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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT      COPYRIGHT IBM CORP 1976
3 ***** COPY LOG7824 ***** ** MAP EC HISTORY **
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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT      COPYRIGHT IBM CORP 1976
002500 2624 198 ***** DC A(ENTPT) ***** POINT TO MAP ENTRY POINT TABLE
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LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
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LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976

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536 *****
537 *****
538 F00004 EQU *
539 AL2(0003)
540 A(0044)
541 D9C5D7D3C1C3C540F DC CLO044*REPLACE 4962 CARDS A-A1C2,A-A1D2,ATTACHMENT.'
542 A(0044)
543 CLO044*INSPECT AND RESEAT CABLES BETWEEN ATTACHMENT'
544 A(0034)
545 CLO034*AND 4962. REPLACE A-A1G2, A-A1H2. '
546 F00008 EQU *
547 AL2(0002)
548 A(0042)
549 CLO042*REPLACE 4962 ATTACHMENT CARD, INSPECT AND '
550 A(0042)
551 CLO042*RESEAT CABLES BETWEEN ATTACHMENT AND 4962 '
552 F00011 EQU *
553 AL2(0002)
554 A(0042)
555 CLO042*4962 FAILURE,GO TO PAPEP ONLY MAP 7885 FOR'
556 A(0012)
557 CLO012*MORE TESTING'
558 F00130 EQU *
559 AL2(0001)
560 A(0042)
561 CLO042*FOR MORE TESTING GO TO PAPER ONLY MAP 7885'
562 HDIT 00B2
564+OPTN1 DC X'0000' PROGRAM OPTION CONTROL WORD 1
565+OPTN2 DC X'0000' PROGRAM OPTION CONTROL WORD 2
567** BIT HEX
568+B48 EQU 16 0 8
569+B49 EQU 17 1 4
570+B50 EQU 18 2 2
571+B51 EQU 19 3 1
572+B52 EQU 20 4 8
573+B53 EQU 21 5 4
574+B54 EQU 22 6 2
575+B55 EQU 23 7 1
576+B56 EQU 24 8 4
577+B57 EQU 25 9 2
578+B58 EQU 26 10 1
579+B59 EQU 27 11 1
580+B60 EQU 28 12 8
581+B61 EQU 29 13 4
582+B62 EQU 30 14 2
583+B63 EQU 31 15 1
584+CH EQU 30 14 2
585+CMF EQU 31 15 1
587+OPTN3 DC X'0000' PROGRAM OPTION CONTROL WORD 3
588**
589** 0 MYSTERY INTERRUPT MI 8 CS STATUS IN PROGRESS CSA
590** 1 ERROR INTERRUPT ER 9 CS AVAILABLE CSA
591** 2 EXPECTED INTERRUPT XI 10 CS STATUS INTERRUPT ERR CE
592** 3 INTERRUPT RECEIVED IN 11 ISB BITS ON (1-7) ISBON
593**
594** 4 EXPECTED EPR/ATTENT XE 12 TEST UNIT RESULTS VOID NG
595** 5 HARD ERROR FOUND HE 13 OIO CC ERROR IOCC
596** 6 WRONG INTR LEVEL SLE 14 NO INTERRUPT NOIN
597** 7 NO INTR EXPECTED NI 15 INTERRUPT CC ERROR INCC
598**
599+MI EQU 32 0 8 MYSTERY INTERRUPT HAPPENED
600+ER EQU 33 1 4 EPORR RECEIVED ON INTERRUPT
601+XI EQU 34 2 2 EXPECTED INTERRUPT CONTROL BIT
602+IN EQU 35 3 1 INTERRUPT RECEIVED CONTROL BIT
603+XE EQU 36 4 8 EXPECTED ERROR RESPONSE
604+HE EQU 37 5 4 HARD ERROR 8 RETRIES
605+SLE EQU 38 6 2 INTERRUPT ON WRONG LEVEL ERROR
606+NI EQU 39 7 1 NO INTERRUPT EXPECTED E
607+CS EQU 40 8 8 CYCLE STATUS IN PROGRESS
608+CSA EQU 41 9 4 CYCLE STEAL AVAILABLE
609+CE EQU 42 10 2 CYCLE STEAL STATUS INERRRUPT ERROR
610+ISBON EQU 43 11 1 ISB BITS ON (1-7)
611+NG EQU 44 12 8 TEST UNIT RESULTS NO GOOD
612+IOCC EQU 45 13 4 OIO CC ERROR
613+NOIN EQU 46 14 2 NO INTERRUPT
614+INCC EQU 47 15 1 INTERRUPT CC EPROR
615**
616** COMMON BUFFER FOR PRINTING DATA
617**
619+$TUID DC A(*-*) TEST UNIT IDENTIFICATION
620+$IOIN DC A(*-*) I/O AND INTR CONDITION CODES
621+$ISB DC A(*-*) R7, INTR STATUS BYTE & DEV ADRS
622+$LSTIO DC A(*-*) ADRS OF LAST I/O + 4 BYTES
623+$DEV1 DC A(*-*) DEVICE DEPENDENT DATA
624+$DEV2 DC A(*-*) *
625+$DEV3 DC A(*-*) *
626+$DEV4 DC A(*-*) *
627+$SCTID EQU DEV1 READ ID BUFFER FOR IBIS & TERN
628+$DCBUF EQU * DCB BUFFER FOR LAST DCB USED
629+$DCB1 DC A(*-*) LAST DCB TABLE, CONTROL WORD
630+$DCB2 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
631+$DCB3 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
632+$DCB4 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
633+$DCB5 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
634+$DCB6 DC A(*-*) LAST DCB TABLE, CHAIN ADRS
635+$DCB7 DC A(*-*) LAST DCB TABLE, BYTE COUNT
636+$DCB8 DC A(*-*) LAST DCB TABLE, BUFFER ADDRESS
637**
638+$CSBUF EQU * CYCLE STEAL DATA BUFFER
639+$CSTL1 DC A(*-*) CYCLE STEAL BUFFER, RESIDUAL ADRS
640+$CSTL2 DC A(*-*) CYCLE STEAL WD 2, DEVICE DEPEND
641+$CSTL3 DC A(*-*) CYCLE STEAL WD 3, DEVICE DEPEND
642+$CSTL4 DC A(*-*) CYCLE STEAL WD 4, DEVICE DEPEND
643+$CSTL5 DC A(*-*) CYCLE STEAL WD 5, DEVICE DEPEND
644+$CSTL6 DC A(*-*) CYCLE STEAL WD 6, DEVICE DEPEND
645+$CSTL7 DC A(*-*) CYCLE STEAL WD 7, DEVICE DEPEND
646+$CSTL8 DC A(*-*) CYCLE STEAL WD 8, DEVICE DEPEND
647**
648+$SUBN DC A(*-*) LAST SUBROUTINE ADDRESS USED
649+$DATA DC 2A(*-*) OPTIONAL DATA
650+$INEL DC X'0021' INTERRUPT LEVEL REQUESTED
651+$TURN DC A(*-*) TEST UNIT RETURN ADRS TO MDI
652+$DVID DC X'00B2' DEVICE ID

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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976

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0027B2 19D0 653+SVCAL DC A(DEVADD) ADRS OF DEVICE ADDRESS
0027B4 0000 654+ DC A(*-*) IBIS CYLINDER ADDRESS
655**
656** THIS TEST UNIT WILL RETURN TO MDI WITHOUT DOING ANY PROGRAM
657** FUNCTION. THE RESULTS THAT WERE SET UP IN THE RESULTS AREA ARE
658** STILL VALID BUT A DIFFERENT TEST IS TO BE PERFORMED.
659**
0027B6 4020 2776 3C02 660+23C02 MVWI X'3C02', $TUID SET UP TEST UNIT ID
0027BC 5700 661+ BXS (R7) RETURN TO MDI SUPVR
662+ COPY COMEQU
663 *****
664 *****
665 *
666 * EQUATED NAMES FOR SUPPORTED SVC'S
667 *
668 *****
669 OUT EQU 0 OUT SVC
670 OUTIN EQU 1 OUTIN SVC
671 IDLE EQU 2 IDLE SVC
672 ASCII EQU 3 HEX TO ASCII SVC
673 CHNGE EQU 4 CHANGE LEVEL SVC
674 PGMCK EQU 5 ALLOW RETURN ON PROGRAM CHECK SVC
675 EXIT EQU 6 EXIT SVC
676 TERM EQU 7 TERMINATE SVC
677 RESET EQU 8 RESET DEVICE SVC
678 RID EQU 9 READ ID SVC
679 START EQU 10 START CYCLE STEAL SVC
680 STCSS EQU 11 START CYCLE STEAL STATUS SVC
681 PREP EQU 12 PREPARE DEVICE SVC
682 READ0 EQU 13 READ WITH FUNCTION BIT 3 OFF SVC
683 READ1 EQU 14 READ WITH FUNCTION BIT 3 ON SVC
684 RSTAT EQU 15 READ STATUS SVC
685 WRIT0 EQU 16 WRITE WITH FUNCTION BIT 3 OFF SVC
686 WRIT1 EQU 17 WRITE WITH FUNCTION BIT 3 ON SVC
687 CTRL EQU 18 CONTROL SVC
688 RICB EQU 19 RELEASE INTERRUPT CONTROL BLOCK SVC
689 CICB EQU 20 CONNECT INTERRUPT CONTROL BLOCK SVC
690 HIO EQU 21 HALT ALL I/O
691 RECSO EQU 22 REQUEST USE OF DCP DISK SVC
692 RELSD EQU 23 RELEASE USE OF DCP DISK SVC
693 HALT EQU 24 HALT SVC
694 HTOH EQU 25 HEX TO EBCDIC SVC (STRING)
695 HTOA EQU 26 ASCII TO HEX SVC (STRING)
696 ATOH EQU 27 HEX TO ASCII SVC (STRING)
697 HTOA EQU 28 EBCDIC TO ASCII SVC (STRING)
698 ATOA EQU 29 ASCII TO EBCDIC SVC (STRING)
699 ATOE EQU 30 ASCII TO EBCDIC SVC (STRING)
700 READI EQU 31 READ DATA SETS FOR MDI/UTIL
701 WRITI EQU 32 WRITE DATA SETS FOR UTIL
702 *****
703 *****
704 *
705 * EQUATES USED BY TU'S AS CONSTANTS
706 *
707 *****
708 PLUS EQU C'+ PLUS CHAR
709 MINUS EQU C-' MINUS CHAR
710 ZERO EQU 0
711 ONE EQU 1
712 TWO EQU 2
713 THREE EQU 3
714 FOUR EQU 4
715 FIVE EQU 5
716 SIX EQU 6
717 SEVEN EQU 7
718 EIGHT EQU 8
719 NINE EQU 9
720 TEN EQU 10
721 ELEVN EQU 11
722 TWELV EQU 12
723 THRTN EQU 13
724 FIVTN EQU 14
725 SIXTN EQU 15
726 THRY2 EQU 16
727 THRY4 EQU 32
728 SIXT4 EQU 64
729 ONE28 EQU 128
730 TWO56 EQU 256
731 ONEK EQU 1024
732 TWOK EQU 2048
733 THREEK EQU 3072
734 FOURK EQU 4096
735 M1 EQU -1
736 M2 EQU -2
737 M3 EQU -3
738 M4 EQU -4
739 *****
740 *****
741 *****
742 *
743 * THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE
744 * BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES.
745 *
746 *****
747 BS0 EQU 0
748 BS1 EQU 1
749 BS2 EQU 2
750 BS3 EQU 3
751 BS4 EQU 4
752 BS5 EQU 5
753 BS6 EQU 6
754 BS7 EQU 7
755 BS8 EQU 8
756 BS9 EQU 9
757 BS10 EQU 10
758 BS11 EQU 11
759 BS12 EQU 12
760 BS13 EQU 13
761 BS14 EQU 14
762 BS15 EQU 15
763 *****
764 ** COPY CK78DCB 01DEC76
765 ** (T78DCB) 13AUG76
766 *****
767 *
768 * DCB TABLES AND DC'S
769 *
770 *****
771 *****
772 ***** DIAGNOSTIC DCB *****

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LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
00277E	2008	773 *		
0027C0	0000	774 DGDCB DC	X'2008'	DIAGNOSTIC DCB
0027C2	0000	775 DC	X'0000'	NOT USED
0027C4	0000	776 DC	X'0000'	NOT USED
0027C6	0000	777 DC	X'0000'	NOT USED
0027C8	0000	778 DC	X'0000'	NOT USED
0027CA	0100	779 DC	A(*-*)	CHAINING ADDRESS
0027CC	0000	780 DC	X'0100'	BYTE COUNT
		781 DC	A(*-*)	DATA ADDRESS
		782 *		
		783 *		
		784 *****	RECALIBRATE DCB *****	
0027CE	0007	785 *		
0027D0	000000000000000000	786 CLDCB DC	X'0007'	RECALIBRATE DCB
		787 DC	7A(*-*)	
		788 *		
		789 *****	WRITE SECTOR ID **	
		790 *		
0027DE	0002	791 WSDCB DC	X'0002'	WRITE SECTOR ID CONTROL WORD
0027E0	0000	792 DC	X'0000'	NOT USED
0027E2	0000	793 DC	A(*-*)	0-7 = PHYSICAL SECTOR # MINUS ONE
0027E4	0000	794 DC	A(*-*)	NOT USED
0027E6	0000	795 DC	A(*-*)	NOT USED
0027E8	0000	796 DC	A(*-*)	CHAIN ADDRESS
0027EA	0006	797 DC	X'0006'	BYTE COUNT
0027EC	288A	798 DC	A(WRSID)	ADDR OF SECTOR ID DATA
		799 *****	READ SECTOR ID DCB *****	
		800 *		
0027EE	200A	801 FSDCB DC	X'200A'	READ SECTOR ID
0027F0	0000	802 DC	X'0000'	NOT USED
0027F2	0000	803 DC	X'0000'	0-7 = PHYSICAL SECTOR # MINUS ONE
0027F4	0000	804 DC	X'0000'	NOT USED
0027F6	0000	805 DC	X'0000'	NOT USED
0027F8	0000	806 DC	X'0000'	CHAIN ADDRESS
0027FA	0006	807 DC	X'0006'	BYTE COUNT FOR READ SECTOR ID
0027FC	277E	808 DC	A(SCTID)	SECTOR ID DATA ADDRESS
		809 *		
		810 *		
		811 *****	READ SECTOR ID IMMEDIATE DCB *****	
		812 *		
0027FE	200E	813 RIDCB DC	X'200E'	READ SECTOR ID
002800	0000	814 DC	X'0000'	NOT USED
002802	0000	815 DC	X'0000'	NOT USED
002804	0000	816 DC	X'0000'	NOT USED
002806	0000	817 DC	X'0000'	NOT USED
002808	0000	818 DC	A(*-*)	CHAIN ADDRESS
00280A	0006	819 DC	X'0006'	BYTE COUNT FOR READ SECTOR ID
00280C	277E	820 DC	A(SCTID)	SECTOR ID DATA ADDRESS
		821 *		
		822 *		
		823 *****	SEEK DCB *****	
		824 *		
00280E	0005	825 SKDCB DC	X'0005'	SEEK DCB
002810	0000	826 DC	X'0000'	BIT 0-3=0; BIT4=DIRECTION; 5-15=DIFFER
002812	0000	827 DC	F'0'	
002814	0000	828 DC	F'0'	
002816	0000	829 DC	X'0000'	0-7 = HEAD; 8-15 NOT USED
002818	0000	830 DC	A(*-*)	CHAIN ADDRESS
00281A	0000	831 DC	F'0'	NOT USED
00281C	0000	832 DC	F'0'	NOT USED
		833 *		
		834 *****	CYCLE STEAL STATUS DCB *****	
		835 *		
00281E	2000	836 CSDCB DC	X'2000'	CONTROL WORD
002820	0000	837 DC	F'0'	NOT USED
002822	0000	838 DC	F'0'	NOT USED
002824	0000	839 DC	F'0'	NOT USED
002826	0000	840 DC	F'0'	NOT USED
002828	0000	841 DC	F'0'	NOT USED
00282A	0008	842 DC	X'0008'	4 WORDS OF STATS
00282C	2796	843 DC	A(CSBUF)	ADDRESS OF CYCLE STEAL STATUS DATA
		844 *		
		845 *****	WRITE DCB *****	
		846 *		
00282E	0001	847 WRDCB DC	X'0001'	WRITE CONTROL WORD
002830	0000	848 DC	F'0'	NOT USED
002832	0000	849 DC	X'0000'	0-7=0; 8-15 = FLAG BYTE
002834	0000	850 DC	X'0000'	SEARCH ARGUMENT CYLINDER
002836	0000	851 DC	X'0000'	SEARCH ARGUMENT HEAD-SECTOR
002838	0000	852 DC	A(*-*)	CHAIN ADDRESS
00283A	0000	853 DC	F'0'	BYTE COUNT
00283C	0000	854 DC	A(*-*)	WRITE DATA ADDRESS
		855 *		
		856 *****	VERIFY DCB *****	
		857 *		
00283E	200C	858 VRDCB DC	X'200C'	CONTROL WORD
002840	0000	859 DC	F'0'	NOT USED
002842	0000	860 DC	X'0000'	0-7=0; 8-15 = FLAG BYTE
002844	0000	861 DC	X'0000'	CYLINDER
002846	0000	862 DC	X'0000'	HEAD - SECTOR
002848	0000	863 DC	A(*-*)	CHAIN ADDRESS
00284A	0000	864 DC	F'0'	BYTE COUNT
00284C	0000	865 DC	A(*-*)	VERIFY DATA ADDRESS
		866 *		
		867 *****	READ DCB *****	
		868 *		
00284E	2009	869 RDCCB DC	X'2009'	READ DCB CONTROL WORD
002850	0000	870 DC	F'0'	NOT USED
002852	0000	871 DC	X'0000'	0-7=0; 8-15 = FLAG BYTE
002854	0000	872 DC	X'0000'	SEARCH ARGUMENT CYLINDER
002856	0101	873 DC	X'0101'	SEARCH ARGUMENT H-R
002858	0000	874 DC	A(*-*)	CHAIN ADDRESS
00285A	0000	875 DC	F'0'	BYTE COUNT
00285C	0000	876 DC	A(*-*)	READ DATA ADDRESS
		877 *		
		878 *****	WRITE SECTOR ID SKEWED *****	
		879 *		
00285E	0003	880 WKDCB DC	X'0003'	CONTROL WORD
002860	0000	881 DC	X'0000'	NOT USED
002862	0000	882 DC	A(*-*)	0-7 = PHYSICAL SECTOR # MINUS ONE
002864	0000	883 DC	A(*-*)	NOT USED
002866	0000	884 DC	A(*-*)	NOT USED
002868	0000	885 DC	A(*-*)	CHAIN ADDRESS
00286A	0006	886 DC	X'0006'	BYTE COUNT

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
00286C	288A	887 DC	A(WRSID)	ADDR OF SECTOR ID DATA
		888 *		
		889 ****	READ SECTOR ID SKEWED ****	
		890 *		
00286E	200E	891 RKDCB DC	X'200E'	CONTROL WORD
002870	0000	892 DC	X'0000'	NOT USED
002872	0000	893 DC	X'0000'	0-7 = PHYSICAL SECTOR # MINUS ONE
002874	0000	894 DC	X'0000'	NOT USED
002876	0000	895 DC	X'0000'	NOT USED
002878	0000	896 DC	A(*-*)	CHAIN ADDRESS
00287A	0006	897 DC	X'0006'	BYTE COUNT FOR READ SECTOR ID
00287C	277E	898 DC	A(SCTID)	SECTOR ID DATA ADDRESS
		899 *		
		900 *	CONSTANTS AND DEFINED STORAGE LOCATIONS	
00287E	0000	901 ZERO0 DC	X'0000'	CONSTANT ZERO
002880	0001	902 ONE1 DC	X'0001'	CONSTANT ONE
002882	0000	903 LGSEC DC	X'0000'	LOGICAL SECTOR #
002884	0000	904 PHYSC DC	X'0000'	CONVERTED PHYSICAL SEC #
002886	1000	905 CB29 DC	X'1000'	CONSTANT BYTE 29
002888	3800	906 FIVE9 DC	X'3800'	CONSTANT BYTE 59
00288A	0000	907 WPSID DC	X'0000'	FLAG, CYLINDER (WPT SECTOR ID DATA)
00288C	0000	908 DC	X'0000'	CYLINDER HEAD
00288E	0000	909 DC	X'0000'	LOG SECTOR, NOT USED
002890	FE34	910 WSIDT DC	X'FE34'	WRITE SECTOR ID TEST DATA
002892	5678	911 DC	X'5678'	*
002894	9A00	912 DC	X'9A00'	*
002896	0000	913 SCTST DC	X'0000'	READ SECTOR ID TEST DATA 3 UPPER
002898	0000	914 DC	X'0000'	*
00289A	0000	915 DC	X'0000'	*
00289C	0000	916 CTR01 DC	X'0000'	COUNTER
00289E	0000	917 DIFF DC	X'0000'	DIFFERENCE LOC
0028A0	0000	918 XXX DC	X'0000'	DIRECTION
		919 *		
		921 *	COPY T78DPCIO	01DEC76
		922 **	(T78DPCIO)	
		923 *		
		924 *	EXECUTE DPC INPUT/OUTPUT COMMANDS	2/07/77
		925 *	THIS ROUTINE HAS THE FOLLOWING ENTRIES:	
		926 *		
		927 * 1	BAL CEOP1,R6	CE DIAGNOSTIC OP1(TURN ON DIAG MODE)
		928 *		
		929 * 2	BAL CEOP2,R6	WRITE DIAG CLOCK STEP DATA
		930 *		
		931 * 3	BAL SENS0,R6	CE FEAD SENSE WORD ZERO
		932 *		
		933 * 4	BAL SENS1,R6	CE FEAD SENSE WORD ONE
		934 *		
		935 * 5	BAL WRAP,R6	READ DIAGNOSTIC WRAP
		936 *		
		937 *	BXS (R6,2)	RETURN
		938 *		
		939 *****	*****	
		940 *		
		941 *	CE DIAGNOSTIC OP2 DATA WORD (CLOCK STEP)	
		942 *		
		943 *	BIT 00 - SET READY	
		944 *	BIT 01 - RESET READY	
		945 *	BIT 02 - SET WRITE CLOCK	
		946 *	BIT 03 - SET READ CLOCK	
		947 *	BIT 04 - INDEX PULSE	
		948 *	BIT 05 - STANDARD PULSE	
		949 *	BIT 06 - STANDARD READ DATA	
		950 *	BIT 07 - SPEED PULSE	
		951 *	BIT 08 - BEHIND HOME	
		952 *	BIT 09 - SET SEEK COMPLETE	
		953 *	BIT 10 - RESET SEEK COMPLETE	
		954 *	BIT 11 - PLO OUT OF SYNC	
		955 *	BIT 12 - RST RD/WRT CLOCK	
		956 *	BIT 13 -	
		957 *	BIT 14 -	
		958 *	BIT 15 - RESET DIAGNOSTIC MODE	
		959 *		
		960 *****	*****	
		961 *		
		962 *		
0028A2	6E0D 277C	963 WRAP MVB	R6,LSTIO	SAVE ADDRESS OF LAST IO
0028A6	8028 19D0 2925	964 MVB	DEVADD,IDCBRAP+1	LOAD DEVICE ADDRESS IN IDCB
0028AC	680C 2924	965 IO	IDCBRAP	READ SENSE WORD 1
0028B0	6F05 2906	966 BNCC	7,CCERR	CHECK COND CODE
0028B4	5601	967 BXS	(R6,2)	RETURN TO CALLER
		968 *		
0028B6	6E0D 277C	969 CEOP1 MVB	R6,LSTIO	SAVE ADDRESS OF LAST IO
0028BA	8028 19D0 291D	970 MVB	DEVADD,IDCBCE1+1	LOAD DEVICE ADDRESS IN IDCB
0028C0	680C 291C	971 IO	IDCBCE1	SET DIAGNOSTIC MODE
0028C4	6F05 2906	972 BNCC	7,CCERR	CHECK COND CODE
0028C8	5601	973 BXS	(R6,2)	RETURN TO CALLER
		974 *		
0028CA	6E0D 277C	975 CEOP2 MVB	R6,LSTIO	SAVE ADDRESS OF LAST IO
0028CE	8028 19D0 2921	976 MVB	DEVADD,IDCBCE2+1	LOAD DEVICE ADDRESS IN IDCB
0028D4	680C 2920	977 IO	IDCBCE2	WRITE DIAG CLOCK STEP
0028D8	6F05 2906	978 BNCC	7,CCERR	CHECK COND CODE
0028DC	5601	979 BXS	(R6,2)	RETURN TO CALLER
		980 *		
0028DE	6E0D 277C	981 SENS1 MVB	R6,LSTIO	SAVE ADDRESS OF LAST IO
0028E2	8028 19D0 2919	982 MVB	DEVADD,IDCB1+1	LOAD DEVICE ADDRESS IN IDCB
0028E8	680C 2918	983 IO	IDCB1	READ SENSE WORD 2
0028EC	6F05 2906	984 BNCC	7,CCERR	CHECK COND CODE
0028F0	5601	985 BXS	(R6,2)	RETURN TO CALLER
		986 *		
0028F2	6E0D 277C	987 SENS0 MVB	R6,LSTIO	SAVE ADDRESS OF LAST IO
0028F6	8028 19D0 2915	988 MVB	DEVADD,IDCB0+1	LOAD DEVICE ADDRESS IN IDCB
0028FC	680C 2914	989 IO	IDCB0	READ SENSE WORD 1
002900	6F05 2906	990 BNCC	7,CCERR	CHECK COND CODE
002904	5601	991 BXS	(R6,2)	RETURN TO CALLER
		992 *		
002906	706E	993 CCERP DC	X'706E'	COPY STATUS ANY LEVEL INTO R3
002908	336A	994 SRL	13,R3	POSITION CC CODE TO BITS 13-15
00290A	C328 2778	995 MVB	R3,SI0IN	* PUT IN LOG AREA
00290E	68D2 0000	997 B	(R6)*	RETURN TO USER
		998 *		
002912	6F05	999 IORST DC	X'6F05'	RESET IO
002914	2205	1000 IDCB0 DC	X'2205'	SENSE WORD ZERO
002916	0000	1001 RDATA0 DC	A(*-*)	DATA WORD


