```
1 *  THIS IS A COPYRIGHTED PROGRAM, COPYRIGHT 1971 BY VARIAN DATA MACHINES01 00001
2 *                                                                      01 00002
3 *    V.D.M.  PART  NO.       92L0107-021C                              ********
4 *                                                                      01 00004
5 *                                                      RELEASED        01 00005
6 *                                                                      01 00006
7 *              620 MEMORY TEST    PART 2                               01 00007
8 *                                                                      01 00008
9 *                                                                      01 00009
10 *                                                                     01 00010
11        SMRY                                                          01 00011
12 *                    *   * ***** *   * *****                         01 00012
13 *                    ** ** *     ** ** *   *                         01 00013
14 *                    * * * *     * * * *   *                         01 00014
15 *                    * * * ***   * * * *   *                         01 00015
16 *                    *   * *     *   * *   *                         01 00016
17 *                    *   * *     *   * *   *                         01 00017
18 *                    *   * ***** *   * *****                         01 00018
19 *                                                                    01 00019
20 *                                                                    01 00020
21 *                    ***** *****  ***  *****                         01 00021
22 *                      *   *      *   *   *                         01 00022
23 *                      *   *      *       *                         01 00023
24 *                      *   ***      *     *                         01 00024
25 *                      *   *        *     *                         01 00025
26 *                      *   *      *   *   *                         01 00026
27 *                      *   *****  ***     *                         01 00027
28 *                                                                    01 00028
29 *                                                                    01 00029
30 *                ****    *   ****  *****         ***                01 00030
31 *                *   *  * *  *   *   *           *   *              01 00031
32 *                *   *  *   * *   *   *                *             01 00032
33 *                ****   *   * ****    *     ***   ***                01 00033
34 *                *      ***** * *     *           *                  01 00034
35 *                *      *   * * *  *  *           *                  01 00035
36 *                *      *   * * *   *  *           *****             01 00036
37 *                                                                    01 00037
38 *                                                                    01 00038
39 *            THIS TEST PROGRAM IS A PART OF THE MAINTAIN II          01 00039
40 *                        TEST PROGRAM SYSTEM                         01 00040
41 *                                                                    01 00041
42 *                                                                    01 00042
```

```
          *                                                               01 00043
          *        THE MEMO TEST IS DESIGNED TO ASCERTAIN THE OPERATIONAL  01 00044
          *    STATUS OF THE COMPUTER MEMORY. ANY MEMORY SIZE (4K-32K,16 OR 18 01 00045
          *    BIT) CAN BE CHECKED. READ-ONLY-MEMORY(ROM) IS NOT TESTED BY 01 00046
          *    THIS PROGRAM.                                              01 00047
          *                                                               01 00048
          *                                                               01 00049
          *                                                               01 00050
          *                                                               01 00051
          *                                                               01 00052
          *                                                               01 00053
          *                                                               01 00054
          *                                                               01 00055
          *    *******************************                            01 00056
          *    *                             *                            01 00057
          *    * AREAS RESERVED BY EXECUTIVE *                            01 00058
          *    *******************************                            01 00059
          *    ORG      0                                                 01 00060
          *    JMP      EXECUTIVE                                         01 00061
          *    ORG      040                                               01 00062
          *    JMPM     POWER DOWN ROUTINE                                01 00063
          *    JMP      POWER UP   ROUTINE                                01 00064
          *    NOTE:    THE TEST EXECUTIVE ALSO RESERVES LOCATIONS 0400 TO 0477 01 00065
          *             FOR A POINTER TABLE TO STANDARD ROUTINES,AND AS AN AREA 01 00066
          *             FOR EXECUTIVE DATA. ALL TEST PROGRAMS WORKING WITH THE 01 00067
          *             EXECUTIVE MUST PRESERVE THIS BLOCK.               01 00068
          *             STANDARD ROUTINES WILL BE CALLED INDIRECTLY THRU  01 00069
          *             THIS TABLE                                        01 00070
          *                                                               01 00071
          *                                                               01 00072
          *                                                               01 00073
          *                                                               01 00074
          *                                                               01 00075
          *                                                               01 00076
000400             ORG      0400                                          01 00077
000400        OUTA BSS      1            OUTPUT ONE CHAR ROUTINE          01 00078
000401        OUTB BSS      1            OUTPUT TWO CHAR ROUTINE          01 00079
000402        OUTC BSS      1            OUTPUT CR/LF    ROUTINE          01 00080
000403        OUTD BSS      1            OUTPUT MESSAGE  ROUTINE          01 00081
000404        OUTE BSS      1            OUTPUT OCTAL WORD ROUTINE        01 00082
000405        OUTF BSS      1            OUTPUT OCTAL ADDR ROUTINE        01 00[illegible]
000406        OUTG BSS      1            OUTPUT ERROR MSG  ROUTINE        0
```

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000407                 85 OUTH   BSS     1          OUTPUT CONTROL CHAR TO TTY ROUTINE          01 00085
000410                 86 INPA   BSS     1          INPUT  ONE CHAR            ROUTINE          01 00086
000411                 87 INPB   BSS     1          INPUT  AND PRINT ONE CHAR  ROUTINE          01 00087
000412                 88 INPC   BSS     1          INPUT  ONE CHAR EDITED     ROUTINE          01 00088
000413                 89 INPD   BSS     1          INPUT  ONE ALPHA CHAR      ROUTINE          01 00089
000414                 90 INPE   BSS     1          INPUT  TWO ALPHA CHAR      ROUTINE          01 00090
000415                 91 INPF   BSS     1          INPUT  COMMA/PERIOD TERMINATION ROUTINE     01 00091
000416                 92 INPG   BSS     1          INPUT  OCTAL NUMBER ROUTINE                 01 00092
000417                 93 TOUT   BSS     1          TIME-OUT              ROUTINE               01 00093
000420                 94 TDLY   BSS     1          TIME DELAY            ROUTINE               01 00094
000421                 95 SSWT   BSS     1          STANDARD SENSE SWITCH ROUTINE               01 00095
000422                 96 SLWE   BSS     1          LOWEST WORD USED BY EXEC                    01 00096
000423                 97 ESZC   BSS     1          MEMORY SIZE DETERMINATION ROUTINE           01 00097
000424                 98 SMSM   BSS     1          MEMORY SIZE MESSAGE                         01 00098
                       99 *                                                                     01 00099
                      100 *                                                                     01 00100
000440                101       ORG     0440                                                    01 00101
                      102 *                                                                     01 00102
                      103 *     EXECUTIVE DATA TABLE                                          01 00103
                      104 *                                                                     01 00104
000440                105 $FLG  BSS     1          LOOP ON ERROR FLAG, 0=DON'T LOOP 1=LOOP     01 00105
000441                106 $MEM  BSS     1          MEMORY SIZE (HIGHEST AVAIL CORE)            01 00106
000442                107 $CON  BSS     1          0=CONSOLE MODE 1=TTY MODE                   01 00107
000443                108       BSS     22                                                      01 00108
000471                109 $DCT  BSS     1          DIGIT COUNTER FOR INPG                      01 00109
                      110 *                                                                     01 00110
000042                111       ORG     042        POWER UP INTERRUPT                       B  01 00111
000042 001000 A       112       JMP     PRUP                                                B  01 00112
000043 005433 A
                      113 *                                                                     01 00113
000100                114       ORG     0100                                                    01 00114
000100 000000 A       115       ENTR    0          INSTRUCTION PARITY ERROR                    01 00115
000101 001000 A       116       JMP     IPER                                                    01 00116
000102 005182 A
000104                117       ORG     0104                                                    01 00117
000104 000000 A       118       ENTR    0          ADDRESS PARITY ERROR                        01 00118
000105 001000 A       119       JMP     APER                                                    01 00119
000106 005221 A
000110                120       ORG     0110                                                    01 00120
000110 000000 A       121       ENTR    0          OPERAND PARITY ERROR                        01 00121
000111 001000 A       122       JMP     OPER                                                    01 00122
000112 005260 A
```

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000114                 123          ORG     0114                                              01 00123
000114 000000 A        124          ENTR    0           TRAP PARITY ERROR                     01 00124
000115 001000 A        125          JMP     TPER                                              01 00125
000116 005317 A
                       126 *                                                                  01 00126
000370                 127          ORG     0370                                        C     ********
000370 000000 A        128          ENTR    0           PARITY ERROR                        C     ********
000371 001000 A        129          JMP     PER                                         C     ********
000372 005356 A
                       130 *                                                            C     ********
000500                 131          ORG     0500                                              01 00127
                       132 ***********************************************************************01 00128
                       133 *        MAIN ENTRY POINT                                          *01 00129
                       134 ***********************************************************************01 00130
       000045 A        135 PRTY     SET     045         PARITY HARDWARE DEVICE ADDRESS        01 00131
000500 001000 A        136          JMP     STRT                                              01 00132
000501 003200 A
                       137 ***********************************************************************01 00133
                       138 *        DATA                                                      *01 00134
                       139 ***********************************************************************01 00135
                       140 *                                                                  01 00136
                       141 *        DATA TABLE                                                01 00137
                       142 *                                                                  01 00138
000502                 143 MTN1     BSS     1           SAVE VALID PATTERN                    01 00139
000503                 144 MTN2     BSS     1           SAVE PATTERN READ                     01 00140
000504                 145 TCYC     BSS     1           TOTLE CYCLES EXECUTED                 01 00141
000505 000000 A        146 CYCL     DATA    0           CYCLES                                01 00142
000506 000000 A        147 EMEM     DATA    0           PRINT END MEMO FLAG                   01 00143
000507 000000 A        148 TEST     DATA    0           TEST NUMBER                           01 00144
000510                 149 TBAA     BSS     1                                             B     01 00145
000511 000000 A        150 PFK      DATA    0           COUNT OF POWER FAILURES           B     01 00146
000512                 151 REP1     BSS     1           REP CTR                               01 00147
000513                 152 REP      BSS     1           REP CTR                               01 00148
000514 000000 A        153 FRST     DATA    0           FIRST ADDRESS                         01 00149
000515 000000 A        154 LAST     DATA    0           LAST ADDRESS                          01 00150
000516                 155 BITS     BSS     1           BIT SELECT PATTERN                    01 00151
000517                 156 PAT1     BSS     1           PATTERN 1                             01 00152
000520                 157 PAT2     BSS     1           PATTERN 2                             01 00153
000521 000000 A        158 TERR     DATA    0           ERROR TOTAL                           01 00154
000522 000000 A        159 SWCH     DATA    0           PRINT ERROR HDG FLG                   01 00155
000523 000000 A        160 SAVB     DATA    0                                                 01 00[illegible]
000524 000000 A        161 SAVX     DATA    0                                                 0[illegible]
```

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                    162 *                                                                                   01 00158
                    163 *       TABLES HAVE THE FORM                                                        01 00159
                    164 * NAME  BSS     1           TABLE NAME, INDEX PTR FOR TABLE                         01 00160
                    165 *       BSS     1           MAX LENGTH OR CURRENT LENGTH OF TABLE                   01 00161
                    166 *                           (DEPENDING ON ROUTINE ACCESSING TABLE)                  01 00162
                    167 *       BSS     N           BODY OF TABLE,N=OCTAL MAX LENGTH                        01 00163
                    168 *                                                                                   01 00164
000525 000000 A     169 TBLI    DATA    0,6         TABLE OF WORSE CASE PATTERNS                        C   ********
000526 000006 A
000527 000203 A     170         DATA    0203        AMPEX                                                   01 00166
000530 004001 A     171         DATA    04001       FABRI-TEK OR LITTON                                     01 00167
000531 000024 A     172         DATA    024,0144,044                                                    B   01 00168
000532 000144 A
000533 000044 A
000534 003000 A     173         DATA    03000                                                           C   ********
                    174 *                                                                                   01 00169
                    175 * TBLO = MEMORY LOCATIONS IN FIRST 4K TO BE TESTED                                   01 00170
                    176 *                                                                                   01 00171
000535 000000 A     177 TBLO    DATA    0,8                                                                 01 00172
