

MAY 01 1981

BELL TELEPHONE LABORATORIES, INCORPORATED

7-186

COMMON SYSTEMS  
FOR USE WITH NO. 3 ESS  
ARRANGED WITH 2-WIRE FEATURES  
COMMON TAPE HANDLER  
(CTAPH)

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ISSUE 8  
02/06/81

AT&TCO  
SPCS

PR-1C957-50  
186 PAGES

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## SECTION DICTIONARY

NUMBER	NAME	MAXIMUM	ORIGIN	TYP	ADDRESS-MODIFICATION
01	TAPEHL	0004320		C	
02	CPATCH	0000657		C	
03	CPATCH1	0001151		C	
04	CPATCH2	0000724		C	
05	CPATCH3	0000000		C	
06	CPATCH7	0000344		C	
07	TFAPCH2	0001146		C	
08	TPATCH	0000000		C	

COMMON TAPE HANDLER

PR-1C957-50

00:43:06 02/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH

ISSUE 08 PAGE A1

0123206  
0123206  
0123206

```

01 DBNAM NO33E3I3.OFF.DATABASE
02 RELNAM NO3ESS
03 GETLIB LIBRARY, MEMBER=MOPTBL
04 GETLIB LIBRARY, MEMBER=SYSMAC
05 GETLIB LIBRARY, MEMBER=SYSSYM
06 GETLIB LIBRARY, MEMBER=PATCH2
07 FIRSTOPTSS
08 VERSION 3ACC, FIELD, ESS2E
09 PATCHINIT
10 NO33E3I3.OFF.OPMS(0) DECK
11 DSQUAL NO33E3I3
12 LISTING N, CRUNCH=Y, SYSOUT=N
13 #####
14 ##
15 ## UNIX ID = NO3PAG
16 ##
17 #####
18 #####
19 ###
20 ### pid date time rel
21 ###
22 ### ctaph 1/24/81 18:14:02 7.1.1.1
23 ###
24 #####
25 GETLIB MEMBER=TTYSYM
26 VERSIONS (3ACC, INTERDATA), (ESS3, ESS2B)
27 GETLIB MEMBER=TTYMAC
28 GETLIB MEMBER=GPMAC
29 GETLIB MEMBER=TAPSYM
30 GETLIB MEMBER=BSAIMAC
31 GETLIB MEMBER=CTVTAB
32 NAME CTAPH

```

0123206

36 ## The following is a list of the valid csects for program CTAPH

38 TAPEHL CSECT

41 ## The following csects are necessary for patching

0111432  
0112562  
0114107  
0115073  
0121236

```

43 CPATCH CSECT
44 CPATCH1 CSECT
45 CPATCH2 CSECT
46 CPATCH3 CSECT
47 CPATCH7 CSECT

```

001

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0116774

01 TFAPCH2 CSECT

0600000

03 TPATCH CSECT

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ED1

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0123206

01 OREF ON  
02 TAPEHL CSECT

COMMON TAPE HANDLER

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EXTERNS

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

01 BLMMA EXTERN OFLUTIL  
02 BLMMA EXTERN TEMPINH\_

06 CBLM EXTERN ACTMSF  
07 CBLM EXTERN CTAPHRTN

11 CINIT EXTERN SWITCHCC

15 CNRUTL DIRECT TUUTCTL

19 CSYSUB EXTERN CLR\_WRDS  
20 CSYSUB EXTERN LODIOC  
21 CSYSUB EXTERN MOVST  
22 CSYSUB EXTERN SENDMIO  
23 CSYSUB EXTERN UNLODIQC  
24 CSYSUB EXTERN BINXBCD

28 CTSD EXTERN CCKTSTAT  
29 CTSD EXTERN OFLUCTL  
30 CTSD EXTERN TDCO  
31 CTSD EXTERN RESDIR  
32 CTSD EXTERN MTCSV  
33 CTSD EXTERN SYSTM  
34 CTSD EXTERN TCBADR  
35 CTSD EXTERN TUSTAT  
36 CTSD EXTERN PAGSCR

40 BLMMA EXTERN DGNTAPE  
41 BLMMA EXTERN TAPEIRTN  
42 BLMMA EXTERN TAPOIRTN

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EXTERNS

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

01 TDATA EXTERN TAPEOPTS  
 02 TDATA EXTERN TAPEQUE  
 03 TDATA EXTERN TAPEQUO  
 04 TDATA EXTERN TAPETBL

08 TTYTBL EXTERN TTY\_IP  
 09 TTYTBL EXTERN TTY\_NG  
 10 TTYTBL EXTERN TTY\_OK  
 11 TTYTBL EXTERN TTY\_PF  
 12 TTYTBL EXTERN TTY\_RL  
 13 TTYTBL EXTERN UCL

17 LAYOUT EXTERN I\_OBUF  
 18 LAYOUT EXTERN MMT0FO  
 19 LAYOUT EXTERN MMT1FO  
 20 LAYOUT EXTERN MMT0TE  
 21 LAYOUT EXTERN MMT1TE  
 22 LAYOUT EXTERN MMT0FR  
 23 LAYOUT EXTERN MMT1FR  
 24 LAYOUT EXTERN MMT0FW  
 25 LAYOUT EXTERN MMT1FW  
 26 LAYOUT EXTERN MMTDCAR

30 # TAPE DEFINITION PARAMETERS  
 31 MASACS EXTERN BLKMAX  
 32 MASACS EXTERN BUFLN  
 33 MASACS EXTERN BUFBK  
 34 MASACS EXTERN DIRLOC  
 35 MASACS EXTERN DIRTRK  
 36 MASACS EXT: RN FSTDIST  
 37 MASACS EXTERN LASTBUF  
 38 MASACS EXTERN MSECPR  
 39 MASACS EXTERN REDKON

43 PUBLIC ALWERRCV  
 44 PUBLIC CLRMAINT  
 45 PUBLIC COMPROK  
 46 PUBLIC COM1J  
 47 PUBLIC CTAPH  
 48 PUBLIC BLKDATA  
 49 PUBLIC DGNRMV

COMMON TAPE HANDLER

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EXTERNS

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

```

01 PUBLIC DIAGST
02 PUBLIC INHERRCV
03 PUBLIC INITTAPE
04 PUBLIC JAMTU
05 PUBLIC OPENM
06 PUBLIC OPENTCB
07 PUBLIC ORDEXC
08 PUBLIC ORDEXCAB
09 PUBLIC POPSTATE
10 PUBLIC PTREC
11 PUBLIC POSOK
12 PUBLIC POSST
13 PUBLIC ORDEXCNT
14 PUBLIC PUSHSTAT
15 PUBLIC REDON
16 PUBLIC REPACK
17 PUBLIC REQR
18 PUBLIC REQSTP
19 PUBLIC RPTTAPE
20 PUBLIC RSTDUP
21 PUBLIC RSTTAPE
22 PUBLIC RMVTAPE
23 PUBLIC SETMAINT
24 PUBLIC STATONL
25 PUBLIC STATSET
26 PUBLIC STATWRQ
27 PUBLIC TAPINTE
28 PUBLIC TAPINTO
29 PUBLIC TSTATE
30 PUBLIC XORTAB

```

0000001

```

34 # TAPE BLOCK DEFINITIONS
35 I_OBUFD EQU 1
36 PUBLIC I_OBUFD

```

COMMON TAPE HANDLER

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0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 6

TAPE MACROS AND LAYOUTS

0:43:06 2/06/81 \*\*\*\*

OPEN MACRO

CTAPH

W77D

```

01 # THIS IS THE EXPECTED TYPE OF DATA LAYOUT FOLLOWING
02 # THE USE OF THE OPEN MACRO. THIS DATA IS USED BY THE
03 # DIRECTORY SEARCH ROUTINES. THE SEIZE MACRO ALSO USES
04 # THIS LAYOUT WITHOUT THE ASCII CHARACTERS.
05 LAYOUT 5
06 WORDCNT ITEM 3 #NO. OF WORDS FOR FILE NAME
07 OPSZ ITEM 1 # OPEN-SEIZE FLAG
08 RTNDX ITEM 3 #RETURN INDEX
09 ITEM 2
10 EXPOP ITEM 1
11 ITEM 1
12 ITEM 5 # CLIENT NUMBER
13 NAME ITEM 8 #ASCII CHARACTER 2 OF FILE NAME
14 ITEM 8 #ASCII CHARACTER 1 OF FILE NAME
15 ITEM 8 #ASCII CHARACTER 4 OF FILE NAME
16 ITEM 8 #ASCII CHARACTER 3 OF FILE NAME
17 ITEM 8 #ASCII CHARACTER 6 OF FILE NAME
18 ITEM 8 #ASCII CHARACTER 5 OF FILE NAME
19 ITEM 8 #ASCII CHARACTER 8 OF FILE NAME
20 ITEM 8 #ASCII CHARACTER 7 OF FILE NAME
21 LOEND
    
```

-003- 22 #

001	CLIENT NUMBER	EXPOP	RTNDX	OPSZ	WORDCNT											
01	ASCII CHARACTER 1 OF FILE NAME		NAME													
02	ASCII CHARACTER 3 OF FILE NAME		ASCII CHARACTER 2 OF FILE NAME													
03	ASCII CHARACTER 5 OF FILE NAME		ASCII CHARACTER 4 OF FILE NAME													
04	ASCII CHARACTER 7 OF FILE NAME		ASCII CHARACTER 6 OF FILE NAME													
	ASCII CHARACTER 8 OF FILE NAME		ASCII CHARACTER 8 OF FILE NAME													
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

COMMON TAPE HANDLER

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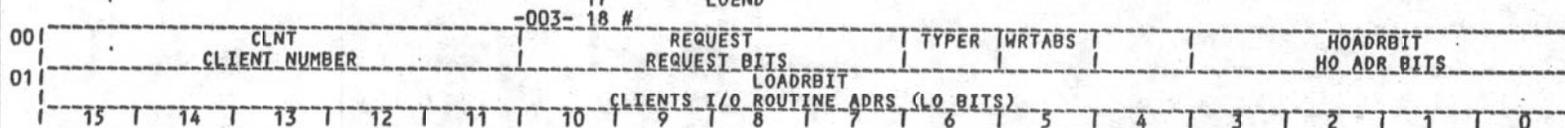
TAPE MACROS AND LAYOUTS

0:43:06 2/06/81 \*\*\*\*

CLIENT CONTROL MACROS

CTAPH W77D

01 # LAYOUT OF DATA WORDS AFTER CALL TO REQUEST SUBROUTINE FOR THE  
 02 # REMAINING MACRO CALLS.  
 03 # 1 READ  
 04 # 2 READ-A-BLK  
 05 # 3 WRITE  
 06 # 4 POSITION  
 07 # 5 BACK SPACE  
 08 # 6 WRITE ABSOLUTE  
 09 LAYOUT 2,FLTBLK  
 10 HOADRBIT ITEM 4 # HO ADR BITS  
 11 ITEM 1  
 12 WRTABS ITEM 1  
 13 TYPER ITEM 1 # 1 IF ONLY ONE DATA WORD 0 IF 2.  
 14 REQUEST ITEM 4 # REQUEST BITS  
 15 CLNT ITEM 5 # CLIENT NUMBER  
 16 LOADRBIT ITEM 16 # CLIENTS I/O ROUTINE ADRS (LO BITS)  
 17 LOEND



COMMON TAPE HANDLER

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## DATA LAYOUTS

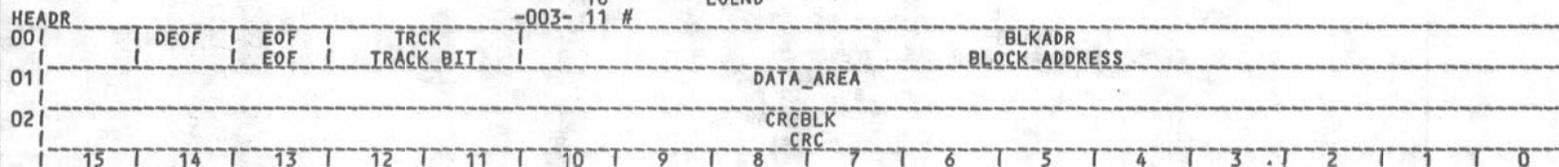
0:43:06 2/06/81 \*\*\*\*

## BLOCK HEADER STORAGE

CTAPH

W77D

01 # THIS IS THE LAYOUT OF A BLOCK ON THE TAPE.  
 02 HEADR LAYOUT 3,FLTBLK  
 03 BLKADR ITEM 11 # BLOCK ADDRESS  
 04 TRCK ITEM 2 # TRACK BIT  
 05 EOF ITEM 1 # EOF  
 06 DEOF ITEM 1 #FILE CONTINUED ON NEXT TRACK.  
 07 LOSKIP 0,0  
 08 DATA\_AREA ITEM 16  
 09 CRCBLK ITEM 16 # CRC  
 10 LOEND



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DATA LAYOUTS  
TAPE CONTROL BLOCK

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0123206 01 # THIS IS THE MAIN STORAGE AND CONTROL BLOCK OF THE  
02 # CTAPH PROGRAM. THE UNDERSTANDING OF THESE WORDS AND  
03 # BITS ARE ESSENTIAL IN MAINTAINING THE PROGRAM.  
04  
05 # 1. THE 'REQ' BITS ARE USED TO STOKE NEW REQUESTS  
06 # FROM A CLIENT. WHEN THE TAPE SYSTEM IS IDLE (NOT  
07 # SERVICING ANY TAPES, THE IDLE REQUEST IS STORED  
08 # IN THESE BITS. THIS IS A NON ZERO STATUS SINCE ZERO  
09 # IS RESERVED FOR A MRF CONDITION WHICH CAUSES SPECIAL  
10 # ACTION TO BE TAKEN.  
0123206 11  
12 # 2. THE 'REQSTP' BIT IS SET UNTIL THE NEW INCOMING CLIENT  
13 # REQUEST CAN BE INITIATED. THIS BIT WILL PREVENT THE  
14 # OVERWRITING OF THE 'REQ' FIELD BY AN ATTEMPT TO MAKE  
15 # ANOTHER REQUEST BEFORE THE NEW ONE IS SERVICED.  
0123206 16  
17 # 3. THE 'MAINT' BIT IS SET WHEN THE ERROR RECOVERY  
18 # STATE IS INPROGRESS TRYING TO RECOVER A BLOCK  
19 # IN ERROR. SOME STATES IN TAPE HANDLING WILL  
20 # EXECUTE DIFFERENTLY WHEN THEY ARE INVOKED BY  
21 # THE ERROR RECOVERY STATE.  
0123206 22  
23 # 4. THE 'W3I' BIT INFORMS THE INTERRUPT CODE THAT  
24 # THE NEXT INTERRUPT IS THE EXTRANEOUS ONE GENERATED  
25 # AT THE END OF THE WRITE OPERATION.  
0123206 26  
27 # 5. THE 'ABWRT' BIT INFORMS THE WRITE STATE NOT TO  
28 # DO ANYTHING TO FORMAT THE BLOCK IN THE I\_OBUF  
29 # STORAGE AREA. THE CLIENT HAS TAKEN CARE OF EVERYTHING  
30 # BUT THE CRC.  
0123206 31  
32 # 6. THE 'IOCMP' BIT COMMUNICATES A SUCCESSFUL INTERRUPT  
33 # LEVEL OPERATION AT THE END OF A BLOCK READ OR WRITE.  
34 # BASE LEVEL USES THIS AS AN ALL SEEMS WELL FLAG.  
0123206 35  
36 # 7. THE 'SRFAL' BIT INDICATES THAT THE INTERRUPT HAS  
37 # DETECTED A CRC FAILURE OR OTHER DATA SHUFFLING  
38 # FAILURE.  
0123206 39  
40 # 8. THE 'STPST' BIT TELLS THE INTERRUPT LEVEL CODE  
41 # NOT TO OVERWRITE THE I\_OBUF STORAGE AREA WITH  
42 # DATA COMING OFF OF THE TAPE. THE INTERRUPT IS  
43 # JUST TO SERVICE THE TDC AND PERFORM AUDIT FUNCTIONS  
44 # REQUIRED TO GUARANTEE A RELIABLE READ OPERATION.  
0123206 45  
46 # 9. THE 'CLIENT' BITS STORE THE NUMBER OF THE CLIENT  
47 # IN CONTROL OF THE TAPE SYSTEM.  
0123206 48  
49 # 10. THE 'HOFILNAM' AND 'FILNAM' FIELDS STORE THE ADDRESS

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## DATA LAYOUTS

## TAPE CONTROL BLOCK

CTAPH

W77D

0123206 01 # OF THE NAME OF THE FILE TO BE OPENED.  
 02 #  
 03 # 11. THE 'CONTLPT' AND 'HOCONPT' FIELDS STORE THE  
 04 # ADDRESS OF THE CLIENT'S BLOCK READING ROUTINE. THIS  
 05 # ADDRESS WILL BE CALLED FOR EVERY BLOCK READ IN BY  
 06 # THE INTERRUPT LEVEL PROGRAM.  
 07 #  
 0123206 08 # 12. THE 'LOGBLK' FIELD IS WHERE THE CLIENT'S LOGICAL  
 09 # FILE INDEX REQUEST IS STORED FOR POSITIONING  
 10 # REQUESTS.  
 11 #  
 0123206 12 # 13. THE 'VERTRK' FIELD IS USED TO INDICATE THE TRACK  
 13 # TO BE USED WHEN VERIFYING THE TAPES POSITION.  
 14 # THIS FIELD SHOULD USUALLY BE THE SAME AS THE  
 15 # 'TRACK' FIELD WHEN NO ERROR CONDITIONS EXIST.  
 16 #  
 0123206 17 # 14. THE 'OTHERU' BIT INDICATES THAT ERROR RECOVERY  
 18 # SHOULD TERMINATE SINCE THE OTHER UNIT HAS ALREADY  
 19 # BEEN USED TO ATTEMPT A RECOVERY AND AN ERROR STILL  
 20 # EXISTS OR A NEW ONE HAS OCCURED IN THE USE OF THE  
 21 # OTHER UNIT.  
 22 #  
 0123206 23 # 15. THE 'ERNA' BIT INDICATES THAT THE OPERATION NOW  
 24 # BEING ATTEMPTED CANNOT ALLOW FULL ERROR RECOVERY  
 25 # THUS LIMITING THE RECOVERABILITY OF DATA.  
 26 #  
 0123206 27 # 16. THE 'SEEZ' BIT INDICATES THAT CONTROL OF THE TAPE  
 28 # SYSTEM WAS GAINED BY THE SEIZE MACRO. THIS GIVES  
 29 # THE CLIENT CERTAIN PRIVILEGES NOT AFFORDED TO THE  
 30 # USERS OF THE OPEN MACRO.  
 31 #  
 0123206 32 # 17. THE 'PHYBLK' FIELD HOLDS THE PHYSICAL BLOCK NUMBER  
 33 # OF THE START OF THE FILE BEING USED CURRENTLY.  
 34 #  
 0123206 35 # 18. THE 'TRACK' FIELD INDICATES THE TRACK TO BE  
 36 # USED FOR ALL CLIENT READ AND WRITE REQUESTS.  
 37 #  
 0123206 38 # 19. THE 'DUP' BIT INDICATES THAT THE OPENED FILE  
 39 # IS OF THE WRITE DUPLICATE TYPE. A BLOCK WRITTEN  
 40 # BY THE CLIENT WILL BE AUTOMATICALLY WRITTEN ON  
 41 # THE MATE UNIT, IF INSERVICE.  
 42 #  
 0123206 43 # 20. THE 'EXPLIC' BIT INDICATES THAT THE CLIENT HAS  
 44 # SPECIFIED THE TAPE TO BE USED IN THE OPEN OPERATION.  
 45 #  
 0123206 46 # 21. THE 'EVOD' BIT INDICATES WHICH TAPE THE CLIENT  
 47 # SPECIFIED. THE EVEN OR ODD ONE IN THE MATED PAIR  
 48 # ON WHICH THE FILE IS LOCATED.  
 49 #

COMMON TAPE HANDLER

PR-1C957-50

DATA LAYOUTS

0:43:06 2/06/81 \*\*\*\*

TAPE CONTROL BLOCK

CTAPH W77D

0123206 01 # 22. THE 'LASTBLK' FIELD INDICATES THE ENDING PHYSICAL  
02 # BLOCK NUMBER OF THE FILE.  
03 #

0123206 04 # 23. THE 'ENDTRK' FIELD INDICATES THE ENDING TRACK OF  
05 # THE FILE.  
06 #

0123206 07 # 24. THE 'REPK' BIT INDICATES THAT A REPACK OF THE TAPE  
08 # HAS BEEN SCHEDULED FOR WHEN THE TCB IS RELEASED BY  
09 # THE CLIENT.  
10 #

0123206 11 # 25. THE 'DIAGBITS' FIELD INDICATE WHAT MODE THE  
12 # TAPE HANDLER SHOULD RUN UNDER DURING SPECIFIC  
13 # PHASES OF TAPE DIAGNOSTICS.  
14 #

0123206 15 # 26. THE 'TAPNO' FIELD INDICATES THE TAPE NUMBER  
16 # OF THE TAPE BEING USED AT THIS TIME.  
17 #

0123206 18 # 27. THE 'BUFCT' FIELD IS A COUNTER USED BY THE INTERRUPT  
19 # LEVEL CODE TO KEEP TRACK OF HOW MANY TDC BUFFERS HAVE  
20 # BEEN USED SO FAR IN A READ OR WRITE OPERATION.  
21 #

0123206 22 # 28. THE 'STATEWRD' AND 'STATEFLG' FIELDS ARE THE MAIN  
23 # STATE SCHEDULING FIELDS FOR A TAPE OPERATION. THE  
24 # 'STATEWRD' IS COMPOSED OF 4-4BIT FIELDS WHICH ARE  
25 # A PUSH-PULL SCHEDULING STACK. THE LOW 4 BITS SHOW WHICH  
26 # STATE IS IN CURRENT OPERATION. 3 MORE FIELDS EXIST  
27 # ABOVE THE LOW 4 BITS FOR STACKING THE NEXT STATES TO  
28 # GAIN CONTROL WHEN THE CURRENT ONE RELINQUISHES CONTROL.  
29 # THE 'STATEFLG' FIELD IS ALSO 4-4BIT FIELDS WHICH MOVE  
30 # WITH THE 4-4BIT STATEWRD FIELDS. THEY INDICATE WHICH  
31 # SUBSTATE IS IN CONTROL WITHIN THE STATE CURRENTLY  
32 # IN PROGRESS.  
33 #

0123206 34 # 29. THE 'TIMEK' FIELD IS USED TO STORE TIMING CONSTANTS.  
35 #

0123206 36 # 30. THE 'LSTCOM' FIELD INDICATES THE LAST MOTION ORDER  
37 # SENT TO THE TDC AS A RESULT OF A CLIENT REQUEST.  
38 #

0123206 39 # 31. THE 'ORIGIN' FIELD SAVES THE STARTING TRACK AND BLOCK  
40 # NUMBER OF THE FILE BEING USED BY THE CLIENT. THIS IS  
41 # REQUIRED SINCE THE 'PHYBLK' FIELD GETS MODIFIED FOR  
42 # FILES WHICH BLEED ON TO THE NEXT TRACK.  
43 #

0123206 44 # 32. THE 'TORLOK' AND 'SNER' BITS ARE USED IN THE BASE LEVEL  
45 # DETECTION OF A TAPE-OFF-REEL CONDITION.  
46 #

0123206 47 # 33. THE 'LSTGOOD' FIELD IS USED TO STORE THE BLOCK NUMBER  
48 # OF THE LAST VERIFIED GOOD BLOCK READ IN BY THE TAPE  
49 # HANDLER DURING READ OPERATIONS. IT IS USED IN MAINTAINING

COMMON TAPE HANDLER

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DATA LAYOUTS

0:43:06 2/06/81 \*\*\*\*

TAPE CONTROL BLOCK

CTAPH

W77D

0123206

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01 # RELIABLE POSITIONING AND ERROR RECOVERY.
02
03 # 34. THE '5MRTN' BIT IS USED WHEN A CLIENT WISHES INTERRUPT
04 # LEVEL CONTROL DURING TIMED INTERRUPTS. THE INTERRUPT
05 # LEVEL TAPE HANDLER FIRST FILLS THE IO_BUFF AREA WITH
06 # THE DATA FROM THE TAPE BLOCK, THEN BRANCHES TO THE CLIENT.
07 # IF THE CLIENT DOES A RETURN 0, NO MORE INTERRUPT CONTROL
08 # IS NEEDED IF THE CLIENT DOES A RETURN 1, THIS BIT IS SET
09 # TO 1. ON THE NEXT INTERRUPT IF IS NO WORK FOR
10 # THE TAPE HANDLER CONTROL IS GIVEN BACK TO THE CLIENT.

14 TCB LAYOUT 16,FLTBLK
15 REQ ITEM 4 # REQUEST BITS
16 REQSTP ITEM 1 # STOP REQUEST BIT
17 MAINT ITEM 1 # MAINTENANCE REQUEST BIT
18 WSI ITEM 1 # WRITE STOP INT. EXPECTED.
19 ABWRT ITEM 1 #ABSOLUTE WRITE REQUEST
20 IOCMP ITEM 1 # I/O SUCCESS FLAG.
21 SRFAL ITEM 1 # CRC FAIL
22 STPST ITEM 1 #STOP DATA STORAGE
23 CLIENT ITEM 5 # CLIENT NUMBER
24 HOFILNAM ITEM 4 #HIGH BITS OF NAME ADR.
25 LOSKIP 0,0
26 FILNAM ITEM 16 # FILE ADDRESS NAME LOW ORDER BITS (LOB)
27 HOCONPT ITEM 4 #HIGH BITS OF CONT ADR.
28 LOSKIP 0,0
29 CONTLPT ITEM 16 # LOW BITS OF CLIENT CONTROL ROUTINE.
30 LOGBLK ITEM 11 # CLIENTS LOGICAL INDEX INTO FILE
31 VERTRK ITEM 2 #TRACK VERIFY WILL BE DONE ON
32 OTHERU ITEM 1 # OTHER UNIT USED IN RECOVERY ALREADY
33 ERNA ITEM 1 #ERROR NOT ALLOWED BIT
34 SEEZ ITEM 1 #SIEZE FUNCTION IP.
35 PHYBLK ITEM 11 # PHYSICAL LOCATION OF FILE.
36 TRACK ITEM 2 # TAPE TRACK
37 DUP ITEM 1 # DUPLICATED FILE
38 EXPLIC ITEM 1 # EXPLICIT TAPE UNIT REQUEST
39 EVOD ITEM 1 # EVEN OR ODD TU FOR EXPLICIT TAPE REQUESTS.
40 LASTBLK ITEM 11 # LAST BLOCKS IN FILE.
41 ENDTRK ITEM 2
42 REPK ITEM 1 #REPACK TAPE REQUEST
43 DIAGBITS ITEM 2
44 TAPNO ITEM 2 # TAPE NUMBER
45 LOSKIP 0,0
46 BUFCT ITEM 4 # BUFFER COUNT
47 LOSKIP 0,0
48 STATEWRD ITEM 16 # STATE STACK WORD (4 BITS PER STATE)
49 STATEFLG ITEM 16 # STATE FLAGS (4 BITS PER STATE)

```

COMMON TAPE HANDLER

PR-1C957-50

DATA LAYOUTS  
TAPE CONTROL BLOCK

0:43:06 2/06/81 \*\*\*\*  
CTAPH W770

01	TIMEK	ITEM	16	# TIME CONSTANT STORAGE
02	LSTCOM	ITEM	16	# LAST ORDER SENT TO TDC AT BASE
03	ORIGIN	ITEM	13	# ORIGIN OF FILE. BLK AND TRACK.
04	TORLOK	ITEM	1	#TAPE OF REEL FLG
05	SNER	ITEM	1	#SEEN TAPE OFF REEL
06	5MRTN	ITEM	1	#CLIENT WISHES INTERRUPT CONTROL IF BR FLAG=0
07	LSTGOOD	ITEM	11	#LAST GOOD BLOCK READ IN
08		ITEM	2	
09		ITEM	2	
10		ITEM	1	
11		LOEND		

TCB	-003- 12 #																	
00	CLIENT NUMBER										STPST	SRFAL	IOCMP	ABWRT	WSI	MAINT	IREQSTP	REQ
01	REQUEST BITS																	
02	HOFILNAM																	
03	HIGH BITS OF NAME ADR.																	
04	FILNAM																	
05	FILE ADDRESS NAME LOW ORDER BITS (LOB)																	
06	HOCONPT																	
07	HIGH BITS OF CONT ADR.																	
08	CONTLPT																	
09	LOW BITS OF CLIENT CONTROL ROUTINE.																	
10	SEEZ	ERNA	OTHERU	VERTRK												LOGBLK		
11	CLIENTS LOGICAL INDEX INTO FILE																	
12	EVOD	EXPLIC	DUP	TRACK												PHYBLK		
13	PHYSICAL LOCATION OF FILE.																	
14	DIAGBITS	REPK	ENDTRK												LASTBLK			
15	LAST BLOCKS IN FILE.																	
16																		
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96																		
97																		
98																		
99																		
100																		

COMMON TAPE HANDLER

PR-1C957-50

DATA LAYOUTS

MAINTENANCE SAVE BLOCK

CTAPH W77D

01 # THIS IS THE LAYOUT OF THE SAVE AREA USED BY THE ERROR RECOVERY  
 02 # STATE. CRITICAL CLIENT DATA IS SAVED HERE SO THAT IT CAN BE  
 03 # RESTORED TO THE PRE-ERROR STATE IF THE RECOVERY IS SUCCESSFULL.  
 04 # THE STATEWRD AND STATEFLG AREAS ARE SAVED ALONG WITH THE  
 05 # PHYBLK, LSTCOM, LOGBLK AND LSTGOOD FIELDS OF THE TCB.  
 06 LAYOUT 6, FLTBLK  
 07 SVST ITEM 16 # STATE SAVE WORD  
 08 SVFLG ITEM 16 # FLAG SAVE WORD  
 09 SVBASE ITEM 16 # SAVE THE BASE BLOCK OF FILE  
 10 SVCOM ITEM 16 # LAST BASE LEVEL TDC COMMAND  
 11 SVINDX ITEM 16 # SAVE CLIENTS LOGICAL INDEX  
 12 SVLSTGOOD ITEM 16 # SAVED LAST GOOD BLOCK READ IN  
 13 LOEND

-003- 14 #

00	SVST
01	STATE SAVE WORD
02	SVFLG
03	FLAG SAVE WORD
04	SVBASE
05	SAVE THE BASE BLOCK OF FILE
06	SVCOM
07	LAST BASE LEVEL TDC COMMAND
08	SVINDX
09	SAVE CLIENTS LOGICAL INDEX
10	SVLSTGOOD
11	SAVED LAST GOOD BLOCK READ IN

COMMON TAPE HANDLER

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CTAPH

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DATA LAYOUTS

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TAPE STATUS

CTAPH W77D

01 # THIS IS THE LAYOUT OF THE MEMORY OF EACH TAPES SOFTWARE STATUS.  
 02 # EACH TAPE HAS AN ENTRY WHICH SHOWS ITS PRESENT TAPE POSITION (PTP),  
 03 # IF IT IS OUT OF SERVICE (TSTATE), IF IT HAS PASSED A COMPARE WHILE  
 04 # OUT OF SERVICE (COMPROK), IF THE PTP IS CURRENT (POSOK), IF IT IS  
 05 # TSTATE IS SET), AND FINALLY IF A BLOCK SEQUENCE ERROR OCCURRED  
 06 # IN THE READ ONLY STATE (REDON) (WHICH DOUBLES AS A DIAG. PASS BIT IF  
 07 # DURING A READ OPERATION.  
 08 TUSTAT LAYOUT 1, FLTBLK  
 09 PTP ITEM 11 #PRESENT TAPE POSITION  
 10 TSTATE ITEM 1 #OOS BIT.  
 11 COMPROK ITEM 1 #COMPARE BIT  
 12 POSOK ITEM 1 #POSITION VERIFIED  
 13 REDON ITEM 1 # TAPE IN READ ONLY STATE.  
 14 SQERR ITEM 1 #BLOCK OUT OF ORDER READ IN  
 15 LOEND

TUSTAT -003- 16 #

001	SQERR	REDON	POSOK	COMPROK	TSTATE	PTP PRESENT TAPE POSITION										
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

COMMON TAPE HANDLER

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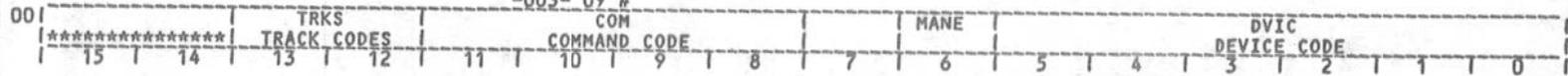
DATA LAYOUTS

0:43:06 2/06/81 \*\*\*\*

TAPE UNIT COMMAND LAYOUT

CTAPH W77D

01 # THIS IS THE LAYOUT OF A TAPE UNIT CONTROLLER ORDER.  
 02 LAYOUT 1,FLTBLK  
 03 DVIC ITEM 6 # DEVICE CODE  
 04 MANE ITEM 1 # MANUAL ENABLE  
 05 ITEM 1  
 06 COM ITEM 4 # COMMAND CODE  
 07 TRKS ITEM 2 # TRACK CODES  
 08 LOEND  
 09 #



COMMON TAPE HANDLER

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0:43:06 2/06/81 \*\*\*\*

DATA LAYOUTS

TAPE STATUS REGISTER.

CTAPH

W77D

01 # THIS IS THE LAYOUT OF THE TAPE STATUS RECIEVED FROM  
 02 # SENDING THE TAPE STATUS ORDER. THIS STATUS IS TYPICALLY  
 03 # REFERED TO AS THE SECONDARY STATUS ORDER RESPONSE.  
 04 TAPSTAT LAYOUT 1,FLTBLK  
 05 DEVCODE ITEM 6 # DEVICE CODE FOR TAPE.  
 06 WENBL ITEM 1 # WRITE ENABLE.  
 07 TUR ITEM 1 # TAPE UNIT READY.  
 08 EOT ITEM 1 # END OF TAPE.  
 09 TOR ITEM 1 # TAPE OFF RECL.  
 10 TIM ITEM 1 # TAPE IN MOTION  
 11 DDT ITEM 1 # DATA DETECT.  
 12 MTCE ITEM 1 # MAINTENANCE ACTIVE.  
 13 REWND ITEM 1 # TAPE REWINDING.  
 14 BOT ITEM 1 # BEGINNING OF TAPE  
 15 MOP ITEM 1 # MANUAL OPERATION ACTIVE  
 16 LOEND

TAPSTAT -003- 17 #

00	MOP	BOT	REWND	MTCE	DDT	TIM	TOR	EOT	TUR	WENBL	DEVCODE DEVICE CODE FOR TAPE.							
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

COMMON TAPE HANDLER

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## CONSTANT DEFINITIONS

CTAPH

W77D

## CONSTANTS

	01 # TCB STATE CONSTANTS		
0000001	02 COPYST EQU	1	# TAPE TO TAPE COPY STATE
0000000	03 MONST EQU	0	# MONITORING STATE
0000002	04 REREAD EQU	2	# MAINTENANCE STATE
0000003	05 POSST EQU	3	# POSITIONING STATE
0000004	06 READST EQU	4	# READING STATE
0000005	07 SEIZST EQU	5	# SIEZURE STATE
0000006	08 TIMST EQU	6	# TIMING STATE
0000007	09 VERST EQU	7	# VERIFY POSITION STATE
0000010	10 WRITST EQU	8	# WRITING STATE
0000011	11 MRFST EQU	9	# TU INIT STATE (RESULTS FROM SYSTEM MRF, LEVEL 2)
0000012	13 REPAK EQU	10	#TAPE REPACK STATE
0000013	14 DIAGST EQU	11	
	17 # STATUS CODES FOR TUSTAT		
0004000	18 ACC0 EQU	1*ES(TSTATE)	
0010000	19 ACC1 EQU	2*ES(TSTATE)	
0014000	20 OOS EQU	3*ES(TSTATE)	
0000000	21 STATOK EQU	0*ES(TSTATE)	
	25 TUUTIL EQU	2	
0000002	26 AUDITFN EQU	7	
0000007	27 TUCDEV EQU	13	
0000015	28 BUFDEV EQU	11	
0000013			
	32 TUENABL TEXT	'TAPETBL+1'	
0000215	36 TMSTOP EQU	0(215)	

COMMON TAPE HANDLER

PR-1C957-50

## CONSTANT DEFINITIONS

0:43:06 2/06/81 \*\*\*\*

## CONSTANTS

CTAPH W77D

0123206 01 # THE CTAPH PROGRAM IS GIVEN CONTROL ONCE EVERY BASE LEVEL LOOP.  
 02 # THE CONTROL IS GIVEN TO THE CTAPH ENTRY POINT BY CBLM. THIS CODE  
 03 # HAS THE RESPONSIBILITY TO DO A QUICK BASE LEVEL DETECTION TEST  
 04 # ON ALL THE DEFINED TDC'S. THIS INVOLVES ASSURING THAT THE TDC'S  
 05 # APPEAR TO BE PROGRAM ACCESSABLE, HAVE A CARTRIDGE IN PLACE AND  
 06 # NOT WRITE PROTECTED AND THAT THE BUFFER UNITS ARE ACCESSABLE AND  
 07 # FINALLY THAT THE TAPES DO NOT APPEAR TO BE OFF OF THEIR REELS.  
 08 # TAPES MAY BE REMOVED FROM SERVICE IF ANYTHING LOOKS IRREGULAR.  
 09  
 10 # THE NEXT RESPONSIBILITY OF THIS BASE LEVEL MONITOR IS TO PASS  
 11 # CONTROL TO THE STATE SPECIFIED IN THE 1ST 4 BITS OF THE  
 12 # STATEWRD. TWELVE SEPERATE STATES HAVE BEEN DEFINED.  
 13  
 14 # 1. THE MONITOR STATE IS THE BASE LEVEL CODE WHICH  
 15 # INTERROGATES THE 'REQ' BITS IN THE TCB FOR INITIATING  
 16 # NEW REQUESTS. THIS STATE HAS A BINARY ZERO VALUE IN  
 17 # THE STATEWRD FIELD. THIS STATE GAINS CONTROL WHEN THE  
 18 # TCB IS NOT BEING USED BY A CLIENT OR THE CLIENTS LAST  
 19 # REQUEST HAS BEEN COMPLETED.  
 20  
 21 # IF THE TCB IS IDLE('REQ'=7) THE MONITOR STATE CAN AND  
 22 # WILL INITIATE A TAPE REPACK IF ONE HAS BEEN SCHEDULED  
 23 # AND NO CLIENT IS ACTIVE IN THE TCB.  
 24  
 25 # IF A NEW CLIENT REQUEST IS DETECTED, THE MONSTATE WILL PASS  
 26 # CONTROL TO THE FIRST ENTRY POINT OF THE PARTICULAR REQUEST.  
 27 # THESE FIRST ENTRY POINTS WILL SET UP INITIAL CONDITION AND  
 28 # SCHEDULE OTHER STATES TO GO IN PROGRESS TO CONTINUE THE  
 29 # EXECUTION OF THE CLIENT REQUEST.  
 30  
 31 # 2. THE COPY STATE CONTAINS THE SUBSTATE CONTROL FOR COPYING A  
 32 # FILE OFF OF ONE TAPE TO THE MATE UNIT, IF IT IS IN SERVICE.  
 33  
 34 # 3. THE RETRY STATE IS THE ERROR RECOVERY STATE.  
 35  
 36 # 4. THE POSITION STATE IS RESPONSIBLE FOR PLACING THE  
 37 # TAPES AT A SPECIFIED BLOCK NUMBER.  
 38  
 39 # 5. THE READ STATE CONTROLS THE READING OF A TAPE BLOCK(S).  
 40  
 41 # 6. THE SEIZURE STATE IS THE FIRST STATE CLIENTS GO THROUGH.  
 42 # IT POSITIONS THE CLIENT AT THE START OF THE REQUESTED  
 43 # FILE. IT HANDLES THE DIRECTORY LOOKUP.  
 44  
 45 # 7. THE TIMING STATE MEASURES ELAPSED TIME AND WILL NOT PASS  
 46 # CONTROL TO ANOTHER STATE UNTIL THE REQUESTED TIME HAS  
 47 # ELAPSED.  
 48  
 49 # 8. THE VERIFY STATE WILL ESTABLISH WHERE THE TAPE HEADS

COMMON TAPE HANDLER

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## CONSTANT DEFINITIONS

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## CONSTANTS

CTAPH

W77D

0123206	01 #	ARE POSITIONED.
	02	
	03 #	9. THE WRITE STATE WILL CARRY ON THE OPERATIONS REQUIRED TO
	04 #	WRITE A BLOCK ON THE TAPE.
0123206	05	
	06 #	10. THE MRF STATE HANDLES THE REQUIRED OPERATIONS THAT FOLLOW
	07 #	A SYSTEM INITIALIZATION.
0123206	08	
	09 #	11. THE PACK STATE HANDLES THE SOFTWARE OR MANUAL REQUEST
	10 #	FOR THE REPACKING OF THE INSERVICE TDC'S.
0123206	11	
	12 #	12. FINALLY THE DIAG STATE IS USED TO AVOID THE MONITOR
	13 #	STATE DURING DIAGNOSTICS. IT IS A NULL STATE WHICH
	14 #	SIMPLY PASSES CONTROL BACK TO CBLM.

COMMON TAPE HANDLER

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TAPE HANDLER  
MAIN TCB HANDLER

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0123206

01 CTAPH  
02 # THIS CODE IS THE BASE LEVEL MONITOR SECTION OF THE TAPE HANDLER.  
03 # IT IS ENTERED FROM CBLM ONCE A SYSTEM SCAN. IT IS CHARGED WITH  
04 # SCANNING THE TAPE UNITS TO DETECT GROSS ERROR CONDITIONS SUCH AS  
05 # NO SOFTWARE LINK TO THE INSERVICE TDCS, WRITE PROTECT ON AND THE  
06 # APPARENT REMOVAL OF A CARTRIDGE FROM THE TRANSPORT. IT ALSO CHECKS  
07 # FOR A TAPE OFF REEL FAILURE. REMOVAL OF A TDC CAN BE INITIATED HERE.

0123206 01 000000 130542 020006 TDATA

0123210 01 000002 004157 -----  
0123211 01 000003 031040 043317 CTSD  
0123213 01 000005 051347 -----  
0123214 01 000006 054174 ----- 0123410  
0123215 01 000007 040070 -----  
0123216  
0123216 01 000010 131600 043337 CTSD  
0123220 01 000012 042606 -----

11 # THE FIRST SECTION OF CODE CHECKS FOR THE HAND SHAKING BETWEEN  
12 # THE DIAGNOSTIC AND CTAPH. CERTAIN OR ALL CTAPH PROGRAM OPERATIONS  
13 # MUST BE INHIBITED UNDER CERTAIN DIAGNOSTIC TESTING. THESE PROHIBITIONS  
14 # ARE CONVEYED IN TWO BITS OF THE TCB (DIAGBITS). IF THE FIRST BIT IS  
15 # SET THE DIAGNOSTIC HAS REQUESTED THAT THE TAPE HANDLER REMAIN TOTALLY  
16 # DORMANT. THE SECOND BIT SET WILL INDICATE THAT THE DIAGNOSTIC WISHES  
17 # THE TAPE HANDLER TO GO INTO A NO-RECOVERY STATE. IT WILL SERVICE  
18 # ALL INTERRUPTS BUT WILL NOT DO ANY RECOVERY OR ERROR PRINTOUT OPERATIONS.  
19 LL R6,TAPETBL # GET BX CONSTANT FOR NUMBER OF TAPE UNITS  
AVAILABLE.  
21 SN R6,1  
22 LAL R2,TCBADR,RAO # SET UP TCBADR  
23 TBS N(DIAGBITS)(RAO),S(DIAGBITS) #IS DIAG IP  
24 BC BACKBASEX  
25 L R3,N(TAPNO)(RAD)  
26 TAPSTORD  
27 LAL R8,TUSTAT,RA1  
28 LX R8,R6(RA1) #GET STATUS OF UNIT ABOUT TO BE SCANNED.  
29 TAPEHL OW 0(13) # 11914  
-001- 30 NOTE \*\*\*\*\* THE FIRST ADDRESS OVERWRITTEN IS 000013 \*\*\*\*\*

0123221 01 000013 037000 114736 0114736

33 CPATCH2 BGNP 0(627) # 11914  
-001- 34 BL %X369  
-001- 35 NOTE CPATCH2 'CSECT'  
-001- 36 NOTE \*\*\*\*\* PATCH AREA BEGINS AT 000627 \*\*\*\*\*

0114736

0114736 04 000627 124213 -----  
0114737 04 000630 031620 043023 CTSD  
0114741 04 000632 011626 -----  
0114742 04 000633 030230 ----- CTSD  
0114743 04 000634 011226 -----  
0114744 04 000635 002620 177400

-001- 39 %X369 PATCHAREA  
40 # \*\*\* CHECK THE TDC STATUS AND UPDATE TDC LAMP ON THE SSP \*\*\*  
41 TBN R8,S(TSTATE) # TDC STATUS BIT  
42 LAL R9,CCKTSTAT,RA1  
43 RR R9,R6  
44 ICF R9,S(TDC0)  
45 RL R9,R6  
46 STM R9,0(RA1),MSK(8,8) # UPDATE TDC STATUS WRD  
47 # \*\*\*\*\*  
48 LAL R9,TUENABL,RA1  
49 ENDP # 11914

0114746 04 000637 031622 020007 TDATA  
0114750

COMMON TAPE HANDLER

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TAPE HANDLER

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MAIN TCB HANDLER

CTAPH W77D

```

0114750 04 000641 037000 123223 0123223 -001- 01 BL XXX371
-001- 02 NOTE ***** LAST PATCH ADDRESS USED IS 000642 *****
-001- 03 NOTE ***** NUMBER OF PATCH WORDS USED IS 12 (DECIMAL) *****

0123223 -001- 06 XXX371 OMCONTINUE
0123223 01 000015 103641 002015 07 LI R10,TSTAT
0123225 08 EOW # 11914
-001- 09 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000016 *****

0123225 01 000017 024213 ----- 12 TBN R8,S(TSTATE) #IS UNIT OOS
0123226 01 000020 055002 ----- 13 BNC NOMAN #NO
0123227 01 000021 026246 ----- 14 SBN R10,S(MANE) #SET MANUAL ENABLE

18 # THE TDCS THAT ARE DEFINED WILL BE SCANNED WITH A TAPE STATUS ORDER.
19 # ALL UNITS MUST REPORT BACK WITH A STATUS THAT INDICATES
0123230 20
21 # 1. WRITE ENABLE
22 # 2. TAPE UNIT READY
23 # 3. NO TAPE OFF REEL
0123230 24
25 # THE TAPE OFF REEL FLAG MUST BE UP ON 2 CONSECUTIVE SCANS IF THE TAPE
26 # IS MOVING (TIM). THIS IS BECAUSE IF THE TAPE IS MOVING DUE TO SOME
27 # LEGITIMATE OPERATION AND JUST HAPPENS TO BE CROSSING A BOT/EOT HOLE
28 # A MOMENTARY TAPE OFF REEL FLAG WILL GO ACTIVE. IF THE TAPE IS NOT
29 # MOVING AN ERROR CONDITION IS NOTED.
0123230 30
31 # ALL OF THE ABOVE ERRORS WILL RESULT IN THE REMOVAL OF THE TDC FROM
32 # SERVICE. THE TCB WILL BE CLEARED IF THE TAPE BEING REMOVED IS ACTIVE
33 # IN THE TCB.
0123230 34 NOMAN
0123230 01 000022 142626 ----- 35 LX R9,R6(RA1) # OBTAIN ENABLE ADDRESS.
0123231 36 CALL ORDEXCAB # SEND STATUS TO TAPE UNIT. JUST CARE IF THE
TAPE
0123231 01 000023 073032 ----- -001- 38 BSAI ordexCab # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
39 # RESPONSE SINCE IT MAY BE READING AND FAILING CRC CHECK.

0123232 01 000024 124001 ----- 41 TBN R0,1
0123233 01 000025 054032 ----- 42 BC NORESPONSE
0123234 01 000026 017660 177715 43 CIRM R11,M(TUR)+M(WENBL)+TUCDEV,0,M(WENBL)+M(TUR)+M(DEVICODE) # CHECK
THAT TAPE RESPONDED AND TUR SET.

0123236 01 000030 003024 ----- 45 LN R1,TURER
0123237 01 000031 055027 ----- 46 BNC REMOVMS
0123240 01 000032 024271 ----- 47 TBN R11,S(TOR) #IS TAPE OFF REEL
0123241 01 000033 055012 ----- 48 BNC TUSCAN
0123242 01 000034 051336 ----- 49 TBS N(TORLOK)(RA0),S(TORLOK) #HAS THE TAPE BEEN OFF REEL

```

COMMON TAPE HANDLER

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## TAPE HANDLER

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## MAIN TCB HANDLER

CTAPH W77D

```

0123243 01 000035 054006 ----- 0123251      01      BC      ZEROMV
0123244 01 000036 024272 -----              02      TBN      R11,S(TIM)      #IS TAPE MOVING.
0123245 01 000037 055006 ----- 0123253      03      BNC      TUSCAN      #NO IGNORE AT THIS TIME - MAY BE BOT HOLES
0123246 01 000040 061336 -----              04      SBS      N(TORLOK)(RAD),S(TORLOK)
0123247 01 000041 061356 -----              05      SBS      N(SNER)(RAD),S(SNER) #FLAG ERROR IN SCAN.
0123250 01 000042 053031 ----- 0123301      06      B      BXTST

0123251      08 ZEROMV
0123251 01 000043 162336 -----              09      ZBS      N(TORLOK)(RAD),S(TORLOK) #CLEAR FLAG
0123252 01 000044 053014 ----- 0123266      10      B      REMOVMS

0123253      14 TUSCAN
0123253 01 000045 120066 -----              15      CR      R3,R6      #IS THIS THE UNIT SPECIFIED IN THE TCB
0123254 01 000046 055003 ----- 0123257      16      BNC      NOSAVE
0123255 01 000047 072631 -----              17      HN      R9,9      #SAVE FOR LATER USE
0123256 01 000050 006113 -----              18      LR      R4,R11     #SAVE RESPONSE FOR BASE LEVEL STATE IN
                                           CONTROL.

23 # THE BUFFER UNIT WILL NOW BE SCANNED. IT MUST NEVER RESPOND WITH A
24 # MAINTENANCE START CODE. IF A MAINTENANCE START CODE OR NO RESPONSE
25 # IS SENSED, A REMOVAL OF THE TDC WILL BE EXECUTED.
26 NOSAVE
0123257      27      LI      R10,BSTAT      # SEND A BUFFER STATUS CHECK TO BUFFER UNIT.
0123257 01 000051 103641 000013      28      CALL     ORDEXCAB
0123261      29      BSAI     ordexCab      # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0123261 01 000053 073032 ----- -001- 30      BPAX     RD
0123262 01 000054 156000 -----              31      B      BXTST      # BUFFER UNIT RESPONSE OK, KEEP GOING
0123263 01 000055 153016 ----- 0123301      32      B      BUFR

0123265      34 NORESPONSE
0123265 01 000057 103023 -----              35      LN      R1,NRESP
0123266      36 REMOVMS
0123266      37      CALL     REMOVTU      # REMOVE AND PRINTOUT
0123266 01 000060 137020 126766 0126766 -001- 38      BSA      REMOVTU
0123270 01 000062 155011 ----- 0123301      39      BNC      BXTST      # TDC ALREADY REMOVED
0123271 01 000063 017440 017407 -----              40      CIRM     R2,IDL,E,0,M(REQ)+M(REQSTP)
0123273 01 000065 054006 ----- 0123301      41      BC      BXTST
0123274 01 000066 014042 -----              42      TZ      R2
0123275 01 000067 054004 ----- 0123301      43      BC      BXTST
0123276 01 000070 017143 000003      44      CRM      R6,R3,M(TAPNO)      # IS TAPE UNIT JUST REMOVED ACTIVE IN TCB.
0123300 01 000072 054111 ----- 0123411      45      BC      CLOSESTATE      # YES ZERO OUT TCB. FORCE ABORT IF ACTIVE
0123301      46 BXTST
0123301 01 000073 136140 123216 0123216      47      BX      R6,TAPSTORD      # CONTINUE SYSTEM SCAN.
0123303 01 000075 051356 -----      48 # INITIALIZE TOR AUDIT BIT IF NO TOR ERROR OCCURED THIS SCAN.
                                           49-      TBS      N(SNER)(RAD),S(SNER) #WAS ERROR SEEN THIS SCAN

```

## COMMON TAPE HANDLER

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TAPE HANDLER

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MAIN TCB HANDLER

CTAPH W77D

```

0123304 01 000076 062356 ----- 01      ZBS      N(SNER)(RAD),S(SNER)
0123305 01 000077 054002 ----- 02      BC       NOCLRTOR
0123306 01 000100 062336 ----- 03      ZBS      N(TORLOK)(RAD),S(TORLOK)

```

0123307

```

07 # ALL THE PRELIMINARY BASE LEVEL OPERATIONS HAVE BEEN COMPLETED.
08 # NOW PREPARATIONS ARE MADE TO PASS CONTROL TO THE STATE IN CONTROL
09 # OF THE TCB. (THE LOW 4 BITS OF STATEWRD).
10
11 # THE TAPE CONTROLLER STATUS IS PLACED IN R11 AND THE SOFTWARE
12 # TAPE STATUS WORD IS PLACED IN R3. RA1 WILL BE LEFT POINTING
13 # TO THE TUSTAT WORD ASSIGNED TO THE TDC SPECIFIED IN THE TDC.
14 # THE STATE'S SUBSTATE FLAGS ARE PLACED IN R1 (LOW 4 BITS OF STATEFLG).
15 NOCLRTOR

```

0123307

```

0123307 01 000101 103641 002015
0123311 01 000103 006264 -----
0123312 01 000104 003057 -----

```

0123313

```

0123313 01 000105 073024 -----
0123314 01 000106 140150 -----
0123315 01 000107 014142 -----
0123316 01 000110 006061 -----
0123317 01 000111 040012 -----
0123320 01 000112 014002 -----
0123321 01 000113 040033 -----
0123322 01 000114 014022 -----
0123323 01 000115 010417 -----

```

```

16      LI      R10,TSTAT
17      LR      R11,R4          #RESTORE TAPE STATUS
18      LN      R2,MSK(4)
19 # R11 WILL CONTAIN TAPE STATUS
20      CALL   STATSET          # SET R3=PTP AND RA1 TO STATUS WORD
21      BSAI   SXTATSET        # SUBROUTINE STATSET IS IN PROGRAM CTAPH
22      L      R6,N(TAPNO)(RAD)
23      NR      R6,R2          # SET UP TAPE NUMBER AS SPECIFIED IN TCB.
24      LR      R3,R1
25      L      R0,N(STATEWRD)(RAD)
26      NR      R0,R2
27      L      R1,N(STATEFLG)(RAD)
28      NR      R1,R2          # R1 CONTAINS STATE FLAGS (SUBSTATE)
29      RLN    R0,1
30 # GO TO THE STATE IN CONTROL.
31      BPAX   R0              # GO TO STATE IN CONTROL
32      BL     MONSTATE
33      BL     COPYSTATE
34      BL     RETRYSTATE
35      BL     POSIT
36      BL     READSTATE
37      BL     SIEZURE
38      BL     TIMING
39      BL     VERIFY
40      BL     WRITESTATE
41      BL     MRFINIT
42      BL     PACKTAPE
43      BL     BACKBASE

```

```

0123324 01 000116 056000 -----
F0123325 01 000117 137000 123357 0123357
0123327 01 000121 137000 124721 0124721
0123331 01 000123 137000 124763 0124763
0123333 01 000125 137000 124151 0124151
F0123335 01 000127 137000 123514 0123514
F0123337 01 000131 137000 123632 0123632
0123341 01 000133 137000 124143 0124143
F0123343 01 000135 137000 123740 0123740
0123345 01 000137 137000 124325 0124325
0123347 01 000141 137000 124643 0124643
0123351 01 000143 137000 125277 0125277
F0123353 01 000145 137000 123727 0123727

```

COMMON TAPE HANDLER

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TAPE HANDLER  
MAIN TCB HANDLER

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CTAPH W77D

0123355  
0123355 01 000147 103025 -----  
0123356 01 000150 053710 ----- 0123266

01 # A BUFFER ERROR EXISTS, SET UP PRINT CONTROL.  
02 BUFER  
03 LN R1,ORDER # SET UP PRINTOUT CONTROL.  
05 B REMOVMS

COMMON TAPE HANDLER

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TAPE HANDLER

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BASE HANDLER TASK DISPENSOR

CTAPH W77D

0123357

01 MONSTATE  
 02 # THE MONITOR STATE (MONSTATE) IS ENTERED WHENEVER THE STATEWRD IN  
 03 # THE TCB IS ZERO. THIS CAN OCCUR WHEN THE TCB IS NOT UNDER CLIENT  
 04 # CONTROL OR WHEN A SPECIFIC CLIENT REQUEST HAS BEEN COMPLETED. IN  
 05 # ANY CASE THE TCB IS AWAITING A NEW REQUEST TO BE PLANTED IN THE  
 06 # REQ BITS.

0123357

07  
 08 # THE FIRST OBJECTIVE OF MONSTATE IS TO OBTAIN THE REQ BITS AND  
 09 # RESTORE THEM TO THE IDLE STATE. THEN IT TRANSFERS CONTROL BASED UPON  
 10 # THESE BITS TO 8 SEPERATE ENTRY POINTS. MOST OF THESE ARE INITIAL ENTRY  
 11 # POINTS TO CLIENT REQUEST SERVICING SETUP ROUTINES. OTHERS PERFORM  
 12 # MAINTENANCE FUNCTIONS AND ONE IS THE SOFTWARE ASSOCIATED WITH THE  
 13 # IDLE REQ BIT CONFIGURATION ITSELF.

0123357

14  
 15 # THE 8 ENTRY POINTS ARE;

0123357

16  
 17 # 1. MRFPROG- RESPONSIBLE FOR ACTIONS TO BE TAKEN AFTER A MRF.  
 18 # THE VALUE OF REQ FOR THIS REQUEST IS ALWAYS ZERO. THE REASON  
 19 # IS A MRF WILL CLEAR ALL TAPE CONTROL WORDS THUS PROVIDING AN  
 20 # EASY DETECTION FOR THE TAPE PROGRAMS THAT A MRF HAD OCCURRED.

0123357

21  
 22 # 2. READPROG- THE INITIAL ENTRY POINT FOR A CONTINUOUS READ REQUEST.

0123357

23  
 24 # 3. READ1PROG- THE INITIAL ENTRY POINT FOR A READ-A-BLOCK REQUEST.

0123357

25  
 26 # 4. WRITEPROG- THE INITIAL ENTRY POINT FOR A WRITE-A-BLOCK REQUEST.

0123357

27  
 28 # 5. POSITIONLOD- THE INITIAL ENTRY POINT FOR A POSITION OR BACKSPACE.  
 29 # REQUEST.

0123357

30  
 31 # 6. CLOSESTATE- THE INITIAL ENTRY POINT FOR A CLOSE REQUEST.

0123357

32  
 33 # 7. COPYPROG- THE INITIAL ENTRY POINT FOR A FILE COPY REQUEST.

0123357

34  
 35 # 8. IDLSTATE- THIS IS THE ENTRY POINT FOR THE STABLE REQ BIT  
 36 # CONFIGURATION. IT INDICATES NO NEW REQUEST HAS BEEN OBTAINED  
 37 # THIS SCAN.

0123357 01 000151 103047 -----  
 0123360 01 000152 002040 000017  
 0123362 01 000154 003402 000017  
 0123364 01 000156 056000 -----  
 0123365 01 000157 153073 ----- 0123460  
 0123366 01 000160 153040 ----- 0123426  
 0123367 01 000161 153052 ----- 0123441  
 0123370 01 000162 153054 ----- 0123444  
 0123371 01 000163 153250 ----- 0123641  
 0123372 01 000164 153017 ----- 0123411  
 0123373 01 000165 153105 ----- 0123500

39 LN R2, IDLE  
 40 STM R2, N(REQ) (RAD), M(REQ) # IDLE OUT TCB AND GET CURRENT REQUEST  
 41 NI RD, M(REQ)  
 42 BPAX RD # GO TO REQUESTED ROUTINE  
 43 B MRFPROG # END  
 44 B READPROG  
 45 B READ1PROG  
 46 B WRITEPROG  
 47 B POSITIONLOD  
 48 B CLOSESTATE  
 49 B COPYPROG

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 29

TAPE HANDLER  
BASE HANDLER TASK DISPENSOR

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0123374

			04 IDLESTATE	
			05 # THIS CODE IS EXECUTED WHEN NO STATE EXISTS IN THE STATEWRD. IT	
			06 # WILL CHECK TO SEE IF A REPACK OF THE TAPE HAS BEEN SCHEDULED. THIS	
			07 # IS DONE THROUGH THE INTERROGATION OF THE REPK BIT IN THE TCB. A	
			08 # REPACK WILL BE ALLOWED ONLY IF THE TAPE SYSTEM HAS NO CLIENT IN	
			09 # CONTROL OF IT. THE ABSENCE OF A CLIENT WILL RESULT IN THE REPACK	
			10 # STATE SET UP IN THE TCB STATEWRD. IF A CLIENT IS IN CONTROL, THE	
			11 # REQSTP BIT IS RESET TO ALLOW FURTHER CLIENT REQUESTS TO BE HONORED.	
0123374	01	000166 151327	-----	12 TBS N(REPK)(RAD),S(REPK)
0123375	01	000167 055012	----- 0123407	13 BNC NOREPK
0123376	01	000170 040000	-----	14 L RD,N(CLIENT)(RAD)
0123377	01	000171 003402	174000	15 NI RD,M(CLIENT) #A. REPACK IS REQUESTED IS TCB IDLE
0123401	01	000173 055006	----- 0123407	16 BNC NOREPK
0123402	01	000174 003012	-----	17 LN RD,REPAK #SET UP REPACK STATE
0123403	01	000175 044012	-----	18 ST RD,N(STATEWRD)(RAD)
0123404	01	000176 062327	-----	19 ZBS N(REPK)(RAD),S(REPK) #CLEAR REPACK REQUEST BIT
0123405	01	000177 061100	-----	20 SBS N(REQSTP)(RAD),S(REQSTP) # STOP FURTHER REQUESTS
0123406	01	000200 053321	----- 0123727	21 B BACKBASE
0123407				22 NOREPK
0123407	01	000201 162100	-----	23 ZBS N(REQSTP)(RAD),S(REQSTP) # ALLOW MORE REQUESTS
0123410				24 BACKBASEX
0123410	01	000202 153317	----- 0123727	25 B BACKBASE

COMMON TAPE HANDLER

PR-1C957-50

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

CLOSE STATE INITIAL ENTRY

CTAPH W77D

```

0123411          01 CLOSESTATE
02 # THE CLOSE STATE IS ENTERED TO CLEAR UP THE TCB AND ALLOW ITS ACCESS
03 # TO OTHER CLIENTS. THE CLIENT IN CONTROL OF THE TCB MAY EXECUTE
04 # THE 'CLOSE' MACRO TO INITIATE THE CLEARING OF THE TCB OR THE CTAPH
05 # PROGRAM MAY FORCE A CLOSE OPERATION DUE TO UNRECOVERABLE ERRORS.
06 # THE REPK BIT IS LEFT UNTOUCHED IN THE CLEARING OPERATION. THE
07 # IDLE STATE IS JAMMED INTO THE REQ BITS.

