

| SEQ | PG | LIN | LABEL | OP | OPERANDS | SFX | CT | LOCN | INSTRUCTION | TYPE | CARD | A-ADDR | B-ADDR |
|-----|----|-----|--------|-------|---|-----|----|------|-------------|------|------|--------|--------|
| 101 | 1 | 67 | | JOB | OBJECT TIME FORMAT | | | | | | | | |
| 102 | | | * | | | | | | | | | | |
| 103 | | | * | | THIS IS GARY MOKOTOFF'S ORIGINAL LIMITED FORMAT I/O ROUTINE 54B, | | | | | | | | |
| 104 | | | * | | MODIFIED ONLY TO USE THE REVISED LOADER AND REVISED 54A, AND TO | | | | | | | | |
| 105 | | | * | | REPLACE GENERATED LITERALS WITH EXPLICIT ONES SO WE CAN MAKE ONE | | | | | | | | |
| 106 | | | * | | EXTERNAL. | | | | | | | | |
| 107 | | | * | | | | | | | | | | |
| 108 | | | * | | EXTERNALLY REFERENCED SYMBOLS ARE MARKED WITH ASTERISK IN COLUMN 1. | | | | | | | | |
| 109 | | | * | | | | | | | | | | |
| 110 | | | * | | SEVERAL PHASES REFER TO ADDRESSES HERE, AND IN OTHER I/O | | | | | | | | |
| 111 | | | * | | ROUTINES. | | | | | | | | |
| 112 | | | * | | | | | | | | | | |
| 113 | | | * | | STUFF IN THE RESIDENT AREA | | | | | | | | |
| 114 | | | * | | | | | | | | | | |
| 115 | | | | EXT00 | SNAPSH, LOADNX, CDOVLY | | | | | | | MACRO | |
| 116 | | | SNAPSH | EQU | 333 | | | 0333 | | | | GEN | |
| 117 | | | PHASLD | EQU | 381 | | | 0381 | | | | GEN | |
| 118 | | | SNAPEX | EQU | 564 | | | 0564 | | | | GEN | |
| 119 | | | LOADNX | EQU | 700 | | | 0700 | | | | GEN | |
| 120 | | | CDOVLY | EQU | 700 | | | 0700 | | | | GEN | |
| 121 | | | TPREAD | EQU | 704 | | | 0704 | | | | GEN | |
| 122 | | | TPERR | EQU | 728 | | | 0728 | | | | GEN | |
| 123 | | | * | | | | | | | | | | |
| 124 | | | X1 | EQU | 89 | | | 0089 | | | | | |
| 125 | | | X2 | EQU | 94 | | | 0094 | | | | | |
| 126 | | | X3 | EQU | 99 | | | 0099 | | | | | |
| 127 | | | * | | | | | | | | | | |
| 128 | | | * | | ADDRESS IN FORMAT LOADER | | | | | | | | |
| 129 | | | * | | | | | | | | | | |
| 130 | | | | XT54A | | | | | | | | MACRO | |
| 131 | | | LOAD54 | EQU | 934 | | | 0934 | | | | GEN | |
| 132 | | | SKIPB | EQU | 934 | | | 0934 | | | | GEN | |
| 133 | | | SKIPC | EQU | 935 | | | 0935 | | | | GEN | |
| 134 | | | SKIPD | EQU | 936 | | | 0936 | | | | GEN | |
| 135 | | | RET54B | EQU | 976 | | | 0976 | | | | GEN | |
| 136 | | | RET54D | EQU | 1011 | | | 1011 | | | | GEN | |
| 137 | | | SKIP54 | EQU | 1062 | | | 1062 | | | | GEN | |
| 138 | | | GMWM54 | EQU | 1140 | | | 1140 | | | | GEN | |
| 139 | | | * | | | | | | | | | | |
| 140 | | | PHS54B | LDPH | , FMTBAS, RET54B, SKIPB, SKIP54, 54B | | | | | | | MACRO | |
| | | | * | PHAZ | LDPH [PHASID], LOADAD, ENTAD[, SKIPFG, SKIP], [NUMBER] [, HALT] | | | | | | | GEN | |
