

```

000.000      1  H14BUG EQU 0      ASSEMBLE FOR HARDWARE HANDSHAKE
000.000      2  HB410 EQU 0      ASSEMBLE FOR HB-4 CARD INTERFACE

```

```

000.000      4          IF      HB410
      6          ELSE
      7          TITLE 'HDOS LP: DEVICE DRIVER, HB-5 INTERFACE'
      8      ENDIF

```

```

      9
     10 ***      LPDDV - 'LINE PRINTER DEVICE' DRIVER
     11 *
     12 *      G. A. CHANDLER      24-AUG-78
     13 *
     14 *      Copyright 18-OCT-78 for:
     15 *
     16 *      Heath Co.
     17 *      Benton Harbor, MI
     18 *      49022
     19 *
     20 *      Copyright      1979
     21 *

```

```

     23 **      LPDDV IS THE DEVICE DRIVER FOR THE DEVICE
     24 *
     25 *      LP:
     26 *
     27 *      LP: is an H-14 Printer interfaced via an HB-4 MULTI-PORT I/O
     28 *      card or an HB-5 SERIAL card configured at address 3400--the
     29 *      default line printer port.
     30 *

```

```

000.000     32          IF      HB410
     33          ELSE
     34          ERRZR H14BUG *****
     35          ERRZR H14BUG * HB-5 CARD DOES NOT SUPPORT HARDWARE HANDSHAKE *
     36          ERRZR H14BUG *****
     37          ENDIF
000.000     38      XTEXT      HOSDEF

```

```

    40X **      HOSDEF - DEFINE HOS PARAMETER.
    41X *
    42X
    43X

```

```

000.026     44X VERS      EQU      1*16+6      VERSION 1.6
    45X
000.377     46X SYSCALL EQU      3770      SYSCALL INSTRUCTION
    47X
    48X

