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Copy No. 29 Pages
(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-13

VEHICLE NO. 1179

MISSION NO. 1012-1&2

CAMERA NOS. 156 & 157

Prepared by: [redacted]

Checked by:

Approved by:

Approved by:

Program [redacted], Manager

[redacted]

Declassified and Released by the N R O
in Accordance with E. O. 12958
on NOV 26 1997

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28 OCT 1964

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TABLE OF CONTENTS

		Page No.
Vehicle Layout		2
General Flight Data	Mission #1 →	3A
	Mission # 2 →	3B
Lens Settings and Film Types		4
V/H Ramp Configuration and Constants		5
Cycle Period Data		6
Lens Data Summary Master Camera		7
Lens Data Summary Master Camera Horizon Optics		8
Lens Data Summary Slave Camera		9
Lens Data Summary Slave Camera Horizon Optics		10
Definition of Panoramic Camera Format Calibrations		11
Panoramic Camera Format Calibration Dimensions		12
Panoramic Camera Format Layout		13
Lens Data Summary Stellar Index "A"		14A
Lens Data Summary Stellar Index "B"		14B
Preliminary Clock Correlation	Mission # 1 →	15A
	Mission # 2 →	15B
Horizon Lens Settings		16
Performance Estimate	Mission # 1 →	21-25
	Mission # 2 →	26-29

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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

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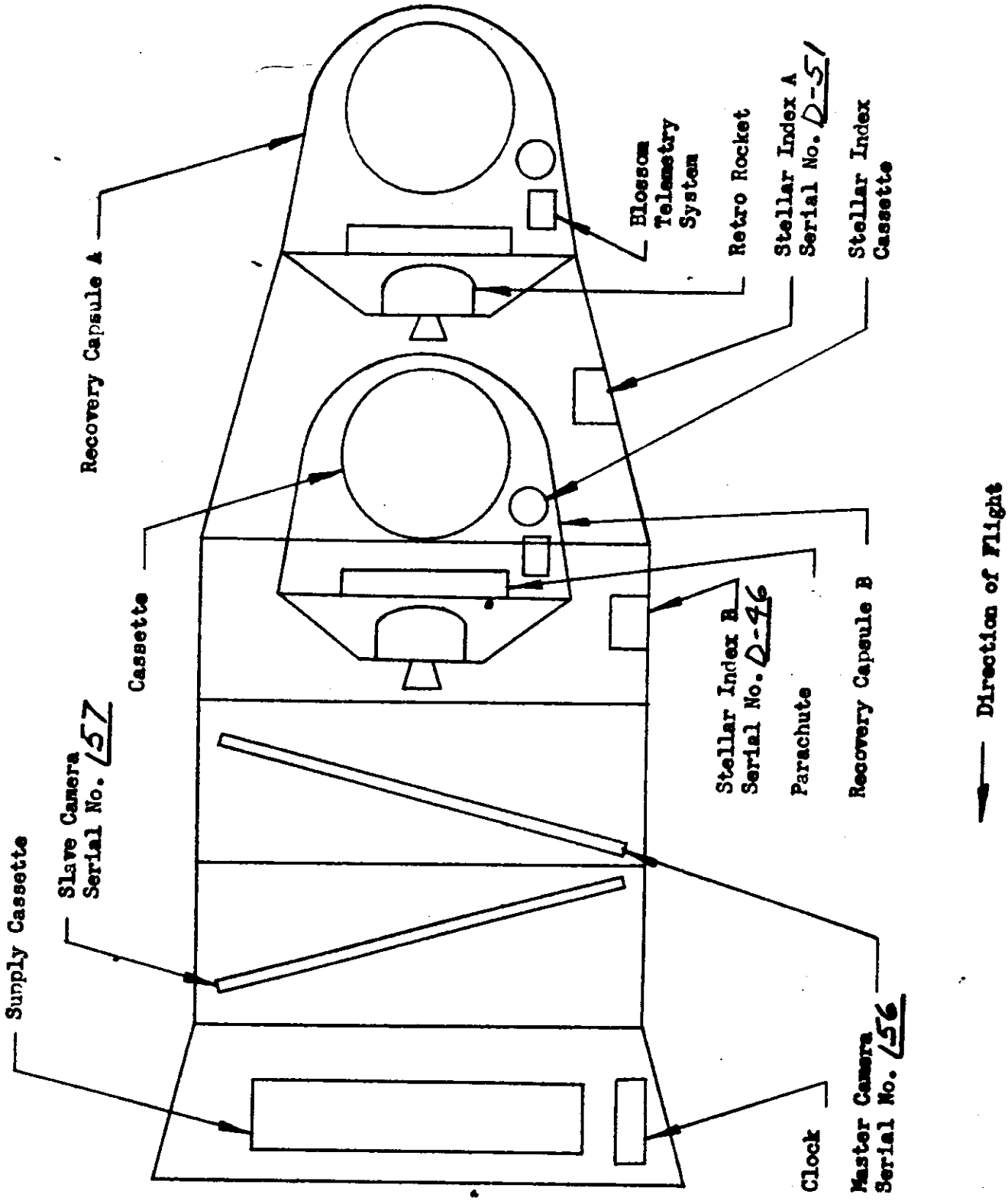
VEHICLE LAYOUT:



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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

[redacted]

GENERAL FLIGHT DATA:

Master Camera Serial No. 156

Slave Camera Serial No. 157

Stellar Index "A" Serial No. D-51

Stellar Index "B" Serial No. D-46

Launch Date 10/17/64

Reactivation Date —

Reactivation Orbit No. —

Orbital Parameters: (Rev. 10)

Period 90.60 Min. Eccentricity 0.0196

Perigee 96.28 NM Perigee Latitude 32.43 Deg. N

Apogee 237.68 NM Inclination Angle 75.05 Deg. N

Recovery Orbit No. 1ST REC -ORBIT 49

Recovery Date 10/20/64 - ZULU

REMARKS:

[redacted]

[redacted]

[redacted]

SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1 & 2
CAMERA NOS. 156 & 157

[redacted]

GENERAL FLIGHT DATA:

Master Camera Serial No. 156

Slave Camera Serial No. 157

Stellar Index "A" Serial No. D-51

Stellar Index "B" Serial No. D-46

Launch Date 10/17/64

Reactivation Date NOT APPLICABLE

Reactivation Orbit No. NOT APPLICABLE

Orbital Parameters: (Rev. 72)

Period 90.51 Min. Eccentricity .01876

Perigee 98.78 NM Perigee Latitude 43.32 Deg. N

Apogee 234.02 NM Inclination Angle 74.99 Deg.

