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(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-10

VEHICLE NO. 1177

MISSION NO. 1008

CAMERA NOS. 150/151

Prepared by: [redacted]

Checked by:

Approved by:

Approved by:

Program Manager

[redacted]

17 JUL 1964

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SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CONTRACT NO. 150/151

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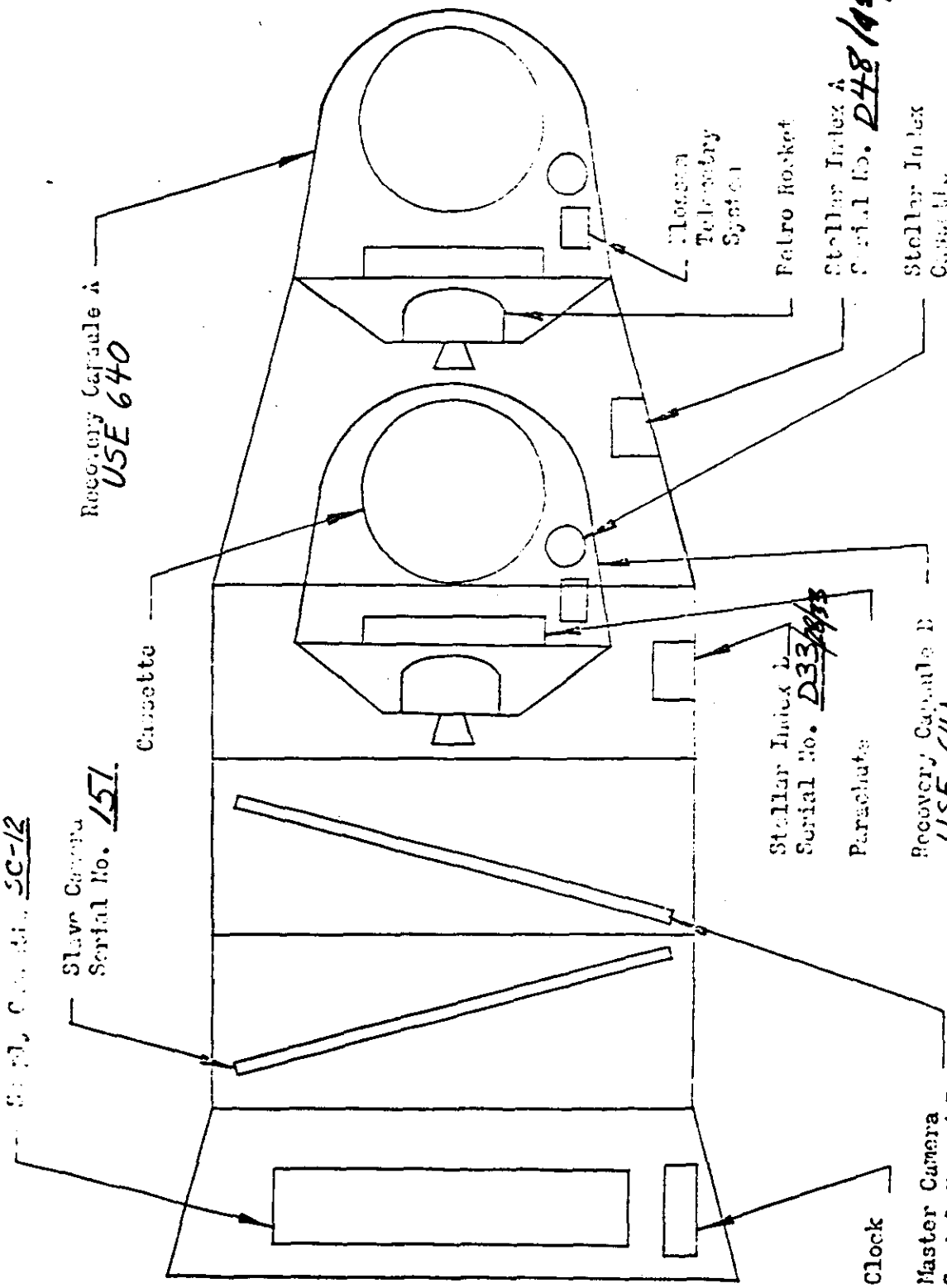
SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

VEHICLE LAYOUT:



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SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

SPECIAL FLIGHT DATA:

Master Camera Serial No. 150

Slave Camera Serial No. 151

Stellar Index "A" Serial No. D48/45/48

Stellar Index "B" Serial No. D33/28/33

Launch Date JULY 10, 1964

Reactivation Date NONE

Reactivation Orbit No. —

Orbital Parameters: (Rev. 42)

Period 90.97 Min. Eccentricity .0218

Perigee 100.71 NM Perigee Latitude 49.32 Deg. N

Apogee 258.40 NM Inclination Angle 84.99 Deg. N

Recovery Orbit No. 49

Recovery Date JULY 13, 1964

REMARKS:

SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

LENS SETTINGS AND FILM TYPES:

Panoramic Camera Settings:	Camera No. 150	Camera No. 151
Panoramic Optics Slit Width	.200 in.	.200 in.
Panoramic Optics Filter Type	WRATTEN-21	WRATTEN-21
Horizon Optics Exp. Time	1/100 sec.	1/100 sec.
Horizon Optics Aperture	F6.8 SUPPLY F8.0 TAKEUP	F8.0 SUPPLY F6.8 TAKEUP
Horizon Optics Filter Type	WRATTEN-25	WRATTEN-25

Stellar Index Camera Settings:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Exposure Time	2.0	1/500	2.0	1/500
Aperture Setting	F1.8	F4.5	F1.8	F4.5
Filter Type	NONE	WRATTEN-21	NONE	WRATTEN-21

Ratio: One Stellar Index Frame Per 7 Master Camera Frames.

