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23 Pages

(Including Cover Sheet)

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CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-19

VEHICLE NO. 1612

MISSION NO. 1018

CAMERA NOS. 122 & 123

Prepared by [redacted]

Checked by:

Approved by

Approved by

Program Manager

1 APR 1965

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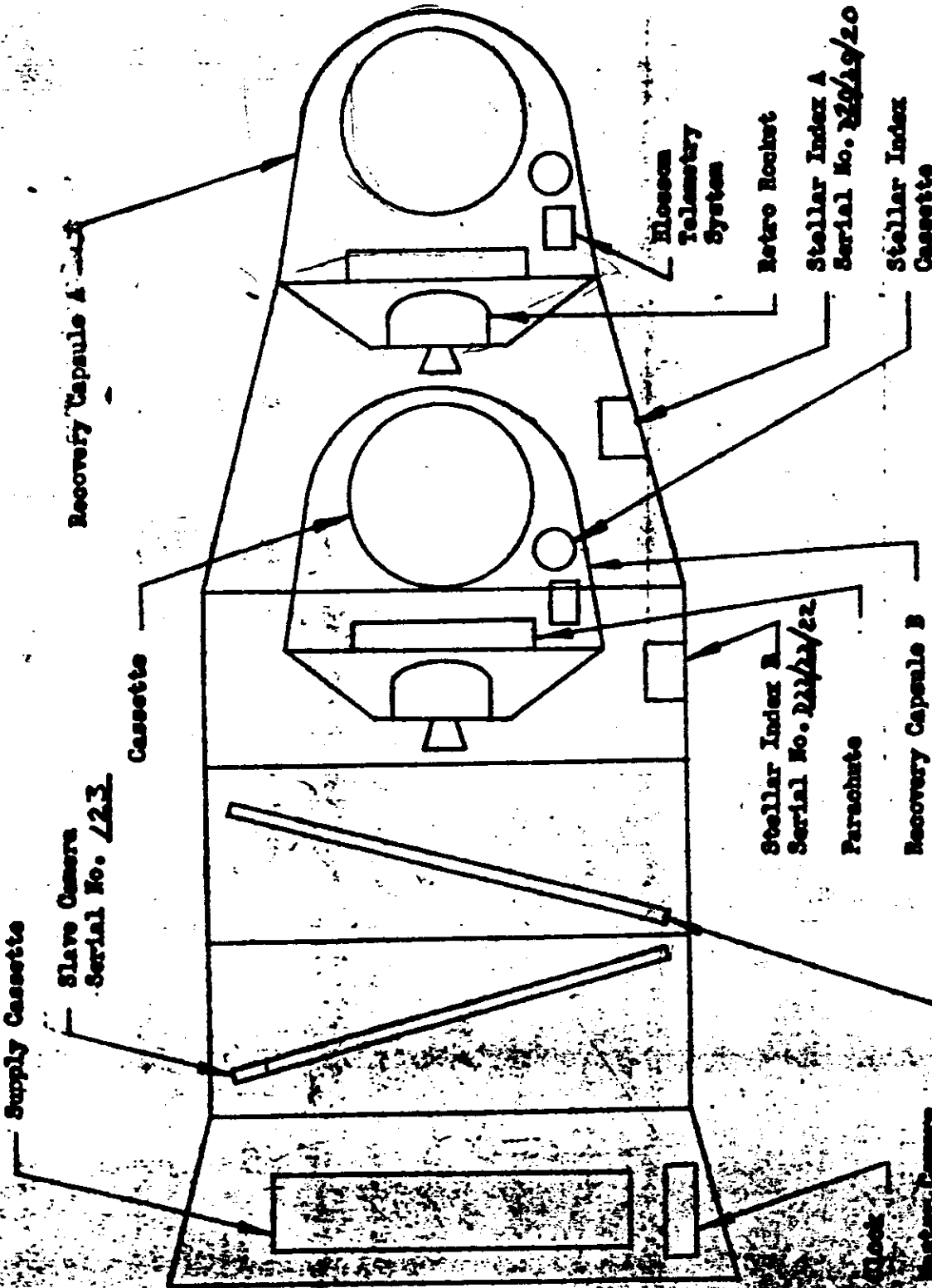
SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1012
CAMERA NOS. 122 & 123

VEHICLE LAYOUT:



SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

GENERAL FLIGHT DATA:

Master Camera Serial No. 122

Slave Camera Serial No. 123

Stellar Index "A" Serial No. D20/20/20

Stellar Index "B" Serial No. D22/22/22

Launch Date 3/25/65

Reactivation Date N/A

Reactivation Orbit No. N/A

Orbital Parameters: (Rev. 33)

Period 88.96 Min. Eccentricity 0.0067

Perigee 100.26 NM Perigee Latitude 40.37 Deg. N

Apogee 148.6 NM Inclination Angle 96.01 Deg. E

Recovery Orbit No. 66

Recovery Date 3/29/65

REMARKS:

[redacted] NO. J-19
[redacted] LE NO. 1612
[redacted] ION NO. 1018
[redacted] A NOS. 122 & 123

[redacted] SETTINGS AND FILM TYPES:

[redacted] Panoramic Camera Settings:

	Camera No. 122	Camera No. 123
Panoramic Optics Slit Width	.250 in.	.175 in.
Panoramic Optics Filter Type	WRATTEN 25	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

