

3	WRITE-READ ADDRESS MARK	DESIGNED TO SEE THAT ADDRESS MARKS CAN BE WRITTEN AND READ CORRECTLY.
4	RD TRACK OF ADDRESS MARKS	FORMATS A FULL TRACK OF RECORDS THEN CHECKS TO SEE THAT NONE ARE MISSED WHEN READ.
5	FALSE ADDRESS MARK TEST	FORMATS RECORDS THAT APPROXIMATE ADDRESS MARKER THEN CHECKS FOR ERRORS WHEN THEY ARE READ.
3	1	CONTROL UNIT BUSY, CONTROL UNIT END
	2	UNIT EXCEPTION
	3	COMMAND REJECT ON INVALID COMMANDS
4	1	HALT I/O ON READ
	2	HALT I/O ON WRITE
	3	READ IPL
PHASE B		
1	1	SEARCH COMMANDS
2	1	FILE PROTECT
3	1	CHANNEL/2841 OVERRUN SENSE BIT
	2	TRACK CONDITION CHECK SENSE BIT (DEFECTIVE TRK)
	3	TRACK CONDITION CHECK SENSE BIT (ALTERNATE TRACK)
	4	SEEK CHECK SENSE BIT (INVALID ARGUMENT)
	5	SEEK CHECK SENSE BIT (4 BYTES)
	6	TRACK OVERRUN SENSE BIT
	7	END OF CYLINDER SENSE BIT
	8	NO RECORD FOUND SENSE BIT
PHASE C		
1	1	INVALID SEQUENCES
2	1	SPACE COUNT
3	1	OVER/UNDER TRUNCATION

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS

- 1800 DIAGNOSTIC MONITOR PROGRAM- AT LEAST 8K OF CORE
- SECTIONS SHOULD BE RUN IN SEQUENTIAL ORDER FOR CORRECT INDICATION

2.2 EQUIPMENT REQUIREMENTS

- CENTRAL PROCESSOR WITH THE STANDARD INSTRUCTION SET, COMPLETELY OPERATIVE.
- SELECTOR CHANNEL (MUST BE FULLY OPERATIONAL)
- HARD COPY OUTPUT DEVICE.
- METHOD OF LOADING PROGRAM.
- IBM 2841 CONTROL UNIT
- 2311 - WITH CE DISK PACK INITIALIZED WITH PID 0814 OR A SCRATCH PACK INITIALIZED WITH A PROGRAMMING SYSTEM DISK INITIALIZER.

** NOTE- UTILITY PROGRAM PID 0814 (CE PACK INITIALIZER) WRITES HOME ADDRESSES. DO NOT USE PID 0814 UNLESS SUBSYSTEM IS COMPLETELY OPERATIONAL, AND THEN ONLY WHEN HOME ADDRESSES ARE NOT ALREADY PRESENT.

****WARNING**** DO NOT USE PID 0814 TO INITIALIZE CUSTOMER PACKS BECAUSE HOME ADDRESS ARE NOT WRITTEN ON THE CE CYLINDERS. ERRORS WILL BE DETECTED BY THE CUSTOMER WHEN SEEKS ARE MADE TO INVALID OR MISSING HOME ADDRESS. IF A CUSTOMERS SCRATCH PACK IS USED, IT SHOULD BE INITIALIZED WITH A PROGRAMMING SYSTEMS DISK INITIALIZER.

3. USE PROCEDURE.

3.1 PROGRAM LOADING.

STANDARD MONITOR LOADING PROCEDURES DO NOT APPLY TO THIS DFT. THE FOLLOWING PROCEDURE DETAILS LOADING AND RUNNING THE 3 PART DECK THAT IS PID 0811.

LOADING THE PROGRAM-

1. PLACE THE DIAGNOSTIC MONITOR AND ALL 3 DECKS (PHASE A,B, & C) IN THE 1442 HOPPER.
2. PROGRAM LOAD THE MONITOR. IT WILL STOP AT WAIT 2 (3002).
3. TURN ON D/E SWITCH 8 TO INHIBIT LOADING ALL BUT THE FIRST DECK.
4. PUSH START.

RUNNING THE PROGRAM-

1. EXECUTE THIS DFT AS EXPLAINED BELOW. PHASES A,B, & C ARE RUN ALIKE BUT MUST BE RUN SEPARATELY.
2. AT 'END OF DFT' PRINTOUT OR WHENEVER IT IS DEEMED NECESSARY TO GO ON TO PHASE B OR C TURN ON MONITOR FUNCTION 0 BIT 9 AND CAUSE 'CONSOLE INTERRUPT', THIS WILL RETURN TO THE LOADER.
3. AT MONITOR WAIT 4 PERFORM STEPS 3 & 4 OF LOADING DESCRIPTION ABOVE AND CONTINUE.

** NOTE - DO NOT INCLUDE DEVICE ADDRESS ON MONITOR EDIT. ENTER COMPLETE DEVICE ADDRESS IN BITS 8-15 OF SW FNC 2 WHEN PROGRAM COMES TO 'SELECT OPTIONS' HALT (SEE 3.3).

NECESSARY INSTRUCTIONS TO EXIT THE ERROR HALT LOOP ACCOMPANY ENTRY TO THE LOOP VIA A PRINTOUT. WHILE IN THE LOOP VARIOUS SWITCH FUNCTION 0 OPTIONS CAN BE ENTERED ALONG WITH BIT 15=0 WHICH PROVIDES THE EXIT. BIT 15=0 ALONE WILL RESULT IN A NORMAL EXIT, IN MOST CASES THE ROUTINE WILL TERMINATE.

1. SETTING BIT 12 WILL EXIT TO THE FUNCTION THAT CAUSED THE ERROR.
2. SETTING BIT 8 WITH 12 WILL EXIT TO THE FAILING FUNCTION AND LOOP ON THE BRANCH TO SID ROUTINE (TIGHT SCOPE LOOP)
3. SETTING BIT 13 WITH 12 WILL EXIT TO THE FAILING FUNCTION AND LOOP THROUGH THE ROUTINE WITHOUT CHANGING ANY PARAMETERS, PRINTING ERRORS, OR HALTING ON THE ERROR. (LONG SCOPE LOOP) THESE OPTIONS SHOULD BE THE MOST USEFUL. SEE TABLE OF OPTIONS FOR OTHER APPLICATIONS.

** NOTE- THIS PROGRAM IS DESIGNED TO BE MOST EFFECTIVE WHEN RUNNING UNDER -HALT AFTER ERROR-. IF USER WISHES TO RUN IN THIS MODE SWITCH FUNCTION 0, BIT 14 MUST BE TURNED ON.

** NOTE - IF ERRORS APPEAR TO BE DUE TO THE 2311 DRIVE, THE DISK PACK INSTALLED OR THE 2311/2841 INTERFACE, IT MAY BE HELPFUL TO RUN PID 0812 (2311 DFT).

** NOTE - IF THE SELECTOR CHANNEL AND THE LOG DEVICE SHARE A DATA CHANNEL, CAUSING A CONSOLE INTERRUPT MAY RESULT IN MONITOR WAIT 9 (3009).

3.4 PROGRAM TERMINATION.

1. END OF NORMAL TEST.
'END OF DFT' MESSAGE IS PRINTED AT COMPLETEION OF TEST PHASE.
PROGRAM PHASE WILL TERMINATE UNLESS MONITOR FNC 0, SW 11 IS ON (LOOP PROGRAMS).

4.0 PRINTOUTS

4.1 MESSAGE FORMATS

THE PRIMARY MESSAGE FROM THIS PROGRAM (PHASES B & C) IS PROVIDED BY THE CHECK SUBROUTINE (GENERAL ERROR MESSAGE 'GEM') THE PURPOSE OF THE GEM IS TO SUPPLY ALL POSSIBLE STATUS AND DATA CONDITIONS RECEIVED AND EXPECTED. THE FIRST LINE IN THE GEM WILL CONTAIN ROUTINE SUPPLIED ENGLISH OR AN ERROR NUMBER WHICH WILL BE FURTHER DESCRIBED IN SECTIONS 4.4 TO 4.12.

```

1100 **ER SECT- SS,RTN- RR (60 CHARACTERS OF ROUTINE INFORMATION)
CAW AAAA CSW BB00 CCDD EEEE FFFF SNS GGGGGGGG HHHHHHHH IIIIIIII JJJJJJJJ
S/B KK00 XXLL MMMM NNNN S/B OOOOOOOO PPPPPPPP QQQQQQQQ RRRRRRRR
DATA READ WAS SSSS
DATA READ S/B TTTT
WORD CNT WAS UUUU

```

WHERE

AAAA-STARTING ADDRESS OF THE COMMAND CHAIN
BB-CHANNEL STATUS RECEIVED
CC-UNIT ADDRESS RECEIVED
DD-UNIT STATUS RECEIVED
EEEE-CHANNEL ADDRESS REG AT ENDING STATUS TIME

```

FFFF-RESIDUAL BYTE COUNT AT ENDING STATUS TIME
G-SENSE BYTE ONE RECEIVED
H-SENSE BYTE TWO RECEIVED
I-SENSE BYTE THREE RECEIVED
J-SENSE BYTE FOUR RECEIVED
00-THESE SHOULD BE ZERO'S AT ALL TIMES

```

THE THIRD LINE OF THE PRINTOUT (S/B) INDICATES THE INFORMATION EXPECTED AS A RESULT OF THE OPERATION. THE MEANING OF EACH POSITION IN THE LINE IS THE SAME AS IN LINE 2.

ANY POSITION IN THE LINE WHICH HAS BEEN X'ED OUT MEANS THAT THIS PORTION OF THE WORDS WERE NOT CHECKED AGAINST THE WAS DATA.

```

SSSS-DATA READ-THIS IS THE DATA ACTUALLY READ BY THE 2311.
TTTT-DATA S/B-THIS IS THE DATA EXPECTED BY THE PROGRAM
UUUU-WORD COUNT-THE WORD IN THE DATA FIELD WHICH FAILED (IF ANY)
TO MATCH THE EXPECTED DATA.

```

** NOTE **

ANY ONE FIELD FAILING IN THE ABOVE PRINTOUT WILL GENERATE THE ENTIRE PRINTOUT. EACH FIELD, THEREFORE, MUST BE CAREFULLY CHECKED TO ACCUMULATE ALL AVAILABLE INFORMATION.

ERROR NUMBER FORMAT

THE SECONDARY MESSAGE IS AN ERROR NUMBER. THE PURPOSE OF THE NUMBER

IS TO REFER THE USER TO A DESCRIPTION OF THE ERROR CONDITION IN THIS DOCUMENT. THE ERROR DESCRIPTION PROVIDES DIAGNOSTIC INFORMATION ABOUT THE ERROR AND SCOPE LOOP OPTIONS.

1. SIO,TIO,SENSE I/O,ERRORS--

1100 ** XX ERROR ON SIO, SECTION S, ROUTINE R, UNIT UU ADRS AAAA

2. ERROR NUMBER WITH MESSAGE.

1100 ** ER SRXXMESSAGE..... UNIT UU ADRS AAAA

3. NORMAL ERROR NUMBER PRINTOUT.

1100 ** ER SRXX UNIT UU ADRS AAAA

4. THE SECOND LINE OF AN ERROR PRINTOUT GIVES VARIABLE DATA ON MACHINE CONDITIONS.

CAW KKKK CSW YYYY UZZZ ADRS CNTR SNS B-B B-B B-B B-B

5. EXPLANATION OF CHARACTERS-

```

S SECTION NUMBER
R ROUTINE NUMBER
XX SEQUENTIAL ERROR NUMBER WITHIN EACH ROUTINE
UU CHANNEL AND DEVICE ADDRESS IN HEX
AAAA ADDRESS OF ERROR BRANCH & STORE I-REG INSTRUCTION IN LISTING
KKKK CHANNEL ADDRESS WORD FOR THE CCW CHAIN
ADRS CHANNEL CCW ADDRESS REGISTER
YYYY CHANNEL STATUS IN HEX
UZZZ UNIT ADDRESS/UNIT STATUS IN HEX
CNTR CHANNEL BYTE COUNT REGISTER
B-B SENSE BYTES IN BINARY

```

PROGRAM EXECUTED A SENSE I/O AND GOT A NOT OPERATIONAL CONDITION. THE PRINTOUT GIVES THE SECTION AND ROUTINE BEING EXECUTED WHEN THIS ERROR OCCURRED.

- DIAGNOSTIC INFORMATION -

THIS ERROR SHOULD NEVER OCCUR ONCE THE PROGRAM IS UNDER WAY, IF IT DOES

1. CHECK TO BE SURE THE CORRECT UNIT ADDRESS WAS ENTERED IN SW FUNCTION 2.
2. CHECK TO BE SURE THAT THE INTERFACE IS STILL ENABLED.
3. IF THE ABOVE CONDITIONS ARE TRUE THEN THE POSSIBILITY OF AN INTERMITTENT INTERFACE PROBLEM IS HIGH.

- USER OPTIONS -

1. RESET AND RESTART.
2. RERUN SECTION 1 OF THE DIAGNOSTIC

25 - ERROR IN SEEK RTN THAT POSITIONS ACCESS PRIOR TO ROUTINES

A SUBROUTINE WAS ATTEMPTING TO SEEK AND READ THE HOME ADDRESS OF THE FILE BEING TESTED AND A FAILURE HAS OCCURRED. THE HOME ADDRESS EXPECTED AND THE HOME ADDRESS ACTUALLY READ ARE PRINTED WITH THIS ERROR. THE OPERATION WILL BE RE-ATTEMPTED A TOTAL OF FOUR MORE TIMES BEFORE THE ROUTINE IS ABORTED. (**HARD ERROR** PROG TERM). THE ROUTINES THAT FOLLOW CANNOT RUN UNLESS A SUCCESSFUL SEEK CAN BE PERFORMED.

- DIAGNOSTIC INFORMATION -

1. FAILURE TO SEEK TO THE CORRECT TRACK.
2. POSSIBLE FAILURE TO READ HOME ADDRESS CORRECTLY.
3. POSSIBILITY OF NO HOME ADDRESSES WRITEN ON TRACK.

- USER OPTION -

1. RERUN SECTION 1 OF THIS DIAGNOSTIC
2. RUN THE 2311 DIAGNOSTIC (PID 0812)

***NOTE IF ERRORS ARE UNCOVERED IN SECTION 1, ROUTINE 1 THROUGH 5, THEN THE SELECTOR CHANNEL DIAGNOSTIC (PID 0810) SHOULD BE RUN BEFORE PROCEEDING WITH THIS DIAGNOSTIC.

4.2.2 ERRORS IN PHASE A

1101 - CONDITION CODE 1 ON A TEST CHANNEL COMMAND

THE FIRST COMMAND IN THIS DIAGNOSTIC PROGRAM IS A TEST CHANNEL TO DETERMINE THAT THE CHANNEL IS AVAILABLE. A CONDITION CODE 1 (UNIT STATUS PENDING) WAS DETECTED ON THE FIRST TEST CHANNEL COMMAND. THE PROGRAM EXECUTED A TEST I/O TO CLEAR THE INTERRUPT CONDITIONS AND THEN RETRIED THE TEST CHANNEL COMMAND. THE CONDITION CODE 1 CONDITION WAS STILL PRESENT.

- DIAGNOSTIC INFORMATION

THE CHANNEL MUST BE CLEARED OF PENDING INTERRUPTIONS BEFORE ANY OTHER COMMANDS MAY BE EXECUTED.

- USER OPTIONS -

1. REFER TO SECTION 3.3.

1102 - CONDITION CODE 2 ON TEST CHANNEL COMMAND -

A CONDITION CODE 2 WAS DETECTED ON A TEST CHANNEL COMMAND INDICATING CHANNEL OR SUBCHANNEL BUSY.

- DIAGNOSTIC INFORMATION -

THE CHANNEL MUST BE CLEARED OF BUSY CONDITION BEFORE ANY OTHER COMMANDS MAY BE EXECUTED. (MAY REQUIRE RESET-RESTART)

- USER OPTIONS -

1. REFER TO SECTION 3.3.

1103 - CONDITION CODE 3 ON A TEST CHANNEL COMMAND -

CONDITION CODE 3 WAS DETECTED ON A TEST CHANNEL COMMAND INDICATING CHANNEL IS NOT OPERATIONAL.

- DIAGNOSTIC INFORMATION -

CHANNEL IS NOT OPERATIONAL

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1201 - INCORRECT STATUS IN CHANNEL STATUS

PROGRAM ATTEMPTED TO EXECUTE A HALT I/O COMMAND AND DETECTED INCORRECT STATUS IN CHANNEL STATUS WORD.

- DIAGNOSTIC INFORMATION -

1. NO SELECT OUT
2. SOLID ADDRESS OUT
3. SOLID COMMAND OUT
4. HALT I/O LATCH ON
5. NO DW REG GATE
6. SOLID BUSS IN BITS 1,2,4,5,6 AND 7
7. OFF - BUSS IN BITS P,0,3
8. SOLID ADDRESS IN
9. NO GATE D BUSS TO IG REG
10. NO IG 7 BIT
11. NO INITIAL SELECT
12. SOLID FILE ENTRY 0 BIT
13. SOLID FILE ENTRY BIT 1,2,3,4 AND 7
14. SOLID OPERATIONAL IN

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1202 - INCORRECT STATUS IN UNIT STATUS

- DIAGNOSTIC INFORMATION -

SOME UNSELECTED ACCESS HAS A FILE SAFETY (FS) LINE - UP - TO THE 2841.

1. SOLID MOD SELECT (FD021)
2. SOLID SELECTED READY (FD025)
3. SOLID SELECTED END OF CYL. (FD025)
4. SOLID UNSAFE (FD025)

- USERS OPTIONS -

1. SYSTEM RESET AND EXAMINE -FS- LINES TO DETERMINE WHICH ACCESS LINE IS INCORRECT.
2. SEE 3.3 FOR ERROR EXIT OPTIONS

1308 - UNIT CHECK ON TEST I/O

PROGRAM RECEIVED A UNIT CHECK ON A TEST I/O COMMAND AND ISSUED A SENSE COMMAND. PROGRAM HAS DETERMINED THAT UNIT CHECK WAS NOT CAUSED BY UNSAFE, NOT ON LINE, NOT READY, OR UNSELECTED STATUS. THUS, SOME OTHER CONDITION CAUSED THE UNIT CHECK.

- DIAGNOSTIC INFORMATION -

1. SUSPECT SEEK INCOMPLETE, BUSS OUT PARITY, OR SEEK CHECK. BIT SHOULD SHOW UP IN SENSE DATA PRINTED WITH ERROR TYPEOUT.

- USER OPTIONS -

1. SEE 3.3
2. TRY TURNING FILE DRIVE OFF -ON AND RESET-RESTART

1309 - CONDITION CODE 1 BUT NO CHANNEL STATUS.

PROGRAM RECEIVED A CONDITION CODE 1 ON A TEST I/O, BUT NO CHANNEL STATUS WAS STORED, NO UNIT CHECK OCCURED, AND CONTROL UNIT IS NOT BUSY.

- DIAGNOSTIC INFORMATION -

1. SOLID SELECTED SEEK START
2. POSSIBLY LOSING READY AT FILE DRIVE WITH A SOLID FILE BUS 6 (FD021)
3. SOLID RESTORE (FD021)
4. COULD HAVE GOTTEN AN UNEXPECTED DEVICE END, IF USER POWERED OFF-ON THE FILE. (DETENT CAUSES DEVICE END)

- USER OPTIONS -

1. TRY STARTING TEST OVER, LEAVE FILE DRIVE ON. IF SAME FAILURE OCCURS, DETERMINE WHY 2841 IS HANGING IN LOOP OR WHY DRIVE IS LOSING READY.
2. OPTIONAL SCOPE LOOPS, SEE 3.3

1310 - UNEXPECTED END OF CYLINDER -

PROGRAM RECEIVED A UNIT CHECK ON A TEST I/O COMMAND AND DETERMINED THAT END OF CYL. BIT IS ON.

- DIAGNOSTIC INFORMATION -

1. SUSPECT ERRONEOUS END OF CYLINDER FROM FILE BUS 4 (FD020)
2. NO HAR RESET IF THIS ERROR OCCURS ON 2ND TIME THROUGH THIS SECTION (FD065)
3. NO FILE BUS 2

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1311 - CONTROL UNIT HUNG UP BUSY

PROGRAM RECEIVED A CONDITION CODE 1 ON A TEST I/O WITH CONTROL UNIT BUSY,(STATUS MODIFIER AND BUSY IN CSW.)

- DIAGNOSTIC INFORMATION -

1. NO MOD SELECT (FD021)
2. ATTENTION LATCH (FD053) ALWAYS ON.
3. DELTA ATTENTION LATCH (FD053) ALWAYS ON.
4. SOLID FILE BUS 2 (FD020)
5. SOLID CONTROL UNIT BUSY

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1401 - CHANL. STATUS OR UNIT CHECK ON NO OP COMMAND

PROGRAM EXECUTED A NO OP COMMAND AND DETECTED ERROR STATUS OR UNIT CHECK

- DIAGNOSTIC INFORMATION -

1. IF END OF CYLINDER BIT ON, CHECK FOR SOLID FILE BUS 7.(FD021)
2. OTHERWISE, EXAMINE SENSE DATA TO DETERMINE CAUSE OF STATUS OR UNIT CHECK.

- USERS OPTIONS -

REFER TO SECTION 3.3

1402 - NO CHANL OR DEVICE END ON NO OP. COMMAND

PROGRAM ATTEMPTED A NO OP COMMAND BUT DID NOT RECEIVE CHNL AND DEVICE END IN THE CHANNEL STATUS WORD.

- USER OPTIONS -

REFER TO SECTION 3.3

1403 - CONDITION 0, 2, OR 3 ON NO OP COMMAND.

PROGRAM EXECUTED A NO OP COMMAND AND DETECTED INCORRECT CONDITION CODE. (SHOULD GET CCI UNIT STATUS PENDING)

- DIAGNOSTIC INFORMATION -

1. POSSIBLE SOLID FILE BUS 7 (FD021)

11. NO BIT RING RESET
12. SOLID BIT RING RESET
13. NO GATE VFO INPUT
14. SOLID GATE VFO INPUT
15. NO VFO GATE A
16. SOLID VFO GATE A
17. NO DELTA BIT RING ADVANCE DRIVE
18. NO BIT RING 0,5,6, OR 7
19. NO DELTA BIT RING 0

- USER OPTIONS -

REFER TO SECTION 3.3

1703 - DATA CHECK ON READ HOME ADDRESS COMMAND -

PROGRAM ATTEMPTED TO EXECUTE A READ HOME ADDRESS AND DETECTED A DATA CHECK.

- DIAGNOSTIC INFORMATION -

1. 2311 ADDRESS MARK ON
2. NO GATE FILE DATA REG TO DR REG
3. SOLID FDR RESET
4. NO FDR RESET
5. NO FDR ZERO DATA
6. NO FDR BIT 1,2,3,4,5,6, OR 7
7. DATA GOOD LATCH ON

- USER OPTIONS -

REFER TO SECTION 3.3

1704 - UNIT CHECK ON READ HOME ADDRESS -

PROGRAM ATTEMPTED TO READ HOME ADDRESS IN CYL 000 HD 0/1 AND RECEIVED UNIT CHECK IN RESULTING UNIT STATUS.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1705 - NO RECORD FOUND ON READ HOME ADDRESS COMMAND -

PROGRAM ATTEMPTED TO EXECUTE A READ HOME ADDRESS COMMAND AND DETECTED NO RECORD FOUND.

PROGRAM COULD NOT FIND HOME ADDRESS.

- USER OPTIONS -

1. CHECK THAT CE STORAGE DEVICE HAS BEEN FORMATTED.
2. REFER TO SECTION 3.3 FOR LOOP OPTIONS

1706 - EQUIPMENT CHECK ON READ HOME ADDRESS COMMAND -

PROGRAM ATTEMPTED TO EXECUTE A READ HOME ADDRESS COMMAND AND DETECTED AN EQUIPMENT CHECK.

- DIAGNOSTIC INFORMATION -

1. WRITE GATE ALWAYS ON

- USER OPTIONS -

REFER TO SECTION 3.3

1707 - TIME OUT ERROR ON SEEK AND READ HOME ADDRESS -

PROGRAM ATTEMPTED TO EXECUTE A SEEK AND READ HOME ADDRESS COMMAND (CYL 000 HD 0/1) AND TIMED OUT WAITING FOR AN I/O INTERRUPT.

- DIAGNOSTIC INFORMATION -

1. NO INDEX
2. NO BIT RING 1,2,3, OR 4
3. SOLID INDEX

- USER OPTIONS -

REFER TO SECTION 3.3

1708 - TIMEOUT ERROR ON READ HOME ADDRESS -

PROGRAM ATTEMPTED TO READ HOME ADDRESS ON CYL 000 HD 0/1 AND TIMED OUT WAITING FOR AN I/O INTERRUPT.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

1801 - CSW ERROR ON READ RECORD 0 COMMAND -

PROGRAM ATTEMPTED TO EXECUTE A READ RECORD 0 COMMAND AND DETECTED UNIT STATUS OTHER THAN 'CHANNEL END', 'DEVICE END' (000C)

- USER OPTIONS -

1. ANALYZE SENSE BYTES IF UNIT CHECK IS ON.
2. ANALYZE CSW FOR TYPE OF FAILURE.
3. REFER TO SECTION 3.3 FOR LOOP OPTIONS

1802 - NO INTERRUPT FROM READ R0

PROGRAM ATTEMPTED TO EXECUTE A READ R0 COMMAND AND TIMED OUT WAITING FOR AN I/O INTERRUPT.

- DIAGNOSTIC INFORMATION -

CONTROL UNIT IS PROBABLY HUNG UP

- USER OPTIONS -

REFER TO SECTION 3.3

1901 - UNIT CHECK ON SEEK CCW CHAIN -

PROGRAM ATTEMPTED TO EXECUTE A CHAIN OF CCWS (RECALIBRATE, SEEK 0, SEEK, SEEK, READ HOME ADDRESS) AND DETECTED A UNIT CHECK.

- DIAGNOSTIC INFORMATION -

- SOLID ADDRESS MARK GOOD
- SOLID COUNT 8

- USER OPTIONS -

REFER TO SECTION 3.3

2104 - DATA READ DID NOT COMPARE WITH DATA WRITTEN

THE PROGRAM HAS ATTEMPTED TO SEARCH A HOME ADDRESS, THEN WRITE AND READ A 100 BYTE PATTERN OF BITS (ALL 256 COMBINATIONS ARE TRIED). THIS IS THE FIRST TIME THE PROGRAM HAS ATTEMPTED TO WRITE.

PREVIOUS TO THIS ERROR NUMBER, THE PROGRAM HAS CHECKED FOR THE FOLLOWING ERRORS --- MISSING ADDRESS MARK/NO RECORD FOUND, SERIALIZER/DERIALIZER, NO RECORD FOUND, AND DATA CHECK. THIS ERROR IS SOMETHING OTHER THAN THE ERRORS JUST LISTED.

- DIAGNOSTIC INFORMATION -

IF THERE HAVE BEEN NO FAILURES IN THE PREVIOUS SECTIONS, THE READING ABILITY OF THE FILE BEING TESTED HAS BEEN ESTABLISHED. THIS FAILURE CAN BE ASSUMED A WRITE FAILURE. SOME OF THE POSSIBLE CAUSES OF THIS FAILURE MAY BE ---

- SOLID DOUBLE FREQUENCY WRITE DATA
- NO RESET STATUS REGISTER BIT 4
- NO WRITE OSCILLATOR

- USER OPTIONS -

REFER TO SECTION 3.3

2105 - NO CONTROL UNIT BUSY RECEIVED -

THE PROGRAM HAS ATTEMPTED TO WRITE HOME ADDRESS FOLLOWED IMMEDIATELY BY T10. THE DEVICE SHOULD CONTINUE TO ERASE THE REMAINDER OF THE TRACK AND RESPOND TO THE T10 WITH CONTROL UNIT BUSY.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

2106 - TIMEOUT ERROR ON WRITE/READ -

THE PROGRAM HAS ATTEMPTED TO WRITE AND READ R0 AND HAS TIMED OUT WHILE WAITING FOR I/O INTERRUPT.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

2200 - NO TRACK OVERRUN

THE PROGRAM HAS ATTEMPTED TO WRITE A LONG RECORD TO DETERMINE THE MAXIMUM TRACK LENGTH OF THE FILE BEING TESTED. THIS ERROR WAS PRINTED BECAUSE THE EXPECTED OVERRUN, WHICH SHOULD HAVE BEEN THE RESULT OF THE CCW CHAIN, WAS MISSING.

- USER OPTIONS -

REFER TO SECTION 3.3

2201 - UNIT CHECK ON WRITE/READ R0 RECORD

THE PROGRAM WAS ATTEMPTING TO WRITE, THEN READ, 63/64 THE MAXIMUM NUMBER OF BYTES THAT CAN BE WRITTEN FOR AN R0 RECORD. THE ATTEMPT WAS UNSUCCESSFUL.

- DIAGNOSTIC INFORMATION -

A POSSIBLE CAUSE OF THIS FAILURE MAY BE ---

- SOLID COUNTER 2

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

2202 - TIMEOUT ERROR ON SID TO WRITE R0 OF 10,000 BYTES -

THE PROGRAM ATTEMPTED TO WRITE A RECORD R0 OF 10,000 BYTES TO DETERMINE CAPACITY OF TRACK BEFORE OVERRUN. THE PROGRAM TIMED OUT WHILE AWAITING AN I/O INTERRUPT FROM THIS OPERATION.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

2203 - TIMEOUT ERROR ON SID TO WRITE/READ LONG R0 -

63/64 OF THE BYTE CAPACITY OF THE TRACK IS USED AS THE RECORD SIZE AS THE PROGRAM ATTEMPTS TO WRITE/READ R0. THE PROGRAM TIMED OUT WHILE AWAITING AN I/O INTERRUPT AFTER THIS OPERATION.

- USER OPTIONS -

REFER TO SECTION 3.3 FOR LOOP OPTIONS

2300 - UNIT CHECK WHILE WRITING R0 AND R1 RECORDS

THE PROGRAM WAS ATTEMPTING TO WRITE R0 AND R1 RECORDS WITH A DATA LENGTH OF ONE. THE PURPOSE OF WHICH IS TO FORMAT THE TRACK WITH AN ADDRESS MARK WHICH CAN BE SEARCHED FOR IN THE FOLLOWING TEST. THE ATTEMPT TO WRITE THE ADDRESS MARK WAS UNSUCCESSFUL.

- USER OPTIONS -

1. ANALYZE SENSE DATA TO DETERMINE CAUSE OF WRITE FAILURE
2. REFER TO SECTION 3.3 FOR LOOP OPTIONS

2301 - UNIT CHECK WHILE ATTEMPTING TO READ COUNT OF R1 RECORD

A UNIT CHECK HAS OCCURRED WHILE THE PROGRAM WAS ATTEMPTING TO READ THE COUNT OF AN R1 RECORD. THE PURPOSE OF THIS TEST WAS TO SEE WHETHER OR NOT ADDRESS MARKS COULD BE FOUND.

- USER OPTIONS -
REFER TO SECTION 3.3

2504 - TOO MANY RECORDS WRITTEN ON TRACK -
OVER 100 RECORDS WERE WRITTEN WHILE FORMATTING TRACK
OF ADDRESS MARKS.

3101 - SOME BITS ON IN UNITS OTHER THAN CHANNEL/DEVICE END

3102 - 2841 DIDN'T GO BUSY ON SEEK

3201 - SOME ERROR IN CHANNEL STATUS WORD

3202 - SOME ERROR IN SENSE BYTES

3301 - SOME ERROR IN CHANNEL STATUS WORD

3302 - SOME ERROR IN SENSE BYTES

4101 - TIMEOUT ERROR ON ATTEMPT TO FORMAT TRACK -
THE PROGRAM ATTEMPTED TO WRITE R0 AND R1 AND TIMED OUT WAITING
FOR AN I/O INTERRUPT.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4102 - READING OF R1 DID NOT OCCUR -
THE PROGRAM ATTEMPTED TO READ R1 AND TIMED OUT WAITING FOR
DATA TO BE TRANSFERRED INTO CORE.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4103 - NO HALT I/O INTERRUPT RECEIVED -
THE PROGRAM ISSUED A HALT I/O COMMAND DURING READING OF R1
AND TIMED OUT WAITING FOR THE HALT I/O INTERRUPT.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4104 - INVALID UNIT STATUS -
THE PROGRAM ISSUED A HALT I/O COMMAND DURING READING OF R1
AND RECEIVED AN INVALID UNIT STATUS AFTER THE OPERATION WAS
TERMINATED.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4106 - DATA TRANSFER NOT HALTED -
THE PROGRAM ISSUED A HALT I/O COMMAND DURING READING OF R1
BUT IN-CORE CHECKS REVEALED THAT THE FULL R1 BYTE COUNT WAS
TRANSFERRED INTO CORE.

4201 - TIMEOUT ERROR ON ATTEMPT TO FORMAT TRACK
THE PROGRAM ATTEMPTED TO WRITE R0 AND R1 AND TIMED OUT
WAITING FOR I/O INTERRUPT.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4202 - READ COUNT R1 FAILED -
THE PROGRAM ATTEMPTED TO READ COUNT FROM R1 AFTER TRACK
WAS FORMATTED AND THE COUNT WAS NOT TRANSFERRED INTO CORE.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4203 - READ DATA R1 FAILED -
THE PROGRAM ATTEMPTED TO READ COUNT FROM R1 AFTER TRACK
WAS FORMATTED AND THE DATA WAS NOT TRANSFERRED INTO CORE.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4204 - TIMEOUT ERROR ON ATTEMPT TO READ R1 -
THE PROGRAM ATTEMPTED TO READ R1 AFTER THE TRACK
WAS FORMATTED AND TIMED OUT WAITING FOR I/O INTERRUPT.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4205 - READ COUNT R1 FAILED -
THE PROGRAM ATTEMPTED TO READ COUNT FROM R1 PRIOR TO
A WRITE OPERATION AND COUNT WAS NOT TRANSFERRED INTO CORE.
- USER OPTIONS -
REFER TO SECTION 3.3 FOR LOOP OPTIONS

4206 - NO HALT I/O INTERRUPT RECEIVED -
THE PROGRAM ISSUED A HALT I/O COMMAND WHILE WRITING OF R1
WAS IN PROGRESS AND TIMED OUT WAITING FOR A HALT I/O
INTERRUPT.

```

14 SRCH ID HI OR EQ (REC 0), READ KEY, DATA
15 SRCH COUNT, KEY EQ (REC 2), SRCH ID HI OR EQ (REC 6) REA
    DATA
16 SRCH KEY HI OR EQ (REC 8), READ DATA
17 SRCH ID (REC 1), SRCH KEY HI OR EQ (REC 2), READ DATA
18 SRCH ID (REC 1), SRCH KEY HI OR EQ (REC 1), READ DATA
19 SRCH ID (REC 1), SRCH KEY HI OR EQ (REC 2), READ DATA
20 SRCH COUNT, KEY EQ (REC 2), SRCH KEY HI OR EQ (REC 3),
    READ DATA
    
```

STATUS MESSAGES FOR SECTION 2 - FILE PROTECT

REFER TO 'GENERAL ERROR MESSAGE' SECTION 4.1

THE FIRST LINE OF AN ERROR PRINTOUT WILL CONTAIN THE LINE

MASK=XXXX

WHERE XXXX WILL IDENTIFY THE FILE MASK THAT WAS SET DURING THE FAILING WRITE/SEARCH. ANALYSIS OF 'CAW' AND 'CSW ADDRS' WILL ENABLE LOCATION OF THE FAILING CHAIN IN THE PROGRAM LISTING.

STATUS MESSAGES FOR SECTION 3

REFER TO 'GENERAL ERROR MESSAGE' SECTION 4.1 FOR ALL ERRORS UNCOVERED IN SECTION 3

**NOTE-

'XXXX MEANS NOT COMPARED' THIS MESSAGE OCCURS AFTER THE RESULT MESSAGE. IT INDICATES THAT THE PORTION OF THE CHANNEL STATUS WORD INDICATED BY XXXX WAS NOT COMPARED.

PHASE C

4. STATUS MESSAGES FOR SECTION 1 - INVALID SEQUENCES

SECTION 4.1

THE FIRST LINE OF THE ERROR MESSAGE WILL CONTAIN AN ERROR NUMBER TO ALLOW CROSS REFERENCE OF THE PROGRAM LISTING AND WILL REFER TO THE CCW CHAIN DURING WHICH THE ERROR OCCURRED.

**NOTE - THIS ROUTINE WILL TERMINATE AFTER 10 ERRORS

STATUS MESSAGES FOR SECTION 2 - SPACE COUNT

REFER TO 'GENERAL ERROR MESSAGE' SECTION 4.1

THE FOLLOWING SPACE COUNT FUNCTIONS ARE CHECKED (THE USER CAN FIND OUT WHICH FUNCTION FAILED BY CROSS REFERENCING THE CAW WITH THE PROGRAM LISTING).

1. SPACE COUNT SHOULD SET FILE PROTECT SO AS TO INHIBIT ANY WRITE COMMANDS.
2. IF INDEX IS DETECTED WHILE SPACE COUNT IS SEARCHING FOR AN ADDRESS MARK, NO RECORD FOUND SHOULD BE SET.
3. SPACE COUNT FOLLOWING A FORMAT WRITE SHOULD SET INVALID SEQUENCE.
4. SPACE COUNT NOT CHAINED FROM A PREVIOUS COMMAND SHOULD SPACE OVER RECORD -0-.
5. THREE CHAINED SPACE COUNTS NOT CHAINED FROM A PREVIOUS COMMAND SHOULD SPACE TO RECORD -2-.
6. CHECK THAT SPACE COUNT WILL REQUEST -3- BYTES FROM THE CHANNEL AND USE THESE BYTES AS THE KEY AND DATA LENGTHS. (CORRECT LENGTHS PROVIDED)
7. SAME AS NUMBER 6 EXCEPT DATA LENGTH IS INCORRECT. THIS WILL ALSO FORCE A BURST CHECK. THE ACTUAL AND EXPECTED CSW, SENSE, AND DATA ARE ALSO PRINTED OUT.

STATUS MESSAGES FOR SECTION 3 - OVER/UNDER TRUNCATION OF COMMANDS

REFER TO 'GENERAL ERROR MESSAGE' SECTION 4.1

'TRUNC COMMAND CODE - XXXX
TRUNC BYTE COUNT - YYYY'

ERROR MESSAGE WHEN A TRUNCATION ERROR IS DETECTED (FOLLOWS 'GEM' PRINTOUT).

UNDER TRUNCATION IS WHEN THE CHANNEL REQUESTS LESS BYTES THAN THERE ARE AVAILABLE. OVER TRUNCATION OCCURS WHEN THE CHANNEL REQUESTS MORE BYTES THAN THERE ARE AVAILABLE.

CODE EXPLANATION --

2841 OPERATION CODE
WILL BE ONE OF THE FOLLOWING COMMANDS

1A - READ HA	05 - WRITE DATA
16 - READ R0	00 - WRITE KEY-DATA
12 - READ COUNT	1D - WRITE C-K-D
06 - READ DATA	39 - SEARCH EQ-HA
0E - READ KEY-DATA	31 - SEARCH EQ-ID
1E - READ C-K-D	29 - SEARCH EQ-KEY
19 - WRITE HA	51 - SEARCH HI-ID
15 - WRITE R0	

CHANNEL ADDRESS WORD - POINTS TO CCW CHAIN

TRACK FORMAT --

HA, R0 (K#2, D#4), R1 (K#0, D#4), R2 (K#2, D#4)

COMMAND	NORMAL COUNT	CHANNEL COUNT FOR TRUNCATION
1A	5	3,9
16	14	6,8,9,10,11,12,13,15
12	8	5,10
06	4 (R1)	3,5
0E	6 (R2)	1,2,3,8
1E	14 (R2)	2,5,8,9,10,11,17
19	5	4,6
15	14	2,8,11,17
05	4 (R1)	3,5
00	6 (R2)	1,2,4,9
1D	14 (R2)	5,8,9,10,13,15
39	4	2,6

--ROUTINE 8-- READ RECORD 0

THE READ RECORD 0 COMMAND INITIATED BY THIS ROUTINE IS USED TO CHECK DEVICE AND CHANNEL STATUS FOR PROPER EXECUTION OF THAT COMMAND. THE CONDITIONS CHECKED ARE ---

DEVICE END INTERRUPT
COMMAND NOT ACCEPTED

--ROUTINE 9-- SEEKS

THIS ROUTINE WILL CAUSE EXECUTION OF A SERIES OF CCW@S USING EIGHT DIFFERENT SEEK ARGUMENTS. THE SEEK ARGUMENTS FOR THIS SERIES ARE CONTAINED IN SEEK TABLES THAT ARE DESIGNED TO USE THE MAXIMUM NUMBER OF BUSS AND DATA LINES. THE SERIES OF CCW'S IS REPEATED TEN (10) TIMES. ---NOTE--- THIS IS THE FIRST ROUTINE TO VERIFY THAT HOME ADDRESS READ IS IDENTICAL TO HOME ADDRESS EXPECTED.

THE CONDITIONS CHECKED ARE ---

BUSS LINES
DATA LINES
FILE/CHANNEL INTERFACE

--ROUTINE A-- HEAD ADVANCE (M/T)

THIS ROUTINE WILL CAUSE THE INITIATION OF A READ HOME ADDRESS MULTI-TRACK CCW (CHANNEL COMMAND WORD) FOR THE PURPOSE

OF TESTING THE 2841/FILE INTERFACE HEAD ADVANCE LINES AND THE END OF CYLINDER LINES. THIS ROUTINE DOES NOT COMPARE HOME ADDRESS READ TO HOME ADDRESS EXPECTED TO SEE THAT THEY ARE IDENTICAL.

SECTION 2

--ROUTINE 1-- WRITE/READ R0

THE FIRST PART OF THIS ROUTINE IS DESIGNED TO TEST THE SERIALIZER/DERIALIZER BY WRITING AND READING A RECORD 0 (00 CHARACTERS LONG) REPEATING THE TEST FOR ALL 256 BIT COMBINATIONS.

IN THIS PART, ROUTINE 1 INITIATES A WRITE HOME ADDRESS AND FOLLOWS IT WITH TIO. SINCE THE CONTROL UNIT IS ERASING THE REST OF THE TRACK AFTER WRITE HOME ADDRESS, A CONTROL UNIT BUSY IS RECEIVED AS EXPECTED. THIS IS REPEATED 50 TIMES.

--ROUTINE 2-- LONG RECORDS TEST

TO DETERMINE THE MAXIMUM LENGTH RECORD WHICH CAN BE WRITTEN ON THE FILE UNDER TEST, THIS ROUTINE INITIATES A WRITE R0 WHICH IS 10,000 BYTES LONG. A CHECK IS MADE AND WHEN AN OVERRUN CONDITION IS RECEIVED, THE RESIDUAL COUNT IN THE CSW (CHANNEL STATUS WORD) IS USED TO CALCULATE THE LENGTH RECORD WHICH CAN BE CORRECTLY WRITTEN. WITH 63/64 OF THIS LENGTH, RECORDS R0 ARE WRITTEN AND READ BACK 100 TIMES WHILE TESTING FOR ANY STATUS ERRORS.

--ROUTINE 3-- WRITE/READ ADDRESS MARKS

THIS ROUTINE IS DESIGNED TO VERIFY THAT ADDRESS MARKS CAN BE CORRECTLY WRITTEN AND READ. IN ORDER THAT THIS TEST MAY

BE ACCOMPLISHED, A RECORD 0 AND A RECORD 1 ARE WRITTEN. THE RECORD 1 IS THEN READ ONE HUNDRED (100) TIMES. ANY FAILURE TO DETECT AND READ THE RECORD WILL BE INDICATED BY AN ERROR NUMBER PRINTOUT.

--ROUTINE 4-- READ TRACK OF ADDRESS MARKS

THIS ROUTINE IS DESIGNED TO EXERCISE THAT CIRCUITRY OF THE CONTROL UNIT WHICH DETECTS ADDRESS MARKS. A FULL TRACK OF SHORT RECORDS (DATA LENGTH # 1) ARE FORMATED BY FIRST WRITING A RECORD R0 AND A RECORD R1, THEN SEARCH ID TO RECORD R1 AND WRITE A RECORD R2, SEARCH ID TO RECORD R2 AND WRITE A RECORD R3, ETC., UNTIL AN OVER-RUN CONDITION IS FORCED. THE LAST TWO RECORDS WRITTEN ARE THEN ERASED AND THE ID OF THE LAST RECORD ON THE TRACK IS STORED TO VERIFY CORRECT EXECUTION OF THE READ PORTION OF THE ROUTINE.

A READ HOME ADDRESS COMMAND IS EXECUTED FOLLOWED IN ORDER BY A READ COUNT AND A TIC BACK TO READ COUNT. WHEN OVER-RUN CONDITION IS REACHED, THE FORCED UNIT CHECK BREAKS THE CCW CHAIN. THIS UNIT CHECK IS IGNORED BUT THE ID OF THE LAST RECORD READ MUST BE IDENTICAL TO THAT OF THE LAST RECORD PREVIOUSLY WRITTEN OR AN ERROR NUMBER WILL BE PRINTED. THIS

READ PORTION OF THE ROUTINE IS REPEATED ONE HUNDRED (100) TIMES.

--ROUTINE 5-- FALSE ADDRESS MARK TEST

THE OBJECTIVE OF THIS ROUTINE IS TO TEST THAT CIRCUITRY IN THE CONTROL UNIT WHICH DETECTS ADDRESS MARKS BY GETTING IT TO READ FALSE MARKERS. THIS IS DONE BY FORMATING A FULL TRACK OF RECORDS, THE DATA PORTION OF WHICH APPROXIMATE AN ADDRESS MARK. THE RECORDS ARE WRITTEN (AS IN ROUTINE 4) UNTIL AN OVER RUN CONDITION IS FORCED. AGAIN THE LAST TWO RECORDS WRITTEN ARE ERASED. READ HOME ADDRESS AND READ COUNT COMMANDS ARE ISSUED FOR EXECUTION FOLLOWED BY A TIC BACK TO THE READ COUNT COMMAND AGAIN. THE TRACK IS SEARCHED BY THIS METHOD UNTIL OVER RUN CONDITION IS FORCED. IF A FALSE ADDRESS MARK IS READ, IT WILL BE SENSED BY SOME ERROR OTHER THAN THE EXPECTED (NO RECORD FOUND) AND AN ERROR NUMBER PRINTOUT WILL RESULT. THIS ROUTINE IS REPEATED ONE HUNDRED (100) TIMES AND THEN THE SECTION IS TERMINATED.

SECTION 3

--ROUTINE ONE-- FORCES THE SETTING OF STATUS MODIFIER, CONTROL UNIT END, BUSY, CHANNEL END, AND DEVICE END BITS

THEY ARE SET BY PERFORMING A WRITE HOME ADDRESS WITH COMMAND CHAIN BIT OFF, THEN ADDRESSING THE SAME FILE WITH A SEEK OPERATION. AS SOON AS HOME ADDRESS IS WRITTEN, AN INTERRUPT WILL BE INITIATED AND THE CHANNEL STATUS WORD SHOULD INDICATE CHANNEL END AND DEVICE END. AT THIS TIME THE SEEK IS ATTEMPTED ON THE SAME FILE AND THE STATUS MODIFIER AND BUSY BITS TURNED ON IN THE CHANNEL STATUS WORD. THE CHANNEL IS THEN ENABLED, AND THE PROGRAM WAITS FOR CONTROL UNIT END INTERRUPT.

--ROUTINE TWO-- FORCE UNIT EXCEPTION

IT IS SET BY WRITING A COUNT--KEY--DATA WITH KEY LENGTH EQUAL DATA LENGTH EQUAL ZERO, AND THEN ATTEMPTING TO READ THE COUNT--KEY--DATA.

--ROUTINE ONE-- FORCES THE INVALID SEQUENCE BIT TO BE SET BY ATTEMPTING A LARGE NUMBER OF INVALID SEQUENCES.

SECTION 2 SPACE COUNT

THIS ROUTINE WILL CHECK THE FOLLOWING FUNCTIONS THE -SPACE COUNT- COMMAND.

1. SPACE COUNT SHOULD SET FILE PROTECT SO AS TO INHIBIT ANY WRITE COMMANDS.
2. IF INDEX IS DETECTED WHILE SPACE COUNT IS

SEARCHING FOR AN ADDRESS MARK, NO RECORD FOUND SHOULD BE SET.

3. SPACE COUNT FOLLOWING A FORMAT WRITE SHOULD SET INVALID SEQUENCE.
4. SPACE COUNT NOT CHAINED FROM A PREVIOUS COMMAND SHOULD SPACE OVER RECORD -0-.
5. THREE CHAINED SPACE COUNTS NOT CHAINED FROM A PREVIOUS COMMAND SHOULD SPACE TO RECORD -2-.
6. CHECK THAT SPACE COUNT WILL REQUEST -3- BYTES FROM CHANNEL AND USE THESE BYTES AS KL AND DL OF THE RECORD. (CORRECT LENGTHS)
7. SAME AS NUMBER 6, EXCEPT KEY LENGTH AND DATA LENGTH THAT THE CHANNEL SENDS THE CONTROL UNIT ARE INCORRECT.

SECTION 3 TEST OVER UNDER TRUNCATION OF COMMANDS

THIS ROUTINE WILL CHECK THAT THE FOLLOWING COMMANDS CAN BE TRUNCATED. BOTH OVER-TRUNCATION (CHANNEL COUNT IS GREATER THAN 2841 COUNT) AND UNDER-TRUNCATION (CHANNEL COUNT IS LESS THAN 2841 COUNT) ARE CHECKED.

TRACK FORMAT - HA, RD (K=2 D=4), RL (K=0 D=4), R2 (K=2 D=4)

COMMAND	NORMAL-CNT	CHNL-CNT FOR TRUNC
RD HA	5	3,9
RD RD	14	6,8,9,10,11,12,13,15
RD CNT	8	5,10
RD D	4	3,5
RD K-D	6	1,2,3,8
RD CKD	14	2,5,8,9,10,11,17
WR HA	5	4,6
WR RD	14	2,8,11,17
WR D	4	3,5
WR K-D	6	1,2,4,9
WR CKD	14	5,8,9,10,13,15
SRCH # HA	4	2,6
SRCH # ID	5	4,8
SRCH # KEY	2	1,3
SRCH HI-ID	5	4,7

5.2 DESCRIPTION OF SUBROUTINES

1. GET SENSE

THIS SUBROUTINE IS USED BY MOST ROUTINES TO GET FOUR -4- SENSE BYTES OF ACCESS STATUS. AFTER THE SUBROUTINE HAS DONE THE START I/O AND CHECKED THE SENSE COMMAND HAS ACCEPTED, IT WILL WAIT IN A TEST I/O - BRANCH CONDITION CODE 2 LOOP FOR THE 4 BYTES TO TRANSFER. THE PROGRAM WILL HANG-UP IF IT FOREVER RECEIVES CONDITION CODE 2.

2. START I/O

THIS SUBROUTINE IS USED BY ALL ROUTINES TO START A CHAIN OF CCW-S (CHANNEL COMMAND WORDS). BEFORE THE START I/O IS EXECUTED, THE SUBROUTINE PERFORMS A TEST I/O TO CHECK THAT THE ACCESS IS AVAILABLE (COND CODE 0). PROGRAM THEN SETS UP THE CAW, DOES A START I/O AND CHECKS THAT THE COMMAND WAS ACCEPTED. THE -WAIT- SUBROUTINE IS USED TO WAIT FOR COMPLETION OF THE CHAIN OF COMMANDS BEFORE RETURNING TO THE CALLING ROUTINE.

3. ERROUT

THIS SUBROUTINE IS USED BY ALL ROUTINES TO PRINT OUT AN ERROR NUMBER OR ERROR MESSAGE, THE CAW, CSW, AND/OR SENSE INFORMATION. THE ROUTINE ALSO PROVIDES FOR PRINTING A BLANK LINE AS A SEPARATOR, WILL GET THE SENSE BYTES, STOP AFTER PRINTING ERROR, RETURN TO PROGRAM VIA AN OPTIONAL REG, AND/OR EXIT TO NEXT ROUTINE.

4. CHECK

THIS SUBROUTINE IS USED BY MANY ROUTINES TO COMPARE THE CHANNEL STATUS WORD, SENSE BYTES AND DATA RESULTING FROM A START I/O WITH THE STATUS AND DATA EXPECTED BY THE ROUTINE. THE 'CHECK' SUBROUTINE PRINTS A COMPREHENSIVE ANALYSIS MESSAGE (SEE 'GENERAL ERROR MESSAGE' 4.1) AS A RESULT OF NON-EQUAL COMPARISONS.

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```

0008 0 UNATN EQU 8 UNIT STATUS-ATTENTION 81102740
0009 0 UNSMD EQU 9 STATUS MOD 1/1FR 81102750
000A 0 UNCUE EQU 10 CONTROL UNIT END 81102760
000B 0 UNBZY EQU 11 UNIT BUSY 81102770
000C 0 UNCHE EQU 12 CHANNEL END 81102780
000D 0 UNJVE EQU 13 DEVICE END 81102790
000E 0 UNCHK EQU 14 UNIT CHECK 81102800
000F 0 UNEXC EQU 15 UNIT EXCEPTION 81102810
*****:*****
* 81102830
* 81102840
* 81102850
* 81102860
* 81102870
* EQUATES FOR 2311 SENSE BYTES
*
0004 0 FBRST EQU 4 (BURST) DATA CK 81102880
0005 0 FOVRN EQU 5 CHANNEL/2841 OVERRUN 81102890
0007 0 FSKCK EQU 7 SEEK CK 81102900
0009 0 FTROV EQU 9 81102910
000A 0 FEUCY EQU 10 END OF CYLINDER 81102920
000C 0 FNORC EQU 12 NO RECORD FOUND 81102930
0010 0 FUNSF EQU 16 81102940
0012 0 FSEPD EQU 18 SERDES CHECK 81102950
0015 0 FUNSL EQU 21 81102960
0018 0 FDRDY EQU 24 DRIVE READY 81102970
0019 0 FDNLN EQU 25 81102980
001A 0 FUNS1 EQU 26 UNSAFE 81102990
001D 0 FECYL EQU 29 END OF CYLINDER 81103000
001F 0 FSKIN EQU 31 SEEK INCOMPLETE 81103010
*
* 81103020
* 81103030
* 81103040
* 81103050
* 81103060
* 81103070
* 81103080
* 81103090
* 81103100
* 81103110
* 81103120
* 81103130
* 81103140
* 81103150
* 81103160
* 81103170
* 81103180
* 81103190
* 81103200
* 81103210
* 81103220
* 81103230
* 81103240
* 81103250
* 81103260
* 81103270
* 81103280
* 81103290
* 81103300
* 81103310
* 81103320
* 81103330
* 81103340
* 81103350
* 81103360
* 81103370
* 81103380
* 81103390
* 81103400
* 81103410

```

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```

08B5 0 0000 DC ** = 0A 81103420
08B6 0 0000 SCSN3 DC ** = 0B 81103430
08B7 0 0000 DC ** = 0C 81103440
08B8 0 0000 SCSN4 DC ** = 0D 81103450
08B9 0 0000 DC ** = 0E 81103460
08BA 0 0000 SCSN5 DC ** = 0F 81103470
08BB 0 0000 DC ** = 10 81103480
08BC 0004 SCSX0 BSS E 4 START I/O SAVE AREA 81103490
08CD 0004 SCSX4 BSS E 4 START I/O SAVE AREA 2 81103500
08CE 0004 SCSX8 BSS E 4 TIO SAVE AREA 81103510
08CF 0004 SCSXC BSS E 4 SENSE I/O SAVE AREA 81103520
08D0 0004 SCSVS BSS E 4 SAVE AREA FOR SENSE INFO 81103530
08D1 0003 HA BSS E 3 81103540
08D2 0000 BSS E 0 81103550
08D3 0000 TLGWR DC TLGBA IDAREA ADDRESS 81103560
08D4 1 1E26 DC ** TO BE FILLED IN 81103570
08D5 0 0000 DC /0000 SPACE IN 1443 CODE 81103580
08D6 0 0000 TLGSP DC /0000 SENSE DSW IOCC 81103590
08D7 0 DC ** TO BE FILLED IN 81103600
08D8 0 0000 TLGCT DC 0 LOOP COUNT FOR PRNTR INT 81103610
08D9 0 0000 TLGSW DC 0 1ST/2ND CHAR SW (1053) 81103620
08DA 0 0000 TLGSR DC 0 1ST/2ND CHAR SW (TLGCR) 81103630
08DB 0 0000 DC ** SENSE/RESET DSW 81103640
* 81103650
* 81103660
* 81103670
* 81103680
* 81103690
* 81103700
* 81103710
* 81103720
* 81103730
* 81103740
* 81103750
* 81103760
* 81103770
* 81103780
* 81103790
* 81103800
* 81103810
* 81103820
* 81103830
* 81103840
* 81103850
* 81103860
* 81103870
* 81103880
* 81103890
* 81103900
* 81103910
* 81103920
* 81103930
* 81103940
* 81103950
* 81103960
* 81103970
* 81103980
* 81103990
* 81104000
* 81104010
* 81104020
* 81104030
* 81104040
* 81104050
* 81104060
* 81104070
* 81104080
* 81104090

```

INT

INT

INT

INT

INT

INT

INT

INT

INT

INT

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```

0918 0 100B          SLA      UNBZY      TEST FOR UNIT OR CU BUSY 81104100
0919 1 4C2B 0929    BN       SCINX      BR TO SET POINTER TO SCSXB 81104110
*
091B 0 0A35         XIO      2 SCSN2-TB  FETCH UNIT STATUS      81104130
091C 0 EA3E         DR       2 SCSX0+1-TB MERGE WITH OLD STATUS 81104140
091D 0 D23E         STO      2 SCSX0+1-TB *      81104150
*
091E 0 709A         B        SCINX      BR SET POINTER TO SCSX0 81104170
*
* GET HERE IF TIOSW WAS NOT ON AND TEST
* FOR USER TIO IF SO PLACE STATUS IN SCSXB.
* ELSE GO TEST FOR SENSE OPERATION INTERRUPT
*
091I 0 C22B         SCIN0   LD       2 HIOXX-TB  GET HIO SW          81104230
0920 1 4C20 0949    BNZ      SCIN3      BR IF SET          81104240
*
0922 0 0A39         XIO      2 SCSN4-TB  ELSE GET CCW ADPRS REG 81104260
0923 0 D239         STO      2 SCSN4-TB  SAVE FOR LATER USE    81104270
0924 0 C229         LD       2 TIOXX-TB  GET TEST I/O ADDRESS 81104280
0925 0 8299         A        2 K3-TB    ADD THREE            81104290
0926 0 F239         EOR      2 SCSN4-TB  COMPARE WITH CCW ADPRS REG 81104300
0927 1 4C20 092D    BNZ      SCIN1      BR IF NOT THE SAME    81104310
*
* GET HERE IF USER TIO OR SYSTEM TIO
* FOUND THAT THE UNIT OR CU WAS BUSY
* AFTER A TEST I/O.
*
092J 1 6700 08C4    SCINX   LDX      L3 SCSXB  ELSE POINT TO SAVE AREA 81104370
092B 0 68CB         STX      WATSW      SET TIO INTERRUPT SW 81104380
092C 0 702E         MUX      SCIN5      GO TO COMMON RTN     81104390
*
* GET HERE IF NO TEST I/O WAS INDICATED
* BY THE PRIOR ROUTINES
*
092D 0 C22D         SCIN1   LD       2 SENSE-TB  GET CCW ADDRESS FOR SENSE 81104440
092E 0 8299         A        2 K3-TB    POINT TO FOLLOWING      81104450
092F 0 F239         EOR      2 SCSN4-TB  COMPARE                 81104460
0930 1 4C20 0935    BNZ      **3        BR IF NOT              81104470
0932 1 6700 08C8    JX      L3 SCSXC   POINT TO SAVE AREA     81104480
0934 0 702E         MUX      SCIN5      GO TO COMMON RTN     81104490
*
* GET HERE IF SENSE WAS FOUND NOT TO
* BE THE CAUSE OF THE INTERRUPT AND TEST
* FOR START I/O TO BE THE CAUSE, IF NOT
* THEN SET THE INTERRUPT TO THE UNEXPECTED.
*
0935 0 C22F         LD       2 SIOXX-TB  GET START I/O CCW ADDRESS 81104560
0936 1 6780 08AE    LDX      L3 SIOXX  SET IN REG TOO         81104570
*
0938 0 8299         SCIN2   A        2 K3-TB    POINT TO NEXT ADPRS AFTER 81104590
0939 0 D221         STO      2 TSWDS-TB  SAVE IN TEMP STORAGE    81104600
093A 0 F239         EOR      2 SCSN4-TB  COMPARE                 81104610
093B 1 4C18 0949    BZ       SCIN3      BR IF SAME             81104620
093D 0 C301         LD       3 1        GET OPCCODE/FLAGS      81104630
093E 0 180E         SRA      14        SAVE CMD CHAIN/DATA CHAIN 81104640
093F 1 4C20 0946    BNZ      *+5       BR IF SET              81104650
0941 0 C301         LD       3 1        GET IT AGAIN          81104660
0942 0 F29B         EOR      2 KB-TB    TEST FOR TIC           81104670
0943 0 100B         SLA      8         SAVE OPCCODE ONLY     81104680
0944 1 4C20 0955    BNZ      SCIN4      BR IF NOT TIC         81104690
0946 0 7303         MUX      3 3        POINT TO NEXT CCW IN CHAIN 81104700
0947 0 C221         LD       2 TSWDS-TB  GET ADDRESS            81104710
0948 0 70EF         MUX      SCIN2      LOOP                  81104720
*
0949 0 1010         SCIN3   SLA      16        CLEAR HIO SW          81104740
094A 0 D22B         STO      2 HIOXX-TB  *                      81104750
094B 1 6700 08BC    LDX      L3 SCSXB  POINT TO SIO SAVE AREA 81104760
094D 0 C301         LD       3 1        GET LAST UNIT STATUS 81104770

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094E 0 100D          SLA      UNBVE      TEST FOR DEVICE END      81104780
094F 1 4C2B 095B    BN       SCIN0      BR IF SET              81104790
0951 0 1001          SLA      UNCHK-UNBVE  TEST FOR UCHK          81104800
0952 1 4C2B 095B    BN       SCIN5      BR IF SET              81104810
0954 0 7008          MUX      SCIN6      ELSE 'OR' IN STATUS    81104820
*
0955 1 6700 0971    SCIN4   LDX      L3 SCIN8  SET MLSCF ENTRY FOR RETURN 81104840
0957 1 6FC0 0809    STX      L3 MLSC0  ***                   81104850
0959 1 6700 08C0    LDX      L3 SCSX4  POINT U SAVE AREA     81104860
*
095B 0 1010          SCIN5   SLA      16        CLEAR WORD TO ZERO     81104880
095C 0 D301          STO      3 1        FOR DR'ING IN STAT'S 81104890
*
095D 0 0A33          SCIN6   XIO      2 SCSN1-TB  GET CHAN. STATUS      81104910
095E 0 D300          STO      3 0        SAVE                  81104920
095F 0 1001          SLA      1         TEST FOR USP          81104930
0960 1 4C10 096F    BNN      SCINA      BRANCH IF NOT ON      81104940
*
0962 0 0A37          XIO      2 SCSN3-TB  SET UNIT STATUS        81104960
0963 0 FB01          OR       3 1        COMBINE WITH EXISTING 81104970
0964 0 D301          SCIN8   STO      3 1        SAVE                  81104980
0965 0 0A39          XIO      2 SCSN4-TB  GET CCW ADDRESS REG.   81104990
0966 0 D302          STO      3 2        SAVE                  81105000
0967 0 0A3B          XIO      2 SCSN5-TB  GET BYTE COUNTER      81105010
0968 0 D303          STO      3 3        SAVE                  81105020
*
0969 0 6600 0000    SCIN7   LDX      L2 **    RELOAD REG 2          81105030
096B 0 6500 0000    LDX      L1 **    REG 1                 81105040
*
096D 1 4C80 08FA    BSC      1 SCINT    EXT INT. RTN          81105060
*
* GET HERE IF USP WAS NOT THE CAUSE OF
* THE INTERRUPT AND SET US TO 0000
*
096F 0 1010          SCINA   SLA      16        CLEAR ACC              81105120
0970 0 70F3          MUX      SCIN8      RETURN                 81105130
*
* RETURN HERE AFTER UNEXPECTED INT
*
0971 1 6600 087F    SCIN8   LDX      L2 TB    SET UP TABLE POINTER 81105170
0973 0 610C          LDX      L1 12       SET UP POINTER        81105180
0974 1 6700 08C3    LDX      L3 SCSX4+3  SET UP CSW POINTER    81105190
*
0976 0 C300          SCIN9   LD       3 0        GET CHNL STATUS       81105210
0977 0 42FA          BSI      2 TCVRB-TB  CONVERT TO 1443 CODE 81105220
0978 1 D500 0993    STO      L1 SCIM2-1  PUT IN MESSAGE        81105230
097A 0 1800          RCH      *          *                      81105240
097B 1 D500 0994    STO      L1 SCIM2    *                      81105250
097D 0 73FF          MUX      3 -1       *                      81105260
097E 0 71FD          MUX      1 -3       *                      81105270
097F 0 70F6          MUX      SCIN9      *                      81105280
*
0980 0 4209          BSI      2 TLGMS-TB  *                      81105290
0981 1 0984          DC       SCIM5      *                      81105310
0982 0 4C80 012D    BSC      1 START    *                      81105320
*
0984 0015          SCIM5   PRNT      ** ER 00 UNEXPECTED INTERRUPT. 81105340
0993 0 FF00          DC       /FF00     *                      81105350
0994 0013          SCIM2   PRNT      .CSW XXXX, XXXX, XXXX, XXXX. 81105360
09A1 0 FFFF          DC       /FFFF     *                      81105370
*****
*
* WAIT FOR INTERRUPT
*
*****
*
* ENTRY POINT
*
09A2 0 0000          TINTW   DC       **    *                      81105440

```

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

09A3 0 C28D          LD  2 TERM-TB  FETCH TIME OUT CONSTANT  81105460
09A4 0 D233          STO  2 SCSN1-TB  81105470
*                   * 81105480
09A5 0 C278          TINT2 LD  2 WATSW-TB  81105490
09A6 1 4C20 09B6    BNZ  TINT3        81105500
09A8 0 42F7          BSI  2 STMLS-TB  GO VISIT MONITOR  81105510
09A9 1 74F6 08B2    MDX  L  SCSN1,-10 81105520
09AB 0 70F9          MDX  TINT2        81105530
*                   * 81105540
09AC 0 0A33          XIO  2 SCSN1-TB  GET CHANNEL STATUS  81105550
09AD 0 D249          STO  2 SCSXC-TB  * AND SAVE FOR ERR  81105560
09AE 0 0A37          XIO  2 SCSN3-TB  * MESSAGE           81105570
09AF 0 D24A          STO  2 SCSXC+1-TB *                   81105580
09B0 0 0A29          XIO  2 SCSN.-TB  *                   81105590
09B1 0 D24H          STO  2 SCSXC+2-TB 81105600
09B2 0 0A3B          XIO  2 SCSN5-TB  81105610
09B3 0 D24C          STO  2 SCSXC+3-TB 81105620
*                   * 81105630
09B4 1 4C80 09A2    BSC  1 TINTW     EXIT RTN          81105640
*                   * 81105650
09B5 1 7401 09A2    TINT3 MDX L TINTW.1 81105660
09B6 0 1010          SLA  16          81105670
09B9 0 D278          STO  2 WATSW-TB  81105680
09BA 1 4C80 09A2    BSC  1 TINTW     EXIT RTN          81105690
*                   * 81105700
*                   * 81105710
***** 81105720
*                   * 81105730
***** 81105740
*                   * 81105750
*                   * 81105760
*                   * 81105770
*                   * 81105780
*                   * 81105790
*                   * 81105800
RAREA BSS E 100     RESERVE 200 BYTES 81105810
DC /FFFF
WAREA BSS E 100     RESERVE 200 BYTES 81105820
DC /FFFF
***** 81105830
***** 81105840
***** 81105850
***** 81105860
***** 81105870
***** 81105880
***** 81105890
***** 81105900
***** 81105910
09B7 0 4480 012C    BGIN BSI 1 BGIN   GO TO MONITOR BEGIN RTN 81105920
09B9 1 07FF          DC      TPID     ADDRESS OF PID 81105930
***** 81105940
***** 81105950
***** 81105960
ZIPA DC *-*        ENTRY POINT 81105970
LD ZIPA            MOVE RETURN ADURS 81105980
STO ZLPA          * 81105990
LDX L2 TB        SET UP POINTER 81106000
*                   * 81106010
09B8 0 1010          SLA  16          RESET- 81106020
09B9 1 D400 1E07    STO L FRESW     RESET CONTROL SWS 81106030
09A2 0 D2D6          STO  2 LGBSY-TB * 81106040
09A3 0 D277          STO  2 WIOSW-TB * 81106050
09A4 0 D2D5          STO  2 TIOSW-TB * 81106060
09A5 0 D27H          STO  2 WATSW-TB * 81106070
09A6 0 D283          STO  2 TSW0-TB  * SW 0 81106080
09A7 0 D284          STO  2 TSW1-TB  * SW 1 81106090
09A8 0 D286          STO  2 TSW3-TB  * SW 3 81106100
09A9 1 D400 1AC8    STO L STMP     RESET STMLS POINTER 81106110
09A9 0 C2B9          LD  2 HFF00-TB  FETCH CONSTANT 81106120
09A9 0 D285          STO  2 TSW2-TB  PLACE IN SW 2 81106130
09A9 0 C297          LD  2 K1-TB     FETCH CONSTANT OF 1 81106130

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09BC 0064
0A20 0 FFFF
0A22 0064
0A86 0 FFFF