Film:

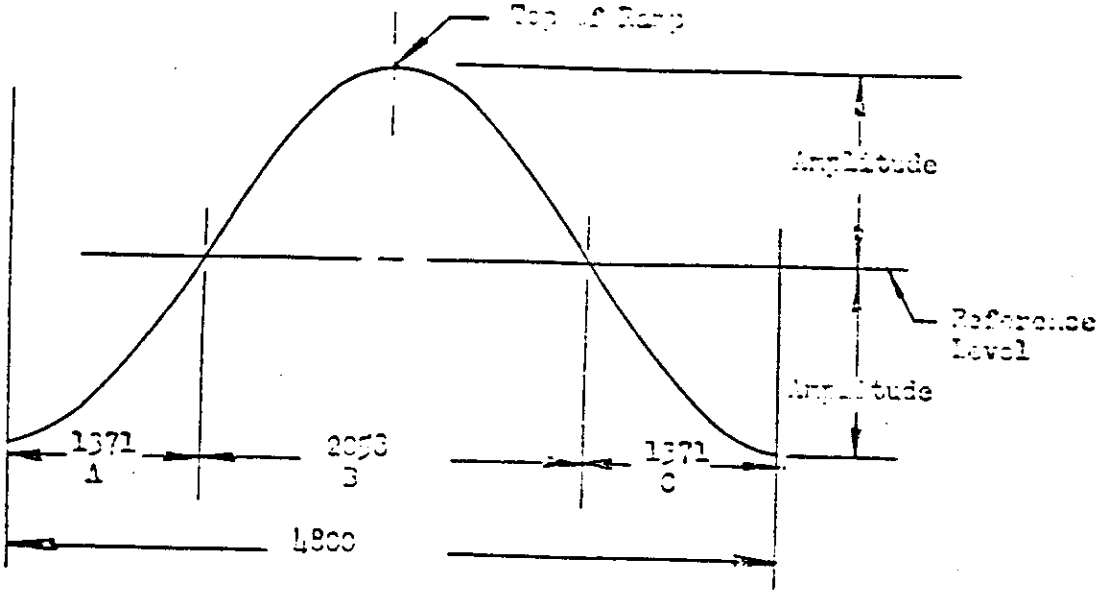
Panoramic Cameras:	Camera No. 150	Camera No. 151
Type	7J-40	7J-40
Length	15753 ft.	15753 ft.
Splices	4	4
Emul. Data	62-3-6-4	62-3-6-4

Stellar Index Cameras:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Type	3J-34	7J-33	3J-34	7J-33
Emul. Data	7-3-6-4	28-1-3-4	7-3-6-4	28-1-3-4

SYSTEM NO. T-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

V/H RAMP CONFIGURATION AND CONSTANTS:



Cycle Rate Computation:

A. C to 1371 Sec Up Ramp: CPS=P+A Sin (1.5 X -1.5707963)

B. 1372 to 3429 Sec Up Ramp: CPS=P+A Sin (2 X -0.3926991) ≤ .4625

C. 3430 to 4800 Sec Up Ramp: CPS=P+A Sin (1.5 X - 0.7853982)

FMC Rate Computation:

FMC Rate (In/Sec) = $2\pi \left(\frac{0.1303}{CP}\right)$ = 2.08507 x CPS

FMC Rate (Radians/Sec) = $2\pi \left(\frac{0.1304}{24\ CP}\right)$ = 0.34378 x CPS

Scan Velocity Computation:

Scan Velocity (In/Sec) = $\frac{48\pi}{CP}$ = 150.796 x CPS

Scan Velocity (Radians/Sec) = $\frac{48\pi}{24\ CP}$ = 6.28319 x CPS

Exposure Time (Milliseconds) = 1000 $\left(\frac{CP \times SLIT}{48\pi}\right)$ = 6.63146 $\left(\frac{SLIT}{CPS}\right)$

WHERE: $X = \frac{\text{Time Up Ramp (Seconds)}}{1309.6179}$ $R = \frac{1}{2}$ (CPS (top) + CPS (bottom))

$A = \frac{1}{2}$ (CPS top - CPS bottom) CP = Camera Cycle Period in Sec/Cycle

CPS = Camera Cycle Rate in Cycles/Sec

SLIT = Slit Width in Inches

[redacted]

SUBSYS NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

CYCLE PERIOD DATA:

PRE-FLIGHT CYCLE PERIODS:

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Time Up Ramp Sec
		Master	Slave	
11	11	3.784	3.814	853
11	1	5.943	6.100	912
11	1	2.197	2.259	2580
11	1	5.491	5.612	985

IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Orbit No.	Time Up Ramp Sec
		Master	Slave		
11	11	3.820	3.895	8	853
11	1	5.888	6.156	24	912
11	1	2.267	2.272	31	2580
11	1	5.513	5.685	40	985
11	1	2.270	2.270	47	2300

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SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

LENS DATA SUMMARY: Master Camera No. 150

Lens Serial No. 1272435

Slit Width .200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.551 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	235	SO-132	HI
Other	137	SO-132	LO

Dynamic:

Itek ~~Pre-Vibration~~	167	SO-132	HI
Itek ~~Post~~ Vibration	131	SO-132	LO
AP	178	SO-132	HI
AP	112	SO-132	LO
Other			

Note: ~~Itek~~ Post Vibration Resolution of 178 lines/MM Reported In Message No. _____ dated 7/10/64

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	0	1.0	2.0	3.0	359	358	357		
Distortion Millimeters	.000	.000	.002	.003	.000	.002	.004		

[redacted]

[redacted]

SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

LENS DATA SUMMARY: (Horizon Cameras for MASTER Camera No. 150)

	Take-Up	Supply
Lens Serial No.	812546	812302
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F 8.0	F 6.8
Operational Focal Length	54.71 MM	55.13 MM
Radial Distortion:		
10° off Axis	.002 MM	.041 MM
20° off Axis	.000 MM	.088 MM
Tangential Distortion (Maximum Vector)	.002 MM	.002 MM

Resolution:

Angle off Axis Deg.	0	10	15	20	25			0	5	10	15	20	25	27.5
Radial Resolution	170	132	108	101	98			206	182	172	149	116	125	123
Tangential Resolution	170	130	106	84	55			164	162	151	115	92	60	51

115.4 Lines/MM Avg. 133.4 Lines/MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on SO-132 film and Hi contrast target.

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[redacted]

SYSTEM NO. J-10

VEHICLE NO. 1177

MISSION NO. 1008

CAMERA NOS. 150/151

LENS DATA SUMMARY: Slave Camera No. 151

Lens Serial No. 1312435

Slit Width .200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.653 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	226	SO-132	HI
Other	135	SO-132	LO

Dynamic:

Itek Pre-Vibration	163	SO-132	HI
Itek Post Vibration	127	SO-132	LO
AP	194	SO-132	HI
AP	113	SO-132	LO
Other			

NOTE: ~~AAA~~ Post Vibration Resolution of 194 lines/MM Reported In Message No. _____ dated 7/10/64.

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	0	1.0	2.0	3.0	359.0	358.0	357.0		
Distortion Millimeters	.000	.000	.001	.002	.000	.001	.003		

[redacted]

SYSTEM NO. J-10

VEHICLE NO. 1177

MISSION NO. 1008

CAMERA NOS. 150/151

LENS DATA SUMMARY: (Horizon Cameras for CLAVE Camera No. 151)

	Take-Up	Supply
Lens Serial No.	812286	812307
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F8.0
Operational Focal Length	54.84 MM	55.29 MM
Radial Distortion:		
10° off Axis	-.001 MM	.006 MM
20° off Axis	-.008 MM	.014 MM
Tangetial Distortion (Maximum Vector)	.005 MM	.003 MM

Resolution:

Angle off Axis Deg.		N.A.				
Radial Resolution						
Tangetial Resolution		—				

0	5	10	15	20	25	27.5
102	103	86	64	55	70	62
103	102	89	60	54	60	44

N.A. Lines/MM Avg. 754 Lines/MM Avg.

NOTE:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resulution in lines per MM on SO-132 film and 41 contrast target.

[redacted]

SYSTEM NO. J-10
VEHICLE NO. 1179
MISSION NO. 1008
CAMERA NOS. 150/151

DEFINITION OF PANORAMIC CAMERA FORMAT CALIBRATIONS:

1.0 Measurements are made with respect to collimator targets fixed with respect to the mechanical interface between the total payload assembly and the orbital vehicle.

2.0 Two sets of three targets each, are aligned to be coplanar within ±5" of arc so positioned to form an angle of -15.00° ±5" to the mechanical interface for master camera calibrations and an angle of +15.00°±5" to the mechanical interface for slave camera calibrations.

2.1 One target, Target 1 of each set is imaged on the Terrain format.

2.2 The second and third targets of each set are at angles of 75.00° ±5" from target one and are imaged on the horizon formats.

3.0 The indicated center of format for the panoramic cameras is given by the intersection of a line through the center of mass of the central shrinkage marker drawn normal to the edge of format containing the shrinkage marker and a line parallel to the same edge located at a position half-way between the format edges.

4.0 The indicated principal points of the horizon cameras are the points of intersection of lines joining opposite fiducials.

5.0 Xvo and Yvo are the offsets of Target 1 from the indicated center of format of the panoramic cameras as defined in Paragraph 3.

6.0 Xs, Ys and Xt, Yt are the offsets of Targets 2 and 3 from the indicated principal points of the supply and take-up horizon cameras respectively.

7.0 The indicated flight direction is the direction of vehicle travel during orbit. The forward edge of format is the edge opposite the shrinkage markers for the master camera and is the edge containing the shrinkage markers for the slave camera.