0123411 01 000203 103401 000017          09 LI RO,15
10 TAPEHL OW 0(205) # 13669
-001- 11 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000205 *****

0123413 01 000205 037000 120074 0120074 14 TFAPCH2 BGNP 0(1100) # 13669
-001- 15 BL %X384
-001- 16 NOTE TFAPCH2 'CSECT'
-001- 17 NOTE ***** PATCH AREA BEGINS AT 001100 *****

0120074          -001- 20 %X384 PATCHAREA
0120074 07 001100 131420 043317 CTSD 21 LAL R1,TCBADR,RA1
0120076 07 001102 017433 017437 22 CIRM R1,DIAGT,S(CLIENT),M(CLIENT)/E(S(CLIENT))
23 DPATCH NOTE ! CHANGE BNCL TO BNC
0120100 07 001104 050400 123415 0123415 24 BNCL LREPK
0120102 07 001106 061777 ----- 25 SBS 15(RA1),15
26 DPATCH NOTE ! CHANGE BL TO B
0120103 07 001107 037000 123417 0123417 27 BL LNIDLE
0120105          28 ENDP NR # 13669
-001- 29 NOTE ***** LAST PATCH ADDRESS USED IS 001110 *****
-001- 30 NOTE ***** NUMBER OF PATCH WORDS USED IS 9 (DECIMAL) *****

0123415          33 LREPK
0123415 01 000207 140447 ----- 34 L R2,N(REPK)(RA1) # MUST SAVE REPACK REQUEST
0123416          35 EOW # 13669
-001- 36 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000207 *****

0123416          39 CALL CLR_WRDS # ZERO OUT THE ENTIER TCB
0123416 01 000210 073031 ----- -001- 40 BSAI clr_wrds # SUBROUTINE CLR_WRDS IS IN PROGRAM CSYSUB
41 TAPEHL OW 0(211) # 13669
-001- 42 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000211 *****

0123417          45 LNIDLE
0123417 01 000211 103007 ----- 46 LN RO,IDLE # PREPARE IDLE STATE
0123420          47 EOW # 13669
-001- 48 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000211 *****

```

COMMON TAPE HANDLER

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TAPE HANDLER

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CLOSE STATE INITIAL ENTRY

CTAPH W77D

```

0123420 01 000212 024055 ----- 01 TBN R2,S(REPK) #WAS A REPACK REQUEST PENDING
0123421 01 000213 055003 ----- 02 BNC NOACTION
0123422 01 000214 061727 ----- 03 SBS N(REPK)(RA1),S(REPK)
0123423 01 000215 026004 ----- 04 SBN RO,S(REQSTP)
-001- 05 TAPEHL OW 0(216) # 13669
-001- 06 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000216 *****

0123424 09 NOACTION
0123424 01 000216 137000 120114 0120114 -001- 10 TFAPCH2 BGNP 0(1120) # 13669
-001- 11 BL XXX397
-001- 12 NOTE TFAPCH2 'CSECT'
-001- 13 NOTE ***** PATCH AREA BEGINS AT 001120 *****

0120114 -001- 16 XXX397 PATCHAREA
17 DDELETE NOTE 1
0120114 07 001120 106020 ----- 18 LR R1,RO
0120115 07 001121 002420 003777 19 STM R1,N(REQ)(RA1),-(M(CLIENT))
0120117 07 001123 037000 123727 0123727 20 BL BACKBASE
0120121 21 ENDP NR # 13669
-001- 22 NOTE ***** LAST PATCH ADDRESS USED IS 001124 *****
-001- 23 NOTE ***** NUMBER OF PATCH WORDS USED IS 5 (DECIMAL) *****

0123426 -001- 26 EOW # 13669
-001- 27 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000217 *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 32

TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

READ STATE INITIAL ENTRY

CTAPH

W77D

```

0123426 01 READPROG
02 # THE READ STATE INITIAL ENTRY POINT WILL SEND A TAPE READ ORDER
03 # TO THE TAPE DEFINED IN THE TCB ON THE TRACK SPECIFIED BY THE
04 # TRACK BITS IN THE TCB.
0123426 . 05
06 # A 3 SECOND DELAY IS SET UP BY THIS ENTRY POINT WHICH WILL
07 # BE INTERROGATED BY THE READ STATE. ONCE THE TIMEOUT OCCURES
08 # THE READ STATE WILL INVESTIGATE THE SUCCESS OF THE INTERRUPT
09 # IN HANDLING THE READ OPERATION.
0123426 10
11 # THE 3 SECOND DELAY ALLOWS THE INTERRUPT TO GAIN CONTROL ONCE
12 # DATA COMING OFF OF THE TAPE HAS FILLED UP A TDC BUFFER. THE
13 # INTERRUPT LEVEL CODE WILL FURTHER DELAY THE READ STATE FROM
14 # GAINING CONTROL UNTIL EITHER THE TOTAL READ OPERATION IS
15 # COMPLETE(E.G. EOF BLOCK ENCOUNTERED) OR AN ABNORMAL SITUATION
0123426 16 # ARISES CAUSING THE INTERRUPT LEVEL CODE TO STOP.
17
18 # ONCE THE INTERRUPT LEVEL CODE STOPS DELAYING THE BASE LEVEL
19 # READ STATE, THE TIMING STATE WILL 'TIME' OUT AND 'POP' THE STACK
20 # STATEWRD. THE READ STATE SHOULD THEN GAIN CONTROL.
0123426 01 000220 103641 007415 21 LI R10,TRT # SET UP READ COMMAND.
0123430 22 SENDIT
0123430 23 CALL ORDEXC
0123430 01 000222 173043 ----- -001- 24 BSAI OXRDEXC # SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
0123431 01 000223 155160 ----- 0123611 25 BNC RHMVANDPO
26 # A TIME REQUEST WILL BE ISSUED TO ALLOW TIME FOR THE INTERRUPT TO
27 # GAIN CONTROL.
0123432 28 BGNTIM SEC=3 #MUST TIME LONG FOR BOT CONDITIONS.
0123432 -001- 29 CALL TIMOUT
0123432 01 000224 073022 ----- -002- 30 BSAI TXIMOUT # SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB
0123433 01 000225 000171 ----- -001- 31 DATA 121 # TIMOUT+1
0123434 01 000226 144014 ----- 32 ST RO,N(TIMEK)(RAD)
0123435 01 000227 062200 ----- 33 ZBS N(IOCMP)(RAD),S(IOCMP)
0123436 01 000230 003004 ----- 34 LN RO,READST
0123437 01 000231 003020 ----- 35 ZR R1
0123440 01 000232 053266 ----- 0123726 36 B PUSHAND

```

COMMON TAPE HANDLER

PR-1C957-50

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

READ 1 BLOCK STATE INITIAL ENTRY

CTAPH W77D

0123441

01 READ1PROG  
 02 # THIS CODE USES MOST OF THE READ STATE INITIAL ENTRY PROGRAM. THE  
 03 # REASON THIS IS POSSIBLE IS THAT THE ONLY DIFFERENCE BETWEEN THESE  
 04 # TWO STATES IS THE ORDER SENT TO THE TDC. THE TAPE READ-A-BLOCK  
 05 # ORDER IS SENT TO THE TDC DEFINED IN THE TCB ON THE TRACK DESIGNATED  
 06 # IN THE 'TRACK' FIELD OF THE TDC.

0123441 01 000233 103641 003415  
 0123443 01 000235 053765 ----- 0123430

08 LI R10,TRB # PREPARE TO READ 1 BLOCK.  
 09 B SENDIT

COMMON TAPE HANDLER

PR-1C957-50.

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

WRITE STATE INITIAL ENTRY

CTAPH W77D

0123444

```

01 WRITEPROG
02 # THE WRITE INITIAL ENTRY IS RESPONSIBLE FOR TWO SIMPLE TASKS. ITS
03 # PRIMARY OBJECTIVE IS TO SCHEDULE THE WRITE STATE IN THE TCB STACK
04 # WORD. THE SECONDARY RESPONSIBILITY IS TO CHECK THE STATUS OF
05 # THE MATE UNIT OF THE TAPE CURRENTLY IN THE TCB IF THE FILE BEING
06 # WRITTEN IS AN AUTO-DUPLICATE FILE (DUP BIT=1 IN TCB). IF THE MATE
07 # IS OUT OF SERVICE THE DUP BIT IS RESET AND CONTROL IS PASSED BACK
08 # TO CBLM.
09 TBS N(DUP)(RAD),S(DUP) # TEST IF TAPE FILE IS DUPLICATED.
10 BNC NONDUPL # NOT DUPLICATED OR TDC NOT INSERVICE AT THIS
# TIME.
12 LR R2,R6
13 XI R6,1 # COMPLIMENT TAPE NUMBER
14 ST R6,N(TAPNO)(RAD) # TAPE NUMBERS ARE READY FOR STATUS ROUTINE.
15 CALL STATSET #GET STATUS OF ACTIVE TAPE
16 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH
17 BC DUPOK
18 ZBS N(DUP)(RAD),S(DUP) # CLEAR DUP BIT. TU IS 00S
19 DUPOK
20 ST R2,N(TAPNO)(RAD)
21 NONDUPL
22 LN R0,WRITST
23 B ZRPUSH

```

0123444 01 000236 151326 -----

0123445 01 000237 055011 ----- 0123456

0123446 01 000240 006046 -----

0123447 01 000241 003544 000001

0123451 01 000243 044150 -----

0123452

0123452 01 000244 073024 ----- -001-

0123453 01 000245 154002 ----- 0123455

0123454 01 000246 062326 -----

0123455

0123455 01 000247 144050 -----

0123456

0123456 01 000250 103010 -----

0123457 01 000251 053246 ----- 0123725

COMMON TAPE HANDLER

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

MRF STATE INITIAL ENTRY

CTAPH

W77D

```

0123460          01 MRFPROG
02 # AN INITIALIZATION OF SUFFICIENT MAGNITUDE HAS RESULTED IN THE
03 # CLEARING OF CALL STORE TCB, OR A TTY REQUEST HAS RESULTED IN THE
04 # INITIALIZATION OF THE TAPE SYSTEM.
05
0123460          06 # THIS ENTRY POINT WILL ATTEMPT TO INITIALIZE ALL THE DEFINED
07 # TDC UNITS. ALSO THE MRF STATE MUST BE SET UP TO CONTINUE THE
08 # SOFTWARE INITIALIZATION AND HARDWARE CONFIGURATION REQUIRED AFTER
09 # A SYSTEM INITIALIZATION. THE SENDING OF AN INIT ORDER TO THE
10 # TDCS MUST BE FOLLOWED BY 50 MSEC OF DELAY TO ALLOW THE HARDWARE
11 # TO SETTLE DOWN. THIS DELAY MUST BE EXECUTED PRIOR TO THE ISSUANCE
12 # OF ANY FUTURE MOTION ORDER. THEREFORE THE TIMING STATE IS 'PUSHED'
13 # INTO THE STACK WORD IN FRONT OF THE MRF STATE.
0123460 01 000252 130462 020006 TDATA 14      LL      R3,TAPETBL      #GET NUMBER OF DEFINED TAPE UNITS
0123462 01 000254 003641 040007      16      LI      R10,INIT
0123464 01 000256 031622 020007 TDATA 17      LAL     R9,TUENABL,RA1
0123466          18      INITCONT
0123466 01 000260 136060 123475 0123475 19      BX      R3,SNDDINIT
0123470 01 000262 003020 ----- 20      ZR      R1
0123471 01 000263 003011 ----- 21      LN     R0,MRFST      # SET UP MRF STATE
0123472          22      CALL   PUSHSTAT
0123472 01 000264 073044 ----- -001- 23      BSAI   pushsTat      # SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH
0123473 01 000265 137000 124165 0124165 24      BL      BCKTIM      # ALLOW ALL TAPE MOTION TO EASE.

0123475          26      SNDDINIT
0123475 01 000267 142623 ----- 27      LX     R9,R3(RA1)
0123476          28      CALL   ORDEXCAB      # SEND ORDER TO INIT TDCS.
0123476 01 000270 073032 ----- -001- 29      BSAI   ordexCab      # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0123477 01 000271 153767 ----- 0123466. 30      B      INITCONT      #CONTINUE INIT.

```

COMMON TAPE HANDLER

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

COPY STATE INITIAL ENTRY

CTAPH W77D

```

0123500      01 COPYPROG
02 # A CLIENT HAS REQUESTED THAT A FILE BE COPIED FROM ONE TAPE TO ANOTHER.
03 # THIS CAN ONLY BE DONE BETWEEN MATED PAIRS OF UNITS. THE FILE PRESENTLY
04 # OPEN WILL BE COPIED TO ITS MATE UNIT. THE UNIT NOW SPECIFIED IN THE TCB
05 # WILL BE USED AS THE STANDARD FOR THE COPY.
06
0123500      07 # THE TCB MUST BE SET UP TO POINT TO THE BEGINNING OF THE FILE SINCE
08 # THE CLIENT MAY BE A TWO TRACK FILE USER AND MOST LIKELY HAD DONE
09 # SOME FILE MANIPULATION PRIOR TO THE COPY REQUEST.
10
0123500      11 # THE AUTO DUPLICATION BIT MUST BE RESET SO NOT TO CONFUSE THE WRITE
12 # OPERATION. ALSO NO TAPE SWITCH RECOVERY WILL BE ALLOWED THROUGHOUT
13 # THE COPY.
14
0123500      15 # THE INITIAL ENTRY SCHEDULES THE COPY STATE IN THE STACK WORD AND
16 # 'PUSHES' THE POSITION STATE INFRONT OF IT TO EFFECT THE POSITIONING
17 # OF THE FILE TO ITS BEGINNING BEFORE THE COPY STATE GAINS CONTROL.
18 TAPEHL OW      0(272)          #3E800177
-001- 19      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 000272 *****

0123500 01 000272 103020 -----      22      ZR      R1
0123501 01 000273 044025 -----      23      ST      R1,N(LOGBLK)(RAO) #CLEAR LOGICAL INDEX INTO FILE
0123502 01 000274 061345 -----      24      SBS     N(ERNA)(RAO),S(ERNA) #SWITCH RECOVERY NOT ALLOWED HERE
0123503 01 000275 062326 -----      25      ZBS     N(DUP)(RAO),S(DUP) #AUTO DUPLICATION IS PROHIBITED IN COPY.
0123504      26      EOW     #3E800177
-001- 27      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 000275 *****

0123504 01 000276 040056 -----      30      L      R2,N(ORIGTN)(RAO) #SET UP TO START OF FILE.
0123505 01 000277 002046 017777      31      STM     R2,N(PHYBLK)(RAO),M(ORIGIN)
0123507 01 000301 002045 014000      32      STM     R2,N(VERTRK)(RAO),M(VERTRK) #SET UP VERIFY TRACK
0123511 01 000303 003001 -----      33      LN      R0,COPYST
34 # R1 SETUP ABOVE EQUAL TO ZERO SUBSTATE.
0123512      35      CALL   PUSHSTAT #SET UP SUB-STATE.
0123512 01 000304 073044 -----      -001- 36      BSAI   pushsTat #SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH
0123513 01 000305 153126 ----- 0123641 37      B      POSITIONLOD #POSITION STANDARD AT BOF.

```

COMMON TAPE HANDLER

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

MAIN BASE LEVE TAPE STATES

CTAPH W77D

0123514

0123514

0123514

0123514

01 # THE FOLLOW CODE CONTAINS THE STATES WHICH CARRY OUT ALL THE  
 02 # VARIOUS CLIENT REQUESTS AND ERROR RECOVERY. THEY SCHEDULE A NUMBER  
 03 # OF SUBSTATES AND OTHER STATES IN ORDER TO CARRY OUT THE MAIN CLIENT  
 04 # REQUEST. THE SUBSTATES ARE SCHEDULED THROUGH THE USE OF THE STATEFLG  
 05 # WORD IN THE TCB. THIS 4-4BIT WORD TRACK THE STATEWRD ENTRY SUCH THAT  
 06 # STATE ENTRY ALWAYS HAS ITS 'FLAGS' IMMEDIATELY UNDER ITS STATE DESIG-  
 07 # NATION. THE BASE LEVEL TAPE MONITOR HANDS EACH CONTROLLING STATE  
 08 # THESE 'FLAG' OR SUBSTATE BITS IN R1. THE STATE THEN MAY INTERROGATE  
 09 # OR BPAX ON THESE BITS TO SEQUENCE THROUGH THE OPERATIONS IN ITS CHARGE.  
 10  
 11 # A STATE MAY REQUEST HELP (OR NEED IT) FROM ANOTHER STATE BY 'PUSHING'  
 12 # THE NEW STATE INTO THE STACK. EACH STATE HAS THE OPTION OF RE-GAINING  
 13 # CONTROL OR JUST RELINQUISHING IT BY 'PUSHING' ITSELF UP THE STACK  
 14 # OR 'POPING' ITSELF OUT OF THE STACK.  
 15  
 16 # EACH STATE HAS A SINGLE ENTRY AND A SINGLE EXIT. IT GAINS CONTROL  
 17 # FROM THE BASE LEVEL TAPE MONITOR AND PASSES CONTROL BACK TO CBLM.  
 18  
 19 # THE COMPLETION OF A CLIENT REQUEST IS PRECEDED BY THE LAST STATE  
 20 # 'POPING' OUT OF THE STACK LEAVING IT ZERO THUS INVOKING THE MONITOR  
 21 # STATE.  
 22  
 23 # THE SUBSTATE RESIDE IN THE LISTING WITH THE STATE THAT USES IT THE  
 24 # MOST. HOWEVER SUBSTATES CAN BE USED BY OTHER STATES.

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 38

TAPE HANDLER

READ STATE

CTAPH

W77D

0123514

01 READSTATE

02 # THE READ STATE SERVES MOSTLY AS AN AUDITOR OF A READ OPERATION.  
 03 # THE READ STATE WILL WAIT UNTIL A PRESET TIME OUT CONSTANT HAS  
 04 # BEEN SATISFIED BEFORE INVESTIGATING THE SUCCESSFUL COMPLETION OF  
 05 # THE INTERRUPT CODE.

0123514

06

07 # THE INTERRUPT WILL CONTINUE TO EXTEND THE TIME OUT INTERVAL AS LONG  
 08 # AS IT GAINS CONTROL AND CAN COPE WITH AN ERROR CONDITION IF IT MAY  
 09 # OCCUR. WHEN THE TIMEOUT OCCURS THE READ STATE WILL INTERROGATE THE  
 10 # IOCMP BIT TO VERIFY IF THE READ OPERATION (BE IT READ OR READ-A-BLK)  
 11 # HAS SUCCESSFULLY COMPLETED. CERTAIN FAILURES MAY CAUSE THE INITIATION  
 12 # OF AN ERROR RECOVERY ATTEMPT FROM THE READ STATE.

0123514

13

14 # IF A FILE CONTINUES ON ANOTHER TRACK, THE READ STATE HAS THE RESPONSIBILITY  
 15 # TO REWIND THE TAPE TO BOT AND CONTINUE THE INTERRUPTED OPERATION (THIS  
 16 # DOES NOT APPLY IF THE CLIENT GAINED ACCESS TO THE TCB THROUGH THE SEIZE  
 17 # MACRO.) IN THE CASE OF FILES CONTINUED ON THE NEXT TRACK, THE INTERRUPT  
 18 # LEVEL CODE DETECTS THE DEOF BIT SET IN THE LAST BLOCK READ IN BYIT. THE  
 19 # INTERRUPT THEN ADJUSTS THE SATEFLG WORD FOR THE READ STATE TO EFFECT THE  
 20 # EXECUTION OF THE SUBSTATES INVOLVED WITH REWINDING THE TAPE TO BOT.

0123514 01 000306 156001 -----

21 BPAX R1

22 # THIS IS THE LIST (TRANSFER VECTOR TABLE) OF THE SUBSTATES WHICH ARE  
 23 # USED BY THE READ STATE. R1 IS USED TO DETERMINE WHICH STATE SHALL BE  
 24 # ACCESSED.

0123515 01 000307 153052 ----- 0123567

25 B REGREAD

0123516 01 000310 153032 ----- 0123550

26 B VERSTPX

0123517 01 000311 153032 ----- 0123551

27 B REWINDTU

0123520 01 000312 153030 ----- 0123550

28 B VERSTPX

32 # THIS LAST SUBSTATE IS USED TO ADJUST THE TCB TO THE NEXT TRACK IN  
 33 # HANDLING BLEED OVER FILES. THIS SUBSTATE GAINS CONTROL AFTER THE  
 34 # TAPE FAST REVERSE COMMAND HAS TERMINATED. A CHECK IS MADE TO ASSURE  
 35 # THAT NO BLEED OVER OCCURED ON TRACK 4 TO THE NON-EXISTENT TRACK 5.  
 36 # FINALLY IF A READ CONTINUOUS WAS INTERRUPTED IT WILL BE RESTARTED  
 37 # ON THE NEW TRACK. NOTE THAT SEEZ CLIENTS ARE NOT AFFECTED BY THIS  
 38 # LOGICAL FILE CHARACTERISTIC.

0123521 01 000313 140026 -----

39 L R1,N(TRACK)(RAO) #PREPARE TO GO TO NEXT TRACK

0123522 01 000314 003420 004000

40 AI R1,ES(TRACK)

0123524 01 000316 044026 -----

41 ST R1,N(TRACK)(RAO)

0123525 01 000317 003422 014000

42 NI R1,M(TRACK) # OVERFLOW ERROR.

0123527 01 000321 054662 ----- 0123411

43 BC CLOSESTATE

0123530 01 000322 002025 014000

44 STM R1,N(VERTRK)(RAO),M(VERTRK)

0123532

45 POPY

0123532 01 000324 140255 -----

46 L R10,N(LSTCOM)(RAD) #PREPARE TO SEND LAST READ COMMAND.

0123533

47 CALL POPSTATE #CLEAR,OUT READ STATE

0123533 01 000325 073045 -----

-001-

48 BSAI popstAte # SUBROUTINE POPSTATE IS IN PROGRAM CTAPH

0123534 01 000326 116572 007477

49 LRM R7,R10,M(DVIC)+M(COM)

COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

## READ STATE

CTAPH W77D

```

0123536 01 000330 003565 007415          01      CI      R7,TRT
0123540 01 000332 055167 ----- 0123727 02      BNC      BACKBASE          #IF READ WAS NOT GIVEN RETURN TO IDLE STATE
0123541 01 000333 051365 -----          03      TBS      N(SEEZ)(RAD),S(SEEZ)
0123542 01 000334 054666 ----- 0123430 04      BC       SENDIT
0123543 01 000335 030420 045266 LAYOUT 05      LL      R1,I,OBUF
0123545 01 000337 024035 -----          06      TBN      R1,S(EOF)
0123546 01 000340 054161 ----- 0123727 07      BC       BACKBASE          #IF EOF WAS DETECTED, NO READ SHOULD BE
                                                INITIATED.
0123547 01 000341 053661 ----- 0123430 09      B        SENDIT          #SEND COMMAND AND RE-START READ STATE.

```

```

13 # THE BRANCH TO 'REGREAD' IS THE NORMAL, MOST USED SUBSTATE OF THE
14 # READ STATE. HOWEVER, IF THE INTERRUPT LEVEL CODE DETECTS A DEOF
15 # BIT SET IN A BLOCK JUST READ IN IT WILL STOP THE TAPE TRANSPORT
16 # AND SCHEDULE THE NEXT SUBSTATE IN THE READ STATE FOR EXECUTION.
17 # THIS SUBSTATE IS ONE SHARED WITH THE VERIFY STATE. IT WAITS FOR
18 # ALL TAPE MOTION TO STOP. ONCE TIM IS GONE IN THE TAPE STATUS,
19 # IT SCHEDULES THE NEXT READ SUBSTATE FOR EXECUTION AND 'PUSHES'
20 # THE TIMING STATE INTO THE STACK WORD FOR EXECUTION, IT WILL WAIT
21 # FOR AN AMOUNT OF TIME NEEDED TO GUARANTEE THAT THE TDC HARDWARE
22 # HAS IDLED OUT.
23 VERSTPX
24

```

```

0123550
0123550 01 000342 153341 ----- 0124111

```

```

24      B        VERSTP

```

```

27 # THIS SUBSTATE HANDLES THE FAST REVERSE ORDER WHICH IS NEEDED TO PLACE
28 # THE TAPE AT THE NEXT SEQUENTIAL BLOCK IN THE BLEED OVER FILE. THE
29 # ORDER IS NOT SENT IF THE CLIENT USED THE SEIZE MACRO TO GAIN CONTROL
30 # OF THE TCB. THIS MACRO IS NOT FILE ORIENTED AND THEREFORE DOES NOT
31 # GET AFFECT BY LOGICAL FILE DIVISIONS. THIS SUBSTATE NEXT SCHEDULES
32 # THE VERSTPX SUBSTATE FOR EXECUTION.
33 REWINDTU

```

```

0123551
0123551 01 000343 172231 -----
0123552 01 000344 051365 -----
0123553 01 000345 054757 ----- 0123532
0123554 01 000346 003641 004415
0123556 01 000350 023440 -----
0123557 01 000351 003045 -----
0123560 01 000352 136040 123560 0123560
0123562 01 000354 023500 -----
0123563 01 000355 055032 ----- 0123615
0123564
0123564 01 000356 137040 043332 CTSD
0123566 01 000360 053141 ----- 0123727

```

```

34      GN      R9,9          #GET ADDRESS FOR CURRENT TAPE.
35 # IF CLIENT IS OF THE SIEZE TYPE, JUST EXIT FROM THE READ STATE VIA POPY.
36      TBS      N(SEEZ)(RAD),S(SEEZ)
37      BC       POPY
38      LI      R10,TFR          #MUST REWIND TAPE TO READ NEXT TRACK
39      SMIO
40      LN      R2,5
41      BX      R2,*
42      TIO
43      BNC     ORDFAL          # ORDER FAILED PO ERROR.
44 BACK
45      A1S     TCBADR+N(STATEFLG)
46      B        BACKBASE

```

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 40

TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

READ STATE

CTAPH W770

```

01 # THE REGREAD STATE CHECKS THE TIME CONSTANT STORED IN THE TCB AGAINST
02 # THE SYSTEM CLOCK TO SEE IF THE INTERRUPT HAS GIVEN UP CONTROL OR
03 # TERMINATED EXECUTION. THE IOCMP BIT IN THE TCB IS INVESTIGATED TO
04 # ASSURE THAT THE READ WENT WITHOUT ERROR. UPON A SUCCESS, THE STATEWRD
05 # STACK IS 'POPPED' WHICH SHOULD LEAVE IT EMPTY WHICH WILL INVOKE
06 # THE MONITOR STATE FOR SERVICING A NEW CLIENT REQUEST.
07
08 # THE ABSENCE OF IOCMP WILL BE INVESTIGATED WITH A TAPE STATUS ORDER.
09 # IF A MAINTENANCE START CODE IS RECEIVED, IT HINTS THAT A BLOCK WAS
10 # PARTIALLY READ AND FOR SOME REASON(SUCH AS A BIT DROP OUT) CAUSED
11 # LESS THAN THE EXPECTED NUMBER OF TDC BUFFERS TO BE READ BY THE
12 # INTERRUPT. A CRC ERROR WOULD RESULT IN THIS CASE SINCE THE HARDWARE
13 # WILL COMPUTE THE CRC ON THE PARTIALLY READ DATA WHICH OBVIOUSLY CAN
14 # NOT PASS. UNDER THIS CASE THE ERROR RECOVERY STATE IS INITIATED AND
15 # CONTROL PASSED TO IT VIA THE CRCERC SUBROUTINE. AN ERROR PRINTOUT
16 # ALSO IS GENERATED.
17
18 # IF NO CRC ERROR IS GENERATED, THE TAPE HANDLER AT THIS POINT WILL
19 # REMOVE THE TDC IN USE FROM SERVICE SINCE THIS SITUATION IS NOT EVER
20 # EXPECTED. THE CLIENT IS ABORT SINCE THE READ STATE GOES DIRECTLY TO
21 # THE CLOSE STATE.
22 REGREAD
23 # STATE WHICH WILL MONITOR THE READ INTERRUPT.
24 CALL TIMOUTCK # CHECK IF INTERRUPT HAS ALLOWED BASE TIMEOUT
0123567 01 000361 137020 127124 0127124 -001- 25 BSA TIMOUTCK
0123571 01 000363 155136 ----- 0123727 26 BNC BACKBASE
27 # A TIMEOUT HAS OCCURED. CHECK IF THE INTERRUPT HAS SUCCESSFULLY COMPLETED.
28 TBS N(IOCMP)(RAO),S(IOCMP) # CHECK THE IO COMPLETE FLAG.
0123572 01 000364 051200 ----- 29 BC OKCOMP
0123573 01 000365 054035 ----- 0123630 30 LI R10,TSTAT
0123574 01 000366 003641 002015 31 CALL ORDEXCNT #CHECK CRC HARDWARE RESPONSE.
0123576 01 000370 073023 ----- -001- 32 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH.
0123577 01 000371 154010 ----- 0123607 33 BC NOCRC
35 SPELL R8,(B,A,S,E,T,O)
0123600 01 000372 003601 001412 TTYTBL -001- 36 LI R8,BXASETO
0123602 37 CALL PTREC
0123602 01 000374 073046 ----- -001- 38 BSAI PXTREC # SUBROUTINE PTREC IS IN PROGRAM CTAPH
0123603 39 CALL CRCERC #OUTPUT MESSAGE AND SET UP RECOVERY.
0123603 01 000375 137020 127155 0127155 -001- 40 BSA CRCERC
0123605 01 000377 162220 ----- 41 ZBS N(SRFAL)(RAO),S(SRFAL)
0123606 01 000400 053121 ----- 0123727 42 B BACKBASE
0123607 43 NOCRC
45 LN R1,BASETO # A BASE LEVEL TIMEOUT OCCURRED.
0123610 01 000402 053010 ----- 0123620 46 B RMVDCLOSE
0123611 47 RMVANDPO
0123611 01 000403 110417 ----- 48 RLN RD,1
0123612 01 000404 056000 ----- 49 BPAX RO

```

COMMON TAPE HANDLER

PR-1C957-50

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TAPE HANDLER

0:43:06 2/06/81 \*\*\*\*

READ STATE

CTAPH W77D

```

0123613 01 000405 106000 ----- 01      NOP
0123614 01 000406 006000 ----- 02      NOP
0123615                                03 ORDFAL
0123615 01 000407 103025 ----- 04      LN      R1,ORDER
0123616 01 000410 053002 ----- 05      B      RMVCLSE
0123617 01 000411 103023 ----- 06      LN      R1,NORESP
0123620                                07 RMVCLSE
08 # A FATAL ERROR HAS OCCURED. A COMMAND WILL BE SENT TO THE SPI TO REQUEST
09 # THE STATUS OF THE ADDRESSED UNIT FOR PRINTOUT ON THE REMOVE MESSAGE.
0123620 01 000412 103641 010007 10      LI      R10,SST # STATUS REQUEST TO SPI.
0123622 01 000414 006061 ----- 11      LR
0123623                                12      CALL    ORDEXCNT
0123623 01 000415 073023 ----- -001- 13      BSAI   ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0123624 01 000416 106023 ----- 14      LR      R1,R3
0123625                                15      CALL    REMOVTV # REMOVE UNIT AND PRINTOUT.
0123625 01 000417 037020 126766 0126766 -001- 16      BSA    REMOVTV
0123627 01 000421 153562 ----- 0123411 17      B      CLOSESTATE # ABANDON OPERATIONS.

0123630                                19 OKCOMP
0123630 01 000422 162200 ----- 20 # A SUCCESSFUL READ HAS TAKEN PLACE. GO TO NEXT STATE.
0123631 01 000423 053310 ----- 0124141 21      ZBS    N(IOCMP)(RAO),S(IOCMP)
22      B      POP

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 42

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

SIEZURE STATE

CTAPH W77D

```

0123632 01 SIEZURE
02 # THE SIEZURE STATE IS RESPONSIBLE FOR LOCATING THE REQUESTED FILE,
03 # LOADING UP THE RESIDENT DIRECTORY IF REQUIRED AND POSITIONING THE
04 # TAPE AT THE START OF THE CLIENT'S FILE. THE CLIENT HAS THE OPTION TO
05 # BE POSITIONED AT ANY LOGICAL BLOCK WITHIN THE FILE.
06
0123632 07 # THE SEIZURE STATE IS DIFFERENT FROM THE OTHER STATES IN THE MANNER
08 # IN WHICH IT IS SET UP. IT DOES NOT HAVE AN INITIAL ENTRY POINT SCHEDULED
09 # OUT OF THE MONITOR STATE. THE SEIZURE STATE AND ITS STARTING SUBSTATES
10 # ARE SET UP IN THE STACK WORDS BY THE OPEN SUBROUTINE. THIS SUBROUTINE
11 # GAINS CONTROL FROM ONE OF 3 MACRO CALLS USED BY CLIENTS.
12
0123632 13 # 1. OPEN
14 # 2. OPENE
15 # 3. SEIZE
16
0123632 17 # THE OPEN MACRO RESULTS IN THE USE OF THE TAPE UNIT WHICH IS NUMERICALLY
18 # THE SAME AS THE ON-LINE PROCESSOR (OR IF THE TAPEOPTS WORD IS NON-ZERO
19 # TAPE 0 WILL ALWAYS BE USED). THE OPENE WILL POSITION THE CLIENT TO THE
20 # REQUESTED FILE USING THE TAPE UNIT (EVEN/ODD) SPECIFIED BY THE CLIENT.
21 # IF THE TAPE CHOSEN IN THE OPEN MACRO IS OUT OF SERVICE A SWITCH WILL
22 # BE MADE AUTOMATICALLY TO THE OTHER UNIT. IN THE OPENE EXAMPLE, AN OUT OF
23 # SERVICE UNIT WILL FORCE THE ABORT OF THE CLIENT (THIS IS DONE DIRECTLY
24 # OUT OF THE OPEN SUBROUTINE).
25
0123632 26 # SEIZE MACRO ALLOWS ACCESS TO ALL PORTIONS OF THE TAPE AND IS NOT AFFECTED
27 # BY LOGICAL FILE CHARACTERISTICS (DEOF-EOF). THE CLIENT USING SEIZE MAY
28 # BE POSITIONED TO ANY BLOCK ON ANY TAPE UNIT.

0123632 01 000424 156001 ----- 32 BPAX R1
0123633 01 000425 153010 ----- 0123643 33 B UNITCHK
0123634 01 000426 153027 ----- 0123663 34 B SYSDIR
0123635 01 000427 153053 ----- 0123710 35 B ATSYSDIR
0123636 01 000430 153073 ----- 0123731 36 B PHYLOC
0123637 01 000431 153004 ----- 0123643 37 B UNITCHK
0123640 38 USERLOOK
39 # SET UP POSSITION REQUEST FOR LOOK UP OF CLIENTS BLOCK
0123640 01 000432 173045 ----- -001- 40 CALL POPSTATE
0123641 41 BSAI popstAte # SUBROUTINE POPSTATE IS IN PROGRAM CTAPH
0123641 42 POSITIONLOD
0123641 01 000433 103003 ----- 43 LN RO,POSST
0123642 01 000434 053063 ----- 0123725 44 B ZRPUSH

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 43

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

SIEZURE STATE

CTAPH W77D

0123643

01 # THE TAPE OPEN MACRO HAS BEEN ACCEPTED. THE DIRECTORY ON TAPE MAY HAVE  
 02 # TO BE SEARCHED TO OBTAIN THE FILE INFORMATION. A TAPE WILL BE SELECTED  
 03 # TO RECOVER THE DIRECTORY IF THE RESIDENT DIRECTORY DOES NOT YIELD A  
 04 # MATCH ON THE FILE NAME.  
 05  
 06 # THE UNIT SELECTED WILL BE BASED UPON WHICH CU IS ACTIVE UNLESS THE  
 07 # TAPE OPTION WORD INDICATES TAPE UNIT ZERO IS TO BE USED ALWAYS.  
 08 # IF THE PREFERED UNIT IS NOT INSERVICE, ITS MATE WILL SERVE AS THE  
 09 # BACKUP.

0123643

0123643 01 000435 130422 020003 TDATA  
 0123645 01 000437 024020 -----  
 0123646 01 000440 054004 ----- 0123652

0123647 01 000441 057437 -----  
 0123650 01 000442 055002 ----- 0123652  
 0123651 01 000443 061010 -----  
 0123652

0123652  
 0123652 01 000444 173024 ----- -001-  
 0123653 01 000445 154711 ----- 0123564

0123654 01 000446 051010 -----  
 0123655 01 000447 061010 -----  
 0123656 01 000450 055002 ----- 0123660  
 0123657 01 000451 062010 -----  
 0123660

0123660  
 0123660 01 000452 173024 ----- -001-  
 0123661 01 000453 154703 ----- 0123564  
 0123662 01 000454 053527 ----- 0123411

0123663

13 UNITCHK  
 14 # CHECK IF TAPE OPTIONS WORD IS ACTIVE FOR TAPE ZERO SELECT.  
 15 LL R1,TAPEOPTS  
 16 TBN R1,0  
 17 BC ZERON  
 18 # TEST WHICH CU IS ACTIVE TO DETERMINE THE PREFERED UNIT.  
 19 TCC1  
 20 BNC ZERON  
 21 SBS N(TAPNO)(RAD),0 # SET TU1 IN TCB  
 22 ZERON  
 23 # CHECK IF THE SELECTED TDC IS INSERVICE  
 24 CALL STATSET #GET STATUS OF TAPE IN TCB  
 25 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH  
 26 BC BACK  
 27 # SWITCH TO MATE UNIT SINCE FIRST SELECTION WAS OUT-OF-SERVICE.  
 28 TBS N(TAPNO)(RAD),0  
 29 SBS N(TAPNO)(RAD),0  
 30 BNC ODUNIT  
 31 ZBS N(TAPNO)(RAD),0  
 32 ODUNIT  
 33 # CHECK IF THIS UNIT IS INSERVICE  
 34 CALL STATSET #CHECK MATE UNITS STATUS  
 35 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH  
 36 BC BACK  
 37 # NO DIRECTORY CAN BE USED. ABORT CLIENT.  
 38 B CLOSESTATE

42 SYSDIR  
 43 # THIS SUB-STATE WILL SEARCH THE RESIDENT DIRECTORY FOR A MATCH ON  
 44 # THE REQUESTED FILE. FAILURE OF A MATCH SHALL RESULT IN THE POSITION  
 45 # STATE BEING INVOKED TO GET TO THE TAPE DIRECTORY BLOCK. IF A MATCH  
 46 # IS FOUND, A CHECK IS MADE TO SEE IF AN EXPLICIT OPEN WAS USED. IN THIS  
 47 # CASE, THE TAPE UNIT REQUESTED IS SET UP. THE UNIT SELECTED WILL THEN  
 48 # HAVE ITS STATUS CHECKED BEFORE CONTINUING.

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 44

## TAPE HANDLER PROGRAM

SEIZURE STATE

CTAPH

W77D

```

01 # GET FILE NAME ADDRESS AND CALL THE RESIDENT DIRECTORY SEARCH
02 # AND SETUP ROUTINE.
03     A1S      TCBADR+N(STATEFLG)
04     L        R14,N(HOFILNAM)(RAO)
05     L        R15,N(FILNAM)(RAO)
06     CALL     DIRSRCHRES
07     BSA      DIRSRCHRES
08 # SET UP SEARCH FOR TAPE DIRECTORY IF NO MATCH IS FOUND IN RESIDENT
09 # DIRECTORY.
10     BNC      POSITIONLOD
11     A1S      TCBADR+N(STATEFLG)
12     EPLCHK
13     LN       R1,IDLE
14     STM      R1,N(REQ)(RAO),M(REQ) # REMOVE OPEN. IDLE TCB.
15     A1S      TCBADR+N(STATEFLG)
16 # CHECK IF OPENE WAS USED. IF SO SET UP TAPE REQUESTED AND CHECK
17 # STATUS.
18     TBS      N(EXPLIC)(RAO),S(EXPLIC)
19     BNC      UNITCHK
20     L        R1,N(EVOD)(RAO)
21     RRN      R1,S(EVOD)
22     STM      R1,N(TAPNO)(RAO),MSK(1) # FORCE EVEN OR ODD UNIT ACTIVE
23     B        ODUNIT

27 # THIS SUBSTATE WILL CAUSE THE READING IN OF THE TAPE DIRECTORY.
28 # UPON COMPLETION OF THE OPERATION, CONTROL WILL BE PASSED TO
29 # THE PHYLOC SUBSTATE TO SEARCH THE I/O BUFFER FOR A DIRECTORY MATCH.
30 # THE TIME STATE IS INVOKED TO ALLOW THE READ-A-BLK TO TERMINATE PRIOR
31 # TO PASSING CONTROL TO THE NEXT SEIZURE SUBSTATE.
32     ATSYSDIR
33     L        R14,N(HOFILNAM)(RAO) # OBTAIN THE ADDRESS FOR CLIENTS FILE
                                # REQUEST DATA
34     L        R15,N(FILNAM)(RAO)
35     L        R15,N(FILNAM)(RAO)
36     MATERED
37     A1S      TCBADR+N(STATEFLG)

39     RD1AGN
40     LI       R10,TRB # PREPARE TO READ A BLOCK.
41     CALL     ORDEXC # SEND COMMAND
42     BSAI    OXRDEXC # SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
43     BNC      RMVANDPO
44     BGNTIM  MSEC=IBG_1BUF # SET UP TIME CONTROL
45     CALL     TIMOUT
46     BSAI    TXIMOUT # SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB
47     DATA   5 # TIMOUT+1
48     SETIME
49     ST       RO,N(TIMEK)(RAO)

0123663 01 000455 137040 043332 CTSD
0123665 01 000457 040341 -----
0123666 01 000460 040362 -----
0123667 01 000461 037020 126627 0126627 -001-
0123671 01 000463 155750 ----- 0123641
0123672 01 000464 037040 043332 CTSD
0123674 01 000466 103027 -----
0123675 01 000467 002020 000017
0123677 01 000471 037040 043332 CTSD
0123701 01 000473 051346 -----
0123702 01 000474 055741 ----- 0123643
0123703 01 000475 040026 -----
0123704 01 000476 010437 -----
0123705 01 000477 002030 000001
0123707 01 000501 053751 ----- 0123660
0123710 01 000502 140341 -----
0123711 01 000503 040362 -----
0123712 01 000504 137040 043332 CTSD
0123714 01 000506 103641 003415
0123716 01 000510 073043 -----
0123717 01 000511 155672 ----- 0123611
0123720 01 000512 073022 -----
0123721 01 000513 000005 -----
0123722 01 000514 144014 -----

```

COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## SIEZURE STATE

CTAPH W77D

```

0123723
0123723 01 000515 103401 000006
0123725
0123725 01 000517 103020 -----
0123726
0123726 01 000520 173044 -----
0123727 01 000521 137000 001062 CBLM
0123731
0123731 01 000523 140341 -----
0123732 01 000524 040362 -----
0123733
0123733 01 000525 037020 126634 0126634 -001-
0123735 01 000527 155454 ----- 0123411
0123736
0123736 01 000530 073024 ----- -001-
0123737 01 000531 153735 ----- 0123674
01 SETIM
02 LI RO,TIMST
03 ZRPUSH
04 ZR R1
05 PUSHAND
06 CALL PUSHSTAT # SET UP FOR REQUESTED STATE.
07 BSAI pushsTat # SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH
08 BACKBASE
09 BL CTAPHRTN
13 PHYLOC
14 # THIS SUBSTATE WILL INTERROGATE THE I/O BUFFER, WHICH SHOULD CONTAIN
15 # THE TAPE DIRECTORY IN TOTAL, TO LOCATE THE CLIENT FILE INFORMATION.
16 L R14,N(HOFILNAM)(RAO)
17 L R15,N(FILNAM)(RAO)
18 CALL DIRSRCHIO # CHECK DIRECTORY FOR REQUESTED FILE
19 BSA DIRSRCHIO
20 BNC CLOSESTATE # ENTRY NOT IN THIS BLOCK
21 CALL STATSET # SET UP RA1 AGAIN
22 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH
23 # CHECK STATUS FOR REQUESTED FILES TAPE UNIT.
24 B EPLCHK

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 46

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

VERIFY STATE

CTAPH

W77D

0123740

01 VERIFY  
 02 # IN CERTAIN INSTANCES THE POSITION OF THE TAPE IS NOT KNOWN. A  
 03 # VERIFICATION OF THE BLOCK AT WHICH THE HEADS ARE AT IS DONE BY  
 04 # THE VERIFY STATE. THIS STATE MAY BE INVOKED AFTER A FAST SEARCH  
 05 # OR TAPE RESTORAL OPERATION FOR INSTANCE. IT ALSO SERVES A ROLE IN  
 06 # ERROR RECOVERY BY PROVIDING RE-READ OPERATIONS AFTER THE INITIAL  
 07 # CRC ERROR IS DETECTED.

0123740

08  
 09 # ITS PRIMARY OBJECTIVE IS TO LOCATE THE HEAD POSITION. THIS WILL  
 10 # NOT BE INTERFERED WITH BY CRC ERRORS. IF CRC ERRORS ARE ENCOUNTERED  
 11 # THIS STATE WILL SIMPLY SWITCH TRACKS TO CONTINUE ITS OBJECTIVE.  
 12 # IF ALL TRACKS EXHIBIT ERROR OR IF THE DESTINATION ITSELF IS BAD,  
 13 # AN ATTEMPT TO SWITCH TAPE UNITS IS MADE, IF POSSIBLE. AN UNRECOVERABLE  
 14 # SITUATION RESULTS IN THE ABORTING OF THE CLIENT.

0123740

15  
 16 # SINCE VERIFICATION CAN RESULT IN SWITCHING TRACKS FROM THE CLIENTS  
 17 # REQUESTED TRACK, A VERIFY TRACK FIELD IS KEPT IN THE TCB. NORMALLY  
 18 # THE CLIENT TRACK AND THE VERIFY TRACK ARE IDENTICAL. IF NOT, THIS  
 19 # INDICATES SOME VERIFY ERROR RECOVERY TOOK PLACE WHICH WILL RESULT  
 20 # IN MORE SOFTWARE CHECKS.

24 # FIRST CHECK IF POSITION IS ALREADY KNOWN. ANOTHER STATE MAY HAVE  
 25 # REQUESTED VERIFICATION WITH THE POSITION ALREADY KNOWN. ALSO THE  
 26 # NORMAL EXECUTION OF VERIFY RESULTS IN THE INTERRUPT LEVEL READ CODE  
 27 # SETTING THE POSOK BIT IN THE STATUS WORD. NORMAL EXIT WILL BE MADE  
 28 # HERE UNDER ANY CONDITION.

0123740 01 000532 140205 -----  
 0123741 01 000533 040226 -----  
 0123742 01 000534 024075 -----  
 0123743 01 000535 054104 ----- 0124047  
 0123744 01 000536 006041 -----

32 L R8,N(VERTRK)(RAO) #GET VERIFY TRACK AND READ TRACK  
 33 L R9,N(TRACK)(RAO)  
 34 TBN R3,S(POSOK) # CHECK IF TAPE IS VERIFIED  
 35 # IF POSITION IS OK, FURTHER CHECKS ARE MADE AT FINAL VERIFY.  
 36 BC FINALVER  
 37 LR R2,R1  
 38 # BEFORE SUBSTATE DISPATCHING IS DONE, CHECKS ARE MADE TO ASSURE THAT  
 39 # THE BEGINNING OF TAPE CONDITION IS HANDLED PROPERLY. DEPENDING ON  
 40 # WHICH TRACK THE CLIENT FILE IS LOCATED THE PRESENT TAPE POSITION  
 41 # MAY BE 0 OR 1 IF THE BOT STATUS BIT IS SET.  
 42 TBN R11,S(BOT) # IF TAPE AT BOT MARK ZERO IN STATUS.  
 43 BNC BPX  
 44 ZR RO  
 45 ST RD,N(LSTCOM)(RAO) #PREVENT POSITION LOOP DUE TO BACKSPACE CMD.  
 46 BOTPAT1  
 47 LI R1,ES(POSOK)  
 48 NI R9,M(TRACK)  
 49 BC STRPOS

0123745 01 000537 024276 -----  
 0123746 01 000540 055017 ----- 0123765  
 0123747 01 000541 063000 -----  
 0123750 01 000542 044015 -----  
 0123751  
 0123751 01 000543 103421 020000  
 0123753 01 000545 003622 014000  
 0123755 01 000547 054002 ----- 0123757

COMMON TAPE HANDLER.

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TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

VERIFY STATE

CTAPH W77D

0123756 01 000550 004421 -----  
 0123757  
 0123757 01 000551 102420 023777  
 0123761 01 000553 004037 -----  
 0123762 01 000554 002037 003777  
 0123764 01 000556 053175 ----- 0124161

01 AN R1,1 #NOT TRACK WITH BLOCK ZERO.  
 02 STRPOS  
 03 STM R1,0(RA1),M(PTP)+M(POSOK)  
 04 SN R1,1  
 05 STM R1,N(LSTGOOD)(RAD),M(PTP)  
 06 B ORDSND

0123765

08 # VERIFICATION CONSISTS OF POSITIONING THE TAPE READ HEADS IN AN  
 09 # INTER-BLOCK-GAP AND THEN READING THE NEXT BLOCK ON THE VERIFY TRACK,  
 10 # THE NORMAL INTERRUPT LEVEL CODE WILL HANDLE THE UPDATING OF THE  
 11 # TAPE STATUS WORD. IF THE BLOCK IS READ CORRECTLY, THE POSITION OK  
 12 # BIT WILL BE SET AND THE BLOCK NUMBER STORED IN THE STATUS WORD.  
 13

0123765

0123765 01 000557 156002 -----  
 0123766 01 000560 153112 ----- 0124100  
 0123767 01 000561 153122 ----- 0124111  
 0123770 01 000562 153134 ----- 0124124  
 0123771 01 000563 153120 ----- 0124111

14 # SEQUENCING DOWN THE DISPATCH TRANSFER VECTOR TABLE WILL ONLY  
 15 # CONTINUE IF THE READ FAILS. THAT IS WHEN THE READ A BLOCK  
 16 # IS EXECUTED TO RECOVER THE BLOCK NUMBER THE SETTING OF THE  
 17 # POSITION OK BIT WILL TERMINATE THE VERIFY STATE AT IT'S ENTRY CHECK  
 18 # OF THAT BIT. IF NOT THE STOPPING OF THE UNIT WILL INITIATE ONE MORE  
 19 # ATTEMPT AT THE BACKSPACE, READ-A-BLOCK SEQUENCE. FAILURE HERE  
 20 # WILL INITIATE THE VERIFY STATE'S ERROR RECOVERY MECHANISM.  
 21 BPX

0123772 01 000564 153136 ----- 0124130  
 0123773 01 000565 153105 ----- 0124100  
 0123774 01 000566 153115 ----- 0124111  
 0123775 01 000567 153127 ----- 0124124  
 0123776 01 000570 153113 ----- 0124111  
 0123777 01 000571 103020 -----  
 0124000 01 000572 002033 000017  
 0124002 01 000574 002031 000017

22 BPX R2  
 23 # THIS SUBSTATE BACKS UP THE TAPE INTO AN IBG.  
 24 B BKUP  
 25 # THIS STATE WAITS FOR THE PREVIOUS MOTION ORDER TO TERMINATE.  
 26 B VERSTP  
 27 # THIS STATE DOES THE READ-A-BLOCK COMMAND  
 28 B RDVERY  
 29 B VERSTP  
 30 # GETTING HERE IS AN ERROR CONDITION. ONE MORE VERIFY SEQUENCE  
 31 # WILL BE EXECUTED.  
 32 B INITAGN  
 33 B BKUP  
 34 B VERSTP  
 35 B RDVERY  
 36 B VERSTP  
 37 ZR R1 # RESET THE STATE FLAG AND BUFFER COUNT.  
 38 STM R1,N(STATEFLG)(RAD),MSK(4)  
 39 STM R1,N(BUFCT)(RAD),M(BUFCT)

0124004

40 # THE SEQUENCING THROUGH THE ABOVE DISPATCH TABLE INDICATES THE  
 41 # INABILITY TO READ A BLOCK ON THE CURRENT VERIFY TRACK. THE POSSIBILITY  
 42 # THAT THIS STATE HAS BEEN INVOKED BY THE ERROR RECOVERY EXISTS. IF  
 43 # SO, CONTROL SHOULD PASS BACK AFTER SOME BASIC INITIALIZATION IS DONE.  
 44

0124004 01 000576 103641 040007

45 # IF A TRUE VERIFICATION ERROR EXISTS, THE VERIFY STATE SHALL INITIATE  
 46 # THE SEQUENCING OF THE VERIFY TRACK TO THE NEXT ADJACENT TRACK AND  
 47 # RESTART THE VERIFY PROCEEDURE. THIS CAN CONTINUE UNTIL THE VERIFY  
 48 # TRACK AGAIN MATCHES THE CLIENT READ-WRITE TRACK FIELD.  
 49 LI R10,INIT

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## TAPE HANDLER PROGRAM

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## VERIFY STATE

CTAPH W77D

```

0124006
0124006 01 000600 073023 -----
0124007 01 000601 161220 -----
0124010 01 000602 051120 -----
0124011 01 000603 054065 ----- 0124076
0124012 01 000604 003600 004000
0124014 01 000606 017211 014000
0124016 01 000610 055023 ----- 0124041

-001- 01 CALL ORDEXCNT #INIT TDC
02 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
03 SBS N(SRFAL)(RAD),S(SRFAL)
04 TBS N(MAINT)(RAD),S(MAINT) #SET CRC FAIL BIT AND TEST IF MAINT IP
05 BC POPTIME
06 AI R8,ES(VERTRK) #SEQUENCE TRACK READS
07 CRM R8,R9,M(VERTRK) #HAVE ALL TRACKS BEEN USED
08 BNC SEQTRK #NO
09 # IF ALL FOUR TRACKS FAIL, SCHEDULE A REPACK OPERATION SINCE THIS
10 # IS SYMTEATIC OF THE NEED FOR ONE. THE NEXT PHASE IN THE RECOVERY
11 # PROCESS IS TO CHECK IF THE CLIENT CAN AFFORD A SWITCH TO THE
12 # MATE UNIT. SOME CAN NOT FOR REASONS FLAGGED IN THE TCB.
13 SBS N(REPK)(RAD),S(REPK) #FLAG TAPES TO BE REPACKED
0124017 01 000611 061327 -----
0124020 01 000612 051325 -----
14 TBS N(OTHERU)(RAD),S(OTHERU) #HAVE BOTH UNITS BEEN USED TO LOCATE
FILE
0124021 01 000613 054023 ----- 0124044
16 BC FILELOST #YES
0124022 01 000614 051346 -----
17 TBS N(EXPLIC)(RAD),S(EXPLIC) #CAN CLIENT LIVE WITH OTHER UNIT
0124023 01 000615 054021 ----- 0124044
18 BC FILELOST #NO
0124024 01 000616 051345 -----
19 TBS N(ERNA)(RAD),S(ERNA) #IS ANY ERROR RECOVERY ALLOWED NOW
0124025 01 000617 054017 ----- 0124044
20 BC FILELOST #NO
0124026 01 000620 002205 014000
21 STM R8,N(VERTRK)(RAD),M(VERTRK) #RE-ESTABLISH VERIFY TRACK
0124030
22 CALL COMTU
0124030 01 000622 073026 ----- -001-
23 BSAI CXOMTU # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124031 01 000623 161325 -----
24 SBS N(OTHERU)(RAD),S(OTHERU) #FLAG MATE BEING USED
0124032
25 CLEAN
0124032 01 000624 103020 -----
26 ZR R1
0124033 01 000625 002033 000017
27 STM R1,N(STATEFLG)(RAD),MSK(4)
0124035 01 000627 002031 000017
28 STM R1,N(BUFCT)(RAD),M(BUFCT) #RESET TO START OF VERIFY
0124037 01 000631 062220 -----
29 ZBS N(SRFAL)(RAD),S(SRFAL) # CLEAR ERROR CONDITION
0124040 01 000632 053125 ----- 0124165
30 B BCKTIM

34 SEQTRK
0124041
0124041 01 000633 102205 014000
0124043 01 000635 053767 ----- 0124032
35 STM R8,N(VERTRK)(RAD),M(VERTRK)
36 B CLEAN

0124044
40 FILELOST
0124044 01 000636 103020 -----
0124045 01 000637 037000 125110 0125110
42 LN R1,FATLREAD
43 BL SETSTAT

```

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## TAPE HANDLER PROGRAM

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## VERIFY STATE

CTAPH W77D

```

0124047
0124047 01 000641 162200 -----
0124050 01 000642 062325 -----
0124051 01 000643 017211 014000
0124053 01 000645 054014 ----- 0124067
0124054 01 000646 051120 -----

0124055 01 000647 054010 ----- 0124065
0124056 01 000650 040026 -----
0124057 01 000651 040045 -----
0124060 01 000652 001422 -----
0124061 01 000653 004421 -----
0124062 01 000654 017023 003777

0124064 01 000656 054760 ----- 0124044
0124065
0124065 01 000657 102225 014000
0124067
0124067 01 000661 103462 003777
0124071 01 000663 054047 ----- 0124140
0124072 01 000664 004077 -----
0124073 01 000665 002077 003777
0124075 01 000667 053043 ----- 0124140

0124076
0124076
0124076 01 000670 173045 ----- -001-
0124077 01 000671 153066 ----- 0124165.

