

PS/8 NEWSLETTER

Submissions should be sent to:

J. C. Alderman
 Georgia Tech Research Reactor
 900 Atlantic Drive, N.W.
 Atlanta, Georgia 30318

RECENT CONTRIBUTIONS:

MAGTAPE HANDLER FOR PS/8 (7 TRACK, TC-58)

by J. Alderman
 Georgia Tech Research Reactor
 900 Atlantic Drive, N.W.
 Atlanta, Georgia 30318

The program for the Handler is given along with a flow chart. The Magtape must be formatted and two FOCAL formatter programs are also given.

```

/MTA HANDLER FOR PS/8 MONITOR
/DIRECTORY VERSION, IN ONE PAGE!
/
/EACH "BLOCK" ON TAPE CONSISTS OF 3 RECORDS.
/   1. A SINGLE WORD RECORD CONTAINING THE
/     BLOCK NUMBER.
/
/   2. 256 or 128 WORDS OF DATA.
/
/   3. AN END-OF-FILE RECORD (EOF=17)
/
/THERE IS A TAPE FORMATTER PROGRAM (WRITTEN IN
/FOCAL !!) TO
/FORMLT A TAPE WITH THE REQUIRED BLOCK STRUCTURE.
/
/NOTE: BECAUSE OF THE WAY THE FORMATTED TAPE IS
/CENERATED,
/EACH "BLOCK" (GROUP OF 3 RECORDS AS DESCRIBED
/ABOVE)
/IS ONLY 3.75 INCHES LONG.  THUS A 200' REEL OF
/TAPE
/WILL CONTAIN 640 BLOCKS.
/
/ASSEMBLY PARAMETERS
/
EOF= 0100
FORWAR= 0060
REVERS= 0070
REWIND= 0010
WRITE= 0040
TEST= 3766
READ= 0020
/
/MAGTAPE IOT'S
/
MTSF=6701
MTCM=6714
MTCR=6711
MTTR=6721
MTAF=6712
MTRC=6724
MTLC=6716
MTRS=6706
MTGO=6722
MCAF=6732
*7200
/
/ENTRY
/
    
```

```

MTA, 0 /SINGLE ENTRY ONLY!
RDF
TAD CDFCIF
DCA ERROR
RIF /WHAT IS THE FIELD WE'RE IN?
TAD KCDF
DCA MFIELD+1
TAD I MTA
DCA MTFUNC
ISZ MCA
TAD I MTA
DCA MTADDR
ISZ MTA
TAD I MTA
DCA BLOCK
ISZ MTA
JMS MFIELD
MCAF /POWER CLEAR TAPE CONTROL.

TAD MTFUNC
AND P3700 /SAVE PAGECOUNT.
CLL RTL
RTL
RTL /BLOCKS IN ACC, EVEN/ODD IN
/LINK.
SZL /SKIP IF EVEN # PAGES
IAC
CIA
DCA BLCNTR /A WELL-ROUNDED COUNT!
SZL /SKIP IF EVEN # PAGES.
TAD BLCNTR
DCA HALFBLOCK /WATCH THIS, IT IS SUPER-
/TRICKY!

JMP NEXTBL
SEARCH, SMA /FIND THE BLOCK.
JMP NEXTBLOCK-1
TAD (-1
DCA BCNTR
STA CLL RTL /-3
TAD BLOCK
SNL CLA /SKIP IF BLOCK< 3
JMP SPACE
DCA BCNTR
TAD (REWIND-READ
JMP NEXTBLOCK
SPACE, TAL (REVERSE-READ
JMS MOVE
P200, 200
PREAD, READ
MTWC, 7752
EOF
ISZ BCNTR /SKIP IF FINISHED SPACING
JMP SPACE
CLA CLL
NEXTBL, JMS MOVE
1
MTCA, 7752
BCNTR, 0 /COUNTS BLOCK-SPACING, ALSO 0.
TEST
JMP NEXTBLOCK /BLOCK RECORD INCORRECT.
MTLOOP, CDF
TAD I MTCA
JMS MFIELD
CIA CLL
TAD BLOCK
SZA /SKIP IF BLOCK FOUND.
JMP SEARCH
ISZ HALFBLOCK /SKIP IF LASTBLOCK AND #
/PAGES IS OD
TAD P200 /FULL BLOCK.
TAD P200
DCA MTADDR-1
    
```

```

TAD MTFUNC /GET FUNCTIONWORD AGAIN.
SPA CLA /SKIP IF READ IS FUNCTION
TAD PREAD
JMS MOVE
MTCOMM, 400
MTADDR, 0 /ADDRESS OF DATA.
MTFUNC, 0 /FUNCTIONWORD.
TEST
JMP ERROR /TRANSFER BOMBED.
TAD MTADDR
TAD MTADDR-1 /UPDATE DATA ADDRESS.
DCA MTADDR
ISZ BLOCK /STEP TO NEXT BLOCK IN FILE.
ISZ BLCNTR /SKIP WHEN TRANSFER COMPLETE.
JMP NEXTBLOCK
ISZ MTA /INDICATE NO ERROR.
ERROR, CDF CIF
JMP I MTA

/MOVE. CALLED BY:
/ JMS MOVE /ACC CONTAINS FUNCTION IN BITS
/ /6-8.
/ WORDCOUNT /NEGATED INTERNALLY.
/ CURRENT ADDRESS /-1 SUBTRACTED INTERNALLY
/ FIELD
/ STATUS BIT PATTERN
/ RETURN IF MASKED STATUS #0.
/ RETURN IF MASKED STATUS =0.
MOVE, 0
TAD UPD
MILC
MTRS
TAD M400
SNA CLA /SKIP IF TRANSPORT NOT
/SETTLING.

JMP -3
TAD I MOVE /WORDCOUNT
CIA
KCDF, CDF
DCA I MTWC
JMS MFIELD
STA CLL
TAD I MOVE /ADDRESS
CDE
DCA I MTCA
JMS MFIELD
TAD I MOVE /FIELD
ISZ MOVE
MTGO
MITR
JMP -1
MTRS
AND I MOVE /MASK
ISZ MOVE
SNA CLA /SKIP IF STATUS!MASK#0
ISZ MOVE
JMP I MOVE

MFIELD, 0
CDF
ISZ MOVE /SAVE 1 LOCATION IN MOVE!
JMP I MFIELD
P3700, 3700 /CONSTANT.
BLOCK, 0 /CONTAINS DESIRED BLOCK.
CDFCIF, CDF CIF /CONSTANT.
UPD, 421 /UNIT 0, ODD PARITY, 556
/BIPIREAD COMMAND.
M400, -400 /CONSTANT.
HALFBL, 0 /DECIDES ABOUT FINAL BLOCK
/LENGTH.
BLCNTR, 0 /COUNTS BLOCKS.