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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
002918 2105 1002 IDCB1 DC X'2105' SENSE WORD ONE
00291A 0000 1003 RDATA DC A(*-*)
00291C 4005 1004 IDCBCE1 DC X'4005' CE DIAG OP1
00291E 0000 1005 CEDAT DC A(*-*) SENSE DATA
002920 4105 1006 IDCBCE2 DC X'4105' CE DIAG OP2
002922 0000 1007 CEDAT2 DC A(*-*) SENSE DATA
002924 2800 1008 IDCBEP DC X'2F05' READ DIAG WRAP
002926 0000 1009 RAPDAT DC A(*-*) SENSE DATA
002932 1010 CPUID EQU X'0232' CPU ID
1011 *
1013 COPY T78IO 01DEC76
1014 ** (T78IO)
1015 *****12/01/76*****
1016 *
1017 * SUBROUTINE
1018 *
1019 * PURPOSE
1020 *
1021 * COMPARE READ SECTOR ID DATA TO WRITE SECTOR ID DATA
1022 * NORMAL AND TEST DATA.
1023 *
1024 * CALLING SEQUENCE
1025 *
1026 * BAL CMPRW,R6 (NORMAL)
1027 * BAL CMPRT,R6 (TEST)
1028 *
1029 * RETURN
1030 *
1031 * BXS (P6,2) - NPMAL
1032 *
1033 *
1034 *****
1035 *
1036 CMPRT MVWI 5,R7 BYTE COUNT
1037 MVA SCTST+1,R3 ADDR OF RD SECT ID DATA (TEST)
1038 MVA WSIDT,R5 ADDR OF WR SECT ID DATA (TEST)
1039 J TT4Y
1040 CMPRW MVWI 5,R7 COMPARE BYTE COUNT
1041 MVA SCTID+1,R3 ADDR OF RD SEC ID DATA
1042 MVA WRSID,R5 ADDR OF WR SEC ID DATA
1043 TT4Y CFNEN (R3),(R5) COMPARE ID DATA
1044 BE (R6,2) BCH IF WRITE ID DATA OK
1045 B (R6)* COMPARE ERROR
1046 *
1047 *****
1048 *
1049 * SUBROUTINE
1050 *
1051 * PURPOSE
1052 * CONVERT LOGICAL SECTOR NUMBER TO A PHYSICAL SECTOR MINUS
1053 * ONE.
1054 * SETUP LOGICAL SECTOR # IN LOCATION 'LGSEC'
1055 * PHYSICAL SECTOR # WILL BE LOADED IN LOCATION 'PHYS'
1056 *
1057 * LOGICAL SECTOR# TO PHYSICAL SECTOR# CONVERSION
1058 * LOGICAL- X 00, 1E, 01, 1F, 02, 20, 03, 21, 04, 22, 05, 23, 06, 24,
1059 * PHYSICAL X 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B, 0C, 0D,
1060 *
1061 * LOGICAL- 0E, 25, 08, 26, 09, 27, 0A, 28, 0B, 29, 0C, 2A, 0D, 2B,
1062 * PHYSICAL 0E, 0F, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 1A, 1B,
1063 *
1064 * LOGICAL- 0E, 2C, 0F, 2D, 10, 2E, 11, 2F, 12, 30, 13, 31, 14, 32,
1065 * PHYSICAL 1C, 1D, 1E, 1F, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,
1066 *
1067 * LOGICAL- 15, 33, 16, 34, 17, 35, 18, 36, 19, 37, 1A, 38, 1B, 39,
1068 * PHYSICAL 2A, 2B, 2C, 2D, 2E, 2F, 30, 31, 32, 33, 34, 35, 36, 37,
1069 *
1070 * LOGICAL- 1C, 3A, 1D, 3B, X
1071 * PHYSICAL 38, 39, 3A, 3B, X
1072 *
1073 *
1074 * CALLING SEQUENCE
1075 *
1076 * BAL CONV, R6
1077 *
1078 * RETURN
1079 *
1080 * B (TT304+2)
1081 *
1082 *****
1083 *
1084 CONV MVW R6,TT304+2 SETUP RETURN ADDR
1085 CB ZERO, LGSEC+1 CK FOR LOG # ZERO
1086 JE TT303 BCH IF LOG # IS ZERO
1087 CB LGSEC+1,CB29 COMP LOG TO 29
1088 JGE RTT01 BCH IF LGSEC EQ OR LESS THAN CB29
1089 MVWI 2,R0 SETUP MULTIPLIER
1090 HB LGSEC+1,R0 LOG SECTOR # TIMES 2
1091 SWI 6,R0 LOG SEC TIMES 2 MINUS 60
1092 HVB R0,PHYS+1 PHYSICAL SECTOR NUMBER
1093 J TT304 RETURN TO CALLER
1094 TT303 MVB FIVE9,PHYS+1 PHYSICAL SECTOR # 59
1095 J TT304 RETURN TO CALLER
1096 RTT01 MVWI 2,R0 LOAD MULTIPLIER
1097 HB LGSEC+1,R0 LOG SECTOR # TIMES 2
1098 SWI 1,R0 SUBTRACT ONE
1099 HVB R0,PHYS+1 LOAD PHYSICAL SECTOR #
1100 TT304 B *-* RETURN TO CALLER
1101 *
1102 *****
1103 *
1104 * SUBROUTINE
1105 *
1106 * PURPOSE
1107 *
1108 * LOAD WRITE SECTOR ID DATA BUFFER FROM RD SEC ID BUFFER
1109 *
1110 * CALLING SEQUENCE
1111 *
1112 * BAL LWSID,R6
1113 *
1114 * RETURN
1115 *
1116 * BXS (R6)

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002928 4724 0005
00292C 4324 2897
002930 4524 2890
002934 5006
002936 4724 0005
00293A 4324 277F
00293E 4524 288A
002942 28A6
002944 68C0 0002
002948 68D2 0000

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00294C 6E0D 298C
002950 802B 287E 2883
002956 100D
002958 802B 2883 2886
00295E 1C0D
002960 4024 0002
002964 E821 2885
002968 7802 0035
00296C C028 2885
002970 500C
002972 8028 2888 2885
002978 5008
00297A 4024 0002
00297E E821 2883
002982 7802 0001
002986 C028 2885
00298A 6802 0000

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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
1117 *
1118 *****
1119 *
1120 *
1121 LWSID MVWI 5,R7 BYTE COUNT
1122 MVA SCTID+1,R3 ADDR OF RD SECT ID DATA BUFFER
1123 MVA WRSID,R5 ADDR OF WR SECT ID DATA BUFFER
1124 MVFN (R3),(R5) MOV DATA FROM RD TO WR BUFFER
1125 BXS (R6) RETURN TO CALLER
1126 *
1127 *
1128 *
1129 * EXECUTE INPUT & OUTPUT COMMANDS
1130 * TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
1131 * EACH OF THESE ENTRIES SET R7 WITH THE ADRS OF ITS PARAMETER
1132 * LIST AND ANY SPECIAL SWITCHES BEFORE BRANCHING TO THE
1133 * SUPVR CALL.
1134 *
1135 * THIS SUBROUTINE WILL CHECK FOR THE FOLLOWING:
1136 *
1137 * 1. LOST INTERRUPTS BY TIMING OUT A COUNTING LOOP
1138 * 2. ERROR INTERRUPTS RECEIVED FROM SUPVR
1139 *
1140 * THIS ROUTINE HAS THE FOLLOWING ENTRIES:
1141 *
1142 * 1 BAL $RKEW,R6 READ SECTOR ID SKEWED
1143 *
1144 * 2 BAL $WKST,R6 WRITE SECTOR ID SKEWED (TEST)
1145 *
1146 * 3 BAL $RWST,R6 READ SECTOR ID SKEWED (TEST)
1147 *
1148 * 4 BAL $RIDS,R6 READ SECTOR ID (TEST)
1149 *
1150 * 5 BAL $WKEW,R6 WRITE SECTOR ID SKEWED
1151 *
1152 * 6 BAL $WSEC,R6 WRITE SECTOR ID
1153 *
1154 * 7 BAL $WSTS,R6 WRITE SECTOR ID (TEST)
1155 *
1156 * 8 BAL $DIAG,R6 DIAGNOSTIC
1157 *
1158 * 9 BAL $XIOCS,R6 CYCLE STEAL STATUS
1159 *
1160 * 10 BAL $SEEK,P6 SEEK
1161 *
1162 * 11 BAL $RECL,R6 RECALIBRATE
1163 *
1164 * 12 BAL $RDID,R6 READ SECTOR ID
1165 *
1166 * 13 BAL $RD,R6 READ
1167 *
1168 * 14 BAL $RDVY,R6 READ VERIFY
1169 *
1170 * 15 BAL $WRT,R6 WRITE
1171 *
1172 *
1173 $SEEK MVA SKDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1174 J XIO
1175 *
1176 $RECL MVA CLDCB,IODCB SET UP BLOCK FOR SVC CALL
1177 J XIO
1178 *
1179 $RDID MVA RSDCB,IODCB SET UP BLOCK FOR SVC CALL
1180 MVBI X'FF',R3 SET BUFFER TO F'S
1181 MVA SCTID,R5 SETUP READ SECTOR ID BUFFER ADPS
1182 MVWI 6,R7 SETUP BUFFER LENGTH
1183 PFN R3,(R5) INIT READ SECTOR ID BUFFER
1184 MVA SCTID,RSDCB+14 DATA ADDR
1185 J XIO
1186 *
1187 $RD MVBI X'FF',R3 SETRD BUFFER TO ALL F'S
1188 MVA RDDCB+14,R5 SET UP READ BUFFER ADPS
1189 MVWI X'0100',R7 SET UP BUFFER LENGTH
1190 PFN R3,(R5) CLEAR READ BUFFER
1191 $RDS MVA RDDCB,IODCB SET UP BLOCK FOR SVC CALL
1192 J XIO
1193 *
1194 $RDVY MVA VRDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1195 J XIO
1196 *
1197 $WRT MVA WRDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1198 J XIO
1199 *
1200 $RKEW MVA RKDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1201 MVBI X'FF',R3 SET BUFFER TO F'S
1202 MVA SCTID,R5 SETUP READ SECTOR ID BUFFER ADPS
1203 MVWI 6,R7 SETUP BUFFER LENGTH
1204 PFN R3,(R5) INIT READ SECTOR ID BUFFER
1205 MVA SCTID,RKDCB+14 DATA ADDR
1206 J XIO
1207 *
1208 $WKST MVA WKDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1209 MVA WSIDT,WKDCB+14 DATA ADDR
1210 J XIO
1211 *
1212 $RWST MVA RKDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1213 MVA SCTST,RKDCB+14 DATA ADDR
1214 J XIO
1215 *
1216 $RIDS MVA RSDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1217 MVBI X'FF',R3 SET BUFFER TO F'S
1218 MVA SCTST,R5 SETUP READ SECTOR ID BUFFER ADPS
1219 MVWI 6,R7 SETUP BUFFER LENGTH
1220 PFN R3,(R5) INIT READ SECTOR ID BUFFER
1221 MVA SCTST,RSDCB+14 DATA ADDR
1222 J XIO
1223 *
1224 $WKEW MVA WKDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1225 MVA WRSID,WKDCB+14 DATA ADDR
1226 J XIO
1227 *
1228 $WSEC MVA WSDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1229 MVA WRSID,WSDCB+14 DATA ADDR
1230 J XIO
1231 $WSTS MVA WSDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL

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00298E 4724 0005
002992 4324 277F
002996 4524 288A
00299A 28A4
00299C 5600

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00299E 4020 2B70 280E
0029A4 5064

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```

0029A6 4020 2B70 27CE
0029AC 5060

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```

0029AE 4020 2B70 27EE
0029B4 0BFF
0029B6 4524 277E
0029BA 4724 0006
0029BE 2BAC
0029C0 4020 27FC 277E
0029C6 5053

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0029C8 0BFF
0029CA 6D08 285C
0029CE 4724 0100
0029D2 2BAC
0029D4 4020 2B70 284E
0029DA 5049

```

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0029DC 4020 2B70 283E
0029E2 5045

