

G PRELAUNCH ERASABLE LOAD (COMANCHE 55)

MISSION TAPE

REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
* *	DUMPCNT	0333	10000 octal	-	10000	
	PADLONG	1263,1264	0.7760996295 revs	0	30653,23562	Pad 39A
	PGNCSALT	1272,1273	89.4m	29	00000, 00055	
*	CDUCHKWD	1341	5cs	14	00005	
*	RTED1	1351,1352	1.6602637	3	06510, 07025	
*	DVTHRESH	1353	0.006096m/cs	- 2	00620	2ft/sec
*	HORIZALT	1354,1355	24000m	29	00000, 27340	24k.m.
*	ALTVAR	1356	37777 octal	-16	37777	
*	GCOMPSW	1477	0		00000	
	RRECTLEM	1626,1627	6563365m	29	00310, 11423	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
	RRECTLEM+2	1630,1631	0.0m	29	00000, 00000	
	RRECTLEM+4	1632,1633	0.0m	29	00000, 00000	
	VRECTLEM	1634,1635	0.0m/cs	7	00000, 00000	
	VRECTLEM+2	1636,1637	77.93043705m/cs	7	23367, 03044	
	VRECTLEM+4	1640,1641	0.0m/cs	7	00000, 00000	
	TETLEM	1642,1643	60000cs	28	00003, 25140	
	DELTALEM	1644,1645	0.0	-	00000, 00000	
	DELTALEM+2	1646,1647	0.0	-	00000, 00000	
	DELTALEM+4	1650,1651	0.0	-	00000, 00000	
	NOVLEM	1652,1653	0.0	-	00000, 00000	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
	NUVLEM+2	1654,1655	0.0	-	00000, 00000	
	NUVLEM+4	1656,1657	0.0	-	00000, 00000	
	RCVLEM	1660,1661	6563365m	29	00310, 11423	
	RCVLEM+2	1662,1663	0.0m	29	00000, 00000	
	RCVLEM+4	1664,1665	0.0m	29	00000, 00000	
	VCVLEM	1666,1667	0.0m/cs	7	00000, 00000	
	VCVLEM+2	1670,1671	77.93043705m/cs	7	23367, 03044	
	VCVLEM+4	1672,1673	0.0	7	00000, 00000	
	TCLEM	1674,1675	0.0		00000, 00000	
	XKEPLEM	1676,1677	0.0		00000, 00000	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	REFSMMAT	1735, 1736	0.68010001	1	12703, 14106	Rev 1 of mission tape 92.0479047931 E15 m ⁵ /cs ² 13.1289255968E22 m ⁶ /cs ² 10,000 ft
*	E3J22R2M	1776		58	12160	
*	E32C3LRM	1777		80	03363	
*	WRENDPOS	2000	3048m	19	00137	
*	WRENDVEL	2001	0.03048m/cs	0	00763	10ft/sec
*	RMAX	2002	609.6 m	19	00023	2000 ft
*	VMAX	2003	0.006096 m/cs	7	00001	2 ft/sec
*	WORBPOS	2004	0m	19	00000	
*	WORBVEL	2005	0m/cs	0	00000	
*	S22WSUBL	2006	10,000m	19	00471	
*	RPVAR	2007,2010	4000000m ²	28	00364, 04400	
*	1 EMSALT	2017,2020	89636.9 m	29	00002, 27422	294,084.3 ft

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	ATIGINC	2021,2022	18000cs	28	00001, 03120	3 min
*	PTIGINC	2023,2024	18000cs	28	00001, 03120	3 min
*	INTVAR	2377	196 m ²	15	00142	
1	AZIMUTH	2400,2401	-0.2503611111 rev	0	67772, 42530	90.13 ^o west of north
	LATITUDE	2402,2403	0.0794678394 revs	0	02426, 00022	Pad 39A
	LAUNCHAZ	2633,2634	0.2001638055 rev	0	06317, 17366	72.05897 deg
* 1	WMIDPOS	3000	9144 m	19	00436	30,000 ft
* 1	WMIDVEL	3001	0.09144 m/cs	0	02732	30 ft/sec
*	RVAR	3002,3003	0	-16	00000, 00000	
* 1	RVARMIN	3004,3005, 3006	-3716.1216 m ²	40	77777,77777, 42757	(200 ft) ² (a negative number for coding ease)