```

MAGTAPE FORMATTER FOR FOCAL UIOF

C-UIOF 7AUG 69

```

01.01 C GETS PAKAMETERS FOR TAPE
01.10 T !"LENGTH OF TAPE IN FEET
01.20 A LE;S LE=(LE*12/3.75)-1;I (LE-4095)1.3;S
LE=4095
01.30 D 11;S I=0;D 15;D 14;D 15;S I=1;D 14
01.40 S Z=FDXS(4096,4095)+FDXS(4097,7)+FDXS(4098,0)
+FDXS(4099,0)
01.50 S Z=FDXS(4100,0)+FDXS(4101,0)
01.60 S Z=FDXS(4102,4103-LE)+FDXS(4074,3840)+
FDXS(4075,4095)
01.70 D 14.2;D 13;D 15;F I=2,LE;D 14;D 15
01.80 D 11;T %4,LE," BLOCKS WRITTEN",!;Q

11.01 C REWINDS THE TAPE.
11.10 S Z=FADC(3546)+FADC(3534,265)+FADC(3538)
11.20 D 13

13.01 IF (-FADC(3521))13.01,13.01;RR

14.01 C WRITES A ONE-WORD BLOCK NUMBER RECORD.
14.10 S Z=FDXS(4096,1)+FDXS(4074,4095)+FDXS
(4075,4095)
14.20 S Z=FADC(3534,289)+FADC(3538,8)
14.30 D 13

15.01 C WRITES AN END-OF-FILE.
15.10 S Z=FADC(3534,297)+FADC(3538)
15.20 D 13
*

