# APOLLO 12 PHOTOGRAPHY 70-mm, 16-mm, AND 35-mm FRAME INDEX



NATIONAL SPACE SCIENCE DATA CENTER
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APOLLO 12 PHOTOGRAPHY 70-mm, 16-mm, and 35-mm Frame Index

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### INTRODUCTION

This index contains supporting information about the 70-mm, 16-mm, and 35-mm photography taken during the Apollo 12 mission.

For each 70-mm frame, the index presents information on: (1) the focal length of the camera, (2) the photo scale at the principal point of the frame, (3) the selenographic coordinates at the principal point of the frame, (4) the percentage of forward overlap of the frame, (5) the sun angle (medium, low, high), (6) the quality of the photography, (7) the approximate tilt (minimum and maximum) of the camera, and (8) the direction of tilt. A brief description of each frame is also included.

The index to the 16-mm sequence photography includes information concerning the approximate surface coverage of the photographic sequence and a brief description of the principal features shown. A "remarks" column is included to indicate: (1) if the sequence is plotted on the photographic index map and (2) the quality of the photography. The pictures taken using the lunar surface closeup stereoscopic camera (35 mm) are also described in this same index format.

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### APOLLO 12 HASSELBLAD PHOTOGRAPHY (70 mm)

### MAGAZINE Q

### Frames AS12-50-7325 through 7459

This color (SO-368) magazine includes pictures taken just after translunar injection (TLI) and during lunar orbit 3. Three lenses -- 80, 250, and 500 mm -- were used. Earth, moon, spacecraft parts, and spacecraft interior are included. Targets of opportunity (TO) covered (or partially covered) are: 3, 4, 5, 10a, 11, 12, 18, 23, 26, 27, 30, 32, 34, and 35.

In general, the quality of the images is good, although camera movement and positioning of the camera axis near the sun caused nine frames to be nearly useless. Most lunar topography and all earth frames are oblique (or contain the whole sphere); five frames of Petavius-B are near vertical; 12 frames (not numbered) were skipped.

Five usable frames document the smear and liquid droplet movement on the circular hatch window and the left (square) window of the command service module (CSM) and were taken shortly after TLI. Apparently, this liquid was largely outside the innermost glass pane.

High-angle obliques (such as the Eratosthenes and Humbolt frames)
tend toward a more reddish brown color, especially when the illumination
is from a low to a medium angle.

APOLLO 12 PHOTOGRAPHY
Magazine Q Film 368Time Reference GET = GMT

Frame #	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
AS-12-50 7325	80	1,15,000,000		88W		Med	Good		S E	Yucatan, Lake Mich. Gulf of Mex. clouds
7326	80	4	spa	ce		Med	good	70°	NW	Earth,SLA near horizon So.Amer.,Mexico
7327	250		*******************************				fair			LM,SIVB,Prob H <sub>2</sub> O drops
7328	16.		MARIO (1000000000000000000000000000000000000				fair			11
7329	.11						fair	00-07 L		11
7330										blank
7331	11						good			Earth, <del>l</del> illuminated, N&S America
·7332	11						good		·	11
7333	J!				***************************************		good			11
7334	11						good			"
7335	i!						good			<b>8-</b> IV-B
7336	1!						good			"
7337	!'		~~~~		•••••••••••••••••••••••••••••••		good			"
7338	11					Anti-	good			½Earth,S.Am
7339	u						good			ੈEarth,S.Am

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Frame	Camera # f Length	Approx. Photo Scale	Prin Po	icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
# AS-12-5	D mm	i noto codic	Lat	Long	J	, iii gi o		Min — Max	Tilt	
7340	250						good			G TU D
7341	11						good			S-IV-B
7342	<b>91</b>						11			½Earth,S.Am
7343	. 11						11			S-IV-B
7344	11						11			S-IV-B
7345	9						11			S-IV-B,LMedge
7346	11						11			11
7347	ļ t						11			"ీైEarth,S.Am
7348	11						11			11
7349	11						11			S-IV-B LM edge
7350	71						11			11
7351	**						11			½Earth,S.Am
7352	1:						11			"
7353	11						11			11
7354	80						11			ocean 1/3 earth illuminated.

Magazine	Q	Film	368
Time Referenc	e GET	= G M	T

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7355	mm 80		Lat	Long			good	IVIII		1/3 Earth illuminated, ocean
ללכו	6U			***************************************			good			ocean
7356	80			:			11			11
7357	80						11			11
7358	500						11			1/3 Earth,Australia on horizon
7359	500						11			!!
7360	500						11			
7361	500			<b></b>			11			II.
7362	250						11			11
7363	250						11 .	·		"
7364	2 <i>5</i> 0						11			11
7365	250						poor			1/3 Earth,Australia, brownish cast
7366	250						fair			1/4 Earth illuminated
7367	250						fair			l/4 Earth illuminated sunglint
7368	80						poor.			fouled hatch window, streaks go away from CMS cone apex
7369	80						fair			fouled hatch window, streaks go away from CMS cone apex

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Time Reference — GET \_\_\_\_\_ = GMT \_\_\_\_\_

	Frame #	Camera # f Length	Approx. Photo Scale		cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
l	#	mm Length	Photo Scale	Lat	Long	0/ L	Aligie	Quality	Min — Max	Tilt	
	7370	80						fair			sq.left window fouled max.liquid is along edge away from cone apex
	7371	80						fair			"
	7372	80						good	·		left window; max liquid edge is away from cone apex
	7373	. 80						poor			LM thrusters
	7374	80						fair			Edge of LM
	7375	80					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	poor			Window, Camera Movement
	7376	80	·					poor			"
M Managaran	.7377	80						fair			1/5 Earth, terminator
	7378	80						fair	·		"
	7379	80						11			11
	7380	80						11			"
	no number	250		***************************************				very poor			3 under-exposed frames of no use; probably earth
	7381	11						good			1/5 Earth terminator probably W.Australia
	7382	"						"			"
	7383	"						11			11

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm		Lat	Long				Min — Max	Tilt	
7384	250			·····			good			1/5 Earth terminator probably W. Australia
7385	11						11			1/5 Earth, terminator
7386	11						11			11
7387	- 11						11			11
7388	11						11			II .
7389	11						poor			pre-Rev. 1, moon darkside
7390	11						11	Salar Sa		11
7391	11	-					fair			1/4 Earth illuminated
7392	11						"	No constitution of the con		11
7393	11						11			11
7394	11						11			11
7395	11						11			11
7396	80						poor			window edge,1/4 Earth
7397	250						poor			window streak; shutter pentagon
7398	11						11			smear; shutter image

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Frame #	Camera # f Length	Approx. Photo Scale		icipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	1 11010 00410	Lat	Long	07 63	79.0		Min — Max	Tilt	
7399	250						Poor			Smear; shutter image
7400	1:						11			11
7401	11						11			11
7402	500		9N	7E		Low	Fair	50 <b>–</b> 65 <sup>0</sup>	N	Triesnecker-Hyginus Area TO-21, 22; Rev. 1
7403	. "		4N	11E		11	11	11	11	Triesnecker-Agrippe 1 Center Crater,TO-21,22
7404	11					Med.	11	60-75 <sup>0</sup>	SE	Between long 140E & 160E: Rev. 2
7405	250		IN	SPACE	80	11	Good	60-70 <sup>0</sup>	N	Mare IX, about 140°E Rev. 2
7406	11		IN	SPACE	80	11	11	11	11	11
7407	11		IN	SPACE	11	11	11	11	11	Mare IX, about 140 <sup>0</sup> E Rev.2. red window ed <i>g</i> e
7408	11	1:4.000.000	4N	120E	60	1.	11	50-60°	1:	Crater 2ll near horizon Rev.2; Partial TO-4
7409	11	11	5 N	120.5E	11	11	11	11	11	11
7410	<b>50</b> 0	1:5,000,000	32S	108E		High	Cood	65 <b>-</b> 75 <sup>0</sup>	g	West of Mare III; Rev. 2
7411	11	1,	32S	103E		11	11	11	11	11
7412	11	11	28S	84E	25	11	11	50–60°	SE	East edge of Humbolt; TO-10a; Rev. 2
7413	- 11	1"	28.5S	81E		11	Fair	11	11	Humbolt, S Mare on Horizon Rev 2:TO-10a

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Frame #	Camera # f Length	Approx. Photo Scale		ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm	I moro occio	Lat	Long	0/ L	Allgle	Quality	Min — Max	Tilt	
7414	500	1:5,000,000	29S	78E	25	H <b>i</b> gh	Good	50-60°	S	West edge of Humbolt TO-10a; R <sub>e</sub> v. 2
7415	11	"	28S	80.5E	11	11	11	11	SE	Humbolt: Mare Australe on horizon; TO-10a Rev. 2
7416	11	11	11	11	11	11	11	11	11	"
7417	11	11	"	"	11	11	11		11	"
7418	11	11	11	11	11	11	11	11	11-	
7419	11	11	27 <b>.</b> 5S	76.5E	1.	11	11	11	11	West edge of Humbolt; TO-10a; Rev. 2
7420	. 11	11	27 <b>.</b> 5S	11	11	11	11	"	11	"
7421	11	11	11	!!	"	11	11	11	11 .	11
7422	11	1:4,600,000	16.5S	41E	90	Med	!'	7-15 <sup>0</sup>	S	Bohenberger area; TO-12; Rev. 2
71.23	11	11	11	1,	11	11	11	1.	11	P. G.
7424	1"	11	11	ľ	11	,,	1!	tī	1*	"
7425	250	11	14S	35E	30	11	11	10 <b>-</b> 15 <sup>0</sup>	SW	Mare Nectaris;≌GET 36:17, Rev. 2
7426	71	1.	14.5S	33E	1-	11	•	11	1.	,,
7427	ţ:	1:1,380,000	10.5S	18E	90	11	Fair	15-24°	SE	Descartes-Kant Area; TO-18,Alt. 158N. Mi.
7428	11	11	8S	11	11		11	11	SE	GET ≥ 86:22

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Frame #	Camera # f Length	Approx. Photo Scale	6	cipa! int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
π	mm	1 11010 Scale	Lat	Long	0, 5	Allgic	Quu, III y	Min — Max	Tilt	
										Hipparchus, Albategnius TO-23; GET ≅ 86:23
7429	250	1:1,380,00	<b>8</b> S	7.5E	90	med	good	5 <b>-</b> 10°	SE	10-25; GEI = 60:25
7430	11	11	<b>8</b> S	7.5E	90	11	11	5 <b>-</b> 10°	SE	11
7431	11	1:1,350,000	4S	6.5E	95	11	11	20 <b>–</b> 25°	SE	Herschel in center;Rev 2 GET ≅ 86:24;TO 26, 27
7432	. 11	11	4S	6.5E	95	11	"	11	11	11
								***************************************		Eratosthenes; Rev. 2
7433	500	1:2,000,000	15N	11.5W		low	fair	65 <b>-</b> 75°	N	GET ≅ 84:30
7434	11	11	16N	4.5W		11	,,	70 <b>–8</b> 0°	NE	Apenninus Mts.,Rev. 2 Bode Rill II;GET ≅86:26
1424	"		TOM	4.5W				70 <b>–</b> 80°	NE	Lalande, Herschel & Ptolemaeus; TO-30,32;
7435	250	1:4,900,000	4S	7W		low	good	50 <b>-</b> 40°	NE	Rev. 2
7436	11	1:4,000,000	2.5S	14W	90	3-50	fair	8–14°	E	Gambart in North TO-34,35 Rev. 2
7437	11	11	11	11	11	11	11	11	11	"
7438	1!	11	11	"	11	11	11	11	11	Gambart in North: TO-34, 35, term.@west edge Rev. 2
7439	11	11	11	11	11	11	11	11	††	11
7110	11									Mare IX; limb
7440			in	space		med	good	860	N	Rev. 3
7441	11		11	11		11	11	11	11	11
7442	"	1:2,400,000	1 <i>5</i> S	130E	30	11	11	65 <b>–</b> 75°	SE	N.of Tsiolkovsky;partial coverage TO-3
7443	11	11	11	11	11	11	11	11	îî	"

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm		Lat	Long			<u> </u>	Min — Max	Tilt	about 90 N.M. NW of
7444	250	1:2,400,000	17S	122.5E	80	med	good	55 <b>–</b> 60°	SE	Tsiolkovsky TO-5
7445	11	"	11	123E	"	11	11	11	11	about 60 N.M. NW of Tsiolkovsky TO-5
7446	11 -	11				11	11		SW	long. 80E to 125E (?)
7447	11	11				11	11		11	11
7448	11	1:10,000,000	25S	84E		high	good	50–60°	S	Humbolt area
7449	11	11	24.5S	83E		11	11	11	S	"
7450	11	11	11	80.5E		11	11	11	11	11
7451	11	11	25S	80E		11	11	11	11	11
7452	1:	11	11	$77\mathrm{E}$		11	11	11	11	. 11
7453	. 1"	11	11	73.5E		11	11	11	11	11
7454	11	11	11	11		11	. 11	"	11	11
7455	80	1:1,376,00	188	61E	0	high	good	5 <b>-</b> 5°	S	Fast of Petavius B TO-11
7456	ļī	11	18.5S	59E	0	11	11	3 <b>-</b> 5°	S	Near Petavius B TO-11
7457	1!	11	19S	58.5E	10	11	11	11	11	11
7458	,,	11	19 <b>.</b> 5S	57E	10	11	11	11	11	''

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
	mm		Lat	Long				IVIIII IVIGA		
7459	80	1:1,376,000	19.5S	56E	5	high	good	3-50	S	Petavius B TO-11
no numbe	r									about 1/5 of a frame at end of roll.
							The numb	er of blank	frames, i	n groups of l, & 2, is:
										twelve (12)
			***************************************		***************************************					
										erelandering deur eingegegen der den eine von gebreite und er eine eine eine und erstellt diegen zugebate gehörden bekennt
										en inninitian var den anteriori estaturum a a contrantitizan para para para para para para para pa

### MAGAZINE R

## Frames AS12-51-7460 through 7588

Magazine R is 70-mm color photography of the lunar surface, plus some views of the earth. The photographs were taken from the command module (CM) at approximately 60 nautical miles orbital altitude. The majority of the photographs are oblique with a view on track or in a northerly direction. An 80-mm lens was used for all but 20 frames, which were recorded with a 250-mm lens. Photographic quality was good for 90 percent of the magazine. Eighty percent of the frames cover areas of the lunar surface on the near side, with 90 percent of these covering from 35° east longitude to 40° west longitude.

The following targets of opportunity are fully or partially covered: 7, 8, 9, 15, 23, 25, 26, 27, 29, 31, 32, 33, 34, 35, 36, 37, 39, 40, 42, 43, 44, 45, and 47.

Frame	# f Length			ncipal pint	Fwd O/L	Sun	Photo Quality	Approx. Tilt	Direction of	Description
**	nm mm	Photo Scale	Lat	Long	0/L	Angle	Quality	Min — Max	Tilt	
7460	80.	1,678,600	12°s	33 <sup>0</sup> E	0	H <b>i</b> gh	Good	30-40	N	Sea of Nectar, Crater Daguerre
7461	11	11	11	11	90%	"	11	"	11	11
7462	11	11	11.5%	32.5°E	70%	11	11	11	11	11
7463	T1	11	11°s	31 <sup>°</sup> E	50%	11	11	11	11	Crater Madler
7464	11	11	11	30 <sup>0</sup> E	70%	11	11	"	11.	11
7465	11	"	10.58	29 <sup>0</sup> E	60%	ıı	11	11	11	11
7466	11	11	11	28 <sup>0</sup> E	80%	11	11	11	11	Craters Theophilus and Madler
7467	11	11	10 <sup>0</sup> S	27 <sup>0</sup> E	70%	1!	11	11	11	Craters Theophilus & Theophilus B
7468	11	11	11	26.5°E	70%	11	11	11	11	Craters Theophilus & Theophilus B
7469	- 11	11	10.5°	25.5 <sup>0</sup> E	60%	11	11	11	11	11
7470	11	11	11	25 <sup>0</sup> E	90%	1!	11	11	11	" .
7471	11	1,880,100	14°s	3 <sup>0</sup> Е	0	Med	11	40-45	SW	Craters Albategnius and Parrot
7472	250	622,200	9.5°S	0	0	11	11	40-50	S	Crater Ptolemaeus
7473	יו	583,000	<b>8.</b> 5°S	ı°w	11	11	11	35–45	S	Crater Ptolemaeus A
7474	11	11	11	3 <sup>0</sup> W	11	11		35-45	C)	West side of Crater Ptolemaeus

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Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera #	Approx.		cipal oint	Fwd O/L	Sun	Photo	Approx. Tilt	Direction of	Description
117	f Length	Photo Scale	Lat	Long	07 L	Angle	Quality	Min — Max	Tilt	
7475	250	1,622,200	8.5°S	4 <sup>0</sup> W	50%	Med	Good	40-50	S	West Side of Crater Ptolemaeus
7476	"	969,200	L4.5°s	$7^{\circ}$ W		11	11	60-70	S	Craters Lassell and Alpetragius B
7477	11	1,041,100	1 <i>5</i> °S	8.5 <sup>0</sup> W		11	11	11	11	Craters Davy, Lassell, and Lassell C
7478	1!	1,126,100	L4.5 <sup>°</sup> S	9 <sup>0</sup> W		11	11	65–70	S	Craters Davy, Lassell and Lassell C
7479	11	11	14°s	9.5 <sup>0</sup> W		11	11	60-70	11	Sea of Clouds, Crater Lassell C
7480	11	503 <b>,</b> 100	2.5 <sup>°</sup> S	14 <sup>0</sup> W	0	Low	Poor	25 <b>-</b> 35	W	Area North of Fra Mauro, very dark
7481	"	767,100	9 <sup>0</sup> S	15 <sup>0</sup> W .		"	Fair	50-60	S	Craters Parry and Parry A
7482	11	11	8.5 <sup>0</sup> S	15 <sup>0</sup> W		11	11	"	S	11
7483	11	11	8 <sup>0</sup> S	16 <sup>0</sup> W		"	11	"	11	Craters Parry. Fra Maur
7484	11	"	7.5 <sup>0</sup> S	17 <sup>0</sup> W		11	11	"	11	Very dark- SE Rim of Fra Mauro '
7485	11	1,041,100	10.5 <sup>0</sup> S	7 <sup>0</sup> W	0	Med	Good	60-70	SW	Crater Davv. Davv
7486	l I					Low	Poor			Very Dark-Terminator Shot Not Plotted
7487	11					11	11			11
7488	11					11	11			11
7489	11						Good			Earth View

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Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale	8	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	1 Hoto Scare	Lat	Long	O / L	Kiigic		Min — Max	Tilt	· variable (1997)
7490	80				С	High	Poor			Sea of Fertility Not Plotted
7491	11				70%	11	11			Sea of Fertility Not Plotted
7492	11				0	11	11			11
7493	11				70%	11	11			11
7494	. 11	1,411,200	15 <sup>0</sup> S	4.9°E	0	11	Good	10-15	W	Sea of Fertility, Crater Colombo M
7495	11	1,454,200	11	11	95%	11	11	15-25	W	11
7496	11	1,517,100	11	48.5°E	90%	11	11	20 <b>-3</b> 0	W	Craters Columbo M and McClure A
7497	11	1,572,100	11	48 <sup>0</sup> E	90%	11	11	25-35	11	Craters Columbo M & East Rim of Colombo
7498	11	1,678,600	12 <sup>0</sup> S	19.5°E	0	11	11	30–40	††	Craters Kant, Cyrillus, B and Kant D
7499	11	11	"	11	95%	11	11	11	11	Craters Kant, Kant D, and Cyrillus B
7500	11	11	11	11	11	11	11	11	11	11
7501	11	2,184,900	9 <sup>0</sup> S	5.5°E	0	Med	11	50-55	11	Craters Hind, Halley Albategnius and Muller
7502	,,	11	11	5 <sup>0</sup> E	90%	11	11	11	. 11	Craters Hind, Halley Muller, & Ptolemaeus
7503	11	2,524,600	³°s	0.5°E	50%	11	11	55-60	1'	Craters Ptolemaeus Herschel & Müller
7504	1'	11		0.5 <sup>0</sup> W	90%	11	11	11	11	Craters Müller, Herschel and Ptolemaeus