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	IADPAD	3007	0.27	0	10510	
*	LODPAD	3010	0.207	0	06477	
*	1 ALFAPAD	3011	-0.0543055556 revs	- 1	74414	-19.55 deg
*	ESTROKER	3013	5 C.D.U actuator output pulses	14	00005	
*	EKPRIME	3014	0.0001583099 $\frac{\text{revs/cs}}{\text{radian}}$	- 5	00123	
*	EKPRIME+1	3015	0.0002384186 $\frac{\text{revs/cs}}{\text{radian}}$	- 5	00175	
*	EKTLX/I	3016	127400 $\frac{\text{CDU pulse}}{\text{rev}} \frac{\text{nt m}}{\text{kg m}^2}$	17	37065	
*	EKTLX/I+1	3017	9472 $\frac{\text{CDU pulse}}{\text{rev}} \frac{\text{nt m}}{\text{kg m}^2}$	17	02245	
*	EKTLX/I+2	3020	880 $\frac{\text{CDU pulse}}{\text{rev}} \frac{\text{nt m}}{\text{kg m}^2}$	17	00156	
*	EREPPFRAC	3021	0.125	2	01000	unitless. This value is doubled before it is used.

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	HREFTRAC+1	3022	0.0375	2	00232	Unitless
*	HBN10	3025	37777 octal	0	37777	
*	HBN11/2	3026	0	1	00000	
*	HBN12	3027	0	0	00000	
*	HBD11/2	3030	-1.2205810546	1	54360	
*	HBD12	3031	0.5349731445	0	21075	
*	HBN20	3032	37777 octal	0	37777	
*	HBN21/2	3033	-0.9621582031	1	60465	
*	HBN22	3034	0	0	00000	
*	HBD21/2	3035	-1.2205810546	1	54360	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	HBD22	3036	0.5349731445	0	21075	
*	HBN30	3037	37777 octal	0	37777	
*	HBN31/2	3040	-1.0504150390	1	57142	
*	HBN32	3041	0.8480224609	0	33106	
*	HBD31/2	3042	-1.4411621093	1	50741	
*	HBD32	3043	0.7882080078	0	31162	
**	DAPDATR1	3066	31102 octal	-	31102	
**	DAPDATR2	3067	01111 octal	-	01111	
	POLYNUM	3261	5	14	00005	
1	POLYNUM+1	3262,3263	0.7409386111 x 10 ⁻³ rev	5	00000, 14107	+0.2667379 deg

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
1	POLYNUM+3	3264,3265	+0.1031883611 x 10 ⁻⁵ rev/cs	-9	00010, 24775	+0.3714781 E-1 deg/sec
1	POLYNUM+5	3266,3267	+0.2548563889 x 10 ⁻⁸ rev/cs ²	-23	00536, 10550	+0.9174830 E-2 deg/sec ²
1	POLYNUM+7	3270,3271	+0.2161562222 x 10 ⁻¹² rev/cs ³	-37	00746, 27545	+0.7781624 E-4 deg/sec ³
1	POLYNUM+9D	3272,3273	-0.7203122222 x 10 ⁻¹⁶ rev/cs ⁴	-51	72636, 60425	-0.2593124 E-5 deg/sec ⁴
1	POLYNUM+11D	3274,3275	+0.5050663889 x 10 ⁻²⁰ rev/cs ⁵	-65	05754, 36030	+0.1818239 E-7 deg/sec ⁵
1	POLYNUM+13D	3276,3277	-0.1155788333 x 10 ⁻²⁴ rev/cs ⁶	-79	75607, 53465	-0.4160838 E-10 deg/sec ⁶
	SATRLRT	3300,3301	0.0000277778 rev/cs	0	00000, 16441	1.0°/sec
	RPSTART	3302	1185 cs	14	02241	11.85 sec
	POLYSTOP	3303	-14725 cs	14	43172	147.25 sec
	SATRATE	3321	0 output pulses	12	00000	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
1	SATRATE+1	3322	57 output pulses	12	00344	} 2.5° att error, 0.75 volts
	SATRATE+2	3323	-57 output pulses	12	77433	
	SATRATE+3	3324	0 output pulses	12	00000	
	SATSCALE	3331	1	2	10000	0.3 volts/deg
	P37RANGE	3376	0.0565509259 "rev"	0	01637	1221.5 n.m. "rev" = $\frac{n.mi.}{21600}$
	LAT(SPL)	3400,3401	0.0735555556 rev	0	02265, 04227	26.48° north geodetic
	INC(SPL)	3402,3403	-0.0473611111 rev	0	76370, 41106	-17.05 west geodetic
	ECSTEER	3424	1.0	2	10000	
	FLAGWRD 1	0075	00000 octal		00000	
	FLAGWRD 3	0077	00000 octal		00000	
	FLAGWRD 8	0104	00000 octal		00000	