```

```

0029E4 4020 2B70 282E
0029EA 5041

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```

0029EC 4020 2B70 286E
0029F2 0BFF
0029F4 4524 277E
0029F8 4724 0006
0029FC 2BAC
0029FE 4020 287C 277E
002A04 5034

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002A06 4020 2B70 285E
002A0C 4020 286C 2890
002A12 502D

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002A14 4020 2B70 286E
002A1A 4020 287C 2896
002A20 5026

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002A22 4020 2B70 27EE
002A28 0BFF
002A2A 4524 2896
002A2E 4724 0006
002A32 2BAC
002A34 4020 27FC 2896
002A3A 5019

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002A3C 4020 2B70 285E
002A42 4020 286C 288A
002A48 5012

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002A4A 4020 2B70 27DE
002A50 4020 27EC 288A
002A56 500B
002A58 4020 2B70 27DE

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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT
002A5E 4020 27EC 2890 1232 MVA WSDT,WSDCB+14 DATA ADDR
002A64 5004 1233 J XIO
1234 *
002A66 4020 2B70 27BE 1235 $DIAG MVA DGDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
002A6C 5000 1236 J XIO
1237 XEQIT
1238 *****29JUL76**
1239**
1240** SUB-ROUTINE
1241**
1242** EXECUTE INPUT AND OUTPUT COMMANDS
1243**
1244** PURPOSE
1245**
1246** TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.
1247** THIS SUBROUTINE WILL DO THE FOLLOWING FUNCTIONS:
1248**
1249** 1. SAVE THE ADDRESS THAT POINTS TO THE INSTRUCTION THAT STARTED
1250** THE I/O COMMAND.
1251** 2. SAVES THE DCB BLOCK USED UNLESS IT IS A START CYCLE STATUS
1252** ISSUED BY THIS SUBROUTINE.
1253** 3. CLEAR OUT THE CYCLE STEAL STATUS STORAGE UNLESS THE
1254** START CYCLE STATUS WAS ISSUED BY THIS SUBROUTINE.
1255** 4. RESETS THE INTERRUPT INDICATOR AND CHECKS FOR ANY INTERRUPT
1256** SINCE THE LAST EXPECTED INTERRUPT. IF AN INTERRUPT IS FOUND,
1257** MYSTERY INTERRUPT (MI) CONTROL BIT IS SET.
1258** 5. MOVES THE ADDRESS OF THE I/O CONTROL BLOCK IN R7, SET THE
1259** EXPECTED INTERRUPT CONTROL BIT AND ISSUE THE 'SVC START'.
1260** 6. WHEN THE SUPVR RETURNS AFTER ISSUING THE I/O COMMAND, TIMING
1261** STARTS TO DETERMINE A LOST INTERRUPT.
1262** 7. EXCEPT THE INTERRUPT AND GATHER INFORMATION TO DETERMINE IF IT
1263** WAS AN ERROR OR OKAY AND EXIT OFF THE INTERRUPT LEVEL.
1264** 8. CHECK IF THERE WAS A WRONG INTERRUPT LEVEL.
1265** 9. CHECK IF AN ERROR WAS EXPECTED AND IF THERE WAS RETURN.
1266** 10. CHECK IF THERE WAS AN ERROR CONDITION, IF NOT RETURN.
1267** 11. CHECK TO SEE IF THE EXERCISER IS TO BE TERMINATED.
1268** 12. CHECK IF A CYCLE STEAL OPERATION WAS IN PROGRESS THAT WAS
1269** ISSUED BY THIS SUBROUTINE.
1270** 13. CHECK THE ISB BITS THAT ARE ON. IF BIT 0 IS ON, ISSUE A
1271** CYCLE STEAL STATUS COMMAND. CHECK FOR ANY OTHER BIT BEING ON,
1272** COUNT IT AND SET UP THE PROPER ERROR MESSAGE TO BE PRINTED.
1273**
1274** CALLING SEQUENCE
1275**
1276** THIS ROUTINE HAS THE FOLLOWING ENTRIES:
1277**
1278** --> BAL XTO OR XPO ANY CYCLE STEAL COMMAND, MOD=0
1279** --> BAL XIO1 MOD PARM PRELOADED IN 'IOMOD'
1280** --> BAL XIOCS,R6 OR XPO START CYCLE STEAL STATUS, MOD=F
1281** --> BAL XIOCS=4,R6 AUTO CS STATUS (FOLLOWING OTHER XIO
1282** AND DOES NOT POST INTERRUPT STATUS)
1283**
1284** RETURN CONTROL
1285**
1286** OR BXS (R6,2) RETURN TO USER NO ERROR
1287** OR B (R6)* RETURN AND REPLY ON ERROR
1288*****
1289+XIO MVWZ IOMOD,R3 SET MOF OF 0 FOR CYCLE STEAL OP
1290+ J XIO1 CS I/O'S ARE NOT RETRIED
1291**
1292**
1293+ TBTR (R4,CE) RESET CS STATUS INTER ERROR INDICAT.
1294+ TBTS (R4,CS) SET 'CYCLE STEAL STATUS' IN PROGRESS
1295+XIOCS MVA CSDCB,IODCB SET UP CONTROL BLOCK FOR SVC CALL
1296+ MVWI X'000F',IOMOD SET CYCLE STEAL MODIFIER
1297+ TRT (R4,CS) IS CS IN PROGRESS, ERROR CONDITION
1298+ JON XIO2 * YES, BYPASS SAVING I/O ADRS
1299+XIO1 MVW R6,LSIO SAVE IAR FOR PRTY IF REQUESTED
1300+ MVA DCBUF,R3 SET UP TO ADRS TO MOVE DCB WITH
1301+ MVW IODCB,R5 * AND THE FROM ADRS ALONG TABLE
1302+ MVBI 16,R7 * THE NUMBER OF MOVES
1303+ MVFN (R5,R3) MOVE STATUS WORD AND ADJUST
1304+ MVBI 255,R3 CLEAR CYCLE STATUS BUFFER
1305+ MVA CSBUF,R5 * TO ALL ONES *
1306+ MVBI 16,R7 *
1307+ FPN R3,(R5) *
1308+ MVWI X'0708',SIOIN OVERLAY OLD CONDITION CODES
1309+ MVWZ $ISB,R3 ZERO OUT OLD ISB VALUE
1310**
1311+ TBTR (R4,ER) RESET ANY ERROR BEFORE I/O COMMAND
1312+XIO2 TBTR (R4,IN) CLEAR INTERRUPT RECEIVED CNTL BIT
1313+ MVA IOPLK,R7 SET UP CONTROL BLOCK FOR SUPVR
1314+ TBTR (R4,$LE) RESET LEVEL ERROR INDICATOR
1315+ TBTS (R4,XI) SET EXPECTED INTR CONTROL BIT
1316+ SVC START CALL SUPVR FOR I/O COMMAND
1317**
1318+ TBTP (R4,NI) IS AN INTR EXPECTED
1319+ BN (R6,2) * NO, RETURN TO USER
1320**
1321** THE INTR SHOULD OCCUR WHILE SPINNING IN THE NEXT SECTION
1322**
1323+ MVBI X'00',R5 SET UP WORK REG FOR 'LOST INTP'
1324+XIO8 TBTR (R4,IN) HAS INTRPT BEEN RECEIVED
1325+ JON XIOCK * YES, CHECK IF ALL WAS SATISFACTORY
1326+ SVC IDLE ALLOW ANOTHER PROGRAM A CHANCE TO RUN
1327**
1328+ AWI 1,R5 ADVANCE TIME OUT COUNT
1329+ JNZ XIO8 BCH IF TIME OUT NOT REACHED
1330+ TBTS (R4,ER) SET ON ERROR CONTROL BIT
1331+ B (R6)* EPR 'NO INTERRUPT'
1332*****
1333*****03FEB76**
1334**
1335** SUBROUTINE
1336**
1337** I/O EXECUTE ERROR HANDLING ROUTINE
1338**
1339** PURPOSE
1340**
1341** THIS ROUTINE WILL COLLECT INFORMATION TO HELP DETERMINE THE
1342** PROBLEM THAT WAS FOUND WHEN THE I/O COMMAND WAS ISSUED BY THE
1343** SUPERVISOR AND IT WAS NOT ACCEPTED.
1344**
1345** CALLING SEQUENCE
1346**
1347** SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O COMMAND

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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT
1348**
1349** RETURN CONTROL
1350**
1351** B (R6)* RETURN TO USERS ERROR HANDLER
1352**
1353*****
1354**
1355** CC 0= DEVICE NOT ATTACHED
1356** FOR 1= DEVICE BUSY
1357** I/O 2= DEVICE BUSY AFTER RESET
1358** 3= COMMAND REJECT
1359** 4= INTERVENTION REQUIRED
1360** 5= INTERFACE DATA CHECK
1361** 6= CONTROLLER BUSY
1362** 7= I/O COMMAND EXCEPTED
1363**
1364+XIOER DC X'706E' COPY STATUS ANY LEVEL INTO R3
1365+ SRL 13,R3 POSITION CC CODE TO BITS 13-15
1366+ MVB R3,SIOIN * PUT IN LOG OUT AREA
1367+ B (R6)* RETURN TO USER ERROR HANDLER
1368*****
1369*****14APR76**
1370**
1371** SUB-ROUTINE
1372**
1373** ERROR INTERRUPT RUNS ON INTERRUPT LEVEL 'SINTL'
1374**
1375** PURPOSE
1376**
1377** THIS ROUTINE WILL BE ENTERED WHEN THE SUPVR DETECTS AN ERROR
1378** OR THE INTERRUPTING CONDITION CODE DOES NOT AGREE WITH THE
1379** EXPECTED CODE.
1380**
1381** CALLING SEQUENCE
1382**
1383** SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O INTERRUPT
1384**
1385** RETURN CONTROL
1386**
1387** SVC EXIT RETURN TO USER VIA SUPVR
1388**
1389*****
1390**
1391** CC 0= CONTROLLER END ISB 0= ADD STATUS
1392** FOR 1= PROGRAM CONTROL INTERRUPT BITS 1= COMD REJECT
1393** INTR 2= EXCEPTION INTERRUPT FOR 2= INCOM LENGTH
1394** 3= DEVICE END INTERRUPT INTR 3= DCB SPEC CK
1395** 4= ATTENTION INTERRUPT 4= STG DATA CK
1396** 5= ATTENTION / PROGRAM CNTL INTR 5= INV STG ADMS
1397** 6= ATTENTION / EXCEPTION INTR 6= PROTECT CK
1398** 7= ATTENTION / DEVICE END INTR 7= I-PACE DATA
1399**
1400+INTER DC X'706E' COPY STATUS ANY LEVEL INTO R3
1401+ SRL 13,R3 POSITION INDICATORS IN R3
1402+ MVA OEPN1,R4 SET UP BASE ADRS
1403+ TBTR (R4,CS) IS CS IN PROGRESS
1404+ JOFF INTR1 * NO
1405+ TBTS (R4,CE) TURN ON CYCLE STEAL INTER ERROR
1406+ MVW P7,CSTL8 SAVE CS ERR ISB VALUE, BITS 0-7
1407+ MVB R3,CSTL8+1 * AND THE COND CODE
1408+ J INTR1
1409+INTES TBTR (R4,XE) TEST EXPECTED ATTN / ERROP IND
1410+ JOFF INTR1 BCH IF NOT EXPECTED
1411+ CBI 4,R3 IS THIS AN 'ATTENTION' INTP
1412+ JE INTR1 * YES, BCH TO END INTR SEQUENCE
1413+INTET TBTS (R4,ER) SET ERROR ON I/O COMMAND CNTL BIT
1414+ J INTR1
1415**
1416** THE ERROR INTERRUPT USES THE SAME
1417** ENDING SEQUENCE AS THE NORMAL INTR
1418*****
1419**
1420** SOUBROUTINE
1421**
1422** OKAY INTERRUPT RUNS ON INTERRUPT LEVEL 'SINTL'
1423**
1424** PURPOSE
1425**
1426** TO CHECK THE INTERRUPT AND CONTINUE THE TEST
1427**
1428** CALLING SEQUENCE
1429**
1430** SUPERVISOR WILL ENTER HERE IF INTR CC IS AS REQUESTED
1431** THE ERROR INTERRUPT HANDLER WILL BRANCH TO THIS ROUTINE
1432** AFTER THE SPECIAL PART HAS BEEN COMPLETED AND THE
1433** COMMON SECTION IS HANDLED HERE.
1434**
1435** RETURN CONTROL
1436**
1437** SVC EXIT RETURN TO USER VIA SUPVR
1438**
1439*****
1440+INTOK DC X'706E' COPY STATUS ANY LEVEL INTO R3
1441+ SRL 13,R3 POSITION INDICATORS IN R3
1442+ MVA OEPN1,R4 SET UP BASE ADRS
1443+INTR1 TBTS (R4,IN) SET INTERRUPT RECEIVED
1444+ TBTR (R4,CS) IS 'CS IN PROGRESS' ON
1445+ JON INTR2 * YES, BCH AROUND UPDATE
1446+ MVB R3,SIOIN+1 * SAVE INTERRUPTING CC CODE
1447+ MVW R7,$ISB SAVE INTR STATUS AND DEV ADRS
1448+INTR2 EQU *
1449**
1450** CACL R5 CURRENT LEVEL COPIED BY DCP
1451** SLL 4,R5 POSITION INTR LEVEL AND PUT
1452** ABI 1,R5 * IN 'I' BIT
1453** CW $INTL,R5 IS THIS THE CORRECT INTR LEVEL
1454** JE INTR3 * YES, GO EXIT THIS LEVEL
1455** TBTS (R4,$LE) SET INTR LEVEL ERROR CONTROL BIT
1456** TBTS (R4,ER) SET ERROR ON I/O COMMAND CNTL BIT
1457+INTR3 TBTR (R4,XI) WAS INTERRUPT EXPECTED
1458** JON INTRX * YES, SET OFF THIS INTR LEVEL
1459** TBTS (R4,MI) * NO, SET MYSTERY INTR CONTROL BIT
1460** CBI 4,R3 ATTENTION INTERRUPT?
1461** JE INTRX YES
1462** TBTS (R4,NG) ERROR,UNEXPECTED INTERRUPT
1463** SVC EXIT EXIT THIS LEVEL VIA SUPVR TO PGM
1464*****
1465*****03FEB76**

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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
1465** THIS IS THE CONTINUATION OF EXECUTE I/O AFTER THE INTERRUPT
1466** HAS BEEN SERVICED. THE EXERCISER FINDS AN INTERRUPT HAS BEEN
1467** RECEIVED AND BRANCHES HERE TO CHECK FOR ANY ERROR CONDITIONS.
1468**
1469**
1470**
002B36 4CA4 0002
002B38 6AC0
002B3C 4CA8
002B3E 1006
002B40 4C2A
002B42 1002
002B44 68D2 0000
002B48 4C69
002B4A 5601
002B4C 4C21
002B4E 100B
002B50 C520 2779
002B54 F502
002B56 68D1 0000
002B5A C520 277A
002B5E 6A00 2A74
002B62 68D2 0000
002B66 CB25 2774
002B6A 5601
002B6C 19D0
002B6E 2AD4
002B70 0000
002B72 0000
002B74 0000
002B76 0000
002B78 19D0
002B7A 2B04
002B7C 2A80
002B7E 0003
1471** XIOCK TBTR (R4, XE) WAS AN ERROR EXPECTED
1472** BN (R6, 2) * YES, EXIT THIS ROUTINE
1473** TBTR (R4, CS) WAS ADRS CS IN PROGRESS
1474** JCTF XIOCV * NO, CONTINUE CHECKING
1475** JCT (R4, CE) IS CS IN AN ERR CONDITON
1476** JOFF XIOCO * NO, BCH
1477** B (R6)* CS ERROR
1478** XIOCO TBTS (R4, CSA) TURN ON CS STATS AVAIL FLAG
1479** BXS (R6, 2) GO TO USER
1480** XIOCV TBT (R4, ER) WAS ERROR INTR CONTROL BIT ON
1481** JOFF XIOCX * NO, EXIT THIS ROUTINE
1482**
1483** MVB \$I0IN+1, R5 GET LAST INTR CC CODE
1484** CBI 2, R5 IS THIS CC=2
1485** BNE (R6)* * NO, SCH TO ERROR HANDLER
1486** XIOCV MVB \$ISB, R5 GET LAST ISB DATA BYTE AND IF CS
1487** BN XIOCS-4 * AVAILABLE, GO AND GET IT
1488** B (R6)* ERROR
1489** XIOCV MVWZ OPTN3, R3 CLEAR OUT OPTION 3 CNTL BITS
1490** BXS (R6, 2) RETURN TO USER VIA REG 6
1491**
1492** I/O PARAMETER LIST
1493**
1494** IOBLK DC A (DEVADD) ADRS OF DEVICE ADRS
1495** DC A (XIOER) ERROR ROUTINE ADRS
1496** IOBCB DC A (*-*) DCB ADRS OR LEVEL & INTR
1497** IOHOD DC A (*-*) MODIFIER
1498** A (*-*) ADRS OF LAST SVC CALL
1499** IORSF DC A (*-*) SECOND WORD OF LAST IDCB
1500**
1501** INTERRUPT CONTROL BLOCK FOR I/O COMMANDS
1502**
1503** INTBL DC A (DEVADD) ADRS OF DEVICE ADRS
1504** DC A (INTOK) INTERRUPT OK RETURN ADRS
1505** DC A (INTER) INTERRUPT ERROR ADRS
1506** INTCC DC X'0003' INTERRUPT CODE EXPECTED
1508** ***** ** 11MAY 76**
1509**
1510** SUBROUTINE
1511**
1512** CONNECT INTERRUPT CONTROL BLOCK & PREPARE DEVICE
1513**
1514** PURPOSE
1515**
1516** TO CONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
1517** PREPARE ON THE DESIRED INTERRUPT LEVEL AND TO ALLOW THE DEVICE
1518** TO INTERRUPT.
1519**
1520** CALLING SEQUENCE
1521**
1522** THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
1523**
1524** --> BAL \$CONC, R6 CLEAR DEV DEP STG AND CONNECT I/O BLK
1525** --> BAL \$CONCP, R6 PREPARE DEVICE ONLY, ALREADY CONNECT
1526**
1527** RETURN CONTROL
1528**
1529** BXS (R6, 2) RETURN TO USER VIA REG 6 IF OKAY
1530** OR B (R6)* IF THE DEVICE COULD NOT BE CONNECTED
1531**
1532** *****
1533** \$CONC MVB 6, R7 NUMBER OF BYTE TO CLEAR
1534** MVB 0, R3 * AND THE DATA TO USE
1535** MVA D3, R5 * ALONG WITH THE ADRS TO USE
1536** FPN D3, R5
1537** MVWZ OPTN3, R3 CLEAR OI0 CONTROLS FOR NEW ROUTINE
1538** MVA INTBL, R7 SET R7 TO CONTROL BLOCK AND
1539** SVC CIBC * CONNECT IT TO THIS DEVICE
1540** BN CIBC (R6)* ERROR RETURN TO USER
1541**
1542** \$CONCP MVW \$INTL, IOBCB PUT IN LEVEL & INTR PARAMETER
1543** MVA IOBLK, R7 SET P7 TO CONTROL BLOCK TO PREPARE
1544** MVWI X'0708', \$I0IN INITIALIZE CONDITION CODE STOPAGE
1545** MVWZ \$ISB, R3 * AND CLEAR OLD ISB VALUE
1546** MVW R6, LSTIO SET UP ADDRESS THAT STARTED LAST I/O
1547** SVC PRF * AND CALL ON SUPVR
1548** BXS (R6, 2) RETURN TO USER
1550** ***** ** 06APR 76**
1551**
1552** SUBROUTINE
1553**
1554** DISCONNECT THE INTERRUPT CONTROL BLOCK AND LOG ERRORS
1555**
1556** PURPOSE
1557**
1558** DISCONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
1559** SET THE 'NO GOOD' CONTROL BIT, THEN LOG THE DATA THAT HAS
1560** BEEN FOUND TO HELP THE OPERATOR DEFINE THE ERROR CONDITION.
1561**
1562** CALLING SEQUENCE
1563**
1564** THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
1565**
1566** --> B \$ERR\$ SET 'NG' BIT AND CONVERT DATA TO LOG
1567** --> B \$CONX RETURN TO MDI SUPERVISOR TO TEST STS
1568**
1569** RETURN CONTROL
1570**
1571** OR B TURTN* RETURN TO MDI
1572** (R6)* IF THE DEVICE COULD NOT BE CONNECTED
1573**
1574** *****
1575** \$ERR\$ MVWI X'8000', TUSTATUS SET ON 'NO GOOD' STATUS BIT
1576** MVA HEBLK, R7 GET ADRS OF CONTROL BLOCK
1577** SVC HTOE CONVERT HEX TO EBC VIS DCP
1578** \$PRNT MVB 3, R5
1579** MVA TWORK, R3 SET UP BUFFER STORAGE
1580** MVW R3, BUFP

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
002BCA 4124 2C46
002BCE 0F04
002BD0 0E08
002BD2 2B24
002BD4 0F04
002BD6 0A40
002BD8 C258
002BDA E258
002BDC 0E08
002BDE 7921 002C
002BE2 BDF7
002BE4 4020 1802 F1F0
002BEA 4020 19B8 2D1C
002BF0 4020 19BA 2D18
002BF6 402C 19C4 0080
002BFC 4324 2776
002C00 6F13 18BA
002C04
002C0A C720 19D0
002C08 6013
002C0A 6812 27AE
002C0E 0007
002C10 0008
002C12 5C5C40C1C2D6D9E3
002C1A 0028
002C1C E3E4C9C440C9D6C9D
002C44 0028
002C46 4040404040404040
002C6E 0028
002C70 C3B5E3D340C4C3C2F
002C98 0028
002C9A 4040404040404040
002CC2 0028
002CC4 D9E2C9C440C3E260F
002CEC 0028
002CEE 4040404040404040
002D16 0000
002D18 2C0E
002D1A 0101
002D1C 0101
002F00
000080
1581** MVA LINE1, R1
1582** MVB 4, R7
1583** MVB 8, R6
1584** MVFN (R3), (R1)
1585** MVB 4, R7
1586** MVB X'01', R2
1587** MVB R2, (R1)*
1588** JCT MVBUF, R6
1589** MVB 8, R6
1590** AHI 44, R1
1591** JCT MVBUF, R5
1592** MVWI PIDMSG10, PID+2
1593** MVA FAKETU, @DCADD1
1594** MVA DC2PT, @DCADD2
1595** OHI BIT0080, SUPSTAT
1596** MVA \$TUID, R3
1597** BAL TMSGWTR*, R7 SET UP BUFFER STORAGE
GO TO MESSAGE WRITEP
1598**
1599** \$CONX EQU *
1600** MVB * DEVADD, R7 GET DEVICE ADDRESS FROM MDI
1601** SVC RIBC RELEASE INTERRUPT CONTROL BLOCK
1602** B TURTN* RETURN TO MDI SUPERVISOR
1603**
1604** BEGIN DC A (0007) NUMBER OF LINES TO PRINT