8.0 Dimensions A, B and C are the spacings of the shrinkage markers and dimensions D and E are the spacings of the Y Axis fiducials. Techniques for exact measurement of these dimensions have not been developed. The figures quoted are measurements made on hand processed film without control of shrinkage.

9.0 The format dimensions are measured to the best estimate of format edge.

10.0 Measurement of the angle between the indicated axis of the panoramic cameras and the line of intersection of the plane defined in Paragraph 2 on the format is obtained from the offset dimensions Dmx and Dmy of Target 1 for each camera.

11.0 Measurement of the angle between the indicated axis of the horizon cameras and the line of intersection of the plane defined in Paragraph 2 on the format is made by measuring the scan direction offset of the targets defined in Paragraph 2.2 at a fixed distance from the target center in the Y direction. Dimensions Dtx, Dty, Dsx and Dsy are the offsets of these measurements.

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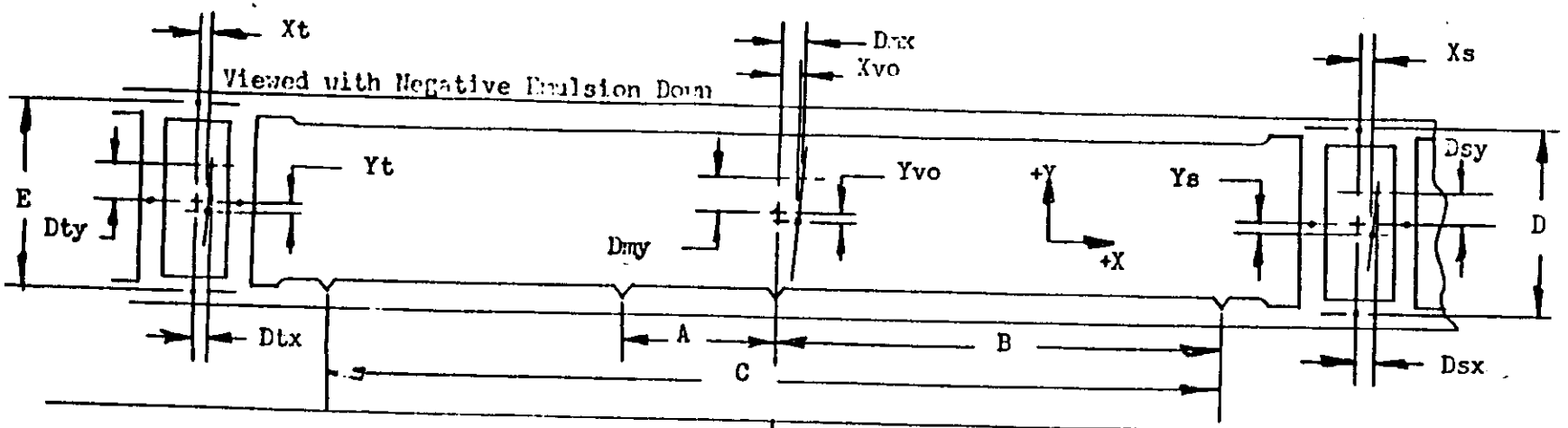
SYSTEM NO. T-10
VEHICLE NO. 1107
MISSION NO. 1008
CAMERA NOS. 150/151

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 150	Vehicle Motion	Scan Direction
A 76.3	Xt +0.171	Dtx +0.184
B 355.2	Yt +0.055	Dty -2.683
C 710.7	Xs +0.051	Dsx +0.052
D 56.564	Ys -0.128	Dsy +2.815
E 56.569	Xvo +0.787	Dmx +0.794
	Yvo +0.495	Dmy +3.495

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.868	NA	NA
Width	755.0	NA	NA

Camera No. 151	Vehicle Motion	Scan Direction
A 76.2	Xt -0.275	Dtx -0.281
B 355.4	Yt -0.261	Dty +1.928
C 710.7	Xs -0.631	Dsx -0.647
D 56.563	Ys -0.100	Dsy -2.622
E 56.550	Xvo -1.018	Dmx -1.015
	Yvo +0.800	Dmy -3.800

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	56.231		
Width	754.7		

Note: 1. All dimensions are in millimeters and are average dimensions of three formats.
2. Height of main format is taken at center of format.
3. Dt, Dm, Ds, X and Y dimensions are taken 10" above point defining target center.
4. Format Sign Convention

