LUNAR ORBITER IV

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	NADIR LONG
5 HR	6	5	11	67	15	46	17.81	-71.501	91.312	8.62	87.93	7.17	61.85	3512.525	5248.625	267.49	2.36	100.28	-71.23	76.27
5 MR	6	5	11	67	15	46	17.93	-71.497	91.311	8.62	87.93	7.17	61.85	3512.496	5248.596	267.46	2.36	100.25	-71.23	76.27
6 HR	6	5	11	67	15	46	27.91	-71.165	91.326	8.78	87.93	7.20	61.88	3510.050	5246.150	264.82	2.38	97.53	-71.13	76.36
6 MR	6	5	11	67	15	46	28.03	-71.161	91.330	8.78	87.93	7.20	61.88	3510.020	5246.120	264.79	2.38	97.50	-71.13	76.36
7 HR	6	5	11	67	15	46	38.11	-70.827	91.341	8.94	87.93	7.25	61.91	3507.552	5243.652	262.16	2.40	94.79	-71.02	76.45
7 MR	6	5	11	67	15	46	38.23	-70.822	91.348	8.95	87.93	7.26	61.90	3507.522	5243.622	262.13	2.40	94.75	-71.02	76.46
8 HR	6	5	11	67	15	46	48.21	-70.492	91.355	9.11	87.93	7.32	61.94	3505.079	5241.179	259.57	2.42	92.11	-70.91	76.54
8 MR	6	5	11	67	15	46	48.33	-70.487	91.367	9.11	87.93	7.32	61.93	3505.050	5241.150	259.54	2.42	92.07	-70.91	76.55
9 HR	6	5	11	67	16	26	37.91	-41.792	96.200	24.77	76.22	11.63	65.08	2989.153	4725.253	288.62	4.25	91.67	-42.02	86.28
9 MR	6	5	11	67	16	26	38.03	-41.787	96.198	24.78	76.22	11.63	65.09	2989.132	4725.232	288.60	4.25	91.65	-42.02	86.28
10 HR	6	5	11	67	16	26	48.11	-41.416	96.194	24.93	76.22	11.67	65.25	2987.368	4723.468	286.76	4.26	89.70	-41.88	86.30
10 MR	6	5	11	67	16	26	48.23	-41.411	96.196	24.93	76.22	11.67	65.25	2987.347	4723.447	286.74	4.26	89.68	-41.88	86.30
11 HR	6	5	11	67	16	26	58.21	-41.043	96.188	25.08	76.22	11.71	65.41	2985.605	4721.705	284.94	4.28	87.87	-41.74	86.32
11 MR	6	5	11	67	16	26	58.33	-41.038	96.195	25.09	76.22	11.72	65.40	2985.584	4721.684	284.92	4.28	87.85	-41.74	86.32
12 HR	6	5	11	67	16	27	8.31	-40.671	96.184	25.23	76.22	11.77	65.57	2983.846	4719.946	283.13	4.30	86.05	-41.61	86.34
12 MR	6	5	11	67	16	27	8.43	-40.666	96.195	25.24	76.22	11.78	65.56	2983.825	4719.925	283.11	4.31	86.03	-41.61	86.34
13 HR	6	5	11	67	16	58	47.31	-13.874	89.625	27.28	63.50	1.10	82.29	2748.231	4484.331	221.73	.43	36.59	-14.42	89.21
13 MR	6	5	11	67	16	58	47.43	-13.869	89.624	27.28	63.50	1.11	82.29	2748.222	4484.322	221.54	.43	36.40	-14.42	89.21
14 HR	6	5	11	67	16	58	57.51	-13.479	89.659	27.36	63.50	1.46	82.48	2747.543	4483.643	213.56	.56	28.42	-14.27	89.22
14 MR	6	5	11	67	16	58	57.63	-13.475	89.662	27.37	63.50	1.46	82.48	2747.535	4483.635	213.56	.57	28.43	-14.26	89.22

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	LONG
15 HR	6	5	11	67	16	59	7.61	-13.088	89.693	27.45	63.50	1.82	82.67	2746.869	4482.969	208.67	.71	23.53	-14.11	89.23
15 MR	6	5	11	67	16	59	7.73	-13.084	89.699	27.46	63.50	1.83	82.67	2746.861	4482.961	208.80	.71	23.66	-14.11	89.24
16 HR	6	5	11	67	16	59	17.71	-12.697	89.726	27.53	63.50	2.20	82.86	2746.201	4482.301	205.43	.85	20.29	-13.96	89.25
16 MR	6	5	11	67	16	59	17.83	-12.692	89.737	27.54	63.50	2.21	82.86	2746.193	4482.293	205.64	.86	20.50	-13.96	89.25
17 HR	6	5	11	67	17	29	56.61	14.241	90.438	28.45	59.89	1.70	97.50	2739.107	4475.207	103.92	.66	290.01	13.89	91.45
17 MR	6	5	11	67	17	29	56.73	14.246	90.436	28.45	59.89	1.70	97.50	2739.114	4475.214	104.06	.66	290.14	13.89	91.45
18 HR	6	5	11	67	17	30	6.71	14.633	90.470	28.43	59.89	1.84	97.72	2739.699	4475.799	115.83	.71	301.92	14.04	91.46
18 MR	6	5	11	67	17	30	6.83	14.638	90.473	28.43	59.89	1.84	97.73	2739.706	4475.806	116.00	.71	302.09	14.04	91.46
19 HR	6	5	11	67	17	30	16.91	15.029	90.503	28.41	59.89	2.05	97.95	2740.304	4476.404	125.78	.80	311.87	14.19	91.47
19 MR	6	5	11	67	17	30	17.03	15.034	90.510	28.42	59.89	2.05	97.95	2740.311	4476.411	126.00	.80	312.09	14.19	91.48
20 HR	6	5	11	67	17	30	27.01	15.421	90.536	28.39	59.89	2.31	98.17	2740.909	4477.009	133.62	.90	319.72	14.34	91.49
20 MR	6	5	11	67	17	30	27.13	15.426	90.547	28.40	59.89	2.31	98.17	2740.916	4477.016	133.89	.89	319.99	14.35	91.49
21 HR	6	5	11	67	18	3	33.51	42.972	98.818	27.04	67.34	4.94	117.80	2979.204	4715.304	249.42	1.82	86.89	42.88	94.55
21 MR	6	5	11	67	18	3	33.63	42.977	98.817	27.04	67.34	4.94	117.80	2979.224	4715.324	249.37	1.82	86.84	42.88	94.55
22 HR	6	5	11	67	18	3	43.61	43.340	98.906	26.92	67.34	5.02	118.04	2980.950	4717.050	245.21	1.84	82.70	43.02	94.58
22 MR	6	5	11	67	18	3	43.73	43.344	98.909	26.92	67.34	5.02	118.04	2980.971	4717.071	245.16	1.85	82.66	43.02	94.58
23 HR	6	5	11	67	18	3	53.81	43.712	98.996	26.81	67.34	5.13	118.28	2982.719	4718.819	241.11	1.88	78.62	43.16	94.60
23 MR	6	5	11	67	18	3	53.93	43.716	99.004	26.81	67.34	5.13	118.29	2982.739	4718.839	241.08	1.89	78.59	43.16	94.60
24 HR	6	5	11	67	18	4	3.91	44.080	99.087	26.69	67.34	5.26	118.53	2984.474	4720.574	237.24	1.93	74.77	43.29	94.62
24 MR	6	5	11	67	18	4	4.03	44.084	99.099	26.70	67.34	5.27	118.54	2984.495	4720.595	237.22	1.93	74.75	43.29	94.62