000536 000010 A
                    178 *                                                                               B   01 00173
                    179 *               W A R N I N G                                                   B   01 00174
                    180 *                                                                               B   01 00175
                    181 *       NUMBER PAIRS MUST REFERENCE AN EVEN NUMBER OF WORDS                     B   01 00176
                    182 *                 ----                                                          B   01 00177
                    183 *                                                                               B   01 00178
000537 000002 A     184         DATA    2,037                                                           B   01 00179
000540 000037 A
000541 000044 A     185         DATA    044,077                                                         B   01 00180
000542 000077 A
000543 000120 A     186         DATA    0120,0367                                                       C   ********
000544 000367 A
000545 000622 A     187         DATA    0622,((SM2/2)*2)-1                                              B   01 00182
000546 003177 A
                    188 *                                                                                   01 00183
                    189 * TBL CONTAINS BEGINNING AND ENDING ADDRS OF MEMORY SEGMENT TO BE TESTED             01 00184
                    190 *                                                                                   01 00185
000547              191 TBL     BSS     1           TBL INDEX                                               01 00186
000550              192         BSS     1           TBL LENGTH,VARIABLE UP TO 30                            01 00187
000551              193         BSS     30          TBL DATA ITEMS                                          01 00188
                    194 ************************************************************************************01 00189
                    195 *                                                                                   01 00190
```

```
                          196 ***********************************************************01 00191
003200                    197             ORG     03200                             B   01 00192
                          198 ***********************************************************01 00193
       003200 A           199 SM2         EQU     *                                 B   01 00194
003200 013353 A           200 STRT        LDA     NL             RESTORE HEADING    B   01 00195
003201 033220 A           201             LDX     RM1                               B   01 00196
003202 055000 A           202             STA     0,1                               B   01 00197
003203 006010 A           203             LDAI    MTOP           RETURN TO MTOP     B   01 00198
003204 003210 A
003205 006030 A           204             LDXI    PWRF            ON POWER FAILURE  B   01 00199
003206 005444 A
003207 055000 A           205             STA     0,1                                   01 00200
                          206 ***********************************************************01 00201
                          207 *           MEMO TOP - COMMON ENTRY POINT                *01 00202
                          208 ***********************************************************01 00203
003210 010442 A           209 MTOP        LDA     SCON           CONSOLE MODE ?         01 00204
003211 001010 A           210             JAZ     MTCM              YES                 01 00205
003212 003355 A
                          211 ***********************************************************01 00206
                          212 *           INPUT PARAMETERS (TTY MODE)                  *01 00207
                          213 ***********************************************************01 00208
003213 033220 A           214 MTTM        LDX     RM1            'MEMORY TEST'      B   01 00209
003214 002000 A           215             CALL    (OUTD)*                               01 00210
003215 100403 A
003216 005001 A           216             TZA                    PRINT HEADING ONCE     01 00211
003217 006030 A           217             LDXI    HDG1                                  01 00212
003220 003344 A
       003220 A           218 RM1         EQU     *-1                               B   01 00213
003221 055000 A           219             STA     0,1                                   01 00214
003222 002000 A           220 MTT1        CALL    (ESZC)*        DETERMINE MEMORY SIZE  01 00215
003223 100423 A
003224 100445 A           221             EXC     0400+PRTY      ENABLE PARITY INTERRUPTS 01 00216
003225 030424 A           222             LDX     SMSM           PRINT MEMORY SIZE MESSAGE 01 00217
003226 002000 A           223             CALL    (OUTD)*                               01 00218
003227 100403 A
003230 006030 A           224             LDXI    HDG2           '4K MEMORY MODULE(S) TO BE TESTED ='   01 00219
003231 005457 A
003232 002000 A           225             CALL    (OUTD)*                               01 00220
003233 100403 A
003234 005001 A           226             TZA                    INIT TBL               01 00221
003235 050347 A           227             STA     TBL                                   01 00222
003236 006010 A           228             LDAI    30                                    01 00223
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003237 000036 A
       003237 A  229 D36    EQU    *-1                                      B   01 00224
003240 050550 A  230        STA    TBL+1                                        01 00225
003241 007400 A  231 MTT2   ROF                     RESET COMMA INDICATOR       01 00226
003242 006010 A  232        LDAI   MTT2             RETURN TO MTT2          B   01 00227
003243 003241 A
003244 006030 A  233        LDXI   PWRR              ON POWER FAILURE       B   01 00228
003245 005444 A
003246 055000 A  234        STA    0,1                                      B   01 00229
003247 002000 A  235        CALL   (INPG)*          INPUT N                     01 00230
003250 100416 A
003251 001000 A  236        JMP    MTOP                SS3                      01 00231
003252 003210 A
003253 001000 A  237        JMP    MTT1+5              BACKSLASH                01 00232
003254 003227 A
003255 007401 A  238        SOF                        COMMA                    01 00233
003256 005011 A  239        MERG   011                 NOP                      01 00234
003257 020471 A  240        LDB    SDCT             TEST ALL OF MEMORY ?        01 00235
003260 001020 A  241        JBZ    MTT4                YES,GOTO MTT4            01 00236
003261 003274 A
003262 002000 A  242        CALL   MTP2,TPR,TTR      PUT INTO TBL,PARAMETER ERROR,TBL SIZE ERR 01 00237
003263 003531 A
003264 003336 A
003265 003330 A
003266 001001 A  243        JOF    MTT2             GET NEXT N IF COMMA IND SET 01 00238
003267 003241 A
003270 010547 A  244 MTT3   LDA    TBL              FIX TBL LENGTH              01 00239
003271 050550 A  245        STA    TBL+1                                        01 00240
003272 001000 A  246        JMP    MTT5                                         01 00241
003273 003301 A
003274 002000 A  247 MTT4   CALL   MTP1,TTR         TBL=ALL OF MEMORY           01 00242
003275 003450 A
003276 003330 A
003277 001000 A  248        JMP    MTT3                                         01 00243
003300 003270 A
003301 006030 A  249 MTT5   LDXI   HDG6             CYCLES =                    01 00244
003302 005534 A
003303 002000 A  250        CALL   (OUTD)*                                      01 00245
003304 100403 A
003305 002000 A  251        CALL   (INPG)*          INPUT CYCLES                01 00246
003306 100416 A
003307 001000 A  252        JMP    MTTM                SS3 TERMINATE            01 00247
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003310 003213 A
003311 001000 A  253         JMP      MTT5           BACKSLASH                          01 00248
003312 003301 A
003313 001000 A  254         JMP      MTT6           COMMA (PRINT 'END MEMO')           01 00249
003314 003322 A
003315 050505 A  255         STA      CYCL         SAVE CYCLES                          01 00250
003316 005001 A  256         TZA                                                        01 00251
003317 050506 A  257         STA      EMEM         SET FLAG TO SUPRESS END MEMO         01 00252
003320 001000 A  258         JMP      MINT         BRANCH TO TEST INITIALIZATION        01 00253
003321 003635 A
003322 050505 A  259 MTT6    STA      CYCL         SAVE CYCLES                          01 00254
003323 005001 A  260         TZA                                                        01 00255
003324 005211 A  261         CPA                                                        01 00256
003325 050506 A  262         STA      EMEM         SET FLAG TO PRINT END MEMO           01 00257
003326 001000 A  263         JMP      MINT                                              01 00258
003327 003635 A
003330 006030 A  264 TMR     LDXI     HDG3         'TOO MANY PARAMETERS'                01 00259
003331 005477 A
003332 002000 A  265         CALL     (OUTD)*                                           01 00260
003333 100403 A
003334 001000 A  266         JMP      MTT1                                              01 00261
003335 003222 A
003336 006030 A  267 TPR     LDXI     HDG5         'MODULE NOT WITHIN MEMORY RANGE'     01 00262
003337 005513 A
003340 002000 A  268         CALL     (OUTD)*                                           01 00263
003341 100403 A
003342 001000 A  269         JMP      MTT1                                              01 00264
003343 003222 A
       106612 A  270 CRLF    SET      0106612      CARRIAGE RETURN / LINE FEED          01 00265
003344 106612 A  271 HDG1    DATA     CRLF,'MEMORY TEST',CRLF,0                         01 00266
003345 146705 A
003346 146717 A
003347 151331 A
003350 120324 A
003351 142723 A
003352 152240 A
003353 106612 A
003354 000000 A
       003353 A  272 NL      EQU      HDG1+7                                       B    01 00267
                 273 *                                                                  01 00268
                 274 ***************************************************************01 00269
                 275 *       INPUT PARAMETERS (CONSOLE MODE)                            01 00270
```

```
                    276 ************************************************************************01 00271
003355 002000 A     277 MTCM    CALL    (ESZC)*         X=ADDRS OF HIGHEST AVAILABLE CORE        01 00272
003356 100423 A
003357 100445 A     278         EXC     0400+PRTY       ENABLE PARITY INTERRUPTS                 01 00273
003360 030441 A     279         LDX     $MEM                                                     01 00274
003361 005103 A     280         INCR    03              SET A REG FOR ALL MEM,CONTINUES EXECUTION 01 00275
003362 004541 A     281         LLSR    1               INIT TBL                                 01 00276
003363 050547 A     282         STA     TBL                                                      01 00277
003364 013237 A     283         LDA     036                                              B       01 00278
003365 050550 A     284         STA     TBL+1                                                    01 00279
003366 005021 A     285         TBA                     A=10---0                                 01 00280
003367 001000 A     286         JMP     MTC1+1                                                   01 00281
003370 003372 A
003371 005001 A     287 MTC1    TZA                                                              01 00282
003372 000037 A     288         HLT     037             INPUT PARAMETERS                         01 00283
003373 001004 A     289         JAN     MTC4            INPUT CYCLES? YES,GOTO MTC4              01 00284
003374 003412 A
003375 002000 A     290         CALL    MTP2,MTC2,MTC3 PUT INTO TBL                              01 00285
003376 003531 A
003377 003403 A
003400 003406 A
003401 001000 A     291         JMP     MTC1                                                     01 00286
003402 003371 A
003403 005301 A     292 MTC2    DECR    01              PARAMETER EXCEEDS MEM A=-1               01 00287
003404 001000 A     293         JMP     MTC1+1                                                   01 00288
003405 003372 A
003406 013407 A     294 MTC3    LDA     =-1             TOO MANY PARAMETERS                      01 00289
003407 000077 A     295         HLT     077                                                      01 00290
003410 001000 A     296         JMP     MTCM                                                     01 00291
003411 003355 A
003412 006150 A     297 MTC4    ANAI    077777          STORE CYCLES                             01 00292
003413 077777 A
003414 050505 A     298         STA     CYCL                                                     01 00293
003415 010547 A     299         LDA     TBL             TEST ALL OF MEMORY                       01 00294
003416 001010 A     300         JAZ     MTC5                                                     01 00295
003417 003424 A
003420 010547 A     301 MTC5    LDA     TBL             FIX TBL LENGTH                           01 00296
003421 050550 A     302         STA     TBL+1                                                    01 00297
003422 001000 A     303         JMP     MINT                                                     01 00298
003423 003635 A
003424 002000 A     304 MTC6    CALL    MTP1,MTC3       TBL=ALL OF MEMORY                        01 00299
003425 003450 A
```

```
003426 003406 A
003427 001000 A  305          JMP      MTC5                                              01 00300
003430 003420 A
                 306 ******************************************************************01 00301
                 307 *        PARAMETER INPUT SUBROUTINES                              *01 00302
                 308 ******************************************************************01 00303
                 309 *                                                                  01 00304
                 310 *        TBL = ALL OF MEMORY                                       01 00305
                 311 *                                                                  01 00306
003431 005302 A  312 MTP3     DECR     02                                               01 00307
003432 005123 A  313          INCR     023                                              01 00308
003433 002000 A  314          CALL     MTP2,MTP7,MTP5  TBL = MODULE (A)                 01 00309
003434 003531 A
003435 003446 A
003436 003441 A
003437 001000 A  315          JMP      MTP3+1                                           01 00310
003440 003432 A
003441 033450 A  316 MTP5     LDX      MTP1            TOO MANY PARAMETERS              01 00311
003442 035000 A  317          LDX      0,1                                              01 00312
003443 073450 A  318          STX      MTP1                                             01 00313
003444 001000 A  319          JMP      (MTP1)*                                          01 00314
003445 103450 A
003446 043450 A  320 MTP7     INR      MTP1            NORMAL EXIT                      01 00315
003447 001000 A  321          JMP      0                                                01 00316
003450 000000 A
003450           322 MTP1     BES      0               ENTRY                            01 00317
003451 001000 A  323          JMP      MTP3                                             01 00318
003452 003431 A
                 324 *                                                                  01 00319
                 325 *        TBL = MODULE (A)                                          01 00320
                 326 *                                                                  01 00321
003453 001010 A  327 MTP4     JAZ      MTP8            TBL=1ST 4K? YES,GOTO MTP8        01 00322
003454 003505 A
003455 004254 A  328          LRLA     12              PARAMETER EXCEEDS MEMORY ?       01 00323
003456 140441 A  329          SUB      SMEM               YES,GOTO MTP6                 01 00324
003457 001002 A  330          JAP      MTP6                                             01 00325
003460 003500 A
003461 120441 A  331          ADD      SMEM                                             01 00326
003462 002000 A  332          CALL     UADA,TBL,MTP0 PUT PARAMETERS INTO TBL            01 00327
003463 003565 A
003464 000547 A
003465 003521 A
```

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003466 006110 A  333          ORAI    07777                                    01 00328
003467 007777 A
003470 002000 A  334          CALL    UADA,TBL,MTPO                            01 00329