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	,	Lat	Long				Min — Max	Tilt	
7505	80	.2,569,700	7.5°S	1.0°W	80%	Med	Good	55-60	W	Craters Muller, Herschell and Ptolemaeus
7506	11	. 11	11	3.5°W	50%	"	"	55-65	W	Craters Ptolemaeus, Herschel & LaLande C
7507	11	2,836,200	7 <sup>0</sup> S	4.5°W	E0%	"	"	"	11	. 11
7508	11	4,702,900	HOR	IZON	30%	11	11	70-75	11	LM Tracking Crater LaLande
7509	11	11	11	11	30%	11	"	"	11	LM Tracking, Craters LaLande & LaLande A
7510	11	11	"	11	30%	19	11	11	11	"
7511	11	11	11	11	11	11	11	11	11	11
7512	11						11	11	11	Earth View
7513	11					-	11			11
7514	11	3, 028,700	11.58	9.5°W	0	1:	Fair	60-65	SW	Craters Davy and Davy Y Sea of Clouds '
7515	11	3,519,000	11.58	11.5°W	70%	"	"	65-70	"	
7516	11	5 <b>,</b> 312 <b>,</b> 600	HOR	[ <b>Z</b> ON	0	11	11	70-80	N	Oblique View of Copernicus Crater
7517	11	11	"	11	30%	"	11	11	11	11
7518	11	5,000,000	HOR	IZON	0	Low	1!	70-75	SW	Area Between Craters 2 <b>9</b> 3 & 297
7519	11	11	HOR	ZON	0	11	11	11	11	11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
117	mm	Filoto Scale	Lat	Long	U/L	Milgie	Quality	Min — Max	Tilt	
7520	80.	5,312,600	нов	I <i>Z</i> ON	Ω	Jow	Fair	70-80	SW	Area Between Craters 293 and 297
7521	11	11	HOR	IZON	0	11	Good	70-80	NW	Crater IX
7522	11						11			Farth View
7523	11						11		A.	11
7524	11		HOR	IZON	***************************************		Poor		W	Area Just West of Crate II, Earth Rise
7525	11		11	11			11		11	Area Just West of Crate II, Earth Rise
7526	11		11	11			11		11	Area Just West of Crate II. Earth Rise
7527	11	·	11	11			11		11	Area Just West of Crate II, Earth Rise
7528	11		11	11			11		11	Area Just West of Crate II, Earth Rise
7529	11		11	11			11		11	Earth Rise
7530	11	4,223,400	11	11	0	Low	11	65 <b>-</b> 75	S	Crater 286 at Terminato
7531	11	1,678,600	1 <sup>o</sup> S	25 <sup>0</sup> W	0	Med	Fair	30-40	NE	Crater Lansberg
7532	11	11	"	26 <sup>0</sup> W	80%	11	11	"	11	11
7533	11	1,944,520	2.5°N	13.5°W	0	11	Poor	40-50	N	Crater Gambart, Gambart B, and GambartO
7534	11	2,284,700	3 <sup>0</sup> N	15 <sup>0</sup> W	0	"	"	50-60	"	Crater Gambart

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Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7535	<b>8</b> 0.	3,519,000	HOR	ZON	30%	Med	Poor	65-70	N	Oblique View of Crater Copernicus
7536	11	3 <b>,</b> 836 <b>,</b> 800	HOR	IZON	11	11	11	"	"	Craters Copernicus and Reinhold B
7537	11	1,721,700	0.5 <sup>0</sup> S	26.5°W	0	11	11	35–40	W	Crater Lansberg
7538	11	11	0.5 <sup>0</sup> S	11	95%	11	Fair	11	11	11
7539	11	11	1°N	29 <sup>0</sup> W	0	Low	Good	35-40	NM	Craters Lansberg A and Kunowsky D
7540	. 11	1,821,900	2 <sup>0</sup> N	31.5°W	40%	11	11	35-45	W	Crater Lansberg A
7541	11	3,253,500	$7^{\circ}$ N	19.5°W	0	Med	11	60-70	N	Craters Copernicus Rheinhold A & Gambart A
7542	11	11	11	20 <sup>0</sup> W	80%	11	Fair	60-70	11	Craters Copernicus & Rheinhold A
7543	11	2,669,700	2.5°N	22 <sup>0</sup> W	0	11	11	55-60	NW	Craters Rheinhold & Rheinhold B
7544	11	3,519,000	lo <sup>o</sup> n	26.5°W	0	11	Good	65-70	N	Craters Hortensius & Hortensius E '
7545	11	11	9.5°N	28 <sup>0</sup> W	80%	11	11	11	11	11
7546	11	3.836.200	11	31 <sup>0</sup> W	50%	11	11	11	. II	Craters Hortensius A & Hortensius B
7547	11	4,702,900	HOR	ZON	0	Low	11	70-75	N₩	Craters Kunowsky, Encke and Kepler
7548	11	2,016,100	3.5°N	32.5°W	0	"	11	45-50	NM	Craters Kunowsky and Hortensius A
7549	11	3, 328,700	8.5°N	34 <sup>0</sup> W	30%	11	11	60-65	N	Craters Kepler A, Kepler B and Hortensius A

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Frame #	Camera # f Length	Approx. Photo Scale	Po	icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm	1 11010 00010	Lat	Long	<i> </i>	, g. c		Min — Max	Tilt	
7550	<u>80</u>	3.253.500	7.50 <sub>N</sub>	36 5 <sup>0</sup> W	30%	Low	Good	60-70	NTaI	Craters Encke and Kepler
7551	11	2,397,200		36.5°W	30%	11	11	50-60	W	Craters Encke & Kepler
7552	11	3,253,500	ll <sup>o</sup> N	32.5 <sup>0</sup> W	0	îi	11	60-70	N	Craters Kepler B & Milichius A
7553	"	3,519,000	12 <sup>0</sup> N	34 <sup>0</sup> W	70%	"	11	65–70	N	11
7554	. 11	2,836,200	2.5°N	116.5°E	0	Med	11	60–65	ŃW	Area Between Craters 206-211
755 <b>5</b>	11	3,519,000	6 <sup>0</sup> n	121 <sup>0</sup> E	40%	11	11	65–70	N	Oblique View looking North into Crater 211
7556	11	1,721,700	5 <sup>0</sup> S	119 <sup>0</sup> E	0	Med	Good	30–40	N	Area Just West of Crater 277
7557	11	2,836,200	0 <sup>'0</sup>	114.5°E	0	1:	11	60–65	NW	Craters 206, 277, 275, and 277
7558	"	1,572,100		114.5 <sup>0</sup> E		11	11	25-35	NW	Southern Half of Crater 277
7559	"	3,519,000		110 <sup>0</sup> E	0	11	11	65–70	NW	Craters 202, 204, 207 and 275
7560	11	3,253,500	0 <sup>0</sup>	108.5°E	60%	11	11	11	11	Craters 202, 204 and 273
7561	11	1,880,100	6 <sup>o</sup> s	109 <b>.5°</b> E	20%	11	11	<b>40 -</b> 45	ŊW	Crater 273
7562	11	3,028,700	1 <sup>o</sup> s	116.5°E	0	11	11	60-65	NE	Crater 277
7563	11	"	2 <sup>0</sup> S	103.5°E	0	High	<b>!!</b>	11	NW	Crater 270
7564	11	2.669.700	9.5°S	113.5°E		11	Fair	55-65	E	Crater 276

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
••	mm		Lat	Long			<b>,</b>	Min — Max	Tilt	
7565	8C.	3 028,700	5 <sup>°</sup> S	84°E	0	High	Good	60-65	NW	Craters 263, Smyths Sea
7566	11	11	7 <sup>0</sup> S	79 <sup>0</sup> E	30%	11	11	11	11	Crater Kastner
7567	11	2 ,524 ,600	10 <sup>0</sup> S	75.5°E	0	11	11	<b>55–</b> 60	NW.	Craters LaPerouse & LaPerouse E
7568	11	11	9°s	66.5°E	0	11	11	11	NW	Crater Langrenus A
7569	11	3·028,700	8 <sup>0</sup> S	61.5°E	50%	11	11	60-65	Ŵ	Crater Langrenus
7570	11	3,519,000	10.58	29.5°E	0	11	11	65–70	W	Craters Daguerre & Madler, Sea of Nectar
7571	11	2,669,700	22 <b>.</b> 58	37.°E	0	11	11	55-69	S	Craters Fracastorius B, Central peaks of Piccolomin
7572	25C	969,200	10 <sup>0</sup> N	31.5°W		Low	Poor	60–65	N	Craters Milichius and Milichius A
7573	11	907 <b>,60</b> 0	9.5°N	32.5°W		11	11	55-65	N	Crater Milichius A
7574	T'	854 <b>,</b> 300	9 <sup>0</sup> N	34 <sup>0</sup> W		11	11	55–60	N	Ocean of Storms
7575	11	"	11	o 35 W		11	*1	11	11	Crater Kepler B
7576	11	807,900	7.5°N	35 <sup>0</sup> W		11	11	,11,	u	11
7577 .	11	11	11	36 <sup>0</sup> W		ıı	11	11	11	Craters A & Kepler B
7578	,,	1 ,126,100	9.5°N	34°W		11	11	60-70	Ŋ	Just North of Kepler B
7579	80	3,836,200	HOR:	ZON	0	H <b>i</b> ch	Good	65 <b>-</b> 75	q	Craters Alphonsus & Arzachel

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Frame #	Camera # f Length	Approx. Photo Scale	Prin Po Lat	cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
	mm									Craters Alphonsus,
7580 7581	80 ''	3,836,200	HO	YIZON	90%	High	Good "	65–75	S	Arzachel & Alpetragius Almost total eclipse of Earth
7582	11						11			Earth View
7583	11						11			11
7584	19						11			Solar Eclipse
7585	!1						11			!!
7586	11						11			11
7587	11						11			"
7588	11						11			Star Shot
										·
										en e
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### MAGAZINE S

### Frames AS12-52-7589 through 7762

Magazine S contains black and white orbital coverage of the lunar surface taken from an average altitude of 60 nautical miles. It consists of 173 frames, numbered from 7589 through 7762, photographed with 80-, 250-, and 500-mm lenses.

The coverage ranges from 130° east longitude to 45° west longitude and 15° north latitude to about 50° south latitude. Photographic quality ranges from poor to good.

Frames 7589 through 7600 are 80-mm low-oblique stereo coverage of Fra Mauro and target of opportunity 35. All frames are of good quality.

Frames 7669 through 7709 include 500-mm low-oblique to near-vertical stereo coverage of Fra Mauro and are of poor to good quality. The frames are partially exposed due to a camera shutter malfunction. Frames 7631 through 7668 are 500-mm low-oblique stereo coverage of Descartes and are of poor to good quality. Frames 7645 through 7668 are partially exposed due to a camera shutter malfunction.

Frames 7601 through 7630 and 7710 through 7762 were taken with a 250-mm lens. Frames 7605 through 7630 are 250-mm low-oblique to near-vertical stereo coverage of the southern edge of Herschel. The photographic quality is fair to good. Frames 7735 and 7738 through 7740 are 250-mm high-oblique exposures of Copernicus. The photographic quality is good. Frames 7761 and 7762 are blurred and not plottable.

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Frame #	Camera # f Length	Approx. Photo Scale		Principal Point Lat Long		Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7589	80	1:1,678,690		13.4°W	959	Low	Good	30-35 <sup>0</sup>	SW	Fra Mauro TO-35
7590	11	11	5.5°S	14.2°W	95%	11	11	11	"	11
7591	11	1:1,604,100	4.4°S	14.4°W	95%	11	11	11	S	. 11
7592	11	11	4.7°S	15.8°W	90%	" ,	11	11	11	11
7593	11	11	4.9°s	16.0°W	90%	"	11	11	11	11
7594	11	1:1,517,100	4.9°S	16.0°W	90%	11	11	20-25°	E	11
7595	11	1:1,821,900	11	17.4°W	85%	11	11	35-40°	W	11
7596	11	1:1,769,300	4.7°S	17.8°W	11	11	11	35-40°	W	11
7597	11	1:1,769,300	4.9°S	18.2°W	11	11	11	. 11	SW	11
7598	11	1:1,821,900	4.7°S	19.2°W	95%	11	11	11	11	11
7599	11	1:1,678,600	4.8°S	19.3°W	90%	"	11	71	11	11
7600	. "	1:1,517,100	4.1°S	18.4°W	95%	11	11	25 <b>–30</b> °	11	11
7601	250	1:767,100	12.6°S	65.7°E	95%	"	11	55 <b>–</b> 60 <sup>0</sup>	SSW	Directly East of Langrenus G
7602	!"	11		65.3°E		"	11	11	11	Between Lame, Langrenus P and Langrenus G
7603	11	11		.65.0°E		11	1.	11	11	İI

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Frame #	Camera # Approx. f Length Photo Scale		Principal Point		Fwd Sun O/L Angle		Photo Quality	Tilt	Direction of	Description
"	mm	Thoro ocure	Lat	Long	0, 5	Aligic	duaiii	Min — Max	Tilt	
7604	250	1:699,200	6.63	1.7°E		High	Good	45-51 <sup>0</sup>	W	Between Müller and Herschel TO-26
7605	500	1:622,200	6.4 <sup>0</sup> s	2.6°W	95%	"	"	45 <b>-</b> 60 <sup>©</sup>	W	TO-27 Southern edge of Herschel
7606	,,	1:699,200	6.3 <sup>0</sup> S	2.7 <sup>0</sup> W	95%	"	11	11	11	11
76 <b>0</b> 7	"	11	"	2.4°W	11	11	:1	11	11	"
7608	11	11	11	11	11	11	11	30 - 45 <sup>0</sup>	11	-
7609	11	11	11	ff	11	11	11	11	"	11
7610	!!	11 .	"	11	11	11	11	11	"	"
.7611	11	11	"	. 11	"	11	11	15-30 <sup>0</sup>	11	11
7612	11	11	11	. 11	11	11	11	11	11	
7613	11	11	11	1'	90%	11	Fair	0-15 <sup>0</sup>	11	11
7614	11	11	6.4°s	2.6°W	11	11	11	11	11	11
7615	11		6.3°s	11	95%	11	11	- 11	11	11
7616	11	11	6.4°s	2.4 <sup>0</sup> W	90%	11	Good	11	!1	11
7617	11	11	11	2.1°W	80%	11	11	Vertical	11	11
7618	"	11	11	11	11	Med	11:	11	!!	, 11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7619	500	1:622,200		2.1°W	90%	Med	Good	45-51°	W	Southern Edge of Herschel
7620	11	1:699,200	11	11	11	11	11	11	11	"
7621	11	11	11	"	80%	11	11	"	11	11
7622	` 11	11	11	11	11	"	11	11		"
7623	11	11	"	11	90%	11	11	"1	11	11
7624	11	[1	11	11	11	11	11	11	11	11
7625	11	11	11	11	95%	"	11	11	11	11
7626	11	"	11	11	11	11	"	11	11	"
7627	"	11	1"	11	90%	11	11	11	11	1'
7628	11	1.	!!	11	80%	1!	"	11		"
7629	11	11	"	11	11	11	11	11	11	11
7630	11	11	"	11	11	11	11	11	11	11
7631	11	11	3.7°s	15.0°E	0%	11	11	30-60°	11	Descartes Looking West into Dolland B. TO-18
7632	11	11	3.7°s	15.0°E	100%	11	11	"	11	11
7633	11	1:1,222,000	8.8°s	15.3°E	95%	11	11	15 <b>–</b> 20 <sup>6</sup>	!!	Area of Descartes centere hetween Taylor, Dolland, 10-180 B, and Kant D.

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Frame #	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7634	mm 500	1:1,222,000		15.3°E	95%	Med	Good	15-20°	W	Area of Descartes centered between Taylor, Dolland F, and Kant D.
7635	11	11	19	11	11	"	11	11	11	"
7636	"	11	11	11	11	11	11	11	17	. 11
<b>7</b> 637	11	11	11	11	11	"		11	11	"
7638	"	11	11	11	11	11	11	11	. 11	11
7639	11	11	11	11	11	. 11	"	11	11	11
7640	11	11 -	11	11	11	11	Fair	11	11	11
7641	11	"	11	11	11	"	11	"	11	11
7642	11	11	11	11	11	"	11	11	11	"
7643		11	11	11	11	11	11	11	"	11
764 <b>4</b>	11	11	11	11	11	"	11	"1	11	. 11
7645	1'	11	11	11	11	î î	11	- 11	- 11	" Partial Frame
7646	11	11	11	11	11	11	Poor	11	11	11
7647	11	11	11	11	11	11	11	"	11	11
7648	11	11	"	1!	11	11	!!	11	11	"

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Frame #	Camera # f Length	Approx. Photo Scale	Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
7649	mm 500	1.1 222 000	Lat	Long	050			Min — Max	Tilt	rea of Pescartes centered telephone and by and kant D. 10-18 Partial Frame
7049	500	1:1,222,000	8.8 5	15.3°E	95%	Med.	Poor	15-20°	W	Partial Frame
7650	11	11	17	11	11	11	11	11	11	11
7651	11	11	11	11	11	11	11	11	11	11
7652	11	11	11	11	11	11	"1	11	11	"
7653	11	11	11	11	1!	11	11	11	11	
7654	11	11	11	11	1.	11	11	11	11	11
7655	11	11	11	11	11	1"	1:	11	11	1.
7656	11	n .	t!	11	11	1'	1:	1:	11	11
7657	11	11	1"	11	1:	11	11:	11	1-	11
7658	7•	11	tî.	11		<b>†</b> -	1'	11	11	11
7659	11	11	11	11		11	"	11	11	11
7660	11	11	11	11		11	11	11	11	11
76 <b>6</b> 1	"	11	Ħ	11		11	11	11	11	"
7662	11	11	11	11	**************************************	11	11	11	11	11
7663	11	11	11	11.		11	11	11	11	11

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Frame #	Camera # f Length		Principal Point		Fwd O/L	Sun	Photo Quality	Approx. Tilt	Direction of	Description
11-	mm		Lat	Long	O/L Ang	Angle	Quality	Min — Max	Tilt	
7664	500	1:1,222,000	8.8°S	15.3°E		Med.	Fair	15-20°	W	Area of Descartes centere etween Taylor, Dolland, Polland Byand Kant D. Partial Frame
7665	11	11	11	11		11	11	11	11	11
7666	11	1:	1?	"		1,	11	11	1.	11
7667	1°	"	1'	"		ı:	11	11	1"	11
7668	11	11	11	11		11	11	11	₹*	11
7669	11	11	3.8°s	17.4°W	0%	High	Poor	1015°	WSW	Southwest of Fra Mauro G and Southeast of Fra Mauro J. (Partial Frame)
7670	11	11	"	11	97%	11	11	11	"	11
7671	11		11	11	17	11	11	11	11	11
7672	11	11	11	11	99%	11	11	11	71	11
7673	11	11	"	11	94%	11	11	11	11	11
7674	11	"	11	11	95%	1.	1,	1,	11	H.
7675	11		1'	11	100%	11	1.	יו	11	11
7676	11	11	11	11	95%	71	11	11	11	11
7677	11	11	11	11	11	11	11	11	11	11
7678	11	11	11	11	80%	11	11	,,	"	l .

Frame #	Camera #	Approx. Photo Scale		ncipal pint	Fwd O/L	Sun	Photo	Approx. Tilt	Direction of	Description
"	f Length	r noto scale	Lat	Long	0/ L	Angle	Quality	Min — Max	Tilt	20
7679	500	1:1,222,000	3.8°S	17.4°W	75%	High	Poor	10 <b>–</b> 15°	WSW	Southwest of Fra Mauro G and Southeast of Fra Mair J. (Partial Frame)
7680	11	11	11	11	80%	11	11	. "	11	n
7681	11	11	11	11	"	11		"	"	11
7682	11	11	11	11	"	11	11	11	91	11
7683	1'	11	11	11	75%	11	11	11	11	11
7684	. 11		11	11	80%	11	11	11	11	
7685	11	11 ·	11	11	11	11	11	11	יו	11
7686	11	. 11	11	"	75%	11	11	11	11	†!
7687	,,	11	11	11	75%	11	11	11	11	17
7688	11	11	"	"	11	11	11	1,	11	11
7689	11	11	11	11	80%	11	11	. 11	11	
7690		''	tt .	11 .	75%	Med	Fair	11	. 11	11
7691	11	11	11	11	80%	"	11	11	11	įt.
7692	11	!'	11	11	75%	11	Good	11	11	11
7693	"	11	1!	11	80%	11	11	11	11	11

Frame #	Camera # f Length	Approx. Photo Scale		ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm	THOIS COULC	Lat	Long	0, 0	Angle	Quality	Min — Max	Tilt	
7694	500	1:1,222,000	3.8°s	17.4°W	85%	Med.	Good	5-10°	WSW	Southwest of Fra Mauro Mauro Joutheast of Fra Mauro (Partial Frame)
7695	11		11 -	11	11	11	11	11	11	11
7696	11	11	11	11	80%	11	11	11	11	
7697	11	11	11	11	85%	11	11	11	15	11
7698	11	. 1'	11	11	90%	1:	11	11	71	
7699	11	11	1.	11	80%	17	1,	11	11	11
7700	11	11	11	11	85%	11	1'	11	11	" .
7701	1"	. 11	1.	11	1'	11	,,	11	11	l,
7702	11	11	ľ	11	1.	11	11	1.	11	"
7703	11	11	11	11	11	11	11	11	11	11
7704	11	11	11	11	90%	11	11	11	11	11
7705	11	11	11	11	80%	"	11	11	1.	11
7706	11	!!	11	"	95%	Low	Good	17	SSW	11
7707	11	11	11	11	11	11	11	11	11	1'
7708	,,	,,	,,	,,	.,	1"	1.	,.	1.	it .

