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22 Pages
(Including Cover Sheet)

CORONA "M" FLIGHT DATA BOOK

SYSTEM NO. M17

VEHICLE NO. 1156

MISSION NO. 9050

Prepared by: [redacted]

Checked by: [redacted]

Approved by: [redacted] (Engineering Manager)

Approved by: [redacted] (Project Manager)

Approved by: [redacted] (SEID)

[redacted]

[redacted]

SYSTEM NO. 117
VEHICLE NO. 1156
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted]

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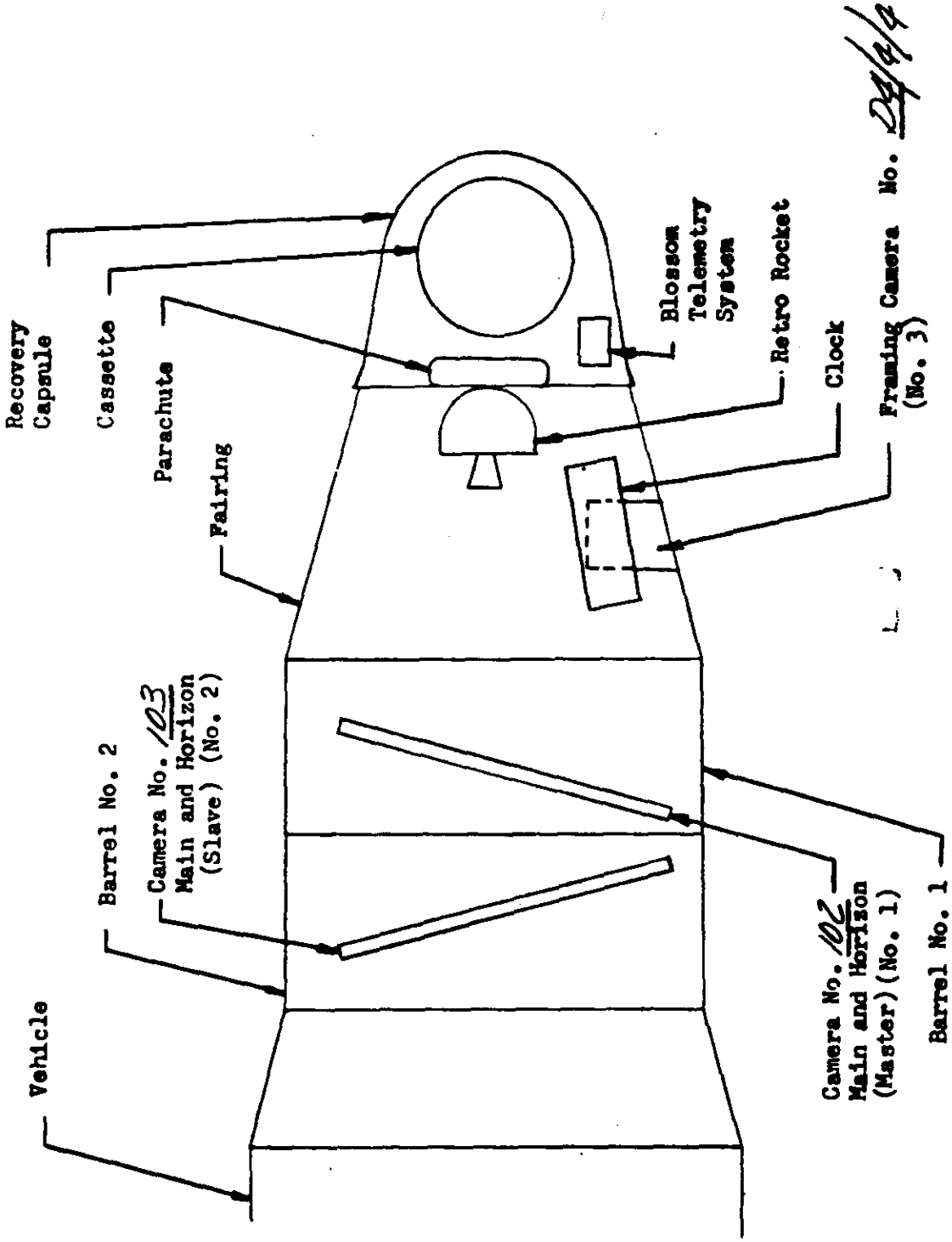
SYSTEM NO. M-7
VEHICLE NO. 1156
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted]