```

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```

0A9E 0 D2D3          STO  2 PSCNT-TB  SET PASS COUNT=1  81106140
0A9F 0 7001          MDX  ZLPA.1     CONTINUE 81106150
***** 81106160
***** 81106170
***** 81106180
***** 81106190
***** 81106200
0AA0 0 0000          ZLPA DC *-*      LOOP PGM RTN 81106210
0AA1 1 6700 0AD9    LDX L3 TCNPR   GET MLSCF ADDRESS 81106220
0AA3 1 6F00 080B    STX L3 MLSC2   SET IN TBL 81106230
0AA5 1 6600 087F    LDX L2 TB     SET UP TBL POINTER 81106240
0AA7 0 C294          LD  2 TLGED-TB  LOOK AT LOG EDIT 81106250
0AA8 1 4C10 0AAE    BNN ZLPA1     BR IF RELEASED 81106260
0AAA 0 4480 0132    BSI 1 RELDV   ELSE RELEASE DEVICE 81106270
0AAC 1 0813          DC TLGED      ADDR OF EDIT WORD 81106280
0AAD 1 080C          DC TERM       TERMINATOR 81106290
0AAE 0 C295          ZLPA1 LD 2 TSCED-TB SEL. CHAN. EDIT 81106300
0AAF 1 4C10 0AF5    BNN ZLPA2     81106310
0AB1 0 4480 0122    BSI 1 RELDV   RELEASE DEVICE 81106320
0AB3 1 0814          DC TSCED      81106330
0AB4 1 080C          DC TERM       81106340
0AB5 0              ZLPA2 EQU *    81106350
0AB5 0 1010          SLA 16        RESET- 81106360
0AB6 0 D2D4          STO 2 STKSW-TB * STACK SW 81106370
0AB7 0 D2D1          STO 2 SIOSW-TB * SIO SW 81106380
0AB8 0 D2D6          STO 2 LGBSY-TB * LOG BUSY SW 81106390
0AB9 0 C297          LD  2 K1-TB   FETCH CONSTANT OF 1 81106400
0ABA 0 D281          STO 2 TSID-TB SET SECTION ID = 1 81106410
0ABB 1 4C80 0AA9    BSC 1 ZLPA    EXIT 81106420
*                   * 81106430
***** 81106440
***** 81106450
***** 81106460
0ABD 0 0000          ZEPA DC *-*      END PGM RTN 81106470
0ABE 1 6600 087F    LDX L2 TB     SET UP TBL POINTER 81106480
0AC0 0 C294          LD  2 TLGED-TB  LOOK AT LOG EDIT 81106490
0AC1 1 4C10 0AC7    BNN ZEPA1     BR IF RELEASED 81106500
0AC3 0 4480 0132    BSI 1 RELDV   ELSE RELEASE DEVICE 81106510
0AC5 1 0813          DC TLGED      ADDR OF EDIT WORD 81106520
0AC6 1 080C          DC TERM       TERMINATOR 81106530
*                   * 81106540
0AC7 0 C295          ZEPA1 LD 2 TSCED-TB SEL CHANNEL EDIT 81106550
0AC8 1 4C10 0ACE    BNN ZEPA2     BR IF RELEASED 81106560
*                   * 81106570
0ACA 0 4480 0132    BSI 1 RELDV   RELEASE DEVICE 81106580
0ACC 1 0814          DC TSCED      ADDR OF EDIT WORD 81106590
0ACD 1 080C          DC TERM       81106600
0ACE 1 4C00 0AED    ZEPA2 BSC 1 ZEPA EXIT BACK TO MONITOR 81106610
***** 81106620
***** 81106630
***** 81106640
***** 81106650
***** 81106660
***** 81106670
***** 81106680
***** 81106690
***** 81106700
0AD0 1 6600 087F    TCNPR LDX L2 TB SET UP TABLE POINTER 81106710
0AD2 0 C2DE          LD  2 T45SW-TB  GET 43/53 SWITCH 81106720
0AD3 1 4C20 0AE7    BNZ TCN01     81106730
0AD5 0 42F7          TCNRO BSI 2 STMLS-TB 81106740
0AD6 0 4480 0131    BSI 1 RELDV   REQUEST DEVICE 81106750
0AD8 1 0AD5          DC TCNRO      BUSY RETURN 81106760
0AD9 1 0813          DC TLGED      EDIT FOR PRINTER 81106770
0ADA 1 1DC3          DC TLGDA      AREA CODE GIVEN BACK 81106780
0ADB 1 080C          DC TERM       TERMINATOR 81106790
0ADC 0 4480 0132    BSI 1 RELDV   RELEASE DEVICE 81106800
0ADE 1 0813          DC TLGED      EDIT FOR PRINTER 81106810
0ADF 1 080C          DC TERM       TERMINATOR

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OAE0 1 C400 IDC3. LD L TLGDA GET PRINTER AREA CODE 81106820
OAE2 0 F2B3 EOR 2 H3000-TB 81106830
OAE3 0 4820 SKP Z 81106840
OAE4 0 C297 LD 2 K1-TB 81106850
OAE5 0 8297 A 2 K1-TB ADD ONE 81106860
OAE6 0 D2DE STO 2 T45SW-TB SET SW FOR 43 OR 53 81106870
81106880
81106890
* TCN01 EQU *
OAE7 0 BS1 2 GETDV-TB GET DEVICE FOR USE 81106900
OAE8 0 42EB BS1 2 FREDV-TB RELEASE DEVICE 81105910
OAE9 0 C285 LD 2 TSW2-TB GET SW FNC 2 (DEV ADDR) 81106920
OAEA 0 1808 SRA 8 SAVE BITS 0-7 81106930
OAE3 1 4C18 OAF4 BZ TCNJ2 BR IF ZERO 81106940
OAE5 0 4209 BS1 2 TLGMS-TB PRINT MESSAGE 81106950
OAE6 1 0B57 DC TCNE2 ENTER DEV ADDRESS 81106960
81106970
* BS1 2 STMLS-TB GO TO MONITOR 81106980
OAEF 0 42F7 LD 2 TSW2-TB GET SW FNC 2 81106990
OAF0 0 C285 SRA 8 SAVE BITS 0-7 81107000
OAF1 0 1808 SKP Z SKIP IF ZERO 81107010
OAF2 0 4820 MDX *-5 LOOP UNTIL OK 81107020
OAF3 0 70FB 81107030
* TCN02 LD 2 TSW2-TB GET SW FNC 2 81107040
OAF4 0 C285 STO 2 DVADR-TB SET FOR S10/T10/SNS 81107050
OAF5 0 D2D0 BS1 2 TCVBE-TB CONVERT ADDR TO EUC 81107060
OAF6 0 42FA SLT 16 Q TO A 81107070
OAF7 0 1090 STU CUU11 STORE FOR PRINT 81107080
OAF8 0 D046 81107090
* LD 2 PSCNT-TB GET PASS COUNT 81107100
OAF9 0 C2D3 BS1 2 TCVHD-TB CVT TO DECIMAL 81107110
OAF0 0 42FD BS1 2 TCVBE-TB CONVERT TO 1443 CODE 81107120
OAFB 0 42F7 XCH Q TO A 81107130
OAFC 0 18D0 STO TTL01+3 PUT IN MSG 81107140
OAFD 0 D546 BS1 2 TLGMS-TB PRINT PROGRAM TITLE 81107150
OAFE 0 4209 DC TTL00 MSG ADDRESS 81107160
OAF1 0 B330 81107170
*****
* 81107180
* 81107190
* *****
* 81107200
* 81107210
* THIS ROUTINE CONTROLS ALL TESTS 81107220
* 81107230
* TCNTE EQU * ENTRY POINT 81107240
OBB0 0 LDX L2 TB SET TABLE ADDRESS 81107250
OBB1 0 C2B4 LD 2 TSW1-TB GET SW FNC 1 81107260
OBB2 0 100C SLA 12 SAVE BITS 12-15 81107270
OBB3 0 180C SRA 12 ** 81107280
OBB4 0 D2BC STO 2 TRTNN-TB ** 81107290
OBB5 0 C2B4 LD 2 TSW1-TB GET SW FNC 1 81107300
OBB6 0 F2A9 AND 2 H00FF-TB DROP BAD BITS 81107310
OBB7 0 18B4 SRT 4 SAVE BITS 8-11 81107320
OBB8 0 D2BB STO 2 TSCTN-TB SAVE SECTION NUMBER 81107330
OBB9 0 4C20 OB1D BNZ TCN04 BR IF NOT ZERO 81107340
OBB0 0 1090 SLT 16 GET BACK BITS 12-15 81107350
OBB1 0 180C SRA 12 SAVE THEM 81107360
OBB2 1 4C20 OB21 BNZ TCNER ERR. NO SECTION SPECIFIED 81107370
81107380
* TCN03 LDX L1 TSID GET SECTION NUMBER 81107390
OBB3 1 C500 OB2A LD L1 TCN1A GET SECT. PREFACE ADDRESS 81107400
OBB4 0 D2B2 STO 2 TSAD-TB STORE IN SEC ADDR 81107410
OBB5 0 1010 SLA 16 CLEAR ERROR COUNTER 81107420
OBB6 0 D2ED STO 2 TCNSW-TB *** 81107430
OBB7 0 D296 STO 2 TRID-TB CLEAR RTN ID TO ZERO 81107440
OBB8 0 C281 LD 2 TSID-TB INCREMENT SECTION 81107450
OBB9 0 8297 A 2 K1-TB * 81107460
OBB0 0 D281 STO 2 TSID-TB * 81107470
OBB1 1 4C80 OB01 BSC 1 TSAD GO TO SECTION PREFACE 81107480
81107490
* TCN04 STO 2 TSID-TB STORE SECT. NUMBER
OBB2 0 D281

```

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```

OBB3 0 900B S TCN04 SUB. NUMBER OF SECTIONS 81107500
OBB4 1 4C28 OB10 BN TCN03 BR IF OK 81107510
81107520
* TCNER LD 2 TSW1-TB GET SW FNC 1 81107530
OBB5 0 C284 BS1 2 TCVHE-TB CONVERT HEX TO PRNT CODE 81107540
OBB6 0 42FA STO TTLER+11 PUT INVALID SWITCH 81107550
OBB7 0 D02F SLT 16 * SETTING INTO MESSAGE 81107560
OBB8 0 1090 STO TTLER+12 * 81107570
OBB9 0 D02E BS1 2 TLGMS-TB 81107580
OBB0 0 4209 DC TTLER 81107590
OBB1 1 0B48 BS1 2 THALT-TB 81107600
OBB2 0 4200 BS1 2 CNTRL-TB GO TO RETRY RTN SELCT 81107610
OBB3 1 1463 81107620
OBB4 0 0006 81107630
OBB5 1 0B67 DC TCN04 TCN04-TCN04 LENGTH OF TBL + 1 81107640
OBB6 1 0F0D DC T10NT SECTION ADDRESS 81107650
OBB7 1 1463 DC T20NT SECTION ADDRESS 81107660
OBB8 1 1662 DC T30NT SECTION ADDRESS 81107670
OBB9 1 1928 DC T40NT SECTION ADDRESS 81107680
OBB0 0 FFFF DC T50NT SECTION ADDRESS 81107690
OBB1 0 FFFF TCNTZ EQU * END OF TABLE 81107700
*****
* 81107710
* 81107720
* *****
* 81107730
* 2841 DIAGNOSTIC TEST ON UNIT. 81107740
* *****
* 81107750
* /FFF0 81107760
* T101 PRNT *PASS- XX * 81107770
* /FFF0 TERMINATOR 81107780
* /FFFF 81107790
* TTLER PRNT * **E# INVLD SWS FNC 1 XXXX. 81107800
* /00FF 81107810
* /FFFF 81107820
* TCNE2 PRNT * *** SELECT OPTIONS ***. 81107830
* /FFF0 81107840
* /FFFF 81107850
* *****
* 81107860
* *****
* 81107870
* *****
* 81107880
* SECTION PREFACE 81107890
* *****
* 81107900
* T10PR DC /0001 SECTION NUMBER 81107910
* DC 10 81107920
* *****
* 81107930
* *****
* 81107940
* T10NT LD 2 TRTNN-TB SW FNC 1 BITS 12-15 81107950
* BZ T1101 BR IF RUN ALL RTNS 81107960
* S T10PR+1 TEST FOR VALID 81107970
* BP TCNER BR IF INVALID RTN NUMBER 81107980
* A T10PR+1 RESTORE RTN NUMBER 81107990
* MDX T1101 GO TO FIRST RTN 81108000
* *****
* 81108010
* *****
* 81108020
* *****
* 81108030
* *****
* 81108040
* *****
* 81108050
* *****
* 81108060
* *****
* 81108070
* *****
* 81108080
* *****
* 81108090
* *****
* 81108100
* *****
* 81108110
* *****
* 81108120
* *****
* 81108130
* *****
* 81108140
* *****
* 81108150
* *****
* 81108160
* *****
* 81108170

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

* GO TO NEXT ROUTINE IN SEQUENCE
T12EN BSI 2 FREDV-TB FREE CHANNEL
LD 2 TRTN-TB GET RTN SWS
BZ T1301 GO TO NEXT RTN IN SEQ
BSI 2 CNTRL-TB GO TO CONTROL RTN
TTL12 PRNT . SECT 1,RT 2-
*
PRNT .HALT I/O.
DC /FFFF
*
* TEST OPTION SWITCHES
T12EP LD 2 TSWO-TB FETCH OPTION SWITCHES
SLA OLPER TEST FOR SW OLPER
BN T1204 BRANCH IF SW OLPER IS ON
MDX T12EN ELSE END ROUTINE
*
T12E3 BSI 2 ERROUT-TB CALL ERROR OUT ROUTINE
DC /0302 FLAG BITS
DC /1203 MSG NO OR ADDRESS
*
T12E1 BSI 2 ERROUT-TB CALL ERROR OUT ROUTINE
DC /0302 FLAG BITS
DC /1201 MSG NO OR ADDRESS
*
T12E2 BSI 2 ERROUT-TB CALL ERROR OUT ROUTINE
DC /0302 FLAG BITS
DC /1202 MSG NO OR ADDRESS
T1205 DC /4000
*
*****
ROUTINE --3-- TEST I/O
*****
*
THIS ROUTINE WILL EXECUTE A TEST I/O TO
DETERMINE THE STATUS OF THE ACCESS. IF
THE CSW INDICATES UNIT CHECK, THE ROUTINE
EXAMINES THE SENSE BYTES FOR ADDITIONAL
INFORMATION.
*
CONDITIONS CHECKED:
CHANNEL BUSY
CHANNEL UNAVAILABLE
CHANNEL DATA CHECK
OTHER CHANNEL STATUS
CONTROL UNIT BUSY
DEVICE END
UNSELECTED FILE STATUS
ONLINE OR OPERATIVE
UNSAFE
BUS OUT PARITY
NOT READY
*
*****
T1301 EQU * TEST ENTRY POINT

```

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```

OBFD 1 7401 0815 MDX L TRID,1 BUMP RTN ID
OBFF 1 4C18 0C04 BZ T1302 BR IF TEST NUMBER ZERO
OC01 0 9297 S 2 K1-TB DECREMENT BY ONE
OC02 1 4C20 0C99 BNZ T1401 BR IF NOT THIS TEST
*
OC04 0 C282 T1302 LD 2 TSWO-TB GET OPTION SWS
OC05 0 100A SLA OTTLE PRINT TITLES
OC06 1 4C10 0C0A BNN T1303 BR IF NOT SET
OC08 0 4209 BSI 2 TLGMS-TB GO TO PRINT ROUTINE
OC09 1 0C26 DC TTL13 MESSAGE ADDRESS
*
OC0A 0 42FB T1303 BSI 2 GETDV-TB GET CHANNEL FOR RTN
*
OC0B 1 6500 0C7C LDX L1 T1317 SET ERADR FOR RETURN
OC0D 1 600C 1C71 STX L1 ERADR **
*
OC0F 0 1CA0 T1304 SLT 32 CLEAR AO
OC10 0 DA45 STD 2 SCSXB-TB CLEAR SAVE ARE A
OC11 0 DA47 STD 2 SCSXB+2-TB ***
OC12 0 D278 STD 2 WATSW-TB CLEAR INT. SWITCH
*
OC13 0 0A29 X10 2 TIOXX-TB TEST I/O
OC14 1 4409 09A2 BSI L TINTW WAIT FOR INTERRUPT
OC16 0 7068 MDX T1318 COME HERE IF NONE
*
OC17 0 420F BSI 2 TLPST-TB TEST LOOP SID
OC18 1 0C0F DC T1304 LOOP ADDR
*
OC19 0 C245 LD 2 SCSXB-TB GET CHAN STATUS WORD
OC1A 0 F2B4 EOR 2 H4000-TB TEST FOR UNIT STATUS PEND
OC1B 1 4C20 0C32 BNZ T1306 BR IF NONZERO STATUS
OC1D 0 C24C LD 2 SCSXB+1-TB GET UNIT STATUS
OC1E 0 1008 SLA 8 CLEAR UNIT ADDRESS
OC1F 1 4C20 0C32 BNZ T1306 BR IF NON ZERO STATUS
*
* GO TO NEXT ROUTINE IN SEQUENCE
T13EN BSI 2 FREDV-TB FREE CHANNEL
LD 2 TRTN-TB GET RTN SWS
BZ T1401 GO TO NEXT RTN IN SEQ
BSI 2 CNTRL-TB GO TO CONTROL RTN
TTL13 PRNT . SECT 1,RT 3-
*
PRNT .TEST I/O.
DC /FFFF
*
T1306 LD 2 SCSXB-TB GET STATUS
BN T1307 BR IF NOT OPERATIONAL
SLA SCUSP TEST FOR UNIT STATUS PEND
BN T1308 BR IF SET
BSI 2 ERROUT-TB TAGS AND OPTIONS
DC /2302 EPR NUMBER
DC /1302
*
T1307 BSI 2 ERROUT-TB TAGS AND OPTIONS
DC /2302 EPR NUMBER
DC /1303
*
T1308 LD 2 SCSXB+1-TB GET UNIT STATUS
SLA UNCHK TEST FOR UNIT CHECK
BN T1311 BR IF YES
*
UNIT CHECK IS OFF
LD 2 SCSXB-TB GET CHAN STATUS
SRA 8 SAVE BITS 0-7
BZ T1309 BR IFNONE
*
GET HERE IF SOME CHAN. STATUS BITS ON
BSI 2 ERROUT-TB

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0C47 0 2302	DC	/2302	TAGS AND OPTIONS	81110900
0C48 0 1301	DC	/1301	ERR NUMBER	81110910
	*	CHECK FOR CNTRL UNIT BUSY		81110920
0C49 0 C246	T1309 LD	2 SCSX+1-TB	GET UNIT STATUS	81110930
0C4A 0 1008	SLA	8	SAVE BITS 8-15	81110940
0C4B 0 F2B5	EOR	2 H5000-TB	TEST FOR CNTRL BUSY AND	81110950
0C4C 1 4C20 0C51	BNZ	T1310	BR IF NOT	81110960
	*			81110970
0C4E 0 42E5	BSI	2 ER0UT-TB		81110980
0C4F 0 2302	DC	/2302	TAGS AND OPTIONS	81110990
0C50 0 1311	DC	/1311	ERR NUMBER	81111000
	*	UNIT CHECK AND NO CHANNEL STATUS		81111010
0C51 0 42E5	T1310 BSI	2 ER0UT-TB		81111020
0C52 0 2302	DC	/2302	TAGS AND OPTIONS	81111030
0C53 0 1309	DC	/1309	ERR NUMBER	81111040
	*			81111050
0C54 1 4400 0B6D	T1311 BSI	L GETSN	GET SENSE INFO	81111060
0C56 0 CA25	LDD	2 SNWDS-TB	GET BYTES TO A REG	81111070
0C57 0 109A	SLT	FUNSI	TEST FOR FILE UNSAFE	81111080
0C58 1 4C10 0C5D	BNN	T1312	BR IF NOT UNSAFE	81111090
0C5A 0 42E5	BSI	2 ER0UT-TB		81111100
0C5B 0 2303	DC	/2303	TAGS AND OPTIONS	81111110
0C5C 0 1304	DC	/1304	ERR NUMBER	81111120
	*	CHECK FOR ONLINE		81111130
0C5D 0 CA25	T1312 LDD	2 SNWDS-TB	GET SENSE INFO	81111140
0C5E 0 1099	SLT	FONLN	TEST FOR ONLINE	81111150
0C5F 1 4C10 0C64	BNN	T1313	BR IF NOT	81111160
0C61 0 42E5	BSI	2 ER0UT-TB		81111170
0C62 0 2303	DC	/2303	TAGS AND OPTIONS	81111180
0C63 0 1306	DC	/1306	ERR NUMBER	81111190
	*	CHECK FOR FILE READY		81111200
0C64 0 CA25	T1313 LDD	2 SNWDS-TB	TEST FOR READY	81111210
0C65 0 1098	SLT	FDHRY	BR IF NOT SET	81111220
0C66 1 4C10 0C6B	BNN	T1314		81111230
0C68 0 42E5	BSI	2 ER0UT-TB		81111240
0C69 0 2303	DC	/2303	TAGS AND OPTIONS	81111250
0C6A 0 1305	DC	/1305	ERR NUMBER	81111260
	*	CHECK FOR UNSELECTED FILE STATUS		81111270
0C6B 0 CA25	T1314 LDD	2 SNWDS-TB		81111280
0C6C 0 1095	SLT	FUNSL	BR IF NOT	81111290
0C6D 1 4C10 0C72	BNN	T1315		81111300
0C6E 0 42E5	BSI	2 ER0UT-TB		81111310
0C6F 0 2303	DC	/2303	TAGS AND OPTIONS	81111320
0C70 0 2303	DC	/1307	ERR NUMBER	81111330
0C71 0 1307	DC			81111340
	*	CHECK FOR END OF CYLINDER		81111350
0C72 0 CA25	T1315 LDD	2 SNWDS-TB	FETCH SENSE WORDS	81111360
0C73 0 109D	SLT	FCCYL	END OF CYLINDER	81111370
0C74 1 4C10 0C79	BNN	T1316	BR IF NOT	81111380
0C76 0 42E5	BSI	2 ER0UT-TB		81111390
0C77 0 2303	DC	/2303	TAGS AND OPTIONS	81111400
0C78 0 1310	DC	/1310	ERR NUMBER	81111410
	*	OTHER SENSE INFO		81111420
0C79 0 42E5	T1316 BSI	2 ER0UT-TB		81111430
0C7A 0 2303	DC	/2303	TAGS AND OPTIONS	81111440
0C7B 0 1308	DC	/1308	ERR NUMBER	81111450
	*			81111460
0C7C 0 420C	T1317 BSI	2 TLPER-TB	TEST LOOP ON ERROR	81111470
0C7D 1 0C6F	DC	T1304	LOOP ADDRESS	81111480
0C7E 0 70A2	MOX	T13EN	END ROUTINE	81111490
	*			81111500
0C7F 0 42E5	T1318 BSI	2 ER0UT-TB	ERROR MSG RTN	81111510
0C80 0 130C	DC	/130E	OPTIONS AND TAGS	81111520
0C81 1 0C82	DC	T13M2	ERROR MSG ADDRESS	81111530
	*			81111540
0C82 0016	T13M2 PRNT	06 CHANNEL HUNG AFTER TEST I/O.		81111550
0C92 0066	PRNT	SECT 1,R1 3.		81111560
0C98 0 FFFF	DC	/FFFF		81111570

*****	81111580
*****	81111590
*****	81111600
*****	81111610
*****	81111620
*****	81111630
*****	81111640
*****	81111650
*****	81111660
*****	81111670
*****	81111680
*****	81111690
*****	81111700
*****	81111710
*****	81111720
*****	81111730
*****	81111740
*****	81111750
*****	81111760
*****	81111770
*****	81111780
*****	81111790
*****	81111800
*****	81111810
*****	81111820
*****	81111830
*****	81111840
*****	81111850
*****	81111860
*****	81111870
*****	81111880
*****	81111890
*****	81111900
*****	81111910
*****	81111920
*****	81111930
*****	81111940
*****	81111950
*****	81111960
*****	81111970
*****	81111980
*****	81111990
*****	81120000
*****	81120010
*****	81120020
*****	81120030
*****	81120040
*****	81120050
*****	81120060
*****	81120070
*****	81120080
*****	81120090
*****	81121000
*****	81121100
*****	81121120
*****	81121130
*****	81121140
*****	81121150
*****	81121160
*****	81121170
*****	81121180
*****	81121190
*****	81122000
*****	81122100
*****	81122200
*****	81122300
*****	81122400
*****	81122500

0C99 0	T1401 EQU	*	TEST ENTRY POINT
0C99 1 7401 0B15	MOX	L TRID.1	BUMP PTN ID
0C9B 1 4C18 0CA0	BZ	T1402	BR IF TEST NUMBER ZERO
0C9D 0 9297	S	2 K1-TB	DECREMENT BY ONE
0C9E 1 4C20 0D0E	BNZ	T1501	BR IF NOT THIS TEST
	*		
0CA0 0 C2B3	T1402 LD	2 TSW0-TB	GET OPTION SW5
0CA1 0 100A	SLA	OTLFC	PRINT TTLS5
0CA2 1 4C10 0CA6	BNN	T1403	BR IF NOT SET
0CA4 0 4209	BSI	2 TLGMS-TB	GO TO PRINT ROUTINE
0CA5 1 0CD8	DC	TTL14	MESSAGE ADDRESS
	*		
0CA6 0 42EB	T1403 BSI	2 GETDV-TB	GET CHANNEL FOR RTN
	*		
0CA7 1 6500 0CED	LDX	L1 T1409	SET RETURN ADDRESS
0CA9 1 6D00 1C71	STX	L1 ERADR	
	*		
0CAB 0 C2B4	T1404 LD	2 H4000-TB	SET SW TO EXIT SID
0CAC 0 D2D1	STO	2 S10SW-TB	* RTN ON ERROR
	*		
0CAD 0 42F4	BSI	2 SID-TB	GO TO START IO RTN
0CAE 1 0B97	DC	NOPCC	NOP CCW
	*		
0CAF 0 1010	SLA	16	CLEAR SW
0CB0 0 D2D1	STO	2 S10SW-TB	
	*		
0CB1 0 C23D	LD	2 SCSX0-TB	GET CHAN STATUS
0CB2 1 4C20 0CHF	BNZ	T140K	BR IF NOT 0
	*		
0CB4 0 0A33	X10	2 SCSN1-TB	ELSE GET CSW AND PUT IN
0CB5 0 D249	STO	2 SCSXC-TB	* SAVE AREA
0CB6 0 0A37	X10	2 SCSN3-TB	*
0CB7 0 D24A	STO	2 SCSXC+1-TB	*
0CB8 0 0A39	X10	2 SCSN4-TB	*
0CB9 0 D24B	STO	2 SCSXC+2-TB	*
0CBA 0 0A3B	X10	2 SCSN5-TB	*
0CBB 0 D24C	STO	2 SCSXC+3-TB	*
0CBC 0 42E5	BSI	2 ER0UT-TB	
0CBD 0 130A	DC	/130A	

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM
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```

DC 114M2
OCBF 1 0CF0
OCBF 0 1001
OCC0 1 4C10 OCEA
OCC2 0 C230
OCC3 0 F2B4
OCC4 1 4C20 OCE4
OCC6 0 C23E
OCC7 0 100E
OCC8 1 4C28 OCE4
OCCA 0 C23E
OCCB 0 100C
OCCC 1 4C10 OCE7
OCC3 0 1001
OCCF 1 4C10 OCE7
OCD1 0 420F
OCD2 1 0CF3
OCD3 0 42E8
OCD4 0 C2BC
OCD5 1 4C18 OD0E
OCD7 0 420F
OCD8 0007
OCD9 0004
OCE3 0 FFFF
OCE4 0 42E5
OCE5 0 0327
OCE6 0 1401
OCE7 0 42E5
OCE8 0 0306
OCE9 0 1402
OCEA 0 42E5
OCEB 0 0306
OCEC 0 1403
OCE4 0 420C
OCEE 1 0CAB
OCEF 0 70E1
OCF0 0018
OD02 0011
OD0D 0 FFFF
DC 114M2
SCUSP T1408
BNN T1408
LD 2 SCSX0-TB
EOR 2 H4000-TB
BNZ T1406
LD 2 SCSX0+1-TB
SLA UNCHK
BN T1406
LD 2 SCSX0+1-TB
SLA UNCHE
BNN T1407
SLA UNVLE-UNCHE
BNN T1407
GET HERE IF NOP APPEARED TO WORK PROPERLY
T1405 5SI 2 TLPST-TB
DC T1404
GO TO NEXT ROUTINE IN SEQUENCE
T14EN BSI 2 FREDV-TB
LD 2 TRTNN-TB
BZ T1501
BSI 2 CNTRL-TB
TTL14 PRNT * SECT 1,RT 4-
PRNT *NOP TEST.
DC /FFFF
T1405 BSI 2 LR0UT-TB
DC /0327
DC /1401
ERR NUMBER
T1407 BSI 2 ER0UT-TB
DC /0306
DC /1402
ERR NUMBER
T1409 BSI 2 ER0UT-TB
DC /0306
DC /1403
T1409 BSI 2 TLPST-TB
DC T1404
M0X T1405
TEST LOOP ERROR
LOOP ADDRS
HERE IF NOT
T14M2 PRNT * 06 CHANNEL BUSY, NO INTERRUPT.
PRNT * OCCURRED, SECT 1,RT 4.
DC /FFFF
*****
ROUTINE --5-- SENSE I/O
*****
THIS ROUTINE WILL PERFORM A SENSE I/O
OPERATION. THIS CHECKS THE DATA TRANSFER
FROM THE 2841 TO THE CHANNEL AND PROCESSOR.
*****
CONDITIONS CHECKED.
DATA TRANSFER FROM 2841 TO PROCESSOR
*****
81112260
81112270
81112280
81112290
81112300
81112310
81112320
81112330
81112340
81112350
81112360
81112370
81112380
81112390
81112400
81112410
81112420
81112430
81112440
81112450
81112460
81112470
81112480
81112490
31112500
81112510
81112520
81112530
81112540
81112550
81112560
81112570
81112580
81112590
81112600
81112610
81112620
81112630
81112640
81112650
81112660
81112670
81112680
81112690
81112700
81112710
81112720
81112730
81112740
81112750
81112760
81112770
81112780
81112790
81112800
81112810
81112820
81112830
81112840
81112850
81112860
81112870
81112880
81112890
81112900
81112910
81112920
81112930

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IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM
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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OD0E 0
OD0E 1 7401 0815
OD10 1 4C18 OD15
OD12 0 9297
OD13 1 4C20 OD62
OD15 0 C283
OD16 0 100A
OD17 1 4C10 OD1B
OD19 0 4209
OD1A 1 0D49
OD1B 0 42EB
OD1C 1 6500 OD5F
OD1E 1 6000 1C71
OD20 0 C28D
OD21 0 D225
OD22 0 D226
OD23 0 D227
OD24 0 10A0
OD25 0 DA49
OD26 0 DA4B
OD27 0 42F4
OD28 1 08A1
OD29 0 C249
OD2A 0 F2B4
OD2B 1 4C20 OD56
OD2D 0 C24A
OD2E 0 100E
OD2F 1 4C28 OD56
OD31 0 C24A
OD32 0 100C
OD33 1 4C10 OD59
OD35 0 1001
OD36 1 4C10 OD59
OD38 0 C225
OD39 1 4C20 OD5C
OD3B 0 C226
OD3C 0 F2AB
OD3D 1 4C20 OD5C
OD3F 0 C227
OD40 1 4C20 OD5C
OD42 0 420F
OD43 1 0D20
OD44 0 42E8
OD45 0 C28C
OD46 1 4C18 OD62
OD48 0 42DF
OD49 0007
OD50 0005
OD55 0 FFFF
T1501 FOU *
M0X L TRID.1
BZ T1502
S 2 K1-TB
BNZ T1601
TEST ENTRY POINT
BUMP RTN ID
BR IF TEST NUMBER ZERO
DECREMENT BY ONE
BR IF NOT THIS TEST
T1502 LD 2 TSW0-TB
SLA OTTLE
BNN T1503
BSI 2 TLGMS-TB
DC TTL15
GET OPTION SWS
PRINT TITLES
BR IF NOT SET
GO TO PRINT ROUTINE
MESSAGE ADDRESS
T1503 BSI 2 GETDV-TB
LDX L1 T1509
STX L1 ERADR
GET CHANNEL FOR RTN
SET RETURN ADDRESS
**
T1504 LD 2 TERM-TB
STO 2 SNWDS-TB
STO 2 SNWDS+1-TB
STO 2 SNWDS+2-TB
SLT 32
STD 2 SCSXC-TB
STO 2 SCSXC+2-TB
SET BYTES TO /FFFF INIT.
**
BSI 2 S10-TB
DC SNCCW
START I/O FOR SENSE
LD 2 SCSXC-TB
EOR 2 H4000-TB
BNZ T1506
GET CHAN STATUS
TEST FOR UNIT STATUS PEND
BR IF NONZERO STATUS
LD 2 SCSXC+1-TB
SLA UNCHK
EN T1505
GET UNIT STATUS
TEST FOR UNIT CHECK
BR IF YES
LD 2 SCSXC+1-TB
SLA UNCHE
BNN T1507
SLA UNVLE-UNCHE
BNN T1507
GET UNIT STATUS
TEST FOR CHANNEL END
BR IF NOT
LD 2 SNWDS-TB
BNZ T1508
GET BYTES 0 AND 1
BR IF NOT ZERO
LD 2 SNWDS+1-TB
EOR 2 H00CB-TB
BNZ T1508
GET BYTES 2 AND 3
TEST FOR CORRECT
BR IF NOT
LD 2 SNWDS+2-TB
BNZ T1508
GET BYTES 4 AND 5
BR IF NOT ZERO
T1505 BSI 2 TLPST-TB
DC T1504
TEST LOOP SIOS
LOOP ADDRS
GO TO NEXT ROUTINE IN SEQUENCE
T15EN BSI 2 FREDV-TB
LD 2 TRTNN-TB
BZ T1601
BSI 2 CNTRL-TB
TTL15 PRNT * SECT 1,RT 5-
PRNT *SENSE I/O.
DC /FFFF

```

1800 DIAGNOSTIC MAINTENANCE PROGRAM

0D56 0 42E5 *
0D57 0 1303 T1506 BSI 2 ER0UT-TB 81113620
0D58 0 1501 DC /1303 TAGS AND OPTIONS 81113630
DC /1501 81113640
81113650
81113660
0D59 0 42E5 * 81113670
0D5A 0 1303 DC /1303 TAGS AND OPTIONS 81113680
0D5B 0 1503 DC /1503 ERR NUMBER 81113690
81113700
81113710
0D5C 0 42E5 * 81113720
0D5D 0 1347 T1508 BSI 2 ER0UT-TB 81113730
0D5E 0 1504 DC /1347 TAGS AND OPTIONS 81113740
DC /1504 ERR NUMBER 81113750
81113760
81113770
0D5F 0 420C * 81113780
0D60 1 0D20 T1509 BSI 2 TLPLR-TB TEST LOOP ERROR 81113790
0D61 0 70E0 DC T1504 LOOP ADDR 81113800
MDX T1505 ELSE HERE 81113810
81113820
* ROUTINE --6-- STAND ALONE CONTROL SEEK 81113830
* 81113840
* 81113850
* 81113860
* 81113870
* 81113880
* THIS ROUTINE PERFORMS A SEEK TO CYL 198
* HD 0, CHAINED TO A SEEK TO CYL 000 HD 0,
* AND WAITS FOR DEVICE END. IF NO DEVICE
* END IS RECEIVED, ERROR MESSAGE(S) WILL
* BE PRINTED.
* 81113920
* 81113930
* 81113940
* 81113950
* 81113960
* 81113970
* 81113980
* 81113990
* 81114000
* 81114010
* 81114020
* 81114030
* 81114040
* 81114050
* 81114060
* 81114070
* 81114080
* 81114090
* 81114100
* 81114110
* 81114120
* 81114130
* 81114140
* 81114150
* 81114160
* 81114170
* 81114180
* 81114190
* 81114200
* 81114210
* 81114220
* 81114230
* 81114240
* 81114250
* 81114260
* 81114270
* 81114280
* 81114290

1800 DIAGNOSTIC MAINTENANCE PROGRAM

0D7A 0 42F4 T1604 BSI 2 S10-TB CALL SID ROUTINE 81114300
0D7B 1 0DA7 DC T1604 CCW ADDRESS 81114310
* 1. SEEK CYL 198 HD 0 81114320
* 2. SEEK CYL 000 HD 0 81114330
* 81114340
* 81114350
0D7C 0 C230 LD 2 SCSX0-TB CHAN STATUS 81114360
0D7D 1 4C10 0D82 BNN T1605 BR. IF OPERATIONAL 81114370
* 81114380
0D7F 0 42E5 * BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81114390
0D80 0 8306 DC /8306 FLAG BITS 81114400
0D81 0 1601 DC /1601 MSG NO OR ADDRESS 81114410
* PRINT CHAN NOT OPERATIONAL 81114420
* 81114430
0D82 0 C23E T1605 LD 2 SCSX0+1-TB UNIT STATUS 81114440
0D83 0 100E SLA UNCHK LOOK AT UNIT CHECK 81114450
0D84 1 4C10 0D88 BNN T16E2 BR. IF NO UNIT CHK. 81114460
* 81114470
0D86 0 42E5 * BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81114480
0D87 0 8327 DC /8327 FLAG BITS 81114490
0D88 0 1602 DC /1602 MSG NO OR ADDRESS 81114500
* PRINT UNIT CHECK 81114510
* 81114520
0D89 0 C000 T16E1 LD * GET A VALUE 81114530
0D8A 0 D2C0 STO 2 ERRSW-TB SET ERROR SWITCH 81114540
0D8B 0 420C T16E2 BSI 2 TLPLR-TB TEST LOOP ON ERROR 81114550
0D8C 1 0D8E DC *+1 TEST ERROR SW 81114560
0D8D 0 7003 MDX T16E6 NORMAL EXIT 81114570
* 81114580
0D8E 0 C2C0 LD 2 ERRSW-TB FETCH ERROR SWITCH 81114590
0D8F 1 4C20 0D7A BNZ T1604 81114600
* 81114610
* GO TO NEXT ROUTINE IN SEQUENCE 81114620
* 81114630
* 81114640
* 81114650
0D91 0 42E8 T16E6 BSI 2 FREDV-TB FREE CHANNEL 81114660
0D92 0 C2BC LD 2 TRINN-TB GET RTN SW 81114670
0D93 1 4C18 0D83 BZ T1701 GO TO NEXT RTN IN SEQ 81114680
0D94 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81114690
0D96 0007 TTL16 PRNT * SECT 1,RT 6- 81114700
* 81114710
* 81114720
* 81114730
0D9D 0000 PRNT *CONTROL SEEK. ROUTINE TITLE 81114740
0DA3 0 FFFF DC -1 81114750
* 81114760
* 81114770
* 81114780
* 81114790
0DA4 0 42E5 T16T1 BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81114800
0DA5 0 8306 DC /8306 FLAG BITS 81114810
0DA6 0 1604 DC /1604 MSG NO OR ADDRESS 81114820
* 81114830
* 81114840
* 81114850
* 81114860
* 81114870
* 81114880
* 81114890
* 81114900
* 81114910
* 81114920
* 81114930
* 81114940
* 81114950
* 81114960
* 81114970

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

***** 81114980
*      81114990
*      ROUTINE --7-- READ HOME ADDRESS 81115000
*      81115010
***** 81115020
*      81115030
*      81115040
*      81115050
*      THIS ROUTINE PERFORMS A SEEK (CYL 000 HD 0)
*      CHAINED TO A READ HOME ADDRESS FOLLOWED BY
*      A READ HOME ADDRESS. IT CHECKS THE
*      ABILITY OF THE DEVICE TO SEEK AND READ
*      CORRECTLY AND THE ABILITY OF THE CHANNEL
*      TO TRANSFER DATA CORRECTLY. THE TEST
*      SEQUENCE IS REPEATED 10 TIMES, ALTER-
*      NATING BETWEEN HEADS 0 AND 1.
*      81115100
*      81115110
*      81115120
*      81115130
*      81115140
*      81115150
*      81115160
*      81115170
*      81115180
*      81115190
*      *****
*      81115200
*      81115210
*      *****
*      81115220
*      *****
T1701 EQU * TEST ENTRY POINT 81115230
      MDX L TRID,1 BUMP RTN ID 81115240
      BZ T1702 BR IF TEST NUMBER ZERO 81115250
      S 2 K1-TB DECREMENT BY ONE 81115260
      BNZ T1801 BR IF NOT THIS TEST 81115270
*
T1702 LD 2 TSWO-TB GET OPTION SWS 81115280
      SLA OTTLE PRINT TITLES 81115290
      BNN T1703 BR IF NOT SET 81115300
      BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81115310
      DC TTL17 MESSAGE ADDRESS 81115320
*
T1703 LD 2 GETOV-TB GET CHANNEL FOR RTN 81115330
*
      LD 2 K1-TB 81115340
      STO T170A+2 INIT HEAD NO. 81115350
*
      LDX 1 10 LOOP COUNT 81115360
      STX 1 T170B INIT COUNTER 81115370
*
T1704 SLA 16 CLEAR ACC 81115380
      STO 2 ERRSW-TB RESET ERROR SWITCH 81115390
*
      LD T170A+2 HEAD NO 81115400
      EOR 2 K1-TB COMPLEMENT 81115410
      STO T170A+2 ALTERNATE HEAD NO (0/1) 81115420
*
      LD 2 H4000-TB 81115430
      STO 2 S10SW-TB SET RETURN ON ERROR 81115440
*
      LDX L1 T17T1 81115450
      STX L1 WTADR EST. TIMEOUT ADDR 81115460
      BSI 2 S10-TB CALL S10 ROUTINE 81115470
      DC T170C CCW ADDRESS 81115480
*
T1705 LDX L1 T1701 81115490
      STX L1 ERADR EST. ERROR RETURN 81115500
*
      LDX L1 T17T2 81115510
      STX L1 WTADR EST. TIMEOUT ADDRESS 81115520
*
      81115530
      81115540
      81115550
      81115560
      81115570
      81115580
      81115590
      81115600
      81115610
      81115620
      81115630
      81115640
      81115650

```

```

ODB3 0
ODB3 1 7401 0515
ODB5 1 4C18 05BA
ODB7 0 9297
ODB8 1 4C20 0E4F

```

```

ODBA 0 C283
ODBB 0 100A
ODBC 1 4C10 CDC0
ODBE 0 4209
ODBF 1 0E1F

```

ODC0 0 42E8

```

ODC1 0 C297
ODC2 0 D07B

```

```

ODC3 0 61JA
ODC4 0 697A

```

```

ODC5 0 1010
ODC6 0 D2C0

```

```

ODC7 0 C076
ODC8 0 F297
ODC9 0 D074

```

```

ODCA 0 C2B4
ODCB 0 D2D1

```

```

ODCC 1 6500 0E30
ODCE 1 6000 19E9
ODD0 0 42F4
ODD1 1 0E40

```

```

ODD2 1 6500 0E0F
ODD4 1 6000 1C71

```

```

ODD6 1 6500 0E36
ODDB 1 6000 19E9

```

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

ODDA 0 42F4 BSI 2 S10-TB CALL S10 ROUTINE 81115660
ODDB 1 0E49 DC T170E CCW ADDRESS 81115670
* 81115680
* GET HERE ONLY IF INT. RECEIVED 81115690
* 81115700
* 81115710
ODDC 0 C230 LD 2 SCSX0-TB EXAMINE CHAN STATUS 81115720
ODDD 0 E06E AND T170F ZERO LENGTH INDICATOR 81115730
ODDE 0 4820 BSC Z SKIP IF NO OTHER BITS SET 81115740
* 81115750
* 81115760
* 81115770
* 81115780
* 81115790
* 81115800
* 81115810
* 81115820
* 81115830
* 81115840
* 81115850
* 81115860
* 81115870
* 81115880
* 81115890
* 81115900
* 81115910
* 81115920
* 81115930
* 81115940
* 81115950
* 81115960
* 81115970
* 81115980
* 81115990
* 81116000
* 81116010
* 81116020
* 81116030
* 81116040
* 81116050
* 81116060
* 81116070
* 81116080
* 81116090
* 81116100
* 81116110
* 81116120
* 81116130
* 81116140
* 81116150
* 81116160
* 81116170
* 81116180
* 81116190
* 81116200
* 81116210
* 81116220
* 81116230
* 81116240
* 81116250
* 81116260
* 81116270
* 81116280
* 81116290
* 81116300
* 81116310
* 81116320
* 81116330

```

```

ODDE 0 4820
ODDF 0 702C
ODE0 0 C23E
ODE1 0 100E
ODE2 1 4C10 ODE9
ODE4 0 42E5
ODE5 0 8106
ODE6 0 1704

```

```

ODE7 0 C000
ODE8 0 D2C0
OLE9 0 42EE

```

```

ODEA 0 C225
ODEB 0 100B
ODEC 0 F060
ODED 1 4C20 ODF2

```

```

ODEE 0 42E5
ODF0 0 8307
ODF1 0 1702

```

```

ODF2 0 C225
ODF3 0 1808
ODF4 0 F29B
ODF5 1 4C20 ODF6

```

```

ODF7 0 42E5
ODF8 0 8307
ODF9 0 1703

```

```

ODFA 0 C225
ODFB 0 100C
ODFC 1 4C10 OE01

```

```

ODFE 0 42E5
ODFF 0 8307
OE00 0 1705

```

```

OE01 0 C225
OE02 0 1003
OE03 1 4C10 OE08

```

```

OE05 0 42E5
OE06 0 8307
OE07 0 1706

```

```

OE08 0 C225
OE09 0 1006
OE0A 1 4C10 OE11

```

```

OE0C 0 42E5
OE0D 0 8306
OE0E 0 1701

```

```

OE0F 0 C000
OE10 0 D2C0
OE11 0 420C

```



```
0E75 0 C000 LD * GET A VALUE 81117700
0E76 0 D2C0 STO 2 ERRSW-TB SET ERROR SWITCH 81117710
* 81117720
0E77 0 70E7 B T1804 CONTINUE 81117730
* 81117740
* COME HERE ON INTEKRUPT FROM READING REC 0 81117750
* 81117760
0E78 0 C23E T181N LD 2 SCSX0+1-TB UNIT STATUS 81117770
0E79 0 100B SLA 8 REMOVE ADDRESS 81117780
0E7A 0 1809 SRA 9 REMOVE BIT 81117790
0E7B 0 1001 SLA 1 81117800
* REMOVE UNIT EXCEPTION 81117810
0E7C 0 F024 EOR T1801 TEST FOR CE AND DE 81117820
0E7D 1 4C20 0E9A BNZ T1808* BRANCH IF WRONG 81117830
* 81117840
* 81117850
* 81117860
* TEST OPTION SWITCHES 81117870
* 81117880
0E7F 0 C233 LD 2 TSW0-TB FETCH OPTION SWITCHES 81117880
0E80 0 100C SLA 0LPER TEST FOR SW 0LPER 81117890
0E81 1 4C10 0E86 BNN T180N BRANCH IF SW 0LPER IS OFF 81117900
* 81117910
* 81117920
0E83 0 C2C0 LD 2 ERRSW-TB FETCH ERROR SWITCH 81117920
0E84 1 4C20 0E5F BNZ T1804 81117930
* 81117940
* 81117950
* GO TO NEXT ROUTINE IN SEQUENCE 81117960
* 81117970
* 81117980
0E86 0 42E8 T180N BSI 2 FREDV-TB FREE CHANNEL 81117980
0E87 0 C2BC LD 2 TRTNN-TB GET RTN SWS 81117990
0E88 1 4C18 0EA2 BZ T1901 GO TO NEXT RTN IN SEQ 81118000
0E8A 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81118010
0E8B 0007 T181B PRNT * SECT 1,RT 8- 81118020
* 81118030
0E92 0007 PRNT *READ RECORD 0. 81118040
0E99 0 FFFF DC /FFFF 81118050
* 81118060
* COME HERE IF ERROR IN CSW 81118070
* 81118080
* 81118090
0E9A 0 42E5 T1808 BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81118090
0E9B 0 8127 DC /8127 FLAG BITS 81118100
0E9C 0 1801 DC /1801 MSG NO OR ADDRESS 81118110
0E9D 0 7003 B T1807 RETURN 81118120
* 81118130
* 81118140
* 81118150
* 81118160
* 81118170
0E9E 0 0008 T180D DC 8 BYTE COUNT 81118170
0E9F 0 2016 DC /20*256+180D FLAGS AND OP CODE 81118180
0EA0 1 090C DC RAREA ADDRESS 81118190
* 31118200
0EA1 0 090C T180K DC /000C 81118210
* 81118220
* 81118230
* 81118240
***** 81118250
* ROUTINE --9-- SEEK 81118260
* 81118270
***** 81118280
* 81118290
* 81118300
* 81118310
* 81118320
* 81118330
* 81118340
* 81118350
* 81118360
* 81118370
* CONDITIONS CHECKED.
```

```
* BUS LINES 81118380
* DATA LINES 81118390
* FILE/CHANNEL INTERFACE 81118400
* 81118410
* 81118420
***** 81118430
* 81118440
***** 81118450
***** 81118460
* 81118470
***** 81118480
0EA2 0 T1901 EQU * TEST ENTRY POINT 81118490
0EA2 1 7401 0815 MDX L TRID,1 HUMP PTN ID 81118500
0EA4 1 4C18 0EA9 BZ T1902 BR IF TEST NUMBER ZERO 81118510
0EA6 0 9297 S 2 K1-TB DECREMENT BY ONE 81118520
0EA7 1 4C20 0E48 BNZ T1A01 BR IF NOT THIS TEST 81118530
* 81118540
0EA9 0 C283 T1902 LD 2 TSW0-TB GET OPTION SWS 81118550
0EAA 0 100A SLA 0TTL TEST TITLE 81118560
0EAB 1 4C10 0EAF BNN T1903 BR IF NOT SET 81118570
0EAD 0 4209 BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81118580
0EAE 1 0EEA DC TTL19 MESSAGE ADDRESS 81118590
* 81118600
0EAF 0 42EB T1903 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81118610
* 81118620
0EB0 0 6931 STX 1 T19X1+1 SAVE XR1 81118630
0EB1 0 6B32 STX 3 T19X1+3 SAVE XR3 81118640
* 81118650
0EB2 0 1010 SLA 16 CLEAR ACC 81118660
0EB3 0 D2C0 STO 2 ERRSW-TB RESET ERROR SWITCH 81118670
* 81118680
0EB4 0 610A LDX 1 410 SET LOOP COUNTER 81118690
0EB5 0 6959 STX 1 T19EC SET ERROR COUNTER = 10 81118700
0EB6 0 63F0 LDX 3 -16 SET SEEK ARG POINTER 81118710
0EB7 1 CF00 0F20 LDD L3 T19ST+16 FETCH SEEK ARG 81118720
0EB9 0 D86A STD T19SA+1 PLACE IN SEEK ARG STORAGE 81118730
* 81118740
0EBA 0 42FA BSI 2 TCVBE-TB CALL CONVERT RTN 81118750
0EBB 1 DC00 0F46 STD L T19E1+5 * 81118760
0EBD 1 C700 0F21 LD L3 T19ST+17 * 81118770
0EBF 0 42FA BSI 2 TCVBE-TB CALL CONVERT RTN 81118780
0EC0 1 DC00 0F48 STD L T19E1+7 * 81118790
0EC2 0 C28A LD 2 H4000-TB FETCH BIT 1 81118800
0EC3 0 D2D1 STO 2 S10SW-TB PLACE IN S10SW 81118810
0EC4 0 42FA BSI 2 S10-TB CALL S10 ROUTINE 81118820
0EC5 1 0F26 DC T19SK CCW ADDRESS 81118830
* 81118840
0EC6 0 C23E LD 2 SCSX0+1-TB FETCH UNIT STATUS 81118850
0EC7 0 100B SLA 8 CLEAR UNIT ADDRESS 81118860
0EC8 0 1808 SRA 8 RESTORE POSITION 81118870
0EC9 1 F400 0F0E EOR L T19S1 TEST WITH MASK 81118880
0ECB 1 4C20 0EF4 BNZ T19EA BRANCH IF ERROR 81118890
* 81118900
0ECD 0 42F1 BSI 2 H4BLC-TB GO TO COMPARE RTN 81118910
0ECE 1 09BC DC RAREA WAS DATA ADDRESS 81118920
0ECF 1 0F23 DC T19SA S/B DATA ADDRESS 81118930
0ED0 1 4C20 0F00 BNZ T19EB BRANCH IF ERROR 81118940
* 81118950
* 81118960
* TEST OPTION SWITCHES 81118970
* 81118980
0ED2 0 C283 LD 2 TSW0-TB FETCH OPTION SWITCHES 81118990
0ED3 0 100C SLA 0LPER TEST FOR SW 0LPER 81119000
0ED4 1 4C10 0ED4 BNN T1907 BRANCH IF SW 0LPER IS OFF 81119010
* 81119020
0ED6 0 C2C0 T19LP LD 2 ERRSW-TB FETCH ERROR SWITCH 81119030
0ED7 1 4C20 0EC2 BNZ T1906 81119040
* 81119050
```

```

0ED9 1 74FF 0F0F T1907 MDX L T19EC,-1 DECREMENT ERROR COUNTER 81119060
0EDB 0 4838 BSC +-Z SKIP TO CONTINUE 81119070
0EDC 0 7008 MDX T19EN ELSE END RTN 81119080
* 81119090
0EDD 0 7302 MDX 3 +2 ADV SEEK ARG POINTER 81119100
0EDE 0 7008 MDX T1905+1 GO DO NEXT CYLINDER 81119110
* 81119120
0EDF 0 71FF MDX 1 -1 DEC LOOP COUNTER 81119130
0EE0 0 7005 MDX T1905 LOOP ALL SEEKS AGAIN 81119140
* 81119150
0EE1 0 6500 0000 T19X1 LDX L1 ** RESTORE XR1 81119160
0EE3 0 6700 0000 LDX L3 ** RESTORE XR3 81119170
* 81119180
* GO TO NEXT ROUTINE IN SEQUENCE 81119190
* 81119200
T19EN BSI 2 FREDV-TB FREE CHANNEL 81119210
LD 2 TRTN-TB GET RTN SWS 81119220
BZ T1A01 GO TO NEXT RTN IN SEQ 81119230
BSI 2 CNTRL-TB GO TO CONTROL RTN 81119240
TTL19 PRNT . SECT 1,RT 9- . 81119250
* 81119260
0EE5 0 42E8 PRNT .SEEK. 81119270
0EE6 0 C2BC DC /FFFF 81119280
* 81119290
* GET HERE IF UNIT CHECK 81119300
* 81119310
T19EA BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81119320
DC /B167 FLAG BITS 81119330
DC /1901 MSG NO OR ADDRESS 81119340
BSI 2 TLGMS-TB CALL LOG ROUTINE 81119350
DC T19E1 81119360
* 81119370
* TEST OPTION SWITCHES 81119380
* 81119390
T1908 LD 2 TSW0-TB FETCH OPTION SWITCHES 81119400
SLA OLPER TEST FOR SW OLPER 81119410
BNN T1907 BRANCH IF SW OLPER IS OFF 81119420
* 81119430
.D * GET A VALUE 81119440
STO 2 ERRSW-TB SET ERROR SWITCH 81119450
B T1906 GO LOOP ON ERROR 81119460
* 81119470
* GET HERE IF READ WRONG HOME ADDRESS 81119480
* 81119490
* 81119500
T19EB BSI 2 CVHA-TB GO TO CONVERT 81119510
DC 0 PARM=CYLINDER 81119520
STD T19E2+5 PLACE IN MESSAGE 81119530
* 81119540
BSI 2 CVHA-TB GO TO CONVERT 81119550
DC 1 PARM=HEAD 81119560
STD T19E2+7 PLACE IN MESSAGE 81119570
* 81119580
0F00 0 42E2 BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81119590
0F01 0 0000 DC /B142 FLAG BITS 81119600
0F02 0 D839 DC /1902 MSG NO OR ADDRESS 81119610
* 81119620
0F03 0 42E2 BSI 2 TLGMS-TB CALL LOG ROUTINE 81119630
0F04 0 0001 DC T19E2 81119640
0F05 0 D838 BSI 2 TLGMS-TB CALL LOG ROUTINE 81119650
* 81119660
0F06 0 42E5 MDX T1908 CONTINUE 81119670
0F07 0 8142 * 81119680
0F08 0 1902 * 81119690
0F09 0 4209 ***** 81119700
0F0A 1 0F37 * DATA CONSTANTS AND MESSAGES FOR RTN09 81119710
0F0B 0 4209 ***** 81119720
0F0C 1 0F41 * ***** 81119730
0F0D 0 70LB * *****

```

```

***** 81119740
* 81119750
CF0E 0 000C T19S1 DC /G00C MASK CONSTANT 81119760
0F0F 0 0000 T19EC DC ** ERROR COUNTER 81119770
0F10 0 0000 BSS E 0 ALIGN TO EVEN WORD 81119780
0F10 0 0080 T19ST DC /0080 CYL 128 81119790
0F11 0 0000 DC /0000 HEAD 00 81119800
0F12 0 0040 DC /0040 CYL 64 81119810
0F13 0 0001 DC /0001 HEAD 01 81119820
0F14 0 0020 DC /0020 CYL 32 81119830
0F15 0 0002 DC /0002 HEAD 02 81119840
0F16 0 0010 DC /0010 CYL 16 81119850
0F17 0 0003 DC /0003 HEAD 03 81119860
0F18 0 0008 DC /0008 CYL 08 81119870
0F19 0 0004 DC /0004 HEAD 04 81119880
0F1A 0 0006 DC /0006 CYL 06 81119890
0F1B 0 0005 DC /0005 HEAD 05 81119900
0F1C 0 0006 DC /0006 CYL 06 81119910
0F1D 0 0006 DC /0006 HEAD 06 81119920
0F1E 0 0001 DC /0001 CYL 01 81119930
0F1F 0 0007 DC /0007 HEAD 07 81119940
* 81119950
0F20 0 0000 T1950 DC 0 SEEK ARG FOR CYL 00 HD 00 81119960
0F21 0 0000 DC 0 * 81119970
0F22 0 0000 DC 0 * 81119980
0F23 0 0000 T19SA DC 0 SEEK ARG FROM TABLE 81119990
0F24 0 0000 DC ** * 8120000
0F25 0 0000 DC ** * 8120010
* 8120020
* 8120030
0F26 0 0001 T19SK DC 1 BYTE COUNT 8120040
0F27 0 6013 DC /60*256+RCAL FLAGS AND OP CODE 8120050
0F28 1 0F29 DC * ADDRESS 8120060
* 8120070
* 8120080
0F29 0 0006 DC 6 BYT COUNT 8120090
0F2A 0 4007 DC /40*256+SEEKC FLAGS AND OP CODE 8120100
0F2B 1 0F20 DC T19S0 ADDRESS 8120110
* 8120120
* 8120130
0F2C 0 0005 DC 6 BYTE COUNT 8120140
0F2D 0 4007 DC /40*256+SEEKC FLAGS AND OP CODE 8120150
0F2E 1 0F23 DC T19SA ADDRESS 8120160
* 8120170
* 8120180
0F2F 0 0006 DC 6 BYTE COUNT 8120190
0F30 0 4007 DC /40*256+SEEKC FLAGS AND OP CODE 8120200
0F31 1 0F23 DC T19SA ADDRESS 8120210
* 8120220
* 8120230
0F32 0 0005 DC 5 BYTE COUNT 8120240
0F33 0 001A DC /00*256+RDHA FLAGS AND OP CODE 8120250
0F34 1 09BC DC RAREA ADDRESS 8120260
* 8120270
* 8120280
0F36 0001 BSS E 1 ALIGN TO LOD ADDRESS 8120290
0F37 0009 T19E2 PRNT . HA READ XXXXXXXX. 8120300
0F40 0 FFFF DC /FFFF 8120310
0F41 0009 T19E1 PRNT . HA EXP XXXXXXXX. 8120320
0F4A 0 FFFF DC /FFFF 8120330
* 8120340
* 8120350
* 8120360
***** 8120370
* 8120380
* ROUTINE --A-- HEAD ADVANCE (M/T) 8120390
* 8120400
***** 8120410

```

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
* THIS ROUTINE WILL EXECUTE THE READ HOME
* ADDRESS MULTI-TRACK CCW TP CHECK THE 2841
* FILE INTERFACE HEAD ADVANCE LINES AND THE
* END OF CYLINDER LINES.
*
*****
* 81120420
* 81120430
* 81120440
* 81120450
* 81120460
* 81120470
* 81120480
* 81120490
* 81120500
* 81120510
* 81120520
* 81120530
* 81120540
* 81120550
*****
T1A01 EQU * TEST ENTRY POINT
      MDX L TRID,1 BUMP RTN ID
      WZ T1A02 BR IF TEST NUMBER ZERO
      S 2 K1-TB DECREMENT BY ONE
      BNZ T1B01 BR IF NOT THIS TEST
*
T1A02 LD 2 TSW0-TB GET OPTION SWS
      SLA OTTLE PRINT TITLES
      BNN T1A03 BR IF NOT SET
      BSI 2 TLGMS-TB GO TO PRINT ROUTINE
      DC TTLIA MESSAGE ADDRESS
*
T1A03 BSI 2 GETDV-TB GET CHANNEL FOR RTN
*
      LDX L1 T1AER SET UP ERROR RETURN
      STX L1 ERADR *
      LD 2 K10-TB SET UP LOOP CNTR
      STD 2 LPCNT-TB *
*
T1A04 SLT 32 CLEAR HOME ADDR5 AREA
      STD 2 HA-TB *
      STD 2 HA+2-TB *
*
T1A05 BSI 2 S10-TB CALL S10 ROUTINE
      DC T1ACC CCW ADDRESS
*
      BSI 2 GETSN-TB GET SENSE BYTES
      LD 2 SNW0-TB *
      EOR 2 H0020-TB TEST FOR END OF CYL
      BNZ T1A05 BR IF NOT SET OR ANY BIT
*
      LD 2 HA+2-TB GET HEAD READ
      SRA 8 *
      EDR T1AH9 TEST FOR HD 9
      BNZ T1A06 BR IF NOT HD 9
*
      MDX L LPCNT,-1 DECREMENT LOOP CNT
      MDX T1A04 LOOP IF NOT ZERO
      DD RECAL TO RESET DEVICE SENSE WORDS
      BSI 2 S10-TB CALL S10 ROUTINE
      DC RECAL CCW ADDRESS
*
* GO TO NEXT ROUTINE IN SEQUENCE
*
T1AEN BSI 2 FREDV-TB FREE CHANNEL
      LD 2 TRTN-TB GET RTN SWS
      BZ T1B01 GO TO NEXT RTN IN SEQ
      BSI 2 CNTRL-TB GO TO CONTROL RTN
      TTLIA PRNT . SECT 1,RT A- .
*
      PRNT .HEAD ADVANCE H/T.
      DC /FFFF
*

```

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OF88 0 42E5 T1A05 BSI 2 ERDUT-TB CALL ERROR OUT ROUTINE 81121100
OF89 0 0307 DC /0307 FLAG BITS 81121110
OF8A 0 1A01 DC /1A01 MSG NO OR ADDRESS 81121120
OF8B 0 C251 LD 2 HA-TB GET HA 81121130
OF8C 0 42FA BSI 2 TCVBE-TB CONVERT TO 1443 CODE 81121140
OF8D 0 D812 STD T1AM1+8 PUT IN MESSAGE 81121150
OF8E 0 C252 T1A06 LD 2 HA+1-TB 81121160
OF8F 0 42FA BSI 2 TCVBE-TB CONVERT TO 1443 CODE 81121170
OF90 0 D811 STD T1AM1+10 81121180
OF91 0 C253 LD 2 HA+2-TB 81121190
OF92 0 42FA BSI 2 TCVBE-TB CONVERT TO 1443 CODE 81121200
OF93 0 D010 STD T1AM1+12 81121210
* 81121220
OF94 0 42E5 * BSI 2 ERDUT-TB CALL ERROR OUT ROUTINE 81121230
OF95 0 030F DC /030F FLAG BITS 81121240
OF96 1 0F98 DC T1AM1 MSG NO OR ADDRESS 81121250
* 81121260
* DATA AND CONSTANTS 81121270
* 81121280
* BSS E 0 81121290
T1AM1 PRNT . 1A02 HA RD- XXX:XXXXXX. 81121300
DC /FFFF 81121310
* 81121320
* 81121330
T1ACC DC 6 BYTE COUNT 81121340
DC FLCCH*256+SEEK FLAGS AND OP CODE 81121350
DC T1ASA ADDRESS 81121360
* 81121370
* 81121380
OF88 0 0005 DC 5 BYTE COUNT 81121390
OF89 0 401A DC FLCCH*256+RDHA FLAGS AND OP CODE 81121400
OF8A 1 0F90 DC HA ADDRESS 81121410
* 81121420
* 81121430
T1ACC DC 5 BYTE COUNT 81121440
DC FLCCH*256+RDHA FLAGS AND OP CODE 81121450
DC HA ADDRESS 81121460
* 81121470
* 81121480
OF8E 0 0000 DC 0 BYTE COUNT 81121490
OF8F 0 0008 DC 0*256+OPTIC FLAGS AND OP CODE 81121500
OF90 1 0F8B DC T1ACC ADDRESS 81121510
* 81121520
* 81121530
* 81121540
* TEST OPTION SWITCHES 81121550
* 81121560
T1AER LD 2 TSW0-TB FETCH OPTION SWITCHES 81121570
SLA OLPER TEST FOR SW OLPER 81121580
BN T1A10 BRANCH IF SW OLPER IS ON 81121590
MDX T1AEN END ROUTINE 81121600
* 81121610
T1AH9 DC /0009 81121620
T1ASA DC /0000 81121630
DC /0000 81121640
DC /0000 81121650
*****
* 81121660
* 81121670
*****
* 81121680
* 81121690
* SECTION END 81121700
* 81121710
T1B01 BSI 2 CNTRL-TB GO TO CONTROL RTN 81121720
*****
* 81121730
* 81121740
*****
* 81121750
* 81121760
* SECTION PREFACE 81121770

```

DIAGNOSTIC MAINTENANCE PROGRAM

