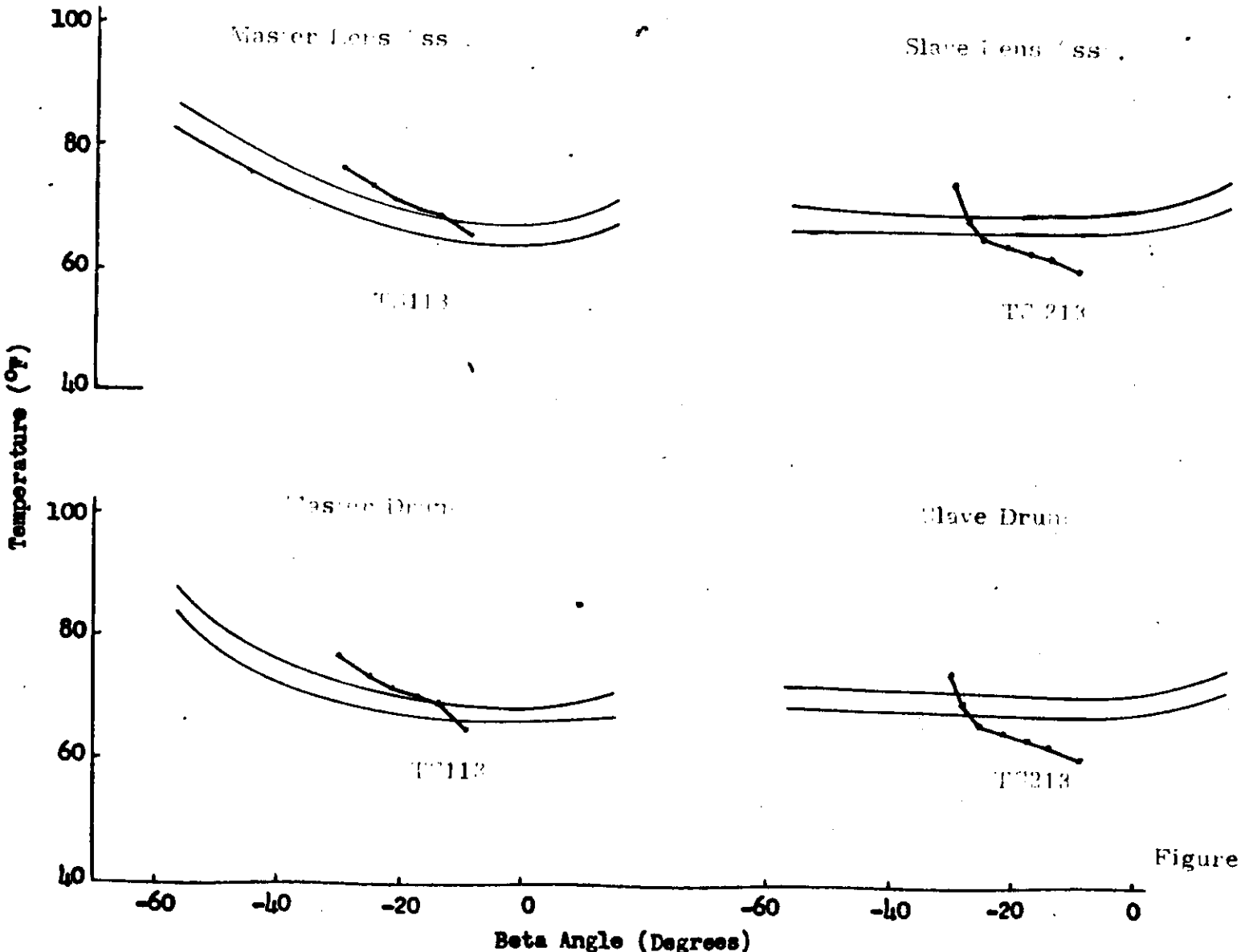

Master Lens Ass'y
Slave Lens Ass'y
T°113
T°213
Master Drum
Slave Drum
T°113
T°213
Temperature (°F)
100
80
60
40
-60
-40
-20
0
Beta Angle (Degrees)

Figure 3-3

[redacted]

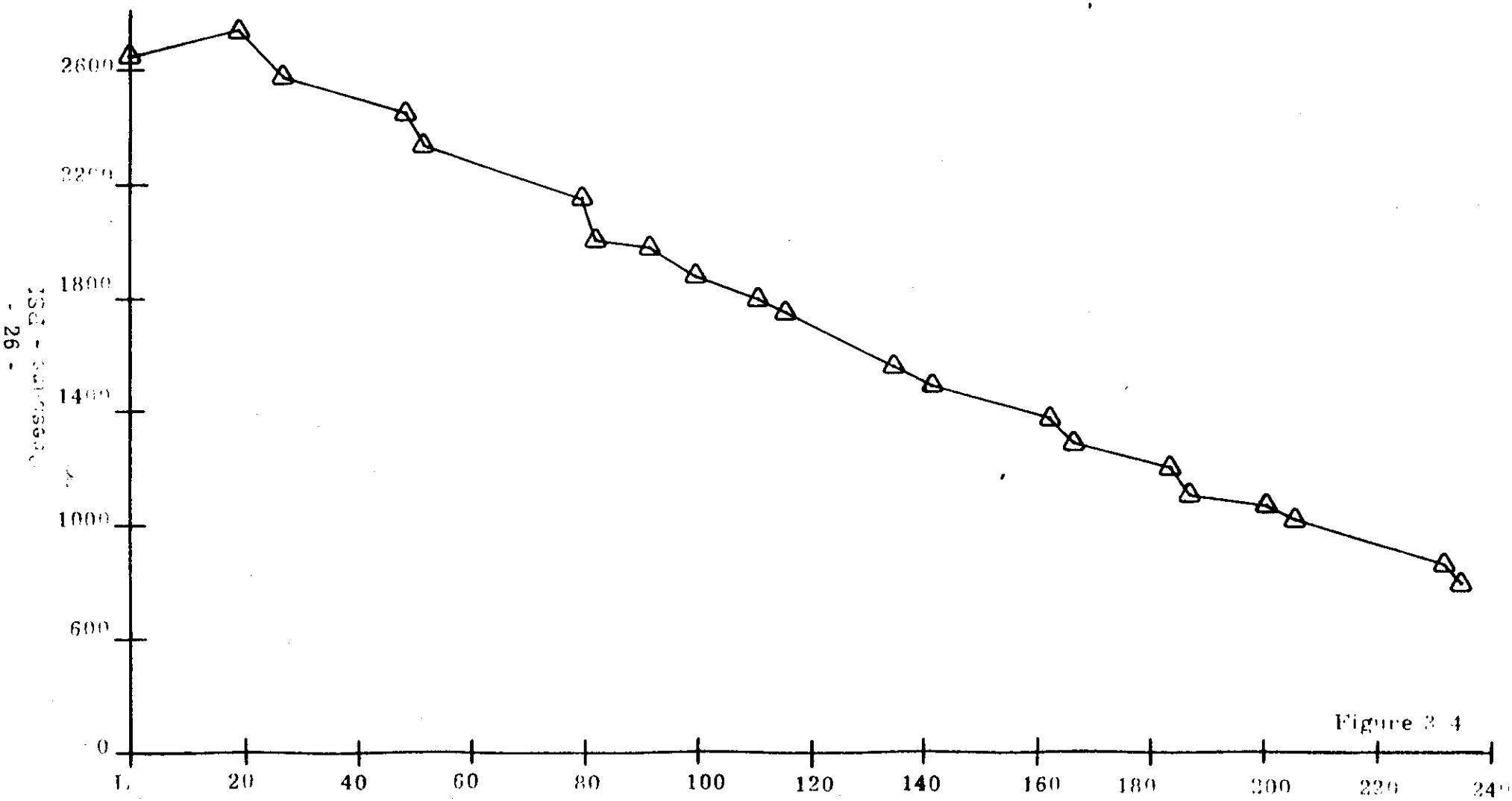


Figure 3-4

[redacted]

SECTION 4

MISSION 1016-1 RECOVERY SYSTEM

SRV #665 was received at A/P on 10 June 1964. The receiving weight was 148.98 pounds. After modifications and incorporation of outstanding E.O.'s, the SRV was delivered to Systems Test for incorporation into the J-18 system.

The capsule was shipped to VAFB on 24 November 1964.

The -1 recovery system was successfully recovered by air catch from orbit 81 at 1557 PST on 20 January 1965. The impact point was within tolerance.

The condition of the recovered capsule was satisfactory with no damage other than normal paint blistering due to the re-entry environment.

Event times are shown in Table 4-1.

MISSION 1016-1

RECOVERY SEQUENCE OF EVENTS

Event	Delta Time (Seconds) Actual	Nominal
Transfer	--	--
Electrical Disconnect	1.06	0.900 $^{+0.430}_{-0.400}$
*Separation	2.00	2.0 ± 0.25
**Spin	3.40	3.4 ± 0.30
Retro	7.54	7.55 ± 0.45
Despin	10.74	10.75 ± 0.54
T/C Separation	1.51	1.5 ± 0.15
Parachute Cover Off	34.76	34.0 ± 1.5
Drogue Chute Deployed	0.64	0.63 ± 0.08
Main Chute Bag Separate	10.19	10.14 $^{+0.48}_{-0.40}$
Main Chute Deployed	0.57	0.52 ± 0.13
Main Chute Disreef	4.60	4.46 $^{+0.49}_{-0.29}$

* From Transfer
**From Electrical Disconnect

Spin Rate 66 RPM
Despin Rate 8.8 RPM
Retro Velocity 1022.4 ft./sec.

TABLE 4-1

SECTION 5

MISSION 1016-2 RECOVERY SYSTEM

SRV #666 was received at A/P on 10 June 1964. The receiving weight was 151.24 pounds. After modifications and incorporation of outstanding E.O.'s the unit was delivered to Systems Test for mating to the J-18 system.

The capsule was shipped to VAFB on 24 November 1964.

The -2 recovery system was successfully recovered by air catch from orbit 159 at 1331 PST on 25 January 1965. The impact point was within tolerance.

Event times are shown in Table 5-1.

The condition of the recovered capsule indicated no abnormal re-entry effects.

MISSION 1016-2

RECOVERY SEQUENCE OF EVENTS

Event	Delta Time (Seconds) Actual	Nominal
Transfer	--	--
Electrical Disconnect	0.98	$0.900^{+0.430}_{-0.400}$
Separation	2.00	2.0 ± 0.25
Spin	3.37	3.4 ± 0.30
Retro	7.51	7.55 ± 0.45
Despin	10.77	10.75 ± 0.54
T/C Separation	1.43	1.5 ± 0.15
Parachute Cover Off	N/A	34.0 ± 1.5
Drogue Chute Deployed	N/A	0.63 ± 0.08
Main Chute Bag Separate	N/A	$10.14^{+0.48}_{-0.40}$
Main Chute Deployed	N/A	0.52 ± 0.13
Main Chute Disreef	N/A	$4.46^{+0.49}_{-0.29}$

* From Transfer

** From Electrical Disconnect

Spin Rate 70.5 RPM
Despin Rate 6.6 RPM
Retro Velocity 968 ft./sec.

TABLE 5-1

SECTION 6

MASTER PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	132
Main Camera Lens	1082435
Supply Horizon Camera	167-B
Supply Horizon Camera Lens	814012
Take-up Horizon Camera	168A
Take-up Horizon Camera Lens	813551
Supply Cassette	SC-23

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 3404
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/8.0
Exposure Time	1/100 second
Filter Type	Wratten 25

C. POST FLIGHT PERFORMANCE EVALUATION (Master Instrument)

The camera generated 2879 frames of panoramic photography during Mission 1016-1 and 3020 frames during Mission 1016-2. The aggregate in-flight frame count from telemetry was outside of prediction, by approximately + 0.4%.

The photographic quality was judged to be somewhat inferior to Mission 1015. The quality was limited by film grain. The information content of the photography was considered excellent by the photo interpreters and comparable to Mission 1015. They felt that the stereo quality of the mission was the best that has been obtained from a Corona system.

The grain observed in the duplicate positive photography is apparently unique to this generation. Examination of the original negative by AFSPPF personnel showed no unusual grain was present.

The usual, minor light leaks were present in the first and last few frames of photography of essentially all operations. An unusual light leak started during pass D25 which fogged an area in the sixth frame from the end of each operation for the remainder of Mission 1016-1 and was not present during Mission 1016-2. Since only the Master camera film was fogged the leak must have been located on the top of the space structure near the interface of the fairing and first recovery system as the Master camera film is emulsion up at this point while the Slave camera film is emulsion down. The cause of the leak is unknown and determination is considered improbable.

The horizon cameras and fiducials, time track, binary data block and end-of-pass mark operated properly throughout the mission. The time track was located outside of the format area and no data lamp failures were observed.

The apparent smearing of highly reflective objects was quite severe however the occurrence of this anomaly was very low. A non-vignetting field stop has been designed to eliminate this problem and is incorporated on all systems after J-21.

SECTION 7

SLAVE PANORAMIC CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Main Camera	133
Main Camera Lens	1102435
Supply Horizon Camera	170-B
Supply Horizon Camera Lens	814020
Take-up Horizon Camera	170-A
Take-up Horizon Camera Lens	819030
Supply Cassette	SC-23

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 3404
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 (Slave Instrument)

The camera exposed 2865 panoramic frames during Mission 1016-1 and 3022 frames during Mission 1016-2. The frame count from in-flight telemetry was outside of prediction by approximately -0.3%.

The photographic quality and information content were equal to the Master Camera. General preference was given to the Master camera, however atmospheric variations produce the normal quality variations in both cameras.

The fog patterns produced by light leaks were much less frequent and of lower intensity than observed on previous missions. This is attributed to the wider band of low reflective paint that was added to the surfaces at the drum and stove arm interface.

A narrow, intermittent band of static was noted along the data block edge during the first half of Mission 1016-1. The general appearance indicated that it was caused by a slight edge abrasion. A similar fogged band was noted during system environmental testing and was attributed to a film manufacturing defect as it started at a splice and ended at the following splice. Comparison of a film sample generated during the environmental test and the flight film showed that the anomalies were not produced by the same source.

Small minus density spots were inside the format near the data block edge during passes D131 to D135. They were probably caused by foreign material on the frame metering pressure roller. The resulting degradation was minimal.

The camera number, index lamps and horizon camera fiducials were either very faint or not present in the last frame of most passes. This was caused by a timing sequence problem between the center of format switch and the camera off switch. The anomaly was observed during pre-flight testing and not repaired as the extensive disassembly was not warranted considering the very minor data loss. Except for the last frame anomaly, the data block, horizon cameras and time mark operated properly.

SECTION 8

PANORAMIC CAMERA EXPOSURE

The Master camera contained a 0.250 inch slit and a Wratten 25 filter. The Slave camera had a 0.175 inch slit and a Wratten 21 filter. These conditions placed the nominal exposure between the full and intermediate processing curve.

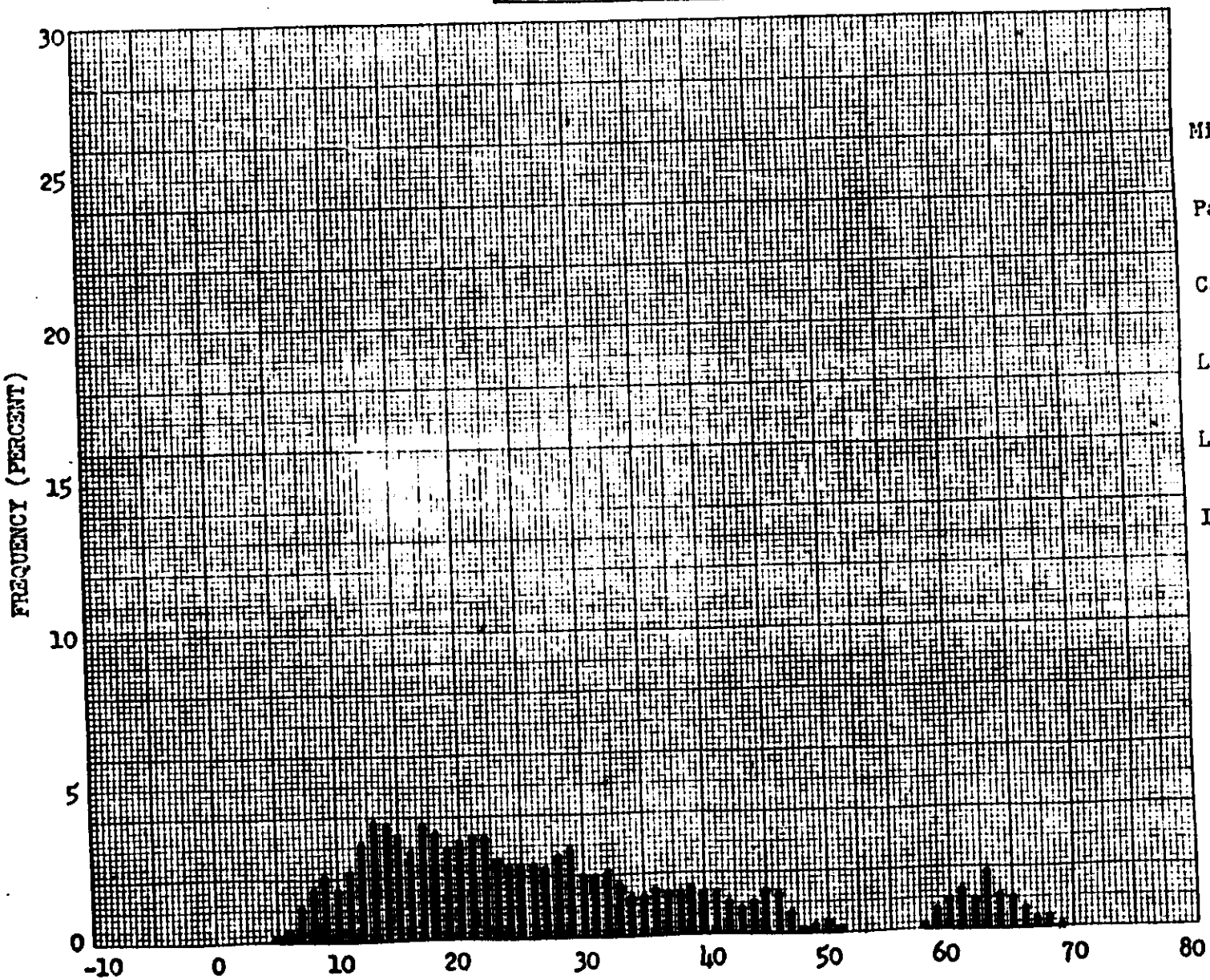
The frequency distributions of the solar elevations and solar azimuths encountered during the photographic operations are shown in Figures 8-1 to 8-4.

The nominal exposure times of the Master and Slave cameras are shown as a function of latitude for passes D-8, D-56, D-104 and D-152 in Figures 8-5 to 8-12. The predicted level of processing for the original negative is based on the in-flight performance estimate and is tabulated below with the processing levels reported by [redacted]

Mission	Camera		Primary	Intermediate	Full
1016-1	FWD	Predicted	0	7	93
		Reported	1	41	58
1016-1	AFT	Predicted	0	27	73
		Reported	0	26	74
1016-2	FWD	Predicted	0	8	92
		Reported	0	31	69
1016-2	AFT	Predicted	0	19	81
		Reported	1	27	72

Analysis of the exposure conditions at low solar elevations showed that significant information could be extracted from the photography at 5 degrees.

SOLAR ELEVATION FREQUENCY DISTRIBUTION



Mission No: 1016-1

Payload No: J-18

Camera No: 132

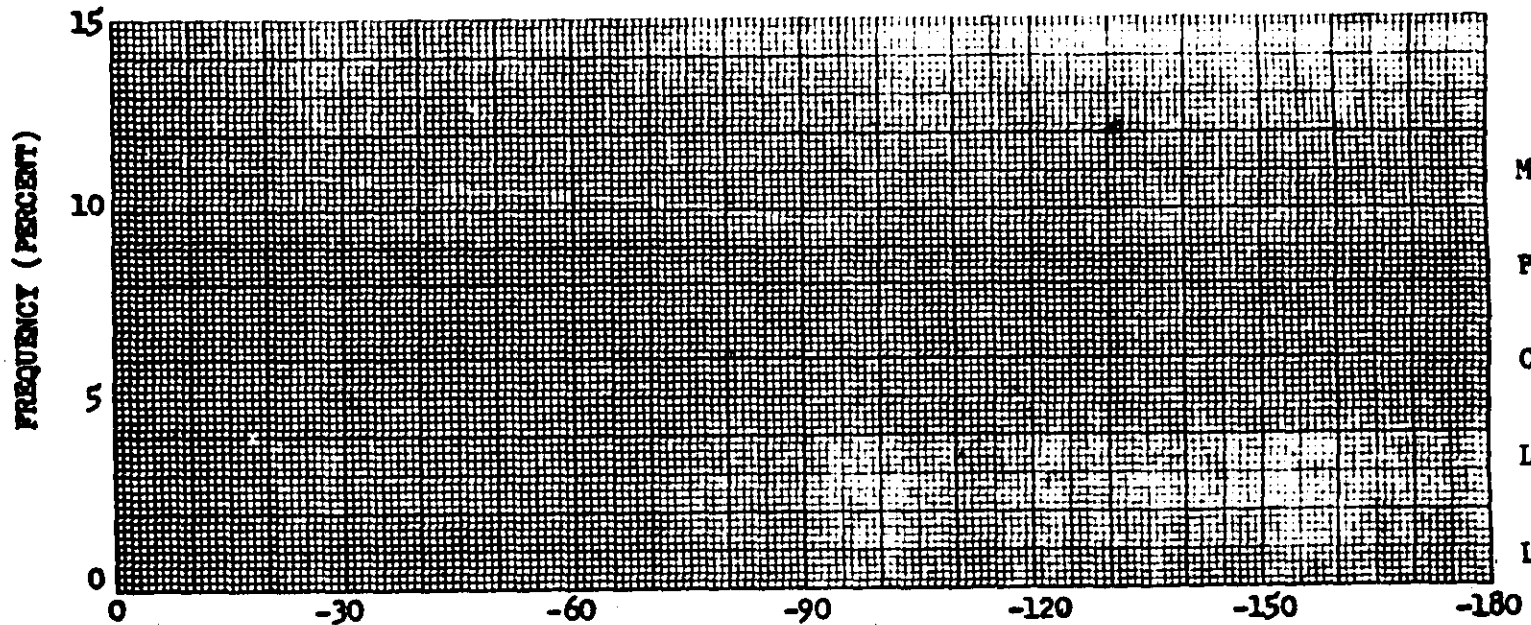
Launch Date: 1/15/65

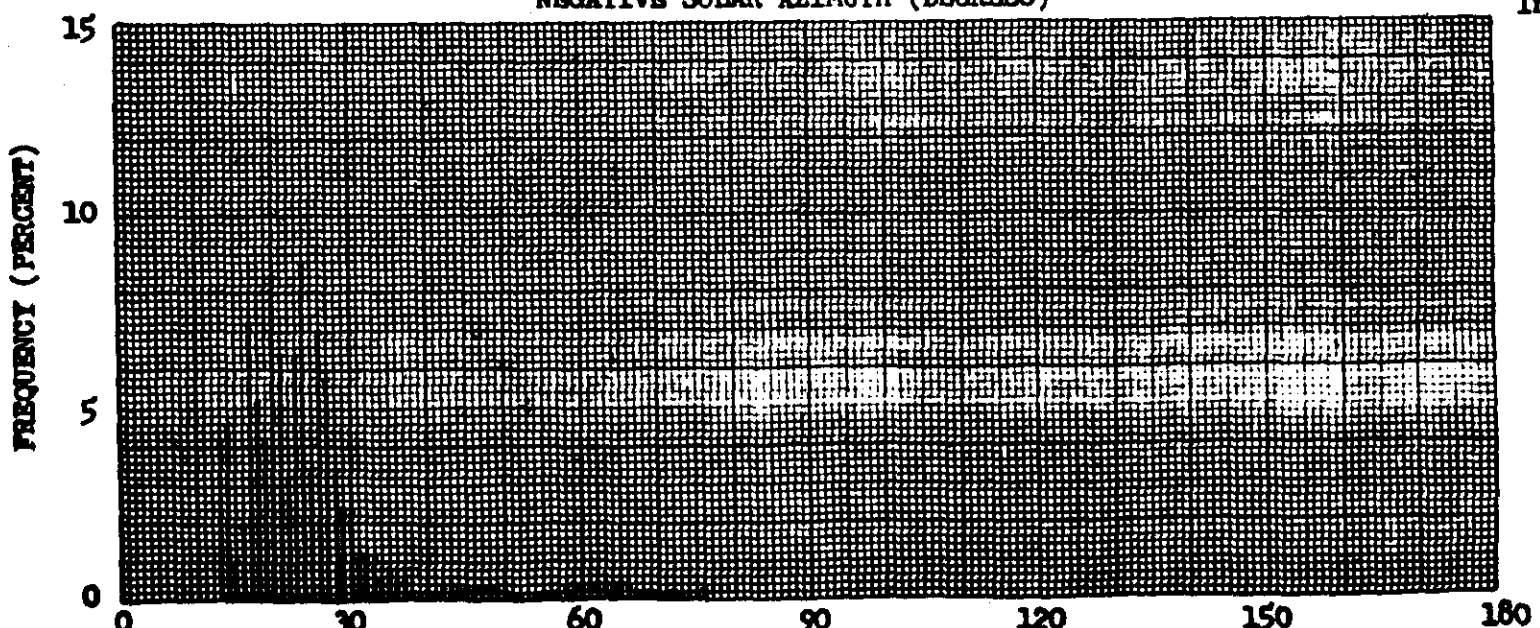
Launch Time: 2101 Z

Inclination: 75°

Figure 8-1

SOLAR AZIMUTH FREQUENCY DISTRIBUTION





Mission No: 1016-1

Payload No: J-18

Camera No: 132

Launch Date: 1/15/65

Launch Time: 2101 Z

Inclination: 75°

SIGN NOTATION

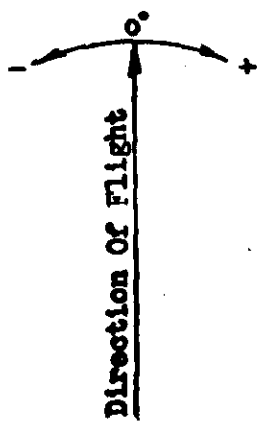
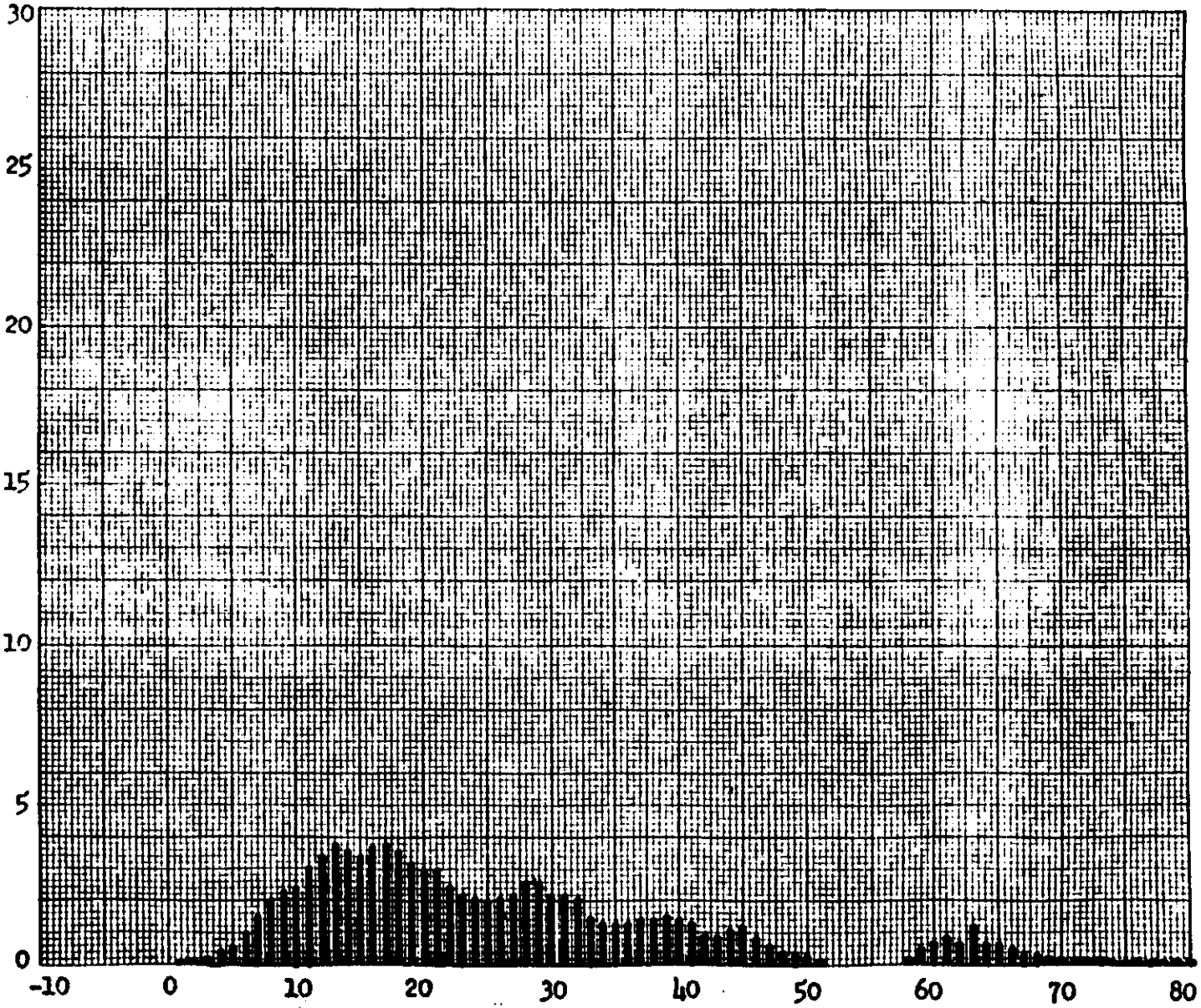


Figure 8-2

SOLAR ELEVATION FREQUENCY DISTRIBUTION



Mission No: 1016-2

Payload No: J-18

Camera No: 132

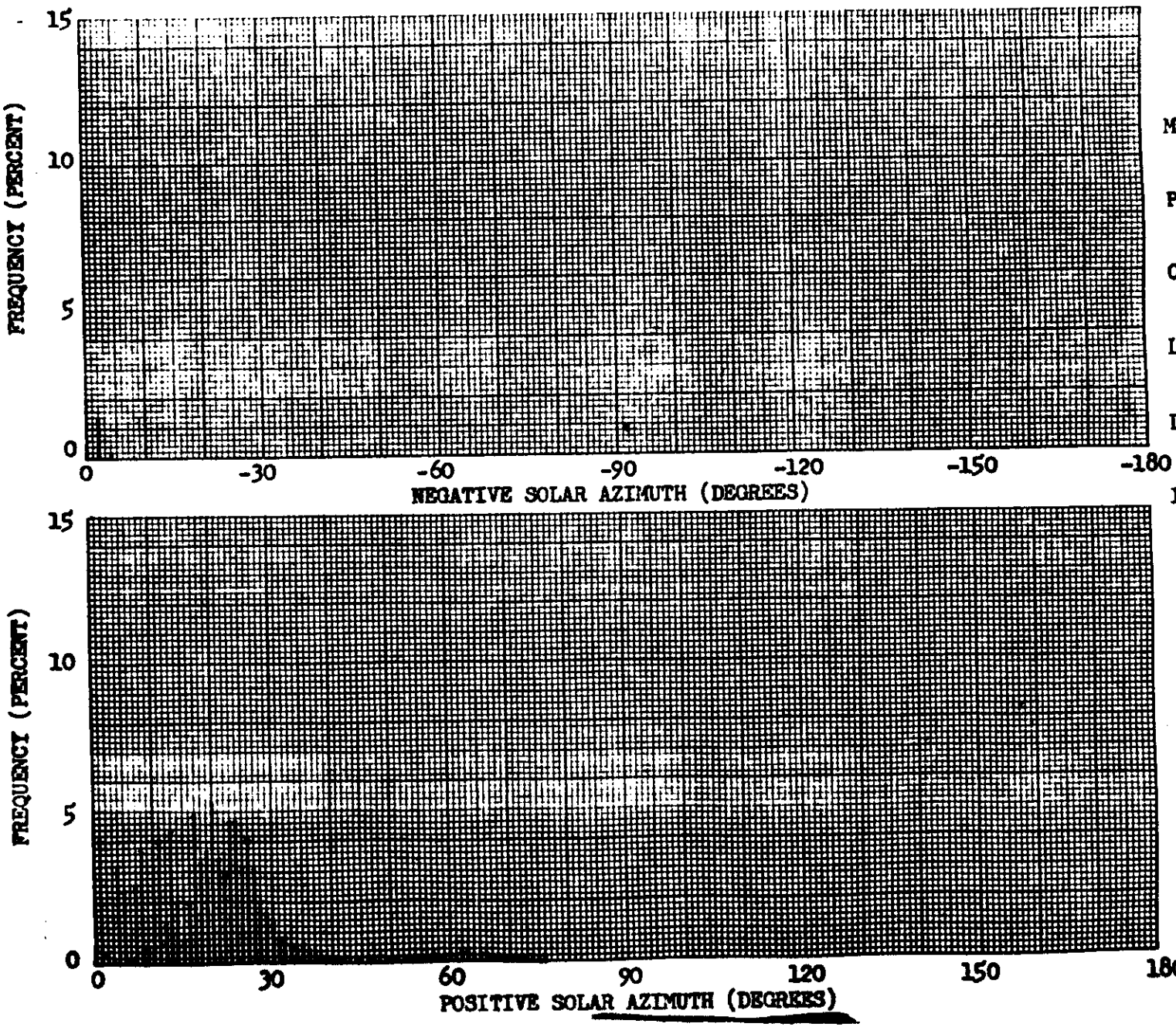
Launch Date: 1/15/65

Launch Time: 2101 Z

Inclination: 75°

Figure 8-3

SOLAR AZIMUTH FREQUENCY DISTRIBUTION



Mission No: 1016-2

Payload No: J-18

Camera No: 132

Launch Date: 1/15/65

Launch Time: 2101 Z

Inclination: 75°

SIGN NOTATION

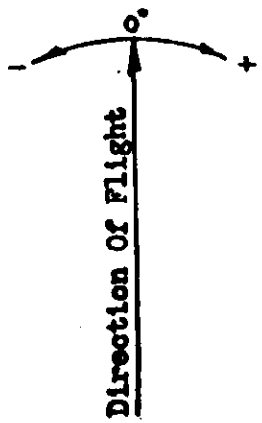
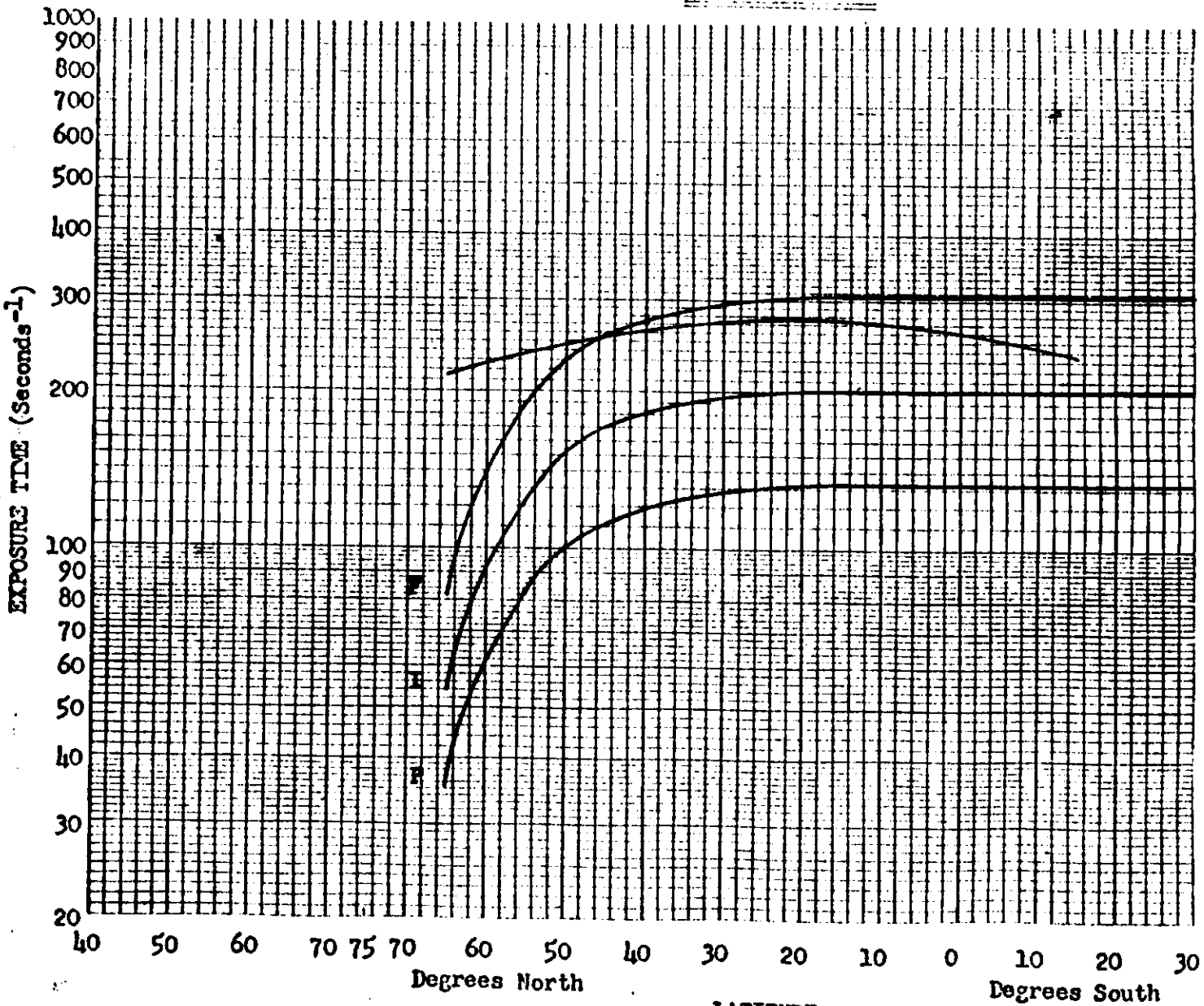