[redacted] Stellar Index Camera Settings:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Exposure Time (Sec)	2.0	1/500	2.0	1/500
Aperture Setting	F1.8	F4.6	F1.8	F4.5
Filter Type	NONE	WRATTEN 21	NONE	WRATTEN 21

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

[redacted] Film:

Panoramic Cameras:	Camera No. 122	Camera No. 123
Type	SO-132	SO-132
Length	16000 ft.	16000 ft.
Splices	5	4
Emul. Data	84-3-11-4	84-3-11-11-4

[redacted] Stellar Index Cameras:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Type	SO-102	SO-130	SO-102	SO-130
Emul. Data	54-2-9-4	31-4-9-4	54-2-9-4	31-4-9-4

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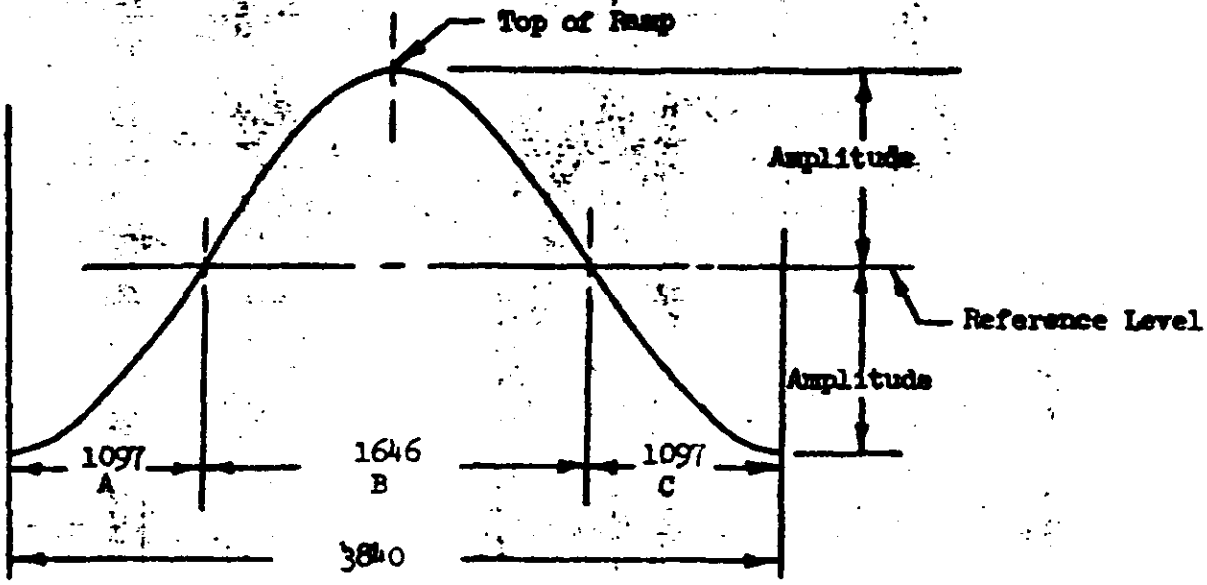
V/H RAMP CONFIGURATION AND CONSTANTS:



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

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CYCLE PERIOD DATA:

PRE-FLIGHT CYCLE PERIODS:

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Time Up Ramp Sec
		Master	Slave	
4	7	3.108	3.107	182
4	7	2.215	2.222	1740
3	7	2.962	2.961	224
3	7	2.206	2.213	1830
3	7	2.206	2.213	1800
3	7	2.206	2.213	1845

IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Orbit No.	Time Up Ramp Sec
		Master	Slave		
4	7	3.112	3.120	8	182
4	7	2.275	2.255	16	1740
3	7	2.973	2.974	24	224
3	7	2.230	2.230	32	1830
3	7	2.237	2.221	48	1800
3	7	2.238	2.229	65	1845

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SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

LENS DATA SUMMARY: Mast.r Camera No. 122

Lens Serial No. 0652435

Slit Width .250 Inch

Filter Type WRATTEN 25

Equivalent Operational Focal Length 609.628 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	288	SO-132	HIGH
Other	154	SO-132	LOW

Dynamic:

Itek [redacted]	168	SO-132	HIGH
Itek [redacted]	126	SO-132	LOW
AP	178	SO-132	HIGH
AP	114	SO-132	LOW
Other			

Note: Itek Post Vibration Resolution of 168 lines/MM Reported In [redacted] dated 3/25/65

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.002	.001	.000	.000	.001	.002	.004		

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SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

LENS DATA SUMMARY: (Horizon Cameras for [redacted] Camera No. 122)

	Take-Up	Supply
Lens Serial No.	814011	813523
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	55.02 MM	54.69 MM
Radial Distortion:		
10° off Axis	.004 MM	.010 MM
20° off Axis	.012 MM	.015 MM
Tangential Distortion (Maximum Vector)	.004 MM	.006 MM
Resolution:		

Angle off Axis Deg.	0	10	15	20	25	30		0	5	10	15	20	25	27.5
Radial Resolution	170	84	65	63	77	85		164	145	128	112	97	118	65
Tangential Resolution	170	87	74	70	58	40		164	145	126	108	91	60	51

87 Lines/MM Avg. 112 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 HIGH contrast target.

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SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

LENS DATA SUMMARY: Slave Camera No. 123
Lens Serial No. 0632435
Slit Width .175 Inch
Filter Type WRATTEN 21
Equivalent Operational Focal Length 609.295 MM
Resolution:
Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	248	SO-132	HIGH
Other	140	SO-132	LOW

