

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

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



ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	2
0000			1	#KCHAN	START 0				
			2		PRINT ON,NODATA				
			3	*	@SYS EXP-N				
			214+		PRINT ON				
			215	*	@FXD EXP-N				
			620+		PRINT ON				
			621	*	@CAN EXP-N				
			724+		PRINT ON				
			725	*	@WKA EXP-N				
			795+		PRINT ON				
			796	*	@ERM EXP-N				
			1418+		PRINT ON				
			1419	*	@SPF EXP-N				
			1882+		PRINT ON				



## #KCHAN - CHANGE SYSTEM COMMAND

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 10/06/22 PAGE 4
		1885		*****	*
		1886	*	5703-XM1 COPYRIGHT IBM CORP, 1970	*
		1887	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083	*
		1888	*		*
		1889		*****	*
		1890	*	*STATUS -	*
		1891	*	VERSION 1 MODIFICATION 0	*
		1892	*		*
		1893	*	*FUNCTION	*
		1894	*	* KCHANG WILL CHANGE A LINE CONTAINED IN THE WORK FILE OR	*
		1895	*	THE 'LAST' BAD LINE,	*
		1896	*	* THE USER CAN SPECIFY TEXT REPLACEMENTS USING THE CHARACTER	*
		1897	*	STRING OPTIONS, ESSENTIALLY THE SECOND CHARACTER STRING WILL	*
		1898	*	REPLACE FIRST/ALL OCCURANCE(S) OF THE FIRST STRING.	*
		1899	*	* THE CHANGED LINE WILL BE DISPLAYED FOR THE USER. HE MAY	*
		1900	*	THEN TABULATE OR BACKSPACE TO MAKE ANY MORE CHANGES.	*
		1901	*		*
		1902	*	*ENTRY POINTS	*
		1903	*	THE ONLY ENTRY IS THE FIRST BYTE OF THIS MODULE. THE LABEL IS	*
		1904	*	#KCHAN. KCHANG IS LOADED BY THE COMMOND ANALYZER VIA \$BLOAD	*
		1905	*	WHEN THE CHANGE COMMAND IS RECOGNIZED.	*
		1906	*		*
		1907	*	*INPUT	*
		1908	*	INPUT TO THIS MODULE IS \$XRSV CONTAINING THE POINTER INTO	*
		1909	*	THE INPUT LINE BUFFER,	*
		1910	*		*
		1911	*	*OUTPUT	*
		1912	*	KCHAN PLACES THE REQUESTED LINE IN THE INPUT LINE BUFFER	*
		1913	*		*
		1914	*	*EXTERNAL REFERENCES	*
		1915	*	\$DISKN - ENTRY TO DISK ROUTINE	*
		1916	*	\$CAERR - ERROR INDICATOR BYTE	*
		1917	*	\$CAERK - ERROR ROUTINE ENTRY POINT	*
		1918	*	\$XRSV - CONTENTS OF XR2	*
		1919	*	\$WFNME - WORK FILE INDICATOR	*
		1920	*	\$INDR1 - WORK FILE STATUS INDICATOR	*
		1921	*	\$PRNT - ENTRY POINT TO PRINT ROUTINE	*
		1922	*	\$KEYCD - CARD INPUT INDICATOR	*
		1923	*	\$INDR2 - GUFUDI INDICATOR	*
		1924	*	\$LPOS - ADDRESS OF END OF STRING	*
		1925	*	\$EOSA - ADDRESS OF EOS	*
		1926	*	\$BLOAD - ENTRY POINT TO BLAST LOADER	*
		1927	*	\$INLN - ADDRESS OF INPUT LINE BUFFER	*
		1928	*		*
		1929	*	*EXITS, NORMAL	*
		1930	*	NORMAL EXIT IS ACCOMPLISHED BY:	*
		1931	*	B \$CAPPL	*
		1932	*	SHOULD THE CHANGED LINE EXCEED THE LOGICAL WIDTH	*
		1933	*	OR THE CHANGE COMMAND IS ENTERED FROM THE DATA RECORDER	*
		1934	*	THE FOLLOWING EXIT IS TAKEN:	*
		1935	*	B \$BLOAD LOAD COMMAND ANALYZER (ECMANL)	*
		1936	*		*
		1937	*	*EXITS, ERROR	*
		1938	*	ANY SYNTAX ERRORS CAUSE THE FOLLOWING EXIT	*
		1939	*	B \$CAERK	*
		1940	*	IF THE CHANGED LINE EXCEEDS 243 CHARACTERS AN INDICATIVE	*

#KCHAN - CHANGE SYSTEM COMMAND

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE	5
		1941	*	MESSAGE IS PRINTED, THE LINE IS TRUNCATED AND CONTROL IS			*	
		1942	*	RETURNED TO THE COMMAND ANALYZER,			*	
		1943	*				*	
		1944	*	TABLES/WORKAREAS			*	
		1945	*	NONE			*	
		1946	*				*	
		1947	*	ATTRIBUTES			*	
		1948	*	KCHANGE IS NON-REUSABLE			*	
		1949	*				*	
		1950	*	CHARACTER CODE DEPENDENCY			*	
		1951	*	KCHANG DEPENDS ON THE ENGLISH EBCDIC REPRESENTATION			*	
		1952	*	OF KEYWORDS CONTAINED IN THE SYNTACTIC STRUCTURE OF THE			*	
		1953	*	CHANGE COMMAND,			*	
		1954	*				*	
		1955	*	NOTES			*	
		1956	*	ERROR PROCEDURES			*	
		1957	*	NONE			*	
		1958	*				*	
		1959	*	REGISTER USAGE			*	
		1960	*	XR1 - USED AS A BASE REGISTER TO ADDRESS CONSTANTS			*	
		1961	*	XR2 - POINTS TO THE INPUT LINE BUFFER			*	
		1962	*	- USED TO CHECK FOR EQUAL STRINGS			*	
		1963	*				*	
		1964	*	SAVED RESTORED AREAS			*	
		1965	*	NONE			*	
		1966	*				*	
		1967	*	MODIFICATION CONSIDERATIONS			*	
		1968	*	NONE			*	
		1969	*				*	
		1970	*	REQUIRED MODULES			*	
		1971	*	@SYSEQ - COMMON SYSTEM EQUATES			*	
		1972	*	@FXDEQ - FIXED ADDRESS IN THE NUCLEUS			*	
		1973	*	@WKAEQ - WORK AREA EQUATES			*	
		1974	*	@CANEQ - FIXED ADDRESSES OUTSIDE OF THE NUCLEUS			*	
		1975	*	C2DEC5 - BINARY TO DECIMAL CONVERTER			*	
		1976	*	C4BIN2 - DECIMAL TO BINARY CONVERTER			*	
		1977	*	SCSTRG - CHARACTER STRING ANALYZER			*	
		1978	*	SDLIST - DATA FILE CONVERSION ROUTINE			*	
		1979	*	SCANIT - SCAN FOR DELIMITERS			*	
		1980	*	GFINDN - FIND REQUESTED LINE IN WORK FILE			*	
		1981	*	GRABIT - RETRIEVE FILE LINE			*	
		1982	*				*	
		1983	*	OTHER			*	
		1984	*	NONE			*	
		1985	*	*****			*	

## #KCHAN - CHANGE SYSTEM COMMAND

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05FF 1987 KCHANG EQU *
1988 *      HDR      #KCHAN,1          PROGRAM HEADER
1989 *****
1990 * PROGRAM HEADER FOR DISK LOAD *
1991 *****
1992 *#$KCHA EQU    X'053C'          DISK ADDR OF #KCHAN
1993 *#$KCH EQU    X'0C00'          CORE LOAD ADDRESS OF #KCHAN
1994 *#$@KCH EQU    012            SECTOR CNT OF #KCHAN
0C00 1995          ORG    $$$KCH      CORE LOAD ADDRESS
0C00 1996 $$$$$$ EQU    *          FIRST LOCATION IN PROGRAM
0C00 7BD2C3C8C1D5 0C05 1997          DC    CL6'#KCHAN'      PROGRAM NAME
0C06 23          0C06 1998          DC    IL1'035'          PROGRAM NUMBER OF #KCHAN
0C07 1999 #KCHA EQU    *          ENTRY POINT TO PROGRAM
2000 *** END OF EXPANSION ***

0C07 F2 87 4F          2002          J      KCH001          SKIP OVER MESSAGE
2003 *      MTEXT  @@M200-@PRETR,PATCH-15
2004 *****
2005 * PPL'S AND TEXT FOR MESSAGE *
2006 *****
0C0A C0          0C0A 2007 @@M200 DC    AL1(@PRETR)          PRINT CONTROL FUNCTION
0C0B 3C          0C0B 2008          DC    IL1'60'          LENGTH OF MESSAGE
0C0C 0C0E          0C0D 2009          DC    AL(@CADDR)(@T200) ADDR OF MESSAGE
2010 *
0C0E C5D9D9D6D940F5F7 0C40 2011 @@T200 EQU    *          LEFT BYTE OF MESSAGE
0C41 E3D9E4D5C3C1E3C5 0C49 2012          DC    CL051'ERROR 575 CHANGED LINE EXCEEDS WIDTH OF 243 - LINE '
2013          DC    CL009'TRUNCATED'
2014 *
2015 * PATCH AREA FOR MESSAGES
2016 *
0C4A          0C58 2017 $$$001 DS    CL15          MSG EXPANSION PATH AREA
2018 *** END OF EXPANSION ***

0C59 C2 01 0CEB          0C59 2020 KCH001 EQU    *          BEGINNING OF PROGRAM
2021          LA      KCH040,@BR      SET-UP BASE REGISTER
0CEB 2022          USING KCH040,@BR    INFORM ASSEMBLER OF USE
0C5D 35 02 03C7          2023          L      $XRSAB,@XR      ADDRESS OF STRING
0C61 C0 87 1840          2024          B      SCANIT      SCAN TO DELIMITER
0C65 C0 82 0D6A          2025          BL     KCH069      ERROR ROUTINE
0C69 3C 01 185D          2026          MVI    SCAMMA,SCACOM      SET INDICATOR
0C6D 7C 00 E4          2027          MVI    KCHMSK(,@BR),@ZERO      INITIALIZE MASK
0C70 BD 1E 00          2028          CLI    @ZERO(,@XR),@EOS      END OF STATEMENT ?
0C73 C0 81 0DD0          2029          BE     KCH099      YES -- GO TO MAINLINE
0C77 3C 18 03CD          2030          MVI    $CAERR,@E139      INVALID DELIMITER
0C7B BD 60 00          2031          CLI    0(,@XR),C'- '      INVALID DELIMITER ?
0C7E C0 81 0D6A          2032          BE     KCH069      YES -- ERROR
0C82 BD F0 00          2033          CLI    @ZERO(,@XR),KCHNUM      NUMERIC LINE NUMBER ?
0C85 F2 02 E6          2034          JNL    KCH080      YES -- CONVERT
2035 *
2036 *      DISK    KCHDPL
0C88 C0 87 0025          2037          B      $DISKN      PERFORM PHYSICAL DISK OP
0C8C 1031          0C8D 2038          DC    AL2(KCHDPL)      DPL ADDRESS
2039 *** END OF EXPANSION ***
2040 *
0C8E 241 KCH010 EQU    *          CHECK FOR END OF STATEMENT
2042          ST      $XRSAB,@XR      SAVE CURRENT POINTER

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	7
	0C92	3C 11	03CD		2043		MVI \$CAERR,@E131				INVALID PARAMETER
	0C96	BD 7D	00		2044		CLI 0(, @XR), C''''				SINGLE QUOTE
	0C99	F2 01	CE		2045		JNE KCH069				INVALID PARAMETER
	0C9C	C0 87	141F		2046		B SCSTRG				CHARACTER STRING CHECKER
	0CA0	1800		0CA1	2047	KCHB@1	DC AL2(KCHSG@)				ADDRESS OF FIRST STRING
	0CA2	C0 84	0DC0		2048		BH KCH085				INVALID CHARACTER STRING
					2049	*					
	0CA6	7A 01	E4		2050	KCH020	SBN KCHMSK(, @BR), KCHSG1				SET STRING ONE INDICATOR
	0CA9	0C 00	0F8D 1494		2051		MVC KCHLG1(@B1), SCSCNT				MODE LENGTH
	0CAF	0E 00	0CFA 0F8D		2052		ALC KCHB@2(@B1), KCHLG1				SET UP SECOND STRING ADDRESS
	0CB5	3D 00	1494		2053		CLI SCSCNT, @ZERO				NULL STRING ?
	0CB9	F2 01	04		2054		JNE KCH025				NO -- CONTINUE
	0CBC	3A 80	0DCF		2055		SBN KCHMSK, KCHNLF				SET NULL BIT ON
					2056	*					
				0CC0	2057	KCH025	EQU *				CHECK NEXT POSTION
	0CC0	C0 87	1840		2058		B SCANIT				GET TO NEXT NON-DELIMITER
	0CC4	F2 82	A3		2059		JL KCH069				ERROR IN SCANIT
	0CC7	BD 1E	00		2060		CLI @ZERO(, @XR), @EOS				END OF STATEMENT ?
	0CCA	C0 81	0DD6		2061		BE KCH100				EXIT FROM SYNTAX CHECKING
	0CCE	3C 11	03CD		2062		MVI \$CAERR,@E131				INVALID PARAMETER
	0CD2	3D 00	1880		2063		CLI SCACNT, @ZERO				DATA MOVEMENT ?
	0CD6	F2 81	E7		2064		JE KCH085				NO -- ERROR
	0CD9	34 02	03C7		2065		ST \$XRSAB, @XR				SAVE CURRENT POINTER
					2066	*					
					2067	*	CHECK POSITION TWO				
					2068	*					
	0CDD	8D 04	04 0DCB		2069	KCH030	CLC KCHFOR(KCHFLG, @XR), KCHFIR				KEYWORD 'FIRST' ?
	0CE2	D0 01	00		2070		BNE KCH040(, @BR)				NO -- CHECK STRING
	0CE5	E2 02	05		2071		LA KCHFLG(, @XR), @XR				BUMP @XR PAST KEYWORD
	0CE8	F2 87	63		2072		J KCH055				FOUND KEYWORD EXIT
	0CEB	BD 7D	00		2074	KCH040	CLI 0(, @XR), C''''				IS IT A QUOTE ?
	0CEE	3C 11	03CD		2075		MVI \$CAERR,@E131				INVALID PARAMETER
	0CF2	F2 01	75		2076		JNE KCH069				INVALID PARAMETER
	0CF5	C0 87	141F		2077		B SCSTRG				GO LOOK FOR CHARACTER STRING
	0CF9			0CFA	2078	KCHB@2	DS CL2				ADDRESS OF SECOND STRING
	0CF9				2079		ORG *-2				RESET LOCATION COUNTER
	0CF9	1800		0CFA	2080		DC AL2(KCHSG@)				INITIALIZE
	0CFB	F2 84	C2		2081		JH KCH085				INVALID CHARACTER STRING
					2082	*					
	0CFE	7A 02	E4		2083		SBN KCHMSK(, @BR), KCHSG2				INDICATE SECOND STRING
	0D01	0C 00	0F98 1494		2084		MVC KCHLG2(@B1), SCSCNT				SAVE LENGTH
	0D07	3D 00	1494		2085		CLI SCSCNT, @ZERO				NULL STRING ?
	0D0B	F2 01	03		2086		JNE KCH050				NO -- CONTINUE
	0D0E	7A 40	E4		2087		SBN KCHMSK(, @BR), KCHNLS				NULL SECOND STRING
					2088	*					
					2089	*	POSITION THREE				
					2090	*					
	0D11	C0 87	1840		2091	KCH050	B SCANIT				GO TO NON-DELIMITER
	0D15	F2 82	52		2092		JL KCH069				ERROR IN SCANIT
	0D18	3C 11	03CD		2093		MVI \$CAERR,@E131				INVALID PARAMETER
	0D1C	BD 1E	00		2094		CLI @ZERO(, @XR), @EOS				EOS ?
	0D1F	F2 81	B4		2095		JE KCH100				YES -- EXIT
	0D22	3C 11	03CD		2096		MVI \$CAERR,@E131				INVALID PARAMETER
	0D26	3D 00	1880		2097		CLI SCACNT, @ZERO				DATA MOVEMENT ?
	0D2A	F2 81	93		2098		JE KCH085				NO -- EROR



#KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	8
	0D2D	34	02	03C7	2099	ST	\$XRSAB,@XR				SAVE CURRENT POINTER
	0D31	9D	02	02 E3	2100	KCH051	CLC KCHTWO(KCHALG,@XR),KCHALL(,@BR)				KEYWORD 'ALL' ?
	0D35	F2	01	09	2101	JNE	KCH052				NO -- CHECK NEXT KEYWORD
	0D38	E2	02	03	2102	LA	KCHALG(,@XR),@XR				BUMP PAST KEYWORD
	0D3B	7A	04	E4	2103	SBN	KCHMSK(,@BR),KCHKAL				TURN ON 'ALL' INDICATOR
	0D3E	F2	87	0D	2104	J	KCH055				CONTINUE ---
	0D41	9D	04	04 E0	2106	KCH052	CLC KCHFOR(KCHFLG,@XR),KCHFIR(,@BR)				KEYWORD 'FIRST' ?
	0D45	F2	01	22	2107	JNE	KCH069				NO --
	0D48	E2	02	05	2108	LA	KCHFLG(,@XR),@XR				BUMP PAST KEYWORD
	0D4B	7A	08	E4	2109	SBN	KCHMSK(,@BR),KCHKFR				SET 'FIRST' INDICATOR
	0D4E	C0	87	1840	2110	KCH055	B SCANIT				
	0D52	F2	82	15	2111	JL	KCH069				ERROR IN SCANIT
	0D55	3C	11	03CD	2112	MVI	\$CAERR,@E131				SET INVALID PARAMETER
	0D59	BD	1E	00	2113	CLI	@ZERO(,@XR),@EOS				END OF STATEMENT ?
	0D5C	F2	81	77	2114	JE	KCH100				END OF STATEMENT- EXIT
	0D5F	3D	00	1880	2115	CLI	SCACNT,@ZERO				POINTER MOVED ?
	0D63	F2	81	5A	2116	JE	KCH085				NO -- MOVEMENT
	0D66	3C	12	03CD	2117	MVI	\$CAERR,@E133				TOO MANY PARAMETERS
					0D6A	2118	KCH069 EQU *				
	0D6A	C0	87	0469	2119	B	\$CAERK				GO TO ERROR ROUTINE

## #KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	9
					2121	*****					
					2122	*** CONVERT LINE NUMBER					
		0D6E			2123	KCH080 EQU *					
0D6E	3C	2A	03CD		2124	MVI \$CAERR,@E220	SET ERROR CODE				
0D72	38	40	0443		2125	TBN \$WFNME,\$WFDEF	WORK FILE DEFINED ?				
0D76	F2	90	40		2126	JF KCH084	YES EXIT				
0D79	3C	2F	03CD		2127	MVI \$CAERR,@E226	SET ERROR CODE				
0D7D	38	04	03D4		2128	TBN \$INDR1,\$WSIND	WORK FILE EMPTY ?				
0D81	F2	10	35		2129	JT KCH084	YES -- EXIT				
0D84	3C	2B	03CD		2130	MVI \$CAERR,@E221	RESET ERROR CODE				
0D88	38	20	03D4		2131	TBN \$INDR1,\$PGMDT	PROGRAM GENERATED ?				
0D8C	F2	10	2A		2132	JT KCH084	YES -- EXIT				
					2133	*					
0D8F	34	02	03C7		2134	ST \$XRSAB,@XR	SAVE POINTER				
0D93	C0	87	13AF		2135	B C4BIN2	CONVERT TO BINARY				
0D97	D0	82	D5		2136	BL KCH085(,@BR)	ERROR IN CONVERSION				
0D9A	7A	10	E4		2137	SBN KCHMSK(,@BR),KCHLIN	SET LINE NUMBER INDICATOR				
0D9D	C0	87	1840		2138	B SCANIT	CHECK FOR NON-BLANK				
0DA1	D0	82	7F		2139	BL KCH069(,@BR)	ERROR IN SCANIT				
0DA4	3C	11	03CD		2140	MVI \$CAERR,@E131	SET INVALID PARAMETER				
0DA8	BD	1E	00		2141	CLI 0(,@XR),@EOS	END OF STATEMENT ?				
0DAB	F2	81	28		2142	JE KCH100	YES -- EXIT				
0DAE	3D	00	1880		2143	CLI SCACNT,@ZERO	RUN-ON PARAMETERS ?				
0DB2	F2	81	0B		2144	JE KCH085	YES -- ERROR				
0DB5	C0	87	0C8E		2145	B KCH010	GO TO MAINLINE				
0DB9	C2	02	0000		2147	KCH084 LA 0,@XR	SET POINTER OUT OF \$\$INLN				
0DBD	D0	87	7F		2148	B KCH069(,@BR)	GO TO ERROR 0ROGRAM				
0DC0	35	02	03C7		2149	KCH085 L \$XRSAB,@XR	RESTOR5 PUNTER				
0DC4	D0	87	7F		2150	B KCH069(,@BR)	ERROR EXIT				
					2152	*****					
		0060			2153	KLICWD EQU 96	LOGICAL WIDTH FOR CARD OUTPUT				
		0002			2154	KCHTWO EQU 2	DISPLACEMENT TO END OF 'ALL'				
		0004			2155	KCHFOR EQU 4	DISPLACEMENT TO END OF 'FIRST'				
		0005			2156	KCHFLG EQU KCHFOR+1	LENGTH OF KEYWORD 'FIRST'				
		0003			2157	KCHALG EQU KCHTWO+1	LENGTH OF KEYWORD 'ALL'				
0DC7	C6C9D9E2E3			0DCB	2158	KCHFIR DC CL5 'FIRST'	KEYWORD FIRST ?				
0DCC	C1D3D3			0DCE	2159	KCHALL DC CL3 'ALL'	KEYWORD ALL				
0DCF				0DCF	2160	KCHMSK DS CL1	CHANGE ACTION BYTE				
					2161	*****					

## #KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 10
					2163	*KCH099	DISK KCHDPL	ISSUE READ
	0DD0	C0 87	0025		2164	KCH099	B \$DISKN	PERFORM PHYSICAL DISK OP
	0DD4	1031		0DD5	2165		DC AL2(KCHDPL)	DPL ADDRESS
					2166	***	END OF EXPANSION ***	
				0DD6	2168	KCH100	EQU *	MAINLINE PROCESSING
	0DD6	C2 01	0EDE		2169		LA KCH131,@BR	SETUP BASE REGISTER
				0EDE	2170		USING KCH131,@BR	INFORM ASSEMBLER OF USE
					2171	*	DISK \$WAITF	
	0DDA	C0 87	0025		2172		B \$DISKN	PERFORM PHYSICAL DISK OP
	0DDE	057F		0DDF	2173		DC AL2(\$WAITF)	DPL ADDRESS
					2174	***	END OF EXPANSION ***	
					2176	*	SPRNT \$WAITF	WAIT FOR COMPLETION
	0DE0	C0 87	0707		2177		B \$\$PRNT	PRINT ON MATRIX PRINTER
	0DE4	057F		0DE5	2178		DC AL2(\$WAITF)	PPL ADDRESS
					2179	***	END OF EXPANSION ***	
	0DE6	3C 40	06F9		2181		MVI KCHIE@,@BLANK	SET HIGH ORDER BLANK
	0DEA	0C F1	06F8 06F9		2182		MVC KCHNXT(KCHIE@-\$\$INLN),KCHIE@	SET FIELD TO BLANKS
	0DF0	5F 01	B6 B6		2183		SLC KCHWRK(@CADDR,@BR),KCHWRK(@BR)	CLEAR WORK AREA
	0DF4	38 10	0DCF		2184		TBN KCHMSK,KCHLIN	LINE NUMBER SPECIFIED ?
	0DF8	F2 10	18		2185		JT KCH105	
	0DFB	C2 02	1B00		2186		LA GRTEXT,@XR	SET UP LINE ADDRESS
	0DFF	BD 1E	00		2187	KCH102	CLI @ZERO(@XR),@EOS	END OF STATEMENT ?
	0E02	F2 81	07		2188		JE KCH104	FOUND- EXIT
	0E05	E2 02	01		2189		LA @B1(@XR),@XR	INCREMENT POINTER
	0E08	C0 87	0DFF		2190		B KCH102	CONTINUE SEARCH
	0E0C	34 02	12D1		2191	KCH104	ST GRTEND,@XR	SET UP EOS ADDRESS
	0E10	F2 87	27		2192		J KCH110	GO TO MAINLINE
				0E13	2194	KCH105	EQU *	
	0E13	0C 01	18E8 1419		2195		MVC GFILNO(@CADDR),C4BVAL	SET UP LINE NUMBER
	0E19	3C 01	1323		2196		MVI GRSCTR,KCH2BF	SET DOUBLE BUFFER OPTION
	0E1D	C0 87	1881		2197		B GFINDN	PRIME BUFFER
					2198	*		
	0E21	C0 87	1192		2199	KCH106	B GRABIT	GET LINE FORM WORK FILE
	0E25	0D 01	18E8 0F8C		2200		CLC GFILNO(@CADDR),GRLINE	REQUESTED LINE: RETRIEVED LINE ?
	0E2B	F2 81	0C		2201		JE KCH110	EQUAL- EXIT
	0E2E	C0 84	0E21		2202		BH KCH106	HIGH- GET NEXT LINE
					2203	*		
	0E32	3C 49	03CD		2204		MVI \$CAERR,@E308	LINE DOES NOT EXIST
	0E36	C0 87	0469		2205		B \$CAERK	GO TO ERROR ROUTINE
					2206	*****		
				0E3A	2207	KCH110	EQU *	
	0E3A	C0 87	0025		2208		B \$DISKN	WAIT FOR GRABIT TO FILL ITS
	0E3E	057F		0E3F	2209		DC AL(@CADDR)(\$WAITF)	* BUFFER
	0E40	3C 80	0EDC		2210		MVI KCH129+@Q,@NOP	SET SWITCH OFF
	0E44	38 10	0DCF		2211		TBN KCHMSK,KCHLIN	LINE NUMBER SPECIFIED ?
	0E48	F2 90	22		2212		JF KCH112	NO, GO PROCESS LAST BAD LINE
	0E4B	38 01	03D4		2213		TBN \$INDR1,\$PROCI	PROCEDURE FILE ? 1-4
	0E4F	F2 10	1B		2214		JT KCH112	BYPASS SDLIST IF PROCEDURE 1-4
	0E52	38 40	03D4		2215		TBN \$INDR1,\$KEYDT	KEYBOARD DATA FILE ?
	0E56	F2 90	14		2216		JF KCH112	NO -- CONTINUE
	0E59	C0 87	149A		2217		B SDLIST	CONVERT DATA FILE LINE
	0E5D	0C 01	12D1 16E6		2218		MVC GRTEND(@CADDR),SDLSAV	MOVE ENDING ADDRESS

#KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER	15,	MOD	00	10/06/22	PAGE	11
0E63	4C	01	B4	16F0	2219	MVC	KCHBF@(@CADDR,@BR),SDLOT@ NEW BUFFER ADDRESS (DATA)							
0E68	4C	01	BC	102C	2220	MVC	KCHED@(@CADDR,@BR),KCHSD@ END OF DATA BUFFER							

## #KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 12
				0E6D	2222	KCH112	EQU *	KCHANG EXECUTION
	0E6D	4C	01 BE 12D1		2223		MVC KCHEOS(@CADDR,@BR),GRTEEND SET EOS ADDRESS	
	0E72	4F	01 BE 0F96		2224		SLC KCHEOS(@CADDR,@BR),KCHPL1 REDUCE POINTER TO LAST CHAR	
	0E77	5C	01 53 BE		2225		MVC KCH134+@OP1(@CADDR,@BR),KCHEOS(@BR) COMPUTE EXPECTED	
	0E7B	5E	01 53 B8		2226		ALC KCH134+@OP1(@CADDR,@BR),KCHPL1(@BR) * EOS ADDRESS	
	0E7F	38	01 0DCF		2227		TBN KCHMSK,KCHSG1 ANY STRING SPECIFIED ?	
	0E83	D0	90 C8		2228		BF KCH200(@BR) NO -- EXIT	
	0E86	38	80 0DCF		2229		TBN KCHMSK,KCHNLF NULL FIRST STRING ?	
	0E8A	F2	90 0B		2230		JF KCH114 NO -- CONTINUE	
	0E8D	38	40 0DCF		2231		TBN KCHMSK,KCHNLS SECOND STRING <NULL> ?	
	0E91	D0	10 C8		2232		BT KCH200(@BR) EXIT	
	0E94	3C	87 0EDC		2233		MVI KCH129+@Q,@UCB SET COMPARE OFF	
				0E98	2234	KCH114	EQU *	INITIALIZATION PROCEDURE
	0E98	5C	00 B6 AF		2235		MVC KCHWRK(@B1,@BR),KCHLG1(@BR) -INITIAL LENGTH	
	0E9C	75	02 B4		2236		L KCHBF(@BR),@XR PICK UP STRING ADDRESS	
	0E9F	76	02 B6		2237		A KCHWRK(@BR),@XR FIRST COMPARE ADDRESS	
	0EA2	76	02 B2		2238		A KCHMN1(@BR),@XR DECREMENT STRING POINTER	
	0EA5	5F	01 B6 BA		2239		SLC KCHWRK(@CADDR,@BR),KCHLG2(@BR) COMPUTE STRING DIFFERENCE	
					2240		*****	
					2241		*	*
					2242		*	*
							INITIALIZE CHANGE CONTROL FUNCTIONS	
	0EA9	5C	01 4D BE		2243		MVC KCH133+@OP1(@CADDR,@BR),KCHEOS(@BR) COMPUTE TO	
	0EAD	5F	01 4D B6		2244		SLC KCH133+@OP1(@CADDR,@BR),KCHWRK(@BR) * ADDRESS FOR MOVE	
	0EB1	5C	01 49 BE		2245		MVC KCH130+@OP2(@CADDR,@BR),KCHEOS(@BR) COMPUTE FROM ADDR	
	0EB5	5F	00 AF B8		2246		SLC KCHLG1(@B1,@BR),KCHPL1(@BR) -LENGTH-1	
	0EB9	5F	00 BA B8		2247		SLC KCHLG2(@B1,@BR),KCHPL1(@BR) -LENGTH-1	
	0EBD	0E	00 0CA1 0F8D		2248		ALC KCHB@1(@B1),KCHLG1 END OF FIRST STRING	
	0EC3	0E	00 0CFA 0F98		2249		ALC KCHB@2(@B1),KCHLG2 COMPUTE ADDRESS OF STRG END	
	0EC9	4C	01 04 0CA1		2250		MVC KCH131+@DOP2(@CADDR,@BR),KCHB@1 FIRST STRING ADDRESS	
	0ECE	4C	01 64 0CFA		2251		MVC KCH138+@OP2(@CADDR,@BR),KCHB@2 SECOND STRING ADDRESS	
	0ED3	5C	00 01 AF		2252		MVC KCH131+@Q(@B1,@BR),KCHLG1(@BR) SET UP LENGTH FOR COMPARE	
	0ED7	5C	00 60 BA		2253		MVC KCH138+@Q(@B1,@BR),KCHLG2(@BR) LENGTH FOR MOVE	
					2254		*	*
					2255		*****	
	0EDB	F2	00 14		2256	KCH129	JC KCH132,*-* SET TO NOP	
	0EDE	8D	00 00 0000		2257	KCH131	CLC @ZERO(@VQ,@XR),*-* CHECK STRING	
	0EE3	F2	81 0C		2258		JE KCH132	
	0EE6	BD	1E 00		2259		CLI @ZERO(@XR),@EOS END OF STATEMENT ?	
	0EE9	F2	81 BA		2260		JE KCH200	
	0EEC	E2	02 01		2261		LA @B1(@XR),@XR	
	0EEF	D0	87 00		2262		B KCH131(@BR)	
				0EF2	2263	KCH132	EQU *	
	0EF2	38	02 0DCF		2264		TBN KCHMSK,KCHSG2 SECOND STRING ?	
	0EF6	F2	90 A4		2265		JF KCH190 NO -- GO TRUNCATE	
	0EF9	5C	01 53 4D		2266		MVC KCH134+@OP1(@CADDR,@BR),KCH133+@OP1(@BR) NEW EOS ADDR	
	0EFD	5E	01 53 B8		2267		ALC KCH134+@OP1(@CADDR,@BR),KCHPL1(@BR) SET-UP NEW EOS ADDR*	
	0F01	74	02 62		2268		ST KCH138+@OP1(@BR),@XR SET-UP MOVE TO ADDRESS	
	0F04	5C	01 BE 49		2269		MVC KCHEOS(@CADDR,@BR),KCH130+@OP2(@BR) END OF STRING ?	
	0F08	5F	01 BE 62		2270		SLC KCHEOS(@CADDR,@BR),KCH138+@OP1(@BR) COMPUTE TAIL LENGTH	
	0F0C	F2	04 1F		2271		JNP KCH134 LESS THAN ZERO NO ACTION	
	0F0F	5F	01 BE B8		2272		SLC KCHEOS(@CADDR,@BR),KCHPL1(@BR) LENGTH-1	
	0F13	5C	00 45 BE		2273		MVC KCH130+@Q(@B1,@BR),KCHEOS(@BR) SET LENG FOR TAIL SHIFT	
	0F17	5C	00 4B BE		2274		MVC KCH133+@Q(@B1,@BR),KCHEOS(@BR) SET LENG FOR TAIL SHIFT	
	0F1B	5D	00 AF BA		2275		CLC KCHLG1(@B1,@BR),KCHLG2(@BR) STRINGS EQUAL ?	
	0F1F	F2	81 10		2276		JE KCH135 YES -- DON'T MOVE TAIL	
	0F22	0C	00 1131 0000		2277	KCH130	MVC KCHOLD(@VQ),*-* SAVE TAIL OF STATEMENT	