003471 003565 A
003472 000547 A
003473 003521 A
003474 043531 A  335          INR     MTP2            NORMAL EXIT              01 00330
003475 043531 A  336          INR     MTP2                                     01 00331
003476 001000 A  337          JMP     (MTP2)*                                  01 00332
003477 103531 A
003500 033531 A  338 MTP6     LDX     MTP2            PARAMETER EXCEEDS MEM,EXIT 01 00333
003501 035000 A  339          LDX     0,1                                      01 00334
003502 073504 A  340          STX     *+2                                      01 00335
003503 001000 A  341          JMP     0                                        01 00336
003504 000000 A
003505 005001 A  342 MTP8     TZA                     TBL=1ST 4K               01 00337
003506 056535 A  343          STA     TBLO                                     01 00338
003507 002000 A  344          CALL    UACA,TBLO,MTPA TRANSFER TBLS             01 00339
003510 003626 A
003511 000535 A
003512 003526 A
003513 002000 A  345          CALL    UADA,TBL,MTPO                            01 00340
003514 003565 A
003515 000547 A
003516 003521 A
003517 001000 A  346          JMP     MTP8+2                                   01 00341
003520 003507 A
003521 033531 A  347 MTPO     LDX     MTP2            TBL OVFL EXIT            01 00342
003522 035001 A  348          LDX     1,1                                      01 00343
003523 073525 A  349          STX     *+2                                      01 00344
003524 001000 A  350          JMP     0                                        01 00345
003525 000000 A
003526 043531 A  351 MTPA     INR     MTP2            NORMAL EXIT              01 00346
003527 043531 A  352          INR     MTP2                                     01 00347
003530 001000 A  353          JMP     0                                        01 00348
003531 000000 A
003531           354 MTP2     BES     0               ENTRY                    01 00349
003532 001000 A  355          JMP     MTP4                                     01 00350
003533 003453 A
                 356 *                                                         01 00351
                 357 *                                                         01 00352
                 358 *        **********************                           01 00353
```

```
                        359 *                  *                       *                              01 00354
                        360 *                  * PUT ITEM INTO TABLE *                                01 00355
                        361 *                  *                       *                              01 00356
                        362 *                  ***********************                                01 00357
                        363 *         CALL     UADA,TBLPTR,OVFLEXIT INCR ()TBLPTR,IF,GT,()TBLPTR+1    01 00358
                        364 *                                       GOTO OVFLEXIT,ELSE                01 00359
                        365 *                                       ()(TBLPTR+()TBLPTR)=A             01 00360
                        366 *         TBL=INDEX,TBLSIZE,ITEM1,...,ITEMN                               01 00361
003534 033565 A         367 UADB      LDX      UADA                 B=TBLPTR                          01 00362
003535 025000 A         368           LDB      0,1                                                    01 00363
003536 046000 A         369           INR      0,2                  INCR ()TBLPTR                     01 00364
003537 016001 A         370           LDA      1,2                  IF ()TBLPTR .GT. ()(TBLPTR+1),GOTO ENDEXIT 01 00365
003540 146000 A         371           SUB      0,2                                                    01 00366
003541 001004 A         372           JAN      UADC                                                   01 00367
003542 003556 A
003543 005121 A         373           INCR     021                                                    01 00368
003544 126000 A         374           ADD      0,2                                                    01 00369
003545 005012 A         375           TAB                                                             01 00370
003546 013573 A         376           LDA      UADD                 RESTORE A,B,X                     01 00371
003547 056000 A         377           STA      0,2                                                    01 00372
003550 023574 A         378           LDB      UADD+1                                                 01 00373
003551 033575 A         379           LDX      UADD+2                                                 01 00374
003552 043565 A         380           INR      UADA                 EXIT (RETURN+2)                   01 00375
003553 043565 A         381           INR      UADA                                                   01 00376
003554 001000 A         382           JMP      (UADA)*                                                01 00377
003555 103565 A
003556 015001 A         383 UADC      LDA      1,1                  SET EXIT                          01 00378
003557 053564 A         384           STA      UADA-1               RESTORE A,B,X                     01 00379
003560 013573 A         385           LDA      UADD                                                   01 00380
003561 023574 A         386           LDB      UADD+1                                                 01 00381
003562 033575 A         387           LDX      UADD+2                                                 01 00382
003563 001000 A         388           JMP      *                    OVFLEXIT (RETURN+1)*              01 00383
003564 003563 A
003565 000000 A         389 UADA      ENTR                          ENTRY POINT                       01 00384
003566 053573 A         390           STA      UADD                 SAVE A,B,X                        01 00385
003567 063574 A         391           STB      UADD+1                                                 01 00386
003570 073575 A         392           STX      UADD+2                                                 01 00387
003571 001000 A         393           JMP      UADB                 CONTINUE                          01 00388
003572 003534 A
003573                  394 UADD      BSS      3                                                      01 00389
                        395 *                                                                         01 00390
                        396 *                                                                         01 00391
```

```
                    *                **************************                 01 00392
                    *                *                        *                 01 00393
                    *                * GET NEXT ITEM FROM TABLE *               01 00394
                    *                *                        *                 01 00395
                    *                **************************                 01 00396
                    *       CALL     UACA,TBLPTR,ENDEXIT   (A)=()(TBL+1+()(TBLPTR))  01 00397
                    *                                                           01 00398
                    *       TBL=INDEX,TBLSIZE,ITEM1,...,ITEMN                   01 00399
003576 033626 A       UACB  LDX      UACA            (B)=TBLPTR                 01 00400
003577 025000 A             LDB      0,1                                        01 00401
003600 046000 A             INR      0,2             INCR ()TBLPTR              01 00402
003601 016001 A             LDA      1,2             IF ()TBLPTR .GT. ()(TBLPTR+1),GOTO ENDEXIT 01 00403
003602 146000 A             SUB      0,2                                        01 00404
003603 001004 A             JAN      UACC                                       01 00405
003604 003617 A
003605 005121 A             INCR     021             (A)=()(TBLPTR+1+()TBLPTR)  01 00406
003606 126000 A             ADD      0,2                                        01 00407
003607 005012 A             TAB                                                 01 00408
003610 016000 A             LDA      0,2                                        01 00409
003611 023633 A             LDB      UACD            RESTORE B,X                01 00410
003612 033634 A             LDX      UACD+1                                     01 00411
003613 043626 A             INR      UACA            EXIT (RETURN+2)            01 00412
003614 043626 A             INR      UACA                                       01 00413
003615 001000 A             JMP      (UACA)*                                    01 00414
003616 103626 A
003617 016001 A       UACC  LDA      1,2             (A)=TBLSIZE                01 00415
003620 035001 A             LDX      1,1             SETEXIT                    01 00416
003621 073625 A             STX      UACA-1                                     01 00417
003622 023633 A             LDB      UACD            RESTORE B,X                01 00418
003623 033634 A             LDX      UACD+1                                     01 00419
003624 001000 A             JMP      0               EXIT (RETURN+1)* =GOTO ENDEXIT 01 00420
003625 000000 A
003626 000000 A       UACA  ENTR                     ENTRY POINT                01 00421
003627 063633 A             STB      UACD            SAVE B,X                   01 00422
003630 073634 A             STX      UACD+1                                     01 00423
003631 001000 A             JMP      UACB            CONTINUE                   01 00424
003632 003576 A
003633                UACD  BSS      2               (B),(X)                    01 00425
                    *                                                           01 00426
                    ****************************************************************01 00427
                    *       SUBTEST DRIVER, AND CYCLE COUNTER                  *01 00428
                    ***************************************************************** 00429
```

```
003635 005001 A  435 MINT  TZA                                                        01 00430
003636 050521 A  436       STA    TERR             INIT ERROR CTR                     01 00431
003637 050522 A  437       STA    SWCH             SET TO PRINT ERROR TABLE HEADING   01 00432
003640 050504 A  438       STA    TCYC             TOTAL CYCLES EXECUTED = 0          01 00433
003641 050510 A  439       STA    TBAA                                             B  01 00434
003642 002000 A  440       JMPM   OTAC                                             C  ********
003643 005417 A
003644 007400 A  441 MIN1  ROF                     RESET ERROR INDICATOR              01 00435
003645 006010 A  442       LDAI   MIN1             RETURN TO MIN1                  B  01 00436
003646 003644 A
003647 006030 A  443       LDXI   PWRR              ON POWER FAILURE               B  01 00437
003650 005444 A
003651 055000 A  444       STA    0,1                                              B  01 00438
003652 002000 A  445       CALL   TUAT             UNIQUE ADDRS                       01 00439
003653 004142 A
003654 005001 A  446       TZA                     INIT TBL                           01 00440
003655 050547 A  447       STA    TBL                                                 01 00441
003656 002000 A  448 MIN2  CALL   UACA,TBL,MIN3 GET FRST ADDRS                        01 00442
003657 003626 A
003660 000547 A
003661 003720 A
003662 050514 A  449       STA    FRST                                                01 00443
003663 002000 A  450       CALL   UACA,TBL,MIN3 GET LAST ADDRS                        01 00444
003664 003626 A
003665 000547 A
003666 003720 A
003667 050515 A  451       STA    LAST                                                01 00445
003670 002000 A  452       JMPM   TBAT             BINARY ADDRESS                  B  01 00446
003671 004744 A
003672 010504 A  453       LDA    TCYC             FIRST PASS                      B  01 00447
003673 001010 A  454       JAZ    *+4               YES                            B  01 00448
003674 003677 A
003675 001000 A  455       JMP    *+7               NO                             B  01 00449
003676 003704 A
003677 010522 A  456       LDA    SWCH             ABORT IF ANY ERRORS             B  01 00450
003700 001010 A  457       JAZ    *+4                                              B  01 00451
003701 003704 A
003702 001000 A  458       JMP    TERM                                             B  01 00452
003703 003753 A
003704 005001 A  459       TZA                                                     B  01 00453
003705 050510 A  460       STA    TBAA                                             B  01 00454
003706 002000 A  461       CALL   TAZT             ALL ZEROS
```

```
003707 004255 A
003710 002000 A  462          CALL    TADT            ALL ONES                                    01 00456
003711 004301 A
003712 002000 A  463          CALL    TCBT            CHECKERBOARD                                01 00457
003713 004325 A
003714 002000 A  464          CALL    TBCT            BIT COMPLIMENT                        B     01 00459
003715 004503 A
003716 001000 A  465          JMP     MIN2            CONTINUE TO NEXT CASE                       01 00460
003717 003656 A
003720 002000 A  466 MIN3     CALL    DEM             DISPLAY 'END MEMO'                          01 00461
003721 003733 A
003722 010505 A  467          LDA     CYCL            CONTINUES ?                                 01 00462
003723 001010 A  468          JAZ     MIN1              YES,GOTO MIN1                             01 00463
003724 003644 A
003725 005311 A  469          DAR                       NO,DONE ?                                 01 00464
003726 050505 A  470          STA     CYCL                                                        01 00465
003727 001010 A  471          JAZ     TERM                YES,GOTO TERM                           01 00466
003730 003753 A
003731 001000 A  472          JMP     MIN1                NO,CONTINUE TO MIN1                     01 00467
003732 003644 A
003733 000000 A  473 DEM      ENTR    0               DISPLAY END MEMO                            01 00468
003734 040504 A  474          INR     TCYC            TCYC = TCYC+1                               01 00469
003735 002000 A  475          JMPM    DTAC                                                  C     ********
003736 005417 A
003737 010442 A  476          LDA     SCON            CONSOLE MODE? YES,RETURN                    01 00472
003740 001010 A  477          JAZ     (DEM)*                                                      01 00473
003741 103733 A
003742 010506 A  478          LDA     EMEM            SUPPRESS MESSAGE ? YES,RETURN               01 00474
003743 001010 A  479          JAZ     (DEM)*                                                      01 00475
003744 103733 A
003745 006030 A  480          LDXI    MDG8            'END MEMO'                                  01 00476
003746 005543 A
003747 002000 A  481          CALL    (OUTO)*                                                     01 00477
003750 100403 A
003751 001000 A  482          JMP     (DEM)*          RETURN                                      01 00478
003752 103733 A
                 483 ********************************************************************************01 00479
                 484 *        TERMINATE TESTS                                                      *01 00480
                 485 ********************************************************************************01 00481
003753 100545 A  486 TERM     EXC     0500+PRTY       DISABLE PARITY INTERRUPTS                   01 00482
003754 010442 A  487          LDA     SCON            TERMINATE TEST, REPORT TOTALS
003755 001010 A  488          JAZ     TERM            MODE = CONSOLE ? YES,GO TO TERM             01 00484
```

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003756 004015 A
003757 006030 A  489          LDXI    HDG9          'ERROR TOTAL =',TERR                    01 00485
003760 005551 A
003761 002000 A  490          CALL    (OUTD)*                                               01 00486
003762 100403 A
003763 010521 A  491          LDA     TERR                                                  01 00487
003764 002000 A  492          CALL    (OUTE)*                                               01 00488
003765 100404 A
003766 006030 A  493          LDXI    HG11          'NO. CYCLES RUN ='                      01 00489
003767 005604 A
003770 002000 A  494          CALL    (OUTD)*                                               01 00490
003771 100403 A
003772 010504 A  495          LDA     TCYC          TOTAL CYCLES EXECUTED                   01 00491
003773 002000 A  496          CALL    (OUTE)*                                               01 00492
003774 100404 A
003775 010511 A  497          LDA     PFK           ANY POWER FAILURES?           B       01 00493
