

LGC - ERASABLE LOAD MEMO

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LGC - ERASABLE LOAD MEMO

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REPLY TO  
ATTN OF: FS66-71-74

JUN 30 1971

MEMORANDUM

TO: PA/Apollo Spacecraft Program Office  
Attn: PD4/John R. Sevier

FROM: FS/Chief, Flight Support Division

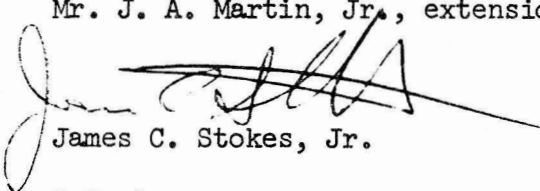
SUBJECT: Final E-Load Apollo 15 (Mission J1) Prelaunch Erasable  
Load (LUMINARY 210)

Enclosure 1 to this memorandum consists of the current values for the parameters in the Apollo 15 (mission J1) Prelaunch Erasable Load for the LGC.

A single or double star (\* or \*\*) next to a parameter mnemonic denotes that it is also in the Inflight Erasable Load. These parameters would have to be verified or reloaded in order to completely initialize the LGC in orbit. A single star denotes loading by ground uplink; a double star denotes loading by the astronaut via the DSKY. All values for parameters in the Inflight Erasable Load should be consistent with the prelaunch values.

Enclosure 2 is the Inflight Erasable Load in uplink format. All values in the Inflight Erasable Load are consistent with the values in the Prelaunch Erasable Load.

Questions or comments regarding erasable loads should be directed to Mr. J. A. Martin, Jr., extension 2308.

  
James C. Stokes, Jr.

2 Enclosures

cc:  
(See attached list)

FS66/JAMartin:lbh:6/28/71:2308

FINAL E-LOAD LUM 210 - APOLLO-15

| REV | MNE/MC/IC | ADDR     | CTAL  | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-----|-----------|----------|-------|----|--------------------------|--------------------------|
|     | FLAGWRD3+ | 0 0077   | 12000 | 0  |                          |                          |
|     | FLAGWRD8+ | 0 0104   | 06000 | 0  |                          |                          |
|     | FLGWRD10+ | 0 0106   | 00000 | 0  |                          |                          |
| **  | CFANCKLP+ | 0 0374   | 00011 | 0  |                          |                          |
| 1   | MASS      | + 0 1243 | 10101 | 16 | 3.6697600000 04 LBS      | 1.6645751360 04 KG       |
|     | MASS      | + 1 1244 | 00000 | 2  | 0.0 LBS                  | 0.0 KG                   |
| *   | LRWH1     | + 0 1315 | 13146 | 0  | 3.5000000000-01 UNITLESS | 3.5000000000-01 UNITLESS |
| 1** | LFMMASS   | + 0 1326 | 10101 | 16 | 3.6697600000 04 LBS      | 1.6645751360 04 KG       |
| 1** | CSMMASS   | + 0 1327 | 10214 | 16 | 3.7921900000 04 LBS      | 1.7201084500 04 KG       |
| *   | E3J22P2M+ | 0 1347   | 12160 | 58 | 9.2047904790 16 M6/CS2   | 9.2047904790 16 M6/CS2   |
| *   | E32C31RM+ | 0 1350   | 03363 | 80 | 1.3128925600 23 M6/CS2   | 1.3128925600 23 M6/CS2   |
| *   | ELEIAS    | + 0 1353 | 00000 | -1 | 0.0 DEG                  | 0.0 REV                  |
| *   | TCCFEW    | + 0 1354 | 00003 | 14 | 3.0000000000 00 UNITLESS | 3.0000000000 00 UNITLESS |



FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC  | ADDR | DCTAL      | SF | ENGINEERING VALUE       | VALUE IN AGC UNITS        |
|-----|-----------|------|------------|----|-------------------------|---------------------------|
| 1 * | PBIASX    | + 0  | 1452 04264 | -3 | 1.700000000D 00 CM/SEC2 | 1.700000000E-02 PIPS/CS   |
| 1 * | PIPASCFX+ | 0    | 1453 57742 | -9 | -9.800000000D 02 PPM    | -9.800000000E-04 PIPS/PIP |
| 1 * | PBIASY    | + 0  | 1454 03470 | -3 | 1.410000000D 00 CM/SEC2 | 1.410000000E-02 PIPS/CS   |
| 1 * | PIPASCFY+ | 0    | 1455 57616 | -9 | -9.900000000D 02 PPM    | -9.900000000E-04 PIPS/PIP |
| *   | PBIASZ    | + 0  | 1456 03505 | -3 | 1.420000000D 00 CM/SEC2 | 1.420000000E-02 PIPS/CS   |
| 1 * | PIPASCFZ+ | 0    | 1457 50443 | -9 | -1.430000000D 03 PPM    | -1.430000000E-03 PIPS/PIP |
| 1 * | NBDX      | + 0  | 1460 00630 | -5 | 3.200000000D 00 MERU    | 7.788494810D-04 G PUL/CS  |
| 1 * | NBDY      | + 0  | 1461 77646 | -5 | -7.000000000E-01 MERU   | -1.703733240D-04 G PUL/CS |
| 1 * | NBDZ      | + 0  | 1462 00263 | -5 | 1.400000000D 00 MERU    | 3.407466479D-04 G PUL/CS  |
| 1 * | ADIA X    | + 0  | 1463 00202 | -6 | 5.000000000E 00 MERU/G  | 1.240946004E-04 GPUL/PIP  |
| *   | ADIA Y    | + 0  | 1464 77713 | -6 | -2.000000000D 00 MERU/G | -4.963784016E-05 GPUL/PIP |
| 1 * | ADIA Z    | + 0  | 1465 00266 | -6 | 7.000000000E 00 MERU/G  | 1.737324406E-04 GPUL/PIP  |
| *   | ADSRAX    | + 0  | 1466 77543 | -6 | -6.000000000E 00 MERU/G | -1.489135205E-04 GPUL/PIP |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC | ADDP | OCTAL                    | SF | ENGINEERING VALUE       | VALUE IN AGC UNITS        |
|-----|----------|------|--------------------------|----|-------------------------|---------------------------|
| 1 * | ACSRAZ   | + 0  | 1467 0015C               | -6 | 4.0000000000 00 MERU/G  | 9.927568032D-05 GPUL/PIP  |
| 1 * | ACSRAZ   | + 0  | 1470 77627               | -6 | -4.0000000000 00 MERU/G | -9.927568032D-05 GPUL/PIP |
| *   | GCOMPSS  | + 0  | 1477 00000               | 14 | 0.0                     | UNITLESS 0.0 UNITLESS     |
|     | TETCSM   | + 0  | 1570 37777<br>1571 37777 | 28 | 2.6843545500 08 CS      | 2.6843545500 08 CS        |
|     | TETLEM   | + 0  | 1642 37777<br>1643 37777 | 28 | 2.6843545500 08 CS      | 2.6843545500 08 CS        |
| *   | X789     | + 0  | 1700 00000<br>1701 00000 | 3  | 0.0                     | RADIANS 0.0 RADIANS       |
| *   | X789     | + 2  | 1702 00000<br>1703 00000 | 3  | 0.0                     | RADIANS 0.0 RADIANS       |
| *   | X789     | + 4  | 1704 00000<br>1705 00000 | 3  | 0.0                     | RADIANS 0.0 RADIANS       |

