

OPTIONS NODECK,LIST,XREF,NOREL,OBJ(P)

THE LIST OF OPTIONS USED DURING THIS ASSEMBLY IS-- NODECK,LIST,XREF,NOREL,OBJ



0000	1	#ECMAN	START	0
	2		PRINT	ON,NODATA
	3	*	@SYS	EXP-Y
	5+		PRINT	ON

@SYSEQ - SYSTEM SOFTWARE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 3
					7+	*****	*****	
					8+	*	CPU EQUATES	*
					9+	*****	*****	
					10+	*		
					11+	***	REGISTER EQUATES	
					12+	*		
	0002				13+	@REGL EQU 2	HARDWARE REGISTER LENGTH	
	0001				14+	@BR EQU 1	BASE REGISTER	
	0002				15+	@XR EQU 2	USABLE INDEX REGISTER	
	0004				16+	@PSR EQU 4	PROGRAM STATUS REGISTER	
	0008				17+	@ARR EQU 8	ADDRESS RECALL REGISTER	
	0010				18+	@IAR EQU 16	INSTRUCTION ADDRESS REGISTER	
	0020				19+	@P1IAR EQU 32	PROGRAM LEVEL 1 IAR	
	0040				20+	@P2IAR EQU 64	PROGRAM LEVEL 2 IAR	
	00C0				21+	@I1IAR EQU X'C0'	INTERRUPT LEVEL 1 IAR Q-CODE	
					22+	*		
					23+	***	EQUATES FOR BYTES OF AN INSTRUCTION	
					24+	*		
	0001				25+	@Q EQU 1	Q-CODE BYTE	
	0001				26+	@VQ EQU 1	VARIABLE Q CODE FOR LENGTH	
	0002				27+	@D1 EQU 2	1ST DISPLACEMENT	
	0003				28+	@OP1 EQU 3	1ST ADDRESS	
	0004				29+	@DOP2 EQU 4	2ND ADDR OF 5 BYTE INSTR.	
	0004				30+	@OPD2 EQU 4	2ND DISP OF 5 BYTE INSTR.	
	0003				31+	@DD2 EQU 3	2ND DISP OF 4 BYTE INSTR.	
	0005				32+	@OP2 EQU 5	2ND ADDR OF 5 BYTE INSTR.	
	0003				33+	@INST3 EQU 3	LENGTH OF 1 DISP INSTRUCTION	
	0004				34+	@INST4 EQU 4	LENGTH OF 1 ADDR INSTRUCTION	
	0005				35+	@INST5 EQU 5	LENGTH OF 1 DISP 1 ADDR INSTR.	
	0006				36+	@INST6 EQU 6	LENGTH OF 2 ADDR INSTR.	
					37+	*		
					38+	***	CONDITION CODES FOR BRANCHES	
					39+	*		
	0087				40+	@UCB EQU X'87'	UNCONDITIONAL BRANCH	
	0080				41+	@NOP EQU X'80'	NO BRANCH	
	0084				42+	@BH EQU X'84'	BRANCH HIGH	
	0082				43+	@BL EQU X'82'	BRANCH LOW	
	0081				44+	@BE EQU X'81'	BRANCH EQUAL	
	0004				45+	@BNH EQU X'04'	BRANCH NOT HIGH	
	0002				46+	@BNL EQU X'02'	BRANCH NOT LOW	
	0001				47+	@BNE EQU X'01'	BRANCH NOT EQUAL	
	0088				48+	@BOZ EQU X'88'	BRANCH OVERFLOW ZONED	
	00A0				49+	@BOL EQU X'A0'	BRANCH OVERFLOW LOGICAL	
	0008				50+	@BNOZ EQU X'08'	BRANCH NO OVERFLOW ZONED	
	0020				51+	@BNOL EQU X'20'	BRANCH NO OVERFLOW LOGICAL	
	0010				52+	@BT EQU X'10'	BRANCH TRUE	
	0090				53+	@BF EQU X'90'	BRANCH FALSE	
	0084				54+	@BP EQU X'84'	BRANCH PLUS	
	0082				55+	@BM EQU X'82'	BRANCH MINUS	
	0081				56+	@BZ EQU X'81'	BRANCH ZERO	
	0004				57+	@BNP EQU X'04'	BRANCH NOT PLUS	
	0002				58+	@BNM EQU X'02'	BRANCH NOT MINUS	
	0001				59+	@BNZ EQU X'01'	BRANCH NOT ZERO	
					60+	*		
					61+	***	MISCELLANEOUS CONSTANTS	
					62+	*		

@SYSEQ - SYSTEM SOFTWARE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 4
		0000	63+	@ZERO EQU	0	ZERO
		0001	64+	@B1 EQU	1	BINARY ONE
		00F0	65+	@DZERO EQU	X'F0'	DECIMAL ZERO
		0040	66+	@BLANK EQU	C' '	EBCDIC BLANK
		006B	67+	@COMMA EQU	C','	EBCDIC COMMA
		0061	68+	@SLASH EQU	C'/'	EBCDIC FORWARD SLASH
		005B	69+	@DOLAR EQU	C'\$'	EBCDIC DOLLAR SIGN
		005C	70+	@ASTER EQU	C'*'	EBCDIC ASTERISK
		007B	71+	@NUMBR EQU	C'#'	EBCDIC NUMBER #
		007C	72+	@ASIGN EQU	C'@'	EBCDIC ASSIGN @
		00C1	73+	@CHARA EQU	C'A'	EBCDIC CHAR A
		00C6	74+	@CHARF EQU	C'F'	EBCDIC CHAR F
		00D9	75+	@CHARR EQU	C'R'	EBCDIC CHAR R
		00E9	76+	@CHARZ EQU	C'Z'	EBCDIC CHAR Z
		001E	77+	@EOS EQU	X'1E'	RETURN CARRIAGE
		001C	78+	@EOF EQU	X'1C'	END OF FILE CHARACTER
		005A	79+	@UPARW EQU	X'5A'	UPARROW FROM KEYBOARD INPUT
		004E	80+	@CPLUS EQU	C'+'	EBCDIC PLUS SIGN
		0060	81+	@MINUS EQU	C'-'	EBCDIC MINUS SIGN
		0001	82+	@DCALK EQU	X'01'	DCAL REQUESTED INDICATOR
		0020	83+	@PGCSZ EQU	32	CORE SIZE IN PAGES
		2000	84+	@MINCR EQU	256*@PGCSZ	CORE SIZE IN BYTES
		00F4	85+	@LINSZ EQU	244	LENGTH OF INPUT LINE BUFFER
		0018	86+	@DTRSZ EQU	24	NO. OF DISK SECTORS PER TRACK
		0030	87+	@SECCY EQU	48	SECTORS PER CYLINDER
		0060	88+	@CARDL EQU	96	LENGTH OF 3700 INPUT CARD
		0050	89+	@BCRDL EQU	80	LENGTH OF 5081 INPUT CARD
		0005	90+	@MAPEN EQU	5	DISP TO END OF FE CORE MAP
		0007	91+	@SDFLN EQU	7	LENGTH OF SDF
		0006	92+	@VOLID EQU	6	LENGTH OF DISK ID FIELD
		0007	93+	@HDLN EQU	7	LENGTH OF PROGRAM HEADER
		0011	94+	@CLON EQU	X'11'	TURN ON COMMAND LITE Q-CODE
		0010	95+	@CLOFF EQU	X'10'	TURN off COMMAND LITE Q-CODE
			97+	*****		
			98+*	DISK REGION EQUATES		*
			99+	*****		
			100+*			
		0100	101+	@SCTS EQU	256	LENGTH OF ONE SECTOR
		0500	102+	@WSFIT EQU	X'0500'	SECTOR ADDR OF WS FIT SCTRS
		0503	103+	@WSTBL EQU	X'0503'	SECTOR ADDR OF WORKING STORAGE
		0005	104+	@DWBCY EQU	5	BASE CYL SYSTEM WORK FILE
		0003	105+	@DWTB1 EQU	3	LOGICAL SCTR 1ST TEXT BLOCK
		00C0	106+	@DWSIZ EQU	192	NO. OF WORK FILE DISK SECTORS
		0004	107+	@DSBCY EQU	4	BASE CYL SYSTEM ROUTINES
		0000	108+	@DSCS1 EQU	0	COMPILER SUBROUTINE 1ST SCTR
		0007	109+	@DVBCY EQU	7	BASE CYL VIRTUAL MEMORY
		0000	110+	@VMFD1 EQU	0	FILE DIRECTORY 1 PAGE
		0001	111+	@VMFD2 EQU	1	FILE DIRECTORY 2 PAGE
		0001	112+	@VMTRL EQU	1	TRACE REFERENCE LIST PAGE
		0002	113+	@VMRS3 EQU	2	START OF VM RESIDENT SUBROUTINE
		0056	114+	@VENTA EQU	86	FIRST PSEUDO CODE PAGE IN VM
		00FE	115+	@VMDDV EQU	254	FUNC AND ARRAY TABLE - PAGE ONE
		0009	116+	@DCBCY EQU	9	BASE CYL COMPILER VADDR TABLES
		0040	117+	@DCST1 EQU	64	STMT ADDRESS TABLE 1ST SECTOR
		0050	118+	@DCBT1 EQU	80	BRANCH ADDRESS TABLE 1ST SECTOR

@SYSEQ - SYSTEM SOFTWARE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	5
					120+	*****					
					121+	*	DISK IOCR EQUATES				*
					122+	*****					
					123+	*					
					124+	***	DISK PARAMETER LIST (DPL) EQUATES				
					125+	*					
				0000	126+	@DCTRL EQU	0				CONTROL PARAMETER
				0001	127+	@DCYL EQU	1				LOGICAL CYLINDER NUMBER
				0002	128+	@DSAD EQU	2				HEAD/SECTOR ADDRESS
				0003	129+	@DCNT EQU	3				SECTOR COUNT
				0004	130+	@DBFR1 EQU	4				1ST BYTE OF DATA AREA
				0005	131+	@DBFR2 EQU	5				DATA AREA ADDRESS
				0002	132+	@DSPIN EQU	X'02'				SPINDLE BIT IN DISK ADDRESS
				0006	133+	@DPLNG EQU	6				LENGTH OF DSL
				0000	134+	@DPOS EQU	X'00'				DPL - SEEK FUNCTION CODE
				0001	135+	@DGET EQU	X'01'				DPL - READ FUNCTION CODE
				0002	136+	@DPUT EQU	X'02'				DPL - WRITE FUNCTION CODE
				0031	137+	@DVERFY EQU	X'31'				DPL - VERIFY FUNCTION CODE
				00FF	138+	@DWAIT EQU	X'FF'				DPL - WAIT I/O COMPLETE FUNC COD
				0003	139+	@DSIVF EQU	X'03'				SIO CTRL CODE FOR VERIFY
					140+	*					
				0002	141+	@DADDR EQU	2				LENGTH OF DISK ADDRESS
				0002	142+	@VADDR EQU	2				LENGTH OF VIRTUAL ADDRESS
				0002	143+	@CADDR EQU	2				LENGTH OF CORE ADDRESS
					145+	*****					
					146+	*	PRINT PARAMETER LIST (PPL) EQUATES				*
					147+	*****					
					148+	*					
				0004	149+	@PPLNG EQU	4				LENGTH OF PPL
				0000	150+	@PCTRL EQU	0				CONTROL BYTE DISPLACEMENT
				0001	151+	@PRCNT EQU	1				COUNT BYTE DISPLACEMENT
				0003	152+	@PDATA EQU	3				DATA ADDR DISPLACEMENT
				0040	153+	@PRINT EQU	X'40'				PRINT CONTROL
				0080	154+	@RETRN EQU	X'80'				RETURN CARRIER CONTROL
				00C0	155+	@PRETR EQU	@PRINT+@RETRN				PRINT AND RETURN CARRIER
				0010	156+	@TBLEF EQU	X'10'				TAB LEFT CONTROL
				0001	157+	@INDEX EQU	X'01'				INDEX FORMS CONTROL
				0011	158+	@TBLIX EQU	@TBLEF+@INDEX				TAB LEFT AND INDEX CONTROL
				00FF	159+	@PWAIT EQU	X'FF'				WITH AND CHECK ERROR CONTROL
				004F	160+	@RLDWN EQU	X'4F'				ROLL DOWN CONTROL (CRT ONLY)
				0000	161+	@TBCNT EQU	0				TAB LEFT COUNT
				0080	162+	@RTRNC EQU	X'80'				CARRIER RETURN COUNT
				0075	163+	@EOFTC EQU	X'75'				EOF RECORD TYPE CODE
					164+	*					
					165+	***	STATEMENT/SEGMENT HEADER EQUATES				
					166+	*					
				0000	167+	@SDF0 EQU	0				DISP TO NULL SEG INDICATOR
				0001	168+	@SDF1 EQU	1				DISP TO LENGTH OF SEGMENT
				0002	169+	@SDF2 EQU	2				DISP TO SEGMENTATION CODE
				0003	170+	@SDF3 EQU	3				DISP TO END OF SDF
				0005	171+	@SBLN EQU	5				DISP TO STMT BINARY LINE NO.
				0006	172+	@STYPE EQU	6				DISP TO STMT TYPE CODE
				0007	173+	@STEXT EQU	7				DISP TO 1ST TEXT BYTE OF STMT
				0080	174+	@SNULL EQU	X'80'				MASK FOR NULL SEG INDICATOR
					175+	*					* 1 = SEGMENT IS NULL

@SYSEQ - SYSTEM SOFTWARE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 6
				176+*			* 0 = SEGMENT IS NOT NULL	
				177+*				
				178+*			FOLLOWING ARE THE MASKS FOR THE SEGMENTATION	
				179+*			CODE. THE SEGMENTATION IS INDICATED BY VALUE	
				180+*			IN @SDF2 AS FOLLOWS:	
		0000		181+@SONLY	EQU	0	ONLY SEG. IN RECORD	
		0001		182+@SIST	EQU	1	1ST SEG. OF A MULTI-SEG RCD	
		0003		183+@SMIDL	EQU	3	MIDDLE SEG. OF A MULTI-SEG RCD	
		0002		184+@SLAST	EQU	2	LAST SEG. OF MULTI-SEG RCD	
		0002		185+@SBLNL	EQU	2	LENGTH OF STMT BINARY LINE NO.	
				186+*				
				187+****			FILE INDEX TABLE EQUATES SECTION	
				188+*				
				189+*			ALL DISPLACEMENT ARE CALCULATED FROM THE	
				190+*			* FIRST BYTE OF THE FIT TO THE RIGHTMOST BYTE	
				191+*			* OF THE SPECIFIED FIELD UNLESS OTHERWISE	
				192+*			* NOTED.	
				193+*				
		0002		194+@FDLNC	EQU	2	DISP TO FILE LINE COUNT	
		0002		195+@FLLNC	EQU	2	LNG OF FILE LINE COUNT FIELD	
		0000		196+@FDDBC	EQU	0	DISP TO FILE DATA BLOCK COUNT	
		0001		197+@FLDBC	EQU	1	LNG OF FILE DATA BLOCK COUNT	
		0009		198+@FLACE	EQU	9	DISP O ADDR OF CURR ENTRY	
		000B		199+@FDFNA	EQU	11	DISP TO ADDR OF 1ST NULL ENTRY	
		0002		200+@FLFNA	EQU	2	LNG OF ADDR OF 1ST NULL ENTRY	
		000C		201+@FDE1	EQU	12	DISP TO 1ST BYTE OF 1ST ENTRY	
		0004		202+@FLENT	EQU	4	LNG OF A FIT ENTRY	
				203+*				
				204+*			ENTRY FIELD DISPLACEMENTS ARE CALCULATED FROM	
				205+*			* THE 1ST BYTE OF THE ENTRY.	
				206+*				
		0000		207+@FDSD	EQU	0	DISP TO DB SECTOR DISP	
		0001		208+@FLSD	EQU	1	LNG OF DB SECTOR DISP FIELD	
		0002		209+@FDHLN	EQU	2	DISP TO HIGH LINE NO. FIELD	
		0002		210+@FLHLN	EQU	2	LNG OF HIGH LINE NO. FIELD	
		0003		211+@FDNSC	EQU	3	DISP TO DB NULL SPACE CNT FIELD	
		0001		212+@FLNSC	EQU	1	LNG OF DB NULL SPACE CNT FIELD	
				213+*				
				214+*			END OF SYSTEM SOFTWARE EQUATES	
				215+			PRINT ON	
				216 *			@FXD EXP-Y	
				218+			PRINT ON	

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 7
			220+		*****	
			221+		GLOBAL INDICATORS STORED IN THE SYSTEM NUCLEUS, ENTRY POINTS *	
			222+		FOR SYSNUC INTERFACE ROUINES. *	
			223+		*****	
0000			224+	ORG	X'0000'	*
	0000		225+	\$\$ZERO EQU	*	ENTRY POINT TO LOAD DUMP PGM
	0004		226+	\$FEARR EQU	\$\$ZERO+4	VALUE OF ADDR IN ARR ON FE AID
			227+			
	0025		228+	\$DISKN EQU	\$\$ZERO+37	ADDR OF ENTRY TO DISK IOCS
	00DE		229+	\$KE090 EQU	\$\$ZERO+X'00DE'	ADDR OF DKDISK ERR-PEND EXIT
	01D5		230+	\$KE130 EQU	\$\$ZERO+X'01D5'	ADDR OF DKDISK HARD ERROR EXIT
0345			232+	ORG	X'0345'	*
	0345		233+	\$ERLOG EQU	*	ADDR OF ENTRY TO LOG I/O ERRORS
	0363		234+	\$ER050 EQU	\$\$ZERO+X'0363'	START OF DISK OPS IN NERLOG
			236+		*****	
			237+		COMMUNICATION AREA REFERENCING NUCLEUS *	
			238+		*****	
			239+			
03C0			240+	ORG	X'03C0'	*
	03C0		241+	\$NUCBS EQU	*	START OF COMMUNICATION AREA
	03C0		242+	\$RMRGN EQU	\$NUCBS	ADDR OF BYTE CONTAINING THE
			243+			* SOFTWARE RIGHT MARGIN VALUE
	03C1		244+	\$LMRGN EQU	\$RMRGN+1	ADDR OF BYTE CONTAINING THE
			245+			* SOFTWARE LEFT MARGIN VALUE
	03C2		246+	\$PRPOS EQU	\$LMRGN+1	ADDR OF BYTE CONTAINING CURRENT
			247+			* POSITION OF MATRIX PRINTER
			248+			* HEAD
	03C3		249+	\$KEYCD EQU	\$PRPOS+1	ADDR OF BYTE CONTAINING KEYBOARD
			250+			* INDICATORS. A LIST OF THE
			251+			* INDICATORS AND MASKS FOLLOW
	0001		252+	\$CARDI EQU	X'01'	INPUT SOURCE INDR MASK
			253+			* 0 - KEYBOARD INPUT
			254+			* 1 - CARD OR PROC INPUT
	0002		255+	\$IOYES EQU	X'02'	I/O ROUTINES IN CORE INDR MASK
			256+			* 0 - I/O ROUTINES NOT IN CORE
			257+			* 1 - I/O ROUTINES IN CORE
	0004		258+	\$NOLST EQU	X'04'	NO LIST INDR MASK
			259+			* 0 - LISTING REQUIRED
			260+			* 1 - NO LISTING RESIRED
	0008		261+	\$GUFIR EQU	X'08'	GUFUDI ABORT INDR
			262+			* 1 - GUFUDI INTERRUPT, NOT ABOR
			263+			* 0 - GUFUDI ABORTED
			264+			* FOR THE ABOVE INDICATOR TO BE
			265+			* VALID, \$INTRP MUST BE PRESENT
	0010		266+	\$KYBSY EQU	X'10'	KEYBOARD BUSY INDR
			267+			* 0 - LINE FINISHED
			268+			* 1 - LINE NOT YET COMPLETE
	0020		269+	\$INRPT EQU	X'20'	INTERRUPT INDR
			270+			* 0 - PROGRAM NOT ABORTED
			271+			* 1 - PROGRAM ABOPRTED
	0040		272+	\$DTNMB EQU	X'40'	* 1 - AUTOMATIC LINE NUMBERS
			273+			* GENERATED FOR CARD INPUT
	0080		274+	\$TRUNK EQU	X'80'	TRUNCATED LINE INDR
			275+			* 1 - LAST LINE TRUNCATED





@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 25/02/16 PAGE 9
		278+	*****		
		279+*		REGISTER SAVE AREAS. THESE AREAS ARE AVAILABLE FOR	*
		280+*		TEMPORARELY USE BY ANY PROGRAM	*
		281+	*****		
	03C5	283+\$BRS	SAV EQU	\$KEYCD+2	ADDR OF 2 BYTE BASE REG SAVE
	03C7	284+\$XRS	SAV EQU	\$BRS+2	ADDR OF 2 BYTE XR SAVE AREA
	03CB	286+\$TAB	LN EQU	\$XRS+4	CURRENT AUTOMATIC LINE NUMBER
		287+*			* TO BE INSERTED IF TAB KEY
		288+*			* PRESSED. (ADDR OF LINE NO.)
	03CD	289+\$CA	ERR EQU	\$TABLN+2	ADDR OF ERROR CODE SAVED FOR
		290+*			* INTERFACE WITH ERRPGM
	03CF	291+\$IN	LNO EQU	\$CAERR+2	ADDR OF EXECUTION TIME LINE
		292+*			* NUMBER FOR INTERPRETER
	03CE	293+\$ERR	PG EQU	\$INLNO-1	ADDR OF INDICATOR BYTE IF
		294+*			* SPECIAL FUNCTION REQUESTED
		295+*			* OF ERROR PROGRAM
	0030	296+\$ER	STK EQU	X'30'	TO BE MOVED TO \$ERRPG IF A STACK
		297+*			* OF ERROR CODES IS TO BE PROCES
	0035	298+\$ER	SFL EQU	X'35'	SYNTAX CHECKERS \$ERRPG SETTING
	0040	299+\$ER	FIL EQU	X'40'	TO BE MOVED TO \$ERRPG IF FILE
		300+*			* LINE ERROR OCCURS
	0050	301+\$ER	1N2 EQU	X'50'	TO BE MOVED TO \$ERRPG IF LEVEL
		302+*			* 1 AND 2 MESSAGES REQUIRED
	0080	303+\$ER	KEY EQU	X'80'	STANDARD ERROR SETTING USED BY
		304+*			* COMMAND ANALYZER ONLY
	03CF	305+\$ERR	CT EQU	\$INLNO	ADDR OF COUNT BYTE FOR STACK
		306+*			* OF ERROR MESSAGES

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 25/02/16 PAGE 10
			308+	*****	
			309+	SYSTEM STATUS EQUATES	*
			310+	*****	
			311+	*	
	03D0		312+	\$XIND1 EQU \$INLNO+1	ADDR OF PRIMARY EXEC MODE INDRS
			313+	*	* ENTRIES FOLLOW
	0001		314+	\$RUNIT EQU X'01'	1 - EXECUTE IN RUN MODE
	0002		315+	\$STEPT EQU X'02'	1 - EXECUTE IN STEP MODE
	0004		316+	\$TRACE EQU X'04'	1 - EXECUTE IN TRACE MODE
			317+	*	THE THREE MODE INDICATORS ARE
			318+	*	MUTUALLY EXCLUSIVE. IF \$TRACE
			319+	*	IS ON, AT LEAST 1 OF THE TRACE
			320+	*	TYPE CODE MUST ALSO BE ON.
	0008		321+	\$TFLOW EQU X'08'	1 - TRACE FLOW
	0010		322+	\$TRALL EQU X'10'	1 - TRACE ALL
	0020		323+	\$TRVAR EQU X'20'	1 - TRACE SELECTED VARIABLES
	0040		324+	\$XPREC EQU X'40'	EXECUTION PRECISION INDR
			325+	*	* 0 - SHORT PRECISION
			326+	*	* 1 - LONG PRECISION
	0080		327+	\$VMDEF EQU X'80'	VM USAGE INDR
			328+	*	* 1 - VIRTUAL MEMORY NOT EMPTY
			329+	*	* 0 - VIRTUAL MEMORY EMPTY
	03D1		331+	\$XIND2 EQU \$XIND1+1	ADDR OF EXECUTION INDICATORS
			332+	*	* MASK AND INDRS FOLLOW
	0001		333+	\$EXCMD EQU X'01'	EXECUTION INDR
			334+	*	* 1 - IN EXECUTION
	0002		335+	\$PAUSE EQU X'02'	* 1 - PROGRAM IN PAUSE STATE
	0004		336+	\$PSTEP EQU X'04'	* 1 - PAUSE CAUSED BY STEP MODE
	0008		337+	\$PSTMT EQU X'08'	* 1 - PAUSE CAUSED BY PAUSE STMT
	0010		338+	\$ABORT EQU X'10'	* 1 - ABORT EXECUTION
	03D2		340+	\$IOIND EQU \$XIND2+1	I/O STATUS INDICATORS
			341+	*	* MASKS AND EXPLANATION FOLLOW
	0001		342+	\$MPDWN EQU X'01'	MP STATE
			343+	*	* 0 - MATRIX PRINTER OPERATIONAL
			344+	*	* 1 - MATRIX PRINTER DOWN
	0002		345+	\$CRTAV EQU X'02'	CRT AVAILABILITY
			346+	*	* 0 - NO CRT ON SYSTEM
			347+	*	* 1 - CRT ON THE SYSTEM
	0004		348+	\$CRTNO EQU X'04'	SYSPRNT ON CRT
			349+	*	* 0 - CRT NOT AVAIL FOR SYSPRNT
			350+	*	* 1 - CRT MAY BE USED FOR SYSPRN
	0008		351+	\$CMDKY EQU X'08'	KEYBOARD MODE
			352+	*	* 0 - NORMAL KEYBOARD INPUT
			353+	*	* 1 - COMMAND KEYS USE ONLY
	0010		354+	\$PGMST EQU X'10'	PGM START KEY
			355+	*	* 0 - MAY BE USED FOR AUTO LINE
			356+	*	* 1 - NOT USED FOR AUTO LINE #
	0020		357+	\$HRDER EQU X'20'	HARD ERROR INDICATOR
			358+	*	* 0 - SOFT ERROR
			359+	*	* 1 - HARD ERROR
	0040		360+	\$DTRDR EQU X'40'	DATA RECORDER
			361+	*	* 0 - DATA RECORDER NOT ON SYSTE
			362+	*	* 1 - DATA RECORDER IS ON SYSTEM
	0080		363+	\$LNPTR EQU X'80'	MP OPTION

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 11
			364+*			* 1 - 50 LPM OPTION AVAILABLE
	03D3	366+\$CRTIN EQU		\$IOIND+1		CRT COMMAND INDICATORS
		367+*				* MASKS AND EXPLANATION FOLLOW
	0001	368+\$CRTUP EQU		X'01'		1 - CRT IN ROLL UP MODE
	0002	369+\$CRTDN EQU		X'02'		1 - CRT IN ROLL DOWN MODE
	0004	370+\$CRTPU EQU		X'04'		1 - POP UP CONDITION REQUESTED
	0008	371+\$CRTSP EQU		X'08'		1 - ROLL STOP REQUESTED
	03D4	373+\$INDR1 EQU		\$CRTIN+1		WORK FILE STATUS INDICATORS
		374+*				* MASKS AND EXPLANATION FOLLOW
	0001	375+\$PROCI EQU		X'01'		PROCEDURE FILE INDR
		376+*				* 0 - NOT A PROCEDURE
		377+*				* 1 - A PROCEDURE
	0002	378+\$PRESN EQU		X'02'		WORK FILE PRECISION INDR
		379+*				* 0 - SHORT PRECISION USED
		380+*				* 1 - LONG PRECISION BEING USED
	0004	381+\$WSIND EQU		X'04'		WORKING STORAGE INDR MASK
		382+*				* 0 - WORKING STOR ON DISK IS EM
		383+*				* 1 - WORKING STORAGE IS NOT EMP
	0008	384+\$WFLOK EQU		X'08'		WORK FILE LOCK INDR
		385+*				* 0 - FILE NOT PROTECTED
		386+*				* 1 - FILE PROTECTED
	0010	387+\$FITIN EQU		X'10'		FIT SECTORS INDR MASK
		388+*				* 0 - FIT SECTORS NOT PRESENT
		389+*				* 1 - FIT SECTORS IN CORE
	0020	390+\$PGMDT EQU		X'20'		PGM DATA FILE INDR
		391+*				* 1 - PROGRAM GENERATED
		392+*				* DATA FILE IN WORK FILE
	0040	393+\$KEYDT EQU		X'40'		KEYBOARD OR CARD FILE INDR
		394+*				* 1 - KYBRD OR CARD GENERATED
		395+*				* DATA FILE IN WORK FILE
	0080	396+\$BASIC EQU		X'80'		BASIC PROGRAM INDR
		397+*				* 1 - BASIC PGM IN WORK FILE
	03D5	399+\$INDR2 EQU		\$INDR1+1		ADDR OF SYSTEM 1-BIT INDRS
		400+*				* MASKS AND EXPLANATION FOLLOW
	0002	401+\$CMODE EQU		X'02'		CONVERSATIONAL MODE INDR MASK
		402+*				* 0 - UTILITY MODE
		403+*				* 1 - CONVERSATIONAL MODE
	0004	404+\$ERPND EQU		X'04'		ERROR LOG PENDING INDR
		405+*				* 0 - NO LOGGING REQUIRED
		406+*				* 1 - ERROR LOGGING PENDING
	0008	407+\$DKERR EQU		X'08'		DISK ERROR INDR
		408+*				* 0 - ERROR WAS NOT DISK
		409+*				* 1 - ERROR WAS DISK, 2 ENTRIES
		410+*				* REQUIRED IN HISTORY LOG
	0010	411+\$FCIND EQU		X'10'		CRUSH INDR MASK
		412+*				* 1 - SINGLE LINE NO DELETION
		413+*				* THROUGH THE CMD ANALYZER REQUI
		414+*				* IF \$FUIND, \$FCIND AND \$FDIND A
		415+*				* ALL ZERO, CRUCHING OP REQUIRED
	0020	416+\$FUIND EQU		X'20'		LINE PASSED INDR MASK
		417+*				* 1 - LINE PASSED
	0040	418+\$FDIND EQU		X'40'		LINE NUMBER LIST
		419+*				* 1 - LINE NO LIST IS DELETED

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 12
		0080	420+\$READY EQU	X'80'	PRINT READY INDR * 0 - READY WILL BE PRINTED * 1 - READY WON'T BE PRINTED	
			421+*			
			422+*			
		03D6	424+\$INDR3 EQU	\$INDR2+1	ADDR OF SYSTEM 1-BIT INDRS * MASKS AND EXPLANATION FOLLOW	
			425+*			
		0001	426+\$DBLOK EQU	X'01'	SAVE PROTECTED WORK FILE MASK * 1 - FILE MAY BE SAVED TO \$\$LIB	
			427+*			
		0002	428+\$LIST EQU	X'02'	KLISTN INDR * 0 - IGNORE ROLL DOWN KEY * 1 - EXCEPT ROLL DOWN KEY	
			429+*			
			430+*			
		0004	431+\$ERHRD EQU	X'04'	ERRPGM HARD ERROR INDR * 1 - ERRPGM WILL EXECUTE HARD * HALT AFTER PRINTING MSG	
			432+*			
			433+*			
		0008	434+\$NOENB EQU	X'08'	KEYBOARD ENABLE INDR * 0 - KEYBOARD NOT ENABLED - * GUFUDI WILL ENABLE * 1 - KEYBOARD HAS ALREADY * BEEN ENABLED	
			435+*			
			436+*			
			437+*			
			438+*			
		0010	439+\$CLBFR EQU	X'10'	CLEAR INPUT LINE BUFFER INDR * 0 - DON'T CLEAR LINE BUFFER * 1 - CLEAR THE INPUT LINE BUFF	
			440+*			
			441+*			
		0020	442+\$MOUNT EQU	X'20'	MOUNT KEYBOARD INDR MASK * 1 - ONLY MOUNT COMMAND VALID	
			443+*			
		0040	444+\$NWRKR EQU	X'40'	REMOVABLE DISK WORK AREA INDR * 0 - CORRECT WORK AREA ON R1 * 1 - NO WORK AREA ON R1	
			445+*			
			446+*			
		0080	447+\$NWRKF EQU	X'80'	FIXED DISK WORK AREA INDR * 0 - CORRECT WORK AREA ON F1 * 1 - NO WORK AREA ON F1	
			448+*			
			449+*			
		03D7	451+\$DKSIZ EQU	\$INDR3+1	ADDR OF DISK SIZE INDR * MASKS AND EXPLANATION FOLLOW	
			452+*			
		0001	453+\$DK100 EQU	X'01'	1 - SYSTEM HAS 100 CYLS	
		0002	454+\$DK200 EQU	X'02'	1 - SYSTEM HAS 200 CYLS	
		0004	455+\$DK400 EQU	X'04'	1 - SYSTEM HAS 400 CYLS	
		0008	456+\$DK600 EQU	X'08'	1 - SYSTEM HAS 600 CYLS	
		0010	457+\$DK800 EQU	X'10'	1 - SYSTEM HAS 800 CYLS	
		03D8	459+\$XIND3 EQU	\$DKSIZ+1	PAST \$XIND1 * SEE \$XIND1 FOR INDR MASKS	
			460+*			
		03DA	462+\$FILIB EQU	\$XIND3+2	ADDR OF CURRENT FILE LIB DADDR	
		03DC	463+\$USRDR EQU	\$FILIB+2	ADDR OF REL DISP TO 1ST USER BK	
		03DD	464+\$CONFIG EQU	\$USRDR+1	CONFIGURATION INDRS	
		0001	465+\$22IMP EQU	X'01'	0 - 13 INCH MATRIX PRINTER 1 - 22 INCH MATRIX PRINTER	
			466+*			
		0002	467+\$16K EQU	X'02'	1 - CPU HAS 12 KBYTE	
		0004	468+\$12K EQU	X'04'	1 - CPU HAS 16 KBYTE * IF BOTH OFF: CPU HAS 8 KBYTE	
			469+*			
		0008	470+\$16CKY EQU	X'08'	0 - KEYBOARD HAS 8 CMD KEYS 1 - KEYBOARD HAS 16 CMD KEYS	
			471+*			
		0080	472+\$BIGCD EQU	X'80'	1 - CPU HAS 129 DATA RECORDER	
		03DF	474+\$LEVEL EQU	\$CONFIG+2	ADDR OF SYSTEM LEVEL NUMBER	

