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CORONA "M" FLIGHT DATA BOOK

SYSTEM NO. M5

VEHICLE NO. 1127

MISSION NO. 9036

Prepared by: [redacted]

Checked by: _____

Approved by: _____
(Engineering Manager)

Approved by: _____
(Project Manager)

Approved by: _____
(SETD)

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[redacted]

[redacted]

SYSTEM NO. M5
VEHICLE NO. 1127
MISSION NO. 9036
CAMERA NOS. 78 & 79

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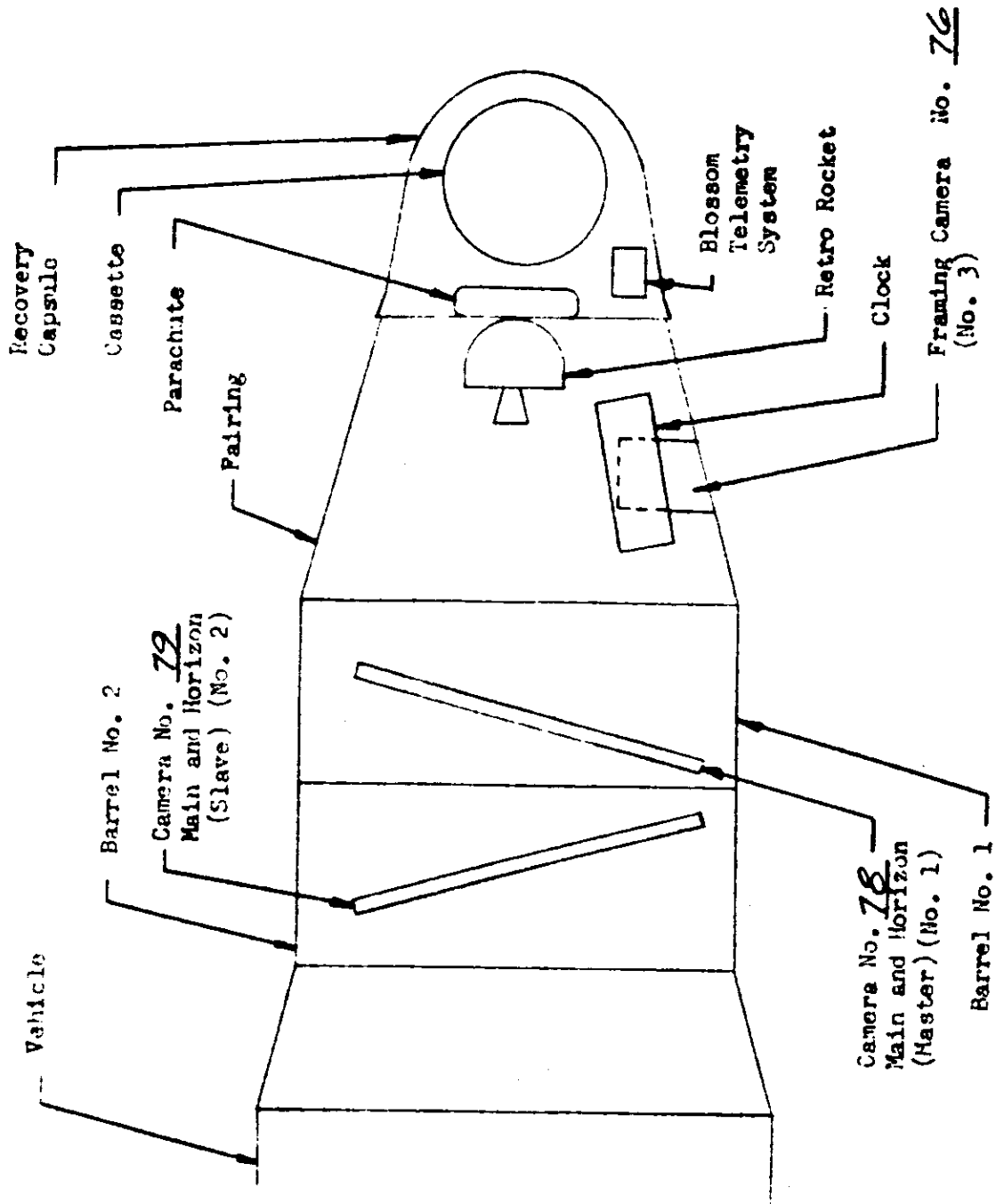
VEHICLE LAYOUT:



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SYSTEM NO. M5
VEHICLE NO. 1127
MISSION NO. 9036
CAMERA NOS. 78 & 79

GENERAL FLIGHT DATA:

Discoverer No. 43

Main Camera No. 1 Serial No. 78

Main Camera No. 2 Serial No. 79

Framing Camera Serial No. 76

Launch Date 6/1/62

Orbital Parameters: (Rev. ___)

Period _____ Min. Eccentricity _____

Perigee _____ NM Perigee Latitude _____ Deg. N

Apogee _____ NM Inclination Angle _____ Deg. N

Recovery Revolution No. _____

Recovery Date _____

REMARKS:

[redacted]

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CAMERA NOS. 78 & 79

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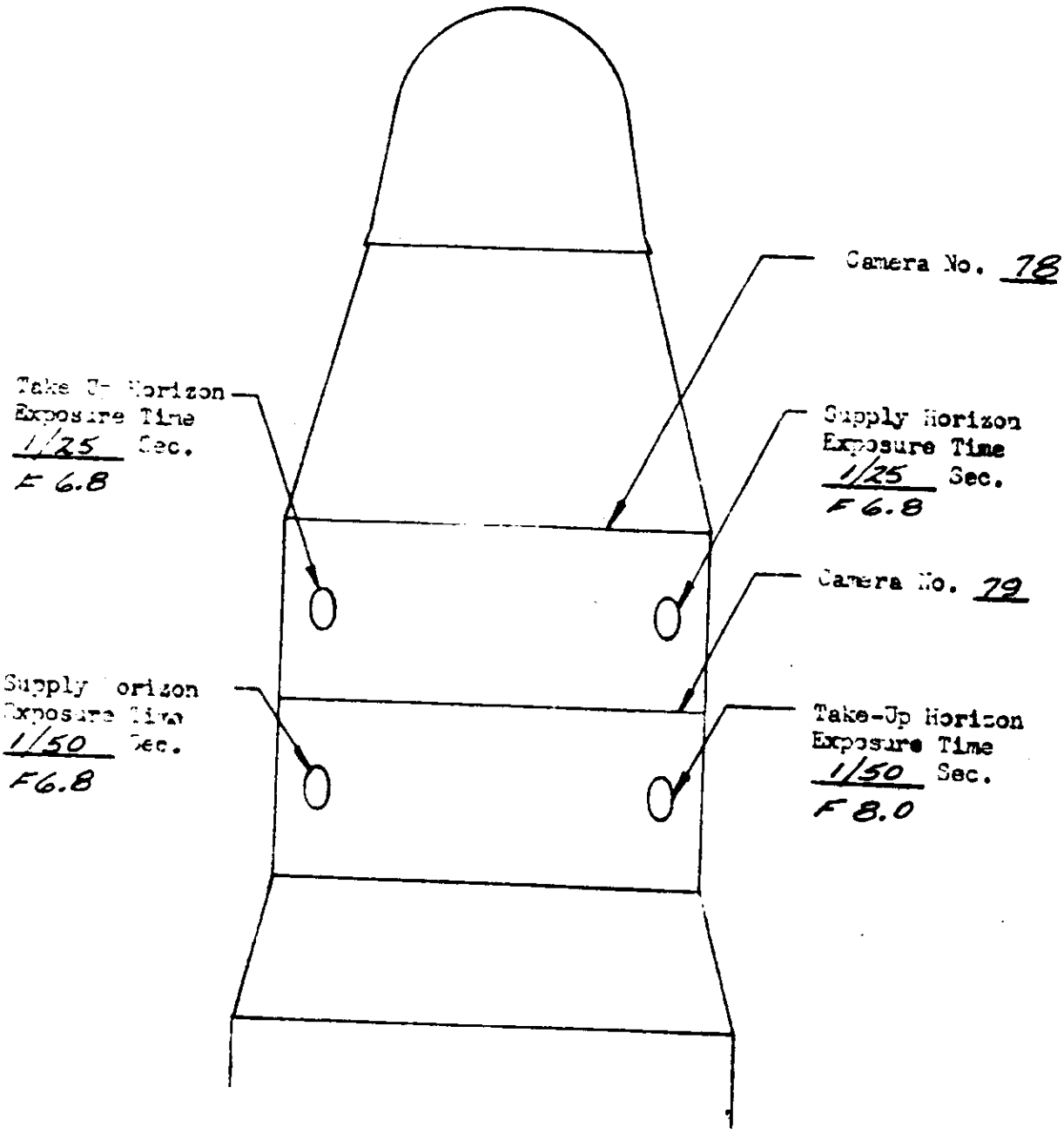
HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