```

```

000.000     49X          ORG      0

```

HQSDEF

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```

50X
51X *      RESIDENT FUNCTIONS
52X
000.000 53X .EXIT DS 1 EXIT (MUST BE FIRST)
000.001 54X .SCIN DS 1 SCIN
000.002 55X .SCOUT DS 1 SCOUT
000.003 56X .PRINT DS 1 PRINT
000.004 57X .READ DS 1 READ
000.005 58X .WRITE DS 1 WRITE
000.006 59X .CONSL DS 1 SET/CLEAR CONSOLE OPTIONS
000.007 60X .CLRCD DS 1 CLEAR CONSOLE BUFFER
000.010 61X .LOADD DS 1 LOAD AN OVERLAY
000.011 62X .VERS DS 1 RETURN HDOS VERSION NUMBER
000.012 63X .SYSRES DS 1 PRECEDING FUNCTIONS ARE RESIDENT
64X
65X
66X *      *HDOSDVLO.SYS* FUNCTIONS
67X
000.040 68X ORG 40A
69X
000.040 70X .LINK DS 1 LINK (MUST BE FIRST)
000.041 71X .CTLCD DS 1 CTL-C
000.042 72X .OPENR DS 1 OPENR
000.043 73X .OPENW DS 1 OPENW
000.044 74X .OPENU DS 1 OPENU
000.045 75X .OPENC DS 1 OPENC
000.046 76X .CLOSE DS 1 CLOSE
000.047 77X .POSIT DS 1 POSITION
000.050 78X .DELET DS 1 DELETE
000.051 79X .RENAM DS 1 RENAME
000.052 80X .SETTP DS 1 SETTOP
000.053 81X .DECODE DS 1 NAME DECODE
000.054 82X .NAME DS 1 GET FILE NAME FROM CHANNEL
000.055 83X .CLEAR DS 1 CLEAR CHAN
000.056 84X .CLEARA DS 1 CLEAR ALL CHANS
000.057 85X .ERROR DS 1 LOOKUP ERROR
000.060 86X .CHFLG DS 1 CHANGE FLAGS
000.061 87X .DISMT DS 1 FLAG SYSTEM DISK DISMOUNTED
000.062 88X .LOADD DS 1 LOAD DEVICE DRIVER
89X
90X
91X *      *HDOSDVLI.SYS* FUNCTIONS
92X
000.200 93X ORG 200H
94X
000.200 95X .MOUNT DS 1 MOUNT (MUST BE FIRST)
000.201 96X .DMOUN DS 1 DISMOUNT
000.202 97X .MONMS DS 1 MOUNT/NO MESSAGE
000.203 98X .DMNMS DS 1 DISMOUNT/NO MESSAGE
000.204 99X .RESET DS 1 RESET = DISMOUNT/MOUNT OF UNIT
000.205 100 XTEXT ASCII

```

ASCII

18:28:11 16-MAY-80

102X ** ASCII CHARACTER EQUIVALENCES.

103X				
000.015	104X CR	EQU	13	CARRIAGE RETURN
000.012	105X LF	EQU	10	LINE FEED
000.200	106X NULL	EQU	200Q	PAD CHARACTER
000.000	107X NUL2	EQU	0	
000.007	108X BELL	EQU	7	BELL CHARACTER
000.177	109X RUBOUT	EQU	177Q	
000.010	110X BKSP	EQU	10Q	CTL-H
000.026	111X C.SYN	EQU	26Q	SYNC
000.002	112X C.STX	EQU	2	STX
000.047	113X QUOTE	EQU	47Q	
000.011	114X TAB	EQU	11Q	
000.033	115X ESC	EQU	33Q	
000.012	116X NL	EQU	12Q	NEW LINE (HDOS SYSTEMS)
000.212	117X ENL	EQU	NL+200Q	NL + END-OF-LINE-FLAG
000.014	118X FF	EQU	14Q	FORM FEED
000.001	119X CTLA	EQU	01Q	CTL-A
000.002	120X CTLE	EQU	02Q	CTL-B
000.003	121X CTLC	EQU	03Q	CTL-C
000.004	122X CTLD	EQU	04Q	CTL-D
000.017	123X CTLO	EQU	17Q	CTL-O
000.020	124X CTLP	EQU	20Q	CTL-P
000.021	125X CTLQ	EQU	21Q	CTL-Q
000.023	126X CTLS	EQU	23Q	CTL-S
000.032	127X CTLZ	EQU	32Q	CTL-Z
000.205	128	XTEXT	DDDEF	

130X ** DEVICE DRIVER COMMUNICATION FLAGS.

131X *				
132X				
000.000	133X	ORG	0	
	134X			
000.000	135X DC.REA	DS	1	READ
000.001	136X DC.WRI	DS	1	WRITE
000.002	137X DC.RER	DS	1	READ REGARDLESS
000.003	138X DC.OPR	DS	1	OPEN FOR READ
000.004	139X DC.OPW	DS	1	OPEN FOR WRITE
000.005	140X DC.OPU	DS	1	OPEN FOR UPDATE
000.006	141X DC.CLO	DS	1	CLOSE
000.007	142X DC.ABT	DS	1	ABORT
000.010	143X DC.MOU	DS	1	MOUNT DEVICE
000.011	144X DC.LOD	DS	1	LOAD DEVICE DRIVER
000.012	145X DC.MAX	DS	1	MAXIMUM ENTRY INDEX
000.013	146	XTEXT	MTR	

149X ** MTR - PAM/8 EQUIVALENCES.

150X *

151X * THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO
152X * MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.

154X ** IO PORTS

155X

000.360

156X IP.PAD EQU

360Q

PAD INPUT PORT

000.360

157X OP.CTL EQU

360Q

CONTROL OUTPUT PORT

000.360

158X OP.DIG EQU

360Q

DIGIT SELECT OUTPUT PORT

000.361

159X OP.SEG EQU

361Q

SEGMENT SELECT OUTPUT PORT

161X ** FRONT PANEL CONTROL BITS.

162X

000.020

163X CB.SSI EQU

00010000B

SINGLE STEP INTERRUPT

000.040

164X CB.MTL EQU

00100000B

MONITOR LIGHT

000.100

165X CB.CLI EQU

01000000B

CLOCK INTERRUPT ENABLE

000.200

166X CB.SPK EQU

10000000B

SPEAKER ENABLE

168X ** MONITOR MODE FLAGS.

169X

000.000

170X DM.MR EQU

0

MEMORY READ

000.001

171X DM.MW EQU

1

MEMORY WRITE

000.002

172X DM.RR EQU

2

REGISTER READ

000.003

173X DM.RW EQU

3

REGISTER WRITE

175X ** USER OPTION BITS.

176X *

177X *

THESE BITS ARE SET IN CELL .MFLAG.

178X

000.200

179X UO.HLT EQU

10000000B

DISABLE HALT PROCESSING

000.100

180X UO.NFR EQU

CB.CLI

NO REFRESH OF FRONT PANEL

000.002

181X UO.DDU EQU

00000010B

DISABLE DISPLAY UPDATE

000.001

182X UO.CLK EQU

00000001B

ALLOW PRIVATE INTERRUPT PROCESSING

184X ** MONITOR IDENTIFICATION FLAGS

185X *

186X *

THESE BYTES IDENTIFY THE ROM MONITOR.

187X *

THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT

188X

000.021

189X M.PAMB EQU

021Q

'LXI' INSTRUCTION AT 000.000 IN PAM-8

000.303

190X M.FOX EQU

303Q

'JMP' INSTRUCTION AT 000.000 IN FOX ROM

ENTRY

192X ** ROUTINE ENTRY POINTS.

193X *

194X

000.000	195X .IDENT	EQU	0000A	IDENTIFICATION LOCATION
000.053	196X .DLY	EQU	0053A	DELAY
001.267	197X .LOAD	EQU	1267A	TAPE LOAD
001.374	198X .DUMP	EQU	1374A	TAPE DUMP
002.136	199X .ALARM	EQU	2136A	ALARM ROUTINE
002.140	200X .HORN	EQU	2140A	HORN
002.172	201X .CTC	EQU	2172A	CHECK TAPE CHECKSUM
002.205	202X .TPERR	EQU	2205A	TAPE ERROR ROUTINE
002.264	203X .PCHL	EQU	2264A	PCHL INSTRUCTION
002.265	204X .SRS	EQU	2265A	SCAN RECORD START
002.325	205X .RNP	EQU	2325A	READ NEXT PAIR
002.331	206X .RNB	EQU	2331A	READ NEXT BYTE
002.347	207X .CRC	EQU	2347A	CRC-16 CALCULATOR
003.017	208X .WNP	EQU	3017A	WRITE NEXT PAIR
003.024	209X .WNB	EQU	3024A	WRITE NEXT BYTE
003.122	210X .DOD	EQU	3122A	DECODE FOR OCTAL DISPLAY
003.260	211X .RCK	EQU	3260A	READ CONSOLE KEYSET
003.356	212X .DODA	EQU	3356A	SEGMENT CODE TABLE

214X ** RAM CELLS USED BY HBMTX.

215X *

216X

040.000	217X .START	EQU	40000A	START DUMP ADDRESS
040.002	218X .IOWRK	EQU	40002A	IN OR OUT INSTRUCTION
040.005	219X .REGI	EQU	40005A	DISPLAYED REGISTER INDEX
040.006	220X .DSPROT	EQU	40006A	PERIOD FLAG BYTE
040.007	221X .DSPMOD	EQU	40007A	DISPLAY MODE
040.010	222X .MFLAG	EQU	40010A	USER OPTION BYTE
040.011	223X .CTLFLG	EQU	40011A	PANEL CONTROL BYTE
040.013	224X .ALEDS	EQU	40013A	ABUSS LEDS
040.021	225X .DLEDS	EQU	40021A	DBUSS LEDS
040.024	226X .ABUSS	EQU	40024A	ABUSS REGISTER
040.027	227X .CRCSUM	EQU	40027A	CRCSUM WORD
040.031	228X .TPERRX	EQU	40031A	TAPE ERROR EXIT VECTOR
040.033	229X .TICNT	EQU	40033A	CLOCK TICK COUNTER
040.035	230X .REGPTR	EQU	40035A	REGISTER POINTER
040.037	231X .UIVEC	EQU	40037A	USER INTERRUPT VECTORS
000.013	232	XTEXT	H05EQU	

234X ** HDOS SYSTEM EQUIVALENCES.

235X *

236X

024.000	237X S.GRT0	EQU	24000A	SYSTEM AREA FOR GRT0
025.000	238X S.GRT1	EQU	25000A	SYSTEM AREA FOR GRT1
026.000	239X S.GRT2	EQU	26000A	SYSTEM AREA FOR GRT2
	240X			
030.000	241X ROMBOOT	EQU	30000A	ROM BOOT ENTRY
	242X			

FAM/B.EQUIVALENCES,

HDOSEUR.

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040.100	243X	ORG	40100A	FREE SPACE FROM FAM-B
	244X			
040.100	245X	DS	8	JUMP TO SYSTEM EXIT
040.110	246X D.CON	DS	14	DISK CONSTANTS
040.130	247X SYDD	EQU	*	SYSTEM DISK ENTRY POINT
040.130	248X D.VEC	DS	24*3	SYSTEM ROM ENTRY VECTORS
040.240	249X D.RAM	DS	31	SYSTEM ROM WORK AREA
040.277	250X S.VAL	DS	36	SYSTEM VALUES
040.343	251X S.INT	DS	115	SYSTEM INTERNAL WORK AREAS
041.126	252X	DS	16	
041.146	253X S.SOVR	DS	2	STACK OVERFLOW WARNING
041.150	254X	DS	42200A-*	SYSTEM STACK
001.032	255X STACKL	EQU	*-S.SOVR	STACK SIZE
	256X			
042.200	257X STACK	EQU	*	LWA+1 SYSTEM STACK
042.200	258X USERFWA	EQU	*	USER.FWA
042.200	259	XTEXT	DIRDEF	

	261X **	DIRECTORY ENTRY FORMAT.		
	262X			
000.000	263X	ORG	0	
	264X			
	265X			
000.377	266X DF,EMP	EQU	377R	FLAGS ENTRY EMPTY
000.376	267X DF,CLR	EQU	376Q	FLAGS ENTRY EMPTY, REST OF DIR ALSO CLEAR
	268X			
000.000	269X DIR,NAM	DS	8	NAME
000.010	270X DIR,EXT	DS	3	EXTENSION
000.013	271X DIR,PRO	DS	1	PROJECT
000.014	272X DIR,VER	DS	1	VERSION
000.015	273X DIRIDL	EQU	*	FILE IDENTIFICATION LENGTH
	274X			
000.015	275X DIR,CLU	DS	1	CLUSTER FACTOR
000.016	276X DIR,FLG	DS	1	FLAGS
000.017	277X	DS	1	RESERVED
000.020	278X DIR,FGN	DS	1	FIRST GROUP NUMBER
000.021	279X DIR,LGN	DS	1	LAST GROUP NUMBER
000.022	280X DIR,LSI	DS	1	LAST SECTOR INDEX (IN LAST GROUP)
000.023	281X DIR,CRD	DS	2	CREATION DATE
000.025	282X DIR,ALD	DS	2	LAST ALTERATION DATE
	283X			
000.027	284X DIRELEN	EQU	*	DIRECTORY ENTRY LENGTH
000.027	285	XTEXT	ESINT	

287X ** S.INT - SYSTEM INTERNAL WORKAREA DEFINITIONS.

288X *

289X * THESE CELLS ARE REFERENCED BY OVERLAYS AND MAIN CODE, AND
290X * MUST THEREFORE RESIDE IN FIXED LOW MEMORY.

291X

292X

040.343

293X ORG S,INT

	294X				
	295X **	CONSOLE STATUS FLAGS			
	296X				
040.343	297X S.CDB DS	1		CONSOLE DESCRIPTOR BYTE	
000.000	298X CDB.HB5 EQU	00000000B			
000.001	299X CDB.HB4 EQU	00000001B		=0 IF HB-5, =1 IF HB-4	
040.344	300X S.BAUD DS	2		[0-14] HB-4 BAUD RATE; =0 IF HB-5	
	301X *			[15] =1 IF BAUD RATE => 2 STOP BITS	
	302X				
	303X **	TABLE ADDRESS WORDS			
	304X				
040.346	305X S.DLINK DS	2		ADDRESS OF DATA IN HDOS CODE	
040.350	306X S.OFWA DS	2		FWA OVERLAY TABLE	
040.352	307X S.CFWA DS	2		FWA CHANNEL TABLE	
040.354	308X S.DFWA DS	2		FWA DEVICE TABLE	
040.356	309X S.RFWA DS	2		FWA RESIDENT HDOS CODE	
	310X				
	311X **	DEVICE DRIVER DELAYED LOAD FLAGS			
	312X				
040.360	313X S.DDLDA DS	2		DRIVER LOAD ADDRESS (HIGH BYTE=0 IF NO LOAD PENDING)	
040.362	314X S.DDLLEN DS	2		CODE LENGTH IN BYTES	
040.364	315X S.DDGRF DS	1		GROUP NUMBER FOR DRIVER	
040.365	316X DS	1		HOLD PLACE	
	317X *S.DDSEC DS	2		SECTOR NUMBER FOR DRIVER (* OBSOLETE ! *)	
040.366	318X S.DDDTA DS	2		DEVICE'S ADDRESS IN DEVLST +DEV.RES	
040.370	319X S.DDOFC DS	1		OPEN OPCODE PENDING	
	320X				
	321X **	OVERLAY MANAGEMENT FLAGS			
	322X				
000.001	323X OVL.IN EQU	00000001B		IN MEMORY	
000.002	324X OVL.RES EQU	00000010B		PERMINANTLY RESIDENT	
000.014	325X OVL.NUM EQU	00001100B		OVERLAY NUMBER MASK	
000.200	326X OVL.UCS EQU	10000000B		USER CODE SWAPPED FOR OVERLAY	
	327X				
040.371	328X S.OVLFL DS	1		OVERLAY FLAG	
040.372	329X S.UCSF DS	2		FWA SWAPPED USER CODE	
040.374	330X S.UCSL DS	2		LENGTH SWAPPED USER CODE	
040.376	331X S.OVLS DS	2		SIZE OF OVERLAY CODE	
041.000	332X S.OVLE DS	2		ENTRY POINT OF OVERLAY CODE	
	333X				
041.002	334X S.SSN DS	2		SWAP AREA SECTOR NUMBER	
041.004	335X S.OSN DS	2		OVERLAY SECTOR NUMBER	
	336X				
	337X *	SYSCALL PROCESSING WORK AREAS			
	338X				
041.006	339X S.CACC DS	1		(ACC) UPON SYSCALL	
041.007	340X S.CODE DS	1		SYSCALL INDEX IN PROGRESS	
	341X				
	342X *	JUMPS TO ROUTINES IN RESIDENT HDOS CODE			
	343X				
041.010	344X S.JUMPS DS	0		START OF DUMP VECTORS	
041.010	345X S.SDD DS	3		JUMP TO STAND-IN DEVICE DRIVER	
041.013	346X S.FASER DS	3		JUMP TO FATERR (FATAL SYSTEM ERROR)	
041.016	347X S.DIREA DS	3		JUMP TO DIREAD (DISK FILE READ)	
041.021	348X S.FCI DS	3		JUMP TO FCI (FETCH CHANNEL INFO)	
041.024	349X S.SCI DS	3		JUMP TO SCI (STORE CHANNEL INFO)	

PAM/S.EQUIVALENCES.

ESINT

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041.027	350X S.GUP DS	3	JUMP TO GUP (GET UNIT POINTER)
	351X		
041.032	352X S.MOUNT DS	1	<>0 IF THE SYSTEM DISK IS MOUNTED
041.033	353X S.DCS DS	1	DEFAULT CLUSTER SIZE-1
	354X		
041.034	355X S.ROOTF DS	1	ROOT FLAGS
000.001	356X BOOT.P EQU	00000001B	EXECUTE PROLOGUE UPON BOOTUP
	357X		
	358X *		STACK VALUE SAVED FOR OVERLAY SYSCALLS
	359X		
041.035	360X S.OVSTK DS	2	VALUE OF SP UPON SYSCALLS USING OVERLAY
	361X		
041.037	362X DS	1	RESERVED
	364X **		ACTIVE I/O AREA,
	365X *		
	366X *		THE AIO.XXX AREA CONTAINS INFORMATION ABOUT THE I/O OPERATION
	367X *		CURRENTLY BEING PERFORMED. THE INFORMATION IS OBTAINED FROM
	368X *		THE CHANNEL TABLE, AND WILL BE RESTORED THERE WHEN DONE,
	369X *		
	370X *		NORMALLY, THE AIO.XXX INFORMATION WOULD BE OBTAINED DIRECTLY
	371X *		FROM VARIOUS SYSTEM TABLES VIA POINTER REGISTERS. SINCE THE
	372X *		8080 HAS NO GOOD INDEXED ADDRESSING, THE DATA IS MANUALLY
	373X *		COPIED INTO THE AIO.XXX CELLS BEFORE PROCESSING, AND
	374X *		BACKDATED AFTER PROCESSING.
	375X		
041.040	376X AIO.VEC DS	3	JUMP INSTRUCTION
041.041	377X AIO.DDA EQU	*-2	DEVICE DRIVER ADDRESS
041.043	378X AIO.FLG DS	1	FLAG BYTE
041.044	379X AIO.GRT DS	2	ADDRESS OF GROUP RESERV TABLE
041.046	380X AIO.SPG DS	1	SECTORS PER GROUP
041.047	381X AIO.CGN DS	1	CURRENT GROUP NUMBER
041.050	382X AIO.CSI DS	1	CURRENT SECTOR INDEX
041.051	383X AIO.LGN DS	1	LAST GROUP NUMBER
041.052	384X AIO.LSI DS	1	LAST SECTOR INDEX
041.053	385X AIO.DTA DS	2	DEVICE TABLE ADDRESS
041.055	386X AIO.DES DS	2	DIRECTORY SECTOR
041.057	387X AIO.DEV DS	2	DEVICE CODE
041.061	388X AIO.UNI DS	1	UNIT NUMBER (0-9)
