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24 Pages
(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-15 A

VEHICLE NO. 1173

MISSION NO. 1013-1

CAMERA NOS. 158 & 159

Prepared by: [redacted]

Checked by: [redacted]

Approved by: [redacted]

Approved by: [redacted] Manager
Program

[redacted]

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SYSTEM NO. J-15-A
VEHICLE NO. 1173
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

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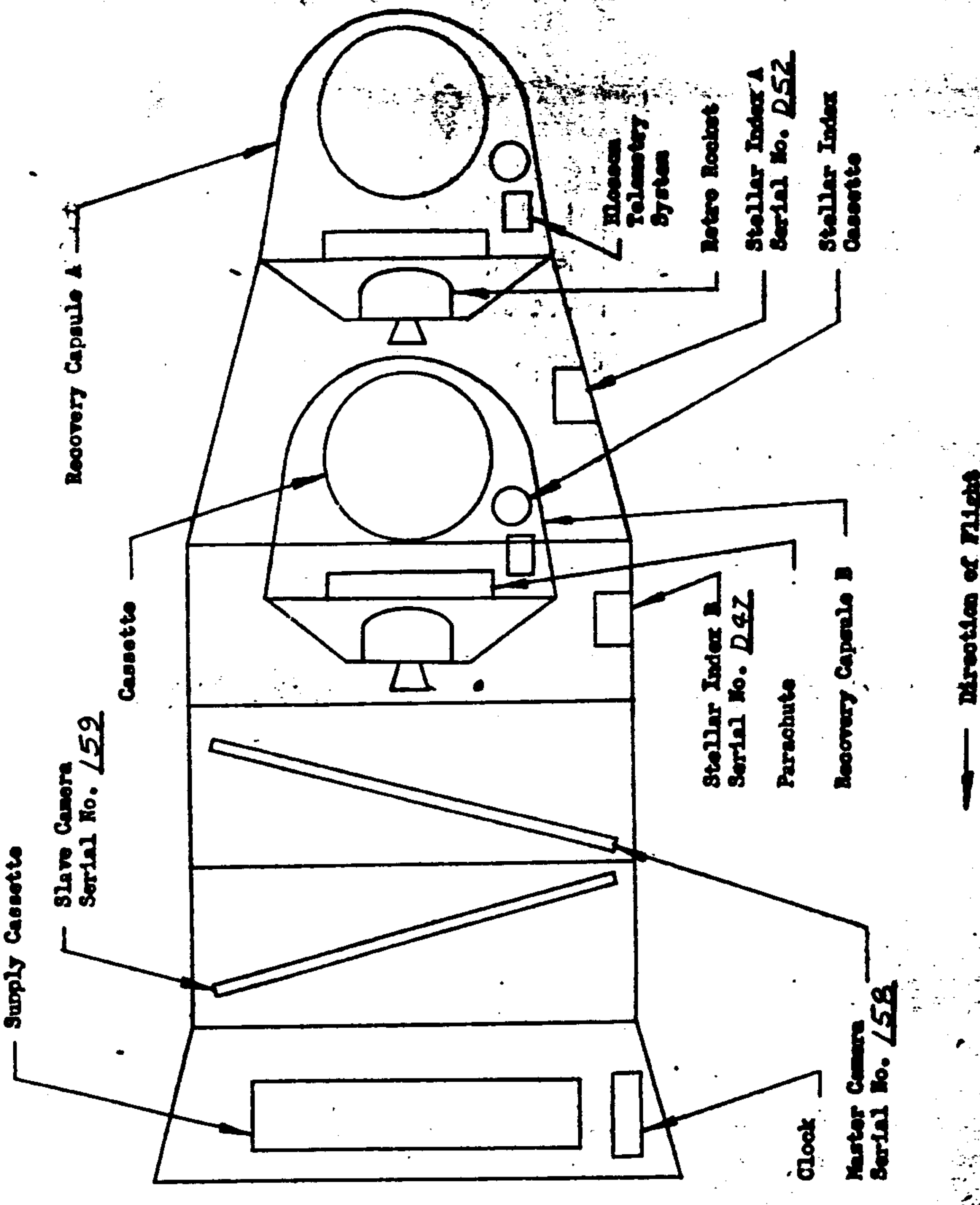
VEHICLE LAYOUT:



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GENERAL FLIGHT DATA:

Master Camera Serial No. 158

Slave Camera Serial No. 159

Stellar Index "A" Serial No. D52

Stellar Index "B" Serial No. D47

Launch Date 11/2/64

Reactivation Date N/A

Reactivation Orbit No. N/A

Orbital Parameters: (Rev. 25)

Period 90.814 Min. Eccentricity .02019

Perigee 98.81 NM Perigee Latitude 29.30 Deg. N

Apogee 244.67 NM Inclination Angle 79.97

Recovery Orbit No. 65

Recovery Date 11/6/64

REMARKS:

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SYSTEM NO. J-15 A
VEHICLE NO. 1173
MISSION NO. 1013-1
CAMERA NOS. 158/159

LENS SETTINGS AND FILM TYPES:

Panoramic Camera Settings:	Camera No. 158	Camera No. 159
Panoramic Optics Slit Width	0.200 in.	0.200 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 TAKE-UP	F8.0 SUPPLY F6.8 TAKE-UP
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 SEC.	1/500 SEC.	2.0 SEC.	1/500 SEC.
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. 158	Camera No. 159
Type	7J-40	7J-40
Length	116000 ft.	116000 ft.
Splices	4	4
Emul. Data	77-3-9-4	77-3-9-4

Stellar Index Cameras:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Type	3J-34-45	7J-33-90	7J-34-45	7J-33-90
Emul. Data	44-30-7-4	31-4-7-4	44-30-7-4	31-4-7-4

