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1          ;***COPYRIGHT 1969, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.***
2
3
4          ;THIS SUB-PROGRAM ASSEMBLED WITH SYSTEM PARAMETER FILE - S,MAC(V414)
5              XLIST
6              LIST
7          ;THIS SUB-PROGRAM ASSEMBLED WITH CONFIGURATION DEPENDENT FEATURE SWITCHES - FT50SB,MAC(
8          V003)
9              XLIST
10             LIST
11          TITLE SCNSRF - SCANNER AND CONSOLE TELETYPE SERVICE ROUTINE - V415
12          SURTTL R CLEMENTS/RCC TS 03 JUN 69
13              XP VSCNSF,415+
14
15          ENTRY SCNSRF
16          SCNSRF:
17
18
19          ;SCNSER IS ORGANIZED INTO THE FOLLOWING SECTIONS
20
21          ;
22          ; I. COMMENTARY ON OPERATION AND DATA STRUCTURES
23          ; II. SYSTEM INITIALIZATION ROUTINE - SCNINI
24          ; III. UOO LEVEL ROUTINES
25          ; A. DOTIN
26          ; B. DOTOUT
27          ; C. TTYUOO
28          ; D. TTYIN
29          ; E. TTYOUT
30          ; IV. COMMAND LEVEL ROUTINES
31          ; A. TTYATT
32          ; B. TTYCOM
33          ; C. TTYDCM
34          ; D. TTYDET
35          ; E. TTYFND,TTYFNU
36          ; F. TTYKIL
37          ; G. TTYSET
38          ; H. TTYSRC
39          ; I. TTYSTR
40          ; J. TTYTLK
41          ; K. TTYUSR
42          ; V. INTERRUPT SERVICE ROUTINES
43          ; A. CTYINT
44          ; B. SCNINT
45          ; C. RFCINT - ALL LINES RECEIVER INTERRUPT
46          ; 1. TTEDIT - EDITS AND ECHOS
47          ; D. XMTINT - TRANSMIT INTERRUPT
48          ; 1. GFTCHR
49          ; 2. TYP

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49                   ;DATA STRUCTURES AND PARAMETERS
50
51                   ; DEFINED BY BUILD PROCESS FOR THE CONFIGURATION
52                   ;        SCNLIN=OCTAL NO. OF SCANNER LINES (0 THRU SCNLIN-1)
53
54                   ;        TRANSLATOR TABLE PARAMETERS
55                   ;        TTYLEN=SCNLIN*1 LENGTH OF TTY TRANSLATOR TABLE (INCLUDING CTY)
56                   ;        TTYTAB: BLOCK TTYLEN     TTY TRANSLATOR TABLE
57                   ;                SIGN BIT=1 IF COMMAND JUST TYPED
58                   ;                BIT 1 =1 IF DELAYED COMMAND
59                   ;                BITS 3-11 = JOB NO TTY IS ATTACHED TO (TPCJOBN)
60                   ;                BITS 12-17=TALK RING LINE # (PTALK)
61                   ;                BITS 18-35=ADDR. OF DEVICE DATA BLOCK
62                   ;                        FOR THIS LINE,
63                   ;        DEVOPR: 0           SIXBIT PHYSICAL NAME OF OPERATORS
64                   ;                        CONSOLE
65
66                   ;        DEFINED IN IOINI2
67                   ;        LINE NUMBRER PARAMETERS
68                   ;        MLTTYL=-NO. OF TTY DEVICE DATA BLOCKS
69                   ;        TCONLN=SCNLIN   CTY LINE NUMBER
70                   ;        MTTYLN=-TTYLEN   -LENGTH OF TRANSLATOR TABLE
71                   ;        TTYLST=TTY0DB   FIRST TTY DEVICE DATA BLOCK
72
73                   ;        TTY DEVICE DATA BLOCK FORMAT
74                   ;        (STANDARD IS AS DEFINED ON SYSTEM PARAMETER TAPE)
75                   ;        DEVNAM: PHYSICAL DEVICE NAME SET UP DYNAMICALLY
76                   ;                        VIA SCNIN0,
77                   ;        DEVCHR: LEFT HALF IS STANDARD
78                   ;                BITS 18-23=LINE NUMBER(BYTE POINTER=PUNIT)
79                   ;                BITS 24-35=MONITOR BUFFER SIZE + 1
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90      ;
91      ;
92      000100      ;
93      USRB=100      ;SET TTY TO USER MODE
94      ;
95      000200      IOSUPR=200      ;WHEN OUTPUT FINISHES
96      ;SUPPRESS ALL OUTPUT
97      ;TILL NEXT INPUT OR INIT (*0).
98      000400      TPMON=400      ;TTY IS IN MONITOR
99      ;COMMAND MODE,
00      001000      DDTM=1000      ;DDT MODE
01      002000      TTYDTC=2000      ;TTY DDB IS DETACHED FROM LINE
02      020000      SYNC=20000      ;BREAK CHARACTER SEEN
03      ;SIGNAL TO INCREMENT SYNC COUNT
04      ;FOR BUFFER INVOLVED
05      400000      TTYIQW=400000      ;TTY INPUT WAIT BIT
06
07      IFNDEF FTHDPX,<FTHDPX=-1>      ;NON-ZERO TO INCLUDE HALF-DUPLEX CODE
08      IFNDEF FTDDTM,<FTDDTM=-1>      ;NON-ZERO TO INCLUDE CALLI DDTIN,OUT
09
10      777777 777777 FTTTYSER=-1      ;DEFINE THIS SYSTEM TO HAVE SCNSRF
11
12      INTERN FTTTYSER ;ASSURE MULT DEF GLOBALS IF WRONG APRSER
  
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100                               ;
101                               ;
102                               ;
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115                               ;
116                               ;
117                               ;
118                               ;
119                               ;
120                               ;
121                               ;
122                               ;
123                               ;
124                               ;
125                               ;
126                               ;
127                               ;
128                               ;
129                               ;
130                               ;
131                               ;

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                                RIGHT HALF BITS (USER MODE)
                                FCS=1000 ;FULL CHARACTER SET, PASS
                                ;ON ALL CHARACTERS EXCEPT +C
                                ;NO SPECIAL CHARACTER PROCESSING
                                NOECHO=200 ;ECHO SUPPRESSION REQ BY PROG
                                QLRSHIP=400 ;400 SUPPRESSES "$" FOR ALTMODE
                                MERTPO=ICIMPM ;MONITOR ERROR TYPE-OUT
                                IGNOR=IODERR ;IGNORE ALL INT, FOR 1/2
                                ;OF A SECOND WHEN ECHO
                                ;FAILURE OCCURS,
                                ECHOOF=IODTER ;ECHO FAILURE OCCURED.
                                ;
                                DEVSER: STANDARD
                                DEVBUF: STANDARD
                                DEVIAD: BITS 6-12=HORIZONTAL POSITION (BYTE
                                ;          POINTER = PHPOS).
                                ;          BITS 13-35 ARE STANDARD.
                                DEVOAD: BITS 0-8=NUMBER OF CHARACTERS TO FIT
                                ;          INTO OUTPUT BUFFER
                                ;          (POINTER= PFITCH)
                                ;          BITS 13-35 ARE STANDARD

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;THE FOLLOWING ARE DEFINITIONS OF THE RELATIVE LOCATIONS OF THE
;BUFFER PARAMETER WORDS OF THE DEVICE DATA BLOCK FOR EACH BUFFER, WITH
;ITX'BUF AS THE BASE (DETAILED DESCRIPTION IN SCNDDR COMMENTS):

```

XP	BUF,7	IBUF(DAT) CONTAINS POINTER TO REG. OF CURRENT BUFFER
XP	PUTR,1	IPUTR(DAT)-PUTS CHARCTERS INTO BUFFER
XP	PCTR,2	INUMBER OF TIMES TO INCR, PUTR BEFORE REINITING
XP	TAKR,3	ITAKER POINTER TO PICK UP CHARACTERS
XP	TCTR,4	ICOUNT OF NUMBER OF TIMES TAKR CAN BE INCREMENTED
XP	FCTR,5	ICOUNT OF FREE SPACES LEFT IN BUFFER

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132          ;DEFINITION OF LINE CHARACTERISTICS TABLE BITS
133          ;LINTAB MADE BY SYSTEM BUILDER
134          ;FOLLOWING IS FORMAT AS SET UP BY SCHINI
135          ;          XWD BITS, LOGICAL LINE#
136
137          EXTERNAL LINTAB
138          400000 PTYLIN=400000          ;THIS LINE LINKED TO PTY
139          200000 CTYLIN=200000          ;THIS "LINE" IS CONSOLE DEVICE "TTY"
140          100000 DISLIN=100000          ;THIS LINE IS TO A DISPLAY KEYBOARD
141          040000 DSDTLN=400000          ;DATA SET DATA LINE
142          020000 DSCTLN=200000          ;DATA SET CONTROL LINE
143          010000 HLFDPX=100000          ;HALF DUPLEX LINE
144          004000 TTYRMT=400000          ;REMOTE TTY LINE
145
146          ;ABOVE ARE "PERMANENT" CHARACTERISTICS
147
148          000001 TLKRNG=1                ;THIS LINE CURRENTLY IN A TALK RING
149          000002 XON=2                    ;Q TYPED, PAPER TAPE INPUT
150
151          000004 FULTWX=4                 ;SELF ECHOING FUL DUPLEX
152          000010 T35=10                   ;MODEL 35
153          000020 T37=20                   ;MODEL 37
154          000040 RORTPD=40                ;RUBOUT TYPED LAST (ECHO \ BEFORE NEXT CHAR.)
155          000100 LINRDY=100              ;LINE TYPED IN BY USER (TISYNC ,G.0)
156          ; NOT ACTUALLY IN LINTAB, BUT RETURNED BY
157          ; GETLIN IN TTCALL
158
159          ;ABOVE ARE TEMPORARY BITS, TURNED ON AND OFF BY VARIOUS MEANS
160          ;(BY MONITOR, TYPE-IN COMMANDS, OR PROGRAM)
161          000036 LGLSET=T37+T35+FULTWX+XON ;THESE CAN BE SET OR ZEROED BY PROGRAM
162          000043 KILMSK=ROBTPD+TLKRNG+XON ;CLEARED AT TTYKIL
163
164          ;DECLARE THESE AS INTERNS TO GET THEM IN THE MAP
165          ;AND TO CHECK AGAINST S IN COMMON
166
167          INTERNAL PTYLIN,CTYLIN,DISLIN,DSDTLN,DSCTLN,HLFDPX,TTYRMT
168          INTERNAL T35,T37,FULTWX,LGLSET,KILMSK,XON

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169
170
171          ;ACCUMULATOR ASSIGNMENTS
172          000010          CHREC=TEM          ;AC FOR CHARACTER
173          000006          DDR=DEV DAT       ;ADDRESS OF DEVICE DATA BLOCK
174          000002          LINE=TAC1        ;SCANNER LINE NUMBER
175          000004          HPOS=ITEM        ;HORIZONTAL POSITION OF TTY.(0-71)
176
177
178          ;SPECIAL SYMROLS
179
180          000200          PION=200         ;TURN PI ON BIT
181          000400          PIOFF=400        ;TURN PI OFF BIT
182
183          000001          IDLECH=1         ;DELAY CHAR FOR TABS, ETC,
184                                          ; SHOULD BE +V, BUT FOR 37'S
185
186          ;BYTE POINTERS
187
188          INTERNAL TPCJOB, TYPX, FULTWX, TYPE, TAKR, BREAKB
189
190          INTERNAL TPCJOB, TYPX, FULTWX, TYPE, TAKR, BREAKB
191
192          000000 270706 000007 PHPOS: POINT 7, DEVIAD(DEV DAT), 12          ;HORIZONTAL POSITION
193          000001 301102 000000 TPCJOB: POINT 9, TTYTAB(LINE), 11          ;JOB NUMBER FOR TTY,
194          000002 310706 000011 P SAVCH: POINT 7, TTYPTR(DDR), 10          ;SAVE CHAR TO ECHO ON UO LEVEL
195
196          INTERNAL FTTALK
197
198          IFN FTTALK, <
199          000003 220602 000001' > PTALK: POINT 6, TTYTAB(LINE), 17 ;POINTER TO ANOTHER TTY IN TALK RING
200
201
202          INTERN PLASTC, PCOMIC
203
204          000004 000706 000011 PLASTC: POINT 7, TTYPTR(DDR), 35 ;FOR ECHO CHECKING ON HDX LINES
205          000005 201106 000011 PCOMIC: POINT 9, TTYPTR(DDR), 19 ;FOR RESCANNING COMMAND INPUT LINE
206                                          ;"COMMAND INPUT COUNTER" SAVES TITCTR
207          000006 071106 000011 PLSTLC: POINT 9, TTYPTR(DDR), 28 ;FOR +U DELETION
208
209          400000 TOIP=400000 ;SIGN OF TTYPTR(DDR) - TYPE-OUT IN PROGRESS
210
211          ;TTYPTR CONTAINS THE FOLLOWING BYTES:
212          ;
213          ; 0 ON IF TYPE-OUT IN PROGRESS
214          ; 1-3 SPARE
215          ; 4-10 P SAVCH, FOR INTERRUPTED ECHO
216          ; 11-19 PCOMIC, FOR COMMAND RESCAN
217          ; 20-28 PLSTLC, FOR +U
218          ; 29-35 PLASTC, FOR ECHO CHECKING HALF DUPLEX LINES

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219 ;SCNINI IS CALLED AT SYSTEM INITIALIZATION TIME FROM
220 ;LOGO IN SYSINI VIA DISPATCH TABLE
221 ;IT 1)CLEAR ALL RECEIVER FLAGS,
222 ; 2)CLEAR THE PHYSICAL NAME (DEVNAM) OF ALL UNUSED
223 ; (TTYUSE=0) TTY DEVICE DATA BLOCKS,
224 ; 3)SETS DEVIOS TO XWD TPMON+IOFST,0 IN ALL TTY DEVICE
225 ; DATA BLOCKS,
226 ; 4)SETS TTYUSE=1 IN ALL TTY DDBS IN THE TRANSLATOR TABLE.
227
228
229 EXTERNAL SCNCHN,MLTTYL,MTTYLN,TTYTAB,SCNINI
230
231
232 000007 201040 000000 TTYINI: MOVEI TAC,SCNCHN
233 000010 712201 001200 CONO TTY,1200(TAC) ;CLEAR CTY, ASSIGN CHANNEL
234 000011 260140 000000 PUSHJ PDP,SCNINI ;DEVICE DEPENDENT SCANNER INIT
235 000012 205100 000000 MOVSI TAC1,MLTTYL ;NO. OF TTY DEV. DATA BLOCKS, NOT LINES
236 000013 205000 000404 MOVSI IOS,TPMON+IOFST ;VIRGIN STATUS
237 000014 201300 000437 MOVEI DDB,TTYLST ;FIRST TTY DDB ADDRESS

238 000015 205240 010000 SCN1: MOVSI DAT,TTYUSE ;TTY DDB IN USE BIT
239 000016 616246 000004 TDNN DAT,DEVMOD(ODB) ;IS THIS TTY DDB IN USE?
240 000017 402006 000000 SETEM DEVNAM(ODB) ;NO, SET PHYSICAL NAME TO 0.
241 000020 202006 000002 MOVEM IOS,DEVIOS(ODB) ;SET IOS TO INITIAL STATE
242 000021 412246 000004 ANDCAM DAT,DEVMOD(ODB) ;CLEAR TTYUSE BIT,
243 000022 402006 000011 SETEM TTYPTR(ODB) ;CLEAR TOIP, ETC.
244 000023 205040 000120 MOVSI TAC,TTYCHR ;NUMBER OF CHARACTERS IN BUFFER
245 000024 541046 000021 HRRJ TAC,TTIRF(ODB) ;ADDRESS OF TTY INPUT BUFFER
246 000025 202046 000013 MOVEM TAC,TTIBUF(ODB) ;SET IT UP
247 000026 541046 000047 HRRJ TAC,TOBF(ODB) ;ADDRESS OF TTY OUTPUT BUFFER
248 000027 202046 000041 MOVEM TAC,TTIOBUF(ODB) ;SET UP INFO FOR THAT
249 000030 260140 000063 PUSHJ PDP,TSETBF ;CLEAR MONITOR BUFFERS
250 000031 554306 000003 HLRZ DDB,DEVSER(ODB) ;GET NEXT TTY DDB
251 000032 253100 000015 AOBJM TAC1,SCN1
252 000033 205100 000000 MOVSI TAC1,MTTYLN ;SET DDB USE BITS FROM TRANSLATOR TABLE
253 000034 205040 010000 SCN2: MOVSI TAC,TTYUSE
254 000035 332302 000003 SKIPE DDB,TTYTAB(TAC1)
255 000036 436046 000004 IORM TAC,DEVMOD(ODB)
256 000037 550040 000002 HRRZ TAC,TAC1 ;SET UP PERMANENT LINTAB BITS
257 000040 305040 000000 CAIGE TAC,TCONLN ;ORDINARY TTY LINE?
258 000041 254000 000045 JRST SCN3 ;YES
259 000042 302040 000040 CAIE TAC,TCONLN ;CTY LINE?
260 000043 665040 400000 TLOA TAC,PTYLIN ;NO, MUST BE PTY LINE NR
261 000044 661040 200010 TLO TAC,CTYLIN+T35 ;YES
262 000045 542042 000000 SCN3: HRRM TAC,LINTAB(TAC1) ;SET LOG. LINE NUMBERS
263 000046 437042 000045 IORB TAC,LINTAB(TAC1) ;SET SIGNIFICANT BITS
264 000047 621040 000043 TLZ TAC,KILMSK ;ZAP INSIGNIFICANT BITS
265 000050 603040 040000 TLNE TAC,DSDTLN ;IF A DATAPHONE,
266 000051 621040 002036 TLZ TAC,LGLSET ; CLEAR OTHERS TOO
267 000052 502042 000046 HLLM TAC,LINTAB(TAC1) ;LEAVING REST OF BITS AS THEY WERE
268 000053 253100 000034 AOBJM TAC1,SCN2
269 000054 263140 000000 POPJ PDP,
270

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271          ;ROUTINES TO SET UP BUFFERS
272
273          INTERNAL TSETBF,SETBFI,PUTCHI
274
275 000055 201240 000001 SETBFI: MOVEI  DAT,1
276 000056 137240 000005'  DPR   DAT,PCOMIC
277 000057 137240 000006'  DPN   DAT,PLSTLC
278 000060 201246 000013  MOVEI  DAT,TTIBUF(00B) ;SPECIFY INPUT BUFFER
279 000061 402006 000012  SETZM  TISYNC(00B) ;NO LINES IN BUFFER
280 000062 254000 000065'  JRST  SETBF0 ;INIT BUFFER
281
282 000063 260140 000055' TSETBF: PUSHJ  PDP,SETBFI ;INIT TTI BUFFER
283 000064 201246 000041  SETBF2: MOVEI  DAT,TTIBUF(00B) ;SPECIFY OUTPUT BUFFER
284 000065 200045 000000  SETBF0: MOVEI  TAC,BUF(DAT)
285 000066 505040 440700  HRLI  TAC,440700 ;INITIAL TAKR AND PUTR
286 000067 202045 000003  MOVEM  TAC,TAKR(DAT)
287 000070 202045 000001  MOVEM  TAC,PUTR(DAT)
288 000071 201040 000001  MOVEI  TAC,1 ;INITIALIZE COUNTERS TOO
289 000072 202045 000004  MOVEM  TAC,TCTR(DAT)
290 000073 202045 000002  MOVEM  TAC,PCTR(DAT)
291 000074 554045 000000  HLRZ  TAC,BUF(DAT) ;CHARACTER COUNT
292 000075 202045 000005  MOVEM  TAC,FCTR(DAT) ;UPDATE FREE CHARACTER COUNT
293 000076 263140 000000  POPJ  PDP,
294
295          ;ROUTINE TO PUT A CHARACTER INTO A BUFFER (FOR INPUT,MERTPO, AND ONCE)
296          ;CALL MOVEI DAT,TTXBUF(00B) ;TO SPECIFY BUFFER
297          ; PUSHJ PDP,PUTCHI
298          ; ERROR RETURN, BUFFER "FULL"
299          ; SUCCESSFUL RETURN
300
301 000077 375005 000005  PUTCHI: SOSGE  FCTR(DAT) ;ANY FREE SPACES LEFT?
302 000100 254000 000142'  JRST  PUTCI0 ;NO
303 000101 373005 000002  PUTCI2: SOSLF  PCTR(DAT) ;LAST BYTE IN BUFFER FILLED?
304 000102 254000 000111'  JRST  PUTCI1 ;NO, GO AHEAD
305 000103 261140 000001  PUSH  PDP,TAC
306 000104 200045 000000  MOVEI  TAC,BUF(DAT) ;GET ADR AND SIZE OF BUFFER
307 000105 556045 000002  HLRZM  TAC,PCTR(DAT) ;INITIAL COUNTER
308 000106 505040 440700  HRLI  TAC,440700 ;MAKE A BYTE POINTER
309 000107 202045 000001  MOVEM  TAC,PUTR(DAT) ;STORE IT
310 000110 262140 000001  POP  PDP,TAC ;RESTORE TAC
311 000111 136405 000001  PUTCI1: IDPB  CHREC,PUTR(DAT)
312 000112 254000 000000  JRST  CPOPJ1
313
314          ;ROUTINE TO STUFF MONITOR ERROR MESSAGE IN TTI BUFFER
315          ;CALLED IN LINE FROM PUTCH0
316
317 000113 200006 000002  TTIOUT: MOVE  IOS,DEVIOS(00B)
318 000114 350006 000046  ACS  TOFCTR(00B) ;RE-ADJUST FREE CHAR COUNT
319 000115 606000 400000  TRNN  IOS,MERTPO ;MONITOR ERROR MESSAGE?