Figure 8-4

EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 132

Pass No: 8

Launch Date: 1/15/65

Launch Time: 2101 Z

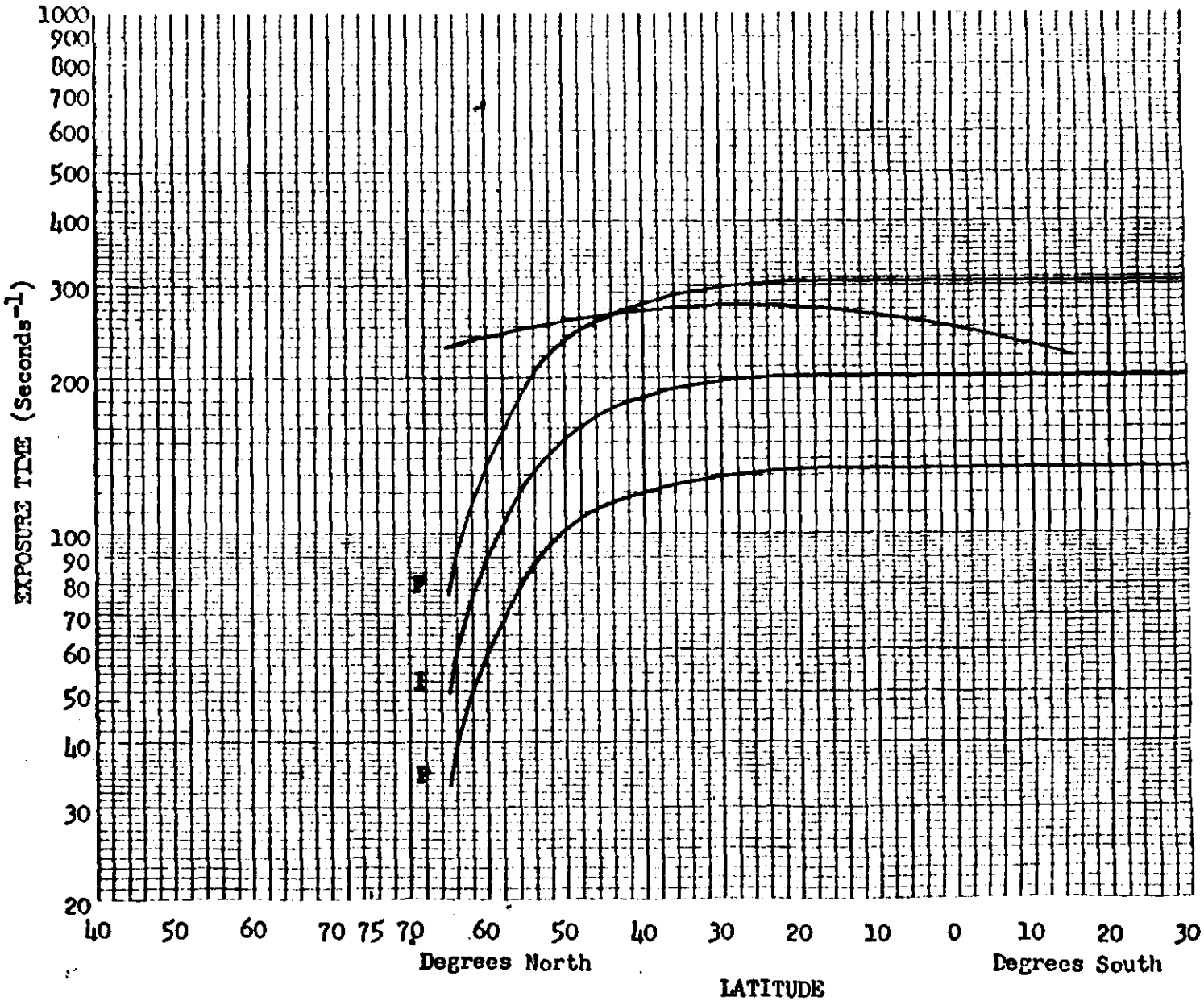
Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

Figure 8-5

No. [redacted] EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 132

Pass No: 56

Launch Date: 1/15/65

Launch Time: 2101 Z

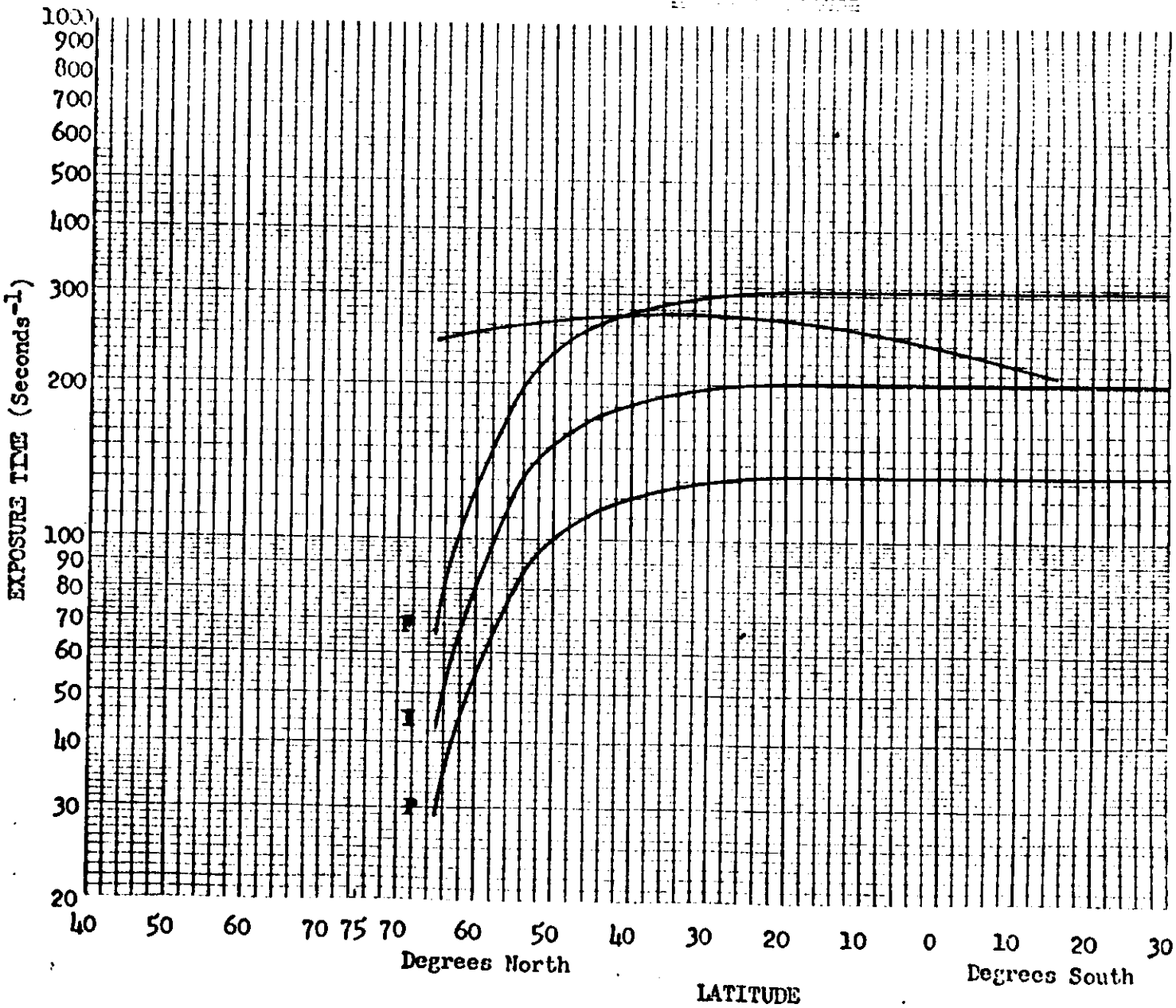
Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

Figure 8-6

EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 132

Pass No: 104

Launch Date: 1/15/65

Launch Time: 2101 Z

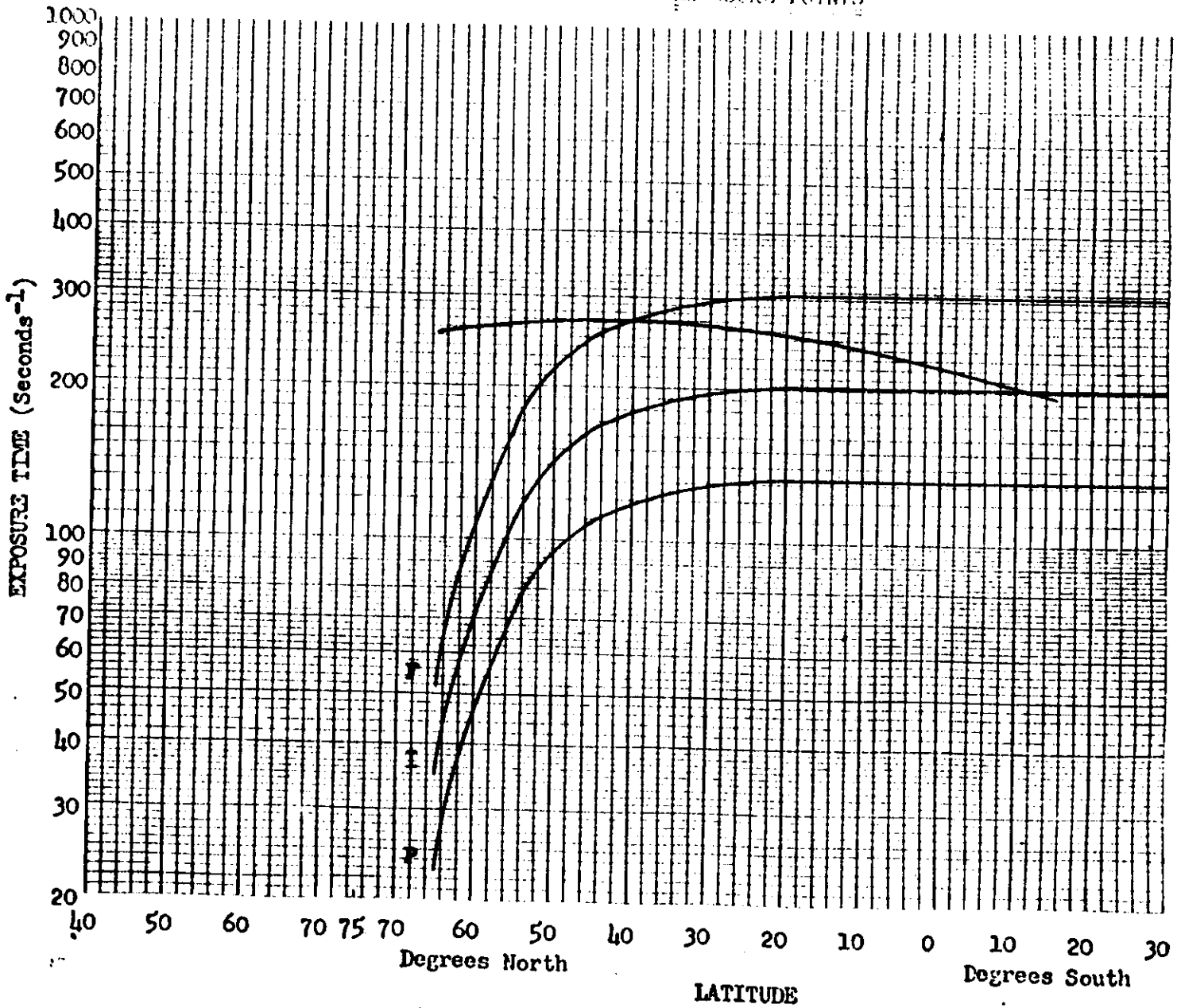
Slit Width: .250

Filter Type: Wratten 25

Film Type: 4404

Figure 8-7

No. [redacted] EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 132

Pass No: 152

Launch Date: 1/15/65

Launch Time: 2101 Z

Slit Width: .250

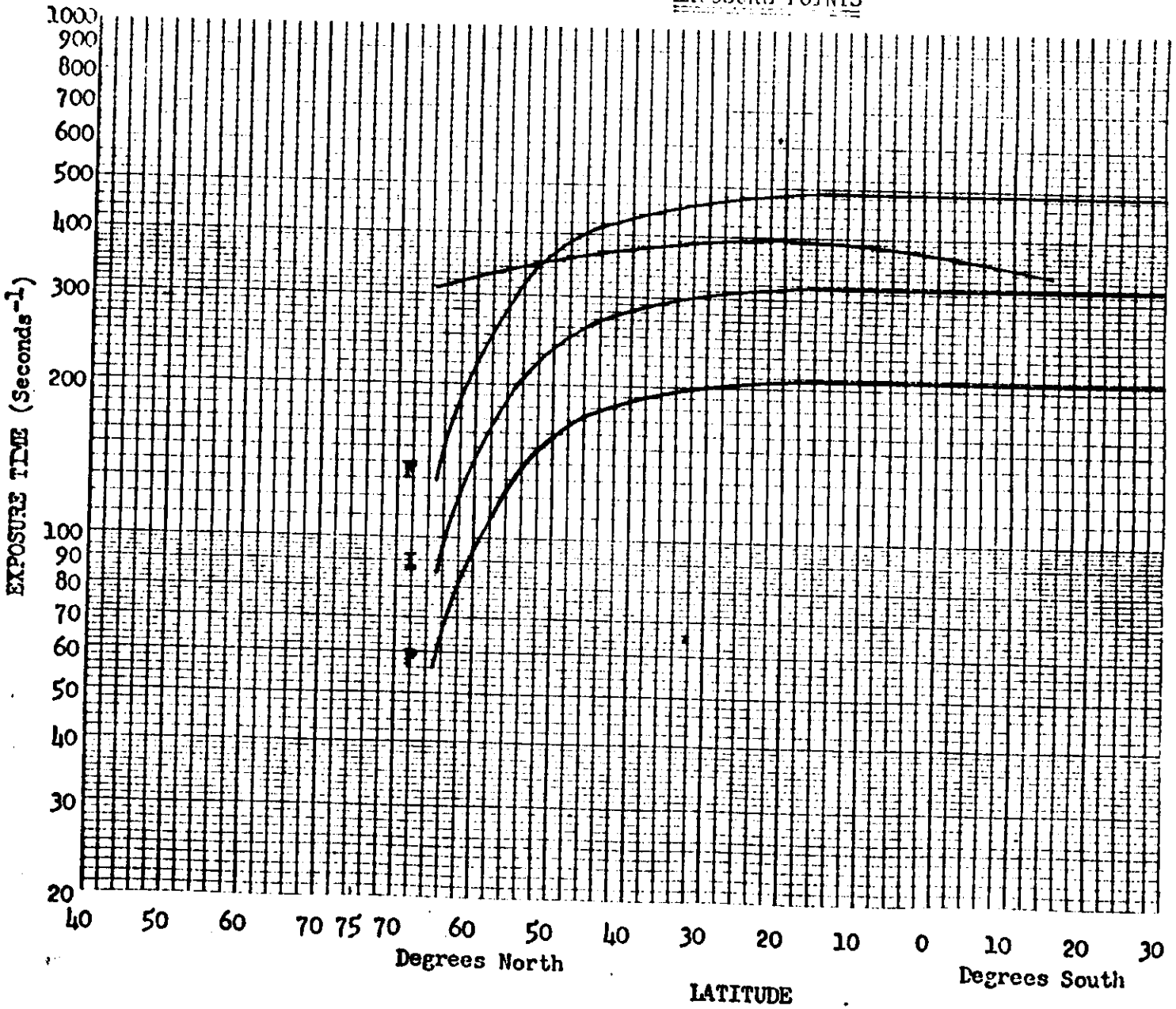
Filter Type: Wratten 25

Film Type: 4404

Figure 8-8

No. [redacted]

EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 133

Pass No: 8

Launch Date: 1/15/65

Launch Time: 2101 Z

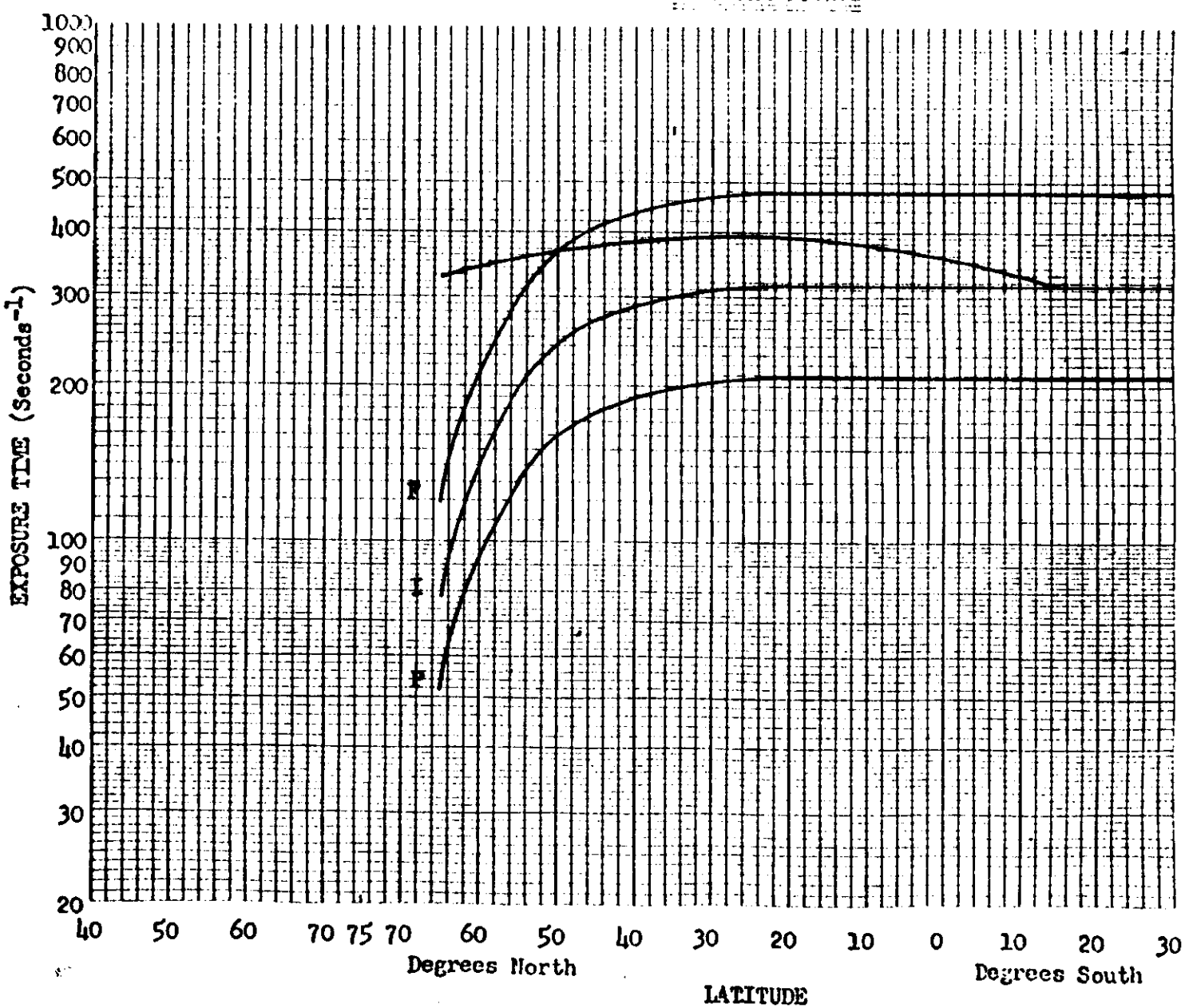
Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

Figure 8-9

No. [redacted] EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 133

Pass No: 56

Launch Date: 1/15/65

Launch Time: 2101 Z

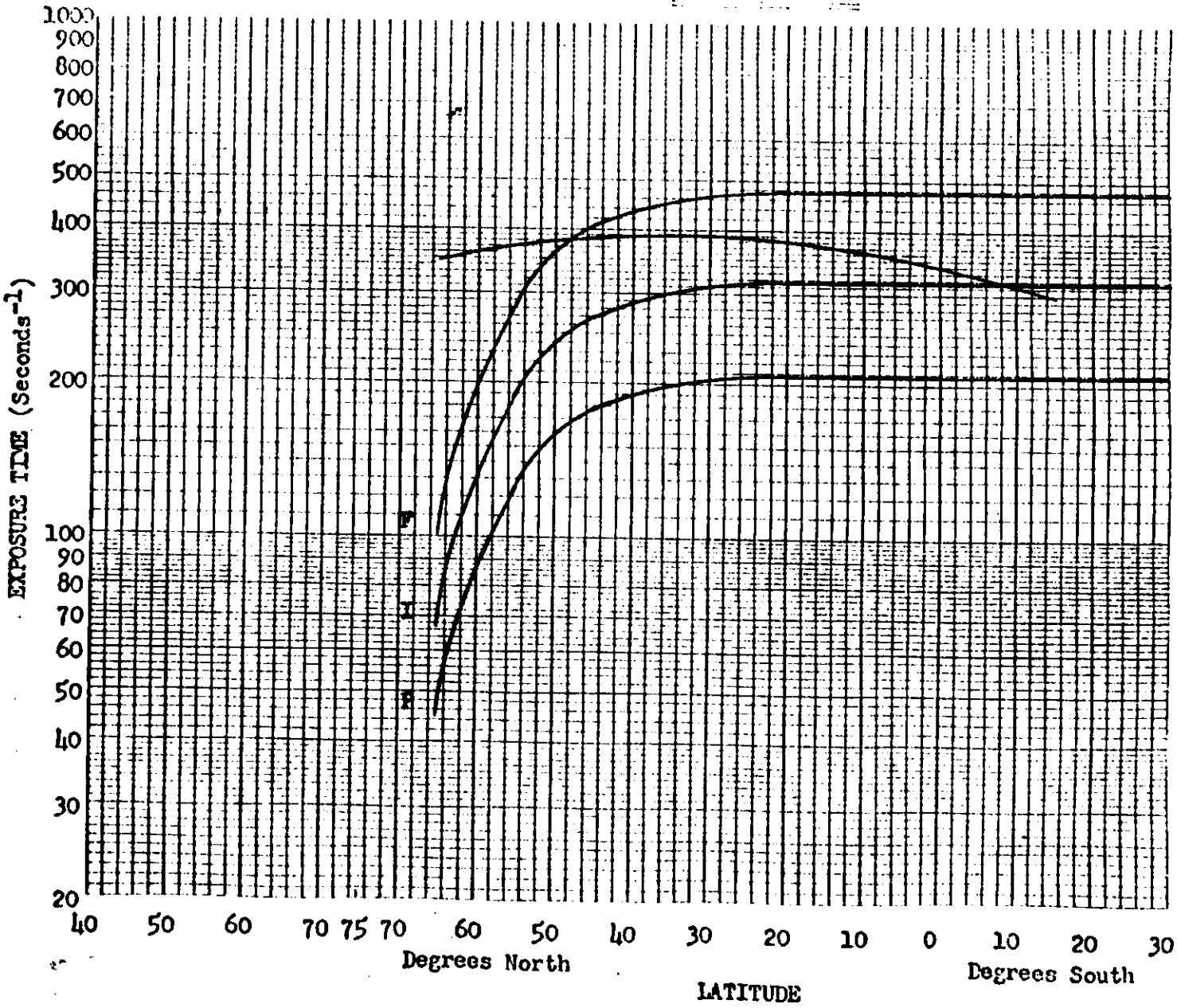
Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

Figure 8-10

EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 133

Pass No: 104

Launch Date: 1/15/65

Launch Time: 2101Z

Slit Width: .175

Filter Type: Wratten 21

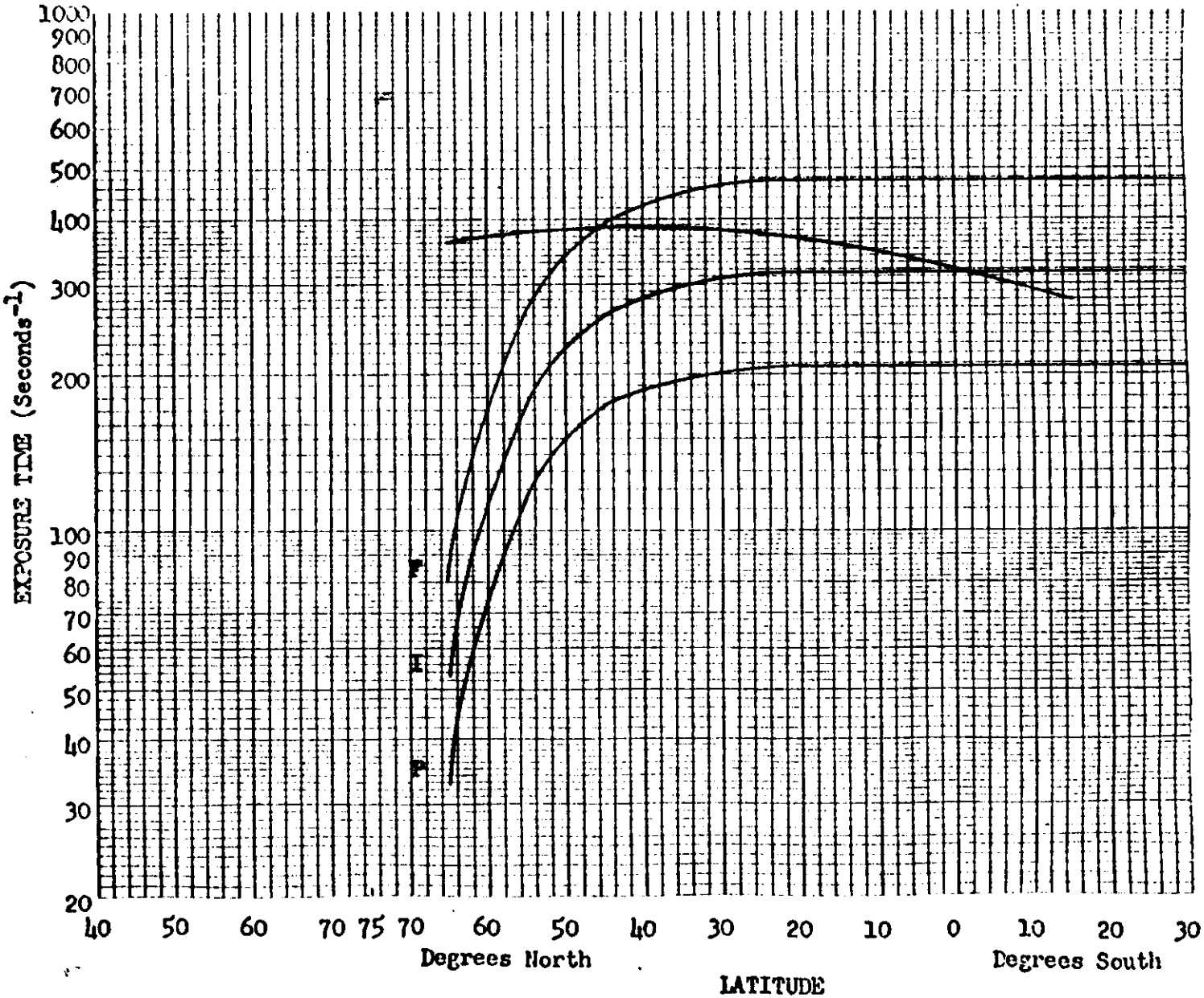
Film Type: 4404

Figure 8-11

[redacted]

No. [redacted]

EXPOSURE POINTS



Mission No: 1016

Payload No: J-18

Camera No: 133

Pass No: 152

Launch Date: 1/15/65

Launch Time: 2101 Z

Slit Width: .175

Filter Type: Wratten 21

Film Type: 4404

Figure 8-12

[redacted]

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
1016-1	FWD	Predicted	0	7	93
		Reported	1	41	58
		Computed	0	59	41
1016-1	AFT	Predicted	0	27	73
		Reported	0	26	74
		Computed	0	42	58
1016-2	FWD	Predicted	0	8	92
		Reported	0	31	69
		Computed	0	48	52
1016-2	AFT	Predicted	0	19	81
		Reported	1	27	72
		Computed	0	40	60

The tabulations of density frequency distributions for Missions 1016-1 and 1016-2 are included in Appendix A, Table A-1 thru A-4. The graphical presentation of the density distribution are computer plotted in Appendix A Figures A-1 thru 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. The area measured for D-Min is selected subjectively and is not necessarily the absolute D-Min in the photography.

[redacted] [redacted] [redacted]

MISSION 1016-1 INSTR - FRWD 02/08/65 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	117	2 PC	28 PC	61 PC	9 PC	1 PC
FULL	82	44 PC	0 PC	49 PC	7 PC	0 PC
ALL LEVELS	199	19 PC	17 PC	56 PC	8 PC	1 PC

MISSION 1016-1 INSTR - AFT 02/08/65 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	120	0 PC	22 PC	57 PC	18 PC	3 PC
FULL	163	19 PC	0 PC	66 PC	15 PC	0 PC
ALL LEVELS	283	11 PC	9 PC	62 PC	17 PC	1 PC

MISSION 1016-2 INSTR - FRWD 03/18/65 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	124	1 PC	39 PC	54 PC	6 PC	0 PC
FULL	136	42 PC	0 PC	57 PC	1 PC	0 PC
ALL LEVELS	260	22 PC	18 PC	56 PC	3 PC	0 PC

MISSION 1016-2 INSTR - AFT 03/18/65 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	102	1 PC	13 PC	75 PC	9 PC	2 PC
FULL	155	38 PC	0 PC	57 PC	5 PC	0 PC
ALL LEVELS	257	23 PC	5 PC	65 PC	6 PC	1 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] [redacted] [redacted]

Table 9-1

[redacted]

[redacted]

SECTION 10

PERFORMANCE MEASUREMENTS

The photography acquired by both panoramic cameras during Missions 1016-1 and 1016-2 received a MIP rating of 85. A summary is tabulated below of the 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]
1016-1	FWD	56	81
1016-1	AFT	61	94
1016-2	FWD	55	92
1016-2	AFT	56	91

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.

The resolution values are notably lower for the AFSPPF team. A probable reason for this discrepancy lies in the type of subjects selected for microdensitometer. The [redacted] subjects were mainly buildings whereas the AFSPPF team traced mainly runways.

SECTION 11

OBSERVED DATA

Objects that could be detected and identified by the Evaluation Team were larger than detected and identified in Mission 1015. Vehicles were usually detected and differentiation between trucks and automobiles generally possible. Aircraft engine nacelles were usually not detectable.

Ground Targets

The photographic operations conducted over the United States and the resolution targets acquired are:

Pass	Target
D 15	200' edge and "T" bar portables
D 47	Indian Springs and Parumph, Nevada
D 61	Webster Field NAS, Maryland
D 62	200' edge and "T" bar portables
D 63	No targets - all cloud cover
D 93	No targets observed
D 94	No targets observed
D 110	Indian Springs and Parumph, Nevada
D 126	No targets observed

The largest group on the portable "T" bar resolution targets observed in passes D 15 and D 62 could not be resolved however the space between groups was detected on the D 62 photography. This spacing and the target panel outline did not match any of the portable targets described in the CORN Manual hence the target bar sizes are unknown.

The 200 foot edge target photographed in pass D 62 appeared to have narrow plus density bands across the white panels parallel to the adjacent edge of the dark panel.

The 200 foot edge and "T" bar resolution targets were reportedly displayed during Pass D 110 however they could not be located.

The largest group, 13' 8" ground resolution, on the Indian Springs target could not be resolved in the pass D 47 photography and was obscured by clouds in pass D 110. The 13'8" ground resolution group could be resolved on the Parumph target in pass D47 in both the along track and cross track direction by the Master camera. The Slave camera was turned off before the target was reached. The Master camera resolved the 9'8" group along track but could not resolve the largest group cross track in pass D110. The Slave camera resolved the 9'8" group along track and the 12'2" group cross track in pass D 110.

The fixed targets at Webster Field were covered by snow.

The abnormal grain noted in the duplicate positive material had a significant effect on the targets analyzed by the Evaluation Team. It is expected that examination of better duplicate positives on the original negative will improve the targets and resolution values.

SECTION 12

MISSION 1016-1 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-55
Index Reseau	55
Stellar Reseau	50

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 3401

Index Camera:

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

C. POST FLIGHT EVALUATION

The Stellar and Index cameras both produced 411 frames of photography. The resulting quality was excellent with no observed camera problems.

Approximately 55% of the Stellar format was flared, as predicted, since a short baffle had to be used to avoid sun impingement on the baffle. The pin head size dense spot reported in all frames was the planet Jupiter.

The general contrast of the index photography was much greater than the contrast obtained during the last few missions. This indicates a lower level of atmospheric haze during camera operations.

The stellar photography contained many frames that had double star images. The magnitude of image separation was comparable to the separation observed in prior missions. The image separation appeared to be cyclic throughout the mission.

A plus density streak, in line with the correlation lamp, was present during the last 44 frames of stellar photography. The streak width was narrower than the lamp diameter and uniform in density between programmed lamp exposures. Since a partially illuminated lamp would show a density variation at all frames, the streak is attributed to a pressure mark.

SECTION 13

MISSION 1016-2 STELLAR-INDEX CAMERA

A. COMPONENT ASSIGNMENT

Component	Serial Number
Camera	D-59
Index Reseau	50
Stellar Reseau	59

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 3401

Index Camera:

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

C. POST FLIGHT EVALUATION

The Stellar and Index cameras produced 433 photographic frames during the mission. The index photography was the same as acquired from Mission 1016-1, displaying the same high quality and higher contrast.

The Stellar camera shutter malfunctioned throughout the entire mission resulting in an exposure time estimated to be 4 seconds. The Stellar photography was severely overexposed to a point that only 35% of the frames were satisfactory for attitude reduction. Vehicle attitude

for the remainder of the mission will have to be obtained from horizon camera and index camera photography. The cause of the shutter malfunction has been isolated and all faulty shutters removed from future operational systems.

SECTION 14

VEHICLE ATTITUDE

The vehicle attitude errors for both Mission 1016-1 and 1016-2 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 1016-1 and Figures 14-7 through 14-12 for Mission 1016-2.

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

Value	Mission 1016-1 90%	Mission 1016-1 Range	Mission 1016-2 90%	Mission 1016-2 Range
Pitch Error (^{o})	0.72	-1.50 to +0.70	0.83	-1.60 to +1.00
Roll Error (^{o})	0.83	-1.05 to $\pm$0.35	0.93	-1.15 to +1.25
Yaw Error (^{o})	2.01	-2.30 to $\pm$0.70	2.19	-2.50 to +0.90
Pitch Rate (^{o}/hr.)	48.89	-80 to +95	42.20	-95 to +100
Roll Rate (^{o}/hr.)	30.20	-70 to +90	27.21	-90 to +100
Yaw Rate (^{o}/hr.)	40.40	-95 to +65	39.94	-85 to +55

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-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.7

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

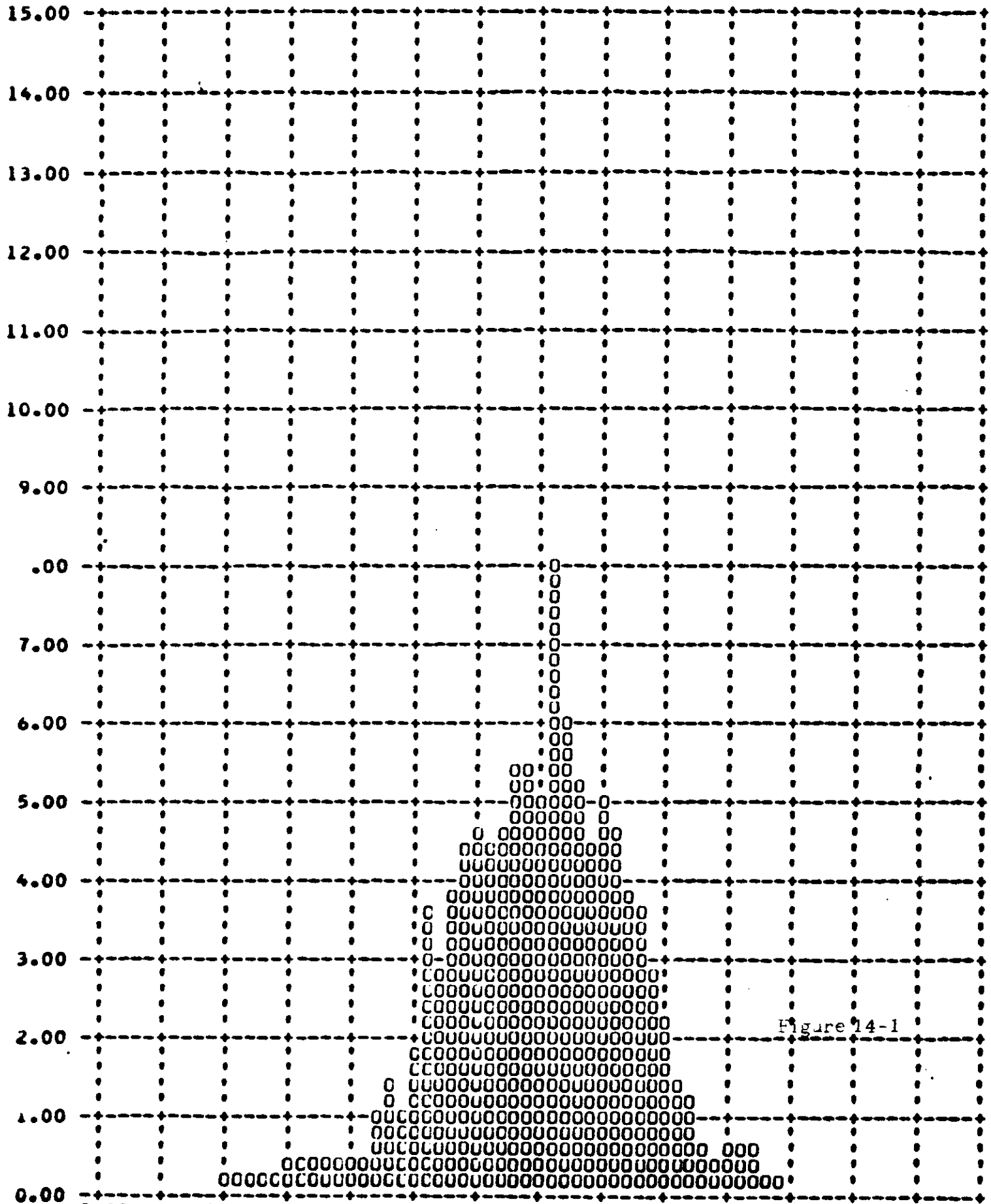


Figure 14-1

J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.83

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

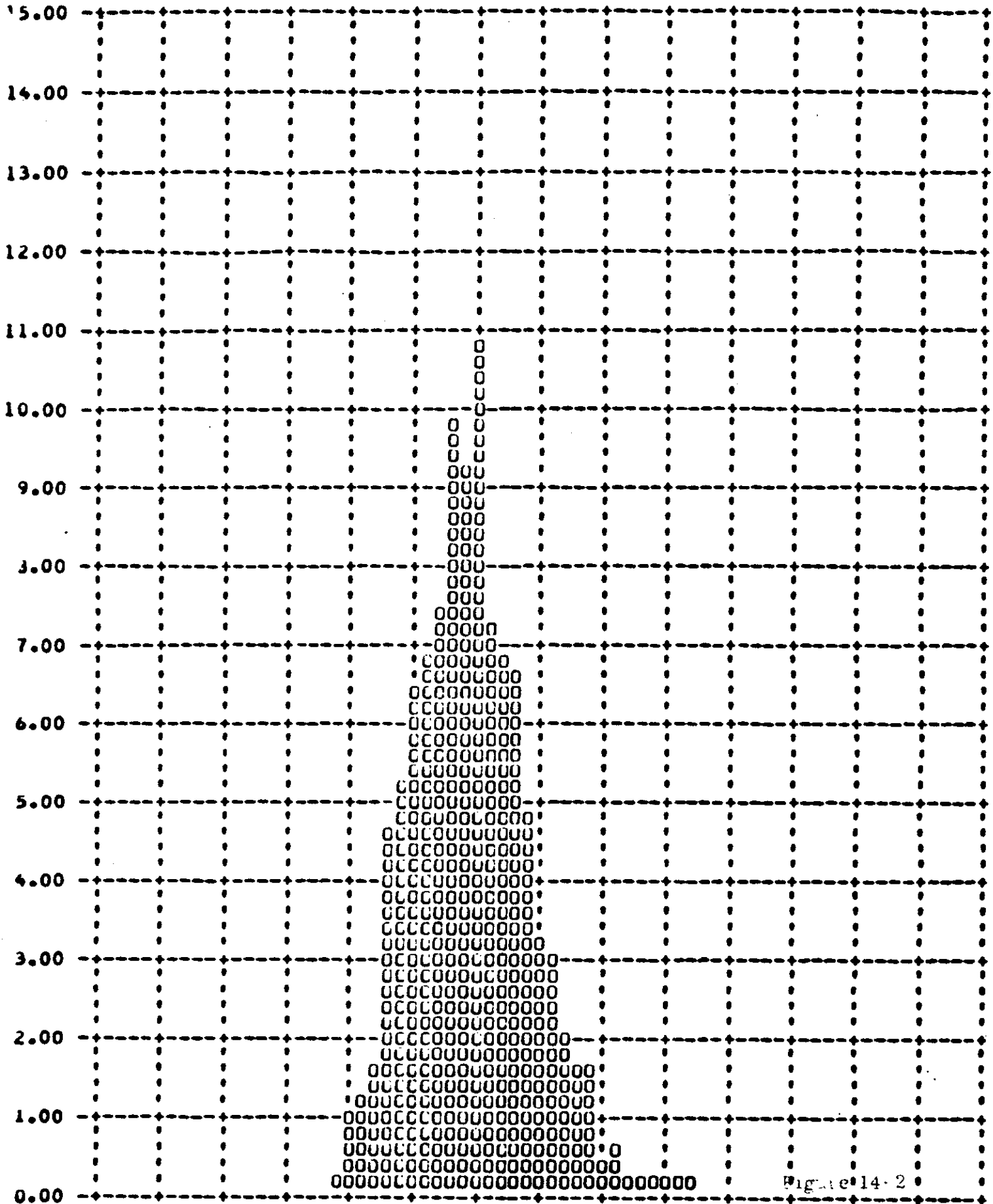
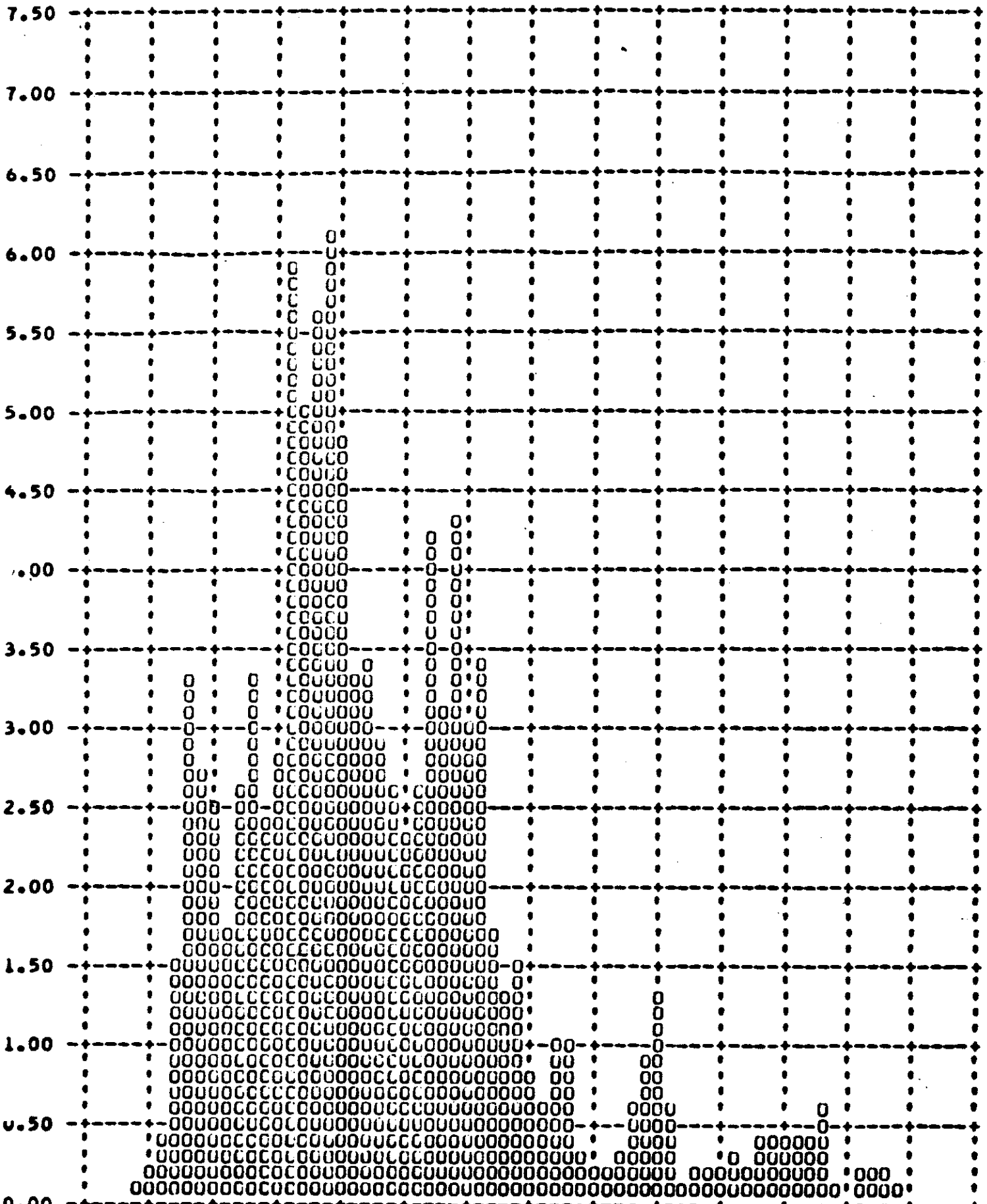