FINAL E-LOAD LCM 210 APOLLO-15

| REV        | MNEMONIC | ADLR | DCAL  | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|------------|----------|------|-------|----|--------------------------|--------------------------|
| * TEPHEM   | + 0      | 1706 | 00000 | 42 | 6.135666667D-02 HR       | 2 20884000D-08 CS        |
|            |          | 1707 | 32251 |    |                          |                          |
|            |          | 1710 | 26040 |    |                          |                          |
| * -AYD     | + 0      | 1711 | 77777 | 0  | -1.696124673D-05 RADIANS | -1.696124673D-05 RADIANS |
|            |          | 1712 | 67066 |    |                          |                          |
| * AXD      | + 0      | 1713 | 00000 | 0  | 3.089010716D-05 RADIANS  | 3.089010716D-05 RADIANS  |
|            |          | 1714 | 20144 |    |                          |                          |
| * REFSMMAT | + 0      | 1731 | 11244 | 1  | 5.825612400D-01 UNITLESS | 5.825612400D-01 UNITLESS |
|            |          | 1732 | 12736 |    |                          |                          |
| * REFSMMAT | + 2      | 1733 | 07474 | 1  | 4.761850900D-01 UNITLESS | 4.761850900D-01 UNITLESS |
|            |          | 1734 | 35041 |    |                          |                          |
| * REFSMMAT | + 4      | 1735 | 12423 | 1  | 6.586882200D-01 UNITLESS | 6.586882200D-01 UNITLESS |
|            |          | 1736 | 37124 |    |                          |                          |