	389X		
041.062	390X AIO.DIR DS	DIRELEN	DIRECTORY ENTRY
	391X		
041.111	392X AIO.CNT DS	1	SECTOR COUNT
041.112	393X AIO.EDM DS	1	END OF MEDIA FLAG
041.113	394X AIO.EQF DS	1	END OF FILE FLAG
041.114	395X AIO.TFP DS	2	TEMP FILE POINTERS
041.116	396X AIO.CHA DS	2	ADDRESS OF CHANNEL BLOCK (IOC.DDA)

041.120	398X S.SCR	DS	2	SYSTEM SCRATCH AREA ADDRESS
041.122	399	XTEXT	ESVAL	

401X ** S.VAL = SYSTEM VALUE DEFINITIONS.

402X *

403X * THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.

404X *

405X * THE DECK HOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.

406X

407X

040.277	408X	ORG	S.VAL	
---------	------	-----	-------	--

409X

040.277	410X S.DATE	DS	9	SYSTEM DATE (IN ASCII)
---------	-------------	----	---	------------------------

040.310	411X S.DATC	DS	2	CODED DATE
---------	-------------	----	---	------------

040.312	412X S.TIME	DS	4	TIME FROM MIDNIGHT (IN TICS)
---------	-------------	----	---	------------------------------

040.316	413X S.HIMEM	DS	2	HARDWARE HIGH MEMORY ADDRESS+1
---------	--------------	----	---	--------------------------------

414X

040.320	415X S.SYSM	DS	2	FWA RESIDENT SYSTEM
---------	-------------	----	---	---------------------

416X

040.322	417X S.USRM	DS	2	LWA USER MEMORY
---------	-------------	----	---	-----------------

418X

040.324	419X S.OMAX	DS	2	MAX OVERLAY SIZE FOR SYSTEM
---------	-------------	----	---	-----------------------------

420X

421X

422X ** THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL

423X

000.200	424X CSL.ECH	EQU	10000000B	SUPPRESS ECHO
---------	--------------	-----	-----------	---------------

000.002	425X CSL.WRF	EQU	00000010B	WRAP LINES AT WIDTH
---------	--------------	-----	-----------	---------------------

000.001	426X CSL.CHR	EQU	00000001B	OPERATE IN CHARACTER MODE
---------	--------------	-----	-----------	---------------------------

427X

000.000	428X I.CSLMD	EQU	0	S.CSLMD IS FIRST BYTE
---------	--------------	-----	---	-----------------------

040.326	429X S.CSLMD	DS	1	CONSOLE MODE
---------	--------------	----	---	--------------

430X

000.200	431X CTP.BKS	EQU	10000000B	TERMINAL PROCESSES BACKSPACES
---------	--------------	-----	-----------	-------------------------------

000.040	432X CTP.MLI	EQU	00100000B	MAP LOWER CASE TO UPPER ON INPUT
---------	--------------	-----	-----------	----------------------------------

000.020	433X CTP.MLO	EQU	00010000B	MAP LOWER CASE TO UPPER ON OUTPUT
---------	--------------	-----	-----------	-----------------------------------

000.010	434X CTP.2SB	EQU	00001000B	TERMINAL NEEDS TWO STOP BITS
---------	--------------	-----	-----------	------------------------------

000.002	435X CTP.BKM	EQU	00000010B	MAP BKSP (UPON INPUT) TO RUBOUT
---------	--------------	-----	-----------	---------------------------------

000.001	436X CTP.TAB	EQU	00000001B	TERMINAL SUPPORTS TAB CHARACTERS
---------	--------------	-----	-----------	----------------------------------

437X

000.001	438X I.CONTY	EQU	1	S.CONTY IS 2ND BYTE
---------	--------------	-----	---	---------------------

000.000	439X	ERRNZ	*-S.CSLMD-I.CONTY	
---------	------	-------	-------------------	--

040.327	440X S.CONTY	DS	1	CONSOLE TYPE FLAGS
---------	--------------	----	---	--------------------

000.002	441X I.CUSOR	EQU	2	S.CUSOR IS 3RD BYTE
---------	--------------	-----	---	---------------------

000.000	442X	ERRNZ	*-S.CSLMD-I.CUSOR	
---------	------	-------	-------------------	--

040.330	443X S.CUSOR	DS	1	CURRENT CURSOR POSITION
---------	--------------	----	---	-------------------------

000.003	444X I.CONWI	EQU	3	S.CONWI IS 4TH BYTE
---------	--------------	-----	---	---------------------

000.000	445X	ERRNZ	*-S.CSLMD-I.CONWI	
---------	------	-------	-------------------	--

040.331	446X S.CONWI	DS	1	CONSOLE WIDTH
---------	--------------	----	---	---------------

447X

000.001	448X CO.FLG	EQU	00000001B	CTL-D FLAG
---------	-------------	-----	-----------	------------

000.200	449X CS.FLG	EQU	10000000B	CTL-S FLAG
---------	-------------	-----	-----------	------------

450X

PAM/B. EQUIVALENCES,

ESVAL

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000.004	451X I.CONFL	EQU	4	S.CONFL IS 5TH BYTE
000.000	452X	ERRNZ	*	S,CSLMD-I,CONFL
040.332	453X S.CONFL	DS	1	CONSOLE FLAGS
	454X			
040.333	455X S.CAADR	DS	2	ADDRESS FOR ABORT PROCESSING (>256 IF VALID)
040.335	456X S.CCTAB	DS	6	ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING
040.343	457	XTEXT	ECDEF	

459X ** ERROR CODE DEFINITIONS.

000.000	460X			
	461X	ORG	0	
000.000	462X	DS	1	NO ERROR #0
000.001	463X EC.EOF	DS	1	END OF FILE
000.002	464X EC.EOM	DS	1	END OF MEDIA
000.003	465X EC.ILC	DS	1	ILLEGAL SYSCALL CODE
000.004	466X EC.CNA	DS	1	CHANNEL NOT AVAILABLE
000.005	467X EC.DNS	DS	1	DEVICE NOT SUITABLE
000.006	468X EC.IDN	DS	1	ILLEGAL DEVICE NAME
000.007	469X EC.IFN	DS	1	ILLEGAL FILE NAME
000.010	470X EC.NRD	DS	1	NO ROOM FOR DEVICE DRIVER
000.011	471X EC.FND	DS	1	CHANNEL NOT OPEN
000.012	472X EC.ILR	DS	1	ILLEGAL REQUEST
000.013	473X EC.FUC	DS	1	FILE USAGE CONFLICT
000.014	474X EC.FNF	DS	1	FILE NAME NOT FOUND
000.015	475X EC.UND	DS	1	UNKNOWN DEVICE
000.016	476X EC.ICN	DS	1	ILLEGAL CHANNEL NUMBER
000.017	477X EC.DIF	DS	1	DIRECTORY FULL
000.020	478X EC.IFC	DS	1	ILLEGAL FILE CONTENTS
000.021	479X EC.NEM	DS	1	NOT ENOUGH MEMORY
000.022	480X EC.RF	DS	1	READ FAILURE
000.023	481X EC.WF	DS	1	WRITE FAILURE
000.024	482X EC.WPV	DS	1	WRITE PROTECTION VIOLATION
000.025	483X EC.WP	DS	1	DISK WRITE PROTECTED
000.026	484X EC.FAP	DS	1	FILE ALREADY PRESENT
000.027	485X EC.DDA	DS	1	DEVICE DRIVER ABORT
000.030	486X EC.FL	DS	1	FILE LOCKED
000.031	487X EC.FAO	DS	1	FILE ALREADY OPEN
000.032	488X EC.IS	DS	1	ILLEGAL SWITCH
000.033	489X EC.UUN	DS	1	UNKNOWN UNIT NUMBER
000.034	490X EC.FNR	DS	1	FILE NAME REQUIRED
000.035	491X EC.DIW	DS	1	DEVICE IS NOT WRITABLE (OR WRITE LOCKED)
000.036	492X EC.UNA	DS	1	UNIT NOT AVAILABLE
000.037	493X EC.ILV	DS	1	ILLEGAL VALUE
000.040	494X EC.ILO	DS	1	ILLEGAL OPTION
000.041	495X EC.VPM	DS	1	VOLUME PRESENTLY MOUNTED ON DEVICE
000.042	496X EC.NVM	DS	1	NO VOLUME PRESENTLY MOUNTED
000.043	497X EC.FOD	DS	1	FILE OPEN ON DEVICE
000.044	498X EC.NPM	DS	1	NO PROVISIONS MADE FOR REMOUNTING MORE DISKS
000.045	499X EC.DNI	DS	1	DISK NOT INITIALIZED
000.046	500X EC.DNR	DS	1	DISK IS NOT READABLE
000.047	501X EC.DSC	DS	1	DISK STRUCTURE IS CORRUPT
000.050	502X EC.NCV	DS	1	NOT CORRECT VERSION OF HDOS
000.051	503X EC.NOS	DS	1	NO OPERATING SYSTEM MOUNTED
000.052	504X EC.IOI	DS	1	ILLEGAL OVERLAY INDEX

000.053	505X EC.OTL	DS	1	OVERLAY TO LARGE
000.054	506	XTEXT	H14	

	509X ***	H-14 DEFINITIONS		
	510X *			
	511X			
000.033	512X SET.H14	EQU	033Q	
	513X			
000.000	514X LPI.6	EQU	0	
000.001	515X LPI.8	EQU	1	
	516X			
000.165	517X SETWIDE	EQU	165Q	
	518X			
000.000	519X CHAR.80	EQU	0	
000.001	520X CHAR.96	EQU	1	
000.002	521X CHAR.132	EQU	2	
000.054	522	XTEXT	PICDEF	

	524X **	PIC FORMAT EQUIVALENCES.		
	525X			
000.000	526X	ORG	0	
	527X			
000.000	528X PIC.ID	DS	1	377Q = BINARY FILE FLAG
000.001	529X	DS	1	FILE TYPE (FT.PIC)
000.002	530X PIC.LEN	DS	2	LENGTH OF ENTIRE RECORD
000.004	531X PIC.PTR	DS	2	INDEX OF START OF PIC TABLE
	532X			
000.006	533X PIC.COD	DS	0	CODE STARTS HERE
000.006	534	XTEXT	DEVDEF	

	536X **	DEVICE TABLE ENTRYS.		
	537X			
000.000	538X	ORG	0	
	539X			
000.000	540X DEV.NAM	DS	2	DEVICE NAME
000.000	541X DV.EL	EQU	00000000B	END OF DEVICE LIST FLAG
000.001	542X DV.NU	EQU	00000001B	DEVICE ENTRY NOT IN USE
	543X			
000.002	544X DEV.RES	DS	1	DRIVER RESIDENSE CODE
000.001	545X DR.IM	EQU	00000001B	DRIVER IN MEMORY
000.002	546X DR.PR	EQU	00000010B	DRIVER PERMINANTLY RESIDENT
	547X			
000.003	548X DEV.JMP	DS	1	JMP TO PROCESSOR
000.004	549X DEV.BDA	DS	2	DRIVER ADDRESS
000.006	550X DEV.FLG	DS	1	FLAG BYTE
000.001	551X DT.DD	EQU	00000001B	DIRECTORY DEVICE
000.002	552X DT.CR	EQU	00000010B	CAPABLE OF READ OPERATION
000.004	553X DT.CW	EQU	00000100B	CAPABLE OF WRITE OPERATION
	554X			
000.007	555X DEV.SPG	DS	1	SECTORS PER GROUP THIS DEVICE

000.010	556X	DEV.MUM	DS	1	MOUNTED UNIT MASK
000.011	557X	DEV.MNU	DS	1	MAXIMUM NUMBER OF UNITS
000.012	558X	DEV.UNT	DS	2	ADDRESS OF UNIT SPECIFIC DATA TABLE
	559X				
000.014	560X	DEV.DVL	DS	2	DRIVER BYTE LENGTH
000.016	561X	DEV.DVG	DS	1	DRIVER ROUTINE GROUP ADDRESS
	562X				
000.017	563X	DEVELEN	EQU	*	DEVICE TABLE ENTRY LENGTH

565X ** UNIT SPECIFIC DEVICE DATA TABLE ENTRIES

	566X				
000.000	567X	ORG		0	
	568X				
000.000	569X	UNT.FLG	DS	1	UNIT SPECIFIC *DEV.FLG*
000.001	570X	UNT.GRT	DS	2	ADDRESS OF GROUP RESERVATION TABLE (IF DT.DD)
000.003	571X	UNT.GTS	DS	2	GRT SECTOR NUMBER
000.005	572X	UNT.DIS	DS	2	DIRECTORY FIRST SECTOR NUMBER
	573X				
000.007	574X	UNT.SIZ	EQU	*	SIZE OF UNIT SPECIFIC DATA TABLE PER UNIT
000.007	575	XTEXT		DVDDEF	

577X ** DEVICE DRIVER EQUIVALENCES.

	578X				
000.307	579X	DVDFLV	EQU	3070	DEVICE DRIVER FLAG VALUE
	580X				
000.006	581X	ORG		PIC.CODE	STARTS AT PIC CODE AREA
	582X				
000.006	583X	DVD.DVD	DS	1	MUST BE DVDFLV, FLAGS TO HDOS AS DRIVER
000.007	584X	DVD.CAP	DS	1	DEVICE CAPABILITY FLAG
000.010	585X	DVD.MUM	DS	1	MOUNTED UNIT MASK
000.011	586X	DVD.MNU	DS	1	MAXIMUM NUMBER OF UNITS
000.012	587X	DVD.UFL	DS	8	UNIT SUB-CAPABILITY FLAGS FOR UNITS 0-7
000.022	588X	DVD.SET	DS	1	= DVDFLV IFF DRIVER WILL TAKE SET OPTIONS
000.023	589X		DS	24	RESERVED, MUST BE 0
000.053	590X	DVD.STE	EQU	*	ENTRY FOR 'SET' INVOCATION
	591X				
002.000	592X	DVD.ENT	EQU	2000A	DRIVER ENTRY POINT (MUST BE MULT OF 256)
000.053	593	XTEXT		U8250	

595X ** 8250 UART CONTROL AND BIT DEFINITIONS.

	596X				
000.350	597X	SC.ACE	EQU	3500	SYSTEM CONSOLE PORT IF 8250 ACE
000.156	598X	AC.DLY	EQU	110	220 MIL. SEC. DELAY FOR 8250
	599X				
000.000	600X	UR.RBR	EQU	0	RECEIVER BUFFER REGISTER (READ ONLY)
	601X				
000.000	602X	UR.THR	EQU	0	TRANSMITTER HOLDING REGISTER (WRITE ONLY)

	603X				
000.000	604X UR.DLL EQU	0		DIVISOR LATCH (LEAST SIGNIFICANT)	
	605X				
000.001	606X UR.DLM EQU	1		DIVISOR LATCH (MOST SIGNIFICANT)	
	607X				
000.001	608X UR.IER EQU	1		INTERRUPT ENABLE REGISTER	
000.001	609X UC.EDA EQU	00000001B		ENABLE RECEIVED DATA AVAILABLE INTERRUPT	
000.002	610X UC.TRE EQU	00000010B		ENABLE TRANSMIT HOLD REGISTER EMPTY INTERRUPT	
000.004	611X UC.RSI EQU	00000100B		ENABLE RECEIVE STATUS INTERRUPT	
000.010	612X UC.MSI EQU	00001000B		ENABLE MODEM STATUS INTERRUPT	
	613X				
000.002	614X UR.IIR EQU	2		INTERRUPT IDENTIFICATION REGISTER	
000.001	615X UC.YIP EQU	00000001B		INVERTED INTERRUPT PENDING (0 MEANS PENDING)	
000.006	616X UC.IID EQU	00000110B		INTERRUPT ID	
	617X				
000.003	618X UR.LCR EQU	3		LINE CONTROL REGISTER	
000.000	619X UC.5BW EQU	00000000B		5 BIT WORDS	
000.001	620X UC.6BW EQU	00000001B		6 BIT WORDS	
000.002	621X UC.7BW EQU	00000010B		7 BIT WORDS	
000.003	622X UC.8BW EQU	00000011B		8 BIT WORDS	
000.004	623X UC.2SB EQU	00000100B		TWO STOP BITS SELECTED	
000.010	624X UC.PEN EQU	00001000B		PARITY COMPUTATION ENABLED	
000.020	625X UC.EPS EQU	00010000B		EVEN PARITY SELECT	
000.040	626X UC.SKP EQU	00100000B		STICK PARITY	
000.100	627X UC.SB EQU	01000000B		SET BREAK	
000.200	628X UC.DLA EQU	10000000B		DIVISOR LATCH ACCESS	
	629X				
000.004	630X UR.MCR EQU	4		MODEM CONTROL REGISTER	
000.001	631X UC.DTR EQU	00000001B		DATA TERMINAL READY	
000.002	632X UC.RTS EQU	00000010B		REQUEST TO SEND	
000.004	633X UC.DU1 EQU	00000100B		OUT 1	
000.010	634X UC.DU2 EQU	00001000B		OUT 2	
000.020	635X UC.LOO EQU	00010000B		LOOP	
	636X				
000.005	637X UR.LSR EQU	5		LINE STATUS REGISTER	
000.001	638X UC.DR EQU	00000001B		DATA READY	
000.002	639X UC.OR EQU	00000010B		OVERRUN	
000.004	640X UC.PE EQU	00000100B		PARITY ERROR	
000.010	641X UC.FE EQU	00001000B		FRAMING ERROR	
000.020	642X UC.BI EQU	00010000B		BREAK INTERRUPT	
000.040	643X UC.THE EQU	00100000B		TRANSMITTER HOLDING REGISTER EMPTY	
000.100	644X UC.TSE EQU	01000000B		TRANSMITTER SHIFT REGISTER EMPTY	
	645X				
000.006	646X UR.MSR EQU	6		MODEM STATUS REGISTER	
000.001	647X UC.DCS EQU	00000001B		DELTA CLEAR TO SEND	
000.002	648X UC.DDR EQU	00000010B		DELTA DATA SET READY	
000.004	649X UC.TER EQU	00000100B		TRAILING EDGE OF RING	
000.010	650X UC.DRL EQU	00001000B		DELTA RECEIVE LINE SIGNAL DETECT	
000.020	651X UC.CTS EQU	00010000B		CLEAR TO SEND	
000.040	652X UC.DSR EQU	00100000B		DATA SET READY	
000.100	653X UC.RI EQU	01000000B		RING INDICATOR	
000.200	654X UC.RLS EQU	10000000B		RECEIVED LINE SIGNAL DETECT	
000.053	655	XTEXT	U8251		

