

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

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



#MIPPE - INITIALIZE CORE RESIDENT NUCLEUS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 2

0000	2	#MIPPE	START	
	3		PRINT ON,NODATA	
	4	*	@SYS EXP-N	
	213+		PRINT ON	
	214	*	@HDW EXP-N	
	398+		PRINT ON	
	399	*	@FXD EXP-N	
	803+		PRINT ON	
	804	*	@CAN EXP-N	
	907+		PRINT ON	
	908	*	@WKA EXP-N	
	978+		PRINT ON	
	979	*	@CY0 EXP-N	
	1052+		PRINT ON	
	1053	*	@CNF EXP-N	
	1166+		PRINT ON	
	1167	*	@ERM EXP-N	
	1789+		PRINT ON	
	1790	*	\$V\$E EXP-N	
	2212+		PRINT ON	
	2213	*	@VOL EXP-N	
	2251+		PRINT ON	
	2252	*	@SPF EXP-N	
	2715+		PRINT ON	
003C	2716	@HCEPK	EQU	X'003C'

## #MIPPE - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE	3
		2718		*****				*
		2719	*	5703-XM1 COPYRIGHT IBM CORP. 1970				*
		2720	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083				*
		2721	*					*
		2722		*****				*
		2723	*	STATUS				*
		2724	*	VERSION 1 MODIFICATION 0				*
		2725	*					*
		2726	*	FUNCTION				*
		2727	*	* MIPPER INITIALIZES THE CORE RESIDENT NUCLEUS AT IPL TIME.				*
		2728	*	ALL REQUIRED TABLES AND INDICATORS ARE INITIALIZED.				*
		2729	*	* MIPPER PROVIDES FOR ENTERING A NEW MACHINE CONFIGURATION				*
		2730	*	BEFORE THE CONFIGURATION RECORD IS CHECKED. INTERFACE WITH				*
		2731	*	UCNFIG IS PROVIDED BY MIPPER.				*
		2732	*	* MIPPER CHECKS MACHINE CONFIGURATION VIA MCNFIG.				*
		2733	*	* ALL DISKS WHICH ARE ON-LINE ARE MOUNTED AND CHECKED FOR				*
		2734	*	INITIALIZATION.				*
		2735	*	* HARD PRINTER FAILURES ARE BACKED UP TO THE CRT IF IT IS AVAIL.				*
		2736	*	* THE PROGRAM PROTECTION INDICATOR IS INCREMENTED TO A MAXIMUM				*
		2737	*	VALUE OF 14.				*
		2738	*	* THE DATE IS REQUESTED, EXCEPTED, SYNTAX CHECKED AND PLACED IN				*
		2739	*	THE NUCLEUS.				*
		2740	*	* A CHECK IS MADE FOR WORKAREAS ON BOTH DISKS. IF THEY EXIST				*
		2741	*	BASIC MODE IS ENTERED.				*
		2742	*	* MESSAGES INDICATING THE STATUS OF THE SYSTEM ARE PRINTED.				*
		2743	*					*
		2744	*	ENTRY POINTS				*
		2745	*	THE FIRST EXECUTABLE INSTRUCTION IMMEDIATELY FOLLOWING THE				*
		2746	*	PROGRAM HEADER IS THE ONLY ENTRY POINT.				*
		2747	*	MIPPER IS ALWAYS EXECUTED BY NBLOAD				*
		2748	*					*
		2749	*	INPUT				*
		2750	*	N/A				*
		2751	*					*
		2752	*	OUTPUT				*
		2753	*	* ALL NUCLEUS INDICATORS AND TABLES ARE INITIALIZED.				*
		2754	*	* MESSAGES ABOUT SYSTEM STATUS INCLUDE SUCH TOPICS AS:				*
		2755	*	PRINTER FAILURE - OUTPUT TO CRT.				*
		2756	*	MINIMUM CONFIGURATION ASSUMED.				*
		2757	*	WRONG WORK AREAS.				*
		2758	*	INITIALIZED DISK(S).				*
		2759	*	DISK SIZE VARIES FROM CONFIGURED SIZE.				*
		2760	*					*
		2761	*	EXTERNAL REFERENCES				*
		2762	*	\$LOADR - ENTRY TO LOAD AN OVERLAY.				*
		2763	*	\$NUCBS - START OF COMMUNICATION AREA.				*
		2764	*	\$\$KLD2 - START OF INPUT LINE BUFFER.				*
		2765	*	\$ERMAD - LOCATION OF ERRPGM DISK ADDRESS.				*
		2766	*	\$GUFIO - LOCATION OF GUFUDI DISK ADDRESS.				*
		2767	*	\$SPRNT - ENTRY TO SYSTEM PRINTER INTERFACE.				*
		2768	*	\$DISKN - ENTRY TO DISK IOCS, DKDISK.				*
		2769	*	\$WAITF - WAIT DPL ADDRESS.				*
		2770	*	\$IOIND - I/O STATUS INDICATOR.				*
		2771	*	\$\$PRES - ENTRY TO KEYBOARD IOCS.				*
		2772	*	\$\$KBSN - SENSE BYTE IN DEPRES.				*
		2773	*	\$\$KBDT - DATA BYTE IN DEPRES.				*

## #MIPPE - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 24/05/21 PAGE 4
		2774	*	\$INDR3 - NUCLEUS INDICATORS.	*
		2775	*	\$XRSAB - POINTER TO 2 BYTE SAVE AREA.	*
		2776	*	\$VOLID - VOLUME LABEL TABLE.	*
		2777	*	\$ERRPG - ERRPGM INDICATOR.	*
		2778	*	\$DATE - LOCATION OF CURRENT DATE.	*
		2779	*	\$DKSIZ - DISK SIZE INDICATOR.	*
		2780	*	\$\$EOSA - ADDRESS OF EOS IN INPUT BUFFER.	*
		2781	*	\$ERRCT - STACKED ERROR MESSAGE COUNT.	*
		2782	*	\$CAERK - ENTRY TO LOAD AND EXECUTE ERRPGM.	*
		2783	*	\$CAIPL - ENTRY TO LOAD AND EXECUTE GUFUDI.	*
		2784	*	\$PRDEV - ADDRESS OF SYSTEM PRINTER IOCS.	*
		2785	*	\$BSADR - SPF RELOCATION FACTOR.	*
		2786	*	MCNFIG - ENTRY TO CHECK CONFIGURATION RECORD.	*
		2787	*	UCNFIG - ENTRY TO PROCESS CONFIGURE COMMAND.	*
		2788	*	SCANIT - ENTRY TO SCAN TO PARAMETERS.	*
		2789	*		*
		2790	*	*EXITS, NORMAL	*
		2791	*	NORMAL EXIT IS TO \$CAIPL TO LOAD AND EXECUTE GUFUDI.	*
		2792	*		*
		2793	*	*EXITS, ERROR	*
		2794	*	IF ANY ERROR MESSAGES ARE TO BE PRINTED (I.E. WRONG OR NO	*
		2795	*	WORKAREAS, ETC), EXIT IS MADE TO \$CAERK TO EXECUTE ERRPGM.	*
		2796	*	THE ERROR MESSAGE NUMBERS ARE STACKED AT \$SERSK.	*
		2797	*		*
		2798	*	*TABLES/WORK AREAS	*
		2799	*	N/A	*
		2800	*		*
		2801	*	*ATTRIBUTES	*
		2802	*	RELOCATABLE	*
		2803	*		*
		2804	*	*CHARACTER CODE DEPENDENCY	*
		2805	*	MIPPER ASSUMES STANDARD ENGLISH EBCDIC CHARACTERS WHEN DECODING	*
		2806	*	A REQUEST FOR CONFIGURING. USE OF FOREIGN LANGUAGE INPUT WILL	*
		2807	*	REQUIRE MODIFICATION TO THE INTERNAL CONSTANT, MIPCFG.	*
		2808	*		*
		2809	*	*NOTES	*
		2810	*	ERROR PROCEDURES	*
		2811	*	* INVALID ENTRY OF EITHER THE CONFIGURE COMMAND OR THE DATE	*
		2812	*	RESULT IN THE PRINTING OF A QUESTION MARK (?) AND THE	*
		2813	*	REQUEST MESSAGE REPRINTED.	*
		2814	*	* IF THE PRINTER FAILS WHILE ATTEMPTING TO PRINT THE	*
		2815	*	COPYRIGHT MESSAGE AN ATTEMPT IS MADE TO BACKUP TO THE	*
		2816	*	DISPLAY STATION. IF NO CONFIGURATION RECORD EXISTS, OR	*
		2817	*	IF THE CRT IS NOT PART OF THE MACHINE, THE NORMAL HARD	*
		2818	*	PRINTER FAILURE HALT IS EXECUTED. IF THE CRT IS PRESENT,	*
		2819	*	THE CRT IOCS IS LOADED (VIA MCNFIG), AND THE SYSTEM PRINTER	*
		2820	*	SWITCHED TO IT. A MESSAGE IS DISPLAYED INFORMING	*
		2821	*	THE USER OF THE ACTION. THE PRINTER UNAVAILABLE INDICATOR	*
		2822	*	IS SET SO THAT ANOTHER ATTEMPT TO USE THE PRINTER WILL	*
		2823	*	BE AVOIDED.	*
		2824	*	* IF A FAILURE TO READ-ID FROM DISK OCCURS, THE DISK IS	*
		2825	*	FLAGGED AS UNINITIALIZED. IN THIS CASE IT IS NOT MOUNTED.	*
		2826	*	A SEEK OF ZERO CYLINDERS IS PERFORMED UPON THE RESPECTIVE	*
		2827	*	DRIVE TO RESET THE DISK ERROR LATCH.	*
		2828	*	* CONFLICTS IN DISK SIZES AND WORKAREAS CAUSE AN ERROR MESSAGE	*
		2829	*	TO BE STACKED FOR LATER PRINTING BY ERRPGM.	*

## #MIPPE - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE	5
		2830	*	* AN UNINITIALIZED DISK ON F1 RESULTS IN AN ASSUMPTION OF			*	
		2831	*	A MINIMUM MACHINE AND AN APPROPRIATE MESSAGE.			*	
		2832	*	* ERRORS IN THE CONFIGURATION RECORD AND CONFIGURE COMMAND			*	
		2833	*	SYNTAX ARE HANDLED BY MCNFIG AND UCNFIG RESPECTIVELY.			*	
		2834	*				*	
		2835	*	REGISTER USAGE			*	
		2836	*	INDEX REGISTERS 1 AND 2 ARE USED FOR BASE ADDRESSING.			*	
		2837	*	ON OCCASION REGISTER 2 (@XR) IS USED FOR DISPLACING AND AS A			*	
		2838	*	POINTER.			*	
		2839	*				*	
		2840	*	SAVED/RESTORED AREAS			*	
		2841	*	N/A			*	
		2842	*				*	
		2843	*	MODIFICATION CONSIDERATIONS			*	
		2844	*	IN GENERAL MIPPER MAY BE MODIFIED WITH LITTLE IMPACT ON THE			*	
		2845	*	REST OF THE SYSTEM. HOWEVER, BECAUSE IT MUST INTERFACE			*	
		2846	*	DIRECTLY WITH THE NUCLEUS AND THE CONFIGURE PROGRAM,			*	
		2847	*	MODIFICATIONS SHOULD BE MADE WITH CONSIDERATION TO THESE			*	
		2848	*	INTERFACES. CODING TECHNIQUES, SUCH AS THE MOUNTING OF DISKS,			*	
		2849	*	ASSUMED VARIOUS TABLE FORMATS.			*	
		2850	*				*	
		2851	*	REQUIRED MODULES			*	
		2852	*	@SYSEQ - GENERAL SYSTEM EQUATES.			*	
		2853	*	@HDWEQ - HARDWARE VALUE EQUATES.			*	
		2854	*	@FXDEQ - NUCLEUS LOCATION EQUATES.			*	
		2855	*	@CANEQ - TRANSCIENT LOCATION EQUATES.			*	
		2856	*	@WKAEQ - WORK AREA DISK ADDRESS EQUATES.			*	
		2857	*	@CY0EQ - CYLINDER ZERO EQUATES.			*	
		2858	*	@CNFEQ - CONFIGURATION EQUATES.			*	
		2859	*	\$V\$EQ - VIRTUAL MEMORY EQUATES.			*	
		2860	*	@ERMEQ - ERROR MESSAGE EQUATES.			*	
		2861	*	@VOLEQ - VOLUME LABEL EQUATES.			*	
		2862	*	\$SPFEQ - SYSTEM PROGRAM FILE DISK ADDRESSES.			*	
		2863	*	MCNFIG - TEST CONFIGURATION SUBROUTINE.			*	
		2864	*	UCNFIG - CONFIGURE KEYWORD PROGRAM.			*	
		2865	*				*	
		2866	*	*OTHER			*	
		2867	*	N/A			*	
		2868	*				*	
		2869	*	*****			*	

## #MIPPE - NUCLEUS INITIALIZATION OVERLAY SEGMENT

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE	6
					2871	*****					
					2872	*	MIPPER OVERLAY ROUTINE				*
					2873	*****					
		0C00			2874	ORG	\$\$KLD3				POSITION OVERLAY
					2875	*****					
					2876	*	PROGRAM HEADER FOR DISK LOAD				*
					2877	*****					
					2878	*#\$MIPP EQU	X'0A80'				DISK ADDR OF #MIPPE
					2879	*#\$MIP EQU	X'0C00'				CORE LOAD ADDRESS OF #MIPPE
					2880	*#\$@MIP EQU	13				SECTOR COUNT OF #MIPPE
		0C00			2881	ORG	\$\$MIP				CORE LOAD ADDRESS
				0C00	2882	\$\$\$\$\$ EQU	*				FIRST LOCATION IN PROGRAM
		0C00	7BD4C9D7D7C5	0C05	2883	DC	CL6'#MIPPE'				PROGRAM NAME
		0C06	34	0C06	2884	DC	IL1'52'				PROGRAM NUMBER OF #MIPPE
					2885	*#MIPPE EQU	*				ENTRY POINT TO PROGRAM
				03C0	2887	USING	\$NUCBS,@XR				INDEX SPECIFICATION
				0E48	2888	USING	MIPOBS,@BR				SET BASE REGISTER
				0C07	2889	MIPOVL EQU	*				MIPPER ENTRY
		0C07	C0 87 0DBE		2890	B	MIP000				JUMP OVER MESSAGES
					2891	*****					
					2892	*	PPL'S AND TEXT FOR MESSAGES				*
					2893	*****					
		0C0B	C0	0C0B	2894	@@M160 DC	AL1(@PRETR)				PRINT CONTROL FUNCTION
		0C0C	2F	0C0C	2895	DC	IL1'47'				LENGTH OF MESSAGE
		0C0D	0C1B	0C0E	2896	DC	AL(@CADDR)(@@T160)				ADDRESS OF MESSAGE
					2897	*					
		0C0F	C0	0C0F	2898	@@M161 DC	AL1(@PRETR)				PRINT CONTROL FUNCTION
		0C10	15	0C10	2899	DC	IL1'21'				LENGTH OF MESSAGE
		0C11	0C4A	0C12	2900	DC	AL(@CADDR)(@@T161)				ADDRESS OF MESSAGE
					2901	*					
		0C13	C0	0C13	2902	@@M162 DC	AL1(@PRETR)				PRINT CONTROL FUNCTION
		0C14	31	0C14	2903	DC	IL1'49'				LENGTH OF MESSAGE
		0C15	0C5F	0C16	2904	DC	AL(@CADDR)(@@T162)				ADDRESS OF MESSAGE
					2905	*					
		0C17	C0	0C17	2906	@@M163 DC	AL1(@PRETR)				PRINT CONTROL FUNCTION
		0C18	21	0C18	2907	DC	IL1'33'				LENGTH OF MESSAGE
		0C19	0C90	0C1A	2908	DC	AL(@CADDR)(@@T163)				ADDRESS OF MESSAGE
					2909	*					
		0C1B	C5D5E3C5D940C3D6	0C1B	2910	@@T160 EQU	*				LEFT BYTE OF MESSAGE
				0C49	2911	DC	CL47'ENTER CONFIGURE COMMAND OR PRESS PROG START KEY'				
				0C4A	2912	@@T161 EQU	*				LEFT BYTE OF MESSAGE
		0C4A	C5D5E3C5D940C4C1	0C5E	2913	DC	CL21'ENTER DATE - MM/DD/YY'				
				0C5F	2914	@@T162 EQU	*				LEFT BYTE OF MESSAGE
		0C5F	C5D9D9D6D940F5F4	0C8F	2915	DC	CL49'ERROR 548 PRINTER FAILURE, OUTPUT SWITCHED TO CRT'				
				0C90	2916	@@T163 EQU	*				LEFT BYTE OF MESSAGE
		0C90	F5F7F0F360E7D4F1	0CB0	2917	DC	CL33'5703-XM1 COPYRIGHT HJS CORP. 1970'				
					2918	*					
					2919	***	PATCH AREA FOR MESSAGES				
					2920	*					
		0CB1		0CBF	2921	\$\$\$001 DS	CL15				MSG EXPANSION PATCH AREA
					2922	*					

## MVDELE - DELETE SCRATCH ENTRIES FROM VTOC

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ERR LOC  OBJECT CODE      ADDR STMT SOURCE STATEMENT                                VER 15, MOD 00  24/05/21  PAGE   7

2924 *****
2925 *          MVDELE - SCRATCH FILE ENTRIES DELETE ROUTINE                      *
2926 *****
2927 *
2928 ***      EQUATES REQUIRED FOR MVDELE
2929 *

000F 2930 MVDM0F EQU  X'0F'          BITS USED FOR DRIVES TO TEST
0001 2931 MVDMK1 EQU  X'01'          INITIAL VALUE FOR DRIVE TO TEST
000F 2932 MVDCNT EQU   15          NR OF SECTORS IN VTOC
01FC 2933 MVDNUM EQU  X'01FC'       DISP TO # OF SCRATCH FILES
01FB 2934 MVDSC1 EQU  X'01FB'       DISP TO 1ST OF S FILE INFO
0013 2935 MVDF1T EQU  X'13'        F1 DISP TO FILE TYPE
0090 2936 MVDMPV EQU  X'90'        MULTI-VOLUME FILE TYPE
0060 2937 MVDMPD EQU  X'60'        MULTI-VOLUME FILE TYPE BITS OFF
0002 2938 MVDCHN EQU   2          DISP OF CHAIN ADDRESS
0002 2939 MVDTWO EQU   2          LENGTH OF 2
003F 2940 MVDFIL EQU   63          FORMAT 1 LENGTH-1
0005 2941 MVDLEN EQU   5          LENGTH OF SCRATCH FILE INFO
2942 * EQUATES USED TO SET UP MVDPRM FOR MVDELE
0001 2943 MVDRR1 EQU  X'01'          DRIVE R1 BIT OF MVDPRM
0002 2944 MVDRF1 EQU  X'02'          DRIVE F1 BIT OF MVDPRM
0004 2945 MVDRR2 EQU  X'04'          DRIVE R2 BIT OF MVDPRM
0008 2946 MVDRF2 EQU  X'08'          DRIVE F2 BIT OF MVDPRM
000C 2947 MVDI10 EQU   12          SIZE OF ERROR MSG STACK SAVED
2948 *****
2949 *          ENTRY POINT TO MODULE MVDELE.                                  *
2950 *****

0CC0 2951 MVDELE EQU  *          MVDELE ENTRY POINT
0CD0 2952 USING MVD050,@BR          SET BASE ADDRESS
0CC0 F2 80 0D 2953 MVD025 JC MVD050,@NOP          1-5
0CC3 C2 01 0CD0 2954 LA MVD050,@BR          LOAD BASE REGISTER
0CC7 0C 0B 0613 1C0B 2955 MVC $$INLN+MVDI10(MVDI10),$$ERSK+MVDI10-1  SAVE ERROR MSGS
0CCD F2 87 1B 2956 J MVD060          JUMP ON ENTRY
0CD0 C0 87 0025 2957 MVD050 B $DISKN          WAIT FOR OPERATION COMPLETE
0CD4 057F 0CD5 2958 DC AL2($WAITF)          WAIT DPL ADDRESS
0CD6 5E 00 1C 1C 2959 ALC MVDMSK(,@BR),MVDMSK(1,@BR)  MOVE MASK LEFT ONE BYTE
0CDA 5E 00 C9 CF 2960 ALC MVDSEC(1,@BR),MVDONE(,@BR)  INCREMENT SECTOR FOR NEXT DRIVE
0CDE 79 0F 1C 2961 MVD055 TBF MVDMSK(,@BR),MVDM0F  TEST OF MORE S FILES POSSIBLE
0CE1 0C 0B 1C0B 0613 2962 MVC $$ERSK+MVDI10-1(MVDI10),$$INLN+MVDI10  RESTORE ERROR MSGS
2963 * $CAROL MAY BE CHANGED TO $CAIPL OR $CAERK BY #MIPPE, #KMOUN OR #UINIT.
0CE7 C0 10 04A1 2964 MVD057 BT $CARPL          BR OUT IF ALL FILES PROCESSED
0CEB 78 01 D9 2965 MVD060 TBN MVDPRM(,@BR),MVDMK1  TEST OF DRIVE NEEDS FILE CHECK
0CEE 3C 87 0CC3 2966 MVI MVD025+@OP1,@UCB          SET UNCONDITIONAL BRANCH 1-5
0CEC 2967 ORG MVD060+@Q          INITIALIZE
0CEC 01 0CEC 2968 DC AL1(MVDMK1)          R1 DISK
0CF2 2969 ORG
0CF2 D0 90 00 2970 BF MVD050(,@BR)          NO - GO BACK AND CHECK NEXT ONE
0CF5 C0 87 0025 2971 B $DISKN          ACCESS DISK TO INPUT VTOC
0CF9 0D97 0CFA 2972 DC AL2(MVDDPL)          DISK DPL ADDR
0CFB C0 87 0025 2973 B $DISKN          WAIT AND CHECK DISK ERRORS
0CFF 057F 0D00 2974 DC AL2($WAITF)          WAIT DPL ADDRESS
2975 *
2976 ***      TEST IF ANY SCRATCH FILES EXIST
2977 *

0D01 3D 00 0FBA 2978 CLI MVDBUF+MVDNUM,0          TEST IF ZERO SCRATCH FILES
0D05 D0 81 00 2979 BE MVD050(,@BR)          NO SRATCH FILES - BRANCH BACK

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## MVDELE - DELETE SCRATCH ENTRIES FROM VTOC

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE	8
					2980	*					
					2981	***	SCRATCH FILE WIPEOUT				
					2982	*					
	0D08	4C	01	D8	0FB9		MVC	MVDADR(@DADDR,@BR),MVDSC1+MVDBUF	SAVE POINTER TO F1		
	0D0D	0F	04	0FBC	0FBC		SLC	MVDSC1+MVDBUF+MVDLEN-2,MVDSC1+MVDLEN-2+MVDBUF(MVDLEN)			
					2985	*			* ZERO OUT SCRATCH FILE INFO		
	0D13	5C	01	D6	D8		MVD100 MVC	MVDDISP(@CADDR,@BR),MVDADR(@BR)	MOVE TO CALCULATE ADDR		
	0D17	5E	01	D5	D5		ALC	MVDADD(MVDTWO,@BR),MVDADD(@BR)	SHIFT TWO BITS LEFT		
	0D1B	5E	01	D5	D5		ALC	MVDADD(MVDTWO,@BR),MVDADD(@BR)	*		
	0D1F	58	02	D5	D5		MNZ	MVDADD(@BR),MVDADD(@BR)	MOVE NUMERIC BITS		
	0D23	58	01	D5	D4		MZN	MVDADD(@BR),MVDADD-1(@BR)	MOVE ZONE BITS		
	0D27	7C	00	D4			MVI	MVDADD-1(@BR),@ZERO	ZERO OUT PRECEEDING BYTE		
	0D2A	5F	01	D6	CE		SLC	MVDDISP(@CADDR,@BR),MVDLGT(@BR)	ADJUST ADDRESS		
	0D2E	D2	02	EE			LA	MVDBUF(@BR),@XR	SET XR TO BUFFER		
	0D31	76	02	D6			A	MVDDISP(@BR),@XR	INCREMENT XR TO F1		
	0D34	B8	90	13			TBN	MVDF1T(@XR),MVDMVF	TEST FOR MULTI-VOLUME FILE		
	0D37	F2	90	06			JF	MVD150	JUMP IF NO MVF		
	0D3A	B9	60	13			TBF	MVDF1T(@XR),MVDMVD	TEST THAT OTHER BITS ARE OFF		
	0D3D	F2	10	3D			JT	MVD200	MULTI-VOLUME FILE WIPEOUT BRANCH		
	0D40	6C	01	D8	02		MVD150 MVC	MVDADR(MVDTWO,@BR),MVDCHN(@XR)	SAVE NEXT F1 POINTER		
	0D44	AF	3E	3F	3F		SLC	MVDFIL(MVDFIL,@XR),MVDFIL(@XR)	ZERO F1		
					3001	*					
					3002	***	SET TAG FILENAME TO ZERO.				
					3003	*					
	0D48	6C	00	D3	00		MVC	MVDTAG(1,@BR),0(@XR)	SAVE TAG		
	0D4C	5E	00	D3	D3		ALC	MVDTAG(1,@BR),MVDTAG(@BR)	DOUBLE TAG		
	0D50	5C	01	97	D3		MVC	MVDTGS(MVDTWO,@BR),MVDTAG(@BR)	MOVE TAG		
	0D54	5E	01	97	97		ALC	MVDTGS(MVDTWO,@BR),MVDTGS(@BR)	DOUBLE		
	0D58	5E	01	97	97		ALC	MVDTGS(MVDTWO,@BR),MVDTGS(@BR)	DOUBLE		
	0D5C	5E	01	97	D3		ALC	MVDTGS(MVDTWO,@BR),MVDTAG(@BR)	ADD TO GET TAG*10		
	0D60	5E	01	97	D1		ALC	MVDTGS(@CADDR,@BR),MVDTAD(@BR)	ADJUST TAG ADDR		
	0D64	3C	00	0000			MVD175 MVI	*-*,0	ZERO'S FILE NAME OF X'20'		
					3012	*					
					3013	***	TEST FOR LAST SCRATCH FILE AND GO BACK IF NOT				
					3014	*					
	0D68	7D	00	D8			CLI	MVDADR(@BR),0	TEST FOR LAST S FILE OF CHAIN		
	0D6B	D0	01	43			BNE	MVD100(@BR)	BRANCH IF MORE S FILES		
	0D6E	7C	02	C7			MVI	MVDFNC(@BR),@DPUT	SET FUNCTION CODE FOR WRITE		
	0D71	C0	87	0025			B	\$DISKN	ACCESS DISK TO INPUT VTOC		
	0D75	0D97			0D76		DC	AL2(MVDDPL)	DISK DPL ADDR		
	0D77	7C	01	C7			MVI	MVDFNC(@BR),@DGET	SET FUNCTION CODE BACK TO READ		
	0D7A	D0	87	00			B	MVD050(@BR)	RETRUN TO TEST FOR MORE FILES		
					3022	*					
					3023	***	MULTI-VOLUME FILE WIPEOUT				
					3024	*					
	0D7D	4D	01	D8	18B0		MVD200 CLC	MVDADR(MVDTWO,@BR),MVDMF1+MVDCHN	RIGHT F7 ?		
	0D82	F2	01	09			JNE	MVD225	JUMP TO ZERO OTHER F7		
	0D85	0F	3F	18ED	18ED		SLC	MVDMF1+MVDFIL(MVDFIL+1),MVDMF1+MVDFIL	ZERO OUT 1ST F7		
	0D8B	D0	87	70			B	MVD150(@BR)	RETURN TO PROCESSING F1'S		
	0D8E	0F	3F	192D	192D		MVD225 SLC	MVDMF2+MVDFIL(MVDFIL+1),MVDMF2+MVDFIL	ZERO OUT 2ND F7		
	0D94	D0	87	70			B	MVD150(@BR)	RETURN TO F1 PROCESSING		
					3031	*					
					3032	***	VTOC DPL				
					3033	*					
					3034	*VDDPL	\$DPL	FUNC=@DGET,DADDR-#VTCR1,CNT-15,CADDR-MVDBUF			
	0D97				3035+MVDDPL	EQU	*	DISK PARAMETER LIST			

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0D97	01		0D97	3036+	DC	AL1(@DGET)	REQUESTED FUNCTION
0D98	0024		0D99	3037+	DC	AL2(#VTCR1)	DISK ADDRESS
0D9A	0F		0D9A	3038+	DC	AL1(15)	SECTOR COUNT
0D9B	0DBE		0D9C	3039+	DC	AL2(MVDBUF)	BUFFER ADDRESS
				3040+	***	END OF EXPANSION ***	
				3041	*		
				3042	***	CONSTANTS AND WORKAREAS USED BY MVDELE	
				3043	*		
0D9D	09		0D9D	3044	MVDHXB DC	IL1'09'	LOWEST SECTOR # OF A F1
0D9E	3F		0D9E	3045	MVDLGT DC	AL1(MVDFIL)	F1 LENGTH - 1
0D9F	01		0D9F	3046	MVDONE DC	XL1'01'	ONE
0DA0	0DBA		0DA1	3047	MVDTAD DC	AL2(MVDBUF-@DADDR-@DADDR)	TAG ADDRESS
0DA2	00		0DA2	3048		DC XL1'00'	ZERO BYTE MUST PRECEED TAG SAVE
0DA3			0DA3	3049	MVDTAG DS	CL1	TAG SAVE AREA
0DA4	00		0DA4	3050		DC XL1'00'	ZERO BYTE MUST PRECEED DADDR
0DA5			0DA5	3051	MVDADD DS	CL1	SECTOR ADDR POINTER FOR CORE
0DA6			0DA6	3052	MVDISP DS	CL1	DISPLACEMENT TO F1
0DA7			0DA8	3053	MVDADR DS	CL2	SCTR/DISP FO FORMAT 1
0DA9			0DA9	3054	MVDPRM DS	CL1	PARAMETERS SHOWS DRIVES TO BE
				3055	*		* TESTED R1, F1, R2, F2 ARE
				3056	*		* BITS 4-7 RESPECTIVELY.
0DA9				3057	ORG	MVDPRM	SET INITIAL VALUE
0DA9	00		0DA9	3058		DC XL1'00'	SET PARM TO ZERO
0DAA			0DBD	3059	\$\$\$\$\$0 DS	CL20	PATCH AREA FOR MVDELE
				3061	*	VTOC BUFFER BEGINS HERE AND IS 15 SECTORS LONG	
			0DBE	3062	MVDBUF EQU	*	
			0CEC	3063	MVDMSK EQU	MVD060+@Q	DISK INDICATOR
			0D67	3064	MVDTGS EQU	MVD175+@OP1	ADDR OF INDEX ASSOC WITH TAG
			18AE	3065	MVDMF1 EQU	MVDBUF+2800	MVF#1 -> 12*256+128=12800
			18EE	3066	MVDMF2 EQU	MVDMF1+64	MVF#2 = F7 DISP WITHIN BUFFER
			0D97	3067	MVDFNC EQU	MVDDPL	FUNCTION CODE BYTE OF DPL
			0D99	3068	MVDSEC EQU	MVDDPL+2	DISK SECTOR ADDR IN DPL
				3069	*****		
				3070	*	END OF MODULE MVDELE	*
				3071	*****		
			0E48	3073		USING MIPOBS,@BR	SET BASE REGISTER
0DBE	31 E6 0EA7			3074	MIP000 LIO	MIPCFA,@PCAR	LOAD PRINTER CONTROL LSR
0DC2	F3 E0 00			3075		SIO @PSIOR,@PSIOQ	RIGHT TAB
0DC5	F3 E0 00			3076		SIO @PSIOR,@PSIOQ	RETURN TO LEFT MARGIN
				3077	*	LOADR MIPDK3	LOAD I/O ROUTINES
0DC8	C0 87 051A			3078		B \$LOADR	LOAD I/O ROUTINES
0DCC	1105		0DCD	3079		DC AL2(MIPDK3)	DPL ADDRESS
0DCE	C2 01 0E48			3080		LA MIPOBS,@BR	LOAD THE BASE REGISTER
0DD2	C2 02 03C0			3081		LA \$NUCBS,@XR	LOAD THE INDEX REGISTER
0DD6	3C 40 06FF			3082		MVI \$\$KLD2-1,@BLANK	SET INPUT LINE BUFFER TO BLANKS
0DDA	0C FE 06FE 06FF			3083		MVC \$\$KLD2-2(255),\$\$KLD2-1	
0DE0	8E 01 B1 0587			3084		ALC \$ERMAD-1(@DADDR,@XR),\$BSADR	SET ERRPGM SPF DADDR
0DE5	0E 01 0582 0587			3085		ALC \$GUFIO-1(@DADDR),\$BSADR	SET GUFUDI SPF DADDR
0DEB	0E 01 110D 0587			3086		ALC MIPDK5+@DSAD,\$BSADR(2)	SET DISK ADDR FOR CONFIG RECORD
0DF1	C0 87 0465			3087		B \$SPRNT	PRINT CARRIAGE RETURN
0DF5	10FE		0DF6	3088		DC AL2(MIPRET)	* BEFORE COPYRIGHT MESSAGE
0DF7	C0 87 0465			3089		B \$SPRNT	PRINT COPYRIGHT MESSAGE
0DFB	0C17		0DFC	3090		DC AL2(@@M163)	PPL ADDRESS
				3091	*		

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	0DFD	3B 04	03D5		3092		SBF \$INDR2,\$ERPND			DISABLE ERROR PENDING INDICATOR
					3093	*				
					3094	***	CHECK FOR DISK INITIALIZED			
					3095	*				
	0E01	C0 87	0025		3096	B	\$DISKN			SEEK TO CYL ZERO
	0E05	110B		0E06	3097	DC	AL2(MIPDK5)			DPL ADDRESS
	0E07	F3 A9	01		3098	SIO	@DCRID,@SPINA+@DREAD+MIPFXD			TEST F1 FOR INITIALIZATION
	0E0A	F1 A2	00		3099	APL	@SPINA+@DBUSY			WAIT FOR NOT-BUSY
	0E0D	D1 A0	42		3100	TIO	MIP210(,@BR),@SPINA+@DERR			JUMP IF NOT INITIALIZED
	0E10	C0 87	0025		3101	B	\$DISKN			READ PROTECTION SECTOR
	0E14	111D		0E15	3102	DC	AL2(MIPDK9)			DISK DPL ADDRESS
	0E16	C0 87	0025		3103	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E1A	057F		0E1B	3104	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3105	*				
	0E1C	3D FF	189D		3106	CLI	MIPBF1+MIPRTD,MIPRTM			IF COUNTER IS NOT BELOW MAX
	0E20	F2 02	0F		3107	JNL	MIP100			* SKIP UPDATE
	0E23	1E 00	189D 6F		3108	ALC	MIPBF1+MIPRTD,MIPRTI(1,@BR)			INCREMENT COUNTER
	0E28	3C 02	111D		3109	MVI	MIPDK9+@DCTRL,@DPUT			SET WRITE CNTL IN DPL
	0E2C	C0 87	0025		3110	B	\$DISKN			WRITE PROTECTION SECTOR
	0E30	111D		0E31	3111	DC	AL2(MIPDK9)			DISK DPL ADDRESS
	0E32	3C 01	110B		3112	MIP100 MVI	MIPDK5+@DCTRL,@DGET			SET READ CNTL IN DPL
	0E36	C0 87	0025		3113	B	\$DISKN			READ CONFIGURATION RECORD
	0E3A	110B		0E3B	3114	DC	AL2(MIPDK5)			DISK DPL ADDRESS
	0E3C	C0 87	0025		3115	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E40	057F		0E41	3116	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3117	*				
	0E42	C0 87	0465		3118	MIP150 B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E46	0C0B		0E47	3119	DC	AL2(@@M160)			PPL ADDRESS
	0E48	C0 87	0465		3120	MIP200 B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E4C	057F		0E4D	3121	DC	AL2(\$WAITF)			WAIT PPL ADDRESS
					3122	*				
	0E4E	38 20	03D2		3123	TBN	\$IOIND,\$HRDER			PRINTER FAILURE ?
	0E52	C0 10	10BE		3124	BT	MIPSWH			ATTEMPT DEVICE SWITCH
	0E56	3A 10	03D2		3125	SBN	\$IOIND,\$PGMST			SET NO AUTO LINE CONDITION
	0E5A	3C FF	09E2		3126	MVI	\$\$KBSN,@PWAIT			INITIALIZE DEPRES SENSE BYTE
	0E5E	C0 87	0890		3127	B	\$\$PRES			ENABLE KEYBOARD
	0E62	C0 87	0025		3128	MIP205 B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E66	057F		0E67	3129	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3130	*				
	0E68	3D FF	09E2		3131	CLI	\$\$KBSN,@PWAIT			HAS SOMETHING BEEN ENTERED ?
	0E6C	D0 81	1A		3132	BE	MIP205(,@BR)			LOOP IF NOT
	0E6F	38 10	09E2		3133	TBN	\$\$KBSN,\$\$\$FUN			WAS IT A FUNCTION KEY ?
	0E73	F2 90	46		3134	JF	MIP225			WAIT FOR DATA IF NO
	0E76	3D 02	09E1		3135	CLI	\$\$KBDT,MIPEMS			ENTER MINUS KEY BY CHANCE ?
	0E7A	D0 81	1A		3136	BE	MIP205(,@BR)			IGNORE IT IF YES
	0E7D	3D 81	09E1		3137	CLI	\$\$KBDT,\$\$\$STD			WAS IT PROGRAM START ?
	0E81	F2 01	38		3138	JNE	MIP225			WAIT FOR DATA IF NO
	0E84	F3 10	1B		3139	SIO	@KELOK,@KEYBD			LOCK KEYBOARD
	0E87	F2 87	72		3140	J	MIP250			GO TEST CONFIGURATION RECORD
	0E8A	3C 00	18D0		3142	MIP210 MVI	MIPBF1+@#CSIZ,@ZERO			SET NO CONFIG RECORD INDR
	0E8E	C0 87	0465		3143	B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E92	057F		0E93	3144	DC	AL2(\$WAITF)			WAIT PPL ADDRESS
	0E94	31 A6	11B9		3145	LIO	MIPSET,@SPINA+@DFCR			LOAD DISK LSR TO RESET DCF
	0E98	F3 A0	00		3146	SIO	@SKCTL,@SPINA+@DSEEK			RESET DISK ERROR STATUS
	0E9B	38 01	03D2		3147	TBN	\$IOIND,\$MPDWN			IF MATRIX PRINTER IS NOT DOWN

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0E9F F2 90 5E          3148      JF      MIP265          * GO FINISH UP
0EA2 C0 87 10CE        3149      B        MIPSW1        OTHERWISE GO SWITCH TO CRT
                                3150 *****
                                3151 *          CONSTANTS WITHIN BASE REGISTER RANGE.          *
                                3152 *****

0EA6 11C4              0EA7 3153 MIPCFA DC      AL2(MIPPCF)        ADDR OF PRINTER INITIALIZER PCF
0EA8 1E                0EA8 3154 MIPEOS DC      AL1(@EOS)        EOS FOR BAD LINE BUFFER
0EA9 0441              0EAA 3155 MIPERA DC      AL2(#@ERRP)        WORK FILE ERR PGM DADDR
0EAB 0401              0EAC 3156 MIPGUA DC      AL2(#@GUFU)        WORK FILE GUFUDI DADDR
0EAD 04BA              0EAE 3157 MIPDPC DC      AL2($PAUSD)        ADDR OF FE AID INTERFACE
0EAF 0000              0EB0 3158 MIPZER DC      XL2'0000'        TWO BYTE ZERO
0EB1                  0EB1 3159 MIPECD DS      CL1          ERROR CODE
0EB2 A0                0EB2 3160          DC      AL1($$N$LN)        NO LINE NUMBER INDR
0EB3 30                0EB3 3161          DC      AL1($ERSTK)        STACKED ERRORS INDR
0EB4 00                0EB4 3162 MIPECT DC      AL1(*-*)        ERROR STACK COUNT
0EB5 0003              0EB6 3163 MIPSC3 DC      IL2'3'          ERROR STACK ENTRY LENGTH
0EB7 01                0EB7 3164 MIPRTI DC      XL1'01'        PROTECTION COUNTER INCR
0EB8 0469              0EB9 3165 MIPERR DC      AL2($CAERK)        ERROR MSG ENTRY POINT
0EBA 049D              0EBB 3166 MIPEXT DC      AL2($CAIPL)        NO ERROR - EXIT ADDRESS

0EBC 38 10 03C3        3168 MIP225 TBN    $KEYCD,$KYBSY        IS LINE IN ?
0EC0 D0 10 74          3169          BT      MIP225(,@BR)        LOOP IF NOT
0EC3 C2 02 0607        3170          LA      $$INLN,@XR        POINT XR TO INPUT LINE BUFFER
0EC7 C0 87 14C1        3171          B        SCANIT          SCAN FOR NON BLANK
0ECB 2D 08 10FD 08     3172          CLC    MIPCFG(MIPCDP+1),MIPCDP(,@XR) IS IT 'CONFIGURE' ?
0ED0 F2 01 0F          3173          JNE     MIP230        DO ERROR IF NOT
0ED3 E2 02 09          3174          LA      MIPCDP+1(,@XR),@XR        POINT TO DELIMITER
0ED6 BD 1E 00          3175          CLI     0(,@XR),@EOS        IS IT EOS ?
0ED9 F2 81 10          3176          JE      MIP240        DO CONFIGURE IF YES
0EDC BD 40 00          3177          CLI     0(,@XR),@BLANK        IS IT A BLANK ?
0EDF F2 81 0A          3178          JE      MIP240        DO CONFIGURE IF YES
0EE2 C0 87 0465        3179 MIP230 B        $SPRNT          PRINT '?' ON SYSTEM PRINTER
0EE6 1100              0EE7 3180 DC      AL2(MIPPR2)        PPL ADDRESS
                                3181 *

0EE8 C0 87 0E42        3182          B        MIP150        LETS TRY IT AGAIN
0EEC 3C 50 03CE        3183 MIP240 MVI     $ERRPG,$ER1N2        SET UP TO GET LEVEL 1&2 MSG
0EF0 3A 04 03D6        3184          SBN     $INDR3,$ERHRD        * IF CONFIGURE ERROR
0EF4 34 02 03C7        3185          ST      $XRSAB,@XR        SAVE XR FOR CONFIGURE
0EF8 C0 87 1502        3186          B        UCNFIG        EXECUTE CONFIGURE
                                0EFC 3187 MIP250 EQU    *          ENTRY TO CONTINUE WITH EXISTING
0EFC C0 87 1200        3188          B        MCNFIG        CHECK CONFIGURATION RECORD
0F00 C2 02 03C0        3189 MIP265 LA      $NUCBS,@XR        RESTORE XR
0F04 BB 24 12          3190          SBF     $IOIND(,@XR),$HRDER+$CRTNO RESET CONFIG ERROR HALT
0F07 3B 04 03D6        3191          SBF     $INDR3,$ERHRD        SET ERRPGM HARD ERROR INDR OFF
0F0B C2 01 0E48        3192          LA      MIPOBS,@BR        RESTORE BASE REGISTER
0F0F 7C 95 69          3193          MVI     MIPECD(,@BR),@@E547 SET POSSIBLE MIN CONFIG MSG
0F12 3D 00 18D0        3194          CLI     MIPBF1+@#CSIZ,@ZERO WAS MINIMUM CONFIG ASSUMED ?
0F16 C0 81 11C8        3195          BE      MIPSTK        STACK ERROR MSG IF YES
0F1A 7C 91 69          3196 MIP268 MVI     MIPECD(,@BR),@@E543 SET POSSIBLE R1 UNINIT MSG
0F1D C0 87 1123        3197          B        MIPVOL        READ R1 VOLUME LABEL
0F21 7C 93 69          3198          MVI     MIPECD(,@BR),@@E545 SET POSSIBLE F1 UNINIT MSG
0F24 8C 05 3B 189B     3199          MVC     $VOLR1+#VOLOC(#VOLNG,@XR),MIPBF1+$#TLBL SET VOLUME LABEL
                                3200 *          * IN VOLID TABLE (R1)
0F29 8E 01 3D 1991    3201          ALC     $VOLR1+#VLTBE-1(@DADDR,@XR),MIPBF1+$#TLAD SET FILE
                                3202 *          * LIBRARY ADDR IN ON R1
0F2E 38 40 1992        3203          TBN     MIPBF1+$#TIDR,$#TWR1        WORK AREA ON R1 ?

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0F32	F2	90	08		3204	JF	MIP269	JUMP IF NOT
0F35	2D	00	196A 1F		3205	CLC	MIPBF1+\$#TWAL,\$LEVEL(1,@XR)	TEST IF RIGHT WORK AREA ?
0F3A	F2	81	03		3206	JE	MIP270	JUMP IF YES
0F3D	BA	40	16		3207	MIP269 SBN	\$INDR3(,@XR),\$NWRKR	SET NO WORK AREA ON R1 INDR
0F40	C0	87	1123		3208	MIP270 B	MIPVOL	READ F1 VOLUME LABEL
0F44	8C	05	43 189B		3209	MVC	\$VOLF1+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3210	*		* LIBRARY ADDR IN ON R1
0F49	8E	01	45 1991		3211	ALC	\$VOLF1+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3212	*		* LIBRARY ADDR IN ON F1
0F4E	38	20	1992		3213	TBN	MIPBF1+\$#TIDR,\$#TWF1	WORK AREA ON F1 ?
0F52	F2	90	08		3214	JF	MIP275	JUMP IF NOT
0F55	2D	00	196A 1F		3215	CLC	MIPBF1+\$#TWAL,\$LEVEL(1,@XR)	TEST IF RIGHT WORK AREA ?
0F5A	F2	81	03		3216	JE	MIP280	JUMP IF YES
0F5D	BA	80	16		3217	MIP275 SBN	\$INDR3(,@XR),\$NWRKF	SET NO WORK AREA ON F1 INDR
0F60	B9	18	17		3218	MIP280 TBF	\$DKSIZ(,@XR),\$DK600+\$DK800	DRIVE 2 ON SYSTEM ?
0F63	F2	10	28		3219	JT	MIP320	JUMP IF NOT
0F66	7C	92	69		3220	MVI	MIPECD(,@BR),@@E544	SET POSSIBLE R2 UNINIT MSG
0F69	C0	87	1123		3221	B	MIPVOL	READ VOLUME LABEL R2
0F6D	8C	05	4B 189B		3222	MVC	\$VOLR2+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3223	*		* IN VOLID TABLE (R2)
0F72	8E	01	4D 1991		3224	ALC	\$VOLR2+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3225	*		* LIBRARY ADDR IN ON R2
0F77	B8	10	17		3226	TBN	\$DKSIZ(,@XR),\$DK800	F2 ON SYSTEM ?
0F7A	F2	90	11		3227	JF	MIP320	DON'T GET F2 IF NO
0F7D	7C	94	69		3228	MVI	MIPECD(,@BR),@@E546	SET POSSIBLE F2 UNINIT MSG
0F80	C0	87	1123		3229	B	MIPVOL	READ F2 VOLUME LABEL
0F84	8C	05	53 189B		3230	MVC	\$VOLF2+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3231	*		* LIBRARY ADDR IN ON F2
0F89	8E	01	55 1991		3232	ALC	\$VOLF2+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3233	*		* LIBRARY ADDR IN ON F2
				0F8E	3234	MIP320 EQU	*	WAIT FOR DATE
0F8E	C0	87	0465		3235	B	\$SPRNT	PRINT ASK FOR DATE
0F92	0C0F			0F93	3236	DC	AL2(@@M161)	PPL ADDRESS
0F94	C0	87	0465		3237	B	\$SPRNT	PRINT ON SYSTEM PRINTER
0F98	057F			0F99	3238	DC	AL2(\$WAITF)	WAIT PPL ADDRESS
					3239	*		
0F9A	C0	87	0890		3240	B	\$\$PRES	ENABLE KEYBOARD INPUT
0F9E	3D	00	043B		3241	CLI	\$EXFTR,@ZERO	EXTENSION FACTOR EQUALS 0 ?
0FA2	F2	81	12		3242	JE	MIP330	IF YES CONTINUE NORMAL PROC.
0FA5	0C	00	1113 0587		3243	MVC	MIPDK6+@DSAD(1),\$BSADR	SET DADDR FOR IPL-ED DISK
0FAB	0C	00	1114 043B		3244	MVC	MIPDK6+@DCNT(1),\$EXFTR	SET COUNT TO EQUAL EXT FACTOR
0FB1	C0	87	0025		3245	B	\$DISKN	INITIALIZE CORE
0FB5	1111			0FB6	3246	DC	AL2(MIPDK6)	DPL ADDRESS
0FB7	B8	10	03		3247	MIP330 TBN	\$KEYCD(,@XR),\$KYBSY	DATE IN YET ?
0FBA	C0	10	0FB7		3248	BT	MIP330	LOOP IF NOT
0FBE	C0	87	0025		3249	B	\$DISKN	WAIT AND CHECK DISK ERRORS
0FC2	057F			0FC3	3250	DC	AL2(\$WAITF)	WAIT DPL ADDRESS
					3251	*		
0FC4	8C	01	79 0EB0		3252	MVC	\$DATE-1(2,@XR),MIPZER	ZERO DATE
0FC9	35	01	0AFE		3253	L	\$\$EOSA,@BR	POINT BR TO EOS
0FCD	36	01	105D		3254	MIP335 A	MIPNG1,@BR	DECREMENT POINTER
0FD1	7D	40	00		3255	CLI	0(,@BR),@BLANK	NON-BLANK ?
0FD4	C0	81	0FCD		3256	BE	MIP335	LOOP IF YES
0FD8	7D	F0	00		3257	CLI	0(,@BR),MIPNUM	NUMERIC CHAR ?
0FDB	F2	82	74		3258	JL	MIPSYN	DO ERROR IF NOT
0FDE	98	03	7A 00		3259	MNN	\$DATE(,@XR),0(,@BR)	SET RIGHT YEAR DIGIT

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0FE2	36	01	105D		3260	A	MIPNG1,@BR			POINT TO LEFT YEAR CHAR
0FE6	7D	F0	00		3261	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
0FE9	F2	82	66		3262	JL	MIPSYN			DO ERROR IF NOT
0FEC	98	01	7A 00		3263	MZN	\$DATE(,@XR),0(,@BR)			SET LEFT YEAR DIGIT
0FF0	36	01	105D		3264	A	MIPNG1,@BR			POINT TO SLASH
0FF4	7D	61	00		3265	CLI	0(,@BR),@SLASH			IS IT REALLY A SLASH ?
0FF7	F2	82	58		3266	JL	MIPSYN			DO ERROR IF NOT
0FFA	36	01	105D		3267	A	MIPNG1,@BR			POINT TO DAY
0FFE	7D	F0	00		3268	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
1001	F2	82	4E		3269	JL	MIPSYN			DO ERROR IF NOT
1004	98	03	79 00		3270	MNN	\$DATE-1(,@XR),0(,@BR)			SET FIRST DIGIT
1008	36	01	105D		3271	MIP340 A	MIPNG1,@BR			POINT TO NEXT CHAR
100C	7D	61	00		3272	CLI	0(,@BR),@SLASH			IS IT A SLASH ?
100F	F2	81	14		3273	JE	MIP345			IF YES GET MONTH
1012	7D	F0	00		3274	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
1015	F2	82	3A		3275	JL	MIPSYN			DO ERROR IF NOT
1018	98	01	79 00		3276	MZN	\$DATE-1(,@XR),0(,@BR)			SET 2ND DAY DIGIT
101C	36	01	105D		3277	A	MIPNG1,@BR			POINT TO SLASH
1020	7D	61	00		3278	CLI	0(,@BR),@SLASH			IS IT A SLASH ?
1023	F2	01	2C		3279	JNE	MIPSYN			DO ERROR IF NOT
1026	36	01	105D		3280	MIP345 A	MIPNG1,@BR			POINT TO MONTH
102A	7D	F0	00		3281	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
102D	F2	82	22		3282	JL	MIPSYN			DO ERROR IF NOT
1030	98	03	78 00		3283	MNN	\$DATE-2(,@XR),0(,@BR)			SET FIRST DIGIT
1034	36	01	105D		3284	A	MIPNG1,@BR			POINT TO SLASH
1038	7D	40	00		3285	CLI	0(,@BR),@BLANK			DATE COMPLETE ?
103B	F2	81	20		3286	JE	MIP350			GO DO REST OF INITIAL
103E	7D	F0	00		3287	CLI	0(,@BR),MIPNUM			NUMERIC ?
1041	F2	82	0E		3288	JL	MIPSYN			DO ERROR IF NOT
1044	98	01	78 00		3289	MZN	\$DATE-2(,@XR),0(,@BR)			SET LAST DIGIT
1048	36	01	105D		3290	A	MIPNG1,@BR			POINT TO END OF DATE
104C	7D	40	00		3291	CLI	0(,@BR),@BLANK			TRUE END ?
104F	F2	81	0C		3292	JE	MIP350			SKIP ERROR IF YES
					3293	*				
				1052	3294	MIPSYN EQU	*			ENTRY TO PRINT SYNTAX ERROR
1052	C0	87	0465		3295	B	\$SPRNT			PRINT '?'
1056	1100			1057	3296	DC	AL2(MIPPR2)			PPL ADDRESS
1058	C0	87	0F8E		3297	B	MIP320			GO GET NEW ENTRY
105C	FFFF			105D	3299	MIPNG1 DC	IL2'-1'			NEGATIVE ONE
				00F0	3300	MIPNUM EQU	X'F0'			SMALLEST NUMERIC
				0008	3301	MIPFXD EQU	X'08'			FIXED DISK SIO BIT
				0002	3302	MIPEMS EQU	X'02'			ENTER MINUS KEY DATA VALUE
105E	C2	01	0E48		3304	MIP350 LA	MIPOBS,@BR			RESTORE BASE REGISTER
1062	7C	90	69		3305	MVI	MIPECD(,@BR),@@E542			SET POSSIBLE WRONG CYL SIZE MSG
1065	3D	00	11C4		3306	CLI	MIPPCF,@ZERO			DID SUCH OCCUR ?
1069	C0	81	11C8		3307	BE	MIPSTK			STACK ERROR MSG IF YES
106D	BA	04	12		3308	SBN	\$IOIND(,@XR),\$CRTNO			ALLOW CMD KEY 12
1070	7C	A2	69		3309	MVI	MIPECD(,@BR),@@E573			SET POSSIBLE NO WA ON R1 MSG
1073	BD	40	16		3310	CLI	\$INDR3(,@XR),\$NWRKR			TEST FOR WORKAREAS ?
1076	BA	10	16		3311	SBN	\$INDR3(,@XR),\$CLBFR			SET CLEAR INPUT LINE INDR
1079	F2	82	20		3312	JL	MIP400			JUMP IF BOTH WORKAREAS
107C	F2	81	0C		3313	JE	MIP380			JUMP IF NO WA ON R1
107F	7C	8D	69		3314	MVI	MIPECD(,@BR),@@E535			SET POSSIBLE NO WA ON R1&F1 MSG
1082	B8	40	16		3315	TBN	\$INDR3(,@XR),\$NWRKR			BOTH MISSING ?

MVDELE - DELETE SCRATCH ENTRIES FROM VTOC

ERR LOC		OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00		24/05/21	PAGE	14
1085	F2	10 03		3316	JT	MIP380			JUMP	IF	YES
1088	7C	A1 69		3317	MVI	MIPECD(, @BR), @@E572			SET	POSSIBLE	NO WA ON F1 MSG
108B	C0	87 11C8		3318	MIP380 B	MIPSTK			GO	STACK	ERROR MSG
108F	9C	01 0F 6C		3319	MIP390 MVC	\$ERRCT(2, @XR), MIPECT(, @BR)			SET	ERROR	PGM INDR FOR STACK
1093	1C	01 0CEA 71		3320	MVC	MVD057+@OP1, MIPERR(@CADDR, @BR)			SET	MVDELE	EXIT ADDRESS
1098	C0	87 0CC0		3321	B	MVDELE			GO	DELETE	SCRATCH FILE ENTRIES
				3322	*						
				3323	***	PREPARE TO ENTER BASIC MODE. (LET'S GO !)					
				3324	*						
			109C	3325	MIP400 EQU	*			ENTRY	TO	ENTER BASIC MODE
109C	C0	87 0025		3326	B	\$DISKN			WRITE	BAD	LINE BUFFER
10A0	1117		10A1	3327	DC	AL2(MIPDK8)			DPL	ADDRESS	
10A2	9C	01 B1 62		3328	MVC	\$ERMAD-1(@DADDR, @XR), MIPERA(, @BR)			SET	ERROR	PGM WF ADDR
10A6	1C	01 0582 64		3329	MVC	\$GUFIO-1(@DADDR), MIPGUA(, @BR)			SET	GUFUDI	WF ADDR
10AB	BA	02 15		3330	SBN	\$INDR2(, @XR), \$CMODE			SET	CONVERSATIONAL	MODE INDR
10AE	7D	00 6C		3331	CLI	MIPECT(, @BR), @ZERO			ANY	ERROR	MESSAGES ?
10B1	C0	01 108F		3332	BNE	MIP390			EXIT	TO	ERROR PGM IF YES
10B5	1C	01 0CEA 73		3333	MVC	MVD057+@OP1, MIPEXT(@CADDR, @BR)			SET	RETURN	EXIT
10BA	C0	87 0CC0		3334	B	MVDELE			GO	DELETE	SCRATCH FILE ENTRIES
				3335	*						

## #MIPPE - SWITCH TO CRT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 15
				10BE	3337	MIPSWH	EQU *			ENTRY TO ATTEMPT DEVICE SWITCH
10BE	3B	04	03D5		3338		SBF \$INDR2,\$ERPND			DON'T LOG PRINTER ERROR NOW
10C2	C0	87	1200		3339		B MCNFIG			CHECK FOR CRT ON SYSTEM
10C6	C2	02	03C0		3340		LA \$NUCBS,@XR			RESTORE BASE REGISTERS
10CA	C2	01	0E48		3341		LA MIPOBS,@BR			*
10CE	BA	04	15		3342	MIPSW1	SBN \$INDR2(,@XR),\$ERPND			SET INDR TO LOG PRINTER ERR
10D1	B8	02	12		3343		TBN \$IOIND(,@XR),\$CRTAV			IS CRT ON SYSTEM ?
10D4	F2	90	16		3344		JF MIPHRD			DO ERROR IF NOT
10D7	8C	01	8B 10F4		3345		MVC \$PRDEV(@CADDR,@XR),MIPDSP			SET DSPLYN ADDR IN SYSPRINT
10DC	AE	00	8A 7B		3346		ALC \$PRDEV-1(1,@XR),\$EXFTR(,@XR)			CALCULATE TRUE ADDRESS
10E0	C0	87	0465		3347		B \$SPRNT			PRINT ON SYSTEM PRINTER
10E4	0C13			10E5	3348		DC AL2(@@M162)			PPL ADDRESS
10E6	BB	24	12		3349		SBF \$IOIND(,@XR),\$HRDER+\$CRTNO			SET HARD ERROR INDR OFF
10E9	C0	87	0E42		3350		B MIP150			GO ASK FOR CONFIG ON CRT
				10ED	3352	MIPHRD	EQU *			ENTRY TO HARD PRINTER FAILURE
10ED	C0	87	0025		3353		B \$DISKN			LOG ERROR AND HALT
10F1	057F			10F2	3354		DC AL2(\$WAITF)			WAIT DPL ADDRESS
					3355	*				
10F3	2004			10F4	3356	MIPDSP	DC AL2(\$\$PLYN)			ADDRESS OF DSPLYN
					3357	*				



## MIPPER - CONSTANTS AND MESSAGES

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 16

10F5	C3D6D5C6C9C7E4D9	10FD	3359	MIPCFG	DC	CL9 'CONFIGURE'	
		0008	3360	MIPCDP	EQU	8	DISPLACEMENT OF CONFIGURE
10FE	80	10FE	3361	MIPRET	DC	AL1(@RETRN)	PRINT CARRIAGE RETURN
10FF	80	10FF	3362		DC	AL1(@RETRN)	PSEUDO COUNT FIELD
			3363	*IPPR2	\$PPL	FUNC-@PRETR,CNT-MIPCT2,CADDR-MIPMS2	
		1100	3364+	MIPPR2	EQU	*	PRINTER PARAMETER LIST
1100	C0	1100	3365+		DC	AL1(@PRETR)	REQUESTED FUNCTION
1101	01	1101	3366+		DC	AL1(MIPCT2)	SECTOR COUNT
1102	1104	1103	3367+		DC	AL2(MIPMS2)	DATA ADDRESS
			3368+	***		END OF EXPANSION ***	
		1104	3369	MIPMS2	EQU	*	MESSAGE 2
1104	6F	1104	3370		DC	CL1'?'	?
		0001	3371	MIPCT2	EQU	*-MIPMS2	LENGTH OF MSG
			3372	*			
			3373	*IPDK3	\$DPL	FUNC-@DGET,DADDR-#\$DPRI,CNT-#\$@DPR,CADDR-\$\$KLD2	
		1105	3374+	MIPDK3	EQU	*	DISK PARAMETER LIST
1105	01	1105	3375+		DC	AL1(@DGET)	REQUESTED FUNCTION
1106	014C	1107	3376+		DC	AL2(#\$DPRI)	DISK ADDRESS
1108	05	1108	3377+		DC	AL1(#\$@DPR)	SECTOR COUNT
1109	0700	110A	3378+		DC	AL2(\$\$KLD2)	BUFFER ADDRESS
			3379+	***		END OF EXPANSION ***	
			3380	*IPDK5	\$DPL	FUNC-@DPOS,DADDR-##\$CNF,CNT-#FIGSC,CADDR-MIPBF1	
		110B	3381+	MIPDK5	EQU	*	DISK PARAMETER LIST
110B	00	110B	3382+		DC	AL1(@DPOS)	REQUESTED FUNCTION
110C	2000	110D	3383+		DC	AL2(##\$CNF)	DISK ADDRESS
110E	01	110E	3384+		DC	AL1(#FIGSC)	SECTOR COUNT
110F	1893	1110	3385+		DC	AL2(MIPBF1)	BUFFER ADDRESS
			3386+	***		END OF EXPANSION ***	
			3387	*IPDK6	\$DPL	FUNC-@DGET,DADDR-MIPCLR,CADDR-\$\$PYMP	
		1111	3388+	MIPDK6	EQU	*	DISK PARAMETER LIST
1111	01	1111	3389+		DC	AL1(@DGET)	REQUESTED FUNCTION
1112	0000	1113	3390+		DC	AL2(MIPCLR)	DISK ADDRESS
1114	00	1114	3391+		DC	AL1(*-*)	SECTOR COUNT
1115	2000	1116	3392+		DC	AL2(\$\$PYMP)	BUFFER ADDRESS
			3393+	***		END OF EXPANSION ***	
			3394	*IPDK8	\$DPL	FUNC-@DPUT,DADDR-#@#BAD,CNT-#@#BA,CADDR-MIPEOS	
		1117	3395+	MIPDK8	EQU	*	DISK PARAMETER LIST
1117	02	1117	3396+		DC	AL1(@DPUT)	REQUESTED FUNCTION
1118	0455	1119	3397+		DC	AL2(#@#BAD)	DISK ADDRESS
111A	01	111A	3398+		DC	AL1(#@#BA)	SECTOR COUNT
111B	0EA8	111C	3399+		DC	AL2(MIPEOS)	BUFFER ADDRESS
			3400+	***		END OF EXPANSION ***	
			3401	*IPDK9	\$DPL	FUNC-@DGET,DADDR-MIPPSA,CNT-1,CADDR-MIPBF1	
		111D	3402+	MIPDK9	EQU	*	DISK PARAMETER LIST
111D	01	111D	3403+		DC	AL1(@DGET)	REQUESTED FUNCTION
111E	00B1	111F	3404+		DC	AL2(MIPPSA)	DISK ADDRESS
1120	01	1120	3405+		DC	AL1(1)	SECTOR COUNT
1121	1893	1122	3406+		DC	AL2(MIPBF1)	BUFFER ADDRESS
			3407+	***		END OF EXPANSION ***	
		000A	3408	MIPRTD	EQU	10	DISP TO BIS PROTECTION CNTR
		00FF	3409	MIPRTM	EQU	X'FF'	MAXIMUM PROTECTION VALUE
		00B1	3410	MIPPSA	EQU	X'00B1'	PROTECTION SECTOR DADDR
		0000	3411	MIPCLR	EQU	X'0000'	CLEAR CORE SCTR DADDR



## #MIPPE - READ VOLUME LABEL ROUTINE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 18

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3414 *****
3415 * THIS ROUTINE TESTS THE SPECIFIED DISK FOR INITIALIZATION AND *
3416 * READS THE VOLUME LABEL SECTOR TO MIPBF1. IF THE DISK IS NOT *
3417 * INITIALIZED, MIPBF1 IS CLEARED TO ZEROS AND A MESSAGE PRINTED *
3418 * INFORMING THE USER. *
3419 *****
1123 3420 USING MIPVOL,@XR BASE SPECIFICATION
1123 3421 MIPVOL EQU * ENTRY
1123 C2 02 1123 3422 LA MIPVOL,@XR LOAD THE BASE REGISTER
1127 B4 08 76 3423 ST MIPV90+@OP1(,@XR),@ARR SAVE RETURN ADDRESS
112A BC 00 9B 3424 MVI MIPDK7+@DCTRL(,@XR),@DPOS SET SEEK CONTROL
112D C0 87 0025 3425 B $DISKN LOG ERROR AND HALT
1131 11BE 1132 3426 DC AL2(MIPDK7) DPL ADDRESS
1133 BC 01 9B 3427 MVI MIPDK7+@DCTRL(,@XR),@DGET SET DPL TO READ OP
1136 F3 A1 01 3428 MIPV20 SIO @DCRID,@SPINA+@DREAD ATTEMP A READ ID TO TEST
3429 * * FOR INITIALIZATION
1139 F1 A2 00 3430 APL @SPINA+@DBUSY WAIT ON COMPLETION
113C E1 A0 77 3431 TIO MIPVER(,@XR),@SPINA+@DERR TEST INITIALIZATION
113F C0 87 0025 3432 B $DISKN READ VOLUME LABEL
1143 11BE 1144 3433 DC AL2(MIPDK7) DPL ADDRESS
1145 C0 87 0025 3434 B $DISKN WAIT AND CHECK DISK ERRORS
1149 057F 114A 3435 DC AL2($WAITF) WAIT DPL ADDRESS
3436 *
114B 2D 02 1895 93 3437 CLC MIPBF1+$#TVOL,MIPVVL(3,@XR) DOES THIS LOOK LIKE A VALID
1150 F2 81 19 3438 JE MIPV22 * VOL LABEL ? JUMP IF YES
1153 2D 02 1895 90 3439 CLC MIPBF1+$#TVOL,MIPABC(MIPLAB,@XR) IS 'ABCDEF' PATCHED ?
1158 F2 81 45 3440 JE MIPV95 IF YES, GO COMPLETE IPL
3441 *
3442 *** CHECK FOR C.E. PACK ON R1 -- HARD HALT IF YES.
3443 *
115B BD 08 9D 3444 CLI MIPDK7+@DSAD(,@XR),#VOLR1 IS R1 THE DISK ?
115E F2 01 3F 3445 JNE MIPV95 IF NOT, GO COMPLETE IPL
3446 *
1161 3C 80 0476 3447 MIPHLT MVI $CIMSK,@NOP MASK AGAINST INTERRUPTS
3448 * $HPL CODE-@HCEPK ISSUE HARD HALT
1165 F0 1165 3449+ DC XL1'F0' INLINE HPL INSTRUCTION
1166 003C 1167 3450+ DC AL2(@HCEPK) HALT CODE
1168 C0 87 1161 3451 B MIPHLT SORRY, IT IS REALLY A HARD HALT
116C 3A 01 0DA9 3453 MIPV22 SBN MVDPRM,MVDRR1 SET BIT FOR SCRATCH FILE DELETE
1170 3D 02 03D7 3454 CLI $DKSIZ,$DK200 DO WE HAVE A 100 CYL DISK ?
1174 F2 84 03 3455 JH MIPV25 JUMP IF 200 CYL DISKS
1177 BC 67 58 3456 MVI MIPV25+@Q(,@XR),103 SET 100 CYL DISK SIZE
117A 3D CB 18EF 3457 MIPV25 CLI MIPBF1+$#TCYL,203 CORRECT CYL SIZE ?
117E F2 81 03 3458 JE MIPV30 JUMP IF CORRECT SIZE
1181 BC 00 A1 3459 MVI MIPPCF(,@XR),@ZERO SET WRONG CYL SIZE INDR
1184 AE 00 14 94 3460 MIPV30 ALC MIPV20+@Q(1,@XR),MIPVIN(,@XR) INCREMENT SIO TO NEXT DISK
1188 AE 00 9D 99 3461 ALC MIPDK7+@DSAD(1,@XR),MIPV01(,@XR) SET NEXT DISK ADDRESS
118C 0E 00 116D 116D 3462 ALC MIPV22+@Q,MIPV22+@Q(1) SHIFT LEFT FOR NEXT DRIVE
1192 C2 02 03C0 3463 LA $NUCBS,@XR RESTORE BASE REGISTER
1196 C0 87 0000 3464 MIPV90 B *-* RETURN TO CALLER
3465 *
3466 *** UNINITIALIZED DISK HANDLER.
3467 *
119A B1 A6 96 119A 3468 MIPVER EQU * ENTRY TO HANDLE UNINITIALIZED DISK
3469 LIO MIPSET(,@XR),@SPINA+@DFCR LOAD DISK CONTROL REGISTER

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## #MIPPE - READ VOLUME LABEL ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 19
	119D	F3	A0 00		3470	SIO	@SKCTL,@DSEEK+@SPINA			RESET ERROR LATCH
	11A0	3C	00 1992		3471	MIPV95	MVI MIPBF1+255,@ZERO			PREPARE TO CLEAR BUFFER
	11A4	0C	FE 1991 1992		3472	MVC	MIPBF1+254(255),MIPBF1+255			CLEAR BUFFER TO ZEROES
	11AA	C0	87 11C8		3473	B	MIPSTK			GO STACK UNINIT MSG
	11AE	E0	87 61		3474	B	MIPV30(,@XR)			GO EXIT ROUTINE
					3475	*				
					3476	***	MIPVOL CONSTANTS			
					3477	*				
				0003	3478	MIPLAB	EQU 3			LENGTH OF THREE
	11B1	ABCDEF		11B3	3479	MIPABC	DC XL(MIPLAB)'ABCDEF'			CONSTANT FOR 'ABCDEF'
	11B4	E5D6D3		11B6	3480	MIPVVL	DC CL3'VOL'			VOLUME LABEL CHECK CHARS
	11B7	08		11B7	3481	MIPVIN	DC XL1'08'			SIO SPINDLE ADDR INCREMENT
	11B8	11BA		11B9	3482	MIPSET	DC AL2(MIPDCF)			ADDRESS OF RESET ERROR DCF
				11BA	3483	MIPDCF	EQU *			START OF RESET DCF
	11BA	00000100		11BD	3484		DC XL4'00000100'			RESET ERROR DCF (SEEK 0 FORWARD)
				11BC	3485	MIPV01	EQU MIPDCF+2			CONSTANT OF ONE
					3486	*				
					3487	*IPDK7	\$DPL FUNC-@DGET,DADDR-#VOLR1,CNT-#@VLAB,CADDR-MIPBF1			
				11BE	3488	+MIPDK7	EQU *			DISK PARAMETER LIST
	11BE	01		11BE	3489	+	DC AL1(@DGET)			REQUESTED FUNCTION
	11BF	0008		11C0	3490	+	DC AL2(#VOLR1)			DISK ADDRESS
	11C1	01		11C1	3491	+	DC AL1(#@VLAB)			SECTOR COUNT
	11C2	1893		11C3	3492	+	DC AL2(MIPBF1)			BUFFER ADDRESS
					3493	+	*** END OF EXPANSION ***			
				0E48	3494	MIPOBS	EQU MIP200			OVERLAY BASE VALUE
				11C4	3495	MIPPCF	EQU *			PCF
	11C4	84200304		11C7	3496		DC XL4'84200304'			RETURN/TAB-RIGHT/RETURN

#MIPPE - ERROR MESSAGE STACKER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 20
					3498	*****	*****	
					3499	*	THIS ROUTINE STACKS THE ERROR MESSAGE INDICATED IN THE	*
					3500	*	LOCATION MIPECD. IT ALSO INCREMENTS THE STACK COUNT.	*
					3501	*****	*****	
				11C8	3502	MIPSTK EQU *	ENTRY TO STACK AN ERROR MSG	
11C8	1C	01	1C01 6A		3503	MIPS10 MVC \$\$ERSK+1,MIPECD+1(2,@BR)	SET ERROR INDR IN STACK	
11CD	1E	01	11CB 6E		3504	ALC MIPS10+@OP1,MIPSC3(@CADDR,@BR)	POINT TO NEXT STACK ENTRY	
11D2	4E	00	6C 0464		3505	ALC MIPECT(1,@BR),\$C0001	SET STACK COUNT	
11D7	34	08	11DE		3506	ST MIPS50+@OP1,@ARR	GET RETURN ADDRESS	
11DB	C0	87	0000		3507	MIPS50 B *-*	RETURN TO CALLER	
					3509	*****	*****	
					3510	*	PATCH AREA #1	*
					3511	*****	*****	
					3512	*		
					3513	***	CALCULATE AREA LEFT IN THIS SECTOR	
					3514	*		
				11DF	3515	\$\$\$\$L1 EQU *	START OF PATCH AREA 1	
1200					3516	ORG *,256,0	SET LOC COUNTER TO NEXT SECTOR	
				1200	3517	\$\$\$\$T1 EQU *	DEFINE ADDR OF SCTR BOUNDARY	
11DF					3518	ORG \$\$\$\$L1	SET LOC COUNTER TO START OF	
					3519	*	* PATCH AREA	
11DF				11FF	3520	\$\$\$\$\$1 DS CL(\$\$\$\$T1-\$\$\$\$L1)	PATCH AREA	
					3521	*		

## MCNFIG - TEST CONFIGURATION RECORD

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 21
		3523		*****			*
		3524	*				*
		3525	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		3526	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
		3527	*				*
		3528		*****			*
		3529	*	*STATUS			*
		3530	*	VERSION 1 MODIFICATION 0			*
		3531	*				*
		3532	*	*FUNCTION			*
		3533	*	* MCNFIG TESTS THE CONFIGURATION RECORD FOR VALIDITY AND SETS THE			*
		3534	*	CORRESPONDING NUCLEUS INDICATORS FOR THE SPECIFIED DEVICES.			*
		3535	*	IF THE CRT IS CONFIGURED THE IOCS #DSPLY IS LOADED TO HIGH CORE			*
		3536	*	AND INITIALIZED.			*
		3537	*	* WHEN THE RECORD IS TESTED EACH I/O DEVICE INDICATED IS TESTED			*
		3538	*	TO DETERMINE IF IT IS ON THE SYSTEM. IF IT IS NOT PRESENT A			*
		3539	*	PROCESSOR CHECK WILL OCCUR (WORKS AS DESIGNED).			*
		3540	*	* MCNFIG WILL ALSO LOAD THE CORRECT KEYBOARD TABLE.			*
		3541	*				*
		3542	*	*ENTRY POINTS			*
		3543	*	THE ENTRY POINT IS MCNFIG. THE CALLING SEQUENCE IS AS FOLLOWS:			*
		3544	*	B MCNFIG			*
		3545	*	MIPPER IS ALWAYS EXECUTED BY NBLOAD			*
		3546	*				*
		3547	*	*INPUT			*
		3548	*	INPUT TO MCNFIG IS THE CONFIGURATION RECORD STARTING AT			*
		3549	*	LOCATION MCNBUF.			*
		3550	*				*
		3551	*	*OUTPUT			*
		3552	*	OUTPUT FROM MCNFIG CONSISTS OF THE CORRESPONDING INDICATORS SET			*
		3553	*	UP IN THE SYSTEM NUCLEUS. IF THE CRT IS SPECIFIED THE IOCS			*
		3554	*	#DSPLY IS LOADED TO HIGH CORE. THE APPROPRIATE KEYBOARD TABLE			*
		3555	*	IS ALSO SET UP.			*
		3556	*				*
		3557	*	*EXTERNAL REFERENCES			*
		3558	*	\$NUCBS - START OF COMMUNICATION AREA.			*
		3559	*	\$CONFIG - LOCATION OF THE CONFIGURATION INDICATORS.			*
		3560	*	#EXFTR - LOCATION OF THE CORE EXTENSION FACTOR.			*
		3561	*	\$CSDPL - ADDRESS OF SAVE RESTORE DPL.			*
		3562	*	\$IOIND - I/O STATUS INDICATOR.			*
		3563	*	\$PRDEV - ADDRESS OF SYSTEM PRINTER IOCS.			*
		3564	*	\$BSADR - LOCATION OF THE SYSTEM BASE ADDRESS.			*
		3565	*	\$DISKN - ENTRY TO DISK IOCS, DKDISK.			*
		3566	*	\$WAITF - WAIT DPL ADDRESS.			*
		3567	*	\$CRTAD - ENTRY TO RELOCATE CRT ROUTINE.			*
		3568	*	\$RMGRN - LOCATION OF SOFTWARE RIGHT MARGIN VALUE.			*
		3569	*	\$C0001 - LOCATION OF 2 BYTE CONSTANT OF ONE.			*
		3570	*	\$KEYBD - LOCATION OF KEYBOARD TYPE INDICATOR.			*
		3571	*	\$\$DATB - LOCATION OF KEYBOARD TYPE IN DPRES.			*
		3572	*	\$DKSIZ - DISK SIZE INDICATOR.			*
		3573	*				*
		3574	*	*EXITS, NORMAL			*
		3575	*	NORMAL RETURN IS TO THE CALLING PROGRAM AT THE FIRST			*
		3576	*	INSTRUCTION FOLLOWING THE BRANCH TO MCNFIG.			*
		3577	*				*
		3578	*	*EXITS, ERROR			*

## MCNFIG - TEST CONFIGURATION RECORD

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		3579	*	AN EXIT IS TAKEN TO \$C0001 TO FORCE A MACHINE PROC CHECK WITH	*		
		3580	*	THE FIELD INDICATORS NOTING THE DEVICE IN ERROR.	*		
		3581	*	THE ERROR MESSAGE NUMBERS ARE STACKED AT \$\$ERSK.	*		
		3582	*		*		
		3583	*	*TABLES/WORK AREAS	*		
		3584	*	N/A	*		
		3585	*		*		
		3586	*	*ATTRIBUTES	*		
		3587	*	RELOCATABLE	*		
		3588	*	REUSABLE	*		
		3589	*		*		
		3590	*	*CHARACTER CODE DEPENDENCY	*		
		3591	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*		
		3592	*	INTERNAL RESPRESENTATION OF THE EXTERNAL CHARACTER SET.	*		
		3593	*		*		
		3594	*	*NOTES	*		
		3595	*	ERROR PROCEDURES	*		
		3596	*	MCNFIG WILL GENERATE A MACHINE PROC CHECK IF A DEVICE IS	*		
		3597	*	CONFIGURED BUT IS NOT ON THE SYSTEM. WHEN THE DEVICE IS A	*		
		3598	*	FIELD INDICATOR IS SET TO INDICATE THE DEVICE IN ERROR.	*		
		3599	*	THE 1 EXCEPTION TO THIS PROCEDURE IS IF DISK DRIVE 2 IS TESTED	*		
		3600	*	AND IT IS NOT ON THE SYSTEM THE DISK NOT READY WILL BE LIT.	*		
		3601	*	THE FIELD INDICATORS ARE AS FOLLOWS:	*		
		3602	*	X'80' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3603	*	X'40' - WRONG DISK CAPACITY ON DRIVE 2	*		
		3604	*	X'20' - WRONG CORE SIZE	*		
		3605	*	X'10' - WRONG SIZE PRINTER	*		
		3606	*	X'08' - WRONG TYPE PRINTER	*		
		3607	*	X'04' - MISSING CRT	*		
		3608	*	X'04' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3609	*	X'80' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3610	*		*		
		3611	*	REGISTER USAGE	*		
		3612	*	@BR IS USED TO REFERENCE THE SYSTEM NUCLEUS.	*		
		3613	*	@XR IS USED TO REFERENCE THE CONFIGURATION RECORD.	*		
		3614	*	THEY ARE -NOT- SAVED OR RESTORED.	*		
		3615	*		*		
		3616	*	SAVED/RESTORED AREAS	*		
		3617	*	N/A	*		
		3618	*		*		
		3619	*	MODIFICATION CONSIDERATIONS	*		
		3620	*	N/A	*		
		3621	*		*		
		3622	*	REQUIRED MODULES	*		
		3623	*	@SYSEQ - GENERAL SYSTEM EQUATES.	*		
		3624	*	@FXDEQ - NUCLEUS LOCATION EQUATES.	*		
		3625	*	@CANEQ - TRANSCIENT LOCATION EQUATES.	*		
		3626	*	@CNFEQ - CONFIGURATION EQUATES.	*		
		3627	*	\$V\$EQU - VIRTUAL MEMORY EQUATES.	*		
		3628	*		*		
		3629	*	*OTHER	*		
		3630	*	N/A	*		
		3631	*		*		
		3632	*	*****	*		



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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 23
					3634	*****	*****	
					3635	*	THIS ROUTINE TESTS THE CONFIGURATION RECORD AT LOCATION MCNBUF. *	
					3636	*	IF IN ERROR THE CORRESPONDING FIELD INDICATORS WILL BE LIT AND *	
					3637	*	A PROC CHECK GENERATED. IF CORRECT, THE CORRESPONDING NUCLEUS *	
					3638	*	INDICATOR WILL BE TURNED ON. THIS ROUTINE MAY BE REUSED. *	
					3639	*****	*****	
				1893	3640		USING MCNBUF,@XR INDEX REG POINTS TO BUFFER	
				03C0	3641		USING \$NUCBS,@BR BASE ADDRESS	
				1200	3642	MCNFIG	EQU * MODULE ENTRY POINT	
1200	C2	01	03C0		3643		LA \$NUCBS,@BR LOAD BASE REGISTER	
1204	C2	02	1893		3644		LA MCNBUF,@XR *	
1208	7C	00	1D		3645		MVI \$CONFIG(,@BR),@ZERO SET 8KBYTE CORE INDR	
120B	34	08	146D		3646		ST MCN500+@OP1,@ARR SAVE RETURN ADDRESS	
120F	BD	00	3D		3647		CLI @#CSIZ(,@XR),@ZERO IS THERE A CONFIG RECORD ?	
1212	C0	81	145A		3648		BE MCN380 EXIT IF NOT	
1216	7C	00	7B		3649		MVI \$EXFTR(,@BR),@ZERO RESET EXTENSION FACTOR	
1219	3C	1A	0511		3650		MVI \$CSDPL+@DCNT,MCN08C SET SAVE CORE SECTOR COUNT	
121D	BD	01	3D		3651		CLI @#CSIZ(,@XR),@#C08K IS IT 8KBYTE ?	
1220	F2	81	2B		3652		JE MCN100 YES, SKIP CORE TEST	
1223	7C	10	7B		3653		MVI \$EXFTR(,@BR),MCN12K SET CORE EXTENSION FOR 12KBYTE	
1226	7C	04	1D		3654		MVI \$CONFIG(,@BR),\$12K SET 12KBYTE CORE INDR	
1229	BD	02	3D		3655		CLI @#CSIZ(,@XR),@#C12K IS IT 12KBYTE ?	
122C	F2	81	0D		3656		JE MCN050 YES, GO TEST IT	
122F	BD	04	3D		3657		CLI @#CSIZ(,@XR),@#C16K IS IT 16KBYTE ? IF NOT ASSUME	
1232	C0	01	145A		3658		BNE MCN380 * MINIMUM CONFIGURATION	
1236	7C	20	7B		3659		MVI \$EXFTR(,@BR),MCN16K SET CORE EXTENSION FOR 16KBYTE	
1239	7C	02	1D		3660		MVI \$CONFIG(,@BR),\$16K SET 16KBYTE CORE INDR	
123C	31	12	1470		3661	MCN050	LIO MCNCOR,@FLDIN SET FIELD INDRS FOR CORE CHECK	
1240	1E	00	1247 7B		3662		ALC MCN060+@D1(1),\$EXFTR(,@BR) CALCULATE LAST BYTE OF CORE	
					3663	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
1245	3A	00	1FFF		3664	MCN060	SBN @MINCR-1,@ZERO TEST CORE SIZE	
1249	1F	00	1247 7B		3665		SLC MCN060+@D1(1),\$EXFTR(,@BR) RESTORE ORIGINAL VALUE	
124E	7B	40	12		3666	MCN100	SBF \$IOIND(,@BR),\$DTRDR SET NO DATA RECORDER	
1251	B8	40	20		3667		TBN @#DATA(,@XR),@#DATB IS DATA RECORDER ON SYSTEM ?	
1254	F2	90	2C		3668		JF MCN130 SKIP TEST IF NOT	
1257	31	12	1474		3669		LIO MCNDAT,@FLDIN SET FIELD INDRS FOR DATA RCDR	
					3670	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
125B	71	F0	8B		3671		LIO \$PRDEV(,@BR),@LO37B ATTEMPT TO LOAD ITS LSR	
125E	7A	40	12		3672		SBN \$IOIND(,@BR),\$DTRDR SET RCDR ON SYSTEM SYSTEM	
1261	30	F2	1484		3673		SNS MCNWRK,MCNDRS SENSE DATA RECORDER	
1265	38	02	1484		3674		TBN MCNWRK,MCNDRT WHICH TYPE OF DATA RCDR ?	
1269	F2	90	0D		3675		JF MCN120 BRANCH IF IBM 0129	
126C	B8	08	20		3676		TBN @#DATA(,@XR),MCNB CD IS AN IBM 5496 CONFIGURED ?	
					3677	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
126F	D0	90	A4		3678		BF \$C0001(,@BR) NO, GENERATE A PROC CHECK	
1272	3B	80	03DD		3679		SBF \$CONFIG,\$BIGCD INDICATE IBM 5496 ON SYSTEM	
1276	F2	87	0A		3680		J MCN130 CONTINUE	
1279	B8	48	20		3681	MCN120	TBN @#DATA(,@XR),@#DATC IS AN IBM 0129 CONFIGURED ?	
					3682	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
127C	D0	90	A4		3683		BF \$C0001(,@BR) NO, GENERATE A PROC CHECK	
127F	3A	80	03DD		3684		SBN \$CONFIG,\$BIGCD INDICATE IBM 0129 ON SYSTEM	
1283	78	02	12		3685	MCN130	TBN \$IOIND(,@BR),\$CRTAV WAS THE CRT ON THE SYSTEM ?	
1286	F2	90	03		3686		JF MCN150 DON'T REFERENCE IT IF NOT	
1289	F3	90	00		3687		SIO 0,@CRTQ TURN THE DISPLAY OFF	
128C	7B	02	12		3688	MCN150	SBF \$IOIND(,@BR),\$CRTAV SET NO CRT ON SYSTEM INDR	
128F	B8	40	28		3689		TBN @#CRTD(,@XR),@#CRTB IS CRT ON SYSTEM ?	



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	1292	F2	90 38		3690	JF	MCN200			SKIP TEST IF NOT
	1295	7A	06 12		3691	SBN	\$IOIND(, @BR), \$CRTAV+\$CRTNO			SET CRT ON SYSTEM INDR
	1298	4F	00 7B 1476		3692	SLC	\$EXFTR(1, @BR), MCNEXF			RECALCULATE EXTENSION FACTOR
	129D	F2	80 2D		3693	MCN155 JC	MCN200, @NOP			SKIP SET UP IF DONE
	12A0	3C	87 129E		3694	MVI	MCN155+@Q, @UCB			SET DONE INDR
	12A4	1E	00 147E 7B		3695	ALC	MCNDK1+@DBFR1(1), \$EXFTR(, @BR)			CALCULATE CRT LOAD ADDR
	12A9	0E	01 147C 0587		3696	ALC	MCNDK1+@DSAD(@DADDR), \$BSADR			GET TRUE DISK ADDR
	12AF	31	12 1473		3697	LIO	MCNCRT, @FLDIN			SET FIELD INDRS FOR CRT
	12B3	C0	87 0025		3698	B	\$DISKN			LOAD DSPLYN
	12B7	147A		12B8	3699	DC	AL2(MCNDK1)			DPL ADDRESS
	12B9	C0	87 0025		3700	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	12BD	057F		12BE	3701	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3702	*				
	12BF	4C	01 8D 147F		3703	MVC	\$CRTAD(@CADDR, @BR), MCNDK1+@DBFR2			SET CRT EXECUTION ADDR
	12C4	1C	01 12CC 8D		3704	MVC	MCN160+@OP1(@CADDR), \$CRTAD(, @BR)			SET BR ADDRESS
	12C9	C0	87 0000		3705	MCN160 B	*-*			GO INITIALIZE DSPLYN
	12CD	1E	00 0511 7B		3706	MCN200 ALC	\$CSDPL+@DCNT(1), \$EXFTR(, @BR)			SET NPAUSE CORE SAVE CNT
	12D2	7B	80 12		3707	SBF	\$IOIND(, @BR), \$LNPTR			SET LINE PRINTER INDR OFF
	12D5	30	EB 1484		3708	SNS	MCNWRK, MCNSTS			SENSE PRINTER STATUS
	12D9	31	12 1471		3709	LIO	MCNPTR, @FLDIN			SET FIELD INDRS FOR PRINTER
	12DD	B8	02 16		3710	TBN	@#MTYP(, @XR), @#MP22			22 INCH PRINTER ON SYSTEM ?
	12E0	F2	10 0C		3711	JT	MCN210			JUMP IF YES
	12E3	7D	84 00		3712	CLI	\$RMRGN(, @BR), MCN13I			IS MARGIN GREATER THEN 13 ?
	12E6	F2	04 10		3713	JNH	MCN220			DON'T CHANGE IT IF NO
	12E9	7C	84 00		3714	MVI	\$RMRGN(, @BR), MCN13I			SET 13 INCH PRINTER WIDTH
	12EC	F2	87 0A		3715	J	MCN220			GO TEST LINE PRINTER
	12EF	39	80 1483		3716	MCN210 TBF	MCNWRK-1, MCNP22			IS 22 INCH PRINTER AVAILABLE ?
					3717	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.			
	12F3	D0	90 A4		3718	BF	\$C0001(, @BR)			GENERATE A PROC CHECK IF NOT
	12F6	7A	01 1D		3719	SBN	\$CONFIG(, @BR), \$22IMP			SET 22 INCH INDR
	12F9	B8	04 16		3720	MCN220 TBN	@#MTYP(, @XR), @#MTLP			IS IT A LINE PRINTER ?
	12FC	F2	90 0E		3721	JF	MCN250			SKIP TEST IF NOT
	12FF	31	12 1472		3722	LIO	MCNLPR, @FLDIN			SET FIELD INDRS FOR LINE PRT
	1303	39	20 1483		3723	TBF	MCNWRK-1, MCNMLP			IS LINE PRINTER AVAlABLE ?
					3724	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.			
	1307	D0	90 A4		3725	BF	\$C0001(, @BR)			GENERATE A PROC CHECK IF NOT
	130A	7A	80 12		3726	SBN	\$IOIND(, @BR), \$LNPTR			SET LINE PRINTER INDR
				130D	3728	MCN250 EQU	*			SET UP KEYBOARD TABLES
	130D	31	12 1475		3729	LIO	MCNOFF, @FLDIN			TURN OFF FIELD INDR
	1311	B8	40 19		3730	TBN	@#KEYS(, @XR), @#KE08			8 COMMAND KEYS ?
	1314	F2	10 03		3731	JT	MCN255			DON'T SET INDR IF YES
	1317	7A	08 1D		3732	SBN	\$CONFIG(, @BR), \$16CKY			SET 16 COMMAND KEYS INDR
	131A	6C	00 21 1A		3733	MCN255 MVC	\$KEYBD(, @BR), @#KNAT(1, @XR)			SET KYBRD NUMBER IN NUCLEUS
	131E	2D	00 0BBF 1A		3734	CLC	\$\$DATB, @#KNAT(, @XR)			ARE WE USING CORRECT KEYBOARD ?
	1323	F2	81 E3		3735	JE	MCN300			SKIP PLACING KEYBOARDS
	1326	F2	80 22		3736	MCN258 JC	MCN263, @NOP			JUMP IF SPF DADDRS SET
	1329	3C	87 1327		3737	MVI	MCN258+@Q, @UCB			SET SPF DADDRS 'SET' INDR
	132D	3C	0A 1477		3738	MVI	MCNLPC, MCNTBC			RELOCATE 10 DADDRS
	1331	C2	01 1487		3739	LA	MCNDK3+@DSAD, @BR			POINT TO 1ST DPL DADDR
	1335	4E	01 00 0587		3740	MCN260 ALC	0(@DADDR, @BR), \$BSADR			CALCULATE TRUE SPF DADDR
	133A	D2	01 06		3741	LA	@DPLNG(, @BR), @BR			POINT TO NEXT DPL
	133D	0F	00 1477 0464		3742	SLC	MCNLPC(1), \$C0001			ARE WE DONE ?
	1343	C0	84 1335		3743	BH	MCN260			LOOP IF NOT
	1347	C2	01 03C0		3744	LA	\$NUCBS, @BR			RESTORE BASE REGISTER
	134B	BD	09 1A		3745	MCN263 CLI	@#KNAT(, @XR), @#UKDM			IS THIS A GOOD KEYBOARD ?

