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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT      COPYRIGHT IBM CORP 1976
3      COPY LOG7823      ** MAP EC HISTORY **
4      *****
5      *
6      *          ***      PREREQUISITES      ***
7      *
8      *          NONE
9      *
10     *****
11     *
12     *          ***      MODIFICATIONS      ***
13     *
14     *          CHANGES MADE TO MEET PROGRAM REQUIREMENTS
15     *
16     *****
17     *
18     *          ***      REA'S INCORPORATED      ***
19     *
20     *          NONE
21     *
22     *****
23     *
24     *          ***      SPECIAL INSTRUCTIONS      ***
25     *
26     *          NONE
27     *
28     *****
29     *
30     *          ***      E. C. HISTORY      ***
31     *
32     *          DATE 17DEC76 DATE 04MAR77 DATE 10JUN77 DATE 01MAR78
33     *          E.C. 578486 E.C. 578638 E.C. 578625 E.C. 755285
34     *
35     *****
002500 I7823      START X'2500'      START ADDRESS OF ALL 'I' TYPE PROG
000100 @QUES      EQU X'0100'      EQUATED VALUE FOR MDI STATEMENT
000101 @FIXT      EQU X'0101'      EQUATED VALUE FOR MDI STATEMENT
000102 @STOP      EQU X'0102'      EQUATED VALUE FOR MDI STATEMENT
000200 @GOTO      EQU X'0200'      EQUATED VALUE FOR MDI STATEMENT
000201 @CALL      EQU X'0201'      EQUATED VALUE FOR MDI STATEMENT
000300 @INPT      EQU X'0300'      EQUATED VALUE FOR MDI STATEMENT
000400 @QUXX      EQU X'0400'      EQUATED VALUE FOR MDI STATEMENT
000500 @TUXX      EQU X'0500'      EQUATED VALUE FOR MDI STATEMENT
000600 @NVLD      EQU X'0600'      EQUATED VALUE FOR MDI STATEMENT
000000 EQ         EQU X'0000'      EQUATE FOR EQUAL
000004 NE         EQU X'0004'      EQUATE FOR NOT EQUAL
000008 HI         EQU X'0008'      EQUATE FOR HIGH
000010 NH         EQU X'000C'      EQUATE FOR NOT HIGH
000014 LO         EQU X'0010'      EQUATE FOR LOW
000018 NL         EQU X'0014'      EQUATE FOR NOT LOW
000020 LE         EQU X'0018'      EQUATE FOR LESS THAN
000024 GE         EQU X'001C'      EQUATE FOR GREATER THAN
000028 ON         EQU X'0020'      EQUATE FOR ON
000032 OF         EQU X'0024'      EQUATE FOR OFF
000036 MX         EQU X'0028'      EQUATE FOR MIXED
000040 EBC         EQU X'0000'      EQUATE FOR EBCDIC DATA TRANSFER
000044 HEX         EQU X'0001'      EQUATE FOR HEX DATA TRANSFER
000048 XTRNL        EQU X'0001'      EQUATE FOR EXTERNAL REFERENCE
000052 INTRNL       EQU X'0000'      EQUATE FOR INTERNAL REFERENCE
000056 PARM         EQU X'0000'      EQUATE INDICATING PARAMETER
000060 DA           EQU X'0001'      EQUATE FOR DEVICE ADDRESS
000064 UA           EQU X'0002'      EQUATE FOR UNIT ADDRESS
000068 DUMMY         EQU X'0000'      DUMMY EQUATE
000100 PID           EQU *-X'0D00'      ADDRESS OF MDI HEADER
000232 PTYPE         EQU *-X'22CE'      ADDRESS OF PROCESSOR TYPE FIELD
000100 STEPNUM      EQU PID+X'000C'      ADDRESS OF DECIMAL STEP NUMBER
000100 OPWD1         EQU PID+X'000E'      ADDRESS OF OPTION WORD ONE
000100 OPWD2         EQU PID+X'0010'      ADDRESS OF OPTION WORD TWO
000180 TUSTATUS       EQU PID+X'0018'      ADDRESS OF TU STATUS WORD
000180 TUNWORK        EQU PID+X'001A'      ADDRESS OF TU WORK AREA
000180 TUPARM1         EQU PID+X'009A'      ADDRESS OF PARM 1 POINTER
000180 TUPARM2         EQU PID+X'009C'      ADDRESS OF PARM 2 POINTER
000180 TUPARM3         EQU PID+X'009E'      ADDRESS OF PARM 3 POINTER
000180 TUPARM4         EQU PID+X'00A0'      ADDRESS OF PARM 4 POINTER
000180 TUPARM5         EQU PID+X'00A2'      ADDRESS OF PARM 5 POINTER
000180 TUPARM6         EQU PID+X'00A4'      ADDRESS OF PARM 6 POINTER
000180 TUPARM7         EQU PID+X'00A6'      ADDRESS OF PARM 7 POINTER
000180 TUPARM8         EQU PID+X'00A8'      ADDRESS OF PARM 8 POINTER
000180 TUPARM9         EQU PID+X'00AA'      ADDRESS OF PARM 9 POINTER
000180 TUPARM10        EQU PID+X'00AC'      ADDRESS OF PARM 10 POINTER
000180 TUPARM11       EQU PID+X'00AE'      ADDRESS OF PARM 11 POINTER
000180 TUPARM12       EQU PID+X'00B0'      ADDRESS OF PARM 12 POINTER
000180 TUPARM13       EQU PID+X'00B2'      ADDRESS OF PARM 13 POINTER
000180 TUPARM14       EQU PID+X'00B4'      ADDRESS OF PARM 14 POINTER
000180 TUPARM15       EQU PID+X'00B6'      ADDRESS OF PARM 15 POINTER
000180 TUPARM16       EQU PID+X'00B8'      ADDRESS OF PARM 16 POINTER
000180 TUMSGWTR       EQU PID+X'00BA'      ADDRESS OF -> TO COMMON MSG WRITER
000180 TUA           EQU PID+X'00BE'      ADDRESS OF UNIT ADDRESS IN EBC
000180 TUDA          EQU PID+X'00C0'      ADDRESS OF DEVICE ADDRESS IN EBC
000180 TUBUFF         EQU PID+X'00C2'      ADDRESS OF LAST USED WORD IN MAP
000180 TULAST         EQU PID+X'00C4'      ADDRESS OF LAST ADDRESSABLE WORD
000180 TURESULN       EQU PID+X'00C6'      ADDRESS OF LENGTH OF TU RESULTS
000180 TURESUL        EQU PID+X'00C8'      ADDRESS OF TU RESULTS FIELD
000180 MAPNAME       EQU PID+X'00FC'      ADDRESS OF MAP NAME FIELD IN HEX
000180 TUINPT        EQU PID+X'0148'      ADDRESS OF SINPT DATA
000180 PARMARA       EQU PID+X'016E'      ADDRESS OF SINPT INPUT AREA
000180 @DCADD1        EQU PID+X'01B8'      MDI POINTER
000180 @DCADD2        EQU PID+X'01BA'      MDI POINTER
000180 SUPSTAT        EQU PID+X'01C4'      ADDRESS OF MDI STATUS
000180 DEVADD         EQU PID+X'01D0'      ADDRESS OF DEVICE ADDRESS TABLE 0
000180 DEVADD1        EQU PID+X'01DA'      ADDRESS OF DEVICE ADDRESS TABLE 1
000180 DEVADD2        EQU PID+X'01E4'      ADDRESS OF DEVICE ADDRESS TABLE 2
000180 DEVADD3        EQU PID+X'01EE'      ADDRESS OF DEVICE ADDRESS TABLE 3
000180 DEVADD4        EQU PID+X'01F8'      ADDRESS OF DEVICE ADDRESS TABLE 4
000180 DEVADD5        EQU PID+X'0202'      ADDRESS OF DEVICE ADDRESS TABLE 5
000180 DEVADD6        EQU PID+X'020C'      ADDRESS OF DEVICE ADDRESS TABLE 6
000180 DEVADD7        EQU PID+X'0216'      ADDRESS OF DEVICE ADDRESS TABLE 7
113     PRINT OFF

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LOCTR OBJECT TEXT      STMT SOURCE STATEMENT      COPYRIGHT IBM CORP 1976
002500 2642      DC A(ENTPT)      POINT TO MAP ENTRY POINT TABLE
198     *****
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305     *****

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THE FOLLOWING TABLES ARE USED BY THE MDI SUPERVISOR (D3C00) TO LOCATE THE CORRECT RULE TO INVOKE, TO OBTAIN THE PROPER PARAMETERS TO PASS TO THE TU'S AND TO PASS TO THE OPERATOR THE INDICATED MESSAGE(S). THERE ARE FOUR TABLES USED FOR THIS PURPOSE THEY ARE:

STEP AND RULE ADDRESS TABLE
 THIS TABLE GIVES THE ADDRESS OF THE RULE TO INVOKE AND THE ASSOCIATED STEP DECIMAL STEP NUMBER OF THAT RULE. ENTRIES ARE AS FOLLOWS:
 A) AN ADDRESS OF THE RULE DC START AREA
 B) THE STEP NUMBER IN DECIMAL
 C) AN EQUATE FOR THE STEP NUMBER

RULE INFORMATION TABLE
 THIS TABLE CONTAINS THE REQUIRED INFORMATION TO EXECUTE THE APPROPRIATE RULE UNDER MDI. EACH RULE HAS ITS OWN UNIQUELY DEFINED AREA INDICATED BELOW. END OF TABLE IS INDICATED WITH A X'0000' FOR THE RULE EQUATE.

\$QUES
 A) RULE EQUATE X'0100'
 B) ADDRESS OF THE YES LEG RULE

\$FIXT
 A) RULE EQUATE X'0101'
 B) ADDRESS OF MESSAGE TO PRINT

\$STOP
 A) RULE EQUATE X'0102'
 B) ADDRESS OF MESSAGE

\$GOTO
 A) RULE EQUATE X'0200'
 B) ADDRESS OF MESSAGE
 C) NAME OF MAP TO GO TO
 D) ENTRY POINT WITHIN GO TO MAP TO USE
 E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE

\$CALL
 A) RULE EQUATE X'0201'
 B) ADDRESS OF MESSAGE
 C) NAME OF MAP TO CALL
 D) ENTRY POINT WITHIN CALLED MAP TO USE
 E) INDICATOR FOR EXTERNAL OR INTERNAL REFERENCE

\$INPT
 A) RULE EQUATE X'0300'
 B) INPUT TYPE (EBCDIC OR HEX)
 C) ADDRESS OF YES LEG RULE
 D) DESTINATION LOCATION OF INPUT DATA
 E) LENGTH OF INPUT DATA
 F) LOWER LIMIT OF GOOD DATA
 G) HIGHER LIMIT OF GOOD DATA

\$QUXX
 A) RULE EQUATE X'0400'
 B) ADDRESS OF YES LEG RULE
 C) TU BRANCH TO ADDRESS (INITIAL)
 D) TU BRANCH TO ADDRESS (SECONDARY)
 E) LENGTH OF PARAMETER IN BYTES
 F) PARAMETER TO PASS TO TU
 G) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER

\$TUXX
 A) RULE EQUATE X'0500'
 B) ADDRESS OF YES LEG RULE
 C) TU BRANCH TO ADDRESS
 D) TYPE OF COMPARE TO MAKE ON RESULTS
 E) LENGTH OF COMPARED RESULTS
 F) MASK FIELD FOR COMPARE
 G) LENGTH OF PARAMETER IN BYTES
 H) PARAMETER TO PASS TO THE TU
 I) STORE ADDRESS FOR FIRST 8 WORDS OF PARAMETER

\$NVLD
 A) RULE EQUATE X'0600'

ENTRY POINT TABLE
 THIS TABLE CONTAINS THE ENTRY POINTS WITHIN THE MAP THAT THE MAP CAN BE ENTERED FROM THESE ENTRY POINTS ARE REFERENCED BY NAME AND ADDRESS. ENTRIES ARE AS FOLLOWS:
 A) NAME OF ENTRY POINT
 B) ADDRESS OF ENTRY POINT RULE TABLE

THE ENTRY POINT TABLE END IS INDICATED BY A X'0000'

MESSAGE TABLE
 THIS TABLE CONTAINS THE MESSAGE PASSED TO THE OPERATOR VIA THE MDI SUPERVISOR. THE TABLE IS AS FOLLOWS:
 A) EQUATE FOR START OF MESSAGE BLOCK
 B) NUMBER OF LINES OF MESSAGE
 C) LENGTH OF FOLLOWING LINE
 D) FIRST LINE OF MESSAGE
 E) LENGTH OF FOLLOWING LINE
 F) SECOND LINE OF MESSAGE
 G) ETC.

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
308			*****	
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421			*****	

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM COPP 1976
422+			DC X'0000'	
423+			ALGN WORD	
424+			DC AL2(0)	
425+			DC C'AA'	
426+			ALGN WORD	
427+			DC AL2(PARMARA)	
428			STUXX T3C02,02,0002,ON,QT=(Q00089),YES=N00008,CT=(C00088)	
429+			DC A(@TUXX)	
430+			DC AL2(N00008)	
431+			DC A(T3C02)	
432+			DC AL2(ON)	
433+			DC AL2(02)	
434+			DC X'0002'	
435+			ALGN WORD	
436+			DC AL2(0)	
437+			DC C'AA'	
438+			ALGN WORD	
439+			DC AL2(PARMARA)	
440			FIXT FT=(F00004),CT=(C00045)	
441+			DC A(@FIXT)	
442+			DC A(F00004)	
443			FIXT FT=(F00008),CT=(C00045)	
444+			DC A(@FIXT)	
445+			DC A(F00008)	
446			STUXX T7879,02,0000,EQ,QT=(Q00098),YES=N00013,CT=(C00097)	
447+			DC A(@TUXX)	
448+			DC AL2(N00013)	
449+			DC A(T7879)	
450+			DC AL2(EQ)	
451+			DC AL2(02)	
452+			DC X'0000'	
453+			ALGN WORD	
454+			DC AL2(0)	
455+			DC C'AA'	
456+			ALGN WORD	
457+			DC AL2(PARMARA)	
458			STUXX T3C02,02,0002,ON,QT=(Q00101),YES=N00012,CT=(C00100)	
459+			DC A(@TUXX)	
460+			DC AL2(N00012)	
461+			DC A(T3C02)	
462+			DC AL2(EQ)	
463+			DC AL2(02)	
464+			DC X'0002'	
465+			ALGN WORD	
466+			DC AL2(0)	
467+			DC C'AA'	
468+			ALGN WORD	
469+			DC AL2(PARMARA)	
470			FIXT FT=(F00004),CT=(C00045)	
471+			DC A(@FIXT)	
472+			DC A(F00004)	
473			FIXT FT=(F00008),CT=(C00045)	
474+			DC A(@FIXT)	
475+			DC A(F00008)	
476			STUXX T7881,02,0000,EQ,QT=(Q00110),YES=N00017,CT=(C00109)	
477+			DC A(@TUXX)	
478+			DC AL2(N00017)	
479+			DC A(T7881)	
480+			DC AL2(EQ)	
481+			DC AL2(02)	
482+			DC X'0000'	
483+			ALGN WORD	
484+			DC AL2(0)	
485+			DC C'AA'	
486+			ALGN WORD	
487+			DC AL2(PARMARA)	
488			STUXX T3C02,02,0002,ON,QT=(Q00113),YES=N00016,CT=(C00112)	
489+			DC A(@TUXX)	
490+			DC AL2(N00016)	
491+			DC A(T3C02)	
492+			DC AL2(ON)	
493+			DC AL2(02)	
494+			DC X'0002'	
495+			ALGN WORD	
496+			DC AL2(0)	
497+			DC C'AA'	
498+			ALGN WORD	
499+			DC AL2(PARMARA)	
500			FIXT FT=(F00004),CT=(C00045)	
501+			DC A(@FIXT)	
502+			DC A(F00004)	
503			FIXT FT=(F00008),CT=(C00045)	
504+			DC A(@FIXT)	
505+			DC A(F00008)	
506			STUXX T7880,02,0000,EQ,QT=(Q00122),YES=N00021,CT=(C00121)	
507+			DC A(@TUXX)	
508+			DC AL2(N00021)	
509+			DC A(T7880)	
510+			DC AL2(EQ)	
511+			DC AL2(02)	
512+			DC X'0000'	
513+			ALGN WORD	
514+			DC AL2(0)	
515+			DC C'AA'	
516+			ALGN WORD	
517+			DC AL2(PARMARA)	
518			STUXX T3C02,02,0002,ON,QT=(Q00125),YES=N00020,CT=(C00124)	
519+			DC A(@TUXX)	
520+			DC AL2(N00020)	
521+			DC A(T3C02)	
522+			DC AL2(ON)	
523+			DC AL2(02)	
524+			DC X'0002'	
525+			ALGN WORD	
526+			DC AL2(0)	
527+			DC C'AA'	
528+			ALGN WORD	
529+			DC AL2(PARMARA)	
530			FIXT FT=(F00004),CT=(C00045)	
531+			DC A(@FIXT)	
532+			DC A(F00004)	
533			FIXT FT=(F00008),CT=(C00045)	
534+			DC A(@FIXT)	
535+			DC A(F00008)	

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
536 N00021 SGOTO TYPE=XTPNL,EP=A,MAP=7824,FT=(F00133),GTO=((7824,A))
537+N00021 DC A(@GOTO)
538+ DC A(F00133)
540+ DC CL4'7824'
541+ DC AL2(XTPNL)
542 DC AL2(DUMMY)
543 ENTPT EQU *
544 *****
545 *****
546 ** ENTRY POINT TABLE **
547 **
548 **
549 *****
550 *****
551 *****
552+ ENTPT EP=A STEP=00001
553+ DC CL2'A'
554 DC A(N00001)
555 DC AL2(DUMMY)
556 *****
557 ** MESSAGE TABLE **
558 **
559 **
560 *****
561 *****
562 F00004 EQU *
563 DC AL2(0003)
564 A(0044)
565 CL0044'REPLACE 4962 CAPDS A-A1C2,A-A1D2,ATTACHMENT.'
566 A(0044)
567 CL0044'INSPECT AND RESEAT CABLES BETWEEN ATTACHMENT'
568 A(0034)
569 CL0034'AND 4962. REPLACE A-A1G2, A-A1H2. '
570 F00008 EQU *
571 DC AL2(0002)
572 A(0042)
573 CL0042'REPLACE 4962 ATTACHMENT CARD, INSPECT AND '
574 A(0042)
575 CL0042'RESEAT CABLES BETWEEN ATTACHMENT AND 4962 '
576 F00133 EQU *
577 DC AL2(0001)
578 A(0016)
579 CL0016'MAP 7823 CORRECT'
580 HDIT 00B2
582+OPTN1 DC X'0000' PPROGRAM OPTION CONTROL WORD 1
583+
584+OPTN2 DC X'0000' PPROGRAM OPTION CONTROL WORD 2
585+
586+B48 EQU 16 0 8 PPROBLEM PROGRAM CONTROL BITS
587+B49 EQU 17 1 4 *
588+B50 EQU 18 2 2 * THESE BITS ARE USED WITH THE
589+B51 EQU 19 3 1 * SECOND OPTION WD AND ARE TO
590+B52 EQU 20 4 8 * BE ASSIGNED BY EACH PROGRAMMER
591+B53 EQU 21 5 4 *
592+B54 EQU 22 6 2 *
593+B55 EQU 23 7 1 *
594+B56 EQU 24 8 8 *
595+B57 EQU 25 9 4 *
596+B58 EQU 26 10 2 *
597+B59 EQU 27 11 1 *
598+B60 EQU 28 12 8 *
599+B61 EQU 29 13 4 *
600+B62 EQU 30 14 2 *
601+B63 EQU 31 15 1 *
602+C EQU 30 14 2 CHARACTER SUPPLIED
603+CMP EQU 31 15 1 COMPARE OPERATION
605+OPTN3 DC X'0000' PPROGRAM OPTION CONTROL WORD 3
606+
607+ 0 MYSTERY INTERRUPT MI 8 CS STATUS IN PROGRESS CS
608+ 1 ERROR INTERRUPT ER 9 CS AVAILABLE CSA
609+ 2 EXPECTED INTERRUPT XI 10 CS STATUS INTERRUPT ERP CE
610+ 3 INTERRUPT RECEIVED IN 11 ISF BITS ON (1-7) ISRON
611+
612+ 4 EXPECTED ERR/ATTENT XE 12 TEST UNIT RESULTS VOID NG
613+ 5 HARD ERROR FOUND HE 13 OIO CC ERROR IOCC
614+ 6 WRONG INTR LEVEL SLF 14 NO INTERRUPT NOIN
615+ 7 NO INTR EXPCTED NI 15 INTERRUPT CC ERROR INCC
616+
617+MI EQU 32 0 8 MYSTERY INTERRUPT HAPPENED
618+ER EQU 33 1 4 ERROR RECEIVED ON INTERRUPT
619+XI EQU 34 2 2 EXPECTED INTERRUPT CONTROL BIT
620+IN EQU 35 3 1 INTERRUPT RECEIVED CONTROL BIT
621+XE EQU 36 4 8 EXPECTED ERROR RESPONSE
622+HE EQU 37 5 4 HARD ERROR, 8 RETRIES
623+SLF EQU 38 6 2 INTERRUPT ON WRONG LEVEL ERROR
624+NI EQU 39 7 1 NO INTERRUPT EXPECTED E
625+CS EQU 40 8 8 CYCLE STEAL IN PROGRESS
626+CSA EQU 41 9 8 CYCLE STEAL AVAILABLE
627+CE EQU 42 10 2 CYCLE STEAL STATUS INTERRUPT ERROR
628+ISBON EQU 43 11 1 ISB BITS ON (1-7)
629+NG EQU 44 12 8 TEST UNIT RESULTS NO GOOD
630+IOCC EQU 45 13 4 OIO CC ERROR
631+NOIN EQU 46 14 2 NO INTERRUPT
632+INCC EQU 47 15 1 INTERRUPT CC ERROR
633+
634+ COMMON BUFFER FOR PRINTING DATA
635+
637+STUID DC A(*-*) TEST UNIT IDENTIFICATION
638+ICBN DC A(*-*) I/O AND INTR CONDITION CODES
639+ICBN DC A(*-*) INTR STATUS BYTES DEV ADPS
640+ISSTO DC A(*-*) ADDR OF LAST I/O + 4 BYTES
641+DEV1 DC A(*-*) DEVICE DEPENDENT DATA
642+DEV2 DC A(*-*)
643+DEV3 DC A(*-*)
644+DEV4 DC A(*-*)
645+SCTID EQU DEV1 READ ID BUFFER FOR IBIS & TERN
646+DCBUF EQU * DCB BUFFER FOR LAST DCB USED
647+DCB1 DC A(*-*) LAST DCB TABLE, CONTROL WORD
648+DCB2 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
649+DCB3 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
650+DCB4 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
651+DCB5 DC A(*-*) LAST DCB TABLE, DEV DEP WORD
652+DCB6 DC A(*-*) LAST DCB TABLE, CHAIN ADPS