```

658X **      8251 USART BIT DEFINITIONS.
659X *
660X
661X **      PORT ADDRESSES.
662X
000.000      663X UDR      EQU      0      DATA REGISTER IS EVEN
000.001      664X USR      EQU      1      STATUS REGISTER IS NEXT
665X
000.372      666X SC.UART EQU      372Q    CONSOLE USART ADDRESS (IFF 8251)
667X
668X
669X **      MODE INSTRUCTION CONTROL BITS.
670X
000.100      671X UMI.1B   EQU      01000000B  1.STOP.BIT
000.200      672X UMI.HB   EQU      10000000B  1 1/2 STOP BITS
000.300      673X UMI.2B   EQU      11000000B  2.STOP.BITS
000.040      674X UMI.PE   EQU      00100000B  EVEN PARITY
000.020      675X UMI.PA   EQU      00010000B  USE PARITY
000.000      676X UMI.L5   EQU      00000000B  5 BIT CHARACTERS
000.004      677X UMI.L6   EQU      00000100B  6 BIT CHARACTERS
000.010      678X UMI.L7   EQU      00001000B  7 BIT CHARACTERS
000.014      679X UMI.L8   EQU      00001100B  8 BIT CHARACTERS
000.001      680X UMI.1X   EQU      00000001B  CLOCK X 1
000.002      681X UMI.16X  EQU      00000010B  CLOCK X 16
000.003      682X UMI.64X  EQU      00000011B  CLOCK X 64
683X
684X **      COMMAND INSTRUCTION BITS.
685X
000.100      686X UCI.IR   EQU      01000000B  INTERNAL RESET
000.040      687X UCI.RD   EQU      00100000B  READER-ON CONTROL FLAG
000.020      688X UCI.ER   EQU      00010000B  ERROR RESET
000.004      689X UCI.RE   EQU      00000100B  RECEIVE ENABLE
000.002      690X UCI.IE   EQU      00000010B  ENABLE INTERRUPTS FLAG
000.001      691X UCI.1E   EQU      00000001B  TRANSMIT ENABLE
692X
693X **      STATUS READ COMMAND BITS.
694X
000.040      695X USR.FE   EQU      00100000B  FRAMING ERROR
000.020      696X USR.OE   EQU      00010000B  OVERRUN ERROR
000.010      697X USR.PE   EQU      00001000B  PARITY ERROR
000.004      698X USR.TXE  EQU      00000100B  TRANSMITTER EMPTY
000.002      699X USR.RXR  EQU      00000010B  RECEIVER READY
000.001      700X USR.TXR  EQU      00000001B  TRANSMITTER READY
000.053      701X      XTEXT SETCAL

```

```

703X **      SETCAL - FIXED ADDRESS ROUTINES IN SET

```

```

704X *

```

```

705X *      THESE VECTORS ARE FIXED ENTRY POINTS INTO THE

```

```

706X *      SET PROGRAM TO UTILIZED BY DEVICE DRIVERS IN

```

```

707X *      PROCESSING SET COMMANDS.

```

```

708X *

```

```

709X

```

```

042.201      710X      ORG      USERFWA+1

```

	711X				
042.201	712X \$SNA	DS	3		
	713X				
042.204	714X \$DCS	DS	3		
	715X				
042.207	716X \$CNA	DS	3		
	717X				
042.212	718X \$FST	DS	3		
	719X				
042.215	720X \$TBLS	DS	3		
	721X				
042.220	722X \$WTBLS	DS	3		
	723X				
042.223	724X \$LBD	DS	3		
	725X				
042.226	726X \$SOP	DS	3		
	727X				
042.231	728X \$PBF	DS	3		
	729X				
042.234	730X \$PBV	DS	3		
	731X				
042.237	732X	DS	60	RESERVED	
	733	CODE	PIC		
	734				
	735 *	CODE	HEADER		
	736				
000.006 307	737	DB	DVDFLV	DEVICE DRIVER FLAG VALUE	
000.007 004	738	DB	DT.CW	DEVICE CAPABILITY	
000.010 001	739	DB	000000001B	MOUNTED UNIT MASK	
000.011 001	740	DB	1	ONLY 1 UNIT	
000.012 004	741	DB	DT.CW	0: CAPABLE OF WRITE	
000.013	742	DS	7	1-7: IGNORED	
000.022 307	743	DB	DVDFLV		
	744				
000.000	745	ERRNZ	*-230		
000.023	746	DS	DVD.STE-230	RESERVED AREAS	

```
749 ***      ASSEMBLY CONSTANTS
750 *
751 *
752 *
753 **      DEFAULT DEVICE DEFINITIONS
754 *
000.340 755 DFLT.LP      EQU      3400      DEFAULT LP0: ADDRESS
000.000 756          IF      H8410
000.030 757 DFLT.BD      EQU      30A      DEFAULT BAUD RATE = 4800 BAUD
758          ELSE
759 DFLT.BD      EQU      0000
760          ENDIF
000.010 761 DFLT.WD      EQU      CHAR.80*4+CHAR132*4      DEFAULT (CHAR.80*16+CHAR132*4)
762 *          WIDTH.=WIDE-132:
763 *          NARROW-80
764 *
000.000 765 DFLT.LI      EQU      LPI.6      6 LINES/INCH
000.054 766 DFLT.FL      EQU      11*4      11 INCH FORM LEN IN 1/4 INCHES
000.074 767 DFLT.LC      EQU      60      LINE COUNT = 60 LINES/PAGE
768 *
000.001 769 DFLT.LX      EQU      1      INITIAL LINE INDEX
000.001 770 DFLT.CX      EQU      1      INITIAL COLUMN INDEX
771 *
000.000 772 DFLT.CS      EQU      0      INITIAL CTL-S FLAG VALUE
```



```

775 *** SET CODE ENTRY POINT
776 *
777 * SET COMMANDS ENTER HERE
778 *
779 * ENTRY: (DE) = LINE POINTER
780 * (A) = UNIT NUMBER
781 *
782 * EXIT: 'C' CLEAR IF OK
783 * 'C' SET IF ERROR
784 * (A) = ERROR CODE
785 *
786 * USES: ALL
787 *
788 *
000.053 789 SETNTR EQU *
000.000 790 ERRNZ *-DVD,STE
000.053 247 791 ANA A
000.054 302 103 000 792 JNZ SET1
000.057 102 793 MOV B,D
000.060 113 794 MOV C,E (BC) = PARAMETER LIST ADDRESS
000.061 021 325 001 795 LXI D,PRCTAB (DE) = PROCESSOR TABLE ADDRESS
000.064 041 212 001 796 LXI H,OPTTAB (HL) = OPTION TABLE ADDRESS
000.067 315 226 042 797 CALL $SOP
000.072 330 798 RC
000.073 315 201 042 799 CALL $SNA
000.076 310 800 RZ AT END OF LINE
000.077 076 040 801 MVI A,EC,ILO ILLEGAL OPTION
000.101 067 802 STC
000.102 311 803 RET
804
000.103 076 033 805 SET1 MVI A,EC,UUN
000.105 067 806 STC
000.106 311 807 RET

```

```

809 *** PROCESSORS
810 *

```

```

812 ** FLAG - PROCESS FLAG OPTIONS
813 *
814 * PROCESS FLAG TYPE OPTION SPECIFICATIONS
815 *
816 *
817 * ENTRY, EXIT, AND USE SAME AS PBF
818 *
000.107 303 231 042 819 FLAG JMP $PBF PROCESS BYTE FLAGS

```

SET CODE

VAL

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```

821 ** VAL - PROCESS VALUE OPTIONS
822 *
823 * PROCESS VALUE TYPE OPTION SPECIFICATIONS
824 *
825 *
826 * ENTRY, EXIT, AND USE SAME AS PBV
827 *
000.112 303 234 042 828 VAL JMP $PBV PROCESS BYTE VALUES

```

```

830 ** WIDTH - PROCESS WIDTH SPECIFICATIONS
831 *
832 * PROCESS H-14 WIDTH OPTION SPECIFICATION.
833 *
834 * SPECIFICATION FORMAT:
835 *
836 * MMM,NNN NNN = VALUE FOR NARROW SIDE OF SWITCH
837 * MMM = VALUE FOR WIDE SIDE OF SWITCH
838 *
839 *
840 * ENTRY: (BC) = TEXT ADDRESS
841 *
842 * EXIT: (BC) = TEXT ADDRESS UPDATED
843 * 'C' CLEAR IF OK
844 * 'C' SET IF ERROR
845 * (A) = ERROR CODE
846 *
847 * USES: ALL
848 *
849
000.115 076 012 850 WIDTH MVI A,10 (A) = DEFAULT RADIX
000.117 315 207 042 851 CALL $CNA (HL) = VALUE
000.122 332 233 000 852 JC WID1
000.125 174 853 MOV A,H
000.126 247 854 ANA A
000.127 302 233 000 855 JNZ WID1
000.132 125 856 MOV D,L (D) = NARROW VALUE
000.133 315 201 042 857 CALL $SNA
000.136 012 858 LDAX B
000.137 376 054 859 CPI ','
000.141 302 233 000 860 JNE WID1
000.144 003 861 INX B
000.145 076 012 862 MVI A,10
000.147 325 863 PUSH D SAVE NARROW VALUE
000.150 315 207 042 864 CALL $CNA (HL) = VALUE
000.153 321 865 POP D RESTORE NARROW VALUE
000.154 332 233 000 866 JC WID1
000.157 174 867 MOV A,H
000.160 247 868 ANA A
000.161 302 233 000 869 JNZ WID1
000.164 175 870 MOV A,L (A) = WIDE SETTING
000.165 041 337 001 871 LXI H,WIDTAB
000.170 315 215 042 872 CALL $TBL5
000.173 302 233 000 873 JNZ WID1

```

SET CODE

WIDTH

```

000.176 176      874      MOV      A,M      (A) = WIDE FLAG
                  875      *      RLC
                  876      *      RLC      /79.02.GC/
000.177 137      877      MOV      E,A      (E) = WIDE FLAG VALUE
000.200 172      878      MOV      A,D
000.201 041 337 001 879      LXI      H,WIDTAB
000.204 315 215 042 880      CALL     $TBLS
000.207 302 233 000 881      JNZ      WID1
000.212 176      882      MOV      A,M      (A) = NARROW FLAG VALUE
000.213 007      883      RLC      /79.02.GC/
000.214 007      884      RLC      /79.02.GC/
000.215 263      885      ORA      E
000.216 007      886      RLC
000.217 007      887      RLC
000.220 137      888      MOV      E,A      (E) = COMBINED VALUE
000.221 072 021 004 889      LDA      TLP.CON
000.224 346 303      890      ANI      11000011B  MASK OUT OLD VALUES
000.226 263      891      ORA      E
000.227 062 021 004 892      STA      TLP.CON
000.232 311      893      RET
                  894
000.233 076 037      895  WID1  MVI      A,EC.ILV
000.235 067      896      STC
000.236 311      897      RET
000.000          898      IF      H8410