VEHICLE LAYOUT:



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SYSTEM NO. 117
VEHICLE NO. 136
MISSION NO. 9050 / [redacted]
CAMERA NOS. 102 & 103

GENERAL FLIGHT DATA:

Main Camera No. 1 Serial No. 102

Main Camera No. 2 Serial No. 103

Framing Camera Serial No. D4/4/4

Launch Date 12/14/62

Orbital Parameters: (Rev. 30)

Period 90.49 Min. Eccentricity .0148

Perigee 108 NM Perigee Latitude 17.3 Deg. N

Apogee 215 NM Inclination Angle 70.95 Deg. N

Recovery Revolution No. 65

Recovery Date 12/18/62

REMARKS:

[redacted]

[redacted]

SYSTEM NO. M17
VEHICLE NO. 1136
MISSION NO. 9050 /
CAMERA NO. 102 & 103

[redacted]

PRE-LAUNCH INFORMATION:

Command settings at launch:

Command	8	9	10	11	12	—
Setting	3	1	4	4	11	

Main Camera Settings:	Camera NO. 102	Camera NO. 103
Main Optics Slit Width	.250 in.	.250 in.
Main Optics Filter Type	WRATTEN 21 (ORANGE)	WRATTEN 12 (YELLOW)
Horizon Optics Exp. Time	1/100 sec.	1/100 sec.
Horizon Optics Aperture	F 8.0	F 6.8
Horizon Optics Filter Type	WRATTEN 25	WRATTEN 25
Framing Camera (S/I) Settings:	Terrain Lens	Stellar Lens
Exposure Time	1/125 sec.	1/2 sec.
Aperture Setting	F 4.5	F 1.9
Filter Type	WRATTEN 21	NONE

Ratio: One Framing Camera (S/I) Frame Per 7 Camera No. 1 Frames.

Film:	Camera No. 102	Camera No. 103	Framing Camera (S/I) Terrain	Framing Camera (S/I) Stellar
Type	7J23(S0132)	7J23(S0132)	S0206	S0130
Length	7800 ft.	7800 ft.	— ft.	— ft.
Splices	2	1	—	—
Expl. Data	7-12-10-2	7-13-10-2	1-9-2	1-4-9-2

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Notice of Missing Page(s)

Pages 6, 7, and 8 of the original document were missing.

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VEHICLE NO. 1136
MISSION NO. 9050
CAMERA NOS. 102 & 103

PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 102)

V/H Ramp	Cycle Period Seconds	FMC Rate		Scan Rate		
		Rad. Per Second	In. Per Second	Rad. Per Second	In. Per Second	Exposure Millisec
3 START	5.17	.016	.392	1.215	29.167	8.57
3 END	2.50	.034	.810	2.513	60.325	3.32
8 START	4.75	.018	.426	1.323	31.746	7.87
8 END	2.43	.035	.833	2.586	62.055	4.03

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 102)

Rev.No.	V/H Ramp	Cycle Period Seconds	FMC Rate		Scan Rate		
			Rad. Per Second	In. Per Second	Rad. Per Second	In. Per Second	Exposure Millisec
9	3 (267)	4.52	.019	.448	1.390	33.362	7.49
25	3 (240)	4.54	.019	.446	1.384	33,214	7.53
57	3(297)	4.44	.019	.456	1.415	33.963	7.36