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
653+DCB7 DC A(*-*) LAST DCB TABLE, BYTE COUNT
654+DCB8 DC A(*-*) LAST DCB TABLE, BUFFER ADDRESS
655+
656+CSBUF EQU * CYCLE STEAL DATA BUFFER
657+CSL1 DC A(*-*) CYCLE STEAL BUFFER, RESIDUAL ADPS
658+CSL2 DC A(*-*) CYCLE STEAL WD 2, DEVICE DEPEND
659+CSL3 DC A(*-*) CYCLE STEAL WD 3, DEVICE DEPEND
660+CSL4 DC A(*-*) CYCLE STEAL WD 4, DEVICE DEPEND
661+CSL5 DC A(*-*) CYCLE STEAL WD 5, DEVICE DEPEND
662+CSL6 DC A(*-*) CYCLE STEAL WD 6, DEVICE DEPEND
663+CSL7 DC A(*-*) CYCLE STEAL WD 7, DEVICE DEPEND
664+CSL8 DC A(*-*) CYCLE STEAL WD 8, DEVICE DEPEND
665+
666+SSUBN DC A(*-*) LAST SUBROUTINE ADDRESS USED
667+SDATA DC 2A(*-*) OPTIONAL DATA
668+SINFL DC X'0021' INTERRUPT LEVEL REQUESTED
669+TUFN DC A(*-*) TEST UNIT RETURN ADPS TO MDI
670+SDVID DC X'00B2' DEVICE ID
671+SVCAL DC A(DEVADD) ADDR OF DEVICE ADDRESS
672+ DC A(*-*) IBIS CYLINDER ADDRESS
673+
674+ THIS TEST UNIT WILL RETURN TO MDI WITHOUT DOING ANY PROGRAM
675+ FUNCTION. THE RESULTS THAT WERE SET UP IN THE RESULTS AREA ARE
676+ STILL VALID BUT A DIFFERENT TEST IS TO BE PERFORMED.
677+
678+T3C02 MVI X'3C02',STUID SET UP TEST UNIT ID
679+ BVS (R7) RETURN TO MDI SUPVR
680+ COPY CMREQ
681+
682+ *****
683+
684+ EQUATED NAMES FOR SUPPORTED SVC'S
685+
686+ *****
687 OUT EQU 0 OUT SVC
688 OUTIN EQU 1 OUTIN SVC
689 IDLE EQU 2 IDLE SVC
690 ASCII EQU 3 HEX TO ASCII SVC
691 CHNGE EQU 4 CHANGE LEVEL SVC
692 EGCHK EQU 5 ALLOW RETURN ON PROGRAM CHECK SVC
693 EXIT EQU 6 EXIT SVC
694 TERM EQU 7 TERMINATE SVC
695 RESET EQU 8 RESET DEVICE SVC
696 RID EQU 9 READ ID SVC
697 START EQU 10 START CYCLE STEAL SVC
698 STCSS EQU 11 START CYCLE STEAL STATUS SVC
699 PREP EQU 12 PREPARE DEVICE SVC
700 READ0 EQU 13 READ WITH FUNCTION BIT 3 OFF SVC
701 READ1 EQU 14 READ WITH FUNCTION BIT 3 ON SVC
702 RSTAT EQU 15 READ STATUS SVC
703 WRIT0 EQU 16 WRITE WITH FUNCTION BIT 3 OFF SVC
704 WRIT1 EQU 17 WRITE WITH FUNCTION BIT 3 ON SVC
705 CTRL EQU 18 CONTROL SVC
706 RICB EQU 19 RELEASE INTERRUPT CONTROL BLOCK SVC
707 CICB EQU 20 CONNECT INTERRUPT CONTROL BLOCK SVC
708 HIO EQU 21 HALT ALL I/O
709 FEQSD EQU 22 REQUEST USE OF DCP DISK SVC
710 RELSD EQU 23 RELEASE USE OF DCP DISK SVC
711 HALT EQU 24 HALT SVC
712 ETOH EQU 25 EBCDIC TO HEX SVC (STRING)
713 HTOH EQU 26 HEX TO EBCDIC SVC (STRING)
714 ATOH EQU 27 ASCII TO HEX SVC (STRING)
715 HTOA EQU 28 HEX TO ASCII SVC (STRING)
716 ETOA EQU 29 EBCDIC TO ASCII SVC (STRING)
717 ATOA EQU 30 ASCII TO EBCDIC SVC (STRING)
718 READI EQU 31 READ DATA SETS FOR MDI/UTIL
719 WRITI EQU 32 WRITE DATA SETS FOR UTIL
720+ *****
721+
722+ *****
723+ EQUATES USED BY TU'S AS CONSTANTS
724+
725+ *****
726 PLUS EQU C'+ ' PLUS CHAR
727 MINUS EQU C-' MINUS CHAR
728 ZERO EQU 0
729 ONE EQU 1
730 TWO EQU 2
731 THREE EQU 3
732 FOUR EQU 4
733 FIVE EQU 5
734 SIX EQU 6
735 SEVEN EQU 7
736 EIGHT EQU 8
737 NINE EQU 9
738 TEN EQU 10
739 ELEVEN EQU 11
740 TWELVE EQU 12
741 THIRTEEN EQU 13
742 FOURTEEN EQU 14
743 FIFTEEN EQU 15
744 SIXTEEN EQU 16
745 THIRTY TWO EQU 32
746 SIXTY FOUR EQU 64
747 ONE HUNDRED TWENTY EIGHT EQU 128
748 TWO HUNDRED FIFTY SIX EQU 256
749 ONE THOUSAND ONE HUNDRED TWENTY FOUR EQU 1024
750 TWO THOUSAND FOUR HUNDRED EIGHTY EQU 2048
751 THREE THOUSAND SEVENTY TWO EQU 3072
752 FOUR THOUSAND ONE HUNDRED FORTY EQU 4096
753 FIVE EQU -1
754 SIX EQU -2
755 SEVEN EQU -3
756 EIGHT EQU -4
757 NINE EQU -5
758 TEN EQU -6
759 *****
760+
761+ THE FOLLOWING ARE EQUATES FOR BIT DISPLACEMENTS FROM THE
762+ BEGINNING OF THE BYTE TO EACH BIT IN THE WORD OF SWITCHES.
763+
764+ *****
765 BS0 EQU 0
766 BS1 EQU 1
767 BS2 EQU 2
768 BS3 EQU 3
769 BS4 EQU 4
770 BS5 EQU 5
771 BS6 EQU 6

LOCTR OBJECT TEXT STMT SOURCE STATEMENT
000007 772 BS7 EQU 7
000008 773 BS8 EQU 8
000009 774 BS9 EQU 9
00000A 775 BS10 EQU 10
00000B 776 BS11 EQU 11
00000C 777 BS12 EQU 12
00000D 778 BS13 EQU 13
00000E 779 BS14 EQU 14
00000F 780 BS15 EQU 15
781 COPY CK78DCB 01DEC76
782 ** (T78DCB) 13AUG76
783 *****
784 *****
785 *
786 * DCB TABLES AND DC'S
787 *
788 *****
789 *
790 ***** DIAGNOSTIC DCB *****
791 *
792 DGDCB DC X'2008' DIAGNOSTIC DCB
793 DC X'0000' NOT USED
794 DC X'0000' NOT USED
795 DC X'0000' NOT USED
796 DC X'0000' NOT USED
797 DC A(*) CHAINING ADDRESS
798 DC X'0100' BYTE COUNT
799 DC A(*) DATA ADDRESS
800 *
801 *
802 ***** RECALIBRATE DCB *****
803 *
804 CLDCB DC X'0007' RECALIBRATE DCB
805 DC 7A(*)
806 *
807 ***** WRITE SECTOR ID **
808 *
809 WSDCB DC X'0002' WRITE SECTOR ID CONTROL WORD
810 DC X'0000' NOT USED
811 DC A(*) 0-7 = PHYSICAL SECTOR # MINUS ONE
812 DC A(*) NOT USED
813 DC A(*) NOT USED
814 DC A(*) CHAIN ADDRESS
815 DC X'0006' BYTE COUNT
816 DC A(WRSID) ADDR OF SECTOR ID DATA
817 ***** READ SECTOR ID DCB *****
818 *
819 RSDCB DC X'200A' READ SECTOR ID
820 DC X'0000' NOT USED
821 DC X'0000' 0-7 = PHYSICAL SECTOR # MINUS ONE
822 DC X'0000' NOT USED
823 DC X'0000' NOT USED
824 DC X'0000' CHAIN ADDRESS
825 DC X'0006' BYTE COUNT FOR READ SECTOR ID
826 DC A(SCTID) SECTOR ID DATA ADDRESS
827 *
828 *
829 ***** READ SECTOR ID IMMEDIATE DCB *****
830 *
831 RIDCB DC X'200F' READ SECTOR ID
832 DC X'0000' NOT USED
833 DC X'0000' NOT USED
834 DC X'0000' NOT USED
835 DC X'0000' NOT USED
836 DC A(*) CHAIN ADDRESS
837 DC X'0006' BYTE COUNT FOR READ SECTOR ID
838 DC A(SCTID) SECTOR ID DATA ADDRESS
839 *
840 *
841 ***** SEEK DCB *****
842 *
843 SKDCB DC X'0005' SEEK DCB
844 DC X'0000' BIT 0-3=0; BIT4=DIRECTION; 5-15=DIFFER
845 DC F'0'
846 DC F'0'
847 DC X'0000' 0-7 = HEAD; 8-15 NOT USED
848 DC A(*) CHAIN ADDRESS
849 DC F'0' NOT USED
850 DC F'0' NOT USED
851 *
852 ***** CYCLE STEAL STATUS DCB *****
853 *
854 CSDCB DC X'2000' CONTROL WORD
855 DC F'0' NOT USED
856 DC F'0' NOT USED
857 DC F'0' NOT USED
858 DC F'0' NOT USED
859 DC F'0' NOT USED
860 DC X'0008' 4 WORDS OF STATS
861 DC A(CSBUF) ADDRESS OF CYCLE STEAL STATUS DATA
862 *
863 ***** WRITE DCB *****
864 *
865 WRDCB DC X'0001' WRITE CONTROL WORD
866 DC F'0' NOT USED
867 DC X'0000' 0-7=0,8-15 = FLAG BYTE
868 DC X'0000' SEARCH ARGUMENT CYLINDER
869 DC X'0000' SEARCH ARGUMENT HEAD-SECTOR
870 DC A(*) CHAIN ADDRESS
871 DC F'0' BYTE COUNT
872 DC A(*) WRITE DATA ADDRESS
873 *
874 ***** VERIFY DCB *****
875 *
876 VRDCB DC X'200C' CONTROL WORD
877 DC F'0' NOT USED
878 DC X'0000' 0-7=0,8-15 = FLAG BYTE
879 DC X'0000' CYLINDER
880 DC X'0000' HEAD - SECTOR
881 DC A(*) CHAIN ADDRESS
882 DC F'0' BYTE COUNT
883 DC A(*) VERIFY DATA ADDRESS
884 *
885 ***** READ DCB *****
886 *

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
002816 2009 887 RDCB DC X'2009' READ DCB CONTROL WORD
002818 0000 888 DC F'0' NOT USED
002819 0000 889 DC X'0000' 0-7=0,8-15 = FLAG BYTE
00281C 0000 890 DC X'0000' SEARCH ARGUMENT CYLINDER
00281E 0101 891 DC X'0101' SEARCH ARGUMENT H-R
002820 0000 892 DC A(*) CHAIN ADDRESS
002822 0000 893 DC F'0' BYTE COUNT
002824 0000 894 DC A(*) READ DATA ADDRESS
895 *
896 ***** WRITE SECTOR ID SKEWED *****
897 *
898 WKDCB DC X'0003' CONTROL WORD
899 DC X'0000' NOT USED
900 DC A(*) 0-7 = PHYSICAL SECTOR # MINUS ONE
901 DC A(*) NOT USED
902 DC A(*) NOT USED
903 DC A(*) CHAIN ADDRESS
904 DC X'0006' BYTE COUNT
905 DC A(WRSID) ADDR OF SECTOR ID DATA
906 *
907 ***** READ SECTOR ID SKEWED *****
908 *
909 PKDCB DC X'200B' CONTROL WORD
910 DC X'0000' NOT USED
911 DC X'0000' 0-7 = PHYSICAL SECTOR # MINUS ONE
912 DC X'0000' NOT USED
913 DC X'0000' NOT USED
914 DC A(*) CHAIN ADDRESS
915 DC X'0006' BYTE COUNT FOR READ SECTOR ID
916 DC A(SCTID) SECTOR ID DATA ADDRESS
917 *
918 *
919 ZER00 DC X'0000' CONSTANTS AND DEFINED STORAGE LOCATIONS
920 ONE1 DC X'0001' CONSTANT ZERO
921 LGSEC DC X'0000' CONSTANT ONE
922 PHYS DC X'0000' LOGICAL SECTOR #
923 CB29 DC X'1B00' CONVERTED PHYSICAL SEC #
924 FIVE9 DC X'3B00' CONSTANT BYTE 29
925 WRSID DC X'0000' CONSTANT BYTE 59
926 DC X'0000' FLAG, CYLINDER (WRT SECTOR ID DATA)
927 DC X'0000' CYLINDER HEAD
928 WSIDT DC X'FF34' LOG SECTOR NOT USED
929 DC X'5678' WRITE SECTOR ID TEST DATA
930 DC X'9A00' *
931 SCTST DC X'0000' READ SECTOR ID TEST DATA 3 UFFER
932 DC X'0000' *
933 DC X'0000' *
934 CTR01 DC X'0000' COUNTER
935 DIFF DC X'0000' DIFFERENCE LOC
936 XXX DC X'0000' DIRECTION
937 *
938 *
939 COPY T78DPCIO 01DEC76
940 ** (T78DPCIO)
941 *
942 * EXECUTE DPC INPUT/OUTPUT COMMANDS
943 * THIS ROUTINE HAS THE FOLLOWING ENTRIES:
944 *
945 * 1 BAL CEOP1,R6 CE DIAGNOSTIC OP1(TUPN ON DIAG MODE)
946 *
947 * 2 BAL CEOP2,P6 WRITE DIAG CLOCK STEP DATA
948 *
949 * 3 BAL SENS0,P6 CE READ SENSE WORD ZEPO
950 *
951 * 4 BAL SENS1,P6 CE READ SENSE WORD ONE
952 *
953 * 5 BAL WRAP,R6 READ DIAGNOSTIC WRAP
954 *
955 * BXS (R6,2) RETURN
956 *
957 * *****
958 *
959 * CE DIAGNOSTIC OP2 DATA WORD (CLOCK STEP)
960 *
961 * BIT 00 - SET READY
962 * BIT 01 - RESET READY
963 * BIT 02 - SET WRITE CLOCK
964 * BIT 03 - SET READ CLOCK
965 * BIT 04 - INDEX PULSE
966 * BIT 05 - SECTOR PULSE
967 * BIT 06 - STANDARD READ DATA
968 * BIT 07 - SPEED PULSE
969 * BIT 08 - BEHIND HOME
970 * BIT 09 - SET SEEK COMPLETE
971 * BIT 10 - RESET SEEK COMPLETE
972 * BIT 11 - PLO OUT OF SYNC
973 * BIT 12 - RST RD/WRT CLOCK
974 * BIT 13 -
975 * BIT 14 -
976 * BIT 15 - PESET DIAGNOSTIC MODE
977 *
978 * *****
979 *
980 *
981 WRAP MVW R6, LSTIO SAVE ADDRESS OF LAST IO
982 MVB DEVADD, IDCBRAP+1 LOAD DEVICE ADDRESS IN IDCB
983 IO IDCBFAP READ SENSE WORD 1
984 BNCC 7, CCERR CHECK COND CODE
985 BXS (R6,2) RETURN TO CALLER
986 *
987 CEOP1 MVW R6, LSTIO SAVE ADDRESS OF LAST IO
988 MVB DEVADD, IDCBCE1+1 LOAD DEVICE ADDRESS IN IDCB
989 IO IDCBCE1 SET DIAGNOSTIC MODE
990 BNCC 7, CCERR CHECK COND CODE
991 BXS (R6,2) RETURN TO CALLER
992 *
993 CEOP2 MVW R6, LSTIO SAVE ADDRESS OF LAST IO
994 MVB DEVADD, IDCBCE2+1 LOAD DEVICE ADDRESS IN IDCB
995 IO IDCBCE2 WRITE DIAG CLOCK STEP
996 BNCC 7, CCERR CHECK COND CODE
997 BXS (R6,2) RETURN TO CALLER
998 *
999 *
1000 SENS1 MVW R6, LSTIO SAVE ADDRESS OF LAST IO
1001 MVB DEVADD, IDCB1+1 LOAD DEVICE ADDRESS IN IDCB

