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Copy No. 21 Pages
(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-5

VEHICLE NO. 1174

MISSION NO. 1004,

CAMERA NOS. 124 & 125

Prepared by [redacted]

Checked by

Approved by

Approved by

Program [redacted] Manager for.

Declassified and Released by the N R O [redacted]

In Accordance with E. O. 12958

on NOV 26 1997

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SYSTEM NO. FS
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

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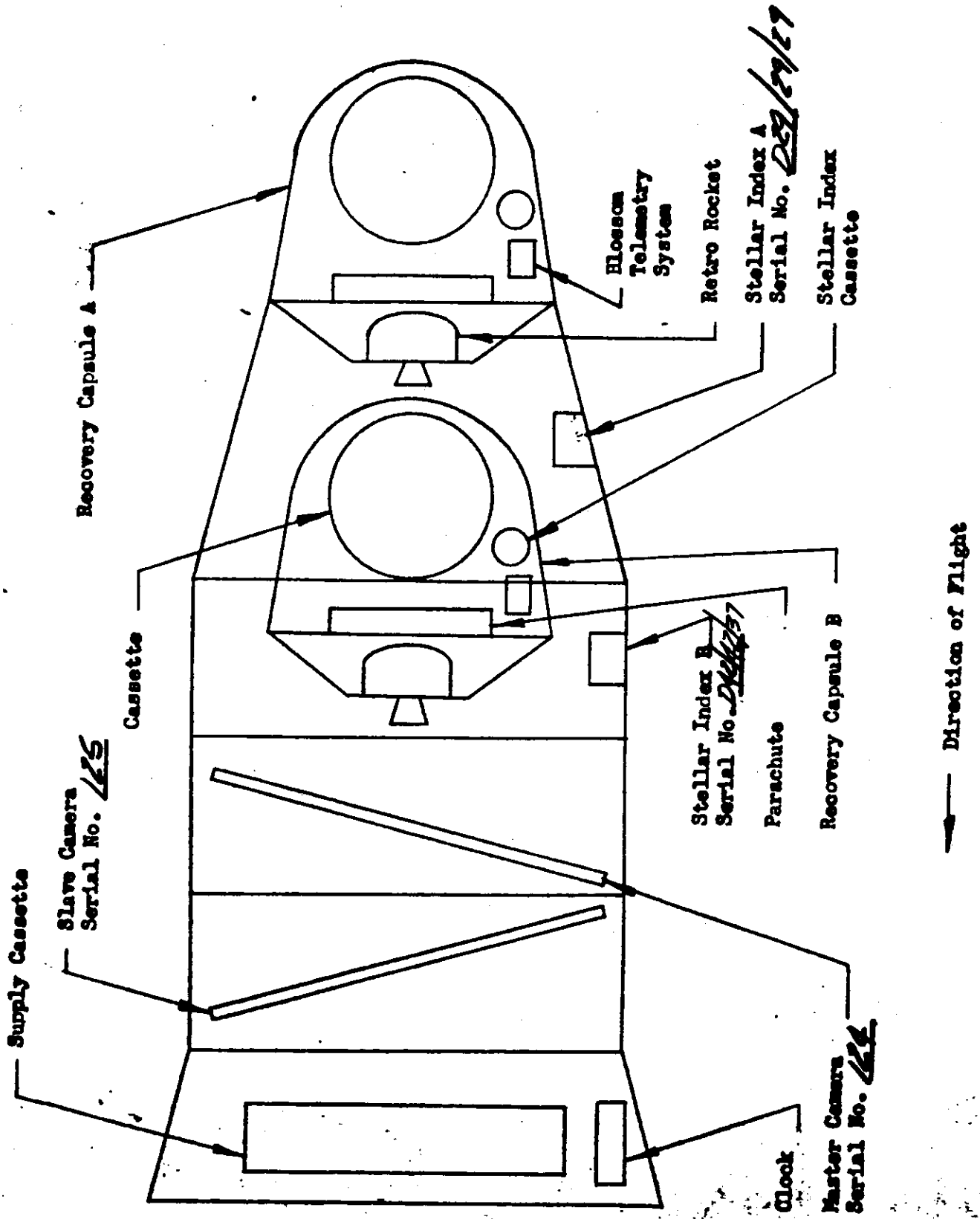
VEHICLE LAYOUT:



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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

GENERAL FLIGHT DATA:

Master Camera Serial No. 124

Slave Camera Serial No. 125

Stellar Index "A" Serial No. 029/29/29

Stellar Index "B" Serial No. 042/42/37

Launch Date 2/15/64

Orbital Parameters: (Rev. 26)

Period 90.79 Min. Eccentricity 0.02027

Perigee 98.61 NM Perigee Latitude 30.08 Deg. N

Apogee 245.11 NM Inclination Angle 75.2 Deg. N

Recovery Orbit No. 49

Recovery Date 2/18/64

REMARKS:

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SYSTEM NO. 75
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

LENS SETTINGS AND FILM TYPES:

Panoramic Camera Settings:	Camera No. 124	Camera No. 125
Panoramic Optics Slit Width	0.250 in.	0.250 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	F 8.0 SUPPLY F 6.8 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 SEC	1/500 SEC	2 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 _____ Master Camera Frames.

Film:

Panoramic Cameras:	Camera No. 124	Camera No. 125
Type	2J40 (S0132)	2J40 (S0132)
Length	* 16,000 ft.	* 16,000 ft.
Splices	8	6
Emul. Data	45-73-75-12-3	45-73-12-3

Stellar Index Cameras:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Type	3J34 (S0102)	2J33 (S0130)	3J34 (S0102)	2J33 (S0130)
Emul. Data	7-3-1-4	16-4-11-3	7-3-1-4	16-4-11-3

* 415 FT. WAS OFFSPOOLED.