0124100
0124100 01 000672 103641 006415
0124102
0124102 01 000674 140225 -----
0124103 01 000675 010637 -----
0124104 01 000676 016251 030000
0124106
0124106 01 000700 073023 ----- -001-
0124107 01 000701 155502 ----- 0123611
0124110 01 000702 053454 ----- 0123564

01 FINALVER
02 ZBS N(IOCMP)(PAD),S(IOCMP) # CLEAR IO COMPLETE FLAG.
03 ZBS N(OTHERU)(RAD),S(OTHERU) #RESET ON SUCCESS
04 CRM R8,R9,M(TRACK)
05 BC PUTLST
06 TBS N(MAINT)(RAD),S(MAINT) # IF MAINT ACTIVE IGNORE POSITION
VERIFICATION

08 BC SKIPCHK
09 L R1,N(PHYBLK)(RAD)
10 L R2,N(LOGBLK)(RAD)
11 AR R1,R2
12 AN R1,1
13 CRM R1,R3,M(PTP) #IF BAD BLK AND DEST. SAME READ CAN'T BE
DONE

15 BC FILELOST
16 SKIPCHK
17 STM R9,N(VERTRK)(RAD),M(VERTRK) #SET TRACK BACK TO ORIG
18 PUTLST
19 NI R3,M(PTP)
20 BC POPZSTP
21 SN R3,1 # ESTABLISH LAST GOOD BLOCK READ IN.
22 STM R3,N(LSTGOOD)(RAD),M(LSTGOOD)
23 B POPZSTP

27 POPTIME
28 CALL POPSTATE
29 BSAI popstAte # SUBROUTINE POPSTATE IS IN PROGRAM CTAPH
30 B BCKTIM

34 BKUP
36 LI R10,TBS # PREPARE TAPE BACKSPACE COMMAND.
37 ORDBCKAB
38 L R9,N(VERTRK)(RAD)
39 RLN R9,1 #GET VERIFY TRACK BITS INTO COMMAND
40 IRM R10,R9,M(TRKS)
41 CALL ORDEXCNT
42 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
43 BNC RMVANDPO
44 B BACK

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

## VERIFY STATE

CTAPH

W77D

0124111				01	VERSTP						
0124111	01	000703	124272	-----	02	TBN	R11,S(TIM)		# CHECK IF TAPE HAS STOPPED.		
0124112	01	000704	054615	-----	03	BC	BACKBASE				
0124113	01	000705	040226	-----	04	L	R9,N(TRACK)(RAO)				
0124114	01	000706	037040	043332	05	A1S	TCBADR+N(STATEFLG)				
0124116	01	000710	024276	-----	06	TBN	R11,S(BOT)		#MUST DO BOT POSITION SETUP		
0124117	01	000711	054632	-----	07	BC	BOTPAT1		#YES		
0124120					08	BGNTIM	MSEC=STPTIM				
0124120					-001-	09	CALL	TIMOUT			
0124120	01	000712	073022	-----	-002-	10	BSAI	TXIMOUT		# SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB	
0124121	01	000713	000003	-----	-001-	11	DATA	3		# TIMOUT+1	
0124122	01	000714	144014	-----	12	ST	RO,N(TIMEK)(RAO)				
0124123	01	000715	053577	-----	13	B	SETIME				
0124124					17	RDVERY					
0124124	01	000716	161240	-----	18	SBS	N(STPST)(RAO),S(STPST)		# PREVENT DATA TRANSFER.		
0124125	01	000717	003641	003415	20	LI	R10,TRB				
0124127	01	000721	053753	-----	21	B	ORDBCKAB				
0124130					25	INITAGN					
0124130	01	000722	103641	040007	26	LI	R10,INIT				
0124132					27	CALL	ORDEXCNT		# SEND INIT ORDER TO TDC		
0124132	01	000724	073023	-----	-001-	28	BSAI	ordexCnt		# SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH	
0124133	01	000725	103020	-----	29	ZR	R1				
0124134	01	000726	002031	000017	30	STM	R1,N(BUFCT)(RAO),M(BUFCT)		#CLEAR BUFFER COUNT INCASE OF PARTIAL		
									BLK		
0124136	01	000730	037000	125154 0125154	32	BL	ADDTIM				
0124140	01	000732	162240	-----	35	POPZSTP	ZBS		N(STPST)(RAO),S(STPST)		
0124141					36	POP					
0124141					37	CALL	POPSTATE				
0124141	01	000733	173045	-----	-001-	38	BSAI	popstAte		# SUBROUTINE POPSTATE IS IN PROGRAM CTAPH	
0124142	01	000734	153565	-----	39	B	BACKBASE				

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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TIMING SUBSTATE

CTAPH W77D

0124143

D1 TIMING

D2 #

ENTRY TO THE TIMING STATE OF THE PROCESSING OF A TAPE TASK.

0124143					06	CALL	TIMOUTCK	# CHECK FOR TIMEOUT		
0124143	01	000735	137020	127124	0127124	-001-	07	BSA	TIMOUTCK	
0124145	01	000737	155562	-----	0123727		08	BNC	BACKBASE	# NO TIMEOUT
0124146							09	CALL	POPSTATE	
0124146	01	000740	073045	-----		-001-	10	BSAI	popstAte	# SUBROUTINE POPSTATE IS IN PROGRAM CTAPH
0124147	01	000741	137000	123206	0123206		11	BL	CTAPH	

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TAPE HANDLER PROGRAM

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POSITIONING SUBSTATE

CTAPH W77D

0124151

01 POSIT  
 02 # ENTRY POINT FOR THE SUBSTATE RESPONSIBLE FOR POSITIONING THE  
 03 # TAPE AT THE FILE REQUESTED IN THE TCB. THE TU MUST BE TURNED ON  
 04 # AND THE PRESENT POSITION VERIFIED. POSITION WILL RETURN TO CLIENT  
 05 # FOR FUTURE STIMULUS.

0124151 01 000743 124075 -----  
 0124152 01 000744 054016 ----- 0124170

09 # FIRST CHECK IF THE TU HAS BEEN PLACED IN A FAST SPEED.  
 10 # THIS WILL BE INDICATED BY THE ABSENCE OF THE POSOK BIT IN THE  
 11 # TU STATUS WORD FOR THIS TAPE UNIT.  
 12 TBN R3,S(POSOK)  
 13 BC CHKDIS # THE TU'S POSITION IS KNOWN CHECK DISTANCE  
 TO DESTINATION

0124153 01 000745 024272 -----

15 # AT THIS POINT THE TU POSITION IS NOT KNOWN. THE REASON MAY BE  
 16 # THAT THE FAST SPEED SEARCH IS INPROGRESS AND REQUIRES TO BE STOPPED.  
 17 # IF IT IS STOPPED, A VERIFY OF THE POSITION MUST BE MADE.  
 18 TBN R11,S(TIM) # CHECK IF TAPE IS IN MOTION (FAST FWD OR  
 REV)

0124154 01 000746 054005 ----- 0124161  
 0124155  
 0124155 01 000747 15320 -----

20 BC ORDSND  
 21 VERSET  
 22 TBS N(SRFAL)(RAO),S(SRFAL) #CRCFAIL HERE MEANS MAINT IP GET OUT OF  
 LOOP

0124156 01 000750 054762 ----- 0124140  
 0124157 01 000751 003007 -----  
 0124160 01 000752 053545 ----- 0123725

24 BC POPZSTP  
 25 LN R0,VERST  
 26 B ZRPUSH

0124161

30 ORDSND

0124161 01 000753 103641 040007  
 0124163  
 0124163 01 000755 073023 ----- -001-  
 0124164 01 000756 155060 ----- 0124244  
 0124165  
 0124165  
 0124165 01 000757 173022 ----- -001-  
 0124166 01 000760 000027 ----- MASACS  
 0124167 01 000761 153533 ----- 0123722

32 LI R10,INIT # PREPARE TO STOP UNIT FROM FAST SEARCH  
 33 CALL ORDEXCNT  
 34 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH  
 35 BNC XRMVPOX  
 36 BCKTIM  
 37 CALL TIMOUT # SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB  
 38 BSAI TXINOUT  
 39 DATA REDKON+6  
 40 B SETIME # SETUP TIME STATE

0124170

44 CHKDIS  
 45 # THE TAPE HAS BEEN PLACED AT AN IBG AND THE POSITION IS VERIFIED.  
 46 # THE CALCULATION OF DISTANCES BETWEEN THE GOAL AND PTP MUST NOW BE DONE.  
 47 # R3 HAS PRESENT TAPE STATUS. RA1 POINTS TO PTP STATUS  
 48 # IF SIEZE STATE IS NEXT IN SCHEDULER STACK. SEARCH FOR DIRECTORY.

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

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## POSITIONING SUBSTATE

CTAPH W77D

0124170 01 000762 140012 -----	01	L	RD,N(STATEWRD) (RAD)	
0124171 01 000763 017404 007405	02	CIRM	RO,SEIZST,4,MSK(4)	# IS SEIZE STATE USING POSITION TO GET DIRECTORY.
0124173 01 000765 055016 ----- 0124211	04	BNC	REGPOS	
0124174 01 000766 003421 014527 MASACS	05	LI	R1,BLKMAX+M(TRACK)	
0124176 01 000770 002027 017777	06	STM	R1,N(LASTBLK) (RAD),M(LASTBLK)+M(TRACK)	
0124200 01 000772 003421 004000 MASACS	07	LI	R1,DIRTRK	
0124202 01 000774 002026 014000	08	STM	R1,N(TRACK) (RAD),M(TRACK)	
0124204 01 000776 002025 014000	09	STM	R1,N(VERTRK) (RAD),M(VERTRK)	
0124206 01 001000 003421 000017 MASACS	10	LI	R1,JIRLOC	# SETUP IS COMPLETE FOR DIRECTORY SEARCH.
0124210 01 001002 053015 ----- 0124225	11	B	SEZSRCH	
0124211	12	REGPOS		
0124211 01 001003 140026 -----	13	L	R1,N(PHYBLK) (RAD)	# GET START ADDRESS AND
0124212 01 001004 003422 003777	14	NI	R1,M(PHYBLK)	
0124214 01 001006 040045 -----	15	L	R2,N(LOGBLK) (RAD)	# INDEX INTO FILE
0124215 01 001007 003442 003777	16	NI	R2,M(LOGBLK)	
0124217 01 001011 001422 -----	17	AR	R1,R2	# DESIRED DESTINATION IN R1
0124220 01 001012 040107 -----	18	L	R4,N(LASTBLK) (RAD)	
0124221 01 001013 003502 017777	19	NI	R4,M(LASTBLK)+M(ENDTRK)	
0124223 01 001015 005101 -----	20	SR	R4,R1	
0124224 01 001016 055023 ----- 0124247	21	BNC	SETOOR	
0124225	22	SEZSRCH		
0124225 01 001017 116403 003777	23	LRM	RD,R3,M(PTP)	# PLACE PRESENT TAPE POSITION IN RD.
0124227 01 001021 005001 -----	24	SR	RD,R1	# FIND DISPLACEMENT IN RD
0124230 01 001022 055022 ----- 0124252	25	BNC	NEG	# FWD SEARCH NEEDED
0124231 01 001023 014000 -----	26	TZ	RO	
0124232 01 001024 054063 ----- 0124315	27	BC	REVERIFY	
0124233	28	CALL	SPEEDTST	# CHECK FOR FAST SEARCH
0124233 01 001025 037020 126615 0126615 -001-	29	BSA	SPEEDTST	
0124235 01 001027 122137 -----	30	ZBN	R5,15	#FLAG REV DIRECTION
0124236 01 001030 055024 ----- 0124262	31	BNC	FAST	
0124237 01 001031 004077 -----	32	SN	R3,1	
0124240 01 001032 044460 -----	33	ST	R3,0(RA1)	# UPDATE PTP
0124241 01 001033 003641 006415	34	LI	R10,TBS	
0124243	36	CALL	ORDEXC	# BACKSPACE FOR SLOW REVERSE SEARCH.
0124243 01 001035 073043 ----- -001-	37	BSAI	OXRDEXC	# SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
0124244	38	XRMVPOX		
0124244 01 001036 150400 123611 0123611	39	BNCL	RMVANDPO	
0124246	40	XBCKTIM		
0124246 01 001040 153717 ----- 0124165	41	B	BCKTIM	
0124247	45	SETOOR		
0124247 01 001041 103026 -----	46	LN	R1,0ORADR	#SET UP KEYWORD FOR P.O.
0124250	47	XRMVCL		
0124250 01 001042 137000 123620 0123620	48	BL	RMVCL	

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## TAPE HANDLER PROGRAM

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## POSITIONING SUBSTATE

CTAPH W77D

```

0124252          01 NEG
0124252 01 001044 115400 ----- 02 # THE FWD SEARCH SEGMENT.
0124253 01 001045 004401 ----- 03 COM RO
                                04 AN RO,1 # RO NOW CONTAINS THE POSITIVE DISPLACEMENT
                                                TO DESTINATION.
0124254          06 CALL SPEEDTST # CHECK DISTANCE TO SPEED RELATIONSHIP
0124254 01 001046 037020 126615 0126615 -001- 07 BSA SPEEDTST
0124256 01 001050 126137 ----- 08 SBN R5,15 # FLAG FWD DIRECTION.
0124257 01 001051 055003 ----- 09 BNC FAST
0124260 01 001052 061240 ----- 10 SBS N(STPST)(RAD),S(STPST) #BLOCK STORE OF BLOCK ON READ POSITION.
0124261 01 001053 053433 ----- 11 B RD1AGN

```

```

0124262          15 FAST
16 # THIS ROUTINE IS USED TO SET UP THE CONDITIONS REQUIRED FOR A FAST
17 # SEARCH OF THE TAPE. A TIME CONSTANT MUST BE PREPARED. RO CONTAINS THE
18 # NUMBER OF BLOCKS TO DESTINATION. ONLY 1 FAST SEARCH PER FILE IS ATTEMPTED.

```

```

0124262 01 001054 162720 ----- 22 ZBS O(RA1),S(POSOK) # CLEAR THE POSITION KNOWN BIT
0124263 01 001055 003020 ----- 23 ZR R1
0124264          24 ADBX
0124264 01 001056 136000 124267 0124267 25 BX RO,ADD
0124266 01 001060 053004 ----- 26 B DIVIDE
0124267          27 ADD
0124267 01 001061 103420 000155 MASACS 28 AI R1,MSECPR # ADD MSEC PER BLOCK FOR EVERY BLOCK TO DEST.
0124271 01 001063 053773 ----- 29 B ADBX
0124272          30 DIVIDE
0124272 01 001064 103441 000031 31 LI R2,25 # 25 MSEC DIVISOR
0124274          32 ADIV
0124274 01 001066 104401 ----- 33 AN RO,1 # ADD NUMBER OF 25 MSEC NEEDED
0124275 01 001067 005022 ----- 34 SR R1,R2 # DIVIDE BY SUB.
0124276 01 001070 054776 ----- 35 BC ADIV
0124277 01 001071 030460 043461 CTSD 36 LL R3,SYSTIM
0124301 01 001073 001460 ----- 37 AR R3,RO # ADD TO MAKE UP CONSTANT
0124302 01 001074 044074 ----- 38 ST R3,N(TIMEK)(RAD)
0124303 01 001075 024137 ----- 40 TBN R5,15 # CHECK FOR DIRECTION OF FAST SEARCH.
0124304 01 001076 054004 ----- 41 BC FFSRCH # FAST FORWARD
0124305 01 001077 003641 004415 42 LI R10,TFR # PREPARE FAST REVERSE.
0124307 01 001101 053003 ----- 43 B SENDO
0124310          44 FFSRCH
0124310 01 001102 103641 002415 45 LI R10,TFF # PREPARE FAST FORWARD COMMAND.
0124312          46 SENDO
0124312          47 CALL ORDEXCNT
0124312 01 001104 173023 ----- -001- 48 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0124313 01 001105 155731 ----- 49 BNC XRMVPOX

```

## COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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POSITIONING SUBSTATE

CTAPH W77D

0124314 01 001106 053407 ----- 0123723

01 B SETIM

0124315

0124315 01 001107 140035 -----  
 0124316 01 001110 003441 C06415  
 0124320 01 001112 017022 007477  
 0124322 01 001114 055616 ----- 0124140  
 0124323 01 001115 062720 -----  
 0124324 01 001116 053631 ----- 0124155

05 REVERIFY

06

L

R1,N(LSTCOM)(RAO) #GET LAST COMMAND GIVEN AT BASE

07

LI

R2,TBS

08

CRM

R1,R2,H(COM)+H(DVIC) #IF BACKSPACE WAS GIVEN RE-VERIFY

09

BNC

POPZSTP

10

ZBS

O(RA1),S(POSOK) #FORCE VERIFY TO BACKSPACE AND READ

11

B

VERSET

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

WRITE SEGMENT OF TAPE HANDLER

CTAPH

W77D

0124325

01 WRITESTATE  
 02 # BASE SEGMENT OF THE WRITE STATE WHICH SETS UP THE TAPE BLOCK  
 03 # AND INITIATES THE LOADING OF THE TAPE UNIT CONTROLLER (TDC).  
 04 # R3=PTP, RA1=ADR OF PTP AND RAO=TCBADR

0124325 01 001117 156001 -----  
 0124326 01 001120 153022 ----- 0124350  
 0124327 01 001121 153176 ----- 0124525  
 0124330 01 001122 153016 ----- 0124346  
 0124331 01 001123 153221 ----- 0124552  
 0124332 01 001124 153027 ----- 0124361  
 0124333 01 001125 153045 ----- 0124400  
 0124334 01 001126 153074 ----- 0124430  
 0124335 01 001127 153136 ----- 0124473  
 0124336 01 001130 153214 ----- 0124552  
 0124337 01 001131 153233 ----- 0124572  
 0124340 01 001132 153165 ----- 0124525  
 0124341 01 001133 153005 ----- 0124346  
 0124342 01 001134 153210 ----- 0124552  
 0124343 01 001135 153130 ----- 0124473  
 0124344 01 001136 153206 ----- 0124552  
 0124345 01 001137 153237 ----- 0124604

08 BPAX R1  
 09 B POSOKCHK  
 10 B BCKUP  
 11 B REDOX  
 12 B SCANSTOP  
 13 B HEDCET # SET UP BLOCK  
 14 B RESETNO  
 15 B CMPUTCRC  
 16 B LCADIT  
 17 B SCANSTOP  
 18 B DUPCHK  
 19 B BCKUP  
 20 B REDOX  
 21 B SCANSYOP  
 22 B LOADIT  
 23 B SCANSTOP  
 24 B RESDUP

0124346  
 0124346 01 001140 137000 125147 0125147

28 REDOX  
 29 BL REDO

0124350

0124350 01 001142 151120 -----  
 0124351 01 001143 054227 ----- 0124600  
 0124352

33 POSOKCHK  
 34 #MAKE SURE POSITION OF TAPE IS KNOWN BEFORE WRITE IS ALLOWED  
 35 TBS N(MAINT) (RAO),S(MAINT)  
 36 BC BASEADD #IF MAINT. IP ASSUME POSITION TAKEN CARE OF.  
 37 POSCHKIT  
 38 # ALSO CHECK IF IN READ ONLY STATE.  
 39 TBN R3,S (REDON)  
 40 BC POMES  
 41 TBN R3,S (POSOK) #HAS POSITION BEEN VERIFIED  
 42 BC BASEADD #YES  
 43 POMES  
 44 LN R1,FATLWRIT

0124352 01 001144 124076 -----  
 0124353 01 001145 054003 ----- 0124356  
 0124354 01 001146 024075 -----  
 0124355 01 001147 054223 ----- 0124600  
 0124356  
 0124356 01 001150 103021 -----

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 57

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## WRITE SEGMENT OF TAPE HANDLER

CTAPH W77D

```

0124357 01 001151 037000 125110 0125110      01      BL      SETSTAT

0124361
0124361 01 001153 162240 -----
0124362 01 001154 037040 043332 CTSD          06 #      SET UP I/O BUFFER FOR OUTPUT.
0124364 01 001156 051326 -----
0124365 01 001157 055015 ----- 0124402    07      ZBS      N(STPST)(RAD),S(STPST) #CLEAR STOP STORE BIT.
0124366 01 001160 040026 -----
0124367 01 001161 003422 003777             08      A1S      N(STATEFLG)+TCBADR
0124371 01 001163 005061 -----
0124372 01 001164 002065 003777             09      TBS      N(DUP)(RAD),S(DUP) # CHECK IF FILE IS DUPLICATED
0124374
0124374 01 001166 073026 ----- -001- 10     BNC      NOMATE
0124375 01 001167 161345 -----
0124376
0124376 01 001170 137000 123641 0123641      11     L        R1,N(PHYBLK)(RAD)
0124400
0124400 01 001172 162345 ----- -001- 12     NI      R1,M(PHYBLK)
0124401
0124401 01 001173 073026 ----- -001- 13     SR      R3,R1
0124402
0124402 01 001174 131400 045266 LAYOUT    14     STM     R3,N(LOGBLK)(RAD),M(LOGBLK) # PREPARE FOR OTHER TU SEARCH
0124404 01 001176 040107 ----- -001- 15     CALL    COMTU #COMPLIMENT TAPE UNIT NUMBER.
0124405 01 001177 037000 113547 0113547      16     BSAI    CXOMTU # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124405 01 001177 037000 113547 0113547      17     SBS     N(ERNA)(RAD),S(ERNA) #ABORT ON ANY ERROR
0124405 01 001177 037000 113547 0113547      18     LDPOS   BL      POSITIONLOD
0124405 01 001177 037000 113547 0113547      19     BL      POSITIONLOD
0124405 01 001177 037000 113547 0113547      20     RESETNO
0124405 01 001177 037000 113547 0113547      21     ZBS     N(ERNA)(RAD),S(ERNA) #CLEAR AND ALLOW ERROR RECOVERY
0124405 01 001177 037000 113547 0113547      22     CALL    COMTU #COMPLIMENT TAPE NUMBER.
0124405 01 001177 037000 113547 0113547      23     BSAI    CXOMTU # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124405 01 001177 037000 113547 0113547      24     NOMATE
0124405 01 001177 037000 113547 0113547      25     LAL     R0,I OBUF,RA1
0124405 01 001177 037000 113547 0113547      26     L        R4,N(LASTBLK)(RAD)
0124405 01 001177 037000 113547 0113547      27     TAPEHL OW 0(1177) # 13596
0124405 01 001177 037000 113547 0113547      28     NOTE   ***** THE FIRST ADDRESS OVERWRITTEN IS 001177 *****

0124405 01 001177 037000 113547 0113547      31     CPATCH1 BGNP 0(765) # 13596
0124405 01 001177 037000 113547 0113547      32     BL      XXX466
0124405 01 001177 037000 113547 0113547      33     NOTE   CPATCH1 'CSECT'
0124405 01 001177 037000 113547 0113547      34     NOTE   ***** PATCH AREA BEGINS AT 000765 *****

0113547
0113547 03 000765 140026 ----- -001- 37     XXX466 PATCHAREA
0113550 03 000766 016061 014000             38     L        R1,N(TRACK)(RAD)
0113552 03 000770 017103 017777             39     IRM     R3,R1,M(TRACK)
0113554
0113554 03 000772 037000 124407 0124407      40     CRM     R4,R3,M(LASTBLK)+M(ENDRK) # SET EOF ON CLIENTS LAST BLK
0113554 03 000772 037000 124407 0124407      41     ENDP    # 13596
0113554 03 000772 037000 124407 0124407      42     BL      XXX468
0113554 03 000772 037000 124407 0124407      43     NOTE   ***** LAST PATCH ADDRESS USED IS 000773 *****
0113554 03 000772 037000 124407 0124407      44     NOTE   ***** NUMBER OF PATCH WORDS USED IS 7 (DECIMAL) *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 58

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## WRITE SEGMENT OF TAPE HANDLER

CTAPH W77D

```

0124407 -001- 01 XXX468 OWCONTINUE
0124407 01 001201 155002 ----- 0124411 02 BNC NOEOFSET
0124410 03 EOW # 13596
-001- 04 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 001201 *****

0124410 01 001202 061720 ----- 07 SBS N(E0F)(RA1),S(E0F)
0124411 08 NOEOFSET
0124411 01 001203 151160 ----- 09 TBS N(ABWRT)(RAD),S(ABWRT) #CHECK FOR BLIND WRITE
0124412 01 001204 062160 ----- 10 ZBS N(ABWRT)(RAD),S(ABWRT)
0124413 01 001205 054006 ----- 0124421 11 BC NOFORMAT #FORGET ABOUT BLOCK FORMAT
0124414 01 001206 040026 ----- 12 L R1,N(TRACK)(RAD)
0124415 01 001207 016061 014000 13 IRM R3,R1,M(TRACK) # SET UP TRACK
0124417 01 001211 002460 017777 14 STM R3,N(BLKADR)(RA1),M(BLKADR)+M(TRCK)
15 # FORM THE HEADER
0124421 16 NOFORMAT
0124421 17 CALL BOUNDCHK # CHECK RANGE OF CLIENT ACCESS.
0124421 01 001213 137020 127351 0127351 -001- 18 BSA BOUNDCHK
0124423 01 001215 155625 ----- 0124250 19 BNC XRMVCL

23 # START TO COMPUTE CRC OVER IOBUF
0124424 01 001216 003000 ----- 24 ZR RO
0124425 01 001217 034400 046765 MASACS 25 STL RO,I_OBUF+BUFLEN #INIT CCRC WORD IN I_OBUF
0124427 01 001221 053151 ----- 0124600 26 B BASEADD

0124430 30 CMPUTCRC
0124430 01 001222 140051 ----- 31 #DO ACTUAL CRC CALC. OVER 64 WORDS PER BASE SCAN.
0124431 01 001223 037040 043330 CTSD 32 L R2,N(BUFACT)(RAD) #GET BUFFER POINTER FOR NEXT 64 WORDS
0124433 01 001225 003421 000077 33 A1S TCBADR+N(BUFACT) #ADD TO POINTER.
0124435 01 001227 030520 046765 MASACS 34 LI R1,WRDBUF-1
0124437 01 001231 031400 045266 LAYOUT 35 LL R5,I_OBUF+BUFLEN
0124441 01 001233 031000 126743 0126743 36 LAL RO,I_OBUF,RA1
0124443 01 001235 034400 046765 MASACS 37 LAL RO,XORTAB,RAO #SET UP ADDRESS REG.
0124445 01 001237 010452 ----- 38 STL RO,I_OBUF+BUFLEN
0124446 01 001240 043402 ----- 39 RLN R2,6 #R6X(64)
40 LAX RO,R2(RA1) #SET REG TO NEXT WORD AND LOAD RO TO NEXT WORD

0124447 42 CRCLOP1
0124447 01 001241 103063 ----- 43 LN R3,3 #FOUR PASS OPERATION ON EACH WORD.
0124450 44 CRCLOP2
0124450 01 001242 116545 000017 45 LRM R6,R5,0(17)
0124452 01 001244 042166 ----- 46 LX R7,R6(RAO)
0124453 01 001245 010524 ----- 47 RRN R5,4
0124454 01 001246 010404 ----- 48 RRN RO,4
0124455 01 001247 016120 170000 49 IRM R5,RO,0(17)*E(12)

```

## COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## WRITE SEGMENT OF TAPE HANDLER

CTAPH

W77D

```

0124457 01 001251 015127 ----- 01      XR      R5,R7
0124460 01 001252 036060 124450 0124450 02      BX      R3,CRCL0P2
0124462 01 001254 041401 ----- 03      LA      R0,1(RA1)      #GET NEXT WORD FOR CRC ALGORITHM.
0124463 01 001255 036020 124447 0124447 04      BX      R1,CRCL0P1
0124465 01 001257 034520 046765 MASACS 05 #DONE WITH 64 WORDS
0124467 01 001261 003445 001400 MASACS 06      STL     R5,I OBUF+BUFLEN
0124471 01 001263 055111 ----- 07      CI      R2,LASTBUF      #WAS ENTIER BUFFER SCANNED?
0124472 01 001264 053106 ----- 08      BNC    BASEBACK      #NO
0124472 01 001264 053106 ----- 09      B      BASEADD      #DONE WITH CRC CALC.

0124473                                13 LOADIT
0124473                                14 #      PREPARE THE TDC FOR WRITE FUNCTION.
0124473                                15 #      THE BUFFER MUST BE PREPARED FOR LOADING

0124473 01 001265 103641 042013          17      LI      R10,BSLD0H
0124475                                18      CALL    ORDEXCNT
0124475 01 001267 073023 ----- -001- 19      BSAI    ordexCnt      # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0124476 01 001270 155260 ----- 0124756 20      BNC     XRMVPO
0124477 01 001271 003000 ----- 21      ZR      R0
0124500 01 001272 044011 ----- 22      ST      R0,N(BUFCT)(RAD)
0124501                                23      CALL    LOADBUF
0124501 01 001273 037020 126453 0126453 -001- 24      BSA     LOADBUF
0124503 01 001275 150400 123411 0123411 25      BNCL    CLOSESTATE      # LOAD ERROR HIT TAPE UNIT

0124505 01 001277 003641 140013          27      LI      R10,BSWB      # SWITCH THE TAPE BUFFERS
0124507                                28      CALL    ORDEXCNT
0124507 01 001301 073023 ----- -001- 29      BSAI    ordexCnt      # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0124510 01 001302 155246 ----- 0124756 30      BNC     XRMVPO
0124511                                31      CALL    LOADBUF      # LOAD UP SECOND BUFFER BOTH WILL BE LOADED
                                                                AT BASE
0124511 01 001303 037020 126453 0126453 -001- 33      BSA     LOADBUF
0124513 01 001305 150400 123411 0123411 34      BNCL    CLOSESTATE      # LOAD ERROR

0124515 01 001307 003641 005415          36      LI      R10,TWT      # PREPARE TO WRITE THE TAPE
0124517                                37      CALL    ORDEXC      # START TAPE WRITING
0124517 01 001311 073043 ----- -001- 38      BSAI    OXRDEXC      # SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
0124520 01 001312 155236 ----- 0124756 39      BNC     XRMVPO
0124521                                40      BGNTIM  MSEC=IBG_1BUF
0124521                                -001- 41      CALL    TIMOUT
0124521 01 001313 073022 ----- -002- 42      BSAI    TXIMOUT      # SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB
0124522 01 001314 000005 ----- -001- 43      DATA   5      # TIMOUT+1
0124523 01 001315 144014 ----- 44      ST      R0,N(TIMEK)(RAD)
0124524 01 001316 053054 ----- 0124600 45      B      BASEADD

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 60

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## WRITE SEGMENT OF TAPE HANDLER

CTAPH W77D

```

0124525          01 BCKUP
02 #            STATE REQUIRED TO BACKSPACE TU FOR WRITE OPERATION.

0124525 01 001317 124276 -----
0124526 01 001320 054007 ----- 0124535

0124527 01 001321 024075 -----
0124530 01 001322 055013 ----- 0124543
0124531 01 001323 016443 003777
0124533 01 001325 014042 -----
0124534 01 001326 055003 ----- 0124537
0124535
0124535 01 001327 162400 -----

0124536 01 001330 053011 ----- 0124547
0124537
0124537 01 001331 104077 -----
0124540 01 001332 044460 -----
0124541 01 001333 004056 -----
0124542 01 001334 044057 -----
0124543
0124543 01 001335 103641 006415

0124545
0124545 01 001337 073023 ----- -001-
0124546 01 001340 155210 ----- 0124756
0124547
0124547 01 001341 137040 043332 CTSD
0124551 01 001343 053475 ----- 0124246

0124552
0124552
0124552 01 001344 137020 127124 0127124 -001-
0124554 01 001346 155026 ----- 0124602
0124555 01 001347 051200 -----
0124556 01 001350 055003 ----- 0124561
0124557 01 001351 062200 -----
0124560 01 001352 053020 ----- 0124600
0124561
0124561 01 001353 161220 -----
0124562 01 001354 051120 -----
0124563 01 001355 050000 124140 0124140
0124565 01 001357 037040 043332 CTSD
0124567
0124567 01 001361 037020 127155 0127155 -001-
0124567 01 001363 153011 ----- 0124602

01 BCKUP
02 #            STATE REQUIRED TO BACKSPACE TU FOR WRITE OPERATION.

04 TBN R11,S(BOT) # IS TAPE ALREADY AT BOT
05 BC ADD1 # YES ZERO LOW BIT OF PTP (NEEDED ONLY FOR
WRITE)

07 # THE FOLLOWING IS USED BY WRITE ROUTINE ONLY. TRANSPARENT TO OTHER STATES.
08 TBN R3,S(POSOK)
09 BNC DOBKUP
10 LRM R2,R3,M(BLKADR)
11 TZ R2 # IS BLK NO 0.
12 BNC DOBKUP1
13 ADD1
14 ZBS O(RA1),D # INFORM THAT HEADS ARE AT BLK 0. (ASSUMES
PTP KNOWN)

16 B ADBKTM
17 DOBKUP1
18 SN R3,1
19 ST R3,O(RA1) #SET UP PTP TO 1 MINUS ITS PRESENT COUNT
20 SN R2,2
21 ST R2,N(LSTGOOD)(RAD) #SET UP LAST GOOD BLK TO REFLECT BACKSPACE
22 DOBKUP
23 LI R10,TBS # BACKSPACE THE UNIT TO PREPARE FOR VERIFICAT
ION.
25 CALL ORDEXCNT # SEND BACKSPACE TO UNIT ON TRACK ZERO.
26 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
27 BNC XRMVPO
28 ADBKTM
29 A1S TCBADR+N(STATEFLG)
30 B XBCKTIM.

34 SCANSTOP
35 CALL TIMOUTCK #SEE IF INT. HAS TIMED OUT
36 BSA TIMOUTCK
37 BNC BASEBACK
38 TBS N(IOCMP)(RAD),S(IOCMP) # HAS INT SUCCEEDED IN TASK
39 BNC RMVCL
40 ZBS N(IOCMP)(RAD),S(IOCMP)
41 B BASEADD
42 RMVCL
43 SBS N(SRFAL)(RAD),S(SRFAL) #MAKE SURE FAILURE IS SET FOR MAINT
44 TBS N(MAINT)(RAD),S(MAINT) #IS MAINT IN CONTROL?
45 BCL POPZSTP #YES GET OUT LET MAINT HAVE SYSTEM.
46 A1S TCBADR+N(STATEFLG)
47 CALL CRCERC #SET UP MAINT FOR RECOVERY ATTEMPT.
48 BSA CRCERC
49 B BASEBACK

```

COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## WRITE SEGMENT OF TAPE HANDLER

CTAPH W77D

```

0124572          04 DUPCHK
0124572          05          CALL      CRCCHK      #CHECK CRC
0124572 01 001364 137020 127132 0127132 -001- 06          BSA      CRCCHK
0124574 01 001366 155006 ----- 0124602 07          BNC      BASEBACK
0124575 01 001367 051326 -----          08          TBS      N(DUP)(RAO),S(DUP) #EXIT UPON FAILURE. LET RECOVERY TAKE OVER.
0124576 01 001370 055012 ----- 0124610 09          BNC      EOFLOOK # CHECK IF FILE IS AUTO-DUP
0124577          10          CALL      COMTU
0124577 01 001371 073026 ----- -001- 11          BSAI     CXOMTU # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124600          12 BASEADD
0124600 01 001372 137040 043332 CTSD 13          A1S     TCBADR+N(STATEFLG)
0124602          14 BASEBACK
0124602 01 001374 137000 001062 CELM 15          BL      CTAPHRTN

0124604          19 RESDUP
0124604          20          CALL      CRCCHK      #CHECK CRC
0124604 01 001376 137020 127132 0127132 -001- 21          BSA      CRCCHK
0124606 01 001400 155774 ----- 0124602 22          BNC      BASEBACK # LET RECOVERY TAKE OVER.
0124607          23          CALL      COMTU
0124607 01 001401 073026 ----- -001- 24          BSAI     CXOMTU # SUBROUTINE COMTU IS IN PROGRAM CTAPH

0124610          28 EOFLOOK
0124610 01 001402 130400 045266 LAYOUT 29          LL      RO,I OBUF
0124612 01 001404 024016 -----          30          TBN      RO,S(EOF) #WAS THIS A DEOF BLOCK
0124613 01 001405 050400 124140 0124140 31          BNCL     POPZSTP
0124615          32 ATLOGEND
0124615 01 001407 140046 -----          33          L      R2,N(PHYBLK)(RAO)
0124616 01 001410 040027 -----          34          L      R1,N(LASTBLK)(RAO)
0124617 01 001411 003442 014000          35          NI      R2,M(TRACK)
0124621 01 001413 017041 014000          36          CRM     R2,R1,M(TRACK)
0124623 01 001415 054032 ----- 0124655 37          BC      CLST
0124624 01 001416 051365 -----          38          TBS      N(SEEZ)(RAO),S(SEEZ)
0124625 01 001417 050000 124140 0124140 39          BCL     POPZSTP
0124627 01 001421 003020 -----          40          ZR      R1
0124630 01 001422 044025 -----          41          ST      R1,N(LOGBLK)(RAO) #INIT VARIOUS TCB WORDS
0124631 01 001423 003440 004001          42          AI      R2,ES(TRACK)+1
0124633 01 001425 002045 014000          43          STM     R2,N(VERTRK)(RAO),M(VERTRK) #ADJUST VERIFY TRACK
0124635 01 001427 024055 -----          44          TBN     R2,S(DUP) #AND TO TRACK AND CHECK FOR OVERFLOW
0124636 01 001430 054017 ----- 0124655 45          BC      CLST #ERROR ATTEMPT TO WRITE ON NON-EXISTENT TRACK
0124637 01 001431 002046 017777          46          STM     R2,N(PHYBLK)(RAO),M(PHYBLK)+M(TRACK)
0124641          47          CALL      POPSTATE
0124641 01 001433 073045 ----- -001- 48          BSAI     popstAte # SUBROUTINE POPSTATE IS IN PROGRAM CTAPH
0124642 01 001434 153534 ----- 0124376 49          B      LDPOS #POSITION PRIMARY TAPE TO BOT FOR READ OR

```

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 62

C01

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

WRITE SEGMENT OF TAPE HANDLER

CTAPH

W77D

WRITE OF BLK 1

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 63

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## TAPE RECOVERY FROM MRF

CTAPH

W77D

0124643

01 MRFINIT  
 02 # THIS STATE WILL PLACE THE TAPE SYSTEM INTO A KNOWN STATE AND  
 03 # CONDITION READY FOR CLIENT USE. THE TAPE DEVICES ARE INITIALIZED  
 04 # AND REWOUND TO THE BEGINNING OF TAPE. ACCESS TO THIS ROUTINE IS  
 05 # MADE VIA TTY REQUEST OR SYSTEM LEVEL 2 INITIALIZATION.

0124643 01 001435 131542 020006 TDATA	09	LAL	R6,TAPETBL,RA1	# PREPARE FOR TAPE DEVICE SCANS
0124645 01 001437 004157 -----	10	SN	R6,1	
0124646 01 001440 041621 -----	11	LA	R9,1(RA1)	#SET UP RA FOR INDEX OPERATION
0124647 01 001441 003136 -----	12	LN	R5,S(BOT)	
0124650 01 001442 003641 004415	13	LI	R10,TFR	#PREPARE FOR STATUS CHECK AND FAST REV.
0124652 01 001444 056001 -----	14	BPAX	R1	
0124653 01 001445 153004 ----- 0124657	15	B	REWINDU	
0124654 01 001446 153020 ----- 0124674	16	B	BOTPOS	
0124655	17	CLST		
0124655 01 001447 137000 123411 0123411	18	BL	CLOSESTATE	

0124657

22 REWINDU  
 23 # THIS SUB-STATE IS SHARED WITH THE REPACK STATE.

0124657 01 001451 142626 -----	25	LX	R9,R6(RA1)	#GET ENABLE ADDRESS.
0124660	26	# SEE IF REQUESTED BIT IS SET		
0124660 01 001452 037020 127264 0127264	27	CALL	CHKTSTAT	
0124662 01 001454 154003 ----- 0124665	28	BSA	CHKTSTAT	
0124663	29	BC	R6BX	
0124663 01 001455 073032 -----	30	CALL	ORDEXCAB	# SEND REWIND ORDER.
0124664 01 001456 155004 ----- 0124670	31	BSAI	ordexCab	# SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0124665	32	BNC	BXRMV	
0124665 01 001457 136140 124657 0124657	33	R6BX		
0124667 01 001461 053711 ----- 0124600	34	BX	R6,REWINDU	
0124670	35	B	BASEADD	
0124670 01 001462 103025 -----	36	BXRMV		
0124671	37	LN	R1,ORDER	
0124671 01 001463 037020 126766 0126766	38	CALL	REMOVTU	
0124673 01 001465 153772 ----- 0124665	39	BSA	REMOVTU	
	40	B	R6BX	

0124674

44 BOTPOS  
 45 # THIS SUBSTATE IS SHARED WITH THE REPACK STATE.

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 64

TAPE HANDLER PROGRAM  
TAPE RECOVERY FROM MRF

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

```

-001- 01 TAPEHL OW      0(1466)          # 13058
      02 NOTE          ***** THE FIRST ADDRESS OVERWRITTEN IS 001466 *****

0124674      05 BOTPOS
0124674 01 001466 131000 043317 CTSD      06 LAL      RD,TCBADR,RAO
0124676      07 NXTSCAN
0124676      08 CALL    CHKTSTAT          # CHECK FOR BOT
0124676 01 001470 137020 127264 0127264 -001- 09 BSA    CHKTSTAT
0124700 01 001472 150000 113725 0113725      10 DPATCH NOTE ! CHANGE BCL TO BC
0124702 01 001474 024272 -----      11 BCL    WATNX
0124703 01 001475 054677 ----- 0124602      12 TBN    R11,S(TIN)          # IF TAPE IN MOTION GONE,ERROR EXIST
      13 BC    BASEBACK
      14 # ***** ARE BOTH TAPES INSERTED *****
      15 TBN    R11,S(BOT)
      16 BC    TB15
      17 TBN    R11,S(EOT)
      18 DPATCH NOTE ! CHANGE BNCL TO BNC
      19 BNCL  WATNX
      20 # *****
      21 TB15
      22 TBS    15(RAO),2          # WAS TFR ORDER GIVEN 4 TIMES ?
      23 DPATCH NOTE ! CHANGE BCL TO BC
      24 BCL    REMOVTV
      25 A1S    TCBADR+15
      26 # *** IS THIS A MRF INIT ***
      27 L      RD,10(RAO)
      28 CPATCH1 BGNP 0(1124)          # 13058
0124717 01 001511 037000 113706 0113706 -001- 29 BL      XXX495
-001- 30 NOTE    CPATCH1 'CSECT'
-001- 31 NOTE    ***** PATCH AREA BEGINS AT 001124 *****

0113706      -001- 34 XXX495 PATCHAREA
0113706 03 001124 103402 000017      35 NI      RD,15
0113710 03 001126 003405 000011      36 CI      RD,MRFST
0113712 03 001130 054004 ----- 0113716      37 BC      AMRF
      38 # *****
      39 L      R1,N(STATEFLG)(RAO)
      40 LN     R1,2
      41 ST     R1,N(STATEFLG)(RAO)
      42 AMRF
      43 BL      ADBKTM
      44 REMOVTV
      45 LN     R1,ORDER
      46 ZR      RD
      47 ST     RD,15(RAO)
      48 CALL   REMOVTV
0113723 03 001141 037020 126766 0126766 -001- 49 BSA    REMOVTV

```

COMMON TAPE HANDLER

PR-1C957-50

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TAPE HANDLER PROGRAM

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TAPE RECOVERY FROM MRF

CTAPH W77D

0113725		01	WATNX		
0113725	03 001143 136140 1246:6 0124676	02	BX	R6,NXTSCAN	
0113727		03	ADBKTH		
0113727	03 001145 103000 -----	04	ZR	RO	
0113730	03 001146 044017 -----	05	ST	RO,15(RAO)	
0113731	03 001147 037000 124547 0124547	06	BL	ADBKTH	
0113731		07	ENDP	NR	# 13058
		-001-	08	NOTE	***** LAST PATCH ADDRESS USED IS 001150 *****
		-001-	09	NOTE	***** NUMBER OF PATCH WORDS USED IS 21 (DECIMAL) *****

0124721		12	EOW		# 13058
		-001-	13	NOTE	***** THE LAST ADDRESS OVERWRITTEN IS 001512 *****

COMMON TAPE HANDLER

PR-1C957-50

TAPE HANDLER PROGRAM  
COPY TAPE TO TAPE ROUTINE

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0124721

01 COPYSTATE  
02 # THIS STATE IS RESPONSIBLE FOR READING A BLOCK OFF ONE TAPE AND  
03 # WRITING IT ONTO ITS MATE TAPE.

```

0124721 01 001513 156001 -----
0124722 01 001514 153022 ----- 0124744
0124723 01 001515 153027 ----- 0124752
                                07      BPAX      R1
                                08      B          POSMATE
                                09      B          REDSTD
                                10 TAPEHL OW      0(1516)      # 12648
-001- 11      NOTE      ***** THE FIRST ADDRESS OVERWRITTEN IS 001516 *****

0124724 01 001516 153014 ----- 0124740
0124725 01 001517 153007 ----- 0124734
0124726 01 001520 153010 ----- 0124736
0124727 01 001521 153623 ----- 0124552
0124730 01 001522 153031 ----- 0124761
                                14      B          SKPREWND
                                15      B          REWINDTUS
                                16      B          VERSTPS
                                17      B          SCANSTOP
                                18      B          WRITEMATE
                                19 # CHECK IF LAST BLK WRITTEN OUT IS THE LAST BLOCK ON THE FILE.
                                20      L          R2,N(LASTBLK)(RAD)
                                21 CPATCH2 BGNP 0(677)      # 12648
0124732 01 001524 037000 115006 0115006 -001- 22      BL          XXX505
-001- 23      NOTE      CPATCH2 'CSECT'
-001- 24      NOTE      ***** PATCH AREA BEGINS AT 000677 *****

0115006
0115006 04 000677 140026 -----
0115007 04 000700 016061 014000
0115011 04 000702 004077 -----
0115012 04 000703 003021 -----
0115013 04 000704 002033 000017
                                -001- 27 XXX505 PATCHAREA
                                28      L          R1,N(TRACK)(RAD)
                                29      IRM      R3,R1,M(TRACK)
                                30      SN          R3,1
                                31      LN          R1,1
                                32      STM      R1,N(STATEFLG)(RAD),MSK(4) # PREPARE TO CONTINUE READ OF NEXT
                                                BLOCK.
0115015 04 000706 017043 017777
                                34      CRM      R2,R3,M(TRACK)+M(LASTBLK)
                                35 DEPATCH NOTE REPLACE BNCL WITH BNC
                                36      BNCL      REDSTD
                                37      CALL      COMTU
                                38      BSAI      CXOMTU      # SUBROUTINE COMTU IS IN PROGRAM CTAPH
-001- 39      BL          POPZSTP
0115017 04 000710 050400 124752 0124752
0115021
0115021 04 000712 073026 -----
0115022 04 000713 137000 124140 0124140
0115024
                                40 SKIPRWND
                                41 # IF THE INTERRUPT HANDLER FINDS A DEOF BIT IT WILL ADD 1 TO
                                42 # THE STATE FLAG AND SKIP THIS SUSTATE. OTHERWISE THIS
                                43 # SUBSTATE WILL INCREMENT THE STATE FLAG BY 3 TO SKIP OVER
                                44 # THE REWIND CODE.
0115024 04 000715 124272 -----
0115025 04 000716 054004 ----- 0115031
0115026 04 000717 040013 -----
0115027 04 000720 004402 -----
0115030 04 000721 044013 -----
                                45      TBN      R11,S(TIM)
                                46      BC          DONTINC
                                47      L          RD,N(STATEFLG)(RAD)
                                48      AN          RD,2
                                49      ST          RD,N(STATEFLG)(RAD)

```

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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COPY TAPE TO TAPE ROUTINE

CTAPH W77D

```

0115031          01 DONTINC
0115031 04 000722 137000 124602 0124602      02          BL      BASEBACK
0115031          03          ENDP      NR
-001- 04          NOTE      ***** LAST PATCH ADDRESS USED IS 000723 *****
-001- 05          NOTE      ***** NUMBER OF PATCH WORDS USED IS 21 (DECIMAL) *****

0124734          08          EOW          # 12648
-001- 09          NOTE      ***** THE LAST ADDRESS OVERWRITTEN IS 001525 *****

          12 TAPEHL OW      0(1526)      # 12648
-001- 13          NOTE      ***** THE FIRST ADDRESS OVERWRITTEN IS 001526 *****

          16 # TRANSFER VECTORS FOR SHORT BRANCHES
0124734          17 REWINDTUS
0124734 01 001526 137000 123551 0123551      18          BL      REWINDTU
0124736          19 VERSTPS
0124736 01 001530 137000 124111 0124111      20          BL      VERSTP
0124740          21 SKPREWND
0124740 01 001532 137000 115024 0115024      22          BL      SKIPRWND
0124742          23          EOW          # 12648
-001- 24          NOTE      ***** THE LAST ADDRESS OVERWRITTEN IS 001533 *****

0124742          27 PIP
0124742 01 001534 137000 124140 0124140      28          BL      POPZSTP      #DONE

0124744          32 POSMATE
0124744          33          CALL      COMTU
0124744 01 001536 173026 -----      -001- 34          BSAI      CXOMTU      # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124745          35          CALL      STATSET      #CHECK MATE STATUS
0124745 01 001537 173024 -----      -001- 36          BSAI      SXTATSET      # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0124746 01 001540 155774 ----- 0124742      37          BNC      PIP
0124747 01 001541 024036 -----      38          TBN      R1,S(REDON)      #CHECK IF UNIT CAN BE WRITTEN.
0124750 01 001542 054772 ----- 0124742      39          BC      PIP
0124751 01 001543 053241 ----- 0125212      40          B      ADDPOS      #GO TO NEXT STATE AND POSITION RECIPIENT TAPE.

0124752          45 REDSTD
0124752          46 # SUB-STATE USED TO READ A BLOCK OFF STANDARD UNIT
0124752 01 001544 173026 -----      -001- 47          CALL      COMTU
          48          BSAI      CXOMTU      # SUBROUTINE COMTU IS IN PROGRAM CTAPH

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

CTAPH W77D

## COPY TAPE TO TAPE ROUTINE

0124753	01	001545	103641	003415		01	LI	R10,TRB	#SEND READ ONE BLK ORDER.
0124755						02	CALL	ORDEXC	
0124755	01	001547	073043	-----	-001-	03	BSAI	OXRDEXC	# SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
0124756						04	XRMVPO		
0124756	01	001550	150400	123611 0123611		05	BNCL	RMVANDPO	# 12648
						06	TAPEHL	OW	0(1552)
					-001-	07	NOTE		***** THE FIRST ADDRESS OVERWRITTEN IS 001552 *****
0124760	01	001552	053620	----- 0124600		10	B	BASEADD	
0124761						11	EOW		# 12648
					-001-	12	NOTE		***** THE LAST ADDRESS OVERWRITTEN IS 001552 *****
0124761						18	WRITEMATE		
0124761						19	CALL	COMTU	#SET TU NUMBER MATE OF STANDARD
0124761	01	001553	173026	-----	-001-	20	BSAI	C%OMTU	# SUBROUTINE COMTU IS IN PROGRAM CTAPH
0124762	01	001554	153075	----- 0125057		21	B	READWRITE	#WRITE A BLOCK AND CHECK CRC.

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

MAINT STATE-REREAD

CTAPH

W77D

0124763

01 RETRYSTATE  
 02 # MAINTENANCE STATE INVOLVED WITH RE-READING A BLOCK WHICH HAS  
 03 # FAILED THE CRC ROUTINE AT THE INTERRUPT LEVEL. THE TAPE BLOCK WILL  
 04 # BE READ ONE MORE TIME TO SEE IF FAILURE WAS TRANSIENT. A SIMPLE  
 05 # METHOD OF ACCOMPLISHING THIS IS TO INVOKE THE VERIFY STATE. THIS STATE  
 06 # WILL SIMPLY BACKSPACE AND TRY TO READ THE BLOCK ADDRESS INTO THE STATUS  
 07 # BLOCK. TWO TRYS ARE ATTEMPTED BEFORE ABORTING. THIS MAINTENANCE STATE  
 08 # WILL GAIN CONTROL UPON THE COMPLETION OR ABORT OF VERIFY.

0124763	01	001555	156001	-----	12	BPAX	R1
0124764	01	001556	153013	-----	13	B	INVOKVER
0124765					14	CHK	
0124765	01	001557	153033	-----	15	B	CHKVER
0124766	01	001560	153066	-----	16	B	REWRITE
0124767	01	001561	153076	-----	17	B	CHKRESULTS
0124770					18	XBCKUP	
0124770	01	001562	153535	-----	19	B	BCKUP
0124771	01	001563	153156	-----	20	B	REDO
0124772	01	001564	153170	-----	21	B	GETBADBLK
0124773	01	001565	153223	-----	22	B	REDMATE
0124774	01	001566	153227	-----	23	B	RERITE
0124775	01	001567	153070	-----	24	B	CHKRESULTS
0124776					25	RES	
0124776	01	001570	153236	-----	26	B	RESRTN

0124777

0124777	01	001571	130420	043311	CTSD	30	INVOKVER
0125001	01	001573	017420	007407		31	# SET UP CONTROL AND VERIFY STATE REQUEST.
0125003	01	001575	04236	-----	0125241	32	LL R1,MTCV
0125004	01	001576	037040	043332	CTSD	33	CIRM R1,VERST,D,MSK(4) # CHECK IF VERIFY ACTIVE
0125006	01	001600	022075	-----		34	BC RSTNOPO #VERIFY CRC ERROR. VERIFY HAS OWN RECOVERY
0125007	01	001601	044460	-----		35	A1S N(STATEFLG)+TCBADR # NEXT SUBSTATE
0125010	01	001602	051220	-----		36	ZBN R3,S(POSOK)
0125011	01	001603	062220	-----		37	ST R3,O(RA1) # CLEAR TAPE STATUS POSITION OK BIT.
0125012	01	001604	050000	124155	0124155	38	TBS N(SRFAL)(RAD),S(SRFAL) #CHECK IF TIMEOUT OCCURRED.
0125014	01	001606	003022	-----		39	ZBS N(SRFAL)(RAD),S(SRFAL)
0125015	01	001607	003007	-----		40	BCL VERSET
0125016	01	001610	037000	123726	0123726	41	LN R1,2
						42	LN R0,VERST #SET UP VERIFY TO READ (NO BACKSPACE)
						43	BL PUSHAND

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

## MAINT STATE-REREAD

CTAPH

W77D