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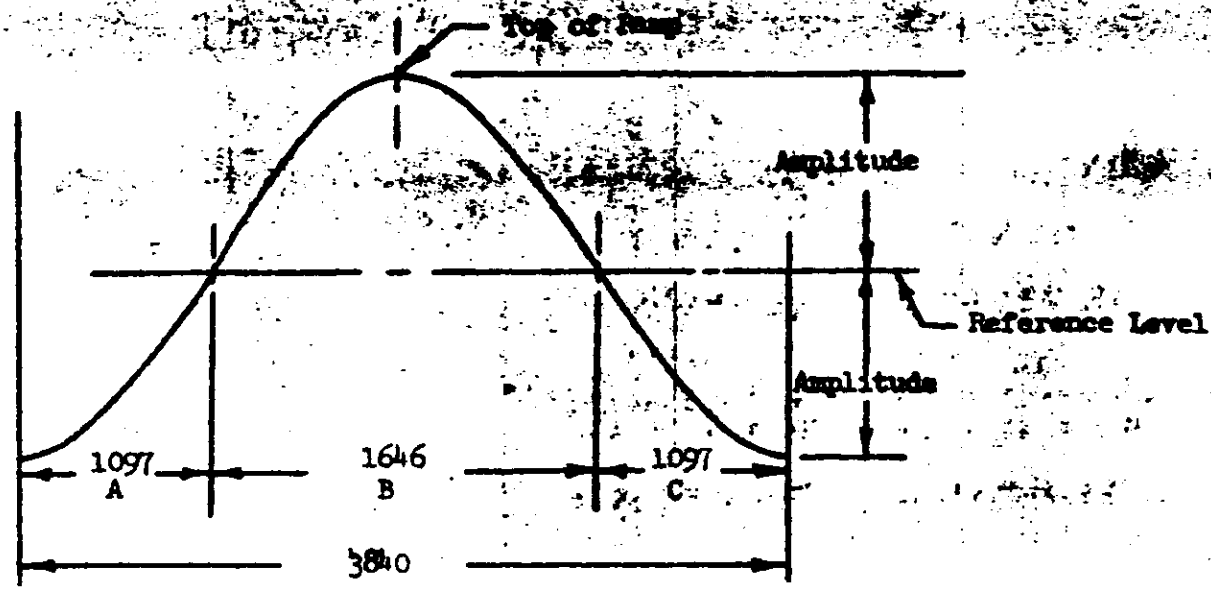
SYSTEM NO. [redacted]

VEHICLE NO. [redacted]

MISSION NO. 1013-1

CAMERA NOS. 158/159

V/H RAMP CONFIGURATION AND CONSTANTS:



Cycle Rate Computation:

A. 0 to 1097 Sec Up Ramp: CPS = R+A Sin (1.5 X -1.5707963)

B. 1097 to 2743 Sec Up Ramp: CPS = R+A Sin (2 X -2.0943951) $\leq$ .4625

C. 2743 to 3840 Sec Up Ramp: CPS = R+A Sin (1.5 X -0.7853982)

FMC Rate Computation:

FMC Rate (In/Sec) = $2\pi \left(\frac{0.3223}{CP}\right)$ = 2.02507 x CPS

FMC Rate (Radians/Sec) = $2\pi \frac{(0.3224)}{(24\ CP)}$ = 0.84378 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: $X = \frac{\text{Time Up Ramp (Seconds)}}{1047.6942}$ $R = \frac{1}{2}$ (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]

CYCLE PERIOD DATA:

PRE-FLIGHT CYCLE PERIODS:

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Time Up Ramp Sec
		Master	Slave	
7	4	5.01	4.98	150
7	4	2.268	2.238	1690
7	4	2.263	2.233	1700
7	4	2.217	2.220	1900

IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Orbit No.	Time Up Ramp Sec
		Master	Slave		
7	4	5.010	4.955	9	150
7	4	2.305	2.270	16	1690
6	4	2.214	2.210	31	1700
6	4	2.200	2.220	47	1900

SYSTEM NO. T-15 A
VEHICLE NO. 1173
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

LENS DATA SUMMARY: Master Camera No. 158

Lens Serial No. 1302435

Slit Width 0.200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.602 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	270	SØ-132	HIGH
Other	171	SØ-132	LOW

Dynamic:

Itek ~~Pre-Vibration~~	171	SØ-132	HIGH
Itek ~~Post-Vibration~~	130	SØ-132	LOW
AP	189	SØ-132	HIGH
AP	112	SØ-132	LOW
Other			

Note: Itek Post Vibration Resolution of 171 lines/MM Reported In Message No. [redacted] dated 11/3/64

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.005	.001	.000	.000	.001	.004	.006		

[redacted]

SYSTEM NO. J-1S/A
VEHICLE NO. 1163
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

LENS DATA SUMMARY: (Horizon Cameras for [redacted] Camera No. 158)

	Star Take-Up	Pan Supply
Lens Serial No.	813512	813550
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	55.07 MM	55.12 MM
Radial Distortion:		
10° off Axis	.002 MM	.000 MM
20° off Axis	.001 MM	.003 MM
Tangential Distortion (Maximum Vector)	.004 MM	.003 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5	0	10	15	20	25	30	
Radial Resolution	116	110	91	80	69	75	65	170	118	82	63	86	71	
Tangential Resolution	116	102	89	77	64	51	41	170	104	79	59	55	38	

81.8 Lines/MM Avg. 91.3 Lines/MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on 4404 film and HIGH contrast target.