## #KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 13
	0F28	0C 00 0000	1131		2278	KCH133	MVC *-*(@VQ),KCHOLD	REST TAIL IN NEW POSITION
	0F2E	3C 1E 0000			2279	KCH134	MVI *-*,@EOS	RESET EOS
				0F32	2280	KCH135	EQU *	CONTINUE
	0F32	5F 01 62 B6			2281		SLC KCH138+@OP1(@CADDR,@BR),KCHWRK(,@BR)	ADJUST POINTER
	0F36	38 40 0DCF			2282		TBN KCHMSK,KCHNLS	NULL SECOND STRING ?
	0F3A	F2 10 06			2283		JT KCH139	SKIP MOVE
	0F3D	0C 00 0000 0000			2284	KCH138	MVC *-*(@VQ),*-*	SUBSTITUTE STRING TWO
				0F43	2285	KCH139	EQU *	
	0F43	5E 00 62 AF			2286		ALC KCH138+@OP1(@B1,@BR),KCHLG1(,@BR)	ADJUST POINTER
	0F47	5E 01 62 B8			2287		ALC KCH138+@OP1(@CADDR,@BR),KCHPL1(,@BR)	LENGTH COMPENSATION
	0F4B	75 02 62			2288		L KCH138+@OP1(,@BR),@XR	GET NEW STRING POSTION
	0F4E	5D 01 53 BC			2289		CLC KCH134+@OP1(@CADDR,@BR),KCHED@(,@BR)	LINE OVERFLOW ?
	0F52	F2 84 0A			2290		JH KCH140	YES -- EXIT
	0F55	5D 01 62 53			2291		CLC KCH138+@OP1(@CADDR,@BR),KCH134+@OP1(,@BR)	FINISHED ?
	0F59	D0 02 C8			2292		BNL KCH200(,@BR)	YES -- EXIT
	0F5C	F2 87 13			2293		J KCH141	CONTINUE
					2294	*		
					2295	*	PRINT OVERFLOW MESSAGE	
					2296	*		
					2297	*KCH140	SPRNT @@M200	
	0F5F	C0 87 0465			2298	KCH140	B \$SPRNT	PRINT ON SYSTEM PRINTER
	0F63	0C0A		0F64	2299		DC AL2(@@M200)	PPL ADDRESS
					2300	***	END OF EXPANSION ***	
					2302	*	SPRNT \$WAITF	WAIT FUNCTION
	0F65	C0 87 0465			2303		B \$SPRNT	PRINT ON SYSTEM PRINTER
	0F69	057F		0F6A	2304		DC AL2(\$WAITF)	PPL ADDRESS
					2305	***	END OF EXPANSION ***	
	0F6B	5C 01 53 BC			2306		MVC KCH134+@OP1(@CADDR,@BR),KCHED@(,@BR)	END OF STMT ADDR
	0F6F	F2 87 34			2307		J KCH200	EXIT
				0F72	2308	KCH141	EQU *	
	0F72	38 80 0DCF			2309		TBN KCHMSK,KCHNLF	<NULL> 1 STRING
	0F76	F2 10 2D			2310		JT KCH200	EXIT
	0F79	38 04 0DCF			2311		TBN KCHMSK,KCHKAL	CHECK ALL STRINGS ?
	0F7D	D0 90 C8			2312		BF KCH200(,@BR)	NO -- EXIT
					2313	*****		
					2314	*		*
					2315	*	ADJUST INSTRUCTIONS	*
	0F80	5F 01 4D B6			2316		SLC KCH133+@OP1(@CADDR,@BR),KCHWRK(,@BR)	COMPUTE BEGINNING
	0F84	5F 01 49 B6			2317		SLC KCH130+@OP2(@CADDR,@BR),KCHWRK(,@BR)	COMPUTE ENDING
	0F88	D0 87 00			2318		B KCH131(,@BR)	RETURN TO CHECK NEXT CHAR
					2319	*		*
					2320	*****		
					2321	*		
				1B00	2322	KCHBUF	EQU X'1B00'	LINE WORK BUFFER
				1B00	2323	GRTEXT	EQU KCHBUF	
	0F8B			0F8C	2324	GRLINE	DS CL2	BINARY LINE NUMBER
	0F8D			0F8D	2325	KCHLG1	DS CL1	LENGTH OF FIRST STRING
	0F8E			0F8E	2326	GRTYPE	DS CL1	TYPE CODE
	0F8F	FFFF		0F90	2327	KCHMN1	DC IL2'-1'	MINUS ONE
	0F91	1B00		0F92	2328	KCHBF@	DC AL2(GRTEXT)	ADDRESS OF BUFFER
	0F93			0F94	2329	KCHWRK	DS CL2	WORK AREA
	0F95	0001		0F96	2330	KCHPL1	DC AL2(01)	CONSTANT +1
	0F97			0F98	2331	KCHLG2	DS CL2	LENGTH OF SECOND STRING
	0F97				2332		ORG *-2	RESET LOCATION COUNTER
	0F97	0000		0F98	2333		DC IL2'0'	INITIALIZE

[illegible]



## #KCHAN - CHANGE SYSTEM COMMAND

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 15
					2337	*****	*****	
					2338	*	*	
					2339	*	<NULL> FIRST STRING	
					2340	*	*	
					2341	*****	*****	
				0F9D	2342	KCH190 EQU	* VARIABLE LABEL	
0F9D	E2	02	01		2343	LA	@B1(, @XR), @XR SET EOS ADDRESS	
0FA0	BC	1E	00		2344	MVI	@ZERO(, @XR), @EOS MOVE EOS TO STATEMENT	
0FA3	74	02	53		2345	ST	KCH134+@OP1(, @BR), @XR SAVE XR ADDRESS	
				0FA6	2346	KCH200 EQU	* SET-UP LINE	
0FA6	5C	01	FD 53		2347	MVC	KCH210+@DOP2(@CADDR, @BR), KCH134+@OP1(, @BR) FROM ADDRESS	
0FAA	C2	02	0607		2348	LA	\$\$INLN, @XR FIRST BYTE OF LINE BUFFER	
0FAE	5F	01	53 B4		2349	SLC	KCH134+@OP1(@CADDR, @BR), KCHBF@ (, @BR) COMPUTE LENGTH	
0FB2	F2	04	68		2350	JNP	KCH225 NO DATA TO MOVE	
0FB5	1C	00	102E 53		2351	MVC	KCHCNT(@B1), KCH134+@OP1(, @BR) ESTABLISH PRINT LENGTH	
0FBA	5F	00	53 B8		2352	SLC	KCH134+@OP1(@B1, @BR), KCHPL1(, @BR) ADDR OF LAST CHAR	
0FBE	5C	00	FA 53		2353	MVC	KCH210+@Q(@B1, @BR), KCH134+@OP1(, @BR) NEW LINE LENGTH	
0FC2	5F	01	FD B8		2354	SLC	KCH210+@DOP2(@CADDR, @BR), KCHPL1(, @BR) STRING ADDRESS	
0FC6	38	80	0DCF		2355	TBN	KCHMSK, KCHNLF NULL FIRST STRING ?	
0FCA	F2	90	07		2356	JF	KCH205 NO -- CONTINUE	
0FCD	38	02	0DCF		2357	TBN	KCHMSK, KCHSG2 YES -- SECOND STRING SPECIFIED ?	
0FD1	F2	90	42		2358	JF	KCH220 NO -- SKIP DATA MOVEMENT	
0FD4	76	02	53		2359	KCH205 A	KCH134+@OP1(, @BR), @XR END OF STRING ADDRESS	
0FD7	8C	00	00 0000		2360	KCH210 MVC	@ZERO(@VQ, @XR), *- * PLACE STMT IN LINE BUFFER	
0FDC	38	01	03C3		2361	TBN	\$KEYCD, \$CARDI CARD INPUT ?	
0FE0	F2	10	42		2362	JT	KCH230 YES -- EXIT TO COMMMAND ANALY	
0FE3	4C	00	B6 03C0		2363	MVC	KCHWRK(@B1, @BR), \$RMRGN GET RIGHT MARGIN VALUE	
0FE8	4F	00	B6 03C1		2364	SLC	KCHWRK(@B1, @BR), \$LMRGN COMPUTE LINE WIDTH	
0FED	4D	00	B6 102E		2365	CLC	KCHWRK(@B1, @BR), KCHCNT DOES LINE EXCEED WIDTH ?	
0FF2	F2	84	0E		2366	JH	KCH216 CONTINUE- NO WIDTH OVERFLOW	
0FF5	3C	C0	102D		2367	KCH215 MVI	KCHPPL+@PCTRL, @PRETR PRINT AND RETURN	
0FF9	76	02	B8		2368	A	KCHPL1(, @BR), @XR BUMP TO EOS ADDRESS	
0FFC	BC	1E	00		2369	MVI	0(, @XR), @EOS SET LOS IN LINE	
0FFF	34	02	0AFE		2370	ST	\$\$EOSA, @XR SET-UP ADDRESS OF EOS	
				1003	2371	KCH216 EQU	* CHECK STATUS OF LINE	
1003	C0	87	0465		2372	B	\$\$SPRNT SYSTEM PRINTER	
1007	102D			1008	2373	DC	AL2(KCHPPL) PARAMETER LIST	
1009	C0	87	0465		2374	B	\$\$SPRNT WAIT	
100D	057F			100E	2375	DC	AL2(\$WAITF) WAIT FUNCTION	
100F	3D	C0	102D		2376	CLI	KCHPPL+@PCTRL, @PRETR AUTOMATIC RETURN ?	
1013	F2	81	0F		2377	JE	KCH230 YES ?	
				1016	2378	KCH220 EQU	* ENABLE AND RETURN	
1016	3A	80	03D5		2379	SBN	\$INDR2, \$READY INHIBIT READY MESSAGE	
101A	76	02	B8		2380	A	KCHPL1(, @BR), @XR POINT TO EOS POSTION	
101D	34	02	09EB		2381	KCH225 ST	\$\$LPOS, @XR END OF STRING ADDRESS	
1021	C0	87	04A1		2382	B	\$\$CARPL RELOAD GUFUDI	
				1025	2383	KCH230 EQU	* GET COMMAND ANALYZER	
					2384	*	BLOAD KCHDP2 DISK OP TO LOAD ECAMAL	
1025	C0	87	0522		2385	B	\$BLOAD LOAD AND EXECUTE WK AREA PGM	
1029	1037			102A	2386	DC	AL2(KCHDP2) DPL ADDRESS	
					2387	***	END OF EXPANSION ***	



## #KCHAN - CHANGE SYSTEM COMMAND

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 10/06/22 PAGE 16

		00F0 2389	KCHNUM EQU	C'0'	NUMERIC ZERO
		0001 2390	KCHSG1 EQU	01	ONE STRING MASK
		0002 2391	KCHSG2 EQU	02	SECOND STRING
		0004 2392	KCHKAL EQU	04	INDICATES ALL PARAMETER
		0008 2393	KCHKFR EQU	08	INDICATES FIRST PARAMETER
		0010 2394	KCHLIN EQU	X'10'	LINE NUMBER INDICATED
		0080 2395	KCHNLF EQU	X'80'	NULL FIRST STRING
		0001 2396	KCH2BF EQU	01	DOUBLE BUFFER OPTION
		0040 2397	KCHNLS EQU	X'40'	NULL SECOND SIRING
		06F9 2398	KCHIE@ EQU	\$\$INLN+242	END OF LINE BUFFER
		06F8 2399	KCHNXT EQU	KCHIE@-1	END OF LINE BUFFER-1
		0000 2400	KLIDVT EQU	0	FAKE CONSTANT FOR 'LIST' ONLY
		0000 2401	KLIMK1 EQU	0	FAKE CONSTANT FOR 'LIST' ONLY
		0000 2402	KLIMK4 EQU	0	FAKE CONSTANT FOR 'LIST' ONLY
		0000 2403	DLPRNT EQU	0	FAKE CONSTANT FOR 'LIST'
		0000 2404	DCDOUT EQU	0	FAKE CONSTANT FOR 'LIST'
		0000 2405	SLLINE EQU	0	FAKE CONSTANT FOR 'LIST'
		1800 2406	KCHSG@ EQU	X'1800'	STRING BUFFER
		1900 2407	SDLBUF EQU	X'1900'	OUTPUT AREA FOR SDL1ST
		0030 2408	KCHMCT EQU	X'30'	MESSAGE LENGTH
102B 19F2		102C 2409	KCHSD@ DC	AL2(SDLBUF+242)	END OF DATA BUFF59
		2410	*KCHPPL PPL	FUNC-@PRINT, ,CADDR-\$ENDNU+@SDFLN	
		102D 2411	KCHPPL EQU	*	PPL ADDRESS
102D 40		102D 2412	DC	AL1(@PRINT)	FUNCTION REQUESTED
102E 00		102E 2413	DC	AL1(*-*)	PRINT COUNT
102F 0607		1030 2414	DC	AL2(\$ENDNU+@SDFLN)	DATA ADDRESS
		2415	*** END OF EXPANSION ***		
		102E 2417	KCHCNT EQU	KCHPPL+@PRCNT	PPL LENGTHN ADDRESS
		2418	*KCHDPL DPL	FUND-@DGET,DADDR-#@#BAD,CNT-#@#BA,CADDR-KCHBUF	
		1031 2419	KCHDPL EQU	*	DISK PARAMETER LIST
1031 01		1031 2420	DC	AL1(@DGET)	REQUESTED FUNCTION
1032 0455		1033 2421	DC	AL2(@#BAD)	DISK ADDRESS
1034 01		1034 2422	DC	AL1(@#BA)	SECTOR COUNT
1035 1B00		1036 2423	DC	AL2(KCHBUF)	BUFFER ADDRESS
		2424	*** END OF EXPANSION ***		
		2426	*KCHDP2 DPL	FUNC-@DGET,DADDR-#@ECMA,CNT-#@@ECM,CADDR-\$\$KLD3	
		1037 2427	KCHDP2 EQU	*	DISK PARAMETER LIST
1037 01		1037 2428	DC	AL1(@DGET)	REQUESTED FUNCTION
1038 0481		1039 2429	DC	AL2(@ECMA)	DISK ADDRESS
103A 06		103A 2430	DC	AL1(@@ECM)	SECTOR COUNT
103B 0C00		103C 2431	DC	AL2(\$\$KLD3)	BUFFER ADDRESS
		2432	*** END OF EXPANSION ***		
		1900 2434	GFIBF1 EQU	X'1900'	GRABIT BUFFER
		1A00 2435	GFIBF2 EQU	GFIBF1+X'0100'	
		103D 2436	KCHEND EQU	*	
		1131 2437	KCHOLD EQU	KCHEND+@LINSZ	BUFFER FOR TAIL SECTION
		2438	*		
		2439	*	\$DL4P	

## DL4ICS - FOUR TRACK LOGICAL IOCR

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 17
		2441+		*****			
		2442+	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		2443+	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083			*
		2444+	*				*
		2445+	*	*****			*
		2446+	*	STATUS			*
		2447+	*	VERSION 1 MODIFICATION 0			*
		2448+	*				*
		2449+	*	FUNCTION			*
		2450+	*	DL4ICS WILL CONVERT A RELATIVE DISK ADDRESS TO A PHYSICAL			*
		2451+	*	DISK ADDRESS AND CALL \$DISKN TO PERFORM THE SPECIFIED FUNCTION			*
		2452+	*	THE DISK ADDRESS IS A ONE BYTE CYLINDER ADDRESS AND A ONE BYTE			*
		2453+	*	SECTOR DISPLACEMENT RELATIVE TO SECTOR 0 ON A CYLINDER			*
		2454+	*	BOUNDARY			*
		2455+	*	WHEN MORE THAN 1 SECTOR IS PROCESSED, DL4ICS WILL MAKE MULTIPLE			*
		2456+	*	CALLS TO \$DISKN TO CROSS CYLINDER BOUNDARIES IF REQUIRED.			*
		2457+	*	IF 1 SECTOR ONLY IS TO BE PROCESSED, THE USER MAY OVERLAY THE			*
		2458+	*	UNUSED CODE BY ORGING HIS NEXT MODULE AT DL4SPT			*
		2459+	*				*
		2460+	*	ENTRY POINTS			*
		2461+	*	DL4ICS - ENTRY TO PROCESS A 4 SURFACE FILE. THE CALLING			*
		2462+	*	SEQUENCE IS AS FOLLOWS			*
		2463+	*	DSKL4 DPL			*
		2464+	*	WHERE DPL IS THE LABEL OF A SIX BYTE DISK PARAMETER			*
		2465+	*	LIST AS DESCRIBED FOR \$DISKN EXCEPT FOR THE SECTOR			*
		2466+	*	ADDRESS BYTE.			*
		2467+	*				*
		2468+	*	INPUT			*
		2469+	*	INPUT TO DL4ICS IS THE ADDRESS OF THE DPL TO BE PROCESSED.			*
		2470+	*				*
		2471+	*	OUTPUT			*
		2472+	*	N/A			*
		2473+	*				*
		2474+	*	EXTERNAL REFENECES			*
		2475+	*	\$DISKN - ENTRY TO SYSTEM DISK ROUTINE			*
		2476+	*				*
		2477+	*	EXITS, NORMAL			*
		2478+	*	NORMAL RETURN IS TO THE 1ST INSTRUCTION FOLLOWING THE TWO BYTE			*
		2479+	*	ADDRESS POINTING TO THE DPL.			*
		2480+	*				*
		2481+	*	EXITS, ERROR			*
		2482+	*	N/A			*
		2483+	*				*
		2484+	*	TABLES/WORK AREAS			*
		2485+	*	N/A			*
		2486+	*				*
		2487+	*	ATTRIBUTES			*
		2488+	*	RELOCATABLE			*
		2489+	*	REUSABLE			*
		2490+	*				*
		2491+	*	CHARACTER CODE DEPENDENCY			*
		2492+	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
		2493+	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
		2494+	*				*
		2495+	*	NOTES			*
		2496+	*	ERROR PROCEDURES			*

DL4ICS - FOUR TRACK LOGICAL IOCR

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 18
		2497+	*	N/A			*
		2498+	*				*
		2499+	*	REGISTER USAGE			*
		2500+	*	@BR IS SAVED AND RESTORED ON EXIT, @XR IS NOT USED. @ARR IS			*
		2501+	*	USED TO PROVIDE THE ADDRESS OF THE PARAMETER. THE @ARR IS			*
		2502+	*	INCREMENTED BT TWO AND SAVED AS THE RETURN ADDRESS.			*
		2503+	*				*
		2504+	*	SAVED/RESTORED AREAS			*
		2505+	*	N/A			*
		2506+	*				*
		2507+	*	MODIFICATION CONSIDERATIONS			*
		2508+	*	N/A			*
		2509+	*				*
		2510+	*	REQUIRED MODULES			*
		2511+	*	@SYSEQ - SYSTEM SOFTWARE EQUATES			*
		2512+	*	@FXDEQ - SYSTEM NUCLEUS EQUATES			*
		2513+	*				*
		2514+	*	OTHER			*
		2515+	*	NONE			*
		2516+	*	*****			*

## DL4ICS - FOUR TRACK LOGICAL IOCR

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 19
				103D	2518+	DL4ICS	EQU *	ENTRY TO DL4ICS
				1041	2519+		USING DL4010,@BR	ESTABLISH BASE REGISTER USAGE
103D	34	01	10AD		2520+		ST DL4900+@OP1,@BR	SAVE BASE REGISTER FOR EXIT
				1041	2521+	DL4010	EQU *	BASE ADDRESSABILITY
1041	C2	01	1041		2522+		LA DL4010,@BR	ESTABLISH BASE
1045	76	08	78		2523+		A DL4C01(,@BR),@ARR	BUMP TO HIGH END OF ADDR
1048	74	08	14		2524+		ST DL4020+@DOP2(,@BR),@ARR	SET UP MOVE INSTRUCTION
104B	76	08	78		2525+		A DL4C01(,@BR),@ARR	BUMP TO RETURN ADDR
104E	74	08	70		2526+		ST DL4920+@OP1(,@BR),@ARR	SAVE RETURN ADDR
					2527+*			
1051	4C	01	1D 0000		2528+	DL4020	MVC DL4030+@DOP2(@DADDR,@BR),*-*	MOVE DPL ADDR INTO MOVE
1056	5E	01	1D 7A		2529+		ALC DL4030+@DOP2(@CADDR,@BR),DL4C05(,@BR)	BUMP TO RIGHT END
105A	4C	05	76 0000		2530+	DL4030	MVC DL4DPL(@DPLNG,@BR),*-*	MOVE USER DPL TO WORK AREA
					2531+*			
105F	7C	00	5E		2532+	DL4035	MVI DL4100+@Q(,@BR),@ZERO	CLEAR TRACK, DISK SET INST
1062	7C	80	67		2533+		MVI DL4200+@Q(,@BR),@NOP	TURN OFF TWICE INDICATOR
					2534+*			
1065	7D	60	73		2535+	DL4040	CLI DL4SCD(,@BR),DL4E96	TEST IF DISPLACEMENT OVER 95 ?
1068	F2	82	0B		2536+		JL DL4050	JUMP IF NOT OVER 95
106B	5E	00	72 78		2537+		ALC DL4CYL(1,@BR),DL4C01(,@BR)	INCREMENT CYLINDER COUNT
106F	5F	00	73 25		2538+		SLC DL4SCD(1,@BR),DL4C96(,@BR)	DECREMENT DISP BY 96
1073	D0	87	24		2539+		B DL4040(,@BR)	GO BACK CHECK FOR NEXT CYLINDER
					2540+*			
1076	7D	30	73		2541+	DL4050	CLI DL4SCD(,@BR),DL4E48	TEST IF DISP ON NEXT DISK ?
1079	F2	82	07		2542+		JL DL4060	JUMP IF NOT OVER 48
107C	7A	01	5E		2543+		SBN DL4100+@Q(,@BR),DL4EFD	TURN ON BIT FOR FIXED DISK
107F	5F	00	73 36		2544+		SLC DL4SCD(1,@BR),DL4C48(,@BR)	DECREMENT DISP 1 DISK
1083	7D	01	74		2545+	DL4060	CLI DL4SCT(,@BR),DL4E01	IS SECTOR COUNT GREATER THEN 1 ?
1086	F2	84	33		2546+		JH DL4SPT	GO TO SPLIT CALL
1089	7D	18	73		2547+	DL4070	CLI DL4SCD(,@BR),DL4E24	DISPLACEMENT OVER 23 ?
108C	F2	82	07		2548+		JL DL4080	JUMP NOT OVER 24
108F	7A	80	5E		2549+		SBN DL4100+@Q(,@BR),DL4ETB	SET TRACK BIT ON
1092	5F	00	73 49		2550+		SLC DL4SCD(1,@BR),DL4C24(,@BR)	DECR DISP TO NEXT TRACK
1096	5E	00	73 73		2551+	DL4080	ALC DL4SCD(1,@BR),DL4SCD(,@BR)	SHIFT LEFT 1 PLACE
109A	5E	00	73 73		2552+		ALC DL4SCD(1,@BR),DL4SCD(,@BR)	SHIFT LEFT 1 PLACE
109E	7A	00	73		2553+	DL4100	SBN DL4SCD(,@BR),*-*	SET TRACK, DISK BIT
					2554+*			
10A1	C0	87	0025		2555+		B \$DISKN	GO PERFORM DISK I/O
10A5	10B2			10A6	2556+		DC AL2(DL4LST)	ADDR OF DISK PARAM LIST
					2557+*			
10A7	F2	00	3C		2558+	DL4200	JC DL4600,*-*	BRANCH OR NOP IF TWICE SET
					2559+*			
10AA	C2	01	0000		2560+	DL4900	LA *-*,@BR	RESTORE OLD BASE TO RETURN
10AE	C0	87	0000		2561+	DL4920	B *-*	RETURN TO CALLER
				10B2	2563+	DL4LST	EQU *	LEFT END OF DPL
10B2				10B7	2564+	DL4DPL	DS CL(@DPLNG)	DPL SAVE AREA
				10B3	2565+	DL4CYL	EQU DL4LST+@DCYL	CYLINDER COUNT BYTE
				10B4	2566+	DL4SCD	EQU DL4LST+@DSAD	DISPLACEMENT SECTOR COUNT
				0060	2567+	DL4E96	EQU 96	TWO DISK SECTOR COUNT PER CYL
				0030	2568+	DL4E48	EQU 48	ONE DISK SECTOR COUNT PER CYL
				0018	2569+	DL4E24	EQU 24	TRACK SECTOR COUNT
				0001	2570+	DL4E01	EQU 01	VALUE TO TEST SECTOR COUNT
				0001	2571+	DL4EFD	EQU 01	VALUE TO SET FIXED DISK BIT
				0080	2572+	DL4ETB	EQU X'80'	VALUE TO SET TRACK BIT
10B8	0001			10B9	2573+	DL4C01	DC IL2'1'	VALUE TO INCR TO CYLINDER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	20
	10BA	0005		10BB	2574+DL4C05	DC	IL2'5'				
				1066	2575+DL4C96	EQU	DL4040+@Q				
				108A	2576+DL4C24	EQU	DL4070+@Q				
				10B5	2577+DL4SCT	EQU	DL4LST+@DCNT				
				1077	2578+DL4C48	EQU	DL4050+@Q				
	10BC	5C	00	14	74		2580+DL4500 MVC	DL4WRK(1,@BR),DL4SCT(,@BR)	PICKUP	SECTOR	COUNT
						10BC	2581+DL4SPT EQU	DL4500	POSSIBLE	OVERLAY	REFERENCE
	10C0	5E	00	14	73		2582+ ALC	DL4WRK(1,@BR),DL4SCD(,@BR)	BUMP	BY	DISPLACEMENT
	10C4	7D	30	14			2583+ CLI	DL4WRK(,@BR),DL4E48	TEST	FOR	CYLINDER OVERLAP
	10C7	D0	04	48			2584+ BNH	DL4070(,@BR)	BRANCH	BACK	IF NO OVERLAY
	10CA	5F	00	14	36		2585+ SLC	DL4WRK(1,@BR),DL4C48(,@BR)	DECREMENT	WORK	BY 48
	10CE	5F	00	74	14		2586+ SLC	DL4SCT(1,@BR),DL4WRK(,@BR)	SUBTRACT	WORK	FROM COUNT
	10D2	7C	87	67			2587+ MVI	DL4200+@Q(,@BR),@UCB	SET	TWICE	SWITCH
	10D5	5C	00	13	73		2588+ MVC	DL4SAV(1,@BR),DL4SCD(,@BR)	SAVE	SECTOR	DISP IN WORK AREA
	10D9	78	01	5E			2589+ TBN	DL4100+@Q(,@BR),DL4EFD	DISK	BIT	ON IN Q CODE ?
	10DC	D0	90	48			2590+ BF	DL4070(,@BR)	BRANCH	NOT	ON
	10DF	5E	00	13	36		2591+ ALC	DL4SAV(1,@BR),DL4C48(,@BR)	BUMP	TO	NEXT DISK
	10E3	D0	87	48			2592+ B	DL4070(,@BR)	RETURN	TO	CALL I/O
							2593+*				
	10E6	5C	00	73	13		2594+DL4600 MVC	DL4SCD(1,@BR),DL4SAV(,@BR)	PICKUP	NEXT	HALF OF I/O
	10EA	5E	00	75	74		2595+ ALC	DL4LST+@DBFR1(1,@BR),DL4SCT(,@BR)	BUMP	CORE	ADDRESS
	10EE	5E	00	73	74		2596+ ALC	DL4SCD(1,@BR),DL4SCT(,@BR)			
	10F2	5C	00	74	14		2597+ MVC	DL4SCT(1,@BR),DL4WRK(,@BR)	MOVE	IN	NEW SECTOR COUNT
	10F6	D0	87	1E			2598+ B	DL4035(,@BR)	RETURN	FOR	SECOND PASS
							2599+*				
						1055	2600+DL4WRK EQU	DL4020+@DOP2	1	BYTE	WORK AREA FOR SPLIT CALL
						1054	2601+DL4SAV EQU	DL4020+@DOP2-1	1	BYTE	WORK AREA FOR SPLIT CALL
						10F9	2602+DL4END EQU	*	DEFINE	END	OF CODE
							2603+***		END	OF	DL4ICS
							2604 *				
							2605 *	\$DL2P			

## DL2ICS - TWO TRACK LOGICAL IOCR

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 21
		2607+	*****				
		2608+	*	5703-XM1 COPYRIGHT IBM CORP 1970			*
		2609+	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE. 120-2083			*
		2610+	*				*
		2611+	*****				*
		2612+	*	STATUS -			*
		2613+	*	VERSION 1 MODIFICATION 0			*
		2614+	*				*
		2615+	*	FUNCTION			*
		2616+	*	DL2ICS CONVERTS A RELATIVE DISK ADDRESS TO A PHYSICAL DISK			*
		2617+	*	ADDRESS AND COMBINES IT WITH A BASE ADDRESS PLACED IN DL2RAD			*
		2618+	*	BY THE CALLER.			*
		2619+	*	THE RELATIVE DISK ADDRESS IS A TWO BYTE CYLINDER SECTOR COUNT			*
		2620+	*	IN THE CALLERS DISK PARAMETER LIST (DPL).			*
		2621+	*	THE COUNT IS A CYLINDER SECTOR DISPLACEMENT FROM THE BASE			*
		2622+	*	ADDRESS PLACED IN DL2RAD			*
		2623+	*	DL2ICS IS USED TO PROCESS DATA ON THE FIXED OR REMOVABLE DISK			*
		2624+	*	ON EITHER DRIVE AND PROVIDES THE INTERFACE TO \$DISKN.			*
		2625+	*	THE PHYSICAL DISK ADDRESS IS PLACED IN A COPY OF THE USERS DPL			*
		2626+	*	IN DL2ICS AND A CALL IS MADE TO \$DISKN TO PERFORM THE REQUESTED			*
		2627+	*	OPERATION.			*
		2628+	*				*
		2629+	*	ENTRY POINTS			*
		2630+	*	THE ENTRY IS DL2ICS. THE BASE REGISTER IS SAVED AND RESTORED			*
		2631+	*	ON RETURN. THE INDEX REGISTER IS NOT USED.			*
		2632+	*	THE FORMAT OF THE CALLING SEQUENCE IS AS FOLLOWS:			*
		2633+	*	B DL2ICS			*
		2634+	*	DC AL2(PARMLT)			*
		2635+	*	WHERE PARMLT IS THE ADDR OF THE PARAMETER LIST TO BE PROCESSED.			*
		2636+	*				*
		2637+	*	INPUT			*
		2638+	*	THE INPUT IS A TWO BYTE BASE DISK ADDRESS PLACED IN			*
		2639+	*	DL2RAD AND A SIX BYTE DPL. THE SAME FORMAT AS THE DPL FOR			*
		2640+	*	\$DISKN EXCEPT FOR THE DISK ADDRESS WHICH IS A RELATIVE CYLINDER			*
		2641+	*	AND SECTOR DISPLACEMENT FROM THE BASE ADDRESS IN DL2RAD.			*
		2642+	*				*
		2643+	*	OUTPUT			*
		2644+	*	NONE.			*
		2645+	*				*
		2646+	*	EXTERNAL REFERENCES			*
		2647+	*	\$DISKN - ENTRY TO PHYSICAL DISK ROUTINE IS THE SYSTEM NUCLEUS.			*
		2648+	*				*
		2649+	*	EXITS, NORMAL			*
		2650+	*	NORMAL - EXIT IS TO THE FIRST INSTRUCTION FOLLOWING THE POINTER			*
		2651+	*	TO THE DPL. THE BASE REGISTER IS RESTORED. THE RETURN ADDRESS			*
		2652+	*	IS THE ADDRESS RECALL REGISTER (ARR) +2.			*
		2653+	*				*
		2654+	*	EXITS, ERROR			*
		2655+	*	NONE			*
		2656+	*				*
		2657+	*	TABLES/WORK AREAS			*
		2658+	*	THE CONSTANTS AND WORK AREAS RESIDE AT THE END OF THE EXECUTABLE			*
		2659+	*	CODE AND ARE REFERENCED BY A DISPLACEMENT RELATIVE TO THE VALUE			*
		2660+	*	IN INDEX REGISTER 1 (@BR).			*
		2661+	*	DL2SEC AND DL2SAD ARE EQUATED TO OPERAND LOCATIONS IN THE			*
		2662+	*	EXECUTABLE CODE TO ELIMINATE EXCESS WORKING STORAGE.			*