```

```

900  **      BAUD - PROCESS BAUD RATE
901  *
902  *      PROCESS BAUD RATE OPTION SPECIFICATION.
903  *
904  *
905  *      ENTRY: (BC) = TEXT ADDRESS
906  *
907  *      EXIT: (BC) = TEXT ADDRESS UPDATED
908  *      'C' CLEAR IF OK
909  *      'C' SET IF ERROR
910  *      (A) = ERROR CODE
911  *
912  *      USES:  ALL
913  *
914
000.237 076 012      915  BAUD  MVI      A,10      (A) = DEFAULT RADIX
000.241 315 207 042 916      CALL     $CNA
000.244 332 262 000 917      JC      BAUI
000.247 353      918      XCHG      (DE) = BAUD RATE
000.250 315 223 042 919      CALL     $LBD
000.253 302 262 000 920      JNZ      BAUI
000.256 042 017 004 921      SHLD     TLP.BAU  SET BAUD RATE WORD
000.261 311      922      RET
                  923
000.262 076 037      924  BAUI  MVI      A,EC.ILV  ILLEGAL VALUE
000.264 067      925      STC
000.265 311      926      RET

```

SET CODE

BAUD

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927 ENDIF

929 ** HELP - PROCESS HELP OPTION

930 *

931 * TYPE VALID OPTIONS ON USER CONSOLE

932 *

933

000.266	315	136	031	934	HELP	CALL	\$TYPTX	
000.271	012	012	123	935		DB	NL,NL,'Set Options:',NL,NL	
000.311	066	114	120	936		DB	'6LPI(8LPI) 6(8) Lines/inch',NL	
000.344	120	101	107	937		DB	'PAGE nnn Lines/page',NL	
000.370	120	117	122	938		DB	'PORT nnn Port number',NL	
001.015	127	111	104	939		DB	'WIDTH nnn Wide(n)/Narrow(n) sides of '	
001.062	167	151	144	940		DB	'width switch',NL	
001.100	011	011	160	941		DB	' Possible values: 80,96,132',NL	
000.000				942		IF	H8410	
001.136	102	101	125	943		DB	'BAUD nnn Baud rate',NL	
				944		ENDIF		
001.161	110	105	114	945		DB	'HELP Type this text',NL	
001.206	012	212		946		DB	NL,ENL	
001.210	257			947		XRA	A	CLEAR CARRY
001.211	311			948		RET		

```

950 *** TABLES
951 *
952 *

```

```

954 ** OPTTAB - OPTION TABLE
955 *

```

```

956
001.212 324 001 957 OPTTAB DW OPTTAB
001.214 006 958 DB 6
959
001.215 066 114 120 960 DB '6LP', 'I'+2000, FLAGI, LPI.6!LPI.8, LPI.6
001.224 021 004 961 DW TLP.CON
001.226 000 962 DB 0
963
001.227 070 114 120 964 DB '8LP', 'I'+2000, FLAGI, LPI.6!LPI.8, LPI.8
001.236 021 004 965 DW TLP.CON
001.240 000 966 DB 0
967
001.241 120 101 107 968 DB 'PAG', 'E'+2000, VALI, 10.0, 255
001.251 023 004 969 DW TLP.LC
970
001.253 120 117 122 971 DB 'POR', 'T'+2000, VALI.8, 0, 3770
001.263 016 004 972 DW TLP.POR
973
001.265 127 111 104 974 DB 'WIDT', 'H'+2000, WIDTHI
001.273 000 000 000 975 DB 0,0,0,0,0
976
000.000 977 IF HB410
001.300 102 101 125 978 DB 'BAU', 'D'+2000, BAUDI
001.305 000 000 000 979 DB 0,0,0,0,0
980 ENDIF
981
001.312 110 105 114 982 DB 'HEL', 'P'+2000, HELPI
001.317 000 000 000 983 DB 0,0,0,0,0
984
001.324 000 985 OPTTAB DB 0

```

```

987 ** PRCTAB - PROCESSOR TABLE
988 *

```

```

989
001.325 990 PRCTAB DS 0
991
000.000 992 FLAGI EQU *-PRCTAB/2
001.325 107 000 993 DW FLAG
994
000.001 995 VALI EQU *-PRCTAB/2
001.327 112 000 996 DW VAL
997
000.002 998 WIDTHI EQU *-PRCTAB/2
001.331 115 000 999 DW WIDTH

```

```

000.000      1000
000.003      1001      IF      H8410
001.333 237 000 1002      BAUDI  EQU  *-PRCTAB/2
                1003      DW      BAUD
                1004      ENDIF
                1005
000.004      1006      HELPI  EQU  *-PRCTAB/2
001.335 266 000 1007      DW      HELP
                1008

```

```

                1010      **      WIDTAB - WIDTH TABLE
                1011      *
                1012
001.337      1013      WIDTAB  DS      0
001.337 120 000 1014      DB      80,CHAR.80
001.341 140 001 1015      DB      96,CHAR.96
001.343 204 002 1016      DB      132,CHAR.132
001.345 000      1017      DB      0

```

```

000.000      1019      IF      H8410
                1020      ELSE
                1021      DS      0660
                1022      ENDIF
001.346      1023      SET      1346A
000.000      1024      ERRNZ  *-
001.346      1025      DS      DVD.ENT-

```

```

1028 *** LPDUD ENTRY POINT
1029 *
1030 * ENTRY: (A) = PROCESS CODE
1031 * (BC) = BYTE COUNT
1032 * (DE) = BUFFER ADDRESS AS PER ROUTINE
1033 *
1034 * EXIT: (PSW) = 'C' CLEAR IF NO ERRORS
1035 * = 'C' SET IF ERROR
1036 * (A) = ERROR CODE
1037 *
1038 * USES: ALL
1039 *
1040
1041
1042
002.000 1043 LPDUD EQU *
000.000 1044 ERANZ *-DVD.ENT
002.000 376 011 1045 CPI #9
002.002 322 022 002 1046 JNC LPDUD10 IF ILLEGAL PROCESS CODE
1047
002.005 315 076 031 1048 CALL $TBRA ENTRY PROCESSOR
002.010 016 1049 DB LPNSUIT-* READ
002.011 107 1050 DB LPWRITE-* WRITE
002.012 014 1051 DB LPNSUIT-* READR
002.013 013 1052 DB LPNSUIT-* OPENR
002.014 027 1053 DB LPOPENW-* OPENW
002.015 011 1054 DB LPNSUIT-* OPEND
002.016 147 1055 DB LPCLOSE-* CLOSE
002.017 013 1056 DB LPARORT-* ABORT
002.020 012 1057 DB LPARORT-* MOUNT
002.021 020 1058 DB LPLDADD-* LDADD
1059
002.022 076 012 1060 LPDUD10 MVI A,EE.ILR ILLEGAL REQUEST
002.024 067 1061 STC
002.025 311 1062 RET
1063

```

LPNSUIT/LPABORT/LPLOADD

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```

1066 *** LPNSUIT - LINE PRINTER NOT SUITABLE
1067 *
1068 * ENTRY: NONE
1069 *
1070 * EXIT: (PSW) = 'C' SET FLAGGING ERROR
1071 * (A) = ERROR CODE
1072 *
1073 * USES: PSW
1074 *
1075 *
002.026 1076 LPNSUIT EQU *
002.026 076 005 1077 MVI A,EC.DNS DEVICE NOT SUITABLE ERROR CODE
002.030 067 1078 STC
002.031 311 1079 RET

```

```

1081 *** LPABORT - LINE PRINTER ABORT
1082 *
1083 * ENTRY: NONE
1084 *
1085 * EXIT: (PSW) = 'C' SET FLAGGING ERROR
1086 * (A) = ERROR CODE
1087 *
1088 * USES: PSW
1089 *
1090 *
002.032 1091 LPABORT EQU *
002.032 315 165 002 1092 CALL LPCLOSE
002.035 076 027 1093 MVI A,EC.DDA DEVICE DRIVER ABORT ERROR CODE
002.037 067 1094 STC
002.040 311 1095 RET

```

```

1097 *** LPLOADD - LOAD LP:
1098 *
1099 * LPLOADD PROCESS THE LOAD DEVICE DRIVER ENTRY POINT.
1100 *
1101 *
1102 * ENTRY: NONE
1103 *
1104 * EXIT: NONE
1105 *
1106 * USES: (F)
1107 *
1108 *
002.041 1109 LPLOADD EQU *
002.041 247 1110 ANA A CLEAR CARRY
002.042 311 1111 RET

```



```

1114 *** LPOPENW - LINE PRINTER OPEN FOR WRITE
1115 *
1116 * SET UP LINE PRINTER FOR OUTPUT
1117 *
1118 * ENTRY NONE
1119 *
1120 * EXIT (PSW) = 'C' CLEAR => NO ERROR
1121 * 'C' SET => ERROR
1122 * (A) = ERROR CODE
1123 *
1124 * USES ALL
1125 *
1126 *
002.043 1127 LPOPENW EQU *
1128 *
002.043 315 043 003 1129 CALL UNITASS
002.046 302 114 002 1130 JNZ LPO1 ALREADY ASSIGNED
1131 *
1132 * FLAG ASSIGNED, INITIALIZE INDICES, AND CTL-S FLAG
1133 *
002.051 076 200 1134 MVI A,10000000B
002.053 062 015 004 1135 STA TLP.AS
002.056 076 001 1136 MVI A,1
002.060 062 024 004 1137 STA TLP.LX
002.063 062 025 004 1138 STA TLP.CX
002.066 257 1139 XRA A
002.067 062 026 004 1140 STA TLP.CTS
1141 *
1142 *
1143 * INITIALIZE PORT
1144 *
002.072 072 016 004 1145 LDA TLP.POR
002.075 052 017 004 1146 LHLD TLP.BAU
000.000 1147 IF H8410
002.100 315 051 003 1148 CALL I8250
1149 ELSE
1150 CALL I8251
1151 ENRIF
1152 *
1153 * INITIALIZE LP:
1154 *
002.103 315 233 003 1155 CALL INITLP
002.106 076 015 1156 MVI A,CR
002.110 315 225 002 1157 CALL LPOUTCH
002.113 311 1158 RET
1159 *
002.114 067 1160 LPO1 STC
002.115 076 036 1161 MVI A,EC.UNA UNIT NOT AVAILABLE, ALREADY ASSIGNED
002.117 311 1162 RET

```

```

1165 *** LPWRITE - LINE PRINTER WRITE
1166 *
1167 * WRITE BYTES TO LP: DEVICE
1168 *
1169 *
1170 * ENTRY: (BC) = BYTE COUNT
1171 * (DE) = ADDRESS OF DATA BUFFER
1172 *
1173 * EXIT: (PSW) = 'C' CLEAR => NO ERROR
1174 * = 'C' SET => ERROR
1175 * (A) = ERROR CODE
1176 * (BC) = UNUSED BYTE COUNT
1177 * (DE) = ADDRESS OF NEXT BYTE TO BE WRITTEN
1178 *
1179 * USES: ALL
1180 *
1181 *
002.120 1182 LPWRITE EQU *
1183
002.120 315 043 003 1184 CALL UNITASS
002.123 312 153 002 1185 JZ LPW3 NOT ASSIGNED
1186
002.126 170 1187 LPW1 MOV A,B
002.127 261 1188 ORA C
002.130 312 156 002 1189 JZ LPW4 LAST BYTE WRITTEN
002.133 072 334 040 1190 LDA S.CAADR+1
002.136 247 1191 ANA A
002.137 302 157 002 1192 JNZ LPW5 CTL-Z,-A,-B,-C HIT
002.142 032 1193 LDAX D (A) = BYTE TO BE WRITTEN
002.143 315 225 002 1194 CALL LPDUTCH
002.146 023 1195 INX D INCREMENT ADDRESS
002.147 013 1196 DCX B DECREMENT COUNT
002.150 303 126 002 1197 JMP LPW1
1198
002.153 076 036 1199 LPW3 MVI A,EC.UNA UNIT NOT AVAILABLE ERROR CODE
002.155 067 1200 STC
1201
002.156 1202 LPW4 EQU *
002.156 311 1203 RET
1204
002.157 076 014 1205 LPW5 MVI A,FF
002.161 315 377 003 1206 CALL DUTCH.
002.164 311 1207 RET

```