Dynamic:

Itek [redacted]	178	SO-132	HIGH
Itek [redacted]	121	SO-132	LOW
AP	172	SO-132	HIGH
AP	110	SO-132	LOW
Other			

NOTE: Itek Post Vibration Resolution of 178 lines/MM Reported In Message No. [redacted] dated 3/25/65

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.004	.001	.000	.000	.000	.001	.003		

SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

LENS DATA SUMMARY: (Horizon Cameras for SLAVE Camera No. 123)

	Take-Up	Supply
Lens Serial No.	812277	812270
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F8.0
Operational Focal Length	55.02 MM	54.48 MM
Radial Distortion:		
10° off Axis	.001 MM	.004 MM
20° off Axis	.001 MM	.002 MM
Tangetial Distortion (Maximum Vector)	.008 MM	.005 MM

Resolution:

Angle off Axis Deg.	0	10	15	20	25	27.5	
Radial Resolution	184	153	114	109	105	46	
Tangetial Resolution	164	134	108	91	60	41	

0	10	15	20	25	27.5	
164	162	134	109	99	41	
164	151	121	91	60	41	

109 Lines/MM Avg. 111 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 HIGH contrast target.

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.

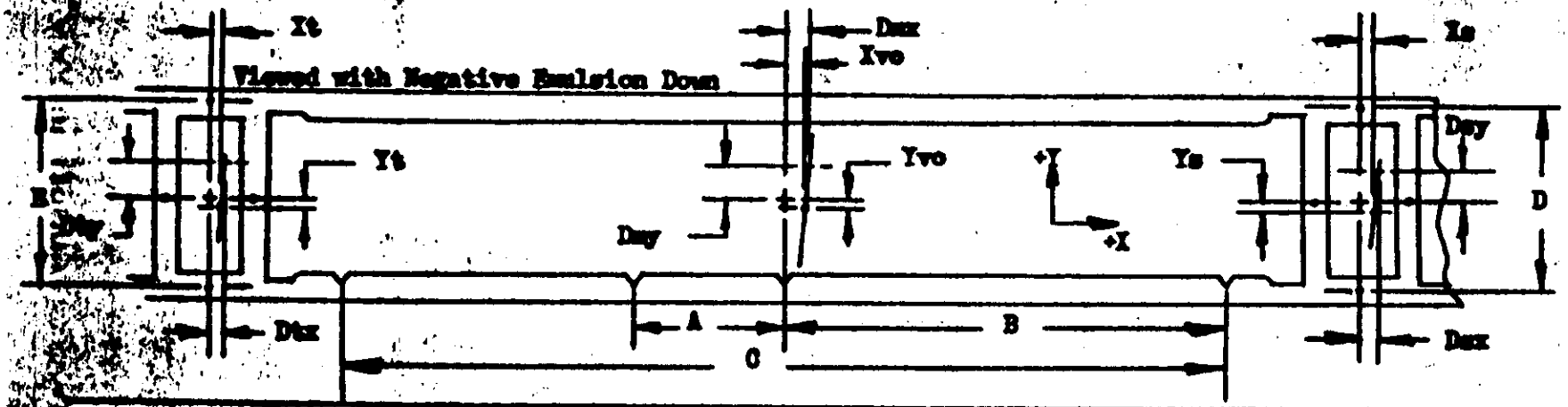
9.0 The format dimensions are measured to the best estimate of format edge.

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.

SYSTEM NO. T-19
VEHICLE NO. 7642
MISSION NO. 1018
CAMERA NOS. 122 & 123

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 122	Vehicle Motion	Scan Direction ←
A 76.0	Xt +0.375	Dtx +0.365
B 355.2	Yt +0.020	Dty +2.894
C 710.2	Xs +0.113	Dsx +0.117
D 56.530	Ys +0.050	Dsy +2.987
E 56.463	Xvo +1.493	Dsx +1.481
	Yvo +0.623	Dsy +3.623

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.954	N/A	N/A
Width	754.4	N/A	N/A

Camera No. 123	Vehicle Motion	Scan Direction ←
A 76.0	Xt +0.040	Dtx +0.038
B 355.0	Yt −0.058	Dty +2.079
C 710.0	Xs +0.252	Dsx +0.239
D 56.447	Ys −0.081	Dsy −2.617
E 56.461	Xvo −0.476	Dsx −0.466
	Yvo +0.688	Dsy +3.688

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	56.209	N/A	N/A
Width	755.5	N/A	N/A

