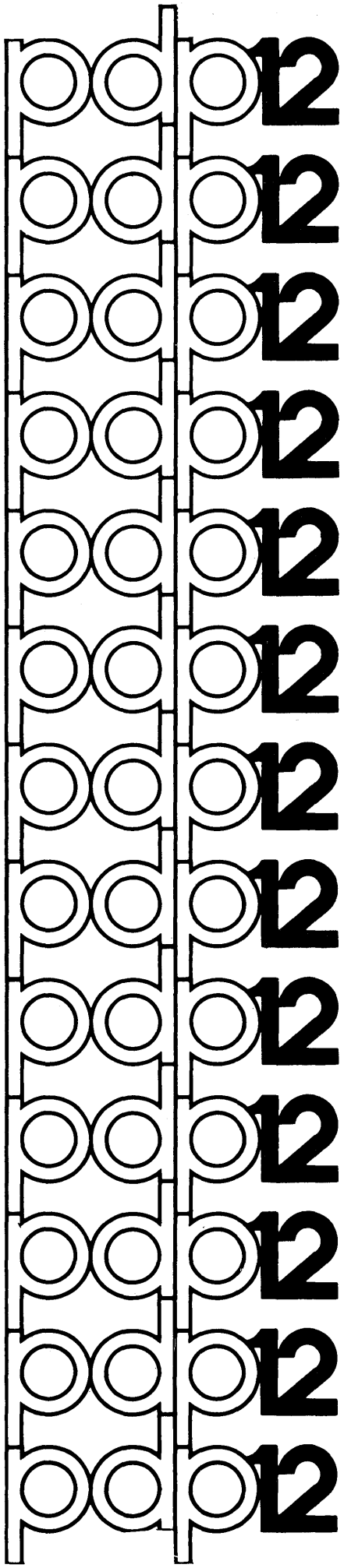
digital

PRTC12-F



DEC-12-YIYA-D

April, 1970

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1.0 PROGRAM DESCRIPTION

The PRTC12-F program operates the TC12-F tape option which is prewired in the PDP-12 computer and allows the user to read and write in the forward direction DECtapes that have been formatted on the PDP-8, PDP-9, PDP-10, or PDP-15 computers. The tape used on the PDP-12 is in LINC format and differs from other DECtapes in the following ways:

a. Tape direction over the tape head is reversed.

b. The polarity of the tape heads is reversed.

c. Channels one and three are reversed.

d. Data transfer has a different bit configuration. The following table is a 12-bit comparison of the two systems.

LINCtape Format	0	1	2	3	4	5	6	7	8	9	10	11
DECtape Format	2	5	8	11	1	4	7	10	0	3	6	9

e. The "mark track" on LINCtape is 4-bit oriented and on DECtape is 8-bit oriented. The TC12-F hardware has a special window register, but only the "block mark" (BM) is decoded. Data flags, bit shuffling, and the computation and verification of the checksum are all done with software.

The PRTC12-F program is written in LAP6-DIAL[1] language and is filed on the DIAL tape with the name PRTC12-F.

2.0 STARTING PROCEDURE

PRTC12-F is started by the following procedure.

a. Start the DIAL system (as described in the LAP6-DIAL Manual, DEC-12-SE2B-D). (Be sure to wind sufficient tape on the takeup reels so that they are positioned at least three blocks beyond the end zone.)

b. Call the PRTC12-F program by the command

```
LO PRTC12-F,n
```

where n is the tape unit number from which the program will be loaded. Units 0-7 can be used.

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[1] LAP6-DIAL is hereafter referred to as DIAL.

PRTC12-F occupies locations 3500 through 7712 and is nondestructive. The program restarts automatically after completing an operation and may be restarted manually at any time at its starting address (4020).

3.0 USING PRTC12-F

After it is loaded, the program displays an introduction followed by three sets of questions for the user to define the operation.

3.1 The first display is an introduction to the program as follows:

```
LINCTAPE/DECTAPE CONVERSION PROGRAM
THIS PROGRAM WILL RUN SUCCESSFULLY
ONLY ON A PDP-12 COMPUTER EQUIPPED WITH THE
TC12-F OPTION.  IT WILL READ AND WRITE
FROM TAPE UNITS 0-7 IN ANY TAPE
FORMAT;  YOU MUST SPECIFY THE CORRECT FORMAT.
TYPE LINE FEED TO CONTINUE.
```

Press the line feed or return key to display the second message.

3.2 The READ questionnaire is displayed next.

```
READ ______ BLOCKS
TAPE FORMAT_____UNIT_____
STARTING WITH BLOCK_____
FORMAT A -- PDP-8 201 WORDS/BLOCK
FORMAT B -- PDP-12 400 WORDS/BLOCK
FORMAT C -- OTHER (PDP-9, 10, 15, WITH 600 12-BIT
   WORDS/BLOCK)
```

Type in each value followed by a carriage return and then press line feed to advance to the next display.

3.3 The WRITE questionnaire must be answered.

```
WRITE THE RESULT
IN TAPE FORMAT_____ON UNIT_____
STARTING AT BLOCK_____
FORMAT A -- PDP-8 201 WORDS/BLOCK
FORMAT B -- PDP-12 400 WORDS/BLOCK
FORMAT C -- OTHER (PDP-9, 10, 15, WITH 600 12-BIT
   WORDS/BLOCK)
```

Again, type the correct values, each followed by a carriage return. Press line feed when completed to display the last message.

3.4 Respond to the PARITY questionnaire:

```
CHECK PARITY-
0 SPECIFIES NO
1 SPECIFIES YES
```

Type 0 or 1 and press line feed. The requested operation is performed. (Be sure sufficient tape has been wound on the take-up reels before pressing line feed.)

4.0 PROGRAM OPERATION

4.1 Transfers

There are nine possible combinations of data transfer referred to as MODOP 1 through 9, as defined in the TAPE FORMATS table below. The block packing column in the table describes all of the possible transfer configurations.

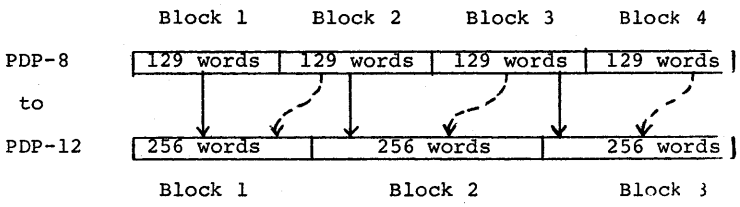
Table 1

TAPE FORMATS

MODOP	Transfer Direction	Number of 12 Bit Words/Block (Octal)		Block Packing Arrangement		Maximum Number of Octal Blocks Read
		READ	WRITE	READ	WRITE	
1	8 to 8	201	201	1	1	2,000
2	8 to 12	201	201	1	1	1,000
3	8 to N	200	600	3	1	2,000
4	12 to 8	400	200	1	2	1,000
5	12 to 12	400	400	1	1	1,000
6	12 to N	400	600	3	2	1,000
7	N to 8	600	200	1	3	750
8	N to 12	600	400	2	3	520
9	N to N	600	600	1	1	2,000

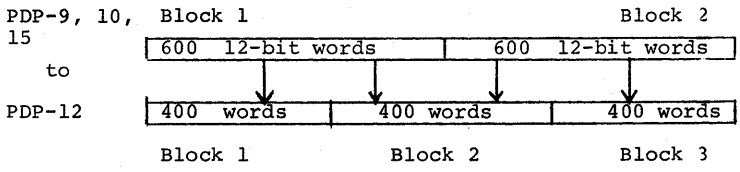
N = PDP-9, PDP-10, PDP-15.

A PDP-8 to PDP-12 transfer is a block to block transfer; a 129 word block of PDP-8 DECtape is written on a block of PDP-12 LINCtape The PDP-12 LINCtape can have a 256 word block format or a 129 word block format. With the 256 word format, a block of PDP-8 DECtape is written in the first 129 locations of the LINCtape and the first 127 words of the next DECtape block are written on the same LINCtape block. This second DECtape block is written in its entirety again in the first 129 locations of the second LINCtape block to make a block to block transfer, as diagrammed.



For a PDP-12 to PDP-8 transfer, one 256 word LINCtape block is written on two PDP-8 128 word blocks. 7777 is written for the 129th (link) word in this case.

With PDP-9, 10, and 15 to PDP-12 transfers, data does not overlap as illustrated.



Note that transferring an odd number of PDP-9, 10, and 15 blocks will use an extra half PDP-12 block. Similarly, PDP-12 and PDP-8 to PDP-9, 10, and 15 transfers may not completely fill the last block with information.

4.2 READ

When the desired block is found, the line counter is initialized. The control words that precede the data on tape are skipped. When a word from tape has been assembled in the tape AC register, the word flag is raised. The program checks the flag with the SWD instruction and the PC is incremented when it is set. Then the data is read into the AC with the TAC

instruction, parity is computed and the data is shuffled and stored in memory. When the WCOUNT is incremented to 7777, it signifies that the complete block of data has been read and that the parity word is now in the AC. This is computed in the parity register (LPB) and, if the transfer was executed correctly, the resulting checksum (CS) should be 7777. If the operator had requested a parity check and the CS was incorrect, the block will be read again until a correct CS is obtained or until the operator intervenes. For PDP-12 transfers, the data is checked after it has been read or written. If an error is detected, the program will halt at location 6766.

4.3 WRITE

The transport is set in motion and a check is made to assure that its status is OK. If it is not OK, i.e., more than one unit is selected or the WRITE LOCK switch is on, a wait loop is entered until the necessary corrections are made. When the desired block is found and the transport is going forward, the program is transferred to the write routine, DOUTIT. Two control words are skipped and then the writers are turned on with IOT 6152 and the appropriate AC bits. The reverse checksum is written as 7777 after the third control word. Then data is read from memory, the parity word is generated, and the data is shuffled and transferred from the AC to the Tape Buffer Register with IOT 6154. When the WCOUNT reaches 7777, the parity word is shuffled and written on tape.

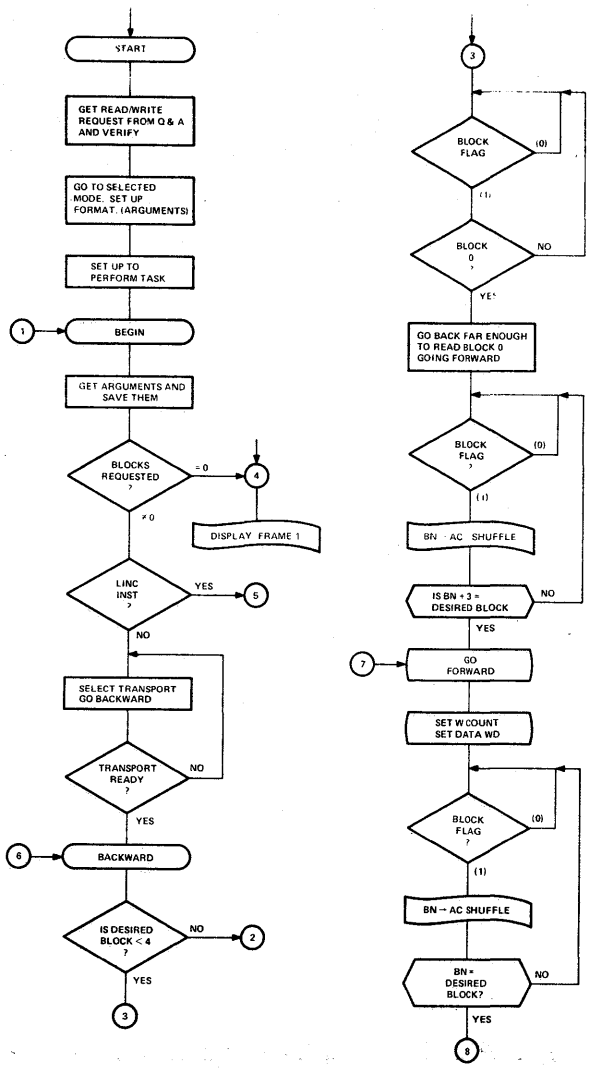
4.4 Restrictions

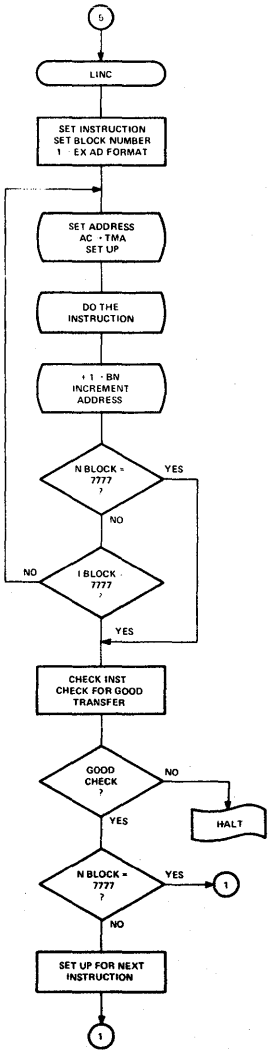
The PRTC12-F program has the following restrictions:

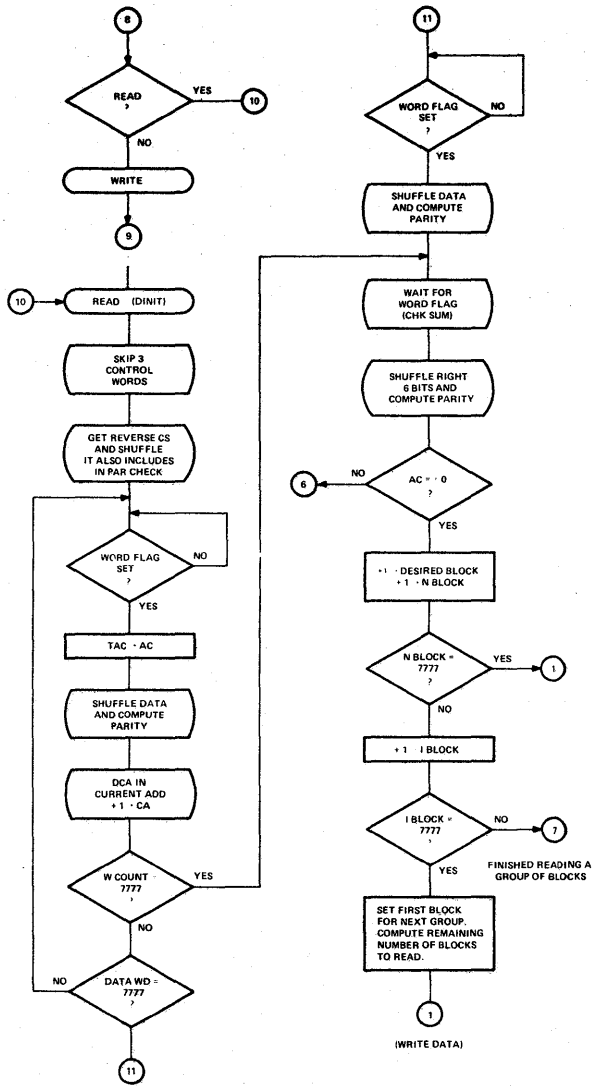
a. Data is read and written only in the "forward" direction.

b. Except for LINCtape transfers, data is not checked after being written on tape.

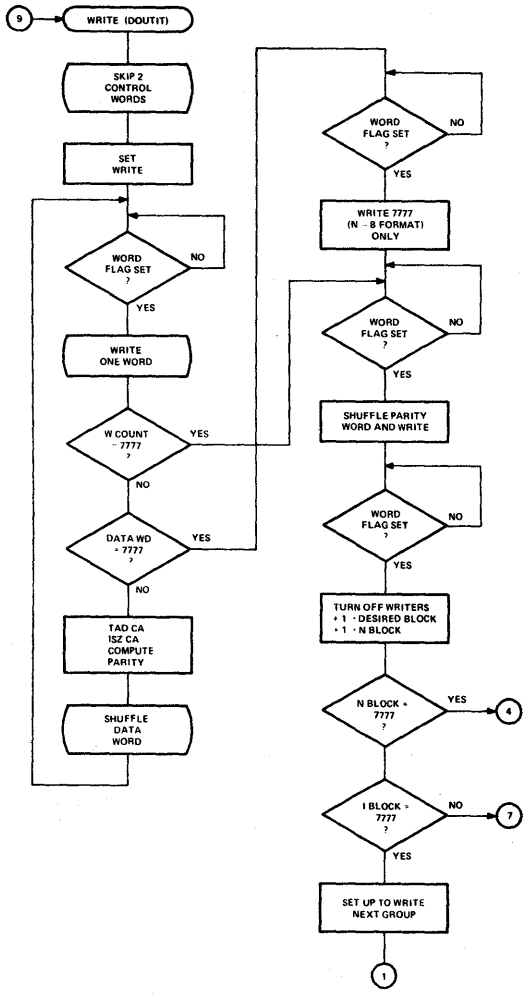
c. The maximum number of blocks in one transfer is 2000_8 blocks.


START
GET READ/WRITE REQUEST FROM Q & A AND VERIFY
GO TO SELECTED MODE. SET UP FORMAT. (ARGUMENTS)
SET UP TO PERFORM TASK
1
BEGIN
GET ARGUMENTS AND SAVE THEM
BLOCKS REQUESTED ?
= 0
4
DISPLAY FRAME 1
≠ 0
LINC INST ?
YES
5
NO
SELECT TRANSPORT GO BACKWARD
TRANSPORT READY ?
NO
YES
6
BACKWARD
IS DESIRED BLOCK < 4 ?
NO
2
YES
3
3
BLOCK FLAG ?
(0)
(1)
BLOCK 0 ?
NO
YES
GO BACK FAR ENOUGH TO READ BLOCK 0 GOING FORWARD
BLOCK FLAG ?
(0)
(1)
BN - AC SHUFFLE
IS BN + 3 = DESIRED BLOCK
NO
YES
7
GO FORWARD
SET W COUNT SET DATA WD
BLOCK FLAG ?
(0)
(1)
BN → AC SHUFFLE
BN = DESIRED BLOCK?
NO
YES
8


5
LINC
SET INSTRUCTION
SET BLOCK NUMBER
1 EX AD FORMAT
SET ADDRESS
AC - TMA
SET UP
DO THE
INSTRUCTION
(1 - BN
INCREMENT
ADDRESS
N BLOCK =
7777
?
YES
NO
I BLOCK
7777
?
NO
YES
CHECK INST
CHECK FOR GOOD
TRANSFER
GOOD
CHECK
?
NO
HALT
YES
N BLOCK =
7777
?
YES
1
NO
SET UP FOR NEXT
INSTRUCTION
1


8
READ ?
YES
10
NO
WRITE
9
10
READ (DINIT)
SKIP 3 CONTROL WORDS
GET REVERSE CS AND SHUFFLE IT ALSO INCLUDES IN PAR CHECK
WORD FLAG SET ?
NO
YES
TAC ← AC
SHUFFLE DATA AND COMPUTE PARITY
DCA IN CURRENT ADD + 1 ← CA
W COUNT = 7777 ?
YES
NO
DATA WD = 7777 ?
NO
11
11
WORD FLAG SET ?
NO
YES
SHUFFLE DATA AND COMPUTE PARITY
WAIT FOR WORD FLAG (CHK SUM)
SHUFFLE RIGHT 6 BITS AND COMPUTE PARITY
AC = 0 ?
NO
6
YES
+1 ← DESIRED BLOCK + 1 ← N BLOCK
N BLOCK = 7777 ?
YES
1
NO
+1 I BLOCK
I BLOCK = 7777 ?
NO
7
YES
FINISHED READING A GROUP OF BLOCKS
SET FIRST BLOCK FOR NEXT GROUP. COMPUTE REMAINING NUMBER OF BLOCKS TO READ.
1
(WRITE DATA)