```

1210 ***      LPCLOSE - CLOSE LINE PRINTER FOR OUTPUT
1211 *
1212 *      REMOVE SELECTED LP: DEVICE FROM TABLE OF CURRENTLY ACTIVE DEVICES.
1213 *
1214 *      ENTRY   NONE
1215 *
1216 *      EXIT    (PSW) = 'C' CLEAR => NO ERROR
1217 *              = 'C' SET   =>   ERROR
1218 *              (A)   = ERROR CODE
1219 *
1220 *      USES    ALL
1221 *
1222 *
002.165      1223 LPCLOSE EQU *
1224
002.165 315 043 003 1225 CALL UNITASS
002.170 312 221 002 1226 JZ   LPC1          UNIT FREE
1227
002.173 072 016 004 1228 LDA   TLP,PCOR
002.176 147          1229 MOV   H,A
002.177 056 000      1230 MVI   L,UR,THR
000.000          1231 ERNZ   UR,THR-UDR
002.201 076 014      1232 MVI   A,FF
002.203 315 171 003 1233 CALL   OUT
002.208 072 015 004 1234 LDA   TLP,AS
002.211 346 177      1235 ANI   #01111111B      CLEAR ASSIGNED BIT
002.213 062 015 004 1236 STA   TLP,AS
002.216 303 224 002 1237 JMP   LPC2
1238
002.221 076 036      1239 LPC1 MVI   A,EC.UNA      UNIT NOT AVAILABLE ERROR CODE
002.223 067          1240 STC
1241
002.224          1242 LPC2 EQU *
002.224 311          1243 RET

```

SUBROUTINES

LPOUTCH

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```

1247 *** LPOUTCH - LINE PRINTER OUTPUT CHARACTER
1248 *
1249 * The special characters processed are:
1250 *
1251 * NULL
1252 * TAB
1253 *
1254 * ENTRY: (A) = BYTE TO BE WRITTEN
1255 * (HL) = UNIT NUMBER OF OUTPUT DEVICE
1256 *
1257 * EXIT: Column Index updated
1258 *
1259 * USES: (PSW)
1260 *
1261 *
002.225 1262 LPOUTCH EQU *
002.225 345 1263 PUSH H
1264
1265
002.226 346 177 1266 ANI 1770 MAP OUT HIGH BIT
002.230 376 014 1267 CPI FF
002.232 302 253 002 1268 JNZ LPOT1 IF NOT FORM FEED
002.235 315 331 003 1269 CALL OUTCHAR
002.240 076 001 1270 MVI A,#1
002.242 062 024 004 1271 STA TLP,LX UNIT LINE INDEX = 1
002.245 062 025 004 1272 STA TLP,CX UNIT COLUMN INDEX = 1
002.250 303 041 003 1273 JMP LPOT9
1274
1275
1276 * CHECK FOR LINE OVER-FLOW
1277
002.253 345 1278 LPOT1 PUSH H
002.254 365 1279 PUSH PSW
002.255 072 023 004 1280 LDA TLP,LC
002.260 267 1281 ORA A
002.261 312 300 002 1282 JZ LPOT2 LINES/PAGE = 0
002.264 041 024 004 1283 LXI H,TLP,LX
002.267 276 1284 CMP M
002.270 322 300 002 1285 JNC LPOT2 TLP,LC >= TLP,LX
002.273 076 014 1286 MVI A,FF
002.275 315 225 002 1287 CALL LPOUTCH
002.300 361 1288 LPOT2 POP PSW
002.301 341 1289 POP H
1290
002.302 376 011 1291 CPI TAB
002.304 302 335 002 1292 JNZ LPOT4 IF NOT TAB
002.307 076 040 1293 MVI A,' IF PRESENTLY AT TAB STOP FORCE
002.311 315 225 002 1294 CALL LPOUTCH TO THE NEXT ONE
002.314 072 025 004 1295 LDA TLP,CX
002.317 075 1296 DCR A
002.320 346 007 1297 ANI #7 CHECK FOR MULTIPLE OF 8
002.322 312 041 003 1298 JZ LPOT9
002.325 076 040 1299 MVI A,'
002.327 315 225 002 1300 CALL LPOUTCH
002.332 303 314 002 1301 JMP LPOT3
1302

```

```

002.335 376 000 1303 LFOY4 CPI NUL2
002.337 312 041 003 1304 JZ LPOT9 IGNORE NULLS!!!
000.000 1305 ERRNZ *-LPOT5
1306
002.342 376 015 1307 LPOT5 CPI CR
002.344 302 362 002 1308 JNZ LPOT6 NOT CARRIAGE RETURN
002.347 315 331 003 1309 CALL OUTCHAR
002.352 076 001 1310 MVI A,*1
002.354 062 025 004 1311 STA TLP.CX COLUMN INDEX = 1
002.357 303 041 003 1312 JMP LPOT9
1313
002.362 376 012 1314 LPOT6 CPI NL
002.364 302 013 003 1315 JNZ LPOT7
002.367 076 015 1316 MVI A,CR
002.371 315 225 002 1317 CALL LFOUTCH
002.374 076 012 1318 MVI A,LF
002.376 315 331 003 1319 CALL OUTCHAR
003.001 072 024 004 1320 LDA TLP.LX
003.004 074 1321 INR A UPDATE LINE INDEX
003.005 062 024 004 1322 STA TLP.LX
003.010 303 041 003 1323 JMP LPOT9
1324
003.013 376 040 1325 LPOT7 CPI
003.015 332 036 003 1326 JC LPOT8 (A) < ' ' => NON-PRINT
003.020 376 177 1327 CPI RUBOUT
003.022 322 036 003 1328 JNC LPOT8 (A) = RUBOUT => NON-PRINT
003.025 365 1329 PUSH PSW
003.026 072 025 004 1330 LDA TLP.CX
003.031 074 1331 INR A
003.032 062 025 004 1332 STA TLP.CX
003.035 361 1333 POP PSW
003.036 315 331 003 1334 LPOT8 CALL OUTCHAR
1335
003.041 341 1336 LPOT9 POP H
003.042 311 1337 RET

```

```

1340 **      UNITASS - UNIT ASSIGNED
1341 *
1342 *      CHECK LP: DEVICE TABLE TO SEE IF SPECIFIED UNIT IS ASSIGNED.
1343 *
1344 *      ENTRY (HL) = UNIT NUMBER
1345 *
1346 *      EXIT (PSW) = 'Z' SET => UNIT FREE
1347 *              = 'Z' CLEAR => UNIT ASSIGNED
1348 *
1349 *      USES (PSW)
1350 *
1351 *
003.043      1352 UNITASS EQU *
1353
003.043 072 015 004 1354 LDA TLP,AS
003.046 346 200      1355 ANI 10000000B [7] = 1 => ASSIGNED
1356
003.050 311      1357 RET
000.000      1358 IF H84ID

```

```

1360 **      I8250 - INITIALIZE 8250
1361 *
1362 *      INITIALIZE AN 8250 PORT, STOLEN AS CAP FROM CONSL. DRIVER.
1363 *
1364 *      ENTRY (A) = PORT ADDRESS
1365 *              (HL)[0-14] = NEW BAUD RATE
1366 *              (HL)[15] = 1 IF TWO STOP BITS
1367 *
1368 *      EXIT NONE
1369 *
1370 *      USES (A)
1371 *
1372 *
003.051      1373 I8250 EQU *
003.051 325      1374 PUSH D
1375
003.052 353      1376 XCHG
003.053 147      1377 MOV H,A
003.054 056 001 1378 MVI L,UR,IER
003.056 257      1379 XRA A /79.02.6C/
003.057 315 171 003 1380 CALL OUT /79.02.6C/
003.062 056 004 1381 MVI L,UR,MCR /79.02.6C/
003.064 076 020 1382 MVI A,UC,L00 /79.01.6C/
003.066 315 171 003 1383 CALL OUT /79.01.6C/
003.071 056 003 1384 MVI L,UR,LCR SET LOOP-BACK
003.073 076 200 1385 MVI A,UC,DLA /79.01.6C/
003.075 315 171 003 1386 CALL OUT
003.100 056 000 1387 MVI L,UR,DLL
003.102 173 1388 MOV A,E
003.103 315 171 003 1389 CALL OUT
003.106 056 001 1390 MVI L,UR,DLH
003.110 172 1391 MOV A,D
003.111 346 177 1392 ANI 177Q

```

```
003.113 315 171 003 1393 CALL OUT
003.116 056 003 1394 MVI L,UR.LCR
003.120 172 1395 MOV A,D
003.121 007 1396 RLC
003.122 007 1397 RLC
003.123 007 1398 RLC
000.000 1399 ERKNZ UC.2SB-4
003.124 346 004 1400 ANI UC.2SB
003.126 366 003 1401 ORI UC.8BW 8 BIT WORDS
003.130 315 171 003 1402 CALL OUT
003.133 056 000 1403 MVI L,UR.RBR
003.135 315 161 003 1404 CALL IN REMOVE GARBAGE
1405
003.140 076 156 1406 MVI A,AC.DLY
003.142 315 053 000 1407 CALL DLY WAIT FOR 8250 TO SETTLE
003.145 056 004 1408 MVI L,UR.MCR
003.147 315 161 003 1409 CALL IN
003.152 346 357 1410 ANI 3770-UC.L00
003.154 315 171 003 1411 CALL OUT TURN OFF LOOP-BACK
1412
003.157 321 1413 POP D
003.160 311 1414 RET
1415 ELSE
1416 I8251 SPACE 4,10
1417 ** I8251 INITIALIZE 8251
1418 *
1419 * INITIALIZE AN 8251 PORT
1420 *
1421 * ENTRY (A) = PORT ADDRESS
1422 * (HL)[15] = 1 IF TWO STOP BITS
1423 *
1424 * EXIT NONE
1425 *
1426 * USES ALL
1427 *
1428
1429 I8251 EQU *
1430 XCHG
1431 MOV H,A
1432 MVI L,USR
1433 MOV A,D
1434 ANI 2000 (A) = 2000 IF TWO STOP BITS
1435 ERKNZ 2000+UMI.1B-UMI.2B
1436 ORI UMI.1B+UMI.L8+UMI.16X
1437 STA I8251.B
1438 LXI B,I8251.A
1439 I8251.1 LDAX B
1440 CPI #3770
1441 JZ I8251.2
1442 CALL OUT
1443 INX B
1444 JMP I8251.1
1445 I8251.2 MVI A,UCI.ER+UCI.TE+UCI.RE
1446 CALL OUT
1447 MVI L,UDR
1448 CALL IN
```

1449 RET
1450 I8251.A DB 0,0,0,0,0,0
1451 DB UCI:IR
1452 I8251.B DB 0
1453 DB 377Q
1454 ENDIF

CONFIGURATION BYTE


```

1457 **      IN - INPUT
1458 *
1459 *      INPUT BYTE FROM SPECIFIED PORT
1460 *
1461 *      ENTRY  (H)  = PORT ADDRESS
1462 *             (L)  = OFFSET
1463 *
1464 *      EXIT   (A)  = BYTE READ
1465 *
1466 *      USES   (PSW)
1467 *
1468 *
003.161      1469 IN      EQU  *
003.161      1470      MOV  A,H
003.162      1471      ADD  L
003.163      1472      STA  IN.ADD
003.166      1473      IN   *-*
003.167      1474 IN.ADD EQU  *-1
003.170      1475      RET

```

```

1477 **      OUT - OUTPUT
1478 *
1479 *      OUTPUT BYTE TO SPECIFIED PORT
1480 *
1481 *      ENTRY  (A)  = BYTE TO BE WRITTEN
1482 *             (H)  = PORT ADDRESS
1483 *             (L)  = OFFSET
1484 *
1485 *      EXIT   NONE
1486 *
1487 *      USES   NONE
1488 *
1489 *
003.171      1490 OUT    EQU  *
003.171      1491      PUSH PSW
003.172      1492      MOV  A,H
003.173      1493      ADD  L
003.174      1494      STA  OUT.ADD
003.177      1495      POP  PSW
003.200      1496      OUT  *-*
003.201      1497 OUT.ADD EQU  *-1
003.202      1498      RET

```

SUBROUTINES

WAIT

18:29:08 16-MAY-80

```

1501 **      WAIT - WAIT FOR H14
1502 *
1503 *      WAIT UNTIL CTL-S, FLAG CLEAR
1504 *
1505 *      ENTRY  NONE
1506 *
1507 *      EXIT   NONE
1508 *
1509 *      USES   (PSW)
1510 *
1511
003.203      1512 WAIT  EQU  *
003.203 345   1513      PUSH  H
1514
003.204 072 334 040 1515 WAIT0 LDA  S.CAADR+1
003.207 247       1516      ANA  A
003.210 302 231 003 1517      JNZ  WAIT3
1518                      IF  CTL-Z,-A,-B,-C  HIT
000.000      1519      IF      H14BUG
003.213 072 016 004 1520      LDA  TLP.POR
003.216 147       1521      MOV  H,A
003.217 056 006     1522      MVI  L,UR.MSR
003.221 315 161 003 1523      CALL IN
003.224 346 020     1524      ANI  UC.CTS
003.226 302 204 003 1525      JNZ  WAIT0
000.000      1526      ERRNZ WAIT3-*
1527                      INVERTED SIGNAL!!!
1528      ELSE
1529      CALL  INCHAR
1530      ANI  #177Q
1531      CPI  CTLS
1532      JNZ  WAIT1
1533      MVI  A,#1
1534      STA  TLP.CTS
1535      JMP  WAIT2
1536      WAIT1 CPI  CTLS
1537      JNZ  WAIT2
1538      MVI  A,#0
1539      STA  TLP.CTS
1540      WAIT2 LDA  TLP.CTS
1541      ANA  A
1542      JNZ  WAIT0
1543      ENDIF
1544
003.231 341      1545 WAIT3 POP  H
003.232 311      1546      RET