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	Description
	mm		Lat	Long			l	Min — Max	1111	
7709	500	1:1,222,000	3.8 <sup>0</sup> S	17.4 <sup>0</sup> W	95%	Low	Good	5 <b>-</b> 10 <sup>0</sup>	WSW	Southwest of Fra Mauro G and Southeast of Fra Mauro J. (Partial Frame
7710	250	1:1,041,100	2.0 <sup>0</sup> N	126 <sup>0</sup> E	95%	11	Poor	60-70°	NE	Craters 283, 282 looking Northeast. TO-4
7711	11	11	1.6 <sup>0</sup> N	125.9 <sup>0</sup> E	11	"	11	11	11	"
7712	11	11			11	11	Fair	"	ı.	Unplottable due to
7713	11				11	11	19		11	"
7714	11	1:767,100	4.7 <sup>0</sup> s	38.3 <sup>0</sup> E	11	Med	Good	50–55 <sup>0</sup>	NW	Censorinus F looking Northwest TO-14
7715	11	11	4.2°s	"	11	11	11	11	"	11
7716		1:767,100 1:907,600	3.7°s	22.2°E	"	11	11	55-61°	N	Hypatia looking North TO-16
7717	"	11	3.1°S	21.2°E	"	"	11	"	NW	Alfraganus D.F.G. & Hypatia & Hypatiac, looking North TO-16
7718	"	l:907,600 l:1,041,100	2.5°S	20.0°E	80%	11	"	61-65 <sup>0</sup>	NNW	to Schmidt & Dionysfus TO-16
7719	"	l:907,600	11	21.5°E	80%	11	"	60-65°	N	Alfraganus E looking N to Hypatia C. & Sabine TO-15
7720	1".	1:513,300 1:537,100	4.1°s	20.9°E		11	11	31-35 <sup>0</sup>	N	Alfraganus D, F, & G Looking W. TO-16
7721	11	1:1,041,100 1:1,351,500	3.0°N	14.3°E		High	Good	65-71°	11	d'Arrest looking N to Rima Ariadaeus
7722	"	1:907,600 1:041,100	3.3°n	14.5°E	90%	High	Good:	61-65 <sup>0</sup>	11	d'Arrest looking N to Rima Ariadaeus
7723	ì	1:907,600	0°	6.1°E		Med	11	60-65°	11	Lade looking N to Agrippa TO-22

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π-	mm	1 noto Scale	Lat	Long	0, 2	Allgic	dudiiiy	Min — Max	Tilt	
7724	250	1:907,600	.08 <sup>0</sup> 1	18.2°E	80%	Med	Good	60-65°	NNE	Western Edge of Lade looking N to Dembowski TO-22
7725	"	11	.02N	7.2°E	11	"1	11	11	NW	TO-22 Directly Wor Lade Godin Agrippa looking Nacross Dambowski TO-22
7726	11	1:1,041,100	.7°N	3.5°E	60%	High	11	11	NW	Rhaeticus looking NW across Triesnecker
7727	11	11	.7°N	4.5°E	65%	"	"	"	11	11
7728	11	11	6.8°n	3.1°W	95%	Med	11	11	N	Pallas, Bode looking N to Rima Bode I TO-28
7729	11	11	6.8°N	4.1°W	90%	ı,	ıı	11	"	Rima Bode IV looking N to Rima Bode 10-28 Bode N
7730	11	11	8.9°n	5.1°W	85%	"	11	11	NW	Rima Bode IV looking NE to Sinus Aestuum TO-28
7731	11	1:1,041,100 1:1,351,500	5.7°N	7.7°W	90%	"	11	65-71°	NW	Schroter looking North to Schroter C & Sinus Aestuum.
7732	11	11	5.0°N		85%	11	11	11	11	Schroter G looking N to Schroter C & Sinus Aestuum
7733	11	1:1.041.100	5.0°N	8.6°W	90%	11	11	"	N	"
7734	11	"	5.4°N		85%	"	11	11	N	11
7735	11	1:1,041,100 1:1,351,500	9.7°N	19.7°W		"	11	65 <b>-</b> 71°	NNW	Copernicus & Copernicus H looking NW
7736		1:767,100 1:907,600	1.4°N	15.3°W		11	11	55-61°	N	Gambart looking N & including Gambart EA TO-34
7737	11	1:622,200 1:699,200	1.C°N	18.8°W		11	11	45-51°	NW	Gambart A looking NW
7738	''	1:1,041,100 1:1,351,500	9.6°n	19.3°W	80%	ıı	"	65-71°	N	Copernicus TO-37

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Frame #	Camera # f Length	Approx. Photo Scale	#	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
$\pi$	mm	Filolo Scale	Lat	Long	0/L	Mildie	Quality	Min — Max	Tilt	
7739	250	1,041,100	10°N	20 <sup>0</sup> W	80%	Med	Good	60 <b>-</b> 65 <sup>0</sup>	N	Copernicus TO-37
7740	11	1 <sup>2</sup> ,351,500	O Y O N	21.7 <sup>0</sup> W	\$0 <b>%</b>	"	!!	70 <b>-</b> 75 <sup>°</sup>	N	
7741	11	907,600 1,041,100	6.5°N	29.4°W	85%	11	11	61-65°	11	Hortensius B looking N to Milichius
7742	11	1,041,100	6.8°N	20.0 W	11	11	11	11	NW	11
7743	11	907,600	n.4°n	31.3°W	80%	11	11	11	N	Milichius & Milichius A
7744	11	1,041,100	7.2°N	31.8°W	80%	11	"	11	11	Milichius A
7745	"	1,041,100 1,351,500	8.3°N	38.3 <sup>0</sup> W		"	11	65 <b>-</b> 71 <sup>0</sup>	NW	Kepler, Kepler A. Kepler F TO-43
7746	11	622,200 699,200	2.1°N	32.5°W		11	11	45-51 <sup>0</sup>	11	Kunowsky TO-42
7747	11	907,600	8.1°n	38.3°W		11	11	60-65°	11	Kepler, Kepler F TO-43
7748	11 .	440,600 448,200	.07°N	36.5°W	80%	Low	11	3-11°	SSW	Encke C TO-47
7749	11	699,200	4.5°s	44.0°W	11	11	"	5055 <sup>0</sup>	SE	TO-50 Flamsteed, Flamsteed B
7750	"	583 <b>,</b> 000	1.0°N	45.1°W	11	11	"	11	NW	Suess F TO-48
7751	"	1,351,500	6.4°N	53.1°W	"	"	"	70 <b>-</b> 75 <sup>°</sup>	WNW	Reiner, Reiner A TO-53
7752	"	699 <b>,</b> 200	4.4°N	47.3°W	80%	11	11	50 <b>-</b> 55 <sup>0</sup>	NM	Suess, Suess D
7753	11	1'	5.0 <b>9</b> V	43.2W	IC%	r	1:	;•	1.	Siess

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7754	mm 250	1,041,100 1,227,800	Lat	Long		Low	Fair	65–70°	NW	West Central Ocean of Storms near Terminator (not plottable)
7755	11					11			Ta.T	п
7756	11	907,600	7.0°N	54.2 <sup>0</sup> W		11	partiall blurred	y 60–65 <sup>0</sup>	WSW	Reiner Looking North TO-53
7757	11	11	12.8 N	50.3°W	80%	Med	11	11	N	Marius TO-52
7758	. 11	907,600 1,041,100	7.9°N	54.9°W	80%	Low	ft .	61–65 <sup>0</sup>	W	Reiner Looking NE TO-53
7759	11	11	13 <b>.</b> 9 N	51.5°W	80%	11	11	11	N	Marius TO-52
7760	11	11								Photography Blurred Not Plottable
7761	11	11								Not Plottable, Blurred
7762	11	11								Not Plottable, Blurred
										ı

## MAGAZINE T

# Frames AS12-54-7948 through 8120

Magazine T is 70-mm black and white photography of the lunar surface, taken from the CM. The entire magazine is a near-vertical stereo strip photographed with an 80-mm lens. The approximate coverage is from 125° east longitude, 3° south latitude to 55° west longitude, 3° north latitude. Sun angles are from low to high, and the photographic quality ranges from poor to good.

Frames 8083 through 8091 cover an area from the north tip of Fra Mauro to landing site 7. Landing site 5 is shown on frames 8108 and 8109. The target of opportunity coverage is as follows: 8 on frames 7954 through 7957; 13 on 8028 and 8029; 15 on 8033 through 8035; 18 on 8048 through 8051; 23 on 8056 through 8059; 26 on 8065 and 8066; 27 on 8068 through 8070; 32 on 8075 through 8077; 35 partially imaged on 8083 and 8084; 39 on 8087 through 8098; and 48 on 8108 through 8111.

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Frame #	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7948	80mm	1:1,376,900	3 <sup>0</sup> S	123°E	60	Low	Poor	Near Vert	Near Vert	Not Usable (Too dark)
7949	11	!!	4°S	121 <b>.5</b> E	60	Low	Poor	Near Vert	Near Vert	Stereo Strip Usable (Dark)
7950	11	11	4ºs	121 <sup>0</sup> E	65	11	11	11	11	Stereo Usable (Dark)
7951	11.	19	<b>45°</b> S	120° E	65	11	11	"	11	Stereo (SE of 277) Strip Usable (Dark)
7952	11	11	4.5°S	119 <sup>0</sup> E	60	11	11	11	11	Stereo Strip,SE of 277
7953	11	11		117.5°L	65	11	11	ŤŤ	11	Stereo Strip,SE of 277
7954	11	11	5° S		770	11	11	11	11	Stereo SSE of Strip TO-8 277
7955	11	11	5° S	116 <sup>0</sup> E	70	11	ft	11	11	Stereo So. Par Strip TO-8 of 277
7956	11	11	5.5°s	115° E	65	11	11	11	11	Stereo So. Part Strip TO-8 of 277
7957	"	11	5.5°s	114º E	65	11	11	"	11	Stereo So. Part Strip TO-8 of 277
7958	"	11	6 <sup>o</sup> s	113 <sup>0</sup> E	65	11	Fair	11	11	Stereo Strip S.E. Part of 273
7959	"	11	6 <sup>o</sup> s	11 <b>1,</b> 5°E	65	11	11	11	!!	Stereo S Part of 273
7960	11	11	6°s	1105 <sup>0</sup> E	/ ~	11	11	"	11	Stereo S Part of 273 Strip
7961	11	71	6 <sup>o</sup> s	109.5°E	60	11	11	11	11	Stereo S Part of 273
7962	11	11	6.5°s	1085°E	65	"1	f1	11	11	Stereo Strip SW of Crater 273

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
			Lat	Long				Min — Max	Tilt	Ctomoo
7963	80mm	1:1,376,900	6.5 S	108 <sup>0</sup> E	65	Low	Fair	Near Vert	Near Vert	Stereo SW of Crater 273
7964	11	11	7 <sup>0</sup> S	107°E	65	Low	Fair	Near Vert	Near Vert	Stereo Strip SW of Crater 273
7965	11	11	7 <sup>0</sup> 0'S	106 <sup>0</sup> E	65	11	11	11	11	11 11
7966	11	11	7° S	105°E	70	11	11	11	11	11 11
7967	11	11	7° S	104 <sup>0</sup> Е	65	11	11	11	11	Stereo Strip SE of Crater 270
7968	11	11	7.5 <sup>6</sup> S	103 <sup>0</sup> E	62	11	Př	11	11	Stereo Strip S of Crater 270
7969	11	. 11	7.5g	102 <sup>0</sup> 0'E	65	"	11	11	11	11 11
7970	91	11	8° S	101°E	65	11	11	11	11	11 11
7971	11	11	8 <sup>0</sup> S	100°E	62	Ħ	11	11	11	" SW of Crater 270
7972	11	11	8º 01S	99°E	65	11	11	11 -	11	11 11
7973	11	11	8°S	98 <sup>0</sup> E	68	11	11	"	"	" "
7974	11	11	8º0'S	97°E	65	11	11	11	"	" SE of Crater 266
7975	11	11	8°S	96°0'E	65	Med.	Good	11	11	11 . 11
7976	11	"	8.5°s	95 <sup>0</sup> E	62	Med.	Good	11	11	SE Part of Crater " 266
7977	11	11	8,5 <sup>0</sup> S	94 <sup>0</sup> E	62	11	11	11.	T†	11 11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7978	80mm	1:1,376,900	8,5°s	1	67	Med.	Good	Near Vert	Near Vert	Stereo S Part of Strip Crater 266
7979	11	"	9°s	92 <sup>0</sup> E	65	11	11	11	11	11 11
7980	11	11	9°S	90.5£	65	11	11	Ϋ́T	11	Stereo SW of Crater Strip 266
7981	11	11	9 <sup>o</sup> s	89.5°E	65	11	11	11	11	" SE of Crater 263
7982	97	11	9 <sup>0</sup> 0'S	88.5°E	65	11	"	11	11	" "
7983	11	11	.9 <sup>0</sup> S	o 87.5 E	65	"	11	11	11	11 11
7984	<b>?</b> 1	11	9.5 S	o 86.5 E	65	ft	11	11	11	" Sof Crater 263
7985	11	11		o 85.5 E	65	11	11	11	11	11 11
7986	11	11	9.5°S	o 84.5 E	65	11	*1	11	11	11 1:
7987	11	11	10 <sup>0</sup> S	83.5°E	65	11	11	11	11	11 11
7988	11	17	10 <sup>0</sup> S	82 <sup>0</sup> E	63	11	11	17	11	" SW of Crater 263
7989	11	11	10 <sup>o</sup> s	81 <sup>0</sup> E	65	11	11	19	"	" "
7990	- "	11	10 <sup>0</sup> 0 'S	80°E	65	11	"	:1	11	La Perouse E Ansgarius M Shown
7991	11	11	10 <sup>0</sup> S	79°E	65	11	11	11	11	11
7992	11	11	10 <sup>0</sup> s	78°E	65	11	11	11	11	11

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7993	80mm	1:1,376,900	Lat 10 <sup>0</sup> S	Long 77 <sup>0</sup> 0'E	65	Med.	Good	Near Vert	Near Vert	La Perouse
									***************************************	11
7994	11	!!	10 <sup>0</sup> S	76°0'E	65	11	11	11	11	11
7995	11	11	10 <sup>0</sup> S	75 <sup>0</sup> E	65	11	19	11	11	11
										Stereo Frames 7996- Strip 8011
7996	80mm	1:1,376,900	10 <sup>0</sup> S	74 <sup>0</sup> E	<b>6</b> 5	Med.	Good	Near Vert	Near Vert	West Part of LaPerouse Crater
7997	11	11	o 10.5 Ş	73 <sup>0</sup> 0'E	65	!!	"	11	11	West of La Perouse
7998	11	11	o 105 S	72 <sup>0</sup> 0'E	65	11	19	11	11	Crater Kapteyn Shown
7999	11	11	o 105 S	71 <sup>0</sup> E	65	11	11	"	"	11
8000	11	11	10.5S	70 <sup>0</sup> Ε	65	11	11	"	11	11
8001	11	11	10.5°S	<b>69</b> °E	65	11	11	11	11	Crater Langrenus A
8002	11	"	11 <sup>0</sup> S	68 <sup>0</sup> ට'Œ	65	11	11	11	11	11
8003	"	!!	. ○ o. 10.5S	. 67 <sup>0</sup> E	57	11	11	11	11	Craters Langrenus A and G Shown
8004	11	11	11ºS	- 66 <sup>0</sup> Е	65	11	11	"	11	11
8005	11	Ú	11 <sup>0</sup> S	రస్ <sup>O</sup> E	6 <i>5</i>	11	11	"	"	Craters Langrenus A, G, and P Shown
8006	"	11	11 <sup>0</sup> S	64 <sup>0</sup> E	63	11	11	11	11	Also S. "tip of Langrenus

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	,		Lat	Long				Min Max	Tilt	
8007	80mm	1:1,376,900	11 <sup>0</sup> S	625 E	65	Med.	Good	Near Vert	Near Vert	Craters Langrenus A.G.& P.Shown — Also south tip of Langrenus
8008	11	11	12 <sup>0</sup> S	61.5E	65	11	11	11	11	11
8009	11	11	11 <sup>o</sup> S	61 <sup>0</sup> E	65	11	Fair	"	11	. 11
8010	11	11	11 <sup>0</sup> S	59.5 <sup>0</sup> E	65	11	11	11	11	SW Section of Langrenus
8011	11	11	11 <sup>o</sup> s	58.5°E	65	11	11	11	11	11
8012	11	11	11 <sup>0</sup> S	57.5°E	68	11	11	11	11	Langrenus D Stereo Strip
8013	11	11	11 <sup>0</sup> S	56.5°E	65	11	11	11	17	11 11
8014	††	11	11 <sup>o</sup> s	55 <sup>0</sup> E	65	11	11	11	11	11 11
8015	11	11	11ºS	54 <sup>0</sup> E	65	11	11	"	11	Southwest of " Langrenus
8016	11 .	11	11 <sup>0</sup> S	53 <sup>0</sup> E	65	11	11	†î	11	11 11
8017	71	"	11 <sup>0</sup> S	52 <sup>0</sup> E	65	11	11	11	11	11 11 /
8018	P\$	11	11 <sup>0</sup> 0′ <b>ธ</b>	51 <sup>0</sup> E	65	11	11	11	11	North of Crozier
8019	<b>?</b> 7	11	11 <sup>0</sup> S	50 <sup>0</sup> E	63	11	11	11	11	11 11
8020	11	11	11°S	49 <sup>0</sup> E	65	11	11	11	11	11 11
8021	11	11	11 <sup>0</sup> S	48 <sup>0</sup> E	63	11	10	<b>††</b>	11	Sea of " Fertility

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Des	scription
8022	80mm	1:1,376,900	Lat 11 <sup>0</sup> \$	Long o 57.5 Æ	ċ5	Med.	Fair	Near Vert	Near Vert	Sea of Fertilit	Stereo y Strip
8023	11	11	11 <sup>0</sup> s	o 45.5 E	65	11	11	11	11	. 11	11
8024	"	11	11 <sup>o</sup> s	o 44.5 E	<b>6</b> 5	11	11	11	11	Gutenber D	g "
8025	11	11	10,5°S	43,5 E	65	High	11	11	11	11	11
80.26	11	11	11 <sup>0</sup> s	4,3°E	65	11	11	11	11	11	11
8027		11	11V'S	42 <sup>0</sup> E	ΰΰ	11	11	"	11	11	11
8028	11	11	11 <sup>0</sup> S	40.5 <sup>0</sup> E	65	11	11	11	11	Stereo Strip	·T0-13
80.29	11	11	11 <sup>0</sup> S	39.5°E	65	11	11	11	11	11	ТО-13
80 <i>3</i> 0	19	11	0 10,58	38.5 E	65	11	11	11	11	" G	audibert Crater
80,31	11	11	105°S	37.5 E	<u>6</u> 5	11	11	11	11	11	11
8032	F1	11	10 <b>.5</b> s	o 36.5 E	65	11	11	71	11	11	11
8033	11	11	o 10.5 S	o 35.5 E	65	11	11	11	11	11	ТО-15
8034	11	11	o 10.5 S	o 34.5-E	<b>ა</b> ე	11	11	11	11	11	TO-15 North Portion of Paguerre
8035	11	11	10 <sup>0</sup> S	33.5E	ა5	11	11	11	11	11	TO-15
8036	**	"	10 <sup>0</sup> ຮ	o .32 <b>.5</b> E	65	11	11	11	11	11	North Portion of Paguerre

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	De	escription
8037	80mm	1:1,376,900	Lat 10 <sup>0</sup> S	Long 31 <sup>0</sup> 0'E	<del>ნ</del> 5	ll <b>i</b> gh	Fair	Near Vert	Near Vert	Stereo Strip	Crater Madler
8038	11	. 11	10 <sup>0</sup> S	30 <sup>0</sup> Е	ó5	11	11	11	11	11	11
8039	11	11	10 <sup>ວ</sup> ຣ	29 <sup>0</sup> E	65	11	11	11	11	11	11
8040	11	11	10 <sup>0</sup> s	28 <sup>0</sup> 0'E	63	11	11	11	11	11	Crater Madler (North half of Theophilus)
8041	11	11	10 <sup>0</sup> S	27 <sup>0</sup> E	65	11	11	11	?1	11	North Half of Theophilus
8042	11	. 11	10 <sup>0</sup> S	o 26.5 E	65	. 11	Poor	11	11	11	11
8043	71	11	9°s	25 <sup>0</sup> E	<b>5</b> 5	11	11	11	. 11	11	11
8044	11	11	o 8.5S	24 <sup>0</sup> E	<b>5</b> 6	11	11	. 11	11	11	NW of Theoph <b>i</b> lus
შე45	11	11	o 8 <b>.5</b> S	23 <sup>0</sup> 0'E	<b>6</b> 3	11	11	11	11	11	Kant C Crater
80 <u>.</u> 46	11 .	11	o 8.5 S	22 <sup>0</sup> E	65	11	11	11	11	11	" (
8047	11	11	9 <sup>o</sup> s	21 <sup>°</sup> E	65	11	11	11	11	11	Kant Crater
8048	11	11	9 <sup>o</sup> s	195 <sup>0</sup> E	65	11	11	11	"	11	Kant G Crater
8049	11	. 11	9°s	19 <sup>0</sup> E	<b>Ú</b> 5	11	11	11	11	11	TO-18
<b>8050</b>	11	"	9 <sup>o</sup> s	18 <sup>0</sup> E	65	11	11	"	"	11	11
8051	11	. "	9 <sup>o</sup> s	17 <sup>0</sup> 9 E	65	11	11	"	11	"	"

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	De	scription
8052	80mm	1:1,376,900	Lat 9 <sup>0</sup> s	Long 16 <sup>0</sup> E	65	High	Poor	Min — Max Near Vert	Near Vert	Stereo Strip	S 3/4 of Dolland B
8053	11	11	9 <sup>o</sup> s	15 <sup>0</sup> E	65	11	11	11	11		olland Crater
8054	11	11	8 <sup>o</sup> s	0 13.5 E	65	11	. 11	11	!!	'' Do	olland B Crater
8055	11	11	8 <sup>o</sup> s	13,5E	65	11	11	"	Ħ	'' A1	ndel F Crater
8056	"	11	8 <sup>o</sup> s	11.5°E	65	11	11	11	11	11	11
80 <i>5</i> 7	11	11	8°00'S	o 10.5 E	65	11	71	11	11	u I	. of Hind TO-23
8058	11	<b>!1</b> .	8 <sup>0</sup> s	9°E	65	11	11	11	11	11	11
8059	11	!1	8.5 S	8°E	65	11	"	11	11	11	Crater Hind TO-23
8060	11	"	7.5°S	7.5°Z	65	11	"	"	11	"	Crater Hind Shown
8061	. 11	"	7 <b>.</b> 5°s	o 6.5 E	65	11	<b>!</b> !	11	11	11	Craters Hind & Halley
8062	11	11	7°s	5.5°E	65	Ħ	11	!!	11	11	Crater Hálley
8063	11	11	7 <sup>o</sup> s	4 <sup>о</sup> Е	65	11	Fair	11	11	11	Hipparchus
8064	11	1:	7 <sup>0</sup> 0'S		65	11	11	ti	11	!!	T1
8065	11	1 !	7 <sup>o</sup> s	o 2.5 E	65	11	11	11	11	! <b>!</b>	Crater Muller TO-26
8066	11	11	6.5°S	1.5°E	65	11	"	1:	11	"	TO-26