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 13
		03E0	476+\$DBGUF	EQU	\$LEVEL+1	ADDR OF GUFUDI DEBUG INDR
		0080	477+\$CRUSH	EQU	X'80'	0 - CRUSH THE FILE
		0040	478+\$REORD	EQU	X'40'	0 - REORDER THE FILE
		0020	479+\$IRKEY	EQU	X'20'	1 - ENABLE KEYBOARD INPUT
		0010	480+\$IOPGS	EQU	X'10'	D1 PAGES INDR: 0 - ONE
		0008	481+\$CALLI	EQU	X'08'	PROCEDURE CALL INDR
			482+*			* 0 - NOT A CALL
			483+*			* 1 - A CALL
		03E1	485+\$KEYBD	EQU	\$DBGUF+1	KEYBOARD TYPE INDR
			486+*			* THIS VALUE WILL BE A BINARY
			487+*			* VALUE FROM 1 TO 12 INDICATING
			488+*			* WHICH DATA TABLE IS IN USE
		03E2	490+\$CRPOS	EQU	\$KEYBD+1	ADDR OF CURRENT CURSOR POSITION
		03E3	491+\$BUFPT	EQU	\$CRPOS+1	LINE PRINTER BUFFER POINTER 1-3
		03E4	492+\$LPRP3	EQU	\$BUFPT+1	LINE PRINTER FLAGS 1-3
		03E5	493+\$LPROS	EQU	\$LPRP3+1	TRUE LINE PRINTER PRINT POS. 1-3
		03E6	495+\$NEXTB	EQU	\$LPROS+1	REL DADDR PROCEDURE CALL 1-4
		03E7	496+\$NEXTL	EQU	\$NEXTB+1	DISPLACEMENT WITHIN DB 1-4
		03E8	497+\$DFDET	EQU	\$NEXTL+1	GRAPRO INTERNAL INDR 1-4
		03EA	498+\$LPRI0	EQU	\$DFDET+2	LINE PRINTER BUF INC. + PDAR 1-4
		03F5	500+\$PTCH1	EQU	\$DKSIZ+30	LAST BYTE OF NUCLUES AREA
			501+*****			*****
			502+*		TABLES AND SYSTEM WORK AREAS	*
			503+*****			*****
		03F6	504+\$VOLID	EQU	\$PTCH1+1	ADDR OF LEFT BYTE VOLID TABLE
		03F6	505+\$VOLR1	EQU	\$VOLID	ADDR LEFT BYTE VOLID FOR R1
		03FE	506+\$VOLF1	EQU	\$VOLR1+8	ADDR LEFT BYTE VOLID FOR F1
		0406	507+\$VOLR2	EQU	\$VOLF1+8	ADDR LEFT BYTE VOLID FOR R2
		040E	508+\$VOLF2	EQU	\$VOLR2+8	ADDR LEFT BYTE VOLID FOR F2
		0419	509+\$PKERT	EQU	\$VOLID+35	ADDR OF 1ST ENTRY IN PACK ERROR
			510+*			* RATE TABLE
		042D	511+\$PASWD	EQU	\$PKERT+20	ADDR OF CURRENT PASSWORD
		042E	512+\$HISTE	EQU	\$PASWD+1	LEFT BYTE OF HISTORY LOG ENTRY
		0435	513+\$HIST1	EQU	\$HISTE+7	ADDR OF 1ST ENTRY OF HIST LOG
		043A	514+\$DATE	EQU	\$HIST1+5	ADDR OF CURRENT DATE
		043B	515+\$EXFTR	EQU	\$DATE+1	ADDR OF CORE EXPANSION FACTOR
			516+*			* THIS VALUE WILL BE ADDED TO
			517+*			* BUFFER ADDRESS (SET FOR 8K)
			518+*			* TO RE-POSITION THEM FOR
			519+*			* LARGER MACHINES
		0443	520+\$WFNME	EQU	\$EXFTR+8	ADDR OF WORK FILE NAME
		0040	521+\$WFDEF	EQU	X'40'	WORK FILE DEFINED INDR
			522+*			* THIS MASK IS USED ON \$WFNME
			523+*			* 0 - WORK FILE UNDEFINED
			524+*			* 1 - WORK FILE DEFINED
		0449	525+\$DPLSV	EQU	\$WFNME+6	ADDR OF 6 BYTE DPL SAVE AREA
			526+*			* FOR KEYBOARD PROGRAMS
		044B	527+\$PRDEV	EQU	\$DPLSV+2	ADDR OF 2 BYTE FIELD POINTING
			528+*			* TO THE SYSTEM PRINTER IOCR
		044D	529+\$CRTAD	EQU	\$PRDEV+2	ADDR OF ENTRY TO RELOCATE CRT
		0454	530+\$PLST1	EQU	\$CRTAD+7	ADDR OF THREE 7-BYTES ENTRY I/O
		045B	531+\$PLST2	EQU	\$PLST1+7	* PARM LISTS MOST RECENTLY USED

@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	14
				0462	532+	\$PLST3	EQU	\$PLST2+7			* THE 1ST ENTRY IS MOST RECENT
				0464	533+	\$C0001	EQU	\$PLST3+2			ADDR OF 2 BYTE CONSTANT 1



@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 25/02/16 PAGE 15
		535+	*****		
		536+	*	ENTRY POINTS TO INTERFACE ROUTINES AND THEIR WORK AREAS	*
		537+	*****		
		0465	539+\$SPRNT EQU	\$C0001+1	ADDR OF ENTRY TO THE SYSTEM
			540+	*	* PRINTER IOCR
		0469	541+\$CAERK EQU	\$SPRNT+4	ADDR OF ENTRY TO ERR ROUTINE
			542+	*	* INTERFACE. ERROR CODE MUST
			543+	*	* BE STORED PREVIOUS TO ENTRY
		046F	544+\$ERDPL EQU	\$CAERK+6	ADDR OF LEFT BYTE OF ERRPGM
			545+	*	* LOAD DPL
		0472	546+\$ERMAD EQU	\$ERDPL+3	ADDR OF DK ADDR, CNT OF ERRPGM
		0476	547+\$CIMSK EQU	\$ERMAD+4	ADDR OF THE INQUIRY REQUEST INDR
			548+	*	* X'87' IR NOT DISABLED
			549+	*	* X'80' IR MASKED
		0480	550+\$CIEXT EQU	\$CIMSK+10	ADDR OF IR EXIT INSTRUCTION
		0483	551+\$CIENT EQU	\$CIEXT+3	ADDR OF ENTRY FOR IR
		048D	552+\$UNMSK EQU	\$CIENT+10	ADDR OF ENTRY TO UNMASK IR
			553+	*	* IF NO SUSPENDED IR, CALLING
			554+	*	* PROGRAM RETURNED TO
		0496	555+\$CISUS EQU	\$UNMSK+9	ADDR OF INDR FOR SUSPENDED IR
			556+	*	* IF X'80' AN IR OCCURRED WHILE
			557+	*	* IR WAS MASKED
			558+	*	* IF X'87' NO IR TOOK PLACE
			559+	*	* WHILE IR WAS MASKED
		049D	560+\$CAIPL EQU	\$CISUS+7	ADDR OF ENTRY TO ABORT CURRENT
			561+	*	* OP AND RE-ENABLE KEYBOARD AND
		04A1	562+\$CARPL EQU	\$CAIPL+4	ADDR OF ENTRY TO ABORT CURRENT
			563+	*	* OP AND ENABLE IR
		04B4	564+\$CABLD EQU	\$CARPL+X'13'	ADDR OF ENTRY TO ABORT CURRENT O
		04BA	565+\$PAUSD EQU	\$CABLD+6	ADDR OF ENTRY OF ROUTINE TO
			566+	*	* SWAP CORE
		04D6	567+\$RSTR EQU	\$PAUSD+X'1C'	ADDR OF ENTRY TO ENTRY CORE
			568+	*	* FROM DISK
		04F2	569+\$PSDXR EQU	\$RSTR+X'1C'	ADDR OF SAVED XR IN NPAUSE
		04FA	570+\$PSDBR EQU	\$PSDXR+8	ADDR OF SAVED BR IN NPAUSE
		04FE	571+\$SRTRN EQU	\$RSTR+X'28'	ADDR OF RETURN ADDR FROM \$PAUSD
		050D	572+\$SFAID EQU	\$SRTRN+15	ADDR OF RETURN IF FE AID REQUEST
			573+	*	* IF THE ABOVE TWO ADDRESSES ARE
			574+	*	* EQUAL, RETURN TO \$RSTR WILL BE
			575+	*	* BE FROM THE FE AID PROGRAM
		050E	576+\$CSDPL EQU	\$RSTR+X'38'	ADDR OF LEFT BYTE OF SAVE/RSTR D
		0511	577+\$SWPCR EQU	\$CSDPL+3	ADDR OF DKADDR, COUNT FOR CORE
			578+	*	* SAVE AREA
		0517	579+\$EXADR EQU	\$SWPCR+6	ADDRR OF DK ADDR, COUNT OF EXEC
			580+	*	* TIME MESSAGE PROGRAM
		051A	581+\$LOADR EQU	\$EXADR+3	ADDR OF ENTRY TO BLAST LOAD
			582+	*	* PROGRAM NOT RESIDING ON CYL 4
			583+	*	* RETURN IS TO CALLING PROGRAM
		051E	584+\$RLOAD EQU	\$LOADR+4	ADDR OF ENTRY TO BLAST LOAD
			585+	*	* PROGRAM NOT RESIDING ON CYL 4
		0522	586+\$BLOAD EQU	\$RLOAD+4	ADDR OF ENTRY TO BLAST LOAD
			587+	*	* PROGRAM RESIDING ON CYL 4
		054A	588+\$LOADB EQU	\$BLOAD+X'28'	ADDR OF SPECIAL ENTRY TO
			589+	*	* NBLOAD FOR SFLOAD/SFFIND
			590+	*	* AND FZPINV



@FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 16
		054E	591+	\$TROVR EQU	\$BLOAD+X'2C'	ADDR OF FE TRACE INDR
			592+*			* @NOP - NO TRACE PERFORMED
			593+*			* @UCB - TRACE PERFORMED
		0550	594+	\$BLRTN EQU	\$TROVR+2	ADDR OF RETURN POINT FROM ZTRACE
		0569	595+	\$BLNOE EQU	\$BLRTN+X'19'	ADDR OF NO EXECUTE INDR-NBLOAD
			596+*			* @NOP - CALLING PGM RETURNED TO
			597+*			* @UCB - LOADED PROGRAM EXECUTED
			598+*			* ENTRY TO \$LOADR SETS THE ABOVE
			599+*			* INDR TO @NOP. IF THE CALLING
			600+*			* SETS THE INDR TO @NOP BEFORE
			601+*			* CALLING \$BLOAD, RETURN WILL BE
			602+*			* MADE UPON COMPLETION OF THE
			603+*			* ABSOLUE LOAD
		0571	604+	\$LDRTN EQU	\$BLOAD+X'4F'	ADDR OF THE RETURN ADDR IN NBLOA
		0579	605+	\$BLDPL EQU	\$BLOAD+X'57'	ADDR OF LEFT BYTE OF \$BLOAD'S
			606+*			* DPL (DPL OF LAST PGM LOADED)
		057F	607+	\$WAITF EQU	\$BLDPL+6	ADDR OF LEFT BYTE OF DISK
			608+*			* WAIT AND CHECK ERRORS DPL
		0583	609+	\$GUFIO EQU	\$WAITF+4	ADDR OF DK ADDR, COUNT OF GUFUDI
		0587	610+	\$BSADR EQU	\$GUFIO+4	ADDR OF DADDR RELOCATION FACTOR
			611+*			* FOR PGMS NOT RESIDING ON CYL 6
		0588	612+	\$FEMAP EQU	\$BSADR+1	ADDR OF START OF CORE MAP
		05A2	613+	\$ZTRAD EQU	\$FEMAP+X'1A'	ADDR OF ZTRACE DADDR
05FF			615+	ORG	X'05FF'	
		05FF	616+	\$IPLDV EQU	*	ADDR OF IPL INDR
			617+*			* X'00' - IPL WAS FROM R1
			618+*			* X'01' - IPL WAS FROM F1
		0600	619+	\$ENDNU EQU	\$IPLDV+1	ADDR OF THE FIRST BYTE
			620+*			* FOLLOWING SYSNUC
			621+*		END OF FIXED ADDRESSES SYSTEM NUCLEUS EQUATES	
			622+		PRINT ON	
			623 *	@CAN	EXP-Y	
			625+		PRINT ON	

@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 25/02/16 PAGE 17
		627+	*****	*****	*****
		628+	*	INPUT LINE HEADER	*
		629+	*****	*****	*****
	0600	630+	\$\$ILHD EQU	\$ENDNU	FIRST BYTE OF INPUT LINE HEADER
		631+	*		
	0601	632+	\$\$ILEN EQU	\$\$ILHD+1	SECOND BYTE OF SDF LENGTH FIELD
		633+	*		
	0602	634+	\$\$UPAR EQU	\$\$ILEN+1	UP ARROW LOCATION IN LAST LINE
		635+	*		
	0603	636+	\$\$CKEY EQU	\$\$UPAR+1	CMD KEY FUNCTION CODE
		637+	*		* EXECUTABLE CMD KEYS
	0605	638+	\$\$BNLN EQU	\$\$ILEN+4	SECOND BYTE OF BINARY LINE NO.
		639+	*		
	0606	640+	\$\$TPCD EQU	\$\$BNLN+1	TYPE CODE FIELD
		642+	*****	*****	*****
		643+	*	INPUT LINE TEXT	*
		644+	*****	*****	*****
	0607	645+	\$\$INLN EQU	\$\$TPCD+1	FIRST BYTE CHAR OF INPUT LINE
		646+	*		
	0666	647+	\$\$CDND EQU	\$\$INLN+@CARDL-1	LAST CHAR OF CARD INPUT
		648+	*		
	06FA	649+	\$\$INND EQU	\$\$INLN+@LINSZ-1	LAST CHAR OF INPUT LINE BUFFER
		651+	*****	*****	*****
		652+	*	KEYBOARD ROUTINE LOCATIONS AND MASKS	*
		653+	*****	*****	*****
	0890	654+	\$\$PRES EQU	\$ENDNU+X'0290'	ENABLE KEYBOARD ENTRY TO DEPRES
		655+	*		
	09E1	656+	\$\$KBDT EQU	\$\$PRES+X'0151'	DATA BYTE FROM KEYBOARD
	0081	657+	\$\$\$STD EQU	B'10000001'	CLI MASK FOR START KEY DATA
	0091	658+	\$\$\$EPL EQU	B'10010001'	CLI MASK FOR ENTER PLUS KEY
		659+	*		
	09E2	660+	\$\$KBSN EQU	\$\$KBDT+1	TYPE BYTE FROM KEYBOARD
	0040	661+	\$\$\$DAT EQU	B'01000000'	TBM MASK FOR DATA KEY
	0020	662+	\$\$\$CMD EQU	B'00100000'	TBM MASK FOR COMMAND KEY
	0010	663+	\$\$\$FUN EQU	B'00010000'	TBM MASK FOR FUNCTION KEY
		664+	*		
	09EB	665+	\$\$LPOS EQU	\$\$KBSN+9	PRINT HEAD POSITION ADDR
	0AFE	666+	\$\$EOSA EQU	\$\$PRES+X'026E'	LOCATION OF EOS ADDR
	0B44	667+	\$\$COFF EQU	\$\$PRES+X'02B4'	ENTRY TO TURN OFF CMD LIGHTS
	0B3D	668+	\$\$CKFF EQU	\$\$PRES+X'02AD'	ENTRY TO TURN OFF CMD LIGHTS 1-1
	0BBF	669+	\$\$DATB EQU	\$\$PRES+X'032F'	ADDR OF DATA TABLE TYPE INDR IN
		670+	*		* DEPRES (VALUE: 1-9)
		672+	*****	*****	*****
		673+	*	MATRIX PRINTER ROUTINE ENTRY POINT	*
		674+	*****	*****	*****
	0707	675+	\$\$PRNT EQU	\$ENDNU+X'0100'+@HDRLN	DPRINT ENTRY
	0782	676+	\$\$PRTN EQU	\$\$PRNT+X'007B'	ADDR OF CARRIER RETURN TEST IN
		677+	*		* DPRINT. MASKS FOLLOE
		678+	*		* @NOP - NO TEST MADE
		679+	*		* @BNL - TEST WILL BE MADE
	07CE	680+	\$\$PSIO EQU	\$\$PRNT+X'00C7'	ADDR OF SIO CTRL IN DPRINT
	07E9	681+	\$\$PCNT EQU	\$\$PRNT+X'00E2'	ADDR OF PPL CNT IN DPRINT

@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 18
			683+	*****	*****	
			684+	*	CARD READER LOCATIONS	*
			685+	*****	*****	
	0890		686+	\$\$\$CDRD EQU	\$\$PRES	ENTRY POINT TO READ CARDS
			687+	*		
	08C0		688+	\$\$\$CDBS EQU	\$\$\$CDRD+X'0030'	ENTRY POINT TO WAIT FOR READ
			690+	*****	*****	
			691+	*	CRT OUTPUT ROUTINE LOCATIONS	*
			692+	*****	*****	
	2000		693+	\$\$\$PYMP EQU	\$\$ZERO+X'2000'	ENTRY POINT TO CRT PLUS PRINT
			694+	*		
	2004		695+	\$\$\$PLYN EQU	\$\$\$PYMP+4	ENTRY POINT TO CRT ONLY
			696+	*		
	209C		697+	\$\$\$CSNS EQU	\$\$\$PYMP+X'009C'	LOCATION OF SENSE BYTE IN
			698+	*		* DSPLYN
	2143		699+	\$\$\$PRFL EQU	\$\$\$PYMP+X'0143'	ENTRY POINT FOR PRINTER FAILURE
			700+	*		
	2200		701+	\$\$\$PYCD EQU	\$\$\$PYMP+X'0200'	ENTRY POINT FOR COMMAND KEYS
			702+	*		* OR CLEAR CRT FUNCTION
			704+	*****	*****	
			705+	*	MISCELLANEOUS LOCATIONS	*
			706+	*****	*****	
	1C00		707+	\$\$\$ERSK EQU	X'1C00'	START ADDR OF ERROR CODE STACK
	00A0		708+	\$\$\$NLN EQU	X'00A0'	HIGH ORDER BYTE OF LINE NUMBER
			709+	*		* IN STACK IF NO. NOT DESIRED
	1C00		710+	\$\$\$SLIB EQU	X'1C00'	SECONDARY LINE INPUT BUFFER
	06FF		711+	\$\$\$XIND EQU	\$\$ENDNU+X'00FF'	EXEC INDR PASS AREA
	0080		712+	\$\$\$ERN EQU	B'10000000'	RUN FUNC SAVED FILE INDR MASK
	1E00		713+	\$\$\$WSPB EQU	X'1E00'	LOCATION OF BAGETC BUFFER
	06FF		714+	\$\$\$FLIB EQU	\$\$\$XIND	FILE LIB ADDR PASS AREA
	1D00		715+	\$\$\$FITS EQU	X'1D00'	LOCATION OF FIT
			717+	*****	*****	
			718+	*	KEYWORD COMMAND LOAD ADDRESSES	*
			719+	*****	*****	
	0600		720+	\$\$\$KLD1 EQU	\$\$ENDNU	PROGRAMS THAT LOAD BEHIND
			721+	*		* SYSNUC
	0700		722+	\$\$\$KLD2 EQU	\$\$ENDNU+X'0100'	PROGRAMS THAT LOAD BEHIND
			723+	*		* THE INPUT LINE BUFFER
	0C00		724+	\$\$\$KLD3 EQU	\$\$ENDNU+X'0600'	STANDARD LOAD ADDRESS BEHIND
			725+	*		* I/O ROUTINES
			726+	*	END OF COMMON CORE LOCATIONS EQUATES	
			727+	*	PRINT ON	
			728	*	@WKA EXP-Y	
			730+	*	PRINT ON	

@WKAEQ - SYSTEM WORK AREA ADDRESSES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 19
					732+*****	
					733+* THIS EQUATE MODULE PROVIDES THE FIXED PHYSICAL DISK *	
					734+* ADDRESSES OF PGM'S AND WA'S IN THE SYSTEM WORK AREA. *	
					735+*****	
					736+*	
					737+*** SELECTED SYSTEM PROGRAMS AND BAD LINE	
					738+*	
		0400		739+#@WAR1 EQU	X'0400'	DADDR OF SELECTED PGM AREA
		0401		740+#@WAF1 EQU	X'0401'	DADDR OF SELECTED PGM AREA
		0400		741+#@BOVL EQU	X'0400'	PHYSICAL DADDR OF #BOVLY
		0018		742+#@BOV EQU	24	SECTOR COUNT OF #BOVLY
		0480		743+#@SFSY EQU	X'0480'	PHYSICAL DADDR OF #SFSYN
		0011		744+#@SFS EQU	17	SECTOR COUNT OF #SFSYN
		0401		745+#@GUFU EQU	X'0401'	PHYSICAL DADDR OF #GUFUD
		0010		746+#@GUF EQU	16	SECTOR COUNT OF #GUFUD
		04AD		747+#@SDSY EQU	X'04AD'	PHYSICAL DADDR OF #SDSYN
		0004		748+#@SDS EQU	4	SECTOR COUNT OF #SDSYN
		0441		749+#@ERRP EQU	X'0441'	PHYSICAL DADDR OF #ERRPG
		0003		750+#@ERR EQU	3	SECTOR COUNT OF #ERRPG
		044D		751+#@LDSV EQU	X'044D'	PHYS DADDR OF #LOADR SAVE AREA
		0002		752+#@LDS EQU	2	SECTOR COUNT OF #LOADR SA
		0455		753+#@#BAD EQU	X'0455'	PHYSICAL DADDR OF THE BAD LINE
		0001		754+#@#BA EQU	1	SECTOR COUNT OF ##BADL
		0481		755+#@ECMA EQU	X'0481'	PHYSICAL DADDR OF #ECMAN
		0006		756+#@ECM EQU	6	SECTOR COUNT OF #ECMAN
		0499		757+#@SFLO EQU	X'0499'	PHYSICAL DADDR OF SFLOAD
		0005		758+#@SFL EQU	5	SECTOR COUNT OF SFLOAD
		04BD		759+#@SFFI EQU	X'04BD'	PHYSICAL DADDR OF SFFIND
		0008		760+#@SFF EQU	8	SECTOR COUNT OF SFFIND
		0459		761+#@#IO1 EQU	X'0459'	PHYSICAL DADDR OF 1ST I/O SECTOR
		045D		762+#@#IO2 EQU	X'045D'	PHYSICAL DADDR OF 2ST I/O SECTOR
		0002		763+#@#SC EQU	2	SECTOR COUNT OF I/O SECTOR
		0008		764+#@#08 EQU	8	NO. ENTRIES IN 1ST I/O SECTOR
		0004		765+#@#04 EQU	4	NO. ENTRIES IN 2ND I/O SECTOR
		0001		766+#@#IO EQU	1	SECTOR COUNT OF I/O SECTOR
		04C4		767+#@SFOV EQU	X'04C4'	PHYSICAL DADDR OF #SFOVR
		0005		768+#@SFO EQU	5	SECTOR COUNT OF #SFOVR
					769+*	
					770+*** WORK FILE ADDRESSES	
					771+*	
		0500		772+#@#WFT EQU	X'0500'	PHYSICAL DADDR 1ST SCTR OF FIT
		0003		773+#@#WF EQU	3	SCTR COUNT OF FIT
		050C		774+#@#WDB EQU	X'050C'	PHYSICAL DADDR OF 1ST DATA BLOCK
		00BD		775+#@#WD EQU	189	SCTR COUNT OF DATA BLOCKS
					776+*	
					777+*** VIRTUAL MEMORY ADDRESSES	
					778+*	
		0700		779+#@#VFP EQU	X'0700'	PHYSICAL DADDR FIRST PAGE OF VM
		0708		780+#@VTRL EQU	X'0708'	DADDR OF SAVED 'TRACE' VAR.LIST
		0001		781+#@#VTR EQU	1	SCTR COUNT SAVED 'TRACE' VAR.LIS
		093D		782+#@#VLP EQU	X'093D'	PHYSICAL DADDR LAST PAGE OF VM
		0100		783+#@#VM EQU	256	SCTR COUNT OF VIRTUAL MEMORY
					784+*	
					785+*** TEMPORARELY WORK AREA ADDRESSES	
					786+*	
		0941		787+#@#TFS EQU	X'0941'	PHYSICAL DADDR 1ST SCTR TEMP WK

@WKAEQ - SYSTEM WORK AREA ADDRESSES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	20
		0020	788+##@#TW	EQU	32				SCTR COUNT OF TEMP WORKAREA
		0941	789+##@#TAT	EQU	X'0941'				PHYSICAL DADDR STMT ADDR TABLE
		0010	790+##@#TA	EQU	16				SCTR COUNT OF STMT ADDR TABLE
		0941	791+##@#TSY	EQU	X'0941'				PHYSICAL DADDR SYMBOL TBL SAVE A
		0005	792+##@#TS	EQU	5				SCTR COUNT OF SYMBOL TBL SAVE AR
		09A1	793+##@#TBA	EQU	X'09A1'				PHYSICAL DADDR BRANCH ADDR TABLE
		0010	794+##@#TB	EQU	16				SCTR COUNT OF BRANCH ADDR TABLE
		09A1	795+##@VSFI	EQU	X'09A1'				PHYSICAL DADDR VSFINT
		0010	796+##@VSF	EQU	16				SCTR COUNT OF VSFINT
		000F	797+##@VSL	EQU	15				SCTR COUNT OF VSFLOA
			798+*		END OF WORK AREA EQUATES				
			799+		PRINT ON				
			800 *	@SPF	EXP-Y				
			802+		PRINT ON				

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 21
					804+	*****				
					805+	SYSTEM PROGRAM FILE (SPF) EQUATES *				
					806+	*****				
					807+	*****				
				0000	808+	##\$#0TR EQU	X'0000'			DISK ADDR OF ##0TRK
				0700	809+	##\$#0T EQU	X'0700'			CORE LOAD ADDRESS OF ##0TRK
				0018	810+	##\$#@#0T EQU	24			SECTOR COUNT OF ##0TRK
					811+	*****				
				0080	812+	##\$#1TR EQU	X'0080'			DISK ADDR OF ##1TRK
				0000	813+	##\$#1T EQU	X'0000'			CORE LOAD ADDRESS OF ##1TRK
				0018	814+	##\$#@#1T EQU	24			SECTOR COUNT OF ##1TRK
					815+	*****				
				0000	816+	##\$#DRT EQU	X'0000'			DISK ADDR OF ##DRTY
				0000	817+	##\$#DR EQU	X'0000'			CORE LOAD ADDRESS OF ##DRTY
				0008	818+	##\$#@#DR EQU	08			SECTOR COUNT OF ##DRTY
					819+	*****				
				0020	820+	##\$INST EQU	X'0020'			DISK ADDR OF #INSTD
				0600	821+	##\$INS EQU	X'0600'			CORE LOAD ADDRESS OF #INSTD
				0010	822+	##\$@INS EQU	16			SECTOR COUNT OF #INSTD
					823+	*****				
				0080	824+	##\$BCOM EQU	X'0080'			DISK ADDR OF #BCOMP
				0600	825+	##\$BCO EQU	X'0600'			CORE LOAD ADDRESS OF #BCOMP
				0018	826+	##\$@BCO EQU	24			SECTOR COUNT OF #BCOMP
					827+	*****				
				0100	828+	##\$LOAD EQU	X'0100'			DISK ADDR OF #LOADR
				0600	829+	##\$LOA EQU	X'0600'			CORE LOAD ADDRESS OF #LOADR
				0013	830+	##\$@LOA EQU	19			SECTOR COUNT OF #LOADR
					831+	*****				
				014C	832+	##\$DPRI EQU	X'014C'			DISK ADDR OF #DPRIN
				0700	833+	##\$DPR EQU	X'0700'			CORE LOAD ADDRESS OF #DPRIN
				0005	834+	##\$@DPR EQU	05			SECTOR COUNT OF #DPRIN
					835+	*****				
				0180	836+	##\$KGOS EQU	X'0180'			DISK ADDR OF #KGOSL
				0C00	837+	##\$KGO EQU	X'0C00'			CORE LOAD ADDRESS OF #KGOSL
				0002	838+	##\$@KGO EQU	02			SECTOR COUNT OF #KGOSL
					839+	*****				
				0188	840+	##\$KEDI EQU	X'0188'			DISK ADDR OF #KEDIT
				0C00	841+	##\$KED EQU	X'0C00'			CORE LOAD ADDRESS OF #KEDIT
				000E	842+	##\$@KED EQU	14			SECTOR COUNT OF #KEDIT
					843+	*****				
				01C4	844+	##\$KENA EQU	X'01C4'			DISK ADDR OF #KENAB
				0C00	845+	##\$KEN EQU	X'0C00'			CORE LOAD ADDRESS OF #KENAB
				0006	846+	##\$@KEN EQU	06			SECTOR COUNT OF #KENAB
					847+	*****				
				0200	848+	##\$DREA EQU	X'0200'			DISK ADDR OF #DREAD
				0889	849+	##\$DRE EQU	X'0889'			CORE LOAD ADDRESS OF #DREAD
				0001	850+	##\$@DRE EQU	01			SECTOR COUNT OF #DREAD
					851+	*****				
				0204	852+	##\$KMOU EQU	X'0204'			DISK ADDR OF #KMOUN
				0C00	853+	##\$KMO EQU	X'0C00'			CORE LOAD ADDRESS OF #KMOUN
				0004	854+	##\$@KMO EQU	04			SECTOR COUNT OF #KMOUN
					855+	*****				
				0214	856+	##\$KRMO EQU	X'0214'			DISK ADDR OF #KRMOV
				0C00	857+	##\$KRM EQU	X'0C00'			CORE LOAD ADDRESS OF #KRMOV
				0003	858+	##\$@KRM EQU	03			SECTOR COUNT OF #KRMOV
					859+	*****				



@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 22
		0220	860+##\$KPAS	EQU	X'0220'			DISK ADDR OF #KPASW
		0C00	861+##\$KPA	EQU	X'0C00'			CORE LOAD ADDRESS OF #KPASW
		0005	862+##\$@KPA	EQU	05			SECTOR COUNT OF #KPASW
			863+*					
		0234	864+##\$KEXT	EQU	X'0234'			DISK ADDR OF #KEXTR
		0C00	865+##\$KEX	EQU	X'0C00'			CORE LOAD ADDRESS OF #KEXTR
		0003	866+##\$@KEX	EQU	03			SECTOR COUNT OF #KEXTR
			867+*					
		0240	868+##\$DSPL	EQU	X'0240'			DISK ADDR OF #DSPLY
		2800	869+##\$DSP	EQU	X'2800'			CORE LOAD ADDRESS OF #DSPLY
		0004	870+##\$@DSP	EQU	04			SECTOR COUNT OF #DSPLY
			871+*					
		0250	872+##\$TSYK	EQU	X'0250'			DISK ADDR OF #TSYKT
		1000	873+##\$TSY	EQU	X'1000'			CORE LOAD ADDRESS OF #TSYKT
		0003	874+##\$@TSY	EQU	03			SECTOR COUNT OF #TSYKT
			875+*					
		0280	876+##\$KRNU	EQU	X'0280'			DISK ADDR OF #KRNUM
		0700	877+##\$KRN	EQU	X'0700'			CORE LOAD ADDRESS OF #KRNUM
		0003	878+##\$@KRN	EQU	03			SECTOR COUNT OF #KRNUM
			879+*					
		028C	880+##\$KROV	EQU	X'028C'			DISK ADDR OF #KROVL
		0D00	881+##\$KRO	EQU	X'0D00'			CORE LOAD ADDRESS OF #KROVL
		000A	882+##\$@KRO	EQU	10			SECTOR COUNT OF #KROVL
			883+*					
		0290	884+##\$KOV	EQU	X'0290'			DISK ADDR OF #KOVME
		0E00	885+##\$KOV	EQU	X'0E00'			CORE LOAD ADDRESS OF #KOVME
		0009	886+##\$@KOV	EQU	09			SECTOR COUNT OF #KOVME
			887+*					
		02B4	888+##\$KWRI	EQU	X'02B4'			DISK ADDR OF #KWRIT
		0C00	889+##\$KWR	EQU	X'0C00'			CORE LOAD ADDRESS OF #KWRIT
		0002	890+##\$@KWR	EQU	02			SECTOR COUNT OF #KWRIT
			891+*					
		02BC	892+##\$KREA	EQU	X'02BC'			DISK ADDR OF #KREAD
		0C00	893+##\$KRE	EQU	X'0C00'			CORE LOAD ADDRESS OF #KREAD
		0002	894+##\$@KRE	EQU	02			SECTOR COUNT OF #KREAD
			895+*					
		02C4	896+##\$KWID	EQU	X'02C4'			DISK ADDR OF #KWIDT
		0C00	897+##\$KWI	EQU	X'0C00'			CORE LOAD ADDRESS OF #KWIDT
		0002	898+##\$@KWI	EQU	02			SECTOR COUNT OF #KWIDT
			899+*					
		02CC	900+##\$KRUN	EQU	X'02CC'			DISK ADDR OF #KRUNI
		0C00	901+##\$KRU	EQU	X'0C00'			CORE LOAD ADDRESS OF #KRUNI
		0003	902+##\$@KRU	EQU	03			SECTOR COUNT OF #KRUNI
			903+*					
		0300	904+##\$KDNT	EQU	X'0300'			DISK ADDR OF #KDNT
		0C00	905+##\$KDN	EQU	X'0C00'			CORE LOAD ADDRESS OF #KDNT
		0010	906+##\$@KDN	EQU	16			SECTOR COUNT OF #KDNT
			907+*					
		030C	908+##\$KMER	EQU	X'030C'			DISK ADDR OF #KMERG
		0D00	909+##\$KME	EQU	X'0D00'			CORE LOAD ADDRESS OF #KMERG
		0003	910+##\$@KME	EQU	03			SECTOR COUNT OF #KMERG
			911+*					
		0350	912+##\$TDCK	EQU	X'0350'			DISK ADDR OF #TDCKT
		1000	913+##\$TDC	EQU	X'1000'			CORE LOAD ADDRESS OF #TDCKT
		0003	914+##\$@TDC	EQU	03			SECTOR COUNT OF #TDCKT
			915+*					

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 23
				035C	916+	#\$KDEL	EQU X'035C'			DISK ADDR OF #KDELE
				0C00	917+	\$\$\$KDE	EQU X'0C00'			CORE LOAD ADDRESS OF #KDELE
				0010	918+	\$\$@KDE	EQU 16			SECTOR COUNT OF #KDELE
					919+	*				
				03BC	920+	#\$KCTL	EQU X'03BC'			DISK ADDR OF #KCTL0
				0C00	921+	\$\$\$KCT	EQU X'0C00'			CORE LOAD ADDRESS OF #KCTL0
				0009	922+	\$\$@KCT	EQU 09			SECTOR COUNT OF #KCTL0
					923+	*				
				0400	924+	#\$KLIS	EQU X'0400'			DISK ADDR OF #KLIST
				0C00	925+	\$\$\$KLI	EQU X'0C00'			CORE LOAD ADDRESS OF #KLIST
				0011	926+	\$\$@KLI	EQU 17			SECTOR COUNT OF #KLIST
					927+	*				
				0444	928+	#\$KLOG	EQU X'0444'			DISK ADDR OF #KLOGO
				0C00	929+	\$\$\$KLO	EQU X'0C00'			CORE LOAD ADDRESS OF #KLOGO
				0008	930+	\$\$@KLO	EQU 08			SECTOR COUNT OF #KLOGO
					931+	*				
				0484	932+	\$\$\$SPSY	EQU X'0484'			DISK ADDR OF #SPSYN
				0C00	933+	\$\$\$SPS	EQU X'0C00'			CORE LOAD ADDRESS OF #SPSYN
				0001	934+	\$\$@SPS	EQU 01			SECTOR COUNT OF #SPSYN
					935+	*				
				0488	936+	\$\$\$KSAV	EQU X'0488'			DISK ADDR OF #KSAVE
				0C00	937+	\$\$\$KSA	EQU X'0C00'			CORE LOAD ADDRESS OF #KSAVE
				0011	938+	\$\$@KSA	EQU 17			SECTOR COUNT OF #KSAVE
					939+	*				
				04CC	940+	\$\$\$SPAC	EQU X'04CC'			DISK ADDR OF #SPACK
				0C00	941+	\$\$\$SPA	EQU X'0C00'			CORE LOAD ADDRESS OF #SPACK
				0004	942+	\$\$@SPA	EQU 04			SECTOR COUNT OF #SPACK
					943+	*				
				04DC	944+	\$\$\$SPOV	EQU X'04DC'			DISK ADDR OF #SPOVL
				0806	945+	\$\$\$SPO	EQU X'0806'			CORE LOAD ADDRESS OF #SPOVL
				0003	946+	\$\$@SPO	EQU 03			SECTOR COUNT OF #SPOVL
					947+	*				
				0508	948+	\$\$\$KPOO	EQU X'0508'			DISK ADDR OF #KPOOL
				0C00	949+	\$\$\$KPO	EQU X'0C00'			CORE LOAD ADDRESS OF #KPOOL
				000D	950+	\$\$@KPO	EQU 13			SECTOR COUNT OF #KPOOL
					951+	*				
				053C	952+	\$\$\$KCHA	EQU X'053C'			DISK ADDR OF #KCHAN
				0C00	953+	\$\$\$KCH	EQU X'0C00'			CORE LOAD ADDRESS OF #KCHAN
				000C	954+	\$\$@KCH	EQU 12			SECTOR COUNT OF #KCHAN
					955+	*				
				058C	956+	\$\$\$KSVL	EQU X'058C'			DISK ADDR OF #KSVLA
				0980	957+	\$\$\$KSV	EQU X'0980'			CORE LOAD ADDRESS OF #KSVLA
				0002	958+	\$\$@KSV	EQU 02			SECTOR COUNT OF #KSVLA
					959+	*				
				0594	960+	\$\$\$KSSP	EQU X'0594'			DISK ADDR OF #KSSPN
				0C00	961+	\$\$\$KSS	EQU X'0C00'			CORE LOAD ADDRESS OF #KSSPN
				000B	962+	\$\$@KSS	EQU 11			SECTOR COUNT OF #KSSPN
					963+	*				
				05C0	964+	\$\$\$KNAM	EQU X'05C0'			DISK ADDR OF #KNAME
				0C00	965+	\$\$\$KNA	EQU X'0C00'			CORE LOAD ADDRESS OF #KNAME
				0008	966+	\$\$@KNA	EQU 08			SECTOR COUNT OF #KNAME
					967+	*				
				0600	968+	\$\$\$KSYM	EQU X'0600'			DISK ADDR OF #KSYMB
				0C00	969+	\$\$\$KSY	EQU X'0C00'			CORE LOAD ADDRESS OF #KSYMB
				000F	970+	\$\$@KSY	EQU 15			SECTOR COUNT OF #KSYMB
					971+	*				