320 000116 254000 000141'  JRST  GETCH1 ;NO, ZERO CHREC TO INDICATE
321 000117 201246 000013  MOVEI  DAT,TTIBUF(00B) ;YES, PUT REST IN TTI BUFFER
322 000120 375005 000005  SOSGE  FCTR(DAT) ;ANY SPACE?
323 000121 254000 000142'  JRST  PUTCI0 ;NO,

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P CLEMFNTS/RFC TS 23 JUN 69

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324	000122	370073	000070	SOS	0(PDP)	:YES, COMPENSATE SKIP RETURN
325	000123	254070	000171	JRST	PUTC12	:AND GO TO MIDDLE OF PUTCH

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326 ;CHARACTER AND BUFFER HANDLING ROUTINES
327
328 ;ROUTINE TO PICK UP A CHARACTER FROM ANY BUFFER
329 ;CALL MOVEI DAT,TTXBUF(0DB) ;TO SPECIFY BUFFER
330 ; PUSHJ PDP,GETCHR
331 ; ONLY RETURN ;CHARACTER OR ZERO IN CHREC
332 ; ;ZERO INDICATES BUFFER "EMPTY"(TAKR=PUTR)
333
334 INTERNAL GETCHR
335
336 000124 554405 000000 GETCHR: HLRZ CHREC,BUF(DAT) ;SIZE OF THIS BUFFER
337 000125 317405 000005 CAMG CHREC,FCTR(DAT) ;IS FREE COUNTER EQUAL TO SIZE?
338 ; ;I.E., IS THE BUFFER EMPTY?
339 000126 254000 000141' JRST GETCH1 ;YES, LOAD CHREC WITH ZERO AND EXIT
340 000127 373005 000004 SOSLE TCTR(DAT) ;NO, ARE WE AT END OF BUFFER?
341 000130 254000 000135' JRST GETCH2 ;YES, GO ON.
342 000131 200405 000000 MOVE CHREC,BUF(DAT) ;YES, START AT TOP AGAIN
343 000132 556405 000004 HLRZM CHREC,TCTR(DAT) ;INITIAL COUNTER
344 000133 505400 440700 HRLI CHREC,440700 ;MAKE A BYTE POINTER
345 000134 202405 000003 MOVEM CHREC,TAKR(DAT) ;INITIAL POINTER
346 000135 134405 000003 GETCH2: ILDB CHREC,TAKR(DAT) ;GET CHARACTER
347 000136 350005 000005 AOS FCTR(DAT) ;INCREMENT FREE CHAR. COUNT
348 000137 322400 000124' JUMPF CHREC,GETCHR ;SKIP NULLS
349 000140 263140 000000 POPJ PDP,
350 000141 634400 000010 GETCH1: TDZA CHREC,CHREC ;RETURN 0 INDICATING END OF BUFFER
351 000142 350005 000005 PUTCH0: AOS FCTR(DAT) ;READJUST FREE COUNTER
352 000143 263140 000000 POPJ PDP,
353
354 ;ROUTINE TO PLACE A CHARACTER INTO THE OUTPUT BUFFER
355 ;CALLED AT INTERRUPT LEVEL
356 ;CALL MOVE CHREC,CHARACTER TO PLACE INTO BUFFER
357 ; PUSHJ PDP,PUTCHO
358 ; ONLY RETURN, WHETHER OR NOT CHARACTER WAS PLACED
359
360
361 000144 375006 000046 PUTCHO: SOSGE TOFCTR(0DB) ;RETURN IMMEDIATELY IF NO ROOM
362 000145 254000 000113' JRST TTIOUT ;UNLESS MONITOR ERROR MESSAGE
363 000146 700600 000400 CONO PI,PIOFF ;PREVENT PCTR AND PUTR DIFFERENCE
364 000147 373006 000043 SOSLE TOPCTR(0DB) ;LAST BYTE IN BUFFER?
365 000150 254000 000155' JRST PUTCO1 ;NO, GO ON.
366 000151 200046 000041 MOVE TAC,TT0BUF(0DB) ;GET COUNT AND ADDRESS
367 000152 556046 000043 HLRZM TAC,TOPCTR(0DB) ;INITIAL COUNTER
368 000153 505040 440700 HRLI TAC,440700 ;MAKE A BYTE POINTER
369 000154 202046 000042 MOVEM TAC,TOPUTR(0DB) ;INITIAL POINTER
370 000155 136406 000042 PUTCO1: IDPB CHREC,TOPUTR(0DB) ;PUT CHARACTER INTO BUFFER
371 000156 700600 000200 CONO PI,PION ;GET PI BACK ON
372 000157 263140 000000 POPJ PDP,
373

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374 ;ROUTINE TO CHECK IF A CHARACTER IS SPECIAL(ASCII 0-37, 175-177)
375 ;CALL MOVE CHREC,CHAR. TO BE CHECKED
376 ; PUSHJ PDP,SPCHEK
377 ; RETURN1 IF REGULAR ASCII CHAR (40-174), C(TAC)=0
378 ; RETURN2 IF SPECIAL CHAR., TAC LOADED WITH WORD FROM SPCTAB
379
380 INTERNAL SPCHEK
381
382 000160 201040 000000 SPCHEK: MOVEI TAC,0 ;LOAD TAC WITH 0 OR SPECIAL CHAR. WORD
383 000161 305400 000040 CAIGF CHREC,40
384 000162 254000 000166' JRST SPCHK1
385 000163 307400 000174 CAIG CHREC,174
386 000164 263140 000000 POPJ PDP,
387 000165 334050 000033' SKIPA TAC,SPCTAB-135(CHREC)
388
389 000166 200050 000170' SPCHK1: MOVE TAC,SPCTAB(CHREC)
390 000167 254200 000112' JRST CPOPJ1
  
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391                ;SPECIAL CHARACTER TABLE
392                ;FORMAT XWD BITS+CHAR,ADDRESS OF ROUTINE
393                ;HIGH ORDER BITS IN LH:
394
395                402070 SPACTN=47000'      ;SPECIAL ACTION TO BE TAKEN
396                100000 SPOUT=100000'     ;SPECIAL HANDLING ON UUD OUTPUT
397                020000 BREAKB=20000'    ;BREAK CHARACTER
398                010000 SPHPOS=10000'    ;CHARACTER AFFECTS HORIZONTAL POSITION
399                004000 FCSBRK=4000'     ;BREAK CHARACTER IN FCS(100) MODE
400                002000 ECHSUP=2000'    ;SUPPRESS ECHO OF CHAR ITSELF
401
402 000170 002000 000000 SPCTAB: XWD      ECHSUP,0                ;NULL
403 000171 002000 000000 XWD            ECHSUP,0                ;*A SOH
404 000172 402000 001754' XWD            SPACTN+ECHSUP,CONTR    ;*B FULTWX SW
405 000173 422000 001722' XWD            SPACTN+ECHSUP+BREAKB,CONTC ;*C
406 000174 002000 000000 XWD            ECHSUP,0                ;*D EOT
407 000175 002000 000000 XWD            ECHSUP,0                ;*E WRU
408 000176 402000 001752' XWD            SPACTN+ECHSUP,CONTF    ;*F T37 SW
409 000177 004000 000000 XWD            FCSBRK,0                ;*G (BELL)
410 000200 410000 001761' XWD            SPACTN+SPHPOS,CONTH    ;*H OR BACKSPACE KEY
411 000201 510000 002004' XWD            SPACTN+SPHPOS+SPOUT,CONTI ;*I OR TAB
412 000202 020000 000000 XWD            BREAKB,0                ;*J OR LINE FEED
413 000203 520000 002005' XWD            SPACTN+SPOUT+BREAKR,CONTK ;*K OR VERT TAB
414 000204 520000 002007' XWD            SPACTN+SPOUT+BREAKR,CONTL ;*L OR FORM FEED
415 000205 410000 002061' XWD            SPACTN+SPHPOS,CRLF     ;*M OR CARRIAGE RETURN
416 000206 002000 000000 XWD            ECHSUP,0                ;*N
417 000207 400000 001727' XWD            SPACTN,CONTO           ;*O SUPP OUTPUT
418 000210 402000 001753' XWD            SPACTN+ECHSUP,CONTP    ;*P T35 SW
419 000211 402000 001756' XWD            SPACTN+ECHSUP,CONTO    ;*Q XON (PAPERTAPE)
420 000212 002000 000000 XWD            ECHSUP,0                ;*R TAPE PUNCH ON
421 000213 402000 001757' XWD            SPACTN+ECHSUP,CONTS    ;*S XOFF
422 000214 002000 000000 XWD            ECHSUP,0                ;*T TAPE PUNCH OFF
423 000215 402000 001733' XWD            SPACTN,CONTV           ;*U DELETE LINE
424 000216 002000 000000 XWD            ECHSUP,0                ;*V OR IDLE
425 000217 002000 000000 XWD            ECHSUP,0                ;*W
426 000220 002000 000000 XWD            ECHSUP,0                ;*X
427 000221 002000 000000 XWD            ECHSUP,0                ;*Y
428 000222 422000 001724' XWD            SPACTN+BREAKR+ECHSUP,CONTE ;*Z TTY EOF
429 000223 422000 001741' XWD            SPACTN+BREAKR+ECHSUP,ALTMOD ;ASCII 33 (ALT-MODE)
430 000224 002000 000000 XWD            ECHSUP,0                ;ASCII 34
431 000225 002000 000000 XWD            ECHSUP,0                ;ASCII 35
432 000226 002000 000000 XWD            ECHSUP,0                ;ASCII 36
433 000227 002000 000000 XWD            ECHSUP,0                ;ASCII 37
434
435                ;ABOVE ARE CONTROL CHARACTERS, BELOW ASCII 175-177
436
437 000230 422000 001741' XWD            SPACTN+BREAKR+ECHSUP,ALTMOD ;OLD DEC ALTMODE 175
438 000231 422000 001741' XWD            SPACTN+BREAKR+ECHSUP,ALTMOD ;ALT-MODE 176
439 000232 406000 001763' XWD            SPACTN+ECHSUP+FCSBRK,RUBOUT ;177 RUBOUT

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```

440             IFN FDDTM,<
441
442             ;INPUT TO DDT
443             ;CALL AC,(SIXBIT /DDTIN/)          AC CONTAINS POINTER TO BUFFER AREA
444             ;BUFFER AREA MUST BE 21 WORDS LONG
445
446             INTERNAL DDTIN
447             EXTERNAL WSYNC,IADRCK,ADRERR
448             EXTERNAL PTYQW
449
450
451 000233 260140 001220' DDTIN: PUSHJ PDP,TTYFNU          ;SET UP DEVDAT,LINE
452 000234 200000 002334' MOVE IOS,CXWD TTYIOW+DDTM,IOACT]
453 000235 437006 000002  IORB IOS,DEVIOS(DDR)  ;PUT INTO I/O WAIT
454 000236 200046 000014  MOVE TAC,TIPUTR(ODB)
455 000237 316046 000016  CAMN TAC,TITAKR(ODB) ;ANYTHING IN BUFFER?
456 000240 260140 000302' PUSHJ PDP,TWSYNC          ;NO, WAIT FOR SOME
457 000241 200000 002335' DDTIW: MOVE IOS,CXWD TTYIOW,IOACT]
458 000242 413006 000002  ANDCAB IOS,DEVIOS(DDR)

459 000243 205040 001004  MOVSI TAC,IOFST+DDTM
460 000244 436046 000002  IORM TAC,DEVIOS(DEV DAT) ;STOP ALL IO
461 000245 550060 000014  HRRZ TAC,@UUD          ;CONTENTS OF USER (DDT) AC
462 000246 271040 000021  ADDI TAC,21
463 000247 260140 000000  PUSHJ PDP,IADRCK
464 000250 254000 000000  JRST ADRERR
465 000251 275040 000021  SUBI TAC,21
466 000252 260140 000247' PUSHJ PDP,IADRCK
467 000253 254000 000250' JRST ADRERR
468 000254 205700 440707  MOVSI AC2,440700+PROG
469 000255 540700 000001  HRR AC2,TAC
470 000256 200106 000014  MOVE TAC1,TIPUTR(ODB)
471 000257 201246 000013  MOVEI DAT,TTIBUF(ODB)
472 000260 201640 000124  MOVEI AC1,<21*5>-1 ;NUMBER OF CHARACTERS ALLOWED

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```

473 000261 260140 000124' XFRIN:  PUSHJ  PDP,GETCHR      ITRANSFER INTO USER'S AREA
474 000262 322400 000273'          JUMPE  CHREC,XFRIN2
475 000263 260140 000160'          PUSHJ  PDP,SPCHK
476 000264 254000 000267'          JRST  XFRIN1
477 000265 603040 024000          TLNE  TAC,FCSBRK+BREAKB
478 000266 370006 000012          SOS   TISYNC(00B)
479 000267 306400 000003 XFRIN1: CAIN  CHREC,3      IPRESTORED CONTROL C?
480 000270 254000 000300'          JRST  DDTCNC      IYES, GO INTO MONITOR MODE
481 000271 136400 000016          IDPB  CHREC,AC2
482 000272 367640 000261'          SOJG  AC1,XFRIN1      ILOOP TILL DONE
483 000273 201400 000000 XFRIN2: MOVEI  CHREC,0      ITERMINATE STRING
484 000274 136400 000016          IDPB  CHREC,AC2
485 000275 205040 000200          MOVSI TAC,IOSUPR      IMAKE SURE IO NO LONGER SUPR.
486 000276 412046 000002          ANDCAM TAC,DEVIOS(DEV DAT)
487 000277 263140 000000          POPJ  PDP,
488
489 000300 260140 001324' DDTCNC: PUSHJ  PDP,STLNAC  IGET LINE CHARACTERISTICS
490 000301 254000 000613'          JRST  MONUS6      IGO PROCESS *C
491
492 >
493
494          EXTERNAL PTYOW,WSYNC
495
496          IWSYNC IS CALLED FOR INPUT IO WAIT
497
497 000302 603100 400000 TWSYNC: TLNE  LINE,PTYLIN  IPSEUDO TELETYPE TTYDDB?
498 000303 260140 000000          PUSHJ  PDP,PTYOW      ISET OUTPUT WAIT BIT IN PTY DEVIOS WORD
499 000304 603100 000002          TLNE  LINE,XON       IDO WE WANT TO START RDR?
500 000305 603100 410004          TLNE  LINE,PTYLIN+HLFDPX+FULTWX  ICAN WE?
501 000306 254000 000000          JRST  WSYNC          INO
502 000307 201400 000021          MOVEI  CHREC,21      IREADER START CHAR
503 000310 260140 000352'          PUSHJ  PDP,OUTCHS    ITO OUTPUT BUFFER
504 000311 260140 000652'          PUSHJ  PDP,UTYPET    ISTART TTY, AND
505 000312 254000 000306'          JRST  WSYNC          IWAIT FOR INPUT

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506                                   EXTERNAL WSYNC,IADRCK,ADRERR,CPOPJ
507                                   EXTERNAL JOBPFI,GETWD1
508
509                                   IFN FTDDTM,<
510                                   ;OUTPUT FROM DDT
511                                   ;CALL AC,CSIXBIT /DDTOUT/           AC HAS POINTER TO DDT OUTPUT BUFFER
512
513                                   INTERNAL DDTOUT
514
515 000313 260140 001220' DDTOUT: PUSHJ PDP,TTYFNU
516 000314 200620 000014           MOVE    UUO,@UUO
517                                   >
518
519 000315 205000 001020 DDT5:  MOVSI  IOS,IO+DDTM
520 000316 437006 000002           IORB  IOS,DEVIOS(DOB)
521 000317 505600 000007           MKLI  UUO,PROG           ;POINT TO USER AC
522 000320 541614 777777           HRRI  UUO,-1(UUO)       ;COMPENSATE FOR GETWD1
523 000321 200240 002336' DDT2:  MOVE  DAT,[XWD 440700,TAC]   ;BYTE POINTER TO TAC
524 000322 260140 000000           PUSHJ  PDP,GETWD1       ;GET THE USER'S WORD
525 000323 607240 760000 DDT3:  TLNN  DAT,760000       ;ANY CHARS LEFT?
526 000324 254000 000321'           JRST  DDT2           ;NO, GET ANOTHER WORD
527 000325 134400 000005 DDT4:  ILDB  CHREC,DAT       ;BYTE FROM TAC
528 000326 322400 000343'           JUMPE  CHREC,DDTUTT     ;NULL IS END OF STRING
529 000327 260140 000345'           PUSHJ  PDP,OUTCHR       ;PLACE CHAR IN OUTPUT BUFFER
530 000330 326400 000323'           JUMPN  CHREC,DDT3       ;LOOP IF CHARACTER WAS PLACED
531 000331 270240 002337'           ADD    DAT,[XWD 070000,0]   ;BACK UP POINTER
532 000332 261140 000005           PUSH  PDP,DAT           ;SAVE BYTE POINTER TO TAC
533 000333 261140 000001           PUSH  PDP,TAC           ;AND SAVE THE CHARS IN TAC
534 000334 260140 000343'           PUSHJ  PDP,DDTUTT       ;START OUTPUT
535
536 000335 201000 010000 DDTWAT: MOVEI IOS,IOACT       ;WAIT UNTIL MONITOR BUFFER EMPTY
537 000336 437006 000002           IORB  IOS,DEVIOS(DOB)
538 000337 260140 000312'           PUSHJ  PDP,WSYNC
539 000340 262140 000001           POP  PDP,TAC           ;RESTORE CHARS IN TAC
540 000341 262140 000005           POP  PDP,DAT           ;RESTORE BYTE POINTER TO TAC
541 000342 254000 000323'           JRST  DDT3           ;TRY AGAIN
542
543 000343 260140 001220' DDTUTT: PUSHJ  PDP,TTYFNU       ;RESTORE DAT,LINE
544 000344 254000 000652'           JRST  UTYPET           ;AND START OUTPUT

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545                                     ;MORE CHARACTER AND BUFFER HANDLING ROUTINES
546
547                                     ;OUTCHR CALLED AT UOQ LEVEL TO OUTPUT A CHARACTER
548                                     ;DAT AND DOB MUST BE SET UP
549                                     ;CHECK IS MADE FOR WHETHER SPECIAL ECHO IS REQUIRED
550                                     ;RIGHT THINGS ARE DONE WITH HPOS & HPOS(NEEDNT BE SET)
551                                     ;CALL MOVE CHREC,CHAR TO BE OUTPUT
552                                     ;   PUSHJ   PDP,OUTCHR
553                                     ;   ONLY RETURN, WITH CHAR, OR ITS SPECIAL ECHO PLACED IN OUT BUFFER
554
555                                     INTERNAL OUTCHS
556
557 000345 603000 000200 OUTCHR: TLNE   IOS,IOSUPR   ;I/O OFF BY *0?
558 000346 263140 000000        POPJ    PDP,           ;YES, RETURN
559 000347 201200 000020        MOVEI   HPOS,20       ;CHECK FREE SPACE
560 000350 311206 000046        CAML    HPOS,TDFCTR(DDR) ; FOR EXPANDING CHARS
561 000351 254000 000141'      JRST    GETCH1       ;NOT ENOUGH ROOM
562 000352 261140 000001 OUTCHS: PUSH   PDP,TAC
563 000353 261140 000004        PUSH   PDP,HPOS
564 000354 261140 000002        PUSH   PDP,TAC1     ;SAVE LINE
565 000355 260140 001324'      PUSHJ   PDP,STLNAC   ;GET LINE DATA
566 000356 405400 000177        ANDI   CHREC,177    ;MASK ANY JUNK
567 000357 135220 000000'      LDR    HPOS,PHPOS   ;GET HORIZONTAL POSITION
568 000360 260140 000423'      PUSHJ   PDP,ADJHP   ;NEW HPOS AFTER CHAR OUTPUT
569 000361 255000 000000        JFCL
570 000362 603100 500000        TLNE   LINE,DISLIN*PTYLIN ;IS IT A DISPLAY OR PTY?
571 000363 254000 000370'      JRST    OUTCH2     ;YES, IGNORE HPOS AND FILLERS
572 000364 301200 000110        CAIL   HPOS,072    ;DID IT GO OVER LINE?
573 000365 260140 002042'      PUSHJ   PDP,CRLFEC  ;YES, OUTPUT CRLF
574 000366 603040 100000        TLNE   TAC,SPOUT   ;VT,FF,HT?
575 000367 325100 000375'      JUMPGE LINE,OUTCH1 ;YES, HANDLE THEM UNLESS PTY
576 000370 260140 000144' OUTCH2: PUSHJ   PDP,PUTCH0 ;PLACE IN BUFFER
577 000371 137200 000000' OUTCH3: OPB    HPOS,PHPOS ;UPDATE IN CORE
578 000372 262140 000002        POP    PDP,TAC1    ;RESTORE LINE
579 000373 262140 000004        POP    PDP,HPOS
580 000374 254000 000000        JRST   TPOPJ

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581                                     ;HERE ON UOQ OUTPUT OF HT,FF,VT
582
583 000375 260140 001324' OUTCH1: PUSHJ PDP,STLNAC ;GET LINE CHARACTERISTICS
584 000376 603100 000010 TLNE LINE,T35 ;SMART TTY?
585 000377 254000 000416' JRST OUTC1A ;YES.
586 000400 200040 000210 MOVE TAC,CHREC ;COPY THE CHARACTER
587 000401 201400 000240 MOVEI CHREC,40 ;STUPID TTY.
588 000402 135200 000000' LDR HPOS,HPOS ;GET OLD POSITION
589 000403 302040 000011 CAIE TAC,11 ;H TAB?
590 000404 201400 000012 MOVEI CHREC,12 ;NO. OUTPUT LF'S.
591 000405 306040 000014 OUTC1C: CAIN TAC,14 ;FF?
592 000406 211200 000010 MOVNI HPOS,10 ;YES. 8 LF'S
593 000407 306040 000013 CAIN TAC,13 ;VT?
594 000410 211200 000004 MOVNI HPOS,4 ;YES. 4 LF'S
595 000411 260140 000144' OUTC1B: PUSHJ PDP,PUTCHO ;OUTPUT THE PHONY CHAR
596 000412 271200 000001 ADDI HPOS,1 ;COUNT THE OUTPUTS
597 000413 602200 000007 TRNE HPOS,7 ;ENOUGH?