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[redacted]

SYSTEM NO. J-15 A

VEHICLE NO. 1173

MISSION NO. 1013-1

CAMERA NOS. 158 & 159

SECRET

LENS DATA SUMMARY: Slave Camera No. 159

Lens Serial No. 1362435

Slit Width 0.200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 575.987 MM — 609.577

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	248	SO-132	HIGH
~~Other~~	163	SO-132	LOW

Dynamic:

Itek ~~Pre-Vibration~~	167	SO-132	HIGH
Itek ~~Post Vibration~~	129	SO-132	LOW
AP	190	SO-132	HIGH
AP	104	SO-132	LOW
Other			

NOTE: Itek Post Vibration Resolution of 167 lines/MM Reported In Message No. [redacted] dated 11/3/64

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.002	.002	.000	.000	.003	.005	.005		

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[redacted]

SYSTEM NO. J-15 A-1

VEHICLE NO. 1173

MISSION NO. 1013-1

CAMERA NOS. 158 & 159

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LENS DATA SUMMARY: (Horizon Cameras for SLAVE Camera No. 159)

	Port Take-Up	Stbd Supply
Lens Serial No.	812272	813553
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F8.0
Operational Focal Length	54.48 MM	54.90 MM
Radial Distortion:		
10° off Axis	.002 MM	.002 MM
20° off Axis	.009 MM	.002 MM
Tangetial Distortion (Maximum Vector)	.003 MM	.003 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5
Radial Resolution	184	164	144	112	103	105	58
Tangetial Resolution	164	145	142	115	86	60	44

0	10	15	20	25	30	
170	140	101	89	93	71	
178	116	100	84	55	38	

116.1 Lines/MM Avg. 102.3 Lines/MM Avg.

NOTE:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per MM on 4404 film and HIGH contrast target.

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MISSION NO. 1013-1
CAMERA NOS. 158/159

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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 [illegible] ±5" to the mechanical interface for master camera calibrations and an angle of 25.00°±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 exposure. 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 Dax and Day 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, Dax and Day are the offsets of these measurements.

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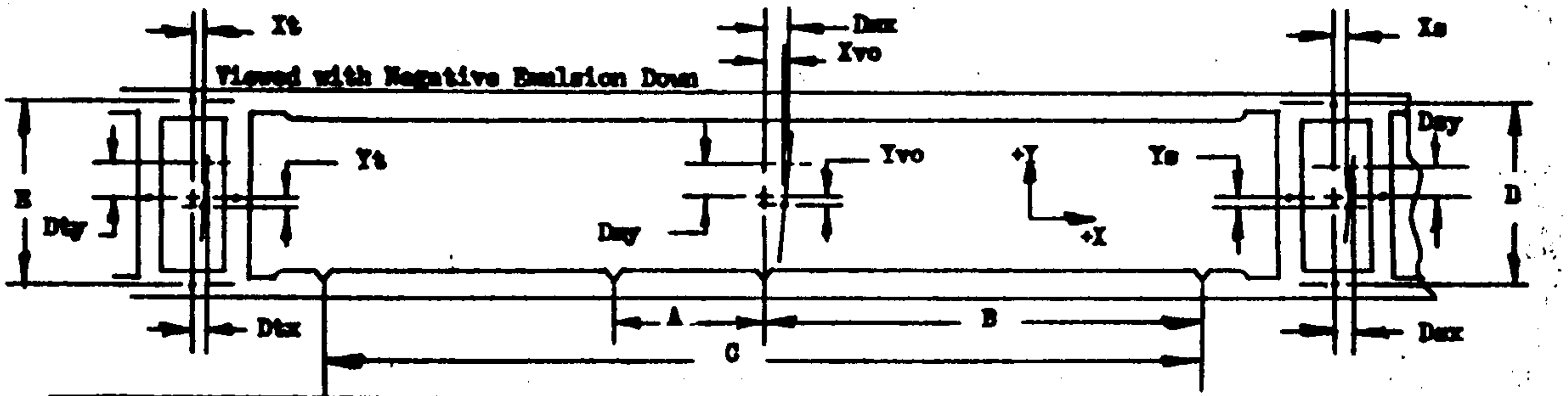
SYSTEM NO. J-15-A
VEHICLE NO. 1173
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 158	Vehicle Motion ↓	Scan Direction ←
A 76.3	Xt −0.036	Dtx −0.044
B 355.2	Yt +0.084	Dty +2.443
C 710.5	Xs +0.157	Dsx +0.161
D 56.476	Ys +0.002	Dsy +2.899
E 56.508	Xvo +1.245	Dxx +1.238
	Yvo +1.165	Dxy +4.165

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.875		
Width	756.6		

Camera No. 159	Vehicle Motion ↓	Scan Direction ←
A 76.0	Xt +0.925	Dtx +0.920
B 355.1	Yt −0.209	Dty +2.118
C 710.2	Xs −0.354	Dsx −0.374
D 56.421	Ys +0.131	Dsy −1.988
E 56.503	Xvo −0.558	Dxx −0.537
	Yvo +0.288	Dxy +3.288

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.654		
Width	754.6		

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, Ds, Dx, X and Y dimensions are taken 10MM above point defining target center.
4. Format Sign Convention −X +Y | +X +Y / −X −Y | +X −Y