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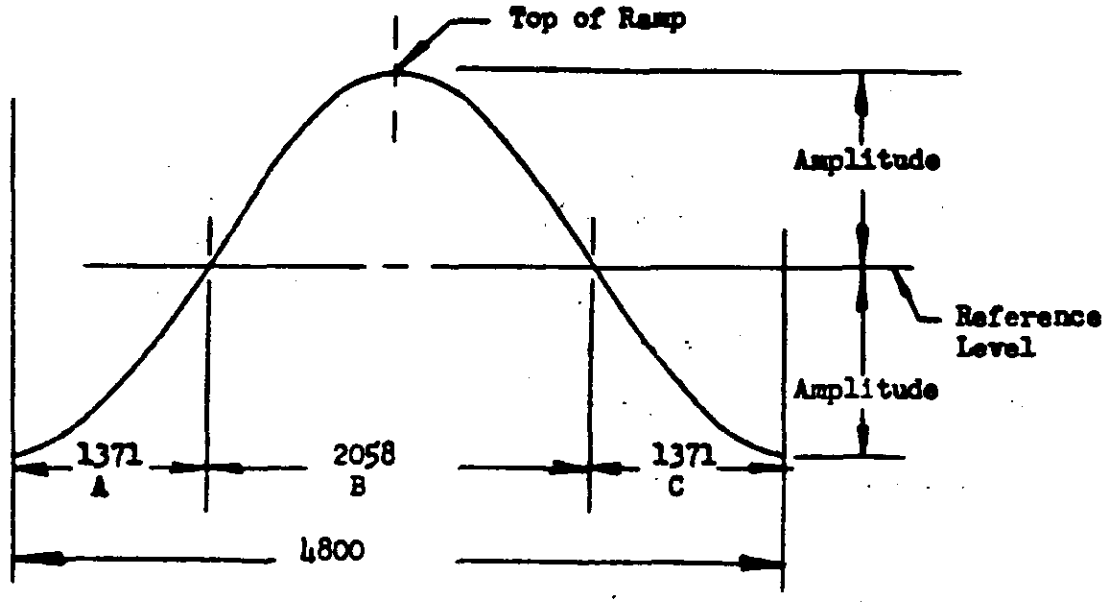
V/H RAMP CONFIGURATION AND CONSTANTS:



Cycle Rate Computation:

A. 0 to 1371 Sec Up Ramp: CPS=R+A Sin (1.5 X -1.5707963)

B. 1372 to 3429 Sec Up Ramp: CPS=R+A Sin (2 X -2.0943951) ≤ .4625

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

FMC Rate Computation:

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

$$\text{FMC Rate (Radians/Sec)} = 2\pi \left(\frac{0.3224}{24\ CP}\right) = 0.84378 \times CPS$$

Scan Velocity Computation:

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

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

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

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

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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

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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	
8	1	7.930	8.000	0
8	1	2.255	2.272	2400

IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Orbit No.	Time Up Ramp Sec
		Master	Slave		
8	1	6.012	6.045	9	650
8	1	5.888	5.936	25	685
8	1	2.293	2.267	31	2290
8	1	5.491	5.584	41	735

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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

LENS DATA SUMMARY: Panoramic Camera No. 124

Lens Serial No. 0642435

Slit Width 0250 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.602 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	290 (LWAR)	SO132	HIGH
Other	160	SO132	Low

Dynamic:

Itek ~~Pre-Vibration~~	170	SO132	HIGH
Itek ~~Post-Vibration~~	131	SO132	Low
AP	183	SO132	HIGH
AP	107	SO132	Low
Other			

Note: Itek Post Vibration Resolution of 170 lines/MM Reported In Message No. _____ dated _____

Distortion - Positive (Pincushion)

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

SYSTEM NO. F5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

LENS DATA SUMMARY: (Horizon Cameras for Panoramic Camera No. 124)

	Take-Up	Supply
Lens Serial No.	812265	812271
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	54.452 MM	54.33 MM
Radial Distortion:		
10° off Axis	.009 MM	-.015 MM
20° off Axis	.012 MM	-.015 MM
Tangential Distortion (Maximum Vector)	.004 MM	N/A MM

Resolution:

Angle off Axis Deg.	0	10	20					0	10	20				
Radial Resolution	157 / 168	141 / 141	100 / 78					157 / 177	141 / 141	106 / 88				
Tangential Resolution														

162 Lines/MM Avg. Max 167 Lines/MM Avg. Max

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on SO132 film and HIGH contrast target.

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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1004 1
CAMERA NOS. 124 & 125

LENS DATA SUMMARY: Panoramic Camera No. 125

Lens Serial No. 1022435

Slit Width 0.250 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.602 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	238	SO132	HIGH
~~Other~~	155	SO132	Low

Dynamic:

Itek ~~Pre-Vibration~~	178	SO132	
Itek ~~Post Vibration~~	135	SO132	
AP	215	SO132	
AP	108	SO132	
Other			

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

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.001	.000	.000	.000	.001	.002	.003		

SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1009
CAMERA NOS. 124 & 125

LENS DATA SUMMARY: (Horizon Cameras for Panoramic Camera No. 125)

	Take-Up	Supply
Lens Serial No.	812212	812270
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F8.0
Operational Focal Length	58.484 MM ? 54.484 54.484	58.484 MM
Radial Distortion:		
10° off Axis	.002 MM	.004 MM
20° off Axis	.009 MM	.002 MM
Tangential Distortion (Maximum Vector)	.003 MM	.005 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5	0	5	10	15	20	25	27.5
Radial Resolution	184	164	144	112	103	105	58	164	164	162	134	109	99	41
Tangential Resolution	164	145	142	115	86	66	44	164	162	151	121	91	60	41

178 Lines/MM Avg. Max 111 Lines/MM Avg. Max ?

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on SO132 film and High contrast target.

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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 -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. 1-5
VEHICLE NO. 1122
MISSION NO. 1008
CAMERA NOS. 122 & 125

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)

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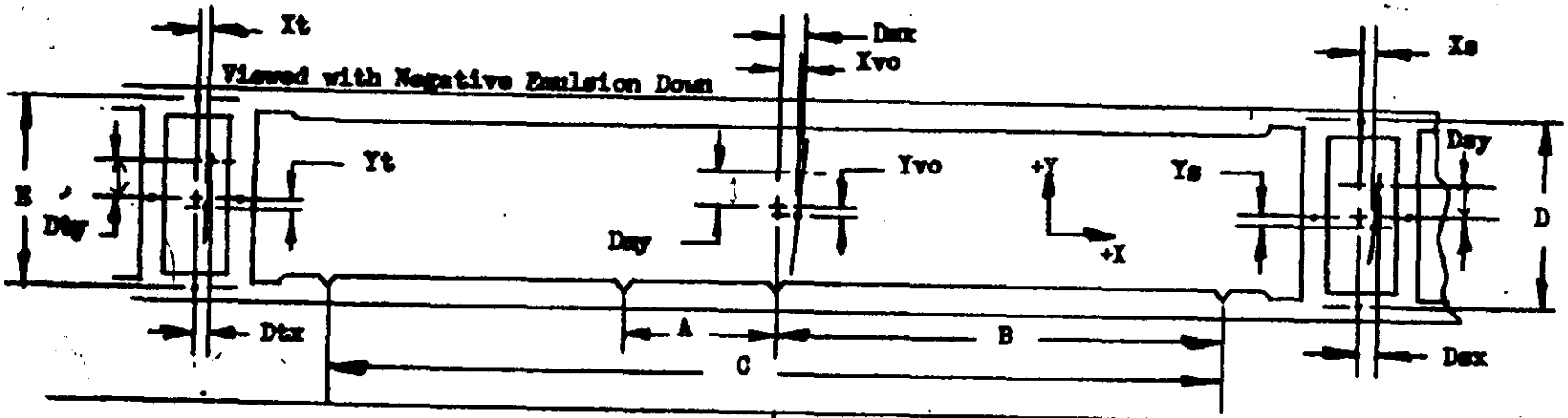