```

MAGTAPE FORMATTER FOR FOCAL S

C-FOCAL S 1/71

```

01.01 C GETS PARAMETERS FOR TAPE
01.10 S BASE=4096+2048;L 1,2048
01.18 T !"LENGTH OF TAPE IN FEET
01.20 A LE;S LE=(LE*2)-1;I (LE-4095)1.3;S LE-4095
01.30 D 11;S I=0;D 15;D 14;D 15;S I=1;D 14
01.40 S Z=FX(1,BASE,-1)+FX(1,BA+1,7)+FX(1,BA+2,0)+
FX(1,BA+3,0)
01.50 S Z=FX(1,BA+4,-1)+FX(1,BA+5,0)+FX(1,BA+6,
7-LE)
01.60 S Z=FX(1,4074,3840)+FX(1,4075,BA-4096-1)
01.70 D 14.2;D 13;D 15;F I=2,LE;D 14;D 15
01.80 D 11;T %4,LE," BLOCKS WRITTEN",!;Q

11.01 C REWINDS THE TAPE.
11.05 I (0*FX(2,3526)+FX(3,FX(2,3526),FX(10,1000))
),11.1;R
11.10 S Z=FX(2,3534,265)+FX(2,3538)
11.20 D 13

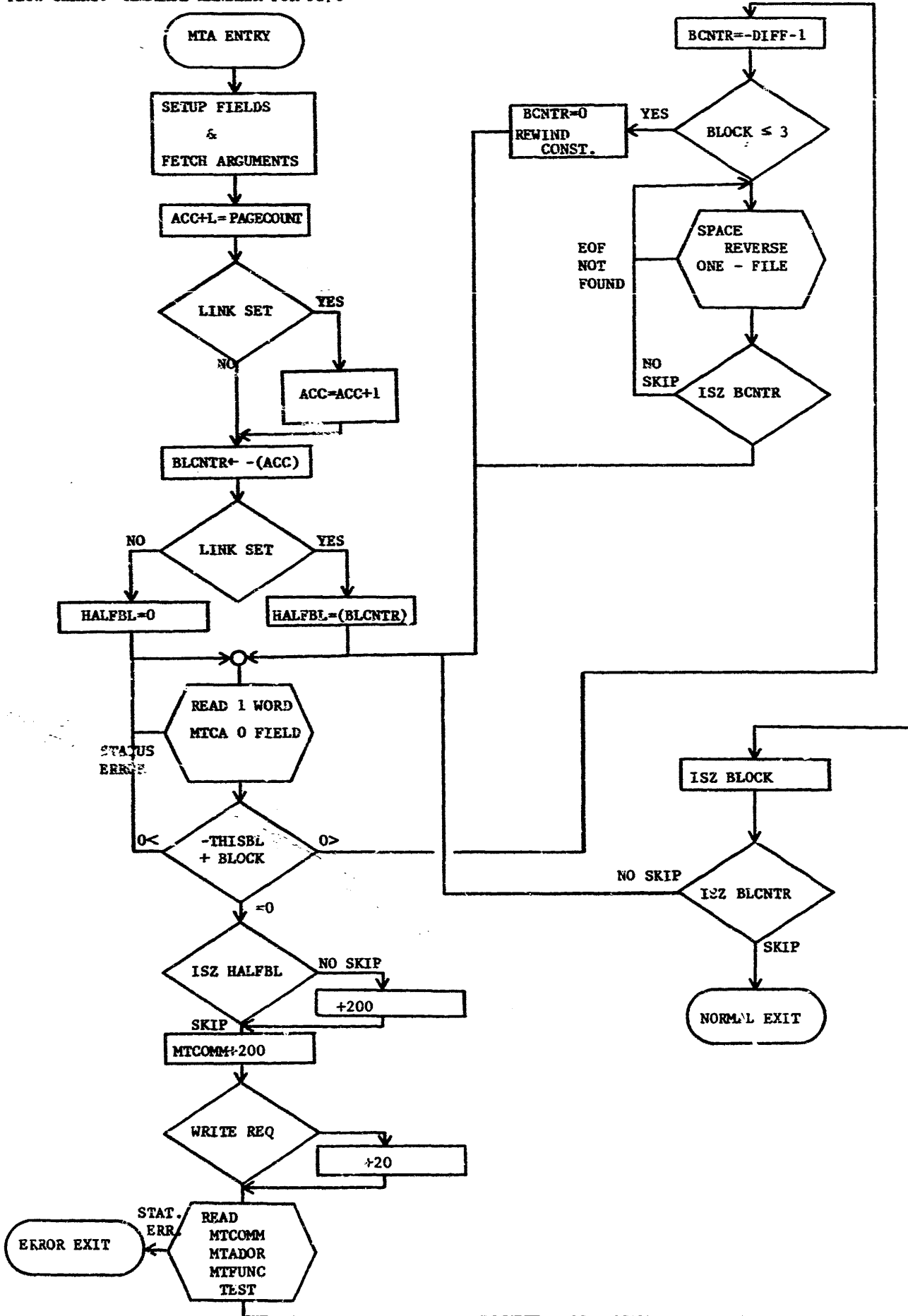
12.10 I (FX(3,FX(2,3526),1)+FX(3,FX(2,3526),1)
-2)13.1;R

14.01 C WRITES A ONE-WORD BLOCK NUMBER RECORD.
14.10 I (FX(1,BA,1)+FX(1,4074,-1)+FX(1,4075,BA
-4096-1))
14.20 I (FX(2,3534,289)+FX(2,3538,8))
14.30 D 13

15.01 C WRITES AN END-OF-FILE.
15.10 I (FX(2,3534,297)+FX(2,3538))
15.20 D 13
*