@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	24
		063C	972+	#\$KPRT	EQU	X'063C'			
		0C00	973+	\$\$\$KPR	EQU	X'0C00'			
		0009	974+	\$\$@KPR	EQU	09			
			975+	*					
		0680	976+	#\$KSET	EQU	X'0680'			
		0E00	977+	\$\$\$KSE	EQU	X'0E00'			
		0004	978+	\$\$@KSE	EQU	04			
			979+	*					
		0690	980+	#\$GRAP	EQU	X'0690'			
		0889	981+	\$\$\$GRA	EQU	X'0889'			
		0003	982+	\$\$@GRA	EQU	03			
			983+	*					
		06A4	984+	#\$KALL	EQU	X'06A4'			
		0C00	985+	\$\$\$KAL	EQU	X'0C00'			
		000F	986+	\$\$@KAL	EQU	15			
			987+	*					
		0700	988+	#\$KRLA	EQU	X'0700'			
		0700	989+	\$\$\$KRL	EQU	X'0700'			
		0004	990+	\$\$@KRL	EQU	04			
			991+	*					
		0710	992+	#\$KRVL	EQU	X'0710'			
		0800	993+	\$\$\$KRV	EQU	X'0800'			
		000D	994+	\$\$@KRV	EQU	13			
			995+	*					
		0744	996+	#\$KDIS	EQU	X'0744'			
		0D00	997+	\$\$\$KDI	EQU	X'0D00'			
		0005	998+	\$\$@KDI	EQU	05			
			999+	*					
		0780	1000+	#\$KDOV	EQU	X'0780'			
		0E00	1001+	\$\$\$KDO	EQU	X'0E00'			
		000C	1002+	\$\$@KDO	EQU	12			
			1003+	*					
		07B4	1004+	#\$VCRT	EQU	X'07B4'			
		2000	1005+	\$\$\$VCR	EQU	X'2000'			
		0008	1006+	\$\$@VCR	EQU	08			
			1007+	*					
		07D4	1008+	#\$EXMS	EQU	X'07D4'			
		0C00	1009+	\$\$\$EXM	EQU	X'0C00'			
		0003	1010+	\$\$@EXM	EQU	03			
			1011+	*					
		0800	1012+	\$\$\$COR	EQU	X'0800'			
		0000	1013+	\$\$\$CO	EQU	X'0000'			
		003A	1014+	\$\$@CO	EQU	58			
			1015+	*					
		0928	1016+	\$\$\$ERM	EQU	X'0928'			
		0000	1017+	\$\$\$ER	EQU	X'0000'			
		0032	1018+	\$\$@ER	EQU	50			
			1019+	*					
		0A30	1020+	#\$KHEL	EQU	X'0A30'			
		0C00	1021+	\$\$\$KHE	EQU	X'0C00'			
		000C	1022+	\$\$@KHE	EQU	12			
			1023+	*					
		0A80	1024+	#\$MIPP	EQU	X'0A80'			
		0C00	1025+	\$\$\$MIP	EQU	X'0C00'			
		000D	1026+	\$\$@MIP	EQU	13			
			1027+	*					

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 25
				0AC8	1028+	#\$KSOV	EQU X'0AC8'			DISK ADDR OF #KSOVR
				0C20	1029+	\$\$\$KSO	EQU X'0C20'			CORE LOAD ADDRESS OF #KSOVR
				000D	1030+	#\$@KSO	EQU 13			SECTOR COUNT OF #KSOVR
					1031+	*				
				0B00	1032+	#\$VXIT	EQU X'0B00'			DISK ADDR OF #VXITI
				0600	1033+	\$\$\$VXI	EQU X'0600'			CORE LOAD ADDRESS OF #VXITI
				0002	1034+	#\$@VXI	EQU 02			SECTOR COUNT OF #VXITI
					1035+	*				
				0B08	1036+	\$\$\$#VUF	EQU X'0B08'			DISK ADDR OF ##VUFA
				0600	1037+	\$\$\$#VU	EQU X'0600'			CORE LOAD ADDRESS OF ##VUFA
				0002	1038+	#\$@#VU	EQU 02			SECTOR COUNT OF ##VUFA
					1039+	*				
				0B80	1040+	#\$VLOA	EQU X'0B80'			DISK ADDR OF #VLOAD
				0600	1041+	\$\$\$VLO	EQU X'0600'			CORE LOAD ADDRESS OF #VLOAD
				0002	1042+	#\$@VLO	EQU 02			SECTOR COUNT OF #VLOAD
					1043+	*				
				0B88	1044+	#\$VODK	EQU X'0B88'			DISK ADDR OF #VODKA
				0600	1045+	\$\$\$VOD	EQU X'0600'			CORE LOAD ADDRESS OF #VODKA
				0016	1046+	#\$@VOD	EQU 22			SECTOR COUNT OF #VODKA
					1047+	*				
				0BAC	1048+	#\$TVKB	EQU X'0BAC'			DISK ADDR OF #TVKBT
				0FC0	1049+	\$\$\$TVK	EQU X'0FC0'			CORE LOAD ADDRESS OF #TVKBT
				0001	1050+	#\$@TVK	EQU 01			SECTOR COUNT OF #TVKBT
					1051+	*				
				0C00	1052+	#\$VVMR	EQU X'0C00'			DISK ADDR OF #VVMRS
				0000	1053+	\$\$\$VVM	EQU X'0000'			CORE LOAD ADDRESS OF #VVMRS
				0030	1054+	#\$@VVM	EQU 48			SECTOR COUNT OF #VVMRS
					1055+	*				
				0D00	1056+	#\$FMST	EQU X'0D00'			DISK ADDR OF #FMSTD
				0200	1057+	\$\$\$FMS	EQU X'0200'			CORE LOAD ADDRESS OF #FMSTD
				0052	1058+	#\$@FMS	EQU 82			SECTOR COUNT OF #FMSTD
					1059+	*				
				0EA8	1060+	#\$UEXL	EQU X'0EA8'			DISK ADDR OF #UEXLI
				0C00	1061+	\$\$\$UEX	EQU X'0C00'			CORE LOAD ADDRESS OF #UEXLI
				000E	1062+	#\$@UEX	EQU 14			SECTOR COUNT OF #UEXLI
					1063+	*				
				0F00	1064+	#\$UALL	EQU X'0F00'			DISK ADDR OF #UALLO
				0C00	1065+	\$\$\$UAL	EQU X'0C00'			CORE LOAD ADDRESS OF #UALLO
				0011	1066+	#\$@UAL	EQU 17			SECTOR COUNT OF #UALLO
					1067+	*				
				0F80	1068+	#\$KCND	EQU X'0F80'			DISK ADDR OF #KCNDI
				0C00	1069+	\$\$\$KCN	EQU X'0C00'			CORE LOAD ADDRESS OF #KCNDI
				0010	1070+	#\$@KCN	EQU 16			SECTOR COUNT OF #KCNDI
					1071+	*				
				1000	1072+	\$\$\$#CSA	EQU X'1000'			DISK ADDR OF #CSAV
				0000	1073+	\$\$\$#CS	EQU X'0000'			CORE LOAD ADDRESS OF #CSAV
				003A	1074+	#\$@#CS	EQU 58			SECTOR COUNT OF #CSAV
					1075+	*				
				1128	1076+	\$\$\$#SSA	EQU X'1128'			DISK ADDR OF #SSAV
				0000	1077+	\$\$\$#SS	EQU X'0000'			CORE LOAD ADDRESS OF #SSAV
				0001	1078+	#\$@#SS	EQU 01			SECTOR COUNT OF #SSAV
					1079+	*				
				1180	1080+	\$\$\$#SAV	EQU X'1180'			DISK ADDR OF ##SAVM
				0000	1081+	\$\$\$#SA	EQU X'0000'			CORE LOAD ADDRESS OF ##SAVM
				0108	1082+	#\$@#SA	EQU 264			SECTOR COUNT OF ##SAVM
					1083+	*				

@SPFEQ - SYSTEM PROGRAM FILE EQUATES									
ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	26
		1700	1084+	#\$FIST EQU	X'1700'				
		0E00	1085+	\$\$\$\$FIS EQU	X'0E00'				
		0009	1086+	\$\$@FIS EQU	09				
			1087+	*					
		1724	1088+	#\$FILN EQU	X'1724'				
		0E00	1089+	\$\$\$\$FIL EQU	X'0E00'				
		0009	1090+	\$\$@FIL EQU	09				
			1091+	*					
		1780	1092+	\$\$#RSP EQU	X'1780'				
		0000	1093+	\$\$\$\$#RS EQU	X'0000'				
		0030	1094+	\$\$@#RS EQU	48				
			1095+	*					
		1780	1096+	\$\$BOLV EQU	X'1780'				
		0800	1097+	\$\$\$\$BOV EQU	X'0800'				
		0018	1098+	\$\$@BOV EQU	24				
			1099+	*					
		1800	1100+	\$\$SFSY EQU	X'1800'				
		0C00	1101+	\$\$\$\$SFS EQU	X'0C00'				
		0011	1102+	\$\$@SFS EQU	17				
			1103+	*					
		1844	1104+	\$\$SFOV EQU	X'1844'				
		1500	1105+	\$\$\$\$SFO EQU	X'1500'				
		0003	1106+	\$\$@SFO EQU	03				
			1107+	*					
		1850	1108+	\$\$STRO EQU	X'1850'				
		1600	1109+	\$\$\$\$STR EQU	X'1600'				
		0002	1110+	\$\$@STR EQU	02				
			1111+	*					
		1880	1112+	\$\$#FSP EQU	X'1880'				
		0000	1113+	\$\$\$\$#FS EQU	X'0000'				
		0030	1114+	\$\$@#FS EQU	48				
			1115+	*					
		1880	1116+	\$\$GUFU EQU	X'1880'				
		0C00	1117+	\$\$\$\$GUF EQU	X'0C00'				
		0010	1118+	\$\$@GUF EQU	16				
			1119+	*					
		18C0	1120+	\$\$ERRP EQU	X'18C0'				
		0C00	1121+	\$\$\$\$ERR EQU	X'0C00'				
		0003	1122+	\$\$@ERR EQU	03				
			1123+	*					
		18D4	1124+	\$\$#BLN EQU	X'18D4'				
		0000	1125+	\$\$\$\$#BL EQU	X'0000'				
		0001	1126+	\$\$@#BL EQU	01				
			1127+	*					
		1900	1128+	\$\$ECMA EQU	X'1900'				
		0C00	1129+	\$\$\$\$ECM EQU	X'0C00'				
		0006	1130+	\$\$@ECM EQU	06				
			1131+	*					
		1918	1132+	\$\$SFLO EQU	X'1918'				
		0F00	1133+	\$\$\$\$SFL EQU	X'0F00'				
		0005	1134+	\$\$@SFL EQU	05				
			1135+	*					
		192C	1136+	\$\$SDSY EQU	X'192C'				
		0C00	1137+	\$\$\$\$SDS EQU	X'0C00'				

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	27
		193C	1140+	#\$SFFI	EQU	X'193C'			
		0E00	1141+	#\$SFF	EQU	X'0E00'			
		0008	1142+	#\$@SFF	EQU	08			
			1143+	*					
		1980	1144+	#\$UPAC	EQU	X'1980'			
		0C00	1145+	#\$UPA	EQU	X'0C00'			
		0004	1146+	#\$@UPA	EQU	04			
			1147+	*					
		1990	1148+	#\$EFKE	EQU	X'1990'			
		0C00	1149+	#\$EFK	EQU	X'0C00'			
		0002	1150+	#\$@EFK	EQU	02			
			1151+	*					
		19B8	1152+	#\$UCNF	EQU	X'19B8'			
		0C00	1153+	#\$UCN	EQU	X'0C00'			
		0009	1154+	#\$@UCN	EQU	09			
			1155+	*					
		19DC	1156+	#\$UCPL	EQU	X'19DC'			
		0700	1157+	#\$UCP	EQU	X'0700'			
		000F	1158+	#\$@UCP	EQU	15			
			1159+	*					
		1A38	1160+	#\$UATR	EQU	X'1A38'			
		0900	1161+	#\$UAT	EQU	X'0900'			
		000C	1162+	#\$@UAT	EQU	12			
			1163+	*					
		1A88	1164+	#\$UINI	EQU	X'1A88'			
		0C00	1165+	#\$UIN	EQU	X'0C00'			
		000F	1166+	#\$@UIN	EQU	15			
			1167+	*					
		1AD8	1168+	#\$UCDI	EQU	X'1AD8'			
		0900	1169+	#\$UCD	EQU	X'0900'			
		000B	1170+	#\$@UCD	EQU	11			
			1171+	*					
		1B24	1172+	#\$UDEL	EQU	X'1B24'			
		0C00	1173+	#\$UDE	EQU	X'0C00'			
		000E	1174+	#\$@UDE	EQU	14			
			1175+	*					
		1B5C	1176+	#\$UDIS	EQU	X'1B5C'			
		0C00	1177+	#\$UDI	EQU	X'0C00'			
		0008	1178+	#\$@UDI	EQU	08			
			1179+	*					
		1B9C	1180+	#\$ZTRA	EQU	X'1B9C'			
		1000	1181+	#\$ZTR	EQU	X'1000'			
		0001	1182+	#\$@ZTR	EQU	01			
			1183+	*					
		1BA4	1184+	#\$ZDUM	EQU	X'1BA4'			
		1100	1185+	#\$ZDU	EQU	X'1100'			
		0008	1186+	#\$@ZDU	EQU	08			
			1187+	*					
		1BC4	1188+	#\$ZLOA	EQU	X'1BC4'			
		1100	1189+	#\$ZLO	EQU	X'1100'			
		000C	1190+	#\$@ZLO	EQU	12			
			1191+	*					
		1C14	1192+	#\$ZUTM	EQU	X'1C14'			
		0C00	1193+	#\$ZUT	EQU	X'0C00'			
		0014	1194+	#\$@ZUT	EQU	20			
			1195+	*					

DISK ADDR OF #SFFIN  
CORE LOAD ADDRESS OF #SFFIN  
SECTOR COUNT OF #SFFIN

DISK ADDR OF #UPACK  
CORE LOAD ADDRESS OF #UPACK  
SECTOR COUNT OF #UPACK

DISK ADDR OF #EFKEY  
CORE LOAD ADDRESS OF #EFKEY  
SECTOR COUNT OF #EFKEY

DISK ADDR OF #UCNFI  
CORE LOAD ADDRESS OF #UCNFI  
SECTOR COUNT OF #UCNFI

DISK ADDR OF #UCPLI  
CORE LOAD ADDRESS OF #UCPLI  
SECTOR COUNT OF #UCPLI

DISK ADDR OF #UATRC  
CORE LOAD ADDRESS OF #UATRC  
SECTOR COUNT OF #UATRC

DISK ADDR OF #UINIT  
CORE LOAD ADDRESS OF #UINIT  
SECTOR COUNT OF #UINIT

DISK ADDR OF #UCDIS  
CORE LOAD ADDRESS OF #UCDIS  
SECTOR COUNT OF #UCDIS

DISK ADDR OF #UDELV  
CORE LOAD ADDRESS OF #UDELV  
SECTOR COUNT OF #UDELV

DISK ADDR OF #UDISV  
CORE LOAD ADDRESS OF #UDISV  
SECTOR COUNT OF #UDISV

DISK ADDR OF #ZTRAC  
CORE LOAD ADDRESS OF #ZTRAC  
SECTOR COUNT OF #ZTRAC

DISK ADDR OF #ZDUMP  
CORE LOAD ADDRESS OF #ZDUMP  
SECTOR COUNT OF #ZDUMP

DISK ADDR OF #ZLOAD  
CORE LOAD ADDRESS OF #ZLOAD  
SECTOR COUNT OF #ZLOAD

DISK ADDR OF #ZUTMO  
CORE LOAD ADDRESS OF #ZUTMO  
SECTOR COUNT OF #ZUTMO

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 28
				1C84	1196+	#\$INLN	EQU X'1C84'			DISK ADDR OF #INLNG
				0600	1197+	\$\$\$INL	EQU X'0600'			CORE LOAD ADDRESS OF #INLNG
				0010	1198+	\$\$@INL	EQU 16			SECTOR COUNT OF #INLNG
					1199+	*				
				1CC4	1200+	#\$KCAL	EQU X'1CC4'			DISK ADDR OF #KCALL
				0C00	1201+	\$\$\$KCA	EQU X'0C00'			CORE LOAD ADDRESS OF #KCALL
				000C	1202+	\$\$@KCA	EQU 12			SECTOR COUNT OF #KCALL
					1203+	*				
				1D24	1204+	#\$KRSU	EQU X'1D24'			DISK ADDR OF #KRSUM
				0C00	1205+	\$\$\$KRS	EQU X'0C00'			CORE LOAD ADDRESS OF #KRSUM
				000A	1206+	\$\$@KRS	EQU 10			SECTOR COUNT OF #KRSUM
					1207+	*				
				1D5C	1208+	#\$UPTF	EQU X'1D5C'			DISK ADDR OF #UPTFI
				0C00	1209+	\$\$\$UPT	EQU X'0C00'			CORE LOAD ADDRESS OF #UPTFI
				0012	1210+	\$\$@UPT	EQU 18			SECTOR COUNT OF #UPTFI
					1211+	*				
				1D24	1212+	#\$UPOV	EQU X'1D24'			DISK ADDR OF #UPOVL
				0C00	1213+	\$\$\$UPO	EQU X'0C00'			CORE LOAD ADDRESS OF #UPOVL
				0005	1214+	\$\$@UPO	EQU 05			SECTOR COUNT OF #UPOVL
					1215+	*				
				1E00	1216+	#\$FMLN	EQU X'1E00'			DISK ADDR OF #FMLNG
				0200	1217+	\$\$\$FML	EQU X'0200'			CORE LOAD ADDRESS OF #FMLNG
				0052	1218+	\$\$@FML	EQU 82			SECTOR COUNT OF #FMLNG
					1219+	*				
				2000	1220+	\$\$\$CNF	EQU X'2000'			DISK ADDR OF ##CNFI
				0000	1221+	\$\$\$#CN	EQU X'0000'			CORE LOAD ADDRESS OF ##CNFI
				0001	1222+	\$\$@#CN	EQU 01			SECTOR COUNT OF ##CNFI
					1223+	*				
				2004	1224+	#\$KLLA	EQU X'2004'			DISK ADDR OF #KLLAY
				0920	1225+	\$\$\$KLL	EQU X'0920'			CORE LOAD ADDRESS OF #KLLAY
				0001	1226+	\$\$@KLL	EQU 01			SECTOR COUNT OF #KLLAY
					1227+	*				
				2008	1228+	#\$ZLBM	EQU X'2008'			DISK ADDR OF #ZLBMA
				1100	1229+	\$\$\$ZLB	EQU X'1100'			CORE LOAD ADDRESS OF #ZLBMA
				0002	1230+	\$\$@ZLB	EQU 02			SECTOR COUNT OF #ZLBMA
					1231+	*				
				2010	1232+	#\$ZL1M	EQU X'2010'			DISK ADDR OF #ZL1MA
				0F00	1233+	\$\$\$ZL1	EQU X'0F00'			CORE LOAD ADDRESS OF #ZL1MA
				0007	1234+	\$\$@ZL1	EQU 07			SECTOR COUNT OF #ZL1MA
					1235+	*				
				2030	1236+	#\$ZL2M	EQU X'2030'			DISK ADDR OF #ZL2MA
				0F00	1237+	\$\$\$ZL2	EQU X'0F00'			CORE LOAD ADDRESS OF #ZL2MA
				000D	1238+	\$\$@ZL2	EQU 13			SECTOR COUNT OF #ZL2MA
					1239+	*				
				2088	1240+	#\$ZL3M	EQU X'2088'			DISK ADDR OF #ZL3MA
				0C00	1241+	\$\$\$ZL3	EQU X'0C00'			CORE LOAD ADDRESS OF #ZL3MA
				000A	1242+	\$\$@ZL3	EQU 10			SECTOR COUNT OF #ZL3MA
					1243+	*				
				20B0	1244+	#\$ZLVR	EQU X'20B0'			DISK ADDR OF #ZLVRL
				0F00	1245+	\$\$\$ZLV	EQU X'0F00'			CORE LOAD ADDRESS OF #ZLVRL
				0006	1246+	\$\$@ZLV	EQU 06			SECTOR COUNT OF #ZLVRL
					1247+	*				
				2100	1248+	#\$KKEY	EQU X'2100'			DISK ADDR OF #KKEYS
				0C00	1249+	\$\$\$KKE	EQU X'0C00'			CORE LOAD ADDRESS OF #KKEYS
				0006	1250+	\$\$@KKE	EQU 06			SECTOR COUNT OF #KKEYS
					1251+	*				



@SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	29
		2118	1252+###CKT	EQU	X'2118'				
		0000	1253+###CK	EQU	X'0000'				
		0004	1254+##\$@#CK	EQU	04				
			1255+*						
		212C	1256+###INV	EQU	X'212C'				
		0000	1257+###IN	EQU	X'0000'				
		003A	1258+##\$@#IN	EQU	58				
			1259+*						
		2300	1260+###PWR	EQU	X'2300'				
		0000	1261+###PW	EQU	X'0000'				
		00C0	1262+##\$@#PW	EQU	192				
			1263+*		END OF SYSTEM PROGRAM FILE EQUATES				
			1264+		PRINT ON				
			1265 *		@ERM EXP-Y				
			1267+		PRINT ON				

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 30
		1269+			*****	
		1270+			ERROR MESSAGES EQUATES	*
		1271+			*****	
	0000	1272+@@E100	EQU	0	FIRST CHARACTER NOT	
		1273+			* ALPHABETIC	
	0001	1274+@@E101	EQU	@@E100+1	FIRST CHARACTER NOT	
		1275+			* <ALPHAMERIC CHARACTER>	
	0002	1276+@@E102	EQU	@@E101+1	PASSWORD OR FILENAME LONGER	
		1277+			* THEN 8 CHARACTERS	
	0003	1278+@@E103	EQU	@@E102+1	<DISK LABEL> LONGER THEN 6	
		1279+			* CHARACTERS	
	0004	1280+@@E110	EQU	@@E103+1	COMMA FOLLOWED BY NOTHING	
		1281+			*	
	0005	1282+@@E112	EQU	@@E110+1	<ARITHMETIC CONSTANT> CONTAINS	
		1283+			* 2 DECIMAL POINTS	
	0006	1284+@@E113	EQU	@@E112+1	DECIMAL POINT WITHOUT	
		1285+			* <ARITHMETIC CONSTANT>	
	0007	1286+@@E114	EQU	@@E113+1	INCOMPLETE <CHARACTER	
		1287+			* CONSTANT>	
	0008	1288+@@E115	EQU	@@E114+1	INVALID <SYSTEM CONSTANT>	
		1289+			*	
	0009	1290+@@E116	EQU	@@E115+1	VARIABLE IS NOT FOLLOWED BY A	
		1291+			* COMMA OR EQUAL SIGN	
	000A	1292+@@E117	EQU	@@E116+1	INVALID EXPONENT IN CONSTANT	
		1293+			*	
	000B	1294+@@E120	EQU	@@E117+1	NON-NUMERIC CHARACTER IN <LINE	
		1295+			* NUMBER> OR INEGER	
	000C	1296+@@E122	EQU	@@E120+1	MORE THAN 4 DIGITS IN <LINE	
		1297+			* NUMBER> OR INTEGER	
	000D	1298+@@E123	EQU	@@E122+1	UNBALANCED LINE NUMBER SERIES	
		1299+			*	
	000E	1300+@@E124	EQU	@@E123+1	LINE NUMBER IS NOT GREATER	
		1301+			* THAN PREVIOUS LINE NUMBER	
	000F	1302+@@E129	EQU	@@E124+1	PARAMETER FOUND WHERE NONE	
		1303+			* IS ALLOWED	
	0010	1304+@@E130	EQU	@@E129+1	REQUIRED PARAMETER MISSING	
		1305+			*	
	0011	1306+@@E131	EQU	@@E130+1	INVALID PARAMETER	
		1307+			*	
	0012	1308+@@E133	EQU	@@E131+1	TOO MANY <PARAMETERS>	
		1309+			*	
	0013	1310+@@E134	EQU	@@E133+1	DUPLICATE <PARAMETER>	
		1311+			*	
	0014	1312+@@E135	EQU	@@E134+1	INVALID USE OF ONE OR TWO	
		1313+			* STAR FILENAME	
	0015	1314+@@E136	EQU	@@E135+1	INVALID COMBINATION OF KEYWORDS	
		1315+			* <PARAMETERS>	
	0016	1316+@@E137	EQU	@@E136+1	NO <LINE-NUMBER-LIST>	
		1317+			* SPECIFIED	
	0017	1318+@@E138	EQU	@@E137+1	UNBALANCED QUOTES IN	
		1319+			* <CHARACTER CONSTANT>	
	0018	1320+@@E139	EQU	@@E138+1	INVALID <DELIMITER>	
		1321+			*	
	0019	1322+@@E142	EQU	@@E139+1	INCOMPLETE KEYWORD	
		1323+			* MISSING DASH	
	001A	1324+@@E143	EQU	@@E142+1	INCOMPLETE KEYWORD	

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	31
			1325+*						* SECOND WORD UNRECOGNIZABLE
		001B	1326+@@E150 EQU	@@E143+1					INVALID BASIC VARIABLE
			1327+*						*
		001C	1328+@@E151 EQU	@@E150+1					VARIABLE SUBSCRIPT NOT
			1329+*						* AN INTEGER
		001D	1330+@@E160 EQU	@@E151+1					MIXED DATA TYPE IN
			1331+*						* ASSIGNMENT
		001E	1332+@@E162 EQU	@@E160+1					UNBALANCED <LABEL-PAIR>
			1333+*						*
		001F	1334+@@E163 EQU	@@E162+1					DIFFERENT VARIABLE TYPES
			1335+*						* IN <LABEL-PAIR>
		0020	1336+@@E164 EQU	@@E163+1					ODD TRACK NUMBER NOT
			1337+*						* ALLOWABLE
		0021	1338+@@E200 EQU	@@E164+1					NO CURRENT <PASSWORD> OR
			1339+*						* DISK DEFINED
		0022	1340+@@E205 EQU	@@E200+1					HELP TEXT NOT FOUND
			1341+*						*
		0023	1342+@@E210 EQU	@@E205+1					<PASSWORD> NOT ON SPECIFIED
			1343+*						* DISK
		0024	1344+@@E211 EQU	@@E210+1					SPECIFIED FILE NOT FOUND
			1345+*						*
		0025	1346+@@E212 EQU	@@E211+1					DUPLICATE DISK LABELS
			1347+*						* ON SYSTEM
		0026	1348+@@E213 EQU	@@E212+1					FILE NOT ON SYSTEM
			1349+*						*
		0027	1350+@@E215 EQU	@@E213+1					SPECIFIED FILE PROTECTED
			1351+*						*
		0028	1352+@@E216 EQU	@@E215+1					DISK LABEL NOT ON SPECIFIED
			1353+*						* LOCATION
		0029	1354+@@E217 EQU	@@E216+1					SPECIFIED DISK NOT ON
			1355+*						* SYSTEM
		002A	1356+@@E220 EQU	@@E217+1					NO <WORK FILE> DEFINED
			1357+*						*
		002B	1358+@@E221 EQU	@@E220+1					<WORK FILE> IS PROGRAM
			1359+*						* GENERATED
		002C	1360+@@E222 EQU	@@E221+1					WORK FILE IS PROTECTED
			1361+*						*
		002D	1362+@@E223 EQU	@@E222+1					NO PROGRAM FILE IN
			1363+*						* <WORK FILE>
		002E	1364+@@E225 EQU	@@E223+1					NO PROGRAM IN PAUSE STATE
			1365+*						*
		002F	1366+@@E226 EQU	@@E225+1					<WORK FILE> IS EMPTY
			1367+*						*
		0030	1368+@@E227 EQU	@@E226+1					SPECIFIED FILE NOT
			1369+*						* A PROGRAM FILE
		0031	1370+@@E228 EQU	@@E227+1					ONE-STAR OR TWO-STAR
			1371+*						* FILE PROTECTED
		0032	1372+@@E229 EQU	@@E228+1					DESIRED CONDITION ALREADY
			1373+*						* PRESENT-FUNCTION IGNORED
		0033	1374+@@E230 EQU	@@E229+1					FUNCTION REQUIRES WORK AREA
			1375+*						*
		0034	1376+@@E232 EQU	@@E230+1					FUNCTION INVALID IN
			1377+*						* PAUSE STATE
		0035	1378+@@E234 EQU	@@E232+1					ONLY MOUNT OR INITIALIZE
			1379+*						* COMMAND VALID
		0036	1380+@@E237 EQU	@@E234+1					ORIGINAL MODE OF EXECUTION



## @ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 32
			1381+*			* NOT 'TRACE'
0037		1382+@@E240	EQU	@@E237+1		DATA RECORDER NOT ON SYSTEM
		1383+*				*
0038		1384+@@E241	EQU	@@E240+1		CRT NOT ON SYSTEM
		1385+*				*
0039		1386+@@E242	EQU	@@E241+1		DRIVE 2 NOT ON SYSTEM
		1387+*				*
003A		1388+@@E248	EQU	@@E242+1		CRT SPECIFIED WHEN INPUT IS
		1389+*				* FROM CARDS OR PROCEDURE
003B		1390+@@E249	EQU	@@E248+1		CARD OUTPUT SPECIFIED WHEN
		1391+*				* INPUT IS FROM CARDS
003C		1392+@@E250	EQU	@@E249+1		VARIABLE NOT IN PROGRAM
		1393+*				*
003D		1394+@@E251	EQU	@@E250+1		<ARITHMETIC CONSTANT> NOT IN
		1395+*				* RANGE 1E-99 < X < 1E99
003E		1396+@@E252	EQU	@@E251+1		SUBSCRIPT EXCEEDS <ARRAY SIZE
		1397+*				* LIMIT>.
003F		1398+@@E253	EQU	@@E252+1		ARRAY NOT IN PROGRAM.
		1399+*				*
0040		1400+@@E254	EQU	@@E253+1		NO NON-ARRAY <VARIABLES> IN
		1401+*				* PROGRAMS
0041		1402+@@E255	EQU	@@E254+1		NO <VARIABLES> IN PROGRAM
		1403+*				*
0042		1404+@@E256	EQU	@@E255+1		INCONSISTENT NUMBER
		1405+*				* OF SUBSCRIPTS
0043		1406+@@E300	EQU	@@E256+1		REQUIRED <FILE LIBRARY AREA>
		1407+*				* SPACE NOT AVAILABLE
0044		1408+@@E301	EQU	@@E300+1		PREVIOUS FILENAME NOT
		1409+*				* ALLOCATED
0045		1410+@@E302	EQU	@@E301+1		NEW FILENAME ALREADY
		1411+*				* ALLOCATED
0046		1412+@@E303	EQU	@@E302+1		TWELVE FILES ALREADY ALLOCATED
		1413+*				* FOR WORK FILE PROGRAM
0047		1414+@@E304	EQU	@@E303+1		'NEW' FILE SPECIFIED ALREADY
		1415+*				* IS IN USER LIBRARY
0048		1416+@@E305	EQU	@@E304+1		'SPACE' PARAMETER EXCEEDS 256
		1417+*				* .
0049		1418+@@E308	EQU	@@E305+1		SPECIFIED <LINE NUMBER>
		1419+*				* DOES NOT EXIST
004A		1420+@@E310	EQU	@@E308+1		USER FILE POOLED
		1421+*				*
004B		1422+@@E315	EQU	@@E310+1		<PROGRAM-GENERATED DATA FILE>
		1423+*				* LARGER THEN WORK FILE
004C		1424+@@E316	EQU	@@E315+1		NO EXECUTED BASIC PROGRAM
		1425+*				* .
004D		1426+@@E320	EQU	@@E316+1		SCP NOT AVAILABLE ON SYSTEM
		1427+*				* DISK
004E		1428+@@E325	EQU	@@E320+1		LINE NUMBER LIST TOO LONG
		1429+*				*
004F		1430+@@E330	EQU	@@E325+1		HELP KEYWORD NOT RECOGNIZED
		1431+*				*
0050		1432+@@E335	EQU	@@E330+1		LINE NO. LIST SPECIFIED FOR
		1433+*				* <PROGRAM-GENERATED FILE>
0051		1434+@@E338	EQU	@@E335+1		INVALID COMBINATION OF
		1435+*				* <PARAMETERS>
0052		1436+@@E340	EQU	@@E338+1		NO ONE-STAR OR TWO STAR