## DL2ICS - TWO TRACK LOGICAL IOCR

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 10/06/22 PAGE 22
			2663+	*	*
			2664+	*ATTRIBUTES	*
			2665+	* DL2ICS IS REUSABLE	*
			2666+	*	*
			2667+	*CHARACTER CODE DEPENDENCY	*
			2668+	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
			2669+	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
			2670+	*	*
			2671+	*NOTES	*
			2672+	ERROR PROCEDURES	*
			2673+	NONE	*
			2674+	*	*
			2675+	REGISTER USAGE	*
			2676+	INDEX REGISTER 1 (@BR) IS SAVED AND RESTORED. THIS REGISTER IS	*
			2677+	USED DURING EXECUTION. REGISTER 2 (@BR) IS NOT USED.	*
			2678+	*	*
			2679+	SAVED/RESTORED AREAS	*
			2680+	NONE	*
			2681+	*	*
			2682+	MODIFICATION CONSIDERATIONS	*
			2683+	NONE	*
			2684+	*	*
			2685+	REQUIRED MODULES	*
			2686+	@SYSEQ - COMMON SYSTEM EQUATES.	*
			2687+	@FXDEQ - SYSTEM NUCLEUS ADDRESSES AND INDICATORS VALUES EQUATES	*
			2688+	*	*
			2689+	OTHER	*
			2690+	DL2ICS MAY BE USED TO CONVERT THE DISK ADDRESS ONLY AND NOT TO	*
			2691+	CALL \$DISKN IF THE USER MOVES A UCB CODE TO DL2SWH.	*
			2692+	THIS OPTION IS NOT STANDARD USAGE.	*
			2693+	*****	*
		10FD	2694+	USING DL2000,@BR	ESTABLISH ADDRESSABILITY
			2695+	*	
		0001	2696+DL2E01	EQU X'01'	FIELD LENGTH OF 1
		0002	2697+DL2E02	EQU X'02'	FIELD LENGTH OF 2
		0018	2698+DL2E18	EQU X'18'	HEX TRACK SECTOR COUNT
		0060	2699+DL2E60	EQU X'60'	PHYSICAL SECTOR COUNT
		0083	2700+DL2TSD	EQU X'83'	MASK OFF TRACK SPINDLE DISK
		007C	2701+DL2E7C	EQU X'7C'	MASK OUT SECTOR COUNT
		10F9	2702+DL2ICS	EQU *	ENTRY POINT
10F9	34 01 117A		2703+	ST DL2900+@OP1,@BR	SAVE OLD BASE
		10FD	2704+DL2000	EQU *	START PROCESSING
			2705+	LA DL2000,@BR	SET BASE ADDRESS
10FD	C2 01 10FD		2706+	A DL2C01(,@BR),@ARR	BUMP TO RIGHT BYTE OF ADDR
1101	76 08 8A		2707+	ST DL2001+@DOP2(,@BR),@ARR	ADDR OF PARAM
1104	74 08 14		2708+	A DL2C01(,@BR),@ARR	BUMP TO RETURN ADDR
1107	76 08 8A		2709+	ST DL2910+@OP1(,@BR),@ARR	SAVE RETURN ADDR
110A	74 08 81		2710+	*	
			2711+DL2001	MVC DL2002+@DOP2(@DADDR,@BR),*-*	SETUP ADDR OF DPL
1112	5E 01 1D 8C		2712+	ALC DL2002+@DOP2(@CADDR,@BR),DL2C05(,@BR)	DUMP TO RIGHT END
1116	4C 05 92 0000		2713+DL2002	MVC DL2DPL(@DPLNG,@BR),*-*	MOVE USER DPL TO WORK AREA
111B	5F 00 8F 86		2714+DL2005	SLC DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR)	ADJUST SCTR/CYL
111F	F2 82 07		2715+	JM DL2006	GO TO RESTORE TO CONTINUE
1122	5E 00 8E 8A		2716+	ALC DL2LST+@DCYL(DL2E01,@BR),DL2C01(,@BR)	BUMP CYLINDER COUNT
1126	D0 87 1E		2717+	B DL2005(,@BR)	BACK FOR NEXT CYLINDER
1129	5E 00 8F 86		2718+DL2006	ALC DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR)	RESTORE POSITIVE

## DL2ICS - TWO TRACK LOGICAL IOCR

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 23
					2719+*			
					2720+*		GET THE LOGICAL SECTOR FROM THE DPL. THE NUMBER IS LEFT ADJUSTED	
					2721+*		TO COMAE IT MTN THE POINTER ESTABLISHED PRIOR TO AN ENTRY.	
112D	5C	00	1D 8F		2722+	MVC	DL2SEC(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR NUMBER	
1131	7C	00	8F		2723+	MVI	DL2LST+@DSAD(,@BR),@ZERO CLEAR SECTOR BYTE	
					2724+*			
					2725+*		MOVE THE RELATIVE START TO THE DFL	
					2726+*			
1134	5E	01	8F 94		2727+	ALC	DL2LST+@DSAD(DL2E02,@BR),DL2RAD(,@BR) DL2RAD TO DPL	
1138	7D	18	1D		2728+	CLI	DL2SEC(,@BR),DL2E18 IS COUNT OVER A TRACK	
113B	F2	82	08		2729+	JL	DL2008 NO GO CHANGE A PHYSICAL ADOR	
113E	5E	01	8F 85		2730+	ALC	DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR) BUMP TRACK VALUE	
1142	5F	00	1D 88		2731+	SLC	DL2SEC(1,@BR),DL2K18(,@BR) DECR BY TRACK VALUE	
1146	5E	00	1D 1D		2732+DL2008	ALC	DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT 1	
114A	5E	00	1D 1D		2733+	ALC	DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT	
114E	5C	00	14 8F		2734+	MVC	DL2SAD(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR ADDRESS	
					2735+*			
					2736+*		ZERO OUT THE SECTOR COUNT AND LEAVE THE DISK. SPINDLE AND	
					2737+*		TRACK BITS AS IS TO BE RE INSERTED AFTER THE SECTOR HAS BEEN	
					2738+*		LOCATES.	
					2739+*			
1152	7B	7C	8F		2740+	SBF	DL2LST+@DSAD(,@BR),DL2E7C TURN OFF	
1155	7B	83	14		2741+	SBF	DL2SAD(,@BR),DL2TSD OFF TRACK SPINDLE DISK	
1158	5E	00	14 1D		2742+	ALC	DL2SAD(DL2E01,@BR),DL2SEC(,@BR) COMBINE SECTOR COUNTS	
115C	7D	60	14		2743+DL2010	CLI	DL2SAD(,@BR),DL2E60 TEST IF TRACK CROSSED	
115F	F2	82	08		2744+	JL	DL2100	
					2745+*			
					2746+*		INCREMENT TRACK BIT. OVERFLOW INTO THE CYLINDER COUNT.	
					2747+*			
1162	5E	01	8F 85		2748+	ALC	DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR)	
1166	5F	00	14 83		2749+	SLC	DL2SAD(1,@BR),DL2K60(,@BR) DECR BY TRACK VALUE	
					2750+*			
116A	5E	00	8F 14		2751+DL2100	ALC	DL2LST+@DSAD(1,@BR),DL2SAD(,@BR) INSERT SECTOR COUNT	
					2752+*			
116E	F2	80	06		2753+DL2110	JC	DL2900,@NOP CONVERSION SWITCH	
				116F	2754+DL2SWH	EQU	DL2110+@Q ADDR OF Q CODE FOR SWITCH	
1171	C0	87	0025		2755+	B	\$DISKN GO PROCESS I/O	
1175	118A			1176	2756+	DC	AL2(DL2LST) ADDRESS OF DPL	
1177	C2	01	0000		2757+DL2900	LA	*-*,@BR RESTORE CALLERS BASE	
117B	C0	87	0000		2758+DL2910	B	*-*	
					2759+*****			
					2760+*		CONSTANTS	
					2761+*****			
117F	0060			1180	2762+DL2K60	DC	XL2'0060' SECTOR COUNT OF 24 LEFT ADJUSTD	
1181	0080			1182	2763+DL2K80	DC	XL2'0080' BIT FOR INCREMENTING TRACK	
1183	30			1183	2764+DL2C48	DC	IL1'48' CYLINDER VALUE FOR 1 DISK	
1184	0018			1185	2765+DL2K18	DC	XL2'18' HEX SECTORS PER TRACK	
1186	0001			1187	2766+DL2C01	DC	IL2'1' CONSTANT FOR REGISTER MODE	
1188	0005			1189	2767+DL2C05	DC	IL2'5' DISP TO RIGHT END OF DPL	
					2768+*****			
					2769+*		WORK AREA	
					2770+*****			
				118A	2771+DL2LST	EQU	* LIST HIGH END	
118A				118F	2772+DL2DPL	DS	CL(@DPLNG) WORKING DPL	
				118C	2773+DL2PHY	EQU	DL2LST+@DSAD POINTER TO PHYSICAL DADDR	
				1111	2774+DL2SAD	EQU	DL2001+@DOP2 SAVE SECTOR BYTE FROM DPI	



[illegible]

1190

```
WORKING SECTOR ADDRESS FIELD
USER RELATIVE STARTING ADDR.
END OF DL2ICS
```

\* \* \*

## GRABIT -- RETRIEVE FILE STATEMENTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 10/06/22 PAGE 25

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2782+*****
2783+* 5703-XM1      COPYRIGHT IBM CORP. 1970      *
2784+*              REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083  *
2785+*              *
2786+*****
2787+*STATUS      *
2788+*  VERSION 1 MODIFICATION 0      *
2789+*      *
2790+*FUNCTION      *
2791+*  GRABIT LOCATES SEQUENTIAL STATEMENTS IN THE FILE SPECIFIED BY THE *
2792+*  USER, AND, DEPENDING UPON THE OPTION CHOSEN, PASSES BACK THE      *
2793+*  STATEMENT OR SKIPS TO THE NEXT.      *
2794+*  AFTER BEING PRIMED BY THE CALLING PROGRAM, GRABIT READS LOGICALLY *
2795+*  CONSECUTIVE BLOCKS OF SEGMENTED STATEMENTS, FROM THE FILE      *
2796+*  SPECIFIED BY THE USER, INTO CORE.  GRABIT RETURNS WITH @XR      *
2797+*  POINTING TO THE BINARY LINE NUMBER OF THE NEXT STATEMENT.      *
2798+*  IN ADDITION TO @XR, GRABIT PARAMETERS CAN BE SET TO CAUSE THE      *
2799+*  BINARY LINE NR; THE TYPE CODE; AND THE UNPACKED, NON-SEGMENTED      *
2800+*  TEXT OF THE NEXT STMT TO BE PLACED IN AREAS DEFINED BY THE USER.  *
2801+*  IF GRABIT IS USED TO SKIP THROUGH THE STMTS WITHOUT UNPACKING      *
2802+*  THEM OR CHANGING THEIR LENGTH OR SEGMENTED CONDITION, GRABIT CAN      *
2803+*  BE INSTRUCTED TO RETURN THE BLOCKS TO THEIR ORIGINAL DISK ADDRESS *
2804+*  IF THE SPECIFIED FILE IS ACCESSED BY DL4ICS.      *
2805+*      *
2806+*****
1279 2807+      USING GRABSE,@BR
1192 2808+GRABIT EQU *      ENTRY POINT TO ROUTINE
1192 2809+      ST      GRASBR,@BR      SAVE CALLING PROG'S BASE REG.
1196 C2 01 1279 2810+      LA      GRABSE,@BR      LOAD LOCAL BASE TO BASE REG.
119A 34 08 121C 2811+      ST      GRASAR,@ARR      SAVE RETURN ADDR.
119E 7D 00 AD 2812+      CLI     GRWHAT(,@BR),GRAEFI      IS FUNC REQ'D INITIALIZATION ?
11A1 F2 81 13 2813+      JE      GRA100      YES, GO TO INITIALIZATION RTN
2814+* THE ADDRESS OF THE NEXT SEGMENT IN THE CURRENT BUFFER IS INITLZ'D
2815+* AND MAINTAINED IN THE NEXT INST, WHICH LOADS IT TO THE @XR.
11A4 C2 02 0000 2816+GRA020 LA      *-*,@XR      LOAD NEXT STMT CADDR TO @XR
11A8 7D 01 AD 2817+      CLI     GRWHAT(,@BR),GRAEFR      IS FUNC REQ'D RETURN TEXT ?
11AB F2 81 90 2818+      JE      GRA300      YES, GO RETURN STMT ROUTINE
11AE 7D 02 AD 2819+      CLI     GRWHAT(,@BR),GRAEFS      IS FUNC REQ'D SKIP STATEMENT
11B1 F2 81 3E 2820+      JE      GRA200      YES, GO TO SKIP STMT ROUTINE
11B4 F2 87 41 2821+      J      GRA210      GO TO SKIP SEGMENT RTN
2822+*
2823+*      INITIALIZATION ROUTINE
2824+*
11B7 75 02 A6 2825+GRA100 L      GRBFRA(,@BR),@XR      LOAD 1ST BFR ADDR TO DB
11BA 74 02 AC 2826+      ST      GRANCA(,@BR),@XR      PROPAGATE IT TO NEXT BFR DPL
11BD 5C 01 A9 A3 2827+      MVC     GRANDA(@DADDR,@BR),GRSRDA(,@BR) INITLZ NEXT BRF DADDR
11C1 7C FF B2 2828+      MVI     GRASIZ(,@BR),GRAEBS      INITLZ BUFFER SIZE COUNTER
11C4 5C 00 A4 AA 2829+      MVC     GRACSC(1,@BR),GRSCTR(,@BR) INITLZ SCTR COUNT IN DPL
11C8 7C 98 BB 2830+      MVI     GRAERR+@Q(,@BR),@@E551      SET ERR CODE TO SAVED FILE
11CB C0 87 0025 2831+      B      $DISKN      WAIT FOR FIRST DATA BLOCKS TO
11CF 057F      11D0 2832+      DC      AL2($WAITF)      * GET INTO CORE
11D1 7D 01 AA 2833+      CLI     GRSCTR(,@BR),GRAESC      IS DL4ICS BEING USED ?
11D4 F2 01 49 2834+      JNE     GRA260      NO, GO ACCESS 1ST STATEMENT
11D7 7C 97 BB 2835+      MVI     GRAERR+@Q(,@BR),@@E550      SET ERR CODE TO SPECIFY WRKFILE
11DA 5E 01 AC AF 2836+      ALC     GRANCA(@CADDR,@BR),GRASSZ(,@BR) SET CADDR OF NEXT BFR
11DE BD 00 00 2837+GRA140 CLI     GRAELK(,@XR),GRAELN      IS 1ST DB LINK CODE = 0 ?

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## GRABIT -- RETRIEVE FILE STATEMENTS

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 26
11E1	F2	81	07		2838+	JE	GRA150	YES, GO INCR TO NEXT LOGICAL DB
11E4	7C	02	A9		2839+	MVI	GRANDA(, @BR), GRAEDB	SET DADDR OF NEXT DB
11E7	6E	00	A9 00		2840+	ALC	GRANDA(1, @BR), GRAELK(, @XR) *	
11EB	5E	00	A9 B1		2841+GRA150	ALC	GRANDA(1, @BR), GRANPB(, @BR)	INCR TO NEXT BFR DADDR
11EF	F2	87	2E		2842+	J	GRA260	GO ACCESS FIRST STATEMENT
					2843+*			
					2844+*		ACCESS NEXT STATEMENT OR NEXT SEGMENT ROUTINE	
					2845+*			
11F2	BD	75	07		2846+GRA200	CLI	GRAEDT(, @XR), GRAEET	END-OF-FILE RECORD ?
11F5	F2	81	16		2847+	JE	GRA230	YES, RESET OR TO THIS RECORD
11F8	6F	00	B2 02		2848+GRA210	SLC	GRASIZ(1, @BR), GRAES1(, @XR)	DECR BFR CT BY SEGMENT LENGTH
11FC	B6	02	02		2849+	A	GRAES1(, @XR), @XR	INCR OR BY SEGMENT LENGTH
11FF	7D	00	B2		2850+GRA220	CLI	GRASIZ(, @BR), @ZERO	IS BUFFER EMPTY ?
1202	D0	82	BA		2851+	BL	GRAERR(, @BR)	GONE NEG, GO TO BAD ERR
1205	F2	81	15		2852+	JE	GRA250	YES, GO TO GET NEXT BFR
1208	BD	80	01		2853+	CLI	GRAES0(, @XR), @SNUL	IS SEGMENT NULL ?
120B	F2	81	0F		2854+	JE	GRA250	YES, GO TO GET NEXT BFR
120E	34	02	11A7		2855+GRA230	ST	GRA020+@OP1, @XR	SAVE CADDR OF NEXT SEG. IN INST.
1212	E2	02	06		2856+	LA	GRAEDL(, @XR), @XR	POINT @XR TO LINE NUMBER
1215	C2	01	0000		2857+GRA240	LA	*-*, @BR	RESTORE THE BASE REGISTER
				1218	2858+GRASBR	EQU	GRA240+@OP1	* STORED IN INST AT GRA240
1219	C0	87	0000		2859+GRA245	B	*-*	RETURN TO USER
				121C	2860+GRASAR	EQU	GRA245+@OP1	* TO CADDR SAVED IN GRA245
121D	D0	87	67		2861+GRA250	B	GRA500(, @BR)	ACCESS NEXT BUFFER
1220	BD	80	01		2862+GRA260	CLI	GRAES0(, @XR), @SNUL	IS 1ST SEG. NULL ?
1223	D0	81	BA		2863+	BE	GRAERR(, @BR)	YES, GO TO BAD ERR
1226	B9	02	03		2864+	TBF	GRAES2(, @XR), GRAETP	PRIMARY SEGMENT
1229	C0	10	120E		2865+	BT	GRA230	YES, SAVE LOCATION
122D	7D	01	AD		2866+	CLI	GRWHAT(, @BR), GRAEFR	ACTION REQ'D = RETURN TEXT ?
1230	D0	81	BA		2867+	BE	GRAERR(, @BR)	YES, GO TO BAD ERR
1233	7D	04	AD		2868+	CLI	GRWHAT(, @BR), GRAEFG	ACTION REQ'D = SKIP SEGMENT ?
1236	C0	81	120E		2869+	BE	GRA230	YES, GO SAVE LOCATION
123A	C0	87	11F8		2870+	B	GRA210	NO, GO SKIP THIS SEGMENT
					2871+*			
					2872+*		RETURN TEXT ROUTINE	
					2873+*			
123E	2C	01	0F8C 06		2874+GRA300	MVC	GRLINE, GRAEDL(GRAELL, @XR)	SET BINARY LINE NO. IN O/P FIELD
1243	2C	00	0F8E 07		2875+	MVC	GRTYPE, GRAEDT(1, @XR)	SET TYPE CODE IN OUTPUT FIELD
1248	4C	01	58 132D		2876+	MVC	GRTEND(@CADDR, @BR), GRATXT	INITLZ TEXT O/P CADDR IN INST.
124D	BD	75	07		2877+	CLI	GRAEDT(, @XR), GRAEET	END OF FILE STATEMENT ?
1250	F2	01	08		2878+	JNE	GRA303	NO - GO RESET SEGMENT SWITCH
1253	3C	1C	1B00		2879+	MVI	GRTEXT, @EOF	MOVE EOF CODE TO GRTEXT
1257	C0	87	120E		2880+	B	GRA230	GO GET OUT
					2881+*			
125B	7C	87	01		2882+GRA303	MVI	GRA310+@Q(, @BR), @UCB	INITLZ BRANCH FOR ONLY SEGMENT
125E	BD	00	03		2883+	CLI	GRAES2(, @XR), @SONLY	IS IT AN ONLY SEGMENT ?
1261	F2	81	03		2884+	JE	GRA305	YES, BYPASS BRANCH RESET
1264	7C	80	01		2885+	MVI	GRA310+@Q(, @BR), @NOP	SET FOR MORE SEGMENTS
1267	6F	00	B2 02		2886+GRA305	SLC	GRASIZ(1, @BR), GRAES1(, @XR)	DECR BFR CT BY SEG LENGTH
126B	9F	00	02 B6		2887+	SLC	GRAES1(1, @XR), GRAPSG(, @BR)	DECR SEG CT BY SDF-HDR LENGTH
126F	6C	00	B9 02		2888+	MVC	GRASEG(1, @BR), GRAES1(, @XR)	MOVE TEXT LENGTH TO TEXT CTR
1273	E2	02	07		2889+	LA	GRAELP(, @XR), @XR	INCR TO TYPE CODE
1276	F2	87	2A		2890+	J	GRA317	GO TEST FILE TYPE
1279	C0	87	11FF		2891+GRA310	B	GRA220	GO ACCESS NEXT STATEMENT
1279					2892+	ORG	GRA310	* UNLESS CURRENT STATEMENT
1279	C0	87	11FF		2893+	BC	GRA220, @UCB	* HAS MORE SEGMENTS

## GRABIT -- RETRIEVE FILE STATEMENTS

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 27
127D	6C	00	24	00	2894+	MVC	GRASVC(, @BR), @ZERO(1, @XR)	SAVE CURR CHAR IN RESTORE INST
1281	D0	87	67		2895+	B	GRA500(, @BR)	ACCESS NEXT BUFFER
1284	BD	02	03		2896+	CLI	GRAES2(, @XR), @SLAST	LAST SEGMENT ?
1287	F2	01	03		2897+	JNE	GRA313	NO, GO RESET SEG COUNTER
128A	7C	87	01		2898+	MVI	GRA310+@Q(, @BR), @UCB	RESET BRANCH OUT
128D	6F	00	B2	02	2899+GRA313	SLC	GRASIZ(1, @BR), GRAES1(, @XR)	DECR BUFFER COUNTER
1291	9F	00	02	B8	2900+	SLC	GRAES1(1, @XR), GRASSG(, @BR)	DECR SEG COUNT BY SDF LENGTH
1295	6C	00	B9	02	2901+	MVC	GRASEG(1, @BR), GRAES1(, @XR)	MOVE TEXT LNG TO SEG COUNTER
1299	E2	02	04		2902+	LA	GRAELS(, @XR), @XR	INCR @XR PAST SECONDARY SDF
129C	BC	00	00		2903+GRA315	MVI	@ZERO(, @XR), *-*	RESTORE CHAR SAVED IN Q-CODE
				129D	2904+GRASVC	EQU	GRA315+@Q	SAVED CHAR HOLD AREA
129F	5E	01	58	B1	2905+GRA316	ALC	GRTEND(@CADDR, @BR), GRABOA(, @BR)	INCR RECEIVING CADDR
				12A3	2906+GRA317	EQU	*	MOVE TEXT TO GRTEXT
12A3	38	80	03	D4	2907+	TBN	\$INDR1, \$BASIC	IS FILE TYPE = BASIC ?
12A7	F2	90	24		2908+	JF	GRA350	NO, BYPASS REPITION CODE CHECK
12AA	BD	1B	01		2909+	CLI	GRAENC(, @XR), GRAEMR	IS CHAR REF A REPITION CODE ?
12AD	F2	84	1E		2910+	JH	GRA350	NO, GO RETURN REF'D CHAR
12B0	5C	01	3E	58	2911+	MVC	GRATND(@CADDR, @BR), GRTEND(, @BR)	SET RCV'G CADDR IN INSTR
12B4	2C	00	0000	00	2912+GRA320	MVC	*-*, @ZERO(1, @XR)	RETURN REPEATED CHAR TO OUTPUT
				12B7	2913+GRATND	EQU	GRA320+@OP1	* ADDR SUPPLIED
12B9	9F	00	01	B1	2914+	SLC	GRAENC(1, @XR), GRAONE(, @BR)	DECR. REPITION COUNTER
12BD	F2	01	07		2915+	JNZ	GRA330	IF <> 0, GO INCR O/P CADDR
12C0	5C	01	58	3E	2916+	MVC	GRTEND(@CADDR, @BR), GRATND(, @BR)	RESTORE NEW O/P CADDR
12C4	F2	87	0C		2917+	J	GRA360	GO INCR @XR
12C7	5E	01	3E	B1	2918+GRA330	ALC	GRATND(@CADDR, @BR), GRABOA(, @BR)	INCR O/P CADDR IN INSTR
12CB	D0	87	3B		2919+	B	GRA320(, @BR)	GO MOVE CHAR TO OUTPUT
12CE	2C	00	0000	01	2920+GRA350	MVC	*-*, GRAENC(1, @XR)	MOVE NON-REPEAT CHAR TO OUTPUT
				12D1	2921+GRTEND	EQU	GRA350+@OP1	* ADDR SUPPLIED
12D3	E2	02	01		2922+GRA360	LA	GRAENC(, @XR), @XR	INCR @XR TO NEXT CHAR.
12D6	5F	00	B9	B1	2923+	SLC	GRASEG(1, @BR), GRABOA(, @BR)	DECR BFR SPACE CTR
12DA	D0	81	00		2924+	BZ	GRA310(, @BR)	NO MORE TEXT IN SEG, CHK MORE
12DD	D0	87	26		2925+	B	GRA316(, @BR)	MORE TEXT, GO INCR RECV CADDR
					2926+*			
					2927+*		ACCESS NEXT BUFFER ROUTINE	
					2928+*			
12E0	74	08	A0		2929+GRA500	ST	GRA5SA(, @BR), @ARR	
12E3	C0	87	0025		2930+	B	\$DISKN	WAIT FOR PRIOR READ TO COMPLETE
12E7	057F			12E8	2931+	DC	AL2(\$WAITF)	*
				12E9	2932+GRA600	EQU	*	
12E9	7D	01	AA		2933+	CLI	GRSCTR(, @BR), GRAESC	DL4ICS BEING USED ?
12EC	F2	01	50		2934+	JNE	GRA700	NO, GO REFILL BUFFER
					2935+*			
					2936+*		DL4ICS BEING USED - ACCESS NEXT DATA BLOCK	
					2937+*			
12EF	75	02	A6		2938+	L	GRBFRA(, @BR), @XR	SAVE CURR BFR STARTING CADDR
12F2	5C	04	A6	AC	2939+	MVC	GRBFRA(GRAEDS, @BR), GRANCA(, @BR)	MOVE NEXT DPL TO CURR DPI
12F6	74	02	AC		2940+	ST	GRANCA(, @BR), @XR	RESTORE NEXT BFR STARTING CADDR
12F9	75	02	A6		2941+	L	GRBFRA(, @BR), @XR	POINT EN TO CURR BFR CADDR
12FC	BD	00	00		2942+	CLI	GRAELK(, @XR), GRAELN	NEXT LOGICAL DB = NEXT PHYS DB ?
12FF	F2	81	07		2943+	JE	GRA620	YES, GO INCR SCTR DISP.
1302	7C	02	A9		2944+	MVI	GRANDA(, @BR), GRAEDB	SET DADDR OF NEXT DB
1305	6E	00	A9	00	2945+	ALC	GRANDA(1, @BR), GRAELK(, @XR)	*
1309	5E	00	A9	B1	2946+GRA620	ALC	GRANDA(1, @BR), GRANPB(, @BR)	INCR SCTR DISP FOR NEXT PHYS D
130D	C0	87	103D		2947+GRA640	B	DL4ICS	GO READ NEXT DB
1311	1320			1312	2948+	DC	AL2(GRANPL)	* CADDR OF DPL
1313	7C	FF	B2		2949+GRA660	MVI	GRASIZ(, @BR), GRAEBS	RE-INITLZ BFR SPACE COUNT

## GRABIT -- RETRIEVE FILE STATEMENTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 28
1316	C0 87 0000		2950+GRA680	B	*-*	RETURN TO	
			1319 2951+GRA5SA	EQU	GRA680+@OP1	* CADDR SUPPLIED	
			131A 2952+GRACPL	EQU	*	DPL FOR CURRENT BUFFER	
131A	02		131A 2953+GRACFN	DC	AL1(@DPUT)	WRITE FUNCTION CODE	
131B			131C 2954+GRSRDA	DS	CL2	RELATIVE DADDR OF CURR. BFR	
			131B 2955+GRACCA	EQU	GRSRDA-@B1	CYLINDER BYTE OF DISK ADDR.	
131B			2956+	ORG	*-2	* INITIALIZED TO THE	
131B	0503		131C 2957+	DC	AL2(@WSTBL)	* 1ST DB OF THE WORK FILE	
131D			131D 2958+GRACSC	DS	CL1	SECTOR COUNT	
131E	1900		131F 2959+GRBFRA	DC	AL2(GBFR1)	CADDR OF CURRENT BUFFER	
			1320 2960+GRANPL	EQU	*	DPL FOR NEXT BUFFER	
1320	01		1320 2961+	DC	AL1(@DGET)	READ FUNCTION CODE	
1321			1322 2962+GRANDA	DS	CL2	RELATIVE DADDR OF NEXT BFR.	
1323			1323 2963+GRSCTR	DS	CL1	SECTOR COUNT	
1323			2964+	ORG	*-1	* INITIALIZE TO 1	
1323	01		1323 2965+	DC	XL1'01'		
1324			1325 2966+GRANCA	DS	CL2	CADDR OF NEXT BUFFER	
1326			1326 2967+GRWHAT	DS	CL1	USER SPEC'D FUNCTION CODE	
1326			2968+	ORG	*-1	SET TO ZERO FOR	
1326	00		1326 2969+	DC	XL1'00'	* INITIALIZATION CALL	
1327	0100		1328 2970+GRASSZ	DC	XL2'0100'	SECTOR SIZE	
1329	0001		132A 2971+GRANPB	DC	XL2'01'	DISP TO NEXT PHYS BFR DADDR	
			0002 2972+GRAEDB	EQU	2	DB DADDR ADJUSTMENT FACTOR	
132B			132B 2973+GRASIZ	DS	CL1	BUFFER SPACE COUNTER	
132C	1B00		132D 2974+GRATXT	DC	AL2(GRTEXT)	ADDRESS OF TEXT OUTPUT AREA	
132E	0007		132F 2975+GRAPSG	DC	XL2'07'	SIZE OF PRIMARY SEG. HEADER	
1330	0004		1331 2976+GRASSG	DC	XL2'04'	SIZE OF 2NDARY SEG. HEADER	
			132A 2977+GRAONE	EQU	GRANPB	DECR FACTOR FOR REPITITION CTR	
			132A 2978+GRABOA	EQU	GRANPB	INCR FACTOR FOR NEXT TEXT CHAR	
			132A 2979+GRANXC	EQU	GRANPB	CYL ADJ FACTOR	
1332			1332 2980+GRASEG	DS	CL1	SEGMENT TEXT COUNTER	
			0000 2981+GRAEFI	EQU	X'00'	INITIALIZATION FUNC. CODE	
			0003 2982+GRAEFW	EQU	X'03'	WRITE BACK ONLY FUNC. CODE	
			0001 2983+GRAEFR	EQU	X'01'	RETURN TEXT FUNC. CODE	
			0002 2984+GRAEFS	EQU	X'02'	SKIP STATEMENT FUNC. CODE	
			0004 2985+GRAEFG	EQU	X'04'	SKIP SEGMENT FUNC. CODE	
			00FF 2986+GRAEBS	EQU	X'FF'	BUFFER TEXT AREA SIZE	
			0001 2987+GRAESC	EQU	X'01'	SCTR COUNT IF DL4ICS USED	
			0000 2988+GRAELK	EQU	X'00'	DISP TO LINK CODE WITHIN DB	
			0000 2989+GRAELN	EQU	X'00'	LINK CODE TO NEXT PHYS DB	
			0001 2990+GRAEXA	EQU	X'01'	ADJ TO '@' EQU'S FOR @XR ADDR	
			0006 2991+GRAEDL	EQU	@SBLN+GRAEXA	DISP TO STMT BINARY LINE NO.	
			0007 2992+GRAEDT	EQU	@STYPE+GRAEXA	DISP TO STMT TYPE CODE	
			0002 2993+GRAELL	EQU	X'02'	LENGTH OF BINARY LINE NUMBER	
			0075 2994+GRAEET	EQU	@EOFTC	TYPE CODE OF END-OF-FILE STMT	
			0001 2995+GRAES0	EQU	@SDF0+GRAEXA	DISP TO SDF0 - NULL INDR	
			0002 2996+GRAES1	EQU	@SDF1+GRAEXA	DISP TO SDF1 - LENGTH	
			0003 2997+GRAES2	EQU	@SDF2+GRAEXA	DISP TO SDF2 - SEGMENTATION CDE	
			0002 2998+GRAETP	EQU	X'02'	MASK FOR A PRIMARY SEGMENT	
			0007 2999+GRAELP	EQU	X'07'	LENGTH OF PRIMARY SEG.	
			0004 3000+GRAELS	EQU	X'04'	LENGTH OF SECONDARY SEG.	
			001B 3001+GRAEMR	EQU	27	MAX. REPITITION CODE	
			0001 3002+GRAENC	EQU	X'01'	DISP TO NEXT TEXT CHARACTER	
			0001 3003+GRAEDC	EQU	X'01'	DISP TO CYL IN DADDR	
			1279 3004+GRABSE	EQU	GRA310	BASE ADDRESS OF GRABIT	
			0005 3005+GRAEDS	EQU	X'05'	LNG OF DPL DADDR, SCTR-CT.	