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	Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	De	scription
l	8067	80mm	1:1,376,900	Lat 6 <sup>0</sup> S	Long O <sup>O</sup> E	65	High	Fair	Near Vert	Near Vert	Stereo. Strip	East of Herschel
	8068	11	11	6 <sup>o</sup> s	1 <sup>0</sup> W	'65	11	11	Ħ	11	11	Crater Herschel TO-27
Ī	8069	11	11	6 <sup>o</sup> s	2 <sup>0</sup> W	68	11	G <b>o</b> od	11	11	11	11
	8070	11	ľ	6 <sup>o</sup> s	3 <sup>0</sup> W	65	. 11	11	"	. 11	11	"
ſ	8071	11	11	6 <sup>o</sup> s	4 <sup>0</sup> W	65	11	11	11	<b>!!</b> .	11	ń
	8072	11	11	6 <sup>o</sup> s	5 <sup>0</sup> W	65	Med.	11	"	"	<b>11</b>	Herschel D
	8073	11	11	5.5°S	6 <sup>0</sup> W	65	11	11	11	11	11	La Lande C
, [	8074	11	11	5.5 <sup>0</sup> S	7 <sup>0</sup> W	65	11	11	11	11	11	11
	8075	11	11	5°S	8 <sup>0</sup> W	65	11	11	11	11		Crater La Lande TO-32- ,
											Stereo Strip	Frames 8076 - Frames 8091
	8076	11	11	5 <sup>o</sup> s	9 <sup>0</sup> W	65	Med.	11	Near Vert	Near Vert	Crater La Lande	TO-32
	8077	11	11	5 <sup>o</sup> S	10 <sup>0</sup> W	65	11	11	11	11	West Hal of La Lar	
	8078	11	11	4.5°S	11 <sup>0</sup> W	65	11	11	11	11	West of NE of H	La Lande and Tra Mauro
	8079	11	II	4.5 <sup>0</sup> S	12 <sup>0</sup> W	65	11	11	11	11	11	
	8080	11	11	4 <sup>0</sup> S	13 <sup>0</sup> W	65	Low	11	11	Ħ	NE of F	ra Mauro

	ame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	Description
				Lat	Long				Min — Max		
8	3081	80mm	1:1,376,900	4 <sup>o</sup> s	14 <sup>0</sup> W	65	Low	Good	Near Vert	Near Vert	NE of Fra Mauro
. 8	3082	11	11	4 <sup>o</sup> s	15 <sup>0</sup> W	65	11	11	11	11	Northern Section of Fra Mauro
8	3083	11	11	4 <sup>o</sup> s	16 <sup>0</sup> W	65	11	11	"	11	Northern Tip TO-35 of Fra Mauro Partial
8	3084	11	11	o 3.5 S	17 <sup>0</sup> W	65	11	"	"	11	
8	3085	11	11	0 3 S	18 <sup>0</sup> W	65	11	11	11	11	Fra Mauro J
8	3086	11.	11	2 <b>.5<sup>0</sup>S</b>	19 <sup>0</sup> W	65	11	11	"	"	Crater Fra Mauro J
8	3087	11	11	o 3.5 S	20°W	65	11	Fair	"	11	TO-39
8	8808	11	11	3°s	21 <sup>0</sup> W	65	11	11	11	11	11
8	3089	11	11	2 <sup>0</sup> S	22 <sup>0</sup> W	65	11	"	11	11	11
8	3090	11	11	2 <sup>o</sup> S	23 <sup>0</sup> W	65	11	11	11	11	Site "
8	3091	11	11	3 <sup>o</sup> s	24 <sup>0</sup> W	65	11	11	11	"	11
											Stereo <b>Stri</b> p Frames 8092 <b>-</b> 8107
8	3092	80mm	1:1,376,900	2 <sup>o</sup> s	25 <sup>0</sup> W	65	Low	Fair	Near Vert	Near Vert	T <b>0-3</b> 9
8	3093	11	11	1.5 <sup>0</sup> S	26°W	65	11	11	11	11	11
8	3094	"	11	2 <sup>o</sup> s	27 <sup>0</sup> W	70	11	"	11	"	South Half " of Lansberg

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	Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
					g			-			Stereo Strip Frames 8092-8107 Cont'd.
	8095	80mm	1:1,376,900	1.5°s	28 <sup>0</sup> W	70	Low	Fair	Near Vert	Near Vert	South Half TO-39 of Lansberg
	8096	11	îī	<b>1.5<sup>0</sup></b> \$	25 <sup>0</sup> W	<b>7</b> 0	11	11	î î	11	п
	8097	11	"	1.5°s	30°W	65	11	Ħ	Ħ	11	. 11
I	8098	11	11	1°s	31 <sup>0</sup> W	65	11	11	"	11	11
	809 <b>9</b>	11	"	1 <sup>o</sup> s	32 <sup>0</sup> W	60	11	11	"	11	Lansberg A & Kunowsky C
	8 <b>1</b> 00	<b>!!</b> :	11	0.5\$	33 <sup>°</sup> W	65	Ħ	11	11	11	Kunowsky C
	8101	"	11	0 <sup>0</sup>	34 <sup>0</sup> W	65	11	11	11	- 11	Lansberg F, C, & E of Encke C
	8102	"	"	0 <sup>o</sup>	35 <sup>°</sup> W	65	11	11	11	11	11
	8103	11	"	0.5°N	36 <sup>0</sup> w	65	11	11	Ħ	11	Encke C
	8104	11	11	0 <sup>0</sup>	36.5 W	65	11	11	"	11	11
	8105	11	11	0 <sup>0</sup> 5N	37.5 W	65	11	11	11	11	West of Encke C
	8106	11	11	1 <sup>0</sup> N	38.5°W	70	11	11,	11	11	East of Encke E
	8107	11	11	1 <sup>0</sup> N	40° w	65	11	<b>11</b> .	11	fl	Encke E & Maestlin G
	8108	11	11	1 <sup>0</sup> N	41 <sup>0</sup> W	70	11	11	11	11	Stereo Strip TO-48

Frame #	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	De	escription
8109	80mm	1:1,376,900		42 <sup>0</sup> W	70	Low	Fair	Near Vert	Near Vert	Stereo Strip	TO-48
8110	11	11	<b>1.</b> 5 N	43 <sup>°</sup> W	65	11	. <b>!!</b>	11	11	11	11
8111	11	11	S <sub>o</sub> N	43.5°W	70	11	11	11	11	ŧī	11
8112	11	11	2 <sup>0</sup> N	o 45.5 W	65	11	, "	"	11	11	Suess F Crater
8113	71	11	2 <sup>0</sup> N	46 <sup>0</sup> W	70	11	11	11	11	,, W	est of Suess F Crater
8114	11	11	o 2.5 N	47 <sup>0</sup> W	70	11	11	11	tt ·	,, E	ast of Reiner E Crater
8115	11	11 .	o 2.5 N	48 <sup>0</sup> W	70	11	Poor	TÎ	ŤŤ	11	Reiner E Crater
<u>8</u> 116	11	11	3 <sup>o</sup> n	49 <sup>0</sup> W	70	Ħ	11	11	11	Ħ	11
8117	11	11	3°N	50°W	70	19	ft	11	11	11	Southwest of Suess Crater
8118	11	11	o 3.5 N	51 <sup>0</sup> W	70	11	11	11	11	11	South of Reiner A,Crater
8119	11	11	o 3.5 N	52 <sup>0</sup> W	70	††	11	11	11	Too Dar	k (Unusable)
8120	11	11						TI 11	11	11	11
											The Contraction of Co

## MAGAZINE U

# Frames AS12-53-7763 through 7947

Magazine U consists of overlapping stereoscopic 70-mm black and white imagery of Fra Mauro (41 frames), Descartes (41 frames), and Lalande (42 frames), photographed with a 500-mm lens. The remaining frames of the magazine are: four frames of the moon, probably taken during transearth coast, and 57 frames of the solar eclipse, 10 of which were exposed during a camera malfunction. The quality of the 500-mm Fra Mauro, Descartes, and Lalande imagery ranges from fair to poor on this magazine. Targets of opportunity 18 and 32 were also photographed on this magazine.

Frame : # AS-12-5	Camera # f Length	Approx. Photo Scale	Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7763	500 mm	1: 450,000	9.0°s	16.0°E	95%	High	Fair	30 <b>-</b> 60°	West	Descartes
7764	11	11	11	11	11	11	FI .	11	11	17
7765	11	11	11	Ħ	11	11	11	"	11	
7766	11	11	11	11	11	11	11	11	11	. 11
7767	11	11	9.0°s	16.0°E	11	11	· 11	11	11 ·	
7768	11	11	11	11	11	11	11	11	11	11
7769	11	11	11	11	11	11	11	11	. 11	11
7770	. 11	1:350,000	9.0°s	16.0°E	11	11	11	11	11	
7771	11	11	11	11	11	11	11	"	11	11
7772	11	11	11	11	11	11	11	11	11	11
7773	11	11	11	11	11	11	11	11 .	11	1:
7774	"	11	11	11	11	11	"	11	11	11
7775	11	11	11	1:	1!	11	1?	1!	11	1:
7776	11 11	11	1:	P 7	11	T T	1 !	0-30°	11	H.
7777	11	"	"	11	11	11	11	"	. 11	11

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
<b>6</b> -12-53			Lat	Long					1 11-1	
7778	500 mm	1:350,000	9.0°S	16.0°E	95%	High	Fair	0-30°	West	Descartes
77 <b>7</b> 9	11	1:300,000	11	11	19	17	11	11	11	
7780	11	11	11	†1	11	11	11	11	n	·
7781	11	11	11	11	11	11	11	11	11	11
7782	11	11	11	11	11	11	. 11	11	11	11
7783	11	11	99	11	11	11	11	11	11	II
7784	11	. 11	11	11	ff	11	11	11	11	
7785	11	11	11	11	91	11	11	11	71	11
7786	11	11	11	11	11	11	F?	11	11	11
7787	11	11	11	11	11	11	11	11	11	11
7788	11	11	11	11	11	11	11	11	11	"
7789	11	11	11	11	11 .	11	19	11	11	11
7790	11	11	11	11	11	11	11	11	11	!!
7791	99	15	17	11	11	11	ff.	Ħ	. 11	11
7792	"	11	?†	11	!!	11	11	.11	11	

Frame # AS12-53	Camera # f Length		Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7793	500 mm	1:300,000		16.0°E	95%	H <b>i</b> gh	Fair	0-300	West	Descartes
7794	11	1:222,000	11	11	"	. 11	11	0-20 <sup>0</sup>	11	
7795	11	11	ff	· 11	11	. 11	11	11	11	11
7796	"	11	 11	11	11	11	11	11		11
7797	11	11	11	11	11	11	11	11	11	. '11
7798	"	11	11	11	"	11	11	11	11	11
7799	11	11	11	11	11	11	11	11	. 11	11
7800	11	11	11	11	11	11	11	11	11	11
7801	11	· 11	11	11	11	11"	11	- 11	11	11
7802	11	11	11	11	11	11	11	11	11	T1
7803	11	ì	11	11	11	11	11	"	11	entinantina alla massa en esta en escala esta esta esta esta esta esta esta est
7804	11	1:450,000	3.5°S	13.0°W	"	11	11	55 <b>-</b> 65°	West	Fra Mauro
7805	11	"	טלי.ל	"	11	11	<b>†</b> †	55 <b>-</b> 60°	nego	"
7806	11	11	11	11	11	11	11	11	11	
7807	11	11	11	11	11	11	11	50 <b>-</b> 55 <sup>0</sup>	11	11

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Frame # AS12-53	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7808	500 mm	1:450.000	3.58		. 95%=	Hi <i>g</i> h	Fair	52°	West	Fra Mauro
7809	11	1:349,600	11	"	11	11	11	50 <sup>0</sup>	11	11
7810	11	1:325.000	11	11	11	11	11	48 <sup>0</sup>	- 11	
7811	11	<b>31</b>	11	11	11	11	11	. <b>4</b> 6°	11	11
7812	11	11	11	11	11	11	11	44°	91	
7813	11	11	11	11	11	11	11	42 <sup>0</sup>	17	"
7814	11	1:283,000	11	11	11	11	11	40°	. 11	11
781 <i>5</i>	11	11	11	11	11	11	11	38 <sup>0</sup>	11	"
7816	††	11	11	11	11	11	. 11	36°	- 11	"
7817	11	11	11	11	11	11	11	34 <sup>0</sup>	11	"
7818	ŤĪ.	11	11	11	11	11	11	32 <sup>0</sup>	"	· 11
7819	11	1:250,000	11	11	11	11	11	30°	11	11
7820	11	11	11	11	11	11	11	. 28 <sup>0</sup>	11	11
7821	11	11	11	11	11	11	11	26 <sup>0</sup>	11	11
7822	"	11	11	91	11	11	11	24 <sup>0</sup>	11	"

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	Frame # AS12-53	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
	7823	500 mm	1:250,000		18.0°W	95%	High	Fair	22 <sup>0</sup>	West	Fra Mauro
	7824	11	1:232,000	11	11	11	11	11	20 <sup>0</sup>	11	11
	7825	11	11	11	11	11	. 11	11	18 <sup>0</sup>	11	11
	7826	11	1:227,000	11	11	11	11	11	16°		11
	7827	´ 11	11	11	11	11	11	11	14°	11:	. 11
	782 <b>8</b>	11	11	11	FF	11	P?	11	12 <sup>0</sup>	11	11
56	7829	11	11	11	11	11	11	11	10 <sup>0</sup>	11	11
	7830	11	15	11	11	11	11	11	8 <sup>0</sup>	11	
	7831	11	11	11	11	11	11	11	6°	11	11
	7832	11	**************************************	11	11	11	11 ***********************************	11	14°	11	11
	7833	11	11	11	11	11	11	11	2°	11	!!
	7834	11	11	11	11	11	11	11	00	Vert.	11
	7835	11	1:222,000	11	11	11	11	11	00	11	11
	7836	11	11	11	11	11	11	11	00	11	11
e de la constant de	7837	11	11	11	11	. 11	11	11	0	11	. 11

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Frame # AS12-53	Camera # f Length	Approx. Photo Scale		cipal int Long	Fwd O/L	Su <b>n</b> Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7838	500 mm	1:222,000		18.0°W	95%	High	Fair	2°	West	Fra Mauro
7839	11	î1	19	11	11	11	11	, 4°	11	11
7840	11	11	11	·, "	11	11	11	6 <sup>0</sup>	11	11
787.1	11	11	11	11	11 .	11	91	8 <sup>0</sup>	11	11
7842	11	11	11	99	11	11	11 .	go	. 11	Fra Mauro Area
7843	11	11	11	11	11	11	11	10°	11	11
7844	11	<b>11</b>	11	11	11	11	11	10°	11	11
7845	11	1:450,000	5.0°s	9.5°W	11	11	11	30 <b>-</b> 60°	West	Lalande Crater
7846	11	11	11	11	11	11	11	11	11	11
7847	11	11	11	"	11	11	11	" .	11	11
787.8	11	11	11	11	11	11	11	11	11	11
7849	11	11	11	11	11	11	11	"	11	11
7850	11	F1	11	11	II	11	91	11	11	11
7851	11	11	11	11	11	11	11	17	11	11
7852	11	"	11	"	11	11	· 11	11	"	11

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Frame # AS12-53	Camera # f Length	Approx. Photo Scale	Po	cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7853	500 mm	1:450,000		18.0°W	95%	High	Fair	30-60°	West	Lalande Crater
7854	11	1:300,000	11	11	11	11	11	"	. 11	11
7855	11	11	11	11	11 .	11	11	11	11	n
7856	11	-11	11	- 11	11	11	11	11	11	
7857	11	11	17	.11	11	11	"	11	11 .	11
785 <b>8</b>	11	11	5.0°S	9.5°W	11	High	Fair	20-30	11	"
7859	11	11	11	11	11	11	11	11	11	11
7860	17	11	11	11	11	11	11	11	"	11
7861	11	11	11	11	11	11	11	Ŋ	11	11
78 62	11	11	11	"	11	11	11	11	11	ш
7863	"	11	11	11	11	11	11	11	11	11
7864	11	11	11	11	11 -	11	11	11	11	11
7865	11	11	11	11	11	11	11	"	11	11
7866	11	11	17	11	11	11	11	T1	11	11
7867	11	11	11	11	11	11	11	11	11	11

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Frame # AS12-53	Camera # f Length		Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7868	500 mm	1:300,000	5.0°E	9 <b>,5</b> °W	95%	High	Fair	20-30°	West	Lai ande
7869	11	"	11	"	"	11	11	11	11	"
7870	11	1:250,000	11	11	11	- 11	11	9-20°	11	11
<b>7</b> 871	11	.11	11	11	11	11	11	11	11	11
7872	11	11	11	11	11	11	11	11	. 11	11
7873	11	11	11	11	11	11	11	11	11	11
7874	11	1:222,000	11	11	11	11	11	0 <b>-</b> 15°	. 11	11
* 7875	11	11	11	11	11	11	11	"	11	11
7876	11	11	11	11	11	11	11	11	11	11
7877	"	. "	11	11	17	11	Ħ	11	11	11
7878	11	11	11	11	11	11	11	11	11	11
7879	"	11	11	11	11	11	11	11	11	11
7880	"	"	Ħ	11	!!	11	11	11	11	TT
7881	11	11	11	ft	11	11	11	11	şī	11
7882	"	11	11	11	11	11	71	11	11	11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
# AS12-53	Lengin	THOTO COULC	Lat	Long		,g, a	4.5	Min — Max	Tilt	
7883	500 mm	1:222,000	5.0°s	9.5°W	95%	High	<u>Fair</u>	0-150	West	Lalande Crater
7884	1:	11	11	11	15	11	11	11	11	11
7885	11	11	11	11	11	11	11	11	11	11
7886	11	11	5.0°S	9.0°W	11	11	11	11	Fast.	11
7887	.80 mm					11	Good			Full Moon during Trans Earth
7888			00000000000000000000000000000000000000			11	Good			Full Moon during Trans Earth
7889	Ή					11	Fair			Quarter Moon during Trans Earth
7890	11						Fair			Quarter Moon during Trans Earth
7891	11						Good			Solar Eclipse
7892	11						11			11 11
7893	11						11			11 11
7894	11						11			11 11
7895	11						11	Security of Security		11 11
7896	17					eveniuskannauusuossa Shiribahakan ka maaguum	11			11 11
7897	11						. 11			11 11

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Fran	ne Came	era # ength		Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
# AS12	2-53	· · · · · · ·		Lat	Long				Min — Max	Tilt	
7898	80 n	nm						Good			Solar Eclipse
7899	) "							11			11 11
7900	) "	!						11			
7901	11			-				11			11 11
7902	, . <b>"</b>							11			. 11
7903								<b>11</b>			11 11
7904	"							11			11 11
7905	<i>\</i>							11			11 11
7906	,							11			11 11
7907	11							Poor			Camera Malfunction during Sclar Eclipse
7908	11							11			11 11
7909								11		-	11 11
7910	)		3000					11			11 11
7911			en e		***************************************			ţ† .			11 11
7912	2						-	- 11			

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
# AS12=53			Lat	Long				Min — Max	Tilt	
7913	80 mm						Poor			Camera Malfunction during Solar Eclipse
7914	18					•••••	11			11 11
7915	11						11			11 11
7916	11						11			11 11
7917	tt.		***************************************				11			11
7918	11						Good			Solar Eclipse
7919	11						. 11			11 11
7920	11	·					11			11 11
7921	11						11			11 11
7922	11						11			11 11
7923	11 .						71			11 11
7924	11						11		_	11 11
7925	11						. 11			11 11
7926	11						11			11 11
7927	11						11			11 11

Frame	Camera #	Approx.	Prin Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
# AS12-53	f Length	Photo Scale	Lat	Long	0/L	Angle	Quality	Min — Max	Tilt	
7928	80 mm		•				Good			Solar Eclipse
7929'	11						11			11 11
7930	11						11	·	·	11 11
7931	11						11			11 11
7932	11						11			11 11
7933	21						11			11 11
7934	11						11			11 11 .
7935	"						11			11 11
7936	11						11			11 11
7937	11						11			11. 11
7938	. 11						11			11 11
7939	11						11			11 11
7940	11			**************************************		ordinate from independent and in the control of the	11			11 11
7941	ff		**************************************				11			11 11
7942	11						11			11 11

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Magazine U Film B&W

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Frame # AS12-53	Camera # f Length	Approx. Photo Scale	Po	cipal oint Long	Fwd O/L	Sun Angle	Photo Qualit <b>y</b>	Approx. Tilt Min — Max	Direction of Tilt	Description
7943	80 mm						Good			Solar Eclipse
7944'	"						11			11 11
7945	11						11			11 11
7946	11						11			11 11
7947	ff						11			11 11
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## MAGAZINE V

# Frames AS12-47-6869 through 7021

The first 16 frames of this color magazine are high obliques of the lunar surface taken from the LM while in lunar orbit. Target of opportunity 9 is included.