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 33
			1437+*		* LIBRARIES ON SYSTEM			
0053		1438+@@E350	EQU	@@E340+1	83 <PASSWORDS> ALREADY DEFINED			
		1439+*			* ON DISK			
0054		1440+@@E351	EQU	@@E350+1	NO <FILE LIBRARY AREA> ON			
		1441+*			* SPECIFIED DISK			
0055		1442+@@E352	EQU	@@E351+1	FILE LIBRARY FRAGMENTED,			
		1443+*			* USE PACK COMMAND			
0056		1444+@@E360	EQU	@@E352+1	MERGED FILE WOULD CONTAIN			
		1445+*			* MORE THEN 990 LINES			
0057		1446+@@E361	EQU	@@E360+1	INCOMPATIBLE FILE TYPES			
		1447+*			* FOR <MERGE>			
0058		1448+@@E362	EQU	@@E361+1	MERGED FILE WOULD EXCEED			
		1449+*			* <WORK FILE> SIZE LIMIT			
0059		1450+@@E371	EQU	@@E362+1	<REMOVE> COMMAND NOT			
		1451+*			* PREVIOUSLY ISSUED			
005A		1452+@@E380	EQU	@@E371+1	<PASSWORD> PREVIOUSLY DEFINED			
		1453+*			*			
005B		1454+@@E390	EQU	@@E380+1	POOLED FILENAME ALREADY			
		1455+*			* DEFINED			
005C		1456+@@E400	EQU	@@E390+1	CURRENT PASSWORD/DISK NOT THE			
		1457+*			* SAME AS CREATING USER			
005D		1458+@@E410	EQU	@@E400+1	DISK LABEL NOT SAME AS LAST			
		1459+*			* MOUNTED			
005E		1460+@@E415	EQU	@@E410+1	INVALID COMMAND KEY			
		1461+*			*			
005F		1462+@@E417	EQU	@@E415+1	INVALID COMMAND SPECIFICATION			
		1463+*			*			
0060		1464+@@E420	EQU	@@E417+1	USER FILENAME ALREADY DEFINED			
		1465+*			*			
0061		1466+@@E430	EQU	@@E420+1	INVALID PARTIAL <RENUMBER>			
		1467+*			* .			
0062		1468+@@E432	EQU	@@E430+1	MAX <LINE NUMBER> WOULD BE			
		1469+*			* EXCEEDED IF RENUMBERED			
0063		1470+@@E433	EQU	@@E432+1	<RENUMBER> <INCREMENT> IS ZERO			
		1471+*			*			
0064		1472+@@E450	EQU	@@E433+1	ANOTHER PROGRAM IS SUSPENSION			
		1473+*			*			
0065		1474+@@E451	EQU	@@E450+1	SCRATCH FILE IN USE			
		1475+*			*			
0066		1476+@@E460	EQU	@@E451+1	RIGHT MARGIN EXCEEDS			
		1477+*			* PRINTER SIZE			
0067		1478+@@E461	EQU	@@E460+1	<WIDTH> LESS THAN 18			
		1479+*			*			
0068		1480+@@E464	EQU	@@E461+1	NO SUSPENDED PROGRAM			
		1481+*			*			
0069		1482+@@E465	EQU	@@E464+1	MISSING 'OPEN' DISK FILE			
		1483+*			*			
006A		1484+@@E466	EQU	@@E465+1	SUSPENDED CONFIGURATION			
		1485+*			* DIFFERS FROM CURRENT SYSTEM			
006B		1486+@@E467	EQU	@@E466+1	'OPEN' DISK FILE HAS BEEN			
		1487+*			* MODIFIED			
006C		1488+@@E469	EQU	@@E467+1	DISK FOUND DEFECTIVE			
		1489+*			*			
006D		1490+@@E470	EQU	@@E469+1	TRACK ALREADY ASSIGNED OR			
		1491+*			* NOT AVAILABLE			
006E		1492+@@E471	EQU	@@E470+1	INVALID SECONDARY			

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 34
			1493+*		* INITIALIZATION	
006F		1494+@@E473	EQU	@@E471+1	DISK ALREADY CONTAINS A	
		1495+*			* <FILE LIBRARY AREA>	
0070		1496+@@E474	EQU	@@E473+1	SPACE NOT AVAILABLE FOR FILE	
		1497+*			*	
0071		1498+@@E475	EQU	@@E474+1	NO MORE ALTERNATE TRACKS	
		1499+*			*	
0072		1500+@@E476	EQU	@@E475+1	CRT, PROCESSING UNIT,	
		1501+*			* COMMAND KEY CONFLICT	
0073		1502+@@E477	EQU	@@E476+1	INVALID KEYBOARD TYPE	
		1503+*			*	
0074		1504+@@E478	EQU	@@E477+1	ACTIVE FILE(S) ON DISK	
		1505+*			*	
0075		1506+@@E479	EQU	@@E478+1	SPECIFIED FILE NOT ON DISK	
		1507+*			*	
0076		1508+@@E480	EQU	@@E479+1	FILES IN AREA TO BE DELETED	
		1509+*			*	
0077		1510+@@E481	EQU	@@E480+1	CYLINDER 0 DEFECTIVE	
		1511+*			*	
0078		1512+@@E482	EQU	@@E481+1	SPECIFIED <TRACK> EXCEEDS DISK	
		1513+*			* CAPACITY	
0079		1514+@@E483	EQU	@@E482+1	VTOC FULL	
		1515+*			*	
007A		1516+@@E484	EQU	@@E483+1	SPACE NOT AVAILABLE BEGINNING	
		1517+*			* AT <TRACK> SPECIFIED	
007B		1518+@@E485	EQU	@@E484+1	WORK AREA SPACE ALLOCATED FOR	
		1519+*			* ANOTHER PURPOSE	
007C		1520+@@E486	EQU	@@E485+1	<TRACK> NOT USABLE	
		1521+*			*	
007D		1522+@@E487	EQU	@@E486+1	NUMBER OF TRACKS REQUESTED	
		1523+*			* EXCEEDS DISK CAPACITY	
007E		1524+@@E488	EQU	@@E487+1	CONTRACTION PARAMETER EXCEED	
		1525+*			* LIBRARY SIZE	
007F		1526+@@E489	EQU	@@E488+1	RELEASE LEVEL ON HELP	
		1527+*			* TEXT IS INCORRECT	
0080		1528+@@E490	EQU	@@E489+1	NO SUSPECTED DEFECTIVE	
		1529+*			* TRACKS	
0081		1530+@@E491	EQU	@@E490+1	INVALID COMPONENT NAME	
		1531+*			*	
0082		1532+@@E492	EQU	@@E491+1	NO 'HDR' OR 'PTF' STATEMENT	
		1533+*			*	
0083		1534+@@E493	EQU	@@E492+1	INCORRECT CHECKSUM	
		1535+*			*	
0084		1536+@@E494	EQU	@@E493+1	NO 'PTF' FILE ON DISK	
		1537+*			*	
0085		1538+@@E495	EQU	@@E494+1	SYSTEM RELEASE LEVEL	
		1539+*			* INCORRECT	
0086		1540+@@E496	EQU	@@E495+1	THIS PTF NOT IN 'PTF'	
		1541+*			* DISK FILE	
0087		1542+@@E497	EQU	@@E496+1	NO WORKAREA ON 'CURRENT'	
		1543+*			* SYSTEM DISK	
0088		1544+@@E498	EQU	@@E497+1	TRACK NOT ASSIGNED	
		1545+*			*	
0089		1546+@@E500	EQU	@@E498+1	LINE LENGTH LIMIT EXCEED-1	
		1547+*			* OR MORE LINES TRUNCATED	
008A		1548+@@E501	EQU	@@E500+1	<WORK FILE> SIZE LIMIT	

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 35
		1549+*			* EXCEEDED - FILE TRUNCATED			
008B		1550+@@E530 EQU	@@E501+1		<WORK FILE> SIZE LIMIT			
		1551+*			* EXCEEDED			
008C		1552+@@E531 EQU	@@E530+1		<WORK FILE> SIZE LIMIT			
		1553+*			* EXCEEDED			
008D		1554+@@E535 EQU	@@E531+1		WRONG/ NO <WORKAREA> ON R1 OR F1			
		1555+*			*			
008E		1556+@@E540 EQU	@@E535+1		RIGHT MARGIN EXCEEDED			
		1557+*			* LINE IGNORED			
008F		1558+@@E541 EQU	@@E540+1		'CURRENT' PASSOWRD/DISK LABEL			
		1559+*			* CANCELLED			
0090		1560+@@E542 EQU	@@E541+1		DISK CYLINDER SIZE DOES NOT			
		1561+*			* MATCH MACHINE CAPACITY			
0091		1562+@@E543 EQU	@@E542+1		R1 DISK NOT INITIALIZED			
		1563+*			*			
0092		1564+@@E544 EQU	@@E543+1		F1 DISK NOT INITIALIZED			
		1565+*			*			
0093		1566+@@E545 EQU	@@E544+1		R2 DISK NOT INITIALIZED			
		1567+*			*			
0094		1568+@@E546 EQU	@@E545+1		F2 DISK NOT INITIALIZED			
		1569+*			*			
0095		1570+@@E547 EQU	@@E546+1		MINIMUM CONFIGURATION			
		1571+*			* RECORD ASSUMED			
0096		1572+@@E549 EQU	@@E547+1		PRINTER UNAVAILABLE DUE TO			
		1573+*			* PREVIOUS PRINTER FAILURE			
0097		1574+@@E550 EQU	@@E549+1		TRAGIC DISK ERROR - BAD			
		1575+*			* WORK FILE			
0098		1576+@@E551 EQU	@@E550+1		TRAGIC DISK ERROR - BAD			
		1577+*			* SAVED FILE			
0099		1578+@@E552 EQU	@@E551+1		TRAGIC DISK ERROR - 'CURRENT'			
		1579+*			* PASSWORD NOT FOUND			
009A		1580+@@E553 EQU	@@E552+1		TRAGIC DISK ERROR - POOLED			
		1581+*			* FILE NOT IN DIRECTORY			
009B		1582+@@E554 EQU	@@E553+1		TRAGIC DISK ERROR - BAD			
		1583+*			* FILENAME IN POOLED DIRECTORY			
009C		1584+@@E555 EQU	@@E554+1		TRAGIC DISK ERROR - 'OPEN'			
		1585+*			* DISK FILE GONE			
009D		1586+@@E556 EQU	@@E555+1		TRAGIC DISK ERROR - PARAMETERS			
		1587+*			* HAVE BEEN DESTROYED			
009E		1588+@@E558 EQU	@@E556+1		CURRENT SYSTEM PROGRAM FILE			
		1589+*			* ON DISK SPECIFIED			
009F		1590+@@E570 EQU	@@E558+1		ONE OR MORE LINES TRUNCATED			
		1591+*			* WHEN PUNCHED			
00A0		1592+@@E571 EQU	@@E570+1		ONE OR MORE DISABLED LINES			
		1593+*			* PUNCHED			
00A1		1594+@@E572 EQU	@@E571+1		WRONG OR NO <WORKAREA> ON F1			
		1595+*			*			
00A2		1596+@@E573 EQU	@@E572+1		WRONG OR NO <WORKAREA> ON R1			
		1597+*			*			
00A3		1598+@@E574 EQU	@@E573+1		NEXT AUTOMATIC LINE NUMBER			
		1599+*			* WILL EXCEED 9999			
00A4		1600+@@E578 EQU	@@E574+1		RESPONSE NOT ALLOWED WITH			
		1601+*			* CARDS OR PROCEDURE INPUT			
00A5		1602+@@E585 EQU	@@E578+1		REQUESTED TRACK SPACE EXCEEDS			
		1603+*			* DISK CONFIGURATION			
00A6		1604+@@E600 EQU	@@E585+1		DIM ARRAY NAME PREVIOUSLY			

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	36
			1605+*						
		00A7	1606+@@E601 EQU	@@E600+1					* DEFINED
			1607+*						REFERENCED MATRIX NOT
		00A8	1608+@@E602 EQU	@@E601+1					* PREVIOUSLY DEFINED.
			1609+*						MATRIX REFERENCED AS VECTOR
		00A9	1610+@@E603 EQU	@@E602+1					*
			1611+*						VECTOR REFERENCED AS MATRIX
		00AA	1612+@@E604 EQU	@@E603+1					*
			1613+*						DUPLICATE DEFINITION OF USER
		00AB	1614+@@E606 EQU	@@E604+1					* FUNCTION
			1615+*						<NEXT> STATEMENT OUT OF
		00AC	1616+@@E607 EQU	@@E606+1					* SEQUENCE
			1617+*						<FOR>/NEXT NESTED INCORRECTLY
		00AD	1618+@@E608 EQU	@@E607+1					*
			1619+*						MORE THAN 9 NESTED <FOR>/NEXT
		00AE	1620+@@E609 EQU	@@E608+1					* LOOPS
			1621+*						<FOR>/NEXT LOOP INCOMPLETE
		00AF	1622+@@E610 EQU	@@E609+1					*
			1623+*						COMPILED PROGRAM TOO LARGE
		00B0	1624+@@E611 EQU	@@E610+1					*
			1625+*						TOO MANY ARRAY ELEMENTS
		00B1	1626+@@E612 EQU	@@E611+1					*
			1627+*						TOO MANY LINE NUMBER
		00B2	1628+@@E613 EQU	@@E612+1					* REFERENCES
			1629+*						STORAGE SPACE REQUIRED FOR
		00B3	1630+@@E614 EQU	@@E613+1					* FILES TOO LARGE
			1631+*						FILE LINE PREVIOUSLY TRUNCATED
		00B4	1632+@@E700 EQU	@@E614+1					*
			1633+*						NON-EXISTENT LINE NUMBER
		00B5	1634+@@E701 EQU	@@E700+1					* REFERENCED
			1635+*						NON-EXISTENT USER FUNCTION
		00B6	1636+@@E710 EQU	@@E701+1					* REFERENCED
			1637+*						REQUIRED FILE NOT ALLOCATED
		00B7	1638+@@E712 EQU	@@E710+1					*
			1639+*						INCONSISTENT INPUT/OUTPUT FILE
		00B8	1640+@@E713 EQU	@@E712+1					* USAGE
			1641+*						ALLOCATED FILE NOT A DATA FILE
		00B9	1642+@@E714 EQU	@@E713+1					*
			1643+*						INSUFFICIENT DATA FOR <GET>
		00BA	1644+@@E715 EQU	@@E714+1					*
			1645+*						OUTPUT FILE EXCEEDED
		00BB	1646+@@E716 EQU	@@E715+1					*
			1647+*						NO SPACE FOR ALLOCATED SCRATCH
		00BC	1648+@@E717 EQU	@@E716+1					* FILE
			1649+*						ALLOCATED DEVICE NOT ON SYSTEM
		00BD	1650+@@E718 EQU	@@E717+1					*
			1651+*						INVALID DATA ITEM FROM CARD
		00BE	1652+@@E720 EQU	@@E718+1					* FILE
			1653+*						NO <DATA STATEMENT> SPECIFIED
		00BF	1654+@@E721 EQU	@@E720+1					*
			1655+*						INSUFFICIENT DATA FOR READ
		00C0	1656+@@E723 EQU	@@E721+1					*
			1657+*						INVALID <FOR> LOOP EXECUTION
		00C1	1658+@@E724 EQU	@@E723+1					*
			1659+*						NO PRINT IMAGE IN 0,01;E
		00C2	1660+@@E725 EQU	@@E724+1					* STATEMENT,
									REFERENCED STATEMENT NOT AN



@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	37
			1661+*						
		00C3	1662+@@E726 EQU	@@E725+1	* IMAGE				
			1663+*		<RETURN> EXECUTED WITHOUT				
		00C4	1664+@@E727 EQU	@@E726+1	* ACTIVE <WSW>				
			1665+*		INVALID VARIABLE ASSIGNED				
		00C5	1666+@@E728 EQU	@@E727+1	*				
			1667+*		RECURSIVE FUNCTION REFERENCE				
		00C6	1668+@@E729 EQU	@@E728+1	*				
			1669+*		STATEMENT BRANCHES TO ITSELF				
		00C7	1670+@@E730 EQU	@@E729+1	*				
			1671+*		EXPRESSION TOO COMPLEX TO				
		00C8	1672+@@E732 EQU	@@E730+1	* EXECUTE				
			1673+*		MORE THAN 10 ACTIVE USER				
		00C9	1674+@@E752 EQU	@@E732+1	* FUNCTIONS				
			1675+*		ASSIGNED MATRIX NOT				
		00CA	1676+@@E753 EQU	@@E752+1	* 2-DIMENSIONAL				
			1677+*		MATRIX MULTIPLIER NOT				
		00CB	1678+@@E754 EQU	@@E753+1	* 2-DIMENSIONAL				
			1679+*		MATRIX FUNCTION ARGUMENT NOT				
		00CC	1680+@@E755 EQU	@@E754+1	* 2-DIMENSIONAL				
			1681+*		ASSIGNED MATRIX DIMS NOT SAME				
		00CD	1682+@@E756 EQU	@@E755+1	* AS EXPR				
			1683+*		MATRIX DIMENSIONS NOT REVERSED				
		00CE	1684+@@E757 EQU	@@E756+1	*				
			1685+*		ASSIGNED MATRIX DIMS NOT SAYE				
		00CF	1686+@@E758 EQU	@@E757+1	* AS INV ARG				
			1687+*		MATRIX EXPR DIMENSIONS NOT				
		00D0	1688+@@E759 EQU	@@E758+1	* CONFORMABLE				
			1689+*		ATTEMPTED MATRIX				
		00D1	1690+@@E760 EQU	@@E759+1	* MULTIPLICATION IN PLACE				
			1691+*		SUBSCRIPT OUT OF <ARRAY SIZE				
		00D2	1692+@@E761 EQU	@@E760+1	* LIMIT>				
			1693+*		DIMENSIONED OUTSIDE MAX <ARRAY				
		00D3	1694+@@E762 EQU	@@E761+1	* SIZE LIMIT>				
			1695+*		MATRIX EXPRESSION DIMENSIONS				
		00D4	1696+@@E763 EQU	@@E762+1	* NOT IDENTICAL				
			1697+*		NEARLY SINGULAR MATRIX				
		00D5	1698+@@E764 EQU	@@E763+1	*				
			1699+*		MATRIX TOO LARGE TO INVERT				
		00D6	1700+@@E765 EQU	@@E764+1	*				
			1701+*		ATTEMPTED MATRIX INVERSION IN				
		00D7	1702+@@E766 EQU	@@E765+1	* PLACE				
			1703+*		MATRIX NOT SQUARE				
		00D8	1704+@@E767 EQU	@@E766+1	*				
			1705+*		ATTEMPTED MATRIX TRANSPOSITION				
		00D9	1706+@@E768 EQU	@@E767+1	* IN PLACE				
			1707+*		SEC FUNCTION ARGUMENT > 1E6				
		00DA	1708+@@E769 EQU	@@E768+1	*				
			1709+*		CSC FUNCTION ARGUMENT > 1E6				
		00DB	1710+@@E770 EQU	@@E769+1	*				
			1711+*		SIN FUNCTION ARGUMENT > 1E6				
		00DC	1712+@@E771 EQU	@@E770+1	*				
			1713+*		COS FUNCTION ARGUMENT > 1E6				
		00DD	1714+@@E772 EQU	@@E771+1	*				
			1715+*		TAN FUNCTION ARGUMENT > 1E6				
		00DE	1716+@@E773 EQU	@@E772+1	*				
					COT FUNCTION ARGUMENT > 1E6				

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	38
			1717+*		*				
	00DF	1718+@@E774	EQU	@@E773+1	EXPONENTIATION ERROR				
		1719+*			*				
	00E0	1720+@@E775	EQU	@@E774+1	SOR FUNCTION ARGUMENT < ZERO				
		1721+*			*				
	00E1	1722+@@E776	EQU	@@E775+1	EXP FUNCTION ARGUMENT > 227.96				
		1723+*			*				
	00E2	1724+@@E777	EQU	@@E776+1	LOG FUNCTION ARGUMENT 0 OR				
		1725+*			* NEGATIVE				
	00E3	1726+@@E778	EQU	@@E777+1	LSI FUNCTION ARGUMENT 0 OR				
		1727+*			* NEGATIVE				
	00E4	1728+@@E779	EQU	@@E778+1	LTW FUNCTION ARGUMENT 0 OR				
		1729+*			* NEGATIVE				
	00E5	1730+@@E780	EQU	@@E779+1	COT FUNCTION RESULT GOES TO				
		1731+*			* INFINITY				
	00E6	1732+@@E781	EQU	@@E780+1	SEC FUNCTION RESULT GOES TO				
		1733+*			* INFINITY				
	00E7	1734+@@E782	EQU	@@E781+1	CSC FUNCTION RESULT GOES TO				
		1735+*			* INFINITY				
	00E8	1736+@@E783	EQU	@@E782+1	ASN FUNCTION ARG NOT IN RANGE				
		1737+*			* -1 < X < 1				
	00E9	1738+@@E784	EQU	@@E783+1	ACS FUNCTION ARC NOT IN RANGE				
		1739+*			* -1 < X < 1				
	00EA	1740+@@E785	EQU	@@E784+1	HSN FUNCTION--ARGUMENT > 225				
		1741+*			*				
	00EB	1742+@@E786	EQU	@@E785+1	HCS FUNCTION--ARGUMENT > 225				
		1743+*			*				
	00EC	1744+@@E790	EQU	@@E786+1	DIVISION BY ZERO				
		1745+*			*				
	00ED	1746+@@E791	EQU	@@E790+1	OVERFLOW - VALUE NOT LESS THAN				
		1747+*			* 1E99				
	00EE	1748+@@E792	EQU	@@E791+1	UNDERFLOW - VALUE LESS THAN				
		1749+*			* 1E-99				
	00EF	1750+@@E793	EQU	@@E792+1	TAN FUNCTION ARGUMENT > 100				
		1751+*			*				
	00F0	1752+@@E794	EQU	@@E793+1	COT FUNCTION ARGUMENT > 100				
		1753+*			*				
	00F1	1754+@@E795	EQU	@@E794+1	SIN FUNCTION ARGUMENT > 100				
		1755+*			*				
	00F2	1756+@@E796	EQU	@@E795+1	COS FUNCTION ARGUMENT > 100				
		1757+*			*				
	00F3	1758+@@E797	EQU	@@E796+1	SEC FUNCTION ARGUMENT > 100				
		1759+*			*				
	00F4	1760+@@E798	EQU	@@E797+1	CSC FUNCTION ARGUMENT > 100				
		1761+*			*				
	00F5	1762+@@E900	EQU	@@E798+1	INVALID FUNCTION IN PROCEDURE				
		1763+*			* STEP				
	00F6	1764+@@E901	EQU	@@E900+1	PROCEDURE ALREADY DEFINED				
		1765+*			*				
	00F7	1766+@@E902	EQU	@@E901+1	PROCEDURE NOT DEFINED				
		1767+*			*				
	00F8	1768+@@E903	EQU	@@E902+1	PROCEDURE > 512 CHARACTERS				
		1769+*			*				
	00F9	1770+@@E905	EQU	@@E903+1	DESK CALCULATOR REQUIRES WITDH				
		1771+*			* > 63				
	00FA	1772+@@E906	EQU	@@E905+1	INVALID CHARACTER IN PROCEDURE				

@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 39
		1773+*				* DEFINITION
	00FB	1774+@@E910 EQU		@@E906+1		INVALID OPERATION
		1775+*				*
	FFFF	1776+@@E548 EQU		-1		PRINTER FAILLQE, OUTPUT
		1777+*				*
	FFFF	1778+@@E575 EQU		-1		CHANGED LINE EXCEEDS WIDTH OF
		1779+*				*
	FFFF	1780+@@E579 EQU		-1		VTOC FILES EXIST, RE-IPL, USE
		1781+*				*
	FFFF	1782+@@E580 EQU		-1		DUPLICATE DISK LABELS -
		1783+*				*
	FFFF	1784+@@E595 EQU		-1		INVALID RESPONSE - TYPE ALPHA
		1785+*				*
	FFFF	1786+@@E597 EQU		-1		LLLLLL NOT ON UU
		1787+*				*
	FFFF	1788+@@E598 EQU		-1		DATA ON ABOVE TRACK
		1789+*				*
	FFFF	1790+@@E800 EQU		-1		INVALID INPUT DATA-NUMERIC
		1791+*				*
	FFFF	1792+@@E801 EQU		-1		INVALID INPUT DATA--CHARACTER
		1793+*				*
	FFFF	1794+@@E802 EQU		-1		TOO MANY INPUT DATA ELEMENTS
		1795+*				*
	FFFF	1796+@@E803 EQU		-1		NOT ENOUGH DATA ELEMENTS
		1797+*				*
	FFFF	1798+@@E804 EQU		-1		NOT ENOUGH ARRAY ROW ELEMENTS
		1799+*				*
	0000	1800+@@E001 EQU		0		MISSING <ARITHMETIC
		1801+*				* EXPRESSION>
	0001	1802+@@E003 EQU		@@E001+1		UNBALANCED <PARENTHESES>
		1803+*				*
	0002	1804+@@E004 EQU		@@E003+1		<ARITHMETIC CONSTANT> CONTAINS
		1805+*				* 2 DECIMAL POINTS
	0003	1806+@@E005 EQU		@@E004+1		DECIMAL POINT WITHOUT
		1807+*				* <ARITHMETIC CONSTANT>
	0004	1808+@@E006 EQU		@@E005+1		INCOMPLETE <ARITHMETIC
		1809+*				* EXPRESSION>
	0005	1810+@@E007 EQU		@@E006+1		INVALID CHARACTER FOLLOWING
		1811+*				* <OPERATOR>
	0006	1812+@@E008 EQU		@@E007+1		<CHARACTER VARIABLE> IN
		1813+*				* <ARITHMETIC EXPRESSION>
	0007	1814+@@E009 EQU		@@E008+1		INVALID EXPRESSION FIRST
		1815+*				* CHARACTER
	0008	1816+@@E010 EQU		@@E009+1		INVALID <SECONDARY KEYWORD>
		1817+*				*
	0009	1818+@@E011 EQU		@@E010+1		COMMA NOT FOLLOWING LINE
		1819+*				* NUMBER
	000A	1820+@@E012 EQU		@@E011+1		INVALID <DELIMITER>
		1821+*				*
	000B	1822+@@E013 EQU		@@E012+1		INCOMPLETE <CHARACTER
		1823+*				* CONSTANT>
	000C	1824+@@E014 EQU		@@E013+1		INVALID FILE SPECIFICATION
		1825+*				*
	000D	1826+@@E015 EQU		@@E014+1		VARIABLE NOT PRESENT IN INPUT
		1827+*				* LIST
	000E	1828+@@E016 EQU		@@E015+1		INVALID VARIABLE



@ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	40
			1829+*		*				
000F		1830+@@E017	EQU	@@E016+1	INVALID EXPONENT IN CONSTANT				
		1831+*			*				
0010		1832+@@E018	EQU	@@E017+1	<OPERATOR> WITHOUT VALID				
		1833+*			* PRECEDING OPERAND				
0011		1834+@@E019	EQU	@@E018+1	<OPERATOR> REQUIRED BTWN LAST				
		1835+*			* 2 CHARACTERS CHECKED				
0012		1836+@@E020	EQU	@@E019+1	INVALID CONSTANT				
		1837+*			*				
0013		1838+@@E021	EQU	@@E020+1	<LINE NUMBER> TOO LONG				
		1839+*			*				
0014		1840+@@E023	EQU	@@E021+1	INVALID <SYSTEM CONSTANT>				
		1841+*			*				
0015		1842+@@E024	EQU	@@E023+1	INVALID OR MISSING <LINE				
		1843+*			* NUMBER>				
0016		1844+@@E025	EQU	@@E024+1	INVALID <PRIMARY KEYWORD>				
		1845+*			*				
0017		1846+@@E026	EQU	@@E025+1	NO EQUAL SIGN AFTER				
		1847+*			* <ARITHMETIC VARIABLE>				
0018		1848+@@E027	EQU	@@E026+1	INVALID SIMPLE <ARITHMETIC				
		1849+*			* VARIABLE>				
0019		1850+@@E028	EQU	@@E027+1	INVALID <CONTROL VARIABLE>				
		1851+*			* CHARACTER				
001A		1852+@@E029	EQU	@@E028+1	MISSING <RELATIONAL OPERATOR>				
		1853+*			*				
001B		1854+@@E030	EQU	@@E029+1	INVALID OR MISSING <CHARACTER				
		1855+*			* EXPRESSION>				
001C		1856+@@E031	EQU	@@E030+1	INVALID <DEF> FUNCTION				
		1857+*			* DEFINITION				
001D		1858+@@E032	EQU	@@E031+1	NO EQUAL SIGN AFTER VALID				
		1859+*			* FUNCTION DEFINITION				
001E		1860+@@E035	EQU	@@E032+1	INVALID CHARACTER AFTER VALID				
		1861+*			* STATEMENT				
001F		1862+@@E036	EQU	@@E035+1	VARIABLE IS NOT FOLLOWED BY A				
		1863+*			* COMMA OR EQUAL SIGN				
0020		1864+@@E037	EQU	@@E036+1	CHARACTER AND ARITHMETIC				
		1865+*			* <VARIABLES> INTERmIXED				
0021		1866+@@E038	EQU	@@E037+1	INVALID <CHARACTER VARIABLE>				
		1867+*			*				
0022		1868+@@E039	EQU	@@E038+1	INVALID <ARRAY NAME>				
		1869+*			*				
0023		1870+@@E040	EQU	@@E039+1	INVALID DIMENSION				
		1871+*			*				
0024		1872+@@E041	EQU	@@E040+1	INVALID <DELIMITER> AFTER				
		1873+*			* VALID ARRAY DEFINITION				
0025		1874+@@E042	EQU	@@E041+1	INVALID MATRIX EXPRESSION ON				
		1875+*			* RIGHT OF EQUAL SIGN				
0026		1876+@@E043	EQU	@@E042+1	INVALID <mATRIX> NAME,				
		1877+*			*				
0027		1878+@@E044	EQU	@@E043+1	MISSING MULTIPLICATION				
		1879+*			* <OPERATOR>				
0028		1880+@@E045	EQU	@@E044+1	STATEMENT TERMINATED				
		1881+*			* PREMATURELY				
0029		1882+@@E046	EQU	@@E045+1	<ARITHMETIC CONSTANT> NOT IN				
		1883+*			* RANGE 1E-99 < X < 1E99				
002A		1884+@@E060	EQU	@@E046+1	EXPRESSION TOO COMPLEX				

[illegible]

## #ECMAN -- COMMAND ANALYZER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	25/02/16	PAGE 42
		1890		*****			*
		1891	*				*
		1892	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		1893	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083			*
		1894	*				*
		1895		*****			*
		1896	*	*STATUS			*
		1897	*	VERSION 1 MODIFICATION 0			*
		1898	*				*
		1899	*	*FUNCTION			*
		1900	*	* ANALYZE CARD AND KEYBOARD INPUT			*
		1901	*	* LIST CARD INPUT IF APPLICABLE			*
		1902	*	* INSERT AUTOMATIC LINE NUMBER IF APPLICABLE			*
		1903	*	* IF A LINE NUMBER IS PRESENT, DETERMINE IF SYSTEM CAN ACCEPT			*
		1904	*	A FILE LINE			*
		1905	*	* ANALYZE POTENTIAL SYSTEM COMMAND			*
		1906	*	* DETERMINE IF SYSTEM CAN ACCEPT COMMAND			*
		1907	*	* SET APPROPRIATE INDICATORS			*
		1908	*	* CAUSE APPROPRIATE PROGRAM TO BE LOADED AND EXECUTED			*
		1909	*				*
		1910	*	*ENTRY POINTS			*
		1911	*	#ECMAN IS THE ONLY ENTRY POINT			*
		1912	*	* CALLING SEQUENCE FOR SPF #ECMAN			*
		1913	*	ALC XXX+@DSAD(2), \$BSADR			*
		1914	*	B \$RLOAD			*
		1915	*	DC AL2(XXX)			*
		1916	*	XXX DC AL1(@DGET)			*
		1917	*	DC AL2(\$ECMA)			*
		1918	*	DC AL1(\$\$ECM)			*
		1919	*	DC AL2(\$s@ECM)			*
		1920	*				*
		1921	*	* CALLING SEQUENCE FOR WORK AREA #ECMAN			*
		1922	*	B \$BLOAD			*
		1923	*	DC AL2(YYY)			*
		1924	*	YYY DC AL1(@DGET)			*
		1925	*	DC AL2(@ECMA)			*
		1926	*	DC AL1(@@ECM)			*
		1927	*	DC AL2(\$@ECM)			*
		1928	*				*
		1929	*	*INPUT			*
		1930	*	* THE INPUT LINE BUFFER			*
		1931	*	* \$\$EOSA SET TO EOS ADDRESS IF INPUT IS KEYBOARD			*
		1932	*	* NUCLEUS INDICATORS SHOULD BE SET TO REFLECT PRESENT SYSTEM			*
		1933	*	STATUS--REFER TOT EXTERNAL REFERENCES MARKED INPUT BELOW			*
		1934	*				*
		1935	*	*OUTPUT			*
		1936	*	* THE INPUT LINE BUFFER MAY BE PRINTED			*
		1937	*	* @XR POINTS TO KEYWORD DELIMITER			*
		1938	*	* A QUESTION MARK MAY BE PRINTED			*
		1939	*	* \$\$ILEN--CARD LENGTH			*
		1940	*	* AUTOMATIC LINE NUMBER MAY BE ADDED			*
		1941	*	* BLANKS INPUT LINE BUFFER BELOW EOS			*
		1942	*	* \$\$UPAR--LENGTH OF KEYBOARD INPUT			*
		1943	*	* \$\$BNLN--SET TO BINARY LINE NUMBER			*
		1944	*	* FIT WRITTEN TO #@WFT IF APPLICABLE			*
		1945	*	* FIRST 2 SECTORS OF WORK AREA FILE READ TO \$\$WSPB IF APPLICABLE			*

## #ECMAN -- COMMAND ANALYZER

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1946	*	*	* #@#IOS READ TO CORE IF APPLICABLE	*
1947	*	*	* SEE EXTERNAL REFERENCES MARKED OUTPUT BELOW	*
1948	*			*
1949	*		*EXTERNAL REFERENCES	*
1950	*	*	* NUCLEUS INDICATORS	*
1951	*		\$KEYCD	*
1952	*		\$CARDI--INPUT	*
1953	*		\$DINMB--INPUT	*
1954	*		\$NOLST--INPUT	*
1955	*		\$IOYES--OUTPUT	*
1956	*		\$INDR1	*
1957	*		\$BASIC--INPUT	*
1958	*		\$WFLOK--INPUT	*
1959	*		\$PGMDT--INPUT	*
1960	*		\$WSIND--INPUT	*
1961	*		\$VMDEF--INPUT	*
1962	*		\$FITIN--OUTPUT	*
1963	*		\$INDR2	*
1964	*		\$CMODE--INPUT	*
1965	*		\$FCIND--OUTPUT	*
1966	*		\$READY--OUTPUT	*
1967	*		\$INDR3	*
1968	*		\$MOUNT--INPUT	*
1969	*		\$XIND1--OUTPUT	*
1970	*		\$XIND2	*
1971	*		\$PAUSE--INPUT	*
1972	*		\$WFNME	*
1973	*		\$WFDEF--INPUT	*
1974	*		\$ERRPG	*
1975	*		\$ERFIL--OUTPUT	*
1976	*		\$ERKEY--OUTPUT	*
1977	*		\$ERSFL--OUTPUT	*
1978	*	*	* OTHER NUCLEUS LOCATIONS	*
1979	*		\$ENDNU	*
1980	*		\$SPRNT	*
1981	*		\$RLOAD	*
1982	*		\$CAERK	*
1983	*		\$CAERR--OUTPUT	*
1984	*		\$CARPL	*
1985	*		\$BLOAD	*
1986	*		\$CAIPL	*
1987	*		\$DISKN	*
1988	*		\$UNMSK	*
1989	*		\$TABLN--INPUT	*
1990	*		\$WAITF	*
1991	*	*	* FIXED CORE LOCATIONS OUTSIDE OF NUCLEUS	*
1992	*		\$\$INND	*
1993	*		\$\$ILEN--OUTPUT	*
1994	*		\$\$INLN--INPUT	*
1995	*		\$\$CDND	*
1996	*		\$\$CKEY--INPUT	*
1997	*		\$\$EOSA--INPUT	*
1998	*		\$\$UPAR--OUTPUT	*
1999	*		\$\$BNLN--OUTPUT	*
2000	*		\$\$FITS--OUTPUT	*
2001	*		\$\$WSPB--OUTPUT	*