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LENS DATA SUMMARY: (Framing Camera No. 76)

Lens Serial No. 2827803

Reseau Serial No. 84

Filter Type WRATTEN 21

Aperture F6.3

Exposure Time 1/250 Sec.

Equivalent Focal Length 38.45 MM

Resolution: 161 Lines/MM AVAR

Angle off axis	0	10	20	30	35
Resolution L/MM High Contrast	320	230	200	155	114
Resolution L/MM Low Contrast	170	96	76	48	—

Note: Resolution data read from 50 132 Film

Distortion:

Angle off Axis Deg.									
Distortion Millimeters									

[redacted]

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FORMAT LAYOUT: (MAIN CAMERAS)

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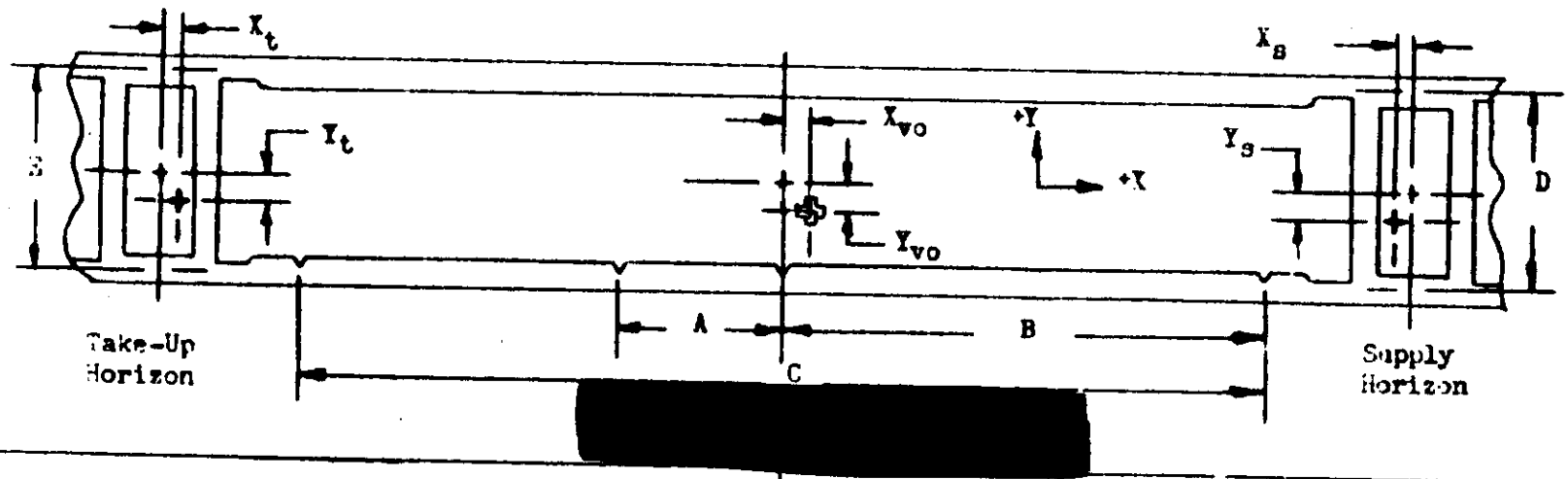