FINAL E-LOAD LUM 210 APDILLO-15

| REV | MNEMONIC    | ADDR | CTAL  | SF  | ENGINEERING VALUE         | VALUE IN AGC UNITS        |
|-----|-------------|------|-------|-----|---------------------------|---------------------------|
| *   | REFSMMAT+ 6 | 1737 | 73772 | 1   | -2.506558100D-01 UNITLESS | -2.506558100D-01 UNITLESS |
|     |             | 1740 | 64052 |     |                           |                           |
| *   | REFSMMAT+ 8 | 1741 | 65262 | 1   | -6.656529500D-01 UNITLESS | -6.656529500D-01 UNITLESS |
|     |             | 1742 | 77044 |     |                           |                           |
| *   | REFSMMAT+10 | 1743 | 13176 | 1   | 7.029067100D-01 UNITLESS  | 7.029067100D-01 UNITLESS  |
|     |             | 1744 | 06616 |     |                           |                           |
| *   | REFSMMAT+12 | 1745 | 14275 | 1   | 7.731714500D-01 UNITLESS  | 7.731714500D-01 UNITLESS  |
|     |             | 1746 | 32203 |     |                           |                           |
| *   | REFSMMAT+14 | 1747 | 66634 | 1   | -5.745902300D-01 UNITLESS | -5.745902300D-01 UNITLESS |
|     |             | 1750 | 76474 |     |                           |                           |
| *   | REFSMMAT+16 | 1751 | 73551 | 1   | -2.684250500D-01 UNITLESS | -2.684250500D-01 UNITLESS |
|     |             | 1752 | 41767 |     |                           |                           |
| *   | RANGEVAR+ 0 | 1766 | 01351 | -12 | 1.111111111D-05 UNITLESS  | 1.111111111D-05 UNITLESS  |
|     |             | 1767 | 24734 |     |                           |                           |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC    | ADDR | OCTAL | SF  | ENGINEERING VALUE         | VALUE IN AGC UNITS       |
|-----|-------------|------|-------|-----|---------------------------|--------------------------|
| *   | PATEVAR + 0 | 1770 | 02354 | -12 | 1.877777778D-05 UNITLESS  | 1.877777778D-05 UNITLESS |
|     |             | 1771 | 04761 |     |                           |                          |
| *   | RVARMIN + 0 | 1772 | 00410 | 12  | 7.104180875D 02 FT2       | 5.500000000D 01 M2       |
| *   | VVARMIN + 0 | 1773 | 00165 | -12 | 1.877764172E-01 FT2/SEC2  | 1.744500000D-06 M2/CS2   |
| *   | WRENDPCS+ 0 | 2000 | 05750 | 14  | 1.000000000D 04 FT        | 3.048000000D 03 M        |
| *   | WRENDVEL+ 0 | 2001 | 00763 | 0   | 1.000000000D 01 FT/SEC    | 3.048000000D-02 M/CS     |
| *   | WSHAFT + 0  | 2002 | 17270 | -5  | 1.500000000D 01 MILLIRAD  | 1.500000000D-02 RADIANS  |
| *   | WTRUN + 0   | 2003 | 17270 | -5  | 1.500000000D 01 MILLIRAD  | 1.500000000D-02 RADIANS  |
| *   | RMAX + 0    | 2004 | 00023 | 19  | 2.000000000D 03 FT        | 6.096000000D 02 M        |
| *   | VMAX + 0    | 2005 | 00001 | 7   | 2.000000000D 00 FT/SEC    | 6.096000000D-03 M/CS     |
| *   | WSUREPCS+ 0 | 2006 | 00000 | 14  | 0.0                       | 0.0 M                    |
| *   | WSUREVEL+ 0 | 2007 | 00000 | 0   | 0.0                       | 0.0 M/CS                 |
| *   | SHAFTVAR+ 0 | 2010 | 00103 | -12 | 1.000000000D 00 MILLIRAD2 | 1.000000000D-06 RADIANS2 |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC | ADDR | OCTAL                    | SF  | ENGINEERING VALUE         | VALUE IN AGC UNITS        |
|-----|----------|------|--------------------------|-----|---------------------------|---------------------------|
| *   | IRLNVAF  | + 0  | 2011 00103               | -12 | 1.0000000000D 00 MILIRAD2 | 1.0000000000D-06 RADIANS2 |
| *   | 504LM    | + 0  | 2012 77774<br>2013 51037 | 0   | -2.268552780D-04 RADIANS  | -2.268552780D-04 RADIANS  |
| *   | 504LM    | + 2  | 2014 00011<br>2015 35623 | 0   | 6.061308086D-04 RADIANS   | 6.061308086D-04 RADIANS   |
| *   | 504LM    | + 4  | 2016 77775<br>2017 53053 | 0   | -1.619607210D-04 RADIANS  | -1.619607210D-04 RADIANS  |
| *   | PLS      | + 0  | 2020 00275<br>2021 31473 | 27  | 5.101198379D 06 FT        | 1.554845266D 06 M         |
| *   | PLS      | + 2  | 2022 00014<br>2023 03666 | 27  | 3.257573530D 05 FT        | 9.929084118D 04 M         |
| *   | PLS      | + 4  | 2024 00135<br>2025 02034 | 27  | 2.501253767D 06 FT        | 7.623821483D 05 M         |

FINAL E-LOAD LUM 210 APOLLO-15

| REV        | MEMORIC | ADDR | UCIAL | SF | ENGINEERING VALUE      | VALUE IN AGC UNITS   |
|------------|---------|------|-------|----|------------------------|----------------------|
| * TLAND    | + 0     | 2026 | 04374 | 28 | 1.046824861D 02 HR     | 3.768569500D 07 CS   |
|            |         | 2027 | 04677 |    |                        |                      |
| * K207PRI  | + 0     | 2371 | 00000 | 14 | 0.0 MIN                | 0.0 CS               |
| * K2072CAP | + 0     | 2372 | 00000 | 0  |                        | 0.0                  |
|            |         | 2373 | 00000 |    |                        |                      |
| * VELBIAS  | + 0     | 2400 | 00001 | 6  | 2.500000000D 00 FT/SEC | 7.620000000D-03 M/CS |
|            |         | 2401 | 36331 |    |                        |                      |
| * RBFECX   | + 0     | 2402 | 77777 | 24 | -3.118358793D 03 FT    | -9.504757600D 02 M   |
|            |         | 2403 | 42227 |    |                        |                      |
| * RBFECX   | + 0     | 2404 | 00000 | 24 | 1.585000000D 02 FT     | 4.831080000D 01 M    |
|            |         | 2405 | 01405 |    |                        |                      |
| * RBFECZ   | + 0     | 2406 | 77774 | 24 | -1.174144094D 04 FT    | -3.578791200D 03 M   |
|            |         | 2407 | 60122 |    |                        |                      |

FINAL E-LOAD LUM 210 APDLLO-15

| REV      | MEMORIC | ADDP | DTAL  | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS     |
|----------|---------|------|-------|----|--------------------------|------------------------|
| * BAPEGZ | + 0     | 2410 | 77777 | 24 | -2.735539993D 01 FT      | -8.337925900D 00 M     |
|          |         | 2411 | 77572 |    |                          |                        |
| * VBPFCX | + 0     | 2412 | 77766 | 10 | -1.964691600D 02 FT/SEC  | -5.988379997E-01 M/CS  |
|          |         | 2413 | 55311 |    |                          |                        |
| * VAPEGX | + 0     | 2414 | 77777 | 10 | -3.534759843D 00 FT/SEC  | -1.077394800D-02 M/CS  |
|          |         | 2415 | 72367 |    |                          |                        |
| * VBPFCZ | + 0     | 2416 | 77767 | 10 | -1.667599672D 02 FT/SEC  | -5.082843800E-01 M/CS  |
|          |         | 2417 | 73603 |    |                          |                        |
| * VAPEGZ | + 0     | 2420 | 00000 | 10 | 2.495050000D-02 FT/SEC   | 7.604912400D-05 M/CS   |
|          |         | 2421 | 00024 |    |                          |                        |
| * ABPFCX | + 0     | 2422 | 77772 | -4 | -7.182481299D-01 FT/SEC2 | -2.189220300D-05 M/CS2 |
|          |         | 2423 | 50265 |    |                          |                        |
| * AAPFGX | + 0     | 2424 | 00000 | -4 | 7.717830052D-02 FT/SEC2  | 2.352394600D-06 M/CS2  |
|          |         | 2425 | 23557 |    |                          |                        |