598 000414 254000 000411' JRST OUTC1B ;NO. MORE.
599 000415 254000 000371' JRST OUTCH3 ;NO MORE.
600
601
602 000416                                     OUTC1A: ;HERE ON OUTPUT OF SLOW CHARS TO SMART TTY
603 000417 260140 000144' PUSHJ PDP,PUTCHO ;SEND THE REAL CHAR
604 000420 201400 000010 MOVE TAC,CHREC ;COPY THE CHARACTER
605 000421 275200 000001 MOVEI CHREC,IOLECH ;A DELAY CHARACTER
606 000422 254000 000405' SUBI HPOS,2 ;TWO SNUFF CHARACTERS
607                                     JRST OUTC1C ;GO OUTPUT THE SLUFFS.
608                                     ;COUNT WILL BE MODIFIED ON VT,FF
609
610                                     ;CALLED AT UOQ AND INT LEVEL
611                                     ;TO ADJUST HPOS FOR OUTPUT OF CHREC
612                                     ;SKIPS IF SPCHECK SAYS SPECIAL CHAR
613
613 000423 303400 000174 ADJHP: CAIE CHREC,174 ;HIGH SPECIALS?
614 000424 254000 000160' JRST SPCHEK ;YES. NO HPOS MOTION
615 000425 301400 000040 CAIL CHREC,40 ;CONTROL CHARACTERS?
616 000426 344200 000160' AOJA HPOS,SPCHEK ;NO. COUNT HPOS FOR PRINT CHAR
617 000427 306400 000010 CAIN CHREC,10 ;BACKSP?
618 000430 361200 000432' SOJL HPOS,.*2 ;YES
619 000431 306400 000015 CAIN CHREC,15 ;CARRIAGE RETURN?
620 000432 201200 000000 MOVEI HPOS,0 ;YES.
621 000433 302400 000011 CAIE CHREC,11 ;TAB?
622 000434 254000 000160' JRST SPCHEK ;NO. NO HP MOD
623 000435 660200 000007 TR0 HPOS,7 ;TAB. TO NEXT B
624 000436 344200 000160' AOJA HPOS,SPCHEK

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```
625                   INTERNAL FTCHECK,FTMONP  
626                   IFN FTCHECK+FTMONP,<  
627                   EXTERNAL SCNDD8,TTYLST,TTIBUF,TIPUTR,TITAKR,TITCTR,TIFCTR,TISYNC  
628                   EXTERNAL TTORUF,TOPUTR,TOPCTR,TOTAKR,TTYCHR,SCNDDS,CCHAR,LINSAV  
629                   EXTERNAL TOTCTR,TOFCTR  
630                   >  
631                   IFE FTCHFK+FTMONP,<  
632
```

```

633      ;DESCRIPTION OF DEVICE DATA BLOCK FOR TELETYPES
634      ;THERE IS ONE DEVICE DATA BLOCK FOR EACH JOB THAT CAN BE INITIALIZED
635      ;UNDER TIME-SHARING, WHETHER THIS JOB IS ATTACHED TO A PHYSICAL LINE
636      ;NUMBER OR NOT, THEREFORE THERE SHOULD BE ONE DDR FOR EVERY LINE NUMBER
637      ;PLUS ONE FOR EVERY PSEUDO-TELETYPE PLUS ONE FOR EVERY ADDITIONAL JOB
638      ;THAT AN INSTALLATION MAY WISH TO RUN DETACHED FROM A PHYSICAL LINE
639      ;PLUS ONE DDR TO PRINT ERROR MESSAGES WHEN ALL JOBS (DDB'S) ARE
640      ;INITIALIZED.
641      ;THE FUNCTIONS OF THE FIRST EIGHT WORDS ARE AS DESCRIBED IN THE
642      ;COMMENTS IN THE SYSTEM PARAMETER TAPE( FILE NAME S), LOCATIONS 11
643      ;THROUGH 27 (OCTAL) RELATIVE TO SCNDDDB PERTAIN DIRECTLY TO THE
644      ;SCANNER SERVICE BUFFERING SCHEME. THE SUBSEQUENT 2*20(OCTAL) LOCATIONS
645      ;ARE CURRENTLY THE TWO TELETYPE BUFFERS, THEY NEED NOT BE IN THE ODB
646      ;AS LONG AS THEIR ADDRESSES ARE PLACED IN THE RIGHT HALF OF TTIBUF,
647      ;AND TTOBUF EITHER AT ASSEMBLY, BUILD OR RUN TIME, IF DYNAMIC
648      ;BUFFER CONSTRUCTION IS TO BE ADDED THESE BUFFERS MAY BE PLACED ANYWHERE IN
649      ;FRE CORE STORAGE, AND THE RIGHT HALF OF THE REQUIRED TTXBUF(WHERE "X"
650      ;MAY BE "I" OR "O")MAY BE LOADED ONLY WHEN THAT BUFFER IS REQUIRED.
651
652      ;THERE ARE TWO BUFFERS, EACH OF WHICH IS A "RING" UNTO ITSELF:
653      ;INPUT---POINTED TO BY TTIBUF
654      ;      ALL CHARACTERS TYPED GO INTO THIS BUFFER. IN ADDITION, ALL
655      ;OTHER COMMANDS TO BE READ BY THE COMMAND INTERPRETER IN COMCON
656      ;(APRSER) ARE STORED HERE.
657      ;OUTPUT BUFFER---POINTED TO BY TTOBUF
658      ;      ALL CHARACTERS THAT ARE OUTPUT ARE PLACED SEQUENTIALLY IN THIS
659      ;BUFFER; THIS INCLUDES ECHOED CHARACTERS AS WELL AS NORMAL OUTPUT OF
660      ;CHARACTER STRINGS.
661
662      ;THERE ARE NINE BUFFER PARAMETER WORDS ASSOCIATED WITH EACH BUFFER
663      ;(EXCEPT FOR THE OUTPUT BUFFER, WHICH ONLY NEEDS SIX), THE LAST
664      ;FOUR CHARACTERS IN THE MNEMONIC DESCRIBES THE FUNCTION OF THE WORD
665      ;WHILE THE FIRST TWO CHARACTERS IDENTIFY WHICH BUFFER THAT THE
666      ;FUNCTION APPLIES TO. THE FORMULA FOR THESE WORDS IS TX'FUNC, WHERE
667      ;THE RELATIVE POSITION OF ALL TX'FNCT1 TO TTX'BUF IS THE SAME FOR
668      ;ALL BUFFERS. IN THIS MANNER, THE ADDRESS OF TTX'BUF IS LOADED INTO
669      ;ACCUMULATOR DAT, AND THE RELATIVE POSITIONS FUNCT1-FUNCT9 ARE
670      ;DEFINED TO BE 0-10 (OCTAL); I.E., FUNCT(DAT) WILL IDENTIFY THE DESIRED
671      ;BUFFER PARAMETER WORD REGARDLES OF BUFFER.
  
```

```
672 ;FOLLOWING ARE DEFINITIONS OF THE RELATIVE BUFFER PARAMETER WORDS;
673 ;TTX'BUF OR BUF(DAT)---THE LEFT HALF CONTAINS NUMBER OF BYTES IN BUFFER AND THE RIGHT
674 ; HALF THE ADDRESS OF THE FIRST WORD OF THE BUFFER, THIS WORD IS
675 ; ONLY READ BY THE CURRENT CODE, UPON THE ADDITION OF DYNAMIC
676 ; BUFFER ALLOCATION, THIS WORD WOULD BE LOADED IN THE SAME FORMAT
677 ; AT THE TIME THAT THE BUFFER WOULD BE BUILT.
678 ;
679 ;SCNINI SETS BUFFERS TO LENGTH TTYCHR AT PRESENT. ALSO
680 ;PRESENT CODE OCCASIONALLY USES TTYCHR RATHER THAN READING LH
681 ;OF TTXBUF
682 ;
683 ;TX'PTR OR PTR(DAT)---BYTE POINTER USED TO PLACE CHARACTERS INTO THE
684 ; BUFFER, IT MUST ALWAYS BE AHEAD OF OR EQUAL TO THE TAKER POINTER.
685 ;TX'PCTR OR PCTR(DAT)---COUNT OF NUMBER OF TIMES THAT PTR MAY BE INCREMENTED
686 ; BEFORE REACHING THE LAST BYTE IN THE LAST WORD OF THE BUFFER
687 ; (NOT THE AMOUNT OF FREE SPACE LEFT)
688 ;TX'TAKR OR TAKR(DAT)---BYTE POINTER USED BY ALL ROUTINES TO PICK UP
689 ; CHARACTERS FROM THE BUFFER, WHEN THE TAKR IS EQUAL TO THE PTR,
690 ; THE BUFFER IS "EMPTY".
691 ;TX'TCTR OR TCTR(DAT)---COUNT OF THE NUMBER OF TIMES THAT THE TAKR CAN
692 ; BE INCREMENTED BEFORE REACHING THE PHYSICAL END OF THE BUFFER.
693 ;TX'FCTR OR FCTR(DAT)---FREE CHARACTER COUNT; I.E., HOW MANY TIMES MAY THE
694 ; PTR BE INCREMENTED BEFORE IT WOULD COME AROUND AND "STEP ON"
695 ; THE TAKR, WHEN THE FREE CHAR. COUNT IS ZERO, NO MORE CHARACTERS
696 ; MAY BE PLACED IN THE BUFFER (USUAL RESULT IS GOING INTO IO WAIT)
697 ;TISYNC---COUNT OF NUMBER OF "LINES" THAT HAVE BEEN TYPED
698 ; INTO INPUT BUFFER.
```

```

699 1
700      ;SCANNER DEVICE DATA BLOCK,
701      ;REMAINING SCN DOB'S ARE GENERATED
702      ;OUT OF LINE AT BUILD TIME.
703
704      INTERNAL SCNDDB,LINSAV
705      000437'      TTYLST=.      ;FIRST TTY DOB
706      000437'      ZZ=.
707      000437 646471 200000 SCNDDB: SIXBIT /TTY3/      ;DEVNAM
708      000440 000000 000021      XWD 0,STTYRF+1      ;DEVCHR
709      000441 000000 000000      Z      ;DEVIOS
710      000442 000000 000531'      EXP SCNDSP      ;DEVSER
711      000443 000013 000003      XWD DVTTY+DVIN+DVOUT,3      ;DEVMOD
712      000444 000000 000000      Z      ;DEVLOG
713      000445 000000 000000      Z      ;DEVSRUF
714      000446 000007 000000      XWD PROG,0      ;DEVIAD, PHPOS BITS 6-12
715      000447 000007 000000      XWD PROG,0      ;DEVOAD, PFITCH BITS 0-8
716      XP TTYPTR,.-ZZ      ;TTYPTR
717      000450 000000 000000      Z      ;PLASTC,PLSTLC,PCOMIC,PSAVCH,TOIP

718      XP TISYNC,.-ZZ+
719      000451 000000 000000      Z
720      XP TIBUF,.-ZZ+
721      000452 000120 000000      XWD STTYRF*5,0      ;RH IS BUFFER ADR
722      XP TIPUTR,.-ZZ+
723      000453 000000 000000      Z
724      XP TIPCTR,.-ZZ+
725      000454 000000 000000      Z
726      XP TITAKR,.-ZZ+
727      000455 000000 000000      Z
728      XP TITCTR,.-ZZ+
729      000456 000000 000000      Z
730      XP TIFCTR,.-ZZ+
731      000457 000000 000000      Z
  
```

```

732                XP      SYSPDL,.*
733                ;BUFFER USED AS PUSH-DOWN LIST BY SYSTEM DURING
734                ;INITIALIZATION AND RESTARTING
735
736                XP      TIBF,.-ZZ†
737                REPEAT STTYBF,< 0>
738 000460 000000 000000 0
739 000461 000000 000000 0
740 000462 000000 000000 0
741 000463 000000 000000 0
742 000464 000000 000000 0
743 000465 000000 000000 0
744 000466 000000 000000 0
745 000467 000000 000000 0
746 000470 000000 000000 0
747 000471 000000 000000 0
748 000472 000000 000000 0
749 000473 000000 000000 0
750 000474 000000 000000 0
751 000475 000000 000000 0
752 000476 000000 000000 0
753 000477 000000 000000 0
754                XP      TTOBUF,.-ZZ†
755 000500 000120 000000 XWD  STTYBF*5,0
756                XP      TOPUTR,.-ZZ†
757                Z
758                XP      TOPCTR,.-ZZ†
759 000502 000000 000000 Z
760                XP      TOTAKR,.-ZZ†
761 000503 000000 000000 Z
762                XP      TOTCTR,.-ZZ†
763 000504 000000 000000 Z
764                XP      TOFCTR,.-ZZ†
765 000505 000000 000000 Z
  
```

```
766 XP TOBF,.-ZZ*
767 REPEAT STTYBF,<0>
768 000506 000000 000000 0
769 000507 000000 000000 0
770 000510 000000 000000 0
771 000511 000000 000000 0
772 000512 000000 000000 0
773 000513 000000 000000 0
774 000514 000000 000000 0
775 000515 000000 000000 0
776 000516 000000 000000 0
777 000517 000000 000000 0
778 000520 000000 000000 0
779 000521 000000 000000 0
780 000522 000000 000000 0
781 000523 000000 000000 0
782 000524 000000 000000 0
783 000525 000000 000000 0
784 ;NO. OF CHAR, IN MON. BUF,
785 XP ITYCHR,<<STTYBF>*5>*
786 XP SCNDDS,.-ZZ ;SIZE OF SCN DDB
787
788 000526 000000 000000 LINSAV: 0
789 > ;CLOSE IFE FTMONP WAY BACK
790
```

```

791                               ;DEVICE DEPENDENT PART OF IO UUOS.
792
793
794                               ;DISPATCH TABLE
795
796                               INTERNAL           SCNDSP
797                               EXTERNAL   OUT,SCNON,SCNOFF
798
799   000527   254000   000007'           JRST   TTYINI           ;INITIALIZATION
800   000530   254000   000167'           JRST   CPOPJ1          ;TTY HUNG TIME-OUT, IGNORE
801   000531   254000   001240'   SCNDSP: JRST   TTYREL          ;RELEASE
802   000532   254000   000000           JRST   OUT           ;CLOSE
803   000533   254000   000632'           JRST   TTYOUT          ;OUTPUT
804
805   000534   200000   002335'   TTYIN:  MOVE   IOS,[XWD TTYIOW,IOACT] ;INDICATE INPUT WAIT
806   000535   437006   000002           IORB   IOS,DEVIOS(000)
807   000536   205000   001400           MOVSI   IOS,DDTM+TPMON
808   000537   413006   000002           ANDCAB   IOS,DEVIOS(000)
809   000540   260140   001324'           PUSHJ   POP,STLNAC       ;GET LINE CHARACTERISTICS
810
811   000541   603100   010000           IFN FTHDPX,<            LINE,HLPDPX
812   000542   607000   000020           TLNE   IOS,IO
813                                       >
814   000543   337006   000012   TTYIN1: SKIPG   TISYNC(000)
815   000544   260140   000302'           PUSHJ   PDP,TWSYNC
816   000545   260140   000551'           PUSHJ   PDP,MONUSR
817   000546   200000   002340'   TENDIN: MOVE   IOS,[XWD TTYIOW+DDTM+IOSUPR,ECHOF+MERTPO+IGNOR+IOACT]
818   000547   413006   000002           T0POPJ: ANDCAB   IOS,DEVIOS(000)
819   000550   263140   000000           POPJ   PDP,
  
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820 ;ROUTINE TO MOVE A LINE OR STRING FROM TTY INPUT BUFFER TO USER'S INPUT BUFFER
821 ;CALLED ONLY FROM UOO LEVEL, FROM INPUT UOO ONLY
822
823 EXTERNAL ADVBFF,STTI00,BUFCLR
824
825 000551 550046 000007 MONUSR: HRFZ TAC,@DEVIAD(0DB) ;ADDRESS OF BUFFER IN USFR AREA
826 000552 260140 000000 PUSHJ PDP,BUFCLR ;CLEAR WHOLE BUFFER
827 000553 254000 000253' JRST ADRERR ;ADDRESS CHECK RETURN
828 000554 260140 001324' PUSHJ PDP,STLNAC ;SETUP LINE
829 000555 201700 000120 MOVEI AC2,TTYCHR ;MAX NR OF CHARACTERS
830 000556 201666 000007 MOVEI AC1,@DEVIAD(0DB) ;ADDRESS OF USR BUFFER-1
831 000557 270640 002341' ADD AC1,[XWD 10700,1] ;MAKE BYTE POINTER POINT RIGHT
832 000560 201246 000013 MOVEI DAT,TTIBUF(0DB) ;SPECIFY USER MODE INPUT BUFFER
833
834 000561 260140 000124' MONUS1: PUSHJ PDP,GETCHR ;GET A CHAR, FROM IT
835 000562 322400 000577' JUMPE CHREC,MONUS3 ;ZERO IMPLIES EMPTY BFR
836 000563 136400 000215 IDPB CHREC,AC1 ;PLACE CHAR, IN USER BUFFER
837 000564 260140 000160' PUSHJ PDP,SPCHEK ;SPECIAL CHARACTER?
838 000565 254000 000570' JRST MONUS2 ;NO
839 000566 603040 024000 TLNE TAC,FCSBRK+BREAKP ;A BREAK CHARACTER?
840 000567 374006 000012 SOSA TISYNC(0DB) ;ISOME BREAK, COUNT IT DOWN
841 000570 367700 000561' MONUS2: SOJG AC2,MONUS1 ;NO, USER BUFFER FULL?
842 000571 306400 000003 CAIN CHREC,3 ;STORED CONTROL C?
843 000572 254000 000623' JRST MONUS7 ;YES, HANDLE IT
844 000573 201000 000000 MOVEI IOS,0
845 000574 306400 000032 CAIN CHREC,"Z"-100 ;*Z READ?
846 000575 205000 000040 MOVSI IOS,IOEND
847 000576 437006 000002 IORB IOS,DEVIOS(0DB)
848
849 000577 201726 000007 MONUS3: MOVEI AC2,@DEVIAD(0DB) ;BREAK CHAR OR COUNTED OUT, INPUT UOO DONE
850 000600 275656 000001 SUBI AC1,1(AC2) ;CALCULATE NUMBER OF WORDS
851 000601 542656 000001 HRRM AC1,1(AC2) ;STORE IN 3RD BUFFER WORD
852
853 000602 260140 000000 MONUS4: PUSHJ PDP,ADVBFF ;INPUT UOO DONE,NEXT BUFFER FULL?
854 000603 254000 000606' JRST MONUS5 ;YES, INPUT REALLY IS DONE
855 000604 333006 000012 SKIPL TISYNC(0DB) ;NO, DO WE HAVE MORE LINES FOR IT?
856 000605 254000 000627' JRST MONUS8 ;YES, GIVE USER NEXT LINE, TOO
857
858 000606 205000 000004 MONUS5: MOVSI IOS,IOFST
859 000607 437006 000002 IORB IOS,DEVIOS(0DB)
860 000610 623000 000001 TLZE IOS,IOW
861 000611 260140 000000 PUSHJ PDP,STTI00 ;TTY IN INPUT WAIT?
862 000612 263140 000000 POPJ PDP,? ;YES, TAKE IT OUT OF IT

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863 000613 260140 002106' MONUS6: PUSHJ PDP,CNCGMOD ;CONTROL C MODE
864 000614 205040 070000 MOVSI TAC,70000 ;DECREMENT TAKR POINTER
865 000615 272046 000016 ADDM TAC,TITAKR(00B) ;SO NEXT ILDB WILL GET +C
866 000616 350006 000017 AOS TITCTR(00B) ;ADJUST COUNTER
867 000617 370006 000020 SOS TIFCTR(00B) ;ADJUST FREE CHAR. COUNT
868 000620 350006 000012 AOS TISYNC(00B) ;SEE THE +C AGAIN
869 000621 260140 001572' PUSHJ PDP,COMSET ;WAKE UP COMMAND DECODER
870 000622 254000 000337' JRST WSYNC ;AND WAIT FOR INTERPRETATION
871
872 000623 200000 002335' MONUS7: MOVE IOS,[XWD TTYIOW,IOACT]
873 000624 437006 000002 IORB IOS,DEVIOS(00B) ;PUT JOB BACK IN IOWAIT
874 000625 260140 000613' PUSHJ PDP,MONUS6
875 000626 254000 000534' JRST TTYIN ;RESTART INPUT UO
876
877 000627 607000 000040 MONUS8: TLNN IOS,IOEND ;ROOM FOR ANOTHER BUFFER, +Z SEEN?
878 000630 254000 000551' JRST MONUSR ;NO, GO PASS ANOTHER LINE
879 000631 263140 000000 POPJ PDP, ;YES, LET UOCON HANDLE EOF
  
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880                                     ;OUTPUT UOJ
881
882                                     EXTERNAL PTYPE,ADVBFE
883
884 000632 205000 000002 TTYOUT: MOVSI IOS,IOREG
885 000633 612006 000002 TDNE IOS,DEVIOS(DDB)
886 000634 661000 000200 TLO IOS,IOSUPR ;KILL *O ON FIRST OUTPUT
887 000635 434000 002342' IOR IOS,[XWD TPMON+DDTM,ECHOF+MERTP0+IGNOR+IOACT]
888 000636 412006 000002 ANDCAM IOS,DEVIOS(DDB)
889 000637 205000 000024 MOVSI IOS,IO+IOFST
890 000640 437006 000002 IORB IOS,DEVIOS(DDB)
891
892
893 000641 260140 001324' PUSHJ PDP,STLNAC ;GET LINE CHARACTERISTICS
894 000642 261140 000002' PUSH PDP,LINE ;SAVE INFO
895 000643 260140 000663' PUSHJ PDP,USRMON ;MOVE USER'S BUFFER TO TTY BUFFER
896 000644 260140 000000' PUSHJ PDP,ADVBFE ;ADVANCE USER'S HEADERS
897 000645 334000 000000' SKIPA
898 000646 254000 000651' JRST ,+3 ;MORE BUFFERS AVAILABLE

899 000647 201000 010000 MOVEI IOS,IOACT ;NO MORE BUFFERS
900 000650 413006 000002 ANDCAB IOS,DEVIOS(DDB) ;CLEAR ACTIVE IN IOS
901 000651 262140 000002' POP PDP,LINE ;RESTORE LINE INFO
902 000652 321100 000000 UTYPT: JUMPL LINE,PTYPE ;START PTY EXCHANGE IF PTY LINE
903 000653 205040 400000 MOVSI TAC,TOIP
904 000654 700600 000400 CONO PI,PIOFF ;PREVENT TIMING GLITCH
905 000655 616046 000011 TDNN TAC,TTYPTR(DDB) ;IS TYPE-OUT ALREADY ON?