*

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LAUNCH TAPE

REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	EMDOT	0110	0.3022739554 kg/cs	3	01153	66.64 lbs/sec
	PIPTIME	1204, 1205	13512000 cs	28	01470, 26500	predicted value of AGC clock at L/O 37 hrs 32 min
* 1	PBIASX	1452	-0.0004444122 accelerometer counts/cs	-8	74267	-0.26 cm/sec ²
* 1	PIPASCFX	1453	0.0000400543 counts/count	-9	00520	+40 ppm
* 1	PBIASY	1454	-0.0002222061 accelerometer counts/cs	-8	76133	-0.13 cm/sec ²
* 1	PIPASCFY	1455	-0.0000799894 counts/count	-9	76540	-80 ppm
* 1	PBIASZ	1456	0.0002393722 accelerometer counts/cs	-8	01754	+0.14 cm/sec ²
* 1	PIPASCFZ	1457	-0.0000300407 counts/count	-9	77403	-30 ppm
* 1	NBDX	1460	-0.0004367828 gyro pulses/cs	-5	77432	-1.8 meru
* 1	NBDY	1461	-0.0001449584 gyro pulses/cs	-5	77663	-0.6 meru
* 1	NBDZ	1462	-0.0000476837 gyro pulses/cs	-5	77746	-0.2 meru

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LAUNCH TAPE

REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
* 1	ADIAZ	1463	0.0021743774 gyro pulses/ accelerometer count	- 3	00435	+15.0 meru/g
* 1	ADIAZ	1464	0.0007247924 gyro pulses/ accelerometer count	- 3	00137	+5.0 meru/g
* 1	ADIAZ	1465	0.0001449584 gyro pulses/ accelerometer count	- 3	00023	+1.0 meru/g
* 1	ADSRAX	1466	-0.0008697509 gyro pulses/ accelerometer count	- 3	77615	-6.0 meru/g
* 1	ADSRAY	1467	0.0004348754 gyro pulses/ accelerometer count	- 3	00071	+3.0 meru/g
* 1	ADSRAY	1470	0.0007247924 gyro pulses/ accelerometer count	- 3	00137	+5.0 meru/g