Recovery Orbit No. 2nd REC-ORBIT 81

Recovery Date 10/23/64 - ZULU

REMARKS:

[redacted]

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[redacted]

SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

LENS SETTINGS AND FILM TYPES:

Panoramic Camera Settings:	Camera No. 156	Camera No. 157
Panoramic Optics Slit Width	.200x2.278 in.	.200x2.278 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 SECS	1/500 SEC	2.0 SECS	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. 156	Camera No. 157
Type	7J-40	7J-40
Length	16000 ft.	16000 ft.
Splices	4	5
Emul. Data	62-7-7-4	62-6-7-7-4

Stellar Index Cameras:

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

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VEHICLE NO. 1179

MISSION NO. 1012-1

CAMERA NOS. 156 & 157

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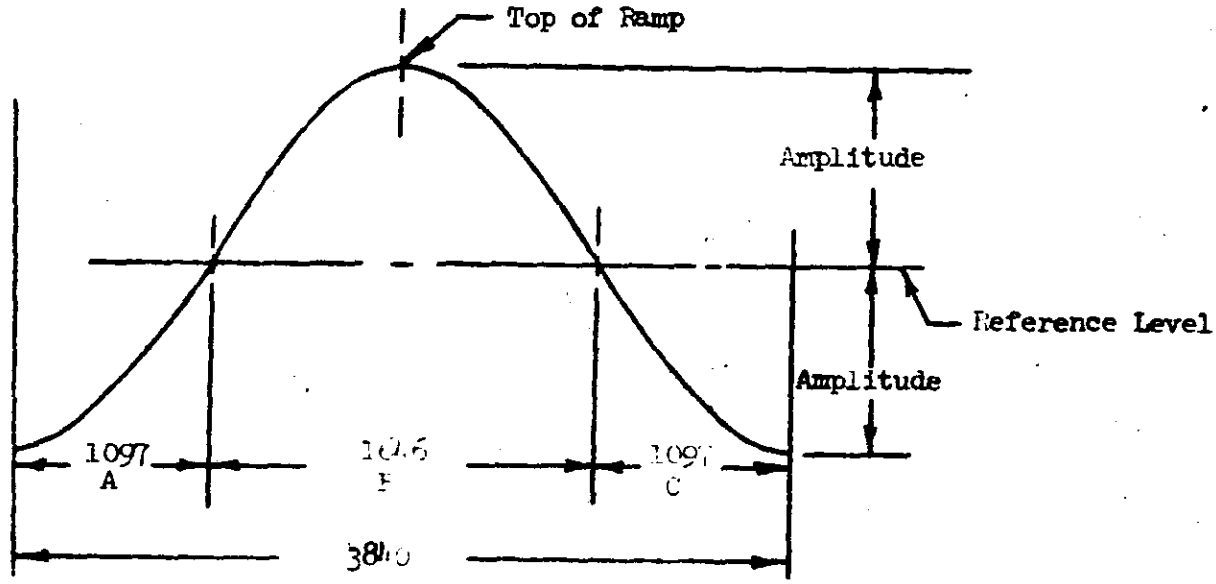
V/H RAMP CONFIGURATION AND CONSTANTS:



Cycle Rate Computation:

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

B. 1097 to 2743 Sec Up Ramp: CPS = B+A Sin (2 X -0.0943951) $\leq$ .4625

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

FMC Rate Computation:

$$\text{FMC Rate (In/Sec)} = 2\pi \left(\frac{0.3224}{CP}\right) = 2.02507 \times CPS$$

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

Scan Velocity Computation:

$$\text{Scan Velocity (In/Sec)} = \frac{42\pi}{2} = 150.796 \times CPS$$

$$\text{Scan Velocity (Radians/Sec)} = \frac{42\pi}{24\ CP} = 6.28319 \times CPS$$

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

WHERE: $X = \frac{\text{Time Up Ramp (Seconds)}}{1047.6942}$ $\qquad B = \frac{1}{2}(CPS(top) + CPS(bottom))$

$A = \frac{1}{2}(CPS\ top - CPS\ bottom)$ $\qquad CP$ = 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-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

[redacted]

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
6	5	4.292	4.246	370
6	5	4.377	4.329	320
6	5	4.316	4.269	360
6	5	2.204	2.199	1914
	Mission	#2		
6	5	4.257	4.212	397
6	5	2.204	2.199	1925

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
6	5	4.380	4.375	9	370
6	5	4.300	4.262	25	320
6	5	4.252	4.230	41	360
6	5	2.210	2.206	47	1914
	Mission	#2			
6	5	4.197	4.175	57	397
6	5	2.214	2.202	63	1925

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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

LENS DATA SUMMARY: Master Camera No. 156

Lens Serial No. 1342435

Slit Width .200 X 2.278 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.628 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	264	SO-132	HIGH
Other	152	SO-132	LOW

Dynamic:

Itek ~~Pre-Vibration~~	167	SO-132	HIGH
Itek ~~Post-Vibration~~	131	SO-132	LOW
AP	173	SO-132	HIGH
AP	114	SO-132	LOW
Other			

Note: Itek Post Vibration Resolution of 173 lines/MM Reported In Message No. _____ dated 10/20/64

Distortion - Positive (Pincushion)

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

[redacted]

[redacted]

[redacted]

SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

[redacted]

LENS DATA SUMMARY: (Horizon Cameras for MASTER Camera No. 156)

	Take-Up	Supply
Lens Serial No.	812265	814019
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	54.45 MM	54.98 MM
Radial Distortion:		
10° off Axis	.009 MM	.002 MM
20° off Axis	.006 MM	.007 MM
Tangential Distortion (Maximum Vector)	.004 MM	.005 MM

Resolution:

Angle off Axis Deg.								0	10	15	20	25	27.5	
Radial Resolution								170	125	77	75	68	59	
Tangential Resolution								170	116	84	75	55	42	

____ Lines/MM Avg. 170 Lines/MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on 30-132 film and HIGH contrast target.

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[redacted]

[redacted]

[redacted]

SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

LENS DATA SUMMARY: Slave Camera No. 157

Lens Serial No. 1232435

Slit Width .200 X 2.278 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.602 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	297	SO-132	HIGH
Other	157	SO-132	LOW

Dynamic:

Itek [redacted]	174	SO-132	HIGH
Itek [redacted]	131	SO-132	LOW
AP	193	SO-132	HIGH
AP	119	SO-132	LOW
Other			

NOTE: Itek Post Vibration Resolution of 193 Lines/MM Reported In Message No. _____ dated 10/20/64

Distortion - Positive (Pincushion)

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

[redacted]

[redacted]

[redacted]

SYSTEM NO. J-13

VEHICLE NO. 1179

MISSION NO. 1012-1

CAMERA NOS. 156 & 157

[redacted]

LENS DATA SUMMARY: (Horizon Cameras for SLATE Camera No. 157)

	Take-Up	Supply
Lens Serial No.	812292.	814009
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F8.0
Operational Focal Length	54.97 MM	55.21 MM
Radial Distortion:		
10° off Axis	.002 MM	.001 MM
20° off Axis	.005 MM	.003 MM
Tangetial Distortion (Maximum Vector)	.002 MM	.004 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	30
Radial Resolution	164	164	144	126	116	105	23
Tangetial Resolution	164	145	134	115	102	60	29

0	10	15	20	25	30	
170	118	101	89	97	79	
170	116	94	79	58	42	

164 Lines/MM Avg. 170 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 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.

