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19 Pages
(Including Cover Sheet)

CORONA "M" FLIGHT DATA BOOK

SYSTEM NO. M11

VEHICLE NO. 1153

MISSION NO. 9044

Prepared by: [redacted]

Checked by: [redacted]

Approved by: [redacted]
(Engineering Manager)

Approved by: [redacted]
(Project Manager)

Approved by: [redacted]
(SAFB)

[redacted]

[redacted]

SYSTEM NO. Mk II
VEHICLE NO. 1153
MISSION NO. 3064
CAMERA NOS. 92 & 93

TABLE OF CONTENTS

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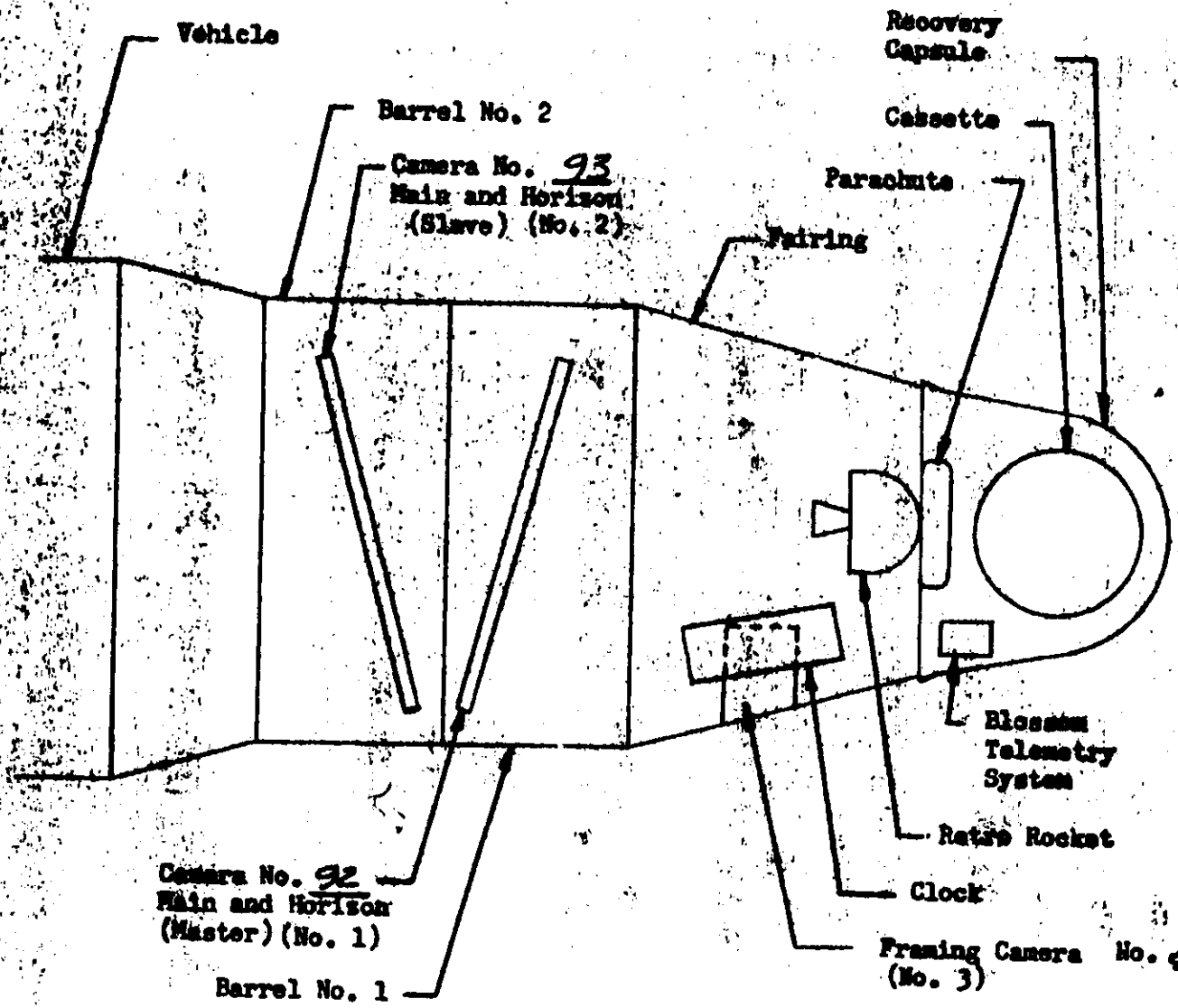