```

0125020 01 001612 130400 043311 CTSD
0125022 01 001614 030440 043316 CTSD
0125024 01 001616 004441 -----
0125025 01 001617 051220 -----
0125026 01 001620 055077 ----- 0125125

0125027 01 001621 162220 -----
0125030 01 001622 017400 007410
0125032 01 001624 054153 ----- 0125205

0125033 01 001625 051010 -----
0125034 01 001626 055004 ----- 0125040
0125035 01 001627 037040 060166 LAYOUT
0125037 01 001631 053003 ----- 0125042
0125040 01 001632 137040 060165 LAYOUT
0125042 01 001634 103601 001437 TTYTBL -001-
0125044 01 001636 073046 ----- -001-
0125045 01 001637 140013 -----
0125046 01 001640 004404 -----
0125047 01 001641 044013 -----
0125050 01 001642 003020 -----
0125051 01 001643 002025 014000

0125053 01 001645 053132 ----- 0125205

0125054 01 001646 103601 001576 TTYTBL -001-
0125056 01 001650 073046 ----- -001-
0125057 01 001651 137040 043332 CTSD
0125061 01 001653 003010 -----
0125062 01 001654 062220 -----
0125063 01 001655 037000 123725 0123725

01 CHKVER
02 # IF THE SRFAL BIT IS SET THE BLOCK HAS FAILED THE CRC CHECK 2 MORE TIMES
03 LL RD,MTCSV # SET UP RD
04 LL R2,MTCSV+(SVLSTGOOD) #GET LAST GOOD BLK NUMBER
05 AN R2,1 # ADJUST FOR POSITIONING
06 TBS N(SRFAL)(RAD),S(SRFAL)
07 BNC RECOVOK # BLOCK HAS PASSED RECOVERY.
08 # BLOCK MUST BE EITHER RE-WRITTEN OR MOVED DEPENDING UPON THE OPERATION
09 # PREFORMED AT THE POINT THE MAITENANCE STATES WERE REQUIRED.
10 FLSRCV
11 ZBS N(SRFAL)(RAD),S(SRFAL)
12 CIRM RD,WRITST,D,MSK(4) # WAS A WRITE IP.
13 BC CONRET # ISSUE BACK SPACE AND GO TO NEXT SUBSTATE.
14 # A READ HAS FAILED. INITIATE BLOCK RECOVERY.
15 TBS N(TAPNO)(RAD),S(TAPNO)
16 BNC ZREAD
17 A1S MMT1FR # ADD PEG COUNT FOR TDC1 FATAL READ.
18 B CRECR
19 ZREAD
20 A1S MMT0FR # ADD PEG COUNT FOR TDC0 FATAL READ.
21 CRECR
22 SPELL R8,(F,A,T,L,R,E,A,D)
23 LI R8,fatlrEad
24 CALL PTREC
25 BSAI PXTREC # SUBROUTINE PTREC IS IN PROGRAM CTAPH
26 L RD,N(STATEFLG)(RAD)
27 AN RD,4 # SET UP FOR READ RECOVERY ROUTINES
28 ST RD,N(STATEFLG)(RAD)
29 ZR R1
30 STM R1,N(VERTRK)(RAD),M(VERTRK) #FORCE VERIFY ON TRACK ZERO
31 #SET POSITION REQUEST FOR BAD BLK MINUS 1
32 B CONRET

36 REWRITE
37 # A RE-WRITE WILL NOW BE ATTEMPTED TO RECOVER THE FATAL CRC FAILURE.
38 # THE TAPE SHOULD BE POSITIONED TO WRITE THE BLOCK OVER.
39 SPELL R8,(W,2,X)
40 LI R8,WX2X
41 CALL PTREC
42 BSAI PXTREC # SUBROUTINE PTREC IS IN PROGRAM CTAPH
43 READWRITE
44 A1S TCBA DR+N(STATEFLG) # GO TO NEXT MAINT SUBSTATE
45 LN RD,WRITST
46 ZBS N(SRFAL)(RAD),S(SRFAL) # CLEAR CRC FAIL FLAG.
47 BL ZRPUSH

```

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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MAINT STATE-REREAD

CTAPH W77D

0125065

01 CHKRESULTS  
 02 # A RE-WRITE HAS BEEN INITIATED AND TERMINATED. CHECK IF THE RESULTS  
 03 # OF THE READ AFTER WRITE INDICATE SUCCESS OF THE RE-WRITE.

0125065	01	001657	130400	043311	CTSD	06	LL	RD,MTCSV	
0125067	01	001661	051220	-----		07	TBS	N(SRFAL)(RAD),S(SRFAL)	# TEST IF WRITE VERIFICATION FAILED.
0125070	01	001662	055051	-----	0125141	08	BNC	SWITAPE	# NO ERROR
0125071	01	001663	017400	007410		09	CIRM	RD,WRITST,0,MSK(4)	# WAS ERROR IN WRITE STATE
0125073	01	001665	054011	-----	0125104	10	BC	PRMERR	# NO FURTHER RECOVERY POSSIBLE.
0125074	01	001666	044420	-----		11	ST	R1,0(RA1)	# CLEAR PTP R1 NEVER > 15
0125075						12	CALL	COMTU	# COMPLIMENT TAPE NUMBER AND PREPARE TO SWITCH UNITS.
0125075	01	001667	073026	-----		-001- 14	BSAI	CXOMTU	# SUBROUTINE COMTU IS IN PROGRAM CTAPH
						15	SPELL	R8,(S,W)	
0125076	01	001670	103601	000043	TTYTBL	-001- 16	LI	R8,SXW	
0125100						17	CALL	PTREC	# OUTPUT RECOVERY ATTEMPT.
0125100	01	001672	073046	-----		-001- 18	BSAI	PXTREC	# SUBROUTINE PTREC IS IN PROGRAM CTAPH
0125101	01	001673	130400	043311	CTSD	19	LL	RD,MTCSV	
0125103	01	001675	053036	-----	0125141	20	B	SWITAPE	

0125104

24 PRMERR  
 25 # A PERMINENT WRITE ERROR EXISTS ON THIS TAPE. PLACE UNIT INTO  
 26 # READ ONLY STATE

0125104	01	001676	124076	-----		27	TBN	R3,S(REDON)	# CHECK IF TAPE IS ALREADY IN READ ONLY.
0125105	01	001677	054016	-----	0125123	28	BC	SCORPO	# INDICATE ANOTHER READ ERROR HAS OCCURED.
0125106	01	001700	026076	-----		29	SBN	R3,S(REDON)	# PLACE TAPE IN READ ONLY STATE.
0125107	01	001701	003021	-----		30	LN	R1,FATLWRT	
0125110						31	SETSTAT		
0125110	01	001702	151010	-----		32	TBS	N(TAPNO)(RAD),S(TAPNO)	
0125111	01	001703	055004	-----	0125115	33	BNC	ZFTWRT	
0125112	01	001704	037040	060170	LAYOUT	34	A1S	MMT1FW	# FATAL WRITE PEG COUNT. TDC1
0125114	01	001706	053003	-----	0125117	35	B	SETST	
0125115						36	ZFTWRT		
0125115	01	001707	137040	060167	LAYOUT	37	A1S	MMT0FW	# FATAL WRITE PEG COUNT. TDC0
0125117						38	SETST		
0125117						39	CALL	PRNTER	
0125117	01	001711	137020	127060	0127060	-001- 40	BSA	PRNTER	
0125121	01	001713	137000	123411	0123411	41	BL	CLOSESTATE	

0125123

45 SCORPO  
 46 # THE TAPE BEING USED AT THIS TIME HAS BEEN REMOVED FROM THE WRITE  
 47 # ALLOWED STATE AND HAS NOW ENCOUNTERED A PERM READ ERROR WHICH HAS FAILED  
 48 # A RECOVERY ATTEMPT, JUST GIVE MAJOR ALARM PO AND ABORT.

0125123	01	001715	103020	-----		49	LN	R1,FATLREAD	
---------	----	--------	--------	-------	--	----	----	-------------	--

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

## MAINT STATE-REREAD

CTAPH

W77D

0125124	01	001716	053764	-----	0125110	01	B	SETSTAT		
0125125						05	RECOVOK			
0125125	01	001717	104077	-----		06	SN	R3,1	# ADJUST PTP FOR COMPARISON AGAINST LAST GOOD BLK. NO.	
0125126	01	001720	017062	003777		08	CRM	R3,R2,H(PTP)		
0125130	01	001722	055677	-----	0125027	09	BNC	FI,SRV	#BLK NUMBERS DO NOT AGREE. FALSE RECOVERY	
0125131	01	001723	004461	-----		10	AN	R3,1		
0125132	01	001724	051010	-----		12	TBS	N(TAPNO)(RAD),S(TAPNO)		
0125133	01	001725	055004	-----	0125137	13	BNC	ZTRNS	# TDC ZERO ENCOUNTERED A TRANSIENT ERROR.	
0125134	01	001726	037040	060164	LAYOUT	14	A1S	MMT1TE	# PEG COUNT FOR TRANSIENT ERROR RECOVERY. TDC 1	
0125136	01	001730	053003	-----	0125141	16	B	SWITAPE		
0125137						17	ZTRNS			
0125137	01	001731	137040	060163	LAYOUT	18	A1S	HMTOTE	# PEG COUNT FOR TRANSIENT ERROR RECOVERY. TDC 0.	
0125141						20	SWITAPE			
0125141	01	001733	117400	007404		21	CIRM	RD,READST,O,X(F)	# CHECK IF READ WAS IP.	
0125143	01	001735	055071	-----	0125234	22	BNC	RESRTN	# SET UP ORIGINAL TCB.	
0125144	01	001736	003011	-----		26	LN	RD,(RES-CHK)		
0125145	01	001737	044013	-----		27	ST	RD,N(STATEFLG)(RAD)	# STORE IN CONTROL BUFFER	
0125146	01	001740	053622	-----	0124770	28	B	XBCKUP		
0125147						32	REDO			
0125147	01	001741	103641	003415		34	LI	R10,TRB	# PREPARE TO READ A BLOCK ON TRACK ZERO.	
0125151						35	CALL	ORDEXCNT		
0125151	01	001743	073023	-----		-001- 36	BSAI	ordexCnt	# SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH	
0125152	01	001744	155604	-----	0124756	37	BNC	KRMVPO		
0125153	01	001745	061240	-----		38	SBS	N(STPST)(RAD),S(STPST)		
0125154						39	ADDTIM			
0125154						40	BGNTIM	SEC=3	#ALLOW FOR BOT CONDITIONS	
0125154						-001- 41	CALL	TIMOUT		
0125154	01	001746	173022	-----		-002- 42	BSAI	TXIMOUT	# SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB	
0125155	01	001747	000171	-----		-001- 43	DATA	121	# TIMOUT+1	
0125156						44	ADSET			
0125156	01	001750	137040	043332	CTSD	45	A1S	N(STATEFLG)+TCBADR		
0125160	01	001752	037000	123722	0123722	46	BL	SETIME	# INCREMENT FLAG AND REQUEST TIME STATE.	

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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MAINT STATE-REREAD

CTAPH W77D

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0125162                                01 GETBADBLK
0125162 01 001754 151345 -----      03      TBS      N(ERNA)(RAD),S(ERNA) #IS SWITCH RECOVERY ALLOWED
0125163 01 001755 054721 ----- 0125104 04      BC      PRMERR      #NO
0125164 01 001756 051220 -----      06      TBS      N(SRFAL)(RAD),S(SRFAL) # CHECK IF REFERENCE BLOCK WAS READ OK
0125165 01 001757 054717 ----- 0125104 07 # THE REFERENCE BLOCK IS THE TRACK 0 BLK JUST BEFORE THE BAD BLOCK.
0125166 01 001760 030440 043316 CTSD 08      BC      PRMERR      # CAN NOT RECOVER THIS BLOCK.
0125170 01 001762 004441 -----      09      LL      R2,MTCSV+N(SVLSTGO.D)
0125171 01 001763 017062 003777      10      AN      R2,1      #ADJUST LAST GOOD BLK NO. FOR COMPARE.
0125173 01 001765 055711 ----- 0125104 11      CRM      R3,R2,M(PTP)      #WAS TRK ZERO POSITION SUCCESSFUL
0125174 01 001766 040106 -----      12      BNC      PRMERR      #NO
0125175 01 001767 017513 001400      13      L      R4,N(TRACK)(RAD)
0125177 01 001771 054705 ----- 0125104 14      CIRM     R4,D,S(TRACK),M(TRACK)/LS(TRACK) # CHECK IF TRACK ZERO.
0125200 01 001772 002105 014000      15      BC      PRMERR      # CAN NOT RECOVER TRACK ZERO.
0125202 01 001774 073026 -----      16      STM      R4,N(VERTRK)(RAD),M(VERTRK) #RE-ESTABLISH VERIFY TRACK
0125203 01 001775 173024 -----      17      CALL     COMTU      #COMPLIMENT TAPE NUMBER IN TCB
0125204 01 001776 155700 ----- 0125104 -001- 18      BSAI     CXOMTU      # SUBROUTINE COMTU IS IN PROGRAM CTAPH
0125205 01 001777 103020 -----      19      CALL     STATSET
0125206 01 002000 002025 017777      20      BSAI     SXTATSET      # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0125210 01 002002 002046 003777      21      BNC      PRMERR
0125212 01 002004 137040 043332 CTSD 22 CONRET
0125214 01 002006 037000 123641 0123641. 23 # THA DUPLICATE TAPE MUST NOW BE POSITIONED FOR THE RECOVERY
0125216 01 002010 151220 -----      24 # OF THE BAD BLOCK.
0125217 01 002011 054704 ----- 0125123 25      ZR      R1
0125220 01 002012 062240 -----      26      STM      R1,N(LOGBLK)(RAD),M(VERTRK)+M(LOGBLK) #CLEAR LOGBLK FOR POSITION
0125221 01 002013 037000 123712 0123712 27      STM      R2,N(PHYBLK)(RAD),M(PHYBLK) # PREPARE TO POSITION BAD BLOCK
0125223 01 002015 151220 -----      28 ADDPOS
0125224 01 002016 054660 ----- 0125104 29      A1S     TCBADR+N(STATEFLG)
0125225 01 002017 073026 ----- -001- 30      BL      POSITIONL0D      # POSITION MATE UNIT
0125216                                34 REDMATE
0125216 01 002010 151220 -----      35 # THE BAD BLOCK WILL NOW BE READ OFF MATE TAPE
0125217 01 002011 054704 ----- 0125123 36      TBS      N(SRFAL)(RAD),S(SRFAL) #IS A CRC FAILURE PRESENT?
0125220 01 002012 062240 -----      37      BC      SCORPO      #CHECK IF PREVIOUS OPERATION WAS SUCCESSFUL
0125221 01 002013 037000 123712 0123712 38      ZBS      N(STPST)(RAD),S(STPST)
0125223 01 002015 151220 -----      40      BL      MATERED
0125223                                44 RERITE
0125223 01 002015 151220 -----      45 # REWRITE ORIGINAL TAPE
0125224 01 002016 054660 ----- 0125104 46      TBS      N(SRFAL)(RAD),S(SRFAL) #DID PREVIOUS OPERATION SUCCEED?
0125225 01 002017 073026 ----- -001- 47      BC      PRMERR
0125225 01 002017 073026 -----      48      CALL     COMTU
0125225 01 002017 073026 -----      49      BSAI     CXOMTU      # SUBROUTINE COMTU IS IN PROGRAM CTAPH

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

## MAINT STATE-REREAD

CTAPH

W77D

```

0125226 01 002020 153631 ----- 0125057      01      B      READWRITE
0125227      03 GETCLNT
0125227      04      BEGIN
0125227 01 002021 171420 ----- -002- 05      HA
0125230 01 002022 031000 125234 0125234      06      LAL      RD,RESRTN,RAO      # SET UP RETURN FOR CLIENT
0125232 01 002024 037000 125764 0125764      07      BL      FUNRTN

0125234      11 RESRTN
0125234 01 002026 131020 043317 CTSD      12      LAL      R1,TCBADR,RAO
0125236 01 002030 003601 000302 TTYTBL -001- 13      SPELL     RB,(C,O,M,P,L)
0125240      14      LI      RB,CXOMPL
0125240 01 002032 073046 ----- -001- 15      CALL     PTREC
0125241      16      BSAI     PXTREC      # SUBROUTINE PTREC IS IN PROGRAM CTAPH
0125241      17 RSTNOPO
0125241 01 002033 162220 -----      18      ZBS      N(SRFAL)(RAO),S(SRFAL)
0125242 01 002034 031400 043311 CTSD      19      LAL      RO,MTC SV,RA1
0125244 01 002036 044012 -----      20      ST      RO,N(STATEWRD)(RAO)
0125245 01 002037 040401 -----      21      L      RO,N(SVFLG)(RA1)
0125246 01 002040 044013 -----      22      ST      RO,N(STATEFLG)(RAO)
0125247 01 002041 062200 -----      23      ZBS      N(IOCMP)(RAO),S(IOCMP)
0125250 01 002042 040404 -----      24      L      RO,N(SVINDX)(RA1)
0125251 01 002043 044005 -----      25      ST      RO,N(LOGBLK)(RAO)      # RESTORE CLIENT INDEX
0125252 01 002044 040402 -----      26      L      RO,N(SVBASE)(RA1)
0125253 01 002045 044006 -----      27      ST      RO,N(PHYBLK)(RAO)      # RESTORE BASE BLOCK NO.
0125254 01 002046 040405 -----      28      L      RO,N(SVLSTGOOD)(RA1)
0125255 01 002047 044017 -----      29      ST      RO,N(LSTGOOD)(RAO)
0125256 01 002050 040643 -----      30      L      R10,N(SVCOM)(RA1)
0125257 01 002051 044255 -----      31      ST      R10,N(LSTCOM)(RAO)
0125260 01 002052 040013 -----      32      L      RO,N(STATEFLG)(RAO)
0125261 01 002053 017400 007407      33      CIRM     RO,VERST,D,MSK(4)
0125263 01 002055 054011 ----- 0125274      34      BC      NOISSUE
0125264 01 002056 017650 003407      35      CIRM     R10,7,8,7      # CHECK IF A READ WAS IP.
0125266 01 002060 055006 ----- 0125274      36      BNC     NOISSUE

0125267      38      CALL     ORDEXC      # SEND INTERRUPTED COMMAND.
0125267 01 002061 073043 ----- -001- 39      BSAI     OXRDEXC      # SUBROUTINE ORDEXC IS IN PROGRAM CTAPH
0125270 01 002062 155466 ----- 0124756      40      BNC     XRMVPO
0125271      41      BGNTIM  MSEC=IBG_1BUF
0125271      42      CALL     TIMOUT
0125271 01 002063 073022 ----- -001- 43      BSAI     TXIMOUT      # SUBROUTINE TIMOUT IS IN PROGRAM CSYSUB
0125272 01 002064 000005 ----- -001- 44      DATA   5      # TIMOUT+1
0125273 01 002065 144014 -----      45      ST      RO,N(TIMEK)(RAO)
0125274      46 NOISSUE
0125274 01 002066 162120 -----      47      ZBS      N(MAINT)(RAO),S(MAINT) # CLEAR MTC CONTROL BIT
0125275 01 002067 037000 001062 CBLM      48      BL      CTAPHRTN

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## COMMON TAPE HANDLER

PR-1C957-50

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

TAPE REPACK STATE.

CTAPH W77D

0125277

01 PACKTAPE  
 02 # PERIODICALLY THE CARTRIDGE UNITS MUST BE PASSED THROUGH A PACKING  
 03 # PROCESS WHICH RE-ALIGNS THE TAPE IN A FLAT HORIZONTAL PLANE. THIS IS  
 04 # DONE BY FAST FORWARDING AND FAST REVERSING THE TAPE SO THAT BOTH ENDS  
 05 # HAVE BEEN REACHED. SHARES MRFINIT STATE'S SUBSTATES.

0125277	01	002071	131542	020006	TDATA	09	LAL	R6,TAPETBL,RA1	# SET UP BX CONSTANT AND TAPE ENABLE ADDRESS
0125301	01	002073	004157	-----		10	SN	R6,1	
0125302	01	002074	041621	-----		11	LA	R9,1(RA1)	
0125303	01	002075	056001	-----		12	BPAX	R1	
0125304	01	002076	153006	-----	0125312	13	B	STANDINT	
0125305	01	002077	153017	-----	0125324	14	B	FFTUS	
0125306	01	002100	153023	-----	0125331	15	B	EOTCHK	
0125307	01	002101	153024	-----	0125333	16	B	BRINGBCK	
0125310	01	002102	153027	-----	0125337	17	B	BTLOK	
0125311	01	002103	153031	-----	0125342	18	B	DONPO	

0125312						22	STANDINT		
0125312						23	CALL	CLRSTAT	# ZERO OUT STATUS BLOCK.
0125312	01	002104	137020	127254	0127254	-001-	24	BSA	CLRSTAT
0125314						25	INTCOM		
0125314	01	002106	103641	040007		26	LI	R10,INIT	
0125316						27	COMINIT		
0125316	01	002110	142626	-----		28	LX	R9,R6(RA1)	
0125317						29	CALL	ORDEXCAB	# SEND INITS TO TDCS
0125317	01	002111	073032	-----		-001-	30	BSAI	ordexCab
0125320	01	002112	136140	125316	0125316	31	BX	R6,COMINIT	# SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0125322	01	002114	037000	124547	0124547	32	BL	ADBKTM	# WAIT FOR UNITS TO GO IDLE BEFORE NEXT SUBSTATE.

0125324						37	FFTUS		
0125324	01	002116	103130	-----		38	LN	R5,S(EOT)	
0125325	01	002117	003641	002415		39	LI	R10,TFE	# PREPARE FAST FORWARD ORDER IF NOT ALREADY AT EOT.
0125327						41	REW		
0125327	01	002121	137000	124657	0124657	42	BL	REWINDU	

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

CTAPH W77D

## TAPE REPACK STATE.

```

0125331          01 EOTCHK
0125331 01 002123 103130 -----
0125332 01 002124 053006 ----- 0125340      02      LN      R5,S(EOT)      # LOOK FOR ALL UNITS INSERVICE TO REACH EOT.
                                                03      B      BPS

0125333          07 BRINGBCK
0125333 01 002125 103136 -----
0125334 01 002126 003641 004415
0125336 01 002130 053771 ----- 0125327      08      LN      R5,S(BOT)
                                                09      LI      R10,TFR
                                                10      B      REW

0125337          14 BTLOK
0125337 01 002131 103136 -----
0125340          15      LN      R5,S(BOT)      # NOW SCAN FOR BOT BEFORE IDLEING OUT TCB.
0125340 01 002132 137000 124674 0124674      16 BPS
                                                17      BL      BOTPOS

0125342          21 DONPO
0125342          22 # OUTPUT THAT TAPES HAVE BEEN REPACED.
                                                23 PRINT FMT=(WRD(I,N,I,T),WRD(T,A,P,E),WRD(C,O,M,P,L))

-001- 25 # MESSAGE PROTOTYPE
-001- 26 # mm INIT TAPE COMPL
-002- 27 BSAI PXMRY # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
-002- 28 VFD 1,1 2,0 1,0 3,0 1,0 1,1 1,0 2,0 1,0 3,0
-002- 29 VFD 4,TTYO_ 4,TTYO_ 4,TTYO_ 4,TTYO_WRD
-002- 30 VFD 4,TTYO_ 4,TTYO_ 4,TTYO_ 4,TTYO_
-002- 31 VFD 5,3 11,IXNIT
-002- 32 VFD 5, 11,IXAPE
-002- 33 VFD 5, 11,CXOMPL
-001- 34 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
CONTAINED IN GENERAL REGISTERS
CLOSESTATE

0125342 01 002134 173053 -----
0125343 01 002135 100200 -----
0125344 01 002136 021040 -----
0125345 01 002137 021042 -----
0125346 01 002140 014023 ----- TTYTBL
0125347 01 002141 000242 ----- TTYTBL
0125350 01 002142 000302 137000 TTYTBL

0125351 01 002143 137000 123411 0123411      36      BL

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COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

0125353

01 # THIS PORTION OF THE TAPE HANDLER IS THE INTERRUPT LEVEL PROGRAM.  
 02 # ITS ENTRY POINT CAN BE ACCESSED EITHER ON A TIMED OR A  
 03 # DEMAND BASIS. THERE ARE TWO ENTRY POINTS, TAPINTE AND TAPINTO  
 04 # FOR EVEN AND ODD CONTROLLERS. AT THE ENTRY POINTS A CHECK IS  
 05 # MADE TO SEE IF THERE IS ANY WORK TO BE DONE. IF THERE IS WORK TO  
 06 # BE DONE IT IS DETERMINED IF THE WORK IS A READ OPERATION OR  
 07 # WRITE OPERATION. AND THAT REQUEST IS BRANCHED TO.  
 08  
 09 # ON A READ OPERATION THE STATUS OF THE UNIT IS CHECKED. IF AN  
 10 # ERROR IS FOUND A MESSAGE IS PRINTED AND THE ROUTINE IS EXITED.  
 11 # IF NORMAL THE BUFFER IS PREPARED FOR UNLOADING BY SENDING THE  
 12 # "BSUNLOD" IO ORDER TO THE TDC AND THE OFF-LINE BUFFER COUNTER  
 13 # IS CLEARED BY SENDING THE "BCLROCN" IO ORDER. THEN THE BUFFER  
 14 # IS UNLOADED WITH THE "SD" IO ORDER. A COUNT OF THE BUFFERS IS  
 15 # KEPT IN THE TCB WORD "BUFCT". WHEN THE BUFFER IS UNLOADED INTO  
 16 # R11 IT IS STORED IN IO BUF. IF IT HAPPENS TO BE THE LAST BUFFER  
 17 # IN THE BLOCK A CRC CHECKED IS DONE, THE "DEOF" BIT IS CHECKED TO  
 18 # SEE IF A REWIND FOR NEXT TRACK IS NEEDED, A RANGE CHECK IS DONE,  
 19 # AND A SEQUENCE CHECK IS DONE. THEN THE CLIENT IS GIVEN CONTROL  
 20 # AT THE ADDRESS SPECIFIED IN THE READ COMMAND. IF THIS IS NOT  
 21 # THE LAST BLOCK OR IS A RETURN FROM CLIENT THEN CONTROL IS GIVEN  
 22 # BACK TO BLMMA. WHEN THE CLIENT GETS CONTROL IT MUST MOVE THE  
 23 # DATA TO ITS DESIRED LOCATION. IF BECAUSE OF REAL TIME CONSIDERATIONS  
 24 # THE ENTIRE BLOCK CANNOT BE MOVED AT ONCE, A RETURN OF RO=1  
 25 # CAN BE GIVEN TO CTAPH. ON THE NEXT INTERRUPT IF THERE IS  
 26 # NO WORK SUCH AS IN THE TIMED INTERRUPT ARRANGEMENT THEN THE  
 27 # CLIENT WILL BE GIVEN CONTROL AGAIN UNTIL A RETURN OF RO=0  
 28 # IS RECIEVED BY CTAPH. WHEN THE CLIENT COMES BACK WITH RO=1  
 29 # BIT "SMRTN" IS SET AS A FLAG TO THE NEXT INTERRUPT. IF  
 30 # THERE IS NO WORK TO BE DONE THE CLIENT IS GIVEN SOME MORE TIME.  
 31  
 32 # IF THE WRITE STATE IS IN THE TCB, A WRITE OPERATION IS DONE.  
 33 # FIRST BY BASE-LEVEL CODE WHICH WRITES THE FIRST 2 BUFFERS.  
 34 # THE BUFFER UNIT IS INITIALIZED BY SENDING A "BINIT" IO ORDER.  
 35 # THEN THE BUFFER IS LOADED FROM DATA PRESENT IN IO BUF. THE  
 36 # CURRENT BUFFER IS AGAIN STORED IN "BUFCT". WHEN A BLOCK HAS  
 37 # BEEN WRITTEN THE WRITE IS STOPPED WITH THE "TWSTP" ORDER  
 38 # INTERRUPT CONTROL IS RETURNED TO BLMMA.

0125353

0125353

0125353 01 002145 130462 020004 TDATA  
 0125355 01 002147 003140 -----  
 0125356 01 002150 031622 020005 TDATA  
 0125360 01 002152 053006 ----- 0125366  
 0125361  
 0125361 01 002153 103141 -----

42 # DATA TO ITS DESIRED LOCATION IF BECAUSE OF REAL TIME CONSIDERATIONS  
 43 TAPINTE  
 44 LL R3,TAPEQUE  
 45 ZR R6  
 46 LAL R9,TUENABL-2,RA1  
 47 B TAPINT  
 48 TAPINTO  
 49 LN R6,1

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

CTAPH M77D

TAPE INTERRUPT LEVEL PROGRAMING

```

0125362 01 002154 030462 020005 TDATA      01      LL      R3,TAPEQUO      # SET UP RA TO ODD INTERRUPT EQUIP WORD
0125364 01 002156 031622 020006 TDATA      02      LAL      R9,TUENABL-1,RA1
0125366                                03      TAPINT
0125366 01 002160 130622 020007 TDATA      04      LL      R9,TUENABL
0125370 01 002162 072547 -----          05      HN      R6,7      # SAVE ODD EVEN INT. INDICATOR
0125371                                06      CALL     UNLODI0C    # GET PREINTERRUPT STATE OF CHAN
0125371 01 002163 037020 110273 CSYSUB    -001- 07      BSA      UNLODI0C
0125373 01 002165 172405 -----          08      HN      R0,5
0125374 01 002166 072426 -----          09      HN      R1,6      # SAVE PERTINENT INFO.
0125375 01 002167 003040 -----          10      ZR      R2
0125376 01 002170 003641 000013          11      LI      R10,BSTAT    # PREPARE TO INTERROGATE BUFFER UNIT
0125400 01 002172 031220 043317 CTSD      12      LAL      R9,TCBADR,RA0
0125402                                13      KEPSND
0125402 01 002174 103045 -----          14      LN      R2,5      #TIME CON.
0125402                                15      TAPEHL  OW      0(2175)      # 12274
-001- 16      NOTE    ***** THE FIRST ADDRESS OVERWRITTEN IS 002175 *****

                                19      CPATCH  BGNP   0(611)      # 12274
0125403 01 002175 037000 112243 0112243 -001- 20      BL      %XX576
-001- 21      NOTE    CPATCH 'CSECT'
-001- 22      NOTE    ***** PATCH AREA BEGINS AT 000611 *****

                                -001- 25      %XX576  PATCHAREA
0112243                                26      BX      R3,SEORD
0112243 02 000611 136060 125411 0125411    27      TBN      R6,0      # EVEN OR ODD INTERRUPT?
0112245 02 000613 024140 -----          28      BCL     ENDI
0112246 02 000614 050000 125620 0125620    29      DEPATCH NOTE  REPLACE "BCL" WITH "BC".
                                30      ENDP      # 12274
0112250                                31      BL      %XX578
0112250 02 000616 037000 125405 0125405 -001- 31      NOTE    ***** LAST PATCH ADDRESS USED IS 000617 *****
-001- 32      NOTE    ***** NUMBER OF PATCH WORDS USED IS 7 (DECIMAL) *****
-001- 33      NOTE

                                -001- 36      %XX578  OWCONTINUE
0125405                                37      TBS      N(SMRTN)(RAD),S(SMRTN) # NO WORK FOR THE TAPE HANDLER, DOES
0125405 01 002177 151376 -----          38      EOW     CLIENT WANT SOME TIME ?
                                39      EOW     # 12274
0125406                                -001- 40      NOTE    ***** THE LAST ADDRESS OVERWRITTEN IS 002177 *****

                                43      ZBS      N(SMRTN)(RAD),S(SMRTN)
0125406 01 002200 062376 -----          44      TAPEHL  OW      0(2201)      # 12274
-001- 45      NOTE    ***** THE FIRST ADDRESS OVERWRITTEN IS 002201 *****
    
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COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER PROGRAM

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## TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

0125407 01 002201 054346 ----- 0125755      01      BC      RTNCLNT
0125410                                02      EOW
                                -001- 03      NOTE      ***** THE LAST ADDRESS OVERWRITTEN IS 002201 *****

0125410 01 002202 053210 ----- 0125620      06      B      ENDI      # DONE WITH TAPE SCAN
0125411                                07 SEORD
0125411 01 002203 141622 -----      08      LA      R9,2(RA1)      # GET ENABLE ADDRESS
0125412 01 002204 003101 -----      09      LN      R4,1      # BX CONSTANT FOR PE CHECK AND NORESPONSE TEST

0125413                                11 SENDSTAT
0125413 01 002205 123440 -----      12      SMIO
0125414 01 002206 136040 125414 0125414      13      BX      R2,*      # TIME FOR RESPONSE
0125416 01 002210 023500 -----      14      TIO
0125417 01 002211 054004 ----- 0125423      15      BC      TESTSTAT
0125420 01 002212 023520 -----      16      TMIO
0125421 01 002213 054006 ----- 0125427      17      BC      INTMTC
0125422 01 002214 053003 ----- 0125425      18      B      NEXTRY

0125423                                22 TESTSTAT
0125423 01 002215 124267 -----      23      TBN      R11,S(BR)      # CHECK IF THIS TAPE SENT INTERRUPT
0125424 01 002216 054011 ----- 0125435      24      BC      RESOLVE
0125425                                25 NEXTRY
0125425 01 002217 104542 -----      26      AN      R6,2
0125426 01 002220 053754 ----- 0125402      27      B      KEPSND
0125427                                28 INTMTC
                                29 # A MTC. RESPONSE FROM UNIT CAN RESULT IF THE UNIT ENCOUNTERS A
                                30 # PARITY ERROR OR THE BUFFERS HAVE NOT BEEN SERVICED PROPERLY.
0125427 01 002221 124266 -----      31      TBN      R11,S(PPE)      # HAS A PARITY ERROR IN TRANS OCCURRED
0125430 01 002222 003025 -----      32      LN      R1,ORDER
0125431 01 002223 055774 ----- 0125425      33      BNC      NEXTRY
0125432 01 002224 036100 125413 0125413      34      BX      R4,SENDSTAT
0125434 01 002226 053771 ----- 0125425      35      B      NEXTRY      # CONTINUE POLL OF UNITS

0125435                                42 RESOLVE
0125435 01 002227 151347 -----      43      TBS      N(DIAGBITS)(RAD),S(DIAGBITS) #IS DIAG IP
0125436 01 002230 055007 ----- 0125445      44      BNC      NORM
0125437 01 002231 030400 043107 CTSD      45      LL      RO,PAGSCR+5
0125441 01 002233 026000 -----      46      SBN      RO,0
0125442 01 002234 034400 043107 CTSD      47      STL      RO,PAGSCR+5
0125444 01 002236 053154 ----- 0125620      48      B      ENDI
0125445                                49 NORM

```

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

-001- 01 TAPEHL OW 0(2237),0(2240) # 13537
      02 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002237 *****

W0125445 01 002237 173022 -----
0125446 01 002240 000012 -----
0125447

      05 BSAI TXIMOUT
      06 DATA 10
      07 EOW # 13537
-001- 08 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002240 *****

      11 TAPEHL OW 0(2241) # 13001
-001- 12 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002241 *****

0125447 01 002241 140050 -----
0125450 01 002242 017046 000003
0125452 01 002244 055753 ----- 0125425
0125453 01 002245 044014 -----
0125454

      15 L R2,N(TAPNO)(RAO)
      16 CRM R2,R6,M(TAPNO)
      17 BNC NEXTRY
      18 ST RD,N(TIMEK)(RAO)
      19 EOW # 13001
-001- 20 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002245 *****

0125454 01 002246 072756 -----
0125455 01 002247 072777 -----
0125456

      23 HN RA1,RA1
      24 HN RA1+1,RA1+1
      25 CALL STATSET
-001- 26 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH
      27 GN RA1,RA1
      28 GN RA1+1,RA1+1
      29 # TEST IF TU IS IN SERVICE
      30 BNC NEXTRY
      31 TBN R11,S(LODST) # TEST IF UNIT IS WRITING (LOAD STATE ACTIVE).

0125461 01 002253 055744 ----- 0125425.
0125462 01 002254 024272 -----

0125463 01 002255 054307 ----- 0125772
0125464 01 002256 040051 -----
0125465 01 002257 010452 -----
0125466 01 002260 003445 001400 HASACS
0125470 C1 002262 055013 ----- 0125503
0125471 01 002263 003641 002015
0125473 01 002265 023440 -----
0125474 01 002266 003065 -----
0125475 01 002267 136060 125475 0125475

      33 BC WRITEINT
      34 L R2,N(BUFCT)(RAO) # GET BUFFER COUNT.
      35 RLN R2,6
      36 CI R2, LASTBUF # CHECK IF LAST BUFFER.
      37 BNC NODETTST
      38 LI R10,TSTAT # MUST DO DATA DETECT DROP OUT TEST.
      39 SMIO
      40 LN R3,5
      41 BX R3,*

0125477 01 002271 023500 -----
0125500 01 002272 055354 ----- 0126054

      43 TIO
      44 BNC CRCFAILPO

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

0125501 01 002273 024273 -----
0125502 01 002274 054352 ----- 0126054
0125503
0125503 01 002275 103641 044013
0125505 01 002277 023440 -----
0125506 01 002300 003065 -----
0125507 01 002301 136060 125507 0125507
0125511 01 002303 023500 -----
0125512 01 002304 055316 ----- 0126030
0125513 01 002305 003641 120013
0125515 01 002307 023440 -----
0125516 01 002310 003065 -----
0125517 01 002311 136060 125517 0125517
0125521 01 002313 023500 -----
0125522 01 002314 055306 ----- 0126030

0125523 01 002315 003641 100007
0125525 01 002317 037040 043330 CTSD
0125527 01 002321 051240 -----
0125530 01 002322 055034 ----- 0125564
0125531 01 002323 014042 -----
0125532 01 002324 054011 ----- 0125543
0125533 01 002325 003445 001400 MASACS
0125535 01 002327 055053 ----- 0125610
0125536 01 002330 003461 000116
0125540
0125540 01 002332 136060 125540 0125540
0125542 01 002334 053073 ----- 0125635
0125543
0125543 01 002335 123440 -----
0125544 01 002336 003065 -----
0125545 01 002337 136060 125545 0125545
0125547 01 002341 023500 -----
0125550 01 002342 055260 ----- 0126030
0125551
0125551 01 002343 037020 126570 0126570 -001-
0125553
0125553 01 002345 103641 120013
0125555 01 002347 023440 -----
0125556 01 002350 003065 -----
0125557 01 002351 136060 125557 0125557
0125561 01 002353 023500 -----
0125562 01 002354 055246 ----- 0126030
0125563 01 002355 053025 ----- 0125610

01 # IF DATA DETECT STILL UP BLOCK IS TOO LONG.
02 TBM R11,S(DDT)
03 BC CRCFAILPO
04 NODETTST
05 LI R10,BSUNLDON # PREPARE THE UNLOAD STATE
06 SMIO
07 LN R3,5
08 BX R3,*
09 TIO
10 BNC INTRMV
11 LI R10,BCLROCN # CLEAR THE OFF-LINE COUNTER
12 SMIO
13 LN R3,5
14 BX R3,*
15 TIO
16 BNC INTRMV
17 # THIS IS THE POINT FOR THE INTERRUPT PROGRAM RESPONSIBLE
18 # FOR ADMINISTRATING TO A TDC WHICH INDICATES ITS TAPE UNIT IS IN THE
19 # READ STATE. RAO MUST CONTAIN THE ADDRESS OF THE TCB. TAPE NUMBER IN R1.
20 LI R10,SD # GET READY TO UNLOAD BUFFER
21 A1S TCBADR+N(BUFCT) # ADD TO BUFFER COUNT.
22 TBS N(STPST)(RAO),S(STPST) # CHECK IF UNLOAD IS REQUIRED.
23 BNC KEEPDATA # CAN IO BUF BE OVERWRITTEN WITH NEW DATA?
24 TZ R2 # CHECK IF THIS IS THE FIRST BUFFER.
25 BC GETADR
26 CI R2,LASTBUF
27 BNC ENDINT
28 LI R3,78
29 MYADR
30 BX R3,MYADR # TIME FOR CRC TO GO STABLE.
31 B LASTBUFFER
32 GETADR
33 SMIO
34 LN R3,5
35 BX R3,*
36 TIO
37 BNC INTRMV
38 CALL UPDATSTAT # STORE BLOCK ADDRESS AWAY
39 BSA UPDATSTAT
40 NOUPITI
41 LI R10,BCLROCN #CLEAR THE OFF-LINE COUNTER
42 SMIO
43 LN R3,5
44 BX R3,*
45 TIO
46 BNC INTRMV
47 B ENDINT

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 82

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

01 # THIS IS A READ-STORE OPERATION
02 KEEPDATA
03 LI R3,WRDBUF-1 # WORDS PER BUFFER.
04 LAL RO,I_OBUF-1,RA1 # SETUP RA FOR BUFFER STORAGE.
05 LAX RO,R2(RA1) # POINT TO CURRENT BUFFER WORD.
06 RLODBX
07 LN R1,10 # 20 USEC BX CONSTANT
08 SMIO # SEND UNLOAD COMMAND.
09 RTESTIT
10 TIO
11 BC STORWRD
12 BX R1,RTESTIT # RETRY UNTIL TIMEOUT HAS OCCURED
13 B INTRMV

15 STORWRD
16 STA R11,1(RA1) # PLACE WORD INTO MEMORY BUFFER.
17 BX R3,RLODBX # KEEP GOING UNTIL WHOLE BUFFER IS DONE.
18 LSTBUFCK
19 CI R2,LASTBUF # ARE ALL BUFFERS UNLOADED FOR BLOCK.
20 BC LASTBUFFER
21 TAPHL OW 0(2400) # 12274
-001- 22 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002400 *****

25 TAKEOUT 2
-001- 26 LR 0,0
0125606 01 002400 006000 ----- -001- 27 LR 0,0
0125607 01 002401 006000 -----
0125610
0125610 -001- 28 ENDINT
-001- 29 EOW # 12274
-001- 30 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002401 *****

33 ENDINT
0125610 01 002402 103112 ----- 34 LN R4,10 #TIMING CONSTANT
0125611 01 002403 003641 020013 35 LI R10,BCLRBRF # ZERO OUT THE BR FLAG.
0125613 01 002405 023440 ----- 36 SMIO
0125614
0125614 01 002406 136100 125614 0125614 37 TWAIT
0125616 01 002410 023500 ----- 38 BX R4,TWAIT
0125617 01 002411 055211 ----- 0126030 39 TIO
0125620 40 BNC INTRMV
41 ENDI
0125620 01 002412 172005 ----- 42 GN RO,5
0125621 01 002413 072026 ----- 43 GN R1,6
0125622 01 002414 030622 020007 TDATA 44 LL R9,TUENABL
0125624 45 CALL LODI0C # RESTOR IO CHANNEL TO PREINTERRUPT STATE
0125624 01 002416 037020 110311 CSYSUB -001- 46 BSA LODI0C
0125626 01 002420 172147 ----- 47 GN R6,7
0125627 01 002421 010557 ----- 48 RLN R6,1 # EVEN OR ODD INT. INDICATOR
0125630 01 002422 056006 ----- 49 BPAX R6

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W770

```

0125631 01 002423 137000 147340 BLMMA      01      BL      TAPEIRTN
0125633 01 002425 137000 147340 BLMMA      02      BL      TAPOIRTN

0125635

06 LASTBUFFER
07 # AT THIS POINT ALL BUFFERS FOR ONE BLOCK HAVE BEEN UNLOADED.
08 # THE CRC CAN BE CHECKED NOW TO ASSURE THAT THE BLOCK IS CORRECT.
09      LI      R10,TSTAT      # STATUS START CODE DETERMINES CRC.
10      LN      R2,S
11      SMIO
12      BX      R2,*
13      ST      R2,N(BUFCT)(RAO)      # ASSUME R2=0
14      TIO
15      BNC     CRCFAIL
16      TBS     N(DIAGBITS)(RAO),S(DIAGBITS)+1
17      BC      JUSTFLG
18      L       R3,N(STATEWRD)(RAO)      # RETRIEVE STATE IN CONTROL.
19      LL      R0,I OBUF+N(E0F)
20      TBN     R0,S(E0F)      # TEST IF UNIT IS TO BE STOPPED.
21      BNC     CRCLOOK
22      TBS     N(SEEZ)(RAO),S(SEEZ)
23      BC      CRCLOOK
24      LI      R10,TSTOP
25      LN      R4,S
26      SMIO
27 STWAIT
28      BX      R4,STWAIT      # TIME FOR RESPONSE.
29      TIO
30      BNC     INTRMV
31      SBS     N(IOCMP)(RAO),S(IOCMP)

0125670

35 CRCLOOK
36 # CRC IS OK, THE TAPE STATUS CAN BE UPDATED.
37      TBS     N(STPST)(RAO),S(STPST)      # HAS ADR BEEN UPDATED.
38      BC      JUSTFLG
39      LL      R11,I OBUF      # PLACE ADR OF BLOCK IN R11
40      TBN     R11,S(D0F0F)      #CHECK IF READ OTHER TRACK MUST START
41      BNC     OKFLG
42      LI      R10,INIT      #STOP TAPE FOR BASE REWIND
43      SMIO
44      A1S     TCBADR+N(STATEFLG)
45      LI      R0,TIMST
46      CALL    PUSHSTAT      #ALLOW STOP TO TAKE AFFECT AND SETTLE
                                # HARDWARE
0125705 01 002477 073044 ----- -001- 48      BSAI     pushsTat      # SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH
0125706                                49      CALL     TIMOUT

```

COMMON TAPE HANDLER

PR-1C957-50

## TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

## TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

0125706 01 002500 173022 ----- -001- 01      BSAI    TXIMOUT      # SUBROUTINE TIMEOUT IS IN PROGRAM CSYSUB
0125707 01 002501 000004 -----          02      DATA      4
0125710 01 002502 130660 045266 LAYOUT          03      LL        R11,I_0BUF
0125712          04      OKFLG
0125712          05      CALL    UPDATSTAT  # PLACE ADR IN STATUS WORD.
0125712 01 002504 137020 126570 0126570 -001- 06      BSA    UPDATSTAT
0125714          07      CALL    BOUNDCHK  # CHECK RANGE OF CLIENT ACCESS.
0125714 01 002506 137020 127351 0127351 -001- 08      BSA    BOUNDCHK
0125716 01 002510 155012 ----- 0125730          09      BNC    NOMT
0125717          10     JUSTFLG
0125717          11     CALL    STATSET
0125717 01 002511 173024 ----- -001- 12     BSAI   SXTATSET  # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0125720 01 002512 161720 -----          13     SBS    O(RA1),S(POSOK) # MARK TAPE POSITION KNOWN.
0125721 01 002513 051760 -----          14     TBS    O(RA1),S(SQERR) #CHECK FOR READ SEQUENCE ERROR
0125722 01 002514 055016 ----- 0125740          15     BNC    UPDAFINI
0125723 01 002515 062760 -----          16     ZBS    O(RA1),S(SQERR)
0125724 01 002516 003027 -----          17     LN     R1,SEQERR
0125725 01 002517 051120 -----          18     TBS    N(MAINT)(RAO),S(MAINT) #IS ERROR RECOVERY ACTIVE
0125726 01 002520 055002 ----- 0125730          19     BNC    NOMT
0125727 01 002521 053661 ----- 0125610          20     B      ENDINT
0125730          21     NOMT
0125730 01 002522 103060 -----          22     ZR     R3
0125731 01 002523 044072 -----          23     ST     R3,N(STATEWRD)(RAO) #PREPARE FOR CLIENT ABORT
0125732 01 002524 003401 000025          24     LI     RO,CLOSE+ES(REQSTP)
0125734 01 002526 044000 -----          25     ST     RO,N(REQ)(RAO) #ESTABLISH CLOSE AS NEXT BASE STATE

0125735          27     CALL    PRNTER
0125735 01 002527 037020 127060 0127060 -001- 28     BSA    PRNTER
0125735          29     TAPEHL OW 0(2531) # 11798
-001- 30     NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002531 *****

0125737 01 002531 153651 ----- 0125610          33     B      ENDINT
0125740          34     EOW   # 11798
-001- 35     NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002531 *****

0125740          38     UPDAFINI
0125740 01 002532 162220 -----          39     ZBS    N(SRFAL)(RAO),S(SRFAL)
0125741 01 002533 040015 -----          40     L      RD,N(LSTCOM)(RAO)
0125742 01 002534 003402 007477          41     NI     RO,M(COM)+M(DVIC)
0125744 01 002536 003405 003415          42     CI     RO,TRB # CHECK IF READ A BLOCK WAS GIVEN.
0125746 01 002540 055002 ----- 0125750          43     BNC    NOIOCMP
0125747 01 002541 061200 -----          44     SBS    N(IOCMP)(RAO),S(IOCMP)
0125750          45     NOIOCMP
0125750 01 002542 151367 -----          46     TBS    N(DIAGBITS)(RAO),S(DIAGBITS)+1 # IF DIAG IP TERMINATE INTERRUPT.
0125751 01 002543 054637 ----- 0125610          47     BC     ENDINT
0125752 01 002544 017460 007404          48     CIRM  R3,READST,0,0(17)
0125752          49     TAPEHL OW 0(2546) # 12274

```

## COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

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## TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

-001- 01      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002546 *****
0125754 01 002546 055634 ----- 0125610      04      BNC      ENDINT
0125755                                05      RTNCLNT
0125755 01 002547 140343 -----                06      L          R14,N(HOCONPT)(RAD)
0125756                                07      EOW          # 12274
-001- 08      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002547 *****
0125756 01 002550 040364 -----                11      L          R15,N(CONTLPT)(RAD)
0125757                                12      CALL        CLNLINKUP
0125757 01 002551 037020 125761 0125761 -001- 13      BSA          CLNLINKUP
0125761                                14      CLNLINKUP
0125761                                15      BEGIN
0125761 01 002553 171420 ----- -002- 16      HA
-001- 17      TAPEHL OW      0(2554) # 12274
-001- 18      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002554 *****
0125762 01 002554 031000 112234 0112234      21      LAL          RL,CLNTRTN,RAD
0125764                                22      EOW          # 12274
-001- 23      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002555 *****
0125764                                26      FUNRTN
0125764 01 002556 172000 -----                27      GN          R0,0
0125765 01 002557 016014 000017                28      IRM        R0,R12,0(17) # INSERT ADDRESS BITS INTO R0
0125767 01 002561 072400 -----                29      HN          R0,0 # CHANGE RETURN ADDRESS
0125770 01 002562 072721 -----                30      HN          R13,1
0125771 01 002563 052420 -----                31      BR          0(RA1) # GO TO CLIENT TO UNLOAD BUFFER.

0125772                                35      WRITEINT
0125772                                36 #          SEGMENT OF THE INTERRUPT RESPONSIBLE FOR WRITING THE TAPE.
0125772                                37 #          BASE LEVEL HAS INITIATED THE WRITE AND LOADED THE 1ST TWO TDC
0125772                                38 #          BUFFERS.
0125772 01 002564 151140 -----                40      TBS          N(WSI)(RAD),S(WSI) # CHECK FOR EXTRA WRITE STOP INTERRUPT.
0125773 01 002565 055011 ----- 0126004      41      BNC          MOREBUF
0125774 01 002566 062140 -----                42      ZBS          N(WSI)(RAD),S(WSI)
0125775                                43      BUFINT
0125775 01 002567 103641 160013                44      LI          R10,BINIT # INIT. BUFFER UNIT
0125777 01 002571 023440 -----                45      SMIO
0126000 01 002572 003045 -----                46      LN          R2,5
0126001 01 002573 136040 126001 0126001      47      BX          R2,*
0126003 01 002575 053615 ----- 0125620      48      B          ENDI
0126004                                49      MOREBUF

```

COMMON TAPE HANDLER

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## TAPE HANDLER PROGRAM

CTAPH W77D

## TAPE INTERRUPT LEVEL PROGRAMING

```

0126004 01 002576 140051 ----- 01      L      R2,N(BUFCT)(RAO)
0126005 01 002577 017440 007415 MASACS 02      CIRM  R2,BUFBLK,D,M(BUFCT) # TEST IF COMPLETE BLOCK DONE.
0126007 01 002601 054004 ----- 03      BC     SETABEUP
0126010 01 002602 037020 126453 0126453 -001- 04      CALL  LOADBUF
0126010 01 002604 153576 ----- 05      BSA   LOADBUF
0126012 01 002604 153576 ----- 06      B     ENDINT

0126013 10 SETABEUP
0126013 01 002605 103641 003015 11 #     THE WRITE HAS BEEN TERMINATED 1 BLOCK HAS BEEN WRITTEN
0126015 01 002607 023440 ----- 12      LI     R10,TWSTP
0126016 01 002610 003045 ----- 13      SMIO  #PRIME TDC TO STOP
0126017 14      LN     R2,5
0126017 01 002611 136040 126017 0126017 15 BXSMB  # TIME FOR RESPONSE
0126021 01 002613 023500 ----- 16      BX     R2,*
0126022 01 002614 055006 ----- 0126030 17      TIO   INTRMV
0126023 01 002615 003100 ----- 18      BNC   R4
0126024 01 002616 044111 ----- 19      ZR     R4,N(BUFCT)(RAO) # CLEAR BUFFER COUNTER
0126025 01 002617 061200 ----- 20      ST     N(IOCMP)(RAO),S(IOCMP) # FLAG BASE DONE
0126026 01 002620 061140 ----- 21      SBS   N(WSI)(RAO),S(WSI) # SET THE EXTRANEOUS INT. FLAG.
0126027 01 002621 053561 ----- 0125610 22      SBS   ENDINT
23      B

0126030 27 INTRMV
0126030 01 002622 151367 ----- 28      TBS   N(DIAGBITS)(RAO),S(DIAGBITS)+1
0126031 01 002623 054744 ----- 0125775 29      BC     BUFINT
0126032 01 002624 040210 ----- 30      L     R8,N(TAPNO)(RAO)
0126033 01 002625 003603 000003 31      OI     R8,M(TAPNO)
0126035 01 002627 041417 ----- CTSD 32      LA     R0,TUSTAT(RA1)
0126036 01 002630 042410 ----- 33      LX     R0,R8(RA1) #PRINT THE BLOCK THAT FAILED.
-001- 34 TAPEHL OW 0(2631) # 12230
35      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002631 *****

0126037 01 002631 003402 003777 38      NI     R0,M(PTP)
0126041 39      EOW  # 12230
-001- 40      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002632 *****

0126041 43      CALL  BINXBCD
0126041 01 002633 037020 110023 CSYSUB -001- 44      BSA   BINXBCD
0126043 01 002635 106030 ----- 45      LR     R1,R8
0126044 46      PRINT PRIOR=3,PACTION=**,FMT(WRD(T,A,P,E),WRD(I,N,T),WRD(E,R,R),SKP,BCD
,L_X,L_X,L_X)

```

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

TAPE INTERRUPT LEVEL PROGRAMING

CTAPH W77D

```

-001- 01 # MESSAGE PROTOTYPE
-001- 02 # ** mm TAPE INT ERR nnnn xxxx xxxx xxxx
-002- 03 BSAI PXMRY # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
0126044 01 002636 073053 -----
0126045 01 002637 104260 ----- -002- 04 VFD 1,1 2,0 1,0 3,4 1,0 1,1 1,0 2,3 1,0 3,0
0126046 01 002640 064040 ----- -002- 05 VFD 4,TTYO_L_X 4,TTYO_BCD 4,TTYO_SKP 4,TTYO_WRD
0126047 01 002641 021146 ----- -002- 06 VFD 4,TTYO_4,TTYO_4,TTYO_L_X 4,TTYO_L_X
0126050 01 002642 014242 ----- TTYTBL -002- 07 VFD 5,3 11,TXAPE
0126051 01 002643 001113 ----- TTYTBL -002- 08 VFD 5, 11,IXNT
0126052 01 002644 000307 ----- TTYTBL -002- 09 VFD 5, 11,EXRR
-001- 10 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
CONTAINED IN GENERAL REGISTERS R8,R9,R10,R11,
-001- 12 NOTE ****THIS MESSAGE WILL RESULT IN A MAJOR ALARM****
0126053 01 002645 153722 ----- 0125775 13 B BUFINF

0126054 17 CRCFAILPO
0126054 01 002646 103601 001437 TTYTBL -001- 18 SPELL R8,(F,A,T,L,R,E,A,D)
0126056 19 LI R8,fatlrEad
0126056 01 002650 073046 ----- -001- 20 CALL PTREC
0126057 21 BSAI PXTREC # SUBROUTINE PTREC IS IN PROGRAM CTAPH
22 CRCFAIL
23 # START OF THE RECOVERY OF A BLOCK WHICH HAS FAILED A CRC CHECK.