FINAL E-LOAD LUM 210 APOLLO-15

| REV      | MEMORIC | ADDR | CCIAL | SF  | ENGINEERING VALUE        | VALUE IN AGC UNITS     |
|----------|---------|------|-------|-----|--------------------------|------------------------|
| * ABRFGZ | + 0     | 2426 | 77675 | -4  | -8.302450459D 00 FT/SEC2 | -2.530586900D-04 M/CS2 |
|          |         | 2427 | 65140 |     |                          |                        |
| * AAPFCZ | + 0     | 2430 | 77773 | -4  | -5.896270013D-01 FT/SEC2 | -1.797183100D-05 M/CS2 |
|          |         | 2431 | 51173 |     |                          |                        |
| * VBRFG* | + 0     | 2432 | 77755 | 13  | -3.001679987D 03 FT/SEC  | -9.149120600D 00 M/CS  |
|          |         | 2433 | 66351 |     |                          |                        |
| * VAPFG* | + 0     | 2434 | 00000 | 13  | 4.451009895D-01 FT/SEC   | 1.368884200D-03 M/CS   |
|          |         | 2435 | 00055 |     |                          |                        |
| * ABRFG* | + 0     | 2436 | 77161 | -4  | -4.581470144D 01 FT/SEC2 | -1.518352100D-03 M/CS2 |
|          |         | 2437 | 77106 |     |                          |                        |
| * AAPFG* | + 0     | 2440 | 77743 | -4  | -3.537762139D 00 FT/SEC2 | -1.078309900D-04 M/CS2 |
|          |         | 2441 | 67344 |     |                          |                        |
| * JBRFG* | + 0     | 2442 | 77541 | -21 | -1.512365879D-02 FT/SEC3 | -4.609691200D-09 M/CS3 |
|          |         | 2443 | 63456 |     |                          |                        |