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	134E	F2	84	B8	3746	JH	MCN300			SKIP PLACEMENT IF NOT
	1351	BD	00	1A	3747	CLI	@#KNAT(, @XR), @ZERO			ARE YOU REALLY SURE ?
	1354	F2	81	B2	3748	JE	MCN300			SKIP PLACEMENT IF NOT
	1357	0C	01	1385 1481	3749	MVC	MCN265+@OP2, MCNDK2+1(@CADDR)			ZERO OUT DATA TABLE DISP
	135D	28	01	1385 1A	3750	MZN	MCN265+@OP2, @#KNAT(, @XR)			PLACE DATA TABLE DISP IN MVC
	1362	0E	01	1385 1385	3751	ALC	MCN265+@OP2(@CADDR), MCN265+@OP2			SHIFT BITS LEFT
	1368	0E	01	1385 1385	3752	ALC	MCN265+@OP2(@CADDR), MCN265+@OP2			TO GET TABLE DISP
	136E	0E	01	1385 1479	3753	ALC	MCN265+@OP2(@CADDR), MCNDBA			CALCULATE DATA TABLE ADDR
	1374	C0	87	0025	3754	B	\$DISKN			READ SYSTEM DATA TABLES TO BUFFER
	1378	1485			1379	3755	DC	AL2(MCNDK3)		DPL ADDRESS
	137A	C0	87	0025	3756	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	137E	057F			137F	3757	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3758	*				
	1380	0C	3F	19D2 0000	3759	MCN265 MVC	MCNBUF+MCNTBD(MCNTBL), *-*			SAVE CORRECT DATA TABLE
	1386	C0	87	0025	3760	B	\$DISKN			READ DEPRES DATA TABLE
	138A	148B			138B	3761	DC	AL2(MCNDK4)		DPL ADDRESS
	138C	C0	87	0025	3762	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	1390	057F			1391	3763	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3764	*				
	1392	0C	3F	1B92 19D2	3765	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	1398	1C	00	1B52 21	3766	MVC	MCNBUF+MCNTID, \$KEYBD(1, @BR)			SET KYBRD TYPE INDR IN DEPRES
	139D	C0	87	0025	3767	B	\$DISKN			WRITE DEPRES DATA TABLE TO DISK
	13A1	1491			13A2	3768	DC	AL2(MCNDK5)		DPL ADDRESS
					3769	*				
	13A3	C0	87	0025	3770	B	\$DISKN			READ VM STD DFKEYNS DATA TABLE TO DISK
	13A7	1497			13A8	3771	DC	AL2(MCNDK6)		DPL ADDRESS
	13A9	C0	87	0025	3772	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13AD	057F			13AE	3773	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3774	*				
	13AF	0C	3F	1B92 19D2	3775	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13B5	C0	87	0025	3776	B	\$DISKN			WRITE VM DFKEYN
	13B9	149D			13BA	3777	DC	AL2(MCNDK7)		DPL ADDRESS
					3778	*				
	13BB	C0	87	0025	3779	B	\$DISKN			READ VM FTD DFKGYN TABLE
	13BF	14A3			13C0	3780	DC	AL2(MCNDK8)		DPL ADDRESS
	13C1	C0	87	0025	3781	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13C5	057F			13C6	3782	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3783	*				
	13C7	0C	3F	1B92 19D2	3784	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13CD	C0	87	0025	3785	B	\$DISKN			WRITE VM DFKEYN
	13D1	14A9			13D2	3786	DC	AL2(MCNDK9)		DPL ADDRESS
					3787	*				
	13D3	C0	87	0025	3788	B	\$DISKN			READ DCAL KEYBOARD TABLES
	13D7	14AF			13D8	3789	DC	AL2(MCNDKA)		DPL ADDRESS
	13D9	C0	87	0025	3790	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13DD	057F			13DE	3791	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3792	*				
	13DF	0C	01	13EA 1385	3793	MVC	MCN268+@OP2(@CADDR), MCN265+@OP2			SET ADDR OF TABLE
	13E5	0C	3F	19D2 0000	3794	MCN268 MVC	MCNBUF+MCNTBD(MCNTBL), *-*			SAVE DATA TABLE FOR DCAL
	13EB	C0	87	0025	3795	B	\$DISKN			READ DCAL DATA TABLE SECTOR
	13EF	14B5			13F0	3796	DC	AL2(MCNDKB)		DPL ADDRESS
	13F1	C0	87	0025	3797	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13F5	057F			13F6	3798	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3799	*				
	13F7	0C	3F	1B92 19D2	3800	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13FD	C0	87	0025	3801	B	\$DISKN			WRITE DCAL DATA SECTOR

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1401	14BB			1402	3802	DC	AL2(MCNDKC)	DPL ADDRESS
1403	C0 87 0025				3803	MCN270 B	\$DISKN	WAIT AND CHECK DISK ERRORS
1407	057F			1408	3804	DC	AL2(\$WAITF)	WAIT DPL ADDRESS
					3805	*		
1409	31 12 146E				3806	MCN300 LIO	MCNDHF,@FLDIN	SET FIELD INDRS FOR DRIVE 1
140D	7C 02 17				3807	MVI	\$DKSIZ(,@BR),\$DK200	SET DISK FOR 1/2 CAPACITY
1410	B8 08 13				3808	MCN310 TBN	@#DSIZ(,@XR),@#C200	FULL CAPACITY ?
1413	F2 90 0E				3809	JF	MCN320	SHIP TEST IF NO
1416	30 A2 1484				3810	SNS	MCNWRK,@DVST1+@SPINA	SENSE BYTES 0 & 1
141A	38 08 1484				3811	TBN	MCNWRK,MCN10C	LESS THEN FULL CAP ?
					3812	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
141E	D0 10 A4				3813	BT	\$C0001(,@BR)	GENERATE A PROC CHECK IF YES
1421	7C 04 17				3814	MVI	\$DKSIZ(,@BR),\$DK400	SET INDR FOR FULL CAPACITY
1424	B9 11 13				3815	MCN320 TBF	@#DSIZ(,@XR),@#FRR2+@#FR12	TWO DRIVES ?
1427	F2 10 3C				3816	JT	MCN400	SKIP TEST IF NOT
142A	31 12 146F				3817	LIO	MCNDR2,@FLDIN	SET FIELD INDRS FOR DRIVE 2
142E	30 B2 1484				3818	SNS	MCNWRK,@DVST1+@SPINB	SENSE DRIVE 2
1432	38 40 1483				3819	TBN	MCNWRK-1,@DERIN	INTERVENTION REQUIRED ?
1436	F2 10 17				3820	JT	MCN350	GO LIGHT DISK INDR
1439	7C 08 17				3821	MVI	\$DKSIZ(,@BR),\$DK600	SET DISK SIZE INDR FOR 600 CYLS
143C	B8 01 13				3822	TBN	@#DSIZ(,@XR),@#FR12	FIXED DISK ON SYSTEM ?
143F	F2 90 24				3823	JF	MCN400	SKIP TEST IF NOT
1442	30 BA 1484				3824	SNS	MCNWRK,@SPINB+MCNFIK	SENSE FIXED DISK
1446	7C 10 17				3825	MVI	\$DKSIZ(,@BR),\$DK800	SET 800 CYLS INDR
1449	38 40 1483				3826	TBN	MCNWRK-1,@DERIN	INTERVENTION REQUIRED ?
144D	F2 90 16				3827	JF	MCN400	EXIT IF OKE
1450	C0 87 0025				3828	MCN350 B	\$DISKN	GO LIGHT DISK INDR
1454	1480			1455	3829	DC	AL2(MCNDK2)	DPL ADDRESS
					3830	*		
1456	C0 87 1424				3831	B	MCN320	GO RETRY TEST
145A	BC 00 3D				3833	MCN380 MVI	@#CSIZ(,@XR),@ZERO	SET NO ONFIG RECORD INDR
145D	7C 00 7B				3834	MVI	\$EXFTR(,@BR),@ZERO	RESET EXTENSION FACTOR
1460	7C 00 1D				3835	MVI	\$CONFIG(,@BR),@ZERO	SET CONFIG INDRS OFF
1463	7C 84 00				3836	MVI	\$RMRGN(,@BR),MCN13I	SET PRINTER 13 INCH WIDTH
1466	31 12 1475				3837	MCN400 LIO	MCNOFF,@FLDIN	TURN OOF FIELD INDRS
146A	C0 87 0000				3838	MCN500 B	*-*	RETURN TO CALLER
				0008	3840	MCNBCE	EQU X'08'	BIG CARD BIT
				0010	3841	MCN12K	EQU X'10'	12KBYTE CORE EXTENSION FACTOR
				0020	3842	MCN16K	EQU X'20'	16KBYTE CORE EXTENSION FACTOR
				001A	3843	MCN08C	EQU 32-6	SECTOR COUNT FOR 8K CORE SAVE
				002A	3844	MCN12C	EQU 48-6	SECTOR COUNT FOR 12K CORE SAVE
				003A	3845	MCN16C	EQU 64-6	SECTOR COUNT FOR 16K CORE SAVE
				0084	3846	MCN13I	EQU 132	13 INCH RIGHT MARGIN
				00DC	3847	MCN22I	EQU 220	22 INCH RIGHT MARGIN
				0080	3848	MCN50C	EQU X'80'	50 CYL DISK INDR BIT
				0008	3849	MCN10C	EQU X'08'	100 CYL DISK INDR BIT
				000A	3850	MCNFIK	EQU X'0A'	FIXED DISK M+N CODE
				00EB	3851	MCNSTS	EQU X'EB'	SENSE PRINTER TYPE Q-CODE
				0080	3852	MCNP22	EQU X'80'	PRINTER SIZE INDR BIT
				0020	3853	MCNMLP	EQU X'20'	PRINTER TYPE INDR BIT
				0040	3854	MCNTBL	EQU 64	LENGTH OF ONE KEYB DATA TABLE
				0100	3855	MCNSTR	EQU 256	SIZE OF ONE DISK SECTOR
				013F	3856	MCNTBD	EQU 255+MCNTBL	DISP OF DATA TABLE FROM MCNBUF
				000A	3857	MCNTBC	EQU 10	NUMBER OF DPLS TO RELOCATE

## MCNFIG - TEST CONFIGURATION RECORD

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 27	
		015C	3858	MCNTB4	EQU	#SDPRI+4*4	DADDR OF DEPRES DATA TABLE
		02BF	3859	MCNTID	EQU	3*MCNSTR-1-MCNTBL	ADDR OF DATA TABLE TYPE INDR IN
			3860	*			* BUFFER (SET FOR DEPRES ONLY)
		00F2	3861	MCNDRS	EQU	X'F2'	SENSE D.R. STATUS BYTES
		0002	3862	MCNDRT	EQU	X'02'	D.R. TYPE: 0=0129, 1=5496
			3863	*			
146E	80	146E	3864	MCNDHF	DC	XL1'80'	DISK CAPACITY ERROR INDR
146F	40	146F	3865	MCNDR2	DC	XL1'40'	DRIVE 2 ERROR INDR
1470	20	1470	3866	MCNCOR	DC	XL1'20'	CORE ERROR INDR
1471	10	1471	3867	MCNPTR	DC	XL1'10'	PRINTER ERROR INDR
1472	08	1472	3868	MCNLPR	DC	XL1'08'	LINE PRINTER ERROR INDR
1473	04	1473	3869	MCNCRT	DC	XL1'04'	CRT ERROR INDR
1474	02	1474	3870	MCNDAT	DC	XL1'02'	DATA RECORDER ERROR INDR
1475	00	1475	3871	MCNOFF	DC	XL1'00'	RESET FIELD INDRS
1476	07	1476	3872	MCNEXF	DC	XL1'07'	SIZE OF DSPLYN IN SECTORS
1477		1477	3873	MCNLPC	DS	IL1	LOOP COUNTER
1478	1A92	1479	3874	MCNDBA	DC	AL2(MCNBUF+2*MCNSTR-1)	ADD OF START OF DATA TABLE BUFF
			3875	*			
			3876	*CNDK1	\$DPL	FUNC-@DGET,DADDR-#\$DSPL,CNT-#\$@DSP,CADDR-MCNCA1	
		147A	3877+	MCNDK1	EQU	*	DISK PARAMETER LIST
147A	01	147A	3878+		DC	AL1(@DGET)	REQUESTED FUNCTION
147B	0240	147C	3879+		DC	AL2(#\$DSPL)	DISK ADDRESS
147D	04	147D	3880+		DC	AL1(#\$@DSP)	SECTOR COUNT
147E	0F00	147F	3881+		DC	AL2(MCNCA1)	BUFFER ADDRESS
			3882+	***		END OF EXPANSION ***	
		0F00	3883	MCNCA1	EQU	X'0F00'	TO BYPASS ORG *-2 PROBLEM
		1480	3884	MCNDK2	EQU	*	ERROR DPL FOR DRIVE 2
1480	000002	1482	3885		DC	XL3'000002'	SEEK TO CYL ZERO ON DRIVE 2
1483		1484	3886	MCNWRK	DS	CL2	
			3887	*CNDK3	\$DPL	FUNC-@DGET,DADDR-#\$TSYK,CNT-#\$@TSY,CADDR-MCNBUF+2*MCNSTR	
		1485	3888+	MCNDK3	EQU	*	DISK PARAMETER LIST
1485	01	1485	3889+		DC	AL1(@DGET)	REQUESTED FUNCTION
1486	0250	1487	3890+		DC	AL2(#\$TSYK)	DISK ADDRESS
1488	03	1488	3891+		DC	AL1(#\$@TSY)	SECTOR COUNT
1489	1A93	148A	3892+		DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3893+	***		END OF EXPANSION ***	
			3894	*CNDK4	\$DPL	FUNC-@DGET,DADDR-MCNTB4,CNT-01,CADDR-MCNBUF+2*MCNSTR	
		148B	3895+	MCNDK4	EQU	*	DISK PARAMETER LIST
148B	01	148B	3896+		DC	AL1(@DGET)	REQUESTED FUNCTION
148C	015C	148D	3897+		DC	AL2(MCNTB4)	DISK ADDRESS
148E	01	148E	3898+		DC	AL1(01)	SECTOR COUNT
148F	1A93	1490	3899+		DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3900+	***		END OF EXPANSION ***	
			3901	*CNDK5	\$DPL	FUNC-@DPUT,DADDR-MCNTB4,CNT-01,CADDR-MCNBUF+2*MCNSTR	
		1491	3902+	MCNDK5	EQU	*	DISK PARAMETER LIST
1491	02	1491	3903+		DC	AL1(@DPUT)	REQUESTED FUNCTION
1492	015C	1493	3904+		DC	AL2(MCNTB4)	DISK ADDRESS
1494	01	1494	3905+		DC	AL1(01)	SECTOR COUNT
1495	1A93	1496	3906+		DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3907+	***		END OF EXPANSION ***	
			3908	*CNDK6	\$DPL	FUNC-@DGET,DADDR-V\$KBTS,CNT-01,CADDR-MCNBUF+2*MCNSTR	
		1497	3909+	MCNDK6	EQU	*	DISK PARAMETER LIST
1497	01	1497	3910+		DC	AL1(@DGET)	REQUESTED FUNCTION
1498	0DAC	1499	3911+		DC	AL2(V\$KBTS)	DISK ADDRESS
149A	01	149A	3912+		DC	AL1(01)	SECTOR COUNT
149B	1A93	149C	3913+		DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS



## MCNFIG - TEST CONFIGURATION RECORD

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 28
				3914+	***	END OF EXPANSION ***	
				3915	*CNDK7	\$DPL FUNC-@DPUT,DADDR-V\$KBTS,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			149D	3916+	MCNDK7	EQU *	DISK PARAMETER LIST
149D	02		149D	3917+		DC AL1(@DPUT)	REQUESTED FUNCTION
149E	0DAC		149F	3918+		DC AL2(V\$KBTS)	DISK ADDRESS
14A0	01		14A0	3919+		DC AL1(01)	SECTOR COUNT
14A1	1A93		14A2	3920+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3921+	***	END OF EXPANSION ***	
				3922	*CNDK8	\$DPL FUNC-@DGET,DADDR-V\$KBTL,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14A3	3923+	MCNDK8	EQU *	DISK PARAMETER LIST
14A3	01		14A3	3924+		DC AL1(@DGET)	REQUESTED FUNCTION
14A4	1EAC		14A5	3925+		DC AL2(V\$KBTL)	DISK ADDRESS
14A6	01		14A6	3926+		DC AL1(01)	SECTOR COUNT
14A7	1A93		14A8	3927+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3928+	***	END OF EXPANSION ***	
				3929	*CNDK9	\$DPL FUNC-@DPUT,DADDR-V\$KBTL,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14A9	3930+	MCNDK9	EQU *	DISK PARAMETER LIST
14A9	02		14A9	3931+		DC AL1(@DPUT)	REQUESTED FUNCTION
14AA	1EAC		14AB	3932+		DC AL2(V\$KBTL)	DISK ADDRESS
14AC	01		14AC	3933+		DC AL1(01)	SECTOR COUNT
14AD	1A93		14AE	3934+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3935+	***	END OF EXPANSION ***	
				3936	*CNDKA	\$DPL FUNC-@DGET,DADDR-#\$TDCK,CNT-#\$@TDC,CADDR-MCNBUF+2*MCNSTR	
			14AF	3937+	MCNDKA	EQU *	DISK PARAMETER LIST
14AF	01		14AF	3938+		DC AL1(@DGET)	REQUESTED FUNCTION
14B0	0350		14B1	3939+		DC AL2(#\$TDCK)	DISK ADDRESS
14B2	03		14B2	3940+		DC AL1(#\$@TDC)	SECTOR COUNT
14B3	1A93		14B4	3941+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3942+	***	END OF EXPANSION ***	
				3943	*CNDKB	\$DPL FUNC-@DGET,DADDR-#\$TVKB,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14B5	3944+	MCNDKB	EQU *	DISK PARAMETER LIST
14B5	01		14B5	3945+		DC AL1(@DGET)	REQUESTED FUNCTION
14B6	0BAC		14B7	3946+		DC AL2(#\$TVKB)	DISK ADDRESS
14B8	01		14B8	3947+		DC AL1(01)	SECTOR COUNT
14B9	1A93		14BA	3948+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3949+	***	END OF EXPANSION ***	
				3950	*CNDKC	\$DPL FUNC-@DPUT,DADDR-#\$TVKB,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14BB	3951+	MCNDKC	EQU *	DISK PARAMETER LIST
14BB	02		14BB	3952+		DC AL1(@DPUT)	REQUESTED FUNCTION
14BC	0BAC		14BD	3953+		DC AL2(#\$TVKB)	DISK ADDRESS
14BE	01		14BE	3954+		DC AL1(01)	SECTOR COUNT
14BF	1A93		14C0	3955+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3956+	***	END OF EXPANSION ***	

## SCANIT - MODULE PROLOGUE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 29
		3958		*****			*
		3959		*			*
		3960	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		3961	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
		3962		*			*
		3963		*****			*
		3964		*STATUS			*
		3965	*	VERSION 1 MODIFICATION 0			*
		3966		*			*
		3967		*FUNCTION			*
		3968	*	THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND			*
		3969	*	RETURN A POINTER TO THE FIRST CHARACTER THAT IS NOT A DELIMITER.			*
		3970		*			*
		3971		*ENTRY POINTS			*
		3972	*	* THE ENTRY POINT IS SCANIT.			*
		3973	*	* THE CALLING SEQUENCE IS AS FOLLOWS:			*
		3974	*	B SCANIT			*
		3975	*	WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE			*
		3976	*	EXAMINED.			*
		3977		*			*
		3978		*INPUT			*
		3979	*	NONE			*
		3980		*			*
		3981		*OUTPUT			*
		3982	*	NONE			*
		3983		*			*
		3984		*EXTERNAL REFERENCES			*
		3985	*	\$CAERR - ERROR CODE SAVE AREA.			*
		3986		*			*
		3987		*EXITS, NORMAL			*
		3988	*	NORMAL RETURN FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO			*
		3989	*	SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A ZERO IF			*
		3990	*	NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR MORE			*
		3991	*	DELIMITERS WERE SCANNED.			*
		3992		*			*
		3993		*EXITS, ERROR			*
		3994	*	ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO			*
		3995	*	SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW COND.			*
		3996		*			*
		3997		*TABLES/WORK AREAS			*
		3998	*	* SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED			*
		3999	*	* SCAMMA - LOCATION WHERE SCACOM MAY BE MOVED IF ONE COMMA IS			*
		4000	*	ALSO TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO			*
		4001	*	SCAMMA INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIM.			*
		4002		*			*
		4003		*ATTRIBUTES			*
		4004	*	RELOCATABLE			*
		4005	*	REUSABLE			*
		4006		*			*
		4007		*CHARACTER CODE DEPENDENCY			*
		4008	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
		4009	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
		4010		*			*
		4011		*NOTES			*
		4012	*	ERROR PROCEDURES			*
		4013	*	THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE			*

SCANIT - MODULE PROLOGUE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 24/05/21 PAGE 30
		4014	*	A CARRIAGE-RETURN CODE FOLLOWS A COMMA. UPON RETURN TO THE	*
		4015	*	CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE	*
		4016	*	ERROR CODE IS SET IN \$CAERR, AND @XR WILL BE POINTING TO THE	*
		4017	*	CARRIAGE-RETURN CHARACTER.	*
		4018	*		*
		4019	*	REGISTER USAGE	*
		4020	*	@XR (INDEX-REG 2) IS USED AS A POINTER ACROSS THE AREA BEING	*
		4021	*	SCANNED FOR DELIMITERS.	*
		4022	*		*
		4023	*	SAVED/RESTORED AREAS	*
		4024	*	UPON ENTRY TO SCANIT, @ARR IS SAVED AND USED AS THE RETURN	*
		4025	*	ADDRESS.	*
		4026	*		*
		4027	*	MODIFICATION CONSIDERATIONS	*
		4028	*	N/A	*
		4029	*		*
		4030	*	REQUIRED MODULES	*
		4031	*	@SYSEQ - GENERAL SYSTEM EQUATES.	*
		4032	*	@FXDEQ - NUCLEUS LOCATION EQUATES.	*
		4033	*		*
		4034	*	OTHER	*
		4035	*	SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS MOVED	*
		4036	*	TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.	*
		4037	*	THE INSTRUCTION TO DO THIS IS AS FOLLOWS:	*
		4038	*	MVI SCAMMA,SCACOM	*
		4039	*	TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE	*
		4040	*	MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:	*
		4041	*	MVI SCAMMA,SCACOF	*
		4042	*		*
		4043	*	*****	*

## SCANIT - DELIMITER SCAN MODULE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 31
				4045	*					
				4046	***		EQUATES USED IN THIS SUBROUTINE			
				4047	*					
				0001	4048	SCAINC EQU	1			TO INCREMENT POINTER
				0001	4049	SCACOM EQU	@BNE			SWITCH TO ALLOW SCANNING COMMAS
				0087	4050	SCACOF EQU	@UCB			SWITCH TO SET OFF THE INDICATOR
				4051	*					* FOR SCANNING A COMMA
				14C1	4052	SCANIT EQU	*			ENTRY POINT TO SCANIT
14C1	34	08	14FD		4053	ST	SCA500+@OP1,@ARR			SAVE RETURN ADDRESS
14C5	34	02	14FF		4054	ST	SCASVE,@XR			SAVE POINTER VALUE
14C9	3C	04	03CD		4055	MVI	\$CAERR,@@E110			SET POSSIBLE ERROR CODE
14CD	F2	87	03		4056	J	SCA200			GO TO PROCESS
				4057	*					
14D0	E2	02	01		4058	SCA100 LA	SCAINC(,@XR),@XR			INCREMENT POINTER TO NEXT CHAR
14D3	BD	40	00		4059	SCA200 CLI	0(,@XR),@BLANK			IS THIS CHAR BLANK ?
14D6	C0	81	14D0		4060	BE	SCA100			YES, FETCH NEXT ONE.
				4061	*					
14DA	BD	6B	00		4062	CLI	0(,@XR),@COMMA			IS THIS A COMMA ?
14DD	F2	87	10		4063	SCA250 JC	SCA400,@UCB			UCB TO RETURN -- OR NOP IF
				4064	*					* SCAMMA IS ACTIVE AND CHAR
14E0	E2	02	01		4065	SCA300 LA	SCAINC(,@XR),@XR			INCREMENT POINTER TO NEXT CHAR
14E3	BD	40	00		4066	CLI	0(,@XR),@BLANK			IS THIS CHAR BLANK ?
14E6	C0	81	14E0		4067	BE	SCA300			YES, FETCH NEXT ONE
				4068	*					
14EA	BD	1F	00		4069	CLI	0(,@XR),@EOS+1			IS THIS EOS ?
14ED	F2	82	0A		4070	JL	SCA500			IF NOT, SKIP ERROR ROUTINE
				4071	*					
14F0	34	02	1501		4072	SCA400 ST	SCACNT,@XR			SAVE NEW POINTER VALUE
14F4	0F	01	1501 14FF		4073	SLC	SCACNT(2),SCASVE			SET PSR TO EQUAL IF POINTER
				4074	*					* NOT ADVANCED
14FA	C0	87	0000		4075	SCA500 B	*-*			YES, RETURN TO CALLER
				14DE	4077	SCAMMA EQU	SCA250+@Q			TO SET SCAN COMMA INDICATOR
				4078	*					
				4079	***		SAVE AREA.			
				4080	*					
				14FE	4081	SCASV1 EQU	*			FIRST BYTE OF SCASVE
14FE				14FF	4082	SCASVE DS	CL2			ORIGINAL POINTER VALUE SAVE
1500				1501	4083	SCACNT DS	CL2			SAVE AREA FOR TOTAL CHAR SCAN



## UCNFIG - MODULE PROLOG

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 32
			4085		*****			*
			4086	*				*
			4087	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			4088	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
			4089	*				*
			4090		*****			*
			4091		*STATUS			*
			4092	*	VERSION 1 MODIFICATION 0			*
			4093	*				*
			4094		*FUNCTION			*
			4095	*	* UCNFIG IS USED TO BUILD OR MODIFY THE CONFIGURATION RECORD ON			*
			4096	*	CYLINDER ZERO AND CHANGE THE CONFIGURATION NUCLEUS INDICATORS.			*
			4097	*	IF THE RECORD EXISTS, THE PROGRAM WILL FORCE A MINIMUM			*
			4098	*	CONFIGURATION FOR ALL COMPONENTS NOT SPECIFIED BY THE OPERATOR.			*
			4099	*	IF THE CONFIGURATION RECORD EXISTS, ONLY THE DEVICES SPECIFIED			*
			4100	*	WILL HAVE THEIR ENTRIES CHANGED IN THE RECORD.			*
			4101	*	* ONCE THE NEW CONFIGURATION RECORD HAS BEEN BUILT, IT IS TESTED.			*
			4102	*	EACH DEVICE INDICATED PRESENT IN THE RECORD IS ISSUED A COMMAND.			*
			4103	*	AN ERROR IN THE RECORD WILL CAUSE A PROC CHECK STOP. IF THE			*
			4104	*	RECORD IS FOUND CORRECT, IT IS PLACED ON CYLINDER ZERO ON THE			*
			4105	*	FIXED DISK. (THE NUCLEUS INDICATORS ARE ALSO MODIFIED)			*
			4106	*				*
			4107		*ENTRY POINTS			*
			4108	*	THE ENTRY POINT IS UCNFIG. THE CALLING SEQUENCE IS AS FOLLOWS:			*
			4109	*	B UCNFIG			*
			4110	*				*
			4111		*INPUT			*
			4112	*	THE INPUT IS THE READING OF THE CONFIGURATION RECORD AND THE			*
			4113	*	VOLUME LABEL(S) IF THE DISK CONFIGURATION INCREASES.			*
			4114	*				*
			4115		*OUTPUT			*
			4116	*	THE OUTPUT IS THE WRITING OF THE CONFIGURATION RECORD TO THE			*
			4117	*	FIXED DISK.			*
			4118	*				*
			4119		*EXTERNAL REFERENCES			*
			4120	*	\$XIND1 - ADDRESS OF PRIMARY EXECUTION INDRS			*
			4121	*	\$XIND2 - ADDRESS OF EXECUTION INDRS			*
			4122	*	\$XIND3 - ADDRESS OF EXECUTION INDRS			*
			4123	*	\$XRSV - ADDRESS OF 2 BYTE SAVE AREA			*
			4124	*	SCANIT - ADDRESS OF ENTRY POINT TO SCAN ROUTINE			*
			4125	*	\$WFNME - ADDRESS OF WORK FILE NAME			*
			4126	*	\$CAERR - ADDRESS OF ERROR CODE FOR ERROR PROGRAM			*
			4127	*	\$CAERK - ADDRESS OF ERROR CODE FOR ERROR PROGRAM			*
			4128	*	\$RLOAD - ADDRESS OF ENTRY TO BLAST LOAD PROGRAM			*
			4129	*	\$XIND - ADDRESS OF EXECUTION INDR USED BY KEDITN			*
			4130	*	\$DISKN - ADDRESS OF ENTRY TO DISK IOCS			*
			4131	*	\$PRDEV - ADDRESS OF POINTER TO THE SYSTEM PRINTER IOCR			*
			4132	*	\$KEYCD - ADDRESS OF BYTE CONTAINING KEYBOARD INDRS			*
			4133	*	MCNFIG - ADDRESS OF ROUTINE TO TEST CONFIGURATION RECORD			*
			4134	*	\$VOLF2 - ADDRESS OF F2 VOLUME ID TABLE ENTRY			*
			4135	*	\$VOLR2 - ADDRESS OF R2 VOLUME ID TABLE ENTRY			*
			4136	*	\$DKSIZ - ADDRESS OF CONFIGURED DISK SIZE			*
			4137	*	\$CARPL - ADDRESS OF ENTRY TO ABORT CURRENT OPERATION			*
			4138	*				*
			4139		*EXITS, NORMAL			*
			4140	*	NORMAL EXIT IS A HARD HALT AFTER THE CONFIGURATION RECORD HAS			*

## UCNFIG - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 33
		4141	*	BEEN VERIFIED.			*
		4142	*				*
		4143	*	EXITS, ERROR			*
		4144	*	ABNORMAL TERMINATION TO ERROR PROGRAM.			*
		4145	*				*
		4146	*	TABLES/WORK AREAS			*
		4147	*	THE CONSTANTS RESIDE AT THE END OF EXECUTABLE CODE.			*
		4148	*	THE CONFIGURATION COMPONENT TABLE AND DISK READ/WRITE BUFFERS ALSO			*
		4149	*	RESIDE AT THE END OF THE CODE.			*
		4150	*				*
		4151	*	ATTRIBUTES			*
		4152	*	RELOCATABLE			*
		4153	*				*
		4154	*	CHARACTER CODE DEPENDENCY			*
		4155	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
		4156	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
		4157	*				*
		4158	*	NOTES			*
		4159	*	ERROR PROCEDURES			*
		4160	*	EXIT IS MADE TO THE ERROR PROGRAM FOR THE FOLLOWING CONDITIONS:			*
		4161	*	* INVALID KEYBOARD TYPE			*
		4162	*	* INVALID PARAMETER			*
		4163	*	* INVALID COMBINATION OF KEYWORD PARAMETERS			*
		4164	*	* REPETITION OF KEYWORD PARAMETERS			*
		4165	*	* CRT, CPU, COMMAND KEY CONFLICT			*
		4166	*				*
		4167	*	REGISTER USAGE			*
		4168	*	INDEX REGISTERS 2 (@XR) IS USED.			*
		4169	*				*
		4170	*	SAVED/RESTORED AREAS			*
		4171	*	EACH CONFIGURATION PARAMETER IS PLACED IN THE PARAMETER HOLDER			*
		4172	*	AT LOCATION UCNHDF.			*
		4173	*				*
		4174	*	MODIFICATION CONSIDERATIONS			*
		4175	*	SIGNIFICANT IMPACT ON #UINIT.			*
		4176	*	REST OF THE SYSTEM. HOWEVER, BECAUSE IT MUST INTERFACE			*
		4177	*				*
		4178	*	REQUIRED MODULES			*
		4179	*	@SYSEQ - GENERAL SYSTEM EQUATES.			*
		4180	*	@FXDEQ - NUCLEUS LOCATION EQUATES.			*
		4181	*	@CANEQ - TRANSCIENT LOCATION EQUATES.			*
		4182	*	\$V\$EQU - VIRTUAL MEMORY EQUATES.			*
		4183	*	@HDWEQ - HARDWARE VALUE EQUATES.			*
		4184	*	@CNFEQ - CONFIGURATION EQUATES.			*
		4185	*	MCNFIG - TEST CONFIGURATION SUBROUTINE.			*
		4186	*	SCANIT - BLANK SCAN ROUTINE.			*
		4187	*				*
		4188	*	OTHER			*
		4189	*	N/A			*
		4190	*				*
		4191	*	*****			*

## UCNFIG - CONFIGURE UTILITY COMMAND

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				1502	4193	UCNFIG	EQU	*	ENTRY POINT TO UCNFIG
1502	3C	00	1892		4194		MVI	UCNSET,@ZERO	INITIALIZE LAST BYTE
1506	0C	05	1891 1892		4195		MVC	UCNSET-1(UCNSET-UCNSUB),UCNSET	RECURSIVE CLEAR
150C	0C	00	1778 03D7		4196		MVC	UCNSAV(UCNONE), \$DKSIZ	SAVE DISK SIZE INDR
1512	35	02	03C7		4197	UCN100	L	\$XRSAB,@XR	XR POINTS TO FIRST CHARACTER
1516	0F	01	03E4 03E4		4198		SLC	\$LPRP3(2), \$LPRP3	INITIALIZE LINE PRINTER INDR
					4199	*			
					4200	***		SCAN KEYWORD PARAMETER AND LEFT	JUSTIFY IN HOLDER
					4201	*			
151C	C0	87	14C1		4202		B	SCANIT	SCAN ACROSS ANY BLANKS
1520	C0	82	0469		4203		BL	\$CAERK	BRANCH TO ERROR PROGRAM
1524	3C	01	14DE		4204		MVI	SCAMMA, SCACOM	SCAN ACROSS BLANKS
1528	BD	1E	00		4205		CLI	0(, @XR), @EOS	EOS ?
152B	F2	81	C3		4206		JE	UCN600	JUMP IF YES
152E	34	02	15EC		4207		ST	UCN550+@OP1, @XR	SAVE XR FOR ERROR EXIT
1532	3C	40	1898		4208		MVI	UCNHDL, @BLANK	MOVE BLANK TO LAST HOLDER BYTE
1536	0C	04	1897 1898		4209		MVC	UCNHDL-1(UCNLPF-1), UCNHDL	RECURSIVELY MOVE BLANKS
					4210	*			* INTO PARAMETER HOLDER
153C	0C	01	1545 1771		4211		MVC	UCN200+@OP1(@CADDR), UCNADR	INITIALIZE TO MOVE
					4212	*			* CHARACTERS IN PARM HOLDER
1542	2C	00	0000 00		4213	UCN200	MVC	*-(UCNONE), 0(, @XR)	MOVE ONE CHARACTER TO
					4214	*			* PARAMETER HOLDER
1547	0E	01	1545 1773		4215		ALC	UCN200+@OP1(@CADDR), UCNINC	INCREMENT PARAMETER
					4216	*			* HOLDER ADDRESS
154D	E2	02	01		4217		LA	UCNONE(, @XR), @XR	INCREMENT XR BY 1
1550	BD	6B	00		4218		CLI	0(, @XR), @COMMA	COMMA FOR DELIMITER ?
1553	C0	81	1569		4219		BE	UCN250	IF YES: CHECK DELIMITER
1557	BD	40	00		4220		CLI	0(, @XR), @BLANK	BLANK FOR DELIMITER ?
155A	C0	81	1569		4221		BE	UCN250	IF YES: CHECK DELIMITER
155E	BD	1E	00		4222		CLI	0(, @XR), @EOS	EOS FOR DELIMITER ?
1561	C0	81	1569		4223		BE	UCN250	IF YES: CHECK DELIMITER
1565	C0	01	1542		4224		BNE	UCN200	IF NO: CHECK NEXT CHARACTER
					4225	*			
1569	34	02	03C7		4226	UCN250	ST	\$XRSAB,@XR	SAVE XR FOR RETURN
					4227	*			
					4228	***		SCAN PARAMETERS TABLE FOR CHARACTERS IN PARAMETER HOLDER	
					4229	*			
156D	C2	02	178D		4230		LA	UCNPAF, @XR	POINT TO 1ST BYTE OF PARM TBL
1571	8D	05	06 1898		4231	UCN300	CLC	UCNLPF(UCNLPF, @XR), UCNHDL	PARAMETER FOUND ?
1576	F2	81	3E		4232		JE	UCN400	JUMP IF FOUND
1579	E2	02	09		4233		LA	UCNLPL(, @XR), @XR	INCREMENT XR BY PARM LENGTH
157C	BD	5C	00		4234		CLI	0(, @XR), @ASTER	COMPLETION OF SCAN ?
157F	C0	01	1571		4235		BNE	UCN300	BRANCH IF NOT FINISHED
					4236	*			
					4237	***		CHK IF NAT LANG PARM TO PRINT INV PARM OR OUT OF LIM NR CODES	
					4238	*			
1583	C2	02	1893		4239		LA	UCNHDF, @XR	POINT TO 1ST BYTE OF PARM HOLDER
1587	8D	01	01 1775		4240		CLC	UCNK02-UCNK01-1(UCNK02-UCNK01, @XR), UCNKYB	CHECK FOR
					4241	*			* NATIONAL LANGUAGE SYNTAX
158C	F2	01	21		4242		JNE	UCN350	JUMP IF NOT NATIONAL LANG.
158F	E2	02	02		4243		LA	UCNK02-UCNK01(, @XR), @XR	LOAD ADDRESS OF
					4244	*			* NATIONAL LANGUAGE SYNTAX
1592	C0	87	173C		4245		B	UCN970	BRANCH TO CHECK FOR NUMERIC
1596	F2	01	17		4246		JNE	UCN350	JUMP IF NOT NUMERIC
1599	E2	02	01		4247		LA	UCNONE(, @XR), @XR	INCREMENT XR BY 1
159C	C0	87	173C		4248		B	UCN970	BRANCH TO CHECK FOR NUMERIC

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 35
	15A0	F2	01	0D	4249		JNE UCN350			JUMP IF NOT NUMERIC
	15A3	BD	40	01	4250		CLI UCNONE(, @XR), @BLANK			CHECK THIRD CHARACTER
	15A6	F2	01	07	4251		JNE UCN350			JUMP IF NOT BLANK
	15A9	3C	73	03CD	4252	UCM320	MVI \$CAERR, @@E477			INVALID KEYBOARD TYPE ERROR MSG
	15AD	F2	87	39	4253		J UCN550			JUMP TO ERROR PROGRAM
	15B0	3C	11	03CD	4255	UCN350	MVI \$CAERR, @@E131			INVALID PARAMETER ERROR MSG
	15B4	F2	87	32	4256		J UCN550			JUMP TO ERROR PROGRAM
					4257	*				
					4258	***	TEST IF PARAMETER ALREADY SPECIFIED AND SET BIT FOR PARM FOUND			
					4259	*				
	15B7	B8	80	00	4260	UCN400	TBN 0(, @XR), UCNDT			PARM ALREADY FOUND ?
	15BA	F2	10	28	4261		JT UCN500			JUMP IF YES
	15BD	BA	80	00	4262		SBN 0(, @XR), UCNDT			SET BIT FOR PARAMETER FOUND
	15C0	2C	00	1777 00	4263		MVC UCNTM(UCNONE), 0(, @XR)			MOVE STATUS BYTE TO FIELD
	15C5	3B	C0	1777	4264		SBF UCNTM, UCNDT+UCNMIN			SET OFF DET AND MIN BITS
	15C9	C2	02	188C	4265		LA UCNSUB, @XR			INITIALIZE TOP OF FIELD
	15CD	36	02	1777	4266		A UCNTM, @XR			ADJUST XR BY FLAG BYTE
	15D1	BD	00	00	4267		CLI 0(, @XR), @ZERO			ZERO ?
	15D4	F2	81	07	4268		JE UCN425			JUMP IF DOUBLE DEFINITION
	15D7	3C	15	03CD	4269		MVI \$CAERR, @@E136			INVALID CONBINATION OF PARMS
	15DB	F2	87	0B	4270		J UCN550			JUMP TO ERROR PROGRAM
	15DE	BC	40	00	4271	UCN425	MVI 0(, @XR), @BLANK			SET FLAG FOR COMPONENT FIND
	15E1	C0	87	1512	4272	UCN450	B UCN100			BRANCH TO SCAN NEXT PARM
	15E5	3C	13	03CD	4274	UCN500	MVI \$CAERR, @@E134			DUPLICATE PARM ERROR MSG
	15E9	C2	02	0000	4275	UCN550	LA *-*, @XR			RESTORE XR TO INVALID CHAR
	15ED	C0	87	0469	4276		B \$CAERK			BRANCH TO ERROR PROGRAM
					4277	*				
					4278	***	READ CONFIGURATION RECORD AND MODIFY IT WITH OPERATOR ENTRIES			
					4279	*				
	15F1	0E	01	1782 0587	4280	UCN600	ALC UCNIOF(2), \$BSADR			SET DISK ADDR FOR CONFIG REC
	15F7	C0	87	0025	4281		B \$DISKN			READ CONFIGURATION RECORD
	15FB	1780			4282		DC AL2(UCNCY0)			DISK DPL ADDR
	15FD	C0	87	0025	4283		B \$DISKN			WAIT AND CHECK DISK ERRORS
	1601	1786			4284		DC AL2(UCNSL0)			WAIT DPL ADDRESS
					4285	*				
	1603	C2	02	1893	4286		LA UCNHDF, @XR			XR POINTS TO 1ST BYTE OF
					4287	*				* CONFIGURATION RECORD
	1607	B9	07	3D	4288		TBF @#CSIZ(, @XR), @#C08K+@#C12K+@#C16K			FIRST UPDATE ?
	160A	F2	90	04	4289		JF UCN650			JUMP IF NOT
	160D	3C	90	1620	4290		MVI UCN670+@Q, @BF			FORCE A FIRST UPDATE OF
					4291	*				* A MINIMUM CONFIGURATION
	1611	C2	02	178D	4292	UCN650	LA UCNPAF, @XR			INITIALIZE TO TOP OF PARM LIST
	1615	3C	00	1643	4293	UCN655	MVI UCN750+@D1, @ZERO			CLEAR LEFT BYTE OF ADDRESS
	1619	B8	80	00	4294	UCN660	TBN 0(, @XR), UCNDT			PARAMETER FOUND ?
	161C	F2	10	09	4295		JT UCN700			JUMP IF FOUND
	161F	F2	87	24	4296	UCN670	JC UCN800, @UCB			JUMP TO CHECK NEXT PARAMETER
	1622	B8	40	00	4297		TBN 0(, @XR), UCNMIN			A MINIMUM CONFIGURATION PARM ?
	1625	F2	90	1E	4298		JF UCN800			JUMP IF NOT A MINIMUM CONFIG
	1628	2C	00	1644 07	4299	UCN700	MVC UCN750+@OP1(UCNONE), UCNLPF+1(, @XR)			MOVE DISP FACTOR
	162D	0E	01	1644 1771	4300		ALC UCN750+@OP1(@CADDR), UCNADR			FORM OP1 ADDRESS
	1633	8D	05	06 1850	4301		CLC UCNLPL-3(UCNLPF, @XR), UCNFG2			'NOCRT' ?
	1638	F2	01	06	4302		JNE UCN750			JUMP IF NOT
	163B	0C	01	044B 188B	4303		MVC \$PRDEV(@CADDR), UCNPRT			INITIALIZE PTR IOCR
	1641	2C	00	0000 08	4304	UCN750	MVC *-*(UCNONE), UCNLPL-1(, @XR)			MOVE CONFIGURATION

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 36
				4305	*		* COMPONENT TO CONFIGURATION			
1646	E2	02	09	4306	UCN800	LA	UCNLPL(, @XR), @XR			UPDATE TO NEXT PARAMETER
1649	BD	5C	00	4307		CLI	0(, @XR), @ASTER			LAST PARAMETER CHECKED ?
164C	C0	01	1615	4308		BNE	UCN655			BRANCH IF NOT FINISHED
				4309	*					
				4310	***	CHECK	FOR THE FOLLOWING COMPONENTS CONFLICTS:			
				4311	*					
				4312	*		1. CRT AND 8KBYTE			
				4313	*		2. CRT AND 8 COMMAND KEYS			
				4314	*					
1650	C2	02	1893	4315		LA	UCNHDF, @XR			XR POINTS TO TOP OF TABLE
1654	3B	02	03C3	4316		SBF	\$KEYCD, \$IOYES			SET OFF I/O IN CORE INDR
1658	B8	40	20	4317		TBN	@#DATA(, @XR), @#DATB			DATA RECORDER CONFIGURED ?
165B	F2	10	12	4318		JT	UCN825			JUMP IF ON SYSTEM
165E	38	08	03E0	4319		TBN	\$DBGUF, \$CALLI			PROCEDURE MODE ?
1662	F2	90	07	4320		JF	UCN815			JUMP IF NOT
1665	38	01	03C3	4321		TBN	\$KEYCD, \$CARDI			PROCEDURE MODE ?
1669	F2	10	04	4322		JT	UCN825			JUMP IF YES
166C	3B	01	03C3	4323	UCN815	SBF	\$KEYCD, \$CARDI			SET OFF CARD INPUT INDR
1670	BA	40	14	4324	UCN825	SBN	@#MTRX(, @XR), @#MTXB			FORCE MATRIX PRINTER ON
1673	BA	40	18	4325		SBN	@#KBRD(, @XR), @#KBRB			FORCE KEYBOARD ON
1676	BA	40	10	4326		SBN	@#DISK(, @XR), @#DISB			FORCE DISK ON
1679	B8	40	28	4327		TBN	@#CRTD(, @XR), @#CRTB			TEST FOR CRT
167C	F2	10	3A	4328		JT	UCN900			JUMP IF
167F	B8	40	19	4329		TBN	@#KEYS(, @XR), @#KE08			TEST FOR 8 CMD KEYS ?
1682	F2	10	2C	4330		JT	UCN850			JUMP IF YES
1685	B8	01	3D	4331		TBN	@#CSIZ(, @XR), @#C08K			TEST FOR 8KBYTE CORE ?
1688	F2	10	26	4332		JT	UCN850			JUMP IF YES
168B	B8	02	28	4333	UCN829	TBN	@#CRTD(, @XR), @#C12K			TEST FOR 12KBYTE CORE ?
168E	F2	90	10	4334		JF	UCN830			JUMP IF NOT
1691	0D	01	044B 188B	4335		CLC	\$PRDEV(@CADDR), UCNPRT			PRINTER IOCR SET ON ?
1697	F2	81	1F	4336		JE	UCN900			JUMP IF YES
169A	3C	29	044A	4337		MVI	\$PRDEV-1, UCN029			SET CRT FOR 12KBYTE
169E	F2	87	18	4338		J	UCN900			JUMP TO CHECK CONFIG
16A1	0D	01	044B 188B	4339	UCN830	CLC	\$PRDEV(@CADDR), UCNPRT			PRINTER IOCR SET ON ?
16A7	F2	81	0F	4340		JE	UCN900			JUMP IF PRINTER IOCR SET ON
16AA	3C	39	044A	4341		MVI	\$PRDEV-1, UCN039			SET CRT FOR 16KBYTE
16AE	F2	87	08	4342		J	UCN900			JUMP TO CHECK CONFIG
16B1	3C	72	03CD	4343	UCN850	MVI	\$CAERR, @@E476			CRT CPU COMMAND KEY CONFLICT
				4344	*	ERROR MESSAGE	'INVALID KEYBOARD TYPE'			
16B5	C0	87	0469	4345		B	\$CAERK			BRANCH TO ERROR PROGRAM
				4346	*					
				4347	***	TEST	CONFIGURATION COMPONENT FOR LEGALITY			
				4348	*					
16B9	C0	87	1200	4349	UCN900	B	MCNFIG			BRANCH TO CHECK CONFIGURATION
16BD	3C	02	1780	4350	UCN925	MVI	UCNCY0, @DPUT			INITIALIZE FOR WRITE FUNCTION
16C1	C0	87	0025	4351	UCN927	B	\$DISKN			WRITE CONFIGURATION RECORD
16C5	1780			16C6 4352		DC	AL2(UCNCY0)			DISK DPL ADDR
				4353	*	THE FOLLOWING INSTRUCTION IS OVERLAID WITH A BRANCH BACK TO MIP265				
				4354	*	OF MIPPER. THE BYTES FOLLOWING THE BRANCH THROUGH UCN940 (BRANCH)				
				4355	*	ARE AVAILABLE TO BE USED AS PATCH AREA.				
				4356	*	(THIS IS MODIFIED TO BYPASS 'P 20 ERROR DURING LINK EDIT)				
				4357	*CN930	B	MIP265			GO WITHIN MIPPER
				4358	*	DC	XL2'03D7'			OP2 OF NEXT CLC
16C7	0D	00	1778 03D7	4359	UCN930	CLC	UCNSAV(UCNONE), \$DKSIZ			NUCLEUS MODIFIED ?
16CD	F2	81	68	4360		JE	UCN940			JUMP IF NOT



## UCNFIG - CONFIGURE UTILITY COMMAND

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16D0 C0 87 0F00          4361      B      SUPDAT          WRITE ERROR LOG TABLES
16D4 38 10 03D7          4362     TBN      $DKSIZ,$DK800        4 DISKS ?
16D8 F2 90 41            4363     JF       UCN935          IF NOT: CHECK FOR 3 DISKS
16DB 0C 01 1789 177C     4364     MVC      UCNDPL+2(@DADDR),UCNAD2  INITIALIZE FOR DISK READ
16E1 3A 0C 0DA9          4365     SBN      MVDPRM,MVDRR2+MVDRF2  SET PARAMETER TO TEST R2 & F2
16E5 C0 87 1754          4366      B      UCN990          READ VOLUME LABEL
16E9 8D 02 02 177F      4367     CLC      UCNVOL(UCNVOL+1,@XR),UCNVLB  INITIALIZATION ?
16EE F2 01 00            4368     JNE      UCN909          JUMP IF NOT INITIALIZED
16F1 2C 07 0415 0A      4369 UCN909 MVC      $VOLF2+7($VOLF2-$VOLR2),$#TLBL+2(@XR)  MOVE ENTRY
16F6 3A 03 0415          4370     SBN      $VOLF2+7,UCN003        MASK F2 BITS
16FA 0C 01 1789 177A     4371 UCN910 MVC      UCNDPL+2(@DADDR),UCNAD1  MOVE R2 VOLUME LABEL DADDR
1700 C0 87 1754          4372      B      UCN990          BRANCH TO READ R2 VOLUME LABEL
1704 8D 02 02 177F      4373     CLC      UCNVOL(UCNVOL+1,@XR),UCNVLB  INITIALIZATION ?
1709 F2 01 04            4374     JNE      UCN911          JUMP IF NOT INITIALIZED
170C 3A 04 0DA9          4375     SBN      MVDPRM,MVDRR2        SET UP R2 FOR MVDELE
1710 2C 07 040D 0A      4376 UCN911 MVC      $VOLR2+7($VOLF2-$VOLR2),$#TLBL+2(@XR)  MOVE ENTRY
1715 3A 02 040D          4377     SBN      $VOLR2+7,UCN002        MASK R2 BITS
1719 F2 87 1C            4378      J       UCN940          GO TO GUFUDI
171C 0F 07 0415 0415    4379 UCN935 SLC      $VOLF2+7($VOLF2-$VOLR2),$VOLF2+7  CLEAR VOLUME-ID
1722 3A 03 0415          4380     SBN      $VOLF2+7,UCN003        MASK F2 BITS
1726 38 08 03D7          4381     TBN      $DKSIZ,$DK600        3 DISKS ?
172A C0 10 16FA          4382     BT       UCN910          BRANCH IF YES
172E 0F 07 040D 040D    4383     SLC      $VOLR2+7($VOLF2-$VOLR2),$VOLR2+7  CLEAR VOLUME-ID
1734 3A 02 040D          4384     SBN      $VOLR2+7,UCN002        MASK R2 BITS
1738 C0 87 0CC0          4385 UCN940 B        MVDELE          GO TEST FOR SCRATCH FILES & DELETE
4386 *
4387 *      ROUTINE DETERMINES IF CHARACTER REFERENCED
4388 *      BY XR IS NUMERIC.
4389 *
4390 *      EXIT: PSR HAS CONDITION
4391 *          * NON-EQUAL - NON-NUMERIC
4392 *          * EQUAL    - NUMERIC
4393 *
173C 4394 UCN970 EQU      *
173C 34 08 1753          4395     ST       UCN980+@OP1,@ARR        SAVE ARR FOR RETURN
1740 BD F0 00            4396     CLI      0(@XR),UCNLOW        LOWER THAN LOWER BOUND ?
1743 F2 82 0A            4397     JL       UCN980          JUMP IF CONDITION HOLDS
1746 BD F9 00            4398     CLI      0(@XR),UCNHII        LOWER THAN LOWER BOUND ?
1749 F2 84 04            4399     JH       UCN980          JUMP IF CONDITION HOLDS
174C 3D 5C 1889          4400     CLI      UCNEND,@ASTER        FORCE PSR EQUAL CONDITION
1750 C0 87 0000          4401 UCN980 B        *-*          RETURN TO CALLER
4402 *
4403 ***      FOLLOWING ROUTINE READS VOLUME LABEL
4404 *
1754 4405 UCN990 EQU      *
1754 34 08 176F          4406     ST       UCN995+@OP1,@ARR        SAVE ARR FOR RETURN
1758 C0 87 0025          4407      B        $DISKN          READ DCAL DATA TABLE SECTOR
175C 1787              175D 4408     DC        AL2(UCNDPL)        DPL ADDRESS
175E C0 87 0025          4409      B        $DISKN          WAIT AND CHECK DISK ERRORS
1762 057F              1763 4410     DC        AL2($WAITF)        WAIT DPL ADDRESS
4411 *
1764 C2 02 1993          4412     LA       UCNARE,@XR          POINT XR TO VOLUME LABEL
1768 AC 01 0A FE          4413     MVC      $#TLBL+2(@DADDR,@XR),$#TLAD(@XR)  PACK LIBRARY ADDRESS
176C C0 87 0000          4414 UCN995 B        *-*          RETRUN TO CALLER
4415 *
4416 ***      CONSTANTS USED IN UCNFIG

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## UCNFIG - CONFIGURE UTILITY COMMAND

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 38
				4417	*		
1770	1893		1771	4418	UCNADR DC	AL2(UCNHDF)	ADDRESS OF HOLDER 1ST BYTE
1772	0001		1773	4419	UCNINC DC	IL2'1'	INCREMENTATION FACTOR OF 1
			1774	4420	UCNK01 EQU	*	ADDRESS MOST LEFT BYTE
1774	D2C2		1775	4421	UCNKYB DC	CL2'KB'	KEYB NATIONALITY
			1776	4422	UCNK02 EQU	*	ADDRESS MOST LEFT BYTE
1776	0000		1777	4423	UCNTEM DC	AL2(*-*)	TEMPORARY ADDRESS FIELD
1778			1778	4424	UCNSAV DS	CL1	TEMPORARY SAVE AREA
1779	000A		177A	4425	UCNAD1 DC	AL2(#VOLR1+2)	DADDR OF R2
177B	000B		177C	4426	UCNAD2 DC	AL2(#VOLF1+2)	DADDR OF F2
177D	E5D6D3		177F	4427	UCNVLB DC	CL3'VOL'	INITIALIZATION IDENTIFICATION
			4428	*			
			4429	***		PARAMETER LIST TO READ/WRITE CONFIGURATION RECORD - CYL 0	
			4430	*			
1780	01		1780	4431	UCNCY0 DC	AL1(@DGET)	READ/WRITE FUNCTION
1781	2000		1782	4432	UCNIOF DC	AL2(##\$CNF)	DISK ADDRESS
1783	01		1783	4433		DC AL1(#FIGSC)	SECTOR COUNT
1784	1893		1785	4434		DC AL2(UCNHDF)	DATA ADDRESS
1786	FF		1786	4435	UCNSL0 DC	AL1(@DWAIT)	WAIT FOR I/O COMPLETION
			4436	*			
			4437	***		DPL TO READ R2 & F2 VOLUME LABEL	
			4438	*			
			4439	*CNDPL	\$DPL	FUNC=@DGET,DADDR=\$VOLR2,CNT=UCNONE,CADDR=UCNARE	
			1787	4440+	UCNDPL EQU	*	DISK PARAMETER LIST
1787	01		1787	4441+		DC AL1(@DGET)	REQUESTED FUNCTION
1788	0406		1789	4442+		DC AL2(\$VOLR2)	DISK ADDRESS
178A	01		178A	4443+		DC AL1(UCNONE)	SECTOR COUNT
178B	1993		178C	4444+		DC AL2(UCNARE)	BUFFER ADDRESS
			4445+	***		END OF EXPANSION ***	
			4446	*			
			4447	*		PARAMETER COMPONENT TABLE FORMAT AS FOLLOWS:	
			4448	*			
			4449	*		BYTE 1 - STATUS BYTE	
			4450	*		- BIT 1 SET - A PARAMETER FOUND	
			4451	*		- BIT 2 SET - A MINIMUM CONFIGURATION	
			4452	*		BYTE 2-7 - PARAMETER SYNTAX	
			4453	*		BYTE 8 - DISPLACEMENT	
			4454	*		BYTE 9 - CONFIGURATION BYTE	
			4456	*			
			4457	***		NATIONAL LANGUAGE COMPONENT	
			4458	*			
			178D	4459	UCNPAF EQU	*	
178D	40		178D	4460	UCNC01 DC	AL1(UCNMIN)	STATUS BYTE
178E	D2C2F1404040		1793	4461		DC CL6'KB1'	SYNTAX FIELD
1794	1A		1794	4462		DC AL1(@#KNAT)	DISPLACEMENT
1795	01		1795	4463		DC AL1(@#DOMS)	CONFIGURATION
			4464	*			
1796	00		1796	4465		DC AL1(@ZERO)	STATUS BYTE
1797	D2C2F2404040		179C	4466		DC CL6'KB2'	SYNTAX FIELD
179D	1A		179D	4467		DC AL1(@#KNAT)	DISPLACEMENT
179E	02		179E	4468		DC AL1(@#AGER)	CONFIGURATION
			4469	*			
179F	00		179F	4470		DC AL1(@ZERO)	STATUS BYTE
17A0	D2C2F3404040		17A5	4471		DC CL6'KB3'	SYNTAX FIELD
17A6	1A		17A6	4472		DC AL1(@#KNAT)	DISPLACEMENT

## UCNFIG - CONFIGURE UTILITY COMMAND

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17A7	03		17A7	4473		DC	AL1(@#BFRN)	CONFIGURATION
				4474	*			
17A8	00		17A8	4475		DC	AL1(@ZERO)	STATUS BYTE
17A9	D2C2F4404040		17AE	4476		DC	CL6'KB4'	SYNTAX FIELD
17AF	1A		17AF	4477		DC	AL1(@#KNAT)	DISPLACEMENT
17B0	04		17B0	4478		DC	AL1(@#DENK)	CONFIGURATION
				4479	*			
17B1	00		17B1	4480		DC	AL1(@ZERO)	STATUS BYTE
17B2	D2C2F5404040		17B7	4481		DC	CL6'KB5'	SYNTAX FIELD
17B8	1A		17B8	4482		DC	AL1(@#KNAT)	DISPLACEMENT
17B9	05		17B9	4483		DC	AL1(@#NORW)	CONFIGURATION
				4484	*			
17BA	00		17BA	4485		DC	AL1(@ZERO)	STATUS BYTE
17BB	D2C2F6404040		17C0	4486		DC	CL6'KB6'	SYNTAX FIELD
17C1	1A		17C1	4487		DC	AL1(@#KNAT)	DISPLACEMENT
17C2	06		17C2	4488		DC	AL1(@#FINL)	CONFIGURATION
				4489	*			
17C3	00		17C3	4490		DC	AL1(@ZERO)	STATUS BYTE
17C4	D2C2F7404040		17C9	4491		DC	CL6'KB7'	SYNTAX FIELD
17CA	1A		17CA	4492		DC	AL1(@#KNAT)	DISPLACEMENT
17CB	07		17CB	4493		DC	AL1(@#SPAN)	CONFIGURATION
				4494	*			
17CC	00		17CC	4495		DC	AL1(@ZERO)	STATUS BYTE
17CD	D2C2F8404040		17D2	4496		DC	CL6'KB8'	SYNTAX FIELD
17D3	1A		17D3	4497		DC	AL1(@#KNAT)	DISPLACEMENT
17D4	08		17D4	4498		DC	AL1(@#PORT)	CONFIGURATION
				4499	*			
17D5	00		17D5	4500		DC	AL1(@ZERO)	STATUS BYTE
17D6	D2C2F9404040		17DB	4501		DC	CL6'KB9'	SYNTAX FIELD
17DC	1A		17DC	4502		DC	AL1(@#KNAT)	DISPLACEMENT
17DD	09		17DD	4503		DC	AL1(@#UKDM)	CONFIGURATION
				4504	*			
				4505	***		CORE SIZE COMPONENT	
				4506	*			
17DE	41		17DE	4507	UCNC02	DC	AL1(UCNMIN+UCN001)	STATUS BYTE
17DF	F8D240404040		17E4	4508		DC	CL6'8K'	SYNTAX FIELD
17E5	3D		17E5	4509		DC	AL1(@#CSIZ)	DISPLACEMENT
17E6	01		17E6	4510		DC	AL1(@#C08K)	CONFIGURATION
				4511	*			
17E7	01		17E7	4512		DC	AL1(@ZERO+UCN001)	STATUS BYTE
17E8	F1F2D2404040		17ED	4513		DC	CL6'12K'	SYNTAX FIELD
17EE	3D		17EE	4514		DC	AL1(@#CSIZ)	DISPLACEMENT
17EF	02		17EF	4515		DC	AL1(@#C12K)	CONFIGURATION
				4516	*			
17F0	01		17F0	4517		DC	AL1(@ZERO+UCN001)	STATUS BYTE
17F1	F1F6D2404040		17F6	4518		DC	CL6'16K'	SYNTAX FIELD
17F7	3D		17F7	4519		DC	AL1(@#CSIZ)	DISPLACEMENT
17F8	04		17F8	4520		DC	AL1(@#C16K)	CONFIGURATION
				4521	*			
				4522	***		SIZE OF DISK CAPACITY	
				4523	*			
17F9	42		17F9	4524		DC	AL1(UCNMIN+UCN002)	STATUS BYTE
17FA	F2C4F1F0F040		17FF	4525		DC	CL6'2D100'	SYNTAX FIELD
1800	13		1800	4526		DC	AL1(@#DSIZ)	DISPLACEMENT
1801	04		1801	4527		DC	AL1(@#C100)	CONFIGURATION
				4528	*			



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1802	02	1802	4529		DC	AL1(@ZERO+UCN002)	STATUS BYTE
1803	F2C4F2F0F040	1808	4530		DC	CL6'2D200 '	SYNTAX FIELD
1809	13	1809	4531		DC	AL1(@#DSIZ)	DISPLACEMENT
180A	08	180A	4532		DC	AL1(@#C200)	CONFIGURATION
			4533	*			
180B	02	180B	4534		DC	AL1(@ZERO+UCN002)	STATUS BYTE
180C	F3C440404040	1811	4535		DC	CL6'3D '	SYNTAX FIELD
1812	13	1812	4536		DC	AL1(@#DSIZ)	DISPLACEMENT
1813	10	1813	4537		DC	AL1(@#FRR2)	CONFIGURATION
			4538	*			
1814	02	1814	4539		DC	AL1(@ZERO+UCN002)	STATUS BYTE
1815	F4C440404040	181A	4540		DC	CL6'4D '	SYNTAX FIELD
181B	13	181B	4541		DC	AL1(@#DSIZ)	DISPLACEMENT
181C	01	181C	4542		DC	AL1(@#FR12)	CONFIGURATION
			4543	*			
			4544	***		PRINTER WIDTH COMPONENT	
			4545	*			
181D	43	181D	4546	UCNC04	DC	AL1(UCNMIN+UCN003)	STATUS BYTE
181E	F1F3D4D74040	1823	4547		DC	CL6'13MP '	SYNTAX FIELD
1824	16	1824	4548		DC	AL1(@#MTYP)	DISPLACEMENT
1825	09	1825	4549		DC	AL1(@#MTMP+@#MP13)	CONFIGURATION
			4550	*			
1826	03	1826	4551		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1827	F1F3D3D74040	182C	4552		DC	CL6'13LP '	SYNTAX FIELD
182D	16	182D	4553		DC	AL1(@#MTYP)	DISPLACEMENT
182E	05	182E	4554		DC	AL1(@#MTLP+@#MP13)	CONFIGURATION
			4555	*			
182F	03	182F	4556		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1830	F2F2D4D74040	1835	4557		DC	CL6'22MP '	SYNTAX FIELD
1836	16	1836	4558		DC	AL1(@#MTYP)	DISPLACEMENT
1837	0A	1837	4559		DC	AL1(@#MTMP+@#MP22)	CONFIGURATION
			4560	*			
1838	03	1838	4561		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1839	F2F2D3D74040	183E	4562		DC	CL6'22LP '	SYNTAX FIELD
183F	16	183F	4563		DC	AL1(@#MTYP)	DISPLACEMENT
1840	06	1840	4564		DC	AL1(@#MTLP+@#MP22)	CONFIGURATION
			4565	*			
			4566	***		CRT COMPONENT	
			4567	*			
1841	04	1841	4568	UCNC05	DC	AL1(@ZERO+UCN004)	STATUS BYTE
1842	C3D9E3404040	1847	4569		DC	CL6'CRT '	SYNTAX FIELD
1848	28	1848	4570		DC	AL1(@#CRTD)	DISPLACEMENT
1849	40	1849	4571		DC	AL1(@#CRTB)	CONFIGURATION
			4572	*			
184A	04	184A	4573		DC	AL1(@ZERO+UCN004)	STATUS BYTE
184B	D5D6C3D9E340	1850	4574	UCNFG2	DC	CL6'NOCRT '	SYNTAX FIELD
1851	28	1851	4575		DC	AL1(@#CRTD)	DISPLACEMENT
1852	80	1852	4576		DC	AL1(@#CRTN)	CONFIGURATION
			4577	*			
			4578	***		DATA RECORDER COMPONENT	
			4579	*			
1853	05	1853	4580	UCNC06	DC	AL1(@ZERO+UCN005)	STATUS BYTE
1854	C3C1D9C44040	1859	4581		DC	CL6'CARD '	SYNTAX FIELD
185A	20	185A	4582		DC	AL1(@#DATA)	DISPLACEMENT
185B	40	185B	4583		DC	AL1(@#DATB)	CONFIGURATION
			4584	*			

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ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 41
185C	05		185C	4585		DC AL1(@ZERO+UCN005)			STATUS BYTE
185D	C3C1D9C4F8F0		1862	4586		DC CL6 'CARD80'			SYNTAX FIELD
1863	20		1863	4587		DC AL1(@#DATA)			DISPLACEMENT
1864	48		1864	4588		DC AL1(@#DATC)			CONFIGURATION
				4589	*				
1865	05		1865	4590		DC AL1(@ZERO+UCN005)			STATUS BYTE
1866	C3C1D9C4F9F6		186B	4591		DC CL6 'CARD96'			SYNTAX FIELD
186C	20		186C	4592		DC AL1(@#DATA)			DISPLACEMENT
186D	40		186D	4593		DC AL1(@#DATB)			CONFIGURATION
				4594	*				
186E	05		186E	4595		DC AL1(@ZERO+UCN005)			STATUS BYTE
186F	D5D6C3C1D9C4		1874	4596		DC CL6 'NOCARD'			SYNTAX FIELD
1875	20		1875	4597		DC AL1(@#DATA)			DISPLACEMENT
1876	80		1876	4598		DC AL1(@#DATN)			CONFIGURATION
				4599	*				
			4600	***		COMMAND KEY NUMBER COMPONENT			
			4601	*					
1877	46		1877	4602	UCNC07	DC AL1(UCNMIN+UCN006)			STATUS BYTE
1878	F8C3D2404040		187D	4603		DC CL6 '8CK '			SYNTAX FIELD
187E	19		187E	4604		DC AL1(@#KEYS)			DISPLACEMENT
187F	40		187F	4605		DC AL1(@#KE08)			CONFIGURATION
				4606	*				
1880	46		1880	4607		DC AL1(UCNMIN+UCN006)			STATUS BYTE
1881	F1F6C3D24040		1886	4608		DC CL6 '16CK '			SYNTAX FIELD
1887	19		1887	4609		DC AL1(@#KEYS)			DISPLACEMENT
1888	80		1888	4610		DC AL1(@#KE16)			CONFIGURATION
				4611	*				
1889	5C		1889	4612	UCNEND	DC AL1(@ASTER)			PARAMETER DELIMITER
188A	0707		188B	4613	UCNPRT	DC AL2(\$\$PRNT)			PRINTER IOCR FLAG
				4614	*				
			4615	***		EQUATES USED IN UCNFIG			
			4616	*					
		0001	4617	UCNONE	EQU	1			CONSTANT FACTOR
		0007	4618	UCNCOM	EQU	7			NO. POSSIBLE COMPONENTS
		0006	4619	UCNLPF	EQU	6			LENGTH PARM SYNTAX FIELD
		0009	4620	UCNLPL	EQU	9			LENGTH PARAMETER LIST
		0029	4621	UCN029	EQU	X'29'			CRT/12K POINTER
		0039	4622	UCN039	EQU	X'39'			CRT/16K POINTER
		0002	4623	UCNVOL	EQU	2			DISP TO 'VOL' IN BUFFER
			4624	*		NATIONALITY SUBSET FLAG TRANSPARENT			
		0001	4625	UCN001	EQU	1			CORE SIZE SUBSET FLAG
		0002	4626	UCN002	EQU	2			DISK CAPACITY SUBSET FLAG
		0003	4627	UCN003	EQU	3			PRINTER WIDTH SUBSET FLAG
		0004	4628	UCN004	EQU	4			CRT SUBSET FLAG
		0005	4629	UCN005	EQU	5			DATA RECORDER SUBSET FLAG
		0006	4630	UCN006	EQU	6			COMMAND KEY NO. SUBSET FLAG
		0080	4631	UCNDET	EQU	X'80'			BIT FOR PARAMETER FOUND
		0040	4632	UCNMIN	EQU	X'40'			BIT FOR MINIMUM CONFIGURE
		006C	4633	UCNDEL	EQU	X'6C'			CODE TO DETECT DELIMITERS
		00F0	4634	UCNLOW	EQU	X'F0'			NUMERIC LOWER BOUND
		00F9	4635	UCNHII	EQU	X'F9'			NUMERIC UPPER BOUND
		0005	4636	UCNCYL	EQU	X'05'			CONFIGURATION RECORD
		16BD	4637	UCNCHK	EQU	UCN925			ADDRESS OF I/O CONFIGURATION
			4638	*					* COMPONENT CHECK DISK ADDR
		188C	4639	UCNSUB	EQU	*			FIRST BYTE OF COMPONENT FIELD
		1892	4640	UCNSET	EQU	UCNSUB+UCNCOM-1			LAST BYTE OF COMPONENT FIELD

UCNFIG - CONFIGURE UTILITY COMMAND

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 42
		1893	4641	UCNHDF	EQU UCNSET+1			FIRST BYTE OF PARM HOLDER
		1898	4642	UCNHDL	EQU UCNHDF+5			LAST BYTE OF PARM HOLDER
		1893	4643	MCNBUF	EQU UCNHDF			MCNFIG BUFFER ADDRESS
		1993	4644	UCNARE	EQU UCNHDF+256			TOP OF VOLUME LABEL
188C	1502	188D	4645	UCNOVR	DC AL2(UCNFIG)			ENTRY POINT TO PROGRAM
		1893	4646	MIPBF1	EQU UCNHDF			WORK BUFFER
		0F00	4647	SUPDAT	EQU MIP265			DUMMY EXIT TO SUPDAT FROM UCNFIG
			4648	*	CHANGES TO UCNFIG TO GIVE PROPER RESULTS			
			4649	*	(COMMENTED OUT. THIS CAUSES 'P 20 ERROR DURING LINK EDIT)			
16C7			4650	ORG	UCN930			CHANGE UCNFIG RETURN BRANCH
16C7	C0 87 0F00		4651	B	MIP265			* TO WITHIN MIPPER
		4653	*****					
		4654	*	PATCH AREA #1				*
		4655	*****					
16CB		171E	4656	\$\$\$\$\$2	DS CL84			PATCH AREA
			4657	*				
		0C07	4658	END	MIPOVL			MODULE ENTRY POINT
TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =					0			

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$\$\$	001	0C00	2882	
\$\$\$\$\$0	020	0DBD	3059	
\$\$\$\$\$1	033	11FF	3520	
\$\$\$\$\$2	084	171E	4656	
\$\$\$\$\$L1	001	11DF	3515	3518 3520
\$\$\$\$\$T1	001	1200	3517	3520
\$\$\$CMD	001	0020	0842	
\$\$\$DAT	001	0040	0841	
\$\$\$EPL	001	0091	0838	
\$\$\$ERN	001	0080	0892	
\$\$\$FUN	001	0010	0843	3133
\$\$\$NLN	001	00A0	0888	3160
\$\$\$STD	001	0081	0837	3137
\$\$\$001	015	0CBF	2921	
\$\$BNLN	001	0605	0818	0820
\$\$CDBS	001	08C0	0868	
\$\$CDND	001	0666	0827	
\$\$CDRD	001	0890	0866	0868
\$\$CKEY	001	0603	0816	
\$\$CKFF	001	0B3D	0848	
\$\$COFF	001	0B44	0847	
\$\$CSNS	001	209C	0877	
\$\$DATB	001	0BBF	0849	3734
\$\$EOSA	001	0AFE	0846	3253
\$\$ERSK	001	1C00	0887	2955 2962* 3503*
\$\$FITS	001	1D00	0895	
\$\$FLIB	001	06FF	0894	
\$\$ILEN	001	0601	0812	0814 0818
\$\$ILHD	001	0600	0810	0812
\$\$INLN	001	0607	0825	0827 0829 2955* 2962 3170
\$\$INND	001	06FA	0829	
\$\$KBDT	001	09E1	0836	0840 3135 3137
\$\$KBSN	001	09E2	0840	0845 3126* 3131 3133
\$\$KLD1	001	0600	0900	
\$\$KLD2	001	0700	0902	3082* 3083 3083* 3378
\$\$KLD3	001	0C00	0904	2874
\$\$LPOS	001	09EB	0845	
\$\$PCNT	001	07E9	0861	
\$\$PLYN	001	2004	0875	3356
\$\$PRES	001	0890	0834	0836 0846 0847 0848 0849 0866 3127 3240
\$\$PRFL	001	2143	0879	
\$\$PRNT	001	0707	0855	0856 0860 0861 4613
\$\$PRTN	001	0782	0856	
\$\$PSIO	001	07CE	0860	
\$\$PYCD	001	2200	0881	
\$\$PYMP	001	2000	0873	0875 0877 0879 0881 3392
\$\$SLIB	001	1C00	0890	
\$\$TPCD	001	0606	0820	0825
\$\$UPAR	001	0602	0814	0816
\$\$WSPB	001	1E00	0893	
\$\$XIND	001	06FF	0891	0894
\$\$ZERO	001	0000	0407	0408 0410 0411 0412 0416 0873
\$#TALT	001	0075	2225	
\$#TBIS	001	00FC	2237	
\$#TCET	001	0069	2224	
\$#TCYL	001	005C	2223	3457

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$#THAD	001	00F2	2229	
\$#THEL	001	0004	2249	
\$#THVT	001	00F0	2228	
\$#TIDR	001	00FF	2239	3203 3213
\$#TLAD	001	00FE	2238	3201 3211 3224 3232 4413
\$#TLBL	001	0008	2220	3199 3209 3222 3230 4369 4376 4413*
\$#TLIB	001	00F8	2234	
\$#TLIF	001	0010	2247	
\$#TLSZ	001	00F7	2233	
\$#TOID	001	005B	2222	
\$#TPAD	001	00F6	2232	
\$#TPFL	001	0008	2248	
\$#TPSZ	001	00F4	2231	
\$#TPTF	001	00F3	2230	
\$#TRES	001	00D7	2241	
\$#TSUS	001	00EF	2227	
\$#TSYM	001	0080	2244	
\$#TSYS	001	00FA	2236	
\$#TUSE	001	00A8	2226	
\$#TVOL	001	0002	2219	3437 3439
\$#TVTC	001	000A	2221	
\$#TWAL	001	00D7	2240	3205 3215
\$#TWF1	001	0020	2246	3213
\$#TWRK	001	00F9	2235	
\$#TWR1	001	0040	2245	3203
\$ABORT	001	0010	0519	
\$BASIC	001	0080	0577	
\$BIGCD	001	0080	0653	3679 3684
\$BLDPL	001	0579	0786	0788
\$BLNOE	001	0569	0776	
\$BLOAD	001	0522	0767	0769 0772 0785 0786
\$BLRTN	001	0550	0775	0776
\$BRSAV	001	03C5	0464	0465
\$BSADR	001	0587	0791	0793 3084 3085 3086 3243 3696 3740 4280
\$BUFPT	001	03E3	0672	0673
\$CABLD	001	04B4	0745	0746
\$CAERK	001	0469	0722	0725 3165 4203 4276 4345
\$CAERR	001	03CD	0470	0472 4055* 4252* 4255* 4269* 4274* 4343*
\$CAIPL	001	049D	0741	0743 3166
\$CALLI	001	0008	0662	4319
\$CARDI	001	0001	0433	4321 4323
\$CARPL	001	04A1	0743	0745 2964
\$CIENT	001	0483	0732	0733
\$CIEXT	001	0480	0731	0732
\$CIMSK	001	0476	0728	0731 3447*
\$CISUS	001	0496	0736	0741
\$CLBFR	001	0010	0620	3311
\$CMDKY	001	0008	0532	
\$CMODE	001	0002	0582	3330
\$CONFIG	001	03DD	0645	0655 3645* 3654* 3660* 3679* 3684* 3719* 3732* 3835*
\$CRPOS	001	03E2	0671	0672
\$CRTAD	001	044D	0710	0711 3703* 3704
\$CRTAV	001	0002	0526	3343 3685 3688 3691
\$CRTDN	001	0002	0550	
\$CRTIN	001	03D3	0547	0554
\$CRTNO	001	0004	0529	3190 3308 3349 3691

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$CRTPU	001	0004	0551	
\$CRTSP	001	0008	0552	
\$CRTUP	001	0001	0549	
\$CRUSH	001	0080	0658	
\$CSDPL	001	050E	0757	0758 3650* 3706*
\$C0001	001	0464	0714	0720 3505 3678 3683 3718 3725 3742 3813
\$DATE	001	043A	0695	0696 3252* 3259* 3263* 3270* 3276* 3283* 3289*
\$DBGUF	001	03E0	0657	0666 4319
\$DBLOK	001	0001	0607	
\$DFDET	001	03E8	0678	0679
\$DISKN	001	0025	0410	2957 2971 2973 3018 3096 3101 3103 3110 3113 3115 3128 3245 3249 3326 3353 3425 3432 3434 3698 3700 3754 3756 3760 3762 3767 3770 3772 3776 3779 3781 3785 3788 3790 3795 3797 3801 3803 3828 4281 4283 4351 4407 4409
\$DKERR	001	0008	0588	
\$DKSIZ	001	03D7	0632	0640 0681 3218 3226 3454 3807* 3814* 3821* 3825* 4196 4359 4362 4381
\$DK100	001	0001	0634	
\$DK200	001	0002	0635	3454 3807
\$DK400	001	0004	0636	3814
\$DK600	001	0008	0637	3218 3821 4381
\$DK800	001	0010	0638	3218 3226 3825 4362
\$DPLSV	001	0449	0706	0708
\$DTNMB	001	0040	0453	
\$DTRDR	001	0040	0541	3666 3672
\$ENDNU	001	0600	0800	0810 0834 0855 0891 0900 0902 0904
\$ERDPL	001	046F	0725	0727
\$ERFIL	001	0040	0480	
\$ERHRD	001	0004	0612	3184 3191
\$ERKEY	001	0080	0484	
\$ERLOG	001	0345	0415	
\$ERMAD	001	0472	0727	0728 3084* 3328*
\$ERPND	001	0004	0585	3092 3338 3342
\$ERRCT	001	03CF	0486	3319*
\$ERRPG	001	03CE	0474	3183*
\$ERSFL	001	0035	0479	
\$ERSTK	001	0030	0477	3161
\$ER050	001	0363	0416	
\$ER1N2	001	0050	0482	3183
\$EXADR	001	0517	0760	0762
\$EXCMD	001	0001	0514	
\$EXFTR	001	043B	0696	0701 3241 3244 3346 3649* 3653* 3659* 3662 3665 3692* 3695 3706 3834*
\$FCIND	001	0010	0592	
\$FDIND	001	0040	0599	
\$FEARR	001	0004	0408	
\$FEMAP	001	0588	0793	0794
\$FILIB	001	03DA	0643	0644
\$FITIN	001	0010	0568	
\$FUIND	001	0020	0597	
\$GUFIO	001	0583	0790	0791 3085* 3329*
\$GUFIR	001	0008	0442	
\$HISTE	001	042E	0693	0694
\$HIST1	001	0435	0694	0695
\$HRDER	001	0020	0538	3123 3190 3349
\$INDR1	001	03D4	0554	0580



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SYMBOL	LEN	VALUE	DEFN	REFERENCES					VER 15, MOD 00				24/05/21		PAGE	46
\$INDR2	001	03D5	0580	0605	3092*	3330*	3338*	3342*								
\$INDR3	001	03D6	0605	0632	3184*	3191*	3207*	3217*	3310	3311*	3315					
\$INLNO	001	03CF	0472	0474	0486	0493										
\$INRPT	001	0020	0450													
\$IOIND	001	03D2	0521	0547	3123	3125*	3147	3190*	3308*	3343	3349*	3666*	3672*	3685	3688*	
				3691*	3707*	3726*										
\$IOPGS	001	0010	0661													
\$IOYES	001	0002	0436	4316												
\$IPLDV	001	05FF	0797	0800												
\$IRKEY	001	0020	0660													
\$KEYBD	001	03E1	0666	0671	3733*	3766										
\$KEYCD	001	03C3	0430	0464	3168	3247	4316*	4321	4323*							
\$KEYDT	001	0040	0574													
\$KE090	001	00DE	0411													
\$KE130	001	01D5	0412													
\$KYBSY	001	0010	0447	3168	3247											
\$LDRTN	001	0571	0785													
\$LEVEL	001	03DF	0655	0657	3205	3215										
\$LIST	001	0002	0609													
\$LMRGN	001	03C1	0425	0427												
\$LNPTR	001	0080	0544	3707	3726											
\$LOADB	001	054A	0769													
\$LOADR	001	051A	0762	0765	3078											
\$LPRIO	001	03E9	0679													
\$LPROS	001	03E5	0674	0676												
\$LPRP3	001	03E4	0673	0674	4198	4198*										
\$MOUNT	001	0020	0623													
\$MPDWN	001	0001	0523	3147												
\$NEXTB	001	03E6	0676	0677												
\$NEXTL	001	03E7	0677	0678												
\$NOENB	001	0008	0615													
\$NOLST	001	0004	0439													
\$NUCBS	001	03C0	0422	0423	2887	3081	3189	3340	3463	3641	3643	3744				
\$NWRKF	001	0080	0628	3217												
\$NWRKR	001	0040	0625	3207	3310	3315										
\$PASWD	001	042D	0692	0693												
\$PAUSD	001	04BA	0746	0748	3157											
\$PAUSE	001	0002	0516													
\$PGMDT	001	0020	0571													
\$PGMST	001	0010	0535	3125												
\$PKERT	001	0419	0690	0692												
\$PLST1	001	0454	0711	0712												
\$PLST2	001	045B	0712	0713												
\$PLST3	001	0462	0713	0714												
\$PRDEV	001	044B	0708	0710	3345*	3346*	3671	4303*	4335	4337*	4339	4341*				
\$PRESN	001	0002	0559													
\$PROCI	001	0001	0556													
\$PRPOS	001	03C2	0427	0430												
\$PSDBR	001	04FA	0751													
\$PSDXR	001	04F2	0750	0751												
\$PSTEP	001	0004	0517													
\$PSTMT	001	0008	0518													
\$PTCH1	001	03F5	0681	0685												
\$READY	001	0080	0601													
\$REORD	001	0040	0659													
\$RLOAD	001	051E	0765	0767												

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\$RMRGN	001	03C0	0423	0425	3712	3714*	3836*
\$RSTR	001	04D6	0748	0750	0752	0757	
\$RUNIT	001	0001	0495				
\$SFAID	001	050D	0753				
\$SPRNT	001	0465	0720	0722	3087	3089	3118 3120 3143 3179 3235 3237 3295 3347
\$SRTRN	001	04FE	0752	0753			
\$STEPT	001	0002	0496				
\$SWPCR	001	0511	0758	0760			
\$TABLN	001	03CB	0467	0470			
\$TFLOW	001	0008	0502				
\$TRACE	001	0004	0497				
\$TRALL	001	0010	0503				
\$TROVR	001	054E	0772	0775			
\$TRUNK	001	0080	0455				
\$TRVAR	001	0020	0504				
\$UNMSK	001	048D	0733	0736			
\$USRDR	001	03DC	0644	0645			
\$VMDEF	001	0080	0508				
\$VOLF1	001	03FE	0687	0688	3209*	3211*	
\$VOLF2	001	040E	0689	3230*	3232*	4369	4369* 4370* 4376 4379 4379 4379* 4380* 4383
\$VOLID	001	03F6	0685	0686	0690		
\$VOLR1	001	03F6	0686	0687	3199*	3201*	
\$VOLR2	001	0406	0688	0689	3222*	3224*	4369 4376 4376* 4377* 4379 4383 4383 4383* 4384*
\$WAITF	001	057F	0788	0790 3701	2958 3757	2974 3763	3104 3773 3116 3121 3129 3144 3238 3250 3354 3435 3782 3791 3798 3804 4410
\$WFDEF	001	0040	0702				
\$WFLOK	001	0008	0565				
\$WFNME	001	0443	0701	0706			
\$WSIND	001	0004	0562				
\$XIND1	001	03D0	0493	0512			
\$XIND2	001	03D1	0512	0521			
\$XIND3	001	03D8	0640	0643			
\$XPREC	001	0040	0505				
\$XRSAV	001	03C7	0465	0467	3185*	4197	4226*
\$ZTRAD	001	05A2	0794				
\$12K	001	0004	0649	3654			
\$16CKY	001	0008	0651	3732			
\$16K	001	0002	0648	3660			
\$22IMP	001	0001	0646	3719			
###BL	001	0000	2576				
###CK	001	0000	2704				
###CN	001	0000	2672				
###CO	001	0000	2464				
###CS	001	0000	2524				
###DR	001	0000	2268				
###ER	001	0000	2468				
###FS	001	0000	2564				
###IN	001	0000	2708				
###PW	001	0000	2712				
###RS	001	0000	2544				
###SA	001	0000	2532				
###SS	001	0000	2528				
###VU	001	0600	2488				
##\$#OT	001	0700	2260				
##\$#1T	001	0000	2264				

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\$\$\$BCO	001	0600	2276	
\$\$\$BOV	001	0800	2548	
\$\$\$DPR	001	0700	2284	
\$\$\$DRE	001	0889	2300	
\$\$\$DSP	001	2800	2320	
\$\$\$ECM	001	0C00	2580	
\$\$\$EFK	001	0C00	2600	
\$\$\$ERR	001	0C00	2572	
\$\$\$EXM	001	0C00	2460	
\$\$\$FIL	001	0E00	2540	
\$\$\$FIS	001	0E00	2536	
\$\$\$FML	001	0200	2668	
\$\$\$FMS	001	0200	2508	
\$\$\$GRA	001	0889	2432	
\$\$\$GUF	001	0C00	2568	
\$\$\$INL	001	0600	2648	
\$\$\$INS	001	0600	2272	
\$\$\$KAL	001	0C00	2436	
\$\$\$KCA	001	0C00	2652	
\$\$\$KCH	001	0C00	2404	
\$\$\$KCN	001	0C00	2520	
\$\$\$KCT	001	0C00	2372	
\$\$\$KDE	001	0C00	2368	
\$\$\$KDI	001	0D00	2448	
\$\$\$KDN	001	0C00	2356	
\$\$\$KDO	001	0E00	2452	
\$\$\$KED	001	0C00	2292	
\$\$\$KEN	001	0C00	2296	
\$\$\$KEX	001	0C00	2316	
\$\$\$KGO	001	0C00	2288	
\$\$\$KHE	001	0C00	2472	
\$\$\$KKE	001	0C00	2700	
\$\$\$KLI	001	0C00	2376	
\$\$\$KLL	001	0920	2676	
\$\$\$KLO	001	0C00	2380	
\$\$\$KME	001	0D00	2360	
\$\$\$KMO	001	0C00	2304	
\$\$\$KNA	001	0C00	2416	
\$\$\$KOV	001	0E00	2336	
\$\$\$KPA	001	0C00	2312	
\$\$\$KPO	001	0C00	2400	
\$\$\$KPR	001	0C00	2424	
\$\$\$KRE	001	0C00	2344	
\$\$\$KRL	001	0700	2440	
\$\$\$KRM	001	0C00	2308	
\$\$\$KRN	001	1000	2328	
\$\$\$KRO	001	0D00	2332	
\$\$\$KRS	001	0C00	2656	
\$\$\$KRU	001	0C00	2352	
\$\$\$KRV	001	0800	2444	
\$\$\$KSA	001	0C00	2388	
\$\$\$KSE	001	0E00	2428	
\$\$\$KSO	001	0C20	2480	
\$\$\$KSS	001	0C00	2412	
\$\$\$KSV	001	0980	2408	
\$\$\$KSY	001	0C00	2420	

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###KWI 001 0C00 2348  
###KWR 001 0C00 2340  
###LOA 001 0600 2280  
###MIP 001 0C00 2476  
###SDS 001 0C00 2588  
###SFF 001 0E00 2592  
###SFL 001 0F00 2584  
###SFO 001 1500 2556  
###SFS 001 0C00 2552  
###SPA 001 0C00 2392  
###SPO 001 0806 2396  
###SPS 001 0C00 2384  
###STR 001 1600 2560  
###TDC 001 1000 2364  
###TSY 001 1000 2324  
###TVK 001 0FC0 2500  
###UAL 001 0C00 2516  
###UAT 001 0900 2612  
###UCD 001 0900 2620  
###UCN 001 0C00 2604  
###UCP 001 0700 2608  
###UDE 001 0C00 2624  
###UDI 001 0C00 2628  
###UEX 001 0C00 2512  
###UIN 001 0C00 2616  
###UPA 001 0C00 2596  
###UPO 001 0C00 2664  
###UPT 001 0C00 2660  
###VCR 001 2000 2456  
###VLO 001 0600 2492  
###VOD 001 0600 2496  
###VVM 001 0000 2504  
###VXI 001 0600 2484  
###ZDU 001 1100 2636  
###ZLB 001 1100 2680  
###ZLO 001 1100 2640  
###ZLV 001 0F00 2696  
###ZL1 001 0F00 2684  
###ZL2 001 0F00 2688  
###ZL3 001 0C00 2692  
###ZTR 001 1000 2632  
###ZUT 001 0C00 2644  
##BLN 001 18D4 2575  
##CKT 001 2118 2703  
##CNF 001 2000 2671  
##COR 001 0800 2463  
##CSA 001 1000 2523  
##DRT 001 0000 2267  
##ERM 001 0928 2467  
##FSP 001 1880 2563  
##INV 001 212C 2707  
##PWR 001 2300 2711  
##RSP 001 1780 2543  
##SAV 001 1180 2531  
##SSA 001 1128 2527  
##VUF 001 0B08 2487

2881

3383 4432

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##\$0TR	001	0000	2259	
##\$1TR	001	0080	2263	
##\$@#BL	001	0001	2577	
##\$@#CK	001	0004	2705	
##\$@#CN	001	0001	2673	
##\$@#CO	001	003A	2465	
##\$@#CS	001	003A	2525	
##\$@#DR	001	0008	2269	
##\$@#ER	001	0032	2469	
##\$@#FS	001	0030	2565	
##\$@#IN	001	003A	2709	
##\$@#PW	001	00C0	2713	
##\$@#RS	001	0030	2545	
##\$@#SA	001	0108	2533	
##\$@#SS	001	0001	2529	
##\$@#VU	001	0002	2489	
##\$@#0T	001	0018	2261	
##\$@#1T	001	0018	2265	
##\$@BCO	001	0018	2277	
##\$@BOV	001	0018	2549	
##\$@DPR	001	0005	2285	3377
##\$@DRE	001	0001	2301	
##\$@DSP	001	0004	2321	3880
##\$@ECM	001	0006	2581	
##\$@EFK	001	0002	2601	
##\$@ERR	001	0003	2573	
##\$@EXM	001	0003	2461	
##\$@FIL	001	0009	2541	
##\$@FIS	001	0009	2537	
##\$@FML	001	0052	2669	
##\$@FMS	001	0052	2509	
##\$@GRA	001	0003	2433	
##\$@GUF	001	0010	2569	
##\$@INL	001	0010	2649	
##\$@INS	001	0010	2273	
##\$@KAL	001	000F	2437	
##\$@KCA	001	000C	2653	
##\$@KCH	001	000C	2405	
##\$@KCN	001	0010	2521	
##\$@KCT	001	0009	2373	
##\$@KDE	001	0010	2369	
##\$@KDI	001	0005	2449	
##\$@KDN	001	0010	2357	
##\$@KDO	001	000C	2453	
##\$@KED	001	000E	2293	
##\$@KEN	001	0006	2297	
##\$@KEX	001	0003	2317	
##\$@KGO	001	0002	2289	
##\$@KHE	001	000C	2473	
##\$@KKE	001	0006	2701	
##\$@KLI	001	0008	2377	
##\$@KLL	001	0001	2677	
##\$@KLO	001	0008	2381	
##\$@KME	001	0003	2361	
##\$@KMO	001	0004	2305	
##\$@KNA	001	0008	2417	

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##\$@KOV 001 0009 2337  
##\$@KPA 001 0005 2313  
##\$@KPO 001 000D 2401  
##\$@KPR 001 0009 2425  
##\$@KRE 001 0002 2345  
##\$@KRL 001 0004 2441  
##\$@KRM 001 0003 2309  
##\$@KRN 001 0003 2329  
##\$@KRO 001 000A 2333  
##\$@KRS 001 000A 2657  
##\$@KRU 001 0003 2353  
##\$@KRV 001 000D 2445  
##\$@KSA 001 0004 2389  
##\$@KSE 001 0004 2429  
##\$@KSO 001 000D 2481  
##\$@KSS 001 000B 2413  
##\$@KSV 001 0002 2409  
##\$@KSY 001 000F 2421  
##\$@KWI 001 0002 2349  
##\$@KWR 001 0002 2341  
##\$@LOA 001 0013 2281  
##\$@MIP 001 000D 2477  
##\$@SDS 001 0004 2589  
##\$@SFF 001 0008 2593  
##\$@SFL 001 0005 2585  
##\$@SFO 001 0003 2557  
##\$@SFS 001 0011 2553  
##\$@SPA 001 0004 2393  
##\$@SPO 001 0003 2397  
##\$@SPS 001 0001 2385  
##\$@STR 001 0002 2561  
##\$@TDC 001 0003 2365 3940  
##\$@TSY 001 0003 2325 3891  
##\$@TVK 001 0001 2501  
##\$@UAL 001 0011 2517  
##\$@UAT 001 000C 2613  
##\$@UCD 001 000B 2621  
##\$@UCN 001 0009 2605  
##\$@UCP 001 000F 2609  
##\$@UDE 001 000E 2625  
##\$@UDI 001 0008 2629  
##\$@UEX 001 000E 2513  
##\$@UIN 001 000F 2617  
##\$@UPA 001 0004 2597  
##\$@UPO 001 0005 2665  
##\$@UPT 001 0012 2661  
##\$@VCR 001 0008 2457  
##\$@VLO 001 0002 2493  
##\$@VOD 001 0016 2497  
##\$@VVM 001 0030 2505  
##\$@VXI 001 0002 2485  
##\$@ZDU 001 0008 2637  
##\$@ZLB 001 0002 2681  
##\$@ZLO 001 000C 2641  
##\$@ZLV 001 0006 2697  
##\$@ZL1 001 0007 2685



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#\$@ZL2	001	000D	2689	
#\$@ZL3	001	000A	2693	
#\$@ZTR	001	0001	2633	
#\$@ZUT	001	0014	2645	
#\$BCOM	001	0080	2275	
#\$BOLV	001	1780	2547	
#\$DPRI	001	014C	2283	3376 3858
#\$DREA	001	0200	2299	
#\$DSPL	001	0240	2319	3879
#\$ECMA	001	1900	2579	
#\$EFKE	001	1990	2599	
#\$ERRP	001	18C0	2571	
#\$EXMS	001	07D4	2459	
#\$FILN	001	1724	2539	
#\$FIST	001	1700	2535	
#\$FMLN	001	1E00	2667	
#\$FMST	001	0D00	2507	
#\$GRAP	001	0690	2431	
#\$GUFU	001	1880	2567	
#\$INLN	001	1C84	2647	
#\$INST	001	0020	2271	
#\$KALL	001	06A4	2435	
#\$KCAL	001	1CC4	2651	
#\$KCHA	001	053C	2403	
#\$KCND	001	0F80	2519	
#\$KCTL	001	03BC	2371	
#\$KDEL	001	035C	2367	
#\$KDIS	001	0744	2447	
#\$KDNT	001	0300	2355	
#\$KDOV	001	0780	2451	
#\$KEDI	001	0188	2291	
#\$KENA	001	01C4	2295	
#\$KEXT	001	0234	2315	
#\$KGOS	001	0180	2287	
#\$KHEL	001	0A30	2471	
#\$KKEY	001	2100	2699	
#\$KLIS	001	0400	2375	
#\$KLLA	001	2004	2675	
#\$KLOG	001	0444	2379	
#\$KMER	001	030C	2359	
#\$KMOU	001	0204	2303	
#\$KNAM	001	05C0	2415	
#\$KOVN	001	0290	2335	
#\$KPAS	001	0220	2311	
#\$KPOO	001	0508	2399	
#\$KPRT	001	063C	2423	
#\$KREA	001	02BC	2343	
#\$KRLA	001	0700	2439	
#\$KRMO	001	0214	2307	
#\$KRNU	001	0280	2327	
#\$KROV	001	028C	2331	
#\$KRSU	001	1D24	2655	
#\$KRUN	001	02CC	2351	
#\$KRVL	001	0710	2443	
#\$KSAV	001	0488	2387	
#\$KSET	001	0680	2427	

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SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 24/05/21 PAGE 53

#\$KSOV 001 0AC8 2479  
#\$KSSP 001 0594 2411  
#\$KSVL 001 058C 2407  
#\$KSYM 001 0600 2419  
#\$KWID 001 02C4 2347  
#\$KWRI 001 02B4 2339  
#\$LOAD 001 0100 2279  
#\$MIPP 001 0A80 2475  
#\$SDSY 001 192C 2587  
#\$SFFI 001 193C 2591  
#\$SFLO 001 1918 2583  
#\$SFOV 001 1844 2555  
#\$SFSY 001 1800 2551  
#\$SPAC 001 04CC 2391  
#\$SPOV 001 04DC 2395  
#\$SPSY 001 0484 2383  
#\$STRO 001 1850 2559  
#\$TDCK 001 0350 2363  
#\$TSYK 001 0250 2323  
#\$TVKB 001 0BAC 2499  
#\$UALL 001 0F00 2515  
#\$UATR 001 1A38 2611  
#\$UCDI 001 1AD8 2619  
#\$UCNF 001 19B8 2603  
#\$UCPL 001 19DC 2607  
#\$UDEL 001 1B24 2623  
#\$UDIS 001 1B5C 2627  
#\$UEXL 001 0EA8 2511  
#\$UINI 001 1A88 2615  
#\$UPAC 001 1980 2595  
#\$UPOV 001 1D24 2663  
#\$UPTF 001 1D5C 2659  
#\$VCRT 001 07B4 2455  
#\$VLOA 001 0B80 2491  
#\$VODK 001 0B88 2495  
#\$VVMR 001 0C00 2503  
#\$VXIT 001 0B00 2483  
#\$ZDUM 001 1BA4 2635  
#\$ZLBM 001 2008 2679  
#\$ZLOA 001 1BC4 2639  
#\$ZLVR 001 20B0 2695  
#\$ZL1M 001 2010 2683  
#\$ZL2M 001 2030 2687  
#\$ZL3M 001 2088 2691  
#\$ZTRA 001 1B9C 2631  
#\$ZUTM 001 1C14 2643  
#@#BAD 001 0455 0932  
#@#IO1 001 0459 0940  
#@#IO2 001 045D 0941  
#@#TAT 001 0941 0968  
#@#TBA 001 09A1 0972  
#@#TFS 001 0941 0966  
#@#TSY 001 0941 0970  
#@#VFP 001 0700 0958  
#@#VLP 001 093D 0961  
#@#WDB 001 050C 0953

3939  
3890  
3946 3953

3397

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#@#WFT	001	0500	0951	
#@@#BA	001	0001	0933	3398
#@@#IO	001	0001	0945	
#@@#SC	001	0002	0942	
#@@#TA	001	0010	0969	
#@@#TB	001	0010	0973	
#@@#TS	001	0005	0971	
#@@#TW	001	0020	0967	
#@@#VM	001	0100	0962	
#@@#WD	001	00BD	0954	
#@@#WF	001	0003	0952	
#@@#04	001	0004	0944	
#@@#08	001	0008	0943	
#@@BOV	001	0018	0921	
#@@ECM	001	0006	0935	
#@@ERR	001	0003	0929	
#@@GUF	001	0010	0925	
#@@LDS	001	0002	0931	
#@@SDS	001	0004	0927	
#@@SFF	001	0008	0939	
#@@SFL	001	0005	0937	
#@@SFO	001	0005	0947	
#@@SFS	001	0011	0923	
#@@VSF	001	0010	0975	
#@@VSL	001	000F	0976	
#@@VTR	001	0001	0960	
#@BOVL	001	0400	0920	
#@CORS	001	0005	1027	
#@ECMA	001	0481	0934	
#@ERRP	001	0441	0928	3155
#@GUFU	001	0401	0924	3156
#@LDSV	001	044D	0930	
#@MVSD	001	0001	1035	
#@NERO	001	0003	1029	
#@OBRA	001	0002	1031	
#@PTFL	001	0006	1050	
#@PTFS	001	0001	1049	
#@SDSY	001	04AD	0926	
#@SFFI	001	04BD	0938	
#@SFLO	001	0449	0936	
#@SFOV	001	04C4	0946	
#@SFSY	001	0480	0922	
#@VCNT	001	0002	1047	
#@VLAB	001	0001	1042	3491
#@VLSD	001	0001	1033	
#@VSFI	001	09A1	0974	
#@VTRL	001	0708	0959	
#@WAF1	001	0401	0919	
#@WAR1	001	0400	0918	
#CNDIS	001	0001	1002	
#CNFIG	001	0005	1038	
#CORSV	001	0010	1026	
#DKEXT	001	0002	1009	
#FIGSC	001	0001	1039	3384 4433
#HISCT	001	0006	1016	
#HISDX	001	0003	1011	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#HISLN	001	0008	1008	1009
#HISN1	001	0003	1014	
#HISN2	001	0005	1015	
#HISTC	001	0007	1018	
#HISTN	001	0009	1020	
#HISTQ	001	0000	1012	
#HISTR	001	0001	1013	
#HISTS	001	0008	1019	
#HISTV	001	000F	1021	
#HSEND	001	0007	1017	
#HSENT	001	0001	1010	
#IOSDR	001	0019	1037	
#MIPPE	001	0000	0002	
#MVSDR	001	000D	1034	
#NEROV	001	009C	1028	
#OBRAD	001	001D	1030	
#PKCNT	001	0002	0995	
#PKMRW	001	002B	0996	
#PKRDD	001	0003	0993	
#PKRTD	001	0003	0992	
#PKRTL	001	0004	0999	
#PKVRD	001	000B	0997	
#PKVWD	001	0007	0998	
#PKWTD	001	0001	0994	
#PTFDA	001	00DC	1048	
#RDWTL	001	0004	1000	
#SDRDK	001	0011	1036	
#VLSDR	001	000C	1032	
#VLTBE	001	0008	0987	3201* 3211* 3224* 3232*
#VOLF1	001	0009	1040	4426
#VOLNG	001	0006	0985	0987 1009 3199 3209 3222 3230
#VOLOC	001	0005	0986	3199* 3209* 3222* 3230*
#VOLR1	001	0008	1041	3444 3490 4425
#VTCF1	001	0025	1044	
#VTCF2	001	0027	1046	
#VTCR1	001	0024	1043	3037
#VTCR2	001	0026	1045	
@#AGER	001	0002	1127	4468
@#BFRN	001	0003	1128	4473
@#CRTB	001	0040	1083	3689 4327 4571
@#CRTD	001	0028	1078	3689 4327 4333 4570 4575
@#CRTN	001	0080	1080	4576
@#CSIZ	001	003D	1160	3142* 3194 3647 3651 3655 3657 3833* 4288 4331 4509 4514 4519
@#C050	001	0002	1152	
@#C08K	001	0001	1162	3651 4288 4331 4510
@#C100	001	0004	1151	4527
@#C12K	001	0002	1163	3655 4288 4333 4515
@#C16K	001	0004	1164	3657 4288 4520
@#C200	001	0008	1150	3808 4532
@#DATA	001	0020	1063	3667 3676 3681 4317 4582 4587 4592 4597
@#DATB	001	0040	1068	3667 4317 4583 4593
@#DATC	001	0048	1071	3681 4588
@#DATN	001	0080	1065	4598
@#DENK	001	0004	1129	4478
@#DISB	001	0040	1144	4326
@#DISK	001	0010	1139	1148 4326*

CROSS REFERENCE															
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 24/05/21 PAGE 56										
@#DISN	001	0080	1141												
@#DOMS	001	0001	1126	4463											
@#DSIZ	001	0013	1148	3808	3815	3822	4526	4531	4536	4541					
@#FINL	001	0006	1131	4488											
@#FRR2	001	0010	1154	3815	4537										
@#FR12	001	0001	1155	3815	3822	4542									
@#KBNO	001	0080	1112												
@#KBRB	001	0040	1115	4325											
@#KBRD	001	0018	1110	1119	1124	4325*									
@#KEYS	001	0019	1119	3730	4329	4604	4609								
@#KE08	001	0040	1121	3730	4329	4605									
@#KE16	001	0080	1122	4610											
@#KNAT	001	001A	1124	3733	3734	3745	3747	3750	4462	4467	4472	4477	4482	4487	4492
				4497	4502										
@#MP13	001	0001	1105	4549	4554										
@#MP22	001	0002	1104	3710	4559	4564									
@#MTLP	001	0004	1102	3720	4554	4564									
@#MTMP	001	0008	1101	4549	4559										
@#MTRX	001	0014	1090	1099	4324*										
@#MTXB	001	0040	1095	4324											
@#MTXN	001	0080	1092												
@#MTYP	001	0016	1099	3710	3720	4548	4553	4558	4563						
@#NORW	001	0005	1130	4483											
@#PORT	001	0008	1133	4498											
@#SPAN	001	0007	1132	4493											
@#UKDM	001	0009	1134	3745	4503										
@#0005	001	0005	1138	1139											
@#0006	001	0006	1089	1090											
@#0007	001	0007	1109	1110											
@#0009	001	0009	1062	1063											
@#0011	001	000B	1077	1078											
@#0016	001	0010	1159	1160											
@@E001	001	0000	1701	1703											
@@E003	001	0001	1703	1705											
@@E004	001	0002	1705	1707											
@@E005	001	0003	1707	1709											
@@E006	001	0004	1709	1711											
@@E007	001	0005	1711	1713											
@@E008	001	0006	1713	1715											
@@E009	001	0007	1715	1717											
@@E010	001	0008	1717	1719											
@@E011	001	0009	1719	1721											

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   24/05/21   PAGE   57

@@E027	001	0018	1749	1751	
@@E028	001	0019	1751	1753	
@@E029	001	001A	1753	1755	
@@E030	001	001B	1755	1757	
@@E031	001	001C	1757	1759	
@@E032	001	001D	1759	1761	
@@E035	001	001E	1761	1763	
@@E036	001	001F	1763	1765	
@@E037	001	0020	1765	1767	
@@E038	001	0021	1767	1769	
@@E039	001	0022	1769	1771	
@@E040	001	0023	1771	1773	
@@E041	001	0024	1773	1775	
@@E042	001	0025	1775	1777	
@@E043	001	0026	1777	1779	
@@E044	001	0027	1779	1781	
@@E045	001	0028	1781	1783	
@@E046	001	0029	1783	1785	
@@E060	001	002A	1785	1787	
@@E080	001	002B	1787		
@@E100	001	0000	1173	1175	
@@E101	001	0001	1175	1177	
@@E102	001	0002	1177	1179	
@@E103	001	0003	1179	1181	
@@E110	001	0004	1181	1183	4055
@@E112	001	0005	1183	1185	
@@E113	001	0006	1185	1187	
@@E114	001	0007	1187	1189	
@@E115	001	0008	1189	1191	
@@E116	001	0009	1191	1193	
@@E117	001	000A	1193	1195	
@@E120	001	000B	1195	1197	
@@E122	001	000C	1197	1199	
@@E123	001	000D	1199	1201	
@@E124	001	000E	1201	1203	
@@E129	001	000F	1203	1205	
@@E130	001	0010	1205	1207	
@@E131	001	0011	1207	1209	4255
@@E133	001	0012	1209	1211	
@@E134	001	0013	1211	1213	4274
@@E135	001	0014	1213	1215	
@@E136	001	0015	1215	1217	4269
@@E137	001	0016	1217	1219	
@@E138	001	0017	1219	1221	
@@E139	001	0018	1221	1223	
@@E142	001	0019	1223	1225	
@@E143	001	001A	1225	1227	
@@E150	001	001B	1227	1229	
@@E151	001	001C	1229	1231	
@@E160	001	001D	1231	1233	
@@E162	001	001E	1233	1235	
@@E163	001	001F	1235	1237	
@@E164	001	0020	1237	1239	
@@E200	001	0021	1239	1241	
@@E205	001	0022	1241	1243	
@@E210	001	0023	1243	1245	



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SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   24/05/21   PAGE   58