-X+Y	+X+Y
-X-Y	+X-Y

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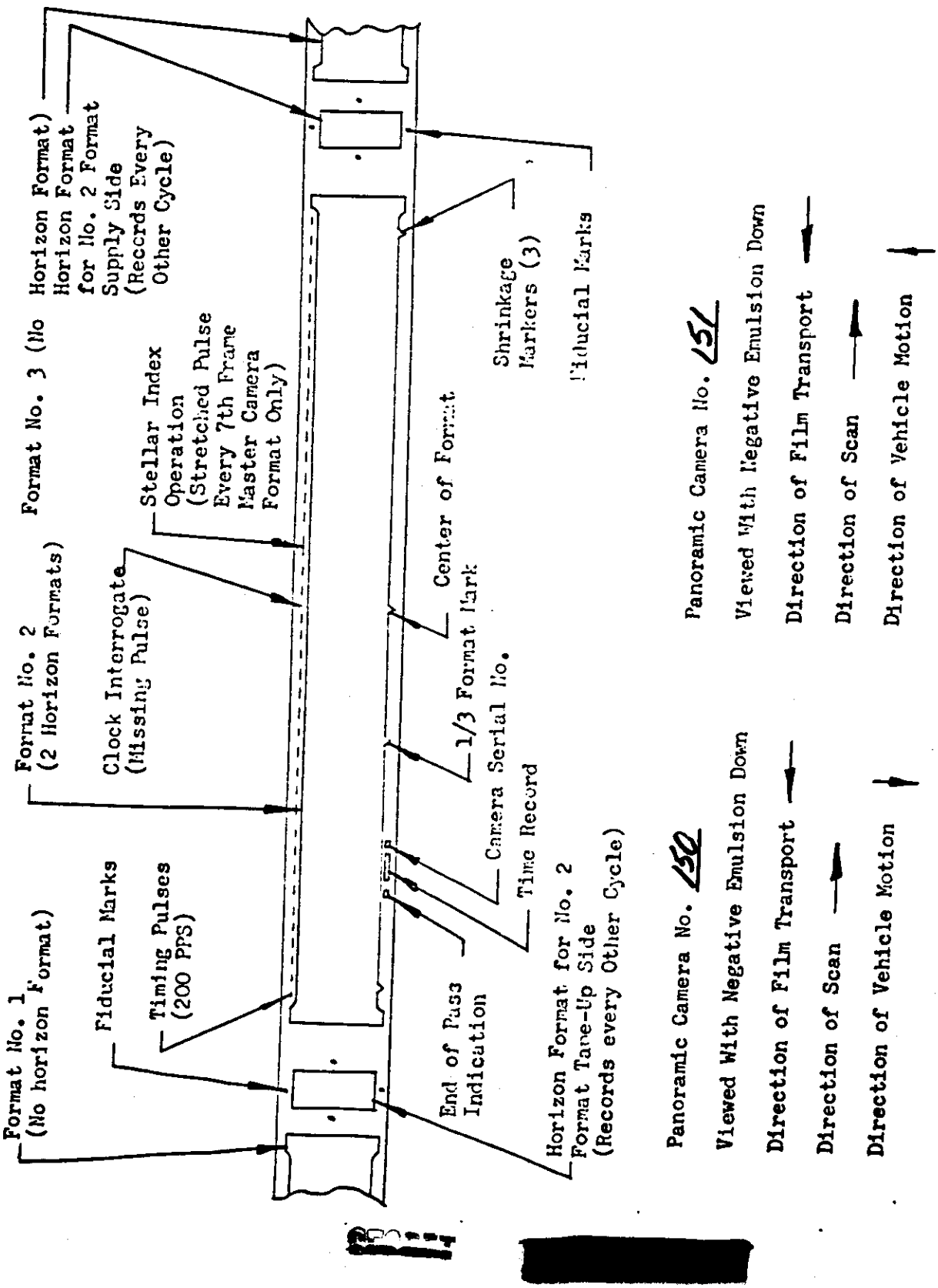
SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

FORMAT LAYOUT: (PANORAMIC CAMERAS)



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SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/156

LENS DATA SUMMARY STELLAR INDEX "A" D48/45/48:

	Stellar	Index
Lens Serial No.	11058	813063
Reseau Serial No.	48	45
Filter Type	NONE	WRATTEN 21
Aperture	F1.8	F4.5
Exposure Time	2.0 Sec.	1/500 Sec.
Operational Focal Length	N.A. MM	38.18 MM
Equivalent Focal Length	NA. MM	NA. MM

Resolution:

Angle off axis					
Resolution L/MM High Contrast		N.A.			
Resolution L/MM Low Contrast					

0	10	20	30	35
73	84	98	90	80
73	82	87	58	37

Note: Index Resolution of 70.6 Lines/MM AMAR
Read From 50-130 Film.

Distortion:

Angle off Axis Deg.					
Distortion Millimeters		N.A.			

	N.A.			

Perpendicularity of Reseau to Optical Axis: .0006/.937 IN. | .0009/2.25 IN.

Location of Principal Point:
X NA MM | X NA MM
Y NA MM | Y NA MM

[redacted]

SYSTEM NO. J-10 [redacted]

VEHICLE NO. 1177

MISSION NO. 1008

CAMERA NOS. 150/151

LENS DATA SUMMARY STELLAR INDEX B: D33/28/33

	Stellar	Index
Lens Serial No.	10293	811898
Reseau Serial No.	33	28
Filter Type	NONE	WRATTEN 21
Aperture	F 1.8	F 4.5
Exposure Time	2.0 Sec.	1/500 Sec.
Operational Focal Length	NA MM	NA MM
Equivalent Focal Length	NA MM	NA MM

Resolution:

Angle off axis						0	10	20	30	35
Resolution L/MM High Contrast		N. A.				92	82	104	90	80
Resolution L/MM Low Contrast						73	78	80	50	25

NOTE: Index Resolution of 71 Lines/MM AWAR

Read From SO-130 Film.