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SYSTEM NO. MS
VEHICLE NO. 1127
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CAMERA NOS. 78 79

FORMAT DIMENSIONS: (MAIN CAMERAS)

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Camera No. 78 Format Viewed with Negative Emulsion Down

Vehicle Motion ↓ Scan Direction →

X_t −.040 Y_t −.057 A 76.047

X_s −.471 Y_s +.306 B 354.967

X_{vo} −1.018 Y_{vo} −.740 C 709.818

D 56.536 E 56.504

Format Dimensions:

	Supply	Main	Take-Up
Height	53.3	55.5	53.3
Width	23.0	753.1	23.0

Camera No. 79 Format Viewed with Negative Emulsion Down

Vehicle Motion ↓ Scan Direction →

X_t −.502 Y_t −.067 A 76.103

X_s −.581 Y_s +.412 B 355.000

X_{vo} +.397 Y_{vo} +.400 C 709.917

D 56.412 E 56.423

Format Dimensions:

	Supply	Main	Take-Up
Height	53.5	55.9	53.4
Width	23.0	752.5	23.0

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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CAMERA NOS. 78 & 79

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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 within ± 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 Xvo 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 horizon cameras and the line of intersection of the plane defined in Para. 2 on the format is not currently available. It is assumed to be zero, but is uncontrolled.

11.0 Similarly, the angle between the plane and the indicated axis on the main format is uncontrolled and assumed to be zero.

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MISSION NO. 9036
CAMERA NOS. 78 & 79

LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 79)

	Take-Up	Supply
Lens Serial No.	807531	807529
Exposure Time	1/50 Sec.	1/50 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	89.1 MM	89.25 MM
Radial Distortion:		
10° off Axis	.004 MM	.003 MM
20° off Axis	.037 MM	.036 MM
Tangential Distortion (Maximum Vector)	.006 MM	.008 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5
Radial Resolution	51	44	39	32	30	29	29
Tangential Resolution	51	42	39	29	29	25	22

35.1 Lines/MM Avg.

0	5	10	15	20	25	2
56	44	33	27	26	23	2
56	47	44	26	27	22	2

33.9 Lines /MM Avg.

Note:

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

[redacted]

SYSTEM NO. M5
VEHICLE NO. 1127
MISSION NO. 9036
CAMERA NOS. 78 & 79

LENS DATA SUMMARY: (Main Camera No. 79)

Lens Serial No. 0172435 (H2)

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.590 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	235	S0243	HIGH
Other	NONE		

Dynamic:

Itek Pre-Vibration	155	S0132	HIGH
Itek Post Vibration	160	S0132	HIGH
AP Pre-HATS	160.6	S0132	HIGH
AP Post-HATS	152.8	S0132	HIGH
Other	NONE		

Note: Itek Post Vibration Resolution of 160 lines/MM Reported In Message No. _____ dated _____

Distortion - Positive (Pincushion)

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

[redacted]

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VEHICLE NO. 1127
MISSION NO. 9036
CAMERA NOS. 78 & 79

LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 78)

	Take-Up	Supply
Lens Serial No.	806858	806885
Exposure Time	1/25 Sec.	1/25 Sec.
Filter Type	NONE	NONE
Aperture	F6.8	F6.8
Operational Focal Length	89.0 MM	89.0 MM
Radial Distortion:		
10° off Axis	.005 MM	.001 MM
20° off Axis	.040 MM	.038 MM
Tangential Distortion (Maximum Vector)	.010 MM	.007 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25
Radial Resolution	49	49	44	34	32	31
Tangential Resolution	44	42	42	39	32	32