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	TEPHEM	1706-1710	120960000 cs	42	00000, 16326 32000	For clock align on GMT of July 15, 1969
*	AZO	1711, 1712	0.7746616521 rev	0	30624, 01636	
*	UNITW	1713, 1714	-0.0000395943	0	77777, 53172	
*	UNITW+2	1715, 1716	+0.0000421325	0	00000, 26056	
*	UNITW+4	1717, 1720	+0.9999999963	0	37777, 37777	
	REFSMMAT+2	1737, 1740	0.67020001	1	12562, 10723	rev 2 of launch tape
	REFSMMAT+4	1741, 1742	0.07150001	1	01111, 27231	TEPHEM = time from July 1 to
*	1 EK1VAL	1767, 1770	896.0141764 $\frac{kg \cdot m}{cs}$	23	00001, 30000	20143.2 lbf sec July 15, 00:00:00 GMT
*	EK2VAL	1771, 1772	218.3676473 $\frac{kg \cdot m}{cs}$	23	00000, 15514	4909.1 lbf sec
*	EK3VAL	1773	11.32272571 $\frac{kg \cdot m}{cs^2}$	9	00552	25454.5 lbf
*	FANG	1774, 1775	9.0032005492 $\frac{kg \cdot m}{cs^2}$	7	02200, 15070	20240 lbf
*	504IM	2011, 2012	-0.17077475786 x 10 ⁻³ rad	0	77775, 46355	
*	504IM+2	2013, 2014	-0.55982545018 x 10 ⁻³ rad	0	77766, 72372	
*	504IM+4	2015, 2016	-0.40609389544 x 10 ⁻⁴ rad	0	77777, 52552	
*	1 RLS	2025, 2026	1588735.998 m	27	00301, 36000	0.6913999975 deg lat SITE 2

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	VECOEM+14D	2054,2055		-151	77716, 70647	
*	VECOEM+16D	2056,2057		-151	77746, 60406	
*	VECOEM+18D	2060,2061		-125	00064, 02353	
*	VECOEM+20D	2062,2063		-125	77536, 60066	
*	VECOEM+22D	2064,2065		-125	77650, 67352	
*	VECOEM+24D	2066,2067		-99	77442, 55253	
*	VECOEM+26D	2070,2071		-99	77247, 64474	
*	VECOEM+28D	2072,2073		-99	77500, 75772	
*	VECOEM+30D	2074,2075		-73	75462, 46023	
*	VECOEM+32D	2076,2077		-73	00033, 17456	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
	VECOEM+34D	2100,2101		-73	77776, 75725	
	VECOEM+36D	2102,2103		-47	76644, 70215	
	VECOEM+38D	2104,2105		-47	04476, 04351	
	VECOEM+40D	2106,2107		-47	02401, 14466	
	VECOEM+42D	2110,2111		-21	10510, 07453	
	VECOEM+44D	2112,2113		-21	02536, 24014	
	VECOEM+46D	2114,2115		-21	01444, 34353	
	VECOEM+48D	2116,2117		+ 5	03772, 21412	
	VECOEM+50D	2120,2121		+ 5	67600, 77510	
	VECOEM+52D	2122,2123		+ 5	73443, 74224	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
*	VECOEM+54D	2124,2125		+31	72462, 62354	
*	VECOEM+56D	2126,2127		+31	76253, 73520	
*	VECOEM+58D	2130,2131		+31	77014, 44315	
*	RESO	2132,2133		+38	67365, 73001	
*	RESO+2	2134,2135		+38	16164, 27246	
*	RESO+4	2136,2137		+38	06126, 34737	
*	VESC	2140,2141		+ 9	57770, 77361	
*	VESO+2	2142,2143		+ 9	67654, 43265	
*	VESO+4	2144,2145		+ 9	74353, 56704	
*	OMEGAES	2146,2147		-26	00521, 17370	

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REV	MNEMONIC	ADDRESS	VALUE	SF	OCTAL	REMARKS
	TAZEL1	2432	-0.2966888889 rev	- 1	55006	253.192 deg Target 1 azimuth (two's compliment)
	TAZEL1+1	2433	-0.0055866667 rev	- 2	77221	-2.0112 deg Target 1 Elevation
	TAZEL1+2	2434	-0.1911472223 rev	- 1	63610	291.187 deg Target 2 azimuth (two's compliment)
	TAZEL1+3	2435	-0.0055994444 rev	- 2	77220	-2.0158 deg Target 2 Elevation
*	1 ETDECAY	3012	63 cs	14	00077	0.63 sec
**	PACTOFF	3023	-64.9 CDU pulses	14	77676	-1.541 deg
**	IACTOFF	3024	+55.7 CDU pulses	14	00070	+1.321 deg
**	LEMMASS	3073	15093.6 kg	16	07275	33275.6 lbs at TD&E
**	CSMMASS	3074	28751.7 kg	16	16024	63386.7 lbs at TD&E