@@E211	001	0024	1245	1247	
@@E212	001	0025	1247	1249	
@@E213	001	0026	1249	1251	
@@E215	001	0027	1251	1253	
@@E216	001	0028	1253	1255	
@@E217	001	0029	1255	1257	
@@E220	001	002A	1257	1259	
@@E221	001	002B	1259	1261	
@@E222	001	002C	1261	1263	
@@E223	001	002D	1263	1265	
@@E225	001	002E	1265	1267	
@@E226	001	002F	1267	1269	
@@E227	001	0030	1269	1271	
@@E228	001	0031	1271	1273	
@@E229	001	0032	1273	1275	
@@E230	001	0033	1275	1277	
@@E232	001	0034	1277	1279	
@@E234	001	0035	1279	1281	
@@E237	001	0036	1281	1283	
@@E240	001	0037	1283	1285	
@@E241	001	0038	1285	1287	2176
@@E242	001	0039	1287	1289	
@@E248	001	003A	1289	1291	
@@E249	001	003B	1291	1293	
@@E250	001	003C	1293	1295	
@@E251	001	003D	1295	1297	
@@E252	001	003E	1297	1299	
@@E253	001	003F	1299	1301	
@@E254	001	0040	1301	1303	
@@E255	001	0041	1303	1305	
@@E256	001	0042	1305	1307	
@@E300	001	0043	1307	1309	
@@E301	001	0044	1309	1311	
@@E302	001	0045	1311	1313	
@@E303	001	0046	1313	1315	
@@E304	001	0047	1315	1317	
@@E305	001	0048	1317	1319	
@@E308	001	0049	1319	1321	
@@E310	001	004A	1321	1323	
@@E315	001	004B	1323	1325	
@@E316	001	004C	1325	1327	
@@E320	001	004D	1327	1329	
@@E325	001	004E	1329	1331	
@@E330	001	004F	1331	1333	
@@E335	001	0050	1333	1335	
@@E338	001	0051	1335	1337	
@@E340	001	0052	1337	1339	
@@E350	001	0053	1339	1341	
@@E351	001	0054	1341	1343	
@@E352	001	0055	1343	1345	
@@E360	001	0056	1345	1347	
@@E361	001	0057	1347	1349	
@@E362	001	0058	1349	1351	
@@E371	001	0059	1351	1353	
@@E380	001	005A	1353	1355	
@@E390	001	005B	1355	1357	

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SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 24/05/21 PAGE 59

@@E400	001	005C	1357	1359	
@@E410	001	005D	1359	1361	
@@E415	001	005E	1361	1363	
@@E417	001	005F	1363	1365	
@@E420	001	0060	1365	1367	
@@E430	001	0061	1367	1369	
@@E432	001	0062	1369	1371	
@@E433	001	0063	1371	1373	
@@E450	001	0064	1373	1375	
@@E451	001	0065	1375	1377	
@@E460	001	0066	1377	1379	
@@E461	001	0067	1379	1381	
@@E464	001	0068	1381	1383	
@@E465	001	0069	1383	1385	
@@E466	001	006A	1385	1387	
@@E467	001	006B	1387	1389	
@@E469	001	006C	1389	1391	
@@E470	001	006D	1391	1393	
@@E471	001	006E	1393	1395	
@@E473	001	006F	1395	1397	
@@E474	001	0070	1397	1399	
@@E475	001	0071	1399	1401	
@@E476	001	0072	1401	1403	4343
@@E477	001	0073	1403	1405	4252
@@E478	001	0074	1405	1407	
@@E479	001	0075	1407	1409	
@@E480	001	0076	1409	1411	
@@E481	001	0077	1411	1413	
@@E482	001	0078	1413	1415	
@@E483	001	0079	1415	1417	
@@E484	001	007A	1417	1419	
@@E485	001	007B	1419	1421	
@@E486	001	007C	1421	1423	
@@E487	001	007D	1423	1425	
@@E488	001	007E	1425	1427	
@@E489	001	007F	1427	1429	
@@E490	001	0080	1429	1431	
@@E491	001	0081	1431	1433	
@@E492	001	0082	1433	1435	
@@E493	001	0083	1435	1437	
@@E494	001	0084	1437	1439	
@@E495	001	0085	1439	1441	
@@E496	001	0086	1441	1443	
@@E497	001	0087	1443	1445	
@@E498	001	0088	1445	1447	
@@E500	001	0089	1447	1449	
@@E501	001	008A	1449	1451	
@@E530	001	008B	1451	1453	
@@E531	001	008C	1453	1455	
@@E535	001	008D	1455	1457	3314
@@E540	001	008E	1457	1459	
@@E541	001	008F	1459	1461	
@@E542	001	0090	1461	1463	3305
@@E543	001	0091	1463	1465	3196
@@E544	001	0092	1465	1467	3220
@@E545	001	0093	1467	1469	3198

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E546	001	0094	1469	1471 3228
@@E547	001	0095	1471	1473 3193
@@E548	001	FFFF	1677	
@@E549	001	0096	1473	1475
@@E550	001	0097	1475	1477
@@E551	001	0098	1477	1479
@@E552	001	0099	1479	1481
@@E553	001	009A	1481	1483
@@E554	001	009B	1483	1485
@@E555	001	009C	1485	1487
@@E556	001	009D	1487	1489
@@E558	001	009E	1489	1491
@@E570	001	009F	1491	1493
@@E571	001	00A0	1493	1495
@@E572	001	00A1	1495	1497 3317
@@E573	001	00A2	1497	1499 3309
@@E574	001	00A3	1499	1501
@@E575	001	FFFF	1679	
@@E578	001	00A4	1501	1503
@@E579	001	FFFF	1681	
@@E580	001	FFFF	1683	
@@E585	001	00A5	1503	1505
@@E595	001	FFFF	1685	
@@E597	001	FFFF	1687	
@@E598	001	FFFF	1689	
@@E600	001	00A6	1505	1507
@@E601	001	00A7	1507	1509
@@E602	001	00A8	1509	1511
@@E603	001	00A9	1511	1513
@@E604	001	00AA	1513	1515
@@E606	001	00AB	1515	1517
@@E607	001	00AC	1517	1519
@@E608	001	00AD	1519	1521
@@E609	001	00AE	1521	1523
@@E610	001	00AF	1523	1525
@@E611	001	00B0	1525	1527
@@E612	001	00B1	1527	1529
@@E613	001	00B2	1529	1531
@@E614	001	00B3	1531	1533
@@E700	001	00B4	1533	1535
@@E701	001	00B5	1535	1537
@@E710	001	00B6	1537	1539
@@E712	001	00B7	1539	1541
@@E713	001	00B8	1541	1543
@@E714	001	00B9	1543	1545
@@E715	001	00BA	1545	1547
@@E716	001	00BB	1547	1549
@@E717	001	00BC	1549	1551
@@E718	001	00BD	1551	1553
@@E720	001	00BE	1553	1555
@@E721	001	00BF	1555	1557
@@E723	001	00C0	1557	1559
@@E724	001	00C1	1559	1561
@@E725	001	00C2	1561	1563
@@E726	001	00C3	1563	1565
@@E727	001	00C4	1565	1567

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E728	001	00C5	1567	1569
@@E729	001	00C6	1569	1571
@@E730	001	00C7	1571	1573
@@E732	001	00C8	1573	1575
@@E752	001	00C9	1575	1577
@@E753	001	00CA	1577	1579
@@E754	001	00CB	1579	1581
@@E755	001	00CC	1581	1583
@@E756	001	00CD	1583	1585
@@E757	001	00CE	1585	1587
@@E758	001	00CF	1587	1589
@@E759	001	00D0	1589	1591
@@E760	001	00D1	1591	1593
@@E761	001	00D2	1593	1595
@@E762	001	00D3	1595	1597
@@E763	001	00D4	1597	1599
@@E764	001	00D5	1599	1601
@@E765	001	00D6	1601	1603
@@E766	001	00D7	1603	1605
@@E767	001	00D8	1605	1607
@@E768	001	00D9	1607	1609
@@E769	001	00DA	1609	1611
@@E770	001	00DB	1611	1613
@@E771	001	00DC	1613	1615
@@E772	001	00DD	1615	1617
@@E773	001	00DE	1617	1619
@@E774	001	00DF	1619	1621
@@E775	001	00E0	1621	1623
@@E776	001	00E1	1623	1625
@@E777	001	00E2	1625	1627
@@E778	001	00E3	1627	1629
@@E779	001	00E4	1629	1631
@@E780	001	00E5	1631	1633
@@E781	001	00E6	1633	1635
@@E782	001	00E7	1635	1637
@@E783	001	00E8	1637	1639
@@E784	001	00E9	1639	1641
@@E785	001	00EA	1641	1643
@@E786	001	00EB	1643	1645
@@E790	001	00EC	1645	1647
@@E791	001	00ED	1647	1649
@@E792	001	00EE	1649	1651
@@E793	001	00EF	1651	1653
@@E794	001	00F0	1653	1655
@@E795	001	00F1	1655	1657
@@E796	001	00F2	1657	1659
@@E797	001	00F3	1659	1661
@@E798	001	00F4	1661	1663
@@E800	001	FFFF	1691	
@@E801	001	FFFF	1693	
@@E802	001	FFFF	1695	
@@E803	001	FFFF	1697	
@@E804	001	FFFF	1699	
@@E900	001	00F5	1663	1665 2172
@@E901	001	00F6	1665	1667 2174
@@E902	001	00F7	1667	1669 2173

CROSS REFERENCE																
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 24/05/21 PAGE 62											
@@E903	001	00F8	1669	1671 2175												
@@E905	001	00F9	1671	1673												
@@E906	001	00FA	1673	1675												
@@E910	001	00FB	1675	2171												
@@M160	001	0C0B	2894	3119												
@@M161	001	0C0F	2898	3236												
@@M162	001	0C13	2902	3348												
@@M163	001	0C17	2906	3090												
@@T160	001	0C1B	2910	2896												
@@T161	001	0C4A	2912	2900												
@@T162	001	0C5F	2914	2904												
@@T163	001	0C90	2916	2908												
@ALTFL	001	0001	0250													
@ARR	001	0008	0017	3423 3506 3646 4053 4395 4406												
@ASIGN	001	007C	0072													
@ASTER	001	005C	0070	4234 4307 4400 4612												
@BCRDL	001	0050	0089													
@BE	001	0081	0044													
@BF	001	0090	0053	4290												
@BH	001	0084	0042													
@BKSPC	001	0010	0346													
@BL	001	0082	0043													
@BLANK	001	0040	0066	3082 3177 3255 3285 3291 4059 4066 4208 4220 4250 4271												
@BM	001	0082	0055													
@BNE	001	0001	0047	4049												
@BNH	001	0004	0045													
@BNL	001	0002	0046													
@BNM	001	0002	0058													
@BNOL	001	0020	0051													
@BNOZ	001	0008	0050													
@BNP	001	0004	0057													
@BNZ	001	0001	0059													
@BOL	001	00A0	0049													
@BOZ	001	0088	0048													
@BP	001	0084	0054													
@BR	001	0001	0014	2888 2952 2954* 2959 2959 2960 2960 2961 2965 2970 2979 2983												
				2986 2986 2987 2987 2988 2988 2989 2989 2990 2990 2991 2992												
				2992 2993 2994 2999 3004 3005 3005 3006 3006 3007 3007 3008												
				3008 3009 3009 3010 3010 3015 3016 3017 3020 3021 3025 3028												
				3030 3073 3080* 3100 3108 3132 3136 3169 3192* 3193 3196 3198												
				3220 3228 3253* 3254* 3255 3257 3259 3260* 3261 3263 3264* 3265												
				3267* 3268 3270 3271* 3272 3274 3276 3277* 3278 3280* 3281 3283												
				3284* 3285 3287 3289 3290* 3291 3304* 3305 3309 3314 3317 3319												
				3320 3328 3329 3331 3333 3341* 3503 3504 3505 3641 3643* 3645												
				3649 3653 3654 3659 3660 3662 3665 3666 3671 3672 3678 3683												
				3685 3688 3691 3692 3695 3703 3704 3706 3707 3712 3714 3718												
				3719 3725 3726 3732 3733 3739* 3740 3741 3741* 3744* 3766 3807												
				3813 3814 3821 3825 3834 3835 3836												
@BT	001	0010	0052													
@BZ	001	0081	0056													
@BZ37B	001	00F2	0359													
@B1	001	0001	0064													
@CADDR	001	0002	0142	2125 2152 2896 2900 2904 2908 2986 2992 3010 3320 3333 3345												
				3504 3703 3704 3749 3751 3752 3753 3793 4211 4215 4300 4303												

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@CC37B	001	0000	0355	
@CD37B	001	00F0	0373	
@CHARA	001	00C1	0073	
@CHARF	001	00C6	0074	
@CHARR	001	00D9	0075	
@CHARZ	001	00E9	0076	
@CKY01	001	0001	0308	
@CKY02	001	0002	0309	
@CKY03	001	0003	0310	
@CKY04	001	0004	0311	
@CKY05	001	0005	0312	
@CKY06	001	0006	0313	
@CKY07	001	0007	0314	
@CKY08	001	0008	0315	
@CKY09	001	0009	0316	
@CKY10	001	000A	0317	
@CKY11	001	000B	0318	
@CKY12	001	000C	0319	
@CKY13	001	000D	0320	
@CKY14	001	000E	0321	
@CKY15	001	000F	0322	
@CKY16	001	0010	0323	
@CLOFF	001	0010	0095	
@CLON	001	0011	0094	
@CMLON	001	0001	0326	
@CMOFF	001	0000	0325	
@COMMA	001	006B	0067	4062 4218
@CPLUS	001	004E	0080	
@CP37B	001	0004	0386	
@CRERR	001	0090	0341	
@CRPRY	001	0004	0345	
@CRTDS	001	0092	0338	
@CRTQ	001	0090	0340	3687
@CURSR	001	0040	0342	
@DADDR	001	0002	0140	2983 3047 3047 3084 3085 3201 3211 3224 3232 3328 3329 3696 3740 4364 4371 4413
@DBFR1	001	0004	0129	3695*
@DBFR2	001	0005	0130	3703
@DBUSY	001	0002	0244	3099 3430
@DCALK	001	0001	0082	
@DCBCY	001	0009	0115	
@DCBT1	001	0050	0117	
@DCFLN	001	0004	0228	
@DCNT	001	0003	0128	3244* 3650* 3706*
@DCRID	001	0001	0242	3098 3428
@DCST1	001	0040	0116	
@DCTRL	001	0000	0125	3109* 3112* 3424* 3427*
@DCTRW	001	0000	0241	
@DCWID	001	0001	0238	
@DCYL	001	0001	0126	
@DCYMV	001	0001	0229	
@DD2	001	0003	0031	
@DEFLG	001	0002	0251	
@DERCE	001	0020	0281	
@DERD2	001	0008	0274	
@DEREQ	001	0010	0273	



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@DERIN	001	0040	0271	3819 3826
@DERMA	001	0020	0272	
@DERNR	001	0004	0275	
@DERR	001	0000	0245	3100 3431
@DERSC	001	0001	0277	
@DERTC	001	0002	0276	
@DFCR	001	0006	0231	3145* 3469*
@DFDR	001	0004	0232	
@DGET	001	0001	0134	3020 3036 3112 3375 3389 3403 3427 3489 3878 3889 3896 3910 3924 3938 3945 4431 4441
@DHARD	001	0000	0259	
@DLNCT	001	000F	0344	
@DLNLG	001	0040	0343	
@DOLAR	001	005B	0069	
@DOP2	001	0004	0029	
@DPLNG	001	0006	0132	3741
@DPOS	001	0000	0133	3382 3424
@DPUT	001	0002	0135	3017 3109 3396 3903 3917 3931 3952 4350
@DREAD	001	0001	0235	3098 3428
@DSAD	001	0002	0127	3086* 3243* 3444 3461* 3696* 3739
@DSBCY	001	0004	0106	
@DSBSY	001	0092	0339	
@DSCS1	001	0000	0107	
@DSEEK	001	0000	0234	3146 3470
@DSIVF	001	0003	0138	
@DSPIN	001	0002	0131	
@DTRSZ	001	0018	0086	
@DUNSF	001	0080	0270	
@DVBCY	001	0007	0108	
@DVERY	001	0003	0240	
@DVRFY	001	0031	0136	
@DVST1	001	0002	0246	3810 3818
@DVST2	001	0003	0247	
@DWAIT	001	00FF	0137	4435
@DWBCY	001	0005	0103	
@DWBIT	001	0002	0236	
@DWSIZ	001	00C0	0105	
@DWTB1	001	0003	0104	
@DZERO	001	00F0	0065	
@D1	001	0002	0027	3662* 3665* 4293*
@EOF	001	001C	0078	
@EOFTC	001	0075	0161	
@EOS	001	001E	0077	3154 3175 4069 4205 4222
@ER37B	001	00F0	0360	
@FDDBC	001	0000	0194	
@FDE1	001	000C	0199	
@FDFNA	001	000B	0197	
@FDHLN	001	0002	0207	
@FDLNC	001	0002	0192	
@FDNSC	001	0003	0209	
@FDSD	001	0000	0205	
@FLACE	001	0009	0196	
@FLDBC	001	0001	0195	
@FLDIN	001	0012	0333	3661* 3669* 3697* 3709* 3722* 3729* 3806* 3817* 3837*
@FLENT	001	0004	0200	
@FLFNA	001	0002	0198	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@FLHLN	001	0002	0208	
@FLLNC	001	0002	0193	
@FLNSC	001	0001	0210	
@FLSD	001	0001	0206	
@HCEPK	001	003C	2716	3450
@HDRLN	001	0007	0093	0855
@HSTAD	001	0009	0257	
@HSTEN	001	0007	0256	
@HSTPE	001	0006	0255	
@HSTQR	001	0001	0253	
@HSTSN	001	0005	0254	
@HSTVI	001	000F	0258	
@IAR	001	0010	0018	
@ID37B	001	0040	0396	
@INDEX	001	0001	0155	0156
@INST3	001	0003	0033	
@INST4	001	0004	0034	
@INST5	001	0005	0035	
@INST6	001	0006	0036	
@IP37B	001	00C0	0395	
@I1IAR	001	00C0	0021	
@KCMDK	001	0020	0307	
@KELOK	001	001B	0306	3139
@KENAB	001	001E	0304	
@KEXIT	001	001F	0305	
@KEYBD	001	0010	0324	3139
@KFUNK	001	0010	0327	
@KHARD	001	0011	0332	
@KLEAR	001	000D	0328	
@LINSZ	001	00F4	0085	0829
@LO37B	001	00F0	0364	3671*
@MAPEN	001	0005	0090	
@MINCR	001	2000	0084	3664*
@MINUS	001	0060	0081	
@NOP	001	0080	0041	2953 3447 3693 3736
@NORFL	001	0000	0252	
@NTRDY	001	00A0	0388	
@NUMBR	001	007B	0071	
@OPD2	001	0004	0030	
@OP1	001	0003	0028	2966* 3064 3320* 3333* 3423* 3504* 3506* 3646* 3704* 4053* 4207* 4211* 4215* 4299* 4300* 4395* 4406*
@OP2	001	0005	0032	3749* 3750* 3751 3751* 3752 3752* 3753* 3793 3793*
@OVRUN	001	0004	0282	
@PBUSY	001	00E2	0294	
@PCAR	001	00E6	0291	3074*
@PCNT	001	0003	0226	
@PCTRL	001	0000	0148	
@PCYL	001	0001	0224	
@PC37B	001	00F2	0380	
@PDAR	001	00E4	0290	
@PDATA	001	0003	0150	
@PD37B	001	0080	0394	
@PERR	001	00E0	0297	
@PFLAG	001	0000	0223	
@PFORM	001	00E1	0295	
@PGCSZ	001	0020	0083	0084

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@PLITE	001	00E2	0296	
@PLNGH	001	0004	0287	
@PMGCK	001	0020	0298	
@PN37B	001	00F0	0379	
@PPLNG	001	0004	0147	
@PRCNT	001	0001	0149	
@PRETR	001	00C0	0153	2894 2898 2902 2906 3365
@PRINT	001	0040	0151	0153
@PRITY	001	0080	0331	
@PSAD	001	0002	0225	
@PSIOQ	001	00E0	0293	3075 3076
@PSIOR	001	0000	0292	3075 3076
@PSNSQ	001	00E2	0299	
@PSR	001	0004	0016	
@PWAIT	001	00FF	0157	3126 3131
@P1IAR	001	0020	0019	
@P2IAR	001	0040	0020	
@Q	001	0001	0025	2967 3063 3456* 3460* 3462 3462* 3694* 3737* 4077 4290*
@RD37B	001	00F1	0374	
@REGL	001	0002	0013	
@RETRN	001	0080	0152	0153 3361 3362
@RLDWN	001	004F	0158	
@RTCNT	001	0003	0289	
@RTRNC	001	0080	0160	
@RT37B	001	0005	0387	
@SBLNL	001	0002	0183	
@SCTSΖ	001	0100	0100	
@SDFLN	001	0007	0091	
@SDF0	001	0000	0165	
@SDF1	001	0001	0166	
@SDF2	001	0002	0167	
@SDF3	001	0003	0168	
@SDLN	001	0005	0169	
@SECCY	001	0030	0087	
@SIST	001	0001	0180	
@SKCTL	001	0000	0239	3146 3470
@SLASH	001	0061	0068	3265 3272 3278
@SLAST	001	0002	0182	
@SMIDL	001	0003	0181	
@SNSB0	001	0000	0263	
@SNSB1	001	0001	0264	
@SNSB2	001	0002	0265	
@SNSB3	001	0003	0266	
@SNULL	001	0080	0172	
@SN37B	001	00F2	0368	
@SONLY	001	0000	0179	
@SPINA	001	00A0	0248	3098 3099 3100 3145* 3146 3428 3430 3431 3469* 3470 3810
@SPINB	001	00B0	0249	3818 3824
@STEXT	001	0007	0171	
@STYPE	001	0006	0170	
@SYCNT	001	0002	0288	
@SYLVL	001	0005	2207	
@TBCNT	001	0000	0159	
@TBLEF	001	0010	0154	0156
@TBLIX	001	0011	0156	
@TJ37B	001	0040	0385	

CROSS REFERENCE																					
SYMBOL	LEN	VALUE	DEFN	REFERENCES												VER 15, MOD 00	24/05/21	PAGE	67		
@TYPAM	001	0002	0330																		
@TYPO	001	001C	0329																		
@UCB	001	0087	0040	2966	3694	3737	4050	4063	4296												
@UPARW	001	005A	0079	2190																	
@VADDR	001	0002	0141	2126	2152																
@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	0092																		
@VQ	001	0001	0026																		
@WA37B	001	00FF	0393																		
@WSFIT	001	0500	0101																		
@WSTBL	001	0503	0102																		
@XR	001	0002	0015	2887	2993*	2994*	2995	2997	2999	3000	3000	3004	3081*	3084	3170*						
				3172	3174	3174*	3175	3177	3185	3189*	3190	3199	3201	3205	3207						
				3209	3211	3215	3217	3218	3222	3224	3226	3230	3232	3247	3252						
				3259	3263	3270	3276	3283	3289	3308	3310	3311	3315	3319	3328						
				3330	3340*	3342	3343	3345	3346	3346	3349	3420	3422*	3423	3424						
				3427	3431	3437	3439	3444	3456	3459	3460	3460	3461	3461	3463*						
				3469	3474	3640	3644*	3647	3651	3655	3657	3667	3676	3681	3689						
				3710	3720	3730	3733	3734	3745	3747	3750	3808	3815	3822	3833						
				4054	4058	4058*	4059	4062	4065	4065*	4066	4069	4072	4197*	4205						
				4207	4213	4217	4217*	4218	4220	4222	4226	4230*	4231	4233	4233*						
				4234	4239*	4240	4243	4243*	4247	4247*	4250	4260	4262	4263	4265*						
				4266*	4267	4271	4275*	4286*	4288	4292*	4294	4297	4299	4301	4304						
				4306	4306*	4307	4315*	4317	4324	4325	4326	4327	4329	4331	4333						
				4367	4369	4373	4376	4396	4398	4412*	4413	4413									
@ZERO	001	0000	0063	2991	3142	3194	3241	3306	3331	3459	3471	3645	3647	3649	3664						
				3747	3833	3834	3835	4194	4267	4293	4465	4470	4475	4480	4485						
				4490	4495	4500	4512	4517	4529	4534	4539	4551	4556	4561	4568						
				4573	4580	4585	4590	4595													
@4K	001	0010	0347																		
MCNBCD	001	0008	3840	3676																	
MCNBUF	001	1893	4643	3640	3644	3759*	3765	3765*	3766*	3775	3775*	3784	3784*	3794*	3800						
				3800*	3874	3892	3899	3906	3913	3920	3927	3934	3941	3948	3955						
MCNCA1	001	0F00	3883	3881																	
MCNCOR	001	1470																			

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MCNDRS	001	00F2	3861	3673
MCNDRT	001	0002	3862	3674
MCNDR2	001	146F	3865	3817
MCNEXF	001	1476	3872	3692
MCNFIG	001	1200	3642	3188 3339 4349
MCNFIX	001	000A	3850	3824
MCNLPC	001	1477	3873	3738* 3742*
MCNLPR	001	1472	3868	3722
MCNMLP	001	0020	3853	3723
MCNOFF	001	1475	3871	3729 3837
MCNPTR	001	1471	3867	3709
MCNP22	001	0080	3852	3716
MCNSTR	001	0100	3855	3765* 3775* 3784* 3800* 3859 3874 3892 3899 3906 3913 3920 3927 3934 3941 3948 3955
MCNSTS	001	00EB	3851	3708
MCNTBC	001	000A	3857	3738
MCNTBD	001	013F	3856	3759* 3765 3775 3784 3794* 3800
MCNTBL	001	0040	3854	3759 3765 3775 3784 3794 3800 3856 3859
MCNTB4	001	015C	3858	3897 3904
MCNTID	001	02BF	3859	3766*
MCNWRK	002	1484	3886	3673* 3674 3708* 3716 3723 3810* 3811 3818* 3819 3824* 3826
MCN050	004	123C	3661	3656
MCN060	004	1245	3664	3662* 3665*
MCN08C	001	001A	3843	3650
MCN10C	001	0008	3849	3811
MCN100	003	124E	3666	3652
MCN12C	001	002A	3844	
MCN12K	001	0010	3841	3653
MCN120	003	1279	3681	3675
MCN13I	001	0084	3846	3712 3714 3836
MCN130	003	1283	3685	3668 3680
MCN150	003	128C	3688	3686
MCN155	003	129D	3693	3694*
MCN16C	001	003A	3845	
MCN16K	001	0020	3842	3659
MCN160	004	12C9	3705	3704*
MCN200	005	12CD	3706	3690 3693
MCN210	004	12EF	3716	3711
MCN22I	001	00DC	3847	
MCN220	003	12F9	3720	3713 3715
MCN250	001	130D	3728	3721
MCN255	004	131A	3733	3731
MCN258	003	1326	3736	3737*
MCN260	005	1335	3740	3743
MCN263	003	134B	3745	3736
MCN265	006	1380	3759	3749* 3750* 3751 3751* 3752 3752* 3753* 3793
MCN268	006	13E5	3794	3793*
MCN270	004	1403	3803	
MCN300	004	1409	3806	3735 3746 3748
MCN310	003	1410	3808	
MCN320	003	1424	3815	3809 3831
MCN350	004	1450	3828	3820
MCN380	003	145A	3833	3648 3658
MCN400	004	1466	3837	3816 3823 3827
MCN50C	001	0080	3848	
MCN500	004	146A	3838	3646*

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MIPABC	003	11B3	3479	3439
MIPBF1	001	1893	4646	3106 3108* 3142* 3194 3199 3201 3203 3205 3209 3211 3213 3215 3222 3224 3230 3232 3385 3406 3437 3439 3457 3471* 3472 3472*
				3492
MIPCDP	001	0008	3360	3172 3172 3174
MIPCFa	002	0EA7	3153	3074
MIPCFG	009	10FD	3359	3172
MIPCLR	001	0000	3411	3390
MIPCT2	001	0001	3371	3366
MIPDCF	001	11BA	3483	3482 3485
MIPDK3	001	1105	3374	3079
MIPDK5	001	110B	3381	3086* 3097 3112* 3114
MIPDK6	001	1111	3388	3243* 3244* 3246
MIPDK7	001	11BE	3488	3424* 3426 3427* 3433 3444 3461*
MIPDK8	001	1117	3395	3327
MIPDK9	001	111D	3402	3102 3109* 3111
MIPDPC	002	0EAE	3157	
MIPDSP	002	10F4	3356	3345
MIPECD	001	0EB1	3159	3193* 3196* 3198* 3220* 3228* 3305* 3309* 3314* 3317* 3503
MIPECT	001	0EB4	3162	3319 3331 3505*
MIPEMS	001	0002	3302	3135
MIPEOS	001	0EA8	3154	3399
MIPERA	002	0EAA	3155	3328
MIPERR	002	0EB9	3165	3320
MIPEXT	002	0EBB	3166	3333
MIPFXD	001	0008	3301	3098
MIPGUA	002	0EAC	3156	3329
MIPHLT	004	1161	3447	3451
MIPHRD	001	10ED	3352	3344
MIPLAB	001	0003	3478	3439 3479
MIPMS2	001	1104	3369	3367 3371
MIPNG1	002	105D	3299	3254 3260 3264 3267 3271 3277 3280 3284 3290
MIPNUM	001	00F0	3300	3257 3261 3268 3274 3281 3287
MIPOBS	004	0E48	3494	2888 3073 3080 3192 3304 3341
MIPOVL	001	0C07	2889	4658
MIPPCF	001	11C4	3495	3153 3306 3459*
MIPPR2	001	1100	3364	3180 3296
MIPPSA	001	00B1	3410	3404
MIPRET	001	10FE	3361	3088
MIPRTD	001	000A	3408	3106 3108*
MIPRTI	001	0EB7	3164	3108
MIPRTM	001	00FF	3409	3106
MIPSC3	002	0EB6	3163	3504
MIPSET	002	11B9	3482	3145 3469
MIPSTK	001	11C8	3502	3195 3307 3318 3473
MIPSWH	001	10BE	3337	3124
MIPSW1	003	10CE	3342	3149
MIPSYN	001	1052	3294	3258 3262 3266 3269 3275 3279 3282 3288
MIPS10	005	11C8	3503	3504*
MIPS50	004	11DB	3507	3506*
MIPVER	001	119A	3468	3431
MIPVIN	001	11B7	3481	3460
MIPVOL	001	1123	3421	3197 3208 3221 3229 3420 3422
MIPVVL	003	11B6	3480	3437
MIPV01	001	11BC	3485	3461
MIPV20	003	1136	3428	3460*



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MIPV22	004	116C	3453	3438 3462 3462*
MIPV25	004	117A	3457	3455 3456*
MIPV30	004	1184	3460	3458 3474
MIPV90	004	1196	3464	3423*
MIPV95	004	11A0	3471	3440 3445
MIPZER	002	0EB0	3158	3252
MIP000	004	0DBE	3074	2890
MIP100	004	0E32	3112	3107
MIP150	004	0E42	3118	3182 3350
MIP200	004	0E48	3120	3494
MIP205	004	0E62	3128	3132 3136
MIP210	004	0E8A	3142	3100
MIP225	004	0EBC	3168	3134 3138 3169
MIP230	004	0EE2	3179	3173
MIP240	004	0EEC	3183	3176 3178
MIP250	001	0EFC	3187	3140
MIP265	004	0F00	3189	3148 4647 4651
MIP268	003	0F1A	3196	
MIP269	003	0F3D	3207	3204
MIP270	004	0F40	3208	3206
MIP275	003	0F5D	3217	3214
MIP280	003	0F60	3218	3216
MIP320	001	0F8E	3234	3219 3227 3297
MIP330	003	0FB7	3247	3242 3248
MIP335	004	0FCD	3254	3256
MIP340	004	1008	3271	
MIP345	004	1026	3280	3273
MIP350	004	105E	3304	3286 3292
MIP380	004	108B	3318	3313 3316
MIP390	004	108F	3319	3332
MIP400	001	109C	3325	3312
MVDADD	001	0DA5	3051	2987 2987* 2988 2988* 2989 2989* 2990 2990* 2991*
MVDADR	002	0DA8	3053	2983* 2986 2999* 3015 3025
MVDBUF	001	0DBE	3062	2978 2983 2984 2984* 2993 3039 3047 3065
MVDCHN	001	0002	2938	2999 3025
MVDCNT	001	000F	2932	
MVDDPL	001	0D97	3035	2972 3019 3067 3068
MVDELE	001	0CC0	2951	3321 3334 4385
MVDFIL	001	003F	2940	3000 3000 3000* 3027 3027 3027* 3029 3029 3029* 3045
MVDFNC	001	0D97	3067	3017* 3020*
MVDF1T	001	0013	2935	2995 2997
MVDHXB	001	0D9D	3044	
MVDISP	001	0DA6	3052	2986* 2992* 2994
MVDI10	001	000C	2947	2955 2955 2955* 2962 2962 2962*
MVDLEN	001	0005	2941	2984 2984 2984*
MVDLGT	001	0D9E	3045	2992
MVDMF1	001	18AE	3065	3025 3027 3027* 3066
MVDMF2	001	18EE	3066	3029 3029*
MVDMK1	001	0001	2931	2965 2968
MVDMSK	003	0CEC	3063	2959 2959* 2961
MVDMVD	001	0060	2937	2997
MVDMVF	001	0090	2936	2995
MVDM0F	001	000F	2930	2961
MVDNUM	001	01FC	2933	2978
MVDONE	001	0D9F	3046	2960
MVDPRM	001	0DA9	3054	2965 3057 3453* 4365* 4375*

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MVDRF1	001	0002	2944	
MVDRF2	001	0008	2946	4365
MVDRR1	001	0001	2943	3453
MVDRR2	001	0004	2945	4365 4375
MVDSC1	001	01FB	2934	2983 2984 2984*
MVDSEC	001	0D99	3068	2960*
MVDTAD	002	0DA1	3047	3010
MVDTAG	001	0DA3	3049	3004* 3005 3005* 3006 3009
MVDTGS	004	0D67	3064	3006* 3007 3007* 3008 3008* 3009* 3010*
MVDTWO	001	0002	2939	2987 2988 2999 3006 3007 3008 3009 3025
MVD025	003	0CC0	2953	2966*
MVD050	004	0CD0	2957	2952 2953 2954 2970 2979 3021
MVD055	003	0CDE	2961	
MVD057	004	0CE7	2964	3320* 3333*
MVD060	003	0CEB	2965	2956 2967 3063
MVD100	004	0D13	2986	3016
MVD150	004	0D40	2999	2996 3028 3030
MVD175	004	0D64	3011	3064
MVD200	005	0D7D	3025	2998
MVD225	006	0D8E	3029	3026
SCACNT	002	1501	4083	4072* 4073*
SCACOF	001	0087	4050	
SCACOM	001	0001	4049	4204
SCAINC	001	0001	4048	4058 4065
SCAMMA	003	14DE	4077	4204*
SCANIT	001	14C1	4052	3171 4202
SCASVE	002	14FF	4082	4054* 4073
SCASV1	001	14FE	4081	
SCA100	003	14D0	4058	4060
SCA200	003	14D3	4059	4056
SCA250	003	14DD	4063	4077
SCA300	003	14E0	4065	4067
SCA400	004	14F0	4072	4063
SCA500	004	14FA	4075	4053* 4070
SUPDAT	004	0F00	4647	4361
UCM320	004	15A9	4252	
UCNADR	002	1771	4418	4211 4300
UCNAD1	002	177A	4425	4371
UCNAD2	002	177C	4426	4364
UCNARE	001	1993	4644	4412 4444
UCNCHK	004	16BD	4637	
UCNCOM	001	0007	4618	4640
UCNCYL	001	0005	4636	
UCNCY0	001	1780	4431	4282 4350* 4352
UCNC01	001	178D	4460	
UCNC02	001	17DE	4507	
UCNC04	001	181D	4546	
UCNC05	001	1841	4568	
UCNC06	001	1853	4580	
UCNC07	001	1877	4602	
UCNDEL	001	006C	4633	
UCNDET	001	0080	4631	4260 4262 4264 4294
UCNDPL	001	1787	4440	4364* 4371* 4408
UCNEND	001	1889	4612	4400
UCNFG2	006	1850	4574	4301
UCNFIG	001	1502	4193	3186 4645

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SYMBOL	LEN	VALUE	DEFN	REFERENCES								VER 15, MOD 00		24/05/21	PAGE	72
UCNHDF	001	1893	4641	4239	4286	4315	4418	4434	4642	4643	4644	4646				
UCNHDL	001	1898	4642	4208*	4209	4209*	4231									
UCNHII	001	00F9	4635	4398												
UCNINC	002	1773	4419	4215												
UCNIOF	002	1782	4432	4280*												
UCNKYB	002	1775	4421	4240												
UCNK01	001	1774	4420	4240	4240	4243										
UCNK02	001	1776	4422	4240	4240	4243										
UCNLOW	001	00F0	4634	4396												
UCNLPF	001	0006	4619	4209	4231	4231	4299	4301								
UCNLPL	001	0009	4620	4233	4301	4304	4306									
UCNMIN	001	0040	4632	4264	4297	4460	4507	4524	4546	4602	4607					
UCNONE	001	0001	4617	4196	4213	4217	4247	4250	4263	4299	4304	4359	4443			
UCNOVR	002	188D	4645													
UCNPAF	001	178D	4459	4230	4292											
UCNPRT	002	188B	4613	4303	4335	4339										
UCNSAV	001	1778	4424	4196*	4359											
UCNSET	001	1892	4640	4194*	4195	4195	4195*	4641								
UCNSLO	001	1786	4435	4284												
UCNSUB	001	188C	4639	4195	4265	4640										
UCNTEM	002	1777	4423	4263*	4264*	4266										
UCNVLB	003	177F	4427	4367	4373											
UCNVOL	001	0002	4623	4367	4367	4373	4373									
UCN001	001	0001	4625	4507	4512	4517										
UCN002	001	0002	4626	4377	4384	4524	4529	4534	4539							
UCN003	001	0003	4627	4370	4380	4546	4551	4556	4561							
UCN004	001	0004	4628	4568	4573											
UCN005	001	0005	4629	4580	4585	4590	4595									
UCN006	001	0006	4630	4602	4607											
UCN029	001	0029	4621	4337												
UCN039	001	0039	4622	4341												
UCN100	004	1512	4197	4272												
UCN200	005	1542	4213	4211*	4215*	4224										
UCN250	004	1569	4226	4219	4221	4223										
UCN300	005	1571	4231	4235												
UCN350	004	15B0	4255	4242	4246	4249	4251									
UCN400	003	15B7	4260	4232												
UCN425	003	15DE	4271	4268												
UCN450	004	15E1	4272													
UCN500	004	15E5	4274	4261												
UCN550	004	15E9	4275	4207*	4253	4256	4270									
UCN600	006	15F1	4280	4206												
UCN650	004	1611	4292	4289												
UCN655	004	1615	4293	4308												
UCN660	003	1619	4294													
UCN670	003	161F	4296	4290*												
UCN700	005	1628	4299	4295												
UCN750	005	1641	4304	4293*	4299*	4300*	4302									
UCN800	003	1646	4306	4296	4298											
UCN815	004	166C	4323	4320												
UCN825	003	1670	4324	4318	4322											
UCN829	003	168B	4333													
UCN830	006	16A1	4339	4334												
UCN850	004	16B1	4343	4330	4332											

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
UCN910	006	16FA	4371	4382
UCN911	005	1710	4376	4374
UCN925	004	16BD	4350	4637
UCN927	004	16C1	4351	
UCN930	006	16C7	4359	4650
UCN935	006	171C	4379	4363
UCN940	004	1738	4385	4360 4378
UCN970	001	173C	4394	4245 4248
UCN980	004	1750	4401	4395* 4397 4399
UCN990	001	1754	4405	4366 4372
UCN995	004	176C	4414	4406*
V\$APWR	001	0800	1834	1979
V\$BFR1	001	5400	1897	2087
V\$BFR2	001	5500	1898	2088
V\$CBNZ	001	0CB2	1906	1986
V\$CCON	001	5120	1913	2084
V\$CDCV	001	3100	1910	2039
V\$CDSY	001	2E00	1909	2036
V\$CFPZ	001	0C70	1904	1985
V\$CNXZ	001	0470	1907	1974
V\$CSSR	001	5100	1912	2083
V\$CZFP	001	04AD	1905	1975
V\$DTLN	001	4600	1919	2071
V\$DTVR	001	4700	1920	2072
V\$FABS	001	1761	1805	2003
V\$FACS	001	1400	1821	1995
V\$FASN	001	1413	1820	1996
V\$FATN	001	1100	1819	1992
V\$FCOS	001	0A00	1816	1981
V\$FCOT	001	0D00	1814	1987
V\$FCSC	001	1725	1818	2002
V\$FDEG	001	17DA	1825	2007
V\$FDET	001	4540	1828	2070
V\$FEXP	001	0500	1812	1976
V\$FHCS	001	1500	1824	1997
V\$FHSN	001	1557	1823	1998
V\$FHTN	001	1593	1822	1999
V\$FINT	001	176C	1806	2004
V\$FLGT	001	0200	1810	1969
V\$FLOG	001	0219	1809	1971
V\$FLTW	001	020B	1811	1970
V\$FRAD	001	17CB	1826	2006
V\$FRND	001	1800	1827	2008
V\$FSEC	001	1700	1817	2001
V\$FSGN	001	17A7	1807	2005
V\$FSIN	001	0A1A	1815	1982
V\$FSQR	001	0900	1808	1980
V\$FTAN	001	0D28	1813	1988
V\$IFCI	001	1B00	1797	2012
V\$IFIO	001	1A00	1799	2011
V\$ISDN	001	1900	1798	2009
V\$KBTL	001	1EAC	1941	3925 3932
V\$KBTS	001	0DAC	1940	3911 3918
V\$LPRB	001	4F00	1895	2081
V\$LPRT	001	4D00	1893	2079
V\$LPR2	001	4E00	1894	2080

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V\$MADD	001	4007	1842	2059
V\$MASN	001	43A0	1840	2066
V\$MCON	001	4324	1847	2064
V\$MIDN	001	4300	1848	2063
V\$MINV	001	4500	1852	2069
V\$MMPY	001	4100	1844	2060
V\$MSMY	001	4264	1845	2062
V\$MSUB	001	4000	1843	2058
V\$MTRN	001	4400	1851	2068
V\$MZER	001	432B	1849	2065
V\$PCH1	001	5200	1933	2085
V\$PCH2	001	5300	1934	2086
V\$SCDI	001	2A00	1890	2030
V\$SCDO	001	2A96	1891	2031
V\$SFA2	001	5000	1875	2082
V\$SFD1	001	0000	1885	1967
V\$SFD2	001	0100	1886	1968
V\$SKEY	001	2500	1889	2025
V\$SPRT	001	2800	1888	2028
V\$VMPL	001	4C06	1927	2078
V\$VMPS	001	4C00	1926	2077
V\$XKAF	001	1C00	1874	2013
V\$XKCA	001	2400	1878	2021
V\$XKCL	001	240A	1877	2022
V\$XKIN	001	2B00	1873	2032
V\$XKLP	001	24AD	1879	
V\$XKRS	001	240D	1876	2023
V\$XMGT	001	3E06	1867	2053
V\$XMIN	001	3D00	1866	2051
V\$XMPL	001	3F06	1870	2056
V\$XMPS	001	3F00	1869	2055
V\$XMPT	001	3E0C	1868	2054
V\$XMPU	001	3F13	1871	2057
V\$XMRD	001	3E00	1865	2052
V\$XSGT	001	2100	1860	2018
V\$XSIN	001	2B6E	1859	2033
V\$XSPR	001	3400	1862	2042
V\$XSPT	001	1D00	1861	2014
V\$XSPU	001	3800	1863	2046
V\$XSRD	001	3300	1858	2041
V\$00E1	001	0000	1967	
V\$01E1	001	0100	1968	
V\$02E1	001	0200	1969	
V\$02E2	001	020B	1970	
V\$02F3	001	0219	1971	
V\$03CC	001	0300	1972	
V\$04CC	001	0400	1973	
V\$04E1	001	0470	1974	
V\$04E2	001	04AD	1975	
V\$05E1	001	0500	1976	
V\$06CC	001	0600	1977	
V\$07CC	001	0700	1978	
V\$08E1	001	0800	1979	
V\$09E1	001	0900	1980	
V\$10E1	001	0A00	1981	
V\$10E2	001	0A1A	1982	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V\$11CC	001	0B00	1983	
V\$12CC	001	0C00	1984	
V\$12E1	001	0C70	1985	
V\$12E2	001	0CB2	1986	
V\$13E1	001	0D00	1987	
V\$13E2	001	0D28	1988	
V\$14CC	001	0E00	1989	
V\$15CC	001	0F00	1990	
V\$16CC	001	1000	1991	
V\$17E1	001	1100	1992	
V\$18CC	001	1200	1993	
V\$19CC	001	1300	1994	
V\$20E1	001	1400	1995	
V\$20E2	001	1413	1996	
V\$21E1	001	1500	1997	
V\$21E2	001	1557	1998	
V\$21E3	001	1593	1999	
V\$22CC	001	1600	2000	
V\$23E1	001	1700	2001	
V\$23E2	001	1725	2002	
V\$23E3	001	1761	2003	
V\$23E4	001	176C	2004	
V\$23E5	001	17A7	2005	
V\$23E6	001	17CB	2006	
V\$23E7	001	17DA	2007	
V\$24E1	001	1800	2008	
V\$25E1	001	1900	2009	
V\$26E1	001	1A00	2011	
V\$27E1	001	1B00	2012	
V\$28E1	001	1C00	2013	
V\$29E1	001	1D00	2014	
V\$30CC	001	1E00	2015	
V\$31CC	001	1F00	2016	
V\$32CC	001	2000	2017	
V\$33E1	001	2100	2018	
V\$34CC	001	2200	2019	
V\$35CC	001	2300	2020	
V\$36CC	001	2400	2024	
V\$36E1	001	2400	2021	
V\$36E2	001	240A	2022	
V\$36E3	001	240D	2023	
V\$37E1	001	2500	2025	
V\$38CC	001	2600	2026	
V\$39CC	001	2700	2027	
V\$40E1	001	2800	2028	
V\$41CC	001	2900	2029	
V\$42E1	001	2A00	2030	
V\$42E2	001	2A96	2031	
V\$43E1	001	2B00	2032	
V\$43E2	001	2B6E	2033	
V\$44CC	001	2C00	2034	
V\$45CC	001	2D00	2035	
V\$46E1	001	2E00	2036	
V\$47CC	001	2F00	2037	
V\$48CC	001	3000	2038	
V\$49E1	001	3100	2039	



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SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   24/05/21   PAGE   76

V\$50CC	001	3200	2040	
V\$51E1	001	3300	2041	
V\$52E1	001	3400	2042	
V\$53CC	001	3500	2043	
V\$54CC	001	3600	2044	
V\$55CC	001	3700	2045	
V\$56E1	001	3800	2046	
V\$57CC	001	3900	2047	
V\$58CC	001	3A00	2048	
V\$59CC	001	3B00	2049	
V\$60CC	001	3C00	2050	
V\$61E1	001	3D00	2051	
V\$62E1	001	3E00	2052	
V\$62E2	001	3E06	2053	
V\$62E3	001	3E0C	2054	
V\$63E1	001	3F00	2055	
V\$63E2	001	3F06	2056	
V\$63E3	001	3F13	2057	
V\$64E1	001	4000	2058	
V\$64E2	001	4007	2059	
V\$65E1	001	4100	2060	
V\$66CC	001	4200	2061	
V\$66E1	001	4264	2062	
V\$67E1	001	4300	2063	
V\$67E2	001	4324	2064	
V\$67E3	001	432B	2065	
V\$67E4	001	43A0	2066	
V\$68E1	001	4400	2068	
V\$69E1	001	4500	2069	
V\$69E2	001	4540	2070	
V\$70E1	001	4600	2071	
V\$71E1	001	4700	2072	
V\$72CC	001	4800	2073	
V\$73CC	001	4900	2074	
V\$74CC	001	4A00	2075	
V\$75CC	001	4B00	2076	
V\$76E1	001	4C00	2077	
V\$76E2	001	4C06	2078	
V\$77CC	001	4D00	2079	
V\$78CC	001	4E00	2080	
V\$79CC	001	4F00	2081	
V\$80E1	001	5000	2082	
V\$81E2	001	5100	2083	
V\$81E3	001	5120	2084	
V\$82E1	001	5200	2085	
V\$83E2	001	5300	2086	
V\$84E1	001	5400	2087	
V\$85E2	001	5500	2088	
V@CDPT	001	0007	2099	
V@CHGH	001	0008	2204	
V@CMIC	001	0002	2100	
V@CMNI	001	00FF	2097	
V@CMUL	001	0007	2205	
V@CNIX	001	0080	2098	
V@COEX	001	001E	2095	
V@CPLS	001	00F0	2102	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V@CPRC	001	000A	2104	
V@CSQR	001	0003	2202	
V@CSTR	001	0002	2203	
V@CTTA	001	0027	2105	
V@DCAD	001	0002	2125	2126
V@DEXP	001	0000	2130	
V@DMAN	001	000D	2132	2133
V@DMN1	001	0001	2131	
V@DPDF	001	0002	2120	
V@DSAD	001	0001	2121	
V@DSGN	001	000D	2133	
V@DVAD	001	0004	2126	
V@EART	001	0001	2103	
V@ECRT	001	0038	2176	
V@EFUL	001	00F8	2175	
V@EINV	001	00FB	2171	
V@EIPR	001	00F5	2172	
V@ENSV	001	00F7	2173	
V@ENUL	001	0000	2170	
V@ERPC	001	0020	2101	
V@ESAV	001	00F6	2174	
V@FEHN	001	0002	2200	
V@FEPL	001	0091	2196	
V@FERS	001	0003	2199	
V@FPGS	001	0081	2195	
V@FRET	001	0015	2198	
V@FSPC	001	0040	2197	
V@FTAB	001	0000	2201	
V@KADD	001	004E	2186	
V@KCLE	001	006E	2183	
V@KDIV	001	0061	2189	
V@KEMN	001	006C	2181	
V@KEPL	001	006B	2180	
V@KMUL	001	005C	2188	
V@KPER	001	004B	2191	
V@KPST	001	007B	2185	
V@KPWR	001	005A	2190	
V@KSQR	001	006F	2182	
V@KSTO	001	006D	2184	
V@KSUB	001	0060	2187	
V@LAIP	001	0003	2151	2152
V@LDEX	001	0002	2154	
V@LETE	001	0003	2158	
V@LEXP	001	0001	2148	2150
V@LFKO	001	0006	2153	
V@LINI	001	0200	2157	
V@LLKS	001	0010	2150	
V@LMAN	001	000F	2149	2150
V@LNOP	001	0015	2155	
V@LTBE	001	0007	2152	
V@LVPG	001	0100	2156	2157
V@MCHS	001	00C0	2137	
V@MCRD	001	0010	2113	
V@MDEF	001	0008	2114	
V@MEXC	001	0080	2111	
V@MEXT	001	0004	2140	

[illegible]

START ADDRESS	CATEGORY	NAME AND ENTRY	CODE LENGTH HEXADECIMAL	DECIMAL
---------------	----------	----------------	----------------------------	---------

0000	0	#MIPPE	188E	6286
------	---	--------	------	------

OL100 I THE TOTAL CORE USED BY #MIPPE IS 6286 DECIMAL.

OL101 I THE START CONTROL ADDRESS OF THIS MODULE IS 0C07.

OL104 I TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 25

NAME-#MIPPE,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O

MADE FOR WORKAREAS ON BOTH DISKS. IF THEY EXIST \*

2752 \* BASIC MODE IS ENTERED. \*

2753 \* \* MESSAGES INDICATING THE STATUS OF THE SYSTEM ARE PRINTED. \*

2754 \* \*

2755 \*ENTRY POINTS \*

2756 \* THE FIRST EXECUTABLE INSTRUCTION IMMEDIATELY FOLLOWING THE \*

2757 \* PROGRAM HEADER IS THE ONLY ENTRY POINT. \*

2758 \* MIPPER IS ALWAYS EXECUTED BY NBLOAD \*

2759 \* \*

2760 \*INPUT \*

2761 \* N/A \*

2762 \* \*

2763 \*OUTPUT \*

2764 \* \* ALL NUCLEUS INDICATORS AND TABLES ARE INITIALIZED. \*

2765 \* \* MESSAGES ABOUT SYSTEM STATUS INCLUDE SUCH TOPICS AS: \*

2766 \* PRINTER FAILURE - OUTPUT TO CRT. \*

2767 \* MINIMUM CONFIGURATION ASSUMED. \*

2768 \* WRONG WORK AREAS. \*

2769 \* UNINITIALIZED DISK(S). \*

2770 \* DISK SIZE VARIES FROM CONFIGURED SIZE. \*

2771 \* \*

2772 \*EXTERNAL REFERENCES \*

2773 \* \$LOADR - ENTRY TO LOAD AN OVERLAY. \*

2774 \* \$NUCBS - START OF COMMUNICATION AREA. \*

2775 \* \$\$KLD2 - START OF INPUT LINE BUFFER. \*

2776 \* \$ERMAD - LOCATION OF ERRPGM DISK ADDRESS. \*

2777 \* \$GUFIO - LOCATION OF GUFUDI DISK ADDRESS. \*

2778 \* \$SPRNT - ENTRY TO SYSTEM PRINTER INTERFACE. \*

2779 \* \$DISKN - ENTRY TO DISK IOCS, DKDISK. \*

2780 \* \$WAITF - WAIT DPL ADDRESS. \*

2781 \* \$IOIND - I/O STATUS INDICATOR. \*

2782 \* \$\$PRES - ENTRY TO KEYBOARD IOCS. \*

2783 \* \$\$KBSN - SENSE BYTE IN DEPRES. \*

2784 \* \$\$KBDT - DATA BYTE IN DEPRES. \*

## #MIPPE - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 24/05/21 PAGE 64
		2785	*	\$INDR3 - NUCLEUS INDICATORS.	*
		2786	*	\$XRSAB - POINTER TO 2 BYTE SAVE AREA.	*
		2787	*	\$VOLID - VOLUME LABEL TABLE.	*
		2788	*	\$ERRPG - ERRPGM INDICATOR.	*
		2789	*	\$DATE - LOCATION OF CURRENT DATE.	*
		2790	*	\$DKSIZ - DISK SIZE INDICATOR.	*
		2791	*	\$\$EOSA - ADDRESS OF EOS IN INPUT BUFFER.	*
		2792	*	\$ERRCT - STACKED ERROR MESSAGE COUNT.	*
		2793	*	\$CAERK - ENTRY TO LOAD AND EXECUTE ERRPGM.	*
		2794	*	\$CAIPL - ENTRY TO LOAD AND EXECUTE GUFUDI.	*
		2795	*	\$PRDEV - ADDRESS OF SYSTEM PRINTER IOCS.	*
		2796	*	\$BSADR - SPF RELOCATION FACTOR.	*
		2797	*	MCNFIG - ENTRY TO CHECK CONFIGURATION RECORD.	*
		2798	*	UCNFIG - ENTRY TO PROCESS CONFIGURE COMMAND.	*
		2799	*	SCANIT - ENTRY TO SCAN TO PARAMETERS.	*
		2800	*		*
		2801	*	*EXITS, NORMAL	*
		2802	*	NORMAL EXIT IS TO \$CAIPL TO LOAD AND EXECUTE GUFUDI.	*
		2803	*		*
		2804	*	*EXITS, ERROR	*
		2805	*	IF ANY ERROR MESSAGES ARE TO BE PRINTED (I.E. WRONG OR NO	*
		2806	*	WORKAREAS, ETC), EXIT IS MADE TO \$CAERK TO EXECUTE ERRPGM.	*
		2807	*	THE ERROR MESSAGE NUMBERS ARE STACKED AT \$SERSK.	*
		2808	*		*
		2809	*	*TABLES/WORK AREAS	*
		2810	*	N/A	*
		2811	*		*
		2812	*	*ATTRIBUTES	*
		2813	*	RELOCATABLE	*
		2814	*		*
		2815	*	*CHARACTER CODE DEPENDENCY	*
		2816	*	MIPPER ASSUMES STANDARD ENGLISH EBCDIC CHARACTERS WHEN DECODING	*
		2817	*	A REQUEST FOR CONFIGURING. USE OF FOREIGN LANGUAGE INPUT WILL	*
		2818	*	REQUIRE MODIFICATION TO THE INTERNAL CONSTANT, MIPCFG.	*
		2819	*		*
		2820	*	*NOTES	*
		2821	*	ERROR PROCEDURES	*
		2822	*	* INVALID ENTRY OF EITHER THE CONFIGURE COMMAND OR THE DATE	*
		2823	*	RESULT IN THE PRINTING OF A QUESTION MARK (?) AND THE	*
		2824	*	REQUEST MESSAGE REPRINTED.	*
		2825	*	* IF THE PRINTER FAILS WHILE ATTEMPTING TO PRINT THE	*
		2826	*	COPYRIGHT MESSAGE AN ATTEMPT IS MADE TO BACKUP TO THE	*
		2827	*	DISPLAY STATION. IF NO CONFIGURATION RECORD EXISTS, OR	*
		2828	*	IF THE CRT IS NOT PART OF THE MACHINE, THE NORMAL HARD	*
		2829	*	PRINTER FAILURE HALT IS EXECUTED. IF THE CRT IS PRESENT,	*
		2830	*	THE CRT IOCS IS LOADED (VIA MCNFIG), AND THE SYSTEM PRINTER	*
		2831	*	SWITCHED TO IT. A MESSAGE IS DISPLAYED INFORMING	*
		2832	*	THE USER OF THE ACTION. THE PRINTER UNAVAILABLE INDICATOR	*
		2833	*	IS SET SO THAT ANOTHER ATTEMPT TO USE THE PRINTER WILL	*
		2834	*	BE AVOIDED.	*
		2835	*	* IF A FAILURE TO READ-ID FROM DISK OCCURS, THE DISK IS	*
		2836	*	FLAGGED AS UNINITIALIZED. IN THIS CASE IT IS NOT MOUNTED.	*
		2837	*	A SEEK OF ZERO CYLINDERS IS PERFORMED UPON THE RESPECTIVE	*
		2838	*	DRIVE TO RESET THE DISK ERROR LATCH.	*
		2839	*	* CONFLICTS IN DISK SIZES AND WORKAREAS CAUSE AN ERROR MESSAGE	*
		2840	*	TO BE STACKED FOR LATER PRINTING BY ERRPGM.	*

## #MIPPE - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 65
		2841	*	* AN UNINITIALIZED DISK ON F1 RESULTS IN AN ASSUMPTION OF			*
		2842	*	A MINIMUM MACHINE AND AN APPROPRIATE MESSAGE.			*
		2843	*	* ERRORS IN THE CONFIGURATION RECORD AND CONFIGURE COMMAND			*
		2844	*	SYNTAX ARE HANDLED BY MCNFIG AND UCNFIG RESPECTIVELY.			*
		2845	*				*
		2846	*	REGISTER USAGE			*
		2847	*	INDEX REGISTERS 1 AND 2 ARE USED FOR BASE ADDRESSING.			*
		2848	*	ON OCCASION REGISTER 2 (@XR) IS USED FOR DISPLACING AND AS A			*
		2849	*	POINTER.			*
		2850	*				*
		2851	*	SAVED/RESTORED AREAS			*
		2852	*	N/A			*
		2853	*				*
		2854	*	MODIFICATION CONSIDERATIONS			*
		2855	*	IN GENERAL MIPPER MAY BE MODIFIED WITH LITTLE IMPACT ON THE			*
		2856	*	REST OF THE SYSTEM. HOWEVER, BECAUSE IT MUST INTERFACE			*
		2857	*	DIRECTLY WITH THE NUCLEUS AND THE CONFIGURE PROGRAM,			*
		2858	*	MODIFICATIONS SHOULD BE MADE WITH CONSIDERATION TO THESE			*
		2859	*	INTERFACES. CODING TECHNIQUES, SUCH AS THE MOUNTING OF DISKS,			*
		2860	*	ASSUMED VARIOUS TABLE FORMATS.			*
		2861	*				*
		2862	*	REQUIRED MODULES			*
		2863	*	@SYSEQ - GENERAL SYSTEM EQUATES.			*
		2864	*	@HDWEQ - HARDWARE VALUE EQUATES.			*
		2865	*	@FXDEQ - NUCLEUS LOCATION EQUATES.			*
		2866	*	@CANEQ - TRANSCIENT LOCATION EQUATES.			*
		2867	*	@WKAEQ - WORK AREA DISK ADDRESS EQUATES.			*
		2868	*	@CY0EQ - CYLINDER ZERO EQUATES.			*
		2869	*	@CNFEQ - CONFIGURATION EQUATES.			*
		2870	*	\$V\$EQ - VIRTUAL MEMORY EQUATES.			*
		2871	*	@ERMEQ - ERROR MESSAGE EQUATES.			*
		2872	*	@VOLEQ - VOLUME LABEL EQUATES.			*
		2873	*	\$SPFEQ - SYSTEM PROGRAM FILE DISK ADDRESSES.			*
		2874	*	MCNFIG - TEST CONFIGURATION SUBROUTINE.			*
		2875	*	UCNFIG - CONFIGURE KEYWORD PROGRAM.			*
		2876	*				*
		2877	*	*OTHER			*
		2878	*	N/A			*
		2879	*				*
		2880	*	*****			*



## #MIPPE - NUCLEUS INITIALIZATION OVERLAY SEGMENT

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 66
					2882	*****	*****	
					2883	*	MIPPER OVERLAY ROUTINE	*
					2884	*****	*****	
	0C00				2885	ORG	\$\$KLD3 POSITION OVERLAY	
					2886	*****	*****	
					2887	*	PROGRAM HEADER FOR DISK LOAD	*
					2888	*****	*****	
					2889	*#\$MIPP EQU	X'0A80' DISK ADDR OF #MIPPE	
					2890	*#\$MIP EQU	X'0C00' CORE LOAD ADDRESS OF #MIPPE	
					2891	*#\$@MIP EQU	13 SECTOR COUNT OF #MIPPE	
	0C00				2892	ORG	\$\$MIP CORE LOAD ADDRESS	
		0C00			2893	\$\$\$\$\$ EQU	* FIRST LOCATION IN PROGRAM	
	0C00	7BD4C9D7D7C5		0C05	2894	DC	CL6'#MIPPE' PROGRAM NAME	
	0C06	34		0C06	2895	DC	IL1'52' PROGRAM NUMBER OF #MIPPE	
					2896	*#MIPPE EQU	* ENTRY POINT TO PROGRAM	
				03C0	2898	USING \$NUCBS,@XR	INDEX SPECIFICATION	
				0E48	2899	USING MIPOBS,@BR	SET BASE REGISTER	
				0C07	2900	MIPOVL EQU	* MIPPER ENTRY	
	0C07	C0 87 0DBE			2901	B	MIP000 JUMP OVER MESSAGES	
					2902	*****	*****	
					2903	*	PPL'S AND TEXT FOR MESSAGES	*
					2904	*****	*****	
	0C0B	C0		0C0B	2905	@@M160 DC	AL1(@PRETR) PRINT CONTROL FUNCTION	
	0C0C	2F		0C0C	2906	DC	IL1'47' LENGTH OF MESSAGE	
	0C0D	0C1B		0C0E	2907	DC	AL(@CADDR)(@@T160) ADDRESS OF MESSAGE	
					2908	*		
	0C0F	C0		0C0F	2909	@@M161 DC	AL1(@PRETR) PRINT CONTROL FUNCTION	
	0C10	15		0C10	2910	DC	IL1'21' LENGTH OF MESSAGE	
	0C11	0C4A		0C12	2911	DC	AL(@CADDR)(@@T161) ADDRESS OF MESSAGE	
					2912	*		
	0C13	C0		0C13	2913	@@M162 DC	AL1(@PRETR) PRINT CONTROL FUNCTION	
	0C14	31		0C14	2914	DC	IL1'49' LENGTH OF MESSAGE	
	0C15	0C5F		0C16	2915	DC	AL(@CADDR)(@@T162) ADDRESS OF MESSAGE	
					2916	*		
	0C17	C0		0C17	2917	@@M163 DC	AL1(@PRETR) PRINT CONTROL FUNCTION	
	0C18	21		0C18	2918	DC	IL1'33' LENGTH OF MESSAGE	
	0C19	0C90		0C1A	2919	DC	AL(@CADDR)(@@T163) ADDRESS OF MESSAGE	
					2920	*		
				0C1B	2921	@@T160 EQU	* LEFT BYTE OF MESSAGE	
	0C1B	C5D5E3C5D940C3D6		0C49	2922	DC	CL47'ENTER CONFIGURE COMMAND OR PRESS PROG START KEY'	
				0C4A	2923	@@T161 EQU	* LEFT BYTE OF MESSAGE	
	0C4A	C5D5E3C5D940C4C1		0C5E	2924	DC	CL21'ENTER DATE - MM/DD/YY'	
				0C5F	2925	@@T162 EQU	* LEFT BYTE OF MESSAGE	
	0C5F	C5D9D9D6D940F5F4		0C8F	2926	DC	CL49'ERROR 548 PRINTER FAILURE, OUTPUT SWITCHED TO CRT'	
				0C90	2927	@@T163 EQU	* LEFT BYTE OF MESSAGE	
	0C90	F5F7F0F360E7D4F1		0CB0	2928	DC	CL33'5703-XM1 COPYRIGHT HJS CORP. 1970'	
					2929	*		
					2930	***	PATCH AREA FOR MESSAGES	
					2931	*		
	0CB1			0CBF	2932	\$\$\$001 DS	CL15 MSG EXPANSION PATCH AREA	
					2933	*		

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15,	MOD 00	24/05/21	PAGE	67
					2935	*****						
					2936	*	MVDELE - SCRATCH FILE ENTRIES DELETE ROUTINE					*
					2937	*****						
					2938	*						
					2939	***	EQUATES REQUIRED FOR MVDELE					
					2940	*						
				000F	2941	MVDM0F	EQU	X'0F'				BITS USED FOR DRIVES TO TEST
				0001	2942	MVDMK1	EQU	X'01'				INITIAL VALUE FOR DRIVE TO TEST
				000F	2943	MVDCNT	EQU	15				NR OF SECTORS IN VTOC
				01FC	2944	MVDNUM	EQU	X'01FC'				DISP TO # OF SCRATCH FILES
				01FB	2945	MVDSC1	EQU	X'01FB'				DISP TO 1ST OF S FILE INFO
				0013	2946	MVDF1T	EQU	X'13'				F1 DISP TO FILE TYPE
				0090	2947	MVDMVF	EQU	X'90'				MULTI-VOLUME FILE TYPE
				0060	2948	MVDMVD	EQU	X'60'				MULTI-VOLUME FILE TYPE BITS OFF
				0002	2949	MVDCHN	EQU	2				DISP OF CHAIN ADDRESS
				0002	2950	MVDTWO	EQU	2				LENGTH OF 2
				003F	2951	MVDFIL	EQU	63				FORMAT 1 LENGTH-1
				0005	2952	MVDLEN	EQU	5				LENGTH OF SCRATCH FILE INFO
					2953	*	EQUATES USED TO SET UP MVDPRM FOR MVDELE					
				0001	2954	MVDRR1	EQU	X'01'				DRIVE R1 BIT OF MVDPRM
				0002	2955	MVDRF1	EQU	X'02'				DRIVE F1 BIT OF MVDPRM
				0004	2956	MVDRR2	EQU	X'04'				DRIVE R2 BIT OF MVDPRM
				0008	2957	MVDRF2	EQU	X'08'				DRIVE F2 BIT OF MVDPRM
				000C	2958	MVDI10	EQU	12				SIZE OF ERROR MSG STACK SAVED
					2959	*****						
					2960	*	ENTRY POINT TO MODULE MVDELE.					*
					2961	*****						
				0CC0	2962	MVDELE	EQU	*				MVDELE ENTRY POINT
				0CD0	2963		USING	MVD050,@BR				SET BASE ADDRESS
	0CC0	F2	80	0D	2964	MVD025	JC	MVD050,@NOP				1-5
	0CC3	C2	01	0CD0	2965		LA	MVD050,@BR				LOAD BASE REGISTER
	0CC7	0C	0B	0613	2966		MVC	\$\$INLN+MVDI10(MVDI10),\$\$ERSK+MVDI10-1				SAVE ERROR MSGS
	0CCD	F2	87	1B	2967		J	MVD060				JUMP ON ENTRY
	0CD0	C0	87	0025	2968	MVD050	B	\$DISKN				WAIT FOR OPERATION COMPLETE
	0CD4	057F			2969		DC	AL2(\$WAITF)				WAIT DPL ADDRESS
	0CD6	5E	00	1C	2970		ALC	MVDMASK(,@BR),MVDMASK(1,@BR)				MOVE MASK LEFT ONE BYTE
	0CDA	5E	00	C9	2971		ALC	MVDSEC(1,@BR),MVDONE(,@BR)				INCREMENT SECTOR FOR NEXT DRIVE
	0CDE	79	0F	1C	2972	MVD055	TBF	MVDMASK(,@BR),MVDM0F				TEST OF MORE S FILES POSSIBLE
	0CE1	0C	0B	1C0B	2973		MVC	\$\$ERSK+MVDI10-1(MVDI10),\$\$INLN+MVDI10				RESTORE ERROR MSGS
					2974	*	\$CAROL MAY BE CHANGED TO \$CAIPL OR \$CAERK BY #MIPPE, #KMOUN OR #UUNIT.					
	0CE7	C0	10	04A1	2975	MVD057	BT	\$CARPL				BR OUT IF ALL FILES PROCESSED
	0CEB	78	01	D9	2976	MVD060	TBN	MVDPRM(,@BR),MVDMK1				TEST OF DRIVE NEEDS FILE CHECK
	0CEE	3C	87	0CC3	2977		MVI	MVD025+@OP1,@UCB				SET UNCONDITIONAL BRANCH 1-5
	0CEC				2978		ORG	MVD060+@Q				INITIALIZE
	0CEC	01			2979		DC	AL1(MVDMK1)				R1 DISK
	0CF2				2980		ORG					
	0CF2	D0	90	00	2981		BF	MVD050(,@BR)				NO - GO BACK AND CHECK NEXT ONE
	0CF5	C0	87	0025	2982		B	\$DISKN				ACCESS DISK TO INPUT VTOC
	0CF9	0D97			2983		DC	AL2(MVDDPL)				DISK DPL ADDR
	0CFB	C0	87	0025	2984							

## MVDELE - DELETE SCRATCH ENTRIES FROM VTOC

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 68

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2991 *
2992 *** SCRATCH FILE WIPEOUT
2993 *
0D08 4C 01 D8 0FB9 2994 MVC MVDADR(@DADDR,@BR),MVDSC1+MVDBUF SAVE POINTER TO F1
0D0D 0F 04 0FBD 0FBD 2995 SLC MVDSC1+MVDBUF+MVDLEN-1,MVDSC1+MVDLEN-1+MVDBUF(MVDLEN)
2996 * * ZERO OUT SCRATCH FILE INFO
0D13 5C 01 D6 D8 2997 MVD100 MVC MVDISP(@CADDR,@BR),MVDADR(@BR) MOVE TO CALCULATE ADDR
0D17 5E 01 D5 D8 2998 ALC MVDADD(MVDTWO,@BR),MVDADR(@BR) SHIFT TWO BITS LEFT
0D1B 5E 01 D5 D8 2999 ALC MVDADD(MVDTWO,@BR),MVDADR(@BR) *
0D1F 58 02 D5 D5 3000 MNZ MVDADD(@BR),MVDADD(@BR) MOVE NUMERIC BITS
0D23 58 01 D5 D4 3001 MZN MVDADD(@BR),MVDADD-1(@BR) MOVE ZONE BITS
0D27 7C 00 D4 3002 MVI MVDADD-1(@BR),@ZERO ZERO OUT PRECEEDING BYTE
0D2A 5F 01 D6 CE 3003 SLC MVDISP(@CADDR,@BR),MVDLGT(@BR) ADJUST ADDRESS
0D2E D2 02 EE 3004 LA MVDBUF(@BR),@XR SET XR TO BUFFER
0D31 76 02 D6 3005 A MVDISP(@BR),@XR INCREMENT XR TO F1
0D34 B8 90 13 3006 TBN MVDF1T(@XR),MVDMVF TEST FOR MULTI-VOLUME FILE
0D37 F2 90 06 3007 JF MVD150 JUMP IF NO MVF
0D3A B9 60 13 3008 TBF MVDF1T(@XR),MVDMVD TEST THAT OTHER BITS ARE OFF
0D3D F2 10 3D 3009 JT MVD200 MULTI-VOLUME FILE WIPEOUT BRANCH
0D40 6C 01 D8 02 3010 MVD150 MVC MVDADR(MVDTWO,@BR),MVDCHN(@XR) SAVE NEXT F1 POINTER
0D44 AF 3E 3F 3F 3011 SLC MVDFIL(MVDFIL,@XR),MVDFIL(@XR) ZERO F1
3012 *
3013 *** SET TAG FILENAME TO ZERO.
3014 *
0D48 6C 00 D3 00 3015 MVC MVDTAG(1,@BR),0(@XR) SAVE TAG
0D4C 5E 00 D3 D3 3016 ALC MVDTAG(1,@BR),MVDTAG(@BR) DOUBLE TAG
0D50 5C 01 97 D3 3017 MVC MVDTGS(MVDTWO,@BR),MVDTAG(@BR) MOVE TAG
0D54 5E 01 97 97 3018 ALC MVDTGS(MVDTWO,@BR),MVDTGS(@BR) DOUBLE
0D58 5E 01 97 97 3019 ALC MVDTGS(MVDTWO,@BR),MVDTGS(@BR) DOUBLE
0D5C 5E 01 97 D3 3020 ALC MVDTGS(MVDTWO,@BR),MVDTAG(@BR) ADD TO GET TAG*10
0D60 5E 01 97 D1 3021 ALC MVDTGS(@CADDR,@BR),MVDTAD(@BR) ADJUST TAG ADDR
0D64 3C 00 0000 3022 MVD175 MVI *-*,0 ZERO'S FILE NAME OF X'20'
3023 *
3024 *** TEST FOR LAST SCRATCH FILE AND GO BACK IF NOT
3025 *
0D68 7D 00 D8 3026 CLI MVDADR(@BR),0 TEST FOR LAST S FILE OF CHAIN
0D6B D0 01 43 3027 BNE MVD100(@BR) BRANCH IF MORE S FILES
0D6E 7C 02 C7 3028 MVI MVDFNC(@BR),@DPUT SET FUNCTION CODE FOR WRITE
0D71 C0 87 0025 3029 B $DISKN ACCESS DISK TO INPUT VTOC
0D75 0D97 0D76 3030 DC AL2(MVDDPL) DISK DPL ADDR
0D77 7C 01 C7 3031 MVI MVDFNC(@BR),@DGET SET FUNCTION CODE BACK TO READ
0D7A D0 87 00 3032 B MVD050(@BR) RETRUN TO TEST FOR MORE FILES
3033 *
3034 *** MULTI-VOLUME FILE WIPEOUT
3035 *
0D7D 4D 01 D8 18B0 3036 MVD200 CLC MVDADR(MVDTWO,@BR),MVDMF1+MVDCHN RIGHT F7 ?
0D82 F2 01 09 3037 JNE MVD225 JUMP TO ZERO OTHER F7
0D85 0F 3F 18ED 18ED 3038 SLC MVDMF1+MVDFIL(MVDFIL+1),MVDMF1+MVDFIL ZERO OUT 1ST F7
0D8B D0 87 70 3039 B MVD150(@BR) RETURN TO PROCESSING F1'S
0D8E 0F 3F 192D 192D 3040 MVD225 SLC MVDMF2+MVDFIL(MVDFIL+1),MVDMF2+MVDFIL ZERO OUT 2ND F7
0D94 D0 87 70 3041 B MVD150(@BR) RETURN TO F1 PROCESSING
3042 *
3043 *** VTOC DPL
3044 *
0D97 3045 *VDDPL $DPL FUNC=@DGET,DADDR-#VTCR1,CNT-15,CADDR-MVDBUF
3046+MVDDPL EQU * DISK PARAMETER LIST

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0D97	01		0D97	3047+	DC	AL1(@DGET)	REQUESTED FUNCTION
0D98	0024		0D99	3048+	DC	AL2(#VTCR1)	DISK ADDRESS
0D9A	0F		0D9A	3049+	DC	AL1(15)	SECTOR COUNT
0D9B	0DBE		0D9C	3050+	DC	AL2(MVDBUF)	BUFFER ADDRESS
				3051+	***	END OF EXPANSION ***	
				3052	*		
				3053	***	CONSTANTS AND WORKAREAS USED BY MVDELE	
				3054	*		
0D9D	09		0D9D	3055	MVDHXB DC	IL1'09'	LOWEST SECTOR # OF A F1
0D9E	3F		0D9E	3056	MVDLGT DC	AL1(MVDFIL)	F1 LENGTH - 1
0D9F	01		0D9F	3057	MVDONE DC	XL1'01'	ONE
0DA0	0DBA		0DA1	3058	MVDTAD DC	AL2(MVDBUF-@DADDR-@DADDR)	TAG ADDRESS
0DA2	00		0DA2	3059	DC	XL1'00'	ZERO BYTE MUST PRECEED TAG SAVE
0DA3			0DA3	3060	MVDTAG DS	CL1	TAG SAVE AREA
0DA4	00		0DA4	3061	DC	XL1'00'	ZERO BYTE MUST PRECEED DADDR
0DA5			0DA5	3062	MVDADD DS	CL1	SECTOR ADDR POINTER FOR CORE
0DA6			0DA6	3063	MVDISP DS	CL1	DISPLACEMENT TO F1
0DA7			0DA8	3064	MVDADR DS	CL2	SCTR/DISP FO FORMAT 1
0DA9			0DA9	3065	MVDPRM DS	CL1	PARAMETERS SHOWS DRIVES TO BE
				3066	*		* TESTED R1, F1, R2, F2 ARE
				3067	*		* BITS 4-7 RESPECTIVELY.
0DA9				3068	ORG	MVDPRM	SET INITIAL VALUE
0DA9	00		0DA9	3069	DC	XL1'00'	SET PARM TO ZERO
0DAA			0DBD	3070	\$\$\$\$\$0 DS	CL20	PATCH AREA FOR MVDELE
				3072	*	VTOC BUFFER BEGINS HERE AND IS 15 SECTORS LONG	
			0DBE	3073	MVDBUF EQU	*	
			0CEC	3074	MVDMSK EQU	MVD060+@Q	DISK INDICATOR
			0D67	3075	MVDTGS EQU	MVD175+@OP1	ADDR OF INDEX ASSOC WITH TAG
			18AE	3076	MVDMF1 EQU	MVDBUF+2800	MVF#1 -> 12*256+128=12800
			18EE	3077	MVDMF2 EQU	MVDMF1+64	MVF#2 = F7 DISP WITHIN BUFFER
			0D97	3078	MVDFNC EQU	MVDDPL	FUNCTION CODE BYTE OF DPL
			0D99	3079	MVDSEC EQU	MVDDPL+2	DISK SECTOR ADDR IN DPL
				3080	*****		
				3081	*	END OF MODULE MVDELE	*
				3082	*****		
			0E48	3084	USING	MIPOBS,@BR	SET BASE REGISTER
0DBE	31 E6 0EA7			3085	MIP000 LIO	MIPCFA,@PCAR	LOAD PRINTER CONTROL LSR
0DC2	F3 E0 00			3086	SIO	@PSIOR,@PSIOQ	RIGHT TAB
0DC5	F3 E0 00			3087	SIO	@PSIOR,@PSIOQ	RETURN TO LEFT MARGIN
				3088	*	LOADR MIPDK3	LOAD I/O ROUTINES
0DC8	C0 87 051A			3089	B	\$LOADR	LOAD I/O ROUTINES
0DCC	1105		0DCD	3090	DC	AL2(MIPDK3)	DPL ADDRESS
0DCE	C2 01 0E48			3091	LA	MIPOBS,@BR	LOAD THE BASE REGISTER
0DD2	C2 02 03C0			3092	LA	\$NUCBS,@XR	LOAD THE INDEX REGISTER
0DD6	3C 40 06FF			3093	MVI	\$\$KLD2-1,@BLANK	SET INPUT LINE BUFFER TO BLANKS
0DDA	0C FE 06FE 06FF			3094	MVC	\$\$KLD2-2(255),\$\$KLD2-1	
0DE0	8E 01 B1 0587			3095	ALC	\$ERMAD-1(@DADDR,@XR),\$BSADR	SET ERRPGM SPF DADDR
0DE5	0E 01 0582 0587			3096	ALC	\$GUFIO-1(@DADDR),\$BSADR	SET GUFUDI SPF DADDR
0DEB	0E 01 110D 0587			3097	ALC	MIPDK5+@DSAD,\$BSADR(2)	SET DISK ADDR FOR CONFIG RECORD
0DF1	C0 87 0465			3098	B	\$SPRNT	PRINT CARRIAGE RETURN
0DF5	10FE		0DF6	3099	DC	AL2(MIPRET)	* BEFORE COPYRIGHT MESSAGE
0DF7	C0 87 0465			3100	B	\$SPRNT	PRINT COPYRIGHT MESSAGE
0DFB	0C17		0DFC	3101	DC	AL2(@@M163)	PPL ADDRESS
				3102	*		



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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 70
	0DFD	3B 04	03D5		3103		SBF \$INDR2,\$ERPND			DISABLE ERROR PENDING INDICATOR
					3104	*				
					3105	***	CHECK FOR DISK INITIALIZED			
					3106	*				
	0E01	C0 87	0025		3107	B	\$DISKN			SEEK TO CYL ZERO
	0E05	110B		0E06	3108	DC	AL2(MIPDK5)			DPL ADDRESS
	0E07	F3 A9	01		3109	SIO	@DCRID,@SPINA+@DREAD+MIPFXD			TEST F1 FOR INITIALIZATION
	0E0A	F1 A2	00		3110	APL	@SPINA+@DBUSY			WAIT FOR NOT-BUSY
	0E0D	D1 A0	42		3111	TIO	MIP210(,@BR),@SPINA+@DERR			JUMP IF NOT INITIALIZED
	0E10	C0 87	0025		3112	B	\$DISKN			READ PROTECTION SECTOR
	0E14	111D		0E15	3113	DC	AL2(MIPDK9)			DISK DPL ADDRESS
	0E16	C0 87	0025		3114	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E1A	057F		0E1B	3115	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3116	*				
	0E1C	3D FF	189D		3117	CLI	MIPBF1+MIPRTD,MIPRTM			IF COUNTER IS NOT BELOW MAX
	0E20	F2 02	0F		3118	JNL	MIP100			* SKIP UPDATE
	0E23	1E 00	189D 6F		3119	ALC	MIPBF1+MIPRTD,MIPRTI(1,@BR)			INCREMENT COUNTER
	0E28	3C 02	111D		3120	MVI	MIPDK9+@DCTRL,@DPUT			SET WRITE CNTL IN DPL
	0E2C	C0 87	0025		3121	B	\$DISKN			WRITE PROTECTION SECTOR
	0E30	111D		0E31	3122	DC	AL2(MIPDK9)			DISK DPL ADDRESS
	0E32	3C 01	110B		3123	MVI	MIPDK5+@DCTRL,@DGET			SET READ CNTL IN DPL
	0E36	C0 87	0025		3124	B	\$DISKN			READ CONFIGURATION RECORD
	0E3A	110B		0E3B	3125	DC	AL2(MIPDK5)			DISK DPL ADDRESS
	0E3C	C0 87	0025		3126	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E40	057F		0E41	3127	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3128	*				
	0E42	C0 87	0465		3129	MIP150 B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E46	0C0B		0E47	3130	DC	AL2(@@M160)			PPL ADDRESS
	0E48	C0 87	0465		3131	MIP200 B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E4C	057F		0E4D	3132	DC	AL2(\$WAITF)			WAIT PPL ADDRESS
					3133	*				
	0E4E	38 20	03D2		3134	TBN	\$IOIND,\$HRDER			PRINTER FAILURE ?
	0E52	C0 10	10BE		3135	BT	MIPSWH			ATTEMPT DEVICE SWITCH
	0E56	3A 10	03D2		3136	SBN	\$IOIND,\$PGMST			SET NO AUTO LINE CONDITION
	0E5A	3C FF	09E2		3137	MVI	\$\$KBSN,@PWAIT			INITIALIZE DEPRES SENSE BYTE
	0E5E	C0 87	0890		3138	B	\$\$PRES			ENABLE KEYBOARD
	0E62	C0 87	0025		3139	MIP205 B	\$DISKN			WAIT AND CHECK DISK ERRORS
	0E66	057F		0E67	3140	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3141	*				
	0E68	3D FF	09E2		3142	CLI	\$\$KBSN,@PWAIT			HAS SOMETHING BEEN ENTERED ?
	0E6C	D0 81	1A		3143	BE	MIP205(,@BR)			LOOP IF NOT
	0E6F	38 10	09E2		3144	TBN	\$\$KBSN,\$\$\$FUN			WAS IT A FUNCTION KEY ?
	0E73	F2 90	46		3145	JF	MIP225			WAIT FOR DATA IF NO
	0E76	3D 02	09E1		3146	CLI	\$\$KBDT,MIPEMS			ENTER MINUS KEY BY CHANCE ?
	0E7A	D0 81	1A		3147	BE	MIP205(,@BR)			IGNORE IT IF YES
	0E7D	3D 81	09E1		3148	CLI	\$\$KBDT,\$\$\$STD			WAS IT PROGRAM START ?
	0E81	F2 01	38		3149	JNE	MIP225			WAIT FOR DATA IF NO
	0E84	F3 10	1B		3150	SIO	@KELOK,@KEYBD			LOCK KEYBOARD
	0E87	F2 87	72		3151	J	MIP250			GO TEST CONFIGURATION RECORD
	0E8A	3C 00	18CF		3153	MIP210 MVI	MIPBF1+@#CSIZ,@ZERO			SET NO CONFIG RECORD INDR
	0E8E	C0 87	0465		3154	B	\$SPRNT			PRINT ON SYSTEM PRINTER
	0E92	057F		0E93	3155	DC	AL2(\$WAITF)			WAIT PPL ADDRESS
	0E94	31 A6	11B9		3156	LIO	MIPSET,@SPINA+@DFCR			LOAD DISK LSR TO RESET DCF
	0E98	F3 A0	00		3157	SIO	@SKCTL,@SPINA+@DSEEK			RESET DISK ERROR STATUS
	0E9B	38 01	03D2		3158	TBN	\$IOIND,\$MPDWN			IF MATRIX PRINTER IS NOT DOWN

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0E9F F2 90 5E          3159      JF      MIP265          * GO FINISH UP
0EA2 C0 87 10CE        3160      B        MIPSW1        OTHERWISE GO SWITCH TO CRT
3161 *****
3162 *          CONSTANTS WITHIN BASE REGISTER RANGE.          *
3163 *****
0EA6 11C4              0EA7 3164 MIPCFA DC      AL2(MIPPCF)        ADDR OF PRINTER INITIALIZER PCF
0EA8 1E                0EA8 3165 MIPEOS DC      AL1(@EOS)        EOS FOR BAD LINE BUFFER
0EA9 0441              0EAA 3166 MIPERA DC      AL2(#@ERRP)        WORK FILE ERR PGM DADDR
0EAB 0401              0EAC 3167 MIPGUA DC      AL2(#@GUFU)        WORK FILE GUFUDI DADDR
0EAD 04BA              0EAE 3168 MIPDPC DC      AL2($PAUSD)        ADDR OF FE AID INTERFACE
0EAF 0000              0EB0 3169 MIPZER DC      XL2'0000'        TWO BYTE ZERO
0EB1                  0EB1 3170 MIPECD DS      CL1          ERROR CODE
0EB2 A0                0EB2 3171          DC      AL1($$N$LN)        NO LINE NUMBER INDR
0EB3 30                0EB3 3172          DC      AL1($ERSTK)        STACKED ERRORS INDR
0EB4 00                0EB4 3173 MIPECT DC      AL1(*-*)        ERROR STACK COUNT
0EB5 0003              0EB6 3174 MIPSC3 DC      IL2'3'          ERROR STACK ENTRY LENGTH
0EB7 01                0EB7 3175 MIPRTI DC      XL1'01'        PROTECTION COUNTER INCR
0EB8 0469              0EB9 3176 MIPERR DC      AL2($CAERK)        ERROR MSG ENTRY POINT
0EBA 049D              0EBB 3177 MIPEXT DC      AL2($CAIPL)        NO ERROR - EXIT ADDRESS

0EBC 38 10 03C3        3179 MIP225 TBN    $KEYCD,$KYBSY        IS LINE IN ?
0EC0 D0 10 74          3180          BT      MIP225(,@BR)        LOOP IF NOT
0EC3 C2 02 0607        3181          LA      $$INLN,@XR        POINT XR TO INPUT LINE BUFFER
0EC7 C0 87 14C1        3182          B        SCANIT          SCAN FOR NON BLANK
0ECB 2D 08 10FD 08     3183          CLC     MIPCFG(MIPCDP+1),MIPCDP(,@XR) IS IT 'CONFIGURE' ?
0ED0 F2 01 0F          3184          JNE     MIP230          DO ERROR IF NOT
0ED3 E2 02 09          3185          LA      MIPCDP+1(,@XR),@XR        POINT TO DELIMITER
0ED6 BD 1E 00          3186          CLI     0(,@XR),@EOS        IS IT EOS ?
0ED9 F2 81 10          3187          JE      MIP240          DO CONFIGURE IF YES
0EDC BD 40 00          3188          CLI     0(,@XR),@BLANK        IS IT A BLANK ?
0EDF F2 81 0A          3189          JE      MIP240          DO CONFIGURE IF YES
0EE2 C0 87 0465        3190 MIP230 B        $SPRNT          PRINT '?' ON SYSTEM PRINTER
0EE6 1100              0EE7 3191          DC      AL2(MIPPR2)        PPL ADDRESS
3192 *
0EE8 C0 87 0E42        3193          B        MIP150          LETS TRY IT AGAIN
0EEC 3C 50 03CE        3194 MIP240 MVI     $ERRPG,$ER1N2        SET UP TO GET LEVEL 1&2 MSG
0EF0 3A 04 03D6        3195          SBN     $INDR3,$ERHRD        * IF CONFIGURE ERROR
0EF4 34 02 03C7        3196          ST      $XRSAB,@XR        SAVE XR FOR CONFIGURE
0EF8 C0 87 1502        3197          B        UCNFIG          EXECUTE CONFIGURE
0EFC C0 87 1200        0EFC 3198 MIP250 EQU    *          ENTRY TO CONTINUE WITH EXISTING
3199          B        MCNFIG          CHECK CONFIGURATION RECORD
0F00 C2 02 03C0        3200 MIP265 LA      $NUCBS,@XR        RESTORE XR
0F04 BB 24 12          3201          SBF     $IOIND(,@XR),$HRDER+$CRTNO RESET CONFIG ERROR HALT
0F07 3B 04 03D6        3202          SBF     $INDR3,$ERHRD        SET ERRPGM HARD ERROR INDR OFF
0F0B C2 01 0E48        3203          LA      MIPOBS,@BR        RESTORE BASE REGISTER
0F0F 7C 95 69          3204          MVI     MIPECD(,@BR),@@E547 SET POSSIBLE MIN CONFIG MSG
0F12 3D 00 18CF        3205          CLI     MIPBF1+@#CSIZ,@ZERO WAS MINIMUM CONFIG ASSUMED ?
0F16 C0 81 11C8        3206          BE      MIPSTK          STACK ERROR MSG IF YES
0F1A 7C 91 69          3207 MIP268 MVI     MIPECD(,@BR),@@E543 SET POSSIBLE R1 UNINIT MSG
0F1D C0 87 1123        3208          B        MIPVOL          READ R1 VOLUME LABEL
0F21 7C 93 69          3209          MVI     MIPECD(,@BR),@@E545 SET POSSIBLE F1 UNINIT MSG
0F24 8C 05 3B 189B     3210          MVC     $VOLR1+#VOLOC(#VOLNG,@XR),MIPBF1+$#TLBL SET VOLUME LABEL
3211 *
0F29 8E 01 3D 1991     3212          ALC     $VOLR1+#VLTBE-1(@DADDR,@XR),MIPBF1+$#TLAD SET FILE
3213 *
0F2E 38 40 1992        3214          TBN     MIPBF1+$#TIDR,$#TWR1 WORK AREA ON R1 ?

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0F32	F2	90	08		3215	JF	MIP269	JUMP IF NOT
0F35	2D	00	196A 1F		3216	CLC	MIPBF1+\$#TWAL,\$LEVEL(1,@XR)	TEST IF RIGHT WORK AREA ?
0F3A	F2	81	03		3217	JE	MIP270	JUMP IF YES
0F3D	BA	40	16		3218	MIP269 SBN	\$INDR3(,@XR),\$NWRKR	SET NO WORK AREA ON R1 INDR
0F40	C0	87	1123		3219	MIP270 B	MIPVOL	READ F1 VOLUME LABEL
0F44	8C	05	43 189B		3220	MVC	\$VOLF1+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3221	*		* LIBRARY ADDR IN ON R1
0F49	8E	01	45 1991		3222	ALC	\$VOLF1+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3223	*		* LIBRARY ADDR IN ON F1
0F4E	38	20	1992		3224	TBN	MIPBF1+\$#TIDR,\$#TWF1	WORK AREA ON F1 ?
0F52	F2	90	08		3225	JF	MIP275	JUMP IF NOT
0F55	2D	00	196A 1F		3226	CLC	MIPBF1+\$#TWAL,\$LEVEL(1,@XR)	TEST IF RIGHT WORK AREA ?
0F5A	F2	81	03		3227	JE	MIP280	JUMP IF YES
0F5D	BA	80	16		3228	MIP275 SBN	\$INDR3(,@XR),\$NWRKF	SET NO WORK AREA ON F1 INDR
0F60	B9	18	17		3229	MIP280 TBF	\$DKSIZ(,@XR),\$DK600+\$DK800	DRIVE 2 ON SYSTEM ?
0F63	F2	10	28		3230	JT	MIP320	JUMP IF NOT
0F66	7C	92	69		3231	MVI	MIPECD(,@BR),@@E544	SET POSSIBLE R2 UNINIT MSG
0F69	C0	87	1123		3232	B	MIPVOL	READ VOLUME LABEL R2
0F6D	8C	05	4B 189B		3233	MVC	\$VOLR2+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3234	*		* IN VOLID TABLE (R2)
0F72	8E	01	4D 1991		3235	ALC	\$VOLR2+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3236	*		* LIBRARY ADDR IN ON R2
0F77	B8	10	17		3237	TBN	\$DKSIZ(,@XR),\$DK800	F2 ON SYSTEM ?
0F7A	F2	90	11		3238	JF	MIP320	DON'T GET F2 IF NO
0F7D	7C	94	69		3239	MVI	MIPECD(,@BR),@@E546	SET POSSIBLE F2 UNINIT MSG
0F80	C0	87	1123		3240	B	MIPVOL	READ F2 VOLUME LABEL
0F84	8C	05	53 189B		3241	MVC	\$VOLF2+#VOLOC(#VOLNG,@XR),MIPBF1+\$#TLBL	SET VOLUME LABEL
					3242	*		* LIBRARY ADDR IN ON F2
0F89	8E	01	55 1991		3243	ALC	\$VOLF2+#VLTBE-1(@DADDR,@XR),MIPBF1+\$#TLAD	SET FILE
					3244	*		* LIBRARY ADDR IN ON F2
				0F8E	3245	MIP320 EQU	*	WAIT FOR DATE
0F8E	C0	87	0465		3246	B	\$SPRNT	PRINT ASK FOR DATE
0F92	0C0F			0F93	3247	DC	AL2(@@M161)	PPL ADDRESS
0F94	C0	87	0465		3248	B	\$SPRNT	PRINT ON SYSTEM PRINTER
0F98	057F			0F99	3249	DC	AL2(\$WAITF)	WAIT PPL ADDRESS
					3250	*		
0F9A	C0	87	0890		3251	B	\$\$PRES	ENABLE KEYBOARD INPUT
0F9E	3D	00	043B		3252	CLI	\$EXFTR,@ZERO	EXTENSION FACTOR EQUALS 0 ?
0FA2	F2	81	12		3253	JE	MIP330	IF YES CONTINUE NORMAL PROC.
0FA5	0C	00	1113 0587		3254	MVC	MIPDK6+@DSAD(1),\$BSADR	SET DADDR FOR IPL-ED DISK
0FAB	0C	00	1114 043B		3255	MVC	MIPDK6+@DCNT(1),\$EXFTR	SET COUNT TO EQUAL EXT FACTOR
0FB1	C0	87	0025		3256	B	\$DISKN	INITIALIZE CORE
0FB5	1111			0FB6	3257	DC	AL2(MIPDK6)	DPL ADDRESS
0FB7	B8	10	03		3258	MIP330 TBN	\$KEYCD(,@XR),\$KYBSY	DATE IN YET ?
0FBA	C0	10	0FB7		3259	BT	MIP330	LOOP IF NOT
0FBE	C0	87	0025		3260	B	\$DISKN	WAIT AND CHECK DISK ERRORS
0FC2	057F			0FC3	3261	DC	AL2(\$WAITF)	WAIT DPL ADDRESS
					3262	*		
0FC4	8C	01	79 0EB0		3263	MVC	\$DATE-1(2,@XR),MIPZER	ZERO DATE
0FC9	35	01	0AFE		3264	L	\$\$EOSA,@BR	POINT BR TO EOS
0FCD	36	01	105D		3265	MIP335 A	MIPNG1,@BR	DECREMENT POINTER
0FD1	7D	40	00		3266	CLI	0(,@BR),@BLANK	NON-BLANK ?
0FD4	C0	81	0FCD		3267	BE	MIP335	LOOP IF YES
0FD8	7D	F0	00		3268	CLI	0(,@BR),MIPNUM	NUMERIC CHAR ?
0FDB	F2	82	74		3269	JL	MIPSYN	DO ERROR IF NOT
0FDE	98	03	7A 00		3270	MNN	\$DATE(,@XR),0(,@BR)	SET RIGHT YEAR DIGIT

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 73
0FE2	36	01	105D		3271	A	MIPNG1,@BR			POINT TO LEFT YEAR CHAR
0FE6	7D	F0	00		3272	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
0FE9	F2	82	66		3273	JL	MIPSYN			DO ERROR IF NOT
0FEC	98	01	7A 00		3274	MZN	\$DATE(,@XR),0(,@BR)			SET LEFT YEAR DIGIT
0FF0	36	01	105D		3275	A	MIPNG1,@BR			POINT TO SLASH
0FF4	7D	61	00		3276	CLI	0(,@BR),@SLASH			IS IT REALLY A SLASH ?
0FF7	F2	82	58		3277	JL	MIPSYN			DO ERROR IF NOT
0FFA	36	01	105D		3278	A	MIPNG1,@BR			POINT TO DAY
0FFE	7D	F0	00		3279	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
1001	F2	82	4E		3280	JL	MIPSYN			DO ERROR IF NOT
1004	98	01	79 00		3281	MZN	\$DATE-1(,@XR),0(,@BR)			SET FIRST DIGIT
1008	36	01	105D		3282	MIP340 A	MIPNG1,@BR			POINT TO NEXT CHAR
100C	7D	61	00		3283	CLI	0(,@BR),@SLASH			IS IT A SLASH ?
100F	F2	81	14		3284	JE	MIP345			IF YES GET MONTH
1012	7D	F0	00		3285	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
1015	F2	82	3A		3286	JL	MIPSYN			DO ERROR IF NOT
1018	98	01	79 00		3287	MZN	\$DATE-1(,@XR),0(,@BR)			SET 2ND DAY DIGIT
101C	36	01	105D		3288	A	MIPNG1,@BR			POINT TO SLASH
1020	7D	61	00		3289	CLI	0(,@BR),@SLASH			IS IT A SLASH ?
1023	F2	01	2C		3290	JNE	MIPSYN			DO ERROR IF NOT
1026	36	01	105D		3291	MIP345 A	MIPNG1,@BR			POINT TO MONTH
102A	7D	F0	00		3292	CLI	0(,@BR),MIPNUM			NUMERIC CHAR ?
102D	F2	82	22		3293	JL	MIPSYN			DO ERROR IF NOT
1030	98	03	78 00		3294	MNN	\$DATE-2(,@XR),0(,@BR)			SET FIRST DIGIT
1034	36	01	105D		3295	A	MIPNG1,@BR			POINT TO SLASH
1038	7D	40	00		3296	CLI	0(,@BR),@BLANK			DATE COMPLETE ?
103B	F2	81	20		3297	JE	MIP350			GO DO REST OF INITIAL
103E	7D	F0	00		3298	CLI	0(,@BR),MIPNUM			NUMERIC ?
1041	F2	82	0E		3299	JL	MIPSYN			DO ERROR IF NOT
1044	98	01	78 00		3300	MZN	\$DATE-2(,@XR),0(,@BR)			SET LAST DIGIT
1048	36	01	105D		3301	A	MIPNG1,@BR			POINT TO END OF DATE
104C	7D	40	00		3302	CLI	0(,@BR),@BLANK			TRUE END ?
104F	F2	81	0C		3303	JE	MIP350			SKIP ERROR IF YES
					3304	*				
				1052	3305	MIPSYN EQU	*			ENTRY TO PRINT SYNTAX ERROR
1052	C0	87	0465		3306	B	\$SPRNT			PRINT '?'
1056	1100			1057	3307	DC	AL2(MIPPR2)			PPL ADDRESS
1058	C0	87	0F8E		3308	B	MIP320			GO GET NEW ENTRY
105C	FFFF			105D	3310	MIPNG1 DC	IL2'-1'			NEGATIVE ONE
				00F0	3311	MIPNUM EQU	X'F0'			SMALLEST NUMERIC
				0008	3312	MIPFXD EQU	X'08'			FIXED DISK SIO BIT
				0002	3313	MIPEMS EQU	X'02'			ENTER MINUS KEY DATA VALUE
105E	C2	01	0E48		3315	MIP350 LA	MIPOBS,@BR			RESTORE BASE REGISTER
1062	7C	90	69		3316	MVI	MIPECD(,@BR),@@E542			SET POSSIBLE WRONG CYL SIZE MSG
1065	3D	00	11C4		3317	CLI	MIPPCF,@ZERO			DID SUCH OCCUR ?
1069	C0	81	11C8		3318	BE	MIPSTK			STACK ERROR MSG IF YES
106D	BA	04	12		3319	SBN	\$IOIND(,@XR),\$CRTNO			ALLOW CMD KEY 12
1070	7C	A2	69		3320	MVI	MIPECD(,@BR),@@E573			SET POSSIBLE NO WA ON R1 MSG
1073	BD	40	16		3321	CLI	\$INDR3(,@XR),\$NWRKR			TEST FOR WORKAREAS ?
1076	BA	10	16		3322	SBN	\$INDR3(,@XR),\$CLBFR			SET CLEAR INPUT LINE INDR
1079	F2	82	20		3323	JL	MIP400			JUMP IF BOTH WORKAREAS
107C	F2	81	0C		3324	JE	MIP380			JUMP IF NO WA ON R1
107F	7C	8D	69		3325	MVI	MIPECD(,@BR),@@E535			SET POSSIBLE NO WA ON R1&F1 MSG
1082	B8	40	16		3326	TBN	\$INDR3(,@XR),\$NWRKR			BOTH MISSING ?