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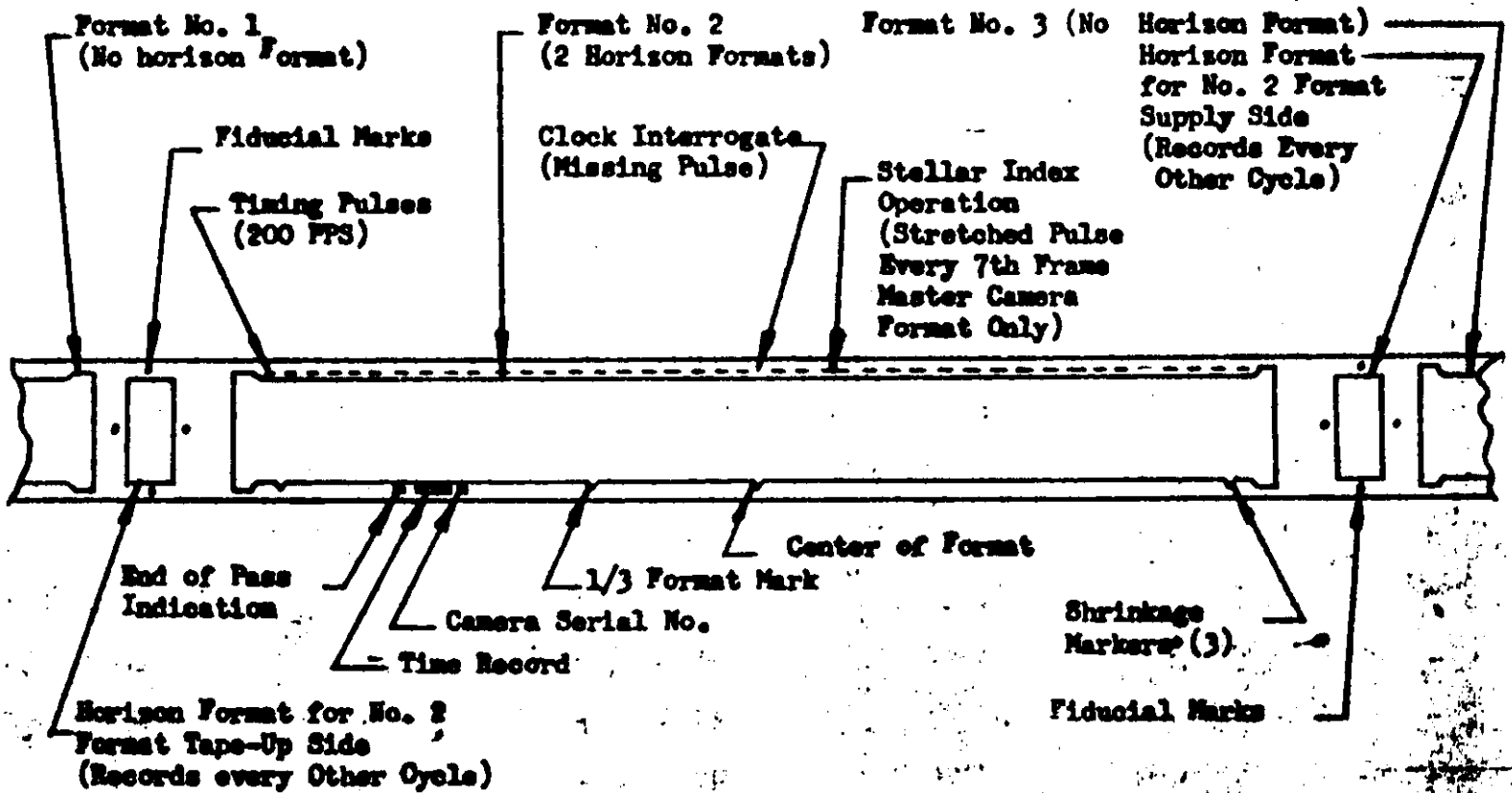

Panoramic Camera No. 158

Viewed With Negative Emulsion Down

Direction of Film Transport →

Direction of Scan →

Direction of Vehicle Motion ↓

Panoramic Camera No. 159

Viewed With Negative Emulsion Down

Direction of Film Transport →

Direction of Scan →

Direction of Vehicle Motion ↓

FORMAT LAYOUT (PANORAMIC CAMERA)

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SYSTEM NO. J-15-A
VEHICLE NO. 1173
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

SECRET

LENS DATA SUMMARY STELLAR INDEX D52/49/55 : A MISSION

	Stellar		Index	
Lens Serial No.	11065		813057	
Reseau Serial No.	55		49	
Filter Type	NONE		WRATTEN 21	
Aperture	F1.8		F4.5	
Exposure Time	2.0	Sec.	1/500	Sec.
Equivalent Focal Length	N/A	MM	38.33	MM

Resolution: INDEX

Angle Off Axis	0	10	20	30	35
Resolution L/MM High Contrast	82/82	84/82	101/87	92/62	81/19

NOTE: Index Resolution of 73.8 Lines/MM AWAR

Read From 4400 Film.

Distortion:

All distortions less than maximum allowable. Full Data to be reported as part of Photogeniometer Data Reduction.

Alignment:

.0003 "/.937 Inches .0007 "/2.25 Inches

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[redacted]

SYSTEM NO. J-15 A

VEHICLE NO. 1173

MISSION NO. 1013-1

CAMERA NOS. 158 & 159

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LENS DATA SUMMARY STELLAR INDEX D47/48/54: B MISSION

	Stellar		Index	
Lens Serial No.	11094		813055	
Reseau Serial No.	54		48	
Filter Type	NONE		WRATTEN 21	
Aperture	F1.8		F4.5	
Exposure Time	2.0	Sec.	1/500	Sec.
Equivalent Focal Length	N/A	MM	38.177	MM

Resolution:

Angle Off Axis	0	10.	20	30	35
Resolution L/MM High Contrast	82/82	93/82	110/82	110/68	104/39

NOTE: Index Resolution of 85.7 Lines/MM AWAR

Read From 4400 Film.

Distortion:

All distortions less than maximum allowable. Full Data to be reported as part of Photogoniometer Data Reduction.