WRITE


9
WRITE (DOUTIT)
SKIP 2 CONTROL WORDS
SET WRITE
WORD FLAG SET ?
NO
YES
WRITE ONE WORD
W COUNT = 7777 ?
YES
NO
DATA WD = 7777 ?
YES
NO
TAD CA
ISZ CA
COMPUTE PARITY
SHUFFLE DATA WORD
WORD FLAG SET ?
NO
YES
WRITE 7777 (N = 8 FORMAT) ONLY
WORD FLAG SET ?
NO
YES
SHUFFLE PARITY WORD AND WRITE
WORD FLAG SET ?
NO
YES
TURN OFF WRITERS
+1 = DESIRED BLOCK
+1 = N BLOCK
N BLOCK = 7777 ?
YES
4
I BLOCK = 7777 ?
NO
7
YES
SET UP TO WRITE NEXT GROUP
1

```
0000                    *20
0001                    /
0002                    /Q AND A HANDLER FOR TC12-F
0003                    /TAPE CONVERTER PROGRAM
0004                    /
0005                    /
0006                    *15
0007                    /
0010                    /
0011      0015  0000    DIVCNT, 0
0012      0016  0000            0
0013      0017  0000            0
0014      0020  0641            LDF 1
0015      0021  7113            JMP QAINIT
0016      0022  3500            TXTINTRQ&3777   /10 B  ADDRESS PLUS DATA FIELD BIT;
0017      0023  3777            3777            /JUST  SAFE ADDRESS;
0020      0024  7166            JMP QARFSH
0021                                            /LINE-FEED DURING INTRQ
0022                                            /RETURNS PROGRAM TO HERE
0023                    /
0024                    /
0025                    /
0026                    /
0027      0025  0643            LDF 3
0030      0026  7113    QAREAD, JMP QAINIT
0031      0027  3274            TXTRDE&3777     /10 BIT ADDRESS PLUS DATA FIELD BIT;
0032      0030  3674            ANSWR1&3777
0033      0031  7166            JMP QARFSH
0034                    /
0035                    /
0036                    /
0037                    /
0040                    /
0041                    /
0042                    /
0043      0032  0077    UNREAD, SET I 17        /ROUTINE TO GET NUMBER
0044      0033  3674            ANSWR1&3777     /OF BLOCKS TO BE TRANSFERRED
0045      0034  0076            SET I 16
0046      0035  7773    M4,     -4              /4 NUM ANS
0047      0036  0075            SET I 15
0050      0037  0110            NUMBRS-1        /ANS ADD -1
0051      0040  0073            SET I 13
0052      0041  6026            JMP QAREAD      /RETURN JMP
0053      0042  6222            JMP GET         /GET ANSWER;
0054      0043  0470            AZE I           /IS RDENUM=0?
0055      0044  6026            JMP QAREAD      /YES;
0056      0045  0451            APO             /NOT ZERO;NEGATIVE?
0057      0046  6026            JMP QAREAD      /YES; TRY AGAIN
0060      0047  1134            ADA I 14        /ADD -2000
0061      0050  0471            APO I           /TOO MANY?
0062      0051  6026            JMP QAREAD      /YES TRY AGAIN
0063      0052  1134            ADA I 14        /ADD +2000
0064      0053  4626            STC RDENUM      /NUM OF BLOCKS
0065                    /
0066                    /
0067      0054  0077            SET I 17        /ROUTINE TO GET TAPE UNIT NO.
0070      0055  7677            ANSWR1&3777+4003
0071      0056  0076            SET I 16
0072      0057  7776            -1              /1 NUM ANS
0073      0060  0075            SET I 15
0074      0061  0110            NUMBRS-1        /ANS ADD -1
0075      0062  6222            JMP GET         /GET ANS
```

```
0076    0063  4622          STC RDEFU       /UNIT
0077                /
0100                /
0101    0064  0077          SET I 17        /ROUTINE TO GET STARTING BLOCK
0102    0065  7700          ANSWR1&3777+4004
0103    0066  0076          SET I 16
0104    0067  7773          -4              /4 WORD ANS
0105    0070  0075          SET I 15
0106    0071  0110          NUMBRS-1        /ANS ADD-1
0107    0072  6222          JMP GET         /GET ANS
0110    0073  4625          STC RDEBN       /BLOCK NUM
0111                /
0112                /
0113    0074  0077          SET I 17        /GET READ FORMAT
0114    0075  7676          3777&ANSWR1+4002
0115    0076  0076          SET I 16
0116    0077  7776          -1              /1 NUM ANS
0117    0100  0075          SET I 15
0120    0101  0116          CHARS-1         /ANS ADD-1
0121    0102  6222          JMP GET         /GET ANS
0122    0103  1260          MUL I           /CONVERT TO MODOP ADDRESS
0123    0104  0003          3
0124    0105  1120          ADA I           /CHANGE RANGE
0125    0106  7774  M3,     -3              /FROM 3,6,9 TO
0126    0107  4161          STC MODOP       /0,3,6
0127    0110  6123          JMP QAWRIT      /GET NEXT FRAME
0130                /
0131                /
0132    0111  7720  NUMBRS,  -57             /NUMBER  LIMITS
0133    0112  0057          +57
0134    0113  7710          -67
0135    0114  0067          +67
0136    0115  5777          -2000
0137    0116  2000          +2000
0140    0117  0000  CHARS,   0               /CHAR LIMITS
0141    0120  0000          0
0142    0121  7774          -3
0143    0122  0003          +3
0144                /
0145                /
0146    0123  7113  QAWRIT,  JMP QAINIT      /WRITE FRAME
0147    0124  3474          TXTWRI&3777     /10 BIT ADDRESS PLUS DATA FIELD BIT
0150    0125  3704          ANSWR2&3777
0151    0126  7166          JMP QARFSH
0152                /
0153                /
0154    0127  0077  UNWRIT,  SET I 17        /GET UNIT TO WRITE ON;
0155    0130  3705          ANSWR2&3777+1
0156    0131  0076          SET I 16        /1 NUM ANS
0157    0132  7776          -1
0160    0133  0075          SET I 15
0161    0134  0110          NUMBRS-1
0162    0135  0073          SET I 13
0163    0136  6123          JMP QAWRIT      /RETURN ADD
0164    0137  6222          JMP GET         /GET ANS
0165    0140  4630          STC WRIFU       /UNIT
0166                /
0167                /
0170    0141  0077          SET I 17        /GET STARTING BLOCK FOR WRITE;
0171    0142  3706          ANSWR2&3777+2
0172    0143  0076          SET I 16
0173    0144  7773          -4              /4 NUM ANS
0174    0145  0075          SET I 15
-
```

```
0175    0146  0110          NUMBRS-1        /ADDRESS-1
0176    0147  6222          JMP GET         /GET ANS
0177    0150  4633          STC WRIBN       /BLOCK
0200                  /
0201                  /
0202    0151  0077          SET I 17
0203    0152  3704          ANSWR2&3777     /ANS ADD
0204    0153  0076          SET I 16
0205    0154  7776          -1              /1 NUM ANS
0206    0155  0075          SET I 15
0207    0156  0116          CHARS-1         /CHECK ADD
0210    0157  6222          JMP GET         /GET ANS
0211    0160  1160          ADM I
0212    0161  0000  MODOP,   0              /FORMAT
0213    0162  1120          ADA I           /GENERATE JMP STA
0214    0163  6210          JMP 0+SETUP
0215    0164  4210          STC SETUP
0216    0165  0011          CLR             /CLEAR THE LINK BIT
0217    0166  0643          LDF 3
0220    0167  7113  QPAR,    JMP QAINIT      /PARITY FRAME
0221    0170  3220          TXTPAR&3777
0222    0171  3711          ANSWR3&3777
0223    0172  7166          JMP QARFSH
0224    0173  1000  UNPAR,   LDA             /CHECK PAR ANSWER
0225    0174  3711          ANSWR3&3777
0226    0175  0301          ROR 1
0227    0176  0451          APO             /NO CHECK
0230    0177  6203          JMP .+4         /YES
0231    0200  1020          LDA I
0232    0201  0016          NOP             /REPLACE JMPRDEAGN WITH NOP
0233    0202  6205          JMP .+3
0234    0203  1020          LDA I
0235    0204  6460          JMP RDEAGN
0236    0205  1040          STA
0237    0206  2430          PARERR!2000
0240    0207  0011          CLR
0241                  /
0242                  /
0243                  /
0244    0210  5000  SETUP,   JMP             /MODES OF OPERATION
0245    0211  5260          JMP MODOP1
0246    0212  6304          JMP MODOP2
0247    0213  6331          JMP MODOP3
0250    0214  6365          JMP MODOP4
0251    0215  6417          JMP MODOP5
0252    0216  6441          JMP MODOP6
0253    0217  6510          JMP MODOP7
0254    0220  6540          JMP MODOP8
0255    0221  6575          JMP MODOP9
0256                  /
0257                  /
0260                  /
0261                  /
0262    0222  0041  GET,     SET 1           /SAVE RETURN JMP
0263    0223  0000          0
0264    0224  0011          CLR
0265    0225  4256          STC HOLD
0266    0226  1337  NEXT,    LDH I 17        /THIS ROUTINE GETS THE ANSWERS
0267    0227  1460          SAE I
0270    0230  0000          00
0271    0231  0467          SKP
0272    0232  6253          JMP HOLD-3
0273    0233  0054          SET 14
-
```

```
0274    0234  0015          15
0275    0235  1134          ADA I 14        /SUBTRACT LOWER LIMIT
0276    0236  0451          APO             /
0277    0237  6013          JMP 13
0300    0240  1134          ADA I 14        /ADD LOWER LIMIT BACK
0301    0241  1134          ADA I 14        /SUBTRACT UPPER LIMIT
0302    0242  0471          APO I           /
0303    0243  6013          JMP 13
0304    0244  1134          ADA I 14        /ADD UPPER LIMIT BACK
0305    0245  1560          BCL I           /JUST TO BE SURE
0306    0246  7770          7770
0307    0247  0303          ROR 3
0310    0250  2256          ADD HOLD
0311    0251  0243          ROL 3
0312    0252  4256          STC HOLD
0313    0253  0236          XSK I 16
0314    0254  6226          JMP NEXT
0315    0255  1020          LDA I
0316    0256  0000  HOLD,    0
0317    0257  6001          JMP 1
0320                  /
0321                  /
0322                  /
0323                  /
0324    0260  2654  MODOP1,   ADD P8FMT1      /PDP-8 TO PDP-8
0325    0261  4624           STC RDELNG
0326    0262  2655           ADD P8FMT2      /129 WORD TRANSFER
0327    0263  4632           STC WRILNG
0330    0264  2626           ADD RDENUM      /NUM OF BLOCKS TO READ
0331    0265  4634           STC WRINUM      /AND WRITE
0332    0266  2313           ADD M16         /DO 16 AT A TIME
0333    0267  1040           STA
0334    0270  2066           RDLTAN!2000
0335    0271  1040           STA
0336    0272  2037           WDLTAN!2000
0337    0273  1020           LDA I           /TOTAL WORDS PER BLOCK
0340    0274  7576           -201
0341    0275  1040           STA
0342    0276  2070           RDEKEY!2000
0343    0277  1020           LDA I
0344    0300  7575           -202
0345    0301  1040           STA
0346    0302  2041           WRIKEY!2000
0347    0303  6620           JMP GO          /DO THE JOB !
0350                  /
0351                  /
0352                  /
0353                  /
0354    0304  2654  MODOP2,   ADD P8FMT1       /PDP-8 TO PDP-12
0355    0305  1040           STA             /WRITE 129 WORDS
0356    0306  2747           ADDINC!2000     /IN A 400 WORD BLOCK
0357    0307  4624           STC RDELNG      /READ 129 WORDS
0360    0310  2626           ADD RDENUM
0361    0311  4634           STC WRINUM      /1:1 BLOCK TRANSFER
0362    0312  1020           LDA I
0363    0313  7761  M16,     -16
0364    0314  1040           STA
0365    0315  2066           RDLTAN!2000
0366    0316  1040           STA
0367    0317  2037           WDLTAN!2000
0370    0320  1020           LDA I
0371    0321  7576           -201
0372    0322  1040           STA
```

```
 0373    0323  2070          RDEKEY!2000
 0374    0324  0011          CLR
 0375    0325  0017          COM
 0376    0326  1040          STA
 0377    0327  2041          WRIKEY!2000
 0400    0330  6620          JMP GO
 0401                  /
 0402                  /
 0403                  /
 0404                  /
 0405    0331  2653  MODOP3,  ADD P8FMT0      /PDP-8 TO PDP-N
 0406    0332  4624          STC RDELNG
 0407    0333  2657          ADD P10FM1
 0410    0334  4632          STC WRILNG
 0411    0335  1020          LDA I
 0412    0336  7774          -3
 0413    0337  4667          STC DIVISR
 0414    0340  6660          JMP DIVIDE
 0415    0341  0011          CLR
 0416    0342  2015          ADD DIVCNT
 0417    0343  4634          STC WRINUM
 0420    0344  1020          LDA I
 0421    0345  7763  M14,     -14
 0422    0346  1040          STA
 0423    0347  2066          RDLTAN!2000
 0424    0350  1020          LDA I
 0425    0351  7773          -4
 0426    0352  1040          STA
 0427    0353  2037          WDLTAN!2000
 0430    0354  1020          LDA I
 0431    0355  7576          -201
 0432    0356  1040          STA
 0433    0357  2070          RDEKEY!2000
 0434    0360  1020          LDA I
 0435    0361  7176  M601,    -601
 0436    0362  1040          STA
 0437    0363  2041          WRIKEY!2000
 0440    0364  6620          JMP GO
 0441                  /
 0442                  /
 0443                  /
 0444                  /
 0445    0365  2654  MODOP4,  ADD P8FMT1      /PDP-12 TO PDP-8
 0446    0366  4632          STC WRILNG       /READ 400 WORDS
 0447    0367  2626          ADD RDENUM       /WRITE 200 WORDS
 0450    0370  0241          ROL 1            /1!2 BLOCK TRANSFER
 0451    0371  4634          STC WRINUM
 0452    0372  1020          LDA I
 0453    0373  0400  K400,    400
 0454    0374  1040          STA
 0455    0375  2747          ADDINC!2000
 0456    0376  1020          LDA I
 0457    0377  7770  M7,      -7
 0460    0400  1040          STA
 0461    0401  2066          RDLTAN!2000
 0462    0402  1020          LDA I
 0463    0403  7761          -16
 0464    0404  1040          STA
 0465    0405  2037          WDLTAN!2000
 0466    0406  0011          CLR
 0467    0407  0017          COM
 0470    0410  1040          STA
 0471    0411  2070          RDEKEY!2000
 -
```

```
0472    0412  1020          LDA I
0473    0413  7575          -202
0474    0414  1040          STA
0475    0415  2041          WRIKEY!2000
0476    0416  6620          JMP GO
0477                  /
0500                  /
0501                  /
0502                  /
0503    0417  2626  MODOP5,  ADD RDENUM      /PDP-12 TO PDP-12
0504    0420  4634          STC WRINUM
0505    0421  2377          ADD M7
0506    0422  1040          STA
0507    0423  2066          RDLTAN!2000
0510    0424  1040          STA
0511    0425  2037          WDLTAN!2000
0512    0426  0011          CLR
0513    0427  2373          ADD K400
0514    0430  1040          STA
0515    0431  2747          ADDINC!2000
0516    0432  0011          CLR
0517    0433  0017          COM
0520    0434  1040          STA
0521    0435  2070          RDEKEY!2000