No. IN PARENTHESIS IS TIME UP RAMP

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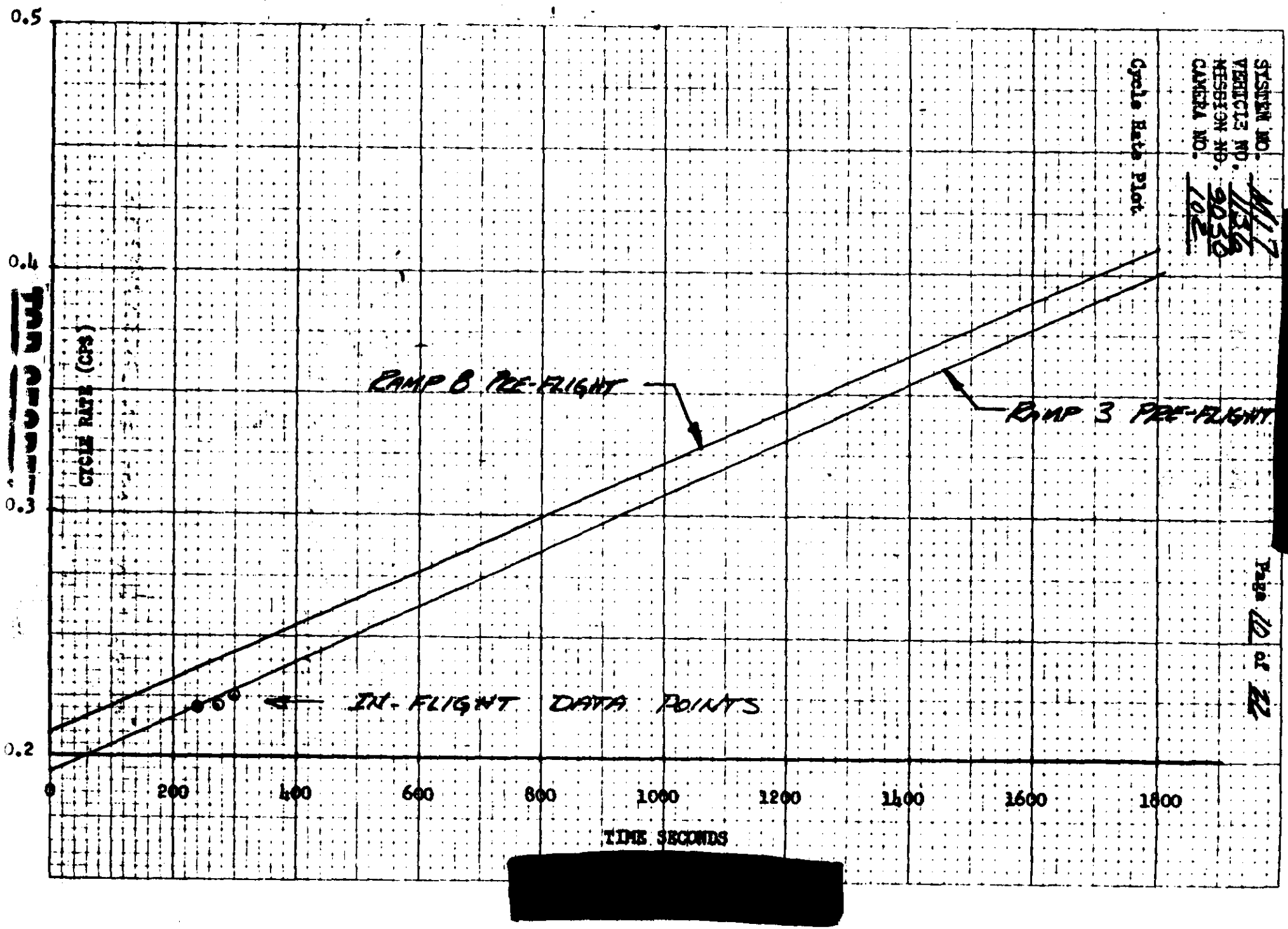
SYSTEM NO. MK7
VEHICLE NO. MK7-9030
MISSION NO. 9030
CAMERA NO. 102
Cycle Rate Plot
0.5
0.4
0.3
0.2
CYCLE RATE (CPS)
RAMP 8 PRE-FLIGHT
RAMP 3 PRE-FLIGHT
IN-FLIGHT DATA POINTS
0
200
400
600
800
1000
1200
1400
1600
1800
TIME SECONDS
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[redacted]