```

FLOW CHART: MAGTAPE HANDLER FOR PS/8



SERIAL HIGH-SPEED DATA-LINK FOR DP12 OR PT08

by J. Alderman
Georgia Tech Research Reactor
900 Atlantic Drive, N.W.
Atlanta, Georgia 30318

This Handler can be used in place of the CDR
Handler. The listing is given below.

/SERIAL HIGH-SPEED DATA LINK
/EACH END MUST ECHO AS RECEIVING.

IFNDEF INDEV < INDEV=6400 >
IFNDEF OUTDEV < OUTDEV=6410 >
INSE=INDEV+1;INCC=INDEV+2;INRS=INDEV+4;
INRB=INDEV+6
OUTSF=OUTDEV+1;OUTCF=OUTDEV+2;
OUTLS=OUTDEV+6
FIELD 0
*5600 /REPLACING CDR: HANDLER.
PTP, 0
CLA CLL
TAD I PTP /FUNCTION
SMA CLA /SKIP IF SENDING.
TAD (JMP PTRLP
DCA PTPCNT /EITHER A JMP, OR 0.
JMS PSETUP /DO COMMON CRAP
PTFLP, KSF
JMP PTPCNT /KEYBOARD FLAG OFF
KRS
AND (177
TAD PTM3
SZA CLA /IS THERE A ^C IN THE TTY BUFFER?
JMP PTPCNT /NO
PTPCIF, CDF CIF 0
JMP I PT7600
PTPCNT, JMP PTRLP /0 IF SENDING.
TAD I PTPCA
JMS PTPPCH /FIRST CHAR IN LOW ORDER 8
/BITS OF WORD
DCA PTR
ISZ PTPCA
PT7700, 7700 /SMA CLA, BUT JUST CLEARS ACC.
TAD I PTPCA
JMS PTPPCH /SECOND CHAR IN LOW ORDEK 8
/BITS OF WORD
CLL RTR
RTR
TAD PTR
RTR
RTR /THIRD CHARACTER NOW IN AC
JMS PTPPCH
PTPEND, ISZ PTPCA
PT70, 70 /JUST IN CASE WERE PUNCHING
/PG 7600 KEEP THIS
JMP PTPISZ
PSETUP, 0
RDF /GET FIELD OF CALLING PROGRAM
TAD PTPCIF
DCA PTPXIT /SET UP RETURN SEQUENCE
TAD I PTP
AND PT70
TAD PCDF
DCA PTPCDF
TAD I PTP /GET FUNCTION WORD
ISZ PTP
AND PT7700
CMA /SET UP -(WORD COUNT)/2-1
DCA PTPWC
TAD I PTP /SET UP STARTING ADDRESS
ISZ PTP
DCA PTPCA

