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DECUS NO.	8-574
TITLE	TD8E SYSTEM HANDLER FOR 8K PS/8
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DATE	August 8, 1972
SOURCE LANGUAGE	PAL-8

TD8E SYSTEM HANDLER FOR 8K PS8

by

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These programs allow someone having a PDP8 computer, a TD8E controller and only 8K of core, to run PS8. The package consists of three programs: a RIM loader switched load-and-go bootstrap system handler for PS8, a program to change the system slightly to protect the system handler, and a listing of a single drive DECtape copy routine.

The load-and-go bootstrap assumes a RIM loader for the high speed reader which begins at loc Ø7756 is used to load the bootstrap and that the bootstrap is loaded on the high speed reader. However, the enclosed listing of the handler pages could be used to generate a low speed reader version. The MONITOR ASsign and DEassign commands should not be used for this version of PS8 since the handler uses locations 17741 to 17757, the ASsign region; the system protection program deletes these commands from the MONITOR. The handler remains vulnerable to ODT.

Generally three steps should be followed in starting PS8. First, a copy should be made of the PS8 system DECtape; all subsequent operations should then use the copy. Second, the copy of the system tape should be loaded on the drive and the bootstrap loaded starting the system. Third, the system protection program should be run. The computer should then be halted and the system tape unloaded and preserved as a local master tape. Copies of the local master tape should be used in normal operation of PS8. Starting copies of the local master tape or restarting the system after destruction of the handler requires only switching in the bootstrap.

I. COPYING DECTAPES WITH ONLY ONE TAPE DRIVE

Among the listings at the back of this writeup is a listing for a tape copy program. Assemble a copy of this program. Then assemble a copy of the standard two page TD8E read/write routine defining AFIELD=1 and MFIELD =1Ø but otherwise unchanged. Load both programs with the BIN loader. Then get the PS8 system tape (DEC-P8-MSUB-UC) and a second tape in standard DEC tape format.

1. Load the PS8 tape on the drive with UNIT =Ø and the write switch at WRITE LOCK. Make sure enough tape (4 feet) is on the right reel so that the tape is not in the endzone. Set the mode switch to REMOTE.

2. Set the Switch Register to ØØ11 (base 8) and press EXTD ADDR LOAD.

3. Set the Switch Register to 7ØØØ (8) and press ADDR LOAD then START (CLEAR → CONT).

4. Wait until the run light goes off and the tape stops for several seconds.

5. Dismount the PS8 tape.

6. Mount the new tape keeping the UNIT =Ø. Set the switches on the drive to WRITE ENABLE and REMOTE. Be sure several feet of tape are on the right reel.

7. Press CONT on the computer.

8. When the computer and tape drive halt, move the write switch to WRITE LOCK and remove the tape. (One round is complete and 58 (10) blocks are copied.)

9. Mount the PS8 tape making sure the write switch is on WRITE LOCK. Set the mode to REMOTE and press CONT.

10. Repeat steps 4-8. (Round 2 is then complete. At this point 116 (10) blocks of 128 words have now been transferred.)

11. Repeat steps 9 and 10 ten more times to transfer a total of more than the 618 (10) blocks saved on the PS8 tape.

Note: If the bell rings on the teletype at any time during the copying procedure, stop immediately! Then reload the two copy programs and start again at step 1.

II. THE BOOTSTRAP SYSTEM HANDLER

If you do not have an high speed reader, you will have to use the listing at the end of the writeup to generate your own bootstrap loader. The paper tape consists of leader code followed by a short routine in RIM code followed by trailer code followed by machine code for most of the top page of field 1 followed by machine code for the top page of field Ø. The machine code is stored in 6 bit form with the first word of each pair being bits Ø - 5 and the second word being bits 6 - 11 of the twelve bit word.

OPERATION:

1. Put the bootstrap tape in the HSR positioned with the leader code over the read head.

2. Turn on the HSR.

3. Mount the copy of the PS8 system DECtape on the drive with UNIT =Ø, WRITE ENABLE, REMOTE. (Make sure 4 or more feet of tape are on the right reel.)

4. Start the RIM loader for the HSR(SA=Ø7756). If you have the RIM loader hard wired, then just press the RIM switch.

5. When the system responds with "." on the TTY, PS8 is in operation.

FEATURES:

The bootstrap preserves all of core except the top page of each field when it is restarted. Thus, if a user program destroys the handler, the system can be bootstrapped and the user program examined with ODT.