MVDELE - DELETE SCRATCH ENTRIES FROM VTOC

ERR LOC		OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00		24/05/21	PAGE	74
1085	F2	10 03		3327	JT	MIP380			JUMP	IF	YES
1088	7C	A1 69		3328	MVI	MIPECD(,@BR),@@E572			SET	POSSIBLE	NO WA ON F1 MSG
108B	C0	87 11C8		3329	MIP380	B			GO	STACK	ERROR MSG
108F	9C	01 0F 6C		3330	MIP390	MVC			\$ERRCT(2,@XR),MIPECT(,@BR)	SET	ERROR PGM INDR FOR STACK
1093	1C	01 0CEA 71		3331	MVC	MVD057+@OP1,MIPERR(@CADDR,@BR)			SET	MVDELE	EXIT ADDRESS
1098	C0	87 0CC0		3332	B	MVDELE			GO	DELETE	SCRATCH FILE ENTRIES
				3333	*						
				3334	***	PREPARE TO ENTER BASIC MODE. (LET'S GO !)					
				3335	*						
			109C	3336	MIP400	EQU	*		ENTRY	TO	ENTER BASIC MODE
109C	C0	87 0025		3337	B	\$DISKN			WRITE	BAD	LINE BUFFER
10A0	1117		10A1	3338	DC	AL2(MIPDK8)			DPL	ADDRESS	
10A2	9C	01 B1 62		3339	MVC	\$ERMAD-1(@DADDR,@XR),MIPERA(,@BR)			SET	ERROR PGM	WF ADDR
10A6	1C	01 0582 64		3340	MVC	\$GUFIO-1(@DADDR),MIPGUA(,@BR)			SET	GUFUDI	WF ADDR
10AB	BA	02 15		3341	SBN	\$INDR2(,@XR),\$CMODE			SET	CONVERSATIONAL	MODE INDR
10AE	7D	00 6C		3342	CLI	MIPECT(,@BR),@ZERO			ANY	ERROR	MESSAGES ?
10B1	C0	01 108F		3343	BNE	MIP390			EXIT	TO	ERROR PGM IF YES
10B5	1C	01 0CEA 73		3344	MVC	MVD057+@OP1,MIPEXT(@CADDR,@BR)			SET	RETURN	EXIT
10BA	C0	87 0CC0		3345	B	MVDELE			GO	DELETE	SCRATCH FILE ENTRIES
				3346	*						

## #MIPPE - SWITCH TO CRT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 75
				10BE	3348	MIPSWH	EQU *			ENTRY TO ATTEMPT DEVICE SWITCH
	10BE	3B 04	03D5		3349		SBF \$INDR2,\$ERPND			DON'T LOG PRINTER ERROR NOW
	10C2	C0 87	1200		3350		B MCNFIG			CHECK FOR CRT ON SYSTEM
	10C6	C2 02	03C0		3351		LA \$NUCBS,@XR			RESTORE BASE REGISTERS
	10CA	C2 01	0E48		3352		LA MIPOBS,@BR			*
	10CE	BA 04	15		3353	MIPSW1	SBN \$INDR2(,@XR),\$ERPND			SET INDR TO LOG PRINTER ERR
	10D1	B8 02	12		3354		TBN \$IOIND(,@XR),\$CRTAV			IS CRT ON SYSTEM ?
	10D4	F2 90	16		3355		JF MIPHRD			DO ERROR IF NOT
	10D7	8C 01	8B 10F4		3356		MVC \$PRDEV(@CADDR,@XR),MIPDSP			SET DSPLYN ADDR IN SYSPRINT
	10DC	AE 00	8A 7B		3357		ALC \$PRDEV-1(1,@XR),\$EXFTR(,@XR)			CALCULATE TRUE ADDRESS
	10E0	C0 87	0465		3358		B \$SPRNT			PRINT ON SYSTEM PRINTER
	10E4	0C13		10E5	3359		DC AL2(@@M162)			PPL ADDRESS
	10E6	BB 24	12		3360		SBF \$IOIND(,@XR),\$HRDER+\$CRTNO			SET HARD ERROR INDR OFF
	10E9	C0 87	0E42		3361		B MIP150			GO ASK FOR CONFIG ON CRT
				10ED	3363	MIPHRD	EQU *			ENTRY TO HARD PRINTER FAILURE
	10ED	C0 87	0025		3364		B \$DISKN			LOG ERROR AND HALT
	10F1	057F		10F2	3365		DC AL2(\$WAITF)			WAIT DPL ADDRESS
					3366	*				
	10F3	2004		10F4	3367	MIPDSP	DC AL2(\$\$PLYN)			ADDRESS OF DSPLYN
					3368	*				

## MIPPER - CONSTANTS AND MESSAGES

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 76

10F5	C3D6D5C6C9C7E4D9	10FD	3370	MIPCFG	DC	CL9 'CONFIGURE'	
		0008	3371	MIPCDP	EQU	8	DISPLACEMENT OF CONFIGURE
10FE	80	10FE	3372	MIPRET	DC	AL1(@RETRN)	PRINT CARRIAGE RETURN
10FF	80	10FF	3373		DC	AL1(@RETRN)	PSEUDO COUNT FIELD
			3374	*IPPR2	\$PPL	FUNC-@PRETR,CNT-MIPCT2,CADDR-MIPMS2	
		1100	3375+	MIPPR2	EQU	*	PRINTER PARAMETER LIST
1100	C0	1100	3376+		DC	AL1(@PRETR)	REQUESTED FUNCTION
1101	01	1101	3377+		DC	AL1(MIPCT2)	SECTOR COUNT
1102	1104	1103	3378+		DC	AL2(MIPMS2)	DATA ADDRESS
			3379+	***		END OF EXPANSION ***	
		1104	3380	MIPMS2	EQU	*	MESSAGE 2
1104	6F	1104	3381		DC	CL1'?'	?
		0001	3382	MIPCT2	EQU	*-MIPMS2	LENGTH OF MSG
			3383	*			
			3384	*IPDK3	\$DPL	FUNC-@DGET,DADDR-#\$DPRI,CNT-#\$@DPR,CADDR-\$\$KLD2	
		1105	3385+	MIPDK3	EQU	*	DISK PARAMETER LIST
1105	01	1105	3386+		DC	AL1(@DGET)	REQUESTED FUNCTION
1106	014C	1107	3387+		DC	AL2(#\$DPRI)	DISK ADDRESS
1108	05	1108	3388+		DC	AL1(#\$@DPR)	SECTOR COUNT
1109	0700	110A	3389+		DC	AL2(\$\$KLD2)	BUFFER ADDRESS
			3390+	***		END OF EXPANSION ***	
			3391	*IPDK5	\$DPL	FUNC-@DPOS,DADDR-##\$CNF,CNT-#FIGSC,CADDR-MIPBF1	
		110B	3392+	MIPDK5	EQU	*	DISK PARAMETER LIST
110B	00	110B	3393+		DC	AL1(@DPOS)	REQUESTED FUNCTION
110C	2000	110D	3394+		DC	AL2(##\$CNF)	DISK ADDRESS
110E	01	110E	3395+		DC	AL1(#FIGSC)	SECTOR COUNT
110F	1893	1110	3396+		DC	AL2(MIPBF1)	BUFFER ADDRESS
			3397+	***		END OF EXPANSION ***	
			3398	*IPDK6	\$DPL	FUNC-@DGET,DADDR-MIPCLR,CADDR-\$\$PYMP	
		1111	3399+	MIPDK6	EQU	*	DISK PARAMETER LIST
1111	01	1111	3400+		DC	AL1(@DGET)	REQUESTED FUNCTION
1112	0000	1113	3401+		DC	AL2(MIPCLR)	DISK ADDRESS
1114	00	1114	3402+		DC	AL1(*-*)	SECTOR COUNT
1115	2000	1116	3403+		DC	AL2(\$\$PYMP)	BUFFER ADDRESS
			3404+	***		END OF EXPANSION ***	
			3405	*IPDK8	\$DPL	FUNC-@DPUT,DADDR-#@#BAD,CNT-#@#BA,CADDR-MIPEOS	
		1117	3406+	MIPDK8	EQU	*	DISK PARAMETER LIST
1117	02	1117	3407+		DC	AL1(@DPUT)	REQUESTED FUNCTION
1118	0455	1119	3408+		DC	AL2(#@#BAD)	DISK ADDRESS
111A	01	111A	3409+		DC	AL1(#@#BA)	SECTOR COUNT
111B	0EA8	111C	3410+		DC	AL2(MIPEOS)	BUFFER ADDRESS
			3411+	***		END OF EXPANSION ***	
			3412	*IPDK9	\$DPL	FUNC-@DGET,DADDR-MIPPSA,CNT-1,CADDR-MIPBF1	
		111D	3413+	MIPDK9	EQU	*	DISK PARAMETER LIST
111D	01	111D	3414+		DC	AL1(@DGET)	REQUESTED FUNCTION
111E	00B1	111F	3415+		DC	AL2(MIPPSA)	DISK ADDRESS
1120	01	1120	3416+		DC	AL1(1)	SECTOR COUNT
1121	1893	1122	3417+		DC	AL2(MIPBF1)	BUFFER ADDRESS
			3418+	***		END OF EXPANSION ***	
		000A	3419	MIPRTD	EQU	10	DISP TO BIS PROTECTION CNTR
		00FF	3420	MIPRTM	EQU	X'FF'	MAXIMUM PROTECTION VALUE
		00B1	3421	MIPPSA	EQU	X'00B1'	PROTECTION SECTOR DADDR
		0000	3422	MIPCLR	EQU	X'0000'	CLEAR CORE SCTR DADDR





## #MIPPE - READ VOLUME LABEL ROUTINE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 78

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3425 *****
3426 * THIS ROUTINE TESTS THE SPECIFIED DISK FOR INITIALIZATION AND *
3427 * READS THE VOLUME LABEL SECTOR TO MIPBF1. IF THE DISK IS NOT *
3428 * INITIALIZED, MIPBF1 IS CLEARED TO ZEROS AND A MESSAGE PRINTED *
3429 * INFORMING THE USER. *
3430 *****
1123 3431 USING MIPVOL,@XR BASE SPECIFICATION
1123 3432 MIPVOL EQU * ENTRY
1123 C2 02 1123 3433 LA MIPVOL,@XR LOAD THE BASE REGISTER
1127 B4 08 76 3434 ST MIPV90+@OP1(,@XR),@ARR SAVE RETURN ADDRESS
112A BC 00 9B 3435 MVI MIPDK7+@DCTRL(,@XR),@DPOS SET SEEK CONTROL
112D C0 87 0025 3436 B $DISKN LOG ERROR AND HALT
1131 11BE 1132 3437 DC AL2(MIPDK7) DPL ADDRESS
1133 BC 01 9B 3438 MVI MIPDK7+@DCTRL(,@XR),@DGET SET DPL TO READ OP
1136 F3 A1 01 3439 MIPV20 SIO @DCRID,@SPINA+@DREAD ATTEMP A READ ID TO TEST
3440 * * FOR INITIALIZATION
1139 F1 A2 00 3441 APL @SPINA+@DBUSY WAIT ON COMPLETION
113C E1 A0 77 3442 TIO MIPVER(,@XR),@SPINA+@DERR TEST INITIALIZATION
113F C0 87 0025 3443 B $DISKN READ VOLUME LABEL
1143 11BE 1144 3444 DC AL2(MIPDK7) DPL ADDRESS
1145 C0 87 0025 3445 B $DISKN WAIT AND CHECK DISK ERRORS
1149 057F 114A 3446 DC AL2($WAITF) WAIT DPL ADDRESS
3447 *
114B 2D 02 1895 93 3448 CLC MIPBF1+$#TVOL,MIPVVL(3,@XR) DOES THIS LOOK LIKE A VALID
1150 F2 81 19 3449 JE MIPV22 * VOL LABEL ? JUMP IF YES
1153 2D 02 1895 90 3450 CLC MIPBF1+$#TVOL,MIPABC(MIPLAB,@XR) IS 'ABCDEF' PATCHED ?
1158 F2 81 45 3451 JE MIPV95 IF YES, GO COMPLETE IPL
3452 *
3453 *** CHECK FOR C.E. PACK ON R1 -- HARD HALT IF YES.
3454 *
115B BD 08 9D 3455 CLI MIPDK7+@DSAD(,@XR),#VOLR1 IS R1 THE DISK ?
115E F2 01 3F 3456 JNE MIPV95 IF NOT, GO COMPLETE IPL
3457 *
1161 3C 80 0476 3458 MIPHLT MVI $CIMSK,@NOP MASK AGAINST INTERRUPTS
3459 * $HPL CODE-@HCEPK ISSUE HARD HALT
1165 F0 1165 3460+ DC XL1'F0' INLINE HPL INSTRUCTION
1166 003C 1167 3461+ DC AL2(@HCEPK) HALT CODE
1168 C0 87 1161 3462 B MIPHLT SORRY, IT IS REALLY A HARD HALT
116C 3A 01 0DA9 3464 MIPV22 SBN MVDPRM,MVDRR1 SET BIT FOR SCRATCH FILE DELETE
1170 3D 02 03D7 3465 CLI $DKSIZ,$DK200 DO WE HAVE A 100 CYL DISK ?
1174 F2 84 03 3466 JH MIPV25 JUMP IF 200 CYL DISKS
1177 BC 67 58 3467 MVI MIPV25+@Q(,@XR),103 SET 100 CYL DISK SIZE
117A 3D CB 18EF 3468 MIPV25 CLI MIPBF1+$#TCYL,203 CORRECT CYL SIZE ?
117E F2 81 03 3469 JE MIPV30 JUMP IF CORRECT SIZE
1181 BC 00 A1 3470 MVI MIPPCF(,@XR),@ZERO SET WRONG CYL SIZE INDR
1184 AE 00 14 94 3471 MIPV30 ALC MIPV20+@Q(1,@XR),MIPVIN(,@XR) INCREMENT SIO TO NEXT DISK
1188 AE 00 9D 99 3472 ALC MIPDK7+@DSAD(1,@XR),MIPV01(,@XR) SET NEXT DISK ADDRESS
118C 0E 00 116D 116D 3473 ALC MIPV22+@Q,MIPV22+@Q(1) SHIFT LEFT FOR NEXT DRIVE
1192 C2 02 03C0 3474 LA $NUCBS,@XR RESTORE BASE REGISTER
1196 C0 87 0000 3475 MIPV90 B *-* RETURN TO CALLER
3476 *
3477 *** UNINITIALIZED DISK HANDLER.
3478 *
119A 3479 MIPVER EQU * ENTRY TO HANDLE UNINITIALIZED DISK
119A B1 A6 96 3480 LIO MIPSET(,@XR),@SPINA+@DFCR LOAD DISK CONTROL REGISTER

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## #MIPPE - READ VOLUME LABEL ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 79
	119D	F3	A0 00		3481	SIO	@SKCTL,@DSEEK+@SPINA			RESET ERROR LATCH
	11A0	3C	00 1992		3482	MIPV95	MVI MIPBF1+255,@ZERO			PREPARE TO CLEAR BUFFER
	11A4	0C	FE 1991 1992		3483	MVC	MIPBF1+254(255),MIPBF1+255			CLEAR BUFFER TO ZEROES
	11AA	C0	87 11C8		3484	B	MIPSTK			GO STACK UNINIT MSG
	11AE	E0	87 61		3485	B	MIPV30(,@XR)			GO EXIT ROUTINE
					3486	*				
					3487	***	MIPVOL CONSTANTS			
					3488	*				
				0003	3489	MIPLAB	EQU 3			LENGTH OF THREE
	11B1	ABCDEF		11B3	3490	MIPABC	DC XL(MIPLAB)'ABCDEF'			CONSTANT FOR 'ABCDEF'
	11B4	E5D6D3		11B6	3491	MIPVVL	DC CL3'VOL'			VOLUME LABEL CHECK CHARS
	11B7	08		11B7	3492	MIPVIN	DC XL1'08'			SIO SPINDLE ADDR INCREMENT
	11B8	11BA		11B9	3493	MIPSET	DC AL2(MIPDCF)			ADDRESS OF RESET ERROR DCF
				11BA	3494	MIPDCF	EQU *			START OF RESET DCF
	11BA	00000100		11BD	3495		DC XL4'00000100'			RESET ERROR DCF (SEEK 0 FORWARD)
				11BC	3496	MIPV01	EQU MIPDCF+2			CONSTANT OF ONE
					3497	*				
					3498	*IPDK7	\$DPL FUNC-@DGET,DADDR-#VOLR1,CNT-#@VLAB,CADDR-MIPBF1			
				11BE	3499	+MIPDK7	EQU *			DISK PARAMETER LIST
	11BE	01		11BE	3500	+	DC AL1(@DGET)			REQUESTED FUNCTION
	11BF	0008		11C0	3501	+	DC AL2(#VOLR1)			DISK ADDRESS
	11C1	01		11C1	3502	+	DC AL1(#@VLAB)			SECTOR COUNT
	11C2	1893		11C3	3503	+	DC AL2(MIPBF1)			BUFFER ADDRESS
					3504	+	*** END OF EXPANSION ***			
				0E48	3505	MIPOBS	EQU MIP200			OVERLAY BASE VALUE
				11C4	3506	MIPPCF	EQU *			PCF
	11C4	84200304		11C7	3507		DC XL4'84200304'			RETURN/TAB-RIGHT/RETURN

#MIPPE - ERROR MESSAGE STACKER

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 80
					3509	*****	*****	
					3510	*	THIS ROUTINE STACKS THE ERROR MESSAGE INDICATED IN THE	*
					3511	*	LOCATION MIPECD. IT ALSO INCREMENTS THE STACK COUNT.	*
					3512	*****	*****	
				11C8	3513	MIPSTK EQU *	ENTRY TO STACK AN ERROR MSG	
11C8	1C	01	1C01 6A		3514	MIPS10 MVC \$\$ERSK+1,MIPECD+1(2,@BR)	SET ERROR INDR IN STACK	
11CD	1E	01	11CB 6E		3515	ALC MIPS10+@OP1,MIPSC3(@CADDR,@BR)	POINT TO NEXT STACK ENTRY	
11D2	4E	00	6C 0464		3516	ALC MIPECT(1,@BR),\$C0001	SET STACK COUNT	
11D7	34	08	11DE		3517	ST MIPS50+@OP1,@ARR	GET RETURN ADDRESS	
11DB	C0	87	0000		3518	MIPS50 B *-*	RETURN TO CALLER	
					3520	*****	*****	
					3521	*	PATCH AREA #1	*
					3522	*****	*****	
					3523	*		
					3524	***	CALCULATE AREA LEFT IN THIS SECTOR	
					3525	*		
				11DF	3526	\$\$\$\$L1 EQU *	START OF PATCH AREA 1	
1200					3527	ORG *,256,0	SET LOC COUNTER TO NEXT SECTOR	
				1200	3528	\$\$\$\$T1 EQU *	DEFINE ADDR OF SCTR BOUNDARY	
11DF					3529	ORG \$\$\$\$L1	SET LOC COUNTER TO START OF	
					3530	*	* PATCH AREA	
11DF				11FF	3531	\$\$\$\$\$1 DS CL(\$\$\$\$T1-\$\$\$\$L1)	PATCH AREA	
					3532	*		

## MCNFIG - TEST CONFIGURATION RECORD

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 81
		3534		*****			*
		3535		*			*
		3536	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		3537	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
		3538		*			*
		3539		*****			*
		3540		*STATUS			*
		3541	*	VERSION 1 MODIFICATION 0			*
		3542		*			*
		3543		*FUNCTION			*
		3544	*	* MCNFIG TESTS THE CONFIGURATION RECORD FOR VALIDITY AND SETS THE			*
		3545	*	CORRESPONDING NUCLEUS INDICATORS FOR THE SPECIFIED DEVICES.			*
		3546	*	IF THE CRT IS CONFIGURED THE IOCS #DSPLY IS LOADED TO HIGH CORE			*
		3547	*	AND INITIALIZED.			*
		3548	*	* WHEN THE RECORD IS TESTED EACH I/O DEVICE INDICATED IS TESTED			*
		3549	*	TO DETERMINE IF IT IS ON THE SYSTEM. IF IT IS NOT PRESENT A			*
		3550	*	PROCESSOR CHECK WILL OCCUR (WORKS AS DESIGNED).			*
		3551	*	* MCNFIG WILL ALSO LOAD THE CORRECT KEYBOARD TABLE.			*
		3552		*			*
		3553		*ENTRY POINTS			*
		3554	*	THE ENTRY POINT IS MCNFIG. THE CALLING SEQUENCE IS AS FOLLOWS:			*
		3555	*	B MCNFIG			*
		3556	*	MIPPER IS ALWAYS EXECUTED BY NBLOAD			*
		3557		*			*
		3558		*INPUT			*
		3559	*	INPUT TO MCNFIG IS THE CONFIGURATION RECORD STARTING AT			*
		3560	*	LOCATION MCNBUF.			*
		3561		*			*
		3562		*OUTPUT			*
		3563	*	OUTPUT FROM MCNFIG CONSISTS OF THE CORRESPONDING INDICATORS SET			*
		3564	*	UP IN THE SYSTEM NUCLEUS. IF THE CRT IS SPECIFIED THE IOCS			*
		3565	*	#DSPLY IS LOADED TO HIGH CORE. THE APPROPRIATE KEYBOARD TABLE			*
		3566	*	IS ALSO SET UP.			*
		3567		*			*
		3568		*EXTERNAL REFERENCES			*
		3569	*	\$NUCBS - START OF COMMUNICATION AREA.			*
		3570	*	\$CONFIG - LOCATION OF THE CONFIGURATION INDICATORS.			*
		3571	*	#EXFTR - LOCATION OF THE CORE EXTENSION FACTOR.			*
		3572	*	\$CSDPL - ADDRESS OF SAVE RESTORE DPL.			*
		3573	*	\$IOIND - I/O STATUS INDICATOR.			*
		3574	*	\$PRDEV - ADDRESS OF SYSTEM PRINTER IOCS.			*
		3575	*	\$BSADR - LOCATION OF THE SYSTEM BASE ADDRESS.			*
		3576	*	\$DISKN - ENTRY TO DISK IOCS, DKDISK.			*
		3577	*	\$WAITF - WAIT DPL ADDRESS.			*
		3578	*	\$CRTAD - ENTRY TO RELOCATE CRT ROUTINE.			*
		3579	*	\$RMGRN - LOCATION OF SOFTWARE RIGHT MARGIN VALUE.			*
		3580	*	\$C0001 - LOCATION OF 2 BYTE CONSTANT OF ONE.			*
		3581	*	\$KEYBD - LOCATION OF KEYBOARD TYPE INDICATOR.			*
		3582	*	\$\$DATB - LOCATION OF KEYBOARD TYPE IN DPRES.			*
		3583	*	\$DKSIZ - DISK SIZE INDICATOR.			*
		3584		*			*
		3585		*EXITS, NORMAL			*
		3586	*	NORMAL RETURN IS TO THE CALLING PROGRAM AT THE FIRST			*
		3587	*	INSTRUCTION FOLLOWING THE BRANCH TO MCNFIG.			*
		3588		*			*
		3589		*EXITS, ERROR			*

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		3590	*	AN EXIT IS TAKEN TO \$C0001 TO FORCE A MACHINE PROC CHECK WITH	*		
		3591	*	THE FIELD INDICATORS NOTING THE DEVICE IN ERROR.	*		
		3592	*	THE ERROR MESSAGE NUMBERS ARE STACKED AT \$\$ERSK.	*		
		3593	*		*		
		3594	*	*TABLES/WORK AREAS	*		
		3595	*	N/A	*		
		3596	*		*		
		3597	*	*ATTRIBUTES	*		
		3598	*	RELOCATABLE	*		
		3599	*	REUSABLE	*		
		3600	*		*		
		3601	*	*CHARACTER CODE DEPENDENCY	*		
		3602	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*		
		3603	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*		
		3604	*		*		
		3605	*	*NOTES	*		
		3606	*	ERROR PROCEDURES	*		
		3607	*	MCNFIG WILL GENERATE A MACHINE PROC CHECK IF A DEVICE IS	*		
		3608	*	CONFIGURED BUT IS NOT ON THE SYSTEM. WHEN THE DEVICE IS A	*		
		3609	*	FIELD INDICATOR IS SET TO INDICATE THE DEVICE IN ERROR.	*		
		3610	*	THE 1 EXCEPTION TO THIS PROCEDURE IS IF DISK DRIVE 2 IS TESTED	*		
		3611	*	AND IT IS NOT ON THE SYSTEM THE DISK NOT READY WILL BE LIT.	*		
		3612	*	THE FIELD INDICATORS ARE AS FOLLOWS:	*		
		3613	*	X'80' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3614	*	X'40' - WRONG DISK CAPACITY ON DRIVE 2	*		
		3615	*	X'20' - WRONG CORE SIZE	*		
		3616	*	X'10' - WRONG SIZE PRINTER	*		
		3617	*	X'08' - WRONG TYPE PRINTER	*		
		3618	*	X'04' - MISSING CRT	*		
		3619	*	X'04' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3620	*	X'80' - WRONG DISK CAPACITY ON DRIVE 1	*		
		3621	*		*		
		3622	*	REGISTER USAGE	*		
		3623	*	@BR IS USED TO REFERENCE THE SYSTEM NUCLEUS.	*		
		3624	*	@XR IS USED TO REFERENCE THE CONFIGURATION RECORD.	*		
		3625	*	THEY ARE -NOT- SAVED OR RESTORED.	*		
		3626	*		*		
		3627	*	SAVED/RESTORED AREAS	*		
		3628	*	N/A	*		
		3629	*		*		
		3630	*	MODIFICATION CONSIDERATIONS	*		
		3631	*	N/A	*		
		3632	*		*		
		3633	*	REQUIRED MODULES	*		
		3634	*	@SYSEQ - GENERAL SYSTEM EQUATES.	*		
		3635	*	@FXDEQ - NUCLEUS LOCATION EQUATES.	*		
		3636	*	@CANEQ - TRANSCIENT LOCATION EQUATES.	*		
		3637	*	@CNFEQ - CONFIGURATION EQUATES.	*		
		3638	*	\$V\$EQU - VIRTUAL MEMORY EQUATES.	*		
		3639	*		*		
		3640	*	*OTHER	*		
		3641	*	N/A	*		
		3642	*		*		
		3643	*	*****	*		

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 83
					3645	*****	*****	
					3646	*	THIS ROUTINE TESTS THE CONFIGURATION RECORD AT LOCATION MCNBUF. *	
					3647	*	IF IN ERROR THE CORRESPONDING FIELD INDICATORS WILL BE LIT AND *	
					3648	*	A PROC CHECK GENERATED. IF CORRECT, THE CORRESPONDING NUCLEUS *	
					3649	*	INDICATOR WILL BE TURNED ON. THIS ROUTINE MAY BE REUSED. *	
					3650	*****	*****	
				1893	3651		USING MCNBUF,@XR INDEX REG POINTS TO BUFFER	
				03C0	3652		USING \$NUCBS,@BR BASE ADDRESS	
				1200	3653	MCNFIG	EQU * MODULE ENTRY POINT	
1200	C2	01	03C0		3654		LA \$NUCBS,@BR LOAD BASE REGISTER	
1204	C2	02	1893		3655		LA MCNBUF,@XR *	
1208	7C	00	1D		3656		MVI \$CONFIG(,@BR),@ZERO SET 8KBYTE CORE INDR	
120B	34	08	146D		3657		ST MCN500+@OP1,@ARR SAVE RETURN ADDRESS	
120F	BD	00	3C		3658		CLI @#CSIZ(,@XR),@ZERO IS THERE A CONFIG RECORD ?	
1212	C0	81	145A		3659		BE MCN380 EXIT IF NOT	
1216	7C	00	7B		3660		MVI \$EXFTR(,@BR),@ZERO RESET EXTENSION FACTOR	
1219	3C	1A	0511		3661		MVI \$CSDPL+@DCNT,MCN08C SET SAVE CORE SECTOR COUNT	
121D	BD	01	3C		3662		CLI @#CSIZ(,@XR),@#C08K IS IT 8KBYTE ?	
1220	F2	81	2B		3663		JE MCN100 YES, SKIP CORE TEST	
1223	7C	10	7B		3664		MVI \$EXFTR(,@BR),MCN12K SET CORE EXTENSION FOR 12KBYTE	
1226	7C	04	1D		3665		MVI \$CONFIG(,@BR),\$12K SET 12KBYTE CORE INDR	
1229	BD	02	3C		3666		CLI @#CSIZ(,@XR),@#C12K IS IT 12KBYTE ?	
122C	F2	81	0D		3667		JE MCN050 YES, GO TEST IT	
122F	BD	04	3C		3668		CLI @#CSIZ(,@XR),@#C16K IS IT 16KBYTE ? IF NOT ASSUME	
1232	C0	01	145A		3669		BNE MCN380 * MINIMUM CONFIGURATION	
1236	7C	20	7B		3670		MVI \$EXFTR(,@BR),MCN16K SET CORE EXTENSION FOR 16KBYTE	
1239	7C	02	1D		3671		MVI \$CONFIG(,@BR),\$16K SET 16KBYTE CORE INDR	
123C	31	12	1470		3672	MCN050	LIO MCNCOR,@FLDIN SET FIELD INDRS FOR CORE CHECK	
1240	1E	00	1247 7B		3673		ALC MCN060+@D1(1),\$EXFTR(,@BR) CALCULATE LAST BYTE OF CORE	
					3674	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
1245	3A	00	1FFF		3675	MCN060	SBN @MINCR-1,@ZERO TEST CORE SIZE	
1249	1F	00	1247 7B		3676		SLC MCN060+@D1(1),\$EXFTR(,@BR) RESTORE ORIGINAL VALUE	
124E	7B	40	12		3677	MCN100	SBF \$IOIND(,@BR),\$DTRDR SET NO DATA RECORDER	
1251	B8	40	20		3678		TBN @#DATA(,@XR),@#DATB IS DATA RECORDER ON SYSTEM ?	
1254	F2	90	2C		3679		JF MCN130 SKIP TEST IF NOT	
1257	31	12	1474		3680		LIO MCNDAT,@FLDIN SET FIELD INDRS FOR DATA RCDR	
					3681	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
125B	71	F0	8B		3682		LIO \$PRDEV(,@BR),@LO37B ATTEMPT TO LOAD ITS LSR	
125E	7A	40	12		3683		SBN \$IOIND(,@BR),\$DTRDR SET RCDR ON SYSTEM SYSTEM	
1261	30	F2	1484		3684		SNS MCNWRK,MCNDRS SENSE DATA RECORDER	
1265	38	02	1484		3685		TBN MCNWRK,MCNDRT WHICH TYPE OF DATA RCDR ?	
1269	F2	90	0D		3686		JF MCN120 BRANCH IF IBM 0129	
126C	B8	08	20		3687		TBN @#DATA(,@XR),MCNBCD IS AN IBM 5496 CONFIGURED ?	
					3688	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
126F	D0	90	A4		3689		BF \$C0001(,@BR) NO, GENERATE A PROC CHECK	
1272	3B	80	03DD		3690		SBF \$CONFIG,\$BIGCD INDICATE IBM 5496 ON SYSTEM	
1276	F2	87	0A		3691		J MCN130 CONTINUE	
1279	B8	48	20		3692	MCN120	TBN @#DATA(,@XR),@#DATC IS AN IBM 0129 CONFIGURED ?	
					3693	***	A PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
127C	D0	90	A4		3694		BF \$C0001(,@BR) NO, GENERATE A PROC CHECK	
127F	3A	80	03DD		3695		SBN \$CONFIG,\$BIGCD INDICATE IBM 0129 ON SYSTEM	
1283	78	02	12		3696	MCN130	TBN \$IOIND(,@BR),\$CRTAV WAS THE CRT ON THE SYSTEM ?	
1286	F2	90	03		3697		JF MCN150 DON'T REFERENCE IT IF NOT	
1289	F3	90	00		3698		SIO 0,@CRTQ TURN THE DISPLAY OFF	
128C	7B	02	12		3699	MCN150	SBF \$IOIND(,@BR),\$CRTAV SET NO CRT ON SYSTEM INDR	
128F	B8	40	28		3700		TBN @#CRTD(,@XR),@#CRTB IS CRT ON SYSTEM ?	



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	1292	F2	90 38		3701	JF	MCN200			SKIP TEST IF NOT
	1295	7A	06 12		3702	SBN	\$IOIND(, @BR), \$CRTAV+\$CRTNO			SET CRT ON SYSTEM INDR
	1298	4F	00 7B 1476		3703	SLC	\$EXFTR(1, @BR), MCNEXF			RECALCULATE EXTENSION FACTOR
	129D	F2	80 2D		3704	MCN155 JC	MCN200, @NOP			SKIP SET UP IF DONE
	12A0	3C	87 129E		3705	MVI	MCN155+@Q, @UCB			SET DONE INDR
	12A4	1E	00 147E 7B		3706	ALC	MCNDK1+@DBFR1(1), \$EXFTR(, @BR)			CALCULATE CRT LOAD ADDR
	12A9	0E	01 147C 0587		3707	ALC	MCNDK1+@DSAD(@DADDR), \$BSADR			GET TRUE DISK ADDR
	12AF	31	12 1473		3708	LIO	MCNCRT, @FLDIN			SET FIELD INDRS FOR CRT
	12B3	C0	87 0025		3709	B	\$DISKN			LOAD DSPLYN
	12B7	147A		12B8	3710	DC	AL2(MCNDK1)			DPL ADDRESS
	12B9	C0	87 0025		3711	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	12BD	057F		12BE	3712	DC	AL2(\$WAITF)			WAIT DPL ADDRESS
					3713	*				
	12BF	4C	01 8D 147F		3714	MVC	\$CRTAD(@CADDR, @BR), MCNDK1+@DBFR2			SET CRT EXECUTION ADDR
	12C4	1C	01 12CC 8D		3715	MVC	MCN160+@OP1(@CADDR), \$CRTAD(, @BR)			SET BR ADDRESS
	12C9	C0	87 0000		3716	MCN160 B	*-*			GO INITIALIZE DSPLYN
	12CD	1E	00 0511 7B		3717	MCN200 ALC	\$CSDPL+@DCNT(1), \$EXFTR(, @BR)			SET NPAUSE CORE SAVE CNT
	12D2	7B	80 12		3718	SBN	\$IOIND(, @BR), \$LNPTR			SET LINE PRINTER INDR OFF
	12D5	30	EB 1484		3719	SNS	MCNWRK, MCNSTS			SENSE PRINTER STATUS
	12D9	31	12 1471		3720	LIO	MCNPTR, @FLDIN			SET FIELD INDRS FOR PRINTER
	12DD	B8	02 16		3721	TBN	@#MTYP(, @XR), @#MP22			22 INCH PRINTER ON SYSTEM ?
	12E0	F2	10 0C		3722	JT	MCN210			JUMP IF YES
	12E3	7D	84 00		3723	CLI	\$RMRGN(, @BR), MCN13I			IS MARGIN GREATER THEN 13 ?
	12E6	F2	04 10		3724	JNH	MCN220			DON'T CHANGE IT IF NO
	12E9	7C	84 00		3725	MVI	\$RMRGN(, @BR), MCN13I			SET 13 INCH PRINTER WIDTH
	12EC	F2	87 0A		3726	J	MCN220			GO TEST LINE PRINTER
	12EF	39	80 1483		3727	MCN210 TBF	MCNWRK-1, MCNP22			IS 22 INCH PRINTER AVAILABLE ?
					3728	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.			
	12F3	D0	81 A4		3729	BE	\$C0001(, @BR)			GENERATE A PROC CHECK IF NOT
	12F6	7A	01 1D		3730	SBN	\$CONFIG(, @BR), \$22IMP			SET 22 INCH INDR
	12F9	B8	04 16		3731	MCN220 TBN	@#MTYP(, @XR), @#MTLP			IS IT A LINE PRINTER ?
	12FC	F2	90 0E		3732	JF	MCN250			SKIP TEST IF NOT
	12FF	31	12 1472		3733	LIO	MCNLPR, @FLDIN			SET FIELD INDRS FOR LINE PRT
	1303	39	20 1483		3734	TBF	MCNWRK-1, MCNMLP			IS LINE PRINTER AVAlABLE ?
					3735	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.			
	1307	D0	90 A4		3736	BF	\$C0001(, @BR)			GENERATE A PROC CHECK IF NOT
	130A	7A	80 12		3737	SBN	\$IOIND(, @BR), \$LNPTR			SET LINE PRINTER INDR
				130D	3739	MCN250 EQU	*			SET UP KEYBOARD TABLES
	130D	31	12 1475		3740	LIO	MCNOFF, @FLDIN			TURN OFF FIELD INDR
	1311	B8	40 19		3741	TBN	@#KEYS(, @XR), @#KE08			8 COMMAND KEYS ?
	1314	F2	10 03		3742	JT	MCN255			DON'T SET INDR IF YES
	1317	7A	08 1D		3743	SBN	\$CONFIG(, @BR), \$16CKY			SET 16 COMMAND KEYS INDR
	131A	6C	00 21 1A		3744	MCN255 MVC	\$KEYBD(, @BR), @#KNAT(1, @XR)			SET KYBRD NUMBER IN NUCLEUS
	131E	2D	00 0BBF 1A		3745	CLC	\$\$DATB, @#KNAT(, @XR)			ARE WE USING CORRECT KEYBOARD ?
	1323	F2	81 E3		3746	JE	MCN300			SKIP PLACING KEYBOARDS
	1326	F2	80 22		3747	MCN258 JC	MCN263, @NOP			JUMP IF SPF DADDRS SET
	1329	3C	87 1327		3748	MVI	MCN258+@Q, @UCB			SET SPF DADDRS 'SET' INDR
	132D	3C	0A 1477		3749	MVI	MCNLPC, MCNTBC			RELOCATE 10 DADDRS
	1331	C2	01 1487		3750	LA	MCNDK3+@DSAD, @BR			POINT TO 1ST DPL DADDR
	1335	4E	01 00 0587		3751	MCN260 ALC	0(@DADDR, @BR), \$BSADR			CALCULATE TRUE SPF DADDR
	133A	D2	01 06		3752	LA	@DPLNG(, @BR), @BR			POINT TO NEXT DPL
	133D	0F	00 1477 0464		3753	SLC	MCNLPC(1), \$C0001			ARE WE DONE ?
	1343	C0	84 1335		3754	BH	MCN260			LOOP IF NOT
	1347	C2	01 03C0		3755	LA	\$NUCBS, @BR			RESTORE BASE REGISTER
	134B	BD	09 1A		3756	MCN263 CLI	@#KNAT(, @XR), @#UKDM			IS THIS A GOOD KEYBOARD ?

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	134E	F2	84	B8	3757	JH	MCN300			SKIP PLACEMENT IF NOT
	1351	BD	00	1A	3758	CLI	@#KNAT(, @XR), @ZERO			ARE YOU REALLY SURE ?
	1354	F2	81	B2	3759	JE	MCN300			SKIP PLACEMENT IF NOT
	1357	0C	01	1385 1481	3760	MVC	MCN265+@OP2, MCNDK2+1(@CADDR)			ZERO OUT DATA TABLE DISP
	135D	28	01	1385 1A	3761	MZN	MCN265+@OP2, @#KNAT(, @XR)			PLACE DATA TABLE DISP IN MVC
	1362	0E	01	1385 1385	3762	ALC	MCN265+@OP2(@CADDR), MCN265+@OP2			SHIFT BITS LEFT
	1368	0E	01	1385 1385	3763	ALC	MCN265+@OP2(@CADDR), MCN265+@OP2			TO GET TABLE DISP
	136E	0E	01	1385 1479	3764	ALC	MCN265+@OP2(@CADDR), MCNDBA			CALCULATE DATA TABLE ADDR
	1374	C0	87	0025	3765	B	\$DISKN			READ SYSTEM DATA TABLES TO BUFFER
	1378	1485			1379	3766	DC	AL2(MCNDK3)		DPL ADDRESS
	137A	C0	87	0025	3767	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	137E	057F			137F	3768	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3769	*				
	1380	0C	3F	19D2 0000	3770	MCN265 MVC	MCNBUF+MCNTBD(MCNTBL), *-*			SAVE CORRECT DATA TABLE
	1386	C0	87	0025	3771	B	\$DISKN			READ DEPRES DATA TABLE
	138A	148B			138B	3772	DC	AL2(MCNDK4)		DPL ADDRESS
	138C	C0	87	0025	3773	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	1390	057F			1391	3774	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3775	*				
	1392	0C	3F	1B92 19D2	3776	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	1398	1C	00	1B52 21	3777	MVC	MCNBUF+MCNTID, \$KEYBD(1, @BR)			SET KYBRD TYPE INDR IN DEPRES
	139D	C0	87	0025	3778	B	\$DISKN			WRITE DEPRES DATA TABLE TO DISK
	13A1	1491			13A2	3779	DC	AL2(MCNDK5)		DPL ADDRESS
					3780	*				
	13A3	C0	87	0025	3781	B	\$DISKN			READ VM STD DFKEYNS DATA TABLE TO DISK
	13A7	1497			13A8	3782	DC	AL2(MCNDK6)		DPL ADDRESS
	13A9	C0	87	0025	3783	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13AD	057F			13AE	3784	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3785	*				
	13AF	0C	3F	1B92 19D2	3786	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13B5	C0	87	0025	3787	B	\$DISKN			WRITE VM DFKEYN
	13B9	149D			13BA	3788	DC	AL2(MCNDK7)		DPL ADDRESS
					3789	*				
	13BB	C0	87	0025	3790	B	\$DISKN			READ VM FTD DFKGYN TABLE
	13BF	14A3			13C0	3791	DC	AL2(MCNDK8)		DPL ADDRESS
	13C1	C0	87	0025	3792	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13C5	057F			13C6	3793	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3794	*				
	13C7	0C	3F	1B92 19D2	3795	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13CD	C0	87	0025	3796	B	\$DISKN			WRITE VM DFKEYN
	13D1	14A9			13D2	3797	DC	AL2(MCNDK9)		DPL ADDRESS
					3798	*				
	13D3	C0	87	0025	3799	B	\$DISKN			READ DCAL KEYBOARD TABLES
	13D7	14AF			13D8	3800	DC	AL2(MCNDKA)		DPL ADDRESS
	13D9	C0	87	0025	3801	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13DD	057F			13DE	3802	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3803	*				
	13DF	0C	01	13EA 1385	3804	MVC	MCN268+@OP2(@CADDR), MCN265+@OP2			SET ADDR OF TABLE
	13E5	0C	3F	19D2 0000	3805	MCN268 MVC	MCNBUF+MCNTBD(MCNTBL), *-*			SAVE DATA TABLE FOR DCAL
	13EB	C0	87	0025	3806	B	\$DISKN			READ DCAL DATA TABLE SECTOR
	13EF	14B5			13F0	3807	DC	AL2(MCNDKB)		DPL ADDRESS
	13F1	C0	87	0025	3808	B	\$DISKN			WAIT AND CHECK DISK ERRORS
	13F5	057F			13F6	3809	DC	AL2(\$WAITF)		WAIT DPL ADDRESS
					3810	*				
	13F7	0C	3F	1B92 19D2	3811	MVC	MCNBUF+3*MCNSTR-1(MCNTBL), MCNBUF+MCNTBD			SET DATA TABLE
	13FD	C0	87	0025	3812	B	\$DISKN			WRITE DCAL DATA SECTOR

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1401	14BB			1402	3813	DC	AL2(MCNDKC)	DPL ADDRESS
1403	C0 87 0025				3814	MCN270 B	\$DISKN	WAIT AND CHECK DISK ERRORS
1407	057F			1408	3815	DC	AL2(\$WAITF)	WAIT DPL ADDRESS
					3816	*		
1409	31 12 146E				3817	MCN300 LIO	MCNDHF,@FLDIN	SET FIELD INDRS FOR DRIVE 1
140D	7C 02 17				3818	MVI	\$DKSIZ(,@BR),\$DK200	SET DISK FOR 1/2 CAPACITY
1410	B8 08 1B				3819	MCN310 TBN	@#DSIZ(,@XR),@#C200	FULL CAPACITY ?
1413	F2 90 0E				3820	JF	MCN320	SHIP TEST IF NO
1416	30 A2 1484				3821	SNS	MCNWRK,@DVST1+@SPINA	SENSE BYTES 0 & 1
141A	38 08 1484				3822	TBN	MCNWRK,MCN10C	LESS THEN FULL CAP ?
					3823	*** A	PROCESSOR CHECK MIGHT OCCUR AFTER NEXT INSTRUCTION.	
141E	D0 10 A4				3824	BT	\$C0001(,@BR)	GENERATE A PROC CHECK IF YES
1421	7C 04 17				3825	MVI	\$DKSIZ(,@BR),\$DK400	SET INDR FOR FULL CAPACITY
1424	B9 11 1B				3826	MCN320 TBF	@#DSIZ(,@XR),@#FRR2+@#FR12	TWO DRIVES ?
1427	F2 10 3C				3827	JT	MCN400	SKIP TEST IF NOT
142A	31 12 146F				3828	LIO	MCNDR2,@FLDIN	SET FIELD INDRS FOR DRIVE 2
142E	30 B2 1484				3829	SNS	MCNWRK,@DVST1+@SPINB	SENSE DRIVE 2
1432	38 40 1483				3830	TBN	MCNWRK-1,@DERIN	INTERVENTION REQUIRED ?
1436	F2 10 17				3831	JT	MCN350	GO LIGHT DISK INDR
1439	7C 08 17				3832	MVI	\$DKSIZ(,@BR),\$DK600	SET DISK SIZE INDR FOR 600 CYLS
143C	B8 01 1B				3833	TBN	@#DSIZ(,@XR),@#FR12	FIXED DISK ON SYSTEM ?
143F	F2 90 24				3834	JF	MCN400	SKIP TEST IF NOT
1442	30 BA 1484				3835	SNS	MCNWRK,@SPINB+MCNFIK	SENSE FIXED DISK
1446	7C 10 17				3836	MVI	\$DKSIZ(,@BR),\$DK800	SET 800 CYLS INDR
1449	38 40 1483				3837	TBN	MCNWRK-1,@DERIN	INTERVENTION REQUIRED ?
144D	F2 90 16				3838	JF	MCN400	EXIT IF OKE
1450	C0 87 0025				3839	MCN350 B	\$DISKN	GO LIGHT DISK INDR
1454	1480			1455	3840	DC	AL2(MCNDK2)	DPL ADDRESS
					3841	*		
1456	C0 87 1424				3842	B	MCN320	GO RETRY TEST
145A	BC 00 3C				3844	MCN380 MVI	@#CSIZ(,@XR),@ZERO	SET NO ONFIG RECORD INDR
145D	7C 00 7B				3845	MVI	\$EXFTR(,@BR),@ZERO	RESET EXTENSION FACTOR
1460	7C 00 1D				3846	MVI	\$CONFIG(,@BR),@ZERO	SET CONFIG INDRS OFF
1463	7C 84 00				3847	MVI	\$RMRGN(,@BR),MCN13I	SET PRINTER 13 INCH WIDTH
1466	31 12 1475				3848	MCN400 LIO	MCNOFF,@FLDIN	TURN OOF FIELD INDRS
146A	C0 87 0000				3849	MCN500 B	*-*	RETURN TO CALLER
				0008	3851	MCNBCE	EQU X'08'	BIG CARD BIT
				0010	3852	MCN12K	EQU X'10'	12KBYTE CORE EXTENSION FACTOR
				0020	3853	MCN16K	EQU X'20'	16KBYTE CORE EXTENSION FACTOR
				001A	3854	MCN08C	EQU 32-6	SECTOR COUNT FOR 8K CORE SAVE
				002A	3855	MCN12C	EQU 48-6	SECTOR COUNT FOR 12K CORE SAVE
				003A	3856	MCN16C	EQU 64-6	SECTOR COUNT FOR 16K CORE SAVE
				0084	3857	MCN13I	EQU 132	13 INCH RIGHT MARGIN
				00DC	3858	MCN22I	EQU 220	22 INCH RIGHT MARGIN
				0080	3859	MCN50C	EQU X'80'	50 CYL DISK INDR BIT
				0008	3860	MCN10C	EQU X'08'	100 CYL DISK INDR BIT
				000A	3861	MCNFIK	EQU X'0A'	FIXED DISK M+N CODE
				00EB	3862	MCNSTS	EQU X'EB'	SENSE PRINTER TYPE Q-CODE
				0080	3863	MCNP22	EQU X'80'	PRINTER SIZE INDR BIT
				0020	3864	MCNMLP	EQU X'20'	PRINTER TYPE INDR BIT
				0040	3865	MCNTBL	EQU 64	LENGTH OF ONE KEYB DATA TABLE
				0100	3866	MCNSTR	EQU 256	SIZE OF ONE DISK SECTOR
				013F	3867	MCNTBD	EQU 255+MCNTBL	DISP OF DATA TABLE FROM MCNBUF
				000A	3868	MCNTBC	EQU 10	NUMBER OF DPLS TO RELOCATE

## MCNFIG - TEST CONFIGURATION RECORD

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 87
		015C	3869	MCNTB4	EQU	#\$DPRI+4*4
		02BF	3870	MCNTID	EQU	3*MCNSTR-1-MCNTBL
			3871	*		
		00F2	3872	MCNDRS	EQU	X'F2'
		0002	3873	MCNDRT	EQU	X'02'
			3874	*		
146E	80	146E	3875	MCNDHF	DC	XL1'80'
146F	40	146F	3876	MCNDR2	DC	XL1'40'
1470	20	1470	3877	MCNCOR	DC	XL1'20'
1471	10	1471	3878	MCNPTR	DC	XL1'10'
1472	08	1472	3879	MCNLPR	DC	XL1'08'
1473	04	1473	3880	MCNCRT	DC	XL1'04'
1474	02	1474	3881	MCNDAT	DC	XL1'02'
1475	00	1475	3882	MCNOFF	DC	XL1'00'
1476	07	1476	3883	MCNEXF	DC	XL1'07'
1477		1477	3884	MCNLPC	DS	IL1
1478	1A92	1479	3885	MCNDBA	DC	AL2(MCNBUF+2*MCNSTR-1)
			3886	*		
			3887	*CNDK1	\$DPL	FUNC-@DGET,DADDR-#\$DSPL,CNT-#\$@DSP,CADDR-MCNCA1
		147A	3888+MCNDK1	EQU	*	DISK PARAMETER LIST
147A	01	147A	3889+	DC	AL1(@DGET)	REQUESTED FUNCTION
147B	0240	147C	3890+	DC	AL2(#\$DSPL)	DISK ADDRESS
147D	04	147D	3891+	DC	AL1(#\$@DSP)	SECTOR COUNT
147E	0F00	147F	3892+	DC	AL2(MCNCA1)	BUFFER ADDRESS
			3893+***	END OF EXPANSION	***	
		0F00	3894	MCNCA1	EQU	X'0F00'
		1480	3895	MCNDK2	EQU	*
1480	000002	1482	3896		DC	XL3'000002'
1483		1484	3897	MCNWRK	DS	CL2
			3898	*CNDK3	\$DPL	FUNC-@DGET,DADDR-#\$TSYK,CNT-#\$@TSY,CADDR-MCNBUF+2*MCNSTR
		1485	3899+MCNDK3	EQU	*	DISK PARAMETER LIST
1485	01	1485	3900+	DC	AL1(@DGET)	REQUESTED FUNCTION
1486	0250	1487	3901+	DC	AL2(#\$TSYK)	DISK ADDRESS
1488	03	1488	3902+	DC	AL1(#\$@TSY)	SECTOR COUNT
1489	1A93	148A	3903+	DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3904+***	END OF EXPANSION	***	
			3905	*CNDK4	\$DPL	FUNC-@DGET,DADDR-MCNTB4,CNT-01,CADDR-MCNBUF+2*MCNSTR
		148B	3906+MCNDK4	EQU	*	DISK PARAMETER LIST
148B	01	148B	3907+	DC	AL1(@DGET)	REQUESTED FUNCTION
148C	015C	148D	3908+	DC	AL2(MCNTB4)	DISK ADDRESS
148E	01	148E	3909+	DC	AL1(01)	SECTOR COUNT
148F	1A93	1490	3910+	DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3911+***	END OF EXPANSION	***	
			3912	*CNDK5	\$DPL	FUNC-@DPUT,DADDR-MCNTB4,CNT-01,CADDR-MCNBUF+2*MCNSTR
		1491	3913+MCNDK5	EQU	*	DISK PARAMETER LIST
1491	02	1491	3914+	DC	AL1(@DPUT)	REQUESTED FUNCTION
1492	015C	1493	3915+	DC	AL2(MCNTB4)	DISK ADDRESS
1494	01	1494	3916+	DC	AL1(01)	SECTOR COUNT
1495	1A93	1496	3917+	DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
			3918+***	END OF EXPANSION	***	
			3919	*CNDK6	\$DPL	FUNC-@DGET,DADDR-V\$KBTS,CNT-01,CADDR-MCNBUF+2*MCNSTR
		1497	3920+MCNDK6	EQU	*	DISK PARAMETER LIST
1497	01	1497	3921+	DC	AL1(@DGET)	REQUESTED FUNCTION
1498	0DAC	1499	3922+	DC	AL2(V\$KBTS)	DISK ADDRESS
149A	01	149A	3923+	DC	AL1(01)	SECTOR COUNT
149B	1A93	149C	3924+	DC	AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS



## MCNFIG - TEST CONFIGURATION RECORD

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 24/05/21 PAGE 88
				3925+	***	END OF EXPANSION ***	
				3926	*CNDK7	\$DPL FUNC-@DPUT,DADDR-V\$KBTS,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			149D	3927+	MCNDK7	EQU *	DISK PARAMETER LIST
149D	02		149D	3928+		DC AL1(@DPUT)	REQUESTED FUNCTION
149E	0DAC		149F	3929+		DC AL2(V\$KBTS)	DISK ADDRESS
14A0	01		14A0	3930+		DC AL1(01)	SECTOR COUNT
14A1	1A93		14A2	3931+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3932+	***	END OF EXPANSION ***	
				3933	*CNDK8	\$DPL FUNC-@DGET,DADDR-V\$KBTL,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14A3	3934+	MCNDK8	EQU *	DISK PARAMETER LIST
14A3	01		14A3	3935+		DC AL1(@DGET)	REQUESTED FUNCTION
14A4	1EAC		14A5	3936+		DC AL2(V\$KBTL)	DISK ADDRESS
14A6	01		14A6	3937+		DC AL1(01)	SECTOR COUNT
14A7	1A93		14A8	3938+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3939+	***	END OF EXPANSION ***	
				3940	*CNDK9	\$DPL FUNC-@DPUT,DADDR-V\$KBTL,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14A9	3941+	MCNDK9	EQU *	DISK PARAMETER LIST
14A9	02		14A9	3942+		DC AL1(@DPUT)	REQUESTED FUNCTION
14AA	1EAC		14AB	3943+		DC AL2(V\$KBTL)	DISK ADDRESS
14AC	01		14AC	3944+		DC AL1(01)	SECTOR COUNT
14AD	1A93		14AE	3945+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3946+	***	END OF EXPANSION ***	
				3947	*CNDKA	\$DPL FUNC-@DGET,DADDR-#\$TDCK,CNT-#\$@TDC,CADDR-MCNBUF+2*MCNSTR	
			14AF	3948+	MCNDKA	EQU *	DISK PARAMETER LIST
14AF	01		14AF	3949+		DC AL1(@DGET)	REQUESTED FUNCTION
14B0	0350		14B1	3950+		DC AL2(#\$TDCK)	DISK ADDRESS
14B2	03		14B2	3951+		DC AL1(#\$@TDC)	SECTOR COUNT
14B3	1A93		14B4	3952+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3953+	***	END OF EXPANSION ***	
				3954	*CNDKB	\$DPL FUNC-@DGET,DADDR-#\$TVKB,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14B5	3955+	MCNDKB	EQU *	DISK PARAMETER LIST
14B5	01		14B5	3956+		DC AL1(@DGET)	REQUESTED FUNCTION
14B6	0BAC		14B7	3957+		DC AL2(#\$TVKB)	DISK ADDRESS
14B8	01		14B8	3958+		DC AL1(01)	SECTOR COUNT
14B9	1A93		14BA	3959+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3960+	***	END OF EXPANSION ***	
				3961	*CNDKC	\$DPL FUNC-@DPUT,DADDR-#\$TVKB,CNT-01,CADDR-MCNBUF+2*MCNSTR	
			14BB	3962+	MCNDKC	EQU *	DISK PARAMETER LIST
14BB	02		14BB	3963+		DC AL1(@DPUT)	REQUESTED FUNCTION
14BC	0BAC		14BD	3964+		DC AL2(#\$TVKB)	DISK ADDRESS
14BE	01		14BE	3965+		DC AL1(01)	SECTOR COUNT
14BF	1A93		14C0	3966+		DC AL2(MCNBUF+2*MCNSTR)	BUFFER ADDRESS
				3967+	***	END OF EXPANSION ***	

## SCANIT - MODULE PROLOGUE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 89
		3969		*****			*
		3970		*			*
		3971	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		3972	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
		3973		*			*
		3974		*****			*
		3975		*STATUS			*
		3976	*	VERSION 1 MODIFICATION 0			*
		3977		*			*
		3978		*FUNCTION			*
		3979	*	THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND			*
		3980	*	RETURN A POINTER TO THE FIRST CHARACTER THAT IS NOT A DELIMITER.			*
		3981		*			*
		3982		*ENTRY POINTS			*
		3983	*	* THE ENTRY POINT IS SCANIT.			*
		3984	*	* THE CALLING SEQUENCE IS AS FOLLOWS:			*
		3985	*	B SCANIT			*
		3986	*	WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE			*
		3987	*	EXAMINED.			*
		3988		*			*
		3989		*INPUT			*
		3990	*	NONE			*
		3991		*			*
		3992		*OUTPUT			*
		3993	*	NONE			*
		3994		*			*
		3995		*EXTERNAL REFERENCES			*
		3996	*	\$CAERR - ERROR CODE SAVE AREA.			*
		3997		*			*
		3998		*EXITS, NORMAL			*
		3999	*	NORMAL RETURN FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO			*
		4000	*	SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A ZERO IF			*
		4001	*	NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR MORE			*
		4002	*	DELIMITERS WERE SCANNED.			*
		4003		*			*
		4004		*EXITS, ERROR			*
		4005	*	ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO			*
		4006	*	SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW COND.			*
		4007		*			*
		4008		*TABLES/WORK AREAS			*
		4009	*	* SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED			*
		4010	*	* SCAMMA - LOCATION WHERE SCACOM MAY BE MOVED IF ONE COMMA IS			*
		4011	*	ALSO TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO			*
		4012	*	SCAMMA INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIM.			*
		4013		*			*
		4014		*ATTRIBUTES			*
		4015	*	RELOCATABLE			*
		4016	*	REUSABLE			*
		4017		*			*
		4018		*CHARACTER CODE DEPENDENCY			*
		4019	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
		4020	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
		4021		*			*
		4022		*NOTES			*
		4023	*	ERROR PROCEDURES			*
		4024	*	THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE			*



SCANIT - MODULE PROLOGUE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE	90
				4025	*		A CARRIAGE-RETURN CODE FOLLOWS A COMMA. UPON RETURN TO THE				*
				4026	*		CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE				*
				4027	*		ERROR CODE IS SET IN \$CAERR, AND @XR WILL BE POINTING TO THE				*
				4028	*		CARRIAGE-RETURN CHARACTER.				*
				4029	*						*
				4030	*	REGISTER USAGE					*
				4031	*		@XR (INDEX-REG 2) IS USED AS A POINTER ACROSS THE AREA BEING				*
				4032	*		SCANNED FOR DELIMITERS.				*
				4033	*						*
				4034	*	SAVED/RESTORED AREAS					*
				4035	*		UPON ENTRY TO SCANIT, @ARR IS SAVED AND USED AS THE RETURN				*
				4036	*		ADDRESS.				*
				4037	*						*
				4038	*	MODIFICATION CONSIDERATIONS					*
				4039	*	N/A					*
				4040	*						*
				4041	*	REQUIRED MODULES					*
				4042	*		@SYSEQ - GENERAL SYSTEM EQUATES.				*
				4043	*		@FXDEQ - NUCLEUS LOCATION EQUATES.				*
				4044	*						*
				4045	*	OTHER					*
				4046	*		SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS MOVED				*
				4047	*		TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.				*
				4048	*		THE INSTRUCTION TO DO THIS IS AS FOLLOWS:				*
				4049	*		MVI SCAMMA,SCACOM				*
				4050	*		TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE				*
				4051	*		MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:				*
				4052	*		MVI SCAMMA,SCACOF				*
				4053	*						*
				4054	*		*****				*

## SCANIT - DELIMITER SCAN MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 24/05/21 PAGE 91

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4056 *
4057 *** EQUATES USED IN THIS SUBROUTINE
4058 *
0001 4059 SCAINC EQU 1 TO INCREMENT POINTER
0001 4060 SCACOM EQU @BNE SWITCH TO ALLOW SCANNING COMMAS
0087 4061 SCACOF EQU @UCB SWITCH TO SET OFF THE INDICATOR
4062 * * FOR SCANNING A COMMA
14C1 4063 SCANIT EQU * ENTRY POINT TO SCANIT
14C1 34 08 14FD 4064 ST SCA500+@OP1,@ARR SAVE RETURN ADDRESS
14C5 34 02 14FF 4065 ST SCASVE,@XR SAVE POINTER VALUE
14C9 3C 04 03CD 4066 MVI $CAERR,@E110 SET POSSIBLE ERROR CODE
14CD F2 87 03 4067 J SCA200 GO TO PROCESS
4068 *
14D0 E2 02 01 4069 SCA100 LA SCAINC(,@XR),@XR INCREMENT POINTER TO NEXT CHAR
14D3 BD 40 00 4070 SCA200 CLI 0(,@XR),@BLANK IS THIS CHAR BLANK ?
14D6 C0 81 14D0 4071 BE SCA100 YES, FETCH NEXT ONE.
4072 *
14DA BD 6B 00 4073 CLI 0(,@XR),@COMMA IS THIS A COMMA ?
14DD F2 87 10 4074 SCA250 JC SCA400,@UCB UCB TO RETURN -- OR NOP IF
4075 * * SCAMMA IS ACTIVE AND CHAR
14E0 E2 02 01 4076 SCA300 LA SCAINC(,@XR),@XR INCREMENT POINTER TO NEXT CHAR
14E3 BD 40 00 4077 CLI 0(,@XR),@BLANK IS THIS CHAR BLANK ?
14E6 C0 81 14E0 4078 BE SCA300 YES, FETCH NEXT ONE
4079 *
14EA BD 1F 00 4080 CLI 0(,@XR),@EOS+1 IS THIS EOS ?
14ED F2 82 0A 4081 JL SCA500 IF NOT, SKIP ERROR ROUTINE
4082 *
14F0 34 02 1501 4083 SCA400 ST SCACNT,@XR SAVE NEW POINTER VALUE
14F4 0F 01 1501 14FF 4084 SLC SCACNT(2),SCASVE SET PSR TO EQUAL IF POINTER
4085 * * NOT ADVANCED
14FA C0 87 0000 4086 SCA500 B *-* YES, RETURN TO CALLER
14DE 4088 SCAMMA EQU SCA250+@Q TO SET SCAN COMMA INDICATOR
4089 *
4090 *** SAVE AREA.
4091 *
14FE 4092 SCASV1 EQU * FIRST BYTE OF SCASVE
14FE 14FF 4093 SCASVE DS CL2 ORIGINAL POINTER VALUE SAVE
1500 1501 4094 SCACNT DS CL2 SAVE AREA FOR TOTAL CHAR SCAN

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## UCNFIG - MODULE PROLOG

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE 92
			4096		*****			*
			4097	*				*
			4098	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			4099	*	REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE 120-2083			*
			4100	*				*
			4101		*****			*
			4102		*STATUS			*
			4103	*	VERSION 1 MODIFICATION 0			*
			4104	*				*
			4105		*FUNCTION			*
			4106	*	* UCNFIG IS USED TO BUILD OR MODIFY THE CONFIGURATION RECORD ON			*
			4107	*	CYLINDER ZERO AND CHANGE THE CONFIGURATION NUCLEUS INDICATORS.			*
			4108	*	IF THE RECORD EXISTS, THE PROGRAM WILL FORCE A MINIMUM			*
			4109	*	CONFIGURATION FOR ALL COMPONENTS NOT SPECIFIED BY THE OPERATOR.			*
			4110	*	IF THE CONFIGURATION RECORD EXISTS, ONLY THE DEVICES SPECIFIED			*
			4111	*	WILL HAVE THEIR ENTRIES CHANGED IN THE RECORD.			*
			4112	*	* ONCE THE NEW CONFIGURATION RECORD HAS BEEN BUILT, IT IS TESTED.			*
			4113	*	EACH DEVICE INDICATED PRESENT IN THE RECORD IS ISSUED A COMMAND.			*
			4114	*	AN ERROR IN THE RECORD WILL CAUSE A PROC CHECK STOP. IF THE			*
			4115	*	RECORD IS FOUND CORRECT, IT IS PLACED ON CYLINDER ZERO ON THE			*
			4116	*	FIXED DISK. (THE NUCLEUS INDICATORS ARE ALSO MODIFIED)			*
			4117	*				*
			4118		*ENTRY POINTS			*
			4119	*	THE ENTRY POINT IS UCNFIG. THE CALLING SEQUENCE IS AS FOLLOWS:			*
			4120	*	B UCNFIG			*
			4121	*				*
			4122		*INPUT			*
			4123	*	THE INPUT IS THE READING OF THE CONFIGURATION RECORD AND THE			*
			4124	*	VOLUME LABEL(S) IF THE DISK CONFIGURATION INCREASES.			*
			4125	*				*
			4126		*OUTPUT			*
			4127	*	THE OUTPUT IS THE WRITING OF THE CONFIGURATION RECORD TO THE			*
			4128	*	FIXED DISK.			*
			4129	*				*
			4130		*EXTERNAL REFERENCES			*
			4131	*	\$XIND1 - ADDRESS OF PRIMARY EXECUTION INDRS			*
			4132	*	\$XIND2 - ADDRESS OF EXECUTION INDRS			*
			4133	*	\$XIND3 - ADDRESS OF EXECUTION INDRS			*
			4134	*	\$XRSV - ADDRESS OF 2 BYTE SAVE AREA			*
			4135	*	SCANIT - ADDRESS OF ENTRY POINT TO SCAN ROUTINE			*
			4136	*	\$WFNME - ADDRESS OF WORK FILE NAME			*
			4137	*	\$CAERR - ADDRESS OF ERROR CODE FOR ERROR PROGRAM			*
			4138	*	\$CAERK - ADDRESS OF ERROR CODE FOR ERROR PROGRAM			*
			4139	*	\$RLOAD - ADDRESS OF ENTRY TO BLAST LOAD PROGRAM			*
			4140	*	\$XIND - ADDRESS OF EXECUTION INDR USED BY KEDITN			*
			4141	*	\$DISKN - ADDRESS OF ENTRY TO DISK IOCS			*
			4142	*	\$PRDEV - ADDRESS OF POINTER TO THE SYSTEM PRINTER IOCR			*
			4143	*	\$KEYCD - ADDRESS OF BYTE CONTAINING KEYBOARD INDRS			*
			4144	*	MCNFIG - ADDRESS OF ROUTINE TO TEST CONFIGURATION RECORD			*
			4145	*	\$VOLF2 - ADDRESS OF F2 VOLUME ID TABLE ENTRY			*
			4146	*	\$VOLR2 - ADDRESS OF R2 VOLUME ID TABLE ENTRY			*
			4147	*	\$DKSIZ - ADDRESS OF CONFIGURED DISK SIZE			*
			4148	*	\$CARPL - ADDRESS OF ENTRY TO ABORT CURRENT OPERATION			*
			4149	*				*
			4150		*EXITS, NORMAL			*
			4151	*	NORMAL EXIT IS A HARD HALT AFTER THE CONFIGURATION RECORD HAS			*

## UCNFIG - MODULE PROLOG

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	24/05/21	PAGE	93
		4152	*	BEEN VERIFIED.			*	
		4153	*				*	
		4154	*	*EXITS, ERROR			*	
		4155	*	ABNORMAL TERMINATION TO ERROR PROGRAM.			*	
		4156	*				*	
		4157	*	*TABLES/WORK AREAS			*	
		4158	*	THE CONSTANTS RESIDE AT THE END OF EXECUTABLE CODE.			*	
		4159	*	THE CONFIGURATION COMPONENT TABLE AND DISK READ/WRITE BUFFERS ALSO			*	
		4160	*	RESIDE AT THE END OF THE CODE.			*	
		4161	*				*	
		4162	*	*ATTRIBUTES			*	
		4163	*	RELOCATABLE			*	
		4164	*				*	
		4165	*	*CHARACTER CODE DEPENDENCY			*	
		4166	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*	
		4167	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*	
		4168	*				*	
		4169	*	*NOTES			*	
		4170	*	ERROR PROCEDURES			*	
		4171	*	EXIT IS MADE TO THE ERROR PROGRAM FOR THE FOLLOWING CONDITIONS:			*	
		4172	*	* INVALID KEYBOARD TYPE			*	
		4173	*	* INVALID PARAMETER			*	
		4174	*	* INVALID COMBINATION OF KEYWORD PARAMETERS			*	
		4175	*	* REPETITION OF KEYWORD PARAMETERS			*	
		4176	*	* CRT, CPU, COMMAND KEY CONFLICT			*	
		4177	*				*	
		4178	*	REGISTER USAGE			*	
		4179	*	INDEX REGISTERS 2 (@XR) IS USED.			*	
		4180	*				*	
		4181	*	SAVED/RESTORED AREAS			*	
		4182	*	EACH CONFIGURATION PARAMETER IS PLACED IN THE PARAMETER HOLDER			*	
		4183	*	AT LOCATION UCNHDF.			*	
		4184	*				*	
		4185	*	MODIFICATION CONSIDERATIONS			*	
		4186	*	SIGNIFICANT IMPACT ON #UINIT.			*	
		4187	*	REST OF THE SYSTEM. HOWEVER, BECAUSE IT MUST INTERFACE			*	
		4188	*				*	
		4189	*	REQUIRED MODULES			*	
		4190	*	@SYSEQ - GENERAL SYSTEM EQUATES.			*	
		4191	*	@FXDEQ - NUCLEUS LOCATION EQUATES.			*	
		4192	*	@CANEQ - TRANSCIENT LOCATION EQUATES.			*	
		4193	*	\$V\$EQU - VIRTUAL MEMORY EQUATES.			*	
		4194	*	@HDWEQ - HARDWARE VALUE EQUATES.			*	
		4195	*	@CNFEQ - CONFIGURATION EQUATES.			*	
		4196	*	MCNFIG - TEST CONFIGURATION SUBROUTINE.			*	
		4197	*	SCANIT - BLANK SCAN ROUTINE.			*	
		4198	*				*	
		4199	*	*OTHER			*	
		4200	*	N/A			*	
		4201	*				*	
		4202	*	*****			*	

## UCNFIG - CONFIGURE UTILITY COMMAND

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				1502	4204	UCNFIG	EQU	*	ENTRY POINT TO UCNFIG
1502	3C	00	1892		4205		MVI	UCNSET,@ZERO	INITIALIZE LAST BYTE
1506	0C	05	1891 1892		4206		MVC	UCNSET-1(UCNSET-UCNSUB),UCNSET	RECURSIVE CLEAR
150C	0C	00	1778 03D7		4207		MVC	UCNSAV(UCNONE), \$DKSIZ	SAVE DISK SIZE INDR
1512	35	02	03C7		4208	UCN100	L	\$XRSAB,@XR	XR POINTS TO FIRST CHARACTER
1516	0F	01	03E4 03E4		4209		SLC	\$LPRP3(2), \$LPRP3	INITIALIZE LINE PRINTER INDR
					4210	*			
					4211	***		SCAN KEYWORD PARAMETER AND LEFT	JUSTIFY IN HOLDER
					4212	*			
151C	C0	87	14C1		4213		B	SCANIT	SCAN ACROSS ANY BLANKS
1520	C0	82	0469		4214		BL	\$CAERK	BRANCH TO ERROR PROGRAM
1524	3C	01	14DE		4215		MVI	SCAMMA, SCACOM	SCAN ACROSS BLANKS
1528	BD	1E	00		4216		CLI	0(, @XR), @EOS	EOS ?
152B	F2	81	C3		4217		JE	UCN600	JUMP IF YES
152E	34	02	15EC		4218		ST	UCN550+@OP1, @XR	SAVE XR FOR ERROR EXIT
1532	3C	40	1898		4219		MVI	UCNHDL, @BLANK	MOVE BLANK TO LAST HOLDER BYTE
1536	0C	04	1897 1898		4220		MVC	UCNHDL-1(UCNLPF-1), UCNHDL	RECURSIVELY MOVE BLANKS
					4221	*			* INTO PARAMETER HOLDER
153C	0C	01	1545 1771		4222		MVC	UCN200+@OP1(@CADDR), UCNADR	INITIALIZE TO MOVE
					4223	*			* CHARACTERS IN PARM HOLDER
1542	2C	00	0000 00		4224	UCN200	MVC	*-*(UCNONE), 0(, @XR)	MOVE ONE CHARACTER TO
					4225	*			* PARAMETER HOLDER
1547	0E	01	1545 1773		4226		ALC	UCN200+@OP1(@CADDR), UCNINC	INCREMENT PARAMETER
					4227	*			* HOLDER ADDRESS
154D	E2	02	01		4228		LA	UCNONE(, @XR), @XR	INCREMENT XR BY 1
1550	BD	6B	00		4229		CLI	0(, @XR), @COMMA	COMMA FOR DELIMITER ?
1553	C0	81	1569		4230		BE	UCN250	IF YES: CHECK DELIMITER
1557	BD	40	00		4231		CLI	0(, @XR), @BLANK	BLANK FOR DELIMITER ?
155A	C0	81	1569		4232		BE	UCN250	IF YES: CHECK DELIMITER
155E	BD	1E	00		4233		CLI	0(, @XR), @EOS	EOS FOR DELIMITER ?
1561	C0	81	1569		4234		BE	UCN250	IF YES: CHECK DELIMITER
1565	C0	01	1542		4235		BNE	UCN200	IF NO: CHECK NEXT CHARACTER
					4236	*			
1569	34	02	03C7		4237	UCN250	ST	\$XRSAB,@XR	SAVE XR FOR RETURN
					4238	*			
					4239	***		SCAN PARAMETERS TABLE FOR CHARACTERS IN PARAMETER HOLDER	
					4240	*			
156D	C2	02	178D		4241		LA	UCNPAF, @XR	POINT TO 1ST BYTE OF PARM TBL
1571	8D	05	06 1898		4242	UCN300	CLC	UCNLPF(UCNLPF, @XR), UCNHDL	PARAMETER FOUND ?
1576	F2	81	3E		4243		JE	UCN400	JUMP IF FOUND
1579	E2	02	09		4244		LA	UCNLPL(, @XR), @XR	INCREMENT XR BY PARM LENGTH
157C	BD	5C	00		4245		CLI	0(, @XR), @ASTER	COMPLETION OF SCAN ?
157F	C0	01	1571		4246		BNE	UCN300	BRANCH IF NOT FINISHED
					4247	*			
					4248	***		CHK IF NAT LANG PARM TO PRINT INV PARM OR OUT OF LIM NR CODES	
					4249	*			
1583	C2	02	1893		4250		LA	UCNHDF, @XR	POINT TO 1ST BYTE OF PARM HOLDER
1587	8D	01	01 1775		4251		CLC	UCNK02-UCNK01-1(UCNK02-UCNK01, @XR), UCNKYB	CHECK FOR
					4252	*			* NATIONAL LANGUAGE SYNTAX
158C	F2	01	21		4253		JNE	UCN350	JUMP IF NOT NATIONAL LANG.
158F	E2	02	02		4254		LA	UCNK02-UCNK01(, @XR), @XR	LOAD ADDRESS OF
					4255	*			* NATIONAL LANGUAGE SYNTAX
1592	C0	87	173C		4256		B	UCN970	BRANCH TO CHECK FOR NUMERIC
1596	F2	01	17		4257		JNE	UCN350	JUMP IF NOT NUMERIC
1599	E2	02	01		4258		LA	UCNONE(, @XR), @XR	INCREMENT XR BY 1
159C	C0	87	173C		4259		B	UCN970	BRANCH TO CHECK FOR NUMERIC

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 95
	15A0	F2	01	0D	4260		JNE UCN350			JUMP IF NOT NUMERIC
	15A3	BD	40	01	4261		CLI UCNONE(, @XR), @BLANK			CHECK THIRD CHARACTER
	15A6	F2	01	07	4262		JNE UCN350			JUMP IF NOT BLANK
	15A9	3C	73	03CD	4263	UCM320	MVI \$CAERR, @@E477			INVALID KEYBOARD TYPE ERROR MSG
	15AD	F2	87	39	4264		J UCN550			JUMP TO ERROR PROGRAM
	15B0	3C	11	03CD	4266	UCN350	MVI \$CAERR, @@E131			INVALID PARAMETER ERROR MSG
	15B4	F2	87	32	4267		J UCN550			JUMP TO ERROR PROGRAM
					4268	*				
					4269	***	TEST IF PARAMETER ALREADY SPECIFIED AND SET BIT FOR PARM FOUND			
					4270	*				
	15B7	B8	80	00	4271	UCN400	TBN 0(, @XR), UCNDT			PARM ALREADY FOUND ?
	15BA	F2	10	28	4272		JT UCN500			JUMP IF YES
	15BD	BA	80	00	4273		SBN 0(, @XR), UCNDT			SET BIT FOR PARAMETER FOUND
	15C0	2C	00	1777 00	4274		MVC UCNTM(UCNONE), 0(, @XR)			MOVE STATUS BYTE TO FIELD
	15C5	3B	C0	1777	4275		SBF UCNTM, UCNDT+UCNMIN			SET OFF DET AND MIN BITS
	15C9	C2	02	188C	4276		LA UCNSUB, @XR			INITIALIZE TOP OF FIELD
	15CD	36	02	1777	4277		A UCNTM, @XR			ADJUST XR BY FLAG BYTE
	15D1	BD	00	00	4278		CLI 0(, @XR), @ZERO			ZERO ?
	15D4	F2	81	07	4279		JE UCN425			JUMP IF DOUBLE DEFINITION
	15D7	3C	15	03CD	4280		MVI \$CAERR, @@E136			INVALID CONBINATION OF PARMS
	15DB	F2	87	0B	4281		J UCN550			JUMP TO ERROR PROGRAM
	15DE	BC	40	00	4282	UCN425	MVI 0(, @XR), @BLANK			SET FLAG FOR COMPONENT FIND
	15E1	C0	87	1512	4283	UCN450	B UCN100			BRANCH TO SCAN NEXT PARM
	15E5	3C	13	03CD	4285	UCN500	MVI \$CAERR, @@E134			DUPLICATE PARM ERROR MSG
	15E9	C2	02	0000	4286	UCN550	LA *-*, @XR			RESTORE XR TO INVALID CHAR
	15ED	C0	87	0469	4287		B \$CAERK			BRANCH TO ERROR PROGRAM
					4288	*				
					4289	***	READ CONFIGURATION RECORD AND MODIFY IT WITH OPERATOR ENTRIES			
					4290	*				
	15F1	0E	01	1782 0587	4291	UCN600	ALC UCNI0F(2), \$BSADR			SET DISK ADDR FOR CONFIG REC
	15F7	C0	87	0025	4292		B \$DISKN			READ CONFIGURATION RECORD
	15FB	1780			4293		DC AL2(UCNCY0)			DISK DPL ADDR
	15FD	C0	87	0025	4294		B \$DISKN			WAIT AND CHECK DISK ERRORS
	1601	1786			4295		DC AL2(UCNSL0)			WAIT DPL ADDRESS
					4296	*				
	1603	C2	02	1893	4297		LA UCNHDF, @XR			XR POINTS TO 1ST BYTE OF
					4298	*				* CONFIGURATION RECORD
	1607	B9	07	3C	4299		TBF @#CSIZ(, @XR), @#C08K+@#C12K+@#C16K			FIRST UPDATE ?
	160A	F2	90	04	4300		JF UCN650			JUMP IF NOT
	160D	3C	90	1620	4301		MVI UCN670+@Q, @BF			FORCE A FIRST UPDATE OF
					4302	*				* A MINIMUM CONFIGURATION
	1611	C2	02	178D	4303	UCN650	LA UCNPAF, @XR			INITIALIZE TO TOP OF PARM LIST
	1615	3C	00	1643	4304	UCN655	MVI UCN750+@D1, @ZERO			CLEAR LEFT BYTE OF ADDRESS
	1619	B8	80	00	4305	UCN660	TBN 0(, @XR), UCNDT			PARAMETER FOUND ?
	161C	F2	10	09	4306		JT UCN700			JUMP IF FOUND
	161F	F2	87	24	4307	UCN670	JC UCN800, @UCB			JUMP TO CHECK NEXT PARAMETER
	1622	B8	40	00	4308		TBN 0(, @XR), UCNMIN			A MINIMUM CONFIGURATION PARM ?
	1625	F2	90	1E	4309		JF UCN800			JUMP IF NOT A MINIMUM CONFIG
	1628	2C	00	1644 07	4310	UCN700	MVC UCN750+@OP1(UCNONE), UCNLPF+1(, @XR)			MOVE DISP FACTOR
	162D	0E	01	1644 1771	4311		ALC UCN750+@OP1(@CADDR), UCNADR			FORM OP1 ADDRESS
	1633	8D	05	06 1850	4312		CLC UCNLPL-3(UCNLPF, @XR), UCNFG2			'NOCRT' ?
	1638	F2	01	06	4313		JNE UCN750			JUMP IF NOT
	163B	0C	01	044B 188B	4314		MVC \$PRDEV(@CADDR), UCNPRT			INITIALIZE PTR IOCR
	1641	2C	00	0000 08	4315	UCN750	MVC *-*(UCNONE), UCNLPL-1(, @XR)			MOVE CONFIGURATION



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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 96
				4316	*		* COMPONENT TO CONFIGURATION			
1646	E2	02	09	4317	UCN800	LA	UCNLPL(, @XR), @XR			UPDATE TO NEXT PARAMETER
1649	BD	5C	00	4318		CLI	0(, @XR), @ASTER			LAST PARAMETER CHECKED ?
164C	C0	01	1615	4319		BNE	UCN655			BRANCH IF NOT FINISHED
				4320	*					
				4321	***	CHECK	FOR THE FOLLOWING COMPONENTS CONFLICTS:			
				4322	*					
				4323	*		1. CRT AND 8KBYTE			
				4324	*		2. CRT AND 8 COMMAND KEYS			
				4325	*					
1650	C2	02	1893	4326		LA	UCNHDF, @XR			XR POINTS TO TOP OF TABLE
1654	3B	02	03C3	4327		SBF	\$KEYCD, \$IOYES			SET OFF I/O IN CORE INDR
1658	B8	40	20	4328		TBN	@#DATA(, @XR), @#DATB			DATA RECORDER CONFIGURED ?
165B	F2	10	12	4329		JT	UCN825			JUMP IF ON SYSTEM
165E	38	08	03E0	4330		TBN	\$DBGUF, \$CALLI			PROCEDURE MODE ?
1662	F2	90	07	4331		JF	UCN815			JUMP IF NOT
1665	38	01	03C3	4332		TBN	\$KEYCD, \$CARDI			PROCEDURE MODE ?
1669	F2	10	04	4333		JT	UCN825			JUMP IF YES
166C	3B	01	03C3	4334	UCN815	SBF	\$KEYCD, \$CARDI			SET OFF CARD INPUT INDR
1670	BA	40	14	4335	UCN825	SBN	@#MTRX(, @XR), @#MTXB			FORCE MATRIX PRINTER ON
1673	BA	40	18	4336		SBN	@#KBRD(, @XR), @#KBRB			FORCE KEYBOARD ON
1676	BA	40	10	4337		SBN	@#DISK(, @XR), @#DISB			FORCE DISK ON
1679	B8	40	28	4338		TBN	@#CRTD(, @XR), @#CRTB			TEST FOR CRT
167C	F2	10	3A	4339		JT	UCN900			JUMP IF
167F	B8	40	19	4340		TBN	@#KEYS(, @XR), @#KE08			TEST FOR 8 CMD KEYS ?
1682	F2	10	2C	4341		JT	UCN850			JUMP IF YES
1685	B8	01	3C	4342		TBN	@#CSIZ(, @XR), @#C08K			TEST FOR 8KBYTE CORE ?
1688	F2	10	26	4343		JT	UCN850			JUMP IF YES
168B	B8	02	28	4344	UCN829	TBN	@#CRTD(, @XR), @#C12K			TEST FOR 12KBYTE CORE ?
168E	F2	90	10	4345		JF	UCN830			JUMP IF NOT
1691	0D	01	044B 188B	4346		CLC	\$PRDEV(@CADDR), UCNPRT			PRINTER IOCR SET ON ?
1697	F2	81	1F	4347		JE	UCN900			JUMP IF YES
169A	3C	29	044A	4348		MVI	\$PRDEV-1, UCN029			SET CRT FOR 12KBYTE
169E	F2	87	18	4349		J	UCN900			JUMP TO CHECK CONFIG
16A1	0D	01	044B 188B	4350	UCN830	CLC	\$PRDEV(@CADDR), UCNPRT			PRINTER IOCR SET ON ?
16A7	F2	81	0F	4351		JE	UCN900			JUMP IF PRINTER IOCR SET ON
16AA	3C	39	044A	4352		MVI	\$PRDEV-1, UCN039			SET CRT FOR 16KBYTE
16AE	F2	87	08	4353		J	UCN900			JUMP TO CHECK CONFIG
16B1	3C	72	03CD	4354	UCN850	MVI	\$CAERR, @@E476			CRT CPU COMMAND KEY CONFLICT
				4355	*	ERROR MESSAGE	'INVALID KEYBOARD TYPE'			
16B5	C0	87	0469	4356		B	\$CAERK			BRANCH TO ERROR PROGRAM
				4357	*					
				4358	***	TEST	CONFIGURATION COMPONENT FOR LEGALITY			
				4359	*					
16B9	C0	87	1200	4360	UCN900	B	MCNFIG			BRANCH TO CHECK CONFIGURATION
16BD	3C	02	1780	4361	UCN925	MVI	UCNCY0, @DPUT			INITIALIZE FOR WRITE FUNCTION
16C1	C0	87	0025	4362	UCN927	B	\$DISKN			WRITE CONFIGURATION RECORD
16C5	1780			16C6 4363		DC	AL2(UCNCY0)			DISK DPL ADDR
				4364	*	THE FOLLOWING INSTRUCTION IS OVERLAID WITH A BRANCH BACK TO MIP265				
				4365	*	OF MIPPER. THE BYTES FOLLOWING THE BRANCH THROUGH UCN940 (BRANCH)				
				4366	*	ARE AVAILABLE TO BE USED AS PATCH AREA.				
				4367	*	(THIS IS MODIFIED TO BYPASS 'P 20 ERROR DURING LINK EDIT)				
				4368	*CN930	B	MIP265			GO WITHIN MIPPER
				4369	*	DC	XL2'03D7'			OP2 OF NEXT CLC
16C7	0D	00	1778 03D7	4370	UCN930	CLC	UCNSAV(UCNONE), \$DKSIZ			NUCLEUS MODIFIED ?
16CD	F2	81	68	4371		JE	UCN940			JUMP IF NOT

## UCNFIG - CONFIGURE UTILITY COMMAND

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ERR LOC  OBJECT CODE      ADDR STMT SOURCE STATEMENT      VER 15, MOD 00  24/05/21  PAGE  97