SYSTEM NO. M17
VEHICLE NO. 1156
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted]

PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 103)

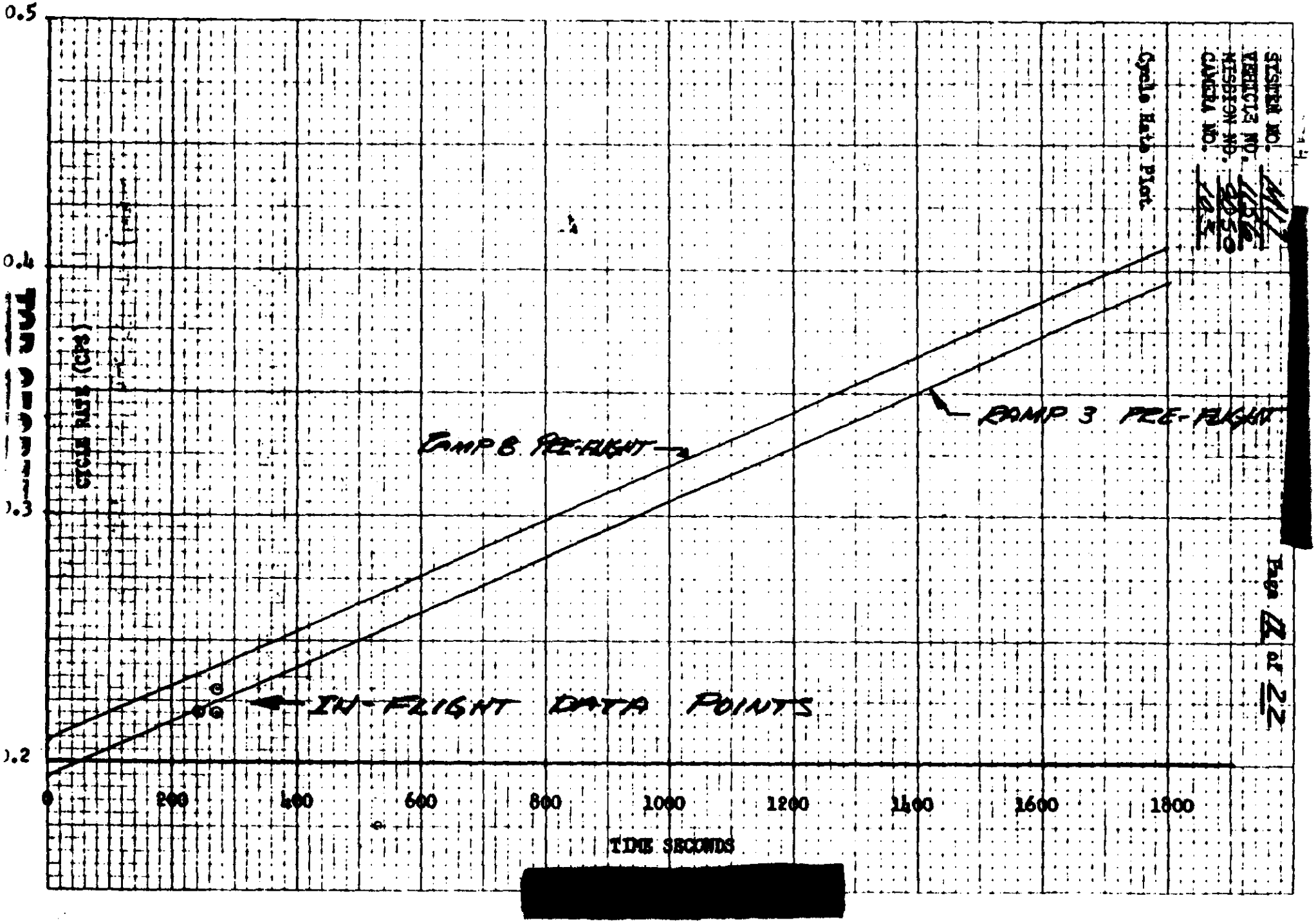
V/H Ramp	Cycle Period Seconds	FMC Rate		Scan Rate		
		Rad. Per Second	In. Per Second	Rad. Per Second	In. Per Second	Exposure Millisec
3 START	5.13	.016	.395	1.225	29.395	8.50
3 END	2.53	.033	.800	2.483	59.603	4.19
8 START	4.77	.018	.425	1.317	31.613	7.91
8 END	2.44	.035	.830	2.575	61.801	4.05