| | | | * | XFR | PHASZ PROHIBITED IN A MACRO | | | | | | | GEN | |
| | | | * | | | | | | | | | GEN | |
| | | | * | | LOAD THE BLOCK IF NO WM IN SKIPB, ELSE SKIP IT | | | | | | | GEN | |
| | | | * | | | | | | | | | GEN | |
| 141 | | |)6K003 | EQU | 700 | | | 0700 | | | | GEN | |
| 142 | | |)6L003 | EQU | 704 | | | 0704 | | | | GEN | |
| 143 | | |)6M003 | EQU | 728 | | | 0728 | | | | GEN | |
| | | | * | | | | | | | | | GEN | |
| 144 | | | | ORG | 201 | | | | 0201 | | | | |

| SEQ | PG | LIN | LABEL | OP | OPERANDS | SFX | CT | LOCN | INSTRUCTION | TYPE | CARD | A-ADDR | B-ADDR |
|-----|----|-----|--------|--------|-------------------|-----|------|-------------|--------------|------|------|--------|--------|
| 145 | | | PHS54B | EQU | *&1 | | | 0201 | | GEN | | | |
| 146 | | | | BW |)1J003,SKIPB | 8 | 0201 | V 245 934 | 1 | GEN | 1 | 245 | 934 |
| 147 | | | | BCE |)6K003,)6K003,1 | 8 | 0209 | B 700 700 | 1 | GEN | 1 | 700 | 700 |
| 148 | | | | BCE |)6K003,)6L003&4,0 | 8 | 0217 | B 700 708 | 0 | GEN | 1 | 700 | 708 |
| 149 | | | | RTW | 1,FMTBAS | 8 | 0225 | L %U1 W97 | R | GEN | 1 | %U1 | 1697 |
| 150 | | | | BER |)6M003 | 5 | 0233 | B 728 L | | GEN | 1 | 728 | |
| 151 | | | | CS | RET54B,)9R003 | 7 | 0238 | / 976 256 | | GEN | 2 | 976 | 256 |
| | | | | * | SKIP THE BLOCK | | | | | GEN | | | |
| 152 | | | |)1J003 | CS SKIP54,)9R003 | 7 | 0245 | / 62 256 | | GEN | 2 | 1062 | 256 |
| 153 | | | | DC | #1 | 1 | 0252 | | | GEN | 2 | | |
| 154 | | | | DC | @54B@ | 3 | 0255 | | PHASE NUMBER | GEN | 2 | | |
| 155 | | | |)9R003 | DCW @)@ | 1 | 0256 | | | GEN | 2 | | |
| 156 | | | | XFR | PHS54B | | | B 201 | | GEN | 3 | 201 | |
| 157 | | | | * | | | | | | | | | |
| 158 | 1 | 68 | | ORG | 1697 | | | 1697 | | | | | |
| 159 | | | FMTBAS | EQU | *&1 | | | 1697 | | | | | |
| 160 | 1 | 69 | START | SBR | X1 | 4 | 1697 | H 089 | | | 4 | 089 | |
| 161 | 1 | 70 | | SW | GPWDMK | 4 | 1701 | , !22 | | | 4 | 2022 | |
| 162 | 1 | 71 | | CW | 0&X1 | 4 | 1705 |) 0 0 | | | 4 | 000+1 | |
| 163 | 1 | 72 | | MCW | X3,SAVX3 | 7 | 1709 | M 099 Z99 | | | 4 | 099 | 1999 |
| 164 | 1 | 73 | | LCA | K001,X3 | 7 | 1716 | L !02 099 | | | 4 | 2002 | 099 |
| 165 | 1 | 74 | | BWZ | WRTAP,0&X1,S | 8 | 1723 | V Z17 0 0 S | | | 4 | 1917 | 000+1 |
| 166 | 1 | 75 | | MCW | KR,IO4&7 | 7 | 1731 | M !03 Y55 | | | 5 | 2003 | 1855 |
| 167 | 1 | 76 | RDTAP | MCW | 6&X1,LOC | 7 | 1738 | M 0 6 !06 | | | 5 | 006+1 | 2006 |
| 168 | 1 | 77 | IO1 | MCW | LOC,IO12&6 | 7 | 1745 | M !06 X58 | | | 5 | 2006 | 1758 |
| 169 | 1 | 78 | IO12 | BCE | RET,000,. | 8 | 1752 | B Z02 000 . | | | 5 | 1902 | 000 |
| 170 | 1 | 79 | | MA | K006,LOC | 7 | 1760 | # !09 !06 | | | 5 | 2009 | 2006 |