39.2 Lines/MM Avg.

0	5	10	15	20	25
51	49	44	39	36	32
51	49	39	34	32	27

40.3 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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SYSTEM NO. M5
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CAMERA NOS. 78 & 79

[redacted]

LENS DATA SUMMARY: (Main Camera No. 78)

Lens Serial No. 0192435 (H5)

Filter Type KRATTEN 21

Equivalent Operational Focal Length 609.653 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	229	SO243	HIGH
Other	NONE		

Dynamic:

Itek Pre-Vibration	162	SO 132	HIGH
Itek Post Vibration	163	SO 132	HIGH
AP Pre-HATS	160.8	SO 132	HIGH
AP Post-HATS	161.6	SO132	HIGH
Other			

Note: Itek Post Vibration Resolution of 163 lines/MM Reported In Message No. _____ Dated _____

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	357	358	359	0	1	2	3		
Distortion (Millimeters)	.005	000	000	000	.001	.002	.002		

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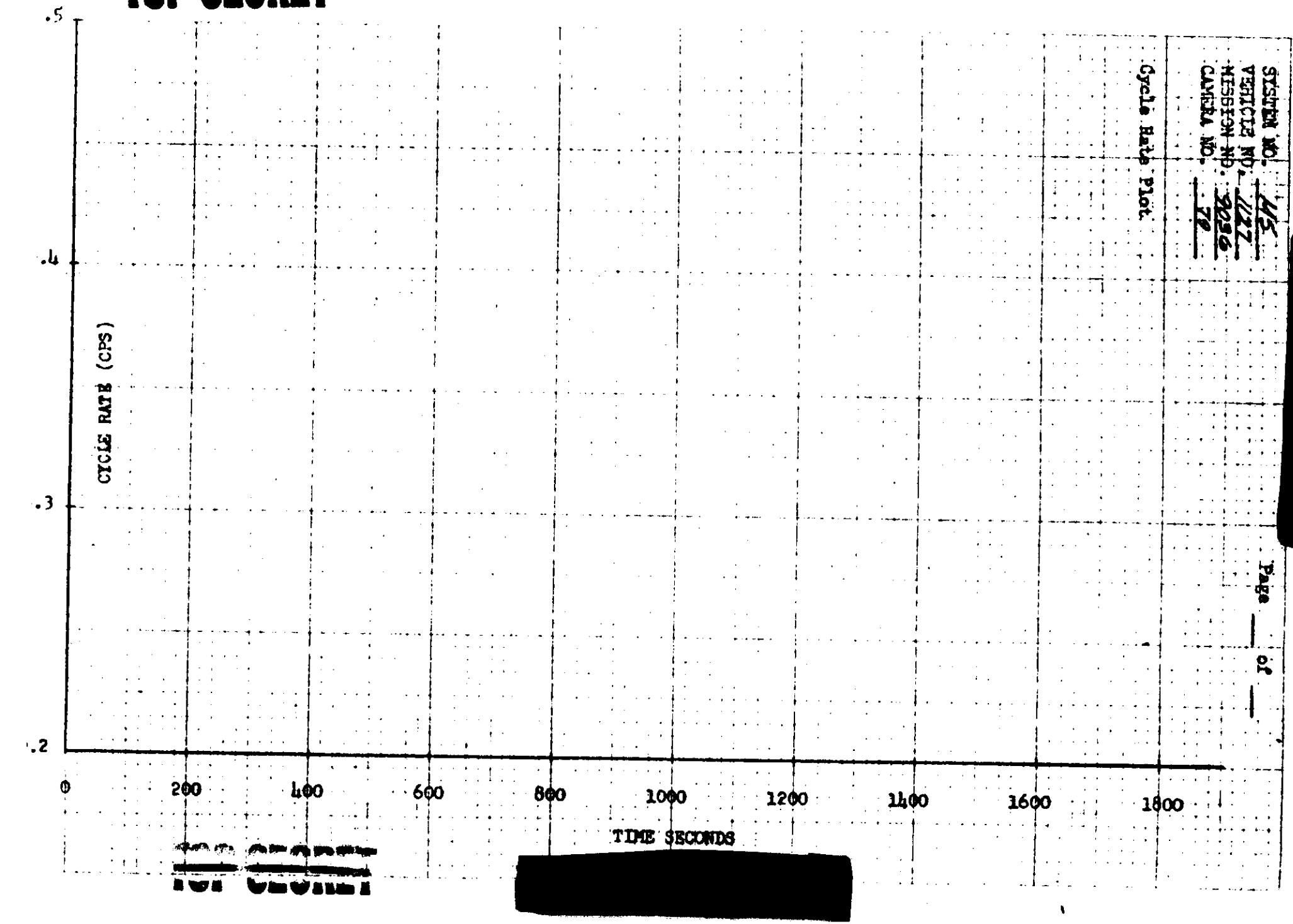