Notes: 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. A, B, C, Dx, Dy, 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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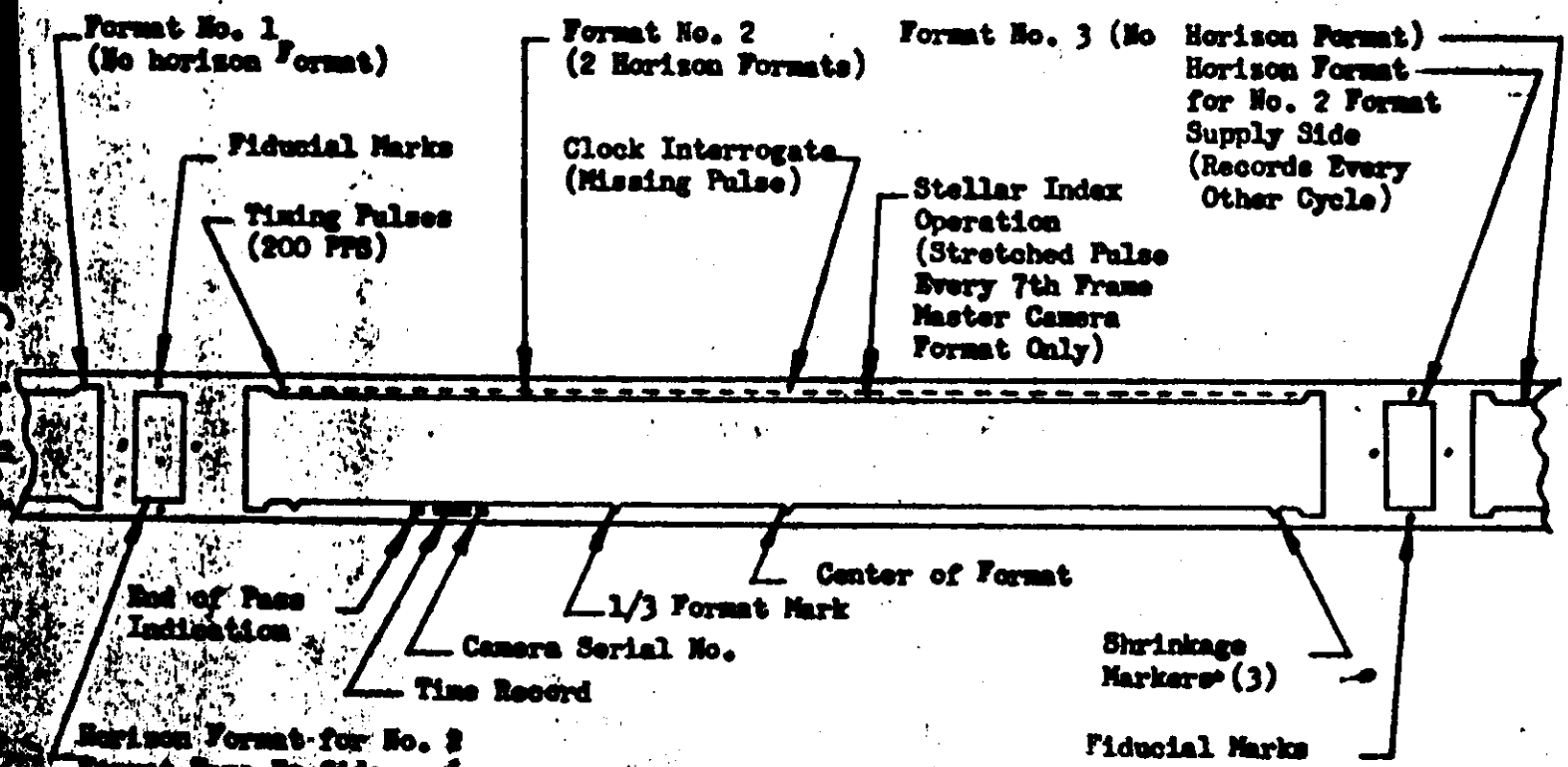
SYSTEM NO. J-19
VEHICLE NO. 1622
MISSION NO. 1012
CAMERA NOS. 122 & 123

FORMAT LAYOUT: (PANORAMIC CAMERAS)



Panoramic Camera No. 122

Viewed With Negative Emulsion Down

Direction of Film Transport

Direction of Scan

Direction of Vehicle Motion

Panoramic Camera No. 123

Viewed With Negative Emulsion Down

Direction of Film Transport

Direction of Scan

Direction of Vehicle Motion

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SYSTEM NO. J-19
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

LENS DATA SUMMARY STELLAR INDEX D22/22/22 : 8 MISSION

	Stellar		Index	
Lens Serial No.	11019		811710	
Reseau Serial No.	22		22	
Filter Type	NONE		WRATTEN 21	
Aperture	F1.8		F4.5	
Exposure Time	2.0	Sec.	1/500	Sec.
Equivalent Focal Length	84.03	MM	38.23	MM

Resolution:

Angle Off Axis	0	10	20	30	35
Resolution L/MM High Contrast	80/85	90/96	115/109	98/52	80/32

NOTE: Index Resolution of 78.6 Lines/MM AWAR

Read From SO-130 Film.

Distortion:

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

Alignment:

.000 MM/.937 Inches .000 MM/2.25 Inches

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SYSTEM NO. J-19

VEHICLE NO. 1612

MISSION NO. 1018

CAMERA NOS. 122 + 123

LENS DATA SUMMARY STELLAR INDEX D20/20/20 : A MISSION

	Stellar		Index	
Lens Serial No.	10441		811904	
Reseau Serial No.	20		20	
Filter Type	NONE		WRATTEN 21	
Aperture	F1.8		F4.5	
Exposure Time	2.0	Sec.	1/500	Sec.
Equivalent Focal Length	84.03	MM	38.21	MM

Resolution:

Angle Off Axis	0	10	20	30	35
Resolution L/MM High Contrast	81/76	93/90	112/73	93/51	92/36

NOTE: Index Resolution of 75.8 Lines/MM AWAR

Read From SO-130 Film.