Camera No. 124	Vehicle Motion ↓	Scan Direction →
A	Xt	Dtx
B	Yt	Dty
C	Xs	Dsx
D	Ys	Dsy
E	Xvo	Dmx
	Yvo	Dmy

Format Dimensions:

	Panoramic	Take-Up	Supply
Height			
Width			

Camera No. 125	Vehicle Motion ↓	Scan Direction →
A	Xt	Dtx
B	Yt	Dty
C	Xs	Dsx
D	Ys	Dsy
E	Xvo	Dmx
	YVo	Dmy

Format Dimensions:

	Panoramic	Take-Up	Supply
Height			
Width			

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. Dt, Dm, Ds, 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-5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

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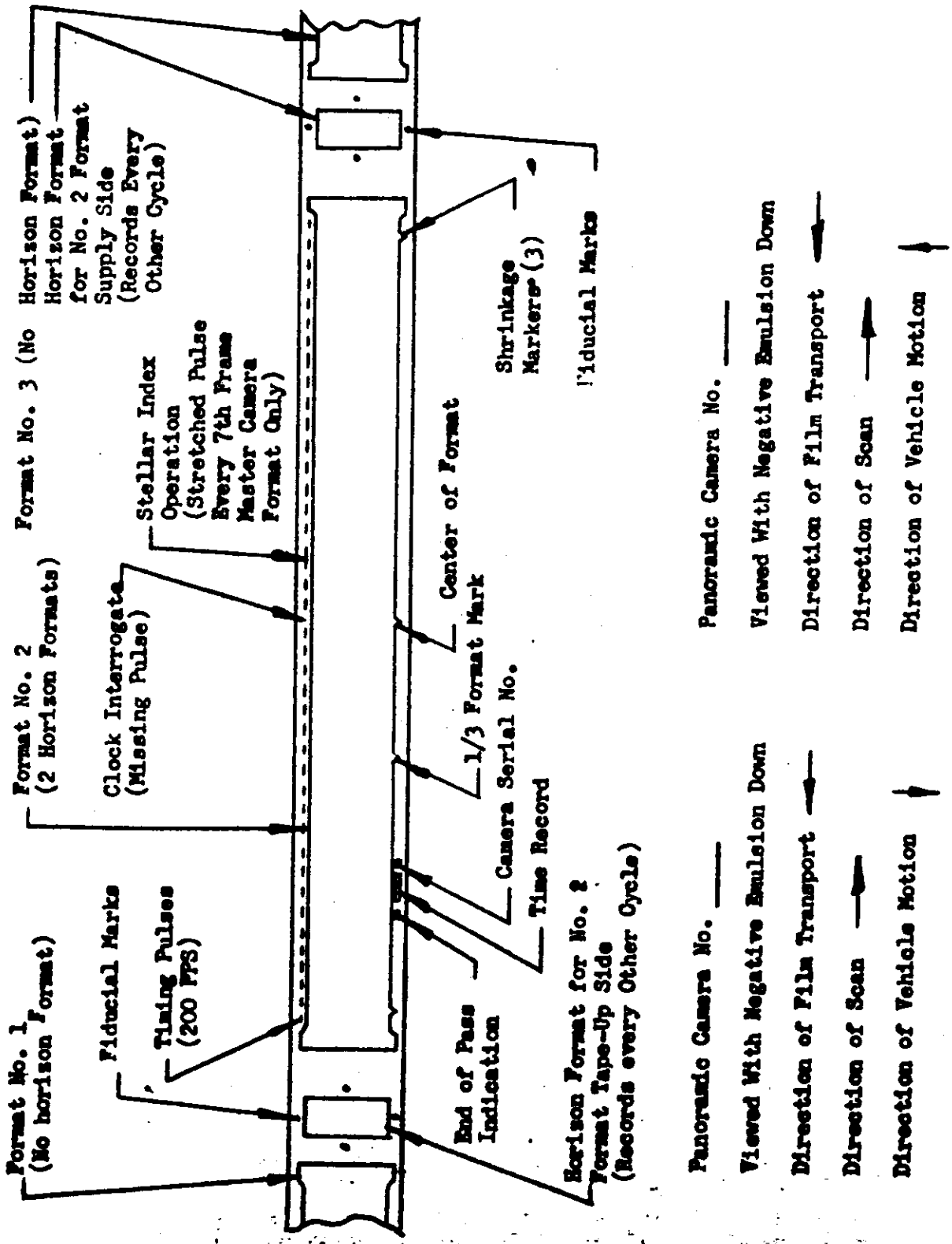
FORMAT LAYOUT: (PANORAMIC CAMERAS)



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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1004
CAMERA NOS. 124 & 125

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LENS DATA SUMMARY STELLAR INDEX D29/29/29:

	Stellar	Index
Lens Serial No.	10494	811906
Reseau Serial No.	29	29
Filter Type	NONE	WRATTEN 21
Aperture	F1.8	F4.5
Exposure Time	2 Sec.	1/500 Sec.
Operational Focal Length	___ MM	___ MM
Equivalent Focal Length	___ MM	___ MM

Resolution:

Angle off axis						0	10	20	30	35
Resolution L/MM High Contrast						73	78	104	105	98
Resolution L/MM Low Contrast						59	74	80	61	10

Note: Index Resolution of 76 Lines/MM AWAR
Read From 50130 Film.

Distortion:

Angle off Axis Deg.										
Distortion Millimeters										

Perpendicularity of Reseau to Optical Axis: 0.0013 in .937 in 0.009 in 225 in.

Location of Principal Point: X ___ MM X ___ MM
Y ___ MM Y ___ MM

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SYSTEM NO. J-5
VEHICLE NO. 1178
MISSION NO. 1004
CAMERA NOS. 124 & 125

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LENS DATA SUMMARY STELLAR INDEX 042/42/37 :

	Stellar	Index
Lens Serial No.	10510	813050
Reseau Serial No.	37	42
Filter Type	None	Wratten
Aperture	F1.8	F4.5
Exposure Time	2 Sec.	1/500 Sec.
Operational Focal Length	____ MM	____ MM
Equivalent Focal Length	____ MM	____ MM

Resolution:

Angle off axis						0	10	20	30	35
Resolution L/MM High Contrast						73	92	108	89	77
Resolution L/MM Low Contrast						73	83	91	35	18

Note: Index Resolution of 70 Lines/MM AWAR
Read From S0130 Film.