0522    0436  1040          STA
0523    0437  2041          WRIKEY!2000
0524    0440  6620          JMP GO
0525                  /
0526                  /
0527                  /
0530                  /
0531    0441  2657  MODOP6,  ADD P10FM1   /PDP12 TO PDP-N
0532    0442  4632          STC WRILNG
0533    0443  2106          ADD M3
0534    0444  4667          STC DIVISR
0535    0445  6660          JMP DIVIDE
0536    0446  1120          ADA I           /ACC =-2 INDICATES REMAINDER WAS 1; I.E., RDENUM =1,4,7, ETC.;
0537    0447  0001  K1,     1
0540    0450  1460          SAE I           /ADDING 1 WOULD MAKE ACC=7776=-1;
0541    0451  7776          7776
0542    0452  6455          JMP .+3         /NO;ACC NOT = -1
0543    0453  4462          STC EXTRA       /YES; NOW PUT IN EXTRA TO SUBTRACT 1
0544    0454  6457          JMP MULT2       /AFTER MULTIPLYING DIVCNT BY 2;
0545    0455  0011          CLR             /ACC NOT = -1;
0546    0456  4462          STC EXTRA       /CLEAR EXTRA;
0547    0457  2015  MULT2,   ADD DIVCNT      /GET RESULTS OF DIVISION;
0550    0460  0241          ROL 1           /MULTIPLY BY 2;
0551    0461  1120          ADA I
0552    0462  0000  EXTRA,  0               /ADD EXTRA;
0553    0463  4634          STC WRINUM
0554    0464  2373          ADD K400
0555    0465  1040          STA
0556    0466  2747          ADDINC!2000
0557    0467  1020          LDA I
0560    0470  7771  M6,      -6
0561    0471  1040          STA
0562    0472  2066          RDLTAN!2000
0563    0473  1020          LDA I
0564    0474  7773          -4
0565    0475  1040          STA
0566    0476  2037          WDLTAN!2000
0567    0477  0011          CLR
0570    0500  0017          COM
-
```

```
0571      0501  1040          STA
0572      0502  2070          RDEKEY!2000
0573      0503  1020          LDA I
0574      0504  7176          -601
0575      0505  1040          STA
0576      0506  2041          WRIKEY!2000
0577      0507  6620          JMP GO
0600                    /
0601                    /
0602                    /
0603                    /
0604      0510  2656    MODOP7, ADD P10FMT      /PDP-N TO PDP-8
0605      0511  4624          STC RDELNG
0606      0512  2654          ADD P8FMT1
0607      0513  4632          STC WRILNG
0610      0514  2626          ADD RDENUM
0611      0515  1260          MUL I
0612      0516  0003          3
0613      0517  4634          STC WRINUM
0614      0520  2035          ADD M4
0615      0521  1040          STA
0616      0522  2066          RDLTAN!2000
0617      0523  1020          LDA I
0620      0524  7763          -14
0621      0525  1040          STA
0622      0526  2037          WDLTAN!2000
0623      0527  1020          LDA I
0624      0530  7177    M600,   -600
0625      0531  1040          STA
0626      0532  2070          RDEKEY!2000
0627      0533  1020          LDA I
0630      0534  7575          -202
0631      0535  1040          STA
0632      0536  2041          WRIKEY!2000
0633      0537  6620          JMP GO
0634                    /
0635                    /
0636                    /
0637                    /
0640      0540  2656    MODOP8, ADD P10FMT      /PDP-N TO PDP-12
0641      0541  4624          STC RDELNG        /WRIFMT IS OK FOR 12 TAPE
0642      0542  2626          ADD RDENUM
0643      0543  1040          STA
0644      0544  0634          WRINUM
0645      0545  0321          ROR I 1
0646      0546  1200          LAM               /ADD AGAIN TO MAKE 1.5 X RDENUM;
0647      0547  0634          WRINUM            /LINK BIT GIVES US EXTRA BLK IF RDENUM WAS AN ODD NUMBER
0650      0550  4634          STC WRINUM
0651      0551  2035          ADD M4
0652      0552  1040          STA
0653      0553  2066          RDLTAN!2000
0654      0554  0011          CLR
0655      0555  2470          ADD M6
0656      0556  1040          STA
0657      0557  2037          WDLTAN!2000
0660      0560  1020          LDA I
0661      0561  0400          400
0662      0562  1040          STA
0663      0563  2747          ADDINC!2000
0664      0564  0011          CLR
0665      0565  0017          COM
0666      0566  1040          STA
0667      0567  2041          WRIKEY!2000
```

```
0670      0570  0011          CLR
0671      0571  2530          ADD M600
0672      0572  1040          STA
0673      0573  2070          RDEKEY!2000
0674      0574  6620          JMP GO
0675                    /
0676                    /
0677                    /
0700                    /
0701      0575  2656    MODOP9, ADD P10FMT      /PDP-N TO PDP-N
0702      0576  4624          STC RDELNG
0703      0577  2657          ADD P10FM1
0704      0600  4632          STC WRILNG
0705      0601  2626          ADD RDENUM
0706      0602  4634          STC WRINUM
0707      0603  2035          ADD M4
0710      0604  1040          STA
0711      0605  2066          RDLTAN!2000
0712      0606  1040          STA
0713      0607  2037          WDLTAN!2000
0714      0610  0011          CLR
0715      0611  2361          ADD M601
0716      0612  1040          STA
0717      0613  2041          WRIKEY!2000
0720      0614  0011          CLR
0721      0615  2530          ADD M600
0722      0616  1040          STA
0723      0617  2070          RDEKEY!2000
0724                    /
0725                    /
0726                    /
0727                    /
0730      0620  0002    GO,     PDP
0731                    PMODE
0732      4621  4651    JOB1,   JMS I READPT
0733                    LMODE
0734      0622  0000    RDEFU,  0000
0735      0623  0000    RDELOC, 0000            /ALWAYS LEFT AS 0000
0736      0624  0000    RDELNG, 0000
0737      0625  0000    RDEBN,  0000
0740      0626  0000    RDENUM, 0000
0741                    /
0742                    PMODE
0743      4627  4652    JOB2,   JMS I WRITPT
0744                    LMODE
0745      0630  0000    WRIFU,  0000
0746      0631  0000    WRILOC, 0000
0747      0632  0000    WRILNG, 0000
0750      0633  0000    WRIBN,  0000
0751      0634  0000    WRINUM, 0000
0752                    PMODE
0753      4635  6141    WRIEXIT,LINC
0754                    LMODE
0755      0636  0643          LDF 3
0756      0637  1000          LDA
0757      0640  2012          NBLOCK!2000     /GET REMAINING BLOCKS
0760      0641  1620          BSE I
0761      0642  6000          6000
0762      0643  0470          AZE I           /ARE WE FINISHED?
0763      0644  6673          JMP DONE        /YES
0764      0645  0002          PDP             /HELL NO
0765                          PMODE
0766      4646  5221          JMP JOB1        /OK; GO READ MORE
-
```

```
0767    4647  7402          HLT
0770    4650  7402          HLT             /TRY AGAIN;
0771                  /
0772    4651  6057  READPT, READ!6000
0773    4652  6025  WRITPT, WRITE!6000
0774                  LMODE
0775    0653  0200  P8FMT0, 0200     /WORDS PER BLOCK
0776    0654  0201  P8FMT1, 0201
0777    0655  0202  P8FMT2, 0202
1000    0656  0600  P10FMT, 0600
1001    0657  0601  P10FM1, 0601
1002                  /
1003                  /
1004                  /
1005                  /
1006    0660  0041  DIVIDE, SET 1           /SET UP RETURN JUMP;
1007    0661  0000          0
1010    0662  0011          CLR             /CLEAR DIVIDEND
1011    0663  4015          STC DIVCNT
1012    0664  2626          ADD RDENUM
1013    0665  0235          XSK I DIVCNT    /INCREMENT DIVIDEND;
1014    0666  1120          ADA I
1015    0667  0000  DIVISR, 0               /SUBTRACT DIVISOR;
1016    0670  0471          APO I           /HAS ACC GONE NEGATIVE YET?
1017    0671  6665          JMP,-4          /NO;
1020    0672  6001          JMP 1           /YES; RETURN;
1021                  /
1022                  /
1023    0673  6020  DONE,   JMP 20          /DISPLAY FRAME 1
1024                  /
1025                  ////
1026                        LMODE
1027                        SEGMNT 2
1030                  /QANDA SUBROUTINE FOR THE
1031                  /PDP-12
1032                  /REMOVE *1000 BELOW IF
1033                  /INSERTING SOURCE DIRECTLY
1034                  /INTO YOUR PROGRAM SOURCE
1035                  *1113 /REMOVE,IF DESIRED
1036                  /
1037                  /TO HERE TO INITIALIZE THE ROUTINE
1040                  /
1041                        NOLIST
2013                  /
2014                  /
2015                  /                       DECTAPE ROUTINE FOR THE PDP - 12
2016                  /
2017                  /
2020                  /
2021                  /
2022                  /
2023                  /
2024                  /
2025                  /
2026                  /
2027                  /
2030                  /
2031                  /
2032                  LMODE
2033                  /
2034                        SEGMNT  3
2035                  /
2036                  /
-
```

```
2037                    /
2040                    /
2041                    /
2042                    /
2043                    /
2044                    /
2045                    /
2046                    /
2047                    /
2050                    /
2051                    /
2052                    /
2053                    /
2054                            SBM=414                 /SKIP ON BLOCK MARK FLAG
2055                            SWD=457                 /SKIP ON WORD IN TAC.
2056                    /
2057                    /
2060                    /
2061                    /
2062                    /
2063                    /
2064                    /
2065                            *1
2066                    /
2067                    /
2070                    /
2071    0001    0000    TASK,   HLT
2072    0002    0000    BEST,   0
2073    0003    0000    WCOUNT, 0
2074    0004    0000    BETAR,  0
2075    0005    0000    SKIP,   0
2076    0006    0000    SKIP2,  0
2077    0007    0000    DATAWD, 0
2100    0010    0000    COUNT0, 0
2101    0011    0000    COUNT1, 0
2102    0012    0000    NBLOCK, 0
2103    0013    0000    POINT1, 0
2104    0014    0000    POINT2, 0
2105    0015    0000    IBLOCK, 0
2106    0016    0000    SWITCH, 0
2107                    /
2110                    /
2111                    /
2112                    /
2113                    /
2114                    /
2115                    /
2116                    /
2117                    /
2120                    /
2121                    /
2122                            *20
2123                    /
2124                    /
2125                    /
2126                    /
2127                    /
2130                    /
2131                    /
2132                    /
2133                    /
2134                    /
2135                    /
```

```
2136                    /
2137                    /
2140                    /
2141                    /
2142    0020  0002  EXIT,   PDP             /COMES HERE AFTER READS & WRITES
2143                        PMODE
2144    6021  7330          CLA CLL CML RAR
2145    6022  6152          6152
2146    6023  7200          CLA
2147    6024  5657          JMP I   READ
2150                    /
2151                    /
2152                    /
2153                    /
2154                    /
2155                    /
2156                    /
2157                    /
2160                    /
2161                    /
2162                    LMODE
2163                    /
2164                    /
2165                    /
2166                    /
2167                    /
2170                    /ITS IMPORTANT THAT "WRITE" LOCATION HAVE A 10 BIT ADDRESS!
2171                    /
2172                    /
2173                    /
2174    0025  0000  WRITE,  0                       /GENERALWRITE ROUTINE
2175                        PMODE
2176                                                /CALLED IN 8 MODE
2177    6026  6141          LINC                    /GET INTO LINC MODE
2200                        LMODE
2201    0027  1000          LDA
2202    0030  0025          WRITE                   /GET THE CALLING ADDRESS
2203    0031  4057          STC     READ            /AND PLACE IN THE READ ADDRESS
2204    0032  0061          SET I   TASK            /SET THE OPERATION TO DO A WRITE
2205    0033  6476          JMP     DOUTIT          /JMP TO WRITE ROUTINE
2206    0034  0062          SET I   BEST            /SET THE BEST CASE TO SKIP
2207    0035  7774          -3                      /3 WORDS, THE WRITTERS NEED SOME ROOM
2210    0036  0075          SET I IBLOCK
2211    0037  0000  WDLTAN, 0                       /NUMBER OF BLOCKS WRITTEN AT A TIME
2212    0040  0076          SET I SWITCH
2213    0041  0000  WRIKEY, 0                       /TOTAL NUM WORDS WRITTEN
2214    0042  1020          LDA I
2215    0043  0706          0706            /LINC WRITE
2216    0044  4744          STC INST
2217    0045  1020          LDA I
2220    0046  2633          WRIBN!2000              /SET-UP WRITE
2221    0047  5003          STC BNSET
2222    0050  1020          LDA I
2223    0051  2634          WRINUM!2000             /DITTO
2224    0052  5010          STC NUMSET
2225    0053  1020          LDA I
2226    0054  0451          APO
2227    0055  4225          STC WRIOK               /CHECK THE WRITE SWITCH
2230    0056  6105          JMP COMMON              /GO TO THE COMMON READ-WRITE
2231                    /
2232                    /
2233                    /
2234    0057  0000  READ,   0                       /GENERAL READ ENTRY
```

```
2235                                    PMODE                   /WE RE IN 8 MODE WHEN CALLED
2236    6060  6141                      LINC                    /GET OVER INTO LINC MODE
2237                                    LMODE
2240    0061  0061                      SET I   TASK                    /SET THE TASK TO READ
2241    0062  6350                      JMP     DINIT
2242    0063  0062                      SET I   BEST            /SET THE BEST CASE TO SKIP
2243    0064  7773                      -4                      / 5 WORDS
2244    0065  0075                      SET I IBLOCK
2245    0066  0000  RDLTAN,  0                                 /NUM BLKS READ AT A TIME
2246    0067  0076                      SET I SWITCH
2247    0070  0000  RDEKEY,  0                                 /TOTAL WORDS PER BLK
2250    0071  1020                      LDA I
2251    0072  0702                      0702                    /LINC READ