VEHICLE LAYOUT

SYSTEM NO. MIII
VEHICLE NO. 1115
MISSION NO. 9044
CAMERA NO. 9293

CONFIDENTIAL

Page 1 of 12

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SYSTEM NO. M11
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 9293

GENERAL FLIGHT DATA:

Discoverer No. 49

Main Camera No. 1 Serial No. 92

Main Camera No. 2 Serial No. 93

Framing Camera Serial No. 84

Launch Date 8/28/62

Orbital Parameters: (Rev. 32)

Period 90.16 Min. Eccentricity .0159

Perigee 96.1 NM Perigee Latitude 3.79 Deg. S

Apogee 210.3 NM Inclination Angle 65.25 Deg. N

Recovery Revolution No. 65

Recovery Date 9/1/62

REMARKS:

[redacted]

[redacted]

SECRET

SYSTEM NO. MII
VEHICLE NO. 1153
MISSION NO. 9Dg
CAMERA NOS. 92 & 93

PRE-LAUNCH INFORMATION:

V/H Programmer Set On Step 5 At Launch

Main Camera Settings:

	Camera No. 92	Camera No. 93
Main Optics Slit Width	.200 in.	.200 in.
Horizon Optics Exposure Time	1/200 Sec.	1/200 Sec.
Horizon Optics Aperture	F6.8	F 6.8

Framing Camera Settings:

Exposure Time 1/250 Sec.

Aperture F6.3

Ratio: One Framing Camera Frame Per 7 Camera No. 1 Frames

Film:

	Camera No. 92	Camera No. 93	Framing Camera
Type	SO-132	SO-132	SO-130
Length	7800 Ft.	7800 Ft.	135 Ft.
No. of Splices	2	2	None
Emulsion Date	29-7-6-2	29-7-6-2	15-8-4-2

SECRET

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SYSTEM NO. A11
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 92 & 93
FRAMING CAMERA NO. 84

[redacted]

PERFORMANCE ESTIMATE

Pass No.	Frames Camera No.			Test Camera No.			Latitude Degrees On	Latitude Degrees Off	Time On Hr. Min. Sec.	Dur.	Solar Angle On	Solar Angle Off	Exp. Time On	Exp. Time Off	Lamp No.	Instr. On Sec Up Lamp
	PERFORMANCE ESTIMATE NOT COMPLETED															
	IN TIME FOR INCLUSION IN DATA															
	BOOK.															

[redacted]

[redacted]