Distortion:

Angle off Axis Deg.										
Distortion Millimeters										

Perpendicularity of Reseau to Optical Axis .0004 in .937 in. .0005 in 2.25 in.

Location of Principal Point: X ____ MM X ____ MM
Y ____ MM Y ____ MM

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SYSTEM NO. J-5
VEHICLE NO. 1174
MISSION NO. 1009
CAMERA NOS. 124&125

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PRELIMINARY CLOCK CORRELATION:

ORBIT	SYSTEM TIME	CLOCK TIME	DIFFERENCE
9	39172.397	213296.784	
16	78973.398	253097.795	+.010
25	40012.892	300537.280	-.109
31	74356.440	334880.840	+.012
41	40835.655	387760.055	-.010
47	75164.251	422088.658	+.007

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SYSTEM NUMBER J-05
VEHICLE NUMBER 1174
MISSION NUMBER 1CC4
PANORAMIC CAMERA NUMBERS 124 AND 125
STELLAR/INDEX CAMERA NUMBER D29/29/29

MISSION A
PERFORMANCE ESTIMATE

SUB	PROG		CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZC ST	TUR NO	TUR SEC.	DUR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
LAUNCH			124	105	15										
LAUNCH			125	103											
1	5	0	124	18	C2	253	250	1583277	8	1	1866	50	23	26	4.9	4.8
1	5	0	125	18		254	251	1583277	8	1	1866	50	22	25	4.9	4.8
3	5	1	124	71	10	269	258	16 7512	8	1	1585	201	8	19	5.1	4.5
3	5	1	125	70		269	258	16 7512	8	1	1585	201	7	18	5.1	4.6
3	5	2	124	33	C5	255	250	16 7750	8	1	1823	82	21	26	4.4	4.3
3	5	2	125	32		256	251	16 7750	8	1	1823	82	20	25	4.5	4.3
4	5	1	124	104	15	272	256	1612888	8	1	1510	301	3	20	5.4	4.4
4	5	1	125	103		273	257	1612888	8	1	1510	301	2	19	5.4	4.5
4	5	2	124	54	08	253	244	1613248	8	1	1869	135	24	31	4.3	4.1
4	5	2	125	54		254	245	1613248	8	1	1869	135	23	30	4.4	4.2
5	5	1	124	117	16	266	247	1618481	8	1	1648	312	11	28	4.9	4.2
5	5	1	125	115		266	248	1618481	8	1	1648	312	10	28	4.9	4.2
6	5	1	124	105	15	269	253	1623856	8	1	1571	292	6	23	5.1	4.3
6	5	1	125	103		270	254	1623856	8	1	1571	292	5	22	5.2	4.4
6	5	2	124	37	06	243	237	1624316	8	1	2032	86	32	37	4.1	4.0
6	5	2	125	36		244	238	1624316	8	1	2032	86	32	36	4.1	4.0
7	2	1	124	40	05	260	253	1629497	8	1	1759	107	17	23	4.6	4.4
7	2	1	125	40		260	254	1629497	8	1	1759	107	16	22	4.7	4.5
7	2	2	124	54	08	250	241	1629661	8	1	1924	134	26	34	4.3	4.1
7	2	2	125	53		250	242	1629661	8	1	1924	134	26	33	4.3	4.2
8	2	1	124	72	1C	260	248	1634951	8	1	1762	187	17	28	4.6	4.2
8	2	1	125	71		260	249	1634951	8	1	1762	187	16	27	4.6	4.3
9	2	0	124	8	C1	140	143	1639253	8	1	613	49-43-40			11.6	11.2
9	2	0	125	8		137	140	1639253	8	1	613	49-44-42			11.6	11.2
9	9	1	124	98	14	259	243	1640419	8	1	1779	251	18	32	4.5	4.1
9	9	1	125	97		260	244	1640419	8	1	1779	251	17	31	4.6	4.1
11	9	0	124	4	C1	125	127	1649918	8	1	0	32-52-51			16.3	16.3
11	9	0	125	4		122	124	1649918	8	1	0	32-53-52			16.4	16.4
17	10	1	124	59	08	315	326	1685167	8	1	2932	162	60	55	4.5	4.8
17	10	1	125	58		314	325	1685167	8	1	2932	162	60	55	4.5	4.9
19	10	1	124	87	13	270	257	17 8309	8	1	1580	247	5	20	5.1	4.4
19	10	1	125	86		271	258	17 8309	8	1	1580	247	4	19	5.2	4.5
20	10	1	124	79	11	266	253	1713859	8	1	1682	213	11	24	4.8	4.3
20	10	1	125	78		266	254	1713859	8	1	1682	213	10	23	4.9	4.4
20	10	2	124	43	06	247	240	1714178	8	1	2001	102	30	36	4.1	4.0
20	10	2	125	42		247	241	1714178	8	1	2001	102	29	35	4.2	4.1
21	10	1	124	71	1C	259	248	1719432	8	1	1808	180	18	29	4.5	4.2
21	10	1	125	69		259	248	1719432	8	1	1808	180	18	28	4.6	4.2
21	10	2	124	66	1C	245	235	1719649	8	1	2025	157	31	40	4.1	3.9
21	10	2	125	65		246	236	1719649	8	1	2025	157	30	39	4.2	4.0
22	8	1	124	26	C4	271	267	1724654	8	1	1582	74	5	9	5.1	4.9
22	8	1	125	25		271	268	1724654	8	1	1582	74	4	8	5.2	5.0