2252    0073  4744                      STC INST
2253    0074  1020                      LDA I
2254    0075  2625                      RDEBN!2000
2255    0076  5003                      STC BNSET               /SET-UP FOR READ
2256    0077  1020                      LDA I
2257    0100  2626                      RDENUM!2000             /NUM BLKS
2260    0101  5010                      STC NUMSET
2261    0102  1020                      LDA I
2262    0103  0016                      NOP
2263    0104  4225                      STC WRIOK               /DONT CHECK WRITE SW
2264                  /
2265                  /
2266    0105  0002  COMMON,  PDP                                /GET OVER INTO 8 MODE TO GET THE ARGUMENYTS
2267                         PMODE
2270    6106  4321                      JMS     AGET            /GET THE ARGUMENTS
2271    6107  3325                      DCA     ARG1
2272    6110  4321                      JMS     AGET
2273    6111  3326                      DCA     ARG2
2274    6112  4321                      JMS     AGET
2275    6113  3327                      DCA     ARG3
2276    6114  4321                      JMS     AGET
2277    6115  3330                      DCA     ARG4
2300    6116  4321                      JMS     AGET
2301    6117  3331                      DCA     ARG5
2302    6120  5334                      JMP     PASTS           /SKIP PAST SUBROUTINE
2303                  /
2304                  /
2305    6121  0000  AGET,   0
2306    6122  1657                      TAD I   READ
2307    6123  2257                      ISZ     READ
2310    6124  5721                      JMP I   AGET
2311                  /
2312                  /
2313                  /
2314                  /
2315                  /
2316                  /
2317                                    LMODE
2320                  /
2321                  /
2322                  /
2323                  /
2324                  /
2325                  /
2326    0125  0000  ARG1,    0                  /READ & WRITE ARGS
2327    0126  0000  ARG2,    0
2330    0127  0000  ARG3,    0
2331    0130  0000  ARG4,    0
2332    0131  0000  ARG5,    0
2333    0132  0000  SIZE,    0
```

```
2334    0133  0000  TEMP,   0
2335                FBLOCK=ARG4
2336                /
2337                /
2340                /
2341                /
2342                /
2343                /
2344                /
2345                /
2346                /
2347                /
2350                /
2351                      PMODE
2352                /
2353                /
2354    6134  6141  PASTS,  LINC                    /GET INTO LINC MODE
2355                      LMODE
2356    0135  2125        ADD     ARG1              /GET THE FIRST ARGUMENT
2357    0136  0245        ROL     5                 /ROTATE TO GOOD IOB PLACE
2360    0137  1560        BCL I                     /JUST GET BIT 6
2361    0140  7737        -40
2362    0141  4252        STC UNITL1                /SAVE UNITS 0 & 1;
2363    0142  2125        ADD     ARG1              /GET IT AGAIN
2364    0143  0301        ROR     1                 /SHIFT OVER
2365    0144  1560        BCL I
2366    0145  7774        -3
2367    0146  4240        STC     LAX0              /AND STASH AWAY
2370    0147  2125        ADD     ARG1              /GET THECRAP AGAIN
2371    0150  0301        ROR     1
2372    0151  1560        BCL I
2373    0152  7743        -34
2374    0153  1620        BSE I
2375    0154  0640        LDF     0
2376    0155  4635        STC SDATAF
2377    0156  2126        ADD     ARG2              /GET THE ADDRESS
2400    0157  1040        STA
2401    0160  0347        COREL1                    /STORE IN FIRST CORE LOC
2402    0161  4552        STC COREL2
2403                      /ALSO IN SECOND LOC,
2404    0162  2127        ADD     ARG3              /GET THE NUMBER OF WORDS TO TDUE
2405    0163  0017        COM                       /NEGATE IT
2406    0164  4132        STC     SIZE              /AND STASH AWAY
2407    0165  2131        ADD     ARG5              /GET THE NUMBER OF BLOCKS
2410    0166  0470        AŽE I
2411    0167  6020        JMP     EXIT              /NO BLOCKS TO DO.
2412    0170  0017        COM
2413    0171  4012        STC     NBLOCK            /AND STASH AWAY.
2414    0172  0216  XSK SWITCH
2415    0173  0467        SKP
2416    0174  6711  JMP LINC                       /IF SWITCH=7777
2417                /
2420                /
2421                /
2422                /
2423                /
2424                /
2425                /
2426    0175  1020  WAITL,  LDA I                   /THIS WAITS TILL DRIVE IS READY.
2427    0176  5000        5000
2430    0177  0500        IOB
2431    0200  6151        6151                      /GET INTO MAINTENANCE MODE
2432    0201  1020        LDA I
```

```
2433    0202  0040          40
2434    0203  2240          ADD     LAXO            /ADD ON CORRECT UNITS
2435    0204  0001          AXO
2436    0205  1000          LDA
2437    0206  0252          UNITL1
2440    0207  1120          ADA I
2441    0210  0206          206
2442    0211  0500          IOB
2443    0212  6152          6152            /SELECT,SET MTN
2444    0213  1020          LDA I
2445    0214  0100          100
2446    0215  0500          IOB
2447    0216  6152          6152            /SET BACKWARD
2450    0217  0011          CLR
2451    0220  0500          IOB
2452    0221  6154          6154            /READ TRANSPORT STATUS
2453    0222  0322          ROR I   2
2454    0223  0472          LZE I
2455    0224  6175          JMP     WAITL           /UNIT NOT READY YET.
2456    0225  0016  WRIOK,  NOP             /THIS INST. IS REPLACED DURING THE READ/WRITE SUBROUTINE
2457                                        /READ=NOP WRITE=APO
2460    0226  6234          JMP   .+6
2461    0227  1020          LDA I           /WRITE SWITCH NOT ON;
2462    0230  4000          4000            /STOP TAPE
2463    0231  0500          IOB
2464    0232  6152          6152            /LTM PRESET
2465    0233  6175          JMP  WAITL
2466                /
2467                /
2470                /
2471    0234  0011          CLR             /CLEAR OUT THE MAINTENANCE MODE
2472    0235  0500          IOB
2473    0236  6151          6151
2474    0237  1020          LDA I
2475    0240  0000  LAXO,    0
2476    0241  0001          AXO
2477    0242  6300          JMP BACKWARD
2500                /
2501                /
2502    0243  0047  FORWARD,SET DATAWD      /DATA WORDS PER BLOCK
2503    0244  0132          SIZE
2504    0245  0043          SET WCOUNT      /TOTAL WORDS PER BLOCK
2505    0246  0016          SWITCH
2506    0247  1020          LDA I
2507    0250  0226          226
2510    0251  1120          ADA I
2511    0252  0000  UNITL1, 0
2512    0253  0500          IOB
2513    0254  6152          6152            /SEL,SET FWD
2514    0255  0045          SET SKIP
2515    0256  0002          BEST            /NUM CONTROL WORDS
2516    0257  0414          SBM             /WAIT FOR BM
2517    0260  6257          JMP .-1
2520    0261  0003          TAC             /BN TO AC
2521    0262  0016          NOP
2522    0263  0457          SWD             /SKIP FIRST SHORT WORD
2523    0264  6263          JMP .-1
2524    0265  6637          JMP INIT        /SHUFFLE
2525    0266  0451          APO             /ARE WE OUT OF END ZONE?
2526    0267  6243          JMP FORWARD     /NO
2527    0270  1440          SAE             /YES
2530    0271  0130          FBLOCK          /RIGHT BLOCK?
2531    0272  0467          SKP             /NO
-
```

```
2532    0273  6001          JMP TASK        /YES; NOW DO IT!
2533    0274  0017          COM
2534    0275  2130          ADD FBLOCK
2535    0276  0471          APO I           /GOING RIGHT DIRECTION??
2536    0277  6243          JMP FORWARD     /YES, KEEP GOIN
2537                /
2540                /
2541                /
2542                /
2543                /
2544                /
2545                /
2546                /
2547                /
2550                /
2551    0300  1020  BACKWARD,LDA I
2552    0301  0306          306
2553    0302  1100          ADA
2554    0303  0252          UNITL1
2555    0304  0500          IOB
2556    0305  6152          6152            /GO BACKWARD
2557    0306  1000          LDA
2560    0307  0130          FBLOCK
2561    0310  1120          ADA I
2562    0311  7774          7774
2563    0312  0451          APO             /IS BLOCK <4?
2564    0313  6331          JMP DEEP        /YES
2565    0314  0414          SBM             /WAIT FOR BM
2566    0315  6314          JMP .-1
2567    0316  0003          TAC             /BN TO AC
2570    0317  6637          JMP INIT        /SHUFFLE
2571    0320  1120          ADA I           /GO 3 BLOCKS PAST DESIRED BLK
2572    0321  0003          3
2573    0322  0017          COM
2574    0323  2130          ADD FBLOCK
2575    0324  0470          AZE I           /RIGHT BLOCK?
2576    0325  6243          JMP FORWARD     /YES
2577    0326  0451          APO             /NO,
2600    0327  6300          JMP BACKWARD
2601    0330  6243          JMP FORWARD
2602                /
2603                /
2604                /
2605                /
2606                /
2607                /
2610                /
2611                /
2612                /
2613                /
2614    0331  0414  DEEP,    SBM             /COMES HERE IF BLOCK < 4
2615    0332  6331          JMP .-1
2616    0333  0003          TAC             /BN TO AC
2617    0334  6637          JMP INIT        /SHUFFLE IT
2620    0335  0450          AZE             /BLOCK 0?
2621    0336  6300          JMP BACKWARD    /NOT YET!
2622    0337  0071          SET I COUNT1    /THIS DELAY ALLOWS US TO FIND THE BLK GOING FWD
2623    0340  7767          -10
2624    0341  4010          STC COUNT0
2625    0342  0230          XSK I COUNT0
2626    0343  6342          JMP .-1
2627    0344  0231          XSK I COUNT1
2630    0345  6342          JMP .-3
-
```

```
2631      0346  6243          JMP FORWARD
2632                  /
2633                  /
2634                  /
2635                  /
2636      0347  0000  COREL1,0
2637                  /
2640                  /
2641                  /
2642                  /
2643                  /
2644      0350  0046  DINIT,   SET SKIP2        /READ ROUTINE
2645      0351  0005          SKIP
2646      0352  0011          CLR
2647      0353  4641          STC LPB
2650      0354  6635          JMP SDATAF        /JUST SET DF
2651      0355  0226          XSK I SKIP2       /SKIP 3 CONTROL WORDS
2652      0356  0467          SKP
2653      0357  6365          JMP IGETCK        /GET REV CS
2654      0360  0457          SWD               /SKIP ON WD FLAG
2655
2656      0361  6360          JMP .-1
2657      0362  0457          SWD
2660      0363  6352          JMP DINIT+2       /REPEAT
2661      0364  6362          JMP .-2
2662                  /
2663                  /
2664      0365  0457  IGETCK,  SWD               /WAIT FOR REV CS
2665      0366  6365          JMP .-1
2666      0367  0003          TAC               /GET IT
2667      0370  6637          JMP INIT          /PUT IN LPB & SHUFFLE
2670                  /
2671                  /
2672                  /
2673                  /
2674      0371  0457  IGETIT,  SWD               /WAIT FOR WORD
2675      0372  6371          JMP .-1
2676      0373  0003          TAC               /TAPE AC TO AC
2677      0374  6637          JMP INIT          /COMP PARITY &SHUFFLE
2700      0375  0002          PDP
2701                          PMODE
2702      6376  3747          DCA I COREL1      /STORE DATA
2703      6377  2347          ISZ  COREL1       /INCR ADD
2704      6400  7000          NOP
2705      6401  6141          LINC
2706                          LMODE
2707      0402  0223          XSK I WCOUNT      /FINISHED?
2710      0403  0467          SKP               /NO
2711      0404  6410          JMP IGETLP        /YES,GET CS
2712      0405  0227          XSK I DATAWD      /GOT ALL DATA?
2713      0406  6371          JMP IGETIT        /NO,GO TO IT
2714      0407  6453          JMP LASTWD        /GET LAST WORD
2715      0410  0457  IGETLP,  SWD               /WAIT FOR LPB
2716      0411  6410          JMP  .-1
2717      0412  0003          TAC               /LPB TO AC
2720      0413  1560          BCL I             /CS IS ONLY 6 BITS
2721      0414  1463          1463              /CLEAR LEFT HALF
2722      0415  6637          JMP INIT          /COMP PARITY
2723      0416  0011          CLR
2724      0417  2641          ADD LPB           /GET PARITY BUF
2725      0420  6646          JMP LPB+5         /SHUFFLE IT
2726      0421  1040          STA
2727      0422  0641          LPB
-
```

```
2730    0423  0246          ROL 6           /XOR L&R
2731    0424  1640          BCO
2732    0425  0641          LPB
2733    0426  0306          ROR 6
2734    0427  0450          AZE             /GOOD CHK SUM?
2735    0430  6460  PARERR, JMP RDEAGN      /NO!TRY AGAIN
2736                /
2737                /
2740                /
2741                /
2742                /
2743    0431  1020  RDEDUN, LDA I
2744    0432  0001          1
2745    0433  1140          ADM
2746    0434  0130          FBLOCK          /INCR BLOCK
2747    0435  0232          XSK I NBLOCK    /ALL DONE?
2750    0436  0467          SKP             /NOT DONE YET
2751    0437  6020          JMP EXIT        /YES DONE
2752    0440  0235          XSK I IBLOCK    /FINISHED DBN?
2753    0441  6243          JMP FORWARD      /NO
2754    0442  0642          LDF 2
2755    0443  1040          STA             /SET UP FOR NEXT READ
2756    0444  2625          RDEBN!2000
2757    0445  0011          CLR
2760    0446  2012          ADD NBLOCK
2761    0447  0017          COM
2762    0450  1040          STA
2763    0451  2626          RDENUM!2000
2764    0452  6020          JMP EXIT
2765                /
2766                /
2767    0453  0457  LASTWD, SWD             /THIS WORD IS INCLUDED IN THE CS
2770    0454  6453          JMP .-1
2771    0455  0003          TAC
2772    0456  6637          JMP INIT        /PUT IN LPB
2773    0457  6410          JMP IGETLP      /GET THE CS
2774                /
2775                /
2776    0460  0011  RDEAGN, CLR             /PARITY ERROR
2777    0461  2132          ADD SIZE        /DECR  ADDRESS
