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,REM

IDENTIFICATION

PRODUCT CODE: AC-A797F-MC
PRODUCT NAME: CZTECF0 TM03-TE16/TU77 BASIC FUNCTION TEST
DATE CREATED: 15 MARCH 1984
MAINTAINER: TAPE DIAGNOSTIC ENGINEERING
AUTHOR: J. HITT

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1. ABSTRACT

THIS PROGRAM IS INTENDED TO TEST ALL OF THE BASIC FUNCTIONAL LEVEL OPERATIONS OF THE TMO3/TE16 MAG TAPE SYSTEM. ALL FUNCTIONS, WRITE, READ, SPACE, ERASE, REWIND, ETC, WILL BE TESTED. IN ADDITION TO THE TMO3/TE16 TESTS, THE RM WILL BE TESTED SEPARATELY IN SO FAR AS IT IS POSSIBLE TO SEPARATE THE RM FROM THE TMO3/TE16 ITSELF.

2. REQUIREMENTS (HARDWARE)

- A. ANY PDP11 PROCESSOR
- B. 8K OF CORE
- C. CONSOLE TTY
- D. TMO3 MAGTAPE CONTROLLER
- E. MASS BUS CONTROLLER
- F. TE16 MAG TAPE TRANSPORT

3. LOADING PROCEDURE

USE STANDARD BINARY LOADING PROCEDURE

4. STARTING PROCEDURE

THERE ARE TWO (2) STARTING ADDRESSES THAT MAYBE USED: 200(8) AND 210(8)

- A. 200(8): STARTING AT THIS ADDRESS WILL CAUSE THE PROGRAM IDENTIFICATION TO BE PRINTED FOLLOWED BY REQUESTS FOR THE VARIOUS PARAMETERS NEEDED BY THE PROGRAM.
- B. 210(8): THIS ADDRESS IS INTENDED FOR USE AS A RESTART ONLY AND WILL USE THE CURRENT PARAMETER VALUES.

••NOTE SEE ALSO SECTION 5 CONSOLE SWITCH SETTINGS
** TYPE FC TO RESTART PROGRAM @200.

4.1 AUTOMATIC MODE OPERATION

IF THIS PROGRAM IS LOADED AND RUN IN AUTOMATIC (CHAIN) MODES
DEFAULT RESPONSES TO OPERATOR REQUESTS ARE USED, AND ALL AVAIL-
ABLE TMO3/TE16 COMBINATIONS ARE TESTED. ADDITIONALLY THE SOFTWARE
SWR IS INVOKED WITH A SWITCH SETTING OF 000000
IF LOADED VIA ACT11 CHAIN MODE.

**EXCEPTION: IF THIS PROGRAM IS LOADED VIA TMDP CHAIN MODE THE
PROGRAM WILL NOT TEST TMO3 DRIVE 00, TE16 SLAVE 00.

**NOTE: IN ORDER TO CHANGE THE SETTING OF THE SOFTWARE SWR,
SET LOC: 176(SWREG:) TO THE DESIRED SETTING.

** NOTE: THIS PROGRAM CONTAINS AN OPERATOR ASSISTED SUBTEST. THIS
SUBTEST IS NOT EXECUTED IN CHAIN MODE. TO RUN LOAD THE
PROGRAM IN DUMP MODE.

4.2 SAMPLE START AT 200

NOTE: DEFAULT RESPONSES ARE SHOWN IN ANGLE BRACKETS <>,
OPERATOR RESPONSES ARE SHOWN IN PARENTHESES (), AND
LOCATIONS CONTAINING THE DEFAULT ARE SHOWN IN [].
TO INVOKE THE DEFAULT RESPONSE TYPE (CR), NON-STANDARD
MODE FOR JUMPERS IS M8931 (W2-IN), M8937 (W2-IN, W1-OUT).

PARAMETER REQUEST: <DEFAULT> (RESPONSE) [LOCATION:]

TMO3-TE16/TU77 BASIC FUNCTIONS TEST (DZTEC-B)
TYPE 'C' TO RESTART

REGISTER START: <172440> (CR) [REGS:]
VECTOR ADDRESS: <224> (CR) [VECT:]
IS CONTROLLER JUMPED IN NON-STANDARD MODE
TYPE 2 FOR NON-STANDARD OR CR FOR STANDARD: <3> [JUMPER:]
DRIVE NUMBER: <0> (CR) [DRVN:]
SLAVE NUMBER: <0> (CR) [SLVN:]
SERIAL NO: 12545
RM ONLY (NO=0, YES=1): <0> (0) [RHQS:]
IF THE SOFTWARE SWR IS INVOKED:
SWR * <000000> NEW * (CR)

5. CONSOLE SWITCH SETTING

CONTROL:

1) CONTROL G <+G>:
SELECTS THE SOFTWARE SWR AND ALLOWS THE USER TO SELECT NEW SWITCH SETTINGS.

THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW=
WHERE: XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWR.
AFTER THE 'NEW=' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE
OF THE FOLLOWING AT THE TTY:
A) TYPE A NEW SWITCH SETTING
B) IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH
REGISTER CONTENTS WILL NOT BE CHANGED.

2) CONTROL A <+A>:
ALTERNATES USAGE OF SWR FROM HARDWARE TO SOFTWARE & VICE VERSA.

3) CONTROL C <+C>:
RESTARTS PROGRAM AT 200

4) CONTROL U <+U>:
DELETES ALL CHARACTERS TYPED IN RESPONSE TO A REQUEST.

ALL SWITCHES EXCEPT 5-9 ARE USED AND THE NORMAL, OR DEFAULT,
RUN IS DONE WITH ALL SWITCHES SET TO ZERO (0).
ALL HARDWARE SWITCHES ARE DYNAMIC, AND MAY BE CHANGED AT ANY TIME.

SW15(100000):	1-HALT ON ERROR 0-CONTINUE
SW14(040000):	1-LOOP ON ERROR (SCOPE; RH TESTS ONLY) 0-CONTINUE
SW13(020000):	1-DO NOT PRINT ERRORS 0-PRINT ALL ERRORS
SW12(010000):	1-CONTINUOUS CYCLE 0-HALT AT END OF PASS
SW11(004000):	1-INHIBIT ITERATION 0-DO ALL ITERATIONS PER TEST
SW10(002000):	1-HALT AT END OF CURRENT TEST 0-CONTINUE
SW9-5:	N/A
SW4 0:	SELECT TEST NUMBER::00-ALL TESTS

THE USE OF SW0-4 IS TO ALLOW SELECTION AND CONTINUOUS
EXECUTION OF ANY TEST. THE TEST SELECTION MAY BE CHANGED AT
ANY TIME, HOWEVER IT IS ADVISABLE TO USE SW10 TO STOP THE
PROGRAM AT THE END OF THE CURRENT TEST BEFORE SELECTING A TEST.

6. ERROR PRINTOUTS

THE ERROR PRINTOUTS FOR EACH TEST WILL APPEAR IN THE SAME GENERAL FORMAT. THE FIRST LINE WILL ALWAYS SHOW THE TEST NUMBER AND ITS TITLE. THE SECOND LINE WILL BE AN EXPLANATION OF THE ERROR. THE FOLLOWING LINES WILL SHOW THE APPROPRIATE REGISTER OR ADDRESS VALUES THAT ARE APPLICABLE TO THE INDIVIDUAL TEST

EXAMPLES:

1. THIS EXAMPLE SHOWS A TYPICAL ERROR PRINTOUT FOR THE WRITE READ TEST: A WRITE CRC ERROR OCCURRED ON SLAVE 6.

FT13: WRITE-READ TEST
WRITE ERROR NR7

CS1	WC	BA	FC	CS2	DS	ER	TC
144260	000000	015650	000000	000103	150600	100000	101306

2. THIS EXAMPLE SHOWS A TYPICAL SPACE ERROR:
THE FC IS NOT ZERO AT THE END OF THE OPERATION.

FT14: SPACE TEST
SPACE REVERSE ERROR NR2

CS1	WC	BA	FC	CS2	DS	ER	TC
144230	177700	017162	177740	000114	150600	001000	161700

3. THIS EXAMPLE SHOWS A SPACE OPERATION WHICH RESULTED IN
INCORRECT POSITIONING. SHOULD BE AT RECORD 20, IS AT RECORD 22.

FT14: SPACE TEST
POSITION ERROR:
REVERSE ERROR EXPT:20 RCVD:22

7. OPERATION

THE PROCEDURES FOR OPERATING THIS PROGRAM ARE QUITE SIMPLE
AND REQUIRE ONLY A FEW STEPS:

1. LOAD ADDRESS 200 OR 210
2. SET SWITCHES FOR DESIRED TEST CYCLE
****REFER TO SECTION 5 FOR DYNAMIC LOADING
OF SOFTWARE SWITCH REGISTER.***
3. PRESS START
4. ENTER APPROPRIATE RESPONSES TO THE TTY REQUESTS

ALL HARDWARE SWITCHES ARE DYNAMIC AND MAY BE CHANGED AT ANY
TIME. THE NORMAL, OR DEFAULT, OPERATING SEQUENCE IS ALL
SWITCHES DOWN (ZERO). THE END OF EACH PASS IS NOTED BY A
MESSAGE STATING END OF PASS AND THE NUMBER OF THAT PASS.

*****FOR THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER REFER TO SECTION 5 *****

SINGLE TEST SELECTION: (SW0 SW4)

WHEN SW0-4 ARE SET TO ZERO (00) THE SCHEDULAR WILL
EXECUTE ALL OF THE TESTS IN SEQUENCE. IF SW0-4 IS
SET TO SOME SPECIFIC TEST NUMBER THAT PARTICULAR TEST
WILL BE EXECUTED CONTINUOUSLY. ANY TEST MAY BE SINGLE
SELECTED IN ANY ORDER; HOWEVER, THE BEST WAY TO AFFECT
THE CHANGE IS TO USE SW10 TO HALT THE CURRENT TEST, THEN
CHANGE NUMBER AND PRESS CONTINUE.

8. SUBTEST SUMMARIES

THE FOLLOWING IS A LIST OF ALL TESTS IN THEIR PROPER SEQUENCE.
A BASIC DESCRIPTION OF EACH TEST IS PROVIDED TO AID IN UNDERSTANDING
OF THE ERROR MESSAGES ASSOCIATED WITH EACH ONE.

A. RH TESTS: THE FIRST TEN (10) TESTS WILL PERFORM BASIC RH
OPERATIONS AS FAR AS IS POSSIBLE WITHOUT REQUIRING
THE TMO3-TE16/TU77 ITSELF. (SEE RH ONLY OPTION; PAR 7)

FT1: RH ADDRESSING: THIS TEST WILL ASSURE THAT THE
RH WILL RESPOND WITHOUT CAUSING A BUS
TRAP TO ALL TMO2 REGISTER ADDRESS
IN SEQUENCE STARTING AT THE ADDRESS
OF CS1 ENTERED BY THE OPERATOR.

FT2: RH REGISTER BITS READ/WRITE: THIS TEST WILL ASSURE THAT
ALL BITS OF THE RH WRITE/READ REGISTERS
CAN BE SET AND RESET.

FT3: RH INITIALIZE: THIS TEST WILL ASSURE THAT A RH INITIALIZE
(BIT 5 OF CS2+1) WILL INDEED CLEAR
THE RH ERRORS.

* FT4: SILO TEST 1: THIS TEST WILL ASSURE THAT A READ FROM
AN EMPTY SILO WILL CAUSE DLT TO SET.

* FT5: SILO TEST 2: THIS TEST WILL ASSURE THAT BOTH THE
IR AND OR BITS WILL CORRECTLY RESPOND
TO LOADING OF THE SILO WITH ALL ZEROS
AND THEN A WORD OF ALL ONES.

* FT6: SILO TEST 3: THIS TEST WILL WRITE AND THEN READ
THE ENTIRE SILO TO ASSURE THAT DATA CAN
BE PROPERLY FILLED AND READ. ALSO THE
PROPER STATUS OF IR AND OR ARE CHECKED.

* FT7: SILO TEST 4: THIS TEST WILL ASSURE PROPER RH11
RESPONSE TO SILO OVERFLOW.

* FT10: SILO TEST 5: THIS TEST WILL ASSURE SILO RESET
BY RH11 INITIALIZE.

*** NOTE: SILO TESTS (FT4-FT10) ARE FOR THE RH11 ONLY. *****

B. TM03-TE16/TU77 BASIC FUNCTIONS: THE FOLLOWING FOURTEEN (14)
TESTS WILL ASSURE OPERATION OF THE
MAG TAPE BASIC FUNCTIONS.

FT11: NOP TEST: THIS TEST WILL ASSURE THAT THE NOP
FUNCTION EXECUTES WITH NO ERROR.

FT12: REWIND TEST: THIS TEST WILL ASSURE THAT THE REWIND
FUNCTION WILL POSITION THE TAPE TO
BOT WITH NO ERROR.

1. ISSUE A REWIND COMMAND
2. AWAIT PIP RESET (MOTION STOPPED)
3. ASSURE THAT NO ERROR OCCURED
4. END

FT13: WRITE/READ TEST: THIS TEST WILL ASSURE THAT
THE UNIT UNDER TEST CAN WRITE AND
READ IN ALL DENSITIES (FOR BOTH PE AND NR/).

1. REWIND TO BOT
2. WRITE 100 RECORDS
 - A. ALL ONES DATA
 - B. 200 FRAMES
 - C. 200 BPI; ODD
3. CHECK FOR ERRORS ON EACH RECORD
4. READ REVERSE THEN FORWARD ALL 100 RECORDS
5. CHECK FOR ERRORS ON EACH RECORD
6. REPEAT STEPS 2 THRU 5 FOR 556,800,1600 BPI
7. END.

DATA READ IS NOT CHECKED; ONLY THE FUNCTION IS TESTED, NOT THE MEDIUM.

FT14: SPACE TEST: THIS TEST WILL ASSURE THAT PROPER
POSITIONING IS MAINTAINED BY BOTH
SPACE FORWARD AND REVERSE.

1. REWIND TO BOT
2. WRITE 100 RECORDS
 - A. EACH RECORD IS ONE FRAME LARGER THAN THE LAST.
THIS WILL ALLOW FOR POSITION CHECKING BY RECORD SIZE.
3. EACH RECORD IS ERROR CHECKED.
4. DATA RELATED ERRORS ARE IGNORED.
5. NOW SPACE REVERSE 77 RECORDS AND
READ REVERSE 1, THE FRAME COUNT
SHOULD BE 100.
THIS IS THE SIZE OF THE FIRST RECORD.
6. NOW SPACE FORWARD 76 RECORDS AND READ
FORWARD 1, THE FRAME COUNT SHOULD BE 177.
THIS IS THE SIZE OF THE NEXT TO LAST RECORD.
7. CONTINUE THE SPACE AND READ (DECREMENTING THE RECORD COUNT EACH TIME)
UNTIL ALL POSITIONS HAVE BEEN CHECKED. IF POSITION IS LOST; TEST ENDS.
8. REPEAT STEPS 1 THRU 7 FOR PE.
9. END

FT15: ERASE TEST: THIS TEST WILL ASSURE THAT THE ERASE
FUNCTION WILL INDEED ERASE TAPES.

1. REWIND TO BOT
2. ISSUE 200 ERRASE COMMANDS.
3. ASSURE NO ERRORS FOR EACH COMMAND.
4. REWIND TO BOT.
5. ISSUE A READ FORWARD COMMAND.
6. THE TAPE SHOULD MOVE FORWARD UNTIL
STOPPED BY OPI (APPROX 25 FT).
7. ASSURE NO ERRORS OTHER THAN OPI.
8. END

FT16: TAPE MARK WRITE/READ: THIS TEST WILL ASSURE THAT
A TAPE MARK CAN BE WRITTEN AND READ
IN BOTH PE AND NRZ.

1. REWIND TO BOT.
2. ISSUE A WRITE TAPE MARK COMMAND.
3. ASSURE NO ERRORS.
4. ASSURE THAT TAPE MARK STATUS IS SET
IN DRIVE STATUS (BIT 2).
5. READ REVERSE.
6. ASSURE THAT TAPE MARK IS SET.
7. ASSURE THAT NO ERRORS OTHER THAN FCE OCCURED.
8. READ FORWARD.
9. REPEAT STEPS 6 AND 7
10. REPEAT STEPS 1 THRU 9 FOR PE.
11. END

FT17: TAPE MARK SPACE TEST: THIS TEST WILL ASSURE THAT
SPACING WILL BE TERMINATED BY RECOGNITION
OF TAPE MARK BOTH IN PE AND NRZ.

1. REWIND TO BOT.
2. WRITE THE FOLLOWING PATTERN OF
TAPE MARKS AND DATA RECORDS:

TM:20 RECS:TM:40 RECS:TM:60 RECS:TM:100 RECS:TM:

3. ASSURE NO ERRORS.
4. ASSURE THAT TAPE MARK STATUS IS SET FOR TM WRITES.
5. NOW SPACE REVERSE 200 RECORDS.
6. THE SPACE OPERATION SHOULD STOP ON EACH
TAPE MARK IT FINDS. THEREFOR 5 SPACE
COMMANDS ARE ISSUED TO COVER THE ENTIRE
PATTERN WRITTEN ON TAPE.
BOT SHOULD NEVER BE REACHED AND THE
FRAME COUNT WILL REFLECT
THE NUMBER OF RECORDS BETWEEN
TAPE MARKS.
7. REPEAT STEP 6 IN THE FORWARD DIRECTION.
8. ASSURE NO ERRORS OTHER THAN FCE.
9. REPEAT STEPS 1 THRU 8 FOR PE
10. END

FT20: WRITE CHECK TEST: BOTH WRITE CHECK FORWARD AND REVERSE ARE
TESTED IN BOTH PE AND NRZ.

1. REWIND TO BOT.
2. WRITE A 400 FRAME RECORD USING DATA
PATTERN 3 (100 25).
3. ASSURE NO ERRORS OCCURED.
4. ISSUE A REVERSE WRITE CHECK COMMAND.
5. ASSURE NO ERRORS OCCURED.
6. REPEAT STEP 5 FOR A FORWARD WRITE CHECK.
7. REPEAT STEPS 1 THRU 6 FOR PE.
8. END

FT21: ERASE HEAD TEST: THIS TEST WILL ASSURE THAT THE
ERASE HEAD ITSELF IS OPERATING.

1. REWIND TO BOT.
2. WRITE 2 RECORDS OF 800(10) FRAMES
EACH. EACH RECORD WILL BE 1 INCH
OF TAPE. DATA IS NOT ALL ONES.
3. REWIND TO BOT.
4. NOW WRITE A 400(10) FRAME RECORD.
THIS RECORD WILL BE ONE HALF
INCH OF TAPE. THE ERASE HEAD
SHOULD CLEAR THE REMAINDER OF THE
FIRST RECORD (ONE HALF INCH).
5. REWIND TO BOT.
6. NOW READ THE SHORT FIRST RECORD.
IT SHOULD BE 400(10) FRAMES.
7. NOW READ THE SECOND RECORD.
IT SHOULD BE STILL 800(10)
FRAMES.
8. IF THE SECOND RECORD IS TOO LONG,
THE ERASE HEAD DID NOT FUNCTION OR
IT IS IN THE WRONG POLARITY.
10. END

FT22: BUFFERED COMMAND: THIS TEST WILL ASSURE THAT THE
TMO2 WILL ACCEPT AND EXECUTE ANOTHER
COMMAND WHILE ITS SELECTED SLAVE IS REWINDING.

1. REWIND TO BOT.
2. ISSUE 3 LONG WRITE COMMANDS TO ASSURE
BEING OFF BOT.
3. ISSUE A REWIND COMMAND.
4. AS SOON AS DRIVE READY BECOMES SET,
ISSUE ANOTHER WRITE COMMAND.
5. THE NEXT DRIVE READY SHOULD BE AFTER THE
TAPE HAS REACHED BOT AND EXECUTED THE
BUFFERED WRITE COMMAND.
6. ASSURE NO ERRORS OCCURED.
7. END

FT23: READ IN PRESET: THIS TEST WILL ASSURE THAT UNIT 0
IS REWOUND AND SET TO 800 BPI NORMAL.
(ONLY IF SLAVE 0 IS SELECTED).

1. ISSUE A WRITE COMMAND TO ASSURE
BEING OFF BOT.
2. ISSUE THE READ-IN PRESET COMMAND.
3. AWAIT MOTION STOP.
4. ASSURE THAT BOT WAS REACHED.
5. ASSURE THAT THE TAPE CONTROL REGISTER
IS SET TO 800 BPI,NORMAL,ODD.
6. END

(THIS TEST IS ONLY PERFORMED IF THE SELECTED SLAVE IS ZERO (0)).

FT24: AUTOMATIC DENSITY SELECTION -WRITE NRZ,READPF:
THIS TEST ASSURES THAT AN NRZ WRITTEN
TAPE WHEN READ AS PE WILL SWITCH THE
SLAVE TO NRZ MODE.

1. REWIND SLAVE
2. WRITE AN NRZ RECORD
3. REWIND SLAVE
4. READ RECORD IN PE MODE
5. CHECK DS REG PES BIT=0
6. END

FT25: AUTOMATIC DENSITY SELECTION-WRITE PE,READ NRZ:
THIS TEST ASSURES THAT A PE WRITTEN
TAPE WHEN READ AS NRZ WILL SWITCH
THE SLAVE TO PE MODE.

1. REWIND SLAVE
2. WRITE A PE RECORD
3. REWIND A SLAVE
4. READ RECORD IN NRZ MODE
5. CHECK DS REG PES BIT=1
6. END.

FT27: REWIND: OFF LINE THIS TEST WILL ASSURE
THAT THE UNIT WILL REWIND AND
GO OFF LINE. (NOT IF IN CONTINUOUS CYCLE)

1. ISSUE THE REWIND OFF-LINE COMMAND.
2. ASSURE THAT MOL (BIT 12 OF DRIVE STATUS)
IS RESET INDICATING THE UNIT WENT OFF LINE.
3. END

(THIS TEST IS NOT PERFORMED WHEN CONTINUOUS CYCLE OPERATION IS SELECTED: SW 12 = 1)

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```
.LIST BIN,LOC,SEQ
.TITLE CZTECF0 IM03-TE16/TU77 BFT
;BASIC FUNCTION TEST
;AC-A797F-MC
;FCB 77
;J.G. ADAMS

;REVISED JUN 1977 BY J.G. ADAMS ;++B ADDED TU77 CAPABILITY
;REVISED NOV 1978 BY MIKE PAGE ;+ DESIGNATES CODE ADDED FOR
;NON-STANDARD JUMPER CONFIG.
;REVISED MAY 1983 BY B. LEBLANC ;BL FIXED CC0000810,CC0001688
;REVISED SEP 1983 BY B. LEBLANC ;; FIXED CC0001619,CC0001743
;REVISED MARCH 1984 BY J. HITT ;ADDED XON/XOFF FUNCTIONALITY

.MCALL .,ACT11,,$EOP,$CATCH,$SAVE,$RESTORE,$CHAIN,$CHNMODE
.NLIST MC
.LIST ME
.ENABLE ABS,AMA

;CONSOLE SWITCHES*****
;
;SW15(100000): 1=HALT ON ERROR
;              0=CONTINUE
;SW14(040000) 1=LOOP ON ERROR (SCOPE(040000) RH TESTS ONLY)
;              0=CONTINUE
;SW13(02000): 1=DO NOT PRINT ERRORS
;              0=PRINT ERRORS
;SW12(010000): 1=HALT AT END OF PASS
;              0=CONTINUOUS CYCLE
;SW11(40000): 1=INHIBIT ITERATIONS
;              0=DO ITERATIONS
;SW10(002000): 1=HALT AT END OF EACH TEST
;              0=CONTINUE
;SW0 4:       SELECT TEST NUMBER :: 00=ALL TESTS
;USE SOFTWARE SWR IF HARDWARE SWR <15::00> * 177777 OR NOT AVAIL.
```



```

629                                     ;REGISTER EQUIVS*****
630
631                                000000      R0=*0
632                                000001      R1=*1
633                                000002      R2=*2
634                                000003      R3=*3
635                                000004      R4=*4
636                                000005      R5=*5
637                                000006      SP=*6
638                                000007      PC=*7
639
641
642
(1)
(1)                                000764      ;ACT11 HOOK *****
(1)                                000042      $SVPC*,          ;SAVE CURRENT LOCATION CTR
(1)                                000000      .*42
(1) 000042 000000      .WORD 0
(1)                                000046      .*46
(1) 000046 003226      .WORD $ENDAD          ;SET LOCATION 46
(1)                                000052      .*52
(1) 000052 000000      .WORD 0              ;SET LOCATION 52 = 0
(1)                                000764      .*$SVPC          ;RESTORE LOCATION CTR
(1)
643                                     ;TTY INTERRUPT VECTOR*****
644
645                                .*60
646 000060 013576      .WORD TTINT          ;TTY INTERRUPT HEADER ADDRESS
647 000062 000340      .WORD 340           ;PRIORITY LEVEL 7
648
649                                     ;SOFTWARE SWITCH REGISTER*****
650                                     ;USED IF HARDWARE SWR <15:100> = 177777 OR NOT AVAIL.
651
652                                .*176
653 000176 000000      SWREG: 0             ;SOFTWARE SWITCH REGISTER
654
655
656                                     ;START ADDRESS*****
657
658                                .*200
659 000200 000137 001600      JMP START      ;PROGRAM START
660
661                                     ;RESTART ADDRESS*****
662                                .*210
663 000210 000137 002540      JMP ST4
664
665                                     ;IM03 INTERRUPT VECTOR*****
666
667                                .*224
668 000224 013566      MTINT          ;TAPE INTERRUPT HANDLER ADDRESS
669 000226 000340
670