003776 001010 A  498          JAZ     TERO          =NO=                          B       01 00494
003777 004011 A
004000 006030 A  499          LDXI    PFKM          'POWER FAILURES'              B       01 00495
004001 005712 A
004002 002000 A  500          CALL    (OUTD)*                                     B       01 00496
004003 100403 A
004004 005004 A  501          TZX                                                 B       01 00497
004005 010511 A  502          LDA     PFK           COUNT                         B       01 00498
004006 070511 A  503          STX     PFK           CLEAR COUNT                   B       01 00499
004007 002000 A  504          CALL    (OUTE)*                                     B       01 00500
004010 100404 A
       004011 A  505 TERO     EQU     *                                           B       01 00501
004011 002000 A  506          CALL    (OUTC)*                                             01 00502
004012 100402 A
004013 001000 A  507          JMP     MTOP          CONTINUE                              01 00503
004014 003210 A
004015 010521 A  508 TERN     LDA     TERR          A = TOTAL ERRORS                      01 00504
004016 030504 A  509          LDB     TCYC          B = NO. CYCLES                        01 00505
004017 030507 A  510          LDX     TEST          X = CURRENT (OR LAST) TEST            01 00506
004020 000777 A  511          HLT     0777          DISPLAY TOTALS                        01 00507
004021 001000 A  512          JMP     MTOP          CONTINUE                              01 00508
004022 003210 A
                 513 ************************************************************************01 00509
                 514 *        ERROR REPORTING ROUTINE                                       *01 00510
                 515 ************************************************************************01 00511
004023 000000 A  516 MERR     ENTR    0                                                     01 00512
```

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004024 007401 A  517          SOF                                          01 00513
004025 040521 A  518          INR     TERR         INCR ERR CTR            01 00514
004026 060523 A  519          STB     SAVB         SAVE B (#TEST CYCLES)   01 00515
004027 070524 A  520          STX     SAVX         ERROR ADDRESS           01 00516
004030 002000 A  521          JMPM    OTAC                              C   ********
004031 005417 A
004032 010507 A  522          LDA     TEST                                 01 00517
004033 006150 A  523          ANAI    0777         SAVE HALT            B   01 00518
004034 000777 A
004035 054004 A  524          STA     ERR1+2       GET TEST NO.            01 00519
004036 010502 A  525          LDA     MTW1         EXPECTED                01 00520
004037 020503 A  526          LDB     MTW2         ACTUAL                  01 00521
004040 002000 A  527 ERR1     CALL    (SSWT)*      CALL SENSE SWITCH ROUTINE 01 00522
004041 100421 A
004042 000000 A  528          DATA    0            TEST#                   01 00523
004043 104052 A  529          DATA    (ERPO)*      ERR PRINTOUT            01 00524
004044 003753 A  530          DATA    TERM         SS3 EXIT                01 00525
004045 004126 A  531          DATA    ELOP         LOOP ON ERROR           01 00526
004046 020523 A  532          LDB     SAVB         RESTORE B               01 00527
004047 030524 A  533          LDX     SAVX                                 01 00528
004050 001000 A  534          JMP*    MERR         PROCEED WITH TEST       01 00529
004051 104023 A
                 535 *        ERROR PRINTOUT SUBROUTINE                    01 00530
004052 000000 A  536 ERPO     ENTR    0                                    01 00531
004053 002000 A  537          CALL    (OUTC)*                              01 00532
004054 100402 A
004055 010522 A  538          LDA     SWCH                                 01 00533
004056 001010 A  539          JAZ     *+4                                  01 00534
004057 004062 A
004060 001000 A  540          JMP     ERP1                                 01 00535
004061 004067 A
004062 040522 A  541          INR     SWCH         SET TO BYPASS HEADING   01 00536
004063 006030 A  542          LDXI    HG10                                 01 00537
004064 005562 A
004065 002000 A  543          CALL    (OUTD)*                              01 00538
004066 100403 A
004067 010507 A  544 ERP1     LDA     TEST         TEST NO.                01 00539
004070 002000 A  545          CALL    (OUTE)*                              01 00540
004071 100404 A
004072 010524 A  546          LDA     SAVX         ADDR                    01 00541
004073 002000 A  547          CALL    (OUTE)*                              01 00542
004074 100404 A
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004075 005010 A  548          LDAI    0120240                                          01 00543
004076 120240 A
004077 002000 A  549          CALL    (OUTB)*                                          01 00544
004100 100401 A
004101 010502 A  550          LDA     MTW1            EXP                              01 00545
004102 002000 A  551          CALL    (OUTE)*                                          01 00546
004103 100404 A
004104 005010 A  552          LDAI    0120240                                          01 00547
004105 120240 A
004106 002000 A  553          CALL    (OUTB)*                                          01 00548
004107 100401 A
004110 002000 A  554          CALL    (OUTA)*                                          01 00549
004111 100400 A
004112 010503 A  555          LDA     MTW2            ACTUAL                           01 00550
004113 002000 A  556          CALL    (OUTE)*                                          01 00551
004114 100404 A
004115 010510 A  557          LDA     TBAA            TBCT TEST WORD             8     01 00552
004116 001010 A  558          JAZ     **4                                        8     01 00553
004117 004122 A
004120 002000 A  559          CALL    (OUTE)*                                    9     01 00554
004121 100404 A
004122 001000 A  560          JMP*    ERPD            RETURN                           01 00555
004123 104052 A
                 561 ************************************************************************01 00556
                 562 *        LOOP ON ERROR                                           *01 00557
                 563 ************************************************************************01 00558
004124 001200 A  564          JSS2    ERR1-2          SS2 EXIT FROM LOOPING            01 00559
004125 004036 A
004126 001400 A  565 ELOP     JSS3    TERM            SS3 EXIT                         01 00560
004127 003753 A
004130 010502 A  566          LDA     MTW1                                             01 00561
004131 055000 A  567          STA     0,1                                        8     01 00562
004132 005000 A  568          NOP                                                      01 00563
004133 135000 A  569          ERA     0,1             READ ERROR WORD                  01 00564
004134 001010 A  570          JAZ     ELOP-2          ERROR AGAIN? NO,TRY AGAIN        01 00565
004135 004124 A
004136 130502 A  571          ERA     MTW1            RESTORE                          01 00566
004137 050503 A  572          STA     MTW2                                             01 00567
004140 001000 A  573          JMP     ERR1-2          REPORT                           01 00568
004141 004036 A
                 574 ************************************************************************01 00569
                 575 *        SUBTEST ROUTINES                                        *01 00570
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                    576 ************************************************************************01 00571
                    577 *                                                                      01 00572
                    578 *       UNIQUE ADDRS                                                   01 00573
                    579 *                                                                      01 00574
004142 000000 A     580 TUAT    ENTR    0                                                      01 00575
004143 005101 A     581         INCR    1               TEST = 1                           B   01 00576
004144 050507 A     582         STA     TEST                                                   01 00577
004145 005001 A     583         TZA                     INIT TBL                               01 00578
004146 050547 A     584         STA     TBL                                                    01 00579
004147 002000 A     585 TUAA    CALL    UACA,TBL,TUAB GET FRST                                 01 00580
004150 003626 A
004151 000547 A
004152 004167 A
004153 050514 A     586         STA     FRST                                                   01 00581
004154 002000 A     587         CALL    UACA,TBL,TUAB GET LAST                                 01 00582
004155 003626 A
004156 000547 A
004157 004167 A
004160 050515 A     588         STA     LAST                                                   01 00583
004161 001400 A     589         JSS3    TERM            SS3 TERMINATE TESTS                    01 00584
004162 003753 A
004163 002000 A     590         CALL    IUA             INIT MEMORY                            01 00585
004164 004213 A
004165 001000 A     591         JMP     TUAA            CONTINUE                               01 00586
004166 004147 A
004167 005001 A     592 TUAB    TZA                     INIT TBL                               01 00587
004170 050547 A     593         STA     TBL                                                    01 00588
004171 005101 A     594         INCR    1               REP = 1                            B   01 00589
004172 050513 A     595         STA     REP                                                    01 00590
004173 002000 A     596 TUAC    CALL    UACA,TBL,(TUAT)* GET FRST                              01 00591
004174 003626 A
004175 000547 A
004176 104142 A
004177 050514 A     597         STA     FRST                                                   01 00592
004200 002000 A     598         CALL    UACA,TBL,(TUAT)* GET LAST                              01 00593
004201 003626 A
004202 000547 A
004203 104142 A
004204 050515 A     599         STA     LAST                                                   01 00594
004205 001400 A     600         JSS3    TERM            SS3 TERMINATE TESTS                    01 00595
004206 003753 A
004207 002000 A     601         CALL    TUA             TEST UNIQUE ADDRS                      01 00596
```

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004210 004225 A
004211 001000 A  602          JMP     TUAC            CONTINUE                                01 00597
004212 004173 A
                 603 *        INIT UNIQUE ADDRS                                               01 00598
004213 000000 A  604 IUA      ENTR    0                                                       01 00599
004214 030514 A  605          LDX     FRST                                                    01 00600
004215 005041 A  606 IUA1     TXA                     ()X = X                                 01 00601
004216 055000 A  607          STA     0,1                                                     01 00602
004217 005144 A  608          IXR                     X = X+1                                 01 00603
004220 140515 A  609          SUB     LAST            DONE ?                                  01 00604
004221 001004 A  610          JAN     IUA1               NO,CONTINUE                          01 00605
004222 004215 A
004223 001000 A  611          JMP     (IUA)*          RETURN                                  01 00606
004224 104213 A
                 612 *        TEST UNIQUE ADDRS                                               01 00607
004225 000000 A  613 TUA      ENTR    0                                                       01 00608
004226 020513 A  614          LDB     REP             B ! REP                                 01 00609
004227 030514 A  615          LDX     FRST            X = FRST                                01 00610
004230 005041 A  616 TUA1     TXA                     ()X = X ?                               01 00611
004231 135000 A  617          ERA     0,1                                                     01 00612
004232 001010 A  618          JAZ     *+7                                                     01 00613
004233 004241 A
004234 070502 A  619          STX     MTW1            NO,CALL MERR                            01 00614
004235 130502 A  620          ERA     MTW1                                                    01 00615
004236 050503 A  621          STA     MTW2                                                    01 00616
004237 007000 A  622          CALL    MERR                                                    01 00617
004240 004023 A
004241 005041 A  623          TXA                     A = X                                   01 00618
004242 005144 A  624          IXR                     X = X+1                                 01 00619
004243 140515 A  625          SUB     LAST            DONE ?                                  01 00620
004244 001004 A  626          JAN     TUA1               NO,CONTINUE                          01 00621
004245 004230 A
004246 001020 A  627          JBZ     TUA+1           CONTINUES ? YES                         01 00622
004247 004226 A
004250 005322 A  628          DBR                     DONE ?                                  01 00623
004251 001020 A  629          JBZ     (TUA)*             YES,RETURN                           01 00624
004252 104225 A
004253 001000 A  630          JMP     TUA+1              NO,CONTINUE                          01 00625
004254 004226 A
                 631 ************************************************************************01 00626
                 632 *                                                                        01 00627
                 633 *        ALL ZEROS                                                       01 00628
```

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                    634 *                                                                   01 00629
004255 000000 A     635 TAZT    ENTR    0           ENTRY/EXIT                              01 00630
004256 002000 A     636         CALL    IAZ         INIT                                    01 00631
004257 004266 A
004260 014227 A     637         LDA     D3          REP = 3                          B      01 00632
004261 050513 A     638         STA     REP                                                 01 00633
004262 002000 A     639         CALL    TES         TEST PATTERN                            01 00634
004263 005124 A
004264 001000 A     640         JMP     (TAZT)*     RETURN                                  01 00635
004265 104255 A
                    641 *       INIT ALL ZEROS                                              01 00636
004266 000000 A     642 IAZ     ENTR    0                                                   01 00637
004267 005010 A     643         LDAI    2           TEST = 2                                01 00638
004270 000002 A
004271 050507 A     644         STA     TEST                                                01 00639
004272 005001 A     645         TZA                 BITS = 0                                01 00640
004273 050516 A     646         STA     BITS                                                01 00641
004274 050517 A     647         STA     PAT1        PATTERN1 = 0                            01 00642
004275 002000 A     648         CALL    SET         SET PATTERN INTO MEMORY                 01 00643
004276 005107 A
004277 001000 A     649         JMP     (IAZ)*                                              01 00644
004300 104266 A
                    650 ********************************************************************01 00645
                    651 *                                                                   01 00646
                    652 *       ALL ONES                                                    01 00647
                    653 *                                                                   01 00648
004301 000000 A     654 TAOT    ENTR    0           ENTRY/EXIT                              01 00649
004302 002000 A     655         CALL    IAO         INIT                                    01 00650
004303 004312 A
004304 014203 A     656         LDA     D3          REP = 3                          B      01 00651
004305 050513 A     657         STA     REP                                                 01 00652
004306 002000 A     658         CALL    TES         TEST PATTERN                            01 00653
004307 005124 A
004310 001000 A     659         JMP     (TAOT)*     RETURN                                  01 00654