Alignment:

.0004 "/.937 Inches .0005 "/2.25 Inches

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SECURITY

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SYSTEM NO. [illegible]
VEHICLE NO. [illegible]
MISSION NO. 1013-1
CAMERA NOS. 158 & 159

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PRELIMINARY CLOCK CORRELATION:

ORBIT	CORRECTED SYSTEM TIME	CLOCK TIME	DIFFERENCE
8	33323.442	395863.140	
9	38772.460	401312.161	+.003
16	78439.779	440979.497	+.017
25	39377.244	488316.982	+.020
31	73857.010	522796.763	+.015
40	34884.848	33353.710	+.020
47	74611.338	73080.217	+.017
56	35630.665	120499.565	+.021

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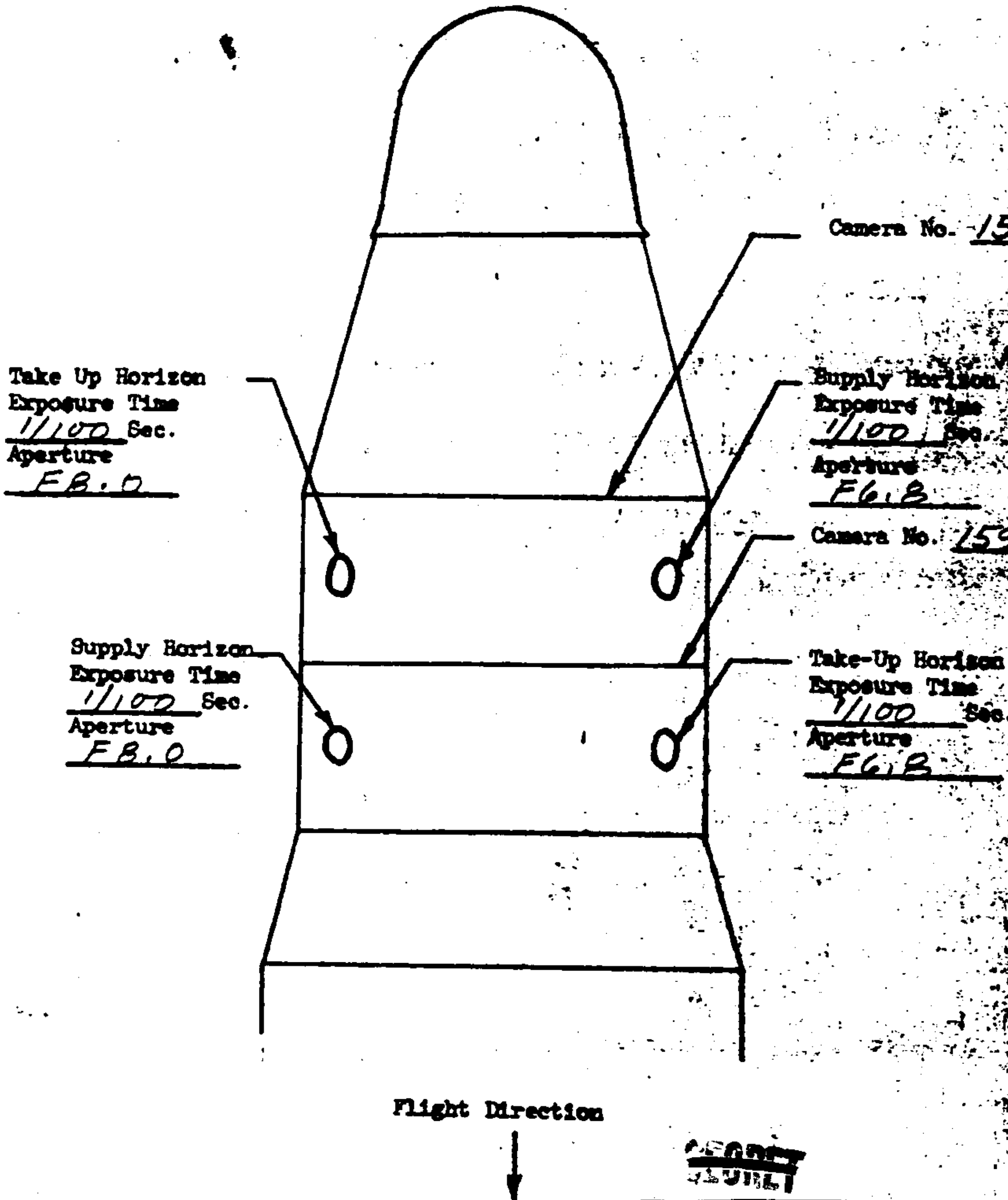
HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