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 103)

Rev.No.	V/H Ramp	Cycle Period Seconds	FMC Rate		Scan Rate		
			Rad. Per Second	In. Per Second	Rad. Per Second	In. Per Second	Exposure Millisec
9	3 (267)	4.56	.018	.444	1.378	33.069	7.56
25	3 (240)	4.56	.018	.444	1.378	33.069	7.56
41	3 (270)	4.32	.020	.469	1.454	34.906	7.16
57	3 (297)	4.44	.019	.456	1.415	33.963	7.36

(XXX) = TIME OF A RAMP

[redacted]


0.5
0.4
0.3
0.2
CYCLE RATE (CPS)
0
200
400
600
800
1000
1200
1400
1600
1800
TIME SECONDS
Cycle Rate Plot
SYSTEM NO.
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MISSION NO.
CAMERA NO.
COMP 3 PRE-FLIGHT
COMP 8 PRE-FLIGHT
IN-FLIGHT DATA POINTS
[redacted]
[redacted]
Page 22 of 22

LENS DATA SUMMARY: (Main Camera No. 102)

Lens Serial No. 0462435

Filter Type WRATTEN 21 (ORANGE)

Equivalent Operational Focal Length 608.942 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	230	S0243	HIGH
Other			

Dynamic:

Itek Pre-Vibration	153	S0132	HIGH
Itek Post Vibration	151	S0132	HIGH
AP	163	S0132	HIGH
AP	88	S0132	LOW
Other			

Note: Itek Post Vibration Resolution of 151. lines/MM Reported In Message No. _____ dated _____

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.004	.003	.002	.000	.002	.004	.005		

SYSTEM NO. MI[redacted] Page 14 of 22
VEHICLE NO. 1156
MISSION NO. 9030
CAMERA NOS. 102 103

[redacted]

LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 102)

	Take-Up	Supply
Lens Serial No.	808967	807534
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F8.0
Operational Focal Length	89.2 MM	89.0 MM
Radial Distortion:		
10° off Axis	.004 MM	.003 MM
20° off Axis	.037 MM	.038 MM
Tangential Distortion (Maximum Vector)	.012 MM	.003 MM
Resolution:		

Angle off Axis Deg.	0	5	10	15	20	25	27.5	0	5	10	15	20	25	27.5
Radial Resolution	56	49	42	32	32	29	30	56	46	39	29	32	28	19
Tangential Resolution	56	44	39	34	31	25	22	51	44	39	36	30	27	19

37.2 Lines/MM Avg. 35.4 Lines/MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on SUPER XX film and 4/1 contrast target.

[redacted]

SYSTEM NO. M17
VEHICLE NO. 1156
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted] SECRET

LENS DATA SUMMARY: (Main Camera No. 103)

Lens Serial No. 442435

Filter Type WRATTEN 12 (YELLOW)

Equivalent Operational Focal Length 608.990 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	251	SO243	HIGH
Other			

Dynamic:

Itek Pre-Vibration	143	SO132	HIGH
Itek Post Vibration	160	SO132	HIGH
AP	166	SO132	HIGH
AP	90	SO132	HIGH
Other			

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

Distortion - Positive (Pincushion)

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

[redacted] FOR OFFICIAL USE ONLY

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LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 103)