FINAL E-LOAD LUM 210 APOLO-15

| REV         | DESCRIPTION | ADL  | ACTAL | SF  | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-------------|-------------|------|-------|-----|--------------------------|--------------------------|
| * JAPFC*    | + 0         | 2444 | 00704 | -21 | 4.317359900D-02 FT/SEC3  | 1.315931300D-08 M/CS3    |
|             |             | 2445 | 04643 |     |                          |                          |
| * GAINBRAK* | 0           | 2446 | 37777 | 0   | 9.999999963D-01 UNITLESS | 9.999999963D-01 UNITLESS |
|             |             | 2447 | 37777 |     |                          |                          |
| * GAINAPPR* | 0           | 2450 | 00700 | 0   | 0.0 UNITLESS             | 0.0 UNITLESS             |
|             |             | 2451 | 00000 |     |                          |                          |
| * TCCFBRAK* | 0           | 2452 | 00567 | 17  | 3.000000000D-01 SEC      | 3.000000000D-03 CS       |
| * TCCIBRAK* | 0           | 2453 | 25762 | 17  | 9.000000000D-02 SEC      | 9.000000000D-04 CS       |
| * TCCFAPPR* | 0           | 2454 | 00113 | 17  | 6.000000000D-00 SEC      | 6.000000000D-02 CS       |
| * TCCIAPPR* | 0           | 2455 | 04704 | 17  | 2.000000000D-02 SEC      | 2.000000000D-04 CS       |
| 1 * VIGN    | + 0         | 2456 | 00416 | 10  | 5.548141010D-03 FT/SEC   | 1.691073390D-01 M/CS     |
|             |             | 2457 | 22227 |     |                          |                          |
| 1 * FIGNX   | + 0         | 2460 | 77717 | 24  | -1.625396686D-05 FT      | -4.954209100D-04 M       |
|             |             | 2461 | 63636 |     |                          |                          |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC  | ADDR | DCTAL      | SF  | ENGINEERING VALUE         | VALUE IN AGC UNITS        |
|-----|-----------|------|------------|-----|---------------------------|---------------------------|
| 1 * | FIGNZ     | + 0  | 2462 77063 | 24  | -1.547120997D 06 FT       | -4.715624800D 05 M        |
|     |           |      | 2463 57527 |     |                           |                           |
| *   | FIGNX/B4* | 0    | 2464 77251 | 4   | -3.340000000D-01 UNITLESS | -3.340000000D-01 UNITLESS |
|     |           |      | 2465 77371 |     |                           |                           |
| *   | KIGNY/PP* | 0    | 2466 76366 | -16 | -2.206999985D-07 FT/FT2   | -7.240813600D-07 M-1      |
|     |           |      | 2467 60601 |     |                           |                           |
| *   | KIGNV/B4* | 0    | 2470 71727 | 18  | -4.980000000D 02 SEC      | -4.980000000D 04 CS       |
|     |           |      | 2471 57777 |     |                           |                           |
| *   | LOWCRIT   | + 0  | 2472 04114 | 14  | 5.985007886D 03 LBF       | 2.124377200D 03 DPSTROTP  |
| *   | HIGHCRIT  | + 0  | 2473 04454 | 14  | 6.615008567D 03 LBF       | 2.347995800D 03 DPSTROTP  |
| *   | TAMHZ     | + 0  | 2474 07640 | 11  | 5.000000000D 00 SEC       | 5.000000000D 02 CS        |
| *   | CFZ       | + 0  | 2475 14632 | 0   | 4.000000000D-01 UNITLESS  | 4.000000000D-01 UNITLESS  |
| *   | AFZLIM    | + 0  | 2476 00017 | -4  | 1.938979987D 00 FT/SEC2   | 5.910011000D-05 M/CS2     |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MEMORIC   | ADDR     | CTAL  | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-----|-----------|----------|-------|----|--------------------------|--------------------------|
| *   | PLATE4444 | 0 2477   | 00000 | 28 | 1.5000000000 00 SEC      | 1.5000000000 02 CS       |
|     |           | 2500     | 00226 |    |                          |                          |
| *   | DELDFIX   | + 0 2503 | 05000 | 24 | 1.0000000000 02 FT       | 3.0480000000 01 M        |
|     |           | 2504     | 00750 |    |                          |                          |
| *   | LPVMAX    | + 0 2511 | 01717 | 7  | 2.4999999670 03 FT/SEC   | 7.6199999000 00 M/CS     |
| *   | LPVF      | + 0 2512 | 00116 | 7  | 1.9999999670 02 FT/SEC   | 6.0999999000-01 M/CS     |
| *   | LRWVZ     | + 0 2513 | 11463 | 0  | 3.0000000000-01 UNITLESS | 3.0000000000-01 UNITLESS |
| *   | LRWVY     | + 0 2514 | 11463 | 0  | 3.0000000000-01 UNITLESS | 3.0000000000-01 UNITLESS |
| *   | LRWVX     | + 0 2515 | 11463 | 0  | 3.0000000000-01 UNITLESS | 3.0000000000-01 UNITLESS |
| *   | LRWVFZ    | + 0 2516 | 06315 | 0  | 2.0000000000-01 UNITLESS | 2.0000000000-01 UNITLESS |
| *   | LRWVFY    | + 0 2517 | 06315 | 0  | 2.0000000000-01 UNITLESS | 2.0000000000-01 UNITLESS |
| *   | LRWVFX    | + 0 2520 | 06315 | 0  | 2.0000000000-01 UNITLESS | 2.0000000000-01 UNITLESS |
| *   | LRWVFF    | + 0 2521 | 03146 | 0  | 1.0000000000-01 UNITLESS | 1.0000000000-01 UNITLESS |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC | ADDR | OCTAL      | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-----|----------|------|------------|----|--------------------------|--------------------------|
| 1 * | ABSC0    | + 0  | 2522 51736 | 18 | -5.9300000000 05 FT      | -1.8074640000 05 M       |
| 1 * | ABSC1    | + 0  | 2523 70551 | 18 | -1.9600000000 05 FT      | -5.9740800000 04 M       |
| 1 * | ABSC2    | + 0  | 2524 74034 | 18 | -1.0600000000 05 FT      | -3.2308800000 04 M       |
| 1 * | ABSC3    | + 0  | 2525 74530 | 18 | -8.9400000000 04 FT      | -2.7249120000 04 M       |
| 1 * | ABSC4    | + 0  | 2526 76723 | 18 | -2.9200000000 04 FT      | -8.9001600000 03 M       |
| 1 * | SLOPE0   | + 0  | 2527 00005 | 6  | 2.0968000000-02 RADIANS  | 2.0968000000-02 RADIANS  |
| *   | SLLPF1   | + 0  | 2530 00000 | 6  | 0.0 RADIANS              | 0.0 RADIANS              |
| 1 * | SLOPE2   | + 0  | 2531 00060 | 6  | 1.8674700000-01 RADIANS  | 1.8674700000-01 RADIANS  |
| 1 * | SLOPE3   | + 0  | 2532 77710 | 6  | -2.1478400000-01 RADIANS | -2.1478400000-01 RADIANS |
| 1 * | SLOPE4   | + 0  | 2533 00003 | 6  | 1.1301400000-02 RADIANS  | 1.1301400000-02 RADIANS  |
| *   | RCDSCALE | + 0  | 2534 14370 | -7 | 1.0000000000 00 FT/SEC   | 3.0480000000-03 M/CS     |
| *   | TAURCD   | + 0  | 2535 11300 | 9  | 1.5000000000 00 SEC      | 1.5000000000 02 CS       |
|     |          |      | 2535 00000 |    |                          |                          |