SYSTEM NO. MII
VEHICLE NO. 1153
MISSION NO. 9014
CAMERA NOS. 92&93

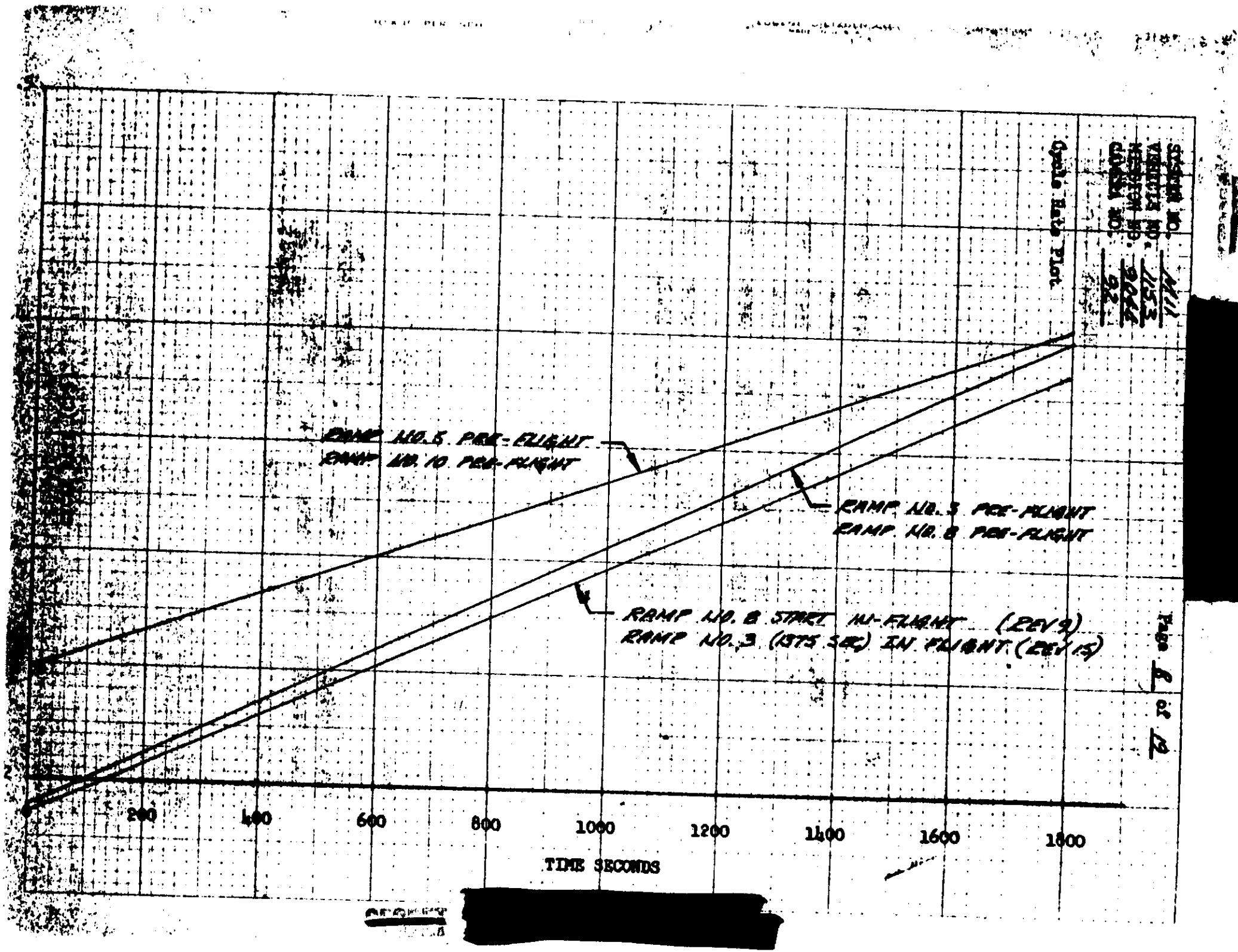
PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 92)

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	5.27	.016	.384	1.192	28.614	7.00
3 END	2.50	.034	.810	2.513	60.318	3.32
5 START	4.02	.021	.504	1.563	37.511	5.33
5 END	2.46	.034	.823	2.554	61.298	3.26
8 START	5.29	.016	.383	1.188	28.506	7.02
8 END	2.50	.034	.810	2.513	60.318	3.32
10 START	4.03	.021	.503	1.559	37.418	5.55
10 END	2.46	.034	.823	2.554	61.298	3.26

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 92)

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	8 START	5.37	.016	.377	1.170	28.081	7.12
15	3 (1ST SEC UP DOWN)	2.95	.029	.686	2.130	51.117	3.91

[redacted]


RAMP NO. 5 PRE-FLIGHT
RAMP NO. 10 PRE-FLIGHT
RAMP NO. 3 PRE-FLIGHT
RAMP NO. 8 PRE-FLIGHT
RAMP NO. 8 START IN-FLIGHT (LEV 9)
RAMP NO. 3 (1375 SEC) IN FLIGHT (LEV 15)
200
400
600
800
1000
1200
1400
1600
1800
TIME SECONDS

[redacted]