	Take-Up	Supply
Lens Serial No.	807095	807094
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F6.8
Operational Focal Length	89.15 MM	88.95 MM
Radial Distortion:		
10° off Axis	.009 MM	.003 MM
20° off Axis	.048 MM	.021 MM
Tangential Distortion (Maximum Vector)	.004 MM	.010 MM

Resolution:

Angle off Axis Deg.														
Radial Resolution	56	49	40	30	30	32	27	56	49	44	39	36	32	32
Tangential Resolution	51	49	42	34	32	27	20	56	47	42	36	35	29	23

37.1 Lines/MM Avg. 39.7 Lines /MM Avg.

Note:

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

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VEHICLE NO. 1136
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted]

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DEFINITION OF MAIN 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 Agena vehicle with the position of the total payload being changed for each instrument calibration.

2.0 Three targets are aligned to be coplanar with ± 5" of arc. The longitudinal axis of the vehicle (Z axis) is so positioned to form an angle of 105.00° ± 5" to the target plane for camera number one calibrations and an angle of 75.00° ± 5" to the target plane for camera number two calibrations.

2.1 One target, Target 1, is in the ZX plane (Nadir) imaging on the Terrain format.

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

3.0 The indicated center of format of the main 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 Yvo and Yvo are the offsets of Target 1 from the indicated center of format 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 camera Number One and is the edge containing the shrinkage markers for camera Number Two.

8.0 Dimensions A, B, and C are the spacings of the shrinkage markers. 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 main cameras and the line of intersection of the plane defined in Paragraph 2 on the format is not currently available. It is assumed to be zero, but is uncontrolled.

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 positioning two targets for each horizon format normal ± 5" of arc to the plane defined in Paragraph 2. Dimensions F, G, H, J, K, L, M and N are the offset of these targets.

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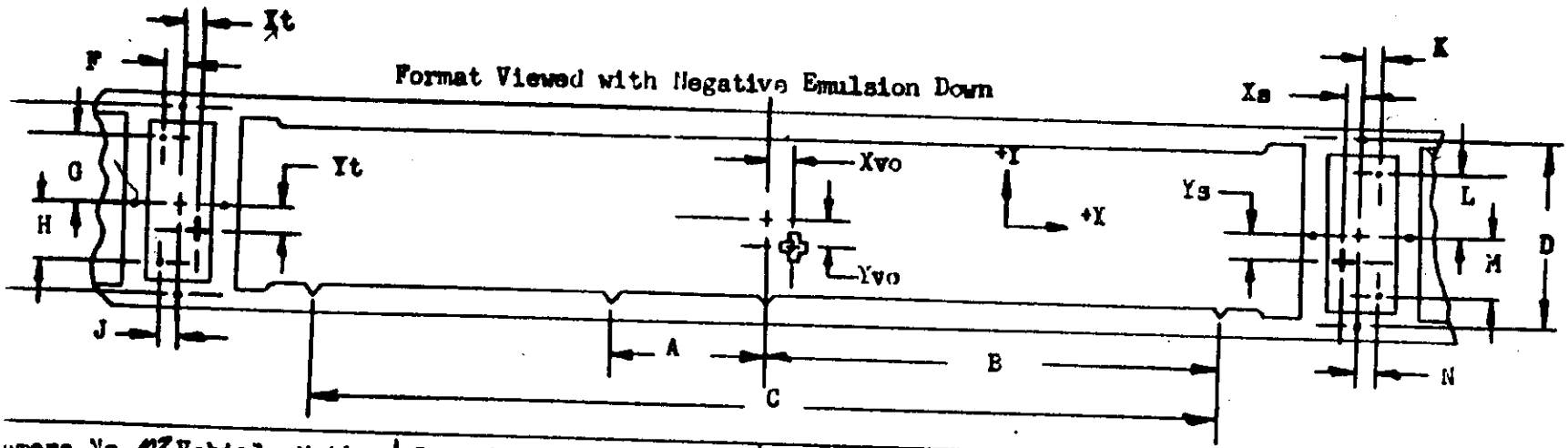
SYSTEM NO. 117
VEHICLE NO. 1136
MISSION NO. 9038
CAMERA NOS. 102 & 103