1605** DC A (0008) LINE LENGTH = 8 CHAR
1606** C'*** ABORT'
1607** DC A (0040) LINE LENGTH = 40 CHAR
1608** C'TUID IOIN ISB INST DEV1 DEV2 DEV3 DEV4 '
1609** DC A (0040) LINE LENGTH = 40 CHAR
1610** DC A (0040) LINE LENGTH = 40 CHAR
1611** DC C'CNTRL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADRS '
1613** DC A (0040) LINE LENGTH = 40 CHAR
1614** DC C'
1615** DC A (0040) LINE LENGTH = 40 CHAR
1616** DC C'RSID CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 CS-8 '
1617** DC A (0040) LINE LENGTH = 40 CHAR
1618** DC C'
1619**
1620** BUFP DC A (*-*)
1621** DC2PT DC A (BEGIN)
1622** FIXTU DC X'0101'
1623** FAKETU DC X'0101'
1624** PIDMSG10 EQU X'F1F0'
1625** BIT0080 EQU X'0080'
1626**
1627** DATA CONTROL BLOCK FOR CONVERTING HEX TO EBCDIC
1628**
1629** HEBLK DC A (48) NUMBER OF BYTES TO CONVERT
1630** DC A (\$TUID) FROM ADRS
1631** DC A (TWORK) AND THE TO ADRS
1632** COPY T7882 01DEC76
1633** T7882 TUIT T82ER
1634** ***** ** 06FEB 76**
1635**
1636** TEST UNIT
1637**
1638** 4962 CONTROL CLOCK STEP DIAGNOSTIC (READ SECTOR ID) 3/11/77
1639**
1640** PURPOSE
1641**
1642** (FORCE SYNC CHECK)
1643** CALLING SEQUENCE
1644**
1645** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
1646** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
1647**
1648** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
1649** . TURESUL BIT 0-----NOT USED
1650** . TURESUL BIT 1-----NOT USED
1651** . TURESUL BIT 2-----NOT USED
1652** . TURESUL BIT 3-----NOT USED
1653**
1654** . TURESUL BIT 4-----NOT USED
1655** . TURESUL BIT 5-----NOT USED
1656** . TURESUL BIT 6-----NOT USED
1657** . TURESUL BIT 7-----NOT USED
1658**
1659** . TURESUL BIT 8-----NOT USED
1660** . TURESUL BIT 9-----NOT USED
1661** . TURESUL BIT 10-----NOT USED
1662** . TURESUL BIT 11-----NOT USED
1663**
1664** . TURESUL BIT 12-----NOT USED
1665** . TURESUL BIT 13-----NOT USED
1666** . TURESUL BIT 14-----OIO CC ERROR
1667** . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE
1668** INFORMATION
1669**
1670** RETURN CONTROL
1671**
1672** B TURTN* RETURN TO MDI SUPERVISOR
1673**
1674** *****
1675** T7882 MVH R7, TURTN SAVE RETURN ADDRESS
1676** MVWI X'7882', \$TUID SAVE TU ID FOR DISPLAY
1677** MVA OPTN1, R4 SET UP POINTER ADRS IN R4
1678** BAL \$CONC, R6 CLEAR DEV DEP STG AND CONNECT I/O BL
1679** DC A (T82ER) ERROR ADRS FOR INVALID PREP
1680**
1681** MVB DEVADD, IDCB1+1 LOAD DEVICE ADDRESS IN IDCB
1682** MVA T82ST, R2 ADDRESS OF CLOCK STEP BUFFER
1683** MVWI 0, T82U CLEAR SUM COUNTERS
1684** MVWI 0, T82U+2 *
1685** MVWZ TURESUL, R5 CLEAR RESULTS WORD
1686** MVA IOBLK, R7 ISSUE DEVICE RESET
1687** SVC RST *
1688** MVWZ TURESUL+2, R5 CLEAR RESULTS WORD 2
1689** MVWI 0, CEDAT SET DIAGNOSTIC MODE
1690** BAL CEOP1, R6 *
1691** DC A (T82ER) *
1692** TBTS (R4, XI) TURN ON EXPECTED INTERRUPT (ATTEN)
1693** MVWI X'8000', CEDAT2 TURN ON READY
1694** BAL CEOP2, R6 *

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
002D74	2E2C	1695	DC A(T82ER)	*
002D76	4CA3	1696	TBTR (R4, IN)	TURN OFF ATTENTION INTERRUPT
002D78	6800 2E2C	1697	BOFF T82ER	NO INTERRUPT RECEIVED
002D82	1002 2778 0704	1698	CWI X'0704', \$IOIN	CHECK FOR INT COND CODE OF 4
002D84	6802 2E2C	1699	JE T82H	OR
002D88	4020 289C 0018	1700	T82ER	WRONG INTERRUPT CODE
002D8E	4020 2922 08C0	1701	MVWI 24, CTR01	INIT COUNTER
002D94	6803 28CA	1702	BAL X'08C0', CEDAT2	SEND INDEX PULSE, BEHIND HOME,
002D98	2E2C	1703	DC A(T82ER)	* SEEK COMPLETE
002D9A	4020 2922 0400	1704	MVWI X'0400', CEDAT2	SEND SECTOR PULSE
002DA0	6803 28CA	1705	BAL CEOP2, R6	ERROR
002DA4	2E2C	1706	DC A(T82ER)	ERROR
002DA6	4020 2922 3000	1707	MVWI X'3000', CEDAT2	SEND CEOP2 USING '3000' DATA
002DAC	6803 28CA	1708	BAL CEOP2, R6	ERROR
002DB0	2E2C	1709	DC A(T82ER)	ERROR
002DB2	4020 2922 0200	1710	MVWI X'0200', CEDAT2	SEND CEOP2 USING '0200' DATA
002DB8	6803 28CA	1711	BAL CEOP2, R6	ERROR
002DBE	2E2C	1712	DC A(T82ER)	ERROR
002DC4	4020 2922 0008	1713	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002DC8	6803 28CA	1714	BAL CEOP2, R6	ERROR
002DCA	402E 289C 0001	1715	DC A(T82ER)	ERROR
002DD0	18EA	1716	SWI 1, CTR01	DECREMENT COUNT
002DD2	4C67	1717	T82S	CONTINUE TO SEND CLOCKS
002DD4	4020 27F2 0000	1718	TBTS (R4, IN)	TURN ON NO INTER MODE INDICATOR
002DDA	6803 29AE	1719	MVWI X'0000', RSDCB+4	PHYSICAL SECTOR = ZERO
002DE0	2E2C	1720	BAL \$RDID, R6	READ SECTOR ID
002DE4	4024 0400	1721	DC A(T82ER)	ERROR
002DE6	B8FF	1722	MVWI 1024, R0	TIME OUT 2 MSEC
002DE8	4324 FFFF	1723	JCT * R0	*
002DEA	6803 2E44	1724	MVWI X'FFFF', R3	INIT XOR REGISTER
002DEE	6803 2F52	1725	BAL T82CC, R5	STIMULATE CLOCK BITS
002DF2	50FB	1726	BAL T82SS, R5	READ SENSE WORDS
		1727	J T82D	LOOP
		1728	*	
		1729	* T82F	
002DF4	4CA3	1730	TBTR (R4, IN)	HAS INTERRUPT OCCURRED?
002DF6	101E	1731	BOFF T82I	NO ERROR
002DF8	4020 2922 0001	1732	MVWI 1, CEDAT2	RESET CE DIAG MODE
002FE0	6803 28CA	1733	BAL CEOP2, R6	ERROR
002FE2	2E2C	1734	DC A(T82ER)	ERROR
002FE4	CR24 2FB6	1735	DC A(T82ER)	ERROR
002FE6	1818	1736	CW T4XR, R3	COMPARE RESULTS
002FE8	6803 2A78	1737	JNE T82E	ERROR
002FEA	2E2C	1738	BAL XTOCS, R6	START CYCLE STEAL STATS
002FEC	4CA1	1739	DC A(T82ER)	OIO CC ERROR
002FEF	120C	1740	TBTR (R4, ER)	TEST FOR ERROR
002FF0	828	1741	JON T82ER	ERROR
002FF2	828 2798 2FAA	1742	AW CSTL2, T82U	ADD CYCLE STEAL DATA TO SUM CHECK
002FF4	828 2FAA 2FB2	1743	CW T82U, T82RE	COMPARE RESULTS
002FF6	180C	1744	JNE T82E	ERROR
002FF8	8088 2FAC 2FB4	1745	CB T82U+2, T82RE+2	COMPARE RESULTS
002FFA	500A	1746	JNE T82E	ERROR
		1747	J T82X	ERROR
		1748	*	
002E2C	402C 18C8 0002	1749	T82ER OWI X'0002', TURESUL	SET OIO CC ERROR
002E32	5006	1750	J T82X	ERROR
002E34	4724 2B6C	1751	T82I MVA IOBLK, R7	ISSUE DEVICE RESET
002E38	6008	1752	SVC RESET	ERROR
002E3A	402C 18C8 0001	1753	T82E OWI X'0001', TURESUL	SET CLOCK STEP ERROR
		1754	T82X TXIT	ERROR
002E40	6802 2C04	1755	B T82X	ERROR
		1756	* *****	
		1757	* *****	
		1758	* *****	
		1759	T82CC MVW R5, T82C+2	SET RETURN ADDRESS
002E44	600D 2F50	1760	CWI - (R2)	CHK FOR END OF STIMULATE TABLE
002E48	408F FFFF	1761	BE T82F	BCH IF END OF TABLE
002E4C	6800 2DF4	1762	CWI X'FFFF', (R2)	TST FOR DATA
002E50	408F FFFE	1763	JE T82T	YES
002E54	101F	1764	CWI X'FFFD', (R2)	TEST FOR CLOCKS
002E56	408F FFFD	1765	JE T82M	YES
002E5A	1002	1766	B T82EE	INC TABLE ADDRESS
002E5C	6802 2F40	1767	MVWI (R2), R0	GET CLOCK COUNT
002E60	7A41 0002	1768	T82N CWI 0, R0	COUNT ZERO?
002E64	C880	1769	BE T82FF	RETURN
002E66	6800 0000	1770	MVWI X'3000', CEDAT2	SEND CEOP2 USING '3000' DATA
002E68	4020 2922 3000	1771	BAL CEOP2, R6	ERROR
002E6A	6803 28CA	1772	DC A(T82ER)	ERROR
002E6C	2E2C	1773	BAL T82SS, R5	SENSE DATA
002E6E	6803 2F52	1774	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E70	4020 2922 0008	1775	BAL CEOP2, R6	ERROR
002E72	6803 28CA	1776	DC A(T82ER)	ERROR
002E74	2E2C	1777	BAL T82SS, R5	SENSE DATA
002E76	6803 2F52	1778	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E78	4020 2922 0008	1779	BAL CEOP2, R6	ERROR
002E7A	6803 28CA	1780	DC A(T82ER)	ERROR
002E7C	2E2C	1781	BAL T82SS, R5	SENSE DATA
002E7E	6803 2F52	1782	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E80	4020 2922 0001	1783	BAL CEOP2, R6	ERROR
002E82	6803 28CA	1784	DC A(T82ER)	ERROR
002E84	2E2C	1785	BAL T82SS, R5	SENSE DATA
002E86	6803 2F52	1786	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E88	4020 2922 0001	1787	BAL CEOP2, R6	ERROR
002E8A	6803 28CA	1788	DC A(T82ER)	ERROR
002E8C	2E2C	1789	BAL T82SS, R5	SENSE DATA
002E8E	6803 2F52	1790	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E90	4020 2922 0001	1791	BAL CEOP2, R6	ERROR
002E92	6803 28CA	1792	DC A(T82ER)	ERROR
002E94	2E2C	1793	BAL T82SS, R5	SENSE DATA
002E96	6803 2F52	1794	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E98	4020 2922 0001	1795	BAL CEOP2, R6	ERROR
002E9A	6803 28CA	1796	DC A(T82ER)	ERROR
002E9C	2E2C	1797	BAL T82SS, R5	SENSE DATA
002E9E	6803 2F52	1798	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002EA0	4020 2922 0001	1799	BAL CEOP2, R6	ERROR
002EA2	6803 28CA	1800	DC A(T82ER)	ERROR
002EA4	2E2C	1801	BAL T82SS, R5	SENSE DATA
002EA6	6803 2F52	1802	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002EA8	4020 2922 0001	1803	BAL CEOP2, R6	ERROR
002EAA	6803 28CA	1804	DC A(T82ER)	ERROR
002EAC	2E2C	1805	BAL T82SS, R5	SENSE DATA
002EAE	6803 2F52	1806	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002E90	4020 2922 0200	1807	BAL CEOP2, R6	ERROR
002E92	6803 28CA	1808	DC A(T82ER)	ERROR

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
002EF4	2E2C	1809	DC A(T82ER)	*
002EF6	6803 2F52	1810	BAL T82SS, R5	SENSE DATA
002EFA	4020 2922 0008	1811	MVWI X'0008', CEDAT2	SEND CEOP2 USING '0008' DATA
002FF0	6803 28CA	1812	BAL CEOP2, R6	ERROR
002FF2	2E2C	1813	DC A(T82ER)	ERROR
002FF4	6803 2F52	1814	BAL T82SS, R5	SENSE DATA
002FF6	5010	1815	T82HH	SENSE DATA
002FF8	4020 2922 3000	1816	T82G MVWI X'3000', CEDAT2	SEND '3000' DATA
002FFA	6803 28CA	1817	BAL CEOP2, R6	ERROR
002FFC	2E2C	1818	DC A(T82ER)	ERROR
002FFE	6803 2F52	1819	BAL T82SS, R5	SENSE DATA
003000	4020 2922 0008	1820	MVWI X'0008', CEDAT2	SEND '0008' DATA
003002	6803 28CA	1821	BAL CEOP2, R6	ERROR
003004	2E2C	1822	DC A(T82ER)	ERROR
003006	6803 2F52	1823	BAL T82SS, R5	SENSE DATA
003008	4029 289C 0010	1824	T82HH AWI 1, CTR01	ADD ONE TO SHIFT COUNTER
00300A	1001	1825	CWI 16, CTR01	SHIFT COUNT = 16?
00300C	50CD	1826	J T82JJ	YES
00300E	6802 0000	1827	T82JJ	RETURN TO CALLER
003010	8A08 2922	1828	T82EE MVW (R2), CEDAT2	LD DATA INTO IO BLOCK
003012	6803 28CA	1829	BAL CEOP2, R6	WRITE CLOCK DATA
003014	2E2C	1830	DC A(T82ER)	ERROR
003016	7A41 0002	1831	T82FF AWI 2, R2	INC TABLE ADDRESS
003018	6802 0000	1832	T82C B	RETURN TO CALLER
		1833	*	
00301A	6803 28F2	1834	T82SS BAL SENS0, R6	READ SENSE WORD ONE
00301C	2E2C	1835	DC A(T82ER)	ERROR
00301E	4C23	1836	TBTR (R4, IN)	INTERRUPT?
003020	1003	1837	JOFF T82I	NO
003022	402C 2916 4000	1838	JOFF X'0000', RDATA0	SET INTERRUPT BIT IN SENSE WORD
003024	8828 2916 2FAE	1839	T82A MVW RDATA0, T82TP	SAVE DATA
003026	6803 28DE	1840	BAL SENS1, R6	READ SENSE WORD ONE
003028	2E2C	1841	DC A(T82ER)	ERROR
00302A	402D 291A 4E7F	1842	RBTWI X'4E7F', RDATA	RESET UNUSED BITS
00302C	402B 291A 0080	1843	TWI X'0080', RDATA	MOVE BIT FROM BYTE TO BYTE
00302E	1003	1844	JOFF T82B	BIT NOT ON
003030	402C 291A 0200	1845	OWI X'0200', RDATA	SET BIT ON
003032	C720 291A	1846	MVW RDATA, R7	SAVE DATA
003034	C72E 2FAC	1847	AB R7, T82U+2	DEVELOP SUM CHECK
003036	1803	1848	JNJC J	JUMP IF NO CARRY
003038	402C 2916 0001	1849	AWI 1, T82U	
00303A	8828 2FAE 2FAA	1850	AWI T82TP, T82U	
00303C	8828 2FAE 2FAA	1851	XB T82TP+2, R3	XOR EXPECT DATA
00303E	C323 2F80	1852	XB T82TP+2, R3	*
003040	680B 2FAE	1853	XW T82TP, R5	TEST FOR INTER IN GEN MODE
003042	4C23	1854	TBTR (R4, IN)	NO INTERRUPT
003044	1002	1855	JOFF T82J	INSERT END OF TABLE CHAR
003046	4080 FFFF	1856	MVWI X'FFFF', (R2)	RETURN TO CALLER
003048	5500	1857	T82J BXS (R5)	
		1858	*	
		1859	*	
		1860	*	
00304A	00000000	1861	T82H DC 2A (*-*)	
00304C	00000000	1862	T82TP DC 2A (*-*)	
00304E	D715	1863	T82RE DC X'D715'	EXPECTED RESULTS (DUTCHESS)
003050	C300	1864	DC X'C300'	*
003052	73E7	1865	T82XR DC X'73E7'	*
		1866	*	
003054	8048	1867	T82ST EQU *	WRITE CLOCK STIMULATE TABLE
003056	0400	1868	DC X'8048'	READ SECTOR ID
003058	0800	1869	DC X'0400'	
00305A	0400	1870	DC X'0800'	
00305C	0400	1871	DC X'0400'	
00305E	FFFF	1872	DC X'FFFF'	
003060	0000	1873	DC X'0000'	
003062	0000	1874	DC X'0000'	
003064	0200	1875	DC X'0200'	
003066	0008	1876	DC X'0008'	
003068	3000	1877	DC X'3000'	
00306A	0200	1878	DC X'0200'	
00306C	0008	1879	DC X'0008'	
00306E	FFFF	1880	DC X'FFFF'	
003070	1E12	1881	DC X'1E12'	FORCE SYNC CHECK-SHOULD BE '0E12'
003072	3456	1882	DC X'3456'	
003074				

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	STMT	SOURCE STATEMENT
1924+*			TURESUL BIT 14-----OIO CC ERROR		
1925+*			TUPESUL BIT 15--COMPARE ERROR BETWEEN EXPECT TABLE & SENSE INFORMATION		
1926+*					
1927+*					
1928+*			RETURN CONTROL		
1929+*					
1930+*		B	TURTN*		RETURN TO MDI SUPERVISOR
1931+*					
1932+*					
002FDE	6F0D 27AE	7883	MVW R7,TURTN	1933+*	SAVE RETURN ADDRESS
002FE2	4020 2776		MVWI X'7883',STUID	1934+*	SAVE TU ID FOR DISPLAY
002FE6	4024 2770		MVA OPTN0,R4	1935+*	SET UP POINTERS ADFS IN R4
002FEC	6F03 2B80		BAL \$CONC,R6	1936+*	CLEAR DEV DEB S'IG AND CONNECT I/O BL
002FF0	30E6		DC A(T83ER)	1937+*	ERROR ADRS FOR INVALID PREP
				1938+*	
002FF2	8028 19D0 2919		MVB DEVADD,IDCB1+1	1939	LOAD DEVICE ADDRESS IN IDCB
002FF6	4224 3272		MVA T83ST,R2	1940	ADDRESS OF CLOCK STEP BUFFER
002FFC	4020 3264 0000		MVWI 0,T83U	1941	CLEAR SUM COUNTERS
003002	4020 3266 0000		MVWI 0,T83U+2	1942	*
003008	C025 18C8		MVWZ TURESUL,R5	1943	CLEAR RESULTS WORD
00300C	4724 2B6C		MVA IOBLK,R7	1944	ISSUE DEVICE RESET
003010	6008		SVC RESET	1945	*
003012	C025 18CA		MVWZ TURESUL+2,R5	1946	CLEAR RESULTS WORD 2
003016	4020 291E 0000		MVWI 0,CEDAT	1947	SET DIAGNOSTIC MODE
00301C	6E03 28B6		BAL CEOP1,R6	1948	*
003020	30E6		DC A(T83ER)	1949	*
003022	4C62		TBTS (R4,XI)	1950	TURN ON EXPECTED INTERRUPT (ATTEN)
003024	4020 2922 8000		MVWI X'8000',CEDAT2	1951	TURN ON READY
00302A	6E03 28CA		BAL CEOP2,R6	1952	*
00302E	30E6		DC A(T83ER)	1953	*
003030	4CA3		TBTR (R4,IN)	1954	TURN OFF ATTENTION INTERRUPT
003032	6800 30E6		BOFF T83ER	1955	NO INTERRUPT RECEIVED
003036	402F 2778 0704		CWI X'0704',SIOIN	1956	CHECK FOR INT COND CODE OF 4
00303C	30E6		JE T83H	1957	OK
003042	4020 289C 0018		MVWI 2,CTR01	1958	WRONG INTERRUPT CODE
003048	4020 2922 08C0		MVWI X'08C0',CEDAT2	1959	INTT COUNTER
003054	30E6		BAL CEOP2,R6	1960	SEND INDEX PULSE,BEHIND HOME,
00305A	4020 2922 0400		DC A(T83ER)	1961	* SEEK COMPLETE
003066	6E03 28CA		BAL CEOP2,R6	1962	ERROR
003072	30E6		DC A(T83ER)	1963	SEND SECTOR PULSE
003078	4020 2922 0008		MVWI X'0008',CEDAT2	1964	*
003084	6E03 28CA		BAL CEOP2,R6	1965	ERROR
00308A	402E 289C 0001		DC A(T83ER)	1966	SEND CEOP2 USING '3000' DATA
003096	4020 2922 3000		MVWI X'3000',CEDAT2	1967	*
003102	6E03 28CA		BAL CEOP2,R6	1968	*
003108	30E6		DC A(T83ER)	1969	SEND CEOP2 USING '0200' DATA
003114	4020 2922 0200		MVWI X'0200',CEDAT2	1970	*
003120	6E03 28CA		BAL CEOP2,R6	1971	SEND CEOP2 USING '0008' DATA
003126	30E6		DC A(T83ER)	1972	*
003132	4020 2922 0008		MVWI X'0008',CEDAT2	1973	*
003138	6E03 28CA		BAL CEOP2,R6	1974	*
003144	402E 289C 0001		DC A(T83ER)	1975	DECREMENT COUNT
003150	30E6		SWI 1,CTR01	1976	CONTINUE TO SEND CLOCKS
003156	4020 27F2 0000		JNZ T83S	1977	TURN ON NO INTER MODE INDICATOR
003162	4C67		TBTS (R4,NI)	1978	PHYSICAL SECTOR = ZERO
003168	4020 27AE		MVWI X'0000',RSDCB+4	1979	READ SECTOR ID
003174	6E03 29AE		BAL \$RDIR,R6	1980	ERROR
003180	30E6		DC A(T83ER)	1981	TIME OUT 2 MSEC
003186	4024 0400		MVWI X'0204',R0	1982	*
003192	B85F		JCT *	1983	INIT XOR REGISTER
003198	4324 FFFF		MVWI X'FFFF',R3	1984	STIMULATE CLOCK BITS
003204	6D03 30FE		BAL T83CC,R5	1985	READ SENSE WORDS
003210	6D03 320C		BAL T83SS,R5	1986	LOOP
003216	50FB		J T83D	1987	*
				1988	*
0030AE	4CA3		TBTR (R4,IN)	1989	HAS INTERRUPT OCCURRED?
0030B0	101E		JOFF T83I	1990	NO-ERROR
0030B6	4020 2922 0001		MVWI 1,CEDAT2	1991	RESET CE DIAG MODE
0030BC	6E03 28CA		BAL CEOP2,R6	1992	*
0030C0	30E6		DC A(T83ER)	1993	*
0030C6	CB24 3270		CW T83XR,R3	1994	COMPARE RESULTS
0030CC	1818		JNE T83E	1995	ERROR
0030D2	6E03 2A78		BAL XIOCS,R6	1996	START CYCLE STEAL STATS
0030D8	30E6		DC A(T83ER)	1997	OIO CC ERROR