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
0028E0	680C 28E0	1002	IO IDCB1	READ SENSE WORD 2
0028E4	6F05 28CE	1003	BNCC 7, CCEFR	CHECK COND CODE
0028E8	5601	1004	BXS (R6,2)	RETURN TO CALLEP
0028EA	6E0D 2744	1005	* SENS0 MVA R6, LSTIO	SAVE ADDRESS OF LAST IO
0028EE	8028 19D0 28DD	1006	MVB DEVADD, IDCBO+1	LOAD DEVICE ADDRESS IN IDCBO
0028F0	680C 28DC	1007	IO IDCB0	READ SENSE WORD 1
0028F4	6F05 28CE	1008	BNCC 7, CCEFR	CHECK COND CODE
0028F8	5601	1009	BXS (R6,2)	RETURN TO CALLEP
0028FC	706E	1010	* CCERR DC X'706E'	COPY STATUS ANY LEVEL INTO R3
002800	336A	1011	SFL 13, P3	POSITION CC CODE TO BITS 13-15
002804	C328 2740	1012	MVB R3, \$IOIN	* PUT IN LOG AREA
002808	68D2 0000	1013	B (R6) *	RPTUPN TO USER
00280C	6F05	1014	* IOERST DC X'6F05'	PESET IO
002810	2205	1015	IDCB0 DC X'2205'	SENSE WORD ZERO
002814	0000	1016	RDAT0 DC A(*) *	DATA WORD
002818	2105	1017	IDCB1 DC X'2105'	SENSE WORD ONE
00281C	0000	1018	RDAT1 DC A(*) *	
002820	4005	1019	IDCBCE1 DC X'4005'	CE DIAG OP1
002824	0000	1020	CEDAT DC A(*) *	SENSE DATA
002828	4105	1021	IDCBCE2 DC X'4105'	CE DIAG OP2
00282C	0000	1022	CEDAT2 DC A(*) *	SENSE DATA
002830	2F05	1023	IDCBFAP DC X'2F05'	READ DIAG WFAP
002834	0000	1024	RAFDAT DC A(*) *	SENSE DATA
002838	0000	1025	CPUID EQU X'0232'	CPU ID
00283C	0000	1026	* COPY CK78IO	01DEC76
000232		1027	** (T78IO)	01DEC76
		1028		
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		1076		
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		1078		
		1079		
		1080		
		1081		
0028F0	4020 2AAA 27D6	1082	\$SEEK MVA SKDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
0028F6	5058	1083	J XIO	
0028F8	4020 2AAA 2796	1084	\$RECL MVA CLDCB, IODCB	SET UP BLOCK FOR SVC CALL
0028FE	5054	1085	J XIO	
002900	4020 2AAA 27B6	1086	* \$RDID MVA RSDCB, IODCB	SET UP BLOCK FOR SVC CALL
002906	0BFF	1087	MVBI X'00FF', P3	SET BUFFER TO P3
002908	4524 2746	1088	MVA SCTID, R5	SETUP READ SECTOR ID BUFFER ADPS
00290C	4724 000F	1089	MVWI 6, R7	SETUP BUFFER LENGTH
002910	2BAC	1090	FFN R3, (P5)	INIT READ SECTOR ID BUFFER
002912	4020 27C4 2746	1091	MVA SCTID, PSDCB+14	DATA ADDR
002918	5047	1092	J XIO	
00291A	4020 2AAA 2816	1093	* \$RD MVA RSDCB, IODCB	SET UP BLOCK FOR SVC CALL
002920	5043	1094	J XIO	
002922	4020 2AAA 2806	1095	* \$RDVY MVA VRDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002928	503F	1096	J XIO	
00292A	4020 2AAA 27F6	1100	* \$WRT MVA WRDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002930	503B	1101	J XIO	
002932	4020 2AAA 2836	1104	* \$RKEW MVA RKDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002938	4020 2844 2746	1105	MVA SCTID, PKDCB+14	DATA ADDR
00293E	5034	1106	J XIO	
002940	4020 2AAA 2826	1107	* \$WKST MVA WKDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002946	4020 2834 2858	1108	MVA WSIDT, WKDCB+14	DATA ADDR
00294C	502D	1109	J XIO	
00294E	4020 2AAA 2836	1112	* \$RWST MVA RKDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002954	4020 2844 285E	1113	MVA SCTST, PKDCB+14	DATA ADDR
00295A	5026	1114	J XIO	
		1115	*	
		1116	*	

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
00295C	4020 2AAA 27B6	1117	\$PIDS MVA RSDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002962	0BFF	1118	MVBI X'00FF', P3	SET BUFFER TO P3
002964	4524 285E	1119	MVA SCTST, R5	SETUP READ SECTOR ID BUFFER ADPS
002968	4724 000F	1120	MVWI 6, R7	SETUP BUFFER LENGTH
00296C	2BAC	1121	FFN R3, (P5)	INIT READ SECTOR ID BUFFER
00296E	4020 27C4 285E	1122	MVA SCTST, PSDCB+14	DATA ADDR
002974	5019	1123	J XIO	
002976	4020 2AAA 2826	1124	* \$WKEW MVA WKDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
00297C	4020 2834 2852	1125	MVA WSID, WKDCB+14	DATA ADDR
002982	5012	1126	J XIO	
002984	4020 2AAA 27A6	1127	* \$WSEC MVA WSDCE, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
00298A	4020 27B4 2852	1128	MVA WRSID, WSDCB+14	DATA ADDR
002990	500B	1129	J XIO	
002992	4020 2AAA 27A6	1130	* \$WSTS MVA WSDCE, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
002998	4020 27B4 2858	1131	MVA WSIDT, WSDCB+14	DATA ADDR
00299E	5004	1132	J XIO	
0029A0	4020 2AAA 2786	1133	* \$DIAG MVA DGDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
0029A6	5000	1134	J XIO	
		1135	* XEQIT	
		1136		
		1137		
		1138		
		1139	*****29JUL76**	
		1140		
		1141	SUB-ROUTINE	
		1142		
		1143	EXECUTE INPUT AND OUTPUT COMMANDS	
		1144		
		1145	PUPPOSE	
		1146		
		1147	TO EXECUTE ALL I/O COMMANDS FROM A COMMON PLACE.	
		1148	THIS SUBROUTINE WILL DO THE FOLLOWING FUNCTIONS:	
		1149		
		1150	1. SAVE THE ADDRESS THAT POINTS TO THE INSTRUCTION THAT STARTED	
		1151	THE I/O COMMAND.	
		1152	2. SAVES THE DCB BLOCK USED UNLESS IT IS A START CYCLE STATUS	
		1153	ISSUED BY THIS SUBROUTINE.	
		1154	3. CLEAR OUT THE CYCLE STEAL STATUS STORAGE UNLESS THE	
		1155	START CYCLE STATUS WAS ISSUED BY THIS SUBROUTINE.	
		1156	4. RESETS THE INTERRUPT INDICATOR AND CHECKS FOR ANY INTERRUPT	
		1157	SINCE THE LAST EXPECTED INTERRUPT. IF AN INTERRUPT IS FOUND,	
		1158	MYSTERY INTERRUPT (MI) CONTROL BIT IS SET.	
		1159	5. MOVES THE ADDRESS OF THE I/O CONTROL BLOCK IN R7. SET THE	
		1160	EXPECTED INTERRUPT CONTROL BIT AND ISSUE THE 'SVC START'.	
		1161	6. WHEN THE SUPVR RETURNS AFTER ISSUING THE I/O COMMAND, TIMING	
		1162	STARTS TO DETERMINE A LOST INTERRUPT.	
		1163	7. EXCEPT THE INTERRUPT AND GATHER INFORMATION TO DETERMINE IF IT	
		1164	WAS AN ERROR OR OKAY AND EXIT OFF THE INTERRUPT LEVEL.	
		1165	8. CHECK IF THERE WAS A WRONG INTERRUPT LEVEL.	
		1166	9. CHECK IF AN ERROR WAS EXPECTED AND IF THERE WAS RETURN.	
		1167	10. CHECK IF THERE WAS AN ERROR CONDITION, IF NOT RETURN.	
		1168	11. CHECK TO SEE IF THE EXERCISER IS TO BE TERMINATED.	
		1169	12. CHECK IF A CYCLE STEAL OPERATION WAS IN PROGRESS THAT WAS	
		1170	ISSUED BY THIS SUBROUTINE.	
		1171	13. CHECK THE ISB BITS THAT ARE ON. IF BIT 0 IS ON, ISSUE A	
		1172	CYCLE STEAL STATUS COMMAND. CHECK FOR ANY OTHER BIT BEING ON,	
		1173	COUNT IT AND SET UP THE PROPER ERROR MESSAGE TO BE PRINTED.	
		1174		
		1175	CALLING SEQUENCE	
		1176		
		1177	THIS ROUTINE HAS THE FOLLOWING ENTRIES:	
		1178		
		1179	--> BAL XIO OR XEO ANY CYCLE STEAL COMMAND, MOD=0	
		1180	--> BAL XIO1 MOD PARM PRELOADED IN 'IOMOD'	
		1181	--> BAL XIOCS, P6 OF XEO START CYCLE STEAL STATUS, MOD=P	
		1182	--> BAL XIOCS-4, P6 AUTO CS STATUS (FOLLOWING OTHER XIO	
		1183	AND DOES NOT POST INTERRUPT STATUS)	
		1184		
		1185	RETURN CONTROL	
		1186		
		1187	BXS (R6,2)	RETURN TO USER NO ERROR
		1188	OR B (R6) *	RETURN AND RETRY ON ERROR
		1189	*****	
0029A8	CB25 2AAC	1191	XIO MVWZ IOMOD, R3	SET MOD OF 0 FOR CYCLE STEAL OP
0029AC	500A	1192	J XIO1	CS I/O'S ARE NOT RETRIED
		1193		
0029AE	4CAA	1194	TBTP (R4, EF)	RESET CS STATUS INTER ERROR INDICAT.
0029B0	4C68	1195	TBTS (R4, CS)	SET 'CYCLE STEAL STATUS' IN PFOGRESS
0029B2	4020 2AAA 27E6	1196	XIOCS MVA CSDCB, IODCB	SET UP CONTROL BLOCK FOR SVC CALL
0029B8	4020 2AAC 000F	1197	MVWI X'000F', IOMOD	SET CYCLE STEAL MODIFIER
0029BE	4C28	1198	TET (R4, CS)	IS CS IN PROGRESS, ERROR CONDITION
0029C0	1213	1199	JON XIO2	* YES, BYPASS SAVING I/O ADPS
0029C2	6E0D 2744	1200	XIO1 MVA R6, LSTIO	SAVE IAR FOR RETRY IF REQUESTED
0029C6	4324 274E	1201	MVA DCBUP, R3	SET UP TO ADPS TO MOVE DCB TABLE
0029CA	6D08 2AAA	1202	MVA IODCB, R5	* AND THE FROM ADPS ALONG WITH
0029CE	0F10	1203	MVBI 16, P7	* THE NUMBER OF MOVES
0029D0	2D64	1204	MVFN (R5, J, R3)	MOVE 1 STATUS WORD AND ADJUST
0029D2	0BFF	1205	MVBI 255, X1	CLEAR CYCLE STATUS BUFFER
0029D4	4524 275E	1206	MVA CSBUP, P5	* TO ALL ONES *
0029D8	0F10	1207	MVBI 16, R7	
0029DA	2BAC	1208	FFN R3, (R5)	
0029DC	4020 2740 0708	1209	MVWI X'0708', \$IOIN	OVERLAY OLD CONDITION CODES
0029E2	CB25 2742	1210	MVWZ \$ISB, R3	ZERO OUT OLD ISB VALUE
		1211		
0029E6	4CA1	1212	TBTP (R4, EF)	PESET ANY ERROR BEFORE I/O COMMAND
0029E8	4CA3	1213	XIO2 TBTP (R4, IN)	CLEAR INTERRUPT RECEIVED CNTL BIT
0029EA	4724 2AA6	1214	MVA IOBLK, P7	SET UP CONTROL BLOCK FOR SUPVR
0029EE	4CA6	1215	TBTP (R4, SLE)	RESET LEVEL ERROR INDICATOR
0029F0	462	1216	TBTS (R4, XI)	SET EXPECTED INTR CONTROL BIT
0029F2	600A	1217	SVC START	CALL SUPVR FOR I/O COMMAND
		1218		
0029F4	4CA7	1219	TBTR (R4, NI)	IS AN INTR EXPECTED
0029F6	6AC0 0002	1220	BN (R6,2)	* NO, RETURN TO USER
		1221		
		1222		
		1223		
		1224		
0029FA	0D00	1225	XIO8 MVBI X'00', R5	SET UP WORK REG FOR 'LOST INTR'
0029FC	4CA3	1226	TBTR (R4, IN)	HAS INTERRUPT BEEN RECEIVED
0029FE	1238	1227	JON XIOCK	* YES, CHECK IF ALL WAS SATISFACTORY
002A00	6002	1228	SVC IDLE	ALLOW ANOTHER PROGRAM A CHANCE TO RUN
		1229		
002A02	7DA1 0001	1230	AWI 1, R5	SUPVR WILL RETURN HERE
002A06	18FA	1231	JNZ XIO8	ADVANCE TIME OUT COUNT
002A08	4C61	1232	TBTS (R4, EF)	BCH IF TIME OUT NOT REACHED
		1233		SET ON ERROR CONTROL BIT

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
1232+ B (R6)* ERR 'NO INTERRUPT'
1233+*****03FEB76**
1234+*****
1235+
1236+ SUBROUTINE
1237+
1238+ I/O EXECUTE ERROR HANDLING ROUTINE
1239+
1240+ PURPOSE
1241+
1242+ THIS ROUTINE WILL COLLECT INFORMATION TO HELP DETERMINE THE
1243+ PROBLEM THAT WAS FOUND WHEN THE I/O COMMAND WAS ISSUED BY THE
1244+ SUPERVISOR AND IT WAS NOT ACCEPTED.
1245+
1246+ CALLING SEQUENCE
1247+
1248+ SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O COMMAND
1249+
1250+ RETURN CONTROL
1251+
1252+ B (R6)* RETURN TO USERS ERROR HANDLER
1253+
1254+*****
1255+
1256+ CC 0= DEVICE NOT ATTACHED
1257+ FOR 1= DEVICE BUSY
1258+ I/O 2= DEVICE BUSY AFTER RESET
1259+ 3= COMMAND REJECT
1260+ 4= INTERVENTION REQUIRED
1261+ 5= INTERFACE DATA CHECK
1262+ 6= CONTROLLER BUSY
1263+ 7= I/O COMMAND EXPECTED
1264+
1265+XIOEP DC X'706E' COPY STATUS ANY LEVEL INTO R3
1266+ SRL 13,R3 POSITION CC CODE TO BITS 13-15
1267+ MVB R3,\$IOIN * PUT IN LOG OUT AREA
1268+ B (R6)* RETURN TO USER ERROR HANDLER
1269+*****14APR76**
1270+*****
1271+
1272+ SUB-ROUTINE
1273+
1274+ ERROR INTERRUPT RUNS ON INTERRUPT LEVEL '\$INTL'
1275+
1276+ PURPOSE
1277+
1278+ THIS ROUTINE WILL BE ENTERED WHEN THE SUPVR DETECTS AN ERROR
1279+ OR THE INTERRUPTING CONDITION CODE DOES NOT AGREE WITH THE
1280+ EXPECTED CODE.
1281+
1282+ CALLING SEQUENCE
1283+
1284+ SUPVR WILL ENTER WHEN AN ERROR OCCURS ON AN I/O INTERRUPT
1285+
1286+ RETURN CONTROL
1287+
1288+ SVC EXIT RETURN TO USER VIA SUPVR
1289+
1290+*****
1291+
1292+ CC 0= CONTROLLER END ISB 0= ADD STATUS
1293+ POP 1= PROGRAM CONTROL INTERRUPT BITS 1= COND REJECT
1294+ INTP 2= EXCEPTION INTERRUPT FOR 2= INCOR LENGTH
1295+ 3= DEVICE END INTERRUPT INTR 3= DCB SPEC CK
1296+ 4= ATTENTION INTERRUPT 4= STG DATA CK
1297+ 5= ATTENTION / PROGRAM CNTL INTP 5= INV STG ADPS
1298+ 6= ATTENTION / EXCEPTION INTR 6= PROTECT CK
1299+ 7= ATTENTION / DEVICE END INTR 7= I-FACE DATA
1300+
1301+INTER DC X'706E' COPY STATUS ANY LEVEL INTO R3
1302+ SRL 13,R3 POSITION INDICATORS IN R3
1303+ MVA OPTN1,P4 SET UP BASE ADPS
1304+ TBT (R4,CS) IS CS IN PROGRESS
1305+ JOFF INTES * NO
1306+ TBTS (R4,CS) TURN ON CYCLE STEAL INTRP ERROR
1307+ F3,CS18 SAVE CS ERR ISB VALUE, BITS 0-7
1308+ MVB R3,CS18+1 * AND THE COND CODE
1309+ J INTR1
1310+INTES TBT (R4,XE) TEST EXPECTED ATTN / ERROR IND
1311+ JOFF INTET BCH IF NOT EXPECTED
1312+ CBI 4,R3 IS THIS AN 'ATTENTION' INTP
1313+ JE INTR1 * YES, BCH TO END INTP SEQUENCE
1314+INTET TBTS (R4,ER) SET ERROR ON I/O COMMAND CNTL BIT
1315+ J INTP1
1316+ THE ERROR INTERRUPT USES THE SAME
1317+ ENDING SEQUENCE AS THE NORMAL INTR
1318+*****14APR76**
1319+*****
1320+
1321+ SOUBROUTINE
1322+
1323+ OKAY INTERPUPT RUNS ON INTERRUPT LEVEL '\$INTL'
1324+
1325+ PURPOSE
1326+
1327+ TO CHECK THE INTERRUPT AND CONTINUE THE TEST
1328+
1329+ CALLING SEQUENCE
1330+
1331+ SUPERVISOR WILL ENTER HERE IF INTR CC IS AS REQUESTED
1332+ THE ERROR INTERRUPT HANDLER WILL BRANCH TO THIS ROUTINE
1333+ AFTER THE SPECIAL PART HAS BEEN COMPLETED AND THE
1334+ COMMON SECTION IS HANDLED HERE.
1335+
1336+ RETURN CONTROL
1337+
1338+ SVC EXIT RETURN TO USER VIA SUPVR
1339+
1340+*****
1341+INTOK DC X'706E' COPY STATUS ANY LEVEL INTO R3
1342+ SRL 13,R3 POSITION INDICATORS IN R3
1343+ MVA OPTN1,P4 SET UP BASE ADPS
1344+INTR1 TBTS (R4,ER) SET INTERRUPT RECEIVED
1345+ TBT (R4,CS) IS 'CS IN PROGRESS' ON
1346+ JON INTR2 * YES, BCH AROUND UPDATE
1347+ MVB R3,\$IOIN+1 SAVE INTERRUPTING CC CODE
1348+ MVW P7,\$ISB SAVE INTR STATUS AND DEV ADPS