Figure 14-2

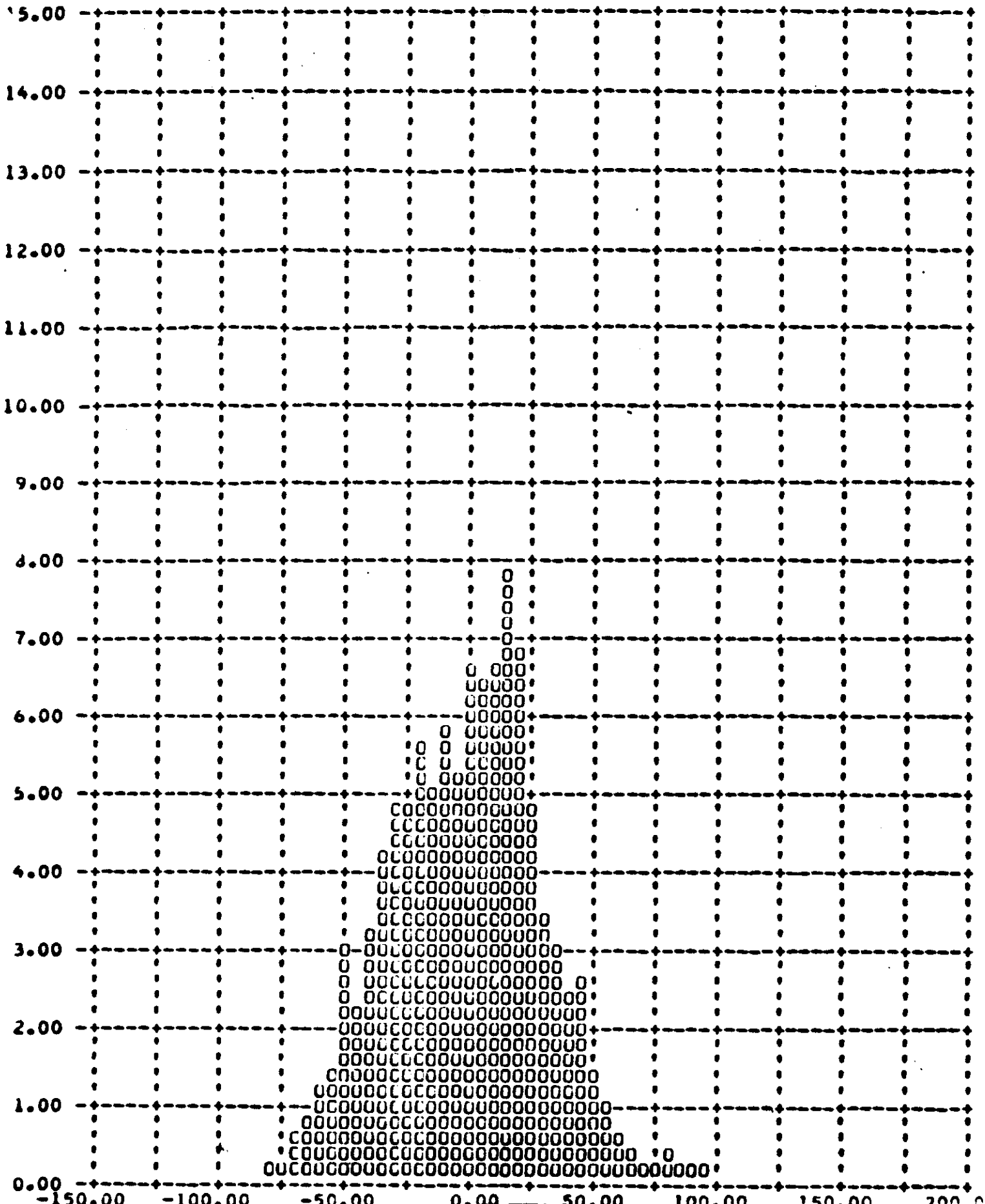
J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 2.01

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



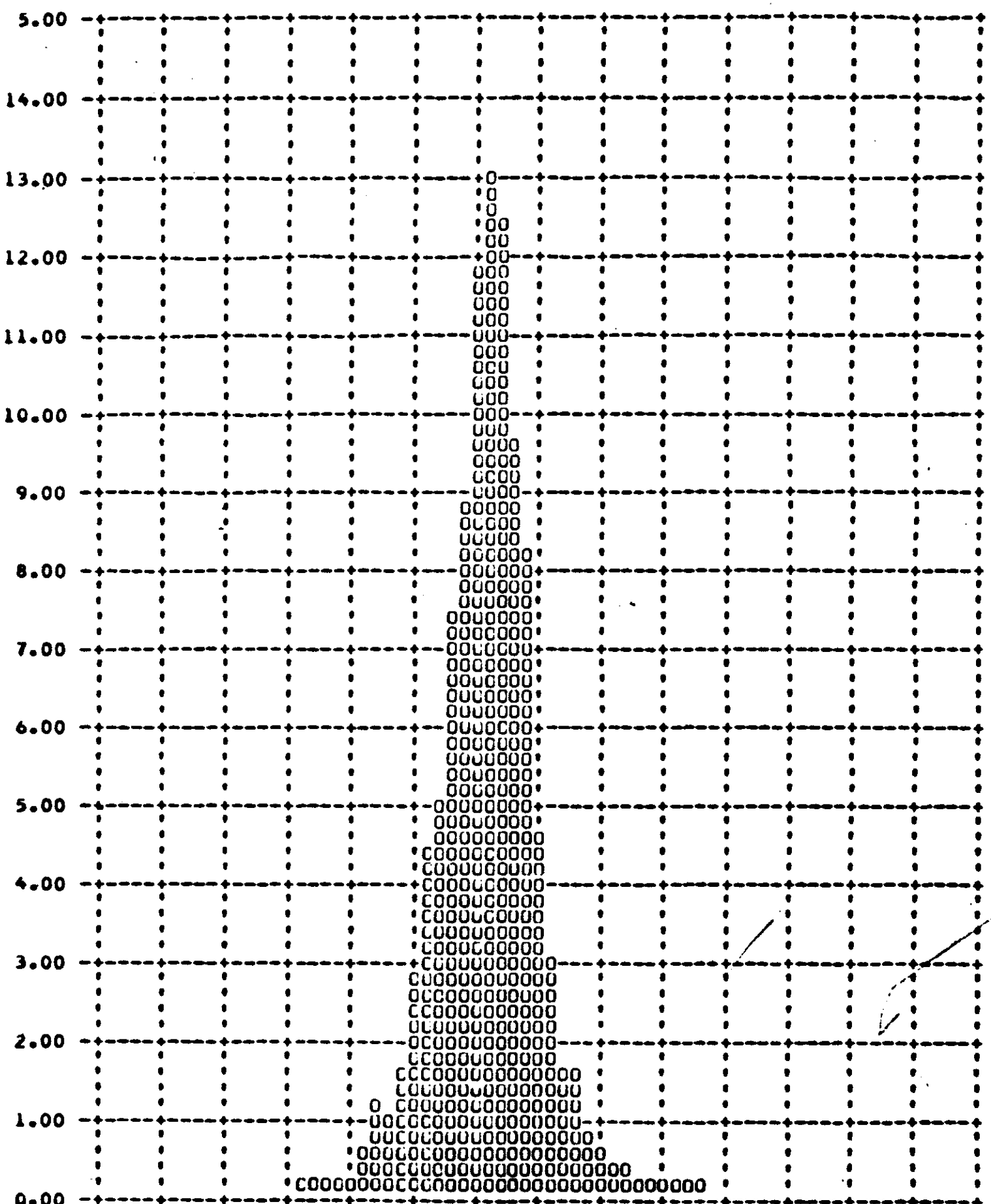
J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 48.89

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



J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 30.20

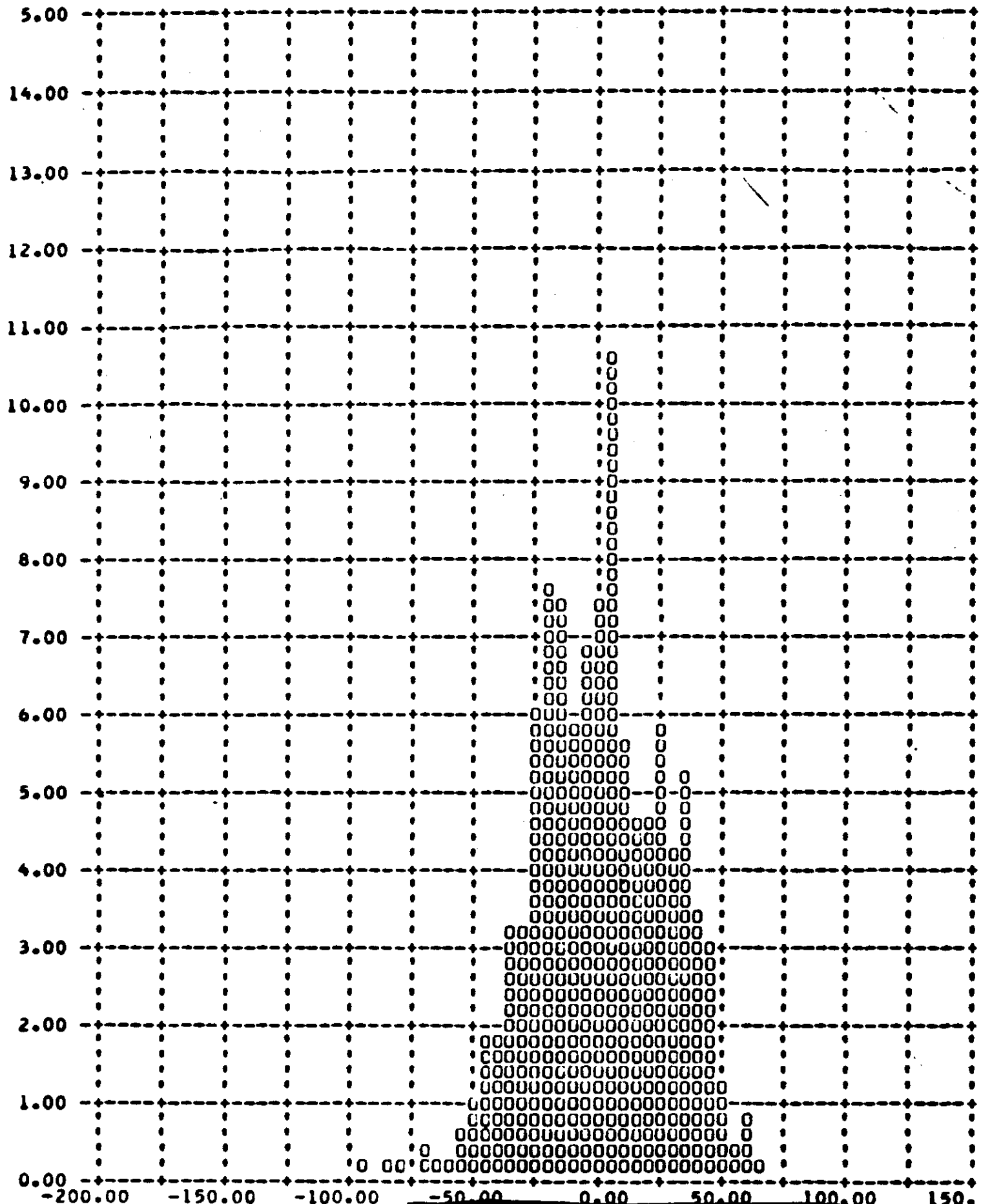
Y ROLL RATE ERRCR - DEG/HOUR (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1016A1 ~~TOP SECRET~~ [redacted]

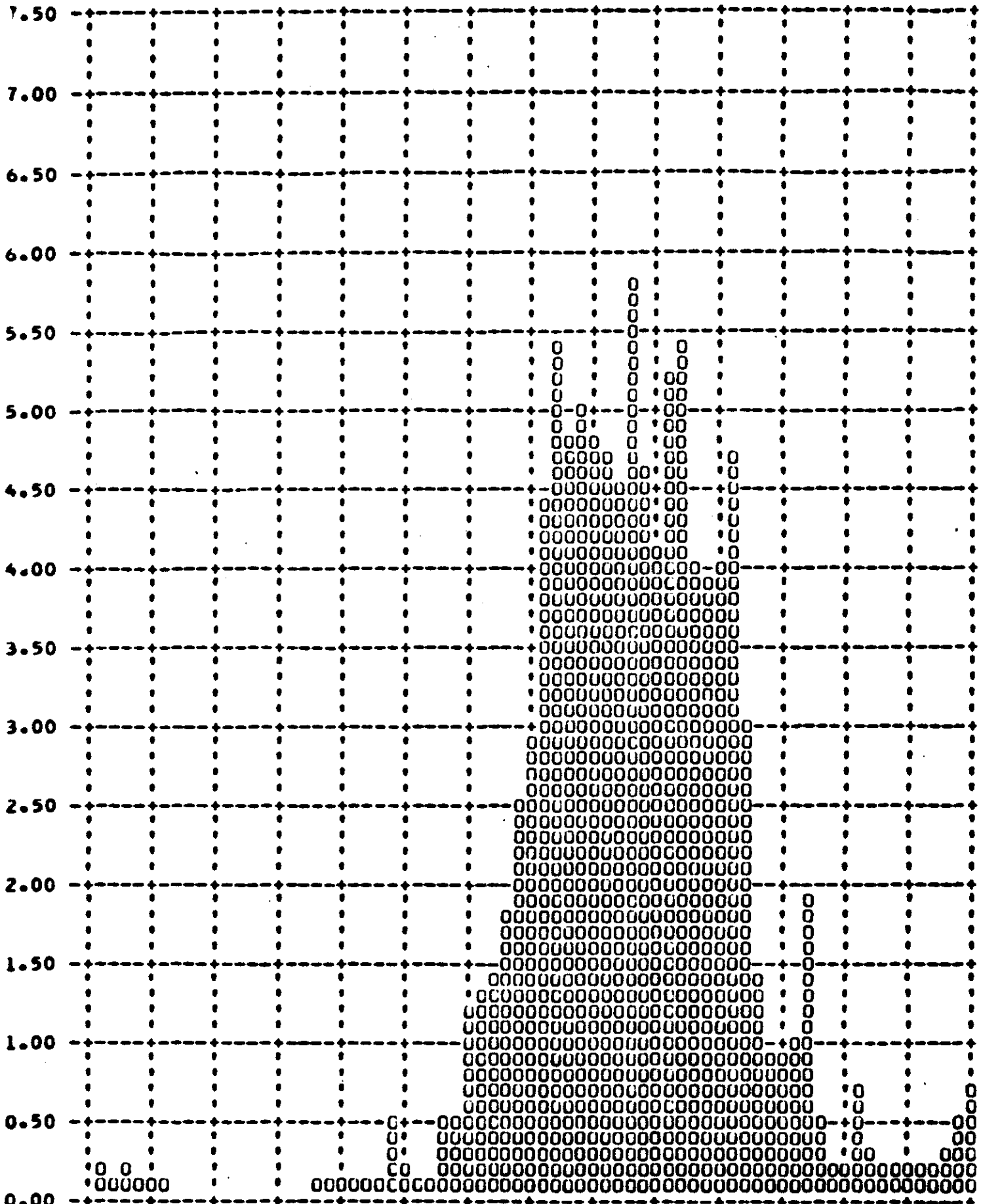
J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 40.40

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



J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.83

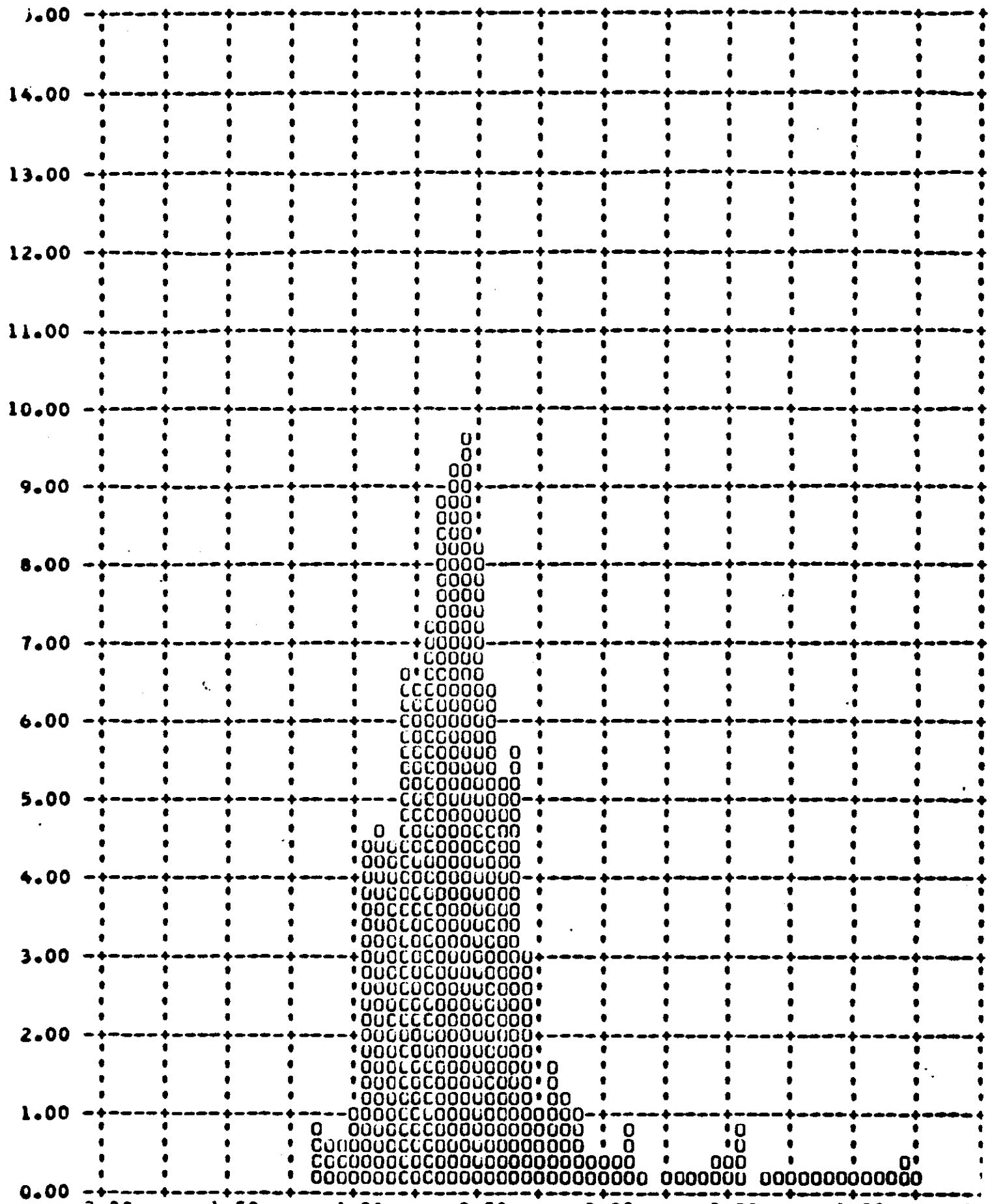
Y PITCH ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



MISSION 1016B1 ~~TOP SECRET~~ [redacted]

J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 0.93

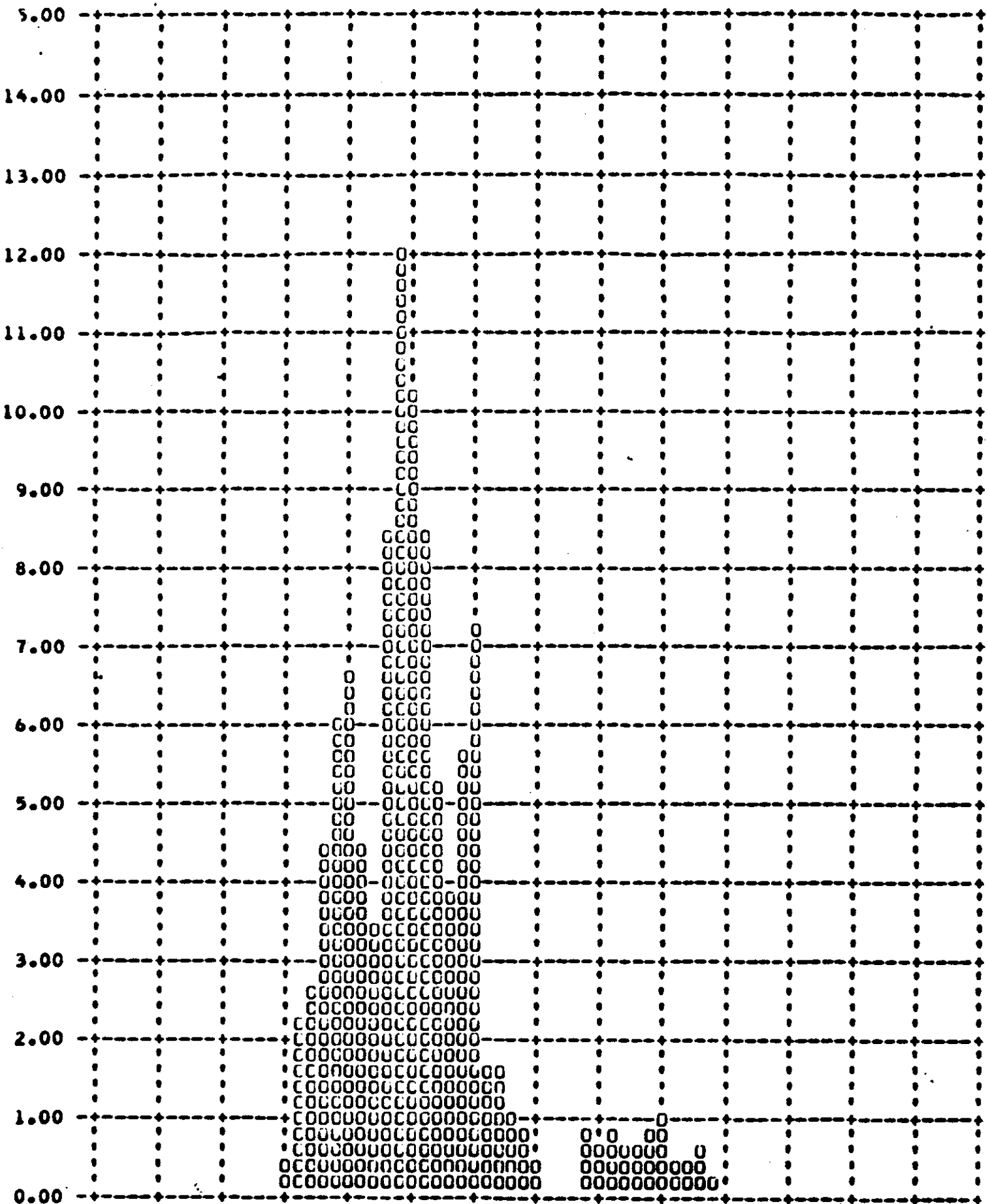
Y ROLL ANGLE ERROR - DEGREES (X) VERSUS FREQUENCY - PERCENT (Y)



[redacted]

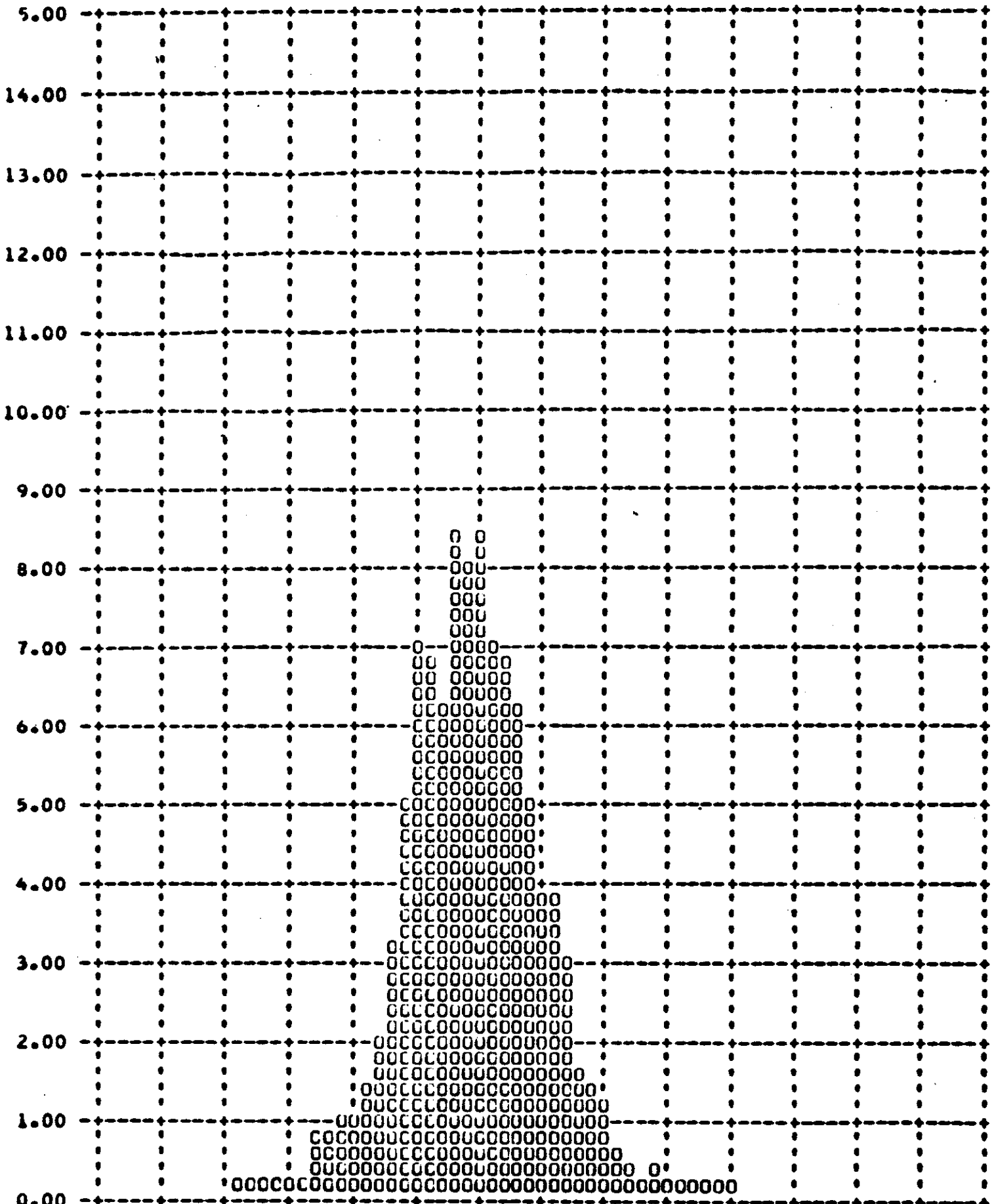
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 2.19

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



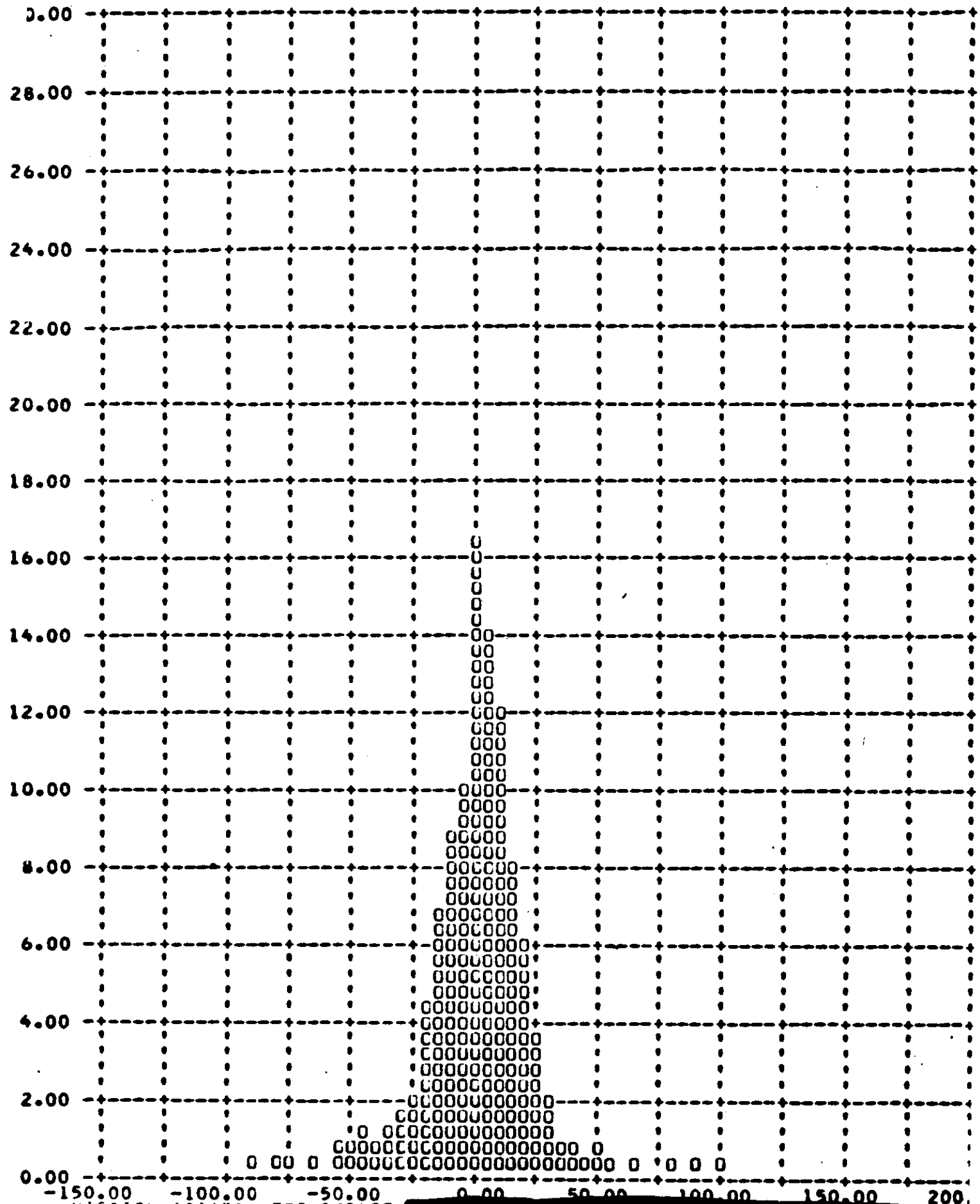
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 42.20

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



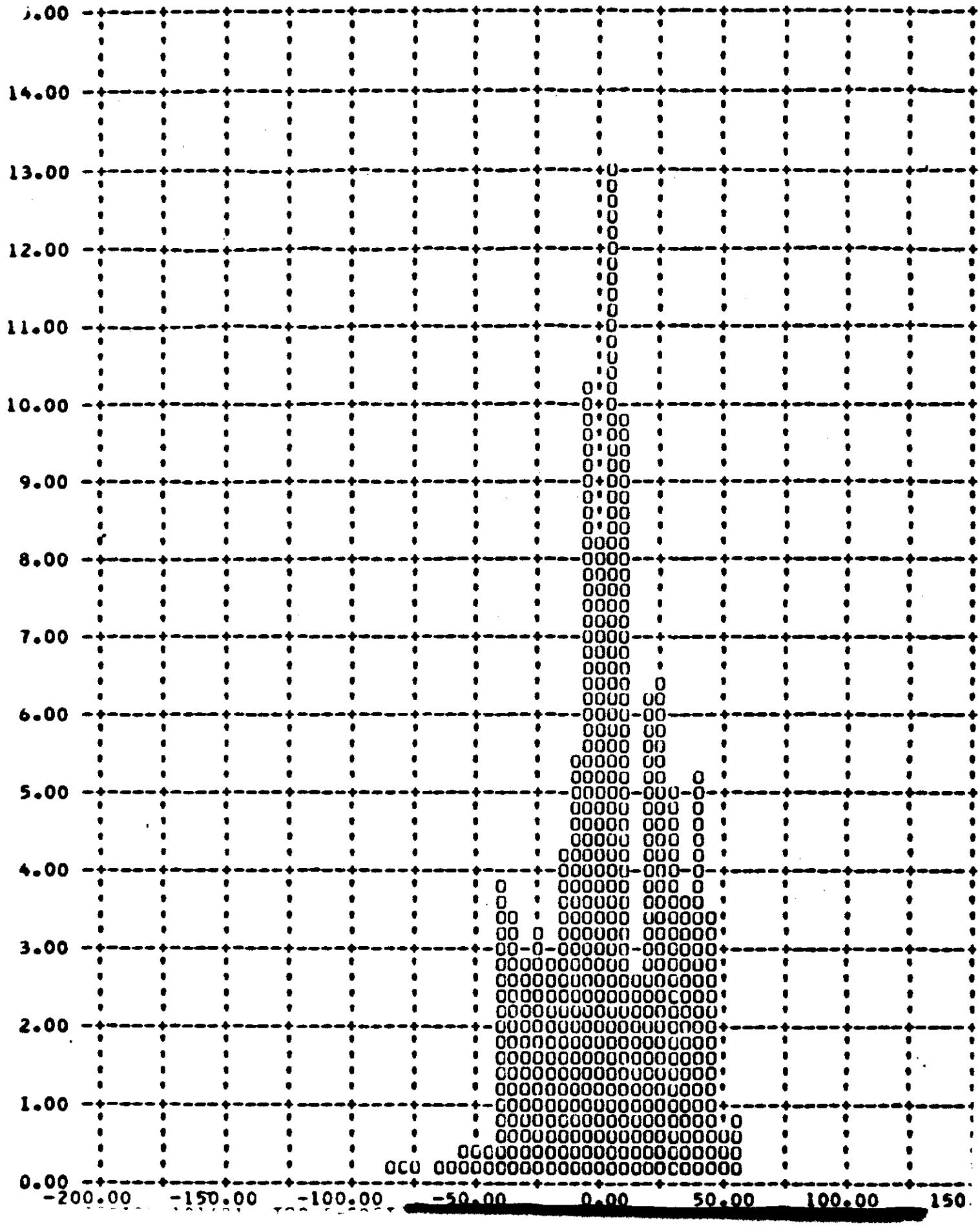
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 27.21

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



J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 39.94

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



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 distribut ion 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.