## #ECMAN -- COMMAND ANALYZER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	25/02/16	PAGE 44
		2002	*	* OTHER LOCATIONS			*
		2003	*	C4BIN2			*
		2004	*	C4BLNK--OUTPUT			*
		2005	*	C4BVAL--INPUT			*
		2006	*	* MOST OF SYSTEM PROGRAM FILE EQUATES			*
		2007	*	* MOST OF WORK AREA EQUATES			*
		2008	*				*
		2009	*	*EXITS, NORMAL			*
		2010	*	\$TABLN--INPUT			*
		2011	*	\$WAITF			*
		2012	*	* \$RLOAD			*
		2013	*	* TO LOAD #EFKEY			*
		2014	*	* TO LOAD KEYWORD PROGRAM			*
		2015	*	* \$CARPL--LOAD #GUFUD			*
		2016	*	* DELETION LINE			*
		2017	*	* COMMENTS CARD			*
		2018	*	* \$BLOAD			*
		2019	*	* TO LOAD #SDSYN			*
		2020	*	* TO LOAD #SFSYN			*
		2021	*				*
		2022	*	*EXITS, ERROR			*
		2023	*	* \$CARPL--UNRECOGNIZABLE KEYWORD FROM KEYBOARD			*
		2024	*	* \$CAIPL--UNRECOGNIZABLE KEYWORD FROM DATA RECORDER			*
		2025	*	* \$CAERK--\$CAERR SET TO ONE OF THE FOLLOWING			*
		2026	*	@@E230			*
		2027	*	@@E220			*
		2028	*	@@E222			*
		2029	*	@@E221			*
		2030	*	@@E232			*
		2031	*	@@E234			*
		2032	*	@@E225			*
		2033	*	@@E226			*
		2034	*	@@E316			*
		2035	*	@@E223			*
		2036	*	@@E122			*
		2037	*				*
		2038	*	*TABLES/WORK AREAS			*
		2039	*	KEYWORD TABLE DESCRIBED IN PLM			*
		2040	*				*
		2041	*	*ATTRIBUTES			*
		2042	*	RELOCATABLE			*
		2043	*				*
		2044	*	*CHARACTER CODE, DEPENDENCY			*
		2045	*	THE OPERATION OF THIS MODULE DEPENDS UPON AN INTERNAL			*
		2046	*	REPRESENTATION FO THE EXTERNAL CHARACTER SET WHICH IS EQUIVALENT			*
		2047	*	TO THE ONE USED AT ASSEMBLY TIME. THE CODING HAS BEEN ARRANGED			*
		2048	*	SO THAT REDEFINITION OF CHARACTERS CONSTANTS, BY REASSEMBLY, WILL			*
		2049	*	RESULT IN A CORRECT MODULE FOR THE NEW DEFINITIONS.			*
		2050	*				*
		2051	*	*NOTES			*
		2052	*	REQUIRED MODULES			*
		2053	*	@SYSEQ			*
		2054	*	@FXDEQ			*
		2055	*	@CANEQ			*
		2056	*	@WKAEQ			*
		2057	*	ECMANL			*



## #ECMAN -- COMMAND ANALYZER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 46
					2062	*	HDR #ECMAN	
					2063	*****		
					2064	*	PROGRAM HEADER FOR DISK LOAD	*
					2065	*****		
					2066	*#SECMA EQU	X'1900'	DISK ADDR OF #ECMAN
					2067	*#\$ECM EQU	X'0C00'	CORE LOAD ADDRESS OF #ECMAN
					2068	*#\$@ECM EQU	006	SECTOR CNT OF #ECMAN
	0C00				2069		ORG \$\$\$ECM	CORE LOAD ADDRESS
				0C00	2070	\$\$\$\$\$ EQU	*	FIRST LOCATION IN PROGRAM
	0C00	7BC5C3D4C1D5		0C05	2071	DC	CL6 '#ECMAN'	PROGRAM NAME
	0C06	4C		0C06	2072	DC	IL1 '076'	PROGRAM NUMBER OF #ECMAN
				0C07	2073	#ECMA EQU	*	ENTRY POINT TO PROGRAM
					2074	*** END OF EXPANSION ***		
				0600	2075	USING	\$ENDNU,@BR	BASE VALUE
	0C07	C2 01 0600			2076	LA	\$ENDNU,@BR	LOAD BASE REG
	0C0B	38 01 03C3			2077	TBN	\$KEYCD,\$CARDI	CARD INPUT?
	0C0F	F2 90 5B			2078	JF	ECM170	NO, GOTO CENTRAL PORTION
					2079	*		
					2080	*** CARD INPUT		
					2081	*		
	0C12	D2 02 FB			2082	LA	\$\$INND+1(,@BR),@XR	SET POINTER TO END OF CARDINPUT
	0C15	36 02 0ED9			2083	ECM110 A	ECM900,@XR	DECREMENT POINTER BY ONE
	0C19	BD 40 00			2084	CLI	0(,@XR),@BLANK	THIS CHAR BLANK
	0C1C	C0 81 0C15			2085	BE	ECM110	YES, CONTINUE LOOP
	0C20	BC 1E 01			2086	MVI	1(,@XR),@EOS	SET EOS
	0C23	74 02 01			2087	ST	\$\$ILEN(,@BR),@XR	SAVE LAST CHAR LOCATION
	0C26	4F 01 01 0ED7			2088	SLC	\$\$ILEN(@CADDR,@BR),ECMINP	SUBTRACT FIRST CHAR ADDRESS TO
					2089	* LEAVE CHAR COUNT		
	0C2B	38 40 03C3			2090	TBN	\$KEYCD,\$DTNMB	BRANCH IF AUTO LINE NUMBER
	0C2F	7D 5C 07			2091	CLI	\$\$INLN(,@BR),ECMAST	* NOT REQUESTED OR IF FIRST
	0C32	F2 91 23			2092	JC	ECM140,ECMFAE	8 CHAR IS AN ASTERISK
	0C35	7D 61 07			2093	CLI	\$\$INLN(,@BR),ECMSLH	FIRST CHAR IS A SLASH
	0C38	F2 01 0F			2094	JNE	ECM130	NO, GOTO INSERT LINE NUMBER
	0C3B	3C 07 0C92			2095	MVI	ECM200+@D1,\$\$INLN-\$ENDNU	MODIFY INSTRUCTIONS
	0C3F	3C 80 0CBD			2096	MVI	ECM300+@Q,@NOP	* THAT HANDLE
	0C43	3C 80 0D51			2097	MVI	ECM510+@Q,@NOP	* COLUMN ONE SLASHES
	0C47	F2 87 0E			2098	J	ECM140	DON'T PUT IN LINE NUMBER
					2099	*		
	0C4A	5C 60 6C 67			2100	ECM130 MVC	\$\$CDND+ECMDCN+1(@CARDL+1,@BR),\$\$CDND+1(,@BR)	MOVE INP 1-3
	0C4E	4C 04 0B 03CC			2101	MVC	\$\$INLN+ECMDCN-1(ECMDCN,@BR),\$TABLN+1	INSERT LINE NUMBER
	0C53	4E 00 01 0EDB			2102	ALC	\$\$ILEN(1,@BR),ECMLNL	ADD TO LENGTH COUNT OF CARD
					2103	*		
					2104	PRINT CARD IF NOT IN NOLIST MODE		
					2105	*		
	0C58	1C 00 0ED3 01			2106	ECM140 MVC	ECMPPL+@PRCNT,\$\$ILEN(1,@BR)	MOVE CHAR COUNT TO PPL
	0C5D	38 04 03C3			2107	TBN	\$KEYCD,\$NOLST	IF IN NOLIST MODE
	0C61	F2 10 2C			2108	JT	ECM200	THEN DON'T LIST
	0C64	C0 87 0465			2109	B	\$\$SPRNT	PRINT INPUT CARD
	0C68	0ED2		0C69	2110	DC	AL(@CADDR)(ECMPPL)	ADDR OF PPL
	0C6A	F2 87 23			2111	J	ECM200	GOTO PROCESS
					2112	*		
					2113	*** KEYBOARD INPUT ONLY		
					2114	*		
	0C6D	7D 10 03			2115	ECM170 CLI	\$\$CKEY(,@BR),ECMCKY	BRANCH IF THIS
	0C70	F2 84 06			2116	JH	ECM180	* IS COMMAND KEY
					2117	* RLOAD ECMDPK		



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	0C73	C0 87	051E		2118	B	\$RLOAD			LOAD AND EXECUTE PGM
	0C77	0F04		0C78	2119	DC	AL2(ECMDPK)			DPL ADDRESS
					2120	***	END OF EXPANSION ***			
	0C79	7C 40	FF		2121	ECM180	MVI \$ENDNU+ECMSCE(,@BR),@BLANK			MOVE BLANKS FROM EOS TO END
	0C7C	0F 00	0C83 0AFE		2122		SLC ECM190+@Q(1),\$EOSA			* OF INPUT BUFFER SECTOR
	0C82	5C FD	FE FF		2123	ECM190	MVC \$ENDNU+ECMSCE-@B1(ECMSCE-@B1+*-*,@BR),\$ENDNU+ECMSCE(,@BR)			
	0C86	4C 00	02 0AFE		2124		MVC \$\$UPAR(1,@BR),\$EOSA			SET LENGTH OF INPUT
	0C8B	4F 00	02 0ED7		2125		SLC \$\$UPAR(1,@BR),ECMEDR			* FOR EFUCH
					2126	*				*
					2127	*	CARD AND KEYBOARD INPUT			*
					2128	*				*
	0C90	D2 02	06		2129	ECM200	LA \$\$INLN-1+*-*(@BR),@XR			INITIALIZE INPUT LINE POINTER
	0C93	E2 02	01		2130	ECM210	LA 1(@XR),@XR			LOOP TO INCREMENT
	0C96	BD 40	00		2131		CLI 0(@XR),@BLANK			* POINTER TO FIRST
	0C99	C0 81	0C93		2132		BE ECM210			* NON-BLANK CHAR
	0C9D	3C 40	03CE		2133		MVI \$ERRPG,\$ERFIL			SET FILE LINE INDICATOR
	0CA1	38 80	03D4		2134		TBN \$INDR1,\$BASIC			IS DATA FILE INDICATOR ON
	0CA5	F2 90	04		2135		JF ECM230			YES, BLANKS NOT ALLOWED
	0CA8	3C 87	0F26		2136		MVI C4BLNK,C4BSPC			ALLOW IMBEDDED BLANKS
	0CAC	C0 87	0F0B		2137	ECM230	B C4BIN2			CALL CONVERT TO BINARY ROUTINE
	0CB0	F2 81	89		2138		JZ ECM500			BRANCH IF FIRST CHAR NONNUMERIC
	0CB3	C0 82	0469		2139		BL \$CAERK			PSR SET TO BR IF GT 4 CHARS
	0CB7	4C 01	05 0F75		2140		MVC \$\$BNLN(@SBLNL,@BR),C4BVAL			PUT BINARY LINE NO. IN HEADER
	0CBC	F2 87	03		2141	ECM300	JC ECM400,@UCB			THIS BRANCH SET TO NOP IF IN
	0CBF	7C 40	07		2142		MVI \$\$INLN(@BR),@BLANK			* NUM MODE AND SLASH IN COL ONE

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 48
				2144	*			*
				2145	*		CALL APPROPRIATE SYNTAX CHECKER	*
				2146	*			*
0CC2	3C	33	03CD	2147	ECM400	MVI	\$CAERR,@E230	SET ERROR CODE
0CC6	38	02	03D5	2148		TBN	\$INDR2,\$CMODE	CONVERSATIONAL MODE?
0CCA	F2	90	E9	2149		JF	ECM560	NO, GOTO ERROR EXIT
0CCD	3C	2A	03CD	2150		MVI	\$CAERR,@E220	SET ERROR CODE
0CD1	38	40	0443	2151		TBN	\$WFNME,\$WFDEF	WORK FILE DEFINED
0CD5	F2	90	DE	2152		JF	ECM560	NO, GOTO ERROR EXIT
0CD8	3C	2C	03CD	2153		MVI	\$CAERR,@E222	PROTECTED ERROR CODE
0CDC	38	08	03D4	2154		TBN	\$INDR1,\$WFLOK	BRANCH IF WORK AREA
0CE0	F2	10	D3	2155		JT	ECM560	* FILE IS PROTETED
0CE3	3C	2B	03CD	2156		MVI	\$CAERR,@E221	PROG GEN DATA FILE ERROR CODE
0CE7	38	20	03D4	2157		TBN	\$INDR1,\$PGMDT	BRANCH IF WORK AREA CONTAINS
0CEB	F2	10	C8	2158		JT	ECM560	* PROG GEN DATA FILE
0CEE	3C	34	03CD	2159		MVI	\$CAERR,@E232	SET ERROR CODE
0CF2	38	02	03D1	2160		TBN	\$XIND2,\$PAUSE	BRANCH IF IN
0CF6	F2	10	BD	2161		JT	ECM560	* PAUSE STATE
0CF9	F2	87	03	2162		J	ECM403	GO TO LOOP
0CFC	E2	02	01	2163	ECM402	LA	1(,@XR),@XR	FETCH NEXT CHAR
0CFF	BD	40	00	2164	ECM403	CLI	0(,@XR),C' '	BRANCH IF THIS
0D02	C0	81	0CFC	2165		BE	ECM402	* CHAR BLANK
0D06	BD	1E	00	2166		CLI	0(,@XR),@EOS	BRANCH IF THIS NOT
0D09	F2	01	0C	2167		JNE	ECM405	* A DELETION LINE
0D0C	3A	10	03D5	2168		SBN	\$INDR2,\$FCIND	SET ON DELETE IND
0D10	3A	80	03D5	2169	ECM320	SBN	\$INDR2,\$READY	SET OFF READY IND
0D14	C0	87	04B4	2170		B	\$CABLD	CALL GUFUDI
				2171	*			
0D18	3C	35	03CE	2172	ECM405	MVI	\$ERRPG,\$ERSFL	SYNTAX ERROR INDICATOR
0D1C	38	01	03D4	2173		TBN	\$INDR1,\$PROCI	IS THIS A PROC FILE LINE? 1-4
0D20	F2	10	0D	2174		JT	ECM407	YES, CALL SPSYN 1-4
0D23	38	80	03D4	2175		TBN	\$INDR1,\$BASIC	IS THIS A BASIC PROGR FILE? 1-4
0D27	F2	90	0C	2176		JF	ECM410	NO, CALL SDSYN 1-4
0D2A	C0	87	0522	2177		B	\$BLOAD	CALL BASIC SYNTAX CHECKER
0D2E	0EDC			0D2F	2178	DC	AL(@CADDR)(ECMDPL)	ADDR OF DPL TO LOAD SFSYN
				2179	*			
0D30	C0	87	051E	2180	ECM407	B	\$RLOAD	CALL PROCEDURE LINE CHECKER 1-4
0D34	0EE8			0D35	2181	DC	AL(@CADDR)(ECMPRC)	ADDR OF DPL TO LOAD SPSYN 1-4
0D36	C0	87	0522	2182	ECM410	B	\$BLOAD	EXIT TO DATA SYNTAX CHECKER
0D3A	0EE2			0D3B	2183	DC	AL(@CADDR)(ECMDSC)	ADDR OF DPL TO LOAD SDSYN

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					2185	*		*
					2186	*	ANALYZE POTENTIAL SYSTEM COMMAND	*
					2187	*		*
0D3C	38	04	03C3		2188	ECM500	TBN \$KEYCD,\$NOLST	IS NOLIST INDICATOR ON
0D40	F2	90	06		2189		JF ECM505	NO, INPUT LINE ALREADY LISTED
0D43	C0	87	0465		2190		B \$SPRNT	LIST CARD AS INPUT MUST BE
0D47	0ED2			0D48	2191		DC AL(@CADDR)(ECMPPL)	* SYSTEM COMMAND OR ERROR
0D49	7D	5C	07		2192	ECM505	CLI \$\$INLN(,@BR),ECMAST	IS FIRST CHAR ASTERISK
0D4C	C0	81	0D10		2193		BE ECM320	YES, EXIT TO GUFUDI
0D50	F2	87	03		2194	ECM510	JC ECM520,@UCB	MODIFIED TO NOP IF FIRST CHAR
0D53	7C	40	07		2195		MVI \$\$INLN(,@BR),@BLANK	* SLASH AND IN NUM MODE
0D56	BD	40	01		2196	ECM520	CLI 1(,@XR),@BLANK	THIS CHAR BLANK?
0D59	F2	81	19		2197		JE ECM530	YES, DELIMETER FOUND
0D5C	BD	1E	01		2198		CLI 1(,@XR),@EOS	THIS CHAR EOS
0D5F	F2	81	13		2199		JE ECM530	YES, BRANCH FROM LOOP
0D62	BD	60	01		2200		CLI 1(,@XR),@MINUS	THIS CHAR MINUS SIGN
0D65	F2	81	0D		2201		JE ECM530	YES, THIS MAY BE DELFMETER
0D68	E2	02	01		2202		LA 1(,@XR),@XR	INCREMENT POINTER TO NEXT CHAR
0D6B	0E	00	0D8E 0EDA		2203		ALC ECMLN,ECM910(1)	ADD ONE TO LENGTH OF KEYWORD
0D71	C0	87	0D56		2204		B ECM520	GOTO LOOP
					2205	*		
0D75	C2	01	0F7A		2206	ECM530	LA ECMTBL-ECMLDP,@BR	POINT BR TO KEYWORD TABLE
0D79	0E	00	0D8F 0D8E		2207		ALC ECM540+@D1(1),ECMLN	ADD KEYWORD LENGTH TO DISP
0D7F	0E	00	0EDA 0D8E		2208		ALC ECMLNG(1),ECMLN	
0D85	1D	00	0EDA 01		2209	ECM535	CLC ECMLNG,ECMLDP(1,@BR)	THIS ENTRY SAME LENGTH AS INPUT
0D8A	F2	01	07		2210		JNE ECM550	NO, GOTO ADVANCE POINTER
0D8D	6D	00	08 00		2211	ECM540	CLC ECMK1D+*-*(@VQ,@BR),0(,@XR)	IS THIS KEYWORD
				0D8E	2212	ECMLN EQU	ECM540+@Q	LOCATION OF KEYWORD LENGTH-1
0D91	F2	81	36		2213		JE ECM580	YES, GOTO CHECK INDICATORS
0D94	7C	00	00		2214	ECM550	MVI 0(,@BR),@ZERO	ZERO BYTE IN FRONT OF LENGTH
0D97	76	01	01		2215		A ECMLDP(,@BR),@BR	ADD KEYWORD LENGTH TO POINTER
0D9A	D2	01	07		2216		LA ECMDPD(,@BR),@BR	INCREMENT POINTER TO NEXT ENTRY
0D9D	7D	00	01		2217		CLI ECMLDP(,@BR),@ZERO	IS LENGTH FIELD ZERO
0DA0	C0	01	0D85		2218		BNE ECM535	NO, GO BACK TO SEARCH MORE
0DA4	C0	87	0465		2219		B \$SPRNT	CALL OUTPUT ROUTINE TO PRINT
0DA8	0EEE			0DA9	2220		DC AL(@CADDR)(ECMEPL)	* A QUESTION MARK
0DAA	38	01	03C3		2221		TBN \$KEYCD,\$CARDI	CARD INPUT?
0DAE	C0	90	0D10		2222		BF ECM320	NO, DON'T TYPE READY
0DB2	C0	87	049D		2223		B \$CAIPL	YES, CHANGE TO KEYBOARD
					2224	*		*
					2225	*	PRINT ERROR CARD IF IN NOLIST MODE	*
					2226	*		*
0DB6	3C	80	03CE		2227	ECM560	MVI \$ERRPG,\$ERKEY	SET ERROR PROG INDICATOR
0DBA	38	04	03C3		2228		TBN \$KEYCD,\$NOLST	BRANCH IF NOT
0DBE	F2	90	B6		2229		JF ECM655	* IN NOLIST MODE
					2230	*	SPRNT ECMPPL	PRINT CARD
0DC1	C0	87	0465		2231		B \$SPRNT	PRINT ON SYSTEM PRINTER
0DC5	0ED2			0DC6	2232		DC AL2(ECMPPL)	PPL ADDRESS
					2233	***	END OF EXPANSION ***	
0DC7	F2	87	AD		2234		J ECM655	GOTO ERROR PROGRAM

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				2236	*			*
				2237	*		TEST INDICATORS TO SEE IF CONDITIONS ALLOW THIS COMMAND	*
				2238	*			*
0DCA	3C	80	03CE	2239	ECM580	MVI	\$ERRPG,\$ERKEY	SET COMMAND LINE ERROR IND
0DCE	38	20	03D6	2240		TBN	\$INDR3,\$MOUNT	BRANCH IF SYSTEM IS
0DD2	F2	90	0A	2241		JF	ECM590	* NOT IN TEMP. UTIL. MODE
0DD5	3C	35	03CD	2242		MVI	\$CAERR,@E234	SET ERROR CODE
0DD9	78	20	03	2243		TBN	ECMI2D(,@BR),ECMTUT	BRANCH IF THIS COMMAND NOT
0DDC	F2	90	98	2244		JF	ECM655	* ALLOWED IN TEMP UTI MODE
				2245	*			
0DDF	38	02	03D5	2246	ECM590	TBN	\$INDR2,\$CMODE	BRANCH IF SYSTEM IN
0DE3	F2	10	0D	2247		JT	ECM610	* CONVERSATIONAL MODE
0DE6	3C	33	03CD	2248		MVI	\$CAERR,@E230	INVALID IN UTILITY ERROR CODE
0DEA	78	02	02	2249		TBN	ECMI1D(,@BR),ECMCON	BRANCH IF THIS COMMAND
0DED	F2	10	87	2250		JT	ECM655	* NOT ALLOWED IN UTILITY MODE
0DF0	F2	87	9B	2251		J	ECM665	CONTINUE
				2252	*			
0DF3	38	02	03D1	2253	ECM610	TBN	\$XIND2,\$PAUSE	BRANCH IF SYSTEM IN PAUSE MODE
0DF7	F2	10	0D	2254		JT	ECM620	YES, CHECK FURTHER
0DFA	3C	2E	03CD	2255		MVI	\$CAERR,@E225	NOT IN PAUSE STATE ERROR CODE
0DFE	78	04	02	2256		TBN	ECMI1D(,@BR),ECMPSO	THIS PAUSE ONLY COMMAND
0E01	F2	10	73	2257		JT	ECM655	YES, GOTO ERROR PROCEDURE
0E04	F2	87	0A	2258		J	ECM625	CHECK NEXT INDICATOR
				2259	*			
0E07	3C	34	03CD	2260	ECM620	MVI	\$CAERR,@E232	SET ERROR CODE
0E0B	78	08	02	2261		TBN	ECMI1D(,@BR),ECMPST	THIS OK IN PAUSE MODE
0E0E	F2	10	66	2262		JT	ECM655	NO, GOTO ERROR
				2263	*			
0E11	38	40	0443	2264	ECM625	TBN	\$WFNME,\$WFDEF	WORK FILE DEFINED
0E15	F2	10	0A	2265		JT	ECM630	YES, CHECK NEXT ONE
0E18	3C	2A	03CD	2266		MVI	\$CAERR,@E220	SET ERROR CODE
0E1C	78	10	02	2267		TBN	ECMI1D(,@BR),ECMDEF	THIS COMMAND NEED DEFINED FILE
0E1F	F2	10	55	2268		JT	ECM655	YES, ERROR CONDITION
				2269	*			
0E22	39	04	03D4	2270	ECM630	TBF	\$INDR1,\$WSIND	WORK FILE EMPTY
0E26	F2	10	0A	2271		JT	ECM635	NO, OK
0E29	3C	2F	03CD	2272		MVI	\$CAERR,@E226	SET ERROR CODE
0E2D	78	20	02	2273		TBN	ECMI1D(,@BR),ECMWSI	THIS COMMAND OK WITH EMPTY FILE
0E30	F2	10	44	2274		JT	ECM655	NO, ERROR
				2275	*			
0E33	38	80	03D0	2276	ECM635	TBN	\$XIND1,\$VMDEF	BRANCH IF VIRTUAL
0E37	F2	10	0A	2277		JT	ECM640	* MEMORY DEFINED
0E3A	3C	4C	03CD	2278		MVI	\$CAERR,@E316	VIRTUAL MEMORY BAD ERROR CODE
0E3E	78	40	03	2279		TBN	ECMI2D(,@BR),ECMVMG	BRANCH IF THIS COMMAND
0E41	F2	10	33	2280		JT	ECM655	* NEEDS GOOD VIRTUAL MEMORY
				2281	*			
0E44	38	08	03D4	2282	ECM640	TBN	\$INDR1,\$WFLOK	WORK FILE LOCKED
0E48	F2	90	0A	2283		JF	ECM645	NO, PROCEED
0E4B	3C	2C	03CD	2284		MVI	\$CAERR,@E222	SET ERROR CODE
0E4F	78	40	02	2285		TBN	ECMI1D(,@BR),ECMLOK	THIS COMMAND ALLOWED IF LOCKED
0E52	F2	90	22	2286		JF	ECM655	NO, ERROR
				2287	*			
0E55	38	80	03D4	2288	ECM645	TBN	\$INDR1,\$BASIC	TAKE BRANCH IF WORK AREA
0E59	F2	10	22	2289		JT	ECM660	* CONTAINS PROGRAM FILE
0E5C	3C	2D	03CD	2290		MVI	\$CAERR,@E223	SET ERROR CODE
0E60	78	10	03	2291		TBN	ECMI2D(,@BR),ECMDTN	TAKE BRANCH IF DATA

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0E63	F2	10	11		2292	JT	ECM655		* FILE NOT OK
0E66	38	20	03D4		2293	TBN	\$INDR1,\$PGMDT		WORK AREA CONTAINS PROG GEN FILE
0E6A	F2	90	11		2294	JF	ECM660		NO, ERRORS FINISHED
0E6D	3C	2B	03CD		2295	MVI	\$CAERR,@E221		SET ERRORS CODE
0E71	78	80	02		2296	TBN	ECMI1D(,@BR),ECMPGD		THIS COMMAND LIKES PGDF
0E74	F2	10	07		2297	JT	ECM660		YES, CONTINUE
					2298	*			
0E77	D2	02	00		2299	ECM655 LA	0(,@BR),@XR		POINT XR OUT OF INPUT BUFFER
0E7A	C0	87	0469		2300	B	\$CAERK		EXIT TO ERRPGM
					2301	*			*
					2302	*			*
					2303	*			*
0E7E	78	01	03		2304	ECM660 TBN	ECMI2D(,@BR),ECMSVF		FIT OVERLAYED BY THIS PROG
0E81	F2	90	0A		2305	JF	ECM665		NO, TEST NEXT BIT
0E84	C0	87	0025		2306	B	\$DISKN		CALL DISK ROUTINE TO WRITE
0E88	0EF2			0E89	2307	DC	AL(@CADDR)(ECMDPT)		* FIT TO DISK
0E8A	3B	10	03D4		2308	SBF	\$INDR1,\$FITIN		SET FIT IN CORE INDICATOR OFF
					2309	*			
0E8E	78	08	03		2310	ECM665 TBN	ECMI2D(,@BR),ECMVMD		TAK BRANCH IF THIS KEYWORD
0E91	F2	90	04		2311	JF	ECM670		* DOES NOT DESTROY VIRT MEMORY
0E94	3C	00	03D0		2312	MVI	\$XIND1,@ZERO		* VIRTUAL MEMORY DESTROYED
					2313	*			
0E98	78	02	03		2314	ECM670 TBN	ECMI2D(,@BR),ECMLWS		WORKING STORAGE TO BE PRIMED
0E9B	F2	90	12		2315	JF	ECM680		NO, DON'T
0E9E	C0	87	0025		2316	B	\$DISKN		CALL DISK ROUTINE TO READ FIRST
0EA2	0EF8			0EA3	2317	DC	AL(@CADDR)(ECMDPW)		* SECTOR OF WORK FILE TO CORE
0EA4	78	05	03		2318	TBN	ECMI2D(,@BR),ECMSVF+ECMIOO		BRANCH IF NOT RUN,
0EA7	F2	90	06		2319	JF	ECM680		* STEP OR TRACE
					2320	*	DISK ECMDPI		
0EAA	C0	87	0025		2321	B	\$DISKN		PERFORM PHYSICAL DISK OF
0EAE	0EFE			0EAF	2322	DC	AL2(ECMDPI)		DPL ADDRESS
					2323	***	END OF EXPANSION ***		
					2324	*			
0EB0	78	04	03		2325	ECM680 TBN	ECMI2D(,@BR),ECMIOO		I/O ROUTINES OVERLAYED
0EB3	F2	90	04		2326	JF	ECM690		NO, LOAD PROGRAM
0EB6	3B	02	03C3		2327	SBF	\$KEYCD,\$IOYES		SET OFF I/O IN CORE INDICATOR
					2328	*			
0EBA	C0	87	0465		2329	ECM690 B	\$SPRNT		WAIT UNTIL PRINTER FINISHED
0EBE	057F			0EBF	2330	DC	AL(@CADDR)(\$WAITF)		* IN CASE CARD BEING LISTED
0EC0	1C	03	0EE0 07		2331	MVC	ECMRPL+@DBFR1,ECMDPD(ECMKWS-ECMDAS,@BR)		SET UP DPL
0EC5	E2	02	01		2332	LA	1(,@XR),@XR		INCR XR TO DELIMITER
0EC8	C0	87	048D		2333	B	\$UNMSK		UNMASK INQUIRY REQUEST
0ECC	C0	87	051E		2334	B	\$RLOAD		LOAD AND EXECUTE KEYWORD
0ED0	0EDC			0ED1	2335	DC	AL(@CADDR)(ECMRPL)		* PROGRAM



## #ECMAN -- COMMAND ANALYZER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 52
	0ED2	C0		0ED2	2337	ECMPPL	DC	AL1(@PRINT+@RETRN)	PRINT WITH CARRIAGE RETURN	
	0ED3			0ED3	2338		DS	CL1	LENGTH OF LINE	
	0ED4	0607		0ED5	2339		DC	AL(@CADDR)(\$\$INLN)	INPUT LINE	
					2340	*				
	0ED6	0606		0ED7	2341	ECMINP	DC	AL(@CADDR)(\$\$INLN-1)	CALCULATE LINE COUNT	
					2342	*				
	0ED8	FFFF		0ED9	2343	ECM900	DC	IL2'-1'	TO DECREMENT XR	
					2344	*				
	0EDA	01		0EDA	2345	ECM910	DC	IL1'1'	INCREMENT KEYWORD CHAR COUNT	
					2346	*				
	0EDB	05		0EDB	2347	ECMLNL	DC	AL1(ECMDCN)	LENGTH FOR ADD FOR AUTO LINE INC	
					2348	*				
	0EDC	01		0EDC	2349	ECMDPL	DC	AL1(@DGET)	DPL USED TO READ THE SPECIFIED	
	0EDD			0EDE	2350		DS	CL(@DADDR)	* KEYWORD PROGRAM-THE MIDDLE	
	0EDF			0EDF	2351		DS	CL1	* FOUR BYTES ARE MOVED IN	
	0EE0			0EE1	2352		DS	CL(@CADDR)	* FROM THE KEYWORD TABLE THE	
					2353	*			* LAST BYTE IS INITIALIZED TO	
	0EDD				2354	ORG		ECMDPL+@DCYL	* ZERO BY THIS ORG INSTRUCTION	
	0EDD	0480		0EDE	2355		DC	AL(@DADDR)(#@SFSY)	* WHICH INITIALIZED THE DPL TO	
	0EDF	11		0EDF	2356		DC	AL1(##@SFS)	* BE USED TO READ THE BASIC	
	0EE0	0C00		0EE1	2357		DC	AL(@CADDR)(\$\$KLD3)	* SYNTAX CHECKER	
					2358	*				
	0EE2	01		0EE2	2359	ECMDSC	DC	AL1(@DGET)	DPL TO READ	
	0EE3	04AD		0EE4	2360		DC	AL(@DADDR)(#@SDSY)	* DATA FILE	
	0EE5	04		0EE5	2361		DC	AL1(##@SDS)	* SYNTAX	
	0EE6	0C00		0EE7	2362		DC	AL(@CADDR)(\$\$KLD3)	* CHECKER	
					2363	*				1-4
					2364	*CMPRC	\$DPL	FUNC-@DGET,DADDR-#\$SPSY,CNT-#\$@SPS,CADDR-#\$SPS		1-4
				0EE8	2365+	ECMPRC	EQU	*	DISK PARAMETER LIST	
	0EE8	01		0EE8	2366+		DC	AL1(@DGET)	REQUESTED FUNCTION	
	0EE9	0484		0EEA	2367+		DC	AL2(\$\$SPSY)	DISK ADDRESS	
	0EEB	01		0EEB	2368+		DC	AL1(\$\$@SPS)	SECTOR COUNT	
	0EEC	0C00		0EED	2369+		DC	AL2(\$\$SPS)	BUFFER ADDRESS	
					2370+	***		END OF EXPANSION ***		
					2371	*				
	0EEE	C0		0EEE	2372	ECMEPL	DC	AL1(@PRINT+@RETRN)	PPL TO PRINT	
	0EEF	01		0EEF	2373		DC	AL1(ECMLQM)	* QUESTION MARK FOR	
	0EF0	0F0A		0EF1	2374		DC	AL(@CADDR)(ECMQUE)	* UNRECOGNIZABLE INPUT	
					2375	*				
	0EF2	02		0EF2	2376	ECMDPT	DC	AL1(@DPUT)	DISK PARAMETER LIST	
	0EF3	0500		0EF4	2377		DC	AL(@DADDR)(#@#WFT)	* TO WRITE FILE	
	0EF5	03		0EF5	2378		DC	AL1(##@#WF)	* INDEX TABLE TO DISK	
	0EF6	1D00		0EF7	2379		DC	AL(@CADDR)(\$\$FITS)	* IF KEYWORD PROGRAM WILL OVERLAY	
					2380	*				
	0EF8	01		0EF8	2381	ECMDPW	DC	AL1(@DGET)	DISK PARAMETER LIST TO READ	
	0EF9	050C		0EFA	2382		DC	AL(@DADDR)(#@#WDB)	* FIRST TEXT SECTOR OF THE	
	0EFB	02		0EFB	2383		DC	XL1'02'	* WORK AREA FILE TO CORE IF	
	0EFC	1E00		0EFD	2384		DC	AL(@CADDR)(\$\$WSPB)	* REQUESTED BY KEYWORD PROGRAM	
					2385	*				
					2386	*CMDPI	\$DPL	FUNC-@DGET,DADDR-##@#IO1,CNT-##@#IO,CADDR-ECMLDS		
				0EFE	2387+	ECMDPI	EQU	*	DISK PARAMETER LIST	
	0EFE	01		0EFE	2388+		DC	AL1(@DGET)	REQUESTED FUNCTION	
	0EFF	0459		0F00	2389+		DC	AL2(##@#IO1)	DISK ADDRESS	
	0F01	01		0F01	2390+		DC	AL1(##@#IO)	SECTOR COUNT	
	0F02	1F00		0F03	2391+		DC	AL2(ECMLDS)	BUFFER ADDRESS	
					2392+	***		END OF EXPANSION ***		

#ECMAN -- COMMAND ANALYZER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 53
					2393	*				
					2394	*CMDPK \$DPL	FUNC=@DGET,DADDR-#\$EFKE,CNT-#\$@EFK,CADDR-#\$SEFK			
				0F04	2395+	ECMDPK EQU	*			DISK PARAMETER LIST
0F04	01			0F04	2396+	DC	AL1(@DGET)			REQUESTED FUNCTION
0F05	1990			0F06	2397+	DC	AL2(#\$EFKE)			DISK ADDRESS
0F07	02			0F07	2398+	DC	AL1(#\$@EFK)			SECTOR COUNT
0F08	0C00			0F09	2399+	DC	AL2(#\$SEFK)			BUFFER ADDRESS
					2400+	*** END OF EXPANSION ***				
				0001	2402	ECMLQM EQU	1			LENGTH OF QUESTION MARK TEXT
					2403	*				
0F0A	6F			0F0A	2404	ECMQUE DC	CL(ECMLQM)'?'			