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
		MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
25 HR	6	5	11	67	23	13	42.01	-3.016	-78.123	*****	114.77	19.28	267.60	6109.666	7845.766	100.84	4.19	101.23	-.11	-92.94
25 MR	6	5	11	67	23	13	42.13	-3.019	-78.126	*****	114.77	19.28	267.60	6109.666	7845.766	100.85	4.19	101.24	-.11	-92.94
26 HR	7	5	12	67	4	27	23.31	-42.743	90.382	24.57	76.66	12.54	64.43	2986.361	4722.461	296.13	4.58	99.21	-41.96	79.66
26 MR	7	5	12	67	4	27	23.43	-42.738	90.380	24.57	76.66	12.53	64.43	2986.340	4722.440	296.11	4.58	99.19	-41.96	79.66
27 HR	7	5	12	67	4	59	32.41	-15.219	82.670	26.29	63.64	1.43	81.87	2747.185	4483.285	.04	.55	175.08	-14.35	82.59
27 MR	7	5	12	67	4	59	32.53	-15.214	82.669	26.29	63.64	1.42	81.87	2747.177	4483.277	.07	.55	175.11	-14.34	82.59
28 HR	7	5	12	67	5	30	40.21	13.341	81.885	26.22	59.25	4.78	96.30	2739.955	4476.055	72.62	1.85	258.61	13.94	84.83
28 MR	7	5	12	67	5	30	40.33	13.345	81.883	26.22	59.25	4.78	96.30	2739.962	4476.062	72.67	1.85	258.66	13.94	84.83
29 HR	7	5	12	67	6	4	15.51	41.320	89.170	25.42	66.90	2.87	114.13	2981.390	4717.490	313.28	1.05	149.47	42.89	87.94
29 MR	7	5	12	67	6	4	15.63	41.325	89.169	25.42	66.90	2.86	114.13	2981.411	4717.510	313.26	1.05	149.44	42.89	87.94
30 HR	7	5	12	67	6	31	5.31	43.972	85.388	21.97	76.68	29.42	112.34	3309.414	5045.514	10.92	9.73	196.43	63.17	93.00
30 MR	7	5	12	67	6	31	5.43	43.976	85.388	21.97	76.68	29.41	112.34	3309.441	5045.541	10.92	9.73	196.44	63.17	93.00
32 HR	8	5	12	67	15	47	46.91	-71.402	77.786	8.28	88.26	7.05	63.09	3504.932	5241.032	266.19	2.33	98.97	-71.24	63.03
32 MR	8	5	12	67	15	47	47.03	-71.398	77.785	8.28	88.26	7.05	63.09	3504.903	5241.003	266.16	2.33	98.94	-71.24	63.03
33 HR	8	5	12	67	16	28	1.11	-41.845	84.126	24.85	77.40	12.98	64.90	2984.565	4720.665	289.41	4.74	92.49	-42.02	73.04
33 MR	8	5	12	67	16	28	1.23	-41.841	84.124	24.85	77.40	12.98	64.91	2984.544	4720.644	289.39	4.74	92.47	-42.02	73.04
34 HR	8	5	12	67	17	0	8.91	-14.707	76.588	26.40	64.50	1.09	82.09	2746.328	4482.428	301.68	.42	116.77	-14.41	75.97
34 MR	8	5	12	67	17	0	9.03	-14.702	76.587	26.40	64.50	1.09	82.09	2746.320	4482.420	301.49	.42	116.58	-14.40	75.97
35 HR	8	5	12	67	17	31	16.41	13.632	76.707	27.11	60.59	2.41	96.71	2740.015	4476.115	74.35	.93	260.60	13.88	78.20
35 MR	8	5	12	67	17	31	16.53	13.637	76.706	27.10	60.59	2.41	96.71	2740.022	4476.122	74.46	.93	260.72	13.88	78.20

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	LONG
36 HR	8	5	12	67	18	4	52.31	41.649	85.885	27.21	68.44	5.68	116.60	2982.448	4718.548	270.58	2.09	107.64	42.83	81.30
36 MR	8	5	12	67	18	4	52.43	41.654	85.884	27.21	68.44	5.68	116.60	2982.469	4718.569	270.54	2.09	107.60	42.83	81.30
38 HR	9	5	13	67	4	28	45.81	-42.639	77.772	24.35	77.66	13.21	64.75	2981.590	4717.690	295.24	4.82	98.06	-42.02	66.45
38 MR	9	5	13	67	4	28	45.93	-42.635	77.770	24.35	77.66	13.21	64.76	2981.569	4717.669	295.22	4.82	98.05	-42.01	66.45
39 HR	9	5	13	67	5	0	52.21	-14.897	69.880	25.81	64.90	1.17	82.17	2744.586	4480.686	320.06	.45	135.12	-14.39	69.36
39 MR	9	5	13	67	5	0	52.33	-14.892	69.879	25.81	64.90	1.16	82.18	2744.578	4480.678	319.94	.45	135.00	-14.39	69.36
40 HR	9	5	13	67	5	31	59.01	13.277	70.195	26.77	61.18	2.41	96.40	2739.662	4475.762	59.39	.93	245.37	13.90	71.57
40 MR	9	5	13	67	5	31	59.13	13.282	70.194	26.77	61.18	2.41	96.40	2739.669	4475.769	59.50	.93	245.48	13.90	71.57
41 HR	9	5	13	67	6	5	35.21	41.259	80.108	27.63	69.25	6.88	116.70	2983.604	4719.704	272.56	2.53	109.55	42.85	74.64
41 MR	9	5	13	67	6	5	35.33	41.264	80.107	27.62	69.25	6.88	116.70	2983.625	4719.725	272.53	2.53	109.51	42.85	74.64
42 HR	9	5	13	67	6	45	6.21	70.087	84.083	13.53	77.69	2.28	130.13	3493.707	5229.807	357.38	.76	188.59	71.60	84.75
42 MR	9	5	13	67	6	45	6.33	70.091	84.084	13.53	77.69	2.28	130.13	3493.736	5229.836	357.39	.76	188.59	71.60	84.75
44 HR	10	5	13	67	15	49	23.71	-72.118	69.063	8.88	88.95	8.97	59.57	3497.584	5233.684	274.69	2.96	107.01	-71.27	50.06
44 MR	10	5	13	67	15	49	23.83	-72.114	69.061	8.88	88.95	8.97	59.57	3497.554	5233.654	274.66	2.96	106.99	-71.27	50.06
45 HR	10	5	13	67	16	29	31.71	-42.418	71.803	24.54	78.29	13.91	64.71	2979.067	4715.167	293.29	5.08	96.45	-42.04	59.88
45 MR	10	5	13	67	16	29	31.83	-42.414	71.801	24.54	78.29	13.90	64.71	2979.046	4715.146	293.27	5.08	96.43	-42.04	59.88
46 HR	10	5	13	67	17	1	37.01	-14.810	63.405	25.48	65.46	1.23	82.31	2742.637	4478.737	307.31	.48	122.64	-14.40	62.75
46 MR	10	5	13	67	17	1	37.13	-14.805	63.404	25.48	65.46	1.23	82.32	2742.629	4478.729	307.15	.48	122.48	-14.40	62.75
47 HR	10	5	13	67	17	32	42.11	13.319	62.359	25.11	60.94	4.18	95.93	2738.477	4474.577	71.12	1.62	257.73	13.88	64.93
47 MR	10	5	13	67	17	32	42.23	13.324	62.357	25.11	60.94	4.18	95.93	2738.484	4474.584	71.19	1.62	257.80	13.88	64.93