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
1349+INTR2 BOU *
1350+ CFCCL R5 CURRENT LEVEL COPIED BY DCP
1351+ SLL 4,R5 POSITION INTR LEVEL AND PUT
1352+ ABI 1,R5 * IN 'I' BIT
1353+ CW \$INTL,R5 IS THIS THE CORRECT INTR LEVEL
1354+ JE INTR3 * YES, GO EXIT THIS LEVEL
1355+ TBTS (R4,\$LE) SET INTR LEVEL ERROR CONTROL BIT
1356+ TBTS (R4,ER) SET ERROR ON I/O COMMAND CNTL BIT
1357+INTR3 TBTR (R4,XI) WAS INTERRUPT EXPECTED
1358+ JON INTRX * YES, EXIT OFF THIS INTR LEVEL
1359+ TBTS (R4,MI) * NO, SET MYSTERY INTR CONTROL BIT
1360+ CBI 4,R3 ATTENTION INTERRUPT?
1361+ JE INTRX YES, INTR
1362+ TBTS (R4,NG) ERROR, UNEXPECTED INTERRUPT
1363+INTRX SVC EXIT THIS LEVEL VIA SUPVR TO PGM
1364+*****03FEB76**
1365+*****
1366+
1367+ THIS IS THE CONTINUATION OF EXECUTE I/O AFTER THE INTERRUPT
1368+ HAS BEEN SERVICED. THE EXERCISEP FINDS AN INTERRUPT HAS BEEN
1369+ RECEIVED AND BRANCHES HERE TO CHECK FOR ANY ERROR CONDITIONS.
1370+
1371+
1372+XIOCK TBTR (R4,XE) WAS AN ERROR EXPECTED
1373+ BN (R6,2) * YES, EXIT THIS ROUTINE
1374+ TBTR (R4,CS) WAS AUTO CS IN PROGRESS
1375+ JOFF XIOCV * NO, CONTINUE CHECKING
1376+ TBTR (R4,CE) IS CS IN AN ERR CONDITION
1377+ JOFF XIOCO * NO, BCH
1378+ B (R6)* CS ERROR
1379+XIOCO TBTS (R4,CSA) TURN ON CS STAS AVAIL FLAG
1380+ BXS (R6,2) GO TO USER
1381+XIOCV TBT (R4,ER) WAS ERROR INTR CONTROL BIT ON
1382+ JOFF XIOCX * NO, EXIT THIS ROUTINE
1383+
1384+ MVB \$IOIN+1,R5 GET LAST INTR CC CODE
1385+ CBI 2,R5 IS THIS CC=2
1386+ BNE \$R6 * NO, BCH TO ERROR HANDLER
1387+XIOCV MVB \$ISB,R5 GET LAST ISB DATA BYTE AND IF CS
1388+ B \$R6-4 * AVAILABLE, GO AND GET IT
1389+ B (R6)* ERROR
1390+XIOCV MVWZ OPTN3,R3 CLEAR OUT OPTION 3 CNTL BITS
1391+ BXS (R6,2) RETURN TO USER VIA REG 6
1392+
1393+ I/O PARAMETER LIST
1394+
1395+IOBLK DC A(DEVADD) ADPS OF DEVICE ADPS
1396+ DC A(XIOER) ERROP ROUTINE ADPS
1397+IODCB DC A(*-*) DCB ADPS OR LEVEL & INTR
1398+IOMOD DC A(*-*) MODIFIER
1399+ DC A(*-*) ADPS OF LAST SVC CALL
1400+IORSR DC A(*-*) SECOND WORD OF LAST IDCB
1401+
1402+ INTERRUPT CONTROL BLOCK FOR I/O COMMANDS
1403+
1404+INTBL DC A(DEVADD) ADPS OF DEVICE ADPS
1405+ DC A(INTOK) INTERRUPT OK RETURN ADPS
1406+ DC A(INTRP) INTERRUPT ERROR ADPS
1407+INTCC DC X'0003' INTERRUPT CODE EXPECTED
1408+*****11MAY76**
1409+*****
1410+
1411+ SUBROUTINE
1412+
1413+ CONNECT INTERRUPT CONTROL BLOCK & PREPARE DEVICE
1414+
1415+ PURPOSE
1416+
1417+ TO CONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
1418+ PREPARE ON THE DESIRED INTERRUPT LEVEL AND TO ALLOW THE DEVICE
1419+ TO INTERRUPT.
1420+
1421+ CALLING SEQUENCE
1422+
1423+ THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:
1424+
1425+ --> BAL \$CONC,R6 CLEAR DEV DEP STG AND CONNECT I/O BLK
1426+ --> BAL \$CONP,R6 PREPARE DEVICE ONLY, ALREADY CONNECT
1427+
1428+ RETURN CONTROL
1429+
1430+ OR BXS (R6,2) RETURN TO USER VIA REG 6 IF OKAY
1431+ B (R6)* IF THE DEVICE COULD NOT BE CONNECTED
1432+
1433+*****
1434+ \$CONC MVBI 6,R7 NUMBER OF BYTE TO CLEAR
1435+ MVBI 0,R3 * AND THE DATA TO USE
1436+ MVA B4,R5 * ALONG WITH THE ADPS TO USE
1437+ FEN R3,(R5) *
1438+ MVWZ OPTN3,R3 CLEAR OLD CONTROLS FOR NEW ROUTINE
1439+ MVA INTBL,R7 SET P7 TO CONTROL BLOCK AND
1440+ SVC CIBC * CONNECT IT TO THIS DEVICE
1441+ BN (R6)* ERROP RETURN TO USER
1442+
1443+ \$CONP MVW \$INTL,IODCB PUT IN LEVEL & INTR PARAMETER
1444+ MVA IOBLK,P7 SET R7 TO CONTROL BLOCK TO PREPARE
1445+ MVWI X'0708', \$IOIN INITIALIZE CONDITION CODE STORAGE
1446+ MVWZ \$ISB,R3 * AND CLEAR OLD ISB VALUE
1447+ MVW R6,\$STIO SET UP ADDRESS THAT STARTED LAST I/O
1448+ SVC PRP * AND CALL ON SUPVR
1449+ BXS (R6,2) RETURN TO USER
1450+*****06APR76**
1451+*****
1452+
1453+ SUBROUTINE
1454+
1455+ DISCONNECT THE INTERRUPT CONTROL BLOCK AND LOG ERRORS
1456+
1457+ PURPOSE
1458+
1459+ DISCONNECT THE INTERRUPT CONTROL BLOCK TO THIS DEVICE AND
1460+ SET THE 'NO GOOD' CONTROL BIT, THEN LOG THE DATA THAT HAS
1461+ BEEN FOUND TO HELP THE OPERATOR DEFINE THE ERROR CONDITION.
1462+
1463+ CALLING SEQUENCE
1464+
1465+ THIS SUBROUTINE HAS THE FOLLOWING ENTRIES:

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
1466**		--> B	\$ERRS	SET 'NG' BIT AND CONVERT DATA TO LOG
1467**		--> B	\$CONX	RETURN TO MDI SUPERVISOR TO TEST STS
1470**			RETURN CONTROL	
1471**				
1472**		B	TURTN*	RETURN TO MDI
1473**		OR B	(R6)*	IF THE DEVICE COULD NOT BE CONNECTED
1474**				
1475**				
002AEE	4020 1818 8000	1476**	\$ERRS MVNI X'8000',TUSTATUS	SET ON 'NO GOOD' STATUS BIT
002AP4	4724 2C58	1477**	HEBLK,R7	GET ADRS OF CONTROL BLOCK
002AF8	601A	1478**	SVC HTOE	CONVERT HEX TO EBC VIS DCP
002AFA	0D03	1479**	\$PRMT MVBI 3,R5	
002AFC	4324 181A	1480**	MVA TWORK,R3	SET UP BUFFER STORAGE
002B00	6B0D 2C50	1481**	MVA R3,BUFPT	
002B04	4124 2B80	1482**	MVA LINE1,R1	
002B08	0F04	1483**	MVBI 4,R7	
002B0A	0E08	1484**	MVBI 8,R6	
002B0C	2B24	1485**	MVFN (R3),(R1)	
002B0E	0F04	1486**	MVBI 4,R7	
002B10	0A04	1487**	MVBI X'40',R2	
002B12	C258	1488**	MVB R2,(R1)+	
002B14	BEFB	1489**	JCT MVBUF,R6	
002B16	0E08	1490**	MVBI 8,R6	
002B18	7921 002C	1491**	AWI 4,R1	
002B1C	BD77	1492**	JCT MVBUF,R5	
002B20	4020 1802 F1F0	1493**	MVA PIDMSG10,PID+2	
002B24	4020 19B8 2C56	1494**	MVA FAKETU,ADCADD1	
002B2A	4020 19BA 2C52	1495**	MVA DC2PT,ADCADD2	
002B30	402C 19C4 0080	1496**	OWI BIT0080,SUPSTAT	
002B36	4324 273E	1497**	MVA \$TUID,R3	SET UP BUFFER STORAGE
002B3A	6F13 18BA	1498**	BAL TUMSGWTF*,R7	GO TO MESSAGE WRITEP
1499**		1500**	\$CONX EQU *	
002B3E		1501**	MVB DEVADD,R7	GET DEVICE ADDRESS FROM MDI
002B42	6013	1502**	SVC RIBC	RELEASE INTERRUPT CONTROL BLOCK
002B44	6812 2776	1503**	B TURTN*	RETURN TO MDI SUPERVISOR
1504**		1504**		
002B48	0007	1505**	BEGIN DC A(0007)	NUMBER OF LINES TO PRINT
002B4A	0008	1506**	DC A(0008)	LINE LENGTH = 8 CHAR
002B4C	5C540C1C2D6D9E3	1507**	DC C'***ABORT'	
002B54	0028	1508**	DC A(0040)	LINE LENGTH = 40 CHAR
002B56	E3E4C9C440C9D6C9D	1509**	DC C'TUID IOIN ISB INST	DEV1 DEV2 DEV3 DEV4
002B7E	0028	1510**	DC A(0040)	LINE LENGTH = 40 CHAR
002B80	40404040404040404	1511**	LINE1 DC C'	
002BA8	0028	1512**	DC A(0040)	LINE LENGTH = 40 CHAR
002BAA	C3D5E3D340C4C3C2F	1513**	DC C'CNLT DCB2 DCB3 DCB4	DCB5 CHAD BYCT ADRES
002BD2	0028	1514**	DC A(0040)	LINE LENGTH = 40 CHAR
002BD4	40404040404040404	1515**	LINE2 DC C'	
002BFC	0028	1516**	DC A(0040)	LINE LENGTH = 40 CHAR
002BE2	D9E2C9C440C3E260F	1517**	DC C'RSID CS-2 CS-3 CS-4	CS-5 CS-6 CS-7 CS-8
002C26	0028	1518**	DC A(0040)	LINE LENGTH = 40 CHAR
002C28	40404040404040404	1519**	LINE3 DC C'	
1520**		1520**		
002C50	0000	1521**	BUFPT DC A(*-*)	
002C52	2B48	1522**	DC2PT DC A(BEGIN)	
002C54	0101	1523**	DC PIXTU DC X'0101'	
002C56	0101	1524**	DC FAKETU DC X'0101'	
00F1F0		1525**	PIDMSG10 EQU X'F1F0'	
000080		1526**	BIT0080 EQU X'0080'	
1527**		1527**		
002C58	0030	1528**		
002C5A	273E	1529**		
002C5C	181A	1530**	HEBLK DC A(48)	NUMBER OF BYTES TO CONVERT
1531**		1531**	DC A(\$TUID)	FROM ADRS
1532**		1532**	DC A(TWORK)	AND THE TO ADRS
1533**		1533**	COPY T7877	01DEC76
1534**		1534**	T7877 TUIT T77E	
1535**		1535**		
1536**		1536**		
1537**		1537**	TEST UNIT	
1538**		1538**		
1539**		1539**	4962 CONTROL CLOCK STEP DIAGNOSTIC (READ DATA)	3/11/77
1540**		1540**	PURPOSE	
1541**		1541**		
1542**		1542**		
1543**		1543**		(FORCE PLO OUT OF SYNC)
1544**		1544**	CALLING SEQUENCE	
1545**		1545**		
1546**		1546**		
1547**		1547**	THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION	
1548**		1548**	VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.	
1549**		1549**	PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:	
1550**		1550**	TURESUL BIT 0-----NOT USED	
1551**		1551**	TURESUL BIT 1-----NOT USED	
1552**		1552**	TURESUL BIT 2-----NOT USED	
1553**		1553**	TURESUL BIT 3-----NOT USED	
1554**		1554**		
1555**		1555**	TURESUL BIT 4-----NOT USED	
1556**		1556**	TURESUL BIT 5-----NOT USED	
1557**		1557**	TURESUL BIT 6-----NOT USED	
1558**		1558**	TURESUL BIT 7-----NOT USED	
1559**		1559**		
1560**		1560**	TURESUL BIT 8-----NOT USED	
1561**		1561**	TURESUL BIT 9-----NOT USED	
1562**		1562**	TURESUL BIT 10-----NOT USED	
1563**		1563**	TURESUL BIT 11-----NOT USED	
1564**		1564**		
1565**		1565**	TURESUL BIT 12-----NOT USED	
1566**		1566**	TURESUL BIT 13-----NOT USED	
1567**		1567**	TURESUL BIT 14-----OIO CC ERROR	
1568**		1568**	TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE	INFORMATION
1569**		1569**		
1570**		1570**	RETURN CONTROL	
1571**		1571**	B TURTN*	RETURN TO MDI SUPERVISOR
1572**		1572**		
1573**		1573**		
1574**		1574**		
1575**		1575**		
002C5E	6F0D 2776	1576**	T7877 MVB R7,TURTN	SAVE RETURN ADDRESS
002C62	4020 273E 7877	1577**	MVBI X'7877', \$TUID	SAVE TO ID FOR DISPLAY
002C68	4424 2738	1578**	MVA OPTM1,R4	SET UP POINTER ADRS IN R4
002C6C	6E03 2ABA	1579**	BAL \$CONC,R6	CLEAR DEV DEP STG AND CONNECT I/O BL

LOCTR	OBJECT TEXT	STMT	SOURCE STATEMENT	COPYRIGHT IBM CORP 1976
002C70	2D7E	1580**	DC A(T77E)	ERROR ADRS FOR INVALID PPEP
1581**		1581**		
002C72	8028 19D0 28E1	1582**	MVB DEVADD,IDCB1+1	LOAD DEVICE ADDRESS IN IDCB
002C7C	4020 300A	1583**	MVA T77E,R2	ADDRESS OF CLOCK STEP BUFPEP
002C82	4020 2EFC 0000	1584**	MVWI 0,T77E	CLEAR SUM COUNTERS
002C88	CD25 18C8	1585**	MVWI 0,T77E+2	
002C8C	4724 2AA6	1586**	MVWZ TURESUL,R5	CLEAR RESULTS WORD
002C90	6008	1587**	MVA IOBLK,R7	ISSUE DEVICE RESET
002C92	CD25 18CA	1588**	SVC RESET	*
002C96	4020 28E6 0000	1589**	MVWZ TURESUL+2,R5	CLEAR RESULTS WORD 2
002C9C	6E03 287E	1590**	MVWI 0,CEDAT	SET DIAGNOSTIC MODE
002CA0	2D7E	1591**	BAL CEOP1,R6	*
002CA2	4C62	1592**	DC A(T77E)	*
002CA4	4020 28EA 8000	1593**	TBTS (R4,XI)	TURN ON EXPECTED INTERRUPT (ATTEN)
002CA6	6E03 2892	1594**	MVWI X'8000',CEDAT2	TURN ON READY
002CA8	2D7E	1595**	BAL CEOP2,R6	*
002CB0	4CA3	1596**	DC A(T77E)	*
002CB2	6800 2D7E	1597**	TBTR (R4,IN)	TURN OFF ATTENTION INTERPUPT
002CB6	402F 2740 0704	1598**	BOFF T77E	NO INTERRUPT RECEIVED
002CBC	1002	1599**	CWI X'0704', \$IOIN	CHECK FOR INT COND CODE OF 4
002CBE	6802 2D7E	1600**	JE T77H	OK
002CC2	4020 2864 0018	1601**	B T77E	WRONG INTERRUPT CODE
002CC8	4020 28E2 08C0	1602**	T77H MVWI 24,CTR01	INIT COUNTER
002CCE	6E03 289A	1603**	MVWI X'0800',CEDAT2	SEND INDEX PULSE,BEHIND HOME,
002CD2	2D7E	1604**	BAL CEOP2,R6	* SEEK COMPLETE
002CD4	2D7E	1605**	DC A(T77E)	ERROR
002CD6	4020 28EA 0400	1606**	MVWI X'0400',CEDAT2	SEND SECTOR PULSE
002CDA	6E03 2892	1607**	BAL CEOP2,R6	*
002CDE	2D7E	1608**	DC A(T77E)	ERROR
002CE0	4020 28EA 3000	1609**	T77S MVWI X'3000',CEDAT2	SEND CEOP2 USING '3000' DATA
002CE6	6E03 2892	1610**	BAL CEOP2,R6	*
002CEA	2D7E	1611**	DC A(T77E)	*
002CEC	4020 28EA 0200	1612**	MVWI X'0200',CEDAT2	SEND CEOP2 USING '0200' DATA
002CF2	6E03 2892	1613**	BAL CEOP2,R6	*
002CF6	2D7E	1614**	DC A(T77E)	*
002CF8	4020 28EA 0008	1615**	MVWI X'0008',CEDAT2	SEND CEOP2 USING '0008' DATA
002CFE	6E03 2892	1616**	BAL CEOP2,R6	*
002D02	2D7E	1617**	DC A(T77E)	*
002D04	402E 2864 0001	1618**	SWI 1,CTR01	DECREMENT COUNT
002D0A	18EA	1619**	JNZ T77S	CONTINUE TO SEND CLOCKS
002D0C	4C67	1620**	TBTS (R4,NT)	TURN ON NO INTER MODE INDICATOR
002D0E	4020 281A 0000	1621**	MVWI X'0000',RDDCB+4	R-15 FLAG BYTE
002D14	4020 281C 00FF	1622**	MVWI X'00FF',RDDCB+6	CYLINDER
002D1A	4020 281E 0112	1623**	MVWI X'0112',RDDCB+8	HEAD AND SECTOR
002D20	4020 2822 00FE	1624**	MVWI X'00FE',RDDCB+12	BYTE COUNT
002D26	4020 2824 2F0A	1625**	MVA RDEUF,RDDCB+14	DATA ADDRESS
002D2C	6E03 291A	1626**	BAL \$RD,R6	READ DATA
002D30	2D7E	1627**	DC A(T77E)	ERROR
002D32	4024 0400	1628**	MVWI 1024,R0	TIME OUT 2 MSEC
002D36	B8FF	1629**	JCT *R0	*
002D38	4324 FFFF	1630**	MVWI X'FFFF',R3	INIT XOR REGISTER
002D3C	6D03 2D96	1631**	T77D BAL T77CC,R5	STIMULATE CLOCK BITS
002D40	6D03 2EA4	1632**	BAL T77SS,R5	READ SENSE WORDS
002D44	50FB	1633**	J T77D	LOOP
1634**		1634**		
1635**		1635**		
002D46	4CA3	1636**	T77F TBTR (R4,IN)	HAS INTERRUPT OCCURRED?
002D48	101E	1637**	JOFF T77I	NO-EROP
002D4A	4020 28EA 0001	1638**	MVWI 1,CEDAT2	RESET CE DIAG MODE
002D50	6E03 2892	1639**	BAL CEOP2,R6	*
002D54	2D7E	1640**	DC A(T77E)	*
002D56	CB24 2F08	1641**	CW T77XR,R3	COMPARE RESULTS
002D5A	1818	1642**	JNE T77E	ERROR
002D5C	6E03 29B2	1643**	BAL XT0CS,R6	START CYCLE STEAL STATS
002D60	4020 281C	1644**	DC A(T77E)	OIO CC ERROR
002D62	4CA1	1645**	TBTR (R4,IN)	TEST FOR ERROR
002D64	120C	1646**	JON T77E	ERROR
002D66	A828 2760 2EFC	1647**	AW C5TL2,T77U	ADD CYCLE STEAL DATA TO SUM CHECK
002D6C	882B 2EFC 2F04	1648**	CW T77U,T77RE	COMPARE RESULTS
002D72	180C	1649**	JNE T77E	ERROR
002D74	802E 2EFE 2F06	1650**	CB T77U+2,T77RE+2	COMPARE RESULTS
002D7A	1808	1651**	JNE T77E	ERROR
002D7C	500A	1652**	J T77X	
1653**		1653**		
002D7E	402C 18C8 0002	1654**	T77E OWI X'0002',TURESUL	SET OIO CC ERROR
002D84	402E 2AA6	1655**	J T77X	
002D86	4724 2AA6	1656**	T77I MVA IOBLK,R7	ISSUE DEVICE RESET
002D88	6008	1657**	SVC R5	*
002D8C	402C 18C8 0001	1658**	T77E OWI X'0001',TURESUL	SET CLOCK STEP ERROR
1659**		1659**	T77X TXIT	
002D92	6802 2B3E	1660**	T77X B \$CONX	RETURN TO MDI CONTROLLER
1661**		1661**		
1662**		1662**		
1663**		1663**		
002D96	6D0D 2EA2	1664**	T77C MVW R5,T77C+2	SET RETURN ADDRESS
002D9A	408F FFFF	1665**	CWI -1,(R2)	CHK FOR END OF STIMULATE TABLE
002D9E	6800 2D46	1666**	BE T77E	BCH IF END OF TABLE
002DA2	408F FFFE	1667**	CWI X'FFFE',(R2)	TST FOR DATA
002DA6	101F	1668**	JE T77E	YES
002DA8	408F FFFD	1669**	CWI X'FFFD',(R2)	TEST FOR CLOCKS
002DAC	1002	1670**	JE T77H	YES
002DAE	6802 2E92	1671**	B T77E	
002DB2	7A41 0002	1672**	T77H AWI 2,R2	INC TABLE ADDRESS
002DB6	C880	1673**	MVW (R2),R0	GET CLOCK COUNT
002DB8	7806 0000	1674**	T77H CWI 0,R0	COUNT ZERO?
002DBC	6800 2E9C	1675**	BE T77F	RETURN
002DBE	4020 28EA 3000	1676**	MVWI X'3000',CEDAT2	SEND CEOP2 USING '3000' DATA
002DC6	6E03 2892	1677**	BAL CEOP2,R6	*
002DCA	2D7E	1678**	DC A(T77E)	*
002DCC	6D03 2EA4	1679**	MVWI X'0008',CEDAT2	SENSE DATA
002DD0	4020 28EA 0008	1680**	BAL X'0008',CEDAT2	SEND CEOP2 USING '0008' DATA
002DD6	6E03 2892	1681**	BAL CEOP2,R6	*
002DDA	2D7E	1682**	DC A(T77E)	*
002DDC	6D03 2EA4	1683**	BAL T77SS,R5	SENSE DATA
002DE0	7802 0001	1684**	SWI 1,R0	DECREMENT CLOCK COUNT
002DE4	50E9	1685**	J T77H	LOOP
002DE6	7A41 0002	1686**	T77T AWI 2,R2	INC TABLE ADDRESS
002DEA	408F FFFE	1687**	CWI X'FFFE',(R2)	END OF DATA?
002DEF	1056	1688**	JE T77F	YES
002DF0	408F FFFC	1689**	CWI X'FFFC',(R2)	REPEAT READ DATA?
002DF4	1003	1690**	JE T77E	YES
002DF				

