[redacted]

[redacted]

[redacted] Pages
(Including Cover Sheet)

CORONA "J" FLIGHT DATA BOOK

SYSTEM NO. J-12

VEHICLE NO. 1605

MISSION NO. 1009

CAMERA NOS. 154, 155

Prepared by: [redacted]

Checked by:

Approved by:

Approved by: [redacted] anager
Program

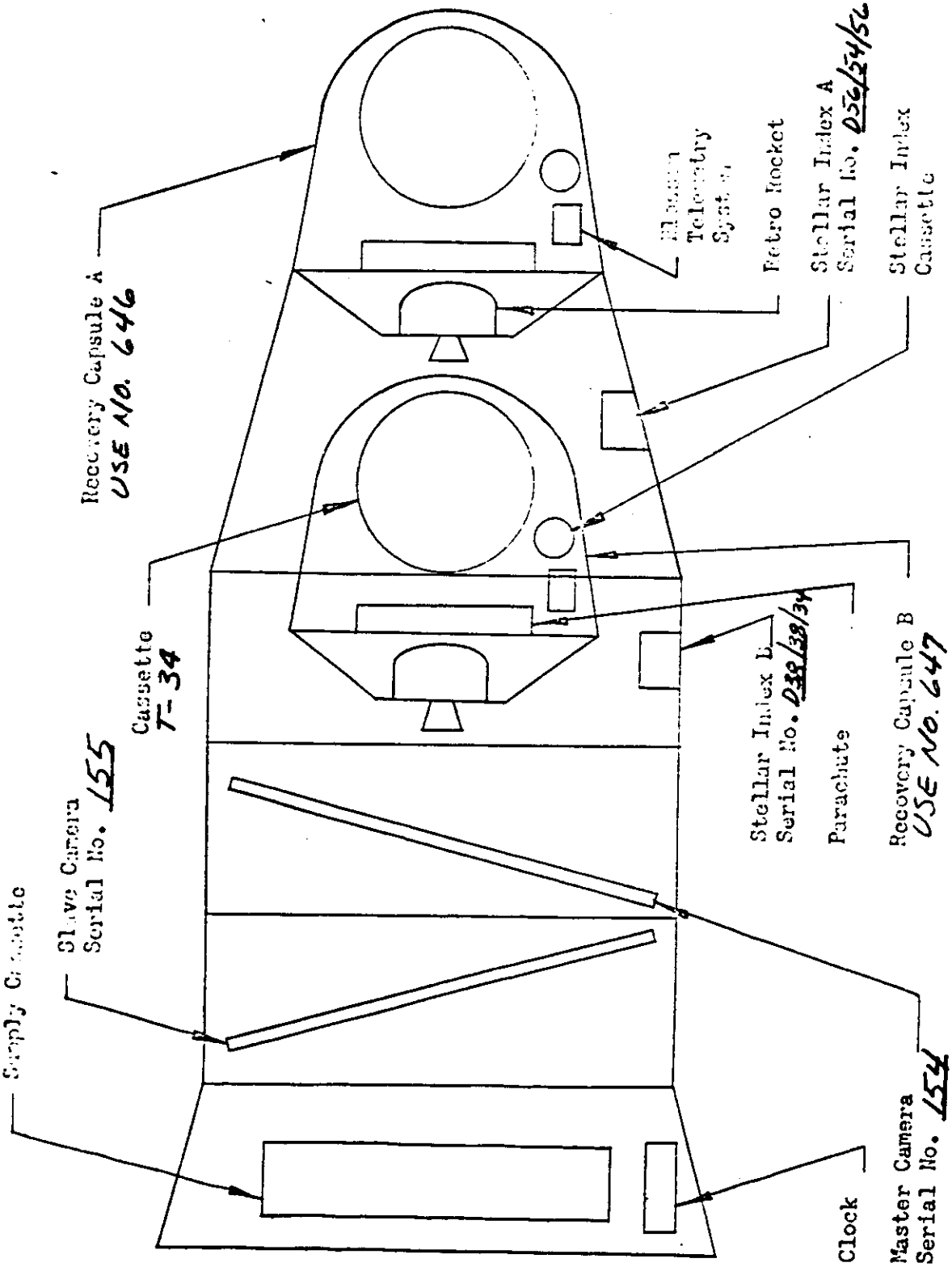
[redacted]

TABLE OF CONTENTS

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

VEHICLE LAYOUT:



SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154, 155

[redacted]

GENERAL FLIGHT DATA:

Master Camera Serial No. 154

Slave Camera Serial No. 155

Stellar Index "A" Serial No. D56/54/56

Stellar Index "B" Serial No. 038/38/34

Launch Date 5 AUGUST 1964

Reactivation Date —

Reactivation Orbit No. —

Orbital Parameters: (Rev. 25)

Period 90.7 Min. Eccentricity 0.0198

Perigee 101 NM Perigee Latitude 44.6 Deg. N

Apogee 243 NM Inclination Angle 79.99 Deg. N

Recovery Orbit No. 49

Recovery Date 8 AUGUST 1964

REMARKS:

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

LENS SETTINGS AND FILM TYPES:

Panoramic Camera Settings:		Camera No. 154	Camera No. 155
Panoramic Optics Slit Width		0.200 in.	0.200 in.
Panoramic Optics Filter Type		WRATTEN 21	WRATTEN 21
Horizon Optics Exp. Time		1/100 sec.	1/100 sec.
Horizon Optics Aperture	SUPPLY	F 6.8	F 8.0
	TAKEUP	F 8.0	F 6.8
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 SEC.	1/500 SEC.	2.0 SEC.	1/500 SEC.
Aperture Setting	F 1.8	F 4.5	F 1.8	F 4.5
Filter Type	NONE	WRATTEN 21	NONE	WRATTEN 21

Ratio: One Stellar Index Frame Per 7 Master Camera Frames.