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22	8	2	124	116	16	265	247	1724769	8	1	1697	304	12	30	4.8	4.1
22	8	2	125	114		266	248	1724769	8	1	1697	304	11	29	4.8	4.2
23	5	1	124	122	18	271	253	1730108	8	1	1570	337	4	24	5.1	4.2
23	5	1	125	121		272	254	1730108	8	1	1570	337	3	23	5.2	4.3
24	3	1	124	58	08	262	253	1735755	8	1	1765	151	15	24	4.6	4.3
24	3	1	125	57		262	253	1735755	8	1	1765	151	15	24	4.6	4.3
24	3	2	124	66	09	250	240	1735943	8	1	1952	160	27	36	4.2	4.0
24	3	2	125	65		251	241	1735943	8	1	1952	160	26	35	4.3	4.1
25	3	0	124	8	01	140	143	1740091	8	1	653	49-45-42		11.6	11.1	
25	3	0	125	8		137	140	1740091	8	1	653	49-46-44		11.6	11.1	
30	2	1	124	36	06	233	227	1768927	8	1	2242	85	42	46	4.1	4.0
30	2	1	125	36		233	228	1768927	8	1	2242	85	41	45	4.1	4.0
31	2	1	124	45	06	235	228	1774347	8	1	2212	99	40	45	3.8	3.7
31	2	1	125	45		236	229	1774347	8	1	2212	99	39	45	3.8	3.7
33	5	1	124	28	04	275	272	1784500	8	1	1520	89	-5	2	5.6	5.2
33	5	1	125	28		275	273	1784500	8	1	1520	89	-5	1	5.6	5.2
33	5	2	124	49	07	269	262	1784665	8	1	1686	138	6	15	5.0	4.6
33	5	2	125	49		270	263	1784665	8	1	1686	138	5	14	5.0	4.6
33	4	0	124	20	03	221	218	1785457	8	1	2477	44	52	54	3.9	3.9
33	4	0	125	20		222	219	1785457	8	1	2477	44	52	54	3.9	3.9
33	4	2	124	57	08	316	326	1786004	8	1	3025	162	62	57	4.6	5.0
33	4	2	125	57		315	325	1786004	8	1	3025	162	63	58	4.6	5.1
34	4	1	124	101	14	272	258	18 3646	8	1	1618	278	2	19	5.0	4.3
34	4	1	125	100		273	259	18 3646	8	1	1618	278	1	18	5.1	4.4
35	4	1	124	115	17	272	256	18 9096	8	1	1619	313	2	21	5.0	4.2
35	4	1	125	113		273	257	18 9096	8	1	1619	313	1	21	5.1	4.3
36	4	1	124	115	16	256	238	1814870	8	1	1945	278	22	38	4.2	3.9
36	4	1	125	114		256	239	1814870	8	1	1945	278	21	38	4.3	4.0
37	4	1	124	36	05	256	250	1820321	8	1	1947	88	22	27	4.2	4.1
37	4	1	125	36		256	251	1820321	8	1	1947	88	21	27	4.3	4.1
37	4	2	124	109	16	237	220	1820621	8	1	2246	252	40	53	3.9	3.9
37	4	2	125	107		237	221	1820621	8	1	2246	252	39	52	4.0	3.9
38	5	1	124	124	18	265	247	1825605	8	1	1784	310	12	31	4.5	4.0
38	5	1	125	122		266	247	1825605	8	1	1784	310	11	30	4.6	4.0
39	10	1	124	193	27	270	242	1830956	8	1	1680	489	5	35	4.7	3.9
39	10	1	125	190		271	243	1830956	8	1	1680	489	4	34	4.8	4.0
39	10	0	124	5	01	426	424	1834402	8	1	0	31-47-49		13.4	13.4	
39	10	0	125	5		429	427	1834402	8	1	0	31-45-47		13.7	13.7	
40	5	1	124	161	23	262	237	1836576	8	1	1853	393	16	39	4.4	3.9
40	5	1	125	159		262	238	1836576	8	1	1853	393	15	38	4.4	3.9
40	5	0	124	5	01	426	424	1839850	8	1	0	32-47-49		13.5	13.5	
40	5	0	125	5		429	427	1839850	8	1	0	32-45-47		13.8	13.8	
41	5	0	124	8	01	140	143	1840914	8	1	743	49-46-43		11.5	11.1	
41	5	0	125	8		138	141	1840914	8	1	743	49-48-45		11.5	11.1	
47	3	1	124	38	05	235	230	1875157	8	1	2298	84	41	45	3.8	3.8
47	3	1	125	37		236	230	1875157	8	1	2298	84	40	45	3.9	3.9
49	3	1	124	39	06	268	263	1885512	8	1	1763	97	8	14	4.4	4.2
49	3	1	125	39		269	263	1885512	8	1	1763	97	8	14	4.4	4.2

AAA BB C DDD EEE FF GHH GII JJKKKKK L 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)

[redacted]

SECRET [redacted]

E EST. NO OF PAN FRAMES, BASED ON COUNTER READINGS INFLITE
F EST. NUMBER OF STELLAR/INDEX FRAMES
G QUADRANT (QUAD 1 IS NORTHBOUND FROM ASCENDING NODE)
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 2.658, STELLAR X 0.099, INDEX X 0.198

NOTES (1) THE LAST 5 FRAMES OF THE REV 49 OPERATION ARE RETAINED IN THE SECOND BUCKET- THIS IS NOMINAL
(2) LATITUDES HAVE BEEN ADJUSTED FOR REVISED EPHEMERIS.

J 5 RAMP

REF. LEVEL= 0.2847 A= 0.1586 L= 4800.0 R- 8 A- 1 2 -15 -64

T	CYC/SEC	PERIOD	RATIO	CYCLES	INST.NO. 124
0	0.1261	7.930	0.0114	0	
100	0.1271	7.865	0.0115	13	
200	0.1302	7.678	0.0118	25	
300	0.1354	7.387	0.0122	39	
400	0.1425	7.019	0.0129	53	
500	0.1514	6.604	0.0137	67	
600	0.1621	6.169	0.0147	83	
700	0.1744	5.733	0.0158	100	
800	0.1882	5.314	0.0170	118	
900	0.2032	4.922	0.0184	137	
1000	0.2193	4.561	0.0198	159	
1100	0.2362	4.233	0.0214	181	
1200	0.2538	3.940	0.0230	206	
1300	0.2718	3.679	0.0246	232	
1400	0.2917	3.429	0.0264	260	
1500	0.3157	3.168	0.0286	291	
1600	0.3390	2.950	0.0307	323	
1700	0.3611	2.770	0.0327	358	
1800	0.3813	2.622	0.0345	396	
1900	0.3994	2.504	0.0361	435	
2000	0.4147	2.411	0.0375	475	
2100	0.4270	2.342	0.0386	517	
2200	0.4361	2.293	0.0394	561	
2300	0.4416	2.265	0.0399	604	
2400	0.4434	2.255	0.0401	649	
2500	0.4416	2.265	0.0399	693	
2600	0.4361	2.293	0.0394	737	
2700	0.4270	2.342	0.0386	780	
2800	0.4147	2.411	0.0375	822	

[redacted]

SECRET

2900	0.3994	2.504	0.0361	863
3000	0.3813	2.622	0.0345	902
3100	0.3611	2.770	0.0327	939
3200	0.3390	2.950	0.0307	974
3300	0.3157	3.168	0.0286	1007
3400	0.2917	3.429	0.0264	1037
3500	0.2718	3.679	0.0246	1065
3600	0.2538	3.940	0.0230	1092
3700	0.2362	4.233	0.0214	1116
3800	0.2193	4.561	0.0198	1139
3900	0.2032	4.922	0.0184	1160
4000	0.1882	5.314	0.0170	1180
4100	0.1744	5.733	0.0158	1198
4200	0.1621	6.169	0.0147	1215
4300	0.1514	6.604	0.0137	1230
4400	0.1425	7.019	0.0129	1245
4500	0.1354	7.387	0.0122	1259
4600	0.1302	7.678	0.0118	1272
4700	0.1271	7.865	0.0115	1285
4800	0.1261	7.930	0.0114	1298

[redacted]

SECRET [redacted]

14 00040348D

[redacted]

Copy No. _____

10 Pages
(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK ADDENDUM

SYSTEM NO. J-5

VEHICLE NO. 1174

MISSION NO. 1004-2

CAMERA NOS. 124 & 125

Prepared by: [redacted]

Checked by: [redacted]

Approved by: [redacted]

Approved by: [redacted]

Program [redacted]

[redacted]

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[redacted]

GENERAL FLIGHT DATA:

Master Camera Serial No. 124

Slave Camera Serial No. 125

Stellar Index "A" Serial No. D29/29/29

Stellar Index "B" Serial No. D42/42/37

Launch Date 2/15/64

Reactivation Date

Reactivation Orbit No.