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG$_c$	ELEV	PHASE	EMISN	AZ$_c$	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
48 HR	10	5	13	67	18	6	18.11	41.209	71.769	26.15	68.98	5.17	114.84	2983.349	4719.449	282.03	1.90	118.61	42.84	67.95
48 MR	10	5	13	67	18	6	18.23	41.214	71.768	26.15	68.98	5.16	114.84	2983.370	4719.470	281.99	1.90	118.57	42.84	67.95
49 HR	10	5	13	67	23	16	48.01	10.216	-112.193	*****	114.82	15.83	277.31	6113.903	7850.003	36.55	3.46	35.59	.18	-119.47
49 MR	10	5	13	67	23	16	48.13	10.213	-112.195	*****	114.82	15.83	277.31	6113.903	7850.003	36.55	3.46	35.58	.18	-119.47
50 HR	10	5	13	67	23	17	39.41	9.051	-112.136	*****	114.82	14.95	276.56	6113.969	7850.068	39.42	3.27	38.45	-.07	-119.46
50 MR	10	5	13	67	23	17	39.53	9.049	-112.102	*****	114.82	14.97	276.57	6113.968	7850.068	39.52	3.27	38.56	-.07	-119.45
51 HR	10	5	13	67	23	18	4.81	8.483	-112.107	*****	114.83	14.53	276.19	6113.979	7850.079	40.94	3.18	39.97	-.19	-119.45
51 MR	10	5	13	67	23	18	4.93	8.481	-112.110	*****	114.83	14.53	276.19	6113.979	7850.079	40.94	3.18	39.97	-.19	-119.45
52 HR	11	5	14	67	4	30	24.21	-42.907	63.806	23.07	77.97	12.25	66.03	2976.443	4712.543	297.20	4.48	99.76	-42.06	53.33
52 MR	11	5	14	67	4	30	24.33	-42.903	63.804	23.07	77.97	12.25	66.03	2976.423	4712.523	297.18	4.48	99.74	-42.06	53.33
53 HR	11	5	14	67	5	2	28.51	-14.819	56.818	25.03	65.94	1.26	82.44	2740.230	4476.330	307.79	.49	122.34	-14.41	56.14
53 MR	11	5	14	67	5	2	28.63	-14.814	56.816	25.03	65.94	1.25	82.45	2740.222	4476.322	307.64	.49	122.19	-14.41	56.14
54 HR	11	5	14	67	5	33	33.01	13.592	56.696	25.53	62.02	2.57	96.17	2736.667	4472.767	73.58	1.00	259.22	13.89	58.29
54 MR	11	5	14	67	5	33	33.13	13.597	56.694	25.53	62.02	2.57	96.18	2736.674	4472.774	73.68	1.00	259.33	13.89	58.29
55 HR	11	5	14	67	6	7	6.51	42.073	65.573	25.75	69.36	5.18	115.15	2982.128	4718.228	265.87	1.91	102.02	42.84	61.25
55 MR	11	5	14	67	6	7	6.63	42.078	65.572	25.75	69.36	5.18	115.15	2982.149	4718.249	265.83	1.90	101.97	42.84	61.25
56 HR	11	5	14	67	6	46	39.21	70.352	68.439	12.49	77.69	2.30	126.81	3494.661	5230.761	24.88	.76	214.95	71.63	71.06
56 MR	11	5	14	67	6	46	39.33	70.356	68.440	12.49	77.69	2.30	126.81	3494.690	5230.790	24.93	.76	215.00	71.63	71.06
58 HR	12	5	14	67	15	51	18.21	-71.578	54.402	8.47	89.04	8.10	61.98	3493.639	5229.739	268.72	2.68	100.37	-71.36	37.31
58 MR	12	5	14	67	15	51	18.33	-71.574	54.400	8.47	89.04	8.10	61.99	3493.610	5229.710	268.69	2.68	100.34	-71.36	37.31

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
59 HR	12	5	14	67	16	31	21.81	-41.750	55.055	21.72	77.68	9.73	68.54	2974,564	4710.664	286.93	3.57	89.42	-42.11	46.79
59 MR	12	5	14	67	16	31	21.93	-41.746	55.053	21.72	77.68	9.73	68.54	2974,543	4710.643	286.90	3.57	89.39	-42.11	46.79
60 HR	12	5	14	67	17	3	25.51	-13.583	48.793	23.35	65.64	1.83	83.55	2737.787	4473.887	145.37	.71	319.31	-14.43	49.54
60 MR	12	5	14	67	17	3	25.63	-13.579	48.792	23.35	65.64	1.84	83.55	2737.779	4473.879	145.43	.71	319.37	-14.43	49.54
61 HR	12	5	14	67	17	34	28.21	14.139	49.695	24.63	62.27	3.10	96.16	2734.037	4470.137	93.54	1.21	278.36	13.87	51.63
61 MR	12	5	14	67	17	34	28.33	14.144	49.694	24.62	62.27	3.11	96.16	2734.044	4470.144	93.62	1.21	278.44	13.87	51.63
62 HR	12	5	14	67	18	7	58.91	42.374	59.163	25.44	69.80	5.44	115.03	2979.363	4715.463	260.08	2.00	95.76	42.81	54.52
62 MR	12	5	14	67	18	7	59.03	42.378	59.163	25.43	69.80	5.44	115.03	2979.384	4715.484	260.03	2.00	95.72	42.81	54.52
64 HR	13	5	15	67	4	32	29.71	-42.560	50.549	22.51	78.62	12.00	66.96	2972.871	4708.971	294.32	4.40	96.60	-42.14	40.27
64 MR	13	5	15	67	4	32	29.83	-42.555	50.547	22.51	78.62	12.00	66.96	2972.850	4708.950	294.30	4.40	96.58	-42.14	40.27
65 HR	13	5	15	67	5	4	33.01	-14.901	43.303	23.79	66.67	.93	82.78	2735.078	4471.178	328.79	.36	143.31	-14.44	42.95
65 MR	13	5	15	67	5	4	33.13	-14.897	43.302	23.79	66.67	.93	82.78	2735.070	4471.170	328.67	.36	143.20	-14.44	42.95
66 HR	13	5	15	67	5	35	33.51	13.469	43.038	24.18	62.82	3.15	95.69	2730.753	4466.852	72.44	1.23	258.31	13.87	44.98
66 MR	13	5	15	67	5	35	33.63	13.473	43.037	24.18	62.82	3.16	95.69	2730.760	4466.860	72.53	1.23	258.40	13.87	44.98
67 HR	13	5	15	67	6	9	.81	41.804	51.641	24.73	70.03	4.77	113.64	2975.576	4711.676	271.73	1.76	108.11	42.81	47.79
67 MR	13	5	15	67	6	9	.93	41.809	51.640	24.73	70.03	4.77	113.64	2975.597	4711.697	271.68	1.76	108.07	42.81	47.79
68 HR	13	5	15	67	6	48	26.61	70.930	53.658	11.49	77.78	1.96	124.40	3487.773	5223.873	50.38	.65	239.59	71.63	57.12
68 MR	13	5	15	67	6	48	26.73	70.934	53.658	11.49	77.78	1.96	124.40	3487.802	5223.902	50.47	.65	239.69	71.63	57.12
70 HR	14	5	15	67	15	53	35.21	-72.648	49.064	9.69	89.95	11.25	55.08	3496.526	5232.626	276.05	3.71	109.77	-71.56	24.60
70 MR	14	5	15	67	15	53	35.33	-72.644	49.060	9.69	89.95	11.25	55.09	3496.496	5232.596	276.03	3.71	109.75	-71.56	24.60

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	NADIR LONG
71 HR	14	5	15	67	16	33	44.11	-43.689	46.674	23.54	79.72	15.07	64.69	2972.296	4708.396	301.12	5.50	103.19	-42.22	33.74
71 MR	14	5	15	67	16	33	44.23	-43.685	46.672	23.54	79.72	15.07	64.69	2972.275	4708.375	301.11	5.50	103.18	-42.22	33.74
72 HR	14	5	15	67	17	5	47.51	-15.768	37.863	24.33	67.78	3.16	82.16	2732.453	4468.553	316.23	1.23	131.22	-14.50	36.35
72 MR	14	5	15	67	17	5	47.63	-15.763	37.862	24.33	67.78	3.15	82.17	2732.445	4468.545	316.19	1.22	131.17	-14.50	36.35
73 HR	14	5	15	67	17	36	45.71	12.533	37.588	24.93	64.12	2.41	95.43	2726.560	4462.660	23.16	.94	209.36	13.82	38.33
73 MR	14	5	15	67	17	36	45.83	12.538	37.587	24.93	64.12	2.41	95.44	2726.567	4462.667	23.24	.94	209.44	13.82	38.33
74 HR	14	5	15	67	18	10	8.21	40.699	45.574	25.22	70.94	6.25	113.20	2969.841	4705.940	283.01	2.30	119.86	42.75	41.06
74 MR	14	5	15	67	18	10	8.33	40.703	45.574	25.22	70.94	6.24	113.20	2969.861	4705.961	282.98	2.30	119.83	42.75	41.06
75 HR	14	5	15	67	23	21	4.21	4.293	-145.859	*****	114.82	5.43	272.48	6126.792	7862.892	1.11	1.20	1.32	.06	-145.96
75 MR	14	5	15	67	23	21	4.33	4.290	-145.861	*****	114.82	5.43	272.48	6126.792	7862.892	1.08	1.20	1.30	.06	-145.96
76 HR	15	5	16	67	4	35	13.81	-42.775	37.867	22.11	79.35	12.40	67.20	2971.558	4707.658	295.73	4.54	97.68	-42.21	27.23
76 MR	15	5	16	67	4	35	13.93	-42.771	37.865	22.11	79.35	12.40	67.21	2971.537	4707.637	295.71	4.54	97.66	-42.21	27.23
77 HR	15	5	16	67	5	7	17.51	-14.929	30.154	22.92	67.60	.98	83.02	2729.560	4465.660	326.83	.38	141.14	-14.46	29.77
77 MR	15	5	16	67	5	7	17.63	-14.924	30.153	22.92	67.60	.97	83.02	2729.552	4465.652	326.72	.38	141.03	-14.46	29.77
78 HR	15	5	16	67	5	38	13.31	13.299	30.213	23.64	64.13	2.51	95.43	2722.094	4458.194	63.19	.98	248.54	13.86	31.68
78 MR	15	5	16	67	5	38	13.43	13.303	30.211	23.64	64.13	2.51	95.43	2722.102	4458.202	63.30	.98	248.65	13.87	31.68
79 HR	15	5	16	67	6	11	30.51	41.829	39.047	24.50	71.20	5.73	113.35	2963.806	4699.906	268.07	2.11	103.79	42.79	34.33
79 MR	15	5	16	67	6	11	30.63	41.834	39.046	24.50	71.20	5.73	113.35	2963.827	4699.927	268.03	2.11	103.75	42.79	34.33
80 HR	15	5	16	67	6	51	7.01	70.448	46.092	13.05	79.33	2.53	128.92	3479.069	5215.169	322.70	.84	147.04	71.89	43.34
80 MR	15	5	16	67	6	51	7.13	70.452	46.094	13.04	79.33	2.53	128.92	3479.099	5215.199	322.65	.84	146.99	71.89	43.34