W MATRIX DIAGONAL AT FIRST MARK AFTER CSI

LUMINARY 99

	W_{rr} (Meters)	W_{rv} (M/CS)	W_{β} (Rad)	W_{θ} (Rad)
DECIMAL	609.6	.006096	.005	.005
OCTAL	01142	00144	05075	05075

COMANCHE 55

	W_{rr} (Meters)	W_{rv}
DECIMAL	609.6	.006096
OCTAL	00023	00144

TEPHEM automatically updated to reflect time of liftoff

Routine 3 data to be updated as necessary

Launch July 16

	R (LS)	SITE	002
	LAT(DEG)	LONG(DEG)	ALT(N MI.)
	6.913999975E-01	2.371690005E 01	-1.442519903E 00
	X	Y	Z
DECIMAL	1.538735998E 06	6.279649961E 05	2.094099998E 04
OCTAL	301 36000	125 6332	2 21632

Launch July 18

	R (LS)	SITE	003
	LAT(DEG)	LONG(DEG)	ALT(N MI.)
	3.527777791E-01	-1.299166864E 00	-9.811015010E-01
	X	Y	Z
DECIMAL	1.735793486E 06	-3.936499983E 04	1.068999991E 04
OCTAL	323 34343	77773 46165	1 11604

Launch July 21

	R (LS)	SITE	005
	LAT(DEG)	LONG(DEG)	ALT(N MI.)
	1.678055555E 00	-4.189916611E 01	-1.249460042E 00
	X	Y	Z
DECIMAL	1.291420490E 06	-1.158691496E 06	5.082899988E 04
OCTAL	235 24471	77562 61670	6 6432

MSC/TRW TASK A-164 ON BOARD DATA LOAD PROGRAM, RUN 05 JUN 69

LAUNCH DATE 16 JUL. 1969

START TIME (EJD) = 2440419.0700+000 (TO)
 EPH. CENTER(EJD) = 2440424.2500+000 (TMO)
 AGC ZERO (UJD) = 2440403.5000+000
 E.T. - U.T. (CS) = 3972.70

EPHEMERIS SPAN (DAYS) = 10.500
 UNITW COMPUTED, TO + -.50 DAYS
 504LM COMPUTED, TO + +.50 DAYS
 BRCS FOR NBY 1970

 DECIMAL = .17927602800+009
 TIMEMO (CS)
 OCTAL (SCALED B42) = 0 25276 4374

 EARTH ORIENTATION ANGLES
 UNITW = UNITW + 2 =
 -AYC (RAD) AXC (RAD) UNITW + 4 AZC (REV)
 DECIMAL -.39592385292-074 .42133 33276-074 .99999999627+010 .77446155010000
 OCTAL 77777 53173 0 26056 37777 37777 30624 01535

***** LUNAR LIBRATION VECTOR (SELENOGRAPHIC COORDINATES) *****
 504LM 504LM + 2 504LM + 4
 (RADIAN)-DECIMAL -.17077475786-003 -.55992545018-003 -.40619389544-004
 (RADIAN)-OCTAL 77775 46355 77766 72372 77777 52552

 SUN EPHEMERIS DATA
 SOLAR POSITION VECTOR (RESO)
 RESO RESO + 2 RESO + 4
 (METERS)-DECIMAL -.73184835584+011 .12221746995+012 .52997618683+011
 (2**38M)-DECIMAL -.26624488186+00 .44452456554+0 .19280421361+000
 (2**38M)-OCTAL 67365 73001 16164 27246 6126 34737