MISSION 1016

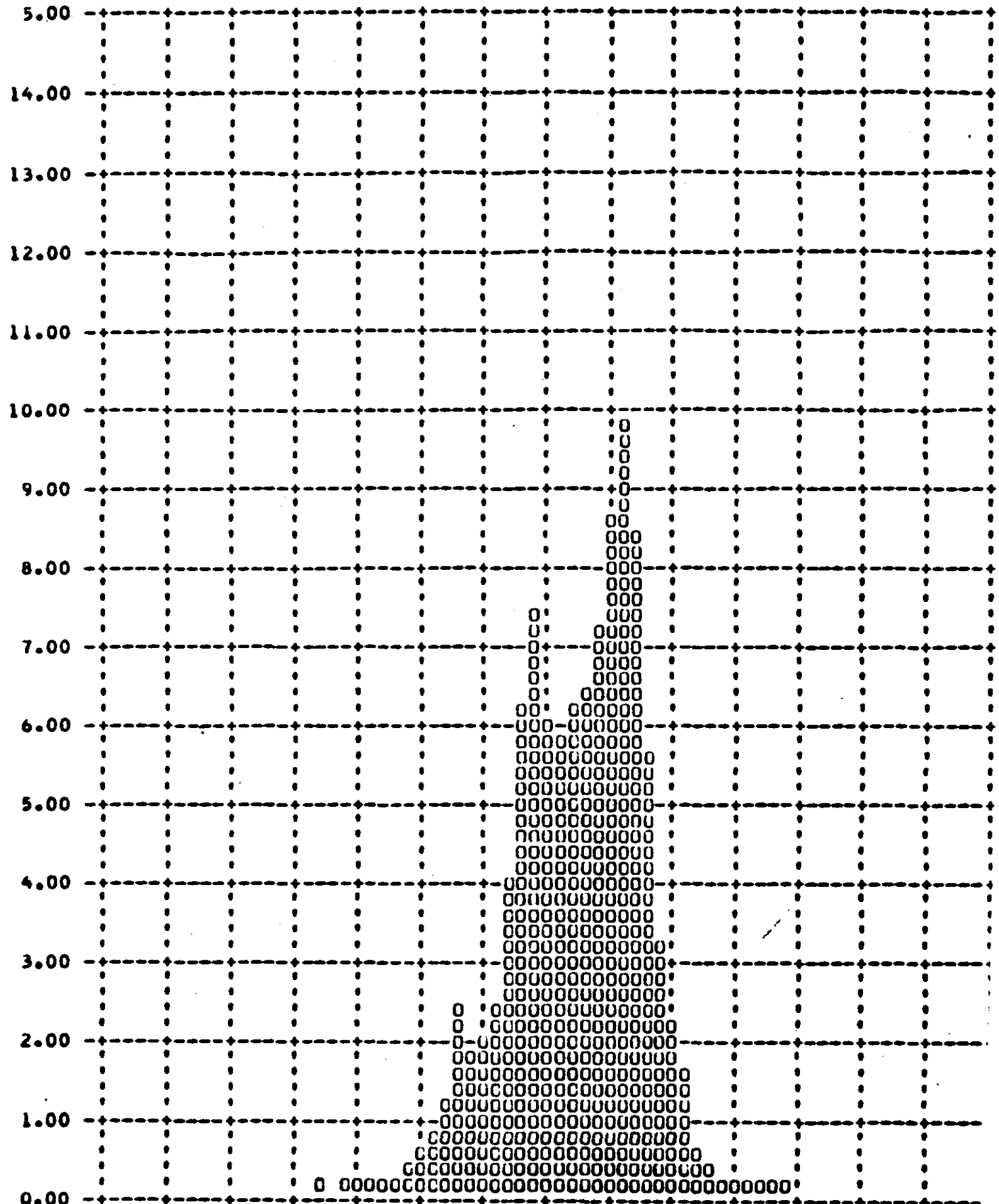
V/h RATIO AND RESOLUTION LIMITS

VALUE	UNITS	CAMERA	MISSION 1016-1 90%	MISSION 1016-1 Range	MISSION 1016-2 90%	MISSION 1016-2 Range
V/h Ratio Error	%	FWD	1.97	-4.6 to +2.8	1.52	-14.5 to +1.0
		AFT	2.80	-6.0 to +2.2	2.33	-15 to +1.0
Along Track Resolution Limit	Feet	FWD	5.47	0.2 to 7.6	4.86	0.5 to 21.5
		AFT	3.36	0.2 to 4.8	3.33	0.5 to 16.0
Cross Track Resolution Limit	Feet	FWD	10.47	0.6 to 13.8	8.04	5.4 to 11.8
		AFT	7.38	0.4 to 9.8	7.07	3.8 to 8.4

TABLE 15-1

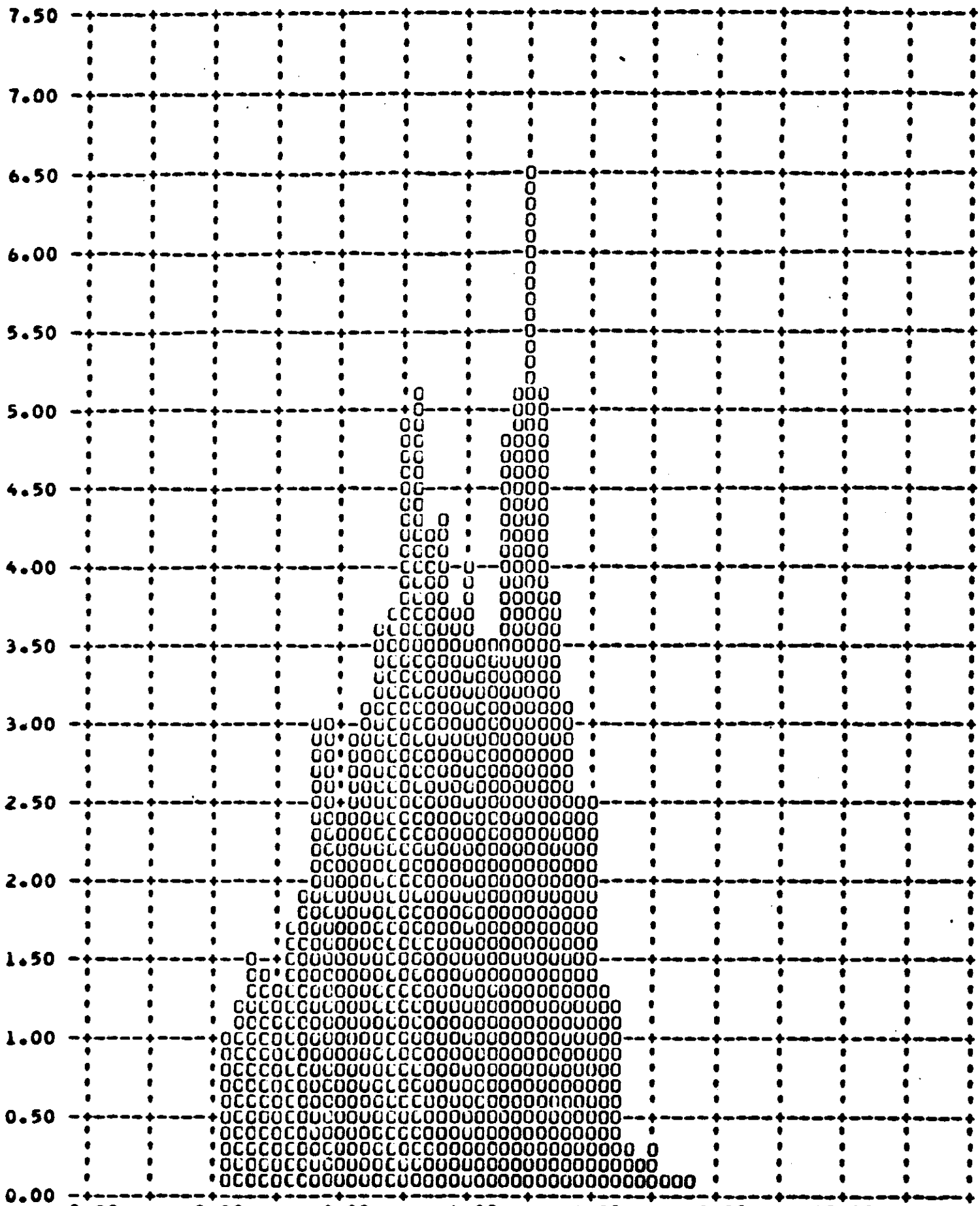
J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 1.97

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



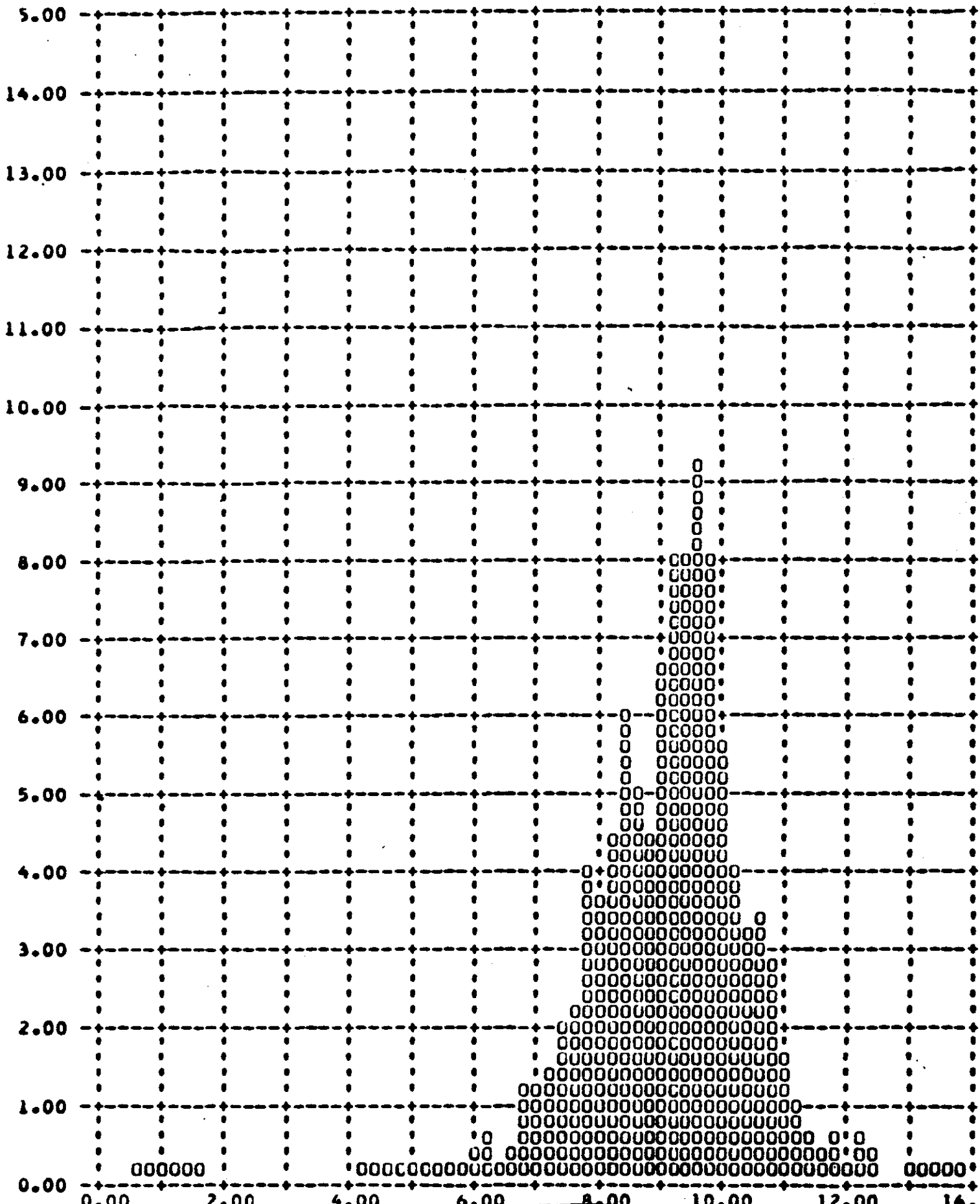
J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 5.47

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

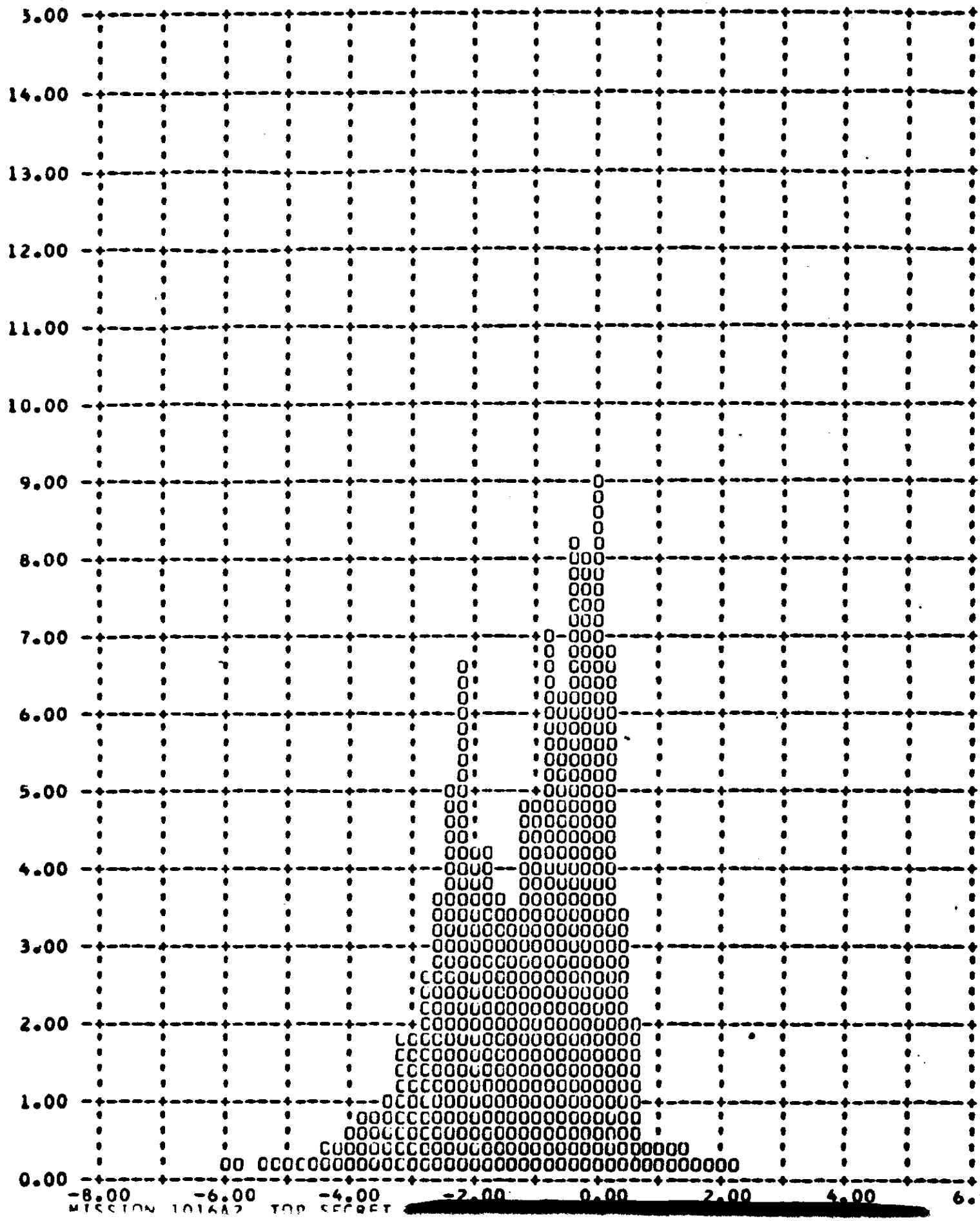


J-18 A BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP UMITTED 90 PERCENT = 10.47

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

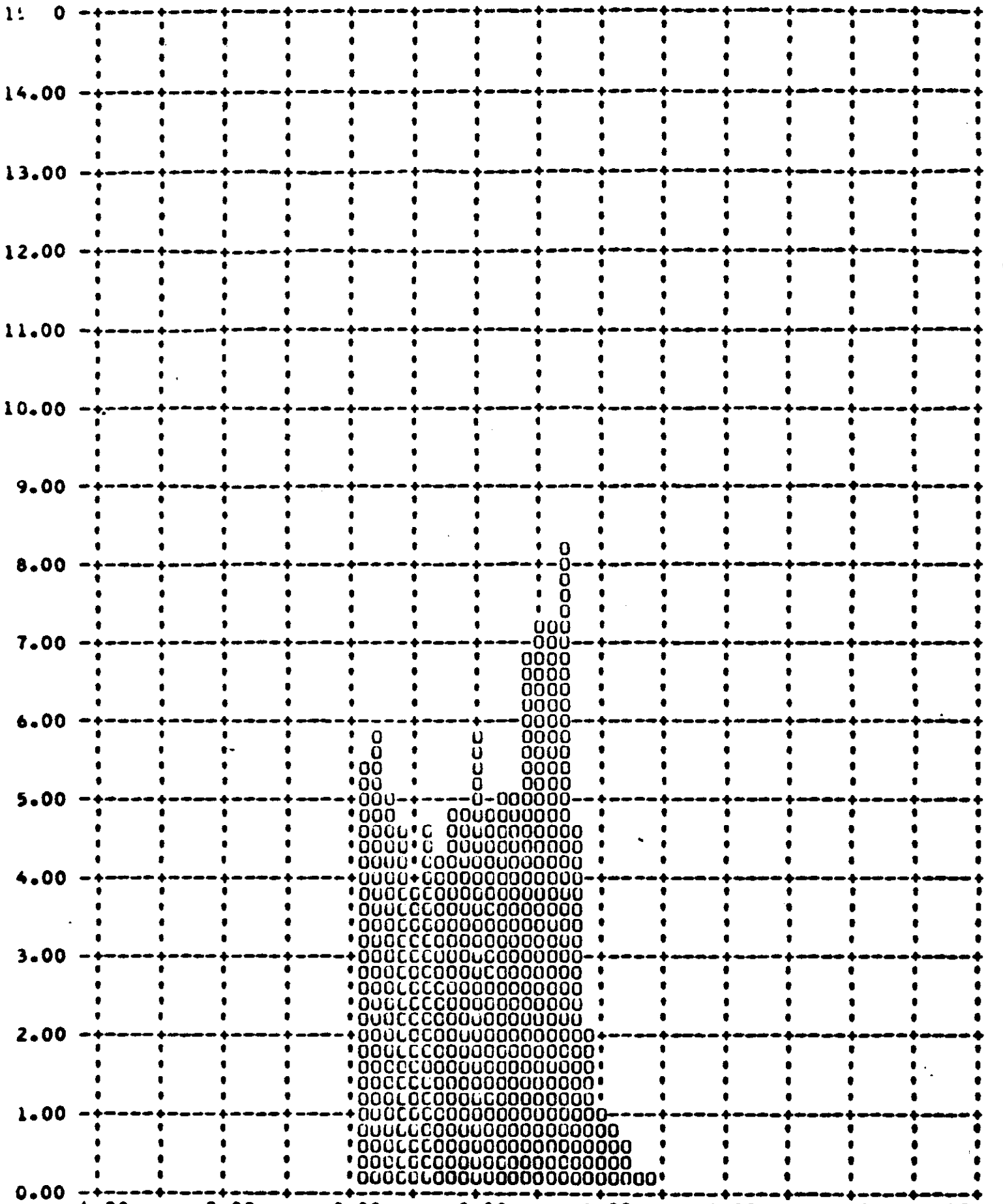


J-18 A BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 2.80



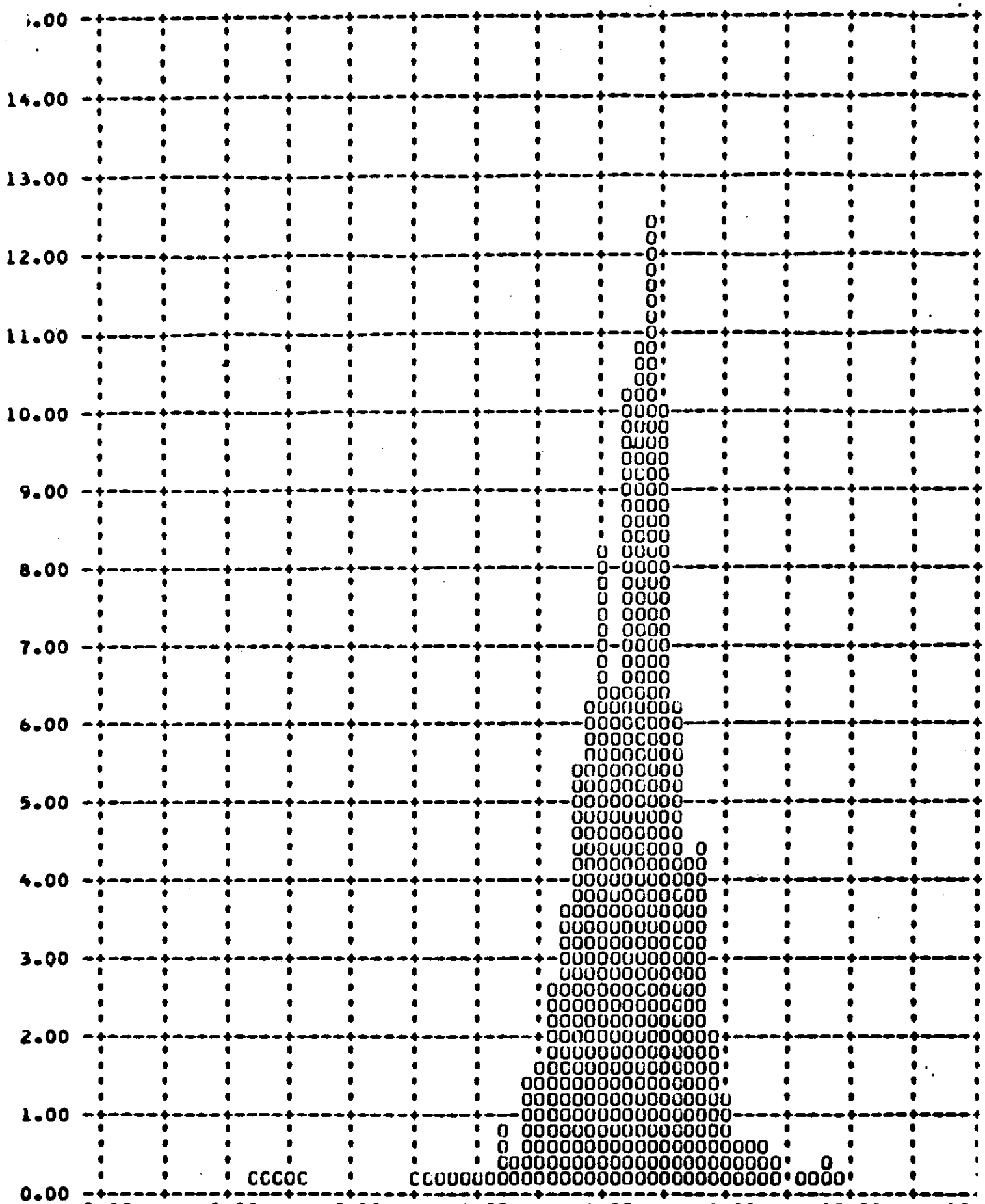
18 A BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3.36

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



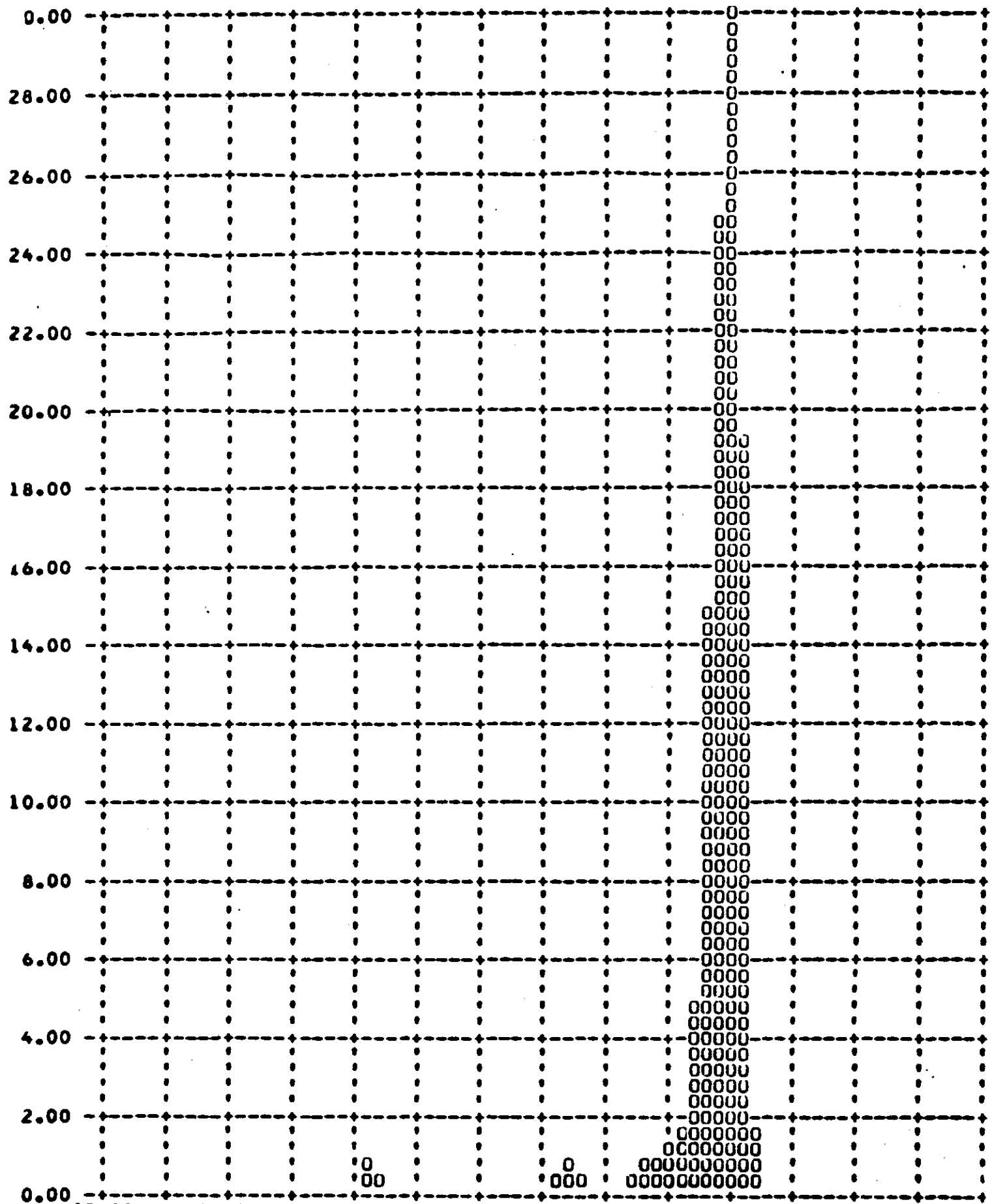
J-18 A BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 7.38

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



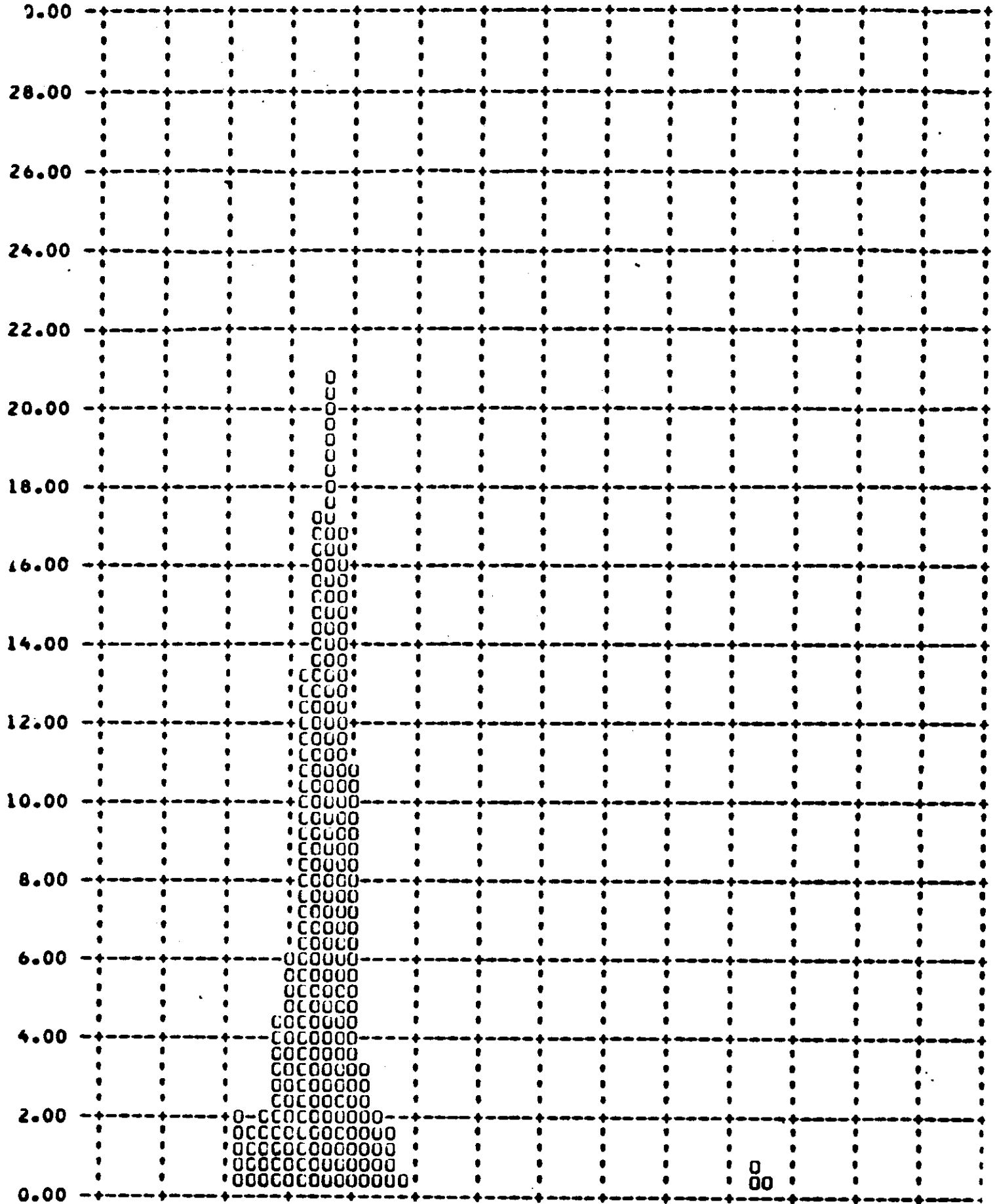
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 1.52

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



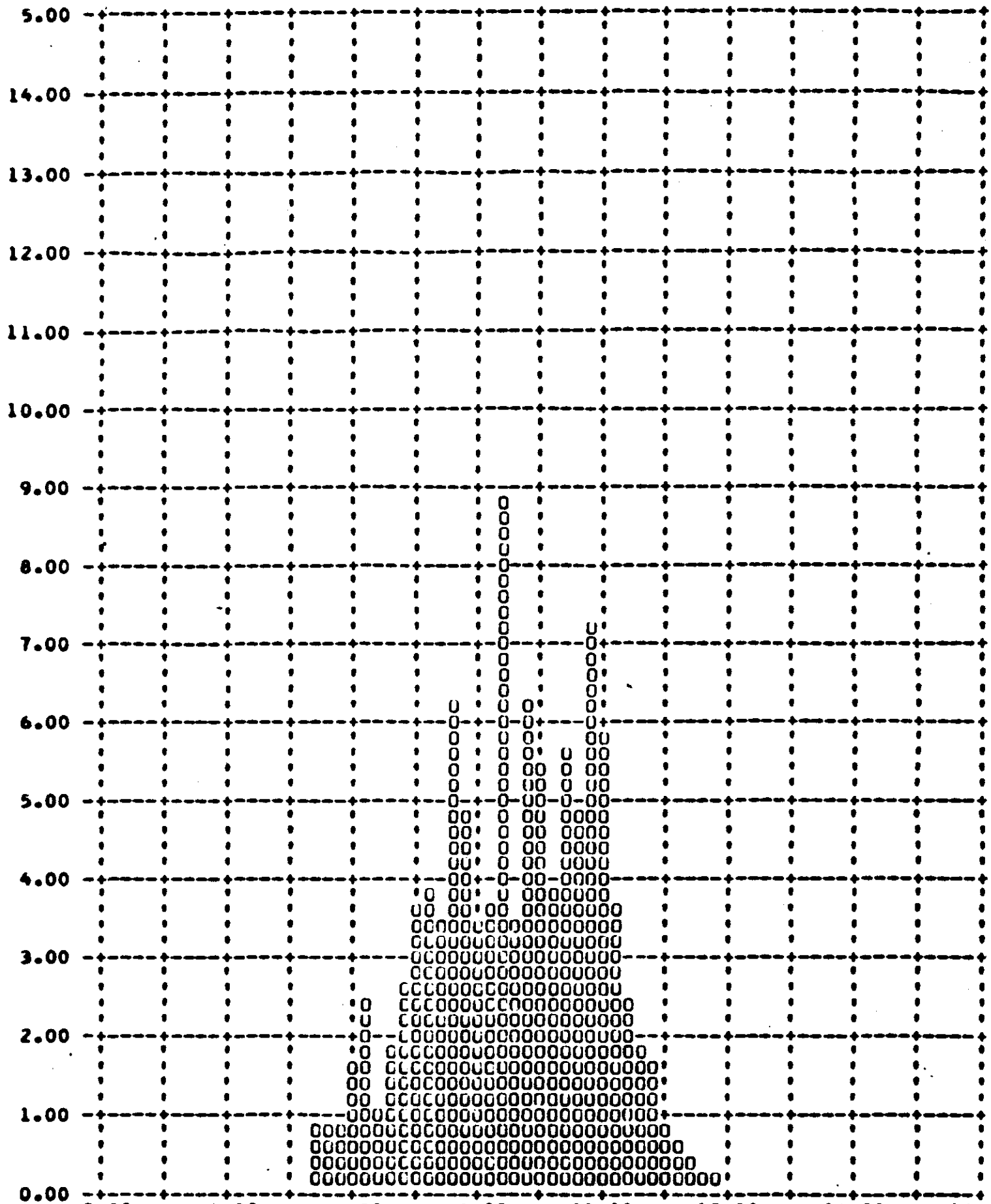
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 4.86

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



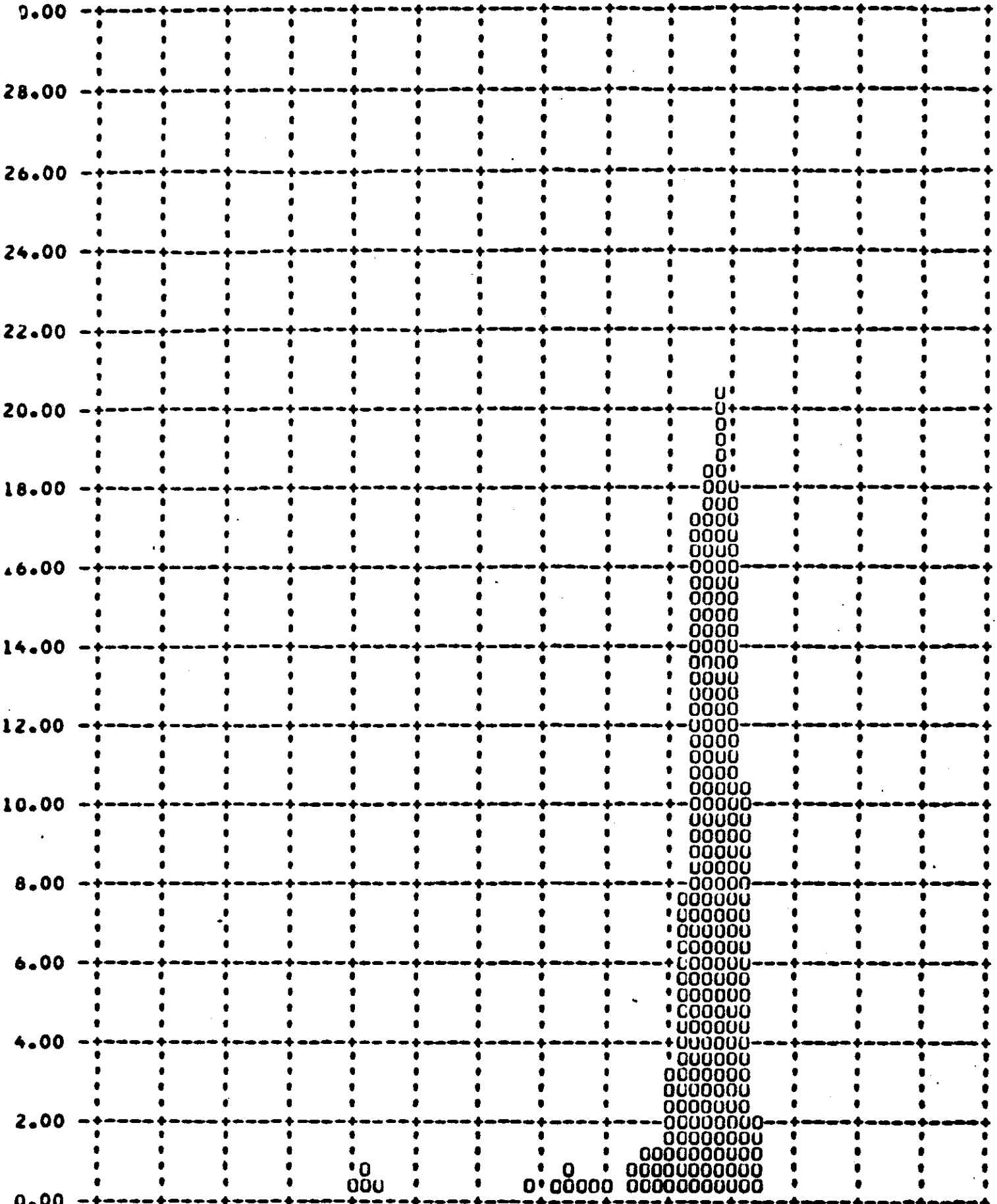
J-18 B BUCKET - FWD INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 8.04

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



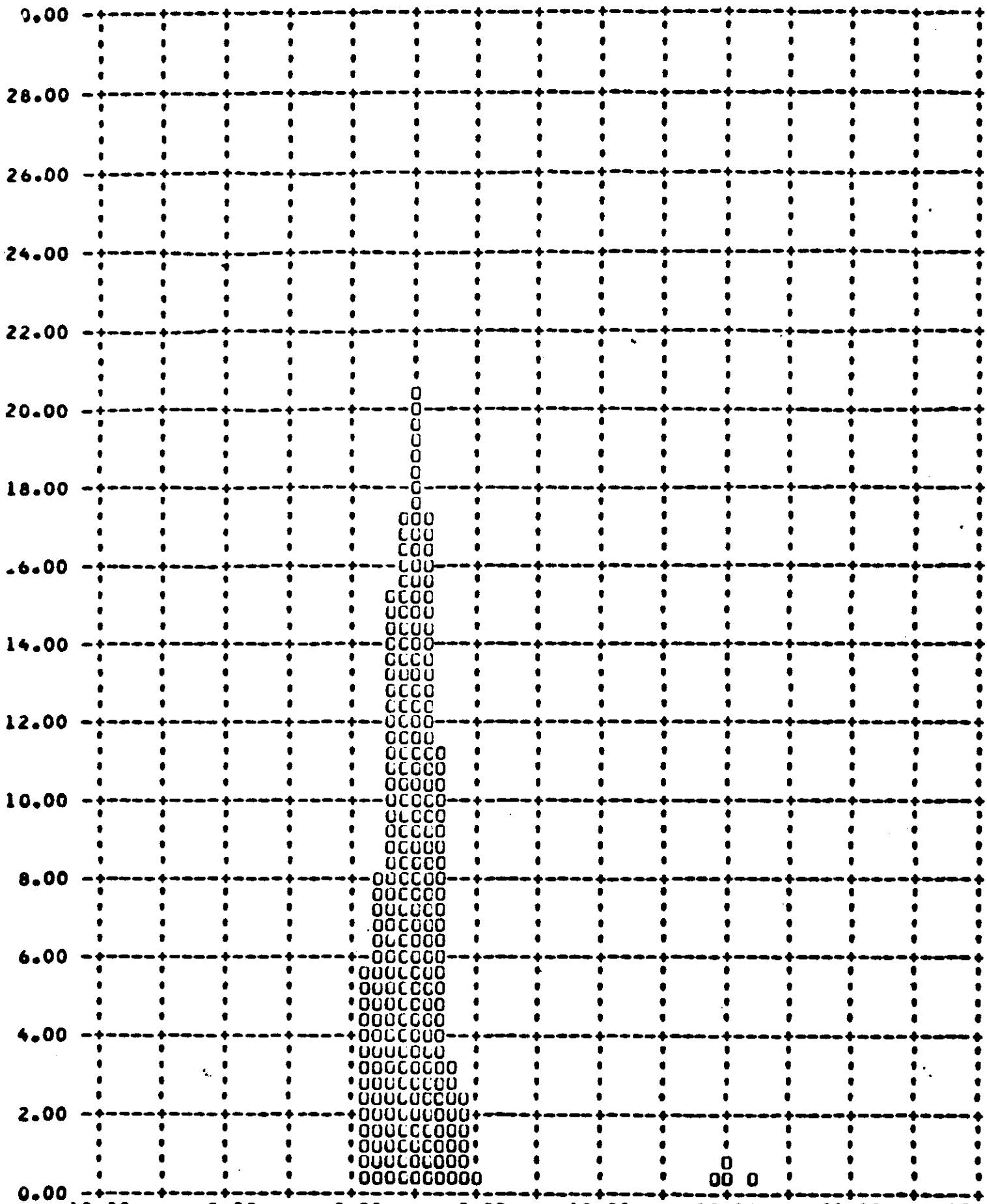
J-18 B BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 2.33

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



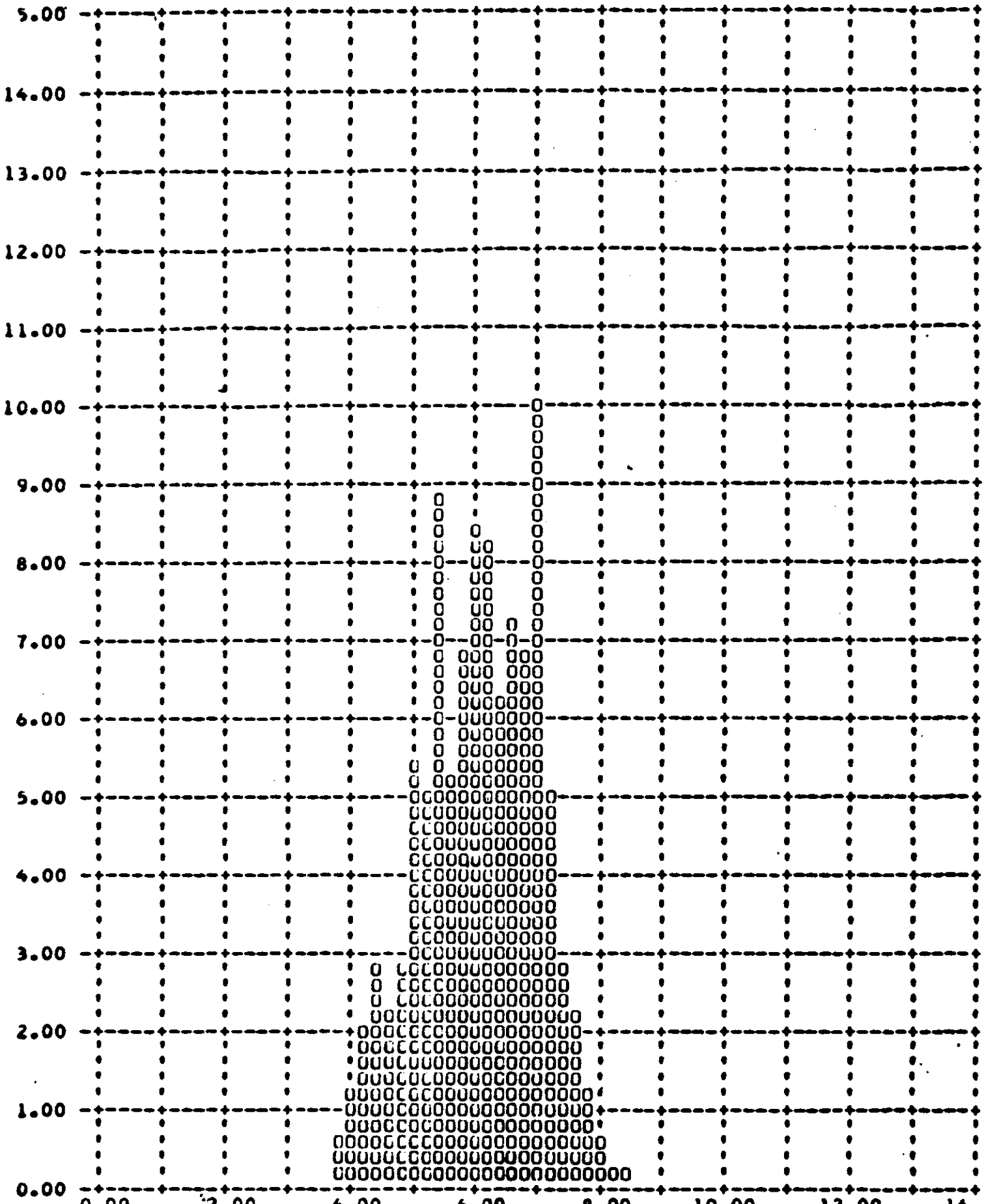
J-18 B BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 3.33

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



J-18 B BUCKET - AFT INSTR FRAMES 1-6 OF EACH OP OMITTED 90 PERCENT = 7.07

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



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 1016-1		Mission 1016-2	
Emulsion	B + F Density	Radiation	B + F Density	Radiation
Type 3401	0.17	0.5 R	0.20	0.7 R
Royal X Pan	0.19	0.4 R	0.25	0.5R

These levels are below that which will degrade the photography. It does not appear that the recent atmospheric contamination from atomic testing had any effect at higher elevations.