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	NADIR LONG
82 HR	16	5	16	67	15	56	37.91	-72.373	32.467	8.71	89.67	9.44	59.38	3502.940	5239.040	272.99	3.12	106.45	-71.62	12.04
82 MR	16	5	16	67	15	56	38.03	-72.370	32.464	8.71	89.67	9.44	59.38	3502.910	5239.010	272.96	3.12	106.43	-71.62	12.04
83 HR	16	5	16	67	16	36	52.11	-42.948	32.818	22.76	80.18	14.08	66.27	2971.865	4707.965	297.06	5.15	98.70	-42.23	20.71
83 MR	16	5	16	67	16	36	52.23	-42.943	32.816	22.76	80.18	14.08	66.27	2971.843	4707.943	297.04	5.15	98.69	-42.23	20.71
84 HR	16	5	16	67	17	8	56.81	-15.189	24.278	23.12	68.47	2.12	82.82	2726.815	4462.915	310.41	.82	124.97	-14.45	23.18
84 MR	16	5	16	67	17	8	56.93	-15.185	24.277	23.11	68.47	2.12	82.82	2726.806	4462.906	310.33	.82	124.88	-14.45	23.18
85 HR	16	5	16	67	17	39	49.71	12.992	23.938	23.52	64.88	2.28	95.24	2716.927	4453.027	44.26	.89	230.27	13.88	25.04
85 MR	16	5	16	67	17	39	49.83	12.997	23.936	23.52	64.88	2.28	95.24	2716.934	4453.034	44.37	.89	230.38	13.89	25.04
86 HR	16	5	16	67	18	13	.31	41.018	31.246	23.66	71.35	5.13	111.67	2956.113	4692.213	285.75	1.90	122.07	42.80	27.61
86 MR	16	5	16	67	18	13	.43	41.022	31.245	23.66	71.35	5.13	111.67	2956.134	4692.234	285.72	1.90	122.03	42.80	27.61
88 HR	17	5	17	67	4	38	38.21	-42.698	24.941	21.66	80.04	12.53	67.75	2973.343	4709.443	295.32	4.59	96.82	-42.26	14.18
88 MR	17	5	17	67	4	38	38.33	-42.694	24.939	21.66	80.04	12.53	67.76	2973.322	4709.422	295.30	4.59	96.80	-42.26	14.18
89 HR	17	5	17	67	5	10	44.31	-15.092	16.904	21.92	68.46	1.16	83.23	2724.420	4460.520	340.12	.45	154.35	-14.46	16.59
89 MR	17	5	17	67	5	10	44.43	-15.088	16.903	21.92	68.46	1.16	83.23	2724.411	4460.511	340.08	.45	154.31	-14.45	16.59
90 HR	17	5	17	67	5	41	34.61	13.747	15.868	21.57	64.44	4.03	95.02	2711.287	4447.387	81.96	1.57	266.96	13.89	18.40
90 MR	17	5	17	67	5	41	34.73	13.751	15.866	21.57	64.44	4.03	95.02	2711.294	4447.394	82.02	1.57	267.03	13.89	18.39
91 HR	17	5	17	67	6	14	38.81	42.030	25.726	23.70	72.01	5.78	112.55	2947.285	4683.385	265.21	2.14	100.54	42.80	20.90
91 MR	17	5	17	67	6	14	38.93	42.035	25.725	23.70	72.01	5.78	112.55	2947.306	4683.406	265.17	2.14	100.50	42.80	20.90
92 HR	17	5	17	67	6	53	56.91	71.161	32.226	12.21	79.51	1.73	127.43	3457.197	5193.297	306.46	.58	129.79	71.92	29.48
92 MR	17	5	17	67	6	53	57.03	71.165	32.227	12.21	79.51	1.73	127.43	3457.226	5193.326	306.36	.58	129.68	71.92	29.48

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LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
		MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
94 HR	18	5	17	67	16	0	8.11	-72.115	20.189	8.81	89.98	9.62	59.44	3816.916	5253.016	270.54	3.17	103.81	-71.70	-.67
94 MR	18	5	17	67	16	0	8.23	-72.111	20.186	8.81	89.98	9.62	59.45	3816.886	5252.986	270.51	3.17	103.49	-71.70	-.67
95 HR	18	5	17	67	16	40	33.41	-42.538	18.698	21.62	80.50	12.87	67.90	2975.518	4711.618	293.90	4.71	95.63	-42.27	7.64
95 MR	18	5	17	67	16	40	33.53	-42.534	18.696	21.62	80.50	12.87	67.90	2975.496	4711.596	293.88	4.71	95.61	-42.27	7.64
96 HR	18	5	17	67	17	12	40.51	-15.177	10.665	21.80	69.13	1.60	83.22	2722.281	4458.381	323.90	.62	138.22	-14.45	9.99
96 MR	18	5	17	67	17	12	40.63	-15.172	10.664	21.80	69.13	1.59	83.22	2722.272	4458.372	323.82	.62	138.15	-14.45	9.99
97 HR	18	5	17	67	17	43	28.01	12.970	9.656	21.55	65.25	3.69	94.67	2705.315	4441.415	60.19	1.44	245.81	13.90	11.76
97 MR	18	5	17	67	17	43	28.13	12.975	9.655	21.55	65.25	3.68	94.67	2705.321	4441.421	60.26	1.44	245.89	13.90	11.76
98 HR	18	5	17	67	18	16	25.41	40.970	18.534	23.36	72.44	5.89	111.26	2937.526	4673.625	282.30	2.19	118.24	42.81	14.21
98 MR	18	5	17	67	18	16	25.53	40.974	18.533	23.36	72.44	5.89	111.27	2937.546	4673.646	282.27	2.18	118.21	42.81	14.21
99 HR	18	5	17	67	23	24	21.21	3.510	179.919	*****	115.04	10.77	271.47	6142.235	7878.335	293.86	2.36	293.95	.11	-172.38
99 MR	18	5	17	67	23	24	21.33	3.508	179.917	*****	115.04	10.77	271.47	6142.236	7878.336	293.84	2.36	293.93	.11	-172.38
100 HR	19	5	18	67	4	42	36.61	-42.716	12.289	21.35	80.89	13.07	68.05	2978.203	4714.303	295.36	4.78	96.97	-42.26	1.05
100 MR	19	5	18	67	4	42	36.73	-42.712	12.287	21.35	80.89	13.07	68.05	2978.181	4714.281	295.35	4.78	96.95	-42.25	1.05
101 HR	19	5	18	67	5	14	43.91	-15.194	3.829	21.10	69.46	1.41	83.42	2720.454	4456.554	336.12	.55	150.14	-14.45	3.38
101 MR	19	5	18	67	5	14	44.03	-15.189	3.827	21.10	69.46	1.41	83.42	2720.445	4456.545	336.07	.55	150.09	-14.45	3.38
102 HR	19	5	18	67	5	45	27.31	12.956	3.630	21.65	66.09	2.85	94.67	2699.160	4435.260	52.76	1.12	237.85	13.88	5.14
102 MR	19	5	18	67	5	45	27.43	12.961	3.628	21.65	66.09	2.85	94.68	2699.166	4435.266	52.86	1.12	237.95	13.89	5.14
103 HR	19	5	18	67	6	18	15.41	41.814	11.282	22.28	72.35	4.62	110.71	2926.591	4662.691	272.39	1.72	107.73	42.76	7.57
103 MR	19	5	18	67	6	18	15.53	41.819	11.281	22.28	72.35	4.62	110.71	2926.611	4662.711	272.34	1.72	107.68	42.76	7.57