FINAL E-LOAD IUM 210 APOLLO-15

| REV | MNEMONIC    | ADDR | DCTAL | SF | ENGINEERING VALUE         | VALUE IN AGC UNITS        |
|-----|-------------|------|-------|----|---------------------------|---------------------------|
| *   | LAE/TAU + 0 | 2537 | 07356 | 0  | 2.3333000000E-01 UNITLESS | 2.3333000000E-01 UNITLESS |
|     |             | 2540 | 34075 |    |                           |                           |
| *   | MINFORCE+ 0 | 2541 | 00001 | 12 | 9.7599998140 C2 LBF       | 4.3592571000E-01 KG M/CS2 |
|     |             | 2542 | 27631 |    |                           |                           |
| *   | MAXFORCE+ 0 | 2543 | 00013 | 12 | 6.2999999610 C3 LBF       | 2.8023796000 E00 KG M/CS2 |
|     |             | 2544 | 06551 |    |                           |                           |
| *   | J1PARAM + 0 | 2545 | 07014 | 23 | 6.8410278000 C6 FT        | 1.8413052730 C6 M         |
|     |             | 2546 | 11451 |    |                           |                           |
| *   | K1PARAM + 0 | 2547 | 75563 | 23 | -3.1137525000 C5 FT/RAD   | -5.9631937490 C5 M/REV    |
|     |             | 2550 | 52023 |    |                           |                           |
| *   | J2PARAM + 0 | 2551 | 07015 | 23 | 6.8422821000 C6 FT        | 1.8416875840 C6 M         |
|     |             | 2552 | 01363 |    |                           |                           |
| *   | K2PARAM + 0 | 2553 | 73350 | 23 | -6.2221362000 C5 FT/RAD   | -1.1916105630 C6 M/REV    |
|     |             | 2554 | 64255 |    |                           |                           |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC    | ADDR | CTAL                     | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-----|-------------|------|--------------------------|----|--------------------------|--------------------------|
|     | * THETCRIT+ | 0    | 2555 76343<br>2556 42146 | C  | -1.751069600D 01 DEG     | -4.864082223D-02 REV     |
|     | * RAMIN     | + 0  | 2557 03224<br>2560 04500 | 24 | 5.873031450D 06 FT       | 1.790099998D 06 M        |
|     | * YLIM      | + 0  | 2561 00016<br>2562 32446 | 24 | 8.200000000D 00 N.MI.    | 1.518640000D 04 M        |
|     | * ABTRDCT   | + 0  | 2563 00007<br>2564 23346 | 7  | 1.950000000D 01 FT/SEC   | 5.943500000D-02 M/CS     |
|     | * CCSTHET1+ | 0    | 2565 00000<br>2566 00000 | 2  | 0.0                      | UNITLESS 0.0             |
|     | * CCSTHET2+ | 0    | 2567 06733<br>2570 07535 | 2  | 8.660254037D-01 UNITLESS | 8.660254037D-01 UNITLESS |
|     | * ELAND     | + 0  | 2631 00000<br>2632 00000 | 24 | 0.0                      | FT 0.0                   |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC  | ADDR | OCTAL                    | SF | ENGINEERING VALUE        | VALUE IN AGC UNITS       |
|-----|-----------|------|--------------------------|----|--------------------------|--------------------------|
| *   | ELAND     | + 2  | 2633 00000<br>2634 00000 | 24 | 0.0 FT                   | 0.0 M                    |
| *   | ELAND     | + 4  | 2635 00000<br>2636 00000 | 24 | 0.0 FT                   | 0.0 M                    |
| *   | HIASCENT+ | 0    | 3000 02324               | 16 | 1.0900000000 04 LBS      | 4.944156833D 03 KG       |
| 1** | ROLLTIME+ | 0    | 3001 06246               | 14 | 3.2380000000 01 SEC      | 3.2380000000 03 CS       |
| 1** | PITTIME   | + 0  | 3002 06112               | 14 | 3.1460000000 01 SEC      | 3.1460000000 03 CS       |
| 1 * | DKTRAP    | + 0  | 3003 77000               | -3 | -3.898620605D-03 REV/SEC | -3.898620605D-03 REV/SEC |
| *   | DKMEGAN+  | 0    | 3004 00012               | 14 | 1.0000000000 01 UNITLESS | 1.0000000000 01 UNITLESS |
| *   | DKKACSN   | + 0  | 3005 00074               | 14 | 6.0000000000 01 UNITLESS | 6.0000000000 01 UNITLESS |
| 1 * | LMTRAP    | + 0  | 3006 77000               | -3 | -3.898620605D-03 REV/SEC | -3.898620605D-03 REV/SEC |
| *   | LMMEGAN+  | 0    | 3007 00000               | 14 | 0.0 UNITLESS             | 0.0 UNITLESS             |
| *   | LMKACSN   | + 0  | 3010 00074               | 14 | 6.0000000000 01 UNITLESS | 6.0000000000 01 UNITLESS |



FINAL E-LOAD LCM 210 APOLLO-15

| REV | MNEMONIC  | ADDR | OCTAL                    | SF | ENGINEERING VALUE          | VALUE IN AGC UNITS         |
|-----|-----------|------|--------------------------|----|----------------------------|----------------------------|
| *   | DKDB      | + 0  | 3011 00200               | 15 | 2.5600000000 C2 REV-1      | 2.5600000000 02 REV-1      |
| 2 * | IGNACSG   | + 0  | 3012 02075               | -2 | 5.9610000000 C0 DEG/SEC2   | 1.6558333333 C-02 REV/SEC2 |
| 2 * | IGNACSR   | + 0  | 3013 00036               | -2 | 1.6300000000 C-01 DEG/SEC2 | 4.5277777778 C-04 REV/SEC2 |
| *   | DCWNTORK+ | 0    | 3113 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | DCWNTORK+ | 1    | 3114 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | DCWNTORK+ | 2    | 3115 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | DCWNTORK+ | 3    | 3116 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | DCWNTORK+ | 4    | 3117 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | DCWNTORK+ | 5    | 3120 00000               | 5  | 0.0                        | JET SEC 0.0 JET SEC        |
| *   | AGSK      | + 0  | 3371 04225<br>3372 10400 | 28 | 1.0000000000 C2 HR         | 3.6000000000 07 CS         |
| *   | AZBIAS    | + 0  | 3373 00000               | -1 | 0.0                        | DEG 0.0 REV                |
| *   | ATIGINC   | + 0  | 3400 00001<br>3401 03120 | 28 | 3.0000000000 C0 MIN        | 1.8000000000 04 CS         |