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 Tables 17-1.

Panoramic Camera Reliability

Sample Size - 90 opportunities to operate.
One failure - capping shutter on slave instrument on System M-7.
Assume - 3000 cycles per camera per mission.
Estimated Reliability = 98.1% at 50% confidence level.

Main Camera Door Reliability

Sample Size - 34 vehicles x 2 doors = 68 opportunities to operate
Estimated Reliability = 99.0% at 50% confidence level.

Payload Command and Control

Sample Size - 4560 hours operation in sample
One failure
Estimated Reliability = 96.5% at 50% confidence level

Payload Clock Reliability

Sample Size - 4560 hours operation in sample
No failures
Estimated Reliability = 98.5% at 50% confidence level

Estimated Reliability of Payload Functioning on orbit = 96.4% at 50% confidence level

Recovery System Reliability

34 opportunities to recover
1 failure - improper separation due to water seal - cutter failure
Estimated Reliability = 95.2% at 50% confidence level

Stellar-Index Camera Reliability

Sample begins with J5
Sample size = 7650 cycles
1 failure
Estimated Reliability = 91.0 at 50% confidence level

Horizon Camera Reliability

Sample (begins with J5) - 34,500 cycles.
Estimated Reliability of Single Camera = 97.0% at 50% confidence level.
Estimated Reliability for Four Horizon Cameras at a Parallel Redundant System = 99.9% at 50% confidence level.

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 / 97.3	52 DOORS / 0 / 98.6	3124 HOURS / 0 / 98.0	3124 HOURS / 0 / 98.0	96.1	18 CAPSULES / 1 / 90.7	3400 CYCLES / 3 / 83.1	12,000 CYCLES / 0 / 91.7
1009	64 / 1 / 97.4	64 / 0 / 98.7	3216 / 0 / 98.0	3216 / 0 / 98.0	96.2	20 / 1 / 91.8	4250 / 3 / 89.5	15,000 / 0 / 96.4
1010	68 / 1 / 97.6	56 / 0 / 98.8	3432 / 0 / 98.1	3432 / 0 / 98.1	96.4	22 / 1 / 92.5	5100 / 3 / 78.7	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	5525 / 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	5525 / 0 / 94.7	24,000 / 0 / 98.8
1013	78 / 1 / 97.8	62 / 0 / 99.0	3940 / 1 / 96.9	3940 / 0 / 98.3	96.0	28 / 1 / 94.0	5950 / 0 / 98.1	25,500 / 0 / 98.0
1014	82 / 1 / 97.9	64 / 0 / 99.0	4056 / 1 / 96.1	4056 / 0 / 98.3	96.1	30 / 1 / 94.4	6375 / 1 / 89.8	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
1016	90 / 1 / 98.1	68 / 0 / 99.0	4560 / 1 / 96.5	4560 / 0 / 98.5	96.4	34 / 1 / 95.2	7650 / 1 / 91.0	34,500 / 0 / 97.0

[redacted]

Table 17-1

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.

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	2/15/64	2138 Z	74.9	99.9	29.0	49/112	124	0.250	W-21	125	0.250	W-21	D29/29/29 / D42/42/37
1006	J-09	1176	6/4/64	2259 Z	79.9	84.0	63.2	65/128	148	0.200	W-21	149	0.200	W-21	D45/47/45 / D49/53/42
1007	J-07	1609	6/19/64	2318 Z	85.0	99.2	41.5	65/128	144	0.250	W-25	145	0.200	W-21	D43/43/43 / D54/56/51
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	D48/45/48 / D33/28/33
1009	J-12	1605	8/5/64	2316 Z	80.1	99.6	39.5	49/128	154	0.200	W-21	155	0.200	W-21	D56/54/56 / D38/38/34
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	D41/41/41 / D44/46/44
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	D30/30/30 / D57/57/57
1012	J-13	1179	10/17/64	2202 Z	75.0	98.2	32.4	49/81	156	0.200	W-21	157	0.200	W-21	D31/31/47 / D46/52/53
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	D52/49/55 / D47/48/54
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	D53/59/49 / D50/44/46
1015	J-17	1607	12/19/64	2110 Z	74.9	96.7	21.5	81/175	138	0.250	W-25	141	0.175	W-21	D61/61/61 / D58/58/58
1016	J-18	1608	1/15/65	2101 Z	74.9	99.4	30.2	81/159	132	0.250	W-25	133	0.175	W-21	D55/55/50 / D59/50/59

REC/JOB 4/65

Table 18-1

PERFORMANCE SUMMARY

MISSION NUMBER	CAMERA	SERIAL NUMBER	M I P VALUE	VISUAL RES	AFSPPL MTF/AIM SLIT (μ)	AFSPPL MTF/AIM AVERAGE	[redacted] SLIT (μ)	[redacted] AVERAGE	[redacted] AVERAGE ALL	[redacted] 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	115	127	0.45	0.42	1.08	30.0	25.0	21.0	5.1	7.7	8.1
1004-2	AFT			86		80		96	117	124									
	FWD	125	85	76		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	65	43	88	84	97	0.41	0.42	1.14	26.8	28.5	27.8	15.4	15.8	6.7
1006-2	AFT			74		71		90	87	92									
	FWD	149	90	85		64		81	84	90	0.49	0.40	1.08	31.1	27.9	30.0	11.6	10.1	7.0
	AFT			83		72		90	87	94									
1007-1	FWD	144	85	80	350	60	43	87	82	91	0.58	0.46	1.43	37.6	23.9	29.9	3.6	3.1	9.4
1007-2	AFT			86		65		83	97	110							4.6	2.1	7.6
	FWD	145	85	79		72		81	68	74	0.64	0.47	—	43.0	25.8	—	3.2	2.4	—
	AFT			81		77		92	74	81							4.2	1.8	—
1008-1	FWD	150	85	80	350	80	43	95	81	89	0.59	0.39	0.94	43.8	23.9	29.6	2.9	4.9	8.9
1008-2	AFT			76		73		89	86	95									
	FWD	151	85	82		84		96	83	92	0.63	0.36	0.71	42.9	24.0	32.5	2.8	4.2	5.4
	AFT			79		91		83	85	91									
1009-1	FWD	154	85	92	350	80	—	—	75	88	0.65	0.65	0.71	29.2	22.7	27.6	3.3	5.3	5.8
1009-2	AFT			89		85			75	83									
	FWD	155	85	94		85			76	84	0.48	0.65	0.59	33.6	23.9	27.2	2.6	4.9	5.9
	AFT			87		87			72	79									
1010-1	FWD	152	85	90	350	90	80	88	87	96	0.93	0.30	0.87	39.1	23.6	30.8	4.5	2.3	4.4
1010-2	AFT			88		86		80	92	103									
	FWD	153	85	92		81		82	82	93	0.59	0.70	1.21	45.4	23.6	30.7	4.6	7.5	3.8
	AFT			90		82		85	87	98									
1011-1	FWD	160	90	84	350	76	80	96	78	87	0.77	0.39	0.97	43.1	28.9	31.1	2.3	5.3	6.8
	AFT	161		84		77		86	83	93									
1012-1	FWD	156	85	92	—	—	80	91	84	98	0.65	0.51	—	47.1	33.2	—	1.5	4.8	—
1012-2	AFT			91				87	89	100									
	FWD	157	85	91				89	84	91	0.97	0.77	0.51	45.2	30.7	20.4	5.9	3.3	5.9
	AFT			89				96	85	98									
1013-1	FWD	158	85	89	—	—	80	94	85	99	0.64	0.32	1.34	36.9	29.0	32.3	3.7	7.8	8.3
	AFT	159		77				97	81	103	0.64	0.32	1.34	36.9	29.0	32.3	4.5	6.8	8.2
1014-1	FWD	162	80	87	—	—	80	78	74	86	0.62	0.41	1.46	35.0	36.1	38.5	2.2	6.2	8.8
1014-2	AFT			83				80	95	107	0.62	0.41	1.44	34.8	36.0	38.3	3.3	2.8	6.3
	FWD	139	80	83				75	70	77	1.06	0.55	—	38.4	36.4	—	1.4	6.4	—
	AFT			86				84	80	88	1.06	0.59	—	38.1	36.0	—	3.2	2.2	—
1015-1	FWD	138	85	87	—	—	80	76	90		0.65	0.38	0.53	47.0	29.4	38.2	5.0	8.8	7.8
1015-2	AFT			87				73	97	—	0.64	0.39	0.53	46.9	29.2	38.2	6.3	3.4	9.8
	FWD	141	85	83				72	89		*								*
	AFT			82				72	90										
1016-1	FWD	132	85	85	—	—	80	56	81		0.72	0.83	2.01	48.9	30.2	40.4	2.0	5.8	10.9
1016-2	AFT			83				61	94	—	0.72	0.83	2.01	48.4	30.1	40.4	2.8	3.4	7.4
	FWD	133	85	90				55	92		0.83	0.93	2.19	42.2	27.2	39.9	1.8	4.9	8.0
	AFT			91				56	91		0.83	0.93	2.19	42.2	27.3	39.9	2.3	3.3	7.1

* DATA NOT PRESENTLY AVAILABLE

TOP SECRET [redacted]

No [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	79	17	0	79	21	0.26	1.89	0.83	0.78	0.43	2.43	1.97	2.02	1.00	2.43	2.04	2.08	0	4	60	31	5	35
	AFT	-3	61	25	124	5	74	21	4	79	17	0	80	20	0.22	1.56	0.76	0.70	0.93	2.45	1.92	1.94	1.08	2.43	1.98	2.03	1	4	67	26	3	35
1004-2	FWD	-4	68	10	131	7	76	17	37	50	13	4	83	13	0.29	1.80	0.83	0.78	0.36	2.30	1.84	1.90	0.41	2.37	1.87	1.93	0	4	59	27	9	35
	AFT	-4	68	10	131	7	76	17	37	50	13	4	77	19	0.29	1.91	0.81	0.73	0.36	2.39	1.89	1.99	0.45	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	60
	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	60
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	1.49	1.50	1.30	2.33	2.11	2.16	2	21	72	4	0	45
	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	45
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	1.36	2.17	2.21	20	8	67	5	0	60
	AFT	11	49	48	102	0	100	0	10	42	48	8	77	17	0.26	1.76	0.58	0.55	0.78	2.31	1.52	1.52	1.54	2.39	2.20	2.24	1	13	80	5	1	60
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	16	9	71	2	0	65
	AFT	31	57	38	111	0	100	0	19	41	40	3	88	9	0.24	1.56	0.60	0.56	0.44	2.27	1.50	1.52	0.84	2.41	2.17	2.25	1	16	74	9	1	65
1008-1	FWD	30	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	65
	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	1.55	1.55	1.10	2.35	2.18	2.22	1	3	69	27	0	65
1009-1	FWD	12	49	42	132	0	100	0	1	26	73	0	34	66	0.32	1.40	0.65	0.62	0.85	2.41	1.53	1.82	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	0.83	2.51	2.32	2.36	1	5	73	20	0	50
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	58
	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	59
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	48
	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	2.26	9	4	81	6	0	48
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	45
	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	0.56	0.50	2.35	1.57	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	60
	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	60
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	58	26	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	18	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	1.38	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	65	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	1.95	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	65	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
1016-1	FWD	5	69	13	76	0	7	93	1	41	58	0	59	41	0.13	1.55	0.51	0.45	0.70	2.43	1.67	1.68	0.85	2.44	1.91	1.90	19	17	56	8	1	45
	AFT	4	69	12	76	0	27	73	0	26	74	0	42	58	0.22	1.65	0.64	0.58	0.62	2.34	1.69	1.72	0.98	2.46	1.90	1.92	11	9	62	17	1	45
1016-2	FWD	1	84	-4	76	0	8	92	0	31	69	0	48	52	0.18	1.58	0.48	0.44	0.29	2.35	1.45	1.44	0.34	2.50	1.76	1.82	22	18	56	3	0	40
	AFT	0	84	-4	76	0	19	81	1	27	72	0	40	60	0.20	1.88	0.55	0.49	0.26	2.32	1.52	1.60	0.30	2.49	1.75	1.82	23	5	65	6	1	40

[redacted]

Table 18-3

APPENDIX A

[redacted]

MISSION • 1016-1 • INSTRUMENT • FRWD 02/08/65 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	1	0	0	1	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	1	0	0	0	0	0	1	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	1	0	0	0	0	0	1	0	0
0.21	0	0	0	0	0	0	0	0	0	0	0	0
0.22	0	0	0	2	0	0	0	0	0	2	0	0
0.23	0	0	0	0	0	0	0	0	0	0	0	0
0.24	0	0	0	1	0	0	0	0	0	1	0	0
0.25	0	0	0	2	0	0	2	0	0	4	0	0
0.26	0	0	0	6	0	0	2	0	0	8	0	0
0.27	0	0	0	0	0	0	2	0	0	2	0	0
0.28	0	0	0	3	0	0	2	0	0	5	0	0
0.29	0	0	0	0	0	0	5	0	0	5	0	0
0.30	0	0	0	1	0	0	5	0	0	6	0	0
0.31	0	0	0	1	0	0	0	0	0	1	0	0
0.32	0	0	0	2	0	0	2	0	0	4	0	0
0.33	0	0	0	1	0	0	1	0	0	2	0	0
0.34	0	0	0	2	0	0	3	0	0	5	0	0
0.35	0	0	0	0	0	0	1	0	0	1	0	0
0.36	0	0	0	3	0	0	4	0	0	7	0	0
0.37	0	0	0	5	0	0	2	0	0	7	0	0
0.38	0	0	0	3	0	0	4	0	0	7	0	0
0.39	0	0	0	1	0	0	0	0	0	1	0	0
0.40	0	0	0	6	0	0	5	0	0	11	0	0
0.41	0	0	0	1	0	0	0	0	0	1	0	0
0.42	0	0	0	1	0	0	2	0	0	3	0	0
0.43	0	0	0	1	0	0	2	0	0	3	0	0
0.44	0	0	0	5	0	0	1	0	0	6	0	0
0.45	0	0	0	2	0	0	3	0	0	5	0	0
0.46	0	0	0	4	0	0	2	0	0	6	0	0
0.47	0	0	0	2	0	0	0	0	0	2	0	0
0.48	0	0	0	3	0	0	4	0	0	7	0	0
0.49	0	0	0	1	0	0	2	0	0	3	0	0
0.50	0	0	0	3	0	0	3	0	0	6	0	0
SUBTOTAL	0	0	0	64	0	0	60	0	0	124	0	0

[redacted]

[redacted]

MISSION • 1016-1 • INSTRUMENT • FRWD 02/08/65 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	1	0	0	0	0	0	1	0	0
0.53	0	0	0	1	0	0	0	0	0	1	0	0
0.54	0	0	0	0	0	0	2	0	0	2	0	0
0.55	0	0	0	4	0	0	2	0	0	6	0	0
0.56	0	0	0	1	0	0	0	0	0	1	0	0
0.57	0	0	0	1	0	0	0	0	0	1	0	0
0.58	0	0	0	5	0	0	2	0	0	7	0	0
0.59	0	0	0	1	0	0	1	0	0	2	0	0
0.60	0	0	0	1	0	0	1	0	0	2	0	0
0.61	0	0	0	0	0	0	0	0	0	0	0	0
0.62	0	0	0	3	0	0	1	0	0	4	0	0
0.63	0	0	0	2	0	0	0	0	0	2	0	0
0.64	0	0	0	2	0	0	1	0	0	3	0	0
0.65	0	0	0	0	0	0	0	0	0	0	0	0
0.66	0	0	0	1	0	0	0	0	0	1	0	0
0.67	0	0	0	0	0	0	0	0	0	0	0	0
0.68	0	0	0	1	0	0	0	0	0	1	0	0
0.69	0	0	0	0	0	0	0	0	0	0	0	0
0.70	0	0	0	3	1	0	0	0	0	3	1	0
0.71	0	0	0	1	0	0	0	0	0	1	0	0
0.72	0	0	0	1	0	0	2	0	0	3	0	0
0.73	0	0	0	0	0	0	0	0	0	0	0	0
0.74	0	0	0	1	0	0	0	0	0	1	0	0
0.75	0	0	0	0	0	0	0	0	0	0	0	0
0.76	0	0	0	2	0	0	1	0	0	3	0	0
0.77	0	0	0	0	0	0	0	0	0	0	0	0
0.78	0	0	0	1	0	0	1	0	0	2	0	0
0.79	0	0	0	1	0	0	0	0	0	1	0	0
0.80	0	0	0	0	0	0	0	0	0	0	0	0
0.81	0	0	0	0	0	0	0	0	0	0	0	0
0.82	0	0	0	3	0	0	0	0	0	3	0	0
0.83	0	0	0	1	0	0	0	0	0	1	0	0
0.84	0	0	0	0	0	0	1	0	0	1	0	0
0.85	0	0	0	1	1	1	1	0	0	2	1	1
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	2	0	0	0	0	0	2	0	0
0.89	0	0	0	0	0	0	0	0	0	0	0	0
0.90	0	0	0	1	0	0	0	0	0	1	0	0
0.91	0	0	0	0	0	0	0	0	0	0	0	0
0.92	0	0	0	2	0	0	1	0	0	3	0	0
0.93	0	0	0	0	0	0	1	0	0	1	0	0
0.94	0	0	0	0	0	0	0	0	0	0	0	0
0.95	0	0	0	0	0	0	1	1	0	1	1	0
0.96	0	0	0	0	0	0	0	1	0	0	1	0
0.97	0	0	0	0	0	0	0	0	0	0	0	0
0.98	0	0	0	2	0	0	1	0	0	3	0	0
0.99	0	0	0	1	0	0	0	0	0	1	0	0
1.00	0	0	0	2	2	0	0	1	0	2	3	0
SUBTOTAL	0	0	0	49	4	1	20	3	0	69	7	1

[redacted]

Table A-1

[redacted] [redacted] [redacted]

MISSION • 1016-1 • INSTRUMENT • AFT 02/08/65 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	120	120	142	163	163	132	283	283	274

MISSION 1016-1 INSTR - AFT 02/08/65 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	120	0 PC	22 PC	57 PC	18 PC	3 PC
FULL	163	19 PC	0 PC	66 PC	15 PC	0 PC
ALL LEVELS	283	11 PC	9 PC	62 PC	17 PC	1 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] [redacted] [redacted]

Table A-2

[redacted] TOP SECRET [redacted]

No. [redacted]

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.67 • MEDIAN • 0.60 • STD DEV • 0.30 • RANGE • 0.22 TO 1.65 WITH 120 SAMPLES

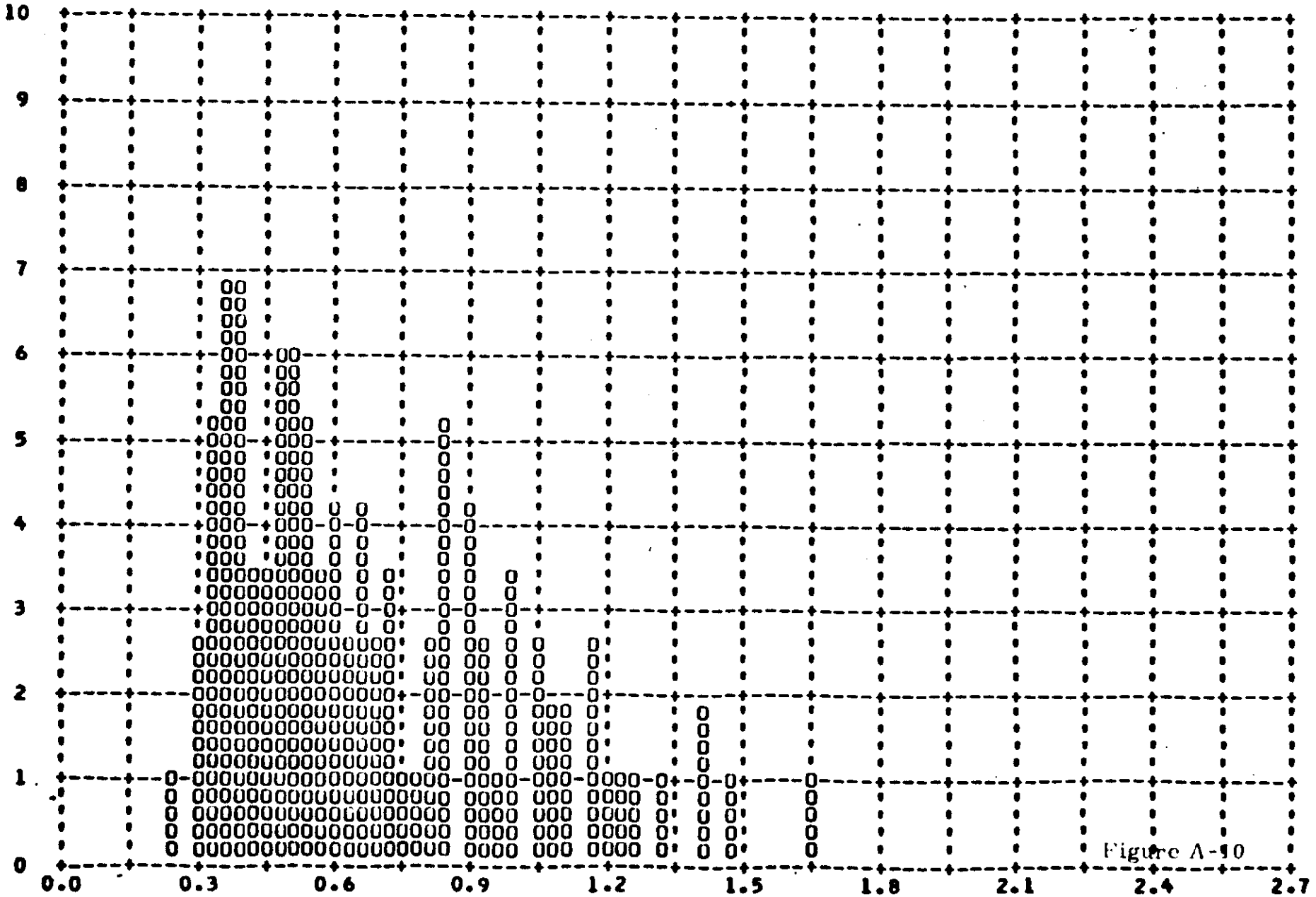


Figure A-10

[redacted] [redacted]

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.58 • MEDIAN • 1.60 • STD DEV • 0.35 • RANGE • 0.62 TO 2.25 WITH 120 SAMPLES

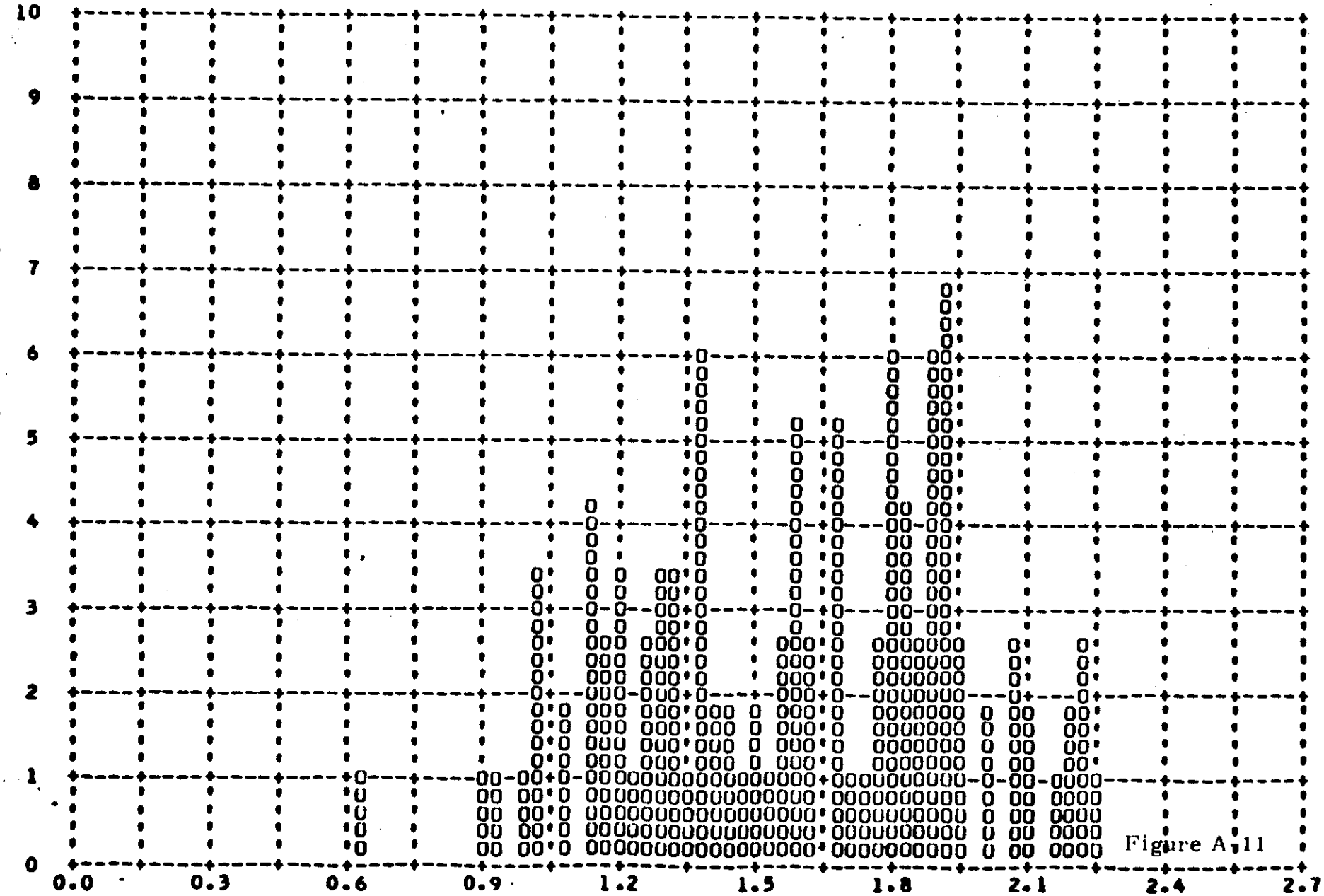


Figure A-11

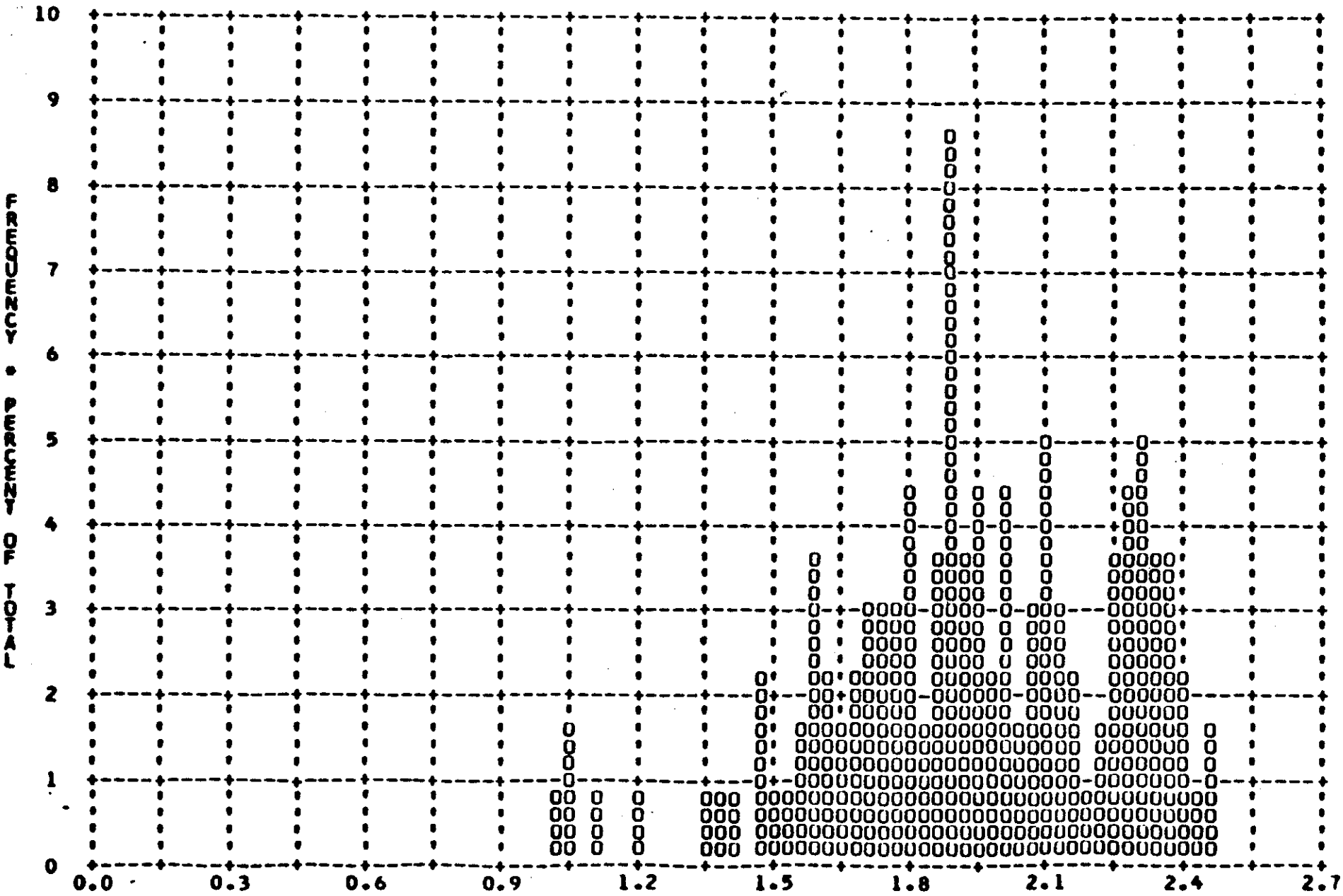
[redacted] TOP SECRET [redacted]

No [redacted]

[redacted]

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.93 • MEDIAN • 1.94 • STD DEV • 0.32 • RANGE • 1.00 TO 2.46 WITH 142 SAMPLES



[redacted]

[redacted]

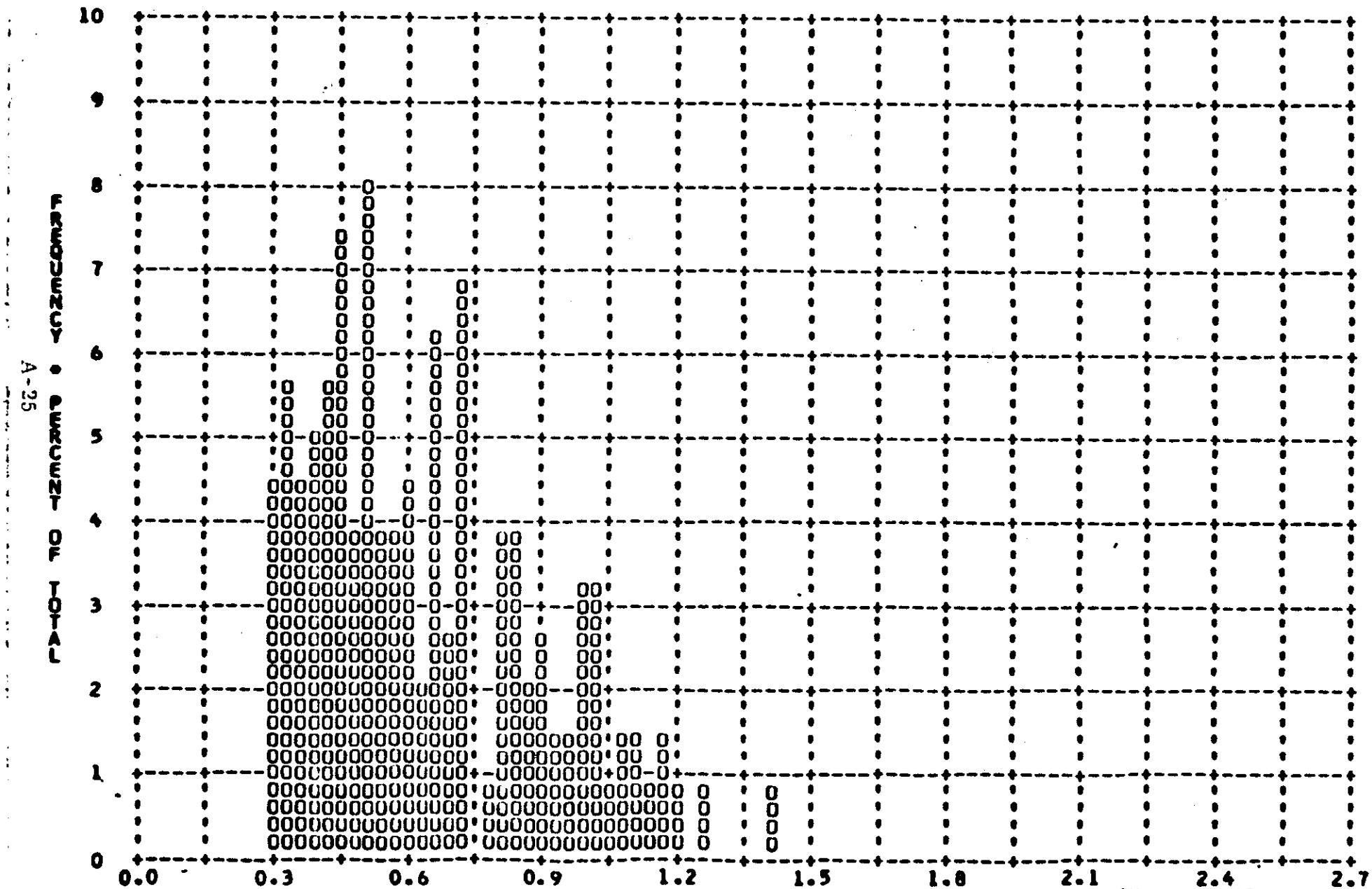

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MIN • TERRAIN • PROCESSING • FULL
ARITH MEAN • 0.62 • MEDIAN • 0.56 • STD DEV • 0.25 • RANGE • 0.28 TO 1.40 WITH 163 SAMPLES
FREQUENCY • PERCENT OF TOTAL
10
9
8
7
6
5
4
3
2
1
0
0.0
0.3
0.6
0.9
1.2
1.5
1.8
2.1
2.4
2.7
• DENSITY •

Figure A-13

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • TERRAIN • PROCESSING • FULL