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D.P

SEQ 0016

672				
673	000510		.510	
674			MASS BUS REGISTER EQUIVS*****	
675				
676	000510	172440	C1:	172440
677	000512	172442	WC:	172442
678	000514	172444	BA:	172444
679	000516	172446	FC:	172446
680	000520	172450	CS:	172450
681	000522	172452	DS:	172452
682	000524	172454	ER:	172454
683	000526	172456	AS:	172456
684	000530	172460	CC:	172460
685	000532	172462	DB:	172462
686	000534	172464	MR:	172464
687	000536	172466	DT:	172466
688	000540	172470	SN:	172470
689	000542	172472	IC:	172472
690	000544	172474	BAE:	172474
691				
692			CONSTANTS*****	
693				
694	000546	177776	PSW:	177776
695	000550	177570	SWR:	177570
696	000552	177560	TKS:	177560
697	000554	177562	TKB:	177562
698	000556	177564	TPS:	177564
699	000560	177566	TPB:	177566
700	000562	177777	SERNUM:	177777
701	000564	000011	DRVTP:	011
702	000566	000010	ITAMT:	10
703	000570	000224	VECT:	224
704	000572	172440	REGS:	172440
705	000574	000004	BTRP:	4
706	000576	000006	BTRP2:	6

PROCESSOR STATUS
SWITCH REGISTER
TTY READER STATUS
TTY READ BUFFER
TTY PUNCH STATUS
TTY PUNCH BUFFER
SERIAL NUMBER
DRIVE TYPE
ITERATION AMOUNT
INTERRUPT VECTOR(RH)
STARTING REGISTER ADDRESS
BUS TRAP ADDRESS
BUS TRAP PRIORITY LEVEL 7

E2

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		IFLAGS AND COUNTERS*****
708		
709		
710	000600	000000
711	000602	000000
712	000604	000000
713	000606	000000
714	000610	000000
715	000612	000000
716	000614	000000
717	000616	000000
718	000620	000000
719	000622	000000
720	000624	000000
721	000626	000000
722	000630	000000
723	000632	000000
724	000634	000000
725	000636	000000
726	000640	000000
727	000642	000000
728	000644	000000
729	000646	000000
730	000650	000000
731	000652	000000
732	000654	000000
733	000656	000000
734	000660	000000
735	000662	000000
736	000664	000000
737	000666	000000
738	000670	000000
739	000672	000000
740	000674	000000
741	000676	000000
742	000700	000000
743	000702	000000
744	000704	000000
745	000706	000000
746	000710	000000
747	000712	000000
748	000714	000000
749	000716	000000
750	000720	000000
751	000722	000000
752	000724	000000
753	000726	000000
754	000730	000000
755	000732	000000
756	000734	000000
757	000736	000000
758	000740	000000
759	000742	000000
760		

F2

CZTECF0 IM03-TE16-1077 BFI
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SEQ 0018

762
763
764
765
766
767
768
769

000744 000000
000746 013262
000750 013302
000752 013306
000754 013314

DATA PATTERN GENERATORS*****

DATBL: 0
DATA0: DAT1 ;ALL ONE BITS
DATA1: DAT2 ;ALL ZERO BITS
DATA2: DAT3 ;ALTERNATING ONE/ZERO BITS
DATA3: DAT4 ;ALL BITS 0-377

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SEQ 0019

771

772

773

774 000756 000000

775 000760 000000

776 000762 003270

777 000764 003270

778 000766 003376

779 000770 003376

780 000772 003720

781 000774 003720

782 000776 004140

783 001000 004140

784 001002 004266

785 001004 004266

786 001006 004460

787 001010 004460

788 001012 004732

789 001014 004732

790 001016 005026

791 001020 005026

792 001022 005162

793 001024 005162

794 001026 005300

795 001030 005300

796 001032 005412

797 001034 005412

798 001036 005724

799 001040 005724

800 001042 006576

801 001044 006576

802 001046 007210

803 001050 007210

804 001052 007436

805 001054 007436

806 001056 010040

807 001060 010040

808 001062 010264

809 001064 010264

810 001066 010616

811 001070 010616

812 001072 011022

813 001074 011022

814 001076 011242

815 001100 011242

816 001102 011434

817 001104 011434

818 001106 011626

819 001110 011626

820 001112 012064

821 001114 012064

822 001116 003162

823 001120 000027

824 001122 000000

LOGIC TEST ENTRY TABLE*****

TSTTBL: 0

0

FT1

FT1

FT2

FT2

FT3

FT3

FT4

FT4

FT5

FT5

FT6

FT6

FT7

FT7

FT10

FT10

FT11

FT11

FT12

FT12

FT13

FT13

FT14

FT14

FT15

FT15

FT16

FT16

FT17

FT17

FT20

FT20

FT21

FT21

FT22

FT22

FT23

FT23

FT24

FT24

FT25

FT25

FT26

FT26

FT27

FT27

LAST: .WORD TEND
\$CNTRL5: .WORD 27
0

CONTAINS # OF TESTS
XON/XOFF FLAG

```

826      001600      .1600
827      ;PROGRAM START AND HOUSEKEEPING*****
828
829 001600 012706 000500      START: MOV    $500,SP      ;SET STACK POINTER
830 001604 013746 000006      MOV    $06,-(SP)      ;SAVE VECTORS
831 001610 013746 000004      MOV    $04,-(SP)
832 001614 012737 001640 000004      MOV    $1,$004      ;SET UP FOR TIMEOUT
833 001622 005037 000006      CLR     $06
834 001626 022777 177777 176714      CMP    $-1,$SWR      ;REFERENCE HARDWARE SWITCH REGISTER
835 001634 001402      BEQ     $2
836 001636 000404      BR      $3
837 001640 022626      1$:    CMP    (SP),-(SP)+      ;ADJUST STACK
838 001642 012737 000176 000550      2$:    MOV    $SWREG,SWR      ;POINT TO SOFTWARE SWITCH REG
839 001650 012637 000004      3$:    MOV    (SP),-$04      ;RESTORE VECTORS
840 001654 012637 000006      MOV    (SP),-$06
841 001660 005027      CLR     (PC)+      ;CLEAR CHAIN INDICATOR
(1) 001662 000000      CHNFLG: .WORD 0      ;CHAIN MODE INDICATOR
(1)
(1) 001664 005737 000042      TST     $042      ;1/0 - CHAIN/NOT CHAIN MODE
(1) 001670 001407      BEQ     $0$      ;BRANCH IF IN DUMP MODE
(1) 001672 012737 000176 000550      MOV    $SWREG,SWR      ;INVOKE SOFTWARE SWR
(1) 001700 005237 001662      INC     CHNFLG      ;SET CHNFLG - CHAIN MODE
(1) 001704 000137 001710      JMP     SCHN      ;GO TO CHAIN ADDRESS
(1) 001710
842 001710 000240      50$:    SCHN: NOP
843 001712 122737 000006 000041      4$:    CMPB   $6,$041      ;BRANCH IF LOADED VIA TMDP (DUMP MODE)
844 001720 001005      BNE     $5
845 001722 012704 020214      MOV    $MSG69,R4      ;ADVISE USER TO REMOVE TMDP FROM OUT
846 001726 004737 014414      JSR     PC,$TOUT
847 001732 000000      HALT
848 001734 012704 015563      5$:    MOV    $MSG3,R4
849 001740 004737 014414      JSR     PC,$TOUT      ;PRINT TITLE
850 001744 005737 001662      TST     CHNFLG      ;SEE IF IN CHAIN MODE
851 001750 001402      BEQ     $6$      ;IF NOT: BR
852 001752 000137 002554      JMP     TSCD      ;ELSE GO START TEST
853 001756 112737 000043 015563      6$:    MOVB   $0,$MSG3      ;DO NOT PRINT TITLE ON RESTART
854 001764 012704 015723      STOB:  MOV    $MSG4,R4
855 001770 004737 014414      JSR     PC,$TOUT      ;REQUEST REGISTER ADDRESS
856 001774 013703 000572      MOV    REGS,R3
857 002000 004737 014630      JSR     PC,$CTP      ;PRINT CURRENT ADDRESS
858 002004 012705 000572      MOV    $REGS,R5      ;SET ADDRESS SAVE LOC
859 002010 012701 000007      MOV    $7,R1      ;SET SIZE OF RESPONSE
860 002014 012702 176400      MOV    $176400,R2      ;SET UPPER LIMIT
861 002020 012703 172300      MOV    $172300,R3      ;SET LOWER LIMIT
862 002024 004737 014072      JSR     PC,$TR      ;GO GET RESPONSE
863 002030 012704 015746      MOV    $MSG5,R4
864 002034 004737 014414      JSR     PC,$TOUT      ;REQUEST VECTOR
865 002040 013703 000570      MOV    VECT,R3
866 002044 004737 014630      JSR     PC,$CTP      ;PRINT CURRENT VECTOR
867 002050 012705 000570      MOV    $VECT,R5      ;SET ADDRESS SAVE LOC
868 002054 012701 000004      MOV    $4,R1      ;SET SIZE OF RESPONSE
869 002060 012702 000224      MOV    $224,R2      ;SET UPPER LIMIT
870 002064 012703 000150      MOV    $150,R3      ;SET LOWER LIMIT
871 002070 004737 014072      JSR     PC,$TR      ;GO GET RESPONSE
872 002074 013700 000570      MOV    VECT,R0      ;GET VECTOR
873 002100 012720 013566      MOV    $MTINT,(R0)+ ;LOAD INTERRUPT ADDRESS IN VECTOR

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SEQ 0021

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874 002104 012710 000340      MOV      #340,(R0)      ;LOAD PRIORITY
875 002110 013700 000572      MOV      REGS,R0      ;GET START OF REGS
876 002114 012701 000017      MOV      #17,R1      ;SET NUMBER OF REGS
877 002120 012702 000510      MOV      #C1,R2      ;GET START OF TABLE
878 002124 010022      ST0:    MOV      R0,(R2)+      ;BUILD TABLE
879 002126 062700 000002      ADD      #2,R0      ;BUMP ADDRESS
880 002132 005301      DEC      R1      ;SEE IF DONE
881 002134 001373      BNE      ST0      ;IF NOT: BR
882 002136 012702 000600      MOV      #T0B,R2
883 002142 012700 000054      MOV      #54,R0
884 002146 005022      ST1:    CLR      (R2)+      ;CLEAR FLAGS + COUNTERS
885 002150 005300      DEC      R0
886 002152 001375      BNE      ST1
887 002154 012737 000001 000722      MOV      #1,RHTF      ;SET ADDRESS TEST FLAG
888 002162 000137 003022      JMP      TSRH      ;GO DO INITIAL ADDRESS TEST PASS
889 002166 012704 016025      ST1A:   MOV      #MSG10A,R4
890 002172 004737 014414      JSR      PC,TTOUT      ;REQUEST JUMPER CONFIGURATION
891 002176 012705 000742      MOV      #JUMPER,R5      ;GET ADDRESS OF RESPONSE
892 002202 012701 000002      MOV      #2,R1      ;SET SIZE OF RESPONSE
893 002206 012702 000004      MOV      #4,R2      ;SET RANGE
894 002212 012703 000000      MOV      #0,R3      ;LOWER LIMIT
895 002216 004737 014072      JSR      PC,ITR      ;GET RESPONSE
896 002222 022737 000002 000742      CMP      #2,JUMPER      ;TEST FOR NON-STANDARD MODE
897 002230 001002      BNE      1$
898 002232 004737 013442      JSR      PC,NOST      ;MODIFY TEST SCHEDULE
899 002236 012704 016165      1$:    MOV      #MSG10,R4
900 002242 004737 014414      JSR      PC,TTOUT      ;REQUEST DRIVE NUMBER
901 002246 013703 000612      MOV      #DRVN,R3      ;GET CURRENT DRIVE #
902 002252 004737 014630      JSR      PC,OCIP      ;AND TYPE IT
903 002256 012705 000612      MOV      #DRVN,R5      ;SET ADDRESS OF DRIVE NUMBER SAVE
904 002262 012701 000002      MOV      #2,R1      ;SET SIZE OF RESPONSE
905 002266 012702 000007      MOV      #7,R2      ;SET UPPER LIMIT
906 002272 012703 000000      MOV      #0,R3      ;SET LOWER LIMIT
907 002276 004737 014072      JSR      PC,ITR      ;GO GET RESPONSE
908 002302 012777 000040 176210      MOV      #40,#ACS      ;SET INIT
909 002310 053777 000612 176202      BIS      #DRVN,#ACS      ;SET DRIVE NUMBER
910 002316 005777 176166      TST      #C1      ;ACCESS DRIVE
911 002322 032777 010000 176170      BIT      #10000,#ACS      ;SEE IF NED
912 002330 001405      BEQ      ST2      ;IF NOT: BR
913 002332 012704 017164      MOV      #MSG41,R4
914 002336 004737 014414      JSR      PC,TTOUT      ;PRINT NOT AVAIL
915 002342 000711      BR       ST1A      ;REDO DRIVE REQUEST
916 002344 012704 016205      ST2:    MOV      #MSG11,R4
917 002350 004737 014414      JSR      PC,TTOUT      ;REQUEST SLAVE NUMBER
918 002354 013703 000614      MOV      #SLVN,R3      ;GET CURRENT SLAVE #
919 002360 004737 014630      JSR      PC,OCIP      ;AND TYPE IT
920 002364 012705 000614      MOV      #SLVN,R5      ;SET ADDRESS OF SLAVE SAVE
921 002370 012701 000002      MOV      #2,R1      ;SET SIZE OF RESPONSE
922 002374 012702 000007      MOV      #7,R2      ;SET UPPER LIMIT
923 002400 012703 000000      MOV      #0,R3      ;SET LOWER LIMIT
924 002404 004737 014072      JSR      PC,ITR      ;GO GET RESPONSE
925 002410 012777 000040 176102      MOV      #40,#ACS      ;INIT
926 002416 053777 000612 176074      BIS      #DRVN,#ACS      ;SET DRIVE NUMBER
927 002424 013777 000614 176110      MOV      #SLVN,#C      ;LOAD SLAVE NUMBER
928 002432 032777 002000 176076      BIT      #2000,#C      ;SEE IF SLAVE PRESENT
929 002440 001005      BNE      ST3      ;IF SO: BR
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J2

SEQ 0022

930	002442	012704	017205	MOV	MSG42,R4	
931	002446	004737	014414	JSR	PC,TTOUT	;PRINT NON-EXIST SLAVE
932	002452	000734		BR	ST2	;REDO SLAVE REQUEST
933	002454	012704	017226	ST3: MOV	MSG43,R4	
934	002460	004737	014414	JSR	PC,TTOUT	;PRINT SERIAL NUMBER TAG
935	002464	017703	176050	MOV	SN,R3	
936	002470	004737	015156	JSR	PC,SNPT	;PRINT SERIAL NUMBER
937	002474	012704	020071	MOV	MSG62,R4	;GET REQUEST
938	002500	004737	014414	JSR	PC,TTOUT	;REQUEST RH11 ONLY RESPONSE
939	002504	013703	000726	MOV	RHOF,R3	;GET CURRENT FLAG SETTING
940	002510	004737	014630	JSR	PC,OCTP	;AND TYPE IT
941	002514	012705	000726	MOV	RHOF,R5	;SET FLAG ADDRESS
942	002520	012701	000002	MOV	R1	;SET SIZE OF RESPONSE
943	002524	012702	000001	MOV	R2	;SET UPPER LIMIT
944	002530	012703	000000	MOV	R3	;SET LOWER LIMIT
945	002534	004737	014072	JSR	PC,TTR	;GO GET RESPONSE
946						
947						
948	002540	012706	000500	ST4: MOV	500,SP	;SET STACK PTR
949	002544	005037	000730	CLR	PCNTR	;CLEAR PASS COUNTER
950	002550	004737	015260	JSR	PC,GTSWR	;GET SWITCHES

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SEQ 0023

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952                                     ;TEST SCHEDULAR*****
953
954 002554 052777 000100 175770 TSCD: BIS #100, @TKS ;SET KEYBOARD IE BIT
955 002562 005037 000704 CLR STFLG ;CLEAR SINGLE TEST FLAG
956 002566 005037 000604 CLR RH17F ;SET RH INDICATOR = RH11
957 002572 013746 000004 MOV @04, -(SP) ;SAVE ERROR TRAP VECTORS
958 002576 013746 000006 MOV @06, -(SP) ;AND PRIORITY
959 002602 012737 002630 000004 MOV @1$, @04 ;SET TIME OUT TRAP TO 1$ BELOW
960 002610 005037 000006 CLR @06
961 002614 005777 175724 TST @BAE ;REFERENCE BAE REGISTER
962 002620 012737 000001 000604 MOV @1, RH17F ;SET FLAG = RH70
963 002626 000401 BR 2$
964 002630 022626 1$: CMP (SP)+, (SP)+ ;RESET STACK
965 002632 012637 000006 2$: MOV (SP)+, @06 ;RESTORE ERROR TRAP
966 002636 012637 000004 MOV (SP)+, @04
967 002642 017700 175702 MOV @SWR, R0
968 002646 042700 177740 BIC @177740, R0
969 002652 001125 BNE STSCD ;GO SELECT SINGLE TEST
970 002654 005737 001662 TST CHNFLG ;BRANCH IF NOT IN CHAIN MODE
(1) 002660 001457 BEQ TSCDA
(1) 002662 012737 177777 000612 MOV @-1, DRVN ;INITIALIZE DRIVE #
(1) 002670 012737 177777 000614 NXTDRV: MOV @-1, SLVN ;INITIALIZE SLAVE #
(1) 002676 012777 000040 175614 1$: MOV @40, @CS ;INIT CONTROLLER
(1) 002704 005237 000612 INC DRVN ;STEP DRIVE #
(1) 002710 022737 000010 000612 CMP @10, DRVN ;EXIT IF ALL DRIVES TESTED
(1) 002716 001524 BEQ $DONE ;FOR AVAILABILITY
(1) 002720 013777 000612 175572 MOV DRVN, @CS ;LOAD DRIVE #
(1) 002726 005777 175556 TST @C1 ;ACCESS DRIVE
(1) 002732 032777 010000 175560 BIT @10000, @CS ;BRANCH IF DRIVE NON EXISTANT
(1) 002740 001356 BNE 1$ ;((NED = 1)
(1) 002742 005237 000614 NXTSLV: INC SLVN ;STEP SLAVE # AND BRANCH
(1) 002746 001011 BNE 1$ ;IF NOT SLAVE 0
(1) 002750 005737 000612 TST DRVN ;BRANCH IF NOT DRIVE # 0
(1) 002754 001006 BNE 1$
(1) 002756 122737 000006 000041 CMPB @6, @041 ;BRANCH IF NOT TMDP
(1) 002764 001002 BNE 1$
(1) 002766 005237 000614 INC SLVN ;STEP TO SLAVE # 1
(1) 002772 022737 000010 000614 1$: CMP @10, SLVN ;BRANCH IF ALL SLAVES TESTED
(1) 003000 001733 BEQ NXTDRV ;FOR AVAILABILITY
(1) 003002 013777 000614 175532 MOV SLVN, @TC ;LOAD SLAVE UNIT #
(1) 003010 032777 002000 175520 BIT @2000, @OT ;BRANCH IF SLAVE NOT
(1) 003016 001751 BEQ NXTSLV ;PRESENT (SPR = 0)
971 003020 000240 TSCDA: NOP
972 003022 012737 000756 000706 TSRH: MOV @TSTTBL, LTADD
973 003030 062737 000004 000706 TSCD0: ADD @4, LTADD
974 003036 013737 000706 000676 TSCD1: MOV LTADD, ITRLP
975 003044 062737 000002 000676 ADD @2, ITRLP ;SET ITERATION ADDRESS
976 003052 005037 000660 CLR STMSK
977 003056 005037 000626 CLR ERRP
978 003062 005037 000606 CLR HDRFI ;CLEAR PRINT HEADER FLAG
979 003066 017700 175614 MOV @LTADD, R0 ;SET POINTER TO TEST
980 003072 000110 JMP (R0) ;GO TO TEST
981 003074 032777 002000 175446 TSCD2: BIT @2000, @SWR ;SEE IF HALT ON TEST
982 003102 001401 BEQ TSCD3 ;IF NOT: BR
983 003104 000000 HALT
984 003106 005737 000704 TSCD3: TST STFLG ;SE IF SINGLE TEST

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SEQ 0024

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985 003112 001746      BEQ      TSCD0      ;IF NOT: BR
986 003114 017700 175430  MOV      @SWR,R0
987 003120 042700 177740  BIC      @177740,R0      ;BRANCH IF ALL TESTS SELECTED
988 003124 001613      BEQ      TSCD
989 003126 012737 000001 000704 STSCD:  MOV      @1,STFLG      ;SET SINGLE TEST FLAG
990 003134 023700 C01120  CMP      TLAST,R0      ;SEE IF EXCEEDED TESTS
991 003140 002410      BLT      TEND      ;IF SO: BR
992 003142 006300      ASL      R0
993 003144 006100      ROL      R0      ;SET TABLE MODIFIER
994 003146 012737 000756 000706  MOV      @TSTTBL,LTADD
995 003154 060037 000706  ADD      R0,LTADD      ;SET TEST POINTER
996 003160 000726      BR      TSCD1
997 003162 005737 001662      TEND:  TST      CHNFLG      ;BRANCH IF IN CHAIN MODE
998 003166 001265      BNE      NXTSLV
999 003170 012704 015761      $DONE:  MOV      @MSG6,R4
1000 003174 004737 014414      JSR      PC,TTOUT      ;PRINT END OF PASS
1001 003200 013703 000730      MOV      PCNTR,R3
1002 003204 004737 014630      JSR      PC,OCTP      ;PRINT PASS NUMBER
1003 003210 005000      CLR      R0
1004 003212 005300      1$:      DEC      R0
1005 003214 001376      BNE      1$
1006 003216 013700 000042      MOV      @42,R0      ;GET ACT11 RETURN ADDRESS
(1) 003222 001405      BEQ      HERE      ;BRANCH IF NOT ACT11
(1) 003224 000005      RESET
(1) 003226 004710      $ENDAD:  JSR      PC,(R0)
(1) 003230 000240      NOP
(1) 003232 000240      NOP
(1) 003234 000240      NOP
(1) 003236 000240      HERE:  NOP
1007 003240 005737 001662      TST      CHNFLG      ;BRANCH IF IN CHAIN MODE
1008 003244 001005      BNE      TENDX
1009 003246 032777 010000 175274  BIT      @10000,@SWR      ;SEE IF HALT ON PASS
1010 003254 001401      BEQ      TENDX      ;IF NOT: BR
1011 003256 000000      HALT
1012 003260 005237 000730      TENDX:  INC      PCNTR      ;BUMP PASS COUNTER
1013 003264 000137 002554      JMP      TSCD      ;RESTART

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M2

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SEQ 0025

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1015
1016
1017
1018 003270 012737 020362 000610 FT1: MOV 0MSFT1,EMADDR ;SET HEADER
1019 003276 012737 013756 000004      MOV 0TRAP,004 ;SET TRAP HANDLER ADDRESS
1020 003304 012737 000340 000006      MOV 0340,006
1021 003312 012700 000016      MOV 016,R0 ;SET NUMBER OF REGISTERS
1022 003316 013701 000510      MOV C1,R1 ;GET FIRST ADDRESS (CS1)
1023 003322 005711      FT1A: TST (R1) ;REFERENCE REGISTER
1024 003324 000240      NOP ;IF ADDRESS IS BAD, BUS TRAP WILL OCCUR
1025 003326 005300      FT1B: DEC R0 ;SEE IF DONE ALL
1026 003330 001403      BEQ FT1X ;IF SO: BR
1027 003332 062701 000002      ADD 02,R1 ;BUMP ADDRESS POINTER
1028 003336 000771      BR FT1A ;CONTINUE
1029 003340 012737 000006 000004 FT1X: MOV 06,004 ;RESET TRAP CATCHER
1030 003346 012737 000000 000006      MOV 0HALT,006
1031 003354 005737 000722      TST RHTF ;SEE IF INITIAL ADDRESS TEST PASS
1032 003360 001404      BEQ FT1XX ;IF NOT: BR
1033 003362 005037 000722      CLR RHTF ;CLEAR FLAG
1034 003366 000137 002166      JMP ST1A ;RETURN
1035 003372 000137 003074      FT1XX: JMP TSCD2 ;RETURN TO SCHEDULAR

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SEQ 0026

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1037
1038
1039
1040 003376 012737 020407 000610 FT2:  MOV    #MSG12,EMADDR    ;SET TEST HEADER
1041 003404 012701 177777          MOV    #-1,R1          ;SET ALL ONES PATTERN
1042 003410 004737 013540          FT2A:  JSR    PC,INIT1        ;GO INIT
1043 003414 013700 000512          MOV    WC,R0          ;GET ADDRESS OF WORD COUNT
1044 003420 010102          MOV    R1,R2          ;SET EXPT REGISTER BIT PATTERN
1045 003422 010110          MOV    R1,(R0)        ;LOAD PATTERN
1046 003424 021002          CMP     (R0),R2        ;SEE IF EXPT=RCVD
1047 003426 001410          BEQ     FT2B          ;IF SO: BR
1048 003430 012737 016512 000650    MOV    #MSG25,ERADD    ;SET CODE
1049 003436 012737 003410 000674    MOV    #FT2A,SCOLP    ;SET SCOPE
1050 003444 004737 003564          JSR    PC,FT2ER        ;GO DO ERROR
1051 003450 013700 000514          FT2B:  MOV    BA,R0          ;GET ADDRESS OF BUS ADDRESS
1052 003454 010102          MOV    R1,R2
1053 003456 042702 000001          BIC     #1,R2          ;SET EXPT PATTERN
1054 003462 010110          MOV    R1,(R0)        ;LOAD PATTERN
1055 003464 020210          CMP     R2,(R0)        ;SEE IF EXPT=RCVD
1056 003466 001410          BEQ     FT2C          ;IF SO:BR
1057 003470 012737 016520 000650    MOV    #MSG26,ERADD    ;SET ERROR CODE
1058 003476 012737 003450 000674    MOV    #FT2B,SCOLP    ;SET SCOPE ADDRESS
1059 003504 004737 003564          JSR    PC,FT2ER        ;GO DO ERROR
1060 003510 013700 000532          FT2C:  MOV    DB,R0          ;GET ADDRESS OF DATA BUFFER
1061 003514 010102          MOV    R1,R2
1062 003516 010110          MOV    R1,(R0)        ;LOAD PATTERN
1063 003520 012703 004000          MOV    #4000,R3
1064 003524 005303          FT2D:  DEC     R3          ;DELAY
1065 003526 001376          BNE     FT2D
1066 003530 020210          CMP     R2,(R0)        ;SEE IF EXPT=RCVD
1067 003532 001410          BEQ     FT2E          ;IF SO: BR
1068 003534 012737 016526 000650    MOV    #MSG27,ERADD    ;SET ERROR CODE
1069 003542 012737 003510 000674    MOV    #FT2C,SCOLP    ;SET SCOPE ADDRESS
1070 003550 004737 003564          JSR    PC,FT2ER        ;GO DO ERROR
1071 003554 005701          FT2F:  TST     R1          ;SEE IF DONE RESET
1072 003556 001453          BEQ     FT2X          ;IF SO: BR
1073 003560 005001          CLR     R1          ;SET ZERO PATTERN
1074 003562 000712          BR     FT2A          ;DO ZERO BITS
1075 003564 000240          FT2ER: NOP
1076 003566 032777 020000 174754    BIT     #20000,#SWH    ;SEE IF PRINT ERROR
1077 003574 001034          BNE     FT2ERB        ;IF NOT: BR
1078 003576 005737 000606          TST     HDRFL        ;SEE IF DONE HEADER
1079 003602 001004          BNE     FT2ERA        ;IF SO: BR
1080 003604 013704 000610          MOV    EMADDR,R4
1081 003610 004737 014414          JSR    PC,T1OUT        ;DO HEADER
1082 003614 012737 000001 000606    FT2ERA: MOV    #1,HDRFL    ;SET FLAG
1083 003622 013704 000650          MOV    ERADD,R4
1084 003626 004737 014414          JSR    PC,T1OUT        ;PRINT ERROR CODE
1085 003632 012704 016456          MOV    #MSG22,R4
1086 003636 004737 014414          JSR    PC,T1OUT        ;PRINT EXPT TAG
1087 003642 010103          MOV    R1,R3
1088 003644 004737 014616          JSR    PC,OC1PE        ;PRINT EXPT
1089 003650 012704 016466          MOV    #MSG23,R4
1090 003654 004737 014414          JSR    PC,T1OUT        ;PRINT RCVD TAG
1091 003660 011003          MOV    (R0),R3
1092 003662 004737 014616          JSR    PC,OC1PE        ;PRINT RCVD