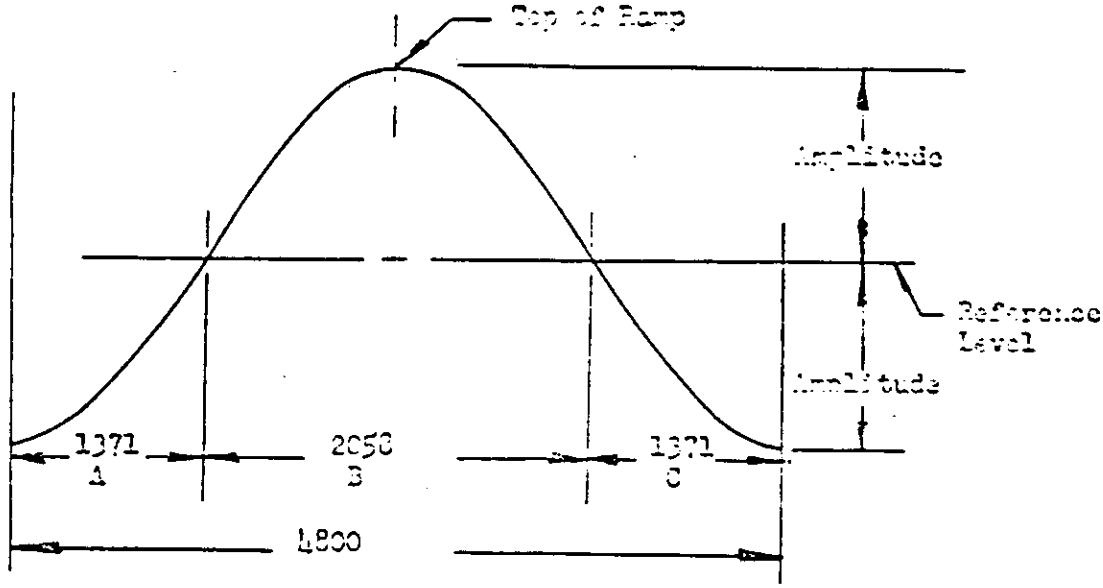
Film:

Panoramic Cameras:	Camera No. 154	Camera No. 155
Type	7J-40	7J-40
Length	15,800 ft.	15,800 ft.
Splices	4	4
Emul. Data	59-2-4-3-5-4	59-4-5-4

Stellar Index Cameras:

	Stellar Index A		Stellar Index B	
	Stellar	Index	Stellar	Index
Type	3J-34	7J-33	3J-34	7J-33
Emul. Data	7-3-6-4	28-1-3-4	7-3-6-4	28-1-3-4

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:

FMC Rate (In/Sec) = $2\pi \left(\frac{0.3303}{CP}\right)$ = 2.32507 x CPS

FMC Rate (Radians/Sec) = $2\pi \left(\frac{0.3303}{24 \cdot CP}\right)$ = 0.34378 x CPS

Scan Velocity Computation:

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

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

Exposure Time (Milliseconds) = 1000 $\left(\frac{CP \times SLIT}{40\pi}\right)$ = 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

SYSTEM NO. T-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

CYCLE PERIOD DATA:

PRE-FLIGHT CYCLE PERIODS:

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Time Up Ramp Sec
		Master	Slave	
9	4	4.677	4.634	900
9	4	4.499	4.461	956
9	4	4.344	4.310	1005

IN-FLIGHT CYCLE PERIODS

V/H Ramp Level	V/H Ramp Amplitude	Cycle Period Seconds		Orbit No.	Time Up Ramp Sec
		Master	Slave		
9	4	4.576	4.570	9	900
9	4	4.457	4.490	25	956
9	4	4.328	4.336	40	1005

[redacted]

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

LENS DATA SUMMARY: Master Camera No. 154

Lens Serial No. 1292435

Slit Width 0.200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.602 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	253	SO-132	HIGH
	157	SO-132	LOW

Dynamic:

Itek	163	SO-132	HIGH
Itek	131	SO-132	LOW
AP	171	SO-132	HIGH
AP	102.5	SO-132	LOW
Other	—	—	—

Note: Itek Post Vibration Resolution of 163 lines/MM Reported In Message No. [redacted] dated 4 AUG 64

Distortion - Positive (Pincushion)

Angle Off Axis Deg.	3	2	1	0	359	358	357		
Distortion Millimeters	.007	.005	.002	.000	.001	.002	.003		

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

LENS DATA SUMMARY: (Horizon Cameras for MASTER Camera No. 154)