Orbital Parameters: (Rev. 92)

Period 90.78 Min. Eccentricity 0.0198

Perigee 102.38 NM Perigee Latitude 43.25 Deg. N

Apogee 245.51 NM Inclination Angel 75.06 Deg. N

Recovery Orbit No. 112

Recovery Date 2/22/64

REMARKS:

NO DEACTIVATION BETWEEN 1ST AND 2ND MISSIONS. B MISSION BEGAN ON ORBIT 49 AFTER FIRST RECOVERY.

RAMP LEVEL CHANGED FROM 8 TO 7 TO INCREASE INSTRUMENT RATES TO MATCH LEVEL 8. THEREFORE, DATA FOR RAMP LEVEL 7 IS NOT INCLUDED.

CYCLE PERIOD DATA:

PRE-FLIGHT CYCLE PERIODS:

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds Master	Cycle Period Seconds Slave	Time Up Ramp Sec
8	1	7.930	8.000	0
8	1	2.255	2.272	2400

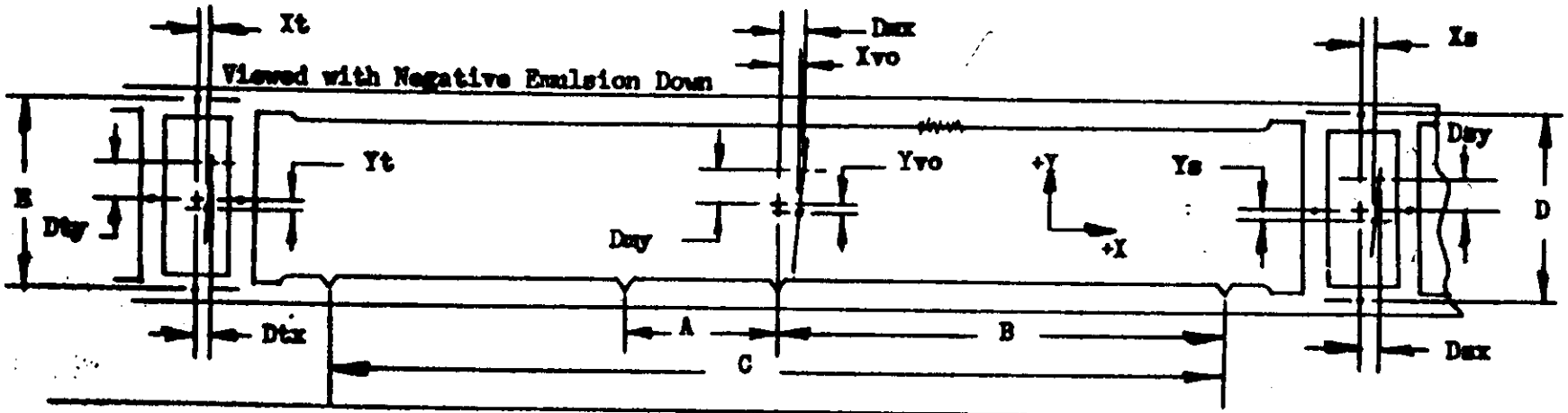
IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds Master	Cycle Period Seconds Slave	Orbit No.	Time Up Ramp Sec
8	1	2.305	2.335	78	2350
8	1	2.335	2.355	94	2500

SYSTEM NO. V-5
VEHICLE NO. 1124
MISSION NO. 1004-1E-2
CAMERA NOS. 124 E 125

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)

SECRET



Camera No. 124		Vehicle Motion ↓		Scan Direction →	
A	76.1	Xt	+0.225	Dtx	+0.226
B	355.3	Yt	-0.089	Dty	+2.000
C	710.3	Xs	-0.393	Dsx	-0.394
D	56.496	Ys	+0.036	Dsy	-2.000
E	56.435	Xvo	+0.757	Dmx	+0.773
		Yvo	+1.104	Dmy	-2.000

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.9		
Width	756.4		

Camera No. 125		Vehicle Motion ↓		Scan Direction →	
A	76.1	Xt	-0.045	Dtx	-0.047
B	355.3	Yt	+0.348	Dty	-2.000
C	710.6	Xs	-0.721	Dsx	-0.737
D	56.488	Ys	+0.045	Dsy	+2.000
E	56.459	Xvo	-0.737	Dmx	-0.749
		Yvo	+0.306	Dmy	-2.000

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	56.2		
Width	755.3		

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 10MM above point defining target center.
4. Format Sign Convention

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

HERE THE INDICATED PRINCIPAL POINT IS THE TARGET

[redacted]

SECRET

PRELIMINARY CLOCK CORRELATION:

ORBIT	SYSTEM TIME	CLOCK TIME	DIFFERENCE
49	75164.251	42088.658	+.007
56	36042.255	469366.671	+.009
63	75973.894	509298.799	-.011
72	37096.237	19949.733	+.002
78	71305.820	54159.343	+.027
88	37771.326	107024.860	+.011
94	72069.910	141323.448	+.004
104	38521.36	194174.872	-.026

[redacted]

SYSTEM NUMBER J-C5
VEHICLE NUMBER 1174
MISSION NUMBER 1CC4
PANORAMIC CAMERA NUMBERS 124 AND 125
STELLAR/INDEX CAMERA NUMBER C42/42/37