Distortion:

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

Alignment:

.030 MM °/.357 Inches | .002 MM [illegible]

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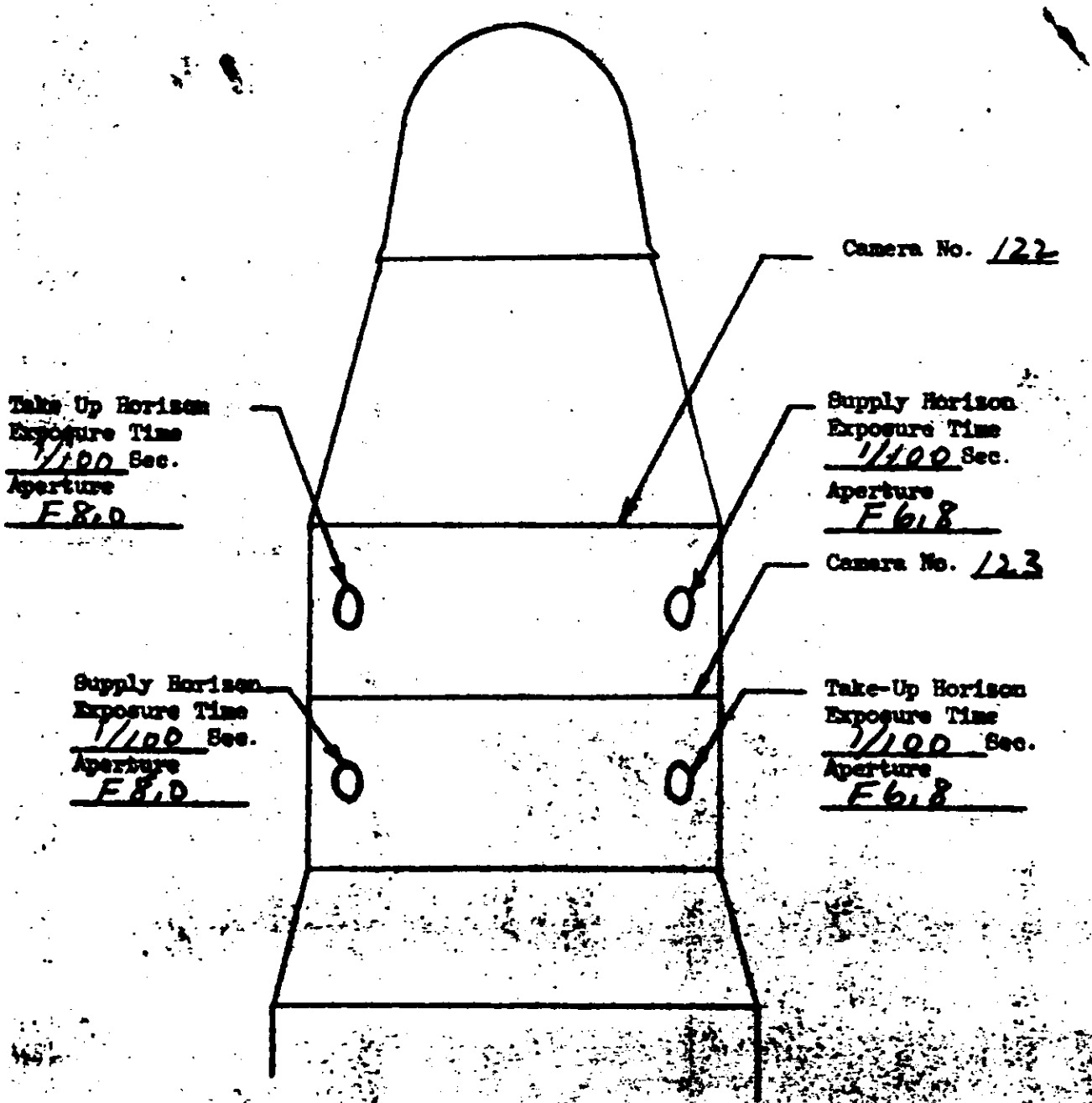
SYSTEM NO. J-9
VEHICLE NO. 1612
MISSION NO. 1018
CAMERA NOS. 122 & 123

HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



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A. 1018-1
B. DRY
C. PERFORMANCE ESTIMATE