0030DE	4CA1		TBTR (R4,ER)	1998	TEST FOR ERROR
0030E4	120C		JON T83ER	1999	ERROR
0030EA	A828 2798 3264		AW CSTI2,T83U	2000	ADD CYCLE STEAL DATA TO SUM CHECK
0030F0	882B 3264 326C		CW T83U,T83RE	2001	COMPARE RESULTS
0030F6	180C		JNE T83E	2002	ERROR
003102	802B 3266 326E		CB T83U+2,T83RE+2	2003	COMPARE RESULTS
003108	1808		JNE T83E	2004	ERROR
003114	500A		J T83X	2005	ERROR
				2006	*
0030E6	402C 18C8 0002		2007 T83ER OWI X'0002',TURESUL	2007	SET OIO CC ERROR
0030EC	5006		J T83X	2008	*
0030EE	4724 2B6C		2009 T83I MVA IOBLK,R7	2009	ISSUE DEVICE RESET
0030F2	6008		2010 SVC RESET	2010	*
0030F8	402C 18C8 0001		2011 T83E OWI X'0001',TURESUL	2011	SET CLOCK STEP ERROR
			2012 T83X TXIT	2012	*
0030FA	6802 2C04		2013+ T83X F \$CONX	2013	RETURN TO MDI CONTROLLER
			2014+*****	2014	*****
			2015 *	2015	*
0030FE	6D0D 320A		2017 T83CC MVW R5,T83C+2	2017	SET RETURN ADDRESS
003102	408F FFFF		2018 CWI -1,(R2)	2018	CHK FOR END OF STIMULATE TABLE
003106	6800 30AE		2019 BE T83F	2019	BCH IF END OF TABLE
00310A	408F FFFE		2020 CWI X'FFFF',(R2)	2020	TST FOR DATA
00310E	101F		2021 JE T83T	2021	YES
003110	408F FFFD		2022 CWI X'FFFD',(R2)	2022	TEST FOR CLOCKS
003114	1002		2023 JE T83M	2023	YES
003116	6802 31FA		2024 B T83EE	2024	*
00311A	7A41 0002		2025 T83M AWI 2,R2	2025	INC TABLE ADDRESS
00311E	C880		2026 MVW (R2),R0	2026	GET CLOCK COUNT
003122	7806 0000		2027 T83N CWI 0,R1	2027	COUNT ZERO?
003126	6806 3204		2028 J T83F	2028	RETURN
00312A	6E03 2922 3000		2029 MVWI X'3000',CEDAT2	2029	SEND CEOP2 USING '3000' DATA
00312E	6E03 28CA		2030 BAL CEOP2,R6	2030	*
003132	30E6		2031 DC A(T83ER)	2031	*
003138	6D03 320C		2032 BAL T83SS,R5	2032	SENSE DATA
00313C	4020 2922 0008		2033 MVWI X'0008',CEDAT2	2033	SEND CEOP2 USING '0008' DATA
003140	6E03 28CA		2034 BAL CEOP2,R6	2034	*
003146	30E6		2035 DC A(T83ER)	2035	*
00314A	6D03 320C		2036 BAL T83SS,R5	2036	SENSE DATA
00314E	7802 0001		2037 SWI 1,R0	2037	DECREMENT CLOCK COUNT

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	STMT	SOURCE STATEMENT
00314C	50E9	2038	J T83N	2038	LOOP
00314E	7A41 0002	2039	AWI 2,R2	2039	INC TABLE ADDRESS
003152	408F FFFE	2040	CWI X'FFFF',(R2)	2040	END OF DATA?
003156	1056	2041	JE T83FF	2041	YES
003158	408F FFFC	2042	CWI X'FFFC',(R2)	2042	REPEAT READ DATA?
00315C	1003	2043	JE T83R	2043	YES
00315E	6D03 3184	2044	BAL T83L,R5	2044	READ DATA
003162	50F5	2045	J T83T	2045	YES
003164	7A41 0002	2046	AWI 2,R2	2046	INC TABLE ADDRESS
003168	7380	2047	MVW (R2),R1	2047	REPEAT COUNT
00316A	70E0 0000	2048	CWI 0,R1	2048	REPEAT COUNT ZERO?
00316E	10E8	2049	JE T83T	2049	YES
003170	7A41 0002	2050	AWI 2,R2	2050	INC TABLE ADDRESS
003174	6D03 3184	2051	BAL T83L,R5	2051	READ DATA
003178	7922 0001	2052	SWI 1,R1	2052	DECREMENT REPEAT COUNT
00317C	7906 0000	2053	CWI 0,R1	2053	REPEAT COUNT ZERO?
003180	10E6	2054	JE T83T	2054	YES
003182	50F8	2055	J T83V	2055	REPEAT DATA LOOP
003184	6D0D 31F8	2056	T83L MVW R5,T83JJ+2	2056	SET UP RETURN ADDRESS
003188	4020 289C 0000	2057	0,CTR01	2057	INIT SHIFT COUNTER
00318E	C880	2058	MVW (R2),R0	2058	GET DATA
003192	3009	2059	SLI 1,R0	2059	TEST IF DATA '1'
003196	1F19	2060	J T83G	2060	NO
00319A	4020 2922 3000	2061	MVWI X'3000',CEDAT2	2061	SEND CEOP2 USING '3000' DATA
00319E	6E03 28CA	2062	BAL CEOP2,R6	2062	*
0031A0	30E6	2063	DC A(T83ER)	2063	*
0031A4	6D03 320C	2064	BAL T83SS,R5	2064	SENSE DATA
0031A8	4020 2922 0200	2065	MVWI X'0200',CEDAT2	2065	SEND CEOP2 USING '0200' DATA
0031AC	6E03 28CA	2066	BAL CEOP2,R6	2066	*
0031B0	30E6	2067	DC A(T83ER)	2067	*
0031B4	6D03 320C	2068	BAL T83SS,R5	2068	SENSE DATA
0031B8	4020 2922 0008	2069	MVWI X'0008',CEDAT2	2069	SEND CEOP2 USING '0008' DATA
0031BC	6E03 28CA	2070	BAL CEOP2,R6	2070	*
0031C0	30E6	2071	DC A(T83ER)	2071	*
0031C4	5010	2072	BAL T83HH,R5	2072	SENSE DATA
0031C8	320C	2073	J T83HH	2073	NO
0031CC	4020 2922 3000	2074	T83G MVWI X'3000',CEDAT2	2074	SEND '3000' DATA
0031D0	6E03 28CA	2075	BAL CEOP2,R6	2075	*
0031D4	30E6	2076	DC A(T83ER)	2076	*
0031D8	6D03 320C	2077	BAL T83SS,R5	2077	SENSE DATA
0031DC	4020 2922 0008	2078	MVWI X'0008',CEDAT2	2078	SEND '0008' DATA
0031E0	6E03 28CA	2079	BAL CEOP2,R6	2079	*
0031E4	30E6	2080	DC A(T83ER)	2080	*
0031E8	6D03 320C	2081	BAL T83SS,R5	2081	SENSE DATA
0031EC	4029 289C 0001	2082	T83HH AWI 1,CTR01	2082	ADD ONE TO SHIFT COUNTER
0031F0	102F	2083	CWI 1,CTR01	2083	SHIFT COUNT = 16?
0031F4	50CD	2084	JE T83JJ	2084	YES
0031F8	6802 0000	2085	T83JJ B *-*	2085	RETURN TO CALLER
0031FC	8A08 2922	2086	T83EE MVW (R2),CEDAT2	2086	LD DATA INTO IO BLOCK
003200	6E03 28CA	2087	BAL CEOP2,R6	2087	WRITE CLOCK DATA
003204	30E6	2088	DC A(T83ER)	2088	*
003208	7A41 0002	2089	2090 T83FF AWI 2,R2	2089	INC TABLE ADDRESS
00320C	6802 0000	2090	T83C B *-*	2090	RETURN TO CALLER
		2091	*	2091	*
00320C	6E03 28F2	2092	BAL SENS0,R6	2092	READ SENSE WORD ONE
003210	30E6	2093	DC A(T83ER)	2093	*
003214					

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LOCTR OBJECT TEXT          STMT SOURCE STATEMENT          COPYRIGHT IBM CORP 1976
2153**
2154** 4962 CONTROL CLOCK STEP DIAGNOSTIC (WRITE SECTOR ID) 3/11/77
2155** PURPOSE
2156**
2157** (FORCE ECHO CHECK)
2158**
2159** CALLING SEQUENCE
2160**
2161** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
2162** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
2163**
2164** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
2165** . TURESUL BIT 0-----NOT USED
2166** . TURESUL BIT 1-----NOT USED
2167** . TURESUL BIT 2-----NOT USED
2168** . TURESUL BIT 3-----NOT USED
2169**
2170** . TURESUL BIT 4-----NOT USED
2171** . TURESUL BIT 5-----NOT USED
2172** . TURESUL BIT 6-----NOT USED
2173** . TURESUL BIT 7-----NOT USED
2174**
2175** . TURESUL BIT 8-----NOT USED
2176** . TURESUL BIT 9-----NOT USED
2177** . TURESUL BIT 10-----NOT USED
2178** . TURESUL BIT 11-----NOT USED
2179**
2180** . TURESUL BIT 12-----NOT USED
2181** . TURESUL BIT 13-----NOT USED
2182** . TURESUL BIT 14-----OIO CC ERROR
2183** . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE
2184** INFORMATION
2185**
2186** RETURN CONTROL
2187**
2188** B TURTN* RETURN TO MDI SUPERVISOR
2189**
2190** *****
2191** T7813 NVW R7 TURTN SAVE RETURN ADDRESS
2192** NVWI X'7813',STUID SAVE TU ID FOR DISPLAY
2193** NVA OPTN1,R4 SET UP POINTER ADRS IN R4
2194** BAL $CONC,R6 CLEAR DEV DEP STG AND CONNECT I/O BL
2195** DC A(T13ER) ERROR ADRS FOR INVALID PREP
2196**
2197** MVB DEVAID,IDCB1+1 LOAD DEVICE ADDRESS IN IDCB
2198** MVA T13ST,R2 ADDRESS OF CLOCK STEP BUFFER
2199** MWVI 0,T13U CLEAR SUM COUNTERS
2200** MWVZ 0,T13U+2 *
2201** TURESUL,R5 CLEAR RESULTS WORD
2202** MVA LOBLK,R7 ISSUE DEVICE RESET
2203** SVC RESET *
2204** MWVZ TURESUL+2,R5 CLEAR RESULTS WORD 2
2205** MWVI 0,CEDAT SET DIAGNOSTIC MODE
2206** BAL CEOP1,R6 *
2207** DC A(T13ER) *
2208** TBTS (R4,XI) TURN ON EXPECTED INTERRUPT (ATTN)
2209** MWVI X'8000',CEDAT2 TURN ON READY
2210** BAL CEOP2,R6 *
2211** DC A(T13ER) *
2212** TBTR (R4,IN) TURN OFF ATTENTION INTERRUPT
2213** BOFF T13ER NO INTERRUPT RECEIVED
2214** CHI X'0704',SIOIN CHECK FOR INT COND CODE OF 4
2215** JE T13H OK
2216** B T13ER WRONG INTERRUPT CODE
2217** MWVI 24,CTR01 INIT COUNTER
2218** MWVI X'08C0',CEDAT2 SEND INDEX PULSE,BEHIND HOME,
2219** BAL CEOP2,R6 * SEEK COMPLETE
2220** DC A(T13ER) ERROR
2221** MWVI X'0400',CEDAT2 SEND SECTOR PULSE
2222** BAL CEOP2,R6 *
2223** DC A(T13ER) ERROR
2224** T13S MWVI X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
2225** BAL CEOP2,R6 *
2226** DC A(T13ER) *
2227** MWVI X'0200',CEDAT2 SEND CEOP2 USING '0200' DATA
2228** BAL CEOP2,R6 *
2229** DC A(T13ER) *
2230** MWVI X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
2231** BAL CEOP2,R6 *
2232** DC A(T13ER) *
2233** SWI 1,CTR01 DECREMENT COUNT
2234** JNZ T13S CONTINUE TO SEND CLOCKS
2235** TBTS (R4,NI) TURN ON NO INTER MODE INDICATOR
2236** MWVI X'0000',WSDCB+4 PHYSICAL SECTOR = ZERO
2237** MWVI X'1234',WRSID SECTOR ID DATA
2238** MWVI X'5678',WRSID+2 *
2239** MWVI X'9A00',WRSID+4 *
2240** BAL $WSEC,R6 WRITE SECTOR ID
2241** DC A(T13ER) ERROR
2242** MWVI 1024,R0 TIME OUT 2 MSEC
2243** JCT * ,R0 *
2244** MWVI X'FFFF',R3 INIT XOR REGISTER
2245** T13D BAL T13CC,R5 STIMULATE CLOCK BITS
2246** BAL T13SS,R5 READ SENSE WORDS
2247** J T13D LOOP
2248** *
2249** *
2250** T13F TBTR (R4,IN) HAS INTERRUPT OCCURRED?
2251** JOFF T13F NO ERROR
2252** MWVI 1,CEDAT2 RESET CE DIAG MODE
2253** BAL CEOP2,R6 *
2254** DC A(T13ER) *
2255** CW T13XR,R3 COMPARE RESULTS
2256** JNE T13E ERROR
2257** BAL XI0CS,R6 START CYCLE STEAL STATS
2258** DC A(T13ER) OIO CC ERROR
2259** TBTR (R4,ER) TEST FOR ERROR
2260** JON T13ER ERROR
2261** AN C5ST2,T13U ADD CYCLE STEAL DATA TO SUM CHECK
2262** CN T13T,T13RE COMPARE RESULTS
2263** JNE T13E ERROR
2264** CB T13U+2,T13RE+2 COMPARE RESULTS
2265** JNE T13E ERROR
2266** J T13X

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LOCTR OBJECT TEXT          STMT SOURCE STATEMENT          COPYRIGHT IBM CORP 1976
2267**
2268** T13ER OWI X'0002',TURESUL SET OIO CC ERROR
2269** J T13E
2270** T13I MVA LOBLK,R7 ISSUE DEVICE RESET
2271** SVC RESET *
2272** T13E OWI X'0001',TURESUL SET CLOCK STEP ERROR
2273** T13X TXIT *
2274** T13X B $CONX RETURN TO MDI CONTROLLER
2275** *****
2276** *
2277** *
2278** T13CC MWV R5,T13C+2 SET RETURN ADDRESS
2279** CWI -1,R2 CHK FOR END OF STIMULATE TABLE
2280** BE T13E BCH IF END OF TABLE
2281** CWI X'FFFE',(R2) TST FOR DATA
2282** JE T13E YES
2283** CWI X'FFFD',(R2) TEST FOR CLOCKS
2284** JE T13E YES
2285** B T13EE
2286** T13M AWI 2,R2 INC TABLE ADDRESS
2287** MWV (R2),R0 GET CLOCK COUNT
2288** T13N CWI 0,R0 COUNT ZERO?
2289** BE T13FF RETURN
2290** MWVI X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
2291** BAL CEOP2,R6 *
2292** DC A(T13ER) *
2293** BAL T13SS,R5 SENSE DATA
2294** MWVI X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
2295** BAL CEOP2,R6 *
2296** DC A(T13ER) *
2297** BAL T13SS,R5 SENSE DATA
2298** SWI 1,R0 DECREMENT CLOCK COUNT
2299** J T13N LOOP
2300** T13T AWI 2,R2 INC TABLE ADDRESS
2301** CWI X'FFFE',(R2) END OF DATA?
2302** JE T13FF YES
2303** CWI X'FFFC',(R2) REPEAT READ DATA?
2304** JE T13E YES
2305** BAL T13T,R5 READ DATA
2306** J T13E
2307** T13R AWI 2,R2 INC TABLE ADDRESS
2308** MWV (R2),R1 REPEAT COUNT
2309** CWI 0,R1 REPEAT COUNT ZERO?
2310** JE T13E YES
2311** T13V AWI 2,R2 INC TABLE ADDRESS
2312** BAL T13T,R5 READ DATA
2313** SWI 1,R1 DECREMENT REPEAT COUNT
2314** CWI 0,R1 REPEAT COUNT ZERO?
2315** JE T13E YES
2316** J T13E
2317** T13L MWV R5,T13JJ+2 REPEAT DATA LOOP
2318** MWVI 0,CTR0 INIT SHIFT COUNTER
2319** BAL (R2),R0 GET DATA
2320** J R0 TEST IF DATA '1'
2321** JNCY T13G NO
2322** MWVI X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
2323** BAL CEOP2,R6 *
2324** DC A(T13ER) *
2325** BAL T13SS,R5 SENSE DATA
2326** MWVI X'0200',CEDAT2 SEND CEOP2 USING '0200' DATA
2327** BAL CEOP2,R6 *
2328** DC A(T13ER) *
2329** BAL T13SS,R5 SENSE DATA
2330** MWVI X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
2331** BAL CEOP2,R6 *
2332** DC A(T13ER) *
2333** BAL T13SS,R5 SENSE DATA
2334** J T13HH
2335** T13G MWVI X'3000',CEDAT2 SEND '3000' DATA
2336** BAL CEOP2,R6 *
2337** DC A(T13ER) *
2338** BAL T13SS,R5 SENSE DATA
2339** MWVI X'0008',CEDAT2 SEND '0008' DATA
2340** BAL CEOP2,R6 *
2341** DC A(T13ER) *
2342** BAL T13SS,R5 SENSE DATA
2343** T13HH AWI 1,CTR01 ADD ONE TO SHIFT COUNTER
2344** CWI 16,CTR01 SHIFT COUNT = 16?
2345** JE T13JL YES
2346** J T13JL
2347** T13JJ B *-
2348** T13EE MWV (R2),CEDAT2 RETURN TO CALLER
2349** BAL CEOP2,R6 LD DATA INTO IO BLOCK
2350** DC A(T13ER) WRITE CLOCK DATA
2351** T13FF AWI 2,R2 INC TABLE ADDRESS
2352** T13C B *-
2353** *
2354** T13SS BAL SENS0,R6 READ SENSE WORD ONE
2355** DC A(T13ER)
2356** TBTR (R4,IN) INTERRUPT?
2357** JOFF T13A NO
2358** OWI X'4000',RDATA SET INTERRUPT BIT IN SENSE WORD
2359** T13A MWV RDATA0,T13TP SAVE DATA
2360** BAL SENS1,R6 READ SENSE WORD ONE
2361** DC A(T13ER)
2362** RBTWI X'4E7F',RDATA RESET UNUSED BITS
2363** TWI X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
2364** JOFF T13E BIT NOT ON
2365** OWI X'0200',RDATA SET BIT ON
2366** T13B MWV RDATA,R7 SAVE DATA
2367** AWI RDATA,T13U+2 DEVELOP SUM CHECK
2368** JNCY T13ER JUMP IF NO CARRY
2369** AWI 1,T13U
2370** T13RR AW T13TP,T13U
2371** XB T13TP+2,R3 *
2372** XW T13TP,R3
2373** T13K TBTR (R4,IN) TEST FOR INTER IN GEN MODE
2374** JOFF T13J NO INTERRUPT
2375** MWVI X'FFFF',(R2) INSERT END OF TABLE CHAR
2376** T13J BXS (R5) RETURN TO CALLER
2377** *
2378** *
2379** *
2380** T13U DC 2A(*-*)

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LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
003534	00000000	2381	T13TP DC 2A(*-*)	
003538	AC65	2382	T13RE DC X'AC65'	EXPECTED RESULTS (DUTCHESS)
00353A	4900	2383	DC X'4900'	*
00353C	B53C	2384	T13XR DC X'B53C'	*
00353E		2385	*	
00353E	8048	2386	T13ST EQU *	WRITE CLOCK STIMULATE TABLE
003540	0400	2387	DC X'8048'	WRITE SECTOR ID
003540	0800	2388	DC X'0400'	
003542	0400	2389	DC X'0800'	
003544	0400	2390	DC X'0400'	
003546	FFFD	2391	DC X'FFFD'	
003548	0063	2392	DC X'0063'	SEND 99 WRITE CLOCKS
00354A	FFFE	2393	DC X'FFFE'	
00354C	0E10	2394	DC X'0E10'	START ID
00354E	3456	2395	DC X'3456'	FLAG (FORCE ECHO CHECK-SHOULD BE-0E10
003550	789A	2396	DC X'789A'	CYL
003552	F8A0	2397	DC X'F8A0'	HEAD,SECTOR
003554	FFFE	2398	DC X'FFFE'	CRC
003556	FFFF	2399	DC X'FFFF'	END ID
		2400	*	END OF TABLE
		2401	*	
		2403	COPY T7814	01DEC76
		2404	T7814 TUIT T14R	
		2405	*****	*****06FEB76**
		2406	**	
		2407	** TEST UNIT	
		2408	**	
		2409	** 4962 CONTROL CLOCK STEP DIAGNOSTIC (READ DATA)	5/18/77
		2410	** PURPOSE	
		2411	**	
		2412	**	
		2413	**	
		2414	** CALLING SEQUENCE	(FORCE NO RECORD FOUND)
		2415	**	
		2416	** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION	
		2417	** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.	
		2418	**	
		2419	** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:	
		2420	** . TURESUL BIT 0-----NOT USED	
		2421	** . TURESUL BIT 1-----NOT USED	
		2422	** . TURESUL BIT 2-----NOT USED	
		2423	** . TURESUL BIT 3-----NOT USED	
		2424	** .	
		2425	** . TURESUL BIT 4-----NOT USED	
		2426	** . TURESUL BIT 5-----NOT USED	
		2427	** . TURESUL BIT 6-----NOT USED	
		2428	** . TURESUL BIT 7-----NOT USED	
		2429	** .	
		2430	** . TURESUL BIT 8-----NOT USED	
		2431	** . TURESUL BIT 9-----NOT USED	
		2432	** . TURESUL BIT 10-----NOT USED	
		2433	** . TURESUL BIT 11-----NOT USED	
		2434	** .	
		2435	** . TURESUL BIT 12-----NOT USED	
		2436	** . TURESUL BIT 13-----NOT USED	
		2437	** . TURESUL BIT 14-----OIO CC ERROR	
		2438	** . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE	INFORMATION
		2439	** .	
		2440	** RETURN CONTROL	
		2441	** B TURTN*	RETURN TO MDI SUPERVISOR
		2442	**	
		2443	**	
		2444	**	
		2445	**	
003558	6F0D 27AE	2446	T7814 MVW R7,TURTN	SAVE RETURN ADDRESS
00355C	4020 2776	2447	MVWI X'7814',STUID	SAVE TU ID FOR DISPLAY
003562	4424 2770	2448	MVA OPTN1,R4	SET UP POINTER ADRS IN R4
003566	6E03 2B80	2449	BAL SCONC,R6	CLEAR DEV DEP STG AND CONNECT I/O BL
00356A	3678	2450	DC A(T14R)	ERROR ADRS FOR INVALID PREP
00356C		2451	**	
00356E	8028 19D0 2919	2452	MVB DEWADD,IDCB1+1	LOAD DEVIC ADDRESS IN IDCB
003572	4224 3904	2453	MVA T14ST,R2	ADDRESS OF CLOCK STEP BUFFER
003576	4020 37F6 0000	2454	MVWI 0,T14U	CLEAR SUM COUNTERS
00357C	4020 37F8 0000	2455	MVWI 0,T14U+2	*
003582	CD25 18C8	2456	MVWZ TURESUL,R5	CLEAR RESULTS WORD