	Take-Up	Supply
Lens Serial No.	814010	812290
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F8.0	F6.8
Operational Focal Length	55.01 MM	55.03 MM
Radial Distortion:		
10° off Axis	.001 MM	-.001 MM
20° off Axis	.001 MM	-.005 MM
Tangential Distortion (Maximum Vector)	.006 MM	N.A. MM

Resolution:

Angle off Axis Deg.	0	10	15	20	25	30								
Radial Resolution	170	111	87	71	81	75					N.	A.		
Tangential Resolution	170	110	79	79	52	47								

94.3 Lines/MM Avg. N.A. Lines/MM Avg.

Note:

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

[redacted]

SYSTEM NO. J-12 Page 10 of 23

VEHICLE NO. 1605

MISSION NO. 1009

CAMERA NOS. 154 - 155

LENS DATA SUMMARY: Slave Camera No. 155

Lens Serial No. 1322435

Slit Width 0.200 Inch

Filter Type WRATTEN 21

Equivalent Operational Focal Length 609.617 MM

Resolution:

Static:

	Lines/MM	Film Type	Target Contrast
Bench Test	200	SO132	HIGH
	151	SO132	LOW

Dynamic:

Itek	194	SO-132	HIGH
Itek	137	SO-132	LOW
AP	194.5	SO-132	HIGH
AP	110	SO-132	LOW
Other	—	—	—

NOTE: Itek Post Vibration Resolution of 194 lines/MM Reported In Message No. [redacted] dated 4 AUG 64.

Distortion - Positive (Pincushion)

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

[redacted]

[redacted]

[redacted]

SYSTEM NO. J-12

VEHICLE NO. 1605

MISSION NO. 1009

CAMERA NOS. 154 - 155

LENS DATA SUMMARY: (Horizon Cameras for SLAVE Camera No. 155)

	Take-Up	Supply
Lens Serial No.	813519	813517
Exposure Time	1/100 Sec.	1/100 Sec.
Filter Type	WRATTEN 25	WRATTEN 25
Aperture	F 6.8	F 8.0
Operational Focal Length	54.77 MM	54.97 MM
Radial Distortion:		
10° off Axis	.001 MM	.001 MM
20° off Axis	.002 MM	.001 MM
Tangetial Distortion (Maximum Vector)	.002 MM	.008 MM

Resolution:

Angle off Axis Deg.	0	5	10	15	20	25	27.5
Radial Resolution	116	116	101	89	63	83	46
Tangetial Resolution	116	115	100	82	64	54	39

0	5	10	15	20	25	27.5
116	110	86	63	52	74	65
116	109	95	68	64	53	41

84.6 Lines/MM Avg. 79.4 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.

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

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.

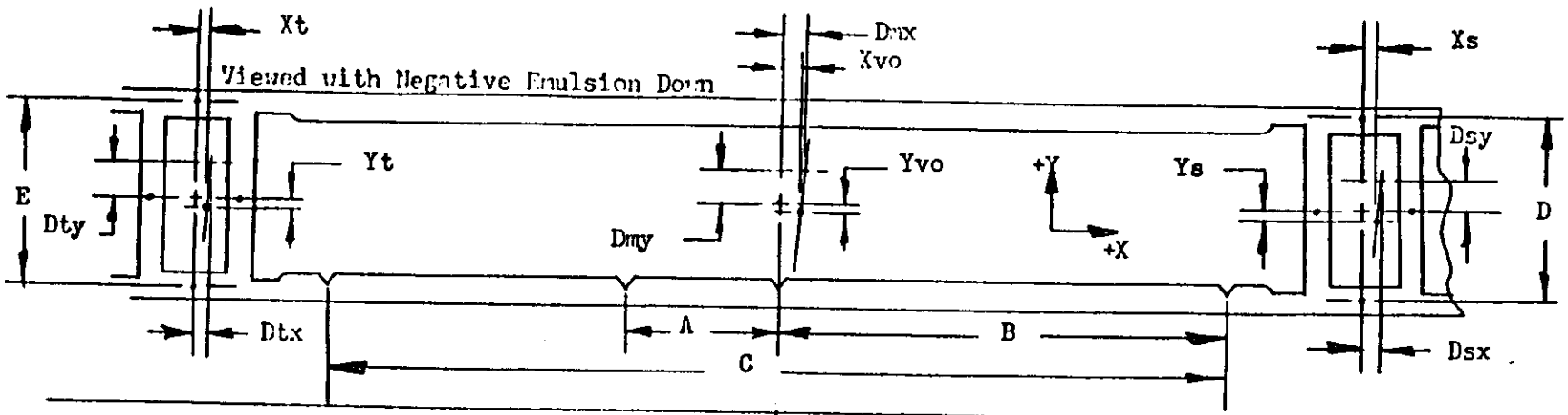
9.0 The format dimensions are measured to the best estimate of format edge.