The system handler assumes only fields Ø and 1 are in use and will not support calls from other fields. Unit DTA1 destroys the handler and should be deleted with the protection program. Use of the ODT breakpoint feature should be followed by restoration of the handler in 17741 - 17757 before a tape read; the listing at the end of this writeup shows values which should be restored by ODT. The system handler only reads and writes 128 word records.

The system handler does no checksumming, thus making it slightly susceptible to longitudinal READ errors. Practically this should not be a problem. Lack of checksums also results in some incompatibility with the standard TD8E two page routine. In practice this problem can be overcome by rewriting each block on the tape with the two page handler. Using the two page handler to read one block, the routine will read 3 times and take the error exit with the data actually saved in the buffer. Rewriting the one block (128 words) will then save the block on tape with a checksum. Alternatively, DEC-8E-UZTA-D can be changed by removing the 5341 at loc 7265 at line 178 of the listing. Storing Ø or 7ØØØ in that location in the two page routine in core will allow the routine to ignore checksum errors.

III. SYSTEM PROTECTION PROGRAM

This program removes the ASsign and DEassign commands from the MONITOR (subsequent attempts to use AS or DE result in "?") and deletes various device names from USR. The protection program checks to make sure that the correct system programs are being changed. If the locations being changed are not found, the protection program quits. DTA1 is automatically deleted from USR since the system handler only works for tape unit Ø. Deletion of other devices depends on the user's answers to queries from the program. A listing of the protection program is shown at the back of this writeup.

OPERATION:

1. When the system is loaded and responds with ".", type R ABSLDR(CR) where (CR)=RETURN key.

2. When the system responds with "*", type PTR:=12ØØ(89)/G$ where $=ALT MODE key.

3. When the system responds with "↑", put the System Protection Program in the HSR with leader over the read head and the HSR switched on. Then type a character on the TTY, e.g. "R".

4. The program should then start, typing "HELLO!"

5. Answer the questions on the TTY by typing a single character: "Y" for YES or else any other character for NO. Feel free to answer N (NO) if you are not sure the devices saved are OK; the program will start over again asking about device deletion.

6. When the program finishes, it returns control to the MONITOR which responds with a "." and awaits your command.

EXAMPLE:

Shown below is a sample run with the System Protection Program for someone with only an high speed reader and punch and one tape drive. User responses are underlined.
In the example, the answer to "ARE YOU SURE THIS IS OK?" is "Y" indicating that there is no need to start device deletion over again.

```
.R ABSLDR
*PTR:=12200(89)/G$↑-

HELLO!

PROGRAM TO PROTECT TD8E SYSTEM HANDLER
DO YOU WANT TO RUN THIS PROGRAM(Y=YES;ANY OTHER CHAR=NO)?:Y
AS AND DE REMOVED FROM MONITOR.


USR DEVICES BEING DELETED FROM PS8.
DTA0,SYS,DSK,TTY,PTP,PTR SAVED AUTOMATICALLY.
DTA1 DELETED AUTOMATICALLY.

ANSWER THE FOLLOWING QUESTIONS(Y=YES);

WANT LINE PRINTER LPT?N
DO YOU WANT TAPE DTA2?N
DO YOU WANT TAPE DTA3?N
DO YOU WANT TAPE DTA4?N
DO YOU WANT TAPE DTA5?N
DO YOU WANT TAPE DTA6?N
DO YOU WANT TAPE DTA7?N
DO YOU WANT CARD READER CDR?N


YOU HAVE SPECIFIED SAVING ONLY:
SYS,DSK,TTY,DTA0,PTP,PTR,


ARE YOU SURE THIS IS OK(Y=YES)???:Y

****DEVICES CHANGED***

EXIT TO MONITOR

.
```

```
                / DECTAPE COPY PROGRAM. 26-6-72.
                / THE ROUTINE AND THIS COPY PROGRAM ARE ALL IN FIELD 1.
                /ASSEMBLE TD8E ROUTINE DEC-8E-UZTA-PA STARTING AT 17200
                /CHANGE TO AFIELD=1 AND MFIELD=10; OTHER PARAMETERS UNCHANGE

                FIELD 1

                *7000

7000  7300  START,  CLA CLL
7001  1233          TAD ARG1
7002  1244          TAD K4400
7003  0246          AND MASK7707
7004  3233          DCA ARG1
7005  1235          TAD ARG3          /IF READ ADD 33 BLOCKS
7006  7430          SZL               /LINK=0 ==> WRITE
                                      /OVERFLOW FROM ARG1
7007  5213          JMP .+4           /FOR READING
7010  1241          TAD M37           /WRITING RESET TO BEGIN
7011  3235          DCA ARG3
7012  5215          JMP .+3
7013  1242          TAD K33           /READ
7014  3235          DCA ARG3
7015  4230          JMS RDWT          /DO 37 PAGES FIRST
7016  7300          CLA CLL
7017  1243          TAD K37
7020  1235          TAD ARG3          /NEXT BLOCK
7021  3235          DCA ARG3
7022  1233          TAD ARG1
7023  1245          TAD K7410
7024  3233          DCA ARG1
7025  4230          JMS RDWT          /DO THE NEXT 33 PAGES
7026  7402          HLT               /NEXT OPERATION INITIATED
7027  5200          JMP START         /BY PRESSING CONT. KEY


7030  0000  RDWT,   0
7031  6213          6213              /CDI 1
7032  4640          JMS I ENTRY       /ENTRY TO DO READ WRITE
7033  7303  ARG1,   7303              /AFTER MASKING READ FIRST
7034  0200  ARG2,   200               /ALWAYS START AT LOC.200
7035  7745  ARG3,   -33
7036  5247  ERROR,  JMP BELL
7037  5630          JMP I RDWT        /CORRECT RETURN
7040  7200  ENTRY,  7200


7041  7741  M37,    -37
7042  0033  K33,    33
7043  0037  K37,    37
7044  4400  K4400,  4400
7045  7410  K7410,  7410
7046  7707  MASK7707,       7707     /BACK TO FIELD 0
```

```
7047  7300  BELL,   CLA CLL
7050  1257           TAD K207        /CODE FOR BELL
7051  6041           TSF
7052  5251           JMP .-1
7053  6046           TLS
7054  7402           HLT
7055  7402           HLT
7056  5247           JMP BELL

7057  0207  K207,    207
                $$
```

```
                /  PS8 SKELETAL HANDLER FIELD 0
                /DEPARTMENT OF PSYCHIATRY, UNIV OF AUCKLAND, NEW ZEALAND 8/7

                /LOAD AND GO VERSION EXPECTS RIM LOADER BEGINNING AT 07756 A
                /A HIGH SPEED READER IN THE SYSTEM FOR LOAD AND GO TAPE!

                /VARIABLE DESIGNATIONS IN THIS PROGRAM AGREE WITH STANDARD W
                /WRITEUP GENERALLY.

                FIELD 0
                *7600
7600  4207      PS0,      4207
7601  5000      PS1,      5000
7602  0000      PS2,      0