906 000656 254000 000661' JRST UTYPT1
907 000657 700600 000200 CONO PI,PION
908 000660 263140 000000 POPJ PDP,0
909
910 000661 436046 000011 UTYPT1: IORM TAC,TTYPTR(DDB) ;START TYPEOUT
911 000662 254000 001612' JRST XMTIN1
  
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912          ;ROUTINE TO MOVE USER OUTPUT BUFFER TO MON. OUTPUT BUFFER
913          ;CALLED ONLY AT UO0 LEVEL,RY OUTPUT UO0
914
915          EXTERN UADRCK
916
917 000663 201726 000010 USRMON: MCVET AC2,@DEVOAD(0DB) ;ADDRESS OF 2ND BUFFER WORD
918 000664 200716 000021 MOVE AC2,1(AC2) ;NUMBER OF WORDS TO OUTPUT
919 000665 221700 000005 TMULI AC2,5 ;NR OF CHARACTERS
920
921 000666 550646 000010 USRPMN1: HRRZ AC1,DEVOAD(0DB) ;ADDRESS OF BUFFER
922 000667 260140 000000 PUSHJ PDP,UADRCK ;MAKE SURE IT IS OK
923 000670 270640 002343' ADD AC1,[XWD 10700+PROG,1] ;MAKE POINTER RELOCATABLE
924
925 000671 134400 000015 USRPMN2: ILDB CHREC,AC1 ;PICK UP CHARACTER
926 000672 322400 000675' USRPMN4: JUMPE CHREC,USRPMN5 ;IF NULL, IGNORE
927 000673 260140 000345' PUSHJ PDP,OUTCHR ;PLACE IN OUTPUT BUFFER
928 000674 322400 000677' JUMPE CHREC,USRPMN3 ;IF NO MORE ROOM IN MON, BUFFER
929
930 000675 367700 000671' USRPMN5: SOJG AC2,USRPMN2 ;LOOP AS LONG AS THERE ARE CHAR'S,
931 000676 263140 000000 POPJ PDP, ;IDONE
932
933 000677 261140 000016 USRPMN3: PUSH PDP,AC2 ;NUMBER OF CHARACTERS TO GO
934 000700 261140 000015 PUSH PDP,AC1 ;SAVE RELOCATABLE POINTER
935 000701 200103 777775 MOVE LINE,-3(PDP) ;GET SAVED LINE CHAR WORD
936 000702 260140 000710' PUSHJ PDP,TTOWS ;WAIT FOR IO
937 000703 262140 000015 POP PDP,AC1 ;RESTORE POINTER
938 000704 262140 000016 POP PDP,AC2 ;RESTORE COUNT
939 000705 200006 000002 MOVE IOS,DEVIOS(0DB) ;RESTORE IOS
940 000706 135400 000015 LDR CHREC,AC1 ;GET LAST CHARACTER
941 000707 254000 000672' JRST USRPMN4 ;RETURN TO OUT LOOP
942
943 000710 200000 002344' TTOWS: MOVE IOS,[XWD IO,IOACT] ;SET DEVICE ACTIVE (TTY)
944 000711 437006 000002 IORB IOS,DEVIOS(0DB)
945 000712 260140 000652' PUSHJ PDP,UTYPE ;START TYPING IF NEEDED
946 000713 254000 000622' JRST WSYNC ;WAIT TILL ROOM IN BUFFER
  
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947          ;ITCALL - QUANTITY IN AC FIELD DETERMINES ACTION OF UOO (051)
948
949          INTERNAL TTYUOO
950          EXTERN  UADCK1
951
952 000714 260140 001220' TTYUOO: PUSHJ PDP,TTYFNU
953 000715 301520 000015      CAIL  UCHN,TTUOOL      ;TOO HIGH AC FIELD?
954 000716 263140 000000      POPJ  PDP,          ;YES, NO-OP
955 000717 302500 000001      CAIE  UCHN,1      ;A READ OPERATION?
956 000720 306500 000003      CAIN  UCHN,3      ;I.E., PURE?
957 000721 254032 000725'      JRST @TTUOOT(UCHN) ;YES, DONT ADR CHECK
958 000722 550640 000014      HRRZ  AC1,UUO
959 000723 260140 000000      PUSHJ PDP,UADCK1
960 000724 254032 000725'      JRST  @TTUOOT(UCHN)      ;DISPATCH TO UOO ROUTINES
961
962
963 000725 000000 001001' TTUOOT: EXP  INCHRW      ;(0)INPUT CHAR. WAIT TILL TYPED
964 000726 000000 001010'      EXP  ONEOUT      ;(1)OUTPUT A CHARACTER
965 000727 000000 000744'      EXP  INCHRS      ;(2)INPUT A CHAR. & SKIP
966 000730 000000 000771'      EXP  OUTSTR      ;(3)OUTPUT A STRING
967 000731 000000 000760'      EXP  INCHWL      ;(4)INPUT CHAR, WAIT, LINE MODE
968 000732 000000 000742'      EXP  INCHSL      ;(5)INPUT CHAR, SKIP, LINE MODE
969 000733 000000 001020'      EXP  GETLIN      ;(6)GET LINE CHARACTERISTICS WORD
970 000734 000000 001035'      EXP  SETLIN      ;(7)SET BITS IN LH LINTAB
971 000735 000000 001170'      EXP  TRESOU      ;(10)BACK UP POINTER TO COMMAND
972 000736 000000 000055'      EXP  SETBFI      ;(11)CLEAR INPUT BUFFER
973 000737 000000 000064'      EXP  SETBF2      ;(12)CLEAR OUTPUT BUFFER
974 000740 000000 000775'      EXP  SKPINC      ;(13)SKIP IF CHAR TO INPUT
975 000741 000000 000772'      EXP  SKPINL      ;(14)SKIP IF LINE TO INPUT
976
977          000015 TTUOOL=-.TTUOOT
  
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978                                     ;INPUT A CHARACTER AND SKIP---IF NONE TYPED, DON'T SKIP
979
980 000742 337006 000012 INCHSL: SKIPG   TISYNC(DDB)   ;ANY LINES IN BUFFER?
981 000743 263140 000000      POPJ     PDP,0      ;NO. RETURN
982 000744 201246 000013 INCHRS: MOVEI   DAT,TTIBUF(DDB) ;GET A CHARACTER
983 000745 260140 000124'      PUSHJ   PDP,GETCHR  ;FROM TTI BUFFER
984 000746 322400 000000      JUMPE   CHREC,CPOPJ ;RETURN IF NULL(EMPTY BUFFER)
985 000747 260140 000160'      PUSHJ   PDP,SPCHEK
986 000750 255000 000000      JFCL
987 000751 603040 024000      TLNE    TAC,FCSBRK+BREAKB
988 000752 370006 000012      SOS     TISYNC(DDB) ;KEEP BREAK COUNT RIGHT
989 000753 260140 000546'      PUSHJ   PDP,TENDIN  ;CLEAR UP IOACT, IOSUPR, ETC
990 000754 306400 000003      CAIN    CHREC,3
991 000755 254000 000613'      JRST    MONUS6     ;STORED +C
992 000756 202420 000014      MOVEM   CHREC,@UUO ;MOVE INTO LOC, SPECIFIED BY UUU
993 000757 254000 000530'      JRST    CPOPJ1    ;AND SKIP RETURN
994
995                                     ;INPUT CHARACTER AND WAIT, LINE MODE
996
997 000760 260140 000742' INCHWL: PUSHJ   PDP,INCHSL      ;SEE IF ANY CHARS.
998 000761 254000 000763'      JRST    ,+2      ;NO
999 000762 263140 000000      POPJ     PDP,0      ;YES. GIVE IT TO USER
1000 000763 200000 002335'      MOVE    IOS,[XWD TTYIOW,IOACT] ;NONE, WAIT FOR IT
1001 000764 436006 000002      IORM    IOS,DEVIOS(DDB) ;TTY TO IOW STATE
1002 000765 205000 001000      MOVSI   IOS,DDTM   ;JUST IN CASE
1003 000766 413006 000002      ANDCAB IOS,DEVIOS(DDB) ;CLEAR DDTMODE BREAK FLAG
1004 000767 260140 000302'      PUSHJ   PDP,TWSYNC ;WAIT FOR CHAR
1005 000770 254000 000760'      JRST    INCHWL  ;AND TRY AGAIN
1006
1007                                     ;OUTPUT A STRING
1008
1009 000771 254000 000315' OUTSTR: JRST    DDT5      ;JUST USE DDT OUTPUT CODE
1010
1011 000772 333006 000012 SKPINL: SKIPLE  TISYNC(DDB)   ;INPUT BUFFER HAVE A LINE?
1012 000773 350003 000000      AOS     0(PDP)     ;YES, SKIP.
1013 000774 263140 000000      POPJ     PDP,0      ;RETURN
1014
1015 000775 554046 000013 SKPINC: HLRZ    TAC,TTIBUF(DDB) ;SIZE OF IN RUFFER
1016 000776 313046 000020      CAMLE  TAC,TIFCTR(DDB) ;SIZE > # FREE CHARS?
1017 000777 350003 000000      AOS     0(PDP)     ;YES, SKIP.
1018 001000 263140 000000      POPJ     PDP,0      ;RETURN,

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1019                ;MORE ROUTINES CALLED BY TTY UOO DISPATCHER
1020
1021                EXTERNAL TTPLEN,GETWDU.
1022
1023                ;INCHRW GOES INTO I/O WAIT IF NO CHARACTER HAS BEEN TYPED--NO SKIPS
1024
1025 001001 260140 000744' INCHRW: PUSHJ PDP,INCHRS                ;GET ACHAR IF ONE IS THERE
1026 001002 254000 001004'                JRST ,+2                ;NONE THERE
1027 001003 263140 000000                POPJ PDP,                ;CHAR, PICKED UP AND STORED
1028 001004 200070 002334'                MOVE IOS,[XWD TTYIOW+DDTM,IOACT] ;SETUP FOR IOWAIT
1029 001005 437006 000002                IORB IOS,DEVIOS(ODDB)        ;SPECIFICALLY FOR INPUT WAIT
1030 001006 260140 000302'                PUSHJ PDP,TWSYNC            ;WAIT FOR CHAR. TO BE TYPED
1031 001007 254000 001001'                JRST INCHRW                ;GO GET IT
1032
1033                ;ONEOUT OUTPUTS ONE CHARACTER
1034
1035 001010 260140 000000 ONEOUT: PUSHJ PDP,GETWDU                ;PICK UP CHAR FROM USER
1036 001011 200400 000001                MOVE CHREC,TAC                ;PUT IT IN PROPER AC
1037 001012 405400 000177                ANDI CHREC,177                ;MASK ANY JUNK
1038 001013 322400 000746'                JUMPE CHREC,CPOPJ            ;DONT STORE NULLS
1039 001014 260140 000345'                PUSHJ PDP,OUTCHR            ;PLACE IT IN TTO BUFFER
1040 001015 326400 000343'                JUMPN CHREC,DDTUTT          ;IF IT STORED, RETURN
1041 001016 260140 000710'                PUSHJ PDP,TTOWS            ;BUFFER WAS FULL. TRY AGAIN LATER
1042 001017 254000 001010'                JRST ONEOUT
1043
1044                ;GETLIN PUTS LINE CHARACTERISTICS WORD INTO ADR, IN UOO ADR, FIELD
1045
1046 001020 335060 000014 GETLIN: SKIPGE TAC,@UOO                ;DOES USER WANT OWN LINE CHAR, WD.?
1047 001021 254000 001033'                JRST GETLN1                ;YES
1048 001022 201100 000000                MOVEI LINE,0                ;NO, CHECK SIZE OF NUMBER
1049 001023 301040 000000                CAIL TAC,TTPLEN            ;TOO HIGH?
1050 001024 254000 001033'                JRST GETLN1                ;YES, GIVE HIM THE 0.
1051 001025 200102 000052'                MOVE LINE,LINTAB(LINE)      ;OK, GET THE ENTRY
1052 001026 550301 000035'                HRRZ DEVDAT,TTYTAB(TAC)    ;GET DEVDAT ON REQUESTED LINE
1053                ; NOTE - NO LONGER ON JOB'S TTY
1054 001027 135040 000000                LDB TAC,PJOBN                ;GET JOB NUMBER OF REQUESTED TTY
1055 001030 322040 001033'                JUMPE TAC,GETLN1            ;IF NONE, NO LINES.
1056 001031 333006 000012                SKIPLE TISYNC(DEVDAT)      ;ANY TYPE-IN?
1057 001032 661100 000100                TLO LINE,LINRDY            ;YES, FLAG.
1058 001033 202120 000014 GETLN1: MOVEM LINE,@UOO                ;GIVE IT TO USER
1059 001034 263140 000000                POPJ PDP,
1060
1061                ;ROUTINE TO SET LINE CHARACTERISTICS THAT ARE SETABLE
1062
1063 001035 205040 000036 SETLIN: MOVSI TAC,LGLSET                ;MAKE MASK OF ALL OF THEM
1064 001036 412042 001025'                ANDCAM TAC,LINTAB(LINE)
1065 001037 404060 000014                AND TAC,@UOO                ;SET ONLY THOSE BITS USER WANTS SET
1066 001040 436042 001036'                IORM TAC,LINTAB(LINE)      ;SET RESULTANT
1067 001041 263140 000000                POPJ PDP,
1068

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1069 ;ROUTINE TO ATTACH TTY TO A JOB
1070 ;CALL: MOVE DEVDAT,ADDRESS OF TTY DEVICF DATA BLOCK
1071 ; MOVE ITEM,JOB NUMBER
1072 ; PUSHJ PDP,TTYATT
1073 ; ERROR ;DEVDAT=0DB ADR OF OTHER TTY
1074 ; ;IF ANOTHER ALREADY IS ATTACHED.
1075 ; OK RETURN ;DEVDAT, DAT AND TRANSLATOR TABLE SET
1076
1077 ;CALLED FROM COMCON (ATTACH) AND COMCSS (JOBINI).
1078 ;ON OK RETURN 1)SETS TTYATC
1079 ; 3)PUTS ADDRESS OF ATTACHED DDB INTO DEVDAT.
1080 ; 4)SETS PHYSICAL NAME TO SIXBIT /TTY LINE #/
1081 ; OR SIXBIT /CTY/,
1082 ; 5)SETS DEVOPR IF IT IS NON-ZERO.
1083
1084
1085 INTERNAL TTYATT,TTYATI
1086 EXTERNAL PUNIT,PJOBN,TTYTAB
1087
1088 001042 TTYATI:
1089 INTERNAL FTATTACH
1090 IFN FTATTACH,<
1091 001042 260140 001324' TTYATT: PUSHJ PDP,STLNAC ;GET LINE CHARACTERISTICS
1092 001043 201340 000437' MOVE DEVDAT,TTYLST ;SEARCH FOR DDB THAT IS ATTACHED
1093 001044 334000 000000 SKIPA
1094 001045 554306 000003 TTYAT2: HLRZ DEVDAT,DEVSER(DEVDAT)
1095 001046 322300 001105' JUMPE DEVDAT,TTYAT4 ;HAVE ALL TTY DDB'S BEEN LOOKED AT?
1096 001047 135040 001027' LDB TAC,PJOBN ;NO, GET JOB NUMBER.
1097 001050 500046 000004 HLL TAC,DEVMOD(DEVDAT) ;ATTACH AND USE BITS
1098 001051 607040 000010 TLNN TAC,OVTTY ;IS THIS STILL A TTY DDB?
1099 001052 254000 001105' JRST TTYAT4 ;NO, THIS MUST BE IJOB.
1100 001053 200006 000002 MOVE IOS,DEVIOS(DDB)
1101 001054 306201 000000 CAIN ITEM,(TAC) ;JOB NUMBER THE ONE TO ATTACH?
1102 001055 607040 020000 TLNN TAC,TTYATC ;YES, IS DDB ATTACHED TO JOB?
1103 001056 254000 001045' JRST TTYAT2 ;NO, KEEP LOOKING.
1104 001057 603000 002000 TLNE IOS,TTYDTC ;IS DDB DETACHED FROM LINE?
1105 001060 254000 001073' JRST TTYAT5 ;YES, OK TO ATTACH TTY OF REQUESTER TO JOB
1106 001061 200043 777775 MOVE TAC,-3(PDP) ;NO, GET TTY DEVDAT OF JOB DOING ATTACH COM.
1107 ; AS PUSHED BY COMMAND DECODER
1108 001062 332041 000000 SKIPE TAC,DEVNAM(TAC) ;PHYSICAL NAME OF REQUESTOR TTY
1109 001063 312040 000000 CAME TAC,DEVOPR ; CHECK IF OPR IS REQUESTOR
1110 001064 263140 000000 POPJ PDP, ;NO, ERROR RETURN, CAN'T ATTACH
1111 001065 261140 000002 PUSH POP,LINE ;YES, SAVE LINE CHARACTERISTICS
1112 001066 135140 000000 LDB LINE,PUNIT ;GET LINE NO. OF TTY BEING GRABBED
1113 001067 550043 000000 WRRZ TAC,(PDP) ;OPERATOR'S LINE NUMBER?
1114 001070 312100 000001 CAME LINE,TAC ;IS OPERATOR TRYING TO GRAB HIMSELF?
1115 ; IF YES, DO NOT DETACH HIM
1116 001071 260140 001141' PUSHJ PDP,TTYDET ;DETACH TTY OF JOB BEING GRABBED BY OPR
1117 001072 262140 000002 POP PDP,LINE ;RESTORE LINE CHARACTERISTICS
1118 001073 261140 000006 TTYAT5: PUSH PDP,DEVDAT ;SAVE NEW DDB ADDRESS.
  
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1119 001074 200372 001026'      MOVE DEVDAT,TTYTAB(LINE)
1120 001075 260140 001141'      PUSHJ PDP,TTYDET      ;DETACH DDB FROM TTY
1121 001076 262140 000006      POP PDP,DEVDAT
1122 001077 137200 000001' TTYAT3: DPR ITEM,TPCJORN      ;STORE ATTACHED JOB NO.
1123 001100 137200 001047'      DPR ITEM,PJOBN      ;SET JOB NUMBER,
1124 001101 205000 002000      MOVSI IOS,TTYDTC      ;INDICATE DDB NO LONGER DET. FROM LINE
1125 001102 413006 000002      ANDCAB IOS,DEVIOS(DDB)
1126 001103 205040 020000      MOVSI TAC,TTYATC      ;SET ATTACHED BIT
1127 001104 254000 002305'      JRST SCNIN      ;SO INITIALIZE DDB
1128
1129 001105 200372 001074' TTYAT4: MOVE DEVDAT,TTYTAB(LINE);RESTORE OLD DDB ADDRESS.
1130 001106 254000 001077'      JRST TTYAT3
1131      >
1132      IFE FTATTACH,<
1133      TTYATT: LDR LINE,PUNIT      ;LINE NO. OF THIS TTY
1134           DPR ITEM,TPCJOBN
1135           DPR ITEM,PJOBN
1136           MOVSI TAC,TTYATC
1137           JRST SCNIN>
  
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1138          ;ROUTINE TO SETUP AC DEVDAT TO ADDRESS OF TTY WHICH HAS TYPED A COMMAND
1139          ;AC DAT TO BYTE POINTER TO OUTPUT BUFFER FOR COMMAND MESSAGES
1140          ;AC TAC TO BYTE POINTER TO COMMAND STRING
1141          ;AC ITEM TO JOB NUMBER TTY IS ATTACHED TO
1142          ;CALL:  PUSHJ PDP,TTYCOM
1143          ;      NONE FOUND
1144          ;      AC'S SETUP
1145          ;CALLED FROM COMMAND
1146
1147          INTERNAL TTYCOM,TTYCM
1148          EXTERNAL MTTYLN,TTYTAB,CPOPJ
1149
1150 001107 331100 000526' TTYCOM: SKIPL  LINE,LINSAV
1151 001110 205100 000033'      MOVSI  LINE,MTTYLN
1152 001111 331042 001105'      SKIPL  TAC,TTYTAB(LINE)
1153 001112 253100 001111' TTYCM1: AORJN LINE,-1
1154 001113 202100 000526'      MOVEM  LINE,LINSAV
1155 001114 327100 001013'      JUMPG  LINE,CPOPJ
1156 001115 550302 001111'      HRRZ  DEVDAT,TTYTAB(LINE)
1157 001116 322300 001136'      JUMPE  DDB,TTYCM2      ;THIS SHOULDNT HAPPEN, BUT...
1158 001117 201246 000013'      MOVEI  DAT,TTIBUF(DDB) ;SO GETCHR CAN BE CALLED FROM COMCON
1159 001120 200106 000017'      MOVE  LINE,TITCTR(DDB)
1160 001121 137100 000005'      DPB   LINE,PCOMIC      ;SAVE COMMAND INPUT COUNTER
1161 001122 135100 001066'      LDB  LINE,PUNIT      ;LINE NO.
1162 001123 135200 001100'      LDB  ITEM,PJOBN      ;JOB NO, TTY ATTACHED TO
1163 001124 607040 200000'      TLNN  TAC,200000      ;IS THIS A DELAYED COMMAND?
