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25X1

TOP SECRET [redacted] 182036Z

OUT 51324 25X1

25X1

1963 JUN 19 01 35Z

19 JUN 1963

HFS
CS
ACS
CPS
FILE

1. THE FOLLOWING TECHNICAL INFORMATION NECESSARY FOR THE REDUCTION OF QUANTITATIVE DATA OBTAINED FROM PHOTOGRAPHY OF MISSION 9054 IS FORWARDED FOR YOUR INFORMATION.

A. THIS PHOTOGRAPHY INVOLVES THE USE OF EIGHT CAMERAS: TWO MAIN CAMERAS, FOUR HORIZON CAMERAS, STELLAR CAMERA AND A INDEX CAMERA.

B. OPERATIONAL FOCAL LENGTHS

		FWD UNIT	AFT UNIT
(1)	MAIN LENS	609.625 MM	608.965 MM
(2)	PORT HORIZON LENS	89.20 MM	89.20 MM
(3)	STARBOARD HORIZON LENS	89.25 MM	89.20 MM
(4)	STELLAR CAMERA	83.70 MM	
(5)	INDEX CAMERA	38.40 MM	

DEFINITION: "OPERATIONAL FOCAL LENGTH" IS DEFINED AS THE DISTANCE FROM THE MAIN LENS NODAL POINT TO THE FILM SURFACE AS MEASURED ON THE LENS BENCH, AND THE DATA REDUCED FOR A VACUUM CONDITION. (OPERATIONAL FOCAL LENGTH IS EQUIVALENT FOCAL LENGTH CORRECTED FOR ENVIRONMENT.)

C. LENS DISTORTION (PIN CUSHION)

(1)	MAIN LENS	FWD UNIT	AFT UNIT
	3 DEGREES	.007 MM	.002 MM
	2 DEGREES	.003 MM	.001 MM

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GROUP 1
Excluded from automatic downgrading and declassification

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1 DEGREE	.001 MM	.000 MM
0 DEGREE	.000 MM	.000 MM
359 DEGREES	.001 MM	.000 MM
358 DEGREES	.003 MM	.001 MM
357 DEGREES	.008 MM	.002 MM
(2) PORT HORIZON CAMERA		
(RADICAL DISTORTION)		
10 DEGREES	.010 MM	.009 MM
20 DEGREES	0.042 MM	.055 MM
(TANGENTIAL DISTORTION)		
MAXIMUM VECTOR	.004 MM	.012 MM
(3) STARBOARD HORIZON CAMERA		
(RADIAL DISTORTION)		
10 DEGREES	.013 MM	.009 MM
20 DEGREES	.054 MM	.045 MM
(TANGENTIAL DISTORTION)		
MAXIMUM VECTOR	.012 MM	.005 MM

D. DEPRESSION ANGLES OF HORIZON CAMERAS RELATIVE TO NOMINAL MAIN CAMERA.

(1) FWD UNIT

A. PORT HORIZON CAMERA - 14 DEGREES 49' 42"

B. STARBOARD HORIZON CAMERA - 14 DEGREES 50' 01"

(2) AFT UNIT

A. PORT HORIZON CAMERA - 14 DEGREES 30' 20"

B. STARBOARD HORIZON CAMERA - 14 DEGREES 50' 06"

E. FILTER AND EXPOSURE DATA

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(1)	MAIN CAMERAS	FWD UNIT	AFT UNIT
	FILTER	WRATTEN 21	WRATTEN 21
	APERTURE	F 3.5	F 3.5
	SLIT WIDTH	.200"	.200"
(2)	PORT HORIZON CAMERAS		
	FILTER	WRATTEN 25	WRATTEN 25
	APERTURE	F 6.8	F 6.8
	EXPOSURE	1/100 SEC.	1/100 SEC.
(3)	STARBOARD HORIZON CAMERAS		
	FILTER	WRATTEN 25	WRATTEN 25
	APERTURE	F 6.8	F 6.8
	EXPOSURE	1/100 SEC.	1/100 SEC.
(4)	STELLAR CAMERA		
	FILTER	NONE	
	APERTURE	F 1.9	
	EXPOSURE	2 SEC.	
(5)	INDEX CAMERA		
	FILTER	WRATTEN 21	
	APERTURE	F 4.5	
	EXPOSURE	1/500 SEC.	