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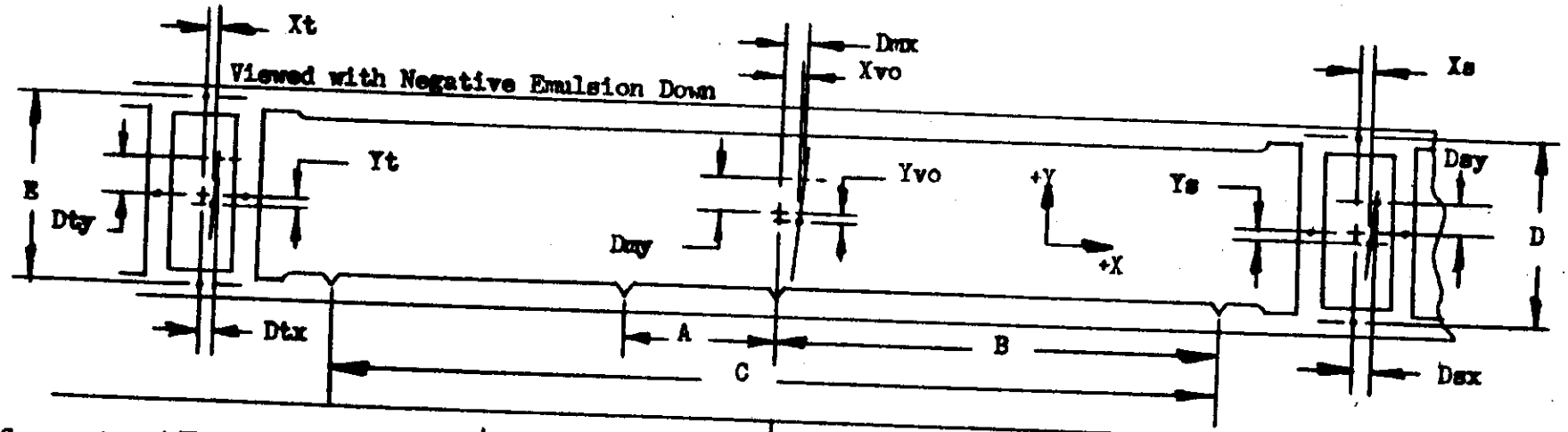
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 156	Vehicle Motion ↓	Scan Direction →
A 76.1	Xt +.241	Dtx +1.138
B 355.6	Yt -.006	Dty +1.024
C 710.8	Xs -.411	Dsx +.252
D 56.485	Ys -.150	Dsy -2.857
E 56.510	Xvo -.407	Dmx +1.142
	Yvo +2.842	Dmy -1.976

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.544	N/A	N/A
Width	755.7	N/A	N/A

Camera No. 157	Vehicle Motion ↓	Scan Direction →
A 76.3	Xt -.265	Dtx -.392
B 355.3	Yt -.041	Dty +.259
C 710.6	Xs -.135	Dsx -.260
D 56.550	Ys +.003	Dsy +2.102
E 56.579	Xvo -.140	Dmx -.407
	Yvo -2.261	Dmy -2.741

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	56.217	N/A	N/A
Width	755.0	N/A	N/A

DATA N.G., SEE ERRATA SHEET IN FRONT OF BOOK

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

[redacted]

SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

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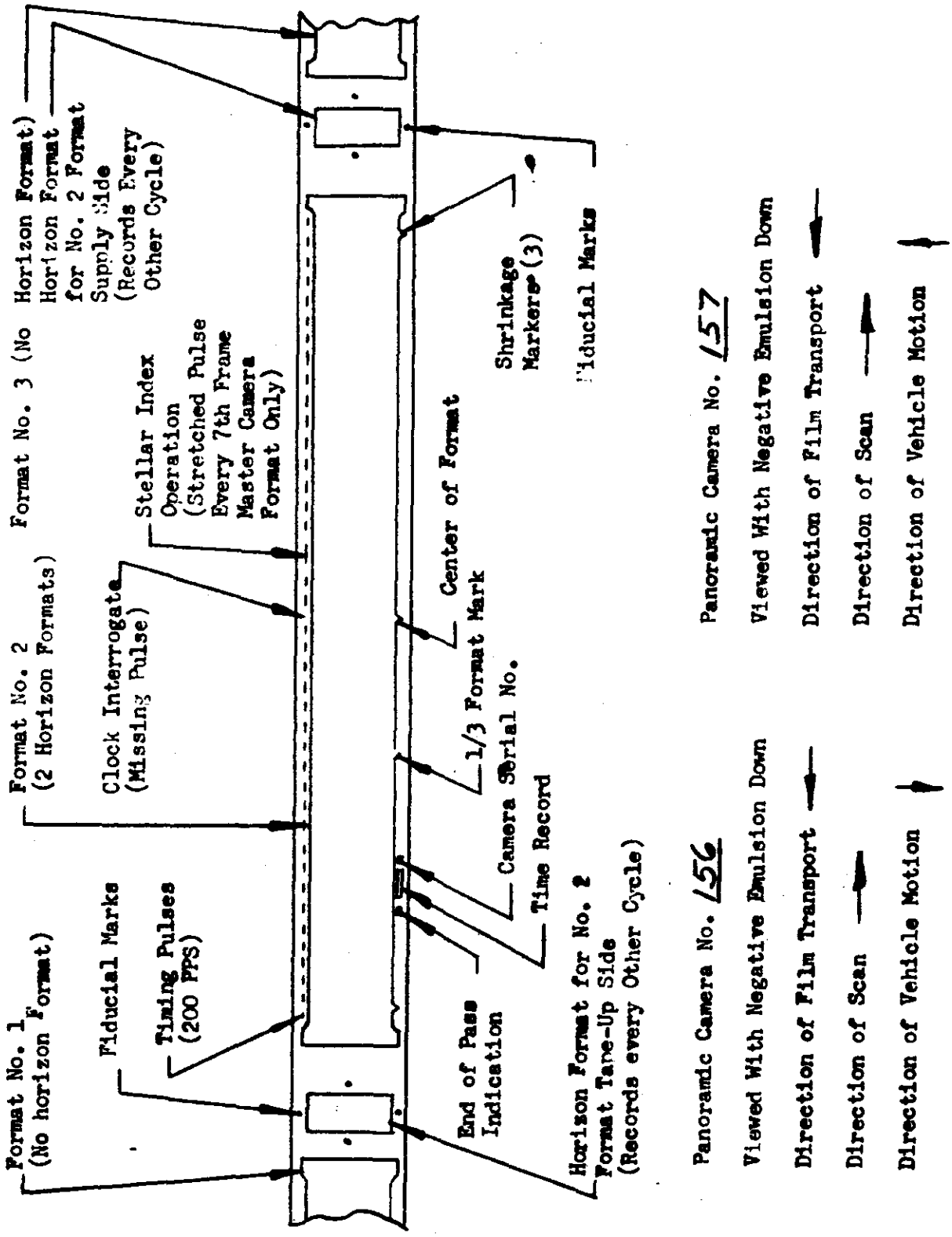
FORMAT LAYOUT: (PANORAMIC CAMERAS)



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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

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LENS DATA SUMMARY STELLAR INDEX D 51/51/47: 1012-1 MISSION

	Stellar	Index
Lens Serial No.	11144	813053
Reseau Serial No.	47	51
Filter Type	NONE	WRATTEN 21
Aperture	F/1.8	F/4.5
Exposure Time	2.0 Sec.	1/500 Sec.
Equivalent Focal Length	NOT APPLICABLE MM	38.50 MM

Resolution:

Angle Off Axis	0	10	20	30	35
Resolution L/MM High Contrast	82/82	92/82	114/82	95/47	

NOTE: Index Resolution of 73.3 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:

.0002 "/.937 Inches .0008 "/2.25 Inches

[redacted]