```

IGNORE ALL OTHER CHARACTERS.

```

1549 **      INITLP - INITIALIZE LPT
1550 *
1551 *      INITIALIZE DEVICE LPT; THE H14 LINE PRINTER; BY SENDING THE
1552 *      CORRECT ESCAPE SEQUENCES.
1553 *
1554 *      ENTRY    (L)  = UNIT NUMBER
1555 *
1556 *      EXIT      NONE
1557 *
1558 *      USES      (PSW),(HL)
1559 *
1560
003.233      1561 INITLP EQU *
1562
003.233 072 021 004 1563 LDA TLP,CON
003.236 062 273 003 1564 STA INITA+2
003.241 346 001 1565 ANI #1
000.000      1566 ERRNZ LPI.8-1
003.243 306 170 1567 ADI #1700
003.245 062 275 003 1568 STA INITB+1
003.250 041 271 003 1569 LXI H,INITA
003.253 176      1570 INIT0 MOV A,M
003.254 376 377 1571 CPI #3770
003.256 312 270 003 1572 JZ INIT1
003.261 315 331 003 1573 CALL OUTCHAR
003.264 043      1574 INX H
003.265 303 253 003 1575 JMP INIT0
1576
003.270 311      1577 INIT1 RET
003.271 033 165 000 1578 INITA DB ESC,SETWIDE,0
003.274 033 000 377 1579 INITB DB ESC,0,3770
1580
1581
1582

```

SUBROUTINES

INCHAR

18:29:09...16 MAY-80

```

1585 **      INCHAR - INPUT CHARACTER
1586 *
1587 *      INPUT CHARACTER FROM SPECIFIED DEVICE
1588 *
1589 *      ENTRY    NONE
1590 *
1591 *      EXIT      (PSW) = 'Z' CLEAR IF THERE IS A CHARACTER
1592 *                (A) = CHARACTER
1593 *                = 'Z' SET   IF THERE IS NOT A CHARACTER
1594 *
1595 *      USES      (PSW)
1596 *
1597
003.277      1598 INCHAR EQU *
003.277 345    1599 PUSH H
003.300 072 016 004 1600 LIA TLP,FDR
003.303 147      1601 MOV H,A
1602
1603 *      CHECK FOR DATA
1604
000.000      1605 IF H8410
1606
003.304 056 005    1607 MVI L,UR,LSR
003.306 315 161 003 1608 CALL IN
003.311 346 001    1609 ANI UC,DR
003.313 312 326 003 1610 JZ INC1
003.316 056 000    1611 MVI L,UR,RBR
003.320 315 161 003 1612 CALL IN
003.323 303 327 003 1613 JMP INC2
1614
1615 ELSE
1616
1617 MVI L,USR
1618 CALL IN
1619 ANI USR,RXR
1620 JZ INC1
1621 MVI L,UDR
1622 CALL IN
1623 ANA A
1624 JMP INC2
1625
1626 ENDF
003.326 067      1628 INC1 STC
1629
003.327 341      1630 INC2 POP H
003.330 311      1631 RET

```

```

1633 **      OUTCHAR - OUTPUT CHARACTER
1634 *
1635 *      OUTPUT CHARACTER TO SPECIFIED DEVICE
1636 *
1637 *      ENTRY  (A)  = CHARACTER
1638 *
1639 *      EXIT   NONE
1640 *
1641 *      USES   (PSW)
1642 *
1643
003.331      1644 OUTCHAR EQU  *
003.331 345   1645 PUSH  H
1646
003.332 365   1647 PUSH  PSW
003.333 072 016 004 1648 LDA  TLP.POR
003.336 147   1649 MOV  H,A
1650
000.000      1651 IF    H8410
1652
003.337 056 005   1653 MVI  L,UR.LSR
003.341 315 203 003 1654 CALL WAIT
003.344 072 334 040 1655 OUTC0 LDA  S.CAADR+1
003.347 247   1656 ANA  A
003.350 302 374 003 1657 JNZ  OUTC1 IF CTL-Z,-A,-B,-C HIT
003.353 315 161 003 1658 OUTC0.0 CALL IN
003.356 346 040   1659 ANI  UC.THE
003.360 312 344 003 1660 JZ   OUTC0 IF NOT READY FOR TRANSMIT
003.363 361   1661 POP  PSW
003.364 056 000   1662 MVI  L,UR.THR
003.366 315 171 003 1663 CALL OUT
003.371 303 375 003 1664 JMP  OUTC2
1665
1666 ELSE
1667
1668 MVI  L,USR
1669 CALL WAIT
1670 OUTC0 LDA  S.CAADR+1
1671 ANA  A
1672 JNZ  OUTC1 IF CTL-Z,-A,-B,-C HIT
1673 OUTC0.0 CALL IN
1674 ANI  USR.TXR
1675 JZ   OUTC0 IF NOT READY FOR TRANSMIT
1676 POP  PSW
1677 MVI  L,UDR
1678 CALL OUT
1679 JMP  OUTC2
1680
1681 ENDDIF
1682
003.374 361   1683 OUTC1 POP  PSW
1684
003.375 341   1685 OUTC2 POP  H
003.376 311   1686 RET
1687
003.377 345   1688 OUTCH. PUSH  H

```

SUBROUTINES

OUTCHAR

18:29:11 16-MAY-80

004.000	365	1689	PUSH	PSW
004.001	072 016 004	1690	LDA	TLP, POR
004.004	147	1691	MOV	H, A
		1692		
000.000		1693	IF	H8410
004.005	056 005	1694	MVI	L, UR, LSR
		1695	ELSE	
		1696	MVI	L, USR
		1697	ENDIF	
		1698		
004.007	315 203 003	1699	CALL	WAIT
004.012	303 353 003	1700	JMP	OUTC0.0

```

1703 *** TLP.UNIT - TABLE OF LP: UNIT CONSTANTS
1704 *
1705 *
1706
004.015 1707 TLP.UNA EQU *
1708
004.015 000 1709 TLP.UNIT DB 0 UNIT NUMBER
1710
004.015 1711 TLP.AS EQU TLP.UNIT [7] = 1 IF ASSIGNED
1712
004.016 340 1713 TLP.FOR DB DFLT.LP
1714
004.017 030 000 1715 TLP.BAU DW DFLT.BD [15] = 1 IF TWO STOP BITS
1716
004.021 010 1717 TLP.CON DB DFLT.LI+DFLT.WD CONFIGURE BYTE FOR H14
1718
004.022 054 1719 TLP.FML DB DFLT.FL FORM LENGTH
1720
004.023 074 1721 TLP.LC DB DFLT.LC LINE COUNT = LINES/PAGE
1722
004.024 001 1723 TLP.LX DB DFLT.LX LINE INDEX = LINE HEAD IS OVER
1724
004.025 001 1725 TLP.CX DB DFLT.CX COLUMN INDEX = COLUMN HEAD IS OVER
1726
004.026 000 1727 TLP.CTS DB DFLT.CS CONTROL-S FLAG

```

004.027 1730 XTEXT TBRA

1732X ** \$TBRA - BRANCH RELATIVE THOUGH TABLE.
1733X *
1734X * \$TBRA USES THE SUPPLIED INDEX TO SELECT A BYTE FROM THE
1735X * JUMP TABLE. THE CONTENTS OF THIS BYTE ARE ADDED TO THE
1736X * ADDRESS OF THE BYTE, YIELDING THE PROCESSOR ADDRESS.
1737X *
1738X * CALL \$TBRA
1739X * DB LAB1-* INDEX = 0 FOR LAB1
1740X * DB LAB2-* INDEX = 1 FOR LAB2
1741X * DB LABN-* INDEX = N-1 FOR LABN
1742X *
1743X * ENTRY (A) = INDEX
1744X * (RET) = TABLE FWA
1745X * EXIT TO COMPUTED ADDRESS
1746X * USES F, H, L
1747X
1748X

031.076 1749X \$TBRA EQU 31076A IN H17 ROM
004.027 1750 XTEXT TYPTX

1752X ** \$TYPTX - TYPE TEXT.
1753X *
1754X * \$TYPTX IS CALLED TO TYPE A BLOCK OF TEXT ON THE SYSTEM CONSOLE.
1755X *
1756X * IMBEDDED ZERO BYTES INDICATE A CARRIAGE RETURN LINE FEED,
1757X * A BYTE WITH THE 2000 BIT SET IS THE LAST BYTE IN THE MESSAGE.
1758X *
1759X * ENTRY (RET) = TEXT
1760X * EXIT TO (RET+LENGTH)
1761X * USES A, F
1762X
1763X

031.136 1764X \$TYPTX EQU 31136A IN H17 ROM

031.144 1765X
1766X \$TYPTX, EQU 31144A IN H17 ROM

004.027 116 112 1767 DW 'JN' DUMMY ADDRESS FOR RELOCATION
004.031 1769 DS 64 PATCH AREA

1770 LON 6
1771
1772 END

004.131 055 000 062
000 065 000
123 000 130
000 142 000
155 000 162
000 166 000
174 000 202
000 210 000

222 000 230
000 245 000
254 000 257
000 212 001
224 001 236
001 251 001
263 001 325
001 327 001
331 001 333
001 335 001
003 002 033
002 044 002
047 002 054
002 061 002
064 002 070
002 073 002
076 002 101
002 104 002
111 002 121
002 124 002
131 002 140
002 144 002
151 002 162
002 166 002
171 002 174
002 204 002
207 002 214
002 217 002
233 002 236
002 243 002
246 002 251
002 256 002
262 002 265
002 271 002
278 002 305
002 312 002
315 002 323
002 330 002
333 002 340
002 345 002
350 002 355
002 360 002
365 002 372
002 377 002
002 003 006
003 011 003
016 003 023
003 027 003
033 003 037
003 044 003
060 003 067
003 076 003
104 003 114
003 131 003
136 003 150
003 155 003

COMMON DECKS INVOKED

.IYPTX

18:29:18 16-MAY-80

164 003 175
003 211 003
214 003 222
003 227 003
234 003 237
003 246 003
251 003 257
003 262 003
266 003 301
003 307 003
314 003 321
003 324 003
334 003 342
003 351 003
354 003 361
003 367 003
372 003 002
004 010 004
013 004 000
000

ASSEMBLY COMPLETE

1772 STATEMENTS

0 ERRORS DETECTED

11406 BYTES FREE

HDOS LP: DEVICE DRIVER, HB-4 INTERFACE
CROSS REFERENCE TABLE

XREF V1.1
PAGE 43

\$CNA	042207	716L	851	864	916
\$DCS	042204	714L			
\$FST	042212	718L			
\$LBD	042223	724L	919		
\$PBF	042231	728L	819		
\$PRV	042234	730L	828		
\$SNA	042201	712L	799	857	
\$SOP	042226	726L	797		
\$TBL	042215	720L	872	880	
\$TBRA	031076	1048	1749E		
\$TYPTX	031136	934	1764E		
\$TYPTX	031144	1766E			
\$WTBL	042220	722L			
.	001346	1023S	1024	1025	
.ABUSS	040024	226E			
.ALARM	002136	199E			
.ALED	040013	224E			
.CHFLG	000060	86L			
.CLEAR	000055	83L			
.CLEARA	000056	84L			
.CLOSE	000046	76L			
.CLRCO	000007	80L			
.CONSL	000006	59L			
.CRC	002347	207E			
.CRCSUM	040027	227E			
.CTC	002172	201E			
.CTLC	000041	71L			
.CTLFLG	040011	223E			
.DECODE	000053	81L			
.DELET	000050	78L			
.DISMT	000061	87L			
.DLEDS	040021	225E			
.DLY	000053	196E	1407		
.DMNMS	000203	98L			
.DMOUN	000201	96L			
.DOD	003122	210E			
.DODA	003356	212E			
.DSPMOD	040007	221E			
.DSPROT	040006	220E			
.DUMP	001374	198E			
.ERROR	000057	85L			
.EXIT	000000	53L			
.HORN	002140	200E			
.IDENT	000000	195E			
.IDWRK	040002	218E			
.LINK	000040	70L			
.LOAD	001267	197E			
.LOADD	000062	88L			
.LOADO	000010	61L			
.MFLAG	040010	222E			
.MONMS	000202	97L			
.MOUNT	000200	95L			
.NAME	000054	82L			
.OPENC	000045	75L			
.OPENR	000042	72L			
.OPENU	000044	74L			
.OPENW	000043	73L			
.PCHL	002264	203E			