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 Dvx and Dvy 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. T-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

FORMAT DIMENSIONS: (PANORAMIC CAMERAS)



Camera No. 154	Vehicle Motion ↓	Scan Direction →	Camera No. 155	Vehicle Motion ↓	Scan Direction →
A 76.2	Xt +0.063	Dtx +0.076	A 76.1	Xt +0.087	Dtx +0.088
B 355.6	Yt +0.264	Dty −2.622	B 355.6	Yt −0.177	Dty +2.146
C 711.0	Xs +0.085	Dsx +0.088	C 711.1	Xs −0.374	Dsx −0.385
D 56.540	Ys +0.083	Dsy +2.764	D 56.573	Ys −0.141	Dsy −2.077
E 56.564	Xvo +1.010	Dmx +1.021	E 56.559	Xvo −0.708	Dmx −0.732
	Yvo +0.612	Dmy −2.388		Yvo +0.243	Dmy −2.738

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.947	N.A.	N.A.
Width	755.8	NA	N.A.

Format Dimensions:

	Panoramic	Take-Up	Supply
Height	55.824	N.A.	N.A
Width	755.3	NA.	N.A.

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

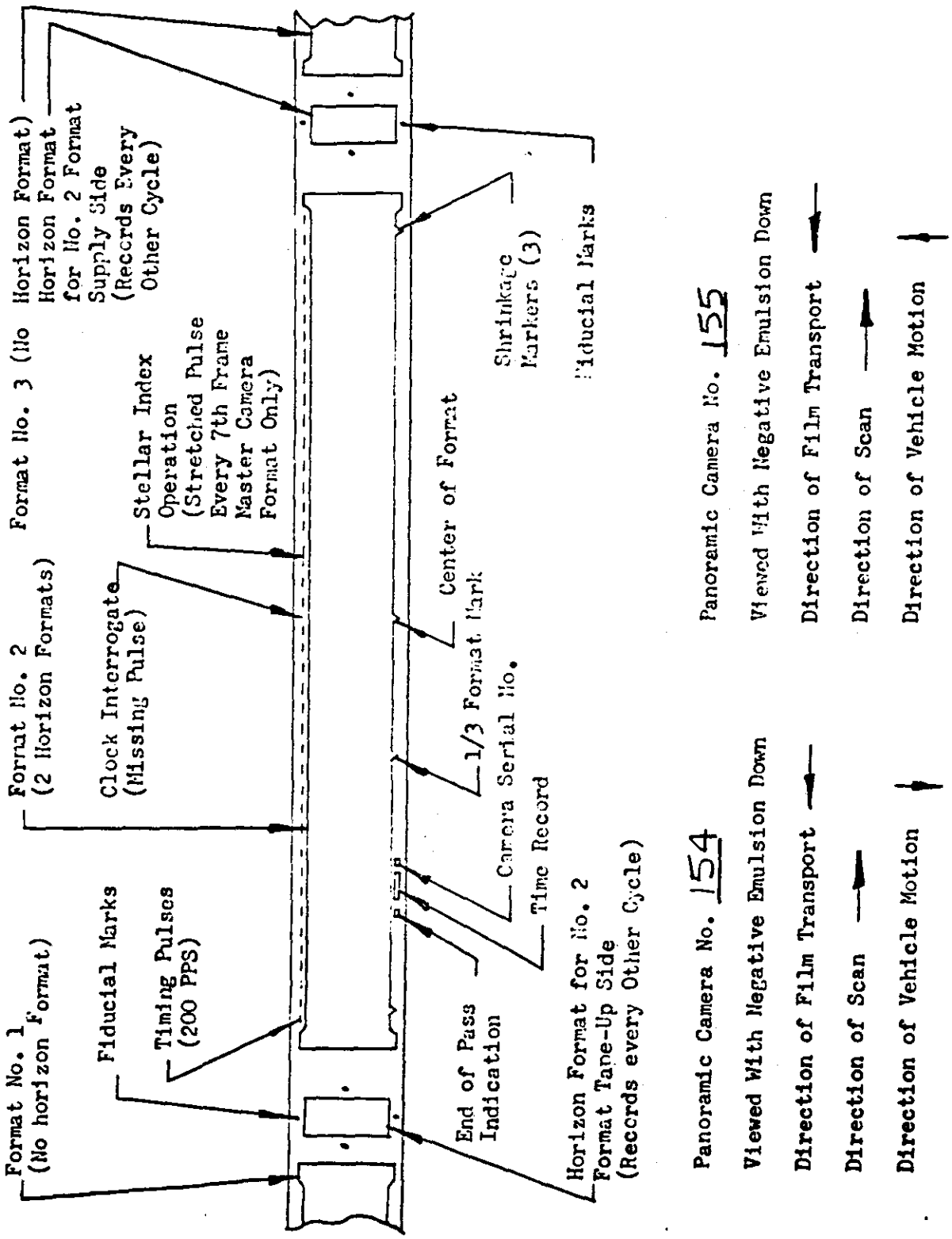
−X+Y	+X+Y
−X−Y	+X−Y

[redacted]

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

FORMAT LAYOUT: (PANORAMIC CAMERAS)



SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

[redacted]

LENS DATA SUMMARY STELLAR INDEX A D56/54/56

	Stellar	Index
Lens Serial No.	10781	813271
Reseau Serial No.	56	54
Filter Type	NONE	WRATTEN/21
Aperture	F1.8	F4.5
Exposure Time	2.0 Sec.	1/500 Sec.
* Operational Focal Length	N.A. MM	N.A. MM
Equivalent Focal Length	N.A. MM	N.A. MM

Resolution:

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

0	10	20	30	35
82	87	104	90	78
82	89	79	46	30

Note: Index Resolution of 76.7 Lines/MM AWAR
Read From 50-130 Film.