## #ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 25/02/16 PAGE 55
				2407	*			*
				2408	*		INITIALIZATION	*
				2409	*			*
				0F0B 2410	C4BIN2 EQU *		ENTRY POINT	
				0F0B 2411	USING C4BIN2,@BR		BASE VALUE	
				2412	*			
0F0B	34	01	0F6D	2413		ST C4B800+@OP1,@BR	SAVE CALLERS BASE REGISTER	
0F0F	C2	01	0F0B	2414		LA C4BIN2,@BR	LOAD BASE VALUE	
				2415	*			
0F13	74	08	66	2416		ST C4B850+@OP1(,@BR),@ARR	SAVE RETURN ADDRESS	
				2417	*			
0F16	74	02	6E	2418		ST C4BSAV(,@BR),@XR	SAVE VALUE OF POINTER	
0F19	3C	0C	03CD	2419		MVI \$CAERR,@E122	SET ERROR CODE IN CASE	
0F1D	5C	01	6A 6B	2420		MVC C4BVAL(C4BLVL,@BR),C4BINI(,@BR)	INIT VALUE TO ZERO	
0F21	3C	04	0F7A	2421	C4B100	MVI C4B900,4	INITLZ CHAR. COUNT	
				2422	*			
				2423	***	DETERMINE IF CHAR NUMERIC AND DECR CHAR COUNT		
				2424	*			
0F25	F2	80	32	2425	C4B200	JC C4B600,@NOP	SET TO UCB IF IMBEDDED BLANKS	
				2426	*		* ALLOWED	
0F28	BD	F0	00	2427	C4B300	CLI 0(,@XR),C4BLOW	THIS CHAR NUMERIC ?	
0F2B	F2	82	35	2428		JL C4B700	NO, GOTO RETURN	
				2429	*			
0F2E	5F	00	6F 4E	2430		SLC C4B900(1,@BR),C4B590+@D1(,@BR)	DECR CHAR COUNT	
0F32	F2	82	35	2431		JL C4B800	BR TO ERROR EXIT IF TOO MANY	
				2432	*			
				2433	***	MULTIPLY PREVIOUS VALUE BY TEN		
				2434	*			
0F35	5E	01	6A 6A	2435		ALC C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	DOUBLE PREVIOUS VALUE	
0F39	5C	01	68 6A	2436		MVC C4BWRK(C4BLVL,@BR),C4BVAL(,@BR)	SAVE DOUBLE VALUE	
0F3D	5E	01	6A 6A	2437		ALC C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	QUADRUPLE PREVIOUS VALUE	
0F41	5E	01	6A 6A	2438		ALC C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	OCTUPLE PREVIOUS VALUE	
0F45	5E	01	6A 68	2439		ALC C4BVAL(C4BLVL,@BR),C4BWRK(,@BR)	ADD IN SAVED DOUBLE	
				2440	*			
				2441	***	ADD IN VALUE OF THIS CHAR AND INCR POINTER		
				2442	*			
0F49	68	03	6C 00	2443		MNN C4BCHR(,@BR),0(,@XR)	FETCH NEMERIC VALUE OF NEW CHAR	
0F4D	5E	01	6A 6C	2444		ALC C4BVAL(C4BLVL,@BR),C4BCHR(,@BR)	INCR VALU BY THIS CHAR	
				2445	*			
0F51	E2	02	01	2446		LA @B1(,@XR),@XR	INCR POINTER TO NEXT CHAR	
0F54	D0	87	1A	2447		B C4B200(,@BR)	GOTO DO IT AGAIN	
				2448	*			*
				2449	*	ROUTINE TO SCAN BLANKS		*
				2450	*			*
0F57	E2	02	01	2451	C4B590	LA @B1(,@XR),@XR	INCR POINTER TO NEXT CHAR	
0F5A	BD	40	00	2452	C4B600	CLI 0(,@XR),@BLANK	IS THIS CHAR A BLANK ?	
0F5D	D0	01	1D	2453		BNE C4B300(,@BR)	RETURN IF NOT	
0F60	D0	87	4C	2454		B C4B590(,@BR)	GET NEXT CHAR IF YES	

## #ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	56
				2456	*						
				2457	***		ENDING ROUTINE				
				2458	*						
0F63	74	02	68	2459	C4B700	ST	C4BLEN(,@BR),@XR			PLACE VALUE OF POINTER	
0F66	5F	01	68 6E	2460		SLC	C4BLEN(2,@BR),C4BSAV(,@BR)			SUBTRACT ENTERING VALUE	
				2461	*						
0F6A	C2	01	0000	2462	C4B800	LA	*-*,@BR			RESTORE CALLERS BR	
				2463	*						
0F6E	C0	87	0000	2464	C4B850	B	*-*			RETURN TO CALLING ROUTINE	
				2465	*						*
				2466	*		WORK AREA AND CONSTANT				*
				2467	*						*
0F72				0F73	2468	C4BWRK	DS	CL2		SAVE AREA FOR DOUBLED VALUE	
				2469	*						
				0F74	2470	C4BYT1	EQU	*		FIRST BYTE OF BINARY VALUE	
0F74				0F75	2471	C4BVAL	DS	CL2		SAVE AREA FOR BINARY VALUE	
				2472	*						
0F76	00			0F76	2473	C4BINI	DC	XL1'00'		INITIALIZE WA TO ZERO	
				2474	*						
0F77				0F77	2475	C4BCHR	DS	CL1		SAVE AREA FOR EACH NEW CHAR	
0F77				2476		ORG	*-1			INITIALIZE	
0F77	00			0F77	2477		DC	XL1'00'		* TO ZERO	
				2478	*						
0F78				0F79	2479	C4BSAV	DS	CL2		SAVE AREA FOR XR	
				2480	*						
0F7A				0F7A	2481	C4B900	DS	CL1		SAVE AREA FOR CHAR COUNTER	
				2482	*						*
				2483	*		EQUATES FOR C4BIN2				*
				2484	*						*
				0F73	2485	C4BLEN	EQU	C4BWRK		ON RETURN WILL CONTAIN COUNT	
				2486	*					* @XR INCREMENTED BY	
				0004	2487	C4BCHC	EQU	4		NUMBER OF CHAR TO CONVERT	
				2488	*						
				00F0	2489	C4BLOW	EQU	C'0'		LOWEST NUMERIC CHARACTER	
				2490	*						
				0002	2491	C4BLVL	EQU	C4BVAL-C4BWRK		LENGTH OF BINARY VALUE	
				2492	*						
				0F26	2493	C4BLNK	EQU	C4B200+@Q		LOCATION OF IMBEDDED BLANK IND	
				2494	*						
				0087	2495	C4BSPC	EQU	@UCB		MOVED TO C4BLNK TO ALLOW BLANKS	
				2496	*						
				0F22	2497	C4BNMC	EQU	C4B100+@Q		LOCATION OF CONVERSION COUNT	
				2498	*						
				0080	2499	C4BNOP	EQU	@NOP		CHANGED IF IMBEDDED BLANK OK	

## #ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 57
				0F7B	2501	ECMTBL	EQU *			KEYWORD TABLE
					2502	*				
	0F7B	08		0F7B	2503	ECMKWL	DC IL1'8'			LENGTH OF KEYWORD
	0F7C	5A		0F7C	2504	ECMIB1	DC AL1(ECMCON+ECMPHY+ECMDEF+ECML0K)			1ST IND BYTE
	0F7D	11		0F7D	2505	ECMIB2	DC AL1(ECMDTN+ECMSVF)			SECOND INDICATOR BYTE
				0F7E	2506	ECMDAS	EQU *			START OF FOUR BYTE DPL
	0F7E	06A4		0F7F	2507		DC AL(@DADDR)(\$KALL)			DISK ADDRESS OF PROGRAM
	0F80	0F		0F80	2508		DC AL1(\$@KAL)			NUMBER OF SECTORS IN PROGRAM
				0F81	2509	ECMDPF	EQU *			ADDRESSING LABEL
	0F81	0C00		0F82	2510		DC AL(@CADDR)(\$\$KAL)			SECTOR LOAD ADDR
	0F82				2511		ORG *-1			LAST BYTE NOT USED
				0F82	2512	ECMKWS	EQU *			FIRST BYTE OF KEYWORD
	0F82	C1D3D3D6C3C1E3C5		0F89	2513		DC CL8'ALLOCATE'			KEYWORD
					2514	*				
	0F8A	04		0F8A	2515		DC IL1'4'			LENGTH OF KEYWORD
	0F8B	C8		0F8B	2516		DC AL1(ECMPHY+ECML0K+ECMPGD)			FIRST INDICATOR BYTE
	0F8C	21		0F8C	2517		DC AL1(ECMSVF+ECMTUT)			SECOND INDICATOR BYTE
	0F8D	1CC4		0F8E	2518		DC AL(@DADDR)(\$KCAL)			DISK ADDRESS OF PROGRAM
	0F8F	0C		0F8F	2519		DC AL1(\$@KCA)			SECTOR COUNT
	0F90	0C00		0F91	2520		DC AL(@CADDR)(\$\$KCA)			SECTOR LOAD ADDR
	0F91				2521		ORG *-1			LAST BYTE NOT USED
	0F91	C3C1D3D3		0F94	2522		DC CL4'CALL'			KEYWORD
					2523	*				
	0F95	06		0F95	2524		DC IL1'6'			LENGTH OF KEYWORD
	0F96	8A		0F96	2525		DC AL1(ECMCON+ECMPHY+ECMPGD)			FIRST INDICATOR BYTE
	0F97	00		0F97	2526		DC AL1(ECM000)			SECOND INDICATOR BYTE
	0F98	053C		0F99	2527		DC AL(@DADDR)(\$KCHA)			DISK ADDRESS OF PROGRAM
	0F9A	0C		0F9A	2528		DC AL1(\$@KCH)			SECTOR COUNT
	0F9B	0C00		0F9C	2529		DC AL(@CADDR)(\$\$KCH)			SECTOR LOAD ADDR
	0F9C				2530		ORG *-1			LAST BYTE NOT USED
	0F9C	C3C8C1D5C7C5		0FA1	2531		DC CL6'CHANGE'			KEYWORD
					2532	*				
	0FA2	09		0FA2	2533		DC IL1'9'			LENGTH OF KEYWORD
	0FA3	C0		0FA3	2534		DC AL1(ECML0K+ECMPGD)			FIRST INDICATOR BYTE
	0FA4	01		0FA4	2535		DC AL1(ECMSVF)			SECOND INDICATOR BYTE
	0FA5	0F80		0FA6	2536		DC AL(@DADDR)(\$KCN)			DISK ADDRESS OF PROGRAM
	0FA7	10		0FA7	2537		DC AL1(\$@KCN)			SECTOR COUNT
	0FA8	0C00		0FA9	2538		DC AL(@CADDR)(\$\$KCN)			SECTOR LOAD ADDR
	0FA9				2539		ORG *-1			LAST BYTE NOT USED
	0FA9	C3D6D5C4C9E3C9D6		0FB1	2540		DC CL9'CONDITION'			KEYWORD
					2541	*				
	0FB2	06		0FB2	2542		DC IL1'6'			LENGTH OF KEYWORD
	0FB3	CA		0FB3	2543		DC AL1(ECMCON+ECMPHY+ECML0K+ECMPGD)			1ST IND BYTE
	0FB4	01		0FB4	2544		DC AL1(ECMSVF)			SECOND INDICATOR BYTE
	0FB5	035C		0FB6	2545		DC AL(@DADDR)(\$KDEL)			DISK ADDRESS OF PROGRAM
	0FB7	10		0FB7	2546		DC AL1(\$@KDE)			SECTOR COUNT
	0FB8	0C00		0FB9	2547		DC AL(@CADDR)(\$\$KDE)			SECTOR LOAD ADDR
	0FB9				2548		ORG *-1			LAST BYTE NOT USED
	0FB9	C4C5D3C5E3C5		0FBE	2549		DC CL6'DELETE'			KEYWORD
					2550	*				
	0FBF	07		0FBF	2551		DC IL1'7'			LENGTH OF KEYWORD
	0FC0	3A		0FC0	2552		DC AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)			1ST IND BYTE
	0FC1	00		0FC1	2553		DC AL1(ECM000)			SECOND INDICATOR BYTE
	0FC2	01C4		0FC3	2554		DC AL(@DADDR)(\$KENA)			DISK ADDRESS OF PROGRAM
	0FC4	06		0FC4	2555		DC AL1(\$@KEN)			SECTOR COUNT
	0FC5	0C00		0FC6	2556		DC AL(@CADDR)(\$\$KEN)			SECTOR LOAD ADDR

## #ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE 58
	0FC6			2557	ORG	*-1			LAST BYTE NOT USED
	0FC6	C4C9E2C1C2D3C5	0FCC	2558	DC	CL7'DISABLE'			KEYWORD
				2559	*				
	0FCD	07	0FCD	2560	DC	IL1'7'			LENGTH OF KEYWORD
	0FCE	C2	0FCE	2561	DC	AL1(ECMCON+ECMLOK+ECMPGD)			FIRST INDICATOR BYTE
	0FCF	45	0FCF	2562	DC	AL1(ECMVMG+ECMSVF+ECMIOO)			SECOND INDICATOR BYTE
	0FD0	0744	0FD1	2563	DC	AL(@DADDR)(\$KDIS)			DISK ADDRESS OF PROGRAM
	0FD2	05	0FD2	2564	DC	AL1(\$@KDI)			SECTOR COUNT
	0FD3	0D00	0FD4	2565	DC	AL(@CADDR)(\$\$KDI)			SECTOR LOAD ADDR
	0FD4			2566	ORG	*-1			LAST BYTE NOT USED
	0FD4	C4C9E2D7D3C1E8	0FDA	2567	DC	CL7'DISPLAY'			KEYWORD
				2568	*				
	0FDB	04	0FDB	2569	DC	IL1'4'			LENGTH OF KEYWORD
	0FDC	C2	0FDC	2570	DC	AL1(ECMCON+ECMLOK+ECMPGD)			FIRST INDICATOR BYTE
	0FDD	01	0FDD	2571	DC	AL1(ECMSVF)			SECOND INDICATOR BYTE
	0FDE	0188	0FDF	2572	DC	AL(@DADDR)(\$KEDI)			DISK ADDRESS OF PROGRAM
	0FE0	0E	0FE0	2573	DC	AL1(\$@KED)			SECTOR COUNT
	0FE1	0C00	0FE2	2574	DC	AL(@CADDR)(\$\$KED)			SECTOR LOAD ADDR
	0FE2			2575	ORG	*-1			LAST BYTE NOT USED
	0FE2	C5C4C9E3	0FE5	2576	DC	CL4'EDIT'			KEYWORD
				2577	*				
	0FE6	06	0FE6	2578	DC	IL1'6'			LENGTH OF KEYWORD
	0FE7	3A	0FE7	2579	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)			1ST IND BYTE
	0FE8	00	0FE8	2580	DC	AL1(ECM000)			SECOND INDICATOR BYTE
	0FE9	01C4	0FEA	2581	DC	AL(@DADDR)(\$KENA)			DISK ADDRESS OF PROGRAM
	0FEB	06	0FEB	2582	DC	AL1(\$@KEN)			SECTOR COUNT
	0FEC	0C00	0FED	2583	DC	AL(@CADDR)(\$\$KEN)			SECTOR LOAD ADDR
	0FED			2584	ORG	*-1			LAST BYTE NOT USED
	0FED	C5D5C1C2D3C5	0FF2	2585	DC	CL6'ENABLE'			KEYWORD
				2586	*				
	0FF3	05	0FF3	2587	DC	IL1'5'			LENGTH OF KEYWORD
	0FF4	C8	0FF4	2588	DC	AL1(ECMPHY+ECMLOK+ECMPGD)			FIRST INDICATOR BYTE
	0FF5	01	0FF5	2589	DC	AL1(ECMSVF)			SECOND INDICATOR BYTE
	0FF6	0300	0FF7	2590	DC	AL(@DADDR)(\$KDNT)			DISK ADDRESS OF PROGRAM
	0FF8	10	0FF8	2591	DC	AL1(\$@KDN)			SECTOR COUNT
	0FF9	0C00	0FFA	2592	DC	AL(@CADDR)(\$\$KDN)			SECTOR LOAD ADDR
	0FFA			2593	ORG	*-1			LAST BYTE NOT USED
	0FFA	C5D5E3C5D9	0FFE	2594	DC	CL5'ENTER'			KEYWORD
				2595	*				
	0FFF	07	0FFF	2596	DC	IL1'7'			LENGTH OF KEYWORD
	1000	3A	1000	2597	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)			1ST IND BYTE
	1001	00	1001	2598	DC	AL1(ECM000)			SECOND INDICATOR BYTE
	1002	0234	1003	2599	DC	AL(@DADDR)(\$KEXT)			DISK ADDRESS OF PROGRAM
	1004	03	1004	2600	DC	AL1(\$@KEX)			SECTOR COUNT
	1005	0C00	1006	2601	DC	AL(@CADDR)(\$\$KEX)			SECTOR LOAD ADDR
	1006			2602	ORG	*-1			LAST BYTE NOT USED
	1006	C5E7E3D9C1C3E3	100C	2603	DC	CL7'EXTRACT'			KEYWORD
				2604	*				
	100D	02	100D	2605	DC	IL1'2'			LENGTH OF KEYWORD
	100E	C6	100E	2606	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)			1ST IND BYTE
	100F	05	100F	2607	DC	AL1(ECMSVF+ECMIOO)			SECOND INDICATOR BYTE
	1010	0180	1011	2608	DC	AL(@DADDR)(\$KGOS)			DISK ADDRESS OF PROGRAM
	1012	02	1012	2609	DC	AL1(\$@KGO)			SECTOR COUNT
	1013	0C00	1014	2610	DC	AL(@CADDR)(\$\$KGO)			SECTOR LOAD ADDR
	1014			2611	ORG	*-1			LAST BYTE NOT USED
	1014	C7D6	1015	2612	DC	CL2'GO'			KEYWORD

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			2613	*			
1016	04	1016	2614	DC	IL1'4'	LENGTH OF KEYWORD	
1017	C8	1017	2615	DC	AL1(ECM000+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE	
1018	01	1018	2616	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE	
1019	0A30	101A	2617	DC	AL(@DADDR)(\$KHEL)	DISK ADDRESS OF PROGRAM	
101B	0C	101B	2618	DC	AL1(\$@KHE)	SECTOR COUNT	
101C	0C00	101D	2619	DC	AL(@CADDR)(\$\$KHE)	SECTOR LOAD ADDR	
101D			2620	ORG	*-1	LAST BYTE NOT USED	
101D	C8C5D3D7	1020	2621	DC	CL4'HELP'	KEYWORD	
			2622	*			
1021	04	1021	2623	DC	IL1'4'	LENGTH OF KEYWORD	1-3
1022	C8	1022	2624	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE	1-3
1023	00	1023	2625	DC	AL1(ECM000)	SECOND INDICATOR BYTE	1-3
1024	2100	1025	2626	DC	AL(@DADDR)(\$KKEY)	DISK ADDRESS OF PROGRAM	1-3
1026	06	1026	2627	DC	AL1(\$@KKE)	SECTOR COUNT	1-3
1027	0C00	1028	2628	DC	AL(@CADDR)(\$\$KKE)	SECTOR LOAD ADDR	1-3
1028			2629	ORG	*-1	LAST BYTE NOT USED	1-3
1028	D2C5E8E2	102B	2630	DC	CL4'KEYS'	KEYWORD	1-3
			2631	*			
102C	04	102C	2632	DC	IL1'4'	LENGTH OF KEYWORD	
102D	B2	102D	2633	DC	AL1(ECMCON+ECMDEF+ECMWSI+ECMPGD)	1ST IND BYTE	
102E	00	102E	2634	DC	AL1(ECM000)	SECOND INDICATOR BYTE	
102F	0400	1030	2635	DC	AL(@DADDR)(\$KLI)	DISK ADDRESS OF PROGRAM	
1031	11	1031	2636	DC	AL1(\$@KLI)	SECTOR COUNT	
1032	0C00	1033	2637	DC	AL(@CADDR)(\$\$KLI)	SECTOR LOAD ADDR	
1033			2638	ORG	*-1	LAST BYTE NOT USED	
1033	D3C9E2E3	1036	2639	DC	CL4'LIST'	KEYWORD	
			2640	*			
1037	07	1037	2641	DC	IL1'7'	LENGTH OF KEYWORD	
1038	C0	1038	2642	DC	AL1(ECMLOK+ECMPGD)	FIRST INDICATOR BYTE	
1039	00	1039	2643	DC	AL1(ECM000)	SECOND INDICATOR BYTE	
103A	03BC	103B	2644	DC	AL(@DADDR)(\$KCTL)	DISK ADDRESS OF PROGRAM	
103C	09	103C	2645	DC	AL1(\$@KCT)	SECTOR COUNT	
103D	0C00	103E	2646	DC	AL(@CADDR)(\$\$KCT)	SECTOR LOAD ADDR	
103E			2647	ORG	*-1	LAST BYTE NOT USED	
103E	D3C9E2E3C3C1E3	1044	2648	DC	CL7'LISTCAT'	KEYWORD	
			2649	*			
1045	05	1045	2650	DC	IL1'5'	LENGTH OF KEYWORD	
1046	C8	1046	2651	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE	
1047	08	1047	2652	DC	AL1(ECMVMD)	SECOND INDICATOR BYTE	
1048	0444	1049	2653	DC	AL(@DADDR)(\$KLOG)	DISK ADDRESS OF PROGRAM	
104A	08	104A	2654	DC	AL1(\$@KLO)	SECTOR COUNT	
104B	0C00	104C	2655	DC	AL(@CADDR)(\$\$KLO)	SECTOR LOAD ADDR	
104C			2656	ORG	*-1	LAST BYTE NOT USED	
104C	D3D6C7D6D5	1050	2657	DC	CL5'LOGON'	KEYWORD	
			2658	*			
1051	05	1051	2659	DC	IL1'5'	LENGTH OF KEYWORD	
1052	3A	1052	2660	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)	1ST IND BYTE	
1053	0D	1053	2661	DC	AL1(ECMSVF+ECMIOO+ECMVMD)	SECOND INDICATOR BYTE	
1054	030C	1055	2662	DC	AL(@DADDR)(\$KMER)	DISK ADDRESS OF PROGRAM	
1056	03	1056	2663	DC	AL1(\$@KME)	SECTOR COUNT	
1057	0D00	1058	2664	DC	AL(@CADDR)(\$\$KME)	SECTOR LOAD ADDR	
1058			2665	ORG	*-1	LAST BYTE NOT USED	
1058	D4C5D9C7C5	105C	2666	DC	CL5'MERGE'	KEYWORD	
			2667	*			
105D	05	105D	2668	DC	IL1'5'	LENGTH OF KEYWORD	



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105E	C8	105E	2669	DC	AL1(ECM000+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
105F	20	105F	2670	DC	AL1(ECMTUT)	SECOND INDICATOR BYTE
1060	0204	1061	2671	DC	AL(@DADDR)(\$KMOU)	DISK ADDRESS OF PROGRAM
1062	04	1062	2672	DC	AL1(\$@KMO)	SECTOR COUNT
1063	0C00	1064	2673	DC	AL(@CADDR)(\$\$KMO)	SECTOR LOAD ADDR
1064			2674	ORG	*-1	LAST BYTE NOT USED
1064	D4D6E4D5E3	1068	2675	DC	CL5 'MOUNT'	KEYWORD
			2676	*		
1069	03	1069	2677	DC	IL1 '3'	LENGTH OF KEYWORD
106A	C8	106A	2678	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
106B	08	106B	2679	DC	AL1(ECMVMD)	SECOND INDICATOR BYTE
106C	0444	106D	2680	DC	AL(@DADDR)(\$KLOG)	DISK ADDRESS OF PROGRAM
106E	08	106E	2681	DC	AL1(\$@KLO)	SECTOR COUNT
106F	0C00	1070	2682	DC	AL(@CADDR)(\$\$KLO)	SECTOR LOAD ADDR
1070			2683	ORG	*-1	LAST BYTE NOT USED
1070	D6C6C6	1072	2684	DC	CL3 'OFF'	KEYWORD
			2685	*		
1073	08	1073	2686	DC	IL1 '8'	LENGTH OF KEYWORD
1074	C8	1074	2687	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1075	00	1075	2688	DC	AL1(ECM000)	SECOND INDICATOR BYTE
1076	0220	1077	2689	DC	AL(@DADDR)(\$KPAS)	DISK ADDRESS OF PROGRAM
1078	05	1078	2690	DC	AL1(\$@KPA)	SECTOR COUNT
1079	0C00	107A	2691	DC	AL(@CADDR)(\$\$KPA)	SECTOR LOAD ADDR
107A			2692	ORG	*-1	LAST BYTE NOT USED
107A	D7C1E2E2E6D6D9C4	1081	2693	DC	CL8 'PASSWORD'	KEYWORD
			2694	*		
1082	04	1082	2695	DC	IL1 '4'	LENGTH OF KEYWORD
1083	C8	1083	2696	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1084	01	1084	2697	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE
1085	0508	1086	2698	DC	AL(@DADDR)(\$KPOO)	DISK ADDRESS OF PROGRAM
1087	0D	1087	2699	DC	AL1(\$@KPO)	SECTOR COUNT
1088	0C00	1089	2700	DC	AL(@CADDR)(\$\$KPO)	SECTOR LOAD ADDR
1089			2701	ORG	*-1	LAST BYTE NOT USED
1089	D7D6D6D3	108C	2702	DC	CL4 'POOL'	KEYWORD
			2703	*		
108D	07	108D	2704	DC	IL1 '7'	LENGTH OF KEYWORD
108E	C8	108E	2705	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
108F	00	108F	2706	DC	AL1(ECM000)	SECOND INDICATOR BYTE
1090	063C	1091	2707	DC	AL(@DADDR)(\$KPRT)	DISK ADDRESS OF PROGRAM
1092	09	1092	2708	DC	AL1(\$@KPR)	SECTOR COUNT
1093	0C00	1094	2709	DC	AL(@CADDR)(\$\$KPR)	SECTOR LOAD ADDR
1094			2710	ORG	*-1	LAST BYTE NOT USED
1094	D7D9D6E3C5C3E3	109A	2711	DC	CL7 'PROTECT'	KEYWORD
			2712	*		
109B	04	109B	2713	DC	IL1 '4'	LENGTH OF KEYWORD
109C	C8	109C	2714	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
109D	01	109D	2715	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE
109E	0508	109F	2716	DC	AL(@DADDR)(\$KPOO)	DISK ADDRESS OF PROGRAM
10A0	0D	10A0	2717	DC	AL1(\$@KPO)	SECTOR COUNT
10A1	0C00	10A2	2718	DC	AL(@CADDR)(\$\$KPO)	SECTOR LOAD ADDR
10A2			2719	ORG	*-1	LAST BYTE NOT USED
10A2	D7E4D3D3	10A5	2720	DC	CL4 'PULL'	KEYWORD
			2721	*		
10A6	04	10A6	2722	DC	IL1 '4'	LENGTH OF KEYWORD
10A7	C0	10A7	2723	DC	AL1(ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
10A8	04	10A8	2724	DC	AL1(ECMIOO)	SECOND INDICATOR BYTE



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10A9	02BC	10AA	2725	DC	AL(@DADDR)(\$KREA)	DISK ADDRESS OF PROGRAM
10AB	02	10AB	2726	DC	AL1(\$@KRE)	SECTOR COUNT
10AC	0C00	10AD	2727	DC	AL(@CADDR)(\$\$KRE)	SECTOR LOAD ADDR
10AD			2728	ORG	*-1	LAST BYTE NOT USED
10AD	D9C5C1C4	10B0	2729	DC	CL4'READ'	KEYWORD
			2730	*		
10B1	07	10B1	2731	DC	IL1'7'	LENGTH OF KEYWORD
10B2	3A	10B2	2732	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)	1ST IND BYTE
10B3	1D	10B3	2733	DC	AL1(ECMSVF+ECMIOO+ECMVMD+ECMDTN)	2ND IND BYTE
10B4	0700	10B5	2734	DC	AL(@DADDR)(\$KRLA)	DISK ADDRESS OF PROGRAM
10B6	04	10B6	2735	DC	AL1(\$@KRL)	SECTOR COUNT
10B7	0700	10B8	2736	DC	AL(@CADDR)(\$\$KRL)	SECTOR LOAD ADDR
10B8			2737	ORG	*-1	LAST BYTE NOT USED
10B8	D9C5D3C1C2C5D3	10BE	2738	DC	CL7'RELABEL'	KEYWORD
			2739	*		
10BF	06	10BF	2740	DC	IL1'6'	LENGTH OF KEYWORD
10C0	C8	10C0	2741	DC	AL1(ECM000+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
10C1	00	10C1	2742	DC	AL1(ECM000)	SECOND INDICATOR BYTE
10C2	0214	10C3	2743	DC	AL(@DADDR)(\$KRM0)	DISK ADDRESS OF PROGRAM
10C4	03	10C4	2744	DC	AL1(\$@KRM)	SECTOR COUNT
10C5	0C00	10C6	2745	DC	AL(@CADDR)(\$\$KRM)	SECTOR LOAD ADDR
10C6			2746	ORG	*-1	LAST BYTE NOT USED
10C6	D9C5D4D6E5C5	10CB	2747	DC	CL6'REMOVE'	KEYWORD
			2748	*		
10CC	06	10CC	2749	DC	IL1'6'	LENGTH OF KEYWORD
10CD	CA	10CD	2750	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
10CE	00	10CE	2751	DC	AL1(ECM000)	SECOND INDICATOR BYTE
10CF	05C0	10D0	2752	DC	AL(@DADDR)(\$KNAM)	DISK ADDRESS OF PROGRAM
10D1	08	10D1	2753	DC	AL1(\$@KNA)	SECTOR COUNT
10D2	0C00	10D3	2754	DC	AL(@CADDR)(\$\$KNA)	SECTOR LOAD ADDR
10D3			2755	ORG	*-1	LAST BYTE NOT USED
10D3	D9C5D5C1D4C5	10D8	2756	DC	CL6'RENAME'	KEYWORD
			2757	*		
10D9	08	10D9	2758	DC	IL1'8'	LENGTH OF KEYWORD
10DA	3A	10DA	2759	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)	1ST IND BYTE
10DB	0D	10DB	2760	DC	AL1(ECMSVF+ECMIOO+ECMVMD)	SECOND INDICATOR BYTE
10DC	0280	10DD	2761	DC	AL(@DADDR)(\$KRUN)	DISK ADDRESS OF PROGRAM
10DE	03	10DE	2762	DC	AL1(\$@KRN)	SECTOR COUNT
10DF	0700	10E0	2763	DC	AL(@CADDR)(\$\$KRN)	SECTOR LOAD ADDR
10E0			2764	ORG	*-1	LAST BYTE NOT USED
10E0	D9C5D5E4D4C2C5D9	10E7	2765	DC	CL8'RENUMBER'	KEYWORD
			2766	*		
10E8	06	10E8	2767	DC	IL1'6'	LENGTH OF KEYWORD
10E9	CA	10E9	2768	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
10EA	01	10EA	2769	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE
10EB	1D24	10EC	2770	DC	AL(@DADDR)(\$KRSU)	DISK ADDRESS OF PROGRAM
10ED	0A	10ED	2771	DC	AL1(\$@KRS)	SECTOR COUNT
10EE	0C00	10EF	2772	DC	AL(@CADDR)(\$\$KRS)	SECTOR LOAD ADDR
10EF			2773	ORG	*-1	LAST BYTE NOT USED
10EF	D9C5E2E4D4C5	10F4	2774	DC	CL6'RESUME'	KEYWORD
			2775	*		
10F5	03	10F5	2776	DC	IL1'3'	LENGTH OF KEYWORD
10F6	CA	10F6	2777	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
10F7	07	10F7	2778	DC	AL1(ECMSVF+ECMLWS+ECMIOO)	SECOND INDICATOR BYTE
10F8	02CC	10F9	2779	DC	AL(@DADDR)(\$KRUN)	DISK ADDRESS OF PROGRAM
10FA	03	10FA	2780	DC	AL1(\$@KRU)	SECTOR COUNT

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10FB	0C00	10FC	2781	DC	AL(@CADDR)(\$\$KRU)	SECTOR LOAD ADDR
10FC			2782	ORG	*-1	LAST BYTE NOT USED
10FC	D9E4D5	10FE	2783	DC	CL3 'RUN'	KEYWORD
			2784	*		
10FF	04	10FF	2785	DC	IL1 '4'	LENGTH OF KEYWORD
1100	FA	1100	2786	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI+ECMLOK+ECMPGD)	1ST IND BYTE
1101	05	1101	2787	DC	AL1(ECMSVF+ECMIOO)	SECOND INDICATOR BYTE
1102	0488	1103	2788	DC	AL(@DADDR)(\$\$KSAV)	DISK ADDRESS OF PROGRAM
1104	11	1104	2789	DC	AL1(\$\$@KSA)	SECTOR COUNT
1105	0C00	1106	2790	DC	AL(@CADDR)(\$\$KSA)	SECTOR LOAD ADDR
1106			2791	ORG	*-1	LAST BYTE NOT USED
1106	E2C1E5C5	1109	2792	DC	CL4 'SAVE'	KEYWORD
			2793	*		
110A	03	110A	2794	DC	IL1 '3'	LENGTH OF KEYWORD
110B	56	110B	2795	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMLOK)	1ST IND BYTE
110C	05	110C	2796	DC	AL1(ECMSVF+ECMIOO)	SECOND INDICATOR BYTE
110D	0680	110E	2797	DC	AL(@DADDR)(\$\$KSET)	DISK ADDRESS OF PROGRAM
110F	04	110F	2798	DC	AL1(\$\$@KSE)	SECTOR COUNT
1110	0E00	1111	2799	DC	AL(@CADDR)(\$\$KSE)	SECTOR LOAD ADDR
1111			2800	ORG	*-1	LAST BYTE NOT USED
1111	E2C5E3	1113	2801	DC	CL3 'SET'	KEYWORD
			2802	*		
1114	04	1114	2803	DC	IL1 '4'	LENGTH OF KEYWORD
1115	CA	1115	2804	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
1116	07	1116	2805	DC	AL1(ECMSVF+ECMLWS+ECMIOO)	SECOND INDICATOR BYTE
1117	02CC	1118	2806	DC	AL(@DADDR)(\$\$KRUN)	DISK ADDRESS OF PROGRAM
1119	03	1119	2807	DC	AL1(\$\$@KRU)	SECTOR COUNT
111A	0C00	111B	2808	DC	AL(@CADDR)(\$\$KRU)	SECTOR LOAD ADDR
111B			2809	ORG	*-1	LAST BYTE NOT USED
111B	E2E3C5D7	111E	2810	DC	CL4 'STEP'	KEYWORD
			2811	*		
111F	07	111F	2812	DC	IL1 '7'	LENGTH OF KEYWORD
1120	C6	1120	2813	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
1121	01	1121	2814	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE
1122	0594	1123	2815	DC	AL(@DADDR)(\$\$KSSP)	DISK ADDRESS OF PROGRAM
1124	0B	1124	2816	DC	AL1(\$\$@KSS)	SECTOR COUNT
1125	0C00	1126	2817	DC	AL(@CADDR)(\$\$KSS)	SECTOR LOAD ADDR
1126			2818	ORG	*-1	LAST BYTE NOT USED
1126	E2E4E2D7C5D5C4	112C	2819	DC	CL7 'SUSPEND'	KEYWORD
			2820	*		
112D	07	112D	2821	DC	IL1 '7'	LENGTH OF KEYWORD
112E	3A	112E	2822	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI)	1ST IND BYTE
112F	13	112F	2823	DC	AL1(ECMDTN+ECMSVF+ECMLWS)	SECOND INDICATOR BYTE
1130	0600	1131	2824	DC	AL(@DADDR)(\$\$KSYM)	DISK ADDRESS OF PROGRAM
1132	0F	1132	2825	DC	AL1(\$\$@KSY)	SECTOR COUNT
1133	0C00	1134	2826	DC	AL(@CADDR)(\$\$KSY)	SECTOR LOAD ADDR
1134			2827	ORG	*-1	LAST BYTE NOT USED
1134	E2E8D4C2D6D3E2	113A	2828	DC	CL7 'SYMBOLS'	KEYWORD
			2829	*		
113B	05	113B	2830	DC	IL1 '5'	LENGTH OF KEYWORD
113C	7A	113C	2831	DC	AL1(ECMCON+ECMPHY+ECMDEF+ECMWSI+ECMLOK)	1ST IND BYTE
113D	17	113D	2832	DC	AL1(ECMSVF+ECMLWS+ECMIOO+ECMDTN)	2ND IND BYTE
113E	02CC	113F	2833	DC	AL(@DADDR)(\$\$KRUN)	DISK ADDRESS OF PROGRAM
1140	03	1140	2834	DC	AL1(\$\$@KRU)	SECTOR COUNT
1141	0C00	1142	2835	DC	AL(@CADDR)(\$\$KRU)	SECTOR LOAD ADDR
1142			2836	ORG	*-1	LAST BYTE NOT USED