1164 001125 254000 000757'      JRST CPOPJ1          ;NO, RETURN TO SCAN IT
1165 001126 205040 200000'      MOVSI  TAC,200000      ;INDICATE NO LONGER DELAYED COMMAND
1166 001127 412042 001115'      ANDCAM TAC,TTYTAB(LINE)
1167 001130 254000 001125'      JRST  CPOPJ1          ;RETURN TO COMMAND SCAN
1168
1169 001131 205300 200000' TTYCM: MOVSI  DDB,200000      ;INDICATE DELAYED COMMAND
1170 001132 437302 001127'      IORB  DDB,TTYTAB(LINE)
1171 001133 260140 001154'      PUSHJ PDP,TRESCN      ;BACK UP TO START OF COMMAND
1172 001134 200100 000526'      MOVE  LINE,LINSAV      ;TRESCN HAS CALLED STLNAC
1173 001135 254000 001112'      JRST  TTYCM1          ;LOOK FOR OTHER COMMAND TO PROCESS
1174
1175 001136 205300 600000' TTYCM2: MOVSI  DDB,600000      ;CLEAR COMMAND BITS IN TTYTAB
1176 001137 412302 001132'      ANDCAM DDB,TTYTAB(LINE)
1177 001140 254000 001107'      JRST  TTYCOM          ;GO TRY AGAIN
  
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1231	001200	350076	000012	AOS	TISYNC(008)
1232	001201	254000	001173'	JRST	TRESCL

1233	001222	350700	000000	TLHBYT: XWD	350700,0	
1234	001203	260700	000000	XWD	260700,0	
1235	001204	170700	000000	XWD	170700,0	
1236	001205	100700	000000	XWD	100700,0	
1237	001206	010700	000000	XWD	010700,0	
1238						
1239	001207	261140	000002	TBYTEP: PUSH	PDP,TAC1	;SAVE LINE
1240	001210	213000	000001	MOVNS	TAC	
1241	001211	335000	000001	SKIPGE	TAC	
1242	001212	271040	000120	ADDI	TAC,TTYCHR	
1243	001213	231040	000005	IDIVI	TAC,5	
1244	001214	270046	000013	ADD	TAC,TTIBUF(DPB)	
1245	001215	500042	001202	HLL	TAC,TLHBYT(TAC1)	
1246	001216	262140	000002	POP	PDP,TAC1	;RESTORE LINE
1247	001217	263140	000000	POPJ	PDP,0	

```

1248
1249
1250 ;ROUTINE TO FIND TTY FOR A JOB
1251 ;CALL: MOVE ITEM, JOB NUMBER
1252 ; PUSHJ PDP, TTYFND
1253 ; RETURN WITH DEV DAT SFT TO ADR OF DDB
1254 ; AND DAT SET TO BYTE POINTER TO MONITOR OUTPUT BUFFER
1255
1256 INTERNAL TTYFNU, TTYFND, TTYERP
1257 EXTERNAL JOB
1258
1259
1260 001220 200200 000000 TTYFNU: MOVE ITEM, JOB
1261 001221 260140 001275' TTYFND: PUSHJ PDP, TTYSRC
1262 001222 201246 000041 TTYDAT: MOVEI DAT, TTOBUF(DDB)
1263 001223 263140 000000 POPJ PDP,
1264
1265
1266 ;PUT JOB IN TO WAIT IF TTY BUFFER NOT EMPTY
1267 ;CALLED BY NON ERROR MESSAGE ROUTINES AT UUD LEVEL
1268
1269 INTERNAL TTYFUW
1270 EXTERNAL WSYNC
1271
1272 001224 260140 001220' TTYFUW: PUSHJ PDP, TTYFNU
1273 001225 200046 000042 MOVE TAC, TOPUTR(DDB)
1274 001226 607100 400000 TLNN LINE, PTYLIN
1275 001227 316046 000044 CAMN TAC, TOTAKR(DDB)
1276 001230 263140 000000 POPJ PDP,
1277 001231 201000 010000 MOVEI IOS, IOACT ;YES
1278 001232 437006 000002 IORB IOS, DEVIOS(DDB)
1279 001233 254000 000713' JRST WSYNC
1280
1281 ;ROUTINE TO INDICATE MONITOR ERROR MESSAGE TO BE FORCED OUT
1282 ;WHEN NO MORE ROOM IN TTO BUFFER, TTI BUFFER WILL BE USED
1283
1284 001234 260140 001275' TTYERP: PUSHJ PDP, TTYSRC ;FIND TTY DDB
1285 001235 201000 400000 MOVEI IOS, MERTPO ;SET MONITOR ERROR PRINT OUT BIT
1286 001236 437006 000002 IORB IOS, DEVIOS(DDB)
1287 001237 254000 000055' JRST SETBFI ;CLEAR TTI BUFFER
  
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1288
1289 001240 201000 767777 TTYREL: MOVEI IOS,777777-IOACT ;CLEAR INITED STUFF IN IOS
1290 001241 205040 020000 MOVSI TAC,TTYATC
1291 001242 612046 000004 TDNE TAC,DEVMOD(0DB)
1292 001243 254000 000547 JRST T0POPJ ;GO CLEAR OUT IOS BITS
1293
1294 ;ROUTINE TO SET SCNSER TO RETURN TTY TO VIRGIN STATE
1295 ;CALL: MOVE 0DB, ADDRESS OF DEVICE DATA BLOCK
1296 ; PUSHJ PDP,TTYKIL
1297
1298 ;CALLED FROM COMCSS (JOBKIL);
1299 ;IF NOT OPERATOR CONSOLE, THEN
1300 ; 1)CLEAR PHYSICAL AND LOGICAL NAMES,
1301 ; 2)CLEAR JOB NUMBER ASSIGNMENT
1302 ; 3)CLEAR TTYUSE,TTYATC,ASSCON,ASSPRG,
1303 ; 4)CLEAR ENTRY IN TRANSLATOR TABLE,
1304
1305
1306
1307 INTERNAL TTYKIL
1308 EXTERNAL PJOBN,PTMNM
1309
1310
1311 001244 205000 423101 TTYKIL: MOVSI IOS,TTYIOW+IOW+TTYDTC+SYNC+DDTM+USRB ;CLEAR TTY INPUT AND OUTPUT
1312 ;WAIT BITS SO TTY WILL BE KILLED
1313 001245 412006 000002 ANDCAM IOS,DEVIOS(0DB) ;PROPERLY AT INTER. LEVEL IF STILL OUTPUTTING
1314 ; ALSO CLEAR DDT MODE AND SYNC FOR
1315 ; NEXT USER OF THE 0DB
1316 ;CLEAR JOB NUMBER
1317 001246 205000 000400 MOVSI IOS,TPMON
1318 001247 137000 001123' DPB IOS,PJOBN
1319 001250 437006 000002 IORB IOS,DEVIOS(0DB) ;TURN TPMON ON IN CASE TTY IS
1320 ;STILL OUTPUTTING
1321 001251 260140 001324' PUSHJ PDP,STLNAC ;GET LINE CHARACTERISTICS
1322 001252 603100 400000 TLNE LINE,PTYLIN
1323 001253 260140 000000 PUSHJ PDP,PTMNM ;YES, PUT PTY INTO MONITOR MODE
1324 001254 331006 000011 SKIPL TTYPTR(0DB) ;CHECK TOIP
1325 001255 603000 000020 TLNE IOS,IO ;IS IT OUTPUTTING OR TALKING?
1326 001256 263140 000000 POPJ PDP, ;YES, 0DB WILL BE KILLED AT
1327 ;INTERRUPT LEVEL
1328 001257 513006 000002 HLLZS DEVIOS(0DB) ;CLEAR INITED STUFF IN IOS
1329 001260 621100 000043 TLZ LINE,KILMSK ;CLEAR BITS IN LINE TABLE
1330 001261 603100 040000 TLNE LINE,DSDTLN ;DATAPHONE?
1331 001262 621100 000036 TLZ LINE,LGLSET ;INITIALIZE OTHER MODES
1332 001263 502102 001040' HLLM LINE,LINTAB(LINE)
1333 001264 403046 000005 SETZB TAC,DEVLOG(DEVDAT) ;CLEAR LOGICAL NAME
1334 001265 200040 002345' MOVE TAC,[XWD TTYUSE+TTYATC,ASSCON+ASSPRG]
1335 001266 412046 000004 ANDCAM TAC,DEVMOD(DEVDAT) ;CLEAR ATTACH,USE, AND ASSIGN BITS
1336 001267 135100 001122' TTYKL1: LDB LINE,PUNIT ;LINE NO.
1337 001270 402002 001137' SETZM TTYTAB(LINE) ;CLEAR TRANSLATOR TABLE
1338 001271 402006 000000 SETZM DEVNAM(0DB)
1339 001272 263140 000000 POPJ PDP,0

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```
1340                           ;ROUTINE TO SET TTY INTO USEP MORE NOW,  
1341                           ;CALL: MOVE CEV^AT,ADDRESS OF DEVICE DATA BLOCK  
1342                           ;            PUSHJ PDP,TTYSET  
1343  
1344                           ;CALLED FROM RUNCSS (START1)  
1345                           ;CLEARS ODTM,IOSHPR,USRB,TTYIOW AND IOW  
1346  
1347                           INTERNAL TTYSET  
1348  
1349  
1350   001273   205000   401301   TTYSET: MOVSI   IOS,ODTM+IOSHPR+USRB+TTYIOW+IOW  
1351   001274   254000   000547'           JRST    T0POPJ   ;GO CLEAR BITS
```

```

1352          INTERN STLNAC
1353
1354          EXTERNAL JOB,MTTYLN,TTYTAB,DEVPHY,DEVOPR,ERROR
1355
1356          ;ROUTINE TO SEARCH TRANSLATOR TABLE FOR TTY
1357          ;CALL: MOVE ITEM,JOB NUMBER
1358          ;      PUSHJ PDP,TTYSRC
1359          ;      RETURN WITH ADDRESS OF DEVICE DATA BLOCK IN DEVDAT.
1360
1361
1362 001275 322200 001305' TTYSRC: JUMPE ITEM,TTYF1          ;SEARCH FOR OPER. TTY IF JOB NO. 0
1363 001276 205100 001110'          MOVSI LINE,MTTYLN          ;NUMBER OF TTY DDBS
1364 001277 550302 001270' TTYSRA: HRRZ DEVDAT,TTYTAB(LINE)
1365 001300 322300 001304'          JUMPE DEVDAT,TTYF0
1366 001301 135040 000001'          LDB TAC,TPCJOBN
1367 001302 306044 000000'          CAIN TAC,(ITEM)
1368 001303 254000 001323'          JRST TTYF9          ;FOUND
1369 001304 253100 001277' TTYF0: AOBJN LINE,TTYSRA
1370 001305 205040 576062 TTYF1: MOVSI TAC,576062          ;LOOK FOR DEVICE "OPR"

1371 001306 260140 000000'          PUSHJ PDP,DEVPHY          ;SEARCH PHYSICAL DEVICE NAMES FOR OPR
1372 001307 334040 001063'          SKIPA TAC,DEVOPR          ;NOT FOUND.
1373 001310 254000 001323'          JRST TTYF9
1374 001311 326040 001321'          JUMPN TAC,TTYF3          ;WAS OPR SPECIFIED IN ONCE ONLY CODE?
1375 001312 201300 000437'          MOVEI DDB,TTYLST          ;NO
1376 001313 332006 000000'          SKIPE DEVNAM(DDB)          ;HAS A TTY BEEN TYPED ON?
1377 001314 254000 001323'          JRST TTYF9
1378 001315 201100 000042'          MOVEI LINE,TCOINL          ;NO USE CTY.
1379 001316 550302 001277'          HRRZ DDB,TTYTAB(LINE)          ;DOES IT HAVE A DDB?
1380 001317 326300 001323'          JUMPN DDB,TTYF9          ;YES. USE IT.
1381 001320 205040 436471'          MOVSI TAC,(SIXBIT /CTY/)          ;NO
1382 001321 260140 002226' TTYF3: PUSHJ PDP,GETDDB          ;GET A DDB FOR DEVOPR
1383 001322 265240 000000'          JSP DAT,ERROR          ;SHOULD NEVER HAPPEN
1384 001323 200006 000002' TTYF9: MOVE IOS,DEVIOS(DDB) ;SET UP IOS
1385 001324 135100 001267' STLNAC: LDB LINE,PUNIT          ;GET UNIT # FROM DDB
1386 001325 500102 001263'          HLL LINE,LINTAB(LINE)          ;AND LINE BITS
1387 001326 263140 000000'          POPJ PDP,0          ;RETURN
  
```

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1388                                     ;ROUTINE TO START TTY OUTPUT AFTER CLEARING USRB
1389
1390     EXTERNAL PTMNM0,PTMNMZ
1391
1392     INTERNAL TTYSTC,TTYTCM
1393
1394     001327                               TTYTCM:
1395     001327 205040 000100 TTYSTC: MOVSI TAC,USRB           ;CLEAR BIT IN MEMORY
1396     001330 412046 000002                ANDCAM TAC,DEVIOS(DDR)
1397     001331 260140 001324'              PUSHJ PDP,STLNAC
1398     001332 603100 400000                TLNE LINE,PTYLIN
1399     001333 260140 001253'              PUSHJ PDP,PTMNM0
1400
1401                                     ;ROUTINE TO START TTY OUTPUT
1402     ;CALL: MOVE DAT,BYTE POINTER TO LAST OUTPUT ITEM
1403     ; MOVE DEVDAT,ADDRESS OF TTY DDB
1404     ; MOVE ITEM,JOB NUMBER ;(MUST BE PRESERVED)
1405     ; PUSHJ PDP,TTYSTR
1406
1407                                     ;CALLED FROM COMINI
1408     ;INITIALIZED TTY FOR MONITOR OUTPUT AND STARTS OUTPUT
1409
1410     INTERNAL TTYSTR
1411     EXTERNAL CLRRYT
1412
1413     001334 200000 002346' TTYSTR: MOVE IOS,CXWD DDTM+IOSUPR+IOBEG+IO+TPMON,IODTER+IOBKTL+IGNOR+IOACT]
1414     001335 413006 000002                ANDCAB IOS,DEVIOS(DDR)
1415     001336 260140 001324'              PUSHJ PDP,STLNAC           ;GET LINE CHARACTERISTICS
1416     001337 325100 001342'              JUMPGE LINE,TTSTR1       ;IF NOT PTY, JUMP
1417     001340 603000 000100                TLNE IOS,USRB
1418     001341 260140 000000                PUSHJ POP,PTMNMZ
1419     001342 205040 000420 TTSTR1: MOVSI TAC,IO+TPMON
1420     001343 603000 000100                TLNE IOS,USRB           ;GOING OUT OF MONITOR MODE?
1421     001344 621040 000400                TLZ TAC,TPMON           ;YES
1422     001345 436046 000002                IORM TAC,DEVIOS(DDR)
1423     001346 205040 000500                MOVSI TAC,USRB+TPMON
1424     001347 603000 000100                TLNE IOS,USRB
1425     001350 412046 000002                ANDCAM TAC,DEVIOS(DDR)
1426     001351 200006 000002                MOVE IOS,DEVIOS(DDR)   ;GET CORRECT IOS
1427     001352 333006 000012                SKIPLE TISYNC(DDR)     ;HAS USER TYPED AHEAD?
1428     001353 260140 001572'              PUSHJ PDP,COMSET       ;YES, WAKE UP COMMAND DECODER(IF IN MON, MODE)
1429     001354 254000 000652'              JRST UTYPT             ;GO TYPE FIRST CHAR.
  
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1430 ;ROUTINE TO ADD TTY TO TALK RING
1431 ;CALL: ADR. OF DDB TO BE ADDED TO RING AT -3(PDP)
1432 ; MOVE TAC,SIXRIT /TTYM/
1433 ; PUSHJ PDP,TTYTLK
1434 ; TTY IS BUSY RETURN OR NOT A TTY OR TOO BIG A LINE NO.
1435 ; OK RETURN, TTY ADDED TO TALK RING
1436
1437 INTERNAL FTTALK
1438 IFN FTTALK,<
1439 INTERNAL TTYTLK
1440 EXTERNAL PUNIT,CPOPJ1
1441
1442 001355 260140 002226 TTYTLK: PUSHJ PDP,GETDDB ;IN CASE NOT SET UP
1443 001356 263140 000000 POPJ PDP,0 ;NONE AVAIL. GIVE UP
1444 001357 200046 000004 MOVE TAC,DEVMOD(DEV DAT)
1445 001360 607040 000010 TLNN TAC,DVTTY
1446 001361 263140 000000 POPJ PDP,
1447 001362 200006 000002 MOVE IOS,DEVIOS(DEV DAT) ;IS TTY IN MONITOR MODE AND LEFT HAND MARGIN?
1448 001363 200103 777775 MOVE TAC1,-3(PDP) ;TTY GIVING TALK COMMAND
1449 001364 200102 000000 MOVE TAC1,DEVNAM(TAC1) ;ITS NAME
1450 001365 200046 000000 MOVE TAC,DEVNAM(DEV DAT) ;OPR IS NEVER TOO BUSY...
1451 001366 312100 001307 CAME TAC1,DEVOPR ;EITHER ONE OPR?
1452 001367 316040 001366 CAMN TAC,DEVOPR
1453 001370 254000 001374 JRST TTYTK1
1454 001371 603000 000400 TLNE IOS,TPMON
1455 001372 607000 000004 TLNN IOS,IOFST
1456 001373 263140 000000 POPJ PDP, ;NO, HE IS BUSY.
1457 001374 700600 000000 TTYTK1: CMOO PI,SCNOFF
1458 001375 135100 001324 LDB LINE,PUNIT ;LINE NUMBER IN RING.
1459 001376 205040 000001 MOVSI TAC,TLKRNG
1460 001377 135400 000003 LDB CHREC,PTALK
1461 001400 616042 001325 TDNN TAC,LINTAB(LINE)
1462 001401 550400 000002 HRRZ CHREC,LINE
1463 001402 436042 001400 IORM TAC,LINTAB(LINE)
1464 001403 250303 777775 EXCH DDB,-3(PDP) ;GET DDB OF TALKER
1465 001404 135100 001375 LDB LINE,PUNIT ;LINE NO. OF TALKER
1466 001405 137400 000003 OPB CHREC,PTALK ;SET TO POINT INTO RING
1467 001406 505100 000001 HRLI LINE,TLKRNG
1468 001407 437102 001402 IORB LINE,LINTAB(LINE)
1469 001410 202100 000001 MOVEM LINE,TAC ;SAVE LINE NO. OF TALKER
1470 001411 250303 777775 EXCH DDB,-3(PDP) ;RESTORE
1471 001412 135100 001404 LDB LINE,PUNIT ;LINE NO. IN RING AGAIN
1472 001413 137040 000003 OPB TAC,PTALK ;MAOE IT POINT TO TALKER
1473 001414 700600 000000 CONO PI,SCNON
1474 001415 254000 001130 JRST CPOPJ1 ;OK RETURN
1475 >

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1476                           ;ROUTINES TO SET SCANNER TO START UP JOB WHEN OUTPUT FINISHES
1477                           ;CALL:  MOVE DEVDAT,TTY DDB ADR.
1478                           ;            PUSHJ PDP,TTYUSR
1479                           ;            TTY WILL GO TO USER MODE WHEN TYPING OUT STOPS
1480
1481                           EXTERNAL SETRUN
1482
1483                           INTERNAL TTYUSR
1484
1485  001416  205000  000100  TTYUSR:  MOVSI IOS,USRB           ;SET BIT TO SWITCH TTY TO USER MODE
1486  001417  436006  000002            IORM IOS,DEVIOS(00B)       ;WHEN MONITOR OUTPUT FINISHES
1487  001420  254000  000000            JRST SETRUN           ;GO FLAG JOB AS RUNABLE IMMEDIATELY
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1488          ;CTY INTERRUPT SERVICE ROUTINE
1489
1490          INTERNAL CTYINT
1491          EXTERNAL SCNSAV,SCNCHN,TCONLN
1492
1493 001421 712340 000050 CTYINT: CONSO TTY,50          ;TTI OR TTO FLAG?
1494 001422 254000 001421' JRST CTYINT                ;NO
1495 001423 264000 000000 JSR SCNSAV                ;YES, SAVE AC'S
1496 001424 201100 001315' MOVEI LINE,TCONLN        ;LOAD LINE WITH PROPER
1497 001425 712340 000040 CONSO TTY,40          ;YES. TTI FLAG?
1498 001426 254000 001431' JRST CTYOU1            ;NO.
1499 001427 712040 000010 DATAI TTY,CHREC
1500 001430 254000 001434' JRST RECINT                ;RECEIVER INTERRUPT HANDLER
1501
1502 001431 201400 000007' CTYOU1: MOVEI CHREC,SCNCHN
1503 001432 712210 000200 CONO TTY,200(CHREC)        ;CLEAR TTO FLAG.
1504 001433 254000 001602' JRST XMTINT                ;COMMON TRANSMIT INTERRUPT HANDLER
1505
1506          ;SCANNER INTERRUPT SERVICE ROUTINE IS IN SEPARATE DEVICE DEPENDENT SECTION
1507
1508          EXTERNAL SCNSAV,TCONLN,TTYTAR
1509

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1510                                     ;COMMON RECEIVER INTERRUPT FOR ALL KEYBOARD DEVICES
1511
1512 INTERNAL RECINT,INUS2,INJEST
1513
1514 EXTERNAL COMCNT
1515
1516 RECINT:
1517 INUS2: ;TAG FOR INTERRUPT SERVICE
1518 INJEST: ;ANOTHER TAG, NOT USED, BUT WANTED BY LOSING DLSINT
1519
1520 001434 606400 000177 TRNN CHREC,177 ;IGNORE NULLS
1521 001435 263140 000000 POPJ PDP,0 ;DISMISS INTERRUPT
1522 001436 500102 001407' HLL LINE,LINTAB(LINE) ;GET LINE CHARACTERISTICS
1523 001437 550302 001316' HRRZ DDB,TTYTAB(LINE) ;IS THERE A DDB FOR THIS LINE?