* Distortion:

Angle off Axis Deg.					
Distortion Millimeters					

Perpendicularity of Reseau to Optical Axis 0.0004/0.937 IN. 0.0003/2.25 IN.

* Location of Principal Point: X N.A. MM X N.A. MM
Y N.A. MM Y N.A. MM

* AVAILABLE IN ANOTHER REPORT

[redacted]

SYSTEM NO. J-12 [redacted]
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

LENS DATA SUMMARY STELLAR INDEX B: D38/38/34

	Stellar	Index
Lens Serial No.	10466	813047
Reseau Serial No.	34	38
Filter Type	NONE	WRATTEN 21
Aperture	F1.8	F4.5
Exposure Time	2.0 Sec.	1/500 Sec.
Operational Focal Length	— MM	— MM
* Equivalent Focal Length	— MM	— MM

Resolution:

Angle off axis	N.A.				
Resolution L/MM High Contrast					
Resolution L/MM Low Contrast					

0	10	20	30	35
92	102	114	80	73
92	87	80	40	28

NOTE: Index Resolution of 78.8 Lines/MM AWAR
Read From SO-130 Film.

* Distortion:

Angle off Axis Deg.					
Distortion Millimeters					

Perpendicularity of Reseau to Optical Axis: 0.0004/0.937 IN. 0.0002/2.25 IN.

* Location of Principal Point: X — MM, Y — MM | X — MM, Y — MM

* AVAILABLE IN ANOTHER REPORT

[redacted]

SYSTEM NO. J-12
VEHICLE NO. 1205
MISSION NO. 1009
CAMERA NOS. 154-155

PRELIMINARY CLOCK CORRELATION:

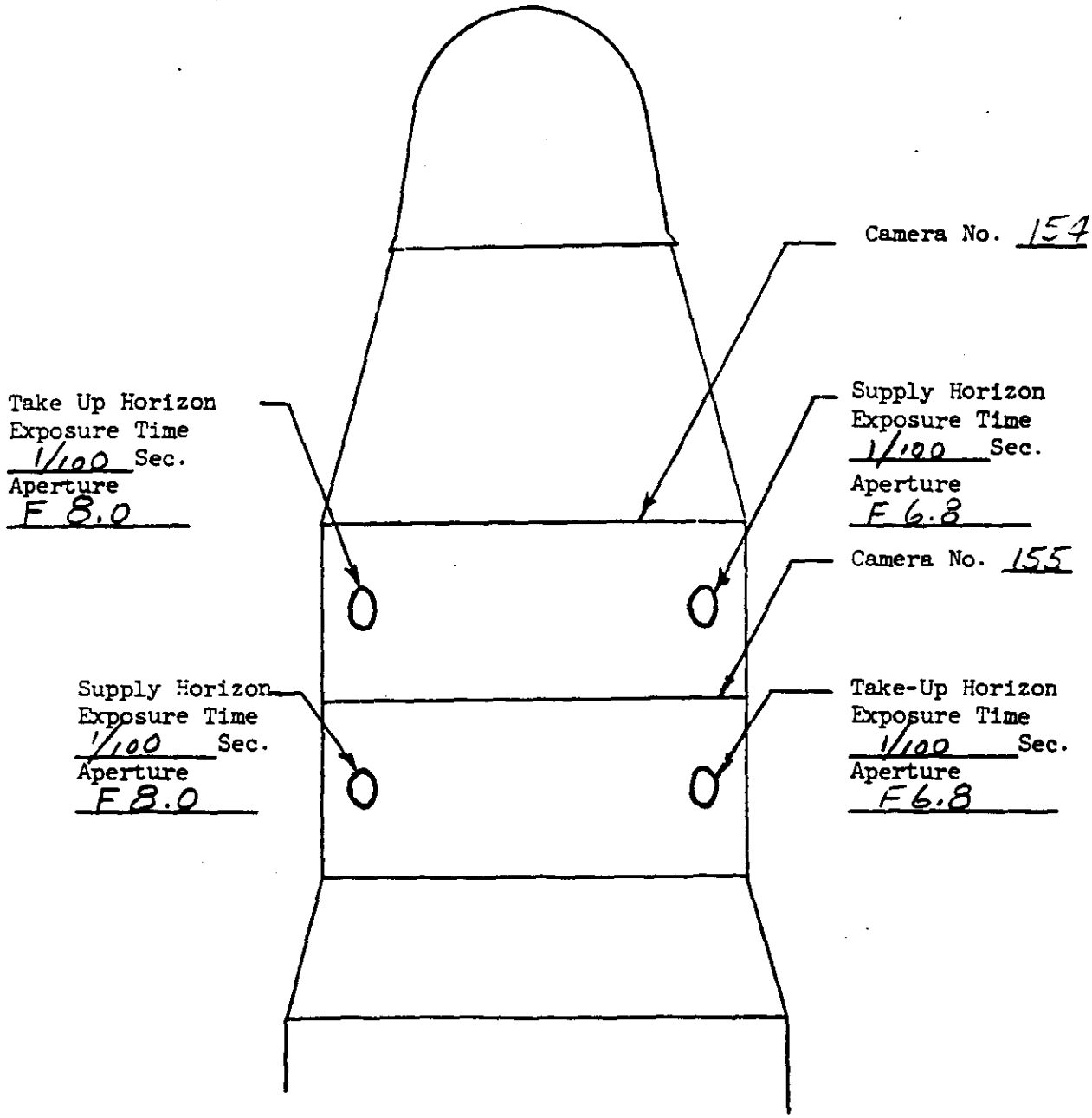
ORBIT	SYSTEM TIME	10^{16} · CLOCK TIME	DIFFERENCE
9	45058.100	358634.201	
16	84744.257	398320.352	
25	45743.214	445719.306	
31	79956.884	479932.975	
40	40982.397	527358.478	
		10^{16}	
		10^{16}	