## GRABIT -- RETRIEVE FILE STATEMENTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 29
		0006	3006+GRAEW2	EQU	6	SECOND CYL OF WORK FILE
			3007+*			
			3008+*		ERROR ROUTINE	
			3009+*			
1333	3C 98 03CD		3010+GRAERR	MVI	\$CAERR,@E551	SET BAD FILE ERROR CODE
			3011+*		THE ABOVE ERROR CODE IS INITIALLY SET FOR A SAVED FILE,	
			3012+*		BUT IS MODIFIED TO THE WORK FILE IF DL4ICS IS USED	
1337	3A 04 03D6		3013+	SBN	\$INDR3,\$ERHRD	SET INDR FOR HARD ERROR
133B	C0 87 0469		3014+	B	\$CAERK	GO TO ERRPGM INTERFACE
			3015+*			
			3016+*		DL2ICS BEING USED - ACCESS NEXT DATA BLOCK	
			3017+*			
		133F	3018+GRASHT	EQU	*	ORG HERE TO OVERLAY DL2ICS HDLG
133F	5F 00 A4 B1		3019+GRA700	SLC	GRACSC(1,@BR),GRANPB(,@BR)	DECR IN CORE SCTR COUNT
1343	F2 81 07		3020+	JZ	GRA720	IF ZERO, GO GET NEXT BFR BLOCK
1346	5E 01 A6 AF		3021+	ALC	GRBFRA(@CADDR,@BR),GRASSZ(,@BR)	INCR DPL CADDR TO NEXT DB
134A	F2 87 18		3022+	J	GRA740	GO LOAD CADDR TO @XR
134D	5E 00 A9 AA		3023+GRA720	ALC	GRANDA(1,@BR),GRSCTR(,@BR)	INCR LAST DADDR BY SCTR READ
1351	C0 87 10F9		3024+GRA730	B	DL2ICS	REFILL CORE BUFFER
1355	1320	1356	3025+	DC	AL2(GRANPL)	CADDR OF DPL
1357	5C 00 A4 AA		3026+	MVC	GRACSC(1,@BR),GRSCTR(,@BR)	RE-INITLZ BFR SECTOR COUNT
135B	5C 01 A6 AC		3027+	MVC	GRBFRA(@CADDR,@BR),GRANCA(,@BR)	RE-INITLZ BFR START CADDR
135F	C0 87 0025		3028+	B	\$DISKN	WAIT FOR READ COMPLETE
1363	057F	1364	3029+	DC	AL2(\$WAITF)	*
1365	75 02 A6		3030+GRA740	L	GRBFRA(,@BR),@XR	POINT @XR TO START OF BFR
1368	D0 87 9A		3031+	B	GRA660(,@BR)	GO RE-INITLZ BFR SPACE CTR
			3032+***		END OF GRABIT	***
			3033 *			
			3034 *		\$C2D5	

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15,	MOD 00	10/06/22	PAGE	30
					3036+	*****						
					3037+	*	SERIALLY REUSABLE SUBROUTINE TO CONVERT A 2 BYTE BINARY VALUE TO				*	
					3038+	*	A 5 BYTE POSITIVE DECIMAL NUMBER.				*	
					3039+	*	ON ENTRY @XR POINTS TO THE LEFT BYTE OF THE BINARY VALUE.				*	
					3040+	*	ON RETURN C2DVAL IS THE RIGHT BYTE OF THE 5 BYTES DECIMAL VALUE				*	
					3041+	*	WITH LEADING ZEROS WHICH MAY BE MODIFIED BY THE USER IN ANY WAY				*	
					3042+	*	IN IT'S LOCATION.				*	
					3043+	*	THE 2 BYTES BINARY VALUE IS NOT ALTERED.				*	
					3044+	*	@XR IS NOT ALTERED.				*	
					3045+	*	@BR IS SAVED AND RESTORED AT EXIT.				*	
					3046+	*****						
				136B	3048+C2DEC5	EQU	*				MODULE ENTRY POINT	
				136B	3049+	USING	C2DEC5,@BR				BASE ADDRESS SPECIFICATION	
136B	34	01	139F		3050+	ST	C2D050+@OP1,@BR				SAVE @BR	
136F	C2	01	136B		3051+	LA	C2DEC5,@BR				LOAD BASE REGISTER	
1373	74	08	38		3052+	ST	C2D052+@OP1(,@BR),@ARR				SAVE RETURN ADDRESS	
					3053+	*	INITIALIZE DECIMAL INCREMENTER AND DECIMAL SUM TO 1 AND 0 RESP.					
1376	54	90	43	39	3054+	ZAZ	C2D903(C2D903-C2D901,@BR),C2D901(C2D902-C2D901,@BR)					
137A	7C	01	17		3055+	MVI	C2D030+@D1(,@BR),@B1				INITIALIZE DISP TO BYTE 1	
137D	7C	01	16		3056+C2D020	MVI	C2D030+@Q(,@BR),@B1				INIT TEST TO BIT 7	
					3057+	*						
1380	B8	00	00		3058+C2D030	TBN	*-*(,@XR),*-*				TEST IF THIS BIT IS OFF	
1383	F2	90	04		3059+	JF	C2D040				* BR AROUND SUM INCREMENT	
					3060+	*	INCREMENT DECIMAL SUM BY DECIMAL VALUE OF THIS TESTED BIT					
1386	56	04	3E	43	3061+	AZ	C2DVAL(C2D903-C2DVAL,@BR),C2D903(C2D903-C2DVAL,@BR)					
					3062+	*	DOUBLE DECIMAL VALUE OF INCREMENT TO VALUE OF NEXT BIT					
138A	56	04	43	43	3063+C2D040	AZ	C2D903(C2D903-C2DVAL,@BR),C2D903(C2D903-C2DVAL,@BR)					
138E	5E	00	16	16	3064+	ALC	C2D030+@Q(1,@BR),C2D030+@Q(,@BR)				SHIFT BIT MASK LEFT ONE	
1392	D0	20	15		3065+	BNOL	C2D030(,@BR)				CONTINUE LOOP UNLESS ALL BITS	
					3066+	*	* TESTED					
1395	5F	00	17	13	3067+	SLC	C2D030+@D1(1,@BR),C2D020+@Q(,@BR)				DECR DISP TO BYTE 0	
1399	D0	81	12		3068+	BZ	C2D020(,@BR)				FALL THROUGH IF UNDERFLOW	
139C	C2	01	0000		3069+C2D050	LA	*-*,@BR				RESTORE @BR	
13A0	C0	87	0000		3070+C2D052	B	*-*				RETURN TO CALLING PROGRAM	
					3071+	*						
					3072+***		WORK AREA					
					3073+	*						
13A4	F1			13A4	3074+C2D901	DC	DL1'1'				INIT WORK AREA	
				13A5	3075+C2D902	EQU	*				FIST BYTE OF DECIMAL VALUE	
13A5				13A9	3076+C2DVAL	DS	CL5				5 BYTES DECIMAL VALUE	
13AA				13AE	3077+C2D903	DS	CL5				DECIMAL INCREMENTER	
					3078+***		END OF C4DEC5					***
					3079	*						
					3080	*	\$C4BD					

## C4BIN2 - CONVERT DECIMAL TO BINARY ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 31
					3082+*			*
					3083+*		INITIALIZATION	*
					3084+*			*
				13AF	3085+C4BIN2	EQU	*	ENTRY POINT
				13AF	3086+	USING	C4BIN2,@BR	BASE VALUE
					3087+*			
13AF	34	01	1411		3088+	ST	C4B800+@OP1,@BR	SAVE CALLERS BASE REGISTER
13B3	C2	01	13AF		3089+	LA	C4BIN2,@BR	LOAD BASE VALUE
					3090+*			
13B7	74	08	66		3091+	ST	C4B850+@OP1(,@BR),@ARR	SAVE RETURN ADDRESS
					3092+*			
13BA	74	02	6E		3093+	ST	C4BSAV(,@BR),@XR	SAVE VALUE OF POINTER
13BD	3C	0C	03CD		3094+	MVI	\$CAERR,@E122	SET ERROR CODE IN CASE
13C1	5C	01	6A 6B		3095+	MVC	C4BVAL(C4BLVL,@BR),C4BINI(,@BR)	INIT VALUE TO ZERO
13C5	3C	04	141E		3096+C4B100	MVI	C4B900,4	INITLZ CHAR. COUNT
					3097+*			
					3098+***		DETERMINE IF CHAR NUMERIC AND DECR CHAR COUNT	
					3099+*			
13C9	F2	80	32		3100+C4B200	JC	C4B600,@NOP	SET TO UCB IF IMBEDDED BLANKS
					3101+*			* ALLOWED
13CC	BD	F0	00		3102+C4B300	CLI	0(,@XR),C4BLOW	THIS CHAR NUMERIC ?
13CF	F2	82	35		3103+	JL	C4B700	NO, GOTO RETURN
					3104+*			
13D2	5F	00	6F 4E		3105+	SLC	C4B900(1,@BR),C4B590+@D1(,@BR)	DECR CHAR COUNT
13D6	F2	82	35		3106+	JL	C4B800	BR TO ERROR EXIT IF TOO MANY
					3107+*			
					3108+***		MULTIPLY PREVIOUS VALUE BY TEN	
					3109+*			
13D9	5E	01	6A 6A		3110+	ALC	C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	DOUBLE PREVIOUS VALUE
13DD	5C	01	68 6A		3111+	MVC	C4BWRK(C4BLVL,@BR),C4BVAL(,@BR)	SAVE DOUBLE VALUE
13E1	5E	01	6A 6A		3112+	ALC	C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	QUADRUPLE PREVIOUS VALUE
13E5	5E	01	6A 6A		3113+	ALC	C4BVAL(C4BLVL,@BR),C4BVAL(,@BR)	OCTUPLE PREVIOUS VALUE
13E9	5E	01	6A 68		3114+	ALC	C4BVAL(C4BLVL,@BR),C4BWRK(,@BR)	ADD IN SAVED DOUBLE
					3115+*			
					3116+***		ADD IN VALUE OF THIS CHAR AND INCR POINTER	
					3117+*			
13ED	68	03	6C 00		3118+	MNN	C4BCHR(,@BR),0(,@XR)	FETCH NEMERIC VALUE OF NEW CHAR
13F1	5E	01	6A 6C		3119+	ALC	C4BVAL(C4BLVL,@BR),C4BCHR(,@BR)	INCR VALU BY THIS CHAR
					3120+*			
13F5	E2	02	01		3121+	LA	@B1(,@XR),@XR	INCR POINTER TO NEXT CHAR
13F8	D0	87	1A		3122+	B	C4B200(,@BR)	GOTO DO IT AGAIN
					3123+*			*
					3124+*		ROUTINE TO SCAN BLANKS	*
					3125+*			*
13FB	E2	02	01		3126+C4B590	LA	@B1(,@XR),@XR	INCR POINTER TO NEXT CHAR
13FE	BD	40	00		3127+C4B600	CLI	0(,@XR),@BLANK	IS THIS CHAR A BLANK ?
1401	D0	01	1D		3128+	BNE	C4B300(,@BR)	RETURN IF NOT
1404	D0	87	4C		3129+	B	C4B590(,@BR)	GET NEXT CHAR IF YES



## C4BIN2 - CONVERT DECIMAL TO BINARY ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 32
					3131+*					
					3132+***	ENDING ROUTINE				
					3133+*					
1407	74	02	68		3134+C4B700	ST	C4BLEN(,@BR),@XR		PLACE VALUE OF POINTER	
140A	5F	01	68 6E		3135+	SLC	C4BLEN(2,@BR),C4BSAV(,@BR)		SUBTRACT ENTERING VALUE	
					3136+*					
140E	C2	01	0000		3137+C4B800	LA	*-*,@BR		RESTORE CALLERS BR	
					3138+*					
1412	C0	87	0000		3139+C4B850	B	*-*		RETURN TO CALLING ROUTINE	
					3140+*				*	
					3141+*		WORK AREA AND CONSTANT		*	
					3142+*				*	
1416				1417	3143+C4BWRK	DS	CL2		SAVE AREA FOR DOUBLED VALUE	
					3144+*					
				1418	3145+C4BYT1	EQU	*		FIRST BYTE OF BINARY VALUE	
1418				1419	3146+C4BVAL	DS	CL2		SAVE AREA FOR BINARY VALUE	
					3147+*					
141A	00			141A	3148+C4BINI	DC	XL1'00'		INITIALIZE WA TO ZERO	
					3149+*					
141B				141B	3150+C4BCHR	DS	CL1		SAVE AREA FOR EACH NEW CHAR	
141B					3151+	ORG	*-1		INITIALIZE	
141B	00			141B	3152+	DC	XL1'00'		* TO ZERO	
					3153+*					
141C				141D	3154+C4BSAV	DS	CL2		SAVE AREA FOR XR	
					3155+*					
141E				141E	3156+C4B900	DS	CL1		SAVE AREA FOR CHAR COUNTER	
					3157+*				*	
					3158+*		EQUATES FOR C4BIN2		*	
					3159+*				*	
				1417	3160+C4BLEN	EQU	C4BWRK		ON RETURN WILL CONTAIN COUNT	
					3161+*				* @XR INCREMENTED BY	
				0004	3162+C4BCHC	EQU	4		NUMBER OF CHAR TO CONVERT	
					3163+*					
				00F0	3164+C4BLOW	EQU	C'0'		LOWEST NUMERIC CHARACTER	
					3165+*					
				0002	3166+C4BLVL	EQU	C4BVAL-C4BWRK		LENGTH OF BINARY VALUE	
					3167+*					
				13CA	3168+C4BLNK	EQU	C4B200+@Q		LOCATION OF IMBEDDED BLANK IND	
					3169+*					
				0087	3170+C4BSPC	EQU	@UCB		MOVED TO C4BLNK TO ALLOW BLANKS	
					3171+*					
				13C6	3172+C4BNMC	EQU	C4B100+@Q		LOCATION OF CONVERSION COUNT	
					3173+*					
				0080	3174+C4BNOP	EQU	@NOP		CHANGED IF IMBEDDED BLANK OK	
				141F	3175+C4END	EQU	*		DEFINE END OF CODE	
					3176+***		END OF C4BIN2		***	
					3177 *					
					3178 *	\$CSTR				

## SCSTRG - PLACES SYNTACTIC UNIT &lt;CHAR STRING&gt;

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 10/06/22 PAGE 33
		3180+		*****	*
		3181+	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		3182+	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083	*
		3183+	*		*
		3184+		*****	*
		3185+	*	STATUS	*
		3186+	*	VERSION 1 MODIFICATION 0	*
		3187+	*		*
		3188+	*	FUNCTION	*
		3189+	*	* SCSTRG PLACES THE SYNTACTIC UNIT <CHARACTER STRING> IN	*
		3190+	*	AN AREA DEFINED BY THE USER. THIS ROUTINE WILL ALSO PLACE A	*
		3191+	*	NUMBER OF CHARACTERS IN THE CALLING PROGRAMS AREA.	*
		3192+	*	* A COUNT OF THE NUMBER OF CHARACTERS IN THE STRING IS MAINTAINED	*
		3193+	*	BY SCSTRG.	*
		3194+	*		*
		3195+	*	ENTRY POINTS	*
		3196+	*	THE ONLY ENTRY TO SCSTRG IS THE FIRST BYTE OF	*
		3197+	*	THE ROUTINE. THE CALLING SEQUENCE IS:	*
		3198+	*	B SCSTRG	*
		3199+	*	DC AL2(AREA)	*
		3200+	*		*
		3201+	*	WHERE AREA POINTS TO THE LEFTMOST BYTE OF THE CALLING	*
		3202+	*	PROGRAMS OUTPUT AREA.	*
		3203+	*		*
		3204+	*	INPUT	*
		3205+	*	INDEX REGISTER TWO(2) SHOULD POINT TO THE LEFT QUOTE OF THE	*
		3206+	*	CHARACTER STRING. THE CALLING PROGRAM MUST ALSO SET THE	*
		3207+	*	CHARACTER COUNT IN THE ONE BYTE FIELD SCSLNG. A ZERO(0) LENGTH	*
		3208+	*	DENOTES THAT THE CALLING PROGRAM WANTS THE ENTIRE STRING.	*
		3209+	*		*
		3210+	*	OUTPUT	*
		3211+	*	THE CHARACTER STRING IS RETURNED TO THE ADDRESS GIVEN BY THE	*
		3212+	*	CALLING ROUTINE. THE FIELD SCSCNT CONTAINS THE NUMBER OF	*
		3213+	*	CHARACTERS IN THE CHARACTER STRING.	*
		3214+	*		*
		3215+	*	EXTERNAL REFERENCES	*
		3216+	*	NONE	*
		3217+	*		*
		3218+	*	EXITS, NORMAL	*
		3219+	*	NORMAL EXIT IS TO THE FIRST BYTE FOLLOWING THE THE	*
		3220+	*	POINTER TO THE USERS STRING AREA. THE BASE REGISTER	*
		3221+	*	IS RESTORED(XR1). XR2 WILL POINT TO THE CHARACTER	*
		3222+	*	FOLLOWING THE ENDING QUOTE. THE PSR WILL BE NOT LOW.	*
		3223+	*		*
		3224+	*	EXITS, ERROR	*
		3225+	*	SHOULD AN ERROR BE FOUND THE PSR IS FORCED LOW. THE XR2	*
		3226+	*	WILL POINT TO THE POSITION WHERE THE ERROR WAS FOUND.	*
		3227+	*		*
		3228+	*	TABLES/WORKAREAS	*
		3229+	*	NONE	*
		3230+	*		*
		3231+	*	ATTRIBUTES	*
		3232+	*	SCSTRG IS REUSABLE	*
		3233+	*		*
		3234+	*	CHARACTER CODE DEPENDENCY	*
		3235+	*	THIS ROUTINE ASSUMES THE EBCDIC CODE OF X'7D' FOR A	*

## SCSTRG - PLACES SYNTACTIC UNIT &lt;CHAR STRING&gt;

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 10/06/22 PAGE 34

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3236+*   SINGLE QUOTE.
3237+*
3238+*NOTES
3239+*   ERROR PROCEDURES
3240+*       N/A
3241+*
3242+*   REGISTER USAGE
3243+*       INDEX REGISTER 1 IS USED AS A POINTER TO THE CALLING PROGRAMS
3244+*       STRING AREA. INDEX REGISTER 2 POINTS TO THE CHARACTER STRING
3245+*       IN THE INPUT LINE. XR 1 IS SAVED AND RESTORED.
3246+*
3247+*   REQUIRED MODULES
3248+*       @SYSEQ - SYSTEM EQUATES
3249+*
3250+*   MODIFICATION CONSIDERATIONS
3251+*       NONE
3252+*
3253+*   OTHER
3254+*       NONE
3255+*****

141F 34 01 148F 141F 3257+SCSTRG EQU * ENTRY POINT
1423 34 08 1493 3258+ ST SCS050+@OP1,@BR SAVE BASE REGISTER
1427 0E 00 1493 1497 3259+ ST SCS051+@OP1,@ARR SAVE RETURN ADDRESS
142D 36 08 1496 3260+ ALC SCS051+@OP1(@B1),SCSPL2 INCREMENT PAST PARAMETER
1431 34 08 1440 3261+ A SCSPL1,@ARR POINT TO PARAMETER
1435 3C 00 1494 3262+ ST SCS005+@OP1,@ARR SAVE PARAMETER ADDRESS
1439 3C 80 1466 3263+ MVI SCSCNT,@ZERO CLEAR COUNTER
143D 35 01 0000 3264+ MVI SCS020+@Q,@NOP SET SWITCH OFF
1441 BD 7D 00 3265+SCS005 L *-*,@BR PICK UP OUTPUT ADDRESS
1444 F2 01 37 3266+ CLI @ZERO(,@XR),SCSQUO CHECK QUOTES
3267+ JNE SCS030 ERROR -
3268+*
1447 E2 02 01 3269+SCS006 LA @B1(,@XR),@XR INCREMENT POINTER
144A BD 7D 00 3270+ CLI @ZERO(,@XR),SCSQUO EMBEDDED QUOTES
144D F2 01 09 3271+ JNE SCS010 NO GO CHECK FOR EOS
1450 E2 02 01 3272+ LA @B1(,@XR),@XR MOVE INPUT POINTER
1453 BD 7D 00 3273+ CLI @ZERO(,@XR),SCSQUO DOUBLE QUOTE ?
1456 F2 01 30 3274+ JNE SCS040 EXIT
1459 BD 1E 00 3275+SCS010 CLI @ZERO(,@XR),@EOS END OF STATEMENT ?
145C F2 81 1F 3276+ JE SCS030 YES - ERROR
145F 0E 00 1494 1496 3277+ ALC SCSCNT(@B1),SCSPL1 INCREMENT COUNT
3278+*
1465 F2 00 12 3279+SCS020 JC SCS029,*-* SWITCH
1468 6C 00 00 00 3280+ MVC @ZERO(@B1,@BR),@ZERO(,@XR) MOVE CHARACTER
146C D2 01 01 3281+ LA @B1(,@BR),@BR BUMP OUTPUT POINTER
3282+*
146F 3D 00 1494 3283+SCS025 CLI SCSCNT,*-* CHECK CHARACTER COUNT
1473 F2 01 04 3284+ JNE SCS029 NOT EXCEEDED CONTINUE
1476 3C 87 1466 3285+ MVI SCS020+@Q,@UCB SET SWITCH ON
147A C0 87 1447 3286+SCS029 B SCS006 RETURN TO MAINLINE

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## SCSTRG - PLACES SYNTACTIC UNIT &lt;CHAR STRING&gt;

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	35
					3288+*						
					3289+*		ERROR SETTING				
					3290+*						
				147E	3291+SCS030	EQU	*				
147E	35	04	1499		3292+	L	SCSERR,@PSR			SET ERROR INDICATOR	
1482	3C	17	03CD		3293+	MVI	\$CAERR,@E138			INCOMPLETE CHARACTER CONSTANT	
1486	F2	87	03		3294+	J	SCS050			RETURN	
1489	BD	FF	00		3295+SCS040	CLI	0(,@XR),SCSFRC			FORCE PSR LOW	
					3296+*						
					3297+*		RETURN				
					3298+*						
148C	C2	01	0000		3299+SCS050	LA	*-*,@BR			RESTORE BASE	
1490	C0	87	0000		3300+SCS051	B	*-*			RETURN	
					3301+*						
					3302+*		CONSTANTS				
					3303+*						
				1470	3304+SCSLNG	EQU	SCS025+@Q			LENGTH REQUESTED	
				007D	3305+SCSQUO	EQU	X'7D'			QUOTE	
				00FF	3306+SCSFRC	EQU	X'FF'			FORCE PSR INDICATOR	
					3307+*						
1494				1494	3308+SCSCNT	DS	CL1			CHARACTER COUNT	
1495	0001			1496	3309+SCSPL1	DC	IL2'1'			PLUS ONE	
1497	02			1497	3310+SCSPL2	DC	IL1'2'			PLUS TWO	
1498	0084			1499	3311+SCSERR	DC	XL2'84'			PSR CODE FOR ERROR	
					3312+***			END OF SCSTRG		***	
					3313 *						
					3314 *	\$DLST					

# SDLIST - LIST DATA FILES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 36
		3316+	*****				
		3317+	*	5703-XM1	COPYRIGHT IBM CORP. 1970		*
		3318+	*		REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083		*
		3319+	*				*
		3320+	*****				*
		3321+	*	STATUS			*
		3322+	*	VERSION 1 MODIFICATION 0			*
		3323+	*				*
		3324+	*	FUNCTION			*
		3325+	*	* SDLIST WILL CONVERT THE CONTENTS OF THE WORK FILE FROM			*
		3326+	*	INTERNAL FLOATING POINT REPRESENTATION TO THE 'SHORTEST'			*
		3327+	*	EXTERNAL REPRESENTATION. THIS ROUTINE IS USED TO CONVERT			*
		3328+	*	EITHER KEYBOARD OR PROGRAM GENERATED FILES FOR LISTING			*
		3329+	*	PURPOSES.			*
		3330+	*	* FOR LISTING PROGRAM GENERATED FILES, SDLIST ALSO WILL OUTPUT			*
		3331+	*	THE FILE TO THE SPECIFIED OUTPUT DEVICE.			*
		3332+	*	* CHARACTER STRINGS ARE ALSO OUTPUT VIA SDLIST.			*
		3333+	*				*
		3334+	*	ENTRY POINTS			*
		3335+	*	SDLIST HAS TWO(2) ENTRY POINTS. ONE ENTRY POINT IS USED WHEN			*
		3336+	*	THE WORK FILE CONTAINS A KEYBOARD DATA FILE.			*
		3337+	*	B SDLIST	CONVERT KEYBOARD DATA FILE		*
		3338+	*				*
		3339+	*	TO OUTPUT A PROGRAM GENERATED FILE, THE FOLLOWING ENTRY POINT			*
		3340+	*	IS USED.			*
		3341+	*	B SDLPGM	OUTPUT PGD FILE		*
		3342+	*				*
		3343+	*	THE ENTIRE FILE WILL BE OUTPUT BY SDLIST			*
		3344+	*	FOR PROGRAM GENERATED FILES THE CONSTANT SDLWID SHOULD			*
		3345+	*	CONTAIN THE LOGICAL WIDTH			*
		3346+	*				*
		3347+	*	INPUT			*
		3348+	*	* FOR KEYBOARD DATA FILES THE LINE TO SE CONVERTED MUST BE			*
		3349+	*	AT THE ADDRESS POINTED BY GTTEXT			*
		3350+	*	* FOR PROGRAM GENERATED FILES DL4ICS IS USED TO ACCESS EACH			*
		3351+	*	SECTOR OF THE WORK FILE.			*
		3352+	*				*
		3353+	*	OUTPUT			*
		3354+	*	* EACH CONVERTED LINE IS PLACED IN THE LOCATION POINTED TO BY			*
		3355+	*	SDLBUF WHICH IS DEFINIED BY THE CALLING PROGRAM. FOR PGD'S			*
		3356+	*	THE PROPER OUTPUT DEVICE IS DETERMINED AND DLPRNT (PRINTER OR			*
		3357+	*	CRT) OR DCDOUT IS CALLED TO OUTPUT THE LINE.			*
		3358+	*	XR1 AND XR2 ARE SAVED AND RESTORED.			*
		3359+	*				*
		3360+	*	EXTERNAL REFERENCES			*
		3361+	*	* \$INDR1 - CHECK PRECISION OF WORK FILE AND PGD INDICATOR			*
		3362+	*	* \$XRSV - REGISTER STORAGE AREA			*
		3363+	*				*
		3364+	*	EXITS, NORMAL			*
		3365+	*	CONTROL IS RETURNED TO THE BYTE FOLLOWING THE CALL TO SDLIST			*
		3366+	*	IN THE CALLING PROGRAM			*
		3367+	*				*
		3368+	*	EXITS, ERROR			*
		3369+	*	NONE			*
		3370+	*				*
		3371+	*	TABLES/WORKAREAS			*

SDLIST - LIST DATA FILES

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 37	
		3372+	*	NONE				*
		3373+	*					*
		3374+	*	ATTRIBUTES				*
		3375+	*	SDLIST IS REUSABLE				*
		3376+	*					*
		3377+	*	CHARACTER CODE DEPENDENCY				*
		3378+	*	N/A				*
		3379+	*					*
		3380+	*	NOTES				*
		3381+	*	ERROR PROCEDURES				*
		3382+	*	NONE				*
		3383+	*					*
		3384+	*	REGISTER USAGE				*
		3385+	*	XR1 IS USED AS A POINTER TO THE OUTPUT AREA				*
		3386+	*	XR2 IS USED AS A POINTER TO THE INPUT AREA				*
		3387+	*	- AS A BASE REGISTER				*
		3388+	*					*
		3389+	*	SAVED RESTORED AREA				*
		3390+	*	NONE				*
		3391+	*					*
		3392+	*	MODIFICATION CONSIDERATIONS				*
		3393+	*	NONE				*
		3394+	*					*
		3395+	*	REQUIRED MODULES				*
		3396+	*	@SYSEQ - COMMON SYSTEM EQUATES				*
		3397+	*	@FXDEQ - LOCATION OF INDICATORS WITHIN THE NUCLEUS				*
		3398+	*	DCDOUT - CARD PUNCH IOCR				*
		3399+	*	DLPRNT - CRT/PRINTER INTERFACE ROUTINE				*
		3400+	*	C2DEC5 - BINARY TO DECIMAL CONVERSION ROUTINE				*
		3401+	*					*
		3402+	*	OTHER				*
		3403+	*	N/A				*
		3404+	*	*****				*

SDLIST - LIST DATA FILES

ERR LOC				OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 38			
					149A	3406+	SDLIST	EQU *				
149A	34	02	165D			3407+		ST SDL089+@OP1,@XR	SAVE @XR			
149E	34	01	1661			3408+		ST SDL090+@OP1,@BR	SAVE BASE RESISTER			
14A2	34	08	1665			3409+		ST SDL091+@OP1,@ARR	SAVE RETURN ADDRESS			
					14A6	3410+	SDL001	EQU *				
14A6	3C	40	19FE			3411+		MVI SDLBUF+SDLEND,@BLANK	SET LAST FIELD TO BLANKS			
14AA	0C	FE	19FD	19FE		3412+		MVC SDLBUF+SDLED1(SDLMAX),SDLBUF+SDLEND	SET FIELD TO BLANKS			
14B0	C2	02	0F8B			3413+		LA GRLINE-1,@XR	BINARY LINE %UNSER			
14B4	C0	87	136B			3414+		B C2DEC5	CONVERT STATEMENT NUMBER			
14B8	0C	03	1903	13A9		3415+		MVC SDLBUF+3(SDLFOR),C2DVAL	NOVE STATEMENT NUMBER			
14BE	C2	01	1905			3416+		LA SDLBUF+SDLLNG,@BR	POINTER TO OUTPUT AREA			
14C2	C2	02	1B00			3417+		LA SDLBF@,@XR	SET-UP INPUT ADRESS			

SDLIST - LIST DATA FILES

ERR LOC		OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22		PAGE 39
			14C6	3419+	SDL005	EQU *	CHECK ALPHA OR FLOATING POINT		
14C6	3C	00 183D		3420+		MVI SDLSMN,@ZERO	INIT MINUS SIGN IND OFF		1-5
14CA	B8	40 00		3421+		TBN @ZERO(,@XR),SDLTYP	ALPHA DATA ?		1-5
14CD	C0	10 1714		3422+		BT SDL250	GO TO ALPHA OUTPUT		1-5
14D1	B8	10 00		3423+		TBN @ZERO(,@XR),SDLMIN	MINUS SIGN ?		
14D4	F2	90 0A		3424+		JF SDL010	NO		
14D7	3C	60 183D		3425+		MVI SDLSMN,@MINUS	SET ON MINUS SIGN INDICATOR		
14DB	7C	60 00		3426+		MVI @ZERO(,@BR),@MINUS	MOVE MINUS SIGN		
14DE	D2	01 01		3427+		LA @B1(,@BR),@BR	BUMP POINTER TO NEXT SPACE		
14E1	38	02 03D4		3428+	SDL010	TBN \$INDR1,\$PRESN	SHORT PRECISION ?		
14E5	3C	03 16EC		3429+		MVI SDLCTR,SDLSRT-1	SET SHORT PREC CTR		1-3
14E9	F2	90 04		3430+		JF SDL025	IF SHORT, JUMP OVER LONG		1-3
14EC	3C	07 16EC		3431+		MVI SDLCTR,SDLONG-1	SET LONG PREC CTR		1-3



SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 40
				14F0	3433+	SDL025	EQU *	
	14F0	34	01	16E6	3434+		ST SDLSAV,@BR	SAVE BEGINNING ADDRESS
	14F4	68	03	00 00	3435+		MVX 0(SDLNUM,@BR),0(,@XR)	MOVE FIRST DIGIT
	14F8	7A	F0	00	3436+		SBN 0(,@BR),SDLEBC	SET ZONE MASK
	14FB	D2	01	01	3437+		LA @B1(,@BR),@BR	ADVANCE OUTPUT PRINTER
	14FE	3C	87	1511	3438+		MVI SDL035+@Q,@UCB	SET SW -- VALUE = ZERO
	1502	B9	0F	00	3439+		TBF 0(,@XR),SDLDZR	LEADING ZERO ?
	1505	F2	10	04	3440+		JT SDL030	JUMP IF YES
	1508	3C	80	1511	3441+		MVI SDL035+@Q,@NOP	ELSE, SET -- VALUE = NOT ZERO
	150C	C0	87	1666	3442+	SDL030	B SDL100	GET NEXT CHARACTER
	1510	F2	00	11	3443+	SDL035	JC SDL037,*-*	JUMP IF VALUE = ZERO
	1513	68	02	00 00	3444+		MVX @ZERO(SDLZON,@BR),@ZERO(,@XR)	MOVE FIRST DIGIT
	1517	68	03	01 00	3445+		MVX @B1(SDLNUM,@BR),@ZERO(,@XR)	MOVE SECOND DIGIT
	151B	7A	F0	00	3446+		SBN @ZERO(,@BR),SDLEBC	
	151E	7A	F0	01	3447+		SBN @B1(,@BR),SDLEBC	TURN ON ZONE FOR DIGIT
	1521	D2	01	02	3448+		LA SDLTWO(,@BR),@BR	BUMP POINTER
	1524	0F	00	16EC 16EA	3449+	SDL037	SLC SDLCTR(@B1),SDLPL1	DECREMENT PRECISION COUNTER
	152A	C0	01	150C	3450+		BNZ SDL030	NOT ZERO -- CONTINUE
	152E	C0	87	1666	3451+		B SDL100	BUMP @XR PAST EXPONENT
	1532	3D	87	1511	3452+		CLI SDL035+@Q,@UCB	WAS VALUE OF THIS ITEM = ZERO ?
	1536	F2	81	EB	3453+		JE SDL066	YES -- EXIT
	1539	2C	00	16E8 00	3454+		MVC SDLEXP(1),0(,@XR)	MOVE EXPONENT
	153E	36	01	16E4	3455+	SDL040	A SDLMN1,@BR	REDUCE POINTER BY ONE
	1542	7D	F0	00	3456+		CLI @ZERO(,@BR),SDLZRO	CHARACTER ZERO ?
	1545	F2	01	07	3457+		JNE SDL050	NO -- EXIT
	1548	7C	40	00	3458+		MVI @ZERO(,@BR),@BLANK	BLANK OUT ZERO
	154B	C0	87	153E	3459+		B SDL040	CONTINUE CHECKING

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 41
				154F	3461+	SDL050	EQU *			
154F	34	02	1623		3462+		ST SDL065+@OP1,@XR			SAVE INPUT POINTER
				15F4	3463+		USING SDL060,@XR			INFORM ASSEMBLER
1553	C2	02	15F4		3464+		LA SDL060,@XR			SET UP BASE
1557	D2	01	01		3465+		LA @B1(,@BR),@BR			BUMP INPUT POINTER
155A	B4	01	EB		3466+		ST SDLLST(,@XR),@BR			SAVE ENDING ADDRESS
155D	BC	87	0E		3467+		MVI SDL062+@Q(,@XR),@UCB			ASSUME VALUE > 1
1560	B4	01	03		3468+		ST SDL060+@OP1(,@XR),@BR			ONE POSITION TO THE RIGHT
1563	B4	01	05		3469+		ST SDL060+@OP2(,@XR),@BR			SET UP SHIFT FROM POSITION
1566	AF	00	05 F6		3470+		SLC SDL060+@OP2(1,@XR),SDLPL1(,@XR)			REDUCE FOR MOVE
156A	AC	01	09 F2		3471+		MVC SDL061+@OP1(@CADDR,@XR),SDLSAV(,@XR)			SET POINT POSITION
156E	AF	01	EB F2		3472+		SLC SDLLST(@CADDR,@XR),SDLSAV(,@XR)			COMPUTE SIGNIFICANCE
1572	AC	00	01 EB		3473+		MVC SDL060+@Q(1,@XR),SDLLST(,@XR)			* OF DIGITS TO SHIFT
1576	AF	00	01 F6		3474+		SLC SDL060+@Q(1,@XR),SDLPL1(,@XR)			MANTISSE LENGTH
157A	3D	80	16E8		3475+		CLI SDLEXP,SDLC80			CHECK EXPONENT
157E	F2	84	17		3476+		JH SDL053			INTEGER AND FRANCTION

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 42
					3478+*		THIS CODE HANDLES FRACTIONS	7F 123000	.0123	
				1581	3479+SDL052	EQU	*		VARIABLE LABEL	
1581	3C	80	16EC		3480+	MVI	SDLCTR,SDLC80			
1585	AF	00	F8 F4		3481+	SLC	SDLCTR(, @XR), SDLEXP(, @XR) COMPOTE EXCESS 10**0			
1589	AE	00	03 F8		3482+	ALC	SDL060+@OP1(1, @XR), SDLCTR(, @XR) INCREASE SHIFT			
158D	BC	80	0E		3483+	MVI	SDL062+@Q(, @XR), @NOP SET SWITCH			
1590	AC	00	F4 F8		3484+	MVC	SDLEXP(@B1, @XR), SDLCTR(, @XR) MOVE EXPONENT			
1594	C0	87	16FD		3485+	B	SDL200 GO CHECK PRECISION EXPONENT			
				1598	3487+SDL053	EQU	*			
1598	AF	00	F4 F7		3488+	SLC	SDLEXP(, @XR), SDLMOD(, @XR) COMPUTE EXPONENT MODULO 80			
159C	AE	00	09 F4		3489+	ALC	SDL061+@OP1(1, @XR), SDLEXP(, @XR) * POSTION OF POINT			
				15A0	3490+SDL054	EQU	*			
15A0	AF	00	01 F4		3491+	SLC	SDL060+@Q(1, @XR), SDLEXP(, @XR) * RIGHT FOR POINT			
15A4	AD	00	EB F4		3492+	CLC	SDLLST(1, @XR), SDLEXP(, @XR) CHECK SIGNIFICANCE EXPONENT			
15A8	F2	84	49		3493+	JH	SDL060 FIXED POINT			
15AB	F2	81	72		3494+	JE	SDL065 INTEGER -- EXIT			

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 43
	15AE	AE	01 EB EE		3496+	ALC	SDLLST(@CADDR,@XR),SDLPL2(,@XR) COMPUTE CHOICE POINT			
	15B2	0D	00 16DF 16E8		3497+	CLC	SDLLST(@B1),SDLEXP			
	15B8	F2	04 09		3498+	JNH	SDL055			
	15BB	7C	F0 00		3499+	MVI	@ZERO(,@BR),SDLZRO SET LOW ORDER ZERO			
	15BE	D2	01 01		3500+	LA	1(,@BR),@BR ADJUST OUTPUT POINTER			
	15C1	F2	87 5C		3501+	J	SDL065 EXIT			
	15C4	7C	C5 00		3503+SDL055	MVI	@ZERO(,@BR),SDLEXE MOVE E VALUE			
	15C7	AF	00 F4 EB		3504+	SLC	SDLEXP(,@XR),SDLLST(,@XR) COMPUTE EXPONENT			
	15CB	AE	00 F4 EE		3505+	ALC	SDLEXP(,@XR),SDLPL2(,@XR) ADJUST			
	15CF	C2	02 16E7		3506+SDL056	LA	SDLCON,@XR SET UP INPUT			
	15D3	C0	87 136B		3507+	B	C2DEC5 CONVERT TO EBCDIC			
	15D7	3D	F0 13A8		3508+	CLI	C2DVAL-1,SDLZRO ZERO ?			
	15DB	F2	81 0B		3509+	JE	SDL057			
	15DE	4C	01 02 13A9		3510+	MVC	SDLTWO(@CADDR,@BR),C2DVAL MOVE 2 DIGITS			
	15E3	D2	01 03		3511+	LA	SDLTHR(,@BR),@BR BUMP TO LAST ENTRY			
	15E6	F2	87 37		3512+	J	SDL065 EXIT			
	15E9	4C	00 01 13A9		3514+SDL057	MVC	@B1(@B1,@BR),C2DVAL MOVE 1 DIGIT			
	15EE	D2	01 02		3515+	LA	SDLTWO(,@BR),@BR BUMP TO LAST ENTRY			
	15F1	F2	87 2C		3516+	J	SDL065 EXIT			

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 44
	15F4	0C	00	0000	0000	3518+SDL060	MVC *-*( @VQ ), *-*			SHIFT RIGHT
	15FA	3C	4B	0000		3519+SDL061	MVI *-*,SDLPNT			SET DECIMAL POINT
	15FE	D2	01	01		3520+	LA 1( ,@BR ),@BR			INCREMENT POINTER
	1601	F2	00	1C		3521+SDL062	JC SDL065, *-*			GREATER THAN ONE -- JUMP
	1604	B5	01	09		3522+	L SDL061+@OP1( ,@XR ),@BR			PICK UP BEGIN ADDRESS
	1607	D2	01	01		3523+SDL063	LA @B1( ,@BR ),@BR			BUMP TO NEXT POSITION
	160A	BD	00	F4		3524+	CLI SDLEXP( ,@XR ),@ZERO			HAVE ENOUGH 0 BEEN INSERTED ?
	160D	F2	81	0A		3525+	JE SDL064			YES -- EXIT
	1610	7C	F0	00		3526+	MVI 0( ,@BR ),SDLZRO			SET ZERO
	1613	AF	00	F4 F6		3527+	SLC SDLEXP( ,@XR ),SDLPL1( ,@XR )			REDUCE EXPONENT
	1617	E0	87	13		3528+	B SDL063( ,@XR )			CONTINUE
	161A	B5	01	03		3530+SDL064	L SDL060+@OP1( ,@XR ),@BR			GET TO END OF DATA
	161D	D2	01	01		3531+	LA 1( ,@BR ),@BR			BUMP TO BLANK
	1620	C2	02	0000		3532+SDL065	LA *-*,@XR			RESTORE INPUT POINTER
					1624	3533+SDL066	EQU *			
	1624	38	20	03D4		3534+	TBN \$INDR1,\$PGMDT			PROGRAM GENERATED ?
	1628	C0	10	179B		3535+	BT SDL300			YES -- GO OUTPUT
	162C	34	02	03C7		3536+	ST \$XRSAB,@XR			SAVE POINTER FOR TEST
	1630	0D	00	03C7 12D1		3537+	CLC \$XRSAB,GRTEND			END OF LINE ?
	1636	F2	82	08		3538+	JL SDL075			CONTINUE EXECUTION
	1639	34	01	16E6		3539+	ST SDLSAB,@BR			CURRENT POINTER
	163D	C0	87	165A		3540+	B SDL089			EXIT
					1641	3542+SDL075	EQU *			
	1641	7C	6B	00		3543+	MVI @ZERO( ,@BR ),@COMMA			MOVE COMMA TO OUTPUT FIELD
	1644	D2	01	01		3544+	LA @B1( ,@BR ),@BR			BUMP OUTPUT POINTER
	1647	34	01	16E6		3545+	ST SDLSAB,@BR			SAVE ADDRESS
	164B	C0	87	1666		3546+	B SDL100			GET NEXT CHARACTER
	164F	C0	87	14C6		3547+	B SDL005			CHECK TYPE OF DATA
	1653	7C	F0	00		3548+SDL080	MVI @ZERO( ,@BR ),SDLZRO			SET TO ZERO
	1656	C0	87	1624		3549+	B SDL066			CONTINUE OUTPUT
	165A	C2	02	0000		3551+SDL089	LA *-*,@XR			RESTORE @XR
	165E	C2	01	0000		3552+SDL090	LA *-*,@BR			RESTORE BASE REGISTER
	1662	C0	87	0000		3553+SDL091	B *-*			RETURN

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 45
				1666	3555+	SDL100	EQU *			GET NEXT CHARACTER
1666	34	08	16AB		3556+		ST SDL105+@OP1,@ARR			SAVE RETURN ADDRESS
166A	E2	02	01		3557+		LA @B1(,@XR),@XR			INCREMENT POINTER
166D	34	02	03C7		3558+		ST \$XRSAB,@XR			SAVE CURRENT POINTER
1671	0F	01	03C7	16EE	3559+		SLC \$XRSAB,SDLED@(@CADDR)			COMPUTE CURRENT BUFFER LENGTH
1677	F2	01	2E		3560+		JNZ SDL105			END OF BUFFER ?
167A	C0	87	103D		3561+		B DL4ICS			RETRIEVE DISK BLOCK
167E	16F5			167F	3562+		DC AL2(SDLDPL)			ADDRESS OF DPL
1680	C0	87	0025		3563+		B \$DISKN			SO ISSUE WAIT
1684	057F			1685	3564+		DC AL2(\$WAITF)			WAIT FUNCTION
1686	C2	02	1900		3565+		LA GFIBF1,@XR			INPUT POINTER
168A	0E	00	16F7	16EA	3566+		ALC SDLDPL+@DSAD(1),SDLPL1			BUMP SECTOR COUNT
1690	38	20	03D4		3567+	SDL102	TBN \$INDR1,\$PGMDT			PROGRAM GENERATED ? 1-2
1694	F2	90	11		3568+		JF SDL105			IF NOT, JUMP OVER EOS CHECK 1-2
1697	BD	1C	00		3569+		CLI 0(,@XR),@EOF			IS FIRST BYTE EOF ? 1-2
169A	F2	01	0B		3570+		JNE SDL105			IF NOT, JUMP TO CONTINUE 1-2
169D	36	01	16E4		3571+		A SDLMN1,@BR			DECR POINTER OVER COMMA 1-2
16A1	BC	1C	01		3572+		MVI 1(,@XR),@EOF			SET NEXT BYTE TO EOF ALSO 1-2
16A4	C0	00	179B		3573+	SDL104	BC SDL300,*-*			GO OUTPUT -- FINISHED 1-3
16A5					3574+		ORG SDL104+@Q			INIT 1-3
16A5	80			16A5	3575+		DC AL1(@NOP)			* TO NOP 1-3
16A8					3576+		ORG *+2			1-3
16A8	C0	87	0000		3577+	SDL105	B *-*			RETURN



SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 46
				16AC	3579+	SDL150	EQU *			SDLIST OUTPUT INTERFACE
	16AC	34 08	16DD		3580+		ST SDL180+@OP1,@ARR			SAVE RETURN ADDRESS
	16B0	3D 00	0000		3581+		CLI KLIDVT,KLIMK1			CARD OUTPUT ONLY ?
	16B4	F2 81	0D		3582+		JE SDL170			YES -- GO PUNCH CARDS
	16B7	C0 87	0000		3583+		B DLPRNT			PRINTER -- CRT INTERFACE
	16BB	16F1		16BC	3584+		DC AL2(SDLPPL)			PRINTER PARAMETER LIST
	16BD	38 00	0000		3585+	SDL160	TBN KLIDVT,KLIMK1			CARD OUTPUT ?
	16C1	F2 90	16		3586+		JF SDL180			NO -- CONTINUE
	16C4	C0 87	0000		3587+	SDL170	B DCDOUT			GO OUTPUT CARD
	16C8	16F1		16C9	3588+		DC AL2(SDLPPL)			PRINT PARAMETER LIST
	16CA	C0 87	0000		3589+		B DCDOUT			ISSUE WAIT FUNCTION
	16CE	057F		16CF	3590+		DC AL(@CADDR)(\$WAITF)			WAIT FUNCTION ADDRESS
	16D0	3C 40	195F		3591+		MVI SDLBUF+KLICWD-1,@BLANK			SET BUFFER TO BLANKS - ONLY IF
	16D4	0C 5D	195E 195F		3592+		MVC SDLBUF+KLICWD-2,SDLBUF+KLICWD-1(KLICWD-2) *			PUNCHING
	16DA	C0 87	0000		3593+	SDL180	B *-*			RETURN

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 47
16DE			16DF	3595+SDLLST	DS	CL2	SAVE AREA FOR LENGTH
16E0			16E0	3596+SDLACT	DS	CL1	COUNT OF ALPHA CHARACTERS
16E1	0002		16E2	3597+SDLPL2	DC	IL2'2'	PLUS 2
16E3	FFFF		16E4	3598+SDLMN1	DC	IL2'-1'	MINUS ONE
16E5			16E6	3599+SDLSAV	DS	CL2	BEGINNING OF DATA
16E7	00		16E7	3600+SDLCON	DC	IL1'0'	HEADER FOR EXPONENT
16E8			16E8	3601+SDLEXP	DS	CL1	EXPONENT
16E9	0001		16EA	3602+SDLPL1	DC	IL2'1'	PLUS ONE
16EB	80		16EB	3603+SDLMOD	DC	XL1'80'	MODULO FOR EXPONENT
16EC			16EC	3604+SDLCCTR	DS	CL1	PRECISION INDICATOR
16ED	1A00		16EE	3605+SDLED@	DC	AL(@CADDR)(GFIBF1+256)	END OF BUFFER (PGD)
16EF	1900		16F0	3606+SDLOT@	DC	AL2(SDLBUF)	ADDRESS OF OUTPUT BUFFER
			00FD	3608+SDLED1	EQU	253	
			00FE	3609+SDLEND	EQU	254	
			0012	3610+SDLC18	EQU	18	MAXIMUM COUNT
			007D	3611+SDLQUO	EQU	X'7D'	QUOTE
			1B00	3612+SDLBF@	EQU	GRTEXT	LINE BUFFER ADDRESS
			0004	3613+SDLSRT	EQU	4	SHORT PRECISION LENGN
			0010	3614+SDLMIN	EQU	X'10'	STATUS BYTE MINUS SIGN
			0002	3615+SDLZON	EQU	02	ZONE TO NUMERIC
			0006	3616+SDLBEG	EQU	6	LENGTH OF SDF INFO
			0003	3617+SDLNUM	EQU	03	NUMERIC TO NUMERIC
			00F0	3618+SDLEBC	EQU	X'F0'	ZONED DECIMAL REPRESENTATION
			0002	3619+SDLTWO	EQU	2	INCREMENT
			0008	3620+SDLONG	EQU	8	LONG PRECISION
			000F	3621+SDLDZR	EQU	X'0F'	MASK FOR LEADING ZERO
			00F0	3622+SDLZRO	EQU	X'F0'	BITS OFF INDICATE ZERO DIGIT
			004B	3623+SDLPNT	EQU	C'.'	DECIMAL POINT
			00C5	3624+SDLEXE	EQU	C'E'	EXPONENT
			0003	3625+SDLTHR	EQU	3	DISPLACEMENT OF THREE
			0080	3626+SDLC80	EQU	X'80'	10**0
			0004	3627+SDLFOR	EQU	4	DISPLACEMENT OF FOUR
			00FF	3628+SDLMAX	EQU	255	MAXIMUM LINE SIZE
			0005	3629+SDLLNG	EQU	5	LENGTH OF SDF INFO
			0040	3630+SDLTYP	EQU	X'40'	ALPHA INDICATOR
			0007	3631+SDLLNE	EQU	7	BYPASS SDF INFO ET AL
				3632+*			
				3633+*SDLPPL \$PPL	FUNC-@PRETR,CADDR-SDLBUF		
			16F1	3634+SDLPPL	EQU	*	
16F1	C0		16F1	3635+	DC	AL1(@PRETR)	
16F2	00		16F2	3636+	DC	AL1(*-*)	
16F3	1900		16F4	3637+	DC	AL2(SDLBUF)	
				3638+***	END OF EXPANSION ***		
				3640+*SDLDPL \$DPL	FUNC-@DGET,DADDR-@WSTBL,CNT-SDLONE,CADDR-GFIBF1		
			16F5	3641+SDLDPL	EQU	*	
16F5	01		16F5	3642+	DC	AL1(@DGET)	
16F6	0503		16F7	3643+	DC	AL2(@WSTBL)	
16F8	01		16F8	3644+	DC	AL1(SDLONE)	
16F9	1900		16FA	3645+	DC	AL2(GFIBF1)	
				3646+***	END OF EXPANSION ***		
			0001	3648+SDLONE	EQU	1	ONE
16FB			16FC	3649+SDLWID	DS	CL2	LOGICAL WIDTH
16FB				3650+	ORG	*-2	RESET LOCATION COUNTER



SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	49
16FD	BD	02	F4		3653+SDL200	CLI	SDLEXP(,@XR),SDLTWO			EXP > TWO(2) = FLOATING	
1700	E0	04	00		3654+	BNH	SDL060(,@XR)			CHOOSE FIXED	
1703	7C	C5	00		3655+	MVI	0(,@BR),SDLEXE			SET EXPONENT	
1706	7C	60	01		3656+	MVI	1(,@BR),C'-'			SET MINUS SIGN	
1709	AE	00	F4	EB	3657+	ALC	SDLEXP(,@XR),SDLLST(,@XR)			VALUE FOR PRINTING	
170D	D2	01	01		3658+	LA	1(,@BR),@BR			PTR = PTR + 1;	
1710	C0	87	15CF		3659+	B	SDL056			CONTINUE --	

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 50
				1714	3661+	SDL250 EQU *	OUTPUT ALPHA STRING	
1714	3C	12	16E0		3662+	MVI SDLACT,SDLC18	SET MAXIMUM LIMIT	
					3663+	* @BR - POINTS TO OUTPUT AREA		
					3664+	* @XR - POINTS TO INPUT LINE BUFFER		
					3665+	*		
1718	7C	7D	00		3666+	MVI @ZERO(,@BR),SDLQUO	MOVE BEGINNING QUOTE	
171B	D2	01	01		3667+	LA @B1(,@BR),@BR	POINTER + 1 --> POINTER	
171E	34	01	1767		3668+	ST SDL270+@OP1,@BR	SAVE CURRENT LOCATION	
1722	C0	87	1666		3669+	SDL251 B SDL100	GET NEXT CHARACTER	
1726	BD	40	00		3670+	CLI @ZERO(,@XR),@BLANK	CHARACTER BLANK ?	
1729	F2	01	3F		3671+	JNE SDL280	NO	
172C	7C	40	00		3672+	MVI @ZERO(,@BR),@BLANK	MOVE A BLANK TO BUFFER	
172F	D2	01	01		3673+	LA @B1(,@BR),@BR	POINTER + 1 --> POINTER	
1732	0F	00	16E0 16EA		3674+	SLC SDLACT(@B1),SDLPL1	DECREMENT COUNT	
1738	F2	81	29		3675+	JZ SDL270	EXIT	
173B	C0	87	1722		3676+	B SDL251	CONTINUE	
173F	C0	87	1666		3677+	SDL255 B SDL100	AT NEXT CHARACTER	
1743	BD	40	00		3678+	CLI @ZERO(,@XR),@BLANK	CHARACTER BLANK	
1746	F2	01	22		3679+	JNE SDL280	LEAVE SWITCH ON	
1749	F2	00	08		3680+	SDL256 JC SDL257,*-*	SWITCH	
174C	34	01	1767		3681+	ST SDL270+@OP1,@BR	SAVE CURRENT ADDRESS	
1750	3C	87	174A		3682+	MVI SDL256+@Q,@UCB	SET SWITCH ON	
1754	7C	40	00		3683+	SDL257 MVI @ZERO(,@BR),@BLANK	MOVE A BLANK TO BUFFER	
1757	D2	01	01		3684+	LA @B1(,@BR),@BR	POINTER + 1 --> POINTER	
175A	0F	00	16E0 16EA		3685+	SLC SDLACT(@B1),SDLPL1	DECREMENT COUNT	
1760	C0	01	173F		3686+	BNZ SDL255	CONTINUE	
1764	C2	01	0000		3687+	SDL270 LA *-*,@BR	RESTORE POINTER	
1768	F2	87	25		3688+	J SDL285	GO TO WINDUP	
				176B	3690+	SDL280 EQU *		
176B	3C	80	174A		3691+	MVI SDL256+@Q,@NOP	TURN SWITCH FOR OFF	
176F	6C	00	00 00		3692+	MVC @ZERO(@B1,@BR),@ZERO(,@XR)	MOVE CHARACTER TO OUTPUT	
1773	D2	01	01		3693+	LA @B1(,@BR),@BR	BUMP POINTER	
1776	0F	00	16E0 16EA		3694+	SLC SDLACT(@B1),SDLPL1	DECREMENT COUNT	
177C	BD	7D	00		3695+	CLI @ZERO(,@XR),SDLQUO	CHARACTER QUOTE ?	
177F	F2	01	06		3696+	JNE SDL281	NO --	
1782	7C	7D	00		3697+	MVI @ZERO(,@B1),SDLQUO	MOVE QUOTE	
1785	D2	01	01		3698+	LA @B1(,@BR),@BR	BUMP POINTER	
1788	3D	00	16E0		3699+	SDL281 CLI SDLACT,@ZERO	COUNT EQUAL ZERO ?	
178C	C0	01	173F		3700+	BNE SDL255	NO -- CONTINUE	
1790	7C	7D	00		3701+	SDL285 MVI @ZERO(,@BR),SDLQUO	MOVE ENDING QUOTE	
1793	D2	01	01		3702+	LA @B1(,@BR),@BR	BUMP COUNTER	
1796	C0	87	1624		3703+	B SDL066	GO CHECK FILE TYPE	

SDLIST - LIST DATA FILES

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 10/06/22 PAGE 51
					3705+*			
					3706+*		PROGRAM GENERATED FILES	
					3707+*			
179A				179A	3708+	DS	CL1	EOS FOR SLLINE
				179B	3709+SDL300	EQU	*	HANDLE OUT PGM GENERATED LINE
179B	34	01	183F		3710+	ST	SDLWRK,@BR	SAVE CURRENT POSITION
179F	0F	01	183F 16F0		3711+	SLC	SDLWRK(@CADDR),SDLOT@	COMPUTE CURRENT LENGTH
17A5	0D	01	183F 16FC		3712+	CLC	SDLWRK(@CADDR),SDLWID	GREATER THAN LOGICAL WIDTH ?
17AB	F2	04	4A		3713+	JNH	SDL340	CONTINUE -- CONVERSION
17AE	34	01	183F		3714+	ST	SDLWRK,@BR	COMPUTE CURRENT POSITION
17B2	3D	00	183D		3715+	CLI	SDLSMN,@ZERO	MINUS SIGN INDICATOR ON ?
17B6	F2	81	06		3716+	JE	SDL305	NO -- GO COMPUTE LENGTH
17B9	0E	00	183F 16EA		3717+	ALC	SDLWRK(1),SDLPL1	INCR NUMBER OF PLACES BY ONE
17BF	0F	01	183F 16E6		3718+SDL305	SLC	SDLWRK(@CADDR),SDLSAV	COMPUTE LENGTH
17C5	0C	00	17D8 183F		3719+	MVC	SDL310+@Q(1),SDLWRK	SET-UP LENGTH
17CB	0C	00	17F4 183F		3720+	MVC	SDL330+@Q(1),SDLWRK	*
17D1	0C	00	17E4 183F		3721+	MVC	SDL320+@Q(1),SDLWRK	SET UP LENGTH
17D7	1C	00	11EC 00		3722+SDL310	MVC	SDLHLD(1),0(,@BR)	MOVE OVERFLOW
17DC	36	01	16E4		3723+	A	SDLMN1,@BR	DECREMENT POINTER
17E0	7C	40	01		3724+	MVI	1(,@BR),@BLANK	SET BLANK
17E3	5C	00	00 01		3725+SDL320	MVC	0(@VQ,@BR),1(,@BR)	SET FIELD TO BLANKS
17E7	C0	87	16AC		3726+	B	SDL150	OUTPUT LINE
17EB	C2	01	1900		3727+	LA	SDLBUF,@BR	BEGINNING OF BUFFER
17EF	36	01	183F		3728+	A	SDLWRK,@BR	INDEX INTO BUFFER
17F3	4C	00	00 11EC		3729+SDL330	MVC	0(@VQ,@BR),SDLHLD	MOVE FIELD TO BUFFER
17F8	BD	1C	01		3730+SDL340	CLI	1(,@XR),@EOF	END OF FILE ?
17FB	C0	01	1641		3731+	BNE	SDL075	NO -- CONTINUE
17FF	0C	00	16F2 183F		3732+	MVC	SDLPPL+@PRCNT,SDLWRK	SET PPL LENGTH
1805	C0	87	16AC		3733+	B	SDL150	OUTPUT DATA
1809	C0	87	165A		3734+	B	SDL089	EXIT --
				180D	3736+SDLPGM	EQU	*	PGM DATA FILE ENTRY POINT
180D	34	08	1665		3737+	ST	SDL091+@OP1,@ARR	SAVE RETURN ADDRESS
1811	C2	02	19FF		3738+	LA	GFIBF1+255,@XR	INITIALIZATION VALUE
1815	C0	87	1666		3739+	B	SDL100	INITIALIZE BUFFER
1819	3C	87	16A5		3740+	MVI	SDL104+@Q,@UCB	SET BC AFTER FIRST TIME 1-3
181D	3C	00	1A00		3741+	MVI	GFIBF1+@SCTS@ZERO	SET BUFFER END + 1 = 0 1-3
1821	BD	1C	00		3742+	CLI	@ZERO(,@XR),@EOF	TEST FOR AN EMPTY FILE ?
1824	F2	01	08		3743+	JNE	SDL345	BR IF NOT EMPTY FILE
1827	3C	2F	03CD		3744+	MVI	\$CAERR,@E226	SET EMPTY FILE ERROR MSG #
182B	C0	87	0469		3745+	B	\$CAERK	BR TO ERROR ROUTINE
182F	C2	01	1900		3746+SDL345	LA	SDLBUF,@BR	SET-UP OUTPUT ADDRESS
1833	0C	00	16F2 16FC		3747+	MVC	SDLPPL+@PRCNT,SDLWID	SET FINAL WIDTH
1839	C0	87	14C6		3748+	B	SDL005	GO -- CONTINUE
				11EC	3750+SDLHLD	EQU	GRABIT+90	LINE OVERFLOW AREA
183D				183D	3751+SDLSMN	DS	XL1	IND FOR MINUS SIGN, X'60' --> ON
183E				183F	3752+SDLWRK	DS	CL2	COMPUTED LINE LENGTH
					3753+*****			*****
					3754+***		END OF SDLIST	***
					3755 *			
					3756 *	\$CANI		