003586	4724 2B6C	2457	MVA IOBLK,R7	ISSUE DEVICE RESET
00358A	6008	2458	SVC RESET	*
00358C	CD25 18CA	2459	MVWZ TURESUL+2,R5	CLEAR RESULTS WORD 2
003590	4424 291E 0000	2460	MVWI 0,CEDAT	SET DIAGNOSTIC MODE
003596	6E03 28B6	2461	BAL CEOP1,R6	*
00359A	3678	2462	DC A(T14R)	*
00359C	4C62	2463	DC (R4,X1)	TURN ON EXPECTED INTEPRUPT (ATTEN)
00359E	4020 2922 8000	2464	MVWI X'8000',CEDAT2	TURN ON READY
0035A4	6E03 28CA	2465	BAL CEOP2,R6	*
0035A8	3678	2466	DC A(T14R)	*
0035AA	4CA3	2467	DC (R4,IN)	TURN OFF ATTENTION INTERRUPT
0035AC	6800 3678	2468	BOFF T14R	NO INTERRUPT RECEIVED
0035B0	402F 2778 0704	2469	CWI X'0704',SIOIN	CHECK FOR INT COND CODE OF 4
0035B6	1002	2470	JE T14H	OK
0035B8	6802 3678	2471	B T14R	WRONG INTERRUPT CODE
0035BC	4020 289C 0018	2472	T14H MVWI 24,CTR01	INIT COUNTER
0035C0	4020 2922 08C0	2473	MVWI X'08C0',CEDAT2	SEND INDEX PULSE,BEHIND HOME,
0035C6	6E03 28CA	2474	BAL CEOP2,R6	* SEEK COMPLETE
0035CC	3678	2475	DC A(T14R)	ERROR
0035CE	4020 2922 0400	2476	MVWI X'0400',CEDAT2	SEND SECTOR PULSE
0035D4	6E03 28CA	2477	BAL CEOP2,R6	ERROR
0035D8	3678	2478	DC A(T14R)	ERROR
0035DA	4020 2922 3000	2479	T14S MVWI X'3000',CEDAT2	SEND CEOP2 USING '3000' DATA
0035DE	6E03 28CA	2480	BAL CEOP2,R6	*
0035E4	3678	2481	DC A(T14R)	*
0035E6	4020 2922 0200	2482	MVWI X'0200',CEDAT2	SEND CEOP2 USING '0200' DATA
0035EC	6E03 28CA	2483	BAL CEOP2,R6	*
0035F0	3678	2484	DC A(T14R)	*
0035F2	4020 2922 0008	2485	MVWI X'0008',CEDAT2	SEND CEOP2 USING '0008' DATA
0035F8	6E03 28CA	2486	BAL CEOP2,R6	*
0035FC	3678	2487	DC A(T14R)	*
003604	402F 289C 0001	2488	SWI 1,CTR01	DECREMENT COUNT
003608	18EA	2489	JNZ T14S	CONTINUE TO SEND CLOCKS
00360E	4C67	2490	TBTS (R4,NI)	TURN ON NO INTER MODE INDICATOR
003614	4020 2852 0000	2491	MVWI X'0000',RDDCB+4	8-15 FLAG BYTE
003618	4020 2854 00FF	2492	MVWI X'00FF',RDDCB+6	CYLINDER
00361C	4020 2856 0112	2493	MVWI X'0112',RDDCB+8	HEAD AND SECTOR
003620	4020 285A 00FE	2494	MVWI X'00FE',RDDCB+12	BYTE COUNT
003624	4020 285C 3804	2495	MVA RDBUF,RDDCB+14	DATA ADDRESS

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
003626	6E03 29D4	2496	BAL SRDS,R6	READ DATA
00362A	3678	2497	DC A(T14R)	ERROR
00362C	4024 0400	2498	MVWI 1024,R0	TIME OUT 2 MSEC
003630	B8FF	2499	JCT *R0	*
003632	4324 FFFF	2500	MVWI X'FFFF',R3	INIT XOR REGISTER
003636	6D03 3690	2501	T14D BAL T14CC,R5	STIMULATE CLOCK BITS
00363A	6D03 379E	2502	BAL T14SS,R5	READ SENSE WORDS
00363E	50FB	2503	J T14D	LOOP
		2504	*	
		2505	*	
003640	4CA3	2506	T14F TBTR (R4,IN)	HAS INTERRUPT OCCURRED?
003642	101E	2507	JOFF T14I	NO-ERROR
003644	4020 2922 0001	2508	MVWI 1,CEDAT2	RESET CE DIAG MODE
00364A	6E03 28CA	2509	BAL CEOP2,R6	*
00364E	3678	2510	DC A(T14R)	*
003650	CB24 3802	2511	CW T14XR,R3	COMPARE RESULTS
003654	1818	2512	JNE T14E	ERROR
003656	6E03 2A78	2513	BAL XIOCS,R6	START CYCLE STEAL STATS
00365A	3678	2514	DC A(T14R)	OIO CC ERROR
00365C	4CA1	2515	TBTR (R4,ER)	TEST FOR ERROR
003660	120C	2516	JON T14E	ERROR
003666	A828 2798 37F6	2517	AW CSTT2,T14U	ADD CYCLE STEAL DATA TO SUM CHECK
00366E	882B 37F6 37FE	2518	CW T14U,T14RE	COMPARE RESULTS
003672	180C	2519	JNE T14E	ERROR
003676	802B 37F8 3800	2520	CB T14U+2,T14RE+2	COMPARE RESULTS
00367A	1808	2521	JNE T14E	ERROR
00367E	500A	2522	J T14X	
		2523	*	
003678	402C 18C8 0002	2524	T14ER OWI X'0002',TURESUL	SET OIO CC ERROR
00367E	5006	2525	J T14X	
003680	4724 2B6C	2526	T14I MVA IOBLK,R7	ISSUE DEVICE RESET
003684	6008	2527	SWC RESET	*
003688	402C 18C8 0001	2528	T14E X'0001',TURESUL	SET CLOCK STEP EPROR
		2529	T14X TXR	
00368C	6802 2C04	2530	T14X B \$CONX	RETURN TO MDI CONTROLLER
		2531	*****	*****
		2532	*	
		2533	*	
003690	6D0D 379C	2534	T14CC MVW R5,T14C+2	SET RETURN ADDRESS
003694	40BF FFFF	2535	CWI -1,(R2)	CHK FOR END OF STIMULATE TABLE
003698	6800 3640	2536	BE T14F	BCH IF END OF TABLE
00369C	40BF FFFE	2537	CWI X'FFFE',(R2)	TST FOR DATA
0036A0	101F	2538	JE T14E	YES
0036A2	40BF FFFD	2539	CWI X'FFFD',(R2)	TEST FOR CLOCKS
0036A6	1002	2540	JE T14E	YES
0036A8	6802 378C	2541	B T14E	
0036AC	7841 0002	2542	T14H AWI 2,R2	INC TABLE ADDRESS
0036B0	C880	2543	MVW (R2),R0	GET CLOCK COUNT
0036B2	7806 0000	2544	T14N CWI 0,R0	COUNT ZERO?
0036B6	6800 379E	2545	BE T14F	RETURN
0036BA	4020 2922 3000	2546	MVWI X'3000',CEDAT2	SEND CEOP2 USING '3000' DATA
0036C0	6E03 28CA	2547	BAL CEOP2,R6	*
0036C4	3678	2548	DC A(T14R)	*
0036C6	6D03 379E	2549	BAL T14SS,R5	SENSE DATA
0036CA	4020 2922 0008	2550	MVWI X'0008',CEDAT2	SEND CEOP2 USING '0008' DATA
0036CE	6E03 28CA	2551	BAL CEOP2,R6	*
0036D0	3678	2552	DC A(T14R)	*
0036D4	6D03 379E	2553	BAL T14SS,R5	SENSE DATA
0036D8	6D03 0001	2554	SWI 1,R0	DECREMENT CLOCK COUNT
0036DE	50E9	2555	J T14N	LOOP
0036E0	7A41 0002	2556	T14T AWI 2,R2	INC TABLE ADDRESS
0036E4	40BF FFFE	2557	CWI X'FFFE',(R2)	END OF DATA?
0036E8	1056	2558	JE T14F	YES
0036EA	40BF FFFC	2559	CWI X'FFFC',(R2)	REPEAT READ DATA?
0036EE	1003	2560	JE T14R	YES
0036F0	6D03 3716	2561	BAL T14I,R5	READ DATA
0036F4	50F5	2562	J T14T	
0036F6	7A41 0002	2563	T14R AWI 2,R2	INC TABLE ADDRESS
0036FA	C980	2564	MVW (R2),R1	REPEAT COUNT
0036FE	7036 0000	2565	CWI 0,R0	REPEAT COUNT ZERO?
003700	103E	2566	JE T14T	YES
003702	7A41 0002	2567	AWI 2,R2	INC TABLE ADDRESS
003706	6D03 3716	2568	T14V BAL T14I,R5	READ DATA
00370A	7922 0001	2569	SWI 1,R1	DECREMENT REPEAT COUNT
00370E	7906 0000	2570	CWI 0,R1	REPEAT COUNT ZERO?
003712	10E6	2571	JE T14T	YES
003714	50F8	2572	J T14V	REPEAT DATA LOOP
003716	6D0D 378A	2573	T14L MVW R5,T14JJ+2	SET UP RETURN ADDRESS
00371A	4020 289C 0000	2574	MVWI 0,CTR01	INIT SHIFT COUNTER
00371E	C880	2575	MVW (R2),R0	GET DATA
003722	3009	2576	T14LL SWI 1,R0	TEST IF DATA '1'
003724	1F19	2577	J T14E	NO
003726	4020 2922 3000	2578	MVWI X'3000',CEDAT2	SEND CEOP2 USING '3000' DATA
00372A	6E03 28CA	2579	BAL CEOP2,R6	*
00372E	3678	2580	DC A(T14R)	*
003732	6D03 379E	2581	BAL T14SS,R5	SENSE DATA
003736	4020 2922 0200	2582	MVWI X'0200',CEDAT2	SEND CEOP2 USING '0200' DATA
00373A	6E03 28CA	2583	BAL CEOP2,R6	*
00373E	3678	2584	DC A(T14R)	*
003742	6D03 379E	2585	BAL T14SS,R5	SENSE DATA
003746	4020 2922 0008	2586	MVWI X'0008',CEDAT2	SEND CEOP2 USING '0008' DATA
00374A	6E03 28CA	2587	BAL CEOP2,R6	*
00374E	3678	2588	DC A(T14R)	*
003750	6D03 379E	2589	BAL T14SS,R5	SENSE DATA
003754	5010	2590	J T14H	LOOP
003758	4020 2922 3000	2591	T14G MVWI X'3000',CEDAT2	SEND '3000' DATA
00375C	6E03 28CA	2592	BAL CEOP2,R6	*
003762	3678	2593	DC A(T14R)	*
003766	6D03 379E	2594	BAL T14SS,R5	SENSE DATA
00376A	4020 2922 0008	2595	MVWI X'0008',CEDAT2	SEND '0008' DATA
00376E	6E03 28CA	2596	BAL CEOP2,R6	*
003772	3678	2597	DC A(T14R)	*
003776	6D03 379E	2598	BAL T14SS,R5	SENSE DATA
00377A	4029 289C 0001	2599	T14HH AWI 1,CTR01	ADD ONE TO SHIFT COUNTER
00377E	40BF 289C 0010	2600	CWI 16,CTR01	SHIFT COUNT = 16?
003784	1091	2601	J T14JJ	YES
003788	50CD	2602	J T14L	
00378C	6802 0000	2603	T14JJ B *-*	RETURN TO CALLER
00378E	8A08 2922	2604	T14EE MVW (R2),CEDAT2	LD DATA INTO IO BLOCK
003790	6E03 28CA	2605	BAL CEOP2,R6	WRITE CLOCK DATA
003794	3678	2606	DC A(T14R)	*
00379				

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00379E 6E03 28F2 2610 T14SS BAL SENS0,P6 READ SENSE WORD ONE
0037A2 3673 2611 DC A(T14ER)
0037A4 4C23 2612 TBT (R4 IN) INTERRUPT?
0037A6 1003 2613 JOFF T14 NO
0037A8 402C 2916 4000 2614 ONI X'4000',RDATA0 SET INTERRUPT BIT IN SENSE WORD
0037AE 9828 2916 37FA 2615 T14A MVW RDATA0,R14TP SAVE DATA
0037B4 6E03 28DE 2616 BAL SENS1,P6 READ SENSE WORD ONE
0037B8 3678 2617 DC A(T14ER)
0037BA 402D 291A 4E7F 2618 RBTWI X'4E7F',RDATA RESET UNUSED BITS
0037BC 402E 291A 0080 2619 TH1 X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
0037C6 1003 2620 JOFF T14B BIT NOT ON
0037C8 402C 291A 0200 2621 ONI X'0200',RDATA SET BIT ON
0037CA 402D 291A 431A 2622 MVW RDATA,R7 SAVE DATA
0037CC C720 291A 37F8 2623 AB F7,T14U+2 DEVELOP SUM CHECK
0037CE C720 291A 37F8 2624 JNCY T14ER JUMP IF NO CARRY
0037D8 4029 37F6 0001 2625 ANI T14U
0037DE A828 37FA 37F6 2626 T14RR AN T14TP,T14U
0037E4 C323 37FC 2627 XB T14TP+2,R3 XOR EXPECT DATA
0037E8 6B0B 37FA 2628 XW T14TP,R3
0037EC 4C23 2629 T14K TBT (R4 IN) TEST FOR INTER IN GEN MODE
0037EE 1002 2630 JOFF T14 NO INTERRUPT
0037F0 4080 FFFF 2631 MVWI X'FFFF',(R2) INSERT END OF TABLE CHAR
0037F4 5500 2632 T14J BXS (R5) RETURN TO CALLER
2633 *
2634 *
2635 *
0037F6 00000000 2636 T14U DC 2A(*-*)
0037FA 00000000 2637 T14TP DC 2A(*-*)
0037FE 084F 2638 T14RE DC X'084F' EXPECTED RESULTS (DUTCHESS)
003800 9800 2639 DC X'9800'
003802 BBBF 2640 T14XR DC X'BBBBF'
003804 0000000000000000 2641 RDBUF DC 128A(*-*) READ BUFFER
2642 *
2643 T14ST EQU * WRITE CLOCK STIMULATE TABLE
2644 X'8048' READ DATA
2645 X'0400'
2646 X'0400'
2647 X'FFFD'
2648 X'0049'
2649 X'3000'
2650 X'0200'
2651 X'0008'
2652 X'3000'
2653 X'0200'
2654 X'0008'
2655 X'0800'
2656 X'0800'
2657 X'FFFF'
2658 X'FFFF'
2659 COPY T7802
2661 T7802 TUIT T02R
2662 *****06FEB76**
2663**
2664** TEST UNIT
2665**
2666** SEEK AND CHAINING TEST 5/18/77
2667**
2668** PURPOSE
2669**
2670** VERIFY THE FOLLOWING:
2671** 1. SEEK AND VERIFY SECTOR ID FOR ALL TRACKS.
2672**
2673** CALLING SEQUENCE
2674**
2675** PERFORM THE FOLLOWING:
2676**
2677** 1. SEEK RECALIBRATE AND VERIFY TRACK EQUALS ZEROO.
2678** 2. SEEK TO ALL CYLINDERS ALTERNATELY (302,1,301,2,300,3,ETC).
2679** 3. READ SECTOR ID AND VERIFY THAT SEEK WAS PERFORMED CORRECTLY.
2680** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
2681**
2682** TURESUL BIT 0-----NOT USED
2683** TURESUL BIT 1-----NOT USED
2684** TURESUL BIT 2-----NOT USED
2685** TURESUL BIT 3-----NOT USED
2686**
2687** TURESUL BIT 4-----NOT USED
2688** TURESUL BIT 5-----NOT USED
2689** TURESUL BIT 6-----NOT USED
2690** TURESUL BIT 7-----NOT USED
2691**
2692** TURESUL BIT 8-----NOT USED
2693** TURESUL BIT 9-----NOT USED
2694** TURESUL BIT 10-----RECALIBRATE FAILURE
2695** TURESUL BIT 11-----SEEK FAILURE
2696**
2697** TURESUL BIT 12-----READ ID FAILURE
2698** TURESUL BIT 13-----SEEK & READ ID FAILURE (CHAINING)
2699** TURESUL BIT 14-----TRACK ZEROO HAS DEFECTIVE SECTOR
2700** TURESUL BIT 15-----OIO CC ERROR
2701**
2702** TURESUL BIT 16-31 ----- CYCLE STEAL STATUS FOR FAILING OP
2703** TURESUL BIT 32-47 ----- CC - 32-39 OIO CC,40-47 INT CC
2704** TURESUL BIT 47-63 ----- IBS
2705** TURESUL BIT 64-79 ----- OPTION WORD 3 (ERROR INDICATORS)
2706**
2707**
2708** RETURN CONTROL
2709**
2710** B TURTN* RETURN TO MDI SUPERVISOR
2711**
2712*****
2713**T7802 MVW R7,TURTN SAVE RETURN ADDRESS
2714** MVWI X'7802',STUID SAVE TU ID FOR DISPLAY
2715** MVA OPTN1,R4 SET UP POINTER ADRS IN R4
2716** BAL SCONC,R6 CLEAR DEV DEP STG AND CONNECT I/O BL
2717** DC A(T02R) ERROR ADRS FOR INVALID PREP
2718**
2719** MVWZ TURESUL,R2 CLEAR RESULTS WORD
2720** MVWZ TURESUL+2,R2 CLEAR RESULTS WORD 2
2721** MVWZ TURESUL+4,R2 CLEAR RESULTS WORD 3
2722** MVWZ TURESUL+6,R2 CLEAR RESULTS WORD 4
2723** MVWZ TURESUL+8,R2 CLEAR RESULTS WORD 5
2724** MVA TURESUL,R1 ADDRESS OF RESULTS

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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976

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00394E 6E03 29A6 2725 RT210 BAL SRECL,R6 RECALIBRATE
003952 3A24 2726 DC A(T02ER) ERROR
003954 4C11 2727 TBT (R4 ER) INTERRUPT ERROR?
003956 1250 2728 JON T02 YES
003958 4020 280E 0005 2729 MVWI X'0005',SKDCB SEEK CONTROL WORD- NO CHAINING
00395E 4020 2810 0000 2730 MVWI 0,SKDCB+2 DIRRECTION, DIFFERENCE
003964 4020 2816 0000 2731 MVWI 0,SKDCB+8 HEAD 0
00396A 4224 19D4 2732 MVA DEVADD+4,R2 TEST FOR VTL OR DUTCHESS
00396E 4A0C 2733 TBT (R2,12) *
003970 1204 2734 JON T7888 JUMP IF DUTCHESS
003972 4020 2818 27EE 2735 MVA RSDCB,SKDCB+10 RD SECT ID CHAINING ADDRESS
003978 5003 2736 J T7777
00397A 4020 2818 27FE 2737 T7888 MVA RIDCB,SKDCB+10 RD SECT ID IMMEDIATE CHAINING ADDRESS
003980 4020 27EE 200A 2738 T7777 MVWI X'200A',RSDCB RD SECTOR ID CONTROL WORD
003986 4020 27F2 3B00 2739 MVWI X'3B00',RSDCB+4 PHYSICAL SECTOR 0, LOG#0
00398C 6E03 299E 2740 DC S$EEK,R6 SEEK NOOP,SELECT HEAD 0
003990 3A24 2741 J A(T02ER) ERROR
003992 4CA1 2742 TBTR (R4 ER) INTERRUPT ERROR?
003994 1233 2743 JON T02B YES
003996 6E03 29AE 2744 BAL $RDID,R6 READ SECTOR ID
00399A 3A24 2745 DC A(T02ER) ERROR
00399C 4CA1 2746 TBTR (R4 ER) INTERRUPT ERROR?
00399E 1230 2747 JON T02C YES
0039A0 802B 287E 277F 2748 CB ZEREO,SCTID+1 CK IF FLAG IS ZEROO
0039A6 6801 3AAA 2749 BNE RT201 BCH IF FLAG NOT ZEROO (TRK 0 DEFECT)
0039AA 402F 2780 0000 2750 CW 0,SCTID+2 CK FOR TRACK ZEROO
0039B0 187B 2751 JNE T02C RECAL FAILURE - TRACK NOT ZEROO
0039B2 4020 289E 012E 2752 MVWI 312,DIFF MAX DIFFERENCE
0039B8 4020 28A0 0000 2753 MVWI 0,XXX INIT 'XXX'=TRACK NUM IN REVER DIR
0039BE 4C9F 2754 TBTR (R4 B63) CLEAR INDICATORS
0039C0 4020 280E 8005 2755 MVWI X'8005',SKDCB SEEK CONTROL WORD- CHAINING
0039C6 42CB 2756 LOOP1 TBTV (R4 B63) TEST AND INVERT DIRECTION BIT
0039C8 120B 2757 JN SKRV BCH NEG - BCH IF REV BIT ON
0039CA 6A08 28A0 2758 MVW XXX,R2 MOVE CONTENTS OF 'XXX' IN R2
0039CE 6A0E 289E 2759 AW DIFF,R2 SEEK DIFFERENCE PLUS 'XXX'
0039D2 4020 2816 0000 2760 MVWI 0,SKDCB+8 SELECT HEAD ZEROO
0039D8 A828 2880 28A0 2761 AW ONE1,XXX ONE PLUS 'XXX'
0039DE 5024 2762 J EQU GO1
0039E0 2763 SKRV EQU *
0039E4 6A08 28A0 2764 MVW XXX,R2
0039EA 8828 289E 2810 2765 DIFF,SKDCB+2
0039EE X'0800',SKDCB+2 LOAD DIFFERENCE IN DCB
0039F0 4020 2816 0100 2766 OWI X'0800',SKDCB+2 TURN ON REVERSE BIT
0039F6 501E 2767 MVWI X'0100',SKDCB+8 SELECT HEAD ONE
0039F8 494A 2768 J RT205
2769 *
0039F8 494A 2770 T02A TBTS (R1,10) RECALIBRATE FAILURE
0039FA 5058 2771 J FINS
0039FC 494B 2772 T02B TBTS (R1,11) SEEK FAILURE
0039FE 5056 2773 J FINS
003A00 494C 2774 T02C TBTS (R1,12) READ ID FAILURE
003A04 494D 2775 J FINS
003A06 5052 2776 T02D TBTS (R1,13) SEEK & READ ID FAILURE -CHAINING
003A08 494E 2777 J FINS
003A0A 5050 2778 J TBTS (R1,14) TRACK ZERO DEFECTIVE
003A0C 5050 2779 J FINS
003A0E CA25 18C8 2780 T02R MVWZ TURESUL,R2 CLEAR RESULTS WORD
003A10 CA25 18CA 2781 MVWZ TURESUL+2,R2 CLEAR RESULTS WORD 2
003A14 CA25 18CC 2782 MVWZ TURESUL+4,R2 CLEAR RESULTS WORD 3
003A18 CA25 18CE 2783 MVWZ TURESUL+6,R2 CLEAR RESULTS WORD 4
003A1C CA25 18D0 2784 MVWZ TURESUL+8,R2 CLEAR RESULTS WORD 5
003A20 4124 18C8 2785 MVA TURESUL,R1 ADDRESS OF RESULTS
003A24 494F 2786 TBTS (R1,15) OIO CC ERROR
003A26 5042 2787 J FINS
2788 *
003A28 8828 289E 2810 2789 GO1 EQU *
003A28 402D 2810 0800 2790 MVW DIFF,SKDCB+2
003A2E 402D 2810 0800 2791 RBTWI X'0800',SKDCB+2 SETUP SEEK DIFFERENCE
003A34 2792 EQU * TURN ON FOR DIRECTION BIT
003A34 4020 2882 001E 2793 MVWI 30,LGSEC
003A3A 6E03 294C 2794 BAL CONVT,R6 SETUP LOG SECT EQUAL 1
003A3E 8028 2885 27F2 2795 MVB PHYSC+1,RSDCB+4 CONVERT TO PHYSICAL - 1
003A44 2796 EQU * LOAD PHY SECT IN RD SEC DCB
003A44 6E03 299E 2797 EQU *
003A48 3A24 2798 BAL S$EEK,R6 SEEK & READ SECTOR ID
003A4A 4C11 2799 DC A(T02ER) ERROR
003A4C 120B 2800 TBT (R4 ER) INTERRUPT ERROR?
003A4E 802B 287E 277F 2801 JON T02B YES
003A54 101D 2802 CB ZEREO,SCTID+1 CK IF FLAG BYTE IS ZEROO
003A56 2803 RT207 EQU *
003A5C 802B 2881 277F 2804 CB ONE1+1,SCTID+1
003A5E 1804 2805 JNE RT203 BCH IF GOOD ALT. SECT NOT FOUND
003A5E CA24 2880 2806 EQU *
003A5E 1019 2807 ONE1,R2 CHECK FOR CYLINDER ONE1
003A62 50CD 2808 JE RT208
003A64 2809 EQU *
003A66 402F 2810 RT203 EQU *
003A6C 10C9 2811 CMJ 58,LGSEC
003A6E 4029 2882 0001 2812 T02C EQU *