```

*
OFBB 0 0002 T20PR DC /0002 SECTION NUMBER 81121780
OFBC 0 0005 DC 5 81121790
* 81121800
* 81121810
OFBD 0 C2BC T20NT LD 2 TRTN-TB SW FNC 1 BITS 12-15 81121820
OFBE 1 4C18 OFC5 BZ T2101 BR IF RUN ALL RTNS 81121830
OFCC 0 90FB S T20PR+1 TEST FOR VALID 81121840
OFC1 1 4C30 OFB21 BP TCNER BR IF INVALID RTN NUMBER 81121850
OFC3 0 80FB A T20PR+1 RESTORE RTN NUMBER 81121860
OFC4 0 7000 MDX T2101 GO TO FIRST RTN 81121870
***** 81121880
* 81121890
***** 81121900
* 81121910
* 81121920
***** 81121930
* 81121940
* ROUTINE --1-- SERIALIZER/DESERIALIZER, 81121950
* CONTROL UNIT BUSY, 81121960
* INTERRUPT TEST 81121970
* 81121980
***** 81121990
* 81122000
* 81122010
* 81122020
* THIS ROUTINE HAS TWO TESTS, TEST 1 AND 81122030
* TEST 2. 81122040
* 81122050
* TEST 1 TESTS THE SERIALIZER/DESERIALIZER 81122060
* BY WRITING AND READING RO (100 BYTES OF 81122070
* DATA) USING ALL 256 BIT COMBINATIONS. 81122080
* 81122090
* TEST 2 DETERMINES THAT CONTROL UNIT BUSY 81122100
* IS PRESENTED WHEN A TEST I/O IS ISSUED 81122110
* AFTER A WRITE HOME ADDRESS (AFTER CHAN END 81122120
* AND DEV END, BUT WHILE THE REMAINDER OF THE 81122130
* TRACK IS BEING ERASED). THIS TEST IS RE- 81122140
* PEATED 50 TIMES. 81122150
***** 81122160
* 81122170
***** 81122180
* 81122190
OFC5 0 T2101 FOU * TEST ENTRY POINT 81122200
OFC6 1 7401 0815 MDX L TRID.1 BUMP RTN ID 81122210
OFC7 1 4C18 OFCC BZ T2102 BR IF TEST NUMBER ZERO 81122220
OFC9 0 9297 S 2 K1-TB DECREMENT BY ONE 81122230
OFC8 1 4C20 10FD BNZ T2201 BR IF NOT THIS TEST 81122240
* 81122250
OFC0 0 C283 T2102 LD 2 TSW0-TB GET OPTION SWS 81122260
OFCD 0 100A SLA OTILE PRINT TITLES 81122270
OFCE 1 4C10 OFD2 BNN T2103 BR IF NOT SET 81122280
OFDO 0 4209 BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81122290
OFD1 1 1099 DC TTL21 MESSAGE ADDRESS 81122300
* 81122310
OFD2 0 42EB T2103 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81122320
* 81122330
OFD3 0 4212 BSI 2 SKTV-TB BRANCH TO SEEKX ROUTINE 81122340
* AND COMPARE HA 81122350
OFD4 1 CC00 09BC LDD L RAREA XFER HOME ADDRESS FROM 81122360
OFD6 1 DC00 10FA STD L WHA * READ AREA 81122370
OFD8 1 C400 09BE LD L RAREA+2 * 81122380
OFDA 1 D400 10FC STO L WHA+2 * 81122390
* 81122400
* 81122410
* BEGINNING OF TEST 1 81122420
* 81122430
OFDC 0 C2A1 T2104 LD 2 K256-TB 81122440
OFDD 0 D2DA STO 2 LPCT1-TB EST. LOOP COUNTER 81122450

```

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
OFDE 0 1810 SRA 16 81122460
OFDF 1 D400 10BD STO L T21ER RESET ERROR COUNTER 81122470
* 81122480
* 81122490
OFE1 0 1010 T2105 SLA 16 CLEAR ACC 81122500
OFE2 0 D2C0 STO 2 ERRSW-TB RESET ERROR SWITCH 81122510
* 81122520
* ESTABLISH RO COUNT AREA IN WRITE AREA 81122530
* 81122540
OFE3 0 1810 SRA 16 81122550
OFE4 1 D400 0A24 STO L WTAR1+2 ZERO REC NO, KEY LENGTH 81122560
OFE6 0 CA51 LDD 2 HA-TB CYL NO, HEAD NO. 81122570
OFE7 1 DC00 0A22 STD L WTAR1 EST. CYL NO, HD NO. 81122580
OFE9 0 C2A0 LD 2 K100-TB 81122590
OFEA 1 D400 0A25 STO L WTAR1+3 EST. BYTE COUNT FOR DATA 81122600
* 81122610
OFEF 1 6500 09C0 T2106 LDX L1 RDAR1+4 FWA OF READ AREA (DATA) 81122620
OFEF 0 6332 LDX 3 50 WORD COUNT (100 BYTES) 81122630
OFEF 0 1810 SRA 16 81122640
* STORES A-REG IN DESIGNATED FIELD 81122650
STO 1 0 STORE TWO BYTES 81122660
MDX 1 +1 INDR. STORAGE ADDRESS 81122670
MDX 3 -1 DECR. WORD COUNT 81122680
MDX *-4 CYCLE UNTIL FIELD FILLED 81122690
* 81122700
* 81122710
OFF4 1 6500 0A26 LDX L1 WTAR1+4 FWA OF WRITE AREA (DATA) 81122720
OFF6 0 6332 LDX 3 50 WORD COUNT (100 BYTES) 81122730
OFF7 0 C2DA LD 2 LPCT1-TB TAKE LOOP COUNT 81122740
OFF8 0 E2A9 AND 2 F00FF-TB USE LOWER 8 BITS 81122750
OFF9 0 D2DB STO 2 TEMP1-TB 81122760
OFFA 0 1006 SLA 6 81122770
OFFB 0 EADB OR 2 TEMP1-TB FORM 2-BYTE PATTERN 81122780
* STORES A-REG IN DESIGNATED FIELD 81122790
STO 1 0 STORE TWO BYTES 81122800
MDX 1 +1 INDR. STORAGE ADDRESS 81122810
MDX 3 -1 DECR. WORD COUNT 81122820
MDX *-4 CYCLE UNTIL FILLD FILLED 81122830
* 81122840
* 81122850
1000 1 6500 10B0 LDX L1 T21T1 81122860
1002 1 6000 19F9 STX L1 WTADR EST. SIO TIMEOUT ADDRESS 81122870
* 81122880
* 81122890
1004 0 42F4 BSI 2 SIO-TB CALL STO ROUTINE 81122900
1005 1 10E5 DC T21WP CCW ADDRESS 81122910
* 1. SET FILE MASK 81122920
* 2. SEARCH HA EQUAL 81122930
* 3. TIC *-1 81122940
* 4. WRITE RO 81122950
* 5. READ RO 81122960
* 81122970
* 81122980
1006 1 6500 0A26 LDX L1 WTAR1+4 FWA OF WRITE AREA (DATA) 81122990
1008 1 6700 09C0 LDX L3 RDAR1+4 FWA OF READ AREA (DATA) 81123000
100A 0 C29F LD 2 K50-TB WORD COUNT (100 BYTES) 81123010
* COMPARES TWO FIELDS 81123020
100B 0 D00A STO *-10 EST. LOOP COUNTER 81123030
100C 0 C100 LD 1 0 AREA1 WORD 81123040
100D 0 F300 EOR 3 0 AREA2 WORD 81123050
100E 1 4C20 1017 BSC L *-7,Z BR. ON NON-COMPARE 81123060
1010 0 7101 MDX 1 +1 INCR. AREA1 ADDR. 81123070
1011 0 7301 MDX 3 +1 INCR. AREA2 ADDR. 81123080
1012 1 74FF 1016 MDX L *-2,-1 DECR. LOOP COUNT 81123090
1014 0 70F6 MDX *-10 CYCLE THROUGH FIELD 81123100
1015 0 7001 MDX *-1 BR. AROUND LOOP COUNTER 81123110
1016 0 0000 DC *-* LOOP COUNTER 81123120
* 81123130

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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110B 0 4212      *      BSI  2 SKTV-TB  BRANCH TO SEEKX ROUTINE 81125860
                  *      *      AND COMPARE WITH SEEK ARG 81125870
                  *      *      LEAVE CYL AND HD IN HA 81125880
                  *      *      *      81125890
                  *      *      *      81125900
110C 0 1010      *      SLA   16      CLEAR ACC 81125910
110D 0 02C0      *      STO  2 ERRSW-TB  RESET ERROR SWITCH 81125920
                  *      *      *      81125930
                  *      *      *      81125940
110E 0 CA51      *      LDD  2 HA-TB  CYL NO. HEAD NO 81125950
110F 1 DC00 0A22 *      STO  L WAREA  EST. CYL NO. HD NO. 81125960
                  *      *      *      81125970
1111 0 1810      *      SRA   16      *      81125980
1112 1 D400 0A24 *      STO  L WAREA+2  ZERO REC NO., KEY LENGTH 81125990
1114 0 6500 2710 *      LD   L1 10000 *      81125990
1116 1 6000 0A25 *      STX  L1 WAREA+3  EST. DATA LENGTH (10000) 81126000
                  *      *      *      81126010
                  *      *      *      81126020
1118 1 6500 1779 *      LD   L1 T22T1 *      81126030
111A 1 6000 19E9 *      STX  L1 WTADR  EST. TIMEOUT ADDR. 81126040
                  *      *      *      81126050
                  *      *      *      81126060
111C 0 1010      *      T2204 SLA   16      CLEAR ACC 81126070
111D 0 D2C0      *      STO  2 ERRSW-TB  RESET ERROR SWITCH 81126080
111E 0 D07D      *      STO  T22ER  RESET ERROR COUNTER 81126090
                  *      *      *      81126100
                  *      *      *      81126110
111F 0 42F4      *      T2205 BSI  2 SIO-TB  CALL SIO ROUTINE 81126120
1120 1 116D      *      DC    T22R0  CCW ADDRESS 81126130
                  *      *      *      1. SET FILE MASK 'C0' 81126140
                  *      *      *      2. SEARCH HA EQUAL 81126150
                  *      *      *      3. TIC *-1 81126160
                  *      *      *      4. WRITE R0 81126170
                  *      *      *      GET HERE IF INTERRUPT OCCURS 81126180
                  *      *      *      *      81126190
1121 0 42E8      *      BSI  2 GETSN-TB  GET SENSE BYTES 81126200
                  *      *      *      *      81126210
1122 0 C225      *      LD   2 SNWD0-TB  LOOK AT SENSE BYTE 1 81126220
1123 0 1009      *      CL   S      CHECK OVERRUN 81126230
1124 1 4C28 112B *      CN   T2206 *      81126240
                  *      *      *      81126250
1126 0 42E5      *      BSI  2 ERROUT-TB  CALL ERROR OUT ROUTINE 81126260
1127 0 8107      *      DC    /8107  FLAG BITS 81126270
1128 0 2209      *      DC    /2200  MSG NO OR ADDRESS 81126280
                  *      *      *      PRINT NO OVERRUN OCCURRED 81126290
1129 0 C000      *      LD   *      GET A VALUE 81126300
112A 0 D2C0      *      STO  2 ERRSW-TB  SET ERROR SWITCH 81126310
                  *      *      *      81126320
                  *      *      *      81126330
112B 0 420C      *      T2206 BSI  2 TLPER-TB  CHECK LOOP ON ERROR 81126340
112C 1 112E      *      DC    *+1  CHECK ERROR SWITCH 81126350
112D 0 7003      *      MOX  T2207  CONTINUE 81126360
                  *      *      *      81126370
112E 0 C2C0      *      LD   2 ERRSW-TB  FETCH ERROR SWITCH 81126380
112F 1 4C20 111F *      BNZ  T2205 *      81126390
                  *      *      *      81126400
1131 1 C400 0A25 *      T2207 LD   L WAREA+3  REQUESTED BYTE CNT 81126410
1133 0 0240      *      A    2 SCSX0+3-TB  RESIDUAL BYTE CNT 81126420
                  *      *      *      81126430
                  *      *      *      A-REG = NO. BYTES TRANSFERRED (DATA) 81126440
                  *      *      *      *      81126450
1134 0 D2DB      *      STO  2 TEMP1-TB  HOLD 81126460
                  *      *      *      *      81126470
1135 0 1808      *      SRA   8      NO. XFER/64 81126480
1136 0 F28D      *      EOR  2 TERM-TB *      81126490
1137 0 0297      *      A    2 K1-TB  FORM 2'S COMPLEMENT 81126500
1138 0 82DB      *      A    2 TEMP1-TB  A = A - A/64 81126510
                  *      *      *      81126520
                  *      *      *      A-REG = 63/64 OF TRACK DATA CAPACITY 81126530

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1139 1 D400 11C1 *      STO  L T22C5  STORE IN READ CCW 81126540
113B 1 D400 0A25 *      STO  L WAREA+3  EST. DATA LENGTH 81126550
113D 0 D07A      *      STO  T22C3  STORE IN WRITE CCW 81126560
                  *      *      *      81126570
113E 0 6164      *      LD   1 100 *      81126580
113F 1 6000 0859 *      STX  L1 LPCT1  EST. LOOP COUNTER 81126590
                  *      *      *      81126600
1141 1 6500 117F *      LD   L1 T22T2 *      81126610
1143 1 6000 19E9 *      STX  L1 WTADR  EST. TIMEOUT ADDRESS 81126620
                  *      *      *      81126630
1145 0 1810      *      SRA   16 *      81126640
1146 0 D055      *      STO  T22ER  RESET ERROR COUNTER 81126650
                  *      *      *      81126660
1147 0 1010      *      T2208 SLA   16      CLEAR ACC 81126670
1148 0 D2C0      *      STO  2 ERRSW-TB  RESET ERROR SWITCH 81126680
                  *      *      *      81126690
                  *      *      *      81126700
1149 0 42F4      *      T2209 BSI  2 SIO-TB  CALL SIO ROUTINE 81126710
114A 1 11AC      *      DC    T22W0  CCW ADDRESS 81126720
                  *      *      *      1. SET FILE MASK 'C0' 81126730
                  *      *      *      2. SEARCH HA EQUAL 81126740
                  *      *      *      3. TIC *-1 81126750
                  *      *      *      4. WRITE R0 (COUNT) 81126760
                  *      *      *      5. WRITE R0 (DATA) 81126770
                  *      *      *      6. SEARCH HA EQUAL 81126780
                  *      *      *      7. TIC *-1 81126790
                  *      *      *      8. READ R0 (SKIP) 81126800
                  *      *      *      *      81126810
                  *      *      *      *      81126820
114B 0 C23E      *      LD   2 SCSX0+1-TB  LOOK AT UNIT STATUS 81126830
114C 0 100E      *      SLA  UNCHK  CHECK FOR UNIT CHECK 81126840
114D 1 4C10 1156 *      BNN  T2210 *      81126850
                  *      *      *      81126860
114F 0 42E5      *      BSI  2 ERROUT-TB  CALL ERROR OUT ROUTINE 81126870
1150 0 8127      *      DC    /8127  FLAG BITS 81126880
1151 0 2201      *      DC    /2201  MSG NO OR ADDRESS 81126890
                  *      *      *      PRINT UNIT CHECK 81126900
1152 0 C000      *      LD   *      GET A VALUE 81126910
1153 0 D2C0      *      STO  2 ERRSW-TB  SET ERROR SWITCH 81126920
                  *      *      *      81126930
1154 1 7401 119C *      MOX  L T22ER,+1  INCR. ERROR COUNTER 81126940
                  *      *      *      81126950
1156 0 420C      *      T2210 BSI  2 TLPER-TB  TEST LOOP ON ERROR 81126960
1157 1 1159      *      DC    *+1  CHECK ERROR SWITCH 81126970
1158 0 7003      *      MOX  T2211  CONTINUE 81126980
                  *      *      *      81126990
1159 0 C2C0      *      LD   2 ERRSW-TB  FETCH ERROR SWITCH 81127000
115A 1 4C20 1149 *      BNZ  T2209 *      81127010
                  *      *      *      81127020
115C 0 C03F      *      T2211 LD   T22ER  ERROR COUNT 81127030
115D 0 929D      *      S    2 K10-TB *      81127040
115E 1 4C10 1187 *      BNN  T22EX  TERMINATE IF G.E. 10 81127050
                  *      *      *      81127060
1160 1 74FF 0859 *      MOX  L LPCT1,-1  DECR. LOOP COUNT 81127070
1162 0 70E4      *      MOX  T2208  CONTINUE TEST LOOP 81127080
                  *      *      *      81127090
                  *      *      *      81127100
                  *      *      *      GO TO NEXT ROUTINE IN SEQUENCE 81127110
                  *      *      *      *      81127120
1163 0 42E8      *      T22EN BSI  2 FREDV-TB  FREE CHANNEL 81127130
1164 0 C2BC      *      LD   2 TRTN-TB  GET RTN SWS 81127140
1165 1 4C18 11C4 *      BZ   T2301  GO TO NEXT RTN IN SEQ 81127150
1167 0 42DF      *      BSI  2 CNTRL-TB  GO TO CONTROL RTN 81127160
1168 0007      *      TTL22 PRNT  . SECT 2,RT 2- . 81127170
                  *      *      *      81127180
116F 0009      *      PRNT  .LONG RECORD TESTS. 81127190
1178 0 FFFF      *      DC    -1 *      81127200
                  *      *      *      81127210

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1179 0 42E5	T22T1 BSI	2	EROUT-TB	CALL ERROR OUT ROUTINE	81127220
117A 0 8106	DC		/8106	FLAG BITS	81127230
117B 0 2202	DC		/2202	MSG NO OR ADDRESS	81127240
	*		PRINT TIMEOUT		81127250
117C 0 C000	LD	*		GET A VALUE	81127260
117D 0 D2C0	STO	2	ERRSW-TB	SET ERROR SWITCH	81127270
117E 0 70AC	MDX		T2206	TEST ERROR OPTION	81127280
	*				81127290
117F 0 42E5	T22T2 BSI	2	EROUT-TB	CALL ERROR OUT ROUTINE	81127300
1180 0 8106	DC		/8106	FLAG BITS	81127310
1181 0 2203	DC		/2203	MSG NO OR ADDRESS	81127320
	*		PRINT TIMEOUT		81127330
1182 0 C000	LD	*		GET A VALUE	81127340
1183 0 D2C0	STO	2	ERRSW-TB	SET ERROR SWITCH	81127350
	*				81127360
1184 1 7401 119C	MDX L		T22ER,+1	INCR. ERROR COUNTER	81127370
1186 0 70CF	MDX		T2210	TEST ERROR OPTION	81127380
	*				81127390
1187 0 42E5	T22EX BSI	2	EROUT-TB	CALL ERROR OUT ROUTINE	81127400
1188 0 0C08	DC		/0008	FLAG BITS	81127410
1189 1 118B	DC		T22M1	MSG NO OR ADDRESS	81127420
	*		PRINT TERMINATION MESSAGE		81127430
118A 0 70D8	MDX		T22EN	EXIT ROUTINE	81127440
	*				81127450
118B 0016	T22M1 PRNT		***HARD ERROR**	ROUTINE 2.2 TERM.	81127460
118B 0 FFFF	DC		-1		81127470
	*				81127480
119C 0 0000	T22ER DC		**	ERROR COUNTER	81127490
	*				81127500
	*				81127510
119D 0 0001	T22R0 DC		1	BYTE COUNT	81127520
119E 0 401F	DC		/40*256+SFILM	FLAGS AND OP CODE	81127530
119F 1 085C	DC		C0	ADDRESS	81127540
	*				81127550
	*				81127560
11A0 0 0004	T22C1 DC		4	BYTE COUNT	81127570
11A1 0 4039	DC		/40*256+SRCHA	FLAGS AND OP CODE	81127580
11A2 1 08D0	DC		HA	ADDRESS	81127590
	*				81127600
	*				81127610
11A3 0 0001	DC		1	BYTE COUNT	81127620
11A4 0 0008	DC		0*256+OPTIC	FLAGS AND OP CODE	81127630
11A5 1 11A0	DC		T22C1	ADDRESS	81127640
	*				81127650
	*				81127660
11A6 0 0008	DC		8	BYTE COUNT	81127670
11A7 0 8015	DC		/80*256+WRR0	FLAGS AND OP CODE	81127680
11A8 1 0A22	DC		WAREA	ADDRESS	81127690
	*				81127700
	*				81127710
11A9 0 2710	DC		10000	BYTE COUNT	81127720
11AA 0 0000	DC		0*256+0	FLAGS AND OP CODE	81127730
11AB 0 0000	DC		0	ADDRESS	81127740
	*				81127750
	*				81127760
	*				81127770
11AC 0 0001	T22W0 DC		1	BYTE COUNT	81127780
11AD 0 401F	DC		/40*256+SFILM	FLAGS AND OP CODE	81127790
11AE 1 085C	DC		C0	ADDRESS	81127800
	*				81127810
	*				81127820
11AF 0 0004	T22C2 DC		4	BYTE COUNT	81127830
11B0 0 4039	DC		/40*256+SRCHA	FLAGS AND OP CODE	81127840
11B1 1 08D0	DC		HA	ADDRESS	81127850
	*				81127860
	*				81127870
11B2 0 0001	DC		1	BYTE COUNT	81127880
11B3 0 0008	DC		0*256+OPTIC	FLAGS AND OP CODE	81127890

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11B4 1 11AF	DC		T22C2	ADDRESS	81127900
	*				81127910
	*				81127920
11B5 0 0008	DC		8	BYTE COUNT	81127930
11B6 0 8015	DC		/80*256+WRR0	FLAGS AND OP CODE	81127940
11B7 1 0A22	DC		WAREA	ADDRESS	81127950
	*				81127960
	*				81127970
11B8 0 0000	T22C3 DC		**	BYTE COUNT	81127980
11B9 0 4000	DC		/40*256+0	FLAGS AND OP CODE	81127990
11BA 0 0000	DC		0	ADDRESS	81128000
	*				81128010
	*				81128020
11BB 0 0004	T22C4 DC		4	BYTE COUNT	81128030
11BC 0 4039	DC		/40*256+SRCHA	FLAGS AND OP CODE	81128040
11BD 1 08D0	DC		HA	ADDRESS	81128050
	*				81128060
	*				81128070
11BE 0 0001	DC		1	BYTE COUNT	81128080
11BF 0 0008	DC		0*256+OPTIC	FLAGS AND OP CODE	81128090
11C0 1 118B	DC		T22C4	ADDRESS	81128100
	*				81128110
	*				81128120
11C1 0 0000	T22C5 DC		**	BYTE COUNT	81128130
11C2 0 0816	DC		/8*256+PDR0	FLAGS AND OP CODE	81128140
11C3 1 0A22	DC		WAREA	ADDRESS	81128150
	*				81128160
	*				81128170
	*				81128180
	*				81128190
	*				81128200
	*				81128210
	*				81128220
	*				81128230
	*				81128240
	*				81128250
	*				81128260
	*				81128270
	*				81128280
	*				81128290
	*				81128300
	*				81128310
	*				81128320
	*				81128330
	*				81128340
	*				81128350
	*				81128360
	*				81128370
	*				81128380
	*				81128390
11C4 0	T2301 EQU	*		TEST ENTRY POINT	81128400
11C4 1 7401 0815	MDX L		TRID,+1	BUMP RTH ID	81128410
11C5 1 4C18 11CB	BZ		T2302	BR IF TEST NUMBER ZERO	81128420
11C8 0 9297	S		2 K1-TB	DECREMENT BY ONE	81128430
11C9 1 4C20 123B	BNZ		T2401	BR IF NOT THIS TEST	81128440
	*				81128450
11CB 0 C283	T2302 LD		2 TSW0-TB	GET OPTION SWS	81128460
11CC 0 100A	SLA		OTTLF	PRINT TITLES	81128470
11CD 1 4C10 11D1	BNN		T2303	BR IF NOT SET	81128480
11CF 0 4209	BSI		2 TLGMS-TB	GO TO PRINT ROUTINE	81128490
11D0 1 1201	DC		TTL23	MESSAGE ADDRESS	81128500
	*				81128510
11D1 0 42EB	T2303 BSI		2 GETDV-TB	GET CHANNEL FOR RTN	81128520
	*				81128530
11D2 0 4212	BSI		2 SKTV-TB	BRANCH TO SEEKX ROUTINE	81128540
11D3 0 6500 0064	LX		L1 100	SET UP LOOP CNTR	81128550
11D5 1 6000 0858	STX		L1 LPCNT	*	81128560
	*				81128570
11D7 0 C251	LD		2 HA-TB	GET CYLN READ	81128580

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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11D8 0 D058      STO T23R0 PUT IN R0      81128580
11D9 0 D05C      STO T23R1 PUT IN R1      81128590
11DA 0 C252      LD 2 HA+1-TB GET HEAD READ 81128600
11DB 0 D055      STO T23R0+1 PUT IN R0     81128610
11DC 0 D05A      STO T23R1+1 PUT IN R1     81128620
*
11DD 0 42F4      * T2304 BSI 2 SIO-TB CALL SIO ROUTINE 81128630
11DE 1 1215      DC T23WR CCW ADDRESS      81128640
11DF 0 C23E      LD 2 SCSX0+1-TB GET UNIT STATUS 81128650
11E0 0 100E      SLA UNCHK TEST FOR UNIT CHECK 81128660
11E1 1 4C10 11FB BNN T2305 BR IF NO        81128670
*
11E3 0 42E5      * BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81128680
11E4 0 0127      DC /0127 FLAG BITS        81128690
11E5 0 2300      DC /2300 MSG NO OR ADDRESS 81128700
*
* TEST OPTION SWITCHES
*
11E6 0 C283      * LD 2 TSW0-TB FETCH OPTION SWITCHES 81128710
11E7 0 100C      SLA OLPER TEST FOR SW OLPER 81128720
11E8 1 4C28 11DD BN T2304 BRANCH IF SW OLPER IS ON 81128730
11EA 0 7011      MDX T23EN END ROUTINE     81128740
*
11EB 0 42F4      * T2305 BSI 2 SIO-TB CALL SIO ROUTINE 81128750
11EC 1 122A      DC T23RD CCW ADDRESS      81128760
11ED 0 C23E      LD 2 SCSX0+1-TB GET UNIT STATUS 81128770
11EE 0 100E      SLA UNCHK TEST FOR UNIT CHECK 81128780
11EF 1 4C10 11F9 BNN T2306 BR IF NOT ON    81128790
*
11F1 0 42E5      * BSI 2 ER0UT-TB CALL ERROR OUT ROUTINE 81128800
11F2 0 0107      DC /0107 FLAG BITS        81128810
11F3 0 2301      DC /2301 MSG NO OR ADDRESS 81128820
*
* TEST OPTION SWITCHES
*
11F4 0 C283      * LD 2 TSW0-TB FETCH OPTION SWITCHES 81128830
11F5 0 100C      LA OLPER TEST FOR SW OLPER 81128840
11F6 1 4C28 11EB BN T2305 BRANCH IF SW OLPER IS ON 81128850
11F8 0 7003      MDX T23EN END ROUTINE     81128860
*
11F9 1 74FF 085B T2306 MDX L LPCNT,-1 DECREMENT LOOP CNT 81128870
11FB 0 70EF      MDX T2305 LOOP ON READ R0 81128880
*
* GO TO NEXT ROUTINE IN SEQUENCE
*
11FC 0 42E8      * T23EN BSI 2 FRED V-TB FREE CHANNEL 81128890
11FD 0 C2BC      LD 2 TRTN-TB GET RTN SWS 81129000
11FE 1 4C18 123B BZ T2401 GO TO NEXT RTN IN SEQ 81129010
1200 0 42DF      BSI 2 CNTPL-TB GO TO CONTROL RTN 81129020
1201 0007      TTL23 PRNT . SECT 2,RT 3- . 81129030
*
1208 0012      * PRNT .WRITE/READ ADDRESS MARKS. 81129040
1214 0 FFFF      DC /FFFF 81129050
*
* DATA AND CONSTANTS
*
1215 0 0001      * T23WR DC 1 BYTE COUNT 81129060
1216 0 401F      DC FLCCH*256+5FILM FLAGS AND OP CODE 81129070
1217 1 065C      DC C0 ADDRESS 81129080
*
1218 0 0004      * T23W2 DC 4 BYTE COUNT 81129090
1219 0 4039      DC FLCCH*256+SRCHA FLAGS AND OP CODE 81129100
121A 1 1231      DC T23R0 ADDRESS 81129110
*
121B 0 0000      * DC 0 BYTE COUNT 81129120

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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121C 0 0008      DC 0*256+OPTIC FLAGS AND OP CODE 81129260
121D 1 1218      DC T23W2 ADDRESS          81129270
*
121E 0 0009      * DC 9 BYTE COUNT        81129280
121F 0 4015      DC FLCCH*256+WRR0 FLAGS AND OP CODE 81129290
1220 1 1231      DC T23R0 ADDRESS          81129300
*
1221 0 0005      * T23W4 DC 5 BYTE COUNT    81129310
1222 0 4031      DC FLCCH*256+SRCID FLAGS AND OP CODE 81129320
1223 1 1231      DC T23R0 ADDRESS          81129330
*
1224 0 0000      * DC 0 BYTE COUNT        81129340
1225 0 0008      DC 0*256+OPTIC FLAGS AND OP CODE 81129350
1226 1 1221      DC T23W4 ADDRESS          81129360
*
1227 0 0009      * DC 9 BYTE COUNT        81129370
1228 0 001D      DC 0*256+WRCKD FLAGS AND OP CODE 81129380
1229 1 1236      DC T23R1 ADDRESS          81129390
*
122A 0 0005      * T23RD DC 5 BYTE COUNT    81129400
122B 0 481A      DC /48*256+RDHA FLAGS AND OP CODE 81129410
122C 1 122D      DC * ADDRESS              81129420
*
122D 0 0008      * DC 8 BYTE COUNT        81129430
122E 0 0812      DC FLSKP*256+RDCNT FLAGS AND OP CODE 81129440
122F 1 1230      DC * ADDRESS              81129450
*
1230 0 0002      * T23US DC /0002 UNIT STATUS=UNIT CHECK 81129460
* COUNT,KEY FOR R0 AND R1-RX 81129470
* T23R0 DC *- CYL NO GOES HERE 81129480
1231 0 0000      DC *- HEAD NO GOES HERE 81129490
1232 0 0000      DC /0000 RECORD 0 81129500
1233 0 0000      DC /0001 D=1 81129510
1234 0 0001      DC /0000 81129520
1235 0 0000      DC /0001 81129530
1236 0 0000      * T23R1 DC *- CYL NO GOES HERE 81129540
1237 0 0000      DC *- HEAD NO GOES HERE 81129550
1238 0 0100      DC /0100 RECORD 1,(1-X) 81129560
1239 0 0001      DC /0001 D=1 81129570
123A 0 0000      DC /0000 81129580
*
* ROUTINE --4-- READ TRACK OF ADDR MARKS
*
*****
THIS ROUTINE IS DESIGNED TO EXERCISE THE
CIRCUITRY OF THE CONTROL UNIT TO RECOGNIZE
ADDRESS MARKS. THIS IS ACCOMPLISHED BY
FORMATTING A FULL TRACK OF RECORDS AND
READING THESE RECORDS, INDICATING AN ERROR
IF ANY ARE MISSED.
*****
81129610
81129620
81129630
81129640
81129650
81129660
81129670
81129680
81129690
81129700
81129710
81129720
81129730
81129740
81129750
81129760
81129770
81129780
81129790
81129800
81129810
81129820
81129830
81129840
81129850
81129860
81129870
81129880
81129890
81129900
81129910
81129920
81129930

```

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
* TEST OPTION SWITCHES
*
12B6 0 C283      T2414 LD  2 TSW0-TB  FETCH OPTION SWITCHES
12B7 0 100C      SLA  OLPER    TEST FOR SW OLPER
12B8 1 4C10 12BF BNN  T2415    BRANCH IF SW OLPER IS OFF
*
12BA 0 C059      LD  T24MB  FETCH MARK SW B
12BB 1 4C20 12AB BNZ  T2413    BRANCH IF ON
*
12BD 0 1010      SLA  16      RESET MARK SW C
12BE 0 D056      STD  T24MC  *
*
12BF 0 63FC      T2415 LDX  3 -4    ZERO READ IN AREA
12C0 0 1010      T240L SLA  16      CLEAR ACC
12C1 1 D710 1336 STD  L3 T24RA+4 *
12C3 0 7301      MDX  3 +1    *
12C4 0 70FB      MDX  T240L  *
*
12C5 0 42F4      BSI  2 S10-TB  CALL S10 ROUTINE
12C6 1 1336      DC   T24MK    CCW ADDRESS
*
12C7 0 61FC      LDX  1 -4    SET LOOP CTR
12C8 1 C500 130C T24L1 LD  L1 T24HA+4  FETCH S/Z
12CA 1 F500 1336 EOR  L1 T24RA+4  TEST WITH WAS
12CC 1 4C20 12D0 BNZ  T240T    EXIT
12CE 0 7101      MDX  1 +1    DEC
12CF 0 70F6      MDX  T24L1  LOOP
*
12D0 1 4C10 12E5 T240T BZ  T2417    BRANCH IF EQ
*
12D2 0 42E5      BSI  2 EROUT-TB CALL ERROR OUT ROUTINE
12D3 0 8147      DC   /8147    FLAG BITS
12D4 0 2403      DC   /2403    MSG NO OR ADDRESS
*
12D5 0 C000      LD  *        SET MARK SW C
12D6 0 D03E      STD  T24MC  *
*
12D7 0 C032      LD  T24HA+2  CONVERT RECORD READ
12D8 0 1808      SRA  8      *
12D9 0 42FD      BSI  2 TCVHD-TB CONVERT TO DECIMAL
12DA 0 42FA      BSI  2 TCVBE-TB CALL CONVERT RTN
12DB 0 D844      STD  T24RR+10 *
*
12DC 0 4209      BSI  2 TLGMS-TB CALL LOG ROUTINE
12DD 1 1316      DC   T24RR
*
12DE 0 C055      LD  T24RA+2  CONVERT RECORD WRITTEN
12DF 0 1808      SRA  8      *
12E0 0 42FD      BSI  2 TCVHD-TB CONVERT TO DECIMAL
12E1 0 42FA      BSI  2 TCVBE-TB CALL CONVERT RTN
12E2 0 D84B      STD  T24RW+10 *
*
12E3 0 4209      BSI  2 TLGMS-TB CALL LOG ROUTINE
12E4 1 1324      DC   T24RW
*
* TEST OPTION SWITCHES
*
12E5 0 C283      T2417 LD  2 TSW0-TB  FETCH OPTION SWITCHES
12E6 0 100C      SLA  OLPER    TEST FOR SW OLPER
12E7 1 4C10 12EC BNN  T2416    BRANCH IF SW OLPER IS OFF
*
12E9 0 C02B      LD  T24MC  TEST MARK SW C
12EA 1 4C20 12BF BNZ  T2415    BRANCH IF ON
*
12EC 0 71FF      T2416 MDX  1 -1    DEC CYCLE COUNT

```

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```

12ED 0 70D1      MDX  T2415  CONTINUE
*
* GO TO NEXT ROUTINE IN SEQUENCE
*
12EE 0 42E8      T24EN BSI  2 FREDV-TB  FREE CHANNEL
12EF 0 C28C      LD  2 TRTNN-TB  GET RTN SWS
12F0 1 4C18 1362 BZ  T2501    GO TO NEXT RTN IN SEQ
12F2 0 42DF      BSI  2 CNTRL-TB  GO TO CONTROL RTN
12F3 0007      TTL24 PRNT  . SECT 2,RT 4- .
*
12FA 0013      PRNT  .RD TRACK OF ADDRESS MARKS.
1307 0 FFFF      DC   /FFFF
*****
*
* DATA CONSTANTS AND MESSAGES
*****
*
1308 0000      BSS  E 0      ALIGN
1308 0 0000      T24HA DC  *-#   CYL
1309 0 0000      DC   *-#     HEAD
130A 0 0000      DC   /0000    REC AND KEY LNG
130B 0 0001      DC   /0001    DATA HIGH AND LOW
130C 0 FF00      DC   /FF00    DATA 'FF'
*
130E 0000      BSS  E 0      ALIGN
130E 0 0000      T24CN DC  *-#   CYL
130F 0 0000      DC   *-#     HEAD
1310 0 0100      DC   /0100    REC AND KEY LNG
1311 0 0001      DC   /0001    DATA HIGH AND LOW
1312 0 FF00      DC   /FF00    DATA 'FF'
*
1313 0 C000      T24MA DC  *-#   MARK SW A
1314 0 0000      T24MB DC  *-#   MARK SW B
1315 0 0000      T24MC DC  *-#   MARK SW C
*
1316 0012      T24RR PRNT  . LAST RCD READ IS XXXX.
1322 0 FFFF      DC   /FFFF    TERM
1323 0 FFFF      DC   /FFFF    PAD
1324 0012      T24RW PRNT  . LAST RCD WROTE IS XXXX.
1330 0 FFFF      DC   /FFFF    TERM
*
1332 0004      T24RA BSS  E 4      READ COUNT INPUT AREA
*
1336 0 0005      T24MK DC  5      BYTE COUNT
1337 0 481A      DC   /48*256+RDHA FLAGS AND OP CODE
1338 1 1339      DC   *        ADDRESS
*
1339 0 0008      DC   8      BYTE COUNT
133A 0 4012      DC   /40*256+RDCNT FLAGS AND OP CODE
133B 1 1332      DC   T24RA    ADDRESS
*
133C 0 0001      DC   1      BYTE COUNT
133D 0 0008      DC   /00*256+OPTIC FLAGS AND OP CODE
133E 1 1339      DC   *-6     ADDRESS
*
133F 0 0001      T24R1 DC  1      BYTE COUNT
1340 0 401F      DC   /40*256+SFILM FLAGS AND OP CODE

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```

1341 1 1360      *      DC      T24C0      ADDRESS      81132660
*
*
1342 0 0004      *      DC      4          BYTE COUNT      81132670
1343 0 4039      *      DC      /40*256+SPCHA FLAGS AND OP CODE 81132680
1344 1 1308      *      DC      T24HA      ADDRESS      81132690
*
*
1345 0 0001      *      DC      1          BYTE COUNT      81132700
1346 0 0008      *      DC      /00*256+OPTIC FLAGS AND OP CODE 81132710
1347 1 1342      *      DC      *-6         ADDRESS      81132720
*
*
1348 0 0009      *      DC      9          BYTE COUNT      81132730
1349 0 4015      *      DC      /40*256+WRR0 FLAGS AND OP CODE 81132740
134A 1 1308      *      DC      T24HA      ADDRESS      81132750
*
*
134B 0 0009      *      DC      9          BYTE COUNT      81132760
134C 0 0010      *      DC      /00*256+WRR0D FLAGS AND OP CODE 81132770
134D 1 130E      *      DC      T24CN      ADDRESS      81132780
*
*
134E 0 0005      *      T24RX DC      5          BYTE COUNT      81132790
134F 0 4031      *      DC      /40*256+SRCID FLAGS AND OP CODE 81132800
1350 1 1308      *      DC      T24HA      ADDRESS      81132810
*
*
1351 0 0001      *      DC      1          BYTE COUNT      81132820
1352 0 0008      *      DC      /00*256+OPTIC FLAGS AND OP CODE 81132830
1353 1 134E      *      DC      *-6         ADDRESS      81132840
*
*
1354 0 0009      *      DC      9          BYTE COUNT      81132850
1355 0 0010      *      DC      /00*256+WRR0D FLAGS AND OP CODE 81132860
1356 1 130E      *      DC      T24CN      ADDRESS      81132870
*
*
1357 0 6005      *      T24ER DC      5          BYTE COUNT      81132880
1358 0 4031      *      DC      /40*256+SRCID FLAGS AND OP CODE 81132890
1359 1 1308      *      DC      T24HA      ADDRESS      81132900
*
*
135A 0 0001      *      DC      1          BYTE COUNT      81132910
135B 0 0008      *      DC      /00*256+OPTIC FLAGS AND OP CODE 81132920
135C 1 1357      *      DC      *-6         ADDRESS      81132930
*
*
135D 0 0009      *      DC      9          BYTE COUNT      81132940
135E 0 0011      *      DC      /00*256+ERASE FLAGS AND OP CODE 81132950
135F 1 130E      *      DC      T24CN      ADDRESS      81132960
*
*
1360 0 C000      *      T24C0 DC      /C000      FILE MASK      81132970
1361 0 000E      *      T24UC DC      /000E      UNIT CK MASK 81132980
*
*
*****
*      ROUTINE --S--      FALSE ADDRESS MARK TEST
*****
*
*      THIS ROUTINE FORMATS A TRACK WITH RECORDS

```

```

*      WHICH APPROXIMATE AN ADDRESS MARK. THE      81133040
*      TRACK IS THEN READ, ATTEMPTING TO FOOL THE 81133050
*      CONTROL UNIT INTO READING FALSE ADDRESS 81133060
*      MARKS FOR ACTUAL ONES. 81133070
*
*      *****
*      *****
*      *****
12501 EGU      *      TEST ENTRY POINT      81133400
*      M0X L TRID;1      BUMP RTN ID      81133410
*      BZ T2502      BR IF TEST NUMBER ZERO 81133420
*      S 2 K1-TB      DECREMENT BY ONE 81133430
*      BNZ T2601      BR IF NOT THIS TEST 81133440
*
*      *****
12502 LD 2 TSW0-TB      GET OPTION SWS      81133450
*      SLA OTTLE      PRINT TTILES      81133460
*      BNN T2503      BR IF NOT SET      81133470
*      BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81133480
*      DC TTL25      MESSAGE ADDRESS      81133490
*
*      *****
12503 BSI 2 GETDV-TB      GET CHANNEL FOR RTN 81133500
*
*      *****
*      BSI 2 SKTV-TB      BRANCH TO SEEKX ROUTINE 81133510
*      LD 2 HCCFF-TB      GET FIRST WORD      81133520
*      STO L WAREA      PUT IN WRITE AREA      81133530
*      LD 1 50      SET UP COUNT=50 BYTES 81133540
*      LD 2 TERM-TB      GET 'FFFF'      81133550
*      STO L WAREA+1      BUILD WRITE DATA 81133560
*      XCH *      *      81133570
*      LD 2 TERM-TB      *      81133580
*      T2504 STO L1 WAREA+2      *      81133590
*      M0X 1 -2      *      81133600
*      M0X T2504      LOOP TILL AREA-ALL F'S 81133610
*      LD 2 H0707-TB      SET UP END OF WRITE AREA 81133620
*      STO L WAREA+52      *      81133630
*      LD 2 H0C00-TB      *      81133640
*      STO L WAREA+53      *      81133650
*
*      *****
*      SLA 16      CLEAR--      81133660
*      STO L T25R0+2      RECORD 0 HA      81133670
*      A 2 H0100-TB      SET RECORD 1 D=1 81133680
*      STO L T25RX+2      *      81133690
*
*      *****
*      LD 2 HA-TB      GET CYL 'AT'      81133700
*      STO L T25R0      PUT IN R0 HA      81133710
*      STO L T25RX      PUT IN R1 HA      81133720
*      LD 2 HA+1-TB      GET HEAD 'AT'      81133730
*      STO L T25R0+1      *      81133740
*      STO L T25RX+1      *      81133750
*      GO FORMAT R0AND R1      81133760
*      BSI 2 S10-TB      CALL S10 ROUTINE 81133770
*      DC T25F0      CCW ADDRESS      81133780
*
*      *****
*      LD 2 SCSX0+1-TB GET UNIT STATUS      81133790
*      SLA UNCHK      TEST FOR UNIT CK      81133800
*      BNN T2505      *      81133810
*
*      *****
*      BSI 2 EROUT-TB      CALL ERROR OUT ROUTINE 81133820
*      DC /0107      FLAG BITS      81133830
*      DC /2500      MSG NO OR ADDRESS 81133840
*
*      *****
*      TEST OPTION SWITCHES
*

```


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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

14DB 0 42EB      T3203 BSI  2 GETDV-TB  GET CHANNEL FOR RTN  81138100
*****
* 81138110
* 81138120
*****
* 81138130
* 81138140
14DC 0 42F4      T32AA BSI  2 SIO-TB    CALL SIO ROUTINE  81138150
14DD 1 1518      DC      T32WR      CCW ADDRESS  81138160
* 81138170
* 81138180
14DE 0 420F      BSI  2 TLPST-TB   TEST LOOP SIO    81138180
14DF 1 14DC      DC      T32AA      LOOP ADDR      81138190
14E0 0 C23D      LD      2 SCSX0-TB  GET CHANNEL STATUS 81138200
14E1 0 F2B4      EOR     2 H40C-TB   TEST FOR UNIT STATUS PEND 81138210
14E2 1 4C20 14F1  BNZ     T32ER      BRANCH ON ERROR  81138220
* 81138230
* 81138240
14E4 0 C23E      LD      2 SCSX0+1-TB GET UNIT STATUS  81138240
14E5 0 100P      SLA     8          BUMP OUT ADDRESS 81138250
14E6 0 F02E      EOR     T32EX      TEST FOR UNIT EXCEPTION 81138260
14E7 1 4C20 14F1  BNZ     T32ER      81138270
* 81138280
* 81138290
14E9 0 C23F      LD      2 SCSX0+2-TB GET CCW ADDR REG  81138290
14EA 0 F04B      EOR     T32MK      81138300
14EB 1 4C20 14F1  BNZ     T32ER      81138310
* 81138320
* 81138330
14ED 0 C240      LD      2 SCSX0+3-TB GET BYTE COUNT REG 81138330
14EE 0 F297      EOR     2 K1-TB    81138340
14EF 1 4C1B 14F4  BZ      T32B2      81138350
* 81138360
* 81138370
14F1 0 42E5      T32ER BSI  2 EROUT-TB  81138370
14F2 0 0103      DC      /0103      81138380
14F3 0 3201      DC      /3201      81138390
* 81138400
* 81138410
14F4 0 42EE      T32B2 BSI  2 GETSN-TB   GET SENSE BYTES  81138410
14F5 0 CA25      LDD     2 SNWDS-TB  * 81138420
14F6 0 981F      SD      T32SX      TEST FOR 'SHOULD BE' 81138430
14F7 1 4C1B 14FE  BZ      T32EN      BR IF OK 81138440
* 81138450
* 81138460
14F9 0 42E5      SI      2 EROUT-TB  81138460
14FA 0 0107      DC      /0107      81138470
14FB 0 3202      DC      /3202      81138480
* 81138490
* 81138500
14FC 0 429C      T32LP BSI  2 TLPER-TB  81138500
14FD 1 14DC      DC      T32AA      81138510
* 81138520
* 81138530
* 81138540
* 81138550
* 81138560
* 81138570
* 81138580
* 81138590
* 81138600
* 81138610
* 81138620
* 81138630
* 81138640
* 81138650
* 81138660
* 81138670
* 81138680
* 81138690
* 81138700
* 81138710
* 81138720
* 81138730
* 81138740
* 81138750
* 81138760
* 81138770
14FE 0 42EB      T32EN BSI  2 FREDV-TB  FREE CHANNEL 81138500
14FF 0 C2BC      LD      2 TRINN-TB  GET RTN SWS  81138570
1500 1 4C1B 153F  BZ      T3301      GO TO NEXT RTN IN SEQ 81138580
1502 0 42DF      BSI  2 CNTRL-TB   GO TO CONTROL RTN  81138590
1503 0007      TTL32 PRNT  . SECT 3,RT 2- . 81138600
* 81138610
* 81138620
* 81138630
* 81138640
* 81138650
* 81138660
* 81138670
* 81138680
* 81138690
* 81138700
* 81138710
* 81138720
* 81138730
* 81138740
* 81138750
* 81138760
* 81138770
150A 0010      PRNT     .CHECK UNIT EXCEPTION. 81138600
1514 0 FFFF      DC      /FFFF      TERMINATOR 81138630
* 81138640
* 81138650
* 81138660
* 81138670
* 81138680
* 81138690
* 81138700
* 81138710
* 81138720
* 81138730
* 81138740
* 81138750
* 81138760
* 81138770
1515 0 0D00      T32EX DC      /0D00      * 81138660
* 81138670
* 81138680
* 81138690
* 81138700
* 81138710
* 81138720
* 81138730
* 81138740
* 81138750
* 81138760
* 81138770
1516 0000      BSS     E 0          81138670
1516 0 0000      T32SX DC      /0000      EXPECTED SNS 81138680
1517 0 00C8      DC      /00C8      * 81138690
* 81138700
* 81138710
* 81138720
* 81138730
* 81138740
* 81138750
* 81138760
* 81138770
1518 0 0001      T32WR DC      1          BYTE COUNT  81138720
1519 0 401F      DC      /40*256+SFILM FLAGS AND OP CODE 81138730
151A 1 0B5C      DC      C0          ADDRESS 81138740
* 81138750
* 81138760
* 81138770
151B 0 0006      DC      6          BYTE COUNT  81138770

```

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

151C 0 4007      DC      /40*256+SEEK FLAGS AND OP CODE 81138740
151D 1 1534      DC      T32SK      ADDRESS 81138790
* 81138800
* 81138810
* 81138820
151E 0 0004      T32AF DC      4          BYTE COUNT 81138810
151F 0 4039      DC      /40*256+SRCHA FLAGS AND OP CODE 81138830
1520 1 1535      DC      T32AC      ADDRESS 81138840
* 81138850
* 81138860
* 81138870
1521 0 0001      DC      1          BYTE COUNT 81138870
1522 0 0008      DC      /00*256+OPTIC FLAGS AND OP CODE 81138880
1523 1 151E      DC      T32AF      ADDRESS 81138890
* 81138900
* 81138910
* 81138920
1524 0 000C      DC      12         BYTE COUNT 81138920
1525 0 4015      DC      /40*256+WRR0 FLAGS AND OP CODE 81138930
1526 1 1537      DC      T32R0      ADDRESS 81138940
* 81138950
* 81138960
* 81138970
1527 0 0008      DC      8          BYTE COUNT 81138970
1528 0 401D      DC      /40*256+WRRKD FLAGS AND OP CODE 81138980
1529 1 153B      DC      T32R1      ADDRESS 81138990
* 81139000
* 81139010
* 81139020
152A 0 0005      T32AG DC      5          BYTE COUNT 81139020
152B 0 4031      DC      /40*256+SRCID FLAGS AND OP CODE 81139030
152C 1 1537      DC      T32R0      ADDRESS 81139040
* 81139050
* 81139060
* 81139070
152D 0 0001      DC      1          BYTE COUNT 81139070
152E 0 0008      DC      /00*256+OPTIC FLAGS AND OP CODE 81139080
152F 1 152A      DC      T32AG      ADDRESS 81139090
* 81139100
* 81139110
* 81139120
1530 0 0008      DC      8          BYTE COUNT 81139120
1531 0 001E      DC      /00*256+71E FLAGS AND OP CODE 81139130
1532 1 098C      DC      RAREA      ADDRESS 81139140
* 81139150
* 81139160
* 81139170
1533 1 1533      T32MK DC      *-1        END OF CHAIN 81139170
* 81139180
* 81139190
1534 0 0000      T32SK DC      /0000      SEEK 81139190
1535 0 0005      T32AC DC      /0005      * 81139200
1536 0 0001      DC      /0001      * 81139210
* 81139220
* 81139230
1537 0 0005      T32R0 DC      /0005      WRITE-SRCH R0 81139230
1538 0 0001      DC      /0001      * 81139240
1539 0 0000      DC      /0000      * 81139250
153A 0 0004      DC      /0004      * 81139260
* 81139270
* 81139280
153B 0 0005      T32R1 DC      /0005      WRITE-READ R1 81139280
153C 0 0001      DC      /0001      * 81139290
153D 0 0100      DC      /0100      * 81139300
153E 0 0000      DC      /0000      * 81139310
* 81139320
* 81139330
* 81139340
* 81139350
* 81139360
* 81139370
* 81139380
* 81139390
* 81139400
* 81139410
* 81139420
* 81139430
* 81139440
* 81139450
ROUTINE --3-- TEST INVALID COMMANDS
*****
THIS ROUTINE ATTEMPTS TO EXECUTE ALL IN-
VALID CCW COMMANDS. A GENERATOR PRODUCES
AN 8-BIT COMMAND AND A CHECK IS MADE
AGAINST VALID COMMANDS. IF THE GENERATED

```

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*      COMMAND IS INVALID, AN ATTEMPT IS MADE TO 81139460
*      EXECUTE IT AND THE RESULTS ARE CHECKED. 81139470
*      THE TRACK UNDER TEST IS RE-FORMATTED AS RE- 81139480
*      QUIRED. 81139490
*      81139500
*      81139510
***** 81139520
*      81139530
***** 81139540
*      81139550
*      81139560
***** 81139570
153F 0      T3301 EQU *      TEST ENTRY POINT 81139580
153F 1 7401 0815 MDX L TRID,+1 -- BUMP RTN ID 81139590
1541 1 4C18 1546 BZ T3302 BR IF TEST NUMBER ZERO 81139600
1543 0 9297 S 2 K1-TB DECREMENT BY ONE 81139610
1544 1 4C20 165F BNZ T3401 BR IF NOT THIS TEST 81139620
*      81139630
1546 0 C283 T3302 LD 2 TSW0-TB GET OPTION SWS 81139640
1547 0 100A SLA 0 TTTLE PRINT TTTLES 81139650
1548 1 4C10 154C BNN T3303 BR IF NOT SET 81139660
154A 0 4209 HSI 2 TLGMS-TB GO TO PRINT ROUTINE 81139670
154B 1 15A7 DC TTL33 MESSAGE ADDRESS 81139680
*      81139690
154C 0 42EB T3303 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81139700
***** 81139710
*      81139720
***** 81139730
154D 0 C297 LD 2 K1-TB SET UP CNTR = 2 81139740
154E 1 D400 160F STO L T330P * 81139750
*      81139760
1550 0 C29D LD 2 K10-TB SET UP ERROR COUNTER 81139770
1551 0 D2D2 STO 2 PASSW-TB * 81139780
*      81139790
1552 0 42F4 T33AA BSI 2 S10-TB CALL SIO ROUTINE 81139800
1553 1 15CF DC T33FR CCW ADDRESS 81139810
*      81139820
1554 1 6500 1610 T33AB LD L1 T33TB SET TABLE POINTER 81139830
1556 0 634F LD L 3 79 SET LOOP COUNTER 81139840
1557 1 6F00 160E STX L3 T33RT * 81139850
*      81139860
1559 0 C100 T33AC LD 1 0 PICK UP TABLE DP 81139870
155A 1 F400 160F EOR L T330P COMPARE WITH GENERATED OP 81139880
155C 1 4C18 158B BSC L T33AG,+- BRANCH IF EQUAL 81139890
155E 0 7101 MDX 1 1 INCR TABLE POINTER 81139900
155F 1 74FF 160E MDX L T33RT,-1 DECR LOOP COUNTER 81139910
1561 0 70F7 MDX T33AC LOOP IF MORE 81139920
*      81139930
*      81139940
*      81139950
*      81139960
*      81139970
*      81139980
*      81139990
*      81140000
*      81140010
*      81140020
*      81140030
*      81140040
*      81140050
*      81140060
*      81140070
*      81140080
*      81140090
*      81140100
*      81140110
*      81140120
*      81140130
1562 1 C400 160F LD L T330P GET INVALID OP CODE 81139960
1564 1 EC00 15H7 GR L T331V SET IN CCW 81139970
1566 1 D400 15E8 STO L T33V2+1 SET IN COMMAND STRING 81139980
*      81139990
*      81140000
*      81140010
*      81140020
*      81140030
*      81140040
*      81140050
*      81140060
*      81140070
*      81140080
*      81140090
*      81140100
*      81140110
*      81140120
*      81140130
1568 0 C284 T33AD LD 2 H4000-TB FETCH BIT 1 81140020
1569 0 D2D1 STO 2 S10SW-TB PLACE IN SIOSW 81140030
156A 0 42F4 BSI 2 S10-TB CALL SIO ROUTINE 81140040
156B 1 150E DC T33FR2 CCW ADDRESS 81140050
*      81140060
*      81140070
*      81140080
*      81140090
*      81140100
*      81140110
*      81140120
*      81140130
1571 0 C23D LD 2 SCSX0-TB GET CHANNEL STATUS 81140110
1572 0 F2B4 EOR 2 H4000-TB 81140120
1573 1 4C20 1581 BNZ T33ER 81140130

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1575 0 C23E * LD 2 SCSX0+1-TB GET UNIT STATUS 81140140
1576 0 1008 SLA 8 BUMP OUT ADDR 81140150
1577 0 F2AB EOR 2 H0200-TB TEST FOR UNIT CHECK 81140170
1578 1 4C20 1581 BNZ T33ER 81140180
*      81140190
157A 0 C23F * LD 2 SCSX0+2-TB GET CCW ADDR REG 81140200
157B 0 F074 EOR T33MK 81140210
157C 1 4C20 1561 BNZ T33ER 81140220
*      81140230
157E 0 C240 * LD 2 SCSX0+3-TB GET BYTE COUNT REG 81140240
157F 1 4C18 1585 BZ T33B2 81140250
*      81140260
1581 0 42F5 T33ER BSI 2 EROUT-TB 81140270
1582 0 0103 DC /0103 81140280
1583 0 3301 DC /3301 81140290
1584 0 7008 * MDX T33MS 81140300
*      81140310
1585 0 42EE T33H2 BSI 2 GETSN-TB GET SENSE BYTES 81140320
1586 0 CA25 LDD 2 SNW05-TB * 81140330
1587 0 9838 SD T33SX 81140340
1588 1 4C18 15A2 BZ T33EN 81140350
*      81140360
158A 0 42E5 * BSI 2 EROUT-TB 81140370
158B 0 0107 DC /0107 81140380
158C 0 3302 DC /3302 81140390
*      81140400
158D 0 4209 T33MS BSI 2 TLGMS-TB 81140410
158E 1 15C2 DC T33M1 81140420
*      81140430
158F 0 426C * BSI 2 TLPER-TB 81140440
1590 1 1595 DC T33AX 81140450
*      81140460
1591 1 74FF 0851 * MDX L PASSW,-1 BUMP ERROR COUNTER 81140470
1593 0 7004 MDX T33AG CONTINUE IF NOT 10 ERRS 81140480
1594 0 7000 MDX T33EN 81140490
1595 0 42F4 T33AX BSI 2 S10-TB CALL SIO ROUTINE 81140500
1596 1 15CF DC T33FR CCW ADDRESS 81140510
1597 0 7000 MDX T33AD REPEAT INVALID COMMAND 81140520
*      81140530
*      81140540
*      81140550
*      81140560
*      81140570
*      81140580
*      81140590
*      81140600
*      81140610
*      81140620
*      81140630
*      81140640
*      81140650
*      81140660
*      81140670
*      81140680
*      81140690
*      81140700
*      81140710
*      81140720
*      81140730
*      81140740
*      81140750
*      81140760
*      81140770
*      81140780
*      81140790
*      81140800
*      81140810
1598 1 7401 160F T33AG MDX L T330P,+1 INCR INVLDP OP 81140560
159A 1 C400 160F LD L T330P GET CTR 81140570
159C 1 F400 15B9 EOR L T33CM CK FOR COMPLETE 81140580
159E 1 4C18 15A2 BSC L T33EN,+- BRANCH IF COMPLETE 81140590
15A0 1 4C00 1552 BSC L T33AA CONTINUE ROUTINE 81140600
*      81140610
*      81140620
*      81140630
*      81140640
*      81140650
*      81140660
*      81140670
*      81140680
*      81140690
*      81140700
*      81140710
*      81140720
*      81140730
*      81140740
*      81140750
*      81140760
*      81140770
*      81140780
*      81140790
*      81140800
*      81140810
15A2 0 42E8 T33EN BSI 2 FRLDV-TB FREL CHANNEL 81140650
15A3 0 C2BC LD 2 TRTN-TB GET RTN SWS 81140660
15A4 1 4C18 165F BZ T3401 GO TO NEXT RTN IN SEG 81140670
15A6 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81140680
15A7 0097 TTL33 PRNT . SLECT 3,RT 3- . 81140690
*      81140700
*      81140710
*      81140720
*      81140730
*      81140740
*      81140750
*      81140760
*      81140770
*      81140780
*      81140790
*      81140800
*      81140810
15AE 0008 * PRNT .TEST INVLD CMNDS. 81140700
15B6 0 FFFF DC /FFFF TERMINATOR 81140720
*      81140730
15B7 0 6000 T33IV DC /6000 INVALID CMD FILL IN 81140740
*      81140750
15B8 1 15EA T330A DC T33NO EXP CSW ADRS 81140760
*      81140770
15B9 0 0100 T33CM DC /0100 CK COMPLETE CONSTANT 81140780
*      81140790
15BA 0 0000 T33RD DC ** READ AREA 81140800
*      81140810

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

15BB 0 4000	T33CX DC	/4000	EXPECTED CSW	81140820
15BC 0 0002	DC	/0002	*	81140830
15BD 1 15EA	DC	T33NO	*	81140840
15BE 0 0001	DC	/0001	*	81140850
	*			81140860
15C0 0000	BSS E	0		81140870
15C0 0 8000	T335X DC	/8000	EXPECTED SNS	81140880
15C1 0 00C8	DC	/00C8	*	81140890
	*			81140900
15C2 0000	BSS E	0		81140910
15C2 0010	T33M1 PRNT	.INVLD OP-CMD CODE-		81140920
15CC 0 0000	T33M2 DC	**	INVALID CDF	81140930
15CD 0 0000	DC	**	*	81140940
15CE 0 FFFF	DC	/FFFF	TERMINATOR	81140950
	*			81140960
15CF 0 0001	T33FR DC	1	BYTE COUNT	81140970
15D0 0 401F	DC	/40*256+SF1L*	FLAGS AND OP CODE	81140980
15D1 1 085C	DC	C0	ADDRESS	81140990
	*			81141000
	*			81141010
	*			81141020
15D2 0 0006	DC	6	BYTE COUNT	81141030
15D3 0 4007	DC	/40*256+SEEM*	FLAGS AND OP CODE	81141040
15D4 1 15F1	DC	T33SK	ADDRESS	81141050
	*			81141060
	*			81141070
15D5 0 0005	DC	5	BYTE COUNT	81141080
15D6 0 4019	DC	/40*256+WRHA	FLAGS AND OP CODE	81141090
15D7 1 15F4	DC	T33HA	ADDRESS	81141100
	*			81141110
	*			81141120
15D8 0 000E	DC	14	BYTE COUNT	81141130
15D9 0 4015	DC	/40*256+WRRO	FLAGS AND OP CODE	81141140
15DA 1 15F7	DC	T33R0	ADDRESS	81141150
	*			81141160
	*			81141170
15DB 0 001F	DC	31	BYTE COUNT	81141180
15DC 0 501D	DC	/00*256+WRCKD	FLAGS AND OP CODE	81141190
15DD 1 15FE	DC	T33R1	ADDRESS	81141200
	*			81141210
	*			81141220
	*			81141230
15DE 0 0001	T33R2 DC	1	BYTE COUNT	81141240
15DF 0 401F	DC	/40*256+SF1LM	FLAGS AND OP CODE	81141250
15E0 1 085C	DC	C0	ADDRESS	81141260
	*			81141270
	*			81141280
15E1 0 0005	T33R3 DC	5	BYTE COUNT	81141290
15E2 0 4031	DC	/40*256+SRCID	FLAGS AND OP CODE	81141300
15E3 1 15FE	DC	T33R1	ADDRESS	81141310
	*			81141320
	*			81141330
15E4 0 0001	DC	1	BYTE COUNT	81141340
15E5 0 0008	DC	/00*256+OPTIC	FLAGS AND OP CODE	81141350
15E6 1 15E1	DC	T33R3	ADDRESS	81141360
	*			81141370
	*			81141380
15E7 0 0001	T33V2 DC	1	BYTE COUNT	81141390
15E8 0 6000	DC	/60*256+/00	FLAGS AND OP CODE	81141400
15E9 1 15BA	DC	T33RD	ADDRESS	81141410
	*			81141420
	*			81141430
15EA 0 0001	T33NO DC	1	BYTE COUNT	81141440
15EB 0 0008	DC	0*256+OPTIC	FLAGS AND OP CODE	81141450
15EC 1 15E7	DC	T33V2	ADDRESS	81141460
	*			81141470
	*			81141480
15ED 0 0001	DC	1	BYTE COUNT	81141490

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

15EE 0 2003	DC	/20*256+OPNDP	FLAGS AND OP CODE	81141500
15EF 1 15F0	DC	*	ADDRESS	81141510
	*			81141520
	*			81141530
15F0 1 15EA	T33MK DC	T33NO	SET FILE MK	81141540
	*			81141550
15F1 0 0000	T33SK DC	/0000	SEEK	81141560
15F2 0 0005	DC	/0005	*	81141570
15F3 0 0001	DC	/0001	*	81141580
	*			81141590
15F4 0 0000	T33HA DC	/0000	WRITE HA	81141600
15F5 0 0500	DC	/0500	*	81141610
15F6 0 0100	DC	/0100	*	81141620
	*			81141630
15F7 0 0005	T33R0 DC	/0005	WRITE R0	81141640
15F8 0 0001	DC	/0001	*	81141650
15F9 0 0000	DC	/0000	*	81141660
15FA 0 0006	DC	/0006	*	81141670
15FB 0 0000	DC	/0000	*	81141680
15FC 0 0005	DC	/0005	*	81141690
15FD 0 0001	DC	/0001	*	81141700
	*			81141710
15FE 0 0005	T33R1 DC	/0005	WRITE R1	81141720
15FF 0 0001	DC	/0001	*	81141730
1600 0 0108	DC	/0108	*	81141740
1601 0 000C	DC	/000C	*	81141750
1602 0 09C5	DC	/09C5	*	81141760
1603 0 C3D6	DC	/C3D6	*	81141770
1604 0 D9C4	DC	/D9C4	*	81141780
1605 0 F140	DC	/F140	*	81141790
1606 0 D2C5	DC	/D2C5	*	81141800
1607 0 E8D9	DC	/E8D9	*	81141810
1608 0 C5C3	DC	/C5C3	*	81141820
1609 0 D6D9	DC	/D6D9	*	81141830
160A 0 C4F1	DC	/C4F1	*	81141840
160B 0 40C4	DC	/40C4	*	81141850
160C 0 C1E3	DC	/C1E3	*	81141860
160D 0 C100	DC	/C100	*	81141870
	*			81141880
160E 0 0000	T33RT DC	**	TABLE COUNTER	81141890
	*			81141900
160F 0 0000	T33OP DC	**	GENERATED OP CODE	81141910
	*			81141920
1610 0 0005	T33TB DC	/0005	WRITE DATA	81141930
1611 0 0008	DC	/0008	TIC	81141940
1612 0 0000	DC	/0000	WRITE KEY-DATA	81141950
1613 0 0001	DC	/0001	WRITE	81141960
1614 0 0010	DC	/0010	WRITE COUNT-KEY-DATA	81141970
1615 0 0019	DC	/0019	WRITE HOME ADDRESS	81141980
1616 0 0015	DC	/0015	WRITE R0	81141990
1617 0 0031	DC	/0031	SRCH = ID WITHOUT M/T	81142000
1618 0 00B1	DC	/00B1	SRCH = ID WITH M/T	81142010
1619 0 0029	DC	/0029	SRCH= KEY WITHOUT M/T	81142020
161A 0 00A9	DC	/00A9	SRCH = KEY WITH M/T	81142030
161B 0 0039	DC	/0039	SRCH = HA WITHOUT M/T	81142040
161C 0 00B9	DC	/00B9	SRCH = HA WITH M/T	81142050
161D 0 0051	DC	/0051	SRCH HI ID WITHOUT M/T	81142060
161E 0 00D1	DC	/00D1	SRCH HI ID WITH M/T	81142070
161F 0 0049	DC	/0049	SRCH HI KEY WITHOUT M/T	81142080
1620 0 00C9	DC	/00C9	SRCH HI KEY WITH M/T	81142090
1621 0 0071	DC	/0071	SRCH HI EQ ID WITHOUT M/T	81142100
1622 0 00F1	DC	/00F1	SRCH HI EQ ID WITH M/T	81142110
1623 0 0069	DC	/0069	SRCH HI EQ KEY WITHOUT M/T	81142120
1624 0 00E9	DC	/00E9	SRCH HI EQ KEY WITH M/T	81142130
1625 0 0006	DC	/0006	RD DATA WITHOUT M/T	81142140
1626 0 00B6	DC	/00B6	RD DATA WITH M/T	81142150
1627 0 000E	DC	/000E	RD KEY-DATA WITHOUT M/T	81142160
1628 0 00BE	DC	/00BE	RD KEY-DATA WITH M/T	81142170

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1629 0 001E	DC	/001E	RD CT-KEY-DATA WITHOUT M/T	81142180
162A 0 009E	DC	/009E	RD CT-KEY-DATA WITH M/T	81142190
162B 0 001A	DC	/001A	RD HOME ADR WITHOUT M/T	81142200
162C 0 009A	DC	/009A	RD HOME ADR WITH M/T	81142210
162D 0 0016	DC	/0016	RD R0 WITHOUT M/T	81142220
162E 0 0096	DC	/0096	RD R0 WITH M/T	81142230
162F 0 0012	DC	/0012	RD COUNT WITHOUT M/T	81142240
1630 0 0092	DC	/0092	RD COUNT WITH M/T	81142250
1631 0 0007	DC	/0007	CONTROL SEED (BBCCHH)	81142260
1632 0 0013	DC	/0013	CONTROL RECALIBRATE	81142270
1633 0 0017	DC	/0017	CONTROL STORE	81142280
1634 0 00CF	DC	/000	CONTROL SPACE COUNT	81142290
1635 0 0003	DC	/0003	CONTROL NO-OP	81142300
1636 0 000B	DC	/000B	CONTROL CY SEEK (CCHH)	81142310
1637 0 001B	DC	/001B	CONTROL HEAD SEEK (HH)	81142320
1638 0 001F	DC	/001F	CONTROL SET FILE MASK	81142330
1639 0 0011	DC	/0011	ERASE	81142340
163A 0 0002	DC	/0002	READ IPL	81142350
163B 0 0025	DC	/0025	CONTINUE SCAN-EQ	81142360
163C 0 002D	DC	/002D	SRCH EQ K-D	81142370
163D 0 0004	DC	/0004	SENSE I/O	81142380
163E 0 0094	DC	/0094	RELEASE	81142390
163F 0 00B4	DC	/00B4	RESERVE	81142400
1640 0 001B	DC	/001B	1800-TIO	81142410
1641 0 002B	DC	/002B	1800-TIO	81142420
1642 0 003B	DC	/003B	1800-TIO	81142430
1643 0 004B	DC	/004B	1800-TIO	81142440
1644 0 005B	DC	/005B	1800-TIO	81142450
1645 0 006B	DC	/006B	1800-TIO	81142460
1646 0 007B	DC	/007B	1800-TIO	81142470
1647 0 008B	DC	/008B	1800-TIO	81142480
1648 0 009B	DC	/009B	1800-TIO	81142490
1649 0 00AB	DC	/00AB	1800-TIO	81142500
164A 0 00BB	DC	/00BB	1800-TIO	81142510
164B 0 00CB	DC	/00CB	1800-TIO	81142520
164C 0 00DB	DC	/00DB	1800-TIO	81142530
164D 0 00EB	DC	/00EB	1800-TIO	81142540
164E 0 00FB	DC	/00FB	SENSE I/O	81142550
164F 0 004D	DC	/004D	SRCH HI KEY DATA	81142560
1650 0 0035	DC	/0035	CONTINUE SCAN-SET CMP	81142570
1651 0 0045	DC	/0045	CONTINUE SCAN HI	81142580
1652 0 0055	DC	/0055	CONTINUE SCAN-NO CMP	81142590
1653 0 0065	DC	/0065	CONTINUE SCAN-HI EQ	81142600
1654 0 0075	DC	/0075	CONTINUE SCAN-SET CMP	81142610
1655 0 00AD	DC	/00AD	SRCH EQ K-D	81142620
1656 0 00A5	DC	/00A5	CONTINUE SCAN-EQ	81142630
1657 0 00C5	DC	/00C5	CONTINUE SCAN-HI	81142640
1658 0 00CD	DC	/00CD	SRCH HI K-D	81142650
1659 0 00D5	DC	/00D5	CONTINUE SCAN-NO CMP	81142660
165A 0 00E5	DC	/00E5	CONTINUE SCAC-HI EQ	81142670
165B 0 00FD	DC	/00FD	SRCH HI EQ K-D	81142680
165C 0 00B5	DC	/00B5	CONTINUE SCAN-SET CMP	81142690
165D 0 00F5	DC	/00F5	CONTINUE SCAN-SET CMP	81142700
165E 0 006D	DC	/006D	SRCH-K-D HI EQ	81142710
				81142720
				81142730
				81142740
				81142750
				81142760
				81142770
				81142780
				81142790
				81142800
				81142810
				81142820
				81142830
				81142840
				81142850