RATIO OF CLOCK TIME TO SYSTEM TIME IS 0.99999984

SYSTEM NO. J-12
VEHICLE NO. 1605
MISSION NO. 1009
CAMERA NOS. 154-155

[redacted]

HORIZON LENS SETTINGS (Viewed from top of vehicle inflight)



[redacted]

[redacted]

SYSTEM NUMBER J-12
VEHICLE NUMBER 1605
MISSION NUMBER 1009
PANORAMIC CAMERA NUMBERS 154 AND 155
STELLAR/INDEX CAMERA NUMBER D56/54/56

PERFORMANCE ESTIMATE

SUB	PROG		CAM NO.	PAN FR.	SI FR	LAT. ON	LAT. OFF	TIME ON ZD	TIME ON ST	TUR NO	DUR SEC.	SOLAR SEC	SOLAR ON	SOLAR OFF	EXPOS. ON	EXPOS. OFF
LAUNCH			154	80	11											
LAUNCH			155	81												
1	2	0	154	15	02	252	249	06	2739	10	3	2135	37	46	46	3.5	3.5
1	2	0	155	15		253	250	06	2739	10	3	2135	37	46	46	3.5	3.5
6	9	1	154	141	20	273	251	0629	621	9	4	1784	348	38	46	3.5	3.1
6	9	1	155	140		274	252	0629	621	9	4	1784	348	37	46	3.5	3.1
6	9	2	154	70	10	242	231	0630	112	9	4	2275	158	46	45	3.1	3.0
6	9	2	155	70		243	232	0630	112	9	4	2275	158	46	45	3.1	3.1
7	6	1	154	127	18	257	237	0635	328	9	4	2042	294	45	46	3.2	3.0
7	6	1	155	126		258	238	0635	328	9	4	2042	294	44	46	3.2	3.1
8	7	1	154	72	11	272	261	0640	532	9	4	1841	179	38	43	3.5	3.3
8	7	1	155	71		273	262	0640	532	9	4	1841	179	38	43	3.5	3.3
8	7	2	154	85	12	258	245	0640	749	9	4	2058	198	44	46	3.2	3.1
8	7	2	155	84		259	246	0640	749	9	4	2058	198	44	46	3.2	3.1
8	7	3	154	37	05	242	236	0640	999	9	4	2308	82	46	46	3.1	3.1
8	7	3	155	36		243	237	0640	999	9	4	2308	82	46	46	3.1	3.1
9	9	0	154	12	02	139	143	0644	993	9	4	861	53	-3	-0	6.5	6.3
9	9	0	155	12		138	141	0644	993	9	4	861	53	-4	-2	6.5	6.3
9	9	1	154	115	16	261	244	0646	153	9	4	2022	268	43	46	3.2	3.1
9	9	1	155	114		262	244	0646	153	9	4	2022	268	43	46	3.2	3.1
10	6	1	154	31	05	302	307	0652	533	9	4	2961	83	29	26	3.6	3.8
10	6	1	155	31		301	306	0652	533	9	4	2961	83	30	26	3.6	3.8
17	3	1	154	44	06	316	324	07	4443	9	4	3190	131	24	18	3.8	4.2
17	3	1	155	44		315	323	07	4443	9	4	3190	131	25	18	3.8	4.2
20	3	1	154	46	07	276	270	0719	374	9	4	1804	114	36	40	3.4	3.3
20	3	1	155	46		277	270	0719	374	9	4	1804	114	35	40	3.4	3.3
20	3	2	154	45	06	253	247	0719	748	9	4	2177	101	48	49	3.1	3.0
20	3	2	155	45		254	247	0719	748	9	4	2177	101	48	49	3.1	3.0
21	3	1	154	34	05	255	250	0725	175	9	4	2165	76	47	49	3.1	3.1
21	3	1	155	33		255	250	0725	175	9	4	2165	76	47	49	3.1	3.1
21	3	2	154	156	22	247	223	0725	289	9	4	2279	357	49	47	3.1	3.1
21	3	2	155	155		248	224	0725	289	9	4	2279	357	49	47	3.1	3.1
22	6	1	154	128	18	269	250	0730	384	9	4	1935	303	41	49	3.3	3.1
22	6	1	155	128		270	251	0730	384	9	4	1935	303	40	49	3.3	3.1
23	3	1	154	43	07	270	264	0735	809	9	4	1920	105	40	44	3.4	3.3
23	3	1	155	43		271	265	0735	809	9	4	1920	105	39	43	3.4	3.3
23	3	2	154	37	05	260	254	0735	984	9	4	2096	86	46	48	3.2	3.2
23	3	2	155	37		260	255	0735	984	9	4	2096	86	45	47	3.2	3.2
23	3	3	154	50	07	251	243	0736	120	9	4	2232	114	49	50	3.1	3.1
23	3	3	155	49		251	244	0736	120	9	4	2232	114	48	50	3.2	3.1
24	5	1	154	106	15	272	257	0741	216	9	4	1889	257	39	47	3.4	3.1
24	5	1	155	105		273	257	0741	216	9	4	1889	257	38	46	3.4	3.2