LOCTR OBJECT TEXT STMT SOURCE STATEMENT
002E00 C980 1694 MVW (R2),R1 REPEAT COUNT
002E02 7906 0000 1695 CWI 0,R1 REPEAT COUNT ZERO?
002E06 10FF 1696 JE T77T YES
002E08 7A41 0002 1697 AWI 2,R2 INC TABLE ADDRESS
002E0C 6D03 2E1C 1698 BAL T77V T77L,R5 READ DATA
002E10 7922 0001 1699 SWI 1,R1 DECREMENT REPEAT COUNT
002E14 7906 0000 1700 CWI 0,R1 REPEAT COUNT ZERO?
002E18 10E6 1701 JE T77T YES
002E1A 50F8 1702 J T77V REPEAT DATA LOOP
002E1C 6D0D 2E90 1703 T77L MVW R5,T77JJ+2 SET UP RETURN ADDRESS
002E20 4020 2864 0000 1704 MVWI 0,CTR01 INIT SHIFT COUNTER
002E26 C880 1705 MVW (R2),R0 GET DATA
002E28 3009 1706 T77LL SWI 1,R0 TEST IF DATA '1'
002E2A 1F19 1707 JNCY T77G NO
002E2C 4020 28EA 3000 1708 MVWI X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
002E32 6E03 2892 1709 BAL CEOP2,R6 *
002E36 2D7E 1710 DC A(T77ER) *
002E38 6D03 2EA4 0200 1711 BAL T77SS,R5 SENSE DATA
002E3C 4020 28EA 0200 1712 MVWI X'0200',CEDAT2 SEND CEOP2 USING '0200' DATA
002E42 6E03 2892 1713 BAL CEOP2,R6 *
002E46 2D7E 1714 DC A(T77ER) *
002E48 6D03 2EA4 0008 1715 BAL T77SS,R5 SENSE DATA
002E4C 4020 28EA 0008 1716 MVWI X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
002E52 6E03 2892 1717 DC A(T77ER) *
002E56 2D7E 1718 DC A(T77ER) *
002E58 6D03 2EA4 1719 BAL T77SS,R5 SENSE DATA
002E5C 5010 1720 J T77HH *
002E5E 4020 28EA 3000 1721 T77G MVWI X'3000',CEDAT2 SEND '3000' DATA
002E64 6E03 2892 1722 BAL CEOP2,R6 *
002E68 2D7E 1723 DC A(T77ER) *
002E6A 6D03 2EA4 0008 1724 BAL T77SS,R5 SENSE DATA
002E6E 4020 28EA 0008 1725 MVWI X'0008',CEDAT2 SEND '0008' DATA
002E74 6E03 2892 1726 BAL CEOP2,R6 *
002E78 2D7E 1727 DC A(T77ER) *
002E7A 6D03 2EA4 0001 1728 BAL T77SS,R5 SENSE DATA
002E7E 402F 2864 0010 1729 AWI 1,CTR01 ADD ONE TO SHIFT COUNTER
002E84 402F 2864 0010 1730 CWI 16,CTR01 SHIFT COUNT = 16?
002E88 1001 1731 J T77J YES
002E8C 50CD 1732 JE T77LL *
002E8E 6802 0000 1733 T77JJ B RETURN TO CALLER
002E92 8A08 28EA 1734 T77EE MVW (R2),CEDAT2 LD DATA INTO IO BLOCK
002E96 6E03 2892 1735 BAL CEOP2,R6 WRITE CLOCK DATA
002E9A 2D7E 1736 DC A(T77ER) *
002E9C 7A41 0002 1737 T77FF AWI 2,R2 INC TABLE ADDRESS
002EA0 6802 0000 1738 T77C B RETURN TO CALLER
002EA4 6E03 28BA 1739 *
002EA8 2D7E 1740 T77SS BAL SENSO,R6 READ SENSE WORD ONE
002EAC 4C23 1741 DC A(T77ER) *
002EAE 1003 1742 TBT (R4,IN) INTERRUPT?
002EAE 402C 28DE 4000 1743 JOFF T77A NO
002EB4 8828 28DE 2F00 1744 OWI X'4000',RDATA0 SET INTERRUPT BIT IN SENS3 WORD
002EB8 6E03 28A6 1745 MVW RDATA0,T77TP SAVE DATA
002EBE 2D7E 1746 BAL SENS1,R6 READ SENSE WORD ONE
002EC0 402D 28E2 4E7F 1747 DC A(T77ER) *
002EC6 402B 28E2 0080 1748 RBTWI X'4E7F',RDATA RESET UNUSED BITS
002ECC 1003 1749 TWI X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
002ECE 402C 28E2 0200 1750 JOFF T77B BIT NOT ON
002ED4 C720 28E2 1751 OWI X'0200',RDATA SET BIT ON
002ED8 C72E 2EFE 1752 T77B MVW RDATA,R7 SAVE DATA
002EDC 1E03 1753 T77B AWI 1,T77U+2 DEVELOP SUM CHECK
002EDE 4029 2EFC 0001 1754 JNCY T77B JUMP IF NO CARRY
002EE4 A828 2F00 2EFC 1755 T77RR AWI 1,T77U XOR EXPECT DATA
002EE8 C323 2F02 1756 T77RR AWI 1,T77U *
002EEC 6B0B 2F00 1757 YB T77TP,T77U TEST FOR INTER IN GEN MODE
002EF2 4C23 1758 XW T77TP,R3 NO INTERRUPT
002EF4 1002 1759 T77K TBT (R4,IN) INSERT END OF TABLE CHAR
002EF6 4080 FFFF 1760 JOFF T77J *
002EFA 5500 1761 MVWI X'FFFF',(R2) RETURN TO CALLER
1762 T77J BXS (R5)
1763 *
1764 *
1765 *
1766 T77U DC 2A(*-*)
1767 T77TP DC 2A(*-*)
1768 T77RE DC X'842'
1769 DC X'8000'
1770 T77XR DC X'35A5'
1771 RDBUF DC 128A(*-*)
1772 *
1773 T77ST EQU *
1774 DC X'8048'
1775 DC X'0400'
1776 DC X'0400'
1777 DC X'0400'
1778 DC X'0400'
1779 DC X'0400'
1780 DC X'0200'
1781 DC X'0008'
1782 DC X'0008'
1783 DC X'0200'
1784 DC X'0008'
1785 DC X'0008'
1786 DC X'0000'
1787 DC X'00FF'
1788 DC X'00FF'
1789 DC X'00FF'
1790 DC X'00FF'
1791 DC X'00FF'
1792 DC X'0008'
1793 DC X'0008'
1794 DC X'0008'
1795 DC X'0008'
1796 DC X'0008'
1797 DC X'0008'
1798 DC X'0008'
1799 DC X'0008'
1800 DC X'0008'
1801 DC X'0008'
1802 DC X'0008'
1803 DC X'0008'
1804 DC X'0008'
1805 DC X'0008'
1806 DC X'0008'
1808 COPY T7878

LOCTR OBJECT TEXT STMT SOURCE STATEMENT
1809 T7878 TUIT T78ER
1810 *****06FEB76**
1811**
1812** TEST UNIT
1813**
1814** 4962 CONTROL CLOCK STEP DIAGNOSTIC (SEEK) 3/11/77
1815**
1816** PURPOSE
1817**
1818**
1819** CALLING SEQUENCE
1820**
1821** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
1822** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
1823**
1824** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
1825** . TURESUL BIT 0-----NOT USED
1826** . TURESUL BIT 1-----NOT USED
1827** . TURESUL BIT 2-----NOT USED
1828** . TURESUL BIT 3-----NOT USED
1829** .
1830** . TURESUL BIT 4-----NOT USED
1831** . TURESUL BIT 5-----NOT USED
1832** . TURESUL BIT 6-----NOT USED
1833** . TURESUL BIT 7-----NOT USED
1834** .
1835** . TURESUL BIT 8-----NOT USED
1836** . TURESUL BIT 9-----NOT USED
1837** . TURESUL BIT 10-----NOT USED
1838** . TURESUL BIT 11-----NOT USED
1839** .
1840** . TURESUL BIT 12-----NOT USED
1841** . TURESUL BIT 13-----NOT USED
1842** . TURESUL BIT 14-----OIO CC ERROR
1843** . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE INFORMATION
1844**
1845**
1846** RETURN CONTROL
1847**
1848** B TUPTN* RETURN TO MDI SUPERVISOR
1849**
1850*****
1851+T7878 MVW R7,TURTN SAVE RETURN ADDRESS
1852+ MVWI X'7878',STUID SAVE TU ID FOR DISPLAY
1853+ MVA OPN1,R4 SET UP POINTER ADRS IN R4
1854+ BAL \$CONC,R6 CLEAR DEV DEP STG AND CONNECT I/O BL
1855+ DC A(T78ER) ERROR ADRS FOR INVALID PREP
1856**
1857 MVB DEVAID,IDCB1+1 LOAD DEVICE ADDRESS IN IDCB
1858 MVA T78ST,R2 ADDRESS OF CLOCK STEP BUFFER
1859 MVWI 0,T78U CLEAR SUM COUNTERS
1860 MVWI 0,T78U+2 *
1861 MVWZ TURESUL,R5 CLEAR RESULTS WORD
1862 MVA IOBLK,R7 ISSUE DEVICE RESET
1863 SVC RESET *
1864 MVWZ TURESUL+2,R5 CLEAR RESULTS WORD 2
1865 MVWI 0,CEDAT SET DIAGNOSTIC MODE
1866 BAL CEOP1,R6 *
1867 DC A(T78ER) *
1868 TETS (R4,NI) TURN ON EXPECTED INTERRUPT (ATTEN)
1869 MVWI X'8000',CEDAT2 TURN ON READY
1870 BAL CEOP2,R6 *
1871 DC A(T78ER) *
1872 TETR (R4,IN) TURN OFF ATTENTION INTERRUPT
1873 BOFF T78ER NO INTERRUPT RECEIVED
1874 CWI X'0704',SIOIN CHECK FOR INT COND CODE OF 4
1875 JE T78H OK
1876 B T78ER WRONG INTERRUPT CODE
1877 T78H MVWI 24,CTR01 INIT COUNTER
1878 MVWI X'08C0',CEDAT2 SEND INDEX PULSE,BEHIND HOME,
1879 BAL CEOP2,R6 * SEEK COMPLETE
1880 DC A(T78ER) ERROR
1881 MVWI X'0400',CEDAT2 SEND SECTOR PULSE
1882 BAL CEOP2,R6 *
1883 DC A(T78ER) ERROR
1884 T78S MVWI X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
1885 BAL CEOP2,R6 *
1886 DC A(T78ER) *
1887 MVWI X'0200',CEDAT2 SEND CEOP2 USING '0200' DATA
1888 BAL CEOP2,R6 *
1889 DC A(T78ER) *
1890 MVWI X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
1891 BAL CEOP2,R6 *
1892 DC A(T78ER) *
1893 SWI 1,CTR01 DECREMENT COUNT
1894 JNZ T78S CONTINUE TO SEND CLOCKS
1895 MVWI X'0040',CEDAT2 SEND SEEK COMPLETE
1896 BAL CEOP2,R6 *
1897 DC A(T78ER) *
1898 TETS (R4,NI) TURN ON NO INTER MODE INDICATOR
1899 MVWI X'0002',SKDCB+2 SEEK FORWARD - 2 TRACKS
1900 BAL \$SEEK,R6 SEEK
1901 DC A(T78ER) ERROR
1902 MVWI 1024,R0 TIME OUT 2 MSEC
1903 JCT *R0 *
1904 MVWI X'FFFF',R3 INIT XOR REGISTER
1905 BAL T78CC,R5 STIMULATE CLOCK BITS
1906 BAL T78SS,R5 REPT SENSE WORDS
1907 J T78D LOOP
1908 *
1909 *
1910 T78F TETR (R4,IN) HAS INTERRUPT OCCURRED?
1911 JOFF T78I NO-ERROR
1912 MVWI 1,CEDAT2 RESET CE DIAG MODE
1913 BAL CEOP2,R6 *
1914 DC A(T78ER) *
1915 CW T78XR,F3 COMPARE RESULTS
1916 JNE T78E ERROR
1917 BAL XIOCS,R6 START CYCLE STEAL STATS
1918 DC A(T78ER) OIO CC ERROR
1919 TETR (R4,ER) TEST FOR ERROR
1920 JON T78ER ERROR
1921 AW CSTT2,T78U ADD CYCLE STEAL DATA TO SUM CHECK
1922 CW T78U,T78RE COMPARE RESULTS

I7823 --- CLOCK/4962 P/N=1635405 EC=755285 PAGE 09

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976

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003154 180C 31F0 31F8 1923 JNE T78E ERROR
003156 802B 31F0 31F8 1924 CB T78U+2,T78RE+2 COMPARE RESULTS
00315C 180B 1925 JNE T78E ERROR
00315E 500A 1926 J T78X
1927 *
003160 402C 18C8 0002 1928 T78ER OWI X'0002',TURESUL SET OIO CC ERROR
003166 5006 1929 J T78X
003168 4724 2AA6 1930 T78I MVA IOBLK,R7 ISSUE DEVICE RESET
00316C 6008 1931 SVC RESET
00316E 402C 18C8 0001 1932 T78E OWI X'0001',TURESUL SET CLOCK STEP ERROR
1933 T78X TXIT
003174 6802 2B3E 1934+T78X B $CONX RETURN TO MDI CONTROLLER
1935+*****
1936 *
1937 *
003178 6D0D 3194 1938 T78CC MVW R5,T78C+2 SET RETURN ADDRESS
00317C 408F FFFF 1939 CWI -1,(R2) CHK FOR END OF STIMULATE TABLE
003180 6800 3128 1940 BE T78F BCH IF END OF TABLE
003184 8A08 28EA 1941 T78EE MVW (R2),CEDAT2 LD DATA INTO IO BLOCK
003188 6E03 2892 1942 BAL CEOP2,R6 WRITE CLOCK DATA
00318C 3160 1943 DC A(T78ER)
00318E 7A41 0002 1944 T78FF AWI R2, INC TABLE ADDRESS
003192 6802 0000 1945 T78C B *-* RETURN TO CALLER
1946 *
003196 6E03 28BA 1947 T78SS BAL SENSO,R6 READ SENSE WORD ONE
00319A 3160 1948 DC A(T78ER)
00319C 4C23 1949 TBT (R4,IN) INTERRUPT?
00319E 1003 1950 JOFF T78A NO
0031A0 402C 28DE 4000 1951 OWI X'4000',RDATA0 SET INTERRUPT BIT IN SENSE WORD
0031A6 8828 28DE 31F2 1952 T78A MVW RDATA0,T78TP SAVE DATA
0031AC 6E03 28A6 1953 BAL SENSI,R6 READ SENSE WORD ONE
0031B0 3160 1954 DC A(T78ER)
0031B2 402D 28E2 4E7F 1955 RBTWI X'4E7F',RDATA RESET UNUSED BITS
0031B8 402B 28E2 0080 1956 TWI X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
0031BC 1003 1957 JOFF T78J BIT NOT ON
0031C0 402C 28E2 0200 1958 OWI X'0200',RDATA SET BIT ON
0031C6 C720 28E2 1959 T78B MVB RDATA,R7 SAVE DATA
0031CA C72E 31F0 1960 AB R7,T78U+2 DEVELOP SUM CHECK
0031CC 1F03 1961 JNCY T78RR JUMP IF NO CARRY
0031D0 4029 31EE 0001 1962 AWI 1,T78U
0031D6 A828 31F2 31EE 1963 T78RR AW T78TP,T78U
0031DC C323 31F4 1964 XB T78TP+2,R3
0031E0 6B0B 31F2 1965 XW T78TP,R3
0031E4 4C23 1966 T78K TBT (R4,IN)
0031E6 1002 1967 JOFF T78J
0031E8 4080 FFFF 1968 MVW X'FFFF',(R2)
0031EC 5500 1969 T78J BXS (R5)
1970 *
1971 *
1972 *
0031EE 00000000 1973 T78U DC 2A(*-*)
0031F2 00000000 1974 T78TP DC 2A(*-*)
0031F6 4C30 1975 T78RE DC X'4C30' EXPECTED RESULTS (DUTCHESS)
0031F8 4400 1976 DC X'4400'
0031FA BFFF 1977 T78XR DC X'BFFF'
1978 *
0031FC 0020 1979 T78ST EQU * WRITE CLOCK STIMULATE TABLE
0031FE 0040 1980 DC X'0040' SEEK (RESET SEEK COMPLETE)
003200 FFFF 1981 DC X'0040'
003202 FFFF 1982 DC X'FFFF' SET SEEK COMPLETE
1983 DC X'FFFF'
1984 *
1985 *
1987 COPY T7879 01DEC76
1988 T7879 TUIT T79ER
1989+*****06FEB76**
1990+
1991+ TEST UNIT
1992+ 4962 CONTROL CLOCK STEP DIAGNOSTIC (RECALIBRATE) 3/11/77
1993+ PURPOSE
1994+
1995+
1996+
1997+
1998+ CALLING SEQUENCE
1999+
2000+ THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
2001+ VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
2002+
2003+ PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
2004+ . TURESUL BIT 0-----NOT USED
2005+ . TURESUL BIT 1-----NOT USED
2006+ . TURESUL BIT 2-----NOT USED
2007+ . TURESUL BIT 3-----NOT USED
2008+
2009+ . TURESUL BIT 4-----NOT USED
2010+ . TURESUL BIT 5-----NOT USED
2011+ . TURESUL BIT 6-----NOT USED
2012+ . TURESUL BIT 7-----NOT USED
2013+
2014+ . TURESUL BIT 8-----NOT USED
2015+ . TURESUL BIT 9-----NOT USED
2016+ . TURESUL BIT 10-----NOT USED
2017+ . TURESUL BIT 11-----NOT USED
2018+
2019+ . TURESUL BIT 12-----NOT USED
2020+ . TURESUL BIT 13-----NOT USED
2021+ . TURESUL BIT 14-----OIO CC ERROR
2022+ . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE INFORMATION
2023+
2024+ RETURN CONTROL
2025+ B TURTN* RETURN TO MDI SUPERVISOR
2026+
2027+
2028+*****
2029+
2030+ T7879 MVW R7,TURTN SAVE RETURN ADDRESS
2031+ MVW X'7879',STUID SAVE TO ID FOR DISPLAY
2032+ MVA OPTN1,R4 SET UP POINTER ADRS IN R4
2033+ BAL $CONX,R6 CLEAR DEV DEP STG AND CONNECT I/O BL
2034+ DC A(T79ER) ERROR ADRS FOR INVALID PREP
2035+
003204 6F0D 2776 2036 MVB DEVADD,IDCB1+1 LOAD DEVICE ADDRESS IN IDCB
003208 4020 273E 7879 2037 MVA T79ST,R2 ADDRESS OF CLOCK STEP BUFFER

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I7823 --- CLOCK/4962 P/N=1635405 EC=755285 PAGE 09A