The remainder of this magazine illustrates the LM, deployed equipment, and the lunar surface around the landing area. Surface photography was exposed with the 60-mm lens. Included are the following four panoramas taken near the landing area:

# 1. 6941 through 6960

A 20-frame panorama from northwest at the ALSEP to north at the flag, then to east with the LM (sunglint) and Surveyor Crater; then to south and southwest including Bench Crater.

# 2. 6961 through 6981

A 21-frame panorama northwest from the LM, east to Surveyor Crater, and a  $360^{\circ}$  panorama back to the LM.

# 3. 6982 through 7006

A 25-frame panorama,  $360^{\circ}$ , taken from northeast of the LM looking west at the panel and flag; then to southwest at the LM and counterclockwise to south and west looking into Surveyor Crater; then looking northwest at the TV and back to the panel to complete the  $360^{\circ}$  circuit.

## 4. 7011 through 7015

A five-frame panorama from northwest to north showing (from left to right) a blocky mound, the ALSEP, the flag, and the antenna.

Frame #	Camera # f Length mm		Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6869	80		<b>. 48. Ma</b> Walloco	5-M. (13-day)Maril	90	M	Fair	60-70	S	Craters 285, 28 7, Tsiolkovski
6870	80				90	М	Fair	60 <b>7</b> 0	S	11
<b>6</b> 871	80				90	М	Fair	60 <b>-</b> -7 <b>0</b>	W	Crater II
6872	80				90	М	Fair	60 <b>–</b> 70	W	11
6873	80				90	М	Fair	60-70	W	11
6874	80				90	М	Fair	60-70	W	"
6875	. 80				100	L	Good	60-70	NE	Copernicus-Rheinhold
6876	<b>\$</b> 0				100	L	Good	60-70	11	11
6877	80				100		Fair			CSM
6878	80	**************************************			100		Fair			11
6879	80				90	М	Fair	70-80	W	TO-9 Crater II, Craters 276, 273
6880	80				90	М	Fair	70-80	W	11
6881	80			-	90	М	Fair	70-80	W	11
6882	80				90	M	Fair	70-80	W	11
6883	80			**************************************	90	М	Fair	70-80	W	11

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Frame #	Camera # f Length	Approx. Photo Scale	cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6884	80			90	М	Fair	70-80	W	TO-9, Crater II, Craters 276, 273
6885	80			90	М	Fair	70-80	W	11
6886	80		-	90 .	М	Fair	70-80	W	11
6887	80			90	М	Fair	70-80	W	11
6888	80			90	М	Fair	70-80	W	19
6889	80			90	М	Fair	70-80	M	11
6890	.80		• • • • • • • • • • • • • • • • • • • •	90	М	Fair	70-80	W	11
6891	80			90	М	Fair	70-80	W	11
6892	80			90	М	Fair	70 <b>–</b> 80	W	11
6893	80			90	М	Fair	70 <b>–8</b> 0	W	терительной при в терительной в постановлений пост
6894	80			90	М	Fair	70–80	W	11
6895	80			90	М	Fair	70-80	W	11
6896	60				Low	Good	Med. Obl.	W	Flag on Lunar Surface
6897	60				Low	Fair	Med. Obl.	W	11 11 11
6898	60				Low	Fair	Med. Obl.	W	Solar Wind Panel

Frame #	Camera # f Length		Po	cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6899	60	A. J. M. Prick and Mills a	C. officerson and an	a William de Constitution de C	n-Autoritidi valoritri yriqiyali.Ci	Low	Fair	Med. Obl.	W	LM
6900	60	Common Miller (Miller	handa addising coop saan na ann ann ann ann ann ann ann ann			Low	Fair	Low Obl.	E	LM Footpad
6901	60					Low	Fair	Low Obl.	E	- 17 17
6902	60					Low	Poor	Low Obl.	E	" "
6903	60		,			Low	Poor	Low Obl.	E .	11 11
6904	60					Low	Fair	Low Obl.	W	11 11
6905	60					Low	Fair	Low Obl.	. W	11 11
6906	60					Low	Fair	Low Obl.	W	11 11
6907	60					Low	Fair	Low Obl.	W	Engine Skirt
6908	60					Low	Fair	Low Obl.	W	LM Footpad
6909	60					Low	Fair	Low Obl.	W	11 11
6910	60					Low	Fair	Low Obl.	W	Lower LM Structure
6911	60					Low	Good	Low Obl.	W	Lower LM Structure
6912	60					Low	Poor	Med. Obl.	W	Astronaut & LM
6913	60					Low	Poor	Med. Obl.	W	11 11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6914	60					Low	Poor	Med. Obl.	W	Astronaut & LM
6915	60 .					Low	Poor	Low Obl.	E	LM Footpad
6916	60			· .		Low	Fair	Low Obl.	W	ALSEP Deployment
6917	60		~ ***			Low	Fair	Low Obl.	W	11 11
6918	60					Low	Fair	Med. Obl.	W	11 11
6919	60					Low	Fair	Med. Obl.	W	11 11
6920	60					Low	Fair	Low Obl.	W	11 11
6921	60					Low	Fair	Med. Obl.	W	11 11
6922	60					Low	Fair	Low Obl.	W	11 11
6923	60					Low	Fair	Low Obl.	W	11 11
6924	60					Low	Fair	Low Obl.	W	11 19
6925	60					Low	Fair	Low Obl.	W	11 11
6926	60					Low	Fair	Low Obl.	W	11 11
6927	60					Low	Fair	Low Obl.	W	19 11
6928	60					Low	Fair	Med. Obl.	E	11 <b>II</b>

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Frame #	Camera # f Length	Approx. Photo Scale		ncipal pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6929	60					Low	Good	Med. Obl.	W	ALSEP Deployment
6930	60		***************************************		-	Low	Fair	Med. Obl.	W	11 11
6931	60					Low	Fair	Med. Obl.	W	11 11
6932	60 .					Low	Fair	Low Obl.	W	Lunar Surface
6933	60					Low	Fair	Low Obl.	W	11 11
6934	60					Low	Fair	Low Obl.	W	ît îi
6935	60					Low	Fair	Low Obl.	W	11 11
6936	60		***************************************			Low	Fair	Low Obl.	W	11 11
6937	60					Low	Fair	Low Obl.	W	11 11
6938	60		haan ahakan gaararaanan oo k			Low	Fair	Low Obl.	W	11 11
6939	60					Low	Fair	Low Obl.	W	11 11
6940	60		···Committeeditrisii alii Peekeessi, ·····			Low	Fair	Low Obl.	W	11 11
6941	60		eta maridataria kunanun alungan na		an-un-anamente-an-ingresiviaure.	Low	Fair	Med. Obl.	W	Start 20-Frame Pan Near LM
6942	60					Low	Fair	Med. Obl.	W	Start 20-Frame Pan Near LM
6943	60					Low	Fair	Med. Obl.		20-Frame Pan Near LM

Frame #	Camera # f Length mm		cip <b>al</b> pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6944	60				Low	Fair	Med. Obl.	-	20-Frame Pan Near LM
6945	60 -				Low	Fair	Med. Obl.		11
6946	60		;		Low	Fair	Med. Obl.		††
6947	60				Low	Fair	Med. Obl.		II .
6948	. 60				Low	Fair	Med. Obl.		II.
6949	60	,			Low	Poor	Med. Obl.		17
69 <i>5</i> 0	60				Low	Poor	Med. Obl.		11
6951	60				Low	Poor	Med. Obl.		11
6952	60				Low	Poor	Med. Obl.		11
6953	60				Low	Poor	Med. Obl.		11
6954	60				Low	Fair	Med. Obl.		11
6955	60				Low	Fair	Med. Obl.	And the second s	11
6956	60				Low	Fair	Med. Obl.		11
6957	60				Low	Fair	Med. Obl.		11
6958	60				Low	Fair	Med. Obl.		11

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Frame #	Camera # f Length mm	Approx. Photo Scale	Po	cipal pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6959	60	**************************************	- <b>6.6</b> % Maximum A		. 40.0.00000.20.0000000.i.	Low	Fair	Med. Obl.		20-Frame Pan Near LM
6960	60					Low	Fair	Med. Obl.	never missin variabili di quandia mangandia in si dibinanzionali qua neve	End of 20-Frame Pan Near LM
6961	60					Low	Fair	Med. Obl.		21-Frame Pan Near LM
6962	60					Low	Fair	Med. Obl.		11
6963	60					Low	Fair	Med. Obl.		- 11
6964	60					Low	Fair	Med. Obl.		11
6965	60				30000000000000000000000000000000000000	Low	Fair	Med. Obl.		11
6966	, 60					Low	Fair	Med. Obl.		TT .
6967	60					Low	Fair	Med. Obl.		11
6968	60					Low	Fair	Med. Obl.		11
6969	60					Low	Poor	Med. Obl.		t i
6970	60		***************************************			Low	Poor	Med. Obl.		11
6971	60					Low	Poor	Med. Obl.		11
6972	60					Low	Poor	Med. Obl.		n ·
6973	60					Low	Poor	Med. Obl.		11

Magazine V Film HCEX

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Principal Approx. Direction Approx. Fwd Sun Photo Point Tilt Description of. Photo Scale 0/L Angle Quality Min - Max Tilt Lat Long Low Poor Med. Obl 21-Frame Pan Near LM Med. Obl Low Poor 21-Frame Pan Near LM LOW Fair Med. Obl Low Med. Obl Fair 11 Low Fair Med. Obl 11 Low Fair Med. Obl 11 Fair Low Med. Obl End of 21-Frame Pan Low Fair Med. Obl Near LM Start of 25-Frame Pan Low Fair Med. Obl Near LM

Fair

Fair

Fair

Fair

Fair

Fair

Med. Obl

Med. Obl

Med. Obl

Med. Obl

Med. Obl.

Med. Obl

Low

Low

Low

Low

Low

Low

Frame

#

6974

6975

6976

6977

6978

6979

6980

6981

6982

6983

6984

6985

6986

6987

6988

Camera #

f Length

60

60.

60

60

60

60

60

60

60

60

60

60

60

60

60

25-Frame Pan Near LM

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Frame #	Camera # f Length	Approx. Photo Scale		cipal cint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
<b>69</b> 89	60		4.00.000			Low	Fair	Med. Obl		25-Frame Pan Near LM
6990	60					Low	Fair	Med. Obl.		11
6991	60		**************************************		**************************************	Low	Fair	Med. Obl.		. 11
6992	60					Low	Fair	Med. Obl.		"
6993	60					Low	Fair	Med. Obl.		11
6994	60					Low	Poor	Med. Obl.		11
6995	60					Low	Poor	Med. Obl.		11
6996	60					Low	Poor	Med. Obl.		21
6997	60					Low	Poor	Med. Obl.		11
6998	60					Low	Poor	Med. Obl.		11
6999	60					Low	Poor	Med. Obl.		11
7000	60					Low	Fair	Med. Obl.		11
7001	60					Low	Fair	Med. Obl.		11
7002	60					Low	Fair	Med. Obl		11
7003	60					Low	Fair	Med. Obl.		11

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Low

Low

Low

Low

Low

Low

Fair

Fair

Poor

Poor

Poor

Fair

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Approx.		cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	Lat	Long	07 1	Angre	Quality	Min — Max	Tilt	
				Low	Fair	Med. Obl.		25-Frame Pan Near LM
				Low	Fair	Med. Obl.		11
				Low	Fair	Med. Obl.		End of 25 <b>-Frame</b> Pan Near LM
				Low	Good	Low Obl.	E	Core Tool
•				Low	Good	Low Obl.		11
				Low	Poor	Low Obl.		Astronaut
				Low	Poor	Low Obl.	and the second s	11
				Low	Fair	Med. Obl.		Start 5-Frame Pan Near LM
				Low	Fair	Med. Obl.		5-Frame Pan Near LM

Med. Obl.

Med. Obl.

Med. Obl.

Med. Obl.

Med. Obl.

Med. Obl.

Camera #

f Length

60

60

60

60

60

60

60

60

60

60

60

60

60

60

60

Photo

Frame

#

7004

7005

7006

7007

7008

7009

7010

7011

7012

7013

7014

7015

7016

7017

7018

End of 5-Frame Pan

LM Thruster & Antenna

11

11

Near LM

Frame #	Camera # f Length	Approx. Photo Scale	Prin Po Lat	cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
7019	60			-		Low	Fair	Med. Obl.		Antenna & Flag
7020	60		***************************************			Low	Fair	Med. Obl.	W	Lunar Surface
									has annual rither in the lither test in the equipment of the lither encountered and the lither encount	
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			***************************************				
g Mariantania da kalantania da kalantania da kalantania da kalantania da kalantania da kalantania da kalantani						y				
				77						

#### MAGAZINE X

## Frames AS12-48-7022 through 7171

Magazine X is 70-mm black and white photography taken before, during, and after the second extravehicular activity (EVA) on the lunar surface. Each of the images has a reseau grid superimposed on the 60-mm lens.

Included in this magazine are panoramic views of the lunar surface taken from the LM window showing the flag, the ALSEP equipment, and the solar wind panel. Surveyor 3, the Surveyor Crater, Block Crater, and the color chart are also included.

Panoramas of areas on the lunar surface near the LM and Surveyor 3 are identified below:

## 1. 7031 through 7032

A two-frame view from the LM looking northwest at terrain near the LM.

## 2. 7088 through 7090

A three-frame panorama of the Surveyor Crater and a view to the northwest from the southeastern rim showing Surveyor 3, the LM, and the blocky rim of a small crater on the north slopes of the Surveyor Crater.

#### 3. 7101 through 7105

A five-frame panorama to the northeast, inside Surveyor Crater, and a closeup view of Surveyor 3 with arm extended.

## 4. 7141 through 7143

A three-frame panorama of Block Crater, with a view to the west from the east rim showing the LM and the Surveyor Crater. Part of Surveyor 3 is visible at the extreme upper left of the panorama.

# 5. 7144 through 7147

A four-frame panorama of Block Crater with a view to the south from the north rim showing a view into Surveyor Crater. Surveyor 3 is visible in the upper left of the panorama.

# 6. 7153, 7156, and 7157

These three frames comprise a short panorama of the near terrain to the west of the LM.

# 7. 7167 through 7169

A three-frame panorama from the LM looking north at the ALSEP and flag.

APOLLO 12 PHOTOGRAPHY

Magazine X Film S0-267

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_\_

Fra		Camera # f Length		Prin Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
		, Longin	1 11010 00010	Lat	Long	0, 2	7910	[ 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Min — Max	Tilt	
702	2						Low	Fair	OBLIQUE Med.	SW	Surface View from LM
702	3						11	11	11	W	11
702	4				3		11	Good	11	W	11
702	5						11	11	11	11	11
7026	6						11	11	11	11	Ħ
7027	7						11	11	77	11	n
7028	3				,		11	11	91	NW	11
7029	9						11	11	11	11	11
7030	0						11	11	11	11	"
703]	1.						11	11	11	11	11
7032	5						11	11	11	11	"
7033	3						11	11	Low	_d*	11
7034	4.						11	11	11	NE	View of MESA and Fuel Cask
7034	5						11	11	11	11	View Under LM
7036	Ś						1!	11	11	W	Photograph of Color Chart

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	_ 3		Lat	Long				Min — Max	Tilt	
7037						Low	Good	OBLIQUE Med	W	Color Chart, Solar Wind Panel
7038						11	Fair	Low	E	Color Chart
7039						11	11	11	Ę	11 11
7040						11	11	Med	E	11 11
7041			*****			11	Good	"	NW.	Solar Wind Experiment
7042						11	11	11	SW	11
7043						11	11	Low	WSW	Small Crater on Lunar Surface
7044						11	11	!!	W	
7045						11	PT	Med	11	11
7046						11	11	11	SW	View of Lunar Terrain
7047						11	11	11	11	11
704 <b>8</b>						"	11	Lou	SSM	Tri-Pod Holder of Core Tube Sampler
7049						11	11	11	11	11
7050						11	11	Med	W	11
7051						"	11	Low	SW	11

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	. congin	, 11010 6 6616	Lat	Long		, <b>g</b>	,	Min — Max	Tilt	
7052						Low	Good	OBLIQUE Low	SW	Area of Core Sample
7053				****		11	1	"		ш
7054						11	11	"	W	View of Lunar Terrain
7055			,			11	11	11		
7056						11	11	Med	W	Crater on Lunar Surface
7057					Commission of the state of the	11	11	11	11	11
7058	·					11	11	"	11	
7059						11	11	Low	SW	Tri-Pod Holder for Core Tube, Lunar Terrain
7060						11	11	Med	W	Tri-Pod Holder for Core Tube, Large rock
7061						11	11	!!	M	Tri-Pod Holder for Core Tube, Large Rock '
7062						11	11	Low	SE	Core Sample
7063						11	11	Med	W	Tri-Pod Holder for Core Tube, Lunar Terrain
7064.						11	11	11		"
7065						11	"	11	11	" Bench Crater
7066						11	11	11	11	11 11 11

Frame #	Camera #			icipal oint	Fwd O/L	Sun	Photo Quality	Approx. Tilt	Direction of	Description
11	f Length	Photo Scale	Lat	Long	0/ L	Angle	Quality	Min — Max	Tilt	
70 <b>6</b> 7						Low	Gaad	OBLIQUE Med	W	Tri-Pod Holder for Core Tube, Bench Crater
7068						11	11	11	11	Tri-Pod Holder for Core Tube, Core Sample
7069						11	11	11	11	. 11
7070						11	"	Low	SW	Tri-Pod Holder for Cor Tube, Lunar Terrain
7071						11	11	Med	NW	Astronaut Holding Core Tube, LM in Background
7072						11	11	11	SW	Tri-Pod Holder for Core Tube, Lunar Terrain
7073						11	11	"	11	11
7074						11	. 11	11	11	Tri-Pod Holder for Core Tube, Astronaut
7.075						11	11	11	S	Lunar Terrain
7076						. 11	11	11	11	11
7077					<b></b>	11	11	11	SW	Lunar Terrain, Core Tube
7078						11	Poor	11	SW	Core Tube
7079.						11	11			Washed Out
7080						11	11 .			11
7081						11	11			11

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Frame #	Camera # f Length	Approx. Photo Scale	Prin Po	icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
11	Lengin	Photo Scale	Lat	Long	07 L	Angle	Quality	Min — Max	Tilt	
7082						Low	Good	OBLIQUE Low	W	Tri-Pod Holder for Core Tube, Hand Tool Ki
7083						11	11	"	SW	11
7084						11	11	High	NE	Surveyor Crater Surveyor III
7085				•••••		11 ,	11	11	11	
7086						11	11	II.	П	
<b>7</b> 087				·····		11	11	11	11	11
7088						11	11	1	N	
7089						11	11	11	11	
7090						11	11	"	11	Surveyor Crater Surveyor III, LM
7091						11	11	11	NW	11 .
7092						11	11	11	NW	11
7093	·					11	11	. 11	. NW	11
7094						11	11	Med	11	"
7095						11	11	11	"	Surveyor III
7096						11	11	11	"	11

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Frame #	Camera # f Length	, ,	Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
			Lat	Long				Min — Max	Tilt	
7097		Menticolonication aproviduos de potación I. El dela propiede con recompressa en contracto de contracto de la c				Low	Good	OBLIQUE Med	NW	Surveyor Crater
7098			hans papagaman-anaber plagooand	o-mate C. Viscous Control (Control (Con		19	11	Low	F.	Lunar Soil Near Surveyor Scoop
7099			Davi julioji (Oppo) (Oppo) (Oppo) (Oppo)	manatarrasanilanintrosal visi vitrimas centarios proced		11	<b>† †</b>	H <b>i</b> gh	NW	Surveyor III, LM
7100					••••••	19	11	11	11	11
7101			ann ann an Talanta			11	11	11	NE	Surveyor Crater
7102			an-1704/Civilian			Low	11	11	NE	Surveyor III Scoop Shovel
7103						11	11	17	••	"
7104						11	11	Med	NE	Surveyor III
7105			`			11	11	11	11	"
7106						71	11	11	. 11	Surveyor III Scoop Shovel
7107						11	11	11	11	11
7108						11	11	11	11	11
7109						11	11	11	17	"
7110						11	11	Low	N	Surveyor III, Foot Pad, with Pad Imprint
7111						11	11	11	11	11

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Frame #	Camera # f Length	Approx. Photo Scale		cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
#	i Lengin	Piloto Scule	Lat	Long	0/ L	Angle	Quality	Min — Max	Tilt	
7112						Low	Good	OBLIQUE Low	Ŋ	Surveyor III Foot Pad, Pad Imprint
7113						??	11	11	11	Surveyor III Foot Pad
7114				***************************************		11	11	11	11	Surveyor III
7115				·		11	"	Med	NW	"
7116				·····	Person	11	11 .	11	11	11
7117						11	11	"	11	11
7118						11	11	Low	NE	Surveyor III Equipment
7119						11	11	11	NW	Surveyor III Foot Pad
7120						11	11	"	11	11
7121						"	11	Med	NE	Surveyor III
7122						11	11	H <b>i</b> gh	V	11
7123						11	11	11	NE	11
7124			~~~		·	11	11	Low	E	Surveyor III Foot Pad
7125						11	11	Med	SE	Surveyor III Equipment
7126						11	11	Low	SE	Surveyor III Foot Pad