SOLAR VELOCITY VECTOR (VESO)
 VESO VESO + 2 VESO + 4
 (METERS/CS)-DECIMAL -.25621926498+003 -.13062172318+003 -.56641714096+002
 (2**9 M/CS)-DECIMAL -.50042825192+000 -.25512055308+000 -.11062834784+000
 (2**9 M/CS)-OCTAL 57770 77361 67654 43265 74353 56704

 ANGULAR RATE OF RES AT TIMEMO (OMEGAES)
 (REV/CS)-DEC (REV/2**26CS)-DEC (REV/2**26CS)-OCT
 .30693980690-009 .20598381758-001 521 17370

LAUNCH DATE 16 JUL. 1969

***** LUNAR EPHEMERIS DATA (POLYNOMIAL COEFFICIENTS) *****

(METERS,CENTISECONDS)-DECIMAL

	0	1	2	3	4
0	-.362469528+009	.398935756+001	.128762244-006	-.261614226-015	-.794746912-023
1	-.111691128+009	-.824806869+001	.400068743-007	.102614931-014	.177631754-024
2	-.655179680+008	-.442991388+001	.234253630-007	.555716029-015	-.688281140-026
	5	6	7	8	9
0	-.213376910-031	.747266153-040	.199272358-047	.137893073-055	-.151225494-064
1	-.331600431-031	-.231726318-039	-.15251595-047	.923271828-056	.131879955-063
2	-.183986789-031	-.125221870-039	-.544990770-048	.521928181-056	.716453453-064

(2**29M,2**26CS)-DECIMAL

	0	1	2	3	4
0	-.675152108+000	.498668821+000	.178013599+001	-.147275716+000	-.300246894+000
1	-.208740938+000	-.17010959+001	.335601985+000	.577670708+000	.671073794-002
2	-.122036725+000	-.553739235+000	.196506187+000	.312840313+000	-.260025263-003
	5	6	7	8	9
0	-.540974736-001	.127140731-001	.227528811-001	.105660260-001	-.777631998-003
1	-.840712041-001	-.394278914-001	-.120176077-001	.707454979-002	.678153336-002
2	-.466461927-001	-.213053972-001	-.622166693-002	.399926305-002	.368414819-002

(2**29M,2**26CS)-OCTAL SCALED B2

	0	1	2	3	4
0	72462 62354	3772 21412	10510 7453	76644 70215	75462 46023
1	76253 73520	67600 77510	2536 24014	4476 4351	33 17456
2	77014 44315	73443 74224	1444 34353	2401 14466	77776 75725
	5	6	7	8	9
0	77442 55253	64 2353	135 6210	53 10722	77774 72045
1	77247 64474	77536 60066	77716 70647	34 37215	33 30675
2	77500 75772	77650 67352	77746 60406	20 14142	17 2707

MSC/TRW TASK A-164 ON BOARD DATA LOAD PROGRAM, RUN 05 JUN 69

LAUNCH DATE 18 JUL. 1969

START TIME (EJD) = 2440421.0000+000 (TO)
 EPH. CENTER(EJD) = 2440426.2500+000 (TMO)
 AGC ZERO (UJD) = 2440403.5000+000
 E.T. - U.T. (CS) = 3972.00

EPHEMERIS SPAN (DAYS) = 10.500
 UNITW COMPUTED, TO + -.50 DAYS
 504LM COMPUTED, TO + 4.50 DAYS
 BRCS FOR NBY 1970

***** TIMEMO (CS) *****
 DECIMAL = .19655602800+009 OCTAL (SCALED 842) = 0 27334 32374

***** EARTH ORIENTATION ANGLES *****
 UNITW = UNITW + 2 =
 -AYG (RAD) AXC (RAD) UNITW + 4 AZC (REV)
 DECIMAL -.39 37317038-004 .42647123337-004 .99999999627+000 .774662185+5000
 OCTAL 7777 53427 0 26277 37777 37777 30624 02055

***** LUNAR LIBRATION VECTOR (SELENOGRAPHIC COORDINATES) *****
 504LM 504LM + 2 504LM + 4
 (RADIANS)-DECIMAL -.16816705465-003 -.49381330609-003 -.53495168686-003
 (RADIANS)-OCTAL 77775 47651 77767 75062 77777 43747