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FRAME	ORB	GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
		MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
104 HR	19	5	18	67	6	57	7.91	70.346	18.100	12.22	79.96	2.53	125.41	3427.691	5163.791	330.36	.85	153.63	71.87	15.88
104 MR	19	5	18	67	6	57	8.03	70.350	18.101	12.22	79.96	2.53	125.41	3427.721	5163.821	330.32	.85	153.59	71.87	15.88
106 HR	20	5	18	67	16	4	5.71	-72.160	9.455	9.15	90.39	10.49	57.96	3534.501	5270.601	271.99	3.44	104.48	-71.71	-13.37
106 MR	20	5	18	67	16	4	5.83	-72.156	9.452	9.15	90.39	10.49	57.96	3534.471	5270.571	271.96	3.44	104.46	-71.71	-13.37
107 HR	20	5	18	67	16	44	42.31	-42.407	6.449	21.64	81.46	13.80	67.93	2981.850	4717.950	292.89	5.04	94.94	-42.26	-5.42
107 MR	20	5	18	67	16	44	42.43	-42.403	6.447	21.64	81.46	13.80	67.93	2981.828	4717.928	292.87	5.04	94.92	-42.26	-5.42
108 HR	20	5	18	67	17	16	51.01	-14.265	-2.360	21.13	70.18	1.32	83.78	2719.028	4455.128	262.53	.51	77.03	-14.45	-3.17
108 MR	20	5	18	67	17	16	51.13	-14.260	-2.362	21.13	70.18	1.32	83.78	2719.018	4455.118	262.33	.51	76.82	-14.45	-3.17
109 HR	20	5	18	67	17	47	31.71	13.787	-3.579	20.53	66.16	3.35	94.69	2693.057	4429.157	81.87	1.31	267.35	13.89	-1.48
109 MR	20	5	18	67	17	47	31.83	13.792	-3.580	20.53	66.16	3.35	94.69	2693.063	4429.163	81.95	1.31	267.43	13.89	-1.48
110 HR	20	5	18	67	18	20	12.71	42.591	3.348	20.76	72.10	2.93	109.58	2915.843	4651.943	258.91	1.09	94.72	42.77	.86
110 MR	20	5	18	67	18	20	12.83	42.595	3.347	20.76	72.10	2.93	109.58	2915.863	4651.963	258.83	1.09	94.63	42.77	.86
112 HR	21	5	19	67	4	46	49.51	-42.578	-1.345	20.42	81.41	12.50	69.16	2986.038	4722.138	294.35	4.56	95.89	-42.26	-12.09
112 MR	21	5	19	67	4	46	49.63	-42.573	-1.347	20.42	81.41	12.50	69.17	2986.015	4722.115	294.33	4.56	95.87	-42.26	-12.09
113 HR	21	5	19	67	5	19	.01	-14.639	-9.512	20.10	70.34	.56	83.92	2718.028	4454.128	309.59	.22	123.78	-14.45	-9.81
113 MR	21	5	19	67	5	19	.13	-14.634	-9.513	20.09	70.34	.56	83.92	2718.018	4454.118	309.27	.22	123.46	-14.45	-9.81
114 HR	21	5	19	67	5	49	38.21	13.464	-10.968	19.32	66.15	4.66	94.22	2687.231	4423.331	76.66	1.83	261.76	13.89	-8.09
114 MR	21	5	19	67	5	49	38.33	13.469	-10.969	19.32	66.15	4.66	94.23	2687.237	4423.337	76.72	1.83	261.82	13.89	-8.09
115 HR	21	5	19	67	6	22	12.31	42.273	-2.670	20.95	72.68	3.65	109.53	2905.179	4641.279	266.58	1.36	101.26	42.76	-5.70
115 MR	21	5	19	67	6	22	12.43	42.278	-2.671	20.94	72.68	3.65	109.53	2905.199	4641.299	266.51	1.36	101.20	42.76	-5.70

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
116 HR	21	5	19	67	7	0	40.91	70.795	4.493	11.62	80.09	1.90	124.13	3396.998	5133.098	325.82	.64	148.23	71.88	2.48
116 MR	21	5	19	67	7	0	41.03	70.799	4.494	11.62	80.09	1.90	124.13	3397.027	5133.127	325.75	.64	148.17	71.88	2.48
118 HR	22	5	19	67	16	8	4.91	-72.495	-6.988	7.84	90.37	9.14	62.01	3554.963	5291.063	274.61	2.99	107.08	-71.67	-26.89
118 MR	22	5	19	67	16	8	5.03	-72.491	-6.991	7.84	90.37	9.14	62.02	3554.933	5291.033	274.59	2.99	107.05	-71.67	-26.89
119 HR	22	5	19	67	16	48	55.01	-42.786	-7.442	20.35	81.98	13.12	69.06	2990.553	4726.653	295.42	4.78	97.42	-42.26	-18.74
119 MR	22	5	19	67	16	48	55.13	-42.782	-7.444	20.35	81.98	13.12	69.07	2990.530	4726.630	295.40	4.78	97.40	-42.26	-18.74
120 HR	22	5	19	67	17	21	6.71	-14.290	-15.643	20.11	71.16	1.28	84.03	2717.500	4453.600	263.00	.50	77.37	-14.46	-16.43
120 MR	22	5	19	67	17	21	6.83	-14.285	-15.644	20.11	71.16	1.28	84.04	2717.490	4453.590	262.79	.50	77.16	-14.46	-16.43
121 HR	22	5	19	67	17	51	42.81	13.807	-16.795	19.58	67.07	3.37	94.40	2681.823	4417.923	82.70	1.32	268.42	13.87	-14.69
121 MR	22	5	19	67	17	51	42.93	13.812	-16.797	19.58	67.07	3.37	94.40	2681.829	4417.929	82.78	1.32	268.50	13.87	-14.69
122 HR	22	5	19	67	18	24	11.31	42.075	-9.239	20.71	73.03	3.74	109.10	2895.029	4631.129	270.34	1.40	105.91	42.76	-12.27
122 MR	22	5	19	67	18	24	11.43	42.079	-9.240	20.70	73.03	3.74	109.10	2895.049	4631.149	270.28	1.40	105.85	42.76	-12.27
123 HR	22	5	19	67	23	27	53.61	1.128	162.380	****	110.63	2.04	271.07	6151.331	7887.430	64.01	.45	44.76	-.00	161.26
123 MR	22	5	19	67	23	27	53.73	1.126	162.377	****	110.63	2.04	271.07	6151.333	7887.433	64.00	.45	44.75	-.00	161.26
124 HR	23	5	20	67	4	50	59.21	-43.082	-14.076	19.90	82.36	13.18	69.38	2994.470	4730.570	297.51	4.80	99.27	-42.21	-25.42
124 MR	23	5	20	67	4	50	59.33	-42.998	-14.078	19.90	82.36	13.18	69.38	2994.447	4730.547	297.49	4.80	99.26	-42.20	-25.42
125 HR	23	5	20	67	5	23	13.41	-14.893	-22.971	18.88	71.17	.82	84.15	2716.975	4453.075	356.19	.32	170.63	-14.40	-23.06
125 MR	23	5	20	67	5	23	13.53	-14.888	-22.972	18.88	71.17	.82	84.15	2716.964	4453.064	356.22	.32	170.66	-14.40	-23.06
126 HR	23	5	20	67	5	53	47.71	12.862	-23.047	19.52	67.78	3.35	94.02	2677.290	4413.390	52.95	1.32	238.37	13.93	-21.27
126 MR	23	5	20	67	5	53	47.83	12.867	-23.048	19.52	67.78	3.35	94.02	2677.296	4413.396	53.03	1.32	238.45	13.94	-21.27