SYSTEM NO. M11
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 92&93

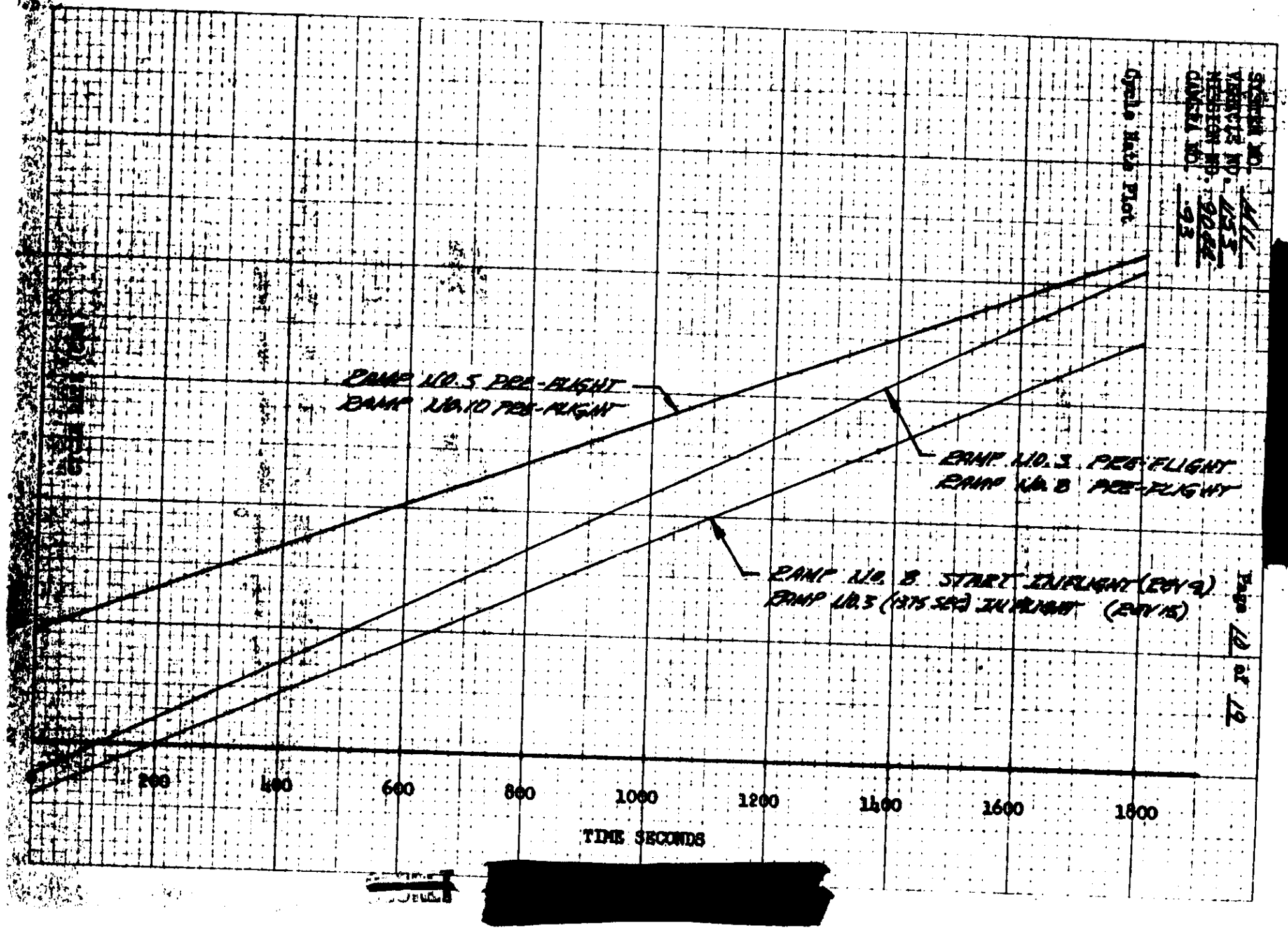
PRE-FLIGHT CYCLE PERIOD: (CAMERA NO. 93)

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	5.35	.016	.379	1.179	28.186	7.10
3 END	2.46	.034	.823	2.554	61.299	3.26
5 START	4.04	.021	.501	1.555	37.325	5.36
5 END	2.42	.035	.837	2.596	62.312	3.21
8 START	5.38	.016	.376	1.168	28.029	7.14
8 END	2.46	.034	.823	2.554	61.299	3.26
10 START	4.06	.021	.499	1.548	37.141	5.38
10 END	2.42	.035	.837	2.596	62.312	3.21

IN-FLIGHT CYCLE PERIOD: (CAMERA NO. 93)

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	8 START	5.56	.015	.364	1.130	27.121	7.37
15	3 (AUTO SEC. UP RAMP)	3.06	.028	.662	2.053	49.279	4.06

[redacted]


RAMP NO. 5 PRE-FLIGHT
RAMP NO. 10 PRE-FLIGHT
RAMP NO. 5 PRE-FLIGHT
RAMP NO. 8 PRE-FLIGHT
RAMP NO. 8 START IN FLIGHT (EVT 9)
RAMP NO. 5 (1375 SEC) IN FLIGHT (EVT 15)
200
400
600
800
1000
1200
1400
1600
1800
TIME SECONDS

SYSTEM NO. MII [redacted] Page 12 of 19
VEHICLE NO. 1151
MISSION NO. 2046
CAMERA NOS. 92,93

LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 92)

	Take-Up	Supply
Lens Serial No.	807538	807543
Exposure Time	1/200 Sec.	1/200 Sec.
Filter Type	HOYA #25	HOYA #25
Aperture	F6.8	F6.8
Operational Focal Length	89.15 MM	89.05 MM
Radial Distortion:		
10° off Axis	.016 MM	.005 MM
20° off Axis	.003 MM	.038 MM
Tangential Distortion (Maximum Vector)	.007 MM	.009 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5	0	5	10	15	20	25	27.5
Radial Resolution	51	47	42	34	34	32	29	51	44	37	30	29	31	27
Tangential Resolution	51	44	39	36	34	29	20	51	44	39	29	29	25	19

57.5 Lines/MM Avg. 34.6 Lines /MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.
2. Resolution in lines per mm on [redacted] Film and 1000:1 contrast target.