MISSION B
PERFORMANCE ESTIMATE

SUB	PROG	CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZD ST	TUR NO	TUR SEC.	DUR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
*49	3 1	125	5		264	263	1885512	8 1	1763	97	13	14	4.2	4.2
*49	3 1	124	5	C	264	263	1885512	8 1	1763	97	13	14	4.2	4.2
CUT/WRAP		124	3	1									14.0	14.0
CUT/WRAP		125	3										14.0	14.0
49	3 0	124	17	C2	221	218	1886270	8 1	2521	46	54	57	4.7	4.7
49	3 0	125	16		222	219	1886270	8 1	2521	46	54	56	5.0	5.0
50	3 1	124	105	15	269	254	19 4530	8 1	1725	274	7	24	4.7	4.1
50	3 1	125	104		270	255	19 4530	8 1	1725	274	6	23	4.7	4.2
52	3 1	124	116	17	255	237	1915697	8 1	1999	277	23	40	4.2	3.9
52	3 1	125	115		255	238	1915697	8 1	1999	277	23	40	4.2	3.9
53	3 1	124	36	C5	259	253	1921081	8 1	1935	88	19	25	4.2	4.1
53	3 1	125	36		259	254	1921081	8 1	1935	86	18	24	4.3	4.2
53	3 2	124	117	17	244	226	1921321	8 1	2175	272	34	50	4.0	3.9
53	3 2	125	116		245	227	1921321	8 1	2175	272	33	49	4.0	3.9
54	5 1	124	63	09	269	260	1926336	8 1	1743	167	7	18	4.7	4.3
54	5 1	125	62		270	261	1926336	8 1	1743	167	6	17	4.7	4.4
54	5 2	124	76	1C	258	247	1926540	8 1	1947	185	20	31	4.2	4.0
54	5 2	125	75		259	247	1926540	8 1	1947	185	19	31	4.3	4.1
55	1 1	124	263	38	271	233	1931741	8 1	1693	650	4	44	4.7	3.8
55	1 1	125	260		272	234	1931741	8 1	1693	650	3	44	4.8	3.9
55	1 0	124	5	C1	426	424	1935215	8 1	0	32-49-51			13.4	13.4
55	1 0	125	5		428	426	1935215	8 1	0	32-47-49			13.6	13.6
56	3 1	124	66	09	256	246	1937474	8 1	2004	163	22	32	4.2	4.1
56	3 1	125	65		257	247	1937474	8 1	2004	163	21	31	4.3	4.1
56	3 0	124	5	C1	425	423	1940676	8 1	0	32-50-51			14.0	14.0
56	3 0	125	5		428	426	1940676	8 1	0	32-48-49			14.2	14.2
57	8 0	124	11	C1	173	174	1942330	8 1	1404	40-13-10			6.6	6.4
57	8 0	125	11		172	173	1942330	8 1	1404	40-14-11			6.6	6.4
61	2 1	124	41	C6	242	236	1964951	8 1	2231	95	36	41	4.0	4.0
61	2 1	125	40		243	237	1964951	8 1	2231	95	35	41	4.1	4.1
62	2 1	124	41	C6	234	228	1970524	8 1	2360	96	43	49	4.0	4.0
62	2 1	125	40		235	229	1970524	8 1	2360	96	42	48	4.1	4.1
64	6 1	124	42	C6	272	267	1980779	8 1	1720	117	3	10	4.9	4.6
64	6 1	125	42		272	267	1980779	8 1	1720	117	2	10	4.9	4.6
64	3 2	124	36	C5	319	326	1982228	8 1	3169	112	64	59	5.1	5.5
64	3 2	125	36		318	325	1982228	8 1	3169	112	64	60	5.1	5.5
65	2 1	124	68	1C	268	259	1986310	8 1	1810	177	8	19	4.6	4.2
65	2 1	125	67		269	259	1986310	8 1	1810	177	7	19	4.6	4.3
66	3 1	124	28	C4	275	273	20 5158	8 1	1604	81	-5	0	5.1	4.9
66	3 1	125	28		275	274	20 5158	8 1	1604	81	-5	-0	5.2	4.9
66	3 2	124	67	1C	260	250	20 5509	8 1	1955	165	18	28	4.3	4.1
66	3 2	125	66		261	251	20 5509	8 1	1955	165	17	28	4.3	4.1
67	3 1	124	37	05	274	270	2010673	8 1	1673	103	-0	6	4.9	4.6
67	3 1	125	37		274	270	2010673	8 1	1673	103	-1	5	5.0	4.7
67	3 2	124	67	09	254	244	2011057	8 1	2056	162	24	35	4.1	4.0
67	3 2	125	67		255	245	2011057	8 1	2056	162	24	34	4.2	4.0