3000    0462  1120          ADA I           /BY 1 BLOCK
3001    0463  0001          1
3002    0464  1200          LAM
3003    0465  0347          COREL1
3004    0466  0011          CLR             /CLR LINK
3005    0467  1000          LDA
3006    0470  0130          FBLOCK
3007    0471  1120          ADA I
3010    0472  7774          -3
3011    0473  0471          APO I
3012    0474  6300          JMP BACKWARD
3013    0475  6243          JMP FORWARD
3014                /
3015                /
3016    0476  0011  DOUTIT, CLR             /WRITE ROUTINE
3017    0477  4641          STC LPB
3020    0500  0046          SET SKIP2
3021    0501  0005          SKIP
3022    0502  6635          JMP SDATAF      /SET DF
3023    0503  1020          LDA I
3024    0504  0027          27
3025    0505  0226          XSK I SKIP2     /SKIP 2 CONTROL WORDS
3026    0506  0467          SKP
-
```

```
3027    0507  6515          JMP OGETIT      /PREPARE TO WRITE
3030    0510  0457          SWD             /SKIP ON WORD FLAG
3031    0511  6510          JMP .-1
3032    0512  0457          SWD             /WAIT FOR FLAG TO GO DOWN
3033    0513  6505          JMP DOUTIT+7    /DO IT AGAIN
3034    0514  6512          JMP     .-2
3035                  /
3036                  /
3037                  /
3040                  /
3041                  /
3042                  /
3043                  /
3044                  /
3045    0515  0500  OGETIT, IOB
3046    0516  6152          6152              /SET WRITE
3047    0517  1020          LDA I             /SET RTN  JMP
3050    0520  6522          JMP GOWRI
3051    0521  4710          STC OUTRTN
3052    0522  0457  GOWRI,  SWD             /WAIT FOR WORD FLAG
3053    0523  6522          JMP     .-1
3054    0524  0500          IOB
3055    0525  6154          6154            /AC TO TB
3056    0526  0223          XSK I WCOUNT    /FINISHED?
3057    0527  0467          SKP             /NOT YET
3060    0530  6560          JMP OGETLP      /GET CS
3061    0531  0227          XSK I DATAWD    /WRITTEN ALL DATA?
3062    0532  0467          SKP             /NOO
3063    0533  6553          JMP WRILAST     /WRITE 7777
3064    0534  0002          PDP
3065                        PMODE
3066    6535  7300          CLA CLL
3067    6536  1752          TAD I COREL2    /GET DATA
3070    6537  2352          ISZ   COREL2    /INCR ADDRESS
3071    6540  6141          LINC
3072                        LMODE
3073    0541  0017          COM             /COMPUTE PARITY
3074    0542  4545          STC TEMPØ
3075    0543  2641          ADD LPB
3076    0544  1660          BCO I
3077    0545  0000  TEMPØ,  Ø
3100    0546  4641          STC LPB
3101    0547  2545          ADD TEMPØ
3102    0550  0017          COM
3103    0551  6670          JMP OUTIT       / SHUFFLE DATA &WRITE IT
3104    0552  0000  COREL2, Ø
3105    0553  0011  WRILAST,CLR             /WRITE 7777 WHEN THE LAST WORD IS JUNK
3106    0554  0457          SWD             /WAIT FOR FLAG TO GO DOWN JUST IN CASE
3107    0555  0467          SKP
3110    0556  6554          JMP  .-2
3111    0557  6522          JMP  GOWRI      /WRITE 7777
3112    0560  1020  OGETLP, LDA I           /SET RTN JMP TO
3113    0561  6571          JMP WRILPB      /WRITE PARITY
3114    0562  4710          STC OUTRTN
3115    0563  1000          LDA             /GET PARITY WOR
3116    0564  0641          LPB
3117    0565  0306          ROR 6           /ITS 6 BITS
3120    0566  1640          BCO             /XOR IT
3121    0567  0641          LPB
3122    0570  6670          JMP OUTIT       /SHUFFLE IT GOOD
3123    0571  0457  WRILPB, SWD             /WRITE CS
3124    0572  6571          JMP .-1
3125    0573  0500          IOB
-
```

```
3126    0574  6154          6154            /CS TO TB
3127    0575  0457  WRIOFF, SWD                     /NOW WAIT TILL LAS IS OPT AND WELL
3130    0576  0467          SKP
3131    0577  6575          JMP     .-2
3132    0600  0457          SWD                     /NEXT WORD ALL SET???
3133    0601  6600          JMP     .-1             /NOPE. WAIT
3134    0602  0457          SWD                     /NEXT WORD THERE. WAIT TILL IT PASSES.
3135    0603  0467          SKP
3136    0604  6602          JMP     .-2             /ITS PAST. LAST WORD IS NOW OUT COMPLETEL
3137    0605  1020          LDA I                   /YEP. TURN OFF THE WRITTERS.
3140    0606  0226          226
3141    0607  0500          IOB
3142    0610  6152          6152
3143    0611  1020  WRIDUN, LDA I           /PREPARE TO WRITE NEXT BLK
3144    0612  0001          0001
3145    0613  1140          ADM
3146    0614  0130          FBLOCK
3147    0615  0232          XSK I NBLOCK    /ALL DONE?
3150    0616  0467          SKP             /NOT YET
3151    0617  6020          JMP EXIT        /THATS IT!
3152    0620  0043          SET WCOUNT      /INIT WCOUNT
3153    0621  0041          WRIKEY
3154    0622  0235          XSK I IBLOCK    /FINISHED GROUP?
3155    0623  6243          JMP FORWARD     /GO DO IT!
3.56    0624  0642          LDF 2
3157    0625  1040          STA
3160    0626  2633          WRIBN!2000      /NEXT BLOCK
3161    0627  0011          CLR
3162    0630  2012          ADD NBLOCK
3163    0631  0017          COM
3164    0632  1040          STA
3165    0633  2634          WRINUM!2000     /REMAINING BLKS
3166    0634  6020          JMP EXIT        /READ SOME MORE
3167                /
3170                /
3171                /
3172                /
3173                /
3174                /
3175                /
3176                /
3177                /
3200                /
3201                SDATAF=.
3202    0635  0000  DATAF, HLT             /OPTION FOR EXT MEM
3203    0636  6000          JMP     0
3204                /
3205                /
3206                /
3207                /
3210    0637  4643  INIT,  STC TEMP1       /COMPUTE PARITY
3211    0640  1120          ADA I
3212    0641  0000  LPB,    0
3213    0642  1660          BCO I
3214    0643  0000  TEMP1,  0
3215    0644  4641          STC LPB
3216    0645  2643          ADD TEMP1       /READ SHUFFLE
3217    0646  0017          COM
3220    0647  1040          STA
3221    0650  0643          TEMP1
3222    0651  1560          BCL I
3223    0652  7700          -77
3224    0653  1120          ADA I
-
```

```
3225    0654  3012          ADD TABLE1
3226    0655  4666          STC ADDIN1
3227    0656  1300          LDH             /GET LEFT HALF
3230    0657  0643          TEMP1&3777      /OF TEMP1
3231    0660  1120          ADA I
3232    0661  3012          ADD TABLE1
3233    0662  4664          STC ADDIN2
3234    0663  0011          CLR
3235    0664  2000  ADDIN2, ADD 0
3236    0665  0265          ROL I   5
3237    0666  2000  ADDIN1, ADD 0
3240    0667  6000          JMP 0
3241                /
3242                /
3243                /
3244                /
3245                /
3246                /
3247                /
3250                /
3251                /
3252                /
3253    0670  1060  OUTIT,  STA I           /WRITE SHUFFLE
3254    0671  0000  TEMP2,  0
3255    0672  1560          BCL I           /LOOK AT RIGHT HALF
3256    0673  7700          -77
3257    0674  1120          ADA I
3260    0675  3112          ADD TABLE2
3261    0676  4706          STC ADOUT1
3262    0677  1300          LDH             /GET LEFT HALF
3263    0700  0671          TEMP2&3777
3264    0701  1120          ADA I
3265    0702  3112          ADD  TABLE2
3266    0703  4704          STC  .+1
3267    0704  0000  ADOUT2, 0
3270    0705  0242          ROL     2
3271    0706  0000  ADOUT1, 0
3272    0707  0017          COM
3273    0710  0000  OUTRTN, 0               /WRITE IT
3274                /
3275                /
3276                /
3277                /
3300    0711  1000  LINC,   LDA             /LINC TAPE HANDLER
3301    0712  0125          ARG1            /GET UNIT
3302    0713  0321          ROR I 1
3303    0714  1560          BCL I
3304    0715  7774          7774
3305    0716  4730          STC EXUN
3306    0717  0264          ROL I 4         /GET LINK BIT BACK
3307    0720  1140          ADM
3310    0721  0744          INST            /ADD UNIT ONE BIT IF ITS THERE
3311    0722  1620          BSE I
3312    0723  0007          0007
3313    0724  4763          STC CHECK
3314    0725  1020          LDA I
3315    0726  0020          0020            /EXTENDED ADDRESS FORMAT, BANK 0
3316    0727  1120          ADA I
3317    0730  0000  EXUN,   0
3320    0731  0001          AXO             /SET EX UNIT
3321    0732  1000          LDA
3322    0733  0130          ARG4            /GET BLOCK NUMBER
3323    0734  1040          STA
```

```
3324    0735  0745          BN
3325    0736  4764          STC CHECK+1
3326    0737  4742          STC ADDR
3327    0740  0640          LDF 0             /CLR DF
3330    0741  1020          LDA I
3331    0742  0000  ADDR,    0
3332    0743  0023          TMA               /AC>TMA SETUP
3333    0744  0000  INST,    0
3334    0745  0000  BN,      0
3335    0746  1020          LDA I
3336    0747  0000  ADDINC,  0000            /WORDS PER BLOCK
3337    0750  1140          ADM
3340    0751  0742          ADDR
3341    0752  1020          LDA I
3342    0753  0001          1
3343    0754  1140          ADM
3344    0755  0745          BN                /INCR BLOCK NUM
3345    0756  0232          XSK I NBLOCK
3346    0757  0467          SKP
3347    0760  6763          JMP CHECK         /TRANSFER COMPLETE
3350    0761  0235          XSK I IBLOCK
3351    0762  6740          JMP ADDR-2        /DO NEXT BLOCK
3352                /
3353                /
3354                /
3355                /
3356    0763  0707  CHECK,   CHK
3357    0764  0000          0000              /BLOCK NUMBER
3360    0765  0450          AZE
3361    0766  0000          HLT
3362    0767  1020          LDA I
3363    0770  0001          1
3364    0771  1140          ADM
3365    0772  0764          CHECK+1
3366    0773  1440          SAE               /FINISHED?
3367    0774  0745          BN
3370    0775  6763          JMP CHECK         /NO
3371    0776  0212          XSK NBLOCK        /ALL DONE?
3372    0777  0467          SKP
3373    1000  6020          JMP EXIT          /ALL DONE
3374                /
3375                /
3376    1001  0642          LDF 2
3377    1002  1040          STA
3400    1003  2625  BNSET,  RDEBN!2000        /OR WRIBN!2000
3401    1004  0011          CLR
3402    1005  2012          ADD NBLOCK
3403    1006  0017          COM
3404    1007  1040          STA
3405    1010  2626  NUMSET, RDENUM!2000       /OR WRINUM!2000
3406    1011  6020          JMP EXIT
3407                /
3410                /
3411                /
3412                /
3413                /                         INPUT CONVERSION TABLES.
3414                /
3415                        LMODE
3416                /
3417    1012  0000  TABLE1,  0
3420    1013  0004           4
3421    1014  0040           40
3422    1015  0044           44
-
```

```
3423      1016  0400          400
3424      1017  0404          404
3425      1020  0440          440
3426      1021  0444          444
3427      1022  4000          4000
3430      1023  4004          4004
3431      1024  4040          4040
3432      1025  4044          4044
3433      1026  4400          4400
3434      1027  4404          4404
3435      1030  4440          4440
3436      1031  4444          4444
3437      1032  0002          2
3440      1033  0006          6
3441      1034  0042          42
3442      1035  0046          46
3443      1036  0402          402
3444      1037  0406          406
3445      1040  0442          442
3446      1041  0446          446
3447      1042  4002          4002
3450      1043  4006          4006
3451      1044  4042          4042
3452      1045  4046          4046
3453      1046  4402          4402
3454      1047  4406          4406
3455      1050  4442          4442
3456      1051  4446          4446
3457      1052  0020          20
3460      1053  0024          24
3461      1054  0060          60
3462      1055  0064          64
3463      1056  0420          420
3464      1057  0424          424
3465      1060  0460          460
3466      1061  0464          464
3467      1062  4020          4020
3470      1063  4024          4024
3471      1064  4060          4060
3472      1065  4064          4064
3473      1066  4420          4420
3474      1067  4424          4424
3475      1070  4460          4460
3476      1071  4464          4464
3477      1072  0022          22
3500      1073  0026          26
3501      1074  0062          62
3502      1075  0066          66
3503      1076  0422          422
3504      1077  0426          426
3505      1100  0462          462
3506      1101  0466          466
3507      1102  4022          4022
3510      1103  4026          4026
3511      1104  4062          4062
3512      1105  4066          4066
3513      1106  4422          4422
3514      1107  4426          4426
3515      1110  4462          4462
3516      1111  4466          4466
3517                /
3520                /
3521                /
-
```

```
3522                    /
3523                    /
3524                    /
3525                    /
3526                    /
3527
3530
3531
3532                            EJECT
-
```

```
3533
3534
3535
3536
3537
3540                    /               OUTPUT CONVERSION TABLE
3541
3542
3543
3544
3545
3546        1112  0000  TABLE2,  0
3547        1113  0400          400
3550        1114  0020          20
3551        1115  0420          420
3552        1116  0001          1
3553        1117  0401          401
3554        1120  0021          21
3555        1121  0421          421
3556        1122  1000          1000
3557        1123  1400          1400
3560        1124  1020          1020
3561        1125  1420          1420
3562        1126  1001          1001
3563        1127  1401          1401
3564        1130  1021          1021
3565        1131  1421          1421
3566        1132  0040          40
3567        1133  0440          440
3570        1134  0060          60
3571        1135  0460          460
3572        1136  0041          41
3573        1137  0441          441
3574        1140  0061          61
3575        1141  0461          461
3576        1142  1040          1040
3577        1143  1440          1440
3600        1144  1060          1060