```

B3

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SEQ 0027

1093	003666	005777	174656	FT2ERB:	IST	BSWR	ISEE IF HALT ON ERROR
1094	003672	100001			BPL	FT2ERC	IF NOT: BR
1095	003674	000000			HALT		
1096	003676	004737	013334	FT2ERC:	JSR	PC,SCOPE	GO SEE IF SCOPE ON ERROR
1097	003702	000240			NOP		
1098	003704	000207			RTS	PC	IF NO SCOPE: CONTINUE TEST
1099	003706	000240		FT2X:	NOP		
1100	003710	004737	013370		JSR	PC,ITER	GO SEE IF ITERATIONS
1101	003714	000137	003074		JMP	TSC02	RETURN TO SCHEDULAR

C3

CZTECPO INOS 1816 1077 BFI
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SEQ 0028

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1103
1104
1105      ;RH INITIALIZE TEST*****
1106 003720 012737 020444 000610 FT3:  MOV  #MSFT3,EMADDR  ;SET TEST HEADER
1107 003726 012737 003720 000674      MOV  #FT3,SCOLP
1108 003734 004737 013540      JSR    PC,INIT1      ;GO INIT
1109 003740 052777 020000 174552      BIS  #20000,0CS      ;FORCE UPE =1
1110 003746 000240      NOP
1111 003750 004737 013540      JSR    PC,INIT1      ;GO INIT
1112 003754 005777 174530      TST   0C1          ;SEE IF SC IS RESET
1113 003760 100005      BPL    FT3A          ;IF SO: BR
1114 003762 012737 016564 000650      MOV  #MSG29,ERADD      ;SET ERROR CODE
1115 003770 004737 004054      JSR    PC,FT3ER      ;GO DO ERROR
1116 003774 032777 040000 174506 FT3A:  BIT   #40000,0C1      ;SEE IF TRE IS RESET
1117 004002 001405      BEQ    FT3B          ;IF SO: BR
1118 004004 012737 016613 000650      MOV  #MSG30,ERADD      ;SET ERROR CODE.
1119 004012 004737 004054      JSR    PC,FT3ER      ;GO DO ERROR
1120 004016 017701 174476      FT3B:  MOV  #CS,R1          ;GET CS2
1121 004022 042701 000307      BIC   #307,R1         ;MARK IR/OR
1122 004026 005701      TST   R1            ;SEE IF RESET
1123 004030 001405      BEQ    FT3X          ;IF SO: BR
1124 004032 012737 016643 000650      MOV  #MSG31,ERADD      ;SET ERROR CODE
1125 004040 004737 004054      JSR    PC,FT3ER      ;GO DO ERROR
1126 004044 004737 013370      FT3X:  JSR    PC,ITER      ;GO SEE IF ITERATION
1127 004050 000137 003074      JMP    TSCD2          ;RETURN TO SCHEDULAR
1128
1129      ;ERROR REPORT SUBROUTINE
1130 004054 000240      FT3ER:  NOP
1131 004056 032777 020000 174464      BIT   #20000,0SWR      ;SEE IF PRINT ERROR
1132 004064 001015      BNE     2$          ;IF NOT: BR
1133 004066 005737 000606      TST   HDRFL          ;SEE IF DONE HEADER
1134 004072 001006      BNE     1$          ;IF SO: BR
1135 004074 013704 000610      MOV  EMADDR,R4
1136 004100 004737 014414      JSR    PC,TTOUT      ;PRINT HEADER
1137 004104 005237 000606      INC   HDRFL
1138 004110 013704 000650      1$:  MOV  ERADD,R4
1139 004114 004737 014414      JSR    PC,TTOUT      ;PRINT ERROR CODE
1140 004120 005777 174424      2$:  TST   0SWR          ;SEE IF HALT ON ERROR
1141 004124 100001      BPL    3$          ;IF NOT: BR
1142 004126 000000      HALT
1143 004130 000240      3$:  NOP
1144 004132 004737 013334      JSR    PC,SCOPE      ;GO SEE IF SCOPE
1145 004136 000207      RTS     PC          ;IF NOT: BR

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D3

SEQ 0029

```
1147
1148
1149          ;RH11 SILO TEST 1: EPMTY SILO READ*****
1150 004140 005737 000604          FT4:  TST    RH17F
1151 004144 001141          BNE    FT5X          ;IF RH70: BR
1152 004146 012737 020476 000610  MOV    #MSFT4,EMADDR ;SET TEST TEST HFADE
1153 004154 012777 000040 174336  MOV    #40,DCS          ;INIT
1154 004162 017700 174344          MOV    #DB,RO          ;READ DB
1155 004166 005777 174326          TST    DCS          ;SEE IF DLT IS SET
1156 004172 100013          BPL    FT4ER          ;IF NOT: BR
1157 004174 005777 174310          TST    DC1          ;SEE IF SC IS SET
1158 004200 100014          BPL    FT4ERA          ;IF NOT: BR
1159 004202 032777 040000 174300  BIT    #40000,DC1 ;SEE IF TRE IS SET
1160 004210 001414          BEQ    FT4ERB          ;IF NOT: BR
1161 004212 004737 013370          FT4X:  JSR    PC,ITER          ;GO SEE IF ITERATION
1162 004216 000137 003074          JMP    TSCD2          ;RETURN TO SCHEDULAR
1163 004222 012737 016673 000650  FT4ER:  MOV    #MSG32,ERADD ;SET ERROR CODE
1164 004230 000407          BR          FT4ERC
1165 004232 012737 016711 000650  FT4ERA: MOV    #MSG33,ERADD ;SET ERROR CODE
1166 004240 000403          BR          FT4ERC
1167 004242 012737 016726 000650  FT4ERB: MOV    #MSG34,ERADD ;SET ERROR CODE.
1168 004250 000240          FT4ERC:  NOP
1169 004252 012737 004140 000674  MOV    #FT4,SCOLP ;SET SCOPE ADDRESS
1170 004260 004737 004054          JSR    PC,FT3ER ;GO PRINT ERROR
1171 004264 000752          BR          FT4X
```

E3

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SEQ 0030

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1173
1174
1175
1176 004266 005737 000604      FT5:  TST      RH17F      ;SEE IF RH70
1177 004272 001066              BNE      FT5X      ;IF SO: BR
1178 004274 012737 020526 000610      MOV      @MSFT5,EMADDR ;SET TEST HEADER
1179 004302 012737 004310 000674      MOV      @FT5A,SCOLP  ;SET SCOPE ADDRESS
1180 004310 004737 013540      FT5A:  JSR      PC,INIT1    ;GO INIT
1181 004314 032777 000100 174176      BIT      @100,BCS     ;SEE IF IR IS SET
1182 004322 001005              BNE      FT5B      ;IF SO: BR
1183 004324 012737 016744 000650      MOV      @MSG35,ERADD ;SET ERROR CODE
1184 004332 004737 004054      JSR      PC,FT3ER   ;GO DO ERROR
1185 004336 032777 000200 174154      FT5B:  BIT      @200,BCS     ;SEE IF OR IS RESET
1186 004344 001405              BEQ      FT5C      ;IF SO: BR
1187 004346 012737 016771 000650      MOV      @MSG36,ERADD ;SET ERROR CODE
1188 004354 004737 004054      JSR      PC,FT3ER   ;GO DO ERROR
1189 004360 012777 000000 174144      FT5C:  MOV      @0,BCB     ;LOAD ZERO INTO SILO
1190 004366 032777 000200 174124      BIT      @200,BCS     ;SEE THAT OR RESET
1191 004374 001405              BEQ      FT5D      ;IF IT DOES: BR
1192 004376 012737 017020 000650      MOV      @MSG37,ERADD ;SET ERROR CODE
1193 004404 004737 004054      JSR      PC,FT3ER   ;GO DO ERROR
1194 004410 012777 177777 174114      FT5D:  MOV      @-1,BCB    ;LOAD SILO WITH -1
1195 004416 012700 004000      MOV      @4000,R0
1196 004422 032777 000200 174070      FT5E:  BIT      @200,BCS     ;SEE IF OR IS SET
1197 004430 001007              BNE      FT5X      ;IF SO: BR
1198 004432 005300              DEC      R0
1199 004434 001372              BNE      FT5E
1200 004436 012737 017020 000650      MOV      @MSG37,ERADD ;SET ERROR CODE
1201 004444 004737 004054      JSR      PC,FT3ER   ;GO DO ERROR
1202 004450 004737 013370      FT5X:  JSR      PC,ITER   ;GO SEE IF ITERATION
1203 004454 000137 003074      JMP      TSCD2      ;RETURN TO SCHEDULAR

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F3

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SEQ 0031

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1205
1206
1207
1208 004460 005737 000604 FT6: TST RH17F
1209 004464 001052 BNE FT6X ;IF RH70: BR
1210 004466 012737 020556 000610 MOV #MSGT6,EMADDR ;SET TEST HEADER
1211 004474 012737 004502 000674 MOV #FT6A,SCOLP ;SET SCOPE ADDRESS
1212 004502 004737 013540 FT6A: JSR PC,INIT1 ;GO INIT
1213 004506 005000 CLR R0 ;PRESET DATA
1214 004510 010077 174016 FT6B: MOV R0,R0B ;LOAD SILO
1215 004514 005200 INC R0 ;BUMP DATA
1216 004516 022700 000102 CMP #102,R0 ;SEE IF FILLED ALL
1217 004522 001372 BNE FT6B ;IF NOT: BR
1218 004524 032777 000100 173766 BIT #100,R0C ;SEE IF IR IS RESET.
1219 004532 001405 BEQ FT6C ;IF SO: BR
1220 004534 012737 017131 000650 MOV #MSG40,ERADD ;SET ERROR CODE
1221 004542 004737 004054 JSR PC,FT3ER ;GO DO ERROR
1222 004546 032777 000200 173744 FT6C: BIT #200,R0C ;SEE IF OR IS SET
1223 004554 001005 BNE FT6D ;IF SO: BR
1224 004556 012737 017057 000650 MOV #MSG38,ERADD ;SET ERROR CODE
1225 004564 004737 004054 JSR PC,FT3ER ;GO DO ERROR
1226 004570 005000 FT6D: CLR R0 ;PRESET DATA
1227 004572 017701 173734 FT6E: MOV R0B,R1 ;READ SILO
1228 004576 020001 CMP R0,R1 ;SEE IF EXPT=RCVD
1229 004600 001010 BNE FT6DE ;IF NOT: BR
1230 004602 005200 INC R0 ;BUMP DATA
1231 004604 022700 000102 CMP #102,R0 ;SEE IF DONE ALL
1232 004610 001370 BNE FT6E ;IF NOT: BR
1233 004612 004737 013370 FT6X: JSR PC,ITER ;GO SEE IF ITERATION
1234 004616 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULAR
1235
1236 004622 000240 FT6DE: NOP
1237 004624 032777 020000 173716 BIT #20000,R0SWR ;SEE IF PRINT ERROR
1238 004632 001032 BNE FT6DEB ;IF NOT: BR
1239 004634 005737 000606 TST HDRFL ;SEE IF DONE HEADER
1240 004640 013701 000610 MOV EMADDR,R1
1241 004644 004737 014414 JSR PC,TOUT ;PRINT HEADER
1242 004650 005237 000606 INC HDRFL ;SET FLAG
1243 004654 012704 017111 FT6DEA: MOV #MSG39,R4
1244 004660 004737 014414 JSR PC,TOUT ;PRINT SILO READ ERROR
1245 004664 012704 016456 MOV #MSG22,R4
1246 004670 004737 014414 JSR PC,TOUT ;PRINT EXPT TAG
1247 004674 010003 MOV R0,R3
1248 004676 004737 014630 JSR PC,OCTP ;PRINT EXPT
1249 004702 012704 016466 MOV #MSG23,R4
1250 004706 004737 014414 JSR PC,TOUT ;PRINT RCVD TAG
1251 004712 010103 MOV R1,R3
1252 004714 004737 014630 JSR PC,OCTP ;PRINT RCVD
1253 004720 005777 173624 FT6DEB: TST R0SWR ;SEE IF HALT ON ERROR
1254 004724 100001 BPL FT6DEX ;IF NOT: BR
1255 004726 000000 HALT
1256 004730 000207 FT6DEX: RTS PC ;RETURN TO TEST

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SEQ 0032

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1258
1259
1260
1261 004732 005737 000604 FT7: TST RH17F
1262 004736 001021 BNE FT7X ;IF RH70: BR
1263 004740 012737 020606 000610 MOV #MSFT7,EMADDR ;SET TEST HEADER
1264 004746 012737 004732 000674 MOV #FT7,SCOLP ;SET SCOPE ADDRESS
1265 004754 004737 013540 JSR PC,INIT1 ;GO INIT
1266 004760 012700 000103 MOV #103,R0 ;SET SIZE OF SILO +1
1267 004764 010077 173542 FT7A: MOV R0,#0B ;LOAD SILO
1268 004770 005300 DEC R0 ;SEE IF DONE
1269 004772 001374 BNE FT7A ;IF NOT: BR
1270 004774 005777 173520 TST #CS ;SEE IF DLT IS SET
1271 005000 100004 BPL FT7ER ;IF NOT: BR
1272 005002 004737 013370 FT7X: JSR PC,ITER ;GO SEE IF ITERATION
1273 005006 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULAR
1274 005012 012737 016673 000650 FT7ER: MOV #MSG32,ERADD ;SET ERROR CODE
1275 005020 004737 004054 JSR PC,FT3ER ;GO DO ERROR
1276 005024 000766 BR FT7X

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H3

CZTECF 0 IM03-TE16-10:17 BE?
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SEQ 0033

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1278
1279
1280
1281 005026 005737 000604          FT10:  TST    RH17F
1282 005032 001034                BNE    FT10X          ; IF RH70: BR
1283 005034 012737 020636 000610    MOV    @MSFT10,EMADDR ; SET TEST HEADER
1284 005042 012737 005026 000674    MOV    @FT10,SCOLP   ; SET SCOPE ADDRESS
1285 005050 012777 000040 173442    MOV    @40,@CS      ; INITIALIZE
1286 005056 012700 000004          MOV    @4,R0          ; SET NUMBER OF SILO WRITER
1287 005062 010077 173444          FT10A: MOV    R0,@DB      ; WRITE SILO
1288 005066 005300                DEC    R0              ; SEE IF DONE
1289 005070 001374                BNE    FT10A            ; IF NOT: BR
1290 005072 052777 000040 173420    BIS    @40,@CS      ; INITIALIZE
1291 005100 012777 177777 173424    MOV    @-1,@DB     ; WRITE SILO
1292 005106 017701 173420          MOV    @DB,R1          ; READ SILO 1
1293 005112 017701 173414          MOV    @DB,R1          ; READ SILO 2
1294 005116 005777 173376          TST    @CS            ; SEE IF DLT IS SET
1295 005122 100011                BPL    FT10ER          ; IF NOT: BR
1296 005124 004737 013370          FT10X: JSR    PC,ITER      ; GO SEE IF ITERATION
1297 005130 005737 000726          TST    @HOF            ; SEE IF RH11 ONLY
1298 005134 001402                BEQ    FT10XX          ; IF NOT: BR
1299 005136 000137 003162          JMP     TEND          ; ELSE GO TO END
1300 005142 000137 003074          FT10XX: JMP    TSCD2        ; RETURN TO SCHEDULAR
1301 005146 012737 016673 000650    FT10ER: MOV    @MSG32,ERADD ; SET ERROR CODE
1302 005154 004737 004054          JSR    PC,FT3ER      ; GO DO ERROR
1303 005160 000761                BR     FT10X

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SEQ 0034

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1305                                     ;NOP TEST*****
1306
1307 005162 000240                                     FT11: NOP
1308 005164 012737 005162 000674  MOV      #FT11,SCOLP      ;SET SCOPE ADDRESS
1309 005172 004737 013540  JSR      PC,INIT1
1310 005176 012737 000300 000716  MOV      #300,ODES      ;SET TC= ALL NRZ,NORM,ODD
1311 005204 012737 177777 000620  MOV      #-1,FCNT      ;SET FC= ALL OVER
1312 005212 012737 177777 000622  MOV      #-1,WCNT      ;SET WC= ALL OVER
1313 005220 012737 177777 000616  MOV      #-1,BADUR      ;SET BA= ALL OVER
1314 005226 012737 000001 000636  MOV      #1,RDIDX      ;SET DELAY
1315 005234 012737 000001 000640  MOV      #1,OPDYX      ;SET OP DELAY
1316 005242 012737 000001 000710  MOV      #1,FUN        ;SET NOP FUNCTIONS CODE
1317 005250 004737 012310  JSR      PC,EXEC      ;GO EXECUTE COMMAND
1318 005254 000240  NOP
1319 005256 012737 020667 000610  MOV      #MSFT11,EMADDR
1320 005264 004737 012510  JSR      PC,ERCHK      ;GO CHECK REGISTER
1321 005270 004737 013370  JSR      PC,ITER      ;GO SEE IF ITERATIONS
1322 005274 000137 003074  JMP      TSCD2      ;RETURN TO SCHEDULAR

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SEQ 0035

1324 ;REWIND TEST*****
1325
1326 005300 000240 FT12: NOP
1327 005302 012737 005300 000674 MOV #FT12,SCOLP
1328 005310 004737 013540 JSR PC,INIT1 ;GO INITIALIZE
1329 005314 052777 001700 173220 BIS #1700,0TC ;SET TO NRZ,NORMAL
1330 005322 012737 177760 000620 MOV #-20,FCNT ;SET FC=20
1331 005330 012737 177770 000622 MOV #-10,WCNT ;SET WC=10
1332 005336 012737 021544 000616 MOV #WDATA,BADDR ;SET BA=WRITE BUFFER
1333 005344 012737 000007 000710 MOV #7,FUN ;SET REWIND OP CODE
1334 005352 004737 012310 JSR PC,EXEC ;GO EXECUTE COMMAND
1335 005356 000240 NOP
1336 005360 032777 020000 173134 FT12A: BIT #20000,0DS
1337 005366 001374 BNE FT12A ;AWAIT PIP
1338 005370 012737 020707 000610 MOV #MSFT12,EMADDR
1339 005376 004737 012510 JSR PC,ERCHK ;GO CHECK FOR ERROR
1340 005402 004737 013370 JSR PC,ITER ;GO SEE IF ITERATION
1341 005406 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULAR
1342

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1344                                     ;WRITE/READ TEST*****
1345
1346 005412 000240          FT13:  NOP
1347 005414 012737 000001 000636  MOV    #1,RDYDX
1348 005422 012737 000001 000640  MOV    #1,OPDYX
1349 005430 012737 000100 000624  MOV    #100,RCNT      ;SET RECORD COUNT
1350 005436 012737 020732 000610  MOV    #MSG13,FMADDR ;SET TEST HEADER
1351 005444 012737 000001 000720  MOV    #1,PATRN
1352 005452 004737 013222          JSR    PC,DSUP      ;SET UP ALL ONES DATA PATTERN
1353 005456 012737 001700 000716  MOV    #1700,UDES    ;SET TO 800 BPI NORMAL
1354 005464 004737 012442          FT13A: JSR    PC,RWIND  ;GO REWIND
1355 005470 012737 177600 000620  MOV    #-200,FCNT    ;SET FC
1356 005476 012737 177700 000622  MOV    #-100,WCNT    ;SET WC
1357 005504 012737 021544 000616  MOV    #WDATA,BADDR  ;SET BA
1358 005512 012737 000061 000710  MOV    #61,FUN       ;SET WRITE OP-CODE
1359 005520 012737 016225 000626  MOV    #MSG12,ERRP
1360 005526 004737 012310          FT13B: JSR    PC,EXEC    ;GO EXECUTE COMMAND
1361 005532 005037 000674          CLR    SCOLP      ;NO SCOPE LOOP
1362 005536 004737 012510          JSR    PC,ERCHK     ;GO CHECK ERROR
1363 005542 005337 000624          DEC    RCNT       ;SEE IF DONE ALL
1364 005546 001367          BNE    FT13B      ;IF NOT: BR
1365 005550 012737 000100 000624  MOV    #100,RCNT    ;SET RECORD COUNT
1366 005556 012737 023256 000616  MOV    #WDATA,BADDR
1367 005564 062737 000200 000616  ADD     #200,BADDR   ;SET BA
1368 005572 012737 000077 000710  MOV    #77,FUN       ;SET READ REVERSE OP-CODE
1369 005600 012737 016243 000626  MOV    #MSG13,ERRP
1370 005606 004737 012310          FT13C: JSR    PC,EXEC    ;GO EXECUTE COMMAND
1371 005612 004737 012510          JSR    PC,ERCHK     ;GO CHECK ERROR
1372 005616 005337 000624          DEC    RCNT       ;SEE IF READ ALL
1373 005622 001371          BNE    FT13C      ;IF NOT:BR
1374 005624 062737 000200 000616  SUB     #200,BADDR   ;SET BA
1375 005632 012737 000071 000710  MOV    #71,FUN       ;SET READ FORWARD OP-CODE
1376 005640 012737 016270 000626  MOV    #MSG14,ERRP
1377 005646 012737 000100 000624  MOV    #100,RCNT    ;SET RECORD COUNT
1378 005654 004737 012310          FT13D: JSR    PC,EXEC    ;GO EXECUTE COMMAND
1379 005660 004737 012510          JSR    PC,ERCHK     ;GO CHECK ERRORS
1380 005664 005337 000624          DEC    RCNT       ;SEE IF DONE ALL
1381 005670 001371          BNE    FT13D      ;IF NOT:BR
1382 005672 032737 002000 000716  BIT     #2000,UDES   ;SEE IF DONE PE
1383 005700 001007          BNE    FT13X      ;IF SO: BR
1384 005702 012737 002300 000716  MOV    #2300,UDES    ;SET PE MODE
1385 005710 012737 000100 000624  MOV    #100,RCNT    ;RESET RECORD COUNT
1386 005716 000662          BR     FT13A      ;GO DO NEXT DENSITY
1387 005720 000137 003074          FT13X: JMP    TSCD2    ;RETURN TO SCHEDULAR