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx.	Direction of	Description
"	· = g		Lat	Long				Min — Max	Tilt	
712.7						Low	Good	OBLIQUE Low	S	Surveyor III Foot Pad
7128						11	11	11	S	Surveyor III Scoop Shovel
7129						11	11	11	SW	11
7130	•					11	11	High	W	Surveyor III Equipment
7131						11	"	"	11	
7132						11	11	11	SW	11
7133						"	"	"	NW	View of Astronaut, Surveyor III and LM
7134			***************************************			11	11	High	NW	"
7135						11	11	71	11	11
7136						1:	11	11	11	. 11
7137						11	11	Med	SW	Surveyor III Equipment
71 <b>3</b> 8						!!	11	11	S	11
7139						11	11	11	NW	Surveyor Crater Terrain
7140						"	"	11		11
7141					·	11	. 11	"	SW	View of Block Crater, Surveyor Crater

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	L c.ig.ii	1 11010 00010	Lat	Long	٠, <u>-</u>	/g.o	444	Min — Max	Tilt	
7142						Low	Good	OBLIQUE Med	SW	View of Block Crater, Surveyor Crater
7143						11	11	11	W	View of Block Crater, Surveyor Crater, LM
7144						11	11	71	S	Block Crater, Surveyor III
7145						11	11	11	11	11
7146						11	"	"	SW	Block Crater, Surveyor Crater
7147						11	11	11	11	Surveyor Crater
7148					***************************************	11	11	Low	N	Astronaut using tongs to pick up rock
7149						11	11	1!	''	11
71.50				•		11	11	11	1*	11
7151						11	11	High	W	View of LM
7152						11	11	11	11	"
7153						11	11	"	11	View of Lunar Terrain from IM
7154						11	11	11	SW	11
7155						11	<b>!!</b>	. 11	W	11
7156		_				11.	11	71	11	11

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Frame #	Camera # f Length	Approx. Photo Scale		icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
<i>TT</i>	Lengin	Photo Scale	Lat	Long	0/ L	Aligie	Quality	Min — Max	Tilt	
7157						Low	Good	OBLIQUE High	W	View of Lunar Terrain from IM
7158						11	11	Med	"	11
7159						11	11	High	NW	View from LM of ALSEP, Lunar Terrain
7160						"	"	Med	"	Flag, Footprints on Lunar Surface from LM
7161						11	11	11	11	Footprints on Lunar Surface from LM
7162						"	11	11	N	Flag, Footprints, Lunar Terrain from LM
7163						11	11	"	N	11
7.164						11	!!	H <b>i</b> gh	NW	11
7165						11	"	"	"	View of Lunar Terrain from LM
7166						11	11	11	N	11
7167						"	11	"	. " .	Flag, ALSEP, Lunar' Terrain from IM
7168	·					11	11	++	₩	ALSEP, Lunar Terrain from LM
7169						11	11	11	11	"
7170						11	11	"	11	"
7171						11	Fair	"	11	11

#### MAGAZINE Y

#### Frames AS12-46-6715 through 6868

Magazine Y contains color photographs taken before, during, and after the first EVA. Each of the images has a reseau grid superimposed on the 60-mm lens. Included are the following seven panoramas of the area around the ALSEP deployment:

#### 1. 6730 through 6745

A 16-frame panorama from west to northwest showing an astronaut before ALSEP deployment, to northeast at the flag, antenna, and LM (sunglint), to west with Surveyor Crater.

# 2. 6746 through 6763

An 18-frame panorama, 360°, taken from north of the LM, including Surveyor Crater, Surveyor, LM, flag, panel, and TV camera, and returning to Surveyor Crater.

## 3. 6764 through 6782

A complete  $360^{\circ}$  panorama from southeast of the LM on the rim of Surveyor Crater. This panorama includes Surveyor 3, Surveyor Crater, and the LM.

#### 4. 6807 through 6811

A five-frame panorama from south to southwest showing an astronaut deploying the ALSEP. The LM, flag, and antenna are in the background to the south. A mound to the southwest is in the central portion of the panorama.

## 5. 6836 through 6844

A nine-frame panorama of "1000 Crater," northwest of Head Crater, showing the entire rim with numerous rocks.

#### 6. 6845 through 6852

An eight-frame panorama of "1000 Crater," northwest of Head Crater, showing the entire rim with numerous rocks.

#### 7. 6853 through 6855

A three-frame panorama to the west, containing Bench Crater to the extreme southwest, Head Crater to the west, and a blocky mound to the northwest.

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Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
	mm		Lat	Long				WIGA	1111	
6715	60					Low	Poor	Med. Obl.	W	Astronaut on Ladder
6716	11					11	11	11	"	11 11 11
6717	11					11	11	11	11	11 11 11
6718	11					11	11	11	11	11 11 11
6719	11					11	Fair	Low Obl.	11	Footprints
6720	11					11	11	11	11	Lunar Surface
6721	11					11	11	11	11	11 11 .
6722	11					11	11	"	11	11 11
6723	"					11	11	11	"	11 11
6724	11					11	Foor	Med Obl	11	Egress from LM
6725	"					11	Fair	11	11	11 11 11
6726	11					11	11	11	11	11 11 11
6727	11					11	11	11	11	11 11 11
6728	11					11	11	11	11	11 11 11
6729	11					Į:	11	11	11	11 11 11

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Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6730	mm 60		LUI	Long		Low	Fair	Med Obl.	W	Start 16-Frame Pan near LM
6731	11			***************************************		11	11	11	,	11
6732	11			***************************************		11	"	11	"	11
6733	11					11	11	11	,,	11
6734	11					11	11	11	,,	11
6735	11					11	11	11	P	11
6736	11 A		·			11	11	11	,	n
6737	11					11	11	"1	•	11
6738	11					11	Poor	-11		11
6739	11					11	11	11	.,	"
6740	11					11	11	11	"	"
6741	11				**************************************	11	Fair	11	1)	11
6742	11				processing the second s	11	11	11	· · · · · · · · · · · · · · · · · · ·	11
6743	11					11	11	11		11
6744	11					11	η	19		, "

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Frame #	Camera # f Length	Approx. Photo Scale	Prir Po	icipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
<i>"</i>	mm	Thoro ocure	Lat	Long		Aligic	Quality	Min — Max	Tilt	
6745	60					Low	Fair	Med. Obl.		End 16-Frame Pan near LM
014)						TOM	rair	Med. Ubl.	······································	Start 18-Frame Pan
6746	11					11	11	11		near LM
6747	11					11	11	11	-	11
6748	11			•		11	11	11		11
6749	11		**************************************			11	11	11		11
6750	11					11	11	11		11
6751	11				***************************************	11	11	11		11
6752	11		***************************************		90000000000000000000000000000000000000	11	11	11		11
6753	11		~*************************************			11	11	11		"
6754	11					11	11	11		11
6755	11					11	11	11		11
6756	11					11	11	11		11
6757	11					11	11	11		11
6758	11					11	11	11		!!
6759	11					11	1,	11		11

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Direction Principal Approx. Photo Camera # Fwd Frame Approx. Sun Point Description Tilt of # f Length Photo Scale 0/L Angle Quality Min - Max Tilt Lat Long mm18-Frame Pan near LM 6760 60 Low Fair Med Obl 11 6761 11 Poor 11 11 6762 End 18-Frame Pan 6763 11 11 11 11 near LM Start 19-Frame Pan 6764 11 near LM 6765 11 11 6766 11 11 6767 6768 11 11 6769 11 Fair 6770 11 6771 11 11 6772 11 6773 11 11 6774 11 11

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Frame #	Camera # f Length	Approx. Photo Scale	· Po	cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm		Lat	Long				Min — Max	Tilt	
6775	60					Low	Fair	Med Ohl		19-Frame Pan near LM
6776	11	-			•••••	11	11	"		11
6777	11				***************************************	11	11	"		11
6778	11					11	11	11		11
6779	11					11	11	11		II.
6780	"					11	"	11		11
6781	11					11	ll	Ш		1
6782	11					11	Poor	11		End 19-Frame Pan near LM
6783	11					11	Fair	"		ALSEP removal from LM
6784	11					11	11	11	11	11
6785	11			•		11	11	11	11	11
6786	11					11	11	11	11	11
6787	11					11	11	11	11	11
6788	11		***************************************			11	11		11	11
6789	11					11	11	"	11	11

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Frame	Camera #	Approx. Photo Scale	Principal Point		Fwd	Sun	Photo Quality	,	Direction of	Description
#	f Length	Photo Scale	Lat	Long	0/L	Angle	Quality	Min — Max	Tilt	
6790	60					Low	Fair	Med. Obl.	W	ALSEP Removal from LM
6791	11					11	11	11	11	11
6792	11					†î	11	"	N	11
6793	11					11	Poor	11	W	Lunar Surface Mound
6794	п					11	Fair	"	11	11
6795	11					19	11	11	11	11
6796	11	·				11	11	11		(Start) 8-Frame Pan West of LM
6797	11					11	11	11		. "
6798	11					11	11	11		11
6799	11					11	11	11		"
6800	11					11	11	11		11
6801	11					11	11	11		"
6802	"					11	11	11		11
6803	"					17	11	11		" (End)
6804	11					11	Poor	11		(Start) 8- Frame Pan ALSEP Packa

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Frame #	Camera # f Length	Approx. Photo Scale	Prin Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	1 noto Scale	Lat	Long	07 L	Angre	Quality	Min — Max	Tilt	
6805	60					Low	Poor	Med. Obl.		8-Frame Pan ALSEP Package
6806	11					"	11	11		н,
6807	11		***************************************			11	Fair	11		
6808	11		**************************************			11	11	11		11.
6809	11					11	11	11		11
6810	11					11	11	11		"
6811	"1"					11	11	"		" (End)
6812	11		***************************************	and the state of t		11	11	Low Obl.	W	Solar Wind Exp.
6813	11					11	11	Med. Obl.	11	ALSEP Cable
6814						11	11	11	11	Central Station
6815	11					11	11	11	11	11
6816	11					11	11	11	11	11
6817.	11				Name (Street Street	11	11	11	11	11
6818	11					11	11 .	11	11	ALSEP Deployment
6819	11					11	Poor	11	E	"

Frame #	Camera # f Length	Approx. Photo Scale		icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm		Lat	Long		, ing , c	agaii,,,	Min — Max	Tilt	
6820	60					Low	Fair	Med Obl-	W	Ion Detector
6821	11				***************************************	11	11	11	11	ALSEP Deployment
6822	11			***************************************		11	11	11	11	Mound
6823	11					11	11	11	11	11
6824	11		***************************************	***************************************		11	11	Low Obla	11	11
6825	11					11	11	. 11	11	11
6826	11					11	11	11	11	ALSEP Deployment
6 <b>8</b> :27	11					11	11	11		Mound
んなつな	11					11	11	11		,1
6829	11					"	11	"		
6830	11					"	11	11		"
6831	"					11	11	- 11		11
6832	"					11	11	11		11
6833	"					11	11	11		Lunar Surface
6834	11					11	11	1!		11

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Frame #	Camera #	Approx. Photo Scale	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	f Length		Lat	Long		9		Min Max	Tilt	
6835	60					Low	Fair	Low Obl		Lunar Surface (Start)
6836	11				***************************************	?†	11	Med. Obl.	W	9-Frame Pan NW of ALSEP
6837	11					11	11	11	11	11
6838	11					11				
6839	17	***************************************				11	11	11	11	
6840	11		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			11	11	11	1!	
6841	11 :					11	11	11	11	11
6842	"		20002000000000000000000000000000000000			11	11	11	11	
6843	"			onnerstanding occupant books at Tradellining or the		11	11	11	11	11
6844	"		,			11	11	11	11	" (End)
6845	11				00000000000000000000000000000000000000	11	11	11		(Start) 8—Frame Pan NW of ALSEP
6846	11					11	11	11		11
6847	11					11	11	11		11
6848	11					11	11	11	"	
6849	11					<b>?1</b>	?1	11		11

Frame #	Camera # f Length	Approx. Photo Scale		cipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
#	n Length	Photo Scale	Lat	Long	U/ L	Angle	Quality	Min — Max	Tilt	
6850	60			•		Low	Fair	Med. Obl.		8-Frame Pan NW of ALSE
6851	11					11	11	"		11
6852	11					11	11	11		
6853	11					11	11	Low Obl.	W	(Start) 3-Frame Pan From LM
6854	11					11	11	11	<u> 11 ·                                   </u>	11
6855	11					11	11	11	11	" (End)
6856	11 .					11	11	11	11	4-Frame Pan From LM
6857	11					FI .	11	11	11	11
6858	11					17	11	11	11	11
6859	11		***************************************			11	11	11	11	" (End)
6860	11					11	11	Med. Obl.	11	ALSEP From LM
6861	· 11					11	11	11	"	Solar Wind Panel Flag/Antenna
6862	11					11	11	11	11	3-Frame Pan ALSEP From LM (Start)
6863	11					11	11	11	11	11
6864	11		:			11	75 magazana (* † † † † † † † † † † † † † † † † † †	11	11	" (Find)

# APOLLO 12 PHOTOGRAPHY Magazine Y Film HCEX Time Reference — GET \_\_\_\_\_ = GMT \_\_\_\_\_

Frame #	Camera # f Length		Po	cipal pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
6865	60	·		, and the second		Low	Fair	Med. Obl.	W	Flag/Antenna/Solar Wind
6866	"					11	11	11	11	ALSEP From LM
6867	11					11	11	11	11	"
6868	11					11	11	11	11	11
			***************************************							

#### MAGAZINE Z

#### Frames AS12-49-7172 through 7324

Magazine Z is 70-mm black and white photography taken on the lunar surface during the second EVA. A 60-mm lens with a reseau grid was used. Photographic content includes the core samples, tool kit, and views of Head, Bench, Halo, and Sharp Craters. The following are included in the magazine Z panorama:

# 1. 7209 through 7212

A four-frame panorama looking west to north showing the lunar surface. The lunar surface hand tool kit is in the center of the panorama.

## 2. 7213 through 7215

A three-frame panorama to the east over Head Crater, showing the LM.

## 3. 7223 through 7228

A six-frame clockwise panorama of Bench Crater, rim to rim, looking south from the north rim, showing the east, south, and west inner walls and large rocks on the floor.

## 4. 7229 through 7233

A five-frame counterclockwise panorama of Bench Crater from the north rim, showing the south and west walls and floor.

#### 5. 7244 through 7256

A 13-frame counterclockwise panorama looking east into the sun, showing an astronaut, the LM, and numerous rocks. The panorama continues to the north and then to due west.

## 6. 7263 through 7269

A seven-frame counterclockwise panorama of Sharp Crater looking west from outside the eastern rim. Very blocky.

## 7. 7271 through 7275

A five-frame clockwise panorama of Sharp Crater looking from the east rim to the west.

#### 8. 7308 through 7311

A four-frame panorama looking west showing the lunar surface, the lunar surface hand tool kit, and Astronaut Bean with hand tools.

#### 9. 7321 through 7324

Originally a six-frame panorama of Surveyor Crater; frame 7325 is 90% washout and 7326 will not tie end of panorama. This panorama, which contains four frames, begins on the southwestern rim of Surveyor Crater looking east at Surveyor and the eastern inner slope of the crater, and pans counterclockwise to the LM on the northwestern rim.

APOLLO 12 PHOTOGRAPHY<sub>0-267</sub>

Magazine \_\_\_\_\_ Film \_\_\_\_ = GMT \_\_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale		cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
Tr	Lengin	Filoto Scale	Lat	Long	0/ L	Mudie	Quanty	Oblique	Tilt	
7172				20-000-000-000-00-00-00-00-00-00-00-00-0	***************************************	Low	Poor		S	Lunar Terrain
7173						11	Good	High	ı	View into Head Crater
7174.						11	11	11	11	117 11
7175		·				11	11	11	17	11 11
7176						11	11 .	TT .	11	11 11
7177						11	11	11	11	11 11
7178						11	11	11	11	11 11
7179				- · · ·		11	11	Med.	11	11 11
7180						11	11	11	11	
7181						11	11	11	11	. 11
7182						11	11	disconnection 11	11	11 11
7183						17	11	11	11	11 11
7184						11	11	TI III	SE	11 11
7185						11	11	11	11	11 11
7186						11	ff	11	"	11 11

APOLLO 12 PHOTOGRAPHY

Magazine Z

Film \_\_\_\_S0-267

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	Description
7187	:		Lui	Long		Low	Good	Med.	SE	View into Head Crater
71.88						11	11	11	11	11
71.89						11	11	Low	N	Tri-Pod Holder for Core Sampler
7190						11	11	11	NW	Core Sampler Lunar Surface
7191		4				11	,11	11	11	" "
7192						11	11	11	11	11 11
7193						11	11	11	N	11 11
7194						11	11	11	NW	11 11
7195						11	11	11	N	11 11
7196						11	11	11	N	11 11
7197						11	11	"	SE	11 11
7198						11	11	. 11	E	11 11
7199						11	11	11	SE	ıı <u>U</u>
7200						17	11	Med.	SE	View of Lumar Surface
7201		·				11	11	High	SE	" "

APOLLO 12 PHOTOGRAPHY

Magazine Z Film S0=267Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Po	cipal pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Oblique	Direction of Tilt	Description
7202		2.13.00.20.20.20.20.20			Low	Good	High	SE	View of Lunar Surface
7203					11	11	11	S	11 9
7204					11	11	11	SW	h II
7205					11 .	11	tr'	ลพ	11 11
7206				90************************************	11	11	11	W	11 11
7207					11	11	TT.	11	11 11
7208		***************************************		***************************************	11	11	11	NW	11 11
7209					11	11	††	11	11 11
7210					11	11	Med.	NW	<b>V</b> iew of Lunar Surface Hand Tool Kit
7211					17	11	11	N	11 11
7212	T-Valuation of the Control of the Co				11	11	11	N	View of Lunar Surface
7213				**************************************	††	11	11	NE	Astronaut, <b>LM</b> , Head Crater
7214					11	Fair	Med.	E	LM, Head Crater
7215					11	11	11	E	11 11
7216					"	11	11	E	Head Crater

AFOLLO 12 PHOTOGRAPHY
Magazine Z Film SO-267Time Reference — GET \_\_\_\_ = GMT \_\_\_\_\_

Frame #	Camera # f Length	, ,,	Prin Po	icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
			Lat	Long				Oblique	Tilt	
7217					£	Low	Good	Low	NW	Core Sampler
7218						11	17	11	11	" "
7219						"	11		N	Core Sampler, Large Rock
7220						11	11	11	N	" "
7221						11	11	Med.	NNE	Core Sampler, Hand Tool Kit
7222						11	11	11	11 -	11 11
7223			***			11	11	11	SE	Bench Crater
7224						11	11	11	S	11 11
7225						11	11	11	11	11 11
7226						11	11	11	SW	11 11
7227						11	11	11	11	
7228						11	11	11	W	11 11
7229						11	11	11	W	11 11
7230						11	11	††	SW	11 11
7231						11	11	11	S	11 11

APOLLO I2 PHOTOGRAPHY
gazine Z Film S0-267

Frame #	Camera # f Length		cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Oblique	Direction of Tilt	Description
7232				****************	Low	Good	Med.	S	Bench Crater
7233					11	11	11	SE	Bench Crater
7234					11	11	Low	11	Core Sampler, Bench Crater
7235					11	"	Ħ	17	11 91
7236					Low	Good	Low	S	Core Sampler
7237					11	!!	11	SE	Core Sampler, Bench Crater
7238					11	11	11	11	11
7239					11	11	11	E	11
7240					11	"	Med.	S	11
7241					11	11	11	11	11
7242					11	11	Low	W	Core Sampler, Hand Tool Kit
7243					11	11	11	31	11
7244					11	11	High	E	View of Lunar Terrain
7245					11	Fair	11	11	View of Lunar Terrain, Astronaut
7246					11	11	"	11	Astronaut Carrying Hand Tool Kit, LM, Lunar

APOLLO 12 PHOTOGRAPHY

Magazine Z Film S0-267

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	 Prin Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	Description
<b>,</b>		Lat	Long	<u> </u>			Oblique	1111	
7247					Low	Fair	High	NE	Lunar Terrain, LM
7248					11	Good	11	11	11 11
7249					11	. II	11	N	11 11
7250				************************	ff	11	11	NE	Lunar Terrain
7251				***************************************	11	11	11	N	11 11
7252					11	11	<b>!</b> !	NW	View of Lunar Terrain
7253				<b>~</b> 0.000 (0.000)	11	11	iı	. 11	Large Boulder
7254					11	11	11		Lunar Terrain
7255			-	************************************	11	11	11	11	11 11
7256					PT	11	11	11	11
7257					11	11	11	11	11 11
7258					Pî	İ	11	SW	11 11
7259					11	11	11	S	11 11
7260					11	11	Med.	S	Lunar Terrain, Large Rock
7261					11	11	11	SE	Lunar Terrain

Frame #	Camera # f Length	Approx. Photo Scale	Prir Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Oblique	Direction of	Description
		Thoro oddic	Lat	Long		Aligie	Quality		Tilt	
7262			Overconnection de discourse consequent	nan o standisti sina di tang ilipunik palik pilik pilik palik palik palik palik palik palik palik palik palik p	ModPoressodoudouper@nouedbasis-son	Low	Good	Med.	SE	Lunar Terrain
7263						11	11	11	NW	Sharp Crater
7264			•••••			11	11	11	W	11 11
7265						11	11	11	11	" "
7266				•		11	11	11	11	11 11
7267			****			11	11	11	11	" "
7268						11	11	11	SW	11 11
7269						11	11	11	71	11 11
7270						11	11 :	11	99	11 11
<b>7</b> 271						ft	11	11	W	" "
7272						11	11	11	11	11 11
7273						11	11	11	11	11 11
7274						11	11	11	NW	11 11
7275						11	11	11	11	11 11
7276					and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	11	11	Low	S	Core Sampler Near