16D0 C0 87 0F00          4372      B      SUPDAT          WRITE ERROR LOG TABLES
16D4 38 10 03D7          4373     TBN      $DKSIZ,$DK800      4 DISKS ?
16D8 F2 90 41            4374     JF       UCN935        IF NOT: CHECK FOR 3 DISKS
16DB 0C 01 1789 177C     4375     MVC      UCNDPL+2(@DADDR),UCNAD2  INITIALIZE FOR DISK READ
16E1 3A 0C 0DA9          4376     SBN      MVDPRM,MVDRR2+MVDRF2  SET PARAMETER TO TEST R2 & F2
16E5 C0 87 1754          4377      B      UCN990        READ VOLUME LABEL
16E9 8D 02 02 177F      4378     CLC      UCNVOL(UCNVOL+1,@XR),UCNVLB  INITIALIZATION ?
16EE F2 01 00            4379     JNE      UCN909        JUMP IF NOT INITIALIZED
16F1 2C 07 0415 0A      4380 UCN909 MVC      $VOLF2+7($VOLF2-$VOLR2),$#TLBL+2(@XR)  MOVE ENTRY
16F6 3A 03 0415          4381     SBN      $VOLF2+7,UCN003      MASK F2 BITS
16FA 0C 01 1789 177A     4382 UCN910 MVC      UCNDPL+2(@DADDR),UCNAD1  MOVE R2 VOLUME LABEL DADDR
1700 C0 87 1754          4383      B      UCN990        BRANCH TO READ R2 VOLUME LABEL
1704 8D 02 02 177F      4384     CLC      UCNVOL(UCNVOL+1,@XR),UCNVLB  INITIALIZATION ?
1709 F2 01 04            4385     JNE      UCN911        JUMP IF NOT INITIALIZED
170C 3A 04 0DA9          4386     SBN      MVDPRM,MVDRR2      SET UP R2 FOR MVDELE
1710 2C 07 040D 0A      4387 UCN911 MVC      $VOLR2+7($VOLF2-$VOLR2),$#TLBL+2(@XR)  MOVE ENTRY
1715 3A 02 040D          4388     SBN      $VOLR2+7,UCN002      MASK R2 BITS
1719 F2 87 1C            4389      J      UCN940        GO TO GUFUDI
171C 0F 07 0415 0415     4390 UCN935 SLC      $VOLF2+7($VOLF2-$VOLR2),$VOLF2+7  CLEAR VOLUME-ID
1722 3A 03 0415          4391     SBN      $VOLF2+7,UCN003      MASK F2 BITS
1726 38 08 03D7          4392     TBN      $DKSIZ,$DK600      3 DISKS ?
172A C0 10 16FA          4393     BT      UCN910        BRANCH IF YES
172E 0F 07 040D 040D     4394     SLC      $VOLR2+7($VOLF2-$VOLR2),$VOLR2+7  CLEAR VOLUME-ID
1734 3A 02 040D          4395     SBN      $VOLR2+7,UCN002      MASK R2 BITS
1738 C0 87 0CC0          4396 UCN940 B      MVDELE          GO TEST FOR SCRATCH FILES & DELETE
4397 *
4398 *      ROUTINE DETERMINES IF CHARACTER REFERENCED
4399 *      BY XR IS NUMERIC.
4400 *
4401 *      EXIT: PSR HAS CONDITION
4402 *      * NON-EQUAL - NON-NUMERIC
4403 *      * EQUAL    - NUMERIC
4404 *
173C 4405 UCN970 EQU      *
173C 34 08 1753          4406     ST      UCN980+@OP1,@ARR      SAVE ARR FOR RETURN
1740 BD F0 00            4407     CLI      0(@XR),UCNLOW      LOWER THAN LOWER BOUND ?
1743 F2 82 0A            4408     JL      UCN980        JUMP IF CONDITION HOLDS
1746 BD F9 00            4409     CLI      0(@XR),UCNHII      LOWER THAN LOWER BOUND ?
1749 F2 84 04            4410     JH      UCN980        JUMP IF CONDITION HOLDS
174C 3D 5C 1889          4411     CLI      UCNEND,@ASTER      FORCE PSR EQUAL CONDITION
1750 C0 87 0000          4412 UCN980 B      *-*          RETURN TO CALLER
4413 *
4414 ***      FOLLOWING ROUTINE READS VOLUME LABEL
4415 *
1754 4416 UCN990 EQU      *
1754 34 08 176F          4417     ST      UCN995+@OP1,@ARR      SAVE ARR FOR RETURN
1758 C0 87 0025          4418      B      $DISKN          READ DCAL DATA TABLE SECTOR
175C 1787              175D 4419     DC      AL2(UCNDPL)      DPL ADDRESS
175E C0 87 0025          4420      B      $DISKN          WAIT AND CHECK DISK ERRORS
1762 057F              1763 4421     DC      AL2($WAITF)      WAIT DPL ADDRESS
4422 *
1764 C2 02 1993          4423     LA      UCNARE,@XR          POINT XR TO VOLUME LABEL
1768 AC 01 0A FE          4424     MVC      $#TLBL+2(@DADDR,@XR),$#TLAD(@XR)  PACK LIBRARY ADDRESS
176C C0 87 0000          4425 UCN995 B      *-*          RETRUN TO CALLER
4426 *
4427 ***      CONSTANTS USED IN UCNFIG

```

## UCNFIG - CONFIGURE UTILITY COMMAND

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```

      4428 *
1770 1893      1771 4429 UCNADR DC    AL2(UCNHDF)      ADDRESS OF HOLDER 1ST BYTE
1772 0001      1773 4430 UCNINC DC    IL2'1'          INCREMENTATION FACTOR OF 1
      1774 4431 UCNK01 EQU    *          ADDRESS MOST LEFT BYTE
1774 D2C2      1775 4432 UCNKYB DC    CL2'KB'         KEYB NATIONALITY
      1776 4433 UCNK02 EQU    *          ADDRESS MOST LEFT BYTE
1776 0000      1777 4434 UCNTM DC    AL2(*-*)         TEMPORARY ADDRESS FIELD
1778          1778 4435 UCNSAV DS    CL1             TEMPORARY SAVE AREA
1779 000A      177A 4436 UCNAD1 DC    AL2(#VOLR1+2)    DADDR OF R2
177B 000B      177C 4437 UCNAD2 DC    AL2(#VOLF1+2)    DADDR OF F2
177D E5D6D3    177F 4438 UCNVLB DC    CL3'VOL'        INITIALIZATION IDENTIFICATION
      4439 *
      4440 ***      PARAMETER LIST TO READ/WRITE CONFIGURATION RECORD - CYL 0
      4441 *
1780 01        1780 4442 UCNCY0 DC    AL1(@DGET)       READ/WRITE FUNCTION
1781 2000      1782 4443 UCNIOF DC    AL2(##$CNF)      DISK ADDRESS
1783 01        1783 4444          DC    AL1(#FIGSC)     SECTOR COUNT
1784 1893      1785 4445          DC    AL2(UCNHDF)     DATA ADDRESS
1786 FF        1786 4446 UCNSL0 DC    AL1(@DWAIT)      WAIT FOR I/O COMPLETION
      4447 *
      4448 ***      DPL TO READ R2 & F2 VOLUME LABEL
      4449 *
      4450 *CNDPL $DPL  FUNC=@DGET,DADDR-$VOLR2,CNT-UCNONE,CADDR-UCNARE
1787 01        1787 4451+UCNDPL EQU    *          DISK PARAMETER LIST
1788 0406      1787 4452+          DC    AL1(@DGET)     REQUESTED FUNCTION
178A 01        1789 4453+          DC    AL2($VOLR2)    DISK ADDRESS
178B 1993      178A 4454+          DC    AL1(UCNONE)    SECTOR COUNT
      178C 4455+          DC    AL2(UCNARE)            BUFFER ADDRESS
      4456+***      END OF EXPANSION ***
      4457 *
      4458 *          PARAMETER COMPONENT TABLE FORMAT AS FOLLOWS:
      4459 *
      4460 *          BYTE 1 - STATUS BYTE
      4461 *              - BIT 1 SET - A PARAMETER FOUND
      4462 *              - BIT 2 SET - A MINIMUM CONFIGURATION
      4463 *          BYTE 2-7 - PARAMETER SYNTAX
      4464 *          BYTE 8 - DISPLACEMENT
      4465 *          BYTE 9 - CONFIGURATION BYTE
      4467 *
      4468 ***      NATIONAL LANGUAGE COMPONENT
      4469 *
178D 40        178D 4470 UCNPAF EQU    *
178E D2C2F1404040 178D 4471 UCNC01 DC    AL1(UCNMIN)    STATUS BYTE
1794 1A        1793 4472          DC    CL6'KB1'       SYNTAX FIELD
1795 01        1794 4473          DC    AL1(@#KNAT)     DISPLACEMENT
      1795 4474          DC    AL1(@#DOMS)            CONFIGURATION
      4475 *
1796 00        1796 4476          DC    AL1(@ZERO)     STATUS BYTE
1797 D2C2F2404040 179C 4477          DC    CL6'KB2'     SYNTAX FIELD
179D 1A        179D 4478          DC    AL1(@#KNAT)     DISPLACEMENT
179E 02        179E 4479          DC    AL1(@#AGER)     CONFIGURATION
      4480 *
179F 00        179F 4481          DC    AL1(@ZERO)     STATUS BYTE
17A0 D2C2F3404040 17A5 4482          DC    CL6'KB3'     SYNTAX FIELD
17A6 1A        17A6 4483          DC    AL1(@#KNAT)     DISPLACEMENT

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## UCNFIG - CONFIGURE UTILITY COMMAND

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17A7	03		17A7	4484		DC	AL1(@#BFRN)	CONFIGURATION
				4485	*			
17A8	00		17A8	4486		DC	AL1(@ZERO)	STATUS BYTE
17A9	D2C2F4404040		17AE	4487		DC	CL6'KB4'	SYNTAX FIELD
17AF	1A		17AF	4488		DC	AL1(@#KNAT)	DISPLACEMENT
17B0	04		17B0	4489		DC	AL1(@#DENK)	CONFIGURATION
				4490	*			
17B1	00		17B1	4491		DC	AL1(@ZERO)	STATUS BYTE
17B2	D2C2F5404040		17B7	4492		DC	CL6'KB5'	SYNTAX FIELD
17B8	1A		17B8	4493		DC	AL1(@#KNAT)	DISPLACEMENT
17B9	05		17B9	4494		DC	AL1(@#NORW)	CONFIGURATION
				4495	*			
17BA	00		17BA	4496		DC	AL1(@ZERO)	STATUS BYTE
17BB	D2C2F6404040		17C0	4497		DC	CL6'KB6'	SYNTAX FIELD
17C1	1A		17C1	4498		DC	AL1(@#KNAT)	DISPLACEMENT
17C2	06		17C2	4499		DC	AL1(@#FINL)	CONFIGURATION
				4500	*			
17C3	00		17C3	4501		DC	AL1(@ZERO)	STATUS BYTE
17C4	D2C2F7404040		17C9	4502		DC	CL6'KB7'	SYNTAX FIELD
17CA	1A		17CA	4503		DC	AL1(@#KNAT)	DISPLACEMENT
17CB	07		17CB	4504		DC	AL1(@#SPAN)	CONFIGURATION
				4505	*			
17CC	00		17CC	4506		DC	AL1(@ZERO)	STATUS BYTE
17CD	D2C2F8404040		17D2	4507		DC	CL6'KB8'	SYNTAX FIELD
17D3	1A		17D3	4508		DC	AL1(@#KNAT)	DISPLACEMENT
17D4	08		17D4	4509		DC	AL1(@#PORT)	CONFIGURATION
				4510	*			
17D5	00		17D5	4511		DC	AL1(@ZERO)	STATUS BYTE
17D6	D2C2F9404040		17DB	4512		DC	CL6'KB9'	SYNTAX FIELD
17DC	1A		17DC	4513		DC	AL1(@#KNAT)	DISPLACEMENT
17DD	09		17DD	4514		DC	AL1(@#UKDM)	CONFIGURATION
				4515	*			
				4516	***		CORE SIZE COMPONENT	
				4517	*			
17DE	41		17DE	4518	UCNC02	DC	AL1(UCNMIN+UCN001)	STATUS BYTE
17DF	F8D240404040		17E4	4519		DC	CL6'8K'	SYNTAX FIELD
17E5	3C		17E5	4520		DC	AL1(@#CSIZ)	DISPLACEMENT
17E6	01		17E6	4521		DC	AL1(@#C08K)	CONFIGURATION
				4522	*			
17E7	01		17E7	4523		DC	AL1(@ZERO+UCN001)	STATUS BYTE
17E8	F1F2D2404040		17ED	4524		DC	CL6'12K'	SYNTAX FIELD
17EE	3C		17EE	4525		DC	AL1(@#CSIZ)	DISPLACEMENT
17EF	02		17EF	4526		DC	AL1(@#C12K)	CONFIGURATION
				4527	*			
17F0	01		17F0	4528		DC	AL1(@ZERO+UCN001)	STATUS BYTE
17F1	F1F6D2404040		17F6	4529		DC	CL6'16K'	SYNTAX FIELD
17F7	3C		17F7	4530		DC	AL1(@#CSIZ)	DISPLACEMENT
17F8	04		17F8	4531		DC	AL1(@#C16K)	CONFIGURATION
				4532	*			
				4533	***		SIZE OF DISK CAPACITY	
				4534	*			
17F9	42		17F9	4535		DC	AL1(UCNMIN+UCN002)	STATUS BYTE
17FA	F2C4F1F0F040		17FF	4536		DC	CL6'2D100'	SYNTAX FIELD
1800	1B		1800	4537		DC	AL1(@#DSIZ)	DISPLACEMENT
1801	04		1801	4538		DC	AL1(@#C100)	CONFIGURATION
				4539	*			

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1802	02	1802	4540		DC	AL1(@ZERO+UCN002)	STATUS BYTE
1803	F2C4F2F0F040	1808	4541		DC	CL6'2D200 '	SYNTAX FIELD
1809	1B	1809	4542		DC	AL1(@#DSIZ)	DISPLACEMENT
180A	08	180A	4543		DC	AL1(@#C200)	CONFIGURATION
			4544	*			
180B	02	180B	4545		DC	AL1(@ZERO+UCN002)	STATUS BYTE
180C	F3C440404040	1811	4546		DC	CL6'3D '	SYNTAX FIELD
1812	1B	1812	4547		DC	AL1(@#DSIZ)	DISPLACEMENT
1813	10	1813	4548		DC	AL1(@#FRR2)	CONFIGURATION
			4549	*			
1814	02	1814	4550		DC	AL1(@ZERO+UCN002)	STATUS BYTE
1815	F4C440404040	181A	4551		DC	CL6'4D '	SYNTAX FIELD
181B	1B	181B	4552		DC	AL1(@#DSIZ)	DISPLACEMENT
181C	01	181C	4553		DC	AL1(@#FR12)	CONFIGURATION
			4554	*			
			4555	***		PRINTER WIDTH COMPONENT	
			4556	*			
181D	43	181D	4557	UCNC04	DC	AL1(UCNMIN+UCN003)	STATUS BYTE
181E	F1F3D4D74040	1823	4558		DC	CL6'13MP '	SYNTAX FIELD
1824	16	1824	4559		DC	AL1(@#MTYP)	DISPLACEMENT
1825	09	1825	4560		DC	AL1(@#MTMP+@#MP13)	CONFIGURATION
			4561	*			
1826	03	1826	4562		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1827	F1F3D3D74040	182C	4563		DC	CL6'13LP '	SYNTAX FIELD
182D	16	182D	4564		DC	AL1(@#MTYP)	DISPLACEMENT
182E	05	182E	4565		DC	AL1(@#MTLP+@#MP13)	CONFIGURATION
			4566	*			
182F	03	182F	4567		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1830	F2F2D4D74040	1835	4568		DC	CL6'22MP '	SYNTAX FIELD
1836	16	1836	4569		DC	AL1(@#MTYP)	DISPLACEMENT
1837	0A	1837	4570		DC	AL1(@#MTMP+@#MP22)	CONFIGURATION
			4571	*			
1838	03	1838	4572		DC	AL1(@ZERO+UCN003)	STATUS BYTE
1839	F2F2D3D74040	183E	4573		DC	CL6'22LP '	SYNTAX FIELD
183F	16	183F	4574		DC	AL1(@#MTYP)	DISPLACEMENT
1840	06	1840	4575		DC	AL1(@#MTLP+@#MP22)	CONFIGURATION
			4576	*			
			4577	***		CRT COMPONENT	
			4578	*			
1841	04	1841	4579	UCNC05	DC	AL1(@ZERO+UCN004)	STATUS BYTE
1842	C3D9E3404040	1847	4580		DC	CL6'CRT '	SYNTAX FIELD
1848	28	1848	4581		DC	AL1(@#CRTD)	DISPLACEMENT
1849	40	1849	4582		DC	AL1(@#CRTB)	CONFIGURATION
			4583	*			
184A	04	184A	4584		DC	AL1(@ZERO+UCN004)	STATUS BYTE
184B	D5D6C3D9E340	1850	4585	UCNFG2	DC	CL6'NOCRT '	SYNTAX FIELD
1851	28	1851	4586		DC	AL1(@#CRTD)	DISPLACEMENT
1852	80	1852	4587		DC	AL1(@#CRTN)	CONFIGURATION
			4588	*			
			4589	***		DATA RECORDER COMPONENT	
			4590	*			
1853	05	1853	4591	UCNC06	DC	AL1(@ZERO+UCN005)	STATUS BYTE
1854	C3C1D9C44040	1859	4592		DC	CL6'CARD '	SYNTAX FIELD
185A	20	185A	4593		DC	AL1(@#DATA)	DISPLACEMENT
185B	40	185B	4594		DC	AL1(@#DATB)	CONFIGURATION
			4595	*			



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ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 101
185C	05		185C	4596		DC AL1(@ZERO+UCN005)			STATUS BYTE
185D	C3C1D9C4F8F0		1862	4597		DC CL6 'CARD80'			SYNTAX FIELD
1863	20		1863	4598		DC AL1(@#DATA)			DISPLACEMENT
1864	48		1864	4599		DC AL1(@#DATC)			CONFIGURATION
				4600	*				
1865	05		1865	4601		DC AL1(@ZERO+UCN005)			STATUS BYTE
1866	C3C1D9C4F9F6		186B	4602		DC CL6 'CARD96'			SYNTAX FIELD
186C	20		186C	4603		DC AL1(@#DATA)			DISPLACEMENT
186D	40		186D	4604		DC AL1(@#DATB)			CONFIGURATION
				4605	*				
186E	05		186E	4606		DC AL1(@ZERO+UCN005)			STATUS BYTE
186F	D5D6C3C1D9C4		1874	4607		DC CL6 'NOCARD'			SYNTAX FIELD
1875	20		1875	4608		DC AL1(@#DATA)			DISPLACEMENT
1876	80		1876	4609		DC AL1(@#DATN)			CONFIGURATION
				4610	*				
				4611	***	COMMAND KEY NUMBER COMPONENT			
				4612	*				
1877	46		1877	4613	UCNC07	DC AL1(UCNMIN+UCN006)			STATUS BYTE
1878	F8C3D2404040		187D	4614		DC CL6 '8CK '			SYNTAX FIELD
187E	19		187E	4615		DC AL1(@#KEYS)			DISPLACEMENT
187F	40		187F	4616		DC AL1(@#KE08)			CONFIGURATION
				4617	*				
1880	46		1880	4618		DC AL1(UCNMIN+UCN006)			STATUS BYTE
1881	F1F6C3D24040		1886	4619		DC CL6 '16CK '			SYNTAX FIELD
1887	19		1887	4620		DC AL1(@#KEYS)			DISPLACEMENT
1888	80		1888	4621		DC AL1(@#KE16)			CONFIGURATION
				4622	*				
1889	5C		1889	4623	UCNEND	DC AL1(@ASTER)			PARAMETER DELIMITER
188A	0707		188B	4624	UCNPRT	DC AL2(\$\$PRNT)			PRINTER IOCR FLAG
				4625	*				
				4626	***	EQUATES USED IN UCNFIG			
				4627	*				
			0001	4628	UCNONE	EQU 1			CONSTANT FACTOR
			0007	4629	UCNCOM	EQU 7			NO. POSSIBLE COMPONENTS
			0006	4630	UCNLPF	EQU 6			LENGTH PARM SYNTAX FIELD
			0009	4631	UCNLPL	EQU 9			LENGTH PARAMETER LIST
			0029	4632	UCN029	EQU X'29'			CRT/12K POINTER
			0039	4633	UCN039	EQU X'39'			CRT/16K POINTER
			0002	4634	UCNVOL	EQU 2			DISP TO 'VOL' IN BUFFER
				4635	*	NATIONALITY SUBSET FLAG TRANSPARENT			
			0001	4636	UCN001	EQU 1			CORE SIZE SUBSET FLAG
			0002	4637	UCN002	EQU 2			DISK CAPACITY SUBSET FLAG
			0003	4638	UCN003	EQU 3			PRINTER WIDTH SUBSET FLAG
			0004	4639	UCN004	EQU 4			CRT SUBSET FLAG
			0005	4640	UCN005	EQU 5			DATA RECORDER SUBSET FLAG
			0006	4641	UCN006	EQU 6			COMMAND KEY NO. SUBSET FLAG
			0080	4642	UCNDET	EQU X'80'			BIT FOR PARAMETER FOUND
			0040	4643	UCNMIN	EQU X'40'			BIT FOR MINIMUM CONFIGURE
			006C	4644	UCNDEL	EQU X'6C'			CODE TO DETECT DELIMITERS
			00F0	4645	UCNLOW	EQU X'F0'			NUMERIC LOWER BOUND
			00F9	4646	UCNHII	EQU X'F9'			NUMERIC UPPER BOUND
			0005	4647	UCNCYL	EQU X'05'			CONFIGURATION RECORD
			16BD	4648	UCNCHK	EQU UCN925			ADDRESS OF I/O CONFIGURATION
				4649	*				* COMPONENT CHECK DISK ADDR
			188C	4650	UCNSUB	EQU *			FIRST BYTE OF COMPONENT FIELD
			1892	4651	UCNSET	EQU UCNSUB+UCNCOM-1			LAST BYTE OF COMPONENT FIELD



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ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	24/05/21	PAGE 102
		1893	4652	UCNHDF	EQU UCNSET+1			FIRST BYTE OF PARM HOLDER
		1898	4653	UCNHDL	EQU UCNHDF+5			LAST BYTE OF PARM HOLDER
		1893	4654	MCNBUF	EQU UCNHDF			MCNFIG BUFFER ADDRESS
		1993	4655	UCNARE	EQU UCNHDF+256			TOP OF VOLUME LABEL
188C	1502	188D	4656	UCNOVR	DC AL2(UCNFIG)			ENTRY POINT TO PROGRAM
		1893	4657	MIPBF1	EQU UCNHDF			WORK BUFFER
		0F00	4658	SUPDAT	EQU MIP265			DUMMY EXIT TO SUPDAT FROM UCNFIG
			4659	*	CHANGES TO UCNFIG TO GIVE PROPER RESULTS			
			4660	*	(COMMENTED OUT. THIS CAUSES 'P 20 ERROR DURING LINK EDIT)			
16C7			4661	ORG	UCN930			CHANGE UCNFIG RETURN BRANCH
16C7	C0 87 0F00		4662	B	MIP265			* TO WITHIN MIPPER
		4664	*****					
		4665	*	PATCH AREA #1				*
		4666	*****					
16CB		171E	4667	\$\$\$\$\$2	DS CL84			PATCH AREA
			4668	*				
		0C07	4669	END	MIPOVL			MODULE ENTRY POINT
TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =					0			

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$\$\$	001	0C00	2893	
\$\$\$\$\$0	020	0DBD	3070	
\$\$\$\$\$1	033	11FF	3531	
\$\$\$\$\$2	084	171E	4667	
\$\$\$\$\$L1	001	11DF	3526	3529 3531
\$\$\$\$\$T1	001	1200	3528	3531
\$\$\$CMD	001	0020	0846	
\$\$\$DAT	001	0040	0845	
\$\$\$EPL	001	0091	0842	
\$\$\$ERN	001	0080	0896	
\$\$\$FUN	001	0010	0847	3144
\$\$\$NLN	001	00A0	0892	3171
\$\$\$STD	001	0081	0841	3148
\$\$\$001	015	0CBF	2932	
\$\$BNLN	001	0605	0822	0824
\$\$CDBS	001	08C0	0872	
\$\$CDND	001	0666	0831	
\$\$CDRD	001	0890	0870	0872
\$\$CKEY	001	0603	0820	
\$\$CKFF	001	0B3D	0852	
\$\$COFF	001	0B44	0851	
\$\$CSNS	001	209C	0881	
\$\$DATB	001	0BBF	0853	3745
\$\$EOSA	001	0AFE	0850	3264
\$\$ERSK	001	1C00	0891	2966 2973* 3514*
\$\$FITS	001	1D00	0899	
\$\$FLIB	001	06FF	0898	
\$\$ILEN	001	0601	0816	0818 0822
\$\$ILHD	001	0600	0814	0816
\$\$INLN	001	0607	0829	0831 0833 2966* 2973 3181
\$\$INND	001	06FA	0833	
\$\$KBDT	001	09E1	0840	0844 3146 3148
\$\$KBSN	001	09E2	0844	0849 3137* 3142 3144
\$\$KLD1	001	0600	0904	
\$\$KLD2	001	0700	0906	3093* 3094 3094* 3389
\$\$KLD3	001	0C00	0908	2885
\$\$LPOS	001	09EB	0849	
\$\$PCNT	001	07E9	0865	
\$\$PLYN	001	2004	0879	3367
\$\$PRES	001	0890	0838	0840 0850 0851 0852 0853 0870 3138 3251
\$\$PRFL	001	2143	0883	
\$\$PRNT	001	0707	0859	0860 0864 0865 4624
\$\$PRTN	001	0782	0860	
\$\$PSIO	001	07CE	0864	
\$\$PYCD	001	2200	0885	
\$\$PYMP	001	2000	0877	0879 0881 0883 0885 3403
\$\$SLIB	001	1C00	0894	
\$\$TPCD	001	0606	0824	0829
\$\$UPAR	001	0602	0818	0820
\$\$WSPB	001	1E00	0897	
\$\$XIND	001	06FF	0895	0898
\$\$ZERO	001	0000	0410	0411 0413 0414 0415 0419 0877
\$#TALT	001	0075	2235	
\$#TBIS	001	00FC	2247	
\$#TCET	001	0069	2234	
\$#TCYL	001	005C	2233	3468

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$#THAD	001	00F2	2239	
\$#THEL	001	0004	2259	
\$#THVT	001	00F0	2238	
\$#TIDR	001	00FF	2249	3214 3224
\$#TLAD	001	00FE	2248	3212 3222 3235 3243 4424
\$#TLBL	001	0008	2230	3210 3220 3233 3241 4380 4387 4424*
\$#TLIB	001	00F8	2244	
\$#TLIF	001	0010	2257	
\$#TLSZ	001	00F7	2243	
\$#TOID	001	005B	2232	
\$#TPAD	001	00F6	2242	
\$#TPFL	001	0008	2258	
\$#TPSZ	001	00F4	2241	
\$#TPTF	001	00F3	2240	
\$#TRES	001	00D7	2251	
\$#TSUS	001	00EF	2237	
\$#TSYM	001	0080	2254	
\$#TSYS	001	00FA	2246	
\$#TUSE	001	00A8	2236	
\$#TVOL	001	0002	2229	3448 3450
\$#TVTC	001	000A	2231	
\$#TWAL	001	00D7	2250	3216 3226
\$#TWF1	001	0020	2256	3224
\$#TWRK	001	00F9	2245	
\$#TWR1	001	0040	2255	3214
\$ABORT	001	0010	0522	
\$BASIC	001	0080	0580	
\$BIGCD	001	0080	0656	3690 3695
\$BLDPL	001	0579	0789	0791
\$BLNOE	001	0569	0779	
\$BLOAD	001	0522	0770	0772 0775 0788 0789
\$BLRTN	001	0550	0778	0779
\$BRSAV	001	03C5	0467	0468
\$BSADR	001	0587	0794	0796 3095 3096 3097 3254 3707 3751 4291
\$BUFPT	001	03E3	0675	0676
\$CABLD	001	04B4	0748	0749
\$CAERK	001	0469	0725	0728 3176 4214 4287 4356
\$CAERR	001	03CD	0473	0475 4066* 4263* 4266* 4280* 4285* 4354*
\$CAIPL	001	049D	0744	0746 3177
\$CALLI	001	0008	0665	4330
\$CARDI	001	0001	0436	4332 4334
\$CARPL	001	04A1	0746	0748 2975
\$CIENT	001	0483	0735	0736
\$CIEXT	001	0480	0734	0735
\$CIMSK	001	0476	0731	0734 3458*
\$CISUS	001	0496	0739	0744
\$CLBFR	001	0010	0623	3322
\$CMDKY	001	0008	0535	
\$CMODE	001	0002	0585	3341
\$CONFIG	001	03DD	0648	0658 3656* 3665* 3671* 3690* 3695* 3730* 3743* 3846*
\$CRPOS	001	03E2	0674	0675
\$CRTAD	001	044D	0713	0714 3714* 3715
\$CRTAV	001	0002	0529	3354 3696 3699 3702
\$CRTDN	001	0002	0553	
\$CRTIN	001	03D3	0550	0557
\$CRTNO	001	0004	0532	3201 3319 3360 3702

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$CRTPU	001	0004	0554	
\$CRTSP	001	0008	0555	
\$CRTUP	001	0001	0552	
\$CRUSH	001	0080	0661	
\$CSDPL	001	050E	0760	0761 3661* 3717*
\$C0001	001	0464	0717	0723 3516 3689 3694 3729 3736 3753 3824
\$DATE	001	043A	0698	0699 3263* 3270* 3274* 3281* 3287* 3294* 3300*
\$DBGUF	001	03E0	0660	0669 4330
\$DBLOK	001	0001	0610	
\$DFDET	001	03E8	0681	0682
\$DISKN	001	0025	0413	2968 2982 2984 3029 3107 3112 3114 3121 3124 3126 3139 3256 3260 3337 3364 3436 3443 3445 3709 3711 3765 3767 3771 3773 3778 3781 3783 3787 3790 3792 3796 3799 3801 3806 3808 3812 3814 3839 4292 4294 4362 4418 4420
\$DKERR	001	0008	0591	
\$DKSIZ	001	03D7	0635	0643 0684 3229 3237 3465 3818* 3825* 3832* 3836* 4207 4370 4373 4392
\$DK100	001	0001	0637	
\$DK200	001	0002	0638	3465 3818
\$DK400	001	0004	0639	3825
\$DK600	001	0008	0640	3229 3832 4392
\$DK800	001	0010	0641	3229 3237 3836 4373
\$DPLSV	001	0449	0709	0711
\$DTNMB	001	0040	0456	
\$DTRDR	001	0040	0544	3677 3683
\$ENDNU	001	0600	0803	0814 0838 0859 0895 0904 0906 0908
\$ERDPL	001	046F	0728	0730
\$ERFIL	001	0040	0483	
\$ERHRD	001	0004	0615	3195 3202
\$ERKEY	001	0080	0487	
\$ERLOG	001	0345	0418	
\$ERMAD	001	0472	0730	0731 3095* 3339*
\$ERPND	001	0004	0588	3103 3349 3353
\$ERRCT	001	03CF	0489	3330*
\$ERRPG	001	03CE	0477	3194*
\$ERSFL	001	0035	0482	
\$ERSTK	001	0030	0480	3172
\$ER050	001	0363	0419	
\$ER1N2	001	0050	0485	3194
\$EXADR	001	0517	0763	0765
\$EXCMD	001	0001	0517	
\$EXFTR	001	043B	0699	0704 3252 3255 3357 3660* 3664* 3670* 3673 3676 3703* 3706 3717 3845*
\$FCIND	001	0010	0595	
\$FDIND	001	0040	0602	
\$FEARR	001	0004	0411	
\$FEMAP	001	0588	0796	0797
\$FILIB	001	03DA	0646	0647
\$FITIN	001	0010	0571	
\$FUIND	001	0020	0600	
\$GUFIO	001	0583	0793	0794 3096* 3340*
\$GUFIR	001	0008	0445	
\$HISTE	001	042E	0696	0697
\$HIST1	001	0435	0697	0698
\$HRDER	001	0020	0541	3134 3201 3360
\$INDR1	001	03D4	0557	0583

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$INDR2	001	03D5	0583	0608 3103* 3341* 3349* 3353*
\$INDR3	001	03D6	0608	0635 3195* 3202* 3218* 3228* 3321 3322* 3326
\$INLNO	001	03CF	0475	0477 0489 0496
\$INRPT	001	0020	0453	
\$IOIND	001	03D2	0524	0550 3134 3136* 3158 3201* 3319* 3354 3360* 3677* 3683* 3696 3699* 3702* 3718* 3737*
\$IOPGS	001	0010	0664	
\$IOYES	001	0002	0439	4327
\$IPLDV	001	05FF	0800	0803
\$IRKEY	001	0020	0663	
\$KEYBD	001	03E1	0669	0674 3744* 3777
\$KEYCD	001	03C3	0433	0467 3179 3258 4327* 4332 4334*
\$KEYDT	001	0040	0577	
\$KE090	001	00DE	0414	
\$KE130	001	01D5	0415	
\$KYBSY	001	0010	0450	3179 3258
\$LDRTN	001	0571	0788	
\$LEVEL	001	03DF	0658	0660 3216 3226
\$LIST	001	0002	0612	
\$LMRGN	001	03C1	0428	0430
\$LNPTR	001	0080	0547	3718 3737
\$LOADB	001	054A	0772	
\$LOADR	001	051A	0765	0768 3089
\$LPRIO	001	03E9	0682	
\$LPROS	001	03E5	0677	0679
\$LPRP3	001	03E4	0676	0677 4209 4209*
\$MOUNT	001	0020	0626	
\$MPDWN	001	0001	0526	3158
\$NEXTB	001	03E6	0679	0680
\$NEXTL	001	03E7	0680	0681
\$NOENB	001	0008	0618	
\$NOLST	001	0004	0442	
\$NUCBS	001	03C0	0425	0426 2898 3092 3200 3351 3474 3652 3654 3755
\$NWRKF	001	0080	0631	3228
\$NWRKR	001	0040	0628	3218 3321 3326
\$PASWD	001	042D	0695	0696
\$PAUSD	001	04BA	0749	0751 3168
\$PAUSE	001	0002	0519	
\$PGMDT	001	0020	0574	
\$PGMST	001	0010	0538	3136
\$PKERT	001	0419	0693	0695
\$PLST1	001	0454	0714	0715
\$PLST2	001	045B	0715	0716
\$PLST3	001	0462	0716	0717
\$PRDEV	001	044B	0711	0713 3356* 3357* 3682 4314* 4346 4348* 4350 4352*
\$PRESN	001	0002	0562	
\$PROCI	001	0001	0559	
\$PRPOS	001	03C2	0430	0433
\$PSDBR	001	04FA	0754	
\$PSDXR	001	04F2	0753	0754
\$PSTEP	001	0004	0520	
\$PSTMT	001	0008	0521	
\$PTCH1	001	03F5	0684	0688
\$READY	001	0080	0604	
\$REORD	001	0040	0662	
\$RLOAD	001	051E	0768	0770

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$RMRGN	001	03C0	0426	0428 3723 3725* 3847*
\$RSTR	001	04D6	0751	0753 0755 0760
\$RUNIT	001	0001	0498	
\$SFAID	001	050D	0756	
\$SPRNT	001	0465	0723	0725 3098 3100 3129 3131 3154 3190 3246 3248 3306 3358
\$SRTRN	001	04FE	0755	0756
\$STEPT	001	0002	0499	
\$SWPCR	001	0511	0761	0763
\$TABLN	001	03CB	0470	0473
\$TFLOW	001	0008	0505	
\$TRACE	001	0004	0500	
\$TRALL	001	0010	0506	
\$TROVR	001	054E	0775	0778
\$TRUNK	001	0080	0458	
\$TRVAR	001	0020	0507	
\$UNMSK	001	048D	0736	0739
\$USRDR	001	03DC	0647	0648
\$VMDEF	001	0080	0511	
\$VOLF1	001	03FE	0690	0691 3220* 3222*
\$VOLF2	001	040E	0692	3241* 3243* 4380 4380* 4381* 4387 4390 4390 4390* 4391* 4394
\$VOLID	001	03F6	0688	0689 0693
\$VOLR1	001	03F6	0689	0690 3210* 3212*
\$VOLR2	001	0406	0691	0692 3233* 3235* 4380 4387 4387* 4388* 4390 4394 4394 4394* 4395*
\$WAITF	001	057F	0791	0793 2969 2985 3115 3127 3132 3140 3155 3249 3261 3365 3446
				3712 3768 3774 3784 3793 3802 3809 3815 4421
\$WFDEF	001	0040	0705	
\$WFLOK	001	0008	0568	
\$WFNME	001	0443	0704	0709
\$WSIND	001	0004	0565	
\$XIND1	001	03D0	0496	0515
\$XIND2	001	03D1	0515	0524
\$XIND3	001	03D8	0643	0646
\$XPREC	001	0040	0508	
\$XRSAB	001	03C7	0468	0470 3196* 4208 4237*
\$ZTRAD	001	05A2	0797	
\$12K	001	0004	0652	3665
\$16CKY	001	0008	0654	3743
\$16K	001	0002	0651	3671
\$22IMP	001	0001	0649	3730
###BL	001	0000	2587	
###CK	001	0000	2715	
###CN	001	0000	2683	
###CO	001	0000	2475	
###CS	001	0000	2535	
###DR	001	0000	2279	
###ER	001	0000	2479	
###FS	001	0000	2575	
###IN	001	0000	2719	
###PW	001	0000	2723	
###RS	001	0000	2555	
###SA	001	0000	2543	
###SS	001	0000	2539	
###VU	001	0600	2499	
###OT	001	0700	2271	
###1T	001	0000	2275	



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SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   24/05/21   PAGE 108

###BCO   001   0600   2287  
###BOV   001   0800   2559  
###DPR   001   0700   2295  
###DRE   001   0889   2311  
###DSP   001   2800   2331  
###ECM   001   0C00   2591  
###EFK   001   0C00   2611  
###ERR   001   0C00   2583  
###EXM   001   0C00   2471  
###FIL   001   0E00   2551  
###FIS   001   0E00   2547  
###FML   001   0200   2679  
###FMS   001   0200   2519  
###GRA   001   0889   2443  
###GUF   001   0C00   2579  
###INL   001   0600   2659  
###INS   001   0600   2283  
###KAL   001   0C00   2447  
###KCA   001   0C00   2663  
###KCH   001   0C00   2415  
###KCN   001   0C00   2531  
###KCT   001   0C00   2383  
###KDE   001   0C00   2379  
###KDI   001   0D00   2459  
###KDN   001   0C00   2367  
###KDO   001   0E00   2463  
###KED   001   0C00   2303  
###KEN   001   0C00   2307  
###KEX   001   0C00   2327  
###KGO   001   0C00   2299  
###KHE   001   0C00   2483  
###KKE   001   0C00   2711  
###KLI   001   0C00   2387  
###KLL   001   0920   2687  
###KLO   001   0C00   2391  
###KME   001   0D00   2371  
###KMO   001   0C00   2315  
###KNA   001   0C00   2427  
###KOV   001   0E00   2347  
###KPA   001   0C00   2323  
###KPO   001   0C00   2411  
###KPR   001   0C00   2435  
###KRE   001   0C00   2355  
###KRL   001   0700   2451  
###KRM   001   0C00   2319  
###KRN   001   1000   2339  
###KRO   001   0D00   2343  
###KRS   001   0C00   2667  
###KRU   001   0C00   2363  
###KRV   001   0800   2455  
###KSA   001   0C00   2399  
###KSE   001   0E00   2439  
###KSO   001   0C20   2491  
###KSS   001   0C00   2423  
###KSV   001   0980   2419  
###KSY   001   0C00   2431

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SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 24/05/21 PAGE 109

###KWI 001 0C00 2359  
###KWR 001 0C00 2351  
###LOA 001 0600 2291  
###MIP 001 0C00 2487  
###SDS 001 0C00 2599  
###SFF 001 0E00 2603  
###SFL 001 0F00 2595  
###SFO 001 1500 2567  
###SFS 001 0C00 2563  
###SPA 001 0C00 2403  
###SPO 001 0806 2407  
###SPS 001 0C00 2395  
###STR 001 1600 2571  
###TDC 001 1000 2375  
###TSY 001 1000 2335  
###TVK 001 0FC0 2511  
###UAL 001 0C00 2527  
###UAT 001 0900 2623  
###UCD 001 0900 2631  
###UCN 001 0C00 2615  
###UCP 001 0700 2619  
###UDE 001 0C00 2635  
###UDI 001 0C00 2639  
###UEX 001 0C00 2523  
###UIN 001 0C00 2627  
###UPA 001 0C00 2607  
###UPO 001 0C00 2675  
###UPT 001 0C00 2671  
###VCR 001 2000 2467  
###VLO 001 0600 2503  
###VOD 001 0600 2507  
###VVM 001 0000 2515  
###VXI 001 0600 2495  
###ZDU 001 1100 2647  
###ZLB 001 1100 2691  
###ZLO 001 1100 2651  
###ZLV 001 0F00 2707  
###ZL1 001 0F00 2695  
###ZL2 001 0F00 2699  
###ZL3 001 0C00 2703  
###ZTR 001 1000 2643  
###ZUT 001 0C00 2655  
##BLN 001 18D4 2586  
##CKT 001 2118 2714  
##CNF 001 2000 2682  
##COR 001 0800 2474  
##CSA 001 1000 2534  
##DRT 001 0000 2278  
##ERM 001 0928 2478  
##FSP 001 1880 2574  
##INV 001 212C 2718  
##PWR 001 2300 2722  
##RSP 001 1780 2554  
##SAV 001 1180 2542  
##SSA 001 1128 2538  
##VUF 001 0B08 2498

2892

3394 4443

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SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 24/05/21 PAGE 110

##\$0TR	001	0000	2270	
##\$1TR	001	0080	2274	
##\$@#BL	001	0001	2588	
##\$@#CK	001	0004	2716	
##\$@#CN	001	0001	2684	
##\$@#CO	001	003A	2476	
##\$@#CS	001	003A	2536	
##\$@#DR	001	0008	2280	
##\$@#ER	001	0032	2480	
##\$@#FS	001	0030	2576	
##\$@#IN	001	003A	2720	
##\$@#PW	001	00C0	2724	
##\$@#RS	001	0030	2556	
##\$@#SA	001	0108	2544	
##\$@#SS	001	0001	2540	
##\$@#VU	001	0002	2500	
##\$@#0T	001	0018	2272	
##\$@#1T	001	0018	2276	
##\$@BCO	001	0018	2288	
##\$@BOV	001	0018	2560	
##\$@DPR	001	0005	2296	3388
##\$@DRE	001	0001	2312	
##\$@DSP	001	0004	2332	3891
##\$@ECM	001	0006	2592	
##\$@EFK	001	0002	2612	
##\$@ERR	001	0003	2584	
##\$@EXM	001	0003	2472	
##\$@FIL	001	0009	2552	
##\$@FIS	001	0009	2548	
##\$@FML	001	0052	2680	
##\$@FMS	001	0052	2520	
##\$@GRA	001	0003	2444	
##\$@GUF	001	0010	2580	
##\$@INL	001	0010	2660	
##\$@INS	001	0010	2284	
##\$@KAL	001	000F	2448	
##\$@KCA	001	000C	2664	
##\$@KCH	001	000C	2416	
##\$@KCN	001	0010	2532	
##\$@KCT	001	0009	2384	
##\$@KDE	001	0010	2380	
##\$@KDI	001	0005	2460	
##\$@KDN	001	0010	2368	
##\$@KDO	001	000C	2464	
##\$@KED	001	000E	2304	
##\$@KEN	001	0006	2308	
##\$@KEX	001	0003	2328	
##\$@KGO	001	0002	2300	
##\$@KHE	001	000C	2484	
##\$@KKE	001	0006	2712	
##\$@KLI	001	0008	2388	
##\$@KLL	001	0001	2688	
##\$@KLO	001	0008	2392	
##\$@KME	001	0003	2372	
##\$@KMO	001	0004	2316	
##\$@KNA	001	0008	2428	

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SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 24/05/21 PAGE 111

#\$@KOV	001	0009	2348	
#\$@KPA	001	0005	2324	
#\$@KPO	001	000D	2412	
#\$@KPR	001	0009	2436	
#\$@KRE	001	0002	2356	
#\$@KRL	001	0004	2452	
#\$@KRM	001	0003	2320	
#\$@KRN	001	0003	2340	
#\$@KRO	001	000A	2344	
#\$@KRS	001	000A	2668	
#\$@KRU	001	0003	2364	
#\$@KRV	001	000D	2456	
#\$@KSA	001	0004	2400	
#\$@KSE	001	0004	2440	
#\$@KSO	001	000D	2492	
#\$@KSS	001	000B	2424	
#\$@KSV	001	0002	2420	
#\$@KSY	001	000F	2432	
#\$@KWI	001	0002	2360	
#\$@KWR	001	0002	2352	
#\$@LOA	001	0013	2292	
#\$@MIP	001	000D	2488	
#\$@SDS	001	0004	2600	
#\$@SFF	001	0008	2604	
#\$@SFL	001	0005	2596	
#\$@SFO	001	0003	2568	
#\$@SFS	001	0011	2564	
#\$@SPA	001	0004	2404	
#\$@SPO	001	0003	2408	
#\$@SPS	001	0001	2396	
#\$@STR	001	0002	2572	
#\$@TDC	001	0003	2376	3951
#\$@TSY	001	0003	2336	3902
#\$@TVK	001	0001	2512	
#\$@UAL	001	0011	2528	
#\$@UAT	001	000C	2624	
#\$@UCD	001	000B	2632	
#\$@UCN	001	0009	2616	
#\$@UCP	001	000F	2620	
#\$@UDE	001	000E	2636	
#\$@UDI	001	0008	2640	
#\$@UEX	001	000E	2524	
#\$@UIN	001	000F	2628	
#\$@UPA	001	0004	2608	
#\$@UPO	001	0005	2676	
#\$@UPT	001	0012	2672	
#\$@VCR	001	0008	2468	
#\$@VLO	001	0002	2504	
#\$@VOD	001	0016	2508	
#\$@VVM	001	0030	2516	
#\$@VXI	001	0002	2496	
#\$@ZDU	001	0008	2648	
#\$@ZLB	001	0002	2692	
#\$@ZLO	001	000C	2652	
#\$@ZLV	001	0006	2708	
#\$@ZL1	001	0007	2696	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$@ZL2	001	000D	2700	
#\$@ZL3	001	000A	2704	
#\$@ZTR	001	0001	2644	
#\$@ZUT	001	0014	2656	
#\$BCOM	001	0080	2286	
#\$BOLV	001	1780	2558	
#\$DPRI	001	014C	2294	3387 3869
#\$DREA	001	0200	2310	
#\$DSPL	001	0240	2330	3890
#\$ECMA	001	1900	2590	
#\$EFKE	001	1990	2610	
#\$ERRP	001	18C0	2582	
#\$EXMS	001	07D4	2470	
#\$FILN	001	1724	2550	
#\$FIST	001	1700	2546	
#\$FMLN	001	1E00	2678	
#\$FMST	001	0D00	2518	
#\$GRAP	001	0690	2442	
#\$GUFU	001	1880	2578	
#\$INLN	001	1C84	2658	
#\$INST	001	0020	2282	
#\$KALL	001	06A4	2446	
#\$KCAL	001	1CC4	2662	
#\$KCHA	001	053C	2414	
#\$KCND	001	0F80	2530	
#\$KCTL	001	03BC	2382	
#\$KDEL	001	035C	2378	
#\$KDIS	001	0744	2458	
#\$KDNT	001	0300	2366	
#\$KDOV	001	0780	2462	
#\$KEDI	001	0188	2302	
#\$KENA	001	01C4	2306	
#\$KEXT	001	0234	2326	
#\$KGOS	001	0180	2298	
#\$KHEL	001	0A30	2482	
#\$KKEY	001	2100	2710	
#\$KLIS	001	0400	2386	
#\$KLLA	001	2004	2686	
#\$KLOG	001	0444	2390	
#\$KMER	001	030C	2370	
#\$KMOU	001	0204	2314	
#\$KNAM	001	05C0	2426	
#\$KOVN	001	0290	2346	
#\$KPAS	001	0220	2322	
#\$KPOO	001	0508	2410	
#\$KPRT	001	063C	2434	
#\$KREA	001	02BC	2354	
#\$KRLA	001	0700	2450	
#\$KRMO	001	0214	2318	
#\$KRNU	001	0280	2338	
#\$KROV	001	028C	2342	
#\$KRSU	001	1D24	2666	
#\$KRUN	001	02CC	2362	
#\$KRVL	001	0710	2454	
#\$KSAV	001	0488	2398	
#\$KSET	001	0680	2438	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#\$KSOV	001	0AC8	2490	
#\$KSSP	001	0594	2422	
#\$KSVL	001	058C	2418	
#\$KSYM	001	0600	2430	
#\$KWID	001	02C4	2358	
#\$KWRI	001	02B4	2350	
#\$LOAD	001	0100	2290	
#\$MIPP	001	0A80	2486	
#\$SDSY	001	192C	2598	
#\$SFFI	001	193C	2602	
#\$SFLO	001	1918	2594	
#\$SFOV	001	1844	2566	
#\$SFSY	001	1800	2562	
#\$SPAC	001	04CC	2402	
#\$SPOV	001	04DC	2406	
#\$SPSY	001	0484	2394	
#\$STRO	001	1850	2570	
#\$TDCK	001	0350	2374	3950
#\$TSYK	001	0250	2334	3901
#\$TVKB	001	0BAC	2510	3957 3964
#\$UALL	001	0F00	2526	
#\$UATR	001	1A38	2622	
#\$UCDI	001	1AD8	2630	
#\$UCNF	001	19B8	2614	
#\$UCPL	001	19DC	2618	
#\$UDEL	001	1B24	2634	
#\$UDIS	001	1B5C	2638	
#\$UEXL	001	0EA8	2522	
#\$UINI	001	1A88	2626	
#\$UPAC	001	1980	2606	
#\$UPOV	001	1D24	2674	
#\$UPTF	001	1D5C	2670	
#\$VCRT	001	07B4	2466	
#\$VLOA	001	0B80	2502	
#\$VODK	001	0B88	2506	
#\$VVMR	001	0C00	2514	
#\$VXIT	001	0B00	2494	
#\$ZDUM	001	1BA4	2646	
#\$ZLBM	001	2008	2690	
#\$ZLOA	001	1BC4	2650	
#\$ZLVR	001	20B0	2706	
#\$ZL1M	001	2010	2694	
#\$ZL2M	001	2030	2698	
#\$ZL3M	001	2088	2702	
#\$ZTRA	001	1B9C	2642	
#\$ZUTM	001	1C14	2654	
##BAD	001	0455	0937	3408
##IO1	001	0459	0945	
##IO2	001	045D	0946	
##TAT	001	0941	0973	
##TBA	001	09A1	0977	
##TFS	001	0941	0971	
##TSY	001	0941	0975	
##VFP	001	0700	0963	
##VLP	001	093D	0966	
##WDB	001	050C	0958	



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#@#WFT	001	0500	0956	
#@@#BA	001	0001	0938	3409
#@@#IO	001	0001	0950	
#@@#SC	001	0002	0947	
#@@#TA	001	0010	0974	
#@@#TB	001	0010	0978	
#@@#TS	001	0005	0976	
#@@#TW	001	0020	0972	
#@@#VM	001	0100	0967	
#@@#WD	001	00BD	0959	
#@@#WF	001	0003	0957	
#@@#04	001	0004	0949	
#@@#08	001	0008	0948	
#@@BOV	001	0018	0926	
#@@ECM	001	0006	0940	
#@@ERR	001	0003	0934	
#@@GUF	001	0010	0930	
#@@LDS	001	0002	0936	
#@@SDS	001	0004	0932	
#@@SFF	001	0008	0944	
#@@SFL	001	0005	0942	
#@@SFO	001	0005	0952	
#@@SFS	001	0011	0928	
#@@VSF	001	0010	0980	
#@@VSL	001	000F	0981	
#@@VTR	001	0001	0965	
#@BOVL	001	0400	0925	
#@CORS	001	0005	1033	
#@ECMA	001	0481	0939	
#@ERRP	001	0441	0933	3166
#@GUFU	001	0401	0929	3167
#@LDSV	001	044D	0935	
#@MVSD	001	0001	1041	
#@NERO	001	0003	1035	
#@OBRA	001	0002	1037	
#@PTFL	001	0006	1056	
#@PTFS	001	0001	1055	
#@SDSY	001	04AD	0931	
#@SFFI	001	04BD	0943	
#@SFLO	001	0449	0941	
#@SFOV	001	04C4	0951	
#@SFSY	001	0480	0927	
#@VCNT	001	0002	1053	
#@VLAB	001	0001	1048	3502
#@VLSD	001	0001	1039	
#@VSFI	001	09A1	0979	
#@VTRL	001	0708	0964	
#@WAF1	001	0401	0924	
#@WAR1	001	0400	0923	
#CNDIS	001	0001	1008	
#CNFIG	001	0005	1044	
#CORSV	001	0010	1032	
#DKEXT	001	0002	1015	
#FIGSC	001	0001	1045	3395 4444
#HISCT	001	0006	1022	
#HISDX	001	0003	1017	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#HISLN	001	0008	1014	1015
#HISN1	001	0003	1020	
#HISN2	001	0005	1021	
#HISTC	001	0007	1024	
#HISTN	001	0009	1026	
#HISTQ	001	0000	1018	
#HISTR	001	0001	1019	
#HISTS	001	0008	1025	
#HISTV	001	000F	1027	
#HSEND	001	0007	1023	
#HSENT	001	0001	1016	
#IOSDR	001	0019	1043	
#MIPPE	001	0000	0002	
#MVSDR	001	000D	1040	
#NEROV	001	009C	1034	
#OBRAD	001	001D	1036	
#PKCNT	001	0002	1001	
#PKMRW	001	002B	1002	
#PKRDD	001	0003	0999	
#PKRTD	001	0003	0998	
#PKRTL	001	0004	1005	
#PKVRD	001	000B	1003	
#PKVWD	001	0007	1004	
#PKWTD	001	0001	1000	
#PTFDA	001	00DC	1054	
#RDWTL	001	0004	1006	
#SDRDK	001	0011	1042	
#VLSDR	001	000C	1038	
#VLTBE	001	0008	0993	3212* 3222* 3235* 3243*
#VOLF1	001	0009	1046	4437
#VOLNG	001	0006	0991	0993 1015 3210 3220 3233 3241
#VOLOC	001	0005	0992	3210* 3220* 3233* 3241*
#VOLR1	001	0008	1047	3455 3501 4436
#VTCF1	001	0025	1050	
#VTCF2	001	0027	1052	
#VTCR1	001	0024	1049	3048
#VTCR2	001	0026	1051	
@#AGER	001	0002	1134	4479
@#BFRN	001	0003	1135	4484
@#CRTB	001	0040	1090	3700 4338 4582
@#CRTD	001	0028	1085	3700 4338 4344 4581 4586
@#CRTN	001	0080	1087	4587
@#CSIZ	001	003C	1167	3153* 3205 3658 3662 3666 3668 3844* 4299 4342 4520 4525 4530
@#C050	001	0002	1159	
@#C08K	001	0001	1169	3662 4299 4342 4521
@#C100	001	0004	1158	4538
@#C12K	001	0002	1170	3666 4299 4344 4526
@#C16K	001	0004	1171	3668 4299 4531
@#C200	001	0008	1157	3819 4543
@#DATA	001	0020	1070	3678 3687 3692 4328 4593 4598 4603 4608
@#DATB	001	0040	1075	3678 4328 4594 4604
@#DATC	001	0048	1078	3692 4599
@#DATN	001	0080	1072	4609
@#DENK	001	0004	1136	4489
@#DISB	001	0040	1151	4337
@#DISK	001	0010	1146	4337*

CROSS REFERENCE															
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 24/05/21 PAGE 116										
@#DISN	001	0080	1148												
@#DOMS	001	0001	1133	4474											
@#DSIZ	001	001B	1155	3819	3826	3833	4537	4542	4547	4552					
@#FINL	001	0006	1138	4499											
@#FRR2	001	0010	1161	3826	4548										
@#FR12	001	0001	1162	3826	3833	4553									
@#KBNO	001	0080	1119												
@#KBRB	001	0040	1122	4336											
@#KBRD	001	0018	1117	1126	1131	1155	4336*								
@#KEYS	001	0019	1126	3741	4340	4615	4620								
@#KE08	001	0040	1128	3741	4340	4616									
@#KE16	001	0080	1129	4621											
@#KNAT	001	001A	1131	3744	3745	3756	3758	3761	4473	4478	4483	4488	4493	4498	4503
				4508	4513										
@#MP13	001	0001	1112	4560	4565										
@#MP22	001	0002	1111	3721	4570	4575									
@#MTLP	001	0004	1109	3731	4565	4575									
@#MTMP	001	0008	1108	4560	4570										
@#MTRX	001	0014	1097	1106	4335*										
@#MTXB	001	0040	1102	4335											
@#MTXN	001	0080	1099												
@#MTYP	001	0016	1106	3721	3731	4559	4564	4569	4574						
@#NORW	001	0005	1137	4494											
@#PORT	001	0008	1140	4509											
@#SPAN	001	0007	1139	4504											
@#UKDM	001	0009	1141	3756	4514										
@#0005	001	0005	1145	1146											
@#0006	001	0006	1096	1097											
@#0007	001	0007	1116	1117											
@#0009	001	0009	1069	1070											
@#0011	001	000B	1084	1085											
@#0016	001	0010	1166	1167											
@@E001	001	0000	1709	1711											
@@E003	001	0001	1711	1713											
@@E004	001	0002	1713	1715											
@@E005	001	0003	1715	1717											
@@E006	001	0004	1717	1719											
@@E007	001	0005	1719	1721											
@@E008	001	0006	1721	1723											
@@E009	001	0007	1723	1725											
@@E010	001	0008	1725	1727											
@@E011	001	0009	1727	1729											
@@E012	001	000A	1729	1731											
@@E013	001	000B	1731	1733											
@@E014	001	000C	1733	1735											
@@E015	001	000D	1735	1737											
@@E016	001	000E	1737	1739											
@@E017	001	000F	1739	1741											
@@E018	001	0010	1741	1743											
@@E019	001	0011	1743	1745											
@@E020	001	0012	1745	1747											
@@E021	001	0013	1747	1749											
@@E023	001	0014	1749	1751											
@@E024	001	0015	1751	1753											
@@E025	001	0016	1753	1755											
@@E026	001	0017	1755	1757											

## CROSS REFERENCE

SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   24/05/21   PAGE 117

@@E027	001	0018	1757	1759	
@@E028	001	0019	1759	1761	
@@E029	001	001A	1761	1763	
@@E030	001	001B	1763	1765	
@@E031	001	001C	1765	1767	
@@E032	001	001D	1767	1769	
@@E035	001	001E	1769	1771	
@@E036	001	001F	1771	1773	
@@E037	001	0020	1773	1775	
@@E038	001	0021	1775	1777	
@@E039	001	0022	1777	1779	
@@E040	001	0023	1779	1781	
@@E041	001	0024	1781	1783	
@@E042	001	0025	1783	1785	
@@E043	001	0026	1785	1787	
@@E044	001	0027	1787	1789	
@@E045	001	0028	1789	1791	
@@E046	001	0029	1791	1793	
@@E060	001	002A	1793	1795	
@@E080	001	002B	1795		
@@E100	001	0000	1181	1183	
@@E101	001	0001	1183	1185	
@@E102	001	0002	1185	1187	
@@E103	001	0003	1187	1189	
@@E110	001	0004	1189	1191	4066
@@E112	001	0005	1191	1193	
@@E113	001	0006	1193	1195	
@@E114	001	0007	1195	1197	
@@E115	001	0008	1197	1199	
@@E116	001	0009	1199	1201	
@@E117	001	000A	1201	1203	
@@E120	001	000B	1203	1205	
@@E122	001	000C	1205	1207	
@@E123	001	000D	1207	1209	
@@E124	001	000E	1209	1211	
@@E129	001	000F	1211	1213	
@@E130	001	0010	1213	1215	
@@E131	001	0011	1215	1217	4266
@@E133	001	0012	1217	1219	
@@E134	001	0013	1219	1221	4285
@@E135	001	0014	1221	1223	
@@E136	001	0015	1223	1225	4280
@@E137	001	0016	1225	1227	
@@E138	001	0017	1227	1229	
@@E139	001	0018	1229	1231	
@@E142	001	0019	1231	1233	
@@E143	001	001A	1233	1235	
@@E150	001	001B	1235	1237	
@@E151	001	001C	1237	1239	
@@E160	001	001D	1239	1241	
@@E162	001	001E	1241	1243	
@@E163	001	001F	1243	1245	
@@E164	001	0020	1245	1247	
@@E200	001	0021	1247	1249	
@@E205	001	0022	1249	1251	
@@E210	001	0023	1251	1253	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E211	001	0024	1253	1255
@@E212	001	0025	1255	1257
@@E213	001	0026	1257	1259
@@E215	001	0027	1259	1261
@@E216	001	0028	1261	1263
@@E217	001	0029	1263	1265
@@E220	001	002A	1265	1267
@@E221	001	002B	1267	1269
@@E222	001	002C	1269	1271
@@E223	001	002D	1271	1273
@@E225	001	002E	1273	1275
@@E226	001	002F	1275	1277
@@E227	001	0030	1277	1279
@@E228	001	0031	1279	1281
@@E229	001	0032	1281	1283
@@E230	001	0033	1283	1285
@@E232	001	0034	1285	1287
@@E234	001	0035	1287	1289
@@E237	001	0036	1289	1291
@@E240	001	0037	1291	1293
@@E241	001	0038	1293	1295 2185
@@E242	001	0039	1295	1297
@@E248	001	003A	1297	1299
@@E249	001	003B	1299	1301
@@E250	001	003C	1301	1303
@@E251	001	003D	1303	1305
@@E252	001	003E	1305	1307
@@E253	001	003F	1307	1309
@@E254	001	0040	1309	1311
@@E255	001	0041	1311	1313
@@E256	001	0042	1313	1315
@@E300	001	0043	1315	1317
@@E301	001	0044	1317	1319
@@E302	001	0045	1319	1321
@@E303	001	0046	1321	1323
@@E304	001	0047	1323	1325
@@E305	001	0048	1325	1327
@@E308	001	0049	1327	1329
@@E310	001	004A	1329	1331
@@E315	001	004B	1331	1333
@@E316	001	004C	1333	1335
@@E320	001	004D	1335	1337
@@E325	001	004E	1337	1339
@@E330	001	004F	1339	1341
@@E335	001	0050	1341	1343
@@E338	001	0051	1343	1345
@@E340	001	0052	1345	1347
@@E350	001	0053	1347	1349
@@E351	001	0054	1349	1351
@@E352	001	0055	1351	1353
@@E360	001	0056	1353	1355
@@E361	001	0057	1355	1357
@@E362	001	0058	1357	1359
@@E371	001	0059	1359	1361
@@E380	001	005A	1361	1363
@@E390	001	005B	1363	1365

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E400	001	005C	1365	1367
@@E410	001	005D	1367	1369
@@E415	001	005E	1369	1371
@@E417	001	005F	1371	1373
@@E420	001	0060	1373	1375
@@E430	001	0061	1375	1377
@@E432	001	0062	1377	1379
@@E433	001	0063	1379	1381
@@E450	001	0064	1381	1383
@@E451	001	0065	1383	1385
@@E460	001	0066	1385	1387
@@E461	001	0067	1387	1389
@@E464	001	0068	1389	1391
@@E465	001	0069	1391	1393
@@E466	001	006A	1393	1395
@@E467	001	006B	1395	1397
@@E469	001	006C	1397	1399
@@E470	001	006D	1399	1401
@@E471	001	006E	1401	1403
@@E473	001	006F	1403	1405
@@E474	001	0070	1405	1407
@@E475	001	0071	1407	1409
@@E476	001	0072	1409	1411 4354
@@E477	001	0073	1411	1413 4263
@@E478	001	0074	1413	1415
@@E479	001	0075	1415	1417
@@E480	001	0076	1417	1419
@@E481	001	0077	1419	1421
@@E482	001	0078	1421	1423
@@E483	001	0079	1423	1425
@@E484	001	007A	1425	1427
@@E485	001	007B	1427	1429
@@E486	001	007C	1429	1431
@@E487	001	007D	1431	1433
@@E488	001	007E	1433	1435
@@E489	001	007F	1435	1437
@@E490	001	0080	1437	1439
@@E491	001	0081	1439	1441
@@E492	001	0082	1441	1443
@@E493	001	0083	1443	1445
@@E494	001	0084	1445	1447
@@E495	001	0085	1447	1449
@@E496	001	0086	1449	1451
@@E497	001	0087	1451	1453
@@E498	001	0088	1453	1455
@@E500	001	0089	1455	1457
@@E501	001	008A	1457	1459
@@E530	001	008B	1459	1461
@@E531	001	008C	1461	1463
@@E535	001	008D	1463	1465 3325
@@E540	001	008E	1465	1467
@@E541	001	008F	1467	1469
@@E542	001	0090	1469	1471 3316
@@E543	001	0091	1471	1473 3207
@@E544	001	0092	1473	1475 3231
@@E545	001	0093	1475	1477 3209



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E546	001	0094	1477	1479 3239
@@E547	001	0095	1479	1481 3204
@@E548	001	FFFF	1685	
@@E549	001	0096	1481	1483
@@E550	001	0097	1483	1485
@@E551	001	0098	1485	1487
@@E552	001	0099	1487	1489
@@E553	001	009A	1489	1491
@@E554	001	009B	1491	1493
@@E555	001	009C	1493	1495
@@E556	001	009D	1495	1497
@@E558	001	009E	1497	1499
@@E570	001	009F	1499	1501
@@E571	001	00A0	1501	1503
@@E572	001	00A1	1503	1505 3328
@@E573	001	00A2	1505	1507 3320
@@E574	001	00A3	1507	1509
@@E575	001	FFFF	1687	
@@E578	001	00A4	1509	1511
@@E579	001	FFFF	1689	
@@E580	001	FFFF	1691	
@@E585	001	00A5	1511	1513
@@E595	001	FFFF	1693	
@@E597	001	FFFF	1695	
@@E598	001	FFFF	1697	
@@E600	001	00A6	1513	1515
@@E601	001	00A7	1515	1517
@@E602	001	00A8	1517	1519
@@E603	001	00A9	1519	1521
@@E604	001	00AA	1521	1523
@@E606	001	00AB	1523	1525
@@E607	001	00AC	1525	1527
@@E608	001	00AD	1527	1529
@@E609	001	00AE	1529	1531
@@E610	001	00AF	1531	1533
@@E611	001	00B0	1533	1535
@@E612	001	00B1	1535	1537
@@E613	001	00B2	1537	1539
@@E614	001	00B3	1539	1541
@@E700	001	00B4	1541	1543
@@E701	001	00B5	1543	1545
@@E710	001	00B6	1545	1547
@@E712	001	00B7	1547	1549
@@E713	001	00B8	1549	1551
@@E714	001	00B9	1551	1553
@@E715	001	00BA	1553	1555
@@E716	001	00BB	1555	1557
@@E717	001	00BC	1557	1559
@@E718	001	00BD	1559	1561
@@E720	001	00BE	1561	1563
@@E721	001	00BF	1563	1565
@@E723	001	00C0	1565	1567
@@E724	001	00C1	1567	1569
@@E725	001	00C2	1569	1571
@@E726	001	00C3	1571	1573
@@E727	001	00C4	1573	1575

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E728	001	00C5	1575	1577
@@E729	001	00C6	1577	1579
@@E730	001	00C7	1579	1581
@@E732	001	00C8	1581	1583
@@E752	001	00C9	1583	1585
@@E753	001	00CA	1585	1587
@@E754	001	00CB	1587	1589
@@E755	001	00CC	1589	1591
@@E756	001	00CD	1591	1593
@@E757	001	00CE	1593	1595
@@E758	001	00CF	1595	1597
@@E759	001	00D0	1597	1599
@@E760	001	00D1	1599	1601
@@E761	001	00D2	1601	1603
@@E762	001	00D3	1603	1605
@@E763	001	00D4	1605	1607
@@E764	001	00D5	1607	1609
@@E765	001	00D6	1609	1611
@@E766	001	00D7	1611	1613
@@E767	001	00D8	1613	1615
@@E768	001	00D9	1615	1617
@@E769	001	00DA	1617	1619
@@E770	001	00DB	1619	1621
@@E771	001	00DC	1621	1623
@@E772	001	00DD	1623	1625
@@E773	001	00DE	1625	1627
@@E774	001	00DF	1627	1629
@@E775	001	00E0	1629	1631
@@E776	001	00E1	1631	1633
@@E777	001	00E2	1633	1635
@@E778	001	00E3	1635	1637
@@E779	001	00E4	1637	1639
@@E780	001	00E5	1639	1641
@@E781	001	00E6	1641	1643
@@E782	001	00E7	1643	1645
@@E783	001	00E8	1645	1647
@@E784	001	00E9	1647	1649
@@E785	001	00EA	1649	1651
@@E786	001	00EB	1651	1653
@@E790	001	00EC	1653	1655
@@E791	001	00ED	1655	1657
@@E792	001	00EE	1657	1659
@@E793	001	00EF	1659	1661
@@E794	001	00F0	1661	1663
@@E795	001	00F1	1663	1665
@@E796	001	00F2	1665	1667
@@E797	001	00F3	1667	1669
@@E798	001	00F4	1669	1671
@@E800	001	FFFF	1699	
@@E801	001	FFFF	1701	
@@E802	001	FFFF	1703	
@@E803	001	FFFF	1705	
@@E804	001	FFFF	1707	
@@E900	001	00F5	1671	1673 2181
@@E901	001	00F6	1673	1675 2183
@@E902	001	00F7	1675	1677 2182

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@@E903	001	00F8	1677	1679	2184												
@@E905	001	00F9	1679	1681													
@@E906	001	00FA	1681	1683													
@@E910	001	00FB	1683	2180													
@@M160	001	0C0B	2905	3130													
@@M161	001	0C0F	2909	3247													
@@M162	001	0C13	2913	3359													
@@M163	001	0C17	2917	3101													
@@T160	001	0C1B	2921	2907													
@@T161	001	0C4A	2923	2911													
@@T162	001	0C5F	2925	2915													
@@T163	001	0C90	2927	2919													
@ALTFL	001	0001	0252														
@ARR	001	0008	0018	3434	3517	3657	4064	4406	4417								
@ASIGN	001	007C	0073														
@ASTER	001	005C	0071	4245	4318	4411	4623										
@BCRDL	001	0050	0090														
@BE	001	0081	0045														
@BF	001	0090	0054	4301													
@BH	001	0084	0043														
@BKSPC	001	0010	0348														
@BL	001	0082	0044														
@BLANK	001	0040	0067	3093	3188	3266	3296	3302	4070	4077	4219	4231	4261	4282			
@BM	001	0082	0056														
@BNE	001	0001	0048	4060													
@BNH	001	0004	0046														
@BNL	001	0002	0047														
@BNM	001	0002	0059														
@BNOL	001	0020	0052														
@BNOZ	001	0008	0051														
@BNP	001	0004	0058														
@BNZ	001	0001	0060														
@BOL	001	00A0	0050														
@BOZ	001	0088	0049														
@BP	001	0084	0055														
@BR	001	0001	0015	2899	2963	2965*	2970	2970	2971	2971	2972	2976	2981	2990	2994		
				2997	2997	2998	2998	2999	2999	3000	3000	3001	3001	3002	3003		
				3003	3004	3005	3010	3015	3016	3016	3017	3017	3018	3018	3019		
				3019	3020	3020	3021	3021	3026	3027	3028	3031	3032	3036	3039		
				3041	3084	3091*	3111	3119	3143	3147	3180	3203*	3204	3207	3209		
				3231	3239	3264*	3265*	3266	3268	3270	3271*	3272	3274	3275*	3276		
				3278*	3279	3281	3282*	3283	3285	3287	3288*	3289	3291*	3292	3294		
				3295*	3296	3298	3300	3301*	3302	3315*	3316	3320	3325	3328	3330		
				3331	3339	3340	3342	3344	3352*	3514	3515	3516	3652	3654*	3656		
				3660	3664	3665	3670	3671	3673	3676	3677	3682	3683	3689	3694		
				3696	3699	3702	3703	3706	3714	3715	3717	3718	3723	3725	3729		
				3730	3736	3737	3743	3744	3750*	3751	3752	3752*	3755*	3777	3818		
				3824	3825	3832	3836	3845	3846	3847							
@BT	001	0010	0053														
@BZ	001	0081	0057														
@BZ37B	001	00F2	0361														
@B1	001	0001	0065														
@CADDR	001	0002	0143	2134	2161	2907	2911	2915	2919	2997	3003	3021	3331	3344	3356		
				3515	3714	3715	3760	3762	3763	3764	3804	4222	4226	4311	4314		
				4346	4350												
@CARDL	001	0060	0089	0831													

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@CC37B	001	0000	0357	
@CD37B	001	00F0	0375	
@CHARA	001	00C1	0074	
@CHARF	001	00C6	0075	
@CHARR	001	00D9	0076	
@CHARZ	001	00E9	0077	
@CKY01	001	0001	0310	
@CKY02	001	0002	0311	
@CKY03	001	0003	0312	
@CKY04	001	0004	0313	
@CKY05	001	0005	0314	
@CKY06	001	0006	0315	
@CKY07	001	0007	0316	
@CKY08	001	0008	0317	
@CKY09	001	0009	0318	
@CKY10	001	000A	0319	
@CKY11	001	000B	0320	
@CKY12	001	000C	0321	
@CKY13	001	000D	0322	
@CKY14	001	000E	0323	
@CKY15	001	000F	0324	
@CKY16	001	0010	0325	
@CLOFF	001	0010	0096	
@CLON	001	0011	0095	
@CMLON	001	0001	0328	
@CMOFF	001	0000	0327	
@COMMA	001	006B	0068	4073 4229
@CPLUS	001	004E	0081	
@CP37B	001	0004	0388	
@CRERR	001	0090	0343	
@CRPRY	001	0004	0347	
@CRTDS	001	0092	0340	
@CRTQ	001	0090	0342	3698
@CURSR	001	0040	0344	
@DADDR	001	0002	0141	2994 3058 3058 3095 3096 3212 3222 3235 3243 3339 3340 3707 3751 4375 4382 4424
@DBFR1	001	0004	0130	3706*
@DBFR2	001	0005	0131	3714
@DBUSY	001	0002	0246	3110 3441
@DCALK	001	0001	0083	
@DCBCY	001	0009	0116	
@DCBT1	001	0050	0118	
@DCFLN	001	0004	0230	
@DCNT	001	0003	0129	3255* 3661* 3717*
@DCRID	001	0001	0244	3109 3439
@DCST1	001	0040	0117	
@DCTRL	001	0000	0126	3120* 3123* 3435* 3438*
@DCTRW	001	0000	0243	
@DCWID	001	0001	0240	
@DCYL	001	0001	0127	
@DCYMV	001	0001	0231	
@DD2	001	0003	0032	
@DEFLG	001	0002	0253	
@DERCE	001	0020	0283	
@DERD2	001	0008	0276	
@DEREQ	001	0010	0275	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@DERIN	001	0040	0273	3830 3837
@DERMA	001	0020	0274	
@DERNR	001	0004	0277	
@DERR	001	0000	0247	3111 3442
@DERSC	001	0001	0279	
@DERTC	001	0002	0278	
@DFCR	001	0006	0233	3156* 3480*
@DFDR	001	0004	0234	
@DGET	001	0001	0135	3031 3047 3123 3386 3400 3414 3438 3500 3889 3900 3907 3921 3935 3949 3956 4442 4452
@DHARD	001	0000	0261	
@DLNCT	001	000F	0346	
@DLNLG	001	0040	0345	
@DOLAR	001	005B	0070	
@DOP2	001	0004	0030	
@DPLNG	001	0006	0133	3752
@DPOS	001	0000	0134	3393 3435
@DPUT	001	0002	0136	3028 3120 3407 3914 3928 3942 3963 4361
@DREAD	001	0001	0237	3109 3439
@DSAD	001	0002	0128	3097* 3254* 3455 3472* 3707* 3750
@DSBCY	001	0004	0107	
@DSBSY	001	0092	0341	
@DSCS1	001	0000	0108	
@DSEEK	001	0000	0236	3157 3481
@DSIVF	001	0003	0139	
@DSPIN	001	0002	0132	
@DTRSZ	001	0018	0087	
@DUNSF	001	0080	0272	
@DVBCY	001	0007	0109	
@DVERY	001	0003	0242	
@DVRFY	001	0031	0137	
@DVST1	001	0002	0248	3821 3829
@DVST2	001	0003	0249	
@DWAIT	001	00FF	0138	4446
@DWBCY	001	0005	0104	
@DWBIT	001	0002	0238	
@DWSIZ	001	00C0	0106	
@DWTB1	001	0003	0105	
@DZERO	001	00F0	0066	
@D1	001	0002	0028	3673* 3676* 4304*
@EOF	001	001C	0079	
@EOFTC	001	0075	0162	
@EOS	001	001E	0078	3165 3186 4080 4216 4233
@ER37B	001	00F0	0362	
@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	
@FLDIN	001	0012	0335	3672* 3680* 3708* 3720* 3733* 3740* 3817* 3828* 3848*
@FLENT	001	0004	0201	
@FLFNA	001	0002	0199	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@FLHLN	001	0002	0209	
@FLLNC	001	0002	0194	
@FLNSC	001	0001	0211	
@FLSD	001	0001	0207	
@HCEPK	001	003C	2727	3461
@HDRLN	001	0007	0094	0859
@HSTAD	001	0009	0259	
@HSTEN	001	0007	0258	
@HSTPE	001	0006	0257	
@HSTQR	001	0001	0255	
@HSTSN	001	0005	0256	
@HSTVI	001	000F	0260	
@IAR	001	0010	0019	
@ID37B	001	0040	0398	
@INDEX	001	0001	0156	0157
@INST3	001	0003	0034	
@INST4	001	0004	0035	
@INST5	001	0005	0036	
@INST6	001	0006	0037	
@IP37B	001	00C0	0397	
@I1IAR	001	00C0	0022	
@KCMDK	001	0020	0309	
@KELOK	001	001B	0308	3150
@KENAB	001	001E	0306	
@KEXIT	001	001F	0307	
@KEYBD	001	0010	0326	3150
@KFUNK	001	0010	0329	
@KHARD	001	0011	0334	
@KLEAR	001	000D	0330	
@LINSZ	001	00F4	0086	0833
@LO37B	001	00F0	0366	3682*
@MAPEN	001	0005	0091	
@MINCR	001	2000	0085	3675*
@MINUS	001	0060	0082	
@NOP	001	0080	0042	2964 3458 3704 3747
@NORFL	001	0000	0254	
@NTRDY	001	00A0	0390	
@NUMBR	001	007B	0072	
@OPD2	001	0004	0031	
@OP1	001	0003	0029	2977* 3075 3331* 3344* 3434* 3515* 3517* 3657* 3715* 4064* 4218* 4222* 4226* 4310* 4311* 4406* 4417*
@OP2	001	0005	0033	3760* 3761* 3762 3762* 3763 3763* 3764* 3804 3804*
@OVRUN	001	0004	0284	
@PBUSY	001	00E2	0296	
@PCAR	001	00E6	0293	3085*
@PCNT	001	0003	0228	
@PCTRL	001	0000	0149	
@PCYL	001	0001	0226	
@PC37B	001	00F2	0382	
@PDAR	001	00E4	0292	
@PDATA	001	0003	0151	
@PD37B	001	0080	0396	
@PERR	001	00E0	0299	
@PFLAG	001	0000	0225	
@PFORM	001	00E1	0297	
@PGCSZ	001	0020	0084	0085



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@PLITE	001	00E2	0298	
@PLNGH	001	0004	0289	
@PMGCK	001	0020	0300	
@PN37B	001	00F0	0381	
@PPLNG	001	0004	0148	
@PRCNT	001	0001	0150	
@PRETR	001	00C0	0154	2905 2909 2913 2917 3376
@PRINT	001	0040	0152	0154
@PRITY	001	0080	0333	
@PSAD	001	0002	0227	
@PSIOQ	001	00E0	0295	3086 3087
@PSIOR	001	0000	0294	3086 3087
@PSNSQ	001	00E2	0301	
@PSR	001	0004	0017	
@PWAIT	001	00FF	0158	3137 3142
@P1IAR	001	0020	0020	
@P2IAR	001	0040	0021	
@Q	001	0001	0026	2978 3074 3467* 3471* 3473 3473* 3705* 3748* 4088 4301*
@RD37B	001	00F1	0376	
@REGL	001	0002	0014	
@RETRN	001	0080	0153	0154 3372 3373
@RLDWN	001	004F	0159	
@RTCNT	001	0003	0291	
@RTRNC	001	0080	0161	
@RT37B	001	0005	0389	
@SBLNL	001	0002	0184	
@SCTSZ	001	0100	0101	
@SDFLN	001	0007	0092	
@SDF0	001	0000	0166	
@SDF1	001	0001	0167	
@SDF2	001	0002	0168	
@SDF3	001	0003	0169	
@SDLN	001	0005	0170	
@SECCY	001	0030	0088	
@SIST	001	0001	0181	
@SKCTL	001	0000	0241	3157 3481
@SLASH	001	0061	0069	3276 3283 3289
@SLAST	001	0002	0183	
@SMIDL	001	0003	0182	
@SNSB0	001	0000	0265	
@SNSB1	001	0001	0266	
@SNSB2	001	0002	0267	
@SNSB3	001	0003	0268	
@SNULL	001	0080	0173	
@SN37B	001	00F2	0370	
@SONLY	001	0000	0180	
@SPINA	001	00A0	0250	3109 3110 3111 3156* 3157 3439 3441 3442 3480* 3481 3821
@SPINB	001	00B0	0251	3829 3835
@STEXT	001	0007	0172	
@STYPE	001	0006	0171	
@SYCNT	001	0002	0290	
@SYLVL	001	0005	2216	
@TBCNT	001	0000	0160	
@TBLEF	001	0010	0155	0157
@TBLIX	001	0011	0157	
@TJ37B	001	0040	0387	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@TYPAM	001	0002	0332	
@TYPO	001	001C	0331	
@UCB	001	0087	0041	2977 3705 3748 4061 4074 4307
@UPARW	001	005A	0080	2199
@VADDR	001	0002	0142	2135 2161
@VENTA	001	0056	0114	
@VMDDV	001	00FE	0115	
@VMFD1	001	0000	0110	
@VMFD2	001	0001	0111	
@VMRS3	001	0002	0113	
@VMTRL	001	0001	0112	
@VOLID	001	0006	0093	
@VQ	001	0001	0027	
@WA37B	001	00FF	0395	
@WSFIT	001	0500	0102	
@WSTBL	001	0503	0103	
@XR	001	0002	0016	2898 3004* 3005* 3006 3008 3010 3011 3011 3015 3092* 3095 3181* 3183 3185 3185* 3186 3188 3196 3200* 3201 3210 3212 3216 3218 3220 3222 3226 3228 3229 3233 3235 3237 3241 3243 3258 3263 3270 3274 3281 3287 3294 3300 3319 3321 3322 3326 3330 3339 3341 3351* 3353 3354 3356 3357 3357 3360 3431 3433* 3434 3435 3438 3442 3448 3450 3455 3467 3470 3471 3471 3472 3472 3474* 3480 3485 3651 3655* 3658 3662 3666 3668 3678 3687 3692 3700 3721 3731 3741 3744 3745 3756 3758 3761 3819 3826 3833 3844 4065 4069 4069* 4070 4073 4076 4076* 4077 4080 4083 4208* 4216 4218 4224 4228 4228* 4229 4231 4233 4237 4241* 4242 4244 4244* 4245 4250* 4251 4254 4254* 4258 4258* 4261 4271 4273 4274 4276* 4277* 4278 4282 4286* 4297* 4299 4303* 4305 4308 4310 4312 4315 4317 4317* 4318 4326* 4328 4335 4336 4337 4338 4340 4342 4344 4378 4380 4384 4387 4407 4409 4423* 4424 4424 @ZERO 001 0000 0064 3002 3153 3205 3252 3317 3342 3470 3482 3656 3658 3660 3675 3758 3844 3845 3846 4205 4278 4304 4476 4481 4486 4491 4496 4501 4506 4511 4523 4528 4540 4545 4550 4562 4567 4572 4579 4584 4591 4596 4601 4606 @4K 001 0010 0349 MCNBCD 001 0008 3851 3687 MCNBUF 001 1893 4654 3651 3655 3770* 3776 3776* 3777* 3786 3786* 3795 3795* 3805* 3811 3811* 3885 3903 3910 3917 3924 3931 3938 3945 3952 3959 3966 MCNCA1 001 0F00 3894 3892 MCNCOR 001 1470 3877 3672 MCNCRT 001 1473 3880 3708 MCNDAT 001 1474 3881 3680 MCNDBA 002 1479 3885 3764 MCNDHF 001 146E 3875 3817 MCNDKA 001 14AF 3948 3800 MCNDKB 001 14B5 3955 3807 MCNDKC 001 14BB 3962 3813 MCNDK1 001 147A 3888 3706* 3707* 3710 3714 MCNDK2 001 1480 3895 3760 3840 MCNDK3 001 1485 3899 3750 3766 MCNDK4 001 148B 3906 3772 MCNDK5 001 1491 3913 3779 MCNDK6 001 1497 3920 3782 MCNDK7 001 149D 3927 3788 MCNDK8 001 14A3 3934 3791 MCNDK9 001 14A9 3941 3797

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MCNDRS	001	00F2	3872	3684
MCNDRT	001	0002	3873	3685
MCNDR2	001	146F	3876	3828
MCNEXF	001	1476	3883	3703
MCNFIG	001	1200	3653	3199 3350 4360
MCNFIX	001	000A	3861	3835
MCNLPC	001	1477	3884	3749* 3753*
MCNLPR	001	1472	3879	3733
MCNMLP	001	0020	3864	3734
MCNOFF	001	1475	3882	3740 3848
MCNPTR	001	1471	3878	3720
MCNP22	001	0080	3863	3727
MCNSTR	001	0100	3866	3776* 3786* 3795* 3811* 3870 3885 3903 3910 3917 3924 3931 3938 3945 3952 3959 3966
MCNSTS	001	00EB	3862	3719
MCNTBC	001	000A	3868	3749
MCNTBD	001	013F	3867	3770* 3776 3786 3795 3805* 3811
MCNTBL	001	0040	3865	3770 3776 3786 3795 3805 3811 3867 3870
MCNTB4	001	015C	3869	3908 3915
MCNTID	001	02BF	3870	3777*
MCNWRK	002	1484	3897	3684* 3685 3719* 3727 3734 3821* 3822 3829* 3830 3835* 3837
MCN050	004	123C	3672	3667
MCN060	004	1245	3675	3673* 3676*
MCN08C	001	001A	3854	3661
MCN10C	001	0008	3860	3822
MCN100	003	124E	3677	3663
MCN12C	001	002A	3855	
MCN12K	001	0010	3852	3664
MCN120	003	1279	3692	3686
MCN13I	001	0084	3857	3723 3725 3847
MCN130	003	1283	3696	3679 3691
MCN150	003	128C	3699	3697
MCN155	003	129D	3704	3705*
MCN16C	001	003A	3856	
MCN16K	001	0020	3853	3670
MCN160	004	12C9	3716	3715*
MCN200	005	12CD	3717	3701 3704
MCN210	004	12EF	3727	3722
MCN22I	001	00DC	3858	
MCN220	003	12F9	3731	3724 3726
MCN250	001	130D	3739	3732
MCN255	004	131A	3744	3742
MCN258	003	1326	3747	3748*
MCN260	005	1335	3751	3754
MCN263	003	134B	3756	3747
MCN265	006	1380	3770	3760* 3761* 3762 3762* 3763 3763* 3764* 3804
MCN268	006	13E5	3805	3804*
MCN270	004	1403	3814	
MCN300	004	1409	3817	3746 3757 3759
MCN310	003	1410	3819	
MCN320	003	1424	3826	3820 3842
MCN350	004	1450	3839	3831
MCN380	003	145A	3844	3659 3669
MCN400	004	1466	3848	3827 3834 3838
MCN50C	001	0080	3859	
MCN500	004	146A	3849	3657*

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MIPABC	003	11B3	3490	3450
MIPBF1	001	1893	4657	3117 3119* 3153* 3205 3210 3212 3214 3216 3220 3222 3224 3226 3233 3235 3241 3243 3396 3417 3448 3450 3468 3482* 3483 3483*
				3503
MIPCDP	001	0008	3371	3183 3183 3185
MIPCFA	002	0EA7	3164	3085
MIPCFG	009	10FD	3370	3183
MIPCLR	001	0000	3422	3401
MIPCT2	001	0001	3382	3377
MIPDCF	001	11BA	3494	3493 3496
MIPDK3	001	1105	3385	3090
MIPDK5	001	110B	3392	3097* 3108 3123* 3125
MIPDK6	001	1111	3399	3254* 3255* 3257
MIPDK7	001	11BE	3499	3435* 3437 3438* 3444 3455 3472*
MIPDK8	001	1117	3406	3338
MIPDK9	001	111D	3413	3113 3120* 3122
MIPDPC	002	0EAE	3168	
MIPDSP	002	10F4	3367	3356
MIPECD	001	0EB1	3170	3204* 3207* 3209* 3231* 3239* 3316* 3320* 3325* 3328* 3514
MIPECT	001	0EB4	3173	3330 3342 3516*
MIPEMS	001	0002	3313	3146
MIPEOS	001	0EA8	3165	3410
MIPERA	002	0EAA	3166	3339
MIPERR	002	0EB9	3176	3331
MIPEXT	002	0EBB	3177	3344
MIPFXD	001	0008	3312	3109
MIPGUA	002	0EAC	3167	3340
MIPHLT	004	1161	3458	3462
MIPHRD	001	10ED	3363	3355
MIPLAB	001	0003	3489	3450 3490
MIPMS2	001	1104	3380	3378 3382
MIPNG1	002	105D	3310	3265 3271 3275 3278 3282 3288 3291 3295 3301
MIPNUM	001	00F0	3311	3268 3272 3279 3285 3292 3298
MIPOBS	004	0E48	3505	2899 3084 3091 3203 3315 3352
MIPOVL	001	0C07	2900	4669
MIPPCF	001	11C4	3506	3164 3317 3470*
MIPPR2	001	1100	3375	3191 3307
MIPPSA	001	00B1	3421	3415
MIPRET	001	10FE	3372	3099
MIPRTD	001	000A	3419	3117 3119*
MIPRTI	001	0EB7	3175	3119
MIPRTM	001	00FF	3420	3117
MIPSC3	002	0EB6	3174	3515
MIPSET	002	11B9	3493	3156 3480
MIPSTK	001	11C8	3513	3206 3318 3329 3484
MIPSWH	001	10BE	3348	3135
MIPSW1	003	10CE	3353	3160
MIPSYN	001	1052	3305	3269 3273 3277 3280 3286 3290 3293 3299
MIPS10	005	11C8	3514	3515*
MIPS50	004	11DB	3518	3517*
MIPVER	001	119A	3479	3442
MIPVIN	001	11B7	3492	3471
MIPVOL	001	1123	3432	3208 3219 3232 3240 3431 3433
MIPVVL	003	11B6	3491	3448
MIPV01	001	11BC	3496	3472
MIPV20	003	1136	3439	3471*

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MIPV22	004	116C	3464	3449 3473 3473*
MIPV25	004	117A	3468	3466 3467*
MIPV30	004	1184	3471	3469 3485
MIPV90	004	1196	3475	3434*
MIPV95	004	11A0	3482	3451 3456
MIPZER	002	0EB0	3169	3263
MIP000	004	0DBE	3085	2901
MIP100	004	0E32	3123	3118
MIP150	004	0E42	3129	3193 3361
MIP200	004	0E48	3131	3505
MIP205	004	0E62	3139	3143 3147
MIP210	004	0E8A	3153	3111
MIP225	004	0EBC	3179	3145 3149 3180
MIP230	004	0EE2	3190	3184
MIP240	004	0EEC	3194	3187 3189
MIP250	001	0EFC	3198	3151
MIP265	004	0F00	3200	3159 4658 4662
MIP268	003	0F1A	3207	
MIP269	003	0F3D	3218	3215
MIP270	004	0F40	3219	3217
MIP275	003	0F5D	3228	3225
MIP280	003	0F60	3229	3227
MIP320	001	0F8E	3245	3230 3238 3308
MIP330	003	0FB7	3258	3253 3259
MIP335	004	0FCD	3265	3267
MIP340	004	1008	3282	
MIP345	004	1026	3291	3284
MIP350	004	105E	3315	3297 3303
MIP380	004	108B	3329	3324 3327
MIP390	004	108F	3330	3343
MIP400	001	109C	3336	3323
MVDADD	001	0DA5	3062	2998* 2999* 3000 3000* 3001 3001* 3002*
MVDADR	002	0DA8	3064	2994* 2997 2998 2999 3010* 3026 3036
MVDBUF	001	0DBE	3073	2989 2994 2995 2995* 3004 3050 3058 3076
MVDCHN	001	0002	2949	3010 3036
MVDCNT	001	000F	2943	
MVDDPL	001	0D97	3046	2983 3030 3078 3079
MVDELE	001	0CC0	2962	3332 3345 4396
MVDFIL	001	003F	2951	3011 3011 3011* 3038 3038 3038* 3040 3040 3040* 3056
MVDFNC	001	0D97	3078	3028* 3031*
MVDF1T	001	0013	2946	3006 3008
MVDHXB	001	0D9D	3055	
MVDISP	001	0DA6	3063	2997* 3003* 3005
MVDI10	001	000C	2958	2966 2966 2966* 2973 2973 2973*
MVDLEN	001	0005	2952	2995 2995 2995*
MVDLGT	001	0D9E	3056	3003
MVDMF1	001	18AE	3076	3036 3038 3038* 3077
MVDMF2	001	18EE	3077	3040 3040*
MVDMK1	001	0001	2942	2976 2979
MVDMSK	003	0CEC	3074	2970 2970* 2972
MVDMVD	001	0060	2948	3008
MVDMVF	001	0090	2947	3006
MVDM0F	001	000F	2941	2972
MVDNUM	001	01FC	2944	2989
MVDONE	001	0D9F	3057	2971
MVDPRM	001	0DA9	3065	2976 3068 3464* 4376* 4386*

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
MVDRF1	001	0002	2955	
MVDRF2	001	0008	2957	4376
MVDRR1	001	0001	2954	3464
MVDRR2	001	0004	2956	4376 4386
MVDSC1	001	01FB	2945	2994 2995 2995*
MVDSEC	001	0D99	3079	2971*
MVDTAD	002	0DA1	3058	3021
MVDTAG	001	0DA3	3060	3015* 3016 3016* 3017 3020
MVDTGS	004	0D67	3075	3017* 3018 3018* 3019 3019* 3020* 3021*
MVDTWO	001	0002	2950	2998 2999 3010 3017 3018 3019 3020 3036
MVD025	003	0CC0	2964	2977*
MVD050	004	0CD0	2968	2963 2964 2965 2981 2990 3032
MVD055	003	0CDE	2972	
MVD057	004	0CE7	2975	3331* 3344*
MVD060	003	0CEB	2976	2967 2978 3074
MVD100	004	0D13	2997	3027
MVD150	004	0D40	3010	3007 3039 3041
MVD175	004	0D64	3022	3075
MVD200	005	0D7D	3036	3009
MVD225	006	0D8E	3040	3037
SCACNT	002	1501	4094	4083* 4084*
SCACOF	001	0087	4061	
SCACOM	001	0001	4060	4215
SCAINC	001	0001	4059	4069 4076
SCAMMA	003	14DE	4088	4215*
SCANIT	001	14C1	4063	3182 4213
SCASVE	002	14FF	4093	4065* 4084
SCASV1	001	14FE	4092	
SCA100	003	14D0	4069	4071
SCA200	003	14D3	4070	4067
SCA250	003	14DD	4074	4088
SCA300	003	14E0	4076	4078
SCA400	004	14F0	4083	4074
SCA500	004	14FA	4086	4064* 4081
SUPDAT	004	0F00	4658	4372
UCM320	004	15A9	4263	
UCNADR	002	1771	4429	4222 4311
UCNAD1	002	177A	4436	4382
UCNAD2	002	177C	4437	4375
UCNARE	001	1993	4655	4423 4455
UCNCHK	004	16BD	4648	
UCNCOM	001	0007	4629	4651
UCNCYL	001	0005	4647	
UCNCY0	001	1780	4442	4293 4361* 4363
UCNC01	001	178D	4471	
UCNC02	001	17DE	4518	
UCNC04	001	181D	4557	
UCNC05	001	1841	4579	
UCNC06	001	1853	4591	
UCNC07	001	1877	4613	
UCNDEL	001	006C	4644	
UCNDET	001	0080	4642	4271 4273 4275 4305
UCNDPL	001	1787	4451	4375* 4382* 4419
UCNEND	001	1889	4623	4411
UCNFG2	006	1850	4585	4312
UCNFIG	001	1502	4204	3197 4656



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S Y M B O L	L E N	V A L U E	D E F N	R E F E R E N C E S								VER 15, MOD 00 24/05/21 PAGE 132			
UCNHDF	001	1893	4652	4250	4297	4326	4429	4445	4653	4654	4655	4657			
UCNHDL	001	1898	4653	4219*	4220	4220*	4242								
UCNHII	001	00F9	4646	4409											
UCNINC	002	1773	4430	4226											
UCNIOF	002	1782	4443	4291*											
UCNKYB	002	1775	4432	4251											
UCNK01	001	1774	4431	4251	4251	4254									
UCNK02	001	1776	4433	4251	4251	4254									
UCNLOW	001	00F0	4645	4407											
UCNLPF	001	0006	4630	4220	4242	4242	4310	4312							
UCNLPL	001	0009	4631	4244	4312	4315	4317								
UCNMIN	001	0040	4643	4275	4308	4471	4518	4535	4557	4613	4618				
UCNONE	001	0001	4628	4207	4224	4228	4258	4261	4274	4310	4315	4370	4454		
UCNOVR	002	188D	4656												
UCNPAF	001	178D	4470	4241	4303										
UCNPRT	002	188B	4624	4314	4346	4350									
UCNSAV	001	1778	4435	4207*	4370										
UCNSET	001	1892	4651	4205*	4206	4206	4206*	4652							
UCNSLO	001	1786	4446	4295											
UCNSUB	001	188C	4650	4206	4276	4651									
UCNTEM	002	1777	4434	4274*	4275*	4277									
UCNVLB	003	177F	4438	4378	4384										
UCNVOL	001	0002	4634	4378	4378	4384	4384								
UCN001	001	0001	4636	4518	4523	4528									
UCN002	001	0002	4637	4388	4395	4535	4540	4545	4550						
UCN003	001	0003	4638	4381	4391	4557	4562	4567	4572						
UCN004	001	0004	4639	4579	4584										
UCN005	001	0005	4640	4591	4596	4601	4606								
UCN006	001	0006	4641	4613	4618										
UCN029	001	0029	4632	4348											
UCN039	001	0039	4633	4352											
UCN100	004	1512	4208	4283											
UCN200	005	1542	4224	4222*	4226*	4235									
UCN250	004	1569	4237	4230	4232	4234									
UCN300	005	1571	4242	4246											
UCN350	004	15B0	4266	4253	4257	4260	4262								
UCN400	003	15B7	4271	4243											
UCN425	003	15DE	4282	4279											
UCN450	004	15E1	4283												
UCN500	004	15E5	4285	4272											
UCN550	004	15E9	4286	4218*	4264	4267	4281								
UCN600	006	15F1	4291	4217											
UCN650	004	1611	4303	4300											
UCN655	004	1615	4304	4319											
UCN660	003	1619	4305												
UCN670	003	161F	4307	4301*											
UCN700	005	1628	4310	4306											
UCN750	005	1641	4315	4304*	4310*	4311*	4313								
UCN800	003	1646	4317	4307	4309										
UCN815	004	166C	4334	4331											
UCN825	003	1670	4335	4329	4333										
UCN829	003	168B	4344												
UCN830	006	16A1	4350	4345											
UCN850	004	16B1	4354	4341	4343										

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
UCN910	006	16FA	4382	4393
UCN911	005	1710	4387	4385
UCN925	004	16BD	4361	4648
UCN927	004	16C1	4362	
UCN930	006	16C7	4370	4661
UCN935	006	171C	4390	4374
UCN940	004	1738	4396	4371 4389
UCN970	001	173C	4405	4256 4259
UCN980	004	1750	4412	4406* 4408 4410
UCN990	001	1754	4416	4377 4383
UCN995	004	176C	4425	4417*
V\$APWR	001	0800	1843	1988
V\$BFR1	001	5400	1906	2096
V\$BFR2	001	5500	1907	2097
V\$CBNZ	001	0CB2	1915	1995
V\$CCON	001	5120	1922	2093
V\$CDCV	001	3100	1919	2048
V\$CDSY	001	2E00	1918	2045
V\$CFPZ	001	0C70	1913	1994
V\$CNXZ	001	0470	1916	1983
V\$CSSR	001	5100	1921	2092
V\$CZFP	001	04AD	1914	1984
V\$DTLN	001	4600	1928	2080
V\$DTVR	001	4700	1929	2081
V\$FABS	001	1761	1814	2012
V\$FACS	001	1400	1830	2004
V\$FASN	001	1413	1829	2005
V\$FATN	001	1100	1828	2001
V\$FCOS	001	0A00	1825	1990
V\$FCOT	001	0D00	1823	1996
V\$FCSC	001	1725	1827	2011
V\$FDEG	001	17DA	1834	2016
V\$FDET	001	4540	1837	2079
V\$FEXP	001	0500	1821	1985
V\$FHCS	001	1500	1833	2006
V\$FHSN	001	1557	1832	2007
V\$FHTN	001	1593	1831	2008
V\$FINT	001	176C	1815	2013
V\$FLGT	001	0200	1819	1978
V\$FLOG	001	0219	1818	1980
V\$FLTW	001	020B	1820	1979
V\$FRAD	001	17CB	1835	2015
V\$FRND	001	1800	1836	2017
V\$FSEC	001	1700	1826	2010
V\$FSGN	001	17A7	1816	2014
V\$FSIN	001	0A1A	1824	1991
V\$FSQR	001	0900	1817	1989
V\$FTAN	001	0D28	1822	1997
V\$IFCI	001	1B00	1806	2021
V\$IFIO	001	1A00	1808	2020
V\$ISDN	001	1900	1807	2018
V\$KBTL	001	1EAC	1950	3936 3943
V\$KBTS	001	0DAC	1949	3922 3929
V\$LPRB	001	4F00	1904	2090
V\$LPRT	001	4D00	1902	2088
V\$LPR2	001	4E00	1903	2089

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V\$MADD	001	4007	1851	2068
V\$MASN	001	43A0	1849	2075
V\$MCON	001	4324	1856	2073
V\$MIDN	001	4300	1857	2072
V\$MINV	001	4500	1861	2078
V\$MMPY	001	4100	1853	2069
V\$MSMY	001	4264	1854	2071
V\$MSUB	001	4000	1852	2067
V\$MTRN	001	4400	1860	2077
V\$MZER	001	432B	1858	2074
V\$PCH1	001	5200	1942	2094
V\$PCH2	001	5300	1943	2095
V\$SCDI	001	2A00	1899	2039
V\$SCDO	001	2A96	1900	2040
V\$SFA2	001	5000	1884	2091
V\$SFD1	001	0000	1894	1976
V\$SFD2	001	0100	1895	1977
V\$SKEY	001	2500	1898	2034
V\$SPRT	001	2800	1897	2037
V\$VMPL	001	4C06	1936	2087
V\$VMPS	001	4C00	1935	2086
V\$XKAF	001	1C00	1883	2022
V\$XKCA	001	2400	1887	2030
V\$XKCL	001	240A	1886	2031
V\$XKIN	001	2B00	1882	2041
V\$XKLP	001	24AD	1888	
V\$XKRS	001	240D	1885	2032
V\$XMGT	001	3E06	1876	2062
V\$XMIN	001	3D00	1875	2060
V\$XMPL	001	3F06	1879	2065
V\$XMPS	001	3F00	1878	2064
V\$XMPT	001	3E0C	1877	2063
V\$XMPU	001	3F13	1880	2066
V\$XMRD	001	3E00	1874	2061
V\$XSGT	001	2100	1869	2027
V\$XSIN	001	2B6E	1868	2042
V\$XSPR	001	3400	1871	2051
V\$XSPT	001	1D00	1870	2023
V\$XSPU	001	3800	1872	2055
V\$XSRD	001	3300	1867	2050
V\$00E1	001	0000	1976	
V\$01E1	001	0100	1977	
V\$02E1	001	0200	1978	
V\$02E2	001	020B	1979	
V\$02F3	001	0219	1980	
V\$03CC	001	0300	1981	
V\$04CC	001	0400	1982	
V\$04E1	001	0470	1983	
V\$04E2	001	04AD	1984	
V\$05E1	001	0500	1985	
V\$06CC	001	0600	1986	
V\$07CC	001	0700	1987	
V\$08E1	001	0800	1988	
V\$09E1	001	0900	1989	
V\$10E1	001	0A00	1990	
V\$10E2	001	0A1A	1991	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00	24/05/21	PAGE 135
V\$11CC	001	0B00	1992				
V\$12CC	001	0C00	1993				
V\$12E1	001	0C70	1994				
V\$12E2	001	0CB2	1995				
V\$13E1	001	0D00	1996				
V\$13E2	001	0D28	1997				
V\$14CC	001	0E00	1998				
V\$15CC	001	0F00	1999				
V\$16CC	001	1000	2000				
V\$17E1	001	1100	2001				
V\$18CC	001	1200	2002				
V\$19CC	001	1300	2003				
V\$20E1	001	1400	2004				
V\$20E2	001	1413	2005				
V\$21E1	001	1500	2006				
V\$21E2	001	1557	2007				
V\$21E3	001	1593	2008				
V\$22CC	001	1600	2009				
V\$23E1	001	1700	2010				
V\$23E2	001	1725	2011				
V\$23E3	001	1761	2012				
V\$23E4	001	176C	2013				
V\$23E5	001	17A7	2014				
V\$23E6	001	17CB	2015				
V\$23E7	001	17DA	2016				
V\$24E1	001	1800	2017				
V\$25E1	001	1900	2018				
V\$26E1	001	1A00	2020				
V\$27E1	001	1B00	2021				
V\$28E1	001	1C00	2022				
V\$29E1	001	1D00	2023				
V\$30CC	001	1E00	2024				
V\$31CC	001	1F00	2025				
V\$32CC	001	2000	2026				
V\$33E1	001	2100	2027				
V\$34CC	001	2200	2028				
V\$35CC	001	2300	2029				
V\$36CC	001	2400	2033				
V\$36E1	001	2400	2030				
V\$36E2	001	240A	2031				
V\$36E3	001	240D	2032				
V\$37E1	001	2500	2034				
V\$38CC	001	2600	2035				
V\$39CC	001	2700	2036				
V\$40E1	001	2800	2037				
V\$41CC	001	2900	2038				
V\$42E1	001	2A00	2039				
V\$42E2	001	2A96	2040				
V\$43E1	001	2B00	2041				
V\$43E2	001	2B6E	2042				
V\$44CC	001	2C00	2043				
V\$45CC	001	2D00	2044				
V\$46E1	001	2E00	2045				
V\$47CC	001	2F00	2046				
V\$48CC	001	3000	2047				
V\$49E1	001	3100	2048				

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SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00	24/05/21	PAGE 136
V\$50CC	001	3200	2049				
V\$51E1	001	3300	2050				
V\$52E1	001	3400	2051				
V\$53CC	001	3500	2052				
V\$54CC	001	3600	2053				
V\$55CC	001	3700	2054				
V\$56E1	001	3800	2055				
V\$57CC	001	3900	2056				
V\$58CC	001	3A00	2057				
V\$59CC	001	3B00	2058				
V\$60CC	001	3C00	2059				
V\$61E1	001	3D00	2060				
V\$62E1	001	3E00	2061				
V\$62E2	001	3E06	2062				
V\$62E3	001	3E0C	2063				
V\$63E1	001	3F00	2064				
V\$63E2	001	3F06	2065				
V\$63E3	001	3F13	2066				
V\$64E1	001	4000	2067				
V\$64E2	001	4007	2068				
V\$65E1	001	4100	2069				
V\$66CC	001	4200	2070				
V\$66E1	001	4264	2071				
V\$67E1	001	4300	2072				
V\$67E2	001	4324	2073				
V\$67E3	001	432B	2074				
V\$67E4	001	43A0	2075				
V\$68E1	001	4400	2077				
V\$69E1	001	4500	2078				
V\$69E2	001	4540	2079				
V\$70E1	001	4600	2080				
V\$71E1	001	4700	2081				
V\$72CC	001	4800	2082				
V\$73CC	001	4900	2083				
V\$74CC	001	4A00	2084				
V\$75CC	001	4B00	2085				
V\$76E1	001	4C00	2086				
V\$76E2	001	4C06	2087				
V\$77CC	001	4D00	2088				
V\$78CC	001	4E00	2089				
V\$79CC	001	4F00	2090				
V\$80E1	001	5000	2091				
V\$81E2	001	5100	2092				
V\$81E3	001	5120	2093				
V\$82E1	001	5200	2094				
V\$83E2	001	5300	2095				
V\$84E1	001	5400	2096				
V\$85E2	001	5500	2097				
V@CDPT	001	0007	2108				
V@CHGH	001	0008	2213				
V@CMIC	001	0002	2109				
V@CMNI	001	00FF	2106				
V@CMUL	001	0007	2214				
V@CNIX	001	0080	2107				
V@COEX	001	001E	2104				
V@CPLS	001	00F0	2111				

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V@CPRC	001	000A	2113	
V@CSQR	001	0003	2211	
V@CSTR	001	0002	2212	
V@CTTA	001	0027	2114	
V@DCAD	001	0002	2134	2135
V@DEXP	001	0000	2139	
V@DMAN	001	000D	2141	2142
V@DMN1	001	0001	2140	
V@DPDF	001	0002	2129	
V@DSAD	001	0001	2130	
V@DSGN	001	000D	2142	
V@DVAD	001	0004	2135	
V@EART	001	0001	2112	
V@ECRT	001	0038	2185	
V@EFUL	001	00F8	2184	
V@EINV	001	00FB	2180	
V@EIPR	001	00F5	2181	
V@ENSV	001	00F7	2182	
V@ENUL	001	0000	2179	
V@ERPC	001	0020	2110	
V@ESAV	001	00F6	2183	
V@FEHN	001	0002	2209	
V@FEPL	001	0091	2205	
V@FERS	001	0003	2208	
V@FPGS	001	0081	2204	
V@FRET	001	0015	2207	
V@FSPC	001	0040	2206	
V@FTAB	001	0000	2210	
V@KADD	001	004E	2195	
V@KCLE	001	006E	2192	
V@KDIV	001	0061	2198	
V@KEMN	001	006C	2190	
V@KEPL	001	006B	2189	
V@KMUL	001	005C	2197	
V@KPER	001	004B	2200	
V@KPST	001	007B	2194	
V@KPWR	001	005A	2199	
V@KSQR	001	006F	2191	
V@KSTO	001	006D	2193	
V@KSUB	001	0060	2196	
V@LAIP	001	0003	2160	2161
V@LDEX	001	0002	2163	
V@LETE	001	0003	2167	
V@LEXP	001	0001	2157	2159
V@LFKO	001	0006	2162	
V@LINI	001	0200	2166	
V@LLKS	001	0010	2159	
V@LMAN	001	000F	2158	2159
V@LNOP	001	0015	2164	
V@LTBE	001	0007	2161	
V@LVPG	001	0100	2165	2166
V@MCHS	001	00C0	2146	
V@MCRD	001	0010	2122	
V@MDEF	001	0008	2123	
V@MEXC	001	0080	2120	
V@MEXT	001	0004	2149	



[illegible]

START ADDRESS	CATEGORY	NAME AND ENTRY	CODE LENGTH	HEXADECIMAL	DECIMAL
---------------	----------	----------------	-------------	-------------	---------

0000	0	#MIPPE	188E	6286
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OL100 I THE TOTAL CORE USED BY #MIPPE IS 6286 DECIMAL.
OL101 I THE START CONTROL ADDRESS OF THIS MODULE IS 0C07.
OL104 I TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 25
      NAME-#MIPPE,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
      DISP FOR 'FOR TABLE' NXT VADDR

```

```
7881  *
7882  *  CONSTANTS
7883  *
```

195E 0004	195F 7884 BKNFEL DC	AL (@CADDR) (B@LFRT)	LENGTH OF 'FOR TABLE' ENTRY
1960 0002	1961 7885 BKNEX2 DC	IL (@CADDR) '2'	BINARY 2

```

7887 *****
7888 * 'NEXT' STATEMENT ROUTINE PMC AND STORAGE PARAMETERS
7889 *****
7890 *
7891 BKNBRC DC      AL(B@LCOP)(B@CBRA)          'BRA' INSTR OPCODE
7892 BKNBRO DS      CL(@VADDR)                  'BRA' INSTR OPERAND
7893 *
7894 *****
7895 *
7896 * END OF 'NEXT' STATEMENT ROUTINE CODING
7897 *

```

1962	46	1962	7891	BKNBRC	DC	AL(B@LCOP)(B@CBRA)	'BRA'	INSTR	OPCODE
1963		1964	7892	BKNBRO	DS	CL(@VADDR)	'BRA'	INSTR	OPERAND

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 116
		7899		*****	
		7900	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		7901	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		7902	*		*
		7903		*****	
		7904	*	*STATUS	*
		7905	*	VERSION 1 MODIFICATION 0	*
		7906	*		*
		7907	*	*FUNCTION	*
		7908	*	BMGETX IS EXECUTED TO TRANSLATE MAT GET STATEMENTS IF THEY OCCUR	*
		7909	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE	*
		7910	*	THE PSEUDOCODE IN VIRTUAL MEMORY.	*
		7911	*		*
		7912	*	*ENTRY POINTS	*
		7913	*	BMGETX HAS ONLY ONE ENTRY POINT:	*
		7914	*	BMGETX - TRANSLATE MAT GET STATEMENT	*
		7915	*	THE FORMAT OF THE CALLING SEQUENCE IS:	*
		7916	*	B BMGETX	*
		7917	*		*
		7918	*	*INPUT	*
		7919	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		7920	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE	*
		7921	*	LEADING KEYWORD, MAT GET.	*
		7922	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST	*
		7923	*	CHARACTER IN THE LEADING KEYWORD, MAT GET.	*
		7924	*		*
		7925	*	*OUTPUT	*
		7926	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		7927	*	GENERATED BY BMGETX IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		7928	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		7929	*	SEQUENCES.	*
		7930	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		7931	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		7932	*		*
		7933	*	*EXTERNAL REFERENCES	*
		7934	*	B\$GETC - (B\$NUMC) - ENTRY TO BASIC RETRIEVAL ROUTINE.	*
		7935	*	B\$PUTC - (B\$PCAD)(B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY	*
		7936	*	OUTPUT ROUTINE.	*
		7937	*	B\$MATR - ENTRY TO BASIC COMPILER MATRIX REFERENCE ROUTINE.	*
		7938	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		7939	*		*
		7940	*	*EXITS, NORMAL	*
		7941	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		7942	*		*
		7943	*	*EXITS, ERROR	*
		7944	*	N/A	*
		7945	*		*
		7946	*	*TAILS/WORK AREAS	*
		7947	*	N/A	*
		7948	*		*
		7949	*	*ATTRIBUTES	*
		7950	*	BNGETX IS RELOCATABLE AND REUSABLE.	*
		7951	*		*
		7952	*	*CHARACTER CODE DEPENDENCY	*
		7953	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON ANY PARTICULAR	*
		7954	*	INTERNAL REPRESENTATION UP THE EXTERNAL CHARACTER SET.	*