SECTION END

165F 0 42DF

T3401 BSI 2 CNTRL-TB GO TO CONTROL RTN

SECTION PREFACE

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1660 0 0004	T40PR DC	/0004	SECTION NUMBER	81142860
1661 0 0003	DC	3		81142870
				81142880
1662 0 C2BC	T40NT LD	2 TRTNN-TB	SW FNC 1 BITS 12-15	81142890
1663 1 4C1B 166A	BZ	T4101	BR IF RUN ALL RTNS	81142900
1665 0 90FB	S	T40PR+1	TEST FOR VALID	81142910
1666 1 4C30 0B21	BP	TCNER	BR IF INVALID RTN NUMBER	81142920
1668 0 80FB	A	T40PR+1	RESTORE RTN NUMBER	81142930
1669 0 7000	MDX	T4101	GO TO FIRST RTN	81142940
				81142950
				81142960
				81142970
				81142980
				81142990
				81143000
				81143010
			ROUTINE --1-- TEST HALT I/O ON READ OP	81143020
				81143030
				81143040
				81143050
				81143060
				81143070
			THIS ROUTINE ISSUES A HALT I/O COMMAND	81143080
			DURING A READ OPERATION AND CHECKS TO SEE	81143090
			IF READING WAS ACTUALLY STOPPED BY THE	81143100
			HIO. THE TRACK IS FIRST FORMATTED WITH	81143110
			HA-R0-R1 AND THEN HIO IS ISSUED AFTER A	81143120
			READ OF R1 IS INITIATED (200 BYTES). IF	81143130
			ALL OF R1 IS READ, THE HIO IS CONSIDERED	81143140
			TO HAVE FAILED.	81143150
				81143160
				81143170
				81143180
				81143190
166A 0	T4101 EQU	*	TEST ENTRY POINT	81143200
166A 1 7401 0815	MDX L	TRID,1	BUMP RTN ID	81143210
166C 1 4C1B 1671	BZ	T4102	BR IF TEST NUMBER ZERO	81143220
166E 0 9297	S	2 K1-TB	DECREMENT BY ONE	81143230
166F 1 4C20 1730	BNZ	T4201	BR IF NOT THIS TEST	81143240
				81143250
1671 0 C2B3	T4102 LD	2 TSW0-TB	GET OPTION SWS	81143260
1672 0 100A	SLA	OTTLE	PRINT TITLES	81143270
1673 1 4C10 1677	BNN	T4103	BR IF NOT SET	81143280
1675 0 4209	BSI	2 TLGMS-TB	GO TO PRINT ROUTINE	81143290
1676 1 16F1	DC	TTL41	MESSAGE ADDRESS	81143300
				81143310
1677 0 42EB	T4103 BSI	2 GETDV-TB	GET CHANNEL FOR RTN	81143320
1678 0 4212	BSI	2 SKTV-TB	BRANCH TO SEEKX ROUTINE	81143330
1679 0 1010	SLA	16	CLEAR ACC	81143340
167A 0 D2C0	STO	2 ERRSW-TB	RESET ERROR SWITCH	81143350
				81143360
167B 0 CA51	T4104 LDD	2 HA-TB	OBTAIN CYL AND HD NOS	81143370
167C 1 DC00 09BC	STD L	RAREA	EST. CYL, HD FOR R0	81143380
167E 1 DC00 09C6	STD L	RAREA+10	EST. CYL, HD FOR R1	81143390
				81143400
1680 0 1810	SRA	16		81143410
1681 1 D400 09BE	STO L	RAREA+2	EST. REC., KEY L, R0	81143420
				81143430
1683 0 C29D	LD	2 K10-TB		81143440
1684 1 D400 09BF	STD L	RAREA+3	DATA LGTH. R0 = 10 BYTES	81143450
				81143460
				81143470
				81143480
				81143490
1686 1 C400 170C	LD L	T41K2		81143500
1688 1 D400 09CB	STD L	RAREA+12	EST. REC NO. KEY L., R1	81143510
				81143520
168A 1 C400 170D	LD L	T41K3		81143530
168C 1 D400 09C9	STD L	RAREA+13	DATA LGTH R1 = 200 BYTES	81143540

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*
*      R1 COUNT AREA IS NOW ESTABLISHED
*
168E 1 6500 09C0      LDX L1 RAREA+4   FWA OF R0 DATA
1690 0 6305          LDX 3 5           W.C.
1691 1 C400 170B      LD  L T41K1       C5C5 DATA PATTERN
*
*      STORES A-REG IN DESIGNATED FIELD
*
1692 0 D100          STO 1 0           STORE TWO BYTES
1694 0 7101          MDX 1 +1          INDR. STORAGE ADDRESS
1695 0 73FF          MDX 3 -1          DECR. WORD COUNT
1696 0 70FC          MDX *-4          CYCLE UNTIL FIELD FILLED
*
*
1697 1 6500 09CB      LDX L1 RAREA+15  FWA OF R1 DATA
1699 0 6364          LDX 3 100         W.C.
*
*      STORES A-REG IN DESIGNATED FIELD
*
169A 0 D100          STO 1 0           STORE TWO BYTES
169B 0 7101          MDX 1 +1          INDR. STORAGE ADDRESS
169C 0 73FF          MDX 3 -1          DECR. WORD COUNT
169D 0 70FC          MDX *-4          CYCLE UNTIL FIELD FILLED
*
*
169E 0 C297          LD 2 K1-TB
169F 1 D400 09CA      STO L RAREA+14   EST. KEY
*
*      DATA PATTERNS FOR R0 AND R1 ARE ESTABLISHED
*
16A1 1 6500 1705      LDX L1 T41T1
16A3 1 6000 19E9      STX L1 WTADR     EST. TIMEOUT ADDRESS
*
*
16A5 0 42F0          BSI 2 SIO-TB     CALL SIO ROUTINE
16A6 1 170F          DC  T41F1       CCW ADDRESS
*
*      1. SET FILE MASK 'CO'
*      2. SEARCH HA EQUAL
*      3. TIC *-1
*      4. WRITE R0 (10 BYTES)
*      5. WRITE R1 (200 BYTES)
*
16A7 1 6500 09CB      LDX L1 RAREA+15  FWA OF R1 DATA AREA
16A9 0 6364          LDX 3 100         W.C.
16AA 0 1810          SRA 16
*
*      STORES A-REG IN DESIGNATED FIELD
*
16AB 0 D100          STO 1 0           STORE TWO BYTES
16AC 0 7101          MDX 1 +1          INDR. STORAGE ADDRESS
16AD 0 73FF          MDX 3 -1          DECR. WORD COUNT
16AE 0 70FC          MDX *-4          CYCLE UNTIL FIELD FILLED
*
*
*      INPUT AREA IS CLEARED TO ZEROES
*
16AF 0 C2B7          LD 2 H000-TB     FETCH SIO SW VALUE
16B0 0 D2D1          STO 2 SIOSW-TB   PLACE IN SIO SWITCH
*
*
16B1 0 42F4          BSI 2 SIO-TB     CALL SIO ROUTINE
16B2 1 171E          DC  T41R1       CCW ADDRESS
*
*      1. SET FILE MASK 'CO'
*      2. READ HA (NO DATA XFER)
*      3. READ COUNT R1
*      4. SEARCH KEY EQ (R1)
*      5. TIC *-1
*      6. READ DATA R1 (200 BYTE)
*
16B3 0 C2B0          LD 2 TERM-TB
16B4 0 D2DA          STO 2 LPCT1-TB   EST. DELAY COUNT
*
*
16B5 1 C400 09CB      T4105 LD L RAREA+15 FWA OF READ AREA
16B7 1 4C20 16C5      BNZ T4106        BRANCH IF READ STARTED
*

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16B9 0 6332          LDX 3 50          EXTRA DELAY COUNT
16BA 0 73FF          MDX 3 -1          DECR. DELAY COUNT
16BB 0 70FE          MDX *-2          WAIT FOR END OF DELAY
*
*
16BC 1 74FF 0859      * MDX L LPCT1,-1  DECR. DELAY COUNTER
16BE 0 70F6          * MDX T4105        WAIT FOR 1ST BYTE
*
*
16BF 0 42E5          * BSI 2 ER0UT-TB   CALL ERROR OUT ROUTINE
16C0 0 8127          DC  /8127        FLAG BITS
16C1 0 4102          * DC  /4102        MSG NO OR ADDRESS
*
*      PRINT READ DID NOT INITIATE
*
16C2 0 C000          LD *             GET A VALUE
16C3 0 D2C0          STO 2 ERRSW-TB   SET ERROR SWITCH
16C4 0 7021          MDX T41E2        CHECK LOOP ON ERROR
16C5 0 1010          T4106 SLA 16         RESET ACCUMULATOR
16C6 0 D23E          STO 2 SCSX0+1-TB CLEAR UNIT STATUS
16C7 0 0A2B          XIO 2 HIOXX-TB   ISSUE HALT I/O
16C8 1 6C00 08AA      STX L HIOXX      SET HIO SW
*
*      HALT I/O DURING READ OPERATION
*
16CA 0 4215          BSI 2 WAIT5-TB   CALL WAIT I/O ROUTINE
16CB 1 16CD          DC  +*1         NO INTERRUPT ADDRESS
16CC 0 7006          MDX T4107
*
*
16CD 0 42E5          BSI 2 ER0UT-TB   CALL ERROR OUT ROUTINE
16CE 0 8106          DC  /8106        FLAG BITS
16CF 0 4103          DC  /4103        MSG NO OR ADDRESS
*
*      PRINT NO HIO INT. RECEIVED
*
16D0 0 C000          LD *             GET A VALUE
16D1 0 D2C0          STO 2 ERRSW-TB   SET ERROR SWITCH
16D2 0 700A          MDX T41CK        CHECK READ AREA
*
*
16D3 0 C23E          T4107 LD 2 SCSX0+1-TB LOOK AT UNIT STATUS
16D4 0 1008          SLA 8
16D5 0 F038          EOR T41K4        CHECK C.E., D.F.
16D6 1 4C18 16DD      BZ T41CK         BRANCH IF DE.,CE.
*
*
16D8 0 42E5          BSI 2 ER0UT-TB   CALL ERROR OUT ROUTINE
16D9 0 8127          DC  /8127        FLAG BITS
16DA 0 4104          DC  /4104        MSG NO OR ADDRESS
*
*      PRINT NON-ZERO UNIT STATUS RECEIVED
*
16DB 0 C000          LD *             GET A VALUE
16DC 0 D2C0          STO 2 ERRSW-TB   SET ERROR SWITCH
*
*
16DD 1 C400 0A2E      T41CK LD L RAREA+114 LWA OF READ AREA
16DF 1 4C18 16E6      SZ T41E2        BR. IF NO DATA READ
*
*
16E1 0 42E5          BSI 2 ER0UT-TB   CALL ERROR OUT ROUTINE
16E2 0 8127          DC  /8127        FLAG BITS
16E3 0 4106          DC  /4106        MSG NO OR ADDRESS
*
*      PRINT FULL READ OCCURRED
*
16E4 0 C000          LD *             GET A VALUE
16E5 0 D2C0          STO 2 ERRSW-TB   SET ERROR SWITCH
*
*
16E6 0 420C          T41E2 BSI 2 TLPER-TB TEST LOOP ON ERROR
16E7 1 15E9          DC  +*1         CHECK ERROR SWITCH
16E8 0 7003          MDX T41EN        EXIT
*
*
16E9 0 C2C0          LD 2 ERRSW-TB     FETCH ERROR SWITCH
16EA 1 4C20 167H      BNZ T4104        LOOP ON ERROR
*
*
*      GO TO NEXT ROUTINE IN SEQUENCE
*
16EC 0 42E8          T41EN BSI 2 FREDV-TB FREE CHANNEL
16ED 0 C2BC          LD 2 TPTNN-TB   GET RTN SWS
16EE 1 4C18 1730      BZ T4201        GO TO NEXT RTN IN SEQ

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16F0 0 42DF      BSI 2 CNTRL-TB GO TO CONTROL RTN      81144900
16F1 0007      TTL41 PRNT . SECT 4,RT 1- .        81144910
*              *                                81144920
16F8 0012      PRNT .HALT I/O DURING READ OP.    81144930
1704 0 FFFF      DC -1                          81144940
*              *                                81144950
*              *                                81144960
*              *                                81144970
1705 0 42E5      T41T1 BSI 2 ERDUT-TB CALL ERPRG DUT ROUTINE    81144980
1706 0 8106      DC /8106 FLAG BITS                          81144990
1707 0 4101      DC /4101 MSG NO OR ADDRESS          81145000
*              *                                81145010
*              *                                81145020
*              *                                81145030
*              *                                81145040
*              *                                81145050
*              *                                81145060
*              *                                81145070
0029 0          SRKE0 EOU /29 SFARCH KEY EQUAL COMMAND 81145070
0A30 0          T41HA EOU RAREA+116 HOME ADDRESS AREA 81145080
09CB 0          T41RD EOU RAREA+15 READ AREA        81145090
09C6 0          T41W1 EOU RARFA+10 FWA OF RI        81145100
*              *                                81145110
170B 0 C5C5      T41K1 DC /C5C5 WRITE DATA PATTERN            81145120
170C 0 0102      T41K2 DC /0102 REC NO. KEY LENGTH        81145130
170D 0 00C8      T41K3 DC 200                                81145140
170E 0 0C00      T41K4 DC /0C00 CHAN AND DEV END              81145150
*              *                                81145160
*              *                                81145170
*              *                                81145180
170F 0 0001      T41FT DC 1 BYTE COUNT                          81145180
1710 0 401F      DC /40*256+SFILM FLAGS AND OP CODE 81145190
1711 1 085C      DC C0 ADDRESS                               81145200
*              *                                81145210
*              *                                81145220
*              *                                81145230
*              *                                81145240
1712 0 0004      T41C1 DC 4 BYTE COUNT                          81145240
1713 0 4039      DC /40*256+SRCHA FLAGS AND OP CODE          81145250
1714 1 08D0      C HA ADDRESS                               81145260
*              *                                81145270
*              *                                81145280
*              *                                81145290
*              *                                81145300
1715 0 0001      DC 1 BYTE COUNT                              81145300
1716 0 J008      DC 0*256+OPTIC FLAGS AND OP CODE            81145310
1717 1 1712      DC T41C1 ADDRESS                               81145320
*              *                                81145330
*              *                                81145340
*              *                                81145350
*              *                                81145360
1718 0 0012      DC 18 BYTE COUNT                             81145360
1719 0 4015      DC /40*256+WRRO FLAGS AND OP CODE          81145370
171A 1 09BC      DC RAREA ADDRESS                               81145380
*              *                                81145390
*              *                                81145400
*              *                                81145410
*              *                                81145420
171B 0 00D2      DC 210 BYTE COUNT                            81145420
171C 0 0010      DC 0*256+WRCKD FLAGS AND OP CODE          81145430
171D 1 09C6      DC T41W1 ADDRESS                               81145440
*              *                                81145450
*              *                                81145460
*              *                                81145470
*              *                                81145480
*              *                                81145490
171E 0 0001      T41R1 DC 1 BYTE COUNT                          81145500
171F 0 401F      DC /40*256+SFILM FLAGS AND OP CODE          81145510
1720 1 085C      DC C0 ADDRESS                               81145520
*              *                                81145530
*              *                                81145540
*              *                                81145550
1721 0 0005      DC 5 BYTE COUNT                              81145560
1722 0 481A      DC /48*256+RDHA FLAGS AND OP CODE          81145570

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1723 1 0A30      DC T41HA ADDRESS                          81145580
*              *                                81145590
*              *                                81145600
*              *                                81145610
1724 0 0008      DC 8 BYTE COUNT                              81145620
1725 0 4012      DC /40*256+RDCNT FLAGS AND OP CODE          81145630
1726 1 0A30      DC T41HA ADDRESS                               81145640
*              *                                81145650
*              *                                81145660
*              *                                81145670
*              *                                81145680
1727 0 0002      T41C2 DC 2 BYTE COUNT                          81145680
1728 0 4029      DC /40*256+SRKE0 FLAGS AND OP CODE          81145690
1729 1 0816      DC K1 ADDRESS                               81145700
*              *                                81145710
*              *                                81145720
*              *                                81145730
*              *                                81145740
172A 0 0001      DC 1 BYTE COUNT                              81145740
172B 0 0008      DC 0*256+OPTIC FLAGS AND OP CODE            81145750
172C 1 1727      DC T41C2 ADDRESS                               81145760
*              *                                81145770
*              *                                81145780
*              *                                81145790
*              *                                81145800
172D 0 00C8      DC 200 BYTE COUNT                             81145800
172E 0 0006      DC 0*256+RDAT FLAGS AND OP CODE          81145810
172F 1 09C8      DC T41R2 ADDRESS                               81145820
*              *                                81145830
*              *                                81145840
*              *                                81145850
*              *                                81145860
*              *                                81145870
*              *                                81145880
*              *                                81145890
*              *                                81145900
*              *                                81145910
*              *                                81145920
*              *                                81145930
*              *                                81145940
*              *                                81145950
*              *                                81145960
*              *                                81145970
*              *                                81145980
*              *                                81145990
*              *                                81160000
*              *                                81160010
*              *                                81160020
*              *                                81160030
*              *                                81160040
*              *                                81160050
*              *                                81160060
*              *                                81160070
*              *                                81160080
*              *                                81160090
*              *                                81160100
*              *                                81160110
*              *                                81160120
*              *                                81160130
*              *                                81160140
*              *                                81160150
*              *                                81160160
*              *                                81160170
*              *                                81160180
*              *                                81160190
*              *                                81160200
*              *                                81160210
*              *                                81160220
1730 0          T4201 EOU * TEST ENTRY POINT          81160230
1730 1 7401 0815 MDX L TRID*1 BUMP RTN ID          81160240
1732 1 4C18 1737 BZ T4202 BR IF TEST NUMBER ZERO 81160250

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1734 0 9297	S	2 K1-TB	DECREMENT BY ONE	81146260
1735 1 4C20 1840	BNZ	T4301	BR IF NOT THIS TEST	81146270
*				
1737 0 C283	T4202 LD	2 TSW0-TB	GET OPTION SWS	81146280
1738 0 100A	SLA	DTTLE	PRINT TITLES	81146290
1739 1 4C10 173D	BNN	T4203	BR IF NOT SET	81146300
173B 0 4209	BSI	2 TLGMS-TB	GO TO PRINT ROUTINE	81146310
173C 1 17FB	DC	TTL42	MESSAGE ADDRESS	81146320
*				
173D 0 42EB	T4203 BSI	2 GETDV-TB	GET CHANNEL FOR RTN	81146330
173E 0 4212	BSI	2 SFTV-TB	BRANCH TO SEEKX ROUTINE	81146340
*				
173F 0 1010	SLA	16	CLEAR ACC	81146350
1740 0 D2C0	STO	2 ERRSW-TB	RESET ERROR SWITCH	81146360
*				
1741 0 CA51	T4204 LDD	2 HA-TB	OBTAIN CYL AND HD NOS	81146370
1742 1 DC00 09BC	STD	L RAREA	EST. CYL, HD FOR R0	81146380
1744 1 D400 09C6	STD	L RAREA+10	EST. CYL, HD FOR R1	81146390
*				
1746 0 1810	SRA	16		81146400
1747 1 D400 09BE	STO	L RAREA+2	EST. REC NO., KEY L., R0	81146410
*				
1749 0 C29D	LD	2 K10-TB		81146420
174A 1 D400 09BF	STO	L RAREA+3	DATA LGTH R0 = 10 BYTES	81146430
*				
R0 COUNT AREA IS NOW ESTABLISHED				
*				
174C 1 C400 1817	LD	L T42K2		81146440
174E 1 D400 09C8	STO	L RAREA+12	EST. REC. NO., KEY L., R1	81146450
*				
1750 1 C400 1818	LD	L T42K3		81146460
1752 1 D400 09C9	STO	L RAREA+13	DATA LGTH R1 = 200 BYTES	81146470
*				
R1 COUNT AREA IS NOW ESTABLISHED				
*				
1754 1 6500 09C0	LDY	L1 RAREA+4	FWA OF R0 DATA	81146480
1756 0 6305	LD	3 5	W.C.	81146490
1757 1 C400 1816	LD	L T42K1	CSCS DATA PATTERN	81146500
* STORES A-REG IN DESIGNATED FIELD				
1759 0 D100	STO	1 0	STORE TWO BYTES	81146510
175A 0 7101	MDX	1 +1	INDR. STORAGE ADDRESS	81146520
175B 0 73FF	MDX	3 -1	DECR. WORD COUNT	81146530
175C 0 70FC	MDX	*-4	CYCLE UNTIL FIELD FILLED	81146540
*				
175D 1 6500 09CB	LDX	L1 RAREA+15	FWA OF R1 DATA	81146550
175F 0 6364	LDX	3 100	W.C.	81146560
* STORES A-REG IN DESIGNATED FIELD				
1760 0 D100	STO	1 0	STORE TWO BYTES	81146570
1761 0 7101	MDX	1 +1	INDR. STORAGE ADDRESS	81146580
1762 0 73FF	MDX	3 -1	DECR. WORD COUNT	81146590
1763 0 70FC	MDX	*-4	CYCLE UNTIL FIELD FILLED	81146600
*				
DATA PATTERNS FOR R0 AND R1 ARE ESTABLISHED				
*				
1764 0 C297	LD	2 K1-TB		81146610
1765 1 D400 09CA	STO	L RAREA+14	EST. R1 KEY	81146620
*				
1767 1 6500 180F	LDX	L1 T42T1		81146630
1769 1 6D00 19E9	STX	L1 WTADR	EST. TIMEOUT ADDRESS	81146640
*				
176B 0 42F4	BSI	2 S10-TB	CALL S10 ROUTINE	81146650
176C 1 181A	DC	T42FT	CCW ADDRESS	81146660
*				
1. SET FILE MASK 'C0'				
2. SEARCH HA EQUAL				
3. TIC *-1				
4. WRITE R0 (10 BYTES)				

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176D 0 1810	*	SRA	16	5. WRITE R1 (200 BYTES)	81146940
176E 1 D400 0A33	STO	L T42HA+3	RESET COUNT LWA		81146950
1770 1 D400 09F8	STO	L RAREA+60	RESET SYNC LOCATION		81146960
*					
1772 0 C287	LD	2 H8000-TB	FETCH S10 SW VALUE		81146970
1773 0 D2D1	STO	2 S10SW-TB	PLACE IN S10 SWITCH		81146980
*					
1774 0 42F4	BSI	2 S10-TB	CALL S10 ROUTINE		81146990
1775 1 1829	DC	T42R1	CCW ADDRESS		81147000
*					
1. SET FILE MASK 'C0'					
2. READ HA (NO DATA XFER)					
3. READ COUNT R1					
4. SEARCH KEY EQ R1					
5. TIC *-1					
6. READ DATA R1 (200)					
*					
1776 0 C28D	LD	2 TERM-TB			81147010
1777 0 D2DA	STO	2 LPCT1-TB	EST. MAX. DELAY		81147020
*					
1778 1 C400 0A33	T4205 LD	L T42HA+3	LOOK AT COUNT INPUT AREA		81147030
177A 1 4C20 1789	BNZ	T4206	CONTINUE UPON READ COUNT		81147040
*					
177C 0 630A	LDX	3 10			81147050
177D 0 73FF	MDX	3 -1			81147060
177E 0 70FE	MDX	*-2	WAIT SHORT DELAY		81147070
*					
177F 1 74FF 0859	MDX	L LPCT1,-1			81147080
1781 0 70F6	MDX	T4205	CONTINUE WAITING		81147090
*					
1782 0 42E5	BSI	2 ER0UT-TB	CALL ERROR OUT ROUTINE		81147100
1783 0 8127	DC	/8127	FLAG BITS		81147110
1784 0 4202	DC	/4202	MSG NO OR ADDRESS		81147120
* PRINT READ COUNT NOT INITIATED					
1785 0 C000	LD	*	GET A VALUE		81147130
1786 0 D2C0	STO	2 ERRSW-TB	SET ERROR SWITCH		81147140
1787 1 4C00 17F0	BSC	L T42E2	CHECK LOOP ON ERROR		81147150
*					
1789 1 C400 1815	T4206 LD	L T42K0	A = ZERO		81147160
178B 0 D2DH	STO	2 TEMP1-TB	RESET DELAY COUNTER		81147170
*					
178C 1 C400 09F8	T42L1 LD	L RAREA+60	MONITOR SYNC LOCATION		81147180
178E 1 4C20 179C	BNZ	T4207	CONTINUE ON TRANSITION		81147190
*					
1790 0 6105	LDX	1 5			81147200
1791 0 71FF	MDX	1 -1			81147210
1792 0 70FE	MDX	*-2	WAIT LOCAL DELAY		81147220
*					
1793 1 7401 085A	MDX	L TEMP1,+1	INCR. SYNC COUNTER		81147230
1795 0 70F6	MDX	T42L1	CONTINUE SYNC LOOP		81147240
*					
1796 0 42E5	BSI	2 ER0UT-TB	CALL ERROR OUT ROUTINE		81147250
1797 0 8127	DC	/8127	FLAG BITS		81147260
1798 0 4203	DC	/4203	MSG NO OR ADDRESS		81147270
* PRINT READ DID NOT INITIATE					
1799 0 C000	LD	*	GET A VALUE		81147280
179A 0 D2C0	STO	2 ERRSW-TB	SET ERROR SWITCH		81147290
179B 0 7054	MDX	T42E2	CHECK LOOP ON ERROR		81147300
*					
WAIT FOR S10 COMPLETION INTERRUPT					
*					
179C 0 4215	T4207 BSI	2 WAITS-TB	CALL WAIT I/O ROUTINE		81147310
179D 1 179F	DC	*+1	NO INTERRUPT ADDRESS		81147320
179E 0 7006	MDX	T4208			81147330
*					
179F 0 42E5	BSI	2 ER0UT-TB	CALL ERROR OUT ROUTINE		81147340
17A0 0 8127	DC	/8127	FLAG BITS		81147350
17A1 0 4204	DC	/4204	MSG NO OR ADDRESS		81147360
* PRINT NO S10 INTERRUPT					

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17A2 0 C000      LD      *      GET A VALUE      81147620
17A3 0 D2C0      STO 2 ERRSW-TB  SET ERROR SWITCH  81147630
17A4 0 704B      MUX  T42E2    CHECK LOOP ON ERROR 81147640
*
17A5 0 1810      T4208 SRA  I6
17A6 1 D400 0A33 STO L  T42HA+3  RESET COUNT LWA  81147650
*
17A8 0 C2B7      LD 2 M8000-TB  FETCH SID SW VALUE  81147660
17A9 0 D201      STO 2 SIOSW-TB  PLACE IN SID SWITCH  81147670
*
17AA 0 42F4      BSI 2 SIO-TB   CALL SIC ROUTINE      81147680
17AB 1 183B      DC  T42W2     CCW ADDRESS          81147690
*
*               1. SET FILE MASK 'CO'  81147700
*               2. READ HA (SKIP)      81147710
*               3. READ COUNT R1      81147720
*               4. SEARCH KEY EQ R1   81147730
*               5. TIC *-1            81147740
*               6. WRITE R1 (200)     81147750
*
17AC 0 C28D      LD 2 TERM-TB
17AD 0 D2DA      STO 2 LPCT1-TB  EST. MAX. DELAY      81147760
*
17AE 1 C400 0A33 T4209 LD L  T42HA+3  LOOK AT COUNT INPUT AREA 81147770
17B0 1 4C20 17BE BNZ  T4210     CONTINUE UPON TRANSITION 81147780
*
17B2 0 630A      LDX 3 10
17B3 0 73FF      MDX 3 -1
17B4 0 70FE      MDX *-2      WAIT SHORT DELAY  81147790
*
17B5 1 74FF 0659 MDX L  LPCT1,-1  DECR. DELAY COUNTER    81147800
17B7 0 70F6      MDX  T4209    CONT. WAITING FOR COUNT 81147810
*
17B8 0 42E5      BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE 81147820
17B9 0 8127      DC /8127     FLAG BITS              81147830
17BA 0 4205      DC /4205     MSG NO OR ADDRESS  81147840
*
* PRINT READ COUNT DID NOT INITIATE 81147850
* LD * GET A VALUE 81147860
* STO 2 ERRSW-TB SET ERROR SWITCH 81147870
* MUX T42E2 CHECK LOOP ON ERROR 81147880
*
17BE 1 C400 085A T4210 LD L  TEMP1
17C0 0 D2DB      STO 2 TEMP1-TB  EST. SYNC COUNTER  81147890
*
17C1 1 C400 09F6 T42L2 LD L  RAREA+60  MONITOR SYNC LOCATION 81147900
17C3 1 4C00 17C5 BSC L *      NOP 81147910
*
17C5 0 6105      LDX 1 5
17C6 0 71FF      MDX 1 -1
17C7 0 70FE      MDX *-2      WAIT FOR LOCAL DELAY 81147920
*
17C8 1 74FF 085A MDX L  TEMP1,-1  DECR. SYNC COUNT    81147930
17CA 0 70F6      MDX  T42L2    CONTINUE SYNC LOOP 81147940
*
* AT THIS POINT, THE WRITE R1 SHOULD 81147950
* HAVE BEEN INITIATED 81147960
*
17CB 0 1010      SLA 16      RESET ACCUMULATOR    81147970
17CC 0 D23E      STO 2 SCSX0+1-TB  CLEAR UNIT STATUS  81147980
17CD 0 0A2B      XIO 2 HIOXX-TB  ISSUE HALT I/O    81147990
17CE 1 6C00 08AA STX L  HIOXX    SET HIO SW 81148000
*
17D0 0 4215      BSI 2 WAITS-TB  CALL WAIT I/O ROUTINE 81148010
17D1 1 17D3      DC *+1     NO INTERRUPT ADDRESS 81148020
17D2 0 7005      MDX  T42E1    CONTINUE UPON INTERRUPT 81148030
*
17D3 0 42E5      BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE 81148040
17D4 0 8127      DC /8127     FLAG BITS              81148050
17D5 0 4206      DC /4206     MSG NO OR ADDRESS  81148060
*
* PRINT NO HIO INTERRUPT 81148070

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

17D6 0 C000      LD *      GET A VALUE      81148300
17D7 0 D2C0      STO 2 ERRSW-TB  SET ERROR SWITCH  81148310
*
17D8 0          T42E1 EQU *
17D8 0 6500 7FFF LDX L1 32767
17DA 0 4206      T42L3 BSI 2 TIOSN-TB  CHECK FOR DEV. AVAILABLE 81148320
17DB 1 4C10 17E5 BZ  T4211     GO TO SID IF NOT BUSY  81148330
*
17DD 0 71FF      MDX 1 -1
17DE 0 70FB      MDX  T42L3    RECHECK DEVICE  81148340
*
17DF 0 42E5      BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE 81148350
17E0 0 8127      DC /8127     FLAG BITS              81148360
17E1 0 4209      DC /4209     MSG NO OR ADDRESS  81148370
*
* PRINT DEVICE HUNG 81148380
* LD * GET A VALUE 81148390
* STO 2 LRRSW-TB SET ERROR SWITCH 81148400
* MDX T42E2 CHECK LOOP ERROR 81148410
*
17E5 0 42F4      T4211 BSI 2 SIO-TB  CALL SIC ROUTINE      81148420
17E6 1 1829      DC  T42R1    CCW ADDRESS          81148430
*
* 1. SET FILE MASK 'CO' 81148440
* 2. READ HA (SKIP) 81148450
* 3. READ COUNT R1 81148460
* 4. SEARCH KEY EQUAL 81148470
* 5. TIC *-1 81148480
* 6. READ DATA (R1) 81148490
* LD L RAREA+114 LWA OF READ AREA 81148500
17E7 1 C400 0A2E BZ  T42E2     CHECK LOOP ERROR 81148510
17E9 1 4C18 17F0 *
*
17EB 0 42F5      BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE 81148520
17EC 0 8127      DC /8127     FLAG BITS              81148530
17ED 0 4210      DC /4210     MSG NO OR ADDRESS  81148540
*
* PRINT WRITE NOT PADDED WITH ZERDES 81148550
* LD * GET A VALUE 81148560
* STO 2 ERRSW-TB SET ERROR SWITCH 81148570
*
17EE 0 C000      T42E2 BSI 2 TLPER-TB  TEST LOOP ERROR 81148580
17EF 0 D2C0      DC *+1
17F0 0 420C      MDX  T42EN
17F1 1 17F3
17F2 0 7003
*
17F3 0 C2C0      LD 2 ERPSW-TB  FETCH ERROR SWITCH 81148590
17F4 1 4C20 1741 BNZ  T4204     LOOP ON ERROR 81148600
*
* GO TO NEXT ROUTINE IN SEQUENCE 81148610
*
17F6 0 42E8      T42EN BSI 2 FREDV-TB  FREE CHANNEL 81148620
17F7 0 C28C      LD 2 TRTNM-TB  GET RTN SWS 81148630
17F8 1 4C18 184D BZ  14301     GO TO NEXT RTN IN SEQ 81148640
17FA 0 42DF      BSI 2 CNTRL-TB  GO TO CONTROL RTN 81148650
17FB 0 0007      TTL42 PRNT . SECT 4,RT 2- . 81148660
*
1802 0 0012      PRNT .HALT I/O DURING WRITE OP. 81148670
180E 0 FFFF      DC -1 81148680
*
180F 0 42E5      T42T1 BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE 81148690
1810 0 8106      DC /8106     FLAG BITS              81148700
1811 0 4201      DC /4201     MSG NO OR ADDRESS  81148710
*
* PRINT TIMEOUT ERROR 81148720
* LD * GET A VALUE 81148730
* STO 2 ERKSW-TB SET ERROR SWITCH 81148740
* MDX T42E2 CHECK LOOP ERROR 81148750
*
1812 0 C000      T42W1 EQU RAREA+10  FWA OF R1 81148760
1813 0 D2C0      T42R0 EQU RAREA+15  READ/WRITE R1 81148770
1814 0 70DB      T42HA EQU RAREA+116 HA/COUNT AREA 81148780
*
09C6 0
09C8 0
0A30 0

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```

1815 0 0000      *
T42K0 DC        0      81148980
1816 0 C5C5     T42K1 DC /C5C5 WRITE PATTERN 81148990
1817 0 0102     T42K2 DC /0102 REC NO., KEY LENGTH 81149000
1818 0 00C8     T42K3 DC 200 DATA LENGTH 81149010
1819 0 0C00     T42K4 DC /0C00 CHAN AND DEV END 81149020
*               *
*               *
*               *
181A 0 0001     T42FT DC 1 BYTE COUNT 81149030
181H 0 401F     DC /40*256+SFILM FLAGS AND OP CODE 81149040
181C 1 085C     DC C0 ADDRESS 81149050
*               *
*****
181D 0 0004     T42C1 DC 4 BYTE COUNT 81149060
181E 0 4039     DC /40*256+SPCHA FLAGS AND OP CODE 81149070
181F 1 08D0     DC HA ADDRESS 81149080
*               *
*****
1820 0 0001     DC 1 BYTE COUNT 81149090
1821 0 0008     DC 0*256+OPTIC FLAGS AND OP CODE 81149100
1822 1 181D     DC T42C1 ADDRESS 81149110
*               *
*****
1823 0 0012     DC 18 BYTE COUNT 81149120
1824 0 4015     DC /40*256+WRR0 FLAGS AND OP CODE 81149130
1825 1 09BC     DC RAREA ADDRESS 81149140
*               *
*****
1826 0 00D2     DC 210 BYTE COUNT 81149150
1827 0 001D     DC 0*256+WRCKD FLAGS AND OP CODE 81149160
1828 1 09C6     DC T42W1 ADDRESS 81149170
*               *
*****
1829 0 0001     T42R1 DC 1 BYTE COUNT 81149180
182A 0 401F     DC /40*256+SFILM FLAGS AND OP CODE 81149190
182B 1 085C     DC C0 ADDRESS 81149200
*               *
*****
182C 0 0005     DC 5 BYTE COUNT 81149210
182D 0 481A     DC /48*256+RDHA FLAGS AND OP CODE 81149220
182E 1 0A30     DC T42HA ADDRESS 81149230
*               *
*****
182F 0 0008     DC 8 BYTE COUNT 81149240
1830 0 4012     DC /40*256+R0CNT FLAGS AND OP CODE 81149250
1831 1 0A39     DC T42HA ADDRESS 81149260
*               *
*****
1832 0 0002     T42C2 DC 2 BYTE COUNT 81149270
1833 0 4029     DC /40*256+SRKEQ FLAGS AND OP CODE 81149280
1834 1 0816     DC K1 ADDRESS 81149290
*               *
*****
1835 0 0001     DC 1 BYTE COUNT 81149300
1836 0 0008     DC 0*256+OPTIC FLAGS AND OP CODE 81149310

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```

1837 1 1832     DC T42C2 ADDRESS 81149360
*               *
*****
1838 0 00C8     DC 200 BYTE COUNT 81149670
1839 0 0006     DC 0*256+RDAT FLAGS AND OP CODE 81149680
183A 1 09CB     DC T42RD ADDRESS 81149690
*               *
*****
183B 0 0001     T42W2 DC 1 BYTE COUNT 81149700
183C 0 401F     DC /40*256+SFILM FLAGS AND OP CODE 81149710
183D 1 085C     DC C0 ADDRESS 81149720
*               *
*****
183E 0 0005     DC 5 BYTE COUNT 81149730
183F 0 481A     DC /48*256+RDHA FLAGS AND OP CODE 81149740
1840 1 0A30     DC T42HA ADDRESS 81149750
*               *
*****
1841 0 0008     DC 8 BYTE COUNT 81149760
1842 0 4012     DC /40*256+R0CNT FLAGS AND OP CODE 81149770
1843 1 0A30     DC T42HA ADDRESS 81149780
*               *
*****
1844 0 0002     T42C3 DC 2 BYTE COUNT 81149790
1845 0 4029     DC /40*256+SRKEQ FLAGS AND OP CODE 81149800
1846 1 0316     DC K1 ADDRESS 81149810
*               *
*****
1847 0 0001     DC 1 BYTE COUNT 81149820
1848 0 0008     DC 0*256+OPTIC FLAGS AND OP CODE 81149830
1849 1 1844     DC T42C3 ADDRESS 81149840
*               *
*****
184A 0 00C8     DC 200 BYTE COUNT 81149850
184B 0 0005     DC 0*256+RDAT FLAGS AND OP CODE 81149860
184C 1 09CB     DC T42RD ADDRESS 81149870
*               *
*****
184D 0          T4301 EQU * TEST ENTRY POINT 81150000
184D 1 7401 0815 MDX L TRID,1 BUMP RTN ID 81150010
184F 1 4C18 1854 BZ T4302 BR IF TEST NUMBER ZERO 81150020

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```

1851 0 9297      S      2 K1-TB      DECREMENT BY ONE
1852 1 4C20 1925 BNZ      T4401      BR IF NOT THIS TEST

*
1854 0 C283      T4302 LD      2 TSW0-TB      GET OPTION SWS
1855 0 100A      SLA      OTITLE      PRINT TITLES
1856 1 4C10 185A BNN      T4303      BR IF NOT SET
1858 0 4209      BSI      2 TLGMS-TB      GO TO PRINT ROUTINE
1859 1 18E6      DC      TTL43      MESSAGE ADDRESS

*
185A 0 42EB      T4303 BSI      2 GETDV-TB      GET CHANNEL FOR R1N
*
185B 0 1010      SLA      16      CLEAR ACC
185C 0 D2C0      STC      2 ERKSW-TB      RESET ERROR SWITCH

*
185D 1 6500 0A7F T4304 LDX      L1 T43R0      FWA FOR R0
185F 0 6307      LDX      3 7      W.C.
1860 0 1810      SRA      16

*
1861 0 D100      STO      1 0      STORES A-REG IN DESIGNATED FIELD
1862 0 7101      MDX      1 +1      STORE TWO BYTES
1863 0 73FF      MDX      3 -1      INDR. STORAGE ADDRESS
1864 0 70FC      MDX      *-4      DECR. WORD COUNT
                       CYCLE UNTIL FIELD FILLED

*
1865 0 C29A      LD      2 K6-TB
1866 1 D400 0A82 STO      L WAREA+96 EST. DATA LENGTH R0

*
RO IS NOW FORMATTED

*
1868 0 10A0      SLT      32
1869 1 DC00 0A22 STD      L WAREA      CYL 000 HD 0

*
186B 0 C2AA      LD      2 H0100-TB
186C 1 D400 0A24 STO      L WAREA+2 EST. REC NO., KEY L.

*
186E 1 C400 1902 LD      L T43K1
1870 1 D400 0A25 STD      L WAREA+3 EST. DATA LENGTH R1

*
1872 1 6500 0A26 LDX      L1 WAREA+4 R1 DATA FWA
1874 0 630C      LDX      3 12      W.C.
1875 1 C400 1903 LD      L T43K2      CSC5 DATA PATTERN

*
1877 0 D100      STO      1 0      STORES A-REG IN DESIGNATED FIELD
1878 0 7101      MDX      1 +1      STORE TWO BYTES
1879 0 73FF      MDX      3 -1      INDR. STORAGE ADDRESS
187A 0 70FC      MDX      *-4      DECR. WORD COUNT
                       CYCLE UNTIL FIELD FILLED

*
R1--IPL-- IS NOW FORMATTED

*
187B 1 6500 18F6 LDX      L1 T43T1
187D 1 6000 19E9 STX      L1 WTADR      EST. TIMEOUT ADDR.

*
187F 1 6500 18D9 LDX      L1 T43E1
1881 1 6000 1C71 STX      L1 ERADR      EST. ERROR RETURN

*
1883 0 42F4      BSI      2 S10-TB      CALL S10 ROUTINE
1884 1 1904      DC      T43W1      CCW ADDRESS
                       1. SET FILE MASK
                       2. SEEK CYL 000 HD 0
                       3. SEARCH HA EQUAL
                       4. TIC *-1
                       5. WRITE R0
                       6. WRITE R1 (IPL)
                       7. READ R0
                       8. READ R1 (RAREA)