SUB	PROG	CAM NO.	PAN FR.FR	SI	LAT. ON	LAT. OFF	TIME ON ZD	TIME ON ST	TUR NO	DUR SEC.	SOLAR SEC ON	SOLAR SEC OFF	EXPOS. ON	EXPOS. OFF
PREFLIGHT		122	160	22										
PREFLIGHT		123	160											
1	4	0 122	14	02	254	251	2581545		4 7	1330	37	35 37	4.3	4.2
1	4	0 123	14		255	252	2581545		4 7	1330	37	34 36	3.0	3.0
2	1	1 122	18	03	218	215	26	1022	4 7	1865	44	68 70	3.9	3.9
2	1	1 123	19		218	215	26	1022	4 7	1865	44	67 70	2.6	2.6
5	5	1 122	79	11	272	259	2616238		4 7	1058	202	16 30	4.3	4.1
5	5	1 123	19		273	269	2616238		4 7	1058	49	16 19	2.9	2.9
6	3	1 122	15	02	273	270	2621573		4 7	1134	41	16 19	4.4	4.3
6	3	1 123	45		273	265	2621573		4 7	1134	118	15 23	3.1	2.9
6	3	2 122	29	05	253	248	2621876		4 7	1438	71	36 41	4.0	3.9
6	3	2 123	29		253	248	2621876		4 7	1438	71	35 40	2.8	2.8
6	3	3 122	62	08	234	224	2622159		4 7	1720	142	54 63	3.8	3.8
6	3	3 123	62		234	224	2622159		4 7	1720	142	54 62	2.7	2.6
7	3	1 122	10	02	273	271	2626913		4 7	1135	26	16 18	4.4	4.3
7	3	1 123	34		273	267	2626913		4 7	1135	88	15 21	3.0	3.0
7	3	2 122	48	07	260	252	2627109		4 7	1331	119	29 37	4.1	4.0
7	3	2 123	59		262	252	2627083		4 7	1305	145	26 36	2.9	2.8
7	3	3 122	23	03	242	238	2627374		4 7	1596	55	46 50	3.9	3.8
7	3	3 123	23		243	238	2627374		4 7	1596	55	45 49	2.7	2.7
8	6	0 122	14	02	139	141	2631261		4 7	143	43	-48-45	5.1	5.1
8	6	0 123	14		137	139	2631261		4 7	143	43	-49-46	3.6	3.6
8	6	1 122	21	03	281	277	2632115		4 7	998	58	6 10	4.5	4.4
8	6	1 123	21		281	278	2632115		4 7	998	58	6 10	3.1	3.1
8	6	2 122	92	13	258	242	2632488		4 7	1370	218	31 46	4.0	3.8
8	6	2 123	91		258	243	2632488		4 7	1370	218	31 45	2.8	2.7
8	6	3 122	37	05	224	218	2632990		4 7	1873	83	63 68	3.7	3.7
8	6	3 123	36		224	218	2632990		4 7	1873	83	63 68	2.6	2.6
10	9	1 122	22	04	282	278	2642789		4 7	992	59	6 10	4.5	4.4
10	9	1 123	22		282	278	2642789		4 7	992	59	6 10	3.2	3.1
10	9	2 122	22	03	271	266	2642973		4 7	1176	56	18 22	4.2	4.2
10	9	2 123	21		271	267	2642973		4 7	1176	56	18 21	3.0	2.9
10	9	3 122	41	06	260	252	2643141		4 7	1344	99	29 36	4.0	3.9
10	9	3 123	41		260	253	2643141		4 7	1344	99	29 35	2.8	2.8
10	9	4 122	69	09	213	201	2643835		4 7	2038	157	72 77	3.7	3.8
10	9	4 123	68		213	202	2643835		4 7	2038	157	72 77	2.6	2.7
16	1	1 122	23	04	238	234	2675505		4 7	1686	55	50 54	3.9	3.9
16	1	1 123	24		238	234	2675505		4 7	1686	55	50 53	2.6	2.6
21	1	1 122	201	28	272	241	2615294		3 7	1188	463	17 47	4.0	3.6
21	1	1 123	16		272	269	2615294		3 7	1188	41	16 19	2.9	2.8
21	1	1 123	118		260	241	2615488		3 7	1382	269	29 46	2.7	2.6
21	1	2 122	31	05	203	301	2616317		3 7	2211	69	77 77	3.7	3.7
21	1	2 123	30		204	300	2616317		3 7	2211	69	77 77	2.6	2.6
21	1	3 122	30	04	307	311	2616463		3 7	2357	69	75 72	3.8	3.8
21	1	3 123	30		305	310	2616463		3 7	2357	69	75 73	2.6	2.7