| 171 | 1 | 80 | | MCW | LOC,IO15&3 | 7 | 1767 | M !06 X77 | | | 6 | 2006 | 1777 |
| 172 | 1 | 81 | IO15 | MCW | 000,ADDR | 7 | 1774 | M 000 !15 | | | 6 | 000 | 2015 |
| 173 | 1 | 82 | | SW | ADDR-2 | 4 | 1781 | , !13 | | | 6 | 2013 | |
| 174 | 1 | 83 | | MA | K001,ADDR | 7 | 1785 | # !02 !15 | | | 6 | 2002 | 2015 |
| 175 | 1 | 84 | | MCW | ADDR,IO2&3 | 7 | 1792 | M !15 Y02 | | | 6 | 2015 | 1802 |
| 176 | 1 | 85 | IO2 | MCW | 000,SAVCH | 7 | 1799 | M 000 !16 | | | 6 | 000 | 2016 |
| 177 | 1 | 86 | | MCW | ADDR,IO3&6 | 7 | 1806 | M !15 Y19 | | | 7 | 2015 | 1819 |
| 178 | 1 | 87 | IO3 | LCA | GPWDMK,000 | 7 | 1813 | L !22 000 | | | 7 | 2022 | 000 |
| 179 | 1 | 88 | | MCW | ADDR-3,IO4&6 | 7 | 1820 | M !12 Y54 | | | 7 | 2012 | 1854 |
| 180 | 1 | 89 | | MN | 0&X1,IO4&3 | 7 | 1827 | D 0 0 Y51 | | | 7 | 000+1 | 1851 |
| 181 | 1 | 90 | | S | COUNT,COUNT | 7 | 1834 | S !17 !17 | | | 7 | 2017 | 2017 |
| 182 | 1 | 91 | | MZ | KA,IO4&5 | 7 | 1841 | Y !18 Y53 | | | 8 | 2018 | 1853 |
| 183 | 1 | 92 | IO4 | RTW | 1,000 | 8 | 1848 | L %U1 000 R | | | 8 | %U1 | 000 |
| 184 | 1 | 94 | | BER | RWT31 | 5 | 1856 | B Z28 L | | | 8 | 1928 | |
| 185 | 1 | 95 | | MCW | ADDR,IO5&6 | 7 | 1861 | M !15 Y74 | | | 8 | 2015 | 1874 |
| 186 | 1 | 96 | IO5 | MCW | SAVCH,000 | 7 | 1868 | M !16 000 | | | 8 | 2016 | 000 |
| 187 | 1 | 97 | | MA | K001,LOC | 7 | 1875 | # !02 !06 | | | 9 | 2002 | 2006 |
| 188 | 1 | 98 | | CW | ADDR-2 | 4 | 1882 |) !13 | | | 9 | 2013 | |
| 189 | 1 | 981 | | BEF | RWT78 | 5 | 1886 | B Z90 K | | | 9 | 1990 | |
| 190 | 1 | 982 | | MA | K001,LOC | 7 | 1891 | # !02 !06 | | | 9 | 2002 | 2006 |
| 191 | 1 | 99 | | B | IO1 | 4 | 1898 | B X45 | | | 9 | 1745 | |
| 192 | 2 | 00 | RET | MCW | SAVX3,X3 | 7 | 1902 | M Z99 099 | | | 9 | 1999 | 099 |
| 193 | 2 | 01 | | SW | 0&X1 | 4 | 1909 | , 0 0 | | | 9 | 000+1 | |

| SEQ | PG | LIN | LABEL | OP | OPERANDS | SFX | CT | LOCN | INSTRUCTION | TYPE | CARD | A-ADDR | B-ADDR |
|-----|----|-----|--------|-------|--------------------------------|-----|----|------|-------------|-------|------|--------|--------|
| 194 | 2 | 02 | | B | 7&X1 | 4 | | 1913 | B 0 7 | | 10 | 007+1 | |
| 195 | 2 | 03 | WRTAP | MCW | KW,IO4&7 | 7 | | 1917 | M !19 Y55 | | 10 | 2019 | 1855 |
| 196 | 2 | 04 | | B | RDTAP | 4 | | 1924 | B X38 | | 10 | 1738 | |
| 197 | 2 | 05 | RWT31 | BCE | RWT77,COUNT,I | 8 | | 1928 | B Z83 !17 I | | 10 | 1983 | 2017 |
| 198 | 2 | 06 | | MN | IO4&3,*&4 | 7 | | 1936 | D Y51 Z46 | | 10 | 1851 | 1946 |
| 199 | 2 | 07 | | UB | %U0 | 5 | | 1943 | U %U0 B | | 10 | %U0 | |
| 200 | 2 | 08 | | BCE | RWT41,IO4&7,W | 8 | | 1948 | B Z67 Y55 W | | 11 | 1967 | 1855 |
| 201 | 2 | 09 | | A | K1,COUNT | 7 | | 1956 | A !20 !17 | | 11 | 2020 | 2017 |