[redacted]

[redacted]

SYSTEM NO. J-13

VEHICLE NO. 1179

MISSION NO. 1012-1 & 2

CAMERA NOS. 156 & 157

[redacted]

LENS DATA SUMMARY STELLAR INDEX D46/52/53 1012-2 MISSION

	Stellar	Index
Lens Serial No.	10771	813064
Reseau Serial No.	53	52
Filter Type	NONE	WRATTEN 21
Aperture	F1.8	F4.5
Exposure Time	2.0 Sec.	1/500 Sec.
Equivalent Focal Length	NOT APPLICABLE MM	38.277 MM

Resolution:

Angle Off Axis	0	10	20	30	35
Resolution L/MM High Contrast	65/65	84/80	110/75	89/50	83/38

NOTE: Index Resolution of 73 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:

.0005 "/.937 Inches .0001 "/2.25 Inches

[redacted]

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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1
CAMERA NOS. 156 & 157

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PRELIMINARY CLOCK CORRELATION:

ORBIT	CORRECTED SYSTEM TIME	CLOCK TIME	DIFFERENCE
LAUNCH	79775.118	42696.309	
9 A	40614.322	89935.539	+.026
16 A	80144.053	129465.292	+.022
25 A	41182.582	176903.847	+.026
32 D	80678.766	216400.052	+.021
41 A	41709.512	263830.824	+.026
47 D	75726.400	297847.731	+.019

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SYSTEM NO. J-13
VEHICLE NO. 1179
MISSION NO. 1012-1 & 2
CAMERA NOS. 156 & 157

[redacted]

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PRELIMINARY CLOCK CORRELATION:

ORBIT	CORRECTED SYSTEM TIME	CLOCK TIME	DIFFERENCE
47	75726.402	297847.731	
57	42232.272	350753.637	.036
63	76217.912	384739.300	.023
72	37285.750	432207.170	.032
79	76771.912	471693.359	.027

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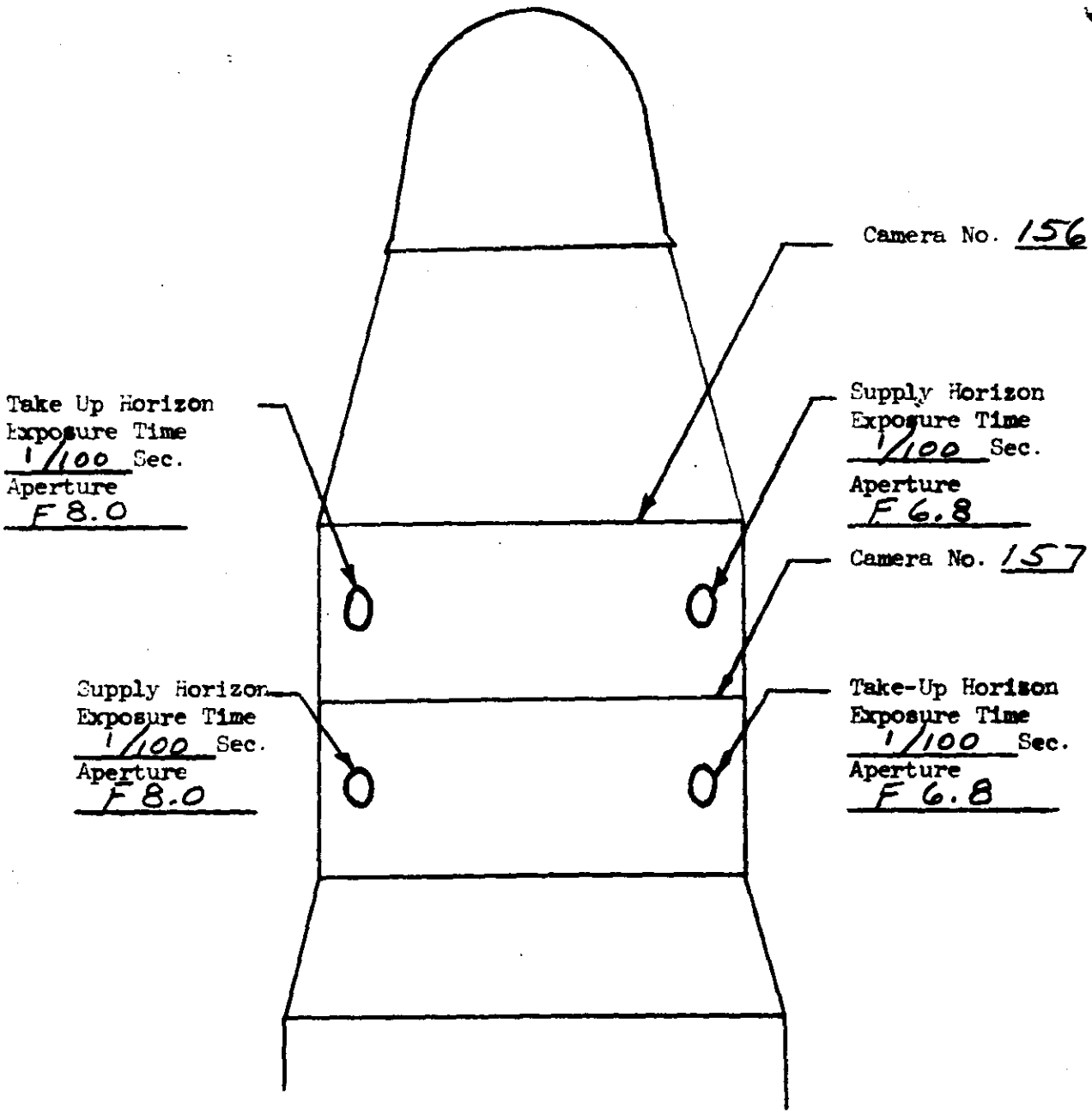
HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



Flight Direction

[redacted]

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SECRET

~~TOP SECRET~~
PRIORITY [redacted] INFO PRIORITY [redacted] CITE [redacted]
[redacted] (FINAL)
A. 1012-1
B. DRY
C. THRU U. FOLLOW