0126057 25 CALL CRCEREC
0126057 01 002651 137020 127155 0127155 -001- 26 BSA CRCEREC
27 TAPEHL OW 0(2653) # 12274
-001- 28 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 002653 *****

0126061 01 002653 153527 ----- 0125610 31 B ENDINT
0126062 32 EOW # 12274
-001- 33 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 002653 *****

```

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM

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TTY INPUT HANDLING RESTORAL

CTAPH W77D

0126062

01 RSTTAPE  
 02 # RESIDENT PORTION OF TAPE UNIT RESTORAL ROUTINE FOR SERVICING  
 03 # THE RST:TAPE N! INPUT MESSAGE. IF THE REQUEST IS UNCONDITIONAL, NO  
 04 # SPECIAL TESTING IS PERFORMED ON THE UNIT. THE TAPE WILL BE INITIALIZED  
 05 # AND THE SOFTWARE STATUS IS UPDATED.  
 06 # A NORMAL REQUEST WILL RESULT IN A CHECK TO ASSURE THAT THE  
 07 # TAPE HAS PASSED DIAGNOSTICS AND THAT THE TAPE HAS BEEN COMPARED  
 08 # AGAINST ITS MATE. IF NOT, A RL WILL RESULT TO THE REQUEST

0126062 01 002654 130422 020006 TDATA

12 LL R1,TAPETBL # HOW MANY EQUIPPED TDCS?  
 13 TAPEHL OW 0(2656) #3E790243  
 -001- 14 NOTE \*\*\*\*\* THE FIRST ADDRESS OVERWRITTEN IS 002656 \*\*\*\*\*

0126064 01 002656 037000 113436 0113436

17 CPATCH1 BGNP 0(654) #3E790243  
 -001- 18 BL %X655  
 -001- 19 NOTE CPATCH1 'CSECT'  
 -001- 20 NOTE \*\*\*\*\* PATCH AREA BEGINS AT 000654 \*\*\*\*\*

0113436

-001- 23 %X655 PATCHAREA

0113436 03 000654 104037 ----- 24 SN R1,1  
 0113437 03 000655 005026 ----- 25 SR R1,R6  
 0113440 03 000656 050400 126161 0126161 26 BNCL UNDEF # BRANCH IF BAD TAPE NO. TYPED  
 0113442 27 CALL ACTMSF  
 0113442 03 000660 037020 003165 CBLM -001- 28 BSA ACTMSF  
 0113444 03 000662 124003 ----- BLMMA 29 TBN RO,DGNTAPE # TAPE DIAGNOSTIC IN PROGRESS?  
 0113445 03 000663 050000 126103 0126103 30 BCL RLPLY  
 0113447 03 000665 024007 ----- BLMMA 31 TBN RO,OFLUTIL  
 0113450 03 000666 050400 126067 0126067 32 BNCL NOTUTL  
 0113452 03 000670 003401 000002 33 LI RO,TUUTIL  
 0113454 03 000672 030420 043177 CTSD 34 LL R1,OFLUCTL  
 0113456 03 000674 020001 ----- 35 CR RO,R1  
 0113457 03 000675 050400 126067 0126067 36 BNCL NOTUTL  
 0113461 03 000677 030400 010052 CNRUTL 37 LL RO,TUUTCTL # TAPE AUDIT IN PROGRESS?  
 0113463 03 000701 003405 000007 38 CI RO,AUDITFN  
 0113465 39 ENDP #3E790243  
 0113465 03 000703 037000 126066 0126066 -001- 40 BL %X658  
 -001- 41 NOTE \*\*\*\*\* LAST PATCH ADDRESS USED IS 000704 \*\*\*\*\*  
 -001- 42 NOTE \*\*\*\*\* NUMBER OF PATCH WORDS USED IS 25 (DECIMAL) \*\*\*\*\*

0126066  
 0126066 01 002660 154015 ----- 0126103  
 0126067  
 0126067

-001- 45 %X658 OWCONTINUE  
 46 BC RLPLY  
 47 NOTUTL  
 48 EOW #3E790243  
 -001- 49 NOTE \*\*\*\*\* THE LAST ADDRESS OVERWRITTEN IS 002660 \*\*\*\*\*

COMMON TAPE HANDLER

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TAPE HANDLER PROGRAM  
TTY INPUT HANDLING RESTORAL

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CTAPH W77D

```

0126067 01 002661 151040 043337 CTSD          03      LAL      R2,TUSTAT,RAO
0126071 01 002663 043046 -----          04      LAX      R2,R6(RAO)          #GET PRESENT STATUS
0126072 01 002664 003160 -----          05      ZR       R7
0126073 01 002665 024234 ----- TTYTBL    06      TBN      R9,S(UCL)          #HAS UNCONDITIONAL REQUEST INPUTTED.
0126074 01 002666 054013 -----          07      BC       CONTRST
0126075 01 002667 024053 -----          08      TBN      R2,S(TSTATE)       #IS TU MARKED OOS
0126076 01 002670 055006 -----          09      BNC      REDONLY          #NO CHECK READ ONLY BIT
0126077 01 002671 024056 -----          10      TBN      R2,S(REDON)       #HAS DIAG PASSED ON THIS UNIT.
0126100 01 002672 055003 -----          11      BNC      RLPLY
0126101 01 002673 051300 -----          12      TBS      O(RAO),S(COMPROK)
0126102 01 002674 054005 -----          13      BC       CONTRST
0126103          14      RLPLY
0126103 01 002675 156446 ----- TTYTBL    -001- 15      RETURN  TTY_RL
          16      BTSAGN  TTY_RL
0126104          17      REDONLY
0126104 01 002676 124056 -----          18      TBN      R2,S(REDON)       #IS UNIT IN READ ONLY STATE
0126105 01 002677 054776 -----          19      BC       RLPLY
0126106          20      RETURN  TTY_OK
0126106 01 002700 056444 ----- TTYTBL    -001- 21      BTSAGN  TTY_OK
0126107          22      CONTRST
0126107 01 002701 131400 043200 CTSD          23      LAL      RO,RESDIR,RA1
0126111 01 002703 003401 000111 CTSD          24      LI       RO,TBLSIZ(RESDIR)
0126113          25      CALL     CLR_WRDS          # ZERO OUT RESIDENT DIRECTORY FOR PROTECTION.
0126113 01 002705 073031 -----          -001- 26      BSAI     CLR WRDS          # SUBROUTINE CLR_WRDS IS IN PROGRAM CSYSUB
0126114 01 002706 144160 -----          27      ST       R7,O(RAO)          #PLACE UNIT BACK IN SERVICE
0126115 01 002707 031002 020007 TDATA          28      LAL      RO,TUENABL,RAO
0126117 01 002711 043226 -----          29      LAX      R9,R6(RAO)
0126120 01 002712 003641 040007          30      LI       R10,INIT
0126122 01 002714 023440 -----          31      SMIO
          32      TAPEHL  OW      0(2715)          # 11914
          -001- 33      NOTE     ***** THE FIRST ADDRESS OVERWRITTEN IS 002715 *****

          36      DDELETE NOTE 1
          37      TAKEOUT 5
0126123          -001- 38      LR       0,0
0126124 01 002715 106000 -----          -001- 39      LR       0,0
0126125 01 002716 006000 -----          -001- 40      LR       0,0
0126126 01 002717 006000 -----          -001- 41      LR       0,0
0126127 01 002720 006000 -----          -001- 42      LR       0,0
0126130          43      EOW
          -001- 44      NOTE     ***** THE LAST ADDRESS OVERWRITTEN IS 002721 *****
    
```

COMMON TAPE HANDLER

PR-1C957-50

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

TTY INPUT HANDLING RESTORAL

CTAPH W77D

0126130 01  
0126130 01 002722 056444 ----- TTYTBL -001- 02

RETURN TTY\_OK  
BTSAGN TTY\_OK

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 91

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

REMOVE TAPE ROUTINE. TTY REQUEST HANDLER

CTAPH W77D

0126131

01 RMVTAPE

02 # TAPE REMOVAL ROUTINE SERVICING THE RMV:TAPE X! MESSAGE

0126131	01	002723	130422	020006	TDATA	06	LL	R1,TAPETBL	# HOW MANY EQUIPPED TDCS?
0126133	01	002725	004037	-----		07	SN	R1,1	
0126134	01	002726	005026	-----		08	SR	R1,R6	
0126135	01	002727	055024	-----	0126161	09	BNC	UNDEF	# BRANCH IF BAD TAPE NO. TYPED.
0126136	01	002730	003561	004000		10	LI	R7,M(TSTATE)	#GET R7 READY TO REMOVE TAPE FROM SERVICE.
0126140	01	002732	030400	043327	CTSD	11	LL	RO,TCBADR+N(TAPNO)	
0126142	01	002734	020006	-----		12	CR	RO,R6	# DOES REMOVED TAPE REQUIRE CLIENT ABORT?
0126143	01	002735	055010	-----	0126153	13	BNC	RMVENT	
0126144	01	002736	031400	043317	CTSD	14	LAL	RO,TCBADR,RA1	
0126146	01	002740	003017	-----		15	LN	RO,15	
0126147	01	002741	073031	-----		16	CALL	CLR_WRDS	#CLEAR TCB
0126150	01	002742	103401	000027		-001- 17	BSAI	CLR_WRDS	# SUBROUTINE CLR_WRDS IS IN PROGRAM CSYSUB
0126152	01	002744	044400	-----		18	LI	RO,IDLE+ES(REQSTP)	
0126153						19	ST	RO,N(REQ)(RA1)	
0126153	01	002745	131400	043337	CTSD	20	RMVENT		
0126155	01	002747	046566	-----		21	LAL	RO,TUSTAT,RA1	
0126156						22	STX	R7,R6(RA1)	
0126156	01	002750	037020	127033	0127033	-001- 23	CALL	RMVLED	# MARK LED IN SSP.
0126160						24	BSA	RMVLED	
0126160	01	002752	156444	-----	TTYBL	-001- 25	RETURN	TTY_OK	
0126161						26	BTSAGN	TTY_OK	
						27	UNDEF		
						28	# AN UNDEFINED	TDC WAS TYPED, GIVE A NG.	
0126161						29	RETURN	TTY_NG	
0126161	01	002753	156447	-----	TTYBL	-001- 30	BTSAGN	TTY_NG	

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 92

TAPE HANDLER PROGRAM

0:43:06 2/06/81 \*\*\*\*

EMERGENCY TCB INIT. ROUTINE

CTAPH W77D

0126162

01 INITTAPE  
 02 # EMERGENCY TCB CLEAN UP ROUTINE. IN THE EVENT TEMPORARY STORE GETS  
 03 # RANDOMLY WRITTEN AND PLACES THE TCB IN AN UNUSEABLE STATE, THIS MESSAGE  
 04 # WILL CLEAR UP THE TCB AND THEREFORE MAKE IT ACCESSABLE FOR CLIENT USE.

0126162

0126162	01	002754	171420	-----	-002-	08	BEGIN		
0126162	01	002754	171420	-----		09	HA		
0126163	01	002755	003401	00002D		10	LI	RO,16	
0126165	01	002757	031420	043317		11	LAL	R1,TCBADR,RA1	
0126167						12	CALL	CLR_WRDS	# ZERO ALL 16 WORDS OF THE TCB.
0126167	01	002761	073031	-----	-001-	13	BSAI	clr_wrds	# SUBROUTINE CLR_WRDS IS IN PROGRAM CSYSUB
0126170	01	002762	103401	000007		14	LI	RO,IDLE	
0126172	01	002764	044400	-----		15	ST	RO,N(REQ)(RA1)	#SET UP IDLE STATE AND REPACK REQUEST.
0126173	01	002765	061727	-----		16	SBS	N(REPK)(RA1),S(REPK)	
0126174						17	RETURN	TTY_IP	
0126174	01	002766	056445	-----	-001-	18	BTSAGN	TTY_IP	

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 93

TAPE HANDLER PROGRAM  
 PERIODIC REPACK ROUTINE

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0126175

01 REPACK  
 02 # THE COMMON SYSTEM TIME MONITOR WILL CALL THIS ROUTINE PERIODICALLY  
 03 # TO INITIATE THE REPACKING OF THE TAPE DEVICES.

0126175			07	BEGIN	
0126175	01	002767 171420	-----	-002-	08 HA
0126176	01	002770 031000	043317		09 LAL RO,TCBADR,RAO
0126200	01	002772 061327	-----		10 SBS N(REPK)(RAO),S(REPK) # SET REPACK BIT.
0126201					11 RETURN
0126201	01	002773 056420	-----	-001-	12 BTSAG

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 94

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## OPEN TCB SUBROUTINE

CTAPH W77D

```

0126202          01 OPENM
02 #SPECIAL ENTRY FOR CLIENT POINTED TO DIRECTORY ENTRY.
03 #RA1 POINTS TO CLIENT CONTROL BLOCK CONTAINING ASCII DATA.
04          BEGIN
0126202 01 002774 171420 ----- -002- 05          HA
0126203 01 002775 022160 -----          06          ZBN          R7,0          #FLAG FOR THIS ENTRY POINT.
07 TAPEHL OW          0(2776)          # 12376
-001- 08          NOTE          ***** THE FIRST ADDRESS OVERWRITTEN IS 002776 *****

0126204 01 002776 053005 ----- 0126211          11          B          REGOPEN
0126205          12          EOW          # 12376
-001- 13          NOTE          ***** THE LAST ADDRESS OVERWRITTEN IS 002776 *****

0126205          16 OPENTCB
17 # THIS ROUTINE IS ACCESSED FROM THE OPEN AND SIEZE MACROS WHICH HAVE SET
18 # UP INFORMATION CONCERNING THE CLIENT NUMBER AND FILE NAME AFTER
19 # THE CALL TO THIS ROUTINE. A RETURN 0 (CF=1) INDICATES THAT THE
20 # CLIENT HAS SIEZED CONTROL OF THE TAPE UNIT AND MAY MAKE FURTHER
21 # REQUESTS. RETURN 1 (CF=0) TCB IS BUSY.
22 # R0 ON ENTRY UNDER SIEZURE ROUTINE CONTAINS THE TU NUMBER.
23 # R1 ON ENTRY UNDER SIEZURE ROUTINE CONTAINS TRACK AND BLOCK NUMBER.

0126205          25          BEGIN
0126205 01 002777 171420 ----- -002- 26          HA
0126206 01 003000 026160 -----          27          SBN          R7,0          #FLAG FOR THIS ENTRY POINT.
0126206          28 TAPEHL OW          0(3001)          # 12376
-001- 29          NOTE          ***** THE FIRST ADDRESS OVERWRITTEN IS 003001 *****

0126207 01 003001 072340 -----          32          GN          R14,0          # ADDRESS OF CLIENT DATA BLOCK
0126210 01 003002 072361 -----          33          GN          R15,1
0126211 01 003003 106120 -----          34 REGOPEN LR          R5,R0          # POSSIBLE TAPE NO. IN R0
0126212 01 003004 006141 -----          35          LR          R6,R1          # POSSIBLE TRACK IN R1
0126213 01 003005 040440 -----          36          L          R2,0(RA1)          # GET CLIENT DATA
0126214          37          EOW          # 12376
-001- 38          NOTE          ***** THE LAST ADDRESS OVERWRITTEN IS 003005 *****

0126214 01 003006 003002 -----          41          LN          R0,2          #GET RETURN FOR BUSY TCB
0126215          42          SBIN
0126215 01 003007 013002 ----- -001- 43          MIS          2
0126216 01 003010 105722 016462 -001- 44          DATA          35794
0126217 01 003011 016462 174000          45          LRM          R3,R2,M(CLIENT)          #GET CLIENT NUMBER
0126221 01 003013 031100 043317 CTSD          46          LAL          R4,TCBADR,RA0
0126223 01 003015 024104 -----          47          TBN          R4,S(REQSTP)          # IS INIT TAPE IN PROGRESS?
0126224 01 003016 054060 ----- 0126304          48          BC          BUSY
0126225 01 003017 017513 017400          49          CIRM          R4,0,S(CLIENT),M(CLIENT)/ES(CLIENT) # IS TCB IDLE.

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## COMMON TAPE HANDLER

PR-1C957-50

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## OPEN TCB SUBROUTINE

CTAPH W770

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0126227 01 003021 055055 ----- 0126304      01      BNC      BUSY
0126230 01 003022 003460 000032      02      AI       R3,OPEN+ES(REQSTP) #SET UP REQUEST AND BLOCK FURTHER REQUESTS
0126232 01 003024 044060 -----      03      ST       R3,0(RAO)
0126233 01 003025 002341 000017      04      STM      R14,N(HOFILNAM)(RAO),M(HOFILNAM)
0126235 01 003027 044362 -----      05      ST       R15,N(FILNAM)(RAO) # STORE ADDRESS OF FILE NAME AWAY
0126236 01 003030 002025 003777      06      STM      R1,N(LOGBLK)(RAO),M(LOGBLK) # STORE CLIENT INDEX
0126240 01 003032 003020 -----      07      ZR       R1
0126241 01 003033 024051 -----      08      TBN      R2,S(EXPOP)
0126242 01 003034 055005 ----- 0126247      09      BNC      NOTEXPLI
0126243 01 003035 010521 -----      10      RLN      R5,S(EVOD)
0126244 01 003036 002126 100000      11      STM      R5,N(EVOD)(RAO),M(EVOD)
0126246 01 003040 061346 -----      12      SBS      N(EXPLIC)(RAO),S(EXPLIC)
0126247 -----      13      NOTEXPLI
0126247 01 003041 124043 -----      14      TBN      R2,3 # SIEZE?
0126250 01 003042 055030 ----- 0126300      15      BNC      ITSOP
      16      TAPEHL OW 0(3043) # 12808
-001- 17      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003043 *****

0126251 01 003043 037000 114242 0114242 -001- 20 CPATCH2 BGNP 0(133) # 12808
      21      BL      XXX705
-001- 22      NOTE CPATCH2 'CSECT'
-001- 23      NOTE ***** PATCH AREA BEGINS AT 000133 *****

0114242 ----- -001- 26 XXX705 PATCHAREA
0114242 04 000133 116646 003777      27      LRM      R10,R6,M(BLKADR)
0114244 04 000135 014252 -----      28      TZ       R10
0114245 04 000136 055027 ----- 0114274      29      BNC      BLKISOK
0114246 04 000137 024153 -----      30      TBN      R6,11
0114247 04 000140 054003 ----- 0114252      31      BC       BLKISZRO
0114250 04 000141 024154 -----      32      TBN      R6,12
0114251 04 000142 055023 ----- 0114274      33      BNC      BLKISOK
0114252 -----      34      BLKISZRO
0114252 04 000143 103561 000272 TTYTBL -001- 35 SPELL R7,(B,L,K)
      36      LI      R7,BXLK
0114254 04 000145 003621 000307 TTYTBL -001- 37 SPELL R9,(E,R,R)
0114256 04 000147 003200 -----      38      LI      R9,EXRR
0114257 -----      39      ZR       RB
      40      PRINT PACTION=M,(WRD(T,A,P,E),WRD(O,P,E,R),WRD(A,B,T),WRD(DEC,WRD))

-001- 42 # MESSAGE PROTOTYPE
-001- 43 # M mm TAPE OPER ABT WRD dddd WRD
-002- 44 BSAI PXMRY # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
0114260 04 000151 102200 ----- -002- 45 VFD 1,1 2,0 1,0 3,2 1,0 1,1 1,0 2,0 1,0 3,0
0114261 04 000152 002000 ----- -002- 46 VFD 4,TTYO WRD 4,TTYO DEC 4,TTYO WRD 4,TTYO WRD
0114262 04 000153 021042 ----- -002- 47 VFD 4,TTYO_ 4,TTYO_ 4,TTYO_ 4,TTYO_
0114263 04 000154 014242 ----- TTYTBL -002- 48 VFD 5,3 11,TXAPE
0114264 04 000155 001517 ----- TTYTBL -002- 49 VFD 5, 11,0XPER

```

## COMMON TAPE HANDLER

PR-1C957-50

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## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## OPEN TCB SUBROUTINE

CTAPH W77D

```

0114265 04 000156 000001 ----- TTYTBL -002- 01 VFD 5, 11, AXBT
-001- 02 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
CONTAINED IN GENERAL REGISTERS R7,R8,R9,

0114266 04 000157 103001 ----- 04 LN R0,1
0114267 04 000160 003060 ----- 05 ZR R3
0114270 04 000161 034460 043317 CTSO 06 STL R3,TCBADR
07 DEPARTCH NOTE REPLACE BL WITH B ON THE LINE BELOW
0114272 04 000163 037000 126306 0126306 08 BL BLKNG
0114274 09 BLKISOK
0114274 04 000165 126157 ----- 10 SBN R6,S(SEEZ) # SET SIEZE IP BIT
0114275 04 000166 003067 ----- 11 LN R3,IDLE
0114276 12 ENDP # 12808
0114276 04 000167 037000 126253 0126253 -001- 13 BL XXX726
-001- 14 NOTE ***** LAST PATCH ADDRESS USED IS 000170 *****
-001- 15 NOTE ***** NUMBER OF PATCH WORDS USED IS 30 (DECIMAL) *****

0126253 -001- 18 XXX726 OWCONTINUE
0126253 01 003045 102060 000017 19 STM R3,N(REQ)(RAO),M(REQ)
0126255 20 EOW # 12808
-001- 21 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003046 *****

0126255 01 003047 002145 114000 24 STM R6,N(VERTRK)(RAO),M(VERTRK)+M(SEEZ) #SET UP VERIFY TRACK FOR
SIEZE
0126257 01 003051 002146 014000 26 STM R6,N(TRACK)(RAO),M(TRACK)
0126261 01 003053 044130 ----- 27 ST R5,N(TAPNO)(RAO)
0126262 01 003054 003401 014527 MASACS 28 LI R0,BLKMAX+M(ENDRK)
0126264 01 003056 044007 ----- 29 ST R0,N(LASTBLK)(RAO)
0126265 01 003057 007350 ----- 30 EXR RA1,R8
0126266 01 003060 007371 ----- 31 EXR RA1+1,R9
0126267 32 CALL STATSET
0126267 01 003061 073024 ----- -001- 33 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0126270 01 003062 107371 ----- 34 EXR RA1+1,R9
0126271 01 003063 007350 ----- 35 EXR RA1,R8
0126272 01 003064 003025 ----- 36 LN R1,5
0126273 01 003065 054005 ----- 0126300 37 BC ITSOP
0126274 01 003066 002020 000017 38 STM R1,N(REQ)(RAO),M(REQ) # STORE ABORT REQUEST TO CLEAN UP TCB.
0126276 01 003070 003001 ----- 39 LN R0,1 #PREPARE RETURN CODE
0126277 01 003071 053005 ----- 0126304 40 B BUSY
0126300 41 ITSOP
-001- 42 TAPEHL OW 0(3072) #3E800177
-001- 43 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003072 *****

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## COMMON TAPE HANDLER

PR-1C957-50

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## OPEN TCB SUBROUTINE

CTAPH W77D

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0126300 01 003072 137000 121575 0121575 -001- 01 CPATCH7 BGNP 0(337) #3E800177
-001- 02 BL XXX733
-001- 03 NOTE CPATCH7 'CSECT'
-001- 04 NOTE ***** PATCH AREA BEGINS AT 000337 *****

0121575 -001- 07 XXX733 PATCHAREA
0121575 06 000337 161345 ----- 08 SBS N(ERNA)(RAO),S(ERNA) # STOP RECOVERY FROM MATE TAPE
0121576 06 000340 003401 000005 09 LI RO,SEIZST
0121600 10 ENDP #3E800177
0121600 06 000342 037000 126302 0126302 -001- 11 BL XXX735
-001- 12 NOTE ***** LAST PATCH ADDRESS USED IS 000343 *****
-001- 13 NOTE ***** NUMBER OF PATCH WORDS USED IS 5 (DECIMAL) *****

0126302 -001- 16 XXX735 OWCONTINUE
0126302 17 CALL PUSHSTAT # PLACE SIEZURE STATE INTP TCB
0126302 01 003074 173044 ----- -001- 18 BSAI pushsTat # SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH
0126303 19 EDW #3E800177
-001- 20 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003074 *****

0126303 01 003075 103000 ----- 23 ZR RO
0126304 24 BUSY
0126304 01 003076 124160 ----- 25 TBN R7,0
0126305 01 003077 055007 ----- 26 BNC SPECLOSE #WHICH ENTRY POINT WAS USED?
0126314 27 TAPEHL OW 0(3100) # 12808
-001- 28 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003100 *****

0126306 31 BLKNG
0126306 01 003100 103442 000160 32 NI R2,M(RTNDX)
0126310 33 EDW # 12808
-001- 34 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003101 *****

0126310 01 003102 010444 ----- 37 RRN R2,S(RTNDX)
0126311 01 003103 043422 ----- 38 LAX R1,R2(RA1) # UPDATE RA
0126312 01 003104 072740 ----- 39 HN R14,0
0126313 01 003105 072761 ----- 40 HN R15,1
0126314 41 SPECLOSE
0126314 42 ZBIN
0126314 01 003106 113002 ----- -001- 43 MIS 2
0126315 01 003107 107322 ----- -001- 44 DATA 36562
0126316 45 RETURN
0126316 01 003110 056420 ----- -001- 46 BTSAG

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 98

## TAPE SUBROUTINES

CTAPH

W770

## ORDER EXECUTION ROUTINE

```

0126317      01 ORDEXCNT
02 # THIS ENTRY POINT WILL RESULT IN THE ORDER SPECIFIED IN R10 TO
03 # BE SENT TO THE TAPE UNIT SPECIFIED IN THE TCB. RAO SHOULD BE
04 # SET TO THE TCBADR.

0126317      06      BEGIN
0126317 01 003111 171420 ----- -002- 07      HA
0126320 01 003112 053010 ----- 0126330 08      B      NOTRACK

0126321      10 ORDEXCAB
11 # THIS ENTRY POINT WILL RESULT IN THE ORDER SPECIFIED IN R10 TO
12 # BE SENT TO THE TAPE UNIT SPECIFIED IN R9. RAO AS ABOVE.

0126321      14      BEGIN
0126321 01 003113 171420 ----- -002- 15      HA
0126322 01 003114 053014 ----- 0126336 16      B      EXPLICIT

0126323      18 ORDEXC
19 # THIS ROUTINE WILL SEND THE ORDER SPECIFIED IN R10 TO THE TDC SPECIFIED
20 # IN THE TCB. THE REQUIRED TRACK BITS WILL BE SUPPLIED BY THE TCB INFORMATION.
21 # RAO SAME AS ABOVE.

23 # RETURN CODES FOR ABOVE ENTRY POINTS.
24 # RETURN 0-MESSAGE OK
25 # RETURN 1-ERROR MESSAGE,MAINT RESPONSE
26 # RETURN 2-NO RESPONSE.

0126323      30      BEGIN
0126323 01 003115 171420 ----- -002- 31      HA
0126324 01 003116 040006 ----- 32      L      RD,N(TRACK)(RAO)
0126325 01 003117 010417 ----- 33      RLN     RD,1      # POSITION TRACK BITS
0126326 01 003120 016240 030000 34      IRM     R10,RD,M(TRKS) # INSERT TRACK BITS INTO COMMAND.
0126330      35 NOTRACK
0126330 01 003122 131422 020007 TDATA 36      LAL     R1,TUENABL,RA1
0126332 01 003124 040010 ----- 37      L      RD,N(TAPNO)(RAO)
0126333 01 003125 003402 000003 38      NI     RD,M(TAPNO)
0126335 01 003127 042620 ----- 39      LX     R9,RD(RA1) # OBTAIN TDC ENABLE ADDRESS.
0126336      40 EXPLICIT
0126336 01 003130 117640 037415 41      CIRM    R10,13,0,M(DVIC) #WAS THIS A TAPE COMMAND
0126340 01 003132 055004 ----- 0126344 42      BNC    NONO
0126341 01 003133 024250 ----- 43      TBN    R10,8      #WAS IT A MOTION COMMAND.
0126342 01 003134 055002 ----- 0126344 44      BNC    NONO
0126343 01 003135 044255 ----- 45      ST     R10,N(LSTCOM)(RAO) #SAVE LAST MOTION COMMAND TO TAPE
0126344      46 NONO
0126344      47      CALL   SENDMIO # SEND ORDER. RETURN CODES SET BY SENDMIO.
0126344 01 003136 137020 111050 CSYSUB -001- 48      BSA     SENDMIO
0126346 01 003140 172673 ----- 49      HN     R11,11

```

## COMMON TAPE HANDLER

PR-1C957-50

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

ORDER EXECUTION ROUTINE

CTAPH W77D

0126347

0126347 01 003141 056420 -----

-001- 01  
02RETURN  
BTSAG

COMMON TAPE HANDLER

PR-1C957-50

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TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

REQUEST PLANT SUBROUTINE

CTAPH W77D

0126350

01 REQR

02 # THIS SUBROUTINE IS ENTERED TO PLACE ONE OF 6 REQUESTS IN THE TCB.  
 03 # A VALIDITY CHECK IS DONE TO ASSURE THAT THE REQUESTING CLIENT IS THE  
 04 # CLIENT IN CONTROL OF THE TCB. CF=0 IF REQUEST WAS ABORTED.  
 05 # IF THE REQUEST IS 'POSITION', R1 CONTAINS THE LOGICAL BLOCK NUMBER  
 06 # OF THE DESTINATION REQUESTED BY THE CLIENT IF THE CLIENT NUMBER  
 07 # IS NOCLIENT, THE REAL CLIENT NUMBER IS IN R3.

0126350

09 BEGIN

0126350 01 003142 171420 -----  
 0126351 01 003143 072340 -----  
 0126352 01 003144 072361 -----  
 0126353 01 003145 031040 043317 CTSD  
 0126355 01 003147 040440 -----  
 0126356 01 003150 017453 017411  
 0126360 01 003152 055003 ----- 0126363

-002-

10 HA  
 11 GN \*R14,0  
 12 GN R15,1 # OBTAIN ADDRESS OF DATA WORD AFTER SUB CALL.  
 13 LAL R2,TCBADR,RAO  
 14 L R2,D(RA1) # RETRIEVE DATA WORD  
 15 CIRM R2,NOCLIENT,S(CLIENT),M(CLIENT)/ES(CLIENT) #I CLIENT NO. IN R3?  
 16 BNC NORMOP  
 17 TAPEHL OW O(3153) # 14090  
 -001- 18 NOTE \*\*\*\*\* THE FIRST ADDRESS OVERWRITTEN IS 003153 \*\*\*\*\*

0126361 01 003153 016043 174000  
 0126363

21 IRM  
 22 EOW  
 -001- 23 NOTE

R2,R3,0(174000) # MSK OF 'NOCLIENT'  
 # 14090  
 \*\*\*\*\* THE LAST ADDRESS OVERWRITTEN IS 003154 \*\*\*\*\*

0126363

26 NORMOP

0126363 01 003155 141501 -----  
 0126364 01 003156 024046 -----  
 0126365 01 003157 054002 ----- 0126367.  
 0126366 01 003160 041461 -----  
 0126367  
 0126367 01 003161 172740 -----  
 0126370 01 003162 072761 -----  
 0126371 01 003163 040060 -----  
 0126372 01 003164 017043 174000  
 0126374 01 003166 055055 ----- 0126451

27

LA R4,1(RA1) # ADJUST RA AND RETRIEVE POSSIBLE 2ND DATA  
 WORD.  
 29 TBN R2,S(TYPER) # CHECK IF 2ND DATA WORD IS REUIRED.  
 30 BC NODONT  
 31 LA R3,1(RA1) # NEEDED TO CORRECT RA.  
 32 NODONT  
 33 HN R14,0  
 34 HN R15,1  
 35 L R3,N(CLIENT)(RAD) # OBTAIN CLIENT IN CONTROL WORD  
 36 CRM R2,R3,M(CLIENT)  
 37 BNC NOTRITE # BRANCH IF REQUESTING CLIENT IS NOT IN  
 CONTROL.  
 39 TAPEHL OW O(3167) #3E790502  
 -001- 40 NOTE \*\*\*\*\* THE FIRST ADDRESS OVERWRITTEN IS 003167 \*\*\*\*\*

0126375 01 003167 037000 112260 0112260

43 CPATCH BGNP  
 -001- 44 BL  
 -001- 45 NOTE  
 -001- 46 NOTE

O(626) #3E790502  
 XXX768  
 CPATCH 'CSECT'  
 \*\*\*\*\* PATCH AREA BEGINS AT 000626 \*\*\*\*\*

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 101

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## REQUEST PLANT SUBROUTINE

CTAPH W77D

```

0112260
0112260 02 000626 106120 ----- -001- 01 XXX768 PATCHAREA
0112261 02 000627 006141 ----- 02 LR R5,R0 # SAVE R0
0112262 02 000630 037020 147320 BLMMA -001- 03 LR R6,R1 # SAVE R1
0112264 02 000632 106005 ----- 04 CALL TEMPINH_ #SET UP FOR FULL BASE LEVEL LOOP BREAK
0112265 02 000633 006026 ----- 05 BSA TEMPINH_
0112266 02 000634 051100 ----- 06 LR RO,R5 # GET R0
0112267 02 000635 050000 126452 0126452 07 LR R1,R6 # GET R1
0112271 02 000637 037000 126377 0126377 -001- 08 TBS N(REQSTP)(RAD),S(REQSTP) #CHECK IF REQUEST CAN BE MADE
0112271 02 000637 037000 126377 0126377 -001- 09 BCL NOTYET
0112271 02 000637 037000 126377 0126377 -001- 10 ENDP #3E790502
0112271 02 000637 037000 126377 0126377 -001- 11 BL XXX771
0112271 02 000637 037000 126377 0126377 -001- 12 NOTE ***** LAST PATCH ADDRESS USED IS 000640 *****
0112271 02 000637 037000 126377 0126377 -001- 13 NOTE ***** NUMBER OF PATCH WORDS USED IS 11 (DECIMAL) *****

0126377 -001- 16 XXX771 OMCONTINUE
0126377 17 EOW #3E790502
0126377 -001- 18 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003170 *****

0126377 01 003171 137000 120124 0120124 -001- 21 TAPEHL OW 0(3171) # 13669
0126377 01 003171 137000 120124 0120124 -001- 22 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003171 *****

0126377 01 003171 137000 120124 0120124 -001- 25 TFAPCH2 BGNP 0(1130) # 13669
0126377 01 003171 137000 120124 0120124 -001- 26 BL XXX777
0126377 01 003171 137000 120124 0120124 -001- 27 NOTE TFAPCH2 'CSECT'
0126377 01 003171 137000 120124 0120124 -001- 28 NOTE ***** PATCH AREA BEGINS AT 001130 *****

0120124 -001- 31 XXX777 PATCHAREA
0120124 07 001130 117447 007411 32 CIRM R2,STATST,S(REQUEST),M(REQUEST)/E(S(REQUEST)) # IS THIS STATUS
0120124 07 001130 117447 007411 34 DPATCH NOTE ! CHANGE BNCL TO BNC
0120126 07 001132 050400 126402 0126402 35 BNCL NOSTAT
0120130 07 001134 030400 043336 CTSD 36 LL RO,TCBADR+15
0120132 07 001136 024017 ----- 37 TBN RO,15
0120133 07 001137 050400 126450 0126450 38 DPATCH NOTE ! CHANGE BNCL TO BNC
0120135 07 001141 022017 ----- 39 BNCL NO2DAT
0120136 07 001142 034400 043336 CTSD 40 ZBN RO,15
0120140 07 001144 037000 126451 0126451 41 STL RO,TCBADR+15
0120140 07 001144 037000 126451 0126451 42 DPATCH NOTE ! CHANGE BL TO B
0120140 07 001144 037000 126451 0126451 43 BL NOTRITE
0120140 07 001144 037000 126451 0126451 44 ENDP NR # 13669
0120140 07 001144 037000 126451 0126451 -001- 45 NOTE ***** LAST PATCH ADDRESS USED IS 001145 *****
0120140 07 001144 037000 126451 0126451 -001- 46 NOTE ***** NUMBER OF PATCH WORDS USED IS 14 (DECIMAL) *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 102

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## REQUEST PLANT SUBROUTINE

CTAPH W77D

```

0126401          01      EOW          # 13669
-001- 02      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003172 *****

0126401 01 003173 054047 ----- 0126450      05      BC      NO2DAT          #YES
06      TAPEHL OW      0(3174)          # 13669
-001- 07      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003174 *****

0126402          10      NOSTAT
0126402 01 003174 161100 -----
0126403          11      SBS          N(REQSTP)(RAD),S(REQSTP)
0126403          12      EOW          # 13669
-001- 13      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003174 *****

0126403 01 003175 024045 -----          16      TBN      R2,S(WRTABS)          #CHECK FOR ABSOLUTE WRITE REQUEST
0126404 01 003176 010447 -----          17      RRN      R2,S(REQUEST)
0126405 01 003177 030047 -----          18      ICF      R2,S(ABWRT)
0126406 01 003200 054011 ----- 0126417          19      BC      NOEOF
0126407 01 003201 017440 007403          20      CIRM     R2,WRITE,O,M(REQUEST)/ES(REQUEST)
0126411 01 003203 055006 ----- 0126417          21      BNC      NOEOF
0126412 01 003204 010403 -----          22      RLN      R0,S(EOF)
0126413 01 003205 003402 060000          23      NI      R0,M(EOF)+M(DEOF)
0126415 01 003207 034400 045266 LAYOUT          24      STL      R0,I_OBUF          #SET UP END OF FILE BITS
0126417          25      NOEOF
0126417 01 003211 117440 007410          26      CIRM     R2,BACKSP,O,M(REQUEST)/ES(REQUEST) #CHECK IF THIS WAS A BACKSPACE
                                REQUEST
0126421 01 003213 055012 ----- 0126433          28      BNC      NOLOKUP          # NO
                                29 # FIGURE OUT WHAT TO REQUEST TO POSITION STATE TO EFFECT A BACKSPACE
0126422 01 003214 004054 -----          30      SN      R2,(BACKSP-POSITION) # SET UP POSITION STATE REQUEST
0126423          31      CALL     STATSET          #GET PRESENT TAPE POSITION
0126423 01 003215 073024 -----          32      BSAI     SXTATSET          # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0126424 01 003216 140006 -----          33      L      R0,N(PHYBLK)(RAD)
0126425 01 003217 003402 003777          34      NI      R0,M(PHYBLK)
0126427 01 003221 003422 003777          35      NI      R1,M(PHYBLK)
0126431 01 003223 005020 -----          36      SR      R1,R0          #GET LOGICAL INDEX
0126432 01 003224 004037 -----          37      SN      R1,1          # DO BACKSPACE SUBTRACTION
                                38 # NOW STORE IN LOGICAL INDEX REQUEST BITS
0126433          39      NOLOKUP
0126433 01 003225 102040 000217          40      STM      R2,O(RAD),M(REQ)+M(ABWRT) # PLACE REQUEST IN TCB.
0126435 01 003227 017440 007404          41      CIRM     R2,POSITION,O,M(REQ)
0126437 01 003231 010451 -----          42      RLN      R2,S(REQUEST)
0126440 01 003232 055003 ----- 0126443          43      BNC      CMPOP
0126441 01 003233 002025 003777          44      STM      R1,N(LOGBLK)(RAD),M(LOGBLK) # STORE LOGICAL BLK NUMBER IN TCB.
0126443          45      CMPOP
0126443 01 003235 124046 -----          46      TBN      R2,S(TYPER)          # CHECK IF ADR WORD IS IN DATA BLOCK.
0126444 01 003236 054004 ----- 0126450          47      BC      NO2DAT
0126445 01 003237 002043 000017          48      STM      R2,N(HOCONPT)(RAD),M(HOCONPT) # STORE CLIENTS I/O ENTRY POINT.
0126447 01 003241 044104 -----          49      ST      R4,N(CONTLPT)(RAD)

```

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 103

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## REQUEST PLANT SUBROUTINE

CTAPH W77D

0126450		01	NO2DAT		
0126450		02	RETURN	0	
0126450	01 003242 156440	-----	-001- 03	BTSAGN	0
0126451			04	NOTRITE	
0126451			05	RETURN	1
0126451	01 003243 156441	-----	-001- 06	BTSAGN	1
0126452			07	NOTYET	
0126452			08	RETURN	2
0126452	01 003244 156442	-----	-001- 09	BTSAGN	2

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 104

## TAPE SUBROUTINES

## TDC BUFFER LOADING ROUTINE

CTAPH

W77D

```

0126453 01 003245 171420 -----
0126453 01 003245 171420 ----- -002-
0126454 01 003246 040150 -----
0126455 01 003247 003542 000003
0126457 01 003251 031042 020007 TDATA
0126461 01 003253 042226 -----
0126462 01 003254 030440 043330 CTSD
0126464 01 003256 003501 000077
0126466 01 003260 010452 -----
0126467 01 033261 031020 045265 LAYOUT
0126471 01 003263 043022 -----
0126472
0126472 01 003264 103121 -----
0126473 01 003265 041241 -----
0126474
0126474 01 003266 123400 -----
0126475 01 003267 003073 -----
0126476
0126476 01 003270 136060 126476 0126476
0126500 01 003272 023500 -----
0126501 01 003273 055006 ----- 0126507
0126502 01 003274 036100 126472 0126472
0126504 01 003276 037040 043330 CTSD
0126506
0126506 01 003300 056440 ----- -001-

0126507
0126507 01 003301 123520 -----
0126510 01 003302 003421 000005
0126512 01 003304 055005 ----- 0126517
0126513 01 003305 024266 -----
0126514 01 003306 055003 ----- 0126517
0126515 01 003307 036120 126474 0126474
0126517

0126517
0126517 01 003311 137020 126766 0126766 -001-
0126521
0126521 01 003313 156441 ----- -001-

01 LOADBUF
02 # LOAD WORDS INTO CURRENT OFF-LINE TDC BUFFER. UPDATE COUNTERS.
03 # AND EXIT
04 # RAD MUST POINT TO TCB
05 BEGIN
06 HA
07 L R6,N(TAPNO)(RAD)
08 NI R6,M(TAPNO)
09 LAL R2,TUENABL,RAD
10 LX R9,R6(RAO) #GET ENABLE ADDRESS
11 LL R2,TCBADR+N(BUFCT)
12 LI R4,WRDBUF-1
13 RLN R2,6
14 LAL R1,I_0BUF-1,RAD
15 LAX R1,R2(RAO)
16 KPSND
17 LN R5,1 # PE BX CONSTANT
18 LA R10,1(RAO) # GET NEXT WORD TO BE OUTPUTTED.
19 RELOD
20 SIO
21 LN R3,11
22 OUTWAIT
23 BX R3,OUTWAIT #TIME FOR RESPONSE.
24 TIO
25 BNC TSTPE
26 BX R4,KPSND #SEND 32 ORDERS
27 A1S TCBADR+N(BUFCT) # UPDATE BUFFER COUNT
28 RETURN 0
29 BTSAGN 0

33 TSTPE
34 THIO
35 LI R1,ORDER
36 BNC REM
37 TBN R11,S(PPE)
38 BNC REM
39 BX R5,RELOD
40 REM

42 CALL REMOVTU
43 BSA REMOVTU
44 RETURN 1
45 BTSAGN 1

```

COMMON TAPE HANDLER

PR-1C957-50

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

POPSTATE SUBROUTINE

CTAPH W77D

0126522

0126522

0126522 01 003314 131000 043317 CTSD

0126524 01 003316 040012 -----

0126525 01 003317 040033 -----

0126526 01 003320 003402 177760

0126530 01 003322 003422 177760

0126532 01 003324 010404 -----

0126533 01 003325 010424 -----

0126534 01 003326 044012 -----

0126535 01 003327 044033 -----

0126536

0126536 01 003330 056400 -----

```

01 POPSTATE
02 # THIS ROUTINE WILL ROTATE THE STATE WORD OF THE TCB TO THE NEXT
03 # STATE TO BE EXECUTED. RAO SHOULD BE SET TO THE TCB ADDRESS.
04 BEGIN ( )
05 LAL RO,TCBADR,RAO
06 L RO,N(STATEWRD)(RAO) # OBTAIN STATE AND FLAG WORDS FROM TCB.
07 L R1,N(STATEFLG)(RAO)
08 NI RO,-X(F)
09 NI R1,-X(F)
10 RRN RO,4 # POP BOTH STATE AND FLAG.
11 RRN R1,4
12 ST RO,N(STATEWRD)(RAO) # PLACE NEW STATE AND FLAG WORDS INTO TCB.
13 ST R1,N(STATEFLG)(RAO)
14 RETURN
15 BTSA
-001-

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH

ISSUE 08 PAGE 106

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

PUSHSTAT SUBROUTINE

CTAPH W77D

```

0126537      01 003331 171420 -----
0126537      01 003332 040052 -----
0126541      01 003333 040073 -----
0126542      01 003334 010454 -----
0126543      01 003335 010474 -----
0126544      01 003336 016040 000017
0126546      01 003340 016061 000017
0126550      01 003342 044052 -----
0126551      01 003343 044073 -----
0126552
0126552      01 003344 056420 -----

01 PUSHSTAT
02 # THIS IS THE COMPLEMENT ROUTINE FOR SERVICING THE STATE WORD AND
03 # FLAG WORD IN THE TCB. RAO SHOULD POINT TO THE TCB. RO IS STATE REQUEST
04 # A NEW STATE RO WILL BE PLACED INTO THE STATE STACK WORD.
05 # R1 SHOULD CONTAIN STATE FLAGS FOR TCB
06 BEGIN
-002- 07 HA
08 L R2,N(STATEWRD)(RAO)
09 L R3,N(STATEFLG)(RAO)
10 RLN R2,4
11 RLN R3,4
12 IRM R2,RO,X(F) # STORE NEW STATE REQUEST.
13 IRM R3,R1,X(F) # STORE NEW STATE FLAGS.
14 ST R2,N(STATEWRD)(RAO) # PLACE WORDS BACK INTO STORE.
15 ST R3,N(STATEFLG)(RAO)
16 RETURN
-001- 17 BTSAG

```

COMMON TAPE HANDLER

PR-10957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 107

TAPE SUBROUTINES  
TU STATUS RETRIEVAL

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0126553

01 STATSET

02 # THIS ROUTINE WILL SET UP RAO TO THE BASE TCB ADDRESS AND ALSO  
03 # SET UP RA1 TO THE BASE TAPE STATUS ADDRESS. THE STATUS OF THE PREFERRED  
04 # TAPE UNIT IS IN R1 ON EXIT. RA1 POINTS TO STATUS WORD.  
05 # RETURN 0 INDICATES TAPE IS INSERVICE  
06 # RETURN 1 INDICATES TAPE IS OOS

0126553

0126553 01 003345 131420 043337 CTSD  
0126555 01 003347 031020 043317 CTSD  
0126557 01 003351 040010 -----  
0126560 01 003352 003402 000003  
0126562 01 003354 043420 -----  
0126563 01 003355 024033 -----  
0126564 01 003356 054002 ----- 0126566  
0126565  
0126565 01 003357 056460 -----  
0126566  
0126566  
0126566 01 003360 156461 -----  
0126567  
0126567 01 003361 056400 -----

08 BEGIN ()  
09 LAL R1,TUSTAT,RA1  
10 LAL R1,TCBADR,RAO  
11 L RO,N(TAPNO)(RAO)  
12 NI RO,M(TAPNO)  
13 LAX R1,RO(RA1)  
14 TBN R1,S(TSTATE)  
15 BC RTRNONE  
16 RETURN 0  
-001- 17 BTSAN 0  
18 RTRNONE  
19 RETURN 1  
-001- 20 BTSAN 1  
21 RETURN  
-001- 22 BTSAN

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 108

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

PTP UPDATE

CTAPH W77D

```

0126570          01 003362 171420 -----
0126570 01 003362 171420 -----
0126571 01 003363 006040 -----
0126572 01 003364 006101 -----
0126573
0126573 01 003365 073024 -----
0126574 01 003366 103060 -----
0126575 01 003367 024035 -----
0126576 01 003370 055006 ----- 0126604
0126577 01 003371 017261 003777
0126601 01 003373 006061 -----
0126602 01 003374 054002 ----- 0126604
0126603 01 003375 026277 -----
0126604
0126604 01 003376 104661 -----
0126605 01 003377 002077 003777
0126607 01 003401 022275 -----
0126610 01 003402 002660 123777
0126612 01 003404 006002 -----
0126613 01 003405 006024 -----
0126614
0126614 01 003406 056A20 -----
01 UPDATSTAT
02 # SUBROUTINE CALLED OUT-OF INTERRUPT TO UPDATE THE PRESENT
03 # TAPE POSITION. MUST PROTECT ALL REGISTERS. R11=PRESENT TAPE POSITION
04 BEGIN
-002- 05 HA
06 LR R2,R0
07 LR R4,R1
08 CALL STATSET # GET PRESENT TAPC STATUS OF PREFERRED UNIT.
-001- 09 BSAI SXTATSET # SUBROUTINE STATSET IS IN PROGRAM CTAPH
10 ZR R3
11 TBN R1,S(POSOK) #IS THE PRESENT POSITION VERIFIED
12 BNC NOSEQER #NO
13 CRM R11,R1,M(PTP) #IS INCOMING BLOCK EXPECTED
14 LR R3,R1
15 BC NOSEQER #YES
16 SBN R11,S(SQERR)
17 NOSEQER
18 AN R11,1 #PREPARE FOR STOP AFTER BLOCK
19 STM R3,N(LSTGOOD)(RA0),M(LSTGOOD)
20 ZBN R11,S(POSOK)
21 STM R11,O(RA1),M(PTP)+M(POSOK)+M(SQERR)
22 LR R0,R2
23 LR R1,R4
24 RETURN
-001- 25 BTSAG

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 109

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

SPEED RESOLVING SUBROUTINE

CTAPH W77D

```

0126615
0126615 01 003407 140033 -----
0126616 01 003410 024021 -----
0126617 01 003411 054007 ----- 0126626
0126620 01 003412 037040 043332 CTSD
0126622 01 003414 003024 ----- MASACS
0126623 01 003415 005020 -----
0126624 01 003416 054002 ----- 0126626
0126625
0126625 01 003417 056400 ----- -001- 15
0126626
0126626
0126626 01 003420 156460 ----- -001- 18

```

```

01 SPEEDST
02 # CHECK THE DISTANCE TO THE DESTINATION AND DECIDE IF A FAST
03 # SEARCH IS APPROPRIATE. ONLY ONE FAST SEARCH IS ALLOWED. RO WILL
04 # CONTAIN THE DISTANCE. CF=0 ON EXIT INDICATES A FAST SEARCH
05 BEGIN ( )
06 L R1,N(STATEFLG)(RAO)
07 #ONLY TWO FAST SEARCHES ARE ALLOWED.
08 TBN R1,1
09 BC SLWRTN
10 A1S TCBADR+N(STATEFLG)
11 LN R1,FSTDIST
12 SR R1,RO # TEST IF DISTANCE REQUIRES A FAST SEARCH
13 BC SLWRTN
14 RETURN
15 BTSA
16 SLWRTN
17 RETURN 0 # SLOW SEARCH RETURN
18 BTSAN 0

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 110

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## DIRECTORY SEARCH ROUTINE

CTAPH W770

```

0126627 01 DIRSRCHRES
0126627 01 003421 171420 ----- -002- 03 BEGIN
0126630 01 003422 031040 043200 CTSD 04 HA
0126632 01 003424 003221 ----- 05 LAL R2,RESDIR,RAO
0126633 01 003425 053100 ----- 06 LN R9,1 #FLAG FOR WHICH DIR. IS SEARCHED
0126634 08 DIRSRCHIO 07 B RESNUMB
09 #ROUTINE TO SEARCH THE IOBUFFER FOR DIRECTORY DATA
10 BEGIN
0126634 01 003426 171420 ----- -002- 11 HA
0126635 01 003427 003220 ----- 12 ZR R9
0126636 01 003430 031040 045267 LAYOUT 13 LAL R2,I_0BUF+N(DATA_AREA),RAO
0126640 01 003432 014042 ----- 14 TZ R2 #WERE ANY FILES SPECIFIED IN DIRECTORY
0126641 01 003433 054071 ----- 15 BC ERTN #NO
16 #MULTIPLY THE NUMBER OF ENTRIES BY 6
17 NI R2,M(SYFILE)
0126642 01 003434 003442 000377 18 RLN R2,2
0126644 01 003436 010456 ----- 19 LR R3,R2
0126645 01 003437 006062 ----- 20 RRN R2,1
0126646 01 003440 010441 ----- 21 AR R2,R3
0126647 01 003441 001443 ----- 22 LOOKMORE
0126650 01 003442 103003 ----- 23 LN R0,3 #ALL ZERO DEFENSIVE CHECK
0126651 01 003443 040460 ----- 24 L R3,0(RA1)
0126652 01 003444 003462 000007 25 NI R3,M(WORDCNT) # NUMBER OF WORDS MINUS ONE IN NAME
0126654 01 003446 006103 ----- 26 LR R4,R3
0126655 01 003447 004501 ----- 27 AN R4,1 # INDEX INTO CLIENT NAME
0126656 01 003450 003124 ----- 28 LN R5,4 # INDEX INTO DIRECTORY
0126657 29 RELOAD
0126657 01 003451 142145 ----- 30 LX R6,R5(RAO) # GET CHARACTERS
0126660 01 003452 004137 ----- 31 SN R5,1
0126661 01 003453 014146 ----- 32 TZ R6 #IS NAME LESS THAN 4 WORDS LONG
0126662 01 003454 054046 ----- 33 BC ZERCHK
0126663 01 003455 042564 ----- 34 LX R7,R4(RA1) # GET CLIENTS WORD
0126664 01 003456 020147 ----- 35 CR R6,R7 #MATCH ?
0126665 01 003457 055051 ----- 36 BNC NOMCH
0126666 01 003460 004117 ----- 37 SN R4,1
0126667 01 003461 036060 126657 0126657 38 BX R3,RELOAD # GET NEXT WORD
0126671 01 003463 031420 043317 CTSD 39 LAL R1,TCBADR,RA1 # SET UP TO STORE FILE INFO
0126673 01 003465 040025 ----- 40 L R1,N(LSTBLK)(RAO) # GET LAST BLOCK IN FILE
0126674 01 003466 044427 ----- 41 ST R1,N(LASTBLK)(RA1) # STORE LAST BLOCK NUMBER AWAY
0126675 01 003467 040026 ----- 42 L R1,N(FILSTRT)(RAO) # GET FIRST BLOCK
0126676 01 003470 002426 037777 43 STM R1,N(PHYBLK)(RA1),M(PHYBLK)+M(DUP)+M(TRACK) # STOR FILE INFO
0126700 01 003472 002425 014000 44 STM R1,N(VERTRK)(RA1),M(VERTRK) #ESTABLISH VERIFY TRACK
0126702 01 003474 002436 017777 45 STM R1,N(ORIGIN)(RA1),M(ORIGIN) # SAVE ORIGINAL START OF FILE.
0126704 01 003476 010435 ----- 46 RRN R1,S(TAPNUM)-1
0126705 01 003477 002430 000006 47 STM R1,N(TAPNO)(RA1),M(TAPNO)*E(1)
0126707 01 003501 051410 ----- 48 TBS N(TAPNO)(RA1),S(TAPNO)
0126710 01 003502 055004 ----- 49 BNC ZROPN

```

COMMON TAPE HANDLER

PR-1C957-50

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## DIRECTORY SEARCH ROUTINE

CTAPH W77D

```

0126711 01 003503 037040 060162 LAYOUT      01      A1S      MMT1FO      # ADD TO PEG COUNT. TDC1 OPENED
0126713 01 003505 053003 ----- 0126716    02      B        MVCHK
0126714 ,                                     03 ZROPN
0126714 01 003506 137040 060161 LAYOUT      04      A1S      MMT0FO      # ADD TO PEG COUNT. TDC0 OPENED
0126716 -----                               05 MVCHK
0126716 01 003510 114231 -----             06      TZ      R9          #DOES DIRECTORY NEED MOVING TO RESDIR?
0126717 01 003511 055010 ----- 0126727    07      BNC     RTNOKCOD    #NO
0126720 01 003512 003401 000111 CTSD        08      LI      RO,TBLSIZ(RESDIR)
0126722 01 003514 031220 045267 LAYOUT      09      LAL     R9,I_OBUF+N(DATA_AREA),RA0 #PREPARE ADDRESS FOR MOVE
0126724 01 003516 031420 043200 CTSD        10      LAL     R1,RESDIR,RA1
0126726 -----                               11      CALL    MOVST      # MOVE DIRECT ENTRY TO RESIDENT DIRECTORY
0126726 01 003520 073033 -----             -001- 12     BSAI     MMOVST     # SUBROUTINE MOVST IS IN PROGRAM CSYSUB
0126727 -----                               13     RTNOKCOD
0126727 -----                               14      RETURN  0
0126727 01 003521 156440 -----             -001- 15     BTSAGN  0

0126730 -----                               19 ZERCHK
0126730 01 003522 136000 126657 0126657    20      BX      RO,RELOAD    #HAS AN ENTRY BEEN ALL ZERO?
0126732 -----                               21     ERTN
0126732 -----                               22      RETURN  1      #YES
0126732 01 003524 156441 -----             -001- 23     BTSAGN  1

0126733 -----                               27 RESNUMB
0126733 01 003525 103441 000110 CTSD        28      LI      R2,TBLSIZ(RESDIR)-1 #WORDS PER RESDIR
0126735 01 003527 053713 ----- 0126650    29      B        LOOKMORE

0126736 -----                               31 NOMCH
0126736 01 003530 141006 -----             32      LA      RO,6(RA0)    # SET UP FOR NEXT ENTRY
0126737 01 003531 004052 -----             33      SN      R2,6          #DELETE ONE ENTRY SIZE
0126740 01 003532 014042 -----             34      TZ      R2          #DONE WITH ALLOTTED AREA
0126741 01 003533 055707 ----- 0126650    35      BNC     LOOKMORE    #NO
0126742 -----                               36      RETURN  1
0126742 01 003534 056441 -----             -001- 37     BTSAGN  1      # NO MATCH FOUND IN THIS DIRECTORY

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 112

TAPE SUBROUTINES

CTAPH

W77D

CRC XCR TABLE

Address	Op	Op1	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17
0126743																		01 XORTAB
0126743	01	003535	000000	-----														VFD
0126744	01	003536	146001	-----														VFD
0126745	01	003537	154001	-----														VFD
0126746	01	003540	012000	-----														VFD
0126747	01	003541	170001	-----														VFD
0126750	01	003542	036000	-----														VFD
0126751	01	003543	024000	-----														VFD
0126752	01	003544	162001	-----														VFD
0126753	01	003545	120001	-----														VFD
0126754	01	003546	066000	-----														VFD
0126755	01	003547	074000	-----														VFD
0126756	01	003550	132001	-----														VFD
0126757	01	003551	050000	-----														VFD
0126760	01	003552	116001	-----														VFD
0126761	01	003553	104001	-----														VFD
0126762	01	003554	042000	-----														VFD

COMMON TAPE HANDLER

PR-1C957-50

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## REMOVE TAPE FROM ACCESS ROUTINE

CTAPH W77D

```

0126763
0126763 01 003555 171420 -----
0126764 01 003556 003030 -----
0126765 01 003557 053023 ----- 0127010
0126766

01 DGNRMV
02 # ENTRY FOR DIAGNOSTIC REMOVAL OF TAPE UNIT.
03 HA
04 LN R1,DGN
05 B PNTREMOV
06 REMOVTV
07 # PLACE THIS TAPE OUT OF ACCESS FROM T'S CC AND PRINTOUT
08 # IF UNIT HAS NOT BEEN REMOVED. R6 CONTAINS TAPE NUMBER
09 # R1 CONTAINS DICTIONARY WORD.