003A74 6E03 294C 2813 AWI 1,LGSEC
003A78 8028 2885 27F2 2814 BAL CONVT,R6 CONVERT TO PHYSICAL SECT# - 1
003A7E 6E03 29AE 2815 MVB PHYSC+1,RSDCB+4 LOAD DCB
003A82 3A24 2816 BAL $RDID,R6 READ SECTOR ID
003A84 4CA1 2817 DC A(T02ER) ERROR
003A86 12CB 2818 TBTR (R4 ER) INTERRUPT ERROR?
003A88 802B 287E 277F 2819 JON T02C YES
003A8E 18EB 2820 CB ZEREO,SCTID+1 CK FOR FLAG BYTE EQUAL ZEROO
003A90 2821 EQU * FLAG IS NON-ZEROO
003A92 2822 RT204 EQU *
003A94 CA24 2780 2823 EQU *
003A96 1857 2824 S$CTID+2,R2 COMPARE CYL # TO CALCULATED #
003A98 2825 RT208 EQU * SECTOR ID DOES NOT MATCH,SEEK ERROR
003A9E 2826 EQU *
003A9C 402F 289E 0000 2827 SW ONE1,DIFF
003AA2 1012 2828 JE O,DIFF CHECK FOR END OF TEST
003AA4 6802 39C6 2829 J T2END
003AA8 50A7 2830 B LOOP1
003AAA 50AE 2831 J T02A
2832 *
2833 *
2834 *
2835 *
2836 *
2837 *
2838 *
003AAC 8828 2798 18CA 2839 * FINS MVW CSTL2,TURESUL+2
003AB2 8828 2778 18CC 2840 MVW $TOIN,TURESUL+4
003AB8 8828 277A 18CE 2841 MVW SIB4,TURESUL+4
003ABE 8828 2774 18D0 2842 MVW OPTN3,TURESUL+8
2843 TXIT OPTION WORD 3 (ERROR INDICATORS)

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I7824 --- CLOCK/4962 P/N=1635408 EC=755285 PAGE 13
 LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
 003AC4 6802 2C04 2839+ B \$CONX RETURN TO MDI CONTROLLER
 003AC8 6E03 29A6 2840+ *****
 003ACC 3A24 2841 T2END BAL \$RECL,R6 RECALIBRATE
 003ACE 4CA1 2842 DC A(TO2ER) ERROR
 003AD0 1293 2843 TBTR (R4,ER) INTERRUPT ERROR?
 003AD2 6802 2C04 2844 JON TO2A YES
 2845 TXIT
 2846+ B \$CONX RETURN TO MDI CONTROLLER
 2847+ *****
 2848 *
 000000 2849 END

I7824 --- CLOCK/4962 P/N=1635408 EC=755285 PAGE 13A
 CROSS-REFERENCE LISTING COPYRIGHT IBM CORP 1976
 DECLARED NAME ATTRIBUTES AND REFERENCES
 0 .R0. ABSOLUTE. HEX VALUE(00000000)
 1089 1090 1091 1092 1096 1097 1098 1099 1723
 1724 1768 1769 1779 1800 1801 1981 1982 2026
 2027 2037 2058 2059 2242 2243 2287 2288 2298
 2319 2320 2498 2499 2543 2544 2554 2575 2576
 0 .R1. ABSOLUTE. HEX VALUE(00000001)
 1581 1584 1587 1590 1789 1790 1794 1795 2047
 2048 2052 2053 2308 2309 2313 2314 2564 2565
 2569 2570 2724 2770 2772 2774 2776 2778 2785
 0 .R2. ABSOLUTE. HEX VALUE(00000002)
 1586 1587 1682 1760 1762 1764 1767 1768 1768
 1768 1781 1782 1784 1788 1789 1789 1789 1792
 1800 1800 1800 1829 1832 1856 1940 2018 2020
 2022 2025 2026 2026 2026 2026 2039 2040 2042 2046
 2047 2047 2047 2050 2058 2058 2058 2087 2090
 2114 2198 2279 2281 2283 2286 2287 2287 2287
 2300 2301 2303 2307 2308 2308 2308 2311 2319
 2319 2319 2348 2351 2375 2453 2535 2537 2539
 2542 2543 2543 2543 2556 2557 2559 2563 2564
 2564 2564 2567 2572 2572 2573 2573 2604 2607
 2579 2720 2721 2722 2723 2732 2733 2758 2759
 2764 2780 2781 2782 2783 2784 2807 2823
 0 .R3. ABSOLUTE. HEX VALUE(00000003)
 995 996 1037 1041 1043 1122 1124 1180 1183
 1187 1190 1201 1204 1217 1220 1290 1300 1303
 1304 1307 1309 1365 1366 1401 1407 1411 1441
 1446 1459 1489 1534 1536 1537 1545 1579 1580
 1584 1596 1725 1736 1852 1853 1983 1994 2110
 2111 2244 2255 2371 2372 2500 2511 2627 2628
 0 .R4. ABSOLUTE. HEX VALUE(00000004)
 1293 1294 1297 1311 1312 1314 1315 1318 1324
 1330 1402 1403 1405 1409 1413 1442 1443 1444
 1454 1456 1456 1458 1466 1471 1473 1475 1478
 1480 1637 1692 1698 1719 1731 1740 1837 1854
 1935 1950 1954 1977 1989 1998 2095 2112 2193
 2208 2212 2235 2250 2259 2356 2373 2448 2463
 2467 2490 2506 2515 2612 2629 2715 2727 2742
 2746 2754 2756 2799 2818 2843
 0 .R5. ABSOLUTE. HEX VALUE(00000005)
 1038 1042 1043 1123 1124 1181 1183 1188 1190
 1202 1204 1218 1220 1301 1303 1305 1307 1323
 1328 1450 1451 1452 1483 1484 1486 1535 1536
 1578 1591 1685 1688 1726 1727 1759 1774 1778
 1786 1793 1798 1806 1810 1814 1819 1823 1857
 1943 1943 1984 1985 2037 2037 2038 2044 2051
 2056 2064 2068 2072 2077 2081 2136 2201 2204
 2245 2246 2278 2293 2297 2305 2312 2317 2325
 2329 2333 2338 2342 2376 2456 2459 2501 2502
 2534 2549 2553 2561 2568 2573 2581 2585 2589
 2594 2598 2632
 0 .R6. ABSOLUTE. HEX VALUE(00000006)
 963 967 969 973 975 979 982 986 988
 992 997 1044 1045 1084 1125 1299 1319 1331
 1367 1472 1477 1479 1485 1488 1490 1540 1546
 1548 1583 1588 1589 1678 1690 1694 1703 1706
 1709 1712 1715 1721 1734 1738 1771 1776 1804
 1808 1812 1817 1821 1830 1834 1871 1936 1948
 1952 1961 1964 1967 1970 1973 1979 1992 1996
 2030 2034 2062 2066 2070 2075 2079 2088 2093
 2099 2194 2206 2210 2219 2222 2225 2228 2231
 2240 2253 2257 2291 2295 2323 2327 2331 2336
 2340 2349 2354 2360 2449 2461 2465 2474 2477
 2480 2483 2486 2496 2509 2513 2547 2551 2579
 2583 2597 2592 2596 2605 2610 2616 2716 2725
 2740 2744 2794 2797 2814 2816 2841
 0 .R7. ABSOLUTE. HEX VALUE(00000007)
 661 1036 1040 1127 1182 1189 1203 1219 1302
 1306 1313 1406 1447 1533 1538 1543 1576 1592
 1585 1597 1600 1675 1686 1751 1847 1848 1932
 1944 2009 2105 2106 2191 2202 2270 2366 2367
 2446 2457 2526 2622 2623 2713
 1533 \$CONC ADDRESS. HEX LOCATION(00002B80) IN CSECT(I7824) LENGTH(2)
 1599 \$CONX ADDRESS. HEX LOCATION(00002C04) IN CSECT(I7824) LENGTH(1)
 2778 \$ER\$ ADDRESS. HEX LOCATION(00003A08) IN CSECT(I7824) LENGTH(2)
 2831
 650 \$INTL ADDRESS. HEX LOCATION(000027AC) IN CSECT(I7824) LENGTH(2)
 1452 1542
 620 \$IOIN ADDRESS. HEX LOCATION(00002778) IN CSECT(I7824) LENGTH(2)
 896 1308 1366 1446 1483 1544 1698 1956 2214
 2469 2835
 621 \$ISB ADDRESS. HEX LOCATION(0000277A) IN CSECT(I7824) LENGTH(2)
 1309 1447 1486 1545 2836
 605 \$LE ABSOLUTE. HEX VALUE(00000026)
 1314 1454
 1191 \$RD\$ ADDRESS. HEX LOCATION(000029D4) IN CSECT(I7824) LENGTH(6)
 2496
 1179 \$RDID ADDRESS. HEX LOCATION(000029AE) IN CSECT(I7824) LENGTH(6)
 1721 1979 2744 2816
 1176 \$RECL ADDRESS. HEX LOCATION(000029A6) IN CSECT(I7824) LENGTH(6)
 2725 2841
 1173 \$SEEK ADDRESS. HEX LOCATION(0000299E) IN CSECT(I7824) LENGTH(6)
 2740 2797
 619 \$TUID ADDRESS. HEX LOCATION(00002776) IN CSECT(I7824) LENGTH(2)
 660 1596 1630 1676 1934 2192 2447 2714
 1228 \$WSEC ADDRESS. HEX LOCATION(00002A4A) IN CSECT(I7824) LENGTH(6)
 2240
 102 @DCADD1 ADDRESS. HEX LOCATION(000019B8) IN CSECT(I7824) LENGTH(1)
 1593
 103 @DCADD2 ADDRESS. HEX LOCATION(000019BA) IN CSECT(I7824) LENGTH(1)
 1594
 39 @FIXT ABSOLUTE. HEX VALUE(00000101)
 405 408 435 438 465 468 495 498 513
 40 @STOP ABSOLUTE. HEX VALUE(00000102)
 516
 45 @TUXX ABSOLUTE. HEX VALUE(00000500)
 381 393 411 423 441 453 471 483 501
 1604 @BEGIN ADDRESS. HEX LOCATION(00002C0E) IN CSECT(I7824) LENGTH(2)
 1621

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1625	BIT0080	ABSOLUTE. HEX VALUE(00000080)
1620	BUFPT	1595 ADDRESS. HEX LOCATION(00002D16) IN CSECT(I7824) LENGTH(2)
583	B63	1580 ABSOLUTE. HEX VALUE(0000001F)
905	CB29	2754 ADDRESS. HEX LOCATION(00002886) IN CSECT(I7824) LENGTH(2)
994	CCERR	1087 ADDRESS. HEX LOCATION(00002906) IN CSECT(I7824) LENGTH(2)
609	CE	966 ABSOLUTE. HEX VALUE(0000002A)
1005	CEDAT	1293 ADDRESS. HEX LOCATION(0000291E) IN CSECT(I7824) LENGTH(2)
1007	CEDAT2	1689 ADDRESS. HEX LOCATION(00002922) IN CSECT(I7824) LENGTH(2)
		1693 1702 1705 1708 1711 1714 1733 1771 1775 1803 1807 1811 1816 1820 1829 1951 1960 1963 1966 1969 1972 1991 2029 2033 2061 2065 2069 2074 2078 2087 2209 2218 2221 2224 2227 2230 2242 2290 2294 2326 2330 2335 2339 2348 2484 2470 2476 2479 2482 2485 2508 2546 2550 2578 2582 2586 2591 2595 2604
969	CEOP1	1690 ADDRESS. HEX LOCATION(000028B6) IN CSECT(I7824) LENGTH(4)
975	CEOP2	1694 ADDRESS. HEX LOCATION(000028CA) IN CSECT(I7824) LENGTH(4)
		1694 1703 1706 1709 1712 1715 1734 1772 1776 1804 1808 1812 1817 1821 1830 1952 1961 1964 1967 1970 1973 1992 2030 2034 2062 2066 2070 2075 2079 2088 2210 2219 2222 2225 2228 2231 2253 2291 2295 2325 2327 2331 2336 2340 2349 2473 2474 2477 2480 2483 2486 2509 2547 2551 2579 2583 2587 2592 2596 2605
689	CICB	ABSOLUTE. HEX VALUE(00000014)
786	CLDCB	1539 ADDRESS. HEX LOCATION(000027CE) IN CSECT(I7824) LENGTH(2)
1084	CONVT	1176 ADDRESS. HEX LOCATION(0000294C) IN CSECT(I7824) LENGTH(4)
607	CS	2794 ABSOLUTE. HEX VALUE(00000028)
608	CSA	1294 ABSOLUTE. HEX VALUE(00000029)
638	CSBUF	1478 ADDRESS. HEX LOCATION(00002796) IN CSECT(I7824) LENGTH(1)
836	CSDCB	843 ADDRESS. HEX LOCATION(0000281E) IN CSECT(I7824) LENGTH(2)
640	CSTL2	1295 ADDRESS. HEX LOCATION(00002798) IN CSECT(I7824) LENGTH(2)
646	CSTL8	1742 ADDRESS. HEX LOCATION(000027A4) IN CSECT(I7824) LENGTH(2)
916	CTR01	1406 ADDRESS. HEX LOCATION(0000289C) IN CSECT(I7824) LENGTH(2)
		1701 1717 1799 1824 1825 1959 1975 2057 2082 2083 2217 2233 2318 2343 2344 2472 2488 2574 2599 2600
628	DCBUF	ADDRESS. HEX LOCATION(00002786) IN CSECT(I7824) LENGTH(1)
1621	DC2PT	1300 ADDRESS. HEX LOCATION(00002D18) IN CSECT(I7824) LENGTH(2)
105	DEVADD	1594 ADDRESS. HEX LOCATION(000019D0) IN CSECT(I7824) LENGTH(1)
		653 964 970 976 983 989 1494 1503 1600
623	DEV1	1681 ADDRESS. HEX LOCATION(0000277E) IN CSECT(I7824) LENGTH(2)
774	DGDCB	627 ADDRESS. HEX LOCATION(000027EE) IN CSECT(I7824) LENGTH(2)
917	DIFF	1235 ADDRESS. HEX LOCATION(0000289E) IN CSECT(I7824) LENGTH(2)
67	DUMMY	2752 ABSOLUTE. HEX VALUE(00000000)
519	ENTFT	372 ADDRESS. HEX LOCATION(00002624) IN CSECT(I7824) LENGTH(1)
47	EQ	198 ABSOLUTE. HEX VALUE(00000000)
600	ER	384 ABSOLUTE. HEX VALUE(00000021)
		1311 1330 1413 1455 1480 1740 1998 2259 2515 2727 2742 2746 2799 2818 2843
675	EXIT	ABSOLUTE. HEX VALUE(00000006)
1623	FAKETU	1462 ADDRESS. HEX LOCATION(00002D1C) IN CSECT(I7824) LENGTH(2)
2834	FINS	1593 ADDRESS. HEX LOCATION(00003AAC) IN CSECT(I7824) LENGTH(6)
906	FIVE9	2771 ADDRESS. HEX LOCATION(00002888) IN CSECT(I7824) LENGTH(2)
538	FO0004	1094 ADDRESS. HEX LOCATION(0000262A) IN CSECT(I7824) LENGTH(1)
546	FO0008	406 ADDRESS. HEX LOCATION(000026AC) IN CSECT(I7824) LENGTH(1)
552	FO0011	409 ADDRESS. HEX LOCATION(00002706) IN CSECT(I7824) LENGTH(1)
558	FO0130	514 ADDRESS. HEX LOCATION(00002742) IN CSECT(I7824) LENGTH(1)
2789	GO1	517 ADDRESS. HEX LOCATION(00003A28) IN CSECT(I7824) LENGTH(1)
1629	HEBLK	2762 ADDRESS. HEX LOCATION(00002D1E) IN CSECT(I7824) LENGTH(2)
695	HTOE	1576 ABSOLUTE. HEX VALUE(0000001A)
1004	IDCBCE1	1577 ADDRESS. HEX LOCATION(0000291C) IN CSECT(I7824) LENGTH(2)
1006	IDCBCE2	970 ADDRESS. HEX LOCATION(00002920) IN CSECT(I7824) LENGTH(2)
1008	IDCBRAP	976 ADDRESS. HEX LOCATION(00002924) IN CSECT(I7824) LENGTH(2)
1000	IDCB0	964 ADDRESS. HEX LOCATION(00002914) IN CSECT(I7824) LENGTH(2)
1002	IDCB1	989 ADDRESS. HEX LOCATION(00002918) IN CSECT(I7824) LENGTH(2)
671	IDLE	983 ABSOLUTE. HEX VALUE(00000002)
602	IN	1326 ABSOLUTE. HEX VALUE(00000023)

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1503	INTBL	1312 ADDRESS. HEX LOCATION(00002B78) IN CSECT(I7824) LENGTH(2)
1400	INTER	2095 ADDRESS. HEX LOCATION(00002AE0) IN CSECT(I7824) LENGTH(2)
1409	INTES	1538 ADDRESS. HEX LOCATION(00002AF8) IN CSECT(I7824) LENGTH(2)
1413	INTET	1505 ADDRESS. HEX LOCATION(00002B00) IN CSECT(I7824) LENGTH(2)
1440	INTOK	1400 ADDRESS. HEX LOCATION(00002B04) IN CSECT(I7824) LENGTH(2)
1462	INTRX	1410 ADDRESS. HEX LOCATION(00002B34) IN CSECT(I7824) LENGTH(2)
1443	INTR1	1504 ADDRESS. HEX LOCATION(00002B0C) IN CSECT(I7824) LENGTH(2)
1448	INTR2	1457 ADDRESS. HEX LOCATION(00002B1A) IN CSECT(I7824) LENGTH(1)
1456	INTR3	1408 ADDRESS. HEX LOCATION(00002B28) IN CSECT(I7824) LENGTH(2)
1494	IOBLK	1455 ADDRESS. HEX LOCATION(00002B6C) IN CSECT(I7824) LENGTH(2)
		1413 1543 1686 1751 1944 2009 2202 2270 2457 2526
1496	IODCB	ADDRESS. HEX LOCATION(00002B70) IN CSECT(I7824) LENGTH(2)
1497	IOHOD	1173 ADDRESS. HEX LOCATION(00002B72) IN CSECT(I7824) LENGTH(2)
37	I7824	1216 CSECT. START(00002500) LENGTH(5590) ESDID(0)
903	LGSEC	1290 ADDRESS. HEX LOCATION(00002882) IN CSECT(I7824) LENGTH(2)
1610	LINE1	1085 ADDRESS. HEX LOCATION(00002C46) IN CSECT(I7824) LENGTH(40)
2756	LOOP1	1581 ADDRESS. HEX LOCATION(000039C6) IN CSECT(I7824) LENGTH(2)
622	LSTIO	2829 ADDRESS. HEX LOCATION(0000277C) IN CSECT(I7824) LENGTH(2)
599	NI	963 ABSOLUTE. HEX VALUE(00000020)
1584	MVBUF	1458 ADDRESS. HEX LOCATION(00002BD2) IN CSECT(I7824) LENGTH(2)
611	NG	1588 ABSOLUTE. HEX VALUE(0000002C)
606	NI	1461 ABSOLUTE. HEX VALUE(00000027)
381	N00001	1318 ADDRESS. HEX LOCATION(00002550) IN CSECT(I7824) LENGTH(2)
393	N00002	315 ADDRESS. HEX LOCATION(00002562) IN CSECT(I7824) LENGTH(2)
405	N00003	318 ADDRESS. HEX LOCATION(00002574) IN CSECT(I7824) LENGTH(2)
408	N00004	321 ADDRESS. HEX LOCATION(00002578) IN CSECT(I7824) LENGTH(2)
411	N00005	324 ADDRESS. HEX LOCATION(0000257C) IN CSECT(I7824) LENGTH(2)
423	N00006	327 ADDRESS. HEX LOCATION(0000258E) IN CSECT(I7824) LENGTH(2)
435	N00007	330 ADDRESS. HEX LOCATION(000025A0) IN CSECT(I7824) LENGTH(2)
438	N00008	333 ADDRESS. HEX LOCATION(000025A4) IN CSECT(I7824) LENGTH(2)
441	N00009	336 ADDRESS. HEX LOCATION(000025A8) IN CSECT(I7824) LENGTH(2)
453	N00010	339 ADDRESS. HEX LOCATION(000025BA) IN CSECT(I7824) LENGTH(2)
465	N00011	342 ADDRESS. HEX LOCATION(000025CC) IN CSECT(I7824) LENGTH(2)
468	N00012	345 ADDRESS. HEX LOCATION(000025D0) IN CSECT(I7824) LENGTH(2)
471	N00013	348 ADDRESS. HEX LOCATION(000025D4) IN CSECT(I7824) LENGTH(2)
483	N00014	351 ADDRESS. HEX LOCATION(000025E6) IN CSECT(I7824) LENGTH(2)
495	N00015	354 ADDRESS. HEX LOCATION(000025F8) IN CSECT(I7824) LENGTH(2)
498	N00016	357 ADDRESS. HEX LOCATION(000025FC) IN CSECT(I7824) LENGTH(2)
501	N00017	360 ADDRESS. HEX LOCATION(00002600) IN CSECT(I7824) LENGTH(2)
513	N00018	363 ADDRESS. HEX LOCATION(0000261A) IN CSECT(I7824) LENGTH(2)
516	N00019	366 ADDRESS. HEX LOCATION(0000261E) IN CSECT(I7824) LENGTH(2)
57	ON	369 ABSOLUTE. HEX VALUE(00000200)
902	ONE1	396 ADDRESS. HEX LOCATION(00002880) IN CSECT(I7824) LENGTH(2)
564	OPTN1	2761 ADDRESS. HEX LOCATION(00002770) IN CSECT(I7824) LENGTH(2)
587	OPTN3	1402 ADDRESS. HEX LOCATION(00002774) IN CSECT(I7824) LENGTH(2)
101	PARMARA	1485 ADDRESS. HEX LOCATION(000196E) IN CSECT(I7824) LENGTH(1)
904	PHYSC	394 ADDRESS. HEX LOCATION(00002884) IN CSECT(I7824) LENGTH(2)
69	PID	1092 ADDRESS. HEX LOCATION(00001800) IN CSECT(I7824) LENGTH(1)
		71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 1592
1624	PIDMSG10	ABSOLUTE. HEX VALUE(0000F1F0)
681	PREP	1592 ABSOLUTE. HEX VALUE(0000000C)
1003	RDATA	ADDRESS. HEX LOCATION(0000291A) IN CSECT(I7824) LENGTH(2)
1001	RDATA0	1843 ADDRESS. HEX LOCATION(00002916) IN CSECT(I7824) LENGTH(2)
		2363 2365 2366 2618 2619 2621 2622 2105 2362

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2641	RDBUF	1839 1840 2097 2098 2358 2359 2614 2615 ADDRESS. HEX LOCATION(00003804) IN CSECT(I7824) LENGTH(2)
869	RDDCB	2495 ADDRESS. HEX LOCATION(0000284E) IN CSECT(I7824) LENGTH(2)
677	RESET	1188 1191 2491 2492 2493 2494 2495 ABSOLUTE. HEX VALUE(00000008)
688	RICB	1687 1752 1945 2010 2203 2271 2458 2527 ABSOLUTE. HEX VALUE(00000013)
813	RIDCB	1601 ADDRESS. HEX LOCATION(000027FE) IN CSECT(I7824) LENGTH(2)
891	RKDCB	2737 ADDRESS. HEX LOCATION(0000286E) IN CSECT(I7824) LENGTH(2)
801	RSDCB	1200 1205 1212 1213 ADDRESS. HEX LOCATION(000027EE) IN CSECT(I7824) LENGTH(2)
1096	RTT01	1179 1184 1216 1221 1720 1978 2735 2738 2739 ADDRESS. HEX LOCATION(0000297A) IN CSECT(I7824) LENGTH(4)
2830	RTY22	1088 ADDRESS. HEX LOCATION(00003AA8) IN CSECT(I7824) LENGTH(2)
2831	RT201	2751 ADDRESS. HEX LOCATION(00003AAA) IN CSECT(I7824) LENGTH(2)
2810	RT203	2749 ADDRESS. HEX LOCATION(00003A66) IN CSECT(I7824) LENGTH(1)
2822	RT204	2805 2821 ADDRESS. HEX LOCATION(00003A90) IN CSECT(I7824) LENGTH(1)