*
1885 0 C23D      LD      2 SCSX0-TB      CHAN STATUS
1886 1 4C10 188B BNN      T4305      CONTINUE IF OPERATIONAL

```

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1888 0 42E5      *      BSI      2 ER0UT-TB      CALL ERROR OUT ROUTINE
1889 0 8306      DC      /8306      FLAG BITS
188A 0 4302      DC      /4302      MSG NO OR ADDRESS
                       PRINT CHAN NOT OP. AND CHECK LOOP ERROR

*
188B 0 C23E      *      T4305 LD      2 SCSX0+1-TB      UNIT STATUS
188C 0 100E      SLA      UNCHK      LOOK AT UNIT CHECK
188D 1 4C10 1892 BNN      T4306

*
188F 0 42E5      *      BSI      2 ER0UT-TB      CALL ERROR OUT ROUTINE
1890 0 8327      DC      /8327      FLAG BITS
1891 0 4303      DC      /4303      MSG NO OR ADDRESS
                       PRINT UNIT CHECK AND CHECK LOOP ERROR

*
1892 1 6500 0A26 T4306 LDX      L1 WAREA+4      FWA OF R1 WRITTEN
1894 1 6700 09C0 LDX      L3 RAREA+4      FWA OF R1 READ
1896 0 C06B      LD      T43K1      W.C.
1897 0 1801      SRA      1

*
1898 0 DC0A      *      S10      *+10      EST. LOOP COUNTER
1899 0 C100      LD      1 0      AREA1 WORD
189A 0 F300      EOR      3 0      AREA2 WORD
189B 1 4C20 18A4 BSC      L *+7+Z      BR. ON NON-COMPARE
189D 0 7101      MDX      1 +1      INCR. AREA1 ADDR.
189E 0 7301      MDX      3 +1      INCR. AREA2 ADDR.
189F 1 74FF 18A3 MDX      L *+2,-1      DECR. LOOP COUNT
18A1 0 70F6      MDX      *-10      CYCLE THROUGH FIELD
18A2 0 7001      MDX      *+1      BP. AROUND LOOP COUNTER
18A3 0 0000      DC      *-*      LOOP COUNTER

*
18A4 1 4C18 18AB BZ      14307      BR. OVER ERROR IF COMPARE

*
18A6 0 42E5      *      BSI      2 ER0UT-TB      CALL ERROR OUT ROUTINE
18A7 0 8127      DC      /8127      FLAG BITS
18A8 0 4304      DC      /4304      MSG NO OR ADDRESS
                       R1 READ (IPL) DOES NOT COMPARE WITH R1 WRIT
18A9 0 C000      LD      *      GET A VALUE
18AA 0 D2C0      STD      2 ERKSW-TB      SET ERROR SWITCH

*
18AB 1 6500 0A26 T4307 LDX      L1 WAREA+4      FWA OF IPL INPUT AREA
18AD 0 630C      LDX      3 12      W.C.
18AE 0 1810      SRA      16      A EQUAL ZERO

*
18AF 0 D100      *      STO      1 0      STORES A-REG IN DESIGNATED FIELD
18B0 0 7101      MDX      1 +1      STORE TWO BYTES
18B1 0 73FF      MDX      3 -1      INDR. STORAGE ADDRESS
18B2 0 70FC      MDX      *-4      DECR. WORD COUNT
                       CYCLE UNTIL FIELD FILLED

*
IPL INPUT AREA = 0'S

*
18B3 1 6500 18F9 LDX      L1 T43T2
18B5 1 6000 19E9 STX      L1 WTADR      EST. TIMEOUT ADDR.

*
18B7 0 42F4      BSI      2 S10-TB      CALL S10 ROUTINE
18B8 1 191C      DC      T431P      CCW ADDRESS
                       1. SEEK CYL 100 HD 9
                       2. READ IPL (RAREA)
                       3. NOP

*
18B9 0 C23E      LD      2 SCSX0+1-TB      UNIT STATUS
18BA 0 100E      SLA      UNCHK      LOOK AT UNIT CHECK
18BB 1 4C10 18C2 BNN      T4308      CONTINUE IF NO UNIT CHECK

*
18BD 0 42E5      BSI      2 ER0UT-TB      CALL ERROR OUT ROUTINE
18BE 0 8127      DC      /8127      FLAG BITS
18BF 0 4306      DC      /4306      MSG NO OR ADDRESS
                       PRINT UNIT CHECK ERROR

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1970 0 D277	STO	2	WIOSW-TB	CLEAR WAIT SW	81154420	
	*				81154430	
197E 0 0A2F	XIO	2	SIOXX-TB	DO THE START I/O	81154440	
	*				81154450	
197F 0 0A31	XIO	2	SCSN0-TB	GET CHANNEL STATUS	81154460	
1980 0 D231	STO	2	SCSN0-TB	SAVE FOR LATER EXAM	81154470	
	*				81154480	
1981 0 7066	MDX		SIOG3	GO TEST FOR ERRORS	81154490	
	*				81154500	
1982 0 4203	SIO02	BSI	2	TIO-TB	GO DO A TIO	81154510
	*				81154520	
1983 0 C246	LD	2	SCS 8+1-TB	GET UNIT STATUS	81154530	
1984 0 100B	SLA		UNBZY	TEST FOR BUSY	81154540	
1985 1 4C28 1982	BN		SIO02	BR IF STILL BUSY	81154550	
1987 0 70F2	MDX		SIO01	GO DO THE SIO AGAIN	81154560	
	*				81154570	
1988 0 C231	SIO03	LD	2	SCSN0-TB	GET CHAN STATUS	81154580
1989 0 1007	SLA		SCABZ	TEST FOR BUSY	81154590	
198A 1 4C10 1998	BNN		SIO05	BRANCH IF NOT NEG	81154600	
	*				81154610	
198C 0 C201	SIO04	LD	2	SIOSW-TB	GET SIO SW	81154620
198D 1 4C28 1990	BN		SIOX1	BR IF SET	81154630	
	*				81154640	
198F 0 4947	BSI		WAITT	GO WAIT FOR DE OR UNIT CHK	81154650	
	*				81154660	
1990 0 6500 0000	SIOX1	LDX	L1	*-*	RESTORE REGS	81154670
1992 0 6700 0000		LDX	L3	*-*	***	81154680
1994 0 1010	SLA		16		RESET SIO SW	81154690
1995 0 D201	STO	2	SIOSW-TB	*		81154700
1996 1 4C80 0873	BSC	1	SIO		THEN EXIT	81154710
	*					81154720
1998 0 C201	SIO05	LD	2	SIOSW-TB	GET CNTRL SW	81154730
1999 0 1001	SLA		1		TEST FOR EXIT EVEN IF ERR	81154740
199A 1 4C28 1990	BN		SIOX1		BR IF SET	81154750
	*					81154760
199C 0 CAC5	LDD	2	TYP2-TB	'SIO '		81154770
199D 0 DA63	STO	2	STSER+6-TB	SET IN MSG		81154780
199E 1 4468 1E8E	BSI	L	TCVDR		GET SECT/RTN NUMBERS	81154790
19A0 0 D267	STO	2	STSER+10-TB			81154800
19A1 0 1090	SLT		16			81154810
19A2 0 126A	STC	2	STSER+13-TB	SET IN MSG		81154820
19A3 0 C231	LD	2	SCSN0-TB	GET CHAN STATUS		81154830
19A4 1 4C10 19AE	BNN		SIO06		BR IF NOT OPER IS NOT SET	81154840
	*					81154850
19A6 0 C2A5	LD	2	HCC13-TB	GET MSG NUMBER		81154860
19A7 0 42FA	BSI	2	TCVBE-TB	CONVERT TO PRNT CODE		81154870
19A8 0 1090	SLT		16	SAVE 0 ONLY		81154880
19A9 0 D250	STO	2	STSER-TB	SET IN MSG		81154890
19AA 0 42E5	BSI	2	EROUT-TB	PRINT ERROR MSG		81154900
19AB 0 0108	DC		/0108	TAGS AND OPTIONS		81154910
19AC 1 08DC	DC		STSER	MSG ADDRESS		81154920
19AD 0 7023	MDX		SIO09	LOOP		81154930
	*					81154940
19AE 0 1007	SIO06	SLA		SCABZ	TEST FOR ADAPTER BUSY	81154950
19AF 1 4C10 19BA	BNN		SIO07		BR IF NOT	81154960
19B1 0 C2A4	LD	2	H0011-TB	SET MSG NUMBER		81154970
19B2 0 8297	A		2	K1-TB		81154980
19B3 0 42FA	BSI	2	TCVBE-TB	CONVERT		81154990
19B4 0 1090	SLT		16	0 ONLY		81155000
19B5 0 D250	STO	2	STSER-TB	SET IN MSG		81155010
19B6 0 42E5	BSI	2	EROUT-TB	CALL ERROR PRINT RTN		81155020
19B7 0 010C	DC		/010C	MESSAGE TAGS AND OPTIONS		81155030
19B8 1 08DC	DC		STSER	MSG ADDRESS		81155040
19B9 0 7017	MDX		SIO09	*		81155050
	*					81155060
19BA 0 C231	SIO07	LD	2	SCSN0-TB	GET CHAN STATUS	81155070
19BB 0 1001	SLA		SCUSP	UNIT STATUS PENDING		81155080
19BC 1 4C10 198C	BNN		SIO04		BR IF NOT SET	81155090

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19BE 0 42EE	BSI	2	GETSN-TB	ELSE GET SENSE INFO	81155100	
19BF 0 CA25	LDD	2	SNWDS-TB	GET SENSE WORDS	81155110	
19C0 0 109F	SLT		FSKIN	TEST FOR SEEK INCOMPLETE	81155120	
19C1 1 4C10 19CA	BNN		SIO08	BR IF NOT SET	81155130	
19C3 1 6780 08AE	LDX	13	SIOXX	GET CCW ADDRESS	81155140	
19C5 0 C301	LD		3	1	GET FLAGS AND OP CODE	81155150
19C6 0 F2A5	EOB	2	H0013-TB	TEST FOR RECALIBRATE	81155160	
19C7 0 1008	SLA		8			81155170
19C8 1 4C18 197A	BZ		SIO01	RETRY IF SO	81155180	
	*				81155190	
19CA 0 C2A4	SIO08	LD	2	H0011-TB	SET ERR NUMBER	81155200
19CB 0 42FA	BSI	2	TCVBE-TB	CONVERT		81155210
19CC 0 1090	SLT		16	G ONLY		81155220
19CD 0 D250	STO	2	STSER-TB	SET IN MSG		81155230
19CE 0 42E5	BSI	2	EROUT-TB	CALL MSG RTN		81155240
19CF 0 010F	DC		/010F	TAGS AND OPTIONS		81155250
19D0 1 08DC	DC		STSER	MSG ADDRESS		81155260
	*				81155270	
19D1 0 C283	SIO09	LD	2	TSW0-TB	GET SW FNC 0	81155280
19D2 0 1008	SLA		ORTRY	TEST FOR RETRY SIO		81155290
19D3 1 4C28 1982	BN		SIO02	BR IF YES		81155300
	*				81155310	
19D5 0 4200	BSI	2	THALT-TB	GO WAIT FOR OPERATOR		81155320
19D6 0 70AB	MDX		SIO02	LOOP		81155330
	*				81155340	
	*				81155350	
	*				81155360	
	*				81155370	
	*				81155380	
	*				81155390	
	*				81155400	
19D7 0 0000	WAITT	DC		**		81155410
19D8 0 C280	LD	2	TERM-TB	GET COUNTER FOR LOOP		81155420
19D9 0 D2BA	STO	2	CNTDN-TB	SET FOR LOOP		81155430
	*				81155440	
19DA 0 4203	WAIT1	BSI	2	TIO-TB	GO DO A TEST I/O	81155450
	*				81155460	
19DB 0 C246	LD	2	SCSX8+1-TB	GET UNIT STATUS		81155470
19DC 0 100B	SLA		UNBZY	TEST FOR UNIT BUSY		81155480
19DD 1 4C28 19E3	BN		WAIT2	BR TO WAIT IF ON		81155490
19DE 0 1010	SLA		16	ELSE CLEAR TIO SW		81155500
19DF 0 D2D5	STO	2	TIOSW-TB	*		81155510
19E1 1 4C80 19D7	BSC	1	WAITT	EXIT IF NOT BUSY		81155520
	*				81155530	
19E3 0 42F7	WAIT2	BSI	2	STHLS-TB	GO TO MONITOR	81155540
19E4 1 74CE 0839	MDX	L	CNTDN,-50	COUNT TIME		81155550
19E6 0 70F3	MDX		WAIT1	LOOP		81155560
19E7 1 4C80 19E9	BSC	1	WTADR	GO TO TIMEOUT ADDRESS		81155570
19E9 0 0000	WTADR	DC		**	TIMEOUT ADDRESS	81155580
	*				81155590	
	*				81155600	
	*				81155610	
	*				81155620	
	*				81155630	
	*				81155640	
	*				81155650	
	*				81155660	
19EA 0	TIONT	EQU	*	ENTRY FOR XFER VECTOR		81155670
19EA 0 1010	SLA		16	CLEAR-		81155680
19EB 0 D278	STO	2	WATSW-TB	*		81155690
19EC 0 D233	STO	2	SCSN1-TB	* LOOP COUNTER		81155700
	*				81155710	
19ED 0 0A31	TIO01	XIO	2	SCSN0-TB	GET CHAN. STATUS WORD	81155720
19EE 0 1007	SLA		SCABZ	TEST FOR ADAPTER BUSY		81155730
19EF 1 4C10 1A02	BNN		TIO02	BR IF NOT		81155740
19F1 0 0A3B	XIO	2	SCSN5-TB	ALLOW POLLING		81155750
	*				81155760	
19F2 0 42F7	BSI	2	STHLS-TB	GO TO MONITOR		81155770

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19F3 1 7432 08B2 MDX L SCSN1.50 COUNT LOOPS 81155780
19F5 0 70F7 MDX T1001 LOOP UNTIL NOT BUSY 81155790
* 81155800
19F6 0 0A33 XIO 2 SCSN1-TB GET CHANNEL STATUS 81155810
19F7 0 D249 STO 2 SCSXC-TB * AND SAVE FOR ERROR 81155820
19F8 0 0A37 XIO 2 SCSN3-TB * MESSAGE 81155830
19F9 0 D24A STO 2 SCSXC+1-TB * 81155840
19FA 0 0A39 XIO 2 SCSN4-TB * 81155850
19FB 0 D24B STO 2 SCSXC+2-TB * 81155860
19FC 0 0A3B XIO 2 SCSN5-TB * 81155870
19FD 0 D24C STO 2 SCSXC+3-TB * 81155880
* 81155890
19FE 0 42E5 BSI 2 ER0UT-TB 81155900
19FF 0 110E DC /110E TAGS AND OPTIONS 81155910
1A00 1 1A16 DC T10M1 ERROR MSG-ADDRESS 81155920
* 81155930
1A01 0 70E9 MDX T10NT LOOP TO TRY AGAIN 81155940
* 81155950
1A02 0 0A29 T1002 XIO 2 T10XX-TB EXECUTE TEST I/O 81155960
* 81155970
1A03 1 6C00 0854 STX L T10SW SET T10 SW 81155980
1A05 0 0A3B XIO 2 SCSN5-TB RELIEVE POLL 81155990
* 81156000
1A06 1 4400 09A2 BSI L TINTW WAIT FOR INTERRUPT 81156010
1A08 0 7006 MDX T1003 BR IF DID NOT OCCUR 81156020
1A09 0 C246 LD 2 SCSX8+1-TB GET UNIT STATUS 81156030
1ACA 0 100A SLA UNCUE TEST FOR CNTL UNIT END 81156040
1A0B 1 4C2B 19EA BN T10NT RETRY IF YES 81156050
* 81156060
1A0D 1 4C80 08B2 BSC I T10 EXIT 81156070
* 81156080
1A0F 0 42E5 T1003 BSI 2 ER0UT-TB 81156090
1A10 0 110E DC /110E TAGS AND OPTIONS 81156100
1A11 1 1A22 DC T10M2 ERROR MSG ADDRESS 81156110
* 81156120
1A12 0 0A2B XIO 2 H10XX-TB ISSUE HALT I/O TO CLEAR CHANNEL 81156130
* 81156140
1A13 0 4209 BSI 2 TLGMS-TB 81156150
1A14 1 1A33 DC T10M5 81156160
* 81156170
1A15 0 70D4 MDX T10NT 81156180
* 81156190
1A16 0011 T10M1 PRNT . 02 ADAPTER HUNG BUSY. 81156200
1A21 0 FFFF DC /FFFF 81156210
* 81156220
1A22 0016 T10M2 PRNT . 06 CHANNEL HUNG AFTER TEST I/O. 81156230
1A32 0 FFFF DC /FFFF 81156240
1A33 0015 T10M5 PRNT . A HALT I/O HAS BEEN ISSUED TO. 81156250
1A42 0 FF00 DC /FF00 81156260
1A43 0017 PRNT .TRY TO RESET THE CHANNEL CONDITION. 81156270
1A54 0 FFFF DC /FFFF 81156280
* 81156290
***** 81156300
* 81156310
***** 81156320
* 81156330
***** 81156340
* 81156350
***** 81156360
* 81156370
* 81156380
* 81156390
* 81156400
* 81156410
***** 81156420
* 81156430
***** 81156440
1A55 0 6916 GTSNS STX 1 GTSNX+1 SAVE REGS 81156450

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1A56 0 6B17 STX 3 GTSNX+3 *** 81156460
1A57 0 CA49 LDD 2 SCSXC-TB SAVE SNS CHAN STATUS 81156470
1A58 0 DA4D STD 2 SCSVS-TB ** 81156480
1A59 0 CA4B LDD 2 SCSXC+2-TB ** 81156490
1A5A 0 DA4F STD 2 SCSVS+2-TB ** 81156500
1A5B 0 0A2D GTSNO XIO 2 SENSE-TB SENSE I/O 81156510
1A5C 0 0A31 XIO 2 SCSNO-TB GET CHAN STATUS 81156520
1A5D 0 D231 STO 2 SCSNO-TB SAVE 81156530
1A5E 0 1007 SLA SCABZ 81156540
1A5F 1 4C10 1A7E BNN GTSN2 81156550
* 81156560
1A61 0 0A31 GTSN1 XIO 2 SCSNO-TB GET CHAN STATUS 81156570
1A62 0 1007 SLA SCABZ TEST FOR BUSY 81156580
1A63 1 4C2B 1A61 BN GTSN1 BR IF SO 81156590
* 81156600
1A65 0 0A3B XIO 2 SCSN5-TB ALLOW POLLING 81156610
1A66 0 1000 NOP TO ALLOW INTERRUPT 81156620
* 81156630
1A67 0 C24A LD 2 SCSXC+1-TB GET UNIT STATUS 81156640
1A68 0 100E SLA UNCHK 81156650
1A69 1 4C2B 1A75 LN GTSN2 81156660
1A6B 0 6500 0000 GTSNX LDX L1 *- RESTORE REGS 81156670
1A6D 0 6700 0000 LDX L3 *- *** 81156680
1A6F 0 CA4D LDD 2 SCSVS-TB RESTORE SNS CHAN STATUS 81156690
1A70 0 DA49 STD 2 SCSXC-TB ** 81156700
1A71 0 CA4F LDD 2 SCSVS+2-TB ** 81156710
1A72 0 DA4B STD 2 SCSXC+2-TB ** 81156720
1A73 1 4C80 086D BSC I GETSN EXIT TO CALLER 81156730
* 81156740
1A75 1 4400 1E8E GTSN2 BSI L TCVSR GET SECTION / RTN NUMBERS 81156750
1A77 0 D267 STO 2 STSER+10-TB STORE IN MSG 81156760
1A7E 0 1090 SLT 16 Q TO A 81156770
1A79 0 D26A STO 2 STSER+13-TB 81156780
1A7A 0 CAC7 LDD 2 TYP3-TB 'SNS' 81156790
1A7B 0 DA63 STD 2 STSER+6-TB SET IN MSG 81156800
1A7C 0 C249 LD 2 SCSXC-TB GET CHAN STATUS WORD 81156810
1A7D 0 1001 SLA SCUSP TEST FOR UNIT STAT.PENDING 81156820
1A7E 1 4C10 1A87 BNN GTSN3 BR IF NOT 81156830
* 81156840
1A80 0 C2B2 LD 2 H2100-TB SET MSG NUMBER 81156850
1A81 0 42FA BSI 2 TCVBE-TB CONVERT TO EBC 81156860
1A82 0 D25D STO 2 STSER-TB SET IN MSG 81156870
1A83 0 42E5 BSI 2 ER0UT-TB PRINT ERROR MSG 81156880
1A84 0 114E DC /114E TAGS AND OPTIONS 81156890
1A85 1 0BDC DC STSER MESSAGE 81156900
1A86 0 70D4 MDX GTSNO GO TRY AGAIN 81156910
* 81156920
1A87 0 C231 GTSN3 LD 2 SCSNO-TB GET CHAN STATUS 81156930
1A88 0 1007 SLA SCABZ TEST FOR ADAPTER BUSY 81156940
1A89 1 4C10 1A93 BNN GTSN5 BR IF NOT 81156950
1A8B 0 C2AA LD 2 H0100-TB SET MSG NUMBER TO 22 81156960
* 81156970
1A8C 0 82B2 GTSN4 A 2 H2100-TB CREATE PROPER MSG NUMBER 81156980
1A8D 0 42FA BSI 2 TCVBE-TB CONVERT 81156990
1A8E 0 D25D STO 2 STSER-TB SET IN MSG 81157000
1A8F 0 42E5 BSI 2 ER0UT-TB CALL ERROR MSG RTN 81157010
1A90 0 114C DC /114C TAGS AND OPTIONS 81157020
1A91 1 0BDC DC STSER MSG ADDRESS 81157030
1A92 0 70CB MDX GTSNO GO TRY AGAIN 81157040
* 81157050
1A93 0 C2AB GTSN5 LD 2 H0200-TB SET MSG NUMBER TO 23 81157060
1A94 0 70F7 MDX GTSN4 GO TO COMMON RTN 81157070
***** 81157080
* 81157090
***** 81157100
* 81157110
* 81157120
* 81157130

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***** 81157140
* 81157150
***** 81157160
STMLE EQU *
LD 2 STMLS-TB GET CALLING ADDR 81157170
STC STMSA PUT IN TEMP SAVE AREA 81157180
STX 1 STMSA+1 PUT REGS IN SAVE AREA 81157190
STX 3 STMSA+2 ** 81157200
LDX 11 STMP T GET Q LOCATION 81157210
* 81157220
LD STMSA GET I REG 81157230
STC L1 STMS T PUT IN Q 81157240
LD STMSA+1 GET XR1 81157250
STC L1 STMS T+1 PUT IN Q 81157260
LD STMSA+2 GET XR3 81157270
STC L1 STMS T+2 PUT IN Q 81157280
* 81157290
MDX 1 +3 BUMP Q POINTER 81157300
STX 1 STMP T SAVE 81157310
* 81157320
LD STMR T SET UP MONITOR RETURN 81157330
STC 2 MLSC2-TB * 81157340
BSC 1 START GO VISIT MONITOR 81157350
* 81157360
* 81157370
* RETURN FROM MONITOR HERE
* 81157380
* 81157390
STMLX LDX L2 TB SET UP TABLE PNTR 81157400
LD STMS T GET ENTRY LOC 81157410
STC 2 STMLS-TB PUT IN RETURN 81157420
* 81157430
LD STMS T+1 GET XR1 81157440
STC STMSA+1 PUT IN TEMP SAVE 81157450
LD STMS T+2 GET XR2 81157460
STC STMSA+2 PUT IN TEMP SAVE 81157470
* 81157480
LDX 1 -9 81157490
* 81157500
* 81157510
STMP T L1 STMS T+12 MOVE ALL SAVED 81157520
STC L1 STMS T+9 * PARAMETERS UP 3 81157530
MDX 1 +1 * PLACES IN Q 81157540
MDX STMLL * 81157550
* 81157560
MDX L STMP T,-3 DECREMENT Q POINTER 81157570
MDX STMP S IF NOT Q,CONTINUE 81157580
* 81157590
STMS E LDX 11 STMSA+1 ELSE RESTORE PARAMETERS 81157600
LDX 13 STMSA+2 * 81157610
BSC 1 STMS L RETURN 81157620
* GET HERE IF ENTRIES NEED SERVICING 81157630
STMP S LD STMR T SET UP RETURN TO 81157640
STC 2 MLSC2-TB * STMLS ROUTINE 81157650
MDX STMS E EXIT 81157660
* 81157670
* 81157680
* 81157690
* 81157700
* 81157710
* 81157720
* 81157730
* 81157740
* 81157750
* 81157760
* 81157770
* 81157780
* 81157790
* 81157800
* 81157810

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1ACD 0 0000 DC ** I 2 81157820
1ACE 0 0000 DC ** XR1 2 81157830
1ACF 0 0000 DC ** XR3 2 81157840
* 81157850
* 81157860
* 81157870
* 81157880
* 81157890
* 81157900
* 81157910
* 81157920
* 81157930
***** 81157940
* 81157950
***** 81157960
* 81157970
* 81157980
* TERLP IS CALLED BY A **BSI 2 TLPER-TB** * 81157990
* TO TEST THE LOOP ERROR OPTION AND * 81158000
* BR TO THE LOOP ADDR IF BIT 12 IS SET * 81158010
* 81158020
***** 81158030
* 81158040
***** 81158050
* 81158060
TERLP LD 2 TSW0-TB GET OPTION SWS 81158070
SLA OLPER TEST LOOP ON ERROR 81158080
BN TER01 YES 81158090
* 81158100
* 81158110
MDX L TLPER,1 NO,BUMP RETURN 81158120
BSC 1 TLPER CONTINUE 81158130
* 81158140
TER01 LD TLPER GET LOOP ADDRESS 81158150
STO TER02+1 PUT IN RETURN 81158160
TER02 BSC L ** CONTINUE 81158170
* 81158180
***** 81158190
* 81158200
* 81158210
* TSTLP IS CALLED BY A **BSI 2 TLPST-TB** * 81158220
* TO TEST THE LOOP START I/O OPTION * 81158230
* AND BR TO THE LOOP ADDR IF BIT * 81158240
* 8 IS SET * 81158250
* 81158260
***** 81158270
* 81158280
***** 81158290
* 81158300
TSTLP LD 2 TSW0-TB GET OPTION SWS 81158310
SLA OLPST TEST LOOP SIO 81158320
BN TST01 YES 81158330
* 81158340
* 81158350
MDX L TLPST,1 NO,BUMP RETURN 81158360
BSC 1 TLPST CONTINUE 81158370
* 81158380
TST01 LD 1 TLPST GET LOOP ADDRESS 81158390
STO TST02+1 PUT IN RETURN 81158400
TST02 BSC L ** CONTINUE 81158410
* 81158420
TST03 MDX L TLPST,-3 GO BACK 81158430
LD L TLPST 81158440
STO TST04+1 81158450
TST04 BSC L ** 81158460
***** 81158470
* 81158480
* HALT ROUTINE 81158490
* SETS BIT 15 IN TSW0 ON AND LOOPS

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*          THRU MONITOR UNTIL BIT IS CLEARED.      81158500
*          81158510
***** 81158520
*          * 81158530
***** 81158540
*          81158550
1AF7 0      THLTE EQU *
1AF7 0 C283 LD      2 TSW0-TB GET OPTION SWS      81158560
1AF8 0 100E SLA     0HALT  TEST FOR HALT ON ERROR 81158570
1AF9 1 4C10 1B0A BNN   THLTR BR IF NO           81158580
*          81158590
1AFB 0 C200 *
1AFC 0 42FA THLTG LD  2 THALT-TB GET CALLING ADDRESS 81158600
1AFD 0 D020 BSI   2 TCVBE-TB CONVERT TO PRNT CODE 81158610
1AFE 0 1090 STO   THLT2 SET IN MSG           81158620
1AFF 0 D01F SLT   16 Q TO A                 81158630
1B00 0 4209 STO   THLT2+1 SET IN MSG          81158640
1B01 1 1B0C BSI   2 TLGMS-TB GO PRINT MSG      81158650
*          DC     THLTM MESSAGE ADDRESS      81158660
*          81158670
1B02 0 C297 LD     2 K1-TB SET BIT 15          81158680
1B03 0 EA83 OR     2 TSW0-TB *                 81158690
1B04 0 D283 STO   2 TSW0-TB *                 81158700
*          81158710
*          LOOP THRU MONITOR UNTIL READY
*          81158720
1B05 0 42F7 *
*          THLTL BSI  2 STMLS-TB GO TO MONITRR    81158730
*          RETURN HERE 81158740
1B06 0 C283 *
1B07 1 4C04 1B05 LD   2 TSW0-TB GET SWITCH WORD 81158750
*          BDD   THLTL BR IF STILL ON         81158760
*          81158770
1B09 0 42F7 *
1B0A 1 4C80 0B7F BSI  2 STMLS-TB GO TO MONITOR    81158780
*          THLTR BSC 1 THALT RETURN TO CALLER 81158790
*          81158800
1B0C 0 0018 *
1B0E 0 0002 *
1B20 0 00FF THLTM PRNT . ***HALT-- 2841 DIAGNOSTIC AT ADRS . 81158820
1B21 0 0014 THLT2 PRNT . . . . . 81158830
1B2F 0 00FF DC /00FF 81158840
1B30 0 0011 PRNT . TO CLEAR HALT SET SWITCHES-. 81158850
1B3B 0 00FF DC /00FF 81158860
1B3C 0 0012 PRNT . S/P 00PP 0PPP, P=PID. 81158870
1B4B 0 00FF DC /00FF 81158880
1B49 0 0012 PRNT . DES XXXX XXXX XXXX XXXX. 81158890
1B55 0 FFFF DC /FFFF 81158900
*          81158910
*          81158920
*          81158930
***** 81158940
*          * 81158950
***** 81158960
*          81158970
*          CALL *****
*          * BSI 2 ER0UT-TB * 81158980
*          * DC /0127 CNTRL TAGS * 81158990
*          * DC /ABCD ENR NUMBER * 81159000
*          * (SECT,RT,ER) * 81159010
*          ***** 81159020
*          81159030
*          81159040
*          81159050
*          * 81159060
***** 81159070
*          81159080
*          81159090
*          EQUATES FOR ER0UT TAGS
*          81159100
DECX0 EQU 0 CSW=SCSX0 81159110
DECX4 EQU 1 CSW=SCSX4 81159120
DECX8 EQU 2 CSW=SCSX8 81159130
DEXC EQU 3 CSW=SCSXC 81159140
DEXT EQU 6 EXIT TO ERADR 81159150
DEPBL EQU 7 PRINT A BLANK LINE 81159160
DEBYP EQU 9 BYPASS HALT LOOP 81159170

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000A 0 DEGSN EQU 10 GET SENSE BYTES 81159180
000B 0 DELIB EQU 11 BYPASS LINE 1 81159190
000C 0 DEERR EQU 12 PRINT ERROR MSG 81159200
000D 0 DECAW EQU 13 PRINT CAW 81159210
000E 0 DECSW EQU 14 * CSW 81159220
000F 0 DESNS EQU 15 * SNS 81159230
***** 81159240
*          * 81159250
***** 81159260
*          81159270
1B56 0 0000 ERMSG BSS E 0 81159280
1B56 0 0006 PRNT . **ER-XXXX . 81159290
1B5C 0 003C PRINT BSS E 60 PRINT BUFFER 81159300
1B98 0 * ERTNE EQU * ENTRY POINT 81159310
1B98 0 C2D4 LD 2 STKSW-TB GET RE-ENTRY SWITCH 81159320
1B99 1 4C20 1BAB BNZ ERTN2 BR IF SET 81159330
1B9B 1 6000 1C4B STX L1 ERT17+1 SAVE REGS 81159340
1B9D 1 6F00 1C6A STX L3 ERT17+3 ** 81159350
1B9F 1 C480 0B6A LD 1 ER0UT GET FLAGS 81159360
1BA1 0 100A SLA DEGSN GET SENSE BYTES 81159370
1BA2 1 4C10 1BAB BNN ERTN2 BR IF NO 81159380
1BA4 0 C2E5 LD 2 ER0UT-TB GET RETURN ADDR 81159390
1BA5 0 D2D4 STO 2 STKSW-TB SET SW 81159400
1BA6 0 42EE BSI 2 GETSN-TB GET SENSE BYTES 81159410
1BA7 0 C2D4 LD 2 STKSW-TB GET SAVED ADDRESS 81159420
1BA8 0 D2E5 STO 2 ER0UT-TB SET FOR RETURN 81159430
1BA9 0 1010 SLA 16 CLEAR SWITCH 81159440
1BAA 0 D2D4 STO 2 STKSW-TB 81159450
*          81159460
1BAB 1 6780 0B64 ERTN2 LDX 13 ER0UT SET REG 81159470
1BAD 0 C300 LD 3 0 GET OPTIONS/FLAGS 81159480
1BAE 0 1007 SLA DEPBL PRINT BLANK LINE FIRST 81159490
1BAF 1 4C13 1BB3 BNN ERTN3 BR IF NOT 81159500
1BB1 0 4209 BSI 2 TLGMS-TB PRINT BLANK LINE 81159510
1BB2 1 0B0C DC TERM /FFFF 81159520
*          81159530
1BB3 0 C300 ERTN3 LD 3 0 GET TAGS 81159540
1BB4 0 100B SLA DELIB BYPASS LINE 1 PRINT 81159550
1BB5 1 4C28 1BBB BN ERT10 BR IF YES 81159560
1BB7 0 1001 SLA DEERR-DELIB ERROR MSG 81159570
1BB8 1 4C10 1BCB BNN ERTN6 BR IF NOT 81159580
*          81159590
1BBA 0 6100 LDX 1 0 SET COUNT TO ZERO 81159600
1BBB 0 C301 LD 3 1 GET MSG ADDRESS 81159610
1BBC 0 D001 STO ERTN4+1 SET FOR LOAD INSTRUCTION 81159620
1BBD 0 C500 0000 ERTN4 LD L1 *-* GET WORD TO MOVE 81159630
1BBF 0 F2ND EOR 2 TERM-TB IS IT END OF MSG 81159640
1BC0 1 4C18 1BC7 BZ ERTN5 BR YES 81159650
1BC2 0 F2ND EOR 2 TERM-TB RESTORE DATA WORD 81159660
1BC3 1 D500 1B59 STO L1 ERMSG+3 STORE IN TABLE 81159670
1BC5 0 7101 MDX 1 1 COUNT 81159680
1BC6 0 70F6 MDX ERTN4 LOOP 81159690
*          81159700
1BC7 1 7500 1B59 ERTN5 MDX L1 ERMSG+3 POINT TO NEXT WORD 81159710
1BC9 0 1000 NOP 81159720
1BCA 0 7009 MDX ERTN7 81159730
*          81159740
1BCB 0 C301 ERTN6 LD 3 1 GET MSG NUMBER 81159750
1BCC 0 42FA BSI 2 TCVBE-TB CONVERT TO 43 CODE 81159760
1BCD 0 D08B STO ERMSG+3 STORE 81159770
1BCE 0 1B00 XCH SWAP A-Q 81159780
1BCF 0 D08A STO ERMSG+4 81159790
1BD0 0 1010 SLA 16 SET IN TWO BLANKS 81159800
1BD1 0 D089 STO ERMSG+5 ** 81159810
1BD2 1 6500 1B5C LDX L1 PRINT SET POINTER 81159820
*          81159830
1BD4 0 C2D0 ERTN7 LD 2 DVADR-TB GET DEVICE ADDRESS 81159840
1BD5 0 42FA BSI 2 TCVBE-TB CONVERT TO 43 CODE 81159850
1BD6 0 1090 SLT 16 LOW ORDER TWO BYTES ONLY

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1BD7 0 D270	STO	2 UNADR+3-TB	STORE FOR PRINT	81159860
1BD8 0 C2E5	LD	2 ER0UT-TB	GET CALLING ADDRESS	81159870
1BD9 0 9297	S	2 K1-TB	POINT TO CALLING INSTRUCTN	81159880
1BDA 0 42FA	BSI	2 TCVBE-TB	CONVERT TO HEX	81159890
1BDB 0 D274	STO	2 UNADR+7-TB		81159900
1BDC 0 1090	SLT	16		81159910
1BDD 0 D275	STO	2 UNADR+8-TB		81159920
1BDE 0 6904	STX	1 ERTN8+3	SAVE REG IN INSTRUCTION	81159930
1BDF 0 6100	LDX	1 0	SET COUNT	81159940
*				
1BE0 1 C500 08EC	ERTN8 LD	L1 UNADR	GET WORD TO MOVE	81159950
1BE1 0 D500 0000	STO	L1 *-*	STORE IN NEW LOC'N	81159960
1BE2 0 F260	FOR	2 TERM-TB	TEST FOR END OF MSG	81159970
1BE5 1 4C18 1BE9	BZ	ERTN9	BR IF YES	81159980
1BE7 0 7101	MDX	1 1	BUMP COUNT	81160000
1BE8 0 70F7	MDX	ERTN8	LOOP	81160010
*				
1BE9 0 4209	ERTN9 BSI	2 TLGMS-TB	GO PRINT MSG	81160030
1BEA 1 1856	DC	ERM5G	ADDRESS OF MESSAGE	81160040
* --CAW-- ADDRESS OF CCW CHAIN				
1BEB 0 C300	ERT10 LD	3 0	GET TAGS	81160060
1BEC 0 1000	SLA	DECAW	TEST FOR CAW,CSW,SNS	81160070
1BED 1 4C18 1C60	BZ	ERT15	BR IF NONE	81160080
1BEF 1 6500 1B5C	LDX	L1 PRINT	SET POINTER TO AREA	81160090
1BF1 1 4C10 1BFD	BNN	ERT11	BR IF NO CAW	81160100
1BF3 0 10A0	SLT	32		81160110
1BF4 0 D900	STD	1 0		81160120
1BF5 0 7102	MDX	1 2		81160130
1BF6 0 CAC9	LDD	2 PCAW-TB	GET HEADER	81160140
1BF7 0 D900	STD	1 0	STORE IN AREA	81160150
1BF8 0 C2C1	LD	2 CAWSV-TB	GET CCW ADDRESS FOR SIO	81160160
1BF9 0 42FA	BSI	2 TCVBE-TB	CONVERT TO ERC	81160170
1BFA 0 D902	STD	1 2	STORE IN AREA	81160180
1BFB 0 7104	MDX	1 4	BUMP POINTER	81160190
1BFC 0 1000	NOP			81160200
* --CSW-- CHANNEL DSW WORDS				
1BFD 0 C200	ERT11	3 0	GET TAGS	81160220
1BFE 0 100E	SLA	DECSW	TEST FOR CSW TO BE PRINTED	81160230
1BFF 1 4C10 1C2F	BNN	ERT12	BR IF NOT	81160240
1C01 0 C300	LD	3 0	GET OPTION WORD	81160250
1C02 1 6700 0B8C	LDX	L3 SCSX0	POINT TO CSW SAVE AREA 0	81160260
1C04 0 1P0C	SRA	12	SAVE BITS 0-3	81160270
1C05 0 100C	SLA	12	***	81160280
1C06 0 4830	SKP	Z-		81160290
1C07 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81160300
1C08 0 1001	SLA	1	TEST NEXT BIT	81160310
1C09 0 4830	SKP	Z-		81160320
1C0A 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81160330
1C0B 0 1001	SLA	1	TEST NEXT BIT	81160340
1C0C 0 4830	SKP	Z-		81160350
1C0D 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81160360
1C0E 0 1001	SLA	1	TEST NEXT BIT	81160370
1C0F 0 4830	SKP	Z-		81160380
1C10 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81160390
1C11 0 CACB	LDD	2 PCSW-TB	GET *CSW *	81160400
1C12 0 D902	STD	1 2	SET IN MSG	81160410
1C13 0 C300	LD	3 0	GET CHANNEL STATUS WORD	81160420
1C14 0 42FA	BSI	2 TCVBE-TB	CONVERT	81160430
1C15 0 D904	STD	1 4	STORE	81160440
1C16 0 C301	LD	3 1	GET UNIT STATUS WORD	81160450
1C17 0 42FA	BSI	2 TCVBE-TB	CONVERT	81160460
1C18 0 D107	STD	1 7	STORE	81160470
1C19 0 1090	SLT	16		81160480
1C1A 0 D108	STD	1 8	STORE	81160490
1C1B 0 C302	LD	3 2	GET CSW ADDRESS WORD	81160500
1C1C 0 42FA	BSI	2 TCVBE-TB	CONVERT	81160510
1C1D 0 D90A	STD	1 10	STORE	81160520
1C1E 0 C303	LD	3 3	GET BYTE COUNT	81160530

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1C1F 0 42FA	BSI	2 TCVBE-TB	CONVERT	81160540
1C20 0 D100	STD	1 13	STORE	81160550
1C21 0 1090	SLT	16	0 TO A	81160560
1C22 0 D10E	STO	1 14	STORE	81160570
1C23 0 C2CF	LD	2 SPACE-TB	GET SPACES	81160580
1C24 0 D100	STO	1 0	**	81160590
1C25 0 D101	STO	1 1	**	81160600
1C26 0 D106	STO	1 6	SET IN BETWEEN	81160610
1C27 0 D109	STO	1 9	SET IN BETWEEN	81160620
1C28 0 D10C	STO	1 12	SET IN BETWEEN	81160630
1C29 0 D10F	STO	1 15		81160640
1C2A 0 D111	STO	1 17	CLEAR NEXT SLOT TOO	81160650
1C2B 0 710F	MDX	1 15	BUMP POINTER	81160660
1C2C 0 1000	NOP			81160670
1C2D 1 6700 0864	LDX	13 ER0UT	RESTORE REG	81160680
* --SNS-- GET 2311 SENSE INFORMATION				
1C2F 0 C300	ERT12 LD	3 0	GET TAGS	81160700
1C30 0 100F	SLA	DESNS	TEST FOR SNS INFO	81160710
1C31 1 4C10 1C59	BNN	ERT14	BR IF NO	81160720
1C33 0 CAC0	LDD	2 PSNS-TB	GET HEADER WORDS	81160730
1C34 0 D100	STD	1 0	STORE	81160740
1C35 0 1090	SLT	16		81160750
1C36 0 D101	STO	1 1	STORE	81160760
1C37 0 7103	MDX	1 3	BUMP POINTER	81160770
1C38 0 1000	NOP			81160780
1C39 0 C298	LD	2 KB-TB		81160790
1C3A 0 D0A8	STO	ERTN8+3	SAVE TEMPORARILY	81160800
1C3B 0 CA25	LDD	2 SNWDS-TB	GET SENSE INFO	81160810
* ERT13 RTE 28 MOVE AROUND				
1C3C 0 100C	STD	2 ERTSV-TB	SAVE FOR LOOP	81160830
1C3D 0 DAF3	SLT	12		81160840
1C3E 0 100C	SLA	16		81160850
1C3F 0 1010	SLA	16		81160860
1C40 0 1001	SLT	1		81160870
1C41 0 1003	SLA	3		81160880
1C42 0 1001	SLT	1		81160890
1C43 0 1003	SLA	3		81160900
1C44 0 1001	SLT	1		81160910
1C45 0 1003	SLA	3		81160920
1C46 0 1001	SLT	1		81160930
1C47 0 42FA	BSI	2 TCVBE-TB	CONVERT TO HEX	81160940
1C48 0 D100	STO	1 0	STORE IN TABLE	81160950
1C49 0 1090	SLT	16	0 TO A	81160960
1C4A 0 D101	STO	1 1	STORE	81160970
1C4B 0 7102	MDX	1 2	BUMP POINTER	81160980
1C4C 0 1000	NOP			81160990
1C4D 0 C595	LD	ERTN8+3	FETCH COUNTER	81161000
1C4E 0 8297	A	2 K1-TB	ADD ONE	81161010
1C4F 1 4C04 1C55	BDD	***	BRANCH IF ODD	81161020
1C51 0 C2CF	LD	2 SPACE-TB	FETCH SPACE CHARACTERS	81161030
1C52 0 D100	STO	1 0	PLACE IN PRINT LINE	81161040
1C53 0 7101	MDX	1 1	ADVANCE PRINT LINE POINTER	81161050
1C54 0 1000	NOP			81161060
1C55 0 CAC3	LDD	2 ERTSV-TB	GET SENSE INFO BACK	81161070
1C56 1 74FF 1BF3	MDX	L ERTN8+3,-1	COUNT	81161080
1C58 0 70E3	MDX	ERT13	LOOP UNTIL FINISHED	81161090
* ERT14 LD 2 TERM-TB SET /FFFF AT END				
1C59 0 C200	STD	1 0	**	81161110
1C5A 0 D100	BSI	2 TLGMS-TB	PRINT MESSAGE	81161120
1C5B 0 4209	DC	PRINT		81161130
1C5C 1 1B5C	LD	2 STKSW-TB	GET SWITCH	81161140
1C5D 0 C204	BNZ	ERT18	EXIT IF SET	81161150
1C5E 1 4C20 1C60				81161160
* ERT15 LD 3 0 GET TAGS				
1C60 0 C300	SLA	DEBYP		81161170
1C61 0 1099	BN	ERT16	BR IF NOT HALT	81161180
1C62 1 4C28 1C65	BSI	2 THALT-TB	WAIT FOR OPERATOR	81161190
1C64 0 4200				81161200
				81161210

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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*
1D0E 0001      *      BSS E 1      ALIGN TO ODD BOUNDARY      81162580
1D0F 0 0000    SKARG DC 0      81162590
1D10 0 00C6    DC 198      CYLINDER 19R      81162600
1D11 0 0000    DC 0      HEAD 0      81162610
*              *              *              81162620
*****        *              *              81162630
*****        *              *              81162640
*              *              *              81162650
*****        *              *              81162660
*              *              *              81162670
*              *              *              81162680
*****        *              *              81162690
*              *              *              81162700
*****        *              *              81162710
1D12 0         TLGME EQU *      ENTRY POINT      81162720
1D12 0 C2D6    LD 2 LGBSY-TB  GET LOG BUSY SW      81162730
1D13 1 4C18 1D17 BZ TLGNB BR IF NOT BUSY      81162740
1D15 0 42F7    BSI 2 STMLS-TB GO VISIT MONITOR      81162750
1D16 0 70FB    B TLGME ELSE LOOP      81162760
*              *              *              81162770
1D17 0 C209    TLGNB LD 2 TLGMS-TB GET CALLING ADDR      81162780
1D18 0 D2D6    STO 2 LGBSY-TB  SET LOG BUSY SW      81162790
1D19 1 0400 1E06 STO L LEXIT+1 SET RETURN ADDR      81162800
1D1B 1 6F00 1F00 STX L3 TLGX3+1 SAVE REG      81162810
1D1D 1 6D00 1E02 STX L1 TLGX3+3 SAVE REG      81162820
1D1F 0 C2A3    LD 2 TSW0-TB  GET OPTION SWS      81162830
1D20 0 100D    SLA DBYPR      81162840
1D21 1 4C28 1DFD BN TLGEN BR IF BYPASS PRNTOU      81162850
*              *              *              81162860
1D23 0 C294    LD 2 TLGFD-TB  GET EDIT FOR PRINTER      81162870
1D24 1 4C10 1D27 BNN TLG01 BR IF NOT SELECTED      81162880
*****        *              *              81162890
1D26 0 70FF    MDX *-1 TRAP STOP      81162900
*****        *              *              81162910
*              *              *              81162920
1D27 0 C295    TLG01 LD 2 TSCFD-TB GET DDEF      81162930
1D28 1 4C10 1D36 BNN TLG02 BR IF NOT SEL      81162940
*              *              *              81162950
1D2A 0 1010    SLA 16 CLEAR CHANNEL FREED SW      81162960
1D2B 1 0460 1E07 STO L FRESW *      81162970
1D2D 0 C29E    LD 2 K20-TB SET COUNTER FOR DELAY      81162980
1D2E 0 D253    STO 2 SCSN1-TB **      81162990
1D2F 0 42F7    BSI 2 STMLS-TB GO TO MONITOR      81163000
1D30 1 74FF 03B2 MDX L SCSN1,-1 DECR. COUNTER      81163010
1D32 0 70FC    MDX *-4 LOOP UNTIL FINISHED      81163020
*              *              *              81163030
1D33 0 42E8    BSI 2 FREDV-TB FREE SEL CHNL      81163040
1D34 1 6C00 1E07 STX L FRESW SET SC FREED SW      81163050
1D36 0 4480 0131 TLG02 BSI 1 REQDV REQUEST DEVICE      81163060
1D38 1 1D4F    DC TLG03 BUSY RETURN      81163070
1D39 1 0813    DC TLG02 EDIT FOR PRINTED      81163080
1D3A 1 1DC3    DC TLG0A AREA CODE GIVEN BACK      81163090
1D3B 1 080C    DC TERM TERMINATOR      81163100
*              *              *              81163110
1D3C 0 C2DE    LD 2 T45SW-TB GET 43/53 SW      81163120
1D3D 1 4C04 1D44 BOD TLG40 BR IF 1443      81163130
*              *              *              81163140
1D3F 0 C2AA    LD 2 H0100-TB ELSE BUILD WRITE IOCC      81163150
1D40 1 EC00 1DC3 OR L TLG0A *      81163160
1D42 0 D256    STO 2 TLGWR+1-TB *      81163170
1D43 0 7004    MDX TLGCM * GO TO COMMON RTN      81163180
*              *              *              81163190
1D44 0 C2AD    TLG40 LD 2 H0500-TB CREATE WR IOCC      81163200
1D45 1 EC00 1DC3 OR L TLG0A OR IN AREA CODE      81163210
1D47 0 D256    STO 2 TLGWR+1-TB *      81163220
1D48 0 C2AE    TLGCM LD 2 H0700-TB CREATE SENSE IOCC      81163230
1D49 1 EC00 1DC3 OR L TLG0A OR IN AREA CODE      81163240
1D4B 0 D258    STO 2 TLGSN+1-TB *      81163250

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1D4C 0 EA97    OR 2 K1-TB SET RESET BIT      81163200
1D4D 0 D25C    STO 2 TLGSR+1-TB ***      81163270
1D4E 0 7002    MDX TLG04 GO TO PRINT      81163280
*              *              *              81163290
1D4F 0 42F7    TLG03 BSI 2 STMLS-TB GO TO MONITOR      81163300
1D50 0 70E5    MDX TLG02 LOOP TO TRY AGAIN      81163310
*              *              *              81163320
1D51 1 6580 1E06 TLG04 LD 11 LEXIT+1 GET CALLING R1N ADDR      81163330
1D53 0 C100    LD 1 0 GET MSG ADDRESS      81163340
1D54 0 D001    STO *+1 SET FOR LOAD INDEX      81163350
1D55 0 6500 0000 LD L1 *-+ LOAD REG      81163360
1D57 1 6D00 1E0A STX L1 TLGCH+2 SAVE IN 'GET CHAR' RTN      81163370
1D59 1 67H0 0BD4 LD X 13 TLGWR GET W#D COUNT ADDRESS      81163380
1D5B 0 6B16    STX 3 TLGWP+1 SET FOR BUMPING      81163390
*              *              *              81163400
1D5C 0 C100    LD 1 0 GET FIRST DATA WORD      81163410
1D5D 0 F28D    EOR 2 TERM-TB COMPARE WITH /FFFF      81163420
1D5E 1 4C18 1D64 BZ TLG05 BR IF YES      81163430
*              *              *              81163440
1D60 0 C280    LD 2 TPID-TB GET PID      81163450
1D61 0 E2B6    AND 2 H7FFF-TB DRDP SELECT BIT      81163460
1D62 0 42FA    BSI 2 TCVHE-TB CONVERT TO 1443 CODE      81163470
1D63 0 DB02    STO 3 2 SET IN MSG      81163480
*              *              *              81163490
1D64 0 1010    TLG05 SLA 16 CLEAR -      81163500
1D65 0 D25A    STO 2 TLGSW-TB * 1ST/2ND CHAR SW      81163510
1D66 0 D25B    STO 2 TLGSW+1-TB *      81163520
1D67 0 D05A    STO TLG15 * INTERRUPT SW      81163530
1D68 0 C299    LD 2 K3-TB *      81163540
1D69 0 D300    STO 3 0      81163550
1D6A 0 7301    MDX 3 1 BUMP TO PT TO BUFFER      81163560
*              *              *              81163570
1D6B 1 4400 1E08 TLG06 BSI L TLGCH GET A CHARACTER      81163580
1D6D 0 700F    MDX TLG07 COME HERE FOR HEX FF      81163590
1D6E 0 1008    SLA 8 PUT IN HIGH ORDER BYTE      81163600
1D6F 0 EA57    OR 2 TLGSP-TB SET LOW ORDER TO SP      81163610
1D70 0 D303    STO 3 3 STORE IN BUFFER      81163620
1D71 0 74C1 0000 MDX L *-+1 BUMP WORD COUNT      81163630
1D73 1 4400 1E08 BSI L TLGCH GET ANOTHER CHARACTER      81163640
1D75 0 7007    MDX TLG07 IF CHARACTER IS HEX FF      81163650
1D76 0 1888    SRT 8 CHARACTER TO 0      81163660
1D77 0 C303    LD 3 3 GET LAST CHARACTER      81163670
1D78 0 1808    SRA 8 BYTE TO LOW POSITION      81163680
1D79 0 1088    SLI 8 COMBINED BYTES IN A      81163690
1D7A 0 D303    STO 3 3 STORE IN BUFFER      81163700
1D7B 0 7301    MDX 3 1 BUMP SINK      81163710
1D7C 0 70E1    MDX TLG06 LOOP UNTIL HEX FF      81163720
*              *              *              81163730
*              *              *              81163740
*              *              *              81163750
*              *              *              81163760
1D7D 0 C2DE    TLG07 LD 2 T45SW-TB GET 43/53 SW      81163770
1D7E 1 4C04 1DAA BOD TLG42 BR IF 1443      81163780
*              *              *              81163790
1D80 0 C25B    LD 2 TLGSW+1-TB GET 1ST/2ND CHAR SW      81163800
1D81 1 4C18 1D85 BZ TLG08 BR IF 2ND CHAR      81163810
1D83 0 C2B9    LD 2 HFF00-TB ELSE GET TERMINATOR      81163820
1D84 0 D303    STO 3 3 PUT IN MESSAGE      81163830
*              *              *              81163840
1D85 0 C2A9    TLG08 LD 2 H00FF-TB GET TERMINATOR      81163850
1D86 0 EB03    OR 3 3 PUT IN MESSAGE      81163860
1D87 0 D303    STO 3 3 *      81163870
*              *              *              81163880
1D88 1 6500 1E27 LD X L1 TLGBA+1 SET UP BUFFER POINTER      81163890
1D8A 0 6936    STX 1 TLGSV SAVE      81163900
1D8B 0 1010    SLA 16 CLEAR-      81163910
1D8C 0 D25A    STO 2 TLGSW-TB * SECOND CHAR SW      81163920
*              *              *              81163930

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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* START LINE WITH A **CARRIAGE RETURN**
*
1D8D 0 C032      LD      TLGCR  GET CR CHARACTER
1D8E 1 0400 1E26  STD L  TLGBA  PUT IN OUTPUT AREA
1D90 0 7023      MDX    TLG43  GO PRINT
*
* COME HERE FROM INTERRUPT ROUTINE IF 1053
*
1D91 1 6580 1DC1  TLGPR LDX 11 TLGSV  RESTORE POINTER
1D93 0 C25A      LD      2 TLGSW-TB GET 2ND CHAR SW
1D94 1 4C18 1D9D  BZ      TLG09  BR IF 0 (CHAR 1)
*
1D9E 0 1010      SLA     16      ELSE RESET SW
1D97 0 D25A      STO     2 TLGSW-TB *
1D98 0 C100      LD      1 0      GET CHARACTERS
1D99 0 1008      SLA     8        SAVE 2ND CHAR
1D9A 0 7101      MUX    1 1      BUMP POINTER
1D9B 0 6925      STX    1 TLGSV  SAVE POINTER
1D9C 0 7005      MDX    TLG10  GO TO COMMON RTN
*
1D9D 0 C100      GET HERE IF PRINTING CHARACTER 1
1D9E 0 1808      TLG09 LD 1 0      GET CHARACTERS
1D9F 0 1008      SRA     8
1DA0 1 6C00 08D9  SLA     8
1DA1 1 6C00 08D9  STX L  TLGSW  SFT 2ND CHAR SW
*
1DA2 0 92B9      GET HERE IF PRINTING CHARACTER 2
1DA3 1 4C18 1DE6  TLG10 S 2 HFF00-TB TEST FOR END OF LINE
1DA4 1 4C18 1DE6  BZ      TLGX2  BR IF YES
*
1DA5 0 82B9      A       2 HFF00-TB ELSE RESTORE CHAR
1DA6 0 1808      SRA     8        RIGHT JUSTIFY CHAR
1DA7 1 4400 1EAD  BSI L  TCV45  CONVERT TO 1816 CODE
1DA9 0 D07C      STO    TLGBA  PUT IN OUTPUT AREA
*
*****
*
* XIO WRITE-
* PRINT 4 LINE (1443)
* PRINT A CHARACTER (1053)
*
*****
*
1DA4 0 0A57      TLG42 XIO 2 TLGN-TB SENSE DSW
1DAB 0 18D0      RTE     16      SAVE
1DAC 0 C2DE      LD      2 T45SW-TB GET 43/53 SW
1DAD 0 4804      SKP    E        SKIP IF 53
1DAE 0 108A      SLT    10      SHIFT 31 FOR 43
1DAF 0 1095      SLT    21      SHIFT 21 FOR 53
1DB0 1 4C10 1DB4  BNN    TLG43  BR IF READY
1DB2 0 42F7      BSI    2 STMS-TB ELSE GO TO MONITOR
1DB3 0 70F6      MDX    TLG42  LOOP UNTIL READY
*
1DB4 0 0A55      TLG43 XIO 2 TLGWP-TB
*
1DB5 0 680C      STX    TLG15  SET INT SW
1DB6 0 C240      LD      2 TERM-TB GET /FFFF
1DB7 0 D259      STO    2 TLGCT-TB SET LOOP COUNT
*
1DB8 0 42F7      TLG11 BSI 2 STMS-TB GO TO MONITOR
1DB9 0 C008      LD      TLG15  TEST FOR INT
1DBA 1 4C18 1DE2  BZ      TLGXR  BR IF IT HAPPENED
1DBC 1 74FF 08D8  MDX L  TLGCT,-1 DECR COUNT
1DBE 0 70F9      MDX    TLG11  LOOP
*****
1DBF 0 70FF      MDX    *-1    TRAP STOP

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*****
*
* PRINT INTERRUPT ROUTINE
*
1DC0 0 8100      TLGCR DC /8100 CARRIAGE*RETURN
1DC1 0 0000      TLGSV DC *-*   SAVE BUFFER POINTER
1DC2 0 0000      TLGIS DC 0     INT SW
1DC3 0 0000      TLGDA DC *-*   AREA CODE PUT HERE BY MON
1DC4 0 0000      TLGIN DC *-*   INTERRUPT ENTRY POINT
1DC5 1 6E00 1DDF  STX L2 TLG13E3 SAVE X2
1DC7 1 6600 087F  LDX L2 TB     SET X2
1DC9 0 C0F8      LD      TLGIS  GET INT SWITCH
1DCA 0 4818      SKP    +-     SKIP IF NONZERO
*****
1DCB 0 70FF      MDX    *-1    TRAP STOP
*****
1DCC 1 0C00 08DA  XIO L  TLGSR  SENSE RESET DSW
1DCE 1 4C28 1DD4  BN     TLG12  BR IF XFER COMPLETE (1443
* OR SVC RESPONSE (1053)
1DD0 0 1002      SLA     2      TEST FOR PRINT COMPLETE
1DD1 1 4C28 1DDC  BN     TLG13  BR IF YES
*****
1DD3 0 70FF      MDX    *-1    TRAP STOP
*****
1DD4 0 18D0      TLG12 RTE 16   SAVE DSW
1DD5 0 C09E      LD      2 T45SW-TB GET 43/53 SW
1DD6 0 F297      EOR    2 K1-TB  TEST FOR 1443
1DD7 1 4C20 1DDC  BNZ    TLG13  BR IF 1053
1DD9 0 1092      SLT    18     GET DSW (PRINT COMPLETE)
1DDA 1 4C10 1DDE  BNN    TLG13+2
*
1DDC 0 1010      TLG13 SLA 16   CLEAR INT SWITCH
1DDD 0 D0E4      STO    TLGIS  RESET X2
1DDE 0 6600 0000  LDX L2 *-*   EXIT INT RTN
1DE0 1 4C80 1DC4  BSC 1 TLGIN
*
*****
* MONITOR COMES HERE FROM INT RTN
*
1DE2 0 C043      TLGXR LD  TLGBA  GET WORD CNT
1DE3 0 1808      SRA     8      TEST FOR 1053 CHAR
1DE4 1 4C20 1D91  BNZ    TLGPR  BR IF 1053
*
1DE6 1 6780 08D4  TLGX2 LDX 13 TLGWR GET BUFFER ADDRESS
1DE8 1 6F00 1D72  STX L3 TLGBP+1 SET PTR TO WORD COUNT
1DEA 0 C299      LD      2 K3-TB  SET WRD CNT=3
1DEB 0 D300      STO    3 0      ***
1DEC 0 7301      MDX    3 1      BUMP POINTER
1DED 0 10A0      SLT    32      SET PID=BLANKS IN MESSAGE
1DEE 0 D801      STO    3 1      *
1DEF 0 D25A      STO    2 TLGSW-TB RESET 1ST/2ND CHAR SW
1DF0 0 4017      BSI    TLGCH  GET A CHARACTER
1DF1 0 7002      MDX    TLG15  HERE IF HEX /00FF
1DF2 1 4C00 1D6E  BSC L  TLG06+3 ELSE LOOP
*
1DF4 0 4480 0132  TLG15 BSI 1 RELDV GO RELEASE DVC
1DF6 1 0813      DC     TLGED  ADDR OF EDIT WRD
1DF7 1 080C      DC     TERM   *
1DF8 0 C00E      LD      FRESW  GET CHNL RELS SW
1DF9 0 4820      BSC    Z      SKIP IF NOT SET
1DFA 0 42EB      BSI    2 GETOV-TB ELSE GET CHNL

```

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1DFB 0 1010          *          SLA 16      RESET-          81165300
1DFC 0 D00A          *          STO  FRESW  * CHNL RELS SW  81165310
                                     81165320
1DFD 1 7401 1E56    *          TLGEN MDX L LEXIT+1,1 BUMP RETURN BY 1 81165330
1DFF 0 6700 0000    *          TLGX3 LDX L3 *-*      RESTORE REG      81165340
1E01 0 6500 0000    *          LDX L1 *-*      RESTORE REG      31165350
1E03 0 1010          *          SLA 16      RESET LGG BUSY SW  81165360
1E04 0 D2D6          *          STO 2 LGBSY-TB *          81165370
1E05 0 4C00 0000    *          LEXIT BSC L *-*      EXIT PRINT RTN    81165380
                                     81165390
1E07 0 0000          *          FRESW DC 0          CHNL RELEASED SW  81165400
                                     81165410
***** 81165420
*          *          81165430
***** 81165440
*          *          81165450
*          *          81165460
*          *          81165470
*          *          81165480
*          *          81165490
*          *          81165500
*          *          81165510
*          *          81165520
*          *          81165530
*          *          81165540
*          *          81165550
*          *          81165560
*          *          81165570
*          *          81165580
*          *          81165590
*          *          81165600
*          *          81165610
*          *          81165620
*          *          81165630
*          *          81165640
*          *          81165650
*          *          81165660
*          *          81165670
*          *          81165680
*          *          81165690
*          *          81165700
*          *          81165710
*          *          81165720
*          *          81165730
*          *          81165740
*          *          81165750
*          *          81165760
***** 81165770
*          *          81165780
***** 81165790
***** 81165800
*          *          81165810
***** 81165820
*          *          81165830
*          *          81165840
*          *          81165850
***** 81165860
*          *          81165870
***** 81165880
***** 81165890
*          *          81165900
*          *          81165910
*          *          81165920
*          *          81165930
*          *          81165940
*          *          81165950
*          *          81165960
*          *          81165970

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1E63 0 4008          *          BSI  TCV01      GET NEXT CHARACTER 81165980
1E64 0 1008          *          SLA  8          81165990
1E65 0 D2BF          *          STO 2 TCVS2-TB 81166000
1E66 0 4005          *          BSI  TCV01      GET NEXT CHARACTER 81166010
1E67 0 EABF          *          OR 2 TCVS2-TB 81166020
1E68 0 1890          *          SRT 16          81166030
1E69 0 C2BE          *          LD 2 TCVS1-TB 81166040
1E6A 1 4C80 0879    *          BSC 1 TCVBF 81166050
                                     81166060
1E6C 0 0000          *          TCV01 DC *-*      ENTRY 81166070
1E6D 0 1010          *          SLA 16          81166080
1E6E 0 1084          *          SLT 4          81166090
1E6F 1 4C20 1E74    *          BNZ TCV02      BR IF NOT ZERO 81166100
1E71 0 C2A3          *          LD 2 H00CA-TB 0=0A 81166110
1E72 1 4C80 1E6C    *          BSC 1 TCV01  EXIT 81166120
                                     81166130
1E74 0 929C          *          TCV02 S 2 K9-TB  SUBTRACT 9 81166140
1E75 0 4830          *          SKP Z-          81166150
1E76 0 82A7          *          A 2 H0027-TB  ADD BACK A CONSTANT 81166160
1E77 0 829C          *          A 2 K9-TB 81166170
                                     81166180
1E78 1 4C80 1E6C    *          BSC 1 TCV01  EXIT 81166190
                                     81166200
*          *          81166210
*          *          81166220
***** 81166230
*          *          81166240
***** 81166250
*          *          81166260
*          *          81166270
*          *          81166280
*          *          81166290
*          *          81166300
*          *          81166310
*          *          81166320
*          *          81166330
*          *          81166340
1E7A 1 4CA8 087C    *          THEXD BN 1 TCVHD  EXIT IF NEG 81166350
1E7C 0 1890          *          SRT 16          81166360
1E7D 0 AAA2          *          D 2 K1000-TB  MOST SIGNIFICANT DIGIT 81166370
1E7E 0 100C          *          SLA 12          POSITION DIGIT 81166380
1E7F 0 D00D          *          STU THEXS 81166390
1E80 0 1004          *          SLA 4          CLEAR A REG 81166400
                                     81166410
1E81 0 AAA0          *          D 2 K100-TB  NEXT SIGNIFICANT DIGIT 81166420
1E82 0 1008          *          SLA 8          POSITION DIGIT 81166430
1E83 0 E809          *          OR THEXS 81166440
1E84 0 D008          *          STO THEXS 81166450
1E85 0 1008          *          SLA 8          CLEAR A REG 81166460
                                     81166470
1E86 0 AA9D          *          D 2 K10-TB  NEXT SIGNIFICANT DIGIT 81166480
1E87 0 108C          *          SLT 12          COMBINE LAST TWO DIGITS 81166490
1E88 0 180C          *          SRA 12          *** 81166500
1E89 0 1084          *          SLT 4          *** 81166510
1E8A 0 F802          *          OR THEXS 81166520
1E8B 1 4C80 087C    *          BSC 1 TCVHD 81166530
                                     81166540
1E8D 0 0000          *          THEXS DC 0          TEMP STORAGE 81166550
*          *          81166560
***** 81166570
*          *          81166580
***** 81166590
*          *          81166600
***** 81166610
*          *          81166620
*          *          81166630
*          *          81166640
*          *          81166650

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

***** 81166660
* 81166670
***** 81166680
TCVSR DC **
STX 3 TCVSZ+1 SAVE REG 81166700
LDX 13 TRID GET ROUTINE NUMBER 81166710
LD L3 DIGIT GT PRINTABLE CODE 81166720
SRT 16 A TO Q 81166730
LDX 13 TSID GET SECT NUMBER 81166740
LD L3 DIGIT-1 GET PRINTABLE CODE 81166750
TCVSR LDX L3 ** RESTORE REG 81166760
BSC 1 TCVSR EXIT 81166770
* 81166780
DIGIT PRNT . 0 1 2 3 4 5 6 7 8 9 A B C D E F. 81166790
***** 81166800
* 81166810
***** 81166820
* 81166830
* 81166840
* CONVERT 1443 CODE TO 1816/1053 CODE
* 81166850
***** 81166860
* 81166870
***** 81166880
TCV45 DC **
STX 3 TCVSV+1 81166900
STO TCVSV SAVE 1443 CHAR 81166910
LDX L3 TCVTB SET UP POINTER 81166920
SLT 32 CLEAR AD 81166930
TCV03 LD 3 0 PICK UP NEXT ENTRY IN TBL 81166940
RTE 8 DELETE TR CHAR 81166950
EOR 1 TCVSV TEST CHAR 81166960
BZ TCV04 CHAR COMPARES 81166970
* 81166980
* 81166990
* 81167000
* 81167010
* 81167020
* 81167030
* 81167040
* 81167050
* 81167060
* 81167070
* 81167080
* 81167090
* 81167100
* 81167110
* 81167120
* 81167130
* 81167140
***** 81167150
TCVTR DC /313E A(1443,TILT-ROTATE) 81167160
DC /321A R 81167170
DC /331E C 81167180
DC /3432 D 81167190
DC /3536 E 81167200
DC /3612 F 81167210
DC /3716 G 81167220
DC /3826 H 81167230
DC /3922 I 81167240
DC /217E J 81167250
DC /225A K 81167260
DC /235E L 81167270
DC /2472 M 81167280
DC /2576 N 81167290
DC /2652 O 81167300
DC /2756 P 81167310
DC /2866 Q 81167320
DC /2962 R 81167330

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1ED8 0 129A DC /129A S 81167340
1ED9 0 139E DC /139E T 81167350
1EDA 0 14B2 DC /14B2 U 81167360
1EDB 0 15B6 DC /15B6 V 81167370
1EDC 0 1692 DC /1692 W 81167380
1EDD 0 1796 DC /1796 X 81167390
1EDE 0 18A6 DC /18A6 Y 81167400
1EDF 0 19A2 DC /19A2 Z 81167410
* 81167420
1EE0 0 01FC DC /01FC 1(1443,TILT-ROTATE) 81167430
1EE1 0 02D8 DC /02D8 2 81167440
1EE2 0 03DC DC /03DC 3 81167450
1EE3 0 04F0 DC /04F0 4 81167460
1EE4 0 05F4 DC /05F4 5 81167470
1EE5 0 06D0 DC /06D0 6 81167480
1EE6 0 07D4 DC /07D4 7 81167490
1EE7 0 08E4 DC /08E4 8 81167500
1EE8 0 09E0 DC /09E0 9 81167510
1EE9 0 0AC4 DC /0AC4 0 81167520
* 81167530
1EEA 0 0021 DC /0021 SP(1443,TILT-ROTATE) 81167540
1EEB 0 2CD6 DC /2CD6 * 81167550
1EEC 0 1CFE DC /1CFE ( 81167560
1EED 0 3CF6 DC /3CF6 ) 81167570
1EEE 0 11BC DC /11BC / 81167580
1EEF 0 2084 DC /2084 - 81167590
1EF0 0 0BC2 DC /0BC2 = 81167600
1EF1 0 00FF TCVTC DC /00FF TERM 81167610
1EF2 0 2100 TCVSP DC /2100 SPACE 81167620
1EF3 0 0000 TCVSV DC 0 TEMP STORAGE 81167630
1EF4 0 0030 DC 0 81167640
***** 81167650
* 81167660
***** 81167670
* WAIT FOR I/O INTERRUPT 81167680
***** 81167690
* 81167700
***** 81167710
* 81167720
TINTS EQU * ENTRY POINT 81167730
1EF5 0 LD 2 TERM-TB SET TIMEOUT COUNTER 81167740
1EF6 0 D233 STO 2 SCSN1-TB * 81167750
* 81167760
1EF7 0 C277 TINS2 LD 2 WIOSW-TB FETCH WAIT SWITCH 81167770
1EF8 1 4C20 1F06 BNZ TINS3 BRANCH IF SET 81167780
* 81167790
1EFA 1 74FF 08R2 MDX L SCSN1,-1 DEC WAIT COUNTER 81167800
1EFC 0 70FA MDX TINS2 LOOP BACK AND WAIT 81167810
* 81167820
* 81167830
* 81167840
* 81167850
* 81167860
* 81167870
* 81167880
* 81167890
* 81167900
* 81167910
* 81167920
* 81167930
* 81167940
* 81167950
* 81167960
* 81167970
* 81167980
* 81167990
* 81180000
* 81180100

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1F30 0 CVHAE EQU * ENTRY POINT 81168700
1F30 0 6900 STX 1 CVHA1+1 SAVE XR1 81168730
1F31 1 C480 0861 LD 1 CVHA FETCH PARAMETER 81168750
1F33 0 D001 STO **1 PLACE IN LD X 81168760
1F34 0 6500 0000 LD X L1 ** XR1=PARM 81168770
* CONVERT HEAD OR CYLINDER
1F36 1 C500 0980 LD L1 RAREA+1 FETCH DATA 81168810
1F38 0 1800 RTE 16 PLACE IN 0 81168820
1F39 1 C500 098C LD L1 RAREA FETCH DATA 81168830
1F3B 0 1088 SLT 8 81168840
1F3C 0 42FA BSI 2 TCVBE-TB CALL CONVERT RTN 81168850
* CVHA1 LD X L1 ** RESTORE XR1 81168870
1F3F 1 7401 0861 MD X L CVHA,+1 SET RETURN ADDRESS 81168880
1F41 1 4C80 0861 BSC 1 CVHA RETURN TO USER 81168890
***** 81168910
* 81168920
***** 81168930
* HOME ADDRESS COMPARE ROUTINE 81168940
***** 81168950
* 81168960
***** 81168970
1F43 0 HACRT EQU * ENTRY POINT 81168980
* 81168990
1F43 0 6924 STX 1 HACR3+1 SAVE XR1 81169000
1F44 0 6925 STX 3 HACR3+3 SAVE XR3 81169010
* 81169020
1F45 0 1010 SLA 16 CLEAR ACC 81169030
1F46 0 D027 STO HACR5 RESET PASS SWITCH 81169040
* 81169050
1F47 1 C480 0870 LD 1 HABL C FETCH WAS ADDRESS 81169060
1F49 0 D001 ST **1 SET IN LD X 81169070
1F4A 0 6500 0000 LD X L1 ** XR1=WAS ADDRESS 81169080
* 81169090
1F4C 1 7401 0870 MD X L HABL C,+1 ADVANCE PARM LIST 81169100
* 81169110
1F4E 1 C480 0870 LD 1 HABL C FETCH S/B ADDRESS 81169120
1F50 0 D091 STO **1 SET IN LD X 81169130
1F51 0 6700 0000 LD X L3 ** XR3=S/B ADDRESS 81169140
1F53 1 7401 0870 MD X L HABL C,+1 SET-UP RETURN ADDRESS 81169150
* 81169160
1F55 0 C101 HACR1 LD 1 +1 FETCH WAS +1 81169170
1F56 0 1800 RTE 16 PLACE IN 0 REG 81169180
1F57 0 C100 LD 1 0 FETCH WAS +0 81169190
1F58 0 1088 SLT 8 SET-UP CYLINDER ONLY 81169200
1F59 0 D013 STO HACR4 SAVE 81169210
* 81169220
1F5A 0 C301 LD 3 +1 FETCH S/B WORD 81169230
1F5B 0 F011 EOR HACR4 TEST FOR MATCH WITH WAS 81169240
1F5C 1 4C20 1F57 BNZ HACR3 BRANCH IF ERROR 81169250
* 81169260
1F5E 0 C00F LD HACR5 FETCH SECOND PASS SW 81169270
1F5F 1 4C20 1F66 BNZ HACR2 BRANCH IF SET 81169280
* 81169290
1F61 0 C000 LD * FETCH A VALUE 81169300
1F62 0 D00B STO HACR5 SET PASS SW 81169310
* 81169320
1F63 0 7101 MD X 1 +1 ADV TO HEAD TEST 81169330
1F64 0 7301 MD X 3 +1 * 81169340
1F65 0 70EF MD X HACR1 CONTINUE 81169350
* 81169360
1F66 0 1010 HACR2 SLA 16 CLEAR ACC 81169370

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1F0E 0 D003 STO **3 * 81168020
1F0F 0 1010 SLA 16 RESET-WAIT SW 81168030
1F10 0 D277 STO 2 WIOSW-TB 81168040
1F11 0 4C00 0000 BSC L ** RETURN TO USER 81168050
* 81168060
***** 81168070
* 81168080
***** 81168090
* 81168100
* SPECIAL TIO ROUTINE 81168110
* 81168120
* WILL RETURN THE FOLLOWING CONDITIONS 81168130
* VIA THE A REG WHEN USER RETURN IS ISSUED. 81168140
* 81168150
* /0000 DEVISE IS AVAILABLE--NO STATUS 81168160
* /0000 CSW STORED 81168170
* /4000 ADAPTER BUSY 81168180
* /2000 NOT OPERATIONAL 81168190
* 81168200
***** 81168210
* 81168220
***** 81168230
1F13 0 TIOSE EQU * ENTRY POINT 81168240
* 81168250
1F13 0 1010 SLA 16 CLEAR- 81168260
1F14 0 D247 STO 2 SCSX8+2-TB * INTERRUPT SW 81168270
* 81168280
* TEST FOR ADAPTER BUSY 81168290
* 81168300
1F15 0 0A31 XIO 2 SCSN0-TB GET CHANNEL STATUS WORD 81168310
1F16 0 1007 SLA SCABZ TEST FOR ADAPTER BUSY 81168320
1F17 1 4C10 1F1C BNN TIOS1 BRANCH IF NOT BUSY 81168330
* 81168340
1F19 0 0A3B XIO 2 SCSN5-TB 81168350
1F1A 0 C2B4 LD 2 H4000-TB FETCH RETURN CODE 81168360
1F1B 0 7012 MD X TIOS3 GO TO EXIT 81168370
* 81168380
1F1C 0 0A3B TIOS1 XIO 2 SCSN5-TB 81168390
1F1D 0 0A29 XIO 2 TIOXX-TB EXECUTE TIO 81168400
* 81168410
1F1E 0 42F7 TIOSF BSI 2 STMUS-TB GO VISIT MONITOR 81168420
1F1F 0 C247 LD 2 SCSX8+2-TB FETCH INTERRUPT SW 81168430
1F20 1 4C18 1F1E BZ TIOSF BRANCH IF NOT YET 81168440
* 81168450
1F22 0 C245 LD 2 SCSX8-TB FETCH CHANNEL STATUS 81168460
1F23 1 4C10 1F27 BNN TIOS2 BRANCH IF OPERATIONAL 81168470
* 81168480
1F25 0 C2B1 LD 2 H2000-TB FETCH RETURN CODE 81168490
1F26 0 7007 MD X TIOS3 GO TO EXIT 81168500
* 81168510
1F27 0 C246 TIOS2 LD 2 SCSX8+1-TB FETCH UNIT STATUS 81168520
1F28 0 1008 SLA 8 CLEAR UNIT ADDRESS 81168530
1F29 1 4C18 1F2D BZ TIOS4 BRANCH IF STATUS ZERO 81168540
* 81168550
1F2B 0 C2E7 LD 2 H0000-TB FETCH RETURN CODE 81168560
1F2C 0 7001 MD X TIOS3 GO TO EXIT 81168570
* 81168580
1F2D 0 1010 TIOS4 SLA 16 SET RETURN CODE 81168590
* 81168600
1F2E 1 4C80 0885 TIOS3 BSC 1 TIOSN RETURN TO USER 81168610
* 81168620
***** 81168630
* 81168640
***** 81168650
* CONVERT HOME ADDRESS TO 1443 CODE 81168660
***** 81168670
* 81168680
***** 81168690

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1F67 0 6500 0000   HACR3 LDX L1 *-*   RESTORE XR1
1F69 0 6700 0000   LDX L3 *-*   RESTORE XR3
1F6B 1 4C80 0870   BSC I HABL C   RETURN TO USER
*
1F6D 0 0000   HACR4 DC *-*   SAVE AREA
1F6E 0 0000   HACR5 DC *-*   PASS SWITCH
*
1F6E 0   PEND EQU *-1   END OF PGM
1F70 0A87   END BGIN   XFER ADDRESS

```

NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY

```

81169380
81169390
81169400
81169410
81169420
81169430
81169440
81169450
81169460

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

BEGIN 012C 0A87
BGIN 0A87 1F70
BR1 1C85 1CB9
CAWSV 0840 1979 1BF8
CNTDN 0839 19D9 19E4
CNTRL 085E 0B29 0B91 0BE1 0C25 0CD7 0D43 0D95 0E1E 0E8A 0EE9 0F77 0F8A 109B
1167 1200 12F2 13F2 1460 1490 1502 15A6 165F 16F0 17FA 18E5 1925
1945

CRCK 0133
CUU11 0B3F 0AF8
CVHA 0861 0F00 0F03 1F31 1F3F 1F41
CVHAE 1F30 0862
CVHA1 1F30 1F30
CJ 085C 10E7 10F6 119F 11AE 1217 1406 151A 15D1 15E0 1711 1726 181C 182B
183D 1906

DIGIT 1E9D 292 1F97
DVADR 084F 090B 0AF5 194F 1B04
END 012E 1938 1CBC
EPA 0808
EPADR 1C71 0B7F 0BC9 0C0D 0CA9 0D1E 0D78 0DD4 0F5B 1020 1881 1C6B
ERASE 0011 135E 142C
ERMSG 1B56 1BC3 1BC7 1BCD 1BCF 1BD1 1BEA
EROUT 0864 0BAD 0BB0 0BB3 0BF3 0BF6 0BF9 0C38 0C3B 0C46 0C4E 0C51 0C5A 0C61
0C68 0C6F 0C76 0C79 0C7F 0C8C 0CE4 0CE7 0CEA 0D56 0D59 0D5C 0D7F
0D86 0D8A 0DE4 0DEF 0DF7 0DFE 0E05 0E0C 0E30 0E36 0F6E 0E9A 0EFA
0F06 0F88 0F94 1029 1030 1037 103E 1041 1054 107A 10B0 10B8 1126
114F 1179 117F 1187 11E3 11F1 1265 1293 12B1 12D2 139A 13B8 13BC
13CC 13E5 1487 14B1 14F1 14F9 1581 158A 16BF 16CD 16DB 16E1 1705
1782 1796 179F 17B8 17D3 17DF 17EB 180F 1888 188F 18A6 18ED 18D6
18F6 18F9 19AA 19B6 19CE 19FE 1A0F 1A83 1A8F 1B9F 1BA4 1BA8 1BAB
1BD8 1C2D 1C60 1C6F 1CAD 1CB3

ERROR 0130
ERRSW 083F 0D71 0D8A 0D8E 0DC6 0DE8 0E10 0E14 0E34 0E3A 0E5E 0E76 0F83 0EB3
0ED6 0EFE 0FE2 1045 105A 106D 107E 108A 10B4 110D 111D 112A 112E
1148 1153 1159 117D 1183 125B 1269 126E 167A 16C3 15D1 16DC 16E5
16E9 1709 1740 1786 179A 17A3 17BC 17D7 17E3 17EF 17F3 1813 185C
18AA 18C1 18DA 18DE

ERRX 1CBA 1C88
ERR1 1CB3 1C7E
ERR2 1CA3 1C99 1C9D
ERR6 1CB8 1CH2
ERTNE 1B98 0865
ERTN2 1B8B 1B99 1BA2
ERTN3 1BB3 1BAF
ERTN4 1BB0 1B8C 1BC6
ERTN5 1BC7 1BC0
ERTN6 1BCB 1BB8
ERTN7 1BD4 1BCA
ERTN8 1BE0 1BDE 1BF8 1C3A 1C4D 1C56
ERTN9 1BE9 1BE5
ERTSV 0842 1C3D 1C55
ERT10 1BE8 1BB5
ERT11 1BFD 1BF1
ERT12 1C2F 1BFF
ERT13 1C3C 1C58
ERT14 1C59 1C31
ERT15 1C60 1BED
ERT16 1C65 1C62
ERT17 1C67 1B9B 1B9D
ERT18 1C6D 1C5E
FBRST 0004
FDRDY 0018 0C65
FECYL 001D 0C73
FEOCY 000A
FLCCH 0040 0FA6 0FA9 0FAC 1216 1219 121F 1222 1405 1408 1411 141A 1426 1432
FLSKP 0008 122E
FLSL1 0020 142C
FNDRC 000C

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

FUNLN 0019 0C5E
 FUVRN 0005
 FRDVE 1968 0868
 FREDV 0807 0AE8 0B8D 0BDD 0C21 0CD3 0D44 0D91 0E1A 0E86 0EE5 0F73 1094 1103
 11FC 12EE 13EE 148C 14FE 15A2 16EC 17F6 18E1 196E 1D33
 FRESW 1E07 0A90 1D28 1D34 1DF8 1DFC
 FSERD 0012
 FSKCK 0007
 FSKIP 001F 19C0
 FTROV 0009 1290 13B5
 FUNSF 0010
 FUNSI 001A 0C57
 FUNSL 0015 0C6C
 GETDV 086A 0AE7 0B7C 0BC6 0C0A 0CA6 0D1B 0D6F 0DC0 0E5C 0EAF 0F58 0FD2 110A
 11D1 1248 136F 1478 14DB 154C 1677 173D 185A 1966 1DFA
 GETSM 086D 0C5A 0DE9 0F64 101D 1121 128E 13B3 13D8 14F4 1585 19BE 1A73 1BA6
 GTDVE 1946 0868
 GTDVI 1946 1949
 GTSNS 1A55 086E
 GTSNX 1A6B 1A55 1A56
 GTSNO 1A5B 1A86 1A92
 GTSNI 1A61 1A63
 GTSN2 1A75 1A5F 1A69
 GTSN3 1A87 1A7E
 GTSN4 1A8C 1A94
 GTSN5 1A93 1A89
 HA 08D0 0F60 0F61 0F69 0F8B 0F8E 0F91 0FAA 0FAD 0FE6 10EA 110E 11A2 11B1
 11BD 11D7 11DA 1255 138A 138F 167B 1714 1741 181F 1CBF 1C96 1C9B
 1CA3 1CA9
 HABLC 0870 0ECD 1F47 1F4C 1F4E 1F53 1F6B
 HACRT 1F43 0871
 HACR1 1F55 1F65
 HACR2 1F66 1F5F
 HACR3 1F67 1F43 1F44 1F5C
 HACR4 1F6D 1F59 1F5B
 HACR5 1F6E 1F46 1F5E 1F62
 HCCFF 0837 1371
 HFF00 0838 0A9B 1279 1283 1DA2 1DA5
 HIUXX 08AA 091F 094A 09CD 0BCE 16C7 16C8 17CD 17CE 1950 1A12
 H0E00 082F 1381
 H00C8 0827 0D3C
 H00FF 0E28 0807 0FF8 124C 1251 127D 1D85 1E1D 1E20 1E89 1EBA
 H000A 0822 1E71
 H0011 0823 19B1 19CA
 H0013 0824 19A6 19C6
 H0020 0825 0F66
 H0027 0826 1E76
 H0100 0829 1252 1278 12A9 1311 1346 13C4 186B 1951 1A8B 1D3F
 H0200 082A 1577 1A93
 H0400 082B 194D
 H0500 082C 1D44
 H0700 082D 1955 1D48
 H0707 082E 137E
 H2000 0830 1F25
 H2100 0831 1A80 1A8C
 H3000 0832 0AE2
 H4000 0833 0C1A 0CAB 0CC3 0D2A 0DCA 0EC2 14E1 1568 1572 1F1A
 H5000 0834 0C4B
 H7FFF 0835 1D61
 H8000 0836 0E5F 106E 1479 16AF 1772 17A8 1F2B
 IPA 0806
 IR1 1C9F 1C72
 K1 0816 0A9D 0AB9 0AE4 0AE5 0B19 0B73 0B8D 0C01 0C9D 0D12 0D66 0D87 0DC1
 0DC8 0E53 0EA6 0F4F 0FC9 1101 1137 11C8 123F 1366 146F 14D2 14EE
 1543 154D 166E 169E 1729 1734 1764 1834 1846 1851 195D 195F 1961
 1963 1982 1B02 1B09 1C4E 1D4C 1DD6
 K10 081C 0F5D 105E 108E 115D 1550 1683 1749 1E86
 K100 081F 0FE9 1282 13AA 13D4 1E81

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

K1000 0821 1E7D
 K2 0817 195E
 K20 081D 1D2D
 K256 0820 0FDC
 K3 0818 0925 092E 0938 1D68 1DEA
 K50 081E 100A
 K6 0819 1865 1959
 K8 081A 0942 0DF4 13DA 1C39
 K9 081B 1E7- 1E77
 LEXIT 1E05 1D15 1D51 1DFD
 LGBSY 0855 0A92 0A88 1D12 1D18 1E04
 LOG 012F
 LPA 0807
 LPCNT 0858 0F5E 0F6E 11D5 11F9 13D5 13E9
 LPCT1 0859 0FDD 0FF7 1061 1068 1091 113F 1160 1684 168C 1777 177F 17AD 17B5
 1CB3 1C85
 MATO 0134
 MLSCF 0809
 MLSC0 0809 0957
 MLSC1 080A
 MLSC2 080B 0AA3 1AA7 1AC3
 MX 1CFA 1C8E
 M1 1CBE 1C8E
 M2 1CCE 1CA6 1CAB 1CAC
 M5 1CDD 1CAF 1C85
 M6 1CE1 1C7E
 M7 1CE5 1C7D
 M8 1CEF 1C87
 NUPCC 0877 0CAE
 OBYPR 080D 1D29
 OCHLT 080F
 OEBYP 0809 1C61
 OECA# 080D 1BEC
 OECS# 080E 1BFE
 OECXC 0803
 OECX0 0800
 OECX4 0801
 OECX8 0802
 DEERR 080C 1B87
 OEGSH 080A 1B41
 DELIB 080B 1B84 1B87
 OEPBL 0807 1E4E
 OESNS 080F 1C30
 OEXIT 0806 1C66
 OHALT 080E 1AF8
 OLPER 080C 0EEF 0E72 0E80 0ED3 0EFA 0FB2 11E7 11F5 126B 129A 129F 12B7 12E6
 129E 13C0 13D0 1AD7
 OLPST 0808 0E64 1AE4
 OPNOP 0803 0E98 15EE 1923
 OPKJ 0802 1920
 OPRK5 080A
 OPSNS 0804 0E42
 OPTIC 0808 0FAF 10FC 11A4 11B3 11HF 121C 1225 1330 1346 1352 135B 140B 141D
 1429 1435 1522 152E 15E5 15EB 1716 172B 1821 1836 1848 190E
 OPTID 0800 089E
 OPRR 0801
 ORTRY 080B 19C2
 OSALC 0809
 OTTLE 080A 0E77 0BC1 0C05 0CA1 0D16 0D6A 0D8B 0E57 0EAA 0F53 0FCD 1105 11CC
 1243 136A 1473 14D6 1547 1672 1738 1855
 PASSW 0851 0E32 0BA6 0BA8 1551 1591
 PCA# 0848 1E76
 PCSW 084A 1C11
 PE#D 1F6E 0E9D
 PRINT 1B5C 1B82 1BEF 1C5C
 PSCNT 0852 0A9E 0AF9 1935
 PSNS 084C 1C33
 RAPEA 09BC 0EA0 0ECE 0F34 0FD4 0FD8 1430 1532 167C 167E 1681 1684 168B 168C

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

168E 1697 169F 16A7 16B5 16D0 171A 1742 1744 1747 174A 174E 1752
1754 175D 1765 1770 178C 17C1 17E7 1825 1894 1918 191B 1C75 1C77
1C8B 1D0D 1F36 1F39
RCAL 0013 089B 0F27
RDARI 098C 0FEC 1008 10F3
RDCKD 001E 191A
RDCNT 0012 122E 133A 1432 1725 1830 1842
RDDAT 0006 172E 1839
RDHA 001A 0E44 0E4A 0F33 0FA9 122B 1337 142F 1722 182D 183F 1D0C
RDHMT 009A 0FAC
RDKD 000E
RDR0 0016 0E9F 10F2 11C2 1917
RECAL 089A 0F72 13ED
RELLV 0132 0AAA 0AB1 0AC3 0ACA 0ADC 0968 1DF4
REODV 0131 0AD6 1947 1D36
SCAHZ 0007 1989 19AE 19EE 1A5E 1A62 1A88 1F16
SCDCK 0004
SCICC 0005
SCILG 0006
SCIMS 0984 0981
SCIM2 0994 0978 097B
SCINA 096F 0960
SCINB 0964 0970
SCINC 0914 090C
SCINT 08FA 0960
SCINX 0929 0919 091E
SCINO 091F 0905 0915
SCINI 092D 0927
SCIN2 0938 0948
SCIN3 0949 0920 093B
SCIN4 0955 0901 090F 0912 0944
SCIN5 095B 092C 0934 094F 0952
SCIN6 095D 0954
SCIN7 0969 08FC 08FD
SCIN8 0971 0955
SCIN9 0976 097F
SCISW 08FB 0900 1965 196D
SCPCI 0002
SCPCK 0003
SCSNO 08B0 0903 08B3 0884 08B7 195C 197F 1980 1988 19A3 19BA 19ED 1A5C 1A5D
1A61 1A87 1F15
SCSNI 08B2 095D 09A4 09A9 09AC 0CB4 195E 19FC 19F3 19F6 1D2E 1D30 1EF6 1EFA
1EFD
SCSN2 08B4 0907 0917 091B 1960
SCSN3 08B6 0962 09AE 0BA9 0CB6 1962 19F8 1EFF
SCSN4 08B8 0922 0923 0926 092F 093A 0965 09B0 0CB8 1964 19FA 1F01
SCSN5 08BA 0967 09B2 0CBA 195A 19F1 19FC 1A05 1A65 1F03 1F19 1F1C
SCSV5 08CC 1A58 1A5A 1A6F 1A71
SCSXC 08C8 0932 09AD 09AF 09B1 09B3 0CB5 0CB7 0CB9 0CBB 0D25 0D26 0D29 0D2D
0D31 19F7 19F9 19FB 19FD 1A57 1A59 1A67 1A70 1A72 1A7C 1EFE 1F00
1F02 1F04
SCSX0 08EC 091C 091D 094B 0BCC 0BD4 0BD9 0CB1 0CC2 0CC6 0CCA 0D7C 0DB2 0DDC
0E00 0E0B 0E78 0EC6 10B3 1133 114B 11DF 11ED 125E 1287 12AD 1396
13C8 1480 14E0 14E4 14E9 14ED 1571 1575 157A 157E 16C6 16D3
1885 188B 18B9 197B 197C 1C02 1C97
SCSX4 08C0 0974
SCSXB 08C4 0929 0C10 0C11 0C19 0C1D 0C37 0C3E 0C42 0C49 1073 14AA 19B3 19DB
1A09 1F14 1F1F 1F22 1F27
SCUND 0000
SCUDP 0008
SCUSP 0001 0BA3 0C35 0CBF 19BB 1A7D
SEEKB 000B
SEEKC 0007 0DAB 0DAH 0E41 0F2A 0F2D 0F30 0FA6 14BF 14C5 151C 15D3 1908 191D
1D09
SEEKX 1C72 0892
SENSE 08AC 092D 1954 1A5B
SFILM 001F 10E6 10F5 119E 11AD 1216 1340 1405 14BC 1519 15D0 15DF 1710 171F
181B 182A 183C 1905