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
127 HR	23	5	20	67	6	26	10.21	41.201	-14.291	21.76	74.13	5.93	109.57	2886.379	4622.479	278.30	2.23	114.08	42.80	-18.79
127 MR	23	5	20	67	6	26	10.33	41.206	-14.292	21.75	74.13	5.93	109.57	2886.399	4622.499	278.27	2.22	114.05	42.81	-18.79
128 HR	23	5	20	67	7	4	16.91	69.920	-9.432	11.65	80.31	3.02	122.30	3369.217	5105.317	347.32	1.03	171.24	71.89	-10.32
128 MR	23	5	20	67	7	4	17.03	69.924	-9.431	11.65	80.31	3.02	122.30	3369.246	5105.346	347.30	1.03	171.22	71.90	-10.32
130 HR	24	5	20	67	16	11	43.11	-65.025	-25.848	8.69	91.50	12.62	69.34	3574.829	5310.929	211.11	4.09	46.68	-71.63	-40.64
130 MR	24	5	20	67	16	11	43.23	-65.021	-25.850	8.69	91.50	12.62	69.34	3574.798	5310.898	211.10	4.10	46.67	-71.62	-40.64
131 HR	24	5	20	67	16	52	51.81	-36.505	-23.471	19.53	82.84	13.79	73.97	2999.018	4735.118	251.05	5.01	52.41	-42.20	-32.12
131 MR	24	5	20	67	16	52	51.93	-36.501	-23.473	19.53	82.84	13.79	73.97	2998.994	4735.094	251.03	5.01	52.39	-42.20	-32.12
132 HR	24	5	20	67	17	25	6.71	-9.142	-29.588	18.86	72.09	8.63	86.21	2717.377	4453.477	188.00	3.35	1.11	-14.42	-29.69
132 MR	24	5	20	67	17	25	6.83	-9.138	-29.590	18.86	72.09	8.63	86.22	2717.366	4453.466	187.99	3.35	1.10	-14.42	-29.69
133 HR	24	5	20	67	17	55	39.71	18.732	-29.693	18.51	67.95	8.45	95.86	2673.436	4409.536	155.99	3.32	340.18	13.91	-27.86
133 MR	24	5	20	67	17	55	39.83	18.736	-29.694	18.51	67.95	8.46	95.86	2673.441	4409.541	155.99	3.32	340.19	13.91	-27.86
134 HR	24	5	20	67	18	27	59.01	46.308	-18.139	21.43	74.43	9.90	113.25	2878.493	4614.593	218.15	3.71	53.03	42.80	-25.30
134 MR	24	5	20	67	18	27	59.13	46.313	-18.140	21.42	74.43	9.90	113.25	2878.513	4614.613	218.13	3.71	53.01	42.80	-25.31
136 HR	25	5	21	67	4	54	35.31	-42.646	-27.397	19.24	83.36	13.29	70.32	3002.964	4739.064	295.40	4.83	97.13	-42.16	-38.84
136 MR	25	5	21	67	4	54	35.43	-42.642	-27.399	19.24	83.36	13.29	70.33	3002.941	4739.041	295.38	4.83	97.11	-42.16	-38.84
137 HR	25	5	21	67	5	26	51.21	-14.977	-35.285	18.77	72.80	1.91	84.12	2718.009	4454.109	305.04	.74	119.54	-14.40	-36.33
137 MR	25	5	21	67	5	26	51.33	-14.973	-35.286	18.77	72.80	1.91	84.12	2717.998	4454.098	304.94	.74	119.44	-14.40	-36.34
138 HR	25	5	21	67	5	57	23.81	13.702	-36.452	18.32	68.48	3.26	93.97	2670.694	4406.794	78.40	1.28	263.82	13.92	-34.43
138 MR	25	5	21	67	5	57	23.93	13.706	-36.453	18.32	68.48	3.26	93.97	2670.698	4406.798	78.49	1.28	263.91	13.92	-34.43

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LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
		MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
139 HR	25	5	21	67	6	29	40.01	42.163	-28.246	20.24	74.07	4.32	108.58	2872.433	4608.533	267.20	1.62	102.80	42.81	-31.79
139 MR	25	5	21	67	6	29	40.13	42.167	-28.247	20.24	74.07	4.31	108.58	2872.453	4608.553	267.15	1.62	102.75	42.82	-31.79
140 HR	25	5	21	67	7	8	.81	71.051	-16.313	12.50	80.94	3.45	127.74	3355.156	5091.256	297.49	1.18	117.64	72.21	-22.53
140 MR	25	5	21	67	7	8	.93	71.055	-16.311	12.50	80.94	3.45	127.74	3355.185	5091.285	297.43	1.18	117.58	72.21	-22.53
142 HR	26	5	21	67	16	56	5.21	-42.040	-33.368	19.53	84.24	14.21	70.41	3006.596	4742.696	291.31	5.16	93.46	-42.14	-45.58
142 MR	26	5	21	67	16	56	5.33	-42.035	-33.370	19.53	84.24	14.21	70.41	3006.572	4742.672	291.29	5.16	93.44	-42.14	-45.58
143 HR	26	5	21	67	17	28	21.61	-14.297	-41.411	18.81	73.69	2.50	84.33	2719.096	4455.196	271.17	.98	85.79	-14.41	-42.98
143 MR	26	5	21	67	17	28	21.73	-14.292	-41.412	18.81	73.69	2.50	84.34	2719.085	4455.185	271.06	.97	85.68	-14.41	-42.98
144 HR	26	5	21	67	17	58	53.61	14.034	-41.765	19.07	69.71	1.23	94.27	2668.975	4405.075	94.34	.48	280.39	13.90	-41.01
144 MR	26	5	21	67	17	58	53.73	14.038	-41.766	19.07	69.71	1.23	94.27	2668.980	4405.080	94.54	.48	280.59	13.90	-41.01
145 HR	26	5	21	67	18	31	9.21	42.335	-33.702	20.65	74.72	5.45	109.12	2868.109	4604.209	259.64	2.05	96.58	42.81	-38.27
145 MR	26	5	21	67	18	31	9.33	42.339	-33.703	20.65	74.72	5.44	109.12	2868.128	4604.228	259.59	2.05	96.53	42.82	-38.27
146 HR	26	5	21	67	23	30	24.91	2.789	136.095	*****	108.60	3.73	271.70	6147.890	7883.990	44.82	.82	25.12	.16	134.86
146 MR	26	5	21	67	23	30	25.03	2.787	136.092	*****	108.60	3.73	271.70	6147.893	7883.993	44.80	.82	25.10	.16	134.86
147 HR	26	5	21	67	23	30	56.51	2.092	136.143	*****	108.60	3.14	271.45	6148.742	7884.842	51.13	.69	31.43	.00	134.87
147 MR	26	5	21	67	23	30	56.63	2.089	136.162	*****	108.60	3.15	271.45	6148.745	7884.845	51.45	.69	31.75	.00	134.87
148 HR	27	5	22	67	4	57	22.21	-42.949	-41.383	17.88	84.07	12.73	71.55	3009.380	4745.480	297.27	4.62	99.63	-42.11	-52.33
148 MR	27	5	22	67	4	57	22.33	-42.945	-41.385	17.88	84.07	12.73	71.55	3009.356	4745.456	297.25	4.62	99.62	-42.11	-52.33
149 HR	27	5	22	67	5	29	39.51	-15.053	-48.760	17.54	73.75	1.75	84.42	2720.269	4456.369	312.97	.68	127.79	-14.40	-49.64
149 MR	27	5	22	67	5	29	39.63	-15.049	-48.762	17.54	73.75	1.75	84.43	2720.257	4456.357	312.88	.68	127.70	-14.40	-49.64