## SCANIT - DELIMETER SCAN MODULE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 10/06/22 PAGE 52
		3758+		*****	*
		3759+	5703-XM1	COPYRIGHT IBM CORP. 1970	*
		3760+		REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083	*
		3761+			*
		3762+		*****	*
		3763+		*STATUS	*
		3764+		VERSION 1 MODIFICATION 0	*
		3765+			*
		3766+		*FUNCTION	*
		3767+		THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND	*
		3768+		RETURN A POINTER TO THE FIRST CHARACTER THAT'S NOT A DELIMITER.	*
		3769+			*
		3770+		*ENTRY POINTS	*
		3771+		* THE ENTRY POINT IS SCANIT.	*
		3772+		* THE CALLING SEQUENCE IS AS FOLLOWS:	*
		3773+		B SCANIT	*
		3774+		WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE	*
		3775+		EXAMINED.	*
		3776+			*
		3777+		*INPUT	*
		3778+		NONE	*
		3779+			*
		3780+		*OUTPUT	*
		3781+		NONE	*
		3782+			*
		3783+		*EXTERNAL REFERENCES	*
		3784+		\$CAERR - ERROR CODE SAVE AREA	*
		3785+			*
		3786+		*EXITS, NORMAL	*
		3787+		NORMAL EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO	*
		3788+		SCANIT IN THE CALLING ROUTINE. THE PSR (REGISTER 4) WILL CONTAIN	*
		3789+		A ZERO IF NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR	*
		3790+		MORE DELIMITERS WERE SCANNED.	*
		3791+			*
		3792+		*EXITS, ERROR	*
		3793+		ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO	*
		3794+		SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW	*
		3795+		CONDITION.	*
		3796+			*
		3797+		*TABLES/WORKAREAS	*
		3798+		* SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED	*
		3799+		* SCAMMA - LOC WHERE SCACOM MAY BE MOVED IF ONE COMMA IS ALSO	*
		3800+		TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO SCAMMA	*
		3801+		INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIMITERS.	*
		3802+			*
		3803+		*ATTRIBUTES	*
		3804+		RELOCATABLE AND RE-USABLE	*
		3805+			*
		3806+		*CHARACTER CODE DEPENDENCY	*
		3807+		THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
		3808+		INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
		3809+			*
		3810+		*NOTES	*
		3811+		ERROR PROCEDURES	*
		3812+		THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE	*
		3813+		A CARRIAGE-RETURN CODE FOLLOWS A COMMA. UPON RETURN TO THE	*

## SCANIT - DELIMETER SCAN MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 10/06/22 PAGE 53

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3814+*      CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE
3815+*      ERROR CODE IS SET IN $CAERR, AND MG WILU BE POINTING TO THE
3816+*      CARRIAGE-RETURN CHARACTER.
3817+*
3818+*      REGISTER USAGE
3819+*      REGISTER 2 (@XR) IS USED AS A POINTER ACROSS THE AREA BEING
3820+*      SCANNED FOR DELIMITERS.
3821+*
3822+*      SAVED/RESTORED AREAS
3823+*      UPON ENTRY TO SCANIT, REGISTER 8 (@ARR) IS SAVED AND USED AS
3824+*      THE RETURN ADDRESS.
3825+*
3826+*      MODIFICATION CONSIDERATIONS
3827+*      NONE
3828+*
3829+*      REQUIRED MODULES
3830+*      * @SYSEQ - COMMON SYSTEM EQUATES
3831+*      * @FXDEQ - FIXED NUCLEUS ADDRESSES EQUATES
3832+*
3833+*      OTHER
3834+*      SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS
3835+*      MOVED TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.
3836+*      THE INSTRUCTION TO DO THIS IS AS FOLLOWS:
3837+*      MVI    SCAMMA,SCACOM
3838+*
3839+*      TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE
3840+*      MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:
3841+*      MVI    SCAMMA,SCACOF
3842+*
3843+*****
3845+*
3846+*      EQUATES USED IN THIS SUBROUTINE
3847+*
0001 3848+SCAINC EQU    1      TO INCREMENT POINTER
0001 3849+SCACOM EQU    @BNE   SWITCH TO ALLOW SCANNING COMMA
0087 3850+SCACOF EQU    @UCB   SWITCH TO SET OFF THE INDICATON
3851+*      * FOR SCANNING A COMMA
1840 3852+SCANIT EQU    *      ENTRY POINT TO THIS SUBROUTINE
1840 34 08 187C 3853+      ST    SCA500+@OP1,@ARR   SAVE RETURN ADDRESS
1844 34 02 187E 3854+      ST    SCASVE,@XR        SAVE POINTER VALUE
1848 3C 04 03CD 3855+      MVI    $CAERR,@@E110      SET ERROR CODE
184C F2 87 03   3856+      J      SCA200          GO TO PROCESS
184F E2 02 01   3857+SCA100 LA    SCAINC(,@XR),@XR   INCREMENT POINTER TO NEXT CHAR
1852 BD 40 00   3858+SCA200 CLI  0(,@XR),@BLANK     IS THIS CHAR BLANK ?
1855 C0 81 184F 3859+      BE    SCA100          YES, FETCH NEXT ONE
1859 BD 6B 00   3860+      CLI  0(,@XR),@COMMA      IS IT A COMMA ?
185C F2 87 10   3861+SCA250 JC    SCA400,@UCB        UCS TO RETURN -- OR NOP IF
3862+*      * SCAMMA IS ACTIVE AND CHAR
185F E2 02 01   3863+SCA300 LA    SCAINC(,@XR),@XR   INCREMENT POINTER TO NEXT CHAR
1862 BD 40 00   3864+      CLI  0(,@XR),@BLANK     IS THIS CHAR A BLANK ?
1865 C0 81 185F 3865+      BE    SCA300          YES, FETCH NEXT ONE
1869 BD 1F 00   3866+      CLI  0(,@XR),@EOS+1      IS THIS EOS ?
186C F2 82 0A   3867+      JL    SCA500          IF NOT, SKIP ERROR ROUTINE
186F 34 02 1880 3868+SCA400 ST    SCACNT,@XR        SAVE NEW POINTER VALUE

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SCANIT - DELIMETER SCAN MODULE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	54
1873	0F	01	1880	187E	3869+	SLC	SCACNT(2),SCASVE				
					3870+*						
1879	C0	87	0000		3871+SCA500	B	*-*				
				185D	3872+SCAMMA	EQU	SCA250+@Q				
					3873+*						
					3874+*		SAVE AREA				
					3875+*						
187D				187D	3876+SCASV1	EQU	*				
				187E	3877+SCASVE	DS	CL2				
187F				1880	3878+SCACNT	DS	CL2				
					3879+***		END OF SCANIT				***
					3880 *						
					3881 *		\$GFND				

## GFINDN -- BUFFER PRIMER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 55
3883+				*****			
3884+	*	5703-XM1		COPYRIGHT IBM CORP. 1970			*
3885+	*			REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083			*
3886+	*						*
3887+	*			*****			*
3888+	*			STATUS			*
3889+	*			VERSION 1 MODIFICATION 0			*
3890+	*						*
3891+	*			FUNCTION			*
3892+	*			GFINDN IS DESIGNED FOR USE WITH GRABIT IN ACCESSING A GIVEN LINE			*
3893+	*			IN THE WORK FILE. THE LINE NUMBER SUPPLIED TO GFILNO IS SEARCHED			*
3894+	*			ON THROUGH THE FIT. THE DB CONTAINING THIS NUMBER ALONG WITH			*
3895+	*			THE NEXT LOGICAL DB ARE READ INTO CORE, AND GRABIT IS INITIALIZED			*
3896+	*			AND CALLED. CONTROL IS THEN RETURNED TO THE CALLING PROGRAM.			*
3897+	*						*
3898+	*			ENTRY POINTS			*
3899+	*			GFINDN - ENTERED VIA A BRANCH. GFILNO MUST BE PRIMED WITH THE			*
3900+	*			LINE NUMBER TO BE SEARCHED FOR.			*
3901+	*						*
3902+	*			INPUT			*
3903+	*			INPUT TO GFINDN IS THE LINE NUMBER SUPPLIED INTO GFILNO FOR THE			*
3904+	*			SEARCH TO BE MADE.			*
3905+	*						*
3906+	*			OUTPUT			*
3907+	*			OUTPUT IS THE PRIMED BUFFERS FOR GRABIT, WHICH CONTAIN THE DB			*
3908+	*			WHICH CONTAINS THE SPECIFIED LINE NUMBER AND THE NEXT LOGICAL			*
3909+	*			DB. (DATA BLOCK)			*
3910+	*						*
3911+	*			EXTERNAL REFERENCES			*
3912+	*			\$\$FITS - CORE ADDRESS OF THE FILE INDEX TABLE (FIT)			*
3913+	*			DL4ICS - FOUR TRACK LOGICAL DISK IOCS			*
3914+	*			GRABIT - DISK FILE LINE RETRIEVER			*
3915+	*			GRSRDA - DADDR SAVE AREA PRIMED FOR GRABIT			*
3916+	*			GRWHAT - GRABIT INDR			*
3917+	*			GRAFRA - BUFFER ADDR FOR GRABIT			*
3918+	*						*
3919+	*			EXITS, NORMAL			*
3920+	*			NEXT SEQUENTIAL INSTRUCTION AFTER CALL FROM USING PROGRAM.			*
3921+	*						*
3922+	*			EXITS, ERROR			*
3923+	*			N/A			*
3924+	*						*
3925+	*			TABLES/WORK AREAS			*
3926+	*			WORK AREAS AND DPL'S ARE LOCATED AT END OF MODULE.			*
3927+	*						*
3928+	*			ATTRIBUTES			*
3929+	*			REUSABLE			*
3930+	*						*
3931+	*			CHARACTER CODE DEPMENCY			*
3932+	*			CHARACTER CODE DEPENDENCY CLASS - A			*
3933+	*			THE OPERATION OF THIS MOMLE DOES NOT DEPEND UPON A PAATICULAO			*
3934+	*			INTERNAL REPRESENTATION OR THE EXTERNAL CNANATTEN SET.			*
3935+	*						*
3936+	*			NOTES			*
3937+	*			ERROR PROCEDURES			*
3938+	*			N/A			*

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	10/06/22	PAGE 56	
			3939+	*					*
			3940+	*	REGISTER USAGE				*
			3941+	*	INDEX REGISTER 1 (@BR) IS SAVED AND RESTORED AND USED AS A				*
			3942+	*	BASE REGISTER DURING EXECUTION. INDEX REGISTER 2 (@XR) IS				*
			3943+	*	NOT SAVED OR RESTORED BUT IT IS USED TO INDEX THROUGH FIT				*
			3944+	*	IT SEARCHING FOR LINE NUMBER.				*
			3945+	*					*
			3946+	*	SAVED/RESTORED AREAS				*
			3947+	*	N/A				*
			3948+	*					*
			3949+	*	MODIFICATION CONSIDERATIONS				*
			3950+	*	\$FINDN IS INTERDEPENDENT WITH GRABIT (IE. WHEN PRIMING				*
			3951+	*	SPECIFIC FIELDS IN GRABIT). ALSO, NOTE 'OTHER'.				*
			3952+	*					*
			3953+	*	REQUIRED MODULES				*
			3954+	*	@SYSEQ - COMMON SYSTEM SOFTWARE EQUATES				*
			3955+	*	@CANEQ - COMMON CORE LOCATION EQUATES OUTSIDE NUCLEUS				*
			3956+	*	DL4ICS - FOUR TRACK LOGICAL DISK IOCS				*
			3957+	*	GRABIT - FILE LINE RETRIEVER				*
			3958+	*					*
			3959+	*	OTHER				*
			3960+	*	GFINDN CAN BE FORCED TO DETECT THAT FIT DB'S ARE NEVER CON-				*
			3961+	*	TIGUOUS BY MOVING A @NOP TO LABEL GFI200 PLUS @Q.				*
			3962+	*					*
			3963+	*	*****				*

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE 57
					3965+	*****				
					3966+	*				
					3967+		GFNON MODULE EQUATES			
					3968+	*				
					3969+	*****				
				0001	3971+	GFICT1 EQU	1			COUNT CODE 1
				0002	3972+	GFICT2 EQU	2			COUNT CODE 2
					3973+	*				
				0000	3974+	GFIDS0 EQU	0			DISPLACEMENT OF 0
				0001	3975+	GFIDS1 EQU	1			DISPLACEMENT OF 1
				0002	3976+	GFIDS2 EQU	2			DISPLACEMENT OF 2
				0003	3977+	GFIDS3 EQU	3			DISPLACEMENT OF 3
				0004	3978+	GFIDS4 EQU	4			DISPLACEMENT OF 4
				0005	3979+	GFIDS5 EQU	5			DISPLACEMENT OF 5
				0008	3980+	GFIDS8 EQU	8			DISPLACEMENT OF 8
					3981+	*				
				0001	3982+	GFILN1 EQU	1			LENGTH CODE 1
				0002	3983+	GFILN2 EQU	2			LENGTH OF 2
					3984+	*				
				1900	3985+	GRBFR1 EQU	GFIBF1			ADDR OF FIRST CORE BUFFER
					3986+	*				
				1D00	3987+	GFITAD EQU	\$\$FITS			ADDR OF FIT IN CORE
					3988+	*				
				1D08	3989+	GFINTY EQU	GFITAD+GFIDS8			ADDR FIRST ENTRY IN FIT
					3990+	*				
				0003	3991+	GFIDTA EQU	3			ADDR FIRST FIT DATA SECTOR
					3992+	*				
					3993+	*****				



## GFINDN -- BUFFER PRIMER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER	15,	MOD	00	10/06/22	PAGE	58
					3995+	*****	*****							
					3996+	*								
					3997+		INIT REGS FOR GCLEAR AND SAVE REGS FOR CALLING ROUTINE							
					3998+	*								
					3999+	*****	*****							
					4000+	*								
					4001+	*GFINDN	ENTER BASE=GFIBSE,EXIT=GFIND,@BR,@ARR							
				188C	4002+	USING	GFIBSE,@BR							
				1881	4003+	GFINDN	EQU *							
							MODULE ENTRY POINT							
1881	34	01	18E2		4004+	ST	GFIND0+@OP1,@BR							
1885	C2	01	188C		4005+	LA	GFIBSE,@BR							
1889	74	08	5A		4006+	ST	GFIND2+@OP1(@BR),@ARR							
					4007+	*								
					4008+		SEARCH FILE INDEX TABLE FOR NUMBER IN GFLINO							
					4009+	*								
				188C	4010+	GFIBSE	EQU *							
188C	C2	02	1D08		4011+	LA	GFINTY,@XR							
					4012+	*								
1890	E2	02	04		4013+	GFI100	LA GFIDS4(@XR),@XR							
					4014+	*								
1893	9D	01	02 5C		4015+	GFI150	CLC GFIDS2(GFILN2,@XR),GFILNO(@BR) THIS DB CONTAIN NUMBER							
					4016+	*								
1897	D0	82	04		4017+	BL	GFI100(@BR)							
							NO, CHECK NEXT FIT ENTRY							
					4019+	*****	*****							
					4020+	*								
					4021+		READ DATA BLOCKS INTO CORE BUFFERS							
					4022+	*								
					4023+	*****	*****							
					4024+	*								
189A	7C	03	60		4025+	MVI	GFIRED+@DSAD(@BR),GFIDTA INIT DPL FOR 1ST DATA SECTOR							
189D	6E	00	60 00		4026+	ALC	GFIRED+@DSAD(GFILN1,@BR),@ZERO(@XR) DISP FROM 1ST SECTOR							
18A1	7C	02	61		4027+	MVI	GFIRED+@DCNT(@BR),GFICT2 INIT DPL SECTOR COUNT							
					4028+	*								
					4029+		CHECK IF DB'S ARE CONTINUOUS							
					4030+	*								
18A4	6C	00	5D 04		4031+	MVC	GFIWRK(GFILN1,@BR),GFIDS4(@XR) COMPUTE IF DB'S ARE							
18A8	6F	00	5D 00		4032+	SLC	GFIWRK(GFILN1,@BR),@ZERO(@XR) * CONTIGUOUS ON DISK							
18AC	7D	01	5D		4033+	CLI	GFIWRK(@BR),GFICT1							
18AF	F2	81	10		4034+	GFI200	JC GFI500,@BE							
					4035+	*								
					4036+	*****	*****							

## GFINDN -- BUFFER PRIMER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	10/06/22	PAGE	59
					4038+	*****	*****				
					4039+	*					*
					4040+		PROCESSING OF NON-CONTIGUOUS DATA BLOCKS				*
					4041+	*					*
					4042+	*****	*****				*
					4043+	*					*
18B2	7C	03	66		4044+	MVI	GFIRAD+@DSAD(,@BR),GFIDTA MODIFY SECTOR ADDR				
18B5	6E	00	66 04		4045+	ALC	GFIRAD+@DSAD(GFILN1,@BR),GFIDS4(,@XR)				
					4047+	DSKL4	GFIRAD READ SECOND DB				
18B9	C0	87	103D		4048+	B	DL4ICS PERFORM RELATIVE DISK OP				
18BD	18F0			18BE	4049+	DC	AL2(GFIRAD) DPL ADDRESS				
					4050+	***	END OF EXPANSION ***				
					4051+	*					*
18BF	7C	01	61		4052+	MVI	GFIREDA+@DCNT(,@BR),GFICT1 MODIFY DPL SECTOR COUNT				
					4054+	*GFI500	DSKL4 WIRED READ DB(S)				
18C2	C0	87	103D		4055+	GFI500 B	DL4ICS PERFORM RELATIVE DISK OP				
18C6	18EA			18C7	4056+	DC	AL2(GFIREDA) DPL ADDRESS				
					4057+	***	END OF EXPANSION ***				
					4059+	*****	*****				*
					4060+	*					*
					4061+		INITIALIZATION FOR GRABIT				*
					4062+	*					*
					4063+	*****	*****				*
					4064+	*					*
18C8	1C	01	131C 60		4065+	MVC	GRSRDA(@CADDR),GFIREDA+@DSAD(,@BR) PRIME GRABIT DISK ADDR				
18CD	3C	00	1326		4066+	MVI	GRWHAT,@ZERO PRIME GRWHAT FOR GRABIT				
18D1	0C	01	131F 18EF		4067+	MVC	GRBFRA(@CADDR),GFIBR1 PRIME GRABIT				
					4068+	*					*
18D7	C0	87	1192		4069+	B	GRABIT GET NEXT STATEMENT				
					4070+	*					*
18DB	3C	01	1326		4071+	MVI	GRWHAT,GFICT1 SET GRABIT FUNCTION CODE				
					4073+	*****	*****				*
					4074+	*					*
					4075+		END OF ROUTINE PROCESSING				*
					4076+	*					*
					4077+	*****	*****				*
					4078+	*					*
					4079+	*GFIND	EXIT @BR,,RETURN				
18DF	C2	01	0000		4080+	GFIND0 LA	*-*,@BR RESTORE @BR				
18E3	C0	87	0000		4081+	GFIND2 B	*-*				RETURN TO CALING PROGRAM
					4082+	***	END OF EXPANSION ***				

## GFINDN -- BUFFER PRIMER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 10/06/22 PAGE 60
			4084+	*****	
			4085+	*	
			4086+	DATA CONSTANTS, BUFFERS, AND WORK AREAS	*
			4087+	*	
			4088+	*****	
			4089+	*	
18E7		18E8	4090+	GFILNO DS CL2	INPUT AREA FOR LINE NUMBER TO
			4091+	*	* BE SEARCHED FOR
18E9		18E9	4092+	GFIWRK DS CL1	USED TO COMPUTE IF DB'S ARE
			4093+	*	* CONTIGUOUS IN CORE
			4094+	DPL MODIFIED FOR READING OF DATA BLOCKS	
			4095+	*	
			4096+	*GFIREDDPL FUNC=@DGET,DADDR=@WSFIT,CADDR=GFIBF1	
		18EA	4097+	GFIREDEQU *	DISK PARAMETER LIST
18EA 01		18EA	4098+	DC AL1(@DGET)	REQUESTED FUNCTION
18EB 0500		18EC	4099+	DC AL2(@WSFIT)	DISK ADDRESS
18ED 00		18ED	4100+	DC AL1(*-*)	SECTOR COUNT
18EE 1900		18EF	4101+	DC AL2(GFIBF1)	BUFFER ADDRESS
			4102+	*** END OF EXPANSION ***	
		18EF	4104+	GFIBR1 EQU GFIREDD+@DBFR2	ADDR OF FIRST BUFFER
			4105+	*	
			4106+	*GFIRAD DPL FUNC=@DGET,DADDR=@WSFIT,CNT=@B1,CADDR=GFIBF2	
		18F0	4107+	GFIRADEQU *	DISK PARAMETER LIST
18F0 01		18F0	4108+	DC AL1(@DGET)	REQUESTED FUNCTION
18F1 0500		18F2	4109+	DC AL2(@WSFIT)	DISK ADDRESS
18F3 01		18F3	4110+	DC AL1(@B1)	SECTOR COUNT
18F4 1A00		18F5	4111+	DC AL2(GFIBF2)	BUFFER ADDRESS
			4112+	*** END OF EXPANSION ***	
		18F5	4114+	GFIBR2 EQU GFIRAD+@DBFR2	ADDR OF SECOND BUFFER
			4115+	*	
			4116+	***	END OF GFINDN ***
			4117	*	
			4118	PRINT ON	
	FFFF	4119	END		
TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY = 0					

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$\$\$	001	0C00	1996	
\$\$\$CMD	001	0020	0659	
\$\$\$DAT	001	0040	0658	
\$\$\$EPL	001	0091	0655	
\$\$\$ERN	001	0080	0709	
\$\$\$FUN	001	0010	0660	
\$\$\$NLN	001	00A0	0705	
\$\$\$STD	001	0081	0654	
\$\$\$001	015	0C58	2017	
\$\$BNLN	001	0605	0635	0637
\$\$CDBS	001	08C0	0685	
\$\$CDND	001	0666	0644	
\$\$CDRD	001	0890	0683	0685
\$\$CKEY	001	0603	0633	
\$\$CKFF	001	0B3D	0665	
\$\$COFF	001	0B44	0664	
\$\$CSNS	001	209C	0694	
\$\$DATB	001	0BBF	0666	
\$\$EOSA	001	0AFE	0663	2370*
\$\$ERSK	001	1C00	0704	
\$\$FITS	001	1D00	0712	3987
\$\$FLIB	001	06FF	0711	
\$\$ILEN	001	0601	0629	0631 0635
\$\$ILHD	001	0600	0627	0629
\$\$INLN	001	0607	0642	0644 0646 2182 2348 2398
\$\$INND	001	06FA	0646	
\$\$KBDT	001	09E1	0653	0657
\$\$KBSN	001	09E2	0657	0662
\$\$KLD1	001	0600	0717	
\$\$KLD2	001	0700	0719	
\$\$KLD3	001	0C00	0721	2431
\$\$LPOS	001	09EB	0662	2381*
\$\$PCNT	001	07E9	0678	
\$\$PLYN	001	2004	0692	
\$\$PRES	001	0890	0651	0653 0663 0664 0665 0666 0683
\$\$PRFL	001	2143	0696	
\$\$PRNT	001	0707	0672	0673 0677 0678 2177
\$\$PRTN	001	0782	0673	
\$\$PSIO	001	07CE	0677	
\$\$PYCD	001	2200	0698	
\$\$PYMP	001	2000	0690	0692 0694 0696 0698
\$\$SLIB	001	1C00	0707	
\$\$TPCD	001	0606	0637	0642
\$\$UPAR	001	0602	0631	0633
\$\$WSPB	001	1E00	0710	
\$\$XIND	001	06FF	0708	0711
\$\$ZERO	001	0000	0223	0224 0226 0227 0228 0232 0690
\$ABORT	001	0010	0336	
\$BASIC	001	0080	0394	2907
\$BIGCD	001	0080	0470	
\$BLDPL	001	0579	0603	0605
\$BLNOE	001	0569	0593	
\$BLOAD	001	0522	0584	0586 0589 0602 0603 2385
\$BLRTN	001	0550	0592	0593
\$BRSAV	001	03C5	0281	0282
\$BSADR	001	0587	0608	0610

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$BUFPT	001	03E3	0489	0490
\$CABLD	001	04B4	0562	0563
\$CAERK	001	0469	0539	0542 2119 2205 3014 3745
\$CAERR	001	03CD	0287	0289 2030* 2043* 2062* 2075* 2093* 2096* 2112* 2117* 2124* 2127* 2130* 2140* 2204* 3010* 3094* 3293* 3744* 3855*
\$CAIPL	001	049D	0558	0560
\$CALLI	001	0008	0479	
\$CARDI	001	0001	0250	2361
\$CARPL	001	04A1	0560	0562 2382
\$CIENT	001	0483	0549	0550
\$CIEXT	001	0480	0548	0549
\$CIMSK	001	0476	0545	0548
\$CISUS	001	0496	0553	0558
\$CLBFR	001	0010	0437	
\$CMDKY	001	0008	0349	
\$CMODE	001	0002	0399	
\$CONFG	001	03DD	0462	0472
\$CRPOS	001	03E2	0488	0489
\$CRTAD	001	044D	0527	0528
\$CRTAV	001	0002	0343	
\$CRTDN	001	0002	0367	
\$CRTIN	001	03D3	0364	0371
\$CRTNO	001	0004	0346	
\$CRTPU	001	0004	0368	
\$CRTSP	001	0008	0369	
\$CRTUP	001	0001	0366	
\$CRUSH	001	0080	0475	
\$CSDPL	001	050E	0574	0575
\$C0001	001	0464	0531	0537
\$DATE	001	043A	0512	0513
\$DBGUF	001	03E0	0474	0483
\$DBLOK	001	0001	0424	
\$DFDET	001	03E8	0495	0496
\$DISKN	001	0025	0226	2037 2164 2172 2208 2555 2755 2831 2930 3028 3563
\$DKERR	001	0008	0405	
\$DKSIZ	001	03D7	0449	0457 0498
\$DK100	001	0001	0451	
\$DK200	001	0002	0452	
\$DK400	001	0004	0453	
\$DK600	001	0008	0454	
\$DK800	001	0010	0455	
\$DPLSV	001	0449	0523	0525
\$DTNMB	001	0040	0270	
\$DTRDR	001	0040	0358	
\$ENDNU	001	0600	0617	0627 0651 0672 0708 0717 0719 0721 2414
\$ERDPL	001	046F	0542	0544
\$ERFIL	001	0040	0297	
\$ERHRD	001	0004	0429	3013
\$ERKEY	001	0080	0301	
\$ERLOG	001	0345	0231	
\$ERMAD	001	0472	0544	0545
\$ERPND	001	0004	0402	
\$ERRCT	001	03CF	0303	
\$ERRPG	001	03CE	0291	
\$ERSFL	001	0035	0296	
\$ERSTK	001	0030	0294	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$ER050	001	0363	0232	
\$ER1N2	001	0050	0299	
\$EXADR	001	0517	0577	0579
\$EXCMD	001	0001	0331	
\$EXFTR	001	043B	0513	0518
\$FCIND	001	0010	0409	
\$FDIND	001	0040	0416	
\$FEARR	001	0004	0224	
\$FEMAP	001	0588	0610	0611
\$FILIB	001	03DA	0460	0461
\$FITIN	001	0010	0385	
\$FUIND	001	0020	0414	
\$GUFIO	001	0583	0607	0608
\$GUFIR	001	0008	0259	
\$HISTE	001	042E	0510	0511
\$HIST1	001	0435	0511	0512
\$HRDER	001	0020	0355	
\$INDR1	001	03D4	0371	0397 2128 2131 2213 2215 2907 3428 3534 3567
\$INDR2	001	03D5	0397	0422 2379*
\$INDR3	001	03D6	0422	0449 3013*
\$INLNO	001	03CF	0289	0291 0303 0310
\$INRPT	001	0020	0267	
\$IOIND	001	03D2	0338	0364
\$IOPGS	001	0010	0478	
\$IOYES	001	0002	0253	
\$IPLDV	001	05FF	0614	0617
\$IRKEY	001	0020	0477	
\$KEYBD	001	03E1	0483	0488
\$KEYCD	001	03C3	0247	0281 2361
\$KEYDT	001	0040	0391	2215
\$KE090	001	00DE	0227	
\$KE130	001	01D5	0228	
\$KYBSY	001	0010	0264	
\$LDRTN	001	0571	0602	
\$LEVEL	001	03DF	0472	0474
\$LIST	001	0002	0426	
\$LMRGN	001	03C1	0242	0244 2364
\$LNPTR	001	0080	0361	
\$LOADB	001	054A	0586	
\$LOADR	001	051A	0579	0582
\$LPRIO	001	03EA	0496	
\$LPROS	001	03E5	0491	0493
\$LPRP3	001	03E4	0490	0491
\$MOUNT	001	0020	0440	
\$MPDWN	001	0001	0340	
\$NEXTB	001	03E6	0493	0494
\$NEXTL	001	03E7	0494	0495
\$NOENB	001	0008	0432	
\$NOLST	001	0004	0256	
\$NUCBS	001	03C0	0239	0240
\$NWRKF	001	0080	0445	
\$NWRKR	001	0040	0442	
\$PASWD	001	042D	0509	0510
\$PAUSD	001	04BA	0563	0565
\$PAUSE	001	0002	0333	
\$PGMDT	001	0020	0388	2131 3534 3567

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$PGMST	001	0010	0352	
\$PKERT	001	0419	0507	0509
\$PLST1	001	0454	0528	0529
\$PLST2	001	045B	0529	0530
\$PLST3	001	0462	0530	0531
\$PRDEV	001	044B	0525	0527
\$PRESN	001	0002	0376	3428
\$PROCI	001	0001	0373	2213
\$PRPOS	001	03C2	0244	0247
\$PSDBR	001	04FA	0568	
\$PSDXR	001	04F2	0567	0568
\$PSTEP	001	0004	0334	
\$PSTMT	001	0008	0335	
\$PTCH1	001	03F5	0498	0502
\$READY	001	0080	0418	2379
\$REORD	001	0040	0476	
\$RLOAD	001	051E	0582	0584
\$RMRGN	001	03C0	0240	0242 2363
\$RSTR	001	04D6	0565	0567 0569 0574
\$RUNIT	001	0001	0312	
\$SFAID	001	050D	0570	
\$SPRNT	001	0465	0537	0539 2298 2303 2372 2374
\$SRTRN	001	04FE	0569	0570
\$STEPT	001	0002	0313	
\$SWPCR	001	0511	0575	0577
\$TABLN	001	03CB	0284	0287
\$TFLOW	001	0008	0319	
\$TRACE	001	0004	0314	
\$TRALL	001	0010	0320	
\$TROVR	001	054E	0589	0592
\$TRUNK	001	0080	0272	
\$TRVAR	001	0020	0321	
\$UNMSK	001	048D	0550	0553
\$USRDR	001	03DC	0461	0462
\$VMDEF	001	0080	0325	
\$VOLF1	001	03FE	0504	0505
\$VOLF2	001	040E	0506	
\$VOLID	001	03F6	0502	0503 0507
\$VOLR1	001	03F6	0503	0504
\$VOLR2	001	0406	0505	0506
\$WAITF	001	057F	0605	0607 2173 2178 2209 2304 2375 2832 2931 3029 3564 3590
\$WFDEF	001	0040	0519	2125
\$WFLOK	001	0008	0382	
\$WFNME	001	0443	0518	0523 2125
\$WSIND	001	0004	0379	2128
\$XIND1	001	03D0	0310	0329
\$XIND2	001	03D1	0329	0338
\$XIND3	001	03D8	0457	0460
\$XPREC	001	0040	0322	
\$XRSAB	001	03C7	0282	0284 2023 2042* 2065* 2099* 2134* 2149 3536* 3537 3558* 3559*
\$ZTRAD	001	05A2	0611	
\$12K	001	0004	0466	
\$16CKY	001	0008	0468	
\$16K	001	0002	0465	
\$22IMP	001	0001	0463	
##\$#BL	001	0000	1743	



## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 10/06/22 PAGE 65

###CK	001	0000	1871	
###CN	001	0000	1839	
###CO	001	0000	1631	
###CS	001	0000	1691	
###DR	001	0000	1435	
###ER	001	0000	1635	
###FS	001	0000	1731	
###IN	001	0000	1875	
###PW	001	0000	1879	
###RS	001	0000	1711	
###SA	001	0000	1699	
###SS	001	0000	1695	
###VU	001	0600	1655	
###0T	001	0700	1427	
###1T	001	0000	1431	
###BCO	001	0600	1443	
###BOV	001	0800	1715	
###DPR	001	0700	1451	
###DRE	001	0889	1467	
###DSP	001	2800	1487	
###ECM	001	0C00	1747	
###EFK	001	0C00	1767	
###ERR	001	0C00	1739	
###EXM	001	0C00	1627	
###FIL	001	0E00	1707	
###FIS	001	0E00	1703	
###FML	001	0200	1835	
###FMS	001	0200	1675	
###GRA	001	0889	1599	
###GUF	001	0C00	1735	
###INL	001	0600	1815	
###INS	001	0600	1439	
###KAL	001	0C00	1603	
###KCA	001	0C00	1819	
###KCH	001	0C00	1571	1995
###KCN	001	0C00	1687	
###KCT	001	0C00	1539	
###KDE	001	0C00	1535	
###KDI	001	0D00	1615	
###KDN	001	0C00	1523	
###KDO	001	0E00	1619	
###KED	001	0C00	1459	
###KEN	001	0C00	1463	
###KEX	001	0C00	1483	
###KGO	001	0C00	1455	
###KHE	001	0C00	1639	
###KKE	001	0C00	1867	
###KLI	001	0C00	1543	
###KLL	001	0920	1843	
###KLO	001	0C00	1547	
###KME	001	0D00	1527	
###KMO	001	0C00	1471	
###KNA	001	0C00	1583	
###KOV	001	0E00	1503	
###KPA	001	0C00	1479	
###KPO	001	0C00	1567	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$KPR	001	0C00	1591	
\$\$\$KRE	001	0C00	1511	
\$\$\$KRL	001	0700	1607	
\$\$\$KRM	001	0C00	1475	
\$\$\$KRN	001	0700	1495	
\$\$\$KRO	001	0D00	1499	
\$\$\$KRS	001	0C00	1823	
\$\$\$KRU	001	0C00	1519	
\$\$\$KRV	001	0800	1611	
\$\$\$KSA	001	0C00	1555	
\$\$\$KSE	001	0E00	1595	
\$\$\$KSO	001	0C20	1647	
\$\$\$KSS	001	0C00	1579	
\$\$\$KSV	001	0980	1575	
\$\$\$KSY	001	0C00	1587	
\$\$\$KWI	001	0C00	1515	
\$\$\$KWR	001	0C00	1507	
\$\$\$LOA	001	0600	1447	
\$\$\$MIP	001	0C00	1643	
\$\$\$SDS	001	0C00	1755	
\$\$\$SFF	001	0E00	1759	
\$\$\$SFL	001	0F00	1751	
\$\$\$SFO	001	1500	1723	
\$\$\$SFS	001	0C00	1719	
\$\$\$SPA	001	0C00	1559	
\$\$\$SPO	001	0806	1563	
\$\$\$SPS	001	0C00	1551	
\$\$\$STR	001	1600	1727	
\$\$\$TDC	001	1000	1531	
\$\$\$TSY	001	1000	1491	
\$\$\$TVK	001	0FC0	1667	
\$\$\$UAL	001	0C00	1683	
\$\$\$UAT	001	0900	1779	
\$\$\$UCD	001	0900	1787	
\$\$\$UCN	001	0C00	1771	
\$\$\$UCP	001	0700	1775	
\$\$\$UDE	001	0C00	1791	
\$\$\$UDI	001	0C00	1795	
\$\$\$UEX	001	0C00	1679	
\$\$\$UIN	001	0C00	1783	
\$\$\$UPA	001	0C00	1763	
\$\$\$UPO	001	0C00	1831	
\$\$\$UPT	001	0C00	1827	
\$\$\$VCR	001	2000	1623	
\$\$\$VLO	001	0600	1659	
\$\$\$VOD	001	0600	1663	
\$\$\$VVM	001	0000	1671	
\$\$\$VXI	001	0600	1651	
\$\$\$ZDU	001	1100	1803	
\$\$\$ZLB	001	1100	1847	
\$\$\$ZLO	001	1100	1807	
\$\$\$ZLV	001	0F00	1863	
\$\$\$ZL1	001	0F00	1851	
\$\$\$ZL2	001	0F00	1855	
\$\$\$ZL3	001	0C00	1859	
\$\$\$ZTR	001	1000	1799	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$ZUT	001	0C00	1811	
\$\$#BLN	001	18D4	1742	
\$\$#CKT	001	2118	1870	
\$\$#CNF	001	2000	1838	
\$\$#COR	001	0800	1630	
\$\$#CSA	001	1000	1690	
\$\$#DRT	001	0000	1434	
\$\$#ERM	001	0928	1634	
\$\$#FSP	001	1880	1730	
\$\$#INV	001	212C	1874	
\$\$#PWR	001	2300	1878	
\$\$#RSP	001	1780	1710	
\$\$#SAV	001	1180	1698	
\$\$#SSA	001	1128	1694	
\$\$#VUF	001	0B08	1654	
\$\$#0TR	001	0000	1426	
\$\$#1TR	001	0080	1430	
\$\$@#BL	001	0001	1744	
\$\$@#CK	001	0004	1872	
\$\$@#CN	001	0001	1840	
\$\$@#CO	001	003A	1632	
\$\$@#CS	001	003A	1692	
\$\$@#DR	001	0008	1436	
\$\$@#ER	001	0032	1636	
\$\$@#FS	001	0030	1732	
\$\$@#IN	001	003A	1876	
\$\$@#PW	001	00C0	1880	
\$\$@#RS	001	0030	1712	
\$\$@#SA	001	0108	1700	
\$\$@#SS	001	0001	1696	
\$\$@#VU	001	0002	1656	
\$\$@#0T	001	0018	1428	
\$\$@#1T	001	0018	1432	
\$\$@BCO	001	0018	1444	
\$\$@BOV	001	0018	1716	
\$\$@DPR	001	0005	1452	
\$\$@DRE	001	0001	1468	
\$\$@DSP	001	0004	1488	
\$\$@ECM	001	0006	1748	
\$\$@EFK	001	0002	1768	
\$\$@ERR	001	0003	1740	
\$\$@EXM	001	0003	1628	
\$\$@FIL	001	0009	1708	
\$\$@FIS	001	0009	1704	
\$\$@FML	001	0052	1836	
\$\$@FMS	001	0052	1676	
\$\$@GRA	001	0003	1600	
\$\$@GUF	001	0010	1736	
\$\$@INL	001	0010	1816	
\$\$@INS	001	0010	1440	
\$\$@KAL	001	000F	1604	
\$\$@KCA	001	000C	1820	
\$\$@KCH	001	000C	1572	
\$\$@KCN	001	0010	1688	
\$\$@KCT	001	0009	1540	
\$\$@KDE	001	0010	1536	

## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 10/06/22 PAGE 68

#\$@KDI	001	0005	1616	
#\$@KDN	001	0010	1524	
#\$@KDO	001	000C	1620	
#\$@KED	001	000E	1460	
#\$@KEN	001	0006	1464	
#\$@KEX	001	0003	1484	
#\$@KGO	001	0002	1456	
#\$@KHE	001	000C	1640	
#\$@KKE	001	0006	1868	
#\$@KLI	001	0011	1544	
#\$@KLL	001	0001	1844	
#\$@KLO	001	0008	1548	
#\$@KME	001	0003	1528	
#\$@KMO	001	0004	1472	
#\$@KNA	001	0008	1584	
#\$@KOV	001	0009	1504	
#\$@KPA	001	0005	1480	
#\$@KPO	001	000D	1568	
#\$@KPR	001	0009	1592	
#\$@KRE	001	0002	1512	
#\$@KRL	001	0004	1608	
#\$@KRM	001	0003	1476	
#\$@KRN	001	0003	1496	
#\$@KRO	001	000A	1500	
#\$@KRS	001	000A	1824	
#\$@KRU	001	0003	1520	
#\$@KRV	001	000D	1612	
#\$@KSA	001	0011	1556	
#\$@KSE	001	0004	1596	
#\$@KSO	001	0005	1648	
#\$@KSS	001	000B	1580	
#\$@KSV	001	0002	1576	
#\$@KSY	001	000F	1588	
#\$@KWI	001	0002	1516	
#\$@KWR	001	0002	1508	
#\$@LOA	001	0013	1448	
#\$@MIP	001	000D	1644	
#\$@SDS	001	0004	1756	
#\$@SFF	001	0008	1760	
#\$@SFL	001	0005	1752	
#\$@SFO	001	0003	1724	
#\$@SFS	001	0011	1720	
#\$@SPA	001	0004	1560	
#\$@SPO	001	0003	1564	
#\$@SPS	001	0001	1552	
#\$@STR	001	0002	1728	
#\$@TDC	001	0003	1532	
#\$@TSY	001	0003	1492	
#\$@TVK	001	0001	1668	
#\$@UAL	001	0011	1684	
#\$@UAT	001	000C	1780	
#\$@UCD	001	000B	1788	
#\$@UCN	001	0009	1772	
#\$@UCP	001	000F	1776	
#\$@UDE	001	000E	1792	
#\$@UDI	001	0008	1796	

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   10/06/22   PAGE   69

#\$@UEX	001	000E	1680	
#\$@UIN	001	000F	1784	
#\$@UPA	001	0004	1764	
#\$@UPO	001	0005	1832	
#\$@UPT	001	0012	1828	
#\$@VCR	001	0008	1624	
#\$@VLO	001	0002	1660	
#\$@VOD	001	0016	1664	
#\$@VVM	001	0030	1672	
#\$@VXI	001	0002	1652	
#\$@ZDU	001	0008	1804	
#\$@ZLB	001	0002	1848	
#\$@ZLO	001	000C	1808	
#\$@ZLV	001	0006	1864	
#\$@ZL1	001	0007	1852	
#\$@ZL2	001	000D	1856	
#\$@ZL3	001	000A	1860	
#\$@ZTR	001	0001	1800	
#\$@ZUT	001	0014	1812	
#\$BCOM	001	0080	1442	
#\$BOLV	001	1780	1714	
#\$DPRI	001	014C	1450	
#\$DREA	001	0200	1466	
#\$DSPL	001	0240	1486	
#\$ECMA	001	1900	1746	
#\$EFKE	001	1990	1766	
#\$ERRP	001	18C0	1738	
#\$EXMS	001	07D4	1626	
#\$FILN	001	1724	1706	
#\$FIST	001	1700	1702	
#\$FMLN	001	1E00	1834	
#\$FMST	001	0D00	1674	
#\$GRAP	001	0690	1598	
#\$GUFU	001	1880	1734	
#\$INLN	001	1C84	1814	
#\$INST	001	0020	1438	
#\$KALL	001	06A4	1602	
#\$KCAL	001	1CC4	1818	
#\$KCHA	001	053C	1570	
#\$KCND	001	0F80	1686	
#\$KCTL	001	03BC	1538	
#\$KDEL	001	035C	1534	
#\$KDIS	001	0744	1614	
#\$KDNT	001	0300	1522	
#\$KDOV	001	0780	1618	
#\$KEDI	001	0188	1458	
#\$KENA	001	01C4	1462	
#\$KEXT	001	0234	1482	
#\$KGOS	001	0180	1454	
#\$KHEL	001	0A30	1638	
#\$KKEY	001	2100	1866	
#\$KLIS	001	0400	1542	
#\$KLLA	001	2004	1842	
#\$KLOG	001	0444	1546	
#\$KMER	001	030C	1526	
#\$KMOU	001	0204	1470	

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   10/06/22   PAGE   70

#\$KNAM	001	05C0	1582	
#\$KOVN	001	0290	1502	
#\$KPAS	001	0220	1478	
#\$KPOO	001	0508	1566	
#\$KPRT	001	063C	1590	
#\$KREA	001	02BC	1510	
#\$KRLA	001	0700	1606	
#\$KRMO	001	0214	1474	
#\$KRNU	001	0280	1494	
#\$KROV	001	028C	1498	
#\$KRSU	001	1D24	1822	
#\$KRUN	001	02CC	1518	
#\$KRVL	001	0710	1610	
#\$KSAV	001	0488	1554	
#\$KSET	001	0680	1594	
#\$KSOV	001	0AC8	1646	
#\$KSSP	001	0594	1578	
#\$KSVL	001	058C	1574	
#\$KSYM	001	0600	1586	
#\$KWID	001	02C4	1514	
#\$KWRI	001	02B4	1506	
#\$LOAD	001	0100	1446	
#\$MIPP	001	0A80	1642	
#\$SDSY	001	192C	1754	
#\$SFFI	001	193C	1758	
#\$SFLO	001	1918	1750	
#\$SFOV	001	1844	1722	
#\$SFSY	001	1800	1718	
#\$SPAC	001	04CC	1558	
#\$SPOV	001	04DC	1562	
#\$SPSY	001	0484	1550	
#\$STRO	001	1850	1726	
#\$TDCK	001	0350	1530	
#\$TSYK	001	0250	1490	
#\$TVKB	001	0BAC	1666	
#\$UALL	001	0F00	1682	
#\$UATR	001	1A38	1778	
#\$UCDI	001	1AD8	1786	
#\$UCNF	001	19B8	1770	
#\$UCPL	001	19DC	1774	
#\$UDEL	001	1B24	1790	
#\$UDIS	001	1B5C	1794	
#\$UEXL	001	0EA8	1678	
#\$UINI	001	1A88	1782	
#\$UPAC	001	1980	1762	
#\$UPOV	001	1D24	1830	
#\$UPTF	001	1D5C	1826	
#\$VCRT	001	07B4	1622	
#\$VLOA	001	0B80	1658	
#\$VODK	001	0B88	1662	
#\$VVMR	001	0C00	1670	
#\$VXIT	001	0B00	1650	
#\$ZDUM	001	1BA4	1802	
#\$ZLBM	001	2008	1846	
#\$ZLOA	001	1BC4	1806	
#\$ZLVR	001	20B0	1862	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$ZL1M	001	2010	1850	
#\$ZL2M	001	2030	1854	
#\$ZL3M	001	2088	1858	
#\$ZTRA	001	1B9C	1798	
#\$ZUTM	001	1C14	1810	
#@#BAD	001	0455	0749	2421
#@#IO1	001	0459	0757	
#@#IO2	001	045D	0758	
#@#TAT	001	0941	0785	
#@#TBA	001	09A1	0789	
#@#TFS	001	0941	0783	
#@#TSY	001	0941	0787	
#@#VFP	001	0700	0775	
#@#VLP	001	093D	0778	
#@#WDB	001	050C	0770	
#@#WFT	001	0500	0768	
##@#BA	001	0001	0750	2422
##@#IO	001	0001	0762	
##@#SC	001	0002	0759	
##@#TA	001	0010	0786	
##@#TB	001	0010	0790	
##@#TS	001	0005	0788	
##@#TW	001	0020	0784	
##@#VM	001	0100	0779	
##@#WD	001	00BD	0771	
##@#WF	001	0003	0769	
##@#04	001	0004	0761	
##@#08	001	0008	0760	
##@BOV	001	0018	0738	
##@ECM	001	0006	0752	2430
##@ERR	001	0003	0746	
##@GUF	001	0010	0742	
##@LDS	001	0002	0748	
##@SDS	001	0004	0744	
##@SFF	001	0008	0756	
##@SFL	001	0005	0754	
##@SFO	001	0005	0764	
##@SFS	001	0011	0740	
##@VSF	001	0010	0792	
##@VSL	001	000F	0793	
##@VTR	001	0001	0777	
#@BOVL	001	0400	0737	
#@ECMA	001	0481	0751	2429
#@ERRP	001	0441	0745	
#@GUFU	001	0401	0741	
#@LDSV	001	044D	0747	
#@SDSY	001	04AD	0743	
#@SFFI	001	04BD	0755	
#@SFLO	001	0499	0753	
#@SFOV	001	04C4	0763	
#@SFSY	001	0480	0739	
#@VSFI	001	09A1	0791	
#@VTRL	001	0708	0776	
#@WAF1	001	0401	0736	
#@WAR1	001	0400	0735	
#KCHA	001	0C07	1999	



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#KCHAN	001	0000	0001	
@@E001	001	0000	1330	1332
@@E003	001	0001	1332	1334
@@E004	001	0002	1334	1336
@@E005	001	0003	1336	1338
@@E006	001	0004	1338	1340
@@E007	001	0005	1340	1342
@@E008	001	0006	1342	1344
@@E009	001	0007	1344	1346
@@E010	001	0008	1346	1348
@@E011	001	0009	1348	1350
@@E012	001	000A	1350	1352
@@E013	001	000B	1352	1354
@@E014	001	000C	1354	1356
@@E015	001	000D	1356	1358
@@E016	001	000E	1358	1360
@@E017	001	000F	1360	1362
@@E018	001	0010	1362	1364
@@E019	001	0011	1364	1366
@@E020	001	0012	1366	1368
@@E021	001	0013	1368	1370
@@E023	001	0014	1370	1372
@@E024	001	0015	1372	1374
@@E025	001	0016	1374	1376
@@E026	001	0017	1376	1378
@@E027	001	0018	1378	1380
@@E028	001	0019	1380	1382
@@E029	001	001A	1382	1384
@@E030	001	001B	1384	1386
@@E031	001	001C	1386	1388
@@E032	001	001D	1388	1390
@@E035	001	001E	1390	1392
@@E036	001	001F	1392	1394
@@E037	001	0020	1394	1396
@@E038	001	0021	1396	1398
@@E039	001	0022	1398	1400
@@E040	001	0023	1400	1402
@@E041	001	0024	1402	1404
@@E042	001	0025	1404	1406
@@E043	001	0026	1406	1408
@@E044	001	0027	1408	1410
@@E045	001	0028	1410	1412
@@E046	001	0029	1412	1414
@@E060	001	002A	1414	1416
@@E080	001	002B	1416	
@@E100	001	0000	0802	0804
@@E101	001	0001	0804	0806
@@E102	001	0002	0806	0808
@@E103	001	0003	0808	0810
@@E110	001	0004	0810	0812 3855
@@E112	001	0005	0812	0814
@@E113	001	0006	0814	0816
@@E114	001	0007	0816	0818
@@E115	001	0008	0818	0820
@@E116	001	0009	0820	0822
@@E117	001	000A	0822	0824

CROSS REFERENCE												
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 10/06/22 PAGE 73							
@@E120	001	000B	0824	0826								
@@E122	001	000C	0826	0828	3094							
@@E123	001	000D	0828	0830								
@@E124	001	000E	0830	0832								
@@E129	001	000F	0832	0834								
@@E130	001	0010	0834	0836								
@@E131	001	0011	0836	0838	2043	2062	2075	2093	2096	2112	2140	
@@E133	001	0012	0838	0840	2117							
@@E134	001	0013	0840	0842								
@@E135	001	0014	0842	0844								
@@E136	001	0015	0844	0846								
@@E137	001	0016	0846	0848								
@@E138	001	0017	0848	0850	3293							
@@E139	001	0018	0850	0852	2030							
@@E142	001	0019	0852	0854								
@@E143	001	001A	0854	0856								
@@E150	001	001B	0856	0858								
@@E151	001	001C	0858	0860								
@@E160	001	001D	0860	0862								
@@E162	001	001E	0862	0864								
@@E163	001	001F	0864	0866								
@@E164	001	0020	0866	0868								
@@E200	001	0021	0868	0870								
@@E205	001	0022	0870	0872								
@@E210	001	0023	0872	0874								
@@E211	001	0024	0874	0876								
@@E212	001	0025	0876	0878								
@@E213	001	0026	0878	0880								
@@E215	001	0027	0880	0882								
@@E216	001	0028	0882	0884								
@@E217	001	0029	0884	0886								
@@E220	001	002A	0886	0888	2124							
@@E221	001	002B	0888	0890	2130							
@@E222	001	002C	0890	0892								
@@E223	001	002D	0892	0894								
@@E225	001	002E	0894	0896								
@@E226	001	002F	0896	0898	2127	3744						
@@E227	001	0030	0898	0900								
@@E228	001	0031	0900	0902								
@@E229	001	0032	0902	0904								
@@E230	001	0033	0904	0906								
@@E232	001	0034	0906	0908								
@@E234	001	0035	0908	0910								
@@E237	001	0036	0910	0912								
@@E240	001	0037	0912	0914								
@@E241	001	0038	0914	0916								
@@E242	001	0039	0916	0918								
@@E248	001	003A	0918	0920								
@@E249	001	003B	0920	0922								
@@E250	001	003C	0922	0924								
@@E251	001	003D	0924	0926								
@@E252	001	003E	0926	0928								
@@E253	001	003F	0928	0930								
@@E254	001	0040	0930	0932								

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E300	001	0043	0936	0938
@@E301	001	0044	0938	0940
@@E302	001	0045	0940	0942
@@E303	001	0046	0942	0944
@@E304	001	0047	0944	0946
@@E305	001	0048	0946	0948
@@E308	001	0049	0948	0950 2204
@@E310	001	004A	0950	0952
@@E315	001	004B	0952	0954
@@E316	001	004C	0954	0956
@@E320	001	004D	0956	0958
@@E325	001	004E	0958	0960
@@E330	001	004F	0960	0962
@@E335	001	0050	0962	0964
@@E338	001	0051	0964	0966
@@E340	001	0052	0966	0968
@@E350	001	0053	0968	0970
@@E351	001	0054	0970	0972
@@E352	001	0055	0972	0974
@@E360	001	0056	0974	0976
@@E361	001	0057	0976	0978
@@E362	001	0058	0978	0980
@@E371	001	0059	0980	0982
@@E380	001	005A	0982	0984
@@E390	001	005B	0984	0986
@@E400	001	005C	0986	0988
@@E410	001	005D	0988	0990
@@E415	001	005E	0990	0992
@@E417	001	005F	0992	0994
@@E420	001	0060	0994	0996
@@E430	001	0061	0996	0998
@@E432	001	0062	0998	1000
@@E433	001	0063	1000	1002
@@E450	001	0064	1002	1004
@@E451	001	0065	1004	1006
@@E460	001	0066	1006	1008
@@E461	001	0067	1008	1010
@@E464	001	0068	1010	1012
@@E465	001	0069	1012	1014
@@E466	001	006A	1014	1016
@@E467	001	006B	1016	1018
@@E469	001	006C	1018	1020
@@E470	001	006D	1020	1022
@@E471	001	006E	1022	1024
@@E473	001	006F	1024	1026
@@E474	001	0070	1026	1028
@@E475	001	0071	1028	1030
@@E476	001	0072	1030	1032
@@E477	001	0073	1032	1034
@@E478	001	0074	1034	1036
@@E479	001	0075	1036	1038
@@E480	001	0076	1038	1040
@@E481	001	0077	1040	1042
@@E482	001	0078	1042	1044
@@E483	001	0079	1044	1046
@@E484	001	007A	1046	1048

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E485	001	007B	1048	1050
@@E486	001	007C	1050	1052
@@E487	001	007D	1052	1054
@@E488	001	007E	1054	1056
@@E489	001	007F	1056	1058
@@E490	001	0080	1058	1060
@@E491	001	0081	1060	1062
@@E492	001	0082	1062	1064
@@E493	001	0083	1064	1066
@@E494	001	0084	1066	1068
@@E495	001	0085	1068	1070
@@E496	001	0086	1070	1072
@@E497	001	0087	1072	1074
@@E498	001	0088	1074	1076
@@E500	001	0089	1076	1078
@@E501	001	008A	1078	1080
@@E530	001	008B	1080	1082
@@E531	001	008C	1082	1084
@@E535	001	008D	1084	1086
@@E540	001	008E	1086	1088
@@E541	001	008F	1088	1090
@@E542	001	0090	1090	1092
@@E543	001	0091	1092	1094
@@E544	001	0092	1094	1096
@@E545	001	0093	1096	1098
@@E546	001	0094	1098	1100
@@E547	001	0095	1100	1102
@@E548	001	FFFF	1306	
@@E549	001	0096	1102	1104
@@E550	001	0097	1104	1106 2835
@@E551	001	0098	1106	1108 2830 3010
@@E552	001	0099	1108	1110
@@E553	001	009A	1110	1112
@@E554	001	009B	1112	1114
@@E555	001	009C	1114	1116
@@E556	001	009D	1116	1118
@@E558	001	009E	1118	1120
@@E570	001	009F	1120	1122
@@E571	001	00A0	1122	1124
@@E572	001	00A1	1124	1126
@@E573	001	00A2	1126	1128
@@E574	001	00A3	1128	1130
@@E575	001	FFFF	1308	
@@E578	001	00A4	1130	1132
@@E579	001	FFFF	1310	
@@E580	001	FFFF	1312	
@@E585	001	00A5	1132	1134
@@E595	001	FFFF	1314	
@@E597	001	FFFF	1316	
@@E598	001	FFFF	1318	
@@E600	001	00A6	1134	1136
@@E601	001	00A7	1136	1138
@@E602	001	00A8	1138	1140
@@E603	001	00A9	1140	1142
@@E604	001	00AA	1142	1144
@@E606	001	00AB	1144	1146

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E607	001	00AC	1146	1148
@@E608	001	00AD	1148	1150
@@E609	001	00AE	1150	1152
@@E610	001	00AF	1152	1154
@@E611	001	00B0	1154	1156
@@E612	001	00B1	1156	1158
@@E613	001	00B2	1158	1160
@@E614	001	00B3	1160	1162
@@E700	001	00B4	1162	1164
@@E701	001	00B5	1164	1166
@@E710	001	00B6	1166	1168
@@E712	001	00B7	1168	1170
@@E713	001	00B8	1170	1172
@@E714	001	00B9	1172	1174
@@E715	001	00BA	1174	1176
@@E716	001	00BB	1176	1178
@@E717	001	00BC	1178	1180
@@E718	001	00BD	1180	1182
@@E720	001	00BE	1182	1184
@@E721	001	00BF	1184	1186
@@E723	001	00C0	1186	1188
@@E724	001	00C1	1188	1190
@@E725	001	00C2	1190	1192
@@E726	001	00C3	1192	1194
@@E727	001	00C4	1194	1196
@@E728	001	00C5	1196	1198
@@E729	001	00C6	1198	1200
@@E730	001	00C7	1200	1202
@@E732	001	00C8	1202	1204
@@E752	001	00C9	1204	1206
@@E753	001	00CA	1206	1208
@@E754	001	00CB	1208	1210
@@E755	001	00CC	1210	1212
@@E756	001	00CD	1212	1214
@@E757	001	00CE	1214	1216
@@E758	001	00CF	1216	1218
@@E759	001	00D0	1218	1220
@@E760	001	00D1	1220	1222
@@E761	001	00D2	1222	1224
@@E762	001	00D3	1224	1226
@@E763	001	00D4	1226	1228
@@E764	001	00D5	1228	1230
@@E765	001	00D6	1230	1232
@@E766	001	00D7	1232	1234
@@E767	001	00D8	1234	1236
@@E768	001	00D9	1236	1238
@@E769	001	00DA	1238	1240
@@E770	001	00DB	1240	1242
@@E771	001	00DC	1242	1244
@@E772	001	00DD	1244	1246
@@E773	001	00DE	1246	1248
@@E774	001	00DF	1248	1250
@@E775	001	00E0	1250	1252
@@E776	001	00E1	1252	1254
@@E777	001	00E2	1254	1256
@@E778	001	00E3	1256	1258

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E779	001	00E4	1258	1260
@@E780	001	00E5	1260	1262
@@E781	001	00E6	1262	1264
@@E782	001	00E7	1264	1266
@@E783	001	00E8	1266	1268
@@E784	001	00E9	1268	1270
@@E785	001	00EA	1270	1272
@@E786	001	00EB	1272	1274
@@E790	001	00EC	1274	1276
@@E791	001	00ED	1276	1278
@@E792	001	00EE	1278	1280
@@E793	001	00EF	1280	1282
@@E794	001	00F0	1282	1284
@@E795	001	00F1	1284	1286
@@E796	001	00F2	1286	1288
@@E797	001	00F3	1288	1290
@@E798	001	00F4	1290	1292
@@E800	001	FFFF	1320	
@@E801	001	FFFF	1322	
@@E802	001	FFFF	1324	
@@E803	001	FFFF	1326	
@@E804	001	FFFF	1328	
@@E900	001	00F5	1292	1294
@@E901	001	00F6	1294	1296
@@E902	001	00F7	1296	1298
@@E903	001	00F8	1298	1300
@@E905	001	00F9	1300	1302
@@E906	001	00FA	1302	1304
@@E910	001	00FB	1304	
@M200	001	0C0A	2007	2299
@T200	001	0C0E	2011	2009
@ARR	001	0008	0016	2523* 2524 2525* 2526 2706* 2707 2708* 2709 2811 2929 3052 3091 3259 3261* 3262 3409 3556 3580 3737 3853 4006
@ASIGN	001	007C	0071	
@ASTER	001	005C	0069	
@BCRDL	001	0050	0088	
@BE	001	0081	0043	4034
@BF	001	0090	0052	
@BH	001	0084	0041	
@BL	001	0082	0042	
@BLANK	001	0040	0065	2181 3127 3411 3458 3591 3670 3672 3678 3683 3724 3858 3864
@BM	001	0082	0054	
@BNE	001	0001	0046	3849
@BNH	001	0004	0044	
@BNL	001	0002	0045	
@BNM	001	0002	0057	
@BNOL	001	0020	0050	
@BNOZ	001	0008	0049	
@BNP	001	0004	0056	
@BNZ	001	0001	0058	
@BOL	001	00A0	0048	
@BOZ	001	0088	0047	
@BP	001	0084	0053	
@BR	001	0001	0013	2021* 2022 2027 2050 2070 2083 2087 2100 2103 2106 2109 2136 2137 2139 2148 2150 2169* 2170 2183 2183 2219 2220 2223 2224 2225 2225 2226 2226 2228 2232 2235 2235 2236 2237 2238 2239

CROSS REFERENCE															
SYMBOL	LEN	VALUE	DEFN	REFERENCES						VER 15, MOD 00 10/06/22 PAGE 78					
				2239	2243	2243	2244	2244	2245	2245	2246	2246	2247	2247	2250
				2251	2252	2252	2253	2253	2262	2266	2266	2267	2267	2268	2269
				2269	2270	2270	2272	2272	2273	2273	2274	2274	2275	2275	2281
				2281	2286	2286	2287	2287	2288	2289	2289	2291	2291	2292	2306
				2306	2312	2316	2316	2317	2317	2318	2345	2347	2347	2349	2349
				2351	2352	2352	2353	2353	2354	2354	2359	2363	2364	2365	2368
				2380	2519	2520	2522*	2523	2524	2525	2526	2528	2529	2529	2530
				2532	2533	2535	2537	2537	2538	2538	2539	2541	2543	2544	2544
				2545	2547	2549	2550	2550	2551	2551	2552	2552	2553	2560*	2580
				2580	2582	2582	2583	2584	2585	2585	2586	2586	2587	2588	2588
				2589	2590	2591	2591	2592	2594	2594	2595	2595	2596	2596	2597
				2597	2598	2694	2703	2705*	2706	2707	2708	2709	2711	2712	2712
				2713	2714	2714	2716	2716	2717	2718	2718	2722	2722	2723	2727
				2727	2728	2730	2730	2731	2731	2732	2732	2733	2733	2734	2734
				2740	2741	2742	2742	2743	2748	2748	2749	2749	2751	2751	2757*
				2807	2809	2810*	2812	2817	2819	2825	2826	2827	2827	2828	2829
				2829	2830	2833	2835	2836	2836	2839	2840	2841	2841	2848	2850
				2851	2857*	2861	2863	2866	2867	2868	2876	2882	2885	2886	2887
				2888	2894	2895	2898	2899	2900	2901	2905	2905	2911	2911	2914
				2916	2916	2918	2918	2919	2923	2923	2924	2925	2929	2933	2938
				2939	2939	2940	2941	2944	2945	2946	2946	2949	3019	3019	3021
				3021	3023	3023	3026	3026	3027	3027	3030	3031	3049	3050	3051*
				3052	3054	3054	3055	3056	3061	3061	3063	3063	3064	3064	3065
				3067	3067	3068	3069*	3086	3088	3089*	3091	3093	3095	3095	3105
				3105	3110	3110	3111	3111	3112	3112	3113	3113	3114	3114	3118
				3119	3119	3122	3128	3129	3134	3135	3135	3137*	3258	3265*	3280
				3281	3281*	3299*	3408	3416*	3426	3427	3427*	3434	3435	3436	3437
				3437*	3444	3445	3446	3447	3448	3448*	3455*	3456	3458	3465	3465*
				3466	3468	3469	3499	3500	3500*	3503	3510	3511	3511*	3514	3515
				3515*	3520	3520*	3522*	3523	3523*	3526	3530*	3531	3531*	3539	3543
				3544	3544*	3545	3548	3552*	3571*	3655	3656	3658	3658*	3666	3667
				3667*	3668	36									