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1142	E3D9C1C3C5	1146	2837		DC	CL5 'TRACE'	KEYWORD
			2838	*			
1147	05	1147	2839		DC	IL1 '5'	LENGTH OF KEYWORD
1148	C0	1148	2840		DC	AL1 (ECM000+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1149	00	1149	2841		DC	AL1 (ECM000)	SECOND INDICATOR BYTE
114A	02C4	114B	2842		DC	AL (@DADDR) (#\$KWID)	DISK ADDRESS OF PROGRAM
114C	02	114C	2843		DC	AL1 (#\$@KWI)	SECTOR COUNT
114D	0C00	114E	2844		DC	AL (@CADDR) (#\$\$KWI)	SECTOR LOAD ADDR
114E			2845		ORG	*-1	LAST BYTE NOT USED
114E	E6C9C4E3C8	1152	2846		DC	CL5 'WIDTH'	KEYWORD
			2847	*			
1153	05	1153	2848		DC	IL1 '5'	LENGTH OF KEYWORD
1154	C0	1154	2849		DC	AL1 (ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1155	00	1155	2850		DC	AL1 (ECM000)	SECOND INDICATOR BYTE
1156	02B4	1157	2851		DC	AL (@DADDR) (#\$KWRI)	DISK ADDRESS OF PROGRAM
1158	02	1158	2852		DC	AL1 (#\$@KWR)	SECTOR COUNT
1159	0C00	115A	2853		DC	AL (@CADDR) (#\$\$KWR)	SECTOR LOAD ADDR
115A			2854		ORG	*-1	LAST BYTE NOT USED
115A	E6D9C9E3C5	115E	2855		DC	CL5 'WRITE'	KEYWORD
			2856	*			
115F	04	115F	2857		DC	IL1 '4'	LENGTH OF KEYWORD
1160	C8	1160	2858		DC	AL1 (ECMLOK+ECMPGD+ECMPsy)	FIRST INDICATOR BYTE
1161	05	1161	2859		DC	AL1 (ECMIOO+ECMSVF)	SECOND INDICATOR BYTE
1162	1AD8	1163	2860		DC	AL (@DADDR) (#\$UCDI)	DISK ADDRESS OF PROGRAM
1164	0B	1164	2861		DC	AL1 (#\$@UCD)	SECTOR COUNT
1165	0900	1166	2862		DC	AL (@CADDR) (#\$\$UCD)	SECTOR LOAD ADDR
1166			2863		ORG	*-1	LAST BYTE NOT USED
1166	C3D6D7E8	1169	2864		DC	CL4 'COPY'	KEYWORD
			2865	*			
116A	06	116A	2866		DC	IL1 '6'	LENGTH OF KEYWORD
116B	C8	116B	2867		DC	AL1 (ECMPsy+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
116C	01	116C	2868		DC	AL1 (ECMSVF)	SECOND INDICATOR BYTE
116D	0F00	116E	2869		DC	AL (@DADDR) (#\$UALL)	DISK ADDRESS OF PROGRAM
116F	11	116F	2870		DC	AL1 (#\$@UAL)	SECTOR COUNT
1170	0C00	1171	2871		DC	AL (@CADDR) (#\$\$UAL)	SECTOR LOAD ADDR
1171			2872		ORG	*-1	LAST BYTE NOT USED
1171	C1E2E2C9C7D5	1176	2873		DC	CL6 'ASSIGN'	KEYWORD
			2874	*			
1177	06	1177	2875		DC	IL1 '6'	LENGTH OF KEYWORD
1178	C8	1178	2876		DC	AL1 (ECMPsy+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1179	01	1179	2877		DC	AL1 (ECMSVF)	SECOND INDICATOR BYTE
117A	0EA8	117B	2878		DC	AL (@DADDR) (#\$UEXL)	DISK ADDRESS OF PROGRAM
117C	0E	117C	2879		DC	AL1 (#\$@UEX)	SECTOR COUNT
117D	0C00	117E	2880		DC	AL (@CADDR) (#\$\$UEX)	SECTOR LOAD ADDR
117E			2881		ORG	*-1	LAST BYTE NOT USED
117E	C5E7D7C1D5C4	1183	2882		DC	CL6 'EXPAND'	KEYWORD
			2883	*			
1184	04	1184	2884		DC	IL1 '4'	LENGTH OF KEYWORD
1185	C8	1185	2885		DC	AL1 (ECMLOK+ECMPGD+ECMPsy)	FIRST INDICATOR BYTE
1186	01	1186	2886		DC	AL1 (ECMSVF)	SECOND INDICATOR BYTE
1187	1B24	1188	2887		DC	AL (@DADDR) (#\$UDEL)	DISK ADDRESS OF PROGRAM
1189	0E	1189	2888		DC	AL1 (#\$@UDE)	SECTOR COUNT
118A	0C00	118B	2889		DC	AL (@CADDR) (#\$\$UDE)	SECTOR LOAD ADDR
118B			2890		ORG	*-1	LAST BYTE NOT USED
118B	E5E3D6C3	118E	2891		DC	CL4 'VTOC'	KEYWORD
			2892	*			

## #ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 25/02/16 PAGE 64

118F	09	118F	2893	DC	IL1'9'	LENGTH OF KEYWORD
1190	C8	1190	2894	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
1191	05	1191	2895	DC	AL1(ECMIOO+ECMSVF)	SECOND INDICATOR BYTE
1192	1A38	1193	2896	DC	AL(@DADDR)(\$UATR)	DISK ADDRESS OF PROGRAM
1194	0C	1194	2897	DC	AL1(\$@UAT)	SECTOR COUNT
1195	0900	1196	2898	DC	AL(@CADDR)(\$\$UAT)	SECTOR LOAD ADDR
1196			2899	ORG	*-1	LAST BYTE NOT USED
1196	C1D3E3C5D9D5C1E3	119E	2900	DC	CL9'ALTERNATE'	KEYWORD
			2901	*		
119F	09	119F	2902	DC	IL1'9'	LENGTH OF KEYWORD
11A0	C8	11A0	2903	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
11A1	04	11A1	2904	DC	AL1(ECMIOO)	SECOND INDICATOR BYTE
11A2	19B8	11A3	2905	DC	AL(@DADDR)(\$UCNF)	DISK ADDRESS OF PROGRAM
11A4	09	11A4	2906	DC	AL1(\$@UCN)	SECTOR COUNT
11A5	0C00	11A6	2907	DC	AL(@CADDR)(\$\$UCN)	SECTOR LOAD ADDR
11A6			2908	ORG	*-1	LAST BYTE NOT USED
11A6	C3D6D5C6C9C7E4D9	11AE	2909	DC	CL9'CONFIGURE'	KEYWORD
			2910	*		
11AF	0A	11AF	2911	DC	IL1'10'	LENGTH OF KEYWORD
11B0	C8	11B0	2912	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
11B1	20	11B1	2913	DC	AL1(ECMTUT)	SECOND INDICATOR BYTE
11B2	1A88	11B3	2914	DC	AL(@DADDR)(\$UINI)	DISK ADDRESS OF PROGRAM
11B4	0F	11B4	2915	DC	AL1(\$@UIN)	SECTOR COUNT
11B5	0C00	11B6	2916	DC	AL(@CADDR)(\$\$UIN)	SECTOR LOAD ADDR
11B6			2917	ORG	*-1	LAST BYTE NOT USED
11B6	C9D5C9E3C9C1D3C9	11BF	2918	DC	CL10'INITIALIZE'	KEYWORD
			2919	*		
11C0	03	11C0	2920	DC	IL1'3'	LENGTH OF KEYWORD
11C1	C8	11C1	2921	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
11C2	0D	11C2	2922	DC	AL1(ECMIOO+ECMVMD+ECMSVF)	SECOND INDICATOR BYTE
11C3	1D5C	11C4	2923	DC	AL(@DADDR)(\$UPTF)	DISK ADDRESS OF PROGRAM
11C5	12	11C5	2924	DC	AL1(\$@UPT)	SECTOR COUNT
11C6	0C00	11C7	2925	DC	AL(@CADDR)(\$\$UPT)	SECTOR LOAD ADDR
11C7			2926	ORG	*-1	LAST BYTE NOT USED
11C7	D7E3C6	11C9	2927	DC	CL3'PTF'	KEYWORD
			2928	*		
11CA	04	11CA	2929	DC	IL1'4'	LENGTH OF KEYWORD
11CB	C8	11CB	2930	DC	AL1(ECMPHY+ECMLOK+ECMPGD)	FIRST INDICATOR BYTE
11CC	01	11CC	2931	DC	AL1(ECMSVF)	SECOND INDICATOR BYTE
11CD	1980	11CE	2932	DC	AL(@DADDR)(\$UPAC)	DISK ADDRESS OF PROGRAM
11CF	04	11CF	2933	DC	AL1(\$@UPA)	SECTOR COUNT
11D0	0C00	11D1	2934	DC	AL(@CADDR)(\$\$UPA)	SECTOR LOAD ADDR
11D1			2935	ORG	*-1	LAST BYTE NOT USED
11D1	D7C1C3D2	11D4	2936	DC	CL4'PACK'	KEYWORD
			2937	*		
11D5	01	11D5	2938	DC	IL1'1'	LENGTH OF KEYWORD
11D6	CA	11D6	2939	DC	AL1(ECMCON+ECMPHY+ECMLOK+ECMPGD)	1ST IND BYTE
11D7	0D	11D7	2940	DC	AL1(ECMSVF+ECMIOO+ECMVMD)	SECOND INDICATOR BYTE
11D8	0B80	11D9	2941	DC	AL(@DADDR)(\$VLOA)	DISK ADDRESS OF PROGRAM
11DA	02	11DA	2942	DC	AL1(\$@VLO)	SECTOR COUNT
11DB	0600	11DC	2943	DC	AL(@CADDR)(\$\$VLO)	SECTOR LOAD ADDR
11DC			2944	ORG	*-1	LAST BYTE NOT USED
11DC	01	11DC	2945	DC	XL1'01'	DCAL KEY
			2946	*		
11DD	00	11DD	2947	DC	XL1'00'	END OF TABLE INDICATOR

#ECMAN C4BIN2 -- CONVERT DECIMAL TO BINARY SUBROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	65
		0091	2949	ECMFAE	EQU B'10010001'				BRANCH FALSE OR EQUAL Q CODE
			2950	*					
	0EDC	2951	ECMRPL	EQU	ECMDPL				DPL USED TO LOAD KEYWORD PROGS
			2952	*					
	005C	2953	ECMAST	EQU	C '*'				CHECK FOR COMMENTS CARD
			2954	*					
	0061	2955	ECMSLH	EQU	C '/'				NON-NUMBER GENERATOR IF IN NUM
			2956	*					
	0000	2957	ECM000	EQU	0				NO INDICATORS INDICATOR
			2958	*					
	1F00	2959	ECMLDS	EQU	X'1F00'				CADDR OF I/O SECTOR
			2960	*					
	0005	2961	ECMDCN	EQU	5				ADDED COUNT FOR AUTO LINE NO9
	0ED7	2962	ECMEDR	EQU	ECMINP				NEGATIVE DISPLACEMENT OF SDF
	0EDA	2963	ECMLNG	EQU	ECM910				LENGTH OF POTENTIAL KEYWORD
	0010	2964	ECMCKY	EQU	16				LARGEST COMMAND KEY
	00FF	2965	ECMSCE	EQU	X'FF'				LAST CHARACTER IN SECTOR
			2966	*					*
			2967	*	EQUATES FOR DISPLACEMENTS TO FIELDS IN KEYWORD TABLE FROM				*
			2968	*	ONE BYTE BEFORE EACH ENTRY.				*
			2969	*					*
	0001	2970	ECMLDP	EQU	ECMKWL-ECMTBL+1				LENGTH FIELD
			2971	*					
	0002	2972	ECMI1D	EQU	ECMIB1-ECMTBL+1				IND BYTE ONE FIELD
			2973	*					
	0003	2974	ECMI2D	EQU	ECMIB2-ECMTBL+1				IND BYTE TWO FIELD
			2975	*					
	0007	2976	ECMDPD	EQU	ECMDPF-ECMTBL+1				LAST BYTE OF 4 BYTE DPL
			2977	*					
	0008	2978	ECMK1D	EQU	ECMKWS-ECMTBL+1				FIRST BYTE OF KEYWORD



ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	25/02/16	PAGE	66
					2980	*					
					2981	*	INDICATOR BYTE EQUATES				
					2982	*					
					2984	*					
					2985	***	FIRST BYTE				
					2986	*					
				0002	2987	ECMCON EQU	X'02'			CONVERSATIONAL MODE ONLY	
				0004	2988	ECMPSO EQU	X'04'			PAUSE STATE ONLY	
				0008	2989	ECMPSY EQU	X'08'			NONPAUSE STATE ONLY	
				0010	2990	ECMDEF EQU	X'10'			WORK FILE MUST BE DEFINED	
				0020	2991	ECMWSI EQU	X'20'			WORK FILE MUST NOT BE EMPTY	
				0040	2992	ECMLOK EQU	X'40'			WORK FILE CAN BE PROTECTED	
				0080	2993	ECMPGD EQU	X'80'			WORK FILE CAN BE PROG GEN DATA	
					2994	*					
					2995	***	SECOND BYTE				
					2996	*					
				0001	2997	ECMSVF EQU	X'01'			SAVE FIT ON DISK	
				0002	2998	ECMLWS EQU	X'02'			READ ONE SECTOR WS	
				0004	2999	ECMIOO EQU	X'04'			I/O ROUTINES OVERLAYED	
				0008	3000	ECMVMD EQU	X'08'			VIRTUAL MEMORY OVERLAYED	
				0010	3001	ECMDTN EQU	X'10'			NOT ALLOWED IF DATA FILE IN WA	
				0020	3002	ECMTUT EQU	X'20'			ALLOWED IN TEMP UTI MODE	
				0040	3003	ECMVMG EQU	X'40'			VIRT MEMORY MUST BE INTACT	
				FFFF	3004		END				
TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY = 0											



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$\$\$	001	0C00	2070	
\$\$\$CMD	001	0020	0662	
\$\$\$DAT	001	0040	0661	
\$\$\$EPL	001	0091	0658	
\$\$\$ERN	001	0080	0712	
\$\$\$FUN	001	0010	0663	
\$\$\$NLN	001	00A0	0708	
\$\$\$STD	001	0081	0657	
\$\$BNLN	001	0605	0638	0640 2140*
\$\$CDBS	001	08C0	0688	
\$\$CDND	001	0666	0647	2100 2100*
\$\$CDRD	001	0890	0686	0688
\$\$CKEY	001	0603	0636	2115
\$\$CKFF	001	0B3D	0668	
\$\$COFF	001	0B44	0667	
\$\$CSNS	001	209C	0697	
\$\$DATB	001	0BBF	0669	
\$\$EOSA	001	0AFE	0666	2122 2124
\$\$ERSK	001	1C00	0707	
\$\$FITS	001	1D00	0715	2379
\$\$FLIB	001	06FF	0714	
\$\$ILEN	001	0601	0632	0634 0638 2087* 2088* 2102* 2106
\$\$ILHD	001	0600	0630	0632
\$\$INLN	001	0607	0645	0647 0649 2091 2093 2095 2101* 2129 2142* 2192 2195* 2339 2341
\$\$INND	001	06FA	0649	2082
\$\$KBDT	001	09E1	0656	0660
\$\$KBSN	001	09E2	0660	0665
\$\$KLD1	001	0600	0720	
\$\$KLD2	001	0700	0722	
\$\$KLD3	001	0C00	0724	2357 2362
\$\$LPOS	001	09EB	0665	
\$\$PCNT	001	07E9	0681	
\$\$PLYN	001	2004	0695	
\$\$PRES	001	0890	0654	0656 0666 0667 0668 0669 0686
\$\$PRFL	001	2143	0699	
\$\$PRNT	001	0707	0675	0676 0680 0681
\$\$PRTN	001	0782	0676	
\$\$PSIO	001	07CE	0680	
\$\$PYCD	001	2200	0701	
\$\$PYMP	001	2000	0693	0695 0697 0699 0701
\$\$SLIB	001	1C00	0710	
\$\$TPCD	001	0606	0640	0645
\$\$UPAR	001	0602	0634	0636 2124* 2125*
\$\$WSPB	001	1E00	0713	2384
\$\$XIND	001	06FF	0711	0714
\$\$ZERO	001	0000	0225	0226 0228 0229 0230 0234 0693
\$ABORT	001	0010	0338	
\$BASIC	001	0080	0396	2134 2175 2288
\$BIGCD	001	0080	0472	
\$BLDPL	001	0579	0605	0607
\$BLNOE	001	0569	0595	
\$BLOAD	001	0522	0586	0588 0591 0604 0605 2177 2182
\$BLRTN	001	0550	0594	0595
\$BRSAV	001	03C5	0283	0284
\$BSADR	001	0587	0610	0612
\$BUFPT	001	03E3	0491	0492

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$CABLD	001	04B4	0564	0565 2170
\$CAERK	001	0469	0541	0544 2139 2300
\$CAERR	001	03CD	0289	0291 2147* 2150* 2153* 2156* 2159* 2242* 2248* 2255* 2260* 2266* 2272*
				2278* 2284* 2290* 2295* 2419*
\$CAIPL	001	049D	0560	0562 2223
\$CALLI	001	0008	0481	
\$CARDI	001	0001	0252	2077 2221
\$CARPL	001	04A1	0562	0564
\$CIENT	001	0483	0551	0552
\$CIEXT	001	0480	0550	0551
\$CIMSK	001	0476	0547	0550
\$CISUS	001	0496	0555	0560
\$CLBFR	001	0010	0439	
\$CMDKY	001	0008	0351	
\$CMODE	001	0002	0401	2148 2246
\$CONFIG	001	03DD	0464	0474
\$CRPOS	001	03E2	0490	0491
\$CRTAD	001	044D	0529	0530
\$CRTAV	001	0002	0345	
\$CRTDN	001	0002	0369	
\$CRTIN	001	03D3	0366	0373
\$CRTNO	001	0004	0348	
\$CRTPU	001	0004	0370	
\$CRTSP	001	0008	0371	
\$CRTUP	001	0001	0368	
\$CRUSH	001	0080	0477	
\$CSDPL	001	050E	0576	0577
\$C0001	001	0464	0533	0539
\$DATE	001	043A	0514	0515
\$DBGUF	001	03E0	0476	0485
\$DBLOK	001	0001	0426	
\$DFDET	001	03E8	0497	0498
\$DISKN	001	0025	0228	2306 2316 2321
\$DKERR	001	0008	0407	
\$DKSIZ	001	03D7	0451	0459 0500
\$DK100	001	0001	0453	
\$DK200	001	0002	0454	
\$DK400	001	0004	0455	
\$DK600	001	0008	0456	
\$DK800	001	0010	0457	
\$DPLSV	001	0449	0525	0527
\$DTNMB	001	0040	0272	2090
\$DTRDR	001	0040	0360	
\$ENDNU	001	0600	0619	0630 0654 0675 0711 0720 0722 0724 2075 2076 2095 2121* 2123
				2123*
\$ERDPL	001	046F	0544	0546
\$ERFIL	001	0040	0299	2133
\$ERHRD	001	0004	0431	
\$ERKEY	001	0080	0303	2227 2239
\$ERLOG	001	0345	0233	
\$ERMAD	001	0472	0546	0547
\$ERPND	001	0004	0404	
\$ERRCT	001	03CF	0305	
\$ERRPG	001	03CE	0293	2133* 2172* 2227* 2239*
\$ERSFL	001	0035	0298	2172
\$ERSTK	001	0030	0296	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$ER050	001	0363	0234	
\$ER1N2	001	0050	0301	
\$EXADR	001	0517	0579	0581
\$EXCMD	001	0001	0333	
\$EXFTR	001	043B	0515	0520
\$FCIND	001	0010	0411	2168
\$FDIND	001	0040	0418	
\$FEARR	001	0004	0226	
\$FEMAP	001	0588	0612	0613
\$FILIB	001	03DA	0462	0463
\$FITIN	001	0010	0387	2308
\$FUIND	001	0020	0416	
\$GUFIO	001	0583	0609	0610
\$GUFIR	001	0008	0261	
\$HISTE	001	042E	0512	0513
\$HIST1	001	0435	0513	0514
\$HRDER	001	0020	0357	
\$INDR1	001	03D4	0373	0399 2134 2154 2157 2173 2175 2270 2282 2288 2293 2308*
\$INDR2	001	03D5	0399	0424 2148 2168* 2169* 2246
\$INDR3	001	03D6	0424	0451 2240
\$INLNO	001	03CF	0291	0293 0305 0312
\$INRPT	001	0020	0269	
\$IOIND	001	03D2	0340	0366
\$IOPGS	001	0010	0480	
\$IOYES	001	0002	0255	2327
\$IPLDV	001	05FF	0616	0619
\$IRKEY	001	0020	0479	
\$KEYBD	001	03E1	0485	0490
\$KEYCD	001	03C3	0249	0283 2077 2090 2107 2188 2221 2228 2327*
\$KEYDT	001	0040	0393	
\$KE090	001	00DE	0229	
\$KE130	001	01D5	0230	
\$KYBSY	001	0010	0266	
\$LDRTN	001	0571	0604	
\$LEVEL	001	03DF	0474	0476
\$LIST	001	0002	0428	
\$LMRGN	001	03C1	0244	0246
\$LNPTR	001	0080	0363	
\$LOADB	001	054A	0588	
\$LOADR	001	051A	0581	0584
\$LPRIO	001	03EA	0498	
\$LPROS	001	03E5	0493	0495
\$LPRP3	001	03E4	0492	0493
\$MOUNT	001	0020	0442	2240
\$MPDWN	001	0001	0342	
\$NEXTB	001	03E6	0495	0496
\$NEXTL	001	03E7	0496	0497
\$NOENB	001	0008	0434	
\$NOLST	001	0004	0258	2107 2188 2228
\$NUCBS	001	03C0	0241	0242
\$NWRKF	001	0080	0447	
\$NWRKR	001	0040	0444	
\$PASWD	001	042D	0511	0512
\$PAUSD	001	04BA	0565	0567
\$PAUSE	001	0002	0335	2160 2253
\$PGMDT	001	0020	0390	2157 2293

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$PGMST	001	0010	0354	
\$PKERT	001	0419	0509	0511
\$PLST1	001	0454	0530	0531
\$PLST2	001	045B	0531	0532
\$PLST3	001	0462	0532	0533
\$PRDEV	001	044B	0527	0529
\$PRESN	001	0002	0378	
\$PROCI	001	0001	0375	2173
\$PRPOS	001	03C2	0246	0249
\$PSDBR	001	04FA	0570	
\$PSDXR	001	04F2	0569	0570
\$PSTEP	001	0004	0336	
\$PSTMT	001	0008	0337	
\$PTCH1	001	03F5	0500	0504
\$READY	001	0080	0420	2169
\$REORD	001	0040	0478	
\$RLOAD	001	051E	0584	0586 2118 2180 2334
\$RMRGN	001	03C0	0242	0244
\$RSTR	001	04D6	0567	0569 0571 0576
\$RUNIT	001	0001	0314	
\$SFAID	001	050D	0572	
\$SPRNT	001	0465	0539	0541 2109 2190 2219 2231 2329
\$SRTRN	001	04FE	0571	0572
\$STEPT	001	0002	0315	
\$SWPCR	001	0511	0577	0579
\$TABLN	001	03CB	0286	0289 2101
\$TFLOW	001	0008	0321	
\$TRACE	001	0004	0316	
\$TRALL	001	0010	0322	
\$TROVR	001	054E	0591	0594
\$TRUNK	001	0080	0274	
\$TRVAR	001	0020	0323	
\$UNMSK	001	048D	0552	0555 2333
\$USRDR	001	03DC	0463	0464
\$VMDEF	001	0080	0327	2276
\$VOLF1	001	03FE	0506	0507
\$VOLF2	001	040E	0508	
\$VOLID	001	03F6	0504	0505 0509
\$VOLR1	001	03F6	0505	0506
\$VOLR2	001	0406	0507	0508
\$WAITF	001	057F	0607	0609 2330
\$WFDEF	001	0040	0521	2151 2264
\$WFLOK	001	0008	0384	2154 2282
\$WFNME	001	0443	0520	0525 2151 2264
\$WSIND	001	0004	0381	2270
\$XIND1	001	03D0	0312	0331 2276 2312*
\$XIND2	001	03D1	0331	0340 2160 2253
\$XIND3	001	03D8	0459	0462
\$XPREC	001	0040	0324	
\$XRSAB	001	03C7	0284	0286
\$ZTRAD	001	05A2	0613	
\$12K	001	0004	0468	
\$16CKY	001	0008	0470	
\$16K	001	0002	0467	
\$22IMP	001	0001	0465	
##\$#BL	001	0000	1125	

## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 25/02/16 PAGE 71

####CK	001	0000	1253	
####CN	001	0000	1221	
####CO	001	0000	1013	
####CS	001	0000	1073	
####DR	001	0000	0817	
####ER	001	0000	1017	
####FS	001	0000	1113	
####IN	001	0000	1257	
####PW	001	0000	1261	
####RS	001	0000	1093	
####SA	001	0000	1081	
####SS	001	0000	1077	
####VU	001	0600	1037	
####0T	001	0700	0809	
####1T	001	0000	0813	
####BCO	001	0600	0825	
####BOV	001	0800	1097	
####DPR	001	0700	0833	
####DRE	001	0889	0849	
####DSP	001	2800	0869	
####ECM	001	0C00	1129	2069
####EFK	001	0C00	1149	2399
####ERR	001	0C00	1121	
####EXM	001	0C00	1009	
####FIL	001	0E00	1089	
####FIS	001	0E00	1085	
####FML	001	0200	1217	
####FMS	001	0200	1057	
####GRA	001	0889	0981	
####GUF	001	0C00	1117	
####INL	001	0600	1197	
####INS	001	0600	0821	
####KAL	001	0C00	0985	2510
####KCA	001	0C00	1201	2520
####KCH	001	0C00	0953	2529
####KCN	001	0C00	1069	2538
####KCT	001	0C00	0921	2646
####KDE	001	0C00	0917	2547
####KDI	001	0D00	0997	2565
####KDN	001	0C00	0905	2592
####KDO	001	0E00	1001	
####KED	001	0C00	0841	2574
####KEN	001	0C00	0845	2556 2583
####KEX	001	0C00	0865	2601
####KGO	001	0C00	0837	2610
####KHE	001	0C00	1021	2619
####KKE	001	0C00	1249	2628
####KLI	001	0C00	0925	2637
####KLL	001	0920	1225	
####KLO	001	0C00	0929	2655 2682
####KME	001	0D00	0909	2664
####KMO	001	0C00	0853	2673
####KNA	001	0C00	0965	2754
####KOV	001	0E00	0885	
####KPA	001	0C00	0861	2691
####KPO	001	0C00	0949	2700 2718

## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 25/02/16 PAGE 72

\$\$\$KPR	001	0C00	0973	2709		
\$\$\$KRE	001	0C00	0893	2727		
\$\$\$KRL	001	0700	0989	2736		
\$\$\$KRM	001	0C00	0857	2745		
\$\$\$KRN	001	0700	0877	2763		
\$\$\$KRO	001	0D00	0881			
\$\$\$KRS	001	0C00	1205	2772		
\$\$\$KRU	001	0C00	0901	2781	2808	2835
\$\$\$KRV	001	0800	0993			
\$\$\$KSA	001	0C00	0937	2790		
\$\$\$KSE	001	0E00	0977	2799		
\$\$\$KSO	001	0C20	1029			
\$\$\$KSS	001	0C00	0961	2817		
\$\$\$KSV	001	0980	0957			
\$\$\$KSY	001	0C00	0969	2826		
\$\$\$KWI	001	0C00	0897	2844		
\$\$\$KWR	001	0C00	0889	2853		
\$\$\$LOA	001	0600	0829			
\$\$\$MIP	001	0C00	1025			
\$\$\$SDS	001	0C00	1137			
\$\$\$SFF	001	0E00	1141			
\$\$\$SFL	001	0F00	1133			
\$\$\$SFO	001	1500	1105			
\$\$\$SFS	001	0C00	1101			
\$\$\$SPA	001	0C00	0941			
\$\$\$SPO	001	0806	0945			
\$\$\$SPS	001	0C00	0933	2369		
\$\$\$STR	001	1600	1109			
\$\$\$TDC	001	1000	0913			
\$\$\$TSY	001	1000	0873			
\$\$\$TVK	001	0FC0	1049			
\$\$\$UAL	001	0C00	1065	2871		
\$\$\$UAT	001	0900	1161	2898		
\$\$\$UCD	001	0900	1169	2862		
\$\$\$UCN	001	0C00	1153	2907		
\$\$\$UCP	001	0700	1157			
\$\$\$UDE	001	0C00	1173	2889		
\$\$\$UDI	001	0C00	1177			
\$\$\$UEX	001	0C00	1061	2880		
\$\$\$UIN	001	0C00	1165	2916		
\$\$\$UPA	001	0C00	1145	2934		
\$\$\$UPO	001	0C00	1213			
\$\$\$UPT	001	0C00	1209	2925		
\$\$\$VCR	001	2000	1005			
\$\$\$VLO	001	0600	1041	2943		
\$\$\$VOD	001	0600	1045			
\$\$\$VVM	001	0000	1053			
\$\$\$VXI	001	0600	1033			
\$\$\$ZDU	001	1100	1185			
\$\$\$ZLB	001	1100	1229			
\$\$\$ZLO	001	1100	1189			
\$\$\$ZLV	001	0F00	1245			
\$\$\$ZL1	001	0F00	1233			
\$\$\$ZL2	001	0F00	1237			
\$\$\$ZL3	001	0C00	1241			
\$\$\$ZTR	001	1000	1181			



## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 25/02/16 PAGE 73

###ZUT	001	0C00	1193	
###BLN	001	18D4	1124	
###CKT	001	2118	1252	
###CNF	001	2000	1220	
###COR	001	0800	1012	
###CSA	001	1000	1072	
###DRT	001	0000	0816	
###ERM	001	0928	1016	
###FSP	001	1880	1112	
###INV	001	212C	1256	
###PWR	001	2300	1260	
###RSP	001	1780	1092	
###SAV	001	1180	1080	
###SSA	001	1128	1076	
###VUF	001	0B08	1036	
##0TR	001	0000	0808	
##1TR	001	0080	0812	
##@BL	001	0001	1126	
##@CK	001	0004	1254	
##@CN	001	0001	1222	
##@CO	001	003A	1014	
##@CS	001	003A	1074	
##@DR	001	0008	0818	
##@ER	001	0032	1018	
##@FS	001	0030	1114	
##@IN	001	003A	1258	
##@PW	001	00C0	1262	
##@RS	001	0030	1094	
##@SA	001	0108	1082	
##@SS	001	0001	1078	
##@VU	001	0002	1038	
##@0T	001	0018	0810	
##@1T	001	0018	0814	
##@BCO	001	0018	0826	
##@BOV	001	0018	1098	
##@DPR	001	0005	0834	
##@DRE	001	0001	0850	
##@DSP	001	0004	0870	
##@ECM	001	0006	1130	
##@EFK	001	0002	1150	2398
##@ERR	001	0003	1122	
##@EXM	001	0003	1010	
##@FIL	001	0009	1090	
##@FIS	001	0009	1086	
##@FML	001	0052	1218	
##@FMS	001	0052	1058	
##@GRA	001	0003	0982	
##@GUF	001	0010	1118	
##@INL	001	0010	1198	
##@INS	001	0010	0822	
##@KAL	001	000F	0986	2508
##@KCA	001	000C	1202	2519
##@KCH	001	000C	0954	2528
##@KCN	001	0010	1070	2537
##@KCT	001	0009	0922	2645
##@KDE	001	0010	0918	2546

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$@KDI	001	0005	0998	2564
#\$@KDN	001	0010	0906	2591
#\$@KDO	001	000C	1002	
#\$@KED	001	000E	0842	2573
#\$@KEN	001	0006	0846	2555 2582
#\$@KEX	001	0003	0866	2600
#\$@KGO	001	0002	0838	2609
#\$@KHE	001	000C	1022	2618
#\$@KKE	001	0006	1250	2627
#\$@KLI	001	0011	0926	2636
#\$@KLL	001	0001	1226	
#\$@KLO	001	0008	0930	2654 2681
#\$@KME	001	0003	0910	2663
#\$@KMO	001	0004	0854	2672
#\$@KNA	001	0008	0966	2753
#\$@KOV	001	0009	0886	
#\$@KPA	001	0005	0862	2690
#\$@KPO	001	000D	0950	2699 2717
#\$@KPR	001	0009	0974	2708
#\$@KRE	001	0002	0894	2726
#\$@KRL	001	0004	0990	2735
#\$@KRM	001	0003	0858	2744
#\$@KRN	001	0003	0878	2762
#\$@KRO	001	000A	0882	
#\$@KRS	001	000A	1206	2771
#\$@KRU	001	0003	0902	2780 2807 2834
#\$@KRV	001	000D	0994	
#\$@KSA	001	0011	0938	2789
#\$@KSE	001	0004	0978	2798
#\$@KSO	001	000D	1030	
#\$@KSS	001	000B	0962	2816
#\$@KSV	001	0002	0958	
#\$@KSY	001	000F	0970	2825
#\$@KWI	001	0002	0898	2843
#\$@KWR	001	0002	0890	2852
#\$@LOA	001	0013	0830	
#\$@MIP	001	000D	1026	
#\$@SDS	001	0004	1138	
#\$@SFF	001	0008	1142	
#\$@SFL	001	0005	1134	
#\$@SFO	001	0003	1106	
#\$@SFS	001	0011	1102	
#\$@SPA	001	0004	0942	
#\$@SPO	001	0003	0946	
#\$@SPS	001	0001	0934	2368
#\$@STR	001	0002	1110	
#\$@TDC	001	0003	0914	
#\$@TSY	001	0003	0874	
#\$@TVK	001	0001	1050	
#\$@UAL	001	0011	1066	2870
#\$@UAT	001	000C	1162	2897
#\$@UCD	001	000B	1170	2861
#\$@UCN	001	0009	1154	2906
#\$@UCP	001	000F	1158	
#\$@UDE	001	000E	1174	2888
#\$@UDI	001	0008	1178	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$@UEX	001	000E	1062	2879
#\$@UIN	001	000F	1166	2915
#\$@UPA	001	0004	1146	2933
#\$@UPO	001	0005	1214	
#\$@UPT	001	0012	1210	2924
#\$@VCR	001	0008	1006	
#\$@VLO	001	0002	1042	2942
#\$@VOD	001	0016	1046	
#\$@VVM	001	0030	1054	
#\$@VXI	001	0002	1034	
#\$@ZDU	001	0008	1186	
#\$@ZLB	001	0002	1230	
#\$@ZLO	001	000C	1190	
#\$@ZLV	001	0006	1246	
#\$@ZL1	001	0007	1234	
#\$@ZL2	001	000D	1238	
#\$@ZL3	001	000A	1242	
#\$@ZTR	001	0001	1182	
#\$@ZUT	001	0014	1194	
#\$BCOM	001	0080	0824	
#\$BOLV	001	1780	1096	
#\$DPRI	001	014C	0832	
#\$DREA	001	0200	0848	
#\$DSPL	001	0240	0868	
#\$ECMA	001	1900	1128	
#\$EFKE	001	1990	1148	2397
#\$ERRP	001	18C0	1120	
#\$EXMS	001	07D4	1008	
#\$FILN	001	1724	1088	
#\$FIST	001	1700	1084	
#\$FMLN	001	1E00	1216	
#\$FMST	001	0D00	1056	
#\$GRAP	001	0690	0980	
#\$GUFU	001	1880	1116	
#\$INLN	001	1C84	1196	
#\$INST	001	0020	0820	
#\$KALL	001	06A4	0984	2507
#\$KCAL	001	1CC4	1200	2518
#\$KCHA	001	053C	0952	2527
#\$KCND	001	0F80	1068	2536
#\$KCTL	001	03BC	0920	2644
#\$KDEL	001	035C	0916	2545
#\$KDIS	001	0744	0996	2563
#\$KDNT	001	0300	0904	2590
#\$KDOV	001	0780	1000	
#\$KEDI	001	0188	0840	2572
#\$KENA	001	01C4	0844	2554 2581
#\$KEXT	001	0234	0864	2599
#\$KGOS	001	0180	0836	2608
#\$KHEL	001	0A30	1020	2617
#\$KKEY	001	2100	1248	2626
#\$KLIS	001	0400	0924	2635
#\$KLLA	001	2004	1224	
#\$KLOG	001	0444	0928	2653 2680
#\$KMER	001	030C	0908	2662
#\$KMOU	001	0204	0852	2671