SECRET

[redacted]

SYSTEM NO. KH
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 92 & 93

LENS DATA SUMMARY: (Main Camera No. 92)

Lens Serial No. 0272435

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.577 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	251.8	SO243	HIGH
Other			

Dynamic:

Itek Pre-Vibration	147	SO 132	HIGH
Itek Post Vibration	172	SO 132	HIGH
AP	172	SO132	HIGH
AP	103	SO132	LOW
Other			

Note: Itek Post Vibration Resolution of 172 Lines/MM Reported In Message No. [redacted] dated 8/28/62

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	0	1	359	358	357		
Distortion Millimeters	.002	.001	.000	.000	.001	.004	.007		

[redacted]

SYSTEM NO. MII
VEHICLE NO. 153
MISSION NO. 9041
CAMERA NOS. 92 & 93

LENS DATA SUMMARY: (Main Camera No. 93)

Lens Serial No. 0262435

Filter Type HEATHEN 21

Equivalent Operational Focal Length 609.589 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	243.6	SO243	HIGH
Other			

Dynamic:

Itek Pre-Vibration	148	SO132	HIGH
Itek Post Vibration	161	SO132	HIGH
AP	159	SO132	HIGH
AP	128	SO132	HIGH
Other			

Note: Itek Post Vibration Resolution of 161 lines/MM Reported In Message No. [redacted] dated 8/28/62

Distortion - Positive (Pincushion)

Angle Off Axis Degs	3	2	1	0	359	358	357		
Distortion Millimeters	.007	.002	.001	.000	.000	.001	.004		

[redacted]

SYSTEM NO. [redacted]
VEHICLE NO. [redacted]
MISSION NO. [illegible]
CAMERA NOS. [illegible]

LENS DATA SUMMARY: (Horizon Cameras for Main Camera No. 95)

	Take-Up	Supply
Lens Serial No.	807539	807541
Exposure Time	1/200 Sec.	1/200 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F6.8	F6.8
Operational Focal Length	88.95 MM	89.0 MM
Radial Distortion:		
10° off Axis	.007 MM	.004 MM
20° off Axis	.067 MM	.057 MM
Tangential Distortion (Maximum Vector)	.005 MM	.006 MM

Resolution:

Angle off Axis Degs.	0	5	10	15	20	25	27.5	0	5	10	15	20	25	27.5
Radial Resolution	52	44	35	30	27	23	27	47	50	42	35	31	27	26
Tangential Resolution	56	44	42	36	31	25	20	36	44	42	36	31	25	19

35.7 Lines/MM Avg. 36.6 Lines /MM Avg.

Note:

1. Distortion and resolution are read at equivalent operational focal length.

2. Resolution [illegible] Super XX [illegible] High contrast targets [illegible]

[redacted]

SYSTEM NO. M11
VEHICLE NO. 1153
MISSION NO. 9014
CAMERA NOS. 92 & 93

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 These 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° ± 2" 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 X 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.