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SUB	PROG		CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZD ST	TUR NO	DUR SEC.	SOLAR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
LAUNCH			158	100	14										
LAUNCH			159	101											
1	4	1	158	416	59	133	250	0281418	7	4	01430-50	22		6.2	3.1
1	4	1	159	417		131	251	0281418	7	4	01430-50	21		6.3	3.1
3	3	1	158	33	05	260	254	03 7192	7	4	1284	87	13	18	3.7	3.5
3	3	1	159	34		261	255	03 7192	7	4	1284	87	12	17	3.6	3.5
4	3	1	158	51	C7	266	257	0312552	7	4	1191	143	8	16	3.9	3.6
4	3	1	159	52		267	258	0312552	7	4	1191	143	7	15	3.9	3.5
4	3	2	158	25	C4	254	250	0312733	7	4	1371	62	18	21	3.5	3.4
4	3	2	159	25		255	251	0312733	7	4	1371	62	17	21	3.5	3.4
5	3	1	158	45	06	258	251	0318118	7	4	1305	118	14	21	3.7	3.4
5	3	1	159	46		259	252	0318118	7	4	1305	118	13	20	3.6	3.4
5	3	2	158	47	C7	246	238	0318318	7	4	1505	112	25	31	3.3	3.2
5	3	2	159	48		246	239	0318318	7	4	1505	112	25	31	3.2	3.1
8	7	1	158	36	C5	26C	254	0334451	7	4	1290	94	13	18	3.7	3.5
8	7	1	159	37		261	254	0334451	7	4	1290	94	12	18	3.6	3.4
8	7	2	158	93	13	250	235	0334597	7	4	1436	227	21	33	3.4	3.1
8	7	2	159	95		251	236	0334597	7	4	1436	227	21	33	3.3	3.1
9	7	0	158	10	C2	138	141	0338708	7	4	105	46-47-45			6.8	6.7
9	7	0	159	10		137	140	0338708	7	4	105	46-48-46			6.7	6.6
9	7	1	158	82	12	255	241	0339979	7	4	1376	204	18	29	3.5	3.2
9	7	1	159	84		256	242	0339979	7	4	1376	204	17	28	3.4	3.1
10	9	1	158	29	C4	3C2	307	0346287	7	4	2239	68	55	55	3.2	3.3
10	9	1	159	29		3C1	306	0346287	7	4	2239	68	54	55	3.2	3.3
16	4	0	158	15	C2	238	235	0378385	7	4	1654	36	31	33	3.4	3.4
16	4	0	159	15		239	236	0378385	7	4	1654	36	31	33	3.4	3.4
19	3	1	158	51	C7	258	250	04 8017	7	4	1344	132	15	22	3.6	3.4
19	3	1	159	52		259	250	04 8017	7	4	1344	132	14	21	3.6	3.3
21	3	1	158	28	C4	252	248	0419009	7	4	1442	70	20	24	3.4	3.3
21	3	1	159	29		253	248	0419009	7	4	1442	70	19	23	3.4	3.3
21	3	2	158	48	C7	244	237	0419130	7	4	1563	114	27	33	3.3	3.2
21	3	2	159	48		245	237	0419130	7	4	1563	114	26	32	3.3	3.1
21	3	3	158	47	07	230	223	0419338	7	4	1771	106	38	43	3.1	3.1
21	3	3	159	47		231	224	0419338	7	4	1771	106	37	43	3.1	3.1
23	9	1	158	86	12	257	243	0429825	7	4	1365	213	15	27	3.5	3.2
23	9	1	159	86		258	244	0429825	7	4	1365	213	14	27	3.5	3.2
23	9	2	158	39	C6	241	235	043C076	7	4	1616	90	29	34	3.2	3.1
23	9	2	159	40		242	236	C43C076	7	4	1616	90	29	34	3.1	3.1
24	7	1	158	60	08	271	260	0435057	7	4	1155	171	3	13	4.0	3.6
24	7	1	159	62		272	261	0435057	7	4	1155	171	2	12	4.0	3.6
24	7	2	158	41	C6	252	246	0435351	7	4	1449	99	20	25	3.4	3.3
24	7	2	159	41		253	247	0435351	7	4	1449	99	19	25	3.3	3.2
25	2	1	158	33	C5	257	252	044C725	7	4	1377	85	15	20	3.6	3.5
25	2	1	159	34		258	253	C44C725	7	4	1377	85	15	19	3.5	3.4
30	4	1	158	30	C4	224	219	0468471	7	4	1900	69	43	46	3.2	3.2
30	4	1	159	31		225	220	0468471	7	4	1900	69	42	45	3.1	3.1

31	4	1	158	24	03	233	229	0473787	6	4	1771	54	36	39	3.1	3.1
31	4	1	159	24		234	230	0473787	6	4	1771	54	35	38	3.1	3.1
35	3	1	158	41	06	263	257	05 8708	6	4	1361	102	10	16	3.5	3.3
35	3	1	159	41		264	258	05 8708	6	4	1361	102	9	15	3.5	3.3
36	3	1	158	47	07	264	256	0514155	6	4	1363	119	10	17	3.5	3.3
36	3	1	159	48		264	257	0514155	6	4	1363	119	9	16	3.4	3.3
36	3	2	158	33	05	254	249	0514311	6	4	1518	78	19	23	3.3	3.2
36	3	2	159	34		254	249	0514311	6	4	1518	78	18	23	3.2	3.1
36	3	3	158	37	05	246	240	0514426	6	4	1633	84	25	30	3.1	3.1
36	3	3	159	38		247	241	0514426	6	4	1633	84	25	30	3.1	3.0
37	3	1	158	48	07	266	258	0519571	6	4	1334	120	8	15	3.5	3.3
37	3	1	159	48		266	259	0519571	6	4	1334	120	7	14	3.5	3.3
37	3	2	158	43	06	255	248	0519745	6	4	1508	100	18	24	3.2	3.1
37	3	2	159	44		255	249	0519745	6	4	1508	100	17	23	3.2	3.1
37	3	3	158	78	11	231	219	0520105	6	4	1868	172	38	47	3.0	3.0
37	3	3	159	79		231	220	0520105	6	4	1868	172	38	47	2.9	2.9
38	2	1	158	29	04	258	253	0525146	6	4	1464	69	15	19	3.3	3.2
38	2	1	159	29		258	254	0525146	6	4	1464	69	14	19	3.3	3.2
38	2	2	158	31	05	243	238	0525373	6	4	1691	69	28	32	3.1	3.0
38	2	2	159	31		243	239	0525373	6	4	1691	69	28	32	3.1	3.0
39	5	1	158	77	11	265	253	0530467	6	4	1340	189	8	19	3.5	3.2
39	5	1	159	78		266	254	0530467	6	4	1340	189	7	18	3.4	3.1
39	5	2	158	78	11	248	236	0530746	6	4	1620	174	24	34	3.1	3.0
39	5	2	159	79		248	237	0530746	6	4	1620	174	23	33	3.0	2.9
40	2	1	158	42	06	260	253	0536002	6	4	1431	101	13	19	3.4	3.2
40	2	1	159	43		261	254	0536002	6	4	1431	101	12	18	3.3	3.1
41	5	1	158	44	06	252	245	0541580	6	4	1564	100	21	26	3.2	3.1
41	5	1	159	45		252	246	0541580	6	4	1564	100	20	26	3.1	3.0
47	4	1	158	50	07	238	230	0574470	6	4	1801	112	33	39	3.1	3.0
47	4	1	159	51		238	231	0574470	6	4	1801	112	32	38	3.0	3.0
51	8	1	158	48	07	264	257	06 9443	6	4	1343	120	8	16	3.5	3.3
51	8	1	159	48		265	258	06 9443	6	4	1343	120	8	15	3.5	3.3
52	8	1	158	50	07	270	262	0614791	6	4	1242	132	3	10	3.7	3.4
52	8	1	159	51		271	263	0614791	6	4	1242	132	2	10	3.7	3.4
52	8	2	158	59	09	260	251	0614959	6	4	1411	141	13	21	3.3	3.2
52	8	2	159	59		261	252	0614959	6	4	1411	141	12	20	3.3	3.1
52	8	3	158	38	05	246	240	0615181	6	4	1632	84	26	31	3.1	3.0
52	8	3	159	38		246	241	0615181	6	4	1632	84	25	30	3.1	3.0
53	8	1	158	49	07	258	250	0620444	6	4	1456	117	15	22	3.3	3.2
53	8	1	159	49		258	251	0620444	6	4	1456	117	14	21	3.3	3.2
53	8	2	158	174	25	243	216	0620671	6	4	1683	395	29	50	3.1	3.0
53	8	2	159	175		243	217	0620671	6	4	1683	395	28	50	3.1	3.0
54	4	1	158	26	04	264	260	0625782	6	4	1351	65	8	12	3.5	3.4
54	4	1	159	27		265	261	0625782	6	4	1351	65	8	12	3.4	3.3
54	4	2	158	123	17	258	239	0625883	6	4	1453	290	15	32	3.3	3.0
54	4	2	159	125		259	240	0625883	6	4	1453	290	14	31	3.3	3.0
55	6	1	158	46	07	270	263	0631127	6	4	1253	123	2	10	3.8	3.5
55	6	1	159	46		271	264	0631127	6	4	1253	123	1	9	3.7	3.5
55	6	2	158	37	05	260	255	0631291	6	4	1417	92	12	18	3.5	3.3
55	6	2	159	38		261	255	0631291	6	4	1417	92	12	17	3.4	3.3
55	6	3	158	26	04	252	248	0631420	6	4	1546	61	20	24	3.3	3.2
55	6	3	159	26		253	249	0631420	6	4	1546	61	19	23	3.2	3.2
55	6	4	158	43	06	241	234	0631593	6	4	1719	98	30	36	3.1	3.1
55	6	4	159	44		241	235	0631593	6	4	1719	98	30	35	3.1	3.0
56	3	1	158	61	09	257	247	0636799	6	4	1481	147	16	25	3.3	3.2