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$KNAM	001	05C0	0964	2752
#\$KOVN	001	0290	0884	
#\$KPAS	001	0220	0860	2689
#\$KPOO	001	0508	0948	2698 2716
#\$KPRT	001	063C	0972	2707
#\$KREA	001	02BC	0892	2725
#\$KRLA	001	0700	0988	2734
#\$KRMO	001	0214	0856	2743
#\$KRNU	001	0280	0876	2761
#\$KROV	001	028C	0880	
#\$KRSU	001	1D24	1204	2770
#\$KRUN	001	02CC	0900	2779 2806 2833
#\$KRVL	001	0710	0992	
#\$KSAV	001	0488	0936	2788
#\$KSET	001	0680	0976	2797
#\$KSOV	001	0AC8	1028	
#\$KSSP	001	0594	0960	2815
#\$KSVL	001	058C	0956	
#\$KSYM	001	0600	0968	2824
#\$KWID	001	02C4	0896	2842
#\$KWRI	001	02B4	0888	2851
#\$LOAD	001	0100	0828	
#\$MIPP	001	0A80	1024	
#\$SDSY	001	192C	1136	
#\$SFFI	001	193C	1140	
#\$SFLO	001	1918	1132	
#\$SFOV	001	1844	1104	
#\$SFSY	001	1800	1100	
#\$SPAC	001	04CC	0940	
#\$SPOV	001	04DC	0944	
#\$SPSY	001	0484	0932	2367
#\$STRO	001	1850	1108	
#\$TDCK	001	0350	0912	
#\$TSYK	001	0250	0872	
#\$TVKB	001	0BAC	1048	
#\$UALL	001	0F00	1064	2869
#\$UATR	001	1A38	1160	2896
#\$UCDI	001	1AD8	1168	2860
#\$UCNF	001	19B8	1152	2905
#\$UCPL	001	19DC	1156	
#\$UDEL	001	1B24	1172	2887
#\$UDIS	001	1B5C	1176	
#\$UEXL	001	0EA8	1060	2878
#\$UINI	001	1A88	1164	2914
#\$UPAC	001	1980	1144	2932
#\$UPOV	001	1D24	1212	
#\$UPTF	001	1D5C	1208	2923
#\$VCRT	001	07B4	1004	
#\$VLOA	001	0B80	1040	2941
#\$VODK	001	0B88	1044	
#\$VVMR	001	0C00	1052	
#\$VXIT	001	0B00	1032	
#\$ZDUM	001	1BA4	1184	
#\$ZLBM	001	2008	1228	
#\$ZLOA	001	1BC4	1188	
#\$ZLVR	001	20B0	1244	

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   25/02/16   PAGE   77

#\$ZL1M   001   2010   1232  
#\$ZL2M   001   2030   1236  
#\$ZL3M   001   2088   1240  
#\$ZTRA   001   1B9C   1180  
#\$ZUTM   001   1C14   1192  
#@#BAD   001   0455   0753  
#@#IO1   001   0459   0761   2389  
#@#IO2   001   045D   0762  
#@#TAT   001   0941   0789  
#@#TBA   001   09A1   0793  
#@#TFS   001   0941   0787  
#@#TSY   001   0941   0791  
#@#VFP   001   0700   0779  
#@#VLP   001   093D   0782  
#@#WDB   001   050C   0774   2382  
#@#WFT   001   0500   0772   2377  
#@#BA   001   0001   0754  
#@#IO   001   0001   0766   2390  
#@#SC   001   0002   0763  
#@#TA   001   0010   0790  
#@#TB   001   0010   0794  
#@#TS   001   0005   0792  
#@#TW   001   0020   0788  
#@#VM   001   0100   0783  
#@#WD   001   00BD   0775  
#@#WF   001   0003   0773   2378  
#@#04   001   0004   0765  
#@#08   001   0008   0764  
#@#BOV   001   0018   0742  
#@#ECM   001   0006   0756  
#@#ERR   001   0003   0750  
#@#GUF   001   0010   0746  
#@#LDS   001   0002   0752  
#@#SDS   001   0004   0748   2361  
#@#SFF   001   0008   0760  
#@#SFL   001   0005   0758  
#@#SFO   001   0005   0768  
#@#SFS   001   0011   0744   2356  
#@#VSF   001   0010   0796  
#@#VSL   001   000F   0797  
#@#VTR   001   0001   0781  
#@BOVL   001   0400   0741  
#@ECMA   001   0481   0755  
#@ERRP   001   0441   0749  
#@GUFU   001   0401   0745  
#@LDSV   001   044D   0751  
#@SDSY   001   04AD   0747   2360  
#@SFFI   001   04BD   0759  
#@SFLO   001   0499   0757  
#@SFOV   001   04C4   0767  
#@SFSY   001   0480   0743   2355  
#@VSFI   001   09A1   0795  
#@VTRL   001   0708   0780  
#@WAF1   001   0401   0740  
#@WAR1   001   0400   0739  
#ECMA   001   0C07   2073

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#ECMAN	001	0000	0001	
@@E001	001	0000	1800	1802
@@E003	001	0001	1802	1804
@@E004	001	0002	1804	1806
@@E005	001	0003	1806	1808
@@E006	001	0004	1808	1810
@@E007	001	0005	1810	1812
@@E008	001	0006	1812	1814
@@E009	001	0007	1814	1816
@@E010	001	0008	1816	1818
@@E011	001	0009	1818	1820
@@E012	001	000A	1820	1822
@@E013	001	000B	1822	1824
@@E014	001	000C	1824	1826
@@E015	001	000D	1826	1828
@@E016	001	000E	1828	1830
@@E017	001	000F	1830	1832
@@E018	001	0010	1832	1834
@@E019	001	0011	1834	1836
@@E020	001	0012	1836	1838
@@E021	001	0013	1838	1840
@@E023	001	0014	1840	1842
@@E024	001	0015	1842	1844
@@E025	001	0016	1844	1846
@@E026	001	0017	1846	1848
@@E027	001	0018	1848	1850
@@E028	001	0019	1850	1852
@@E029	001	001A	1852	1854
@@E030	001	001B	1854	1856
@@E031	001	001C	1856	1858
@@E032	001	001D	1858	1860
@@E035	001	001E	1860	1862
@@E036	001	001F	1862	1864
@@E037	001	0020	1864	1866
@@E038	001	0021	1866	1868
@@E039	001	0022	1868	1870
@@E040	001	0023	1870	1872
@@E041	001	0024	1872	1874
@@E042	001	0025	1874	1876
@@E043	001	0026	1876	1878
@@E044	001	0027	1878	1880
@@E045	001	0028	1880	1882
@@E046	001	0029	1882	1884
@@E060	001	002A	1884	1886
@@E080	001	002B	1886	
@@E100	001	0000	1272	1274
@@E101	001	0001	1274	1276
@@E102	001	0002	1276	1278
@@E103	001	0003	1278	1280
@@E110	001	0004	1280	1282
@@E112	001	0005	1282	1284
@@E113	001	0006	1284	1286
@@E114	001	0007	1286	1288
@@E115	001	0008	1288	1290
@@E116	001	0009	1290	1292
@@E117	001	000A	1292	1294



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E120	001	000B	1294	1296
@@E122	001	000C	1296	1298 2419
@@E123	001	000D	1298	1300
@@E124	001	000E	1300	1302
@@E129	001	000F	1302	1304
@@E130	001	0010	1304	1306
@@E131	001	0011	1306	1308
@@E133	001	0012	1308	1310
@@E134	001	0013	1310	1312
@@E135	001	0014	1312	1314
@@E136	001	0015	1314	1316
@@E137	001	0016	1316	1318
@@E138	001	0017	1318	1320
@@E139	001	0018	1320	1322
@@E142	001	0019	1322	1324
@@E143	001	001A	1324	1326
@@E150	001	001B	1326	1328
@@E151	001	001C	1328	1330
@@E160	001	001D	1330	1332
@@E162	001	001E	1332	1334
@@E163	001	001F	1334	1336
@@E164	001	0020	1336	1338
@@E200	001	0021	1338	1340
@@E205	001	0022	1340	1342
@@E210	001	0023	1342	1344
@@E211	001	0024	1344	1346
@@E212	001	0025	1346	1348
@@E213	001	0026	1348	1350
@@E215	001	0027	1350	1352
@@E216	001	0028	1352	1354
@@E217	001	0029	1354	1356
@@E220	001	002A	1356	1358 2150 2266
@@E221	001	002B	1358	1360 2156 2295
@@E222	001	002C	1360	1362 2153 2284
@@E223	001	002D	1362	1364 2290
@@E225	001	002E	1364	1366 2255
@@E226	001	002F	1366	1368 2272
@@E227	001	0030	1368	1370
@@E228	001	0031	1370	1372
@@E229	001	0032	1372	1374
@@E230	001	0033	1374	1376 2147 2248
@@E232	001	0034	1376	1378 2159 2260
@@E234	001	0035	1378	1380 2242
@@E237	001	0036	1380	1382
@@E240	001	0037	1382	1384
@@E241	001	0038	1384	1386
@@E242	001	0039	1386	1388
@@E248	001	003A	1388	1390
@@E249	001	003B	1390	1392
@@E250	001	003C	1392	1394
@@E251	001	003D	1394	1396
@@E252	001	003E	1396	1398
@@E253	001	003F	1398	1400
@@E254	001	0040	1400	1402
@@E255	001	0041	1402	1404
@@E256	001	0042	1404	1406

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   25/02/16   PAGE   80

@@E300	001	0043	1406	1408	
@@E301	001	0044	1408	1410	
@@E302	001	0045	1410	1412	
@@E303	001	0046	1412	1414	
@@E304	001	0047	1414	1416	
@@E305	001	0048	1416	1418	
@@E308	001	0049	1418	1420	
@@E310	001	004A	1420	1422	
@@E315	001	004B	1422	1424	
@@E316	001	004C	1424	1426	2278
@@E320	001	004D	1426	1428	
@@E325	001	004E	1428	1430	
@@E330	001	004F	1430	1432	
@@E335	001	0050	1432	1434	
@@E338	001	0051	1434	1436	
@@E340	001	0052	1436	1438	
@@E350	001	0053	1438	1440	
@@E351	001	0054	1440	1442	
@@E352	001	0055	1442	1444	
@@E360	001	0056	1444	1446	
@@E361	001	0057	1446	1448	
@@E362	001	0058	1448	1450	
@@E371	001	0059	1450	1452	
@@E380	001	005A	1452	1454	
@@E390	001	005B	1454	1456	
@@E400	001	005C	1456	1458	
@@E410	001	005D	1458	1460	
@@E415	001	005E	1460	1462	
@@E417	001	005F	1462	1464	
@@E420	001	0060	1464	1466	
@@E430	001	0061	1466	1468	
@@E432	001	0062	1468	1470	
@@E433	001	0063	1470	1472	
@@E450	001	0064	1472	1474	
@@E451	001	0065	1474	1476	
@@E460	001	0066	1476	1478	
@@E461	001	0067	1478	1480	
@@E464	001	0068	1480	1482	
@@E465	001	0069	1482	1484	
@@E466	001	006A	1484	1486	
@@E467	001	006B	1486	1488	
@@E469	001	006C	1488	1490	
@@E470	001	006D	1490	1492	
@@E471	001	006E	1492	1494	
@@E473	001	006F	1494	1496	
@@E474	001	0070	1496	1498	
@@E475	001	0071	1498	1500	
@@E476	001	0072	1500	1502	
@@E477	001	0073	1502	1504	
@@E478	001	0074	1504	1506	
@@E479	001	0075	1506	1508	
@@E480	001	0076	1508	1510	
@@E481	001	0077	1510	1512	
@@E482	001	0078	1512	1514	
@@E483	001	0079	1514	1516	
@@E484	001	007A	1516	1518	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E485	001	007B	1518	1520
@@E486	001	007C	1520	1522
@@E487	001	007D	1522	1524
@@E488	001	007E	1524	1526
@@E489	001	007F	1526	1528
@@E490	001	0080	1528	1530
@@E491	001	0081	1530	1532
@@E492	001	0082	1532	1534
@@E493	001	0083	1534	1536
@@E494	001	0084	1536	1538
@@E495	001	0085	1538	1540
@@E496	001	0086	1540	1542
@@E497	001	0087	1542	1544
@@E498	001	0088	1544	1546
@@E500	001	0089	1546	1548
@@E501	001	008A	1548	1550
@@E530	001	008B	1550	1552
@@E531	001	008C	1552	1554
@@E535	001	008D	1554	1556
@@E540	001	008E	1556	1558
@@E541	001	008F	1558	1560
@@E542	001	0090	1560	1562
@@E543	001	0091	1562	1564
@@E544	001	0092	1564	1566
@@E545	001	0093	1566	1568
@@E546	001	0094	1568	1570
@@E547	001	0095	1570	1572
@@E548	001	FFFF	1776	
@@E549	001	0096	1572	1574
@@E550	001	0097	1574	1576
@@E551	001	0098	1576	1578
@@E552	001	0099	1578	1580
@@E553	001	009A	1580	1582
@@E554	001	009B	1582	1584
@@E555	001	009C	1584	1586
@@E556	001	009D	1586	1588
@@E558	001	009E	1588	1590
@@E570	001	009F	1590	1592
@@E571	001	00A0	1592	1594
@@E572	001	00A1	1594	1596
@@E573	001	00A2	1596	1598
@@E574	001	00A3	1598	1600
@@E575	001	FFFF	1778	
@@E578	001	00A4	1600	1602
@@E579	001	FFFF	1780	
@@E580	001	FFFF	1782	
@@E585	001	00A5	1602	1604
@@E595	001	FFFF	1784	
@@E597	001	FFFF	1786	
@@E598	001	FFFF	1788	
@@E600	001	00A6	1604	1606
@@E601	001	00A7	1606	1608
@@E602	001	00A8	1608	1610
@@E603	001	00A9	1610	1612
@@E604	001	00AA	1612	1614
@@E606	001	00AB	1614	1616

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E607	001	00AC	1616	1618
@@E608	001	00AD	1618	1620
@@E609	001	00AE	1620	1622
@@E610	001	00AF	1622	1624
@@E611	001	00B0	1624	1626
@@E612	001	00B1	1626	1628
@@E613	001	00B2	1628	1630
@@E614	001	00B3	1630	1632
@@E700	001	00B4	1632	1634
@@E701	001	00B5	1634	1636
@@E710	001	00B6	1636	1638
@@E712	001	00B7	1638	1640
@@E713	001	00B8	1640	1642
@@E714	001	00B9	1642	1644
@@E715	001	00BA	1644	1646
@@E716	001	00BB	1646	1648
@@E717	001	00BC	1648	1650
@@E718	001	00BD	1650	1652
@@E720	001	00BE	1652	1654
@@E721	001	00BF	1654	1656
@@E723	001	00C0	1656	1658
@@E724	001	00C1	1658	1660
@@E725	001	00C2	1660	1662
@@E726	001	00C3	1662	1664
@@E727	001	00C4	1664	1666
@@E728	001	00C5	1666	1668
@@E729	001	00C6	1668	1670
@@E730	001	00C7	1670	1672
@@E732	001	00C8	1672	1674
@@E752	001	00C9	1674	1676
@@E753	001	00CA	1676	1678
@@E754	001	00CB	1678	1680
@@E755	001	00CC	1680	1682
@@E756	001	00CD	1682	1684
@@E757	001	00CE	1684	1686
@@E758	001	00CF	1686	1688
@@E759	001	00D0	1688	1690
@@E760	001	00D1	1690	1692
@@E761	001	00D2	1692	1694
@@E762	001	00D3	1694	1696
@@E763	001	00D4	1696	1698
@@E764	001	00D5	1698	1700
@@E765	001	00D6	1700	1702
@@E766	001	00D7	1702	1704
@@E767	001	00D8	1704	1706
@@E768	001	00D9	1706	1708
@@E769	001	00DA	1708	1710
@@E770	001	00DB	1710	1712
@@E771	001	00DC	1712	1714
@@E772	001	00DD	1714	1716
@@E773	001	00DE	1716	1718
@@E774	001	00DF	1718	1720
@@E775	001	00E0	1720	1722
@@E776	001	00E1	1722	1724
@@E777	001	00E2	1724	1726
@@E778	001	00E3	1726	1728

## CROSS REFERENCE

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@@E779	001	00E4	1728	1730											
@@E780	001	00E5	1730	1732											
@@E781	001	00E6	1732	1734											
@@E782	001	00E7	1734	1736											
@@E783	001	00E8	1736	1738											
@@E784	001	00E9	1738	1740											
@@E785	001	00EA	1740	1742											
@@E786	001	00EB	1742	1744											
@@E790	001	00EC	1744	1746											
@@E791	001	00ED	1746	1748											
@@E792	001	00EE	1748	1750											
@@E793	001	00EF	1750	1752											
@@E794	001	00F0	1752	1754											
@@E795	001	00F1	1754	1756											
@@E796	001	00F2	1756	1758											
@@E797	001	00F3	1758	1760											
@@E798	001	00F4	1760	1762											
@@E800	001	FFFF	1790												
@@E801	001	FFFF	1792												
@@E802	001	FFFF	1794												
@@E803	001	FFFF	1796												
@@E804	001	FFFF	1798												
@@E900	001	00F5	1762	1764											
@@E901	001	00F6	1764	1766											
@@E902	001	00F7	1766	1768											
@@E903	001	00F8	1768	1770											
@@E905	001	00F9	1770	1772											
@@E906	001	00FA	1772	1774											
@@E910	001	00FB	1774												
@ARR	001	0008	0017	2416											
@ASIGN	001	007C	0072												
@ASTER	001	005C	0070												
@BCRDL	001	0050	0089												
@BE	001	0081	0044												
@BF	001	0090	0053												
@BH	001	0084	0042												
@BL	001	0082	0043												
@BLANK	001	0040	0066	2084	2121	2131	2142	2195	2196	2452					
@BM	001	0082	0055												
@BNE	001	0001	0047												
@BNH	001	0004	0045												
@BNL	001	0002	0046												
@BNM	001	0002	0058												
@BNOL	001	0020	0051												
@BNOZ	001	0008	0050												
@BNP	001	0004	0057												
@BNZ	001	0001	0059												
@BOL	001	00A0	0049												
@BOZ	001	0088	0048												
@BP	001	0084	0054												
@BR	001	0001	0014	2075	2076*	2082	2087	2088	2091	2093	2100	2100	2101	2102	2106
				2115	2121	2123	2123	2124	2125	2129	2140	2142	2192	2195	2206*
				2209	2211	2214	2215	2215*	2216	2216*	2217	2243	2249	2256	2261
				2267	2273	2279	2285	2291	2296	2299	2304	2310	2314	2318	2325
				2331	2411	2413	2414*	2416	2418	2420	2420	2430	2430	2435	2435
				2436	2436	2437	2437	2438	2438	2439	2439	2443	2444	2444	2447

CROSS REFERENCE															
SYMBOL	LEN	VALUE	DEFN	REFERENCES								VER 15, MOD 00    25/02/16    PAGE    84			
				2453	2454	2459	2460	2460	2462*						
@BT	001	0010	0052												
@BZ	001	0081	0056												
@B1	001	0001	0064	2123	2123*	2446	2451								
@CADDR	001	0002	0143	2088	2110	2178	2181	2183	2191	2220	2307	2317	2330	2335	2339
				2341	2352	2357	2362	2374	2379	2384	2510	2520	2529	2538	2547
				2556	2565	2574	2583	2592	2601	2610	2619	2628	2637	2646	2655
				2664	2673	2682	2691	2700	2709	2718	2727	2736	2745	2754	2763
				2772	2781	2790	2799	2808	2817	2826	2835	2844	2853	2862	2871
				2880	2889	2898	2907	2916	2925	2934	2943				
@CARDL	001	0060	0088	0647	2100										
@CHARA	001	00C1	0073												
@CHARF	001	00C6	0074												
@CHARR	001	00D9	0075												
@CHARZ	001	00E9	0076												
@CLOFF	001	0010	0095												
@CLON	001	0011	0094												
@COMMA	001	006B	0067												
@CPLUS	001	004E	0080												
@DADDR	001	0002	0141	2350	2355	2360	2377	2382	2507	2518	2527	2536	2545	2554	2563
				2572	2581	2590	2599	2608	2617	2626	2635	2644	2653	2662	2671
				2680	2689	2698	2707	2716	2725	2734	2743	2752	2761	2770	2779
				2788	2797	2806	2815	2824	2833	2842	2851	2860	2869	2878	2887
				2896	2905	2914	2923	2932	2941						
@DBFR1	001	0004	0130	2331*											
@DBFR2	001	0005	0131												
@DCALK	001	0001	0082												
@DCBCY	001	0009	0116												
@DCBT1	001	0050	0118												
@DCNT	001	0003	0129												
@DCST1	001	0040	0117												
@DCTRL	001	0000	0126												
@DCYL	001	0001	0127	2354											
@DD2	001	0003	0031												
@DGET	001	0001	0135	2349	2359	2366	2381	2388	2396						
@DOLAR	001	005B	0069												
@DOP2	001	0004	0029												
@DPLNG	001	0006	0133												
@DPOS	001	0000	0134												
@DPUT	001	0002	0136	2376											
@DSAD	001	0002	0128												
@DSBCY	001	0004	0107												
@DSCS1	001	0000	0108												
@DSIVF	001	0003	0139												
@DSPIN	001	0002	0132												
@DTRSZ	001	0018	0086												
@DVBCY	001	0007	0109												
@DVRFY	001	0031	0137												
@DWAIT	001	00FF	0138												
@DWBCY	001	0005	0104												
@DWSIZ	001	00C0	0106												
@DWTB1	001	0003	0105												
@DZERO	001	00F0	0065												
@D1	001	0002	0027	2095*	2207*	2430									



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@EOS	001	001E	0077	2086 2166 2198
@FDDBC	001	0000	0196	
@FDE1	001	000C	0201	
@FDFNA	001	000B	0199	
@FDHLN	001	0002	0209	
@FDLNC	001	0002	0194	
@FDNSC	001	0003	0211	
@FDSD	001	0000	0207	
@FLACE	001	0009	0198	
@FLDBC	001	0001	0197	
@FLENT	001	0004	0202	
@FLFNA	001	0002	0200	
@FLHLN	001	0002	0210	
@FLLNC	001	0002	0195	
@FLNSC	001	0001	0212	
@FLSD	001	0001	0208	
@HDRLN	001	0007	0093	0675
@IAR	001	0010	0018	
@INDEX	001	0001	0157	0158
@INST3	001	0003	0033	
@INST4	001	0004	0034	
@INST5	001	0005	0035	
@INST6	001	0006	0036	
@I1IAR	001	00C0	0021	
@LINSZ	001	00F4	0085	0649
@MAPEN	001	0005	0090	
@MINCR	001	2000	0084	
@MINUS	001	0060	0081	2200
@NOP	001	0080	0041	2096 2097 2425 2499
@NUMBR	001	007B	0071	
@OPD2	001	0004	0030	
@OP1	001	0003	0028	2413* 2416*
@OP2	001	0005	0032	
@PCTRL	001	0000	0150	
@PDATA	001	0003	0152	
@PGCSZ	001	0020	0083	0084
@PPLNG	001	0004	0149	
@PRCNT	001	0001	0151	2106*
@PRETR	001	00C0	0155	
@PRINT	001	0040	0153	0155 2337 2372
@PSR	001	0004	0016	
@PWAIT	001	00FF	0159	
@P1IAR	001	0020	0019	
@P2IAR	001	0040	0020	
@Q	001	0001	0025	2096* 2097* 2122* 2212 2493 2497
@REGL	001	0002	0013	
@RETRN	001	0080	0154	0155 2337 2372
@RLDWN	001	004F	0160	
@RTRNC	001	0080	0162	
@SBLN	001	0005	0171	
@SBLNL	001	0002	0185	2140
@SCTS	001	0100	0101	
@SDFLN	001	0007	0091	
@SDF0	001	0000	0167	
@SDF1	001	0001	0168	
@SDF2	001	0002	0169	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@SDF3	001	0003	0170	
@SECCY	001	0030	0087	
@SIST	001	0001	0182	
@SLASH	001	0061	0068	
@SLAST	001	0002	0184	
@SMIDL	001	0003	0183	
@SNULL	001	0080	0174	
@SONLY	001	0000	0181	
@STEXT	001	0007	0173	
@STYPE	001	0006	0172	
@TBCNT	001	0000	0161	
@TBLEF	001	0010	0156	0158
@TBLIX	001	0011	0158	
@UCB	001	0087	0040	2141 2194 2495
@UPARW	001	005A	0079	
@VADDR	001	0002	0142	
@VENTA	001	0056	0114	
@VMDDV	001	00FE	0115	
@VMFD1	001	0000	0110	
@VMFD2	001	0001	0111	
@VMRS3	001	0002	0113	
@VMTRL	001	0001	0112	
@VOLID	001	0006	0092	
@VQ	001	0001	0026	2211
@WSFIT	001	0500	0102	
@WSTBL	001	0503	0103	
@XR	001	0002	0015	2082* 2083* 2084 2086 2087 2129* 2130 2130* 2131 2163 2163* 2164 2166 2196 2198 2200 2202 2202* 2211 2299* 2332 2332* 2418 2427 2443 2446 2446* 2451 2451* 2452 2459
@ZERO	001	0000	0063	2214 2217 2312
C4BCHC	001	0004	2487	
C4BCHR	001	0F77	2475	2443* 2444
C4BINI	001	0F76	2473	2420
C4BIN2	001	0F0B	2410	2137 2411 2414
C4BLEN	002	0F73	2485	2459* 2460*
C4BLNK	003	0F26	2493	2136*
C4BLOW	001	00F0	2489	2427
C4BLVL	002	0002	2491	2420 2435 2436 2437 2438 2439 2444
C4BNMC	004	0F22	2497	
C4BNOP	001	0080	2499	
C4BSAV	002	0F79	2479	2418* 2460
C4BSPC	001	0087	2495	2136
C4BVAL	002	0F75	2471	2140 2420* 2435 2435* 2436 2437 2437* 2438 2438* 2439* 2444* 2491
C4BWRK	002	0F73	2468	2436* 2439 2485 2491
C4BYT1	001	0F74	2470	
C4B100	004	0F21	2421	2497
C4B200	003	0F25	2425	2447 2493
C4B300	003	0F28	2427	2453
C4B590	003	0F57	2451	2430 2454
C4B600	003	0F5A	2452	2425
C4B700	003	0F63	2459	2428
C4B800	004	0F6A	2462	2413* 2431
C4B850	004	0F6E	2464	2416*
C4B900	001	0F7A	2481	2421* 2430*
ECMAST	001	005C	2953	2091 2192
ECMCKY	001	0010	2964	2115

## CROSS REFERENCE

SYMBOL	LEN	VALUE	DEFN	REFERENCES								VER 15, MOD 00				25/02/16	PAGE	87
ECMCON	001	0002	2987	2249	2504	2525	2543	2552	2561	2570	2579	2597	2606	2633	2660			
				2732	2750	2759	2768	2777	2786	2795	2804	2813	2822	2831	2939			
ECMDAS	001	0F7E	2506	2331														
ECMDCN	001	0005	2961	2100*	2101	2101*	2347											
ECMDEF	001	0010	2990	2267	2504	2552	2579	2597	2633	2660	2732	2759	2786	2795	2822			
				2831														
ECMDPD	001	0007	2976	2216	2331													
ECMDPF	001	0F81	2509	2976														
ECMDPI	001	0EFE	2387	2322														
ECMDPK	001	0F04	2395	2119														
ECMDPL	001	0EDC	2349	2178	2354	2951												
ECMDPT	001	0EF2	2376	2307														
ECMDPW	001	0EF8	2381	2317														
ECMDSC	001	0EE2	2359	2183														
ECMDTN	001	0010	3001	2291	2505	2733	2823	2832										
ECMEDR	002	0ED7	2962	2125														
ECMEPL	001	0EEE	2372	2220														
ECMFAE	001	0091	2949	2092														
ECMIB1	001	0F7C	2504	2972														
ECMIB2	001	0F7D	2505	2974														
ECMINP	002	0ED7	2341	2088	2962													
ECMIOO	001	0004	2999	2318	2325	2562	2607	2661	2724	2733	2760	2778	2787	2796	2805			
				2832	2859	2895	2904	2922	2940									
ECMI1D	001	0002	2972	2249	2256	2261	2267	2273	2285	2296								
ECMI2D	001	0003	2974	2243	2279	2291	2304	2310	2314	2318	2325							
ECMKWL	001	0F7B	2503	2970														
ECMKWS	001	0F82	2512	2331	2978													
ECMK1D	001	0008	2978	2211														
ECMLDP	001	0001	2970	2206	2209	2215	2217											
ECMLDS	001	1F00	2959	2391														
ECMLEN	004	0D8E	2212	2203*	2207	2208												
ECMLNG	001	0EDA	2963	2208*	2209													
ECMLNL	001	0EDB	2347	2102														
ECMLOK	001	0040	2992	2285	2504	2516	2534	2543	2561	2570	2588	2606	2615	2624	2642			
				2651	2669	2678	2687	2696	2705	2714	2723	2741	2750	2768	2777			
				2786	2795	2804	2813	2831	2840	2849	2858	2867	2876	2885	2894			
				2903	2912	2921	2930	2939										
ECMLQM	001	0001	2402	2373	2404													
ECMLWS	001	0002	2998	2314	2778	2805	2823	2832										
ECMPGD	001	0080	2993	2296	2516	2525	2534	2543	2561	2570	2588	2606	2615	2624	2633			
				2642	2651	2669	2678	2687	2696	2705	2714	2723	2741	2750	2768			
				2777	2786	2804	2813	2840	2849	2858	2867	2876	2885	2894	2903			
				2912	2921	2930	2939											
ECMPPL	001	0ED2	2337	2106*	2110	2191	2232											
ECMPRC	001	0EE8	2365	2181														
ECMPSO	001	0004	2988	2256	2606	2795	2813											
ECMPSY	001	0008	2989	2261	2504	2516	2525	2543	2552	2579	2588	2597	2615	2624	2651			
				2660	2669	2678	2687	2696	2705	2714	2732	2741	2750	2759	2768			
				2777	2786	2804	2822	2831	2858	2867	2876	2885	2894	2903	2912			
				2921	2930	2939												
ECMQUE	001	0F0A	2404	2374														
ECMRPL	001	0EDC	2951	2331*	2335													
ECMSCE	001	00FF	2965	2121*	2123	2123	2123*											
ECMSLH	001	0061	2955	2093														
ECMSVF	001	0001	2997	2304	2318	2505	2517	2535	2544	2562	2571	2589	2607	2616	2661			
				2697	2715	2733	2760	2769	2778	2787	2796	2805	2814	2823	2832			

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   25/02/16   PAGE   88

				2859	2868	2877	2886	2895	2922	2931	2940						
ECMTBL	001	0F7B	2501	2206	2970	2972	2974	2976	2978								
ECMTUT	001	0020	3002	2243	2517	2670	2913										
ECMVMD	001	0008	3000	2310	2652	2661	2679	2733	2760	2922	2940						
ECMVMG	001	0040	3003	2279	2562												
ECMWSI	001	0020	2991	2273	2552	2579	2597	2633	2660	2732	2759	2786	2822	2831			
ECM000	001	0000	2957	2526	2553	2580	2598	2615	2625	2634	2643	2669	2688	2706	2741		
				2742	2751	2840	2841	2850									
ECM110	004	0C15	2083	2085													
ECM130	004	0C4A	2100	2094													
ECM140	005	0C58	2106	2092	2098												
ECM170	003	0C6D	2115	2078													
ECM180	003	0C79	2121	2116													
ECM190	004	0C82	2123	2122*													
ECM200	003	0C90	2129	2095*	2108	2111											
ECM210	003	0C93	2130	2132													
ECM230	004	0CAC	2137	2135													
ECM300	003	0CBC	2141	2096*													
ECM320	004	0D10	2169	2193	2222												
ECM400	004	0CC2	2147	2141													
ECM402	003	0CFC	2163	2165													
ECM403	003	0CFF	2164	2162													
ECM405	004	0D18	2172	2167													
ECM407	004	0D30	2180	2174													
ECM410	004	0D36	2182	2176													
ECM500	004	0D3C	2188	2138													
ECM505	003	0D49	2192	2189													
ECM510	003	0D50	2194	2097*													
ECM520	003	0D56	2196	2194	2204												
ECM530	004	0D75	2206	2197	2199	2201											
ECM535	005	0D85	2209	2218													
ECM540	004	0D8D	2211	2207*	2212												
ECM550	003	0D94	2214	2210													
ECM560	004	0DB6	2227	2149	2152	2155	2158	2161									
ECM580	004	0DCA	2239	2213													
ECM590	004	0DDF	2246	2241													
ECM610	004	0DF3	2253	2247													
ECM620	004	0E07	2260	2254													
ECM625	004	0E11	2264	2258													
ECM630	004	0E22	2270	2265													
ECM635	004	0E33	2276	2271													
ECM640	004	0E44	2282	2277													
ECM645	004	0E55	2288	2283													
ECM655	003	0E77	2299	2229	2234	2244	2250	2257	2262	2268	2274	2280	2286	2292			
ECM660	003	0E7E	2304	2289	2294	2297											
ECM665	003	0E8E	2310	2251	2305												
ECM670	003	0E98	2314	2311													
ECM680	003	0EB0	2325	2315	2319												
ECM690	004	0EBA	2329	2326													
ECM900	002	0ED9	2343	2083													
ECM910	001	0EDA	2345	2203	2963												

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY = 0

OL105 I THE CODE LENGTH OF #ECMAN IS 4574 DECIMAL.

```
OL103 I  TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS      18
        NAME-#ECMAN,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000
```

START ADDRESS	CATEGORY	NAME AND ENTRY	CODE LENGTH HEXADECIMAL	DECIMAL
0000	0	#ECMAN	11DE	4574
OL100	I	THE TOTAL CORE USED BY #ECMAN IS 4574 DECIMAL.		
OL101	I	THE START CONTROL ADDRESS OF THIS MODULE IS 0000.		
OL104	I	TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 18		
		NAME-#ECMAN,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O		