## S/3 BASIC COMPILER -MAT GET- STATEMENT RTN

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 117
				7955	*	*
				7956	*NOTES	*
				7957	* ERROR PROCEDURES	*
				7958	* N/A	*
				7959	*	*
				7960	* REGISTER USAGE	*
				7961	* BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
				7962	*	*
				7963	* SAVED/RESTORED AREAS	*
				7964	* N/A	*
				7965	*	*
				7966	* MODIFICATION CONSIPERATIPAS	*
				7967	* BMGETX RESIDES ON A SECTOR WITH BKNEXT AND BKGOTO. ANY	1-4*
				7968	* MODIFICATION TO BMGETX WILL CHANGE THE ENTRY ADDRESS OF	1-4*
				7969	* BKCOTO AND MUST CONSIDER THE LIMITATION OF THE SECTOR	1-4*
				7970	* BOUNDARY ON SIZE.	1-4*
				7971	*	*
				7972	* REQUIRED MODULES	*
				7973	* @SYSEQ - COMMON SYSTEM EQUATES.	*
				7974	* @FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES.	*
				7975	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS.	*
				7976	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.	*
				7977	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES.	*
				7978	* @ERMEQ - ERROR MESSAGE EQUATES.	*
				7979	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES.	*
				7980	* \$B\$EQU - COMPILER FIXED EQUATES.	*
				7981	* SB@EQU - COMPILER SYSTEM EQUATES.	*
				7982	*	*
				7983	* OTHER	*
				7984	* BMGETX IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.	*
				7985	*****	
				7987	*	
				7988	* ENTER BMGETX - 'MAT GET' STATEMENT	
				7989	*	
			1965	7990	BMGETX EQU *	BMGETX ENTRY POINT
				7991	*	
				7992	* SET GET ROUTINE TO SKIP TO THE CHARACTER FOLLOWING KEYWORD 'MAT GET'	
				7993	*	
1965	3C	05	0873	7994	BMG010 MVI B\$NUMC,B@LMGT-1	SET GET TO SKIP KEYWORD
1969	C0	87	0867	7995	B B\$GETC	LINK TO ADVANCE POINTER
196D	C0	87	14B0	7996	B B\$CSCN	LINK TO PROCESS FILE REFERENCE
				7997	*	
				7998	* GENERATE THE 'ADF' PMC IN V.M. (IF OPND IS ZERO, THE FILENAME IS	
				7999	* NOT IN THE ENTRY TABLE)	
				8000	*	
1971	D2	02	AC	8001	BMG100 LA BMGAFC(, @BR), @XR	LOAD CADDR OF 'ADF' INSTR
1974	34	02	0A40	8002	ST B\$PCAD, @XR	SET VADIIR PARM OF PUT FOR 'ADF'
1978	3C	01	0A41	8003	MVI B\$PNBY, B@LADF-1	SET LNG PARM, OF PUT FOR 'ADF'
197C	C0	87	093A	8004	B B\$PUTC	LINK TO GENERATE 'ADF' PMC
				8005	*	
				8006	* CALL GET ROUTINE TO REFERENCE THE NEXT VARIABLE	
				8007	*	
1980	3C	00	0873	8008	BMG110 MVI B\$NUMC, B@GETS	DISABLE GET ROUTINE
1984	C0	87	0867	8009	B B\$GETC	LINK TO GET CHARACTER POINTER
				8010	*	

```

      8011 * CALL ROUTINE TO GENERATE DOPE VECTOR STACKING INSTRUCTIONS
      8012 *
1988 C0 87 18F3      8013 BMG120 B      B$MATR      LINK TO GENERATE PMC
198C 74 02 A1      8014          ST      BMG150+@OP1(,@BR),@XR      SAVE TEXT POINTER
      8015 *
      8016 * GENERATE THE 'MF1' INSTRUCTION IN VIRTUAL MEMORY
      8017 *
198F D2 02 AE      8018 BMG140 LA      BMGMFC(,@BR),@XR      LOAD CADDR OF 'MF1' INSTR
1992 34 02 0A40      8019          ST      B$PCAD,@XR      SET VADDR PARM OF PUT FOR 'MF1'
1996 3C 02 0A41      8020          MVI      B$PNBY,B@LMF1-1      SET LNG PARM OF PUT FOR 'MF1'
199A C0 87 093A      8021          B      B$PUTC      LINK TO GENERATE 'MF1' INSTR
      8022 *
      8023 * TEST THE DELIMITER FOR BEING AN END-OF-STATEMENT
      8024 *
199E C2 02 0000      8025 BMG150 LA      *-*,@XR      RESTORE TEXT POINTER
19A2 BD 1E 00      8026          CLI      B@CHAR(,@XR),B@EOST      IF DELIMITER IS AN EOS
19A5 D0 01 88      8027          BNE      BMG120(,@BR)      * BRANCH TO GET NEXT CHAR
      8028 *
      8029 * RETURN CONTROL TO THE COMPILER DISTRIBUTOR
      8030 *
19A8 C0 87 0700      8031 BMG160 B      B$DIST      RETURN TO DISTRIBUTOR

      8033 *****
      8034 * 'MAT GET' STATEMENT STORAGE AND PARAMETER AREA
      8035 *****
      8036 *
19AC 58      19AC 8037 BMGAFC DC      AL(B@LCOP)(B@CADF)      'ADF' INSTR OPCODE
19AD 00      19AD 8038 BMGAFO DC      XL1'00'      'ADF' INSTR OPERAND
      8039 *
19AE 18      19AE 8040 BMGMFC DC      AL(B@LCOP)(B@CMF1)      'MF1' INSTR OPCODE
19AF 3E06      19B0 8041 BMGMFO DC      AL(B@LCVA)(V$XMGT)      'MF1' INSTR OPERAND

      8043 *****
      8044 * 'MAT GET' STATEMENT CONSTANTS AND EQUATES
      8045 *****
      8046 *
      8047 * CONSTANTS
      8048 *
      19B1 8049 BMGSFA EQU      *
19B1 0001      19B2 8050 BMGBN1 DC      IL(@CADDR)'1'      BINARY 1
      8051 *
      8052 *****
      8053 *
      8054 * END OF 'MAT GET' STATEMENT ROUTINE CODING
      8055 *

```

## S/3 BASIC COMPILER -GOTO- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 119
			8057		*****			
			8058	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			8059	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
			8060	*				*
			8061		*****			*
			8062	*	STATUS			*
			8063	*	VERSION 1 MODIFICATION 0			*
			8064	*				*
			8065	*	FUNCTION			*
			8066	*	BKGOTO IS EXECUTED TO TRANSLATE SIMPLE GOTO STATEMENTS AS THEY			*
			8067	*	OCCUR IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO			*
			8068	*	PLACE THE PSEUDOCODE IN VIRTUAL MEMORY.			*
			8069	*				*
			8070	*	ENTRY POINTS			*
			8071	*	BKGOTO HAS ONLY ONE ENTRY POINT:			*
			8072	*	BKGOTO - TRANSLATE GOTO STATEMENT			*
			8073	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
			8074	*	B BKGOTO			*
			8075	*				*
			8076	*	INPUT			*
			8077	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
			8078	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
			8079	*	LEADING KEYWORD, GOTO.			*
			8080	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
			8081	*	CHARACTER IN THE LEADING KEYWORD, GOTO.			*
			8082	*				*
			8083	*	OUTPUT			*
			8084	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
			8085	*	GENERATE BY BKGOTO IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
			8086	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
			8087	*	SEQUENCES.			*
			8088	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
			8089	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
			8090	*				*
			8091	*	EXTERNAL REFERENCES			*
			8092	*	B\$GETC - (B\$NUMC) - ENTRY TO BASIC RETRIEVAL ROUTINE.			*
			8093	*	B\$PUTC - (B\$PCAD, B\$PNBY, B\$PVAD) - ENTRY TO COMPILER			*
			8094	*	VIRTUAL MEMORY OUTPUT ROUTINE.			*
			8095	*	B\$BTAB - (B\$BRVA, B\$BRLN) - ENTRY TO BASIC COMPILER BRANCH			*
			8096	*	TABLE ROUTINE.			*
			8097	*	B\$ZDBN - (B\$BINO) - ENTRY TO BASIC COMPILER ZONED DECIMAL			*
			8098	*	TO BINARY CONVERSION ROUTINE.			*
			8099	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
			8100	*				*
			8101	*	EXITS, NORMAL			*
			8102	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
			8103	*				*
			8104	*	EXITS, ERROR			*
			8105	*	N/A			*
			8106	*				*
			8107	*	TABLES/WORK AREAS			*
			8108	*	N/A			*
			8109	*				*
			8110	*	ATTRIBUTES			*
			8111	*	BKGOTO IS NATURALLY RELOCATABLE AND REUSABLE.			*
			8112	*				*



## S/3 BASIC COMPILER -GOTO- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 20/07/20 PAGE 120
				8113	*	CHARACTER CODE DEPENDENCY	*
				8114	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
				8115	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
				8116	*		*
				8117	*	NOTES	*
				8118	*	ERROR PROCEDURES	*
				8119	*	N/A	*
				8120	*		*
				8121	*	REGISTER USAGE	*
				8122	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
				8123	*		*
				8124	*	SAVED/RESTORED AREAS	*
				8125	*	N/A	*
				8126	*		*
				8127	*	MODIFICATION CONSIDERATIONS	*
				8128	*	BKGOTO RESIDES ON A SECTOR WITH BKNEXT AND BMGETX.	1-4*
				8129	*	ANY MODIFICATION TO BKGOTO MUST CONSIDER THIS CO-RESIDENCY	1-4*
				8130	*	AND THE LIMITATION OF THE SECTOR BOUNDARY ON SIZE.	1-4*
				8131	*		*
				8132	*	REQUIRED MODULES	*
				8133	*	@SYSEQ - COMMON SYSTEM EQUATES	*
				8134	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES	*
				8135	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS	*
				8136	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES	*
				8137	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES	*
				8138	*	@ERMEQ - ERROR MESSAGE EQUATES	*
				8139	*	\$VSEQU - FIXED VIRTUAL ADDRESS	*
				8140	*	\$B\$EQU - COMPILER FIXED EQUATES	*
				8141	*	\$B@EQU - COMPILER SYSTEM EQUATES	*
				8142	*		*
				8143	*	OTHER	*
				8144	*	BKGOTO IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS	*
				8145	*	*****	*
				8147	*		*
				8148	*	ENTER BKGOTO - 'GOTO' STATEMENT ROUTINE	
				8149	*		
			19B3	8150	BKGOTO EQU	*	BKGOTO ENTRY POINT
				8151	*		
				8152	*	SET INPUT PARAMETER TO SKIP KEYWORD 'GOTO'	
				8153	*		
19B3	3C	04	0873	8154	BKG010 MVI	B\$NUMC,B@LGTO	SET GET RTN TO SKIP 'GOTO'
19B7	C0	87	0867	8155	B	B\$GETC	LINK TO ADVANCE POINTER
				8156	*		
				8157	*	CONVERT THE 'GOTO' LINE NUMBER TO BINARY FROM ITS DECIMAL FORM	
				8158	*		
19BB	C0	87	19F2	8159	BKG020 B	B\$ZDBN	LINK TO CONVERT LINE NO. TO BIN
				8160	*		
				8161	*	GENERATE A 'BRA' PMC IMAGE IN VIRTUAL MEMORY	
				8162	*		
19BF	D2	02	E7	8163	BKG030 LA	BKGBRC(,@BR),@XR	LOAD CADDR OF 'BRA' INSTR
19C2	34	02	0A40	8164	ST	B\$PCAD,@XR	SET VADDR PARM FOR PUT RTN
19C6	3C	02	0A41	8165	MVI	B\$PNBY,B@LBRA-1	SET LENGTH PARM FOR PUT RTN
19CA	C0	87	093A	8166	B	B\$PUTC	LINK TO GENERATE PMC
				8167	*		
				8168	*	UPDATE UNRESOLVED BRANCH TABLE	

## S/3 BASIC COMPILER -GOTO- STATEMENT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 121
					8169	*				
	19CE	0C	01	19F1	1A6A	8170	BKG040 MVC B\$BRLN,B\$BINO(@VADDR)		SET	BRANCH TABLE LINE NUMBER
	19D4	0C	01	19EF	0A43	8171	MVC B\$BRVA,B\$PVAD(@VADDR)		SET	BRANCH TABLE VADDR
	19DA	1F	01	19EF	EB	8172	SLC B\$BRVA,BKGBN1(@VADDR,@BR)		ADJUST	VADDR FOR 'BRA' OPERAND
					8173	*				
					8174	*	ESTABLISH RESOLUTION OF LINE NUMBER AND VIRTUAL ADDR IN BRANCH TABLE			
					8175	*				
	19DF	C0	87	1996		8176	BKG050 B B\$BTAB		LINK	TO WRITE BRANCH TBL ENTRY
					8177	*				
					8178	*	RETURN CONTROL TO THE COMPILER DISTRIBUTOR			
					8179	*				
	19E3	C0	87	0700		8180	BKG060 B B\$DIST		RETURN	TO DISTRIBUTOR
					8182	*****				
					8183	*	'GOTO' STATEMENT ROUTINE PMC AND STORAGE PARAMETERS			
					8184	*****				
					8185	*				
	19E7	46		19E7	8186	BKGBRC DC	AL(B@LCOP)(B@CBRA)		'BRA'	INSTR OPCODE
	19E8	0000		19E9	8187	BKGBRO DC	XL(B@LCVA)'00'		'BRA'	INSTR OPERAND IMAGE
					8189	*****				
					8190	*	'GOTO' STATEMENT CONSTANTS			
					8191	*****				
					8192	*				
	19EA	0001		19EB	8193	BKGBN1 DC	IL(@VADDR)'1'		BINARY	'1'
					8194	*				
					8195	*****				
					8196	*				
					8197	*	END OF 'GOTO' STATEMENT ROUTINE CODING			
					8198	*				

## S/3 BASIC COMPILER -IF- STATEMENT ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 122
		8200		*****	
		8201	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		8202	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		8203	*		*
		8204		*****	
		8205	*	*STATUS	*
		8206	*	VERSION 1 MODIFICATION 0	*
		8207	*		*
		8208	*	*FUNCTION	*
		8209	*	BKARIF IS EXECUTED TO TRANSLATE ARITHMETIC IF STATEMENTS AS THEY	*
		8210	*	OCCUR IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO	*
		8211	*	PLACE THE PSEUDOCODE IN VIRTUAL MEMORY.	*
		8212	*		*
		8213	*	*ENTRY POINTS	*
		8214	*	BKARIF HAS ONLY ONE ENTRY POINT:	*
		8215	*	BKARIF - TRANSLATE ARITHMETIC IF STATEMENT	*
		8216	*	THE FORMAT FOR THE CALLING SEQUENCE IS:	*
		8217	*	B BKARIF	*
		8218	*		*
		8219	*	*INPUT	*
		8220	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		8221	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE	*
		8222	*	LEADING KEYWORD, IF.	*
		8223	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST.	*
		8224	*	CHARACTER IN THE LEADING KEYWORD, IF.	*
		8225	*		*
		8226	*	*OUTPUT	*
		8227	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		8228	*	GENERATED BY BKARIF IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		8229	*	MEMORY LOCATION. FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		8230	*	SEQUENCES.	*
		8231	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		8232	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		8233	*		*
		8234	*	*EXTERNAL REFERENCES	*
		8235	*	B\$GETC - (B\$NUMC, B\$GPTR) - ENTRY TO BASIC RETRIEVAL RTN.	*
		8236	*	B\$PUTC - (B\$PCAD, B\$PNBY, B\$PVAD) - ENTRY TO COMPILER VIRT	*
		8237	*	MEMORY OUTPUT ROUTINE.	*
		8238	*	B\$BTAB - (B\$BRVA, B\$BRLN) - ENTRY TO BASIC COMPILER BRANCH	*
		8239	*	TABLE ROUTINE.	*
		8240	*	B\$ZOBN - (B\$BINO) - ENTRY TO BASIC COMPILER ZONED DECIMAL	*
		8241	*	TO BINARY CONVERSION ROUTINE.	*
		8242	*	B\$SCAN - ENTRY TO BASIC COMPILER ARITHMETIC EXPRESSION SCAN	*
		8243	*	ROUTINE.	*
		8244	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		8245	*		*
		8246	*	*EXITS, NORMAL	*
		8247	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		8248	*		*
		8249	*	*EXITS, ERROR	*
		8250	*	N/A	*
		8251	*		*
		8252	*	*TABLES/WORK AREAS	*
		8253	*	* RELATIONAL OPERATOR TABLE - INTERNAL TO OKARIF, THIS TABLE	*
		8254	*	CONTAINS BRC INSTRUCTION CONDITION CODES ASSOCIATED WITH EVERY	*
		8255	*	SIMPLE OR COMPOUND RELATIONAL OPERATOR. OPERATOR ENTRIES IN	*

## S/3 BASIC COMPILER -IF- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 123
				8256 *	THE TABLE CONSIST OF THE EBCDIC CHARACTER CODE FOR SIMPLE	*
				8257 *	OPERATORS AND THE SUM OF EBCDIC CHARACTER CODES FOR COMPOUND	*
				8258 *	OPERATORS.	*
				8259 *	* RELATIONAL OPERATOR BUCKET - INTERNAL TO BKARIF, THIS 1-BYTE	*
				8260 *	FIELD IS USED TO STORE SIMPLE AND COMPOUND RELATIONAL OPERATOR	*
				8261 *	CHARACTERS FOR ASSOCIATION WITH A RELATIONAL OPERATOR TABLE	*
				8262 *	ENTRY.	*
				8263 *		*
				8264 *	*ATTRIBUTES	*
				8265 *	BKARIF IS NATURALLY RELOCATABLE AND REUSABLE.	*
				8266 *		*
				8267 *	*CHARACTER CODE DEPENDENCY	*
				8268 *	THE OPERATION OF THIS MODULE DEPENDS UPON AN INTERNAL REPRRESEN-	*
				8269 *	TATION OF THE EXTERNAL CHARACTER SET WHICH IS EQUIVALENT TO THE	*
				8270 *	ONE USED AT ASSEMBLY TIME. THE CODING HAS BEEN ARRANGED SO THAT	*
				8271 *	REDEFINITION OF CHARACTER CONSTANTS. BY REASSEMBLY, WILL RESULT	*
				8272 *	IN A CORRECT MODULE FOR THE NEW DEFINITIONS.	*
				8273 *		*
				8274 *	*NOTES	*
				8275 *	ERROR PROCEDURES	*
				8276 *	N/A	*
				8277 *		*
				8278 *	REGISTER USAGE	*
				8279 *	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
				8280 *		*
				8281 *	SAVED/RESTORED AREAS	*
				8282 *	N/A	*
				8283 *		*
				8284 *	MODIFICATION CONSIDERATIONS	*
				8285 *	BKARIF RESIDES ON A SECTOR WITH BMDPRT. ANY MODIFICATION	1-4*
				8286 *	TO BKARIF WILL CHANGE THE ENTRY ADDRESS OF BMDPRT AND	1-4*
				8287 *	MUST TAKE INTO CONSIDERATION THE LIMITATION OF THE SECTOR	1-4*
				8288 *	BOUNDARY ON SIZE.	1-4*
				8289 *		*
				8290 *	REQUIRED MODULES	*
				8291 *	@SYSEQ - COMMON SYSTEM EQUATES	*
				8292 *	@FXDEQ - SYSTEM NUCLEUS ADDRESS AND INDICATOR VALUES EQUATES	*
				8293 *	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS EQUATES	*
				8294 *	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.	*
				8295 *	@SPFEQ - SYSTEM PROGRAM FILE EQUATES	*
				8296 *	@ERNEQ - ERROR MESSAGE EQUATES	*
				8297 *	\$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES	*
				8298 *	\$B\$EQU - COMPILER FIXED EQUATES	*
				8299 *		*
				8300 *	OTHER	*
				8301 *	BKARIF IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.	*
				8302 *	*****	
				8303 *		
1A00				8304	ORG *,256,0	BEGIN AT CORE PAGE BOUNDARY
	1A00			8305	USING *,@BR	DEFINE BASE ADDR FOR CORE PAGE
				8306 *		
				8307 *	ENTER BKARIF - ARITHMETIC IF STATEMENT ROUTINE	
				8308 *		
	1A00			8309	BKARIF EQU *	BKARIF ENTRY POINT
				8310 *		
				8311 *	SET INPUT PARAMETER TO SKIP 'I' IN KEYWORD 'IF' TO REFERENCE THE	

## S/3 BASIC COMPILER -IF- STATEMENT ROUTINE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 20/07/20 PAGE 124

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8312 * CHARACTER PRECEDING THE FIRST ARITHMETIC EXPRESSION
8313 *
1A00 3C 01 0873 8314 BKA010 MVI B$NUMC,B@LKIF-1 SET GET RTN TO SKIP 'I' IN IF.
1A04 C0 87 0867 8315 B B$GETC LINK TO ADVANCE POINTER
8316 *
8317 * BRANCH TO SCAN ROUTINE TO GENERATE 'STF' INSTR
8318 *
1A08 C0 87 1514 8319 BKA020 B B$SCAN LINK TO GENERATE 'STF' PMC
8320 *
8321 * STORE THE FIRST RELATIONAL OPERATOR IN THE OPERAND OF A CLI INSTR.
8322 *
1A0C 6C 00 32 00 8323 BKA030 MVC BKA090+@Q(,@BR),B@CHAR(1,@XR) STORE 1ST RELATIONAL OPTR
8324 *
8325 * GET NEXT CHARACTER TO CHECK IF COMPOUND OPERATOR IS INDICATED
8326 *
1A10 C0 87 0867 8327 BKA040 B B$GETC LINK TO GET NEXT CHARACTER
1A14 BD 7E 00 8328 CLI B@CHAR(,@XR),B@EQL IF CHAR IS '='
1A17 F2 81 0D 8329 JE BKA060 * GO COMPUTE OPERATOR
1A1A BD 6E 00 8330 CLI B@CHAR(,@XR),B@GRTR IF CHAR IS '>'
1A1D F2 81 07 8331 JE BKA060 * GO COMPUTE OPERATOR
8332 *
8333 * IF NO SECOND RELATIONAL OPERATOR DISABLE BAGETC TO KEEP THE TEXT
8334 * POINTER IN PLACE
8335 *
1A20 3C 00 0873 8336 BKA050 MVI B$NUMC,B@GETS DISABLE GET ROUTINE
1A24 F2 87 04 8337 J BKA070 GO SEARCH OPERATOR TABLE
8338 *
8339 * IF RELATIONAL OPERATOR IS COMPOUND ADD CURRENTLY REFERENCED CHARACTER
8340 * TO THE CONTENTS OF THE OPERATOR OPERAND TO DEKIVE A CHARACTER CODE
8341 *
1A27 6E 00 32 00 8342 BKA060 ALC BKA090+@Q(,@BR),B@CHAR(1,@XR) ADD TO GET CHAR CODE
8343 *
8344 * SEARCH RELATIONAL OPERATOR TABLE FOR THE CONDITION CODE THAT MATCHES
8345 * THE CHARACTER CODE IN THE OPERATOR BUUKET-EITHER SIMPLE OR COMPOUND
8346 *
1A2B D2 02 8B 8347 BKA070 LA BKAOT1(,@BR),@XR LOAD TABLE BASE ADDR IN XR
1A2E E2 02 02 8348 BKA080 LA BKALTH(,@XR),@XR ADD LENGTH TO ADDR IN XR
1A31 BD 00 00 8349 BKA090 CLI BKAOD1(,@XR),*- IF TEXT OPERATOR TABLE ENTRY
1A34 D0 01 2E 8350 BNE BKA080(,@BR) * FALL THROUGH
8351 *
8352 * STORE CONDITION CODE IN OPERAND FIELD OF 'BRC' INSTRUCTION IMAGE
8353 *
1A37 6C 00 8A 01 8354 BKA100 MVC BKAB02(,@BR),BKAOD2(,@XR) SET 'BRC' COND CODE OPERAND
8355 *
8356 * GO TO ARITHMETIC SCAN ROUTINE TO GENERATE PMC FOR THE SECOND
8357 * ARITHMETIC EXPRESSION
8358 *
1A3B 35 02 0878 8359 BKA110 L B$GPTR,@XR RESTORE TEXT POINTER
1A3F C0 87 1514 8360 B B$SCAN LINK TO GENERATE PMC
8361 *
8362 * SET PARAMETER TO SKIP EMBEDDED KEYWORD 'GOTO' OR 'THEN' TO ADVANCE
8363 * THE TEXT POINTER TO THE LINE NUMBER
8364 *
1A43 3C 03 0873 8365 BKA120 MVI B$NUMC,B@LTHN-1 SET GET RTN TO SKIP KEYWORD
1A47 C0 87 0867 8366 B B$GETC LINK TO ADVANCE POINTER
8367 *

```

## S/3 BASIC COMPILER -IF- STATEMENT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 125
					8368	*	CONVERT THE 'GOTO' LINE NUMBER TO BINARY FROM DECIMAL			
					8369	*				
1A4B	C0	87	19F2		8370	BKA130 B	B\$ZDBN LINK TO CONVERT LINE NUMBER			
					8371	*				
					8372	*	GENERATE A COMPARE FLOATING POINT VALUE PMC IN VIRTUAL MEMORY			
					8373	*				
1A4F	D2	02	86		8374	BKA140 LA	BKACMC(,@BR),@XR LOAD CADDR OF 'CMF' INSTR			
1A52	34	02	0A40		8375	ST	B\$PCAD,@XR SET PUT RTN FOR VADDR OF 'CMF'			
1A56	3C	00	0A41		8376	MVI	B\$PNBY,B@LCMF-1 SET PUT RTN FOR LENGTH OF 'CMF'			
1A5A	C0	87	093A		8377	B	B\$PUTC LINK TO GENERATE 'CMF' INSTK			
					8378	*				
					8379	*	GENERATE BRANCH ON CONDITION INSTR IN VIRTUAL MEMORY			
					8380	*				
1A5E	D2	02	87		8381	BKA150 LA	BKABRC(,@BR),@XR LOAD CADDR OF 'BRC' INSTR			
1A61	34	02	0A40		8382	ST	B\$PCAD,@XR SET PUT RTN FOR VADDR OF 'BRC'			
1A65	3C	03	0A41		8383	MVI	B\$PNBY,B@LBRC-1 SET PUT RTN FOR LENGTH OF 'BRC'			
1A69	C0	87	093A		8384	B	B\$PUTC UNK TO GENERATE 'BRC' INSTR			
					8385	*				
					8386	*	ESTABLISH ADDRESS AND LINE NUMBER PARAMETERS FOR BRANCH TABLE			
					8387	*	RESOLUTION ROUTINE			
					8388	*				
1A6D	0C	01	19EF 0A43		8389	BKA160 MVC	B\$BRVA,B\$PVAD(@VADDR) SET ADDR PARAMETER			
1A73	1F	01	19EF 8C		8390	SLC	B\$BRVA,BKALNG(@VADDR,@BR) * TO ADDRESS BRANCH VADDR			
1A78	0C	01	19F1 1A6A		8391	MVC	B\$BRLN,B\$BINO(B@LCLN) SET LINE NO PARAMETER			
1A7E	C0	87	1996		8392	B	B\$BTAB LINK TO WRITE BRANCH TAT ENTRY			
					8393	*				
					8394	*	RETURN CONTROL TO THE DISTRIBUTOR			
					8395	*				
1A82	C0	87	0700		8396	BKA170 B	B\$DIST RETURN TO DISTRIBUTOR			



## S/3 BASIC COMPILER -IF- STATEMENT ROUTINE

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8398 *****
8399 * ARITHMETIC 'IF' ROUTINE PMC AND STORAGE PARAMETERS
8400 *****
8401 *
1A86 40      1A86 8402 BKACMC DC    AL(B@LCOP)(B@CCMF)    COMPARE FLOATING VALUES OPCODE
1A87 44      1A87 8403 BKABRC DC    AL(B@LCOP)(B@CBRC)    BRANCH ON CONDITION OPCODE
1A88 0000    1A89 8404 BKAB01 DC    XL(B@LCVA)'00'        BRANCH ON CONDITION VABOR OPND
1A8A        1A8A 8405 BKAB02 DS    CL(B@LCCC)            BRANCH ON COND COMO CODE OPND

8407 *****
8408 * ARITHMETIC 'IF' ROUTINE CONSTANTS
8409 *****
8410 *
1A8B 0002    1A8C 8411 BKALNG DC    AL(@VADDR)(B@LCCC+1)    LENGTH OF CONDITION CODE + 1

8413 *****
8414 * RELATIONAL OPERATOR - CONDITION CODE TABLE
8415 *****
8416 *
1A8D        1A8D 8417 BKATAB EQU    *                START OF CODE TABLE
0000        0000 8418 BKAOD1 EQU    0                DISP FOR TABLE OPERATOR
0001        0001 8419 BKAOD2 EQU    1                DISP FOR TABLE COND CODE
0002        0002 8420 BKALTH EQU    2                LENGTH OF TABLE ENTRY
1A8B        1A8B 8421 BKAOT1 EQU    BKATAB-BKALTH      CODE TABLE BASE ADDRESS
8422 *
1A8D 7E      1A8D 8423          DC    AL1(B@EQL)        RELATIONAL OPERATOR - '='
1A8E 84      1A8E 8424          DC    AL1(B@BREQ)       BRANCH CONDITION - EQUAL
8425 *
1A8F 6E      1A8F 8426          DC    AL1(B@GRTR)       RELATIONAL OPERATOR - '>'
1A90 88      1A90 8427          DC    AL1(B@BRHI)       BRANCH CONDITION - HIGH
8428 *
1A91 4C      1A91 8429          DC    AL1(B@LESS)       RELATIONAL OPERATOR - '<'
1A92 82      1A92 8430          DC    AL1(B@BRLO)       BRANCH CONDITION - LOW
8431 *
1A93 BA      1A93 8432          DC    AL1(B@LESS+B@GRTR) RELATIONAL OPERATOR - '><'
1A94 94      1A94 8433          DC    AL1(B@BRNE)       BRANCH CONDITION - NOT EQUAL
8434 *
1A95 CA      1A95 8435          DC    AL1(B@LESS+B@EQL) RELATIONAL OPERATOR - '<='
1A96 98      1A96 8436          DC    AL1(B@BRNH)       BRANCH CONDITION - NOT HIGH
8437 *
1A97 EC      1A97 8438          DC    AL1(B@GRTR+B@EQL) RELATIONAL OPERATOR - '>='
1A98 92      1A98 8439          DC    AL1(B@BRNL)       BRANCH CONDITION - NOT LOW
8440 *
1A99 7F      1A99 8441          DC    AL1(B@NEQL)       RELATIONAL OPERATOR - '='
1A9A 94      1A9A 8442          DC    AL1(B@BRNE)       BRANCH CONDITION - NOT EQUAL
8443 *
8444 *****
8445 *
8446 * END OF ARITHMETIC IF ROUTINE CODING
8447 *

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ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 127
		8449		*****	*
		8450	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		8451	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		8452	*		*
		8453		*****	*
		8454	*	*STATUS	*
		8455	*	VERSION 1 MODIFICATION 0	*
		8456	*		*
		8457	*	*FUNCTION	*
		8458	*	BMDPRT IS EXECUTED TO TRANSLATE MAT PRINT STATEMENTS AS THEY OCCUR	*
		8459	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE	*
		8460	*	THE PSEUDOCODE IN VIRTUAL MEMORY.	*
		8461	*		*
		8462	*	*ENTRY POINTS	*
		8463	*	BMDPRT HAS ONLY ONE ENTRY POINT:	*
		8464	*	BMDPRT - TRANSLATE MAT PRINT STATEMENT	*
		8465	*	THE FORMAT OF THE CALLING SEQUENCE IS:	*
		8466	*	B BMDPRT	*
		8467	*		*
		8468	*	*INPUT	*
		8469	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		8470	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE	*
		8471	*	LEADING KEYWORD, MAT PRINT.	*
		8472	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST	*
		8473	*	CHARACTER IN THE LEADING KEYWORD, MAT PRINT.	*
		8474	*		*
		8475	*	*OUTPUT	*
		8476	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		8477	*	GENERATED BY BMDPRT IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		8478	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		8479	*	SEQUENCES.	*
		8480	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		8481	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		8482	*		*
		8483	*	*EXTERNAL REFERENCES	*
		8484	*	B\$GETC - (B\$NUMC, B\$GPTR) - ENTRY TO BASIC RETRIEVAL RTN.	*
		8485	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRT TO COMPILER VIRTUAL MEMORY	*
		8486	*	OUTPUT ROUTINE.	*
		8487	*	B\$MATR - ENTRY TO BASIC COMPILER MATRIX REFERENCE ROUTINE.	*
		8488	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		8489	*		*
		8490	*	*EXITS, NORMAL	*
		8491	*	B@DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		8492	*		*
		8493	*	*EXITS, ERROR	*
		8494	*	N/A	*
		8495	*		*
		8496	*	*TABLES/WORK AREAS	*
		8497	*	N/A	*
		8498	*		*
		8499	*	*ATTRIBUTES	*
		8500	*	BMDPRT IS NATURALLY RELOCATABLE AND REUSABLE.	*
		8501	*		*
		8502	*	*CHARACTER CODE DEPENDENCY	*
		8503	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
		8504	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 128
			8505	*				*
			8506	*NOTES				*
			8507	* ERROR PROCEDURES				*
			8508	* N/A				*
			8509	*				*
			8510	* REGISTER USAGE				*
			8511	* BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.				*
			8512	*				*
			8513	* SAVED/RESTORED AREAS				*
			8514	* N/A				*
			8515	*				*
			8516	* MODIFICATION CONSIDERATIONS				*
			8517	* BADPRT RESIDES ON A SECTOR WITH BKARIF. ANY MODIFICATION	1-4*			
			8518	* TO RMDPRT MUST TAKE INTO CONSIDERATION THIS CO-RESIDENCY	1-4*			
			8519	* AND THE LIMITATION OF THE SECTOR BOUNDARY ON SIZE.	1-4*			
			8520	*				*
			8521	* REQUIRED MODULES				*
			8522	* @SYSEQ - COMMON JESTER EQUATES.				*
			8523	* @FXDEQ - SYSTEM NUCLEUS ADDRESS AND INDICATOR VALUES EQUATES.	*			
			8524	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS.	*			
			8525	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.	*			
			8526	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES.	*			
			8527	* @ERMEQ - ERROR MESSAGE EQUATES.	*			
			8528	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES.	*			
			8529	* \$B\$EQU - COMPILER FIXED EQUATES.	*			
			8530	* \$B@EQU - COMPILER SYSTEM EQUATES.	*			
			8531	*	*			
			8532	* OTHER	*			
			8533	* BMDPRT IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS	*			
			8534	*****				
			8536	*				
			8537	* ENTER BMDPRT - MAT PRINT STATEMENT ROUTINE				
			8538	*				
		1A9B	8539	BMDPRT EQU *	BMDPRT ENTRY POINT			
			8540	*				
			8541	* SET GET ROUTINE TO SKIP TO CHAR FOLLOWING KEYWORDS 'MAT PRINT'				
			8542	*				
1A9B	3C 08 0873		8543	BMD010 MVI B\$NUMC,B@LMPR	SET GET TO SKIP 'MAT PRINT'			
1A9F	C0 87 0867		8544	B B\$GETC	LINK TO ADVANCE POINTER			
			8545	*				
			8546	* DISABLE GET RTN BEFORE CALLING THE MATRIX REFERENCE PROCESSOR				
			8547	*				
1AA3	3C 00 0873		8548	BMD020 MVI B\$NUMC,B@GETS	DISABLE GET RTN NOT TO GET CHAR			
1AA7	C0 87 18F3		8549	B B\$MATR	LINK TO PROCESS MAT-REFERENCE			
			8550	*				
			8551	* TEST DELIMITER FOR BEING A SEMI-COLON (INDICATING SHORT FORM)				
			8552	*				
1AAB	BD 5E 00		8553	BMD030 CLI B@CHAR(,@XR),B@SCLN	IF CHAR IS NOT SEMI-COLON			
1AAE	F2 01 12		8554	JNE BMD050	* GO GENERATE 'MF1' FOR LONG FORM			
			8555	*				
			8556	* GENERATE AN 'MF1' INSTR FOR SHORT FORM				
			8557	*				
1AB1	D2 02 EA		8558	BMD040 LA BMDM1C(,@BR),@XR	LOAD CADDR OF 'MF1' INSTR			
1AB4	34 02 0A40		8559	ST B\$PCAD,@XR	SET VADDR PARM OF PUT FOR 'MF1'			
1AB8	3C 02 0A41		8560	MVI B\$PNBY,B@LMF1-1	SET LNG PARM OF PUT FOR 'MF1'			

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 129
	1ABC	C0	87	093A	8561	B	B\$PUTC			LINK TO GENERATE 'MF1' INSTR
	1AC0	F2	87	19	8562	J	BMD060			GO GET NEXT CHARACTER
					8563	*				
					8564	*	GENERATE AN 'MF1' INSTR FOR LONG FORM			
					8565	*				
	1AC3	D2	02	ED	8566	BMD050	LA BMDM2C(,@BR),@XR			LOAD CADDR OF 'MF1' INSTR
	1AC6	34	02	0A40	8567		ST B\$PCAD,@XR			SET VADDR PARM OF PUT FOR 'MF1'
	1ACA	3C	02	0A41	8568		MVI B\$PNBY,B@LMF1-1			SET LNG PARM OF PUT FOR 'MF1'
	1ACE	C0	87	093A	8569	B	B\$PUTC			LINK TO GENERATE 'MF1' INSTR
					8570	*				
					8571	*	TEST DELIMITER FOR BEING A STATEMENT TERMINATOR			
					8572	*				
	1AD2	35	02	0878	8573	BMD055	L B\$GPTR,@XR			RESTORE TEXT POINTER
	1AD6	BD	1E	00	8574		CLI B@CHAR(,@XR),B@EOST			IF DELIMITER IS AN EOS
	1AD9	D0	81	E6	8575		BE BMD080(,@BR)			* RETURN CONTROL TO DIST
					8576	*				
					8577	*	CALL GET ROUTINE TO GET NEXT CHARACTER			
					8578	*				
	1ADC	C0	87	0867	8579	BMD060	B B\$GETC			LINK TO GET NEXT CHAR
					8580	*				
					8581	*	TEST DELIMITER FOR BEING A STATEMENT TERMINATOR			
					8582	*				
	1AE0	BD	1E	00	8583	BMD070	CLI B@CHAR(,@XR),B@EOST			IF DELIMITER IS NOT AN EOS
	1AE3	D0	01	A3	8584		BNE BMD020(,@BR)			* GO PROCESS NEXT LIST ELEMENT
					8585	*				
					8586	*	RETURN CONTROL TO THE COMPILER DISTRIBUTOR			
					8587	*				
	1AE6	C0	87	0700	8588	BMD080	B B\$DIST			RETURN TO DISTRIBUTOR
					8590		*****			
					8591	*	MAT PRINT STATEMENT ROUTINE STORAGE AND PARAMETER AREA			
					8592		*****			
					8593	*				
	1AEA	18			1AEA	8594	BMDM1C DC AL(B@LCOP)(B@CMF1)			'MF1' INSTR OPCODE
	1AEB	3F00			1AEC	8595	BMDM10 DC AL(B@LCVA)(V\$XMPS)			'MF1' INSTR OPND - SHORT FORM
					8596	*				
	1AED	18			1AED	8597	BMDM2C DC AL(B@LCOP)(B@CMF1)			'MF1' INSTR OPCODE
	1AEE	3F06			1AEF	8598	BMDM20 DC AL(B@LCVA)(V\$XMPL)			'MF1' INSTR OPND - LONG FORM
					8599	*				
					8600		*****			
					8601	*				
					8602	*	END OF 'MAT PRINT' STATEMENT ROUTINE CODING			
					8603	*				

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 130
		8605		*****			
		8606	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		8607	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
		8608	*				*
		8609		*****			*
		8610		*STATUS			*
		8611	*	VERSION 1 MODIFICATION 0			*
		8612	*				*
		8613		*FUNCTION			*
		8614	*	BKCRIF IS EXECUTED TO TRANSLATE CHARACTER IF STATEMENTS AS THEY			*
		8615	*	OCCUR IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO			*
		8616	*	PLACE THE PSEUDOCODE IN VIRTUAL MEMORY.			*
		8617	*				*
		8618		*ENTRY POINTS			*
		8619	*	BKCRIF HAS ONLY ONE ENTRY POINT			*
		8620	*	BKCRIF - TRANSLATE CHARACTER IF STATEMENT			*
		8621	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
		8622	*	B BKCRIF			*
		8623	*				*
		8624		*INPUT			*
		8625	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
		8626	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
		8627	*	LEADING KEYWORD, IF.			*
		8628	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
		8629	*	CHARACTER IN THE LEADING KEYWORD, IF.			*
		8630	*				*
		8631		*OUTPUT			*
		8632	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
		8633	*	GENERATED BY BKCRIF IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
		8634	*	MEMORY LOCATION, FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
		8635	*	SEQUENCES.			*
		8636	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
		8637	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
		8638	*				*
		8639		*EXTERNAL REFERENCES			*
		8640	*	B\$GETC - (B\$NUMC, B\$GPTR) - ENTRY TO BASIC RETRIEVAL ROUTINE			*
		8641	*	B\$PUTC - (B\$PCAD, B\$PNBY, B\$PVAD) - ENTRY TO COMPILER VIRT			*
		8642	*	MEMORY OUTPUT ROUTINE.			*
		8643	*	B\$BTAB - (B\$BRVA, B\$BRIN) - ENTRY TO BASIC COMPILER BRANCH			*
		8644	*	TABLE ROUTINE.			*
		8645	*	B\$ZDBN - (B\$BINO) - ENTRY TO COMPILER ZONED DECIMAL TO			*
		8646	*	BINARY CONVERSION ROUTINE.			*
		8647	*	B\$CSCN - ENTRY TO BASIC COMPILER CHARACTER SCAN ROUTINE			*
		8648	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
		8649	*				*
		8650		*EXITS, NORMAL			*
		8651	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
		8652	*				*
		8653		*EXITS, ERROR			*
		8654	*	N/A			*
		8655	*				*
		8656		*TABLES/WORK AREAS			*
		8657	*	* RELATIONAL OPERATOR TABLE - INTERNAL TO BKCRIF, THIS TABLE			*
		8658	*	CONTAINS 'BRC' INSTRUCTION CONDITION CODES ASSOCIATED WITH			*
		8659	*	EVERY SIMPLE OR COMPOUND RELATIONAL OPERATOR. OPERATOR ENTRIES			*
		8660	*	IN THE TABLE CONSIST OF THE EBCDIC CHARACTER CODE FOR SIMPLE			*

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 131
		8661	*	OPERATORS AND THE SUM OF EBCDIC CHARACTER CODES FOR COMPOUND	*
		8662	*	OPERATORS.	*
		8663	*	* RELATIONAL OPERATOR BUCKET - INTERNAL TO BKCRIF, THIS 1-BYTE	*
		8664	*	FIELD IS USED TO STORE SIMPLE AND COMPOUND RELATIONAL OPERATOR	*
		8665	*	CHARACTERS FOR ASSOCIATION WITH A RELATIONAL OPERATOR TABLE	*
		8666	*	ENTRY.	*
		8667	*		*
		8668	*	*ATTRIBUTES	*
		8669	*	BKCRIF IS NATURALLY RELOCATABLE AND REUSABLE.	*
		8670	*		*
		8671	*	*CHARACTER CODE DEPENDENCY	*
		8672	*	THE OPERATION OF THIS MODULE DEPENDS UPON AS INTERNAL REPRESENTA-	*
		8673	*	TION OF THE EXTERNAL CHARACTER SET WHICH IS EQUIVALENT TO THE	*
		8674	*	ONE USED AT ASSEMBLY TIME. THE CODING HAS BEEN ARRANGED SO THAT	*
		8675	*	REDEFINITION OF CHARACTER CONSTANTS, BY REASSEMBLY, WILL RESULT	*
		8676	*	IN A CORRECT MODULE FOR THE NEW DEFINITIONS.	*
		8677	*		*
		8678	*	*NOTES	*
		8679	*	ERROR PROCEDURES	*
		8680	*	N/A	*
		8681	*		*
		8682	*	REGISTER USAGE	*
		8683	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
		8684	*		*
		8685	*	SAVED/RESTORED AREAS	*
		8686	*	N/A	*
		8687	*		*
		8688	*	MODIFICATION CONSIDERATIONS	*
		8689	*	BKCRIF RESIDES ON A SECTOR WITH BMPUTX. ANY MODIFICATION	1-4*
		8690	*	TO BKCRIF SHOULD CONSIDER THIS CO-RESIDENCY SINCE IT WILL	1-4*
		8691	*	CHANGE THE ENTRY ADDRESS OF BMPUTX. THE SIZE LIMITATION	1-4*
		8692	*	OF THE SECTOR BOUNDARY MUST ALSO BE CONSIDERED.	*
		8693	*		*
		8694	*	REQUIRED MODULES	*
		8695	*	@SYSEQ - COMMON SYSTEM EQUATES.	*
		8696	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES.	*
		8697	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS EQUATES.	*
		8698	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.	*
		8699	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES.	*
		8700	*	@ERMEQ - ERROR MESSAGE EQUATES.	*
		8701	*	\$V\$EQ - FIXED VIRTUAL ADDRESS EQUATES.	*
		8702	*	\$B\$EQ - COMPILER FIXED EQUATES.	*
		8703	*	\$B@EQ - COMPILER SYSTEM EQUATES.	*
		8704	*		*
		8705	*	OTHER	*
		8706	*	BKCRIF IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.	*
		8707	*	*****	*
		8708	*		*
1B00		8709		ORG *,256,0	BEGIN AT CORE PAGE BOUNDARY
	1B00	8710		USING *,@BR	DEFINE BASE ADDR FOR CORE PAGE
		8711	*		
		8712	*	ENTER BKCRIF - CHARACTER 'IF' STATEMENT PROCESSOR	
		8713	*		
	1B00	8714		BKCRIF EQU *	BKCRIF ENTRY POINT
		8715	*		
		8716	*	SKIP PAST 'I' IN KEYWORD 'IF' TO REFERENCE CHARACTER PRECEDING THE	



ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 132
					8717	*	FIRST EXPRESSION CHARACTER			
					8718	*				
	1B00	3C	01	0873	8719	BKC010	MVI B\$NUMC,B@LKIF-1			SET PARAMETER TO SKIP 'I' IN IF
	1B04	C0	87	0867	8720		B B\$GETC			LINK TO ADVANCE POINTER
					8721	*				
					8722	*	GENERATE PNC FOR FIRST CHARACTER EXPRESSION			
					8723	*				
	1B08	C0	87	14B0	8724	BKC020	B B\$CSCN			LINK TO GENERATE PMC
					8725	*				
					8726	*	STORE FIRST RELATIONAL OPERATOR CHARACTER IN OPERAND OF CLI INSTR.			
					8727	*				
	1B0C	6C	00	32 00	8728	BKC030	MVC BKC090+@Q(,@BR),B@CHAR(1,@XR)			STORE 1ST RELATIONAL OPTR
					8729	*				
					8730	*	GET NEXT CHARACTER TO CHECK IF COMPOLND OPERATOR IS INDICATED			
					8731	*				
	1B10	C0	87	0867	8732	BKC040	B B\$GETC			LINK TO GET NEXT CHARACTER
	1B14	BD	7E	00	8733		CLI B@CHAR(,@XR),B@EQL			IF CHAR IS '='
	1B17	F2	81	0D	8734		JE BKC060			* GO COMPUTE OPERATOR
	1B1A	BD	6E	00	8735		CLI B@CHAR(,@XR),B@GRTR			IF CHAR IS '>'
	1B1D	F2	81	07	8736		JE BKC060			* GO COMPUTE OPERATOR
					8737	*				
					8738	*	IF RELATIONAL CPERATOR IS NOT COMPOUND DISABLE BAGETC TO KEEP TEXT			
					8739	*	POINTER STATIONARY			
					8740	*				
	1B20	3C	00	0873	8741	BKC050	MVI B\$NUMC,B@GETS			DISABLE GET RTN FOR NEXT CHAR
	1B24	F2	87	04	8742		J BKC070			GO SEARCH OPERATOR TABLE
					8743	*				
					8744	*	IF RELATIONAL OPERATOR IS COMPOUND ADD CURRENTLY REFERENCED CHARACTER			
					8745	*	TO THE CONTENTS OF THE OPERATOR BUCKET TO DERIVE A CHARACTER CODE			
					8746	*				
	1B27	6E	00	32 00	8747	BKC060	ALC BKC090+@Q(,@BR),B@CHAR(1,@XR)			ADD TO GET CHAR CODE
					8748	*				
					8749	*	SEARCH THE RELATIONAL OPERATOR TABLE FOR THE CONDITION CODE THAT			
					8750	*	MATCHES THE CHARACTER CODE IN THE OPERATOR BUCKET-EITHER SIMPLE OR			
					8751	*	COMPOUND			
					8752	*				
	1B2B	D2	02	8B	8753	BKC070	LA BKCOTB(,@BR),@XR			LOAD TABLE BASE ADOR IN OR
	1B2E	E2	02	02	8754	BKC080	LA BKCLTH(,@XR),@XR			ADD LENGTH TO ADDR IN XR
	1B31	BD	00	00	8755	BKC090	CLI BKC0D1(,@XR),*-*			IF TEXT OPERATOR = TABLE ENTRY
	1B34	D0	01	2E	8756		BNE BKC080(,@BR)			* FALL THROUGH
					8757	*				
					8758	*	STORE CONDITION CODE IN OPERAND FIELD OF 'BRC' INSTRUCTION IMAGE			
					8759	*				
	1B37	6C	00	8A 01	8760	BKC100	MVC BKCB02(,@BR),BKCCD2(,@XR)			SET 'BRC' CORD CODE OPERAND
					8761	*				
					8762	*	GOTO CHARACTER SCAN ROUTINE TO GENERATE PMC FOR THE SECOND CHARACTER			
					8763	*	EXPRESSION			
					8764	*				
	1B3B	35	02	0878	8765	BKC110	L B\$GPTR,@XR			RESTORE TEXT POINTER
	1B3F	C0	87	14B0	8766		B B\$CSCN			LINK TO GENERATE PMC
					8767	*				
					8768	*	SET PARAMETER TO SKIP EMBEDDED KEYWORD 'GOTO' OR 'THEN' TO ADVANCE			
					8769	*	THE TEXT POINTER TO THE LINE NUMBER			
					8770	*				
	1B43	3C	04	0873	8771	BKC120	MVI B\$NUMC,B@LTHN			SET GET RTN TO SKIP KEYWORD
	1B47	C0	87	0867	8772		B B\$GETC			LINK TO ADVANCE POINTER

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8773 *
8774 * CONVERT THE 'GOTO' LINE NUMBER TO BINARY RION DECIMAL
8775 *
1B4B C0 87 19F2 8776 BKC130 B B$ZDBN LINK TO CONVERT LINE NUMBER
8777 *
8778 * GENERATE A COMPARE CHARACTER PMC IN VIRTUAL MEMORY
8779 *
1B4F D2 02 86 8780 BKC140 LA BKCCMC(,@BR),@XR LOAD CADDR OF 'CMC' INSTR
1B52 34 02 0A40 8781 ST B$PCAD,@XR SET PUT RTN FOR VADDR OF 'CMC'
1B56 3C 00 0A41 8782 MVI B$PNBY,B@LCMC-1 SET PUT RTN FOR LENGTH OF 'CMC'
1B5A C0 87 093A 8783 B B$PUTC LINK TO GENERATE PMC
8784 *
8785 * GENERATE BRANCH ON CONDITION INSTRUCTION IMAGE IN VIRTUAL MEMORY
8786 *
1B5E D2 02 87 8787 BKC150 LA BKCBRC(,@BR),@XR LOAD CADDR OF 'BRC' INSTR
1B61 34 02 0A40 8788 ST B$PCAD,@XR SET PUT RTN FOR VADDR OF 'BRC'
1B65 3C 03 0A41 8789 MVI B$PNBY,B@LBRC-1 SET PUT RTN FOR LENGTH OF 'BRC'
1B69 C0 87 093A 8790 B B$PUTC LINK TO GENERATE 'BRC' INSTR
8791 *
8792 * ESTABLISH ADDRESS AND LINE NUMBER PARAMETERS FOR BRANCH TABLE
8793 * RESOLUTION ROUTINE
8794 *
1B6D 0C 01 19EF 0A43 8795 BKC160 MVC B$BRVA,B$PVAD(@VADDR) SET ADDR PARAMETER
1B73 1F 01 19EF 8C 8796 SLC B$BRVA,BKCLNG(@VADDR,@BR) SET PARAMETER FOR VADDR OF BRC
1B78 0C 01 19F1 1A6A 8797 MVC B$BRLN,B$BINO(B@LCLN) SET LINE NO PARAMETER
1B7E C0 87 1996 8798 B B$BTAB LINK TO SET RESOLUTION COND
8799 *
8800 * RETURN CONTROL TO THE DISTRIBUTOR
8801 *
1B82 C0 87 0700 8802 B B$DIST RETURN TO DISTRIBUTOR
8804 *****
8805 * CHARACTER IF ROUTINE PMC AND STORAGE PARAMETERS
8806 *****
8807 *
1B86 42 1B86 8808 BKCCMC DC AL(B@LCOP)(B@CCMC) COMPARE CHAR OPCODE
8809 *
1B87 44 1B87 8810 BKCBRC DC AL(B@LCOP)(B@CBRC) BRANCH ON CONDITION OPCODE
1B88 0000 1B89 8811 BKCB01 DC XL(B@LCVA)'00' BRANCH ON CORD VADDR OPERAND
1B8A 1B8A 8812 BKCB02 DS CL(B@LCCC) BRANCH ON COND COND CODE OPND
8814 *****
8815 * CHARACTER IF ROUTINE CONSTANTS
8816 *****
8817 *
1B8B 0002 1B8C 8818 BKCLNG DC AL(@VADDR)(B@LCCC+1) LENGTH OF CONDITION CODE + 1
8820 *****
8821 * RELATIONAL OPERATOR - CONDITION CODE TABLE
8822 *****
8823 *
1B8D 8824 BKCTAB EQU * START OF CODE TABLE
0000 8825 BKCOD1 EQU 0 DISP FOR TABLE OPERATOR
0001 8826 BKCCD2 EQU 1 DISP FOR TABLE COND CODE
0002 8827 BKCLTH EQU 2 LENGTH OF TABLE ENTRY
1B8B 8828 BKCOTB EQU BKCTAB-BKCLTH CODE TABLE BASE ADDRESS

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ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 134
					8829	*				
	1B8D	7E		1B8D	8830	DC	AL1(B@EQL)			RELATIONAL OPERATOR '='
	1B8E	84		1B8E	8831	DC	AL1(B@BRQ)			BRANCH CONDITION - EQUAL
					8832	*				
	1B8F	6E		1B8F	8833	DC	AL1(B@GRTR)			RELATIONAL OPERATOR '>'
	1B90	88		1B90	8834	DC	AL1(B@BRHI)			BRANCH CONDITION - HI
					8835	*				
	1B91	4C		1B91	8836	DC	AL1(B@LESS)			RELATIONAL OPERATOR '<'
	1B92	82		1B92	8837	DC	AL1(B@BRLO)			BRANCH CONDITION - LOW
					8838	*				
	1B93	BA		1B93	8839	DC	AL1(B@LESS+B@GRTR)			RELATIONAL OPERATOR '<>'
	1B94	94		1B94	8840	DC	AL1(B@BRNE)			BRANCH CONDITION - NOT EQUAL
					8841	*				
	1B95	CA		1B95	8842	DC	AL1(B@LESS+B@EQL)			RELATIONAL OPERATOR '<='
	1B96	98		1B96	8843	DC	AL1(B@BRNH)			BRANCH CONDITION - NOT HIGH
					8844	*				
	1B97	EC		1B97	8845	DC	AL1(B@GRTR+B@EQL)			RELATIONAL OPERATOR '>='
	1B98	92		1B98	8846	DC	AL1(B@BRNL)			BRANCH CONDITION - NOT LOW
					8847	*				
	1B99	7F		1B99	8848	DC	AL1(B@NEQL)			RELATIONAL OPERATOR ''
	1B9A	94		1B9A	8849	DC	AL1(B@BRNE)			BRANCH CONDITION - NOT EQUAL
					8850	*				
					8851	*****				
					8852	*				
					8853	* END OF 'CHAR IF' ROUTINE CODING				
					8854	*				

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 135
		8856		*****			
		8857	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		8858	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
		8859	*				*
		8860		*****			*
		8861	*	STATUS			*
		8862	*	VERSION 1 MODIFICATION 0			*
		8863	*				*
		8864	*	FUNCTION			*
		8865	*	BMPUTX IS EXECUTED TO TRANSLATE MAT PUT STATEMENTS AS THEY OCCUR			*
		8866	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE			*
		8867	*	THE PSEUDOCODE IN VIRTUAL MEMORY.			*
		8868	*				*
		8869	*	ENTRY POINTS			*
		8870	*	BMPUTX HAS ONLY ONE ENTRY POINT:			*
		8871	*	BMPUTX - TRANSLATE MAT PUT STATEMENT			*
		8872	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
		8873	*	B BMPUTX			*
		8874	*				*
		8875	*	INPUT			*
		8876	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
		8877	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
		8878	*	LEADING KEYWORD. MAT PUT.			*
		8879	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
		8880	*	CHARACTER IN THE LEADING KEYWORD. MAT PUT.			*
		8881	*				*
		8882	*	OUTPUT			*
		8883	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
		8884	*	GENERATED BY BMPUTX IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
		8885	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
		8886	*	SEQUENCES.			*
		8887	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
		8888	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
		8889	*				*
		8890	*	EXTERNAL REFERENCES			*
		8891	*	B\$GETU - (B\$NUNC) - ENTRY TO BASIC RETRIEVAL ROUTINE.			*
		8892	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY			*
		8893	*	ROUTINE.			*
		8894	*	B\$MATR - ENTRY TO BASIC COMPILER MATRIX REFERENCE ROUTINE			*
		8895	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
		8896	*				*
		8897	*	EXITS, NORMAL			*
		8898	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
		8899	*				*
		8900	*	EXITS, ERROR			*
		8901	*	N/A			*
		8902	*				*
		8903	*	TABLES/WORK AREAS			*
		8904	*	N/A			*
		8905	*				*
		8906	*	ATTRIBUTES			*
		8907	*	BMPUTX IS NATURALLY RELOCATABLE AND REUSABLE.			*
		8908	*				*
		8909	*	CHARACTER CODE DEPENDENCY			*
		8910	*	THE OPERATION OF THIS NODULE DOES NOT DEPEND ON A PARTICULAR			*
		8911	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 136
					8912	*				*
					8913	*NOTES				*
					8914	* ERROR PROCEDURES				*
					8915	* N/A				*
					8916	*				*
					8917	* REGISTER USAGE				*
					8918	* BOTH THE INNS AND BASE REGISTERS ARE USED DURING EXECUTION.				*
					8919	*				*
					8920	* SAVED/RESTORED AREAS				*
					8921	* N/A				*
					8922	*				*
					8923	* MODIFICATION CONSIDERATIONS				*
					8924	* BMPUTX RESIDES ON A SECTOR WITH IKCRIF. ANY MODIFICATION	1-4*			
					8925	* TO BMPUTX SHOULD CONSIDER THIS CO-RESIDENCY AND TAKE INTO	1-4*			
					8926	* CONSIDERATION THE LIMITATION OF THE SECTOR BOUNDARY ON SIZE.	1-4*			
					8927	*				*
					8928	* REQUIRED MODULES				*
					8929	* @SYSEQ - COMMON SYSTEM EQUATES.				*
					8930	* @FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES.				*
					8931	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS EQUATES.				*
					8932	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.				*
					8933	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES.				*
					8934	* @ERMEQ - ERROR MESSAGE EQUATES.				*
					8935	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES.				*
					8936	* \$B\$EQU - COMPILER FIXED EQUATES.				*
					8937	* \$B@EQU - COMPILER SYSTEM EQUATES.				*
					8938	*				*
					8939	* OTHER				*
					8940	* BMPUTX IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.				*
					8941	*****				
					8943	*				
					8944	* ENTER BMPUTX - MAT PUT STATEMENT ROUTINE				
					8945	*				
				1B9B	8946	BMPUTX EQU *	BMPUTX ENTRY POINT			
					8947	*				
					8948	* SET GET ROUTINE TO SKIP TO THE CHARACTER FOLLOWING KEYWORDS 'MAT PUT'				
					8949	*				
					8950	BMP010 MVI B\$NUMC,B@LMPT-1	SET GET TO SKIP KEYWORD			
					8951	B B\$GETC	LINK TO ADVANCE POINTER			
					8952	B B\$CSCN	LINK TO PROCESS FILE REFERENCE			
					8953	*				
					8954	* GENERATE THE 'ADF' PMC IN VIRT. MEM. (IF OPERAND IS ZERO, THE FILE				
					8955	* IS NOT IN ENTRY TABLE)				
					8956	*				
					8957	BMP100 LA BMPAFC(,@BR),@XR	LOAD CADDR OF 'ADF' INSTR			
					8958	ST B\$PCAD,@XR	SET VADDR PARM OF PUT FOR AVE			
					8959	MVI B\$PNBY,B@LADF-1	SET LNG PARM OF PUT FOR 'ADF'			
					8960	B B\$PUTC	LINK TO GENERATE 'ADF' INSTR			
					8961	*				
					8962	* CALL GET ROUTINE TO GET NEXT CHAR				
					8963	*				
					8964	BMP110 MVI B\$NUMC,B@GETS	DISABLE GET ROUTINE			
					8965	B B\$GETC	LINK TO GET CHARACTER POINTER			
					8966	*				
					8967	* CALL MATRIX REFERENCE PROCESSOR TO GENERATE DOPE VECTOR STACKING				

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8968 * INSTRUCTIONS
8969 *
1BBE C0 87 18F3 8970 BMP120 B B$MATR LINK TO PROCESS MAT-REFERENCE
1BC2 74 02 D7 8971 ST BMP140+@OP1(,@BR),@XR SAVE TEXT POINTER
8972 *
8973 * GENERATE THE 'MF1' INSTR IN VIRTAL MEMORY.
8974 *
1BC5 D2 02 E4 8975 BMP130 LA BMPMFC(,@BR),@XR LOAD CADDR OF 'MF1' INSTR
1BC8 34 02 0A40 8976 ST B$PCAD,@XR SET VADDR PARM OF PUT FOR 'MF1'
1BCC 3C 02 0A41 8977 MVI B$PNBY,B@LMF1-1 SET LNG PARM OF PUT FOR 'MF1'
1BD0 C0 87 093A 8978 B B$PUTC LINK TO GENERATE 'MF1' INSTR
8979 *
8980 * TEST THE DELIMITER FOR BEING A STATEMENT TERMINATOR
8981 *
1BD4 C2 02 0000 8982 BMP140 LA *-*,@XR RESTORE TEXT POINTER
1BD8 BD 1E 00 8983 CLI B@CHAR(,@XR),B@EOST IF DELIMITER IS NOT EOS
1BDB D0 01 BE 8984 BNE BMP120(,@BR) * GO PROCESS NEXT MAT-REFERENCE
8985 *
8986 * RETURN CONTROL TO THE COMPILER DISTRIBUTOR
8987 *
1BDE C0 87 0700 8988 BMP150 B B$DIST RETURN TO DISTRIBUTER

8990 *****
8991 * MAT PUT STATEMENT ROUTINE PARAMETER AND STORAGE AREAS
8992 *****
8993 *
1BE2 58 1BE2 8994 BMPAFC DC AL(B@LCOP)(B@CADF) 'ADF' INSTR OPCODE
1BE3 01 1BE3 8995 BMPAFO DC XL1'01' 'ADF' INSTR OPERAND
8996 *
1BE4 18 1BE4 8997 BMPMFC DC AL(B@LCOP)(B@CMF1) 'MF1' INSTR OPCODE
1BE5 3E0C 1BE6 8998 BMPMFO DC AL(B@LCVA)(V$XMPT) 'MF1' INSTR OPND - PUT

9000 *****
9001 * MAT PUT STATEMENT CONSTANTS AND EQUATES
9002 *****
9003 *
1BE7 9004 BMPSFA EQU *
9005 *
1BE7 0001 1BE8 9006 BMPBN1 DC IL(@CADDR)'1' BINARY 1
9007 *
9008 *****
9009 *
9010 * END OF 'MAT PUT' STATEMENT ROUTINE CODING
9011 *

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ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 138
		9013		*****			
		9014	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		9015	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
		9016	*				*
		9017		*****			*
		9018	*	*STATUS			*
		9019	*	VERSION 1 MODIFICATION 0			*
		9020	*				*
		9021	*	*FUNCTION			*
		9022	*	BKMGTO IS EXECUTED TO TRANSLATE MULTIPLE GOTO STATEMENTS AS THEY			*
		9023	*	OCCUR IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO			*
		9024	*	PLACE THE PSEUDOCODE INTO VIRTUAL MEMORY.			*
		9025	*				*
		9026	*	*ENTRY POINTS			*
		9027	*	BKMGTO HAS ONLY ONE ENTRY POINT:			*
		9028	*	BKMGTO - TRANSLATE MULTIPLE GOTO STATEMENT			*
		9029	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
		9030	*	B BKMGTO			*
		9031	*				*
		9032	*	*INPUT			*
		9033	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
		9034	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
		9035	*	LEADING KEYWORD, GOTO.			*
		9036	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE 1ST			*
		9037	*	CHARACTER IN THE LEADING KEYWORD, GOTO.			*
		9038	*				*
		9039	*	*OUTPUT			*
		9040	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
		9041	*	GENERATED BY BKMGTO IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
		9042	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
		9043	*	SEQUENCES.			*
		9044	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
		9045	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
		9046	*	* B\$BRVA - CONTAINS THE VIRTUAL ADDRESS OF THE RIGHT BYTE OF			*
		9047	*	THE ADDRESS OPERAND FIELD IN THE EXCEPTION BYPASS ADDRESS			*
		9048	*	STACKING INSTRUCTION.			*
		9049	*	* B\$NXSW - SET TO ON STATUS TO CAUSE RESOLUTION OF THE EXCEPTION			*
		9050	*	BYPASS ADDRESS STACKING INSTRUCTION OPERAND.			*
		9051	*				*
		9052	*	*EXTERNAL REFERENCES			*
		9053	*	B\$GETC - (B\$NUMC, B\$GPTR) - ENTRY TO BASIC RETRIEVAL ROUTINE.			*
		9054	*	B\$PUTC - (B\$PCAD, B\$PNBY, B\$PVAD) - ENTRY TO COMPILER VIRT			*
		9055	*	MEMORY OUTPUT ROUTINE.			*
		9056	*	B\$SCAN - ENTRY TO BASIC ARITHMETIC EXPRESSION SCAN ROUTINE.			*
		9057	*	B\$BTAB - (B\$BRVA, B\$BRLN) - ENTRY TO BASIC COMPILER BRANCH			*
		9058	*	TABLE ROUTINE.			*
		9059	*	B\$ZDBN - (B\$BINO) - ENTRY TO BASIC COMPILER ZONED DECIMAL TO			*
		9060	*	BINARY CONVERSION ROUTINE.			*
		9061	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR			*
		9062	*				*
		9063	*	*EXITS, NORMAL			*
		9064	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR			*
		9065	*				*
		9066	*	*EXITS, ERROR			*
		9067	*	N/A			*
		9068	*				*

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 139
			9069	*TABLES/WORK AREAS	*
			9070	* N/A	*
			9071	*	*
			9072	*ATTRIBUTES	*
			9073	* BKMGT0 IS NATURALLY RELOCATABLE AND REUSABLE	*
			9074	*	*
			9075	*CHARACTER CODE DEPENDENCY	*
			9076	* THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
			9077	* INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
			9078	*	*
			9079	*NOTES	*
			9080	* ERROR PROCEDURES	*
			9081	* N/A	*
			9082	*	*
			9083	* REGISTER USAGE	*
			9084	* BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
			9085	*	*
			9086	* SAVED/RESTORED AREAS	*
			9087	* N/A	*
			9088	*	*
			9089	* MODIFICATION CONSIDERATIONS	*
			9090	* BKMGT0 RESIDES ON THE SAME SECTOR WITH BXRSET AND BTPAUS.	1-4*
			9091	* AND MODIFICATION TO BKMGT0 SHOULD TAKE INTO CONSIDERATION	1-4*
			9092	* THIS CO-RESIDENCY SINCE IT WILL CHANGE THE ENTRY ADDRESSES	1-4*
			9093	* OF BXRSET AND BTPAUS AND MUST TAKE INTO CONSIDERATION THE	1-4*
			9094	* LIMITATION OF THE SECTOR BOUNDARY ON SIZE.	1-4*
			9095	*	*
			9096	* REQUIRED MODULES	*
			9097	* @SYSEQ - COMMON SYSTEM EQUATES	*
			9098	* @FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES	*
			9099	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS	*
			9100	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES	*
			9101	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES	*
			9102	* @ERMEQ - ERROR MESSAGE EQUATES	*
			9103	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES	*
			9104	* \$B\$EQU - COMPILER FIXED EQUATES	*
			9105	* \$B@EQU - COMPILER SYSTEM EQUATES	*
			9106	*	*
			9107	* OTHER	*
			9108	* BKMGT0 IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.	*
			9109	*****	
1C00			9110	ORG *,256,0	BEGIN AT CORE PAGE BOUNDARY 1-4
		1C00	9111	USING *,@BR	DEFINE BASE ADDR FOR CORE PG 1-4
			9112	*	
			9113	* ENTER BKMGT0 - MULTIPLE 'GOTO' STATEMENT ROUTINE	
			9114	*	
		1C00	9115	BKMGT0 EQU *	BKMGT0 ENTRY POINT
			9116	*	
			9117	* SET INPUT PARAMETER TO SKIP KEYWORD 'GOTO'.	
			9118	*	
1C00 3C 04 0873			9119	BKM010 MVI B\$NUMC,B@LGTO	SET GET RTN TO SKIP 'GOTO'
1C04 C0 87 0867			9120	B B\$GETC	LINK TO ADVANCE POINTER
			9121	*	
			9122	* GENERATE AN 'STA' INSTRUCTION IMAGE PMC IN VIRTUAL MEMORY	
			9123	*	
1C08 D2 02 9C			9124	BKM020 LA BKMSTC(,@BR),@XR	LOAD CADDR OF 'STA' INSTR

## S/3 BASIC COMPILER -MULT GOTO- STATEMENT RTN

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 140
	1C0B	34	02	0A40	9125	ST	B\$PCAD,@XR			SET PUT RTN FOR VADDR OF 'STA'
	1C0F	3C	02	0A41	9126	MVI	B\$PNBY,B@LSTA-1			SET PUT RTN FOR LENGTH OF 'STA'
	1C13	C0	87	093A	9127	B	B\$PUTC			LINK TO GENERATE PMC
					9128	*				
					9129	*	SAVE THE VADDS FOLLOWING THE OPERAND OF THE 'STA' PMC			
					9130	*				
	1C17	4C	01	A5 0A43	9131	BKM030 MVC	BKMVAD(,@BR),B\$PVAD(@VADDR)			SAVE VADDR TO RESOLVE 'STA'
					9132	*				
					9133	*	CONVERT A LIST LINE NUMBER TO BINARY FROM DECIMAL			
					9134	*				
	1C1C	35	02	0878	9135	BKM035 L	B\$GPTR,@XR			RESTORE TEXT POINTER
	1C20	7C	00	A1	9136	MVI	BKMCSO(,@BR),@ZERO			INITLZ LINE NO. COUNT TO ZERO
	1C23	C0	87	19F2	9137	BKM040 B	B\$ZDBN			CONVERT LIST LN NO TO BINARY
					9138	*				
					9139	*	GENERATE AN 'STA' INSTRUCTION PMC IN VIRTUAL MEMORY			
					9140	*				
	1C27	D2	02	9C	9141	BKM050 LA	BKMSTC(,@BR),@XR			LOAD CADDR OF 'STA' INSTR
	1C2A	34	02	0A40	9142	ST	B\$PCAD,@XR			SET PUT RTN FOR VADDR OF 'STA'
	1C2E	3C	02	0A41	9143	MVI	B\$PNBY,B@LSTA-1			SET PUT RTN FOR LENGTH OF 'STA'
	1C32	C0	87	093A	9144	B	B\$PUTC			LINK TO GENERATE 'STA' PMC
					9145	*				
					9146	*	ESTABLISH THE CURRENT 'STA' OPERAND FOR ADDRESS RESOLUTION			
					9147	*				
	1C36	0C	01	19EF 0A43	9148	BKM060 MVC	B\$BRVA,B\$PVAD(@VADDR)			SET VADDR PARAMETER FOR BR TBL
	1C3C	1F	01	19EF A3	9149	SLC	B\$BRVA,BKMBN1(@VADDR,@BR)			ADJUST VADDR TO 'STA' OPND
					9150	*				
					9151	*	ESTABLISH THE LIST LINE NUMBER AS THE RESOLUTION LINE NUMBER			
					9152	*				
	1C41	0C	01	19F1 1A6A	9153	BKM070 MVC	B\$BRLN,B\$BINO(@VADDR)			SET LN NO PARAMETER FOR BR TBL
	1C47	C0	87	1996	9154	B	B\$BTAB			LINK TO RESOLVE *STA' OPND
					9155	*				
					9156	*	INCREMENT CURRENT LIST LINE NUMBER COUNT BY ONE			
					9157	*				
	1C4B	5E	01	A1 A3	9158	BKM080 ALC	BKMCSO(,@BR),BKMBN1(@VADDR,@BR)			INCREMENT LK NO COUNT
					9159	*				
					9160	*	CHECK FOR THE END OF THE LINE NUMBER LIST			
					9161	*				
	1C4F	35	02	0878	9162	BKM090 L	B\$GPTR,@XR			RESTORE TEXT POINTER
	1C53	BD	6B	00	9163	CLI	B@CHAR(,@XR),B@CMA			IF LINE NUMBER LIST AT END
	1C56	F2	01	07	9164	JNE	BKM100			* JUMP TO PROCESS ARITH EXPR
	1C59	C0	87	0867	9165	B	B\$GETC			LINK TO GET NEXT CHAR
	1C5D	D0	87	23	9166	B	BKM040(,@BR)			BRANCH TO PROCESS NEXT LN NO
					9167	*				
					9168	*	SET INPUT PARAMETER TO SKIP TO 'N' IN KEYWORD 'ON'			
					9169	*				
	1C60	3C	01	0873	9170	BKM100 MVI	B\$NUMC,B@LKON-1			SET GET RTN TO SKIP 'O' IN 'ON'
	1C64	C0	87	0867	9171	B	B\$GETC			LINK TO ADVANCE POINTER
					9172	*				
					9173	*	CALL ARITH SCAN RTN TO GENERATE PMC FOR ARITH EXPRESSION			
					9174	*				
	1C68	C0	87	1514	9175	BKM110 B	B\$SCAN			LINK TO SCAN ARITH EXPRESSION
					9176	*				
					9177	*	GENERATE A 'CSA' INSTRUCTION WITH LIST LINE NO COUNT AS OPERAND			
					9178	*				
	1C6C	D2	02	A0	9179	BKM120 LA	BKMCSO(,@BR),@XR			LOAD CADDR OF 'CSA' INSTR
	1C6F	34	02	0A40	9180	ST	B\$PCAD,@XR			SET PUT RTN FOR VADDR OF 'CSA'

## S/3 BASIC COMPILER -MULT GOTO- STATEMENT RTN

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 141
1C73	3C	01	0A41	9181		MVI	B\$PNBY,B@LCSA-1			SET PUT RTN FOR LENGTH OF 'CSA'
1C77	C0	87	093A	9182		B	B\$PUTC			LINK TO GENERATE 'CSA' PMC
				9183	*					
				9184	*	GENERATE A 'BRS' INSTRUCTION IN VIRTUAL MEMORY				
				9185	*					
1C7B	D2	02	9F	9186	BKM125	LA	BKMBRC(,@BR),@XR			LOAD CADDR OF 'BRS' INSTR
1C7E	34	02	0A40	9187		ST	B\$PCAD,@XR			SET VADDR PARM OF PUT FOR BRS
1C82	3C	00	0A41	9188		MVI	B\$PNBY,B@LBRS-1			SET LNG PARM OF PUT FOR 'BRS'
1C86	C0	87	093A	9189		B	B\$PUTC			LINK TO GENERATE 'BRS' INSTR
				9190	*					
				9191	*	ESTABLISH THE VADDR OF THE FIRST 'STA' INSTR AS THE BRANCH ADDRESS				
				9192	*	TABLE RESOLUTION ADDRESS				
				9193	*					
1C8A	1C	01	19EF A5	9194	BKM130	MVC	B\$BRVA,BKMBAD(@VADDR,@BR)			SET VADDR PARAMETER FOR BR TBL
1C8F	1F	01	19EF A3	9195		SLC	B\$BRVA,BKMBN1(@VADDR,@BR)			ADJUST VADOR FOR 'STA' OPERAND
				9196	*					
				9197	*	SET 'NEXT' SW FOR RESOLUTION OF 'STA' OPERAND WITH NEXT IN NO				
				9198	*					
1C94	3A	07	071D	9199	BKM140	SBN	B\$NXSW,B\$NXMK			SET 'NEXT' SW TO RESOLVE LN NO
				9200	*					
				9201	*	RETURN CONTROL TO THE COMPILER DISTRIBUTOR				
				9202	*					
1C98	C0	87	0700	9203	BKM150	B	B\$DIST			RETURN TO DISTRIBUTOR
				9205	*****					
				9206	*	MULTIPLE 'GOTO' STATEMENT ROUTINE PMC STORAGE AND PARAMETERS				
				9207	*****					
				9208	*					
1C9C	34			1C9C	9209	BKMSTC	DC	AL(B@LCOP)(B@CSTA)		'STA' INSTR IMAGE OPCODE
1C9D	0000			1C9E	9210	BKMSTO	DC	XL(B@LCVA)'00'		'STA' INSTR OPERAND IMAGE
				9211	*					
1C9F	4C			1C9F	9212	BKMBRC	DC	AL(B@LCOP)(B@CBRS)		'BRS' INSTR OPCODE
				9213	*					
1CA0	3E			1CA0	9214	BKMCSC	DC	AL(B@LCOP)(B@CCSA)		'CSA' INSTR OPCODE
1CA1				1CA1	9215	BKMCSO	DS	CL(B@LCNN)		'CSA' OPND - LIST LN NO COUNT
				9217	*****					
				9218	*	MULTIPLE 'GOTO' STATEMENT ROUTINE CONSTANTS				
				9219	*****					
				9220	*					
1CA2	0001			1CA3	9221	BKMBN1	DC	IL(B@LCVA)'1'		BINARY 1
1CA4				1CA5	9222	BKMBAD	DS	CL(@VADDR)		VADDR FOLLOWING 'STA' OPERAND
				9224	*****					
				9225	*					
				9226	*	END OF MULTIPLE 'GOTO' STATEMENT ROUTINE CODING				
				9227	*					

## S/3 BASIC COMPILER -RESET- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 142
			9229		*****			
			9230	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			9231	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
			9232	*				*
			9233		*****			*
			9234	*	STATUS			*
			9235	*	VERSION 1 MODIFICATION 0			*
			9236	*				*
			9237	*	FUNCTION			*
			9238	*	BXRSET IS EXECUTED TO TRANSLATE RESET STATEMENTS AS THEY OCCUR			*
			9239	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE			*
			9240	*	THE PSEUDOCODE INTO VIRTUAL MEMORY.			*
			9241	*				*
			9242	*	ENTRY POINTS			*
			9243	*	BXRSET HAS ONLY ONE ENTRY POINT:			*
			9244	*	BXRSET - TRANSLATE RESET STATEMENT			*
			9245	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
			9246	*	B BXRSET			*
			9247	*				*
			9248	*	INPUT			*
			9249	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
			9250	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
			9251	*	LEADING KEYWORD, RESET.			*
			9252	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
			9253	*	CHARACTER IN THE LEADING KEYWORD. RESET.			*
			9254	*				*
			9255	*	OUTPUT			*
			9256	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
			9257	*	GENERATED BY BXRSET IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
			9258	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
			9259	*	SEQUENCES.			*
			9260	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
			9261	*	* CHARACTER WHICH TERMINATES THE STATEMENT.			*
			9262	*				*
			9263	*	EXTERNAL REFERENCES			*
			9264	*	B\$GETC - (B\$NUMC) - ENTRY TO BASIC TEXT RETRIEVAL ROUTINE.			*
			9265	*	B\$PUTC - (B\$PCAD) - B\$PNBY) - ENTRY TO COMPILER VIRT MEMORY			*
			9266	*	OUTPUT ROUTINE.			*
			9267	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
			9268	*				*
			9269	*	EXITS, NORMAL			*
			9270	*	B\$DIST - ENTRY TO THE BASIC COMPILER DISTRIBUTOR			*
			9271	*				*
			9272	*	EXITS, ERROR			*
			9273	*	N/A			*
			9274	*				*
			9275	*	TABLES/WORK AREAS			*
			9276	*	N/A			*
			9277	*				*
			9278	*	ATTRIBUTES			*
			9279	*	* BXRSET IS NATURALLY RELOCATABLE AND REUSABLE.			*
			9280	*				*
			9281	*	CHARACTER CODE DEPENDENCY			*
			9282	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
			9283	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
			9284	*				*

## S/3 BASIC COMPILER -RESET- STATEMENT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 143
					9285	*	NOTES			*
					9286	*	ERROR PROCEDURES			*
					9287	*	N/A			*
					9288	*				*
					9289	*	REGISTER USAGE			*
					9290	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.			*
					9291	*				*
					9292	*	SAVED/RESTORED AREAS			*
					9293	*	N/A			*
					9294	*				*
					9295	*	MODIFICATION CONSIDERATIONS			*
					9296	*	BXRSET RESIDES ON THE SAME SECTOR WITH BKMGT0 AND BTPAUS.	1-4	*	
					9297	*	ANY MODIFICATION TO BXRSET MUST CONSTER THIS CO-RESIDENCY	1-4	*	
					9298	*	SINCE WILL CHANGE THE ENTRY ADDRESS OF BTPAUS. THE	1-4	*	
					9299	*	LIMITATION OF THE SECTOR BOUNDARY ON SIZE MUST ALSO BE	1-4	*	
					9300	*	CONSIDERID.	1-4	*	
					9301	*				*
					9302	*	REQUIRED MODULES			*
					9303	*	@SYSEQ - COMMON SYSTEM EQUATES			*
					9304	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES			*
					9305	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS			*
					9306	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES			*
					9307	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES			*
					9308	*	@ERMEQ - ERROR MESSAGE EQUATES			*
					9309	*	\$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES			*
					9310	*	\$B\$EQU - COMPILER FIXED EQUATES			*
					9311	*	\$B@EQU - COMPILER SYSTEM EQUATES			*
					9312	*				*
					9313	*	OTHER			*
					9314	*	BXRSET IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.			*
					9315	*	*****			*
					9317	*				*
					9318	*	ENTER BXRSET - 'RESET' STATEMENT ROUTINE			*
					9319	*				*
				1CA6	9320	BXRSET EQU	*	BXRSET ENTRY POINT		*
					9321	*				*
					9322	*	SET POINTER TO SKIP TO 'T' IN KEYWORD 'RESET'			*
					9323	*				*
1CA6	3C	04	0873		9324	BXR010 MVI	B\$NUMC,B@LKRT-1	SET GET RTN TO SKIP TO 'T'		*
1CAA	C0	87	0867		9325	B	B\$GETC	LINK TO ADVANCE POINTER		*
1CAE	C0	87	14B0		9326	BXR020 B	B\$CSCN	LINK TO PROCESS FILE REFERENCE		*
					9327	*				*
					9328	*	GENERATE THE 'ADF' PMC IN V.M. IF OPERAND IS NOT ZERO			*
					9329	*				*
1CB2	D2	02	E2		9330	BXR110 LA	BXRAFC(,@BR),@XR	LOAD CADDR OF 'ADF' INSTR		*
1CB5	34	02	0A40		9331	ST	B\$PCAD,@XR	SET VADDR PARM OF PUT FOR ADF		*
1CB9	3C	01	0A41		9332	MVI	B\$PNBY,B@LADF-1	SET LNG PARM OF PUT FOR 'ADP'		*
1CBD	C0	87	093A		9333	B	B\$PUTC	LINK TO GENERATE 'ADF' PMC		*
					9334	*				*
					9335	*	GENERATE THE 'RST' PMC IN V.M.			*
					9336	*				*
1CC1	D2	02	E4		9337	BXR120 LA	BXRRTC(,@BR),@XR	LOAD CADDR OF 'RST' INSTR		*
1CC4	34	02	0A40		9338	ST	B\$PCAD,@XR	SET VADDR PARM OF PUT FOR RST		*
1CC8	3C	00	0A41		9339	MVI	B\$PNBY,B@LRST-1	SET LNG PARM OF PUT FOR 'RST'		*
1CCC	C0	87	093A		9340	B	B\$PUTC	LINK TO GENERATE 'RST' PMC		*



## S/3 BASIC COMPILER -RESET- STATEMENT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 144
					9341	*				
					9342	*	TEST NEXT LIST CHARACTER FOR BEING AN END-OF-STATEMENT			
					9343	*				
1CD0	3C	00	0873		9344	BXR130 MVI	B\$NUMC,B@GETS		DISABLE GET ROUTINE	
1CD4	C0	87	0867		9345	B	B\$GETC		LINK TO GET CHARACTER POINTER	
1CD8	BD	1E	00		9346	CLI	B@CHAR(,@XR),B@EOST		IF CHAR IS EOS	
1CDB	D0	01	AE		9347	BNE	BXR020(,@BR)		* BRANCH TO PROCESS FILENAME	
					9348	*				
					9349	*	RETURN CONTROL TO THE COMPILER DISTRIBUTOR			
					9350	*				
1CDE	C0	87	0700		9351	BXR140 B	B\$DIST		RETURN TO DISTRIBUTOR	
					9352	*				
					9353	*****				
					9354	*	'RESET' STATEMENT PARAMETER AND STORAGE AREAS			
					9355	*****				
					9356	*				
1CE2	58			1CE2	9357	BXRAFC DC	AL(B@LCOP)(B@CADF)		'ADF' INSTR OPCODE	
1CE3	00			1CE3	9358	BXRAFO DC	XL1'00'		'ADF' INSTR OPERAND	
					9359	*				
1CE4	5C			1CE4	9360	BXRRTC DC	AL(B@LCOP)(B@CRST)		'RST' INSTR OPCODE	
					9362	*****				
					9363	*	'RESET' STATEMENT CONSTANTS AND EQUATES			
					9364	*****				
					9365	*				
					9366	*	CONSTANTS			
					9367	*				
				1CE5	9368	BXRSFA EQU	*			
					9369	*				
1CE5	0001			1CE6	9370	BXRBNI DC	IL(@CADDR)'1'		BINARY +1	
					9371	*				
					9372	*****				
					9373	*				
					9374	*	END OF 'RESET' STATEMENT ROUTINE CODING			
					9375	*				

## S/3 BASIC COMPILER -PAUSE- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 145
			9377		*****			
			9378	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			9379	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
			9380	*				*
			9381		*****			*
			9382	*	STATUS			*
			9383	*	VERSION 1 MODIFICATION 0			*
			9384	*				*
			9385	*	FUNCTION			*
			9386	*	BTPAUS IS EXECUTED TO TRANSLATE PAUSE STATEMENTS AS THEY OCCUR IN			*
			9387	*	A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE THE			*
			9388	*	PSEUDOCODE IN VIRTUAL MEMORY.			*
			9389	*				*
			9390	*	ENTRY POINTS			*
			9391	*	BTPAUS HAS ONLY ONE ENTRY POINT:			*
			9392	*	BTPAUS - TRANSLATE PAUSE STATEMENT			*
			9393	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
			9394	*	B BTPAUS			*
			9395	*				*
			9396	*	INPUT			*
			9397	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
			9398	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
			9399	*	LEADING KEYWORD, PAUSE.			*
			9400	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
			9401	*	CHARACTER IN THE LEADING KEYWORD, PAUSE.			*
			9402	*				*
			9403	*	OUTPUT			*
			9404	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
			9405	*	GENERATED BY BTPAUS IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
			9406	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
			9407	*	SEQUENCES.			*
			9408	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
			9409	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
			9410	*				*
			9411	*	EXTERNAL REFERENCES			*
			9412	*	B\$PUTC(B\$PCAD.B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY			*
			9413	*	OUTPUT.			*
			9414	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.			*
			9415	*				*
			9416	*	EXITS, NORMAL			*
			9417	*	BMW - ENTRY TO BASIC COMPILER REMARK ROUTINE.			*
			9418	*				*
			9419	*	EXITS, ERROR			*
			9420	*	N/A			*
			9421	*				*
			9422	*	TABLES/WORK AREAS			*
			9423	*	N/A			*
			9424	*				*
			9425	*	ATTRIBUTES			*
			9426	*	BTPAUS IS NATURALLY RELOCATABLE AND REUASBLE.			*
			9427	*				*
			9428	*	CHARACTER CODE DEPENDENCY			*
			9429	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
			9430	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
			9431	*				*
			9432	*	NOTES			*

## S/3 BASIC COMPILER -PAUSE- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 146
				9433	*	ERROR PROCEDURES			*
				9434	*	N/A			*
				9435	*				*
				9436	*	REGISTER USAGE			*
				9437	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.			*
				9438	*				*
				9439	*	SAVED/RESTORED AREAS			*
				9440	*	N/A			*
				9441	*				*
				9442	*	MODIFICATION CONSIDERATIONS			*
				9443	*	BTPAUS RESIDES ON THE SAME SECTOR WITH BKMGT0 AND BXRSET.		1-4	*
				9444	*	ANY MODIFICATION OF BTPAUS MUST TAKE INTO CONSIDERATION		1-4	*
				9445	*	THIS CO-RESIDENCY AND THE LIMITATION OF THE SECTOR BOUNDARY		1-4	*
				9446	*	ON SIZE.		1-4	*
				9447	*				*
				9448	*	REQUIRED MODULES			*
				9449	*	@SYSEQ - COMMON SYSTEM EQUATES			*
				9450	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES			*
				9451	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS			*
				9452	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES			*
				9453	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES			*
				9454	*	@ERMEQ - ERROR MESSAGE EQUATES			*
				9455	*	\$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES			*
				9456	*	\$B\$EQU - COMPILER FIXED EQUATES			*
				9457	*	\$B@EQU - COMPILER SYSTEM EQUATES			*
				9458	*				*
				9459	*	OTHER			*
				9460	*	BTPAUS IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.			*
				9461	*	*****			*
				9463	*				*
				9464	*	ENTER BTPAUS - 'PAUSE' STATEMENT ROUTINE			*
				9465	*				*
			1CE7	9466	BTPAUS EQU	*		BTPAUS ENTRY POINT	
				9467	*				*
				9468	*	GENERATE A HALT INSTRUCTION IN VIRTUAL MEMORY			*
				9469	*				*
		1CE7 D2 02 FA		9470	BTP010 LA	BTPHTC(,@BR),@XR		LOAD CADDR OF 'HLT' INSIR	
		1CEA 34 02 0A40		9471	ST	B\$PCAD,@XR		SET PUT RTN FOR VADDR OF 'HLT'	
		1CEE 3C 00 0A41		9472	MVI	B\$PNBY,B@LHLT-1		SET PUT RTN FOR LENGTH OF 'HLT'	
		1CF2 C0 87 093A		9473	B	B\$PUTC		LINK TO GENERATE PMC	
				9474	*				*
				9475	*	RETURN CONTROL TO THE REMARK STATEMENT ROUTINE			*
				9476	*				*
		1CF6 C0 87 1AE6		9477	BTP020 B	B\$RMRK		RETURN CONTROL TO REM STNNT RTN	
				9478	*				*
				9479	*	*****			*
				9480	*	'PAUSE' STATEMENT ROUTINE PMC AND STORAGE PARAMETERS			*
				9481	*	*****			*
				9482	*				*
		1CFA 04	1CFA	9483	BTPHTC DC	AL(B@LCOP)(B@CHLT)		'HLT' INSTRUCTION OPCODE	
				9484	*				*
				9485	*	*****			*
				9486	*				*
				9487	*	END OF 'PAUSE' STATEMENT ROUTINE CODING			*
				9488	*				*

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 147
		9490		*****	*
		9491	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		9492	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		9493	*		*
		9494		*****	*
		9495	*	*STATUS	*
		9496	*	VERSION 1 MODIFICATION 0	*
		9497	*		*
		9498	*	*FUNCTION	*
		9499	*	BMUPRT IS EXECUTED TO TRANSLATE MAT PRINT USING STATEMENTS AS THEY	*
		9500	*	OCCUR IN A B' IC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO	*
		9501	*	PLACE THE PSEUDOCODE IN VIRTUAL MEMORY.	*
		9502	*		*
		9503	*	*ENTRY POINTS	*
		9504	*	BMUPRT HAS ONLY ONE ENTRY POINT:	*
		9505	*	BMUPRT - TRANSLATE MAT PRINT USING STATEMENT	*
		9506	*	THE FORMAT OF THE CALLING SEQUENCE IS:	*
		9507	*	B BMUPRT	*
		9508	*		*
		9509	*	*INPUT	*
		9510	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		9511	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE	*
		9512	*	LEADING KEYWORD, MAT PRINT USING.	*
		9513	*	* TEXT CHARACTER POINTER - CONTAINS THE CCM€ ADDRESS OF THE FIRST	*
		9514	*	CHARACTER IN THE LEADING KEYWORD, MAT ERINT USING.	*
		9515	*		*
		9516	*	*OUTPUT	*
		9517	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		9518	*	* GENERATED BY BRUFRT IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		9519	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		9520	*	SEQUENCES.	*
		9521	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		9522	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		9523	*		*
		9524	*	*EXTERNAL REFERENCES	*
		9525	*	B\$GETC - (B\$NUMC, B\$GPTR) - ENTR, TO BASIC RETRIEVAL ROUTINE.	*
		9526	*	B\$PUTC - (B\$PCAD, B\$PNBY, B\$PVAD) - ENTRY TO COMPILER VIRTUAL	*
		9527	*	MEMORY ROUTINE.	*
		9528	*	B\$BTAW - B\$BRVA, B\$BRIN) - BASIC COMPILER BRANCH TABLE ROUTINE.	*
		9529	*	B\$ZDBN - (B\$BINO) - ENTRY TO COMPILER ZONED DECIMAL TO BINARY	*
		9530	*	ROUTINE.	*
		9531	*	B\$MATR - ENTRY TO BASIC COMPILER MATRIX REFERENCE ROUTINE.	*
		9532	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		9533	*		*
		9534	*	*EXITS, NORMAL	*
		9535	*	B\$DIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.	*
		9536	*		*
		9537	*	*EXITS, ERROR	*
		9538	*	N/A	*
		9539	*		*
		9540	*	*TABLES/WORK AREAS	*
		9541	*	N/A	*
		9542	*		*
		9543	*	*ATTRIBUTES	*
		9544	*	BRUPRT IS NATURALLY RELOCATABLE AND REUSABLE.	*
		9545	*		*

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 148
				9546	*CHARACTER CODE DEPENDENCY	*
				9547	* THE OPERATION OF THIS MULE DOES NOT DEPEND UPON A PARTICULAR	*
				9548	* INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SEI.	*
				9549	*	*
				9550	*NOTES	*
				9551	* ERROR PROCEDURES	*
				9552	* N/A	*
				9553	*	*
				9554	* REGISTER USAGE	*
				9555	* BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
				9556	*	*
				9557	* SAVED/RESTORED AREAS	*
				9558	* N/A	*
				9559	*	*
				9560	* MODIFICATION CONSIDERATIONS	*
				9561	* BMUPRT RESIDES ON THE SAME SECTOR WITH BXCLOS AND BTSTOP.	1-4*
				9562	* ANY MODIFICATION TO BMUPRT MUST TAKE INTO CONSIDERATION	1-4*
				9563	* THIS CO-RESIDENCY SINCE IT WILL CHANGE THE ENTRY ADDRESSES	1-4*
				9564	* OF BXCLOS AND BTSTOP. THE LIMITATION OF THE SECTOR	1-4*
				9565	* BOUNDARY ON SIZE MUST ALSO BE CONSIDERED.	1-4*
				9566	*	*
				9567	* REQUIRED MODULES	*
				9568	* @SYSEQ - COMMON SYSTEM EQUATES	*
				9569	* @FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES	*
				9570	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS	*
				9571	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES	*
				9572	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES	*
				9573	* @ERMEQ - ERROR MESSAGE EQUATES	*
				9574	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES	*
				9575	* \$B\$EQU - COMPILER FIXED EQUATES	*
				9576	* \$B@EQU - COMPILER SYSTEM EQUATES	*
				9577	*	*
				9578	* OTHER	*
				9579	* BMUPRT IS ASSEMBLED WITH ALL THE STATEMENT PROCESSORS.	*
				9580	*****	
1D00				9581	ORG *,256,0 BEGIN AT CORE PAGE BOUNDARY	1-4
	1D00			9582	USING *,@BR DEFINE BASE ADDR FOR CORE PS	1-4
				9583	*	
				9584	* ENTER BMUPRT - MAT PRINT USING STATEMENT ROUTINE	
				9585	*	
	1D00			9586	BMUPRT EQU * BMUPRT ENTRY POINT	
				9587	*	
				9588	* SET GET ROUTINE TO SKIP TO CHAR FOLLOWING 'MAT PRINT USING'	
				9589	*	
1D00 3C 0D 0873				9590	BMU010 MVI B\$NUMC,B@LMPU SET GET TO SKIP KEYWORDS	
1D04 C0 87 0867				9591	B B\$GETC LINK TO ADVANCE POINTER	
				9592	*	
				9593	* GENERATE 'STA' INSTRUCTION 'MACE IN V.M.	
				9594	*	
1D08 D2 02 88				9595	BMU020 LA BMUSTC(,@BR),@XR LOAD CADDR OF 'STA' INSTR	
1D0B 34 02 0A40				9596	ST B\$PCAD,@XR SET VADDR PARAN OF PUT FOR STA	
1D0F 3C 02 0A41				9597	MVI B\$PNBY,B@LSTA-1 SET LNG PARAN OF PUT FOR 'STA'	
1D13 C0 87 093A				9598	B B\$PUTC LINK TO GENERATE 'STA' INSTR	
				9599	*	
				9600	* ESTABLISH 'STA' OPERAND FOR BRANCH TABLE ADDRESS RESOLUTION	
				9601	*	

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT VER 15, MOD 00 20/07/20 PAGE 149

1D17	0C	01	19EF	0A43	9602	BMU030	MVC	B\$BRVA,B\$PVAD(@VADDR)	SET VADDR FOR BR TBL RESOLUTION
1D1D	1F	01	19EF	94	9603		SLC	B\$BRVA,BMUBN1(@VADDR,@BR)	ADJUST TO 'STA' OPND
					9604	*			
					9605	*	GENERATE A 'BMX' INSTRUCTION IMAGE IN V.M.		
					9606	*			
1D22	D2	02	8B		9607	BMU040	LA	BMUBNC(,@BR),@XR	LOAD CADDR OF 'BMX' INSTR
1D25	34	02	0A40		9608		ST	B\$PCAD,@XR	SET VADDR PARM OF PUT FOR ICI
1D29	3C	02	0A41		9609		MVI	B\$PNBY,B@LBNX-1	SET LNG PARM OF PUT FOR WU
1D2D	C0	87	093A		9610		B	B\$PUTC	LINK TO GENERATE 'BMX' INSTR
1D31	35	02	0878		9611		L	B\$GPTR,@XR	RESTORE TEXT POINTER
					9612	*			
					9613	*	ESTABLISH NEXT AVAILABLE ADDR IN V.M. FOR BR TBL RESOLUTION (I.E.		
					9614	*	THE VADDR OF 1ST INSTR IN DATA OUTPUT SEQUENCE)		
					9615	*			
1D35	0C	01	19F1	0A43	9616	BMU050	MVC	B\$BRLN,B\$PVAD(@VADDR)	SET VADDR FOR BR TBL RESOLUTION
1D3B	C0	87	1996		9617		B	B\$BTAB	LINK TO RESOLVE BR TBL ADDRS
					9618	*			
					9619	*	ESTABLISH 'BNX' INSTR OPND FOR ADDRESS RESOLUTION		
					9620	*			
1D3F	0C	01	19EF	0A43	9621	BMU060	MVC	B\$BRVA,B\$PVAD(@VADDR)	SET VADDR FOR BR TBL RESOLUTION
1D45	1F	01	19EF	94	9622		SLC	B\$BRVA,BMUBN1(@VADDR,@BR)	ADJUST TO 'BNX' OPND
					9623	*			
					9624	*	CONVERT THE LINE NUMBER OF THE IMAGE STATEMENT TO BINARY		
					9625	*			
1D4A	C0	87	19F2		9626	BMU070	B	B\$ZDBN	LINK TO CONVERT LINE NO TO BINARY
					9627	*			
					9628	*	ESTABLISH IMAGE LN NO AS RESOLUTION LN NG		
					9629	*			
1D4E	0C	01	19F1	1A6A	9630	BMU080	MVC	B\$BRLN,B\$BINO(@VADDR)	SET RESOLUTION LINE NO
1D54	C0	87	1996		9631		B	B\$BTAB	LINK TO RESOLVE BR TBL ADDRS
					9632	*			
					9633	*	CALL MATRIX REFERENCE PROCESSOR TO GENERATE DOPE VECTOR STACKING		
					9634	*	INSTRUCTIONS IN VIRTUAL MEMORY		
					9635	*			
1D58	C0	87	18F3		9636	BMU090	B	B\$MATR	LINK TO PROCESS MAT-REFERENCE
					9637	*			
					9638	*	GENERATE 'MF1' INSTRUCTION IN V.M. TO INDICATE MAT PRINT USING		
					9639	*			
1D5C	D2	02	8E		9640	BMU100	LA	BMUMFC(,@BR),@XR	LOAD CADDR OF 'MF1' INSTR
1D5F	34	02	0A40		9641		ST	B\$PCAD,@XR	SET VADDR PARM OF PUT FOR 'MF1'
1D63	3C	02	0A41		9642		MVI	B\$PNBY,B@LMF1-1	SET LNG PARM OF PUT FOR 'MF1'
1D67	C0	87	093A		9643		B	B\$PUTC	LINK TO GENERATE 'MF1' PMC
					9644	*			
					9645	*	TEST LIST DELIMITER FOR BEING A STATEMENT TERMINATOR		
					9646	*			
1D6B	35	02	0878		9647	BMU110	L	B\$GPTR,@XR	RESTORE TEXT POINTER
1D6F	BD	1E	00		9648		CLI	B@CHAR(,@XR),B@EOST	IF DELIMITER IS NOT EOS
1D72	D0	01	58		9649		BNE	BMU090(,@BR)	* GO PROCESS NEXT MAT REFERENCE
					9650	*			
					9651	*	GENERATE 'PRU' INSTRUCTION WITH OPCOEE TO INDICATE IMAGE RELEASE		
					9652	*			
1D75	D2	02	91		9653	BMU120	LA	BMUPRC(,@BR),@XR	LOAD CADDR OF 'PRU' INSTR
1D78	34	02	0A40		9654		ST	B\$PCAD,@XR	SET VADDR PARM OF PUT FOR 'PRU'
1D7C	3C	01	0A41		9655		MVI	B\$PNBY,B@LPRU-1	SET LNG PARM OF PUT FOR 'PRU'
1D80	C0	87	093A		9656		B	B\$PUTC	LINK TO GENERATE 'PRU' INSTR
					9657	*			



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          9658 * RETURN CONTROL TO COMPILER DISTRIBUTOR
          9659 *
1D84 C0 87 0700 9660 BMU130 B      B$DIST          RETURN TO DISTRIBUTOR

          9662 *****
          9663 * MAT PRINT USING STATEMENT RTN STORAGE AND PARAMETER AREAS
          9664 *****
          9665 *
1D88 34          1D88 9666 BMUSTC DC    AL(B@LCOP)(B@CSTA)      'STA' INSTR OPCODE
1D89 0000        1D8A 9667 BMUSTO DC    XL(B@LCVA)'00'         'STA' INSTR OPND IMAGE
          9668 *
1D8B 4A          1D8B 9669 BMUBNC DC    AL(B@LCOP)(B@CBNX)      'BNX' INSTR OPCODE
1D8C 0000        1D8D 9670 BMURNO DC    XL(B@LCVA)'00'         'BNX' INSTR OPND IMAGE
          9671 *
1D8E 18          1D8E 9672 BMUMFC DC    AL(B@LCOP)(B@CMF1)      'MF1' INSTR OPCODE
1D8F 3F13        1D90 9673 BMUMFO DC    AL(B@LCVA)(V$XMPU)      'MF1' INSTR OPERAND
          9674 *
1D91 62          1D91 9675 BMUPRC DC    AL(B@LCOP)(B@CPRU)      'PRU' INSTR OPCODE
1D92 10          1D92 9676 BMUPRO DC    AL(B@LCXX)(B@PUTM)      'PRU' INSTR OPND
          9677 *
          9678 * CONSTANTS
          9679 *
1D93 0001        1D94 9680 BMUBN1 DC    IL(@CADDR)'1'          BINARY 1
          9681 *
          9682 *****
          9683 *
          9684 * END OF MAT PRINT USING STATEMENT ROUTINE CODING
          9685 *
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## S/3 BASIC COMPILER -CLOSE- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 151
			9687		*****			
			9688	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
			9689	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
			9690	*				*
			9691		*****			*
			9692	*	STATUS			*
			9693	*	VERSION 1 MODIFICATION 0			*
			9694	*				*
			9695	*	FUNCTION			*
			9696	*	BXCLOS IS EXECUTED TO TRANSLATE CLOSE STATEMENTS AS THEY OCCUR			*
			9697	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE			*
			9698	*	THE PSEUDOCODE INTO VIRTUAL MEMORY.			*
			9699	*				*
			9700	*	ENTRY POINTS			*
			9701	*	BXCLOS HAS ONLY ONE ENTRY POINT:			*
			9702	*	BXCLOS - TRANSLATE CLOSE STATEMENT			*
			9703	*	THE FORMAT OF THE CALLING SEQUENCE IS:			*
			9704	*	B BXCLOS			*
			9705	*				*
			9706	*	INPUT			*
			9707	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
			9708	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER IN THE			*
			9709	*	LEADING KEYWORD. CLOSE.			*
			9710	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
			9711	*	CHARACTER IN THE LEADING KEYWORD. CLOSE.			*
			9712	*				*
			9713	*	OUTPUT			*
			9714	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
			9715	*	GENERATED BY BXCLOS IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
			9716	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
			9717	*	SEQUENCES.			*
			9718	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
			9719	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
			9720	*				*
			9721	*	EXTERNAL REFERENCES			*
			9722	*	B\$GETC - (B\$NUMC) - ENTRY TO BASIC TEXT RETRIEVAL ROUTINE.			*
			9723	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY			*
			9724	*	OUTPUT ROUTINE.			*
			9725	*	BSDIST - ENTRY TO BASIC COMPILER DISTRIBUTOR.			*
			9726	*				*
			9727	*	EXITS, NORMAL			*
			9728	*	BSDIST - ENTRY TO THE BASIC COMPILER DISTRIBUTOR			*
			9729	*				*
			9730	*	EXITS, ERROR			*
			9731	*	N/A			*
			9732	*				*
			9733	*	TABLES/WORK AREAS			*
			9734	*	N/A			*
			9735	*				*
			9736	*	ATTRIBUTES			*
			9737	*	BXCLOS IS NATURALLY RELOCATABLE AND REUSABLE.			*
			9738	*				*
			9739	*	CHARACTER CODE DEPENDENCY			*
			9740	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
			9741	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
			9742	*				*

## S/3 BASIC COMPILER -CLOSE- STATEMENT ROUTINE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 152
					9743	*NOTES				*
					9744	* ERROR PROCEDURES				*
					9745	* N/A				*
					9746	*				*
					9747	* REGISTER USAGE				*
					9748	* BOTH THE INDEX AND BASE REGI,TERS ARE USED DURING EXECUTION.				*
					9749	*				*
					9750	* SAVED/RESTORED AREAS				*
					9751	* N/A				*
					9752	*				*
					9753	* MODIFICATION CONSIDERATIONS				*
					9754	* BXCLOS RESIDES ON THE SAME SECTOR WITH BMUPRT AND BTSTOP.	1-4*			
					9755	* ANY MODIFICATION TO BXCLOS MUST TAKE INTO CONSIDERATION	1-4*			
					9756	* THIS CO-RESIDENCY SINCE IT WILL CHANGE THE ENTRY ADDRESS	1-4*			
					9757	* OF BTSTOP. THE LIMITATION OF THE SECTOR BOUNDARY ON SIZE	1-4*			
					9758	* MUST ALSO BE CONSIDERED.	1-4*			
					9759	*				*
					9760	* REQUIRED MODULES				*
					9761	* @SYSEQ - COMMON SYSTEM EQUATES				*
					9762	* @FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES				*
					9763	* @CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS				*
					9764	* @VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES				*
					9765	* @SPFEQ - SYSTEM PROGRAM FILE EQUATES				*
					9766	* @ERMEQ - ERROR MESSAGE EQUATES				*
					9767	* \$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES				*
					9768	* \$B\$EQU - COMPILER FIXED EQUATES				*
					9769	* \$B@EQU - COMPILER SYSTEM EQUATES				*
					9770	*				*
					9771	* OTHER				*
					9772	* BXCLOS IS ASSEMOLED WITH ALL OF THE STATEMENT PROCESSORS.				*
					9773	*****				
					9775	*				
					9776	* ENTER BXCLOS - 'CLOSE' STATEMENT ROUTINE				
					9777	*				
				1D95	9778	BXCLOS EQU *	BXCLOS ENTRY POINT			
					9779	*				
					9780	* SET GET ROUTINE TO SKIP TO 'E' IN KEYWORD 'CLOSE'				
					9781	*				
1D95	3C	04	0873		9782	BXC010 MVI B\$NUMC,B@LKCL-1	SET GET TO SKIP TO 'E'			
1D99	C0	87	0867		9783	B B\$GETC	LINK TO ADVANCE POINTER			
1D9D	C0	87	14B0		9784	BXC020 B B\$CSCN	LINK TO PROCESS FILE REFERENCE			
					9785	*				
					9786	* GENERATE THE 'ADF' PMC IN V.M. IF OPND IS NOT ZERO				
					9787	*				
1DA1	D2	02	D1		9788	BXC120 LA BXCAFC(,@BR),@XR	LOAD CADDR OF 'ADE' INSTR			
1DA4	34	02	0A40		9789	ST B\$PCAD,@XR	SET VADDR PARAM OF PUT FOR 'ADE'			
1DA8	3C	01	0A41		9790	MVI B\$PNBY,B@LADF-1	SET LNG PARAM OF PUT FOR 'ADE'			
1DAC	C0	87	093A		9791	B B\$PUTC	LINK TO GENERATE 'ADE' PMC			
					9792	*				
					9793	* GENERATE THE 'CLS' PMC IN V.M.				
					9794	*				
1DB0	D2	02	D3		9795	BXC130 LA BXCCLC(,@BR),@XR	LOAD CADOR OF 'CLS' INSTR			
1DB3	34	02	0A40		9796	ST B\$PCAD,@XR	SET VADOR PARAM OF PUT FOR CL:			
1DB7	3C	00	0A41		9797	MVI B\$PNBY,B@LCLS-1	SET LNG PARAM OF PUT FOR 'CLS'			
1DBB	C0	87	093A		9798	B B\$PUTC	LINK TO GENERATE 'CLS' PMC			

## S/3 BASIC COMPILER -CLOSE- STATEMENT ROUTINE

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          9799 *
          9800 * TEST NEXT LIST CHARACTER FOR BEING AN END-OF-STATEMENT
          9801 *
1DBF 3C 00 0873      9802 BXC140 MVI    B$NUMC,B@GETS      DISABLE GET ROUTINE
1DC3 C0 87 0867      9803          B      B$GETC          LINK TO GET CHARACTER POINTER
1DC7 BD 1E 00        9804          CLI    B@CHAR(,@XR),B@EOST  IF CHAR IS EOS
1DCA D0 01 9D        9805          BNE    BXC020(,@BR)        * BRANCH TO PROCESS FILENAME
          9806 *
          9807 * RETURN CONTROL TO THE COMPILER DISTRIBUTOR
          9808 *
1DCD C0 87 0700      9809 BXC150 B      B$DIST          RETURN TO DISTRIBUTOR
          9811 *****
          9812 * 'CLOSE' STATEMENT PARAMETER AND STORAGE AREAS
          9813 *****
          9814 *
1DD1 58              1DD1 9815 BXCAFC DC    AL(B@LCOP)(B@CADF)  'ADF' INSTR OPCODE
1DD2 00              1DD2 9816 BXCAFO DC    XL1'00'            'ADF' INSTR OPERAND
          9817 *
1DD3 5E              1DD3 9818 BXCCLC DC    AL(B@LCOP)(B@CCLS)  'CLS' INSTR OPCODE
          9820 *****
          9821 * 'CLOSE' STATEMENT CONSTANTS AND EQUATES
          9822 *****
          9823 *
          9824 * CONSTANTS
          9825 *
          1DD4 9826 BXCSFA EQU    *
          9827 *
1DD4 0001            1DD5 9828 BXCBN1 DC    IL(@CADDR)'1'      BINARY '1'
          9829 *
          9830 * END OF 'CLOSE' STATEMENT ROUTINE CODING
          9831 *
```