F. RESOLUTION CAPABILITIES

(1) MAIN LENS

A. FWD UNIT - 143 (L/MM AVG)

B. AFT UNIT - 151 (L/MM AVG)

(2) PORT HORIZON CAMERA

A. FWD UNIT - 37.4 (L/MM AVG)

B. AFT UNIT - 37.6 (L/MM AVG)

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(3) STARBOARD HORIZON CAMERA

A. FWD UNIT - 36.0 (L/MM AVG)

B. AFT UNIT - 36.1 (L/MM AVG)

(4) INDEX CAMERA - 70.2 (L/MM AWAR)

G. TIMING MARKS

FREQUENCY MARKS WILL APPEAR ON THE FILM. RATE OF TIMING MARKS WILL BE 200 CYCLES PER SECOND.

H. FILM DATA

(1) MAIN CAMERAS - SO 132

(2) HORIZON CAMERAS - SO 132

(3) STELLAR CAMERA - SO 102/130

(4) INDEX CAMERA - SO 130

I. CALIBRATED ANGLES OF CAMERAS

1. CALIBRATED CONVERGENT ANGLE OF MAIN CAMERAS - 29 DEGREES 52' 30"

2. CALIBRATED ANGLE BETWEEN STELLAR AND INDEX CAMERAS - NOT AVAILABLE AT THIS TIME.

3. STELLAR

X EQUAL PLUS .121 MM

Y EQUAL PLUS .033 MM

NOTE: VIEWING POSITIVE, EMULSION UP, COORDINATE SYSTEM IS DEFINED AS PLUS "Y" IS IN DIRECTION OF FLIGHT. PLUS "X" IS TO THE LEFT AND PERPENDICULAR TO LINE OF FLIGHT.

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4. INDEX

X EQUAL PLUS .015 MM

Y EQUAL PLUS .013 MM

NOTE: VIEWING POSITIVE, EMULSION UP, PLUS "X" IN DIRECTION OF FLIGHT AND MINUS "Y" TO THE RIGHT AND AND PERPENDICULAR TO DIRECTION OF FLIGHT.

J, IMAGE MOTION COMPENSATION DATA

1. RAMP DATA (30 MINUTE DURATION)

RAMP NO. 2

FWD UNIT	BEGINNING	END
CYCLE PERIOD (SEC)	5.74	2.36
IMC RATE ("/SEC)	.352	.858
SCAN RATE ("/SEC)	26.27	63.90
AFT UNIT		
CYCLE PERIOD (SEC)	5.76	2.37
IMC RATE ("/SEC)	.351	.854
SCAN RATE ("/SEC)	26.18	63.63

RAMP 2 PASSES

ALL PASSES USE RAMP 2

K. PROGRAM TIME DATA

PASS	CAMERA	CAMERA ON TIME (ZEBRA TIME) DAY	HOUR	MIN.	PROGRAM ON TIME UP RAMP (SEC)	PROGRAM DURATION (SEC)
1A1	FWD	13	01	10	410	93
1A1	AFT	13	01	10	410	93

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6.

1A2	FWD	13	01	17	780	86
1A2	AFT	13	01	17	780	86
2A1	FWD	13	02	41	402	231
2A1	AFT	13	02	41	402	231
2D1	FWD	13	02	54	1189	157
2D1	AFT	13	02	54	1189	157
4M1	FWD	13	05	50	1018	101
4M1	AFT	13	05	50	1018	101
4D1	FWD	13	05	55	1294	89
4D1	AFT	13	05	55	1294	89
4D2	FWD	13	06	00	1607	114
4D2	AFT	13	06	00	1607	114
6D1	FWD	13	09	00	1520	141
6D1	AFT	13	09	00	1520	141
6D2	FWD	13	09	04	1760	154
6D2	AFT	13	09	04	1760	154
6D3	FWD	13	09	14	-257	236
6D3	AFT	13	09	14	-257	236
7D1	FWD	13	10	28	1406	114
7D1	AFT	13	10	28	1406	114
7D2	FWD	13	10	32	1609	262
7D2	AFT	13	10	32	1609	262
8D1	FWD	13	12	01	1554	201
8D1	AFT	13	12	01	1554	201