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		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
150 HR	27	5	22	67	6	0	11.81	12.699	-49.287	17.79	69.63	3.39	93.45	2668.381	4404.481	48.11	1.33	234.01	13.91	-47.59
150 MR	27	5	22	67	6	0	11.93	12.703	-49.288	17.78	69.63	3.38	93.45	2668.385	4404.485	48.18	1.33	234.09	13.91	-47.59
151 HR	27	5	22	67	6	32	27.51	40.875	-40.203	20.85	75.25	6.26	108.28	2865.877	4601.977	281.94	2.36	118.62	42.84	-44.74
151 MR	27	5	22	67	6	32	27.63	40.880	-40.204	20.85	75.25	6.26	108.28	2865.896	4601.996	281.91	2.36	118.59	42.84	-44.74
152 HR	27	5	22	67	7	10	43.71	69.781	-29.608	13.01	81.19	4.51	126.43	3144.902	5081.002	321.09	1.54	142.91	72.22	-34.79
152 MR	27	5	22	67	7	10	43.83	69.785	-29.606	13.01	81.19	4.50	126.43	3144.931	5081.031	321.05	1.54	142.88	72.23	-34.79
154 HR	28	5	22	67	16	15	55.31	-71.704	-33.513	10.78	94.49	16.12	52.20	3613.426	5349.526	267.80	5.17	105.18	-72.08	-69.24
154 MR	28	5	22	67	16	15	55.43	-71.701	-33.518	10.78	94.49	16.12	52.21	3613.394	5349.494	267.79	5.17	105.16	-72.07	-69.24
155 HR	28	5	22	67	16	58	26.41	-42.406	-48.890	17.05	84.33	11.84	72.75	3011.090	4747.190	293.53	4.30	95.99	-42.07	-59.07
155 MR	28	5	22	67	16	58	26.53	-42.402	-48.892	17.05	84.33	11.84	72.76	3011.066	4747.166	293.51	4.30	95.97	-42.07	-59.07
156 HR	28	5	22	67	17	30	43.11	-14.877	-55.802	16.64	74.05	1.10	84.73	2721.542	4457.642	321.40	.43	136.05	-14.39	-56.29
156 MR	28	5	22	67	17	30	43.23	-14.873	-55.803	16.64	74.05	1.10	84.73	2721.530	4457.630	321.28	.43	135.92	-14.39	-56.29
157 HR	28	5	22	67	18	1	16.11	13.359	-56.268	16.89	69.80	3.49	93.42	2668.781	4404.881	69.44	1.38	255.07	13.91	-54.17
157 MR	28	5	22	67	18	1	16.23	13.363	-56.270	16.89	69.80	3.49	93.43	2668.785	4404.885	69.52	1.38	255.15	13.91	-54.17
158 HR	28	5	22	67	18	33	33.01	41.994	-47.658	19.55	74.88	4.44	107.65	2865.522	4601.622	270.67	1.67	106.83	42.85	-51.22
158 MR	28	5	22	67	18	33	33.13	41.999	-47.659	19.55	74.88	4.43	107.65	2865.541	4601.641	270.62	1.67	106.77	42.85	-51.22
160 HR	29	5	23	67	4	59	16.71	-42.793	-54.519	17.26	85.18	13.12	72.28	3012.068	4748.168	296.34	4.76	99.03	-42.03	-65.80
160 MR	29	5	23	67	4	59	16.83	-42.789	-54.521	17.26	85.18	13.12	72.28	3012.044	4748.144	296.32	4.76	99.01	-42.03	-65.80
161 HR	29	5	23	67	5	31	34.11	-15.132	-61.983	16.54	74.86	1.97	84.66	2722.661	4458.761	314.84	.77	129.88	-14.36	-62.94
161 MR	29	5	23	67	5	31	34.23	-15.127	-61.985	16.53	74.86	1.96	84.66	2722.650	4458.750	314.76	.76	129.80	-14.36	-62.94

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LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

		GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
FRAME	ORB	MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
162 HR	29	5	23	67	6	2	7.51	13.224	-62.175	17.09	70.71	2.56	93.41	2669.905	4406.005	57.01	1.01	243.18	13.93	-60.75
162 MR	29	5	23	67	6	2	7.63	13.229	-62.176	17.09	70.71	2.56	93.42	2669.910	4406.010	57.12	1.01	243.29	13.93	-60.75
163 HR	29	5	23	67	6	34	26.11	41.212	-53.377	20.07	75.63	5.81	107.65	2866.654	4602.754	278.83	2.19	115.82	42.87	-57.71
163 MR	29	5	23	67	6	34	26.23	41.216	-53.378	20.07	75.63	5.80	107.65	2866.673	4602.773	278.79	2.19	115.78	42.87	-57.71
164 HR	29	5	23	67	7	12	46.81	70.195	-41.499	12.88	81.15	4.16	126.80	3345.725	5081.825	313.12	1.42	136.16	72.26	-47.11
164 MR	29	5	23	67	7	12	46.93	70.199	-41.496	12.88	81.15	4.16	126.80	3345.754	5081.854	313.07	1.42	136.12	72.26	-47.11
165 HR	29	5	23	67	9	43	50.91	38.837	81.127	13.92	108.75	33.33	259.41	5486.507	7222.607	281.67	7.59	290.13	33.96	112.70
165 MR	29	5	23	67	9	43	51.03	38.834	81.126	13.92	108.75	33.33	259.41	5486.527	7222.627	281.67	7.59	290.12	33.96	112.70
166 HR	30	5	23	67	16	18	43.71	-71.309	-60.231	7.00	93.20	10.51	66.38	3892.597	5328.697	264.03	3.41	101.44	-71.19	-82.44
166 MR	30	5	23	67	16	18	43.83	-71.305	-60.234	7.00	93.20	10.51	66.38	3892.566	5328.666	264.01	3.41	101.42	-71.19	-82.44
167 HR	30	5	23	67	17	0	11.51	-42.010	-60.700	17.42	85.90	13.75	72.56	3009.047	4745.147	292.44	4.99	95.16	-41.82	-72.48
167 MR	30	5	23	67	17	0	11.63	-42.006	-60.701	17.42	85.90	13.75	72.56	3009.023	4745.123	292.42	4.99	95.15	-41.82	-72.48
168 HR	30	5	23	67	17	32	28.81	-14.446	-68.178	16.50	75.65	2.26	84.87	2722.137	4458.237	288.04	.88	103.11	-14.14	-69.56
168 MR	30	5	23	67	17	32	28.93	-14.442	-68.179	16.50	75.65	2.25	84.88	2722.126	4458.226	287.94	.88	103.00	-14.14	-69.56
169 HR	30	5	23	67	18	3	2.01	13.694	-68.486	16.86	71.34	1.99	93.49	2672.016	4408.116	62.11	.78	248.53	14.14	-67.33
169 MR	30	5	23	67	18	3	2.13	13.698	-68.487	16.86	71.34	1.99	93.49	2672.020	4408.120	62.25	.78	248.67	14.14	-67.33
170 HR	30	5	23	67	18	35	18.31	41.775	-59.603	19.82	75.98	5.81	107.74	2870.532	4606.632	270.83	2.19	108.25	43.00	-64.22
170 MR	30	5	23	67	18	35	18.43	41.779	-59.604	19.82	75.98	5.81	107.74	2870.551	4606.651	270.79	2.19	108.21	43.00	-64.22
171 HR	31	5	24	67	1	28	56.71	-21.339	94.795	*****	114.05	*****	269.11	5800.003	7536.103	37.86	*****	307.96	-34.03	110.74
171 MR	31	5	24	67	1	28	56.83	-21.340	94.794	*****	114.05	*****	269.11	5799.988	7536.088	37.86	*****	307.96	-34.03	110.74

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	LONG
172 HR	31	5	24	67	5	0	29.11	-42.936	-67.936	16.33	86.06	13.12	73.13	3010.733	4746.833	297.27	4.76	100.34	-41.98	-79.20
172 MR	31	5	24	67	5	0	29.23	-42.932	-67.938	16.33	86.06	13.12	73.13	3010.709	4746.809	297.25	4.76	100.32	-41.98	-79.20
173 HR	31	5	24	67	5	32	43.11	-14.766	-75.408	15.37	75.87	1.45	85.08	2724.028	4460.128	301.46	.56	116.66	-14.37	-76.23
173 MR	31	5	24	67	5	32	43.23	-14.762	-75.410	15.37	75.87	1.45	85.08	2724.017	4460.117	301.31	.56	116.52	-14.37	-76.23
174 HR	31	5	24	67	6	3	17.71	13.369	-76.000	15.51	71.27	3.40	93.02	2673.041	4409.141	68.60	1.34	255.11	13.91	-73.95
174 MR	31	5	24	67	6	3	17.83	13.374	-76.001	15.50	71.27	3.40	93.02	2673.045	4409.145	68.68	1.34	255.19	13.91	-73.95
175 HR	31	5	24	67	6	35	41.11	41.290	-66.782	19.20	76.07	5.40	106.76	2871.664	4607.764	279.58	2.03	116.50	42.86	-70.79
175 MR	31	5	24	67	6	35	41.23	41.294	-66.782	19.20	76.07	5.40	106.76	2871.683	4607.783	279.55	2.03	116.46	42.86	-70.79
176 HR	31	5	24	67	7	14	12.71	69.967	-54.779	12.75	81.23	4.28	125.68	3353.823	5089.923	319.57	1.46	142.72	72.28	-59.77
176 MR	31	5	24	67	7	14	12.83	69.970	-54.776	12.75	81.23	4.28	125.68	3353.852	5089.952	319.53	1.46	142.69	72.28	-59.77
177 HR	31	5	24	67	9	45	28.41	38.809	67.862	14.77	107.72	33.23	258.73	5491.851	7227.951	282.31	7.56	290.06	33.96	99.33
177 MR	31	5	24	67	9	45	28.53	38.806	67.861	14.77	107.72	33.23	258.73	5491.872	7227.972	282.31	7.56	290.06	33.96	99.33
178 HR	32	5	24	67	13	29	33.21	-33.874	82.206	1.46	111.88	23.42	271.85	5796.238	7532.338	274.97	5.26	264.17	-33.98	104.14
178 MR	32	5	24	67	13	29	33.33	-33.876	82.203	1.46	111.88	23.42	271.85	5796.223	7532.323	274.96	5.26	264.16	-33.98	104.14
179 HR	32	5	24	67	16	19	23.81	-69.520	-74.067	7.15	94.08	11.24	68.15	3591.826	5327.926	246.42	3.64	86.54	-71.38	-96.22
179 MR	32	5	24	67	16	19	23.93	-69.516	-74.069	7.15	94.08	11.24	68.16	3591.795	5327.895	246.40	3.64	86.52	-71.38	-96.22
180 HR	32	5	24	67	17	0	54.31	-40.832	-75.224	16.05	86.58	12.65	74.57	3008.997	4745.097	282.69	4.60	85.24	-42.00	-85.86
180 MR	32	5	24	67	17	0	54.43	-40.827	-75.226	16.05	86.58	12.65	74.57	3008.974	4745.073	282.67	4.60	85.22	-41.99	-85.86
181 HR	32	5	24	67	17	33	6.71	-13.091	-82.185	14.84	76.40	2.39	85.69	2723.923	4460.023	212.07	.93	26.84	-14.40	-82.86
181 MR	32	5	24	67	17	33	6.83	-13.087	-82.186	14.84	76.40	2.40	85.69	2723.912	4460.012	211.99	.93	26.77	-14.40	-82.86