## S/3 BASIC COMPILER -STOP- STATEMENT ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 154
		9833		*****	
		9834	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		9835	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		9836	*		*
		9837		*****	
		9838	*	*STATUS	*
		9839	*	VERSION 1 MODIFICATION 0	*
		9840	*		*
		9841	*	*FUNCTION	*
		9842	*	BTSTOP IS EXECUTED TO TRANSLATE STOP STATEMENTS AS THEY OCCUR IN	*
		9843	*	A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE THE	*
		9844	*	PSEUDOCODE IN VIRTUAL MEMORY.	*
		9845	*		*
		9846	*	*ENTRY POINTS	*
		9847	*	BTSTOP HAS ONLY ONE ENTRY POINT:	*
		9848	*	BTSTOP - TRANSLATE STOP STATEMENT	*
		9849	*	THE FORMAT OF THE CALLING SEQUENCE IS:	*
		9850	*	B BTSTOP	*
		9851	*		*
		9852	*	*INPUT	*
		9853	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		9854	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE	*
		9855	*	LEADING KEYWORD, STOP.	*
		9856	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE 1ST	*
		9857	*	CHARACTER IN THE LEADING KEYWORD, STOP.	*
		9858	*		*
		9859	*	*OUTPUT	*
		9860	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		9861	*	GENERATED BY BTSTOP IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		9862	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		9863	*	SEQUENCES.	*
		9864	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		9865	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		9866	*		*
		9867	*	*EXTERNAL REFERENCES	*
		9868	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY	*
		9869	*	OUTPUT ROUTINE.	*
		9870	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.	*
		9871	*		*
		9872	*	*EXITS, NORMAL	*
		9873	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.	*
		9874	*		*
		9875	*	*EXITS, ERROR	*
		9876	*	N/A	*
		9877	*		*
		9878	*	*TABLES/WORK AREAS	*
		9879	*	N/A	*
		9880	*		*
		9881	*	*ATTRIBUTES	*
		9882	*	BTSTOP IS NATURALLY RELOCATABLE AND REUSABLE.	*
		9883	*		*
		9884	*	*CHARACTER CODE DEPENDENCY	*
		9885	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
		9886	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
		9887	*		*
		9888	*	*NOTES	*

## S/3 BASIC COMPILER -STOP- STATEMENT ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 155
				9889	*	ERROR PROCEDURES			*
				9890	*	N/A			*
				9891	*				*
				9892	*	REGISTER USAGE			*
				9893	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.			*
				9894	*				*
				9895	*	SAVED/RESTORED AREAS			*
				9896	*	N/A			*
				9897	*				*
				9898	*	MODIFICATION CONSIDERATIONS			*
				9899	*	BTSTOP RESIDES ON THE SAME SECTOR WITH BMUPRT AND BXCLOS.			1-4*
				9900	*	ANY MODIFICATION TO BTSTOP MUST TAKE INTO CONSIDERATION			1-4*
				9901	*	THIS CO-RESIDENCY AND ALSO THE LIMITATION OF THE SECTOR			1-4*
				9902	*	BOUNDARY ON SIZE.			1-4*
				9903	*				*
				9904	*	REQUIRED MODULES			*
				9905	*	@SYSEQ - COMMON SYSTEM EQUATES			*
				9906	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES			*
				9907	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS			*
				9908	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES			*
				9909	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES			*
				9910	*	@ERMEQ - ERROR MESSAGE EQUATES			*
				9911	*	\$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES			*
				9912	*	\$B\$EQU - COMPILER FIXED EQUATES			*
				9913	*	\$B@EQU - COMPILER SYSTEM EQUATES			*
				9914	*				*
				9915	*	OTHER			*
				9916	*	BTSTOP IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.			*
				9917	*	*****			*
				9919	*				*
				9920	*	ENTER BTSTOP - 'STOP' STATEMENT ROUTINE			*
				9921	*				*
			1DD6	9922	BTSTOP EQU	*			BTSTOP ENTRY POINT
				9923	*				*
				9924	*	GENERATE AN 'SVC' INSTRUCTION IN VIRTUAL MEMORY			*
				9925	*				*
1DD6 D2 02 E9				9926	BTS010 LA	BTSSVC(,@BR),@XR			LOAD CADDR OF 'SVC' INSTR
1DD9 34 02 0A40				9927	ST	B\$PCAD,@XR			SET PUT RTN FOR VADDR OF 'SVC'
1DDD 3C 00 0A41				9928	MVI	B\$PNBY,B@LSVC-1			SET PUT RTN FOR LENGTH OF 'SVC'
1DE1 C0 87 093A				9929	B	B\$PUTC			LINK TO GENERATE PMC
				9930	*				*
				9931	*	RETURN CONTROL TO THE REMARK STATEMENT ROUTINE			*
				9932	*				*
1DE5 C0 87 1AE6				9933	BTS020 B	B\$RMRK			RETURN TO REMARK VINT RTN
				9935	*	*****			*
				9936	*	'STOP' STATEMENT ROUTINE PMC AND STORAGE PARAMETERS			*
				9937	*	*****			*
				9938	*				*
1DE9 02			1DE9	9939	BTSSVC DC	AL(B@LCOP)(B@CSVC)			'SVC' INSTR OPCODE
				9940	*				*
				9941	*	*****			*
				9942	*				*
				9943	*	END OF 'STOP' STATEMENT ROUTINE CODING			*
				9944	*				*



## S/3 BASIC COMPILER TERMINATION ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 156
		9946		*****	
		9947	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		9948	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		9949	*		*
		9950		*****	
		9951	*	*STATUS	*
		9952	*	VERSION 1 MODIFICATION 0	*
		9953	*		*
		9954	*	*FUNCTION	*
		9955	*	* BTRMNT IS EXECUTED TO TRANSLATE THE FIRST END STATEMENT OR	*
		9956	*	END-OF-FILE RECORD ENCOUNTERED IN THE SOURCE PROGRAM TEXT INTO	*
		9957	*	THE APPROPRIATE PSEUDOCODE AND TO PLACE THE PSEUDOCODE IN	*
		9958	*	VIRTUAL MEMORY.	*
		9959	*	* BTRMNT ALSO PERFORMS THE FOLLOWING FUNCTIONS:	*
		9960	*	* BASIC PROGRAM PROCESSING IS ABORTED IN THE PRESENCE OF ANY	*
		9961	*	LOGGED OR CURRENTLY ENCOUNTERED COMPILER ERROR CONDITION.	*
		9962	*	RISIDUAL CORE-RESIDENT PMC AND PROGRAM GENERATED CONSTANTS ARE	*
		9963	*	WRITTEN TO DISK VIRTUAL MEMORY, PMC GENERATION IS CLOSED.	*
		9964	*	* RISIDUAL STATEMENT ADDRESS TABLE AND BRANCH ADDRESS TABLE	*
		9965	*	ENTRIES ARE WRITTEN TO THE RESPECTIVE DISK FILES, ADDRESS TABLE	*
		9966	*	FILES ARE CLOSED.	*
		9967	*	* CRITICAL VIRTUAL ADDRESSES ARE ESTABLISHED IN A HIGH CORE	*
		9968	*	PARAMETER REGION FOR TRANSFER TO THE NEXT PROCESSOR PHASE.	*
		9969	*	* SCALAR VARIABLE SYMBOL TABLES ARE ORGANIZED AND ESTABLISHED	*
		9970	*	IN THE #LOADR PARAMETER TRANSFER AREA.	*
		9971	*	* FUNCTION AND ARRAY SYMBOL TABLES ARE EXTRACTED FROM THE COMPILE	*
		9972	*	TIME SYMBOL TABLE/ATTRIBUTE CONGLOMERATES AND ESTABLISHED IN	*
		9973	*	THE #LOADR PARAMETER TRANSFER AREA.	*
		9974	*	* THE RUN-TIME FUNCTION AND ARRAY TABLE IS CONSTRUCTED IN THE	*
		9975	*	#LOADR PARAMETER TRANSFER AREA FROM DATA EXTRACTED FROM THE	*
		9976	*	COMPILE-TIME SYMBOL TABLE/ATTRIBUTE CONGLOMERATES; THIS TABLE	*
		9977	*	IS CONSTRUCTED AS IT WILL EVENTUALLY APPEAR IN VIRTUAL MEMORY.	*
		9978	*	* THE NEXT PROCESSOR PHASE (#LOADR) IS CORE-LOADED AND EXECUTED	*
		9979	*	USING SYSTEM ENTRY POINT #RLOAD.	*
		9980	*		*
		9981	*	*ENTRY POINTS	*
		9982	*	BTRMNT HAS ONLY ONE ENTRY POINT:	*
		9983	*	BTRMNT - TERMINATE COMPILATION	*
		9984	*	THE FORMAT OF THE CALLING SEQUEICE IS:	*
		9985	*	B BTRMNT	*
		9986	*		*
		9987	*	*INPUT	*
		9988	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		9989	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE	*
		9990	*	LEADING KEYWORD, END. IF THE END IS IMPLICIT THE RECORD	*
		9991	*	SEGMENT CONTAINS THE END-OF-STATEMENT CHARACTER.	*
		9992	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST	*
		9993	*	CHARACTER IN THE LEADING KEYWORD, END. IF THE END IS IMPLICIT,	*
		9994	*	THE CORE ADDRESS IS OF THE END-OF-STATEMENT CHARACTER.	*
		9995	*	* B\$ERSN - SET TO ON STATUS WHEN COMPILE-TIME ERRORS HAVE BEEN	*
		9996	*	ENCOUNTERED AND LOGGED IN VIRTUAL MEMORY PRIOR TO BTRMNT	*
		9997	*	EXECUTION.	*
		9998	*	* LOGGED ERRORS - WHEN B\$ERSW IS FOUND ON, THE FIRST 3 VIRTUAL	*
		9999	*	MEMORY PAGES NORMALLY USED FOR PMC STORAGE ARE EXPECTED TO	*
			*	CONTAIN FROM 1 TO 255 3-BYTE ERROR CODE RECORDS.	*
		1	*	* DIPECT - WHEN MERU IS ON, THIS IS EXPECTED TO CONTAIN A COUNT	*