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

SIDHE 0071
SIDHI 0051
SIO 0873 0CAD 0D27 0D7A 0DD0 0DDA 0E61 0EC4 0F62 0F71 1004 1070 111F 1149
11DD 11EB 125C 1285 12AB 12C5 1394 13AD 13C6 13D6 13EC 147B 14A7
14DC 1552 156A 1595 16A5 16B1 176B 1774 17AA 17E5 1883 1887 1972
1974 1996 1C89
SIONT 1970 0874
SIOSW 0850 0AB7 0CAC 0C80 0DCH 0E60 0EC3 106F 147A 14A6 1569 16B0 1773 17A9
198C 1995 1998
SIOXX 08AE 0935 0936 1952 1976 197E 19C3
SIOX1 1990 1970 1971 198D 199A
SIO01 197A 1987 19C8
SIO02 1982 1985 19D3 19D6
SIO03 1988 1981
SIO04 198C 198C
SIO05 1998 198A
SIO06 19AE 19A4
SIO07 19BA 19AF
SIO08 19CA 19C1
SIO09 19D1 19AD 19B9
SKARG 1D0F 1C9C 1D0A
SKCYL 1D08 1C3A
SKHD 001B
SKHE 0069
SKTV 0891 0FD3 110B 11D2 1249 1370 1678 173E 1CA1
SNCCW 08A1 08AC 0C28
SNWDS 08A4 08A3 0C56 0C5D 0C64 0C6B 0C72 0D21 0D22 0D23 0D36 0D3B 0D3F 128F
14F5 1586 19BF 1C3B
SNWDO 08A4 0DEA 0DF2 0DFA 0E01 0F65 1022 1033 103A 1122 1304 13D9
SNWD1 08A5
SNWD2 08A6 102C
SNWD3 08A7
SPACE 084E 1C23 1C51
SRCHA 0039 10E9 11A1 11B0 11BC 1219 1343 1408 151F 1713 181E 190B
SRCID 0031 1222 134F 1358 141A 1426 152B 15E2
SRCKE 0029
SRCKH 0049
SRKEQ 0029 1728 1833 1845
START 012D 0982 1AAB
STKSW 0853 0AB6 1B98 1BA5 1BA7 1BAA 1C5D
STMLE 1A95 0877
STMLL 1AB3 1A8B
STMLS 0876 09AB 0AD5 0AEF 1946 19E3 19F2 1A95 1AAD 1AC0 1B05 1B09 1D15 1D2F
1D4F 1DB2 1DBB 1F1E
STM LX 1AAA 1AC9
STMP5 1AC2 1ABH
STMPY 1ACB 0A99 1A99 1AA5 1AB9
STMRT 1AC9 1AA6 1AC2
STM SA 1AC5 1A96 1A97 1A98 1A9B 1A9E 1AA1 1AAF 1AB1 1ABC 1ABE
STMSE 1ABC 1AC4
STMST 1ACA 1A9C 1A9F 1AA2 1AAC 1AAE 1AH0 1AB3 1AB5
STSER 08DC 199D 19A0 19A2 19A9 19AC 19B5 19B8 19CD 19D0 1A77 1A79 1A7B 1A82
1A85 1A8E 1A91
TB 087F 08FE 0900 0903 0907 090B 0911 0914 0917 091B 091C 091D 091F 0922
0923 0924 0925 0926 092E 092F 0935 0938 0939 093A 0942 0947
094A 095D 0962 0965 0967 0971 0977 09B0 09A3 09A4 09A5 09AB 09AC
09AD 09AE 09AF 09B0 09B1 09B2 09B3 09B9 0ABD 0A92 0A93 0A94 0A95
0A96 0A97 0A98 0A9B 0A9C 0A9D 0A9E 0AA5 0AA7 0AAE 0AB6 0AB7 0AB8
0AB9 0ABA 0ABE 0AC0 0AC7 0AD0 0AD2 0AD5 0AE2 0AE4 0AL5 0AE6 0AE7
0AEB 0AL9 0AED 0AEF 0AF0 0AF4 0AF5 0AF6 0AF9 0AFA 0AFB 0AFE 0B00
0B02 0B05 0B06 0B07 0B0J 0B14 0B16 0B17 0B18 0B19 0B1A 0B1D 0B21
0B22 0B26 0B28 0B29 0B67 0B73 0B76 0B7A 0B7C 0B82 0B83 0B84 0B85
0B87 0B8B 0B8D 0B8E 0B91 0BA6 0BA9 0BAA 0BAB 0BAD 0BB0 0BB3 0BB6
0BBD 0BC0 0BC4 0BC6 0BCC 0BCD 0BD0 0BD2 0BD4 0BD9 0BDD 0BDE 0BE1
0BEE 0BF3 0BF6 0BF9 0C01 0C04 0C08 0C0A 0C10 0C11 0C12 0C13 0C17
0C19 0C1A 0C1D 0C21 0C22 0C25 0C32 0C38 0C3B 0C3E 0C42 0C46 0C49
0C4B 0C4E 0C5D 0C5A 0C5D 0C61 0C64 0C68 0C6B 0C6F 0C72 0C76
0C79 0C7C 0C7F 0C9D 0CA0 0CA4 0CA6 0CAB 0CAC 0CAD 0CBB 0CB1 0CB4

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

0CB5 0C66 0CB7 0CB8 0CB9 0CBA 0CBB 0CBC 0CC2 0CC3 0CC6 0CCA 0CD1
0CD3 0CD4 0CD7 0CE4 0CE7 0CEA 0CED 0D12 0D15 0D19 0D1B 0D20 0D21
0D22 0D23 0D25 0D26 0D27 0D29 0D2A 0D2D 0D31 0D38 0D3B 0D3C 0D3F
0D42 0D44 0D45 0D48 0D56 0D59 0D5C 0D5F 0D66 0D69 0D6D 0D6F 0D71
0D7A 0D7C 0D7F 0D82 0D86 0D8A 0D8B 0D8E 0D91 0D92 0D95 0DA4 0DB7
0DBA 0DBE 0DC0 0DC1 0DC6 0DC8 0DCA 0DCB 0DD0 0DDA 0DDC 0DE0 0DE4
0DE8 0DE9 0DEA 0DEF 0DF2 0DF4 0DF7 0DFA 0DFE 0E01 0E05 0E08 0E0C
0E10 0E11 0E14 0E1A 0E1B 0E1E 0E30 0E34 0E36 0E3A 0E53 0E56 0E5A
0E5C 0E5E 0E5F 0E60 0E61 0E63 0E67 0E6B 0E6E 0E71 0E76 0E7B 0E7F
0E83 0E86 0E87 0E8A 0E9A 0EA6 0EA9 0EAD 0LAF 0EB3 0EBA 0EBF 0EC2
0EC3 0EC4 0EC6 0ECD 0ED2 0ED6 0EE5 0EE6 0EE9 0EF4 0EF7 0EF9 0EFL
0F00 0F03 0F06 0F09 0F0B 0F4F 0F52 0F56 0F58 0F5D 0F5E 0F60 0F61
0F62 0F64 0F65 0F66 0F69 0F71 0F73 0F74 0F77 0F88 0F8B 0F8C 0F8E
0F8F 0F91 0F92 0F94 0FB1 0FBA 0FBD 0FC9 0FCC 0FD0 0FD2 0FD3 0FDC
0FDD 0FE2 0FE6 0FE9 0FF7 0FF8 0FF9 0FFB 1004 100A 101A 101C 101D
1022 1029 102C 1030 1033 1037 103A 103E 1041 1045 1048 1049 104D
104E 1054 1057 105A 105E 106D 106E 106F 1070 1072 1073 107A 107E
1081 1083 1087 108A 108E 1094 1095 1098 10R0 10B4 10BB 1101 1104
1108 110A 110B 110D 110E 111D 111F 1121 1122 1126 112A 112B 112E
1133 1134 1136 1137 1138 1148 1149 114B 114F 1153 1156 1159 115D
1163 1164 1167 1179 117D 117F 1183 1187 11C8 11CB 11CF 11D1 11D2
11D7 11DA 11DD 11DF 11E3 11E6 11EB 11ED 11F1 11F4 11FC 11FD 1200
123F 1242 1246 1248 1249 124C 1251 1252 1255 125B 125C 125E 1265
1269 126A 126E 1278 1279 127A 127D 127E 1282 1285 1287 128E 128F
1293 1299 129E 12A9 12AH 12AD 12B1 12B6 12C5 12D2 12D9 12DA 12DC
12E0 12E1 12E3 12E5 12EE 12EF 12F2 1366 1369 136D 136F 1370 1371
1375 1379 137E 1381 1387 138A 138F 1394 1396 139A 139D 13A6 13AA
13AD 13AF 13B3 13B4 13B8 13BC 13BF 13C4 13C6 13C8 13CC 13CF 13D4
13D5 13D6 13D8 13D9 13DA 13DE 13DF 13E2 13E3 13E5 13EC 13EE 13EF
13F2 1460 1463 146F 1472 1476 1478 1479 147A 147B 147D 1480 1487
148A 148C 148D 1490 14A6 14A7 14A9 14AA 14B1 14B5 14D2 14D5 14D9
14DB 14DC 14DE 14E0 14E1 14E4 14E9 14ED 14EE 14F1 14F4 14F5 14F9
14FC 14FE 14FF 1502 1543 1546 154A 154C 154D 1550 1551 1552 1568
1569 156A 156E 1571 1572 1575 1577 157A 157E 1581 1585 158J 158A
158D 158F 1595 15A2 15A3 15A6 165F 1662 166E 1671 1675 1677 1678
167A 167B 1683 169E 16A5 16AF 16B0 16B1 16B3 16B4 16BF 16C3 16C6
16C7 16CA 16CD 16D1 16D3 16D8 16DC 16E1 16E5 16E6 16E9 16EC 16ED
16F0 1765 1777 1734 1737 173B 173D 173E 1740 1741 1749 1764 176B
1772 1773 1776 1777 1782 1786 178B 1796 179A 179C 179F 17A3
17A8 17A9 17AA 17AC 17AD 17BB 17BC 17C0 17CC 17CD 17D0 17D3 17D7
17DA 17DF 17E3 17E5 17EB 17EF 17F0 17F3 17F6 17F7 17FA 180F 1813
1851 1854 1858 185A 185C 1865 186B 1863 1865 1888 188B 188F 18A6
18AA 18B7 18B9 18BD 18C1 18D6 18DA 18DB 18DE 18E1 18E2 18E5 18F6
18F9 1925 1928 192B 1933 1945 1946 194D 19AE 19AF 1950 1951 1952
1953 1954 1955 1956 1959 195A 195B 195C 195D 195E 195F 1960 1961
1962 1963 1964 1965 196C 1978 1979 197B 197C 197D 197E 197F 1980
1982 1983 1988 198C 1995 1998 199C 199D 19A0 19A2 19A3 19A6 19A7
19A9 19AA 19B1 19B2 19B3 19B5 19B6 19BA 19BE 19BF 19C6 19CA 19CB
19CD 19CE 19D1 19D5 19D8 19D9 19DA 19DB 19E0 19E3 19EB 19EC 19ED
19F1 19F2 19F6 19F7 19F8 19F9 19FA 19FB 19FC 19FD 19FE 1A02 1A05
1A09 1A0F 1A12 1A13 1A57 1A58 1A59 1A5A 1A5B 1A5C 1A5D 1A61 1A65
1A67 1A6F 1A70 1A71 1A72 1A77 1A79 1A7A 1A7B 1A7C 1A80 1A81 1A82
1A83 1A87 1A8B 1A8C 1A8D 1A8E 1A8F 1A93 1A95 1AA7 1AAA 1AAD 1AC3
1AD6 1AE3 1AF7 1AFB 1AFC 1B00 1B02 1B03 1B04 1B05 1B06 1B09 1B9B
1BA4 1BA5 1BA6 1BA7 1BA8 1BA9 1BB1 1BBF 1BC2 1BCC 1BD4 1BD5 1BD7
1BD8 1BD9 1BDA 1BDB 1BDD 1BE4 1BE9 1BF6 1BF8 1BF9 1C11 1C14 1C17
1C1C 1C1F 1C23 1C33 1C39 1C3D 1C3D 1C47 1C4E 1C51 1C55 1C59 1C5B
1C5D 1C64 1C73 1C89 1C8F 1C92 1C95 1C96 1C97 1C9B 1CA3 1CA4 1CA5
1CA9 1CAA 1CAD 1CB0 1CB3 1CB6 1CB8 1CBA 1D12 1D15 1D17 1D18 1D1F
1D23 1D27 1D2D 1D2E 1D2F 1D33 1D3C 1D3F 1D42 1D44 1D47 1D48 1D4B
1D4C 1D4D 1D4F 1D5D 1D60 1D61 1D62 1D65 1D66 1D68 1D6F 1D7D 1D80
1D83 1D85 1D8C 1D93 1D97 1DA2 1DA5 1DAA 1DAC 1DB2 1DB4 1DB6 1DB7
1DB8 1DC7 1DD5 1DD6 1DEA 1DEF 1DFA 1EC4 1E0B 1E14 1E1C 1E1D 1E20
1E5F 1E61 1E62 1E65 1E67 1E69 1E71 1E74 1E76 1E77 1E7D 1E81 1E86
1EB9 1E8A 1EF5 1EF6 1EF7 1EF9 1EFE 1EFF 1F00 1F01 1F02 1F03 1F04
1F09 1F10 1F14 1F15 1F19 1F1A 1F1C 1F1D 1F1E 1F1F 1F22 1F25 1F27
1F2B 1F3C

TCNER 0B21 0B0E 0B6B 0FC1 1467 1666 192F

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

TCNE2 0B57 0AEE
TCNPR 0AD0 0AA1
TCNRO 0AD5 0ADB
TCNSW 0B3C 0B16
TCNTA 0B2A 0B12 0B1E 0B2A
TCNTE 0H00 085F
TCNTZ 0B30 0B2A
TCNO1 0AE7 0AD3
TCNO2 0AF4 0AEB
TCNO3 0B10 0B1F
TCNO4 0B1D 0B0A
TCVBE 0879 0977 0AF6 0AFB 0B22 0EBA 0EBF 0F8C 0F8F 0F92 1049 104E 12DA 12E1
13DF 13E3 156E 19A7 19B3 19CB 1A81 1A8D 1AFC 1BCC 1E05 1E0A 1BF9
1C14 1C17 1C1C 1C1F 1C47 1CA5 1CAA 1D62 1E6A 1F3C
TCVBN 1E5C 087A
TCVEN 1EC1 1EBB
TCVHD 087C 0AFA 12D9 12E0 13DE 13E2 1CA4 1E7A 1EBB
TCVSP 1EF2 1EC1
TCVSR 1EBE 199E 1A75 1C79 1E9B
TCVSV 1EF3 1EAE 1EAF 1EB5 1EC2
TCVSZ 1E99 1E8F
TCVSI 083D 1E5F 1E61 1E62 1E69
TCVSI 083E 1E65 1E67
TCVVB 1EC6 1EB0
TCVTC 1EF1
TCV01 1E6C 1E5D 1E60 1E63 1E66 1E72 1E78
TCV02 1E74 1E6F
TCV03 1EB3 1EBE
TCV04 1EBF 1EB6
TCV45 1FAD 1DA7 1EC4
TEMP1 085A 0FF9 0FFB 101A 1048 1134 1138 127A 127E 178B 1793 17RE 17C0 17C8
1C92 1C95
TEMP2 085B 101C 104D
TERLP 1AD6 088C
TERM 080C 09A3 0AAD 0AB4 0AC6 0ACD 0ADB 0ADF 0HAA 0D20 1136 1375 1379 16B3
1776 17AC 194C 196B 1908 1BB2 1BBF 1BC2 1BE4 1C59 1C73 1D3B 1D5D
1DB6 1DF7 1EF5
TER01 1ADE 1AD8
TER02 1AE1 1AE0
THALT 087F 0B28 19D5 1AFB 1B0A 1C64 1CB8
THEXD 1E7A 087D
THEXS 1F8D 1E7F 1EB3 1E84 1E8A
THLTE 1AF7 0880
THLTG 1AFB
THLTL 1B05 1B07
THLTL 1B0C 1B01
THLTLR 1B0A 1AF9
TKLT2 1B1E 1AFD 1AFF
TINS2 1EF7 1EFC
TINS3 1F06 1EF8
TINS4 1F0C 1F05
TINTS 1EF5 0895
TINTV 09A2 09B4 09B6 09BA 0C14 1A06
TINT2 09A5 09AB
TINT3 09B6 09A6
TID 0882 1072 1982 19DA 1A0D
TIOMS 1A33 1A14
TIOM1 1A16 1A00
TIOM2 1A22 1A11
TIONT 19EA 08B3 1A01 1A0B 1A15
TIOSE 1F13 0886
TIOSE 1F1E 1F20
TIOSE 0885 0E67 147D 14A9 14E5 17DA 1F2E
TIOSW 0854 0911 0914 0A94 19E0 1A03
TIOS1 1F1C 1F17
TIOS2 1F27 1F23
TIOS3 1F2E 1F1B 1F26 1F2C
TIOS4 1F2D 1F29

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TIOXX 08A8 0924 0C13 1953 1A02 1F1D
 YI001 19ED 19F5
 TIO02 1A02 19EF
 TIO03 1A0F 1A08
 TLGBA 1E26 08D4 1D88 1D8E 1DA9 1DE2
 TLGBP 1U71 1D5B 1DE8
 TLGCH 1E08 1D57 1D6B 1D73 1DF0 1E19 1E1E 1E21 1E23
 TLGCM 1D48 1D43
 TLGCR 1DC0 1D8D
 TLGCT 08D8 1DB7 1DBC
 TLGDA 1DC3 0ADA 0AE0 1D3A 1D40 1D45 1D49
 TLGED 0813 0AA7 0AAC 0AC0 0AC5 0AD9 0ADE 1D23 1D39 1DF6
 TLGEN 1DFD 1D21
 TLGIN 1DC4 1DE0
 TLGIS 1DC2 1D67 1DB5 1DB9 1DC9 1DD0
 TLGME 1D12 0889 1D16
 TLGMS 0888 0980 0AED 0AFE 0B26 0B7A 0BC4 0C08 0CA4 0D19 0D6D 0DBE 0E5A 0EAD
 0EF7 0F09 0F0B 0F56 0FD0 1108 11CF 1246 12DC 12E3 136D 1476 14D9
 154A 158D 1675 173B 1858 1933 1A13 1B00 1BB1 1BE9 1C5B 1CB0 1CB5
 1CBA 1D17
 TLGNB 1D17 1D13
 TLGPR 1D91 1DE4
 TLGSN 08D6 1D4B 1DAA
 TLGSP 08D6 1D6F 1E1C
 TLGSR 08DA 1D4D 1DCC
 TLGSV 1DC1 1D8A 1D91 1D9B
 TLGSW 08D9 1D65 1D66 1D80 1D8C 1D93 1D97 1DA0 1DEF 1E0B 1E0E 1E14
 TLGWR 08D4 1D42 1D47 1D59 1D84 1DE6
 TLGXR 1DE2 1DBA
 TLGX2 1DE6 1DA3
 TLGX3 1DFF 1D1B 1D1D
 TLG01 1D27 1D24
 TLG02 1D36 1D28 1D50
 TLG03 1D4F 1D38
 TLG04 1D51 1D4E
 TLG05 1D64 1D5E
 TLG06 1D6B 1D7C 1DF2
 TLG07 1D7D 1D6D 1D75
 TLG08 1D85 1D81
 TLG09 1D9D 1D94
 TLG10 1DA2 1D9C
 TLG11 1D88 1DBE
 TLG12 1DD4 1DCE
 TLG13 1DDC 1DC5 1DD1 1DD7 1DDA
 TLG15 1DF4 1DF1
 TLG16 1E13 1E0C
 TLG17 1E1A 1E12
 TLG18 1E1D 1E1A
 TLG40 1D44 1D3D
 TLG42 1DAA 1D7E 1DB3
 TLG43 1D84 1D90 1DB0
 TLPER 088B 08B6 0C7C 0CED 0D5F 0D8B 0E11 1057 1087 112B 1156 148A 14FC 158F
 16E6 17F0 18DB 1ADA 1ADC 1ADE
 TLPST 088E 0885 088B 0BD2 0C17 0CD1 0D42 14DE 1AE7 1AE9 1AEB 1AF0 1AF2
 TPID 07FF 0A89 1D60
 TRID 0815 0B17 0B6F 0BB9 0BFD 0C99 0D0E 0D62 0DB3 0E4F 0EA2 0F4B 0FC5 10FD
 11C4 123B 1362 146B 14CE 153F 166A 1730 184D 1E90
 TRTNN 083B 0B05 0B67 0B8E 0BDE 0C22 0CD4 0D45 0D92 0E1B 0L87 0EE6 0F74 0FBD
 1095 1164 11FD 12EF 13EF 1463 148D 14FF 15A3 1662 16ED 17F7 18E2
 192B
 TSAD 0801 0B14 0B1B
 TSCAC 08F9 194B 194E 1956
 TSCCW 089D 08A8
 TSCED 0814 0AAE 0AB3 0AC7 0ACC 194A 196A 1D27
 TSCTN 083A 0B09 1923
 TSID 0800 0ABA 0B10 0B18 0B1A 0B1D 1E95
 TSTLP 1AE3 086F
 TST01 1AEB 1AE5

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TST02 1AEE 1AED
 TST03 1AF0
 TST04 1AF5 1AF4
 TSWDS 08A0 089F 093D 0947
 TSW0 0802 0A96 0B76 0BC0 0BEE 0C04 0CA0 0D15 0D69 0DBA 0E56 0E63 0E71 0E7F
 0EA9 0ED2 0EF9 0F52 0FB1 0FCC 1104 11CB 11E6 11F4 1242 126A 1299
 129E 12B6 12E5 1369 139D 135F 13CF 1472 14D5 1546 1671 1737 1854
 19D1 1AD6 1AE3 1AF7 1B03 1B04 1B06 1D1F
 TSW1 0803 0A97 0B02 0B06 0B21
 TSW2 0804 0A9C 0AE9 0AF0 0AFA
 TSW3 0805 0A93
 TTLER 0B48 0B23 0B25 0B27
 TTL00 0B30 0AFF
 TTL01 0B41 0AFD
 TTL1A 0F78 0F57
 TTL11 0B92 0B7B
 TTL12 0BE2 0BC5
 TTL13 0C26 0C09
 TTL14 0CD8 0CA5
 TTL15 0D49 0D1A
 TTL16 0D96 0D6E
 TTL17 0E1F 0E8F
 TTL18 0E8B 0E5B
 TTL19 0EEA 0EAE
 TTL21 1099 0FD1
 TTL22 1168 1109
 TTL23 1201 11D0
 TTL24 12F3 1247
 TTL25 13F3 136E
 TTL31 1491 1477
 TTL32 1503 14DA
 TTL33 15A7 154H
 TTL41 16F1 1676
 TTL42 17FB 173C
 TTL43 18E6 1859
 TYP2 0844 199C
 TYP3 0846 1A7A
 TIACC 0FA5 0F63
 TIAC3 0FAB 0FB0
 TIAEN 0F73 0FB5
 TIAER 0FB1 0F5D
 TIAH9 0FB6 0FB8
 TIA10 0F62 0FB3
 TIAM1 0F9B 0FB0 0F90 0F93 0F96
 TIASA 0FB7 0FA7
 TIA01 0F4B 0EA7 0EE7
 TIA02 0F52 0F4D
 TIA03 0F5B 0F54
 TIA04 0F5F 0F70
 TIA05 0F88 0F67
 TIA06 0F8E 0F6C
 TI001 0FBA 0F50 0F75
 TI0NT 0B67 0B2B
 TI0PR 0B65 0B6A 0B6D
 TI1EN 0B8D 0B88
 TI101 0B6F 0B68 0B6E
 TI102 0B76 0B71
 TI103 0B7C 0B78
 TI104 0B81 0B87
 TI105 0B83 0B86 0B8C 0BAC
 TI106 0B8B
 TI107 0BA0 0B89
 TI108 0BAD 0BA7
 TI109 0BB0 0BA4
 TI110 0BB3 0BA1
 TI111 0BB6 0B7D
 TI2EN 0BDD 0BF2
 TI2ER 0BEE 0BC7

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T12E1 0BF6 0BD7
T12E2 0BF9 0BD8
T12E3 0BF3 0BD1
T1201 0BB9 0B74 0BBF
T1202 0BC0 0BBB
T1203 0BC6 0BC2
T1204 0BCB 0BD3 0BF0
T1205 0BFC 0BD5
T13EN 0C21 0C7E
T13M2 0C82 0CB1
T1301 0BFD 0BBE 0BDF
T1302 0C04 0BFF
T1303 0C0A 0C06
T1304 0C0F 0C18 0C7D
T1306 0C32 0C1B 0C1F
T1307 0C3B 0C33
T1308 0C3E 0C36
T1309 0C49 0C44
T1310 0C51 0C4C
T1311 0C54 0C40
T1312 0C5D 0C58
T1313 0C64 0C5F
T1314 0C6B 0C66
T1315 0C72 0C6D
T1316 0C79 0C74
T1317 0C7C 0C0B
T1318 0C7F 0C16
T14EN 0CD3
T14M2 0CF0 0CBE
T140K 0CBF 0CB2
T1401 0C99 0C02 0C23
T1402 0CA0 0C9B
T1403 0CA6 0CA2
T1404 0CAB 0CD2 0CEE
T1405 0CD1 0CEF
T1406 0CE4 0CC4 0CC8
T1407 0CE7 0CCC 0CCF
T1408 0CEA 0CC0
T1409 0CED 0CA7
T15EN 0D44
T1501 0D0E 0C9E 0CD5
T1502 0D15 0D10
T1503 0D1B 0D17
T1504 0D20 0D43 0D60
T1505 0D42 0D61
T1506 0D56 0D2B 0D2F
T1507 0D59 0D33 0D36
T1508 0D5C 0D39 0D3D 0D40
T1509 0D5F 0D1C
T16EN 0D91 0D8D
T16E1 0D89 0D76
T16E2 0D8B 0D84
T16T1 0DA4 0D72
T160D 0DA7 0D7B
T160F 0DAD 0DA9
T160G 0DB0 0DAC
T1601 0D62 0D13 0D46
T1602 0D69 0D64
T1603 0D6F 0D6B
T1604 0D7A 0D8F
T1605 0D82 0D7D
T17EN 0E1A
T17T1 0E30 0DCC
T17T2 0E36 0DD6
T170A 0E3C 0DC2 0DC7 0DC9 0E42
T170B 0E3F 0DC4 0E17
T170C 0E40 0DD1
T170D 0E46 0E45 0E4B

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T170E 0E49 0DD8
T170F 0E4C 0DDD
T170G 0E4D 0DEC
T170H 0E4E
T170I 0E0F 0DD2
T170J 0E11 0E0A 0E35 0E3B
T170K 0E0C 0DDF
T170L 0DB3 0D67 0D93
T1702 0DBA 0DB5
T1703 0DC0 0DBC
T1704 0DC5 0E19
T1705 0DD2 0E15
T1706 0DF2 0DED
T1707 0DFA 0DF5
T1708 0E01 0DFC
T1709 0E08 0E03
T1710 0E17 0E13
T18EN 0E86 0E73 0EB1
T181N 0E7B 0E6D
T18MK 0EA1 0E7C
T18R0 0E9E 0E62
T1801 0E4F 0DB8 0E1C
T1802 0E56 0E51
T1803 0E5C 0E58
T1804 0E5F 0E6A 0E77 0E84
T1805 0E67 0F68
T1806 0E6B 0E65
T1807 0E71 0E9D
T1908 0E9A 0E7D
T19EA 0EF4 0ECB
T19EB 0F00 0ED0
T19EC 0F0F 0EB5 0ED9
T19EN 0EE5 0EDC
T19E1 0F41 0EBB 0EC0 0EF8 0F0C
T19E2 0F37 0F02 0F05 0F0A
T19LP 0ED6
T19SA 0F23 0E99 0ECF 0F2E 0F31
T19SK 0F26 0EC5
T19ST 0F10 0EB7 0EBD
T19S0 0F20 0F2B
T19S1 0F0E 0EC9
T19X1 0EE1 0EB0 0EB1
T1901 0EA2 0E54 0E8B
T1902 0EA9 0EA4
T1903 0EAF 0EAB
T1905 0EB6 0EDE 0EE0
T1906 0EC2 0ED7 0EFF
T1907 0ED9 0ED4 0EFB
T1908 0EF9 0F0D
T20NT 0FED 0B2C
T20PR 0FBB 0FC0 0FC3
T21C1 10E8 10ED
T21EN 1094 10BB
T21ER 10BD 0FDF 1046 105D 106B 107F 108D 10B5
T21EX 10B8 105F 10BF
T21HA 10F4 1071
T21M1 10BE 1056
T21M2 10C6 104A 104C
T21M3 10C8
T21M4 10D0 104F 1052
T21M5 10D2
T21M6 10D4 10BA
T21T1 10B0 1000
T21WP 10E5 1005
T21X1 10B7 10B2
T2101 0FC5 0FBE 0FC4
T2102 0FCC 0FC7
T2103 0FD2 0FCE

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T2104 OFDC
T2105 OFE1 1065
T2106 OFEC 105B
T2107 102C 1024 1027
T2108 1033 102E
T2109 103A 1035
T2110 1041 103C
T2111 1044 101E
T2112 1057 1017 10B7
T2113 1050 1059
T2114 106C 1093
T2115 106E 108B
T2116 107A 1075
T2117 1081 1078 1085
T2118 108D 1089
T22C1 11A0 11A5
T22C2 11A7 11B4
T22C3 11B8 113D
T22C4 11B8 11C0
T22C5 11C1 1139
T22EN 1163 118A
T22ER 119C 111E 1146 1154 115C 1184
T22EX 1187 115E
T22M1 118B 1189
T22R0 119D 1120
T22T1 1179 111B
T22T2 117F 1141
T22W0 11AC 114A
T2201 10FD 0FCA 1096
T2202 1104 10FF
T2203 110A 1106
T2204 111C
T2205 111F 112F
T2206 112B 1124 117E
T2207 1131 112D
T2208 1147 1162
T2209 1149 115A
T2210 1156 1140 1186
T2211 115C 1158
T23EN 11FC 11EA 11FB
T23LC 0856
T23LH 0857
T23RD 122A 11EC
T23R0 1231 11D8 11DB 121A 1220 1223
T23R1 1236 11D9 11DC 1229
T23US 1230
T23WR 1215 11DE
T23W2 1218 121D
T23W4 1221 1226
T2301 11C4 1102 1165
T2302 11CB 11C6
T2303 11D1 11CD
T2304 11DD 11EB
T2305 11EB 11E1 11F6 11FB
T2306 11F9 11EF
T24CN 130E 124F 1253 1258 1274 127B 127F 134D 1356 135F
T24C0 1360 1341
T24EN 12EF
T24ER 1357 12AC
T24HA 1308 124A 124D 1256 1276 12A8 12AA 12CB 12D7 1344 134A 1350 1359
T24L1 12C8 12CF
T24MA 1313 1272 1297 12A2
T24MB 1314 12A7 12B5 12BA
T24MC 1315 12BE 12D6 12E9
T24MK 1336 12C6
T24RA 1332 12C1 12CA 12DE 133B
T24RR 1316 12DB 12DD
T24RW 1324 12E2 12E4

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T24RA 134E 1286
T24R1 133F 125D
T24UC 1361 1261 128A
T240L 12C0 12C4
T240T 12D0 12CC
T2401 123B 11C9 11FE
T2402 1242 123D
T2403 1248 1244
T2404 124A
T2405 125C 126F
T2406 126A 1263
T2407 1271 126C
T2408 1285 129B 12A3
T2410 12A6 1291
T2411 1274 129D 12A0 12A5
T2412 129E 128C
T2413 12AB 12BB
T2414 12E6 12AF
T2415 12BF 12BB 12EA 12ED
T2416 12EC 12E7
T2417 12E5 12D0
T2420 1293 1283
T25EN 13EE 13A1 13D3 13FB
T25ER 1425 13C7 142A
T25F0 1404 1395
T25F1 1407 140C
T25F2 1419 13AE 141E
T25LP 13BF 13BB
T25M1 1444 13E0 13E4 13E7
T25RD 142E 13D7
T25RX 143B 1388 138D 1392 13A2 13A7 1415 1421 142D
T25R0 1437 1385 138B 139D 13A4 13C3 13C5 13DD 1409 140F 141E 1427
T25RS 1431 1436
T25SV 1440 13E1 1433
T2501 1362 1240 12F0
T2502 1369 1364
T2503 136F 136B
T2504 137A 137D 139F
T2505 13A2 1398 13B1 13CE
T2506 13HC 13AB
T2507 13C3 13B6
T2508 13C6 13D1
T2509 13D4 13CA
T2510 13D6 13EB
T2511 13E9 13DB
T2601 1460 1367 13F0
T30NT 1463 082D
T30PR 1461 1466 1469
T31AA 147D 147E
T31AC 148A 14B4
T31EN 148C 14B6
T31F1 14A4 14B5
T31HA 14CB 14C3
T31MK 14C7 14A4 14BD
T31M0 14B9 14B3
T31SK 14CB 14C0 14C6
T31W1 14BB 147C
T31W2 14C4 14AB
T3101 146B 1464 146A
T3102 1472 146D
T3103 1478 1474
T3104 1479 148B
T3105 1485 14AF 14BB
T311M 148A 14AD
T32AA 14DC 14DF 14FD
T32AC 1535 1520
T32AF 151E 1523
T32AG 152A 152F

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T32B2 14F4 14EF
T32EN 14FE 14F7
T32ER 14F1 14E2 14E7 14EB
T32EX 1515 14E6
T32LP 14FC
T32MK 1533 14EA
T32R0 1537 1526 152C
T32R1 153B 1529
T32SK 1534 151D
T32SX 1516 14F6
T32WR 1518 14DD
T3201 14CE 1470 148E
T3202 14D5 14D0
T3203 14DB 14D7
T33AA 1552 15A0
T33AB 1554
T33AC 1559 1561
T33AD 1568 1597
T33AG 1598 155C 1593
T33AX 1595 1590
T33B2 1585 157F
T33CM 1589 159C
T33CX 158B
T33EN 15A2 1588 1594 159E
T33ER 1581 1573 1578 157C
T33FR 15CF 1553 1596
T33HA 15F4 15D7
T33IV 15B7 1564
T33MK 15F0 157B
T33MS 158D 1584
T33M1 15C2 158E
T33M2 15CC 156F
T33ND 15EA 158B 15BD 15F0
T33OA 158B
T33OP 160F 154E 155A 1562 156C 1598 159A
T33RD 158A 15E9
T33RT 160E 1557 155F
T33R0 15F7 15DA
T33R1 15FE 15DD 15E3
T33R2 15DE 156B
T33R3 15E1 15E6
T33SK 15F1 15D4
T33SX 15C0 1587
T33TB 1610 1554
T33V2 15E7 1566 15EC
T3301 153F 14D3 1500
T3302 1546 1541
T3303 154C 1548
T3401 165F 1544 15A4
T40NT 1662 082E
T40PR 1660 1665 1668
T41CK 160D 16D2 16D6
T41C1 1712 1717
T41C2 1727 172C
T41EN 16EC 16E8
T41E2 16E6 16C4 16DF 170A
T41FT 170F 16A6
T41HA 0A30 1723 1726
T41K1 170B 1691
T41K2 170C 1686
T41K3 170D 168A
T41K4 170E 16D5
T41RD 09CB 172F
T41R1 171E 16B2
T41T1 1705 16A1
T41W1 09C6 171D
T4101 166A 1663 1669
T4102 1671 166C

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T4103 1677 1673
T4104 167B 16EA
T4105 16B5 16BE
T4106 16C5 16B7
T4107 16D3 16CC
T42C1 181D 1822
T42C2 1832 1837
T42C3 1844 1849
T42EN 17F6 17F2
T42E1 17D8 17D2
T42E2 17F0 1787 179R 17A4 17BD 17E4 17E9 1814
T42FT 181A 176C
T42HA 0A30 176E 1778 17A6 17AE 182E 1831 1840 1843
T42K0 1815 1789
T42K1 1816 1757
T42K2 1817 174C
T42K3 1818 1750
T42K4 1819
T42L1 178C 1795
T42L2 17C1 17CA
T42L3 17DA 17DE
T42RD 09CB 193A 184C
T42R1 1829 1775 17E6
T42T1 180F 1767
T42W1 09C6 1828
T42W2 183B 17AB
T4201 1730 166F 16E1
T4202 1737 1732
T4203 173D 1739
T4204 1741 17F4
T4205 1778 1781
T4206 1789 177A
T4207 179C 178E
T4208 17A5 179E
T4209 17AE 1787
T4210 17BE 17B0
T4211 17E5 17DB
T43C1 190A 193F
T43EN 18E1 18DD
T43E1 18D9 187F
T43E2 18DB 18D4
T43IP 191C 188B
T43K1 1902 186E 1896 18C6
T43K2 1903 1875
T43R0 0A7F 185D 1912
T43R1 0A26 18C2 1921
T43R2 09C0 18C4
T43S1 18FC 1909 190C
T43S2 18FF 191E
T43T1 18F6 187B
T43T2 18F9 18B3
T43W1 1904 1884
T4301 184D 1735 17F8
T4302 1854 184F
T4303 185A 1856
T4304 185D 18DF
T4305 188B 1886
T4306 1892 188D
T4307 18AB 18A4
T4308 18C2 188B
T4401 1925 1852 18E3
T45SW 085D 0AD2 0AE6 1D3C 1D7D 1DAC 1DD5
T50EN 1933 1929
T50ER 193A 1934
T50NT 1928 082F
T50PR 1926 192E 1931
T5101 1945 192C 1932
UNADR 08EC 18D7 18DB 18DD 18F0

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

UNATN 000B
 UNBZY 000B 0918 1077 1984 190C
 UNCHE 000C 0CCB 0CCE 0D32 0D35
 UNCHK 000E 0951 0C3F 0CC7 0D2E 0D83 0E1 114C 1150 11EE 12AE 1397 13B0 13C9
 UNLCA 000A 188C 188A 1A68 1C98
 UNCUE 000A 090E 1084 1A0A
 UNOVE 000D 094E 0951 0CCE 0D35
 UNEXC 000F
 UNSMD 0009 1074 1077
 WAITS 0894 0B00 0E6B 1081 16CA 179C 17D0 1F06 1F0A 1F0C
 WAITT 19D7 198F 19E1
 WAITI 19DA 19E6
 WAIT2 19E3 19DD
 WAKFA 0A22 110F 1112 1116 1131 113B 11A8 11B7 11C3 1372 1376 137A 137F 1382
 1412 141B 1424 1866 1869 186C 1870 1872 1892 18AB 1915
 WATSW 08F7 092B 09A5 0989 0A95 0C12 19EB
 WHA 10FA 0FD6 0FDA 10F9
 WIOSW 08F6 08FB 0A93 197D 1EF7 1F09 1F10
 WRCKD 001D 1228 134C 1355 1414 1417 1420 1423 1528 15DC 171C 1827 1914
 WRDAT 0005 184B
 WRHA 0019 10F8 14C2 15D6
 WRKD 000D
 WRR0 0015 10EF 11A7 11B6 121F 1349 140E 1411 1525 15D9 1719 1824 1911
 WTADR 19E9 0D74 0DCE 0DD8 1002 111A 1143 16A3 1769 187D 18B5 19E7 1C80
 WTAR1 0A22 0FE4 0FE7 0FEA 0FF4 1006 10F0
 ZEPA 0ABD 0808 0ACE
 ZEPA1 0AC7 0AC1
 ZEPA2 0ACE 0ACB
 ZIPA 0ABA 0806 0ABB
 ZLPA 0AA0 0807 0ABC 0A9F 0ABB
 ZLPA1 0AAE 0AAB
 ZLPA2 0AB5 0AAF
 END OF ASSEMBLY

----- LAST PAGE -----

1800-2841 FUNCTION TEST (PHASE B)

```

* 81100020
***** 81100030
* 81100040
***** 81100050
* 81100060
* 1800 MONITOR INTERFACE 81100070
* 81100080
***** 81100090
* 81100100
***** 81100110
BEGIN EQU 300 81100120
START EQU BEGIN+1 81100130
END EQU START+1 81100140
LOG EQU END+1 81100150
ERROR EQU LOG+1 81100160
REQDV EQU ERROR+1 81100170
RELDV EQU REQDV+1 81100180
CRCK EQU RELDV+1 81100190
MATO EQU CRCK+1 81100200
* 81100210
07FF ORG *+/07FF RIGIN OF PGM 81100220
* 81100230
* MONITOR INTERFACE TABLES 81100240
* 81100250
TPID DC /1100 81100260
TSID DC 1 SECTION ID 81100270
TSAD DC 0 SECTION PREFACE ADDRESS 81100280
* EQUATES FOR TSWO SWITCH OPTIONS 81100290
0008 0 OLPST EQU 8 LOOP SIO,TIO 81100300
0009 0 OSALC EQU 9 SEEK ALIGNMENT CYLINDER 81100310
000A 0 OPRRS EQU 10 PRINT RESULTS 81100320
000A 0 OTTLE EQU 10 PRINT RTN TITLES 81100330
000B 0 ORTRY EQU 11 RETRY SIO 81100340
000C 0 OLPER EQU 12 LOOP ERROR 81100350
000D 0 OBYPR EQU 13 BYPASS ALL PRINTOUTS 81100360
000E 0 OHALT EQU 14 HALT ON ERROR 81100370
000F 0 OCHLT EQU 15 CLEAR ERROR HALT 81100380
* 81100390
0802 0 0000 TSWO DC 0 SELECT OPTIONS 81100400
0803 0 0000 TSW1 DC 0 SELECT SECT AND RTN 81100410
0804 0 FF00 TSW2 DC /FF00 UNIT ADDRESS 81100420
0805 0 0000 TSW3 DC 0 81100430
0806 1 0A8E IPA DC ZIPA INIT PRGM ADDRESS 81100440
0807 1 0AA4 LPA DC ZLPA LOOP PRGM ADDR 81100450
0808 1 0AC1 EPA DC ZEPA END PRG ADDR 81100460
0809 0 MLSCF EQU * MONITOR CONTROL FIELD 81100470
0809 0 0000 MLSCO DC 0 ENTRY ZERO 81100480
080A 0 0000 MLSC1 DC 0 ONE 81100490
080B 0 0000 MLSC2 DC 0 TWO 81100500
080C 0 FFFF TERM DC /FFFF 81100510
080D 1 1F38 DC PEND LAST ADDR 81100520
080E 0 0000 DC 0 WORDS FOR MONITOR USE 81100530
080F 0 0000 DC 0 * 81100540
0810 0 0000 DC 0 * 81100550
0811 0 0000 DC 0 * 81100560
0812 0 0000 DC 0 * 81100570
0813 0 0000 TLGED DC 0 LOG EDIT 81100580
0814 0 0000 TSCED DC 0 SEL CHANNEL EDIT 81100590
0815 0 0000 TRID DC 0 ROUTINE ID 81100600
***** 81100610
* 81100620
***** 81100630
* 81100640
* TABLE OF CONSTANTS 81100650
* 81100660
***** 81100670
* 81100680
***** 81100690

```

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1800-2841 FUNCTION TEST (PHASE B)

```

* 81100700
087F 0 T8 EQU TPID+128 SO TBL CAN REACH PST TBL 81100710
0816 0 0001 K1 DC 1 CONSTANT ONE 81100720
0817 0 0002 K2 DC 2 CONSTANT 81100730
0818 0 0003 K3 DC 3 CONSTANT 81100740
0819 0 0006 K6 DC 6 CONSTANT 81100750
081A 0 0008 K8 DC 8 CONSTANT 81100760
081B 0 0009 K9 DC 9 81100770
081C 0 000A K10 DC 10 81100780
081D 0 0014 K20 DC 20 81100790
081E 0 0032 K50 DC 50 81100800
081F 0 0064 K100 DC 100 81100810
0820 0 0100 K256 DC 256 81100820
0821 0 03E8 K1000 DC 1000 81100830
0822 0 000A H000A DC /000A CONSTANT 81100840
0823 0 0011 H0011 DC /0011 81100850
0824 0 0013 H0013 DC /0013 CONSTANT 81100860
0825 0 0020 H0020 DC /0020 81100870
0826 0 0027 H0027 DC /0027 CONSTANT 81100880
0827 0 00C8 H00C8 DC /00C8 81100890
0828 0 00FF H00FF DC /00FF LINE TERMINATOR 81100900
0829 0 0100 H0100 DC /0100 CONSTANT 81100910
082A 0 0200 H0200 DC /0200 CONSTANT 81100920
082B 0 0400 H0400 DC /0400 CONSTANT 81100930
082C 0 0500 H0500 DC /0500 CONSTANT FOR WRITE IOCC 81100940
082D 0 0700 H0700 DC /0700 CONSTANT FOR SENSE DSW IOC 81100950
082E 0 0707 H0707 DC /0707 THE THING THAT LOOKS LIKE 81100960
082F 0 0E00 H0E00 DC /0E00 81100970
0830 0 2000 H2000 DC /2000 81100980
0831 0 2100 H2100 DC /2100 81100990
0832 0 3000 H3000 DC /3000 81101000
0833 0 4000 H4000 DC /4000 CONSTANT 81101010
0834 0 5000 H5000 DC /5000 CONSTANT 81101020
0835 0 7FFF H7FFF DC /7FFF 81101030
0836 0 8000 H8000 DC /8000 81101040
0837 0 CFFF HCCFF DC /CFFF 81101050
0838 0 FF00 HFF00 DC /FF00 81101060
0839 0 0000 CNTDN DC 0 81101070
083A 0 0000 TSCTN DC *-* SECTION NUMBER 81101080
083B 0 0000 TRTNH DC *-* ROUTINE NUMBER 81101090
083C 0 0000 TCNSW DC 0 ERROR SWITCH FOR RTNS 81101100
083D 0 0000 TCVS1 DC 0 81101110
083E 0 0000 TCVS2 DC 0 81101120
083F 0 0000 ERRSW DC 0 81101130
0840 0 0000 CAWSV DC *-* CCW ADDRESS SAVE AREA 81101140
0842 0002 ERTSV BSS E 2 SENSE INFO SAVE 81101150
0844 0002 TYP2 PRNT .SIO,. 81101160
0846 0002 TYP3 PRNT .SNS,. 81101170
0848 0002 PCAW PRNT .CAW,. 81101180
084A 0002 PCSW PRNT .CSW,. 81101190
084C 0002 PSNS PRNT .SNS,. 81101200
084E 0001 SPACE PRNT . . 81101210
084F 0 0000 DVADR DC *-* DEVICE ADDRESS TO BE TESTED 81101220
0850 0 0000 SIOSW DC *-* FOR SIO RTN 81101230
0851 0 0000 PASSW DC *-* USED TO TEST FOR ERROR 81101240
0852 0 0001 PSCNT DC 1 PASS COUNTER 81101250
0853 0 0000 STKSW DC 0 SWITCH FOR RE-ENTRANCE 81101260
0854 0 0000 TIOSW DC 0 TEST IO SW 81101270
0855 0 0000 LGBSY DC *-* LOG RTN BUSY SW 81101280
0856 0 0000 T23LC DC *-* LAST CYLINDER 81101290
0857 0 0000 T23LH DC *-* LAST HEAD 81101300
0858 0 0000 LPCNT DC *-* LOOP CNTR 81101310
0859 0 0000 LPCT1 DC *-* SPECIAL LYNN LOOP COUNTER 81101320
085A 0 0000 TEMP1 DC *-* TEMP STORAGE AREA 81101330
085B 0 0000 TEMP2 DC *-* TEMP STORAGE AREA 81101340
085C 0 C000 C0 DC /C000 SET FILE MASK 81101350
085D 0 0000 T45SW DC 0 0= NOT CALLED 81101360
* 1=1443 81101370

```

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1800-2841 FUNCTION TEST (PHASE B)

```

*
* 2=1053/1816 81101380
* 81101390
085E 0 0000 CNTRL DC **-* CONTROL ROUTINE 81101400
085F 1 4C00 0B04 BSC L TCNTE GO TO ROUTINE 81101410
* 81101420
* CVHA DC **-* CONVERT HA TO 1443 CODE 81101430
0861 0 0000 BSC L CVHAE GO TO RTN 81101440
* 81101450
* CKTV DC **-* 81101460
0864 0 0000 BSC L CHECK GO TO CHECK ROUTINE 81101470
* 81101480
* EROUT DC **-* ERROR PRINTOUT ROUTINE 81101490
0867 0 0000 BSC L ERTNE GO TO RTN 81101500
* 81101510
* FREDV DC **-* RELEASE CHANNEL ROUTINE 81101520
0868 1 4C00 1B68 BSC L FRDVE GO TO ROUTINE 81101530
* 81101540
* GETDV DC **-* CHANNEL ROUTINE 81101550
086D 0 0000 BSC L GTDVE GO TO ROUTINE 81101560
* 81101570
* GETSN DC **-* GET DEVICE SENSE INFO 81101580
0870 0 0000 BSC L GTSNS GO TO ROUTINE 81101590
* 81101600
* HABLC DC **-* COMPARE HA 81101610
0873 0 0000 BSC L HACRT GO TO RTN 81101620
* 81101630
* SIO DC **-* START I/O ROUTINE 81101640
0876 0 0000 BSC L SIONT GO TO RTN 81101650
* 81101660
* STMLS DC **-* SET HLSCF ROUTINE 81101670
0879 0 0000 BSC L STMLE GO TO RTN 81101680
* 81101690
* TCVBE DC **-* CONVERT HEX TO 1443 81101700
087C 0 0000 BSC L TCVBN GO TO RTN 81101710
* 81101720
* TCVHD DC **-* CONVERT HEX TO DEC 81101730
087F 0 0000 BSC L THEXD GO TO RTN 81101740
* 81101750
* THALT DC **-* ENTRY POINT 81101760
0882 0 0000 BSC L THLTE GO TO RTN 81101770
* 81101780
* TIO DC **-* TEST I/O 81101790
0885 0 0000 BSC L TIONT GO TO RTN 81101800
* 81101810
* TIOSN DC **-* SPECIAL TEST I/O 81101820
0888 0 0000 BSC L TIOSE GO TO RTN 81101830
* 81101840
* TLGMS DC **-* PRINT RTN 81101850
088B 0 0000 BSC L TLGME GO TO RTN 81101860
* 81101870
* TLPER DC **-* TEST LOOP ON ERROR 81101880
088E 0 0000 BSC L TERLP GO TO RTN 81101890
* 81101900
* TLPST DC **-* TEST LOOP START I/O 81101910
0891 0 0000 BSC L TSTLP GO TO RTN 81101920
* 81101930
* SKTV DC **-* 81101940
0894 0 0000 BSC L SEEKX GO TO ROUTINE 81101950
* 81101960
* WAITS DC **-* 81101970
0897 0 0000 BSC L TINTS GO TO WAIT IO RTN 81101980
* 81101990
***** 81102000
* 81102010
***** 81102020
* 81102030
* EQUATES AND CONSTANTS FOR CCW'S 81102040
* 81102050

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81102060
* 81102070
***** 81102080
* 81102090
* 81102100
* 81102110
* 81102120
* 81102130
* 81102140
* 81102150
* 81102160
* 81102170
* 81102180
* 81102190
* 81102200
* 81102210
* 81102220
* 81102230
* 81102240
* 81102250
* 81102260
* 81102270
* 81102280
* 81102290
* 81102300
* 81102310
* 81102320
* 81102330
* 81102340
* 81102350
* 81102360
* 81102370
* 81102380
* 81102390
* 81102400
* 81102410
* 81102420
* 81102430
* 81102440
* 81102450
* 81102460
* 81102470
* 81102480
* 81102490
* 81102500
* 81102510
***** 81102520
* 81102530
***** 81102540
* 81102550
* 81102560
* 81102570
* 81102580
* 81102590
* 81102600
* 81102610
* 81102620
* 81102630
* 81102640
* 81102650
* 81102660
* 81102670
***** 81102680
* 81102690
***** 81102700
***** 81102710
* 81102720
***** 81102730

0080 0
0040 0
0020 0
0008 0
0010 0

0000 0
0001 0
0002 0
0003 0
0005 0
0006 0
0004 0
0007 0
0011 0
0008 0
000B 0
0013 0
0012 0
001A 0
001E 0
0029 0
000E 0
000D 0
0016 0
009A 0
001B 0
0039 0
0049 0
0051 0
0069 0
0071 0
0031 0
001F 0
001D 0
0019 0
0015 0

0000 0
0001 0
0002 0
0003 0
0004 0
0005 0
0006 0
0007 0
0008 0

SCUND EQU 0 UNIT NOT OPERATIONAL
SCUSP EQU 1 UNIT STATUS PENDING
SCPCI EQU 2 PGM CNTRL INT.
SCPCK EQU 3 PGM CHECK
SCDCK EQU 4 DATA CHECK
SCICC EQU 5 INTERFACE CNTRL CHECK
SCILG EQU 6 INCORRECT LENGTH INDICATOR
SCABZ EQU 7 ADAPTER BUSY
SCUOP EQU 8 UNIT OPERATIONAL

***** 81102060
* 81102070
***** 81102080
* 81102090
* 81102100
* 81102110
* 81102120
* 81102130
* 81102140
* 81102150
* 81102160
* 81102170
* 81102180
* 81102190
* 81102200
* 81102210
* 81102220
* 81102230
* 81102240
* 81102250
* 81102260
* 81102270
* 81102280
* 81102290
* 81102300
* 81102310
* 81102320
* 81102330
* 81102340
* 81102350
* 81102360
* 81102370
* 81102380
* 81102390
* 81102400
* 81102410
* 81102420
* 81102430
* 81102440
* 81102450
* 81102460
* 81102470
* 81102480
* 81102490
* 81102500
* 81102510
***** 81102520
* 81102530
***** 81102540
* 81102550
* 81102560
* 81102570
* 81102580
* 81102590
* 81102600
* 81102610
* 81102620
* 81102630
* 81102640
* 81102650
* 81102660
* 81102670
***** 81102680
* 81102690
***** 81102700
***** 81102710
* 81102720
***** 81102730

```

1800-2841 FUNCTION TEST (PHASE B)

```

*
* EQUATES FOR UNIT STATUS DSW
UNATN EQU 8 UNIT STATUS-ATTENTION
UNSMO EQU 9 STATUS MODIFIER
UNCUE EQU 10 CONTROL UNIT END
UNBZY EQU 11 UNIT BUSY
UNCHE EQU 12 CHANNEL END
UNDVE EQU 13 DEVICE END
UNCHK EQU 14 UNIT CHECK
UNEXC EQU 15 UNIT EXCEPTION
*****
* EQUATES FOR 2311 SENSE BYTES
FBRST EQU 4 (BURST) DATA CK
FOVRN EQU 5 CHANNEL/2841 OVERRUN
FSKCK EQU 7 SEEK CK
FTROV EQU 9
FEOCY EQU 10 END OF CYLINDER
FNORC EQU 12 NO RECORD FOUND
FUNSF EQU 16
FSERD EQU 18 SERDES CHECK
FUNSL EQU 21
FDRDY EQU 24 DRIVE READY
FONLN EQU 25
FUNSI EQU 26 UNSAFE
FECYL EQU 29 END OF CYLINDER
FSKIN EQU 31 SEEK INCOMPLETE
*
NOPCC DC 1 BYTE COUNT
/20*256+OPNOP FLAGS AND OP CODE
DC * ADDRESS
*
RECAL DC 1 BYTE COUNT
/20*256+RCAL FLAGS AND OP CODE
DC * ADDRESS
*
TSCCW DC 1 BYTE COUNT
/20*256+OPTIO FLAGS AND OP CODE
DC * TSWDS ADDRESS
*
TSWDS DC *-*
*
SNCCW DC 6 BYTE COUNT
0*256+OPSNS FLAGS AND OP CODE
DC * SNWDS ADDRESS
*
SNWDS BSS E 4 SENSE BYTES
SNWDO EQU SNWDS
SNWD1 EQU SNWDS+1
SNWD2 EQU SNWDS+2
SNWD3 EQU SNWDS+3
TIOXX DC TSCCW TIO CCW
DC *-* TO BE FILLED IN
HIOXX DC *-*
DC *-*
SENSE DC SNCCW SENSE ID W/SUPPRESS POLL
DC *-* TO BE FILLED IN
SIOXX DC *-* TO BE FILLED WITH CCW ADDR
DC *-* TO BE FILLED IN
SCSN0 DC *-*
DC *-* = 08

```

1800-2841 FUNCTION TEST (PHASE B)

```

0886 0 0000 SCSN1 DC *-*
0887 0 0000 DC *-* = 09
0888 0 0000 SCSN2 DC *-*
0889 0 0000 DC *-* = 0A
088A 0 0000 SCSN3 DC *-*
088B 0 0000 DC *-* = 0B
088C 0 0000 SCSN4 DC *-*
088D 0 0000 DC *-* = 0C
088E 0 0000 SCSN5 DC *-*
088F 0 0000 DC *-* = 06
08C0 0004 SCSX0 BSS E 4 START I/O SAVE AREA
08C4 0004 SCSX4 BSS E 4 START I/O SAVE AREA 2
08C8 0004 SCSX8 BSS E 4 TIO SAVE AREA
08CC 0004 SCSXC BSS E 4 SENSE I/O SAVE AREA
08D0 0004 SCSVS BSS E 4 SAVE AREA FOR SENSE INFO
08D4 0003 HA BSS E 3
08D8 0000 BSS E 0
08DB 1 1DF0 TLGWR DC TLGBA IOAREA ADDRESS
08D9 0 0000 DC *-* TO BE FILLED IN
08DA 0 0000 TLGSP DC /0000 SPACE IN 1443 CODE
08DA 0 TLGSN EQU TLGSP SENSE DSW IOCC
08DB 0 0000 DC *-* TO BE FILLED IN
08DC 0 0000 TLGCT DC 0 LOOP COUNT FOR PRNTR INT
08DD 0 0000 TLGSW DC 0 1ST/2ND CHAR SW (1053)
08DE 0 0000 TLGSR DC 0 1ST/2ND CHAR SW (TLGCH)
08DF 0 0000 DC *-* SENSE/RESET DSW
*
08E0 0008 STSER PRNT .XX ERROR ON XXX .
08E8 0007 PRNT .SECT X,RTN X .
08EF 0 FFFF DC /FFFF
08F0 0009 UNADR PRNT . UNIT XX,ADRS XXXX.
08F9 0 FFFF DC /FFFF
*
* SELECTOR CHANNEL INT ROUTINE
*
08FA 0 0000 WIOSW DC *-* WAIT FOR USER INTERRUPT
08FB 0 0000 WATSW DC *-* WAIT FOR SYST TIO INT.
08FC 0 0000 SCISW DC *-* INTERRUPT SWITCH
08FD 0 0000 TSCAC DC *-* SEL.CHAN AREA CODE
08FE 0 0000 SCINT DC *-* INT. RTN ENTRY
08FF 0 68FA STX WIOSW SET INTERRUPT SWITCH
0900 0 6A6D STX 2 SCIN7+1 SAVE REG
0901 0 696E STX 1 SCIN7+3
0902 1 6600 087F LDX L2 TB SET UP POINTER TO TBL
0904 0 C27D LD 2 SCISW-TB GET INT SWITCH
0905 1 4C18 0959 BZ 2 SCIN4 BR IF NOT SET
*
0907 0 0A35 XIO 2 SCSN0-TB FETCH CHANNEL STATUS
0908 0 1001 SLA 1 TEST FOR USP
0909 1 4C10 0923 BNN SCIN0 BRANCH IF NOT USP
*
090B 0 0A39 XCH 2 SCSN2-TB GET UNIT STATUS
090C 0 18D0 XCH 16 SAVE STATUS
090D 0 1010 SLA 16 CLEAR A REG
090E 0 1088 SLT 8 GET DEVICE ADDR
090F 0 F2D0 EOR 2 DVADR-TB TEST FOR MY DEVICE
0910 1 4C18 0918 BZ SCINC BRANCH IF MINE
0912 0 1092 SLT 8+UNCUE TEST FOR CONTROL UNIT END
0913 1 4C10 0959 BNN SCIN4 BRANCH IF NOT CU END
*
0915 0 C2D5 LD 2 TIOSW-TB GET TIO SW
0916 1 4C18 0959 BZ SCIN4 BR IF INT NOT DUE TO TIO
*
0918 0 C2D5 SCINC LD 2 TIOSW-TB FETCH TIO SW
0919 1 4C18 0923 BZ SCIN0 BRANCH IF USER TIO
*
* GET HERE IF INTERRUPT FROM TIO AFTER SID
* IF STATUS IS NON BUSY THEN PLACE IN SCSX0

```

1800-2841 FUNCTION TEST (PHASE B)

```

* AND SCSX8
091B 0 0A39
091C 0 100B
091D 1 4C28 092D
*
091F 0 0A39
0920 0 EA42
0921 0 D242
*
0922 0 700A
*
* GET HERE IF TIOSW WAS NOT ON AND TEST
* FOR USER TIO IF SO PLACE STATUS IN SCSX8,
* ELSE GO TEST FOR SENSE OPERATION INTERRUPT
*
0923 0 C22F
0924 1 4C20 094D
*
0926 0 0A3D
0927 0 D23D
0928 0 C22D
0929 0 8299
092A 0 F23D
092B 1 4C20 0931
*
* GET HERE IF USER TIO OR SYSTEM TIO
* FOUND THAT THE UNIT OR CU WAS BUSY
* AFTER A TEST I/O.
*
092D 1 6700 08CB
092F 0 68CB
0930 0 702E
*
* GET HERE IF NO TEST I/O WAS INDICATED
* BY THE PRIOR ROUTINES
*
0931 0 C231
0932 0 8299
0933 0 F23D
0934 1 4C20 0939
0936 1 6700 08CC
0938 0 7026
*
* GET HERE IF SENSE WAS FOUND NOT TO
* BE THE CAUSE OF THE INTERRUPT AND TEST
* FOR START I/O TO BE THE CAUSE, IF NOT
* THEN SET THE INTERRUPT TO THE UNEXPECTED.
*
0939 0 C233
093A 1 6780 08B2
*
093C 0 8299
093D 0 D224
093E 0 F23D
093F 1 4C18 094D
0941 0 C301
0942 0 180E
0943 1 4C20 094A
0945 0 C301
0946 0 F29B
0947 0 1008
0948 1 4C20 0959
094A 0 7303
094B 0 C224
094C 0 70EF
*
094D 0 1010

```

1800-2841 FUNCTION TEST (PHASE B)

```

094E 0 D22F
094F 1 6700 08C0
0951 0 C301
0952 0 100D
0953 1 4C28 095F
0955 0 1001
0956 1 4C28 095F
0958 0 7008
*
0959 1 6700 0975
095B 1 6F00 0809
095D 1 6700 08C4
*
095F 0 1010
0960 0 D301
*
0961 0 0A37
0962 0 D300
0963 0 1001
0964 1 4C10 0973
*
0966 0 0A3B
0967 0 EB01
0968 0 D301
0969 0 0A3D
096A 0 D302
096B 0 0A3F
096C 0 D303
*
096D 0 6600 0000
096F 0 6500 0000
*
0971 1 4C80 08FE
*
0973 0 1010
0974 0 70F3
*
0975 1 6600 087F
0977 0 610C
0978 1 6700 08C7
*
097A 0 C300
097B 0 42FD
097C 1 D500 0997
097E 0 18D0
097F 1 D500 0998
0981 0 73FF
0982 0 71FD
0983 0 70F6
*
0984 0 420C
0985 1 0988
0986 0 4C80 012D
*
0988 0 0015
0997 0 FF00
0998 0 0013
09A5 0 FFFF
*
STO 2 HIOXX-TB
LDX L3 SCSX0
LD 3 1
SLA UNDFE
BN SCSIN5
SLA UNCHK-UNDFE
BN SCSIN5
MDX SCSIN6
*
L3 SCSIN8
L3 MLSCO
L3 SCSX4
*
SLA 16
STO 3 1
*
XIO 2 SCSN1-TB
STO 3 0
SLA 1
BNN SCINA
*
XIO 2 SCSN3-TB
OR 3 1
SCINB STO 3 1
XIO 2 SCSN4-TB
STO 3 2
XIO 2 SCSN5-TB
STO 3 3
*
LDX L2 *-
L3 *-
*
BSC 1 SCINT
*
SLA 16
MDX SCSINB
*
LDX L2 TB
LDX 1 12
LDX L3 SCSX4+3
*
LD 3 0
BSI 2 TCVBE-TB
STO L1 SCIM2-1
XCH
STO L1 SCIM2
MDX 3 -1
MDX 1 -3
MDX SCSIN9
*
BSI 2 TLGMS-TB
DC SCSIMS
BSC 1 START
*
SCIMS PRNT ** ER 00 UNEXPECTED INTERRUPT.
DC /FF00
SCIM2 PRNT .CSW XXXX, XXXX, XXXX, XXXX.
DC /FFFF
*****
*
* WAIT FOR INTERRUPT
*****

```

1800-2841 FUNCTION TEST (PHASE B)

```

* 81105460
***** 81105470
09A6 0 0000 TINTW DC *-* ENTRY POINT 81105480
09A7 0 C28D LD 2 TERM-TB FETCH TIME OUT CONSTANT 81105490
09A8 0 D237 STO 2 SCSN1-TB 81105500
* 81105510
TINT2 LD 2 WATSW-TB 81105520
09A9 0 C27C BNZ TINT3 81105530
09AA 1 4C20 09BA BSI 2 STMLS-TB GO VISIT MONITOR 81105540
09AC 0 42FA MDX L SCSN1,-10 81105550
09AD 1 74F6 08B6 MDX TINT2 81105560
* 81105570
XIO 2 SCSN1-TB GET CHANNEL STATUS 81105580
09B0 0 0A37 STO 2 SCSXC-TB * AND SAVE FOR ERR 81105590
09B1 0 D24D XIO 2 SCSN3-TB * MESSAGE 81105600
09B2 0 0A3B STO 2 SCSXC+1-TB * 81105610
09B3 0 D24E XIO 2 SCSN4-TB * 81105620
09B4 0 0A3D STO 2 SCSXC+2-TB 81105630
09B5 0 D24F XIO 2 SCSN5-TB 81105640
09B6 0 0A3F STO 2 SCSXC+3-TB 81105650
09B7 0 D250 * 81105660
* BSC I TINTW EXIT RTN 81105670
09B8 1 4C80 09A6 * 81105680
TINT3 MDX L TINTW,1 81105690
09BA 1 7401 09A6 SLA 16 81105700
09BC 0 1010 STO 2 WATSW-TB 81105710
09BD 0 D27C BSC I TINTW EXIT RTN 81105720
09BE 1 4C80 09A6 * 81105730
* 81105740
***** 81105750
* 81105760
***** 81105770
* 81105780
* 81105790
* 81105800
***** 81105810
* 81105820
***** 81105830
RAREA BSS E 100 RESERVE 200 BYTES 81105840
09C0 0064 DC /FFFF 81105850
0A24 0 FFFF WAREA BSS E 100 RESERVE 200 BYTES 81105860
0A26 0064 DC /FFFF 81105870
0A8A 0 FFFF * 81105880
* 81105890
* 81105900
* 81105910
* 81105920
* 81105930
* 81105940
0A8B 0 4480 012C BGIN BSI I BEGIN GO TO MONITOR BEGIN RTN 81105950
0A8D 1 07FF DC TPID ADDRESS OF PID 81105960
***** 81105970
* 81105980
***** 81105990
* 81106000
* 81106010
* 81106020
* 81106030
* 81106040
* 81106050
* 81106060
* 81106070
* 81106080
* 81106090
* 81106100
* 81106110
* 81106120
* 81106130
0A8E 0 0000 ZIPA DC *-* ENTRY POINT 81106000
0A8F 0 C0FE LD ZIPA MOVE RETURN ADDR 81106010
0A90 0 D013 STO ZLPA * 81106020
0A91 1 6600 087F LDX L2 TB SET UP POINTER 81106030
* 81106040
* 81106050
* 81106060
* 81106070
* 81106080
* 81106090
* 81106100
* 81106110
* 81106120
* 81106130
0A93 0 1010 SLA 16 RESET- 81106040
0A94 1 D400 1DD1 STO L FRESW RESET CONTROL SWS 81106050
0A96 0 D2D6 STO 2 LGBSY-TB * 81106060
0A97 0 D27B STO 2 WIOSW-TB * 81106070
0A98 0 D2D5 STO 2 TIOSW-TB * 81106080
0A99 0 D27C STO 2 WATSW-TB * 81106090
0A9A 0 D283 STO 2 TSWO-TB * SW 0 81106100
0A9B 0 D284 STO 2 TSW1-TB * SW 1 81106110
0A9C 0 D286 STO 2 TSW3-TB * SW 3 81106120
0A9D 1 D400 17F0 STO L STMPT RESET STMLS POINTER 81106130

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1800-2841 FUNCTION TEST (PHASE B)