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Address	Op-Code	Label	Instruction	Comments
1389			;SPACE TEST*****	
1390				
1391	005724	000240	FT14: NOP	
1392	005726	012737 020761 000610	MOV #MSFT14,EMADDR	;SET TEST HEADER
1393	005734	012737 001700 000716	MOV #1700,UDES	;SET NRZ,NORMAL
1394	005742	004737 012442	FT14A1: JSR PC,RWNO	;GO INITIALIZE
1395	005746	012737 000100 000624	MOV #100,RCNT	;SET NUMBER OF RECORDER
1396	005754	012737 177777 021544	MOV #-1,WDATA	;SET DATA PATTERN
1397	005762	012737 177700 000620	MOV #-100,FCNT	;PRESET FRAME CNT
1398	005770	012737 177740 000622	MOV #40,WCNT	;PRESET WORD CNT
1399	005776	004737 013540	FT14A: JSR PC,INIT1	;GO REWIND
1400	006002	012737 001000 000640	MOV #1000,OPDYX	
1401	006010	012737 040000 000636	MOV #40000,RDYDX	
1402	006016	012737 000061 000710	MOV #61,FUN	;SET WRITE OP-CODE
1403	006024	012737 102300 000660	MOV #102300,STMSK	;MASK DATA RELATED ERRORS
1404	006032	052777 000010 172460	BIS #10,ACS	;INHIBIT BUS ADDRESS INCREMENT
1405	006040	004737 012310	JSR PC,EXEC	;GO EXECUTE COMMAND
1406	006044	012737 017350 000626	MOV #MSG46,ERRP	;SET ERROR CODE
1407	006052	004737 012510	JSR PC,ERCHK	;GO CHECK ERRORS
1408	006056	005737 000712	TST SERFL	;SEE IF ERROR
1409	006062	001402	BEQ FT14A2	;IF NOT: BR
1410	006064	000137 006550	JMP FT14X	;ELSE EXIT
1411	006070	005337 000620	FT14A2: DEC FCNT	;BUMP FC
1412	006074	032737 000001 000620	BIT #1,FCNT	;SEE IF SHOULD BUMP WC
1413	006102	001403	BEQ FT14A3	;IF NOT: BR
1414	006104	162737 000001 000622	SUB #1,WCNT	;BUMP WC
1415	006112	005337 000624	FT14A3: DEC RCNT	;SEE IF DONE ALL
1416	006116	001327	BNE FT14A	;WRITE ALL RECORDS
1417	006120	012737 000100 000632	MOV #100,RRD	;PRESET RECORD POSITION
1418	006126	012737 000176 000634	MOV #176,RFD	
1419	006134	012737 177701 000642	MOV #-77,SCNT	;SET SPACE AMOUNT
1420	006142	012737 000033 000710	FT14B: MOV #33,FUN	;SET OP-CODE SPACE REVERSE
1421	006150	004737 012310	JSR PC,EXEC	;GO EXECUTE COMMAND
1422	006154	012737 017421 000626	MOV #MSG48,ERRP	;SET ERROR CODE
1423	006162	004737 012510	JSR PC,ERCHK	;GO CHECK ERRORS
1424	006166	005737 000712	TST SERFL	;SEE IF ERROR
1425	006172	001166	BNE FT14X	;IF SO: BR
1426	006174	004737 006270	JSR PC,FT14RR	;GO READ REVERSE + CHECK DATA
1427	006200	000240	NOP	
1428	006202	012737 000031 000710	MOV #31,FUN	;SET SPACE FORWARD OP-CODE
1429	006210	005237 000642	INC SCNT	;SET SPACE AMOUNT
1430	006214	001555	BEQ FT14X	;IF DONE: BR
1431	006216	004737 012310	JSR PC,EXEC	;GO EXECUTE COMMAND
1432	006222	012737 017374 000626	MOV #MSG47,ERRP	;SET ERROR CODE
1433	006230	004737 012510	JSR PC,ERCHK	;GO CHECK ERROR
1434	006234	005737 000712	TST SERFL	;SEE IF ERROR FLAG
1435	006240	001143	BNE FT14X	;IF NO: BR
1436	006242	004737 006332	JSR PC,FT14RF	;GO READ FORWARD FOR POSITION CHECK
1437	006246	000240	NOP	
1438	006250	005237 000642	INC SCNT	;DECREMENT SPACE AMOUNT
1439	006254	001535	BEQ FT14X	;IF DONE: BR
1440	006256	005237 000632	INC RRD	;BUMP DATA EXPT
1441	006262	005337 000634	DEC RFD	;BUMP DATA EXPT
1442	006266	000725	DEC	
1443	006270	000240	BR FT14B	
1444	006272	012737 023256 000616	FT14RR: NOP	
			MOV #RDATA,BADDR	;SET BA

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SEQ 0038

1445	006300	012737	000077	000710	MOV	#77,FUN	;SET READ REVERSE OP-CODE
1446	006306	004737	012310		JSR	PC,EXEC	;GO EXECUTE COMMAND
1447	006312	000240			NOP		
1448	006314	013705	000632		MOV	R5,R5	
1449	006320	020577	172172		CMP	R5,#FC	;SEE IF CORRECT RECORD
1450	006324	001020			BNE	FT14RER	;IF NOT: BR
1451	006326	000137	006360		JMP	FT14EC	;GO CLEAR RH11 ERROR BIT
1452	006332	000240			FT14RF: NOP		
1453	006334	012737	000071	000710	MOV	#71,FUN	;SET READ FORWARD OP-CODE
1454	006342	004737	012310		JSR	PC,EXEC	;GO EXECUTE COMMAND
1455	006346	013705	000634		MOV	R5,R5	
1456	006352	020577	172140		CMP	R5,#FC	;SEE IF CORRECT RECORD
1457	006356	001003			BNE	FT14RER	;IF NOT: BR
1458	006360	004737	013540		FT14EC: JSR	PC,INIT1	;CLEAR RH
1459	006364	000207			RTS	PC	;RETURN
1460	006366	000240			FT14RER: NOP		
1461	006370	032777	020000	172152	BIT	#20000,#SWR	;SEE IF PRINT INHIBITED
1462	006376	001060			BNE	FT14R3	;IF SO: BR
1463	006400	012704	020761		MOV	#MSG14,R4	
1464	006404	004737	014414		JSR	PC,TTOUT	;PRINT HEADER
1465	006410	012704	016003		MOV	#MSG9,R4	
1466	006414	004737	014414		JSR	PC,TTOUT	;PRINT ERROR TYPE
1467	006420	012704	016443		MOV	#MSG20,R4	;SET NRZ TAG POINTER
1468	006424	032737	002000	000716	BIT	#2000,ODES	;SEE IF PE
1469	006432	001402			BEQ	FT14R0	;IF NOT: BR
1470	006434	012704	016451		MOV	#MSG21,R4	;ELSE SET PE TAG POINTER
1471	006440	004737	014414		FT14R0: JSR	PC,TTOUT	;PRINT TAG
1472	006444	032737	000002	000710	BIT	#2,FUN	;SEE IF READ REVERSE
1473	006452	001003			BNE	FT14R1	;IF SO: BR
1474	006454	012704	016423		MOV	#MSG17,R4	
1475	006460	000402			BR	FT14R2	;GO PRINT
1476	006462	012704	016403		FT14R1: MOV	#MSG16,R4	
1477	006466	004737	014414		FT14R2: JSR	PC,TTOUT	;PRINT FRWD/REV
1478	006472	012704	016456		MOV	#MSG22,R4	
1479	006476	004737	014414		JSR	PC,TTOUT	;PRINT EXPT TAG
1480	006502	010503			MOV	R5,R3	
1481	006504	042703	177700		BIC	#177700,R3	;MASK RECORD NUMBER
1482	006510	004737	014630		JSR	PC,OCIP	;PRINT EXPT RECORD NUMBER
1483	006514	012704	016466		MOV	#MSG23,R4	
1484	006520	004737	014414		JSR	PC,TTOUT	;PRINT RCVD T.
1485	006524	017703	171766		MOV	#FC,R3	
1486	006530	042703	177700		BIC	#177700,R3	;MASK RECORD NUMBER
1487	006534	004737	014630		JSR	PC,OCIP	;PRINT ACTUAL RECORD NUMBER
1488	006540	005777	172004		FT14R3: TST	#SWR	;SEE IF HALT ON ERROR
1489	006544	100001			BPL	FT14X	;IF NOT: BR
1490	006546	000000			HALT		
1491	006550	032737	002000	000716	FT14X: BIT	#2000,ODES	;SEE IF DONE PE
1492	006556	001005			BNE	FT14XX	;IF SO: BR
1493	006560	012737	002300	000716	MOV	#2300,ODES	;SET TO PE
1494	006566	000137	005742		JMP	FT14A1	;DO IN PE
1495	006572	000137	003074		FT14XX: JMP	TSCD2	;RETURN TO SCHEDULAR

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SEQ 0039

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1497                                     ;ERASE TEST*****
1498
1499 006576 000240          FT15: NOP
1500 006600 005037 000660      CLR      STMSK
1501 006604 012737 000100 000636  MOV     #100,RDYDX
1502 006612 012737 000010 000640  MOV     #10,OPDYX
1503 006620 012737 021003 000610  MOV     #MSFT15,EMADDR ;SET TEST HEADER
1504 006626 004737 012442      JSR      PC,RWND ;REWIND
1505 006632 012737 023256 000616  MOV     #RDATA,BADDR ;SET BA
1506 006640 012737 001700 000716  MOV     #1700,UDES ;SET NRZ, NORMAL
1507 006646 012737 000025 000710  FT15A: MOV     #25,FUN ;SET ERASE OP-CODE
1508 006654 012737 000454 000624  MOV     #300.,RCNT ;++B SET TO ERASE 300 TIMES
1509 006662 004737 012310      FT15B: JSR      PC,EXEC ;GO EXECUTE COMMAND
1510 006666 012737 017350 000626  MOV     #MSG46,ERRP ;SET ERROR CODE
1511 006674 004737 012510      JSR      PC,ERCHK ;GO CHECK ERRORS
1512 006700 005737 000712      TST      SERFL ;SEE IF ANY ERRORS
1513 006704 001032      BNE      FT15X ;IF SO EXIT
1514 006706 005337 000624      DEC      RCNT ;SEE IF DONE ERASING
1515 006712 001363      BNE      FT15B ;IF NOT: BR
1516 006714 000240      NOP
1517 006716 004737 012442      JSR      PC,RWND ;REWIND
1518 006722 012737 177600 000622  MOV     #-200,WCNT ;SET WC
1519 006730 012737 000071 000710  MOV     #71,FUN ;SET READ FORWARD OP-CODE
1520 006736 012737 000040 000636  MOV     #40,RDYDX ;SET DELAY
1521 006744 004737 012310      JSR      PC,EXEC ;GO EXECUTE COMMAND
1522 006750 000240      NOP
1523 006752 012737 020022 000626  MOV     #MSG60,ERRP ;SET ERROR CODE
1524 006760 012737 020000 000660  MOV     #20000,STMSK
1525 006766 004737 012510      JSR      PC,ERCHK ;GO CHECK ERRORS
1526                                     ;*****
1527
1528                                     ;THIS CODE ADDED TO FORM REV C
1529
1530                                     ;THE SSC BIT AND THE PIP BIT IN THE DRIVE STATUS REG
1531                                     ;SHOULD NOT BE SET CONCURRENTLY
1532
1533                                     ;*****
1534
1535 006772 012737 000100 000636  FT15X: MOV     #100,RDYDX ;SET DELAY
1536 007000 012737 000010 000640  MOV     #10,OPDYX
1537 007006 012737 000020 000624  MOV     #20,RCNT ;SET UP FOR 20 ERASES
1538 007014 012737 023256 000616  1$:  MOV     #RDATA,BADDR ;SET UP BUSS ADDR
1539 007022 012737 001700 000716  MOV     #1700,UDES ;SET UP TAPE CONTROL
1540 007030 012737 000025 000710  MOV     #25,FUN ;SET FUN FOR ERASE
1541 007036 004737 012310      JSR      PC,EXEC ;GO EXECUTE CMD
1542 007042 005337 000624      DEC      RCNT ;DECREMENT THE NUMBER OF EXECUTES
1543 007046 001362      BNE      1$ ;BRANCH IF MORE LEFT
1544 007050 052777 001700 171464  JLS     #1700,BTC
1545 007056 012777 177760 171432  MOV     #20,BFC
1546 007064 012777 177770 171420  MOV     #10,BWC
1547 007072 012777 021544 171414  MOV     #WDATA,BBA
1548 007100 012777 000007 171402  MOV     #7,BCL
1549 007106 000240      NOP ;DO REWIND
1550 007110 032777 000100 171404  2$:  BIT     #100,BDS ;WAIT FOR SSC
1551 007116 001774      BFEQ     2$
1552 007120 017737 171376 000652  MOV     #BDS,TEMP1 ;READ DRIVE STATUS REG IMMEDIATELY

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SEQ 0040

1553	007126	032737	020000	000652	BIT	#20000,TEMP1	;CHECK FOR PIP
1554	007134	001420			BEQ	FT15XX	;BRANCH IF NOT SET
1555	007136	052737	000001	007206	BIS	#1,TAG	;SET FLAG FOR ERROR
1556	007144	012704	016375		MOV	#MSG15H,R4	
1557	007150	004737	014414		JSR	PC,TTOUT	
1558	007154	010703			MOV	PC,R3	
1559	007156	062703	000010		ADD	#10,R3	
1560	007162	004737	014616		JSR	PC,OCTPE	
1561							
1562	007166	004737	012772		JSR	PC,ERPTB1	;GO PRINT ERROR
1563							;DS REG REPORTED IS ITS CONTENTS
1564							;AT THE TIME OF THE ERROR (5 LINES OF CODE BACK)
1565	007172	005037	007206		CLR	TAG	;CLEAR FLAG
1566	007176	004737	013370	FT15XX;	JSR	PC,ITER	;CHECK FOR ITERATIONS
1567	007202	000137	003074		JMP	TSCD2	;GO TO SCHEDULE AR
1568							
1569	007206	000000		TAG:	.WORD	0	;+C FLAG FOR ERROR ROUTINE

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SEQ 0041

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1571                                     ;TAPE MARK WRITE/READ TEST*****
1572
1573 007210 000240                      FT16: NOP
1574 007212 012737 000001 000636      MOV     01,RDYDX
1575 007220 012737 001000 000640      MOV     01000,OPDYX
1576 007226 012737 021025 000610      MOV     0MSFT16,EMADDR ;SET HEADER
1577 007234 012737 001700 000716      MOV     01700,UDES ;SET TO NRZ,NORMAL,ODD
1578 007242 004737 012442              FT16A: JSR     PC,RWWD ;INIT AND REWIND SLAVE
1579 007246 012737 177760 000620      FT16B: MOV     0-20,FCNT ;FC=20
1580 007254 012737 177770 000622      MOV     0-10,WCNT ;WC=10
1581 007262 012737 000027 000710      MOV     027,FUN ;SET WRITE TAPE MARK OP-CODE
1582 007270 004737 012310              JSR     PC,EXEC ;GO EXECUTE COMMAND
1583 007274 012737 001000 000660      MOV     01000,STMSK ;SET FOR FCE MASK
1584 007302 012737 016315 000626      MOV     0MSG15,ERRP ;SET ERROR CODE
1585 007310 004737 012510              JSR     PC,ERCHK ;GO CHECK ERROR
1586 007314 004737 013164              JSR     PC,TMCHK ;GO SEE IF TM SET
1587 007320 012737 000077 000710      MOV     077,FUN ;SET READ REVERSE OP-CODE
1588 007326 004737 012310              JSR     PC,EXEC ;GO EXECUTE COMMAND
1589 007332 012737 001000 000660      MOV     01000,STMSK ;SET FCE ERROR MASK
1590 007340 012737 016243 000626      MOV     0MSG13,ERRP ;SET ERROR CODE
1591 007346 004737 012510              JSR     PC,ERCHK ;GO CHECK ERRORS
1592 007352 004737 013164              JSR     PC,TMCHK ;GO SEE IF TM SET
1593 007356 012737 000071 000710      MOV     071,FUN ;SET READ FORWARD OP-CODE
1594 007364 004737 012310              JSR     PC,EXEC ;GO EXECUTE COMMAND
1595 007370 012737 016270 000626      MOV     0MSG14,ERRP ;SET ERROR CODE
1596 007376 004737 012510              JSR     PC,ERCHK ;GO CHECK ERRORS
1597 007402 004737 013164              JSR     PC,TMCHK ;GO SEE IF TM SET
1598 007406 032737 002000 000716      BIT     02000,UDES ;SEE IF DONE PE
1599 007414 001004                      BNE     FT16X ;IF SO: BR
1600 007416 012737 002300 000716      MOV     02300,UDES ;SET PE, NORMAL
1601 007424 000706                      BR      FT16A ;DO IN PE
1602 007426 004737 013370              FT16X: JSR     PC,ITER ;DO ITERATIONS
1603 007432 000137 003074              JMP      TSCD2 ;RETURN TO SCHEDULAR
1604

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SEQ 0042

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1606
1607
1608
1609 007436 005037 000624 FT17: CLR RCNT
1610 007442 012737 021066 000610 MOV #MSFT17,EMADDR ;SET HEADER
1611 007450 012737 001700 000716 MOV #1700,UDES ;SET TO NRZ
1612 007456 004737 012442 FT17A: JSR PC,RWND ;REWIND TAPE
1613 007462 012737 000027 000710 FT17B: MOV #27,FUN
1614 007470 012737 040000 000636 MOV #40000,RDYDX ;SET DRY DELAY
1615 007476 012737 040000 000640 MOV #40000,OPDYX ;SET OP DELAY
1616 007504 004737 012310 JSR PC,EXEC ;GO WRITE TM
1617 007510 012737 102300 000660 MOV #102300,STMSK ;MASK DATA RELATED ERRORS
1618 007516 012737 016315 000626 MOV #MSG15,ERRP ;SET ERROR TYPE
1619 007524 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR
1620 007530 005737 000712 TST SERFL ;SEE IF ERROR
1621 007534 001137 BNE FT17X ;IF SO: BR
1622 007536 004737 013164 JSR PC,TMCHK ;GO SEE IF TM SET
1623 007542 000240 NOP
1624 007544 000240 NOP
1625 007546 032737 000100 000624 BIT #100,RCNT ;SEE IF DONE PATTERN
1626 007554 001045 BNE FT17D ;IF SO: BR
1627 007556 062737 000020 000624 ADD #20,RCNT ;ADD 20 TO RECORD COUNT
1628 007564 013737 000624 000652 MOV RCNT,TEMP1 ;SAVE RECORD COUNT
1629 007572 012737 177600 000622 MOV #200,WCNT ;WC=128
1630 007600 012737 177400 000620 MOV #400,FCNT ;FC=256
1631 007606 012737 021544 000616 MOV #WDATA,BADDR ;BA=WRITE BUFFER
1632 007614 012737 000061 000710 MOV #61,FUN ;SET WRITE OP CODE
1633 007622 000240 FT17C: NOP
1634 007624 000240 NOP
1635 007626 004737 012310 JSR PC,EXEC ;GO WRITE
1636 007632 012737 016225 000626 MOV #MSG12,ERRP ;SET ERROR CODE
1637 007640 012737 102300 000660 MOV #102300,STMSK ;MASK DATA RELATED ERRORS
1638 007646 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR
1639 007652 005737 000712 TST SERFL ;SEE IF ERROR
1640 007656 001066 BNE FT17X ;IF SO: BR
1641 007660 005337 000652 DEC TEMP1 ;SEE IF DONE ALL
1642 007664 001356 BNE FT17C ;IF NOT: BR
1643 007666 000675 BR FT17B ;ELSE GO DO TM
1644 007670 000240 FT17D: NOP
1645 007672 012737 000033 000710 MOV #33,FUN ;SET SPACE REVERSE
1646 007700 012737 016403 000626 MOV #MSG16,ERRP ;SET ERROR CODE
1647 007706 012737 177600 000642 FT17D1: MOV #200,SCNT ;SET TO 200 RECORDS
1648 007714 012737 000005 000624 MOV #5,RCNT ;SET NUMBER OF OPS TO DO
1649 007722 004737 013540 FT17E: JSR PC,INIT1 ;GO INIT
1650 007726 004737 012310 JSR PC,EXEC ;GO SPACE
1651 007732 012737 001000 000660 MOV #1000,STMSK ;SET ERROR MASK
1652 007740 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR
1653 007744 005737 000712 TST SERFL ;SEE IF ERROR
1654 007750 001031 BNE FT17X ;IF SO: BR
1655 007752 004737 013164 JSR PC,TMCHK ;GO SEE IF TM SET
1656 007756 005337 000624 DEC RCNT ;SEE IF DONE SPACES
1657 007762 001357 BNE FT17E ;IF NOT: BR
1658 007764 022737 000031 000710 CMP #31,FUN ;SEE IF DONE FORWARD
1659 007772 001407 BEQ FT17F ;IF SO: BR
1660 007774 012737 016423 000626 MOV #MSG17,ERRP ;SET ERROR CODE
1661 010002 012737 000031 000710 MOV #31,FUN ;SET TO SPACE FORWARD

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SEQ 0043

1662	010010	000736			BR	FT17D1		IDO FORWARD
1663	010012	032737	002000	000716	FT17F:	BIT	02000, UDES	ISEE IF DONE PE
1664	010020	001005			BNE	FT17X		IF SO: BR
1665	010022	012737	002300	000716	MOV	02300, UDES		SET TO PE
1666	010030	000137	007456		JMP	FT17A		GO PE
1667	010034	000137	003074		FT17X:	JMP	TSCD2	RETURN TO SCHEDULAR

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SEQ 0044

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1669
1670                                     ;WRITE CHECK TEST*****
1671
1672 010040 000240          FT20:  NOP
1673 010042 012737 021114 000610  MOV      #MSFT20,EMADDR  ;SET HEADER
1674 010050 012737 001700 000716  MOV      #1700,UDES    ;SET UNIT DESCRIPTION
1675 010056 004737 012442          FT20A: JSR      PC,RWND      ;INIT AND REWIND SLAVE
1676 010062 012737 000003 000720  MOV      #3,PATRN
1677 010070 004737 013222          JSR      PC,DSUP          ;GO SET PATTERN 3
1678 010074 012737 021544 000616  MOV      #WDATA,BADDR    ;SET BA
1679 010102 012737 177400 000620  MOV      #-400,FCNT      ;SET FC
1680 010110 012737 177600 000622  MOV      #-200,WCNT      ;SET WC
1681 010116 012737 000061 000710  MOV      #61,FUN        ;SET WRITE OP CODE
1682 010124 004737 012310          JSR      PC,EXEC          ;GO WRITE RECORD
1683 010130 012737 017350 000626  MOV      #MSG46,ERRP      ;SET ERROR CODE
1684 010136 004737 012510          JSR      PC,ERCHK         ;GO CHECK ERROR
1685 010142 005737 000712          TST      SERFL           ;SEE IF ERROR
1686 010146 001042          BNE      FT20X                  ;IF SO: BR
1687 010150 012737 016403 000626  MOV      #MSG16,ERRP      ;SET REVERSE ERROR TAG
1688 010156 012737 000057 000710  MOV      #57,FUN        ;SET REVERSE WRITE CHECK OP-CODE
1689 010164 062737 000376 000616  ADD      #376,BADDR      ;SET BA FOR REVERSE CHECK
1690 010172 004737 012310          JSR      PC,EXEC          ;GO DO REVERSE CHECK
1691 010176 004737 012510          JSR      PC,ERCHK         ;GO CHECK ERROR
1692 010202 012737 016423 000626  FT20B: MOV      #MSG17,ERRP  ;SET FORWARD TAG
1693 010210 012737 000051 000710  MOV      #51,FUN        ;SET FORWARD CHECK OP CODE
1694 010216 162737 000376 000616  SUB      #376,BADDR      ;SET BA FOR FORWARD CHECK
1695 010224 004737 012310          JSR      PC,EXEC          ;GO DO FORWARD CHECK
1696 010230 004737 012510          JSR      PC,ERCHK         ;GO CHECK ERROR
1697 010234 032737 002000 000716  FT20C: BIT      #2000,UDES  ;SEE IF DONE PE
1698 010242 001004          BNE      FT20X                  ;IF SO: BR
1699 010244 012737 002300 000716  MOV      #2300,UDES      ;ELSE SET PE
1700 010252 000701          BR       FT20A                  ;DO IN PE
1701 010254 004737 013370          FT20X: JSR      PC,ITER      ;DO ITERATIONS
1702 010260 000137 003074          JMP      TSCD2           ;RETURN TO SCHEDULAR