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976

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003222 4020 33A0 0000 2038 MVW I 0,T79U CLEAR SUM COUNTERS
003228 4020 33A2 0000 2039 MVW I 0,T79U+2
003232 CD25 18C8 2040 MVWZ TURESUL,R5 CLEAR RESULTS WORD
003236 4724 2AA6 2041 MVA IOBLK,R7 ISSUE DEVICE RESET
003238 6008 2042 SVC RESET
003238 CD25 18CA 2043 MVWZ TURESUL+2,R5 CLEAR RESULTS WORD 2
003242 4020 28E6 0000 2044 BAL CEOP1,R6 SET DIAGNOSTIC MODE
003242 6E03 287E 2045 DC A(T79ER)
003246 3312 2046 DC TBT (R4,IN)
003248 4C62 2047 TBT (R4,IN)
00324A 4020 28EA 8000 2048 MVW X'8000',CEDAT2 TURN ON EXPECTED INTERRUPT (ATTEN)
003250 6E03 2892 2049 BAL CEOP2,R6 TURN ON READY
003254 3312 2050 DC A(T79ER)
003256 4C43 2051 TBT (R4,IN)
003258 6800 3312 2052 BOFF T79ER TURN OFF ATTENTION INTERRUPT
00325C 402F 2740 0704 2053 CWI X'0704',SIOIN NO INTERRUPT RECEIVED
003262 1002 2054 JE T79H CHECK FOR INT COND CODE OF 4
003264 6802 3312 2055 B T79ER WRONG INTERRUPT CODE
003268 4020 2864 0018 2056 T79H MVW I 24,CTRR01 INIT COUNTER
00326E 4020 28EA 08C0 2057 MVW X'08C0',CEDAT2 SEND INDEX PULSE,BEHIND HOME,
003274 6E03 2892 2058 BAL CEOP2,R6 * SEEK COMPLETE
003278 3312 2059 DC A(T79ER) ERROR
00327A 4020 28EA 0400 2060 MVW X'0400',CEDAT2 SEND SECTOR PULSE
003280 6E03 2892 2061 BAL CEOP2,R6
003284 3312 2062 DC A(T79ER) ERROR
003286 4020 28EA 3000 2063 T79S MVW X'3000',CEDAT2 SEND CEOP2 USING '3000' DATA
00328C 6E03 2892 2064 BAL CEOP2,R6
003290 3312 2065 DC A(T79ER)
003292 4020 28EA 0200 2066 MVW X'0200',CEDAT2 SEND CEOP2 USING '0200' DATA
003298 6E03 2892 2067 BAL CEOP2,R6
00329C 3312 2068 DC A(T79ER)
00329E 4020 28EA 0008 2069 MVW X'0008',CEDAT2 SEND CEOP2 USING '0008' DATA
0032A8 6E03 2892 2070 BAL CEOP2,R6
0032AA 3312 2C71 DC A(T79ER)
0032AC 402E 2864 0001 2072 SWI 1,CTRR01 DECREMENT COUNT
0032AE 402E 2864 0001 2073 JNZ T79H CONTINUE TO SEND CLOCKS
0032B2 4020 28EA 0040 2074 MVB X'0040',CEDAT2 SEND SEEK COMPLETE
0032B8 6E03 2892 2075 BAL CEOP2,R6
0032BC 3312 2076 DC A(T79ER)
0032C6 4C67 2077 TBT (R4,IN)
0032C8 6E03 28F8 2078 BAL $RECL,R6 TURN ON NO INTER MODE INDICATOR
0032CA 3312 2079 DC A(T79ER) RECALIBRATE
0032CC 4024 0400 2080 MVW I 1024,R0 ERROR
0032CE B8FF 2081 JCT *-R0 TIME OUT 2 MSEC
0032C8 4324 FFFF 2082 MVW X'FFFF',R3
0032D0 6D03 332A 2083 T79D BAL T79CC,R5 INIT XOR REGISTER
0032D2 6D03 3348 2084 BAL T79SS,R5 STIMULATE CLOCK BITS
0032D8 50FB 2085 J T79D READ SENSE WORDS
2086 *
2087 *
2088 T79F TBT (R4,IN) HAS INTERRUPT OCCURRED?
0032DA 101E 2089 JOFF T79I NO-ERROR
0032DE 4020 28EA 0001 2090 MVW I 1,CEDAT2 RESET CE DIAG MODE
0032E4 6E03 2892 2091 BAL CEOP2,R6
0032E8 3312 2092 DC A(T79ER)
0032EA CB24 33AC 2093 CW T79XR,R3
0032EE 1818 2094 JNE T79E COMPARE RESULTS
0032F0 6E03 29B2 2095 BAL XIOCS,R6 ERROR
0032F2 3312 2096 DC A(T79ER) START CYCLE STEAL STATS
0032F6 4C41 2097 TBT (R4,IN) OIO CC ERROR
0032F8 120C 2098 JON T79ER TEST FOR ERROR
0032FA A828 2760 33A0 2099 AW T79U,T79RE ADD CYCLE STEAL DATA TO SJM CHECK
003300 882B 33A0 33A8 2100 CW T79U,T79RE COMPARE RESULTS
003306 180C 2101 JNE T79E ERROR
003308 802B 33A2 33AA 2102 CB T79U+2,T79RE+2 COMPARE RESULTS
00330E 1808 2103 JNE T79E ERROR
003310 500A 2104 J T79X
2105 *
003312 402C 18C8 0002 2106 T79ER OWI X'0002',TURESUL SET OIO CC ERROR
003318 5906 2107 J T79I
00331A 4724 2AA6 2108 T79I MVA IOBLK,R7 ISSUE DEVICE RESET
00331E 6008 2109 SVC RESET
003320 402C 18C8 0001 2110 T79E OWI X'0001',TURESUL SET CLOCK STEP ERROR
2111 T79X TXIT
003326 6802 2B3E 2112+T79X B $CONX RETURN TO MDI CONTROLLER
2113+*****
2114 *
2115 *
00332A 6D0D 3346 2116 T79CC MVW R5,T79C+2 SET RETURN ADDRESS
00332E 408F FFFF 2117 CWI -1,(R2) CHK FOR END OF STIMULATE TABLE
003332 6800 32DA 2118 BE T79F BCH IF END OF TABLE
003336 8A08 28EA 2119 T79EE MVW (R2),CEDAT2 LD DATA INTO IO BLOCK
00333A 6E03 2892 2120 BAL CEOP2,R6 WRITE CLOCK DATA
00333E 3312 2121 DC A(T79ER)
003340 7A41 0002 2122 T79FF AWI R2, INC TABLE ADDRESS
003344 6802 0000 2123 T79C B *-* RETURN TO CALLER
2124 *
003348 6E03 28BA 2125 T79SS BAL SENSO,R6 READ SENSE WORD ONE
00334C 3312 2126 DC A(T79ER)
00334E 4C23 2127 TBT (R4,IN) INTERRUPT?
003350 1003 2128 JOFF T79A NO
003352 402C 28DE 4000 2129 OWI X'4000',RDATA0 SET INTERRUPT BIT IN SENSE WORD
003356 8828 28DE 33A4 2130 T79A MVW RDATA0,T79TP SAVE DATA
003358 6E03 28A6 2131 BAL SENSI,R6 READ SENSE WORD ONE
00335C 3312 2132 DC A(T79ER)
00335E 402D 28E2 4E7F 2133 RBTWI X'4E7F',RDATA RESET UNUSED BITS
00336A 402B 28E2 0080 2134 TWI X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
003370 1003 2135 JOFF T79B BIT NOT ON
003372 402C 28E2 0200 2136 OWI X'0200',RDATA SET BIT ON
003378 C720 28E2 2137 T79B MVB RDATA,R7 SAVE DATA
00337C C72E 33A2 2138 AB R7,T79U+2 DEVELOP SUM CHECK
003380 1F03 2139 JNCY T79RR JUMP IF NO CARRY
003382 4029 33A0 0001 2140 AWI 1,T79U
003388 A828 33A4 33A0 2141 T79RR AW T79TP,T79U
00338E C323 33A6 2142 XB T79TP+2,R3
003392 33A4 2143 TBT T79TP,R3
003396 4C23 2144 T79K TBT (R4,IN)
003398 1002 2145 JOFF T79A
00339A 4080 FFFF 2146 MVW X'FFFF',(R2)
00339E 5500 2147 T79J BXS (R5)
2148 *
2149 *
2150 *
0033A0 00000000 2151 T79U DC 2A(*-*)

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LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
0033A4 00000000 2152 T79TP DC 2A(*-*)
0033A8 DE48 2153 T79RE DC X'DE48'
0033AA 6600 2154 DC X'6600'
0033AC 29E7 2155 T79XR DC X'29E7'
0033AE 0020 2156 *
0033AE 0080 2157 T79ST EQU *
0033BE 0040 2158 DC X'0020'
0033BE 0040 2159 DC X'0080'
0033BE FFFF 2160 DC X'0040'
0033BE FFFF 2161 DC X'FFFE'
0033BE FFFF 2162 DC X'FFFF'
2163 *
2164 *
2166 COPY T7881 01DEC76
2167 T7881 TUIT T81ER
2168 *****06FEB76**
2169**
2170** TEST UNIT
2171**
2172** 4962 CONTROL CLOCK STEP DIAGNOSTIC (RECALIBRATE) 3/11/77
2173**
2174** PURPOSE
2175**
2176** (FORCE SEEK CHECK)
2177** CALLING SEQUENCE
2178**
2179** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
2180** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
2181**
2182** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
2183** . TURESUL BIT 0-----NOT USED
2184** . TURESUL BIT 1-----NOT USED
2185** . TURESUL BIT 2-----NOT USED
2186** . TURESUL BIT 3-----NOT USED
2187** .
2188** . TURESUL BIT 4-----NOT USED
2189** . TURESUL BIT 5-----NOT USED
2190** . TURESUL BIT 6-----NOT USED
2191** . TURESUL BIT 7-----NOT USED
2192** .
2193** . TURESUL BIT 8-----NOT USED
2194** . TURESUL BIT 9-----NOT USED
2195** . TURESUL BIT 10-----NOT USED
2196** . TURESUL BIT 11-----NOT USED
2197** .
2198** . TURESUL BIT 12-----NOT USED
2199** . TURESUL BIT 13-----NOT USED
2200** . TURESUL BIT 14-----OIO CC ERROR
2201** . TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE INFORMATION
2202**
2203**
2204** RETURN CONTROL
2205**
2206** B TURTN* RETURN TO MDI SUPERVISOR
2207**
2208*****
2209+T7881 MVW R7, TURTN SAVE RETURN ADDRESS
2210+ MVW X'7881', \$TUID SAVE TU ID FOR DISPLAY
2211+ MVA OPRN1, R4 SET UP POINTER ADRS IN R4
2212+ BAL \$CONC, R6 CLEAR DEV DEP STG AND CONNECT I/O BL
2213+ DC A(T81ER) ERROR ADRS FOR INVALID PREP
2214**
2215 MVW DEVADD, IDCB1+1 LOAD DEVICE ADDRESS IN IDCB
2216 MVA T81ST, R2 ADDRESS OF CLOCK STEP BUFFER
2217 MVW O, T81U CLEAR SUM COUNTERS
2218 MVW O, T81U+2 *
2219 MVWZ TURESUL, R5 CLEAR RESULTS WORD
2220 MVA IOBLK, R7 ISSUE DEVICE RESET
2221 SVC RESET *
2222 MVWZ TURESUL+2, R5 CLEAR RESULTS WORD 2
2223 MVW O, CSTAT SET DIAGNOSTIC MODE
2224 BAL CEOP2, R6 *
2225 DC A(T81ER) *
2226 TETS (R4, XI) *
2227 MVW X'8000', CEDAT2 *
2228 BAL CEOP2, R6 *
2229 DC A(T81ER) *
2230 TBTR (R4, IN) *
2231 BOFF T81ER *
2232 CWI X'0704', \$IOIN *
2233 JE T81H *
2234 B T81ER *
2235 MVW T81ER *
2236 T81H EQU *
2237 MVW X'08C0', CEDAT2 *
2238 BAL CEOP2, R6 *
2239 DC A(T81ER) *
2240 MVW X'0400', CEDAT2 *
2241 BAL CEOP2, R6 *
2242 DC A(T81ER) *
2243 MVW X'3000', CEDAT2 *
2244 BAL CEOP2, R6 *
2245 DC A(T81ER) *
2246 MVW X'0200', CEDAT2 *
2247 BAL CEOP2, R6 *
2248 DC A(T81ER) *
2249 MVW X'0008', CEDAT2 *
2250 BAL CEOP2, R6 *
2251 DC A(T81ER) *
2252 SWI 1, CTR01 *
2253 JNZ T81S *
2254 MVW X'0040', CEDAT2 *
2255 BAL CEOP2, R6 *
2256 DC A(T81ER) *
2257 TBTS (R4, NI) *
2258 BAL \$RECL, R6 *
2259 DC A(T81ER) *
2260 MVW X'020', R0 *
2261 JCT *R0 *
2262 MVW X'FFFF', R3 *
2263 BAL T81CC, R5 *
2264 BAL T81SS, R5 *
2265 J *
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2381**

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
00348E 4CA3 2267 T81F TBTR (R4, IN)
003490 101E 2268 T81I JOFF T81I
003492 4020 28EA 0001 2269 MVW 1, CEDAT2
003498 6E03 2892 2270 BAL CEOP2, R6
00349C 34C6 2271 DC A(T81ER)
00349E CB24 358A 2272 CW T81X, R3
0034A2 1818 2273 JNE T81E
0034A4 6E03 29B2 2274 BAL XIOCS, R6
0034A8 34C6 2275 DC A(T81ER)
0034AC 1CA1 2276 TBTR T81E
0034AE 12A7 2277 JN T81E
0034B4 882B 2760 357E 2278 AW CSTL2, T81U
0034B8 180C 2279 CW T81U, T81E
0034BC 802B 3580 3588 2280 JNE T81E
0034C2 1808 2281 CB T81U+2, T81RE+2
0034C4 500A 2282 JNE T81E
0034C6 402C 18C8 0002 2283 J T81X
0034CC 5006 2284 *
0034CE 4724 2AA6 2285 T81ER OWI X'0002', TURESUL
0034D2 6008 2286 J T81X
0034D4 402C 18C8 0001 2287 T81I MVA IOBLK, R7
2288 T81E SVC RESET
2289 T81X TUIT X'0001', TURESUL
0034DA 6802 2B3E 2290 T81X B \$CONX
2291+T81X B \$CONX
2292+*****
2293 *
2294 *
2295 T81CC MVW R5, T81C+2
2296 CWI -1, (R2)
2297 BE T81F
2298 CWI X'FFFD', (R2)
2299 JE T81H
2300 J T81E
2301 T81H AWI 2, R2
2302 (R2), R0
2303 T81N CWI 0, R0
2304 JE T81F
2305 MVW X'0100', CEDAT2
2306 BAL CEOP2, R6
2307 DC A(T81ER)
2308 BAL T81SS, R5
2309 SWI 1, R0
2310 J T81N
2311 T81EE MVW (R2), CEDAT2
2312 BAL CEOP2, R6
2313 DC A(T81ER)
2314 T81FF AWI 2, R2
2315 T81C B
2316 *
2317 T81SS BAL SENSO, R6
2318 DC A(T81ER)
2319 TBTR (R4, IN)
2320 T81A JOFF T81A
2321 OWI X'4000', RDATA0
2322 MVW RDATA0, T81TP
2323 BAL SENSI, R6
2324 DC A(T81ER)
2325 RBTWI X'0000', RDATA
2326 MVW X'0080', RDATA
2327 T81B JOFF T81B
2328 OWI X'0200', RDATA
2329 T81B MVW RDATA, R7
2330 AB R7, T81U+2
2331 JNCT T81R
2332 AWI 1, T81U
2333 T81RR AW T81TP, T81U
2334 XB T81TP+2, R3
2335 XW T81TE, R3
2336 T81K TBTR (R4, IN)
2337 T81I JOFF T81I
2338 MVW X'FFFF', (R2)
2339 T81J BXS (R5)
2340 *
2341 *
2342 *
2343 T81U DC 2A(*-*)
2344 T81TP DC 2A(*-*)
2345 T81RE DC X'2C99'
2346 T81XR DC X'6600'
2347 T81XR DC X'6BE7'
2348 *
2349 *
2350 *
2351 T81ST EQU *
2352 DC X'0020'
2353 DC X'0080'
2354 DC X'FFFD'
2355 DC X'0080'
2356 DC X'0040'
2357 DC X'FFFF'
2358 DC X'FFFF'
2359 *
2360 COPY T7880 01DEC76
2361 T7880 TUIT T80ER
2362 *****06FEB76**
2363**
2364** TEST UNIT
2365**
2366** 4962 CONTROL CLOCK STEP DIAGNOSTIC (SEEK) 3/11/77
2367**
2368** PURPOSE
2369**
2370** (FORCE SEEK CHECK)
2371** CALLING SEQUENCE
2372**
2373** THIS ROUTINE WILL SIMULATE FILE 'CLOCK AND DATA' INFORMATION
2374** VIA THE 'CLOCK STEP DIAGNOSTIC' TO TEST THE 4962 CONTROL CARDS.
2375**
2376** PROGRAM PASSES STATUS OF ALL LINES IN FOLLOWING FORMAT:
2377** . TURESUL BIT 0-----NOT USED
2378** . TURESUL BIT 1-----NOT USED
2379** . TURESUL BIT 2-----NOT USED
2380** . TURESUL BIT 3-----NOT USED
2381**

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2382** : TURESUL BIT 4-----NOT USED
2383** : TURESUL BIT 5-----NOT USED
2384** : TURESUL BIT 6-----NOT USED
2385** : TURESUL BIT 7-----NOT USED
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2387** : TURESUL BIT 8-----NOT USED
2388** : TURESUL BIT 9-----NOT USED
2389** : TURESUL BIT 10-----NOT USED
2390** : TURESUL BIT 11-----NOT USED
2391** :
2392** :
2393** : TURESUL BIT 12-----NOT USED
2394** : TURESUL BIT 13-----NOT USED
2395** : TURESUL BIT 14-----OIO CC ERROR
2396** : TURESUL BIT 15-COMPARE ERROR BETWEEN EXPECT TABLE & SENSE INFORMATION
2397** :
2398** RETURN CONTROL
2399** B TURTN* RETURN TO MDI SUPERVISOR
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00359A 6F0D 277E 7880
00359B 4020 273E
00359C 4424 2738
00359D 6E03 2A5A
00359E 36AE
00359F 8028 19D0 28E1
0035A0 4224 377E
0035A1 4020 3768 0000
0035A2 4020 376A 0000
0035A3 CD24 18C8
0035A4 4724 2AA6
0035A5 6008
0035A6 4020 18CA
0035A7 4020 2892 0000
0035A8 6E03 287E
0035A9 36AE
0035AA 4C62
0035AB 4020 28EA 8000
0035AC 6E03 2892
0035AD 36AE
0035AE 6800
0035AF 4020 2740 0704
0035B0 1007
0035B1 36AE
0035B2 4020 2864 0018
0035B3 4020 28EA 08C0
0035B4 6E03 2892
0035B5 36AE
0035B6 4020 28EA 0400
0035B7 6E03 2892
0035B8 4020 28EA 3000
0035B9 6E03 2892
0035BA 36AE
0035BB 4020 28EA 0200
0035BC 6E03 2892
0035BD 4020 28EA 0008
0035BE 6E03 2892
0035BF 36AE
0035C0 4020 2864 0001
0035C1 18EA
0035C2 4020 28EA 0040
0035C3 6E03 2892
0035C4 36AE
0035C5 4020 27DB 0002
0035C6 4020 28F0
0035C7 6E03
0035C8 4024 0400
0035C9 88FF
0035CA 4324 FFFF
0035CB 6D03 36C6
0035CC 6D03 3710
0035CD 50FB
0035CE 4CA3
0035CF 1018
0035D0 4020 28EA 0001
0035D1 6E03 2892
0035D2 36AE
0035D3 CB24 3774
0035D4 1818
0035D5 6E03 29B2
0035D6 36AE
0035D7 4CA1
0035D8 120C
0035D9 8828 2760 3768
0035DA 8828 3768 3770
0035DB 1008
0035DC 376A 3772
0035DD 1808
0035DE 500A
0035DF 402C 18C8 0002
0035E0 5006
0035E1 4724 2AA6
0035E2 6008
0035E3 402C 18C8 0001
0035E4 6802 2B3E
0035E5 6D0D 370E
0035E6 408F FFFF
0035E7 6800 3676
0035E8 408F FFFD
0035E9 1001
0035EA 5012