Distortion:

Angle off Axis Deg.										
Distortion Millimeters										

Perpendicularity of Reseau to Optical Axis	.0005/.937 IN.	.0003/2.25 IN.
Location of Principal Point	X NA MM	X NA MM
	Y NA MM	Y NA MM

[redacted]

[redacted]

SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

PRELIMINARY CLOCK CORRELATION:

ORBIT	SYSTEM TIME	CLOCK TIME	DIFFERENCE
0	11726.550	519522.233	
8	39526.545	20451.321	
16	84862.935	65787.720	+0.009
24	40485.245	107310.047	+0.017
31	80351.880	147676.695	+0.013
40	41326.682	195051.518	+0.021
47	81320.415	235045.268	+0.017

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SYSTEM NO. J-10
VEHICLE NO. 1177
MISSION NO. 1008
CAMERA NOS. 150/151

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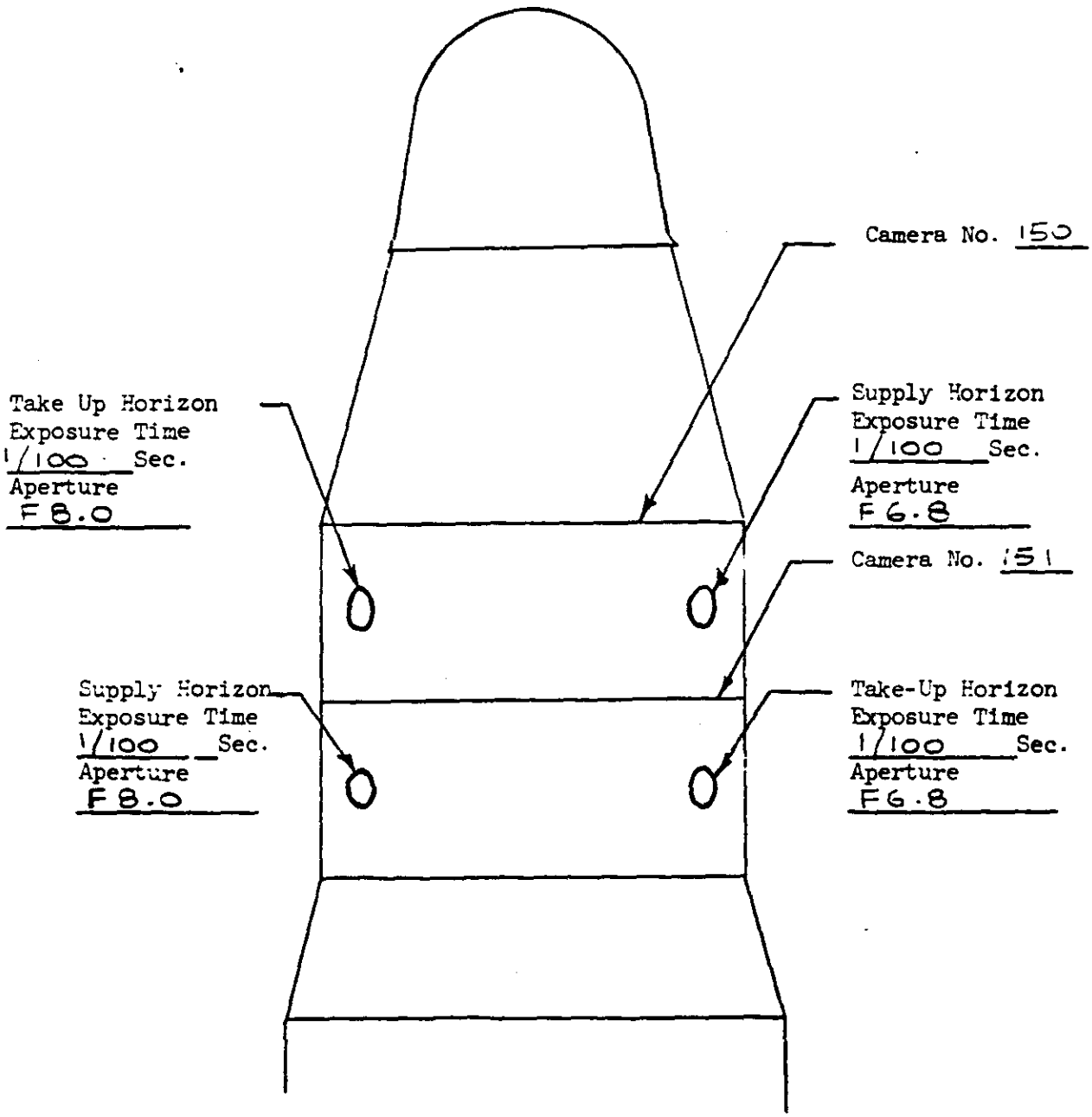
HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



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J-10 PEST AS TRANSMITTED 7/13/64 MISSION A

SYSTEM NUMBER J-10
VEHICLE NUMBER 1177
MISSION NUMBER 1008
PANORAMIC CAMERA NUMBERS 150 AND 151
STELLAR/INDEX CAMERA NUMBER D48/45/48