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SEQ 0045

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1704
1705
1706
1707 010264 012737 021145 000610 FT21: MOV 4MSFT21,EMADDR ;SET TEST HEADER
1708 010272 004737 012442 FT21A: JSR PC,RWIND ;GO REWIND
1709 010276 012737 000003 000720 MOV 43,PATRN
1710 010304 004737 013232 JSR PC,DSUP ;GO SET PATTERN 3
1711 010310 012737 021544 000616 MOV 4WDATA,BADDR ;SET BA=WRITE BUFFER
1712 010316 012737 176340 000620 MOV 4-800.,FCNT ;SET FC=800(10)
1713 010324 012737 177160 000622 MOV 4-400.,WCNT ;SET WC=400(10)
1714 010332 012737 001700 000716 MOV 41700,UNES ;SET NRZ, NORMAL
1715 010340 012737 000061 000710 MOV 461,FUN ;SET WRITE OP-CODE
1716 010346 004737 012310 JSR PC,EXEC ;GO DO WRITE 1
1717 010352 012737 016225 000626 MOV 4MSG12,ERRP ;SET ERROR CODE
1718 010360 004737 012510 JSR PC,ERCHK ;GO CHECK FOR ERROR
1719 010364 004737 012310 JSR PC,EXEC ;YES DO WRITE 2
1720 010370 004737 012510 JSR PC,ERCHK ;YES CHECK FOR ERROR
1721 010374 000240 NOP
1722 010376 004737 012442 JSR PC,RWIND ;GO REWIND
1723 010402 012737 177160 000620 MOV 4-400.,FCNT ;SET FC=400(10)
1724 010410 012737 177470 000622 MOV 4-200.,WCNT ;SET WC=200(10)
1725 010416 004737 012310 JSR PC,EXEC ;GO REWRITE RECORD 1-WH TO EH
1726 010422 000240 FT21SCP: NOP
1727 010424 004737 012442 JSR PC,RWIND ;REWIND
1728 010430 012737 023256 000616 MOV 4RDATA,BADDR ;SET BA=READ BUFFER
1729 010436 012737 177160 000620 MOV 4-400.,FCNT ;SET FC=400
1730 010444 012737 177470 000622 MOV 4-200.,WCNT ;SET WC=200
1731 010452 012737 000071 000710 MOV 471,FUN ;SET READ OP-CODE
1732 010460 004737 012310 JSR PC,EXEC ;GO READ RECORD 1
1733 010464 012737 016270 000626 MOV 4MSG14,ERRP ;SET ERROR CODE
1734 010472 004737 012510 JSR PC,ERCHK ;GO CHECK FOR ERROR
1735 010476 000240 NOP
1736 010500 052777 000010 170012 BIS 410,ACS ;INHIBIT BA INCREMENT
1737 010506 012737 176340 000620 MOV 4-800.,FCNT ;SET FC=800(10)
1738 010514 012737 177160 000622 MOV 4-400.,WCNT ;SET WC=400(10)
1739 010522 004737 012310 JSR PC,EXEC ;GO READ RECORD 2
1740 010526 022777 001440 167762 CMP 4800.,4FC ;SEE IF READ RECORD 2 OK
1741 010534 001424 BEQ FT21X ;IF SO: BR
1742 010536 022777 001441 167752 CMP 4801.,4FC ;BRANCH IF IN GREY AREA
1743 010544 001420 BEQ FT21X
1744 010546 022777 001440 167742 14: CMP 4800.,4FC ;BRANCH IF ERASE HEAD REVERSED
1745 010554 101404 BLOS FT21B ;IF SO: BR
1746 010556 012737 017243 000650 MOV 4MSG44,ERADD ;SET ERASE HEAD INOPERATIVE ERROR CODE
1747 010564 000403 BR FT21C
1748 010566 012737 017273 000650 FT21B: MOV 4MSG45,ERADD ;SET ERASE HEAD REVERSED ERROR CODE
1749 010574 012737 010422 000674 FT21C: MOV 4FT21SCP,SCOLP ;SET SCOPE ADDRESS
1750 010602 004737 004054 JSR PC,FT3ER ;GO PRINT ERROR
1751 010606 004737 013370 FT21X: JSR PC,ITER ;GO SEE IF ITERATION
1752 010612 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULAR
1753
1754

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SEQ 0046

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1756                                     ;BUFFERED COMMAND TEST*****
1757
1758 010616 012737 021174 000610 FT22: MOV    #MSFT22,EMADDR ;SET TEST HEADER
1759 010624 004737 012442          JSR    PC,RWIND    ;GO REWIND
1760 010630 012700 000003          MOV    #3,R0        ;SET NUMBER OF WRITES
1761 010634 012737 001700 000716          MOV    #1700,UDES    ;SET TO NRZ NORMAL
1762 010642 012737 021544 000616          MOV    #WDATA,BADDR    ;SET BA=WRITE BUFFER
1763 010650 012737 177000 000620          MOV    #-1000,FCNT    ;SET FC=1000
1764 010656 012737 177400 000622          MOV    #-400,WCNT    ;SET WC=400
1765 010664 012737 000061 000710          MOV    #61,FUN      ;SET WRITE OP-CODE
1766 010672 004737 012310          FT22A: JSR    PC,EXEC    ;GO DO WRITE
1767 010676 005300          DEC    R0        ;SEE IF DONE ALL
1768 010700 001374          BNE    FT22A      ;IF NOT: BR
1769 010702 000240          NOP
1770 010704 012777 000007 167576          MOV    #7,BC1      ;START REWIND
1771 010712 032777 000200 167602 FT22B: BIT    #200,BDS
1772 010720 001774          BEQ    FT22B
1773 010722 004737 013540          JSR    PC,INIT1    ;INITIALIZE
1774 010726 012737 000010 000636          MOV    #10,RDYDX    ;SET LONG READY DELAY
1775 010734 004737 012310          JSR    PC,EXEC    ;ISSUE BUFFERED WRITE
1776 010740 000240          NOP
1777 010742 012737 017446 000626          MOV    #MSG49,ERRP    ;SET ERROR CODE
1778 010750 012737 102300 000660          MOV    #102300,STMSK ;MARK DATA ERROR
1779 010756 004737 012510          JSR    PC,ERCHK    ;GO CHECK ERROR
1780 010762 032777 000002 167532          BIT    #2,BDS      ;SEE IF BOT IS SET
1781 010770 001410          BEQ    FT22X      ;IF NOT: BR
1782 010772 012737 017474 000650          MOV    #MSG50,ERADD    ;SET ERROR CODE
1783 011000 012737 010616 000674          MOV    #FT22,SCCLP
1784 011006 004737 004054          JSR    PC,FT3ER    ;GO DO ERROR
1785 011012 004737 013370          FT22X: JSR    PC,ITER    ;GO SEE IF ITERATION
1786 011016 000137 003074          JMP    TSCD2      ;RETURN TO SCHEDULAR
1787
1788

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SEQ 0047

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1790                                     ;READ-IN PRESET TEST*****
1791
1792 011022 005737 000614          FT23: TST      SLVN          ;SEE IF SLAVE SELECT=0
1793 011026 001103                BNE      FT23X          ;IF NOT: BR
1794 011030 012737 021231 000610  MOV      @MSFT23,EMADDR ;SET TEST HEADER
1795 011036 004737 013540                JSR      PC,INIT1    ;GO INIT
1796 011042 012737 001700 000716  MOV      @1700,UDES    ;SET TO NRZ NORMAL
1797 011050 012737 021544 000616  MOV      @WDATA,BADDR   ;SET BA-WRITE BUFFER
1798 011056 012737 177400 000620  MOV      @-400,FCNT     ;SET FC=400
1799 011064 012737 177600 000622  MOV      @-200,WCNT     ;SET WC=200
1800 011072 012737 000061 000710  MOV      @61,FUN      ;SET WRITE OP-CODE
1801 011100 004737 012310                JSR      PC,EXEC     ;GO DO WRITE
1802 011104 000240                NOP
1803 011106 004737 013540                JSR      PC,INIT1    ;INITIALIZE
1804 011112 012737 000021 000710  MOV      @21,FUN      ;SET READ-IN PRESET UP CODE
1805 011120 004737 012310                JSR      PC,EXEC     ;GO DO COMMAND
1806 011124 005000                CLR      R0
1807 011126 012703 000004                MOV      @4,R3      ;SET MULT
1808 011132 032777 020000 167362  FT23A: BIT      @20000,@DS  ;SEE IF PIP RESET
1809 011140 001404                BEQ      FT23B          ;IF SO: BR
1810 011142 005300                DEC      R0
1811 011144 001372                BNE      FT23A          ;AWAIT PIP RESET
1812 011146 005303                DEC      R3
1813 011150 001370                BNE      FT23A          ;DELAY
1814 011152 032777 000002 167342  FT23B: BIT      @2,@DS    ;SEE IF BOT
1815 011160 001010                BNE      FT23C          ;IF SO: BR
1816 011162 012737 017532 000650  MOV      @MSG51,ERADD  ;SET ERROR CODE
1817 011170 012737 011022 000674  MOV      @FT23,SCOLP   ;
1818 011175 004737 004054                JSR      PC,FT3ER    ;GO DO ERROR
1819 011202 012701 141000  FT23C: MOV      @141000,R1      ;SET EXPT IC
1820 011206 013700 000542                MOV      TC,R0      ;SET IC ADDRESS
1821 011212 020110                CMP      R1,(R0)    ;SEE IF EXPT-RCVD
1822 011214 001410                BEQ      FT23X          ;IF SO: BR
1823 011216 012737 017566 000650  MOV      @MSG52,ERADD  ;SET ERROR CODE
1824 011224 012737 011022 000674  MOV      @FT23,SCOLP   ;CLEAR SCOPE ADDRESS
1825 011232 004737 003564                JSR      PC,FT2ER    ;GO DO ERROR
1826 011236 000137 003074          FT23X: JMP      TSCD2     ;RETURN TO SCHEDULAR
1827
1828

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1830
1831
1832
1833
1834 011242 012737 021264 000610 FT24: MOV #MSFT24,EMADDR ;SET ERROR MSG HEADER
1835 011250 004737 012442 JSR PC,RWND ;REWIND SLAVE
1836 011254 012737 000001 000720 MOV #1,PATRN ;SELECT PATTERN
1837 011262 004737 013222 JSR PC,DSUP ;GO DO DATA SETUP
1838 011268 012737 021544 000616 MOV #WDATA,BADDR ;SET BUS ADDRESS,
1839 011274 012737 177400 000620 MOV #400,FCNT ;FRAME COUNT,
1840 011302 012737 177600 000622 MOV #200,WCNT ;WORD COUNT,
1841 011310 012737 001700 000716 MOV #1700,UDES ;SLAVE DESC = NRZ NORMAL
1842 011316 012737 000061 000710 MOV #61,FUN ;LOAD OP CODE WRITE FWD
1843 011324 004737 012310 JSR PC,EXEC ;GO EXECUTE COMMAND
1844 011330 012737 017350 000626 MOV #MSG46,ERRP ;SET ERROR MSG ADDRESS
1845 011336 004737 012510 JSR PC,ERCHK ;GO CHECK ERRORS
1846 011342 005737 000712 TST SERFL ;BRANCH IF AN ERROR OCCURRED
1847 011346 001026 BNE FT24X
1848 011350 004737 012442 JSR PC,RWND ;REWIND SLAVE
1849 011354 012737 023256 000616 MOV #RDATA,BADDR ;SET BUS ADDRESS FOR READ
1850 011362 012737 002300 000716 MOV #2300,UDES ;SET SLAVE DESC = PE,NORMAL
1851 011370 012737 000071 000710 MOV #71,FUN ;SET OP CODE = READ FWD
1852 011376 004737 012310 JSR PC,EXEC ;GO READ RECORD
1853 011402 032777 000040 167112 BIT #40,BDS ;BRANCH IF PES BIT CLEARED
1854 011410 001405 BEQ FT24X
1855 011412 012737 020121 000650 MOV #MSG63,ERADD
1856 011420 004737 004054 JSR PC,FT3ER ;GO PROCESS ERROR
1857 011424 004737 013370 FT24X: JSR PC,ITER
1858 011430 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULER

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1860
1861 ;AUTO-DENSITY SELECT TEST: WRITE-PE,READ-NRZ
1862 011434 012737 021342 000610 FT25: MOV #MSFT25,EMADDR ;SET ERROR MESSAGE ADDRESS
1863 011442 004737 012442 JSR PC,RWNO ;REWIND SLAVE
1864 011446 012737 000001 000720 MOV #1,PATRN ;SELECT PATTERN
1865 011454 004737 013222 JSR PC,DSUP ;GO DO DATA SETUP
1866 011460 012737 021544 000616 MOV #WDATA,BADDR ;SET BUS ADDRESS
1867 011466 012737 177400 000620 MOV #400,FCNT ;FRAME COUNT,
1868 011474 012737 177600 000622 MOV #200,WCNT ;WORD COUNT,
1869 011502 012737 002300 000716 MOV #2300,ODES ;SLAVE ! SC = PE,NORMAL
1870 011510 012737 000061 000710 MOV #61,FUN ;LOAD WPT OP CODE
1871 011516 004737 012310 JSR PC,EXEC ;GO EXECUTE WRITE
1872 011522 012737 017350 000626 MOV #MSG46,ERRP ;SET ERROR MSG HDR
1873 011530 004737 012510 JSR PC,ERCHK ;GO CHECK FOR ERRORS
1874 011534 005737 000712 TST SERFL ;BRANCH IF ERROR OCCURRED
1875 011540 001026 BNE FT25X
1876 011542 004737 012442 JSR PC,RWNO ;REWIND SLAVE
1877 011546 012737 023256 000616 MOV #RDATA,BADDR ;SET BUS ADDRESS FOR READ
1878 011554 012737 001700 000716 MOV #1700,ODES ;SET SLAVE DESC = NRZ,NORMAL
1879 011562 012737 000071 000710 MOV #71,FUN ;SET READ FWD OP CODE
1880 011570 004737 012310 JSR PC,EXEC ;GO EXECUTE
1881 011574 032777 000040 166720 BIT #40,BDS ;BRANCH IF PES BIT GOT SET
1882 011602 001005 BNE FT25X
1883 011604 012737 020152 000650 MOV #MSG64,ERRDD
1884 011612 004737 004054 JSR PC,FT3ER ;GO PROCESS ERROR
1885 011616 004737 013370 FT25X: JSR PC,ITER ;ITERATION LOOP
1886 011622 000137 003074 JMP TSCD2 ;RETURN TO SCHEDULER
1887

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1890 ;**B SEQUENTIAL TAPE MARK TEST
1891
1892 011626 000240 FT26: NOP
1893 011630 012737 021420 000610 MOV #MSFT26,EMADDR ;SET TEST ERROR MSG HEADER
1894 011636 012737 001700 000716 MOV #1700,ODES ;SET NRZ
1895 011644 004737 012442 1\$: JSR PC,RWND ;REWIND SLAVE
1896 011650 012737 000027 000710 MOV #27,FUN ;SET WRITE TAPE MARK FUNCTION CODE
1897 011656 004737 012310 JSR PC,EXEC ;GO DO TAPE MARK
1898 011662 005037 000660 CLR STMSK ;CLEAR EXPECTED ERROR MASK
1899 011666 012737 016315 000626 MOV #MSG15,ERRP ;SET ERROR MESSAGE
1900 011674 004737 012510 JSR PC,ERCHK ;GO CHECK FOR ERRORS
1901 011700 004737 013164 JSR PC,TMCHK ;GO CHECK FOR TAPE MARK
1902 011704 005737 000712 TST SERFL ;EXIT TEST IF ERROR DETECTED
1903 011710 001061 BNE FT26X
1904 011712 004737 012310 JSR PC,EXEC ;WRITE SECOND TAPE MARK
1905 011716 012737 016336 000626 MOV #MSG15A,ERRP ;SET ERROR MESSAGE
1906 011724 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR
1907 011730 004737 013164 JSR PC,TMCHK
1908 011734 005737 000712 TST SERFL ;EXIT TEST IF ERROR DETECTED
1909 011740 001045 BNE FT26X
1910 011742 004737 012442 JSR PC,RWND ;REWIND
1911 011746 012737 000031 000710 MOV #31,FUN ;SET SPACE FORWARD OP CODE
1912 011754 012737 177777 000642 MOV #1,SCNT ;SET # OF RECORDS TO SPACE
1913 011762 004737 012310 JSR PC,EXEC ;GO SPACE FORWARD
1914 011766 012737 017374 000626 MOV #MSG47,ERRP ;SET SPACE FORWARD ERROR
1915 011774 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR BITS
1916 012000 004737 013164 JSR PC,TMCHK ;GO CHECK IF TAPE MARK DETECTED
1917 012004 005737 000712 TST SERFL ;EXIT TEST IF ERROR DETECTED
1918 012010 001021 BNE FT26X
1919 012012 004737 012310 JSR PC,EXEC ;SPACE TO SECOND TAPE MARK
1920 012016 004737 012510 JSR PC,ERCHK ;GO CHECK ERROR BITS
1921 012022 004737 013164 JSR PC,TMCHK ;CHECK IF TAPE MARK DETECTED
1922 012026 005737 000712 TST SERFL ;EXIT TEST IF ERROR DETECTED
1923 012032 001010 BNE FT26X
1924 012034 032737 002000 00071 BIT #2000,ODES ;EXIT TEST IF PE COMPLETED
1925 012042 001004 BNE FT26X
1926 012044 012737 002300 000716 MOV #2300,ODES ;SET PE MODE
1927 012052 000674 BR 1\$
1928 012054 004737 013370 FT26X: JSR PC,ITER
1929 012060 000137 003074 JMP TSCD2

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1931                                ;REWIND: OFF LINE TEST*****
1932
1933 012064 032777 010000 166456 FT27: BIT      #10000,BSWR      ;SEE IF IN CONTINUOUS MODE
1934 012072 001104                BNE      FT27XX              ;IF SO: BR
1935 012074 005737 001662                TST      CHNFLG        ;BRANCH IF CHAIN MODE
1936 012100 001101                BNE      FT27XX
1937 012102 012737 021461 000610          MOV      #MSFT27,EMADDR    ;SET TEST HEADER
1938 012110 004737 012442                JSR      PC,RWND        ;REWIND & SELECT SLAVE
1939 012114 012737 000001 000720          MOV      #1,PATRN      ;SELECT PATTERN (ALL 1'S)
1940 012122 004737 013222                JSR      PC,DSUP        ;FILL WRITE BUFFER
1941 012126 012737 021544 000616          MOV      #WDATA,BADDR    ;SET WRITE BUFFER BUS ADDRESS
1942 012134 012737 177400 000620          MOV      #-400,FCNT    ;SET FRAME COUNT
1943 012142 012737 177600 000622          MOV      #-200,WCNT    ;SET WORD COUNT
1944 012150 012737 001700 000716          MOV      #1700,UDES    ;SET UNIT DESCRIPTION = NRZ
1945 012156 012737 000061 000710          MOV      #61,FUN      ;SET WRITE COMMAND
1946 012164 004737 012310                JSR      PC,EXEC        ;GO WRITE A RECORD
1947 012170 004737 013540                JSR      PC,INIT1       ;++B CLEAR ANY ERROR BITS
1948 012174 012777 000003 166306          MOV      #3,BC1        ;ISSUE REWIND: OFF LINE COMMAND
1949 012202 005037 000674                CLR      SCOLP        ;CLEAR SCOPE LOOP
1950 012206 012700 000042                MOV      #42,R0
1951 012212 005001                1$: CLR      R1                ;CLEAR TIMER
1952 012214 005301                2$: DEC      R1
1953 012216 001376                BNE      2$                ;IF NOT TIMED OUT: BR
1954 012220 005300                DEC      R0
1955 012222 001373                BNE      1$                ;IF NOT ALL TIMED OUT: BR
1956 012224 032777 010000 166270          BIT      #10000,BDS      ;SEE IF MOL IS RESET
1957 012232 001406                BEQ      3$                ;IF SO: BR
1958 012234 012737 017605 000650          MOV      #MSG53,ERADD    ;SET ERROR CODE
1959 012242 004737 004054                JSR      PC,FT3ER      ;GO DO ERROR
1960 012246 000412                BR      FT27X
1961 012250 013700 000524                3$: MOV      ER,R0        ;GET ADDRESS OF ERROR REG
1962 012254 005001                CLR      R1                ;RESULT SHOULD BE 0
1963 012256 020110                CMP      R1,(R0)        ;BRANCH IF ERROR REG = 0
1964 012260 001405                BEQ      FT27X
1965 012262 012737 020206 000650          MOV      #MSG67,ERADD    ;SET ERROR MSG HEADER
1966 012270 004737 003564                JSR      PC,FT2ER      ;GO TYPE ERROR
1967 012274 012704 017632                FT27X: MOV      #MSG54,R4
1968 012300 004737 014414                JSR      PC,TTOUT      ;PRINT ON LINE REQUEST
1969 012304 000137 003074                FT27XX: JMP      TSCD2    ;RETURN TO SCHEDULER

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SEQ 0052

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1971
1972                                     ;COMMAND EXECUTE SUBROUTINE*****
1973
1974 012310 000240 EXEC: NOP
1975 012312 053777 000716 166222 BIS      UDES,@TC      ;LOAD TAPE CONT
1976 012320 013777 000622 166164 MOV      WCNT,@WC      ;LOAD WC
1977 012326 013777 000620 166162 MOV      FCNT,@FC      ;LOAD FC
1978 012334 013777 000610 166152 MOV      BADDR,@BA      ;LOAD BA
1979 012342 022737 000031 000710 CMP      #31,FUN      ;SEE IF SPACE FORWARD
1980 012350 001404 BEQ      EXECA      ;IF SO: BR
1981 012352 022737 000033 000710 CMP      #33,FUN      ;SEE IF SPACE REVERSE
1982 012360 001003 BNE      EXECB      ;IF NOT: BR
1983 012362 013777 000642 166126 EXECA: MOV      SCNT,@FC      ;SET SPACE COUNT
1984 012370 000240 EXECB: NOP
1985 012372 013777 000710 166110 MOV      FUN,@C1      ;LOAD OP-CODE + GO
1986 012400 000240 NOP
1987 012402 013703 000636 MOV      RDYDX,R3      ;SET DELAY
1988 012406 005004 CLR      R4
1989 012410 032777 000200 166104 EXECC: BIT      #200,@DS      ;SEE IF DRY
1990 012416 001004 BNE      EXECX      ;IF SO: BR
1991 012420 005304 DEC      R4
1992 012422 001372 BNE      EXECC
1993 012424 005303 DEC      R3      ;DELAY FOR DRY
1994 012426 001370 BNE      EXECC
1995 012430 013703 000640 EXECX: MOV      OPDYX,R3
1996 012434 005303 EXECXA: DEC      R3      ;DELAY
1997 012436 001376 BNE      EXECXA
1998 012440 000207 EXECXX: RTS      PC      ;RETURN TO CALLER
1999

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2001                                ;REWIND SUBROUTINE*****
2002
2003 012442 004737 013540          RWND: JSR    PC,INIT1      ;INIT SLAVE
2004 012446 012777 000007 166034  MOV    #7,BC1          ;START REWIND
2005 012454 032777 000002 166040 1$: BIT    #2,SDS          ;WAIT FOR BOT TO SET
2006 012462 001774                BEQ     1$
2007 012464 032777 020000 166030 2$: BIT    #20000,SDS      ;WAIT FOR PIP TO CLEAR
2008 012472 001374                BNE     2$
2009 012474 105777 166022          3$: TSTB   SDS           ;...B WAIT FOR DRY
2010 012500 100375                BPL     3$
2011 012502 004737 013540          JSR    PC,INIT1      ;INIT
2012 012506 000207                RTS     PC           ;RETURN TO CALLER
2013

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2015
2016
2017 012510 005037 000712 ERCHK: CLR SERFL ;CLEAR FLAG
2018 012514 017737 166002 000664 MOV DDS,DSAV ;SAVE DRIVE STATUS REGISTER
2019 012522 032777 040000 165772 BIT #40000,DDS ;SEE IF ERROR
2020 012530 001021 BNE ERPT ;IF SO: BR
2021 012532 022777 006576 166146 CMP #FT15,DLTADD ;CHECK FOR TEST 15
2022 012540 001404 BEQ 1# ;BRANCH IF TEST 15
2023 012542 022777 007210 166136 CMP #FT16,DLTADD ;CHECK FOR TEST 16
2024 012550 001010 BNE 2# ;BRANCH IF NOT TEST 16
2025 012552 032777 100000 165742 1#; BIT #100000,DDS ;TEST FOR ATA
2026 012560 001004 BNE 2# ;EXIT IF ATA IS SET
2027 012562 012737 020310 000626 MOV #MSG71,ERRP ;SET UP ERROR CODE
2028 012570 000434 BR ERPTG ;GO REPORT ERROR
2029 012572 000207 2#; RTS PC ;RETURN
2030 012574 017704 165724 ERPT: MOV #ER,R4 ;GET ERROR REGISTER
2031 012600 032737 002000 000716 BIT #2000,ODES ;SEE IF PE
2032 012606 001403 BEQ 1# ;IF SO: BR
2033 012610 042737 000200 000660 BIC #200,STMSK ;RESET PEF MASK
2034 012616 022737 000003 000742 1#; CMP #3,JUMPER ;TEST FOR NON-STANDARD JUMPER
2035 012624 001413 BEQ ERPTA1 ;BRANCH IF STANDARD
2036 012626 022777 011242 166052 CMP #FT24,DLTADD ;CHECK FOR TEST 24
2037 012634 001404 BEQ 2# ;BRANCH IF TST24
2038 012636 022777 011454 166042 CMP #FT25,DLTADD ;CHECK FOR TEST 25
2039 012644 001003 BNE ERPTA1
2040 012646 052737 020000 000660 2#; BIS #20000,STMSK ;SET OPI BIT IN ERROR MASK
2041 012654 043704 000660 ERPTA1: BIC STMSK,R4 ;MASK DONT CARE BITS
2042 012660 001536 BEQ ERPTX ;IF NO UNEXPECTED ERRORS: BR
2043 012662 012737 000001 000712 ERPTG: MOV #1,SERFL ;SET FLAG
2044 012670 032777 020000 165652 BIT #20000,DSWR ;SEE IF SHOULD PRINT ERRORS
2045 012676 001123 BNE ERPTD ;IF NOT: BR
2046 012700 005737 000606 IST HORFL ;SEE IF DONE HEADER
2047 012704 001006 BNE ERPTA ;IF SO: BR
2048 012706 005237 000606 INC HORFL ;SET HEADER FLAG
2049 012712 013704 000610 MOV EMADDR,R4
2050 012716 004737 014414 JSR PC,TTOUT ;PRINT HEADER
2051 012722 013704 000626 ERPTA: MOV ERRP,R4 ;GET ERROR CODE
2052 012726 001414 BEQ ERPTB ;IF NONE: BR
2053 012730 004737 014414 JSR PC,TTOUT ;PRINT ERROR CODE
2054 012734 012704 016443 MOV #MSG20,R4 ;SET NRZ TAG
2055 012740 032777 002000 165574 BIT #2000,OTC ;SEE IF PE
2056 012746 001402 BEQ ERPT1A ;IF NOT: BR
2057 012750 012704 016451 MOV #MSG21,R4 ;ELSE SET PE TAG
2058 012754 004737 014414 JSR PC,TTOUT ;PRINT TAG
2059 012760 013704 000630 ERPTB: MOV ERRP1,R4 ;SEE IF CODE 2
2060 012764 001402 BEQ ERPTB1 ;IF NOT: BR
2061 012766 004737 014414 JSR PC,TTOUT ;PRINT CODE 2
2062 012772 032777 004000 165550 ERPTB1: BIT #4000,DSWR ;SEE IF ITERATION
2063 013000 001010 BNE ERPTC ;IF NOT: BR
2064 013002 012704 017776 MOV #MSG56,R4
2065 013006 004737 014414 JSR PC,TTOUT ;PRINT ITER TAG
2066 013012 013703 000662 MOV ITCNT,R3
2067 013016 004737 014630 JSR PC,OTCP ;PRINT ITERATION
2068 013022 012704 015422 ERPTC: MOV #MSG1,R4 ;PRINT REGISTER TAG
2069 013026 004737 014414 JSR PC,TTOUT
2070 013032 017703 165452 MOV WC1,R3