FINAL E-LOAD LUM 210 APOLLO-15

| REV          | MNEMONIC               | ADDR            | LOCAL            | SF            | ENGINEERING VALUE               | VALUE IN AGC UNITS               |
|--------------|------------------------|-----------------|------------------|---------------|---------------------------------|----------------------------------|
|              | * FTIGINC + C          | 3402            | 00001            | 28            | 3.0000000000 C0 MIN             | 1.8000000000 04 CS               |
|              |                        | 3403            | 03120            |               |                                 |                                  |
| <del>1</del> | <del>* ACTAZ + 0</del> | <del>3404</del> | <del>69236</del> | <del>-1</del> | <del>-6.0140000000 C1 DEG</del> | <del>-1.6705555556D-01 REV</del> |
| <del>1</del> | <del>* ACTAZ + 1</del> | <del>3405</del> | <del>77765</del> | <del>-1</del> | <del>-1.1700000000 C1 DEG</del> | <del>-3.2500000000-04 REV</del>  |
| <del>1</del> | <del>* ACTAZ + 2</del> | <del>3406</del> | <del>12512</del> | <del>-1</del> | <del>5.9884000000 C1 DEG</del>  | <del>1.6634444450-01 REV</del>   |
| <del>1</del> | <del>* ACTAZ + 3</del> | <del>3407</del> | <del>29240</del> | <del>-1</del> | <del>1.1988400000 C2 DEG</del>  | <del>3.3301111111D-01 REV</del>  |
| <del>1</del> | <del>* ACTAZ + 4</del> | <del>3410</del> | <del>37767</del> | <del>-1</del> | <del>1.7990200000 C2 DEG</del>  | <del>4.9972777780-01 REV</del>   |
| <del>1</del> | <del>* ACTAZ + 5</del> | <del>3411</del> | <del>52515</del> | <del>-1</del> | <del>-1.2009000000 C2 DEG</del> | <del>-3.3258333340-01 REV</del>  |
| <del>1</del> | <del>* ACTEL + 0</del> | <del>3412</del> | <del>10006</del> | <del>-1</del> | <del>4.5061000000 C1 DEG</del>  | <del>1.2516944450-01 REV</del>   |
| <del>1</del> | <del>* ACTEL + 1</del> | <del>3413</del> | <del>10006</del> | <del>-1</del> | <del>4.5062000000 C1 DEG</del>  | <del>1.2517222220-01 REV</del>   |
| <del>1</del> | <del>* ACTEL + 2</del> | <del>3414</del> | <del>10007</del> | <del>-1</del> | <del>4.5077000000 C1 DEG</del>  | <del>1.2521388890-01 REV</del>   |
| <del>1</del> | <del>* ACTEL + 3</del> | <del>3415</del> | <del>10010</del> | <del>-1</del> | <del>4.5093000000 C1 DEG</del>  | <del>1.2525833330-01 REV</del>   |
| <del>1</del> | <del>* ACTEL + 4</del> | <del>3416</del> | <del>10010</del> | <del>-1</del> | <del>4.5092000000 C1 DEG</del>  | <del>1.2525555560-01 REV</del>   |

FINAL E-LOAD LUM 210 APOLLO-15

| REV | MNEMONIC  | ADLR | OCTAL      | SF | ENGINEERING VALUE         | VALUE IN AGC UNITS        |
|-----|-----------|------|------------|----|---------------------------|---------------------------|
| 1 * | ACTEL     | + 5  | 3417 10007 | -1 | 4.5077000000 C1 DEG       | 1.2521388890-01 REV       |
| *   | LRHMAX    | + 0  | 3420 35610 | 14 | 5.0000000000 C4 FT        | 1.5240000000 C4 M         |
| *   | LRWF      | + 0  | 3421 13146 | 0  | 3.5000000000-01 UNITLESS  | 3.5000000000-01 UNITLESS  |
| *   | ZCOMTIME+ | 0    | 3422 05050 | 14 | 2.6000000000 C1 SEC       | 2.6000000000 C3 CS        |
| *   | TENDERAK+ | 0    | 3423 01407 | 17 | 6.2000000000 C1 SEC       | 6.2000000000 C3 CS        |
| *   | TENDAPPR+ | 0    | 3424 00226 | 17 | 1.2000000000 C1 SEC       | 1.2000000000 C3 CS        |
| *   | DELTTFAP+ | 0    | 3425 75632 | 17 | -9.0000000000 C1 SEC      | -9.0000000000 C3 CS       |
| *   | LEADTIME+ | 0    | 3426 77743 | 17 | -2.2000000000 C0 SEC      | -2.2000000000 C2 CS       |
| *   | RPCRTIME+ | 0    | 3427 01407 | 17 | 6.2000000000 C1 SEC       | 6.2000000000 C3 CS        |
| *   | RPCRTQSW+ | 0    | 3430 57777 | 1  | -1.0000000000 C0 UNITLESS | -1.0000000000 C0 UNITLESS |
| *   | TNEWA     | + 0  | 3431 20000 | 28 | 1.3421772800 C8 CS        | 1.3421772800 C8 CS        |
|     |           |      | 3432 00000 |    |                           |                           |