56	3	1	159	63		257	248	0636799	6	4	1481	147	15	24	3.2	3.1
57	4	1	158	42	06	255	248	0642277	6	4	1515	100	18	24	3.3	3.2
57	4	1	159	43		255	249	0642277	6	4	1515	100	17	23	3.2	3.1
61	3	1	158	53	C7	242	234	0664253	6	4	1724	114	29	36	3.0	2.9
61	3	1	159	54		243	235	0664253	6	4	1724	114	29	35	2.9	2.9
63	3	1	158	27	C4	239	235	0675189	6	4	1774	57	32	35	2.9	2.9
63	3	1	159	27		240	236	0675189	6	4	1774	57	31	35	2.9	2.9

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

NOTE - THE 417 FRAMES CONSUMED ON REV. 1 ARE UNEXPLAINABLE AT THIS TIME. THERE WAS NO ON BRUSH PUNCHED AT LATITUDE 133. IF THE OPERATION APPEARS TO BE CONTINUOUS IT WOULD BE APPRECIATED IF THE TIME WORD ON THE FIRST AND LAST FEW FRAMES COULD BE SUPPLIED TO A/P AS SOON AS AVAILABLE. IF THERE APPEARS TO BE SEVERAL OPERATIONS, TIME WORDS FOR EACH OPERATION WOULD BE APPRECIATED.

NOTE - RESET OF THE TIMER WAS ATTEMPTED ON REV. 6 BUT WAS NOT VERIFIED. IF THIS RESET WAS ACCOMPLISHED, THE OPERATIONAL LATITUDES OF THE OPERATIONS ON REVS. 3, 4, AND 5 WILL BE SOMEWHAT DIFFERENT THAN SHOWN IN THIS MESSAGE.

NOTE - T/M DATA INDICATES FILM PASSAGE WAS UNEXPLAINABLY TERMINATED ON BOTH INSTRUMENTS AT THE FOLLOWING TIMES DURING REV. 52 -

INSTRUMENT 158 - CEASED 20 FRAMES AFTER START OF OPERATION 52-08-2

INSTRUMENT 159 - CEASED ON THE LAST FRAME OF OPERATION 52-08-1 OR ON THE FIRST FRAME OF OPERATION 52-08-2

REV	CLOCK TIME	COR SYSTEM TIME
8	395863.140	33323.442
9	401312.161	38772.460
16	440979.497	78439.779
25	488316.982	39377.244
31	522796.763	73857.010
40	33353.710	34884.848
47	73080.217	74611.338
56	120499.565	35630.665

RATIO CLOCK TO SYSTEM= C.1C00000434D 01

J- 15 RAMP R- 7 A- 4

R= 0.3137 A= 0.1282 RAMP

TIME	PERIOD	CPS	GAV
0	5.391	C.1855	0.01678
50	5.381	C.1858	0.01681
100	5.353	C.1868	0.01690
150	5.307	C.1884	0.C1704
200	5.243	C.19C7	0.01725
250	5.165	C.1936	0.01751
300	5.072	C.1971	0.01783
350	4.969	C.2013	0.01820
400	4.855	C.2060	0.01863
450	4.735	C.2112	0.C1910
500	4.609	C.2170	0.C1962
550	4.480	C.2232	0.C2019
600	4.349	C.23C0	0.C2080
650	4.217	C.2371	0.C2145
700	4.087	C.2447	0.02213
750	3.959	C.2526	0.02284
800	3.834	C.2608	0.02359
850	3.714	C.2693	0.C2435
900	3.597	C.2780	0.02514
950	3.486	C.2869	0.02595
1000	3.379	C.2959	0.02677
1050	3.278	C.3051	0.02759
1100	3.181	C.3144	0.C2844
1150	3.062	C.3266	0.02954
1200	2.952	C.3387	0.03063
1250	2.852	C.35C6	0.C3171
1300	2.762	C.3621	0.C3275
1350	2.679	C.3732	0.03375
1400	2.606	C.3838	0.C3471
1450	2.540	C.3937	0.C3561
1500	2.482	C.4029	0.03644
1550	2.432	C.4112	0.03719
1600	2.388	C.4187	0.C3787