PTPCDF, 0 /SET DATA FIELD TO ACCESS
/BUFFER
PTPEOF=PTPCDF
PT7600, 7600
PTPISZ, ISZ PTPWC
JMP I PSETUP /LOOP FOR BUFFER SIZE
/(128 WORDS)
PTPKIN, TAD PIPEOF
SZA CLA /DID WE RUN OUT OF TAPE?
ISZ PTP
ISZ PTP
PTPXIT, HLT /EXIT CDF GOES HERE
JMP I PTP
PTPPCH, 0
OUTLS
DCA PTMP
INCC /CLEAR OLD ECHO CHARACTER.
TAD PTMP
AND (377
CIA
DCA PTMP1
INSF
JMP -1
INRB
TAD PTMP1
SZA CLA /SKIP IF SAME CHARACTER
/ECHOED.
JMP PTPERR
TAD PTMP
AND PT7400
JMP I PTPPCH
PTPCA, 0
PTR, 0
PTRLP, JMS PTRGCH /READ FIRST CHARACTER OF 3
DCA I PTPCA
JMS PTRGCH
DCA PTPPCH
JMS PTRGCH
RTL
RTL
DCA PTR
TAD PTR
AND PT7400
TAD I PTPCA
DCA I PTPCA /HIGH ORDER 4 BITS INTO WORD 1
TAD PTR /GET THE CHAR FROM THE PTR
/BUFFER
RTL
RTL
AND PT7400
TAD PTPPCH
ISZ PTPCA
PT7400, 7400
DCA I PTPCA /LOW ORDER 4 BITS INTO WORD 2
JMP PTPEND
PTRGCH, 0
INSF
JMP PTRTST /CHECK EOF.
INRB
OUTLS /PRODUCE ECHO.
JMP I PTRGCH /RETURN WITH CHARACTER
PTRTST, KRS
TAD (-232 /-^Z
SZA CLA /SKIP IF EOF.
JMP PTRGCH+1 /LOOK AGAIN.
KRS /PICKUP ^Z.
JMP I PTRGCH
PTPERR, CLA CLL CML RAR /SIGNAL A "PERMANENT I/O
/ERROR" ON TE
JMP PTPXIT-1
PCDF, CDF 0
PTPWC, 0

```
PTPM3, -3
PTMP, 0
PTMP1, 0

*7576
0220 /READ & WRITE, NON-DIRECTORY
/DEVICE.

FIELD 1
*1004 /SPECIFIC TO PS-8 6-NOV-70
/RELEASE!

3*200+PTP-5600 /REPLACES CDR IN BLOCK 21
*602
7224 /LINK INSTEAD OF CDR
$
```

LOW SPEED PTR: AND PTP: USING THE TELETYPE

by J. Alderman
 Georgia Tech Research Reactor
 900 Atlantic Drive, N.W.
 Atlanta, Georgia 30318

This Handler replaces the PTR/PTP Handler in
 CONFIG for those people without the high-speed
 reader/punch.