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9D1	FWD	13	13	35	1642	186
9D1	AFT	13	13	35	1642	186
9D2	FWD	13	13	39	1896	124
9D2	AFT	13	13	39	1896	124
15A1	FWD	13	22	20	570	144
15A1	AFT	13	22	20	570	144
16A1	FWD	13	23	53	581	99
16A1	AFT	13	23	53	581	99
17A1	FWD	14	01	23	552	129
17A1	AFT	14	01	23	552	129
18A1	FWD	14	02	52	543	373
18A1	AFT	14	02	52	543	373
18D1	FWD	14	03	07	1469	103
18D1	AFT	14	03	07	1469	103
23D1	FWD	14	10	40	1450	114
23D1	AFT	14	10	40	1450	114
23D2	FWD	14	10	43	1606	291
23D2	AFT	14	10	43	1606	291
25D1	FWD	14	13	45	1641	341
25D1	AFT	14	13	45	1641	341
25D2	FWD	14	13	52	2059	100
25D2	AFT	14	13	52	2059	100
30A1	FWD	14	21	01	616	113
30A1	AFT	14	21	01	616	113

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30A2	FWD	14	21	07	933	135
30A2	AFT	14	21	07	933	135
31A1	FWD	14	22	33	622	98
31A1	AFT	14	22	33	622	98
32A1	FWD	15	00	04	625	97
32A1	AFT	15	00	04	625	97
33A1	FWD	15	01	35	644	129
33A1	AFT	15	01	35	644	129
33A2	FWD	15	01	41	1043	109
33A2	AFT	15	01	41	1043	109
34A1	FWD	15	03	04	561	237
34A1	AFT	15	03	04	561	237
34A2	FWD	15	03	09	833	98
34A2	AFT	15	03	09	833	98
34D1	FWD	15	03	19	1436	134
34D1	AFT	15	03	19	1436	134
36D1	FWD	15	06	17	1309	110
36D1	AFT	15	06	17	1309	110
36D2	FWD	15	06	22	1571	86
36D2	AFT	15	06	22	1571	86
36D3	FWD	15	06	25	1754	204
36D3	AFT	15	06	25	1754	204
39D1	FWD	15	10	52	1485	113
39D1	AFT	15	10	52	1485	113
39D2	FWD	15	10	55	1640	124
39D2	AFT	15	10	55	1640	124

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39D3	FWD	15	10	58	1817	109
39D3	AFT	15	10	58	1817	109
44A1	FWD	15	18	13	644	118
44A1	AFT	15	18	13	644	118
44A2	FWD	15	18	16	833	89
44A2	AFT	15	18	16	833	89
46A1	FWD	15	21	14	629	89
46A1	AFT	15	21	14	629	89
47A1	FWD	15	22	44	614	164
47A1	AFT	15	22	44	614	164
47A2	FWD	15	22	49	946	108
47A2	AFT	15	22	49	946	108
48A1	FWD	AFT CAMERA "MONO-MODE"				
48A1	AFT	16	00	16	676	113
50A1	FWD	16	03	17	689	102
50A1	AFT	16	03	17	689	102
50A2	FWD	16	03	21	877	122
50A2	AFT	16	03	21	877	122
50D1	FWD	16	03	30	1469	88
50D1	AFT	16	03	30	1469	88
52D1	FWD	16	06	29	1334	67
52D1	AFT	16	06	29	1334	67
52D2	FWD	16	06	31	1437	85
52D2	AFT	16	06	31	1437	85
52D3	FWD	16	06	36	1761	248

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52D3	AFT	16	Ø6	36	1761	243
55D1	FWD	16	11	Ø6	1624	358
55D1	AFT	16	11	Ø6	1624	358
55D2	FWD	16	11	12	2Ø16	113
55D2	AFT	16	11	12	2Ø16	113
56D1	FWD	16	12	4Ø	1845	155
56D1	AFT	16	12	4Ø	1845	155
59A1	FWD	16	16	56	811	114
59A1	AFT	16	16	56	811	114
61A1	FWD	16	19	54	653	113
61A1	AFT	16	19	54	653	113
63A1	FWD	16	22	56	667	164
63A1	AFT	16	22	56	667	164
63A2	FWD	16	23	ØØ	951	89
63A2	AFT	16	23	ØØ	951	89

L. REMARKS

MINUS VALUES ENTERED IN PASS 6D3 INDICATE THAT CAMERA OPERATIONS STARTED PRIOR TO THE START OF THE RAMP. VALUES AS INDICATED ARE CORRECT.

T O P S E C R E T [redacted] 25X1

END OF MESSAGE

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