SUB	PROG		CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZD	TIME ON ST	NO	TUR SEC.	DUR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
LAUNCH			156	115	16											
LAUNCH			157	115												
1	4	1	156	17	02	275	274	1784209		6	5	976	51	1	3	4.4	4.2
1	4	1	157	16		175	274	1784209		6	5	976	51	0	3	4.4	4.3
2	4	1	156	51	08	274	268	18 3310		6	5	1039	153	4	11	4.2	3.8
2	4	1	157	51		274	269	18 3310		6	5	1039	153	3	10	4.3	3.9
3	4	1	156	36	05	263	258	18 9000		6	5	1291	93	16	20	3.6	3.5
3	4	1	157	36		264	258	18 9000		6	5	1291	93	15	20	3.6	3.5
3	4	2	156	36	05	255	249	18 9137		6	5	1428	88	22	26	3.4	3.3
3	4	2	157	36		256	250	18 9137		6	5	1428	88	22	25	3.4	3.3
4	4	1	156	42	06	260	253	1814494		6	5	1347	105	18	23	3.5	3.4
4	4	1	157	42		261	254	1814494		6	5	1347	105	18	23	3.5	3.4
4	4	2	156	33	05	251	246	1814635		6	5	1488	79	25	28	3.3	3.2
4	4	2	157	33		252	247	1814635		6	5	1488	79	24	28	3.3	3.2
5	4	1	156	43	06	254	247	182C034		6	5	1449	104	23	28	3.4	3.2
5	4	1	157	43		254	248	1820034		6	5	1449	104	22	27	3.4	3.2
5	4	2	156	52	07	243	235	1820209		6	5	1624	118	30	35	3.2	3.1
5	4	2	157	52		243	236	1820209		6	5	1624	118	30	35	3.2	3.1
6	4	1	156	30	05	257	253	1825409		6	5	1385	73	20	24	3.5	3.3
6	4	1	157	30		258	254	1825409		6	5	1385	73	20	23	3.5	3.3
6	4	2	156	21	03	241	238	1825665		6	5	1641	48	31	33	3.1	3.1
6	4	2	157	21		242	239	1825665		6	5	1641	48	31	33	3.1	3.1
6	4	3	156	62	08	236	227	1825749		6	5	1725	141	34	39	3.1	3.0
6	4	3	157	62		237	227	1825749		6	5	1725	141	34	39	3.1	3.0
7	4	1	156	76	11	269	258	1830627		6	5	1166	204	10	20	3.8	3.4
7	4	1	157	77		270	259	1830627		6	5	1166	204	9	19	3.8	3.4
7	4	2	156	27	04	256	252	1830866		6	5	1406	64	21	24	3.3	3.3
7	4	2	157	27		257	253	1830866		6	5	1406	64	21	24	3.3	3.2
8	4	1	156	40	06	261	255	1836229		6	5	1330	101	18	22	3.5	3.4
8	4	1	157	40		261	255	1836229		6	5	1330	101	17	22	3.6	3.4
8	4	2	156	48	07	252	245	1836367		6	5	1468	114	24	29	3.3	3.2
8	4	2	157	47		253	246	1836367		6	5	1468	114	23	28	3.3	3.2
9	4	0	156	11	01	139	142	1840545		6	5	233	49	-32	-30	6.5	6.4
9	4	0	157	11		137	140	1840545		6	5	233	49	-33	-31	6.5	6.4
9	4	1	156	71	10	257	247	1841721		6	5	1409	170	20	28	3.3	3.1
9	4	1	157	70		258	248	1841721		6	5	1409	170	20	27	3.4	3.2
14	4	1	156	30	05	223	218	1869439		6	5	1964	69	41	42	3.2	3.2
14	4	1	157	30		224	219	1869439		6	5	1964	69	40	42	3.2	3.2
15	4	1	156	24	03	235	231	1874693		6	5	1783	56	35	37	3.2	3.2
15	4	1	157	24		236	232	1874693		6	5	1783	56	35	37	3.2	3.2
18	4	1	156	37	05	270	265	19 4000		6	5	1188	102	9	13	3.9	3.6
18	4	1	157	37		271	266	19 4000		6	5	1188	102	8	12	3.8	3.6
20	4	1	156	71	11	268	258	1914912		6	5	1235	187	10	19	3.8	3.4
20	4	1	157	71		269	259	1914912		6	5	1235	187	10	18	3.7	3.4
20	4	2	156	50	07	252	245	1915192		6	5	1514	118	23	28	3.3	3.1
20	4	2	157	50		253	246	1915192		6	5	1514	118	22	28	3.3	3.1

SECRET

21	4	1	156	31	04	252	248	1920627	6	5	1517	72	23	26	3.3	3.2
21	4	1	157	31		253	248	1920627	6	5	1517	72	22	26	3.3	3.2
21	4	2	156	45	07	232	226	1920938	6	5	1828	101	36	40	3.0	3.0
21	4	2	157	46		233	226	1920938	6	5	1828	101	36	39	3.0	3.0
22	4	1	156	30	04	270	266	1925741	6	5	1198	82	9	12	3.8	3.7
22	4	1	157	30		271	267	1925741	6	5	1198	82	8	12	3.9	3.7
22	4	2	156	31	04	257	253	1925981	6	5	1438	74	19	23	3.4	3.3
22	4	2	157	31		258	253	1925981	6	5	1438	74	19	22	3.4	3.3
22	4	3	156	44	07	245	239	1926173	6	5	1630	102	28	32	3.2	3.1
22	4	3	157	44		246	239	1926173	6	5	1630	102	27	32	3.2	3.1
23	4	1	156	105	15	259	244	1931383	6	5	1407	250	18	29	3.4	3.1
23	4	1	157	105		260	244	1931383	6	5	1407	250	17	29	3.4	3.1
23	4	2	156	25	03	241	238	1931671	6	5	1695	56	31	33	3.1	3.0
23	4	2	157	25		242	238	1931671	6	5	1695	56	30	33	3.1	3.0
24	4	1	156	65	09	258	249	1936835	6	5	1425	156	19	26	3.3	3.1
24	4	1	157	65		259	249	1936835	6	5	1425	156	18	25	3.3	3.1
25	4	0	156	11	02	139	142	1941115	6	5	273	47	-37	-35	6.2	6.1
25	4	0	157	11		138	140	1941115	6	5	273	47	-38	-36	6.2	6.1
25	4	1	156	72	10	249	239	1942416	6	5	1575	165	25	32	3.1	3.0
25	4	1	157	72		250	239	1942416	6	5	1575	165	25	32	3.1	3.0
26	4	1	156	31	05	225	220	1948221	6	5	1946	70	40	42	3.1	3.1
26	4	1	157	31		226	221	1948221	6	5	1946	70	40	42	3.1	3.1
30	4	1	156	30	04	223	218	1969994	6	5	1986	70	41	43	3.2	3.2
30	4	1	157	31		224	219	1969994	6	5	1986	70	41	43	3.1	3.1
33	4	1	156	38	05	269	264	1985538	6	5	1267	98	9	14	3.7	3.5
33	4	1	157	38		270	265	1985538	6	5	1267	98	9	13	3.7	3.5
34	4	1	156	37	06	273	269	20 4467	6	5	1164	102	4	9	3.9	3.7
34	4	1	157	37		274	270	20 4467	6	5	1164	102	3	8	3.9	3.7
34	4	2	156	37	05	266	261	20 4630	6	5	1327	94	12	17	3.5	3.4
34	4	2	157	37		267	262	20 4630	6	5	1327	94	11	17	3.5	3.4
35	4	1	156	36	05	274	271	20 9852	6	5	1116	103	1	6	4.0	3.8
35	4	1	157	36		274	272	20 9852	6	5	1116	103	0	6	4.0	3.8
35	4	2	156	37	05	264	259	2010101	6	5	1364	93	14	19	3.5	3.3
35	4	2	157	37		265	260	2010101	6	5	1364	93	13	18	3.5	3.3
36	4	1	156	97	14	264	250	2015537	6	5	1368	239	14	26	3.5	3.2
36	4	1	157	97		265	251	2015537	6	5	1368	239	13	26	3.5	3.2
36	4	2	156	32	05	247	242	2015832	6	5	1663	71	29	32	3.1	3.1
36	4	2	157	32		247	243	2015832	6	5	1663	71	29	32	3.1	3.1
37	4	1	156	52	07	273	267	2020772	6	5	1172	143	4	11	3.9	3.6
37	4	1	157	52		273	268	2020772	6	5	1172	143	3	11	3.9	3.6
37	4	2	156	38	06	256	250	2021123	6	5	1522	88	22	26	3.2	3.2
37	4	2	157	38		256	251	2021123	6	5	1522	88	21	26	3.2	3.2
37	4	3	156	46	06	241	234	2021359	6	5	1759	102	34	38	3.1	3.0
37	4	3	157	46		241	235	2021359	6	5	1759	102	33	38	3.1	3.0
37	4	4	156	32	05	226	221	2021588	6	5	1987	70	43	45	3.0	3.0
37	4	4	157	32		226	222	2021588	6	5	1987	70	43	45	3.0	3.0
38	4	1	156	70	10	273	264	2026220	6	5	1186	189	4	14	3.8	3.4
38	4	1	157	70		273	265	2026220	6	5	1186	189	4	14	3.8	3.4
38	4	2	156	44	06	257	251	2026525	6	5	1491	104	20	26	3.3	3.1
38	4	2	157	44		258	252	2026525	6	5	1491	104	20	25	3.3	3.1
38	4	3	156	32	05	244	239	2026748	6	5	1713	70	31	35	3.1	3.0
38	4	3	157	32		244	240	2026748	6	5	1713	70	31	34	3.1	3.0
39	4	1	156	30	04	271	267	2031704	6	5	1238	81	7	11	3.8	3.6
39	4	1	157	30		271	268	2031704	6	5	1238	81	6	11	3.8	3.6
39	4	2	156	37	05	261	256	2031893	6	5	1427	91	17	22	3.4	3.3