FORMAT DIMENSIONS: (MAIN CAMERAS)

[redacted]



Camera No. 102 Vehicle Motion ↓ Scan Direction →

A	76.130	Xs	-.432	H	-24.012
B	354.840	Ys	+.017	J	-5.153
C	709.810	Xvo	-.946	K	+4.588
D	56.427	Yvo	-.640	L	+23.213
E	56.419	F	-5.145	M	-23.164
Xt	-.053	G	+23.760	N	+4.357
Yt	-.069				

Format Dimensions:

	Main	Take-Up	Supply
Height	55.5		
Width	753.5		

Camera No. 103 Vehicle Motion ↓ Scan Direction →

A	75.990	Xs	-.434	H	-22.803
B	354.870	Ys	+.444	J	-5.201
C	709.660	Xvo	+.210	K	+4.689
D	56.403	Yvo	+1.290	L	+24.288
E	56.457	F	-4.973	M	-23.383
Xt	-.196	G	+23.490	N	+4.563
Yt	+.369				

Format Dimensions:

	Main	Take-Up	Supply
Height	55.8		
Width	753.8		

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. Format sign convention

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

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SYSTEM NO. M17
VEHICLE NO. 1136
MISSION NO. 9050
CAMERA NOS. 102 & 103

[redacted]

FORMAT LAYOUT: (MAIN CAMERAS)

[redacted]

LENS DATA SUMMARY: (Framing Camera No. 04) (TERRAIN Lens)

Lens Serial No. 809611

Reseau Serial No. 4

Filter Type WRATTEN 21

Aperture F4.5

Exposure Time 1/125 Sec.

Equivalent Focal Length 38.46 MM Operational Focal Length 38.56 MM

Resolution: 82.6 Lines/MM AWAR

Angle off axis	0	10	20	30	35
Resolution L/MM High Contrast	113/107	106/103	117/86	103/54	91/37
Resolution L/MM Low Contrast	76/72	79/78	77/66	69/39	65/33

Note: Resolution data read from S0130 Film

Distortion:

Angle off Axis Deg.	0	10	20	30	35				
Distortion Millimeters	.000	.013	.051	.122	.172				

Perpendicularity of Reseau to Optical Axis .140 MM IN 57 MM

Date of Stellar Calibration 9/21/62

Knee Calibration 89 Deg. 51 Min. 59.6 Sec.

Location of Principal Point:

X -.016 MM Y -.014 MM

[redacted]

LENS DATA SUMMARY: (Framing Camera No. 04) (STELLAR Lens)

Lens Serial No. 80029

Reseau Serial No. 4

Filter Type NONE

Aperture F1.9

Exposure Time 1/2 Sec.

Equivalent Focal Length 83.65 MM Operational Focal Length 83.64 MM

Resolution: ____ Lines/MM AWAR

NOT REPORTED

Angle off axis					
Resolution L/MM High Contrast					
Resolution L/MM Low Contrast					

Note: Resolution data read from ____ Film

Distortion:

Angle off Axis Deg.	0	2.5	5	7.5					
Distortion Millimeters	.000	.001	.005	.007					

Perpendicularity of Reseau to Optical Axis .013 MM IN 35 MM

Date of Stellar Calibration 9/21/62

Knee Calibration 89 Deg. 51 Min. 59.6 Sec.

Location of Principal Point:

X +.129 MM Y -.056 MM

[redacted]

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SYSTEM NO. M17
VEHICLE NO. 1156
MISSION NO. 9050
CAMERA NOS. 102 & 103

PRELIMINARY CLOCK CORRELATION:

Rev. No.	GCT System Time	Clock Time	Delta Sys. Time	Delta Clock Time	Diff.
9	38417.744	28723.184			
25	→ 38902.938	115608.394	86885.194	86885.210	+.016
41	→ 39378.377	202493.839	86875.439	86875.445	+.006
57	→ 39798.429	289303.909	86820.052	86820.070	+.018

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