LOCTR OBJECT TEXT STMT SOURCE STATEMENT COPYRIGHT IBM CORP 1976
0036DA 7A41 0002
0036DB C880
0036DC 7806 0000
0036DD 6800 3708
0036DE 4020 28EA 0100
0036DF 6E03 2892
0036E0 36AE
0036E1 7802 3710
0036E2 50F1 0001
0036E3 8A08 28EA
0036E4 6E03 2892
0036E5 36AE
0036E6 7A41 0002
0036E7 6802 0000
0036E8 6E03 28BA
0036E9 36AE
0036EA 4C23
0036EB 1003
0036EC 4020 28DE 4000
0036ED 8828 28DE 376C
0036EE 6E03 28A6
0036EF 36AE
0036F0 402D 28E2 4E7F
0036F1 402B 28E2 0080
0036F2 1003
0036F3 402C 28E2 0200
0036F4 C72E 376A
0036F5 1F03
0036F6 4029 3768 0001
0036F7 4823 376C 3768
0036F8 C323 376E
0036F9 6B0B 376C
0036FA 4C23
0036FB 1002
0036FC 4080 FFFF
0036FD 5500
0036FE 00000000
0036FF 00000000
003700 9881
003701 4400
003702 FFFF
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2496 T80M AWI 2,R2 INC TABLE ADDRESS
2497 (R2),R0 GET SPEED PULSE COUNT
2498 T80N MVW 0,R0 COUNT ZERO?
2499 BE T80FF RETURN
2500 MVWI X'0100',CEDAT2 SEND CEOP2 USING '0100' DATA (SPEED-
2501 BAL CEOP2,R6 * PULSES)
2502 DC A(T80ER)
2503 BAL T80SS,R5 SENSE DATA
2504 SWI 1,R0 DECREMENT CLOCK COUNT
2505 T80N LOOP
2506 MVW (R2),CEDAT2 ID DATA INTO IO BLOCK
2507 BAL CEOP2,R6 WRITE CLOCK DATA
2508 DC A(T80ER)
2509 T80FF AWI 2,R2 INC TABLE ADDRESS
2510 T80C B *-* RETURN TO CALLER
2511 *
2512 T80SS BAL SENS0,R6 READ SENSE WORD ONE
2513 DC A(T80ER)
2514 TBT (R4,IN) INTERRUPT?
2515 JOFF T80A NO
2516 OVI X'4000',RDATA0 SET INTERRUPT BIT IN SENSE WORD
2517 T80A MVW RDATA0,T80TP SAVE DATA
2518 BAL SENS1,R6 READ SENSE WORD ONE
2519 DC A(T80ER)
2520 RBTWI X'4E7F',RDATA RESET UNUSED BITS
2521 TWI X'0080',RDATA MOVE BIT FROM BYTE TO BYTE
2522 JOFF T80B BIT NOT ON
2523 OVI X'0200',RDATA SET BIT ON
2524 MVW RDATA,R7 SAVE DATA
2525 AB R7,T80U+2 DEVELOP SUM CHECK
2526 JNCY T80B JUMP IF NO CARRY
2527 AWI 1,T80U
2528 T80RR YB T80TP,T80U
2529 YB T80TP+2,R3
2530 XW T80TP,R3
2531 T80K TBT (R4,IN)
2532 JOFF T80J NO INTERRUPT
2533 MVWI X'FFFF',(R2) INSERT END OF TABLE CHAR
2534 BXS (R5) RETURN TO CALLER
2535 *
2536 *
2537 *
2538 T80U DC 2A(*-*)
2539 T80TP DC 2A(*-*)
2540 T80RE DC X'9881'
2541 DC X'4400'
2542 T80XR DC X'FFFF'
2543 *
2544 T80ST EQU * WRITE CLOCK STIMULATE TABLE
2545 DC X'0020' RESET SEEK COMPLETE
2546 DC X'FFFD' SEND SPEED PULSES
2547 DC X'0080' (128)
2548 DC X'0040' SET SEEK COMPLETE
2549 DC X'FFFF'
2550 *
2551 *
2552 *
2553 END

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DECLARED	NAME	ATTRIBUTES AND REFERENCES							
0	.R0.	ABSOLUTE. HEX VALUE (00000000)							
		1628 1629 1673 1674 1684 1705 1706 1902 1903							
		2080 2081 2259 2260 2302 2303 2309 2454 2455							
		2497 2498 2504							
0	.R1.	ABSOLUTE. HEX VALUE (00000001)							
		1482 1485 1488 1491 1694 1695 1699 1700							
0	.R2.	ABSOLUTE. HEX VALUE (00000002)							
		1487 1488 1583 1665 1667 1669 1672 1673 1673							
		1673 1686 1687 1689 1693 1694 1694 1694 1697							
		1705 1705 1705 1734 1737 1761 1859 1939 1941							
		1944 1968 2037 2117 2118 2122 2146 2216 2296							
		2298 2368 2372 2302 2303 2303 2311 2342 2338							
		2491 2493 2496 2497 2497 2497 2506 2509							
0	.R3.	ABSOLUTE. HEX VALUE (00000003)							
		1013 1014 1089 1092 1118 1121 1191 1201 1204							
		1205 1208 1210 1266 1267 1302 1308 1312 1322							
		1347 1360 1390 1435 1437 1438 1446 1480 1481							
		1485 1497 1630 1641 1757 1758 1904 1915 1944							
		1965 2082 2093 2142 2143 2261 2272 2334 2335							
		2456 2467 2529 2530							
0	.R4.	ABSOLUTE. HEX VALUE (00000004)							
		1194 1195 1198 1212 1213 1215 1216 1219 1225							
		1325 1326 1304 1306 1310 1314 1343 1344 1345							
		1381 1382 1583 1597 1620 1622 1645 1646 1647							
		1853 1868 1872 1898 1910 1919 1949 1966 2032							
		2047 2051 2077 2088 2097 2127 2144 2211 2226							
		2230 2256 2267 2276 2319 2336 2405 2420 2424							
		2450 2462 2471 2514 2531							
0	.R5.	ABSOLUTE. HEX VALUE (00000005)							
		1090 1092 1119 1121 1202 1204 1206 1208 1224							
		1229 1351 1352 1353 1384 1385 1387 1436 1437							
		1479 1492 1586 1589 1631 1632 1664 1679 1683							
		1691 1698 1703 1711 1715 1719 1724 1728 1762							
		2084 2111 1905 1906 2338 2338 2040 2043 2083							
		2339 2413 2416 2457 2458 2462 2503 2534 2538							
0	.R6.	ABSOLUTE. HEX VALUE (00000006)							
		981 985 987 991 993 997 1000 1004 1006							
		1010 1015 1200 1220 1232 1268 1373 1378 1380							
		1386 1389 1391 1441 1447 1449 1484 1489 1490							
		1579 1591 1595 1604 1607 1610 1613 1616 1626							
		1639 1643 1677 1681 1709 1713 1717 1722 1726							
		1735 1740 1746 1854 1866 1870 1879 1882 1885							
		1888 1891 1896 1900 1913 1917 1942 1947 1953							
		2033 2045 2049 2058 2061 2064 2067 2070 2075							
		2079 2091 2095 2120 2125 2131 2217 2224 2228							
		2237 2340 2343 2323 2406 2418 2432 2470 2474							
		2306 2312 2317 2323 2406 2418 2432 2470 2474							
		2437 2440 2443 2448 2452 2465 2469 2501 2507							
0	.R7.	ABSOLUTE. HEX VALUE (00000007)							
		679 1091 1120 1203 1207 1214 1307 1348 1434							
		1439 1444 1477 1483 1486 1498 1501 1576 1587							
		1656 1752 1753 1851 1862 1930 1959 1960 2030							
		2041 2108 2137 2138 2209 2220 2287 2329 2330							
1434	\$CONC	ADDRESS. HEX LOCATION (00002ABA) IN CSECT (I7823) LENGTH (2)							
1500	\$CONX	ADDRESS. HEX LOCATION (00002B3E) IN CSECT (I7823) LENGTH (1)							
668	\$INTL	ADDRESS. HEX LOCATION (00002774) IN CSECT (I7823) LENGTH (2)							
638	\$IOIN	ADDRESS. HEX LOCATION (00002740) IN CSECT (I7823) LENGTH (2)							
		1014 1209 1267 1347 1384 1445 1599 1874 2053							
639	\$ISB	ADDRESS. HEX LOCATION (00002742) IN CSECT (I7823) LENGTH (2)							
623	\$LE	ABSOLUTE. HEX VALUE (00000026)							
1096	\$RD	ADDRESS. HEX LOCATION (0000291A) IN CSECT (I7823) LENGTH (6)							
1085	\$RECL	ADDRESS. HEX LOCATION (000028F8) IN CSECT (I7823) LENGTH (6)							
1082	\$SEEK	ADDRESS. HEX LOCATION (000028F0) IN CSECT (I7823) LENGTH (6)							
637	\$TUID	ADDRESS. HEX LOCATION (0000273E) IN CSECT (I7823) LENGTH (2)							
102	@DCADD1	ADDRESS. HEX LOCATION (000019B8) IN CSECT (I7823) LENGTH (1)							
103	@DCADD2	ADDRESS. HEX LOCATION (000019BA) IN CSECT (I7823) LENGTH (1)							
39	@FIXT	ABSOLUTE. HEX VALUE (0000101)							
		411 414 441 444 471 474 501 504 531							
41	@GOTO	ABSOLUTE. HEX VALUE (00000200)							
45	@TUXX	ABSOLUTE. HEX VALUE (00000500)							
		387 399 417 429 447 459 477 489 507							
1505	BEGIN	ADDRESS. HEX LOCATION (00002B48) IN CSECT (I7823) LENGTH (2)							
1526	BIT0080	ABSOLUTE. HEX VALUE (00000080)							
1521	BUPFT	ADDRESS. HEX LOCATION (00002C50) IN CSECT (I7823) LENGTH (2)							
1012	CCERR	ADDRESS. HEX LOCATION (000028CE) IN CSECT (I7823) LENGTH (2)							
627	CE	ABSOLUTE. HEX VALUE (0000002A)							
		1194 1306 1376							
1023	CDAT	ADDRESS. HEX LOCATION (000028E6) IN CSECT (I7823) LENGTH (2)							
1025	CDAT2	ADDRESS. HEX LOCATION (000028EA) IN CSECT (I7823) LENGTH (2)							
		1590 1865 2044 2223 2417							
		1598 1503 1696 1609 1612 1615 1635 1676 1680							
		1708 1712 1716 1724 1725 1734 2069 1878 1881							
		1884 1887 1890 1895 1923 1941 2069 1878 2060							
		2063 2066 2069 2074 2090 2119 2227 2357 2250							
		2242 2245 2248 2253 2269 2305 2311 2421 2430							
		2433 2436 2439 2442 2447 2464 2500 2506							
987	CEOP1	ADDRESS. HEX LOCATION (0000287E) IN CSECT (I7823) LENGTH (4)							
		1591 1866 2045 2224 2418							

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DECLARED	NAME	ATTRIBUTES AND REFERENCES							
993	CEOP2	ADDRESS. HEX LOCATION (00002892) IN CSECT (I7823) LENGTH (4)							
		1591 1604 1607 1610 1613 1616 1639 1677 1681							
		1709 1713 1717 1722 1726 1735 1870 1879 1882							
		1885 1888 1891 1896 1913 1942 2049 2058 2061							
		2064 2067 2070 2075 2091 2120 2228 2237 2240							
		2243 2246 2249 2254 2270 2306 2312 2422 2431							
		2434 2437 2440 2443 2448 2465 2501 2507							
707	CICB	ABSOLUTE. HEX VALUE (00000014)							
		1440							
804	CLDCB	ADDRESS. HEX LOCATION (00002796) IN CSECT (I7823) LENGTH (2)							
625	CS	ABSOLUTE. HEX VALUE (00000028)							
		1185 1198 1304 1345 1374							
626	CSA	ABSOLUTE. HEX VALUE (00000029)							
		1379							
656	CSBUF	ADDRESS. HEX LOCATION (0000275E) IN CSECT (I7823) LENGTH (1)							
		861 1206							
854	CSDCB	ADDRESS. HEX LOCATION (000027E6) IN CSECT (I7823) LENGTH (2)							
		1196							
658	CSTL2	ADDRESS. HEX LOCATION (00002760) IN CSECT (I7823) LENGTH (2)							
		1647 1921 2099 2278 2473							
664	CSTL8	ADDRESS. HEX LOCATION (0000276C) IN CSECT (I7823) LENGTH (2)							
		1307 1308							
934	CTR01	ADDRESS. HEX LOCATION (00002864) IN CSECT (I7823) LENGTH (2)							
		1602 1618 1704 1728 1730 1877 1893 2056 2072							
646	DCBUF	ADDRESS. HEX LOCATION (0000274E) IN CSECT (I7823) LENGTH (1)							
		1201							
1522	DC2PT	ADDRESS. HEX LOCATION (00002C52) IN CSECT (I7823) LENGTH (2)							
		1495							
105	DEVADD	ADDRESS. HEX LOCATION (000019D0) IN CSECT (I7823) LENGTH (1)							
		671 982 988 994 1001 1007 1395 1404 1501							
641	DEV1	ADDRESS. HEX LOCATION (00002746) IN CSECT (I7823) LENGTH (2)							
		645 1436							
792	DGDCB	ADDRESS. HEX LOCATION (00002786) IN CSECT (I7823) LENGTH (2)							
		1185							
67	DUMMY	ABSOLUTE. HEX VALUE (00000000)							
		378 542 554							
543	ENPT	ADDRESS. HEX LOCATION (00002642) IN CSECT (I7823) LENGTH (1)							
		198							
47	EQ	ABSOLUTE. HEX VALUE (00000000)							
		390 420 450 480 510							
618	ER	ABSOLUTE. HEX VALUE (00000021)							
		1212 1231 1314 1356 1381 1645 1919 2097 2276							
693	EXIT	ABSOLUTE. HEX VALUE (00000006)							
		2471							
1524	FAKETU	ADDRESS. HEX LOCATION (00002C56) IN CSECT (I7823) LENGTH (2)							
		1365							
562	F00004	ADDRESS. HEX LOCATION (00002648) IN CSECT (I7823) LENGTH (1)							
		412 442 472 502 532							
570	F00008	ADDRESS. HEX LOCATION (000026CA) IN CSECT (I7823) LENGTH (1)							
		415 445 475 505 535							
576	F00133	ADDRESS. HEX LOCATION (00002724) IN CSECT (I7823) LENGTH (1)							

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629	NG	1489 1492 ABSOLUTE. HEX VALUE(0000002C)
624	NI	1362 ABSOLUTE. HEX VALUE(00000027)
387	N00001	1219 1620 1898 2077 2256 2450 ADDRESS. HEX LOCATION(00002558) IN CSECT(I7823) LENGTH(2)
399	N00002	315 553 ADDRESS. HEX LOCATION(0000256A) IN CSECT(I7823) LENGTH(2)
411	N00003	318 ADDRESS. HEX LOCATION(0000257C) IN CSECT(I7823) LENGTH(2)
414	N00004	321 ADDRESS. HEX LOCATION(00002580) IN CSECT(I7823) LENGTH(2)
417	N00005	324 400 ADDRESS. HEX LOCATION(00002584) IN CSECT(I7823) LENGTH(2)
429	N00006	327 898 ADDRESS. HEX LOCATION(00002596) IN CSECT(I7823) LENGTH(2)
441	N00007	330 ADDRESS. HEX LOCATION(000025A8) IN CSECT(I7823) LENGTH(2)
444	N00008	333 ADDRESS. HEX LOCATION(000025AC) IN CSECT(I7823) LENGTH(2)
447	N00009	336 430 ADDRESS. HEX LOCATION(000025B0) IN CSECT(I7823) LENGTH(2)
459	N00010	339 418 ADDRESS. HEX LOCATION(000025C2) IN CSECT(I7823) LENGTH(2)
471	N00011	342 ADDRESS. HEX LOCATION(000025D4) IN CSECT(I7823) LENGTH(2)
474	N00012	345 ADDRESS. HEX LOCATION(000025D8) IN CSECT(I7823) LENGTH(2)
477	N00013	348 460 ADDRESS. HEX LOCATION(000025DC) IN CSECT(I7823) LENGTH(2)
489	N00014	351 448 ADDRESS. HEX LOCATION(000025EE) IN CSECT(I7823) LENGTH(2)
501	N00015	354 ADDRESS. HEX LOCATION(00002600) IN CSECT(I7823) LENGTH(2)
504	N00016	357 ADDRESS. HEX LOCATION(00002604) IN CSECT(I7823) LENGTH(2)
507	N00017	360 490 ADDRESS. HEX LOCATION(00002608) IN CSECT(I7823) LENGTH(2)
519	N00018	363 478 ADDRESS. HEX LOCATION(0000261A) IN CSECT(I7823) LENGTH(2)
531	N00019	366 ADDRESS. HEX LOCATION(0000262C) IN CSECT(I7823) LENGTH(2)
534	N00020	369 ADDRESS. HEX LOCATION(00002630) IN CSECT(I7823) LENGTH(2)
537	N00021	372 520 ADDRESS. HEX LOCATION(00002634) IN CSECT(I7823) LENGTH(2)
57	ON	375 508 ABSOLUTE. HEX VALUE(00002200)
582	OPTN1	407 432 462 492 522 ADDRESS. HEX LOCATION(00002738) IN CSECT(I7823) LENGTH(2)
605	OPTN3	1303 1543 1578 1853 2032 2211 2405 ADDRESS. HEX LOCATION(0000273C) IN CSECT(I7823) LENGTH(2)
101	PARHARA	1390 1438 ADDRESS. HEX LOCATION(0000196E) IN CSECT(I7823) LENGTH(1)
69	PID	397 409 427 439 457 469 487 499 517 ADDRESS. HEX LOCATION(00001800) IN CSECT(I7823) LENGTH(1)
1525	PIDMSG10	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 1493
699	PREP	1495 ABSOLUTE. HEX VALUE(0000000C)
1021	RDATA	1448 ADDRESS. HEX LOCATION(000028E2) IN CSECT(I7823) LENGTH(2)
1019	RDATA0	1748 1749 1751 1752 1955 1956 1958 1959 2133 2134 2136 2137 2325 2326 2328 2329 2520 2521 2523 2524 ADDRESS. HEX LOCATION(000028DE) IN CSECT(I7823) LENGTH(2)
1771	RDBUF	1744 1745 1951 1952 2129 2130 2321 2322 2516 2517 ADDRESS. HEX LOCATION(00002F0A) IN CSECT(I7823) LENGTH(2)
887	RDDCB	1625 ADDRESS. HEX LOCATION(00002816) IN CSECT(I7823) LENGTH(2)
695	RESET	1098 1621 1622 1623 1624 1625 ABSOLUTE. HEX VALUE(00000008)
706	RICB	1588 1657 1863 1931 2042 2109 2221 2288 2415 2483 ABSOLUTE. HEX VALUE(00000013)
909	RKDCB	1502 ADDRESS. HEX LOCATION(00002836) IN CSECT(I7823) LENGTH(2)
819	RSDCB	1105 1106 1113 1114 ADDRESS. HEX LOCATION(000027B6) IN CSECT(I7823) LENGTH(2)
645	SCTID	1088 1093 1117 1122 ADDRESS. HEX LOCATION(00002746) IN CSECT(I7823) LENGTH(2)
931	SCTST	828 838 916 1090 1093 1106 ADDRESS. HEX LOCATION(0000285E) IN CSECT(I7823) LENGTH(2)
1006	SENS0	1114 1119 1122 ADDRESS. HEX LOCATION(000028BA) IN CSECT(I7823) LENGTH(4)
1000	SENS1	1740 1947 2125 2317 2512 ADDRESS. HEX LOCATION(000028A6) IN CSECT(I7823) LENGTH(4)
843	SKDCB	1746 1953 2131 2323 2518 ADDRESS. HEX LOCATION(000027D6) IN CSECT(I7823) LENGTH(2)
697	START	1082 1899 2451 ABSOLUTE. HEX VALUE(0000000A)
104	SUPSTAT	1211 ADDRESS. HEX LOCATION(000019C4) IN CSECT(I7823) LENGTH(1)
92	TMSGWTR	1498 ADDRESS. HEX LOCATION(000018BA) IN CSECT(I7823) LENGTH(1)
98	TURESUL	1498 ADDRESS. HEX LOCATION(000018C8) IN CSECT(I7823) LENGTH(1)
669	TURTN	1586 1589 1654 1658 1861 1864 1928 1932 2040 2043 2106 2110 2219 2222 2285 2289 2413 2416 2480 2484 ADDRESS. HEX LOCATION(00002776) IN CSECT(I7823) LENGTH(2)
74	TUSTATUS	1503 1576 1851 2030 2209 2403 ADDRESS. HEX LOCATION(00001818) IN CSECT(I7823) LENGTH(1)
75	TUWORK	1476 ADDRESS. HEX LOCATION(0000181A) IN CSECT(I7823) LENGTH(1)