39	4	2	157	37		262	257	2031893	6	5	1427	91	16	21	3.4	3.3
39	4	3	156	68	10	254	244	2032024	6	5	1558	160	24	31	3.3	3.1
39	4	3	157	68		254	244	2032024	6	5	1558	160	23	31	3.3	3.1
39	4	4	156	28	04	241	237	2032229	6	5	1763	63	34	36	3.1	3.1
39	4	4	157	28		241	237	2032229	6	5	1763	63	33	36	3.1	3.1
40	4	1	156	80	11	262	251	2037310	6	5	1412	191	16	26	3.3	3.1
40	4	1	157	79		263	252	2037310	6	5	1412	191	15	25	3.4	3.1
41	4	0	156	11	02	138	141	2041641	6	5	310	48	-38	-36	6.3	6.2
41	4	0	157	11		136	139	2041641	6	5	310	48	-39	-37	6.3	6.2
41	4	1	156	34	05	255	250	2042870	6	5	1539	80	23	27	3.3	3.2
41	4	1	157	34		256	251	2042870	6	5	1539	80	22	26	3.3	3.2
41	4	2	156	34	05	244	239	2043044	6	5	1713	79	31	35	3.2	3.1
41	4	2	157	35		245	240	2043044	6	5	1713	79	31	34	3.1	3.1
42	4	1	156	24	03	233	229	2048647	6	5	1883	56	39	41	3.2	3.2
42	4	1	157	24		234	230	2048647	6	5	1883	56	38	41	3.2	3.2
46	4	1	156	24	04	239	235	2070287	6	5	1793	56	35	37	3.2	3.2
46	4	1	157	24		240	236	2070287	6	5	1793	56	34	37	3.2	3.2
47	4	1	156	44	06	238	231	2075738	6	5	1812	100	35	40	3.1	3.1
47	4	1	157	45		239	232	2075738	6	5	1812	100	35	39	3.0	3.0
49	4	1	156	35	05	275	273	2085877	6	5	1086	101	-0	4	4.1	3.8
49	4	1	157	35		175	273	2085877	6	5	1086	101	-1	3	4.1	3.8

CCC DD E FFF GGG HH IJJ IKK LLMMMMM NN O PPPP QQQ RR SS TTT UUU

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

V. RAMP PROFILE R-6 A-5

R= 0.3373 A= 0.1201

PERIOD = 3840 SEC.

TIME	PERIOD	CPS	GAV
0	4.604	0.2172	0.01964
100	4.578	0.2184	0.01976
200	4.503	0.2221	0.02009
300	4.384	0.2281	0.02063
400	4.231	0.2364	0.02138
500	4.054	0.2467	0.02231

SECRET

600	3.863	0.2589	0.02341
700	3.668	0.2726	0.02466
800	3.475	0.2877	0.02602
900	3.291	0.3038	0.02748
1000	3.119	0.3207	0.02900
1100	2.959	0.3380	0.03057
1200	2.772	0.3607	0.03263
1300	2.613	0.3827	0.03461
1400	2.482	0.4029	0.03644
1500	2.376	0.4208	0.03806
1600	2.295	0.4357	0.03941
1700	2.237	0.4470	0.04043
1800	2.201	0.4543	0.04109
1900	2.187	0.4573	0.04136
2000	2.193	0.4560	0.04124
2100	2.220	0.4504	0.04073
2200	2.269	0.4406	0.03985
2300	2.341	0.4272	0.03863
2400	2.437	0.4104	0.03712
2500	2.558	0.3910	0.03536
2600	2.705	0.3696	0.03343
2700	2.881	0.3471	0.03139
2800	3.054	0.3275	0.02962
2900	3.221	0.3105	0.02808
3000	3.400	0.2941	0.02660
3100	3.590	0.2785	0.02519
3200	3.785	0.2642	0.02389
3300	3.979	0.2513	0.02273
3400	4.162	0.2403	0.02173
3500	4.326	0.2312	0.02091
3600	4.460	0.2242	0.02028
3700	4.554	0.2196	0.01986
3800	4.600	0.2174	0.01966

W. SMOOTHED CLOCK CORRELATION

REV	CLOCK TIME	COR SYSTEM TIME
0	42696.309	79775.118
9	89935.539	40614.322
16	129465.292	80144.053
25	176903.847	41182.582
32	216400.052	80678.766
41	263830.824	41709.512
47	297847.731	75726.400

RATIO CLOCK TO SYSTEM= 1.000000549

X. CYCLE PERIOD DATA

V/H RAMP LEVEL	V/H RAMP AMPL	TIME UP RAMP IN SECONDS	CYCLE PERIODS-SEC MASTER PREFLT	MASTER INFLT	SLAVE PREFLT	SLAVE INFLT	ORBIT NO.
6	5	370	4.292	4.380	4.246	4.375	9
6	5	320	4.377	4.300	4.329	4.262	25
6	5	360	4.316	4.252	4.269	4.230	41
6	5	1914	2.204	2.210	2.199	2.206	47

SECRET

Y. NOTES

1) CAMERA REMAINS ON PROGRAM 4 DUE TO TENUOUS COMMAND SITUATION CAUSED BY MALFUNCTIONING VEHICLE BEACON. SOME COMMANDS HAVE BEEN ISSUED - PRIMARILY TO ATTEMPT SYNCHRONIZATION OF THE VEHICLE TIMER.
2) THE YAW PROGRAMMER WAS ENABLED DURING OPERATIONS ON REVS 3 THRU 7.
3) S/I OPERATION APPEARS SPORADIC, AT LEAST AFTER REV 24. THE INSTRUMENT WAS NOT OBSERVED TO METER FILM. ONLY ONE SHUTTER PULSE WAS OBSERVED ON REV 47.
4) FRAMES/FEET, PAN X 2.645 STELLAR X 0.099 INDEX X 0.198