/PTR: & PTP: USING TELETYPE
 /FOR PEOPLE WHO HAVE NO HIGH SPEED PAPER TAPE.

```
FIELD 0
*6400

PTP, 0
CLA CLL CML /SET LINK ON TO INDICATE
/FUNCH

JMS PSETUP /DO COMMON CRAP
PTPLP, KSF
JMP PTPCNT /KEYBOARD FLAG OFF
KRS
AND PTP177
TAD PTPM3
SZA CLA /IS THERE A^C IN THE TTY BUFFER?
JMP PTPCNT /NO

PTPCIF, CDF CIF 0
JMP I PT7600
PTPCNT, TAD I PTPCA
JMS PTPPCH /FIRST CHAR IN LOW ORDER 8
/5BITS OF WORD

ICA PTR
ISZ PTPCA
PT7700, 7700
TAD I PTPCA
JMS PTPPCH /SECOND CHAR IN LOW ORDER 8
/5BITS OF WORD

CLL RTR
RTR
TAD PTR
RTR
RTR /THIRD CHARACTER NOW IN AC
JMS PTPPCH

PTPEND, ISZ PTPCA
PT70, 70 /JUST IN CASE WERE PUNCHING PG
/7600 KEEP THIS

JMP PTPISZ
PSETUP, 0
RDF /GET FIELD OF CALLING PROGRAM
TAD PTPCIF
DCA PTPXIT /SET UP RETURN SEQUENCE
TAD I PTP
AND PT70
TAD PCDF
DCA PTPCDF
RAR /GET LINK(1=PTP,0=PTR)
TAD I PTP /GET FUNCTION WORD
```

```
ISZ PTP
SPA /CHECK CORRECT MODE
JMP PTPERR /SIGNAL "UNRECOVERABLE DEVICE
/ERROR"

AND PT7700
CMA /SET UP -(WORD COUNT)/2-1
DCA PTPWC
TAD I PTP /SET UP STARTING ADDRESS
ISZ PTP
DCA PTPCA
TAD I PTP

PTPCDF, 0 /SET DATA FIELD TO ACCESS
/BUFFER

PTPEOF=PTPCDF
SNA CLA
SZL
JMP PTPISZ
TAD PTP336 /INPUT INITIALIZATION - TYPE
/"P"

TLS
KSF
JMP -1

PT7600, 7600
PTPISZ, ISZ PTPWC
JMP I PSETUP /LOOP FOR BUFFER SIZE (128
/WORDS)

PTPRIN, TAD PTPEOF
SZA CLA /DID WE RUN OUT OF TAPE?
ISZ PTP
ISZ PTP

PTPXIT, HLT /EXIT CDF GOES HERE
JMP I PTP

PTPPCH, 0
TLS
TSF /NOTICE THE GLORIOUS LACK OF
/OVERLAP

JMP -1
AND PT7400
JMP I PTPPCH

PTPCA, 0
PTR, 0 /CORRECT ENTRY IN MAIN
/ASSEMBLY

CLA CLL
TAD PTR
DCA PTP
JMS PSETUP /SET UP ADDRESS, COUNT, FIELDS
PTRLP, JMS PTRGCH /READ FIRST CHARACTER OF 3
DCA I PTPCA
JMS PTRGCH
DCA PTPPCH
JMS PTRGCH
RTL
RTL
DCA PTR
TAD PTR
AND PT7400
TAD I PTPCA
DCA I PTPCA /HIGH ORDER 4 BITS INTO WORD 1
TAD PTR /GET THE CHAR FROM THE PTR
/BUFFER

RTL
RTL
AND PT7400
TAD PTPPCH
ISZ PTPCA
PT7400, 7400
DCA I PTPCA /LOW ORDER 4 BITS INTO WORD 2
JMP PTPEND

PTRGCH, 0
TAD PTPEOF
SNA CLA
JMP I PTRGCH
CLA CLL CMA RTL /-3
```

```

DCA PTFEOF
DCA PTR
PTIME, ISZ PTR /TIMEOUT LOOP FOR LOW SPEED
                /READER
JMP PTP232
ISZ PTFEOF /TIMES OUT IN 132 MS(PDP 8/E)
                /OR 205 MS
JMP PTP232
TAD PTP232
JMP I PTRGCH /OVERFLOWED - PTFEOF IS NOW 0,
                /RETURN
PTF232, 232 /WASTE SOME TIME
PTP177, 177
KSF
JMP PTIME /READER NOT READY - CONTINUE
                /TIMEOUT
KRB
JMP I PTRGCH /RETURN WITH CHARACTER
PTPERR, CLA CLL CML RAR /SIGNAL A "PERMANENT I/O
                /ERROR" ON TE
JMP PTPXIT-2
PCDF, CDF 0
PTP336, 336
PTPWC, 0
PTPM3, -3
FIELD 1
*1003 /SPECIFIC TO PS-8 6-NOV-70
                /RELEASE!
1*200+PTR-6*00
$
    
```