ARITH MEAN • 1.77 • MEDIAN • 1.80 • STD DEV • 0.34 • RANGE • 0.90 TO 2.34 WITH 163 SAMPLES

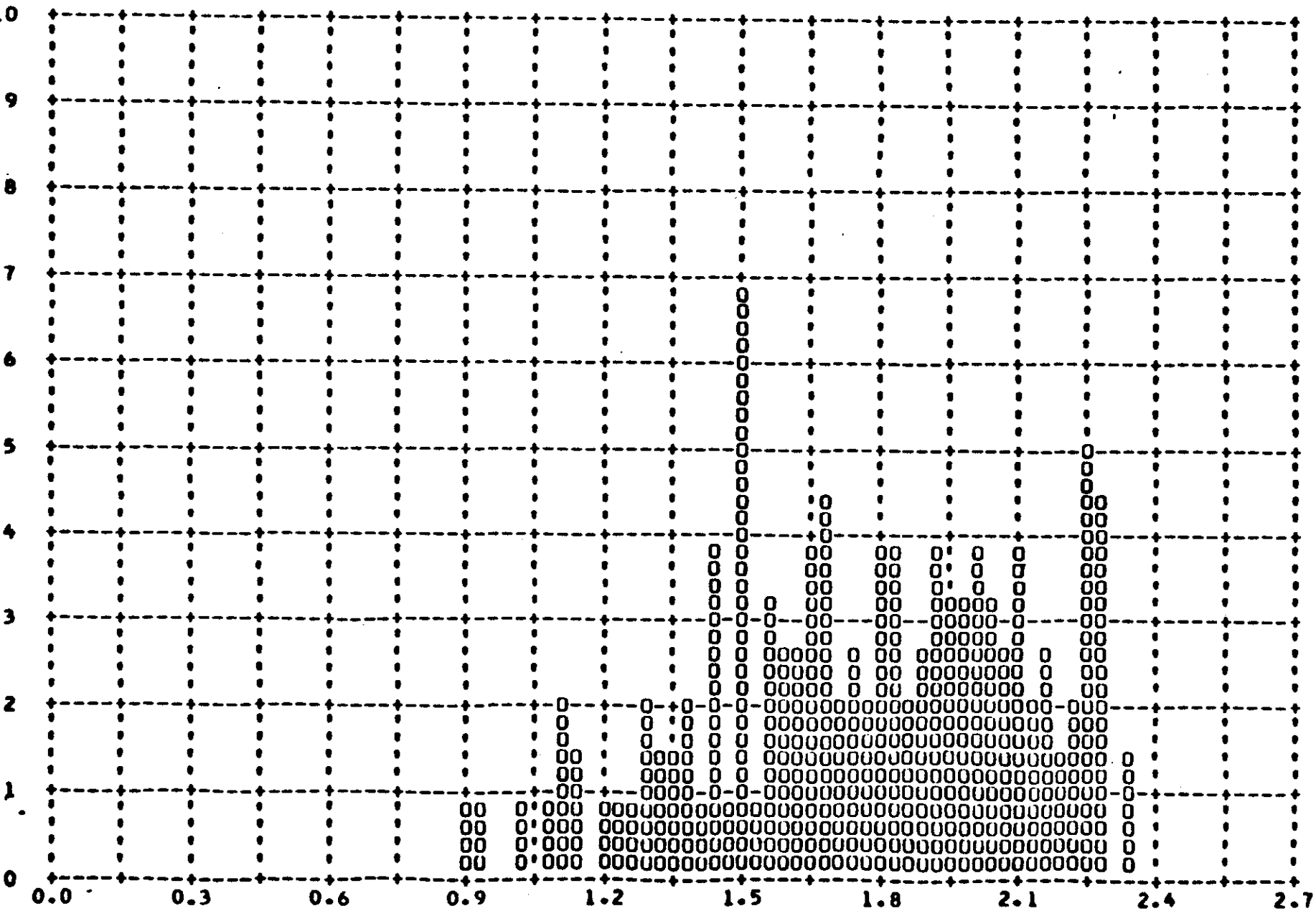


Figure A-14

[redacted]

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • CLOUD • PROCESSING • FULL

ARITH MEAN • 1.87 • MEDIAN • 1.92 • STD DEV • 0.37 • RANGE • 0.98 TO 2.42 WITH 132 SAMPLES

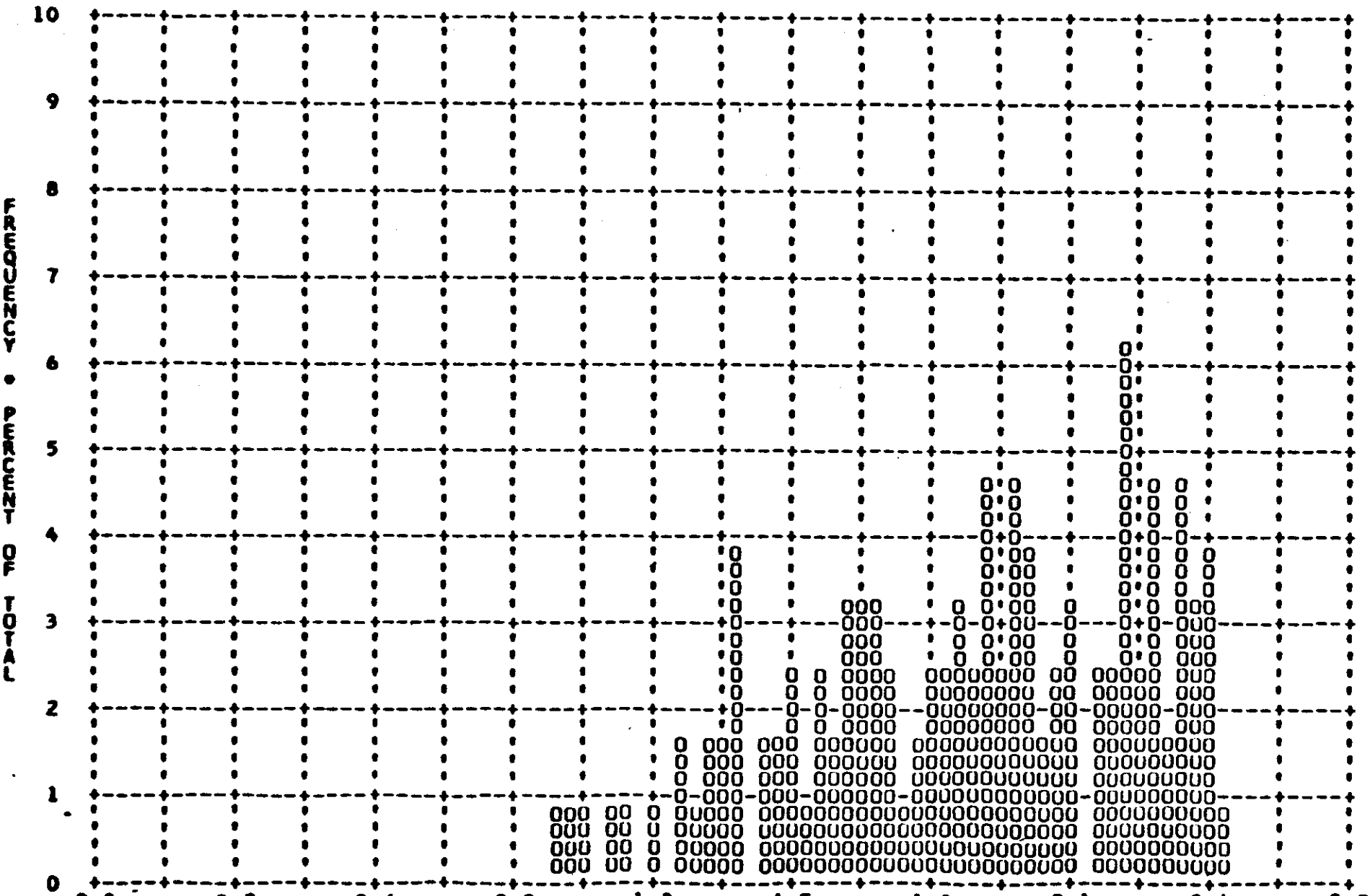


Figure A-15

[redacted]

[redacted]

[redacted]

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.64 • MEDIAN • 0.58 • STD DEV • 0.27 • RANGE • 0.22 TO 1.65 WITH 283 SAMPLES

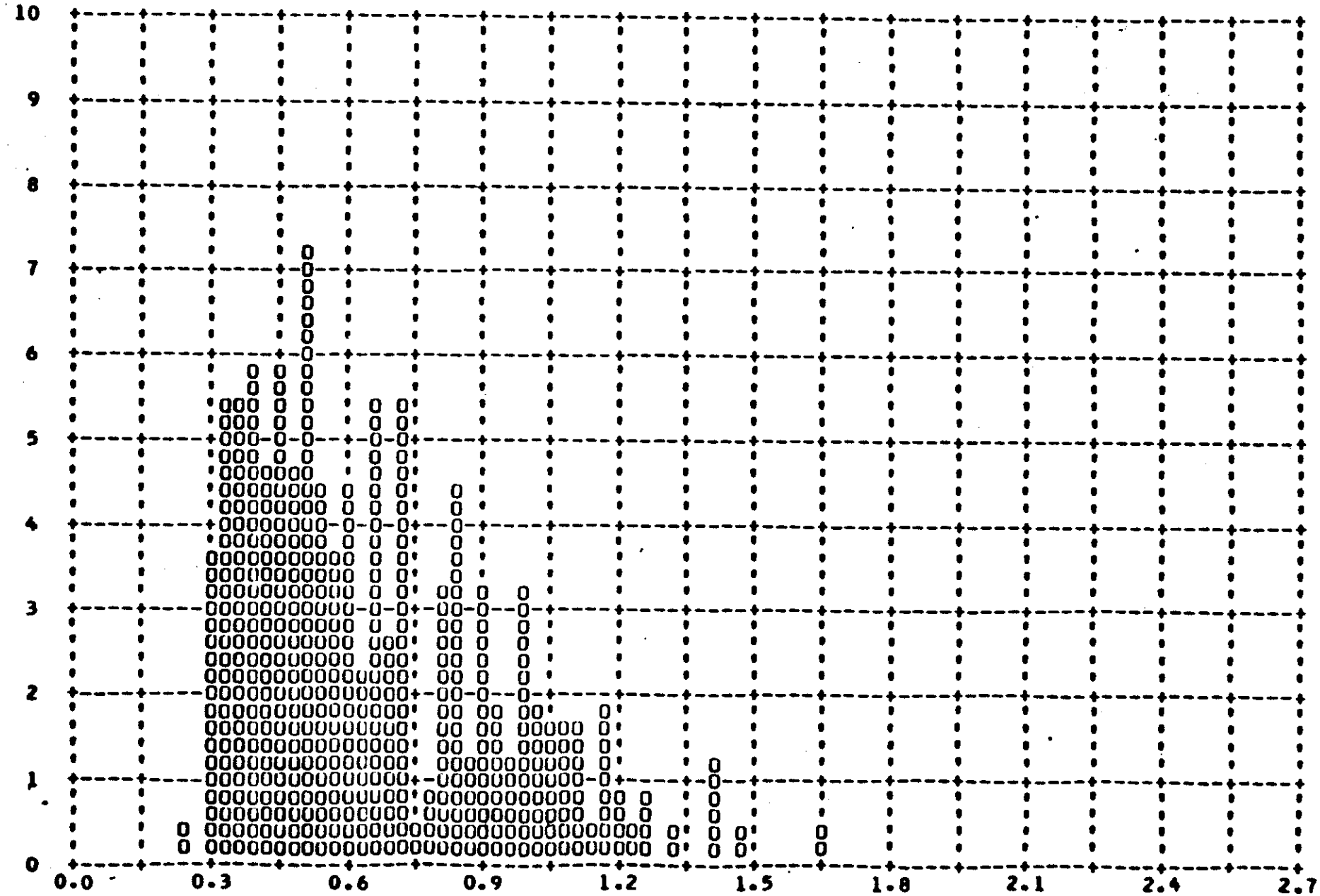


Figure A-16

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.69 • MEDIAN • 1.72 • STD DEV • 0.36 • RANGE • 0.62 TO 2.34 WITH 283 SAMPLES

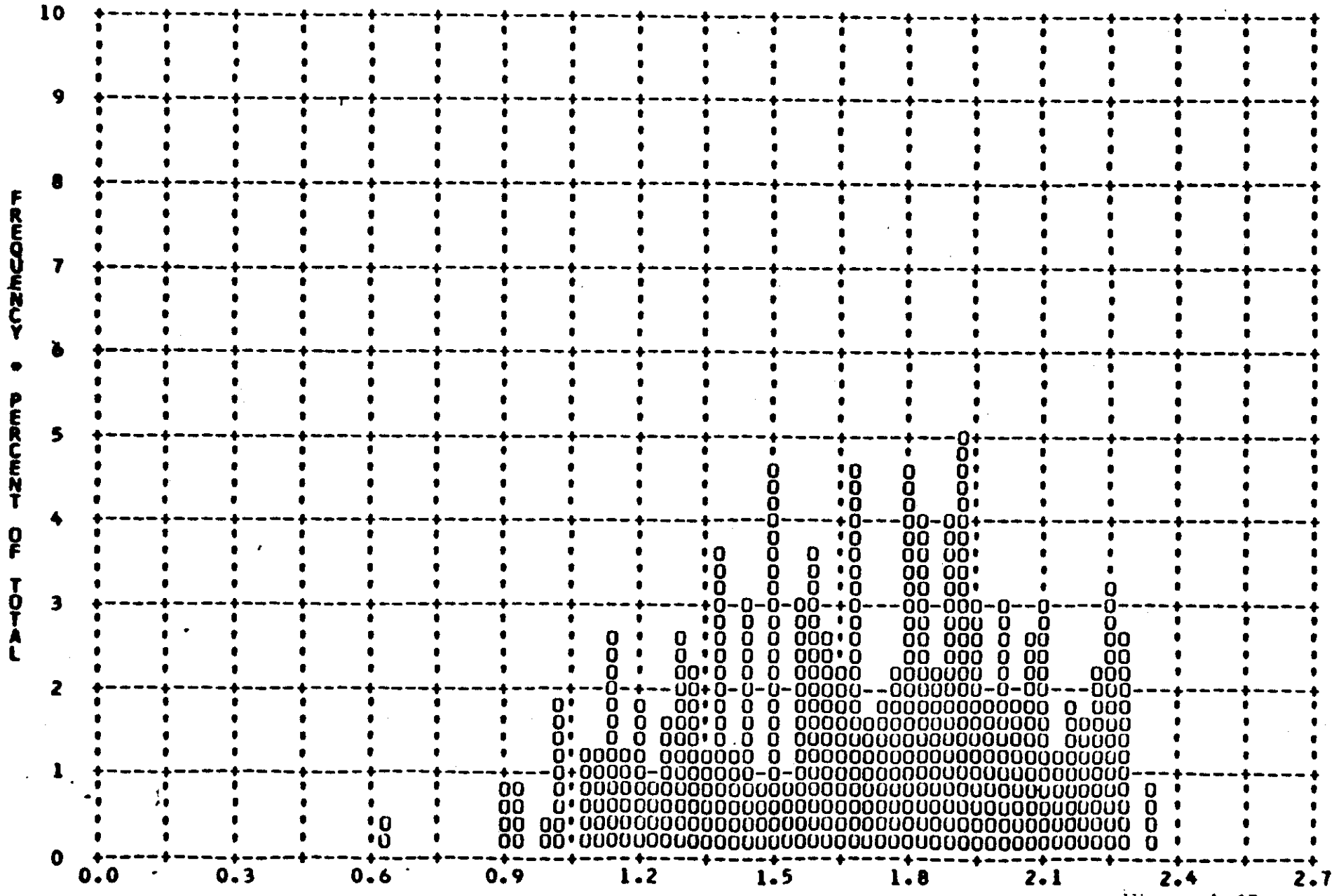


Figure A-17

MISSION • 1016-1 • INSTR • AFT • 02/08/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.90 • MEDIAN • 1.92 • STD DEV • 0.34 • RANGE • 0.98 TO 2.46 WITH 274 SAMPLES

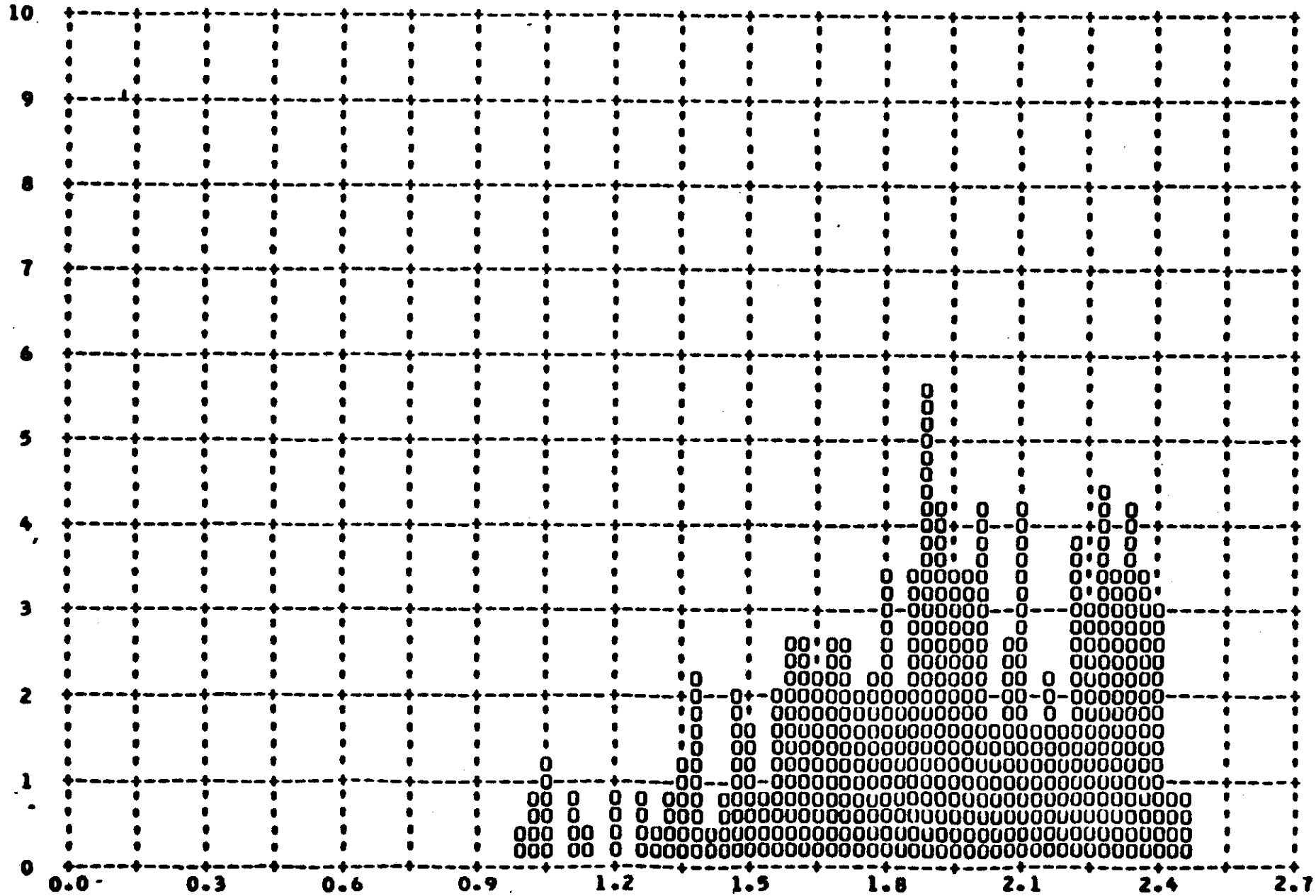


Figure A-19

[redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	1	0	0	0	0	0	1	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	3	0	0	1	0	0	4	0	0
0.23	0	0	0	2	0	0	1	0	0	3	0	0
0.24	0	0	0	2	0	0	3	0	0	5	0	0
0.25	0	0	0	0	0	0	1	0	0	1	0	0
0.26	0	0	0	6	0	0	2	0	0	8	0	0
0.27	0	0	0	3	0	0	3	0	0	6	0	0
0.28	0	0	0	4	0	0	7	0	0	11	0	0
0.29	0	0	0	2	0	0	0	1	0	2	1	0
0.30	0	0	0	4	0	0	12	0	0	16	0	0
0.31	0	0	0	2	0	0	0	0	0	2	0	0
0.32	0	0	0	6	0	0	8	0	0	14	0	0
0.33	0	0	0	0	0	0	4	0	0	4	0	0
0.34	0	0	0	6	0	0	4	0	0	10	0	0
0.35	0	0	0	1	0	0	3	0	0	4	0	0
0.36	0	0	0	2	0	0	2	0	0	4	0	0
0.37	0	0	0	0	0	0	2	0	0	2	0	0
0.38	0	0	0	4	0	0	4	0	0	8	0	0
0.39	0	0	0	1	0	0	0	0	0	1	0	0
0.40	0	0	0	5	0	0	6	0	0	11	0	0
0.41	0	0	0	0	0	0	0	0	0	0	0	0
0.42	0	0	0	4	0	0	4	1	0	8	1	0
0.43	0	0	0	2	0	0	2	0	0	4	0	0
0.44	0	0	0	2	0	0	9	0	0	11	0	0
0.45	0	0	0	1	0	0	0	1	0	1	1	0
0.46	0	0	0	3	0	0	7	1	0	10	1	0
0.47	0	0	0	0	1	0	1	0	0	1	0	0
0.48	0	0	0	5	1	0	4	1	0	9	2	0
0.49	0	0	0	1	0	0	0	0	0	1	0	0
0.50	0	0	0	3	0	0	5	0	0	8	0	0
SUBTOTAL	0	0	0	75	1	1	95	5	1	170	6	2

[redacted]

Table A-3

[redacted] [redacted] [redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	2	0	0	0	1	0	2	1	0
0.52	0	0	0	4	0	1	3	1	0	7	1	0
0.53	0	0	0	1	0	0	2	0	0	3	0	0
0.54	0	0	0	2	0	0	0	0	0	2	0	0
0.55	0	0	0	0	0	0	4	0	0	5	0	0
0.56	0	0	0	1	0	0	2	0	0	5	1	0
0.57	0	0	0	6	1	0	1	0	0	7	1	0
0.58	0	0	0	6	0	0	0	1	0	7	1	0
0.59	0	0	0	2	0	0	2	1	1	4	1	1
0.60	0	0	0	2	0	1	2	0	0	4	1	1
0.61	0	0	0	1	0	0	3	0	0	4	0	0
0.62	0	0	0	1	0	0	0	0	0	1	0	0
0.63	0	0	0	1	0	0	1	0	0	2	0	0
0.64	0	0	0	0	0	0	3	0	0	5	0	0
0.65	0	0	0	2	0	0	0	0	0	1	0	0
0.66	0	0	0	1	0	0	0	0	0	1	0	0
0.67	0	0	0	0	0	0	1	0	0	1	0	0
0.68	0	0	0	0	0	1	0	0	0	1	0	0
0.69	0	0	0	0	0	0	2	0	0	2	0	0
0.70	0	0	0	0	0	0	4	0	0	6	0	0
0.71	0	0	0	2	0	0	0	0	0	2	0	0
0.72	0	0	0	1	0	0	0	0	0	1	0	0
0.73	0	0	0	1	0	0	2	0	0	3	0	0
0.74	0	0	0	1	0	0	0	0	0	1	0	0
0.75	0	0	0	1	1	0	0	0	0	2	1	0
0.76	0	0	0	0	1	0	0	0	0	1	1	0
0.77	0	0	0	2	1	0	0	0	0	2	1	0
0.78	0	0	0	2	1	0	0	0	0	2	1	0
0.79	0	0	0	2	1	0	0	0	0	2	1	0
0.80	0	0	0	2	1	0	0	0	0	2	1	0
0.81	0	0	0	3	0	0	0	0	0	3	0	0
0.82	0	0	0	0	0	0	1	0	0	1	0	0
0.83	0	0	0	0	0	0	1	0	0	1	0	0
0.84	0	0	0	1	0	0	1	0	0	2	0	0
0.85	0	0	0	0	0	0	0	0	0	0	0	0
0.86	0	0	0	1	0	0	0	0	0	1	0	0
0.87	0	0	0	0	0	0	0	0	0	0	0	0
0.88	0	0	0	0	1	0	0	0	0	0	1	0
0.89	0	0	0	0	0	0	0	0	0	0	0	0
0.90	0	0	0	3	1	0	0	0	0	3	1	0
0.91	0	0	0	0	0	0	0	0	0	0	0	0
0.92	0	0	0	2	1	0	0	0	0	2	1	0
0.93	0	0	0	0	1	0	0	0	0	0	1	0
0.94	0	0	0	2	1	0	0	0	0	2	1	0
0.95	0	0	0	0	1	0	0	0	0	0	1	0
0.96	0	0	0	0	0	0	0	0	0	0	0	0
0.97	0	0	0	0	1	0	0	0	0	0	1	0
0.98	0	0	0	0	0	0	0	0	0	0	0	0
0.99	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	1	1	0	1	0	0	2	1
SUBTOTAL	0	0	0	45	12	5	40	9	9	85	21	14

[redacted] [redacted] [redacted]

Table A-3

[redacted]

[redacted] [redacted] [redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	1	0	0	0	2	0	1	2	0
1.02	0	0	0	0	4	0	0	0	0	0	4	0
1.03	0	0	0	0	0	1	0	0	1	0	0	1
1.04	0	0	0	0	1	0	0	0	0	0	1	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	0	1	0	0	2	3	0	3	3
1.09	0	0	0	0	1	0	0	2	0	0	3	0
1.10	0	0	0	0	0	1	0	6	0	0	1	6
1.11	0	0	0	0	0	1	0	0	1	0	0	1
1.12	0	0	0	0	0	1	0	0	1	0	0	1
1.13	0	0	0	0	0	2	0	0	1	0	0	2
1.14	0	0	0	0	2	0	0	4	1	0	6	1
1.15	0	0	0	0	2	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	1	1	0	0	0	1	1	1	0
1.18	0	0	0	0	1	0	0	1	0	0	2	0
1.19	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	5	1	0	3	2	0	8	2
1.21	0	0	0	0	1	1	0	1	2	0	2	2
1.22	0	0	0	0	1	0	0	2	0	0	3	1
1.23	0	0	0	0	0	1	0	3	0	0	3	1
1.24	0	0	0	0	2	1	0	2	0	0	4	1
1.25	0	0	0	0	1	3	0	0	3	0	1	6
1.26	0	0	0	0	3	1	0	0	2	0	1	2
1.27	0	0	0	0	1	0	0	3	0	0	1	2
1.28	0	0	0	0	1	0	0	2	0	0	1	2
1.29	0	0	0	1	0	0	0	2	0	1	0	2
1.30	0	0	0	1	4	2	0	0	2	1	6	3
1.31	0	0	0	0	0	1	0	0	1	0	1	1
1.32	0	0	0	0	1	0	0	0	2	0	1	2
1.33	0	0	0	0	1	4	0	0	1	0	1	5
1.34	0	0	0	0	0	1	0	0	4	0	1	5
1.35	0	0	0	0	0	1	0	0	0	0	0	2
1.36	0	0	0	0	0	1	0	0	0	0	0	1
1.37	0	0	0	0	1	4	0	0	5	0	1	9
1.38	0	0	0	0	0	3	0	0	1	0	0	4
1.39	0	0	0	0	0	3	0	0	0	0	0	3
1.40	0	0	0	0	0	4	0	0	1	0	0	5
1.41	0	0	0	0	0	4	0	0	0	0	0	4
1.42	0	0	0	0	0	4	0	0	1	0	0	4
1.43	0	0	0	0	0	1	0	0	0	0	0	1
1.44	0	0	0	0	0	1	0	0	0	0	0	1
1.45	0	0	0	0	0	2	0	0	1	0	0	3
1.46	0	0	0	0	0	1	0	0	0	0	0	1
1.47	0	0	0	0	0	1	0	0	0	0	0	1
1.48	0	0	0	0	0	1	0	0	1	0	0	2
1.49	0	0	0	0	0	1	0	0	0	0	0	1
1.50	0	0	0	0	0	1	0	0	0	0	0	1
SUBTOTAL	0	0	0	4	57	19	0	62	19	4	119	38

[redacted] [redacted] [redacted]

Table A-3

[redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	1	0	0	0	0	0	1
1.52	0	0	0	0	3	1	0	1	1	0	4	2
1.53	0	0	0	0	0	1	0	1	1	0	0	2
1.54	0	0	0	0	3	2	0	1	0	0	4	2
1.55	0	0	0	0	1	0	0	1	0	0	1	0
1.56	0	0	0	0	1	0	1	1	0	1	2	1
1.57	0	0	0	0	0	0	1	0	1	0	0	1
1.58	0	0	0	0	3	1	0	1	0	0	4	1
1.59	0	0	0	0	0	1	0	0	0	0	0	1
1.60	0	0	0	0	4	4	0	2	0	0	6	4
1.61	0	0	0	0	0	1	0	3	0	0	0	1
1.62	0	0	0	0	6	1	0	3	0	0	9	1
1.63	0	0	0	0	0	1	0	1	0	0	1	1
1.64	0	0	0	0	2	1	0	1	1	0	3	2
1.65	0	0	0	0	0	1	0	1	0	0	0	1
1.66	0	0	0	0	2	1	0	4	0	0	6	1
1.67	0	0	0	0	3	0	0	4	0	0	3	0
1.68	0	0	0	0	4	0	0	2	0	0	6	0
1.69	0	0	0	0	0	0	0	3	0	0	0	0
1.70	0	0	0	0	2	0	0	1	0	0	3	0
1.71	0	0	0	0	0	0	0	1	1	0	1	0
1.72	0	0	0	0	1	3	0	0	1	0	1	4
1.73	0	0	0	0	2	0	0	2	0	0	2	0
1.74	0	0	0	0	1	4	0	0	1	0	2	5
1.75	0	0	0	0	0	1	0	1	1	0	1	2
1.76	0	0	0	0	0	1	0	0	1	0	1	1
1.77	0	0	0	0	0	1	0	0	0	0	0	1
1.78	0	0	0	0	1	1	0	0	0	0	1	1
1.79	0	0	0	0	0	1	0	0	0	0	1	0
1.80	0	0	0	0	0	1	0	0	1	0	1	6
1.81	0	0	0	0	0	1	0	0	1	0	0	1
1.82	0	0	0	0	1	5	0	0	3	0	4	12
1.83	0	0	0	0	0	1	0	0	1	0	1	0
1.84	0	0	0	0	0	4	0	0	1	0	1	5
1.85	0	0	0	0	1	2	0	0	1	0	1	2
1.86	0	0	0	0	0	1	0	0	2	0	1	3
1.87	0	0	0	0	0	1	0	0	2	0	0	4
1.88	0	0	0	0	0	1	0	0	2	0	0	4
1.89	0	0	0	0	0	2	0	0	1	0	0	2
1.90	0	0	0	0	2	1	0	0	1	0	3	2
1.91	0	0	0	0	0	0	0	0	1	0	1	0
1.92	0	0	0	0	0	0	0	0	1	0	1	0
1.93	0	0	0	0	0	2	0	0	1	0	1	2
1.94	0	0	0	0	4	4	0	0	1	0	5	7
1.95	0	0	0	0	1	0	0	0	1	0	2	0
1.96	0	0	0	0	0	2	0	0	1	0	0	3
1.97	0	0	0	0	0	0	0	0	1	0	0	0
1.98	0	0	0	0	0	1	0	0	2	0	0	1
1.99	0	0	0	0	0	1	0	0	0	0	0	1
2.00	0	0	0	0	1	3	0	2	0	0	3	3
SUBTOTAL	0	0	0	0	49	58	1	44	36	1	93	94

[redacted]

Table A-3

[redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	1	1	0	0	0	0	1	1
2.02	0	0	0	0	1	1	0	1	2	0	1	3
2.03	0	0	0	0	0	0	0	0	1	0	0	1
2.04	0	0	0	0	2	3	0	2	1	0	4	4
2.05	0	0	0	0	0	1	0	1	1	0	1	2
2.06	0	0	0	0	0	0	0	0	2	0	0	2
2.07	0	0	0	0	0	2	0	0	0	0	0	2
2.08	0	0	0	0	0	1	0	1	5	0	1	6
2.09	0	0	0	0	0	1	0	0	2	0	0	1
2.10	0	0	0	0	0	1	0	0	2	0	0	3
2.11	0	0	0	0	0	0	0	0	0	0	0	0
2.12	0	0	0	0	0	0	0	1	0	0	1	0
2.13	0	0	0	0	1	0	0	0	1	0	1	1
2.14	0	0	0	0	0	2	0	0	3	0	0	5
2.15	0	0	0	0	0	0	0	0	1	0	0	3
2.16	0	0	0	0	0	0	0	0	2	0	0	1
2.17	0	0	0	0	0	0	0	0	2	0	0	2
2.18	0	0	0	0	1	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	2	0	0	0	0	0	2
2.21	0	0	0	0	0	0	0	0	0	0	0	0
2.22	0	0	0	0	0	2	0	0	5	0	0	7
2.23	0	0	0	0	0	0	0	0	0	0	0	0
2.24	0	0	0	0	0	0	0	0	2	0	0	2
2.25	0	0	0	0	0	0	0	0	1	0	0	1
2.26	0	0	0	0	0	0	0	2	0	0	2	2
2.27	0	0	0	0	0	1	0	0	0	0	0	1
2.28	0	0	0	0	0	0	0	0	1	0	0	1
2.29	0	0	0	0	0	0	0	0	0	0	0	0
2.30	0	0	0	0	0	1	0	0	1	0	0	1
2.31	0	0	0	0	0	0	0	1	0	0	1	0
2.32	0	0	0	0	0	3	0	0	2	0	0	5
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	1	0	1	0	0	1	1
2.36	0	0	0	0	0	1	0	0	3	0	0	4
2.37	0	0	0	0	0	1	0	0	0	0	0	1
2.38	0	0	0	0	0	1	0	0	0	0	0	1
2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40	0	0	0	0	0	1	0	0	2	0	0	3
2.41	0	0	0	0	0	0	0	0	0	0	0	0
2.42	0	0	0	0	0	1	0	0	0	0	0	1
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	1	0	0	1	0	0	2
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	1	0	0	0	0	0	1
SUBTOTAL	0	0	0	0	5	32	0	16	44	0	21	76

[redacted]

Table A-3

[redacted]

MISSION • 1016-2 • INSTRUMENT • FRWD 03/18/65 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	124	124	115	136	136	109	260	260	224

MISSION 1016-2 INSTR - FRWD 03/18/65 PROCESSING AND EXPOSURE ANALYS

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	124	1 PC	39 PC	54 PC	6 PC	0 PC
FULL	136	42 PC	0 PC	57 PC	1 PC	0 PC
ALL LEVELS	260	22 PC	18 PC	56 PC	3 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 U
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AND U
FULL	0.18 AND UP	0.01-0.39	----------	0.40-0.90	0.91-1.69	1.70 AND U

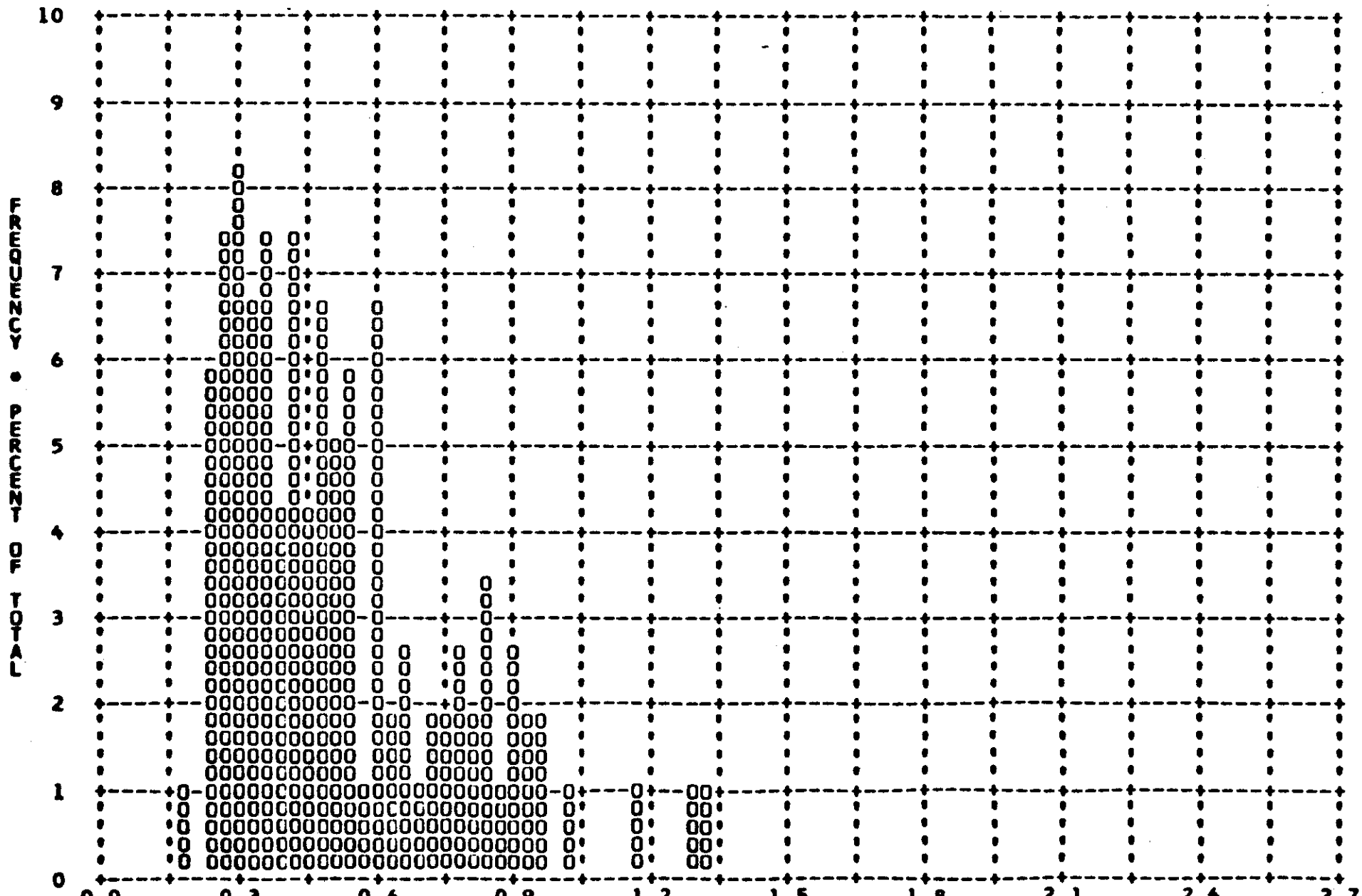
[redacted]

Table A-3

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.50 • MEDIAN • 0.45 • STD DEV • 0.23 • RANGE • 0.18 TO 1.30 WITH 124 SAMPLES



[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.43 • MEDIAN • 1.45 • STD DEV • 0.33 • RANGE • 0.48 TO 2.18 WITH 124 SAMPLES

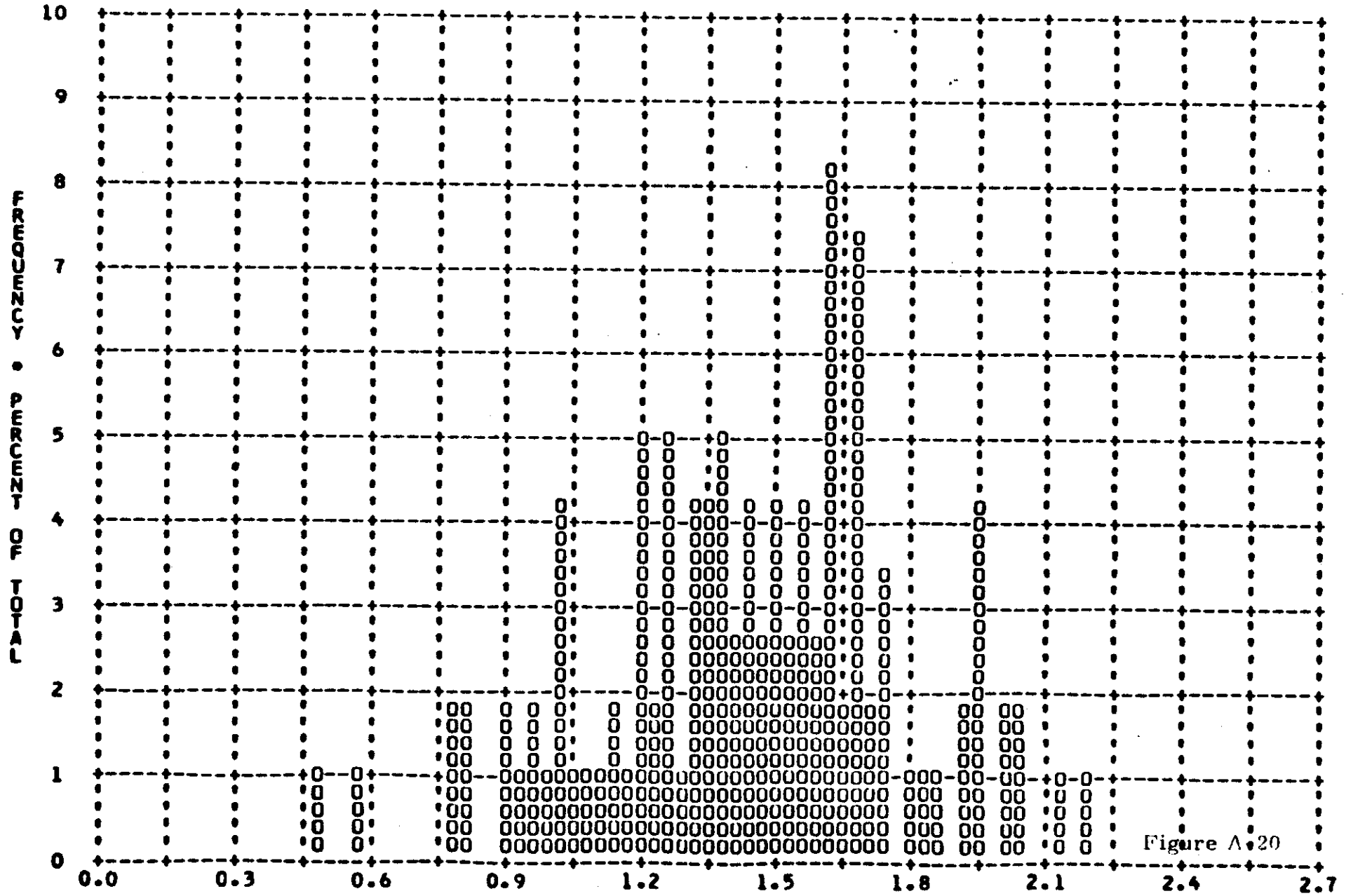


Figure A•20

[redacted]