7603  0033      PS3,      33
7604  7740      PS4,      7740
7605  6213      PS5,      6213
7606  5267      PS6,      5267
7607  0000      SUB,      0
7610  7305                CLA CLL IAC RAL
7611  6214                RDF
7612  1354      C1000,    TAD FLD
7613  3350                DCA EXIT
7614  1607      C1400,    TAD I SUB /ARG 1
7615  7004                RAL
7616  0322                AND C7600
7617  3377                DCA BUFFST
7620  1607                TAD I SUB
7621  0355                AND C70
7622  1354                TAD FLD
7623  3236                DCA WORDS
7624  7026                CML RTL
7625  3202                DCA PS2
7626  2207                ISZ SUB
7627  1607                TAD I SUB /ARG 2
7630  3376                DCA BUFF
7631  2207                ISZ SUB
7632  1607                TAD I SUB /ARG 3
7633  1347                TAD PS47
7634  7004                RAL
7635  3363                DCA BLOCK
7636  0000      WORDS,    0
7637  2207                ISZ SUB
7640  2207                ISZ SUB
7641  7232      GO,       CLA CML RTR
7642  1212                TAD C1000
7643  6774                SDLC
7644  4265                JMS RDNUAD
7645  4265                JMS RDNUAD
7646  6212      C6212,    6212
7647  5341                JMP C41
7650  6777      CONT,     SDRD
7651  7430                SZL
7652  1355                TAD C70
7653  7040                CMA
```

```
7654  1363          TAD BLOCK
7655  7040          CMA
7656  7450          SNA
7657  5272          JMP FOUND
7660  7670          SZL SNA CLA
7661  5246          JMP C6212
7662  6776  ENDZ,   SDRC
7663  7106          CLL RTL
7664  5241          JMP GO
7665  0000  RDNUAD, 0
7666  6773          SDSW
7667  5266          JMP .-1
7670  6777          SDRD
7671  5665          JMP I RDNUAD
7672  7630  FOUND,  SZL CLA
7673  5241          JMP GO
7674  6771  CHKSUM, SDSS
7675  5274          JMP .-1
7676  6776          SDRC
7677  0327          AND K77
7700  1204          TAD PS4 /LOOK FOR MARK CODE 40
7701  7640          SZA CLA
7702  5274          JMP CHKSUM
7703  1322          TAD C7600
7704  3236          DCA WORDS
7705  1202          TAD PS2
7706  7112          CLL RTR
7707  1214          TAD C1400
7710  7420          SNL
7711  6774          SDLC
7712  7430          SZL
7713  4265          JMS RDNUAD /4 LINES FORWARD TO READ
7714  7630  NXT,    SZL CLA
7715  5324          JMP READ
7716  1776  WRITE,  TAD I BUFF
7717  6773          SDSW
7720  5317          JMP .-1
7721  6775          SDLD
7722  7600  C7600,  7600
7723  5326          JMP LAST
7724  4265  READ,   JMS RDNUAD
7725  3776          DCA I BUFF
7726  2376  LAST,   ISZ BUFF
7727  0077  K77,    77
7730  2236          ISZ WORDS
7731  5314          JMP NXT
7732  6773          SDSW /WAIT TO WRITE 128TH WORD
7733  5332          JMP .-1
7734  7100          CLL
7735  1377          TAD BUFFST
7736  1322          TAD C7600
7737  7450          SNA
7740  5350          JMP EXIT
7741  3377  C41,    DCA BUFFST /LINK=1
7742  2363          ISZ BLOCK
```

```
7743  5241          JMP GO
7744  6203  PS44,   6203
7745  7600  PS45,   7600
7746  1000  PS46,   1000
7747  0000  PS47,   0
7750  0000  EXIT,   0
7751  7300          CLL CLA
7752  6774          SDLC
7753  5607          JMP I SUB
7754  6201  FLD,    6201
7755  0010  C70,    10
7756  0000  P56,    0
7757  4756  P57,    4756
7760  0000  P60,    0
7761  0000  P61,    0
7762  0000  P62,    0
7763  7402  BLOCK,  7402
7764  5372  P64,    5372
7765  4207  P65,    4207
7766  0100  P66,    0100
7767  7400  P67,    7400
7770  0037  P70,    37
7771  7402  P71,    7402
7772  6203  P72,    6203
7773  6042  P73,    6042
7774  5775  P74,    5775
7775  0000  P75,    0
7776  0000  BUFF,   0
7777  0000  BUFFST, 0
            $
```