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SEQ 0055

2071	013036	004737	014616	JSR	PC, OCTPE	;PRINT CS1
2072	013042	017703	165444	MOV	BWC, R3	
2073	013046	004737	014616	JSR	PC, OCTPE	;PRINT WC
2074	013052	017703	165436	MOV	BBA, R3	
2075	013056	004737	014616	JSR	PC, OCTPE	;PRINT BA
2076	013062	017703	165430	MOV	BFC, R3	
2077	013066	004737	014616	JSR	PC, OCTPE	;PRINT FC
2078	013072	017703	165422	MOV	BGS, R3	
2079	013076	004737	014616	JSR	PC, OCTPE	;PRINT GS2
2080	013102	005737	007206	TST	TAG	;C CHECK FOR SPECIAL DS
2081	013106	001403		BEQ	1:	
2082	013110	013703	000652	MOV	TEMP1, R3	;C PRINT DS READ INTO TEMP1 AT CRITICAL TIME
2083	013114	000402		BR	2:	
2084	013116	017703	165400	1: MOV	BDS, R3	
2085	013122	004737	014616	2: JSR	PC, OCTPE	;PRINT DS
2086	013126	017703	165372	MOV	BGR, R3	
2087	013132	004737	014616	JSR	PC, OCTPE	;PRINT GR
2088	013136	017703	165400	MOV	BTC, R3	
2089	013142	004737	014616	JSR	PC, OCTPE	;PRINT TC
2090	013146	005777	165376	ERPTD: TST	BWR	;SEE IF HALT ON ERROR
2091	013152	100001		BPL	ERPTX	;IF NOT: BR
2092	013154	000000		HALT		
2093	013156	004737	013540	ERPTX: JSR	PC, INIT1	;INIT
2094	013162	000207		ERPTXX: RTS	PC	;RETURN
2095						
2096						

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2098                                     ;TAPE MARK STATUS CHECK*****
2099
2100 013164 032737 000004 000664 TMCHK: BIT      #4,DSAV      ;BRANCH IF TM SET
2101 013172 001012                BNE      1$
2102 013174 005737 000712                TST      SERFL      ;SEE IF HAD ERROR
2103 013200 001007                BNE      1$
2104 013202 012737 020006 000630        MOV      #MSG57,ERRP1    ;SET ERROR CODE 2
2105 013210 004737 012362                JSR      PC,ERPTG      ;GO PRINT TM ERROR
2106 013214 005037 000630                CLR      ERRP1      ;CLEAR CODE 2 FLAG
2107 013220 000207                1$:    RTS      PC      ;RETURN
2108
2109                                     ;DATA SETUP ROUTINE*****
2110
2111 013222 000240                DSUP:   NOP
2112 013224 012703 021544        DSO:   MOV      #WDATA,R3      ;R3 = ADDRS OF WRITE BUFFER
2113 013230 013701 000720                MOV      PATRN,R1      ;R1 = PATTERN SELECTOR
2114 013234 006301                ASL      R1      ;MAKE PATTERN SELECTOR EVEN
2115 013236 004771 000744                JSR      PC,#DATBL(R1) ;GO GENERATE PATTERN
2116 013242 012702 000640                MOV      #640,R2      ;R2=BUFFER SIZE *2
2117 013246 012701 023256                MOV      #RDATA,R1      ;R1=READ DATA START
2118 013252 005021                1$:    CLR      (R1)+      ;CLEAR BUFFER
2119 013254 005302                DEC      R2      ;SEE IF DONE ALL
2120 013256 001375                BNE      1$
2121 013260 000207                RTS      PC      ;EXIT
2122
2123                                     ;ALL ONES*****
2124
2125 013262 012701 177777        DAT1:   MOV      #1,R1      ;R1=DATA
2126 013266 012702 000640        DAT1A: MOV      #640,R2      ;R2=WORD COUNT *2
2127 013272 010123                1$:    MOV      R1,(R3)+      ;LOAD BUFFER
2128 013274 005302                DEC      R2      ;SEE IF DONE
2129 013276 001375                BNE      1$
2130 013300 000207                RTS      PC      ;IF NOT: BR
2131
2132                                     ;ALL ZEROS*****
2133
2134 013302 005001        DAT2:   CLR      R1      ;R1=DATA
2135 013304 000770        BR      DAT1A      ;LOAD BUFFER
2136
2137                                     ;ONE/ZERO IN ALTERNATING CHARACTERS*****
2138
2139 013306 012701 125125        DAT3:   MOV      #125125,R1    ;R1=DATA
2140 013312 000765        BR      DAT1A      ;LOAD BUFFER
2141
2142                                     ;ALL BITS 0-377*****
2143
2144 013314 005001        DAT4:   CLR      R1      ;R1=STARTING DATA
2145 013316 012702 001500        MOV      #1500,R2      ;R2=CHARACTER COUNT
2146 013322 110123                1$:    MOVH    R1,(R3)+      ;LOAD BUFFER
2147 013324 105201                INCB    R1      ;BUMP DATA
2148 013326 005302                DEC      R2      ;SEE IF DONE
2149 013330 001374                BNE      1$
2150 013332 000207                RTS      PC      ;IF NOT: BR
2151

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2158 013334 000240
2159 013335 032777 040000 165204
2160 013344 001001
2161 013346 000207
2162 013350 000240
2163 013352 005737 000674
2164 013356 001001
2165 013360 000207
2166 013362 022626
2167 013364 000177 165304
2168
2169
2170
2171 013370 000240
2172 013372 032777 004000 165150
2173 013400 001403
2174 013402 005037 000662
2175 013406 000207
2176 013410 005737 000730
2177 013414 001772
2178 013416 005237 000662
2179 013422 023737 000662 000566
2180 013430 001764
2181 013432 005726
2182 013434 017700 165236
2183 013440 000110
2184
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2189 013442 010046
2190 013444 012700 000120
2191 013450 012760 011626 000756
2192 013456 005720
2193 013460 012760 011626 000756
2194
2195 013466 005720
2196 013470 012760 012064 000756
2197 013476 005720
2198 013500 012760 012064 000756
2199 013506 005720
2200 013510 012760 003162 000756
2201 013516 005720
2202 013520 012760 000027 000756
2203 013526 012737 000027 001120
2204 013534 017600
2205 013536 000207
2206
2207
2208

;SCOPE LOOP ON ERROR SUBROUTINE*****
SCOPE: NOP
BIT #40000,DSWR ;SEE IF LOOP ON ERROR
BNE 1$ ;IF SO: BR
RTS PC ;ELSE EXIT
1$: NOP
TST SCOLP ;SEE IF SCOPE ADDRESS
BNE 2$ ;IF NOT: BR
RTS PC ;ELSE EXIT
2$: CMP (SP)+,(SP)+ ;RESET STACK
JMP @SCOLP ;LOOP ON ERROR

;TEST ITERATION SUBROUTINE*****
ITER: NOP
BIT #4000,DSWR ;SEE IF ITERATIONS
BEQ 2$ ;IF SO: BR
CLR ITCNT ;CLEAR ITERATION COUNTER
RTS PC ;ELSE EXIT
2$: TST PCNTR ;DO SINGLE SUBTEST ITERATION
BEQ 1$ ;ON FIRST PASS
INC ITCNT ;BUMP COUNTER
CMP ITCNT,ITAMT ;SEE IF DONE ALL
BEQ 1$ ;IF SO: BR
TST (SP)+ ;RESET STACK
MOV @ITRLP,R0 ;SET ITERATION POINTER
JMP (R0) ;GO ITERATE

;NON-STANDARD JUMPER HANDLER SUBROUTINE*****
NOST: MOV R0,-(SP) ;SAVE R0
MOV #120,R0 ;SET UP INDEX
MOV #FT26,TSTTBL(R0);ADJUST SCHEDULAR TEST TABLE
TST (R0)+
MOV #FT26,TSTTBL(R0) ;OVERLAY TEST LIST
TST (R0)+
MOV #FT27,TSTTBL(R0)
TST (R0)+
MOV #FT27,TSTTBL(R0)
TST (R0)+
MOV #TEND,TSTTBL(R0)
TST (R0)+
MOV #27,TSTTBL(R0)
MOV #27,ILAST
MOV (SP)+,R0 ;RESTO R0
RTS PC

;INITIALIZE SUBROUTINE*****

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SEQ 0058

```
2209 013540 000240      INIT1: NOP
2210 013542 012777 000040 164750  MOV    #40, @CS      ;INIT
2211 013550 013777 000612 164742  INIT2: MOV    DRVN, @CS    ;SELECT DRIVE
2212 013556 013777 000614 164756  MOV    SLVN, @TC    ;SELECT SLAVE
2213 013564 000207      RTS      PC      ;RETURN
2214
2215                      ;MAG TAPE INTERRUPT HANDLER*****
2216
2217 013566 000240      MTINT: NOP
2218 013570 013716 000646  MOV    RTRN, (SP)    ;RETURN TO (RTRN)
2219 013574 000002      RTI      ;RETURN
2220
```

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SEQ 0059

2222

2223

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2225 013576 017746 164752

2226 013602 042716 000200

2227 013606 122716 000003

2228 013612 001010

2229 013614 005737 001662

2230 013620 001005

2231 013622 005077 164720

2232 013626 000005

2233 013630 000137 000200

2234 013634 122716 000001

2235 013640 001017

2236 013642 022737 000176 000550

2237 013650 001016

2238 013652 012737 177570 000550

2239 013660 004737 015356

2240 013664 012704 020262

2241 013670 004737 014414

2242 013674 004737 015400

2243 013700 122716 000007

2244 013704 001006

;TTY INTERRUPT HANDLER*****

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TTINT:  MOV    0TK8, -(SP)      ;GET CHARACTER
        BIC    0200, (SP)      ;CLEAR PARITY BIT
        CMPB   03, (SP)        ;BRANCH IF NOT CONTROL C
        BNE    1$
        TST    CHNFLG          ;INHIBIT +C IF CHAIN MODE
        BNE    1$
        CLR    0PSW
        RESET
        JMP     00200           ;RESTART PROGRAM
1$:      CMPB   01, (SP)        ;BRANCH IF NOT +A
        BNE    2$
        CMP     0SWREG, SWR     ;BRANCH IF HARDWARE SWR IS INVOKED
        BNE    3$
        MOV     0177570, SWR    ;INVOKE HARDWARE SWR
        JSR     PC, .SAVE       ;SAVE REGISTERS ON THE STACK
        MOV     0MSG70, R4      ;TYPE 'HARDWARE SWR IN USE'
        JSR     PC, .TIOUT
        JSR     PC, .RESTORE
2$:      CMPB   07, (SP)        ;BRANCH IF NOT +G
        BNE    4$

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SEQ 0060

2246									
2247	013706	012737	000176	000550	3\$:	MOV	\$SWREG,SWR		; INVOKE SOFTWARE SWR
2248	013714	004737	015260			JSR	PC,GTWR		; GET SWITCHES
2249	013720	000414				BR	6\$		
2250	013722	122716	000023		4\$:	CMPS	\$23,(SP)		; SEE IF \$S
2251	013726	001004				BNE	5\$		; BRANCH IF NOT
2252	013730	112737	000377	001122		MOVB	\$377,\$CNTRL5		; SET XOFF FLAG
2253	013736	000405				BR	6\$		
2254	013740	122716	000021		5\$:	CMPS	\$21,(SP)		; SEE IF \$Q
2255	013744	001002				BNE	6\$		; BRANCH IF NOT
2256	013746	105037	001122			CLRB	\$CNTRL5		
2257	013752	005726			6\$:	TST	(SP)+		; POP CHARACTER OFF STACK
2258	013754	000002				RTI			; RETURN

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SEQ 0061

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2260                                     ;BUS ADDRESS TRAP HANDLER*****
2261
2262 013756 000240          TRAP:  NOP
2263 013760 032777 020000 164562    BIT      *20000,0SWR      ;SEE IF SHOULD PRINT ERRORS
2264 013766 001020          BNE      TRAP2      ;IF NOT; BR
2265 013770 005737 000606          TST      HDRFL      ;SEE IF DONE HEADER
2266 013774 001006          BNE      TRAP1      ;IF SO; BR
2267 013776 005237 000606          INC      HDRFL      ;ELSE SET HEADER FLAG
2268 014002 013704 000610          MOV      EMADDR,R4
2269 014006 004737 014414          JSR      PC,TTOUT      ;PRINT HEADER
2270 014012 012704 016476          TRAP1: MOV      *MSG24,R4
2271 014016 004737 014414          JSR      PC,TTOUT      ;PRINT ERROR
2272 014022 010103          MOV      R1,R3      ;GET ADDRESS THAT CAUSED THE TRAP
2273 014024 004737 014630          JSR      PC,OCTP      ;PRINT ADDRESS OF TRAP
2274 014030 005777 164514          TRAP2: TST      0SWR      ;SEE IF HALT ON ERROR
2275 014034 100001          BPL      TRAPX      ;IF NOT; BR
2276 014036 000000          HALT
2277 014040 022626          TRAPX: CMP      (SP), (SP),      ;RESET STACK
2278 014042 012737 003322 000674    MOV      *FT1A,SCOLP      ;SET SCOPE ADDRESS
2279 014050 004737 013334          JSR      PC,SCOPE      ;GO SEE IF SCOPE LOOP
2280 014054 005737 000722          TST      RHIF      ;SEE IF INITIAL ADDRESS TEST
2281 014060 001402          BEQ      TRAPXX      ;IF NOT; BR
2282 014062 000137 001764          JMP      STOB      ;ELSE REDO ADDRESS REQUEST
2283 014066 000137 003326          TRAPXX: JMP      FT1B      ;RETURN TO TEST 1
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2303 014072 010146      TTR:  MOV      R1, -(SP)      ;SAVE CHAR COUNT ON STACK
2304 014074 011601      10$:  MOV      (SP),R1      ;RESTORE CHAR COUNT (FOR +U)
2305 014076 005037 000652  CLR      TEMP1      ;CLEAR FIRST CHARACTER FLAG
2306 014102 005000      CLR      R0
2307 014104 004737 014352  1$:   JSR      PC,TTIN      ;GO READ CHARACTER
2308 014110 122737 000003 000602  CMPB     #3,TIB      ;BRANCH IF NOT +C
2309 014116 001003      BNE      11$
2310 014120 000005      RESET
2311 014122 000137 000200      JMP      #0200      ;RESTART
2312 014126 122737 000015 000602  11$:  CMPB     #15,TIB      ;SEE IF CR
2313 014134 001004      BNE      2$
2314 014136 005737 000652      TST      TEMP1      ;SEE IF FIRST CHARACTER
2315 014142 001471      BEQ      9$
2316 014144 000457      BR       6$
2317 014146 122737 000025 000602  2$:  CMPB     #25,TIB      ;ELSE GO LOAD VALUE
2318 014154 001005      BNE      21$
2319 014156 012704 020202      MOV      #MSG65,R4      ;TYPE <CR><LF>
2320 014162 004737 014414      JSR      PC,TTOUT
2321 014166 000742      BR       10$
2322 014170 122737 000177 000602  21$:  CMPB     #177,TIB      ;RESTART
2323 014176 001012      BNE      3$
2324 014200 000241      CLC
2325 014202 006000      ROR      R0
2326 014204 006200      ASR      R0
2327 014206 006200      ASR      R0
2328 014210 012704 020204      MOV      #MSG66,R4      ;TYPE '\n'
2329 014214 004737 014414      JSR      PC,TTOUT
2330 014220 005201      INC      R1
2331 014222 000730      BR       1$
2332 014224 122737 000060 000602  3$:  CMPB     #60,TIB      ;DECREMENT CHAR RECEIVED COUNT
2333 014232 101402      RI 05      ;GET NEXT CHARACTER
2334 014234 000137 014352      JMP      T1NER      ;SEE IF CHAR IS LESS THAN 0
2335 014240 122737 000070 000602  4$:  CMPB     #70,TIB      ;IF NOT: BR
2336 014246 101002      BHI      5$
2337 014250 000137 014352      JMP      T1NER      ;ELSE GO TO ERROR
2338 014254 005237 000652      INC      TEMP1      ;SEE IF CHAR IS GREATER THAN 7
2339 014260 006300      ASL      R0
2340 014262 006300      ASL      R0
2341 014264 006300      ASL      R0

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SEQ 0063

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2342 014266 042737 1.7770 000602      BIC      #177770,T1B      ;STRIP ASCII
2343 014274 053700 000602      BIS      T1B,R0        ;LOAD CHARACTER
2344 014300 005301              DEC      R1          ;SEE IF DONE
2345 014302 001300              BNE      1$          ;IF NOT: BR
2346 014304 020002              6$:  CMP      R0,R2        ;SEE IF EXCEEDED MAXIMUM LIMIT
2347 014306 101402              BLOS     7$          ;IF NOT: BR
2348 014310 000137 014332      JMP      T1NER        ;ELSE GO TO ERROR
2349 014314 020300              7$:  CMP      R3,R0        ;SEE IF BELOW MINIMUM LIMIT
2350 014316 101402              BLOS     8$          ;IF NOT: BR
2351 014320 000137 014332      JMP      T1NER        ;ELSE GO TO ERROR
2352 014324 010015              8$:  MOV      R0,(R5)      ;LOAD VALUE
2353 014326 005726              9$:  TST      (SP)+        ;POP CHAR COUNT OFF STACK
2354 014330 000207              RTS      PC          ;EXIT
2355
2356                                ;TTY ENTRY ERROR SUBROUTINE*****
2357
2358 014332 012704 015777      T1NER: MOV      #MSG7,R4
2359 014336 004737 014414      JSR      PC,T1OUT        ;PRINT?
2360 014342 005726              TST      (SP)+        ;POP CHAR COUNT OFF STACK
2361 014344 162716 000020      SUB      #20,(SP)      ;RESET SP TO START OF VALUE ROUTINE
2362 014350 000207              RTS      PC          ;REDO VALUE ENTRY
2363
2364                                ;TTY READ SUBROUTINE*****
2365
2366 014352 005277 164174      T1IN:  INC      #TKS
2367 014356 105777 164170      1$:  TSTB     #TKS
2368 014362 100375              RPL      1$
2369 014364 117737 164164 000602      MOVB     #TKB,T1B
2370 014372 042737 000200 000602      BIC      #200,T1B      ;STRIP PARITY BIT
2371 014400 013737 000602 000600      MOV      T1B,T0B      ;MOVE CHAR TO OUTPUT BFR
2372 014406 004737 014514      JSR      PC,T0G        ;AND TYPE IT
2373 014412 000207              RTS      PC
2374
2375                                ;TTY OUTPUT SUBROUTINE*****
2376
2377 014414 112437 000600      T1OUT: MOVB     (R4)+,T0B
2378 014420 122737 000043 000600      CMPB     #43,T0B
2379 014426 001472              BEQ      TEX
2380 014430 122737 000045 000600      CMPB     #45,T0B
2381 014436 001403              BEQ      1$
2382 014440 004737 014514      JSR      PC,T0G
2383 014444 000763              BR       T1OUT
2384 014446 112737 000015 000600 1$:  MOVB     #15,T0B
2385 014454 004737 014514      JSR      PC,T0G
2386 014460 012703 000004      MOV      #4,R3
2387 014464 005037 000600      2$:  CLR      T0B
2388 014470 004737 014514      JSR      PC,T0G
2389 014474 005303              DEC      R3
2390 014476 001372              BNE      2$          ;DO FILLERS
2391 014500 112737 000012 000600      MOVB     #12,T0B
2392 014506 004737 014514      JSR      PC,T0G
2393 014512 000740              BR       T1OUT

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SEQ 0064

2395	014514	105777	164032		TOG:	TSTB	@TKS		;SEE IF INPUT AT KEYBOARD
2396	014520	100024				BPL	3\$		;IF SO, THEN
2397	014522	117737	164026	001123		MOVB	@TKB,\$CNTRLS+1		;MOVE CHARACTER AND
2398	014530	142737	000200	001123		BICB	@200,\$CNTRLS+1		;MASK OFF PARITY BIT.
2399	014536	122737	000023	001123		CMPB	@23,\$CNTRLS+1		;SEE IF CHARACTER IS XOFF
2400	014544	001004				BNE	2\$		;IF XOFF, THEN
2401	014546	112737	000377	001122		MOVB	@377,\$CNTRLS		;SET XOFF FLAG
2402	014554	000757				BR	TOG		
2403	014556	122737	000021	001123	2\$:	CMPB	@21,\$CNTRLS+1		;SEE IF CHARACTER IS XON
2404	014564	001002				BNE	3\$		;IF SO THEN
2405	014566	105037	001122			CLRB	\$CNTRLS		;CLEAR XOFF FLAG
2406	014572	105737	001122		3\$:	TSTC	\$CNTRLS		;SEE IF IN XOFF MODE
2407	014576	100746				BMI	TOG		;IF NOT THEN
2408	014600	105777	163752			TSTB	@TPS		;CHECK IF PRINTER READY
2409	014604	100343				BPL	TOG		
2410	014606	113777	000600	163744		MOVB	TOB,@TPB		
2411	014614	000207			TEX:	RTS	PC		;RETURN

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SEQ 0065

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2413                                ;OCTAL OUTPUT SUBROUTINE*****
2414
2415 014616 012737 000001 015046 OCTPE: MOV    #1,OFL
2416 014624 C10304                MOV    R3,R4
2417 014626 000410                BR      OCTP0
2418 014630 005037 015046          OCTP: CLR    OFL                ;CLEAR FLAG FOR LEADING ZERO
2419 014634 010304                OCTPE1: MOV   R3,R4                ;SEE IF NUMBER IS ZERO
2420 014636 001004                BNE    OCTP0                ;IF NOT ZERO: BR
2421 014640 004737 015026          JSR    PC,OCTPG1            ;ELSE PRINT ZERO
2422 014644 000137 014770          JMP     OCTP3                ;SPACE AND EXIT
2423 014650 032704 100000          OCTP0: BIT    #100000,R4        ;SEE IF MSD = 1
2424 014654 001406                BEQ     OCTP1                ;IF NOT: BR
2425 014656 012704 000001          MOV    #1,R4
2426 014662 004737 015004          JSR    PC,OCTPG                ;PRINT 1
2427 014666 000137 014700          JMP     OCTP2
2428 014672 005004                OCTP1: CLR    R4
2429 014674 004737 015004          JSR    PC,OCTPG                ;PRINT 0
2430 014700 010304                OCTP2: MOV    R3,R4
2431 014702 006004                ROR     R4
2432 014704 006004                ROR     R4
2433 014706 006004                ROR     R4                ;POSITION DIGIT
2434 014710 006004                ROR     R4
2435 014712 000304                SWAB   R4
2436 014714 004737 015004          JSR    PC,OCTPG                ;PRINT DIGIT 2
2437 014720 010304                MOV    R3,R4
2438 014722 006004                ROR     R4
2439 014724 000304                SWAB   R4
2440 014726 004737 015004          JSR    PC,OCTPG                ;PRINT DIGIT 3
2441 014732 010304                MOV    R3,R4
2442 014734 006104                ROL     R4
2443 014736 006104                ROL     R4
2444 014740 000304                SWAB   R4
2445 014742 004737 015004          JSR    PC,OCTPG                ;PRINT DIGIT 4
2446 014746 010304                MOV    R3,R4
2447 014750 006004                ROR     R4
2448 014752 006004                ROR     R4
2449 014754 006004                ROR     R4
2450 014756 004737 015004          JSR    PC,OCTPG
2451 014752 010304                MOV    R3,R4
2452 014764 004737 015004          JSR    PC,OCTPG                ;PRINT DIGIT 5
2453 014770 012737 000240 000600 OCTP3: MOV    #240,TOB        ;PRINT SPACE
2454 014776 004737 014514          JSR    PC,TOB
2455 015002 000207                RTS     PC                ;EXIT
2456 015004 042704 177770          OCTPG: BIC    #177770,R4
2457 015010 001004                BNE    OCTPG0
2458 015012 005737 015046          TST     OFL
2459 015016 001001                BNE    OCTPG0
2460 015020 000207                RTS     PC
2461
2462 015022 005237 015046          OCTPG0: INC     OFL
2463 015026 052704 000260          OCTPG1: BIS    #260,R4
2464 015032 010437 000600          MOV    R4,TOB
2465 015036 004737 014514          JSR    PC,TOB
2466 015042 010304                MOV    R3,R4
2467 015044 000207                RTS     PC
2468 015046 000000          OFL: 0                ;FIRST CHAR FLAG