~~TOP SECRET~~

PRIORITY [redacted] INFO PRIORITY [redacted] CITE [redacted]

[redacted] (FINAL)

A. 1012-2

B. ~~DRY~~ [illegible]

C. THRU U. FOLLOW

SUB	PROG		CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZC	TIME ON ST	NO	TUR SEC.	DUR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
CUT/WRAP			156	4	0											
CUT/WRAP			157	4												
50	4	1	156	78	11	271	261	17	5034	6	5	1214	207	6	17	3.8	3.4
50	4	1	157	78		272	262	17	5034	6	5	1214	207	5	16	3.8	3.4
51	4	1	156	51	08	253	246	1710803		6	5	1554	119	24	30	3.2	3.1
51	4	1	157	51		254	247	1710803		6	5	1554	119	23	30	3.2	3.1
52	4	1	156	78	11	255	244	1716203		6	5	1524	184	22	32	3.2	3.1
52	4	1	157	78		256	245	1716203		6	5	1524	184	22	31	3.2	3.1
53	4	1	156	59	08	256	248	1721619		6	5	1508	138	21	29	3.3	3.1
53	4	1	157	59		257	249	1721619		6	5	1508	138	21	28	3.3	3.1
53	4	2	156	29	04	241	237	1721857		6	5	1747	64	34	37	3.1	3.0
53	4	2	157	29		242	238	1721857		6	5	1747	64	33	36	3.1	3.0
53	4	3	156	31	05	219	215	1722193		6	5	2083	70	48	50	3.0	3.1
53	4	3	157	31		220	215	1722193		6	5	2083	70	48	50	3.0	3.1
54	6	1	156	79	11	257	246	1727040		6	5	1500	184	21	30	3.2	3.1
54	6	1	157	79		258	246	1727040		6	5	1500	184	20	30	3.2	3.0
54	6	2	156	86	12	238	226	1727340		6	5	1799	192	36	45	3.0	3.0
54	6	2	157	87		239	226	1727340		6	5	1799	192	36	44	3.0	3.0
56	1	1	156	133	19	261	242	1737842		6	5	1456	306	17	33	3.2	3.0
56	1	1	157	133		261	242	1737842		6	5	1456	306	17	33	3.2	3.0
57	10	0	156	11	02	139	142	1742166		6	5	348	48	-39	-37	6.3	6.2
57	10	0	157	11		137	140	1742166		6	5	348	48	-40	-38	6.3	6.2
57	10	1	156	31	04	308	314	1744345		6	5	2527	85	54	53	3.7	3.9
57	10	1	157	31		307	313	1744345		6	5	2527	85	54	53	3.7	3.9
58	1	1	156	23	04	232	228	1749166		6	5	1917	54	41	43	3.2	3.2
58	1	1	157	24		232	229	1749166		6	5	1917	54	40	43	3.1	3.1
63	1	1	156	45	06	239	232	1776211		6	5	1828	101	36	40	3.1	3.0
63	1	1	157	45		240	233	1776211		6	5	1828	101	35	40	3.1	3.0
66	8	1	156	38	05	274	272	18	5422	6	5	1155	106	-0	4	3.9	3.7
66	8	1	157	38		275	272	18	5422	6	5	1155	106	-1	4	3.9	3.7
66	8	2	156	46	07	268	262	18	5608	6	5	1341	115	9	16	3.5	3.3
66	8	2	157	46		269	263	18	5608	6	5	1341	115	8	15	3.5	3.3
66	8	3	156	38	05	256	250	18	5837	6	5	1570	88	22	27	3.2	3.1
66	8	3	157	38		256	251	18	5837	6	5	1570	88	21	26	3.2	3.1
67	8	1	156	55	08	273	266	1810933		6	5	1237	144	3	11	3.7	3.4
67	8	1	157	55		273	267	1810933		6	5	1237	144	2	11	3.7	3.4
67	8	2	156	52	08	254	246	1811300		6	5	1605	119	24	30	3.1	3.1
67	8	2	157	52		254	247	1811300		6	5	1605	119	23	30	3.1	3.1
68	8	1	156	107	15	253	237	1816746		6	5	1623	243	25	38	3.1	3.0
68	8	1	157	107		253	238	1816746		6	5	1623	243	24	37	3.1	3.0
69	8	1	156	66	09	259	249	1822078		6	5	1527	153	19	28	3.2	3.1
69	8	1	157	66		259	250	1822078		6	5	1527	153	18	27	3.2	3.1
69	8	2	156	32	05	243	238	1822334		6	5	1783	70	33	37	3.0	3.0
69	8	2	157	32		244	239	1822334		6	5	1783	70	32	36	3.0	3.0
69	8	3	156	65	09	231	221	1822518		6	5	1967	145	42	49	3.0	3.1

SECRET

69	8	3	157	65		232	222	1822518	6	5	1967	145	42	48	3.0	3.0
70	2	1	156	60	C9	252	243	1827620	6	5	1641	134	25	33	3.1	3.0
70	2	1	157	60		253	244	1827620	6	5	1641	134	25	32	3.1	3.0
71	6	1	156	124	18	264	246	1832853	6	5	1446	287	14	30	3.3	3.0
71	6	1	157	124		264	247	1832853	6	5	1446	287	13	30	3.3	3.0
73	8	1	156	33	04	3C2	308	1844742	6	5	2636	95	57	57	3.8	4.1
73	8	1	157	33		3C1	307	1844742	6	5	2636	95	57	57	3.8	4.1

CCC DD E FFF GGG HH IJJ IKK LLMMMMM NN O PPPP QQQ RR SS TTT UUU

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

V. RAMP PROFILE R-6 A-5

R= 0.3373 A= 0.12C1

PERIOD = 3840 SEC.

TIME	PERIOD	CPS	GAV
0	4.604	C.2172	0.C1964
100	4.578	C.2184	0.C1976
200	4.503	C.2221	0.02009
300	4.384	C.2281	0.02063
400	4.231	C.2364	0.C2138
500	4.054	C.2467	0.02231
600	3.863	C.2589	0.02341
700	3.668	C.2726	0.C2466
800	3.475	C.2877	0.C2602
900	3.291	C.3038	0.02748
1000	3.119	C.32C7	0.02900
1100	2.959	C.3380	0.03057
1200	2.772	C.36C7	0.03263
1300	2.613	C.3827	0.03461
1400	2.482	C.4029	0.03644
1500	2.376	C.42C8	0.C3806
1600	2.295	C.4357	0.03941
1700	2.237	C.4470	0.04043
1800	2.201	0.4543	0.04109
1900	2.187	C.4573	0.04136

2000	2.193	0.4560	0.04124
2100	2.220	0.4504	0.04073
2200	2.269	0.4406	0.03985
2300	2.341	0.4272	0.03863
2400	2.437	0.4104	0.03712
2500	2.558	0.3910	0.03536
2600	2.705	0.3696	0.03343
2700	2.881	0.3471	0.03139
2800	3.054	0.3275	0.02962
2900	3.221	0.3105	0.02808
3000	3.400	0.2941	0.02660
3100	3.590	0.2785	0.02519
3200	3.785	0.2642	0.02389
3300	3.979	0.2513	0.02273
3400	4.162	0.2403	0.02173
3500	4.326	0.2312	0.02091
3600	4.460	0.2242	0.02028
3700	4.554	0.2196	0.01986
3800	4.600	0.2174	0.01966