## FINAL E-LOAD LUM 210 APOLLO-15

|    | A     | B     | C     | D     | E  | F     | G     | H     | I     | J  | K     | L     |       |       |    |
|----|-------|-------|-------|-------|----|-------|-------|-------|-------|----|-------|-------|-------|-------|----|
| ID | V71   | V71   | V71   | V71   | ID | V71   | V71   | V71   | V71   | ID | V71   | V71   | V71   | ID    |    |
| 01 | 00021 | 00017 | 00010 | 00022 | 01 | 00012 | 00024 | 00024 | 00024 | 01 | 00015 | 00024 | 00023 | 00016 | 01 |
| 02 | 01452 | 01700 | 01766 | 02000 | 02 | 02020 | 02400 | 02422 | 02444 | 02 | 02466 | 02512 | 02534 | 02555 | 02 |
| 03 | 04264 | 00000 | 01351 | 05750 | 03 | 00275 | 00001 | 77772 | 00704 | 03 | 76366 | 00116 | 14370 | 76343 | 03 |
| 04 | 57742 | 00000 | 24734 | 00763 | 04 | 31473 | 36331 | 50265 | 04643 | 04 | 60601 | 11463 | 11300 | 42146 | 04 |
| 05 | 03470 | 00000 | 02354 | 17270 | 05 | 00014 | 77777 | 00000 | 37777 | 05 | 71727 | 11463 | 00000 | 03324 | 05 |
| 06 | 57616 | 00000 | 04761 | 17270 | 06 | 02666 | 42227 | 23567 | 37777 | 06 | 57777 | 11463 | 07356 | 04500 | 06 |
| 07 | 03505 | 00000 | 00410 | 00023 | 07 | 00135 | 00000 | 77675 | 00000 | 07 | 04114 | 06315 | 34075 | 00016 | 07 |
| 10 | 50443 | 00000 | 00165 | 00001 | 10 | 02034 | 01405 | 65140 | 00000 | 10 | 04454 | 06315 | 00001 | 32446 | 10 |
| 11 | 00630 | 00000 |       | 00000 | 11 | 04374 | 77774 | 77773 | 00567 | 11 | 07640 | 06315 | 27631 | 00007 | 11 |
| 12 | 77646 | 32251 |       | 00000 | 12 | 04677 | 60122 | 51173 | 25762 | 12 | 14632 | 03146 | 00013 | 23346 | 12 |
| 13 | 00263 | 26040 |       | 00103 | 13 |       | 77777 | 77755 | 00113 | 13 | 00017 | 51736 | 06551 | 00000 | 13 |
| 14 | 00202 | 77777 |       | 00103 | 14 |       | 77572 | 66351 | 04704 | 14 | 00000 | 70551 | 07014 | 00000 | 14 |
| 15 | 77713 | 67066 |       | 77774 | 15 |       | 77766 | 00000 | 00416 | 15 | 00226 | 74034 | 11451 | 06733 | 15 |
| 16 | 00266 | 00000 |       | 51037 | 16 |       | 55311 | 00055 | 22227 | 16 |       | 74530 | 75563 | 07535 | 16 |
| 17 | 77543 | 20144 |       | 00011 | 17 |       | 77777 | 77161 | 77717 | 17 |       | 76723 | 52023 |       | 17 |
| 20 | 00150 |       |       | 35623 | 20 |       | 72367 | 77106 | 63036 | 20 |       | 00005 | 07015 |       | 20 |
| 21 | 77627 |       |       | 77775 | 21 |       | 77767 | 77743 | 77063 | 21 |       | 00000 | 01363 |       | 21 |
| 22 |       |       |       | 53053 | 22 |       | 73603 | 67344 | 57527 | 22 |       | 00060 | 73350 |       | 22 |
| 23 |       |       |       |       | 23 |       | 00000 | 77541 | 77251 | 23 |       | 77710 | 64255 |       | 23 |
| 24 |       |       |       |       | 24 |       | 00024 | 63456 | 77371 | 24 |       | 00003 |       |       | 24 |

## FINAL E-LOAD LHM 210 APOLLO-15

| M      | N     | O     | P     | Q      | R        | S     |          |
|--------|-------|-------|-------|--------|----------|-------|----------|
| ID V71 | V71   | V71   | V71   | ID V71 | V72      | V72   |          |
| 01     | 00010 | 00013 | 00010 | 00022  | 01 00015 | 00023 | 00017    |
| 02     | 02631 | 03003 | 03113 | 03400  | 02 03420 | 01347 | 01315 02 |
| 03     | 00000 | 77000 | 00000 | 00001  | 03 35610 | 12160 | 13146 03 |
| 04     | 00000 | 00012 | 00000 | 03120  | 04 13146 | 01350 | 02371 04 |
| 05     | 00000 | 00074 | 00000 | 00001  | 05 05050 | 03363 | 00000 05 |
| 06     | 00000 | 77000 | 00000 | 03120  | 06 01407 | 01353 | 02372 06 |
| 07     | 00000 | 00000 | 00000 | 65236  | 07 00226 | 00000 | 00000 07 |
| 10     | 00000 | 00074 | 00000 | 77765  | 10 75632 | 01354 | 02373 10 |
| 11     |       | 00200 |       | 12513  | 11 77743 | 00003 | 00000 11 |
| 12     |       | 02075 |       | 25240  | 12 01407 | 01477 | 03371 12 |
| 13     |       | 00036 |       | 37767  | 13 57777 | 00000 | 04225 13 |
| 14     |       |       |       | 52515  | 14 20000 | 02503 | 03372 14 |
| 15     |       |       |       | 10006  | 15 00000 | 00000 | 10400 15 |
| 16     |       |       |       | 10006  | 16       | 02504 | 03373 16 |
| 17     |       |       |       | 10007  | 17       | 00750 | 00000 17 |
| 20     |       |       |       | 10010  | 20       | 02511 | 20       |
| 21     |       |       |       | 10010  | 21       | 01717 | 21       |
| 22     |       |       |       | 10007  | 22       | 03000 | 22       |
| 23     |       |       |       |        | 23       | 02324 | 23       |
| 24     |       |       |       |        | 24       |       | 24       |