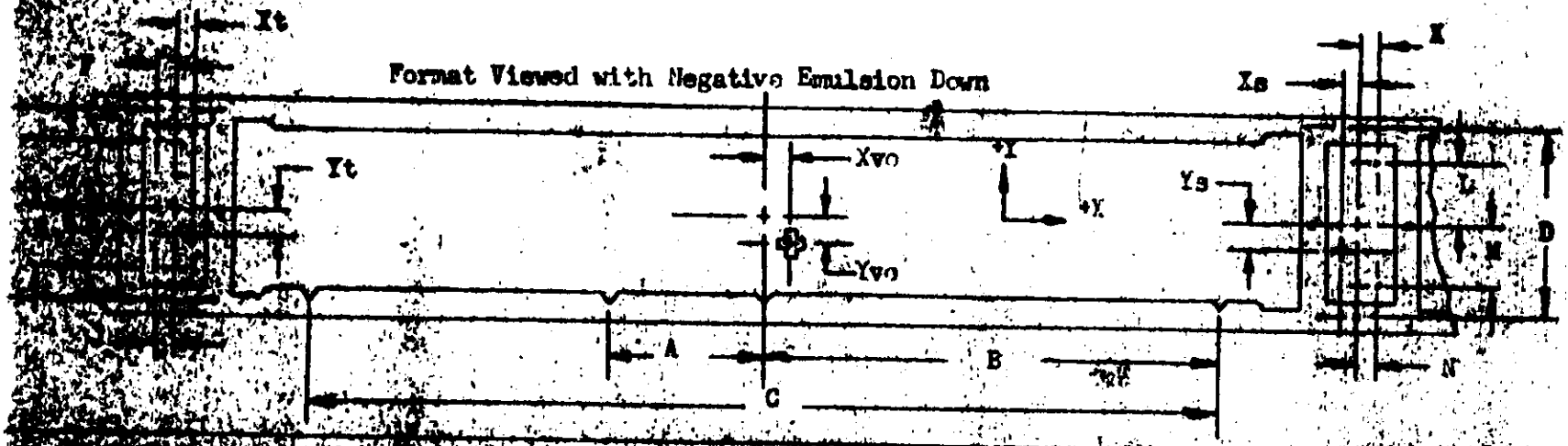
9.0 The format dimensions are measured to the best estimate of format edge.

10.0 Measurement of the angle between the indicated axis of the main cameras and the line of intersection of the plane dfined in Para. 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 Para. 2 on the format is made by positioning two targets for each horiozn format normal ± 5" of arc to the plane defined in Para. 2. Dimensions F, G, H, J, K, L, M and N are the offsets of these targets.

SYSTEM NO. [redacted]
VEHICLE NO. [redacted]
MISSION NO. [redacted]
CAMERA NOS. [redacted]

FORMAT DIMENSIONS (MAIN CAMERAS)



Camera No. [redacted] Vehicle Motion | Scan Direction

		Xs	−.248	H	−23.848
		Ys	+.038	J	−5.400
		Xvo	−.355	K	+5.955
		Yvo	−.154	L	+23.291
		F	−4.971	M	−23.211
		G	+22.748	N	+5.550

Format Dimensions:

	Main Take-Up	Supply
Height	55.7	Not Available
Width	753.8	Not Available

Camera No. 93 Vehicle Motion | Scan Direction

A	76.09	Xs	+.148	H	−23.548
B	355.503	Ys	−.369	J	−5.195
C	710.553	Xvo	+.020	K	+5.099
D	56.453	Yvo	+.510	L	+23.491
E	56.458	F	−4.939	M	−23.179
Xt	−.036	G	+22.894	N	+5.101
Yt	−.315				

Format Dimensions:

	Main Take-Up	Supply
Height	55.9	Not Available
Width	753.5	Not Available

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. Format sign convention

−X+Y	+X+Y
−X−Y	+X−Y

[redacted]

[redacted]

Page 12 of 12

SYSTEM NO. 1411
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 92 & 93

FORMAT LAYOUT: (MAIN CAMERAS)

SYSTEM NO. M11
VEHICLE NO. 1153
MISSION NO. 9044
CAMERA NOS. 92 & 93

LENS DATA SUMMARY: (Framing Camera No. 84)

Lens Serial No. 27608244

Reseau Serial No. 78

Filter Type WRATTEN 21

Aperture F6.3

Exposure Time 1/200 Sec.

Equivalent Focal Length 38.55 MM O.F.L. 38.61

Resolution: 97 Lines/MM AWAR

Angle off axis	0	10	20	30	35
Resolution L/MM High Contrast	134.5	125	109.5	93	85
Resolution L/MM Low Contrast	80	71	64	58	52

Note: Resolution data read from J-50 Film

Distortion: NOT AVAILABLE

Angle off Axis Deg.									
Distortion Millimeters									

Perpendicularity of Reseau to Optical Axis 0.00

Date of Stellar Calibration NONE

LOCATION OF FIDUCIAL POINT:

X = -.25 MM

Y = -.27 MM

SECRET
SECURITY

SYSTEM NO. M11
VEHICLE NO. N53
MISSION NO. 9044
CAMERA NOS. 92 & 93

PRELIMINARY CLOCK CORRELATION:

Rev. No.	System Time	Clock Time	Delta Sys. Time	Delta Clock Time	Diff.
9	51199.444	68909.293			
15	85091.309	102881.158	33891.865	33891.865	.000
25	51535.498	155725.355	52844.189	52844.197	+.008
41	51672.149	242262.019	86536.651	86536.664	+.013