[redacted] No. [redacted] [redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.76 • MEDIAN • 1.82 • STD DEV • 0.42 • RANGE • 0.36 TO 2.50 WITH 115 SAMPLES

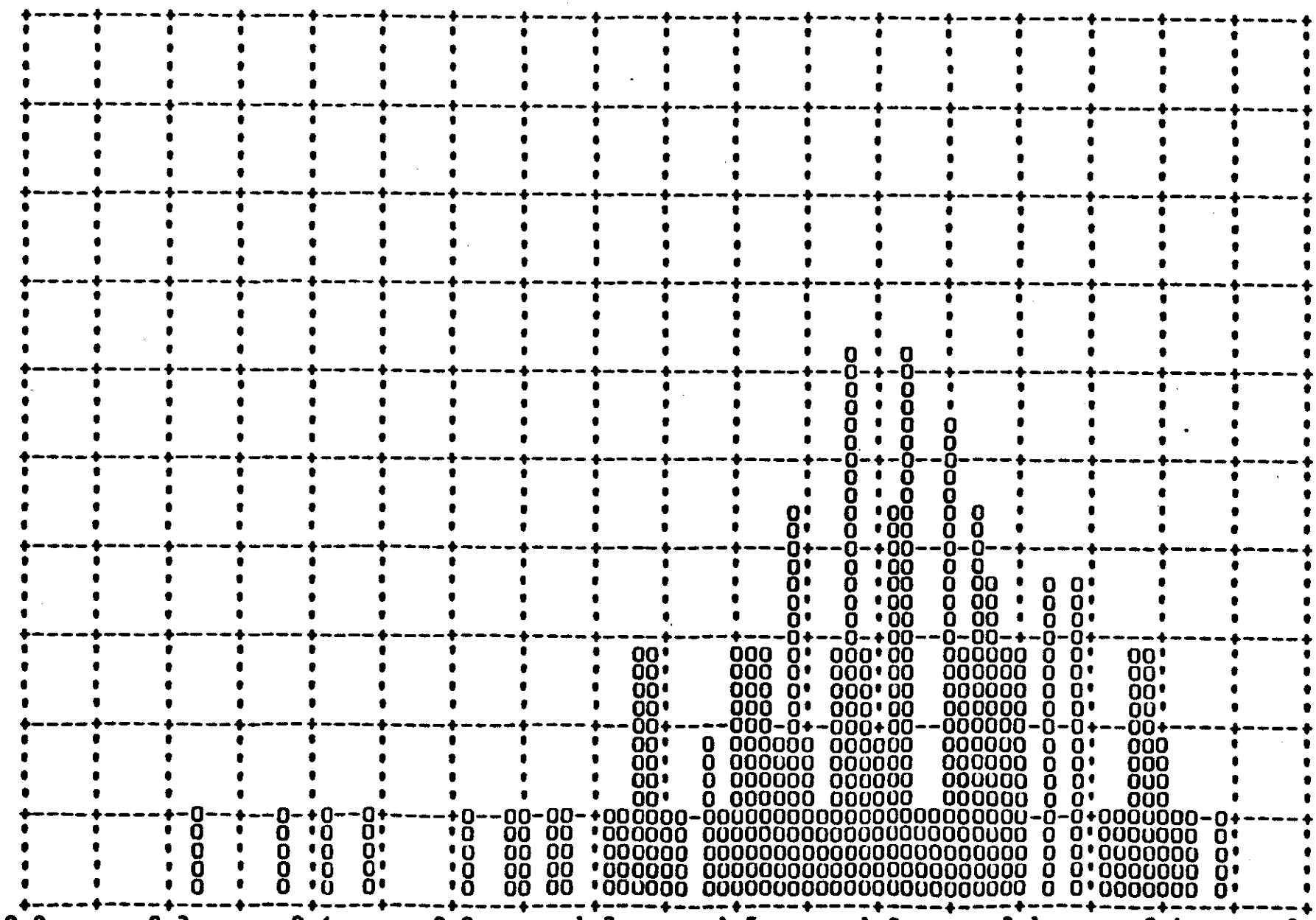


Figure A-21

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MIN • TERRAIN • PROCESSING • FULL

ARITH MEAN • 0.47 • MEDIAN • 0.43 • STD DEV • 0.19 • RANGE • 0.22 TO 1.56 WITH 136 SAMPLES

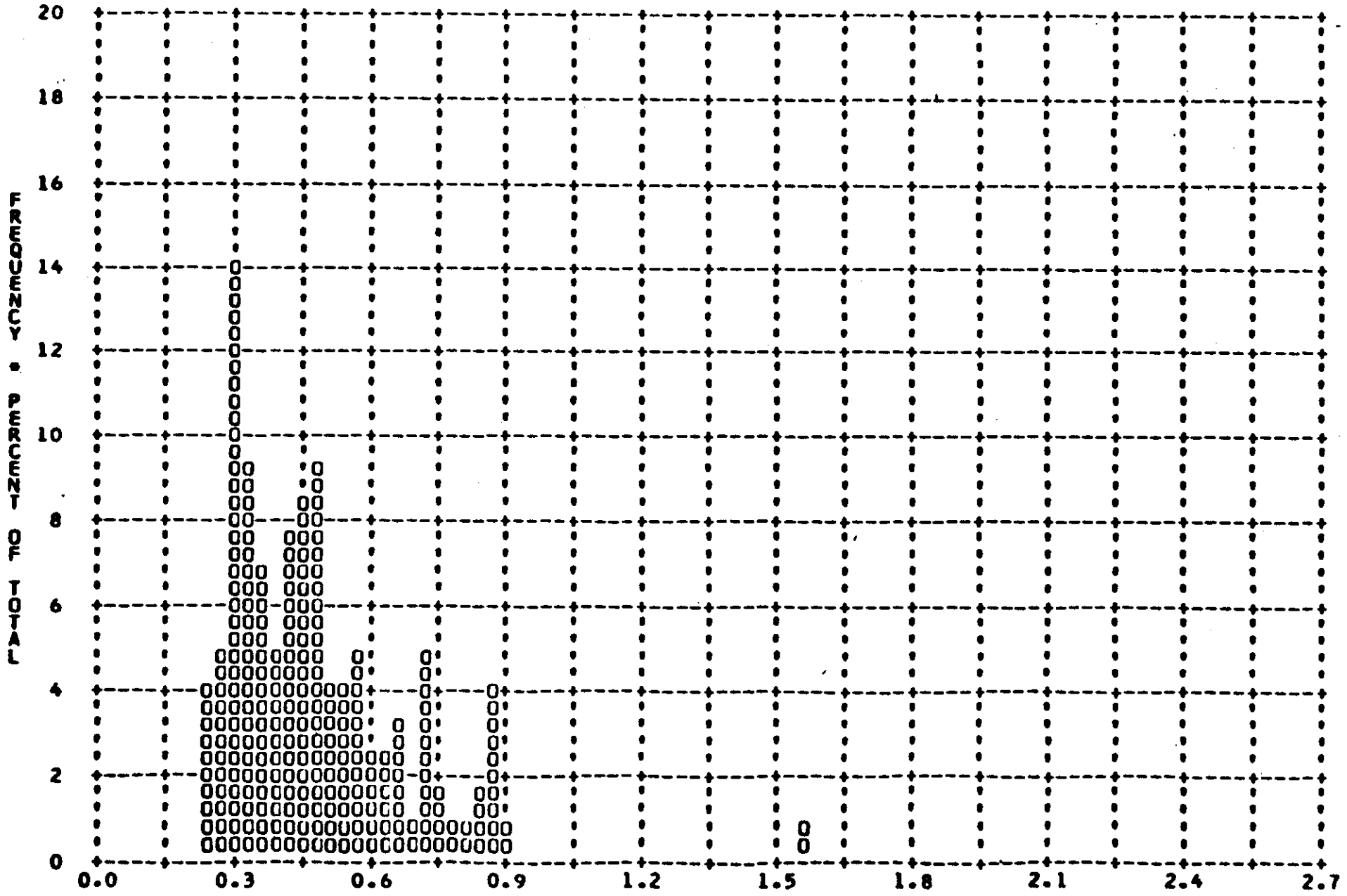


Figure A-22

[redacted]

No. [redacted]

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • FULL

ARITH MEAN • 1.47 • MEDIAN • 1.44 • STD DEV • 0.44 • RANGE • 0.29 TO 2.35 WITH 136 SAMPLES

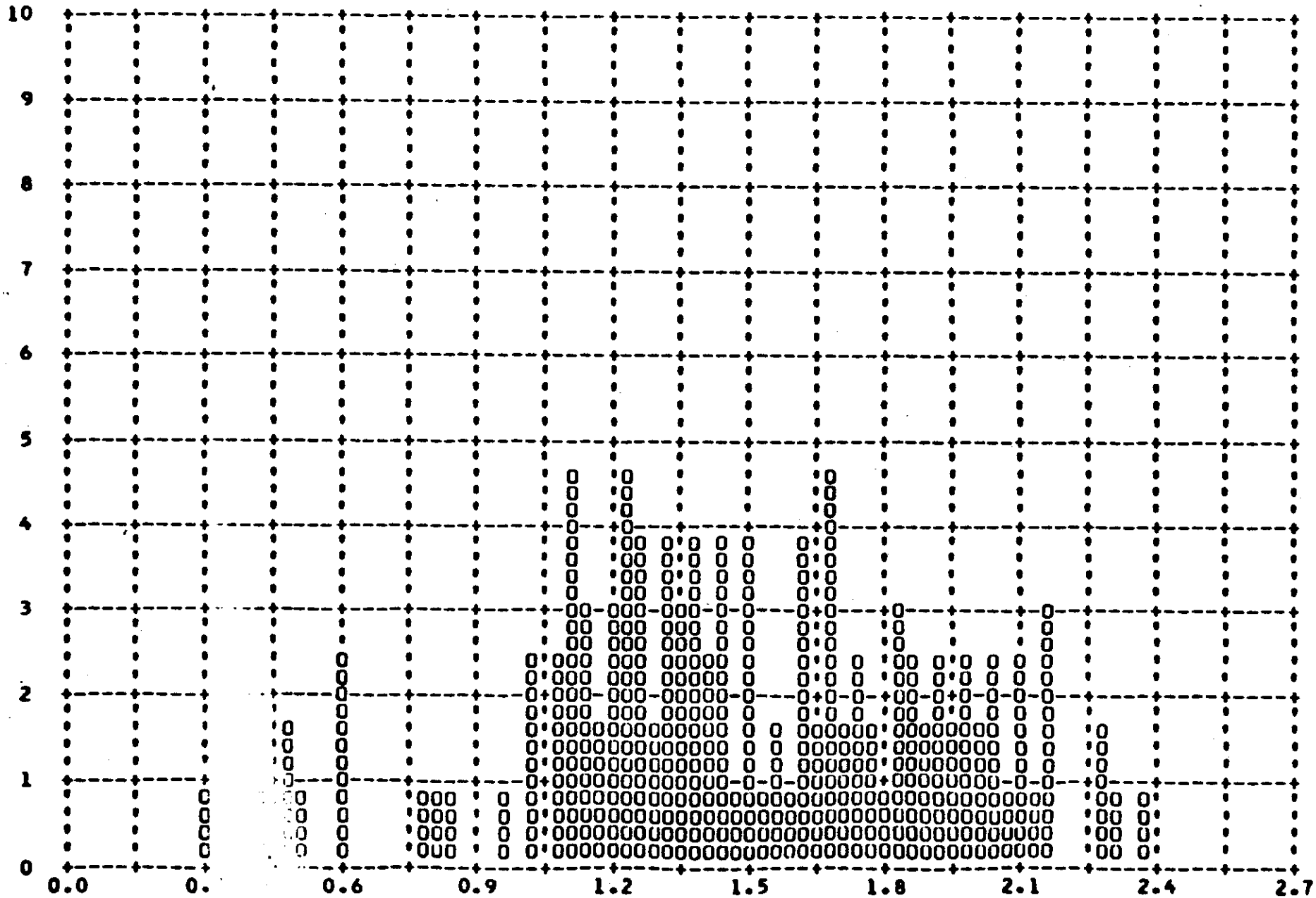


Figure A-23 A

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • FULL

ARITH MEAN • 1.76 • MEDIAN • 1.86 • STD DEV • 0.48 • RANGE • 0.34 TO 2.46 WITH 109 SAMPLES

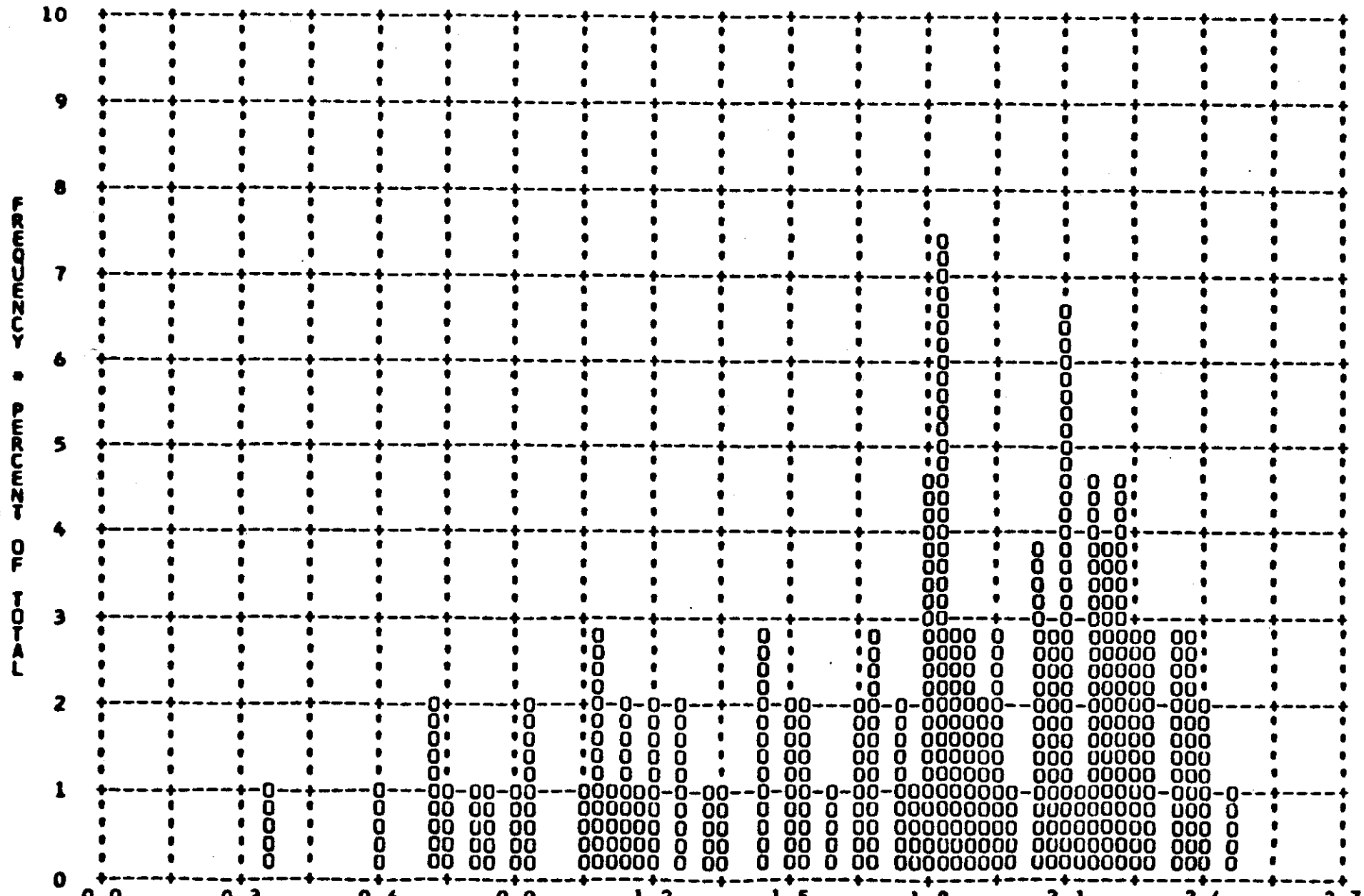


Figure A-24

[redacted] No. [redacted]

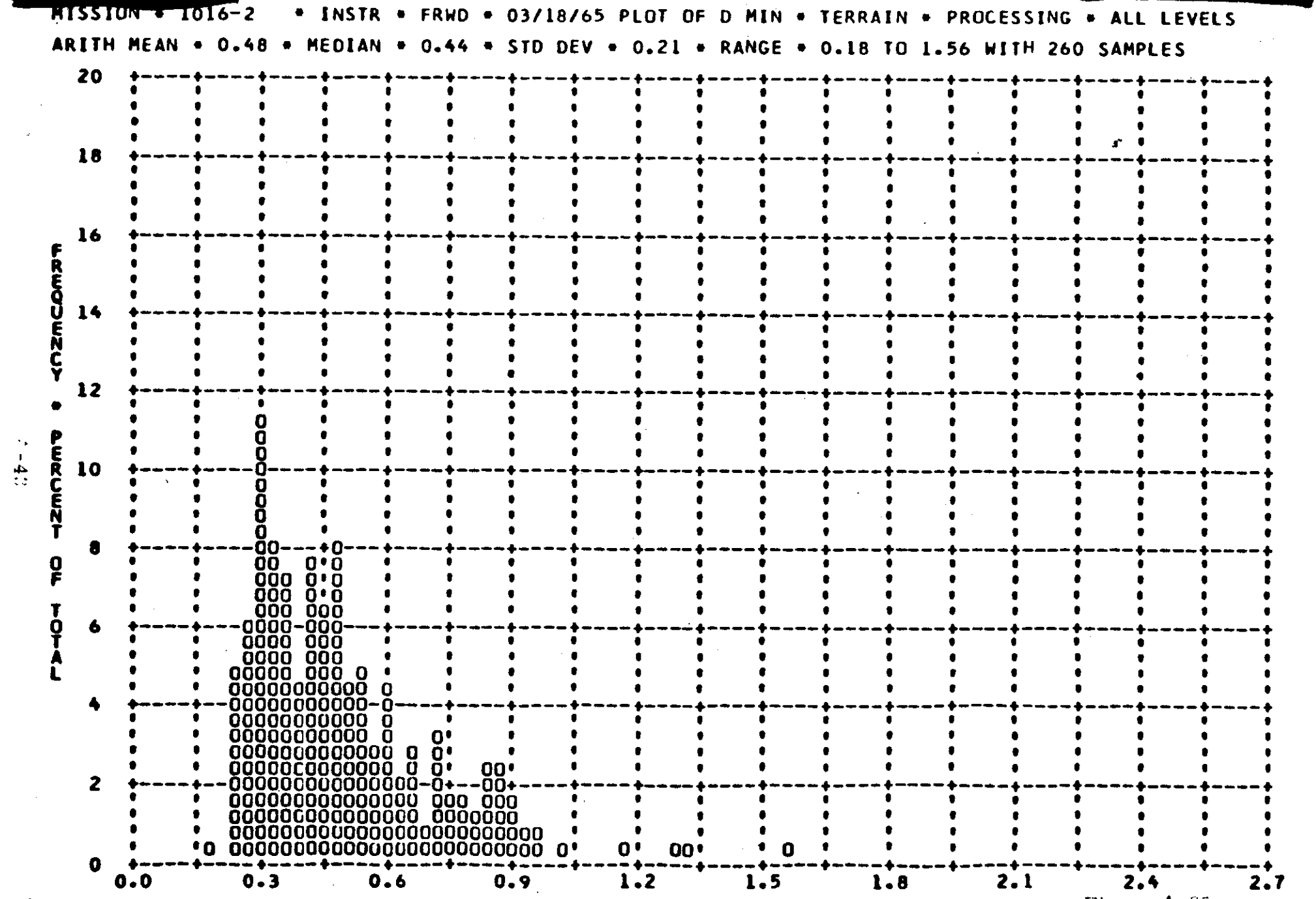


Figure A-35

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.45 • MEDIAN • 1.44 • STD DEV • 0.39 • RANGE • 0.29 TO 2.35 WITH 260 SAMPLES

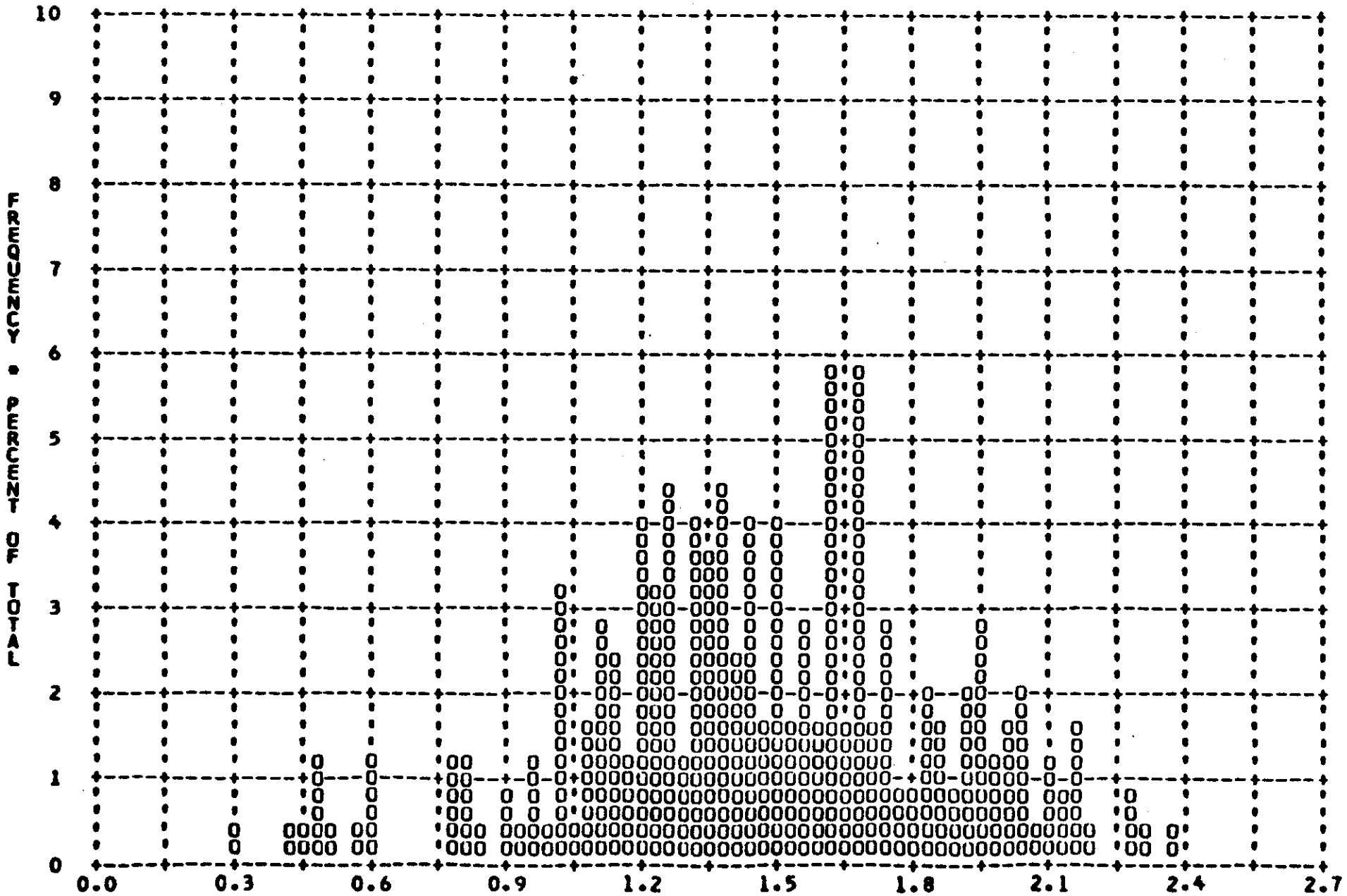


Figure A-26

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • FRWD • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.76 • MEDIAN • 1.82 • STD DEV • 0.45 • RANGE • 0.34 TO 2.50 WITH 224 SAMPLES

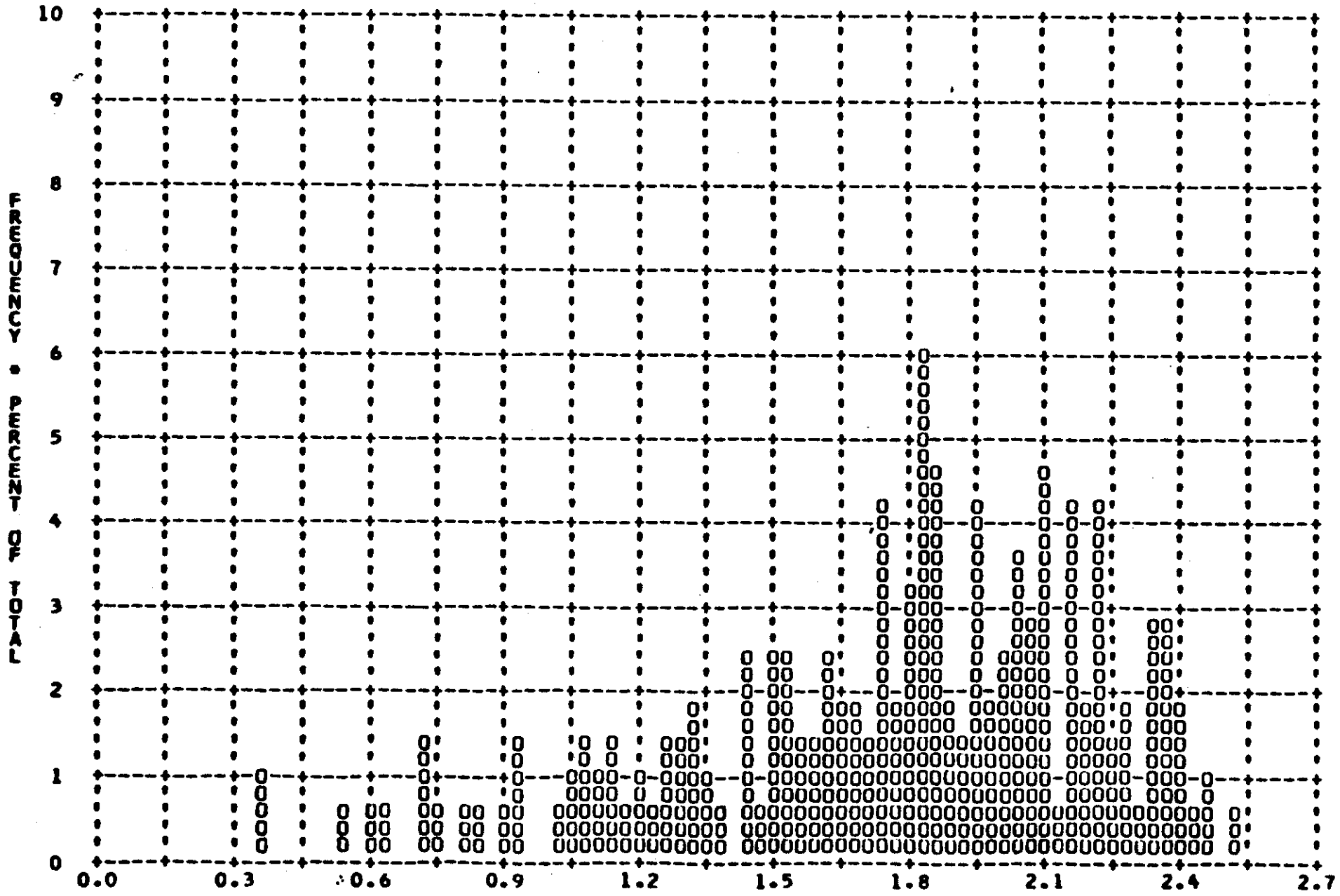


Figure A-57

[redacted] [redacted] [redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	1	0	0	0	0	0	1	0	0
0.21	0	0	0	0	0	0	1	0	0	1	0	0
0.22	0	0	0	1	0	0	1	0	0	2	0	0
0.23	0	0	0	0	0	0	1	0	0	1	0	0
0.24	0	0	0	0	0	0	1	0	0	1	0	0
0.25	0	0	0	2	0	0	0	0	0	2	0	0
0.26	0	0	0	1	0	0	3	1	0	4	1	0
0.27	0	0	0	0	0	0	0	0	0	0	0	0
0.28	0	0	0	0	0	0	6	0	0	6	0	0
0.29	0	0	0	0	0	0	4	0	0	4	0	0
0.30	0	0	0	0	0	0	2	0	1	2	0	1
0.31	0	0	0	1	0	0	2	0	0	2	0	0
0.32	0	0	0	1	0	0	7	0	0	8	0	0
0.33	0	0	0	0	1	1	1	0	0	1	1	1
0.34	0	0	0	1	0	0	7	0	1	8	0	1
0.35	0	0	0	1	1	0	3	0	0	4	1	0
0.36	0	0	0	3	0	0	6	0	0	9	0	0
0.37	0	0	0	2	0	0	2	0	0	4	0	0
0.38	0	0	0	0	0	0	9	0	0	9	0	0
0.39	0	0	0	1	0	0	3	0	0	4	0	0
0.40	0	0	0	1	0	0	4	0	0	5	0	0
0.41	0	0	0	1	0	0	2	0	0	3	0	0
0.42	0	0	0	5	0	0	4	0	0	9	0	0
0.43	0	0	0	1	0	0	2	0	0	3	0	0
0.44	0	0	0	4	0	0	7	0	0	11	0	0
0.45	0	0	0	4	0	0	5	0	1	9	0	1
0.46	0	0	0	0	0	0	2	0	0	2	0	0
0.47	0	0	0	0	0	0	1	0	0	1	0	0
0.48	0	0	0	3	0	0	7	0	0	10	0	0
0.49	0	0	0	2	0	0	2	0	0	4	0	0
0.50	0	0	0	4	0	0	6	0	0	10	0	0
SUBTOTAL	0	0	0	39	2	1	101	1	3	140	3	4

[redacted] [redacted] [redacted]

Table A-4

[redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	1	0	0	1	0	1	2	0	1
0.52	0	0	0	6	0	0	1	1	0	7	1	0
0.53	0	0	0	2	0	0	3	0	0	5	0	0
0.54	0	0	0	3	0	0	3	0	0	6	0	0
0.55	0	0	0	3	0	0	1	0	0	4	0	0
0.56	0	0	0	3	1	0	1	1	0	4	2	0
0.57	0	0	0	1	0	0	1	1	0	2	1	0
0.58	0	0	0	3	0	0	1	1	0	4	1	0
0.59	0	0	0	3	0	0	1	0	0	1	0	0
0.60	0	0	0	3	0	0	4	0	0	7	0	0
0.61	0	0	0	0	0	0	0	0	0	0	0	0
0.62	0	0	0	2	0	0	4	0	0	6	0	0
0.63	0	0	0	0	0	0	1	0	0	1	0	0
0.64	0	0	0	2	0	0	1	0	0	3	0	0
0.65	0	0	0	1	0	0	2	1	0	3	1	0
0.66	0	0	0	1	0	0	1	0	0	2	0	0
0.67	0	0	0	0	0	0	1	0	0	1	0	0
0.68	0	0	0	1	0	1	0	0	0	1	0	1
0.69	0	0	0	1	0	0	1	1	0	2	1	0
0.70	0	0	0	0	0	0	5	2	1	5	2	1
0.71	0	0	0	1	0	0	1	0	0	2	0	0
0.72	0	0	0	0	0	0	2	1	0	2	1	0
0.73	0	0	0	0	0	0	1	0	0	1	0	0
0.74	0	0	0	3	0	0	3	1	0	6	1	0
0.75	0	0	0	2	0	0	1	0	0	3	0	0
0.76	0	0	0	1	1	0	0	0	0	1	1	0
0.77	0	0	0	1	1	0	0	0	0	1	1	0
0.78	0	0	0	1	0	0	0	1	0	1	1	0
0.79	0	0	0	1	0	0	0	2	0	1	2	0
0.80	0	0	0	1	0	0	2	0	1	3	0	1
0.81	0	0	0	0	0	0	0	2	0	0	2	0
0.82	0	0	0	2	0	0	1	0	2	3	0	2
0.83	0	0	0	0	0	0	0	1	0	0	1	0
0.84	0	0	0	0	0	0	1	0	0	1	0	0
0.85	0	0	0	0	0	0	0	0	1	0	0	1
0.86	0	0	0	1	1	0	0	0	1	1	1	1
0.87	0	0	0	1	0	0	0	1	0	1	1	0
0.88	0	0	0	1	0	0	1	0	0	2	0	0
0.89	0	0	0	0	0	0	1	0	0	1	0	0
0.90	0	0	0	3	0	0	1	2	0	4	2	0
0.91	0	0	0	0	0	0	0	1	0	0	1	0
0.92	0	0	0	1	0	0	1	0	0	2	0	0
0.93	0	0	0	0	0	0	0	0	0	0	0	0
0.94	0	0	0	1	0	0	0	1	0	1	1	0
0.95	0	0	0	0	0	0	0	0	0	0	0	0
0.96	0	0	0	1	0	0	0	0	2	1	0	2
0.97	0	0	0	0	0	0	0	0	0	0	0	0
0.98	0	0	0	0	0	0	0	0	0	0	0	0
0.99	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	2	2	0	2	2	0
SUBTOTAL	0	0	0	55	4	1	50	22	11	105	26	12

[redacted]

Table A-4

[redacted] [redacted] [redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	2	0	1	0	1	1	2	1
1.02	0	0	0	0	0	1	0	1	2	0	1	3
1.03	0	0	0	0	0	0	0	0	0	0	0	0
1.04	0	0	0	0	1	0	0	1	1	0	2	1
1.05	0	0	0	0	0	0	0	1	0	0	1	0
1.06	0	0	0	1	0	0	0	1	0	1	1	0
1.07	0	0	0	1	0	0	0	0	0	1	0	0
1.08	0	0	0	0	1	0	0	2	1	0	3	1
1.09	0	0	0	0	0	0	0	2	0	0	3	0
1.10	0	0	0	0	1	0	0	2	0	0	3	0
1.11	0	0	0	0	1	0	0	1	0	0	2	0
1.12	0	0	0	1	2	0	0	0	0	1	2	0
1.13	0	0	0	0	0	0	0	0	1	0	0	1
1.14	0	0	0	0	0	0	0	0	0	0	0	0
1.15	0	0	0	0	1	0	0	0	0	0	1	0
1.16	0	0	0	0	0	0	0	0	0	0	0	0
1.17	0	0	0	1	0	0	0	0	0	1	0	0
1.18	0	0	0	0	0	0	0	2	1	0	2	1
1.19	0	0	0	0	0	0	0	2	0	0	2	0
1.20	0	0	0	1	3	0	0	1	1	1	4	1
1.21	0	0	0	0	1	0	0	1	2	1	3	1
1.22	0	0	0	0	1	2	2	2	2	2	3	4
1.23	0	0	0	0	0	0	2	0	2	2	0	2
1.24	0	0	0	0	0	0	0	3	1	0	3	1
1.25	0	0	0	0	0	1	0	2	0	0	2	1
1.26	0	0	0	0	1	0	0	2	0	0	3	0
1.27	0	0	0	0	0	0	0	2	0	0	2	0
1.28	0	0	0	0	1	0	0	0	0	0	1	0
1.29	0	0	0	0	0	0	0	0	0	0	0	0
1.30	0	0	0	0	1	0	0	1	0	0	2	0
1.31	0	0	0	1	0	0	0	1	0	1	1	0
1.32	0	0	0	0	0	0	0	1	3	0	1	3
1.33	0	0	0	0	0	0	0	0	0	0	0	0
1.34	0	0	0	0	1	0	0	3	0	0	4	0
1.35	0	0	0	0	0	0	0	0	0	0	0	0
1.36	0	0	0	0	2	0	0	0	2	0	2	2
1.37	0	0	0	0	0	0	0	0	0	0	0	0
1.38	0	0	0	0	0	1	0	0	1	0	1	2
1.39	0	0	0	0	0	0	0	1	0	0	1	0
1.40	0	0	0	0	3	4	0	0	1	0	3	5
1.41	0	0	0	0	0	0	0	2	0	0	2	0
1.42	0	0	0	0	0	1	0	0	1	0	1	2
1.43	0	0	0	1	1	0	0	1	0	1	2	0
1.44	0	0	0	0	1	2	0	3	2	0	4	4
1.45	0	0	0	0	1	1	0	0	1	0	1	2
1.46	0	0	0	0	3	1	0	4	1	0	7	2
1.47	0	0	0	0	2	0	0	2	0	0	4	0
1.48	0	0	0	0	2	0	0	1	0	0	3	0
1.49	0	0	0	0	0	0	0	0	0	0	0	0
1.50	0	0	0	0	3	0	0	1	0	0	4	0
SUBTOTAL	0	0	0	7	35	14	3	53	26	10	88	40

[redacted] [redacted] [redacted]

Table A-4

[redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	1	0	0	0	0	0	1	0
1.53	0	0	0	0	0	0	0	1	1	0	1	1
1.54	0	0	0	0	1	1	0	1	1	0	2	2
1.55	0	0	0	0	1	0	0	1	0	0	1	0
1.56	0	0	0	0	2	1	0	1	0	0	3	1
1.57	0	0	0	0	0	0	0	0	0	0	0	0
1.58	0	0	0	0	0	1	0	1	2	0	1	3
1.59	0	0	0	0	0	0	0	1	1	0	1	1
1.60	0	0	0	0	4	0	0	6	1	0	10	1
1.61	0	0	0	0	1	1	0	0	0	0	1	1
1.62	0	0	0	0	0	1	0	4	4	0	4	5
1.63	0	0	0	0	1	1	0	0	1	0	1	2
1.64	0	0	0	0	3	1	0	3	1	0	6	2
1.65	0	0	0	0	1	1	0	0	0	0	1	1
1.66	0	0	0	0	5	2	0	1	0	0	6	2
1.67	0	0	0	0	0	2	0	2	1	0	2	1
1.68	0	0	0	0	2	2	0	2	0	0	4	2
1.69	0	0	0	0	0	1	0	0	0	0	0	1
1.70	0	0	0	0	3	1	0	1	3	0	4	4
1.71	0	0	0	0	1	0	0	0	0	0	1	0
1.72	0	0	0	0	5	1	0	3	2	0	8	3
1.73	0	0	0	0	0	1	0	1	2	0	1	2
1.74	0	0	0	0	0	1	0	0	2	0	2	1
1.75	0	0	0	0	1	1	0	0	2	0	3	1
1.76	0	0	0	0	1	1	0	0	1	0	2	2
1.77	0	0	0	0	1	0	0	0	0	0	1	0
1.78	0	0	0	0	2	2	0	0	2	0	4	4
1.79	0	0	0	0	1	0	0	0	2	0	3	2
1.80	0	0	0	0	0	1	0	0	1	0	3	4
1.81	0	0	0	0	0	1	0	0	0	0	1	1
1.82	0	0	0	0	3	1	0	1	1	0	4	3
1.83	0	0	0	0	1	0	0	0	1	0	1	1
1.84	0	0	0	0	1	0	0	0	2	0	3	1
1.85	0	0	0	0	0	1	0	0	2	0	2	1
1.86	0	0	0	0	1	0	0	0	1	0	2	2
1.87	0	0	0	0	2	1	0	0	1	0	3	1
1.88	0	0	0	1	0	2	0	0	2	0	2	1
1.89	0	0	0	0	1	0	0	0	0	1	1	1
1.90	0	0	0	0	3	3	0	0	3	0	6	3
1.91	0	0	0	0	0	0	0	0	0	0	0	0
1.92	0	0	0	0	0	0	0	0	0	0	0	1
1.93	0	0	0	0	0	0	0	0	0	0	0	0
1.94	0	0	0	0	1	3	0	0	1	0	1	5
1.95	0	0	0	0	0	0	0	0	1	0	1	2
1.96	0	0	0	0	0	2	0	0	0	0	0	3
1.97	0	0	0	0	0	1	0	0	0	0	1	1
1.98	0	0	0	0	0	1	0	0	2	0	2	3
1.99	0	0	0	0	0	0	0	0	0	0	0	0
2.00	0	0	0	0	3	4	0	1	0	0	4	4
SUBTOTAL	0	0	0	1	56	39	1	55	41	2	111	80