2792	RT205	2802 ADDRESS. HEX LOCATION(00003A34) IN CSECT(I7824) LENGTH(1)
2825	RT208	2768 ADDRESS. HEX LOCATION(00003A96) IN CSECT(I7824) LENGTH(1)
627	SCTID	2808 ADDRESS. HEX LOCATION(0000277E) IN CSECT(I7824) LENGTH(2)
913	SCTST	808 820 898 1041 1122 1181 1184 1202 1205 2748 2750 2801 2804 2820 2823 ADDRESS. HEX LOCATION(00002896) IN CSECT(I7824) LENGTH(2)
988	SENS0	1037 1213 1218 1221 ADDRESS. HEX LOCATION(000028F2) IN CSECT(I7824) LENGTH(4)
982	SENS1	1835 2093 2354 2610 ADDRESS. HEX LOCATION(000028DE) IN CSECT(I7824) LENGTH(4)
825	SKDCB	1841 2099 2360 2616 ADDRESS. HEX LOCATION(0000280E) IN CSECT(I7824) LENGTH(2)
2763	SKRV	1173 2729 2730 2731 2735 2737 2755 2760 2765 2766 2767 2790 2791 ADDRESS. HEX LOCATION(000039E0) IN CSECT(I7824) LENGTH(1)
679	START	2757 ABSOLUTE. HEX VALUE(0000000A)
104	SUPSTAT	1316 ADDRESS. HEX LOCATION(000019C4) IN CSECT(I7824) LENGTH(1)
1094	TT303	1595 ADDRESS. HEX LOCATION(00002972) IN CSECT(I7824) LENGTH(6)
1100	TT304	1086 ADDRESS. HEX LOCATION(0000298A) IN CSECT(I7824) LENGTH(4)
1043	TT4Y	1084 1093 1095 ADDRESS. HEX LOCATION(00002942) IN CSECT(I7824) LENGTH(2)
92	TUMSGWTR	1039 ADDRESS. HEX LOCATION(000018BA) IN CSECT(I7824) LENGTH(1)
98	TURESUL	1597 ADDRESS. HEX LOCATION(000018C8) IN CSECT(I7824) LENGTH(1)
651	TURTN	1685 1688 1749 1753 1943 1946 2007 2011 2201 2204 2268 2272 2456 2459 2524 2528 2719 2720 2721 2722 2723 2724 2780 2781 2782 2783 2784 2785 2834 2835 2836 2837 ADDRESS. HEX LOCATION(000027AE) IN CSECT(I7824) LENGTH(2)
74	TUSTATUS	1602 1675 1933 2191 2446 2713 ADDRESS. HEX LOCATION(00001818) IN CSECT(I7824) LENGTH(1)
75	TUWORK	1575 ADDRESS. HEX LOCATION(0000181A) IN CSECT(I7824) LENGTH(1)
2770	T02A	1579 1631 ADDRESS. HEX LOCATION(000039F8) IN CSECT(I7824) LENGTH(2)
2772	T02B	2728 2830 2844 ADDRESS. HEX LOCATION(000039FC) IN CSECT(I7824) LENGTH(2)
2774	T02C	2743 ADDRESS. HEX LOCATION(00003A00) IN CSECT(I7824) LENGTH(2)
2776	T02D	2747 2809 2812 2819 ADDRESS. HEX LOCATION(00003A04) IN CSECT(I7824) LENGTH(2)
2786	T02ER	2800 2824 ADDRESS. HEX LOCATION(00003A24) IN CSECT(I7824) LENGTH(2)
2780	T02R	2726 2741 2745 2798 2817 2842 ADDRESS. HEX LOCATION(00003A0C) IN CSECT(I7824) LENGTH(4)
2359	T13A	2717 ADDRESS. HEX LOCATION(000034E8) IN CSECT(I7824) LENGTH(6)
2366	T13B	2357 ADDRESS. HEX LOCATION(00003508) IN CSECT(I7824) LENGTH(4)
2352	T13C	2364 ADDRESS. HEX LOCATION(000034D4) IN CSECT(I7824) LENGTH(4)
2278	T13CC	2278 ADDRESS. HEX LOCATION(000033CA) IN CSECT(I7824) LENGTH(4)
2245	T13D	2245 ADDRESS. HEX LOCATION(00003370) IN CSECT(I7824) LENGTH(4)
2272	T13E	2247 ADDRESS. HEX LOCATION(000033C0) IN CSECT(I7824) LENGTH(6)
2348	T13EE	2256 2263 2265 ADDRESS. HEX LOCATION(000034C6) IN CSECT(I7824) LENGTH(4)
2268	T13ER	2285 ADDRESS. HEX LOCATION(000033B2) IN CSECT(I7824) LENGTH(6)
2250	T13F	2135 2207 2211 2218 2216 2220 2223 2226 2229 2228 2241 2254 2258 2260 2262 2296 2324 2328 2332 2337 2341 2350 2355 2361 ADDRESS. HEX LOCATION(0000337A) IN CSECT(I7824) LENGTH(2)
2351	T13FF	2280 ADDRESS. HEX LOCATION(000034D0) IN CSECT(I7824) LENGTH(4)
2335	T13G	2289 2302 ADDRESS. HEX LOCATION(00003492) IN CSECT(I7824) LENGTH(6)
2217	T13H	2321 ADDRESS. HEX LOCATION(000032FC) IN CSECT(I7824) LENGTH(6)
2343	T13HH	2215 ADDRESS. HEX LOCATION(000034B2) IN CSECT(I7824) LENGTH(6)
2270	T13I	2334 ADDRESS. HEX LOCATION(000033BA) IN CSECT(I7824) LENGTH(4)
2376	T13J	2251 ADDRESS. HEX LOCATION(0000352E) IN CSECT(I7824) LENGTH(2)

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2347	T13JJ	ADDRESS. HEX LOCATION(000034C2) IN CSECT(I7824) LENGTH(4)
2317	T13L	2317 2345 ADDRESS. HEX LOCATION(00003450) IN CSECT(I7824) LENGTH(4)
2320	T13LL	2305 2312 ADDRESS. HEX LOCATION(0000345C) IN CSECT(I7824) LENGTH(2)
2286	T13M	2346 ADDRESS. HEX LOCATION(000033E6) IN CSECT(I7824) LENGTH(4)
2288	T13N	2284 ADDRESS. HEX LOCATION(000033EC) IN CSECT(I7824) LENGTH(4)
2307	T13R	2299 ADDRESS. HEX LOCATION(00003430) IN CSECT(I7824) LENGTH(4)
2382	T13RE	2304 ADDRESS. HEX LOCATION(00003538) IN CSECT(I7824) LENGTH(2)
2370	T13RR	2262 2264 ADDRESS. HEX LOCATION(00003518) IN CSECT(I7824) LENGTH(6)
2224	T13S	2368 ADDRESS. HEX LOCATION(0000331A) IN CSECT(I7824) LENGTH(6)
2354	T13SS	2234 ADDRESS. HEX LOCATION(000034D8) IN CSECT(I7824) LENGTH(4)
2386	T13ST	2246 2293 2297 2325 2329 2333 2338 2342 ADDRESS. HEX LOCATION(0000353E) IN CSECT(I7824) LENGTH(1)
2300	T13T	2198 ADDRESS. HEX LOCATION(0000341A) IN CSECT(I7824) LENGTH(4)
2381	T13TP	2285 2306 2310 2315 ADDRESS. HEX LOCATION(00003534) IN CSECT(I7824) LENGTH(2)
2380	T13U	2359 2370 2371 2372 ADDRESS. HEX LOCATION(00003530) IN CSECT(I7824) LENGTH(2)
2312	T13V	2199 2200 2261 2262 2264 2367 2369 2370 ADDRESS. HEX LOCATION(00003440) IN CSECT(I7824) LENGTH(4)
2274	T13X	2316 ADDRESS. HEX LOCATION(000033C6) IN CSECT(I7824) LENGTH(4)
2384	T13XR	2266 2269 ADDRESS. HEX LOCATION(0000353C) IN CSECT(I7824) LENGTH(2)
2615	T14A	2255 ADDRESS. HEX LOCATION(000037AE) IN CSECT(I7824) LENGTH(6)
2622	T14B	2613 ADDRESS. HEX LOCATION(000037CE) IN CSECT(I7824) LENGTH(4)
2608	T14C	2620 ADDRESS. HEX LOCATION(0000379A) IN CSECT(I7824) LENGTH(4)
2534	T14CC	2534 ADDRESS. HEX LOCATION(00003690) IN CSECT(I7824) LENGTH(4)
2501	T14D	2501 ADDRESS. HEX LOCATION(00003636) IN CSECT(I7824) LENGTH(4)
2528	T14E	2503 ADDRESS. HEX LOCATION(00003686) IN CSECT(I7824) LENGTH(6)
2604	T14EE	2512 2519 2521 ADDRESS. HEX LOCATION(0000378C) IN CSECT(I7824) LENGTH(4)
2524	T14ER	2547 ADDRESS. HEX LOCATION(00003678) IN CSECT(I7824) LENGTH(6)
2506	T14F	2450 2462 2466 2468 2471 2475 2478 2481 2484 2487 2497 2510 2514 2516 2548 2552 2580 2584 2588 2593 2597 2606 2611 2617 ADDRESS. HEX LOCATION(00003640) IN CSECT(I7824) LENGTH(2)
2607	T14FF	2536 ADDRESS. HEX LOCATION(00003796) IN CSECT(I7824) LENGTH(4)
2591	T14G	2545 2558 ADDRESS. HEX LOCATION(00003758) IN CSECT(I7824) LENGTH(6)
2472	T14H	2577 ADDRESS. HEX LOCATION(000035BC) IN CSECT(I7824) LENGTH(6)
2599	T14HH	2470 ADDRESS. HEX LOCATION(00003778) IN CSECT(I7824) LENGTH(6)
2526	T14I	2590 ADDRESS. HEX LOCATION(00003680) IN CSECT(I7824) LENGTH(4)
2632	T14J	2507 ADDRESS. HEX LOCATION(000037F4) IN CSECT(I7824) LENGTH(2)
2603	T14JJ	2630 ADDRESS. HEX LOCATION(00003788) IN CSECT(I7824) LENGTH(4)
2573	T14L	2573 2501 ADDRESS. HEX LOCATION(00003716) IN CSECT(I7824) LENGTH(4)
2576	T14LL	2561 2568 ADDRESS. HEX LOCATION(00003722) IN CSECT(I7824) LENGTH(2)
2542	T14M	2602 ADDRESS. HEX LOCATION(000036AC) IN CSECT(I7824) LENGTH(4)
2544	T14N	2540 ADDRESS. HEX LOCATION(000036B2) IN CSECT(I7824) LENGTH(4)
2563	T14R	2555 ADDRESS. HEX LOCATION(000036F6) IN CSECT(I7824) LENGTH(4)
2638	T14RE	2560 ADDRESS. HEX LOCATION(000037FE) IN CSECT(I7824) LENGTH(2)
2626	T14RR	2518 2520 ADDRESS. HEX LOCATION(000037DE) IN CSECT(I7824) LENGTH(6)
2479	T14S	2624 ADDRESS. HEX LOCATION(000035DA) IN CSECT(I7824) LENGTH(6)
2610	T14SS	2488 ADDRESS. HEX LOCATION(0000379E) IN CSECT(I7824) LENGTH(4)
2643	T14ST	2502 2549 2553 2581 2585 2589 2594 2598 ADDRESS. HEX LOCATION(00003904) IN CSECT(I7824) LENGTH(1)
2556	T14T	2453 ADDRESS. HEX LOCATION(000036F0) IN CSECT(I7824) LENGTH(4)
2637	T14TP	2538 2562 2566 2571 ADDRESS. HEX LOCATION(000037FA) IN CSECT(I7824) LENGTH(2)
2636	T14U	2615 2626 2627 2628 ADDRESS. HEX LOCATION(000037F6) IN CSECT(I7824) LENGTH(2)
2568	T14V	2450 2455 2517 2518 2520 2623 2625 2626 ADDRESS. HEX LOCATION(00003706) IN CSECT(I7824) LENGTH(4)
2530	T14X	2503 ADDRESS. HEX LOCATION(0000368C) IN CSECT(I7824) LENGTH(4)
2640	T14XR	2522 2525 ADDRESS. HEX LOCATION(00003802) IN CSECT(I7824) LENGTH(2)
2841	T2END	2511 ADDRESS. HEX LOCATION(00003AC8) IN CSECT(I7824) LENGTH(4)
660	T3C02	2828 ADDRESS. HEX LOCATION(000027B6) IN CSECT(I7824) LENGTH(6)
2738	T7777	395 425 455 485 ADDRESS. HEX LOCATION(00003980) IN CSECT(I7824) LENGTH(6)
2713	T7802	2736 ADDRESS. HEX LOCATION(00003922) IN CSECT(I7824) LENGTH(4)
2191	T7813	503 ADDRESS. HEX LOCATION(00003298) IN CSECT(I7824) LENGTH(4)
2446	T7814	443 ADDRESS. HEX LOCATION(00003558) IN CSECT(I7824) LENGTH(4)

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1675	T7882	473 ADDRESS. HEX LOCATION(00002D24) IN CSECT(I7824) LENGTH(4)
1933	T7883	383 ADDRESS. HEX LOCATION(00002FDE) IN CSECT(I7824) LENGTH(4)
2737	T7888	413 ADDRESS. HEX LOCATION(0000397A) IN CSECT(I7824) LENGTH(6)
1840	T82A	2734 ADDRESS. HEX LOCATION(00002F62) IN CSECT(I7824) LENGTH(6)
1847	T82B	1838 ADDRESS. HEX LOCATION(00002F82) IN CSECT(I7824) LENGTH(4)
1833	T82C	1845 ADDRESS. HEX LOCATION(00002F4E) IN CSECT(I7824) LENGTH(4)
1759	T82CC	1759 ADDRESS. HEX LOCATION(00002E44) IN CSECT(I7824) LENGTH(4)
1726	T82D	1726 ADDRESS. HEX LOCATION(00002DEA) IN CSECT(I7824) LENGTH(4)
1753	T82E	1728 ADDRESS. HEX LOCATION(00002E3A) IN CSECT(I7824) LENGTH(6)
1829	T82EE	1737 1744 1746 ADDRESS. HEX LOCATION(00002F40) IN CSECT(I7824) LENGTH(4)
1749	T82ER	1766 ADDRESS. HEX LOCATION(00002E2C) IN CSECT(I7824) LENGTH(6)
1731	T82F	1679 1691 1695 1697 1700 1704 1707 1710 1713 1716 1722 1735 1739 1741 1773 1777 1805 1809 1813 1818 1822 1831 1836 1842 ADDRESS. HEX LOCATION(00002DF4) IN CSECT(I7824) LENGTH(2)
1832	T82FF	1761 ADDRESS. HEX LOCATION(00002F4A) IN CSECT(I7824) LENGTH(4)
1816	T82G	1770 1783 ADDRESS. HEX LOCATION(00002F0C) IN CSECT(I7824) LENGTH(6)
1701	T82H	1802 ADDRESS. HEX LOCATION(00002D88) IN CSECT(I7824) LENGTH(6)
1824	T82HH	1699 ADDRESS. HEX LOCATION(00002F2C) IN CSECT(I7824) LENGTH(6)
1751	T82I	1815 ADDRESS. HEX LOCATION(00002E34) IN CSECT(I7824) LENGTH(4)
1857	T82J	1732 ADDRESS. HEX LOCATION(00002FA8) IN CSECT(I7824) LENGTH(2)
1828	T82JJ	1855 ADDRESS. HEX LOCATION(00002F3C) IN CSECT(I7824) LENGTH(4)
1798	T82L	1798 1826 ADDRESS. HEX LOCATION(00002ECA) IN CSECT(I7824) LENGTH(4)
1801	T82LL	1786 1793 ADDRESS. HEX LOCATION(00002ED6) IN CSECT(I7824) LENGTH(2)
1767	T82M	1827 ADDRESS. HEX LOCATION(00002E60) IN CSECT(I7824) LENGTH(4)
1769	T82N	1765 ADDRESS. HEX LOCATION(00002E66) IN CSECT(I7824) LENGTH(4)
1788	T82R	1780 ADDRESS. HEX LOCATION(00002EAA) IN CSECT(I7824) LENGTH(4)
1863	T82RE	1785 ADDRESS. HEX LOCATION(00002FB2) IN CSECT(I7824) LENGTH(2)
1851	T82RR	1743 1745 ADDRESS. HEX LOCATION(00002F92) IN CSECT(I7824) LENGTH(6)
1708	T82S	1849 ADDRESS. HEX LOCATION(00002DA6) IN CSECT(I7824) LENGTH(6)
1835	T82SS	1718 ADDRESS. HEX LOCATION(00002F52) IN CSECT(I7824) LENGTH(4)
1867	T82ST	1727 1774 1778 1806 1810 1814 1819 1823 ADDRESS. HEX LOCATION(00002FB8) IN CSECT(I7824) LENGTH(1)
1781	T82T	1682 ADDRESS. HEX LOCATION(00002E94) IN CSECT(I7824) LENGTH(4)
1862	T82TP	1763 1787 1791 1796 ADDRESS. HEX LOCATION(00002FAE) IN CSECT(I7824) LENGTH(2)
1861	T82U	1840 1851 1852 1853 ADDRESS. HEX LOCATION(00002FAA) IN CSECT(I7824) LENGTH(2)
1793	T82V	1683 1684 1742 1743 1745 1848 1850 1851 ADDRESS. HEX LOCATION(00002EBA) IN CSECT(I7824) LENGTH(4)
1755	T82X	1797 ADDRESS. HEX LOCATION(00002E40) IN CSECT(I7824) LENGTH(4)
1865	T82XR	1747 1750 ADDRESS. HEX LOCATION(00002FB6) IN CSECT(I7824) LENGTH(2)
2098	T83A	1736 ADDRESS. HEX LOCATION(0000321C) IN CSECT(I7824) LENGTH(6)
2105	T83B	2096 ADDRESS. HEX LOCATION(0000323C) IN CSECT(I7824) LENGTH(4)
2091	T83C	2103 ADDRESS. HEX LOCATION(00003208) IN CSECT(I7824) LENGTH(4)
2017	T83CC	2017 ADDRESS. HEX LOCATION(000030FE) IN CSECT(I7824) LENGTH(4)
1984	T83D	1984 ADDRESS. HEX LOCATION(000030A4) IN CSECT(I7824) LENGTH(4)
2011	T83E	1986 ADDRESS. HEX LOCATION(000030F4) IN CSECT(I7824) LENGTH(6)
2087	T83EE	1995 2002 2004 ADDRESS. HEX LOCATION(000031FA) IN CSECT(I7824) LENGTH(4)
2007	T83ER	2024 ADDRESS. HEX LOCATION(000030E6) IN CSECT(I7824) LENGTH(6)
1989	T83F	1937 1949 1953 1955 1958 1962 1965 1968 1971 1974 1980 1993 1997 1999 2031 2035 2063 2067 2071 2076 2080 2089 2094 2100 ADDRESS. HEX LOCATION(000030AE) IN CSECT(I7824) LENGTH(2)
2090	T83FF	2019 ADDRESS. HEX LOCATION(00003204) IN CSECT(I7824) LENGTH(4)
2074	T83G	2028 2041 ADDRESS. HEX LOCATION(000031C6) IN CSECT(I7824) LENGTH(6)
1959	T83H	2060 ADDRESS. HEX LOCATION(00003042) IN CSECT(I7824) LENGTH(6)
2082	T83HH	1957 ADDRESS. HEX LOCATION(000031E6) IN CSECT(I7824) LENGTH(6)
2009	T83I	2073 ADDRESS. HEX LOCATION(000030EB) IN CSECT(I7824) LENGTH(4)
2115	T83J	1990 ADDRESS. HEX LOCATION(00003262) IN CSECT(I7824) LENGTH(2)
2086	T83JJ	2113 ADDRESS. HEX LOCATION(000031F6) IN CSECT(I7824) LENGTH(4)
2056	T83L	2056 2084 ADDRESS. HEX LOCATION(00003184) IN CSECT(I7824) LENGTH(4)
2059	T83LL	2044 2051 ADDRESS. HEX LOCATION(00003190) IN CSECT(I7824) LENGTH(2)
		2085

CROSS-REFERENCE LISTING

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DECLARED	NAME	ATTRIBUTES AND REFERENCES
2025	T83M	2023 ADDRESS. HEX LOCATION(0000311A) IN CSECT(I7824) LENGTH(4)
2027	T83N	2023 ADDRESS. HEX LOCATION(00003120) IN CSECT(I7824) LENGTH(4)
2046	T83R	2038 ADDRESS. HEX LOCATION(00003164) IN CSECT(I7824) LENGTH(4)
2121	T83RE	2043 ADDRESS. HEX LOCATION(0000326C) IN CSECT(I7824) LENGTH(2)
2109	T83RR	2001 2003 ADDRESS. HEX LOCATION(0000324C) IN CSECT(I7824) LENGTH(6)
1966	T83S	2107 ADDRESS. HEX LOCATION(00003060) IN CSECT(I7824) LENGTH(6)
2093	T83SS	1976 ADDRESS. HEX LOCATION(0000320C) IN CSECT(I7824) LENGTH(4)
2125	T83ST	1985 2032 2036 2064 2068 2072 2077 2081 ADDRESS. HEX LOCATION(00003272) IN CSECT(I7824) LENGTH(1)
2039	T83T	1940 ADDRESS. HEX LOCATION(0000314E) IN CSECT(I7824) LENGTH(4)
2120	T83TP	2021 2045 2049 2054 ADDRESS. HEX LOCATION(00003268) IN CSECT(I7824) LENGTH(2)
2119	T83U	2098 2109 2110 2111 ADDRESS. HEX LOCATION(00003264) IN CSECT(I7824) LENGTH(2)
2051	T83V	1941 1942 2000 2001 2003 2106 2108 2109 ADDRESS. HEX LOCATION(00003174) IN CSECT(I7824) LENGTH(4)
2013	T83X	2055 ADDRESS. HEX LOCATION(000030FA) IN CSECT(I7824) LENGTH(4)
2123	T83XR	2005 2008 ADDRESS. HEX LOCATION(00003270) IN CSECT(I7824) LENGTH(2)
858	VRDCB	1994 ADDRESS. HEX LOCATION(0000283E) IN CSECT(I7824) LENGTH(2)
880	WKDCB	1794 ADDRESS. HEX LOCATION(0000285E) IN CSECT(I7824) LENGTH(2)
847	WRDCB	1208 1209 1224 1225 ADDRESS. HEX LOCATION(0000282E) IN CSECT(I7824) LENGTH(2)
907	WRSID	1197 ADDRESS. HEX LOCATION(0000288A) IN CSECT(I7824) LENGTH(2)
791	WSDCB	798 887 1042 1123 1225 1229 2237 2238 2239 ADDRESS. HEX LOCATION(000027DE) IN CSECT(I7824) LENGTH(2)
910	WSIDT	1228 1229 1231 1232 2236 ADDRESS. HEX LOCATION(00002890) IN CSECT(I7824) LENGTH(2)
603	XE	1038 1209 1232 ABSOLUTE HEX VALUE(00000024)
601	XI	1409 1471 ABSOLUTE HEX VALUE(00000022)
1290	XIO	1315 1456 1692 1950 2208 2463 ADDRESS. HEX LOCATION(00002A6E) IN CSECT(I7824) LENGTH(4)
1471	XIOCK	1174 1177 1185 1192 1195 1198 1206 1210 1214 ADDRESS. HEX LOCATION(00002B36) IN CSECT(I7824) LENGTH(2)
1478	XIOCO	1222 1226 1230 1233 1236 ADDRESS. HEX LOCATION(00002B48) IN CSECT(I7824) LENGTH(2)
1295	XIOCS	1325 ADDRESS. HEX LOCATION(00002A78) IN CSECT(I7824) LENGTH(6)
1480	XIOCV	1476 ADDRESS. HEX LOCATION(00002B4C) IN CSECT(I7824) LENGTH(2)
1489	XIOCX	1487 1738 1996 2257 2513 ADDRESS. HEX LOCATION(00002B66) IN CSECT(I7824) LENGTH(4)
1364	XIOER	1474 ADDRESS. HEX LOCATION(00002AD4) IN CSECT(I7824) LENGTH(2)
1299	XIOI	1481 ADDRESS. HEX LOCATION(00002A88) IN CSECT(I7824) LENGTH(4)
1312	XIOJ	1495 ADDRESS. HEX LOCATION(00002AAE) IN CSECT(I7824) LENGTH(2)
1324	XIOB	1298 ADDRESS. HEX LOCATION(00002AC2) IN CSECT(I7824) LENGTH(2)
918	XXX	1329 ADDRESS. HEX LOCATION(000028A0) IN CSECT(I7824) LENGTH(2)
901	ZEROO	2753 2758 2761 2764 ADDRESS. HEX LOCATION(0000287E) IN CSECT(I7824) LENGTH(2)
		1085 2748 2801 2820

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