BLOCK	7763	BUFF	7776	BUFFST	7777	CHKSUM	7674	CONT	7650
C1000	7612	C1400	7614	C41	7741	C6212	7646	C70	7755
C7600	7722	ENDZ	7662	EXIT	7750	FLD	7754	FOUND	7672
GO	7641	K77	7727	LAST	7726	NXT	7714	PS0	7600
PS1	7601	PS2	7602	PS3	7603	PS4	7604	PS44	7744
PS45	7745	PS46	7746	PS47	7747	PS5	7605	PS6	7606
P56	7756	P57	7757	P60	7760	P61	7761	P62	7762
P64	7764	P65	7765	P66	7766	P67	7767	P70	7770
P71	7771	P72	7772	P73	7773	P74	7774	P75	7775
RDQUAD	7665	READ	7724	SUB	7607	WORDS	7636	WRITE	7716

```
                /PS8 SKELETAL HANDLER FIELD 1
                /   PSYCHIATRY DEPT UNIV OF AUCKLAND 8/2/72
                FIELD 1
                *7646
7646  5205  P46,    5205 /ROUTINE TO LOAD HNDLER FLD 0 IS ABOVE ON PAGE
7647  7607  P47,    7607
7650  7607  P50,    7607
7651  0000  P51,    0
7652  0000  P52,    0
7653  7607  P53,    7607
7654  0000  P54,    0
7655  0000  P55,    0
7656  0000  P56,    0
7657  0000  P57,    0
7660  0000  P60,    0
7661  0000  P61,    0
7662  0000  P62,    0
7663  0000  P63,    0
7664  0000  P64,    0
7665  0000  P65,    0
7666  0000  P66,    0
7667  6202  P67,    6202
7670  4207  P70,    4207
7671  1000  P71,    1000
7672  0000  P72,    0
7673  0007  P73,    7
7674  7746  P74,    7746
7675  6203  P75,    6203
7676  5677  P76,    5677
7677  0400  P77,    0400
7700  0000  P0,     0
7701  3340  P1,     3340
7702  6214  P2,     6214
7703  1275  P3,     1275
7704  3336  P4,     3336
7705  6201  P5,     6201
7706  1674  P6,     1674
7707  7010  P7,     7010
7710  6211  P10,    6211
7711  7630  P11,    7630
7712  5321  P12,    5321
7713  6202  P13,    6202
7714  4207  P14,    4207
7715  5010  P15,    5010
7716  0000  P16,    0
7717  0027  P17,    0027
7720  7764  M20,    7760  /CONSTANT FOR HANDLER
7721  6202  P21,    6202
7722  4207  P22,    4207
7723  0610  P23,    0610
7724  0000  P24,    0
7725  0013  P25,    0013
7726  7670  M110,   7670  /CONSTANT FOR HANDLER
7727  5020  P27,    5020
7730  6202  P30,    6202
```

```
7731  4207  P31,    4207
7732  1014  P32,    1014
7733  0000  P33,    0
7734  0027  P34,    0027
7735  0374  C374,   374    /CONSTANT FOR HANDLER
7736  0000  P36,    0
7737  5700  P37,    5700
7740  0000  P40,    0
7741  6771  SRCH,   SDSS  /ENTRY FROM HANDLER FIELD 0. ASSIGN REGION
7742  5341          JMP .-1  /ODT MAY DESTROY THIS REGION (17741-17757)
7743  6776          SDRC     /ODT BREAKPOINT AND RUN COMMANDS CRITICAL
7744  7106          CLL RTL
7745  0335          AND C374
7746  1326          TAD M110
7747  7450          SNA
7750  5356          JMP END
7751  1320          TAD M20
7752  7640          SZA CLA
7753  5341          JMP SRCH
7754  6202  C6202,  6202
7755  5250          JMP P50
7756  6202  END,    6202
7757  5262          JMP P62
7760  4160  T1,     4160
7761  4160  T2,     4160
7762  0000  T3,     0
7763  1040  T4,     1040
7764  4160  T5,     4160
7765  4160  T6,     4160
7766  4160  T7,     4160
7767  4160  T8,     4160
7770  4160  T9,     4160
7771  4160  T10,    4160
7772  4160  T11,    4160
7773  4160  T12,    4160
7774  1020  T13,    1020
7775  2010  T14,    2010
7776  2030  T15,    2030
7777  4710  T16,    4710
      $$
```

```
                /PROGRAM TO PROTECT TD8E SYSTEM HANDLER AUGUST 8,1972
                FIELD 1
                *2200
2200  6040              SPF
2201  6213              6213
2202  4777'             JMS MESAGE
2203  2256              HELLO
2204  4777'             JMS MESAGE
2205  2310              HELLO2
2206  4777'             JMS MESAGE
2207  2344              HELLO3
2210  6031              KSF
2211  5210              JMP .-1
2212  6036              KRB
2213  6046              TLS
2214  1376              TAD (7447
2215  7640              SZA CLA
2216  5775'             JMP OUT+2
2217  6202              6202
2220  4652              JMS I HNDLR
2221  1000              1000
2222  0200              200
2223  0007              7