MISSION A
PERFORMANCE ESTIMATE

SUB	PROG	CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZD	TIME ON ST	TUR NO	DUR SEC.	SOLAR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
LAUNCH		150	103	14											
LAUNCH		151	99												
1	2 0	150	16	03	252	249	11 2666	11	1	2114	37	44	45	3.2	3.2
1	2 0	151	16		253	250	11 2666	11	1	2114	37	44	44	3.2	3.2
2	2 1	150	45	06	267	260	11 7897	11	1	1881	115	38	41	3.6	3.4
2	2 1	151	45		268	260	11 7897	11	1	1881	115	37	41	3.6	3.4
3	9 1	150	96	14	272	257	1113284	11	1	1808	235	35	42	3.5	3.1
3	9 1	151	95		273	257	1113284	11	1	1808	235	35	42	3.5	3.2
5	9 1	150	127	18	255	236	1124458	11	1	2070	288	43	46	3.1	3.0
5	9 1	151	126		256	237	1124458	11	1	2070	288	43	46	3.2	3.0
6	8 1	150	137	19	276	254	1129602	11	1	1756	340	33	43	3.7	3.1
6	8 1	151	136		277	255	1129602	11	1	1756	340	32	43	3.7	3.1
6	8 2	150	122	18	244	225	1130093	11	1	2247	272	46	45	3.0	3.0
6	8 2	151	121		244	226	1130093	11	1	2247	272	45	45	3.0	3.0
7	7 1	150	62	09	277	267	1135048	11	1	1746	161	32	38	3.7	3.3
7	7 1	151	61		278	268	1135048	11	1	1746	161	32	38	3.7	3.4
7	7 2	150	96	13	257	242	1135363	11	1	2061	217	42	46	3.1	3.0
7	7 2	151	95		257	242	1135363	11	1	2061	217	42	46	3.2	3.0
8	10 0	150	12	02	139	142	1139568	1111		808	45	-9	-7	5.4	5.4
8	10 0	151	11		138	141	1139568	1111		808	45	-10	-8	5.9	5.9
8	10 1	150	164	24	261	235	1140758	11	1	1999	376	41	46	3.2	3.0
8	10 1	151	164		262	236	1140758	11	1	1999	376	40	46	3.2	3.0
9	6 1	150	138	19	264	242	1146176	11	1	1966	318	39	46	3.2	3.0
9	6 1	151	137		265	243	1146176	11	1	1966	318	39	46	3.3	3.0
19	3 1	150	74	11	266	255	1214339	11	1	1971	173	39	44	3.3	3.1
19	3 1	151	73		267	255	1214339	11	1	1971	173	38	44	3.3	3.1
21	9 1	150	138	20	270	248	1225204	11	1	1918	321	37	46	3.3	3.0
21	9 1	151	136		271	249	1225204	11	1	1918	321	36	45	3.4	3.0
22	7 1	150	147	21	276	252	1230576	11	1	1834	355	33	45	3.5	3.1
22	7 1	151	146		276	253	1230576	11	1	1834	355	33	44	3.5	3.1
22	7 2	150	44	06	243	236	1231067	11	1	2325	97	47	47	3.0	3.0
22	7 2	151	44		243	237	1231067	11	1	2325	97	47	47	3.0	3.0
23	3 1	150	36	05	258	252	1236301	11	1	2102	82	42	44	3.2	3.1
23	3 1	151	35		259	253	1236301	11	1	2102	82	42	44	3.2	3.2
23	3 2	150	55	08	250	241	1236420	11	1	2220	126	45	47	3.1	3.1
23	3 2	151	55		251	242	1236420	11	1	2220	126	45	47	3.1	3.1
24	3 0	150	8	01	140	142	1240526	11	1	874	46	-10	-8	8.9	8.4
24	3 0	151	7		137	140	1240526	11	1	874	46	-12	-9	10.2	9.6
24	7 1	150	144	21	266	243	1241639	11	1	1987	335	39	47	3.3	3.0
24	7 1	151	144		267	244	1241639	11	1	1987	335	38	47	3.3	3.0
25	4 1	150	76	10	258	246	1247218	11	1	2111	172	42	46	3.1	3.0
25	4 1	151	76		259	247	1247218	11	1	2111	172	42	46	3.1	3.0