CROSS-REFERENCE TABLE

.POSIT	000047	77L		
.PRINT	000003	56L		
.RCK	003260	211E		
.READ	000004	57L		
.REGI	040005	219E		
.REGPTR	040035	230E		
.RENAM	000051	79L		
.RESET	000204	99L		
.RNB	002331	206E		
.RNP	002325	205E		
.SCIN	000001	54L		
.SCOUT	000002	55L		
.SEITF	000052	80L		
.SRS	002265	204E		
.START	040000	217E		
.SYSRES	000012	63L		
.TICCNT	040033	229E		
.TPERR	002205	202E		
.TPERRX	040031	228E		
.UIVEC	040037	231E		
.VERS	000011	62L		
.WNB	003024	209E		
.WNP	003017	208E		
.WRITE	000005	58L		
AC.DLY	000156	598E	1406	
AIO.CGN	041047	381L		
AIO.CHA	041116	396L		
AIO.CNT	041111	392L		
AIO.CSI	041050	382L		
AIO.DDA	041041	377E		
AIO.DES	041055	386L		
AIO.DEV	041057	387L		
AIO.DIR	041062	390L		
AIO.DTA	041053	385L		
AIO.EOF	041113	394L		
AIO.EOM	041112	393L		
AIO.FLG	041043	378L		
AIO.GRT	041044	379L		
AIO.LGM	041051	383L		
AIO.LSI	041052	384L		
AIO.SPG	041046	380L		
AIO.TFP	041114	395L		
AIO.UNI	041061	388L		
AIO.VEC	041040	376L		
BAUI	000262	917	920	924L
BAUD	000237	915L	1003	
BAURI	000003	978	1002E	
BELL	000007	108E		
BKSP	000010	110E		
BOOT.P	000001	356E		
C.STX	000002	112E		
C.SYN	000026	111E		
CB.CLI	000100	165E	180	
CB.MTL	000040	164E		
CB.SPK	000200	166E		
CB.SSI	000020	163E		
CDB.H84	000001	299E		
CDB.H85	000000	298E		

CROSS REFERENCE TABLE

CHAR.80	000000	519E	761	1014
CHAR.96	000001	520E	1015	
CHAR132	000002	521E	761	1016
CO.FLG	000001	448E		
CR	000015	104E	1156	1307 1316
CS.FLG	000200	449E		
CSL.CHR	000001	426E		
CSL.ECH	000200	424E		
CSL.WRP	000002	425E		
CTLA	000001	119E		
CTLB	000002	120E		
CTLC	000003	121E		
CTLD	000004	122E		
CTLQ	000017	123E		
CTLP	000020	124E		
CTLQ	000021	125E		
CTLS	000023	126E		
CTLZ	000032	127E		
CTP.2SB	000010	434E		
CTP.BKM	000002	435E		
CTP.BKS	000200	431E		
CTP.MLI	000040	432E		
CTP.MLO	000020	433E		
CTP.TAB	000001	436E		
D.CON	040110	246L		
D.RAM	040240	249L		
D.VEC	040130	248L		
DC.ABT	000007	142L		
DC.CLO	000006	141L		
DC.LOD	000011	144L		
DC.MAX	000012	145L		
DC.MOU	000010	143L		
DC.OPR	000003	138L		
DC.OPU	000005	140L		
DC.OPW	000004	139L		
DC.REA	000000	135L		
DC.RER	000002	137L		
DC.WRI	000001	136L		
DEV.IDA	000004	549L		
DEV.DVG	000016	561L		
DEV.DVL	000014	560L		
DEV.FLG	000006	550L		
DEV.JMP	000003	548L		
DEV.MNU	000011	557L		
DEV.MUM	000010	556L		
DEV.NAM	000000	540L		
DEV.RES	000002	544L		
DEV.SPG	000007	555L		
DEV.UNT	000012	558L		
DEVELEN	000017	563E		
DF.CLR	000376	267E		
DF.EMP	000377	266E		
DFLT.BD	000030	757E	1715	
DFLT.CS	000000	772E	1727	
DFLT.CX	000001	770E	1725	
DFLT.FL	000054	766E	1719	
DFLT.LC	000074	767E	1721	
DFLT.LI	000000	765E	1717	

DFLT.LP	000340	755E	1713	
DFLT.LX	000001	769E	1723	
DFLT.WD	000010	741E	1717	
DIR.ALD	000025	282L		
DIR.CLU	000015	275L		
DIR.CRD	000023	281L		
DIR.EXT	000010	270L		
DIR.FGN	000020	278L		
DIR.FLG	000016	276L		
DIR.LGN	000021	279L		
DIR.LSI	000022	280L		
DIR.NAM	000000	269L		
DIR.PRO	000013	271L		
DIR.VER	000014	272L		
DIRELEN	000027	284E	390	
DIRIDL	000015	273E		
DM.MR	000000	170E		
DM.MW	000001	171E		
DM.RR	000002	172E		
DM.RW	000003	173E		
DR.IM	000001	545E		
DR.PR	000002	546E		
DT.CR	000002	552E		
DT.CW	000004	553E	738	741
DT.DD	000001	551E		
DV.EL	000000	541E		
DV.NU	000001	542E		
DVD.CAP	000007	584L		
DVD.DVD	000006	583L		
DVD.ENT	002000	592E	1025	1044
DVD.MNU	000011	586L		
DVD.MUM	000010	585L		
DVD.SET	000022	588L		
DVD.STE	000053	590E	746	790
DVD.UFL	000012	587L		
DVDFLV	000307	579E	737	743
EC.CNA	000004	466L		
EC.DDA	000027	485L	1093	
EC.DIF	000017	477L		
EC.DIW	000035	491L		
EC.DNI	000045	499L		
EC.DNR	000046	500L		
EC.DNS	000005	467L	1077	
EC.DSC	000047	501L		
EC.EOF	000001	463L		
EC.EDM	000002	464L		
EC.FAQ	000031	487L		
EC.FAP	000026	484L		
EC.FL	000030	486L		
EC.FNF	000014	474L		
EC.FNQ	000011	471L		
EC.FNR	000034	490L		
EC.FOD	000043	497L		
EC.FUC	000013	473L		
EC.ICN	000016	476L		
EC.IDN	000006	468L		
EC.IEC	000020	478L		
EC.IFN	000007	469L		

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EC.ILC	000003	465L																		
EC.ILD	000040	494L	801																	
EC.ILR	000012	472L	1060																	
EC.ILV	000037	493L	895	924																
EC.IOI	000052	504L																		
EC.IS	000032	488L																		
EC.NCV	000050	502L																		
EC.NEM	000021	479L																		
EC.NOS	000051	503L																		
EC.NPM	000044	498L																		
EC.NRD	000010	470L																		
EC.NUM	000042	496L																		
EC.OTL	000053	505L																		
EC.RF	000022	480L																		
EC.UNA	000036	492L	1161	1199	1239															
EC.UND	000015	475L																		
EC.UUN	000033	489L	805																	
EC.VPM	000041	495L																		
EC.WF	000023	481L																		
EC.WP	000025	483L																		
EC.WPV	000024	482L																		
ENL	000212	117E	946																	
ESC	000033	115E	1578	1579																
FF	000014	118E	1205	1232	1267	1286														
FLAG	000107	819L	993																	
FLAGI	000000	960	964	992E																
H14BUG	000000	1E	1519																	
H8410	000000	2E	4	32	756	898	942	977	1001	1019	1147	1358	1605							
		1651	1693																	
HELP	000266	934L	1007																	
HELPI	000004	982	1006E																	
I.CONFL	000004	451E	452																	
I.CONTY	000001	438E	439																	
I.CONWI	000003	444E	445																	
I.CSLMD	000000	428E																		
I.CUSDR	000002	441E	442																	
I8250	003051	1148	1373E																	
IN	003161	1404	1409	1469E	1523	1608	1612	1658												
IN.ADD	003167	1472	1474E																	
INC1	003326	1610	1628L																	
INC2	003327	1613	1630L																	
INCHAR	003277	1598E																		
INIT0	003253	1570L	1575																	
INIT1	003270	1572	1577L																	
INITA	003271	1564	1569	1578L																
INITB	003274	1568	1579L																	
INITLP	003233	1155	1561E																	
IP.FAD	000360	156E																		
LF	000012	105E	1318																	
LPABORT	002032	1056	1057	1091E																
LPC1	002221	1226	1239L																	
LPC2	002224	1237	1242E																	
LPCL0SE	002165	1055	1092	1223E																
LPDUD	002000	1043E																		
LPDUD10	002022	1046	1060L																	
LPI.6	000000	514E	765	960	960	964														
LPI.8	000001	515E	960	964	964	1566														
LPLOADD	002041	1058	1109E																	

[illegible]

CROSS REFERENCE TABLE

PAGE 49

S.CONTY	040327	440L				
S.CONWI	040331	446L				
S.CSLMD	040326	429L	439	442	445	452
S.CUSOR	040330	443L				
S.DATC	040310	411L				
S.DATE	040277	410L				
S.DCS	041033	353L				
S.DDDTA	040366	318L				
S.DDGRF	040364	315L				
S.DDLDA	040360	313L				
S.DDLEN	040362	314L				
S.DDOPC	040370	319L				
S.DFWA	040354	308L				
S.DIREA	041016	347L				
S.DLINK	040346	305L				
S.FASER	041013	346L				
S.FCI	041021	348L				
S.GRTO	024000	237E				
S.GRT1	025000	238E				
S.GRT2	026000	239E				
S.GUP	041027	350L				
S.HIMEM	040316	413L				
S.INT	040343	251L	293			
S.JUMPS	041010	344L				
S.MOUNT	041032	352L				
S.OFWA	040350	306L				
S.OMAX	040324	419L				
S.OSN	041004	335L				
S.OVLE	041000	332L				
S.OVLFL	040371	328L				
S.OVLS	040376	331L				
S.OVSTK	041035	360L				
S.RFWA	040356	309L				
S.SCI	041024	349L				
S.SCR	041120	398L				
S.SDD	041010	345L				
S.SQVR	041146	253L	255			
S.SSN	041002	334L				
S.SYSM	040320	415L				
S.TIME	040312	412L				
S.UCSF	040372	329L				
S.UCSL	040374	330L				
S.USRM	040322	417L				
S.VAL	040277	250L	408			
SC.ACE	000350	597E				
SC.UART	000372	666E				
SET.H14	000033	512E				
SET1	000103	792	805L			
SETNTR	000053	789E				
SETWIDE	000165	517E	1578			
STACK	042200	257E				
STACKL	001032	255E				
SYDD	040130	247E				
SYS CALL	000377	46E				
TAR	000011	114E	1291			
TLP.AS	004015	1135	1234	1236	1354	1711E
TLP.BAU	004017	921	1146	1715L		
TLP.CON	004021	889	892	961	965	1563 1717L

CROSS-REFERENCE TABLE

TLP.CTS	004026	1140	1727L						
TLP.CX	004025	1138	1272	1295	1311	1330	1332	1725L	
TLP.FML	004022	1719L							
TLP.LC	004023	969	1280	1721L					
TLP.LX	004024	1137	1271	1283	1320	1322	1723L		
TLP.PDR	004016	972	1145	1228	1520	1600	1648	1690	1713L
TLP.UNA	004015	1707E							
TLP.UNT	004015	1709L	1711						
UC.2SE	000004	623E	1399	1400					
UC.5BW	000000	619E							
UC.6BW	000001	620E							
UC.7BW	000002	621E							
UC.8BW	000003	622E	1401						
UC.BI	000020	642E							
UC.CTS	000020	651E	1524						
UC.DCS	000001	647E							
UC.DDR	000002	648E							
UC.DLA	000200	628E	1385						
UC.DR	000001	638E	1609						
UC.DRL	000010	650E							
UC.DSR	000040	652E							
UC.DTR	000001	631E							
UC.EDA	000001	609E							
UC.EPS	000020	625E							
UC.FE	000010	641E							
UC.IID	000006	616E							
UC.IIP	000001	615E							
UC.L00	000020	635E	1382	1410					
UC.MSI	000010	612E							
UC.OR	000002	639E							
UC.OU1	000004	633E							
UC.OU2	000010	634E							
UC.PE	000004	640E							
UC.PEN	000010	624E							
UC.RI	000100	653E							
UC.RLS	000200	654E							
UC.RSI	000004	611E							
UC.RTS	000002	632E							
UC.SB	000100	627E							
UC.SKP	000040	626E							
UC.TER	000004	649E							
UC.THE	000040	643E	1659						
UC.TRE	000002	610E							
UC.TSE	000100	644E							
UCI.ER	000020	688E							
UCI.IE	000002	690E							
UCI.IR	000100	686E							
UCI.RE	000004	689E							
UCI.RD	000040	687E							
UCI.TE	000001	691E							
UDR	000000	663E	1231						
UMI.16X	000002	681E							
UMI.1B	000100	671E							
UMI.1X	000001	680E							
UMI.2B	000300	673E							
UMI.64X	000003	682E							
UMI.HB	000200	672E							
UMI.L5	000000	676E							

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XREF Vi:1

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25174 BYTES FREE