004311 104301 A
                    660 *       INIT ALL ONES                                               01 00655
004312 000000 A     661 IAO     ENTR    0                                                   01 00656
004313 014174 A     662         LDA     D3          TEST = 3                         B      01 00657
004314 050507 A     663         STA     TEST                                                01 00658
004315 005001 A     664         TZA                 BITS = 0                                01 00659
004316 050516 A     665         STA     BITS                                                01 00660
004317 005211 A     666         CPA                 PATTERN1 = 1'S                          01 00661
```

```
004320 050517 A  667          STA     PAT1            PATTERN1 = 1'S                                  01 00662
004321 002000 A  668          CALL    SET             SET PATTERN INTO MEMORY                         01 00663
004322 005107 A
004323 001000 A  669          JMP     (IAD)*                                                          01 00664
004324 104312 A
                 670 ************************************************************************************01 00665
                 671 *                                                                                01 00666
                 672 *        CHECKER BOARD                                                           01 00667
                 673 *                                                                                01 00668
004325 000000 A  674 TCBT     ENTR    0                                                               01 00669
004326 014161 A  675          LDA     03              REP = 3                                 B       01 00670
004327 050513 A  676          STA     REP                                                             01 00671
004330 002000 A  677          CALL    ICB             INIT CHECKER BOARD                              01 00672
004331 004342 A
004332 002000 A  678          CALL    TCB             TEST CHECKER BOARD                              01 00673
004333 004411 A
004334 002000 A  679          CALL    ICBC            INIT CHECKER BOARD COMPLIMENTED                 01 00674
004335 004361 A
004336 002000 A  680          CALL    TCB             TEST CHECKER BOARD                              01 00675
004337 004411 A
004340 001000 A  681          JMP     (TCBT)*                                                         01 00676
004341 104325 A
                 682 *        INIT CHECKER BOARD                                                      01 00677
004342 000000 A  683 ICB      ENTR    0                                                               01 00678
004343 002000 A  684          CALL    ICB1            B = 0252525                                     01 00679
004344 004361 A
004345 002000 A  685          CALL    ICB2            WRITE B AND NOT B INTO MEMORY                   01 00680
004346 004373 A
004347 001000 A  686          JMP     (ICB)*          RETURN                                          01 00681
004350 104342 A
                 687 *        INIT CHECKER BOARD COMPLIMENTED                                         01 00682
004351 000000 A  688 ICBC     ENTR    0                                                               01 00683
004352 002000 A  689          CALL    ICB1            B = 0525252                                     01 00684
004353 004361 A
004354 005222 A  690          CPB                                                                     01 00685
004355 002000 A  691          CALL    ICB2            WRITE B AND NOT B INTO MEMORY                   01 00686
004356 004373 A
004357 001000 A  692          JMP     (ICBC)*         RETURN                                          01 00687
004360 104351 A
004361 000000 A  693 ICB1     ENTR                                                                    01 00688
004362 014073 A  694          LDA     04              TEST = 4                                B       01 00689
004363 050507 A  695          STA     TEST                                                            01 00690
```

```
004364 014002 A  696          LDA     0525            B = 252525                      B   01 00691
004365 004250 A  697          LRLA    8                                                   01 00692
004366 006110 A  698          ORAI    0525                                                01 00693
004367 000525 A
       004367 A  699 0525     EQU     *-1                                             B   01 00694
004370 005012 A  700          TAB                                                         01 00695
004371 001000 A  701          JMP     (ICB1)*         RETURN                              01 00696
004372 104361 A
                 702 *                                                                    01 00697
004373 000000 A  703 ICB2     ENTR                                                        01 00698
004374 030514 A  704          LDX     FRST            X = FRST                            01 00699
004375 005221 A  705          DATA    05221           A = NOT (B) ,WRITE PATTERN          01 00700
004376 065000 A  706          STB     0,1                                                 01 00701
004377 005144 A  707          IXR                                                         01 00702
004400 055000 A  708          STA     0,1                                                 01 00703
004401 005144 A  709          IXR                                                         01 00704
004402 005041 A  710          TXA                     DONE?                               01 00705
004403 140515 A  711          SUB     LAST                                                01 00706
004404 005311 A  712          DAR                                                         01 00707
004405 001010 A  713          JAZ     (ICB2)*         DONE ? YES,RETURN                   01 00708
004406 104373 A
004407 001000 A  714          JMP     ICB2+2          CONTINUE                            01 00709
004410 004375 A
                 715 *        TEST CHECKER BOARD                                         01 00710
004411 000000 A  716 TCB      ENTR    0                                                   01 00711
004412 010513 A  717          LDA     REP             REP1 = REP                          01 00712
004413 050512 A  718          STA     REP1                                                01 00713
004414 030514 A  719          LDX     FRST            READ PATTERN , INIT                 01 00714
004415 050502 A  720 TCBB     STB     MTW1            EXPECTED = PATTERN                  01 00715
004416 005021 A  721          TBA                     TEST FIRST WORD                     01 00716
004417 135000 A  722          ERA     0,1                                                 01 00717
004420 001010 A  723          JAZ     *+6                                                 01 00718
004421 004426 A
004422 130502 A  724          ERA     MTW1            BAD,CALL MERR                       01 00719
004423 050503 A  725          STA     MTW2                                                01 00720
004424 002000 A  726          CALL    MERR                                                01 00721
004425 004023 A
004426 005221 A  727          DATA    05221           OK,                                 01 00722
004427 005144 A  728          IXR                     TEST SECOND WORD                    01 00723
004430 050502 A  729          STA     MTW1                                                01 00724
004431 135000 A  730          ERA     0,1                                                 01 00725
004432 001010 A  731          JAZ     *+6                                                 01 00726
```

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004433 004440 A
004434 130502 A  732          ERA     MTW1          BAD,CALL MERR                    01 00727
004435 050503 A  733          STA     MTW2                                           01 00728
004436 002000 A  734          CALL    MERR                                           01 00729
004437 004023 A
004440 005041 A  735          TXA                   DONE?                            01 00730
004441 005144 A  736          IXR                                                    01 00731
004442 140515 A  737          SUB     LAST                                           01 00732
004443 001004 A  738          JAN     TCBB             NO,CONTINUE                   01 00733
004444 004415 A
004445 010512 A  739          LDA     REP1          CONTINUES ?                      01 00734
004446 001010 A  740          JAZ     TCBB-1           YES,CONTINUE                  01 00735
004447 004414 A
004450 005311 A  741          DAR                                                    01 00736
004451 001010 A  742          JAZ     (TCB)*        DONE ? YES,RETURN                01 00737
004452 104411 A
004453 050512 A  743          STA     REP1                                           01 00738
004454 001000 A  744          JMP     TCBB-1        CONTINUE                         01 00739
004455 004414 A
004456 000004 A  745 C4       DATA    4                                         C      ********
                 746 *        INIT WORST CASE                                        01 00760
004457 000000 A  747 IWC      ENTR    0                                              01 00761
004460 050515 A  748          STA     BITS                                           01 00762
004461 005001 A  749          TZA                   PAT1 = 0                         01 00763
004462 050517 A  750          STA     PAT1                                           01 00764
004463 005211 A  751          CPA                   PAT2 = 1                         01 00765
004464 050520 A  752          STA     PAT2                                           01 00766
004465 002000 A  753          CALL    SET           SET PATTERN INTO MEMORY          01 00767
004466 005107 A
004467 040507 A  754          INR     TEST          TEST = TEST + 1                  01 00768
004470 001000 A  755          JMP     (IWC)*                                         01 00769
004471 104457 A
                 756 *        INIT WORST CASE COMPLIMENT                             01 00770
004472 000000 A  757 IWCC     ENTR    0                                              01 00771
                 758 *                                                               01 00772
004473 005001 A  759          TZA                   COMPLIMENT PAT1 AND PAT2         01 00773
004474 050520 A  760          STA     PAT2                                           01 00774
004475 005211 A  761          CPA                                                    01 00775
004476 050517 A  762          STA     PAT1                                           01 00776
004477 002000 A  763          CALL    SET           SET PATTERN INTO MEMORY          01 00777
004500 005107 A
004501 001000 A  764          JMP     (IWCC)*                                        01 00778
```

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004502 104472 A
                  765 *****************************************************************01 00779
                  766 *                                                            B    01 00780
                  767 *          BIT COMPLIMENT                                    B    01 00781
                  768 *                                                            B    01 00782
004503 000000 A   769 TBCT      ENTR     0              SELECT WORST CASE PATTERN TABLE  B    01 00783
004504 006010 A   770           LDAI     037            TEST = 037+N               B    01 00784
004505 000037 A
004506 050507 A   771           STA      TEST                                      B    01 00785
004507 006010 A   772           LDAI     03             REP=3                      B    01 00786
004510 000003 A
       004510 A   773 03        EQU      *-1                                       B    01 00787
004511 050513 A   774           STA      REP                                       B    01 00788
004512 006020 A   775           LDBI     TBLI           TABLE OF WORSE CASE PATTERNS  B    01 00789
004513 000525 A
004514 005001 A   776 TBCA      TZA                     INIT TBL                   B    01 00790
004515 056000 A   777           STA      0,2                                       B    01 00791
004516 054002 A   778           STB      TBCB+2                                    B    01 00792
004517 002000 A   779 TBCB      CALL     UACA,0,(TBCT)* GET WORST CASE PATTERN FROM TABLE  B    01 00793
004520 003626 A
004521 000000 A
004522 104503 A
004523 002000 A   780           CALL     IWC            SET WORST CASE PATTERN INTO MEMORY  B    01 00794
004524 004457 A
004525 002000 A   781           CALL     TBC            TEST BIT COMPLIMENT        B    01 00795
004526 004535 A
004527 002000 A   782           CALL     IWCC           COMPLIMENT PATTERN         B    01 00796
004530 004472 A
004531 002000 A   783           CALL     TBC                                       B    01 00797
004532 004535 A
004533 001000 A   784           JMP      TBCB                                      B    01 00798
004534 004517 A
                  785 *                                                            B    01 00799
004535 000000 A   786 TBC       ENTR     0                                         B    01 00800
004536 005103 A   787           INCR     03             B = REP                    B    01 00801
004537 004541 A   788           LLSR     1              BITX = SIGN BIT ON         B    01 00802
004540 054202 A   789           STB      BITX                                      B    01 00803
004541 020513 A   790           LDB      REP                                       B    01 00804
004542 030514 A   791           LDX      FRST           X = FRST                   B    01 00805
004543 014177 A   792 TBC1      LDA      BITX           INIT BITC                  B    01 00806
004544 054175 A   793           STA      BITC                                      B    01 00
004545 005041 A   794           TXA                     ()X = 1'S                       0
```

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004546 002000 A  795          CALL    DAP                                    B  01 00809
004547 005051 A
004550 001004 A  796          JAN     TBC5        YES,GOTO                   B  01 00810
004551 004634 A
004552 005001 A  797 TBC2     TZA                 ZERO                       B  01 00811
004553 050502 A  798          STA     MTW1         EXPECTED                  B  01 00812
004554 015000 A  799          LDA     0,1                                    B  01 00813
004555 050503 A  800          STA     MTW2         ACTUAL                    B  01 00814
004556 001010 A  801          JAZ     **4                                    B  01 00815
004557 004562 A
004560 001000 A  802          JMP     TBCC        -ERROR-                    B  01 00816
004561 004727 A
004562 014157 A  803          LDA     BITC        ()X = ()X XOR BITC         B  01 00817
004563 135000 A  804          ERA     0,1                                    B  01 00818
004564 055000 A  805          STA     0,1                                    B  01 00819
004565 050502 A  806          STA     MTW1        SAVE S/B                    C ********
004566 015000 A  807          LDA     0,1                                     C ********
004567 050503 A  808          STA     MTW2        SAVE WAS                    C ********
004570 130502 A  809          ERA     MTW1                                    C ********
004571 001010 A  810          JAZ     **4         JUMP IF SAME                C ********
004572 004575 A
004573 001000 A  811          JMP     TBCG                                    C ********
004574 004605 A
004575 014144 A  812          LDA     BITC        ()X = ()X XOR BITC         B  01 00820
004576 135000 A  813          ERA     0,1                                    B  01 00821
004577 055000 A  814          STA     0,1                                    B  01 00822
004600 001010 A  815          JAZ     TBC3        ERROR ? NO,SKIP REPORT     B  01 00823
004601 004611 A
004602 050503 A  816          STA     MTW2        YES                        B  01 00824
004603 005001 A  817          TZA                 SET MTW1 = EXP,MTW2 = ACT  B  01 00825
004604 050502 A  818          STA     MTW1        CALL MERR                  B  01 00826
004605 002000 A  819 TBCG     CALL    TBC8        MODIFY TEST # TO INCLUDE BIT C ********
004606 004705 A
004607 002000 A  820          CALL    MERR                                   B  01 00828
004610 004023 A
004611 014130 A  821 TBC3     LDA     BITC        BITC = LOGICAL SHIFT RIGHT 1(BITC) B 01 00829
004612 004341 A  822          LSRA    1                                      B  01 00830
004613 054126 A  823          STA     BITC        DONE ?                     B  01 00831