2224  7402              HLT
2225  6201              6201
2226  1774              TAD I (611
2227  6211              6211
2230  1373              TAD (-7655
2231  7640              SZA CLA
2232  5772'             JMP OUT
2233  6201              6201
2234  1253              TAD MON
2235  3654              DCA I MON1
2236  1253              TAD MON
2237  3655              DCA I MON2
2240  6213              6213
2241  6202              6202
2242  4652              JMS I HNDLR
2243  5000              5000
2244  0200              200
2245  0007              7
2246  7402              HLT
2247  4777'             JMS MESAGE
2250  2347              ASDONE
2251  5771'             JMP START
2252  7607  HNDLR,     7607
2253  0435  MON,       435
2254  0612  MON1,      612
2255  0630  MON2,      630
2256  3736  HELLO,     TEXT /←↑↑↑HELLO!←↑↑PROGRAM TO PROTECT TD8E SYSTEM HA
2257  3636
2260  1005
2261  1414
2262  1741
2263  3736
```

```
2264  3620
2265  2217
2266  0722
2267  0115
2270  4024
2271  1740
2272  2022
2273  1724
2274  0503
2275  2440
2276  2404
2277  7005
2300  4023
2301  3123
2302  2405
2303  1540
2304  1001
2305  1604
2306  1405
2307  2200
2310  3736  HELLO2, TEXT /←↑DO YOU WANT TO RUN THIS PROGRAM(Y=YES;ANY O
2311  0417
2312  4031
2313  1725
2314  4027
2315  0116
2316  2440
2317  2417
2320  4022
2321  2516
2322  4024
2323  1011
2324  2340
2325  2022
2326  1707
2327  2201
2330  1550
2331  3175
2332  3105
2333  2373
2334  0116
2335  3140
2336  1724
2337  1005
2340  2240
2341  0310
2342  0122
2343  7500
2344  1617  HELLO3, TEXT /NO)?:/
2345  5177
2346  7200
2347  3736  ASDONE, TEXT "←↑AS AND DE REMOVED FROM MONITOR.←↑"
2350  0123
2351  4001
2352  1604
```

```
2353  4004
2354  0540
2355  2205
2356  1517
2357  2605
2360  0440
2361  0622
2362  1715
2363  4015
2364  1716
2365  1124
2366  1722
2367  5637
2370  3600
2371  2400
2372  2416
2373  0123
2374  0611
2375  2420
2376  7447
2377  3400
                    PAGE
2400  6202  START,  6202
2401  4712          JMS I HNDLRX
2402  0610          610
2403  0200          200
2404  0013          13
2405  7402          HLT
2406  7300          CLA CLL
2407  1777          TAD I (236
2410  1376          TAD (200
2411  3311          DCA TEMP
2412  1711          TAD I TEMP
2413  1375          TAD (-4631
2414  7650          SNA CLA
2415  5222          JMP .+5
2416  4774' OUT,    JMS MESAGE
2417  2515          ERR      /←↑↑DEVICES NOT FOUND**←↑*QUITTING*/
2420  6203          6203
2421  5773          JMP I (7605
2422  4774'         JMS MESAGE
2423  3000          USR
2424  4774'         JMS MESAGE
2425  3034          USR2
2426  4774'         JMS MESAGE
2427  3070          USR3
2430  2311          ISZ TEMP
2431  2311          ISZ TEMP
2432  2311          ISZ TEMP
2433  4774'         JMS MESAGE  /WANT LINE PRINTER LPT?
2434  3240          LPT
2435  6031          KSF
2436  5235          JMP .-1
2437  6036          KRB
2440  6046          TLS    /ECHO
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2441  1372           TAD (7447   /-"Y
2442  7640           SZA CLA
2443  3711           DCA I TEMP
2444  2311           ISZ TEMP  /DTA0
2445  2311           ISZ TEMP  /DTA1
2446  3711           DCA I TEMP  /ELIM DTA1 (OTHERWISE DESTROY SYS HNDLR)
2447  1371           TAD (-6
2450  3313           DCA T2
2451  1314           TAD PTCH
2452  3770'          DCA TAPES+13
2453  2311           ISZ TEMP  /DTA2
2454  4774' AGN,     JMS MESAGE
2455  3255           TAPES     /DO YOU WANT TAPE DTA2?
2456  6031           KSF
2457  5256           JMP .-1
2460  6036           KRB
2461  6046           TLS
2462  1372           TAD (7447
2463  7640           SZA CLA
2464  3711           DCA I TEMP
2465  2311           ISZ TEMP
2466  1770'          TAD TAPES+13
2467  1367           TAD (100
2470  3770'          DCA TAPES+13
2471  2313           ISZ T2
2472  5254           JMP AGN