***** SUN EPHEMERIS DATA *****
 SOLAR POSITION VECTOR (RESO)
 RESO RESO + 2 RESO + 4
 (METERS)-DECIMAL -.77570170880+011 .11989177856+012 .51989126144+011
 (2**38M)-DECIMAL -.28219863772+000 .43616374955+000 .18913533911+000
 (2**38M)-OCTAL 66760 56507 15752 3327 6032 31307

SOLAR VELOCITY VECTOR (VESO)
 VESO VESO + 2 VESO + 4
 (METERS/CS)-DECIMAL -.25129451752+003 -.13853078651+003 -.60071348190+002
 (2**9 M/CS)-DECIMAL -.45080960453+000 -.27056794241+000 -.11732685193+000
 (2**9 M/CS)-OCTAL 60226 62323 67257 40362 74175 66740

***** ANGULAR RATE OF RES AT TIMEMO (OMEGAES) *****
 (REV/CS)-DEC (REV/2**26CS)-DEC (REV/2**26CS)-OCT
 .30704394582-009 .20605370402-001 521 23114

LAUNCH DATE 18 JUL. 1969

***** LUNAR EPHEMERIS DATA (POLYNOMIAL COEFFICIENTS) *****

(METERS, CENTISECONDS)-DECIMAL

	1	2	3	4	
0	-.257173880+009	.813260791+001	.101040362-006	-.859696963-015	-.903785948-023
1	-.237118992+009	-.595964754+001	.914776503-007	.913518151-015	-.384198690-023
2	-.132237296+009	-.313211751+001	.510936307-007	.486403773-015	-.221500033-023
	5	6	7	8	9
0	.286192413-032	.463436127-039	.394719321-047	-.938755468-056	-.293866784-063
1	-.61444822-031	-.215248115-039	.206595055-047	.277171739-055	.348294458-064
2	-.327593451-031	-.111727452-039	.118008957-047	.149516888-055	.148759451-064

(2**29M, 2**26CS)-DECIMAL

	1	2	3	4	
0	-.479023680+000	.1407599+001	.839199379+000	-.483966365+000	-.341440578+000
1	-.441482276+000	-.744955942+000	.767370149+000	.514265001+000	-.145146161+000
2	-.246311158+000	-.391514689+000	.428604439+000	.273820981+000	-.836803466-001
	5	6	7	8	9
0	.725330412-002	.788495541-001	.450689793-001	-.719319284-002	-.151112229-001
1	-.152484834+000	-.366225690-001	.235889852-001	.212382227-001	.179100037-002
2	-.830523223-001	-.188392997-001	.134742409-001	.114566982-001	.764951110-003

(2**29M, 2**26CS)-OCTAL SCALED B2

	1	2	3	4	
0	74125 75320	10020 26177	6555 13425	74101 65436	75211 56537
1	74357 60021	72024 65104	6107 4573	4072 15574	76655 57315
2	76017 43401	74674 53305	3333 22025	2141 22207	77251 47662
	5	6	7	8	9
0	35 26551	502 36760	270 23220	77742 61130	77702 43256
1	76617 55403	77551 77634	140 23666	126 37571	7 12600
2	77253 72124	77662 72543	67 6061	56 35516	3 4207

MSC/TRW TASK A-164 ON BOARD DATA LOAD PROGRAM, RUN 05 JUN 69

LAUNCH DATE 21 JUL. 1969

START TIME (EJD) = 2440424.0000+000 (TO)	EPHEMERIS SPAN (DAYS) = 10.500
EPH. CENTER(EJD) = 2440429.2500+000 (TMO) = 2440429.2500+000	UNITW COMPUTED, TO + -.50 DAYS
AGC ZERO (UJD) = 2440403.5000+000	504LM COMPUTED, TO + 4.50 DAYS
E.T. - U.T. (CS) = 3973.00	BRCS FOR NBY 1970