Frame #	Camera # f Length		Po	cipal cint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Obligit	Direction of Tilt	Description
7277		Annan	_ G (	Long		Low	Good	Low	S	Core Sampler near Halo Crater
7278						11	11	Med.	SE	Astronaut holding Core Sample
727 <b>9</b>						11	11	Low	S	Core Sampler near Halo Crater
7280						11	:1	11	"	<sup>1</sup> 11 11
7281						11	11	Med.	11	Astronaut, Hand Tool Kit
7282			annin namananan noongaaconassoon-		According to the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second	!!	11	"	SE	- Core Sampler
7283	Machine (Mathematical Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie Annie					11	11	Low	SE	11
7284						11	11	11	11	- 11 11
7285						11	11	11	11	11 11
7286			#%******************************			11	11	Med.	SW	Astronaut and Core Sampler
7287						11	11	Low	S	Core Sampler
728\$					***************************************	11	11	††	SE	11 11
7289						11	11	High	W	View of Lunar Terrain
7290						11	11	11	W	11 11
7291					na vnokovila Birki vikusovila osago v "Avri	11	11	11	SW	11 11

Frame #	Camera # f Length		Po	cipal int Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Oblique	Direction of Tilt	Description
7292	***************************************	y de se contra de constituir de actividad de la constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir de constituir		•		Low	Good	High	S	View of Lunar Terrain
7293						11	11	· 11	11	11 11
7294						11	11	11	SE	11 11
7295						11	11	11	E	11 11
7296						11	Fair	11	11	11 11
7297						11	11	11	11	n i
7298						"	11	11	††	11 11
7299	•			)		11	11	11	? I	11 11
7300						11	Good	High	NE	View of Lunar Terrain
7301					•	11	11	11	11	11 11
7302						11	11	11	N	. 11
7303						îî	11	11	11	11 11
7304						11	11	11	!1	11 11
7305			, , , , , , , , , , , , , , , , , , , ,			11	11	11	11	ti ti
7306						11	11	11	11	17

APOLLO 12 PHOTOGRAPHY

 Magazine
 Z
 Film
 S0-267

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Principal Approx. Direction Camera # Fwd Photo Frame Approx. Sun Point Description Obligation of the of # f Length Photo Scale 0/L Angle Quality Tilt Lat Long Astronaut and 7307 Low Good Med. NW Hand Tool Kit . 11 7308 .11 11 11 7309 11 11 11 High W 7310 Fair View of Lunar Terrain W 7311 11. W 17 7312 Good Low SW Astronaut Collecting Rock 7313 NW11 Core Sampler, 7314 Hand Tool Kit S 7315 11 11 11 7316 NW High View of LM 7317 Astronaut and 7318 11 Med. SE Hand Tool Kit 7319 11 7320 Low View of Lunar 11 7321 High Ε Poor Terrain, Surveyor III

APOLLO 12 PHOTOGRAPHY

Magazine Z Film S0-267

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Po	cipal pint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Obl <b>Ti</b> de	Direction of Tilt	Description
7322			Links		Low	Fair	High	NE	Surveyor Crater, Surveyor III
7323					11	Poor .			Photo Underexposed
7324					11	Fair	Med.	E	Surveyor Crater
						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
					a direction of the second of t				
					<b>&gt;</b> -#************************************				
		**************************************			**************************************	To the second se			
			•						
	Bront Shore control that the last state of the l					a cas, quantitativa a resonantitativa a resonantitativa a resonantitativa a resonantitativa a resonantitativa a			
		······································	\$*************************************	***************************************		······································			
		general control of the control of th		azerlan englightetika idaliyi biliyi diliyi kerma	ann dagan makka san kalan kalan san kala				
							M. Threshold and the state of t		

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### MAGAZINE EE

### Frames AS12-55-8121 through 8297

Photographic coverage of magazine EE is imaged on 70-mm black and white (SO-164) film. Exposures were made from the CM with camera focal lengths of 80 mm and 250 mm at approximately 60 nautical miles altitude. The 177 exposures are of poor to good quality. The 75-frame 80-mm stereo sequence of near-vertical exposures of the back side of the lunar surface are of good quality. Coverage is from approximately 113° east longitude, 5° south latitude to 34° east longitude, 11° south latitude. Target of opportunity 13 is covered on frames 8197 and 8198. Complete coverage of craters Kapteyn, Langrenus A, and Magelhaens was obtained. La Perouse Crater, excepting the very northern section, and the northern part of Langrenus Crater were also photographed in this near-vertical stereo sequence. Other coverage includes 80-mm high obliques of Reiner Crater in frames 8121 through 8123 and 250-mm high-altitude small-scale transearth injection (TEI) photographs of the eastern part of the lunar surface in frames 8201 through 8297. In this series, frames 8216 through 8225 show good detail. Six exposures of magazine EE are blank.

### APOLLO 12 PHOTOGRAPHY

Magazine <u>EE</u> Film <u>B&W</u> SO-164
Time Reference — GET \_\_\_ = GMT \_\_\_

Frame #	Camera # f Length	Approx. Photo Scale		ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
77	mm	1 11010 Scale	Lat	Long	0, 5	Aligie	Quality	Min — Max	Tilt	
8121	80	1:3,519,000	3.5°N	54.5°W	95%	Low	Poor	65-70 <sup>0</sup>	WNW	High Obliques of Reiner Crater
8122	11	1:3.677.900	3.5 <sup>0</sup> N	11	11	11		"	11	Reiner Craters A & C
8123	11	1:3.836.899	11	11	11	11		11	11	and other small craters in the area
8124						·				TO-53 Imaged. Stereo Strip 8125 to 8136
8125	"	1:1,376,900	4.0 <sup>0</sup> S	120.5°E	65%	"	11	Near Vertical	W	NNE of Crater 279 & SSE of Crater 211
8126	ft	1:1,376,900	11	119.2°E	11	11	71	11	11	N of Crater 279 & SSW of Crater 211
8127	11	1:1,376,900	5.5°S	112.5°E	60%	Med	Fair	"	Ţ!	S of Crater 275, N of Crater 276, SW of Crater 2
<u>\$12\$</u>	11	11	11	ni o°e	11	"	11	11	!!	E of Crater 273 & NNW of Crater 276
8129	11	11	11	11	"	11	11	11	11	S 3/4 of Crater 273
8130	11 ·	"	"	1 09.5°E	65%	11	"	11	11	11
8131	11	11	6.0°s	108.5°E	11	11	11	11	11	SW of Crater 273 & SSW of Crater 202
8132	11	11	6.0°s	107.0 <sup>0</sup> F	11	11	11	11		WSW of Crater 273 & SE of Crater 270
8133	11	11	6.5°s	1 <b>0</b> 6.0°E	11	11	11	11	11 	WSW of Crater 273 & SE of Crater 270
8134	!!	11	11	105-0 <sup>0</sup> គ	11	11			ш	Ц.
8135	11	. "	11	104.5°E	11	"	11	11	11	SSE of Crater 270 & WSW of Crater 273

APOLLO 12 PHOTOGRAPHY
Magazine EE Film B&W SO=164Time Reference GET = GMT

Frame #	Camera # f Length	Approx. Photo Scale		icipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	1 11010 00010	Lat	Long	07 L	Aligio	- Quality	Min — Max	Tilt	
8136	80	1:1,376,900	7.0°s	103.5°E	65%	Med	Fair	Near Vertical	W	S of Crater 270 & WSW of Crater 273
8137	11	11	11	102.0°E	11	11	11	11	11	Steres Strip 8137278 & SE of Crater 269
8138	11	11	11	101.5°E	11	11		ll ll	1	SE of Crater 269 & SSW of Crater 270
8139	` 11	11	11	100.5°E	i	"	11	"	11	SE of Crater 269 & SW of Crater 270
8140	"	11	11	99.5°E	11	11		11	11	SSE of Crater-269 & SW of Crater 270
8141	. 11	11	19	98.5 <sup>0</sup> F	11	1:	11	. 11		S of Crater 269 & SW of Crater 270
8142	11	11 .	8.0°s	97.5°	g "	. 11	11	11	11	SSW of Crater 269 & SE of Crater 267
8143	11	11	11	96.5°E	11	<b>†</b> 1	11	11	11	SSE of Crater 267 & SE of Crater 266
8144	11	11	11	95.0°E		11	11	11 .	11	SE of Crater 266 & S of Crater 267 & SE Sec.of 266
8145	11	11	11	94.0°E	11	11	11	11	11	SE Section of Crater 266
8146	11	11	11	93.0°E	"	11	11	11	11	S. Part of Crater 266
8147	11	"	8.5°5	92.0°E	1°	**	Good	TT -	11	SW Part of Crater 266
8148	11	11	11	91.0 <sup>0</sup> E	11	*1	11	!'	17	Small SW Part of Crater 266
8149	"	11	11	90.0°E	1.	11	11 .	11	11	SW of Crater 266 & SE of Crater 263
8150	11	11	9.00	я <sup>0</sup> 0.68	11	11	11	11		SW of Crater 266 & SE of Crater 263

E 3/4 of LaPerouse

W 3/4 of LaPerouse

W 1// of InPorouse

W of LaPerouse & E

of Kapteyn C

76.5°E

75.5°E

7ム 5<sup>0</sup>E

73 0°F

Approx. Photo Scale	Principal Point		Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
1:1,376,900	<b>Lat</b> 9.0 <sup>0</sup> S	Long 89.0 E	65%	Med Good		Min — Max Near Vertical	Tilt W	SE of Crater 263 & SW of Crater 266
11		87.0°E	11	11	"	"	11	SE of Crater 263 & SW of Crater 266
11		86.0°E	11	Med	11	11	11	Stereo Strip 2153 to 8
11	9.5°s	85.0°E	11	11	11	11	11	S of Crater 263 & N of Gibbs Crater
11	11	84.0 <sup>0</sup> т	11	11	11	!!	11	SSW of Crater 263 & N
11	11	83.0°E	11	11	11	11.	11	SW of Crater 263 & NE of Ansgarius
11	10.0°s	82.0°E	11	11	11	11	11	SE of Kastner & SW of Crater 263
11	11	80.5°E	11	11	11	11	11	LaPerouse E & NNE of Ansgarius
19	11	79.5°E	11	11	''	11	11	N of Ansgarius & E of LaPerouse
11	11	78.5°E	11	11	11	11	11	E of LaPerouse & NNW of Ansgarius
1!	11	77.5°E	1'	11	11	11	11	E Half of LaPerouse

. .

Frame | Camera #

f Length mm

#

Film <u>B&W</u> S0-164

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale		cipal oint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
8166	80	1:1,376,900	9.0°s	86.0°E	65%	Med	Good	Near Vertical	L.	Small Section of E Kapteyn & Area E of Kaptey
8167	11	11	11	71.5°E	11	11	11	11	11	E Half of Kapteyn
8168	11	11	11	70.5°E	11	?1	11	"	11	Kapteyn & Bordering Area
8169	11	11	10.5°s	69.0°E	65%	11	11	11	11	Kapteyn & Bordering Area Stereo Strip 8169 to 8184 E of Langrenus A & S of Kapteyn E
8170	11	11	11	68.5 <sup>0</sup> E	11	"	11	11	11	E Half of Langrenus A & W of Kapteyn
8171	11	11	n.o°s	67.0°E	"	11	11	11	11	Langrenus A
8172	"	"	11	66.5°E	11	11	11	11	11	W Half of Langrenus A & ESE of Langrenus
8173	11	11	11	65.5°E	11	"	11	11	"	W of Langrenus A & ESE of Langrenus
8174	11	11	10.5°s	64.0°E	11	11	11	11	11	SE of Langrenus
8175	11	11	11 <b>.</b> 0°s	63.0°E	<b>!</b> '	11	11	11	11	SE Section of Langrenus & NE of Lohse
8176	11	11	11	62.0°E	11	High	11	11.	"	S Part of Langrepus & NE of Lohse
8177	"	11	11	61.0°E	11	11	11	11	11	S 1/4 of Langrenus & N of Lohse
8178	11	11	"	60.0°E	11	11	11	. 11	11	SW Part of Langrenus & I
8179	11	1!	††	59.0°E	11	11	11	ţ•	11	SW Section of Langrenus & NW of Lohse
8180	11	"	"	58.0° <sub>E</sub>	11	11	11	11	11	SW of Langrenus & NW of Lohse

Frame #	Camera # f Length	Approx. Photo Scale		cipal bint Long	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
8181	80	1:1,376,900		57.0°E	65%	High	Good	Near Vertical	W	SW of Langrenus & Langrenus D
8182	11	11	11	56.0°E	11	11	11	"	11	SE Section of Mare Fecunditatis
8183	19	11	11	54.5°E	11	11	11	11	! <b>!</b>	SE Section of Mare Fecunditatis
8184	` 11	11	17	54.5 <sup>0</sup> E	"	11	17	11	- 11	S Section of Mare Fecunditatis
8185	11	11	11	52.5°E	11	11	Fair	11	11	Stered Strip 8185 to 8200 Section of Mare Fecunditatis & NE of Crozie
8186	11	11	11	51.5°E	11	11	11	11	11	NNE of Crozier & SSE of Goclenius U
8187	. 11	11	11	50.5 <sup>0</sup> E	11	11	11	11	11	N of Crozier & ENE of Bellot
8188	r	, . <b>!!</b>	11	49.0°E	11	11	11	11	11	E Part of Bellot & N of Crozier H
8189	1.	11	11	48.0°E	11	11	"	11	11	Most of Bellot & Area N of Bellot
8190	11	11	11	47.0°E	11	11	"	11	11	Most of Bellot & Area NW of Bellot
8191	!!	11	11	46.0°E	11	11	11	11	11	SE Quadrant of Gocleniu. & NE Sec. of Magelhaens
8192	11	11	11	45.0°E	11	"	11	11	11	S Half of <b>Go</b> clenius & E Half of Magelhaens
8193	"	11	11	44.0°E	"	11	11	11	11	SW Quadrant of Goclenius & all of Magelhaens
8194	11	11	11	43.0 <sup>0</sup> Е	"	1!	11	11	11	W Half of Magelhaens & all of Gutenberg D
8195	11	11	11	42.0°E	<b>!</b> '	11	11	11	"	Gutenberg D & ŠE of Gutenberg

APOLLO 12 PHOTOGRAPHY
Magazine EE Film B&W S●-164

Time Reference — GET — = GMT —

Frame #	Camera # f Length	Approx. Photo Scale	Po	cipal int	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	mm	1 more cours	Lat	Long		Aligie	a d d i i i	Min — Max	Tilt	
8196	80	1:1,376,900	11.08	41.0°E	65%	High	Fair	Near Vertical	W	S Edge of Gutenberg & N of Pyrenaeus
8197	11	11	11	40.0°E	11	11	"	11	"	SW of Gutenberg & Gaudibert J: TO-13
8198	11	"	11	39.0°E	11	11	11	11	11	E 3/4 of Gaudibert & SW of Gutenberg; TO-13
8199	. 11	11	11	38.0°E	11	11	11	11	11	Gaudibert & surrounding Area
8200	11	"	11	36.0°E	11	11	"	11	· 11	W 1/4 of Gaudibert & SE of Capella
8201	250		·				"			TEI East Half of Moon
8202	11						"			11
8203	11						11			11
8204	11						"			11
820 <b>5</b>	11						11			"
8206	. 11						11			11
8207	"						11			11
8208	11						11			11

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length	Approx. Photo Scale	Prir Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm	1 11010 00010	Lat	Long	0, 5	Angre	Quality	Min — Max	Tilt	10 14414 90 NO. C.
8209	250						Fair			TET Fast Half of Moon
8210	11						11			11
8211	11		***************************************		and the same and the same and the same and the same and the same and the same and the same and the same and the		11			11
8212	11						11			11
8213	!!				***************************************	**************************************	11			TEI E 3/4 of Moon
8214	"						11			. 11
8215	11						11			"
8216	11						11			11
3217	11						11			Nadir Near Mare Crisium
3218	11						11			!!
3219	11		antor 100 antiquament				11			11
3220	1:						11			11
3221	7:						11			11
3222	11						11			11
3223	11						11			11

APOLLO 12 PHOTOGRAPHY
Magazine EE Film B&W SO-164 Time Reference — GET \_\_\_\_ = GMT \_\_\_\_

Frame #	Camera # f Length		Prin Po Lat	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt Min — Max	Direction of Tilt	Description
	mm		Lar	Long				IVIUI IVIUX		
8224	250						Fair			Nadir Near Mare Crisium
8225	11			-%			11			11
8226	11						11			11
8227	"						11			11
8228	11						Poor			Poor Detail
8229	11						<u>Ii</u>			
8230	11						11			"
8231	11	·					11			11 -
8232	IT						11			Dark TEI E 3/4 of Moon
8233	11						11			11
8234	11						11			11
8235	11						11			11
8236	11						"			11
\$237	11						11			11
8238	11						11			11

Frame #	Camera # f Length	Approx. Photo Scale	Prin Po	ncipal pint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
	mm	, more ocure	Lat	Long	U/ L	Angle	Quanty	Min — Max	Tilt	
8239	250		inno cultural caracteristic de la constantion con				Poor			Dark TEI E 3/4 of Moon
8240	11						11			
8241	**						11			"
8242	` 19				,		!!			11
8243		эмгэж тогч бай харгагаарагаа ан хагаагаа байгуу галайгаар харгагаар ангаа харгаг					17			"
8244	11				MARKET TO THE TOTAL THE TO		19			11
8245	11						11			"
8246	11			***************************************	***************************************		19			11
8247	11			Anno mossos paris por propos programa de la compansa		11			"	
8248	11						11		-	11
8249	11						11			"
8250										11
8251	11						11 .			
8252	19				••••	~~~~	11			11
8253	11						11			11

# APOLLO 12 PHOTOGRAPHY Magazine EE Film B&W \$0-164

Time Reference — GET \_\_\_\_ = GMT \_\_\_\_\_

Frame #	Camera # f Length	Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of Tilt	Description
	mm	Lat	Long				Min — Max	1117	Dark
8254	250					Poor			TEI E 3/4 of Moon
8255	11					11			11
8256	11		<u>.</u>			11			11
8257	"					11			. 11
8258	11					11			11
8259	11					11			11
8260	"					11			11
8261	11					11			11
8262	. 11					11			11
8263	11			***************************************		11			11 .
8264	11			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		11			TEI - Very Distant' Photos of Moon
8265	11					11			11
8266	11					11			!!
8267	"					11			11
8268	11					1'			t.

 APOLLO
 12
 PHOTOGRAPHY

 Magazine
 EE
 Film
 B&W SO-164

 Time Reference
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Frame #	Camera # f Length	Approx. Photo Scale	Prin Po	cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
77	mm.	Thoro Scale	Lat	Long	0/ L	Aligie	Quality	Min — Max	Tilt	
8269	250		annati elissosottue ruossissississississississi	poor space normalis con company of the Section Co. No.		Annua Patria Patria Carriera de Maria (Carriera de Carriera de Car	Poor	Charmon real and Authorises and College (1971) and the second characteristics are second to the college (1971).	New York (Light College Colleg	TEI- Very distant photos of Moon
8270	11			Connection of Artifluorisations approximately	######################################		***			
8271	11				3000 co 1800 co		anner on the second construction of the second c			
8272	11					Management of the Control of the Con	11			TEI - Very distant photos of Moon
8273	11		84.5 <b>4%</b> 288444000.088888800000000000000000000000	and the second s	Newson considerate Park & a Marcolon consort	amananana (a. 17. annananana (a. 17. annananananananananananananananananana				
8274	11			ov. 499mailleinigssaalilassassassassassassassassassassassassa			11 	www.accompanies.		TEI - Very distant photos of Moon
8275	11		august izzigi. Zine entilikki izine zen	annonan sassannon noto o ovaletotuski, i num	All for conflict to the confli		11	ana moreocolonico vicio al Esta honey S. Jean (como inguistro constituto marc		11
8276				animining the section of the section	Managasta Tanggat Tanggat Sangga	oprodukcion, kad 2.470esoskovenki di presi	TT mail of the Contract of the			ît
8277	11		o december de l'accessor accessor	annonemia and an annonemia and an annonemia and an annonemia and an annonemia and an annonemia and an annonemi	Security (chr. 1998), Marie 1990, Marie 19	Source State of the Associal Social S	11 ***********************************			11
8278	11	menonomentum F (meterus musicas) (lilikasias) (kg (kg (g	National Action County & Section (1985)		ramanang paramong to so	na -r-e 5.0 prezionio del mantello 1,5 cu amb	TT	mennik di Bull kulu (aktionistikkulu) belah penesebulkan		11
8279	11		ON FINISH CONTROL OF THE STREET	and was a supplementary and the supplementar		NAN-15-EFFORESHIEDERING (NESSELLER) GERLAND	11			11
8280	91		0.00 × 17 (870,000 Ago , 1000 TOTO (1000 Ago		mc.a.m.m.		11			11
8281	ŶŤ		man ets aggres accommunication and	P 40 Table 2001			99			††
8282	11		541 52 W.L. JUREN 1982 E. JUREN 1982				11			те и темп ин ин интернация до до до до до до до до до до до до до
8283	11		Selection of the select				11			11

APOLLO 12 PHOTOGRAPHY

Magazine <u>FF</u> Film <u>R&W SO-164</u>

Time Reference <u>GET</u> = GMT

Frame #	Camera # f Length			cipal int	Fw∉ O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
π	mm Lengin	Filolo Scale	Lat	Long	Ο / L.	Allyle	Quality	Min — Max	Tilt	
8284	250	ANNIEWS THE SECOND STREET STREET, THE SECOND STREET STREET, THE SECOND STREET, THE SECOND STREET, THE SECOND ST	ondonedo 1771 de 1880 (de distribui	Newson interferiors service interface description of the control o	an amanananan tanan ka		Poor			TEI - Very Distant Photos of Moon
8285	"			anno de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 de 1800 d		NATIONAL AND SECURIOR	11			11
8286	"						"			"
8287	11	######################################	an Ballano (1962), digit si Prantson		ecolos escessos and		TT			11
8288	11		**************************************	00000 900000 PTS-F-76 ZI-70-0000000 wood	and the second second second		11			11
8289	11		00 TOTAL (1800)		porturation & Links & South & Franch and	0147488800000000000000000000000000000000	11			11
8290	"	Blank	enantumat, panjussy masu, /w	annimon stage presenta esta capa		annone of the district of the second of the district of the second of th	oo hii wa uumatanaa wata ka saasay waxaa ka ka saasay ka saasay ka saasay ka saasay ka saasay ka saasay ka saa			Blank
8291	11		***************************************	000, a000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 300	n. Andrews and the supply of t	ericia en constanta di mantanta del constanta de constanta del constanta del constanta del constanta del const	and the second second second second second second second second second second second second second second second			11
8292	11	11 ***********************************	2000 2. 121 122 122 120 120 120 120 120 120 120	a-1 statucoja reazzan esta sate estatuan antena						T1
8293	"	11					*****			"
8294	1'	and the state of t			20 JUL 20		Poor			Unidentified Object - Pos. Section of Hatch
8295	"						11			Window Rings
8296	11	Mail (Mill Mill Mail Mill) (Mill Mill) (Mill)  **************************************		week were to be a supposed		17 ************************************			Unidentified Object Pos. Section of Hatch	
8297	"	augustingstedd ag daellan ac daellan ac connaid a chair a chair a chair a chair a chair a chair a chair a chair	BIRST 87-88-900 W WARRANT	NAMES OF THE PROPERTY OF THE P	a serve existratement tax serveres	\$\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	11		oo-adacooona coolang till Espanskalin och star konstaggen planskalin och se	Window Rings
						(Tag.)-17				

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### APOLLO 12

# LUNAR MULTISPECTRAL CAMERA (LMC) S-158 Experiment Assembly Photography (70 mm)

For this experiment, four EL Hasselblad cameras with 80-mm lenses were mounted together in such a manner that they could be aimed and operated simultaneously.