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68	3	1	124	44	07	273	267	2016151	8	1	1704	121	1	9	4.8	4.5
68	3	1	125	44		273	268	2016151	8	1	1704	121	0	8	4.9	4.6
68	3	2	124	139	20	255	234	2016490	8	1	2043	334	23	44	4.1	3.9
68	3	2	125	138		256	235	2016490	8	1	2043	334	22	44	4.2	4.0
69	3	1	124	54	07	261	253	2021838	8	1	1945	134	17	25	4.3	4.1
69	3	1	125	54		262	254	2021838	8	1	1945	134	16	25	4.3	4.1
69	3	2	124	62	09	243	234	2022129	8	1	2236	145	35	44	4.0	3.9
69	3	2	125	61		244	234	2022129	8	1	2236	145	35	44	4.0	4.0
70	2	1	124	47	07	260	253	2027306	8	1	1967	116	18	25	4.3	4.2
70	2	1	125	46		261	254	2027306	8	1	1967	116	17	25	4.4	4.2
70	2	2	124	60	08	250	241	2027470	8	1	2131	145	28	38	4.1	4.0
70	2	2	125	60		251	241	2027470	8	1	2131	145	28	37	4.1	4.0
71	3	1	124	128	19	261	242	2032734	8	1	1949	310	17	36	4.2	3.9
71	3	1	125	127		262	243	2032734	8	1	1949	310	16	36	4.3	4.0
71	3	0	124	5	00	437	435	2035825	8	1	0	33-40-42			13.7	13.7
71	3	0	125	5		440	438	2035825	8	1	0	33-38-40			13.8	13.8
72	2	1	124	53	08	258	250	2038239	8	1	2008	133	20	29	4.3	4.2
72	2	1	125	52		259	250	2038239	8	1	2008	133	19	28	4.4	4.2
72	2	2	124	46	07	234	227	2038621	8	1	2389	109	44	51	4.1	4.1
72	2	2	125	45		234	227	2038621	8	1	2389	109	44	50	4.1	4.1
72	2	0	124	5	00	437	435	2041278	8	1	0	33-41-42			14.3	14.3
72	2	0	125	5		440	438	2041278	8	1	0	33-38-40			14.5	14.5
78	1	1	124	39	06	242	236	2071184	8	1	2275	94	36	42	4.1	4.1
78	1	1	125	39		243	237	2071184	8	1	2275	94	36	41	4.1	4.1
83	6	1	124	87	12	254	241	2111835	8	1	2096	209	24	38	4.1	4.0
83	6	1	125	86		255	242	2111835	8	1	2096	209	24	37	4.1	4.0
85	6	1	124	74	11	259	248	2122649	8	1	2019	181	19	31	4.2	4.0
85	6	1	125	74		260	249	2122649	8	1	2019	181	18	30	4.2	4.1
85	6	2	124	41	06	242	236	2122923	8	1	2293	96	37	43	4.0	4.0
85	6	2	125	41		243	237	2122923	8	1	2293	96	36	42	4.0	4.0
86	3	1	124	51	07	261	253	2128067	8	1	1991	126	17	25	4.3	4.1
86	3	1	125	50		262	254	2128067	8	1	1991	126	16	24	4.3	4.2
86	3	2	124	67	10	251	241	2128232	8	1	2156	161	28	38	4.1	4.0
86	3	2	125	67		252	241	2128232	8	1	2156	161	27	37	4.1	4.0
87	6	1	124	68	09	262	252	2133498	8	1	1973	168	16	27	4.3	4.1
87	6	1	125	68		263	253	2133498	8	1	1973	168	15	26	4.3	4.1
87	6	2	124	67	10	247	237	2133744	8	1	2219	160	32	42	4.0	4.0
87	6	2	125	67		248	238	2133744	8	1	2219	160	31	41	4.0	4.0
94	4	1	124	46	06	235	228	2172062	8	1	2427	105	44	50	3.9	3.9
94	4	1	125	46		236	229	2172062	8	1	2427	105	43	49	3.9	3.9
101	2	1	124	54	08	255	247	2223474	8	1	2127	132	23	32	4.2	4.1
101	2	1	125	54		256	248	2223474	8	1	2127	132	23	31	4.2	4.1
102	8	1	124	124	18	251	233	2228984	7	1	2193	286	28	46	3.9	3.8
102	8	1	125	123		252	234	2228984	7	1	2193	286	27	46	3.9	3.9
103	6	0	124	9	01	140	142	2233154	7	1	919	47-53-50			9.6	9.3
103	8	0	125	10		138	141	2233154	7	1	919	47-55-52			8.7	8.4
103	6	1	124	131	19	261	242	2234265	7	1	2030	310	17	37	4.1	3.9
103	6	1	125	130		262	243	2234265	7	1	2030	310	16	36	4.1	3.9
103	6	2	124	58	08	219	209	2234927	7	1	2692	142	60	68	4.0	4.2
103	6	2	125	58		220	210	2234927	7	1	2692	142	59	67	4.0	4.2
104	6	0	124	9	01	139	142	2238601	7	1	922	46-53-50			9.5	9.2
104	6	0	125	10		138	141	2238601	7	1	922	46-55-52			8.5	8.2
111	5	1	124	34	05	272	267	2277621	7	1	1861	112	2	10	5.7	5.5
111	5	1	125	34		272	267	2277621	7	1	1861	112	1	9	5.7	5.5
112	5	1	124	52	08	272	263	2283068	7	1	1863	170	2	14	5.7	5.3
112	5	1	125	52		272	264	2283068	7	1	1863	170	1	13	5.7	5.3

DRAFT

AAA BB C DDD EEE FF GHH III JJKKKKK L M NNNN OOC 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 (QUAD 1 IS NORTHBOUND FROM ASCENDING NODE)
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 (CMT)
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 2.658 STELLAR X 0.099,INDEX X 0.198
*NOTE - INDICATES LAST FRAMES OF FIRST MISSION

PRELIMINARY CLOCK CORRELATION

ORBIT	SYSTEM TIME	CLOCK TIME	DELTA SYS TIME	DELTA CLK TIME	ERROR
49	75164.251	42088.658	34328.596	34328.603	.007
56	36042.255	469366.671	47278.004	47278.013	.009
63	75973.294	509298.299	39931.639	39931.628	-.011
72	37096.237	19949.733	47522.345	47522.343	.002
78	71305.820	54159.343	34209.583	34209.610	.027
88	37771.326	107024.260	52865.506	52865.517	.011
94	72069.91	141323.448	34298.584	34298.588	.004
104	38521.36	194174.872	52851.450	52851.424	-.026

J 5 RAMP

REF. LEVEL= 0.2847 A= 0.1586 L= 4800.0 R- 8 A- 1 2 -15 -64

T	CYC/SEC	PERIOD	RATIO	CYCLES	INST.NO. 124
0	0.1261	7.930	0.0114	0	
100	0.1271	7.865	0.0115	13	
200	0.1302	7.678	0.0118	25	
300	0.1354	7.387	0.0122	39	
400	0.1425	7.019	0.0129	53	
500	0.1514	6.604	0.0137	67	
600	0.1621	6.169	0.0147	83	
700	0.1744	5.733	0.0158	100	
800	0.1882	5.314	0.0170	118	
900	0.2032	4.922	0.0184	137	
1000	0.2193	4.561	0.0198	159	
1100	0.2362	4.233	0.0214	181	
1200	0.2538	3.940	0.0230	206	
1300	0.2718	3.679	0.0246	232	
1400	0.2917	3.429	0.0264	260	

1500	0.3157	3.168	0.0286	291
1600	0.3390	2.950	0.0307	323
1700	0.3611	2.770	0.0327	358
1800	0.3813	2.622	0.0345	396
1900	0.3994	2.504	0.0361	435
2000	0.4147	2.411	0.0375	475
2100	0.4270	2.342	0.0386	517
2200	0.4361	2.293	0.0394	561
2300	0.4416	2.265	0.0399	604
2400	0.4434	2.255	0.0401	649
2500	0.4416	2.265	0.0399	693
2600	0.4361	2.293	0.0394	737
2700	0.4270	2.342	0.0386	780
2800	0.4147	2.411	0.0375	822
2900	0.3994	2.504	0.0361	863
3000	0.3613	2.622	0.0345	902
3100	0.3611	2.770	0.0327	939
3200	0.3390	2.950	0.0307	974
3300	0.3157	3.168	0.0286	1007
3400	0.2917	3.429	0.0264	1037
3500	0.2718	3.679	0.0246	1065
3600	0.2538	3.940	0.0230	1092
3700	0.2362	4.233	0.0214	1116
3800	0.2193	4.561	0.0198	1139
3900	0.2032	4.922	0.0184	1160
4000	0.1882	5.314	0.0170	1180
4100	0.1744	5.733	0.0158	1198
4200	0.1621	6.169	0.0147	1215
4300	0.1514	6.604	0.0137	1230
4400	0.1425	7.019	0.0129	1245
4500	0.1354	7.387	0.0122	1259
4600	0.1302	7.678	0.0118	1272
4700	0.1271	7.865	0.0115	1285
4800	0.1261	7.930	0.0114	1298