## S/3 BASIC COMPILER TERMINATION ROUTINE

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2 *      OF THE NUMBER OF ERROR CODE RECORDS LOGGED IN VIRTUAL MEMORY; *
3 *      THIS IS NEVER PERMITTED TO EXCEED A VALUE OF 255. *
4 *      * B$FTPT - CONTAINS THE CORE ADDRESS OF THE FIRST BYTE IN THE *
5 *      TOP FOR TABLE ENTRY. WHEN THIS IS NOT IDENTICAL WITH THE *
6 *      ADDRESS OF THE TABLE ITSELF, AN INCOMPLETE FOR LOOP IS *
7 *      INDICATED. *
8 *      * B$PVAD - CONTAINS THE VIRTUAL ADDRESS OF THE NEXT AVAILABLE PMC *
9 *      BYTE, AND IS USED TO ESTABLISH THE LAST PAGE OCCUPIED BY *
10 *     PMC FOR VM REGION 1 DEFINITION. *
11 *     * B$PCPG - CONTAINS THE VIRTUAL PAGE NUMBER OF THE PAGE CURRENTLY, *
12 *     BEING FILLED WITH PROGRAM GENERATED CONSTANTS, AND USED TO *
13 *     DEFINE THE UPPER BOUNDARY ADDRESS OF VM REGION 19 *
14 *     * B$CVPD - CONTAINS THE DISPLACEMENT VALUE USED AS A CONSTANT *
15 *     OUTPUT BUFFER POINTER WHEN THIS VALUE IS LESS THAN X'FF', *
16 *     RISIDUAL BUFFER CONSTANTS ARE INDICATED. *
17 *     * B$BSDA - CONTAINS THE LOGICAL SECTOR ADDRESS OF THE SECTOR *
18 *     CURRENTLY BEING FILLED WITH BRANCH TABLE ENTRIES. *
19 *     * B$SVPB - CONTAINS THE VIRTUAL ADDRESS OF THE NEXT BYTE *
20 *     AVAILABLE FOR PROGRAM VARIABLE ALLOCATION. *
21 *     * B$SFAB - CONTAINS THE VIRTUAL ADDRESS OF THE FIRST BYTE IN THE *
22 *     LAST ARRAY DOPE VECTOR OR USER FUNCTION ADDRESS DEFINED IN THE *
23 *     PROGRAM. *
24 *     * B$FAIS - CONTAINS THE VIRTUAL ADDRESS OF THE FIRST BYTE *
25 *     ALLOCATED FOR INTERNAL CONSTANTS IN THE PROGRAM. *
26 *     * B$FAIW - CONTAINS THE VIRTUAL ADDRESS OF THE FIRST BYTE *
27 *     ALLOCATED FOR INTERNAL VARIABLES IN THE PROGRAM. *
28 *     * $EXFTR - CONTAINS A COUNT OF THE NUMBER OF CORE PAGES AVAILABLE *
29 *     BEYCND 8K FOR GENERAL PROGRAM UTILIZATION. *
30 *     * B$SLVT - THE 58-BYTE SYMBOL TABLE CONTAINING VIRTUAL ADDRESSES *
31 *     FOR EACH LETTER VARIABLE DEFINED IN THE PROGRAM. *
32 *     * B$SLDT - THE 580-BYTE SYMBOL TABLE CONTAINING VIRTUAL ADDRESSES *
33 *     FOR EACH LETTER-DIGIT VARIABLE DEFINED IN THE PROGRAM. *
34 *     * B$SCVT - THE 58-BYTE SYMBOL TABLE CONTAINING VIRTUAL ADDRESSES *
35 *     FOR EACH CHARACTER VARIABLE DEFINED IN THE PROGRAM. *
36 *     * B$SNAT - THE 174-BYTE SYMBOL/ATTRIBUTE TABLE CONTAINING VIRTUAL *
37 *     ADDRESSES AND DOPE VECTOR INFORMATION FOR EACH ARITHMETIC ARRAY *
38 *     DEFINED IN THE PROGRAM. *
39 *     * B$SCAT - THE 116-BYTE SYMBOL/ATTRIBUTE TABLE CONTAINING VIRTUAL *
40 *     ADDRESSES AND DOPE VECTOR INFORMATION FOR EACH CHARACTER ARRAY *
41 *     DEFINED IN THE PROGRAM. *
42 *     * B$SFNT - THE 116-BYTE SYMBOL/ATTRIBUTE TABLE CONTAINING VIRTUAL *
43 *     ADDRESSES AND RUN-TIME ENTRY POINTS FOR EACH USER FUNCTION *
44 *     DEFINED IN THE PROGRAM. *
45 * *
46 * OUTPUT *
47 *     * VIRTUAL MEMORY - IN THE ABSENCE OF ANY ERROR CONDITION, THE PMC *
48 *     SEQUENCE GENERATED UNDER CONTROL OF BTRMNT IS STORED IN THE *
49 *     NEXT AVAILABLE VIRTUAL MEMORY LOCATION FOLLOWING PREVIOUSLY *
50 *     STORED INSTRUCTION SEQUENCES, VIRTUAL MEMORY IS THEN CLOSED *
51 *     FOR BOTH PMC AND PROGRAM GENERATED CONSTANTS. *
52 *     * TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE *
53 *     CHARACTER WHICH TERMINATES THE STATEMENT. *
54 *     * $CAERR - WHEN ERROR 2 OR ERROR 3 (SEE ERROR PROCEDURES UNDER *
55 *     NOTES) IS IN EFFECT, THIS IS SET TO CONTAIN A CODE DEFINING *
56 *     THE APPROPRIATE ERROR MESSAGE FOR #ERRPG. *
57 *     * #ERRPG - WHEN ERROR 1 IS IN EFFECT, THIS IS SET TO CODE $ERSTK *

```

## S/3 BASIC COMPILER TERMINATION ROUTINE

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58 *      TO INDICATE MULTIPLE ERROR MESSAGE DISPLAY.  WHEN ERROR 2 OR *
59 *      ERROR 3 IS IN EFFECT, THIS IS SET TO CODE $$$NLN TO INDICATE *
60 *      THE SUPPRESSION OF LINE NUMBER DISPLAY. *
61 *      * $ERRCT - WHEN ERROR 1 IS IN EFFECT, THIS IS SET TO CONTAIN THE *
62 *      VALUE IN ERROR RECORD COUNT B$PECT. *
63 *      * ERROR RECORD STACK - WHEN ERROR 1 IS IN EFFECT, CORE REGION *
64 *      X'1C00' THROUGH X'1EFF' IS LOADED WITH THE ERROR RECORDS *
65 *      LOGGED AT COMPILE TIME. *
66 *      * $XIND1 - WHEN ERROR 1 IS IN EFFECT, THIS SYSTEM INDICATOR IS *
67 *      CLEARED TO SPECIFY VIRTUAL MEMORY AS UNDEFINED. *
68 *      * STATEMENT ADDRESS TABLE FILE - A FINAL ENTRY (X'FFFF', X'FFFF') *
69 *      IS STORED IN THE LAST ENTRY POSITION OF THE STATEMENT ADDRESS *
70 *      TABLE BUFFER, AND THE BUFFER IS OUTPUT TO CLOSE THE STATEMENT *
71 *      ADDRESS TABLE FILE. *
72 *      * BRANCH ADDRESS TABLE FILE - WHEN ERROR 3 IS NOT IN EFFECT, THE *
73 *      BRANCH ADDRESS TABLE BUFFER IS OUTPUT TO CLOSE THE FILE. *
74 *      * #LOADR PARAMETER TRANSFER AREA - A COMMON AREA FOR TRANSFER OF *
75 *      INFORMATION BETWEEN THE COMPILER AND LOADER PHASES. *
76 * *
77 *EXTERNAL REFERENCEACES *
78 *      B$PUTC - (B$PFNC, B$PCAD, B$PNBY, B$PVAD, B$PCPG, B$ERSW) - *
79 *      ENTRY TO COMPILER VIRTUAL MEMORY OUTPUT ROUTINE. *
80 *      B$FCON - (B$CVPD) - ENTRY TO BASIC COMPILER CONSTANT ROUTINE. *
81 *      B$SYMB - (B$SLVT, B$SLDT, B$SCVT, B$SNAT, B$SCAT, B$SFNT, *
82 *      B$SVBB, B$SFAB) - ENTRY TO BASIC COMPILER SYMBOL *
83 *      TRANSLATION ROUTINE. *
84 *      B$SCAN - (B$FAIS, B$FAIW) - ENTRY TO BASIC COMPILER ARITHMETIC *
85 *      EXPRESSION SCAN ROUTINE. *
86 *      B$BTAB - (B$BSDA, B$BDPL) - ENTRY TO BASIC COMPILER BRANCH *
87 *      TABLE ROUTINE. *
88 *      B$DIST - (B$DST2, B$SDPL) - ENTRY TO BASIC COMPILER DISTRIBUTOR *
89 *      BVDL4T. *
90 *      COMMOM - (B$FORT, B$FTPT, B$LDRP, B$CSBF, B$CSXA) - ENTRY TO *
91 *      COMMON CORE LOCATIONS OUTSIDE NUCLEUS. *
92 *      NUCLEUS - ($XIND1, $ERRPG, $ERRCT, $CAERR, $CAERK, $DISKN, *
93 *      $WAITF, $EXFTR, $RLOAD) - ENTRY TO INDICATORS AND *
94 *      ADDRESSES IN NUCLEUS. *
95 * *
96 *EXITS, NORMAL *
97 *      IN THE ABSENCE OF COMPILER ERRORS, CONTROL IS ALWAYS PASSED TO *
98 *      SYSTEM LOADER *
99 *      $RLOAD *
100 * *
101 *EXITS, ERROR *
102 *      THE FIRST ERROR CONDITION TO BE DISCOVERED CAUSES AN EXIT *
103 *      TO SYSTEM ERROR MESSAGE ROUTINE *
104 *      #ERRPG VIA *
105 *      $CAERK WITH APPROPRIATE ERROR CODE IN *
106 *      $CAERR *
107 * *
108 *TABLES/WORK AREAS *
109 *      * SEE INPUT AND OUTPUT SECTIONS ABOVE. *
110 *      * BTREPL - THE DISK PARAMETER LIST USED TO CORELOAD ERROR RECORDS *
111 *      LOGGED IN VIRTUAL MEMORY WHEN B$ERSW IS ON. *
112 *      * BTRDPL - THE DISK PARAMETER LIST USED AS ARGUMENT FOR $RLOAD *
113 *      DEFINING #LOADR DISK AND CORELOAD PARAMETERS. *

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## S/3 BASIC COMPILER TERMINATION ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 159
		114	*		*
		115	*	*ATTRIBUTES	*
		116	*	BTRMNT IS NATURALLY RELOCATABLE AND REUSABLE.	*
		117	*		*
		118	**	CHARACTER CODE DEPENDENCY	*
		119	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
		120	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
		121	*		*
		122	*	*NOTES	*
		123	*	ERROR PROCEDURES	*
		124	*	ERROR 1 - SWITCH B\$ERSW IS FOUND ON, INDICATING THAT AT LEAST	*
		125	*	ONE COMPILE-TIME ERROR HAS BEEN GENERATED IN VIRTUAL MEMORY,	*
		126	*	VIRTUAL MEMORY IS SET UNDEFINED AND THE FIRST 3 PMC VIRTUAL	*
		127	*	PAGES ARE READ INTO CORE.	*
		128	*	ERROR 2 - THE FOR TABLE IS FOUND TO CONTAIN AT LEAST ONE ENTRY	*
		129	*	WHICH HAS NOT BEEN PAIRED WITH A MATCHING NEXT STATEMENT.	*
		130	*	AN ERROR CODE IS ESTABLISHED FOR 'FOR/NEXT LOOP INCOMPLETE'.	*
		131	*	ERROR 3 - THE BRANCH ADDRESS TABLE FILE IS FILLED TO CAPACITY	*
		132	*	AND MORE TABLE ENTRIES REMAIN TO BE OUTPUT. AN ERROR CODE	*
		133	*	IS ESTABLISHED FOR 'TOO MANY LINE NUMBER REFERENCES'.	*
		134	*		*
		135	*	REGISTER USAGE	*
		136	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.	*
		137	*		*
		138	*	SAVED/RESTORED AREAS	*
		139	*	N/A	*
		140	*		*
		141	*	MODIFICATION CONSIDERATIONS	*
		142	*	BTRMNT RESIDES ON TWO SECTORS, CO-RESIDENT ON THE SECOND	1-4*
		143	*	SECTOR WITH BKRTRN AND BPXRSR. ANY MODIFICATION TO BTRMNT	1-4*
		144	*	MUST MAINTAIN THE LINKAGE BETWEEN THE TWO SECTORS AND ALSO	1-4*
		145	*	TAKE INTO CONSIDERATION THE CO-RESIDENCY SINCE A CHANGE	1-4*
		146	*	TO BTRMNT CAN CHANGE THE ENTRY ADDRESSES OF BKRTRN AND	1-4*
		147	*	BPXRSR. THE LIMITATION OF THE SECTOR BOUNDARY ON SIZE	1-4*
		148	*	MUST ALSO BE CONSIDERED.	1-4*
		149	*		*
		150	*	REQUIRED MODULE	*
		151	*	@\$YSEQ - COMMON SYSTEM EQUATES.	*
		152	*	@FXDEQ - SYSTEM NUCLEUS ADDR AND INDICATOR VALUES EQUATES.	*
		153	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS.	*
		154	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.	*
		155	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES.	*
		156	*	@ERMEQ - ERROR MESSAGE EQUATES.	*
		157	*	\$V\$EQU - FIXED VIRTUAL ADDRESS EQUATES.	*
		158	*	\$B\$EQU - COMPILER FIXED EQUATES.	*
		159	*	\$B@EQU - COMPILER SYSTEM EQUATES.	*
		160	*		*
		161	*	OTHER	*
		162	*	BTRMNT IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.	*
		163	*	*****	*
1E00		165		ORG *,256,0	BEGIN AT CORE PAGE BOUNDARY
	1E00	166		USING *,@BR	DEFINE BASE ADDR FOR CORE PAGE
		167	*		
		168	*	ENTER BTRMNT - COMPILER TERMINATOR	
		169	*		

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ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00 20/07/20 PAGE 160
1E00 74 01 FB		1E00	170	BTRMNT EQU *	BTRMNT ENTRY POINT	
			171	ST BTRCA2(, @BR), @BR	SAVE BTRMNT BASE ADDRESS	
			172	*		
			173	* TEST FOR COMPILER-GENERATED ERRORS		
			174	*		
1E03 38 07 0993			175	BTR010 TBN B\$ERSW, B\$ERMK	TEST THE COMPILER ERROR SWITCH	
1E07 F2 90 21			176	JF BTR040	BRANCH IF NO COMPILER ERRORS	
			177	*		
			178	* COMPILER ERRORS - CORELOAD ERROR CODES FROM VIRTUAL MEMORY		
			179	*		
1E0A 3C 9D 094E			180	BTR020 MVI B\$PFNC, B\$PFCL	SET PUT ROUTINE 'CLOSE' FUNC	
1E0E C0 87 093A			181	B B\$PUTC	LINK TO CLOSE THE ERROR FILE	
			182	*		
1E12 D2 02 F2			183	LA BTREPL(, @BR), @XR	LOAD COMPILER ERROR DPL CADDR	
1E15 C0 87 1A6B			184	B B\$DL4T	LINK TO READ ERRORS FROM VM	
			185	*		
			186	* ERROR EXIT 1 - PRINT COMPILER-GENERATED STACKED ERROR MESSAGES		
			187	*		
1E19 3C 00 03D0			188	BTR030 MVI \$XIND1, @ZERO	DELETE VM DEFINITION INDICATOR	
1E1D 3C 30 03CE			189	MVI \$ERRPG, \$ERSTK	SET ERROR RTN FOR STACKED CODE	
1E21 0C 00 03CF 0A44			190	MVC \$ERRCT, B\$PECT(1)	SET ERROR RTN MESSAGE COUNT	
1E27 C0 87 0469			191	B \$CAERK	EXIT TO SYSTEM ERROR ROUTINE	
			192	*		
			193	* TEST FOR AN INCOMPLETE 'FOR' LOOP IN THE PROGRAM		
			194	*		
1E2B 1D 01 1B0D ED			195	BTR040 CLC B\$FTPT, BTRFTA(@CADDR, @BR)	TEST FOR AN EMPTY 'FOR' TABLE	
1E30 F2 81 0C			196	JE BTR060	BRANCH IF NO ACTIVE 'FOR' ENTRY	
			197	*		
			198	* ERROR EXIT 2 - PRINT 'INCOMPLETE 'FOR' LOOP' ERROR MESSAGE		
			199	*		
1E33 3C A0 03CE			200	BTR050 MVI \$ERRPG, \$\$\$NLN	SET FOR NO LINE NO. PRINTOUT	
1E37 3C AE 03CD			201	MVI \$CAERR, @@E609	SET THE ERROR MESSAGE CODE	
1E3B C0 87 0469			202	B \$CAERK	EXIT TO SYSTEM ERROR ROUTINE	
			203	*		
			204	* GENERATE THE FINAL PROGRAM PSEUDO INSTRUCTION SEQUENCE - AN ERROR		
			205	* CONDITION (PROGRAM TOO LARGE) IS POSSIBLE AT THIS POINT		
			206	*		
1E3F D2 02 F8			207	BTR060 LA BTRPCA(, @BR), @XR	LOAD FINAL PMC SEQUENCE CADDR	
1E42 34 02 0A40			208	ST B\$PCAD, @XR	SET PUT RTN CORE ADDR PARAMETER	
1E46 3C 01 0A41			209	MVI B\$PNBY, B@LSVC+B@LEOF-1	SET PUT RTN LENGTH PARAMETER	
1E4A C0 87 093A			210	B B\$PUTC	LINK TO OUTPUT THE FINAL PMC	
			211	*		
			212	* CLOSE OUTPUT OF PSEUDO INSTRUCTIONS TO VIRTUAL MEMORY - AN ERROR		
			213	* CONDITION (PROGRAM TOO LARGE) IS POSSIBLE AT THIS POINT		
			214	*		
1E4E 3C 9D 094E			215	BTR070 MVI B\$PFNC, B\$PFCL	SET PUT ROUTINE 'CLOSE' FUNC	
1E52 C0 87 093A			216	B B\$PUTC	LINK TO CLOSE THE PMC FILE	
			217	*		
			218	* TEST FOR ANY CONSTANTS REMAINING TO BE OUTPUT		
			219	*		
1E56 3D FF 0C5D			220	BTR080 CLI B\$CVPD, BTRBND	TEST FOR AN EMPTY CONSTANT BFR	
1E5A F2 81 08			221	JE BTR100	BRANCH WHEN BUFFER IS EMPTY	
			222	*		
			223	* OUTPUT THE FINAL PAGE OF PROGRAM CONSTANTS - AN ERROR CONDITION		
			224	* (PROGRAM TOO LARGE) IS POSSIBLE AT THIS POINT		
			225	*		



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1E5D 3C 15 094E      226 BTR090 MVI   B$PFNC,B$PFWP      SET PUT RTN TO WRITE A PAGE
1E61 C0 87 093A      227          B    B$PUTC      LINK TO OUTPUT CONSTANT BUFFER
228 *
229 * TEST FOR POSSIBLE OVERFLOW OF THE BRANCH ADDRESS TABLE FILE
230 *
1E65 C2 02 19E8      231 BTR100 LA     B$BDPL,@XR      LOAD BRANCH TABLE DPL CADDR
1E69 3D 60 19EA      232          CLI   B$BDSA,B@DTB1+B@DTBN  IF BRANCH ADDR FILE NOT FULL
1E6D F2 82 0C        233          JL    BTR120      * GO OUTPUT THE FINAL FILE BFR
234 *
235 * ERROR EXIT 3 - PRINT 'TOO MANY LINE NO. REFERENCES' ERROR MESSAGE
236 *
1E70 3C A0 03CE      237 BTR110 MVI   $ERRPG,$$$NLN      SET FOR NO LINE NO. PRINTOUT
1E74 3C B1 03CD      238          MVI   $CAERR,@E612     SET THE ERROR MESSAGE CODE
1E78 C0 87 0469      239          B    $CAERK      EXIT TO SYSTEM ERROR ROUTINE
240 *
241 * OUTPUT THE FINAL BRANCH ADDRESS TABLE BUFFER TO DISK
242 *
1E7C C0 87 1A6B      243 BTR120 B      B$DL4T      LINK TO WRITE BRANCH TABLE BFR
244 *
245 * OUTPUT THE FINAL STATEMENT ADDRESS TABLE BUFFER TO DISK
246 *
1E80 1C 03 1CFF F1   247 BTR130 MVC    BTRSHA,BTRSHE(BTRSEL,@BR) SET STMT TABLE MAXIMUM ENTRY
248 *
1E85 C2 02 07DA      249          LA     B$SDPL,@XR      LOAD STATEMENT TABLE DPL CADDR
1E89 C0 87 1A6B      250          B      B$DL4T      LINK TO WRITE STMT TABLE BUFF
251 *
1E8D C0 87 0025      252          B      $DISKN      LINK TO WAIT OUTPUT COMPLETED
1E91 057F          1E92 253          DC     AL(@CADDR)($WAITF) CADDR OF DISK IOCR 'WAIT' DPL
254 *
255 *****
256 * ESTABLISH CRITICAL COMPILER-GENERATED VIRTUAL ADDRESSES FOR LOADER
257 *****
258 *
259 * CLEAR THE VIRTUAL MEMORY REGION INDICATOR AREAS
260 *
1E93 0F 07 1A07 1A07 261 BTR150 SLC    B$LDRP+B@DL04,B$LDRP+B@DL04(4*@VADDR) CLEAR REGION ADDRS
262 *
263 * ESTABLISH VIRTUAL MEMORY REGION-1 BEGINNING ADDRESS
264 *
1E99 0C 00 1A00 0A42 265 BTR160 MVC    B$LDRP+B@DL01-1,B$PVAD-1(@VADDR-1) SET UP PAGE AFTER PMC
266 *
267 * ESTABLISH VIRTUAL MEMORY REGION-1 ENDING ADDRESS
268 *
1E9F 0C 00 1A02 0A35 269 BTR170 MVC    B$LDRP+B@DL02-1,B$PCPG(@VADDR-1) SET UP LOW CONSTANT PAGE
270 *
271 * ESTABLISH VIRTUAL MEMORY REGION-2 BEGINNING ADDRESS
272 *
1EA5 1E 01 0E46 E9   273 BTR180 ALC    B$SVRB,BTRVBA(@VADDR,@BR) ADJUST VARIABLE BASE VADDR
274 *
275          MVC    B$LDRP+B@DL03-1,B$SVRB-1(@VADDR-1) SET UP PAGE AFTER VARS
276 *
277 * ESTABLISH VIRTUAL MEMORY REGION-2 ENDING ADDRESS
278 *
1EB0 0C 00 1A06 0E47 279 BTR190 MVC    B$LDRP+B@DL04-1,B$SFAB-1(@VADDR-1) SET UP LOW NAT PAGE
280 *
281 * ESTABLISH VIRTUAL ADDRESSES FOR SYSTEM INTERNAL ELEMENTS

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282 *
1EB6 0C 01 1A09 15AC 283 BTR200 MVC B$LDRP+B@DL05,B$FAIS(@VADDR) SET UP 1ST CONSTANT VADDR
1EBC 0C 01 1A0B 15A0 284 MVC B$LDRP+B@DL06,B$FAIW(@VADDR) SET UP 1ST VARIABLE VADDR

286 *****
287 * TERMINATOR 2ND SEGMENT CALLING SEQUENCE ROUTINE
288 *****
289 *
290 * TEST WHETHER CURRENT SEGMENT WAS DISK OR CORE RESIDENT
291 *
1EC2 5D 01 FB EB 292 BTR250 CLC BTRCA2(,@BR),BTRPBA(@CADDR,@BR) IF CURR SEG CAME FR DISK
1EC6 F2 81 10 293 JE BTR280 * GO LOAD & EXEC 2ND SEG
294 *
295 * CURRENT SEGMENT WAS CORE RESIDENT - TEST WHETHER 2ND SEGMENT HAS
296 * ALSO BEEN LOADED INTO CORE
297 *
1EC9 4E 00 FD 043B 298 BTR260 ALC BTRFCP-1(,@BR),$EXFTR(1) CALC MAX PROCESSOR CORE PAGE
1ECE 5D 01 FB FE 299 CLC BTRCA2(,@BR),BTRFCP(@CADDR,@BR) IF 2ND SEGMENT IN CORE
1ED2 F2 82 0B 300 JL BTR290 * GO SET TO EXEC 2ND SEG
301 *
302 * 2ND SEGMENT IS DISK RESIDENT - ESTABLISH DISTRIBUTOR PARAMETERS FOR
303 * CORELOADING AND EXECUTING THE 2ND SEGMENT
304 *
1ED5 5C 01 FB EB 305 BTR270 MVC BTRCA2(,@BR),BTRPBA(@CADDR,@BR) SET UP DISKLOAD CADDR
306 *
307 * EXIT TO DISTRIBUTOR FOR 2ND SEGMENT CORELOAD AND EXECUTION
308 *
1ED9 D2 02 FA 309 BTR280 LA BTRAD2(,@BR),@XR LOAD DISTRIBUTOR PARM CADDR
1EDC C0 87 073A 310 B B$DST2 GO LOAD & EXECUTE 2ND SEGMENT
311 *
312 * 2ND SEGMENT IS CORE RESIDENT - BRANCH TO NEXT CONSECUTIVE CORE PAGE
313 * AND CONTINUE TERMINATOR EXECUTION
314 *
1EE0 76 01 E7 315 BTR290 A BTRBLS(,@BR),@BR SET 2ND SEGMENT BASE CORE ADDR
1EE3 D0 87 00 316 B BTRSG2(,@BR) GO EXECUTE THE 2ND SEGMENT

318 *****
319 * COMPILER TERMINATOR SEGMENT-1 CONSTANTS
320 *****
321 *
1EE6 0100 1EE7 322 BTRBLS DC AL(@CADDR)(B@BLSZ) LENGTH OF CORE BLOCK OR PAGE
1EE8 00FF 1EE9 323 BTRVBA DC AL(@VADDR)(B@BLSZ-1) REGION-2 VIRTUAL ADDR ADJUSTER
1EEA 0600 1EEB 324 BTRPBA DC AL(@CADDR)(B$CSBF) PROCESSOR DISK BUFFER CADDR
325 *
1EEC 1B0E 1EED 326 BTRFTA DC AL(@CADDR)(B$FORT) CADDR OF 1ST 'FOR' TABLE ENTRY
327 *
1CFF 328 BTRSHA EQU B$SABF+B@BLSZ-1 CADDR OF STMT TBL BFR RH BYTE
0004 329 BTRSEL EQU @VADDR+B@LSNO LENGTH OF A STATEMENT TBL ENTRY
1EEE FFFFFFFF 1EF1 330 BTRSH DC XL(BTRSEL)'FFFFFFFF' MAXIMUM ENTRY FOR STMT TABLE

332 *****
333 * COMPILER TERMINATOR SEGMENT-1 DISK PARAMETER LIST
334 *****
335 *
1EF2 01 1EF2 336 BTREPL EQU * ERROR STACK CORELOAD DPL ADDR
1EF2 337 BTREFN DC AL1(@DGET) DISK IOCR 'READ' FUNCTION

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1EF3 07	1EF3	338	BTRECY DC	AL1(B@DVCY)	ERROR STACK BASE CYLINDER ADDR
1EF4 56	1EF4	339	BTRESA DC	AL1(B@DVC1)	ERROR STACK 1ST LOGICAL SECTOR
1EF5 03	1EF5	340	BTRESC DC	IL1 '3'	SECTOR COUNT FOR THE ERR STACK
1EF6 1C00	1EF7	341	BTRECA DC	AL(@CADDR)(\$\$ERSK)	ERROR STACK CORELOAD ADDRESS
		343	*****		
		344	* COMPILER TERMINATOR PSEUDO INSTRUCTION SEQUENCE		
		345	*****		
		346	*		
	1EF8	347	BTRPCA EQU *		CADDR OF ENDING PMC SEQUENCE
		348	*		
1EF8 02	1EF8	349	BTRSVC DC	AL(B@LCOP)(B@CSVC)	'SUPERVISOR CALL' PSEUDO OPCODE
1EF9 70	1EF9	350	BTREOF DC	AL(B@LCOP)(B@CEOF)	'END-OF-FILE' PSEUDO OPCODE
		352	*****		
		353	* COMPILER TERMINATOR SEGMENT-1 MORK AREAS		
		354	*****		
		355	*		
	1EFA	356	BTRAD2 EQU *		DISTR PARMS FOR SEG-2 EXEC
1EFA	1EFB	357	BTRCA2 DS	CL(@CADDR)	TERMINATOR SEGMENT CORE ADDRESS
1EFC 5C	1EFC	358	BTRSA2 DC	AL1(B@DEND+BTRPSI)	BTRMNT SEG-2 PHYS SECTOR ADDR
		359	*		
1EFD	1EFE	360	BTRFCP DS	CL(@CADDR)	FINAL AVAILABLE CORE PAGE ADDR
1EFD		361	ORG	*-@CADDR	INITIALIZE CORE PAGE ADDR TO
1EFD 1F00	1EFE	362	DC	AL(@CADDR)(B\$CSXA-B@BLSZ)	* FINAL PAGE BEFORE EXTENSION
		364	*****		
		365	* COMPILER TERMINATOR SECOND SEGMENT		
		366	*****		
		367	*		
		368	* ESTABLISH TERMINATOR SEGMENT-2 ADDRESSABILITY		
		369	*		
1F00		370	ORG	BTRMNT+B@BLSZ	BEGIN SEGMENT-2 AT PAGE BOUND
	1F00	371	USING *	@BR	DEFINE SEGMENT-2 BASE ADDRESS
		372	*		
		373	* ESTABLISH LETTER VARIABLE SYMBOL TABLE FOR THE LOADER		
		374	*		
1F00 0C 39 1A45 109B		375	BTR300 MVC	B\$LDRP+B@DL07,B\$SLVT+B@LL07-1(B@LL07)	SET UP LTR VAR TBL
		376	*		
		377	* ESTABLISH LETTER-DIGIT VARIABLE SYMBOL TABLE FOR THE LOADER		
		378	*		
1F06 0C FF 1B45 119B		379	BTR310 MVC	B\$LDRP+B@DL08,B\$SLDT+B@LL08-1(B@LL08)	SET UP LTR-
1F0C 0C FF 1C45 129B		380	MVC	B\$LDRP+B@DL09,B\$SLDT+B@LL08+B@LL09-1(B@LL09)	* DIGIT TFIL
1F12 0C 43 1C89 12DF		381	MVC	B\$LDRP+B@DL10,B\$SLDT+B@LL08+B@LL09+B@LL10-1(B@LL10)	
		382	*		
		383	* ESTABLISH CHARACTER VARIABLE SYMBOL TABLE FOR THE LOADER		
		384	*		
1F18 0C 39 1CC3 1319		385	BTR320 MVC	B\$LDRP+B@DL11,B\$SCVT+B@LL11-1(B@LL11)	SET UP CHAR VAR TBL
		386	*		
		387	* CLEAR THE FUNCTION AND ARRAY TABLE AREA FOR THE LOADER		
		388	*		
1F1E 0F FF 1E71 1E71		389	BTR330 SLC	B\$LDRP+B@DL15,B\$LDRP+B@DL15(B@LL15)	INITLZ THE FUNC AND
1F24 0F 95 1F07 1F07		390	SLC	B\$LDRP+B@DL16,B\$LDRP+B@DL16(B@LL16)	* ARRAY AREA TO ZEROS
		392	*****		
		393	* ESTABLISH ARITHMETIC ARRAY SYMBOL TABLE AND DOPE VECTORS FOR LOADER		

## S/3 BASIC COMPILER TERMINATION ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 164
				394	*****	
				395	*	
				396	* GET AN ENTRY FROM THE COMPILE-TIME ARITHMETIC (NUMERIC) ARRAY TABLE	
				397	*	
1F2A	75	02 CA		398	BTR350 L BTRCNP(, @BR), @XR LOAD COMPILE-TIME NAT POINTER	
1F2D	6C	05 C8 05		399	MVC BTRCNE(, @BR), @VADDR+B@ACD2(B@LCNA, @XR) SAVE THE NAT ENTRY	
				400	*	
				401	* ESTABLISH A LOADER-TIME NUMERIC ARRAY TABLE VIRTUAL ADDRESS ENTRY	
				402	*	
1F31	C2	02 1CC3		403	BTR360 LA B\$LDRP+B@DL11, @XR LOAD LOADER-TIME NAT BASE ADDR	
				404	*	
1F35	9C	01 00 C4		405	BTR370 MVC *-*(, @XR), BTRVAD(@VADDR, @BR) HOVE THE ARRAY VADDR INTO	
1F37				406	ORG BTR370+@D1 * LOADER-TIME NAT ENTRY	
1F37	3A		1F37	407	DC AL1(B@LL12) INITIALIZE LOADER-TIME NAT	
1F39				408	ORG BTR370+@INST4 * POINTER TO RIGHTMOST ENTRY	
				409	*	
				410	* TEST WHETHER CURRENT ENTRY ARRAY WAS REFERENCED IN PROGRAM	
				411	*	
1F39	7D	56 C3		412	BTR380 CLI BTRVAD-1(, @BR), B@DVC1 IF ARRAY WAS NOT REFERENCED	
1F3C	F2	82 0A		413	JL BTR400 * SKIP PAST FAT PROCESSING	
				414	*	
				415	* ESTABLISH A FUNCTION AND ARRAY TABLE DOPE VECTOR FOR CURRENT ENTRY	
				416	*	
1F3F	75	02 C4		417	BTR390 L BTRVAD(, @BR), @XR LOAD THE ARRAY VIRTUAL ADDRESS	
1F42	76	02 B5		418	A BTRFAC(, @BR), @XR CONVERT THE VADDR TO A CADDR	
1F45	9C	03 03 C8		419	MVC B@ACD2(, @XR), BTRCND(2*B@LDMN, @BR) SET DOPE VECTOR DIMENS	
				420	*	
				421	* DECREMENT TABLE POINTERS AND TEST FOR MORE ENTRIES TO PROCESS	
				422	*	
1F49	5F	01 CA B7		423	BTR400 SLC BTRCNP(, @BR), BTRCNL(@CADDR, @BR) DECR COMPILE-TIME NAT PT	
1F4D	5F	00 37 BC		424	SLC BTRNTP(, @BR), BTRSTL(1, @BR) DECR LOADER-TIME NAT PT	
1F51	D0	84 2A		425	BH BTR350(, @BR) IF MORE NAT ENTRIES, GO PROCESS	
				427	*****	
				428	* ESTABLISH CHARACTER ARRAY SYMBOL TABLE AND DOPE VECTORS FOR LOADER	
				429	*****	
				430	*	
				431	* GET AN ENTRY FROM THE COMPILE-TIME CHARACTER ARRAY TABLE	
				432	*	
1F54	75	02 CC		433	BTR410 L BTRCCP(, @BR), @XR LOAD COMPILE-TIME CAT POINTER	
1F57	6C	03 C6 03		434	MVC BTRCCE(, @BR), @VADDR+B@CDMN(B@LCCA, @XR) SAVE THE CAT ENTRY	
				435	*	
				436	* ESTABLISH A LOADER-TIME CHARACTER ARRAY TABLE VIRTUAL ADDRESS ENTRY	
				437	*	
1F5B	C2	02 1CFD		438	BTR420 LA B\$LDRP+B@DL12, @XR LOAD LOADER-TIME CAT BASE ADDR	
				439	*	
1F5F	9C	01 00 C4		440	BTR430 MVC *-*(, @XR), BTRVAD(@VADDR, @BR) MOVE THE ARRAY VADDR INTO	
1F61				441	ORG BTR430+@D1 * LOADER-TIME CAT ENTRY	
1F61	3A		1F61	442	DC AL1(B@LL13) INITIALIZE LOADER-TIME CAT	
1F63				443	ORG BTR430+@INST4 CHECK OBJ * POINTER TO RIGHTMOST ENTRY	
				444	*	
				445	* TEST WHETHER CURRENT ENTRY ARRAY WAS REFERENCED IN PROGRAM	
				446	*	
1F63	7D	56 C3		447	BTR440 CLI BTRVAD-1(, @BR), B@DVC1 IF ARRAY WAS NOT REFERENCED	
1F66	F2	82 0A		448	JL BTR460 * SKIP PAST FAT PROCESSING	
				449	*	

## S/3 BASIC COMPILER TERMINATION ROUTINE

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450 * ESTABLISH A FUNCTION AND ARRAY TABLE DOPE VECTOR FOR CURRENT ENTRY
451 *
1F69 75 02 C4 452 BTR450 L BTRVAD(, @BR), @XR LOAD THE ARRAY VIRTUAL ADDRESS
1F6C 76 02 B5 453 A BTRFAC(, @BR), @XR CONVERT THE VADDR TO A CADDR
1F6F 9C 01 01 C6 454 MVC B@CDMN(, @XR), BTRCCD(B@LDMN, @BR) SET DOPE VECTOR DIMENSION
455 *
456 * DECREMENT TABLE POINTERS AND TEST FOR MORE ENTRIES TO PROCESS
457 *
1F73 5F 01 CC B9 458 BTR460 SLC BTRCCP(, @BR), BTRCCL(@CADDR, @BR) DECR COMPILE-TIME CAT PT
1F77 5F 00 61 BC 459 SLC BTRCTP(, @BR), BTRSTL(1, @BR) DECR LOADER-TIME CAT PT
1F7B D0 84 54 460 BH BTR410(, @BR) IF MORE CAT ENTRIES, GO PROCESS

462 *****
463 * ESTABLISH USER FUNCTION SYMBOL TABLE AND ADDRESSES FOR LOADER
464 *****
465 *
466 * GET AN ENTRY FROM THE COMPILE-TIME USER FUNCTION TABLE
467 *
1F7E 75 02 CE 468 BTR470 L BTRCFP(, @BR), @XR LOAD COMPILE-TIME FNT POINTER
1F81 6C 03 C6 03 469 MVC BTRCFE(, @BR), @VADDR+B@FVAD(B@LCFN, @XR) SAVE THE FNT ENTRY
470 *
471 * ESTABLISH A LOADER-TIME USER FUNCTION TABLE VIRTUAL ADDRESS ENTRY
472 *
1F85 C2 02 1D37 473 BTR480 LA B$LDRP+B@DL13, @XR LOAD LOADER-TIME FNT BASE ADDR
474 *
1F89 9C 01 00 C4 475 BTR490 MVC *-*(, @XR), BTRVAD(@VADDR, @BR) MOVE THE FUNCTION VADDR
1F8B 476 ORG BTR490+@D1 * INTO LOADER-TIME FNT ENTRY
1F8B 3A 1F8B 477 DC AL1(B@LL14) INITIALIZE LOADER-TIME FNT
1F8D 478 ORG BTR490+@INST4 * POINTER TO RIGHTMOST ENTRY
479 *
480 * TEST WHETHER CURRENT ENTRY FUNCTION WAS REFERENCED IN PROGRAM
481 *
1F8D 7D 56 C3 482 BTR500 CLI BTRVAD-1(, @BR), B@DVC1 IF FUNCTION WAS NOT REFERENCED
1F90 F2 82 0A 483 JL BTR520 * SKIP PAST FAT PROCESSING
484 *
485 * ESTABLISH A FUNCTION AND ARRAY TABLE ADDRESS FOR CURRENT ENTRY
486 *
1F93 75 02 C4 487 BTR510 L BTRVAD(, @BR), @XR LOAD THE FUNCTION VIRTUAL ADDR
1F96 76 02 B5 488 A BTRFAC(, @BR), @XR CONVERT THE VADDR TO A CADDR
1F99 9C 01 01 C6 489 MVC B@FVAD(, @XR), BTRCFA(@VADDR, @BR) SET FUNCTION VIRTUAL ADDR
490 *
491 * DECREMENT TABLE POINTERS AND TEST FOR MORE ENTRIES TO PROCESS
492 *
1F9D 5F 01 CE BB 493 BTR520 SLC BTRCFP(, @BR), BTRCFL(@CADDR, @BR) DECR COMPILE-TIME FNT PT
1FA1 5F 00 8B BC 494 SLC BTRFTP(, @BR), BTRSTL(1, @BR) DECR LOADER-TIME FNT PT
1FA5 D0 84 7E 495 BH BTR470(, @BR) IF MORE FNT ENTRIES, GO PROCESS

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## S/3 BASIC COMPILER TERMINATION ROUTINE

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497 *****
498 * NORMAL COMPILER EXIT ROUTINE
499 *****
500 *
501 * LOAD AND TRANSFER CONTROL TO THE BASIC LOADER
502 *
1FA8 D2 02 BD      503 BTR600 LA      BTRDPL(,@BR),@XR      STORE LOADER CORELOAD DPL ADDR
1FAB 74 02 B3      504          ST      BTRDPA(,@BR),@XR      * FOR SYSTEM LOADER PARAMETER
1FAE C0 87 051E    505          B      $RLOAD      EXIT THE COMPILER
1FB2              1FB3 506 BTRDPA DS      CL(@CADDR)      LOADER CORELOAD DPL ADDRESS

508 *****
509 * COMPILER TERMINATOR SEGMENT-2 CONSTANTS
510 *****
511 *
1FB4 1F08          1FB5 512 BTRFAC DC      AL(@CADDR)(B$LDRP+B@DL16+1) FUNC & ARRAY ADDR CONVERTER
513 *
1FB6 0006          1FB7 514 BTRCNL DC      AL(@CADDR)(B@LCNA)      COMPILE-TIME NAT ENTRY LENGTH
1FB8 0004          1FB9 515 BTRCCL DC      AL(@CADDR)(B@LCCA)      COMPILE-TIME CAT ENTRY LENGTH
1FBA 0004          1FBB 516 BTRCFL DC      AL(@CADDR)(B@LCFN)      COMPILE-TIME FNT ENTRY LENGTH
517 *
1FBC 02            1FBC 518 BTRSTL DC      AL1(@VADDR)      LOADER-TIME SYM TBL ENTRY LNG

520 *****
521 * COMPILER TERMINATOR SEGMENT-2 DISK PARAMETER LIST
522 *****
523 *
524 *TRDPL $DPL      FUNC=@DGET,DADDR-#$LOAD,CNT-#$@LOA,CADDR-#$SLOA
1FBD 01            1FBD 525+BTRDPL EQU      *      DISK PARAMETER LIST
1FBE 0100          1FBD 526+          DC      AL1(@DGET)      REQUESTED FUNCTION
1FC0 13            1FBE 527+          DC      AL2(#$LOAD)      DISK ADDRESS
1FC1 0600          1FC0 528+          DC      AL1(#$@LOA)      SECTOR COUNT
1FC1 0600          1FC2 529+          DC      AL2(#$SLOA)      BUFFER ADDRESS
530+*** END OF EXPANSION ***

532 *****
533 * COMPILER TERMINATOR SEGMENT-2 WORK AREAS
534 *****
535 *
1FC3              1FC3 536 BTRTEN EQU      *      COMPILE-TIME FUNCTION & ARRAY
1FC3              1FC8 537          DS      CL(B@LCNA)      * SYMBOL TABLES ENTRY SAVE AREA
538 *
1FC9              1FCA 539 BTRCNP DS      CL(@CADDR)      COMPILE-TIME NAT POINTER -
1FC9              540          ORG      *-@CADDR      * INITLZ TO THE
1FC9 13C2          1FCA 541          DC      AL(@CADDR)(B$SNAT+B@NAAR*B@LCNA-B@LCNA) * RIGHTMOST ENTRY
542 *
1FCB              1FCC 543 BTRCCP DS      CL(@CADDR)      COMPILE-TIME CAT POINTER -
1FCB              544          ORG      *-@CADDR      * INITLZ TO THE
1FCB 1438          1FCC 545          DC      AL(@CADDR)(B$SCAT+B@NCAR*B@LCCA-B@LCCA) * RIGHTMOST ENTRY
546 *
1FCD              1FCE 547 BTRCFP DS      CL(@CADDR)      COMPILE-TIME FNT POINTER -
1FCD              548          ORG      *-@CADDR      * INITLZ TO THE
1FCD 14AC          1FCE 549          DC      AL(@CADDR)(B$SFNT+B@NUFN*B@LCFN-B@LCFN) * RIGHTMOST ENTRY

551 *****
552 * COMPILER TERMINATOR EQUATES REFERENCING CONSTANTS

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## S/3 BASIC COMPILER TERMINATION ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 167
		553		*****	
		554		*	
	0000	555	BTRSG2 EQU 0	DISP FOR BTRMNT SEG-2 ENTRY PT	
	0004	556	BTRPSI EQU X'04'	PHYSICAL SECTOR ADDR INCREMENT	
	00FF	557	BTRBND EQU B@BLSZ-1	DISP INDICATING EMPTY CON BFR	
		559		*****	
		560		* COMPILER TERMINATOR EQUATES REFERENCING PROGRAM LABELS	
		561		*****	
		562		*	
	1FC4	563	BTRVAD EQU BTRTEN+@VADDR-1	COMPILE-TIME FIA SYMBOL VADDR	
	1FC8	564	BTRCNE EQU BTRTEN+@VADDR+B@ACD2	COMPILE-TIME NAT ENTRY ADDR	
	1FC8	565	BTRCND EQU BTRCNE	COMPILE-TIME NAT ENTRY DINERS	
	1FC6	566	BTRCCE EQU BTRTEN+@VADDR+B@CDMN	COMPILE-TIME CAT ENTRY ADDR	
	1FC6	567	BTRCCD EQU BTRCCE	COMPILE-TIME CAT ENTRY DIMEN	
	1FC6	568	BTRCFE EQU BTRTEN+@VADDR+B@FVAD	COMPILE-TIME FNT ENTRY ADDR	
	1FC6	569	BTRCFA EQU BTRCFE	COMPILE-TIME FNT ENTRY VADDR	
		570		*	
	1F37	571	BTRNTP EQU BTR370+@D1	LOADER-TIME NAT POINTER DISP	
	1F61	572	BTRCTP EQU BTR430+@D1	LOADER-TIME CAT POINTER DISP	
	1F8B	573	BTRFTP EQU BTR490+@D1	LOADER-TIME FNT POINTER DISP	
		574		*	
		575		*****	
		576		*	
		577		* END OF COMPILER TERMINATOR CODING	
		578		*	



## S/3 BASIC COMPILER -RETURN- ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00	20/07/20	PAGE 168
		580		*****			
		581	*	5703-XM1 COPYRIGHT IBM CORP. 1970			*
		582	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083			*
		583	*				*
		584		*****			*
		585	*	*STATUS			*
		586	*	VERSION 1 MODIFICATION 0			*
		587	*				*
		588	*	*FUNCTION			*
		589	*	BKRTRN IS EXECUTED TO TRANSLATE RETURN STATEMENTS AS THEY OCCUR			*
		590	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE			*
		591	*	THE PSEUDOCODE IN VIRTUAL MEMORY.			*
		592	*				*
		593	*	*ENTRY POINTS			*
		594	*	BKRTRN HAS OILY ONE ENTRY POINT:			*
		595	*	BKRTRN - TRANSLATE RETURN STATEMENT			*
		596	*	THE FORMAT OF THE CALLING SEQUENCE:			*
		597	*	B BKRTRN			*
		598	*				*
		599	*	* INPUT			*
		600	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING			*
		601	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE			*
		602	*	LEADING KEYWORD, RETURN.			*
		603	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST			*
		604	*	CHARACTER IN THE LEADING KEYWORD, RETURN.			*
		605	*				*
		606	*	*OUTPUT			*
		607	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE			*
		608	*	GENERATED BY BKRTRN IS STORED IN THE NEXT AVAILABLE VIRTUAL			*
		609	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION			*
		610	*	SEQUENCES.			*
		611	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE			*
		612	*	CHARACTER WHICH TERMINATES THE STATEMENT.			*
		613	*				*
		614	*	*EXTERNAL REFERENCES			*
		615	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY			*
		616	*	OUTPUT ROUTINE.			*
		617	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.			*
		618	*				*
		619	*	*EXITS, NORMAL			*
		620	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.			*
		621	*				*
		622	*	*EXITS, ERROR			*
		623	*	N/A			*
		624	*				*
		625	*	*TABLES/WORK AREAS			*
		626	*	N/A			*
		627	*				*
		628	*	*ATTRIBUTES			*
		629	*	BKRTRN IS NATURALLY RELOCATABLE AND REUSABLE.			*
		630	*				*
		631	*	*CHARACTER CODE DEPENDENCY			*
		632	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR			*
		633	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.			*
		634	*				*
		635	*	*NOTES			*

## S/3 BASIC COMPILER -RETURN- ROUTINE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 169
				636	*	ERROR PROCEDURES			*
				637	*	N/A			*
				638	*				*
				639	*	REGISTER USAGE			*
				640	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.			*
				641	*				*
				642	*	SAVED/RESTORED AREAS			*
				643	*	N/A			*
				644	*				*
				645	*	MODIFICATION CONSIDERATIONS			*
				646	*	BKRTRN RESIDES ON THE SAME SECTOR WITH BTRMNT AND BPXRSR.			1-4*
				647	*	ANY MODIFICATION TO BKRTRN MUST CONSIDER THIS CO-RESIDENCY			1-4*
				648	*	SINCE IT WILL CHANGE THE ENTRY ADDRESS OF BPXRSR. THE			1-4*
				649	*	LIMITATION OF THE SECTOR BOUNDARY ON SIZE MUST ALSO BE			1-4*
				650	*	CONSIDERED.			1-4*
				651	*				*
				652	*	REQUIRED MODULES			*
				653	*	@NYSEQ - COMMON SYSTEM EQUATES.			*
				654	*	@FXDEQ - SYSTEM NUCLEUS AND INDICATOR EQUATES.			*
				655	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS EQUATES.			*
				656	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.			*
				657	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES.			*
				658	*	@ERMEQ - ERROR MESSAGE EQUATES.			*
				659	*	\$VSEQU - FIXED VIRTUAL ADDRESS EQUATES.			*
				660	*	\$B\$EQU - COMPILER FIXED EQUATES.			*
				661	*	\$B@EQU - COMPILER SYSTEM EQUATES.			*
				662	*				*
				663	*	OTHER			*
				664	*	BKRTRN IS ASSEMBLED WITH ALL OF THE STATEMENT PROCESSORS.			*
				665	*	*****			*
				667	*				*
				668	*	ENTER BKRTRN - 'RETURN' STATEMENT ROUTINE			*
				669	*				*
			1FCF	670	BKRTRN EQU	*			BKRTRN ENTRY POINT
				671	*				*
				672	*	GENERATE A 'BRS' INSTRUCTION IN VIRTUAL MEMORY			*
				673	*				*
		1FCF D2 02 E2		674	BKR010 LA	BKRBRC(,@BR),@XR			LOAD CADDR OF 'BRS' INSTR
		1FD2 34 02 0A40		675	ST	B\$PCAD,@XR			SET PUT RTN FOR VADDR OF 'BRS'
		1FD6 3C 00 0A41		676	MVI	B\$PNBY,B@LBRS-1			SET PUT RTN FOR LENGTH OF 'BRS'
		1FDA C0 87 093A		677	B	B\$PUTC			LINK TO GENERATE PMC
				678	*				*
				679	*	RETURN CONTROL TO THE REM STATEMENT ROUTINE			*
				680	*				*
		1FDE C0 87 1AE6		681	BKR020 B	B\$RMRK			RETURN TO REMARK STMT RTN
				682	*				*
				683	*	*****			*
				684	*	'RETURN' STATEMENT ROUTINE PMC AND STORAGE PARAMETERS			*
				685	*	*****			*
				686	*				*
		1FE2 4C	1FE2	687	BKRBRC DC	AL(B@LCOP)(B@CBRS)			'BRS' INSTR OPCODE
				688	*				*
				689	*	*****			*
				690	*				*
				691	*	END OF 'RETURN' STATEMENT ROUTINE CODING			*



## S/3 BASIC COMPILER -RESTORE- ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	VER 15, MOD 00 20/07/20 PAGE 171
		694		*****	
		695	*	5703-XM1 COPYRIGHT IBM CORP. 1970	*
		696	*	REFER TO INSTRUCTIONS ON COPY RIGHT NOTICE, 120-2083	*
		697	*		*
		698		*****	
		699	*	*STATUS	*
		700	*	VERSION 1 MODIFICATION 0	*
		701	*		*
		702	*	*FUNCTION	*
		703	*	BPXRSR IS EXECUTED TO TRANSLATE RESTORE STATEMENTS AS THEY OCCUR	*
		704	*	IN A BASIC PROGRAM INTO THE APPROPRIATE PSEUDOCODE AND TO PLACE	*
		705	*	THE PSEUDOCODE IN VIRTUAL MEMORY.	*
		706	*		*
		707	*	*ENTRY POINTS	*
		708	*	BPXRSR HAS ONLY ONE ENTRY POINT:	*
		709	*	BPXRSR - TRANSLATE RESTORE STATEMENT	*
		710	*	THE FORMAT OF THE CALLING SEQUENCE IS:	*
		711	*	B BPXRSR	*
		712	*		*
		713	*	*INPUT	*
		714	*	* COMPILER INPUT BUFFER - CONTAINS SOURCE PROGRAM TEXT INCLUDING	*
		715	*	THAT RECORD SEGMENT CONTAINING THE FIRST CHARACTER OF THE	*
		716	*	LEADING KEYWORD, RESTORE.	*
		717	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE FIRST	*
		718	*	CHARACTER IN THE LEADING KEYWORD, RESTORE.	*
		719	*		*
		720	*	*OUTPUT	*
		721	*	* VIRTUAL MEMORY - THE PSEUDO MACHINE INSTRUCTION SEQUENCE	*
		722	*	GENERATED BY BPXRSR IS STORED IN THE NEXT AVAILABLE VIRTUAL	*
		723	*	MEMORY LOCATION FOLLOWING PREVIOUSLY STORED INSTRUCTION	*
		724	*	SEQUENCES.	*
		725	*	* TEXT CHARACTER POINTER - CONTAINS THE CORE ADDRESS OF THE	*
		726	*	CHARACTER WHICH TERMINATES THE STATEMENT.	*
		727	*		*
		728	*	*EXTERNAL REFERENCES	*
		729	*	B\$PUTC - (B\$PCAD, B\$PNBY) - ENTRY TO COMPILER VIRTUAL MEMORY	*
		730	*	OUTPUT ROUTINE.	*
		731	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.	*
		732	*		*
		733	*	*EXITS, NORMAL	*
		734	*	B\$RMRK - ENTRY TO BASIC COMPILER REMARK ROUTINE.	*
		735	*		*
		736	*	*EXITS, ERROR	*
		737	*	N/A	*
		738	*		*
		739	*	*TABLES/WORK AREAS	*
		740	*	N/A	*
		741	*		*
		742	*	*ATTRIBUTES	*
		743	*	BPXRSR IS NATURALLY RELOCATABLE AND REUSABLE.	*
		744	*		*
		745	*	*CHARACIER CODE DEPENDENCY	*
		746	*	THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR	*
		747	*	INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.	*
		748	*		*
		749	*	*NOTES	*

## S/3 BASIC COMPILER -RESTORE- ROUTINE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	VER 15, MOD 00	20/07/20	PAGE 172
		750	*	ERROR PROCEDURES				*
		751	*	N/A				*
		752	*					*
		753	*	REGISTER USAGE				*
		754	*	BOTH THE INDEX AND BASE REGISTERS ARE USED DURING EXECUTION.				*
		755	*					*
		756	*	SAVED/RESTORED AREAS				*
		757	*	N/A				*
		758	*					*
		759	*	MODIFICATION CONSIDERATIONS				*
		760	*	BPXRSR RESIDES ON THE SAME SECTOR WITH BTRMNT AND BKRTN.				*
		761	*	ANY MODIFICATION TO BPXRSR MUST TAKE INTO CONSIDERATION				*
		762	*	THIS CO RESIDENCY ANY ALSO THE LIMITATION OF THE SECTOR				*
		763	*	BOUNDARY ON SIZE.				*
		764	*					*
		765	*	REQUIRED MODULES				*
		766	*	@NYSEQ - COMMON SYSTEM EQUATES.				*
		767	*	@FXDEQ - SYSTEM NUCLEUS AND INDICATOR EQUATES.				*
		768	*	@CANEQ - COMMON CORE LOCATIONS OUTSIDE NUCLEUS EQUATES.				*
		769	*	@VMDEQ - VIRTUAL MEMORY DIRECTORY EQUATES.				*
		770	*	@SPFEQ - SYSTEM PROGRAM FILE EQUATES.				*
		771	*	@ERMEQ - ERROR MESSAGE EQUATES.				*
		772	*	\$VSEQU - FIXED VIRTUAL ADDRESS EQUATES.				*
		773	*	\$B\$EQU - COMPILER FIXED EQUATES.				*
		774	*	\$B@EQU - COMPILER SYSTEM EQUATES.				*
		775	*					*
		776	*	OTHER				*
		777	*	BPXRSR IS ASSEMBLED WITH ALL THE STATEMENT PROCESSORS.				*
		778	*	*****				*
		780	*					*
		781	*	ENTER BPXRSR	'RESTORE' STMT ROUTINE			*
		782	*					*
		1FE3	783	BPXRSR EQU	*			BPXRSR ENTRY POINT
		784	*					*
		785	*	GENERATE AN 'RSR' INSTRUCTION PMC IN VIRTUAL MEMORY				*
		786	*					*
1FE3 D2 02 F6		787	BPX010	LA	BPXRSC(,@BR),@XR			LOAD CADDR OF 'RSR' INSTR
1FE6 34 02 0A40		788		ST	B\$PCAD,@XR			SET PUT RTN VADDR FOR 'RSR'
1FEA 3C 00 0A41		789		MVI	B\$PNBY,B@LRSR-1			SET PUT RTN LNG CODE FOR 'RSR'
1FEE C0 87 093A		790		B	B\$PUTC			LINK TO GENERATE 'RSR' PMC
		791	*					*
		792	*	RETURN CONTROL TO THE REMARK ROUTINE				*
		793	*					*
1FF2 C0 87 1AE6		794	BPX020	B	B\$RMRK			*
		795	*					*
		796	*	*****				*
		797	*	'RESTORE' STATEMENT ROUTINE PARAMETER AND STORAGE AREA				*
		798	*	*****				*
		799	*					*
1FF6 5A	1FF6	800	BPXRSC	DC	AL(B@LCOP)(B@CRSR)			'RSR' INSTR OPCODE
		801	*					*
		802	*	*****				*
		803	*					*
		804	*	END OF 'RESTORE' STATEMENT ROUTINE CODING				*
		805	*					*

FFFF    806            END

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =            0



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$\$\$NLN	001	00A0	2568	0200 0237
\$\$ERSK	001	1C00	2567	0341
\$\$ZERO	001	0000	0221	0222 0224 0225 0226 0230
\$ABORT	001	0010	0333	
\$BASIC	001	0080	0391	
\$BIGCD	001	0080	0467	
\$BLDPL	001	0579	0600	0602
\$BLNOE	001	0569	0590	
\$BLOAD	001	0522	0581	0583 0586 0599 0600
\$BLRTN	001	0550	0589	0590
\$BRSAV	001	03C5	0278	0279
\$BSADR	001	0587	0605	0607
\$BUFPT	001	03E3	0486	0487
\$CABLD	001	04B4	0559	0560
\$CAERK	001	0469	0536	0539 0191 0202 0239
\$CAERR	001	03CD	0284	0286 0201* 0238*
\$CAIPL	001	049D	0555	0557
\$CALLI	001	0008	0476	
\$CARDI	001	0001	0247	
\$CARPL	001	04A1	0557	0559
\$CIENT	001	0483	0546	0547
\$CIEXT	001	0480	0545	0546
\$CIMSK	001	0476	0542	0545
\$CISUS	001	0496	0550	0555
\$CLBFR	001	0010	0434	
\$CMDKY	001	0008	0346	
\$CMODE	001	0002	0396	
\$CONFIG	001	03DD	0459	0469
\$CRPOS	001	03E2	0485	0486
\$CRTAD	001	044D	0524	0525
\$CRTAV	001	0002	0340	
\$CRTDN	001	0002	0364	
\$CRTIN	001	03D3	0361	0368
\$CRTNO	001	0004	0343	
\$CRTPU	001	0004	0365	
\$CRTSP	001	0008	0366	
\$CRTUP	001	0001	0363	
\$CRUSH	001	0080	0472	
\$CSDPL	001	050E	0571	0572
\$C0001	001	0464	0528	0534
\$DATE	001	043A	0509	0510
\$DBGUF	001	03E0	0471	0480
\$DBLOK	001	0001	0421	
\$DFDET	001	03E8	0492	0493
\$DISKN	001	0025	0224	0252
\$DKERR	001	0008	0402	
\$DKSIZ	001	03D7	0446	0454 0495
\$DK100	001	0001	0448	
\$DK200	001	0002	0449	
\$DK400	001	0004	0450	
\$DK600	001	0008	0451	
\$DK800	001	0010	0452	
\$DPLSV	001	0449	0520	0522
\$DTNMB	001	0040	0267	
\$DTRDR	001	0040	0355	
\$ENDNU	001	0600	0614	0625

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$ERDPL	001	046F	0539	0541
\$ERFIL	001	0040	0294	
\$ERHRD	001	0004	0426	
\$ERKEY	001	0080	0298	
\$ERLOG	001	0345	0229	
\$ERMAD	001	0472	0541	0542
\$ERPND	001	0004	0399	
\$ERRCT	001	03CF	0300	0190*
\$ERRPG	001	03CE	0288	0189* 0200* 0237*
\$ERSFL	001	0035	0293	
\$ERSTK	001	0030	0291	0189
\$ER050	001	0363	0230	
\$ER1N2	001	0050	0296	
\$EXADR	001	0517	0574	0576
\$EXCMD	001	0001	0328	
\$EXFTR	001	043B	0510	0515 2813 3413 3943 4557 0298
\$FCIND	001	0010	0406	
\$FDIND	001	0040	0413	
\$FEARR	001	0004	0222	
\$FEMAP	001	0588	0607	0608
\$FILIB	001	03DA	0457	0458
\$FITIN	001	0010	0382	
\$FUIND	001	0020	0411	
\$GUFIO	001	0583	0604	0605
\$GUFIR	001	0008	0256	
\$HISTE	001	042E	0507	0508
\$HIST1	001	0435	0508	0509
\$HRDER	001	0020	0352	
\$INDR1	001	03D4	0368	0394
\$INDR2	001	03D5	0394	0419
\$INDR3	001	03D6	0419	0446
\$INLNO	001	03CF	0286	0288 0300 0307 5043 5049*
\$INRPT	001	0020	0264	
\$IOIND	001	03D2	0335	0361
\$IOPGS	001	0010	0475	
\$IOYES	001	0002	0250	
\$IPLDV	001	05FF	0611	0614
\$IRKEY	001	0020	0474	
\$KEYBD	001	03E1	0480	0485
\$KEYCD	001	03C3	0244	0278
\$KEYDT	001	0040	0388	
\$KE090	001	00DE	0225	
\$KE130	001	01D5	0226	
\$KYBSY	001	0010	0261	
\$LDRTN	001	0571	0599	
\$LEVEL	001	03DF	0469	0471
\$LIST	001	0002	0423	
\$LMRGN	001	03C1	0239	0241
\$LNPTR	001	0080	0358	
\$LOADB	001	054A	0583	
\$LOADR	001	051A	0576	0579
\$LPRIO	001	03E9	0493	
\$LPROS	001	03E5	0488	0490
\$LPRP3	001	03E4	0487	0488
\$MOUNT	001	0020	0437	
\$MPDWN	001	0001	0337	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$NEXTB	001	03E6	0490	0491
\$NEXTL	001	03E7	0491	0492
\$NOENB	001	0008	0429	
\$NOLST	001	0004	0253	
\$NUCBS	001	03C0	0236	0237
\$NWRKF	001	0080	0442	
\$NWRKR	001	0040	0439	
\$PASWD	001	042D	0506	0507
\$PAUSD	001	04BA	0560	0562
\$PAUSE	001	0002	0330	
\$PGMDT	001	0020	0385	
\$PGMST	001	0010	0349	
\$PKERT	001	0419	0504	0506
\$PLST1	001	0454	0525	0526
\$PLST2	001	045B	0526	0527
\$PLST3	001	0462	0527	0528
\$PRDEV	001	044B	0522	0524
\$PRESN	001	0002	0373	
\$PROCI	001	0001	0370	
\$PRPOS	001	03C2	0241	0244
\$PSDBR	001	04FA	0565	
\$PSDXR	001	04F2	0564	0565
\$PSTEP	001	0004	0331	
\$PSTMT	001	0008	0332	
\$PTCH1	001	03F5	0495	0499
\$READY	001	0080	0415	
\$REORD	001	0040	0473	
\$RLOAD	001	051E	0579	0581 0505
\$RMGRN	001	03C0	0237	0239
\$RSTR	001	04D6	0562	0564 0566 0571
\$RUNIT	001	0001	0309	
\$SFAID	001	050D	0567	
\$SPRNT	001	0465	0534	0536
\$SRTRN	001	04FE	0566	0567
\$STEPT	001	0002	0310	
\$SWPCR	001	0511	0572	0574
\$TABLN	001	03CB	0281	0284
\$TFLOW	001	0008	0316	
\$TRACE	001	0004	0311	
\$TRALL	001	0010	0317	
\$TROVR	001	054E	0586	0589
\$TRUNK	001	0080	0269	
\$TRVAR	001	0020	0318	
\$UNMSK	001	048D	0547	0550
\$USRDR	001	03DC	0458	0459
\$VMDEF	001	0080	0322	
\$VOLF1	001	03FE	0501	0502
\$VOLF2	001	040E	0503	
\$VOLID	001	03F6	0499	0500 0504
\$VOLR1	001	03F6	0500	0501
\$VOLR2	001	0406	0502	0503
\$WAITF	001	057F	0602	0604 0253
\$WFDEF	001	0040	0516	
\$WFLOK	001	0008	0379	
\$WFNME	001	0443	0515	0520
\$WSIND	001	0004	0376	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
\$XIND1	001	03D0	0307	0326 5373 6288 0188*
\$XIND2	001	03D1	0326	0335
\$XIND3	001	03D8	0454	0457
\$XPREC	001	0040	0319	5373 6288
\$XRSAB	001	03C7	0279	0281
\$ZTRAD	001	05A2	0608	
\$12K	001	0004	0463	
\$16CKY	001	0008	0465	
\$16K	001	0002	0462	
\$22IMP	001	0001	0460	
\$\$\$BOV	001	0800	2573	2574
\$\$\$LOA	001	0600	2571	0529
#\$@LOA	001	0013	2572	0528
#\$LOAD	001	0100	2570	0527
#BOVLY	001	0000	0001	
@@E001	001	0000	2053	2055
@@E003	001	0001	2055	2057
@@E004	001	0002	2057	2059
@@E005	001	0003	2059	2061
@@E006	001	0004	2061	2063
@@E007	001	0005	2063	2065
@@E008	001	0006	2065	2067
@@E009	001	0007	2067	2069
@@E010	001	0008	2069	2071
@@E011	001	0009	2071	2073
@@E012	001	000A	2073	2075
@@E013	001	000B	2075	2077
@@E014	001	000C	2077	2079
@@E015	001	000D	2079	2081
@@E016	001	000E	2081	2083
@@E017	001	000F	2083	2085
@@E018	001	0010	2085	2087
@@E019	001	0011	2087	2089
@@E020	001	0012	2089	2091
@@E021	001	0013	2091	2093
@@E023	001	0014	2093	2095
@@E024	001	0015	2095	2097
@@E025	001	0016	2097	2099
@@E026	001	0017	2099	2101
@@E027	001	0018	2101	2103
@@E028	001	0019	2103	2105
@@E029	001	001A	2105	2107
@@E030	001	001B	2107	2109
@@E031	001	001C	2109	2111
@@E032	001	001D	2111	2113
@@E035	001	001E	2113	2115
@@E036	001	001F	2115	2117
@@E037	001	0020	2117	2119
@@E038	001	0021	2119	2121
@@E039	001	0022	2121	2123
@@E040	001	0023	2123	2125
@@E041	001	0024	2125	2127
@@E042	001	0025	2127	2129
@@E043	001	0026	2129	2131
@@E044	001	0027	2131	2133
@@E045	001	0028	2133	2135

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E046	001	0029	2135	2137
@@E060	001	002A	2137	2139
@@E080	001	002B	2139	
@@E100	001	0000	1525	1527
@@E101	001	0001	1527	1529
@@E102	001	0002	1529	1531
@@E103	001	0003	1531	1533
@@E110	001	0004	1533	1535
@@E112	001	0005	1535	1537
@@E113	001	0006	1537	1539
@@E114	001	0007	1539	1541
@@E115	001	0008	1541	1543
@@E116	001	0009	1543	1545
@@E117	001	000A	1545	1547
@@E120	001	000B	1547	1549
@@E122	001	000C	1549	1551
@@E123	001	000D	1551	1553
@@E124	001	000E	1553	1555
@@E129	001	000F	1555	1557
@@E130	001	0010	1557	1559
@@E131	001	0011	1559	1561
@@E133	001	0012	1561	1563
@@E134	001	0013	1563	1565
@@E135	001	0014	1565	1567
@@E136	001	0015	1567	1569
@@E137	001	0016	1569	1571
@@E138	001	0017	1571	1573
@@E139	001	0018	1573	1575
@@E142	001	0019	1575	1577
@@E143	001	001A	1577	1579
@@E150	001	001B	1579	1581
@@E151	001	001C	1581	1583
@@E160	001	001D	1583	1585
@@E162	001	001E	1585	1587
@@E163	001	001F	1587	1589
@@E164	001	0020	1589	1591
@@E200	001	0021	1591	1593
@@E205	001	0022	1593	1595
@@E210	001	0023	1595	1597
@@E211	001	0024	1597	1599
@@E212	001	0025	1599	1601
@@E213	001	0026	1601	1603
@@E215	001	0027	1603	1605
@@E216	001	0028	1605	1607
@@E217	001	0029	1607	1609
@@E220	001	002A	1609	1611
@@E221	001	002B	1611	1613
@@E222	001	002C	1613	1615
@@E223	001	002D	1615	1617
@@E225	001	002E	1617	1619
@@E226	001	002F	1619	1621
@@E227	001	0030	1621	1623
@@E228	001	0031	1623	1625
@@E229	001	0032	1625	1627
@@E230	001	0033	1627	1629
@@E232	001	0034	1629	1631

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E234	001	0035	1631	1633
@@E237	001	0036	1633	1635
@@E240	001	0037	1635	1637
@@E241	001	0038	1637	1639 2528
@@E242	001	0039	1639	1641
@@E248	001	003A	1641	1643
@@E249	001	003B	1643	1645
@@E250	001	003C	1645	1647
@@E251	001	003D	1647	1649
@@E252	001	003E	1649	1651
@@E253	001	003F	1651	1653
@@E254	001	0040	1653	1655
@@E255	001	0041	1655	1657
@@E256	001	0042	1657	1659
@@E300	001	0043	1659	1661
@@E301	001	0044	1661	1663
@@E302	001	0045	1663	1665
@@E303	001	0046	1665	1667
@@E304	001	0047	1667	1669
@@E305	001	0048	1669	1671
@@E308	001	0049	1671	1673
@@E310	001	004A	1673	1675
@@E315	001	004B	1675	1677
@@E316	001	004C	1677	1679
@@E320	001	004D	1679	1681
@@E325	001	004E	1681	1683
@@E330	001	004F	1683	1685
@@E335	001	0050	1685	1687
@@E338	001	0051	1687	1689
@@E340	001	0052	1689	1691
@@E350	001	0053	1691	1693
@@E351	001	0054	1693	1695
@@E352	001	0055	1695	1697
@@E360	001	0056	1697	1699
@@E361	001	0057	1699	1701
@@E362	001	0058	1701	1703
@@E371	001	0059	1703	1705
@@E380	001	005A	1705	1707
@@E390	001	005B	1707	1709
@@E400	001	005C	1709	1711
@@E410	001	005D	1711	1713
@@E415	001	005E	1713	1715
@@E417	001	005F	1715	1717
@@E420	001	0060	1717	1719
@@E430	001	0061	1719	1721
@@E432	001	0062	1721	1723
@@E433	001	0063	1723	1725
@@E450	001	0064	1725	1727
@@E451	001	0065	1727	1729
@@E460	001	0066	1729	1731
@@E461	001	0067	1731	1733
@@E464	001	0068	1733	1735
@@E465	001	0069	1735	1737
@@E466	001	006A	1737	1739
@@E467	001	006B	1739	1741
@@E469	001	006C	1741	1743



## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E470	001	006D	1743	1745
@@E471	001	006E	1745	1747
@@E473	001	006F	1747	1749
@@E474	001	0070	1749	1751
@@E475	001	0071	1751	1753
@@E476	001	0072	1753	1755
@@E477	001	0073	1755	1757
@@E478	001	0074	1757	1759
@@E479	001	0075	1759	1761
@@E480	001	0076	1761	1763
@@E481	001	0077	1763	1765
@@E482	001	0078	1765	1767
@@E483	001	0079	1767	1769
@@E484	001	007A	1769	1771
@@E485	001	007B	1771	1773
@@E486	001	007C	1773	1775
@@E487	001	007D	1775	1777
@@E488	001	007E	1777	1779
@@E489	001	007F	1779	1781
@@E490	001	0080	1781	1783
@@E491	001	0081	1783	1785
@@E492	001	0082	1785	1787
@@E493	001	0083	1787	1789
@@E494	001	0084	1789	1791
@@E495	001	0085	1791	1793
@@E496	001	0086	1793	1795
@@E497	001	0087	1795	1797
@@E498	001	0088	1797	1799
@@E500	001	0089	1799	1801
@@E501	001	008A	1801	1803
@@E530	001	008B	1803	1805
@@E531	001	008C	1805	1807
@@E535	001	008D	1807	1809
@@E540	001	008E	1809	1811
@@E541	001	008F	1811	1813
@@E542	001	0090	1813	1815
@@E543	001	0091	1815	1817
@@E544	001	0092	1817	1819
@@E545	001	0093	1819	1821
@@E546	001	0094	1821	1823
@@E547	001	0095	1823	1825
@@E548	001	FFFF	2029	
@@E549	001	0096	1825	1827
@@E550	001	0097	1827	1829
@@E551	001	0098	1829	1831
@@E552	001	0099	1831	1833
@@E553	001	009A	1833	1835
@@E554	001	009B	1835	1837
@@E555	001	009C	1837	1839
@@E556	001	009D	1839	1841
@@E558	001	009E	1841	1843
@@E570	001	009F	1843	1845
@@E571	001	00A0	1845	1847
@@E572	001	00A1	1847	1849
@@E573	001	00A2	1849	1851
@@E574	001	00A3	1851	1853

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E575	001	FFFF	2031	
@@E578	001	00A4	1853	1855
@@E579	001	FFFF	2033	
@@E580	001	FFFF	2035	
@@E585	001	00A5	1855	1857
@@E595	001	FFFF	2037	
@@E597	001	FFFF	2039	
@@E598	001	FFFF	2041	
@@E600	001	00A6	1857	1859 3112
@@E601	001	00A7	1859	1861
@@E602	001	00A8	1861	1863
@@E603	001	00A9	1863	1865
@@E604	001	00AA	1865	1867 6283
@@E606	001	00AB	1867	1869 7845
@@E607	001	00AC	1869	1871 7840
@@E608	001	00AD	1871	1873 5397
@@E609	001	00AE	1873	1875 0201
@@E610	001	00AF	1875	1877
@@E611	001	00B0	1877	1879
@@E612	001	00B1	1879	1881 0238
@@E613	001	00B2	1881	1883
@@E614	001	00B3	1883	1885
@@E700	001	00B4	1885	1887
@@E701	001	00B5	1887	1889
@@E710	001	00B6	1889	1891
@@E712	001	00B7	1891	1893
@@E713	001	00B8	1893	1895
@@E714	001	00B9	1895	1897
@@E715	001	00BA	1897	1899
@@E716	001	00BB	1899	1901
@@E717	001	00BC	1901	1903
@@E718	001	00BD	1903	1905
@@E720	001	00BE	1905	1907
@@E721	001	00BF	1907	1909
@@E723	001	00C0	1909	1911
@@E724	001	00C1	1911	1913
@@E725	001	00C2	1913	1915
@@E726	001	00C3	1915	1917
@@E727	001	00C4	1917	1919
@@E728	001	00C5	1919	1921
@@E729	001	00C6	1921	1923
@@E730	001	00C7	1923	1925
@@E732	001	00C8	1925	1927
@@E752	001	00C9	1927	1929
@@E753	001	00CA	1929	1931
@@E754	001	00CB	1931	1933
@@E755	001	00CC	1933	1935
@@E756	001	00CD	1935	1937
@@E757	001	00CE	1937	1939
@@E758	001	00CF	1939	1941
@@E759	001	00D0	1941	1943
@@E760	001	00D1	1943	1945
@@E761	001	00D2	1945	1947
@@E762	001	00D3	1947	1949
@@E763	001	00D4	1949	1951
@@E764	001	00D5	1951	1953

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E765	001	00D6	1953	1955
@@E766	001	00D7	1955	1957
@@E767	001	00D8	1957	1959
@@E768	001	00D9	1959	1961
@@E769	001	00DA	1961	1963
@@E770	001	00DB	1963	1965
@@E771	001	00DC	1965	1967
@@E772	001	00DD	1967	1969
@@E773	001	00DE	1969	1971
@@E774	001	00DF	1971	1973
@@E775	001	00E0	1973	1975
@@E776	001	00E1	1975	1977
@@E777	001	00E2	1977	1979
@@E778	001	00E3	1979	1981
@@E779	001	00E4	1981	1983
@@E780	001	00E5	1983	1985
@@E781	001	00E6	1985	1987
@@E782	001	00E7	1987	1989
@@E783	001	00E8	1989	1991
@@E784	001	00E9	1991	1993
@@E785	001	00EA	1993	1995
@@E786	001	00EB	1995	1997
@@E790	001	00EC	1997	1999
@@E791	001	00ED	1999	2001
@@E792	001	00EE	2001	2003
@@E793	001	00EF	2003	2005
@@E794	001	00F0	2005	2007
@@E795	001	00F1	2007	2009
@@E796	001	00F2	2009	2011
@@E797	001	00F3	2011	2013
@@E798	001	00F4	2013	2015
@@E800	001	FFFF	2043	
@@E801	001	FFFF	2045	
@@E802	001	FFFF	2047	
@@E803	001	FFFF	2049	
@@E804	001	FFFF	2051	
@@E900	001	00F5	2015	2017 2524
@@E901	001	00F6	2017	2019 2526
@@E902	001	00F7	2019	2021 2525
@@E903	001	00F8	2021	2023 2527
@@E905	001	00F9	2023	2025
@@E906	001	00FA	2025	2027
@@E910	001	00FB	2027	2523
@ARR	001	0008	0016	3994 4119 4135 4297 5711 6101
@ASIGN	001	007C	0071	
@ASTER	001	005C	0069	
@BCRDL	001	0050	0088	
@BE	001	0081	0043	
@BF	001	0090	0052	
@BH	001	0084	0041	
@BL	001	0082	0042	
@BLANK	001	0040	0065	
@BM	001	0082	0054	
@BNE	001	0001	0046	
@BNH	001	0004	0044	
@BNL	001	0002	0045	

CROSS REFERENCE																		
SYMBOL	LEN	VALUE	DEFN	REFERENCES												VER 15, MOD 00	20/07/20	PAGE 183
@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	2680	2685	2685	2694	2702	2706	2722	2727	2731	2759	2759	2771			
				2771	2777	2778	2782	2791	2795	2806	2806	2812	2812	2813	2814			
				2814	2820	2820	2824	2830	2830*	2831	2831*	2832	2884	2894	2898			
				2902	2914	2918	2925	2925	2929	2929	2933	2937	2944	3101	3136			
				3142	3143	3149	3153	3168	3183	3304	3309	3309	3333	3334	3353			
				3354	3359	3360	3397	3398	3406	3406	3412	3412	3413	3415	3415			
				3421	3421	3425	3431	3431*	3432	3471	3499	3502	3528	3548	3552			
				3719	3728	3849	3855	3855	3858	3874	3874	3882	3883	3903	3908			
				3909	3909	3915	3917	3918*	3925	3926	3927	3933	3934	3936	3936			
				3942	3943	3944	3944	3951	3951	3952	3958	3958*	3959	3959*	3960			
				3968	3969	3970	3974	3979	3980	3980	3981	3981	3982	3983	3994			
				3998	4034	4047	4049	4054	4055	4056	4056	4057	4058	4061	4063			
				4064	4065	4066	4072	4073	4074	4075	4076	4077	4082	4084	4090			
				4096	4097*	4104	4104	4106	4119	4123	4135	4136	4137	4138	4139			
				4141	4142	4143	4144	4144	4145	4146	4147	4147	4148	4149	4150			
				4151	4152	4153	4195	4202	4203	4209	4217	4218	4219	4230	4235			
				4237	4238*	4248	4249	4252	4253	4254	4255	4256	4258	4259	4260			
				4261	4262	4271	4272	4273	4278	4297	4301	4439	4447	4448	4455			
				4456	4456	4476	4490	4491	4495	4497	4502	4511	4513	4515*	4522			
				4522	4523	4524	4531	4532	4540	4550	4550	4556	4556	4557	4558			
				4558	4564	4564	4568	4569	4569	4575	4575*	4576	4576*	4577	4608			
				4620	4626	4628	4633	4638	4647	4662*	4663	4668	4678	4685	4686			
				4695	4831	4835	4839	4849	4854	4855	5016	5028	5061	5077	5084			
				5085	5087	5088	5091	5098	5101	5105	5115	5121	5125	5132	5137			
				5326	5340	5362	5365	5366	5375	5376	5380	5381	5395	5403	5406			
				5556	5569	5573	5574	5595	5600	5601	5605	5607	561					

@BT      001    0010   0051

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SYMBOL	LEN	VALUE	DEFN	REFERENCES								VER 15, MOD 00		20/07/20		PAGE 184	
@BZ	001	0081	0055														
@B1	001	0001	0063	2760	2772	3890	3926	3926	3926*	3942*	3943	4073	4073	4073*	4218		
				4218	4218*	4226	4447	4472	4522	4557	4569	4620	4638	4651	4656		
				4685	5347												
@CADDR	001	0002	0141	1374	1375	1376	2477	2504	2806	2812	2814	2820	2852	2854	2855		
				2861	2862	3406	3412	3415	3421	3438	3441	3442	3443	3449	3452		
				3453	3858	3909	3933	3936	3944	3951	3980	3981	3982	4018	4019		
				4023	4026	4027	4090	4096	4104	4187	4189	4523	4550	4556	4558		
				4564	4585	4587	4588	4589	4590	4712	5178	5183	5188	5193	5198		
				5203	5390	5395	5440	7361	7680	7860	7884	7885	8050	9006	9370		
				9680	9828	0195	0253	0292	0299	0305	0322	0324	0326	0341	0357		
				0360	0361	0362	0423	0458	0493	0506	0512	0514	0515	0516	0539		
				0540	0541	0543	0544	0545	0547	0548	0549						
@CARDL	001	0060	0087														
@CHARA	001	00C1	0072														
@CHARF	001	00C6	0073														
@CHARR	001	00D9	0074														
@CHARZ	001	00E9	0075														
@CLOFF	001	0010	0094														
@CLON	001	0011	0093														
@COMMA	001	006B	0066														
@CPLUS	001	004E	0079														
@DADDR	001	0002	0139														
@DBFR1	001	0004	0128														
@DBFR2	001	0005	0129														
@DCALK	001	0001	0081														
@DCBCY	001	0009	0114	1203													
@DCBT1	001	0050	0116	1206													
@DCNT	001	0003	0127														
@DCST1	001	0040	0115	1204													
@DCTRL	001	0000	0124														
@DCYL	001	0001	0125														
@DD2	001	0003	0030														
@DGET	001	0001	0133	0337	0526												
@DOLAR	001	005B	0068														
@DOP2	001	0004	0028														
@DPLNG	001	0006	0131														
@DPOS	001	0000	0132														
@DPUT	001	0002	0134														
@DSAD	001	0002	0126														
@DSBCY	001	0004	0105	1141													
@DSCS1	001	0000	0106	1142													
@DSIVF	001	0003	0137														
@DSPIN	001	0002	0130														
@DTRSZ	001	0018	0085														
@DVBCY	001	0007	0107	1200													
@DVRFY	001	0031	0135														
@DWAIT	001	00FF	0136														
@DWBCY	001	0005	0102	1197													
@DWSIZ	001	00C0	0104														
@DWTB1	001	0003	0103	1198													
@DZERO	001	00F0	0064														
@D1	001	0002	0026	2727*	2731*	2759*	2771*	2778*	2902*	2929*	3334*	3354*	3360*	3398*	4532*		
				4540*	4569	5573*	5595*	5612*	5645*	5651*	0406	0441	0476	0571	0572		
				0573													
@EOF	001	001C	0077														

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
@EOFTC	001	0075	0160	
@EOS	001	001E	0076	1213 5350
@FDDBC	001	0000	0193	
@FDE1	001	000C	0198	
@FDFNA	001	000B	0196	
@FDHLN	001	0002	0206	
@FDLNC	001	0002	0191	
@FDNSC	001	0003	0208	
@FDSD	001	0000	0204	
@FLACE	001	0009	0195	
@FLDBC	001	0001	0194	
@FLENT	001	0004	0199	
@FLFNA	001	0002	0197	
@FLHLN	001	0002	0207	
@FLLNC	001	0002	0192	
@FLNSC	001	0001	0209	
@FLSD	001	0001	0205	
@HDRLN	001	0007	0092	
@IAR	001	0010	0017	
@INDEX	001	0001	0154	0155
@INST3	001	0003	0032	2727 2778 5687
@INST4	001	0004	0033	0408 0443 0478
@INST5	001	0005	0034	
@INST6	001	0006	0035	
@I1IAR	001	00C0	0020	
@LINSZ	001	00F4	0084	
@MAPEN	001	0005	0089	
@MINCR	001	2000	0083	
@MINUS	001	0060	0080	
@NOP	001	0080	0040	5686 5820
@NUMBR	001	007B	0070	
@OPD2	001	0004	0029	
@OP1	001	0003	0027	3101* 3143 3153 3168 3858* 3994* 4096* 4119* 4135* 4297* 5711* 6101* 8014* 8971*
@OP2	001	0005	0031	
@PCTRL	001	0000	0147	
@PDATA	001	0003	0149	
@PGCSZ	001	0020	0082	0083
@PPLNG	001	0004	0146	
@PRCNT	001	0001	0148	
@PRETR	001	00C0	0152	
@PRINT	001	0040	0150	0152
@PSR	001	0004	0015	
@PWAIT	001	00FF	0156	
@P1IAR	001	0020	0018	
@P2IAR	001	0040	0019	
@Q	001	0001	0024	3969* 3998* 4065* 4123* 4141* 4254* 4261* 4301* 4620* 4638* 5600* 5685 5819 6553* 8323* 8342* 8728* 8747*
@REGL	001	0002	0012	
@RETRN	001	0080	0151	0152
@RLDWN	001	004F	0157	
@RTRNC	001	0080	0159	
@SBLNL	001	0002	0182	
@SCTSΖ	001	0100	0099	
@SDFLN	001	0007	0090	
@SDF0	001	0000	0164	



## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 20/07/20 PAGE 186

@SDF1	001	0001	0165												
@SDF2	001	0002	0166												
@SDF3	001	0003	0167												
@SDLN	001	0005	0168												
@SECCY	001	0030	0086												
@SIST	001	0001	0179												
@SLASH	001	0061	0067												
@SLAST	001	0002	0181												
@SMIDL	001	0003	0180												
@SNULL	001	0080	0171												
@SONLY	001	0000	0178												
@STEXT	001	0007	0170												
@STYPE	001	0006	0169												
@SYLVL	001	0005	2559												
@TBCNT	001	0000	0158												
@TBLEF	001	0010	0153	0155											
@TBLIX	001	0011	0155												
@UCB	001	0087	0039	5820											
@UPARW	001	005A	0078	2542											
@VADDR	001	0002	0140	0934	1370	1382	1383	1384	1384	1398	1401	1403	1427	1428	1429
				1467	1470	1473	1476	1479	1482	1485	1494	1497	1500	1503	1506
				2478	2504	2701	2702	2713	2721	2722	2863	2888	2893	2894	2973
				3190	3884	4007	4047	4056	4136	4137	4144	4147	4208	4209	4210
				4271	4277	4278	4308	4310	4322	4591	4694	4695	4708	4835	4847
				4848	4849	4854	4855	4880	4886	5039	5049	5055	5091	5115	5131
				5132	5136	5137	5210	5340	5365	5403	5404	5405	5406	5420	5441
				5443	5660	5679	5803	5813	5942	5943	5954	5963	5964	5972	6052
				6080	6127	6129	6266	6297	6298	6304	6337	6338	6361	6399	6543
				6547	6590	6591	6592	6599	6626	6627	6639	6927	6928	6975	7004
				7029	7036	7039	7826	7852	7865	7866	7892	8170	8171	8172	8193
				8389	8390	8411	8795	8796	8818	9131	9148	9149	9153	9158	9194
				9195	9222	9602	9603	9616	9621	9622	9630	0261	0265	0269	0273
				0275	0279	0283	0284	0323	0329	0399	0405	0434	0440	0469	0475
				0489	0518	0563	0564	0566	0568						
@VENTA	001	0056	0112	1201	1456										
@VMDDV	001	00FE	0113												
@VMFD1	001	0000	0108												
@VMFD2	001	0001	0109												
@VMRS3	001	0002	0111												
@VMTRL	001	0001	0110												
@VOLID	001	0006	0091												
@VQ	001	0001	0025												
@WSFIT	001	0500	0100												
@WSTBL	001	0503	0101												
@XR	001	0002	0014	2694*	2695	2706*	2707	2743*	2744	2744*	2753	2760	2760*	2765	2772
				2772*	2773	2777	2782*	2783	2789*	2790	2795*	2796	2824*	2906*	2907
				2907*	2909	2914	2918*	2919	2937*	2938	2944*	2945	3100*	3101	3105
				3127*	3131	3135	3140*	3141	3143*	3148	3153*	3158	3168*	3173	3177
				3182	3324	3329	3331	3336	3338	3343*	3344	3346	3348	3364*	3365
				3425*	3481*	3488*	3499*	3500	3500*	3501	3506	3506*	3507	3528*	3529
				3542*	3548*	3549	3719*	3720	3726*	3727	3882*	3885*	3915*	3916	3919*
				3925*	3934*	3935	3952*	3968*	3971	3995	3999*	4048	4054*	4057*	4060
				4064*	4072*	4075*	4106*	4120	4138*	4142*	4145*	4148*	4150*	4152*	4202*
				4217*	4221	4235*	4236	4239*	4248*	4251	4253*	4258*	4260*	4272*	4298
				4464	4489	4491*	4492	4497*	4498	4511*	4512	4516*	4568*	4616*	4620
				4625	4627	4638	4644*	4645	4645*	4646	4651	4668*	4678*	4679	4686*

CROSS REFERENCE															
SYMBOL	LEN	VALUE	DEFN	REFERENCES											
VER 15, MOD 00 20/07/20 PAGE 187															
				4687	4831*	4832	4839*	4840	5028*	5029	5061*	5062	5070	5078	5084
				5085*	5086	5086*	5087	5089	5090	5090*	5091	5098	5100	5105*	5120
				5125*	5126	5350	5362*	5366*	5367	5381*	5382	5387*	5388	5388*	5389
				5403	5404	5405	5406	5600	5601*	5603	5603*	5604	5606	5611	5612
				5640*	5654	5664*	5706*	5712	5714*	5936*	5947*	5981	6030*	6031	6060*
				6096*	6102	6104*	6259*	6260	6271*	6276*	6277	6303*	6304	6313	6318
				6323	6353*	6354	6534*	6535	6551*	6553	6558*	6559	6562*	6563	6582*
				6583	6600*	6601	6609*	6610	6618*	6619	6767*	6768	6774*	6775	6908*
				6909	6920*	6921	6932*	6952*	6953	6959*	6960	6984*	6985	6991*	6992
				7150*	7151	7157*	7158	7286*	7287	7329*	7330	7336*	7337	7493	7502*
				7503	7628*	7629	7648*	7649	7655*	7656	7825*	7826	7835	7852	7853*
				7854	8001*	8002	8014	8018*	8019	8025*	8026	8163*	8164	8323	8328
				8330	8342	8347*	8348	8348*	8349	8354	8359*	8374*	8375	8381*	8382
				8553	8558*	8559	8566*	8567	8573*	8574	8583	8728	8733	8735	8747
				8753*	8754	8754*	8755	8760	8765*	8780*	8781	8787*	8788	8957*	8958
				8971	8975*	8976	8982*	8983	9124*	9125	9135*	9141*	9142	9162*	9163
				9179*	9180	9186*	9187	9330*	9331	9337*	9338	9346	9470*	9471	9595*
				9596	9607*	9608	9611*	9640*	9641	9647*	9648	9653*	9654	9788*	9789
				9795*	9796	9804	9926*	9927	0183*	0207*	0208	0231*	0249*	0309*	0398*
				0399	0403*	0405	0417*	0418*	0419	0433*	0434	0438*	0440	0452*	0453*
				0454	0468*	0469	0473*	0475	0487*	0488*	0489	0503*	0504	0674*	0675
				0787*	0788										
@ZERO	001	0000	0062	2731	2898	2902	2909	3317	3386	3856	3892	3902	4007	4027	4228
				4229	4308	4455	4474	4475	4487	4489	4532	4663	5349	5646	6042
				6942	7483	9136	0188								
B\$ADMK	001	0001	0838												
B\$ADSW	001	159D	0837												
B\$ARMK	001	0001	0823	5590	6025	7302									
B\$ARSW	001	0A45	0822	5590	6025	7302									
B\$BABF	001	1D00	0628												
B\$BCKT	001	1590	0750	4047	4136	5115	5340	5365	5660	6052	6975	7826			
B\$BDPL	001	19E8	0702	0231											
B\$BDSA	001	19EA	0703	0232											
B\$BINO	001	1A6A	0766	3131	3158	3177	4696	4847	5972	8170	8				

CROSS REFERENCE																
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 20/07/20 PAGE 188											
B\$CDUM	001	0000	0677	0676												
B\$CEND	001	0600	0675													
B\$CEOF	001	0600	0676													
B\$CFOR	001	0600	0648													
B\$CGET	001	06A3	0656													
B\$CGSB	001	0690	0654													
B\$CGTO	001	06B3	0652													
B\$CIFA	001	0600	0650													
B\$CIFC	001	0600	0651													
B\$CIMG	001	0600	0665													
B\$CINP	001	0600	0660													
B\$CLTA	001	0000	0642													
B\$CLTC	001	0669	0646													
B\$CLTM	001	0600	0644													
B\$CMAT	001	0600	0666													
B\$CMGT	001	0665	0667													
B\$CMIN	001	06D3	0668													
B\$CMPR	001	069B	0671													
B\$CMPT	001	069B	0670													
B\$CMPU	001	0600	0672													
B\$CMRD	001	06D0	0669													
B\$CNXT	001	0600	0649													
B\$CPCT	001	0CA8	0731	5646	5670*	6042	6066*	6942	7008*							
B\$CPRT	001	0600	0663													
B\$CPRU	001	0600	0664													
B\$CPSE	001	06E7	0673													
B\$CPUT	001	0600	0657													
B\$CPWA	001	0CA6	0802													
B\$CRAD	001	150D	0772	4236*	4512*											
B\$CRBS	001	1509	0774	4237*	4513*											
B\$CREA	001	06CF	0661													
B\$CREM	001	0000	0638													
B\$CRMK	001	0001	0850	2748	3125											
B\$CRSR	001	06E3	0662													
B\$CRST	001	06A6	0658													
B\$CRSW	001	0E42	0849	3125	3902	4229	4475									
B\$CRTN	001	06CF	0655													
B\$CSBF	001	0600	0625	0639	0640	0641	0644	0645	0646	0647	0648	0649	0650	0651	0652	
				0653	0654	0655	0656	0657	0658	0659	0660	0661	0662	0663	0664	
				0665	0666	0667	0668	0669	0670	0671	0672	0673	0674	0675	0678	
				0679	0680	0681	0682	2862	3443	4019	4189	4590	4712	0324		
B\$CSCN	001	14B0	0747	4224	4470	4486	5586	6015	7280	7321	7501	7622	7996	8724	8766	
				8952	9326	9784										
B\$CSMK	001	0007	0853	5582	6010	7312										
B\$CSSW	001	14BC	0852	5582	6010	7312										
B\$CSTP	001	06D6	0674													
B\$CSTR	001	14CC	0771	4240	4517											
B\$CSXA	001	2000	0631	2855	3453	4588	0362									
B\$CTYP	001	0A5F	0725	5072*	5639*	6037*	6936*									
B\$CVPD	001	0C5D	0730	0220												
B\$CVPG	001	0CA5	0729													
B\$CWRK	001	F500	0799	4012	4170	4313										
B\$DIST	001	0700	0691	2955	3184	3535	3732	4285	4701	4864	5142	5410	5695	5998	6369	
				6633	6780	6970	7163	7342	7506	7661	7870	8031	8180	8396	8588	

CROSS REFERENCE																			
SYMBOL	LEN	VALUE	DEFN	REFERENCES													VER 15, MOD 00	20/07/20	PAGE 189
B\$DL4T	001	1A6B	0768	0184	0243	0250													
B\$DPWA	001	0E46	0803																
B\$DST2	001	073A	0692	2825	3426	3953	4107	4570	4669	0310									
B\$ERMK	001	0007	0826	6903	0175														
B\$ERSW	001	0993	0825	6903	0175														
B\$FACA	001	0E53	0734	3100	6276	6303													
B\$FAIS	001	15AC	0751	0283															
B\$FAIW	001	15A0	0752	0284															
B\$FCON	001	0A46	0724	5110	5364	5641	6038	6937											
B\$FORT	001	1B0E	0793	0326															
B\$FPWA	001	15AC	0804																
B\$FRMK	001	0007	0844																
B\$FRSW	001	16CC	0843																
B\$FSC1	001	0E4C	0735	6313*															
B\$FSC2	001	0E4D	0736	6323*	6331*														
B\$FSMK	001	0007	0835	6343	6348														
B\$FSSW	001	0E5C	0834	6343*	6348*														
B\$FSVA	001	0E4F	0737	6337*	6338*														
B\$FTND	001	1B0B	0795	5390															
B\$FTPT	001	1B0D	0794	5387	5389*	5390	5395*	7825	7860*	0195									
B\$FVME	001	15A2	0756	5193															
B\$FVMP	001	15A4	0757	5198															
B\$FVMS	001	15A6	0758	5203															
B\$FVPE	001	15A8	0753	5178															
B\$FVPP	001	15AA	0754	5183															
B\$FVPS	001	15AC	0755	5188															
B\$GBSW	001	08AF	0828																
B\$GBWK	001	0001	0829																
B\$GETC	001	0867	0705	2690	2735	3091	3095	3117	3162	3181	3315	3319	3330	3337	3339				
				3381	3523	3706	3710	3866	3973	4041	4083	4105	4220	4246	4284				
				4457	4485	4501	4539	4624	4822	5066	5083	5093	5099	5335	5346				
				5356	5565	5932	6255	6308	6314	6325	6332	6524	6575	6758	6916				
				7141	7279	7294	7474	7495	7621	7635	7640	7817	7995	8009	8155				
				8315	8327	8366	8544	8579	8720	8732	8772	8951	8965	9120	9165				
				9171	9325	9345	9591	9783	9803										
B\$GPTR	001	0878	0707	2789	3140	3364	3726	3885	3919	3999	4239	4516	4616	5640	5714				
				6030	6104	6271	6551	6774	7157	7336	7655	8359	8573	8765	9135				
				9162	9611	9647													
B\$GTBF	001	1E00	0629																
B\$IFMK	001	0007	0847																
B\$IFSW	001	16E5	0846																
B\$INVT	001	1B38	0787	2743	2874	2906													
B\$KWMK	001	0001	0841																
B\$KWSW	001	159E	0840	3892*	4228*	4474*	4487*												
B\$LBAS	001	185E	0778	3918															
B\$LBSV	001	18E7	0776	3917*															
B\$LDRP	001	1A00	0626	0261	0261*	0265*	0269*	0275*	0279*	0283*	0284*	0375*	0379*	0380*	0381*				
				0385*	0389	0389*	0390	0390*	0403	0438	0473	0512							
B\$LINE	001	07D0	0693	6907															
B\$LIST	0																		

## CROSS REFERENCE

SYMBOL LEN VALUE DEFN REFERENCES VER 15, MOD 00 20/07/20 PAGE 190

B\$MBSW	001	1903	0861	3389*	3391*										
B\$MFBK	001	1B8F	0789	3329*	3336*	3338*	3343	3372	3374	3481	3488	3494*	3495*	3501	3542
B\$MGMK	001	0007	0859	3388	3392	3482	3490	3541	3544						
B\$MGSW	001	18FF	0858	3388*	3392*	3482*	3490*	3541*	3544*						
B\$MPMK	001	0007	0865	3316	3320										
B\$MPSW	001	1981	0864	3316*	3320*										
B\$MRMK	001	0007	0856												
B\$MRSW	001	0DDE	0855												
B\$NUMC	001	0873	0706	2689*	3090*	3314*	3480*	3487*	3540*	3705*	3865*	4040*	4223*	4245*	4454*
				4469*	4484*	4538*	4632*	4821*	5024*	5089*	5106*	5334*	5345*	5355*	5363*
				5564*	5630*	5931*	6254*	6324*	6523*	6757*	6915*	6938*	7140*	7278*	7293*
				7317*	7473*	7620*	7639*	7816*	7994*	8008*	8154*	8314*	8336*	8365*	8543*
				8548*	8719*	8741*	8771*	8950*	8964*	9119*	9170*	9324*	9344*	9590*	9782*
				9802*											
B\$NXMK	001	0007	0832	2951	4279	4860	5138	6365	6628	6966	7864	9199			
B\$NXSW	001	071D	0831	2951*	4279*	4860*	5138*	6365*	6628*	6966*	7864*	9199*			
B\$PARP	001	0A41	0714												
B\$PBNL	001	0A01	0720	6905*											
B\$PCAD	001	0A40	0715	2695*	2707*	2783*	2796*	2919*	2938*	2945*	3507*	3529*	3549*	3720*	3995*
				4120*	4298*	4492*	4498*	4679*	4687*	4832*	4840*	5029*	5062*	5126*	5367*
				5382*	5712*	6102*	6260*	6354*	6535*	6559*	6563*	6583*	6601*	6610*	6619*
				6768*	6909*	6921*	6953*	6960*	6985*	6992*	7151*	7287*	7330*	7503*	7629*
				7649*	7854*	8002*	8019*	8164*	8375*	8382*	8559*	8567*	8781*	8788*	8958*
				8976*	9125*	9142*	9180*	9187*	9331*	9338*	9471*	9596*	9608*	9641*	9654*
				9789*	9796*	9927*	0208*	0675*	0788*						
B\$PCDL	001	09D3	0719	5405	6298										
B\$PCPG	001	0A35	0718	0269											
B\$PECT	001	0A44	0722	0190											
B\$PERC	001	0A39	0721	3112*	3317*	3386	5397*	6283*	7840*	7845*					
B\$PFAE	001	0033	0712	3111	5396	6282	7831								
B\$PFCL	001	009D	0713	0180	0215										
B\$PFNC	001	094E	0710	3111*	5396*	6282*	7831*	0180*	0215*	0226*					
B\$PFWP	001	0015	0711	0226											
B\$PNBY	001	0A41	0716	2696*	2708*	2784*	2797*	2920*	2939*	2946*	3508*	3530*	3550*	3721*	3996*
				4121*	4299*	4493*	4499*	4680*	4688*	4833*	4841*	5034*	5368*	5380*	5665*
				5707*	5937*	5948*	6061*	6097*	6295*	6355*	6536*	6560*	6564*	6584*	6602*
				6611*	6620*	6769*	6910*	6922*	6954*	6961*	6986*	6993*	7152*	7288*	7331*
				7504*	7630*	7650*	7855*	8003*	8020*	8165*	8376*	8383*	8560*	8568*	8782*
				8789*	8959*	8977*	9126*	9143*	9181*	9188*	9332*	9339*	9472*	9597*	9609*
				9642*	9655*	9790*	9797*	9928*	0209*	0676*	0789*				
B\$PPWA	001	0A35	0801												
B\$PRM1	001	1AF3	0805	4651*	4685										
B\$PTBF	001	1F00	0630												
B\$PUTC	001	093A	0709	2697	2709	2785	2798	2921	2940	2947	3113	3367	3379	3476	3509
				3518	3531	3539	3551	3722	3997	4122	4300	4494	4500	4681	4689
				4834	4842	5035	5092	5116	5127	5369	5383	5398	5713	6103	6261
				6284	6296	6356	6537	6561	6565	6585	6603	6612	6621	6770	6911
				6923	6955	6962	6987	6994	7153	7289	7332	7505	7631	7651	7846
				7856	8004	8021	8166	8377	8384	8561	8569	8783	8790	8960	8978
				9127	9144	9182	9189	9333	9340	9473	9598	9610	9643	9656	9791
				9798	9929	0181	0210	0216	0227	0677	0790				
B\$PVAD	001	0A43	0717	2701	2713	2721	2888	2893	3884	4210	4694	4835	4848	5039	5049
				5131	5404	5942	5954	5963	6266	6297	6543	6592	6906*	6927	8171
				8389	8795	9131	9148	9602	9616	9621	0265				
B\$RMRK	001	1AE6	0770	3387	9477	9933	0681	0794							
B\$RTRN	001	1AF5	0806	3856	3858	3935*	3982*	4096							

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B\$SABF	001	1C00	0627	0328
B\$SCAN	001	1514	0749	3522 4059 4062 4140 4250 4257 4488 4496 5344 5348 5357 5578 6006 6347 6608 7298 8319 8360 9175
B\$SCAT	001	13C8	0744	0545
B\$SCON	001	001B	0727	5639 6037 6936
B\$SCVT	001	12E0	0742	0385
B\$SDPL	001	07DA	0695	0249
B\$SFAB	001	0E48	0739	0279
B\$SFNT	001	143C	0745	0549
B\$SLDT	001	109C	0741	0379 0380 0381
B\$SLVT	001	1062	0740	0375
B\$SNAT	001	131A	0743	0541
B\$SPAT	001	07E0	0696	
B\$SSTA	001	1BAC	0791	3890* 4226* 4472* 5347* 5349*
B\$STAS	001	061B	0680	
B\$STIF	001	0606	0682	
B\$STMA	001	061B	0681	
B\$STML	001	0600	0679	
B\$STRL	001	0600	0678	
B\$SVRB	001	0E46	0738	0273* 0275
B\$SYMB	001	0DBC	0733	3099 3891 4042 4227 4247 4473 5339 6272 7821
B\$TCD2	001	0001	0811	4651
B\$TLTH	001	0002	0812	0813 4645
B\$TOD1	001	0000	0810	4646
B\$TOTB	001	1AF8	0813	4644
B\$TTAB	001	1AFA	0809	0813
B\$TYPE	001	0739	0694	
B\$WORK	001	15A0	0798	3926 4073 4137 4218 6547
B\$ZDBN	001	19F2	0765	3121 3166 4544 4826 5968 8159 8370 8776 9137 9626
B@ABAS	001	0007	1398	
B@ACD1	001	0001	1395	1396 3158*
B@ACD2	001	0003	1396	1397 3177* 0399 0419* 0564
B@AFLG	001	0000	1390	3105 3135* 3148* 3173*
B@ALLA	001	005C	1215	
B@AMAX	001	0005	1397	1398
B@BLNK	001	0040	1224	3494 3495 6331
B@BLSZ	001	0100	1349	1488 1491 1494 1509 1512 2855 2861 2883 3438 3453 3470 4018 4026 4033 4194 4588 4589 4607 0322 0323 0328 0362 0370 0557
B@BREQ	001	0084	1004	8424 8831
B@BRHI	001	0088	1005	8427 8834
B@BRLO	001	0082	1003	8430 8837
B@BRNE	001	0094	1007	8433 8442 8840 8849
B@BRNH	001	0098	1008	8436 8843
B@BRNL	001	0092	1006	8439 8846
B@CADD	001	0006	0873	
B@CADF	001	0058	0914	7348 7667 8037 8994 9357 9815
B@CBAS	001	0003	1401	
B@CBNX	001	004A	0907	6114 9669
B@CBRA	001	0046	0905	2841 4006 4307 4318 4873 5148 6375 6645 6648 7022 7891 8186
B@CBRC	001	0044	0904	4705 8403 8810
B@CBRD	001	0048	0906	6389
B@CBRS	001	004C	0908	2967 7031 9212 0687
B@CCLS	001	005E	0917	9818
B@CCMC	001	0042	0903	4709 8808
B@CCMF	001	0040	0902	8402
B@CCNT	001	001F	1327	



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@CCSA	001	003E	0901	9214
B@CDCA	001	006A	0923	5151
B@CDDL	001	006C	0924	5154
B@CDIV	001	000C	0876	
B@CDMN	001	0001	1400	1401 3131* 0434 0454* 0566
B@CDWA	001	006E	0925	5422 6378
B@CEOF	001	0070	0926	0350
B@CEOP	001	0068	0922	
B@CFCI	001	0016	0881	
B@CFN0	001	0012	0879	4172 4321 4601
B@CFN1	001	0014	0880	
B@CFOR	001	004E	0909	5416
B@CGET	001	0052	0911	2844 3738 7670
B@CHAR	001	0000	1340	2790 3141 3182 3324 3329 3331 3336 3338 3344 3346 3348 3365
				3727 3971 4048 4060 4221 4251 4464 4620 4625 4627 4638 5070
				5078 5084 5098 5100 5120 5350 5600 5654 5981 6031 6313 6318
				6323 6553 6775 7158 7337 7493 7656 8026 8323 8328 8330 8342
				8553 8574 8583 8728 8733 8735 8747 8983 9163 9346 9648 9804
B@CHLT	001	0004	0872	9483
B@CIEX	001	00C5	1300	5177 5192
B@CIMH	001	0066	0921	7019
B@CINI	001	0056	0913	2961
B@CIPI	001	00D7	1303	5182 5197
B@CIS2	001	00E2	1306	5187 5202
B@CMF1	001	0018	0882	3595 3599 3603 6786 7168 8040 8594 8597 8997 9672
B@CMF2	001	001A	0883	3561 3587 3591
B@CMF3	001	001C	0884	3575 3579 3583
B@CMA	001	006B	1235	5654 5731 5752 5773 9163
B@CMPY	001	000A	0875	
B@CMSM	001	001E	0885	3558
B@CNEG	001	0010	0878	
B@CNXT	001	0050	0910	5419
B@COLN	001	007A	1237	
B@CPMK	001	00FF	1145	1149 1153 1154 1188
B@CPRS	001	0060	0918	5809
B@CPRU	001	0062	0919	6117 7025 9675
B@CPUT	001	0054	0912	7351
B@CPWR	001	000E	0877	
B@CRSR	001	005A	0915	0800
B@CRST	001	005C	0916	9360
B@CSA1	001	0036	0897	
B@CSA2	001	0038	0898	
B@CSB1	001	003A	0899	4178
B@CSC1	001	002A	0891	4175
B@CSD0	001	002E	0893	
B@CSD1	001	0030	0894	
B@CSD2	001	0032	0895	
B@CSF1	001	0022	0887	
B@CSF2	001	0024	0888	
B@CSTA	001	0034	0896	2838 4160 4312 4870 6111 6651 9209 9666
B@CSTC	001	0028	0890	4011 4163 4169 5812 6120 7028
B@CSTF	001	0020	0886	4181 5431 6654
B@CSTH	001	0064	0920	
B@CSTX	001	003C	0900	2964 4166 4315 4598
B@CSUB	001	0008	0874	
B@CSVC	001	0002	0871	9939 0349

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@CTYP	001	0020	1325	
B@CUSC	001	002C	0892	4009 4324 7518
B@CUSF	001	0026	0889	4184 6657
B@CVAR	001	005B	1214	
B@DAMK	001	0080	1393	3105 3135
B@DASA	001	00FF	1154	
B@DASC	001	0040	1158	
B@DASM	001	0038	1156	
B@DCGT	001	0050	1164	
B@DCLS	001	0054	1170	
B@DDAT	001	0024	1150	
B@DDEF	001	0034	1151	
B@DDIM	001	0004	1152	
B@DDUM	001	00FF	1188	
B@DEC0	001	00F0	1283	
B@DEC1	001	00F1	1284	
B@DEC2	001	00F2	1285	
B@DEC3	001	00F3	1286	
B@DEC4	001	00F4	1287	
B@DEC5	001	00F5	1288	
B@DEC6	001	00F6	1289	
B@DEC7	001	00F7	1290	
B@DEC8	001	00F8	1291	
B@DEC9	001	00F9	1292	
B@DEND	001	0058	1186	1187 0358
B@DEOF	001	0058	1187	
B@DFOR	001	0028	1159	
B@DGET	001	0040	1167	
B@DGSB	001	0020	1165	
B@DGTO	001	0044	1163	
B@DIFA	001	0048	1161	
B@DIFC	001	004C	1162	
B@DIGS	001	007B	1217	
B@DIMG	001	003C	1176	
B@DINP	001	0000	1171	2853
B@DIVD	001	0061	1234	
B@DLTA	001	00FF	1153	
B@DLTC	001	0040	1157	
B@DLTM	001	0038	1155	
B@DL01	001	0001	1468	1471 0265*
B@DL02	001	0003	1471	1474 0269*
B@DL03	001	0005	1474	1477 0275*
B@DL04	001	0007	1477	1480 0261 0261* 0279*
B@DL05	001	0009	1480	1483 0283*
B@DL06	001	000B	1483	1486 0284*
B@DL07	001	0045	1486	1489 0375*
B@DL08	001	0145	1489	1492 0379*
B@DL09	001	0245	1492	1495 0380*
B@DL10	001	0289	1495	1498 0381*
B@DL11	001	02C3	1498	1501 0385* 0403
B@DL12	001	02FD	1501	1504 0438
B@DL13	001	0337	1504	1507 0473
B@DL14	001	0371	1507	1510
B@DL15	001	0471	1510	1513 0389 0389*
B@DL16	001	0507	1513	0390 0390* 0512
B@DMAT	001	0008	1177	3450

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@DMGT	001	0044	1178	
B@DMIN	001	0038	1179	
B@DMPR	001	0048	1182	
B@DMPT	001	004C	1181	
B@DMPU	001	0054	1183	
B@DMRD	001	003C	1180	
B@DNXT	001	0044	1160	
B@DPNT	001	004B	1225	
B@DPRT	001	002C	1174	
B@DPRU	001	0030	1175	
B@DPSE	001	0050	1184	
B@DPUT	001	0040	1168	
B@DREA	001	000C	1172	
B@DREM	001	00FF	1149	
B@DRSR	001	005C	1173	
B@DRST	001	0050	1169	
B@DRTN	001	005C	1166	
B@DSCY	001	0004	1141	
B@DSIF	001	001C	1190	4586 4713
B@DSLTL	001	0010	1189	
B@DSML	001	0010	1191	4015 4188
B@DSNS	001	0018	1143	
B@DSS1	001	0000	1142	
B@DSTP	001	0054	1185	
B@DTBN	001	0010	1207	0232
B@DTB1	001	0050	1206	0232
B@DTCY	001	0009	1203	
B@DTSN	001	0010	1205	
B@DTS1	001	0040	1204	
B@DTYP	001	0040	1319	
B@DURE	001	0020	1037	
B@DVCY	001	0007	1200	0338
B@DVC1	001	0056	1201	5043 6277 0339 0412 0447 0482
B@DWCY	001	0005	1197	
B@DWT1	001	0003	1198	
B@D1MK	001	0080	1391	3148
B@D2MK	001	00C0	1392	3173
B@EOST	001	001E	1213	2790 3182 3331 3365 3727 5120 5739 5760 5781 5981 6031 6775 7038 7158 7337 7656 8026 8574 8583 8983 9346 9648 9804
B@EQUL	001	007E	1239	3971 4625 6659 7493 8328 8423 8435 8438 8733 8830 8842 8845
B@EXPC	001	00C5	1216	
B@FOFL	001	005C	1218	
B@FVAD	001	0001	1403	6277 6304* 0469 0489* 0568
B@GETC	001	0001	1342	
B@GETE	001	00FF	1343	
B@GETS	001	0000	1341	3480 3487 3540 4223 4469 4632 5106 5363 5630 6938 7293 7317 7639 8008 8336 8548 8741 8964 9344 9802
B@GRTR	001	006E	1236	4627 8330 8426 8432 8438 8735 8833 8839 8845
B@ICON	001	0050	1298	5078 5100
B@LADD	001	0001	0942	
B@LADF	001	0002	0983	7288 7630 8003 8959 9332 9790
B@LADV	001	0008	1427	1448
B@LBIN	001	0002	1352	1353 1359
B@LBNX	001	0003	0976	5948 9609
B@LBRA	001	0003	0974	2708 2797 4841 6387 6398 6405 6536 6584 6620 6922 7855 8165
B@LBRC	001	0004	0973	4688 8383 8789

CROSS REFERENCE																		
SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 20/07/20 PAGE 195													
B@LBRD	001	0003	0975	6355														
B@LBRS	001	0001	0977	2946	6961	9188	0676											
B@LCCA	001	0004	1383	0434	0515	0545	0545											
B@LCCC	001	0001	0935	0973	4707	4708	8405	8411	8812	8818								
B@LCDV	001	0004	1428	1449														
B@LCER	001	0001	0933	0997														
B@LCFN	001	0004	1384	0469	0516	0549	0549											
B@LCLN	001	0002	0938	0989	0990	0997	4696	6907	7020	8391	8797							
B@LCLS	001	0001	0986	9797														
B@LCMC	001	0001	0972	4680	8782													
B@LCMF	001	0001	0971	8376														
B@LCNA	001	0006	1382	0399	0514	0537	0541	0541										
B@LCNN	001	0001	0936	0961	0970	0982	0994	2925	2962	5423	5425	5802	6379	6381	7488			
B@LCOP	001	0001	0932	7512	7519	9215												
				0940	0941	0942	0943	0944	0945	0946	0947	0948	0949	0950	0951			
				0952	0953	0954	0955	0956	0957	0958	0959	0960	0961	0962	0963			
				0964	0965	0966	0967	0968	0969	0970	0971	0972	0973	0974	0975			
				0976	0977	0978	0979	0980	0981	0982	0983	0984	0985	0986	0987			
				0988	0989	0990	0991	0992	0993	0994	0995	2838	2841	2844	2961			
				2964	2967	3558	3561	3575	3579	3583	3587	3591	3595	3599	3603			
				3738	4006	4009	4011	4160	4163	4166	4169	4172	4175	4178	4181			
				4184	4307	4312	4315	4318	4321	4324	4598	4601	4705	4709	4870			
				4873	5034	5148	5151	5154	5416	5419	5422	5431	5809	5812	6111			
				6114	6117	6120	6375	6378	6389	6645	6648	6651	6654	6657	6786			
				7019	7022	7025	7028	7031	7168	7348	7351	7518	7667	7670	7891			
				8037	8040	8186	8402	8403	8594	8597	8808	8810	8994	8997	9209			
				9212	9214	9357	9360	9483	9666	9669	9672	9675	9815	9818	9939			
				0349	0350	0687	0800											
B@LCRV	001	0013	1426	1446	5803	6129	7039											
B@LCSA	001	0002	0970	9181														
B@LCVA	001	0002	0934	0948	0949	0950	0951	0952	0953	0954	0955	0956	0957	0959	0960			
				0962	0963	0964	0965	0966	0967	0968	0973	0974	0975	0976	0978			
				0979	0980	0992	0993	2839	2842	2845	3559	3562	3576	3580	3584			
				3588	3592	3596	3600	3604	3739	4706	4871	4874	5034	5149	5152			
				5155	5417	5432	6112	6115	6121	6376	6390	6646	6649	6652	6655			
				6787	7023	7169	7671	8041	8187	8404	8595	8598	8811	8998	9210			
				9221	9667	9670	9673											
				0969	0981	0983	0987	0988	2965	5810	6118	7026	7352	9676				
				5024														
B@LDCA	001	0003	0992															
B@LDDL	001	0003	0993															
B@LDDM	001	0004	1356															
B@LDEF	001	0003	1097	6254														
B@LDIM	001	0003	1098	3090														

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@LESS	001	004C	1226	8429 8432 8435 8836 8839 8842
B@LET\$	001	005B	1246	
B@LET#	001	007B	1247	
B@LET@	001	007C	1248	
B@LETA	001	00C1	1250	
B@LETB	001	00C2	1252	
B@LETC	001	00C3	1253	
B@LETD	001	00C4	1254	
B@LETE	001	00C5	1255	
B@LETF	001	00C6	1256	
B@LETG	001	00C7	1257	
B@LETH	001	00C8	1258	
B@LETI	001	00C9	1259	
B@LETJ	001	00D1	1260	
B@LETK	001	00D2	1261	
B@LETL	001	00D3	1262	
B@LETM	001	00D4	1263	
B@LETN	001	00D5	1264	
B@LETO	001	00D6	1265	
B@LETP	001	00D7	1266	
B@LETQ	001	00D8	1267	
B@LETR	001	00D9	1268	
B@LETS	001	00E2	1269	
B@LETT	001	00E3	1270	
B@LETU	001	00E4	1271	
B@LETV	001	00E5	1272	
B@LETW	001	00E6	1273	
B@LETX	001	00E7	1274	
B@LETY	001	00E8	1275	
B@LETZ	001	00E9	1276	
B@LEXP	001	0008	1315	
B@LFCI	001	0003	0950	
B@LFNA	001	0002	1429	1450
B@LFN0	001	0003	0948	4499
B@LFN1	001	0003	0949	
B@LFOR	001	0003	0978	5429 5443 5447
B@LFRT	001	0004	1370	1371 5388 5440 7884
B@LGET	001	0003	0980	2784 3721 7650
B@LGSB	001	0005	1104	4821
B@LGTO	001	0004	1103	8154 9119
B@LHLT	001	0001	0941	9472
B@LIEX	001	0002	1301	5179 5194
B@LIFN	001	0003	1364	3501 3506 3574 3578 3582 3586 3590 3594 3598 3602
B@LILP	001	0009	1423	1441 1442 1443 6291 6383 6405
B@LIMG	001	0001	1115	6915
B@LIMH	001	0003	0990	6910
B@LINI	001	0002	0982	2939
B@LINP	001	0005	1110	2689
B@LIPI	001	0003	1304	5184 5199
B@LISP	001	0005	1422	1430 1436 1437 1438 6381 6387
B@LIS2	001	0005	1307	5189 5204
B@LIVT	001	0001	1380	
B@LKCL	001	0005	1109	9782
B@LKFR	001	0003	1100	5334
B@LKGT	001	0003	1106	7620
B@LKIF	001	0002	1102	4454 8314 8719

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@LKON	001	0002	1135	9170
B@LKPT	001	0003	1107	7278
B@LKPU	001	000A	1114	5931
B@LKRR	001	0007	1112	
B@LKRT	001	0005	1108	9324
B@LKTO	001	0002	1129	5345
B@LLET	001	0003	1099	3865 3996 3998 4040 4121 4123 4245 4299 4301 4484 6523 7473
B@LL01	001	0002	1467	1468
B@LL02	001	0002	1470	1471
B@LL03	001	0002	1473	1474
B@LL04	001	0002	1476	1477
B@LL05	001	0002	1479	1480
B@LL06	001	0002	1482	1483
B@LL07	001	003A	1485	1486 0375 0375
B@LL08	001	0100	1488	1489 0379 0379 0380 0381
B@LL09	001	0100	1491	1492 0380 0380 0381
B@LL10	001	0044	1494	1495 0381 0381
B@LL11	001	003A	1497	1498 0385 0385
B@LL12	001	003A	1500	1501 0407
B@LL13	001	003A	1503	1504 0442
B@LL14	001	003A	1506	1507 0477
B@LL15	001	0100	1509	1510 0389
B@LL16	001	0096	1512	1513 0390
B@LMAT	001	0003	1116	3314
B@LMF1	001	0003	0951	3508 6769 7152 8020 8560 8568 8977 9642
B@LMF2	001	0003	0952	3550
B@LMF3	001	0003	0953	
B@LMGT	001	0006	1117	7994
B@LMIN	001	0008	1118	6757
B@LMPR	001	0008	1121	8543
B@LMPT	001	0006	1120	8950
B@LMPU	001	000D	1122	9590
B@LMPY	001	0001	0944	
B@LMRD	001	0007	1119	7140
B@LMSM	001	0003	0954	3530
B@LNEG	001	0001	0947	
B@LNEX	001	0004	1101	7816
B@LNXT	001	0003	0979	5429 5447
B@LPAR	001	004D	1227	3324 4048
B@LPRS	001	0002	0987	5707
B@LPRT	001	0005	1113	5564
B@LPRU	001	0002	0988	6097 6954 6993 9655
B@LPSE	001	0005	1123	
B@LPUT	001	0002	0981	7331
B@LPWR	001	0001	0946	
B@LREA	001	0004	1111	3705
B@LREM	001	0003	1095	
B@LRSR	001	0001	0984	0789
B@LRST	001	0001	0985	9339
B@LRTN	001	0006	1105	
B@LSA1	001	0003	0966	
B@LSA2	001	0003	0967	
B@LSB1	001	0003	0968	
B@LSC1	001	0003	0960	
B@LSDF	001	0004	1350	
B@LSD0	001	0003	0962	



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@LSD1	001	0003	0963	
B@LSD2	001	0003	0964	
B@LSF1	001	0003	0956	
B@LSF2	001	0003	0957	
B@LSKW	001	0002	1366	
B@LSNO	001	0002	1359	0329
B@LSPT	001	0003	1374	1377
B@LSTA	001	0003	0965	2696 4833 5937 6602 9126 9143 9597
B@LSTC	001	0003	0959	5665 6061 6986
B@LSTE	001	0004	1130	
B@LSTF	001	0003	0955	5368 6560
B@LSTH	001	0003	0989	7037
B@LSTP	001	0004	1124	
B@LSTX	001	0002	0969	2920 4065 4254 4493
B@LSUB	001	0001	0943	
B@LSVC	001	0001	0940	9928 0209
B@LTHN	001	0004	1131	4538 8365 8771
B@LTYP	001	0001	1360	
B@LUFN	001	0002	1367	
B@LUSC	001	0002	0961	3969 4261 7504
B@LUSF	001	0001	0958	4141 6564 6611
B@LVPG	001	0100	1454	1457
B@MINS	001	0060	1233	3346 5191 5196 5201
B@MULT	001	005C	1230	3348
B@NAAR	001	001D	1418	1448 1500 0541
B@NCAR	001	001D	1419	1449 1503 0545
B@NCRV	001	001D	1417	1446 1497
B@NDGT	001	000A	1410	1416
B@NEQL	001	007F	1240	8441 8848
B@NFRT	001	000A	1369	1371
B@NICN	001	0006	1412	1414
B@NIEL	001	0007	1414	1430 1436 1441
B@NIFN	001	0018	1363	
B@NIVR	001	0001	1413	1414
B@NIVT	001	0057	1379	2726 2874
B@NLDV	001	0122	1416	1438 1443 1494
B@NLRV	001	001D	1415	1437 1442 1485
B@NLTR	001	001D	1409	1415 1416 1417 1418 1419 1420
B@NSKW	001	0004	1365	
B@NSPT	001	0028	1373	
B@NUFN	001	001D	1420	1450 1506 0549
B@NVPG	001	0100	1453	1457
B@NXHI	001	00E3	1334	
B@NXLO	001	001E	1333	
B@NXZR	001	0080	1332	1333 1334
B@PLUS	001	004E	1228	3344 5077 5176 5181 5186
B@POWR	001	005F	1229	
B@PREC	001	0020	1321	
B@PROD	001	0023	1430	
B@PRPL	001	0002	1017	5732
B@PRPN	001	0001	1016	5656 5744 5765 5778 5786
B@PRPR	001	0004	1019	5740
B@PRPS	001	0003	1018	5736
B@PRRC	001	0007	1022	5761 5782
B@PRRL	001	0008	1023	5653
B@PRSL	001	0005	1020	5753 5774

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@PRSS	001	0006	1021	5757
B@PTAB	001	0000	1375	
B@PTAD	001	0001	1376	
B@PTSA	001	0002	1377	
B@PUD1	001	0006	1033	6021 6056
B@PUD2	001	0007	1034	6076
B@PUI0	001	0001	1027	6948
B@PUI1	001	0004	1028	6980
B@PUI2	001	0005	1029	7000
B@PUNL	001	0002	1031	5986
B@PUNS	001	0003	1032	6047
B@PUTM	001	0010	1036	5990 9676
B@RPAR	001	005D	1231	3141 4060 4251 4489 6318
B@SADV	001	00E8	1448	1451
B@SAVL	001	0B76	1444	1461
B@SAVS	001	065E	1439	1460
B@SCDV	001	0074	1449	1451
B@SCLN	001	005E	1232	5735 5756 5777 8553
B@SCRV	001	0227	1446	1460 1461
B@SDMK	001	0080	1361	
B@SEXP	001	0004	1314	
B@SFAT	001	0196	1451	1460 1461 1512
B@SFNA	001	003A	1450	1451
B@SFRT	001	0028	1371	
B@SIEL	001	003F	1441	1444
B@SIES	001	0023	1436	1439
B@SIGN	001	0010	1323	
B@SLDL	001	0A32	1443	1444
B@SLDS	001	05AA	1438	1439
B@SLVL	001	0105	1442	1444
B@SLVS	001	0091	1437	1439
B@SQUO	001	007D	1238	4221 4464 5070
B@STAT	001	0000	1313	
B@TASA	001	0012	1048	
B@TASC	001	001E	1054	
B@TASM	001	0018	1050	
B@TASS	001	007B	1055	
B@TCGT	001	0030	1063	
B@TCLS	001	0042	1069	
B@TDAT	001	0006	1044	
B@TDEF	001	0009	1045	
B@TDIM	001	000C	1046	
B@TDUM	001	0078	1087	
B@TEND	001	0072	1085	
B@TEOF	001	0075	1086	
B@TFOR	001	0021	1057	
B@TGET	001	0039	1066	
B@TGSB	001	0033	1064	
B@TGTO	001	002D	1062	
B@TIFA	001	0027	1059	
B@TIFC	001	002A	1060	
B@TIFS	001	007D	1061	
B@TIMG	001	0054	1075	
B@TINP	001	0045	1070	
B@TLTA	001	000F	1047	
B@TLTC	001	001B	1051	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
B@TLTM	001	0015	1049	
B@TLTS	001	0079	1052	
B@TMAS	001	007C	1056	
B@TMAT	001	0057	1076	
B@TMGT	001	005A	1077	
B@TMIN	001	005D	1078	
B@TMLS	001	007A	1053	
B@TMPR	001	0066	1081	
B@TMPT	001	0063	1080	
B@TMPU	001	0069	1082	
B@TMRD	001	0060	1079	
B@TNXT	001	0024	1058	
B@TPRT	001	004E	1073	
B@TPRU	001	0051	1074	
B@TPSE	001	006C	1083	
B@TPUT	001	003C	1067	
B@TRAC	001	0080	1317	
B@TREA	001	0048	1071	
B@TREM	001	0003	1043	
B@TRSR	001	004B	1072	
B@TRST	001	003F	1068	
B@TRTN	001	0036	1065	
B@TSTP	001	006F	1084	
B@VMC1	001	0056	1456	
B@VMLB	001	F0CD	1461	
B@VMSB	001	F5E5	1460	
B@VMSZ	001	0000	1457	1459 1460 1461
B@VMTB	001	0000	1459	
B@ZNEG	001	00D0	1330	
B@ZPOS	001	00F0	1329	
BITAD2	001	0FE7	4584	4568
BITBLS	002	0FEF	4589	4576
BITBN1	002	0FF3	4591	
BITBRC	001	1086	4705	4686
BITB01	002	1088	4706	
BITB02	001	1089	4707	4685*
BITCA2	002	0FE8	4585	4456* 4550 4558 4564* 4569* 4575
BITCMC	001	108C	4709	4678
BITEN2	001	0006	4710	4656
BITERM	001	104A	4677	
BITFCP	002	0FEB	4587	4556* 4557* 4558
BITFNO	001	0FF8	4601	4497
BITFPE	002	0FED	4588	4556
BITLNG	002	108B	4708	4695
BITLSW	001	0FF4	4595	4447* 4455* 4522* 4523
BITOOP	002	0FFA	4602	
BITPBA	002	0FF1	4590	4550 4564
BITREL	001	1000	4615	
BITRE1	001	0F06	4453	
BITSG2	001	0000	4582	4577
BITSTX	001	0FF6	4598	4491
BITTRM	001	004A	4583	4540
BIT001	001	0FF5	4596	4522
BIT100	003	0F0D	4456	4448
BIT110	004	0F25	4472	4465
BIT120	004	0F64	4496	4490

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BIT140	003	0F68	4497	4495
BIT150	004	0F73	4500	
BIT160	003	0F7E	4511	4476
BIT200	004	0F95	4522	4471 4502 4511
BIT240	004	101F	4638	4626 4628
BIT260	004	1023	4644	4633
BIT270	003	1027	4645	4647
BIT280	003	102A	4646	4620* 4638*
BIT290	003	1043	4668	4657
BIT300	004	0FA9	4538	4524
BIT340	004	0FB8	4550	4533
BIT350	004	0FBF	4556	
BIT360	004	0FCF	4564	4551
BIT370	003	0FD3	4568	
BIT380	003	0FDE	4575	4559
BIT390	003	0FE4	4577	4532* 4540* 4569
BKABRC	001	1A87	8403	8381
BKAB01	002	1A89	8404	
BKAB02	001	1A8A	8405	8354*
BKACMC	001	1A86	8402	8374
BKALNG	002	1A8C	8411	8390
BKALTH	001	0002	8420	8348 8421
BKAOD1	001	0000	8418	8349
BKAOD2	001	0001	8419	8354
BKAOT1	001	1A8B	8421	8347
BKARIF	001	1A00	8309	
BKATAB	001	1A8D	8417	8421
BKA010	004	1A00	8314	
BKA020	004	1A08	8319	
BKA030	004	1A0C	8323	
BKA040	004	1A10	8327	
BKA050	004	1A20	8336	
BKA060	004	1A27	8342	8329 8331
BKA070	003	1A2B	8347	8337
BKA080	003	1A2E	8348	8350
BKA090	003	1A31	8349	8323* 8342*
BKA100	004	1A37	8354	
BKA110	004	1A3B	8359	
BKA120	004	1A43	8365	
BKA130	004	1A4B	8370	
BKA140	003	1A4F	8374	
BKA150	003	1A5E	8381	
BKA160	006	1A6D	8389	
BKA170	004	1A82	8396	
BKCBO1	002	1B89	8811	
BKCBO2	001	1B8A	8812	8760*
BKCBRC	001	1B87	8810	8787
BKCCD2	001	0001	8826	8760
BKCCMC	001	1B86	8808	8780
BKCLNG	002	1B8C	8818	8796
BKCLTH	001	0002	8827	8754 8828
BKCOD1	001	0000	8825	8755
BKCOTB	001	1B8B	8828	8753
BKCRIF	001	1B00	8714	
BKCTAB	001	1B8D	8824	8828
BKC010	004	1B00	8719	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BKC020	004	1B08	8724	
BKC030	004	1B0C	8728	
BKC040	004	1B10	8732	
BKC050	004	1B20	8741	
BKC060	004	1B27	8747	8734 8736
BKC070	003	1B2B	8753	8742
BKC080	003	1B2E	8754	8756
BKC090	003	1B31	8755	8728* 8747*
BKC100	004	1B37	8760	
BKC110	004	1B3B	8765	
BKC120	004	1B43	8771	
BKC130	004	1B4B	8776	
BKC140	003	1B4F	8780	
BKC150	003	1B5E	8787	
BKC160	006	1B6D	8795	
BKFBN2	002	12E7	5441	
BKFDAC	001	12BE	5422	
BKFDAN	001	12BF	5423	5376* 5424
BKFLLP	001	0027	5447	5375
BKFLSP	001	0001	5448	5355
BKFOCV	001	0001	5449	5403*
BKFOC1	001	12E8	5442	5362
BKFOFA	001	12E0	5427	5375* 5380 5428
BKFOFC	001	12B8	5416	5381
BKFOFO	002	12BA	5417	5340* 5403
BKFONC	001	12BB	5419	
BKFOND	001	0003	5450	5404* 5405* 5406*
BKFONO	002	12BD	5420	
BKFOPR	032	12DF	5426	
BKFORX	001	1200	5330	
BKFOSC	001	12E1	5431	5366
BKFOSO	002	12E3	5432	5365*
BKFOTL	002	12E5	5440	5395
BKFOX3	002	12EA	5443	5406
BKF010	004	1200	5334	
BKF020	004	1208	5339	
BKF030	004	1211	5344	
BKF040	004	122F	5355	
BKF050	003	123E	5362	5351
BKF060	004	125D	5373	5358
BKF070	005	126A	5380	5374
BKF080	004	127A	5387	
BKF090	005	128E	5395	
BKF100	004	12A2	5403	5391
BKF120	004	12B4	5410	5399
BKGBN1	002	19EB	8193	8172
BKGBRC	001	19E7	8186	8163
BKGBRO	002	19E9	8187	
BKGOTO	001	19B3	8150	
BKG010	004	19B3	8154	
BKG020	004	19BB	8159	
BKG030	003	19BF	8163	
BKG040	006	19CE	8170	
BKG050	004	19DF	8176	
BKG060	004	19E3	8180	
BKMBN1	002	1CA3	9221	9149 9158 9195

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BKMBRC	001	1C9F	9212	9186
BKMCSC	001	1CA0	9214	9179
BKMCSO	001	1CA1	9215	9136* 9158*
BKMGTO	001	1C00	9115	
BKMSTC	001	1C9C	9209	9124 9141
BKMSTO	002	1C9E	9210	
BKMOVAD	002	1CA5	9222	9131* 9194
BKM010	004	1C00	9119	
BKM020	003	1C08	9124	
BKM030	005	1C17	9131	
BKM035	004	1C1C	9135	
BKM040	004	1C23	9137	9166
BKM050	003	1C27	9141	
BKM060	006	1C36	9148	
BKM070	006	1C41	9153	
BKM080	004	1C4B	9158	
BKM090	004	1C4F	9162	
BKM100	004	1C60	9170	9164
BKM110	004	1C68	9175	
BKM120	003	1C6C	9179	
BKM125	003	1C7B	9186	
BKM130	005	1C8A	9194	
BKM140	004	1C94	9199	
BKM150	004	1C98	9203	
BKNBRC	001	1962	7891	7853
BKNBRO	002	1964	7892	7852* 7865
BKNDUM	001	0000	7879	7835
BKNEXT	001	1900	7812	
BKNEX2	002	1961	7885	7866
BKNFEL	002	195F	7884	7860
BKNFTD	001	0001	7878	7826 7835
BKNNXT	001	0003	7880	7852
BKN010	004	1900	7816	
BKN020	004	1908	7821	
BKN030	004	190C	7825	
BKN040	004	1918	7831	
BKN050	003	191C	7835	
BKN060	004	1922	7840	
BKN070	004	1929	7845	7836
BKN080	004	192D	7846	7841
BKN090	004	1934	7852	7827
BKN100	005	1947	7860	
BKN110	004	194C	7864	
BKN120	004	195A	7870	7847
BKRBRRC	001	1FE2	0687	0674
BKRTRN	001	1FCF	0670	
BKR010	003	1FCF	0674	
BKR020	004	1FDE	0681	
BKSBN1	002	10ED	4880	4849 4855
BKSBRC	001	10E9	4873	4839
BKSBRO	002	10EB	4874	
BKSTAC	001	10E6	4870	4831
BKSTAO	002	10E8	4871	
BKSUBG	001	1090	4817	
BKSVAS	002	10EF	4886	4835* 4854
BKS010	004	1090	4821	



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BKS020	004	1098	4826	
BKS030	003	109C	4831	
BKS040	003	10B0	4839	
BKS050	006	10BF	4847	
BKS060	005	10D4	4854	
BKS070	004	10DE	4860	
BKS080	004	10E2	4864	
BMDM1C	001	1AEA	8594	8558
BMDM10	002	1AEC	8595	
BMDM2C	001	1AED	8597	8566
BMDM20	002	1AEF	8598	
BMDPRT	001	1A9B	8539	
BMD010	004	1A9B	8543	
BMD020	004	1AA3	8548	8584
BMD030	003	1AAB	8553	
BMD040	003	1AB1	8558	
BMD050	003	1AC3	8566	8554
BMD055	004	1AD2	8573	
BMD060	004	1ADC	8579	8562
BMD070	003	1AE0	8583	
BMD080	004	1AE6	8588	8575
BMGAFC	001	19AC	8037	8001
BMGAFO	001	19AD	8038	
BMGBN1	002	19B2	8050	
BMGETX	001	1965	7990	
BMGMFC	001	19AE	8040	8018
BMGMFO	002	19B0	8041	
BMGSFA	001	19B1	8049	
BMG010	004	1965	7994	
BMG100	003	1971	8001	
BMG110	004	1980	8008	
BMG120	004	1988	8013	8027
BMG140	003	198F	8018	
BMG150	004	199E	8025	8014*
BMG160	004	19A8	8031	
BMIMFC	001	16FC	6786	6767
BMIMFO	002	16FE	6787	
BMINPT	001	16D3	6753	
BMI010	004	16D3	6757	
BMI020	004	16DB	6763	6776
BMI030	003	16DF	6767	
BMI040	004	16EE	6774	
BMI050	004	16F8	6780	
BMMAD2	001	0AF3	3448	3425
BMMATA	001	0A00	3308	3470
BMMAT2	001	0B00	3472	3333 3334 3353 3354 3359 3360 3397 3398
BMMBK0	001	0000	3457	3329* 3481 3494* 3542
BMMBK1	001	0001	3458	3336* 3343 3372 3374
BMMBK2	001	0002	3459	3338* 3488 3495* 3501
BMMBLS	002	0AF0	3438	3431
BMMCA2	002	0AF4	3449	3309* 3406 3415 3421*
BMMFCP	002	0AF7	3452	3412* 3413* 3415
BMMFND	001	0002	3570	3501
BMMFPE	002	0AF9	3453	3412
BMMIA2	001	0AF5	3450	
BMMINV	001	00D5	3445	3372

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BMMMSC	001	0B99	3558	3528
BMMMSO	002	0B9B	3559	
BMMM2C	001	0B9C	3561	3548
BMMM2O	002	0B9E	3562	
BMMPBA	002	0AF2	3441	3333* 3353* 3359* 3397* 3406 3421
BMMPID	001	0003	3569	
BMMPSI	001	0004	3462	3450
BMMSG2	001	0000	3461	
BMMTAB	001	0B9F	3571	3572
BMMTBS	001	0B99	3572	3499
BMMTEL	001	0006	3568	3500 3572
BMMTRN	001	00D9	3446	3374
BMM005	005	0A3D	3336	3332
BMM010	003	0A65	3353	3345 3347
BMM020	003	0A6E	3359	3349
BMM030	004	0A85	3372	3366
BMM040	004	0A93	3379	3373
BMM050	004	0AA2	3386	3375
BMM060	003	0AC1	3397	3325
BMM070	004	0AC7	3406	3335 3355 3368 3382 3393
BMM080	004	0ADE	3421	3407
BMM090	003	0AE9	3431	3416
BMM095	003	0AEC	3432	3334* 3354* 3360* 3398*
BMM100	004	0B00	3476	3353 3354
BMM110	003	0B2C	3499	3359 3360
BMM120	003	0B2F	3500	3502
BMM130	003	0B3A	3506	
BMM140	004	0B4C	3518	3397 3398
BMM150	004	0B6B	3535	3513 3552
BMM160	004	0B6F	3539	3333 3334
BMPAFC	001	1BE2	8994	8957
BMPAFO	001	1BE3	8995	
BMPBN1	002	1BE8	9006	
BMPMFC	001	1BE4	8997	8975
BMPMFO	002	1BE6	8998	
BMPSFA	001	1BE7	9004	
BMPUTX	001	1B9B	8946	
BMP010	004	1B9B	8950	
BMP100	003	1BA7	8957	
BMP110	004	1BB6	8964	
BMP120	004	1BBE	8970	8984
BMP130	003	1BC5	8975	
BMP140	004	1BD4	8982	8971*
BMP150	004	1BDE	8988	
BMREAD	001	17D0	7136	
BMRMFC	001	17F9	7168	7150
BMRMFO	002	17FB	7169	
BMR010	004	17D0	7140	
BMR020	004	17D8	7145	7159
BMR030	003	17DC	7150	
BMR040	004	17EB	7157	
BMR050	004	17F5	7163	
BMUBNC	001	1D8B	9669	9607
BMUBN1	002	1D94	9680	9603 9622
BMUMFC	001	1D8E	9672	9640
BMUMFO	002	1D90	9673	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BMUPRC	001	1D91	9675	9653
BMUPRO	001	1D92	9676	
BMUPRT	001	1D00	9586	
BMURNO	002	1D8D	9670	
BMUSTC	001	1D88	9666	9595
BMUSTO	002	1D8A	9667	
BMU010	004	1D00	9590	
BMU020	003	1D08	9595	
BMU030	006	1D17	9602	
BMU040	003	1D22	9607	
BMU050	006	1D35	9616	
BMU060	006	1D3F	9621	
BMU070	004	1D4A	9626	
BMU080	006	1D4E	9630	
BMU090	004	1D58	9636	9649
BMU100	003	1D5C	9640	
BMU110	004	1D6B	9647	
BMU120	003	1D75	9653	
BMU130	004	1D84	9660	
BNABNI	002	09F7	3190	
BNADIN	001	0973	3086	
BNA010	004	0973	3090	
BNA020	004	097B	3095	3183
BNA030	004	097F	3099	
BNA040	003	098A	3105	
BNA060	004	099C	3117	3107
BNA070	004	09A0	3121	
BNA080	004	09A4	3125	
BNA090	004	09AB	3127	3101* 3143 3153 3168
BNA100	005	09AF	3131	
BNA110	003	09B4	3135	
BNA120	004	09BA	3140	3126
BNA130	003	09CD	3153	3142
BNA140	005	09D0	3158	
BNA150	004	09D5	3162	
BNA160	004	09D9	3166	
BNA170	003	09E0	3173	
BNA180	005	09E3	3177	3149
BNA190	004	09E8	3181	3136
BNDATA	001	1100	5020	
BNDBKL	001	0002	5170	5087 5173
BNDBKT	001	11DA	5172	5077* 5084* 5087 5098* 5105
BNDBK0	001	0000	5161	5077* 5098* 5105
BNDBK1	001	0001	5162	5084* 5087
BNDBN1	001	11FA	5210	5132 5137
BNDBRC	001	11D1	5148	5028
BNDBRO	002	11D3	5149	
BNDDAC	001	11D4	5151	5061
BNDDAO	002	11D6	5152	5091* 5115*
BNDDLCL	001	11D7	5154	5125
BNDDLO	002	11D9	5155	
BNDICA	001	0000	5169	5091
BNDTAB	001	11DC	5175	5085
BNDTB1	001	0001	5165	5087
BNDTB3	001	0003	5166	5090
BNDTB4	001	0004	5167	5089

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BNDTEL	001	0005	5164	5085 5086
BND010	004	1100	5024	
BND020	003	1104	5028	
BND030	006	1113	5039	
BND040	004	1119	5043	
BND050	006	1120	5049	
BND060	006	1129	5055	5044
BND070	003	1133	5061	5050
BND080	004	113A	5066	5121
BND090	003	113E	5070	
BND100	003	114B	5077	5071
BND110	004	1154	5083	5101
BND120	003	115F	5086	5088
BND130	004	1180	5098	5079
BND170	004	1195	5110	5073
BND180	005	1199	5115	
BND190	003	11A2	5120	5094
BND200	003	11A8	5125	
BND210	006	11B3	5131	
BND220	006	11BE	5136	
BND230	004	11CD	5142	
BNFBDC	001	15CB	6389	6353
BNFBDO	002	15CD	6390	6297* 6298* 6304 6337
BNFBN1	001	15CF	6399	6361
BNFBRC	001	15BC	6375	6259
BNFBRO	002	15BE	6376	
BNFDAC	001	15BF	6378	
BNFDAN	001	15C0	6379	6291* 6380
BNFDEF	001	1500	6250	
BNFLIP	001	000D	6405	6290
BNFLTH	001	15CE	6398	6338
BNFSKP	001	0002	6403	6324
BNFSPA	001	15CA	6385	6290* 6295 6386
BNFWKA	009	15C9	6383	
BNF010	004	1500	6254	
BNF020	003	1508	6259	
BNF030	006	1513	6266	
BNF040	004	1519	6271	
BNF050	004	1521	6276	
BNF060	004	152B	6282	
BNF070	004	1537	6288	6278
BNF080	005	1544	6295	6289
BNF090	004	1557	6303	
BNF100	004	155F	6308	
BNF110	005	1563	6313	
BNF120	003	156C	6318	
BNF130	005	1572	6323	
BNF140	004	1582	6331	6319
BNF150	005	158A	6337	6326
BNF160	004	1594	6343	
BNF170	004	1598	6347	
BNF180	003	15A0	6353	
BNF190	005	15AF	6361	
BNF200	004	15B4	6365	
BNF210	004	15B8	6369	
BNIBN1	002	17CB	7036	6928 7008

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BNIBRC	001	17C1	7022	6920
BNIBRO	002	17C3	7023	
BNIBSC	001	17C9	7031	6959
BNIEOS	001	17CD	7038	6932
BNIIHO	002	17C0	7020	6907*
BNIIMH	001	17BE	7019	6908
BNIMAG	001	1700	6897	
BNIPRC	001	17C4	7025	6952 6991
BNIPRO	001	17C5	7026	6948* 6980* 7000*
BNISHL	001	17CC	7037	6905 6906
BNISTC	001	17C6	7028	6984
BNISTO	002	17C8	7029	6975* 7004*
BNISUB	002	17CF	7039	7004
BNI005	004	1725	6915	6904
BNI010	003	172D	6920	
BNI020	006	173C	6927	
BNI030	003	1747	6932	
BNI040	004	174A	6936	
BNI050	004	1756	6942	
BNI060	003	175D	6948	
BNI070	003	1760	6952	
BNI080	003	176F	6959	7013
BNI090	004	177E	6966	
BNI100	004	1782	6970	
BNI110	005	1786	6975	6943
BNI120	003	178B	6980	
BNI130	003	178E	6984	7009
BNI140	003	179D	6991	
BNI150	003	17AC	7000	
BNI160	004	17AF	7004	
BNI170	005	17B3	7008	
BNI180	003	17BB	7013	
BPCASN	001	1871	7478	
BPCBN1	001	18A0	7512	7488
BPCLET	001	1869	7469	
BPCUCC	001	18A1	7518	7502
BPCUCO	001	18A2	7519	7483* 7488*
BPC010	004	1869	7473	
BPC020	003	1871	7483	
BPC030	004	1874	7487	7496
BPC040	003	187C	7493	
BPC050	004	1889	7501	7494
BPMASN	001	1608	6528	
BPMBIC	001	16C5	6645	6534 6582
BPMBIO	002	16C7	6646	
BPMBN1	002	16C4	6639	6591 6627
BPMBRC	001	16C8	6648	6618
BPMBRO	002	16CA	6649	6543* 6590
BPMIND	001	16D2	6659	6569
BPMLET	001	1600	6519	
BPMSAC	001	16CB	6651	6600
BPMSAO	002	16CD	6652	6599*
BPMSFC	001	16CE	6654	6558
BPMSFO	002	16D0	6655	6547* 6599
BPMUFC	001	16D1	6657	6562 6609
BPM010	004	1600	6523	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BPM020	003	1608	6534	
BPM030	005	1617	6543	
BPM040	005	161C	6547	
BPM045	004	1621	6551	
BPM050	004	1625	6552	6576
BPM060	003	162D	6558	
BPM070	003	164B	6569	6553*
BPM080	004	1651	6575	
BPM090	003	1658	6582	6570
BPM100	005	1667	6590	
BPM110	004	167B	6599	
BPM120	004	168E	6608	
BPM130	003	16A1	6618	
BPM140	006	16B0	6626	
BPM150	004	16BF	6633	
BPREAD	001	0BCF	3701	
BPRGTC	001	0BFC	3738	3719
BPRGTO	002	0BFE	3739	
BPR010	004	0BCF	3705	
BPR020	004	0BD7	3710	3728
BPR030	004	0BDB	3714	
BPR040	003	0BDF	3719	
BPR050	004	0BEE	3726	
BPR060	004	0BF8	3732	
BPXRSC	001	1FF6	0800	0787
BPXRSR	001	1FE3	0783	
BPX010	003	1FE3	0787	
BPX020	004	1FF2	0794	
BRA050	004	0990	3111	
BSTRAS	001	0C1B	3873	
BSTRIF	001	0F00	4440	4607
BSTRLT	001	0C00	3854	4033 4194
BST010	004	0C0F	3859	3858*
BST020	004	0C13	3865	3857
BST080	003	0C1E	3882	
BST100	004	0C2E	3890	3974
BST120	004	0C3A	3902	
BST130	003	0C4B	3915	3903
BST131	003	0C62	3925	3915
BST132	005	0C70	3933	3910
BST134	004	0C7C	3936	3983
BST136	004	0C92	3951	3937
BST138	003	0C9D	3958	3945
BST140	003	0CA6	3968	3928 3934
BST145	003	0CBC	3979	3972
BST150	003	0CCF	3994	3883 3927 3970
BST160	004	0CD6	3996	3969* 3998*
BST170	004	0CE5	4000	3994*
BST200	004	0D00	4040	
BST210	004	0D27	4059	4084
BST220	003	0D38	4064	4061
BST230	003	0D41	4072	4063
BST240	003	0D55	4082	4049
BST250	005	0D5F	4090	4077
BST260	004	0D70	4098	4096*
BST270	004	0D74	4104	4091



[illegible]

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BTRSA2	001	1EFC	0358	
BTRSEL	001	0004	0329	0247 0330
BTRSG2	001	0000	0555	0316
BTRSHA	001	1CFF	0328	0247*
BTRSHE	004	1EF1	0330	0247
BTRSTL	001	1FBC	0518	0424 0459 0494
BTRSVL	001	1EF8	0349	
BTRTEN	001	1FC3	0536	0563 0564 0566 0568
BTRVAD	001	1FC4	0563	0405 0412 0417 0440 0447 0452 0475 0482 0487
BTRVBA	002	1EE9	0323	0273
BTR010	004	1E03	0175	
BTR020	004	1E0A	0180	
BTR030	004	1E19	0188	
BTR040	005	1E2B	0195	0176
BTR050	004	1E33	0200	
BTR060	003	1E3F	0207	0196
BTR070	004	1E4E	0215	
BTR080	004	1E56	0220	
BTR090	004	1E5D	0226	
BTR100	004	1E65	0231	0221
BTR110	004	1E70	0237	
BTR120	004	1E7C	0243	0233
BTR130	005	1E80	0247	
BTR150	006	1E93	0261	
BTR160	006	1E99	0265	
BTR170	006	1E9F	0269	
BTR180	005	1EA5	0273	
BTR190	006	1EB0	0279	
BTR200	006	1EB6	0283	
BTR250	004	1EC2	0292	
BTR260	005	1EC9	0298	
BTR270	004	1ED5	0305	
BTR280	003	1ED9	0309	0293
BTR290	003	1EE0	0315	0300
BTR300	006	1F00	0375	
BTR310	006	1F06	0379	
BTR320	006	1F18	0385	
BTR330	006	1F1E	0389	
BTR350	003	1F2A	0398	0425
BTR360	004	1F31	0403	
BTR370	004	1F35	0405	0406 0408 0571
BTR380	003	1F39	0412	
BTR390	003	1F3F	0417	
BTR400	004	1F49	0423	0413
BTR410	003	1F54	0433	0460
BTR420	004	1F5B	0438	
BTR430	004	1F5F	0440	0441 0443 0572
BTR440	003	1F63	0447	
BTR450	003	1F69	0452	
BTR460	004	1F73	0458	0448
BTR470	003	1F7E	0468	0495
BTR480	004	1F85	0473	
BTR490	004	1F89	0475	0476 0478 0573
BTR500	003	1F8D	0482	
BTR510	003	1F93	0487	
BTR520	004	1F9D	0493	0483

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BTR600	003	1FA8	0503	
BTSSVC	001	1DE9	9939	9926
BTSTOP	001	1DD6	9922	
BTS010	003	1DD6	9926	
BTS020	004	1DE5	9933	
BXCAFC	001	1DD1	9815	9788
BXCAFO	001	1DD2	9816	
BXCBN1	002	1DD5	9828	
BXCCLC	001	1DD3	9818	9795
BXCLOS	001	1D95	9778	
BXCSFA	001	1DD4	9826	
BXC010	004	1D95	9782	
BXC020	004	1D9D	9784	9805
BXC120	003	1DA1	9788	
BXC130	003	1DB0	9795	
BXC140	004	1DBF	9802	
BXC150	004	1DCD	9809	
BXDBN1	001	13EF	5802	5670
BXDDMY	001	0009	5798	
BXDDP0	001	0000	5795	5604 5606
BXDDP1	001	0001	5796	5611
BXDDP2	001	0002	5797	5612
BXDDUM	001	0000	5724	5606 5743 5764 5785
BXDLTH	001	0003	5721	5573 5595 5603 5645 5651 5798
BXDMD1	001	13CB	5730	5573 5651
BXDMD2	001	13D7	5751	5595
BXDMD3	001	13E3	5772	5645
BXDM14	001	13D6	5745	5574* 5652*
BXDPRC	001	13F2	5809	5706
BXDPRO	001	13F3	5810	5611* 5653* 5656*
BXDPRT	001	1300	5560	5573 5574 5595 5645 5651 5652 5733 5737 5741 5754 5758 5762 5766 5775 5779 5783 5787
BXDRM1	001	0007	5820	5569 5621
BXDROM	001	0004	5722	
BXDRS1	003	13A8	5819	5569* 5621*
BXDSTC	001	13F4	5812	5664
BXDSTO	002	13F6	5813	5660* 5679*
BXDSUB	002	13F1	5803	5679
BXD010	004	1300	5564	
BXD020	003	1308	5569	
BXD030	003	130B	5573	5622 5631 5779
BXD040	004	1311	5578	
BXD050	004	1315	5582	
BXD060	004	1319	5586	
BXD065	004	131D	5590	
BXD070	003	1324	5595	
BXD080	004	1327	5600	5591 5647 5671
BXD090	003	132B	5601	5573* 5595* 5645* 5651*
BXD095	003	132E	5603	5607
BXD100	003	1331	5604	5600*
BXD110	004	133D	5611	5605
BXD120	003	1345	5613	5612*
BXD140	003	1348	5617	5733 5737 5754 5758 5775
BXD150	003	134B	5621	
BXD160	003	1351	5626	5652
BXD170	004	1354	5630	5787

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BXD180	003	135B	5635	5574
BXD190	004	135E	5639	5766
BXD200	003	136A	5645	
BXD210	003	1374	5651	
BXD220	005	1386	5660	
BXD230	003	138B	5664	5680
BXD240	005	1395	5670	
BXD250	003	139D	5675	
BXD260	004	13A0	5679	
BXD270	003	13A7	5684	5685 5687 5762 5819
BXD280	003	13AA	5691	5741 5783
BXD290	004	13AD	5695	5684
BXD300	003	13B1	5706	5617 5626 5635 5655 5675 5691
BXD310	003	13B8	5711	5666
BXD320	004	13C7	5715	5711*
BXGAFC	001	18EB	7667	7628
BXGAFO	001	18EC	7668	
BXGBN1	002	18F1	7680	
BXGETX	001	18A3	7616	
BXGGTC	001	18ED	7670	7648
BXGGTO	002	18EF	7671	
BXGI60	004	18E7	7661	
BXGSFA	001	18F0	7679	
BXG010	004	18A3	7620	
BXG100	003	18AF	7628	
BXG110	004	18BE	7635	
BXG120	004	18C6	7640	7657
BXG130	004	18CA	7644	
BXG140	003	18CE	7648	
BXG150	004	18DD	7655	
BXIAD2	001	08EE	2851	2824
BXIBLS	002	08F6	2861	2831
BXIBN1	002	08FA	2863	2702 2722 2759 2771 2777
BXIBRC	001	08E8	2841	2706 2795
BXIBRO	002	08EA	2842	
BXIBSC	001	0970	2967	2944
BXICA2	002	08EF	2852	2685* 2806 2814 2820* 2830
BXICMK	001	0080	2875	2753 2765 2773
BXIFCP	002	08F2	2854	2812* 2813* 2814
BXIFPE	002	08F4	2855	2812
BXIGTC	001	08EB	2844	2782
BXIGTO	002	08ED	2845	
BXIINC	001	096C	2961	2937
BXIINO	001	096D	2962	2898* 2925*
BXILTE	001	0001	2872	
BXINPT	001	0800	2684	2883
BXIONE	002	0972	2973	2894 2925 2929
BXIPBA	002	08F8	2862	2806 2820
BXIPSI	001	0004	2869	2853
BXISG2	001	0000	2870	2832
BXISTC	001	08E5	2838	2694
BXISTO	002	08E7	2839	
BXISXC	001	096E	2964	2918
BXISXO	001	096F	2965	2914*
BXITB1	001	1B8E	2874	2726 2726*
BXIVTE	001	0000	2871	2753 2765 2773* 2777* 2909 2914

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BXI010	004	0803	2689	
BXI020	003	080B	2694	
BXI030	006	081A	2701	
BXI040	003	0825	2706	
BXI050	006	0834	2713	
BXI060	004	083A	2717	
BXI070	006	083E	2721	
BXI080	006	0849	2726	
BXI090	003	0852	2731	
BXI100	004	0855	2735	2791
BXI110	004	0859	2739	
BXI120	004	085D	2743	
BXI130	003	0861	2744	2731* 2759* 2771*
BXI140	004	0864	2748	
BXI145	003	0868	2749	2727 2727* 2778 2778*
BXI150	003	086B	2753	
BXI160	004	0871	2759	
BXI170	003	087B	2765	2778
BXI180	004	0881	2771	
BXI185	003	0888	2773	2727
BXI190	004	088B	2777	2754 2761 2766
BXI210	003	0892	2782	
BXI220	004	08A1	2789	
BXI230	003	08AB	2795	
BXI240	004	08BA	2806	
BXI250	004	08C1	2812	
BXI260	004	08D1	2820	2807
BXI270	003	08D5	2824	
BXI280	003	08DC	2830	2815
BXI290	006	0900	2888	
BXI300	006	090A	2893	
BXI310	003	0915	2898	
BXI320	003	0918	2902	
BXI330	004	091B	2906	2933
BXI340	003	091F	2907	2902* 2929*
BXI350	003	0922	2909	
BXI360	004	0928	2914	
BXI370	003	092C	2918	
BXI380	004	093B	2925	
BXI390	004	093F	2929	
BXI400	003	0943	2933	
BXI410	003	0946	2937	2910
BXI420	003	0955	2944	
BXI430	004	0964	2951	
BXI440	004	0968	2955	
BXPAFC	001	1863	7348	7286
BXPAFO	001	1864	7349	
BXPBN1	002	1868	7361	
BXPC02	001	0002	7365	7307
BXPC04	001	0004	7366	7325
BXPPTC	001	1865	7351	7329
BXPPTO	001	1866	7352	7307* 7325*
BXPSFA	001	1867	7360	
BXPUTX	001	1800	7274	
BXP010	004	1800	7278	
BXP100	003	180C	7286	

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BXP120	004	181B	7293	
BXP140	004	1823	7298	7338
BXP150	004	1827	7302	
BXP160	003	182E	7307	
BXP170	004	1834	7312	7303
BXP180	004	183B	7317	
BXP190	004	183F	7321	7313
BXP200	003	1843	7325	
BXP210	003	1846	7329	7308
BXP220	004	1855	7336	
BXP230	004	185F	7342	
BXRAFC	001	1CE2	9357	9330
BXRAFO	001	1CE3	9358	
BXRBNI	002	1CE6	9370	
BXRRTC	001	1CE4	9360	9337
BXRSET	001	1CA6	9320	
BXRSFA	001	1CE5	9368	
BXR010	004	1CA6	9324	
BXR020	004	1CAE	9326	9347
BXR110	003	1CB2	9330	
BXR120	003	1CC1	9337	
BXR130	004	1CD0	9344	
BXR140	004	1CDE	9351	
BXUBNC	001	14DF	6114	5947
BXUBNO	002	14E1	6115	
BXUBN1	002	14E8	6127	5943 5964 6066
BXUPRC	001	14E2	6117	6096
BXUPRO	001	14E3	6118	5986* 5990* 6021* 6047* 6056* 6076*
BXUPRT	001	1400	5927	
BXUSCC	001	14E4	6120	6060
BXUSCO	002	14E6	6121	6052* 6080*
BXUSTC	001	14DC	6111	5936
BXUSTO	002	14DE	6112	
BXUSUB	002	14EA	6129	6080
BXU010	004	1400	5931	
BXU020	003	1408	5936	
BXU025	006	1412	5942	
BXU030	003	141D	5947	
BXU040	006	1427	5954	
BXU050	004	142D	5959	
BXU060	006	1431	5963	
BXU070	004	143C	5968	
BXU080	006	1440	5972	
BXU090	004	1446	5977	
BXU100	003	144A	5981	
BXU110	003	1450	5986	
BXU120	003	1453	5990	6033
BXU130	003	1456	5994	
BXU140	004	1459	5998	
BXU150	003	145D	6002	6032
BXU170	004	1460	6006	5982
BXU180	004	1464	6010	
BXU190	004	146B	6015	
BXU200	003	146F	6021	6011
BXU210	004	1472	6025	
BXU220	004	1479	6030	6048 6067



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SYMBOL	LEN	VALUE	DEFN	REFERENCES
BXU230	004	1486	6037	6026
BXU240	004	148E	6042	
BXU250	003	1495	6047	
BXU260	005	149B	6052	6043
BXU270	003	14A0	6056	
BXU280	003	14A3	6060	6084
BXU290	005	14AD	6066	
BXU300	003	14B5	6071	
BXU310	003	14B8	6076	
BXU320	004	14BB	6080	
BXU340	003	14BF	6084	
BXU350	003	14C2	6096	5994 6002 6071
BXU360	003	14C9	6101	5938 5949 6062
BXU370	004	14D8	6105	6101*
CNTAD2	001	0CF5	4022	3952
CNTBLS	002	0CF2	4018	3959
CNTBL1	002	0CFB	4026	3981
CNTBOP	002	0CEB	4007	3982
CNTBRA	001	0CE9	4006	3882
CNTCA2	002	0CF6	4023	3855* 3874* 3909 3933 3936 3951* 3980
CNTCWR	001	0CEE	4011	3925 3926*
CNTENT	001	0000	4014	3960
CNTFCP	002	0CFD	4027	3942* 3943* 3944
CNTFPE	001	001F	4028	3942
CNTPBA	002	0CF4	4019	3936 3951
CNTPSI	001	0004	4013	4015 4016
CNTSAD	001	0CF7	4024	3908* 3979*
CNTSTR	001	0014	4015	3908 4016
CNTTRM	001	0018	4016	3979
CNTUSC	001	0CEC	4009	3968
CNTWRK	002	0CF9	4025	3909* 3944 3958 3980* 3981*
STRAD2	001	0DF5	4186	4106
STRAOP	002	0DDF	4161	4047* 4056 4137* 4144
STRBOP	002	0DF0	4179	4147*
STRCA2	002	0DF6	4187	4104*
STRCOP	002	0DE2	4164	4056*
STRCWR	001	0DE5	4169	4072
STRFN2	001	0DE8	4172	4075
STRFOP	002	0DF3	4182	4144*
STRPBA	002	0DF9	4189	4090 4104
STRSB1	001	0DEE	4178	4148
STRSC1	001	0DEB	4175	4152
STRSTA	001	0DDD	4160	4054 4138
STRSTC	001	0DE0	4163	4057
STRSTF	001	0DF1	4181	4145 4150
STRSTX	001	0DE3	4166	4064
STRUSF	001	0DF4	4184	4142
STRWOP	002	0DE7	4170	4073*
STRXOP	001	0DE4	4167	
STR1OP	002	0DED	4176	4136* 4147
TRMAOP	002	0EDF	4313	4218*
TRMBIC	001	0ED8	4307	4202
TRMBN1	002	0EDC	4310	4209 4278
TRMBOP	002	0EE4	4319	4271*
TRMBRC	001	0EE2	4318	4272
TRMFN1	001	0EE5	4321	4258

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
TRMSTA	001	0EDD	4312	4217
TRMSTX	001	0EE0	4315	4253
TRMUSC	001	0EE8	4324	4260
TWOAD2	001	108D	4711	4668
TWOCA2	002	108E	4712	
V\$APWR	001	0800	2186	2331
V\$BFR1	001	5400	2249	2439
V\$BFR2	001	5500	2250	2440
V\$CBNZ	001	0CB2	2258	2338
V\$CCON	001	5120	2265	2436 4173
V\$CDCV	001	3100	2262	2391
V\$CDSY	001	2E00	2261	2388
V\$CFPZ	001	0C70	2256	2337
V\$CNXZ	001	0470	2259	2326
V\$CSSR	001	5100	2264	2435 4322 4602
V\$CZFP	001	04AD	2257	2327
V\$DTLN	001	4600	2271	2423
V\$DTVR	001	4700	2272	2424
V\$FABS	001	1761	2157	2355
V\$FACS	001	1400	2173	2347
V\$FASN	001	1413	2172	2348
V\$FATN	001	1100	2171	2344
V\$FCOS	001	0A00	2168	2333
V\$FCOT	001	0D00	2166	2339
V\$FCSC	001	1725	2170	2354
V\$FDEG	001	17DA	2177	2359
V\$FDET	001	4540	2180	2422
V\$FEXP	001	0500	2164	2328
V\$FHCS	001	1500	2176	2349
V\$FHSN	001	1557	2175	2350
V\$FHTN	001	1593	2174	2351
V\$FINT	001	176C	2158	2356
V\$FLGT	001	0200	2162	2321
V\$FLOG	001	0219	2161	2323
V\$FLTW	001	020B	2163	2322
V\$FRAD	001	17CB	2178	2358
V\$FRND	001	1800	2179	2360
V\$FSEC	001	1700	2169	2353
V\$FSGN	001	17A7	2159	2357
V\$FSIN	001	0A1A	2167	2334
V\$FSQR	001	0900	2160	2332
V\$FTAN	001	0D28	2165	2340
V\$IFCI	001	1B00	2149	2364
V\$IFIO	001	1A00	2151	2363
V\$ISDN	001	1900	2150	2361
V\$KBTL	001	1EAC	2293	
V\$KBTS	001	0DAC	2292	
V\$LPRB	001	4F00	2247	2433
V\$LPRT	001	4D00	2245	2431
V\$LPR2	001	4E00	2246	2432
V\$MADD	001	4007	2194	2411 3576
V\$MASN	001	43A0	2192	2418 3562
V\$MCON	001	4324	2199	2416 3600
V\$MIDN	001	4300	2200	2415 3604
V\$MINV	001	4500	2204	2421 3588
V\$MMPY	001	4100	2196	2412 3584

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V\$MSMY	001	4264	2197	2414 3559
V\$MSUB	001	4000	2195	2410 3580
V\$MTRN	001	4400	2203	2420 3592
V\$MZER	001	432B	2201	2417 3596
V\$PCH1	001	5200	2285	2437
V\$PCH2	001	5300	2286	2438
V\$SCDI	001	2A00	2242	2382
V\$SCDO	001	2A96	2243	2383
V\$SFA2	001	5000	2227	2434
V\$SFD1	001	0000	2237	2319
V\$SFD2	001	0100	2238	2320
V\$SKEY	001	2500	2241	2377
V\$SPRT	001	2800	2240	2380
V\$VMPL	001	4C06	2279	2430
V\$VMPS	001	4C00	2278	2429
V\$XKAF	001	1C00	2226	2365
V\$XKCA	001	2400	2230	2373
V\$XKCL	001	240A	2229	2374
V\$XKIN	001	2B00	2225	2384
V\$XKLP	001	24AD	2231	
V\$XKRS	001	240D	2228	2375
V\$XMGT	001	3E06	2219	2405 8041
V\$XMIN	001	3D00	2218	2403 6787
V\$XMPL	001	3F06	2222	2408 8598
V\$XMPS	001	3F00	2221	2407 8595
V\$XMPT	001	3E0C	2220	2406 8998
V\$XMPU	001	3F13	2223	2409 9673
V\$XMRD	001	3E00	2217	2404 7169
V\$XSGT	001	2100	2212	2370 7671
V\$XSIN	001	2B6E	2211	2385 2845
V\$XSPR	001	3400	2214	2394
V\$XSPT	001	1D00	2213	2366
V\$XSPU	001	3800	2215	2398
V\$XSRD	001	3300	2210	2393 3739
V\$00E1	001	0000	2319	
V\$01E1	001	0100	2320	
V\$02E1	001	0200	2321	
V\$02E2	001	020B	2322	
V\$02F3	001	0219	2323	
V\$03CC	001	0300	2324	
V\$04CC	001	0400	2325	
V\$04E1	001	0470	2326	
V\$04E2	001	04AD	2327	
V\$05E1	001	0500	2328	
V\$06CC	001	0600	2329	
V\$07CC	001	0700	2330	
V\$08E1	001	0800	2331	
V\$09E1	001	0900	2332	
V\$10E1	001	0A00	2333	
V\$10E2	001	0A1A	2334	
V\$11CC	001	0B00	2335	
V\$12CC	001	0C00	2336	
V\$12E1	001	0C70	2337	
V\$12E2	001	0CB2	2338	
V\$13E1	001	0D00	2339	
V\$13E2	001	0D28	2340	

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SYMBOL   LEN   VALUE   DEFN   REFERENCES   VER 15, MOD 00   20/07/20   PAGE 219

V\$14CC   001   0E00   2341  
V\$15CC   001   0F00   2342  
V\$16CC   001   1000   2343  
V\$17E1   001   1100   2344  
V\$18CC   001   1200   2345  
V\$19CC   001   1300   2346  
V\$20E1   001   1400   2347  
V\$20E2   001   1413   2348  
V\$21E1   001   1500   2349  
V\$21E2   001   1557   2350  
V\$21E3   001   1593   2351  
V\$22CC   001   1600   2352  
V\$23E1   001   1700   2353  
V\$23E2   001   1725   2354  
V\$23E3   001   1761   2355  
V\$23E4   001   176C   2356  
V\$23E5   001   17A7   2357  
V\$23E6   001   17CB   2358  
V\$23E7   001   17DA   2359  
V\$24E1   001   1800   2360  
V\$25E1   001   1900   2361  
V\$26E1   001   1A00   2363  
V\$27E1   001   1B00   2364  
V\$28E1   001   1C00   2365  
V\$29E1   001   1D00   2366  
V\$30CC   001   1E00   2367  
V\$31CC   001   1F00   2368  
V\$32CC   001   2000   2369  
V\$33E1   001   2100   2370  
V\$34CC   001   2200   2371  
V\$35CC   001   2300   2372  
V\$36CC   001   2400   2376  
V\$36E1   001   2400   2373  
V\$36E2   001   240A   2374  
V\$36E3   001   240D   2375  
V\$37E1   001   2500   2377  
V\$38CC   001   2600   2378  
V\$39CC   001   2700   2379  
V\$40E1   001   2800   2380  
V\$41CC   001   2900   2381  
V\$42E1   001   2A00   2382  
V\$42E2   001   2A96   2383  
V\$43E1   001   2B00   2384  
V\$43E2   001   2B6E   2385  
V\$44CC   001   2C00   2386  
V\$45CC   001   2D00   2387  
V\$46E1   001   2E00   2388  
V\$47CC   001   2F00   2389  
V\$48CC   001   3000   2390  
V\$49E1   001   3100   2391  
V\$50CC   001   3200   2392  
V\$51E1   001   3300   2393  
V\$52E1   001   3400   2394  
V\$53CC   001   3500   2395  
V\$54CC   001   3600   2396  
V\$55CC   001   3700   2397

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V\$56E1	001	3800	2398	
V\$57CC	001	3900	2399	
V\$58CC	001	3A00	2400	
V\$59CC	001	3B00	2401	
V\$60CC	001	3C00	2402	
V\$61E1	001	3D00	2403	
V\$62E1	001	3E00	2404	
V\$62E2	001	3E06	2405	
V\$62E3	001	3E0C	2406	
V\$63E1	001	3F00	2407	
V\$63E2	001	3F06	2408	
V\$63E3	001	3F13	2409	
V\$64E1	001	4000	2410	
V\$64E2	001	4007	2411	
V\$65E1	001	4100	2412	
V\$66CC	001	4200	2413	
V\$66E1	001	4264	2414	
V\$67E1	001	4300	2415	
V\$67E2	001	4324	2416	
V\$67E3	001	432B	2417	
V\$67E4	001	43A0	2418	
V\$68E1	001	4400	2420	
V\$69E1	001	4500	2421	
V\$69E2	001	4540	2422	
V\$70E1	001	4600	2423	
V\$71E1	001	4700	2424	
V\$72CC	001	4800	2425	
V\$73CC	001	4900	2426	
V\$74CC	001	4A00	2427	
V\$75CC	001	4B00	2428	
V\$76E1	001	4C00	2429	
V\$76E2	001	4C06	2430	
V\$77CC	001	4D00	2431	
V\$78CC	001	4E00	2432	
V\$79CC	001	4F00	2433	
V\$80E1	001	5000	2434	
V\$81E2	001	5100	2435	
V\$81E3	001	5120	2436	
V\$82E1	001	5200	2437	
V\$83E2	001	5300	2438	
V\$84E1	001	5400	2439	
V\$85E2	001	5500	2440	
V@CDPT	001	0007	2451	
V@CHGH	001	0008	2556	
V@CMIC	001	0002	2452	
V@CMNI	001	00FF	2449	
V@CMUL	001	0007	2557	
V@CNIX	001	0080	2450	
V@COEX	001	001E	2447	
V@CPLS	001	00F0	2454	
V@CPRC	001	000A	2456	
V@CSQR	001	0003	2554	
V@CSTR	001	0002	2555	
V@CTTA	001	0027	2457	
V@DCAD	001	0002	2477	2478
V@DEXP	001	0000	2482	

## CROSS REFERENCE

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SYMBOL	LEN	VALUE	DEFN	REFERENCES
V@DMAN	001	000D	2484	2485
V@DMN1	001	0001	2483	
V@DPDF	001	0002	2472	
V@DSAD	001	0001	2473	
V@DSGN	001	000D	2485	
V@DVAD	001	0004	2478	
V@EART	001	0001	2455	
V@ECRT	001	0038	2528	
V@EFUL	001	00F8	2527	
V@EINV	001	00FB	2523	
V@EIPR	001	00F5	2524	
V@ENSV	001	00F7	2525	
V@ENUL	001	0000	2522	
V@ERPC	001	0020	2453	
V@ESAV	001	00F6	2526	
V@FEHN	001	0002	2552	
V@FEPL	001	0091	2548	
V@FERS	001	0003	2551	
V@FPGS	001	0081	2547	
V@FRET	001	0015	2550	
V@FSPC	001	0040	2549	
V@FTAB	001	0000	2553	
V@KADD	001	004E	2538	
V@KCLE	001	006E	2535	
V@KDIV	001	0061	2541	
V@KEMN	001	006C	2533	
V@KEPL	001	006B	2532	
V@KMUL	001	005C	2540	
V@KPER	001	004B	2543	
V@KPST	001	007B	2537	
V@KPWR	001	005A	2542	
V@KSQR	001	006F	2534	
V@KSTO	001	006D	2536	
V@KSUB	001	0060	2539	
V@LAIP	001	0003	2503	2504
V@LDEX	001	0002	2506	
V@LETE	001	0003	2510	
V@LEXP	001	0001	2500	2502
V@LFKO	001	0006	2505	
V@LINI	001	0200	2509	
V@LLKS	001	0010	2502	
V@LMAN	001	000F	2501	2502
V@LNOP	001	0015	2507	
V@LTBE	001	0007	2504	
V@LVPG	001	0100	2508	2509
V@MCHS	001	00C0	2489	
V@MCRD	001	0010	2465	
V@MDEF	001	0008	2466	
V@MEXC	001	0080	2463	
V@MEXT	001	0004	2492	
V@MICC	001	0010	2448	
V@MIPC	001	0080	2490	
V@MIPL	001	0020	2496	
V@MLST	001	0040	2464	
V@MPND	001	0000	2495	
V@MPOF	001	0080	2493	



[illegible]

START ADDRESS	CATEGORY	NAME AND ENTRY	CODE LENGTH HEXADECIMAL	DECIMAL
0600	0	#BOVLY	1FF7	8183
OL100	I	THE TOTAL CORE USED BY #BOVLY IS 8183 DECIMAL.		
OL101	I	THE START CONTROL ADDRESS OF THIS MODULE IS 0600.		
OL104	I	TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS 32		
		NAME-#BOVLY,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O		