W. SMOOTHED CLOCK CORRELATION (TWO SEGEMENTS)

REV	CLOCK TIME	COR SYSTEM TIME
0	42696.309	79775.118
9	89935.539	40614.322
16	129465.292	80144.053
25	176903.847	41182.582
32	216400.052	80678.766
41	263830.824	41709.512
47	297847.731	75726.400

RATIO CLOCK TO SYSTEM= 1.000000549 (REVS 0-47)

REV	CLOCK TIME	COR SYSTEM TIME
47	297847.731	75726.402
57	350753.637	42232.272
63	384739.300	76217.912
72	432207.170	37285.750
79	471693.359	76771.912

RATIO CLOCK TO SYSTEM= 1.000000675 (REVS 47-79)

X. CYCLE PERIOD DATA

V/H RAMP LEVEL	V/H RAMP AMPL	TIME UP RAMP IN SECONDS	CYCLE PERIODS-SEC MASTER PREFLT	MASTER INFLT	SLAVE PREFLT	SLAVE INFLT	ORBIT NO.
6	5	370	4.292	4.380	4.246	4.375	9
6	5	320	4.377	4.300	4.329	4.262	25
6	5	360	4.316	4.252	4.269	4.230	41
6	5	1914	2.204	2.210	2.199	2.206	47
6	5	397	4.257	4.197	4.212	4.175	57
6	5	1925	2.204	2.214	2.199	2.202	63

Y. NOTES

1) VEHICLE COMMANDING SITUATION SOMEWHAT IMPROVED, HOWEVER LATITUDE COVERAGE BIASES ARE STILL EVIDENT DUE TO IN-

EXACT SYNCHRONIZATION OF VEHICLE TIMER UNTIL RESET ON REV 61.

5) TM INDICATES POSSIBILITY OF VEHICLE INSTABILITY DURING OPERATION ON REV 73. PHOTO OPERATIONS WERE STOPPED ON REV 74 BECAUSE CAMERA SYSTEM DYNAMICS MAY ACCENTUATE THE VEHICLE STABILITY PROBLEM. RECOVERY WAS EFFECTED BY THE EMERGENCY (LIFEBOAT) RECOVERY CONTROL SYSTEM.

3) THE LAST 5 FRAMES OF 1012-1 ARE CONTAINED IN THE 1012-2 CAPSULE.

4) FRAMES/FEET, PAN X 2.645 STELLAR X 0.099 INDEX X 0.198

[redacted]

14 000403630

SECRET

[redacted]

Copy No. 3

Pages (Including Cover Sheet)

REVISION I 10/28/64

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-13

VEHICLE NO. 1179

MISSION NO. 1012-1 & 2

CAMERA NOS. 156 & 157

Prepared by: [redacted]

Checked by:

Approved by:

Approved by:

Program , Manager

SECRET

[redacted]

2 NOV 1964

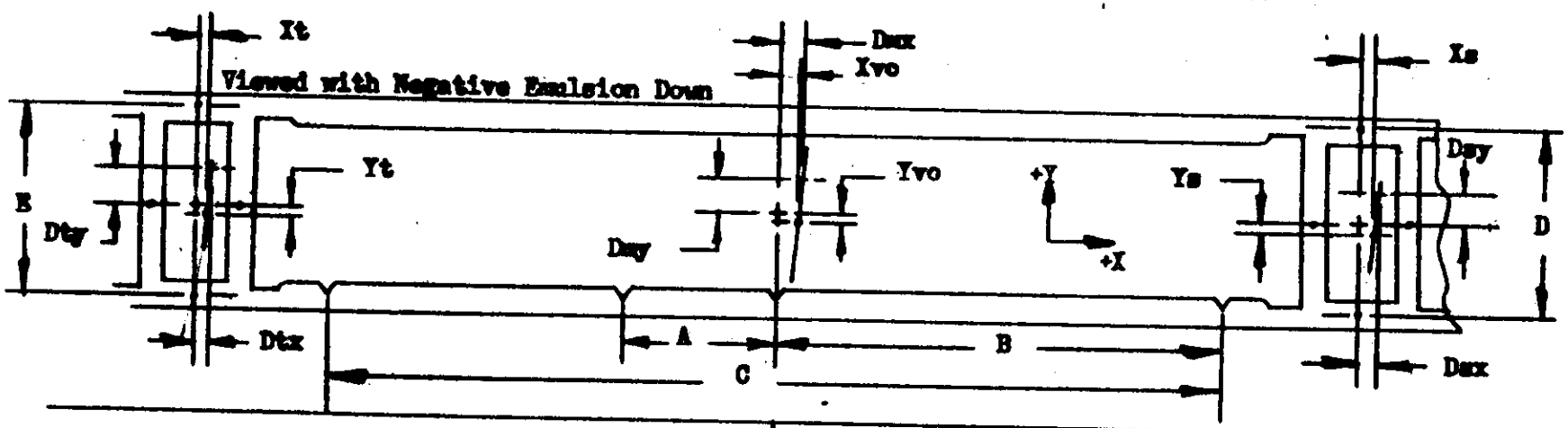
LOGGED

TABLE OF CONTENTS

	Page No.
Vehicle Layout	
General Flight Data	
Lens Settings and Film Types	
V/H Ramp Configuration and Constants	
Cycle Period Data	
Lens Data Summary Master Camera	
Lens Data Summary Master Camera Horizon Optics	
Lens Data Summary Slave Camera	
Lens Data Summary Slave Camera Horizon Optics	
Definition of Panoramic Camera Format Calibrations	
Panoramic Camera Format Calibration Dimensions	3
Panoramic Camera Format Layout	
Lens Data Summary Stellar Index "A"	
Lens Data Summary Stellar Index "B"	
Preliminary Clock Correlation	
Horizon Lens Settings	
Performance Estimate	

SISTER NO. [illegible]
VEHICLE NO. 1179
MISSION NO. 1012-1[illegible]2
CAMERA NOS. 156 & 157

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 156	Vehicle Motion ↓		Scan Direction →	
A 76.1	Xt	+.241	Dtx	+.252*
B 355.6	Yt	-.006	Dty	-2.857*
C 710.8	Xs	-.411	Dax	-.407*
D 56.485	Ys	-.150	Day	+2.842*
E 56.510	Xvo	+1.138*	Dax	+1.142
	Yvo	+1.024*	Day	-1.976

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.544	N/A	N/A
Width	755.7	N/A	N/A

Camera No. 157	Vehicle Motion ↓		Scan Direction →	
A 76.3	Xt	-.265	Dtx	-.260*
B 355.3	Yt	-.041	Dty	+2.102*
C 710.6	Xs	-.135	Dax	-.140*
D 56.550	Ys	+.003	Day	-2.261*
E 56.579	Xvo	-.392*	Dax	-.407
	Yvo	+.259*	Day	-2.741

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	56.217	N/A	N/A
Width	755.0	N/A	N/A

* INDICATES THE VALUES THAT HAVE BEEN CHANGED FROM THE ORIGINAL

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, 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

[redacted]