1524 001440 326300 001443' JUMPJ DDB,RECIN1 ;YES, GO ON
1525 001441 260140 002261' PUSHJ PDP,DDRSRC ;NO, FIND ONE
1526 001442 254000 001565' JRST TYPX
1527
1528 001443 603100 010000 RECIN1: TLNE LINE,HLFDPX ;HALF DUPLEX LINE?
1529 001444 254000 001526' JRST RECHDX ;GO SEE WHETHER INPUT OR OUTPUT
1530 001445 RECIN8: ;RETURN FROM RECHDX
1531
1532 001445 603100 000001 IFN FTTALK,< TLNE LINE,TLKRNG ;IN A TALK RING?
1533 001446 254000 002147' JRST DOTALK ;YES, GO TALK
1534 >
1535 001447 200006 000002 MOVE IOS,DEVIOS(DDB) ;SET UP IOS
1536 001450 405400 000177 RECIN2: ANDI CHREC,177 ;7-BIT ASCII ONLY
1537 001451 306400 000003 CAIN CHREC,3 ;CONTROL C?
1538 001452 260140 002074' PUSHJ PDP,CNCTST ;YES, SEE IF 2ND CONTROL C
1539 001453 135200 000000' LDB HPOS,PHPOS ;PICK UP HORIZONTAL POSITION OF OUTPUT CHAR.
1540 001454 201246 000013 MOVEI DAT,TTIBUF(DDB) ;USER MODE INPUT BUFFER
1541 001455 260140 001665' PUSHJ PDP,TTEDIT ;GO EDIT (AND ECHO) CHARACTER
1542 001456 137200 000000' DPB HPOS,PHPOS ;STORE HORIZONTAL POSITION
1543 001457 502102 001436' HLLM LINE,LINTAB(LINE) ;UPDATE LINE TABLE
1544 001460 200046 000020 MOVE TAC,TIFCTR(DDB) ;FREE SPACES LEFT
1545 001461 307040 000012 CAIG TAC,12 ;ONLY 10 LEFT?
1546 001462 254000 001517' JRST RWARN ;YES, GO OUTPUT XOFF
1547 001463 607000 021000 TLNN IOS,SYNC+DDTM ;WAS A BREAK CHARACTER TYPED?
1548 001464 254000 001505' JRST TYPTST ;NO, GO SEE IF ECHO NEED BE TYPED

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1549
1550 001465 200042 001437' RECIN3: MOVE TAC,TTYTAB(LINE) ;FOR PTYSRF
1551 001466 603040 600000 TLNE TAC,600000 ;IS IT IN COMMAND WAIT NOW?
1552 001467 254000 001472' JRST RECIN4 ;..
1553 001470 337006 000012 SKIPG TISYNC(DDB) ;YES, NOT AGAIN.
1554 001471 260140 001572' PUSHJ PDP,COMSET ;HAS USER TYPED AHEAD?
1555 001472 603000 020000 RECIN4: TLNE IOS,SYNC ;NO, WAKE UP COMMAND DECODER NOW
1556 001473 350006 000012 AOS TISYNC(DDB) ;BREAK CHARACTER (BUMP LINE COUNT)
1557 001474 205000 020000 MOVSI IOS,SYNC ;CLEAR SYNC IN CORE
1558 001475 413006 000002 ANOCAB IOS,DEVIOS(DDB) ;..
1559 001476 200046 000015 MOVE TAC,TIPCTR(DDB) ;UPDATE COUNTER FOR +U
1560 001477 137040 000006' DPB TAC,PLSTLC
1561 001500 627000 400000 TLZN IOS,TTYIOW ;IN TELETYPE INPUT WAIT?
1562 001501 254000 001505' JRST TYPTST ;NO, GO ECHO
1563 001502 260140 000611' PUSHJ PDP,STTIOD ;YES, SET IO DONE(OUT OF TTY IOW)
1564 001503 205000 400001 MOVSI IOS,IOW+TTYIOW
1565 001504 413006 000002 ANOCAB IOS,DEVIOS(DDB) ;CLEAR WAIT BITS
1566 001505 205040 400000 TYPTST: MOVSI TAC,TOIP ;CHECK TOIP
1567 001506 700600 000400 CONO PI,PIOFF
1568 001507 335006 000011 SKIPGE TTYPTR(DDB) ;TYPEOUT HAPPENING?
1569 001510 254000 001515' JRST TYPT1
1570 001511 436046 000011 IORM TAC,TTYPTR(DDB) ;NO, BUT THERE IS NOW
1571 001512 700600 000200 CONO PI,PION
1572 001513 260140 001324' PUSHJ PDP,STLNAC ;TAC1 CLOBBERED ABOVE BY STTIOD
1573 001514 254000 001612' JRST XMTIN1 ;START OUTPUT
1574
1575 001515 700600 000200 TYPT1: CONO PI,PION
1576 001516 263140 000000 POPJ PDP,
1577
1578 001517 603100 012004 RWARN: TLNE LINE,HLFDPX+FULTWX ;CAN LINE BE STOPPED?
1579 001520 254000 001465' JRST RECIN3 ;NO, WAKE JOB AND CROSS FINGERS.
1580 001521 201400 000023 MOVEI CHREC,23 ;YES, SEND AN XOFF.
1581 001522 260140 000144' PUSHJ PDP,PUTCHO ;..
1582 001523 201400 000001 MOVEI CHREC,IDLECH ;AND AN IDLE FOR TTY TO THINK ON.
1583 001524 260140 000144' PUSHJ PDP,PUTCHO ;OUTPUT IT.
1584 001525 254000 001465' JRST RECIN3 ;GO WAKE JOB.

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1585                                    IFN FTHOPX,<
1586
1587                                    ;ROUTINE TO HANDLE HALF DUPLEX RECEIVE INTERRUPTS
1588                                    ;CALLED ONLY AT RCV INTERRUPT LEVEL
1589
1590                                    EXTERN CLOCK
1591
1592 001526 200006 000002 RECHDX: MOVE IOS,DEVIOS(DDB)    ;SETUP IOS
1593 001527 602000 200000            TRNE IOS,IGNOR            ;IN AN ECHO CHECK?
1594 001530 263140 000000            POPJ PDP,                ;YES, IGNORE THIS
1595 001531 622000 100000            TRZE IOS,ECHOF
1596 001532 254000 001561'           JRST RECHD1
1597 001533 331006 000011           SKIPL TTYPTR(DDB)        ;SHOULD THIS BE AN ECHO?
1598 001534 254000 001445'           JRST RECIN8             ;NO, ITS A RECEIVE CHARACTER
1599 001535 405400 000177           ANDI CHREC,177         ;AN ECHO, CHECK IT
1600 001536 135040 000004'           LDB TAC,PLASTC         ;GET WHAT WAS SENT
1601 001537 316040 000010           CAMN TAC,CHREC         ;SAME?
1602 001540 263140 000000           POPJ PDP,0             ;YES, DISMISS INT,
1603 001541 205040 400000 ECHO:    MOVSI TAC,TOIP
1604 001542 412046 000011           ANDCAM TAC,TTYPTR(DDB)    ;TURN OFF TOIP
1605 001543 621000 000020           TL? IOS,IO             ;BAD CHARACTER, SHUT DOWN XMT,
1606 001544 660000 300000           TRO IOS,ECHOF+IGNOR    ;MARK FOR THE 1/2 SEC IGNORE.
1607 001545 201042 000000           MOVEI TAC,(LINE)        ;SETUP CLOCK REQUEST
1608 001546 242040 000014           LSH TAC,+D12
1609 001547 660040 000036           TRO TAC,+D30           ;1/2 SECOND
1610 001550 505040 001556'           HRLI TAC,ENDECH        ;WHERE TO RESPOND TO
1611 001551 700600 000400           CONO PI,PIOFF
1612 001552 136040 000000           IDPB TAC,CLOCK         ;REQUEST FROM THE CLOCK
1613 001553 700600 000200           CONO PI,PION
1614 001554 202006 000002           MOVEM IOS,DEVIOS(DDB)   ;ONLY AT INTERRUPT LEVEL
1615 001555 263140 000000           POPJ PDP,             ;DISMISS INTERRUPT
1616
1617 001556 200301 001465' ENDECH: MOVE    DDB,TTYTAB(TAC)    ;HERE ON TIMEOUT OF ECHOCHECK
1618 001557 201000 200000           MOVEI IOS,IGNOR        ;KILL IGNORE INT BIT
1619 001560 254000 000547'           JRST T0POPJ            ;CLEAR BIT IN IOS, RETURN TO CLK
1620
1621 001561 405400 000177 RECHD1: ANDI    CHREC,177
1622 001562 306400 000003           CAIN CHREC,3           ;+C DURING ECHO CHECK?
1623 001563 137406 000016           DPB CHREC,TITAKR(DDB)   ;YES, MAKE IT LIKE 2 OF THEM
1624 001564 254000 001445'           JRST RECIN8            ;PROCESS AS INPUT
1625                                    >                            ;END OF FTHOPX
  
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1626                                     ;ROUTINE TO TYPE X IF LINE CANNOT GET INTO SYSTEM
1627
1628 001565 405400 000177 TYPX:  ANDI   CHREC,177
1629 001566 306400 000130      CAIN  CHREC,"X"      ;CHAR, RECEIVED AN "X"
1630 001567 263140 000000      POPJ  PDP,          ;YES, MAY BE ECHO, DISMISS INT.
1631 001570 201400 000130      MOVEI  CHREC,"X"
1632 001571 254000 002216      JRST  TYPL          ;TYPE OUT "X"
1633
1634                                     ;ROUTINE TO WAKE UP COMMAND DECODER IF TPMON IS SET
1635
1636 001572 607000 000400 COMSET: TLNN  IOS,TPMON      ;MONITOR MODE?
1637 001573 263140 000000      POPJ  PDP,          ;NO, NOT MONITOR COMMAND
1638 001574 205000 000004      MOVSI IOS,IOFST
1639 001575 437006 000022      IORB  IOS,DEVIOS(00B)
1640 001576 205040 400000      MOVSI TAC,400000      ;SET SIGN RIT
1641 001577 436042 001556      IORM  TAC,TTYTAB(LINE) ;IN TTY TRANSLATOR TABLE
1642 001600 350000 000000      AOS   COMCNT        ;INDICATE ONE MORE COMMAND
1643 001601 263140 000000      POPJ  PDP,

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1644                                   ;COMMON TRANSMITTER INTERRUPT FOR SCANNER AND CTY(TTY)
1645
1646                                   INTERNAL XMTINT,PTYGET
1647
1648   001602   500102   001457' XMTINT: HLL       LINE,LINTAB(LINE)       ;GET LINE CHAR.
1649   001603   550322   001577'       HRRZ       DDB,TTYTAB(LINE)       ;GET DDB ADDRESS
1650   001604   322300   001114'       JUMPE       DDB,CPOPJ       ;IF NONE, X BEING TYPED
1651   001605   200006   000002       MOVE       IOS,DEVIOS(DDB)       ;GET IO STATUS
1652   001606   607100   010000       TLNN       LINE,HLFDPX       ;HALF DUPLEX LINE?
1653   001607   254000   001612'       JRST       XMTIN1       ;NO, REGULAR TRANSMIT INTERRUPT
1654
1655   001610                           PTYGET:                   ;CALL HERE TO SKIP ABOVE OVERHEAD
1656   001610   331006   000011       SKIPL       TTYPTR(DDB)       ;WAS TYPE-OUT IN PROGRESS?
1657   001611   263140   000000       POPJ       PDP,0       ;IGNORE XMT DURING ECHO CK
1658   001612   201246   000041 XMTIN1: MOVEI       DAT,TTIBUF(DDB)       ;SPECIFY TIO BUFFER
1659   001613   700600   000400 XMTI1A: CONO       PI,PIOFF       ;KEEP TOIP AND PTR/TAKR EQUAL
1660   001614   554045   000000       HLRZ       TAC,BUF(DAT)       ;IS OUTPUT BUFFER EMPTY?
1661   001615   313045   000005       CAMLE       TAC,FCTR(DAT)       ;I.E., FREE COUNT AT MAX?
1662   001616   254000   001643'       JRST       XMTIN2       ;NO, TYPING STILL IN PROGRESS
1663
1664   001617   602000   400000       TRNE       IOS,MERTPO       ;MONITOR ERROR MESSAGE?
1665   001620   302246   000041       CAIE       DAT,TTIBUF(DDB)       ;OUTPUT BUFFER?
1666   001621   254000   001624'       JRST       XMTIN4       ;NO, MUST REALLY BE DONE
1667   001622   201246   000013       MOVEI       DAT,TTIBUF(DDB)       ;YES, NOW EMPTY OUT TTI BUFFER
1668   001623   254000   001613'       JRST       XMTI1A

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1669                                     ;HERE WHEN OUTPUT BUFFER(S) EMPTIED.
1670
1671 001624 201000 400000 XMTIN4: MOVEI IOS,MERTPO
1672 001625 413006 000002 ANDCAB IOS,DEVIOS(DDB)
1673 001626 205400 400000 MOVSI CHREC,TOIP
1674 001627 412406 000011 ANDCAM CHREC,TTYPTR(DDB) ;CLEAR MERTPO AND TOIP
1675 001630 700600 000200 CONO PI,PION
1676 001631 201400 000000 MOVEI CHREC,0
1677 001632 135200 001247' LDB HPOS,PJOBN ;JOB NUMBER DDR IS ATTACHED TO
1678 001633 607000 000020 TLNN IOS,IO
1679 001634 254000 001654' JRST LINDON
1680 001635 205000 000020 MOVSI IOS,IO
1681 001636 413006 000002 ANDCAB IOS,DEVIOS(DDB)
1682 001637 603100 000001 TLNE LINE,TLKRN ;OR TALKING?
1683 001640 254000 001654' JRST LINDON ;YES
1684 001641 326200 001654' JUMPN HPOS,LINDON ;LINE DONE IF DDB IS A JOB
1685 ;OTHERWISE, DDB ONLY USED TO TYPE A
1686 001642 254000 001244' JRST TTYKIL ;MESSAGE; KILL TTY DDB
1687

1688 001643 700600 000200 XMTIN2: CONO PI,PION
1689 001644 260140 000124' PUSHJ POP,GETCHR ;NO, GET NEXT CHAR. IN BUFFER
1690 001645 322400 001612' JUMPE CHREC,XMTIN1 ;IGNORE NULLS
1691 001646 321000 001663' JUMPL IOS,TYPE ;KEEP TYPING IF INPUT I/O WAIT
1692 001647 606000 010000 TRNN IOS,IOACT ;ARE WE IN I/O WAIT?
1693 001650 254000 001663' JRST TYPE ;NOT IN IO WAIT
1694 001651 201200 000110 MOVEI HPOS,TTYCHR-10 ;WAKE 8 CHARS BEFORE END
1695 001652 311205 000005 CAML HPOS,FCTR(DAT) ;IS THERE ROOM ENOUGH NOW?
1696 001653 254000 001663' JRST TYPE ;NO, KEEP TYPING
1697
1698 001654 603000 000001 LINDON: TLNE IOS,IOW ;IN IO WAIT?
1699 001655 603000 400000 TLNE IOS,TTYIOW ;YES, TTY INPUT WAIT?
1700 001656 254000 001663' JRST TYPE ;NO, GO TYPE CHAR.
1701 001657 260140 001502' PUSHJ POP,STTIOD ;YES, SET IO DONE (OUT OF WSYNC)
1702 001660 260140 001324' PUSHJ POP,STLNAC ;RESTORE TAC1
1703 001661 200000 002347' MOVE IOS,[XWD IOW,IOACT] ;INDICATE NO IO ACTIVE OR WAIT
1704 001662 413006 000002 ANDCAB IOS,DEVIOS(DDB)
1705
1706 001663 322400 001604' TYPE: JUMPE CHREC,CPOPJ ;IS TYPING STILL TO BE IN PROGRESS?
1707 001664 254000 002216' JRST TYPL ;YES.
  
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1708 ;TTY KEYBOARD EDITOR ROUTINE
1709 ;UPON RECEIPT OF A CHARACTER, THIS ROUTINE DETERMINES WHAT TO DO
1710 ;WITH IT: WHETHER IT'S A SPECIAL CHARACTER NEEDING SPECIAL ECHOING,
1711 ;WHETHER SOME OTHER CHARACTER IS TO BE STORED IN ITS PLACE, WHETHER
1712 ;IT IS A BREAK CHARACTER (LINE TERMINATOR), OR WHETHER THE CHARACTER
1713 ;TYPED IS A SIGNAL TO UNDERTAKE SOME SPECIAL ACTION,
1714 ;IN ANY CASE, ALL SPECIAL ACTION, INCLUDING DUPLEXING TAKES PLACE ON
1715 ;THE LEVEL OF THIS ROUTINE.
1716 ; THIS ROUTINE CALLS SPCHEK, WHICH MAKES USE OF THE SPECIAL
1717 ;CHARACTER TABLE, SPCTAB, TO MAKE ANY CHANGES IN THE ACTION GENERATED
1718 ;BY SPECIFIC CHARACTERS MAKE THE ALTERATIONS REQUIRED BY THE
1719 ;COMMENTS DESCRIBING SPCTAB. NOTE THAT IF A CHARACTER IS TO DISPATCH
1720 ;TO A "SPECIAL ACTION ROUTINE" OR A SPECIAL ECHO ROUTINE, THE LEFT
1721 ;HALF OF THE CORRESPONDING CHARACTER-WORD MUST HAVE SPACTN
1722 ;SET AND THE ADDRESS OF THE SPECIAL ROUTINE MUST BE
1723 ;ASSEMBLED INTO THE RIGHT HALF OF THE WORD,
1724 ;CALL HAVE 7-BIT ASCII CHARACTER IN CHREC
1725 ; LDR HPOS,PHPOS
1726 ; MOVEI DAT,TTIBUF(00B)
1727 ; PUSHJ PDP,TTEDIT
1728 ; RETURN WITH ACTION DONE, SYNC (LH IOS) SET IF BREAK CHAR, STORED
1729
1730 001665 260140 000423' TTEDIT: PUSHJ PDP,ADJHP ;ADJUST HP AND CHECK SPECIAL
1731 001666 254000 001674' JRST TIPACK ;NOT SPECIAL
1732 001667 205000 000000 MOVSI IOS,0
1733 001670 603040 024000 TLNE TAC,BREAKB+FCSBRK ;BREAK CHAR?
1734 001671 661000 020000 TLO IOS,SYNC ;BREAK CHAR, SET SYNC
1735 001672 437006 000002 IORB IOS,DEVIOS(00B) ;SET SYNC
1736 001673 321041 000000 JUMPL TAC,0(TAC) ;DISPATCH IF SPACTN SET
1737 001674 305400 000140 TIPACK: CAIGE CHREC,140 ;LOWER CASE LETTER?
1738 001675 254000 001700' JRST TTIPUT ;NO
1739 001676 607100 000020 TLNN LINE,T37 ;YES, IS THIS TTY IN 37 MODE?
1740 001677 620400 000040 TRZ CHREC,40 ;NO, MAKE CHAR UPPER CASE
1741 001700 623100 000040 TTIPUT: TLZE LINE,ROBTPD ;HAVE WE BEEN DELETING?
1742 001701 260140 002115' PUSHJ PDP,BSECHO ;YES, OUTPUT A BACKSLASH
1743 001702 260140 000077' TTIPUT1: PUSHJ PDP,PUTCHI ;PUT CHAR IN INPUT BUFFER
1744 001703 254000 001714' JRST INBFUL ;IT DIDNT FIT
1745 001704 607040 002000 TLNN TAC,ECHSUP ;SHOULD THIS CHAR BE ECHOED?
1746 001705 603100 010004 DUPLEX: TLNE LINE,FULTWX+HLFDPX ;IS THIS LINE ECHOING ITSELF?
1747 001706 263140 000000 POPJ PDP,0 ;JUST RETURN WITHOUT ECHO
1748 001707 261140 000001 DUPLEX1: PUSH PDP,TAC ;SAVE TAC OVER PUTCHO
1749 001710 607000 000400 TLNN IOS,TPMON ;SHOULD ECHO IF IN MONITOR MODE
1750 001711 606000 000200 TRNN IOS,NOECHO ;AND UNLESS USER SAYS NO, IN USER MODE
1751 001712 260140 000144' PUSHJ PDP,PUTCHO ;SO ECHO IT.
1752 001713 254000 000374' JRST TPOPJ ;RESTORE TAC AND RETURN
1753
1754 ;INTERNAL INBFUL ;FOR THE PTY
1755
1756 001714 205000 020000 INBFUL: MOVSI IOS,SYNC ;DONT COUNT SYNC COUNT
1757 001715 413006 000002 ANDCAB IOS,DEVIOS(00B) ; SINCE CHAR NOT STORED
1758 001716 306400 000003 CAIN CHREC,3 ;CHAR WONT FIT, WAS IT +C?
1759 001717 254000 002103' JRST CNCTS1 ;YES, PANIC OUT OF THIS BIND
1760 001720 201400 000007 MOVEI CHREC,7 ;NO, JUST ECHO BELL TO SHOW LOSS

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1761 001721 254070 000144 JRST PUTCHO ;OUTPUT BELL

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1762                                     ;CALLED WITH A JUMPL TAC,(TAC), WHERE TAC IS LOADED FROM SPCTAB
1763                                     ;SPECIAL CHARACTER HANDLING ROUTINES
1764
1765 001722 260140 002142' CONTG:  PUSHJ  PDP,DELETL  ;SINCE PEOPLE WANT FREE +U
1766 001723 200040 000173'      MOVE   TAC,SPCTAB+3 ;SINCE DELETL CLOBBERS TAC
1767 001724 260140 002052' CONTZ:  PUSHJ  PDP,CNTLEC  ;OUTPUT +C OR +Z
1768 001725 260140 002042'      PUSHJ  PDP,CRLFEC  ;OUTPUT A CRLF
1769 001726 254000 001700'      JRST   TTIPUT   ;AND STORE THE 003 OR 032
1770
1771 001727 260140 000064' CONTO:  PUSHJ  PDP,SETBF2  ;CLEAR THE OUTPUT BUFFER
1772 001730 205000 000200'      MOVSI  IOS,IOSUPR  ;SET TO JUNK FURTHER OUTPUT
1773 001731 437006 000002'      IORB   IOS,DEVIOS(00B)
1774 001732 254000 001737'      JRST   CONTU1
1775 001733 603000 001000' CONTU:  TLNE   IOS,ODTM  ;ECHO, ETC.