[redacted]

[redacted]

[redacted]

24	5	2	154	67	10	254	244	0741509	9	4	2182	152	48	50	3.1	3.0
24	5	2	155	66		255	245	0741509	9	4	2182	152	47	50	3.1	3.1
25	3	0	154	12	01	139	142	0745675	9	4	909	54	-7	-4	6.6	6.3
25	3	0	155	12		137	140	0745675	9	4	909	54	-8	-5	6.6	6.3
25	3	1	154	49	07	260	252	0746866	9	4	2100	117	46	48	3.3	3.2
25	3	1	155	49		261	253	0746866	9	4	2100	117	45	48	3.3	3.2
30	1	1	154	36	06	233	228	0774477	9	4	2485	84	49	48	3.2	3.2
30	1	1	155	36		234	228	0774477	9	4	2485	84	50	48	3.2	3.2
37	10	1	154	116	16	266	249	0825670	9	4	2029	271	42	49	3.2	3.1
37	10	1	155	115		267	250	0825670	9	4	2029	271	42	49	3.2	3.1
37	10	2	154	100	14	236	221	0826125	9	4	2484	232	50	46	3.1	3.2
37	10	2	155	100		237	222	0826125	9	4	2484	232	50	46	3.1	3.2
38	3	1	154	70	10	263	253	0831159	9	4	2079	164	44	48	3.2	3.1
38	3	1	155	70		264	254	0831159	9	4	2079	164	43	48	3.2	3.1
38	3	2	154	50	08	244	237	0831448	9	4	2368	114	50	50	3.1	3.1
38	3	2	155	50		245	238	0831448	9	4	2368	114	50	50	3.1	3.1
39	8	1	154	43	06	260	254	0836648	9	4	2130	99	45	48	3.2	3.1
39	8	1	155	43		261	255	0836648	9	4	2130	99	45	47	3.2	3.1
39	8	2	154	88	12	249	236	0836815	9	4	2297	203	49	50	3.1	3.1
39	8	2	155	87		250	237	0836815	9	4	2297	203	49	50	3.1	3.1
40	3	0	154	12	02	139	142	0840913	9	4	958	54	-7	-4	6.6	6.3
40	3	0	155	12		137	141	0840913	9	4	958	54	-8	-5	6.6	6.3
40	3	1	154	50	07	262	254	0842071	9	4	2115	117	45	48	3.2	3.2
40	3	1	155	49		262	255	0842071	9	4	2115	117	44	47	3.3	3.2
40	3	2	154	50	07	247	239	0842299	9	4	2343	115	49	50	3.1	3.1
40	3	2	155	50		247	240	0842299	9	4	2343	115	49	50	3.2	3.2
41	4	1	154	83	12	257	244	0847590	9	4	2197	189	47	50	3.1	3.0
41	4	1	155	82		257	245	0847590	9	4	2197	189	46	50	3.1	3.1
46	2	1	154	36	05	241	236	0875027	9	4	2438	83	50	50	3.1	3.2
46	2	1	155	36		242	237	0875027	9	4	2438	83	50	50	3.1	3.2
47	2	1	154	56	08	239	231	0880497	9	4	2469	130	50	49	3.1	3.2
47	2	1	155	55		240	232	0880497	9	4	2469	130	50	49	3.2	3.2
48	2	1	154	37	06	172	177	0884977	9	4	1482	113	19	25	4.4	4.0
48	2	1	155	37		171	177	0884977	9	4	1482	113	18	24	4.3	4.0
49	2	1	154	37	05	271	266	09 4483	9	4	1949	90	39	42	3.4	3.3
49	2	1	155	37		272	267	09 4483	9	4	1949	90	39	42	3.4	3.3

AAA BB C DDD EEE FF GHH GII JJKKKKK LL 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)
E EST. NO OF PAN FRAMES, BASED ON COUNTER READINGS INFLITE
F EST. NUMBER OF STELLAR/INDEX FRAMES
G QUADRANT
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

[redacted]

[redacted]

[redacted]

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 2.645 STELLAR X 0.099,INDEX X 0.198