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2469
2470                                     ;DATA CHARACTER OUTPUT SUBROUTINE*****
2471
2472 015050 005037 000600      DOUT:  CLR      TOB
2473 015054 012704 000010      MOV      #10,R4          ;SET NUMBER TO PRINT
2474 015060 110337 000600      MOV      R3,TOB
2475 015064 105777 163466      1$:  TSTB      #TPS
2476 015070 100375           BPL      1$
2477 015072 132737 000200 000600  BITB      #200,TOB
2478 015100 001404           BEQ      2$
2479 015102 012777 000061 163450  MOV      #061,#TPB
2480 015110 000403           BR       3$
2481 015112 012777 000060 163440 2$:  MOV      #060,#TPB
2482 015120 006137 000600      3$:  ROL      TOB
2483 015124 005304           DEC      R4
2484 015126 001356           BNE      1$
2485 015130 000207           RTS      PC
2486
2487 015132 013703 000656      DOUTD: MOV      TEMP3,R3
2488 015136 000303           SWAB     R3
2489 015140 004737 015050      JSR      PC,DOUT
2490 015144 013703 000656      MOV      TEMP3,R3
2491 015150 004737 015050      JSR      PC,DOUT
2492 015154 000207           RTS      PC
2493
2494                                     ;SERIAL NUMBER PRINT SUBROUTINE*****
2495
2496 015156 010304           SNPT:  MOV      R3,R4
2497 015160 000304           SWAB     R4
2498 015162 006004           ROR      R4
2499 015164 006004           ROR      R4
2500 015166 006004           ROR      R4
2501 015170 006004           ROR      R4          ;GET FIRST DIGIT
2502 015172 004737 015234      JSR      PC,SNPG      ;GO PRINT
2503 015176 010304           MOV      R3,R4
2504 015200 000304           SWAB     R4          ;GET SECOND DIGIT
2505 015202 004737 015234      JSR      PC,SNPG      ;GO PRINT
2506 015206 010304           MOV      R3,R4
2507 015210 006004           ROR      R4
2508 015212 006004           ROR      R4
2509 015214 006004           ROR      R4
2510 015216 006004           ROR      R4          ;GET THIRD DIGIT
2511 015220 004737 015234      JSR      PC,SNPG      ;GO PRINT
2512 015224 010304           MOV      R3,R4          ;GET FOURTH DIGIT
2513 015226 004737 015234      JSR      PC,SNPG      ;GO PRINT
2514 015232 000207           RTS      PC          ;EXIT
2515 015234 012737 000260 000600 SNPG:  MOV      #260,TOB      ;SET BASE = 0
2516 015242 042704 177760      BIC      #177760,R4      ;MASK DIGIT
2517 015246 050437 000600      BIS      R4,TOB      ;SET ASCII
2518 015252 004737 014514      JSR      PC,TOG      ;TYPE DIGIT
2519 015256 000207           RTS      PC          ;RETURN
2520

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SEQ 0067

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2522
2523
2524 015260 022737 000176 000550 ;ROUTINE TO LOAD NEW VALUE INTO SWITCHES
2525 015266 001032 GTSWR: CMP #SWREG,SWR ;BRANCH IF SOFTWARE SWR
2526 015270 004737 015356 BNE 11 ;NOT INVOKED
2527 015274 012704 021521 JSR PC,,SAVE ;SAVE REGISTERS ON THE STACK
2528 015300 004737 014414 MOV #IMSWR,R4
2529 015304 017703 163240 JSR PC,TROUT
2530 015310 004737 014616 MOV #SWR,R3
2531 015314 012704 021530 JSR PC,OTPE
2532 015320 004737 014414 MOV #IMNEW,R4
2533 015324 013705 000550 JSR PC,TROUT
2534 015330 012701 000007 MOV SWR,R5 ;TTR ROUTINE RETURNS NEW VALUE TO (R5)
2535 015334 012702 177777 MOV #7,R1 ;LIMIT RESPONSE TO 7 CHARS
2536 015340 012703 000000 MOV #177777,R2 ;BETWEEN 0 AND 177777
2537 015344 004737 014072 JSR PC,TTR
2538 015350 004737 015400 JSR PC,,RESTORE ;RESTORE REGISTERS
2539 015354 000207 11: RTS PC
2540
2541 ;ROUTINE TO SAVE REGISTERS ON THE STACK
(1) 015356 010546 .SAVE: MOV #5,-(SP) ;R5 IS SAVED AT 12(SP)
(1) 015360 010446 MOV #4,-(SP) ;R4 IS SAVED AT 10(SP)
(1) 015362 010346 MOV #3,-(SP) ;R3 IS SAVED AT 6(SP)
(1) 015364 010246 MOV #2,-(SP) ;R2 IS SAVED AT 4(SP)
(1) 015366 010146 MOV #1,-(SP) ;R1 IS SAVED AT 2(SP)
(1) 015370 010046 MOV #0,-(SP) ;R0 IS SAVED AT (SP)
(1) 015372 016646 000014 MOV 14(SP),-(SP) ;PUSH RETURN PC ON THE STACK
(1) 015376 000207 RTS PC ;RETURN TO CALLER
(1)
2542 ;ROUTINE TO RESTORE REGISTERS SAVED ON THE STACK
(1) 015400 012666 000014 .RESTORE: MOV (SP),14(SP) ;STORE RETURN PC ON STACK
(1) 015404 012600 MOV (SP),#0
(1) 015406 012601 MOV (SP),#1
(1) 015410 012602 MOV (SP),#2
(1) 015412 012603 MOV (SP),#3
(1) 015414 012604 MOV (SP),#4
(1) 015416 012605 MOV (SP),#5
(1) 015420 000207 RTS PC ;RETURN
(1)
2543

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SEQ 0068

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2545                                     ;MESSAGE TABLE*****
2546
2547 015422 041445 030523 020040 MSG1: .ASCII /WCS1 WC BA FC CS2 /
      015430 020040 041527 020040
      015436 020040 041040 020101
      015444 020040 020040 041506
      015452 020040 020040 041440
      015460 031123 020040 020040
2548 015466 051504 020040 020040 .ASCII /DS ER TC#0/
      015474 042440 020122 020040
      015502 020040 041524 021445
2549 015510 051045 053505 047111 MSG2: .ASCII /WREWIND ERROR-BUT NOT SET WHEN PIP CLEARED0/
      015516 020104 051105 047522
      015524 026522 047502 020124
      015532 047516 020124 042523
      015540 020124 044127 047105
      015546 050040 050111 041440
      015554 042514 051101 042105
      015562 043
2550 015563 045 052045 030115 MSG3: .ASCII 'WWM03-TE16/TU77 BASIC FUNCTION TEST (CZTECF0)W';++B
      015570 026463 042524 033061
      015576 052057 033525 020067
      015604 040502 044523 020103
      015612 052506 041516 044524
      015620 047117 052040 051505
      015626 020124 041450 052132
      015634 041505 030106 022451
2551 015642 054524 042520 036040 .ASCII /TYPE <CR> TO TERMINATE RESPONSE & TC TO RESTART#0/
      015650 051103 020076 047524
      015656 052040 051105 044515
      015664 040516 042524 051040
      015672 051505 047520 051516
      015700 020105 020046 041536
      015706 052040 020117 042522
      015714 052123 051101 022524
      015722 043
2552 015723 045 042522 044507 MSG4: .ASCII /WREGISTER START * 0/
      015730 052123 051105 051440
      015736 040524 052122 036440
      015744 021440
2553 015746 053045 041505 047524 MSG5: .ASCII /WVECTOR * 0/
      015754 020122 020075 043
2554 015761 045 047105 020104 MSG6: .ASCII /WEND OF PASS 0/
      015766 043117 050040 051501
      015774 020123 043
2555 015777 040 020077 043 MSG7: .ASCII / ? 0/
2556 016003 045 047520 044523 MSG9: .ASCII /WPOSITION ERROR; 0/
      016010 044524 047117 042440
      016016 051122 051117 020072
      016024 043
2557 016025 045 051511 041440 MSG10A: .ASCII /WIS CONTROLLER JUMPERED IN NON- STANDARD MODE/<15><12>
      016032 047117 051124 046117
      016040 042514 020122 052512
      016046 050115 051105 042105
      016054 044440 020116 047516
      016062 026516 052123 047101

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SEQ 0069

	016070	040504	042122	046440		
	016076	042117	006505	012		
2558	016103	124	050131	020105	.ASCII	/TYPE 2 FOR NON-STANDARD OR CR FOR STANDARD; #/
	016110	020062	047506	020122		
	016116	047516	026516	052123		
	016124	047101	040504	042122		
	016132	047440	020122	051103		
	016140	043040	051117	051440		
	016146	040524	042116	051101		
	016154	035104	020040	020040		
	016162	020040	043			
2559	016165	045	051104	053111	MSG10: .ASCII	/#DRIVE NUMBER; #/
	016172	020105	052516	041115		
	016200	051105	020072	043		
2560	016205	045	046123	053101	MSG11: .ASCII	/#SLAVE NUMBER; #/
	016212	020105	052516	041115		
	016220	051105	020072	043		
2561	016225	045	051127	052111	MSG12: .ASCII	/#WRITE ERROR #/
	016232	020105	051105	047522		
	016240	020122	043			
2562	016243	045	042522	042101	MSG13: .ASCII	/#READ REVERSE ERROR #/
	016250	051040	053105	051105		
	016256	042523	042440	051122		
	016264	051117	021440			
2563	016270	051045	040505	020104	MSG14: .ASCII	/#READ FORWARD ERROR #/
	016276	047506	053522	051101		
	016304	020104	051105	047522		
	016312	020122	043			
2564	016315	045	051127	052111	MSG15: .ASCII	/#WRITE TM ERROR #/
	016322	020105	046524	042440		
	016330	051122	051117	021440		
2565	016336	020045	051127	052111	MSG15A: .ASCII	/# WRITE TM ERROR ON SECOND TM #/
	016344	020105	046524	042440		
	016352	051122	051117	047440		
	016360	020116	042523	047503		
	016366	042116	052040	020115		
	016374	043				
2566	016375	045	041520	020040	MSG15B: .ASCII	/#PC #/
	016402	043				
2567	016403	045	042522	042526	MSG16: .ASCII	/#REVERSE ERROR #/
	016410	051522	020105	051105		
	016416	047522	020122	043		
2568	016423	045	047506	053522	MSG17: .ASCII	/#FORWARD ERROR #/
	016430	051101	020104	051105		
	016436	047522	020122	043		
2569	016443	040	051116	020132	MSG20: .ASCII	/ NR/ #/
	016450	043				
2570	016451	040	042520	021440	MSG21: .ASCII	/ PE #/
2571	016456	042440	050130	035124	MSG22: .ASCII	/ EXPT; #/
	016464	021440				
2572	016466	051040	053103	035104	MSG23: .ASCII	/ RCVD; #/
	016474	021440				
2573	016476	041045	051525	052040	MSG24: .ASCII	/#BUS TRAP; #/
	016504	040522	035120	021440		
2574	016512	053445	035103	021440	MSG25: .ASCII	/#WC; #/
2575	016520	041045	035101	021440	MSG26: .ASCII	/#BA; #/

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SEQ 0070

2576	016526	042045	035102	021440	MSG27:	.ASCII	/WDB: #/
2577	016534	044445	044516	020124	MSG28:	.ASCII	/WINIT DID NOT CLEAR RH #/
	016542	044504	020104	047516			
	016550	020124	046103	040505			
	016556	020122	044122	021440			
2578	016564	051445	020103	047516	MSG29:	.ASCII	/WSC NOT RESET BY INIT #/
	016572	020124	042522	042523			
	016600	020124	054502	044440			
	016606	044516	020124	043			
2579	016613	045	051124	020105	MSG30:	.ASCII	/WTRE NOT RESET BY INIT #/
	016620	047516	020124	042522			
	016626	042523	020124	054502			
	016634	044440	044516	020124			
	016642	043					
2580	016643	045	051503	020062	MSG31:	.ASCII	/WCS2 NOT RESET BY INIT #/
	016650	047516	020124	042522			
	016656	042523	020124	054502			
	016664	044440	044516	020124			
	016672	043					
2581	016673	045	046104	020124	MSG32:	.ASCII	/WDLT NOT SET #/
	016700	047516	020124	042523			
	016706	020124	043				
2582	016711	045	041523	047040	MSG33:	.ASCII	/WSC NOT SET #/
	016716	052117	051440	052105			
	016724	021440					
2583	016726	052045	042522	047040	MSG34:	.ASCII	/WTRE NOT SET #/
	016734	052117	051440	052105			
	016742	021440					
2584	016744	044445	020122	047516	MSG35:	.ASCII	/WIR NOT SET BY INIT #/
	016752	020124	042523	020124			
	016760	054502	044440	044516			
	016766	020124	043				
2585	016771	045	051117	047040	MSG36:	.ASCII	/WOR NOT RESET BY INIT #/
	016776	052117	051040	051505			
	017004	052105	041040	020131			
	017012	047111	052111	021440			
2586	017020	047445	020122	047516	MSG37:	.ASCII	/WOR NOT RESET BY 1 SILO ENTRY #/
	017026	020124	042522	042523			
	017034	020124	054502	030440			
	017042	051440	046111	020117			
	017050	047105	051124	020131			
	017056	043					
2587	017057	045	051117	047040	MSG38:	.ASCII	/WOR NOT SET BY SILO FULL #/
	017064	052117	051440	052105			
	017072	041040	020131	044523			
	017100	047514	043040	046125			
	017106	020114	043				
2588	017111	045	040502	020104	MSG39:	.ASCII	/WBAD SILO READ #/
	017116	044523	047514	051040			
	017124	040505	020104	043			
2589	017131	045	051111	047040	MSG40:	.ASCII	/WIR NOT RESET BY SILO FULL #/
	017136	052117	051040	051505			
	017144	052105	041040	020131			
	017152	044523	047514	043040			
	017160	046125	021514				
2590	017164	047045	047117	042455	MSG41:	.ASCII	/WNON-EXIST DRIVE #/

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SEQ 0071

	017172	044530	052123	042040	
	017200	044522	042526	043	
2591	017205	045	047516	026516	MSG42: .ASCII /NON-EXIST SLAVE#/
	017212	054105	051511	020124	
	017220	046123	053101	021505	
2592	017226	051445	051105	040511	MSG43: .ASCII /SERIAL NO: #/
	017234	020114	047516	020072	
	017242	043			
2593	017243	045	051105	051501	MSG44: .ASCII /ERASE HEAD INOPERATIVE#/
	017250	020105	042510	042101	
	017256	044440	047516	042520	
	017264	040522	044524	042526	
	017272	043			
2594	017273	045	047520	051523	MSG45: .ASCII /POSSIBLE ERASE HEAD PROBLEM: /
	017300	041111	042514	042440	
	017306	040522	042523	044040	
	017314	040505	020104	051120	
	017322	041117	042514	035115	
	017330	040			
2595	017331	103	042510	045503	.ASCII /CHECK POLARITY#/
	017336	050040	046117	051101	
	017344	052111	021531		
2596	017350	051445	052105	052455	MSG46: .ASCII /SET-UP WRITE ERROR#/
	017356	020120	051127	052111	
	017364	020105	051105	047522	
	017372	021522			
2597	017374	051445	040520	042503	MSG47: .ASCII /SPACE FORWARD ERROR#/
	017402	043040	051117	040527	
	017410	042122	042440	051122	
	017416	051117	043		
2598	017421	045	050123	041501	MSG48: .ASCII /SPACE REVERSE ERROR#/
	017426	020105	042522	042526	
	017434	051522	020105	051105	
	017442	047522	021522		
2599	017446	041045	043125	042506	MSG49: .ASCII /BUFFERED WRITE ERROR#/
	017454	042522	020104	051127	
	017462	052111	020105	051105	
	017470	047522	021522		
2600	017474	041045	052117	051440	MSG50: .ASCII /BOT SET AFTER BUFFERED WRITE#/
	017502	052105	040440	052106	
	017510	051105	041040	043125	
	017516	042506	042522	020104	
	017524	051127	052111	021505	
2601	017532	047045	020117	047502	MSG51: .ASCII /NO BOT FROM READ IN PRESET#/
	017540	020124	051106	046517	
	017546	051040	040505	020104	
	017554	047111	050040	042522	
	017562	042523	021524		
2602	017566	052045	020103	047111	MSG52: .ASCII /MTC INCORRECT #/
	017574	047503	051122	041505	
	017602	020124	043		
2603	017605	045	047515	020114	MSG53: .ASCII /MOL FAILED TO CLEAR#/
	017612	040506	046111	042105	
	017620	052040	020117	046103	
	017626	040505	021522		
2604	017632	022445	042522	042523	MSG54: .ASCII /RESET SLAVE TO ON LINE BEFORE CONTINUING/

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CZTECF0 TMO3 1816-TU?? RFI
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SEQ 0072

	017640	020124	046123	053101	
	017646	020105	047524	047440	
	017654	020116	044514	042516	
	017662	041040	043105	051117	
	017670	020105	047503	052116	
	017676	047111	044525	043516	
2605	017704	051445	052105	051440	.ASCII /*SET SW12=1 IF YOU DOT WISH TO REPEAT REWIND OFFLINE TEST*/
	017712	030527	036462	020061	
	017720	043111	054440	052517	
	017726	042040	052117	053440	
	017734	051511	020110	047524	
	017742	051040	050105	040505	
	017750	020124	042522	044527	
	017756	042116	047440	043106	
	017764	044514	042516	052040	
	017772	051505	021524		
2606	017776	044440	042524	035122	MSG56: .ASCII / ITER: */
	020004	021440			
2607	020006	052045	020115	047516	MSG57: .ASCII /*TM NOT SET*/
	020014	020124	042523	021524	
2608	020022	042445	052111	042510	MSG60: .ASCII /*EITHER TAPE NOT ERASED OR OPI PROBLEM*/
	020030	020122	040524	042520	
	020036	047040	052117	042440	
	020044	040522	042523	020104	
	020052	051117	047440	044520	
	020060	050040	047522	046102	
	020066	046505	043		
2609	020071	045	044122	047440	MSG62: .ASCII /*RH ONLY (NO=0,YES=1); */
	020076	046116	020131	047050	
	020104	036517	026060	042531	
	020112	036523	024461	020072	
	020120	043			
2610	020121	045	044504	020104	MSG63: .ASCII /*DID NOT AUTO SELECT NRZ*/
	020126	047516	020124	052501	
	020134	047524	051440	046105	
	020142	041505	020124	051116	
	020150	021532			
2611	020152	042045	042111	047040	MSG64: .ASCII /*DID NOT AUTO SELECT PE*/
	020160	052117	040440	052125	
	020166	020117	042523	042514	
	020174	052103	050040	021505	
2612	020202	021445			MSG65: .ASCII /**/
2613	020204	021534			MSG66: .ASCII /*/
2614	020206	042445	035122	021440	MSG67: .ASCII /*ER: */
2615	020214	051045	046505	053117	MSG69: .ASCII /*REMOVE TMDP FROM SLAVE TO BE TESTED*/
	020222	020105	046524	050104	
	020230	043040	047522	020115	
	020236	046123	053101	020105	
	020244	047524	041040	020105	
	020252	042524	052123	042105	
	020260	021445			
2616	020262	044045	051101	053504	MSG70: .ASCII /*HARDWARE SWR IN USE*/
	020270	051101	020105	053523	
	020276	020122	047111	052440	
	020304	042523	021445		
2617	020310	040445	040524	047040	MSG71: .ASCII /*ATA NOT SET AFTER NON-TRANSFER OPERATION*/

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SEQ 0073

020316	052117	051440	052105
020324	040440	052106	051105
020332	047040	047117	052055
020340	040522	051516	042506
020346	020122	050117	051105
020354	052101	047511	021516

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SEQ 0074

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;TEST HEADERS*****
2620
2621
2622 020362 022445 052106 035061 MSFT1: .ASCII /%%FT1:RH ADDRESSING #/
      020370 044122 040440 042104
      020376 042522 051523 047111
      020404 020107 043
2623 020407 045 043045 031124 MSFT2: .ASCII /%%FT2:RH REGISTER BITS TEST #/
      020414 051072 020110 042522
      020422 044507 052123 051105
      020430 041040 052111 020123
      020436 042524 052123 021440
2624 020444 022445 052106 035063 MSFT3: .ASCII /%%FT3:RH INITIALIZE TEST #/
      020452 044122 044440 044516
      020460 044524 046101 055111
      020466 020105 042524 052123
      020474 021440
2625 020476 022445 052106 035064 MSFT4: .ASCII /%%FT4:RH11 SILO TEST 1 #/
      020504 044122 030461 051440
      020512 046111 020117 042524
      020520 052123 030440 021440
2626 020526 022445 052106 035065 MSFT5: .ASCII /%%FT5:RH11 SILO TEST 2 #/
      020534 044122 030461 051440
      020542 046111 020117 042524
      020550 052123 031040 021440
2627 020556 022445 052106 035066 MSFT6: .ASCII /%%FT6:RH11 SILO TEST 3 #/
      020564 044122 030461 051440
      020572 046111 020117 042524
      020600 052123 031440 021440
2628 020606 022445 052106 035067 MSFT7: .ASCII /%%FT7:RH11 SILO TEST 4 #/
      020614 044122 030461 051440
      020622 046111 020117 042524
      020630 052123 032040 021440
2629 020636 022445 052106 030061 MSFT10: .ASCII /%%FT10:RH11 SILO TEST 5 #/
      020644 051072 030510 020061
      020652 044523 047514 052040
      020660 051505 020124 020065
      020666 043
2630 020667 045 043045 030524 MSFT11: .ASCII /%%FT11:NOP TEST#/
      020674 035061 047516 020120
      020702 042524 052123 043
2631 020707 045 043045 030524 MSFT12: .ASCII /%%FT12:REWIND TEST#/
      020714 035062 042522 044527
      020722 042116 052040 051505
      020730 021524
2632 020732 022445 052106 031461 MSFT13: .ASCII /%%FT13:WRITE READ TEST#/
      020740 053472 044522 042524
      020746 051055 040505 020104
      020754 042524 052123 043
2633 020761 045 043045 030524 MSFT14: .ASCII /%%FT14:SPACE TEST#/
      020766 035064 050123 041501
      020774 020105 042524 052123
      021002 043
2634 021003 045 043045 030524 MSFT15: .ASCII /%%FT15:ERASE TEST#/
      021010 035065 051105 051501
      021016 020105 042524 052123
      021024 043

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SEQ 0075

2635	021025	045	043045	030524	MSFT16: .ASCII	/**FT16:TAPE MARK WRITE-READ TEST#//
	021032	035066	040524	042520		
	021040	046440	051101	020113		
	021046	051127	052111	026505		
	021054	042522	042101	052040		
	021062	051505	021524			
2636	021066	022445	052106	033161	MSFT17: .ASCII	/**FT17:IM SPACE TEST #//
	021074	052072	020115	050123		
	021102	041501	020105	042524		
	021110	052123	021440			
2637	021114	022445	052106	030062	MSFT20: .ASCII	/**FT20:WRITE CHECK TEST #//
	021122	053472	044522	042524		
	021130	041440	042510	045503		
	021136	052040	051505	020124		
	021144	043				
2638	021145	045	043045	031124	MSFT21: .ASCII	/**FT21:ERASE HEAD TEST#//
	021152	035061	051105	051501		
	021160	020105	042510	042101		
	021166	052040	051505	021524		
2639	021174	022445	052106	031062	MSFT22: .ASCII	/**FT22:BUFFERED COMMAND TEST#//
	021202	041072	043125	042506		
	021210	042522	020104	047503		
	021216	046515	047101	020104		
	021224	042524	052123	043		
2640	021231	045	043045	031124	MSFT23: .ASCII	/**FT23:READ IN PRESET TEST#//
	021236	035063	042522	042101		
	021244	044440	020116	051120		
	021252	051505	052105	052040		
	021260	051505	021524			
2641	021264	022445	052106	032062	MSFT24: .ASCII	/**FT24:AUTO DENSITY SELECT: WRITE-NRZ,READ-PE#//
	021272	040472	052125	020117		
	021300	042504	051516	052111		
	021306	020131	042523	042514		
	021314	052103	020072	051127		
	021322	052111	026505	051116		
	021330	026132	042522	042101		
	021336	050055	021505			
2642	021342	022445	052106	032462	MSFT25: .ASCII	/**FT25:AUTO DENSITY SELECT: WRITE-PE,READ-NRZ#//
	021350	040472	052125	020117		
	021356	042504	051516	052111		
	021364	020131	042523	042514		
	021372	052103	020072	051127		
	021400	052111	026505	042520		
	021406	051054	040505	026504		
	021414	051116	021532			
2643	021420	022445	052106	033062	MSFT26: .ASCII	/**FT26:SEQUENTIAL TAPE MARK TEST#//
	021426	051472	050505	042525		
	021434	052116	040511	020114		
	021442	040524	042520	046440		
	021450	051101	020113	042524		
	021456	052123	043			
2644	021461	045	043045	031124	MSFT27: .ASCII	/**FT27:REWIND-OFF LINE TEST#//
	021466	035067	042522	044527		
	021474	042116	047455	043106		
	021502	046040	047111	020105		
	021510	042524	052123	043		

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1.6

SEQ 0076

2645	021515	045	043536	043	\$CNTG:	.ASCII	/G#//
2646	021521	045	053523	036522	\$MSWR:	.ASCII	/SWR# //
	021526	021440					
2647	021530	020040	042516	036527	\$MNEW:	.ASCII	/ NEW# //
	021536	021440					
2648	021540	022477	043		\$QUEST:	.ASCII	/?#//
2649							
2650							
2651		021544				.EVEN	
2652	021544	000000			WDATA:	0	
2653		023256				.+1510	
2654	023256	000000			RDATA:	0	
2655							
2656		000001				.END	