004614 001010 A  824          JAZ     TBC7          YES                      B  01 00832
004615 004620 A
004616 001000 A  825          JMP     TBC2          NO,CONTINUE WITH SAME WORD B  01 00833
004617 004552 A
```

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004620 005041 A  826 TBC7   TXA                  A = X                                  B  01 00834
004621 005144 A  827        IXR                  X = X+1                                B  01 00835
004622 140515 A  828        SUB      LAST        DONE ?                                 B  01 00836
004623 001004 A  829        JAN      TBC1           NO,GET NEXT WORD                    B  01 00837
004624 004543 A
004625 001020 A  830 TBC4   JBZ      TBC1+1      FINISHED ? NO,CONTINUES                B  01 00838
004626 004542 A
004627 005322 A  831        DBR                                                         B  01 00839
004630 001020 A  832        JBZ      (TBC)*         YES,RETURN                          B  01 00840
004631 104535 A
004632 001000 A  833        JMP      TBC1+1      CONTINJE                               B  01 00841
004633 004542 A
004634 005301 A  834 TBC5   DECR     1           ONES                                   B  01 00842
004635 050502 A  835        STA      MTW1         EXPECTED                              B  01 00843
004636 015000 A  836        LDA      0,1                                                B  01 00844
004637 050503 A  837        STA      MTW2         ACTUAL                                B  01 00845
004640 005211 A  838        CPA                                                         B  01 00846
004641 001010 A  839        JAZ      *+4                                                B  01 00847
004642 004645 A
004643 001000 A  840        JMP      TBCC        -ERROR-                                B  01 00848
004644 004727 A
004645 014074 A  841        LDA      BITC        ()X = ()X XOR BITC                     B  01 00849
004646 135000 A  842        ERA      0,1                                                B  01 00850
004647 055000 A  843        STA      0,1                                                B  01 00851
004650 050502 A  844        STA      MTW1        SAVE S/B                                C  ********
004651 015000 A  845        LDA      0,1                                                C  ********
004652 050503 A  846        STA      MTW2        SAVE WAS                               C  ********
004653 130502 A  847        ERA      MTW1                                               C  ********
004654 001010 A  848        JAZ      *+4         JUMP IF SAME                           C  ********
004655 004660 A
004656 001000 A  849        JMP      TBCF                                               C  ********
004657 004672 A
004660 014061 A  850        LDA      BITC        ()X = ()X XOR BITC                     B  01 00852
004661 135000 A  851        ERA      0,1                                                B  01 00853
004662 055000 A  852        STA      0,1                                                B  01 00854
004663 005211 A  853        CPA                  ERROR ?                                B  01 00855
004664 001010 A  854        JAZ      TBC8           NO,SKIP REPORT                      B  01 00856
004665 004676 A
004666 005211 A  855        CPA                                                         B  01 00857
004667 050503 A  856        STA      MTW2        MTW1 = EXP,MTW2 = ACT                  B  01 00858
004670 005301 A  857        DECR     01                                                 B  01 00859
004671 050502 A  858        STA      MTW1                                               B  01 00860
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004672 002000 A  859 TBCF   CALL     TBC8          MODIFY TEST # TO INCLUDE BIT                C ********
004673 004705 A
004674 002000 A  860         CALL     MERR          CALL MERR                                   B  01 00862
004675 004023 A
004676 014043 A  861 TBC5    LDA      BITC          BITC = LOGICAL SHIFT RIGHT 1(BITC)          B  01 00863
004677 004341 A  862         LSRA     1                                                         B  01 00864
004700 054041 A  863         STA      BITC          DONE ?                                      B  01 00865
004701 001010 A  864         JAZ      TBC7            YES                                       B  01 00866
004702 004620 A
004703 001000 A  865         JMP      TBC5            NO,CONTINUE WITH SAME WORD                B  01 00867
004704 004634 A
                 866 *       MODIFY TEST TO INDICATE BIT POSITION                              B  01 00868
004705 000000 A  867 TBC8    ENTR     0                                                         B  01 00869
004706 054032 A  868         STB      TBCE                                                      B  01 00870
004707 014032 A  869         LDA      BITC          INIT                                        B  01 00871
004710 005302 A  870         DECR     02                                                        B  01 00872
004711 001010 A  871 TBC9    JAZ      TBCD          DONE ? YES,GOTO TBCD                        B  01 00873
004712 004717 A
004713 004341 A  872         LSRA     1             SHIFT BITC                                  B  01 00874
004714 005122 A  873         ISR                    INCR COUNT                                  B  01 00875
004715 001000 A  874         JMP      TBC9          CONTINUE                                    B  01 00876
004716 004711 A
004717 010507 A  875 TBCD    LDA      TEST          MERGE BIT COUNT                             B  01 00877
004720 154010 A  876         ANA      077           WITH TEST NUMBER                            B  01 00878
004721 004046 A  877         LRLB     6                                                         B  01 00879
004722 005031 A  878         MERG     031                                                       B  01 00880
004723 050507 A  879         STA      TEST                                                      B  01 00881
004724 024014 A  880         LDB      TBCE                                                      B  01 00882
004725 001000 A  881         JMP      (TBC8)*       RETURN                                      B  01 00883
004726 104705 A
004727 010507 A  882 TBCC    LDA      TEST          MERGE                                       B  01 00884
004730 006180 A  883         ANAI     077            BIT 18                                     B  01 00885
004731 000077 A
        004731 A 884 077     EQU      *-1                                                       B  01 00886
004732 006110 A  885         ORAI     04000          WITH                                       B  01 00887
004733 004000 A
004734 050507 A  886         STA      TEST             TEST NO,                                B  01 00888
004735 002000 A  887         CALL     MERR                                                      B  01 00889
004736 004023 A
004737 001000 A  888         JMP      TBC7          GOTO NEXT WORD                              B  01 00890
004740 004620 A
004741           889 TBCE    BSS      1             SAVE B                                      B  01 00891
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```
004742                890 BITC   BSS    1              BIT COMPLIMENTED                   B   01 00892
004743                891 BITX   BSS    1              (-MAX)                             B   01 00893
                      892 *                                                               B   01 00894
                      893 *******************************************************************B   01 00895
                      894 *                                                               B   01 00896
                      895 *      BINARY ADDRESS                                           B   01 00897
                      896 *                                                               B   01 00898
004744 000000 A       897 TBAT   ENTR                  BINARY ADDRESS TEST                B   01 00899
                      898 *                                                               B   01 00900
                      899 *                                                               B   01 00901
004745 010514 A       900        LDA    FRST                                              B   01 00902
004746 006150 A       901        ANAI   070000                                            B   01 00903
004747 070000 A
004750 001010 A       902        JAZ*   TBAT           JUMP IF IN 1ST 4K                  B   01 00904
004751 104744 A
004752 005111 A       903        IAR                                                      B   01 00905
004753 050510 A       904        STA    TBAA           TEST ADDRESS                       B   01 00906
004754 002000 A       905 TBA1   CALL   IAZ            INITIALIZE TO ALL ZEROS            B   01 00907
004755 004266 A
004756 006010 A       906        LDAI   050            TEST = 50                          B   01 00908
004757 000050 A
004760 050507 A       907        STA    TEST                                              B   01 00909
004761 030510 A       908        LDX    TBAA                                              B   01 00910
004762 005301 A       909        DECR   1              SET TEST WORD                      B   01 00911
004763 055000 A       910        STA    0,1             TO ONES                           B   01 00912
004764 030514 A       911        LDX    FRST                                              B   01 00913
004765 005041 A       912 TBA2   TXA                                                      B   01 00914
004766 140510 A       913        SUB    TBAA                                              B   01 00915
004767 001010 A       914        JAZ    TBA4           JUMP IF CHECK FOR ALL ONES         B   01 00916
004770 005005 A
004771 015000 A       915        LDA    0,1            CHECK FOR ALL ZEROS                B   01 00917
004772 001010 A       916        JAZ    TBA3                                              B   01 00918
004773 004776 A
004774 001000 A       917        JMP    TBAZ           ERROR  NOT ALL ZEROS               B   01 00919
004775 005036 A
004776 005041 A       918 TBA3   TXA                                                      B   01 00920
004777 005144 A       919        IXR                   STEP ADDRESS                       B   01 00921
005000 140515 A       920        SUB    LAST                                              B   01 00922
005001 001010 A       921        JAZ    TBA5                                              B   01 00923
005002 005013 A
005003 001000 A       922        JMP    TBA2                                              B   01 00[illegible]
005004 004765 A
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005005 015000 A  923 TBA4   LDA     0,1                                                    B   01 00925
005006 005211 A  924        CPA                                                            B   01 00926
005007 001010 A  925        JAZ     TBA3                                                   B   01 00927
005010 004776 A
005011 001000 A  926        JMP     TBAC        ERROR  NOT ALL ONES                        B   01 00928
005012 005026 A
005013 010510 A  927 TBA5   LDA     TBAA                                                   B   01 00929
005014 006150 A  928        ANAI    01777                                                  B   01 00930
005015 001777 A
005016 120510 A  929        ADD     TBAA                                                   B   01 00931
005017 050510 A  930        STA     TBAA                                                   B   01 00932
005020 006150 A  931        ANAI    01777                                                  B   01 00933
005021 001777 A
005022 001010 A  932        JAZ     TBA7                                                   B   01 00934
005023 005041 A
005024 001000 A  933        JMP     TBA1                                                   B   01 00935
005025 004764 A
                 934 *                                                                     B   01 00936
005026 005301 A  935 TBAC   DECR    1           ONES                                       B   01 00937
005027 050502 A  936 TBA6   STA     MTW1         EXPECTED                                  B   01 00938
005030 015000 A  937        LDA     0,1                                                    B   01 00939
005031 050503 A  938        STA     MTW2         ACTUAL                                    B   01 00940
005032 002000 A  939        CALL    MERR        ANNOUNCE ERROR                             B   01 00941
005033 004023 A
005034 001000 A  940        JMP     TBA3                                                   B   01 00942
005035 004776 A
005036 005001 A  941 TBAZ   TZA                 ZEROS                                      B   01 00943
005037 001000 A  942        JMP     TBA4                                                   B   01 00944
005040 005027 A
005041 040510 A  943 TBA7   INR     TBAA                                                   B   01 00945
005042 010510 A  944        LDA     TBAA                                                   B   01 00946
005043 006150 A  945        ANAI    07000                                                  B   01 00947
005044 007000 A
005045 001010 A  946        JAZ*    TBAT                                                   B   01 00948
005046 104744 A
005047 001000 A  947        JMP     TBA1                                                   B   01 00949
005050 004764 A
                 948 ***************************************************************************B   01 00950
                 949 *       MISC ROUTINES                                                  *01 00951
                 950 ***************************************************************************01 00952
                 951 *       DERIVE ADDRS PARITY                                            01 00953
                 952 *                                                                      01 00954
```

```
                    953 *       ADDRS IN (A),RETURN PAT(0/1)                                    01 00955
                    954 *                                                                       01 00956
005051 000000 A     955 DAP     ENTR    0               ENTRY/EXIT                              01 00957
005052 001400 A     956         JSS3    TERM            SS3 TERMINATE TESTS                     01 00958
005053 003753 A
005054 064030 A     957         STB     DAP3            SAVE B                                  01 00959
005055 074030 A     958         STX     DAP3+1          SAVE X                                  01 00960
005056 005006 A     959         ZERO    06              ZERO B,X                                01 00961
005057 030514 A     960         LDX     FRST            ATTEMPT TO MAKE CONSOLE LIGHTS MORE VISIBLE01 00962
005060 150516 A     961         ANA     BITS            SELECT BITS                             01 00963
005061 001010 A     962 DAP1    JAZ     DAP2            DONE ?                                  01 00964
005062 005072 A
005063 004541 A     963         LLSR    1                NO,GET NEXT BIT                        01 00965
005064 001020 A     964         JBZ     DAP1            EVEN PARITY?                            01 00966
005065 005061 A
005066 005144 A     965         IXR                      NO                                     01 00967
005067 005002 A     966         TZB                      RESET B                                01 00968
005070 001000 A     967         JMP     DAP1            CONTINUE                                01 00969
005071 005061 A
005072 005041 A     968 DAP2    TXA                     A=PAT1 IF EVEN                          01 00970
005073 006150 A     969         ANAI    1               A=PAT2 IF ODD                           01 00971
005074 000001 A
005075 006120 A     970         ADDI    PAT1                                                    01 00972
005076 000517 A
005077 005014 A     971         TAX                                                             01 00973
005100 015000 A     972         LDA     0,1                                                     01 00974
005101 024003 A     973         LDB     DAP3            RETURN                                  01 00975
005102 034003 A     974         LDX     DAP3+1                                                  01 00976
005103 001000 A     975         JMP     (DAP)*                                                  01 00977
005104 105051 A
005105              976 DAP3    BSS     2                                                       01 00978
                    977 *                                                                       01 00979
                    978 *       SET                                                             01 00980