```

00A9F 0 C2B9 LD 2 HFF00-TB FETCH CONSTANT 81106140
00AA0 0 D285 STO 2 TSW2-TB PLACE IN SW 2 81106150
00AA1 0 C297 LD 2 K1-TB FETCH CONSTANT OF 1 81106160
00AA2 0 D2D3 STO 2 PSCNT-TB SET PASS COUNT=1 81106170
00AA3 0 7001 MDX ZLPA+1 CONTINUE 81106180
***** 81106190
* 81106200
***** 81106210
* 81106220
* 81106230
ZLPA DC *-* LOOP PGM RTN 81106240
00AA4 0 0000 LDX L3 TCNPR GET MLCF ADDRESS 81106250
00AA5 1 6700 0AD4 STX L3 MLC2 SET IN TBL 81106260
00AA7 1 6F00 080B LDX L2 TB SET UP TBL POINTER 81106270
00AA9 1 6600 087F LD 2 TLGED-TB LOOK AT LOG EDIT 81106280
00AAB 0 C294 BNN ZLPA1 BR IF RELEASED 81106290
00AAC 1 4C10 0AB2 BSI I RELDV ELSE RELEASE DEVICE 81106300
00AAE 0 4480 0132 DC TLGED ADDR OF EDIT WORD 81106310
00AB0 1 0813 DC TERM TERMINATOR 81106320
00AB1 1 080C ZLPA1 LD 2 TSCED-TB SEL. CHAN. EDIT 81106330
00AB2 0 C295 BNN ZLPA2 81106340
00AB3 1 4C10 0AB9 BSI I RELDV RELEASE DEVICE 81106350
00AB5 0 4480 0132 DC TSCED 81106360
00AB7 1 0814 DC TERM 81106370
00AB8 1 080C ZLPA2 EQU * 81106380
00AB9 0 EQU 16 RESET- 81106390
00ABA 0 D2D4 STO 2 STKSW-TB * STACK SW 81106400
00ABB 0 D2D1 STO 2 SIOSW-TB * SID SW 81106410
00ABC 0 D2D6 STO 2 LGBSY-TB * LOG BUSY SW 81106420
00ABD 0 C297 LD 2 K1-TB FETCH CONSTANT OF 1 81106430
00ABE 0 D281 STO 2 TSID-TB SET SECTION ID = 1 81106440
00ABF 1 4C80 0AA4 BSC I ZLPA EXIT 81106450
* 81106460
***** 81106470
* 81106480
***** 81106490
ZEPa DC *-* END PGM RTN 81106500
00AC1 0 0000 LDX L2 TB SET UP TBL POINTER 81106510
00AC2 1 6600 087F LD 2 TLGED-TB LOOK AT LOG EDIT 81106520
00AC4 0 C294 BNN ZEPa1 BR IF RELEASED 81106530
00AC5 1 4C10 0ACB BSI I RELDV ELSE RELEASE DEVICE 81106540
00AC7 0 4480 0132 DC TLGED ADDR OF EDIT WORD 81106550
00AC9 1 0813 DC TERM TERMINATOR 81106560
00ACA 1 080C * 81106570
00ACB 0 C295 ZEPa1 LD 2 TSCED-TB SEL CHANNEL EDIT 81106580
00ACC 1 4C10 0AD2 BNN ZEPa2 BR IF RELEASED 81106590
* 81106600
* 81106610
* 81106620
* 81106630
00ACE 0 4480 0132 BSI I RELDV RELEASE DEVICE 81106640
00ADO 1 0814 DC TSCED ADDR OF EDIT WORD 81106650
00AD1 1 080C DC TERM 81106660
00AD2 1 4C80 0AC1 ZEPa2 BSC I ZEPa EXIT BACK TO MONITOR 81106670
***** 81106680
* 81106690
* 81106700
* 81106710
* 81106720
* 81106730
* 81106740
* 81106750
* 81106760
* 81106770
* 81106780
* 81106790
* 81106800
* 81106810
0AD4 1 6600 087F TCNPR LDX L2 TB SET UP TABLE POINTER 81106730
0AD6 0 C2DE LD 2 T45SW-TB GET 43/53 SWITCH 81106740
0AD7 1 4C20 0AEB BNZ TCN01 81106750
0AD9 0 42FA TCNRQ BSI 2 STMLS-TB 81106760
0ADA 0 4480 0131 BSI I REQDV REQUEST DEVICE 81106770
0ADC 1 0AD9 DC TCNRQ BUSY RETURN 81106780
0ADD 1 0813 DC TLGED EDIT FOR PRINTER 81106790
0ADE 1 1D93 DC TLGDA AREA CODE GIVEN BACK 81106800
0ADF 1 080C DC TERM TERMINATOR 81106810

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1800-2841 FUNCTION TEST (PHASE B)

OAE0 0 4480 0132	BSI 1	RELDV	RELEASE DEVICE	81106820
OAE2 1 0813	DC	TLGED	EDIT FOR PRINTER	81106830
OAE3 1 080C	DC	TERM	TERMINATOR	81106840
OAE4 1 C400 1093	LD L	TLGDA	GET PRINTER AREA CODE	81106850
OAE6 0 F2B3	EDR 2	H3000-TB		81106860
OAE7 0 4820	SKP	Z		81106870
OAE8 0 C297	LD 2	K1-TB		81106880
OAE9 0 8297	A	2 K1-TB	ADD ONE	81106890
OAEA 0 D2DE	STO 2	T45SW-TB	SET SW FOR 43 OR 53	81106900
OAEB 0	*			81106910
OAE8 0 42EE	TCN01 EQU *			81106920
OAE9 0 42EB	BSI 2	GETDV-TB	GET DEVICE FOR USE	81106930
OAE0 0 C285	BSI 2	FREDV-TB	RELEASE DEVICE	81106940
OAE1 0 1808	LD 2	TSW2-TB	GET SW FNC 2 (DEV ADDR)	81106950
OAE2 1 4C18 OAF8	SRA 8		SAVE BITS 0-7	81106960
OAF1 0 420C	BZ	TCN02	BR IF ZERO	81106970
OAF2 1 0B5A	BSI 2	TLGMS-TB	PRINT MESSAGE	81106980
OAF3 0 42FA	DC	TCNE2	'ENTER DEV ADDRESS'	81106990
OAF4 0 C285	*			81107000
OAF5 0 1808	BSI 2	STMLS-TB	GO TO MONITOR	81107010
OAF6 0 4820	LD 2	TSW2-TB	GET SW FNC 2	81107020
OAF7 0 70FB	SRA 8		SAVE BITS 0-7	81107030
OAF8 0 C285	SKP	Z	SKIP IF ZERO	81107040
OAF9 0 D2D0	MOX *-5		LOOP UNTIL OK	81107050
OAF0 0 42FD	*			81107060
OAFB 0 1090	TCN02 LD 2	TSW2-TB	GET SW FNC 2	81107070
OAFD 0 C2D3	STO 2	DVADR-TB	SET FOR SID/TIO/SNS	81107080
OAFE 0 4200	BSI 2	TCVBE-TB	CONVERT ADDR TO EBC	81107090
OAF0 0 42FD	SLT 16		Q TO A	81107100
OB00 0 18D0	STO	CUU11	STORE FOR PRINT	81107110
OB01 0 D045	*			81107120
OB02 0 420C	LD 2	PSCNT-TB	GET PASS COUNT	81107130
OB03 1 0B33	BSI 2	TCVHD-TB	CVT TO DECIMAL	81107140
	BSI 2	TCVBE-TB	CONVERT TO 1443 CODE	81107150
	XCH		Q TO A	81107160
	STO	TTLO1+3	PUT IN MSG	81107170
	BSI 2	TLGMS-TB	PRINT PROGRAM TITLE	81107180
	DC	TTLO0	MSG ADDRESS	81107190
				81107200
				81107210
				81107220
				81107230
				81107240
				81107250
				81107260
				81107270
				81107280
				81107290
				81107300
				81107310
				81107320
				81107330
				81107340
				81107350
				81107360
				81107370
				81107380
				81107390
				81107400
				81107410
				81107420
				81107430
				81107440
				81107450
				81107460
				81107470
				81107480
				81107490

1800-2841 FUNCTION TEST (PHASE B)

OB1F 1 4C80 0801	BSC 1	TSAD	GO TO SECTION PREFACE	81107500
OB21 0 D281	*			81107510
OB22 0 900B	TCN04 STO 2	TSID-TB	STORE SECT. NUMBER	81107520
OB23 1 4C28 0B14	S	TCNTA	SUB. NUMBER OF SECTIONS	81107530
	BN	TCN03	BR IF OK	81107540
	*			81107550
OB25 0 C284	TCNER LD 2	TSW1-TB	GET SW FNC 1	81107560
OB26 0 42FD	BSI 2	TCVBE-TB	CONVERT HEX TO PRNT CODE	81107570
OB27 0 D02E	STO	TTLER+11	PUT INVALID SWITCH	81107580
OB28 0 1090	SLT 16		* SETTING INTO MESSAGE	81107590
OB29 0 D02D	STO	TTLER+12	*	81107600
OB2A 0 420C	BSI 2	TLGMS-TB		81107610
OB2B 1 0B4B	DC	TTLER		81107620
OB2C 0 4203	BSI 2	THALT-TB		81107630
OB2D 0 42DF	BSI 2	CNTRL-TB	GO TO RETRY RTN SELCT	81107640
	*			81107650
OB2E 0 0005	TCNTA DC	TCNTZ-TCNTA	LENGTH OF TBL + 1	81107660
OB2F 1 0B6A	DC	T1ONT	SECTION ADDRESS	81107670
OB30 1 0DF9	DC	T2ONT	SECTION ADDRESS	81107680
OB31 1 10BC	DC	T3ONT	SECTION ADDRESS	81107690
OB32 1 13CA	DC	T4ONT	SECTION ADDRESS	81107700
OB33 0	TCNTZ EQU *		END OF TABLE	81107710
				81107720
				81107730
				81107740
				81107750
				81107760
				81107770
				81107780
				81107790
				81107800
				81107810
				81107820
				81107830
				81107840
				81107850
				81107860
				81107870
				81107880
				81107890
				81107900
				81107910
				81107920
				81107930
				81107940
				81107950
				81107960
				81107970
				81107980
				81107990
				81108000
				81108010
				81108020
				81108030
				81108040
				81108050
				81108060
				81108070
				81108080
				81108090
				81108100
				81108110
				81108120
				81108130
				81108140
				81108150
				81108160
				81108170

1800-2841 FUNCTION TEST (PHASE B)

* THESE SEARCHES ARE TESTED FOR EACH OF THE 81108180
* FOLLOWING FIVE CASES, 81108190
* 1. CORE SEARCH FIELD G.T. FILE SEARCH FLD 81108200
* 2. CORE SEARCH FIELD EQ FILE SEARCH FLD 81108210
* 3. CORE SEARCH FIELD L.T. FILE SEARCH FLD 81108220
* 4. SEARCH COMMAND TESTED SPECIFIED FEWER 81108230
* BYTES THAN FILE SEARCH FIELD 81108240
* 5. SEARCH COMMAND TESTED SPECIFIED MORE 81108250
* BYTES THAN FILE SEARCH FIELD 81108260
* 81108270
* 81108280
* 81108290
* THE SEARCHES ARE TESTED BY A COMMON ROUTINE 81108300
* WHICH RUNS SEQUENTIALLY THROUGH A TABLE OF 81108310
* CCM'S. THE COMMANDS ARE TESTED BY GIVING 81108320
* THE SEARCH AND THEN READING THE EXPECTED 81108330
* RECORD. A COMPARISON IS PERFORMED AND THE 81108340
* RESULTS INDICATED. 81108350
* 81108360
* 81108370
* 81108380
* 81108390
* 81108400
* 81108410
* 81108420
* 81108430
* 81108440
* 81108450
* 81108460
* 81108470
* 81108480
* 81108490
* 81108500
* 81108510
* 81108520
* 81108530
* 81108540
* 81108550
* 81108560
* 81108570
* 81108580
* 81108590
* 81108600
* 81108610
* 81108620
* 81108630
* 81108640
* 81108650
* 81108660
* 81108670
* 81108680
* 81108690
* 81108700
* 81108710
* 81108720
* 81108730
* 81108740
* 81108750
* 81108760
* 81108770
* 81108780
* 81108790
* 81108800
* 81108810
* 81108820
* 81108830
* 81108840
* 81108850

0872 0
0872 1 7401 0815
0874 1 4C18 0879
0876 0 9297
0877 1 4C20 0DF6

0879 0 C283
087A 0 100A
087B 1 4C10 087F
087D 0 420C
087E 1 08C2

087F 0 42EE

0880 0 4215

0881 0 1010
0882 1 D400 0C01

0884 0 C29D
0885 0 0073

0886 1 4400 0BDE

0888 1 6500 0C37
088A 0 696F
088B 0 C051
088C 1 D400 0C30

088E 0 C100
088F 0 D068
0890 0 C101
0891 0 D06A
0892 0 C102
0893 0 D069
0894 0 C103
0895 0 D068

0896 0 C104
0897 0 D067
0898 0 C105

T1101 EQU * TEST ENTRY POINT
MDX L TRID,1 BUMP RTN ID
BZ T1102 BR IF TEST NUMBER ZERO
S 2 KI-TB DECREMENT BY ONE
BNZ T1201 BR IF NOT THIS TEST

T1102 LD 2 TSWO-TB GET OPTION SWS
SLA OTTLE PRINT TITLES
BNN T1103 BR IF NOT SET
BSI 2 TLGMS-TB GO TO PRINT ROUTINE
DC TTL11 MESSAGE ADDRESS

T1103 BSI 2 GETDV-TB GET CHANNEL FOR RTN
*
BSI 2 SKTV-TB BRANCH TO SEEKX ROUTINE
*
SLA 16 RESET END OF TEST SW
STO L T11YY *
*
LD 2 K10-TB SET UP ERROR COUNTER
STO T11CE *
*
GO FORMAT TRACK
BSI L T11FO
*
LDX L1 T11TB SET UP TABLE POINTER
T1104 STX 1 T11SV SAVE
LD T110F SET CMP DATA SW = 0
STO L T11CK *
*
LD 1 0 SET UP EXPECTED -
STO T11EX CS
LD 1 1
STO T11EX+1 US
LD 1 2
STO T11EX+2 AD
LD 1 3
STO T11EX+3 BC
*
LD 1 4 SET UP EXPECTED SENSE
STO T11SN * BYTES
LD 1 5 *

1800-2841 FUNCTION TEST (PHASE B)

0899 0 D066 STO T11SN+1 * 81108860
* LD 1 6 GET CK DATA WORD 81108870
089A 0 C106 LD T1105 BR IF NO DATA CHECKED 81108880
089B 1 4C18 08A2 * 81108890
* 81108900
089D 1 D400 0C35 STO L T11CK+5 PUT RD DATA ADR IN CK 81108910
089F 0 C03C LD T110N GET CHECK FLAG 81108920
08A0 1 D400 0C30 STO L T11CK REPLACE 81108930
* 81108940
* 81108950
08A2 0 7107 T1105 MDX 1 7 POINT TO ERROR NO 81108960
08A3 1 6D00 0C36 STX L1 T11CK+6 PUT IN CHECK CALL 81108970
08A5 0 7102 MDX 1 2 POINT TO FIRST CCW 81108980
* 81108990
08A6 0 690C * STX 1 T11G0+1 PUT CCW ADDRS IN SID CALL 81109000
* 81109010
08A7 0 C100 T1106 LD 1 0 LOOK FOR TABL TERMINATOR 81109020
08A8 0 F28D EOR 2 TERM-TB * 81109030
08A9 1 4C18 08AD BZ T1107 BR IF END OF CURRENT TABL 81109040
* 81109050
08AB 0 7101 MDX 1 1 ELSE BUMP POINTER 81109060
08AC 0 70FA MDX T1106 GO LOOK AGAIN 81109070
* 81109080
08AD 0 C101 T1107 LD 1 1 LOOK FOR LAST TABL 81109090
08AE 0 F28D EOR 2 TERM-TB * 81109100
08AF 0 4818 BSC +- SKIP IF NOT END OF TABLS 81109110
08B0 0 6850 STX T11YY ELSE SET END OF TEST SW 81109120
08B1 0 7101 MDX 1 1 POINT TO NEXT TABL 81109130
* 81109140
08B2 0 42F7 T11G0 BSI 2 SIO-TB GO DO SIO 81109150
08B3 0 0000 DC *- CCW ADDRS GOES HERE 81109160
* 81109170
08B4 0 4212 BSI 2 TLPST-TB GO TEST LOOP SIO 81109180
08B5 1 08B2 DC T11G0 LOOP ADDRS 81109190
08B6 0 42E5 BSI 2 CKTV-TB CALL CHECK ROUTINE 81109200
08B7 1 0C30 DC T11CK LIST ADDRESS 81109210
08B8 1 4C20 08D3 BNZ T11ER BR IF ERROR ENCOUNTERED 81109220
* 81109230
08BA 0 C046 T11LP LD T11YY ELSE GET END OF TEST SW 81109240
08BB 1 4C18 088A BZ T1104 CONTINUE IF NOT SET 81109250
* 81109260
* 81109270
* GO TO NEXT ROUTINE IN SEQUENCE 81109280
* 81109290
08BD 0 42EB T11EN BSI 2 FREDV-TB FREE CHANNEL 81109300
08BE 0 C28C LD 2 TRTNN-TB GET RTN SWS 81109310
08BF 1 4C18 0DF6 BZ T1201 GO TO NEXT RTN IN SEQ 81109320
08C1 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81109330
08C2 0 0007 TTL11 PRNT * SECT 1,RT 1- 81109340
* 81109350
08C9 0 0009 PRNT *SEARCH OPERATIONS. 81109360
08D2 0 FFFF DC /FFFF 81109370
* 81109380
08D3 0 420F T11ER BSI 2 TLPER-TB GO TEST LOOP ERROR 81109390
08D4 1 08D9 DC T1108 LOOP ADDRS 81109400
* 81109410
08D5 1 74FF 0BF9 MDX L T11CE,-1 DECREMENT ERROR CNTR 81109420
08D7 0 70B2 MDX T1104 LOOP IF LT 10 81109430
08D8 0 70E4 MDX T11EN ELSE END RTN 81109440
* 81109450
08D9 1 6580 0BFA T1108 LDX 11 T11SV RESTORE POINTER 81109460
08DB 0 70AE MDX T1104 LOOP ON LAST SEQUENCE 81109470
* 81109480
08DC 0 FF80 T110N DC /FF80 DATA EXPECTED FLAGS 81109490
08DD 0 EF80 T110F DC /EF80 NO DATA EXPECTED FLAGS 81109500
* 81109510
* 81109520
* 81109530

```
* FORMAT DISK (HA,RO,R1,R2,R7) 81109540
* 81109550
* 81109560
*****
* 81109570
*****
* 81109580
* 81109590
* 81109600
* 81109610
* 81109620
* 81109630
* 81109640
* 81109650
* 81109660
* 81109670
* 81109680
* 81109690
* 81109700
* 81109710
* 81109720
* 81109730
* 81109740
* 81109750
* 81109760
* 81109770
* 81109780
* 81109790
* 81109800
* 81109810
* 81109820
* 81109830
* 81109840
* 81109850
* 81109860
* 81109870
* 81109880
* 81109890
* 81109900
* 81109910
* 81109920
* 81109930
* 81109940
* 81109950
* 81109960
* 81109970
* 81109980
* 81109990
* 81110000
* 81110010
* 81110020
* 81110030
* 81110040
* 81110050
* 81110060
* 81110070
* 81110080
* 81110090
* 81110100
* 81110110
* 81110120
* 81110130
* 81110140
* 81110150
* 81110160
* 81110170
* 81110180
* 81110190
* 81110200
* 81110210

OBDE 0 0000 T11FO DC *-- ENTRY
OBDF 0 42F7 BSI 2 SIO-TB GO DD SIO
OBE0 1 OBE3 DC T11XX CCW ADDR
* BSC 1 T11FO RETURN TO TEST
* T11XX DC 1 BYTE COUNT
OBE3 0 0001 DC FLCCH*256+SFILM FLAGS AND OP CODE
OBE4 0 401F DC CO ADDRESS
OBE5 1 OBE5C *
* DC 4 BYTE COUNT
OBE6 0 0004 DC FLCCH*256+SFILM HA FLAGS AND OP CODE
OBE7 0 4039 DC HA ADDRESS
OBE8 1 OBE84 *
* DC 1 BYTE COUNT
OBE9 0 0001 DC 0*256+OPTIC FLAGS AND OP CODE
OBEA 0 0008 DC *-6 ADDRESS
OBEB 1 OBE6 *
* DC 10 BYTE COUNT
OBEC 0 000A DC FLCCH*256+WRRO FLAGS AND OP CODE
OBE0 0 4015 DC T11WR ADDRESS
OBE2 1 OC02 *
* DC 16 BYTE COUNT
OBEF 0 0010 DC FLCCH*256+WRCKD FLAGS AND OP CODE
OBF0 0 4010 DC T11EC ADDRESS
OBF1 1 OC06 *
* DC 16 BYTE COUNT
OBF2 0 0010 DC FLCCH*256+WRCKD FLAGS AND OP CODE
OBF3 0 4010 DC T11E2 ADDRESS
OBF4 1 OC0E *
* DC 16 BYTE COUNT
OBF5 0 0010 DC 0*256+WRCKD FLAGS AND OP CODE
OBF6 0 0010 DC T11E7 ADDRESS
OBF7 1 OC16 *
* T11ND DC /0800 ALLOW ALL WRITES, NO SKS
* DATA AND CONSTANTS
* T11CE DC *-- ERROR COUNTER (0-10)
OBF9 0 0000 T11SV DC *-- SAVE PRESENT TABL POINTER
OBF8 0 0000 T11EX DC *-- EXPECTED CS
OBF0 0 0000 DC *-- US
OBF1 0 0000 DC *-- AD
OBF2 0 0000 DC *-- BC
* T11SN DC *-- EXPECTED SENSE
OBF3 0 0000 DC *-- BYTES
OC00 0 0000 T11YY DC *-- END OF TEST SW
OC01 0 0000 T11WR DC /0006
OC02 0 0000 DC /0000
OC03 0 0000 DC /0000
OC04 0 0000 DC /0002
OC05 0 0002 DC /0006
OC06 0 00C6 T11EC DC /0000
OC07 0 0000 DC /0104
OC08 0 0104 DC /0004
OC09 0 0004 DC PRNT .REC1REC1.
OCA 0004
```

```
OC0E 0 00C6 T11E2 DC /00C6 81110220
OC0F 0 0000 DC /0000 81110230
OC10 0 0204 DC /0204 81110240
OC11 0 0004 DC /0004 81110250
OC12 0004 PRNT .REC2REC2. 81110260
OC16 0 00C6 T11E7 DC /00C6 81110270
OC17 0 0000 DC /0000 81110280
OC18 0 0704 DC /0704 81110290
OC19 0 0004 DC /0004 81110300
OC1A 0004 PRNT .REC7REC7. 81110310
OC02 0 T11TO EQU T11WR 81110320
OC06 0 T11T1 EQU T11EC 81110330
OC1E 0 00C6 T11T6 DC /00C6 81110340
OC1F 0 0000 DC /0000 81110350
OC20 0 0600 DC /0600 81110360
OC21 0 00C6 T11T8 DC /00C6 81110370
OC22 0 0000 DC /0000 81110380
OC23 0 0800 DC /0800 81110390
OC24 0002 T11Y0 PRNT .REC0. 81110400
OC26 0002 T11Y1 PRNT .REC1. 81110410
OC28 0002 T11Y2 PRNT .REC2. 81110420
OC2A 0002 T11Y3 PRNT .REC3. 81110430
OC2C 0002 T11Y7 PRNT .REC7. 81110440
OC2E 0002 T11Y8 PRNT .REC8. 81110450
* 81110460
* CHECK TABLE 81110470
* T11CK DC *-- FLAG WORD 81110480
DC T11EX ADRS EXP CSW 81110490
DC T11SN ADRS EXP SENSE 81110500
DC *-- WORD COUNT 81110510
DC RAREA ADRS DATA WAS 81110520
DC *-- ADRS DATA S/B 81110530
DC *-- ADRS MESSAGE 81110540
***** 81110550
* 81110560
* 81110570
***** 81110580
* 81110590
* EXPECTED DATA AND CCW'S FOR TEST 81110600
* 81110610
***** 81110620
* 81110630
***** 81110640
***** 81110650
T11TB DC /4000 EXP CHANNEL STATUS 81110660
DC /000E EXP UNIT STATUS 81110670
DC T1118+3 EXP CSW ADDRESS 81110680
DC /0005 EXP BYTE COUNT 81110690
DC /0008 EXPECTED SENSE BYTES 81110700
DC /00C8 * 81110710
DC /0000 SHOULD NOT READ DATA 81110720
OC3E 0001 PRNT -.01. 81110730
OC3F 0 FFFF DC /FFFF TERMINATOR 81110740
* 81110750
* T1118 DC 5 BYTE COUNT 81110760
DC /40*256+SIDHI FLAGS AND OP CODE 81110770
DC T11T8 ADDRESS 81110780
* 81110790
* 81110800
* DC 1 BYTE COUNT 81110810
DC 0*256+/08 FLAGS AND OP CODE 81110820
DC *-6 ADDRESS 81110830
* 81110840
* 81110850
* DC 8 BYTE COUNT 81110860
DC /00*256+/0E FLAGS AND OP CODE 81110870
DC RAREA ADDRESS 81110880
* 81110890
```

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```

OC49 0 FFFF          DC      /FFFF      TABLE TERMINATOR      81110900
*****
OC4A 0 4000          DC      /4000      EXP CHANNEL STATUS      81110910
OC4B 0 000E          DC      /000E      EXP UNIT STATUS          81110920
OC4C 1 0C56          DC      T1119+3    EXP CSW ADDRESS          81110930
OC4D 0 0005          DC      /0005      EXP BYTE COUNT          81110940
OC4E 0 0008          DC      /0008      EXPECTED SENSE BYTES    81110950
OC4F 0 00C8          DC      /00C8      *                        81110960
OC50 0 0000          DC      /0000      SHOULD NOT READ DATA  81110970
OC51 0001            PRNT    .02.
OC52 0 FFFF          DC      /FFFF      TERMINATOR              81110980
*****
OC53 0 0005          T1119 DC      5          BYTE COUNT              81110990
OC54 0 4051          DC      /40*256+/51  FLAGS AND OP CODE      81111000
OC55 1 0C16          DC      T11E7      ADDRESS                81111010
*****
OC56 0 0001          DC      1          BYTE COUNT              81111020
OC57 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81111030
OC58 1 0C53          DC      *-6        ADDRESS                81111040
*****
OC59 0 0008          DC      8          BYTE COUNT              81111050
OC5A 0 000E          DC      /00*256+/0E  FLAGS AND OP CODE      81111060
OC5B 1 09C0          DC      RAREA      ADDRESS                81111070
*****
OC5C 0 FFFF          DC      /FFFF      TABLE TERMINATOR      81111080
*****
OC5D 0 4000          DC      /4000      EXP CHANNEL STATUS      81111090
OC5E 0 000C          DC      /000C      EXP UNIT STATUS          81111100
OC5F 1 0C75          DC      T110A+3    EXP CSW ADDRESS          81111110
OC60 0 0000          DC      /0000      EXP BYTE COUNT          81111120
OC61 0 0000          DC      /0000      EXPECTED SENSE BYTES    81111130
OC62 0 00C8          DC      /00C8      *                        81111140
OC63 1 0C28          DC      T11Y2      ADDR OF EXPECTED DATA  81111150
OC64 0001            PRNT    .03.
OC65 0 FFFF          DC      /FFFF      TERMINATOR              81111160
*****
OC66 0 0005          T1120 DC      5          BYTE COUNT              81111170
OC67 0 4031          DC      /40*256+/31  FLAGS AND OP CODE      81111180
OC68 1 0C02          DC      T11T0      ADDRESS                81111190
*****
OC69 0 0001          DC      1          BYTE COUNT              81112000
OC6A 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81112010
OC6B 1 0C66          DC      *-6        ADDRESS                81112020
*****
OC6C 0 0005          DC      5          BYTE COUNT              81112030
OC6D 0 4051          DC      /40*256+/51  FLAGS AND OP CODE      81112040
OC6E 1 0C06          DC      T11T1      ADDRESS                81112050
*****
OC6F 0 0001          DC      1          BYTE COUNT              81112060
OC70 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81112070
OC71 1 0C6C          DC      *-6        ADDRESS                81112080
*****
OC72 0 0008          T110A DC      8          BYTE COUNT              81112090
OC73 0 000E          DC      /00*256+/0E  FLAGS AND OP CODE      81112100
OC74 1 09C0          DC      RAREA      ADDRESS                81112110
*****
OC75 0 FFFF          DC      /FFFF      TABLE TERMINATOR      81112120
*****
OC76 0 4200          DC      /4200      EXP CHANNEL STATUS      81112130

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OC77 0 000C          DC      /000C      EXP UNIT STATUS          81111580
OC78 1 0C82          DC      T1121+3    EXP CSW ADDRESS          81111590
OC79 0 0000          DC      /0000      EXP BYTE COUNT          81111600
OC7A 0 0000          DC      /0000      EXPECTED SENSE BYTES    81111610
OC7B 0 00C8          DC      /00C8      *                        81111620
OC7C 0 0000          DC      /0000      SHOULD NOT READ DATA  81111630
OC7D 0001            PRNT    .04.
OC7E 0 FFFF          DC      /FFFF      TERMINATOR              81111640
*****
OC7F 0 0004          T1121 DC      4          BYTE COUNT              81111650
OC80 0 4051          DC      /40*256+/51  FLAGS AND OP CODE      81111660
OC81 1 0C06          DC      T11T1      ADDRESS                81111670
*****
OC82 0 0001          DC      1          BYTE COUNT              81111680
OC83 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81111690
OC84 1 0C7F          DC      *-6        ADDRESS                81111700
*****
OC85 0 0008          DC      8          BYTE COUNT              81111710
OC86 0 000E          DC      /00*256+/0E  FLAGS AND OP CODE      81111720
OC87 1 09C0          DC      RAREA      ADDRESS                81111730
*****
OC88 0 FFFF          DC      /FFFF      TABLE TERMINATOR      81111740
*****
OC89 0 4200          DC      /4200      EXP CHANNEL STATUS      81111750
OC8A 0 004C          DC      /004C      EXP UNIT STATUS          81111760
OC8B 1 0C9B          DC      T112A+3    EXP CSW ADDRESS          81111770
OC8C 0 0001          DC      /0001      EXP BYTE COUNT          81111780
OC8D 0 0000          DC      /0000      EXPECTED SENSE BYTES    81111790
OC8E 0 00C8          DC      /00C8      *                        81118000
OC8F 0 0000          DC      /0000      SHOULD NOT READ DATA  81118100
OC90 0001            PRNT    .05.
OC91 0 FFFF          DC      /FFFF      TERMINATOR              81118110
*****
OC92 0 0005          T1122 DC      5          BYTE COUNT              81118120
OC93 0 4031          DC      /40*256+/31  FLAGS AND OP CODE      81118130
OC94 1 0C02          DC      T11T0      ADDRESS                81118140
*****
OC95 0 0001          DC      1          BYTE COUNT              81118150
OC96 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81118160
OC97 1 0C92          DC      *-6        ADDRESS                81118170
*****
OC98 0 0006          T112A DC      6          BYTE COUNT              81118180
OC99 0 4051          DC      /40*256+/51  FLAGS AND OP CODE      81118190
OC9A 1 0C02          DC      T11T0      ADDRESS                81112000
*****
OC9B 0 0001          DC      1          BYTE COUNT              81112010
OC9C 0 0008          DC      0*256+/08  FLAGS AND OP CODE      81112020
OC9D 1 0C98          DC      *-6        ADDRESS                81112030
*****
OC9E 0 0008          DC      8          BYTE COUNT              81112040
OC9F 0 000E          DC      /00*256+/0E  FLAGS AND OP CODE      81112050
OCA0 1 09C0          DC      RAREA      ADDRESS                81112060
*****
OCA1 0 FFFF          DC      /FFFF      TABLE TERMINATOR      81112070
*****
OCA2 0 4000          DC      /4000      EXP CHANNEL STATUS      81112080
OCA3 0 000E          DC      /000E      EXP UNIT STATUS          81112090
OCA4 1 0CAE          DC      T1123+3    EXP CSW ADDRESS          81112100
OCA5 0 0004          DC      /0004      EXP BYTE COUNT          81112110
OCA6 0 0008          DC      /0008      EXPECTED SENSE BYTES    81112120

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OCA7 0 00C8 DC /00C8 * 81112260
OCA8 0 0000 DC /0000 SHOULD NOT READ DATA 81112270
OCA9 0001 PRNT *06. 81112280
OCAA 0 FFFF DC /FFFF TERMINATOR 81112290
* 81112300
OCAB 0 0004 T1123 DC 4 BYTE COUNT 81112310
OCAC 0 4049 DC /40*256+/49 FLAGS AND OP CODE 81112320
OCAD 1 0C2E DC T11Y8 ADDRESS 81112330
* 81112340
* 81112350
OCAE 0 0001 DC 1 BYTE COUNT 81112360
OCAF 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81112370
OCB0 1 0CAB DC *-6 ADDRESS 81112380
* 81112390
* 81112400
OCB1 0 0004 DC 4 BYTE COUNT 81112410
OCB2 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81112420
OCB3 1 09C0 DC RAREA ADDRESS 81112430
* 81112440
OCB4 0 FFFF DC /FFFF TABLE TERMINATOR 81112450

* 81112460
* 81112470
OCB5 0 4000 DC /4000 EXP CHANNEL STATUS 81112480
OCB6 0 000E DC /000E EXP UNIT STATUS 81112490
OCB7 1 0CC1 DC T1124+3 EXP CSW ADDRESS 81112500
OCB8 0 0004 DC /0004 EXP BYTE COUNT 81112510
OCB9 0 0008 DC /0008 EXPECTED SENSE BYTES 81112520
OCBA 0 00C8 DC /00C8 * 81112530
OCBB 0 0000 DC /0000 SHOULD NOT READ DATA 81112540
OCBC 0001 PRNT *07. 81112550
OCBD 0 FFFF DC /FFFF TERMINATOR 81112560
* 81112570
* 81112580
OCBE 0 0004 T1124 DC 4 BYTE COUNT 81112580
OCBF 0 4049 DC /40*256+/49 FLAGS AND OP CODE 81112590
OCC0 1 0C2C DC T11Y7 ADDRESS 81112600
* 81112610
* 81112620
OCC1 0 0001 DC 1 BYTE COUNT 81112630
OCC2 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81112640
OCC3 1 0C8E DC *-6 ADDRESS 81112650
* 81112660
* 81112670
OCC4 0 0004 DC 4 BYTE COUNT 81112680
OCC5 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81112690
OCC6 1 09C0 DC RAREA ADDRESS 81112700
* 81112710
OCC7 0 FFFF DC /FFFF TABLE TERMINATOR 81112720

* 81112730
* 81112740
OCC8 0 4000 DC /4000 EXP CHANNEL STATUS 81112750
OCC9 0 000C DC /000C EXP UNIT STATUS 81112760
OCCA 1 0CE0 DC T115A+3 EXP CSW ADDRESS 81112770
OCCB 0 0000 DC /0000 EXP BYTE COUNT 81112780
OCCC 0 0000 DC /0000 EXPECTED SENSE BYTES 81112790
OCCD 0 00C8 DC /00C8 * 81112800
OCCF 1 0C28 DC T11Y2 ADDR OF EXPECTED DATA 81112810
OCCF 0001 PRNT *08. 81112820
OCD0 0 FFFF DC /FFFF TERMINATOR 81112830
* 81112840
* 81112850
OCD1 0 0005 T1125 DC 5 BYTE COUNT 81112850
OCD2 0 4031 DC /40*256+/31 FLAGS AND OP CODE 81112860
OCD3 1 0C06 DC T11T1 ADDRESS 81112870
* 81112880
* 81112890
OCD4 0 0001 DC 1 BYTE COUNT 81112900
OCD5 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81112910
OCD6 1 0CD1 DC *-6 ADDRESS 81112920
* 81112930

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* 81112940
OC07 0 0004 DC 4 BYTE COUNT 81112950
OC08 0 4049 DC /40*256+/49 FLAGS AND OP CODE 81112960
OC09 1 0C26 DC T11Y1 ADDRESS 81112970
* 81112980
* 81112990
OCDA 0 0001 DC 1 BYTE COUNT 81113000
OCDB 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81113010
OCDC 1 0C07 DC *-6 ADDRESS 81113020
* 81113030
* 81113040
OCDD 0 0004 T115A DC 4 BYTE COUNT 81113050
OCDE 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81113060
OCDF 1 09C0 DC RAREA ADDRESS 81113070
* 81113080
* 81113090
OCE0 0 FFFF DC /FFFF TABLE TERMINATOR 81113100

* 81113110
* 81113120
OCE1 0 4200 DC /4200 EXP CHANNEL STATUS 81113120
OCE2 0 000C DC /000C EXP UNIT STATUS 81113130
OCE3 1 0CED DC T1126+3 EXP CSW ADDRESS 81113140
OCE4 0 0000 DC /0000 EXP BYTE COUNT 81113150
OCE5 0 0000 DC /0000 EXPECTED SENSE BYTES 81113160
OCE6 0 00C8 DC /00C8 * 81113170
OCE7 0 0000 DC /0000 SHOULD NOT READ DATA 81113180
OCE8 0001 PRNT *09. 81113190
OCE9 0 FFFF DC /FFFF TERMINATOR 81113200
* 81113210
* 81113220
OCEA 0 0002 T1126 DC 2 BYTE COUNT 81113220
OCEB 0 4049 DC /40*256+/49 FLAGS AND OP CODE 81113230
OCEC 1 0C26 DC T11Y1 ADDRESS 81113240
* 81113250
* 81113260
* 81113270
OCED 0 0001 DC 1 BYTE COUNT 81113280
OCDE 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81113290
OCEF 1 0CEA DC *-6 ADDRESS 81113300
* 81113310
* 81113320
OCF0 0 0004 DC 4 BYTE COUNT 81113320
OCF1 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81113330
OCF2 1 09C0 DC RAREA ADDRESS 81113340
* 81113350
OCF3 0 FFFF DC /FFFF TABLE TERMINATOR 81113360

* 81113370
* 81113380
OCF4 0 4200 DC /4200 EXP CHANNEL STATUS 81113390
OCF5 0 000C DC /000C EXP UNIT STATUS 81113400
OCF6 1 0D06 DC T117A+3 EXP CSW ADDRESS 81113410
OCF7 0 0001 DC /0001 EXP BYTE COUNT 81113420
OCF8 0 0000 DC /0000 EXPECTED SENSE BYTES 81113430
OCF9 0 00C8 DC /00C8 * 81113440
OCFA 0 0000 DC /0000 SHOULD NOT READ DATA 81113450
OCFB 0001 PRNT *10. 81113460
OCFC 0 FFFF DC /FFFF TERMINATOR 81113470
* 81113480
* 81113490
OCFD 0 0005 T1127 DC 5 BYTE COUNT 81113490
OCFE 0 4031 DC /40*256+/31 FLAGS AND OP CODE 81113500
OCFF 1 0C06 DC T11T1 ADDRESS 81113510
* 81113520
* 81113530
* 81113540
OD00 0 0001 DC 1 BYTE COUNT 81113540
OD01 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81113550
OD02 1 0CFD DC *-6 ADDRESS 81113560
* 81113570
* 81113580
* 81113590
OD03 0 0005 T117A DC 5 BYTE COUNT 81113590
OD04 0 4049 DC /40*256+/49 FLAGS AND OP CODE 81113600
OD05 1 0C26 DC T11Y1 ADDRESS 81113610

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0D06 0 0001	DC	1	BYTE COUNT	81113620
0D07 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81113630
0D08 1 0D03	DC	*-6	ADDRESS	81113640
*****				81113650
0D09 0 0004	DC	4	BYTE COUNT	81113660
0D0A 0 0006	DC	/00*256+/06	FLAGS AND OP CODE	81113670
0D0B 1 09C0	DC	RAREA	ADDRESS	81113680
*****				81113690
0D0C 0 FFFF	DC	/FFFF	TABLE TERMINATOR	81113700
*****				81113710
0D0D 0 4000	DC	/4000	EXP CHANNEL STATUS	81113720
0D0E 0 000E	DC	/000E	EXP UNIT STATUS	81113730
0D0F 1 0D19	DC	T1128+3	EXP CSW ADDRESS	81113740
0D10 0 0005	DC	/0005	EXP BYTE COUNT	81113750
0D11 0 0008	DC	/0008	EXPECTED SENSE BYTES	81113760
0D12 0 00C8	DC	/00C8	*	81113770
0D13 0 0000	DC	/0000	SHOULD NOT READ DATA	81113780
0D14 0001	PRNT	.11.		81113790
0D15 0 FFFF	DC	/FFFF	TERMINATOR	81113800
*****				81113810
0D16 0 0005	T1128 DC	5	BYTE COUNT	81113820
0D17 0 4071	DC	/40*256+/71	FLAGS AND OP CODE	81113830
0D18 1 0C21	DC	T11T8	ADDRESS	81113840
*****				81113850
0D19 0 0001	DC	1	BYTE COUNT	81113860
0D1A 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81113870
0D1B 1 0D16	DC	*-6	ADDRESS	81113880
*****				81113890
0D1C 0 0008	DC	8	BYTE COUNT	81113900
0D1D 0 000E	DC	/00*256+/0E	FLAGS AND OP CODE	81113910
0D1E 1 09C0	DC	RAREA	ADDRESS	81113920
*****				81113930
0D1F 0 FFFF	DC	/FFFF	TABLE TERMINATOR	81113940
*****				81113950
0D20 0 4000	DC	/4000	EXP CHANNEL STATUS	81113960
0D21 0 000C	DC	/000C	EXP UNIT STATUS	81113970
0D22 1 0D38	DC	T119A+3	EXP CSW ADDRESS	81113980
0D23 0 0000	DC	/0000	EXP BYTE COUNT	81113990
0D24 0 0000	DC	/0000	EXPECTED SENSE BYTES	81114000
0D25 0 0006	DC	/00C8	*	81114010
0D26 1 0C26	DC	T11Y1	ADDR OF EXPECTED DATA	81114020
0D27 0001	PRNT	.12.		81114030
0D28 0 FFFF	DC	/FFFF	TERMINATOR	81114040
*****				81114050
0D29 0 0005	T1129 DC	5	BYTE COUNT	81114060
0D2A 0 4031	DC	/40*256+/31	FLAGS AND OP CODE	81114070
0D2B 1 0C02	DC	T11T0	ADDRESS	81114080
*****				81114090
0D2C 0 0001	DC	1	BYTE COUNT	81114100
0D2D 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81114110
0D2E 1 0D29	DC	*-6	ADDRESS	81114120
*****				81114130
0D2F 0 0005	DC	5	BYTE COUNT	81114140
0D30 0 4071	DC	/40*256+/71	FLAGS AND OP CODE	81114150
0D31 1 0C06	DC	T11T1	ADDRESS	81114160
*****				81114170
0D32 0 0001	DC	1	BYTE COUNT	81114180
0D33 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81114190
	DC	*-6	ADDRESS	81114200
*****				81114210
	DC	5	BYTE COUNT	81114220
	DC	/40*256+/71	FLAGS AND OP CODE	81114230
	DC	T11T1	ADDRESS	81114240
*****				81114250
	DC	1	BYTE COUNT	81114260
	DC	0*256+/08	FLAGS AND OP CODE	81114270
	DC	*-6	ADDRESS	81114280
*****				81114290

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0D34 1 0D2F	DC	*-6	ADDRESS	81114300
*****				81114310
0D35 0 0004	T119A DC	4	BYTE COUNT	81114320
0D36 0 0006	DC	/00*256+/06	FLAGS AND OP CODE	81114330
0D37 1 09C0	DC	RAREA	ADDRESS	81114340
*****				81114350
0D38 0 FFFF	DC	/FFFF	TABLE TERMINATOR	81114360
*****				81114370
0D39 0 4000	DC	/4000	EXP CHANNEL STATUS	81114380
0D3A 0 000C	DC	/000C	EXP UNIT STATUS	81114390
0D3B 1 0D51	DC	T110B+3	EXPECTED CSW ADDRESS	81114400
0D3C 0 0000	DC	/0000	EXP BYTE COUNT	81114410
0D3D 0 0000	DC	/0000	EXP SENSE BYTES	81114420
0D3E 0 00C8	DC	/00C8	*	81114430
0D3F 1 0C26	DC	T11Y1	ADDRESS OF EXP DATA	81114440
0D40 0001	PRNT	.13.		81114450
0D41 0 FFFF	DC	/FFFF	TERMINATOR	81114460
*****				81114470
0D42 0 0005	T1130 DC	5	BYTE COUNT	81114480
0D43 0 4031	DC	/40*256+/31	FLAGS AND OP CODE	81114490
0D44 1 0C02	DC	T11T0	ADDRESS	81114500
*****				81114510
0D45 0 0001	DC	1	BYTE COUNT	81114520
0D46 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81114530
0D47 1 0D42	DC	*-6	ADDRESS	81114540
*****				81114550
0D48 0 0005	DC	5	BYTE COUNT	81114560
0D49 0 4071	DC	/40*256+/71	FLAGS AND OP CODE	81114570
0D4A 1 0C02	DC	T11T0	ADDRESS	81114580
*****				81114590
0D4B 0 0001	DC	1	BYTE COUNT	81114600
0D4C 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81114610
0D4D 1 0D48	DC	*-6	ADDRESS	81114620
*****				81114630
0D4E 0 0008	T110B DC	8	BYTE COUNT	81114640
0D4F 0 000E	DC	/00*256+/0E	FLAGS AND OP CODE	81114650
0D50 1 09C0	DC	RAREA	ADDRESS	81114660
*****				81114670
0D51 0 FFFF	DC	/FFFF	TABLE TERMINATOR	81114680
*****				81114690
0D52 0 4200	DC	/4200	EXP CHANNEL STATUS	81114700
0D53 0 004C	DC	/004C	EXP UNIT STATUS	81114710
0D54 1 0D5E	DC	T1131+3	EXP CSW ADDRESS	81114720
0D55 0 0000	DC	/0000	EXP BYTE COUNT	81114730
0D56 0 0000	DC	/0000	EXPECTED SENSE BYTES	81114740
0D57 0 00C8	DC	/00C8	*	81114750
0D58 0 0000	DC	/0000	SHOULD NOT READ DATA	81114760
0D59 0001	PRNT	.14.		81114770
0D5A 0 FFFF	DC	/FFFF	TERMINATOR	81114780
*****				81114790
0D5B 0 0003	T1131 DC	3	BYTE COUNT	81114800
0D5C 0 4071	DC	/40*256+/71	FLAGS AND OP CODE	81114810
0D5D 1 0C02	DC	T11T0	ADDRESS	81114820
*****				81114830
0D5E 0 0001	DC	1	BYTE COUNT	81114840
0D5F 0 0008	DC	0*256+/08	FLAGS AND OP CODE	81114850
0D60 1 0D5B	DC	*-6	ADDRESS	81114860
*****				81114870
0D61 0 0002	DC	2	BYTE COUNT	81114880
*****				81114890
*****				81114900
*****				81114910
*****				81114920
*****				81114930
*****				81114940
*****				81114950
*****				81114960
*****				81114970

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```

0D62 0 000E      DC      /00*256+/0E FLAGS AND OP CODE      81114980
0D63 1 09C0      DC      RAREA ADDRESS                          81114990
*
0D64 0 FFFF      DC      /FFFF TABLE TERMINATOR                    81115000
*****
0D65 0 4200      DC      /4200 EXP CHANNEL STATUS                    81115010
0D66 0 004C      DC      /004C EXP UNIT STATUS                        81115020
0D67 1 0D77      DC      T113A+3 EXP CSW ADDRESS                      81115030
0D68 0 0001      DC      /0001 EXP BYTE COUNT                        81115040
0D69 0 0000      DC      /0000 EXPCTED SENSE BYTES                    81115050
0D6A 0 00C8      DC      /00C8 *                                      81115060
0D6B 0 0000      DC      /0000 SHOULD NOT READ DATA                  81115070
0D6C 0001      PRNT      .15.
0D6D 0 FFFF      DC      /FFFF TERMINATOR                            81115080
*
0D6E 0 0004      T1132 DC      4 BYTE COUNT                            81115090
0D6F 0 4029      DC      /40*256+/29 FLAGS AND OP CODE                81115100
0D70 1 0C28      DC      T11Y2 ADDRESS                                81115110
*
0D71 0 0001      DC      1 BYTE COUNT                                81115120
0D72 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81115130
0D73 1 0D6E      DC      *-6 ADDRESS                                81115140
*
0D74 0 0006      T113A DC      6 BYTE COUNT                            81115150
0D75 0 4071      DC      /40*256+/71 FLAGS AND OP CODE                81115160
0D76 1 0C1E      DC      T11T6 ADDRESS                                81115170
*
0D77 0 0001      DC      1 BYTE COUNT                                81115180
0D78 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81115190
0D79 1 0D74      DC      *-6 ADDRESS                                81115200
*
0D7A 0 0008      DC      8 BYTE COUNT                                81115210
0D7B 0 000E      DC      /00*256+/0E FLAGS AND OP CODE                81115220
0D7C 1 09C0      DC      RAREA ADDRESS                                81115230
*
0D7D 0 FFFF      DC      /FFFF TABLE TERMINATOR                    81115240
*****
0D7E 0 4000      DC      /4000 EXP CHANNEL STATUS                    81115250
0D7F 0 000E      DC      /000E EXP UNIT STATUS                        81115260
0D80 1 0D8A      DC      T1133+3 EXP CSW ADDRESS                      81115270
0D81 0 0004      DC      /0004 EXP BYTE COUNT                        81115280
0D82 0 0008      DC      /0008 EXPCTED SENSE BYTES                    81115290
0D83 0 00C8      DC      /00C8 *                                      81115300
0D84 0 0000      DC      /0000 SHOULD NOT READ DATA                  81115310
0D85 0001      PRNT      .16.
0D86 0 FFFF      DC      /FFFF TERMINATOR                            81115320
*
0D87 0 0004      T1133 DC      4 BYTE COUNT                            81115330
0D88 0 4069      DC      /40*256+/69 FLAGS AND OP CODE                81115340
0D89 1 0C2E      DC      T11Y8 ADDRESS                                81115350
*
0D8A 0 0001      DC      1 BYTE COUNT                                81115360
0D8B 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81115370
0D8C 1 0D87      DC      *-6 ADDRESS                                81115380
*
0D8D 0 0004      DC      4 BYTE COUNT                                81115390
0D8E 0 0006      DC      /00*256+/06 FLAGS AND OP CODE                81115400
0D8F 1 09C0      DC      RAREA ADDRESS                                81115410
*
0D90 0 FFFF      DC      /FFFF TABLE TERMINATOR                    81115420
*****

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81115660
*
0D91 0 4000      DC      /4000 EXP CHANNEL STATUS                    81115670
0D92 0 000C      DC      /000C EXP UNIT STATUS                        81115680
0D93 1 0DA9      DC      T114A+3 EXP CSW ADDRESS                      81115690
0D94 0 0000      DC      /0000 EXP BYTE COUNT                        81115700
0D95 0 0000      DC      /0000 EXPCTED SENSE BYTES                    81115710
0D96 0 00C8      DC      /00C8 *                                      81115720
0D97 1 0C28      DC      T11Y2 ADDR OF EXPECTED DATA                  81115730
0D98 0 0001      PRNT      .17.
0D99 0 FFFF      DC      /FFFF TERMINATOR                            81115740
*
0D9A 0 0005      T1134 DC      5 BYTE COUNT                            81115750
0D9B 0 4031      DC      /40*256+/31 FLAGS AND OP CODE                81115760
0D9C 1 0C06      DC      T11T1 ADDRESS                                81115770
*
0D9D 0 0001      DC      1 BYTE COUNT                                81115780
0D9E 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81115790
0D9F 1 0D9A      DC      *-6 ADDRESS                                81115800
*
0DA0 0 0004      DC      4 BYTE COUNT                                81115810
0DA1 0 4069      DC      /40*256+/69 FLAGS AND OP CODE                81115820
0DA2 1 0C28      DC      T11Y2 ADDRESS                                81115830
*
0DA3 0 0001      DC      1 BYTE COUNT                                81115840
0DA4 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81115850
0DA5 1 0DA0      DC      *-6 ADDRESS                                81115860
*
0DA6 0 0004      T114A DC      4 BYTE COUNT                            81115870
0DA7 0 0006      DC      /00*256+/06 FLAGS AND OP CODE                81115880
0DA8 1 09C0      DC      RAREA ADDRESS                                81115890
*
0DA9 0 FFFF      DC      /FFFF TABLE TERMINATOR                    81115900
*****
0DAA 0 4000      DC      /4000 EXP CHANNEL STATUS                    81115910
0DAB 0 000C      DC      /000C EXP UNIT STATUS                        81115920
0DAC 1 0DC2      DC      T115B+3 EXP CSW ADDRESS                      81115930
0DAD 0 0000      DC      /0000 EXP BYTE COUNT                        81115940
0DAE 0 0000      DC      /0000 EXPCTED SENSE BYTES                    81115950
0DAF 0 00C8      DC      /00C8 *                                      81115960
0DB0 1 0C26      DC      T11Y1 ADDR OF EXPECTED DATA                  81115970
0DB1 0001      PRNT      .18.
0DB2 0 FFFF      DC      /FFFF TERMINATOR                            81115980
*
0DB3 0 0005      T1135 DC      5 BYTE COUNT                            81115990
0DB4 0 4031      DC      /40*256+/31 FLAGS AND OP CODE                81116000
0DB5 1 0C06      DC      T11T1 ADDRESS                                81116010
*
0DB6 0 0001      DC      1 BYTE COUNT                                81116020
0DB7 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81116030
0DB8 1 0DB3      DC      *-6 ADDRESS                                81116040
*
0DB9 0 0004      DC      4 BYTE COUNT                                81116050
0DBA 0 4069      DC      /40*256+/69 FLAGS AND OP CODE                81116060
0DBB 1 0C26      DC      T11Y1 ADDRESS                                81116070
*
0DBC 0 0001      DC      1 BYTE COUNT                                81116080
0DBD 0 0008      DC      0*256+/08 FLAGS AND OP CODE                  81116090
0DBE 1 0DB9      DC      *-6 ADDRESS                                81116100
*

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1800-2841 FUNCTION TEST (PHASE B)

```

* 81116340
ODBF 0 0004 T115B DC 4 BYTE COUNT 81116350
ODCO 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81116360
ODC1 1 09C0 DC RAREA ADDRESS 81116370
* 81116380
ODC2 0 FFFF DC /FFFF TABLE TERMINATOR 81116390
***** 81116400
* 81116410
ODC3 0 4200 DC /4200 EXP CHANNEL STATUS 81116420
ODC4 0 004C DC /004C EXP UNIT STATUS 81116430
ODC5 1 00D5 DC T1136+9 EXP CSW ADDRESS 81116440
ODC6 0 0000 DC /0000 EXP BYTE COUNT 81116450
ODC7 0 0000 DC /0000 EXPECTED SENSE BYTES 81116460
ODC8 0 00C8 DC /00C8 * 81116470
ODC9 0 0000 DC /0000 SHOULD NOT READ DATA 81116480
ODCA 0001 PRNT .19. 81116490
ODCB 0 FFFF DC /FFFF TERMINATOR 81116500
* 81116510
ODCC 0 0005 T1136 DC 5 BYTE COUNT 81116520
ODCD 0 4031 DC /40*256+/31 FLAGS AND OP CODE 81116530
ODCE 1 0C06 DC T11T1 ADDRESS 81116540
* 81116550
* 81116560
ODCF 0 0001 DC 1 BYTE COUNT 81116570
ODDO 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81116580
ODD1 1 0DC6 DC *-6 ADDRESS 81116590
* 81116600
* 81116610
ODD2 0 0001 DC 1 BYTE COUNT 81116620
ODD3 0 4069 DC /40*256+/69 FLAGS AND OP CODE 81116630
ODD4 1 0C28 DC T11Y2 ADDRESS 81116640
* 81116650
* 81116660
ODD5 0 0001 DC 1 BYTE COUNT 81116670
ODD6 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81116680
ODD7 1 0DD2 DC *-6 ADDRESS 81116690
* 81116700
* 81116710
ODD8 0 0004 DC 4 BYTE COUNT 81116720
ODD9 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81116730
ODDA 1 09C0 DC RAREA ADDRESS 81116740
* 81116750
ODDB 0 FFFF DC /FFFF TABLE TERMINATOR 81116760
***** 81116770
* 81116780
ODDC 0 4200 DC /4200 EXP CHANNEL STATUS 81116790
ODDD 0 004C DC /004C EXP UNIT STATUS 81116800
ODDE 1 0DEE DC T117B+3 EXP CSW ADDRESS 81116810
ODDF 0 0002 DC /0002 EXP BYTE COUNT 81116820
ODE0 0 0000 DC /0000 EXPECTED SENSE BYTES 81116830
ODE1 0 00C8 DC /00C8 * 81116840
ODE2 0 0000 DC /0000 SHOULD NOT READ DATA 81116850
ODE3 0001 PRNT .20. 81116860
ODE4 0 FFFF DC /FFFF TERMINATOR 81116870
* 81116880
* 81116890
ODE5 0 0004 T1137 DC 4 BYTE COUNT 81116900
ODE6 0 4029 DC /40*256+/29 FLAGS AND OP CODE 81116910
ODE7 1 0C28 DC T11Y2 ADDRESS 81116920
* 81116930
* 81116940
ODE8 0 0001 DC 1 BYTE COUNT 81116950
ODE9 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81116960
ODEA 1 0DE5 DC *-6 ADDRESS 81116970
* 81116980
* 81116990
ODEB 0 0C06 T117B DC 6 BYTE COUNT 81117000
ODEC 0 4069 DC /40*256+/69 FLAGS AND OP CODE 81117010
ODED 1 0C2A DC T11Y3 ADDRESS 81117010

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1800-2841 FUNCTION TEST (PHASE B)

```

* 81117020
* 81117030
ODEE 0 0001 DC 1 BYTE COUNT 81117040
ODEF 0 0008 DC 0*256+/08 FLAGS AND OP CODE 81117050
ODFO 1 0DEB DC *-6 ADDRESS 81117060
* 81117070
* 81117080
ODF1 0 0004 DC 4 BYTE COUNT 81117090
ODF2 0 0006 DC /00*256+/06 FLAGS AND OP CODE 81117100
ODF3 1 09C0 DC RAREA ADDRESS 81117110
* 81117120
* 81117130
ODF4 0 FFFF DC /FFFF TABLE TERMINATOR 81117140
ODF5 0 FFFF DC /FFFF END OF TABLE ***** 81117150
***** 81117160
* 81117170
* 81117180
* 81117190
* SECTION END 81117200
* 81117210
ODF6 0 42DF T1201 BSI 2 CNTRL-TB GO TO CONTROL RTN 81117220
***** 81117230
* 81117240
* 81117250
* 81117260
* SECTION PREFACE 81117270
* 81117280
T2OPR DC /0002 SECTION NUMBER 81117290
* 81117300
* 81117310
T2ONT LD 2 TRTNN-TB SW FNC 1 BITS 12-15 81117320
ODFA 1 4C18 OE01 BZ T2101 BR IF RUN ALL RTNS 81117330
ODFC 0 90FB S T2OPR+1 TEST FOR VALID 81117340
ODFD 1 4C30 OB25 BP TCNER BR IF INVALID RTN NUMBER 81117350
ODFF 0 80FB A T2OPR+1 RESTORE RTN NUMBER 81117360
OE00 0 7000 MDX T2101 GO TO FIRST RTN 81117370
***** 81117380
* 81117390
* 81117400
* 81117410
* 81117420
* 81117430
* 81117440
* 81117450
* 81117460
* 81117470
* 81117480
* 81117490
* 81117500
* 81117510
* 81117520
* 81117530
* 81117540
* 81117550
* 81117560
* 81117570
* 81117580
* 81117590
* 81117600
* 81117610
* 81117620
* 81117630
* 81117640
* 81117650
* 81117660
* 81117670
* 81117680
* 81117690

```


1800-2841 FUNCTION TEST (PHASE B)

```

0E79 0 0000      DC      **          US      81119060
0E7A 0 0000      DC      **          AD      81119070
0E7B 0 0000      DC      **          BC      81119080
*
0E7C 0 0000      T21SN DC      **          EXPECTED SENSE 81119100
0E7D 0 0000      DC      **          DATA          81119110
*
0E7E 0 0000      T21SV DC      **          SAVE AREA      81119130
0E7F 0 0000      T21EC DC      **          ERROR COUNTER 81119140
*
0E80 0 00FF      T21RO DC      /00FF      RECORD ZERO 81119160
0E81 0 00FF      DC          /00FF      *            81119170
0E82 0 0000      DC          /0000      *            81119180
0E83 0 0002      DC          /0002      *            81119190
0E84 0 FFFF      DC          /FFFF      *            81119200
*
0E85 0 00FF      T21CX DC      /00FF      'COUNT,KEY,DATA' 81119220
0E86 0 00FF      DC          /00FF      'OR CCW'S'        81119230
0E87 0 0101      DC          /0101      *            81119240
0E88 0 0001      DC          /0001      *            81119250
0E89 0 CC33      T21WR DC      /CC33      *            81119260
*
0E8A 0 33CC      T21KD DC      /33CC      'KEY,DATA' FOR CCW'S 81119280
0E8B 0 CC00      T21DT DC      /CC00      'DATA' FOR CCW'S 81119290
*
0E8C 0 FF80      T21CK DC      /FF80      FLAG FOR CHECK RTN 81119300
0E8D 1 0E78      DC      T21EX      CSW 'SB' ADDR      81119310
0E8E 1 0E7C      DC      T21SN      SENSE 'SB' ADDR    81119320
0E8F 0 0000      DC      **          WORD CNT GOES HERE 81119330
0E90 1 09C0      DC      RAREA      READ AREA ADDR     81119340
0E91 0 0000      DC      **          DATA EXPECTED ADDR 81119350
0E92 1 0E82      DC      T21M2     MSG ADDR          81119360
0E93 0 FFFF      DC          /FFFF      *            81119370
*
0E94 0016      T21M1 PRNT      . **10 ERRORS FOUND IN FILE MASK. 81119380
0EA4 0013      PRNT          . TEST- ROUTINE TERMINATED. 81119390
0EB1 0 FFFF      DC          /FFFF      *            81119400
*
0EB2 0000      BSS E 0      81119430
0EB2 0008      T21M2 PRNT      . FILE MASK= XXXX. 81119440
0EBA 0 FFFF      DC          /FFFF      *            81119450
*****
*
* CCW TABLE FOR FILE PROTECT TEST
*****
*
* SET FILE MASK,WRITE/READ HOME ADDR
*
0EB8 0 0001      T21C1 DC      1          BYTE COUNT      81119460
0EB9 0 401F      DC      FLCCH*256+SFILM 81119470
0EBA 1 0E6A      DC      T21FM      ADDRESS          81119480
*
*
0EBE 0 0005      DC      5          BYTE COUNT      81119490
0EBF 0 4019      DC      FLCCH*256+WRHA 81119500
0EC0 1 0E68      DC      T21HA      ADDRESS          81119510
*
*
0EC1 0 0005      DC      5          BYTE COUNT      81119520
0EC2 0 001A      DC      0*256+RDHA    81119530
0EC3 1 09C0      DC      RAREA      ADDRESS          81119540
*
* SET FILE MASK,WRITE/READ RECORD 0
*****

```

1800-2841 FUNCTION TEST (PHASE B)

```

*
*
0EC4 0 0001      T21C2 DC      1          BYTE COUNT      81119740
0EC5 0 401F      DC      FLCCH*256+SFILM 81119750
0EC6 1 0E6A      DC      T21FM      ADDRESS          81119760
*
*
0EC7 0 0004      T21C6 DC      4          BYTE COUNT      81119770
0EC8 0 4039      DC      FLCCH*256+SRCHA 81119780
0EC9 1 08D4      DC      HA          ADDRESS          81119790
*
*
0ECA 0 0001      DC      1          BYTE COUNT      81119800
0ECB 0 0008      DC      0*256+OPTIC    81119810
0ECC 1 0EC7      DC      T21C6      ADDRESS          81119820
*
*
0ECD 0 000A      DC      10         BYTE COUNT      81119830
0ECE 0 4015      DC      FLCCH*256+WRRO 81119840
0ECF 1 0E80      DC      T21RO      ADDRESS          81119850
*
*
0ED0 0 000A      DC      10         BYTE COUNT      81119860
0ED1 0 0016      DC      0*256+RDRO    81119870
0ED2 1 09C0      DC      RAREA      ADDRESS          81119880
*
* SET FILE MASK,WRITE/READ COUNT,KEY,DATA
*
*
0ED3 0 0001      T21C3 DC      1          BYTE COUNT      81119890
0ED4 0 401F      DC      FLCCH*256+SFILM 81119900
0ED5 1 0E6A      DC      T21FM      ADDRESS          81119910
*
*
0ED6 0 0005      T21CH DC      5          BYTE COUNT      81119920
0ED7 0 4031      DC      FLCCH*256+SRCID 81119930
0ED8 1 0E80      DC      T21RO      ADDRESS          81119940
*
*
0ED9 0 0001      DC      1          BYTE COUNT      81119950
0EDA 0 0008      DC      0*256+OPTIC    81119960
0EDB 1 0E06      DC      T21CH      ADDRESS          81119970
*
*
0EDC 0 000A      DC      10         BYTE COUNT      81119980
0EDD 0 401D      DC      FLCCH*256+WRCKD 81119990
0EDE 1 0E85      DC      T21CX      ADDRESS          81120000
*
*
0EDF 0 000A      DC      10         BYTE COUNT      81120010
0EE0 0 001E      DC      0*256+RDCKD    81120020
0EE1 1 09C0      DC      RAREA      ADDRESS          81120030
*
* SET FILE MASK,WRITE/READ KEY,DATA
*
*
0EE2 0 0001      T21C4 DC      1          BYTE COUNT      81120040
0EE3 0 401F      DC      FLCCH*256+SFILM 81120050
0EE4 1 0E6A      DC      T21FM      ADDRESS          81120060
*
*
0EE5 0 0005      T21C1 DC      5          BYTE COUNT      81120070
0EE6 0 4031      DC      FLCCH*256+SRCID 81120080
0EE7 1 0E85      DC      T21CX      ADDRESS          81120090
*
*
0EE8 0 0001      DC      1          BYTE COUNT      81120100
0EE9 0 0008      DC      0*256+OPTIC    81120110

```

1800-2841 FUNCTION TEST (PHASE B)

```

OEEA 1 0EE5      DC      T21C1      ADDRESS      81120420
*
*
OEEB 0 0002      DC      2          BYTE COUNT   81120430
OEEC 0 400D      DC      FLCCH*256+WRKD  FLAGS AND OP CODE 81120440
OEEA 1 0E8A      DC      T21KD      ADDRESS      81120450
*
*
OEEE 0 0005      DC      5          BYTE COUNT   81120460
OEEF 0 4031      DC      FLCCH*256+SRCID  FLAGS AND OP CODE 81120470
OEF0 1 0E85      DC      T21CX      ADDRESS      81120480
*
*
OEF1 0 0001      DC      1          BYTE COUNT   81120490
OEF2 0 0008      DC      0*256+OPTIC  FLAGS AND OP CODE 81120500
OEF3 1 0EEE      DC      T21CJ      ADDRESS      81120510
*
*
OEF4 0 0002      DC      2          BYTE COUNT   81120520
OEF5 0 000E      DC      0*256+RDKD   FLAGS AND OP CODE 81120530
OEF6 1 09C0      DC      RAREA      ADDRESS      81120540
*
*
*          SET FILE MASK,WRITE/READ DATA
*
OEF7 0 0001      DC      1          BYTE COUNT   81120550
OEF8 0 401F      DC      FLCCH*256+SFILM  FLAGS AND OP CODE 81120560
OEF9 1 0E6A      DC      T21FM      ADDRESS      81120570
*
*
OEFB 0 0005      DC      5          BYTE COUNT   81120580
OEFB 0 4031      DC      FLCCH*256+SRCID  FLAGS AND OP CODE 81120590
OEF3 1 0E85      DC      T21CX      ADDRESS      81120600
*
*
OEFD 0 0001      DC      1          BYTE COUNT   81120610
OEFE 0 0008      DC      0*256+OPTIC  FLAGS AND OP CODE 81120620
OEFF 1 0EFA      DC      T21CL      ADDRESS      81120630
*
*
OF00 0 0001      DC      1          BYTE COUNT   81120640
OF01 0 4005      DC      FLCCH*256+WRDAT  FLAGS AND OP CODE 81120650
OF02 1 0E89      DC      T21WR      ADDRESS      81120660
*
*
OF03 0 0005      DC      5          BYTE COUNT   81120670
OF04 0 4031      DC      FLCCH*256+SRCID  FLAGS AND OP CODE 81120680
OF05 1 0E85      DC      T21CX      ADDRESS      81120690
*
*
OF06 0 0001      DC      1          BYTE COUNT   81120700
OF07 0 0008      DC      0*256+OPTIC  FLAGS AND OP CODE 81120710
OF08 1 0F03      DC      T21CM      ADDRESS      81120720
*
*
OF09 0 0001      DC      1          BYTE COUNT   81120730
OF0A 0 0006      DC      0*256+RDDAT   FLAGS AND OP CODE 81120740
OF0B 1 09C0      DC      RAREA      ADDRESS      81120750
*
*
*          SET FILE MASK,SEEK CYL,HD,READ HA
*
OF0C 0 0001      DC      1          BYTE COUNT   81120760
OF0D 0 401F      DC      FLCCH*256+SFILM  FLAGS AND OP CODE 81120770
OF0E 1 0E6A      DC      T21FM      ADDRESS      81120780
*
*
OF0F 0 0006      DC      6          BYTE COUNT   81120790

```

1800-2841 FUNCTION TEST (PHASE B)