3601        1145  1460          1460
3602        1146  1041          1041
3603        1147  1441          1441
3604        1150  1061          1061
3605        1151  1461          1461
3606        1152  0002          2
3607        1153  0402          402
3610        1154  0022          22
3611        1155  0422          422
3612        1156  0003          3
3613        1157  0403          403
3614        1160  0023          23
3615        1161  0423          423
3616        1162  1002          1002
3617        1163  1402          1402
3620        1164  1022          1022
3621        1165  1422          1422
3622        1166  1003          1003
3623        1167  1403          1403
3624        1170  1023          1023
3625        1171  1423          1423
3626        1172  0042          42
3627        1173  0442          442
3630        1174  0062          62
3631        1175  0462          462
-
```

```
3632      1176  0043            43
3633      1177  0443            443
3634      1200  0063            63
3635      1201  0463            463
3636      1202  1042            1042
3637      1203  1442            1442
3640      1204  1062            1062
3641      1205  1462            1462
3642      1206  1043            1043
3643      1207  1443            1443
3644      1210  1063            1063
3645      1211  1463            1463
3646                  ////
3647                  /
3650                  /
3651                  ////
3652                          PMODE
3653                  /
3654                          *3500
3655      3500  0640
3655      3501  4040
3655      3502  4040
3655      3503  4224
3655      3504  0361
3655      3505  6255
3655                  TXTINTRO,TEXT ŻF      "TC12-F"
3656      3506  0642
3656                  H
3657      3507  4310
3657      3510  4310
3657      3511  4040
3657      3512  4014
3657      3513  1116
3657      3514  0324
3657      3515  0120
3657      3516  0557
3657      3517  0405
3657      3520  0324
3657      3521  0120
3657      3522  0540
3657      3523  0317
3657      3524  1626
3657      3525  0522
3657      3526  2311
3657      3527  1716
3657      3530  4020
3657      3531  2217
3657      3532  0722
3657                  H   LINCTAPE/DECTAPE CONVERSION PROGRAM
3660      3533  0115
3660                  F
3661      3534  4306
3661      3535  4310
3661      3536  4040
3661      3537  4024
3661      3540  1011
3661      3541  2340
3661      3542  2022
3661      3543  1707
3661      3544  2201
3661      3545  1540
3661      3546  2711
3661      3547  1414
-
```

```
3661      3550  4022
3661      3551  2516
3661      3552  4023
3661      3553  2503
3661      3554  0305
3661      3555  2323
3661      3556  0625
3661      3557  1414
3661                  H   THIS PROGRAM WILL RUN SUCCESSFULLY
3662      3560  3143
3662      3561  4017
3662      3562  1614
3662      3563  3140
3662      3564  1716
3662      3565  4001
3662      3566  4020
3662      3567  0420
3662      3570  5561
3662      3571  6240
3662      3572  0317
3662      3573  1520
3662      3574  2524
3662      3575  0522
3662      3576  4005
3662      3577  2125
3662      3600  1120
3662      3601  2005
3662      3602  0440
3662      3603  2711
3662      3604  2410
3662      3605  4024
3662                  ONLY ON A PDP-12 COMPUTER EQUIPPED WITH THE
3663      3606  1005
3663      3607  4340
3663      3610  2403
3663      3611  6162
3663      3612  5506
3663      3613  4010
3663      3614  0122
3663      3615  0427
3663      3616  0122
3663      3617  0540
3663      3620  1720
3663      3621  2411
3663      3622  1716
3663      3623  5640
3663      3624  4011
3663      3625  2440
3663      3626  2711
3663      3627  1414
3663      3630  4022
3663      3631  0501
3663      3632  0440
3663      3633  0116
3663                  TC12-F HARDWARE OPTION,  IT WILL READ AND
3664      3634  0443
3664      3635  4027
3664      3636  2211
3664      3637  2405
3664      3640  4006
3664      3641  2217
3664      3642  1540
3664      3643  2401
```

```
3664      3644  2005
3664      3645  4025
3664      3646  1611
3664      3647  2423
3664      3650  4060
3664      3651  5567
3664      3652  4011
3664      3653  1640
3664      3654  0116
3664      3655  3140
3664      3656  2401
3664                    WRITE FROM TAPE UNITS 0-7 IN ANY TAPE
3665      3657  2005
3665      3660  4340
3665      3661  0617
3665      3662  2215
3665      3663  0124
3665      3664  7340
3665      3665  3117
3665      3666  2540
3665      3667  1525
3665      3670  2324
3665      3671  4023
3665      3672  2005
3665      3673  0311
3665      3674  0631
3665      3675  4024
3665      3676  1005
3665      3677  4003
3665      3700  1722
3665      3701  2205
3665      3702  0324
3665      3703  4006
3665      3704  1722
3665      3705  1501
3665                    FORMAT; YOU MUST SPECIFY THE CORRECT FORMAT.
3666      3706  2456
3666                    F
3667      3707  4306
3667                    F
3670      3710  4306
3670      3711  4310
3670      3712  2431
3670      3713  2005
3670      3714  4014
3670      3715  1116
3670      3716  0506
3670      3717  0505
3670      3720  0440
3670      3721  2417
3670      3722  4003
3670      3723  1716
3670      3724  2411
3670      3725  1625
3670      3726  0534
3670                    HTYPE LINEFEED TO CONTINUE\Z
3671                    /
3672                    /
3673                            *7220
3674      7220  0640
3674      7221  0310
3674      7222  0503
3674      7223  1340
-
```

```
3674      7224  2001
3674      7225  2211
3674      7226  2431
3674                  TXTPAR, TEXT ZF CHECK PARITY<1
3675      7227  7461
3675
3676      7230  4347
3676      7231  4306
3676      7232  4760
3676      7233  4023
3676      7234  2005
3676      7235  0311
3676      7236  0611
3676      7237  0523
3676      7240  4016
3676                  F       Ø SPECIFIES NO
3677      7241  1743
3677
3700      7242  4740
3700      7243  4306
3700      7244  4761
3700      7245  4023
3700      7246  2005
3700      7247  0311
3700      7250  0611
3700      7251  0523
3700      7252  4031
3700                  F       1 SPECIFIES YES
3701      7253  0523
3701      7254  4347
3701
3702      7255  4043
3702      7256  4724
3702      7257  3120
3702      7260  0540
3702      7261  1411
3702      7262  1605
3702      7263  4006
3702      7264  0505
3702      7265  0440
3702      7266  2417
3702      7267  4003
3702      7270  1716
3702      7271  2411
3702      7272  1625
3702      7273  0534
3702                        TYPE LINE FEED TO CONTINUE\Z
3703                  /
3704      7274  0640
3704      7275  4022
3704      7276  0501
3704      7277  0474
3704      7300  6440
3704      7301  0214
3704      7302  1703
3704                  TXTRDE, TEXT ZF  READ<4 BLOCKS
3705      7303  1323
3705                  F
3706      7304  4306
3706      7305  4340
3706      7306  4040
3706      7307  4040
3706      7310  4040
-
```

```
3706      7311  4024
3706      7312  0120
3706      7313  0540
3706      7314  0617
3706      7315  2215
3706      7316  0124
3706      7317  7461
3706      7320  4006
3706      7321  2217
3706      7322  1540
3706      7323  2516
3706      7324  1124
3706                          TAPE FORMAT<1 FROM UNIT<1
3707      7325  7461
3707                    F
3710      7326  4306
3710      7327  4340
3710      7330  4040
3710      7331  4040
3710      7332  4040
3710      7333  4040
3710      7334  4023
3710      7335  2401
3710      7336  2224
3710      7337  1116
3710      7340  0740
3710      7341  2711
3710      7342  2410
3710      7343  4002
3710      7344  1417
3710      7345  0313
3710                            STARTING WITH BLOCK<4
3711      7346  7464
3711                    F
3712      7347  4306
3712      7350  4310
3712      7351  0617
3712      7352  2215
3712      7353  0124
3712      7354  4001
3712      7355  5656
3712      7356  5656
3712      7357  5620
3712      7360  0420
3712      7361  5570
3712      7362  4040
3712      7363  5062
3712      7364  6061
3712      7365  4027
3712      7366  1722
3712      7367  0423
3712      7370  5702
3712      7371  1417
3712      7372  0313
3712                    HFORMAT A,....PDP-8  (201 WORDS/BLOCK)
3713      7373  5143
3713                    H
3714      7374  1043
3714      7375  1040
3714      7376  4040
3714      7377  4040
3714      7400  4040
3714      7401  0256
-
```

```
3714      7402  5656
3714      7403  5656
3714      7404  2004
3714      7405  2055
3714      7406  6162
3714      7407  4050
3714      7410  6460
3714      7411  6040
3714      7412  2717
3714      7413  2204
3714      7414  2357
3714      7415  0214
3714      7416  1703
3714                H       B.....PDP-12 (400 WORDS/BLOCK)
3715      7417  1351
3715                H
3716      7420  4310
3716      7421  4310
3716      7422  4040
3716      7423  4040
3716      7424  4040
3716      7425  4003
3716      7426  5656
3716      7427  5656
3716      7430  5617
3716      7431  2410
3716      7432  0522
3716      7433  4040
3716      7434  5020
3716      7435  0420
3716      7436  5571
3716      7437  5461
3716      7440  6054
3716      7441  6165
3716      7442  4027
3716      7443  1124
3716                H       C.....OTHER  (PDP-9,10,15 WITH
3717      7444  1043
3717      7445  1040
3717      7446  4040
3717      7447  4040
3717      7450  4040
3717      7451  4040
3717      7452  4040
3717      7453  4040
3717      7454  4040
3717      7455  4040
3717      7456  4040
3717      7457  4040
3717      7460  6660
3717      7461  6040
3717      7462  6162
3717      7463  5502
3717      7464  1124
3717      7465  4027
3717      7466  1722
3717      7467  0423
3717      7470  5702
3717      7471  1413
3717                H                       600 12-BIT WORDS/BLK)
3720      7472  5143
3720      7473  4034
3720                \z
-
```

```
3721                    /
3722                    /
3723                    /
3724                    /
3725        7474  0640
3725        7475  4027
3725        7476  2211
3725        7477  2405
3725        7500  4024
3725        7501  1005
3725        7502  4022
3725        7503  0523
3725        7504  2514
3725                    TXTWRI, TEXT ZF  WRITE THE RESULT
3726        7505  2443
3726                    F
3727        7506  0643
3727        7507  4040
3727        7510  4040
3727        7511  4040
3727        7512  4040
3727        7513  4011
3727        7514  1640
3727        7515  2401
3727        7516  2005
3727        7517  4006
3727        7520  1722
3727        7521  1501
3727        7522  2474
3727        7523  6140
3727        7524  1716
3727        7525  4025
3727        7526  1611
3727        7527  2474
3727                            IN TAPE FORMAT<1 ON UNIT<1
3730        7530  6143
3730
3731        7531  4743
3731        7532  4040
3731        7533  4040
3731        7534  4040
3731        7535  4040
3731        7536  4040
3731        7537  4023
3731        7540  2401
3731        7541  2224
3731        7542  1116
3731        7543  0740
3731        7544  0124
3731        7545  4002
3731        7546  1417
3731        7547  0313
3731                              STARTING AT BLOCK<4
3732        7550  7464
3732                    F
3733        7551  4306
3733        7552  4310
3733        7553  0617
3733        7554  2215
3733        7555  0124
3733        7556  4001
3733        7557  5656
3733        7560  5656
-
```

```
3733      7561  5620
3733      7562  0420
3733      7563  5570
3733      7564  4040
3733      7565  5062
3733      7566  6061
3733      7567  4027
3733      7570  1722
3733      7571  0423
3733      7572  5702
3733      7573  1417
3733      7574  0313
3733                  HFORMAT A.....PDP-8  (201 WORDS/BLOCK)
3734      7575  5143
3734                  H
3735      7576  1043
3735      7577  1040
3735      7600  4040
3735      7601  4040
3735      7602  4040
3735      7603  0256
3735      7604  5656
3735      7605  5656
3735      7606  2004
3735      7607  2055
3735      7610  6162
3735      7611  4050
3735      7612  6460
3735      7613  6040
3735      7614  2717
3735      7615  2204
3735      7616  2357
3735      7617  0214
3735      7620  1703
3735                  H       B.....PDP-12 (400 WORDS/BLOCK)
3736      7621  1351
3736                  H
3737      7622  4310
3737      7623  4310
3737      7624  4040
3737      7625  4040
3737      7626  4040
3737      7627  4003
3737      7630  5656
3737      7631  5656
3737      7632  5617
3737      7633  2410
3737      7634  0522
3737      7635  4040
3737      7636  5020
3737      7637  0420
3737      7640  5571
3737      7641  5461
3737      7642  6054
3737      7643  6165
3737      7644  4027
3737      7645  1124
3737                  H       C.....OTHER  (PDP-9,10,15 WITH
3740      7646  1043
3740      7647  1040
3740      7650  4040
3740      7651  4040
3740      7652  4040
-
```

```
3740      7653  4040
3740      7654  4040
3740      7655  4040
3740      7656  4040
3740      7657  4040
3740      7660  4040
3740      7661  4040
3740      7662  6660
3740      7663  6040
3740      7664  2717
3740      7665  2204
3740      7666  2357
3740      7667  0214
3740      7670  1703
3740                H                       600 WORDS/BLOCK)
3741      7671  1351
3741      7672  4340
3741      7673  3400
3741                \Z
3742                /
3743                /
3744      7674  7400  ANSWR1, 7400            /NUMBER OF BLOCKS
3745      7675  0000         0000            /TO BE READ IN
3746      7676  0074         0074            /4 OCTAL DIGITS
3747      7677  0074         0074            /FORMAT CHAR;
3750      7700  0074         0074            /UNIT NUMBER;
3751      7701  0000         0000            /STARTING BLOCK
3752      7702  0000         0000            /NUMBER;
3753      7703  3400         3400            /THATS ALL!!
3754      7704  7400  ANSWR2, 7400            /WRITE FORMAT;
3755      7705  7400         7400            /UNIT NUMBER;
3756      7706  7400         7400            /STARTING BLOCK
3757      7707  0000         0000            /NUMBER;
3760      7710  0034         0034            /THATS ALL!!
3761      7711  7400  ANSWR3, 7400            /PARITY
3762      7712  0034         34              /THATS IT!!
3763                /                                    /
3764                /                                    /
3765                /
3766                /       18 MARCH 1970
```