                    979 *                   SET MEMORY TO TEST PATTERN                          01 00981
                    980 *                   FRST,LAST,BITS,PAT1,PAT2                            01 00982
                    981 *                                                                       01 00983
005107 000000 A     982 SET     ENTR    0               ENTRY/EXIT                              01 00984
005110 030514 A     983         LDX     FRST            X=FIRST ADDRS                           01 00985
005111 005041 A     984 SET1    TXA                     DERIVE ADDRS PATTERN                    01 00986
005112 002000 A     985         CALL    DAP                                                     01 00987
005113 005051 A
005114 055000 A     986         STA     0,1             STORE PATTERN                           01 00988
```

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005115 005041 A  987          TXA                    DONE?                    01 00989
005116 140515 A  988          SUB      LAST                                   01 00990
005117 001010 A  989          JAZ      (SET)*           YES,RETURN            01 00991
005120 105107 A
005121 005144 A  990          IXR                    ADDRS = ADDRS+1          01 00992
005122 001000 A  991          JMP      SET1          CONTINUE                 01 00993
005123 005111 A
                 992 *                                                        01 00994
                 993 *        TES                                             01 00995
                 994 *                 TEST MEMORY PATTERN                    01 00996
                 995 *                 REP,FRST,LAST,BITS,PAT1,PAT2           01 00997
                 996 *                                                        01 00998
005124 000000 A  997 TES      ENTR     0             ENTRY/EXIT               01 00999
005125 020513 A  998          LDB      REP           B = REPETITIONS          01 01000
005126 030514 A  999          LDX      FRST          X = FIRST ADDRS          01 01001
005127 005041 A 1000 TES1     TXA                    DERIVE ADDRS PATTERN     01 01002
005130 002000 A 1001          CALL     DAP                                    01 01003
005131 005051 A
005132 050502 A 1002          STA      MTW1                                   01 01004
005133 015000 A 1003          LDA      0,1           GET ACTUAL PATTERN       01 01005
005134 050503 A 1004          STA      MTW2                                   01 01006
005135 130502 A 1005          ERA      MTW1          ERROR?                   01 01007
005136 001010 A 1006          JAZ      *+4                                    01 01008
005137 005142 A
005140 002000 A 1007          CALL     MERR             YES,CALL MERR         01 01009
005141 004023 A
005142 001400 A 1008          JSS3     TERM          SS3 TERMINATE TESTS      01 01010
005143 003753 A
005144 005041 A 1009          TXA                    DONE?                    01 01011
005145 140515 A 1010          SUB      LAST                                   01 01012
005146 001010 A 1011          JAZ      TES2             YES,JMP TES2          01 01013
005147 005153 A
005150 005144 A 1012          IXR                    ADVANCE X TO NEXT WORD   01 01014
005151 001000 A 1013          JMP      TES1          CONTINUE                 01 01015
005152 005127 A
005153 001020 A 1014 TES2     JBZ      TES+2         CONTINUES ?,YES          01 01016
005154 005126 A
005155 005322 A 1015          DBR                       NO,DONE ?             01 01017
005156 001020 A 1016          JBZ      (TES)*              YES,RETURN         01 01018
005157 105124 A
005160 001000 A 1017          JMP      TES+2               NO,CONTINUE        0
00516[illegible]05126 A
```

```
                      1018 *                                                                          01 01020
                      1019 ***************************************************************************01 01021
                      1020 *           PARITY ERROR REPORTING ROUTINES                               *01 01022
                      1021 ***************************************************************************01 01023
005162                1022 IPER     BSS      0              INSTRUCTION PARITY ERROR PROCESSOR        01 01024
005162 100545 A 1023          EXC      0500+PRTY      DISABLE PARITY INTERRUPTS                 01 01025
005163 054032 A 1024          STA      IPEA           SAVE A                                    01 01026
005164 064032 A 1025          STB      IPEB           B                                         01 01027
005165 074032 A 1026          STX      IPEX           AND X                                     01 01028
005166 010100 A 1027          LDA      0100           A=ERROR ADDRESS                           01 01029
005167 006020 A 1028          LDBI     0100           B=TRAP LOCATION                           01 01030
005170 000100 A
005171 002000 A 1029          CALL     (SSWT)*        CALL SENSE SWITCH ROUTINE                 01 01031
005172 100421 A
005173 005000 A 1030          DATA     05000          NOP                                       01 01032
005174 105202 A 1031          DATA     (IPE1)*        ERR PRINTOUT                              01 01033
005175 003753 A 1032          DATA     TERM           SS3 EXIT                                  01 01034
005176 005177 A 1033          DATA     *+1                                                      01 01035
005177 000020 A 1034          HLT      020                                                      01 01036
005200 001000 A 1035          JMP      TERM                                                     01 01037
005201 003753 A
                1036 *                                                                          01 01038
005202 000000 A 1037 IPE1     DATA     0                                                        01 01039
005203 006030 A 1038          LDXI     MG12                                                     01 01040
005204 005621 A
005205 002000 A 1039          CALL     (OUTD)*        OUTPUT ERR MESSAGE                        01 01041
005206 100403 A
005207 010100 A 1040          LDA      0100                                                     01 01042
005210 002000 A 1041          CALL     (OUTE)*        AND PARITY ERROR ADDRESS                  01 01043
005211 100404 A
005212 002000 A 1042          CALL     (OUTC)*        CR/LF                                     01 01044
005213 100402 A
005214 001000 A 1043          JMP*     IPE1                                                     01 01045
005215 105202 A
005216 000000 A 1044 IPEA     DATA     0              REGISTER                                  01 01046
005217 000000 A 1045 IPEB     DATA     0              SAVE                                      01 01047
005220 000000 A 1046 IPEX     DATA     0              AREA                                      01 01048
                1047 *                                                                          01 01049
005221          1048 APER     BSS      0              ADDRESS PARITY ERROR PROCESSOR            01 01050
005221 100545 A 1049          EXC      0500+PRTY      DISABLE PARITY INTERRUPTS                 01 01051
005222 054032 A 1050          STA      APEA           SAVE A                                    01 01052
005223 064032 A 1051          STB      APEB           B                                         01 0
```

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005224 074032 A 1052          STX     APEX        AND X                                  01 01054
005225 010104 A 1053          LDA     0104        A=ERROR ADDRESS                        01 01055
005226 006020 A 1054          LDBI    0104        B=TRAP LOCATION                        01 01056
005227 000104 A
005230 002000 A 1055          CALL    (SSWT)*     CALL SENSE SWITCH ROUTINE              01 01057
005231 100421 A
005232 005000 A 1056          DATA    05000       NOP                                    01 01058
005233 105241 A 1057          DATA    (APE1)*     ERR PRINTOUT                           01 01059
005234 003753 A 1058          DATA    TERM        SS3 EXIT                               01 01060
005235 005236 A 1059          DATA    *+1                                                01 01061
005236 000021 A 1060          HLT     021                                                01 01062
005237 001000 A 1061          JMP     TERM                                               01 01063
005240 003753 A
               1062 *                                                                    01 01064
005241 000000 A 1063 APE1     DATA    0                                                  01 01065
005242 005030 A 1064          LDXI    HG13                                               01 01066
005243 005641 A
005244 002000 A 1065          CALL    (OUTD)*     OUTPUT ERR MESSAGE                     01 01067
005245 100403 A
005246 010104 A 1066          LDA     0104                                               01 01068
005247 002000 A 1067          CALL    (OUTE)*     AND PARITY ERROR ADDRESS               01 01069
005250 100404 A
005251 002000 A 1068          CALL    (OUTC)*     CR/LF                                  01 01070
005252 100402 A
005253 001000 A 1069          JMP*    APE1                                               01 01071
005254 105241 A
005255 000000 A 1070 APEA     DATA    0           REGISTER                               01 01072
005256 000000 A 1071 APEB     DATA    0           SAVE                                   01 01073
005257 000000 A 1072 APEX     DATA    0           AREA                                   01 01074
               1073 *                                                                    01 01075
005260         1074 OPER     BSS     0           OPERAND PARITY ERROR PROCESSOR         01 01076
005260 100545 A 1075          EXC     0500+PRTY   DISABLE PARITY INTERRUPTS              01 01077
005261 054032 A 1076          STA     OPEA        SAVE A                                 01 01078
005262 064032 A 1077          STB     OPEB        B                                      01 01079
005263 074032 A 1078          STX     OPEX        AND X                                  01 01080
005264 010110 A 1079          LDA     0110        A=ERROR ADDRESS                        01 01081
005265 006020 A 1080          LDBI    0110        B=TRAP LOCATION                        01 01082
005266 000110 A
005267 002000 A 1081          CALL    (SSWT)*     CALL SENSE SWITCH ROUTINE              01 01083
005270 100421 A
005271 005000 A 1082          DATA    05000       NOP                                    01 01084
005272 105300 A 1083          DATA    (OPE1)*     ERR PRINTOUT                           01 01085
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005273 003753 A 1084          DATA    TERM            SS3 EXIT                        01 01086
005274 005275 A 1085          DATA    *+1                                             01 01087
005275 000022 A 1086          HLT     022                                             01 01088
005276 001000 A 1087          JMP     TERM                                            01 01089
005277 003753 A
                1088 *                                                                01 01090
005300 000000 A 1089 OPE1     DATA    0                                               01 01091
005301 005630 A 1090          LDXI    MG14                                            01 01092
005302 005657 A
005303 002000 A 1091          CALL    (OUTO)*         OUTPUT ERR MESSAGE              01 01093
005304 100403 A
005305 010110 A 1092          LDA     0110                                            01 01094
005306 002000 A 1093          CALL    (OUTE)*         AND PARITY ERROR ADDRESS        01 01095
005307 100404 A
005310 002000 A 1094          CALL    (OUTC)*         CR/LF                           01 01096
005311 100402 A
005312 001000 A 1095          JMP*    OPE1                                            01 01097
005313 105300 A
                1096 *                                                                01 01098
005314 000000 A 1097 OPEA     DATA    0               REGISTER                        01 01099
005315 000000 A 1098 OPEB     DATA    0               SAVE                            01 01100
005316 000000 A 1099 OPEX     DATA    0               AREA                            01 01101
                1100 *                                                                01 01102
005317          1101 TPER     BSS     0               TRAP PARITY ERROR PROCESSOR     01 01103
005317 100545 A 1102          EXC     0500+PRTY       DISABLE PARITY INTERRUPTS       01 01104
005320 054032 A 1103          STA     TPEA            SAVE A                          01 01105
005321 064032 A 1104          STB     TPEB            B                               01 01106
005322 074032 A 1105          STX     TPEX            AND X                           01 01107
005323 010114 A 1106          LDA     0114            A=ERROR ADDRESS                 01 01108
005324 005020 A 1107          LDBI    0114            B=TRAP LOCATION                 01 01109
005325 000114 A
005326 002000 A 1108          CALL    (SSWT)*         CALL SENSE SWITCH ROUTINE       01 01110
005327 100421 A
005330 005000 A 1109          DATA    05000           NOP                             01 01111
005331 105337 A 1110          DATA    (TPE1)*         ERR PRINTOUT                    01 01112
005332 003753 A 1111          DATA    TERM            SS3 EXIT                        01 01113
005333 005334 A 1112          DATA    *+1                                             01 01114
005334 000023 A 1113          HLT     023                                             01 01115
005335 001000 A 1114          JMP     TERM                                            01 01116
005336 003753 A
                1115 *                                                                01 01117
005337 000000 A 1116 TPE1     DATA    0                                               01 01118
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005340 006030 A 1117          LDXI    MG15                                    01 01119
005341 005675 A
005342 002000 A 1118          CALL    (OUTD)*         OUTPUT ERR MESSAGE      01 01120
005343 100403 A
005344 010114 A 1119          LDA     0114                                    01 01121
005345 002000 A 1120          CALL    (OUTE)*         AND PARITY ERROR ADDRESS 01 01122
005346 100404 A
005347 002000 A 1121          CALL    (OUTC)*         CR/LF                   01 01123
005350 100402 A
005351 001000 A 1122          JMP*    TPE1                                    01 01124
005352 105337 A
                1123 *                                                        01 01125
005353 000000 A 1124 TPEA     DATA    0               REGISTER                01 01126
005354 000000 A 1125 TPEB     DATA    0               SAVE                    01 01127
005355 000000 A 1126 TPEX     DATA    0               AREA                    01 01128
                1127 *                                                  C     ********
005356          1128 PER      BSS     0               PARITY ERROR            C     ********
005356 100545 A 1129          EXC     0500+PRTY       DISABLE PARITY INTERRUPTS C   ********
005357 054034 A 1130          STA     PEA             SAVE A                  C     ********
005360 064034 A 1131          STB     PEB             B                       C     ********
005361 074034 A 1132          STX     PEX             AND X                   C     ********
005362 010370 A 1133          LDA     0370            A=ERROR ADDRESS         C     ********
005363 006020 A 1134          LDBI    0370            B=TRAP ADDRESS          C     ********
005364 000370 A
005365 002000 A 1135          CALL    (SSWT)*         CALL SENSE SWITCH ROUTINE C   ********
005366 100421 A
005367 005000 A 1136          DATA    05000           NOP                     C     ********
005370 105376 A 1137          DATA    (PE1)*          ERR PRINTOUT            C     ********
005371 003753 A 1138          DATA    TERM            553 EXIT                C     ********
005372 005373 A 1139          DATA    *+1             C     ********
005373 000024 A 1140          HLT     024             C     ********
005374 001000 A 1141          JMP     TER*            C     ********
005375 003753 A
                1142 *                                                  C     ********
005376 000000 A 1143 PE1      DATA    0               C     ********
005377 002000 A 1144          CALL    (OUTC)*         C     ********
005400 100402 A
005401 006030 A 1145          LDXI    MG12+7          C     ********
005402 005630 A
005403 002000 A 1146          CALL    (OUTD)*         OUTPUT ERR MESSAGE      C     ********
005404 100403 A
005405 010370 A 1147          LDA     0370                                    C     ********