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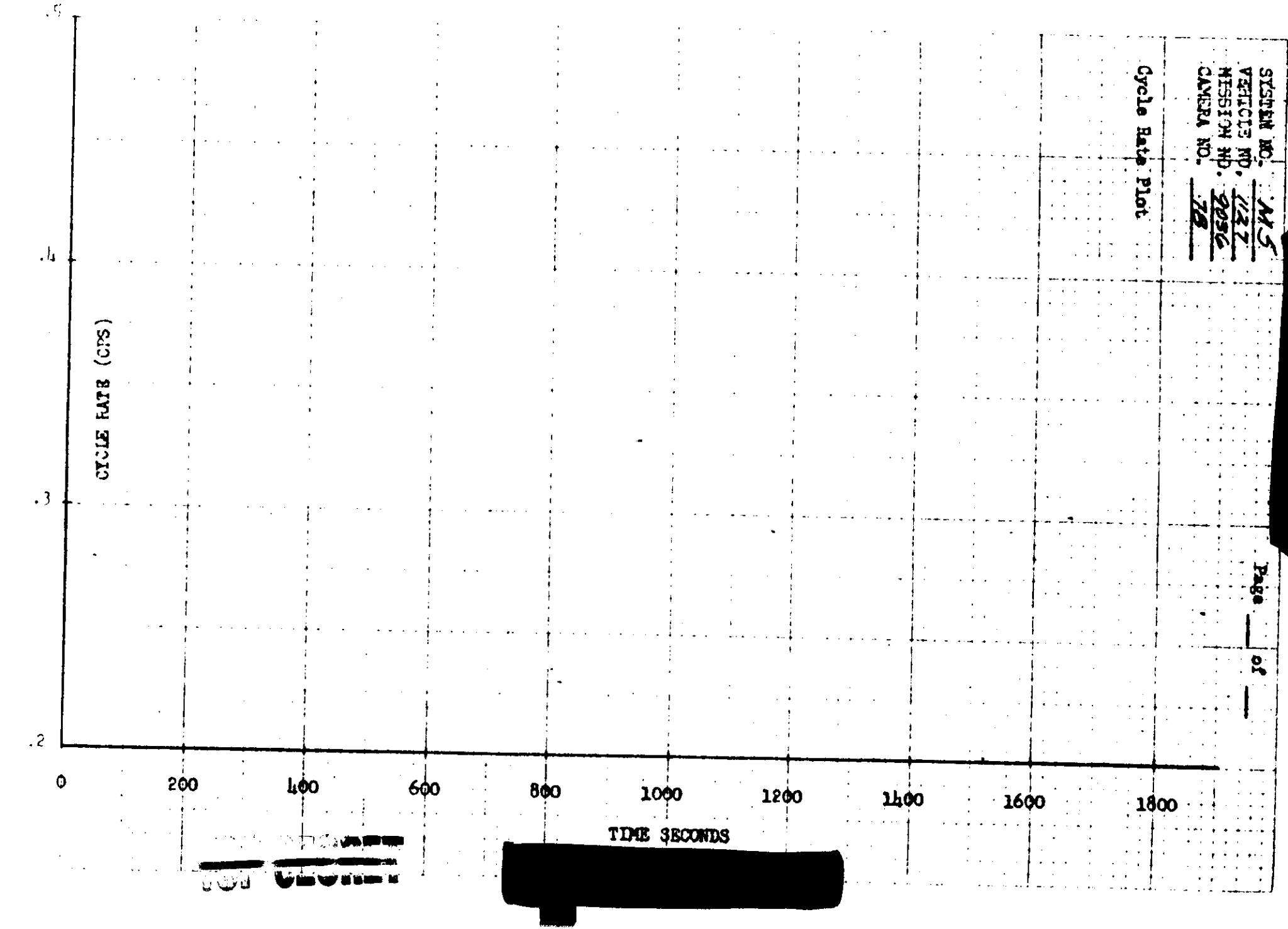
CAMERA NOS. 78 & 79

PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 79)

V/H Ramp	Cycle Period Seconds	FMC Rate		Scan Rate		
		Rad. Per Second	In. Per Second	Rad. Per Second	In. Per Second	Exposure Millisec
5 START	5.27					
3 END	2.46					
5 START	4.01					
5 END	2.41					
10 START	3.98					
10 END	2.40					

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 79)

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



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MISSION NO. 9036
CAMERA NOS. 78 & 79

PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 78)

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	5.37					
3 END	2.46					
5 START	4.06					
5 END	2.41					
10 START	4.03					
10 END	2.38					

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 78)

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

[redacted]

SYSTEM NO. M5
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MISSION NO. 9036
CAMERA NOS. 78 & 79
FRAMING CAMERA NO. 76

PERFORMANCE ESTIMATE

Pass No.	Frames Camera No.			Feet Camera No.			Latitude Degrees		Time On	Dur	Solar Angle		Exp. Time Millisec.		Ramp	Instr. On Sec
	78	79	76	78	79	76	On	Off	Hr. Min.	Sec.	On	Off	On	Off	No.	Up Ramp

[redacted]

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SYSTEM NO. M5
VEHICLE NO. 1127
MISSION NO. 9036
CAMERA NOS. 78 & 79
FRAMING CAMERA NO. 76

PERFORMANCE ESTIMATE

Pass No.	Frames Camera No. 78	79	76	Feet Camera No. 78	79	76	Latitude Degrees On	Off	Time On Hr. Min.	Dur Sec.	Solar Angle On	Off	Exp. Time Millisec. On	Off	Ramp No.	Instr. On Sec In Ramp

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CAMERA NOS. 78 & 79

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PRE-LAUNCH INFORMATION:

V/[illegible] Programmer [illegible] Step 3 to Launch

Main Camera Settings.

	Camera No. 78	Camera No. 79
Main Optics Slit Width	.200 in.	.200 in.
Variable Optics Exposure Time	1/25 Sec.	1/50 Sec.
Variable Optics Aperture	F6.8	F8.0 TAKE UP F6.8 SUPPLY

Tracking Camera Settings:

Exposure Time 1/250 Sec.

Aperture F 6.3

Tracking Camera Frame No. 7
Camera No. 1 Frames

Film:

	Camera No. 78	Camera No. 79	Framing Camera
Type	NT-23 (SO132)	TT-23 (SO132)	NT-30 (SO130)
Length	7800 ft.	7800 ft.	135 Ft.
No. of Emulsions	3	3	NONE
Emulsion Combination	27-4-3-5-2	26-1-7-2-5-2	15-2-4-2

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