0000 ERRORS

```
ADDINC 6747
ADDIN1 6666
ADDIN2 6664
ADDR   6742
ADOUT1 6706
ADOUT2 6704
AGET   6121
ANSWR1 7674
ANSWR2 7704
ANSWR3 7711
ARG1   6125
ARG2   6126
ARG3   6127
ARG4   6130
ARG5   6131
BACKWA 6300
BEST   6002
BETAR  6004
BN     6745
BNSET  7003
-
```

```
CHARS  4117
CHECK  6763
COMMON 6105
COREL1 6347
COREL2 6552
COUNT0 6010
COUNT1 6011
DATAF  6635
DATAWD 6007
DEEP   6331
DINIT  6350
DIVCNT 4015
DIVIDE 4660
DIVISR 4667
DONE   4673
DOUTIT 6476
EXIT   6020
EXTRA  4462
EXUN   6730
FBLOCK 0130
FORWAR 6243
GET    4222
GETKBD 5634
GO     4620
GOWRI  6522
HOLD   4256
IBLOCK 6015
IGETCK 6365
IGETIT 6371
IGETLP 6410
INIT   6637
INST   6744
JOB1   4621
JOB2   4627
K1     4447
K400   4373
LASTWD 6453
LAXO   6240
LINC   6711
LPB    6641
MODOP  4161
MODOP1 4260
MODOP2 4304
MODOP3 4331
MODOP4 4365
MODOP5 4417
MODOP6 4441
MODOP7 4510
MODOP8 4540
MODOP9 4575
MULT2  4457
M14    4345
M16    4313
M3     4106
M4     4035
M6     4470
M600   4530
M601   4361
M7     4377
NBLOCK 6012
NEXT   4226
NUMBRS 4111
NUMSET 7010
-
```

```
OGETIT 6515
OGETLP 6560
OUTIT  6670
OUTRTN 6710
PARERR 6430
PASTS  6134
POINT1 6013
POINT2 6014
P10FMT 4656
P10FM1 4657
P8FMT0 4653
P8FMT1 4654
P8FMT2 4655
QAB    5117
QACA   5130
QACHAR 5770
QACKLF 5734
QACNTR 5717
QAD    5141
QAE    5163
QAEXIT 5750
QAF    5631
QAG    5175
QAH    5227
QAI    5244
QAINIT 5113
QAJ    5251
QAK    5420
QAKRB  6036
QAL    5310
QALEGL 5710
QAM    5214
QAN    5336
QAO    5344
QAP    5355
QAQ    5376
QAREAD 4026
QARFSH 5166
QAT    5403
QATLS  6046
QATPE  5757
QATSF  6041
QATY   5651
QAU    5621
QAV    5431
QAW    5625
QAWRIT 4123
QAX    5537
QAY    5525
QAZ    5414
QPAR   4167
RDEAGN 6460
RDEBN  4625
RDEDUN 6431
RDEFU  4622
RDEKEY 6070
RDELNG 4624
RDELOC 4623
RDENUM 4626
RDLTAN 6066
READ   6057
READPT 4651
SBM    0414
-
```

```
SDATAF  0635
SETUP   4210
SIZE    6132
SKIP    6005
SKIP2   6006
SWD     0457
SWITCH  6016
TABLE1  7012
TABLE2  7112
TASK    6001
TEMP    6133
TEMP0   6545
TEMP1   6643
TEMP2   6671
TXTINT  3500
TXTPAR  7220
TXTRDE  7274
TXTWRI  7474
UNITL1  6252
UNPAR   4173
UNREAD  4032
UNWRIT  4127
WAITL   6175
WCOUNT  6003
WDLTAN  6037
WRIBN   4633
WRIDUN  6611
WRIEXI  4635
WRIFU   4630
WRIKEY  6041
WRILAS  6553
WRILNG  4632
WRILOC  4631
WRILPB  6571
WRINUM  4634
WRIOFF  6575
WRIOK   6225
WRITE   6025
WRITPT  4652
-
```

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