[redacted]

Table A-4

[redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	2	0	1	0	0	1	2
2.02	0	0	0	0	0	1	0	3	0	0	3	1
2.03	0	0	0	0	0	0	0	0	0	0	0	0
2.04	0	0	0	0	1	1	0	1	0	0	2	1
2.05	0	0	0	0	0	1	0	1	0	0	1	1
2.06	0	0	0	0	0	3	0	2	0	0	2	3
2.07	0	0	0	0	0	0	0	0	2	0	0	0
2.08	0	0	0	0	0	4	0	0	2	0	0	6
2.09	0	0	0	0	0	0	0	2	1	0	2	1
2.10	0	0	0	0	0	2	0	1	1	0	1	3
2.11	0	0	0	0	0	1	0	1	2	0	1	3
2.12	0	0	0	0	0	2	0	1	2	0	1	4
2.13	0	0	0	0	0	1	0	1	1	0	1	1
2.14	0	0	0	0	1	2	0	0	3	0	2	5
2.15	0	0	0	0	0	1	0	0	1	0	1	2
2.16	0	0	0	0	0	1	0	1	1	0	1	2
2.17	0	0	0	0	1	0	0	1	1	0	2	0
2.18	0	0	0	0	0	1	0	1	3	0	2	4
2.19	0	0	0	0	0	0	0	1	2	0	1	2
2.20	0	0	0	0	0	2	0	0	2	0	1	2
2.21	0	0	0	0	0	0	0	0	1	0	0	2
2.22	0	0	0	0	0	1	0	0	1	0	0	2
2.23	0	0	0	0	0	0	0	0	0	0	0	0
2.24	0	0	0	0	0	0	0	0	1	0	0	1
2.25	0	0	0	0	0	0	0	0	0	0	0	1
2.26	0	0	0	0	1	0	0	0	1	0	1	1
2.27	0	0	0	0	0	1	0	0	1	0	0	2
2.28	0	0	0	0	0	2	0	0	0	0	0	2
2.29	0	0	0	0	0	2	0	0	1	0	1	2
2.30	0	0	0	0	0	2	0	0	2	0	1	4
2.31	0	0	0	0	0	3	0	0	0	0	0	3
2.32	0	0	0	0	0	1	0	0	1	0	1	2
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	2	0	0	0	0	0	2
2.36	0	0	0	0	0	0	0	0	2	0	0	2
2.37	0	0	0	0	0	1	0	0	0	0	0	1
2.38	0	0	0	0	0	0	0	0	2	0	0	2
2.39	0	0	0	0	0	1	0	0	0	0	0	1
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	1	0	0	0	0	0	1
2.47	0	0	0	0	0	0	0	0	0	0	0	0
2.48	0	0	0	0	0	1	0	0	0	0	0	1
2.49	0	0	0	0	0	1	0	0	0	0	0	1
2.50	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	5	43	0	24	30	0	29	73

[redacted]

Table A-4

[redacted] [redacted] [redacted]

MISSION • 1016-2 • INSTRUMENT • AFT 03/18/65 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	102	102	98	155	155	111	257	257	209

MISSION 1016-2 INSTR - AFT 03/18/65 PROCESSING AND EXPOSURE ANALYS

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	102	1 PC	13 PC	75 PC	9 PC	2 PC
FULL	155	38 PC	0 PC	57 PC	5 PC	0 PC
ALL LEVELS	257	23 PC	5 PC	65 PC	6 PC	1 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 U
INTERMED	0.10-0.17	0.01-0.20	0.21-0.39	0.40-0.90	0.91-1.34	1.35 AND U
FULL	0.18 AND UP	0.01-0.39	---------	0.40-0.90	0.91-1.69	1.70 AND U

[redacted] [redacted] [redacted]

Table A-4

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MIN • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 0.62 • MEDIAN • 0.55 • STD DEV • 0.27 • RANGE • 0.20 TO 1.88 WITH 102 SAMPLES

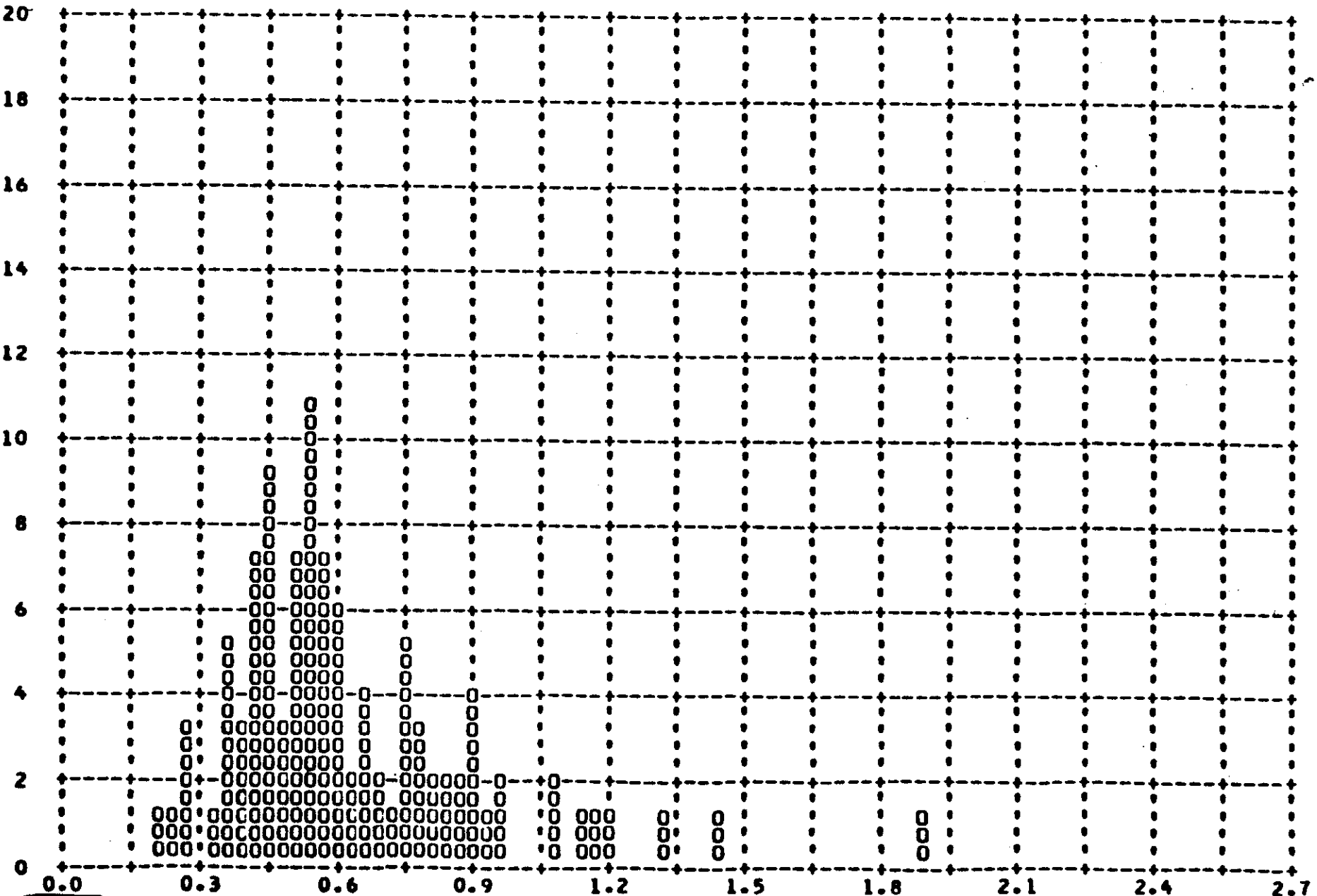


Figure A-28

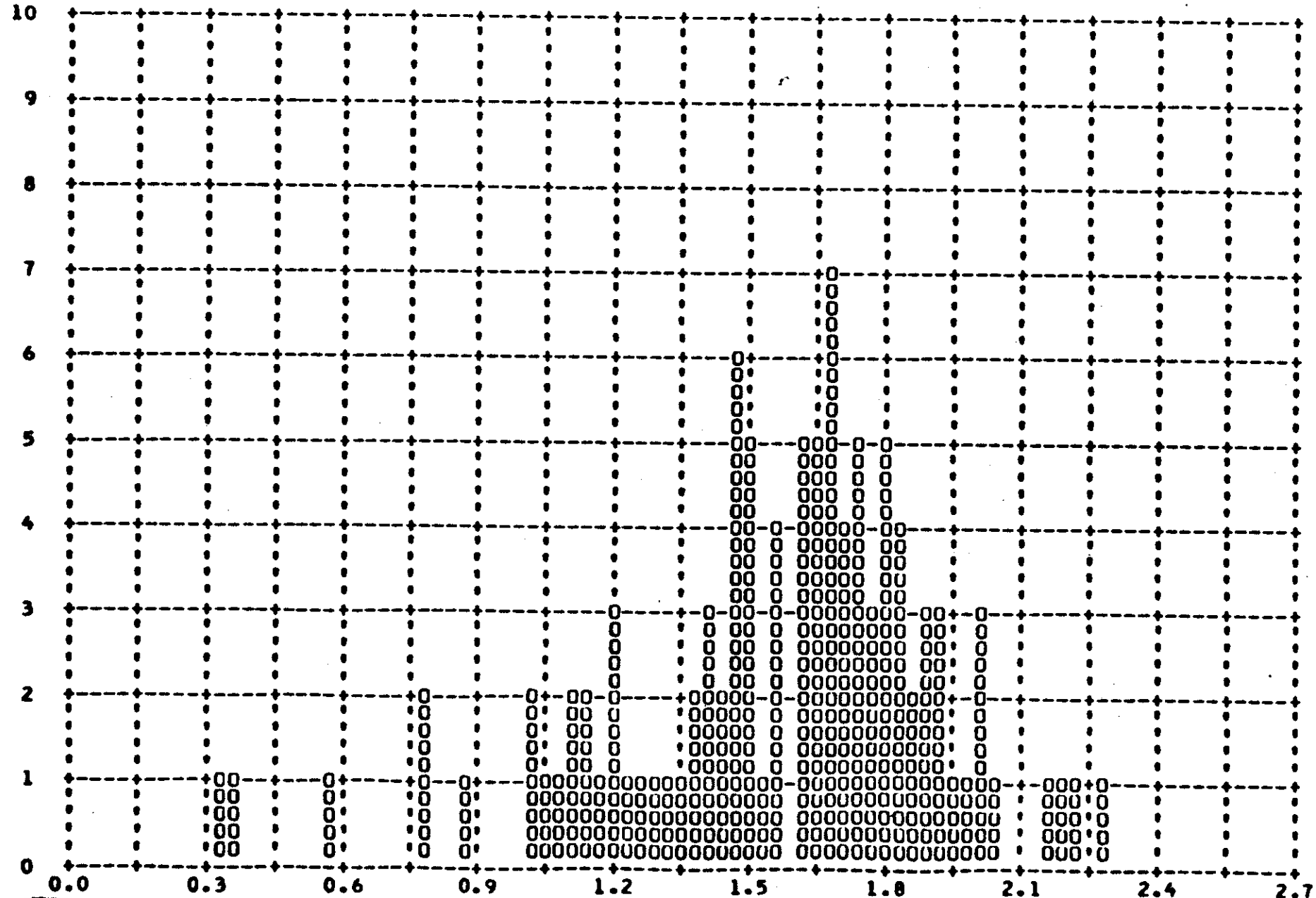
[redacted]

No. [redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.55 • MEDIAN • 1.63 • STD DEV • 0.36 • RANGE • 0.33 TO 2.26 WITH 102 SAMPLES



[redacted]

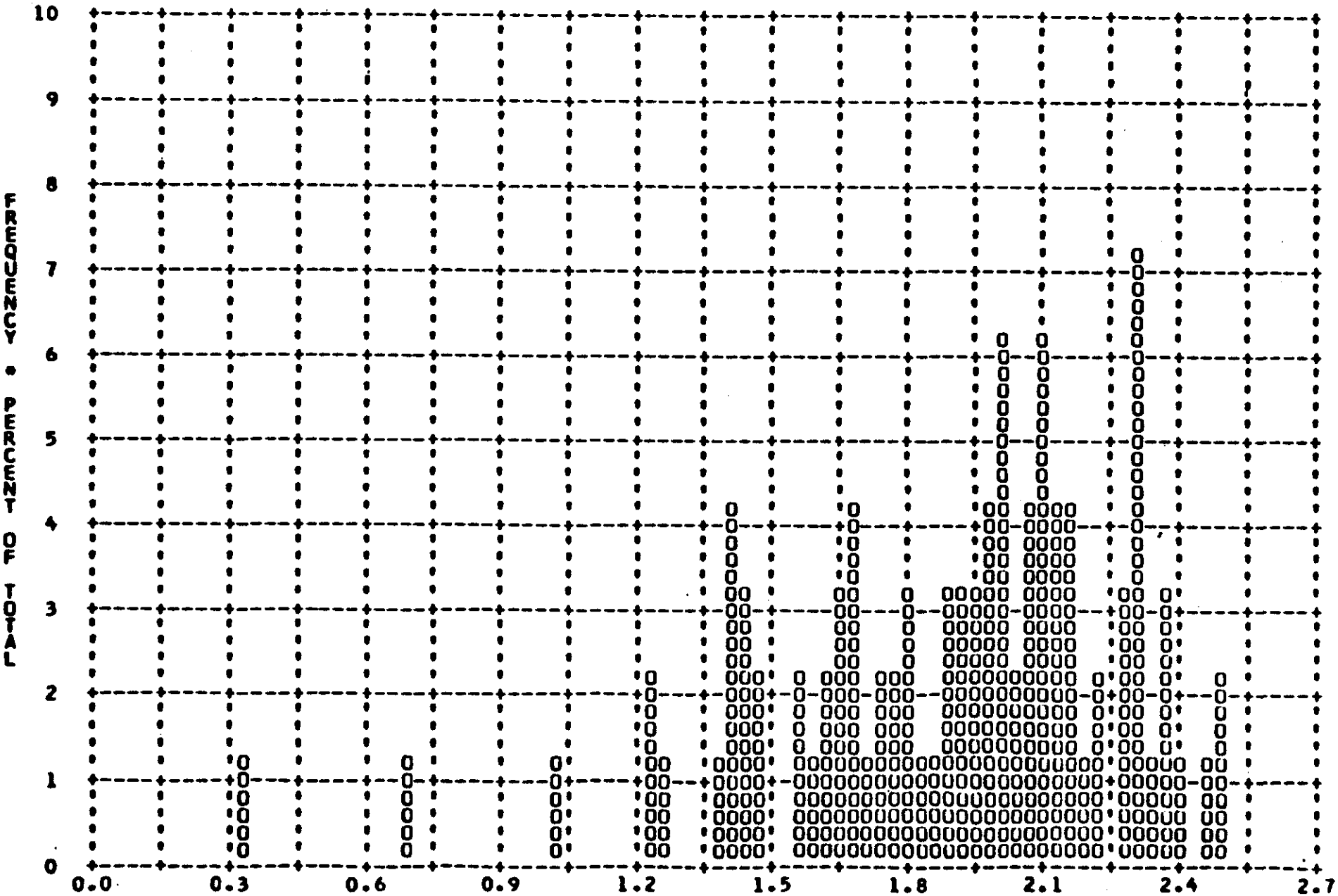
Figure A-20

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • INTERMEDIATE

ARITH MEAN • 1.89 • MEDIAN • 1.97 • STD DEV • 0.38 • RANGE • 0.33 TO 2.49 WITH 98 SAMPLES



[redacted]

Figure A-30

[redacted] No. [redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MIN • TERRAIN • PROCESSING • FULL

ARITH MEAN • 0.50 • MEDIAN • 0.44 • STD DEV • 0.22 • RANGE • 0.21 TO 1.69 WITH 155 SAMPLES

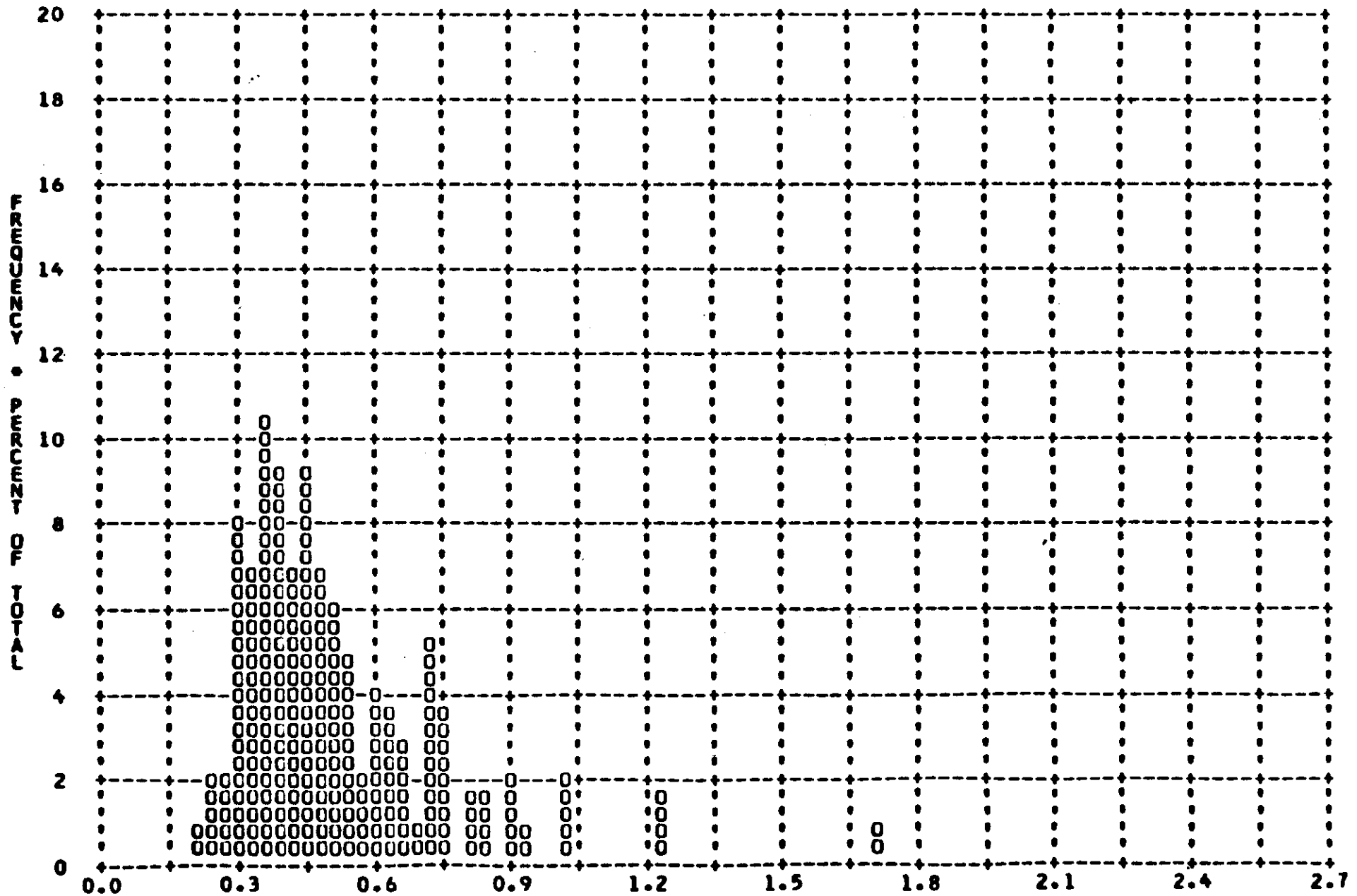


Figure A-31

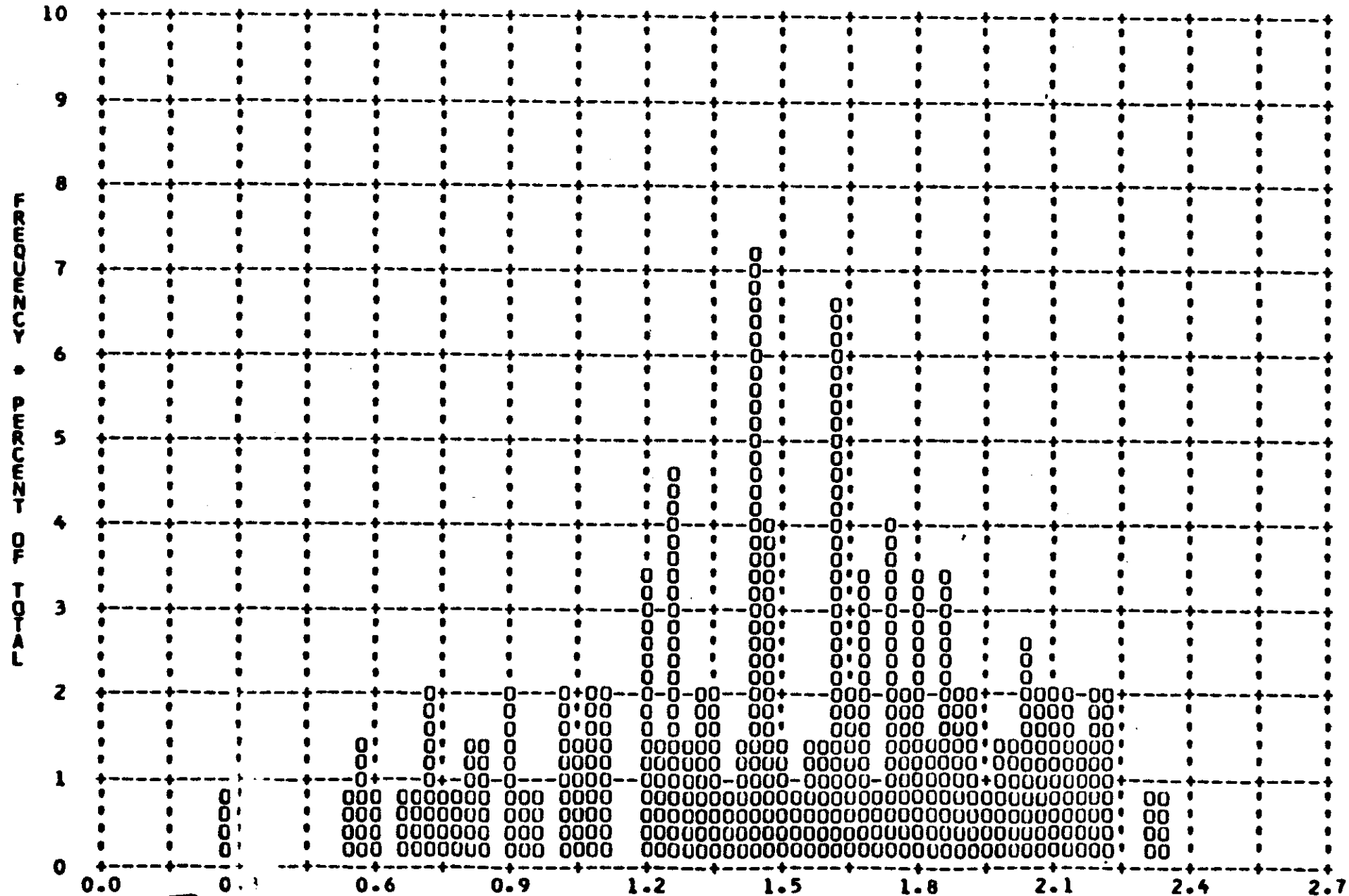
[redacted]

No [redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • FULL

ARITH MEAN • 1.50 • MEDIAN • 1.54 • STD DEV • 0.44 • RANGE • 0.26 TO 2.32 WITH 155 SAMPLES



[redacted]

Figure [illegible]

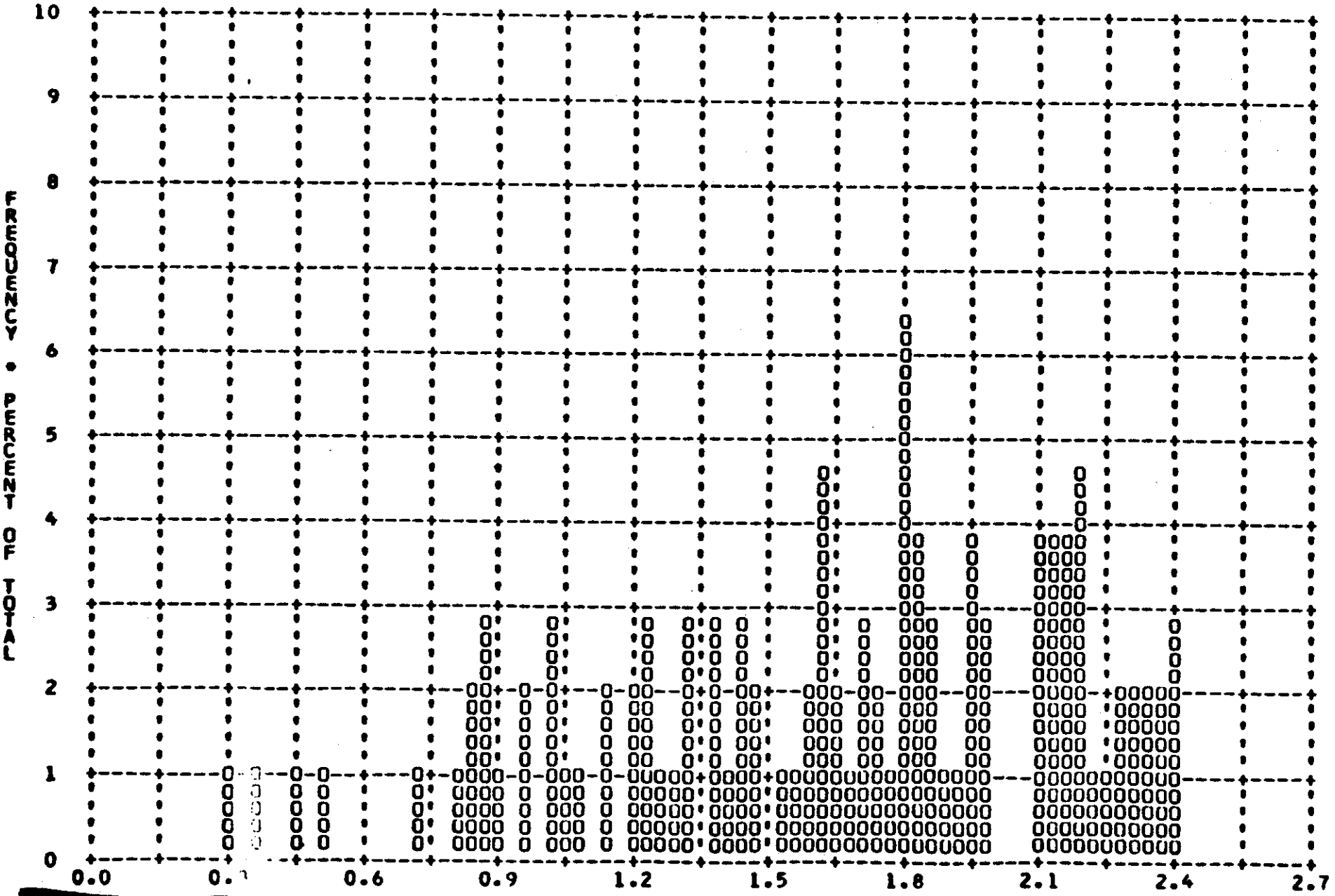
[redacted]

No. [redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • FULL

ARITH MEAN • 1.64 • MEDIAN • 1.72 • STD DEV • 0.51 • RANGE • 0.30 TO 2.40 WITH 111 SAMPLES



[redacted]

Figure A-33

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MIN • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 0.55 • MEDIAN • 0.49 • STD DEV • 0.24 • RANGE • 0.20 TO 1.88 WITH 257 SAMPLES

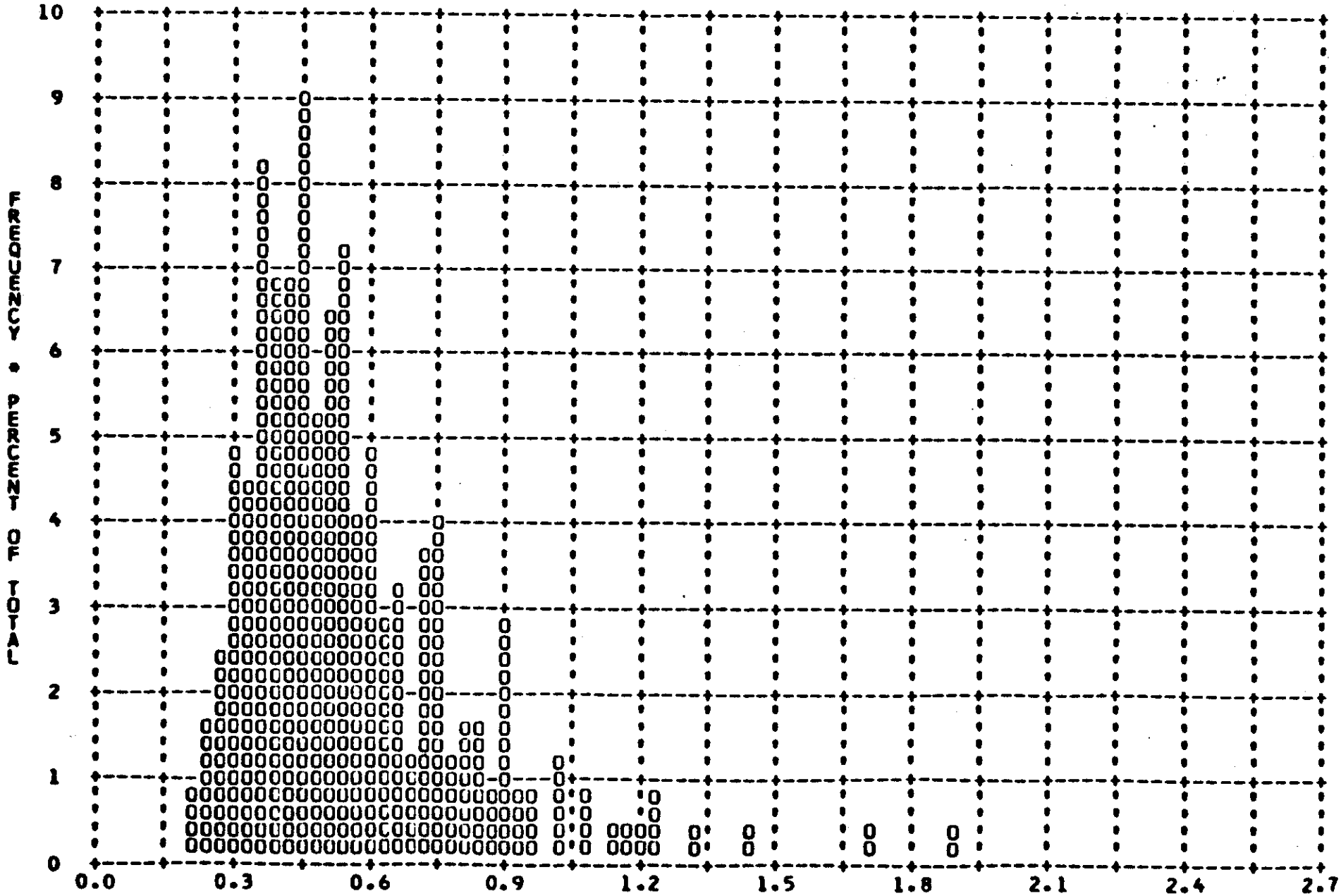


Figure A-24

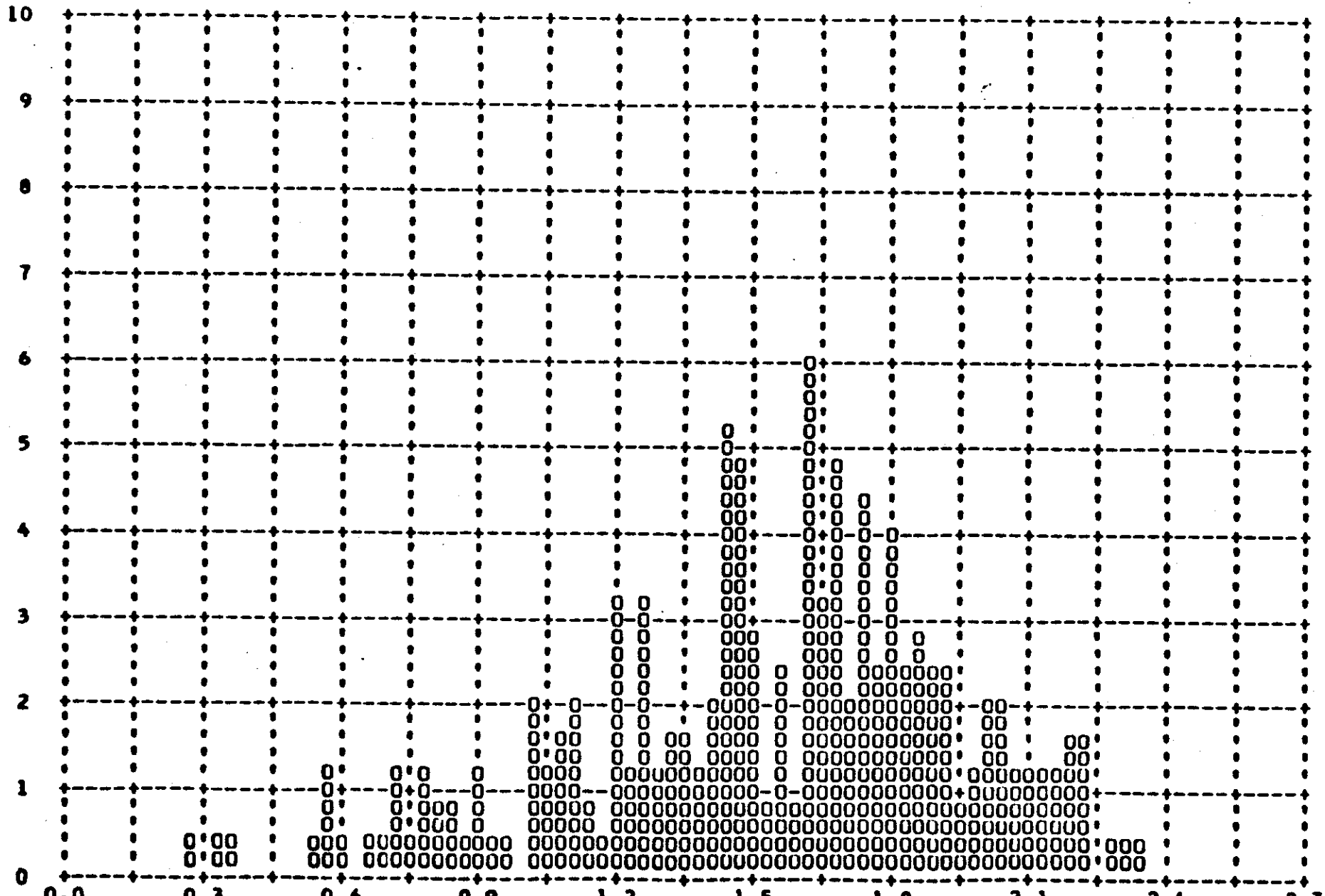
[redacted]

No. [redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • TERRAIN • PROCESSING • ALL LEVELS

ARITH MEAN • 1.52 • MEDIAN • 1.60 • STD DEV • 0.41 • RANGE • 0.26 TO 2.32 WITH 257 SAMPLES



[redacted]

Figure A-35

[redacted]

[redacted]

MISSION • 1016-2 • INSTR • AFT • 03/18/65 PLOT OF D MAX • CLOUD • PROCESSING • ALL LEVELS

ARITH MEAN • 1.75 • MEDIAN • 1.82 • STD DEV • 0.47 • RANGE • 0.30 TO 2.49 WITH 209 SAMPLES

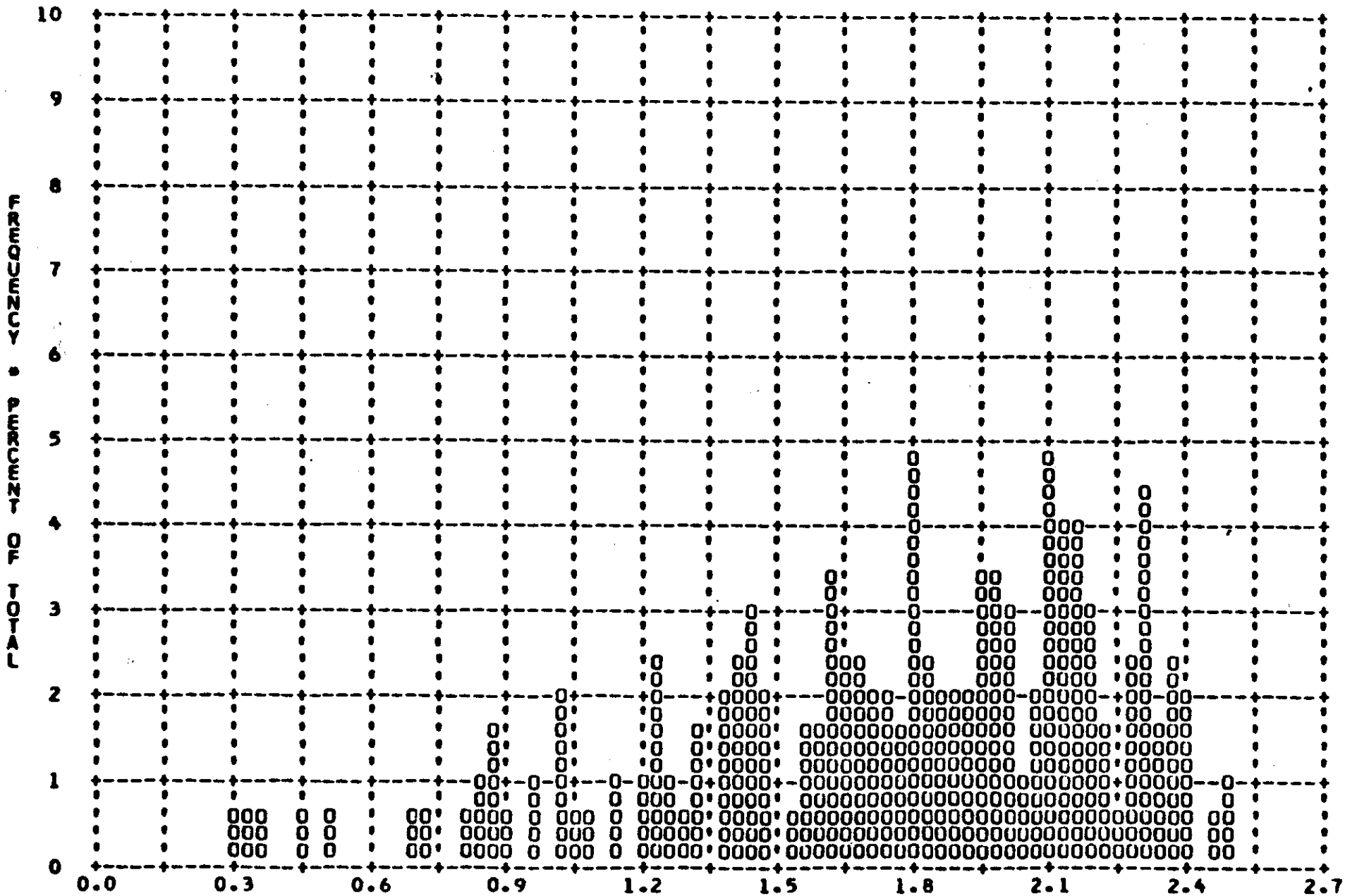


Figure A-36

Distribution:

Copy No.	To
[redacted]	[redacted]