NOTES.
1) REQUESTED COVERAGE NOT OBTAINED ON REV 6
TIMER HAD NOT BEEN RESET FOR ORBIT
2) OPERATIONS IN REVS 47,48, AND 49 SHOW LATITUDES
DIFFERENT FROM NOMINAL BECAUSE OF RECOVERY RESET
3) LAST 5 FRAMES OF 49-2 1 WITH B MSN CAPSULE

J-12 TIME CORRELATION VTS DATA

ORBIT	CLOCK TIME	COR SYS TM
9	358634.201	45058.100
16	398320.352	84744.257
25	445719.306	45743.214
31	479932.975	79956.884
40	527358.478	40982.397

RATIO OF CLOCK TIME TO SYSTEM TIME=0.99999984

J- 12 RAMP R- 9 A- 4
R= 0.2925 A= 0.1523 RAMP PERIOD= 4800

TIME	PERIOD	CPS	GAV
0	7.133	0.1402	0.01268
100	7.082	0.1412	0.01277
200	6.936	0.1442	0.01304
300	6.707	0.1491	0.01349
400	6.414	0.1559	0.01410
500	6.079	0.1645	0.01488
600	5.722	0.1748	0.01581
700	5.360	0.1866	0.01688
800	5.005	0.1998	0.01807
900	4.668	0.2142	0.01937
1000	4.355	0.2296	0.02077
1100	4.067	0.2459	0.02224
1200	3.805	0.2628	0.02377
1300	3.571	0.2801	0.02533
1400	3.343	0.2991	0.02706
1500	3.104	0.3222	0.02914
1600	2.902	0.3446	0.03117
1700	2.734	0.3658	0.03308
1800	2.596	0.3852	0.03484
1900	2.484	0.4025	0.03641
2000	2.397	0.4173	0.03774
2100	2.330	0.4291	0.03881
2200	2.284	0.4378	0.03959
2300	2.257	0.4430	0.04007
2400	2.248	0.4448	0.04023
2500	2.257	0.4430	0.04007
2600	2.284	0.4378	0.03959
2700	2.330	0.4291	0.03881

[redacted]

[redacted]

2800	2.397	C.4173	0.03774
2900	2.484	0.4025	0.03641
3000	2.596	0.3852	0.03484
3100	2.734	0.3658	0.03308
3200	2.902	0.3446	0.03117
3300	3.104	0.3222	0.02914
3400	3.343	C.2991	0.02706
3500	3.571	0.2801	0.02533
3600	3.805	0.2628	0.02377
3700	4.067	0.2459	0.02224
3800	4.355	0.2296	0.02077
3900	4.668	0.2142	0.01937
4000	5.005	C.1998	0.01807
4100	5.360	0.1866	0.01688
4200	5.722	0.1748	0.01581
4300	6.079	0.1645	0.01488
4400	6.414	0.1559	0.01410
4500	6.707	0.1491	0.01349
4600	6.936	0.1442	0.01304
4700	7.082	0.1412	0.01277
4800	7.133	0.1402	0.01268

J- 12 RAMP R-10 A- 3

R= 0.2795 A= 0.1658 RAMP PERIOD= 4800

TIME	PERIOD	CPS	GAV
0	8.795	0.1137	0.01028
100	8.712	0.1148	0.01038
200	8.472	0.1180	0.01068
300	8.104	0.1234	0.01116
400	7.645	0.1308	0.01183
500	7.135	0.1402	0.01268
600	6.608	0.1513	0.01369
700	6.090	0.1642	0.01485
800	5.600	0.1786	0.01615
900	5.148	C.1943	0.01757
1000	4.738	0.2111	0.01909
1100	4.371	0.2288	0.02069
1200	4.046	0.2472	0.02235
1300	3.760	0.2660	0.02405
1400	3.488	0.2867	0.02593
1500	3.207	0.3118	0.02820
1600	2.974	0.3362	0.03041
1700	2.784	0.3592	0.03249
1800	2.629	0.3804	0.03441
1900	2.505	0.3993	0.03611
2000	2.408	C.4153	0.03756
2100	2.335	0.4282	0.03873
2200	2.285	0.4376	0.03958
2300	2.255	0.4434	0.04010
2400	2.246	C.4453	0.04028
2500	2.255	C.4434	0.04010
2600	2.285	0.4376	0.03958
2700	2.335	0.4282	0.03873
2800	2.408	0.4153	0.03756
2900	2.505	C.3993	0.03611

[redacted]

3000	2.629	0.3804	0.03441
3100	2.784	0.3592	0.03249
3200	2.914	0.3362	0.03041
3300	3.207	0.3118	0.02820
3400	3.488	0.2867	0.02593
3500	3.760	0.2660	0.02405
3600	4.046	0.2472	0.02235
3700	4.371	0.2288	0.02069
3800	4.738	0.2111	0.01909
3900	5.148	0.1943	0.01757
4000	5.600	0.1786	0.01615
4100	6.090	0.1642	0.01485
4200	6.608	0.1513	0.01369
4300	7.135	0.1402	0.01268
4400	7.645	0.1308	0.01183
4500	8.104	0.1234	0.01116
4600	8.472	0.1180	0.01068
4700	8.712	0.1148	0.01038
4800	8.795	0.1137	0.01028

[redacted]