31	3	1	150	36	06	234	229	1280322	11	1	2484	83	47	47	3.1	3.2
31	3	1	151	36		235	229	1280322	11	1	2484	83	47	47	3.1	3.2
36	1	1	150	274	39	283	240	1320479	11	1	1764	647	28	48	3.6	2.9
36	1	1	151	273		283	241	1320479	11	1	1764	647	27	48	3.6	3.0
37	2	1	150	43	06	255	248	1326367	11	1	2198	100	44	47	3.2	3.1
37	2	1	151	43		256	249	1326367	11	1	2198	100	44	46	3.2	3.1
38	8	1	150	35	05	283	277	1331396	11	1	1772	91	28	32	3.7	3.5
38	8	1	151	35		283	278	1331396	11	1	1772	91	27	32	3.7	3.5
38	8	2	150	86	12	266	252	1331664	11	1	2040	201	39	45	3.2	3.0
38	8	2	151	86		267	253	1331664	11	1	2040	201	39	45	3.2	3.1
38	8	3	150	88	13	250	236	1331900	11	1	2277	199	46	49	3.0	3.0
38	8	3	151	88		251	237	1331900	11	1	2277	199	46	49	3.0	3.0
39	9	1	150	159	22	260	235	1337212	11	1	2134	361	42	49	3.1	3.0
39	9	1	151	159		261	236	1337212	11	1	2134	361	42	49	3.1	3.0
40	1	0	150	8	02	140	143	1341469	11	1	936	45-11		-9	8.6	8.2
40	1	0	151	9		138	140	1341469	11	1	936	45-12-10			7.7	7.3
40	1	1	150	224	32	272	237	1342490	11	1	1957	512	36	49	3.3	3.0
40	1	1	151	222		273	238	1342490	11	1	1957	512	35	49	3.3	3.0
41	4	1	150	88	12	259	246	1348143	11	1	2157	185	43	47	2.9	2.8
41	4	1	151	88		260	247	1348143	11	1	2157	185	42	47	2.9	2.8
47	4	1	151	70		240	229	1381185	11	1	2471	155	48	47	3.1	3.1
47	4	1	150	70	10	239	228	1381185	11	1	2471	155	48	47	3.1	3.1

AAA BB C DDD EEE FF GHH GII JJKKKKK LL M NNNN OOO PP QQ RRR SSS

A ORBITAL TIMER SUBCYCLE NUMBER
B PROGRAM NUMBER
C OPERATION NUMBER
D PAN. CAMERA SERIAL NUMBER (MASTER IS EVEN, SLAVE IS ODD)
E EST. NO OF PAN FRAMES, BASED ON COUNTER READINGS INFLITE
F EST. NUMBER OF STELLAR/INDEX FRAMES
G QUADRANT
H EST. LATITUDE OF FIRST FORMAT CENTER IN PASS
I EST. LATITUDE OF LAST FORMAT CENTER IN PASS
J ZULU DATE
K SYSTEM TIME IN SECONDS (GMT)
L FMC PROGRAMMER REFERENCE LEVEL
M FMC PROGRAMMER AMPLITUDE LEVEL
N EST. TIME UP RAMP IN SECONDS TO OPERATE COMMAND
O EST. SECONDS DURATION OF OPERATION, BETWEEN ON AND OFF
P SOLAR ELEVATION AT ITEM H
Q SOLAR ELEVATION AT ITEM I
R EST. MILLISECONDS EXPOSURE TIME AT ITEM H
S EST. MILLISECONDS EXPOSURE TIME AT ITEM I

FRAMES TO FEET,PAN X 2.645 STELLAR X 0.099,INDEX X 0.198

NOTES - (1) LAST 5 FRAMES OF 47-4-1 CONTAINED IN SECOND CAPSULE
(2) LONG OPERATION FOR 47-4-1 BECAUSE OF RECOVERY RESET

RAMP PROFILES
J- 10 RAMP R-11 A- 1
R= 0.2669 A= 0.1946 RAMP PERIOD= 4800
TIME PERIOD CPS GAV

0	13.831	0.0723	0.00654
100	13.592	0.0736	0.00665
200	12.923	0.0774	0.00700
300	11.951	0.0837	0.00757
400	10.826	0.0924	0.00835
500	9.676	0.1033	0.00935
600	8.586	0.1165	0.01053
700	7.601	0.1316	0.01190
800	6.737	0.1484	0.01343
900	5.993	0.1669	0.01509
1000	5.359	0.1866	0.01688
1100	4.822	0.2074	0.01876
1200	4.368	0.2289	0.02071
1300	3.984	0.2510	0.02270
1400	3.631	0.2754	0.02491
1500	3.280	0.3049	0.02757
1600	2.999	0.3335	0.03016
1700	2.774	0.3605	0.03261
1800	2.595	0.3854	0.03485
1900	2.454	0.4075	0.03685
2000	2.346	0.4263	0.03856
2100	2.265	0.4414	0.03993
2200	2.210	0.4525	0.04093
2300	2.179	0.4589	0.04151
2400	2.179	0.4589	0.04151
2500	2.179	0.4589	0.04151
2600	2.210	0.4525	0.04093
2700	2.265	0.4414	0.03993
2800	2.346	0.4263	0.03856
2900	2.454	0.4075	0.03685
3000	2.595	0.3854	0.03485
3100	2.774	0.3605	0.03261
3200	2.999	0.3335	0.03016
3300	3.280	0.3049	0.02757
3400	3.631	0.2754	0.02491
3500	3.984	0.2510	0.02270
3600	4.368	0.2289	0.02071
3700	4.822	0.2074	0.01876
3800	5.359	0.1866	0.01688
3900	5.993	0.1669	0.01509
4000	6.737	0.1484	0.01343
4100	7.601	0.1316	0.01190
4200	8.586	0.1165	0.01053
4300	9.676	0.1033	0.00935
4400	10.826	0.0924	0.00835
4500	11.951	0.0837	0.00757
4600	12.923	0.0774	0.00700
4700	13.592	0.0736	0.00665
4800	13.831	0.0723	0.00654