2473  2311           ISZ TEMP  /PTR
2474  2311           ISZ TEMP  /CDR
2475  4774'          JMS MESAGE
2476  3272           CARD      /DO YOU WANT CARD READER CDR?
2477  6031           KSF
2500  5277           JMP .-1
2501  6036           KRB
2502  6046           TLS
2503  1372           TAD (7447
2504  7640           SZA CLA
2505  3711           DCA I TEMP
2506  1311           TAD TEMP
2507  1366           TAD (7765  /-13 SET TO LPT
2510  5765'          JMP STRT2
2511  0000  TEMP,    0
2512  7607  HNDLRX,  7607
2513  0000  T2,      0
2514  6277  PTCH,    6277
2515  3736  ERR,     TEXT /←↑↑**DEVICES NOT FOUND**←↑↑*QUITTING*/
2516  3652
2517  5204
2520  0526
2521  1103
2522  0523
2523  4016
2524  1724
2525  4006
2526  1725
2527  1604
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2530  5252
2531  3736
2532  3652
2533  2125
2534  1124
2535  2411
2536  1607
2537  5200
2565  2600
2566  7765
2567  0100
2570  3270
2571  7772
2572  7447
2573  7605
2574  3400
2575  3147
2576  0200
2577  0236
                      PAGE
2600  3263  STRT2,    DCA TEMPX
2601  4777'           JMS MESAGE
2602  3122            DEVI    /YOU HAVE SPECIFIED SAVING ONLY:
2603  4777'           JMS MESAGE
2604  3145            DEVIC2 /SYS,DSK,TTY,DTA0,PTP,PTR,
2605  1663            TAD I TEMPX
2606  7650            SNA CLA
2607  5212            JMP SCND
2610  4777'           JMS MESAGE
2611  2666            LPTR    /LPT,
2612  2263  SCND,     ISZ TEMPX
2613  2263            ISZ TEMPX /DTA1
2614  2263            ISZ TEMPX /DTA2
2615  1376            TAD (-6
2616  3264            DCA T
2617  1265            TAD A2
2620  3272            DCA DTAX+1
2621  1663  TRY,      TAD I TEMPX
2622  7650            SNA CLA
2623  5226            JMP THRD
2624  4777'           JMS MESAGE
2625  2671            DTAX       /DTA2,
2626  2263  THRD,     ISZ TEMPX
2627  2272            ISZ DTAX+1
2630  2264            ISZ T
2631  5221            JMP TRY
2632  2263            ISZ TEMPX /PTR
2633  2263            ISZ TEMPX /CDR
2634  1663            TAD I TEMPX
2635  7650            SNA CLA
2636  5241            JMP LAST
2637  4777'           JMS MESAGE
2640  2674            READER      /CDR.
2641  4777' LAST,     JMS MESAGE
2642  3163            SURE   /←↑ARE YOU SURE THIS IS OK(Y=YES)?
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2643  6031          KSF
2644  5243          JMP .-1
2645  6036          KRB
2646  6046          TLS
2647  1375          TAD (7447
2650  7640          SZA CLA
2651  5774'         JMP START
2652  6202          6202
2653  4773          JMS I (7607
2654  4610          4610
2655  0200          200
2656  0013          13
2657  7402          HLT
2660  4777'         JMS MESAGE
2661  3210          FINAL   /←↑←↑**DEVICES CHANGED**←↑EXIT TO MONITOR
2662  5772'         JMP OUT+2
2663  0000  TEMPX,  0
2664  0000  T,      0
2665  0162  A2,     0162
2666  1420  LPTR,   TEXT /LPT,/
2667  2454
2670  0000
2671  0424  DTAX,   TEXT /DTA2,/
2672  0162
2673  5400
2674  0304  READER, TEXT /CDR./
2675  2256
2676  0000
2772  2420
2773  7607
2774  2400
2775  7447
2776  7772
2777  3400
                    PAGE
3000  3736  USR,    TEXT /←↑↑↑USR DEVICES BEING DELETED FROM PS8.←↑DTA0
3001  3636
3002  2523
3003  2240
3004  0405
3005  2611
3006  0305
3007  2340
3010  0205
3011  1116
3012  0740
3013  0405
3014  1405
3015  2405
3016  0440
3017  0622
3020  1715
3021  4020
3022  2370
3023  5637
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3024  3604
3025  2401
3026  6054
3027  2331
3030  2354
3031  0423
3032  1354
3033  0000
3034  2424  USR2,   TEXT /TTY,PTP,PTR SAVED AUTOMATICALLY.←↑DTA1 DELETE
3035  3154
3036  2024
3037  2054
3040  2024
3041  2240
3042  2301
3043  2605
3044  0440
3045  0125
3046  2417
3047  1501
3050  2411
3051  0301
3052  1414
3053  3156
3054  3736
3055  0424
3056  0161
3057  4004
3060  0514
3061  0524
3062  0504
3063  4001
3064  2524