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@DADDR	001	0002	0140	2528 2711 2776 2827
@DBFR1	001	0004	0129	2595*
@DBFR2	001	0005	0130	4104 4114
@DCALK	001	0001	0081	
@DCBCY	001	0009	0115	
@DCBT1	001	0050	0117	
@DCNT	001	0003	0128	2577 4027* 4052*
@DCST1	001	0040	0116	
@DCTRL	001	0000	0125	
@DCYL	001	0001	0126	2565 2716*
@DD2	001	0003	0030	
@DGET	001	0001	0134	2420 2428 2961 3642 4098 4108
@DOLAR	001	005B	0068	
@DOP2	001	0004	0028	2250* 2347* 2354* 2524* 2528* 2529* 2600 2601 2707* 2711* 2712* 2774 2775
@DPLNG	001	0006	0132	2530 2564 2713 2772
@DPOS	001	0000	0133	
@DPUT	001	0002	0135	2953
@DSAD	001	0002	0127	2566 2714* 2718* 2722 2723* 2727* 2730* 2734 2740* 2748* 2751* 2773 3566* 4025* 4026* 4044* 4045* 4065
@DSBCY	001	0004	0106	
@DSCS1	001	0000	0107	
@DSIVF	001	0003	0138	
@DSPIN	001	0002	0131	
@DTRSZ	001	0018	0085	
@DVBCY	001	0007	0108	
@DVRFY	001	0031	0136	
@DWAIT	001	00FF	0137	
@DWBCY	001	0005	0103	
@DWSIZ	001	00C0	0105	
@DWTB1	001	0003	0104	
@DZERO	001	00F0	0064	
@D1	001	0002	0026	3055* 3067* 3105
@EOF	001	001C	0077	2879 3569 3572 3730 3742
@EOFTC	001	0075	0162	2994
@EOS	001	001E	0076	2028 2060 2094 2113 2141 2187 2259 2279 2344 2369 3275 3866
@FDDBC	001	0000	0195	
@FDE1	001	000C	0200	
@FDFNA	001	000B	0198	
@FDHLN	001	0002	0208	
@FDLNC	001	0002	0193	
@FDNSC	001	0003	0210	
@FDSD	001	0000	0206	
@FLACE	001	0009	0197	
@FLDBC	001	0001	0196	
@FLENT	001	0004	0201	
@FLFNA	001	0002	0199	
@FLHLN	001	0002	0209	
@FLLNC	001	0002	0194	
@FLNSC	001	0001	0211	
@FLSD	001	0001	0207	
@HDRLN	001	0007	0092	0672
@IAR	001	0010	0017	
@INDEX	001	0001	0156	0157
@INST3	001	0003	0032	
@INST4	001	0004	0033	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@INST5	001	0005	0034	
@INST6	001	0006	0035	
@IILIAR	001	00C0	0020	
@LINSZ	001	00F4	0084	0646 2437
@MAPEN	001	0005	0089	
@MINCR	001	2000	0083	
@MINUS	001	0060	0080	3425 3426
@NOP	001	0080	0040	2210 2533 2753 2885 3100 3174 3264 3441 3483 3575 3691
@NUMBR	001	007B	0070	
@OPD2	001	0004	0029	
@OP1	001	0003	0027	2225* 2226* 2243* 2244* 2266 2266* 2267* 2268* 2270 2281* 2286* 2287* 2288 2289 2291 2291 2306* 2316* 2345* 2347 2349* 2351 2352* 2353 2359 2520* 2526* 2703* 2709* 2855* 2858 2860 2913 2921 2951 3050* 3052* 3088* 3091* 3258* 3259* 3260* 3262* 3407* 3408* 3409* 3462* 3468* 3471* 3482* 3489* 3522 3530 3556* 3580* 3668* 3681* 3737* 3853* 4004* 4006*
@OP2	001	0005	0031	2245* 2251* 2269 2317* 3469* 3470*
@PCTRL	001	0000	0149	2367* 2376
@PDATA	001	0003	0151	
@PGCSZ	001	0020	0082	0083
@PPLNG	001	0004	0148	
@PRCNT	001	0001	0150	2417 3732* 3747*
@PRETR	001	00C0	0154	2007 2367 2376 3635
@PRINT	001	0040	0152	0154 2412
@PSR	001	0004	0015	3292*
@PWAIT	001	00FF	0158	
@P1IAR	001	0020	0018	
@P2IAR	001	0040	0019	
@Q	001	0001	0024	2210* 2233* 2252* 2253* 2273* 2274* 2353* 2532* 2533* 2543* 2549* 2575 2576 2578 2587* 2589 2754 2830* 2835* 2882* 2885* 2898* 2904 3056* 3064 3064* 3067 3168 3172 3264* 3285* 3304 3438* 3441* 3452 3467* 3473* 3474* 3483* 3491* 3574 3682* 3691* 3719* 3720* 3721* 3740* 3872
@REGL	001	0002	0012	
@RETRN	001	0080	0153	0154
@RLDWN	001	004F	0159	
@RTRNC	001	0080	0161	
@SBLN	001	0005	0170	2991
@SBLNL	001	0002	0184	
@SCTS	001	0100	0100	3741*
@SDFLN	001	0007	0090	2414
@SDF0	001	0000	0166	2995
@SDF1	001	0001	0167	2996
@SDF2	001	0002	0168	2997
@SDF3	001	0003	0169	
@SECCY	001	0030	0086	
@SIST	001	0001	0181	
@SLASH	001	0061	0067	
@SLAST	001	0002	0183	2896
@SMIDL	001	0003	0182	
@SNULL	001	0080	0173	2853 2862
@SONLY	001	0000	0180	2883
@STEXT	001	0007	0172	
@STYPE	001	0006	0171	2992
@TBCNT	001	0000	0160	
@TBLEF	001	0010	0155	0157
@TBLIX	001	0011	0157	

## CROSS REFERENCE

SYMBOL	LEN	VALUE	DEFN	REFERENCES										VER 15, MOD 00 10/06/22			PAGE 81
@UCB	001	0087	0039	2233	2587	2882	2893	2898	3170	3285	3438	3452	3467	3682	3740		
				3850	3861												
@UPARW	001	005A	0078														
@VADDR	001	0002	0141														
@VENTA	001	0056	0113														
@VMDDV	001	00FE	0114														
@VMFD1	001	0000	0109														
@VMFD2	001	0001	0110														
@VMRS3	001	0002	0112														
@VMTRL	001	0001	0111														
@VOLID	001	0006	0091														
@VQ	001	0001	0025	2257	2277	2278	2284	2360	3518	3725	3729						
@WSFIT	001	0500	0101	4099	4109												
@WSTBL	001	0503	0102	2957	3643												
@XR	001	0002	0014	2023*	2028	2031	2033	2042	2044	2060	2065	2069	2071	2071*	2074		
				2094	2099	2100	2102	2102*	2106	2108	2108*	2113	2134	2141	2147*		
				2149*	2186*	2187	2189	2189*	2191	2236*	2237*	2238*	2257	2259	2261		
				2261*	2268	2288*	2343	2343*	2344	2345	2348*	2359*	2360	2368*	2369		
				2370	2380*	2381	2816*	2825*	2826	2837	2840	2846	2848	2849	2849*		
				2853	2855	2856	2856*	2862	2864	2874	2875	2877	2883	2886	2887		
				2888	2889	2889*	2894	2896	2899	2900	2901	2902	2902*	2903	2909		
				2912	2914	2920	2922	2922*	2938*	2940	2941*	2942	2945	3030*	3058		
				3093	3102	3118	3121	3121*	3126	3126*	3127	3134	3266	3269	3269*		
				3270	3272	3272*	3273	3275	3280	3295	3407	3413*	3417*	3421	3423		
				3435	3439	3444	3445	3454	3462	3463	3464*	3466	3467	3468	3469		
				3470	3470	3471	3471	3472	3472	3473	3473	3474	3474	3481	3481		
				3482	3482	3483	3484	3484	3488	3488	3489	3489	3491	3491	3492		
				3492	3496	3496	3504	3504	3505	3505	3506*	3522	3524	3527	3527		
				3528	3530	3532*	3536	3551*	3557	3557*	3558	3565*	3569	3572	3653		
				3654	3657	3657	3670	3678	3692	3695	3730	3738*	3742	3854	3857		
				3857*	3858	3860	3863	3863*	3864	3866	3868	4011*	4013	4013*	4015		
				4026	4031	4032	4045										
@ZERO	001	0000	0062	2027	2028	2033	2053	2060	2063	2085	2094	2097	2113	2115	2143		
				2187	2257	2259	2344*	2360*	2532	2723	2850	2894	2903*	2912	3263		
				3266	3270	3273	3275	3280	3280*	3420	3421	3423	3426*	3444	3444*		
				3445	3446*	3456	3458*	3499*	3503*	3524	3543*	3548*	3666*	3670	3672*		
				3678	3683*	3692	3692*	3695	3697*	3699	3701*	3715	3741	3742	4026		
				4032	4066												
C2DEC5	001	136B	3048	3049	3051	3414	3507										
C2DVAL	005	13A9	3076	3061	3061	3061*	3063	3063	3415	3508	3510	3514					
C2D020	003	137D	3056	3067	3068												
C2D030	003	1380	3058	3055*	3056*	3064	3064*	3065	3067*								
C2D040	004	138A	3063	3059													
C2D050	004	139C	3069	3050*													
C2D052	004	13A0	3070	3052*													
C2D901	001	13A4	3074	3054	3054	3054											
C2D902	001	13A5	3075	3054													
C2D903	005	13AE	3077	3054	3054*	3061	3061	3061	3063	3063	3063	3063*					
C4BCHC	001	0004	3162														
C4BCHR	001	141B	3150	3118*	3119												
C4BINI	001	141A	3148	3095													
C4BIN2	001	13AF	3085	2135	3086	3089											
C4BLEN	002	1417	3160	3134*	3135*												
C4BLNK	003	13CA	3168														
C4BLOW	001	00F0	3164	3102													
C4BLVL	002	0002	3166	3095	3110	3111	3112	3113	3114	3119							

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
C4BNMC	004	13C6	3172	
C4BNOP	001	0080	3174	
C4BSAV	002	141D	3154	3093* 3135
C4BSPC	001	0087	3170	
C4BVAL	002	1419	3146	2195 3095* 3110 3110* 3111 3112 3112* 3113 3113* 3114* 3119* 3166
C4BWRK	002	1417	3143	3111* 3114 3160 3166
C4BYT1	001	1418	3145	
C4B100	004	13C5	3096	3172
C4B200	003	13C9	3100	3122 3168
C4B300	003	13CC	3102	3128
C4B590	003	13FB	3126	3105 3129
C4B600	003	13FE	3127	3100
C4B700	003	1407	3134	3103
C4B800	004	140E	3137	3088* 3106
C4B850	004	1412	3139	3091*
C4B900	001	141E	3156	3096* 3105*
C4END	001	141F	3175	
DCDOUT	001	0000	2404	3587 3589
DLPRNT	001	0000	2403	3583
DL2C01	002	1187	2766	2706 2708 2716
DL2C05	002	1189	2767	2712
DL2C48	001	1183	2764	2714 2718
DL2DPL	006	118F	2772	2713*
DL2END	001	1192	2777	
DL2E01	001	0001	2696	2714 2716 2718 2722 2734 2742
DL2E02	001	0002	2697	2727 2730 2748
DL2E18	001	0018	2698	2728
DL2E60	001	0060	2699	2743
DL2E7C	001	007C	2701	2740
DL2ICS	001	10F9	2702	3024
DL2K18	002	1185	2765	2731
DL2K60	002	1180	2762	2749
DL2K80	002	1182	2763	2730 2748
DL2LST	001	118A	2771	2714* 2716* 2718* 2722 2723* 2727* 2730* 2734 2740* 2748* 2751* 2756
				2773
DL2PHY	001	118C	2773	
DL2RAD	002	1191	2776	2727
DL2SAD	005	1111	2774	2734* 2741* 2742* 2743 2749* 2751
DL2SEC	005	111A	2775	2722* 2728 2731* 2732 2732* 2733 2733* 2742
DL2SWH	003	116F	2754	
DL2TSD	001	0083	2700	2741
DL2000	001	10FD	2704	2694 2705
DL2001	005	110D	2711	2707* 2774
DL2002	005	1116	2713	2711* 2712* 2775
DL2005	004	111B	2714	2717
DL2006	004	1129	2718	2715
DL2008	004	1146	2732	2729
DL2010	003	115C	2743	
DL2100	004	116A	2751	2744
DL2110	003	116E	2753	2754
DL2900	004	1177	2757	2703* 2753
DL2910	004	117B	2758	2709*
DL4CYL	001	10B3	2565	2537*
DL4C01	002	10B9	2573	2523 2525 2537
DL4C05	002	10BB	2574	2529
DL4C24	003	108A	2576	2550

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
DL4C48	003	1077	2578	2544 2585 2591
DL4C96	003	1066	2575	2538
DL4DPL	006	10B7	2564	2530*
DL4EFD	001	0001	2571	2543 2589
DL4END	001	10F9	2602	
DL4ETB	001	0080	2572	2549
DL4E01	001	0001	2570	2545
DL4E24	001	0018	2569	2547
DL4E48	001	0030	2568	2541 2583
DL4E96	001	0060	2567	2535
DL4ICS	001	103D	2518	2947 3561 4048 4055
DL4LST	001	10B2	2563	2556 2565 2566 2577 2595*
DL4SAV	005	1054	2601	2588* 2591* 2594
DL4SCD	001	10B4	2566	2535 2538* 2541 2544* 2547 2550* 2551 2551* 2552 2552* 2553* 2582
				2588 2594* 2596*
DL4SCT	001	10B5	2577	2545 2580 2586* 2595 2596 2597*
DL4SPT	004	10BC	2581	2546
DL4WRK	005	1055	2600	2580* 2582* 2583 2585* 2586 2597
DL4010	001	1041	2521	2519 2522
DL4020	005	1051	2528	2524* 2600 2601
DL4030	005	105A	2530	2528* 2529*
DL4035	003	105F	2532	2598
DL4040	003	1065	2535	2539 2575
DL4050	003	1076	2541	2536 2578
DL4060	003	1083	2545	2542
DL4070	003	1089	2547	2576 2584 2590 2592
DL4080	004	1096	2551	2548
DL4100	003	109E	2553	2532* 2543* 2549* 2589
DL4200	003	10A7	2558	2533* 2587*
DL4500	004	10BC	2580	2581
DL4600	004	10E6	2594	2558
DL4900	004	10AA	2560	2520*
DL4920	004	10AE	2561	2526*
GFIBF1	001	1900	2434	2435 3565 3605 3645 3738 3741* 3985 4101
GFIBF2	001	1A00	2435	4111
GFIBR1	001	18EF	4104	4067
GFIBR2	001	18F5	4114	
GFIBSE	001	188C	4010	4002 4005
GFICT1	001	0001	3971	4033 4052 4071
GFICT2	001	0002	3972	4027
GFIDS0	001	0000	3974	
GFIDS1	001	0001	3975	
GFIDS2	001	0002	3976	4015
GFIDS3	001	0003	3977	
GFIDS4	001	0004	3978	4013 4031 4045
GFIDS5	001	0005	3979	
GFIDS8	001	0008	3980	3989
GFIDTA	001	0003	3991	4025 4044
GFILNO	002	18E8	4090	2195* 2200 4015
GFILN1	001	0001	3982	4026 4031 4032 4045
GFILN2	001	0002	3983	4015
GFINDN	001	1881	4003	2197
GFIND0	004	18DF	4080	4004*
GFIND2	004	18E3	4081	4006*
GFINTY	001	1D08	3989	4011
GFIRAD	001	18F0	4107	4044* 4045* 4049 4114

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GFIRE	001	18EA	4097	4025*	4026*	4027*	4052*	4056	4065	4104
GFITAD	001	1D00	3987	3989						
GFIWRK	001	18E9	4092	4031*	4032*	4033				
GFI100	003	1890	4013	4017						
GFI150	004	1893	4015							
GFI200	003	18AF	4034							
GFI500	004	18C2	4055	4034						
GRABIT	001	1192	2808	2199	3750	4069				
GRABOA	002	132A	2978	2905	2918	2923				
GRABSE	004	1279	3004	2807	2810					
GRACCA	002	131B	2955							
GRACFN	001	131A	2953							
GRACPL	001	131A	2952							
GRACSC	001	131D	2958	2829*	3019*	3026*				
GRAEBS	001	00FF	2986	2828	2949					
GRAEDB	001	0002	2972	2839	2944					
GRAEDC	001	0001	3003							
GRAEDL	001	0006	2991	2856	2874					
GRAEDS	001	0005	3005	2939						
GRAEDT	001	0007	2992	2846	2875	2877				
GRAEET	001	0075	2994	2846	2877					
GRAEFG	001	0004	2985	2868						
GRAEFI	001	0000	2981	2812						
GRAEFR	001	0001	2983	2817	2866					
GRAEFS	001	0002	2984	2819						
GRAEFW	001	0003	2982							
GRAELK	001	0000	2988	2837	2840	2942	2945			
GRAELL	001	0002	2993	2874						
GRAELN	001	0000	2989	2837	2942					
GRAELP	001	0007	2999	2889						
GRAELS	001	0004	3000	2902						
GRAEMR	001	001B	3001	2909						
GRAENC	001	0001	3002	2909	2914*	2920	2922			
GRAERR	004	1333	3010	2830*	2835*	2851	2863	2867		
GRAESC	001	0001	2987	2833	2933					
GRAES0	001	0001	2995	2853	2862					
GRAES1	001	0002	2996	2848	2849	2886	2887*	2888	2899	2900* 2901
GRAES2	001	0003	2997	2864	2883	2896				
GRAETP	001	0002	2998	2864						
GRAEW2	001	0006	3006							
GRAEXA	001	0001	2990	2991	2992	2995	2996	2997		
GRANCA	002	1325	2966	2826*	2836*	2939	2940*	3027		
GRANDA	002	1322	2962	2827*	2839*	2840*	2841*	2944*	2945*	2946* 3023*
GRANPB	002	132A	2971	2841	2946	2977	2978	2979	3019	
GRANPL	001	1320	2960	2948	3025					
GRANXC	002	132A	2979							
GRAONE	002	132A	2977	2914						
GRAPSG	002	132F	2975	2887						
GRASAR	004	121C	2860	2811*						
GRASBR	004	1218	2858	2809*						
GRASEG	001	1332	2980	2888*	2901*	2923*				
GRASHT	001	133F	3018							
GRASIZ	001	132B	2973	2828*	2848*	2850	2886*	2899*	2949*	
GRASSG	002	1331	2976	2900						
GRASSZ	002	1328	2970	2836	3021					
GRASVC	003	129D	2904	2894*						



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
GRATND	005	12B7	2913	2911* 2916 2918*
GRATXT	002	132D	2974	2876
GRA020	004	11A4	2816	2855*
GRA100	003	11B7	2825	2813
GRA140	003	11DE	2837	
GRA150	004	11EB	2841	2838
GRA200	003	11F2	2846	2820
GRA210	004	11F8	2848	2821 2870
GRA220	003	11FF	2850	2891 2893
GRA230	004	120E	2855	2847 2865 2869 2880
GRA240	004	1215	2857	2858
GRA245	004	1219	2859	2860
GRA250	003	121D	2861	2852 2854
GRA260	003	1220	2862	2834 2842
GRA300	005	123E	2874	2818
GRA303	003	125B	2882	2878
GRA305	004	1267	2886	2884
GRA310	004	1279	2891	2882* 2885* 2892 2898* 2924 3004
GRA313	004	128D	2899	2897
GRA315	003	129C	2903	2904
GRA316	004	129F	2905	2925
GRA317	001	12A3	2906	2890
GRA320	005	12B4	2912	2913 2919
GRA330	004	12C7	2918	2915
GRA350	005	12CE	2920	2908 2910 2921
GRA360	003	12D3	2922	2917
GRA5SA	004	1319	2951	2929*
GRA500	003	12E0	2929	2861 2895
GRA600	001	12E9	2932	
GRA620	004	1309	2946	2943
GRA640	004	130D	2947	
GRA660	003	1313	2949	3031
GRA680	004	1316	2950	2951
GRA700	004	133F	3019	2934
GRA720	004	134D	3023	3020
GRA730	004	1351	3024	
GRA740	003	1365	3030	3022
GRBFRA	002	131F	2959	2825 2938 2939* 2941 3021* 3027* 3030 4067*
GRBFR1	001	1900	3985	2959
GRLINE	002	0F8C	2324	2200 2874* 3413
GRSCTR	001	1323	2963	2196* 2829 2833 2933 3023 3026
GRSRDA	002	131C	2954	2827 2955 4065*
GRTEND	005	12D1	2921	2191* 2218* 2223 2876* 2905* 2911 2916* 3537
GRTEXT	001	1B00	2323	2186 2328 2879* 2974 3612
GRTYPE	001	0F8E	2326	2875*
GRWHAT	001	1326	2967	2812 2817 2819 2866 2868 4066* 4071*
KCHALG	001	0003	2157	2100 2102
KCHALL	003	0DCE	2159	2100
KCHANG	001	05FF	1987	
KCHB@1	002	0CA1	2047	2248* 2250
KCHB@2	002	0CFA	2078	2052* 2249* 2251
KCHBF@	002	0F92	2328	2219* 2236 2349
KCHBUF	001	1B00	2322	2323 2334 2423
KCHCNT	001	102E	2417	2351* 2365
KCHDPL	001	1031	2419	2038 2165
KCHDP2	001	1037	2427	2386



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SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00	10/06/22	PAGE	86
KCHED@	002	0F9A	2334	2220* 2289 2306				
KCHEND	001	103D	2436	2437				
KCHEOS	002	0F9C	2335	2223* 2224* 2225 2243 2245 2269* 2270* 2272* 2273 2274				
KCHFIR	005	0DCB	2158	2069 2106				
KCHFLG	001	0005	2156	2069 2071 2106 2108				
KCHFOR	001	0004	2155	2069 2106 2156				
KCHIE@	001	06F9	2398	2181* 2182 2182 2399				
KCHKAL	001	0004	2392	2103 2311				
KCHKFR	001	0008	2393	2109				
KCHLG1	001	0F8D	2325	2051* 2052 2235 2246* 2248 2252 2275 2286				
KCHLG2	002	0F98	2331	2084* 2239 2247* 2249 2253 2275				
KCHLIN	001	0010	2394	2137 2184 2211				
KCHMCT	001	0030	2408					
KCHMN1	002	0F90	2327	2238				
KCHMSK	001	0DCF	2160	2027* 2050* 2055* 2083* 2087* 2103* 2109* 2137* 2184 2211 2227 2229				
				2231 2264 2282 2309 2311 2355 2357				
KCHNLF	001	0080	2395	2055 2229 2309 2355				
KCHNLS	001	0040	2397	2087 2231 2282				
KCHNUM	001	00F0	2389	2033				
KCHNXT	001	06F8	2399	2182*				
KCHOLD	001	1131	2437	2277* 2278				
KCHPL1	002	0F96	2330	2224 2226 2246 2247 2267 2272 2287 2352 2354 2368 2380				
KCHPPL	001	102D	2411	2367* 2373 2376 2417				
KCHSD@	002	102C	2409	2220				
KCHSG@	001	1800	2406	2047 2080				
KCHSG1	001	0001	2390	2050 2227				
KCHSG2	001	0002	2391	2083 2264 2357				
KCHTWO	001	0002	2154	2100 2157				
KCHWRK	002	0F94	2329	2183 2183* 2235* 2237 2239* 2244 2281 2316 2317 2363* 2364* 2365				
KCH001	001	0C59	2020	2002				
KCH010	001	0C8E	2041	2145				
KCH020	003	0CA6	2050					
KCH025	001	0CC0	2057	2054				
KCH030	005	0CDD	2069					
KCH040	003	0CEB	2074	2021 2022 2070				
KCH050	004	0D11	2091	2086				
KCH051	004	0D31	2100					
KCH052	004	0D41	2106	2101				
KCH055	004	0D4E	2110	2072 2104				
KCH069	001	0D6A	2118	2025 2032 2045 2059 2076 2092 2107 2111 2139 2148 2150				
KCH080	001	0D6E	2123	2034				
KCH084	004	0DB9	2147	2126 2129 2132				
KCH085	004	0DC0	2149	2048 2064 2081 2098 2116 2136 2144				
KCH099	004	0DD0	2164	2029				
KCH100	001	0DD6	2168	2061 2095 2114 2142				
KCH102	003	0DFF	2187	2190				
KCH104	004	0E0C	2191	2188				
KCH105	001	0E13	2194	2185				
KCH106	004	0E21	2199	2202				
KCH110	001	0E3A	2207	2192 2201				
KCH112	001	0E6D	2222	2212 2214 2216				
KCH114	001	0E98	2234	2230				
KCH129	003	0EDB	2256	2210* 2233*				
KCH130	006	0F22	2277	2245* 2269 2273* 2317*				
KCH131	005	0EDE	2257	2169 2170 2250* 2252* 2262 2318				
KCH132	001	0EF2	2263	2256 2258				

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
KCH133	006	0F28	2278	2243* 2244* 2266 2274* 2316*
KCH134	004	0F2E	2279	2225* 2226* 2266* 2267* 2271 2289 2291 2306* 2345* 2347 2349* 2351
				2352* 2353 2359
KCH135	001	0F32	2280	2276
KCH138	006	0F3D	2284	2251* 2253* 2268* 2270 2281* 2286* 2287* 2288 2291
KCH139	001	0F43	2285	2283
KCH140	004	0F5F	2298	2290
KCH141	001	0F72	2308	2293
KCH190	001	0F9D	2342	2265
KCH2BF	001	0001	2396	2196
KCH200	001	0FA6	2346	2228 2232 2260 2292 2307 2310 2312
KCH205	003	0FD4	2359	2356
KCH210	005	0FD7	2360	2347* 2353* 2354*
KCH215	004	0FF5	2367	
KCH216	001	1003	2371	2366
KCH220	001	1016	2378	2358
KCH225	004	101D	2381	2350
KCH230	001	1025	2383	2362 2377
KLICWD	001	0060	2153	3591* 3592 3592 3592*
KLIDVT	001	0000	2400	3581 3585
KLIMK1	001	0000	2401	3581 3585
KLIMK4	001	0000	2402	
SCACNT	002	1880	3878	2063 2097 2115 2143 3868* 3869*
SCACOF	001	0087	3850	
SCACOM	001	0001	3849	2026
SCAINC	001	0001	3848	3857 3863
SCAMMA	003	185D	3872	2026*
SCANIT	001	1840	3852	2024 2058 2091 2110 2138
SCASVE	002	187E	3877	3854* 3869
SCASV1	001	187D	3876	
SCA100	003	184F	3857	3859
SCA200	003	1852	3858	3856
SCA250	003	185C	3861	3872
SCA300	003	185F	3863	3865
SCA400	004	186F	3868	3861
SCA500	004	1879	3871	3853* 3867
SCSCNT	001	1494	3308	2051 2053 2084 2085 3263* 3277* 3283
SCSERR	002	1499	3311	3292
SCSFRC	001	00FF	3306	3295
SCSLNG	004	1470	3304	
SCSPL1	002	1496	3309	3261 3277
SCSPL2	001	1497	3310	3260
SCSQUO	001	007D	3305	3266 3270 3273
SCSTRG	001	141F	3257	2046 2077
SCS005	004	143D	3265	3262*
SCS006	003	1447	3269	3286
SCS010	003	1459	3275	3271
SCS020	003	1465	3279	3264* 3285*
SCS025	004	146F	3283	3304
SCS029	004	147A	3286	3279 3284
SCS030	001	147E	3291	3267 3276
SCS040	003	1489	3295	3274
SCS050	004	148C	3299	3258* 3294
SCS051	004	1490	3300	3259* 3260*
SDLACT	001	16E0	3596	3662* 3674* 3685* 3694* 3699
SDLBEG	001	0006	3616	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
SDLBF@	001	1B00	3612	3417
SDLBUF	001	1900	2407	2409 3411* 3412 3412* 3415* 3416 3591* 3592 3592* 3606 3637 3727 3746
SDLCON	001	16E7	3600	3506
SDLCTR	001	16EC	3604	3429* 3431* 3449* 3480* 3481* 3482 3484
SDLC18	001	0012	3610	3662
SDLC80	001	0080	3626	3475 3480
SDLDPL	001	16F5	3641	3562 3566*
SDLDZR	001	000F	3621	3439
SDLEBC	001	00F0	3618	3436 3446 3447
SDLED@	002	16EE	3605	3559
SDLED1	001	00FD	3608	3412*
SDLEND	001	00FE	3609	3411* 3412
SDLEXE	001	00C5	3624	3503 3655
SDLEXP	001	16E8	3601	3454* 3475 3481 3484* 3488* 3489 3491 3492 3497 3504* 3505* 3524 3527* 3653 3657*
SDLFOR	001	0004	3627	3415
SDLHLD	001	11EC	3750	3722* 3729
SDLIST	001	149A	3406	2217
SDLLNE	001	0007	3631	
SDLLNG	001	0005	3629	3416
SDLLST	002	16DF	3595	3466* 3472* 3473 3492 3496* 3497 3504 3657
SDLMAX	001	00FF	3628	3412
SDLMIN	001	0010	3614	3423
SDLMN1	002	16E4	3598	3455 3571 3723
SDLMOD	001	16EB	3603	3488
SDLNUM	001	0003	3617	3435 3445
SDLONE	001	0001	3648	3644
SDLONG	001	0008	3620	3431
SDLOT@	002	16F0	3606	2219 3711
SDLPGM	001	180D	3736	
SDLPL1	002	16EA	3602	3449 3470 3474 3527 3566 3674 3685 3694 3717
SDLPL2	002	16E2	3597	3496 3505
SDLPNT	001	004B	3623	3519
SDLPPL	001	16F1	3634	3584 3588 3732* 3747*
SDLQUO	001	007D	3611	3666 3695 3697 3701
SDLSAV	002	16E6	3599	2218 3434* 3471 3472 3539* 3545* 3718
SDLSMN	001	183D	3751	3420* 3425* 3715
SDLSRT	001	0004	3613	3429
SDLTHR	001	0003	3625	3511
SDLTWO	001	0002	3619	3448 3510* 3515 3653
SDLTYP	001	0040	3630	3421
SDLWID	002	16FC	3649	3712 3747
SDLWRK	002	183F	3752	3710* 3711* 3712 3714* 3717* 3718* 3719 3720 3721 3728 3732
SDLZON	001	0002	3615	3444
SDLZRO	001	00F0	3622	3456 3499 3508 3526 3548
SDL001	001	14A6	3410	
SDL005	001	14C6	3419	3547 3748
SDL010	004	14E1	3428	3424
SDL025	001	14F0	3433	3430
SDL030	004	150C	3442	3440 3450
SDL035	003	1510	3443	3438* 3441* 3452
SDL037	006	1524	3449	3443
SDL040	004	153E	3455	3459
SDL050	001	154F	3461	3457
SDL052	001	1581	3479	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
SDL053	001	1598	3487	3476
SDL054	001	15A0	3490	
SDL055	003	15C4	3503	3498
SDL056	004	15CF	3506	3659
SDL057	005	15E9	3514	3509
SDL060	006	15F4	3518	3463 3464 3468* 3469* 3470* 3473* 3474* 3482* 3491* 3493 3530 3654
SDL061	004	15FA	3519	3471* 3489* 3522
SDL062	003	1601	3521	3467* 3483*
SDL063	003	1607	3523	3528
SDL064	003	161A	3530	3525
SDL065	004	1620	3532	3462* 3494 3501 3512 3516 3521
SDL066	001	1624	3533	3453 3549 3703
SDL075	001	1641	3542	3538 3731
SDL080	003	1653	3548	
SDL089	004	165A	3551	3407* 3540 3734
SDL090	004	165E	3552	3408*
SDL091	004	1662	3553	3409* 3737*
SDL100	001	1666	3555	3442 3451 3546 3669 3677 3739
SDL102	004	1690	3567	
SDL104	004	16A4	3573	3574 3740*
SDL105	004	16A8	3577	3556* 3560 3568 3570
SDL150	001	16AC	3579	3726 3733
SDL160	004	16BD	3585	
SDL170	004	16C4	3587	3582
SDL180	004	16DA	3593	3580* 3586
SDL200	003	16FD	3653	3485
SDL250	001	1714	3661	3422
SDL251	004	1722	3669	3676
SDL255	004	173F	3677	3686 3700
SDL256	003	1749	3680	3682* 3691*
SDL257	003	1754	3683	3680
SDL270	004	1764	3687	3668* 3675 3681*
SDL280	001	176B	3690	3671 3679
SDL281	004	1788	3699	3696
SDL285	003	1790	3701	3688
SDL300	001	179B	3709	3535 3573
SDL305	006	17BF	3718	3716
SDL310	005	17D7	3722	3719*
SDL320	004	17E3	3725	3721*
SDL330	005	17F3	3729	3720*
SDL340	003	17F8	3730	3713
SDL345	004	182F	3746	3743
SLLINE	001	0000	2405	

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY = 0

OL105 I THE CODE LENGTH OF #KCHAN IS 6390 DECIMAL.  
OL103 I TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 20  
NAME-#KCHAN,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000

START ADDRESS	CATEGORY	NAME AND ENTRY	CODE LENGTH HEXADECIMAL	DECIMAL
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0C00	0	#KCHAN	18F6	6390
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OL100	I	THE TOTAL CORE USED BY #KCHAN IS 6390 DECIMAL.		
OL101	I	THE START CONTROL ADDRESS OF THIS MODULE IS 0C00.		
OL104	I	TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 25		
		NAME-#KCHAN,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O		