1776 001734 254000 001700'      JRST   TTIPUT   ;IN DDTMODE,
1777 001735 621100 000040'      TLZ    LINE,ROBTPD ;PASS THIS CHARACTER
1778 001736 260140 002142'      PUSHJ  PDP,DELETL  ;NO MORE BACKSLASH
1779 001737 260140 002052' CONTU1: PUSHJ  PDP,CNTLEC  ;+U DELETES INPUT LINE
1780 001740 254000 002042'      JRST   CRLFEC   ;ECHO +O OR +U
1781                                     ;OUTPUT A CRLF AND RETURN WITHOUT
1782                                     ;STORING THE +O OR +U
1783
1783 001741 541050 000000' ALTMOD: HRRI   TAC,(CHREC) ;SAVE WHICH KIND OF ALTMOD
1784 001742 201400 000044'      MOVEI  CHREC,44  ;ECHO A $
1785 001743 607000 000400'      TLNN   IOS,TPMON
1786 001744 606000 000400'      TRNN   IOS,DLRSUP  ;400 IN IOS REMOVES ECHO OF $
1787 001745 260140 002001'      PUSHJ  PDP,AOJDPX
1788 001746 201401 000000'      MOVEI  CHREC,(TAC) ;RESTORE THE CHARACTER
1789 001747 606000 000100'      TRNN   IOS,FCS    ;UNLESS FCS MODE,
1790 001750 201400 000175'      MOVEI  CHREC,175 ;TURN INTO OLD ALTMOD
1791 001751 254000 001700'      JRST   TTIPUT   ;STORE THE CHARACTER
1792
1793 001752 641130 000030' CONTF:  TLC    LINE,T35+T37 ;COMPLEMENT T37 ON +F
1794 001753 645100 000010' CONTP:  TLCA   LINE,T35   ;COMPLEMENT T35 ON +P
1795 001754 641100 000004' CONTB:  TLC    LINE,FULTWX ;COMPLEMENT FULTWX ON +B
1796 001755 263140 000000'      POPJ   PDP,0      ;AND RETURN WITHOUT STORING THESE
1797
1798 001756 665100 000002' CONTO:  TLOA   LINE,XON   ;PAPER TAPE MODE
1799 001757 621130 000002' CONTS:  TLZ    LINE,XON   ;NOT PAPER TAPE
1800 001760 254000 001700'      JRST   TTIPUT   ;DO STORE THESE FOR CUSP

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1871 001761 603100 000020 CONTH: TLNE LINE,T37 ;BACKSPACE
1872 001762 254000 001700' JRST TTIPUT ;JUST PASS TO PROG IF 37 TTY
1873 001763 607100 000002 RUBOUT: TLNN LINE,XON
1874 001764 254000 001767' JRST RUBOU3
1875 001765 205000 020000 RUBOU4: MOVSI IOS,SYNC ;IF PAPER TAPE, NO BREAK
1876 001766 254000 000547' JRST T0POPJ ;OR STORE, RETURN,
1877 001767 603000 000400' RUBOU3: TLNE IOS,TPMON ;IN MONITOR MODE, NOT A BREAK CHAR
1878 001770 254000 001773' JRST RUBOU2
1879 001771 612000 002350' TONE IOS,[XWD DDTM,FCS]
1880 001772 254000 001702' JRST TTIP1 ;STORE RUBOUT IF DDT OR FCS
1881 001773 260140 001765' RUBOU2: PUSHJ PDP,RUBOU4 ;NOT A BREAK AFTER ALL
1882 001774 135405 000001 LDB CHREC,PUTR(DAT) ;GET LAST CHAR IN
1883 001775 260140 002121' PUSHJ PDP,DCPUTR ;BACK UP TIPUTR
1884 001776 254000 002002' JRST RUBOU1 ;IT'S EMPTY ALREADY
1885 001777 667100 000040' TLON LINE,ROBTPD ;MARK IN RUBOUT SEQUENCE
1886 002000 260140 002115' PUSHJ PDP,BSECHO ;AND OUTPUT BACKSLASH IF FIRST
1887 002001 344200 001707' AOJDPX: AOJA HPOS,DUPLX1 ;OUTPUT AND COUNT HPOS
1888
1889 002002 623100 000040 RUBOU1: TLZE LINE,ROBTPD ;END OF INPUT STREAM REACHED

1820 002003 260140 002115' PUSHJ PDP,BSECHO ;OUTPUT A BACKSLASH
1821 002004 254000 002042' JRST CRLFEC ;AND A CR LF
1822
1823 002005 541040 000004 CONTK: HRR1 TAC,4 ;HERE ON V TAB
1824 002006 334000 000000 SKIP4
1825 002007 541040 000010 CONTL: HRR1 TAC,10 ;HERE ON FORMFEED
1826 002010 607100 000010 TLNN LINE,T35 ;THIS TTY HAVE VERT MECHANICS?
1827 002011 254000 002020' JRST SIMFF ;NO, SIMULATE IT
1828 002012 260140 001700' PUSHJ PDP,TTIPUT ;PUT CHAR IN BUFFER AND ECHO IT
1829 002013 201400 000001 CONTL1: MOVEI CHREC,IDLECH ;SYNCHRONOUS IDLE CHARACTERS
1830 002014 260140 001707' SIMFF1: PUSHJ PDP,DUPLX1 ;OUTPUT ECHO OF LF OR IDL
1831 002015 602040 000017 TRNE TAC,17 ;DONE YET?
1832 002016 364040 002014' SOJA TAC,-2 ;NO, OUTPUT MORE
1833 002017 263140 000000 POPJ PDP,0 ;DONE
1834

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1835 002020 661040 002020 SIMFF: TLO TAC,ECHSUP ;DON'T OUTPUT FF OR VT TO A 33
1836 002021 260140 001700' PUSHJ PDP,TTIPUT ;PUT IT IN BUFFER
1837 002022 201400 002012 MOVEI CHREC,12 ;SIMULATE WITH LF'S
1838 002023 254000 002014' JRST SIMFF1
1839
1840 002024 607100 000010 CONTI: TLN LINE,T35
1841 002025 661040 002000 TLO TAC,FCHSUP ;DONT OUTPUT TAB TO 33
1842 002026 260140 001700' PUSHJ PDP,TTIPUT ;PUT IN BUFFER AND MAYBE ECHO
1843 002027 603100 100002 TLNE LINE,XON+DISLIN ;IF PAPER TAPE,DISMISS
1844 002030 263140 000000 POPJ PDP,0 ; SO AS NOT TO OVERFILL OUTBUF
1845 ;ALSO, DISPLAY DOESNT WANT FILLER
1846 002031 541040 000001 HRRJ TAC,1 ;TWO IDLES
1847 002032 603100 000010 TLNE LINE,T35
1848 002033 254000 002013' JRST CONTI1 ;GO SEND SLUFFS
1849
1850 002034 201400 000040 CONTI2: MOVEI CHREC,40 ;SPACES FOR THE 33'S
1851 002035 135200 000000' LDR HPOS,PWPOS ;WHERE WAS I BEFORE TAB?
1852 002036 260140 002001' PUSHJ PDP,AQJDPX ;OUTPUT A SPACE
1853 002037 602200 000007 TRNE HPOS,7 ;AT A TAB STOP?
1854 002040 254000 002036' JRST ,-2 ;NO. MORE SPACES.
1855 002041 263140 000000 POPJ PDP,0 ;RETURN FROM TTEDIT
  
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1856 002042 201200 000000 CRLFEC: MOVEI HPOS,0 ;ECHO A CR LF, SAVING CHREC
1857 002043 261140 000010 PUSH PDP,CHREC
1858 002044 201400 000015 MOVEI CHREC,15 ;CARRIAGE RETURN
1859 002045 260140 001707' PUSHJ PDP,DUPLX1 ;OUTPUT IT
1860 002046 201400 000012 MOVEI CHREC,12 ;LINE FEED
1861 002047 260140 001707' PUSHJ PDP,DUPLX1 ;OUTPUT THAT TOO
1862 002050 262140 000010 CHPOPJ: POP PDP,CHREC ;RESTORE CHREC
1863 002051 263140 000000 POPJ PDP,0
1864
1865 002052 541050 000100 CNTLEC: HRRI TAC,100(CHREC) ;SAVE UN-CNTL CHARACTER
1866 002053 201400 000136 MOVEI CHREC,"+"
1867 002054 260140 002001' PUSHJ PDP,AOJDPX
1868 002055 201401 000000 MOVEI CHREC,(TAC) ;TYPE + CHAR
1869 002056 260140 002001' PUSHJ PDP,AOJDPX
1870 002057 620400 000100 TRZ CHREC,100 ;RESTORE IT TO A CNTL CHAR
1871 002060 263140 000000 POPJ PDP,0
1872
1873 002061 201200 000000 CRLF: MOVEI HPOS,0 ;HERE ON INPUT OF A CARRIAGE RETURN
1874 002062 603100 000002 TLNE LINE,XON ;IF PAPER TAPE, NO FREE LF

1875 002063 254000 001700' JRST TTIPUT ;JUST STORE THE CR
1876 002064 260140 001700' PUSHJ PDP,TTIPUT ;ORDINARILY, STORE AND GO ON HERE
1877 002065 201470 000012 MOVEI CHREC,12 ;BY ADDING A LF
1878 002066 205000 020000 MOVSI IOS,SYNC ;WHICH IS A BREAK CHARACTER
1879 002067 437006 000002 IORB IOS,DEVIOS(0DB)
1880 002070 607100 010004 TLNN LINE,FULTWX+4LFDPX ;IF NOT SELF ECHOING,
1881 002071 254000 001700' JRST TTIPUT ;THIS WILL GIVE LF ECHO
1882 002072 260140 001700' PUSHJ PDP,TTIPUT ;OTHERWISE, THIS WONT
1883 002073 254000 001707' JRST DUPLX1 ;BUT THIS WILL
  
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1884                            INTERN FTLOGIN
1885
1886                            INTERN CNCTST
1887
1888                            CNCTST:
1889                            IFN FTLOGIN,<    EXTERN JBTSTS
1890
1891                            LDR        TAC,PJOBN
1892                            MOVE        TAC,JBTSTS(TAC)
1893                            TLNE        TAC,JACCT
1894                            MOVEI        CHREC,175
1895
1896                            >
1897                            LDR        TAC,TIPUTR(00B)
1898                            CAIE        TAC,3
1899                            POPJ        PDP,
1900                            CNCTS1: PUSHJ    PDP,TSETRF        ;STOP ALL I/O, BY CLEARING BUFFERS
1901                            MOVEI        DAT,TTIBUF(00B)        ;GET POINTER BACK TO INPUT BFR
1902                            MOVE        TAC,SPCTAB+3        ;AND BITS FOR CONTROL C
1903
1904                            CNCMOD: MOVE        IOS,[XWD DDTM+IO+IOSUPR+USRB,MERTPO+ECHOF+IGNOR]
1905                            ANDCAM        IOS,DEVIOS(00B)
1906                            MOVSI        IOS,TPMON+IOFST
1907                            IORB        IOS,DEVIOS(00B)
1908                            TLNE        LINE,PTYLIN        ;*
1909                            PUSHJ        PDP,PTMMD        ;*
1910                            POPJ        PDP,

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1911                                     ;ROUTINE TO ECHO BACK-SLASH
1912
1913 002115 261140 000010 BSECHO: PUSH   PDP,CHREC      ;*
1914 002116 201400 000134         MOVEI   CHREC,"\"
1915 002117 260140 002001'         PUSHJ  PDP,AOJDPX
1916 002120 254000 002050'         JRST   CHPOPJ
1917
1918                                     ;ROUTINE TO DECREMENT PUTR
1919
1920                                     INTERN DCPUTR
1921
1922 002121 135040 000006' DCPUTR: LDB   TAC,PLSTLC      ;CHECK FOR NONE TO DELETE
1923 002122 316045 000002         CAMN   TAC,PCTR(DAT)
1924 002123 263140 000000         POPJ   PDP,
1925
1926 002124 205040 070000         MOVSI  TAC,70000
1927 002125 270045 000001         ADD    TAC,PUTR(DAT)      ;*
1928 002126 603040 400000         TLNE  TAC,400000
1929 002127 270040 002352'         ADD    TAC,CXWD 347777,-11

1930 002130 202045 000001         MOVEM  TAC,PUTR(DAT)
1931 002131 350005 000005         AOS   FCTR(DAT)
1932 002132 350045 000002         AOS   TAC,PCTR(DAT)
1933 002133 307040 000120         CAIG  TAC,TTYCHR          ;*
1934 002134 254000 001415'         JRST  CPOPJ1             ;*
1935 002135 275040 000120         SUBI  TAC,TTYCHR          ;*
1936 002136 202045 000002         MOVEM  TAC,PCTR(DAT)
1937 002137 201040 000020         MOVEI  TAC,STTYBF
1938 002140 272045 000001         ADDM  TAC,PUTR(DAT)      ;*
1939 002141 254000 002134'         JRST  CPOPJ1

1940
1941                                     ;ROUTINE TO DELETE CURRENT LINE (*U)
1942
1943 002142 135040 000006' DELETL: LDB   TAC,PLSTLC      ;WHERE WAS LAST BREAK?
1944 002143 202046 000015         MOVEM  TAC,TIPCTR(DDB)   ;STORE COUNT
1945 002144 260140 001207'         PUSHJ  PDP,TBYTEP       ;CONVERT TO A BYTE POINTER
1946 002145 202046 000014         MOVEM  TAC,TIPUTR(DDB)  ;SAVE POINTER
1947 002146 254000 001160'         JRST   TRESCL           ;GO COMPUTE TIFCTR
  
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1948                                    IFN FTALK,K
1949                                    EXTERNAL TPOPJ
1950 002147 405400 000177 DOTALK: ANDI        CHREC,177
1951 002150 550302 001603'            HRRZ        DDR,TTYTAB(LINE)
1952 002151 322300 001663'            JUMPE        DDR,CPOPJ        ;NO SUCH LINE
1953 002152 306400 000003            CAMN        CHREC,3
1954 002153 254000 002173'            JRST        NOTALK
1955 002154 261140 000002            PUSH        PDP,LINE
1956 002155 135100 000003' DOTAL1: LDR        LINE,PTALK
1957 002156 500102 001602'            HLL        LINE,LINTAB(LINE)
1958 002157 550302 002150'            HRRZ        DDR,TTYTAB(LINE)
1959 002160 322300 002170'            JUMPE        DDR,DOTAL2
1960 002161 261140 000010            PUSH        PDP,CHREC
1961 002162 316103 777777            CAMN        LINE,-1(PDP)
1962 002163 607100 010004            TLMN        LINE,FULTWX+HLFDPX
1963 002164 260140 000144'            PUSHJ        PDP,PUTCHO
1964 002165 200006 000002            MOVE        IOS,DEVIOS(DEV DAT)
1965 002166 260140 001505'            PUSHJ        PDP,TYPTST
1966 002167 262140 000010            POP        PDP,CHREC
1967 002170 312103 000000 DOTAL2: CAMN        LINE,0(PDP)
1968 002171 254000 002155'            JRST        DOTAL1
1969 002172 254000 001713'            JRST        TPOPJ
1970
1971                                    ;IF I TYPE A *C IN TALK RING, THEN
1972                                    ;ASSUME NEXT+ME+PREV
1973                                    ;SET NEXT+PREV
1974                                    ;IF NEXT=PREV, CLEAR ITS TLKRN BIT
1975                                    ;SET ME+ME
1976                                    ;CLEAR TLKRN BIT IN LINTAB(ME)
1977
1978 002173 201202 000000 NOTALK: MOVEI        HPOS,0(LINE)        ;ME
1979 002174 135400 000003'            LDB        CHREC,PTALK        ;NEXT
1980 002175 135040 000003' NOTAL1: LDB        TAC,PTALK
1981 002176 316040 000004            CAMN TAC,HPOS        ;ME+?
1982 002177 254000 002202'            JRST        NOTAL2        ;YES. LINE=PREV
1983 002200 200100 000001            MOVE        LINE,TAC        ;NO. FIND PREV
1984 002201 254000 002175'            JRST        NOTAL1
1985 002202 137400 000003' NOTAL2: OPB        CHREC,PTALK        ;MAKE NEXT+PREV
1986 002203 302402 000000            CATE        CHREC,(LINE)        ;RING NOW EMPTY?
1987 002204 254000 002207'            JRST        NOTAL3        ;NO
1988 002205 205400 000001            MOVSI        CHREC,TLKRN        ;YES. CLR HIS BIT
1989 002206 412402 002156'            ANDCAM        CHREC,LINTAB(LINE)
1990 002207 205400 000001 NOTAL3: MOVSI        CHREC,TLKRN
1991 002210 200100 000004            MOVE        LINE,HPOS        ;ME
1992 002211 137200 000003'            OPB        HPOS,PTALK        ;ME+ME
1993 002212 412402 002206'            ANDCAM        CHREC,LINTAB(LINE)        ;CLR MY BIT
1994 002213 201400 000003            MOVEI        CHREC,3        ;GET A *C AGAIN
1995 002214 137406 000014            OPB        CHREC,TIPUTR(DDR)        ;LOOK LIKE 2 OF THEM
1996 002215 254000 001434'            JRST        RECINT        ;AND PROCESS IT FROM THE TOP
1997

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1998 ;ROUTINE TO TYPE CHAR
1999 ;CALL MOVE LINE,LINE NO,
2000 ; MOVE CHREC,CHARACTER
2001 ; PUSHJ PDP,TYPE
2002
2003 INTERNAL TYPL
2004 EXTERNAL TCNLN,SCNTYP,PEVENB
2005
2006 002216 TYP:
2007 002216 603100 400000 TYPL: TLNE LINE,PTYLIN
2008 002217 263140 000000 POPJ PDP,
2009 002220 260140 000000 PUSHJ PDP,PEVENB ;YES
2010 002221 607100 200000 TLNW LINE,CTYLIN ;GENERATE CORRECT PARITY
2011 002222 254000 000000 JRST SCNTYP ;NO,CONSOLE TTY?
2012 002223 712140 000010 CTYP: DATA TTY,CHREC ;TYPE CHAR,
2013 002224 137400 000004 DPR CHREC,PLASTC
2014 002225 263140 000000 POPJ PDP,
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2015 ;ROUTINE TO SETUP DDB FOR OUTPUT
2016 ;CALL MOVE TAC,[SIXBIT /TTY#]
2017 ; PUSHJ PDP,GETDDB
2018 ; NONE AVAILABLE RETURN
2019 ; RETURN WITH LINE AND DDB SETUP
2020
2021 EXTERNAL TCONLN,CPOPJ,CPOPJ1,TPOPJ1
2022
2023 INTERNAL GETDDB
2024
2025 002226 201100 001424' GETDDB: MOVEI LINE,TCONLN
2026 002227 316040 002353' CAMN TAC,[SIXBIT /CTY/] ;CTY?
2027 002230 254000 002250' JRST GETDB1 ;YES
2028 002231 510100 000001 HLLZ LINE,TAC ;NO
2029 002232 312100 002354' CAME LINE,[SIXBIT /TTY/] ;TTY PREFIX?
2030 002233 263140 000000 POPJ PDP, ;NO
2031 002234 621040 777777 TLZ TAC,-1 ;YES
2032 002235 322040 002151' JUMPE TAC,CPOPJ ;TTY?
2033 002236 245040 000030 ROTC TAC,30 ;NO
2034 002237 622100 000020 TRPE LINE,20 ;IS FIRST SUFFIX AN OCTAL DIGIT?
2035 002240 602100 000070 TRNE LINE,70
2036 002241 263140 000000 POPJ PDP, ;NO
2037 002242 241040 000003 ROT TAC,3 ;YES
2038 002243 640040 000002 TRC TAC,2 ;IS THERE A 2ND SUFFIX THAT IS AN
2039 002244 606040 000007 TRNN TAC,7 ;OCTAL DIGIT?
2040 002245 245040 000003 ROTC TAC,3 ;YES
2041 002246 301100 002226' CAIL LINE,TCONLN ;LEGAL LINE NUMBER?
2042 002247 263140 000000 POPJ PDP, ;NO
2043 002250 550302 002157' GETDB1: HRRZ DDB,TTYTAB(LINE) ;DOES THIS LINE HAVE A DDB?
2044 002251 326300 002141' JUMPN DDB,CPOPJ1 ;JUMP IF SO.
2045 002252 260140 002261' PUSHJ PDP,DDBSRC ;NO, SEARCH FOR FREE DDB
2046 002253 263140 000000 POPJ PDP, ;NONE AVAILABLE
2047 002254 512006 000002 HLLZM IOS,DEVIOS(DDB) ;INITIALIZE STATE
2048 002255 261146 000000 PUSH PDP,DEVNAM(DDB)
2049 002256 201040 600000 MOVEI TAC,ASSCON+ASSPRG
2050 002257 412046 000004 ANDCAM TAC,DEVMOD(DDB)
2051 002260 254000 000000 JRST TPOPJ1
  
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2052                ;ROUTINE TO SEARCH FOR FREE TTY DEV DATA BLOCK
2053                ;CALL:  MOVE LINE,TTY LINE NO,
2054                ;      PUSHJ PDP,DDBSRC
2055                ;      NONE FOUND OR LINE NO, TOO BIG
2056                ;      RETURN DEVDAT,LINE AND DEVNAM SET AND BITS TPMON,IOFST,IOACT,
2057                ;      TTYUSE,ASSCON SET.