3065  1715
3066  0124
3067  0000
3070  1103  USR3,   TEXT /ICALLY.←↑↑ANSWER THE FOLLOWING QUESTIONS(Y=YE
3071  0114
3072  1431
3073  5637
3074  3636
3075  0116
3076  2327
3077  0522
3100  4024
3101  1005
3102  4006
3103  1714
3104  1417
3105  2711
3106  1607
3107  4021
3110  2505
3111  2324
3112  1117
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3113  1623
3114  5031
3115  7531
3116  0523
3117  5173
3120  3736
3121  0000
3122  3736  DEVI,   TEXT /←↑↑↑↑YOU HAVE SPECIFIED SAVING ONLY:/
3123  3636
3124  3631
3125  1725
3126  4010
3127  0126
3130  0540
3131  2320
3132  0503
3133  1106
3134  1105
3135  0440
3136  2301
3137  2611
3140  1607
3141  4017
3142  1614
3143  3172
3144  0000
3145  3736  DEVIC2, TEXT /←↑SYS,DSK,TTY,DTA0,PTP,PTR,/
3146  2331
3147  2354
3150  0423
3151  1354
3152  2424
3153  3154
3154  0424
3155  0160
3156  5420
3157  2420
3160  5420
3161  2422
3162  5400
3163  3736  SURE,   TEXT /←↑←↑←↑ARE YOU SURE THIS IS OK(Y=YES)???:/
3164  3736
3165  3736
3166  0122
3167  0540
3170  3117
3171  2540
3172  2325
3173  2205
3174  4024
3175  1011
3176  2340
3177  1123
3200  4017
3201  1350
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3202  3175
3203  3105
3204  2351
3205  7777
3206  7772
3207  0000
3210  3736  FINAL,  TEXT /←↑←↑****DEVICES CHANGED***←↑←↑EXIT TO MONITOR#
3211  3736
3212  5252
3213  5252
3214  0405
3215  2611
3216  0305
3217  2340
3220  0310
3221  0116
3222  0705
3223  0452
3224  5252
3225  3736
3226  3736
3227  0530
3230  1124
3231  4024
3232  1740
3233  1517
3234  1611
3235  2417
3236  2237
3237  3600
3240  3736  LPT,    TEXT /←↑WANT LINE PRINTER LPT?/
3241  2701
3242  1624
3243  4014
3244  1116
3245  0540
3246  2022
3247  1116
3250  2405
3251  2240
3252  1420
3253  2477
3254  0000
3255  3736  TAPES,  TEXT /←↑DO YOU WANT TAPE DTA2?/
3256  0417
3257  4031
3260  1725
3261  4027
3262  0116
3263  2440
3264  2401
3265  2005
3266  4004
3267  2401
3270  6277
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3271  0000
3272  3736  CARD,   TEXT /←↑DO YOU WANT CARD READER CDR?/
3273  0417
3274  4031
3275  1725
3276  4027
3277  0116
3300  2440
3301  0301
3302  2204
3303  4022
3304  0501
3305  0405
3306  2240
3307  0304
3310  2277
3311  0000
                    PAGE
3400  0000  MESAGE, 0
3401  7300          CLA CLL
3402  1600          TAD I MESAGE
3403  3255          DCA TMP
3404  2200          ISZ MESAGE
3405  1655  NXXT,   TAD I TMP
3406  6030  NXT1,   KCF
3407  7450          SNA
3410  5600          JMP I MESAGE
3411  0377          AND (7700
3412  7012          RTR
3413  7012          RTR
3414  7012          RTR
3415  1376          TAD (-40
3416  7510          SPA
3417  1375          TAD (100
3420  1374          TAD (240
3421  1373          TAD (-336
3422  7510          SPA
3423  5230          JMP .+5
3424  7440          SZA
3425  1372          TAD (2
3426  1371          TAD (212
3427  5231          JMP .+2
3430  1370          TAD (336
3431  4256          JMS TYPE
3432  1655          TAD I TMP
3433  0367          AND (77
3434  7450          SNA
3435  5206          JMP NXT1
3436  1376          TAD (-40
3437  7510          SPA
3440  1375          TAD (100
3441  1374          TAD (240
3442  1373          TAD (-336
3443  7510          SPA
3444  5251          JMP .+5
```

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3445  7440          SZA
3446  1372          TAD (2
3447  1371          TAD (212
3450  5252          JMP .+2
3451  1370          TAD (336
3452  4256          JMS TYPE
3453  2255          ISZ TMP
3454  5205          JMP NXXT
3455  0000  TMP,     0
3456  0000  TYPE,    0
3457  6041          TSF
3460  5257          JMP .-1
3461  6046          TLS
3462  7200          CLA
3463  5656          JMP I TYPE
3567  0077
3570  0336
3571  0212
3572  0002
3573  7442
3574  0240
3575  0100
3576  7740
3577  7700
      $
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