*****	TIMEMO (CS)	*****
DECIMAL = .22247602700+009		OCTAL (SCALED 842) = 0 32412 33373

*****	EARTH ORIENTATION ANGLES	*****
UNITW =	UNITW + 2 =	
-AYO (RAD)	AXO (RAD)	UNITW + 4 AZO (REV)
DECIMAL -.3859282212-004	.4312201786-004	.99999999627+000 .77465298808000
OCTAL 77777 53610	0 26432	37777 37777 2524 02404

*****	LUNAR LIBRATION VECTOR (SELENOGRAPHIC COORDINATES)	*****
	504LM	504LM + 2 504LM + 4
(RADIANS)-DECIMAL -.15255163772-003	-.43987110257-003	-.10504201155-003
(RADIANS)-OCTAL 77775 60111	77770 71312	77776 50732

*****	SUN EPHEMERIS DATA	*****
	SOLAR POSITION VECTOR (RESO)	
	RESO	RESO + 2 RESO + 4
(METERS)-DECIMAL -.83982420992+011	.11615027098+012	.50366689287+011
(2**38M)-DECIMAL -.30552626774+000	.42255222425+000	.18323294818+000
(2**38M)-OCTAL 66162 50174	15413 3037	5672 2654

	SOLAR VELOCITY VECTOR (VESO)	
	VESO	VESO + 2 VESO + 4
(METERS/CS)-DECIMAL -.24337195778+003	-.15010631180+003	-.65090883255+002
(2**9 M/CS)-DECIMAL -.47533585514+000	-.29317639023+000	-.12713063136+000
(2**9 M/CS)-OCTAL 60624 43072	66474 63105	73735 42736

*****	ANGULAR RATE OF RES AT TIMEMO (OMEGAES)	*****
	(REV/CS)-DEC	(REV/2**26CS)-DEC (REV/2**26CS)-OCT
	.30722074884-009	.20617235452-001 521 31275

LAUNCH DATE 21 JUL. 1969

***** LUNAR EPHEMERIS DATA (POLYNOMIAL COEFFICIENTS) *****

(METERS, CENTISECONDS)-DECIMAL

	0	1	2	3	4
	-.60531200+006	.109026204+002	.118643761-008	-.156730294-014	-.225312756-023
1	-.316606712+009	.211560011+000	.135839278-006	.871692988-016	-.115852448-022
2	-.172028456+009	.264448643+000	.739498507-007	.265663678-016	-.634314061-023
	5	6	7	8	9
	.15120725-030	.47566884-039	-.661797815-047	-.439868584-055	.313759720-063
1	-.328415027-031	.717932585-039	.521258156-047	-.363015901-055	-.420236250-063
2	-.164694576-031	.397439861-039	.274686476-047	-.203541800-055	-.224277729-063

(2**29M, 2**26CS)-DECIMAL

	0	1	2	3	4
	-.112748146-012	.136282755+001	.995256007-012	-.882313117+000	-.851207525-001
1	-.589725955+000	.264450014-001	.113950245+001	.490719527-001	-.437678173+000
2	-.320427969+000	.330560803-001	.620336309+000	.149555355-001	-.239637077+000
	5	6	7	8	9
	.266484812+000	.800628066-001	-.755639523-001	-.337048322-001	.161341578-001
1	-.832605660-001	.122149900+000	.595171601-001	-.278160125-001	-.216093957-001
2	-.417550355-001	.676208884-001	.313636512-001	-.155963451-001	-.115328133-001

(2**29M, 2**26CS)-OCTAL SCALED B2

	0	1	2	3	4
0	77773 54157	12716 4421	50 30401	70742 41350	77243 53032
1	73220 57340	154 12146	11073 14673	310 37753	74377 50512
2	75337 60672	207 14564	4754 34561	75 10201	76052 56223
	5	6	7	8	9
0	2103 20545	507 35774	77312 57534	77565 76172	102 2571
1	77252 76675	764 12335	363 31021	77616 42062	77647 57471
2	77524 77052	424 37151	200 16713	77700 43602	77720 70275