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0077

AS	000526	683#												
BA	000514	678#	1051	1547*	1978*	2074								
BADDR	000616	717#	1313*	1332*	1357*	1366*	1367*	1374*	1444*	1505*	1538*	1631*	1678*	1689*
		1694*	1711*	1728*	1762*	1797*	1837*	1848*	1866*	1877*	1941*	1978		
BAE	000544	690#	961											
BTRP	000574	705#												
BTRF2	000576	706#												
CC	000530	684#												
CHNFLG	001662	841#*	850	970	997	1007	1935	2229						
COUNT	000734	756#												
CRCNT	000714	748#												
CS	000520	680#	908*	909*	911	925*	926*	970*	1109*	1120	1153*	1155	1181	1185
		1190	1196	1218	1222	1270	1285*	1290*	1294	1404*	1736*	2078	2210*	2211*
C1	000510	676#	877	910	970	1022	1112	1116	1157	1159	1548*	1770*	1948*	1985*
		2004*	2070											
DATA0	000746	766#												
DATA1	000750	767#												
DATA2	000752	768#												
DATA3	000754	769#												
DATBL	000744	765#	2115											
DAT1	013262	766	2125#											
DAT1A	013266	2126#	2135	2140										
DAT2	013302	767	2134#											
DAT3	013306	768	2139#											
DAT4	013314	769	2144#											
DB	000532	685#	1060	1154	1189*	1194*	1214*	1227	1267*	1267*	1291*	1292	1293	
DOUT	015050	2472#	2489	2491										
DOUTD	015132	2487#												
DRVN	000612	715#	901	903	909	926	970*	2211						
DRVTP	000564	701#												
DS	000522	681#	1336	1550	1552	1771	1780	1808	1814	1852	1881	1956	1989	2005
		2007	2009	2018	2019	2025	2084							
DSAV	000664	736#	2018*	2100										
DSUP	013222	1352	1677	1710	1836	1865	1940	2111#						
DSO	013224	2112#												
DT	000536	687#	928	970										
EMADDR	000610	714#	1018*	1040*	1080	1106*	1135	1152*	1178*	1210*	1240	1263*	1283*	1319*
		1338*	1350*	1392*	1503*	1576*	1610*	1673*	1707*	1758*	1794*	1833*	1862*	1893*
		1937*	2049	2268										
ER	000524	682#	1961	2030	2086									
ERADD	000650	730#	1048*	1057*	1068*	1083	1114*	1118*	1124*	1138	1163*	1165*	1167*	1183*
		1187*	1192*	1200*	1220*	1224*	1274*	1301*	1746*	1748*	1782*	1816*	1823*	

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CROSS REFERENCE TABLE -- USER SYMBOLS

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USER SYMBOLS

ERRP1A	012754	2056	2058											
ERRP	000626	721	977	1359	1369	1376	1406	1422	1432	1510	1523	1584	1590	1595
		1618	1636	1646	1660	1683	1687	1692	1717	1733	1777	1843	1872	1899
		1905	1914	2027	2051									
ERRP1	000630	722	2059	2104	2106									
EXEC	012310	1317	1334	1360	1370	1378	1405	1421	1431	1446	1454	1509	1521	1541
		1582	1588	1594	1616	1635	1650	1682	1690	1695	1716	1719	1725	1732
		1739	1766	1775	1801	1805	1642	1851	1871	1880	1897	1904	1913	1919
		1946	1974											
EXECA	012362	1980	1983											
EXECB	012370	1982	1984											
EXECC	012410	1989	1992	1994										
EXECX	012430	1990	1995											
EXECXA	012434	1996	1997											
EXECXX	012440	1998												
EXFL	000700	742												
FC	000516	679	1449	1456	1485	1545	1740	1742	1744	1977	1983	2076		
FCNT	000620	718	1311	1330	1355	1397	1411	1412	1579	1630	1679	1712	1723	1729
		1737	1763	1798	1838	1867	1942	1977						
FT1	003270	776	777	1018										
FT1A	003322	1023	1028	2278										
FT1B	003326	1025	2283											
FT1X	003340	1026	1029											
FT1XX	003372	1032	1035											
FT10	005026	790	791	1281	1284									
FT10A	005062	1287	1289											
FT10ER	005146	1295	1301											
FT10X	005124	1282	1296	1303										
FT10XX	005142	1298	1300											
FT11	005162	792	793	1307	1308									
FT12	005300	794	795	1326	1327									
FT12A	005360	1336	1337											
FT13	005412	796	797	1346										
FT13A	005464	1354	1386											
FT13B	005526	1360	1364											
FT13C	005606	1370	1373											
FT13D	005654	1378	1381											
FT13X	005720	1383	1387											
FT14	005724	798	799	1391										
FT14A	005776	1399	1416											
FT14A1	005742	1394	1494											
FT14A2	006070	1409	1411											
FT14A3	006112	1413	1415											
FT14B	006142	1420	1442											
FT14EC	006360	1451	1458											
FT14RE	006366	1450	1457	1460										
FT14RF	006332	1436	1452											
FT14RR	006270	1426	1443											
FT14R0	006440	1469	1471											
FT14R1	006462	1473	1476											
FT14R2	006466	1475	1477											
FT14R3	006540	1462	1488											
FT14X	006550	1410	1425	1430	1435	1439	1489	1491						
FT14XX	006572	1492	1495											
FT15	006576	800	801	1499	2021									
FT15A	006646	1507												

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SEQ 0079

FT15B	006662	15090	1515				
FT15X	006772	1513	15350				
FT15XX	007176	1554	15660				
FT16	007210	802	803	15730	2023		
FT16A	007242	15780	1601				
FT16B	007246	15790					
FT16X	007426	1599	16020				
FT17	007436	804	805	16090			
FT17A	007456	16120	1666				
FT17B	007462	16130	1643				
FT17C	007622	16330	1642				
FT17D	007670	1626	16440				
FT17D1	007706	16470	1662				
FT17E	007722	16490	1657				
FT17F	010012	1659	16630				
FT17X	010034	1621	1640	1654	1664	16670	
FT2	003376	778	779	10400			
FT2A	003410	10420	1049	1074			
FT2B	003450	1047	10510	1058			
FT2C	003510	1056	10600	1069			
FT2D	003524	10640	1065				
FT2E	003554	1067	10710				
FT2ER	003564	1050	1059	1070	10750	1825	1966
FT2ERA	003614	1079	10820				
FT2ERB	003666	1077	10930				
FT2ERC	003676	1094	10960				
FT2X	003706	1072	10990				
FT20	010040	806	807	16720			
FT20A	010056	16750	1700				
FT20B	010202	16920					
FT20C	010234	16970					
FT20X	010254	1686	1698	17010			
FT21	010264	808	809	17070			
FT21A	010272	17080					
FT21B	010565	1745	17480				
FT21C	010574	1747	17490				
FT21SC	010422	17260	1749				
FT21X	010606	1741	1743	17510			
FT22	010616	810	811	17580	1783		
FT22A	010672	17660	1768				
FT22B	010712	17710	1772				
FT22Y	011012	1781	17850				
FT23	011022	812	813	17920	1817	1824	
FT23A	011132	18080	1811	1813			
FT23B	011152	1809	18140				
FT23C	011202	1815	18190				
FT23X	011236	1793	1822	18260			
FT24	011242	814	815	18330	2036		
FT24X	011424	1846	1853	18560			
FT25	011434	816	817	18620	2038		
FT25X	011616	1875	1882	18850			
FT26	011626	818	819	18920	2191	2193	
FT26X	012054	1903	1909	1918	1923	1925	19280
FT27	012064	820	821	19330	2196	2198	
FT27X	012274	1960	1964	19670			
FT27XX	012304	1934	1936	19690			

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CROSS REFERENCE TABLE -- USER SYMBOLS

C /

FT3	003720	780	781	11060	1107									
FT3A	003774	1113	11160											
FT3B	004016	1117	11200											
FT3ER	004054	1115	1119	1125	11300	1170	1184	1188	1193	1201	1221	1225	1275	1302
		1750	1784	1818	1855	1884	1959							
FT3X	004044	1123	11260											
FT4	004140	782	783	11500	1169									
FT4ER	004222	1156	11630											
FT4ERA	004232	1158	11650											
FT4ERB	004242	1160	11670											
FT4ERC	004250	1164	1166	11680										
FT4X	004212	11610	1171											
FT5	004266	784	785	11760										
FT5A	004310	1179	11800											
FT5B	004336	1182	11850											
FT5C	004360	1186	11890											
FT5D	004410	1191	11940											
FT5E	004422	11960	1199											
FT5X	004450	1151	1177	1197	12020									
FT6	004460	786	787	12080										
FT6A	004502	1211	12120											
FT6B	004510	12140	1217											
FT6C	004546	1219	12220											
FT6D	004570	1223	12260											
FT6DE	004622	1229	12360											
FT6DEA	004654	12430												
FT6DEB	004720	1238	12530											
FT6DEX	004730	1254	12560											
FT6E	004572	12270	1232											
FT6X	004612	1209	12330											
FT7	004732	788	789	12610	1264									
FT7A	004764	12670	1269											
FT7ER	005010	1271	12740											
FT7X	005002	1262	12720	1276										
FUN	000710	7460	1316*	1333*	1358*	1368*	1375*	1402*	1420*	1428*	1445*	1453*	1472	1507*
		1519*	1540*	1581*	1587*	1593*	1613*	1632*	1645*	1658	1661*	1681*	1688*	1693*
		1715*	1731*	1765*	1800*	1804*	1841*	1850*	1870*	1879*	1896*	1911*	1945*	1979
		1981	1985											
GTSWR	015260	950	2248	25240										
HDRFL	000606	7130	978*	1078	1082*	1133	1137*	1239	1242*	2046	2048*	2265	2267*	
HERE	003236	10060												
INIT1	013540	1042	1108	1111	1180	1212	1265	1309	1328	1399	1458	1649	1773	1795
		1803	1947	2003	2011	2093	22090							
INIT2	013550	22110												
ITAMT	000566	7020	2179											
ITCNT	000662	7350	2066	2174*	2178*	2179								
ITER	013370	1100	1126	1161	1202	1233	1272	1296	1321	1340	1566	1602	1701	1751
		1785	1856	1885	1928	21710								
ITRLP	000676	7410	974*	975*	2182									
JUMPER	000742	7590	891	896	2034									
LTADD	000706	7450	972*	973*	974	979	994*	995*	2021	2023	2036	2038		
MR	000534	6860												
MSFT1	020362	1018	26220											
MSFT10	020636	1283	26290											
MSFT11	020667	1319	26300											
MSFT12	020707	1338	26310											

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CZTECF O TM03-TE16-1077 BFT
CZTECF P11 06-APR-84 10:39MACY11 30(1046) 06-APR-84 10:45 PAGE 56.4
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0081

MSFT13	020732	1350	26320		
MSFT14	020761	1392	1463	26330	
MSFT15	021003	1503	26340		
MSFT16	021025	1576	26350		
MSFT17	021066	1610	26360		
MSFT2	020407	1040	26230		
MSFT20	021114	1673	26370		
MSFT21	021145	1707	26380		
MSFT22	021174	1758	26390		
MSFT23	021231	1794	26400		
MSFT24	021264	1833	26410		
MSFT25	021342	1862	26420		
MSFT26	021420	1893	26430		
MSFT27	021461	1937	26440		
MSFT3	020444	1106	26240		
MSFT4	020476	1152	26250		
MSFT5	020526	1178	26260		
MSFT6	020556	1210	26270		
MSFT7	020606	1263	26280		
MSG1	015422	2068	25470		
MSG10	016165	899	25590		
MSG10A	016025	889	25570		
MSG11	016205	916	25600		
MSG12	016225	1359	1636	1717	25610
MSG13	016243	1369	1590	25620	
MSG14	016270	1376	1595	1733	25630
MSG15	016315	1584	1618	1899	25640
MSG15A	016336	1905	25650		
MSG15B	016375	1556	25660		
MSG16	016403	1476	1646	1687	25670
MSG17	016423	1474	1660	1692	25680
MSG2	015510	25490			
MSG20	016443	1467	2054	25690	
MSG21	016451	1470	2057	25700	
MSG22	016456	1085	1245	1478	25710
MSG23	016466	1089	1249	1483	25720
MSG24	016476	2270	25730		
MSG25	016512	1048	25740		
MSG26	016520	1057	25750		
MSG27	016526	1068	25760		
MSG28	016534	25770			
MSG29	016564	1114	25780		
MSG3	015563	848	8530	25500	
MSG30	016613	1118	25790		
MSG31	016643	1124	25800		
MSG32	016673	1163	1274	1301	25810
MSG33	016711	1165	25820		
MSG34	016726	1167	25830		
MSG35	016744	1183	25840		
MSG36	016771	1187	25850		
MSG37	017020	1192	1200	25860	
MSG38	017057	1224	25870		
MSG39	017111	1243	25880		
MSG4	015723	854	25520		
MSG40	017131	1220	25890		
MSG41	017164	913	25900		

E7

CZTECF0 TM03-TE16/TU77 RFI
CZTECF.P11 06-APR-84 10:39

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0082

MSG42	017205	930	25910																
MSG43	017226	933	25920																
MSG44	017243	1746	25930																
MSG45	017273	1748	25940																
MSG46	017350	1406	1510	1683	1843	1872	25960												
MSG47	017374	1432	1914	25970															
MSG48	017421	1422	25980																
MSG49	017446	1777	25990																
MSG5	015746	863	25530																
MSG50	017474	1782	26000																
MSG51	017532	1816	26010																
MSG52	017566	1823	26020																
MSG53	017605	1958	26030																
MSG54	017632	1967	26040																
MSG56	017776	2064	26060																
MSG57	020006	2104	26070																
MSG6	015761	999	25540																
MSG60	020022	1523	26080																
MSG62	020071	937	26090																
MSG63	020121	1854	26100																
MSG64	020152	1883	26110																
MSG65	020202	2319	26120																
MSG66	020204	2328	26130																
MSG67	020206	1965	26140																
MSG69	020214	845	26150																
MSG7	015777	2358	25550																
MSG70	020262	2240	26160																
MSG71	020310	2027	26170																
MSG9	016003	1465	25560																
MTINT	013566	668	873	22170															
NONSTD	000740	7580																	
NOST	013442	898	21890																
NRZOF	000724	7520																	
NXTDRV	002670	9700																	
NXTSLV	002742	9700	998																
OCTP	014630	857	866	902	919	940	1002	1248	1252	1482	1487	2067	2273	24180					
OCTPE	014616	1088	1092	1560	2071	2073	2075	2077	2079	2085	2087	2089	24150	2530					
OCTPE1	014634	24190	</																

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CZTECF0 TMO3-TE16/TU77 BFT
CZTECF.P11 06-APR-84 10:39MACY11 30(1046) 06-APR-84 10:45 PAGE 56-6
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0083

RDYDX	000636	7250	1314*	1347*	1401*	1501*	1520*	1535*	1574*	1614*	1774*	1987					
REGS	000572	7040	856	858	875												
RFD	000634	7240	1418*	1441*	1455												
RHOF	000726	7530	939	941	1297												
RHTF	000722	7510	887*	1031	1033*	2280											
RH17F	000604	7120	956*	962*	1150	1176	1208	1261	1281								
RRD	000632	7230	1417*	1440*	1448												
RTRN	000646	7290	2218														
RWND	012442	1354	1394	1504	1517	1578	1612	1675	1708	1722	1727	1759	1834	1847			
		1863	1876	1895	1910	1938	20030										
SAV1	000666	7370															
SAV2	000670	7380															
SAV3	000672	7390															
SCHN	001710	841	8420														
SCNT	000642	7270	1419*	1429*	1438*	1647*	1912*	1983									
SCOLP	000674	7400	1049*	1058*	1069*	1107*	1169*	1179*	1211*	1264*	1284*	1308*	1327*	1361*			
		1749*	1783*	1817*	1824*	1949*	2163	2167	2278*								
SCOPE	013334	1096	1144	21580	2279												
SERFL	070712	7470	1408	1424	1434	1512	1620	1639	1653	1685	1845	1874	1902	1908			
		1917	1922	2017*	2043*	2102											
SERNUM	000562	7000															
SLVN	000614	7160	918	920	927	970*	1792	2212									
SN	000540	6880	935														
SNPG	015234	2502	2505	2511	2513	25150											
SNPT	015156	936	24960														
START	001600	659	8290														
STFLG	000704	7440	955*	984	989*												
STMSK	000660	7340	976*	1403*	1500*	1524*	1583*	1589*	1617*	1637*	1651*	1778*	1898*	2033*			
		2040*	2041														
STSCD	003126	969	9890														
STO	002124	8780	881														
STOB	001764	8540	2282														
ST1	002146	8840	886														
ST1A	002166	8890	915	1034													
ST2	002344	912	9160	932													
ST3	002454	929	9330														
ST4	002540	663	9480														
SWR	000550	6950	834	838*	841*	967	981	986	1009	1076	1093	1131	1140	1237			
		1253	1461	1488	1933	2044	2062	2090	2159	2172	2236	2238*	2247*	2263			
		2274	2524	2529	2533												
SWREG	000176	6530	838	841	2236	2247	2524										
TAG	007206	1555*	1565*	15690	2080												
TC	000542	6890	927*	970*	1329*	1544*	1820	1975*	2055	2088	2212*						
TEMPST	000732	7550															
TEMP1	000652	7310	1552*	1553	1628*	1641*	2082	2305*	2314	2338*							
TEMP2	000654	7320															
TEMP3	000656	7330	2487	2490													
TEND	003162	822	991	9970	1299	2200											
TENDX	003260	1008	1010	10120													
TEX	014614	2379	24110														
TIB	000602	7110	2308	2312	2317	2322	2332	2335	2342*	2343	2369*	2370*	2371				
TINER	014332	2334	2337	2348	2351	23580											
TKB	000554	6970	2225	2369	2397												
TKS	000552	6960	954*	2366*	2367	2395											
TLAST	001120	8230	990	2203*													
TMCHK	013164	1586	1592	1597	1622	1655	1901	1907	1916	1921	21000						

TOB	000600	710 0 2474 *	882 2477	2371 * 2482 *	2377 * 2515 *	2378 2517 *	2380	2384 *	2387 *	2391 *	2410	2453 *	2464 *	2472 *
TOG	014514	2372	2382	2385	2388	2392	2395 0	2402	2407	2409	2454	2465	2518	
TPB	000560	699 0	2410 *	2479 *	2481 *									
TPS	000556	698 0	2408	2475										
TRAP	013756	1019	2262 0											
TRAPX	014040	2275	2277 0											
TRAPXX	014066	2281	2283 0											
TRAP1	014012	2266	2270 0											
TRAP2	014030	2264	2274 0											
TSCD	002554	852	954 0	988	1013									
TSCDA	003020	970	971 0											
TSCD0	003030	973 0	985											
TSCD1	003036	974 0	996											
TSCD2	003074	981 0	1035	1101	1127	1162	1203	1234	1273	1300	1322	1341	1387	1495
		1567	1603	1667	1702	1752	1786	1826	1857	1886	1929	1969		
TSCD3	003106	982	984 0											
TSRH	003022	888	972 0											
TSITBL	000756	774 0	972	994	2191 *	2193 *	2196 *	2198 *	2200 *	2202 *				
TTIN	014352	2307	2366 0											
TTINT	013576	646	2225 0											
TTOUT	014414	846	849	855	864	890	900	914	917	931	934	938	1000	1081
		1084	1086	1090	1136	1139	1241	1244	1246	1250	1464	1466	1471	1477
		1479	1484	1557	1968	2050	2053	2058	2061	2065	2069	2241	2269	2271
		2320	2329	2359	2377 0	2383	2393	2528	2532					
TTR	014072	862	871	895	907	924	945	2303 0	2537					
UDES	000716	749 0	1310 *	1353 *	1382	1384 *	1393 *	1468	1491	1493 *	1506 *	1539 *	1577 *	1598
		1600 *	1611 *	1663	1665 *	1674 *	1697	1699 *	1714 *	1761 *	1796 *	1840 *	1849 *	1869 *
		1878 *	1894 *	1924	1926 *	1944 *	1975	2031						
VECT	000570	703 0	865	867	872									
WC	000512	677 0	1043	1546 *	1976 *	2072								
WCNT	000622	719 0	1312 *	1331 *	1356 *	1398 *	1414 *	1518 *	1580 *	1629 *	1680 *	1713 *	1724 *	1730 *
		1738 *	1764 *	1799 *	1839 *	1868 *	1943 *	1976						
WDATA	021544	1332	1357	1396 *	1547	1631	1678	1711	1762	1797	1837	1866	1941	2112
		2652 0												
\$CNTG	021515	2645 0												
\$CNTRL	001122	824 0	2252 *	2256 *	2397 *	2398 *	2399	2401 *	2403	2405 *	2406			
\$DONE	003170	970	999 0											
\$ENDAD	003226	642	1006 0											
\$MNEW	021530	2531	2647 0											
\$MSWR	021521	2527	2646 0											
\$QUEST	021540	2648 0												
\$SVPC	* 000764	642 0												
.	* 023260	640 0	642 0	645 0	652 0	658 0	662 0	667 0	673 0	826 0	2651 0	2653 0		
.RESTO	015400	2242	2538	2542 0										
.SAVE	015356	2239	2526	2541 0										

H7

CZTECF0 TMO3-TE16/TU77 BFT
CZTECF.P11 06-APR-84 10:39

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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0085

\$CATCH	5590	640
\$CHAIN	5590	841
\$CHNMO	5590	970
\$RESTO	5590	2542
\$SAVE	5590	2541
.\$ACT1	5590	642
.\$EOP	5590	1006

. ABS. 023260 000

ERRORS DETECTED: 0

CZTECF,CZTECF/CRF-CZTEAE.SML/ML,CZTECF.P11
RUN-TIME: 3 5 .9 SECONDS
RUN-TIME RATIO: 19/10-1.8
CORE USED: 11K (22 PAGES)

CZTECF.P11	06-APR....B1	CZTECF.P11	06-APR....B5
CZTECF.P11	06-APR....C1	CZTECF.P11	06-APR....C5
CZTECF.P11	06-APR....D1	CZTECF.P11	06-APR....D5
CZTECF.P11	06-APR....E1	CZTECF.P11	06-APR....E5
CZTECF.P11	06-APR....F1	CZTECF.P11	06-APR....F5
CZTECF.P11	06-APR....G1	CZTECF.P11	06-APR....G5
CZTECF.P11	06-APR....H1	CZTECF.P11	06-APR....H5
CZTECF.P11	06-APR....I1	CZTECF.P11	06-APR....I5
CZTECF.P11	06-APR....J1	CZTECF.P11	06-APR....J5
CZTECF.P11	06-APR....K1	CZTECF.P11	06-APR....K5
CZTECF.P11	06-APR....L1	CZTECF.P11	06-APR....L5
CZTECF.P11	06-APR....M1	CZTECF.P11	06-APR....M5
CZTECF.P11	06-APR....N1	CZTECF.P11	06-APR....N5

CZTECF.P11	06-APR....B2	CZTECF.P11	06-APR....B6
CZTECF.P11	06-APR....C2	CZTECF.P11	06-APR....C6
CZTECF.P11	06-APR....D2	CZTECF.P11	06-APR....D6
CZTECF.P11	06-APR....E2	CZTECF.P11	06-APR....E6
CZTECF.P11	06-APR....F2	CZTECF.P11	06-APR....F6
CZTECF.P11	06-APR....G2	CZTECF.P11	06-APR....G6
CZTECF.P11	06-APR....H2	CZTECF.P11	06-APR....H6
CZTECF.P11	06-APR....I2	CZTECF.P11	06-APR....I6
CZTECF.P11	06-APR....J2	CZTECF.P11	06-APR....J6
CZTECF.P11	06-APR....K2	CZTECF.P11	06-APR....K6
CZTECF.P11	06-APR....L2	CZTECF.P11	06-APR....L6
CZTECF.P11	06-APR....M2	CZTECF.P11	06-APR....M6
CZTECF.P11	06-APR....N2	CZTECF.P11	06-APR....N6

CZTECF.P11	06-APR....B3	CZTECF.P11	06-APR....B7
CZTECF.P11	06-APR....C3	CZTECF.P11	06-APR....C7
CZTECF.P11	06-APR....D3	CZTECF.P11	06-APR....D7
CZTECF.P11	06-APR....E3	CZTECF.P11	06-APR....E7
CZTECF.P11	06-APR....F3	CZTECF.P11	06-APR....F7
CZTECF.P11	06-APR....G3	CZTECF.P11	06-APR....G7
CZTECF.P11	06-APR....H3	CZTECF.P11	06-APR....H7
CZTECF.P11	06-APR....I3		
CZTECF.P11	06-APR....J3		
CZTECF.P11	06-APR....K3		
CZTECF.P11	06-APR....L3		
CZTECF.P11	06-APR....M3		
CZTECF.P11	06-APR....N3		

CZTECF.P11	06-APR....B4
CZTECF.P11	06-APR....C4
CZTECF.P11	06-APR....D4
CZTECF.P11	06-APR....E4
CZTECF.P11	06-APR....F4
CZTECF.P11	06-APR....G4
CZTECF.P11	06-APR....H4
CZTECF.P11	06-APR....I4
CZTECF.P11	06-APR....J4
CZTECF.P11	06-APR....K4
CZTECF.P11	06-APR....L4
CZTECF.P11	06-APR....M4
CZTECF.P11	06-APR....N4