0126766
0126766 01 003560 171420 ----- -002- 13 BEGIN
0126767 01 003561 030400 043326 CTSD 14 HA
0126771 01 003563 003402 140000 15 LL RD,TCBADR+N(DIAGBITS)
0126773 01 003565 055014 ----- 0127007 16 NI RD,M(DIAGBITS)
0126774 01 003566 031040 043337 CTSD 17 BNC REFROM
0126776 01 003570 043046 ----- 18 LAL R2,TUSTAT,RAO
0126777 01 003571 016402 003777 19 LAX R2,R6(RAO) # SETUP RAO
20 LRM RD,R2,M(PTP) # PRINT PRESENT TAPE POSITION OF FAILING
TAPE.
-001- 22 TAPEHL OW 0(3573) # 12230
23 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003573 *****

0127001 01 003573 037000 111707 0111707 -001- 26 CPATCH BGNP 0(255) # 12230
-001- 27 BL XXX845
-001- 28 NOTE CPATCH 'CSECT'
-001- 29 NOTE ***** PATCH AREA BEGINS AT 000255 *****

0111707
0111707 02 000255 106121 ----- -001- 32 XXX845 PATCH AREA
0111710 33 LR R5,R1 # SAVE DICTIONARY WORD
0111710 34 CALL BINXBCD
0111710 02 000256 037020 110023 CSYSUB -001- 35 BSA BINXBCD
0111712 36 ENDP # 12230
0111712 02 000260 137000 127003 0127003 -001- 37 BL XXX848
-001- 38 NOTE ***** LAST PATCH ADDRESS USED IS 000261 *****
-001- 39 NOTE ***** NUMBER OF PATCH WORDS USED IS 5 (DECIMAL) *****

0127003
0127003 01 003575 106241 ----- -001- 42 XXX848 OWCONTINUE
0127004 43 LR R10,R1
44 EDW # 12230
-001- 45 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003575 *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 114

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## REMOVE TAPE FROM ACCESS ROUTINE

CTAPH W77D

```

0127004 01 003576 061260 ----- 01      SBS      0(RA0),S(TSTATE)
0127005 01 003577 024053 ----- 02      TBN      R2,S(TSTATE)      #IS UNIT 00S
0127006 01 003600 055002 ----- 03      BNC      PNTREMOV
0127007 04 REFROM
0127007 05      RETURN 1
0127007 01 003601 156441 ----- -001- 06      BTSAGN 1
0127010 07 PNTREMOV
0127010 01 003602 172161 ----- 08      GN       R7,1
0127011 01 003603 031600 123206 0123206 09      LAL      R8,TAPEHL,RA1
0127013 01 003605 005177 ----- 10      SR       R7,RA1+1          #SET UP OFFSET PO.
0127014 01 003606 037040 060160 LAYOUT 11      A1S      MMTDCAR          # PEG COUNT FOR AUTOMATIC TDC REMOVALS.
0127016 01 003610 062340 ----- 12      ZBS      0(RA0),S(REDON)  #CLEAR IN CASE SET. THIS IS ALSO DIAG PASS
                                                BIT
0127017 01 003611 031600 127113 0127113 14      LAL      R8,ERBLK,RA1
                                                15 TAPEHL OW 0(3613)      # 12230
-001- 16      NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 003613 *****

0127021 01 003613 042605 ----- 19      LX      R8,R5(RA1)      # LOAD UP ERROR DESIGNATION
0127022 20      EOW      # 12230
-001- 21      NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 003613 *****

0127022 24      PRINT  PRIOR=3,PACTION=**,FMT=(WRD(T,A,P,E),WRD(R,M,V),BCD,L_X,WRD,SKP,B
                                                CD,L_X),TIME=YES

-001- 27 # MESSAGE PROTOTYPE
-001- 28 # ** RM TAPE RMV nnnn xxxx WRD nnnn xxxx
0127022 01 003614 073053 ----- -002- 29      BSAI    PXMRY      # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
0127023 01 003615 104360 ----- -002- 30      VFD    1,1 2,0 1,0 3,4 1,0 1,1 1,1 2,3 1,0 3,0
0127024 01 003616 020150 ----- -002- 31      VFD    4,TTYO_SKP 4,TTYO_WRD 4,TTYO_L_X 4,TTYO_BCD
0127025 01 003617 021150 ----- -002- 32      VFD    4,TTYO_4,TTYO_4,TTYO_L_X 4,TTYO_BCD
0127026 01 003620 010242 ----- TTYTDL -002- 33      VFD    5,2 11,TXAPE
0127027 01 003621 000035 137020 TTYTBL -002- 34      VFD    5, 11,RXHV
-001- 35      NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
                                                CONTAINED IN GENERAL REGISTERS R6,R7,R8,R10,R11,
                                                ****THIS MESSAGE WILL RESULT IN A MAJOR ALARM****
0127030 37      NOTE
0127030 01 003622 137020 127033 0127033 -001- 38      CALL   RMVLED
0127032 39      BSA    RMVLED
0127032 01 003624 156440 ----- -001- 40      RETURN 0
0127032 01 003624 156440 ----- -001- 41      BTSAGN 0

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 115

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

ORDER SENDING, LED LIGHTING TAPE REMOVE ROUTINE.

CTAPH W77D

0127033

01 RMVLED  
 02 # INITIALIZE OR MAINT. STOP TDC BEING REMOVED FROM SERVICE. MAINT  
 03 # STOP WILL BE SEND IN THE EVENT THE TAPE IS MOVING WHEN REMOVE IS  
 04 # EXECUTED. THIS WILL GUARD AGAINST TAPE-OFF-REEL CONDITION. ALSO  
 05 # SETS LED IN SSP TO INDICATE REMOVED TDC.  
 06 # R6 MUST INDICATE UNIT BEING REMOVED AND  
 07 # RAO MUST POINT TO TCB ADDRESS.

```

0127033          11      BEGIN
0127033 01 003625 171420 ----- -002- 12      HA
0127034 01 003626 031622 020007 TDATA 13      LAL      R9,TUENABL,RA1
0127036 01 003630 042626 ----- 14      LX      R9,R6(RA1)          # SET UP ENABLE ADDRESS.
0127037 01 003631 003641 002015      15      LI      R10,TSTAT        # GET STATUS OF UNIT
0127041          16      CALL      ORDEXCAB
0127041 01 003633 073032 ----- -001- 17      BSAI      ordexCab        # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0127042 01 003634 155005 ----- 0127047 18      BNC      EMGSTP        # FAILURE OF CRDR MEANS SEND MAINT STOP.
0127043 01 003635 024272 ----- 19      TBN      R11,S(TIM)        # IS TAPE MOVING.
0127044 01 003636 003641 040007      20      LI
0127046 01 003640 055003 ----- 0127051 21      BNC      SEORDR
0127047          22      EMGSTP
0127047 01 003641 103641 000215      23      LI      R10,TMSTOP
0127051          24      SEORDR
0127051          25      CALL      ORDEXCAB
0127051 01 003643 173032 ----- -001- 26      BSAI      ordexCab        # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH
0127051          27      # NEXT  RMV TAPE FROM SERVICE BY SETTING LED IN SSP.
0127051          28      TAPEHL CW      0(3644)        # 11914
0127051          -001- 29      NOTE      ***** THE FIRST ADDRESS OVERRITTEN IS 003644 *****

0127052          32      TAKEOUT 5
0127052 01 003644 106000 ----- -001- 33      LR      0,0
0127053 01 003645 006000 ----- -001- 34      LR      0,0
0127054 01 003646 006000 ----- -001- 35      LR      0,0
0127055 01 003647 006000 ----- -001- 36      LR      0,0
0127056 01 003650 006000 ----- -001- 37      LR      0,0
0127057          38      EOW
0127057          -001- 39      NOTE      ***** THE LAST ADDRESS OVERRITTEN IS 003650 *****

0127057          42      RETURN
0127057 01 003651 056420 ----- -001- 43      BTSAG
  
```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 116

0:43:06 2/06/81 \*\*\*\*

## TAPE SUBROUTINES

## ERROR PRINTOUT ROUTINE

CTAPH W77D

0127060

01 PRINTER

02 # A TAPE OPERATION HAS BEEN ABORTED. THIS ROUTINE WILL GENERATE THE  
 03 # APPROPRIATE ERROR RESPONSE FOR THIS PARTICULAR ABORT. R1 SHOULD BE SET  
 04 # TO THE REQUESTED ERROR PRINTOUT.

```

0127060          08      BEGIN
0127060 01 003652 171420 ----- -002- 09      HA
0127061 01 003653 072161 -----          10      GN      R7,1
0127062 01 003654 031600 123206 0123206          11      LAL      R8,TAPEHL,RA1
0127064 01 003656 005177 -----          12      SR      R7,RA1+1      #SET UP OFFSET PRINTOUT.
0127065 01 003657 031600 127113 0127113          13      LAL      R8,ERBLK,RA1
0127067 01 003661 042601 -----          14      LX      R8,R1(RA1)      # PLACE ERROR WRD IN R8
0127070 01 003662 040230 -----          15      L      R9,N(TAPNO)(RA0) # PLACE TAPE NUMBER IN R9
          16 TAPEHL OW      0(3663)      # 12230
          -001- 17      NOTE      ***** THE FIRST ADDRESS OVERWRITTEN IS 003663 *****

          20 CPATCH BGNP      0(335)      # 12230
0127071 01 003663 037000 111767 0111767 -001- 21      BL      XXX887
          -001- 22      NOTE      CPATCH 'CSECT'
          -001- 23      NOTE      ***** PATCH AREA BEGINS AT 000335 *****

0111767          -001- 26 XXX887 PATCHAREA
0111767 02 000335 131640 043337 CTSD          27      LAL      R10,TUSTAT,RA1
0111771 02 000337 042411 -----          28      LX      R0,R9(RA1)
0111772          29      ENDP      # 12230
0111772 02 000340 037000 127073 0127073 -001- 30      BL      XXX889
          -001- 31      NOTE      ***** LAST PATCH ADDRESS USED IS 000341 *****
          -001- 32      NOTE      ***** NUMBER OF PATCH WORDS USED IS 5 (DECIMAL) *****

0127073          -001- 35 XXX889 OWCONTINUE
0127073 01 003665 103402 003777          36      NI      R0,M(PTP)
0127075          37      EOW      # 12230
          -001- 38      NOTE      ***** THE LAST ADDRESS OVERWRITTEN IS 003666 *****

0127075          41      CALL      BINXBCD
0127075 01 003667 037020 110023 CSYSUB -001- 42      BSA      BINXBCD
0127077 01 003671 106241 -----          43      LR      R10,R1
0127100          44      PRINT     PRIOR=3,PACTION=**,FMT=(WRD(T,A,P,E),WRD(O,P,E,R),WRD(A,B,T),L_X,
          WRD,L_X,BCD)

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 117

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## ERROR PRINTOUT ROUTINE

CTAPH W77D

```

-001- 01 # MESSAGE PROTOTYPE
-001- 02 # ** mn TAPE OPER ABT xxxx WRD xxxx nnnn
0127100 01 003672 073053 ----- -002- 03 BSAI PXMRY # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
0127101 01 003673 104260 ----- -002- 04 VFD 1,1 2,0 1,0 3,4 1,0 1,1 1,0 2,3 1,0 3,0
0127102 01 003674 060140 ----- -002- 05 VFD 4,TTYO_L_X 4,TTYO_WRD 4,TTYO_L_X 4,TTYO_WRD
0127103 01 003675 021050 ----- -002- 06 VFD 4,TTYO_4,TTYO_4,TTYO_4,TTYO_BCD
0127104 01 003676 014242 ----- TTYTBL -002- 07 VFD 5,3 11,TXAPE
0127105 01 003677 001517 ----- TTYTBL -002- 08 VFD 5, 11,OXPER
0127106 01 003700 000001 ----- TTYTBL -002- 09 VFD 5, 11,AXBT
-001- 10 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
CONTAINED IN GENERAL REGISTERS R7,R8,R9,R10,
-001- 12 NOTE ****THIS MESSAGE WILL RESULT IN A MAJOR ALARM****
0127107 01 003701 103641 040007 -001- 13 LI R10,INIT
0127111 -001- 14 CALL ORDEXCNT
0127111 01 003703 073023 ----- -001- 15 BSAI ordexCnt # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0127112 -001- 16 RETURN
0127112 01 003704 156420 ----- -001- 17 BTSAG

0127113 21 ERBLK
000000 22 FATLREAD EQU *-ERBLK
0127113 01 003705 001437 ----- TTYTBL -001- 23 SPELL MRY,(F,A,T,L,R,E,A,D)
0000001 24 VFD 5, 11,fatlrEad
25 FATLWRT EQU *-ERBLK
0127114 01 003706 001440 ----- TTYTBL -001- 26 SPELL MRY,(F,A,T,L,W,R,I,T)
0000002 27 VFD 5, 11,fatlwRit
28 BASETO EQU *-ERBLK
0127115 01 003707 001412 ----- TTYTBL -001- 29 SPELL MRY,(B,A,S,E,T,O)
0000003 30 VFD 5, 11,BXASETO
31 NORESP EQU *-ERBLK
0127116 01 003710 001510 ----- TTYTBL -001- 32 SPELL MRY,(N,O,R,E,S,P)
0000004 33 VFD 5, 11,NXORESP
34 TURER EQU *-ERBLK
0127117 01 003711 001571 ----- TTYTBL -001- 35 SPELL MRY,(T,U,R,E,R)
0000005 36 VFD 5, 11,TXURER
37 ORDER EQU *-ERBLK
0127120 01 003712 001521 ----- TTYTBL -001- 38 SPELL MRY,(O,R,D,E,R)
0000006 39 VFD 5, 11,OXRDER
40 OORADR EQU *-ERBLK
0127121 01 003713 001516 ----- TTYTBL -001- 41 SPELL MRY,(O,O,R,A,D,R)
0000007 42 VFD 5, 11,OXORADR
43 SEQERR EQU *-ERBLK
0127122 01 003714 001545 ----- TTYTBL -001- 44 SPELL MRY,(S,E,Q,E,R,R)
0000020 45 VFD 5, 11,SXEQERR
46 DGN EQU *-ERBLK
0127123 01 003715 000014 ----- TTYTBL -001- 47 SPELL MRY,(D,G,N)
48 VFD 5, 11,DXGN

```

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 118

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

TIME CHECK ROUTINE

CTAPH W77D

0127124

```

01 TIMEOUTCK
02 # CHECK IF TIME OUT HAS OCCURED. RAO=TCBADR
03 # RETURN 1=NO TIMEOUT
04 # RETURN 0=TIMEOUT HAS OCCURED

```

```

0127124          08      BEGIN
0127124 01 003716 171420 ----- -002- 09      HA
0127125 01 003717 040014 -----          10      L      RO,N(TIMEK)(RAO) # GET TIME CONSTANT
0127126          11      CHKTIM
0127126          -001- 12      CALL    TIMCHK # HAS TIMEOUT OCCURRED?
0127126 01 003720 073037 ----- -002- 13      BSAI    TXIMCHK # SUBROUTINE TIMCHK IS IN PROGRAM CSYSUB
0127127 01 003721 155002 ----- 0127131          14      BNC     RTNZR
0127130          15      RETURN  1
0127130 01 003722 056441 ----- -001- 16      BTSAGN 1
0127131          17      RTNZR
0127131          18      RETURN  0 # CF=1 TIMEOUT
0127131 01 003723 156440 ----- -001- 19      BTSAGN 0

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 119

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## CRC CHECK ROUTINE

CTAPH W77D

```

0127132          01 CRCCHK
02 # THIS ROUTINE WILL SCAN THE TAPE UNIT TO CHECK IF A CRC ERROR
03 # HAS OCCURRED. IF ONE EXISTS THE RECOVERY SUBSTATE WILL BE INITIATED
04 # AND VARIOUS KEY TCB WORDS ARE SAVED FOR THE RESTORATION OF THE
05 # INTERRUPTED FUNCTION IF RECOVERY IS SUCCESSFUL.

0127132          09      BEGIN
0127132 01 003724 171420 ----- -002- 10      HA
0127133 01 003725 003641 002015          11      LI      R10,TSTAT
0127135          12      CALL  ORDEXCNT      #SEND TAPE STATUS COMMAND.
0127135 01 003727 073023 ----- -001- 13      BSAI  ordexCnt      # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0127136 01 003730 154007 ----- 0127145 14      BC      NOCR CER      #RETURN 0 = NO ERROR.
0127137 01 003731 051120 -----          15      TBS   N(MAINT)(RAO),S(MAINT) #IS ERROR RECOVERY IP.
0127140 01 003732 055002 ----- 0127142 16      BNC   SETCOV      #NO
0127141          17      CALL  POPSTATE      #YES LET IT GAIN CONTROL.
0127141 01 003733 073045 ----- -001- 18      BSAI  popstAte      # SUBROUTINE POPSTATE IS IN PROGRAM CTAPH
0127142          19      SETCOV
0127142          20      CALL  CRCREC      # SET UP RECOVERY SUBSTATE IF REQUIRED.
0127142 01 003734 137020 127155 0127155 -001- 21      BSA   CRCREC
0127144          22      RETURN 1      #FLAG ERROR HAS OCCURRED.
0127144 01 003736 156441 ----- -001- 23      BTSAGN 1

0127145          27      NOCR CER
0127145 01 003737 130660 045266 LAYOUT 28 # NO ERROR HAS RESULTED. UPDATE TAPE STATUS AND EXIT.
0127147          29      LL      R11,I_OBUF      #GET ADDRESS BLK JUST WRITTEN
0127147 01 003741 037020 126570 0126570 -001- 31      CALL  UPDATSTAT
0127151          32      CALL  UPDATSTAT
0127151 01 003743 173024 ----- -001- 33      BSAI  STATSET      # SUBROUTINE STATSET IS IN PROGRAM CTAPH
0127152 01 003744 161720 -----          34      SBS   O(RA1),S(POSOK) #SET POSITION KNOWN BIT IN STATUS WORD.
0127153 01 003745 062220 -----          35      ZBS   N(SRFAL)(RAO),S(SRFAL) #CLEAR CRC FAIL BIT.
0127154          36      RETURN 0
0127154 01 003746 056440 ----- -001- 37      BTSAGN 0

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 120

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## ERROR RECOVERY SETUP ROUTINE.

CTAPH W77D

```

0127155          01 CRCEREC
02 # THIS ROUTINE WILL SET UP THE RECOVERY STATE AND ASSOCIATED
03 # CONTROL WORDS IF REQUIRED. IF THE RECOVERY STATE IS ALREADY ACTIVE,
04 # MINIMAL CLEAN UP IS DONE AND RETURN IS EXECUTED.

0127155          08          BEGIN
0127155 01 003747 171420 ----- -002- 09          HA
                                10 # CHECK IF DIAG IP
0127156 01 003750 061220 -----          11          SBS          N(SRFAL)(RAD),S(SRFAL) #LOG CRC FAILURE.
0127157 01 003751 040007 -----          12          L          RO,N(DIAGBITS)(RAD)
0127160 01 003752 003402 140000          13          NI          RO,M(DIAGBITS)
0127162 01 003754 054002 ----- 0127164          14          BC          NORMTCB
0127163          15          RETURN
0127163 01 003755 056420 ----- -001- 16          BTSAG
0127164          17          NORMTCB
0127164 01 003756 103641 040007          18          LI          R10,INIT
0127166          19          CALL          ORDEXCNT
0127166 01 003760 073023 ----- -001- 20          BSAI          ordxCnt          # SUBROUTINE ORDEXCNT IS IN PROGRAM CTAPH
0127167 01 003761 103100 -----          21          ZR          R4
0127170 01 003762 044111 -----          22          ST          R4,N(BUFCT)(RAD)
0127171 01 003763 051120 -----          23          TBS          N(MAINT)(RAD),S(MAINT) #IS RECOVERY ALREADY ACTIVE
0127172 01 003764 054022 ----- 0127214          24          BC          JUSTEXIT
0127173 01 003765 061120 -----          25          SBS          N(MAINT)(RAD),S(MAINT)
                                26 # SAVE KEY RESTORAL CONTROL WORDS.
0127174 01 003766 040012 -----          27          L          RO,N(STATEWRD)(RAD)
0127175 01 003767 035400 043311 CTSD          28          STAL          RO,MTCSV,R41
0127177 01 003771 040013 -----          29          L          RO,N(STATEFLG)(RAD)
0127200 01 003772 044401 -----          30          ST          RO,N(SVFLG)(RA1)
0127201 01 003773 040015 -----          31          L          RO,N(LSTCOM)(RAD)
0127202 01 003774 044403 -----          32          ST          RO,N(SVCOM)(RA1)
0127203 01 003775 040005 -----          33          L          RO,N(LOGBLK)(RAD)
0127204 01 003776 044404 -----          34          ST          RO,N(SVINDX)(RA1)
0127205 01 003777 040006 -----          35          L          RO,N(PHYBLK)(RAD)
0127206 01 004000 044402 -----          36          ST          RO,N(SVBASE)(RA1)
0127207 01 004001 003002 -----          37          LN          RO,REREAD          #START SUBSTATE SETUP
0127210 01 004002 044012 -----          38          ST          RO,N(STATEWRD)(RAD)
0127211 01 004003 044113 -----          39          ST          R4,N(STATEFLG)(RAD)
0127212 01 004004 040017 -----          40          L          RO,N(LSTGOOD)(RAD)
0127213 01 004005 044405 -----          41          ST          RO,N(SVLSTGOOD)(RA1)
0127214          42          JUSTEXIT
0127214          43          BGNTIM          MSEC=STPTIM
0127214 -001- 44          CALL          TIMEOUT
0127214 01 004006 173022 ----- -002- 45          BSAI          TXIMOUT          # SUBROUTINE TIMEOUT IS IN PROGRAM CSYSUB
0127215 01 004007 000003 ----- -001- 46          DATA          3          # TIMEOUT+1
0127216 01 004010 144014 -----          47          ST          RO,N(TIMEK)(RAD)          #SET UP TIME FOR INIT
0127217 01 004011 003401 000006          48          LI          RO,TIMST
0127221          49          CALL          PUSHSTAT

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 121

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

ERROR RECOVERY SETUP ROUTINE.

CTAPH W77D

0127221 01 004013 073044 -----  
0127222  
0127222 01 004014 156420 -----

-001- 01  
02  
-001- 03

BSAI pushsTat  
RETURN  
BTSAG

# SUBROUTINE PUSHSTAT IS IN PROGRAM CTAPH

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH

ISSUE 08 PAGE 122

TAPE SUBROUTINES  
TAPE RECOVERY MESSAGE

0:43:06 2/06/81 \*\*\*\*

CTAPH W77D

0127223

01 PTREC  
02 # THIS ROUTINE PRINTS THE REPORT OF A TAPE RECOVERY ATTEMPT AND  
03 # INDICATES WHAT TYPE OF ERROR PROMPTED SUCH ACTION. R8 CONTAINS THE  
04 # DICTIONARY WORD SPECIFYING THE TYPE OF PROBLEM ENCOUNTERED. RAO MUST  
05 # POINT TO TCB.

0127223

```

0127223 01 004015 171420 ----- -002- 09 BEGIN
0127223 01 004016 072161 ----- 10 HA
0127224 01 004017 031400 123206 0123206 11 GN R7,1
0127227 01 004021 005177 ----- 12 LAL RO,TAPEHL,RA1
0127230 01 004022 040007 ----- 13 SR R7,RA1+1 #SET UP OFFSET PRINTOUT
0127231 01 004023 003402 140000 14 L RO,N(DIAGBITS)(RAO) #IS DIAG IP
0127233 01 004025 054002 ----- 0127235 15 NI RO,M(DIAGBITS)
0127234 16 BC DOPO
0127234 01 004026 056420 ----- -001- 17 RETURN
0127235 18 BTSAG
0127235 01 004027 140150 ----- 19 DOPO
20 L R6,N(TAPNO)(RAO) # GET TAPE NUMBER WORD
21 TAPEHL OW 0(4030) # 12230
-001- 22 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 004030 *****

0127236 01 004030 037000 111762 0111762 -001- 25 CPATCH BGNP 0(330) # 12230
-001- 26 BL XXX971
-001- 27 NOTE CPATCH 'CSECT'
-001- 28 NOTE ***** PATCH AREA BEGINS AT 000330 *****

0111762 -001- 31 XXX971 PATCHAREA
0111762 02 000330 131620 043337 CTSD 32 LAL R9,TUSTAT,RA1
0111764 02 000332 042406 ----- 33 LX RO,R6(RA1)
0111765 34 ENDP # 12230
0111765 02 000333 037000 127240 0127240 -001- 35 BL XXX973
-001- 36 NOTE ***** LAST PATCH ADDRESS USED IS 000334 *****
-001- 37 NOTE ***** NUMBER OF PATCH WORDS USED IS 5 (DECIMAL) *****

0127240 -001- 40 XXX973 OWCONTINUE
0127240 01 004032 103402 003777 41 NI RO,M(PTP)
0127242 42 EOW # 12230
-001- 43 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 004033 *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 123

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## TAPE RECOVERY MESSAGE

CTAPH W77D

```

0127242
0127242 01 004034 037020 110023 CSYSUB -001- 01 CALL BINXBCD
                                           02 BSA BINXBCD
                                           03 TAPEHL OW 0(4036) # 12230
                                           -001- 04 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 004036 *****

0127244 01 004036 106221 ----- 07 LR R9,R1 # PRINT FAILING BLOCK NUMBER.
0127245 08 EOW # 12230
                                           -001- 09 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 004036 *****

0127245 12 PRINT PRIOR=3,FMT=(WRD(T,A,P,E),WRD(R,C,0,V,R,Y),BCD,L_X,WRD,BCD)
                                           -001- 14 # MESSAGE PROTOTYPE
                                           -001- 15 # mm TAPE RCOVRY nnnn xxxx WRD nnnn
0127245 01 004037 073053 ----- -002- 16 BSAI PXMRY # SUBROUTINE PMRY IS IN PROGRAM TTYAPP
0127246 01 004040 100260 ----- -002- 17 VFD 1,1 2,0 1,0 3,0 1,0 1,1 1,0 2,3 1,0 3,0
0127247 01 004041 100150 ----- -002- 18 VFD 4,TTYO_BCD 4,TTYO_WRD 4,TTYO_L_X 4,TTYO_BCD
0127250 01 004042 021042 ----- -002- 19 VFD 4,TTYO_ 4,TTYO_ 4,TTYO_ 4,TTYO_
0127251 01 004043 010242 ----- -002- 20 VFD 5,2 11,TXAPE
0127252 01 004044 000340 ----- TTYTBL -002- 21 VFD 5, 11,RXCOVRY
                                           -001- 22 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
                                           CONTAINED IN GENERAL REGISTERS R6,R7,R8,R9,

0127253 24 RETURN
0127253 01 004045 156420 ----- -001- 25 BTSAG

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 124

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

TU STATUS CLEAR ROUTINE

CTAPH W77D

0127254

01 CLRSTAT  
 02 # THIS ROUTINE WILL ZERO OUT THE PRESENT TAPE POSITION KNOWN BIT IN  
 03 # EACH STATUS WORD OF THE DEFINED TDCS.  
 04 # R6 MUST BE EQUAL TO THE NUMBER OF DEFINED UNITS-1.

0127254				08	BEGIN
0127254	01	004046	171420	-----	-002- 09
0127255	01	004047	031400	043337 CTSD	10
0127257					11 CLRIT
0127257	01	004051	162720	-----	12
0127260	01	004052	041401	-----	13
0127261	01	004053	036140	127257 0127257	14
0127263					15
0127263	01	004055	056420	-----	-001- 16

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 125

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## TAPE STATUS CHECK ROUTINE

CTAPH W77D

0127264

01 CHKTSTAT  
 02 # THIS ROUTINE WILL ADDRESS THE TAPE UNIT POINTED TO BY R6  
 03 # TO CHECK FOR A BIT POINTED TO BY R5. RETURN 0=THE BIT IS SET  
 04 # RETURN 1=NOT SET OR ORDER FAILED

0127264				08	BEGIN		
0127264	01	004056	171420	-----	-002-	09	HA
0127265	01	004057	031402	020007		10	LAL
							RD,TAPETBL+1,RA1
0127267	01	004061	042626	-----		11	LX
							R9,R6(RA1)
0127270	01	004062	003641	002015		12	LI
							R10,TSTAT
0127272						13	CALL
							ORDEXCAB
0127272	01	004064	073032	-----	-001-	14	BSAI
							ordexCab
0127273	01	004065	154002	-----		15	BC
				0127275			SUCED
0127274						16	NORTN
0127274	01	004066	156441	-----	-001-	17	RETURN
							1
0127275						18	BTSAGN
							1
0127275	01	004067	172673	-----		19	SUCED
0127276	01	004070	024665	-----		20	HN
							R11,11
0127277	01	004071	055775	-----		21	TBR
				0127274			R11,R5
0127300						22	BNC
							NORTN
0127300	01	004072	056440	-----	-001-	23	RETURN
							0
						24	BTSAGN
							0

# GET ENABLE ADDRESS.  
 # SUBROUTINE ORDEXCAB IS IN PROGRAM CTAPH  
 # CHECK IF REQUESTED BIT SET.

COMMON TAPE HANDLER

FR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 126

0:43:06 2/06/81 \*\*\*\*

TAPE SUBROUTINES

COMPLIMENT TAPE NUMBER IN TCB

CTAPH

W77D

0127301

01 COMTU  
 02 # ROUTINE TO COMPLIMENT AND STORE TAPE NUMBER IN THE TCB.  
 03 # RAO MUST POINT TO TCB AND R6 MUST BE TAPE NUMBER IN TCB

0127301  
 0127301 01 004073 103544 000001  
 0127303 01 004075 044150 -----  
 0127304 01 004076 031460 043337 CTSD  
 0127306 01 004100 043466 -----  
 0127307  
 0127307 01 004101 056400 -----

07  
 08  
 09  
 10  
 11  
 12  
 -001- 13

BEGIN ( )  
 XI R6,1  
 ST R6,N(TAPNO)(RA0)  
 LAL R3,TUSTAT,RA1  
 LAX R3,R6(RA1)  
 RETURN  
 BTSA

#SET R3=PTP RA1=STAT WORD R6=TAPNO.

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 127

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## TAPE STATUS OUTPUT MESSAGE

CTAPH W77D

```

0127310
0127310 01 004102 131400 043337 CTSD
0127312 01 004104 030502 020006 TDATA
0127314 01 004106 004117 -----
0127315 01 004107 003140 -----
0127316
0127316 01 004110 142524 -----
0127317 01 004111 024133 -----
0127320 01 004112 055002 ----- 0127322
0127321 01 004113 026544 -----
0127322
0127322 01 004114 136100 127316 0127316
0127324 01 004116 030502 020006 TDATA
0127326 01 004120 040560 -----
0127327 01 004121 040601 -----
0127330 01 004122 004116 -----
0127331 01 004123 014104 -----
0127332 01 004124 054010 ----- 0127342
0127333 01 004125 040622 -----
0127334 01 004126 040643 -----
0127335 01 004127 004116 -----
0127336 01 004130 014104 -----
0127337 01 004131 054003 ----- 0127342
0127340 01 004132 040664 -----
0127341 01 004133 040705 -----
0127342
0127342
0127342

01 RPTTAPE
02 #ROUTINE TO SERVICE THE REPT:TAPE! MESSAGE
03 LAL R0,TUSTAT,RA1
04 LL R4,TAPETBL #GET EQUIPPED TOCS
05 SN R4,1
06 ZR R6
07 NXTSTAT
08 LX R5,R4(RA1) #GET TAPE STATUS
09 TBN R5,S(TSTATE) #UNIT OOS?
10 BNC NOSET #NO
11 SBR R6,R4 #FLAG OOS CONDITION
12 NOSET
13 BX R4,NXTSTAT
14 LL R4,TAPETBL
15 L R7,0(RA1)
16 L R8,1(RA1)
17 SN R4,2
18 TZ R4
19 BC PRNTIT
20 L R9,2(RA1)
21 L R10,3(RA1)
22 SN R4,2
23 TZ R4
24 BC PRNTIT
25 L R11,4(RA1)
26 L R12,5(RA1)
27 PRNTIT
28 PRINT PACTION=M FMT=(WRD(R,E,P,T),WRD(T,A,P,E),L_X,L_X,L_X,L_X,L_X,L_X)

-001- 30 # MESSAGE PROTOTYPE
-001- 31 # M mm REPT TAPE xxxx xxxx xxxx xxxx xxxx
-002- 32 BSAI PXMRY # SUBROUTINE PHRY IS IN PROGRAM TTYAPP
0127342 01 004134 173053 -----
0127343 01 004135 102200 -----
0127344 01 004136 063146 -----
0127345 01 004137 021146 -----
0127346 01 004140 010033 ----- TTYTBL
0127347 01 004141 000242 ----- TTYTBL
-002- 33 VFD 1,1 2,0 1,0 3,2 1,0 1,1 1,0 2,0 1,0 3,0
-002- 34 VFD 4,TTYO_L_X 4,TTYO_L_X 4,TTYO_L_X 4,TTYO_L_X
-002- 35 VFD 4,TTYO_4,TTYO_4,TTYO_L_X 4,TTYO_L_X
-002- 36 VFD 5,2 11,RXEPT
-002- 37 VFD 5, 11,IXAPE
-001- 38 NOTE THE VARIABLE PORTION OF THE OUTPUT MESSAGE TO BE PRINTED IS
CONTAINED IN GENERAL REGISTERS R6,R7,R8,R9,R10,R11,
0127350
0127350 01 004142 156463 ----- TTYTBL -001- 40 RETURN TTY_PF
BTSAN TTY_PF

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 128

## TAPE SUBROUTINES

## BOUNDRY CHECK

CTAPH

W77D

0127351

01 BOUNDCHK  
 02 # THIS SUBROUTINE IS USED TO ASSURE THAT A CLIENT DOES NOT ACCESS  
 03 # ANY BLOCK OUT OF THE OPENED FILE. THIS WILL BE ACTIVE ON ALL WRITES  
 04 # AND READS. RAO POINTS TO TCBADR, RETURN 0=RANGE OK, RETURN 1= OUT OF RANGE.

0127351			08	BEGIN	
0127351	01	004143	171420	-----	-002-
0127352	01	004144	031420	045266 LAYOUT	09
0127354	01	004146	040027	-----	10
0127355	01	004147	040440	-----	11
0127356	01	004150	003442	017777	12
0127360	01	004152	003422	017777	13
0127362	01	004154	005022	-----	14
0127363	01	004155	054003	-----	15
0127364					16
0127364	01	004156	103026	-----	17
0127365					EKK
0127365	01	004157	056441	-----	18
0127366					19
0127366	01	004160	140036	-----	-001-
0127367	01	004161	003422	017777	20
0127371	01	004163	005041	-----	21
0127372	01	004164	055772	-----	OKYET
0127373					22
0127373	01	004165	056440	-----	23
					24
					25
					26
					-001-
					27

COMMON TAPE HANDLER

PR-1C957-50

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

RESET DUPLICATE BIT

CTAPH W77D

0127374

01 RSTDUP

02 # THIS CODE WILL SIMPLY RESET THE DUPLICATE BIT IN TCB.

0127374

0127374 01 004166 171420 -----  
 0127375 01 004167 031000 043317 CTSD  
 0127377 01 004171 062326 -----  
 0127400  
 0127400 01 004172 056420 -----

05  
 -002- 06  
 07  
 08  
 09  
 -001- 10

BEGIN  
 HA  
 LAL RO,TCBADR,RAO  
 ZBS N(DUP)(RAO),S(DUP)  
 RETURN  
 BTSAG

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 130

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

ON-LINE TDC REPORT ROUTINE

CTAPH W77D

0127401

01 STATONL  
02 # THIS CODE WILL REPORT IN RO WHICH TDC IS BEING USED.

0127401			05	BEGIN	
0127401	01	004173	171420	-----	-002- 06
0127402	01	004174	030400	043327 CTSD	07
0127404					08
0127404	01	004176	056420	-----	-001- 09

COMMON TAPE HANDLER

PR-1C957-50

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

00S SCAN ROUTINE

CTAPH W77D

0127405

01 STATWRQ  
 02 # RETURN 0 IF ALL UNITS ARE IN 100 PERCENT GOOD SHAPE  
 03 # RETURN 1 IF ANY UNIT IS IN DIFFICULTY.

0127405				06	BEGIN		
0127405	01	004177	171420	-----	-002-	07	HA
0127406	01	004200	031542	020006		08	LAL R6,TAPETBL,RA1
0127410	01	004202	004157	-----		09	SN R6,1
0127411	01	004203	031400	043337		10	LAL R0,TUSTAT,RA1
0127413						11	NXTLX
0127413	01	004205	142406	-----		12	LX R0,R6(RA1)
0127414	01	004206	003402	044000		13	NI R0,M(REDON)+M(TSTATE)
0127416	01	004210	055004	-----		14	BNC B00
0127417	01	004211	036140	127413	0127413	15	BX R6,NXTLX
0127421						16	RETURN 0
0127421	01	004213	056440	-----	-001-	17	BTSAGN 0
0127422						18	B00
0127422						19	RETURN 1
0127422	01	004214	156441	-----	-001-	20	BTSAGN 1

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 132

## TAPE SUBROUTINES

SUBROUTINE TO JAM THE TAPE TO 1 OR 0

CTAPH

W77D

0127423

```

01 JAMTU
02 # JAM THE TAPE UNIT SPECIFIED IN THE TCB TO THE CONSTANT SPECIFIED
03 # IN RO
04 # ENTRY CONDITIONS--RO=TO TAPE UNIT TO BE JAMED INTO THE TCB
05 # EXIT CONDITIONS--NONE
06 BEGIN

```

0127423

```

0127423 01 004215 171420 -----
0127424 01 004216 031040 043327 CTSD
0127426 01 004220 016040 000003
0127430 01 004222 044040 -----
0127431
0127431 01 004223 056420 -----

```

-002-

-001-

```

07 HA
08 LAL R2,TCBADR+N(TAPNO),RAD
09 IRM R2,RO,M(TAPNO)
10 ST R2,O(RAD)
11 RETURN
12 BTSAG

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81

TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET

CTAPH

ISSUE 08

PAGE 133

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## SUBROUTINE TO SET MAINT. STATE

CTAPH W77D

```

0127432          01 SETMAINT
02 # SET MAINT BIT IN THE TCB AND MARK TAPE POSITION UNKNOWN

0127432          06 BEGIN
0127432 01 004224 171420 ----- -002- 07 HA
                                08 TAPEHL OW 0(4225) #3E790646
                                -001- 09 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 004225 *****

0127433 01 004225 037000 112301 0112301 -001- 12 CPATCH BGNP 0(647) #3E790646
                                -001- 13 BL XXX1051
                                -001- 14 NOTE CPATCH 'CSECT'
                                -001- 15 NOTE ***** PATCH AREA BEGINS AT 000647 *****

0112301          -001- 18 XXX1051 PATCHAREA
0112301 02 000647 131000 043326 CTSD 19 LAL RD,TCBADR+N(DIAGBITS),RAO
0112303 02 000651 061340 ----- 20 SBS 0(RAO),S(DIAGBITS)
0112304 02 000652 031000 043337 CTSD 21 LAL RD,TUSTAT,RAO
0112306 02 000654 062320 ----- 22 ZBS 0(RAO),S(POSOK)
0112307          23 ENDP
0112307 02 000655 037000 127435 0127435 -001- 24 BL XXX1053 #3E790646
                                -001- 25 NOTE ***** LAST PATCH ADDRESS USED IS 000656 *****
                                -001- 26 NOTE ***** NUMBER OF PATCH WORDS USED IS 8 (DECIMAL) *****

0127435          -001- 29 XXX1053 OWCONTINUE
0127435 01 004227 162321 ----- 30 ZBS 1(RAO),S(POSOK)
0127436          31 EOW #3E790646
                                -001- 32 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 004227 *****

0127436          35 RETURN
0127436 01 004230 056420 ----- -001- 36 BTSAG

```

## COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 134

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

SUBROUTINE TO CLEAR MAINT. STATE

CTAPH W77D

0127437

01 CLRMAINT  
02 # CLEAR MAINT BIT IN THE TCB

0127437

0127437 01 004231 171420 -----

-002-	06	BEGIN	
	07	HA	
-001-	08	TAPEHL	0(4232) # 13055
	09	NOTE	***** THE FIRST ADDRESS OVERWRITTEN IS 004232 *****

0127440 01 004232 031000 043326 CTSD

0127442 01 004234 062340 -----

0127443

	12	LAL	RD,TCBADR+N(DIAGBITS),RAO
	13	ZBS	O(RAO),S(DIAGBITS)
	14	EOW	# 13055
-001-	15	NOTE	***** THE LAST ADDRESS OVERWRITTEN IS 004234 *****

0127443

0127443 01 004235 056420 -----

-001-	18	RETURN	
	19	BTSAG	

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 135

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## ERROR RECOVERY ALLOW ROUTINE

CTAPH W77D

0127444

```

01 ALWERRCV
02 # ALLOW ERROR RECOVERY PROCEDURES ON TAPE AFTER THEY HAVE BEEN
03 # INHIBITED BY THE INHERRCV SUBROUTINE.
04 # ENTRY CONDITIONS-NONE
05 # EXIT CONDITION-CF=1 MEANS ERROR RECOVERY WAS NOT INHIBITED
06 # CF=0 MEANS ERROR RECOVERY WAS INHIBITED

```

0127444

```

0127444 01 004236 171420 ----- 10 BEGIN
0127445 01 004237 031400 043324 CTSD -002- 11 HA
0127447 01 004241 062740 ----- 12 LAL RO,TCBADR+N(ERNA),RA1
0127450 01 004242 003402 040000 13 ZBS O(RA1),S(ERNA)
0127452 01 004244 056420 ----- 14 NI RO,ES(ERNA)
0127452 01 004244 056420 ----- 15 RETURN
0127452 01 004244 056420 ----- -001- 16 BTSAG

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 136

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

ERROR RECOVERY INHIBIT ROUTINE

CTAPH

W77D

0127453

01 INHERRCV  
 02 # INHIBIT ERROR RECOVERY PROCEDURES ON TAPE  
 03 # ENTRY CONDITIONS-NONE  
 04 # EXIT CONDITION-CF=1 MEANS ERROR RECOVERY WAS NOT INHIBITED  
 05 # CF=0 MEANS ERROR RECOVERY WAS INHIBITED

0127453

0127453 01 004245 171420 -----  
 0127454 01 004246 031400 043324 CTSD  
 0127456 01 004250 061740 -----  
 0127457 01 004251 003402 040D00  
 0127461  
 0127461 01 004253 056420 -----

09  
 -002- 10  
 11  
 12  
 13  
 14  
 -001- 15

BEGIN  
 HA  
 LAL RD,TCBADR+N(ERNA),RA1  
 SBS O(RA1),S(ERNA)  
 NI RD,ES(ERNA)  
 RETURN  
 BTSAG

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH

ISSUE 08 PAGE 137

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

## SUBROUTINE TO GIVE BLOCK INFORMATION ON FILES

CTAPH W77D

```

0127462          01 BLKDATA
02 # THIS SUBROUTINE WILL RETURN INFORMATION ABOUT THE SIZE OF A
03 # FILE.
04 #   ENTRY CONDITIONS-NONE
05 #   EXIT CONDITIONS-RO=PRESENT LOGICAL POSITION IN FILE
06 #                   R1=LAST LOGICAL BLOCK

0127462          10 BEGIN
0127462 01 004254 171420 ----- -002- 11 HA
0127463 01 004255 031040 043317 CTSD 12 LAL R2,TCBADR,RAO # SET UP TCB
13 TAPEHL OW 0(4257) # 13057
-001- 14 NOTE ***** THE FIRST ADDRESS OVERWRITTEN IS 004257 *****

0127465 01 004257 040056 ----- 17 L R2,N(ORIGIN)(RAO)
0127466          18 EOW # 13057
-001- 19 NOTE ***** THE LAST ADDRESS OVERWRITTEN IS 004257 *****

0127466 01 004260 016462 014000 22 LRM R3,R2,M(TRACK)
0127470 01 004262 003442 003777 23 NI R2,M(PHYBLK) # R2=FIRST BLOCK OF FILE
0127472 01 004264 040107 ----- 24 L R4,N(LASTBLK)(RAO)
0127473 01 004265 016524 014000 25 LRM R5,R4,M(TRACK)
0127475 01 004267 003502 003777 26 NI R4,M(PHYBLK) # R4=LAST BLOCK OF FILE
0127477 01 004271 040017 ----- 27 L R0,N(LSTGOOD)(RAO)
0127500 01 004272 003402 003777 28 NI R0,M(PHYBLK) # R0=PHISCAL BLOCK POSITION
0127502 01 004274 020065 ----- 29 CR R3,R5 # IS THIS FILE ON ONE TRACK?
0127503 01 004275 055005 ----- 0127510. 30 BNC TWOTRKS
0127504 01 004276 005102 ----- 31 SR R4,R2
0127505 01 004277 006024 ----- 32 LR R1,R4 # R1=LAST LOGICAL BLOCK
0127506 01 004300 005002 ----- 33 SR R0,R2 # R0=PRESENT LOGICAL POSITION IN FILE
0127507          34 RETURN
0127507 01 004301 056420 ----- -001- 35 BTSAG
0127510          36 TWOTRKS # THIS FILE EXISTS ON 2 TRACKS
0127510 01 004302 103421 000527 MASACS 37 LI R1,BLKMAX
0127512 01 004304 005022 ----- 38 SR R1,R2
0127513 01 004305 001424 ----- 39 AR R1,R4
0127514 01 004306 040126 ----- 40 L R5,N(TRACK)(RAO)
0127515 01 004307 017123 014000 41 CRM R5,R3,M(TRACK) # IS TRACK SAME AS ORIGINAL BLOCK?
0127517 01 004311 055003 ----- 0127522 42 BNC SECNDRK
0127520 01 004312 005002 ----- 43 SR R0,R2 # R0=PRESENT LOGICAL POSITION IN FILE
0127521          44 RETURN
0127521 01 004313 056420 ----- -001- 45 BTSAG
0127522          46 SECNDRK
0127522 01 004314 105100 ----- 47 SR R4,R0
0127523 01 004315 006001 ----- 48 LR R0,R1
0127524 01 004316 005004 ----- 49 SR R0,R4

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 138

TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

SUBROUTINE TO GIVE BLOCK INFORMATION ON FILES

CTAPH W77D

0127525 01 004317 056420 ----- -001- 01 RETURN  
 0127525 01 004317 056420 ----- -001- 02 BTSAG  
 -001- 03 CPATCH BGNP 0(602) # 12274  
 -001- 04 NOTE CPATCH 'CSECT'  
 -001- 05 NOTE \*\*\*\*\* PATCH AREA BEGINS AT 000602 \*\*\*\*\*

0112234 08 CLNTRTN  
 0112234 02 000602 150000 125610 0125610 09 BCL ENDINT  
 10 DEPATCH NOTE CHANGE ABOVE "BCL" TO "BC".  
 0112236 02 000604 031000 043317 CTSD 11 LAL RO,TCBADR,RAO  
 0112240 02 000606 061376 ----- 12 SBS N(SMRTN)(RAO),S(SMRTN)  
 0112241 02 000607 037000 125610 0125610 13 BL ENDINT  
 14 DEPATCH NOTE CHANGE ABOVE "BL" TO "B".  
 0112243 15 ENDP # 12274  
 -001- 16 NOTE \*\*\*\*\* LAST PATCH ADDRESS USED IS 000610 \*\*\*\*\*  
 -001- 17 NOTE \*\*\*\*\* NUMBER OF PATCH WORDS USED IS 7 (DECIMAL) \*\*\*\*\*

0112243 23 INDEXGEN

	SECTION TITLE	ADDRESS	WORD COUNT
-001- 27 #		000000	0
-001- 28 #	OPEN MACRO	000000	0
-001- 29 #	CLIENT CONTROL MACROS	000000	0
-001- 30 #	BLOCK HEADER STORAGE	000000	0
-001- 31 #	TAPE CONTROL BLOCK	000000	0
-001- 32 #	MAINTENANCE SAVE BLOCK	000000	0
-001- 33 #	TAPE UNIT ENABLES	000000	0
-001- 34 #	TAPE DIRECTORY BLK 1000	000000	0
-001- 35 #	DIRECTORY BLOCK	000000	0
-001- 36 #	TAPE STATUS	000000	0
-001- 37 #	TAPE UNIT COMMAND LAYOUT	000000	0
-001- 38 #	TAPE STATUS REGISTER.	000000	0
-001- 39 #	CONSTANTS	000000	0
-001- 40 #	MAIN TCB HANDLER	000000	0
-001- 41 #	TAPE HANDLER	000000	0
-001- 42 #	BASE HANDLER TASK DISPENSOR	000151	26
-001- 43 #	CLOSE STATE INITIAL ENTRY	000203	13
-001- 44 #	READ STATE INITIAL ENTRY	000220	11
-001- 45 #	READ 1 BLOCK STATE INITIAL ENTRY	000233	3
-001- 46 #	WRITE STATE INITIAL ENTRY	000236	12
-001- 47 #	MRF STATE INITIAL ENTRY	000252	16
-001- 48 #	COPY STATE INITIAL ENTRY	000272	12
-001- 49 #	MAIN BASE LEVE TAPE STATES	000306	0
		000000	2256

COMMON TAPE HANDLER

PR-1C957-50

## TAPE SUBROUTINES

0:43:06 2/06/81 \*\*\*\*

		CTAPH	W77D
-001- 01 #	READ STATE	000306	78
-001- 02 #	SEIZURE STATE	000424	70
-001- 03 #	VERIFY STATE	000532	131
-001- 04 #	TIMING SUBSTATE	000735	6
-001- 05 #	POSITIONING SUBSTATE	000743	108
-001- 06 #	WRITE SEGMENT OF TAPE HANDLER	001117	206
-001- 07 #	TAPE RECOVERY FROM MRF	001435	46
-001- 08 #	COPY TAPE TO TAPE ROUTINE	001513	34
-001- 09 #	MAINT STATE-REREAD	001555	204
-001- 10 #	TAPE REPACK STATE.	002071	44
-001- 11 #	TAPE INTERRUPT LEVEL PROGRAMING	002145	327
-001- 12 #	TTY INPUT HANDLING RESTORAL	002654	39
-001- 13 #	REMOVE TAPE ROUTINE. TTY REQUEST HANDLER	002723	25
-001- 14 #	EMERGENCY TCB INIT. ROUTINE	002754	11
-001- 15 #	PERIODIC REPACK ROUTINE	002767	5
-001- 16 #	OPEN TCB SUBROUTINE	002774	77
-001- 17 #	ORDER EXECUTION ROUTINE	003111	25
-001- 18 #	REQUEST PLANT SUBROUTINE	003142	67
-001- 19 #	TDC BUFFER LOADING ROUTINE	003245	39
-001- 20 #	POPSTATE SUBROUTINE	003314	13
-001- 21 #	PUSHSTAT SUBROUTINE	003331	12
-001- 22 #	TU STATUS RETRIEVAL	003345	13
-001- 23 #	PTP UPDATE	003362	21
-001- 24 #	SPEED RESOLVING SUBROUTINE	003407	10
-001- 25 #	DIRECTORY SEARCH ROUTINE	003421	76
-001- 26 #	CRC XOR TABLE	003535	16
-001- 27 #	REMOVE TAPE FROM ACCESS ROUTINE	003555	40
-001- 28 #	ORDER SENDING, LED LIGHTING TAPE REMOVE ROUTINE.	003625	21
-001- 29 #	ERROR PRINTOUT ROUTINE	003652	42
-001- 30 #	CRC CHECK ROUTINE	003724	19
-001- 31 #	ERROR RECOVERY SETUP ROUTINE.	003747	38
-001- 32 #	TAPE RECOVERY MESSAGE	004015	25
-001- 33 #	TU STATUS CLEAR ROUTINE	004046	8
-001- 34 #	TAPE STATUS CHECK ROUTINE	004056	13
-001- 35 #	COMPLIMENT TAPE NUMBER IN TCB	004073	7
-001- 36 #	TAPE STATUS OUTPUT MESSAGE	004102	33
-001- 37 #	BOUNDRY CHECK	004143	19
-001- 38 #	RESET DUPLICATE BIT	004166	90

-001- 42 # THE TOTAL LENGTH OF THIS ASSEMBLY IS 02256  
43 TAPEHL MAXSIZE 0,4320

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 140





## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

## LISTING OF INDIVIDUAL PATCHES

CTAPH W77D

```

**/**/**/013055/**/**/
-002- 01      PBEGIN  PROG=CTAPH                      TRNO=13055  SERNOB=59698
02 # THIS PATCH WILL ALLOW THE CORRECT BIT TO BE SET TO
03 # PERFORM A LOD:OMAS;BOOT.
04 # THE BIT SET ( DIAGBITS) WILL PUT THE CU TO BE LOADED
05 # IN A MAINTENANCE STATE.
06 # THIS PATCH COORDINATES WITH TC 48839
0112243      07      TCEND
-001- 08      NOTE *****

**/**/**/013001/**/**/
-002- 15      PBEGIN  PROG=CTAPH                      TRNO=13001  SERNOB=49285
16 # THIS PATCH STORES A NEW TIME CONSTANT IN THE 'TIMEK' WORD
17 # OF THE TCB, AFTER THE TEST FOR CONTROLLING TDC.
0112243      18      TCEND
-001- 19      NOTE *****

**/**/**/012808/**/**/
-002- 26      PBEGIN  PROG=CTAPH                      TRNO=12808  SERNOB=61529
27 # THIS PATCH CHECKS THE BLK REQUESTED TO SEE IF IT IS ZERO
28 # AND IF THE TRK IS 2, 3, OR 4 IF THIS IS FOUND TO BE TRUE,
29 # TAPE OPERATION WILL BE ABORTED.
0112243      30 # ABORT MESSAGE: TAPE OPER ABT BLK 0 ERR
31      TCEND
-001- 32      NOTE *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 143



## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

## LISTING OF INDIVIDUAL PATCHES

CTAPH W77D

```

0112243  **/**/**/013669/**/**/  -002- 01  PBEGIN  PROG=CTAPH  TRNO=13669  SERNOB=49741
        02  # THIS PATCH WILL NOT ALLOW THE DIAGNOSTIC PROGRAM
        03  # TO BE ABORTED BY THE TAPE HANDLER PROGRAM WHEN TAPE
        04  # DIAGNOSTICS ARE BEING RUN.
        05  # THIS PATCH MUST FOLLOW TR 13668 PATCH 49569
        06  TCEND
0112243  -001- 07  NOTE  *****

0112243  **/**/**/013214/**/**/  -002- 14  PBEGIN  PROG=CTAPH  TRNO=13214  SERNOB=50271
        15  # RST:TAPE INPUT REQUEST ACCEPTED DURING TAPE DIAGNOSTIC.
        16  # WHEN RST:TAPE IS REQUESTED ,CHECK FOR TAPE DIAGNOSTICS
        17  # OR TAPE AUDIT, IF INPROGRESS GIVE RETRY LATER (RL).
        18  TCEND
0112243  -001- 19  NOTE  *****

0112243  **/**/**/014090/**/**/  -002- 26  PBEGIN  PROG=CTAPH  TRNO=14090  SERNOB=52288
        27  # SUBROUTINE REQR HAS A BAD MASK WHEN 'NOCLINT' IS THE CLIENT
        28  # CORRECT THE MASK
        29  TCEND
0112243  -001- 30  NOTE  *****

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 145

PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

LISTING OF INDIVIDUAL PATCHES

CTAPH W77D

\*\*/\*\*/\*\*/013058/\*\*/\*\*/\*\*

TRNO=13058 SERNOB=56871

0112243

-002- 01 PBEGIN PROG=CTAPH  
 02 # THIS PATCH REMOVES TEMPORARY CODE WHICH PREVENTS  
 03 # A REPACK FROM HAPPENING DURING A INIT TAPE.  
 04 # TAPE REMOVAL DOING AN INIT TAPE.  
 05 # BEFORE REMOVING THE TAPE SEND TFR COMMAND AS MANY AS  
 06 # FOUR TIMES TO BRING TAPE TO BOT.  
 07 TCEND

-001- 08 NOTE \*\*\*\*\*

0112243

15 END

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81

TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH

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PATCH HISTORY

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
30046304	S	.STOP				
0112301	L	XXX1051	134-18	134-13		
0127435	L	XXX1053	134-29	134-24		
0114736	L	XXX369	24-39	24-34		
0123223	L	XXX371	25-06	25-01		
0120074	L	XXX384	31-20	31-15		
0120114	L	XXX397	32-16	32-11		
0113547	L	XXX466	58-37	58-32		
0124407	L	XXX468	59-01	58-42		
0113706	L	XXX495	65-34	65-29		
0115006	L	XXX505	67-27	67-22		
0112243	L	XXX576	79-25	79-20		
0125405	L	XXX578	79-36	79-31		
0113436	L	XXX655	89-23	89-18		
0126066	L	XXX658	89-45	89-40		
0114242	L	XXX705	96-26	96-21		
0126253	L	XXX726	97-18	97-13		
0121575	L	XXX733	98-07	98-02		
0126302	L	XXX735	98-16	98-11		
0112260	L	XXX768	102-01	101-44		
0126377	L	XXX771	102-16	102-11		
0120124	L	XXX777	102-31	102-26		
0111707	L	XXX845	114-32	114-27		
0127003	L	XXX848	114-42	114-37		
0111767	L	XXX887	117-26	117-21		
0127073	L	XXX889	117-35	117-30		
0111762	L	XXX971	123-31	123-26		
0127240	L	XXX973	123-40	123-35		
0000201	A	XBITCNT		1-08		
	O	XBOP		1-08		
0027762	A	XCHKTRX	139-04			
0000003	A	XCLAS		LIBNUM=10	1-08	
0000001	A	XMAXWRD		LIBNUM=10	1-08	
'CTAPH'	T	XNAMEX				
0000000	A	XORGX2				
	O	XOWX	1-10			
	O	XPFTX				
'ALL'	T	XSAVREGS				
0000002	A	XT				
0000010	A	XTA1X	24-30	31-11, 31-42, 32-06, 37-19, 58-28, 65-02, 67-11, 68-13, 69-07, 79-16, 79-45, 81-02, 81-12, 83-22, 85-30, 86-01, 86-18, 87-35, 88-28, 89-14, 90-33, 95-08, 95-29, 96-17, 97-43, 98-28, 101-18, 101-40, 102-22, 103-07, 114-23, 115-16, 116-29, 117-17, 123-22, 124-04, 134-09, 135-09, 138-14		
	O	XTHEADX	1-10			
'PRLINE 1,1,						
-----						
-----						
-----						
-----						

COMMON TAPE HANDLER

PR-1C957-50



## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
TTYTBL	X	BXLK	96-36	96-36		
0123564	L	BACK	40-44	44-26, 44-36, 50-44		
0123727	L	BACKBASE	46-08	27-43, 30-21, 30-25, 32-20, 40-02, 40-07, 40-46, 41-26, 41-42, 51-03, 51-39, 52-08		
0123410	L	BACKBASEX	30-24	24-24		
0000010	A	BACKSP		LIBNUM=10 103-26,103-30		
0124600	L	BASEADD	62-12	57-36, 57-42, 59-26, 60-09, 60-45, 61-41, 64-35, 69-10		
0124602	L	BASEBACK	62-14	60-08, 61-37, 61-49, 62-07, 62-22, 65-13, 68-02		
0000002	A	BASETO	118-28	41-45		
	O	U		1-08		
0124165	L	BCKTIM	53-36	36-24, 49-30, 50-30, 54-41		
0124525	L	BCKUP	61-01	57-10, 57-19, 70-19		
0020013	A	BCLRBRF		LIBNUM=10 83-35		
0120013	A	BCLROCN		LIBNUM=10 82-11, 82-41		
0160013	A	BINIT		LIBNUM=10 86-44		
CSYSUB	V	BINXBCD	4-24	87-44,114-35,117-42,124-02		
0124100	L	BKUP	50-34	48-24, 48-33		
0000000	A	BLKADR	9-04	W=13 S=0 N=0 CL=3 LIBNUM=10	59-14, 61-10, 96-27,129-12,129-13,129-14,129-23	
0127462	L	BLKDATA	138-01	5-48		
0114274	L	BLKISOK	97-09	96-29, 96-33		
0114252	L	BLKISZRO	96-34	96-31		
MASACS	V	BLKMAX	5-31	54-05, 97-28,138-37		
0126306	L	BLKNG	98-31	97-08		
0000000	A	BOFL	20-14	W=1 S=16 N=0 CL=3		
0127422	L	BOO	132-18	132-14		
0000000	A	BOT	19-15	W=1 S=16 N=0 CL=3	47-42, 51-06, 61-04, 64-12, 65-15, 77-08, 77-15	
0123751	L	BOTPAT1	47-46	51-07		
0124674	L	BOTPOS	64-44	64-16, 65-05, 77-17		
0127351	L	BOUNDCHK	129-01	59-18, 85-08		
0125340	L	BPS	77-16	77-03		
0123765	L	BPX	48-21	47-43		
0000000	A	BR	20-07	W=1 S=7 N=0 CL=3 80-23		
0125333	L	BRINGBCK	77-07	76-16		
0042013	A	BSLDON		LIBNUM=10 60-17		
0000013	A	BSTAT		LIBNUM=10 26-27, 79-11		
0044013	A	BSUNLON		LIBNUM=10 82-05		
0140013	A	BSWB		LIBNUM=10 60-27		
0125337	L	BTLOK	77-14	76-17		
MASACS	V	BUFBLK	5-33	87-02		
0000011	A	BUFCT	13-47	W=4 S=0 N=11 CL=3 LIBNUM=10	48-39, 49-28, 51-30, 59-32, 59-33, 60-22, 81-34, 82-21, 84-13, 87-01, 87-02, 87-20,105-11,105-27,121-22	
0000013	A	BUFDEV	21-28			
0123355	L	BUFER	28-02	26-32		
0125775	L	BUFINT	86-43	87-29, 88-13		
MASACS	V	BUFLEN	5-32	59-25, 59-35, 59-38, 60-06		
0126304	L	BUSY	98-24	95-48, 96-01, 97-40		
0124670	L	BXRMV	64-36	64-32		
0126017	L	BXSYMB	87-15			
0123301	L	BXTST	26-46	26-06, 26-31, 26-39, 26-41, 26-43		
	O	U				
	C					

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 149

## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
TTYTBL	X	CXOMPL	75-14	75-14, 77-33		
CTVTAB	V	CXONTU		LIBNUM=12 49-23, 58-16, 58-23, 62-11, 62-24, 67-38, 68-34, 68-48, 69-20, 72-14, 74-18, 74-49		
	14	P CXONTUX_XCTA				
		PH		LIBNUM=12		
CTSD	V	CCKTSTAT	4-28	24-42		
0124765	L	CHK	70-14	73-26		
0124170	L	CHKDIS	53-44	53-13		
0125065	L	CHKRESULTS	72-01	70-17, 70-24		
0127264	L	CHKSTAT	126-01	64-28, 65-09		
0125020	L	CHKVER	71-01	70-15		
0124032	L	CLEAN	49-25	49-36		
0000000	A	CLIENT	13-24	W=5 S=13 N=0 CL=3 LIBNUM=10 30-14, 30-15, 31-22, 32-19, 95-45, 95-49, 101-15, 101-35, 101-36		
0125761	L	CLNLINKUP	86-14	86-13		
0000000	A	CLNT	8-16	W=5 S=13 N=0 CL=3 LIBNUM=10		
0112234	L	CLNTRTN	139-08	86-21		
0000005	A	CLOSE		LIBNUM=10 85-24		
0123411	L	CLOSESTATE	31-01	26-45, 29-48, 39-43, 42-17, 44-38, 46-20, 60-25, 60-34, 64-18, 72-41, 77-36		
CSYSUB	V	CLR_WRDS	4-19			
0127257	L	CLRIT	125-11	125-14		
0127437	L	CLRMAINT	135-01	5-44		
0127254	L	CLRSTAT	125-01	76-24		
0124655	L	CLST	64-17	62-37, 62-45		
0126443	L	CMPOP	103-45	103-43		
0124430	L	CMPTCRC	59-30	57-15		
0000000	A	COM	18-07	W=4 S=10 N=0 CL=3 LIBNUM=10 39-49, 56-08, 85-41		
0125316	L	COMINIT	76-27	76-31		
0000000	A	COMPROK	17-12	W=1 S=14 N=0 CL=3 LIBNUM=10 5-45, 90-12		
0127301	L	COMTU	127-01	5-46		

```

<.<(+18
!$*);
- /
%_>?
: # @ ' = " ab
c d e f g h i n < +
+ j k l m n o p q r
x) z m - s t u v w
x y z + L [ > @ 0 1 2
3 4 5 6 7 8 9 + , _ ]
- C a b c d e f g h i
) j k l m n o
p q r \ s

```

COMMON TAPE HANDLER

PR-1C957-50

0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 150

## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
tuvvxyz 0123456789						
'n	T	CONLC		LIBNUM=12		
	L	CONRET	74-22	71-13, 71-32		
<pre> z fe&lt;hplx vsfgs ; -at ix&gt;k jo#b'd" ab cdefghi n&lt;(+ + jklmnopqr n)±=-stuvv xyz+Lr[≥012 3456789↑↓,]# -CABCDEFghi )JKLMNO PQR \ S TUVWXYZ 0123456789 </pre>						
	T	CONSC		LIBNUM=12		
000004	A	CONTLPT	13-30	W=20 S=0 N=4 CL=3 LIBNUM=10 86-11,103-49		
0126107	L	CONTRST	90-22	90-07, 90-13		
0123500	L	COPYPROG	37-01	29-49		
0000001	A	COPYST	21-02	37-33		
0124721	L	COPYSTATE	67-01	27-33		
0111432	L	CPATCH	1-43	79-20, 101-44, 114-27, 117-21, 123-26, 134-13, 139-04		
0112562	L	CPATCH1	1-44	58-32, 65-29, 89-18		
0114107	L	CPATCH2	1-45	24-34, 67-22, 96-21		
0115073	L	CPATCH3	1-46			
0121236	L	CPATCH7	1-47	98-02		
0000002	A	CRCBLK	9-10	W=20 S=0 N=2 CL=3 LIBNUM=10		
0127132	L	CRCCHK	120-01	62-06, 62-21		
0127155	L	CRCERC	121-01	41-40, 61-48, 88-26, 120-21		
0126057	L	CRCFAIL	88-22	84-15		
0126054	L	CRCFAILPO	88-17	81-44, 82-03		
0125670	L	CRCLOOK	84-35	84-21, 84-23		
0124447	L	CRCLOP1	59-42	60-04		
0124450	L	CRCLOP2	59-44	60-02		
0125042	L	CRECR	71-21	71-18		
0123206	L	CTAPH	24-01	5-47, 52-11		
CBLM	V	CTAPHRTN	4-07	46-09, 62-15, 75-48		
TTYTBL	X	DXGN	118-48	118-48		
0000001	A	DATA_AREA	9-09	W=20 S=0 N=1 CL=3 LIBNUM=10 111-13,112-09		

COMMON TAPE HANDLER

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0:43:06 2/06/81 TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET CTAPH ISSUE 08 PAGE 151

PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
0000000	A	DDT	19-12	W=1 S=13 N=0 CL=3 82-02

CTAPH W77D

```

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!$*)?
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)JKLMNO
PQR \ S
TUVWXYZ
0123456789

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0000000	A	DELLC		
0000000	A	DEOF	9-07	W=1 S=16 N=0 CL=3 62-30, 84-40,103-23
0000000	A	DEVICODE	19-06	W=6 S=0 N=0 CL=3 25-43
0000010	A	DGN	118-46	114-04
0126763	L	DGNRMV	114-01	5-49
BLMMA	V	DGNTAPE	4-40	89-29
0000007	A	DIAGBITS	13-44	W=2 S=16 N=7 CL=3 LIBNUM=10 24-23, 80-43, 84-16, 85-46, 87-28,114-15,114-16,121-12, 121-13,123-14,123-15,134-19,134-20,135-12,135-13
0000013	A	DIAGST	21-14	6-01
0000037	A	DIAGT		LIBNUM=10 31-22
MASACS	V	DIRLOC	5-34	54-10
0126634	L	DIRSRCHIO	111-08	46-19
0126627	L	DIRSRCHRES	111-01	45-07
MASACS	V	DIRTRK	5-35	54-07
0124272	L	DIVIDE	55-30	55-26
0124543	L	DOBKUP	61-22	61-09
0124537	L	DOBKUP1	61-17	61-12
0125342	L	DONPO	77-21	76-18
0115031	L	DONTINC	68-01	67-46
0127235	L	DOPO	123-19	123-16
0000006	A	DUP	13-38	W=1 S=15 N=6 CL=3 LIBNUM=10 35-09, 35-18, 37-25, 58-09, 62-08, 62-44,111-43,130-08
0124572	L	DUPCHK	62-04	57-18
*+6	T	DUPL		W=1 S=15 N=6 CL=2
0123455	L	DUPOK	35-19	35-17
0000000	A	DVIC	18-04	W=6 S=0 N=0 CL=3 LIBNUM=10 39-49, 56-08, 85-41, 99-41
0	U	E		
TTYTBL	X	EXRR	88-09	88-09, 96-38

COMMON TAPE HANDLER

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## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0127364	L	EKK	129-17	129-25		
0127047	L	EMGSTP	116-22	116-18		
0125620	L	ENDI	83-41	79-28, 80-06, 80-48, 86-48		
0125610	L	ENDINT	83-28	82-27, 82-47, 83-33, 85-20, 85-33, 85-47, 86-04, 87-06, 87-23, 88-31, 139-09, 139-13		
0000007	A	ENDTRK	13-42	W=2 S=13 N=7 CL=3 LIBNUM=10	54-19, 58-40, 97-28	
0000000	A	E0F	9-06	W=1 S=15 N=0 CL=3 LIBNUM=10	40-06, 59-07, 84-19, 84-20, 103-22, 103-23	
0124610	L	E0FLOOK	62-28	62-09		
0000000	A	E0T	19-09	W=1 S=10 N=0 CL=3	65-17, 76-38, 77-02	
0125331	L	E0TCHK	77-01	76-15		
0123674	L	EPLCHK	45-12	46-24		
0127113	L	ERBLK	118-21	115-14, 117-13, 118-22, 118-25, 118-28, 118-31, 118-34, 118-37, 118-40, 118-43, 118-46		
0000005	A	ERNA	13-34	W=1 S=16 N=5 CL=3 LIBNUM=10	37-24, 49-19, 58-17, 58-21, 74-03, 98-08, 136-12, 136-13, 136-14, 137-11, 137-12, 137-13	
0126732	L	ERTN	112-21	111-15		
	0	J ESS2		1-10		
	0	J ESS2B		1-27		
	1	J ESS2E		1-09		
	0	J ESS3		1-27		
0000006	A	EVOD	13-40	W=1 S=17 N=6 CL=3 LIBNUM=10	45-20, 45-21, 96-10, 96-11	
0000006	A	EXPLIC	13-39	W=1 S=16 N=6 CL=3 LIBNUM=10	45-18, 49-17, 96-12	
0126336	L	EXPLICIT	99-40	99-16		
'*0'	T	EXPOP		W=1 S=11 N=0 CL=2 LIBNUM=10	96-08	
0124262	L	FAST	55-15	54-31, 55-09		
0000000	A	FATLREAD	118-22	49-42, 72-49		
0000001	A	FATLWRT	118-25	57-44, 72-30		
0124310	L	FFSRCH	55-44	55-41		
0125324	L	FFTUS	76-37	76-14		
	1	J FIELD		1-09		
0124044	L	FILELOST	49-40	49-16, 49-18, 49-20, 50-15		
'*1'	T	FILENAM		W=10 S=0 N=1 CL=2		
0000000	A	FILL	20-15	W=1 S=17 N=0 CL=3		
0000002	A	FILNAM	13-27	W=20 S=0 N=2 CL=3 LIBNUM=10	45-05, 45-35, 46-17, 96-05	
'*6'	T	FILSTR		W=13 S=0 N=6 CL=2	111-42	
0124047	L	FINALVER	50-01	47-36		
0125027	L	FLSRCV	71-10	73-09		
MASACS	V	FSTDIST	5-36	110-11		
0125764	L	FUNRTN	86-26	75-07		
0125543	L	GETADR	82-32	82-25		
0125162	L	GETBADBLK	74-01	70-21		
0125227	L	GETCLNT	75-03			
0124361	L	HEDSET	58-05	57-13		
0000000	A	H0ADRBIT	8-11	W=4 S=0 N=0 CL=3 LIBNUM=10		
0000003	A	H0CONPT	13-28	W=4 S=0 N=3 CL=3 LIBNUM=10	86-06, 103-48	
0000001	A	H0FILNAM	13-25	W=4 S=0 N=1 CL=3 LIBNUM=10	45-04, 45-33, 46-16, 96-04	
TTYTBL	X	IXNIT	77-31	77-31		
TTYTBL	X	IXNT	88-08	88-08		
LAYOUT	V	I_OBUF	5-17	40-05, 58-25, 59-25, 59-35, 59-36, 59-38, 60-06, 62-29, 83-04, 84-19, 84-39, 85-03, 103-24, 105-14, 111-13, 112-09, 120-29, 129-10		
0000001	A	I_OBUFD	6-35	6-36		

COMMON TAPE HANDLER

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PATCH HISTORY		DEF/REF	ATTRIBUTES AND REFERENCES	O:43:06	2/06/81	****
VALUE	T NAME			CTAPH		W77D
0000160	A IBG_1BUF		LIBNUM=10			
0000007	A IDLE		LIBNUM=10			
0123374	L IDLESTATE	30-04	26-40, 29-39, 31-46, 45-13, 92-18, 93-14, 97-11			
'ILLEGAL CON DITIONAL IN THE IF MACRO'	T IFERROR1					
'DATA > 0 OR DATA < 0 IS MEANINGLESS , USE DATA = = 0'	T IFERROR2					
'TWO CONSTAN TS ARE BEING COMPARED IN IF MACRO'	T IFERROR3					
'AN ITEM WAS COMPARED TO SOMETHING O THER THAN A CONSTANT'	T IFERROR4					
'DESTINATION OF AN = STA TEMENT IS A CONSTANT'	T IFERROR5					
'ATTEMPTING TO SET ITEM = TO SOMETHI NG OTHER THA N A CONSTANT'	T IFERROR6					
'ITEM MAY ON LY USE THE = AND = COND ITIONALS'	T IFERROR7					
0000075	A INDEXCNTR	6-37	7-40, 9-01, 9-23, 14-63, 15-35, 16-01, 16-49, 17-22, 18-15, 20-22, 23-15, 28-06, 30-26, 32-30, 33-37, 34-10, 35-24, 36-31, 37-38, 38-25, 42-23, 46-25, 51-40, 52-15, 56-12, 63-02, 66-16, 69-25, 75-49, 77-37, 88-36, 91-06, 92-31, 93-19, 94-13, 98-47, 100-03, 104-10, 105-46, 106-16, 107-18, 108-23, 109-26, 110-19, 112-38, 113-18, 115-42, 116-44, 119-20, 120-38, 122-04, 124-26, 125-17, 126-25, 127-14, 128-42, 129-28, 139-24			
'OPEN MACRO'	T INDEXTITLE1					
'TAPE UNIT C OMMAND LAYOU T'	T INDEXTITLE10					
'TAPE STATUS REGISTER.'	T INDEXTITLE11					
'CONSTANTS'	T INDEXTITLE12					
'MAIN TCB HA NDLER'	T INDEXTITLE13					
'TAPE HANDLE R'	T INDEXTITLE14					
COMMON TAPE HANDLER						
O:43:06	2/06/81	TRADE SECRET - SEE TRADE SECRET RESTRICTIVE NOTICE ON COVER SHEET		CTAPH	ISSUE 08	PAGE 154
					PR-1C957-50	

## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
'BASE HANDLE R TASK DISPRE NSOR'	T	INDEXTITLE15				
'CLOSE STATE INITIAL ENT RY'	T	INDEXTITLE16				
'READ STATE INITIAL ENTR Y'	T	INDEXTITLE17				
'READ 1 BLOC K STATE INIT IAL ENTRY'	T	INDEXTITLE18				
'WRITE STATE INITIAL ENT RY'	T	INDEXTITLE19				
'CLIENT CONT ROL MACROS'	T	INDEXTITLE2				
'MRF STATE I NITIAL ENTRY'	T	INDEXTITLE20				
'COPY STATE INITIAL ENTR Y'	T	INDEXTITLE21				
'MAIN BASE L EVE TAPE STA TES'	T	INDEXTITLE22				
'READ STATE'	T	INDEXTITLE23				
'SIEZURE STA TE'	T	INDEXTITLE24				
'VERIFY STAT E'	T	INDEXTITLE25				
'TIMING SUBS TATE'	T	INDEXTITLE26				
'POSITIONING SUBSTATE'	T	INDEXTITLE27				
'WRITE SEGME NT OF TAPE H ANDLER'	T	INDEXTITLE28				
'TAPE RECOVE RY FROM MRF'	T	INDEXTITLE29				
'BLOCK HEADE R STORAGE'	T	INDEXTITLE3				
'COPY TAPE T O TAPE ROUTI NE'	T	INDEXTITLE30				
'MAINT STATE -REREAD'	T	INDEXTITLE31				
'TAPE REPACK STATE.'	T	INDEXTITLE32				
'TAPE INTERR						

COMMON TAPE HANDLER

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PATCH HISTORY				0:43:06	2/06/81	****
VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W770
UPT LEVEL PR						
OGRAMING'	T	INDEXTITLE33				
'TTY INPUT H						
ANDLING REST						
ORAL'	T	INDEXTITLE34				
'REMOVE TAPE						
ROUTINE. TT						
Y REQUEST HA						
NDLER'	T	INDEXTITLE35				
'EMERGENCY T						
CB INIT. ROU						
TINE'	T	INDEXTITLE36				
'PERIODIC RE						
PACK ROUTINE'	T	INDEXTITLE37				
'OPEN TCB SU						
BROUTINE'	T	INDEXTITLE38				
'ORDER EXECU						
TION ROUTINE'	T	INDEXTITLE39				
'TAPE CONTRO						
L BLOCK'	T	INDEXTITLE4				
'REQUEST PLA						
NT SUBROUTIN						
E'	T	INDEXTITLE40				
'TDC BUFFER						
LOADING ROUT						
INE'	T	INDEXTITLE41				
'POPSTATE SU						
BROUTINE'	T	INDEXTITLE42				
'PUSHSTAT SU						
BROUTINE'	T	INDEXTITLE43				
'TU STATUS R						
ETRIEVAL'	T	INDEXTITLE44				
'PTP UPDATE'	T	INDEXTITLE45				
'SPEED RESOL						
VING SUBROUT						
INE'	T	INDEXTITLE46				
'DIRECTORY S						
EARCH ROUTIN						
E'	T	INDEXTITLE47				
'CRC XOR TAB						
LE'	T	INDEXTITLE48				
'REMOVE TAPE						
FROM ACCESS						
ROUTINE'	T	INDEXTITLE49				
'MAINTENANCE						
SAVE BLOCK'	T	INDEXTITLE5				
'ORDER SENDI						
NG, LED LIGH						
TING TAPE RE						

COMMON TAPE HANDLER

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## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
MOVE ROUTINE						
'	T	INDEXTITLE50				
'ERROR PRINT						
OUT ROUTINE'	T	INDEXTITLE51				
'CRC CHECK R						
OUTINE'	T	INDEXTITLE52				
'ERROR RECOV						
ERY SETUP RO						
UTINE.'	T	INDEXTITLE53				
'TAPE RECOVE						
RY MESSAGE'	T	INDEXTITLE54				
'TU STATUS C						
LEAR ROUTINE'	T	INDEXTITLE55				
'TAPE STATUS						
CHECK ROUTI						
NE'	T	INDEXTITLE56				
'COMPLIMENT						
TAPE NUMBER						
IN TCB'	T	INDEXTITLE57				
'TAPE STATUS						
OUTPUT MESS						
AGE'	T	INDEXTITLE58				
'BOUNDRY CHE						
CK'	T	INDEXTITLE59				
'TAPE UNIT E						
NABLES'	T	INDEXTITLE60				
'RESET DUPLI						
CATE BIT'	T	INDEXTITLE61				
'	T	INDEXTITLE61				
'TAPE DIRECT						
ORY BLK 1000'	T	INDEXTITLE7				
'DIRECTORY B						
LOCK'	T	INDEXTITLE8				
'TAPE STATUS						
'	T	INDEXTITLE9				
0127453	L	INHERRCV	137-01	6-02		
0040007	A	INIT		LIBNUM=10	36-16, 48-49, 51-26, 53-32, 76-26, 84-42, 90-30, 116-20, 118-13, 121-18	
0124130	L	INITAGN	51-25	48-32		
0123466	L	INITCONT	36-18	36-30		
0126162	L	INITTAPE	93-01	6-03		
0125314	L	INTCOM	76-25			
	O	INTERDATA	1-27			
0125427	L	INTMTC	80-28	80-17		
0000000	A	INTOFF	20-09	W=1 S=11 N=0 CL=3		
0126030	L	INTRMV	87-27	82-10, 82-16, 82-37, 82-46, 83-13, 83-40, 84-30, 87-18		
0124777	L	INVOKVER	70-30	70-13		
0000000	A	IOCMP	13-21	W=1 S=10 N=0 CL=3 LIBNUM=10	33-33, 41-28, 42-21, 50-02, 61-38, 61-40, 75-23, 84-31,	
				85-44, 87-21		
0126300	L	ITSOP	97-41	96-15, 97-37		

COMMON TAPE HANDLER

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## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0127423	L	JAMTU	133-01	6-04		
0127214	L	JUSTEXIT	121-42	121-24		
0125717	L	JUSTFLG	85-10	84-17, 84-38		
0125564	L	KEEPDATA	83-02	82-23		
0125402	L	KEPSND	79-13	80-27		
0126472	L	KPSND	105-16	105-26		
0000007	A	LASTBLK	13-41	W=13 S=0 N=7 CL=3 LIBNUM=10	54-06, 54-18, 54-19, 58-26, 58-40, 62-34, 67-20, 67-34,	
				97-29, 111-41, 129-11, 138-24		
MASACS	V	LASTBUF	5-37	60-07, 81-36, 82-26, 83-19		
0125635	L	LASTBUFFER	84-06	82-31, 83-20		
0124376	L	LDPOS	58-18	62-49		
0123417	L	LNIDLE	31-45	31-27		
0126453	L	LOADBUF	105-01	60-24, 60-33, 87-05		
0124473	L	LOADIT	60-13	57-16, 57-22		
0000001	A	LOADRBIT	8-17	W=20 S=0 N=1 CL=3 LIBNUM=10		
CSYSUB	V	LODI0C	4-20	83-46		
0000000	A	LODST	20-10	W=1 S=12 N=0 CL=3	81-31	
0000005	A	LOGBLK	13-31	W=13 S=0 N=5 CL=3 LIBNUM=10	37-23, 50-10, 54-15, 54-16, 58-14, 62-41, 74-26, 75-25,	
				96-06, 103-44, 121-33		
'TCB'	T	LONAM_ABWRT		LIBNUM=10		
'BUFSTAT'	T	LONAM_ACTIV				
'HEADR'	T	LONAM_BLKADR		LIBNUM=10		
'BUFSTAT'	T	LONAM_BOFL				
'TAPSTAT'	T	LONAM_BOT				
'BUFSTAT'	T	LONAM_BR				
'TCB'	T	LONAM_BUFCT		LIBNUM=10		
'TCB'	T	LONAM_CLIEN		LIBNUM=10		
'..'	T	LONAM_CLNT		LIBNUM=10		
'..'	T	LONAM_COM		LIBNUM=10		
'TUSTAT'	T	LONAM_COMPRO				
	K			LIBNUM=10		
'TCB'	T	LONAM_CONTLP				
	T			LIBNUM=10		
'HEADR'	T	LONAM_CRCBLK		LIBNUM=10		
'HEADR'	T	LONAM_DATA_A				
	REA			LIBNUM=10		
'TAPSTAT'	T	LONAM_DDT				
'HEADR'	T	LONAM_DEOF				
'TAPSTAT'	T	LONAM_DEVICO				
	DE					
'TCB'	T	LONAM_DIAGBI				
	TS			LIBNUM=10		
'TCB'	T	LONAM_DUP		LIBNUM=10		
'..'	T	LONAM_DUPL				
'..'	T	LONAM_DVIC		LIBNUM=10		
'TCB'	T	LONAM_ENDTRK		LIBNUM=10		
'HEADR'	T	LONAM_EOF		LIBNUM=10		
'TAPSTAT'	T	LONAM_EOT				
'TCB'	T	LONAM_ERNA		LIBNUM=10		

COMMON TAPE HANDLER

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## PATCH HISTORY

0:43:06 2/06/81 \*\*\*\*

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
'TCB'	T	LONAM_EVOD		LIBNUM=10		
'TCB'	T	LONAM_EXPLIC		LIBNUM=10		
'	T	LONAM_EXPOP		LIBNUM=10		
'	T	LONAM_FILENA				
		M				
'BUFSTAT'	T	LONAM_FILL				
'TCB'	T	LONAM_FILNAM		LIBNUM=10		
'	T	LONAM_FILSTR				
'	T	LONAM_HOADR				
		IT		LIBNUM=10		
'TCB'	T	LONAM_HOCONP		LIBNUM=10		
'TCB'	T	LONAM_HOFILN		LIBNUM=10		
		AM		LIBNUM=10		
'BUFSTAT'	T	LONAM_INTOFF				
'TCB'	T	LONAM_IOCMP		LIBNUM=10		
'TCB'	T	LONAM_LASTBL				
'		K		LIBNUM=10		
'	T	LONAM_LOADRB				
		IT		LIBNUM=10		
'BUFSTAT'	T	LONAM_LODST				
'TCB'	T	LONAM_LOGBLK		LIBNUM=10		
'	T	LONAM_LSTBLK				
'TCB'	T	LONAM_LSTCOM		LIBNUM=10		
'TCB'	T	LONAM_LSTGOO				
'		D		LIBNUM=10		
'	T	LONAM_LTRK				
'TCB'	T	LONAM_MAINT		LIBNUM=10		
'	T	LONAM_MANE		LIBNUM=10		
'TAPSTAT'	T	LONAM_MOP				
'TAPSTAT'	T	LONAM_MTCE				
'	T	LONAM_NAME		LIBNUM=10		
'	T	LONAM_OPSZ		LIBNUM=10		
'TCB'	T	LONAM_ORIGIN		LIBNUM=10		
'TCB'	T	LONAM_OTHERU		LIBNUM=10		
'TCB'	T	LONAM_PHYBLK		LIBNUM=10		
'TUSTAT'	T	LONAM_POSOK		LIBNUM=10		
'BUFSTAT'	T	LONAM_PPE				
'TUSTAT'	T	LONAM_PTP		LIBNUM=10		
'BUFSTAT'	T	LONAM_RDY				
'TUSTAT'	T	LONAM_REDON		LIBNUM=10		
'TCB'	T	LONAM_REPK		LIBNUM=10		
'TCB'	T	LONAM_REQ		LIBNUM=10		
'TCB'	T	LONAM_REQSTP				
'	T	LONAM_REQUES				
		T		LIBNUM=10		
'TAPSTAT'	T	LONAM_REWND				
'	T	LONAM_RTNDX		LIBNUM=10		

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
'TCB'	T	LONAM_SEEZ		LIBNUM=10		
'TCB'	T	LONAM_SNER		LIBNUM=10		
'TUSTAT'	T	LONAM_SRERR		LIBNUM=10		
'TCB'	T	LONAM_SRFAL		LIBNUM=10		
'TCB'	T	LONAM_STATEF				
		LG		LIBNUM=10		
'TCB'	T	LONAM_STATEW				
		RD		LIBNUM=10		
'TCB'	T	LONAM_STPST		LIBNUM=10		
'BUFSTAT'	T	LONAM_STUFF				
'	T	LONAM_SVBASE				
'	T	LONAM_SVCOM				
'	T	LONAM_SVFLG				
'	T	LONAM_SVINDX				
'	T	LONAM_SVLSTG				
'		OOD				
'	T	LONAM_SVST				
'	T	LONAM_SYFILE				
'TCB'	T	LONAM_TAPNO		LIBNUM=10		
'	T	LONAM_TAPNUM				
'TAPSTAT'	T	LONAM_TIM				
'TCB'	T	LONAM_TIMEK		LIBNUM=10		
'TAPSTAT'	T	LONAM_TOR				
'TCB'	T	LONAM_TORLOK		LIBNUM=10		
'TCB'	T	LONAM_TRACK		LIBNUM=10		
'HEADR'	T	LONAM_TRCK		LIBNUM=10		
'	T	LONAM_TRK				
'	T	LONAM_TRKS		LIBNUM=10		
'TUSTAT'	T	LONAM_TSTATE		LIBNUM=10		
'TAPSTAT'	T	LONAM_TUR				
'	T	LONAM_TYPER		LIBNUM=10		
'BUFSTAT'	T	LONAM_UNST				
'	T	LONAM_USRDIS				
'	T					
'TCB'	T	LONAM_VERTRK		LIBNUM=10		
'TAPSTAT'	T	LONAM_WENBL				
'	T	LONAM_WORDCN				
'	T			LIBNUM=10		
'	T	LONAM_WRTABS		LIBNUM=10		
'TCB'	T	LONAM_WSI		LIBNUM=10		
'TCB'	T	LONAM_SMRTN				
	L	LOOKMORE	111-22	112-29,112-35		
	L	LREPK	31-33	31-24		
'+5'	T	LSTBLK		W=13 S=0 N=5 CL=2	111-40	
	L	LSTBJFCK	83-18			
	A	LSTCOM	14-03	W=20 S=0 N=15 CL=3	LIBNUM=10	39-46, 47-45, 56-06, 75-31, 85-40, 99-45, 121-31
	A	LSTGOOD	14-08	W=13 S=0 N=17 CL=3	LIBNUM=10	48-05, 50-22, 61-21, 75-29, 109-19, 121-40, 138-27
'+5'	T	LTRK		W=2 S=13 N=5 CL=2		
CTVTAB	V	MXOVST		LIBNUM=12	112-12	

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
14 P MXOVSTX_XCSY						
0000000	A	MAINT	13-18	LIBNUM=12 W=1 S=5 N=0 CL=3 LIBNUM=10 121-25	49-04, 50-06, 57-35, 61-44, 75-47, 85-18, 120-15, 121-23,	
0000000	A	MANE	18-05	W=1 S=6 N=0 CL=3 LIBNUM=10	25-14	
0123712	L	MATERED	45-36	74-40		
LAYOUT	V	MHTDCAR	5-26	115-11		
LAYOUT	V	MHTOFO	5-18	112-04		
LAYOUT	V	MHTOFR	5-22	71-20		
LAYOUT	V	MHTOFW	5-24	72-37		
LAYOUT	V	MHTOTE	5-20	73-18		
LAYOUT	V	MHT1FO	5-19	112-01		
LAYOUT	V	MHT1FR	5-23	71-17		
LAYOUT	V	MHT1FW	5-25	72-34		
LAYOUT	V	MHT1TE	5-21	73-14		
0000000	A	MONST	21-03			
0125357	L	MONSTATE	29-01	27-32		
0000000	A	MOP	19-16	W=1 S=17 N=0 CL=3		
0126004	L	MOREBUF	86-49	86-41		
CSYSUB	V	MOVST	4-21			
0124643	L	MRFINIT	64-01	27-41		
0123460	L	MRFPORG	36-01	29-43		
0000011	A	MRFST	21-11	36-21, 65-36		
'3E790646'	T	MRNO				
MASACS	V	MSECPR	5-38	55-28		
0000000	A	MTCE	19-13	W=1 S=14 N=0 CL=3		
CTSD	V	MTCSV	4-32	70-32, 71-03, 71-04, 72-06, 72-19, 74-09, 75-19, 121-28		
0126716	L	MVCHK	112-05	112-02		
0125540	L	MYADR	82-29	82-30		
TTYTEL	X	NXORESP	118-33	118-33		
'+1'	T	NAME		W=10 S=0 N=1 CL=2 LIBNUM=10		
0124252	L	NEG	55-01	54-25		
0125425	L	NEXTRY	80-25	80-18, 80-33, 80-35, 81-17, 81-30		
0123424	L	NOACTION	32-09	32-02		
0000011	A	NOCLIENT		LIBNUM=10 101-15		
0123307	L	NOCLRTOR	27-15	27-02		
0123607	L	NOCRC	41-43	41-33		
0127145	L	NOCRCER	120-27	120-14		
0125503	L	NODETTST	82-04	81-37		
0126367	L	NODONT	101-32	101-30		
0126417	L	NOEOF	103-25	103-19, 103-21		
0124411	L	NOEOFSET	59-08	59-02		
0124421	L	NOFORMAT	59-16	59-11		
0125750	L	NOIOCMP	85-45	85-43		
0125274	L	NOISSUE	75-46	75-34, 75-36		
0126433	L	NOLOKUP	103-39	103-28		
0123230	L	NOMAN	25-34	25-13		
0124402	L	NOMATE	58-24	58-10		
0126736	L	NOMCH	112-31	111-36		

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PR-1C957-5D

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0125730	L	NOMT	85-21	85-09, 85-19		
0123456	L	NONDUPL	35-21	35-10		
0126344	L	NONO	99-46	99-42, 99-44		
0123407	L	NOREPK	30-22	30-13, 30-16		
0000003	A	NORESP	118-31	26-35, 42-06		
0123265	L	NORESPONSE	26-34	25-42		
0125445	L	NORM	80-49	80-44		
0126363	L	NORMOP	101-26	101-16		
0127164	L	NORMTCB	121-17	121-14		
0127274	L	NORTN	126-16	126-22		
0123257	L	HOSAVE	26-26	26-16		
0126604	L	NOSEQR	109-17	109-12, 109-15		
0127322	L	NOSET	128-12	128-10		
0126402	L	NOSTAT	103-10	102-35		
0126247	L	NOTEXPLI	96-13	96-09		
0126330	L	NOTRACK	99-35	99-08		
0126451	L	NOTRITE	104-04	101-37, 102-43		
0126067	L	NOTUTL	89-47	89-32, 89-36		
0126452	L	NOTYET	104-07	102-09		
0125553	L	NOUPITI	82-40			
0126450	L	NO2DAT	104-01	102-39, 103-05, 103-47		
0127413	L	NXTLX	132-11	132-15		
0124676	L	NXTSCAN	65-07	66-02		
0127316	L	NXTSTAT	128-07	128-13		
		0 U 0				
TTYTBL	X	OXORADR	118-42	118-42		
TTYTBL	X	OXPER	96-49	96-49, 118-03		
TTYTBL	X	OXRDER	118-39	118-39		
CTVTAB	V	OXRDEXC		LIBNUM=12 33-24, 45-42, 54-37, 60-38, 69-03, 75-39		
	14	P OXRDEXC_XCT				
		APH		LIBNUM=12		
0123660	L	ODUNIT	44-32	44-30, 45-23		
CTSD	V	OFLUCTL	4-29	89-34		
BLMMA	V	OFLUTIL	4-01	89-31		
0123630	L	OKCOMP	42-19	41-29		
0125712	L	OKFLG	85-04	84-41		
0127366	L	OKYET	129-21	129-16		
0000006	A	OORADR	118-40	54-46, 129-18		
0014000	A	OOS	21-20			
0000012	A	OPEN		LIBNUM=10 96-02		
0126202	L	OPENM	95-01	6-05		
0126205	L	OPENTCB	95-16	6-06		
'+0'	T	OPSZ		W=1 S=3 N=0 CL=2 LIBNUM=10		

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## PATCH HISTORY

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
†.<(AON Xst);				
-S/				
%_>?				
:#0'L" ab				
cdefghi n<(+				
+ jklmnopqr"				
n)±=-rstuvw				
xyz+L_[>=012				
3456789+_]#				
-(IBCLEFGHI				
)JKLMNO				
PQR \ S				
LLLMLYZ				
0123456789				
	T	OPTR		
0124102	L	ORDBCKAB	50-37	51-21
0000005	A	ORDER	118-37	28-03, 42-04, 64-37, 65-45, 80-32, 105-35
0126323	L	ORDEXC	99-18	6-07
0126321	L	ORDEXCAB	99-10	6-08
0126317	L	ORDEXCNT	99-01	6-13
0123615	L	ORDFAL	42-03	40-43
0124161	L	ORDSND	53-30	48-06, 53-20
0000557	A	ORG_000013	24-30	
0001301	A	ORG_000133	96-27	
0000576	A	ORG_000205	31-11	
0000607	A	ORG_000211	31-42	
0000613	A	ORG_000216	32-06	
0001515	A	ORG_000255	114-33	
0000636	A	ORG_0J0272	37-19	
0001713	A	ORG_000330	123-32	
0001567	A	ORG_000335	117-27	
0001335	A	ORG_000337	98-08	
0002074	A	ORG_000602	139-08	
0001100	A	ORG_000611	79-26	
0001400	A	ORG_000626	102-02	
0000561	A	ORG_000627	24-40	
0002033	A	ORG_000647	134-19	
0001217	A	ORG_000654	89-24	
0000771	A	ORG_000677	67-28	
0000722	A	ORG_000765	58-38	
0000600	A	ORG_001100	31-21	
0000615	A	ORG_001120	32-17	
0000757	A	ORG_001124	65-35	
0001411	A	ORG_001130	102-32	
0000720	A	ORG_001177	58-28	
0000754	A	ORG_001466	65-02	
0000767	A	ORG_001516	67-11	
0001000	A	ORG_001526	68-13	

CTAPH W77D

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W770
0001010	A	ORG_001552	69-07			
0001076	A	ORG_002175	79-16			
0001106	A	ORG_002201	79-45			
0001112	A	ORG_002237	81-02			
0001116	A	ORG_002241	81-12			
0001124	A	ORG_002400	83-22			
0001140	A	ORG_002531	85-30			
0001144	A	ORG_002546	86-01			
0001154	A	ORG_002554	86-18			
0001161	A	ORG_002631	87-35			
0001210	A	ORG_002653	88-28			
0001215	A	ORG_002656	89-14			
0001231	A	ORG_002715	90-33			
0001263	A	ORG_002776	95-03			
0001272	A	ORG_003001	95-29			
0001277	A	ORG_003043	96-17			
0001333	A	ORG_003072	97-43			
0001344	A	ORG_003100	98-28			
0001372	A	ORG_003153	101-18			
0001376	A	ORG_003167	101-40			
0001407	A	ORG_003171	102-22			
0001417	A	ORG_003174	103-07			
0001513	A	ORG_003573	114-23			
0001525	A	ORG_003613	115-16			
0001553	A	ORG_003644	116-29			
0001565	A	ORG_003663	117-17			
0001711	A	ORG_004030	123-22			
0001722	A	ORG_004036	124-04			
0002031	A	ORG_004225	134-09			
0002045	A	ORG_004232	135-09			
0002065	A	ORG_004257	138-14			
0000016	A	ORIGIN	14-04	W=15 S=0 N=16 CL=3 LIBNUM=10	37-30, 37-31, 111-45, 129-22, 138-17	
0000005	A	OTHERU	13-33	W=1 S=15 N=5 CL=3 LIBNUM=10	49-14, 49-24, 50-03	
0126476	L	OUTWAIT	105-22	105-23		
CTVTAB	V	PXMRY		LIBNUM=12	77-27, 88-03, 96-44, 115-29, 118-03, 124-16, 128-32	
14	P	PXMRYX_XTTYA				
		PP		LIBNUM=12		
CTVTAB	V	PXTREC		LIBNUM=12	41-38, 71-25, 71-42, 72-18, 75-16, 88-21	
14	P	PXTRECX_XCTA				
		PH		LIBNUM=12		
0125277	L	PACKTAPE	76-01	27-42		
CTSD	V	PAGSCR	4-36	80-45, 80-47		
0000006	A	PHYBLK	13-36	W=13 S=0 N=6 CL=3 LIBNUM=10	37-31, 50-09, 54-13, 54-14, 58-11, 58-12, 62-33, 62-46, 74-27, 75-27, 103-33, 103-34, 103-35, 111-43, 121-35, 138-23, 138-26, 138-28	
0123731	L	PHYLOC	46-13	43-36		
0124742	L	PIP	68-27	68-37, 68-39		
TTYAPP	V	PMRY	77-27	88-03, 96-44, 115-29, 118-03, 124-16, 128-32		
0127010	L	PNTREMOV	115-07	114-05, 115-03		
0124356	L	POMES	57-43	57-40		

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0124141	L	POP	51-36	42-22		
0126522	L	POPSTATE	106-01	6-09		
0124076	L	POPTIME	50-27	49-05		
0123532	L	POPY	39-45	40-37		
0124140	L	POPZSTP	51-35	50-20, 50-23, 53-24, 56-09, 61-45, 62-31, 62-39, 67-39, 68-28		
0124352	L	POSCHKIT	57-37			
0124151	L	POSIT	53-01	27-35		
0000004	A	POSITION		LIBNUM=10 103-30,103-41		
0123641	L	POSITIONL0D	43-42	29-47, 37-37, 45-10, 58-19, 74-30		
0124744	L	POSMATE	68-32	67-08		
0000000	A	POSOK	17-13	W=1 S=15 N=0 CL=3 LIBNUM=10 6-11, 47-34, 47-47, 48-03, 53-12, 55-22, 56-10, 57-41, 61-08, 70-36, 85-13,109-11,109-20,109-21,120-34,125-12,134-22,134-30		
0124350	L	POSOKCHK	57-33	57-09		
0000003	A	POSST	21-05	6-12, 43-43		
0000000	A	PPE	20-06	W=1 S=6 N=0 CL=3 80-31,105-37		
0125104	L	PRMERR	72-24	72-10, 74-04, 74-08, 74-12, 74-15, 74-21, 74-47		
0127060	L	PRNTER	117-01	72-40, 85-28		
0127342	L	PRNTIT	128-27	128-19,128-24		
0000000	A	PTP	17-10	W=13 S=0 N=0 CL=3 LIBNUM=10 48-03, 48-05, 50-13, 50-19, 54-23, 73-08, 74-11, 87-38, 109-13,109-21,114-20,117-36,123-41		
0127223	L	PTREC	123-01	6-10		
0123726	L	PUSHAND	46-05	33-36, 70-43		
0126537	L	PUSHSTAT	107-01	6-14		
0124067	L	PUTLST	50-18	50-05		
		O U R				
TTYTBL	X	RXC0VRY	124-21	124-21		
TTYTBL	X	RXEPT	128-36	128-36		
TTYTBL	X	RXMV	115-34	115-34		
14	P	RAD		LIBNUM=3 24-22, 24-23, 24-25, 25-49, 26-04, 26-05, 26-09, 26-49, 27-01, 27-03, 27-22, 27-25, 27-27, 29-40, 30-12, 30-14, 30-18, 30-19, 30-20, 30-23, 33-32, 33-33, 35-09, 35-14, 35-18, 35-20, 37-23, 37-24, 37-25, 37-30, 37-31, 37-32, 39-39, 39-41, 39-44, 39-46, 40-03, 40-36, 41-28, 41-41, 42-21, 44-21, 44-28, 44-29, 44-31, 45-04, 45-05, 45-14, 45-18, 45-20, 45-22, 45-33, 45-35, 45-49, 46-16, 46-17, 47-32, 47-33, 47-45, 48-05, 48-38, 48-39, 49-03, 49-04, 49-13, 49-14, 49-17, 49-19, 49-21, 49-24, 49-27, 49-28, 49-29, 49-35, 50-02, 50-03, 50-06, 50-09, 50-10, 50-17, 50-22, 50-38, 51-04, 51-12, 51-18, 51-30, 51-35, 53-22, 54-01, 54-06, 54-08, 54-09, 54-13, 54-15, 54-18, 55-10, 55-38, 56-06, 57-35, 58-07, 58-09, 58-11, 58-14, 58-17, 58-21, 58-26, 58-38, 59-09, 59-10, 59-12, 59-32, 59-37, 59-46, 60-22, 60-44, 61-21, 61-38, 61-40, 61-43, 61-44, 62-08, 62-33, 62-34, 62-38, 62-41, 62-43, 62-46, 65-06, 65-22, 65-27, 65-39, 65-41, 65-47, 66-05, 67-20, 67-28, 67-32, 67-47, 67-49, 70-38, 70-39, 71-06, 71-11, 71-15, 71-26, 71-28, 71-30, 71-46, 72-07, 72-32, 73-12, 73-27, 73-38, 74-03, 74-06, 74-13, 74-16, 74-26, 74-27, 74-36, 74-38, 74-46, 75-06, 75-12, 75-18, 75-20, 75-22, 75-23, 75-25, 75-27, 75-29, 75-31, 75-32, 75-45, 75-47, 79-12, 79-37, 79-43, 80-43, 81-15, 81-18, 81-34, 82-22, 84-13, 84-16, 84-18, 84-22, 84-31, 84-37, 85-18, 85-23, 85-25, 85-39, 85-40, 85-44, 85-46, 86-06, 86-11, 86-21, 86-40, 86-42, 87-01, 87-20, 87-21, 87-22, 87-28, 87-30, 90-03, 90-04, 90-12, 90-27, 90-28, 90-29, 94-09, 94-10, 95-46, 96-03, 96-04, 96-05, 96-06, 96-11, 96-12, 97-19, 97-24, 97-26, 97-27, 97-29, 97-38, 98-08, 99-32, 99-37, 99-45, 101-13, 101-35, 102-08, 103-11, 103-33, 103-40, 103-44, 103-48, 103-49, 105-07, 105-09, 105-10, 105-14, 105-15, 105-18, 106-05, 106-06, 106-07, 106-12, 106-13, 107-08, 107-09, 107-14, 107-15, 108-10, 108-11, 109-19, 110-06, 111-05, 111-13, 111-30, 111-40, 111-42, 112-09, 112-32, 114-18, 114-19, 115-01, 115-12,		

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
				117-15, 119-10, 120-15, 120-35, 121-11, 121-12, 121-22, 121-23, 121-25, 121-27, 121-29, 121-31, 121-33, 121-35, 121-38, 121-39, 121-40, 121-47, 123-14, 123-20, 127-09, 129-11, 129-22, 130-07, 130-08, 133-08, 133-10, 134-19, 134-20, 134-21, 134-22, 134-30, 135-12, 135-13, 138-12, 138-17, 138-24, 138-27, 138-40, 139-11, 139-12		
16	P	RA1		LIBNUM=3 24-27, 24-28, 24-42, 24-46, 24-48, 25-35, 31-21, 31-25, 31-34, 32-03, 32-19, 36-17, 36-27, 48-03, 54-33, 55-22, 56-10, 58-25, 59-07, 59-14, 59-36, 59-40, 60-03, 61-14, 61-19, 64-09, 64-11, 64-25, 70-37, 72-11, 75-19, 75-21, 75-24, 75-26, 75-28, 75-30, 76-09, 76-11, 76-28, 78-46, 79-02, 80-08, 81-23, 81-24, 81-27, 81-28, 83-04, 83-05, 83-16, 85-13, 85-14, 85-16, 86-31, 87-32, 87-33, 90-23, 92-14, 92-19, 92-21, 92-22, 93-11, 93-15, 93-16, 95-36, 97-30, 97-31, 97-34, 97-35, 98-38, 99-36, 99-39, 101-14, 101-27, 101-31, 108-09, 108-13, 109-21, 111-24, 111-34, 111-39, 111-41, 111-43, 111-44, 111-45, 111-47, 111-48, 112-10, 115-09, 115-10, 115-14, 115-19, 116-13, 116-14, 117-11, 117-12, 117-13, 117-14, 117-27, 117-28, 120-34, 121-28, 121-30, 121-32, 121-34, 121-36, 121-41, 123-12, 123-13, 123-32, 123-33, 125-10, 125-12, 125-13, 126-10, 126-11, 127-10, 127-11, 128-03, 128-08, 128-15, 128-16, 128-20, 128-21, 128-25, 128-26, 129-10, 129-12, 132-08, 132-10, 132-12, 136-12, 136-13, 137-11, 137-12		
0124124	L	RDVERY	51-17	48-28, 48-35		
0000000	A	RDY	20-08	W=1 S=10 N=0 CL=3		
0123714	L	RD1AGN	45-39	55-11		
0123426	L	READPROG	33-01	29-44		
0000004	A	READST	21-06	33-34, 73-21, 85-48		
0123514	L	READSTATE	39-01	27-36		
0125057	L	READWRITE	71-43	69-21, 75-01		
0123441	L	READ1PROG	34-01	29-45		
0125125	L	RECOVOK	73-05	71-07		
MASACS	V	REDKON	5-39	53-39		
0125216	L	REDMATE	74-34	70-22		
0000000	A	REDON	17-14	W=1 S=16 N=0 CL=3 LIBNUM=10 6-15, 57-39, 68-38, 72-27, 72-29, 90-10, 90-18, 115-12, 132-13		
0126104	L	REDONLY	90-17	90-09		
0124752	L	REDSTD	68-45	67-09, 67-36		
0125147	L	REDO	73-32	57-29, 70-20		
0124346	L	REDOX	57-28	57-11, 57-20		
0127007	L	REFROM	115-04	114-17		
0126211	L	REGOPEN	95-34	95-11		
0124211	L	REGPOS	54-12	54-04		
0123567	L	REGREAD	41-22	39-25		
0126657	L	RELOAD	111-29	111-38, 112-20		
0126474	L	RELOD	105-19	105-39		
0126517	L	REM	105-40	105-36, 105-38		
0123266	L	REMOVMS	26-36	25-46, 26-10, 28-05		
0126766	L	REMOVTV	114-06	26-38, 42-16, 64-39, 65-49, 105-43		
0113720	L	REMOVTV	65-44	65-24		
0126175	L	REPACK	94-01	6-16		
0000012	A	REPAK	21-13	30-17		
0000007	A	REPK	13-43	W=1 S=15 N=7 CL=3 LIBNUM=10 30-12, 30-19, 31-34, 32-01, 32-03, 49-13, 93-16, 94-10		
0000000	A	REQ	13-16	W=4 S=0 N=0 CL=3 LIBNUM=10 26-40, 29-40, 29-41, 32-19, 45-14, 85-25, 92-19, 93-15, 97-19, 97-38, 103-40, 103-41		
0126350	L	REQR	101-01	6-17		
0000000	A	REQSTP	13-17	W=1 S=4 N=0 CL=3 6-18, 26-40, 30-20, 30-23, 32-04, 85-24, 92-18, 95-47, 96-02, 102-08,		

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## PATCH HISTORY

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0000000	A	REQUEST	8-15	W=4 S=7 N=0 CL=3 LIBNUM=10 103-11 102-32,103-17,103-20,103-26,103-42		
0000002	A	REREAD	21-04	121-37		
0125223	L	RERITE	74-44	70-23		
0124776	L	RES	70-25	73-26		
CTSD	V	RESDIR	4-31	90-23, 90-24,111-05,112-08,112-10,112-28		
0124604	L	RESDUP	62-19	57-24		
0124400	L	RESETNO	58-20	57-14		
0126733	L	RESNUMB	112-27	111-07		
0125435	L	RESOLVE	80-42	80-24		
0125234	L	RESRTN	75-11	70-26, 73-22, 75-06		
0124763	L	RETRYSTATE	70-01	27-34		
0124315	L	REVERIFY	56-05	54-27		
0125327	L	REW	76-41	77-10		
0123551	L	REWINDTU	40-33	39-27, 68-18		
0124734	L	REWINDTUS	68-17	67-15		
0124657	L	REWINDU	64-22	64-15, 64-34, 76-42		
0000000	A	REWND	19-14	W=1 S=15 N=0 CL=3		
0125054	L	REWRITE	71-36	70-16		
0125571	L	RLODBX	83-06	83-17		
0126103	L	RLPLY	90-14	89-30, 89-44, 90-11, 90-19		
'ABSOLUTE WR	T	RMK_ABWRT		LIBNUM=10		
ITE REQUEST'						
' ACTIVE TAP	T	RMK_ACTIV				
E BUFFER.'						
' BLOCK ADDR	T	RMK_BLKADR		LIBNUM=10		
ESS'						
' BUFFER OVE	T	RMK_BOFL				
RFLOW SET.'						
' BEGINNING	T	RMK_BOT				
OF TAPE'						
' BUFFER REA	T	RMK_BR				
DY FLAG.'						
' BUFFER COU	T	RMK_BUFCT		LIBNUM=10		
NT'						
' CLIENT NUM	T	RMK_CLIENT		LIBNUM=10		
BER'						
' CLIENT NUM	T	RMK_CLNT		LIBNUM=10		
BER'						
' COMMAND CO	T	RMK_COM		LIBNUM=10		
DE'						
' COMPARE BIT	T	RMK_COMPROK		LIBNUM=10		
'						
' LOW BITS 0	T	RMK_CONTLPT		LIBNUM=10		
F CLIENT CON						
TROL ROUTINE	T	RMK_CRCBLK		LIBNUM=10		
'						
' CRC'	T	RMK_DATA_ARE				
'						

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
' LAST BLOCK S IN FILE.'	T	RMK_LASTBLK		LIBNUM=10		
' CLIENTS I/ O ROUTINE AD RS (LO BITS)' ' LOAD STATE SET UP.'	T	RMK_LOADRBIT		LIBNUM=10		
' CLIENTS LO GICAL INDEX INTO FILE'	T	RMK_LOGBLK		LIBNUM=10		
' LAST BLK I N FILE'	T	RMK_LSTBLK				
' LAST ORDER SENT TO TDC AT BASE'	T	RMK_LSTCOM		LIBNUM=10		
' LAST GOOD B LOCK READ IN'	T	RMK_LSTGOOD		LIBNUM=10		
' LAST TRACK' ' MAINTENANC E REQUEST BI T'	T	RMK_LTRK				
' MANUAL ENA BLE'	T	RMK_MAINT		LIBNUM=10		
' MANUAL OPE RATION ACTIV E'	T	RMK_MANE		LIBNUM=10		
' MAINTENANC E ACTIVE.'	T	RMK_MOP				
' ASCII CHARA CTER 2 OF FI LE NAME'	T	RMK_MTCE				
' OPEN-SEIZE FLAG'	T	RMK_NAME		LIBNUM=10		
' ORIGIN OF FILE. BLK AN D TRACK.'	T	RMK_OPSZ		LIBNUM=10		
' OTHER UNIT USED IN REC OVERY ALREAD Y'	T	RMK_ORIGIN		LIBNUM=10		
' PHYSICAL L OCATION OF F ILE.'	T	RMK_OTHERU		LIBNUM=10		
' POSITION VE RIFIED'	T	RMK_PHYBLK		LIBNUM=10		
' PARALLEL P ARITY ERROR.'	T	RMK_POSOK		LIBNUM=10		
' PRESENT TAP E POSITION'	T	RMK_PPE				
	T	RMK_PTP		LIBNUM=10		