| 202 | 2 | 10 | | B | IO4 | 4 | | 1963 | B Y48 | | 11 | 1848 | |
| 203 | 2 | 11 | RWT41 | MN | IO4&3,*&4 | 7 | | 1967 | D Y51 Z77 | | 11 | 1851 | 1977 |
| 204 | 2 | 12 | | UE | %U0 | 5 | | 1974 | U %U0 E | | 11 | %U0 | |
| 205 | 2 | 13 | | B | IO4 | 4 | | 1979 | B Y48 | | 11 | 1848 | |
| 206 | 2 | 14 | RWT77 | H | *-6,777 | 7 | | 1983 | . Z83 777 | | 12 | 1983 | 777 |
| 207 | 2 | 15 | RWT78 | H | *-6,888 | 7 | | 1990 | . Z90 888 | | 12 | 1990 | 888 |
| 208 | | | SAVX3 | DCW | #03 | 3 | | 1999 | | | 12 | | |
| 209 | | | K001 | DCW | 001 | 3 | | 2002 | | | 12 | | |
| 210 | | | KR | DCW | @R@ | 1 | | 2003 | | | 12 | | |
| 211 | | | LOC | DCW | #03 | 3 | | 2006 | | | 12 | | |
| 212 | | | K006 | DCW | 006 | 3 | | 2009 | | | 12 | | |
| 213 | | | ADDR | DCW | #06 | 6 | | 2015 | | | 13 | | |
| 214 | * | | LIMADR | EQU | ADDR USED IN DIMENSION PHASE 2 | | | 2015 | | | | | |
| 215 | | | SAVCH | DCW | #1 | 1 | | 2016 | | | 13 | | |
| 216 | | | COUNT | DCW | #1 | 1 | | 2017 | | | 13 | | |
| 217 | | | KA | DCW | @A@ | 1 | | 2018 | | | 13 | | |
| 218 | | | KW | DCW | @W@ | 1 | | 2019 | | | 13 | | |
| 219 | | | K1 | DCW | 1 | 1 | | 2020 | | | 13 | | |
| 220 | 2 | 16 | | LTORG | * | | | | 2021 | | | | |
| 221 | 2 | 17 | | DCW | @ @ | 1 | | 2021 | | | 13 | | |
| 222 | 2 | 18 | GPWDMK | DCW | @}@ | 1 | | 2022 | | GMARK | 14 | | |
| 223 | * | | LGM | EQU | GPWDMK | | | 2022 | | | | | |
| 224 | 2 | 19 | | XFR | RET54B | | | | B 976 | | 15 | 976 | |

| SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS | SYMBOL | ADDRESS |
|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|)1J003 | 0245: 0 |)6K003 | 0700: 0 |)6L003 | 0704: 0 |)6M003 | 0728: 0 |)9R003 | 0256: 0 | ADDR | 2015: 0 |
| CDOVLY | 0700: 0 | COUNT | 2017: 0 | FMTBAS | 1697: 0 | GMWM54 | 1140: 0 | GPWDMK | 2022: 0 | IO1 | 1745: 0 |
| IO12 | 1752: 0 | IO15 | 1774: 0 | IO2 | 1799: 0 | IO3 | 1813: 0 | IO4 | 1848: 0 | IO5 | 1868: 0 |
| K001 | 2002: 0 | K006 | 2009: 0 | K1 | 2020: 0 | KA | 2018: 0 | KR | 2003: 0 | KW | 2019: 0 |
| LGM | 2022: 0 | LIMADR | 2015: 0 | LOAD54 | 0934: 0 | LOADNX | 0700: 0 | LOC | 2006: 0 | PHASLD | 0381: 0 |
| PHS54B | 0201: 0 | RDTAP | 1738: 0 | RET | 1902: 0 | RET54B | 0976: 0 | RET54D | 1011: 0 | RWT31 | 1928: 0 |
| RWT41 | 1967: 0 | RWT77 | 1983: 0 | RWT78 | 1990: 0 | SAVCH | 2016: 0 | SAVX3 | 1999: 0 | SKIP54 | 1062: 0 |
| SKIPB | 0934: 0 | SKIPC | 0935: 0 | SKIPD | 0936: 0 | SNAPEX | 0564: 0 | SNAPSH | 0333: 0 | START | 1697: 0 |
| TPERR | 0728: 0 | TPREAD | 0704: 0 | WRTAP | 1917: 0 | X1 | 0089: 0 | X2 | 0094: 0 | X3 | 0099: 0 |

UNREFERENCED SYMBOLS

CDOVLY GMWM54 LGM LIMADR LOAD54 LOADNX PHASLD RET54D SKIPC SKIPD SNAPEX SNAPSH START TPERR TPREAD X2