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22	2	1	122	24	04	252	248	2620936	3	7	1494	54	37	40	3.7	3.7
22	2	1	123	23		252	248	2620936	3	7	1494	54	36	40	2.7	2.6
22	2	2	122	24	03	242	238	2621085	3	7	1643	55	47	50	3.7	3.6
22	2	2	123	24		242	238	2621085	3	7	1643	55	46	49	2.6	2.6
22	2	3	122	43	06	201	305	2621686	3	7	2243	98	77	75	3.7	3.7
22	2	3	123	43		202	304	2621686	3	7	2243	98	77	76	2.6	2.6
23	2	1	122	30	04	258	253	2626185	3	7	1407	71	31	36	3.8	3.8
23	2	1	123	31		258	253	2626185	3	7	1407	71	30	35	2.6	2.6
23	2	2	122	25	04	243	238	2626415	3	7	1637	56	46	50	3.7	3.6
23	2	2	123	25		243	239	2626415	3	7	1637	56	45	49	2.5	2.5
24	9	0	122	14	02	138	141	2630300	3	7	186	44-48-45			5.2	5.2
24	9	0	123	15		137	139	2630300	3	7	186	44-49-47			3.4	3.4
24	9	1	122	110	16	253	236	2631600	3	7	1486	247	36	52	3.8	3.6
24	9	1	123	111		253	236	2631600	3	7	1486	247	35	51	2.6	2.5
25	2	1	122	100	14	257	241	2636878	3	7	1427	227	32	47	3.8	3.7
25	2	1	123	100		257	242	2636878	3	7	1427	227	31	46	2.7	2.6
26	5	1	122	23	03	282	278	2641821	3	7	1033	59	5	9	4.2	4.2
26	5	1	123	23		282	278	2641821	3	7	1033	59	6	9	3.0	2.9
26	5	2	122	23	04	271	267	2642004	3	7	1217	56	18	22	4.0	3.9
26	5	2	123	23		271	267	2642004	3	7	1217	56	17	21	2.8	2.8
26	5	3	122	73	10	261	250	2642150	3	7	1363	167	28	39	3.8	3.7
26	5	3	123	72		262	250	2642150	3	7	1363	167	27	38	2.7	2.6
26	5	4	122	30	04	303	307	2643100	3	7	2312	69	76	74	3.7	3.8
26	5	4	123	30		301	306	2643100	3	7	2312	69	77	75	2.6	2.6
31	5	1	122	30	05	238	233	2669190	3	7	1725	69	50	55	3.7	3.7
31	5	1	123	30		238	233	2669190	3	7	1725	69	50	54	2.6	2.6
31	5	2	122	23	03	231	227	2669293	3	7	1829	53	57	60	3.7	3.7
31	5	2	123	23		231	227	2669293	3	7	1829	53	56	60	2.6	2.6
32	3	1	122	24	03	234	230	2674579	3	7	1780	55	54	57	3.7	3.7
32	3	1	123	24		235	231	2674579	3	7	1780	55	53	57	2.6	2.6
37	3	1	122	83	12	254	241	2714579	3	7	1504	189	35	48	3.8	3.7
37	3	1	123	82		254	241	2714579	3	7	1504	189	35	47	2.7	2.6
38	6	1	122	30	04	253	248	2719930	3	7	1522	69	36	41	3.8	3.8
38	6	1	123	30		253	248	2719930	3	7	1522	69	36	40	2.6	2.6
38	6	2	122	77	11	240	228	2720124	3	7	1715	172	49	60	3.7	3.7
38	6	2	123	78		240	228	2720124	3	7	1715	172	48	59	2.6	2.5
38	6	3	122	29	05	203	301	2720666	3	7	2257	68	77	76	3.8	3.8
38	6	3	123	30		203	300	2720666	3	7	2257	68	77	77	2.6	2.6
38	6	4	122	23	03	305	308	2720782	3	7	2374	54	75	73	3.8	3.9
38	6	4	123	23		303	307	2720782	3	7	2374	54	76	74	2.7	2.7
39	6	1	122	95	13	265	250	2725086	3	7	1343	219	24	39	3.9	3.7
39	6	1	123	95		265	250	2725086	3	7	1343	219	24	38	2.7	2.6
39	6	2	122	24	04	242	238	2725422	3	7	1679	54	46	50	3.7	3.6
39	6	2	123	24		243	239	2725422	3	7	1679	54	46	49	2.6	2.5
40	6	1	122	30	04	282	277	2730147	3	7	1071	76	6	11	4.2	4.1
40	6	1	123	30		282	278	2730147	3	7	1071	76	6	11	3.0	2.9
40	6	2	122	110	16	256	239	2730559	3	7	1482	247	33	49	3.8	3.6
40	6	2	123	110		256	239	2730559	3	7	1482	247	33	49	2.6	2.5
41	9	1	122	77	11	230	218	2736280	3	7	1869	172	58	68	3.7	3.7
41	9	1	123	78		230	218	2736280	3	7	1869	172	57	68	2.5	2.5
42	2	1	122	84	12	261	248	2741155	3	7	1411	190	28	41	3.8	3.7
42	2	1	123	84		261	248	2741155	3	7	1411	190	28	40	2.7	2.6
48	5	0	122	16	02	238	235	2773511	3	7	1769	37	51	53	3.7	3.7
48	5	0	123	16		238	235	2773511	3	7	1769	37	50	52	2.6	2.6
52	2	1	122	23	03	273	269	28 7927	3	7	1255	56	16	20	4.0	4.0

~~TOP SECRET~~

52	2	1	123	22		273	269	28	7927	3	7	1255	56	16	20	2.9	2.9
54	9	1	122	150	22	254	231	2818887		3	7	1549	336	36	57	3.8	3.6
54	9	1	123	149		254	231	2818887		3	7	1549	336	35	57	2.7	2.6
55	5	1	122	77	11	262	250	2824100		3	7	1431	175	28	39	3.8	3.7
55	5	1	123	79		262	250	2824100		3	7	1431	175	27	39	2.6	2.5
57	5	1	122	150	21	260	237	2834799		3	7	1466	337	30	52	3.8	3.6
57	5	1	123	150		260	237	2834799		3	7	1466	337	29	51	2.7	2.5
58	1	1	122	171	25	268	241	2840013		3	7	1348	385	22	47	3.9	3.6
58	1	1	123	171		268	242	2840013		3	7	1348	385	21	47	2.7	2.5
59	1	1	122	43	06	255	248	2845544		3	7	1547	98	35	41	3.8	3.7
59	1	1	123	43		255	248	2845544		3	7	1547	98	34	41	2.6	2.6
59	1	2	122	63	09	214	2	4	2846147	3	7	2149	142	72	76	3.7	3.8
59	1	2	123	63		214	2	4	2846147	3	7	2149	142	71	76	2.6	2.6
65	4	0	122	16	02	236	233	2877819		3	7	1816	37	53	55	3.8	3.8
65	4	0	123	16		236	233	2877819		3	7	1816	37	52	55	2.6	2.6

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

A REVOLUTION 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 1) TM DATA HAS NOT INDICATED S/I CAMERAS FUNCTIONAL SINCE PREVIOUS TO REV 16.
2) AFT PAN CAMERA CYCLE COUNTER IS INTERMITTANT.