2058
2059                EXTERNAL TTPLEN,MLTTYL,CPOPJ
2060                INTERNAL DDBSRC
2061
2062 002261 550040 000002 DDBSRC: HRRZ   TAC,LINE           ;NUMBER OF LINE ONLY
2063 002262 303040 001023' CAILE TAC,TTPLEN       ;IS LINE NO, TOO BIG
2064 002263 263140 000000' POPJ PDP,              ;YES.
2065 002264 205000 000012' MOVSI IOS,MLTTYL      ;NO, OF TTY DDBS
2066 002265 201300 000437' MOVEI DEVDAT,TTYLST  ;ADDRESS OF FIRST TTY DDB
2067 002266 334040 002345' SKIPA  TAC,[XWD TTYUSE+TTYATC,ASSPRG+ASSCON]
2068 002267 554306 000003' HLRZ  DEVDAT,DEVSER(DEVDAT) ;CHAIN THRU DDBS
2069 002270 612046 000004' TDNE  TAC,DEVMOD(DEVDAT) ;USE,ATTACH OR ASSIGN BITS ON?
2070 002271 253000 002267' AOBJN IOS,.-2         ;YES. DONE?

2071 002272 325000 002235' JUMPGE IOS,CPOPJ      ;YES. DEVICE DATA BLOCK FOUND?
2072 002273 205040 400000' MOVSI  TAC,TOIP      ;CLEAR TOIP IN DDB
2073 002274 412046 000011' ANDCAM TAC,TTYPTR(DDB) ;IN CASE OF PREVIOUS DETACH
2074 002275 205040 000007' MOVSI  TAC,PROG
2075 002276 202046 000007' MOVEM  TAC,DEVIAD(DDB) ;CLEARS PHPOS
2076 002277 202046 000010' MOVEM  TAC,DEVOAD(DDB) ;CLEARS PFITCH
2077 002300 200000 002355' MOVE  IOS,[XWD TPMON+IOFST,IOACT]
2078 002301 261140 000005' PUSH  PDP,DAT
2079 002302 260140 000063' PUSHJ  PDP,TSETBF     ;INITIALIZE BUFFERS
2080 002303 262140 000005' POP   PDP,DAT
2081 002304 200040 002356' MOVE  TAC,[XWD TTYUSE,ASSCON];INITIALIZE DATA BLOCK.
2082
2083                ;FALL INTO SCNIN

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2084 ;INITIALIZE TTY DEVICE DATA BLOCK(CALLED FROM TTYATT TOO)
2085 ;CALL: MOVE TAC,BITS IN DEVMOD TO BE TURNED ON
2086 ; MOVE DEVDAT,ADDRESS OF DEVICE DATA BLOCK
2087 ; PUSHJ PDP,SCNIN
2088 ; SKIP RETURN ALWAYS
2089
2090 ; CALLED BY JRST FROM TTYATT
2091 ; AND FALLS IN FROM DDRSRC ABOVE
2092
2093 ;SETS PHYSICAL NAME TO SIXBIT /TTY#/ OR SIXBIT /CTY/
2094 ; WHERE # IS THE LINE NUMBER,
2095 ;STORES LINE NUMBER IN DEVICE DATA BLOCK
2096
2097 EXTERNAL PUNIT,TTYTAB,TCOINLN,CPOPJ1
2098
2099 002305 436046 000004 SCNIN: IORM TAC,DEVMOD(DEVDAT)
2100 002306 137100 001412' OPR LINE,PUNIT ;SET LINE NO. IN DDB.
2101
2102 INTERNAL FTALK
2103 IFN FTALK,<
2104 002307 137100 000003' OPR LINE,PTALK ;SETUP TALK RING TO CONTAIN
2105 ;ONLY THIS TTY.
2106 >
2107 002310 205040 646471 MOVSI TAC,646471 ;SIXBIT /TTY/
2108 002311 202046 000000 MOVE TAC,DEVNAM(DEVDAT)
2109 002312 200040 002357' MOVE TAC,[POINT 6,DEVNAM(DEVDAT),17]
2110 002313 606100 000070 TRNN LINE,70 ;IS THERE A HIGH ORDER OCTAL DIGIT?
2111 002314 254000 002322' JRST SCNIN0 ;NO
2112 002315 241100 777775 ROT LINE,-3 ;YES, CONVERT TO SIXBIT,
2113 002316 271100 000020 ADDI LINE,20
2114 002317 136100 000001 IOPB LINE,TAC ;STORE HIGH ORDER SIXBIT DIGIT
2115 002320 620100 777777 TRZ LINE,-1 ;LOW ORDER DIGIT IN LINE
2116 002321 241100 000003 ROT LINE,3
2117 002322 271100 000020 SCNIN0: ADDI LINE,20
2118 002323 136100 000001 IOPB LINE,TAC ;STORE LOW ORDER DIGIT
2119 002324 260140 001324' PUSHJ PDP,STLNAC
2120 002325 542302 002250' HRRM DEVDAT,TTYTAB(LINE) ;SET DDB ADR. IN TRANSLATOR TABLF,
2121 002326 205040 436471 MOVSI TAC,436471 ;SIXBIT /CTY/
2122 002327 603100 200000 TLNE LINE,CTYLN ;IS THIS CONSOLE TTY?
2123 002330 202046 000000 MOVEM TAC,DEVNAM(DEVDAT);YES, SET NAME TO CTY,
2124 002331 603100 400000 TLNE LINE,PTYLN ;IS THIS A PTY?
2125 002332 260140 002113' PUSHJ PDP,PTMNM0 ;YES, SET IT INTO MONITOR MODE
2126 002333 254000 002251' JRST CPOPJ1 ;SUCCESSFUL RETURN.
  
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2127 002334 SCNEND: END
2128 002334 401000 010000
2129 002335 400000 010000
2130 002336 440700 000001
2131 002337 070000 002000
2132 002340 401200 710000
2133 002341 010700 000001
2134 002342 001400 710000
2135 002343 010707 000001
2136 002344 000020 010000
2137 002345 030000 600000
2138 002346 001622 350000
2139 002347 000001 010000
2140 002350 001000 000100
2141 002351 001320 700000
2142 002352 347777 777777
2143 002353 436471 000000
2144 002354 646471 000000
2145 002355 000404 010000

2146 002356 010000 400000
2147 002357 220606 000000

NO ERRORS DETECTED

PROGRAM BREAK IS 002360

AC1	000015	INT	AC2	000016	INT	ADJHP	000423	
ADRERR	000553	EXT	ADVBFE	000644	EXT	ADVBFF	000602	FXT
ALTMOD	001741		AOJDPX	002001		ASSCON	400000	INT
ASSPRG	200000	INT	BREAKB	020000	INT	BSECHO	002115	
RUF	000000	INT	BUFCLR	000552	EXT	CHPOPJ	002050	
CHREC	000010		CLOCK	001552	EXT	CLRBYT	000000	FXT
CNCMOD	002106		CNCTS1	002103		CNCTST	002074	INT
CNTLFC	002052		COMCNT	001600	EXT	COMSET	001572	
CONTR	001754		CONTC	001722		CONTF	001752	
CONTH	001761		CONTI	002024		CONTI1	002013	
CONTI2	002034		CONTK	002005		CONTL	002007	
CONTO	001727		CONTP	001753		CONTR	001756	
CONTS	001757		CONTU	001733		CONTU1	001737	
CONTZ	001724		CPOPJ	002272	EXT	CPOPJ1	002333	FXT
CRLF	002061		CRLFFC	002042		CTYINT	001421	INT
CTYLIN	200000	INT	CTYOU1	001431		CTYP	002223	
DAT	000005	INT	DOPUTR	002121	INT	DOB	000006	
DDPSPC	002261	INT	DDT2	000321		DDT3	000300	
DDT4	000325		DDT5	000315		DDTCNC	000300	
DDTIN	000233	INT	DDTIW	000241		DDTM	001000	
DDTOUT	000313	INT	DDTUTT	000343		DDTWAT	000335	
DELETL	002142		DEVDAT	000006	INT	DEVIAD	000007	INT
DEVINS	000002	INT	DEVLOG	000005	INT	DEVMOD	000004	INT
DEVNAM	000000	INT	DEVOAD	000010	INT	DEVOPR	001367	FXT
DEVPHY	001306	EXT	DEVSER	000003	INT	DISLIN	100000	INT
DLRSUP	000400		DOTAL1	002155		DOTAL2	002170	
DOTALK	002147		DSCTLN	020000	INT	OSDTLN	040000	INT
DUPLEX	001705		DUPLEX1	001707		DVIN	000002	INT
DVOUT	000001	INT	DVTTY	000010	INT	ECHO	001541	
ECHOF	100000		FCHSUP	002000		ENDECH	001556	
ERROR	001322	EXT	FCS	000100		FCSBRK	004000	
FCTR	000005	INT	FTATTA	777777	777777	FTCCL	777777	777777
FTCHFC	000000	INT	FTDDTM	777777	777777	FTDISK	777777	777777
FTWDPX	777777	777777	FTLOGI	777777	777777	FTMONP	000000	INT
FTRC10	777777	777777	FTSWAP	777777	777777	FTTALK	777777	777777
FTTYS	777777	777777	FULTWX	000004	INT	GETCH1	000141	
GETCH2	000135	INT	GETCHR	000124	INT	GETDB1	002250	
GETDNB	002226	INT	GETLIN	001020		GETLN1	001033	
GETW01	000322	EXT	GETWOU	001010	EXT	HLFDPX	010000	INT
HPOS	000004		IADRCK	000252	EXT	IDLECH	000001	
IGNOR	200000		INRFUL	001714	INT	INCHRS	000744	
INCHRW	001001		INCHSL	000742		INCHWL	000760	
INJEST	001434	INT	INUS2	001434	INT	IO	000020	INT
IOACT	010000	INT	IOBEG	000002	INT	IOBCTL	040000	INT
IODERR	200000	INT	IODTER	100000	INT	IOEND	000040	INT
IOFST	000004	INT	IOIMPM	400000	INT	IOS	000000	INT
IOSUPR	000200		IOW	000001	INT	ITEM	000004	INT
JACCT	100000	INT	JBTSTS	002075	EXT	JOB	001220	FXT
JOBPFI	000000	EXT	KILMSK	000043	INT	LGLSET	000036	INT
LINDON	001654		LINE	000002		LINRDY	000100	
LINSAY	000526	INT	LINTAB	002212	EXT	MERTPO	400000	
MLTTYL	002264	EXT	MONUS1	000561		MONUS2	000570	
MONUS3	000577		MONUS4	000602		MONUS5	000606	

MONUS6	000613'	MONUS7	000623'	MONUS8	000627'
MONUSR	000551'	MTTYLN	001276' EXT	NOECHO	002200'
NOTAL1	002175'	NOTAL2	002202'	NOTAL3	002207'
NOTALK	002173'	ONEOUT	001010'	OUT	000532' EXT
OUTC1A	000416'	OUTC1B	000411'	OUTC1C	000405'
OUTCH1	000375'	OUTCH2	000370'	OUTCH3	000371'
OUTCHR	000345'	OUTCHS	000352' INT	OUTSTR	000771'
PCOMIC	000005' INT	PCTR	000002' INT	PDP	000003' INT
PEVEN8	002220' EXT	PHPOS	000000'	PIOFF	000400'
PION	000200'	PJOBN	002074' EXT	PLASTC	000004' INT
PLSTLC	000006'	PROG	000007' INT	PSAVCH	000002'
PTALK	000003'	PTMMD	002332' EXT	PTMNMZ	001341' EXT
PTYGET	001610' INT	PTYLIN	400000' INT	PTYOW	000303' EXT
PTYF	000652' EXT	PUNIT	002306' EXT	PUTCH1	000077' INT
PUTCH0	000144'	PUTCI0	000142'	PUTCI1	000111'
PUTC12	000101'	PUTC01	000155'	PUTR	000001' INT
RECH01	001561'	RECHDX	001526'	RECIN1	001443'
RECIN2	001450'	RECIN3	001465' INT	RECIN4	001472'
RECIN8	001445'	RECINT	001434' INT	ROBTPD	000040'
RUR011	002002'	RUBOU2	001773'	RUBOU3	001767'
RUR014	001765'	RUBOUT	001763'	RWARN	001517'
SCN1	000015'	SCN2	000034'	SCN3	000045'
SCNCHN	001431' EXT	SCNDOB	000437' INT	SCNDDS	000067' INT
SCNDSP	000531' INT	SCNEND	002334'	SCNIN	002305'
SCNIN0	002322'	SCNINI	000011' EXT	SCNOFF	001374' EXT
SCNON	001414' EXT	SCNSAV	001423' EXT	SCNSRF	000000' INT
SCNTYP	002222' EXT	SETBF0	000065'	SETBF2	000064'
SETBFI	000055' INT	SETLIN	001035'	SETRUN	001420' EXT
SIMFF	002020'	SIMFF1	002014'	SKPINC	000775'
SKPINL	000772'	SPACTN	400000'	SPCHEK	000160' INT
SPCHK1	000166'	SPCTAB	000170'	SPHPOS	010000'
SPOUT	100000'	STLNAC	001324' INT	STTI0D	001657' EXT
STTYBF	000020' INT	SYNC	020000'	SYSPDL	000460' INT
T0POPJ	000547'	T35	000010' INT	T37	000020' INT
TAC	000001' INT	TAC1	000002' INT	TAKR	000003' INT
TBYTEP	001207'	TCONLN	002246' EXT	TCTR	000004' INT
TEM	000010' INT	TENDIN	000546'	TIBF	000021' INT
TIFCTR	000020' INT	TIPACK	001674'	TIPCTR	000015' INT
TIPUTR	000014' INT	TISYNC	000012' INT	TITAKR	000016' INT
TITCTR	000017' INT	TLHBYT	001202'	TLKRNQ	000001'
TORF	000047' INT	TOFCTR	000046' INT	TOIP	400000'
TOPCTR	000043' INT	TOPUTR	000042' INT	TOTAKR	000044' INT
TOTCTR	000045' INT	TPCJOB	000001' INT	TPMON	000400'
TPOPJ	002172' EXT	TPOPJ1	002260' EXT	TRESC1	001160'
TRESCL	001173'	TRESCN	001154' INT	TRESCU	001170'
TSETBF	000063' INT	TTEDIT	001665'	TTIBUF	000013' INT
TTIOUT	000113'	TTIPT1	001702'	TTIPUT	001700'
TTOBHF	000041' INT	TTUWS	000710'	TTPLEN	002262' EXT
TTSTR1	001342'	TTUUL	000015'	TTUUT	000725'
TTYAT2	001045'	TTYAT3	001077'	TTYAT4	001105'
TTYAT5	001073'	TTYATC	002000' INT	TTYATI	001042' INT
TTYATT	001042' INT	TTYCHR	000120' INT	TTYCM	001131' INT
TTYCM1	001112'	TTYCM2	001136'	TTYCOM	001107' INT

TTYCAT	001222'	TTYCFI	001141' INT	TTYDT1	001147'
TTYDTC	002020'	TTYCRP	001224' INT	TTYF0	001304'
TTYF1	001305'	TTYF3	001321'	TTYF9	001323'
TTYFNU	001221' INT	TTYFNU	001220' INT	TTYFUW	001224' INT
TTYIN	000534'	TTYIN1	000543'	TTYINI	000007'
TTYJOW	400000'	TTYKIL	001244' INT	TTYKL1	001267'
TYLST	000437'	TTYQNT	000632'	TTYPTR	000011' INT
TTYRFL	001240'	TTYRMT	004000' INT	TTYSET	001273' INT
TTYSPA	001277'	TTYSRC	001275'	TTYSTC	001327' INT
TTYSTR	001334' INT	TTYTAB	002325' EXT	TTYTCM	001327' INT
TTYTK1	001374'	TTYTLK	001355' INT	TTYUSE	010000' INT
TTYUSR	001416' INT	TTYUDD	000714' INT	TWSYNC	000302'
TYP	002216'	TYPE	001663' INT	TYPX	002216' INT
TYPT1	001515'	TYPTST	001505'	TYPN	001565' INT
UADCK1	000723' EXT	UADCK	000667' EXT	UCHN	000012' INT
USRB	000120'	USRMN1	000666'	USRMN2	000671'
USRMN3	000677'	USRMN4	000672'	USRMN5	000675'
USRMON	000663'	UTYPT	000652'	UTYPT1	000661'
UUC	000014' INT	VSCNSF	000415' INT	WSYNC	001233' EXT
XFRIN	000261'	XFRIN1	000267'	XFRIN2	000273'
XMTI1A	001613'	XMTIN1	001612'	XMTIN2	001643'
XMTIN4	001624'	XMTINT	001602' INT	XON	000002' INT
ZZ	000437'				

CONTK	413	1823#												
CONTL	414	1825#												
CONTO	417	1771#												
CONTP	418	1794#												
CONTR	419	1796#												
CONTS	421	1799#												
CONTU	423	1775#												
CONTU1	1774	1779#												
CONTZ	428	1767#												
CORCNT	6#	6												
CPOPJ	506	984	1038	1148	1155	1650	1706	1952	2021	2032	2059	2071		
CPOPJ1	312	390	800	993	1164	1167	1440	1474	1934	1939	2021	2044	2097	2126
CRLF	415	1873#												
CRLFEC	573	1768	1780	1821	1856#									
CTYINT	1490	1493#	1494											
CTYLIN	139#	157	261	2010	2122									
CTYU1	1498	1502#												
CTYP	2012#													
D	6#	6												
DAT	6#	6	238	239	242	275	276	277	278	283	284	286	287	289
	290	291	292	301	303	306	307	309	311	321	322	336	337	340
	342	343	345	346	347	351	471	523	525	527	531	532	540	832
	982	1158	1225	1262	1383	1540	1658	1660	1661	1665	1667	1695	1812	1900
	1923	1927	1930	1931	1932	1936	1938	2078	2080					
DCL	6#	6												
DCLI	6#	6												
DCL0	6#	6												
DCLR	6#	6												
DPCPTR	1813	1920	1922#											
DDR	173#	194	204	205	207	237	239	240	241	242	243	245	246	247
	248	250	254	255	278	279	283	317	318	321	361	364	366	367
	369	370	453	454	455	458	470	471	478	520	537	560	806	808
	814	818	825	830	832	840	847	849	855	859	865	866	867	868
	873	885	888	890	900	905	910	917	921	939	944	980	982	988
	1001	1003	1011	1015	1016	1029	1100	1125	1157	1158	1159	1169	1170	1175
	1176	1195	1198	1202	1204	1211	1213	1214	1216	1219	1224	1225	1231	1244
	1262	1273	1275	1278	1286	1291	1313	1319	1324	1328	1338	1375	1376	1379
	1380	1384	1396	1414	1422	1425	1426	1427	1464	1470	1486	1523	1524	1535
	1540	1544	1553	1556	1558	1559	1565	1568	1570	1592	1597	1604	1614	1617
	1623	1639	1649	1650	1651	1656	1658	1665	1667	1672	1674	1681	1704	1735
	1757	1773	1879	1896	1900	1905	1907	1944	1946	1951	1952	1958	1959	1995
	2043	2044	2047	2048	2050	2073	2075	2076						
DDRSPC	1525	2045	2060	2062#										
DDI	6#	6												
DD0	6#	6												
DDT2	523#	526												
DDT3	525#	530	541											
DDT4	527#													
DDT5	519#	1009												
DDTCNC	480	489#												
DDTIM	446	451#												
DDTIW	457#													
DDTM	88#	452	459	519	807	817	887	1002	1028	1311	1350	1413	1547	1775

FTTRAC	6#															
FTTRPS	6#															
FTTYS	6#	98#	99													
FULTNX	150#	161	168	190	500	1578	1746	1795	1880	1962						
GETCH1	320	339	350#	561												
GETCH2	341	346#														
GETCHR	334	336#	348	473	834	983	1226	1689								
GETDR1	2027	2043#														
GETDOB	1382	1442	2023	2025#												
GETLIN	969	1046#														
GETLN1	1047	1050	1055	1058#												
GETWD1	507	524														
GETWDU	1021	1035														
HLFDPX	143#	167	500	811	1528	1578	1652	1746	1880	1962						
HPOS	175#	559	560	563	567	572	577	579	588	592	594	596	597	605		
	616	618	620	623	624	1539	1542	1677	1684	1694	1695	1817	1851	1853		
	1856	1873	1978	1981	1991	1992										
HSAMSK	6#	6														
HSAPDS	6#	6														
HSASIZ	6#	6														
HUNGCT	6#	6														
HUNGST	6#	6														
I	6#	6														
IADRCK	447	463	466	506												
IB	6#	6														
IBUFB	6#	6														
ICLOSB	6#	6														
IDLECH	183#	634	1582	1829												
IGNOR	107#	817	887	1413	1593	1606	1618	1904								
ILM	6#															
ILUERR	6#	6														
INRFR	6#	6														
INBFUL	1744	1754	1756#													
INCHRS	965	982#	1025													
INCHRW	963	1025#	1031													
INCHSL	968	980#	997													
INCHWL	967	997#	1005													
INITR	6#	6														
INJEST	1512	1518#														
INPB	6#	6														
INUS2	1512	1517#														
IO	6#	6	519	812	889	943	1201	1325	1413	1419	1605	1678	1680	1904		
IOACT	6#	6	452	457	536	805	817	872	887	899	943	1000	1028	1277		
	1289	1413	1692	1703	2077											
IOREG	6#	6	884	1413												
IORKTL	6#	6	1413													
IOBOT	6#	6														
IOCON	6#	6														
IODEND	6#	6														
IODERR	6#	6	107													
IODTER	6#	6	110	1413												
IOEND	6#	6	846	877												
IOFST	6#	6	236	459	858	889	1455	1638	1906	2077						

CODES	6#													
DISABL	6#													
ENABLE	6#													
NOSCHE	6#													
NOSHUF	6#													
QUEUES	6#													
SCHEDU	6#													
SHUFFL	6#													
STARTD	6#													
XP	6#													
		6	13	125	126	127	128	129	130	716	718	720	722	724
	726	728	730	732	736	754	756	758	760	762	764	766	785	786