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678	T3C02	1480 1532 ADDRESS. HEX LOCATION(0000277E) IN CSECT(I7823) LENGTH(6)
1745	T77A	401 431 461 491 521 ADDRESS. HEX LOCATION(00002EB4) IN CSECT(I7823) LENGTH(6)
1752	T77B	1743 ADDRESS. HEX LOCATION(00002ED4) IN CSECT(I7823) LENGTH(4)
1738	T77C	1750 ADDRESS. HEX LOCATION(00002EA0) IN CSECT(I7823) LENGTH(4)
1664	T77CC	1664 ADDRESS. HEX LOCATION(00002D96) IN CSECT(I7823) LENGTH(4)
1631	T77D	1631 ADDRESS. HEX LOCATION(00002D3C) IN CSECT(I7823) LENGTH(4)
1658	T77E	1633 ADDRESS. HEX LOCATION(00002D8C) IN CSECT(I7823) LENGTH(6)
1734	T77EE	1642 1649 1651 ADDRESS. HEX LOCATION(00002E92) IN CSECT(I7823) LENGTH(4)
1654	T77ER	1671 ADDRESS. HEX LOCATION(00002D7E) IN CSECT(I7823) LENGTH(6)
1636	T77F	1580 1592 1596 1598 1601 1605 1608 1611 1614 1617 1627 1640 1644 1646 1678 1682 1710 1714 1718 1723 1727 1736 1741 1747 ADDRESS. HEX LOCATION(00002D46) IN CSECT(I7823) LENGTH(2)
1737	T77FF	1666 ADDRESS. HEX LOCATION(00002E9C) IN CSECT(I7823) LENGTH(4)
1721	T77G	1675 1688 ADDRESS. HEX LOCATION(00002E5E) IN CSECT(I7823) LENGTH(6)
1602	T77H	1707 ADDRESS. HEX LOCATION(00002CC2) IN CSECT(I7823) LENGTH(6)
1729	T77HH	1600 ADDRESS. HEX LOCATION(00002E7E) IN CSECT(I7823) LENGTH(6)
1656	T77I	1720 ADDRESS. HEX LOCATION(00002D86) IN CSECT(I7823) LENGTH(4)
1762	T77J	1637 ADDRESS. HEX LOCATION(00002EFA) IN CSECT(I7823) LENGTH(2)
1733	T77JJ	1760 ADDRESS. HEX LOCATION(00002E8E) IN CSECT(I7823) LENGTH(4)
1703	T77L	1793 1731 ADDRESS. HEX LOCATION(00002E1C) IN CSECT(I7823) LENGTH(4)
1706	T77LL	1691 1698 ADDRESS. HEX LOCATION(00002E28) IN CSECT(I7823) LENGTH(2)
1672	T77M	1732 ADDRESS. HEX LOCATION(00002DB2) IN CSECT(I7823) LENGTH(4)
1674	T77N	1670 ADDRESS. HEX LOCATION(00002DB8) IN CSECT(I7823) LENGTH(4)
1693	T77R	1685 ADDRESS. HEX LOCATION(00002DFC) IN CSECT(I7823) LENGTH(4)
1768	T77RE	1690 ADDRESS. HEX LOCATION(00002F04) IN CSECT(I7823) LENGTH(2)
1756	T77RR	1648 1650 ADDRESS. HEX LOCATION(00002EE4) IN CSECT(I7823) LENGTH(6)
1609	T77S	1754 ADDRESS. HEX LOCATION(00002CE0) IN CSECT(I7823) LENGTH(6)
1740	T77SS	1619 ADDRESS. HEX LOCATION(00002EA4) IN CSECT(I7823) LENGTH(4)
1773	T77ST	1632 1679 1683 1711 1715 1719 1724 1728 ADDRESS. HEX LOCATION(0000300A) IN CSECT(I7823) LENGTH(1)
1686	T77T	1583 ADDRESS. HEX LOCATION(00002DE6) IN CSECT(I7823) LENGTH(4)
1767	T77TP	1668 1692 1696 1701 ADDRESS. HEX LOCATION(00002F00) IN CSECT(I7823) LENGTH(2)
1766	T77U	1745 1756 1757 1758 ADDRESS. HEX LOCATION(00002EFC) IN CSECT(I7823) LENGTH(2)
1698	T77V	1584 1585 1647 1648 1650 1753 1755 1756 ADDRESS. HEX LOCATION(00002E0C) IN CSECT(I7823) LENGTH(4)
1660	T77X	1702 ADDRESS. HEX LOCATION(00002D92) IN CSECT(I7823) LENGTH(4)
1770	T77XR	1652 1655 ADDRESS. HEX LOCATION(00002F08) IN CSECT(I7823) LENGTH(2)
1952	T78A	1641 ADDRESS. HEX LOCATION(000031A6) IN CSECT(I7823) LENGTH(6)
1959	T78B	1950 ADDRESS. HEX LOCATION(000031C6) IN CSECT(I7823) LENGTH(4)
1945	T78C	1957 ADDRESS. HEX LOCATION(00003192) IN CSECT(I7823) LENGTH(4)
1938	T78CC	1938 ADDRESS. HEX LOCATION(00003178) IN CSECT(I7823) LENGTH(4)
1905	T78D	1905 ADDRESS. HEX LOCATION(0000311E) IN CSECT(I7823) LENGTH(4)
1932	T78E	1907 ADDRESS. HEX LOCATION(0000316E) IN CSECT(I7823) LENGTH(6)
1928	T78ER	1916 1923 1925 ADDRESS. HEX LOCATION(00003160) IN CSECT(I7823) LENGTH(6)
1910	T78F	1855 1867 1871 1873 1876 1880 1883 1886 1889 1892 1897 1901 1914 1918 1920 1943 1948 1954 ADDRESS. HEX LOCATION(00003128) IN CSECT(I7823) LENGTH(2)
1877	T78H	1940 ADDRESS. HEX LOCATION(000030B0) IN CSECT(I7823) LENGTH(6)
1930	T78I	1875 ADDRESS. HEX LOCATION(00003168) IN CSECT(I7823) LENGTH(4)
1969	T78J	1911 ADDRESS. HEX LOCATION(000031EC) IN CSECT(I7823) LENGTH(2)
1975	T78RE	1967 ADDRESS. HEX LOCATION(000031F6) IN CSECT(I7823) LENGTH(2)
1963	T78RR	1922 1924 ADDRESS. HEX LOCATION(000031D6) IN CSECT(I7823) LENGTH(6)
1884	T78S	1961 ADDRESS. HEX LOCATION(000030CE) IN CSECT(I7823) LENGTH(6)
1947	T78SS	1894 ADDRESS. HEX LOCATION(00003196) IN CSECT(I7823) LENGTH(4)
1979	T78ST	1906 ADDRESS. HEX LOCATION(000031FC) IN CSECT(I7823) LENGTH(1)
1974	T78TP	1858 ADDRESS. HEX LOCATION(000031F2) IN CSECT(I7823) LENGTH(2)
1973	T78U	1952 1963 1964 1965 ADDRESS. HEX LOCATION(000031EE) IN CSECT(I7823) LENGTH(2)
1934	T78X	1859 1860 1921 1922 1924 1960 1962 1963 ADDRESS. HEX LOCATION(00003174) IN CSECT(I7823) LENGTH(4)
1977	T78XR	1926 1929 ADDRESS. HEX LOCATION(000031FA) IN CSECT(I7823) LENGTH(2)
1576	T7877	1915 ADDRESS. HEX LOCATION(00002C5E) IN CSECT(I7823) LENGTH(4)

DECLARED	NAME	ATTRIBUTES AND REFERENCES
1851	T7878	389 ADDRESS. HEX LOCATION(0000304C) IN CSECT(I7823) LENGTH(4)
2030	T7879	419 ADDRESS. HEX LOCATION(00003204) IN CSECT(I7823) LENGTH(4)
2403	T7880	449 ADDRESS. HEX LOCATION(0000359A) IN CSECT(I7823) LENGTH(4)
2209	T7881	505 ADDRESS. HEX LOCATION(000033B8) IN CSECT(I7823) LENGTH(4)
2130	T79A	479 ADDRESS. HEX LOCATION(00003358) IN CSECT(I7823) LENGTH(6)
2137	T79B	2128 ADDRESS. HEX LOCATION(00003378) IN CSECT(I7823) LENGTH(4)
2123	T79C	2135 ADDRESS. HEX LOCATION(00003344) IN CSECT(I7823) LENGTH(4)
2116	T79CC	2116 ADDRESS. HEX LOCATION(0000332A) IN CSECT(I7823) LENGTH(4)
2083	T79D	2083 ADDRESS. HEX LOCATION(000032D0) IN CSECT(I7823) LENGTH(4)
2110	T79E	2085 ADDRESS. HEX LOCATION(00003320) IN CSECT(I7823) LENGTH(6)
2106	T79ER	2094 2101 2103 ADDRESS. HEX LOCATION(00003312) IN CSECT(I7823) LENGTH(6)
2088	T79F	2034 2046 2050 2052 2055 2059 2062 2065 2068 2071 2076 2079 2092 2096 2098 2121 2126 2132 ADDRESS. HEX LOCATION(000032DA) IN CSECT(I7823) LENGTH(2)
2056	T79H	2118 ADDRESS. HEX LOCATION(00003268) IN CSECT(I7823) LENGTH(6)
2108	T79I	2054 ADDRESS. HEX LOCATION(0000331A) IN CSECT(I7823) LENGTH(4)
2147	T79J	2089 ADDRESS. HEX LOCATION(0000339E) IN CSECT(I7823) LENGTH(2)
2153	T79RE	2145 ADDRESS. HEX LOCATION(000033A8) IN CSECT(I7823) LENGTH(2)
2141	T79RR	2100 2102 ADDRESS. HEX LOCATION(00003388) IN CSECT(I7823) LENGTH(6)
2063	T79S	2139 ADDRESS. HEX LOCATION(00003286) IN CSECT(I7823) LENGTH(6)
2125	T79SS	2073 ADDRESS. HEX LOCATION(00003348) IN CSECT(I7823) LENGTH(4)
2157	T79ST	2084 ADDRESS. HEX LOCATION(000033AE) IN CSECT(I7823) LENGTH(1)
2152	T79TP	2037 ADDRESS. HEX LOCATION(000033A4) IN CSECT(I7823) LENGTH(2)
2151	T79U	2135 2141 2142 2143 ADDRESS. HEX LOCATION(000033A0) IN CSECT(I7823) LENGTH(2)
2112	T79X	2038 2039 2099 2100 2102 2138 2140 2141 ADDRESS. HEX LOCATION(00003326) IN CSECT(I7823) LENGTH(4)
2155	T79XR	2104 2107 ADDRESS. HEX LOCATION(000033AC) IN CSECT(I7823) LENGTH(2)
2517	T80A	2093 ADDRESS. HEX LOCATION(00003720) IN CSECT(I7823) LENGTH(6)
2524	T80B	2515 ADDRESS. HEX LOCATION(00003740) IN CSECT(I7823) LENGTH(4)
2510	T80C	2522 ADDRESS. HEX LOCATION(0000370C) IN CSECT(I7823) LENGTH(4)
2490	T80CC	2495 ADDRESS. HEX LOCATION(000036C6) IN CSECT(I7823) LENGTH(4)
2457	T80D	2455 ADDRESS. HEX LOCATION(0000366C) IN CSECT(I7823) LENGTH(4)
2484	T80E	2459 ADDRESS. HEX LOCATION(000036BC) IN CSECT(I7823) LENGTH(6)
2506	T80EE	2468 2475 2477 ADDRESS. HEX LOCATION(000036FE) IN CSECT(I7823) LENGTH(4)
2480	T80ER	2495 ADDRESS. HEX LOCATION(000036AE) IN CSECT(I7823) LENGTH(6)
2462	T80F	2407 2419 2423 2425 2428 2432 2435 2438 2441 2444 2449 2453 2466 2470 2472 2502 2508 2513 ADDRESS. HEX LOCATION(00003676) IN CSECT(I7823) LENGTH(2)
2509	T80FF	2492 ADDRESS. HEX LOCATION(00003708) IN CSECT(I7823) LENGTH(4)
2429	T80H	2499 ADDRESS. HEX LOCATION(000035FE) IN CSECT(I7823) LENGTH(6)
2482	T80I	2427 ADDRESS. HEX LOCATION(000036B6) IN CSECT(I7823) LENGTH(4)
2534	T80J	2463 ADDRESS. HEX LOCATION(00003766) IN CSECT(I7823) LENGTH(2)
2496	T80M	2532 ADDRESS. HEX LOCATION(000036DA) IN CSECT(I7823) LENGTH(4)
2498	T80N	2494 ADDRESS. HEX LOCATION(000036E0) IN CSECT(I7823) LENGTH(4)
2540	T80RE	2505 ADDRESS. HEX LOCATION(00003770) IN CSECT(I7823) LENGTH(2)
2528	T80RR	2474 2476 ADDRESS. HEX LOCATION(00003750) IN CSECT(I7823) LENGTH(6)
2436	T80S	2526 ADDRESS. HEX LOCATION(0000361C) IN CSECT(I7823) LENGTH(6)
2512	T80SS	2446 ADDRESS. HEX LOCATION(00003710) IN CSECT(I7823) LENGTH(4)
2544	T80ST	2458 2503 ADDRESS. HEX LOCATION(00003776) IN CSECT(I7823) LENGTH(1)
2539	T80TP	2410 ADDRESS. HEX LOCATION(0000376C) IN CSECT(I7823) LENGTH(2)
2538	T80U	2517 2528 2529 2530 ADDRESS. HEX LOCATION(00003768) IN CSECT(I7823) LENGTH(2)
2486	T80X	2411 2412 2473 2474 2476 2525 2527 2528 ADDRESS. HEX LOCATION(000036C2) IN CSECT(I7823) LENGTH(4)
2542	T80XR	2478 2481 ADDRESS. HEX LOCATION(00003774) IN CSECT(I7823) LENGTH(2)
2322	T81A	2467 ADDRESS. HEX LOCATION(00003536) IN CSECT(I7823) LENGTH(6)
2329	T81B	2322 ADDRESS. HEX LOCATION(00003556) IN CSECT(I7823) LENGTH(4)
2315	T81C	2327 ADDRESS. HEX LOCATION(00003522) IN CSECT(I7823) LENGTH(4)
2295	T81CC	2295 ADDRESS. HEX LOCATION(000034DE) IN CSECT(I7823) LENGTH(4)
2262	T81D	2262 ADDRESS. HEX LOCATION(00003484) IN CSECT(I7823) LENGTH(4)
2289	T81E	2264 ADDRESS. HEX LOCATION(000034D4) IN CSECT(I7823) LENGTH(6)

DECLARED	NAME	ATTRIBUTES AND REFERENCES
2311	T81EE	2273 2280 2282 ADDRESS. HEX LOCATION(00003514) IN CSECT(I7823) LENGTH(4)
2285	T81ER	2300 ADDRESS. HEX LOCATION(000034C6) IN CSECT(I7823) LENGTH(6)
2267	T81F	2213 2225 2229 2231 2234 2238 2241 2244 2247 2250 2255 2258 2271 2275 2277 2307 2313 2318 ADDRESS. HEX LOCATION(0000348E) IN CSECT(I7823) LENGTH(2)
2314	T81FF	2322 ADDRESS. HEX LOCATION(0000351E) IN CSECT(I7823) LENGTH(4)
2235	T81H	2304 ADDRESS. HEX LOCATION(0000341C) IN CSECT(I7823) LENGTH(6)
2287	T81I	2233 ADDRESS. HEX LOCATION(000034CE) IN CSECT(I7823) LENGTH(4)
2339	T81J	2268 ADDRESS. HEX LOCATION(0000357C) IN CSECT(I7823) LENGTH(2)
2301	T81M	2337 ADDRESS. HEX LOCATION(000034F2) IN CSECT(I7823) LENGTH(4)
2303	T81N	2295 ADDRESS. HEX LOCATION(000034F8) IN CSECT(I7823) LENGTH(4)
2345	T81RE	2310 ADDRESS. HEX LOCATION(00003586) IN CSECT(I7823) LENGTH(2)
2333	T81RR	2279 2281 ADDRESS. HEX LOCATION(00003566) IN CSECT(I7823) LENGTH(6)
2242	T81S	2331 ADDRESS. HEX LOCATION(0000343A) IN CSECT(I7823) LENGTH(6)
2317	T81SS	2252 ADDRESS. HEX LOCATION(00003526) IN CSECT(I7823) LENGTH(4)
2349	T81ST	2263 2308 ADDRESS. HEX LOCATION(0000358C) IN CSECT(I7823) LENGTH(1)
2344	T81TP	2216 ADDRESS. HEX LOCATION(00003582) IN CSECT(I7823) LENGTH(2)
2343	T81U	2322 2333 2334 2335 ADDRESS. HEX LOCATION(0000357E) IN CSECT(I7823) LENGTH(2)
2291	T81X	2217 2218 2278 2279 2281 2330 2332 2333 ADDRESS. HEX LOCATION(000034DA) IN CSECT(I7823) LENGTH(4)
2347	T81XR	2283 2286 ADDRESS. HEX LOCATION(0000358A) IN CSECT(I7823) LENGTH(2)
876	VRDCB	2272 ADDRESS. HEX LOCATION(00002806) IN CSECT(I7823) LENGTH(2)
898	WKDCB	1099 ADDRESS. HEX LOCATION(00002826) IN CSECT(I7823) LENGTH(2)
865	WRDCB	1105 1110 1125 1126 ADDRESS. HEX LOCATION(000027F6) IN CSECT(I7823) LENGTH(2)
925	WRSID	1102 ADDRESS. HEX LOCATION(00002852) IN CSECT(I7823) LENGTH(2)
809	WSDCB	816 905 1126 1130 ADDRESS. HEX LOCATION(000027A6) IN CSECT(I7823) LENGTH(2)
928	WSIDT	1129 1130 1132 1133 ADDRESS. HEX LOCATION(00002858) IN CSECT(I7823) LENGTH(2)
621	XE	1110 1133 ABSOLUTE. HEX VALUE(00000024)
619	XI	1310 1372 ABSOLUTE. HEX VALUE(00000022)
1191	XIO	1216 1357 1593 1868 2047 2226 2420 ADDRESS. HEX LOCATION(00029A8) IN CSECT(I7823) LENGTH(4)
1372	XIOCK	1083 1086 1094 1097 1100 1103 1107 1111 1115 ADDRESS. HEX LOCATION(00002A70) IN CSECT(I7823) LENGTH(2)
1379	XIOCO	1226 ADDRESS. HEX LOCATION(00002A82) IN CSECT(I7823) LENGTH(2)
1196	XIOCS	1377 ADDRESS. HEX LOCATION(000029B2) IN CSECT(I7823) LENGTH(6)
1381	XIOCV	1388 1643 1917 2095 2274 2469 ADDRESS. HEX LOCATION(00002A86) IN CSECT(I7823) LENGTH(2)
1390	XIOCK	1375 ADDRESS. HEX LOCATION(00002AA0) IN CSECT(I7823) LENGTH(4)
1265	XIOER	1382 ADDRESS. HEX LOCATION(00002A0E) IN CSECT(I7823) LENGTH(2)
1200	XIO1	1396 ADDRESS. HEX LOCATION(000029C2) IN CSECT(I7823) LENGTH(4)
1213	XIO2	1192 ADDRESS. HEX LOCATION(000029E8) IN CSECT(I7823) LENGTH(2)
1225	XIO8	1199 ADDRESS. HEX LOCATION(000029FC) IN CSECT(I7823) LENGTH(2)
62	XTRNL	1230 ABSOLUTE. HEX VALUE(00000001)