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005406 002000 A 1148          CALL    (OUTE)*         AND PARITY ERROR ADDRESS                C  ********
005407 100404 A
005410 002000 A 1149          CALL    (OUTC)*                                                 C  ********
005411 100402 A
005412 001000 A 1150          JMP*    PEI                                                     C  ********
005413 105376 A
005414 000000 A 1151 PEA      DATA    0               REGISTER                                C  ********
005415 000000 A 1152 PEB      DATA    0               SAVE                                    C  ********
005416 000000 A 1153 PEX      DATA    0               AREA                                    C  ********
                    1154 *                                                                    C  ********
005417 000000 A 1155 OTAC     ENTR    0               OUTPUT ERROR AND CYCLE                  C  ********
005420 005002 A 1156          TZB                     CLEAR B                                 C  ********
005421 010521 A 1157          LDA     TERR            GET ERROR CNTR                          C  ********
005422 001010 A 1158          JAZ     *+4             JUMP IF NO ERRORS                       C  ********
005423 005426 A
005424 006020 A 1159          LDBI    0100000         SET SIGN OF B                           C  ********
005425 100000 A
005426 010504 A 1160          LDA     TCYC            TOTAL CYCLES                            C  ********
005427 005031 A 1161          MERG    031             ERROR & CYCLE TO A                      C  ********
005430 103177 A 1162          OAR     077             A TO DISPLAY                            C  ********
005431 001000 A 1163          JMP*    OTAC            -EXIT                                   C  ********
005432 105417 A
                    1164 ********************************************************************01 01129
                    1165 *                                                                    B  01 01130
005433 006030 A 1166 PRUP     LDXI    PFMG            POWER RESTORED MESSAGE                  B  01 01131
005434 005445 A
005435 040511 A 1167          INR     PFK                                                     B  01 01132
005436 010442 A 1168          LDA     SCON                                                    B  01 01133
005437 001010 A 1169          JAZ*    PWRR                                                    B  01 01134
005440 105444 A
005441 002000 A 1170          CALL*   OUTD                                                    B  01 01135
005442 100403 A
005443 001000 A 1171          JMP     MIN1                                                    B  01 01136
005444 003644 A
       005444 A 1172 PWRR     EQU     *-1                                                     B  01 01137
                    1173 *                                                                    B  01 01138
005445 106612 A 1174 PFMG     DATA    CRLF,'POWER RESTORED',CRLF,0                            B  01 01139
005446 150317 A
005447 153705 A
005450 151240 A
005451 151305 A
005452 151724 A
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005453 147722 A
005454 142704 A
005455 106612 A
005456 000000 A
                    1175 *                                                          01 01140
                    1176 *      MESSAGE TABLE                                       01 01141
                    1177 *                                                          01 01142
005457 106612 A     1178 HDG2   DATA    CRLF,'4K MODULE(S) TO BE TESTED =',0        01 01143
005460 132313 A
005461 120315 A
005462 147704 A
005463 152714 A
005464 142650 A
005465 151651 A
005466 120324 A
005467 147640 A
005470 141305 A
005471 120324 A
005472 142723 A
005473 152305 A
005474 142240 A
005475 136640 A
005476 000000 A
005477 152317 A     1179 HDG3   DATA    'TOO MANY PARAMETERS',CRLF,0                01 01144
005500 147640 A
005501 145701 A
005502 147331 A
005503 120320 A
005504 140722 A
005505 140715 A
005506 142724 A
005507 142722 A
005510 151640 A
005511 106612 A
005512 000000 A
005513 146717 A     1180 HDG5   DATA    'MODULE NOT WITHIN MEMORY RANGE',CRLF,0     01 01145
005514 142325 A
005515 146305 A
005516 120316 A
005517 147724 A
005520 120327 A
005521 144724 A
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005522 144311 A
005523 147240 A
005524 146705 A
005525 146717 A
005526 151331 A
005527 120322 A
005530 146716 A
005531 143705 A
005532 106612 A
005533 000000 A
005534 106612 A 1181 HDG6   DATA    CRLF,'CYCLES = ',0                          01 01146
005535 141731 A
005536 141714 A
005537 142723 A
005540 120275 A
005541 120240 A
005542 000000 A
005543 106612 A 1182 HDG8   DATA    CRLF,'END MEMO',0                          01 01147
005544 142716 A
005545 142240 A
005546 146705 A
005547 146717 A
005550 000000 A
005551 106612 A 1183 HDG9   DATA    CRLF,'ERROR TOTAL = ',0                     01 01148
005552 142722 A
005553 151317 A
005554 151240 A
005555 152317 A
005556 152301 A
005557 146240 A
005560 136640 A
005561 000000 A
005562 152305 A 1184 HG10   DATA    'TEST   ADDRESS  EXPECTED  ACTUAL',CRLF,0   01 01149
005563 151724 A
005564 120240 A
005565 120301 A
005566 142304 A
005567 151305 A
005570 151723 A
005571 120240 A
005572 142730 A
005573 150305 A
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005574 141724 A
005575 142704 A
005576 120240 A
005577 140703 A
005600 152325 A
005601 140714 A
005602 106612 A
005603 000000 A
005604 106612 A 1165 MG11   DATA    CRLF,'NUMBER OF CYCLES RUN =',0                    01 01150
005605 147325 A
005606 146702 A
005607 142722 A
005610 120317 A
005611 143240 A
005612 141731 A
005613 141714 A
005614 142723 A
005615 120322 A
005616 152716 A
005617 120275 A
005620 000000 A
005621 106612 A 1166 MG12   DATA    CRLF,'INSTRUCTION PARITY ERROR AT ',0              01 01151
005622 144716 A
005623 151724 A
005624 151325 A
005625 141724 A
005626 144717 A
005627 147240 A
005630 150301 A
005631 151311 A
005632 152331 A
005633 120305 A
005634 151322 A
005635 147722 A
005636 120301 A
005637 152240 A
005640 000000 A
005641 106612 A 1167 MG13   DATA    CRLF,'ADDRESS PARITY ERROR AT ',0                  01 01152
005642 140704 A
005643 142322 A
005644 142723 A
005645 151640 A
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005646 150301 A
005647 151311 A
005650 152331 A
005651 120305 A
005652 151322 A
005653 147722 A
005654 120301 A
005655 152240 A
005656 000000 A
005657 106612 A 1188 MG14   DATA    CRLF,'OPERAND PARITY ERROR AT ',0                    01 01153
005660 147720 A
005661 142722 A
005662 140716 A
005663 142240 A
005664 150301 A
005665 151311 A
005666 152331 A
005667 120305 A
005670 151322 A
005671 147722 A
005672 120301 A
005673 152240 A
005674 000000 A
005675 106612 A 1189 MG15   DATA    CRLF,'TRAP PARITY ERROR AT ',0                       01 01154
005676 152322 A
005677 140720 A
005700 120320 A
005701 140722 A
005702 144724 A
005703 154640 A
005704 142722 A
005705 151317 A
005706 151240 A
005707 140724 A
005710 120240 A
005711 000000 A
005712 106612 A 1190 PFKM   DATA    CRLF,'POWER FAILURES = ',0                       B   01 01155
005713 150317 A
005714 153705 A
005715 151240 A
005716 143301 A
005717 144714 A
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005720 152722 A
005721 142723 A
005722 120275 A
005723 120240 A
005724 000000 A
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                     1191        EJEC                                                        B    01 01155
                     1192 *                                                                  B    01 01157
                     1193 *      MEMORY CHECKERBOARD DUMP                                    B    01 01158
                     1194 *                                                                  B    01 01159
003000               1195        ORG      03000                                              B    01 01160
                     1196 *                                                                  B    01 01161
003000 005041 A 1197 MDP      X                         B   01 01162
003001 000001 A 1198        HLT      1              SET A=START ADDRESS                      B    01 01163
003002 001004 A 1199        JAN      MTOP                                                    B    01 01164
003003 003210 A
003004 153073 A 1200        ANA      070K           SAVE 4K START                            B    01 01165
003005 005014 A 1201        TAX                      IN X                                    B    01 01166
003006 002000 A 1202 MDM1   CALL*    OUTC           CR/LF                                    B    01 01167
003007 100402 A
003010 005041 A 1203        TXA                     OUTPUT                                   B    01 01168
003011 153073 A 1204        ANA      070K            FIRST                                   B    01 01169
003012 004354 A 1205        LSRA     12               THREE                                  B    01 01170
003013 123076 A 1206        ADD      ZERO              OCTAL                                 B    01 01171
003014 002000 A 1207        CALL*    OUTA               DIGITS                               B    01 01172
003015 100400 A
003016 005041 A 1208        TXA                          OF                                  B    01 01173
003017 153074 A 1209        ANA      07K                  ADDRESS                            B    01 01174
003020 004351 A 1210        LSRA     9                                                       B    01 01175
003021 123076 A 1211        ADD      ZERO                                                    B    01 01176
003022 002000 A 1212        CALL*    OUTA                                                    B    01 01177
003023 100400 A
003024 005041 A 1213        TXA                                                              B    01 01178
003025 153075 A 1214        ANA      0700                                                    B    01 01179
003026 004346 A 1215        LSRA     6                                                       B    01 01180
003027 123076 A 1216        ADD      ZERO                                                    B    01 01181
003030 002000 A 1217        CALL*    OUTA                                                    B    01 01182
003031 100400 A
003032 013077 A 1218        LDA      SPCE                                                    B    01 01183
003033 002000 A 1219        CALL*    OUTA                                                    B    01 01184
003034 100400 A
003035 015000 A 1220 MDM2   LDA      0,1            GET WORD                                 B    01 01185
003036 001010 A 1221        JAZ      A0             ZERO?                                    B    01 01186
003037 003065 A
003040 005111 A 1222        IAR                                                              B    01 01187
003041 001010 A 1223        JAZ      A1             =1?                                      B    01 01188
003042 003070 A
003043 013101 A 1224        LDA      NO1            NOT ZERO OR MINUS ONE                    B    01 01189
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003044 002000 A 1225 MDM3   CALL*   OUTA                                    B   01 01190
003045 100400 A
003046 005145 A 1226        INCR    045         BUMP X TO A                 B   01 01191
003047 153102 A 1227        ANA     EOB                                     B   01 01192
003050 001010 A 1228        JAZ     MDM9        END OF 4K?                  B   01 01193
003051 003057 A
003052 153103 A 1229        ANA     EOL                                     B   01 01194
003053 001010 A 1230        JAZ     MDM1        END OF LINE?                B   01 01195
003054 003006 A
003055 001000 A 1231        JMP     MDM2                                    B   01 01196
003056 003035 A
003057 002000 A 1232 MDM9   CALL*   OUTC        CR/LF                       B   01 01197
003060 100402 A
003061 002000 A 1233        CALL*   OUTC        CR/LF                       B   01 01198
003062 100402 A
003063 001000 A 1234        JMP     MDMP                                    B   01 01199
003064 003000 A
003065 013076 A 1235 A0     LDA     ZERO                                    B   01 01200
003066 001000 A 1236        JMP     MDM3                                    B   01 01201
003067 003044 A
003070 013100 A 1237 A1     LDA     ONE                                     B   01 01202
003071 001000 A 1238        JMP     MDM3                                    B   01 01203
003072 003044 A
003073 070000 A 1239 07'0K  DATA    070000                                  B   01 01204
003074 007000 A 1240 07'K   DATA    07000                                   B   01 01205
003075 000700 A 1241 07'00  DATA    0700                                    B   01 01206
003076 130260 A 1242 ZERO   DATA    '00'                                    B   01 01207
003077 120240 A 1243 SPCE   DATA    ' '                                     B   01 01208
003100 130661 A 1244 ONE    DATA    '11'                                    B   01 01209
003101 126665 A 1245 No1    DATA    '=='                                    B   01 01210
003102 007777 A 1246 EOB    DATA    07777                                   B   01 01211
003103 000077 A 1247 EOL    DATA    077                                     B   01 01212
       003200 A 1248        END     STRT                                        01 01213
ENTRY NAMES
EXTERNAL NAMES
SYMBOLS
000442 A SCON   000471 A SDCT   000440 A SFLG   000422 A SLNE
000441 A SMEM   000424 A SMSM   003065 A A0     003070 A A1
005241 A APE1   005255 A APEA   005256 A APEB   005221 A APER
005257 A APEX   004742 A BITC   000516 A BITS   004743 A BITX
105612 A CRLF   000505 A CYCL   005051 A DAP    005061 A DAP1
005072 A DAP2   005105 A DAP3   003733 A DEM    004126 A ELOP
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000506 A EMEM   003102 A EOB    003103 A EOL    004067 A ERP1
004052 A ERPD   004040 A ERR1   000423 A ESZC   000514 A FRST
003344 A HDG1   005457 A HDG2   005477 A HDG3   005513 A HDG5
005534 A HDG6   005543 A HDG8   005551 A HDG9   005562 A HG10
005604 A HG11   005621 A HG12   005641 A HG13   005657 A HG14
005675 A HG15   004312 A IAD    004266 A IAZ    004342 A ICB
004361 A ICB1   004373 A ICB2   004351 A ICBC   000410 A INPA
000411 A INPB   000412 A INPC   000413 A INPD   000414 A INPE
000415 A INPF   000416 A INPG   005202 A IPE1   005216 A IPEA
005217 A IPEB   005162 A IPER   005220 A IPEX   004213 A IUA
004215 A IUA1   004457 A INC    004472 A INCC   000515 A LAST
003006 A MDM1   003035 A MDM2   003044 A MDM3   003057 A MDM9
003000 A MDMP   004023 A MERR   003644 A MIN1   003656 A MIN2
003720 A MIN3   003636 A MINT   003371 A MTC1   003403 A MTC2
003406 A MTC3   003412 A MTC4   003420 A MTC5   003424 A MTC6
003355 A MTCM   003210 A MTOP   003521 A MTP0   003450 A MTP1
003531 A MTP2   003431 A MTP3   003453 A MTP4   003441 A MTP5
003500 A MTP6   003446 A MTP7   003505 A MTP8   003526 A MTPA
003222 A MTT1   003241 A MTT2   003270 A MTT3   003274 A MTT4
003301 A MTT5   003322 A MTT6   003213 A MTTM   000502 A MTW1
000503 A MTW2   003101 A NO1    003353 A NL     004510 A O3
003237 A O36    004456 A O4     004367 A O525   003075 A O700
003073 A O70K   004731 A O77    003074 A O7K    003100 A ONE
005300 A OPE1   005314 A OPEA   005315 A OPEB   005260 A OPER
005316 A OPEX   005417 A OTAC   000400 A OUTA   000401 A OUTB
000402 A OUTC   000403 A OUTD   000404 A OUTE   000405 A OUTF
000406 A OUTG   000407 A OUTH   000517 A PAT1   000520 A PAT2
005376 A PE1    005414 A PEA    005415 A PEB    005356 A PER
005416 A PEX    000511 A PFK    005712 A PFKM   005446 A PFMG
000045 A PRTY   005433 A PRUP   005444 A PWRR   000513 A REP
000512 A REP1   003220 A RM1    000523 A SAVB   000524 A SAVX
005107 A SET    005111 A SET1   003200 A SM2    003077 A SPCE
000421 A SSWT   003200 A STRT   000522 A SWCH   004301 A TADT
004255 A TAZT   004754 A TBA1   004765 A TBA2   004776 A TBA3
005005 A TBA4   005013 A TBAB   005027 A TBAC   005041 A TBA7
000510 A TBAA   005026 A TBAD   004744 A TBAT   005036 A TBAZ
004535 A TBC    004543 A TBC1   004552 A TBC2   004611 A TBC3
004625 A TBC4   004634 A TBC5   004676 A TBC6   004620 A TBC7
004705 A TBC8   004711 A TBC9   004514 A TBCA   004517 A TBCB
004727 A TBCC   004717 A TBCD   004741 A TBCE   004672 A TBCF
004605 A TBCG   004603 A TBCT   000547 A TBL    000535 A TBL0
000525 A TBLI   004411 A TCB    004415 A TCBB   004325 A TCBT
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000504 A TCYC   000420 A TDLY   003753 A TERM   004015 A TERN
004011 A TERO   000521 A TERR   005124 A TES    005127 A TES1
005153 A TES2   000507 A TEST   000417 A TOUT   005337 A TPE1
005353 A TPEA   005354 A TPEB   005317 A TPER   005355 A TPEX
003336 A TPR    003330 A TTR    004225 A TUA    004230 A TUA1
004147 A TUAA   004167 A TUAB   004173 A TUAC   004142 A TUAT
003526 A UACA   003576 A UACB   003617 A UACC   003633 A UACD
003565 A UADA   003534 A UADB   003556 A UADC   003573 A UADD
003076 A ZERO
  0 ERRORS ASSEMBLY COMPLETE
```