1650	2.352	0.4252	0.03846
1700	2.321	0.4308	0.03896
1750	2.298	0.4352	0.03936
1800	2.280	0.4386	0.03966
1850	2.269	0.4408	0.03986
1900	2.263	0.4418	0.03996
1950	2.264	0.4417	0.03995
2000	2.271	0.4404	0.03983
2050	2.283	0.4380	0.03961
2100	2.302	0.4344	0.03929
2150	2.327	0.4297	0.03887
2200	2.358	0.4240	0.03835
2250	2.396	0.4173	0.03774
2300	2.441	0.4096	0.03705
2350	2.493	0.4011	0.03628
2400	2.553	0.3917	0.03543
2450	2.620	0.3817	0.03452
2500	2.695	0.3710	0.03356
2550	2.779	0.3598	0.03255
2600	2.872	0.3482	0.03150
2650	2.973	0.3363	0.03042
2700	3.085	0.3242	0.02932
2750	3.201	0.3124	0.02825
2800	3.298	0.3032	0.02743
2850	3.400	0.2941	0.02660
2900	3.508	0.2851	0.02579
2950	3.620	0.2762	0.02498
3000	3.737	0.2676	0.02420
3050	3.859	0.2591	0.02344
3100	3.985	0.2510	0.02270
3150	4.113	0.2431	0.02199
3200	4.243	0.2357	0.02131
3250	4.375	0.2286	0.02067
3300	4.506	0.2219	0.02007
3350	4.634	0.2158	0.01952
3400	4.759	0.2101	0.01900
3450	4.879	0.2050	0.01854
3500	4.990	0.2004	0.01812
3550	5.092	0.1964	0.01776
3600	5.182	0.1930	0.01746
3650	5.257	0.1902	0.01720
3700	5.317	0.1881	0.01701
3750	5.360	0.1866	0.01687
3800	5.385	0.1857	0.01680

J- 15 RAMP R- 6 A- 4

R= 0.3262 A= 0.1290 RAMP

TIME	PERIOD	CPS	GAV
0	5.071	0.1972	0.01784
50	5.063	0.1975	0.01787
100	5.037	0.1985	0.01796
150	4.996	0.2002	0.01810
200	4.939	0.2025	0.01831
250	4.869	0.2054	0.01858
300	4.786	0.2089	0.01890

350	4.693	0.2131	0.01927
400	4.592	0.2178	0.01970
450	4.483	0.2231	0.02018
500	4.369	0.2289	0.02070
550	4.252	0.2352	0.02127
600	4.133	0.2420	0.02188
650	4.013	0.2492	0.02254
700	3.895	0.2568	0.02322
750	3.778	0.2647	0.02394
800	3.663	0.2730	0.02469
850	3.552	0.2815	0.02546
900	3.445	0.2903	0.02626
950	3.342	0.2993	0.02707
1000	3.243	0.3084	0.02789
1050	3.149	0.3175	0.02872
1100	3.059	0.3270	0.02957
1150	2.948	0.3392	0.03068
1200	2.846	0.3514	0.03178
1250	2.752	0.3634	0.03287
1300	2.667	0.3750	0.03392
1350	2.590	0.3862	0.03493
1400	2.520	0.3968	0.03589
1450	2.459	0.4068	0.03679
1500	2.404	0.4160	0.03762
1550	2.356	0.4244	0.03839
1600	2.315	0.4320	0.03907
1650	2.280	0.4385	0.03966
1700	2.252	0.4441	0.04017
1750	2.229	0.4486	0.04057
1800	2.213	0.4519	0.04087
1850	2.202	0.4541	0.04108
1900	2.197	0.4552	0.04117
1950	2.197	0.4551	0.04116
2000	2.204	0.4538	0.04104
2050	2.216	0.4513	0.04082
2100	2.233	0.4478	0.04050
2150	2.257	0.4431	0.04007
2200	2.287	0.4373	0.03955
2250	2.323	0.4305	0.03894
2300	2.365	0.4228	0.03824
2350	2.414	0.4142	0.03746
2400	2.470	0.4048	0.03661
2450	2.534	0.3947	0.03570
2500	2.604	0.3840	0.03473
2550	2.683	0.3727	0.03371
2600	2.770	0.3610	0.03265
2650	2.865	0.3490	0.03157
2700	2.969	0.3368	0.03046
2750	3.078	0.3249	0.02939
2800	3.168	0.3157	0.02855
2850	3.262	0.3065	0.02772
2900	3.362	0.2975	0.02690
2950	3.466	0.2885	0.02610
3000	3.574	0.2798	0.02531
3050	3.686	0.2713	0.02454

3100	3.801	0.2631	0.02380
3150	3.918	0.2552	0.02308
3200	4.037	0.2477	0.02240
3250	4.157	0.2406	0.02176
3300	4.276	0.2339	0.02115
3350	4.392	0.2277	0.02059
3400	4.505	0.2220	0.02008
3450	4.613	0.2168	0.01961
3500	4.713	0.2122	0.01919
3550	4.804	0.2082	0.01883
3600	4.884	0.2047	0.01852
3650	4.952	0.2019	0.01826
3700	5.005	0.1998	0.01807
3750	5.044	0.1983	0.01793
3800	5.066	0.1974	0.01785

Notice of Missing Page(s)

Page 24 of the original document was missing.