- Magazine AA 80-mm lens infrared black and white SO-246, 87C filter (black), 114 frames
- Magazine BB 80-mm lens medium speed black and white 3401, 47B filter (blue), 150 frames
- Magazine CC 80-mm lens medium speed black and white 3401, 29+ filter (red), 150 frames
- Magazine DD 80-mm lens black and white 3401, 58 filter (green), 150 frames

Camera mounts were perpendicular to the hatch window. Alignment was 57.5° pitched up from the X axis. The camera that used the black and white infrared film did not give as complete a coverage as the other cameras, since it was not turned on until midway into the sequence.

## APOLLO 12 PHOTOGRAPHY SO-246

magazine		<b></b>	riiin "	en en en en en en en en en en en en en e
Time Reference	9	GET	Filter	Blk 87C

Frame #	Camera # f Length	Approx. Photo Scale		cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	<b>₽</b> escription
"	Lengin	1 11010 Scale	Lat	Long	07 6	Aligio	a a a i (i )	Min — Max	Tilt	
8314	80mm	1:1,470,000	10.5°S	101 <b>.</b> 5 <sup>0</sup> E	60%	Medium	Fair	Vertical	#235 4009 4009 6380 6384	Begin IR Stereo Strip
Thru	11				aoranna jorganisti (1800)					
8326	11	11	12.5 <sup>0</sup> S	89.0°E	11	17 .	en Canada de de como companyo de como como como como como como como com	11	oner met Succession ausgeworden (Sphrinklandskappen (Sphrinklandskappen (Sphrinklandskappen (Sphrinklandskappe	End IR Stereo Strip
8 <b>3</b> 49	"	11	13.0°s	33.0°E	11	High	71	11		Begin IR Stereo Strip
Thru	11	11			11	11	19	11		Theophilus, Descartes, Fra Mauro
8393	11	11	o₄.o°s	15.0°W	11	Low	Good	11		End IR Stereo Strip
8394	"	"	.2.0°s	93.0°E	11	High	Fair	11	DESCRIPTION OF THE PROPERTY OF	Begin IR Stereo Strip
Thru	11	11				**************************************				Ansgarius, Kapteyn C, Lame, McClure
8433	"	. <sup>11</sup>	14.0°s	51.0°E	11	<b>F</b> 7	Poor	11		End IR Stereo Strip
8434	11	11	12.0°s	27.0°E	11	11	ff	10°-20 <sup>0</sup>	North	Theophilus
8435	11	11	11	11	11	11	11		II	
8436	11	11	11.0°s	15.0°E	11	11	11 	Vertical	militari salah salah salah salah salah salah salah jalah ingalah salah s	Descartes
8437	11	11	11	11	11	-11	11	11		11
8438	11	đ	04 <b>.0<sup>°</sup></b> s	15.0°W	11	Medium	Fair	11	eare konni kohra koka kaala Markiikaanajiinkokkajiinkokajiinkokajiinkoka kaala	Fra Mauro
8439		11	11	11	11	11	11	!!		Fra Mauro End Experiment

# APOLLO 12 PHOTOGRAPHY Magazine BB, CC, DD Film 3401 MBW

Time Reference GET GMT GMT

Frame #	Camera # f Length	Approx. Photo Scale		cipal oint	Fwd O/L	Sun Angle	Photo Quality	Approx. Tilt	Direction of	Description
"	Longin	1 11010 00010	Lat	Long		, tiligito		Min Max	Tilt	
8298	80mm	1:1,500,000	04.0S	133.0°E	None	Low	Good	Vertical	ANALIS USERS WELLS WITH GROOT STORM SELECT	Crater #286
8299	11		06.0°S	120.0 <sup>0</sup> E	60%	<b>7†</b>	11	11	mercenta stato vote decunio con concomposico de adequato e e	Begin Stereo Strip Crater II
Thru	11	11				11	11	11		TE 19
8326	"	11	12.58	89,0°E	11	11	:1		PERS SETT FAMILY SETTS	End Stereo Strip
8327	11	11	14.08	54.0°E	"	High	Fair	11 	emas entido entido dimino ensum encontraceporte resignas en contractor poster por contractor contra	Begin Stereo Strip
Thru	"	11			11	11	11	11		McClure, Theophilus
8393	11	"	04.0°S	15.0°W	11	Medium	Fair to Good	11	acres forth with either deuth	Descartes, Lalande
8394	11	11	13.0%	93.0 <sup>0</sup> E	11	11	Good		geom kopik diliki enzik diliki Palan-kopik di kukuluk iliminak polikiki dilikukuluk iliki kopik Palan-kopik di kukuluk iliminak polikiki dilikukuluk iliki kopik	Begin Stereo Strip Ansgarius
Thru	11	"				11		"11	entre deste data somo entre	Kapteyn A and C
8433	11	11	14.0°S	51.0°E	11	11	Fair	III	atters and a coop coop serving.	End Stereo Strip McClure
8434	11	11	12.08	27.0°E	11	High	Good	10°-20°	North	Theophilus
8435	11	11	11	11	11 	11	11		T T	11
8436.	11	11	11.0°S	15.0°E	!1 	11	11	Vertical	esser epok esser spoke vene Antivensionalistis d'autre d'apple aven de l'apple de l'appl	Descartes
8437	11	"	11	11	11	11	19	11	med son egg to a com	11
8438 & 8439	"	11	04.0°s	15.0°W	"	!!	11	11		Fra Mauro End Experiment



### MAGAZINES A through P

Magazines A through P are 16-mm color and black and white sequence photography of the lunar surface taken from the CSM and the LM. There are a total of 15 magazines lettered A through P, with the letter J excluded. All magazines are color with the exception of magazine I. The quality of the photography ranges from poor to good.

Magazines A through D portray (in order): transposition and docking, the LM in formation prior to landing, LM ascent from the CSM, and the LM being jettisoned. Magazine C also contains views of the landing site and the Surveyor 3 site as seen through the sextant. Significant surface features covered on these four magazines are the Pyrenees Mountains, the Mare Nectaris, and the craters of Theophilus, Descartes, and Lalande A.

Magazine E is a sextant photography stereo strip running from east to west covering such features as Theophilus Peaks, Lalande A, and Fra Mauro. Also included are Landmark Tracking Sites (CP-1, CP-2, DE-1, and FM-1). The last section of magazine E was taken after TEI and shows the eastern limb of the moon where Basin II, the farside terminator, and the Mare Smythii and Mare Crisium can be seen.

Magazines F through I include (in order) a sextant photography stereo strip, reentry, the CSM interior, and black and white oblique sequences of Herschel, Fra Mauro, and Lalande.

Magazine K contains exposures of the CSM, Fra Mauro, Lalande, Ptolemaeus, and the LM descent and landing.

Magazines L, M, N, and O were recorded from the LM after landing and include views of the deployed ALSEP, the American flag, the S Band Antenna, and some of the astronauts' activities during the first EVA.

Magazine P shows the earthrise, Basin II, and the nearside terminator.

MAG: \_A FILM: 15mm

LOCATION	DESCRIPTION	REMARKS
era	Transposition and Docking	Good quality
14°S,75°E to 14°S,40°E	Craters Cocomio, Lame, Kapteyn B, Pyrenees Mountains	Good quality
		market in the company of the company
and the second and provided the company of the second distribution of distribution and provided and the second	and the first of the second sec	general ratio dissolving the convert flores over an order to be a facility of the filter that the tight flores to the filter than the filter t
		ther are not the second or control of the second of the se
Mender Grand Cardina de La de Vigan de carrier de la réferir de Marie (de marie y 20 de particular constructiv	werde aan die daal keerde as die besteer van verde aan op die besteer die deel de de de verde de de de de de d De de	Market Na PEERA Arts Helde Strift Steward (1984) (1984) (1984) (1984) (1984) (1984) (1984) (1984) (1984) (1984)
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		- Transposition and Docking

### APOLLO 12 SEQUENCE PHOTOGRAPHY (16mm)

MAG: B. FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-3415	15°S,30°E to 8°S,14°W	LM in formation prior to landing	Good Quality
		Theophilus, Cyrillus, Cyrillus "B",	
		Kant, Descartes, Dollond, Andel,	
		Ritchey, Hind, Halley, Albategnius,	
		Klein, Muller, Ptolemaeus, Herschel	
		Lalande "A"	The Mark All Principles and the control of the cont
3416-5316		LM in formation prior to landing	Good Quality
		(No Surface)	

MAG: \_\_\_ FILM: \_\_Color\_

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-2258	6°5,120°E to 11°5,98°E	Basin II Area	Poor to Fair quality
2259=2373		Landing Site (Surveyor 3 Crator) Through Sextant	Fair Quality
2374-2554 2555-5459	00°.31°W 88 To 12°S,80°E	Sextant Photography of Lansberg "A"  LM ascent from CSM. Sequence ends over Crater Ansgarius	Fair Quality  ** Beginning of sequence unplottable.

MAG: \_\_D FILM: \_\_Color

FRAME I	NUMBER	LOCATION	DESCRIPTION	REMARKS
1-3630		13°S,77°E to 15°S,35°E	LM Docking with CSM Craters	Good Quality
			Ansgarius, Kapteyn "B", Lame, Lohse	
			Crozier, Colombo, Magelhaens,	
			Madler, Theophilus, Sea of Nectar,	
			Fyrenees Mountains	
4726			LM Jettison	Good Quality
	***************************************			
			And the second E	

MAG: E FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-616		Bright yellow dot against black background of space	Poor film quality
6171677	12S,41E to 4S,22W	Sextant photography stereo strip	Fair to Good quality
			(From east to west,
			photos partially cover Daguerre, Theophilus, Kant, Dollond, Andel,
			Ptolemaeus, Lalande "A" & Fra Mauro)
(720)	11.7°s, 33.3°E	Small bright crater in Daguerre	
(823)	11.5°S,26.3°E	Theophilus Peaks	
(917)	11.2°S,20.2°E	South rim of Kant	
(1015)	10.6°S,14.4°E	Dollond	
(1250)	8.9°S,1°E	Small wedge shaped crater on east rim of Ptolemaeus	
(1452)	6.5°S,10.3°W	West of Lalande "A"	
1678–1859	6°S, 112°E	Sextant photography; landmark tracking site CP-1	Fair Quality
1860-2054	10°S, 56°E	Sextant photography; landmark tracking site CP-2	Poor Quality Over-exposed
2055-2222	09 <sup>0</sup> S,15.5 <sup>0</sup> E	Sextant photography; landmark tracking site DE-1	Poor
	03 <sup>°</sup> S,17 <sup>°</sup> W	Sextant photography; landmark tracking site FM-1	Fair Quality

MAG: E FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
2398-2669 2670-2924	06°S, 112°E 10°S, 56°E	Sextant photography; landmark tracking site CP-1 Sextant photography; landmark tracking site CP-2	Fair Quality Fair Quality
2925 <u>-</u> 3115 3116-3272	09°S, 15.5°E	Sextant photography; landmark tracking site DF-1 Sextant photography; landmark tracking site FM-1	Poorover-exposed
3273	Centered near 0° Lat.	TEI; eastern Limb of Moon; including Basin II, Smyth's Sea Craters 201, 197, 198, 199, 195 192, 191, 189, 202, 204, 206, 207 275, 277, 273, 270, 276.	Good Quality
3478-3643	Centered near 0° Lat.	TEI, eastern limb of Moon including farside terminator. Direction of view is south and	Good Quality
	де текнопониция и деновного на принципа н	southwestward. Includes Sea of Crises, Smyth's Sea, Basin II	
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MAG: \_\_F FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-3386	3°S,123°E to 3°N,52°W	Sextant Photography Stereo Strip	Good Quality—High Sun Angle—Views are washed out
(84)	4.5°S,120°E	Double Crater on Ridge East on Crater 277	Located on Frame AS12- 54-7953 (Mag. T)
(203)	6°s,112°E	Small Sharp Rim Crater East of Crater 273	Located on Frame AS12- 54-7958 (Mag. T)
(237)	6°s,110.5°E	Small Crater on Southeast Rim of Crater 273	Located on Frame AS12- 54-7960 (Mag. T)
(323)	7°S,106.5°E	Rim of Sharp Crater North of Basin II	Located on Frame AS12- 54-2964 (Mag. T)
(395)	7.5°S,104°E	Rim of Crater Complex North of Basin II	Located on Frame AS12- 54-7967 (Mag T)
(920)	10.5°S.76°E	Bright Crater in La Perouse	Located on Frame AS12- 54-7994 (Mag T)
(2308)	7 <sup>0</sup> S. 4.0 <sup>0</sup> Е	Small Bright Crater South of Hipparchus	Located on Frame AS12- 54-8063 (Mag T)
(2336)	7°S,2.5°E	Old Crater and Small Bright Crater North of Muller	Located on Frame AS12- 54-8065 (Mag T)
(2433)	6°s,3° <sub>W</sub>	West Rim of Herschel	Located on Frame AS12- 54-8070 (Mag T)
(2494)	5.5°s,6°w	Double Crater East of La <b>i</b> ande "C"	Located on Frame AS12- 54-8073 (Mag T)
(2588)	5 <sup>o</sup> s.11°W	Small Crater West of Lalande	Located on Frame AS12- 54-8078 (Mag T)
(2645)	4.5°S,13.5°W	Small Crater Northeast of Fra Mauro	Located on Frame AS12- 54-8081 (Mag T)
(2663)	4°S.14.5°W	Small Crater Northeast of Fra Mauro	Located on Frame AS12- 54-8081 (Mag T)
(2703)	4°S,16.5°W	Small Sharp Crater North	Located on Frame AS12- 54-8083 (Mag T)

MAG: \_\_F FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
(2746)	3.5°S,18.5°W	Juncture of Mare and Highlands North of Fra Mauro	Located on Frame AS12- 54-8083 (Mag T)
(2758)	3 <sup>o</sup> S,20.5 <sup>o</sup> W	Mare Northwest of Fra Mauro	Located on Frame AS12- 54-8086 (Mag T)
(2917)	1.5°S <sub>.</sub> ,27°W	Small Double Crater South of Lansburg	Located on Frame AS12- 54-8093 (Mag T)
(2968)	1.5°S,29.5°W	Small Crater and Rille Northwest of Lansberg "G"	Located on Frame AS12- 54-8096 (Mag T)
(3096)	.5°n,•36°₩	Small Crater and Rille Southeast of Encke "C"	Located on Frame AS12- 54-8103 (Mag T)
(3144)	1°N,38.5°W	Small Triple Crater South Encke "T"	Located on Frame AS12- 54-8105 (Mag T)
(3169)	1°N,•40.5°W	Double Crater North of Encke "E"	Located on Frame AS12- 58-8106 (Mag T)
3387–3856		Solar Eclipse by Earth	Good Quality

MAG: \_\_\_\_G FILM: Color

FRAME	NUMBER	LOCATION	DESCRIPTION	REMARKS
1-5519			Re-entry, drag and main parachute deployment	Good Quality

MAG: H FILM: Color

FRAME NUMBER		LOCATION	DESCRIPTION	REMARKS Fair to Good Quality	
		CSM Interior	Crew shaving, astronaut using		
			Hasselblad 70-mm Camera, Astronaut		
			exercising, drinking.		
	5				

MAG: <u>IK</u> FILM: <u>B&W</u>, <u>Color</u>

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS	
1-2000	7°s,8°E to 6°s,3°W	Oblique Sequence to Herschel,	Poor to Fair Quality	
		includes craters Hind, Halley,		
		Muller, North Portion of		
		Ptolemaeus		
2001–3431		Too poor Quality to Plot	Poor Quality	
3432-4911	5°S,11°W to 35°S,17°W	Oblique Sequence to Fra Mauro	Poor to Fair Quality	
4912-6000	6°S,4°W to 4°S,9°W	Oblique Sequence to Lalande	Poor to Fair Quality	
1-1164	7 <sup>o</sup> S,0 <sup>o</sup> to 5 <sup>o</sup> S, 20 <sup>o</sup> W	CSM from LM, Fra Mauro, Perry "L"	Poor Quality	
		& "C", Lalande, Lalande "A", "C",		
		Herschel, Ptolemaeus		
1165-5494	2 <sup>o</sup> s,26 <sup>o</sup> w to 3 <sup>o</sup> s,23 <sup>o</sup> w	LM Descent and Landing	Good Quality	

MAG: \_\_\_\_ FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-1557	Landing Site (3°S,23°W)	View out of LM window looking	Good Quality
1558_ 4116	1	northwest. Astronaut during EVA.  Astronaut collecting lunar surface	01 01.1.
1338= 7779	landing Site (3 S, 23 W)	sample.	Good Wuality
4117-4814	Landing Site (3°S,23°W)	ALSEP Deployment Site.	Fair Quality
		•	
<b>*</b>			

MAG: M FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1-3808	Landing Site (3°S,23°W)	View from landed LM (window) look-	Good Quality
		ing Northwest. Astronaut during	
		EVA.	
3809-5466	Landing Site (3°S,23°W)	View from landed LM (window)	Good Quality
		looking northwest. Shows American	
		Flag, deployed ALSEP, S Band	
		Antenna	
5467-5576	Landing Site (3°S,23°W)	View from landed LM looking west.	Good Quality
		Shows LM Shadow.	
			en en en en en en en en en en en en en e

MAG: N FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS	
1-88	Landing Site(3°S,23°W)	View from landed LM (window).	Good Quality	
v .		Astronaut during EVA.		
89–5539	Landing Site(3°S,23°W)	Panerama, Flag, ALSEP, LM shadow,	Poor-out of focus	
		S Band Antenna		
			те темпаандын макенин кайта при орган арман картында бана бай 18 км төрөөгүү жайта	
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MAG: \_\_O FILM: \_Color\_

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS	
1-5518	LM Landing Site(3°S,23W)	Taken from LM window after landing,	Good Quality	
		Shows American Flag, S Band		
		Antenna; Direction of View North,		
		Astronaut during EVA.		
	·			

MAG: P FILM: Color

FRAME NUMBER	LOCATION	DESCRIPTION	REMARKS
1–332		Overexposed & Unusable	
333-781	2 <sup>°</sup> S,25 <sup>°</sup> W to 2 <sup>°</sup> S,27 <sup>°</sup> N	Lansberg "N"	Good Quality
782-1181	10°S,105°E to 11°S,	Earthrise, Basin II	Poor Quality
	100°E		Dirty Window Out-of-Focus
1182-2694	3°N,40°W to 3°N,43°W	Terminator, Maestlin "R"	Fair Quality
2695 <b>–</b> 3157		Blurry CSM from LM	Poor Quality
3158-3456		Too poor quality to plot	
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# APOLLO 12 LUNAR CLOSEUP STEREOSCOPIC PHOTOGRAPHY (35 mm)

#### MAGAZINE FF Frames AS12-57-8441 through 8455

Magazine FF consists of 15 stereoscopic frames of 35-mm film. The photography shows the lunar surface and footprint impressions.