PDP-12 DECTAPE CONVERT PROGRAM

by J. Alderman
 Georgia Tech Research Reactor
 900 Atlantic Drive, N.W.
 Atlanta, Georgia 30318

For PDP-12 users a listing of the changes needed to convert DECTape by changing PRT12-F to make it JATC12-F. (PRT12-F doesn't do this for PS/8 or DM LINTapes) is given below.

```

0365 7770 M7, -7
0366 0400 K400, 400
0367 2653 MODOP4, ADD P8FMT2 /PDP-12 to PDP-8
0370 4630 STC WRILNG /READ 201 WORDS
0371 2624 ADD P8ENUM /WRITE 201 WORD
0372 4632 STC WRINUM
0373 2652 ADD P8FMT1 /201 WORDS/BLOCK
0374 1040 STA
0375 2747 ADDINC!2000
0376 1020 LDA I
0377 7761 -16
0400 1040 STA
0401 2066 RDLTAN!2000
0402 1040 STA
0403 2037 WDLTAN!2000
0404 0011 CLR
0405 0017 COM
0406 1040 STA
0407 2070 RDEKEY!2000 /7777=READ FROM
                /LINCT
APE
0410 1020 LDA I
0411 7575 -202
0412 1040 STA
0413 2041 WRIKEY!2000
0414 6616 JMP GO
    
```

/
 /
 /2/5/71 FOR 201 BLOCK LINCTAPEZ
 /MODOP4 CHANGED.

Use of JATC12-F with PS/8 LTA:

```

LO JATC12-F,
2000 BLOCKS
B PS/8 LTA
O FROM UNIT 0
O 1st BLOCK =0
A PDP-8 DTA
1 UNIT 1
O 1st BLOCK =0
O NO CHECK
702 BLOCKS
B
O
2000
A } SAME
1
2000
O
2000 BLOCKS
A PDP-3 PS/8 DTA
1 UNIT 1
O 1st BLOCK =0
B PS/8 LTA
O UNIT 0
O 1st BLOCK =0
1 CHECK PARITY
702
A
1
2000
B } SAME
O
2000
1
    
```

With this issue we are circulating the first printing of the PS/8 Newsletter. In the future these newsletters will be sent to a special mailing list of PS/8 users only. This PS/8 list is now in the process of being compiled. Anyone interested in being added to this list should contact the DECUS office.

DECUSCOPE HAS BEEN PUBLISHED SINCE APRIL 1962 AND IS THE OFFICIAL NEWSLETTER FOR DIGITAL EQUIPMENT COMPUTER USERS SOCIETY.

IT IS PUBLISHED PERIODICALLY AT THE DECUS OFFICE, DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS 01754.

TELEPHONE: Area Code 617, 897-5111, Ext. 2414

EDITOR: ANGELA J. COSSETTE, DECUS

CIRCULATION: 10,500 PER ISSUE