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
' BUFFER UNI				
T READY'	T	RMK_RDY		
' TAPE IN RE				
AD ONLY STAT				
E.'	T	RMK_REDON		LIBNUM=10
'REPACK TAPE				
REQUEST'	T	RMK_REPK		LIBNUM=10
' REQUEST BI				
TS'	T	RMK_REQ		LIBNUM=10
' STOP REQUE				
ST BIT'	T	RMK_REQSTP		
' REQUEST BI				
TS'	T	RMK_REQUEST		LIBNUM=10
' TAPE REWIN				
DING.'	T	RMK_REWND		
'RETURN INDE				
X'	T	RMK_RTNDX		LIBNUM=10
'SIEZE FUNCT				
ION IP.'	T	RMK_SEEZ		LIBNUM=10
'SEEN TAPE 0				
FF REEL'	T	RMK_SNER		LIBNUM=10
'BLOCK OUT 0				
F ORDER READ				
IN'	T	RMK_SQERR		LIBNUM=10
' CRC FAIL'	T	RMK_SRFAL		LIBNUM=10
' STATE FLAG				
S (4 BITS PE				
R STATE)'	T	RMK_STATEFLG		LIBNUM=10
' STATE STAC				
K WORD (4 BI				
TS PER STATE				
)'	T	RMK_STATEWRD		LIBNUM=10
'STOP DATA S				
TORAGE'	T	RMK_STPST		LIBNUM=10
'STUFF ACTIV				
E'	T	RMK_STUFF		
' SAVE THE B				
ASE BLOCK OF				
FILE'	T	RMK_SVBASE		
' LAST BASE				
LEVEL TDC CO				
MMAND'	T	RMK_SVCOM		
' FLAG SAVE				
WORD'	T	RMK_SVFLG		
' SAVE CLIEN				
TS LOGICAL I				
NDEX'	T	RMK_SVINDX		
'SAVED LAST				
GOOD BLOCK R				

CTAPH

W77D

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## PATCH HISTORY

VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES
EAD IN'	T	RMK_SVLSTG00		
		D		
' STATE SAVE	T	RMK_SVST		
WORD'	T	RMK_SVST		
'NO. OF SYST	T	RMK_SYFILE		
EM FILES'	T	RMK_SYFILE		
' TAPE NUMBE	T	RMK_TAPNO		LIBNUM=10
R'	T	RMK_TAPNO		LIBNUM=10
'TAPE NO.'	T	RMK_TAPNUM		
' TAPE IN MO	T	RMK_TIM		
TION'	T	RMK_TIM		
' TIME CONST	T	RMK_TIMEK		LIBNUM=10
ANT STORAGE'	T	RMK_TIMEK		LIBNUM=10
' TAPE OFF R	T	RMK_TOR		
ECL.'	T	RMK_TOR		
'TAPE OF REE	T	RMK_TORLOK		LIBNUM=10
L FLG'	T	RMK_TORLOK		LIBNUM=10
' TAPE TRACK	T	RMK_TRACK		LIBNUM=10
'	T	RMK_TRACK		LIBNUM=10
' TRACK BIT'	T	RMK_TRCK		LIBNUM=10
'TRACK'	T	RMK_TRK		
' TRACK CODE	T	RMK_TRKS		LIBNUM=10
S'	T	RMK_TRKS		LIBNUM=10
'OOS BIT.'	T	RMK_TSTATE		LIBNUM=10
' TAPE UNIT	T	RMK_TUR		
READY.'	T	RMK_TUR		
' 1 IF ONLY	T	RMK_TYPER		LIBNUM=10
ONE DATA WOR	T	RMK_TYPER		LIBNUM=10
D O IF 2.'	T	RMK_TYPER		LIBNUM=10
' UNLOAD STA	T	RMK_UNST		
TE SET UP.'	T	RMK_UNST		
'DISPLACEMEN	T	RMK_USRDIST		
T IN BLKS TO	T	RMK_USRDIST		
USER DIRECT	T	RMK_USRDIST		
ORY'	T	RMK_USRDIST		
'TRACK VERIF	T	RMK_VERTRK		LIBNUM=10
Y WILL BE DO	T	RMK_VERTRK		LIBNUM=10
NE ON'	T	RMK_VERTRK		LIBNUM=10
' WRITE ENAB	T	RMK_WENBL		
LE.'	T	RMK_WENBL		
'NO. OF WORD	T	RMK_WORDCNT		LIBNUM=10
S FOR FILE N	T	RMK_WORDCNT		LIBNUM=10
AME'	T	RMK_WRTABS		LIBNUM=10
'	T	RMK_WRTABS		LIBNUM=10
' WRITE STOP	T	RMK_WSI		LIBNUM=10
INT. EXPECT	T	RMK_WSI		LIBNUM=10
ED.'	T	RMK_WSI		LIBNUM=10
'CLIENT WISH				
ES INTERRUPT				

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
				111-44, 111-45, 111-46, 111-47, 112-10, 114-04, 114-33, 114-43, 117-14, 117-43, 124-07, 129-10, 129-11, 129-14, 129-15, 129-18, 129-22, 129-23, 129-24, 138-32, 138-37, 138-38, 138-39, 138-48		
12	R	R10		LIBNUM=3 25-07, 25-14, 26-27, 27-16, 33-21, 34-08, 36-16, 39-46, 39-49, 40-38, 41-30, 42-10, 45-40, 48-49, 50-36, 50-40, 51-20, 51-26, 53-32, 54-34, 55-42, 55-45, 60-17, 60-27, 60-36, 61-23, 64-13, 69-01, 73-34, 75-30, 75-31, 75-35, 76-26, 76-39, 77-09, 79-11, 81-38, 82-05, 82-11, 82-20, 82-41, 83-35, 84-09, 84-24, 84-42, 86-44, 87-12, 90-30, 96-27, 96-28, 99-34, 99-41, 99-43, 99-45, 105-18, 114-43, 116-15, 116-20, 116-23, 117-27, 117-43, 118-13, 120-11, 121-18, 126-12, 128-21		
13	R	R11		LIBNUM=3 25-43, 25-47, 26-02, 26-18, 27-17, 47-42, 51-02, 51-06, 53-18, 61-04, 65-12, 65-15, 65-17, 67-45, 80-23, 80-31, 81-31, 82-02, 83-16, 84-39, 84-40, 85-03, 99-49, 105-37, 109-13, 109-16, 109-18, 109-20, 109-21, 116-19, 120-29, 126-20, 126-21, 126-25		
14	R	R12		LIBNUM=3 86-28, 128-26		
15	R	R13		LIBNUM=3 86-30		
16	R	R14		LIBNUM=3 45-04, 45-33, 46-16, 86-06, 95-32, 96-04, 98-39, 101-11, 101-33		
17	R	R15		LIBNUM=3 45-05, 45-35, 46-17, 86-11, 95-33, 96-05, 98-40, 101-12, 101-34		
2	R	R2		LIBNUM=3 24-22, 26-40, 26-42, 27-18, 27-23, 27-26, 27-28, 29-39, 29-40, 31-34, 32-01, 35-12, 35-20, 37-30, 37-31, 37-32, 40-40, 40-41, 47-37, 48-22, 50-10, 50-11, 54-15, 54-16, 54-17, 55-31, 55-34, 56-07, 56-08, 59-32, 59-39, 59-40, 60-07, 61-10, 61-11, 61-20, 61-21, 62-33, 62-35, 62-36, 62-42, 62-43, 62-44, 62-46, 67-20, 67-34, 71-04, 71-05, 73-08, 74-09, 74-10, 74-11, 74-27, 79-10, 79-14, 80-13, 81-15, 81-16, 81-34, 81-35, 81-36, 82-24, 82-26, 83-05, 83-19, 84-10, 84-12, 84-13, 86-46, 86-47, 87-01, 87-02, 87-14, 87-16, 90-03, 90-04, 90-08, 90-10, 90-18, 95-36, 95-45, 96-08, 96-14, 98-32, 98-37, 98-38, 101-13, 101-14, 101-15, 101-21, 101-29, 101-36, 102-32, 103-16, 103-17, 103-18, 103-20, 103-26, 103-30, 103-40, 103-41, 103-42, 103-46, 103-48, 105-09, 105-11, 105-13, 105-15, 107-08, 107-10, 107-12, 107-14, 109-06, 109-22, 111-05, 111-13, 111-14, 111-17, 111-18, 111-19, 111-20, 111-21, 112-28, 112-33, 112-34, 114-18, 114-19, 114-20, 115-02, 129-12, 129-13, 129-15, 129-24, 133-08, 133-09, 133-10, 138-12, 138-17, 138-22, 138-23, 138-31, 138-33, 138-38, 138-43		
3	R	R3		LIBNUM=3 24-25, 26-15, 26-44, 27-24, 36-14, 36-19, 36-27, 42-11, 42-14, 47-34, 50-13, 50-19, 50-21, 50-22, 53-12, 54-23, 54-32, 54-33, 55-36, 55-37, 55-38, 57-39, 57-41, 58-13, 58-14, 58-39, 58-40, 59-13, 59-14, 59-43, 60-02, 61-08, 61-10, 61-18, 61-19, 67-29, 67-30, 67-34, 70-36, 70-37, 72-27, 72-29, 73-06, 73-08, 73-10, 74-11, 78-44, 79-01, 79-26, 81-40, 81-41, 82-07, 82-08, 82-13, 82-14, 82-28, 82-30, 82-34, 82-35, 82-43, 82-44, 83-03, 83-17, 84-18, 85-22, 85-23, 85-48, 95-45, 96-02, 96-03, 97-05, 97-06, 97-11, 97-19, 101-21, 101-31, 101-35, 101-36, 105-21, 105-23, 107-09, 107-11, 107-13, 107-15, 109-10, 109-14, 109-19, 111-19, 111-21, 111-24, 111-25, 111-26, 111-38, 127-10, 127-11, 138-22, 138-29, 138-41		
4	R	R4		LIBNUM=3 26-18, 27-17, 54-18, 54-19, 54-20, 58-26, 58-40, 74-13, 74-14, 74-16, 80-09, 80-34, 83-34, 83-38, 84-25, 84-28, 87-19, 87-20, 95-46, 95-47, 95-49, 101-27, 103-49, 105-12, 105-26, 109-07, 109-23, 111-26, 111-27, 111-34, 111-37, 121-21, 121-22, 121-39, 128-04, 128-05, 128-08, 128-11, 128-13, 128-14, 128-17, 128-18, 128-22, 128-23, 138-24, 138-25, 138-26, 138-31, 138-32, 138-39, 138-47, 138-49		
5	R	R5		LIBNUM=3 54-30, 55-08, 55-40, 59-35, 59-45, 59-47, 59-49, 60-01, 60-06, 64-12, 76-38, 77-02, 77-08, 77-15, 95-34, 96-10, 96-11, 97-27, 102-02, 102-06, 105-17, 105-39, 111-28, 111-30, 111-31, 114-33, 115-19, 126-21, 128-08, 128-09, 138-25, 138-29, 138-40, 138-41		
6	R	R6		LIBNUM=3 24-19, 24-21, 24-28, 24-43, 24-45, 25-35, 26-15, 26-44, 26-47, 27-22, 27-23, 35-12, 35-13, 35-14, 59-45, 59-46, 64-09, 64-10, 64-25, 64-34, 66-02, 76-09, 76-10, 76-28, 76-31, 78-45, 78-49, 79-05, 79-27, 80-26, 81-16, 83-47, 83-48, 83-49, 89-25, 90-04, 90-29, 92-08, 92-12, 92-22, 95-35, 96-27, 96-30, 96-32, 97-10, 97-24, 97-26, 102-03, 102-07, 105-07, 105-08, 105-10, 111-30, 111-32, 111-35, 114-19, 116-14, 123-20, 123-33, 125-14, 126-11, 127-08, 127-09, 127-11, 128-06, 128-11, 132-08, 132-09, 132-12, 132-15		

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## PATCH HISTORY

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0124665	L	R6BX	64-33	64-29, 64-40		
	7	R R7		LIBNUM=3 39-49, 40-01, 59-46, 60-01, 90-05, 90-27, 92-10, 92-22, 95-06, 95-27, 96-36, 98-25, 111-34, 111-35, 115-08, 115-10, 117-10, 117-12, 123-11, 123-13, 128-15		
	10	R R8		LIBNUM=3 24-27, 24-28, 24-41, 25-12, 41-36, 47-32, 49-06, 49-07, 49-21, 49-35, 50-04, 71-23, 71-40, 72-16, 75-14, 87-30, 87-31, 87-33, 87-45, 88-19, 96-39, 97-30, 97-35, 115-09, 115-14, 115-19, 117-11, 117-13, 117-14, 128-16		
	11	R R9		LIBNUM=3 24-42, 24-43, 24-44, 24-45, 24-46, 24-48, 25-35, 26-17, 36-17, 36-27, 40-34, 47-33, 47-48, 49-07, 50-04, 50-17, 50-38, 50-39, 50-40, 51-04, 64-11, 64-25, 76-11, 76-28, 78-46, 79-02, 79-04, 79-12, 80-08, 83-44, 90-06, 90-29, 96-38, 97-31, 97-34, 99-39, 105-10, 111-06, 111-12, 112-06, 112-09, 116-13, 116-14, 117-15, 117-28, 123-32, 124-07, 126-11, 128-20		
TTYTBL	X	SXEQERR	118-45	118-45		
CTVTAB	V	SXTATSET		LIBNUM=12 27-21, 35-16, 44-25, 44-35, 46-22, 68-36, 74-20, 81-26, 85-12, 97-33, 103-32, 109-09, 120-33		
	14	P SXTATSETX_XC				
		TAPH		LIBNUM=12		
TTYTBL	X	SXW	72-16	72-16		
0124552	L	SCANSTOP	61-34	57-12, 57-17, 57-21, 57-23, 67-17		
0125123	L	SCORPO	72-45	72-28, 74-37		
0100007	A	SD		LIBNUM=10 82-20		
0127522	L	SECNDTRK	138-46	138-42		
0000005	A	SEEZ	13-35	W=1 S=17 N=5 CL=3 LIBNUM=10 40-03, 40-36, 62-38, 84-22, 97-10, 97-24		
0000005	A	SEIZST	21-07	54-02, 98-09		
0123430	L	SENDIT	33-22	34-09, 40-04, 40-09		
CSYSUB	V	SENDMIO	4-22	99-48		
0124312	L	SEND0	55-46	55-43		
0125413	L	SENDSTAT	80-11	80-34		
0125411	L	SEORD	80-07	79-26		
0127051	L	SEORDR	116-24	116-21		
0000007	A	SEQERR	118-43	85-17		
0124041	L	SEQTRK	49-34	49-08		
0002137	A	SERNO_049285	143-16			
0002153	A	SERNO_049718	144-12			
0002163	A	SERNO_049741	145-02			
0002157	A	SERNO_050102	144-25			
0002167	A	SERNO_050271	145-15			
0002173	A	SERNO_052288	145-27			
0002177	A	SERNO_056871	146-02			
0002147	A	SERNO_059187	144-02			
0002133	A	SERNO_059698	143-02			
0002123	A	SERNO_061018	142-12			
0002127	A	SERNO_061392	142-23			
0002143	A	SERNO_061529	143-27			
0002117	A	SERNO_062113	142-02			
0002113	A	SERNO_062215	141-24			
0002103	A	SERNO_063047	141-02			
0002107	A	SERNO_063638	141-13			
0126013	L	SETABEUP	87-10	87-03		
0127142	L	SETCOV	120-19	120-16		
0123723	L	SETIM	46-01	56-01		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0123722	L	SETIME	45-48	51-13, 53-40, 73-46		
0127432	L	SETMAINT	134-01	6-23		
0124247	L	SETOOR	54-45	54-21		
0125117	L	SETST	72-38	72-35		
0125110	L	SETSTAT	72-31	49-43, 58-01, 73-01		
0124225	L	SEZSRCH	54-22	54-11		
0123532	L	SIEZURE	43-01	27-37		
0124065	L	SKIPCHK	50-16	50-08		
0115024	L	SKIPRWD	67-40	68-22		
0124740	L	SKPREWND	68-21	67-14		
0126626	L	SLWRN	110-16	110-09, 110-13		
0123475	L	SNDINIT	36-26	36-19		
0000016	A	SNR	14-06	W=1 S=16 N=16 CL=3 LIBNUM=10	26-05, 26-49, 27-01	
0126314	L	SPECLOSE	98-41	98-26		
0126615	L	SPEEDTST	110-01	54-29, 55-07		
'TXAPE'	T	SPWORD				
0000000	A	SRERR	17-15	W=1 S=17 N=0 CL=3 LIBNUM=10	85-14, 85-16, 109-16, 109-21	
0000000	A	SRFAL	13-22	W=1 S=11 N=0 CL=3 LIBNUM=10	41-41, 49-03, 49-29, 53-22, 61-43, 70-38, 70-39, 71-06, 71-11, 71-46, 72-07, 74-06, 74-36, 74-46, 75-18, 85-39, 120-35, 121-11	
0010007	A	SST		LIBNUM=10	42-10	
0125312	L	STANDINT	76-22	76-13		
0000013	A	STATEFLG	14-01	W=20 S=0 N=13 CL=3 LIBNUM=10	27-27, 40-45, 45-03, 45-11, 45-15, 45-37, 48-38, 49-27, 51-05, 58-08, 61-29, 61-46, 62-13, 65-39, 65-41, 67-32, 67-47, 67-49, 70-35, 71-26, 71-28, 71-44, 73-27, 73-45, 74-29, 75-22, 75-32, 84-44, 106-07, 106-13, 107-09, 107-15, 110-06, 110-10, 121-29, 121-39	
0000012	A	STATEWRD	13-49	W=20 S=0 N=12 CL=3 LIBNUM=10	27-25, 30-18, 54-01, 75-20, 84-18, 85-23, 106-06, 106-12, 107-08, 107-14, 121-27, 121-38	
0000000	A	STATOK	21-21			
0127401	L	STATONL	131-01	6-24		
0126553	L	STAYSET	108-01	6-25		
0000011	A	STATST		LIBNUM=10	102-32	
0127405	L	STATWRQ	132-01	6-26		
0125600	L	STORWRD	83-15	83-11		
0000000	A	STPST	13-23	W=1 S=12 N=0 CL=3 LIBNUM=10	51-18, 51-35, 55-10, 58-07, 73-38, 74-38, 82-22, 84-37	
0000106	A	STPTIM		LIBNUM=10		
0123757	L	STRPOS	48-02	47-49		
0000000	A	STUFF	20-12	W=1 S=14 N=0 CL=3		
0125663	L	STWAIT	84-27	84-28		
0127275	L	SUCED	126-19	126-15		
0000000	A	SV_REG				
0000002	A	SVBASE	15-10	W=20 S=0 N=2 CL=3	75-26, 121-36	
0000003	A	SVCOM	15-11	W=20 S=0 N=3 CL=3	75-30, 121-32	
0000001	A	SVFLG	15-09	W=20 S=0 N=1 CL=3	75-21, 121-30	
0000004	A	SVINDX	15-12	W=20 S=0 N=4 CL=3	75-24, 121-34	
0000005	A	SVLSTGOOD	15-13	W=20 S=0 N=5 CL=3	71-04, 74-09, 75-28, 121-41	
0000000	A	SVST	15-08	W=20 S=0 N=0 CL=3		
0125141	L	SWITAPE	73-20	72-08, 72-20, 73-16		
CINIT	V	SWITCHCC	4-11			
'+0'	T	SYFILE		W=10 S=0 N=0 CL=2	111-17	

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W770
0123663	L	SYSDIR	44-42	43-34		
CTSD	V	SYSTEM	4-33	55-36		
		O U T				
TTYTBL	X	TXAPE	77-32	77-32, 88-07, 96-48, 115-33, 118-07, 124-20, 128-37		
CTVTAB	V	TXIMCHK		LIBNUM=12 119-13		
	14	P TXIMCHKX_XCS				
		Y SUB		LIBNUM=12		
CTVTAB	V	TXIMOUT		LIBNUM=12 33-30, 45-46, 51-10, 53-38, 60-42, 73-42, 75-43, 81-05, 85-01, 121-45		
	14	P TXIMOUTX_XCS				
		Y SUB		LIBNUM=12		
TTYTBL	X	TXURER	118-36	118-36		
0123206	L	TAPEHL	1-38	115-09, 117-11, 123-12		
BLMMA	V	TAPEIRTN	4-41	84-01		
TDATA	V	TAPEOPTS	5-01	44-15		
TDATA	V	TAPEQUE	5-02	78-44		
TDATA	V	TAPEQUO	5-03	79-01		
TDATA	V	TAPETBL	5-04	24-19, 24-48, 36-14, 36-17, 64-09, 76-09, 78-46, 79-02, 79-04, 83-44, 89-12, 90-28, 92-06, 99-36, 105-09, 116-13, 126-10, 128-04, 128-14, 132-08		
0125366	L	TAPINT	79-03	78-47		
0125353	L	TAPINTE	78-43	6-27		
0125361	L	TAPINTO	78-48	6-28		
0000010	A	TAPNO	13-45	W=2 S=0 N=10 CL=3 LIBNUM=10 24-25, 26-44, 27-22, 35-14, 35-20, 44-21, 44-28, 44-29, 44-31, 45-22, 71-15, 72-32, 73-12, 81-15, 81-16, 87-30, 87-31, 92-11, 97-27, 99-37, 99-38, 105-07, 105-08, 108-11, 108-12, 111-47, 111-48, 117-15, 123-20, 127-09, 131-07, 133-08, 133-09		
*+6*		T TAPNUM		W=2 S=16 N=6 CL=2 111-46		
BLMMA	V	TAPDIRTN	4-42	84-02		
0123216	L	TAPSTORD	24-26	26-47		
0006415	A	TBS		LIBNUM=10 50-36, 54-34, 56-07, 61-23		
0124711	L	TB15	65-21	65-16		
CTSD	V	TCBADR	4-34	24-22, 31-21, 40-45, 45-03, 45-11, 45-15, 45-37, 51-05, 58-08, 59-33, 61-29, 61-46, 62-13, 65-06, 65-25, 70-35, 71-44, 73-45, 74-29, 75-12, 79-12, 82-21, 84-44, 92-11, 92-14, 93-11, 94-09, 95-46, 97-06, 101-13, 102-36, 102-41, 105-11, 105-27, 106-05, 108-10, 110-10, 111-39, 114-15, 130-07, 131-07, 133-08, 134-19, 135-12, 136-12, 137-11, 138-12, 139-11		
CTSD	V	TDCO	4-30	24-44		
BLMMA	V	TEMPINH	4-02	102-05		
0125423	L	TESTSTAT	80-22	80-15		
0116774	L	TFAPCHZ	2-01	31-15, 32-11, 102-26		
0002415	A	TFP		LIBNUM=10 55-45, 76-39		
0004415	A	TFR		LIBNUM=10 40-38, 55-42, 64-13, 77-09		
0000000	A	TIM	19-11	W=1 S=12 N=0 CL=3 26-02, 51-02, 53-18, 65-12, 67-45, 116-19		
CSYSUB	V	TIMCHK	119-12			
0000014	A	TIMEK	14-02	W=20 S=0 N=14 CL=3 LIBNUM=10 33-32, 45-49, 51-12, 55-38, 60-44, 75-45, 81-18, 119-10, 121-47		
0124143	L	TIMING	52-01	27-38		
CSYSUB	V	TIMOUT	33-29	45-45, 51-09, 60-41, 73-41, 75-42, 121-44		
0127124	L	TIMOUTCK	119-01	41-25, 52-07, 61-36		
0000006	A	TIMST	21-08	46-02, 84-45, 121-48		
0000215	A	TMSTOP	21-36	116-23		
0000000	A	TOR	19-10	W=1 S=11 N=0 CL=3 25-47		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W770
0000016	A	TORLOK	14-05	W=1 S=15 N=16 CL=3 LIBNUM=10	25-49, 26-04, 26-09, 27-03	
0600000	L	TPATCH	2-03			
0002117	A	TR_011798	142-02			
0002123	A	TR_011914	142-12			
0002107	A	TR_012230	141-13			
0002103	A	TR_012274	141-02			
0002113	A	TR_012376	141-24			
0002127	A	TR_012648	142-23			
0002143	A	TR_012808	143-27			
0002137	A	TR_013001	143-16			
0002133	A	TR_013055	143-02			
0002147	A	TR_013057	144-02			
0002177	A	TR_013058	146-02			
0002167	A	TR_013214	145-15			
0002153	A	TR_013537	144-12			
0002157	A	TR_013596	144-25			
0002163	A	TR_013669	145-02			
0002173	A	TR_014090	145-27			
0001140	A	TR_11798	85-30			
0001553	A	TR_11914	24-30	24-40, 90-33, 116-29		
0001722	A	TR_12250	87-35	114-23, 114-33, 115-16, 117-17, 117-27, 123-22, 123-32, 124-04		
0002074	A	TR_12274	79-16	79-26, 79-45, 83-22, 86-01, 86-18, 88-28, 139-08		
0001272	A	TR_12376	95-08	95-29		
0001010	A	TR_12648	67-11	67-28, 68-13, 69-07		
0001344	A	TR_12808	96-17	96-27, 98-28		
0001116	A	TR_13001	81-12			
0002045	A	TR_13055	135-09			
0002065	A	TR_13057	138-14			
0000757	A	TR_13058	65-02	65-35		
0001112	A	TR_13537	81-02			
0000722	A	TR_13596	58-28	58-38		
0001417	A	TR_13669	31-11	31-21, 31-42, 32-06, 32-17, 102-22, 102-32, 103-07		
0001372	A	TR_14090	101-18			
0001217	A	TR_3E790243	89-14	89-24		
0001400	A	TR_3E790502	101-40	102-02		
0002033	A	TR_3E790646	134-09	134-19		
0001335	A	TR_3E800177	37-19	97-43, 98-08		
0000006	A	TRACK	13-37	W=2 S=13 N=6 CL=3 LIBNUM=10	39-39, 39-40, 39-41, 39-42, 47-33, 47-48, 50-04, 51-04, 54-05, 54-06, 54-08, 58-38, 58-39, 59-12, 59-13, 62-35, 62-36, 62-42, 62-46, 67-28, 67-29, 67-34, 74-13, 74-14, 97-26, 99-32, 111-43, 138-22, 138-25, 138-40, 138-41	
0003415	A	TRB		LIBNUM=10	34-08, 45-40, 51-20, 69-01, 73-34, 85-42	
0000000	A	TRCK	9-05	W=2 S=13 N=0 CL=3 LIBNUM=10	59-14, 129-13, 129-14, 129-23	
'*+6'	T	TRK		W=2 S=13 N=6 CL=2		
0000000	A	TRKS	18-08	W=2 S=14 N=0 CL=3 LIBNUM=10	50-40, 99-34	
0127465	L	TRORG	24-30	31-11, 31-42, 32-06, 37-19, 58-28, 65-02, 67-11, 68-13, 69-07, 79-16, 79-45, 81-02, 81-12, 83-22, 85-30, 86-01, 86-18, 87-35, 88-28, 89-14, 90-33, 95-08, 95-29, 96-17, 97-43, 98-28, 101-18, 101-40, 102-22, 103-07, 114-23, 115-16, 116-29, 117-17, 123-22, 124-04, 134-09, 135-09, 138-14		
0007415	A	TRT		LIBNUM=10	33-21, 40-01	
0002015	A	TSTAT		LIBNUM=10	25-07, 27-16, 41-30, 81-38, 84-09, 116-15, 120-11, 126-12	

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
0000000	A	TSTATE	17-11	W=1 S=13 N=0 CL=3 LIBNUM=10 6-29, 21-18, 21-19, 21-20, 21-21, 24-41, 25-12, 90-08, 92-10, 108-14, 115-01, 115-02, 128-09, 132-13		
0000015	A	TSTOP		LIBNUM=10 84-24		
0126507	L	TSTPE	105-33	105-25		
TTYTBL	V	TTY_IP	5-08	93-18		
TTYTBL	V	TTY_NG	5-09	92-30		
TTYTBL	V	TTY_OK	5-10	90-21, 91-02, 92-26		
TTYTBL	V	TTY_PF	5-11	128-41		
TTYTBL	V	TTY_RL	5-12	90-16		
	O	TTYAPP				
0000002	A	TTYO		LIBNUM=5 77-29, 77-30, 88-06, 96-47, 115-32, 118-06, 124-19, 128-35		
0000010	A	TTYO_BCD		LIBNUM=5 88-05, 115-31, 115-32, 118-06, 124-18		
0000004	A	TTYO_DEC		LIBNUM=5 96-46		
0000006	A	TTYO_L_X		LIBNUM=5 88-05, 88-06, 115-31, 115-32, 118-05, 124-18, 128-34, 128-35		
0000002	A	TTYO_SKP		LIBNUM=5 88-05, 115-31		
0000000	A	TTYO_WRD		LIBNUM=5 77-29, 88-05, 96-46, 115-31, 118-05, 124-18		
0000002	A	TTYOCNT	77-31	88-07, 96-48, 115-33, 118-07, 124-20, 128-36		
	O	TTYTBL				
0000015	A	TUCDEV	21-27	25-43		
'TAPETBL+1'	T	TUENABL		24-48, 36-17, 78-46, 79-02, 79-04, 83-44, 90-28, 99-36, 105-09, 116-13		
0000000	A	TUR	19-08	W=1 S=7 N=0 CL=3 25-43		
0000004	A	TURER	118-34	25-45		
0123253	L	TUSCAN	26-14	25-48, 26-03		
CTSD	V	TUSTAT	4-35	24-27, 87-32, 90-03, 92-21, 108-09, 114-18, 117-27, 123-32, 125-10, 127-10, 128-03, 132-10, 134-21,		
CNRUTL	X	TUUTCTL	4-15	89-37		
0000002	A	TUUTIL	21-25	89-33		
0125614	L	TWAIT	83-37	83-38		
0127510	L	TWOTRKS	138-36	138-30		
0003015	A	TWSTP		LIBNUM=10 87-12		
0005415	A	TWT		LIBNUM=10 60-36		
0000000	A	TYPER	8-14	W=1 S=6 N=0 CL=3 LIBNUM=10 101-29, 103-46		
TTYTBL	V	UCL	5-13	90-06		
0126161	L	UNDEF	92-27	89-26, 92-09		
0123643	L	UNITCHK	44-13	43-33, 43-37, 45-19		
CSYSUB	V	UNLODI0C	4-23	79-07		
0000000	A	UNST	20-11	W=1 S=13 N=0 CL=3		
0125740	L	UPDAFINI	85-38	85-15		
0126570	L	UPDATSTAT	109-01	82-39, 85-06, 120-31		
0123640	L	USERLOOK	43-38			
'*0'	T	USRDIST		W=10 S=10 N=0 CL=2		
0123740	L	VERIFY	47-01	27-39		
0124155	L	VERSET	53-21	56-11, 70-40		
0000007	A	VERST	21-09	53-25, 70-33, 70-42, 75-33		
0124111	L	VERSTP	51-01	40-24, 48-26, 48-29, 48-34, 48-36, 68-20		
0124736	L	VERSTPS	68-19	67-16		
0123550	L	VERSTPX	40-23	39-26, 39-28		
0000005	A	VERTRK	13-32	W=2 S=13 N=5 CL=3 LIBNUM=10 37-32, 39-44, 47-32, 49-06, 49-07, 49-21, 49-35, 50-17, 50-38, 54-09, 62-43, 71-30, 74-16, 74-26, 97-24, 111-44		

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VALUE	T	NAME	DEF/REF	ATTRIBUTES AND REFERENCES	CTAPH	W77D
TTYTBL	X	WX2X	71-40	71-40		
0113725	L	WATNX	66-01	65-11, 65-19		
0000000	A	WENBL	19-07	W=1 S=6 N=0 CL=3 25-43		
*+0	T	WORDCNT		W=3 S=0 N=0 CL=2 LIBNUM=10 111-25		
0000100	A	WRDBUF		LIBNUM=10 59-34, 83-03, 105-12		
0000003	A	WRITE		LIBNUM=10 103-20		
0125772	L	WRITEINT	86-35	81-33		
0124761	L	WRITEMATE	69-18	67-18		
0123444	L	WRITEPROG	35-01	29-46		
0124325	L	WRITESTATE	57-01	27-40		
0000010	A	WRITST	21-10	35-22, 71-12, 71-45, 72-09		
0000000	A	WRTABS	8-13	W=1 S=5 N=0 CL=3 LIBNUM=10 103-16		
0000000	A	WSI	13-19	W=1 S=6 N=0 CL=3 LIBNUM=10 86-40, 86-42, 87-22		
0124246	L	XBCKTIM	54-40	61-30		
0124770	L	XBCKUP	70-18	73-28		
0126743	L	XORTAB	113-01	6-30, 59-37		
0124250	L	XRMVCL	54-47	59-19		
0124756	L	XRMVPO	69-04	60-20, 60-30, 60-39, 61-27, 73-37, 75-40		
0124244	L	XRMVPOX	54-38	53-35, 55-49		
0126730	L	ZERCHK	112-19	111-33		
0123251	L	ZEROMV	26-08	26-01		
0123652	L	ZERON	44-22	44-17, 44-20		
0125115	L	ZFTWRT	72-36	72-33		
0125040	L	ZREAD	71-19	71-16		
0126714	L	ZROP-N	112-03	111-49		
0123725	L	ZRPUSH	46-03	35-23, 43-44, 53-26, 71-47		
0125137	L	ZTRNS	73-17	73-13		
1	J	3ACC	1-09			
0000016	A	5MRTN	14-07	W=1 S=17 N=16 CL=3 79-37, 79-43, 139-12		

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COUNT	T	NAME	DEF/REF	REFERENCES	CTAPH	M77D
5	0	AI	LIBNUM=1	39-40, 49-06, 55-28, 62-42, 96-02		
12	0	AN	LIBNUM=1	48-01, 50-12, 55-04, 55-33, 67-48, 71-05, 71-27, 73-10, 74-10, 80-26, 109-18, 111-27		
5	0	AR	LIBNUM=1	50-11, 54-17, 55-37, 111-21, 138-39		
29	0	A1S	LIBNUM=1	40-45, 45-03, 45-11, 45-15, 45-37, 51-05, 58-08, 59-33, 61-29, 61-46, 62-13, 65-25, 70-35, 71-17, 71-20, 71-44, 72-34, 72-37, 73-14, 73-18, 73-45, 74-29, 82-21, 84-44, 105-27, 110-10, 112-01, 112-04, 115-11		
157	0	B	LIBNUM=1	26-06, 26-10, 26-31, 26-32, 28-05, 29-43, 29-44, 29-45, 29-46, 29-47, 29-48, 29-49, 30-21, 30-25, 33-36, 34-09, 35-23, 36-30, 37-37, 39-25, 39-26, 39-27, 39-28, 40-09, 40-24, 40-46, 41-42, 41-46, 42-05, 42-17, 42-22, 43-33, 43-34, 43-35, 43-36, 43-37, 43-44, 44-38, 45-23, 46-24, 48-06, 48-24, 48-26, 48-28, 48-29, 48-32, 48-33, 48-34, 48-35, 48-36, 49-30, 49-38, 50-23, 50-30, 50-44, 51-13, 51-21, 51-39, 53-26, 53-40, 54-11, 54-41, 55-11, 55-26, 55-29, 55-43, 56-01, 56-11, 57-09, 57-10, 57-11, 57-12, 57-13, 57-14, 57-15, 57-16, 57-17, 57-18, 57-19, 57-20, 57-21, 57-22, 57-23, 57-24, 59-26, 60-09, 60-45, 61-16, 61-30, 61-41, 61-49, 62-49, 64-15, 64-16, 64-35, 64-40, 67-08, 67-09, 67-14, 67-15, 67-16, 67-17, 67-18, 68-40, 69-10, 69-21, 70-13, 70-15, 70-16, 70-17, 70-19, 70-20, 70-21, 70-22, 70-23, 70-24, 70-26, 71-18, 71-32, 72-20, 72-35, 73-01, 73-16, 73-28, 75-01, 76-13, 76-14, 76-15, 76-16, 76-17, 76-18, 77-03, 77-10, 78-47, 80-06, 80-18, 80-27, 80-35, 80-48, 82-31, 82-47, 83-13, 85-20, 85-33, 86-48, 87-06, 87-23, 88-13, 88-31, 95-11, 97-40, 99-08, 99-16, 111-07, 112-02, 112-29, 114-05		
98	0	BC	LIBNUM=1	24-24, 25-42, 26-01, 26-41, 26-43, 26-45, 27-02, 35-17, 39-43, 40-04, 40-07, 40-37, 41-29, 41-33, 44-17, 44-26, 44-36, 47-36, 47-49, 49-05, 49-16, 49-18, 49-20, 50-05, 50-08, 50-15, 50-20, 51-03, 51-07, 53-13, 53-20, 53-24, 54-27, 55-35, 55-41, 57-36, 57-40, 57-42, 59-11, 61-05, 62-37, 62-45, 64-29, 65-13, 65-16, 65-37, 67-46, 68-39, 70-34, 71-13, 72-10, 72-28, 74-04, 74-08, 74-15, 74-37, 74-47, 75-34, 80-01, 80-15, 80-17, 80-24, 81-33, 82-03, 82-25, 83-11, 83-20, 84-17, 84-23, 84-38, 85-47, 87-03, 87-29, 89-46, 90-07, 90-13, 90-19, 95-48, 96-31, 97-37, 101-30, 103-05, 103-19, 103-47, 108-15, 109-15, 110-09, 110-13, 111-15, 111-33, 120-14, 121-14, 121-24, 123-16, 126-15, 128-19, 128-24, 129-16		
9	0	BCL	LIBNUM=1	61-45, 62-39, 65-11, 65-24, 70-40, 79-28, 89-30, 102-09, 139-09		
77	0	BL	LIBNUM=1	24-34, 25-01, 27-32, 27-33, 27-34, 27-35, 27-36, 27-37, 27-38, 27-39, 27-40, 27-41, 27-42, 27-43, 31-15, 31-27, 32-11, 32-20, 36-24, 46-09, 49-43, 51-32, 52-11, 54-48, 57-29, 58-01, 58-19, 58-32, 58-42, 62-15, 64-18, 65-29, 65-43, 66-06, 67-22, 67-39, 68-02, 68-18, 68-20, 68-22, 68-28, 70-43, 71-47, 72-41, 73-46, 74-30, 74-40, 75-07, 75-48, 76-32, 76-42, 77-17, 77-36, 79-20, 79-31, 84-01, 84-02, 89-18, 89-40, 96-21, 97-08, 97-13, 98-02, 98-11, 101-44, 102-11, 102-26, 102-43, 114-27, 114-37, 117-21, 117-30, 123-26, 123-35, 134-13, 134-24, 139-13		
122	0	BNC	LIBNUM=1	25-13, 25-46, 25-48, 26-03, 26-16, 26-39, 30-13, 30-16, 32-02, 33-25, 35-10, 40-02, 40-43, 41-26, 44-20, 44-30, 45-10, 45-19, 45-43, 46-20, 47-43, 49-08, 50-43, 52-08, 53-35, 54-04, 54-21, 54-25, 54-31, 55-09, 55-49, 56-09, 58-10, 59-02, 59-19, 60-08, 60-20, 60-30, 60-39, 61-09, 61-12, 61-27, 61-37, 61-39, 62-07, 62-09, 62-22, 64-32, 68-37, 71-07, 71-16, 72-08, 72-33, 73-09, 73-13, 73-22, 73-37, 74-12, 74-21, 75-36, 75-40, 80-33, 80-44, 81-17, 81-30, 81-37, 81-44, 82-13, 82-16, 82-23, 82-27, 82-37, 82-46, 83-40, 84-15, 84-21, 84-30, 84-41, 85-09, 85-15, 85-19, 85-43, 86-04, 86-41, 87-18, 90-09, 90-11, 92-09, 92-13, 96-01, 96-09, 96-15, 96-29, 96-33, 98-26, 99-42, 99-44, 101-16, 101-37, 103-21, 103-28, 103-43, 105-25, 105-36, 105-38, 109-12, 111-36, 111-49, 112-07, 112-35, 114-17, 115-03, 116-18, 116-21, 119-14, 120-16, 126-22, 128-10, 129-25, 132-14, 138-30, 138-42		
13	0	BNCL	LIBNUM=1	31-24, 54-39, 60-25, 60-34, 62-31, 65-19, 67-36, 69-05, 89-26, 89-32, 89-36, 102-35, 102-39		
13	0	BPAX	LIBNUM=1	26-30, 27-31, 29-42, 39-21, 41-49, 43-32, 48-22, 57-08, 64-14, 67-07, 70-12,		

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COUNT	T	NAME	DEF/REF	REFERENCES	CTAPH	W77D
1	0	BR		76-12, 83-49		
43	0	BSA	LIBNUM=1	86-31		
			LIBNUM=1	26-36, 41-25, 41-40, 42-16, 45-07, 46-19, 52-07, 54-29, 55-07, 59-18, 60-24, 60-33, 61-36, 61-48, 62-06, 62-21, 64-28, 64-39, 65-09, 65-49, 72-40, 76-24, 79-07, 82-39, 83-46, 85-06, 85-08, 85-28, 86-13, 87-05, 87-44, 88-26, 89-28, 92-24, 99-48, 102-05, 105-43, 114-35, 115-39, 117-42, 120-21, 120-31, 124-02		
95	0	BSAI	LIBNUM=1	25-38, 26-29, 27-21, 31-40, 33-24, 33-30, 35-16, 36-23, 36-29, 37-36, 39-48, 41-32, 41-38, 42-13, 43-41, 44-25, 44-35, 45-42, 45-46, 46-07, 46-22, 49-02, 49-23, 50-29, 50-42, 51-10, 51-28, 51-38, 52-10, 53-34, 53-38, 54-37, 55-48, 58-16, 58-23, 60-19, 60-29, 60-38, 60-42, 61-26, 62-11, 62-24, 62-48, 64-31, 67-38, 68-34, 68-36, 68-48, 69-03, 69-20, 71-25, 71-42, 72-14, 72-18, 73-36, 73-42, 74-18, 74-20, 74-49, 75-16, 75-39, 75-43, 76-30, 77-27, 81-05, 81-26, 84-48, 85-01, 85-12, 88-03, 88-21, 90-26, 92-17, 93-13, 96-44, 97-33, 98-18, 103-32, 109-09, 112-12, 115-29, 116-17, 116-26, 118-03, 118-15, 119-13, 120-13, 120-18, 120-33, 121-20, 121-45, 122-01, 124-16, 126-14, 128-32		
4	0	BTSA	LIBNUM=1	106-15, 108-22, 110-15, 127-13		
22	0	BTSAG	LIBNUM=1	94-12, 98-46, 100-02, 107-17, 109-25, 116-43, 118-17, 121-16, 122-03, 123-18, 124-25, 125-16, 130-10, 131-09, 133-12, 134-36, 135-19, 136-16, 137-15, 138-35, 138-45, 139-02		
26	0	BTSAGN	LIBNUM=1	90-16, 91-02, 92-26, 92-30, 93-18, 104-03, 104-06, 104-09, 105-29, 105-45, 112-15, 112-23, 112-37, 115-06, 115-41, 119-16, 119-19, 120-23, 120-37, 126-18, 126-24, 129-20, 129-27, 132-17, 132-20		
4	0	BTSAN	LIBNUM=1	108-17, 108-20, 110-18, 128-41		
33	0	BX	LIBNUM=1	26-47, 36-19, 40-41, 55-25, 60-02, 60-04, 64-34, 66-02, 76-31, 79-26, 80-13, 80-34, 81-41, 82-08, 82-14, 82-30, 82-35, 82-44, 83-12, 83-17, 83-38, 84-12, 84-28, 86-47, 87-16, 105-23, 105-26, 105-39, 111-38, 112-20, 125-14, 128-13, 132-15		
8	0	CI	LIBNUM=1	40-01, 60-07, 65-36, 81-36, 82-26, 83-19, 85-42, 89-38		
20	0	CIRM	LIBNUM=1	25-43, 26-40, 31-22, 54-02, 70-33, 71-12, 72-09, 73-21, 74-14, 75-33, 75-35, 85-48, 87-02, 95-49, 99-41, 101-15, 102-32, 103-20, 103-26, 103-41		
1	0	COM	LIBNUM=1	55-03		
5	0	CR	LIBNUM=1	26-15, 89-35, 92-12, 111-35, 138-29		
14	0	CRM	LIBNUM=1	26-44, 49-07, 50-04, 50-13, 56-08, 58-40, 62-36, 67-34, 73-08, 74-11, 81-16, 101-36, 109-13, 138-41		
4	0	EXR	LIBNUM=1	97-30, 97-31, 97-34, 97-35		
14	0	GN	LIBNUM=1	40-34, 81-27, 81-28, 83-42, 83-43, 83-47, 86-27, 95-32, 95-33, 101-11, 101-12, 115-08, 117-10, 123-11		
35	0	HA	LIBNUM=1	75-05, 86-16, 93-09, 94-08, 95-05, 95-26, 99-07, 99-15, 99-31, 101-10, 105-06, 107-07, 109-05, 111-04, 111-11, 114-03, 114-14, 116-12, 117-09, 119-09, 120-10, 121-09, 123-10, 125-09, 126-09, 129-09, 130-06, 131-06, 132-07, 133-07, 134-07, 135-07, 136-11, 137-10, 138-11		
14	0	HN	LIBNUM=1	26-17, 79-05, 79-08, 79-09, 81-23, 81-24, 86-29, 86-30, 98-39, 98-40, 99-49, 101-33, 101-34, 126-20		
2	0	ICF	LIBNUM=1	24-44, 103-18		
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95	0	L	LIBNUM=1	24-25, 27-22, 27-25, 27-27, 30-14, 31-34, 37-30, 39-39, 39-46, 45-04, 45-05, 45-20, 45-33, 45-35, 45-16, 46-17, 47-32, 47-33, 50-09, 50-10, 50-38, 51-04, 54-01, 54-13, 54-15, 54-18, 56-06, 58-11, 58-26, 58-38, 59-12, 59-32, 62-33, 62-34, 65-27, 65-39, 67-20, 67-28, 67-47, 71-26, 74-13, 75-21, 75-24, 75-26, 75-28, 75-30, 75-32, 81-15, 81-34, 84-13, 85-40, 86-06, 86-11, 87-01, 87-30, 95-36, 99-32, 99-37, 101-14, 101-35, 103-33, 105-07, 106-06, 106-07, 107-08, 107-09, 108-11, 110-06, 111-24, 111-40, 111-42, 117-15, 119-10, 121-12, 121-27, 121-29, 121-31, 121-33, 121-35, 121-40, 123-14, 123-20, 128-15, 128-16, 128-20, 128-21, 128-25, 128-26, 129-11,		

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10	0	LA		129-12,129-22,138-17,138-24,138-27,138-40		
65	0	LAL	LIBNUM=1	60-03, 64-11, 76-11, 80-08, 87-32, 101-27, 101-31, 105-18, 112-32, 125-13		
			LIBNUM=1	24-22, 24-27, 24-42, 24-48, 31-21, 36-17, 58-25, 59-36, 59-37, 64-09, 65-06, 75-06, 75-12, 75-19, 76-09, 78-46, 79-02, 79-12, 83-04, 86-21, 90-03, 90-23, 90-28, 92-14, 92-21, 93-11, 94-09, 95-46, 99-36, 101-13, 105-09, 105-14, 106-05, 108-09, 108-10, 111-05, 111-13, 111-39, 112-09, 112-10, 114-18, 115-09, 115-14, 116-13, 117-11, 117-13, 117-27, 123-12, 123-32, 125-10, 126-10, 127-10, 128-03, 129-10, 130-07, 132-08, 132-10, 133-08, 134-19, 134-21, 135-12, 136-12, 137-11, 138-12, 139-11		
9	0	LAX	LIBNUM=1	59-40, 83-05, 90-04, 90-29, 98-38, 105-15, 108-13, 114-19, 127-11		
83	0	LI	LIBNUM=1	25-07, 26-27, 27-16, 31-09, 33-21, 34-08, 36-16, 40-38, 41-30, 41-36, 42-10, 45-40, 46-02, 47-47, 48-49, 50-36, 51-20, 51-26, 53-32, 54-05, 54-07, 54-10, 54-34, 55-31, 55-42, 55-45, 56-07, 59-34, 60-17, 60-27, 60-36, 61-23, 64-13, 69-01, 71-23, 71-40, 72-16, 73-24, 75-14, 76-26, 76-39, 77-09, 79-11, 81-38, 82-05, 82-11, 82-20, 82-28, 82-41, 83-03, 83-35, 84-09, 84-24, 84-42, 84-45, 85-24, 86-44, 87-12, 88-19, 89-33, 90-24, 90-30, 92-10, 92-18, 93-10, 93-14, 96-36, 96-38, 97-28, 98-09, 105-12, 105-35, 112-08, 112-28, 116-15, 116-20, 116-23, 118-13, 120-11, 121-18, 121-48, 126-12, 138-37		
33	0	LL	LIBNUM=1	24-19, 36-14, 40-05, 44-15, 55-36, 59-35, 62-29, 70-32, 71-03, 71-04, 72-06, 72-19, 74-09, 78-44, 79-01, 79-04, 80-45, 83-44, 84-19, 84-39, 85-03, 89-12, 89-34, 89-37, 92-06, 92-11, 102-36, 105-11, 114-15, 120-29, 128-04, 128-14, 131-07		
68	0	LN	LIBNUM=1	25-45, 26-35, 27-18, 28-03, 29-39, 30-17, 31-46, 33-34, 35-22, 36-21, 37-33, 40-40, 41-45, 42-04, 42-06, 43-43, 45-13, 49-42, 53-25, 54-46, 57-44, 59-43, 64-12, 64-37, 65-40, 65-45, 67-31, 70-41, 70-42, 71-45, 72-30, 72-49, 73-26, 76-38, 77-02, 77-08, 77-15, 78-49, 79-14, 80-09, 80-32, 81-40, 82-07, 82-13, 82-34, 82-43, 83-07, 83-34, 84-10, 84-25, 85-17, 86-46, 87-14, 92-15, 95-41, 97-04, 97-11, 97-36, 97-39, 105-17, 105-21, 110-11, 111-06, 111-23, 111-28, 114-04, 121-37, 129-18		
40	0	LR	LIBNUM=1	26-18, 27-17, 27-24, 32-18, 35-12, 42-11, 42-14, 47-37, 83-26, 83-27, 87-45, 90-38, 90-39, 90-40, 90-41, 90-42, 95-34, 95-35, 102-02, 102-03, 102-06, 102-07, 109-06, 109-07, 109-14, 109-22, 109-23, 111-19, 111-26, 114-33, 114-43, 116-33, 116-34, 116-35, 116-36, 116-37, 117-43, 124-07, 138-32, 138-48		
9	0	LRM	LIBNUM=1	39-49, 54-23, 59-45, 61-10, 95-45, 96-27, 114-20, 138-22, 138-25		
19	0	LX	LIBNUM=1	24-28, 25-35, 36-27, 59-46, 64-25, 76-28, 87-33, 99-39, 105-10, 111-30, 111-34, 115-19, 116-14, 117-14, 117-28, 123-33, 126-11, 128-08, 132-12		
2	0	MIS	LIBNUM=1	95-43, 98-43		
38	0	NI	LIBNUM=1	29-41, 30-15, 39-42, 47-48, 50-19, 54-14, 54-16, 54-19, 58-12, 62-35, 65-35, 85-41, 87-38, 98-32, 99-38, 103-23, 103-34, 103-35, 105-08, 106-08, 106-09, 108-12, 111-17, 111-25, 114-16, 117-36, 121-13, 123-15, 123-41, 129-13, 129-14, 129-23, 132-13, 136-14, 137-13, 138-23, 138-26, 138-28		
2	0	NOP	LIBNUM=1	42-01, 42-02		
3	0	NR	LIBNUM=1	27-23, 27-26, 27-28		
1	0	OI	LIBNUM=1	87-31		
1	0	RL	LIBNUM=1	24-45		
14	0	RLN	LIBNUM=1	27-29, 41-48, 50-39, 59-39, 81-35, 83-48, 96-10, 99-33, 103-22, 103-42, 105-13, 107-10, 107-11, 111-18		
1	0	RR	LIBNUM=1	24-43		
9	0	RRN	LIBNUM=1	45-21, 59-47, 59-48, 98-37, 103-17, 106-10, 106-11, 111-20, 111-46		
8	0	SBN	LIBNUM=1	25-14, 32-04, 55-08, 72-29, 80-46, 95-27, 97-10, 109-16		
1	0	SBR	LIBNUM=1	128-11		
34	0	SBS	LIBNUM=1	26-04, 26-05, 30-20, 31-25, 32-03, 37-24, 44-21, 44-29, 49-03, 49-13, 49-24, 51-18, 55-10, 56-17, 59-07, 61-43, 73-38, 84-31, 85-13, 85-44, 87-21, 87-22, 93-16, 94-10,		

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				96-12, 98-08, 103-11, 115-01, 120-34, 121-11, 121-25, 134-20, 137-12, 139-12		
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15	0	SMIO	LIBNUM=1	40-39, 80-12, 81-39, 82-06, 82-12, 82-33, 82-42, 83-08, 83-36, 84-11, 84-26, 84-43, 86-45, 87-13, 90-31		
21	0	SN	LIBNUM=1	24-21, 48-04, 50-21, 54-32, 61-18, 61-20, 64-10, 67-30, 73-06, 76-10, 89-24, 92-07, 103-30, 103-37, 111-31, 111-37, 112-33, 128-05, 128-17, 128-22, 132-09		
19	0	SR	LIBNUM=1	54-20, 54-24, 55-34, 58-13, 89-25, 92-08, 103-36, 110-12, 115-10, 117-12, 123-13, 129-15, 129-24, 138-31, 138-33, 138-38, 138-43, 138-47, 138-49		
61	0	ST	LIBNUM=1	30-18, 33-32, 35-14, 35-20, 37-23, 39-41, 45-49, 47-45, 51-12, 54-33, 55-38, 60-22, 60-44, 61-19, 61-21, 62-41, 65-41, 65-47, 66-05, 67-49, 70-37, 71-28, 72-11, 73-27, 75-20, 75-22, 75-25, 75-27, 75-29, 75-31, 75-45, 81-18, 84-13, 85-23, 85-25, 87-20, 90-27, 92-19, 93-15, 96-03, 96-05, 97-27, 97-29, 99-45, 103-49, 106-12, 106-13, 107-14, 107-15, 111-41, 121-22, 121-30, 121-32, 121-34, 121-36, 121-38, 121-39, 121-41, 121-47, 127-09, 133-10		
1	0	STA	LIBNUM=1	83-16		
1	0	STAL	LIBNUM=1	121-28		
7	0	STL	LIBNUM=1	59-25, 59-38, 60-06, 80-47, 97-06, 102-41, 103-24		
47	0	STM	LIBNUM=1	24-46, 29-40, 32-19, 37-31, 37-32, 39-44, 45-14, 45-22, 48-03, 48-05, 48-38, 48-39, 49-21, 49-27, 49-28, 49-35, 50-17, 50-22, 51-30, 54-06, 54-08, 54-09, 58-14, 59-14, 62-43, 62-46, 67-32, 71-30, 74-16, 74-26, 74-27, 96-04, 96-06, 96-11, 97-19, 97-24, 97-26, 97-38, 103-40, 103-44, 103-48, 109-19, 109-21, 111-43, 111-44, 111-45, 111-47		
1	0	STX	LIBNUM=1	92-22		
58	0	TBN	LIBNUM=1	24-41, 25-12, 25-41, 25-47, 26-02, 32-01, 40-06, 44-16, 47-34, 47-42, 51-02, 51-06, 53-12, 53-18, 55-40, 57-39, 57-41, 61-04, 61-08, 62-30, 62-44, 65-12, 65-15, 65-17, 67-45, 68-38, 72-27, 79-27, 80-23, 80-31, 81-31, 82-02, 84-20, 84-40, 89-29, 89-31, 90-06, 90-08, 90-10, 90-18, 95-47, 96-08, 96-14, 96-30, 96-32, 98-25, 99-43, 101-29, 102-37, 103-16, 103-46, 105-37, 108-14, 109-11, 110-08, 115-02, 116-19, 128-09		
1	0	TBR	LIBNUM=1	126-21		
50	0	TBS	LIBNUM=1	24-23, 25-49, 26-49, 30-12, 35-09, 40-03, 40-36, 41-28, 44-28, 45-18, 49-04, 49-14, 49-17, 49-19, 50-06, 53-22, 57-35, 58-09, 59-09, 61-38, 61-44, 62-08, 62-38, 65-22, 70-38, 71-06, 71-15, 72-07, 72-32, 73-12, 74-03, 74-06, 74-36, 74-46, 79-37, 80-43, 82-22, 84-16, 84-22, 84-37, 85-14, 85-18, 85-46, 86-40, 87-28, 90-12, 102-08, 111-48, 120-15, 121-23		
1	0	TCC1	LIBNUM=1	44-19		
13	0	TIO	LIBNUM=1	40-42, 80-14, 81-43, 82-09, 82-15, 82-36, 82-45, 83-10, 83-39, 84-14, 84-29, 87-17, 105-24		
2	0	TMIO	LIBNUM=1	80-16, 105-34		
11	0	TZ	LIBNUM=1	26-42, 54-26, 61-11, 82-24, 96-28, 111-14, 111-32, 112-06, 112-34, 128-18, 128-23, 35-13, 127-08		
2	0	XI	LIBNUM=1	60-01		
1	0	XR	LIBNUM=1	54-30, 70-36, 95-06, 102-40, 109-20		
5	0	ZBN	LIBNUM=1	26-09, 27-01, 27-03, 30-19, 30-23, 33-33, 35-18, 37-25, 41-41, 42-21, 44-31, 49-29, 50-02, 50-03, 51-35, 55-22, 56-10, 58-07, 58-21, 59-10, 61-14, 61-40, 70-39, 71-11, 71-46, 74-38, 75-18, 75-23, 75-47, 79-43, 85-16, 85-39, 86-42, 115-12, 120-35, 125-12, 130-08, 134-22, 134-30, 135-13, 136-13		
29	0	ZR	LIBNUM=1	33-35, 36-20, 37-22, 46-04, 47-44, 48-37, 49-26, 51-29, 55-23, 59-24, 60-21, 62-40, 65-46, 66-04, 71-29, 74-25, 78-45, 79-10, 85-22, 87-19, 90-05, 96-07, 96-39, 97-05, 98-23, 109-10, 111-12, 121-21, 128-06		

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COUNT FLAG

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5 F  
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81-05

6 FLAG(S) FOUND IN THIS ASSEMBLY

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