RAMP PROFILES
R- 4 A- 7
R= 0.3893 A= 0.0668

TUR	PER	CPS	ANG V
100	3.094	0.3232	0.02923
200	3.075	0.3252	0.02941
300	3.044	0.3286	0.02972
400	3.002	0.3332	0.03013
500	2.951	0.3389	0.03065
600	2.893	0.3457	0.03126
700	2.830	0.3533	0.03196

~~TOP SECRET~~

800	2.764	0.3617	0.03272
900	2.698	0.3707	0.03353
1000	2.631	0.3800	0.03437
1100	2.566	0.3897	0.03524
1200	2.486	0.4023	0.03639
1300	2.412	0.4145	0.03749
1400	2.348	0.4258	0.03851
1500	2.295	0.4358	0.03941
1600	2.252	0.4440	0.04016
1700	2.221	0.4503	0.04073
1800	2.201	0.4544	0.04109
1900	2.193	0.4561	0.04125
2000	2.196	0.4553	0.04118
2100	2.211	0.4522	0.04090
2200	2.238	0.4468	0.04041
2300	2.276	0.4393	0.03973
2400	2.326	0.4300	0.03889
2500	2.386	0.4192	0.03791
2600	2.455	0.4073	0.03684
2700	2.533	0.3948	0.03570
2800	2.605	0.3838	0.03472
2900	2.671	0.3744	0.03386
3000	2.738	0.3653	0.03304
3100	2.804	0.3566	0.03225
3200	2.868	0.3486	0.03153
3300	2.928	0.3415	0.03089
3400	2.982	0.3353	0.03033
3500	3.028	0.3303	0.02987
3600	3.064	0.3264	0.02952
3700	3.088	0.3238	0.02929
3800	3.100	0.3226	0.02918

R- 3 A- 7

R= 0.4055 A= 0.0668

TUR	PER	CPS	ANG V
100	2.947	0.3394	0.03070
200	2.929	0.3414	0.03088
300	2.901	0.3448	0.03118
400	2.862	0.3494	0.03160
500	2.816	0.3551	0.03212
600	2.763	0.3619	0.03273
700	2.706	0.3695	0.03342
800	2.646	0.3779	0.03418
900	2.585	0.3869	0.03499
1000	2.524	0.3962	0.03584
1100	2.464	0.4059	0.03671
1200	2.389	0.4185	0.03785
1300	2.322	0.4307	0.03896
1400	2.262	0.4420	0.03998
1500	2.213	0.4520	0.04088
1600	2.173	0.4602	0.04162
1700	2.144	0.4665	0.04219
1800	2.125	0.4706	0.04256
1900	2.118	0.4723	0.04271
2000	2.121	0.4715	0.04265

2100	2.135	0.4684	0.04236
2200	2.160	0.4630	0.04187
2300	2.195	0.4555	0.04120
2400	2.241	0.4462	0.04035
2500	2.297	0.4354	0.03938
2600	2.361	0.4235	0.03830
2700	2.433	0.4110	0.03717
2800	2.500	0.4000	0.03618
2900	2.560	0.3906	0.03533
3000	2.622	0.3815	0.03450
3100	2.682	0.3728	0.03372
3200	2.741	0.3648	0.03300
3300	2.796	0.3577	0.03235
3400	2.845	0.3515	0.03179
3500	2.886	0.3465	0.03134
3600	2.919	0.3426	0.03099
3700	2.941	0.3400	0.03075
3800	2.952	0.3388	0.03064

~~SECRET~~

CLOCK SUMMARY
PRELIMINARY CLOCK CORRELATION

ORDER FIT 1

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
56632.268	395404.54190	56632.27420	-0.00527	0	1
31321.622	456493.88690	31321.61920	0.00378	8	1
75649.309	500821.57590	75649.30810	0.00182	16	1
30360.145	5061.49890	30360.14310	0.00285	24	1
74671.579	49372.93390	74671.57810	0.00189	32	1
29276.552	90377.90990	29276.55400	-0.00107	40	1
73568.432	134669.79290	73568.43700	-0.00404	48	1
28333.667	175835.02690	28333.67100	-0.00300	56	1
77875.992	225377.34590	77875.98990	0.00304	65	1

A0=-0.3387722674D 06 A1= 0.9999999991570 00
SIGMA=0.00305 NO. POINTS= 9
RATIO OF CLOCK TIME TO SYS TIME= 0.100000000084D 01

ORDER FIT 2

SYS TIME I/P	CL TIME I/P	COMP SYS TM	DELTA ST	REV	STA
56632.268	395404.54190	56632.27280	-0.00381	0	1
31321.622	456493.88690	31321.61900	0.00393	8	1
75649.309	500821.57590	75649.30860	0.00134	16	1
30360.145	5061.49890	30360.14390	0.00204	24	1
74671.579	49372.93390	74671.57900	0.00098	32	1
29276.552	90377.90990	29276.55480	-0.00183	40	1
73568.432	134669.79290	73568.43730	-0.00437	48	1
28333.667	175835.02690	28333.67070	-0.00270	56	1
77875.992	225377.34590	77875.98850	0.00442	65	1

A0=-0.3387722898D 06 A1= 0.1000000079590 01
A2=-0.6929654617681D-13
SIGMA=0.00294 NO. POINTS= 9

~~SECRET~~