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME MO	DA	YR	HR	MN	SEC	PRINCIPAL POINT LAT	LONG.	SUN AT PP ELEV	PHASE	EMISN	AZ.	SPACECRAFT ALTITUDE	RADIUS	SWING	TILT	TILT AZ	NADIR LAT	LONG
182 HR	32	5	24	67	18	3	41.71	15.258	-81.414	16.06	72.46	2.64	93.72	2674.331	4410.431	143.46	1.04	329.44	13.88	-80.57
182 MR	32	5	24	67	18	3	41.83	15.263	-81.415	16.06	72.46	2.65	93.72	2674.336	4410.436	143.49	1.04	329.47	13.88	-80.57
183 HR	32	5	24	67	18	36	7.31	43.525	-71.015	19.84	77.00	7.52	108.91	2874.452	4610.552	242.58	2.82	79.44	42.84	-77.39
183 MR	32	5	24	67	18	36	7.43	43.530	-71.016	19.84	77.00	7.52	108.91	2874.472	4610.572	242.54	2.82	79.40	42.84	-77.39
184 HR	33	5	25	67	1	30	32.01	-35.177	69.323	6.94	112.78	29.73	275.83	5790.155	7526.255	269.51	6.57	259.11	-34.03	97.52
184 MR	33	5	25	67	1	30	32.13	-35.179	69.319	6.94	112.78	29.73	275.84	5790.140	7526.240	269.50	6.57	259.11	-34.03	97.52
185 HR	33	5	25	67	1	30	35.91	-35.266	69.304	6.95	112.78	29.73	275.86	5789.659	7525.759	269.33	6.57	258.93	-34.05	97.52
185 MR	33	5	25	67	1	30	36.03	-35.268	69.303	6.95	112.78	29.73	275.86	5789.644	7525.744	269.32	6.57	258.92	-34.05	97.52
186 HR	33	5	25	67	5	1	22.91	-42.268	-81.340	15.64	86.97	12.99	74.18	3005.596	4741.696	292.95	4.72	95.87	-41.96	-92.48
186 MR	33	5	25	67	5	1	23.03	-42.264	-81.342	15.64	86.97	12.98	74.18	3005.573	4741.673	292.93	4.72	95.85	-41.96	-92.48
187 HR	33	5	25	67	5	33	33.51	-14.966	-89.058	13.94	76.66	1.20	85.40	2722.776	4458.876	330.41	.47	145.83	-14.36	-89.48
187 MR	33	5	25	67	5	33	33.63	-14.962	-89.059	13.94	76.66	1.20	85.40	2722.765	4458.865	330.33	.47	145.75	-14.36	-89.49
188 HR	33	5	25	67	6	4	8.61	13.384	-89.217	14.51	72.29	3.37	92.74	2675.385	4411.485	68.71	1.32	255.05	13.92	-87.19
188 MR	33	5	25	67	6	4	8.73	13.389	-89.219	14.51	72.29	3.37	92.74	2675.390	4411.490	68.79	1.32	255.13	13.92	-87.19
189 HR	33	5	25	67	6	36	35.91	41.711	-79.991	18.37	76.70	5.11	106.12	2877.747	4613.847	273.16	1.92	110.11	42.88	-84.00
189 MR	33	5	25	67	6	36	36.03	41.716	-79.992	18.37	76.70	5.10	106.12	2877.767	4613.867	273.11	1.92	110.07	42.88	-84.00
190 HR	33	5	25	67	7	15	53.41	70.337	-63.472	13.50	82.08	5.60	129.20	3373.197	5109.297	306.23	1.90	125.51	72.71	-72.45
190 MR	33	5	25	67	7	15	53.53	70.341	-63.468	13.50	82.08	5.60	129.21	3373.224	5109.326	306.20	1.90	125.48	72.71	-72.45
191 HR	33	5	25	67	9	47	5.51	38.296	53.792	16.32	106.97	33.98	257.65	5803.388	7239.488	281.87	7.70	288.89	33.95	86.05
191 MR	33	5	25	67	9	47	5.63	38.293	53.791	16.33	106.97	33.98	257.65	5803.408	7239.508	281.86	7.70	288.89	33.95	86.05

LATITUDES (+)= NORTH, (-)= SOUTH LONGITUDES (+)= EAST, (-)= WEST

LUNAR ORBITER 4 ENGINEERING PHOTO SUPPORT DATA

FRAME	ORB	GREENWICH MEAN TIME						PRINCIPAL POINT		SUN AT PP				SPACECRAFT					NADIR	
		MO	DA	YR	HR	MN	SEC	LAT	LONG.	ELEV	PHASE	EMISN	AZ.	ALTITUDE	RADIUS	SWING	TILT	TILT AZ	LAT	LONG
192 HR	33	5	25	67	9	47	9.01	38.220	53.842	16.30	106.97	33.94	257.70	5803.977	7240.077	281.73	7.69	288.76	33.93	86.05
192 MR	33	5	25	67	9	47	9.13	38.217	53.843	16.30	106.97	33.94	257.70	5803.997	7240.097	281.73	7.69	288.75	33.93	86.05
193 HR	34	5	25	67	16	24	27.51	-63.889	-85.974	9.31	94.63	14.66	68.60	3819.207	5255.307	231.91	4.80	70.10	-68.87	-107.44
193 MR	34	5	25	67	16	24	27.63	-63.885	-85.976	9.31	94.63	14.66	68.60	3819.176	5255.276	231.90	4.80	70.09	-68.87	-107.44
194 HR	34	5	25	67	17	1	47.31	-42.973	-86.503	16.09	87.83	14.63	73.29	3002.794	4738.893	297.39	5.31	100.18	-42.01	-99.09
194 MR	34	5	25	67	17	1	47.43	-42.969	-86.505	16.09	87.83	14.63	73.29	3002.770	4738.870	297.38	5.31	100.17	-42.01	-99.09
195 HR	34	5	25	67	17	33	56.31	-14.909	-94.602	14.47	77.84	2.52	85.25	2721.386	4457.486	294.21	.98	109.40	-14.40	-96.11
195 MR	34	5	25	67	17	33	56.43	-14.905	-94.603	14.47	77.84	2.52	85.25	2721.375	4457.475	294.12	.98	109.31	-14.40	-96.11
196 HR	34	5	25	67	18	4	30.81	12.858	-94.863	14.98	73.44	2.37	92.70	2675.441	4411.541	38.29	.93	224.92	13.88	-93.82
196 MR	34	5	25	67	18	4	30.93	12.863	-94.864	14.98	73.44	2.36	92.70	2675.446	4411.546	38.39	.93	225.02	13.88	-93.82

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