```

OF10 0 4007      DC      FLCCH*256+SEEK  FLAGS AND OP CODE 81121100
OF11 1 0E6E      DC      T21AH      ADDRESS      81121110
*
*
OF12 0 0005      DC      5          BYTE COUNT   81121120
OF13 0 001A      DC      0*256+RDHA   FLAGS AND OP CODE 81121130
OF14 1 09C0      DC      RAREA      ADDRESS      81121140
*
*
*          SET FILE MASK,SEEK HEAD,READ HOME ADDR
*
OF15 0 0001      DC      1          BYTE COUNT   81121150
OF16 0 401F      DC      FLCCH*256+SFILM  FLAGS AND OP CODE 81121160
OF17 1 0E6A      DC      T21FM      ADDRESS      81121170
*
*
OF18 0 0006      DC      6          BYTE COUNT   81121180
OF19 0 401B      DC      FLCCH*256+SKHD   FLAGS AND OP CODE 81121190
OF1A 1 0E71      DC      T21H5      ADDRESS      81121200
*
*
OF1B 0 0005      DC      5          BYTE COUNT   81121210
OF1C 0 001A      DC      0*256+RDHA   FLAGS AND OP CODE 81121220
OF1D 1 09C0      DC      RAREA      ADDRESS      81121230
*
*
*          SET FILE MASK,SEEK CYL,READ HA
*
OF1E 0 0001      DC      1          BYTE COUNT   81121240
OF1F 0 401F      DC      FLCCH*256+SFILM  FLAGS AND OP CODE 81121250
OF20 1 0E6A      DC      T21FM      ADDRESS      81121260
*
*
OF21 0 0006      DC      6          BYTE COUNT   81121270
OF22 0 400B      DC      FLCCH*256+SEEK  FLAGS AND OP CODE 81121280
OF23 1 0E6E      DC      T21AH      ADDRESS      81121290
*
*
OF24 0 0005      DC      5          BYTE COUNT   81121300
OF25 0 001A      DC      0*256+RDHA   FLAGS AND OP CODE 81121310
OF26 1 09C0      DC      RAREA      ADDRESS      81121320
*
*
*          DATA TABLE FOR FILE PROTECT TEST
*
OF28 0000      BSS E 0
*
*
*          CCW 'C1' TEST WRITE HA
*
OF28 1 0EBB      DC      T21C1      CCW ADDR   81121330
OF29 0 0000      DC      /0000      FILE MASK  81121340
OF2A 0 4000      DC      /4000      EXPECTED-  81121350
OF2B 0 0002      DC      /0002      US         81121360
OF2C 1 0EC1      DC      T21C1+6    AD         81121370
OF2D 0 0005      DC      5          BC         81121380
OF2E 0 8004      DC      /8004      EXPECTED  81121390
OF2F 0 00C8      DC      /00C8      * BYTES   81121400
OF30 1 0A30      DC      WAREA+10   EXPECTED  81121410
OF31 0 0005      DC      5          NO WORDS  81121420
*
*
OF32 1 0EBB      DC      T21C1      CCW ADDR   81121430
OF33 0 4000      DC      /4000      FILE MASK  81121440
OF34 0 4000      DC      /4000      EXPECTED-  81121450
OF35 0 0002      DC      /0002      US         81121460
OF36 1 0EC1      DC      T21C1+6    AD         81121470
OF37 0 0005      DC      5          BC         81121480
OF38 0 8004      DC      /8004      EXPECTED  81121490
OF39 0 00C8      DC      /00C8      * BYTES   81121500

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1800-2841 FUNCTION TEST (PHASE B)

OF3A 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81121780
OF3B 0 0005	DC	5	NO WORDS TO COMPARE	81121790
* * * * *				
OF3C 1 0EBB	DC	T21C1	CCW ADDR	81121800
OF3D 0 8000	DC	/8000	FILE MASK	81121810
OF3E 0 4000	DC	/4000	EXPECTED- CS	81121820
OF3F 0 0002	DC	/0002	US	81121830
OF40 1 0EC1	DC	T21C1+6	AD	81121840
OF41 0 0005	DC	5	BC	81121850
OF42 0 8004	DC	/8004	EXPECTED SENSE	81121860
OF43 0 00C8	DC	/00C8	* BYTES	81121870
OF44 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81121880
OF45 0 0005	DC	5	NO WORDS TO COMPARE	81121890
* * * * *				
OF46 1 0EBB	DC	T21C1	CCW ADDR	81121900
OF47 0 C000	DC	/C000	FILE MASK	81121910
OF48 0 4000	DC	/4000	EXPECTED- CS	81121920
OF49 0 000C	DC	/000C	US	81121930
OF4A 1 0EC4	DC	T21C1+9	AD	81121940
OF4B 0 0000	DC	0	BC	81121950
OF4C 0 0000	DC	/0000	EXPECTED SENSE	81121960
OF4D 0 00C8	DC	/00C8	* BYTES	81121970
OF4E 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81121980
OF4F 0 0003	DC	3	NO WORDS TO COMPARE	81121990
* * * * *				
CCW 'C2' TEST WRITE RECORD 0				
OF50 1 0EC4	DC	T21C2	CCW ADDR	81122000
OF51 0 0000	DC	/0000	FILE MASK	81122010
OF52 0 4000	DC	/4000	EXPECTED- CS	81122020
OF53 0 0002	DC	/0002	US	81122030
OF54 1 0E00	DC	T21C2+12	AD	81122040
OF55 0 000A	DC	10	BC	81122050
OF56 0 8004	DC	/8004	EXPECTED SENSE	81122060
OF57 0 00C8	DC	/00C8	* BYTES	81122070
OF58 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81122080
OF59 0 0005	DC	5	NO WORDS TO COMPARE	81122090
* * * * *				
OF5A 1 0EC4	DC	T21C2	CCW ADDR	81122100
OF5B 0 4000	DC	/4000	FILE MASK	81122110
OF5C 0 4000	DC	/4000	EXPECTED- CS	81122120
OF5D 0 0002	DC	/0002	US	81122130
OF5E 1 0E00	DC	T21C2+12	AD	81122140
OF5F 0 000A	DC	10	BC	81122150
OF60 0 8004	DC	/8004	EXPECTED SENSE	81122160
OF61 0 00C8	DC	/00C8	* BYTES	81122170
OF62 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81122180
OF63 0 0005	DC	5	NO WORDS TO COMPARE	81122190
* * * * *				
OF64 1 0EC4	DC	T21C2	CCW ADDR	81122200
OF65 0 8000	DC	/8000	FILE MASK	81122210
OF66 0 4000	DC	/4000	EXPECTED- CS	81122220
OF67 0 0002	DC	/0002	US	81122230
OF68 1 0E00	DC	T21C2+12	AD	81122240
OF69 0 000A	DC	10	BC	81122250
OF6A 0 8004	DC	/8004	EXPECTED SENSE	81122260
OF6B 0 00C8	DC	/00C8	* BYTES	81122270
OF6C 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81122280
OF6D 0 0005	DC	5	NO WORDS TO COMPARE	81122290
* * * * *				
OF6E 1 0EC4	DC	T21C2	CCW ADDR	81122300
OF6F 0 C000	DC	/C000	FILE MASK	81122310
OF70 0 4000	DC	/4000	EXPECTED- CS	81122320
OF71 0 000C	DC	/000C	US	81122330
OF72 1 0EB3	DC	T21C2+15	AD	81122340
OF73 0 0000	DC	0	BC	81122350
OF74 0 0000	DC	/0000	EXPECTED SENSE	81122360
OF75 0 00C8	DC	/00C8	* BYTES	81122370

1800-2841 FUNCTION TEST (PHASE B)

OF76 1 0E80	DC	T21R0	EXPECTED DATA AREA	81122460
OF77 0 0005	DC	5	NO WORDS TO COMPARE	81122470
* * * * *				
CCW 'C3' TEST WRITE COUNT,KEY,DATA				
OF78 1 0ED3	DC	T21C3	CCW ADDR	81122480
OF79 0 0000	DC	/0000	FILE MASK	81122490
OF7A 0 4000	DC	/4000	EXPECTED- CS	81122500
OF7B 0 000C	DC	/000C	US	81122510
OF7C 1 0EE2	DC	T21C3+15	AD	81122520
OF7D 0 0000	DC	0	BC	81122530
OF7E 0 0000	DC	/0000	EXPECTED SENSE	81122540
OF7F 0 00C8	DC	/00C8	* BYTES	81122550
OF80 1 0E85	DC	T21CX	EXPECTED DATA AREA	81122560
OF81 0 0005	DC	5	NO WORDS TO COMPARE	81122570
* * * * *				
OF82 1 0ED3	DC	T21C3	CCW ADDR	81122600
OF83 0 4000	DC	/4000	FILE MASK	81122610
OF84 0 4000	DC	/4000	EXPECTED- CS	81122620
OF85 0 0002	DC	/0002	US	81122630
OF86 1 0EDF	DC	T21C3+12	AD	81122640
OF87 0 000A	DC	10	BC	81122650
OF88 0 8004	DC	/8004	EXPECTED SENSE	81122660
OF89 0 00C8	DC	/00C8	* BYTES	81122670
OF8A 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81122680
OF8B 0 0005	DC	5	NO WORDS TO COMPARE	81122690
* * * * *				
OF8C 1 0ED3	DC	T21C3	CCW ADDR	81122700
OF8D 0 8000	DC	/8000	FILE MASK	81122710
OF8E 0 4000	DC	/4000	EXPECTED- CS	81122720
OF8F 0 0002	DC	/0002	US	81122730
OF90 1 0EDF	DC	T21C3+12	AD	81122740
OF91 0 000A	DC	10	BC	81122750
OF92 0 8004	DC	/8004	EXPECTED SENSE	81122760
OF93 0 00C8	DC	/00C8	* BYTES	81122770
OF94 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81122780
OF95 0 0005	DC	5	NO WORDS TO COMPARE	81122790
* * * * *				
OF96 1 0ED3	DC	T21C3	CCW ADDR	81122800
OF97 0 C000	DC	/C000	FILE MASK	81122810
OF98 0 4000	DC	/4000	EXPECTED- CS	81122820
OF99 0 000C	DC	/000C	US	81122830
OF9A 1 0EE2	DC	T21C3+15	AD	81122840
OF9B 0 0000	DC	0	BC	81122850
OF9C 0 0000	DC	/0000	EXPECTED SENSE	81122860
OF9D 0 00C8	DC	/00C8	* BYTES	81122870
OF9E 1 0E85	DC	T21CX	EXPECTED DATA AREA	81122880
OF9F 0 0005	DC	5	NO WORDS TO COMPARE	81122890
* * * * *				
CCW 'C4' TEST WRITE KEY,DATA				
0FA0 1 0EE2	DC	T21C4	CCW ADDR	81122900
0FA1 0 0000	DC	/0000	FILE MASK	81122910
0FA2 0 4000	DC	/4000	EXPECTED- CS	81122920
0FA3 0 000C	DC	/000C	US	81122930
0FA4 1 0EF7	DC	T21C4+21	AD	81122940
0FA5 0 0000	DC	0	BC	81122950
0FA6 0 0000	DC	/0000	EXPECTED SENSE	81122960
0FA7 0 00C8	DC	/00C8	* BYTES	81122970
0FA8 1 0E8A	DC	T21KD	EXPECTED DATA AREA	81122980
0FA9 0 0001	DC	1	NO WORDS TO COMPARE	81122990
* * * * *				
0FAA 1 0EE2	DC	T21C4	CCW ADDR	81123000
0FAB 0 4000	DC	/4000	FILE MASK	81123010
0FAC 0 4000	DC	/4000	EXPECTED- CS	81123020
0FAD 0 0002	DC	/0002	US	81123030
0FAE 1 0EEE	DC	T21C4+12	AD	81123040
0FAF 0 0002	DC	2	BC	81123050

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OFB0 0 8004	DC	/8004	EXPECTED SENSE	81123140
OFB1 0 00C8	DC	/00C8	* BYTES	81123150
OFB2 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81123160
OFB3 0 0005	DC	5	NO WORDS TO COMPARE	81123170
* * * * *				
OFB4 1 0FE2	DC	T21C4	CCW ADDR	81123180
OFB5 0 8000	DC	/8000	FILE MASK	81123190
OFB6 0 4000	DC	/4000	EXPECTED- CS	81123210
OFB7 0 000C	DC	/000C	US	81123220
OFB8 1 0EF7	DC	T21C4+21	AD	81123230
OFB9 0 0000	DC	0	BC	81123240
OFBA 0 0000	DC	/0000	EXPECTED SENSE	81123250
OFBB 0 00C8	DC	/00C8	* BYTES	81123260
OFBC 1 0F8A	DC	T21KD	EXPECTED DATA AREA	81123270
OFBD 0 0001	DC	1	NO WORDS TO COMPARE	81123280
* * * * *				
OFBE 1 0EE2	DC	T21C4	CCW ADDR	81123300
OFBF 0 C000	DC	/C000	FILE MASK	81123310
OFB0 0 4000	DC	/4000	EXPECTED- CS	81123320
OFB1 0 000C	DC	/000C	US	81123330
OFB2 1 0EF7	DC	T21C4+21	AD	81123340
OFB3 0 0000	DC	0	BC	81123350
OFB4 0 0000	DC	/0000	EXPECTED SENSE	81123360
OFB5 0 00C8	DC	/00C8	* BYTES	81123370
OFB6 1 0E8A	DC	T21KD	EXPECTED DATA AREA	81123380
OFB7 0 0001	DC	1	NO WORDS TO COMPARE	81123390
* * * * *				
CCW 'C5' TEST WRITE DATA				
OFB8 1 0EF7	DC	T21C5	CCW ADDR	81123400
OFB9 0 0000	DC	/0000	FILE MASK	81123410
OFBA 0 4000	DC	/4000	EXPECTED- CS	81123420
OFBB 0 000C	DC	/000C	US	81123430
OFBC 1 0F0C	DC	T21C5+21	AD	81123440
OFBD 0 0000	DC	0	BC	81123450
OFBE 0 0000	DC	/0000	EXPECTED SENSE	81123460
OFBF 0 00C8	DC	/00C8	* BYTES	81123470
OFB0 1 0E8B	DC	T21DT	EXPECTED DATA AREA	81123480
OFB1 0 0001	DC	1	NO WORDS TO COMPARE	81123490
* * * * *				
OFD2 1 0EF7	DC	T21C5	CCW ADDR	81123500
OFD3 0 4000	DC	/4000	FILE MASK	81123510
OFD4 0 4000	DC	/4000	EXPECTED- CS	81123520
OFD5 0 0002	DC	/0002	US	81123530
OFD6 1 0F03	DC	T21C5+12	AD	81123540
OFD7 0 0001	DC	1	BC	81123550
OFD8 0 8004	DC	/8004	EXPECTED SENSE	81123560
OFD9 0 00C8	DC	/00C8	* BYTES	81123570
OFDA 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81123580
OFDB 0 0005	DC	5	NO WORDS TO COMPARE	81123590
* * * * *				
OFDC 1 0EF7	DC	T21C5	CCW ADDR	81123600
OFDD 0 8000	DC	/8000	FILE MASK	81123610
OFDE 0 4000	DC	/4000	EXPECTED- CS	81123620
OFDF 0 000C	DC	/000C	US	81123630
OFE0 1 0F0C	DC	T21C5+21	AD	81123640
OFE1 0 0000	DC	0	BC	81123650
OFE2 0 0000	DC	/0000	EXPECTED SENSE	81123660
OFE3 0 00C8	DC	/00C8	* BYTES	81123670
OFE4 1 0E8B	DC	T21DT	EXPECTED DATA AREA	81123680
OFE5 0 0001	DC	1	NO WORDS TO COMPARE	81123690
* * * * *				
OFE6 1 0EF7	DC	T21C5	CCW ADDR	81123700
OFE7 0 C000	DC	/C000	FILE MASK	81123710
OFE8 0 4000	DC	/4000	EXPECTED- CS	81123720
OFE9 0 000C	DC	/000C	US	81123730
OFEA 1 0F0C	DC	T21C5+21	AD	81123740
OFEB 0 0000	DC	0	BC	81123750

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OFEC 0 0000	DC	/0000	EXPECTED SENSE	81123820
OFED 0 00C8	DC	/00C8	* BYTES	81123830
OFEE 1 0E8B	DC	T21DT	EXPECTED DATA AREA	81123840
OFEF 0 0001	DC	1	NO WORDS TO COMPARE	81123850
* * * * *				
CCW 'C6' TEST SEEK CYL/HO				
OFF0 1 0F0C	DC	T21C6	CCW ADDR	81123870
OFF1 0 0000	DC	/0000	FILE MASK	81123880
OFF2 0 4000	DC	/4000	EXPECTED- CS	81123890
OFF3 0 000C	DC	/000C	US	81123900
OFF4 1 0F15	DC	T21C6+9	AD	81123910
OFF5 0 0000	DC	0	BC	81123920
OFF6 0 0000	DC	/0000	EXPECTED SENSE	81123930
OFF7 0 00C8	DC	/00C8	* BYTES	81123940
OFF8 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81123950
OFF9 0 0003	DC	3	NO WORDS TO COMPARE	81123960
* * * * *				
OFFA 1 0F0C	DC	T21C6	CCW ADDR	81123970
OFFB 0 0800	DC	/0800	FILE MASK	81123980
OFFC 0 4000	DC	/4000	EXPECTED- CS	81123990
OFFD 0 0002	DC	/0002	US	81124000
OFFE 1 0F12	DC	T21C6+6	AD	81124010
OFFF 0 0006	DC	6	BC	81124020
1000 0 0004	DC	/0004	EXPECTED SENSE	81124030
1001 0 00C8	DC	/00C8	* BYTES	81124040
1002 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81124050
1003 0 0005	DC	5	NO WORDS TO COMPARE	81124060
* * * * *				
1004 1 0F0C	DC	T21C6	CCW ADDR	81124070
1005 0 1000	DC	/1000	FILE MASK	81124080
1006 0 4000	DC	/4000	EXPECTED- CS	81124090
1007 0 0002	DC	/0002	US	81124100
1008 1 0F12	DC	T21C6+6	AD	81124110
1009 0 0006	DC	6	BC	81124120
100A 0 0004	DC	/0004	EXPECTED SENSE	81124130
100B 0 00C8	DC	/00C8	* BYTES	81124140
100C 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81124150
100D 0 0005	DC	5	NO WORDS TO COMPARE	81124160
* * * * *				
100E 1 0F0C	DC	T21C6	CCW ADDR	81124170
100F 0 1800	DC	/1800	FILE MASK	81124180
1010 0 4000	DC	/4000	EXPECTED- CS	81124190
1011 0 0002	DC	/0002	US	81124200
1012 1 0F12	DC	T21C6+6	AD	81124210
1013 0 0006	DC	6	BC	81124220
1014 0 0004	DC	/0004	EXPECTED SENSE	81124230
1015 0 00C8	DC	/00C8	* BYTES	81124240
1016 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81124250
1017 0 0005	DC	5	NO WORDS TO COMPARE	81124260
* * * * *				
1018 1 0F15	DC	T21C7	CCW ADDR	81124270
1019 0 0000	DC	/0000	FILE MASK	81124280
101A 0 4000	DC	/4000	EXPECTED- CS	81124290
101B 0 000C	DC	/000C	US	81124300
101C 1 0F1E	DC	T21C7+9	AD	81124310
101D 0 0000	DC	0	BC	81124320
101E 0 0000	DC	/0000	EXPECTED SENSE	81124330
101F 0 00C8	DC	/00C8	* BYTES	81124340
1020 1 0E74	DC	T215H	EXPECTED DATA AREA	81124350
1021 0 0003	DC	3	NO WORDS TO COMPARE	81124360
* * * * *				
1022 1 0F15	DC	T21C7	CCW ADDR	81124370
1023 0 0800	DC	/0800	FILE MASK	81124380
1024 0 4000	DC	/4000	EXPECTED- CS	81124390
1025 0 000C	DC	/000C	US	81124400
1026 1 0F1E	DC	T21C7+9	AD	81124410
1027 0 0000	DC	0	BC	81124420

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1028 0 0000	DC	/0000	EXPECTED SENSE	81124500
1029 0 00C8	DC	/00C8	* BYTES	81124510
102A 1 0E74	DC	T215H	EXPECTED DATA AREA	81124520
102B 0 0003	DC	3	NO WORDS TO COMPARE	81124530
*				
102C 1 0F15	DC	T21C7	CCW ADDR	81124540
102D 0 1000	DC	/1000	FILE MASK	81124550
102E 0 4000	DC	/4000	EXPECTED- CS	81124560
102F 0 000C	DC	/000C	US	81124570
1030 1 0F1E	DC	T21C7+9	AD	81124580
1031 0 0000	DC	0	BC	81124590
1032 0 0000	DC	/0000	EXPECTED SENSE	81124600
1033 0 00C8	DC	/00C8	* BYTES	81124610
1034 1 0E74	DC	T215H	EXPECTED DATA AREA	81124620
1035 0 0003	DC	3	NO WORDS TO COMPARE	81124630
*				
1036 1 0F15	DC	T21C7	CCW ADDR	81124640
1037 0 1800	DC	/1800	FILE MASK	81124650
1038 0 4000	DC	/4000	EXPECTED- CS	81124660
1039 0 0002	DC	/0002	US	81124670
103A 1 0F1B	DC	T21C7+6	AD	81124680
103B 0 0006	DC	6	BC	81124690
103C 0 0004	DC	/0004	EXPECTED SENSE	81124700
103D 0 00C8	DC	/00C8	* BYTES	81124710
103E 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81124720
103F 0 0005	DC	5	NO WORDS TO COMPARE	81124730
**				
CCW 'C8' TEST SEEK CYLINDER				
**				
1040 1 0F1E	DC	T21C8	CCW ADDR	81124740
1041 0 0000	DC	/0000	FILE MASK	81124750
1042 0 4000	DC	/4000	EXPECTED- CS	81124760
1043 0 000C	DC	/000C	US	81124770
1044 1 0F27	DC	T21C8+9	AD	81124780
1045 0 0000	DC	0	BC	81124790
1046 0 0000	DC	/0000	EXPECTED SENSE	81124800
1047 0 00C8	DC	/00C8	* BYTES	81124810
1048 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81124820
1049 0 0003	DC	3	NO WORDS TO COMPARE	81124830
*				
104A 1 0F1E	DC	T21C8	CCW ADDR	81124840
104B 0 0800	DC	/0800	FILE MASK	81124850
104C 0 4000	DC	/4000	EXPECTED- CS	81124860
104D 0 000C	DC	/000C	US	81124870
104E 1 0F27	DC	T21C8+9	AD	81124880
104F 0 0000	DC	0	BC	81124890
1050 0 0000	DC	/0000	EXPECTED SENSE	81124900
1051 0 00C8	DC	/00C8	* BYTES	81124910
1052 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81124920
1053 0 0003	DC	3	NO WORDS TO COMPARE	81124930
*				
1054 1 0F1E	DC	T21C8	CCW ADDR	81124940
1055 0 1000	DC	/1000	FILE MASK	81124950
1056 0 4000	DC	/4000	EXPECTED- CS	81124960
1057 0 0002	DC	/0002	US	81124970
1058 1 0F24	DC	T21C8+6	AD	81124980
1059 0 0006	DC	6	BC	81124990
105A 0 0004	DC	/0004	EXPECTED SENSE	81125000
105B 0 00C8	DC	/00C8	* BYTES	81125010
105C 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81125020
105D 0 0005	DC	5	NO WORDS TO COMPARE	81125030
*				
105E 1 0F1E	DC	T21C8	CCW ADDR	81125040
105F 0 1800	DC	/1800	FILE MASK	81125050
1060 0 4000	DC	/4000	EXPECTED- CS	81125060
1061 0 0002	DC	/0002	US	81125070
1062 1 0F24	DC	T21C8+6	AD	81125080
1063 0 0006	DC	6	BC	81125090

1800-2841 FUNCTION TEST (PHASE B)

1064 0 0004	DC	/0004	EXPECTED SENSE	81125100
1065 0 00C8	DC	/00C8	* BYTES	81125110
1066 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81125120
1067 0 0005	DC	5	NO WORDS TO COMPARE	81125130
*				
1068 1 0F0C	DC	T21C6	CCW ADDR	81125140
1069 0 0000	DC	/0000	FILE MASK	81125150
106A 0 4000	DC	/4000	EXPECTED- CS	81125160
106B 0 000C	DC	/000C	US	81125170
106C 1 0F15	DC	T21C6+9	AD	81125180
106D 0 0000	DC	0	BC	81125190
106E 0 0000	DC	/0000	EXPECTED SENSE	81125200
106F 0 00C8	DC	/00C8	* BYTES	81125210
1070 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81125220
1071 0 0003	DC	3	NO WORDS TO COMPARE	81125230
*				
1072 1 0F0C	DC	T21C6	CCW ADDR	81125240
1073 0 0200	DC	/0200	FILE MASK	81125250
1074 0 4000	DC	/4000	EXPECTED- CS	81125260
1075 0 000E	DC	/000E	US	81125270
1076 1 0F0F	DC	T21C6+3	AD	81125280
1077 0 0000	DC	0	BC	81125290
1078 0 8000	DC	/8000	EXPECTED SENSE	81125300
1079 0 00C8	DC	/00C8	* BYTES	81125310
107A 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81125320
107B 0 0005	DC	5	NO WORDS TO COMPARE	81125330
*				
107C 1 0F0C	DC	T21C6	CCW ADDR	81125340
107D 0 0400	DC	/0400	FILE MASK	81125350
107E 0 4000	DC	/4000	EXPECTED- CS	81125360
107F 0 000E	DC	/000E	US	81125370
1080 1 0F0F	DC	T21C6+3	AD	81125380
1081 0 0000	DC	0	BC	81125390
1082 0 8000	DC	/8000	EXPECTED SENSE	81125400
1083 0 00C8	DC	/00C8	* BYTES	81125410
1084 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81125420
1085 0 0005	DC	5	NO WORDS TO COMPARE	81125430
*				
1086 1 0F0C	DC	T21C6	CCW ADDR	81125440
1087 0 0600	DC	/0600	FILE MASK	81125450
1088 0 4000	DC	/4000	EXPECTED- CS	81125460
1089 0 000E	DC	/000E	US	81125470
108A 1 0F0F	DC	T21C6+3	AD	81125480
108B 0 0000	DC	0	BC	81125490
108C 0 8000	DC	/8000	EXPECTED SENSE	81125500
108D 0 00C8	DC	/00C8	* BYTES	81125510
108E 1 0A30	DC	WAREA+10	EXPECTED DATA AREA	81125520
108F 0 0005	DC	5	NO WORDS TO COMPARE	81125530
*				
1090 1 0F0C	DC	T21C6	CCW ADDR	81125540
1091 0 0000	DC	/0000	FILE MASK	81125550
1092 0 4000	DC	/4000	EXPECTED- CS	81125560
1093 0 000C	DC	/000C	US	81125570
1094 1 0F15	DC	T21C6+9	AD	81125580
1095 0 0000	DC	0	BC	81125590
1096 0 0000	DC	/0000	EXPECTED SENSE	81125600
1097 0 00C8	DC	/00C8	* BYTES	81125610
1098 1 0E6B	DC	T21HA	EXPECTED DATA AREA	81125620
1099 0 0003	DC	3	NO WORDS TO COMPARE	81125630
*				
109A 1 0F0C	DC	T21C6	CCW ADDR	81125640
109B 0 0100	DC	/0100	FILE MASK	81125650
109C 0 4000	DC	/4000	EXPECTED- CS	81125660
109D 0 000E	DC	/000E	US	81125670
109E 1 0F0F	DC	T21C6+3	AD	81125680
109F 0 0000	DC	0	BC	81125690
10A0 0 8000	DC	/8000	EXPECTED SENSE	81125700
10A1 0 00C8	DC	/00C8	* BYTES	81125710

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81126540
* 81126550
***** 81126560
***** 81126570
* 81126580
***** 81126590
10C4 0 T3101 EQU * TEST ENTRY POINT 81126600
10C4 1 7401 0815 MDX L TRID,1 BUMP RTN ID 81126610
10C6 1 4C18 10CB BZ T3102 BR IF TEST NUMBER ZERO 81126620
10C8 0 9297 S 2 K1-TB DECREMENT BY ONE 81126630
10C9 1 4C20 112A BNZ T3201 BR IF NOT THIS TEST 81126640
* 81126650
10CB 0 C283 T3102 LD 2 TSWO-TB GET OPTION SWS 81126660
10CC 0 100A SLA OTTLE PRINT TITLES 81126670
10CD 1 4C10 10D1 BNN T3103 BR IF NOT SET 81126680
10CF 0 420C BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81126690
10DD 1 10F1 DC TTL31 MESSAGE ADDRESS 81126700
* 81126710
10D1 0 42EE T3103 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81126720
10D2 0 1010 SLA 16 CLEAR ACC 81126730
10D3 0 D2C0 STO 2 ERRSW-TB RESET ERROR SWITCH 81126740
10D4 1 6500 10E7 T3104 LDX L1 T31ER 81126750
10D6 1 6D00 1711 STX L1 WTADR SET TIMEOUT RET ADDR 81126760
10D8 0 42F7 BSI 2 SIO-TB CALL SIO ROUTINE 81126770
10D9 1 1104 DC T31CW CCW ADDRESS 81126780
10DA 0 42F1 BSI 2 GETSN-TB GET SENSE DATA 81126790
10DB 0 42E5 BSI 2 CKTV-TB CALL CHECK ROUTINE 81126800
10DC 1 10E0 DC T3105 LIST ADDRESS 81126810
10DD 1 4C18 10EC BZ T31EN EXIT RTN IF NO ERRORS 81126820
10DF 0 700A MDX T31TE GO TEST LOOP ON ERROR 81126830
10E0 0 A480 T3105 DC /A480 FLAG-CK CHAN STATUS/SNS 81126840
10E1 1 1118 DC T31CS ADDR OF EXP CSW 81126850
10E2 1 111C DC T31SN ADDR OF EXP SNS 81126860
10E3 0 0000 DC 0 81126870
10E4 0 0000 DC 0 81126880
10E5 0 0000 DC 0 81126890
10E6 0 0000 DC 0 81126900
10E7 0 42E8 T31ER BSI 2 EROUT-TB CALL ERROR OUT ROUTINE 81126910
10E8 0 8106 DC /8106 FLAG BITS 81126920
10E9 0 7107 DC /7107 MSG NO OR ADDRESS 81126930
10EA 0 420F T31TE BSI 2 TLPER-TB GO TEST LOOP ON ERR 81126940
10EB 1 1004 DC T3104 LOOP ADDRESS 81126950
* 81126960
* GO TO NEXT ROUTINE IN SEQUENCE 81126970
* 81126980
* 81126990
T31EN BSI 2 FREDV-TB FREE CHANNEL 81127000
LD 2 TRTNN-TB GET RTN SWS 81127010
BZ T3201 GO TO NEXT RTN IN SEQ 81127020
BSI 2 CNTRL-TB GO TO CONTROL RTN 81127030
TTL31 PRNT . SECT 3,RT 1- . 81127040
* 81127050
PRNT .TEST OVERRUN SENSE BIT. 81127060
DC -1 81127070
***** 81127080
* 81127090
T31CW DC 6 BYTE COUNT 81127100
DC /40*256+SEEK FLAGS AND OP CODE 81127110
DC GDTRK ADDRESS 81127120
* 81127130
* 81127140
DC 1 BYTE COUNT 81127150
DC /A0*256+RDHA FLAGS AND OP CODE 81127160
DC T31A1 ADDRESS 81127170
* 81127180
* 81127190
DC 1 BYTE COUNT 81127200
DC /A0*256+0 FLAGS AND OP CODE 81127210
DC T31A2 ADDRESS 81127210

```

1800-2841 FUNCTION TEST (PHASE B)

```

10A2 1 0A30 DC WAREA+10 EXPECTED DATA AREA 81125860
10A3 0 0005 DC 5 NO WORDS TO COMPARE 81125870
* 81125880
10A4 1 0F0C DC T21C6 CCW ADDR 81125890
10A5 0 2000 DC /2000 FILE MASK 81125900
10A6 0 4000 DC /4000 EXPECTED- CS 81125910
10A7 0 000E DC /000E US 81125920
10A8 1 0F0F DC T21C6+3 AD 81125930
10A9 0 0000 DC 0 BC 81125940
10AA 0 8000 DC /8000 EXPECTED SENSE 81125950
10AB 0 00C8 DC /00C8 * BYTES 81125960
10AC 1 0A30 DC WAREA+10 EXPECTED DATA AREA 81125970
10AD 0 0005 DC 5 NO WORDS TO COMPARE 81125980
* 81125990
10AE 1 0F0C DC T21C6 CCW ADDR 81126000
10AF 0 2100 DC /2100 FILE MASK 81126010
10B0 0 4000 DC /4000 EXPECTED- CS 81126020
10B1 0 000E DC /000E US 81126030
10B2 1 0F0F DC T21C6+3 AD 81126040
10B3 0 0000 DC 0 BC 81126050
10B4 0 8000 DC /8000 EXPECTED SENSE 81126060
10B5 0 00C8 DC /00C8 * BYTES 81126070
10B6 1 0A30 DC WAREA+10 EXPECTED DATA AREA 81126080
10B7 0 0005 DC 5 NO WORDS TO COMPARE 81126090
* 81126100
10B8 1 10B8 DC *-1 END O' TABLE 81126110
* 81126120
***** 81126130
* 81126140
* 81126150
* 81126160
* SECTION END 81126170
* 81126180
T2201 BSI 2 CNTRL-TB GO TO CONTROL RTN 81126190
***** 81126200
* 81126210
***** 81126220
* 81126230
* SECTION PREFACE 81126240
* 81126250
T30PR DC /0003 SECTION NUMBER 81126260
DC 8 81126270
* 81126280
T30NT LD 2 TRTNN-TB SW FNC 1 BITS 12-15 81126290
BZ T3101 BR IF RUN ALL RTNS 81126300
S T30PR+1 TEST FOR VALID 81126310
BP TCNER BR IF INVALID RTN NUMBER 81126320
A T30PR+1 RESTORE RTN NUMBER 81126330
MDX T3101 GO TO FIRST RTN 81126340
***** 81126350
* 81126360
***** 81126370
* 81126380
* 81126390
* 81126400
***** 81126410
* 81126420
* ROUTINE --1--CHECK SETTING OF OVERRUN SNS BIT 81126430
* 81126440
***** 81126450
* 81126460
* 81126470
* THIS ROUTINE FORCES THE OVERRUN SENSE BIT 81126480
* TO BE SET BY ATTEMPTING TO READ HOME 81126490
* ADDRESS UTILIZING FOUR DATA CHAINS, RE- 81126500
* QUESTING 1 BYTE EACH. 81126510
* 81126520
* 81126530

```

1800-2841 FUNCTION TEST (PHASE B)

```

*
*      81127220
*      81127230
*      81127240
*      81127250
*      81127260
*      81127270
*      81127280
*      81127290
*      81127300
*      81127310
*      81127320
*      81127330
*      81127340
*      81127350
*      81127360
*      81127370
*      81127380
*      81127390
*      81127400
*      81127410
*      81127420
*      81127430
*      81127440
*      81127450
*      81127460
*      81127470
*      81127480
*      81127490
*      81127500
*      81127510
*      81127520
*      81127530
*      81127540
*      81127550
*      81127560
*      81127570
*      81127580
*      81127590
*      81127600
*      81127610
*      81127620
*      81127630
*      81127640
*      81127650
*      81127660
*      81127670
*      81127680
*      81127690
*      81127700
*      81127710
*      81127720
*      81127730
*      81127740
*      81127750
*      81127760
*      81127770
*      81127780
*      81127790
*      81127800
*      81127810
*      81127820
*      81127830
*      81127840
*      81127850
*      81127860
*      81127870
*      81127880
*      81127890

```

```

110D 0 0001      DC      1      BYTE COUNT
110E 0 A000      DC      /A0*256+0  FLAGS AND OP CODE
110F 1 1115      DC      T31A2      ADDRESS

1110 0 0001      DC      1      BYTE COUNT
1111 0 2000      DC      /20*256+0  FLAGS AND OP CODE
1112 1 1115      DC      T31A2      ADDRESS

1113 0 0000      T31A1 DC      0      READ AREAS
1114 0 0000      DC      0
1115 0 0000      T31A2 DC      0
1116 0 0000      DC      0
1117 0 0000      DC      0

1118 0 4000      T31CS DC      /4000      EXPECTED CSW
1119 0 000E      DC      /000E
111A 1 1113      DC      T31CW+15
111B 0 0002      DC      /0002
111C 0 0400      T31SN DC      /0400      EXPECTED SNS
111D 0 00C8      DC      /00C8

111E 0 0000      GDTRK DC      0      FILE TEST TRACK
111F 0 00C6      DC      /00C6      CYL 198
1120 0 0000      DC      0      HD 0
1121 0 0000      CRTRK DC      0      TO CORRECT TEST TRACK
1122 0 C600      DC      /C600
1123 0 0000      DC      0
1124 0 00C6      WRRZ  DC      /00C6      RECORD 0 TO WRT
1125 0 0000      DC      0
1126 0 0000      DC      0
1127 0 0002      DC      /0002
1128 0 FFFF      DC      /FFFF
1129 0 C000      SETPR DC      /C000

ROUTINE --2-- CHECK SETTING OF THE TRACK
CONDITION CHECK SENSE BIT

THIS ROUTINE FORCES THE TRACK CONDITION
CHECK SENSE BIT TO BE SET. THIS IS AC-
COMPLISHED BY SEARCHING ID ON A FLAGGED
TRACK.

112A 0
112A 1 7401 0815
112C 1 4C18 1131
112E 0 9297
112F 1 4C20 119F

1131 0 C283
1132 0 100A

```

1800-2841 FUNCTION TEST (PHASE B)

```

1133 1 4C10 1137      BNN      T3203      BR IF NOT SET
1135 0 420C      BSI      2      TLGMS-TB GO TO PRINT ROUTINE
1136 1 115B      DC      TTL32      MESSAGE ADDRESS

1137 0 42EE      T3203 BSI      2      GETDV-TB GET CHANNEL FOR RTN
1138 0 1010      SLA      16      CLEAR ACC
1139 0 D2C0      STO      2      ERRSW-TB RESET ERROR SWITCH

113A 1 6500 114F      T3204 LDX      L1 T32ER SET TIMEOUT RET ADDR
113C 1 6D00 1711      STX      L1 WTADR
113E 0 42F7      BSI      2      SIO-TB CALL SIO ROUTINE
113F 1 1173      DC      T32CW      CCW ADDRESS
1140 0 42F7      BSI      2      SIO-TB CALL SIO ROUTINE
1141 1 117F      DC      T32C2      CCW ADDRESS
1142 0 42F1      RSI      2      GETSN-TB GET SENSE DATA
1143 0 42E5      BSI      2      CKTV-TB CALL CHECK ROUTINE
1144 1 1148      DC      T3205      LIST ADDRESS
1145 1 4C18 1154      BZ      T32EX      NO ERRORS GO REWRT HA
1147 0 700A      MDX      T32TE      GO TEST LOOP ON ERROR
1148 0 AE80      DC      /AE80      FLAG
1149 1 1199      DC      T32CS      ADDR OF EXP CSW
114A 1 119D      DC      T32SN      ADDR OF EXP SNS
114B 0 0000      DC      0
114C 0 0000      DC      0
114D 0 0000      DC      0
114E 0 0000      DC      0
114F 0 42E8      T32ER BSI      2      EROUT-TB CALL ERROR OUT ROUTINE
1150 0 8106      DC      /8106      FLAG BITS
1151 0 7207      DC      /7207      MSG NO OR ADDRESS
1152 0 420F      T32TE BSI      2      TLPER-TB TST LOOP ON ERR
1153 1 113A      DC      T3204      LOOP ADDRESS
1154 0 42F7      T32EX BSI      2      SIO-TB CALL SIO ROUTINE
1155 1 1188      DC      T32WH      CCW ADDRESS

*
*      GO TO NEXT ROUTINE IN SEQUENCE
*
1156 0 42EB      T32EN BSI      2      FREDV-TB FREE CHANNEL
1157 0 C28C      LD      2      TRTNN-TB GET RTN SWS
1158 1 4C18 119F      BZ      T3301      GO TO NEXT RTN IN SEQ
1159 0 42DF      BSI      2      CNTRL-TB GO TO CONTROL RTN
115B 0007      TTL32 PRNT      * SECT 3,RT 2-

1162 0016      PRNT      *TEST TRACK COND CHECK SENSE BIT.
1172 0 FFFF      DC      -1

1173 0 0006      T32CW DC      6      BYTE COUNT
1174 0 4007      DC      /40*256+SEEKC  FLAGS AND OP CODE
1175 1 111E      DC      GDTRK      ADDRESS

*
*
1176 0 0001      DC      1      BYTE COUNT
1177 0 401F      DC      /40*256+SFILM  FLAGS AND OP CODE
1178 1 1'29      DC      SETPR      ADDRESS

*
*
1179 0 0005      DC      5      BYTE COUNT
117A 0 4019      DC      /40*256+WRHA   FLAGS AND OP CODE
117B 1 1191      DC      T32HA      ADDRESS

*
*
117C 0 000A      DC      10      BYTE COUNT
117D 0 0015      DC      0*256+WRR0  FLAGS AND OP CODE
117E 1 1124      DC      WRRZ      ADDRESS

*
*
117F 0 0005      T32C2 DC      5      BYTE COUNT
1180 0 4031      DC      /40*256+SRCID  FLAGS AND OP CODE
1181 1 1194      DC      T32R1      ADDRESS

```


1800-2841 FUNCTION TEST (PHASE B)

```

*
1182 0 0001      DC      1      BYTE COUNT
1183 0 0008      DC      0*256+OPTIC FLAGS AND OP CODE
1184 1 117F      DC      T32C2      ADDRESS
*
1185 0 0001      DC      1      BYTE COUNT
1186 0 2003      DC      /20*256+OPNOP FLAGS AND OP CODE
1187 1 1188      DC      *      ADDRESS
*
1188 0 0001      T32WH DC      1      BYTE COUNT
1189 0 401F      DC      /40*256+SFILM FLAGS AND OP CODE
118A 1 1129      DC      SETPR      ADDRESS
*
118B 0 0006      DC      6      BYTE COUNT
118C 0 4007      DC      /40*256+SEEK C FLAGS AND OP CODE
118D 1 111E      DC      GDTRK      ADDRESS
*
118E 0 0005      DC      5      BYTE COUNT
118F 0 0019      DC      0*256+WRHA FLAGS AND OP CODE
1190 1 1121      DC      CRTRK      ADDRESS
*
1191 0 0200      T32HA DC      /0200      HA TO WRT FLAGGING TRK
1192 0 C600      DC      /C600
1193 0 0000      DC      0      HD 0
1194 0 00C6      T32R1 DC      /00C6      RI TO WRT
1195 0 0000      DC      0
1196 0 0101      DC      /0101
1197 0 0001      DC      /0001
1198 0 CCCC      DC      /CCCC
1199 0 4000      T32CS DC      /4000      EXPECTED CSW
119A 0 000E      DC      /000E      DEV ADDR/STATUS
119B 1 1182      DC      T32C2+3  CCW ADDR
119C 0 0005      DC      5      BYTE COUNT
119D 0 0200      T32SN DC      /0200      EXPECTED SNS
119E 0 00C8      DC      /00C8
*
*****
ROUTINE ---3---CHECK SETTING OF THE TRACK
CONDITION CHECK SENSE BIT
*****
*
THIS ROUTINE FORCES THE TRACK CONDITION
SENSE BIT TO BE SET. THIS IS AC-
COMPLISHED BY COMMAND CHAINING (WITH M/T
BIT ON) FROM AN ALTERNATE TRACK.
*
*****
119F 0
119F 1 7401 0815
11A1 1 4C18 11A6
11A3 0 9297
11A4 1 4C20 1215
*
11A6 0 C283
11A7 0 100A
11A8 1 4C10 11AC
T3301 EQU *      TEST ENTRY POINT
MDX L TRID,1     BUMP RTN ID
BZ T3302        BR IF TEST NUMBER ZERO
S 2 K1-TB      DECREMENT BY ONE
BNZ T3401      BR IF NOT THIS TEST
*
T3302 LD 2 TSWO-TB GET OPTION SWS
SLA OTTLE      PRINT TITLES
BNN T3303      BR IF NOT SET

```

1800-2841 FUNCTION TEST (PHASE B)

```

11AA 0 420C      BSI 2 TLGMS-TB GO TO PRINT ROUTINE
11AB 1 11D0      DC      TTL33      MESSAGE ADDRESS
*
11AC 0 42EE      T3303 BSI 2 GETDV-TB GET CHANNEL FOR RTN
11AD 0 1010      SLA 16      CLEAR ACC
11AE 0 D2C0      STO 2 ERRSW-TB RESET ERROR SWITCH
11AF 1 6500 11C4 T3304 LD 1 T33ER SET T/O RET ADDR
11B1 1 6D00 1711 STX L1 WTADR
11B3 0 42F7      BSI 2 SIO-TB CALL SIO ROUTINE
11B4 1 11E8      DC      T33CW      CCW ADDRESS
11B5 0 42F7      BSI 2 SIO-TB CALL SIO ROUTINE
11B6 1 11F4      DC      T33TT      CCW ADDRESS
11B7 0 42F1      BSI 2 GETSN-TB GET SENSE DATA
11B8 0 42E5      BSI 2 CKTV-TB CALL CHECK ROUTINE
11B9 1 11BD      DC      T3305      LIST ADDRESS
11BA 1 4C18 11C9 BZ T33EX BR IF NO ERRS
11BC 0 700A      MDX T33TE GO TEST LOOP ON ERROR
11BD 0 AF80      DC      /AF80      FLAG
11BE 1 120F      DC      T33CS      ADDR OF EXP CSW
11BF 1 1213      DC      T33SN      ADDR OF EXP SNS
11C0 0 0000      DC      0
11C1 0 0000      DC      0
11C2 0 0000      DC      0
11C3 0 0000      DC      0
11C4 0 42E8      T33ER BSI 2 EROUT-TB CALL ERROR OUT ROUTINE
11C5 0 8106      DC      /8106      FLAG BITS
11C6 0 7307      DC      /7307      MSG NO OR ADDRESS
11C7 0 420F      T33TE BSI 2 TLPER-TB TST LOOP ON ERR
11C8 1 11AF      DC      T3304      LOOP ADDRESS
11C9 0 42F7      T33EX BSI 2 SIO-TB CALL SIO ROUTINE
11CA 1 1200      DC      T33WH      CCW ADDRESS
*
GO TO NEXT ROUTINE IN SEQUENCE
*
11CB 0 42EB      T33EN BSI 2 FREDV-TB FREE CHANNEL
11CC 0 C28C      LD 2 TRTNN-TB GET RTN SWS
11CD 1 4C18 1215 BZ T3401 GO TO NEXT RTN IN SEQ
11CF 0 42DF      BSI 2 CNTRL-TB GO TO CONTROL RTN
11D0 0007      TTL33 PRNT . SECT 3,RT 3-
*
11D7 0016      PRNT .TEST TRACK COND CHECK SENSE BIT.
11E7 0 FFFF      DC      -1
*
11E8 0 0006      T33CW DC      6      BYTE COUNT
11E9 0 4007      DC      /40*256+SEEK C FLAGS AND OP CODE
11EA 1 111E      DC      GDTRK      ADDRESS
*
11EB 0 0001      DC      1      BYTE COUNT
11EC 0 401F      DC      /40*256+SFILM FLAGS AND OP CODE
11ED 1 1129      DC      SETPR      ADDRESS
*
11EE 0 0005      DC      5      BYTE COUNT
11EF 0 4019      DC      /40*256+WRHA FLAGS AND OP CODE
11F0 1 1209      DC      T33HA      ADDRESS
*
11F1 0 000A      DC      10      BYTE COUNT
11F2 0 0015      DC      0*256+WRR0 FLAGS AND OP CODE
11F3 1 1124      DC      WRRZ      ADDRESS
*
11F4 0 0006      T33TT DC      6      BYTE COUNT
11F5 0 4007      DC      /40*256+SEEK C FLAGS AND OP CODE
11F6 1 111E      DC      GDTRK      ADDRESS

```

1800-2841 FUNCTION TEST (PHASE B)

```

*
11F7 0 0005      DC      5      BYTE COUNT
11F8 0 401A      DC      /40*256+RDHA  FLAGS AND OP CODE
11F9 1 120C      DC      T33RA   ADDRESS
*
11FA 0 0005      DC      5      BYTE COUNT
11FB 0 409A      DC      /40*256+RDHMT  FLAGS AND OP CODE
11FC 1 120C      DC      T33RA   ADDRESS
*
11FD 0 0001      DC      1      BYTE COUNT
11FE 0 2003      DC      /20*256+OPNDP  FLAGS AND OP CODE
11FF 1 1200      DC      *      ADDRESS
*
1200 0 0001      T33WH DC      1      BYTE COUNT
1201 0 401F      DC      /40*256+SFILM  FLAGS AND OP CODE
1202 1 1129      DC      SETPR   ADDRESS
*
1203 0 0006      DC      6      BYTE COUNT
1204 0 4007      DC      /40*256+SEEKC  FLAGS AND OP CODE
1205 1 111E      DC      GDTRK   ADDRESS
*
1206 0 0005      DC      5      BYTE COUNT
1207 0 0C19      DC      0*256+WRHA  FLAGS AND OP CODE
1208 1 1121      DC      CRTRK   ADDRESS
*
1209 0 0100      T33HA DC      /0100      WR HA 1
120A 0 C600      DC      /C600
120B 0 0000      DC      0      HD 0
120C 0003      T33RA BSS  3      READ AREA
120F 0 4C00      T33CS DC      /4000      EXPECTED CSW
1210 0 000E      DC      /000E
1211 1 11FD      DC      T33TT+9
1212 0 0005      DC      /0005
1213 0 0200      T33SN DC      /0200      EXP SNS
1214 0 00C8      DC      /00C8
*
*****
ROUTINE --4-- CHECK SETTING OF THE SEEK
CHECK SENSE BIT
*****
THIS ROUTINE FORCES THE SEEK CHECK SENSE
BIT TO BE SET. THIS IS ACCOMPLISHED BY
ATTEMPTING A SEEK OUTSIDE THE HEAD BOUND-
ARY.
*****
1215 0
1215 1 7401 0815
1217 1 4C18 121C
1219 0 9297
121A 1 4C20 1268
*
T3401 EQU *      TEST ENTRY POINT
      MDX L TRID,1  BUMP RTN ID
      BZ T3402     BR IF TEST NUMBER ZERO
      S 2 K1-TB   DECREMENT BY ONE
      BNZ T3501   BR IF NOT THIS TEST
*

```

1800-2841 FUNCTION TEST (PHASE B)

```

121C 0 C283      T3402 LD 2 TSW0-TB  GET OPTION SWS
121D 0 100A      SLA      OTTLE   PRINT TITLES
121E 1 4C10 1222 BNN      T3403     BR IF NOT SET
1220 0 420C      BSI 2 TLGMS-TB GO TO PRINT ROUTINE
1221 1 1244      DC      TTL34   MESSAGE ADDRESS
*
1222 0 42EE      T3403 BSI 2 GETDV-TB  GET CHANNEL FOR RTN
1223 0 1010      SLA      16      CLEAR ACC
1224 0 02C0      STO 2 ERRSW-TB  RESET ERROR SWITCH
1225 1 6500 1238 T3404 LDX L1 T34ER  SET T/O RET ADDR
1227 1 6D00 1711 STX L1 WTADR
1229 0 42F7      BSI 2 SIO-TB   CALL SIO ROUTINE
122A 1 1259      DC      T34CW   CCW ADDRESS
122B 0 42F1      BSI 2 GETSN-TB  GET SENSE DATA
122C 0 42E5      BSI 2 CKTV-TB  CALL CHECK ROUTINE
122D 1 1231      DC      T3405   LIST ADDRESS
122E 1 4C18 123F BZ T34EN     EXIT IF NO ERRS
1230 0 700A      DC      T34TE   GO TEST LOOP ON ERROR
1231 0 AF80      MDX      /AF80
1232 1 1262      DC      T34CS
1233 1 1266      DC      T34SN
1234 0 0000      DC      0
1235 0 0000      DC      0
1236 0 0000      DC      0
1237 0 0000      DC      0
1238 0 42E8      T34ER BSI 2 ER0UT-TB  CALL ERROR OUT ROUTINE
1239 0 8106      DC      /8106   FLAG BITS
123A 0 7407      DC      /7407   MSG NO OR ADDRESS
123B 0 420F      T34TE BSI 2 TLPER-TB  TST LOOP ON ERR
123C 1 1225      DC      T3404   LOOP ADDRESS
123D 0 42F7      BSI 2 SIO-TB   CALL SIO ROUTINE
123E 1 1259      DC      T34CW   CCW ADDRESS
*
123F 0 42EB      *
1240 0 C28C      * GO TO NEXT ROUTINE IN SEQUENCE
1241 1 4C18 1268 BZ T3501     GO TO NEXT RTN IN SEQ
1243 0 42DF      BSI 2 CNTRL-TB GO TO CONTROL RTN
1244 0007      PRNT * SECT 3,RT 4-
*
124B 0013      PRNT * TEST SEEK CHECK SENSE BIT.
1258 0 FFFF      DC      -1
*
1259 0 0006      T34CW DC      6      BYTE COUNT
125A 0 0007      DC      0*256+SEEKC  FLAGS AND OP CODE
125B 1 125F      DC      T34BD   ADDRESS
*
125C 0 0001      DC      1      BYTE COUNT
125D 1 289D      DC      /20*256+REGAL  FLAGS AND OP CODE
125E 1 125F      DC      *      ADDRESS
*
125F 0 0000      T34BD DC      0
1260 0 0000      DC      0
1261 0 00FF      DC      /00FF
1262 0 4000      T34CS DC      /4000      EXPECTED CSW
1263 0 000E      DC      /000E
1264 1 125C      DC      T34CW+3
1265 0 0000      DC      0
1266 0 8100      T34SN DC      /8100      EXP SNS
1267 0 00C8      DC      /00C8
*
*****
ROUTINE --5-- CHECK SETTING OF THE SEEK
CHECK SENSE BIT
*****

```

1800-2841 FUNCTION TEST (PHASE B)

1268 0 1268 1 7401 0815 126A 1 4C18 126F 126C 0 9297 126D 1 4C20 12B3 126F 0 C283 1270 0 100A 1271 1 4C10 1275 1273 0 420C 1274 1 1295 1275 0 42EE 1276 0 1010 1277 0 D2C0 1278 1 6500 128B 127A 1 6D00 1711 127C 0 42F7 127D 1 12AA 127E 0 42F1 127F 0 42E5 1280 1 1284 1281 1 4C18 1290 1283 0 700A 1284 0 AF80 1285 1 12AD 1286 1 12B1 1287 0 0000 1288 0 0000 1289 0 0000 128A 0 0000 128B 0 42E8 128C 0 8106 128D 0 7507 128E 0 420F 128F 1 1278 1290 0 42EB 1291 0 C2BC 1292 1 4C18 12B3 1294 0 42DF 1295 0007 129C 0013 12A9 0 FFFF 12AA 0 0004 12AB 0 2007 12AC 1 111E 12AD 0 4000

***** 81131300
81131310
81131320
81131330
81131340
81131350
81131360
81131370
81131380
81131390

81131400
81131410
81131420
81131430
81131440
81131450
81131460
81131470
81131480
81131490
81131500
81131510
81131520
81131530
81131540
81131550
81131560
81131570
81131580
81131590
81131600
81131610
81131620
81131630
81131640
81131650
81131660
81131670
81131680
81131690
81131700
81131710
81131720
81131730
81131740
81131750
81131760
81131770
81131780
81131790
81131800
81131810
81131820
81131830
81131840
81131850
81131860
81131870
81131880
81131890
81131900
81131910
81131920
81131930
81131940
81131950
81131960
81131970

THIS ROUTINE FORCES THE SEEK CHECK SENSE BIT TO BE SET. THIS IS ACCOMPLISHED BY ATTEMPTING A SEEK WITH LESS THAN 6 BYTES OF SEEK ARGUMENT SPECIFIED.

T3501 EQU * TEST ENTRY POINT
MDX L TRID,1 BUMP RTN ID
BZ T3502 BR IF TEST NUMBER ZERO
S 2 K1-TB DECREMENT BY ONE
BNZ T3601 BR IF NOT THIS TEST
*
T3502 LD 2 TSWO-TB GET OPTION SWS
SLA OTTLE PRINT TITLES
BNN T3503 BR IF NOT SET
BSI 2 TLGMS-TB GO TO PRINT ROUTINE
DC TTL35 MESSAGE ADDRESS
*
T3503 BSI 2 GETDV-TB GET CHANNEL FOR RTN
SLA 16 CLEAR ACC
STO 2 ERRSW-TB RESET ERROR SWITCH
T3504 LDX L1 T35ER SET T/O ERR ADDR
STX L1 WTADR
BSI 2 SIO-TB CALL SIO ROUTINE
DC T35CW CCW ADDRESS
BSI 2 GETSN-TB GET SENSE DATA
BSI 2 CKTV-TB CALL CHECK ROUTINE
DC T3505 LIST ADDRESS
BZ T35EN EXIT IF NO ERRS
MDX T35TE GO TEST LOOP ON ERROR
T3505 DC /AF80
DC T35CS ADDR OF EXP CSW
DC T35SN ADDR OF EXP SNS
DC 0
DC 0
DC 0
DC 0
T35ER BSI 2 EROUT-TB CALL ERROR OUT ROUTINE
DC /8106 FLAG BITS
DC /7507 MSG NO OR ADDRESS
T35TE BSI 2 TLPER-TB TST LOOP ON ERR
DC T3504 LOOP ADDRESS
*
* GO TO NEXT ROUTINE IN SEQUENCE
*
T35EN BSI 2 FREDV-TB FREE CHANNEL
LD 2 TRTNN-TB GET RTN SWS
BZ T3601 GO TO NEXT RTN IN SEQ
BSI 2 CNTRL-TB GO TO CONTROL RTN
TTL35 PRNT . SECT 3,RT 5-
*
PRNT .TEST SEEK CHECK SENSE BIT.
DC -1
*
T35CW DC 4 BYTE COUNT
DC /20*256+SEEK FLAGS AND OP CODE
DC GDTRK ADDRESS
*
T35CS DC /4000 EXPECTED CSW

1800-2841 FUNCTION TEST (PHASE B)

12AE 0 000E DC /000E 81131980
12AF 1 12AD DC T35CW+3 81131990
12B0 0 0000 DC 0 81132000
12B1 0 8100 T35SN DC /8100 EXP SNS 81132010
12B2 0 00C8 DC /00C8 81132020
81132030
81132040
81132050
81132060
81132070
81132080
81132090
81132100
81132110
81132120
81132130
81132140
81132150
81132160
81132170
81132180
81132190
81132200
81132210
81132220
81132230
81132240
81132250
81132260
81132270
81132280
81132290
81132300
81132310
81132320
81132330
81132340
81132350
81132360
81132370
81132380
81132390
81132400
81132410
81132420
81132430
81132440
81132450
81132460
81132470
81132480
81132490
81132500
81132510
81132520
81132530
81132540
81132550
81132560
81132570
81132580
81132590
81132600
81132610
81132620
81132630
81132640
81132650

12AE 0 000E DC /000E
12AF 1 12AD DC T35CW+3
12B0 0 0000 DC 0
12B1 0 8100 T35SN DC /8100 EXP SNS
12B2 0 00C8 DC /00C8
*
*

* ROUTINE --6--CHECK SETTING OF THE TRACK
* OVERRUN SENSE BIT
*

* THIS ROUTINE FORCES THE TRACK OVERRUN SENSE
* BIT TO BE SET. THIS IS ACCOMPLISHED BY
* FORMATTING A TRACK BEYOND ITS CAPACITY.
*

T3601 EQU * TEST ENTRY POINT
MDX L TRID,1 BUMP RTN ID
BZ T3602 BR IF TEST NUMBER ZERO
S 2 K1-TB DECREMENT BY ONE
BNZ T3701 BR IF NOT THIS TEST
*
T3602 LD 2 TSWO-TB GET OPTION SWS
SLA OTTLE PRINT TITLES
BNN T3603 BR IF NOT SET
BSI 2 TLGMS-TB GO TO PRINT ROUTINE
DC TTL36 MESSAGE ADDRESS
*
T3603 BSI 2 GETDV-TB GET CHANNEL FOR RTN
SLA 16 CLEAR ACC
STO 2 ERRSW-TB RESET ERROR SWITCH
T3604 LDX L1 T36ER SET T/O RET ADDR
STX L1 WTADR
BSI 2 SIO-TB CALL SIO ROUTINE
DC T36CW CCW ADDRESS
BSI 2 GETSN-TB GET SENSE DATA
LD 2 SCSX0+1-TB GET UNIT STATUS WD
AND T360F AND OUT UNWANTED BITS
STO 2 SCSX0+1-TB
BSI 2 CKTV-TB CALL CHECK ROUTINE
DC T3605 LIST ADDRESS
BZ T36EN EXIT IF NO ERR
MDX T36TE GO TEST LOOP ON ERROR
T3605 DC /AE80
DC T36CS ADDR OF EXP CSW
DC T36SN ADDR OF EXP SNS
DC 0
DC 0
DC 0
DC 0
T36ER BSI 2 EROUT-TB CALL ERROR OUT ROUTINE
DC /8106 FLAG BITS
DC /7607 MSG NO OR ADDRESS
T36TE BSI 2 TLPER-TB GO TST LOOP ON ERR
DC T3604 LOOP ADDRESS
*
* GO TO NEXT ROUTINE IN SEQUENCE
*

1800-2841 FUNCTION TEST (PHASE B)

```

12DE 0 42EB      T36EN BSI  2 FREDV-TB   FREE CHANNEL      81132660
12DF 0 C75C      LD      2 TRTNN-TB   GET RTN SWS       81132670
12E0 1 4C18 1316 BZ      T3701      GO TO NEXT RTN IN SEQ 81132680
12E2 0 42DF      BSI      2 CNTRL-TB   GO TO CONTROL RTN 81132690
12E3 0007      81132700
TTL36 PRNT      . SECT 3,RT 6- . 81132710
*
12EA 0 0014      PRNT      .TEST TRACK OVERRUN SENSE BIT. 81132720
12F8 0 FFFF      DC      -1 81132730
*
12F9 0 0006      T36CW DC      6      BYTE COUNT      81132740
12FA 0 4007      DC      /40*256+SEEKC  FLAGS AND OP CODE 81132750
12FB 1 111E      DC      GOTRK      ADDRESS      81132760
*
12FC 0 0001      DC      1      BYTE COUNT      81132770
12FD 0 401F      DC      /40*256+SFILM  FLAGS AND OP CODE 81132780
12FE 1 1129      DC      SETPR      ADDRESS      81132790
*
12FF 0 0004      DC      4      BYTE COUNT      81132800
1300 0 4039      DC      /40*256+SP 4A  FLAGS AND OP CODE 81132810
1301 1 1124      DC      WRRZ      ADDRESS      81132820
*
1302 0 0001      DC      1      BYTE COUNT      81132830
1303 0 0008      DC      0*256+OPTIC  FLAGS AND OP CODE 81132840
1304 1 12FF      DC      *-6      ADDRESS      81132850
*
1305 0 000A      DC      10     BYTE COUNT      81132860
1306 0 4015      DC      /40*256+WRR0  FLAGS AND OP CODE 81132870
1307 1 1124      DC      WRRZ      ADDRESS      81132880
*
1308 0 0008      DC      8      BYTE COUNT      81132890
1309 0 001D      DC      0*256+/1D  FLAGS AND OP CODE 81132900
130A 1 130B      DC      T36CK      ADDRESS      81132910
*
130B 0 00C6      T36CK DC      /00C6      R1      81132920
130C 0 0000      DC      0      HD 0      81132930
130D 0 0102      DC      /0102      81132940
130E 0 2400      DC      /2400      81132950
130F 0 000F      T360F DC      /000F      CONST 81133000
1310 0 4200      T36CS DC      /4200      EXPECTED CSW 81133010
1311 0 000E      DC      /000E      81133020
1312 1 130B      DC      T36CW+18  81133030
1313 0 0000      DC      0      81133040
1314 0 0040      T36SN DC      /0040      EXP SNS 81133050
1315 0 00C8      DC      /00C8      81133060
*
*****
* ROUTINE --7--CHECK SETTING OF THE END OF 81133170
* CYLINDER SENSE BIT 81133180
* 81133190
* 81133200
* 81133210
* 81133220
* 81133230
* 81133240
* THIS ROUTINE FORCES THE END-OF-CYLINDER 81133250
* SENSE BIT TO BE SET. THIS IS ACCOMPLISHED 81133260
* BY PERFORMING TWO CHAINED READ-HOME-ADDRESS 81133270
* CCM'S, WITH THE FIRST ADDRESSING HEAD 9 AND 81133280
* THE SECOND HAVING THE M/T BIT SET. 81133290
* 81133300
* 81133310
* 81133320
* 81133330
*

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81133340
***** 81133350
* 81133360
***** 81133370
1316 0 81133380
1316 1 7401 0815 MDX L TRID,1 TEST ENTRY POINT 81133390
1318 1 4C18 131D BZ T3702 BUMP RTN ID 81133400
131A 0 9297 S 2 K1-TB BR IF TEST NUMBER ZERO 81133410
131B 1 4C20 136F BNZ T3801 BR IF NOT THIS TEST 81133420
* 81133430
131D 0 C283 T3702 LD 2 TSWO-TB GET OPTION SWS 81133440
131E 0 100A SLA OTTLE PRINT TITLES 81133450
131F 1 4C10 1323 BNN T3703 BR IF NOT SET 81133460
1321 0 420C BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81133470
1322 1 1343 DC TTL37 MESSAGE ADDRESS 81133480
* 81133490
1323 0 42EE T3703 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81133500
1324 0 1010 SLA 16 CLEAR ACC 81133510
1325 0 D2C0 STO 2 ERRSW-TB RESET ERROR SWITCH 81133520
1326 1 6500 1339 T3704 LD L1 T37ER SET T/O RET ADDR 81133530
1328 1 6D00 1711 STX L1 WTADR 81133540
132A 0 42F7 BSI 2 SIO-TB CALL SIO ROUTINE 81133550
132B 1 135A DC T37CW CCW ADDRESS 81133560
132C 0 42F1 BSI 2 GETSN-TB GET SENSE DATA 81133570
132D 0 42E5 BSI 2 CKTV-TB CALL CHECK ROUTINE 81133580
132E 1 1332 DC T3705 LIST ADDRESS 81133590
132F 1 4C18 133E BZ T37EN EXIT IF NO ERR 81133600
1331 0 700A MDX T37TE GO TEST LOOP ON ERROR 81133610
1332 0 AF80 T3705 DC /AF80 81133620
1333 1 1369 DC T37CS ADDR OF EXP CSW 81133630
1334 1 136D DC T37SN ADDR OF EXP SNS 81133640
1335 0 0000 DC 0 81133650
1336 0 0000 DC 0 81133660
1337 0 0000 DC 0 81133670
1338 0 0000 DC 0 81133680
1339 0 42E8 DC 2 ER0UT-TB CALL ERROR OUT ROUTINE 81133690
133A 0 8106 DC /8106 FLAG BITS 81133700
133B 0 7707 DC /7707 MSG NO OR ADDRESS 81133710
133C 0 420F T37TE BSI 2 TLPER-TB TST LOOP ON ERR 81133720
133D 1 132E DC T3704 LOOP ADDRESS 81133730
* 81133740
* GO TO NEXT ROUTINE IN SEQUENCE 81133750
* 81133760
133E 0 42EB T37EN BSI 2 FREDV-TB FREE CHANNEL 81133770
133F 0 C28C LD 2 TRTNN-TB GET RTN SWS 81133780
1340 1 4C18 136F BZ T3801 GO TO NEXT RTN IN SEQ 81133790
1342 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81133800
1343 0007 TTL37 PRNT . SECT 3,RT 7- . 81133810
* 81133820
134A 0015 PRNT .TEST END OF CYLINDER SENSE BIT. 81133830
1359 0 FFFF DC -1 81133840
* 81133850
135A 0 0006 T37CW DC 6 BYTE COUNT 81133860
135B 0 4007 DC /40*256+SEEKC  FLAGS AND OP CODE 81133870
135C 1 1363 DC T37EC ADDRESS 81133880
* 81133890
135D 0 0005 DC 5 BYTE COUNT 81133900
135E 0 401A DC /40*256+RDHA  FLAGS AND OP CODE 81133910
135F 1 1366 DC T37A1 ADDRESS 81133920
* 81133930
1360 0 0005 DC 5 BYTE COUNT 81133940
1361 0 009A DC 0*256+RDHMT  FLAGS AND OP CODE 81133950
1362 1 1366 DC T37A1 ADDRESS 81133960
* 81133970
1363 0 0000 T37EC DC 0 EDC SEEK 81133980
1364 0 00C6 DC /00C6 81134000
81134010

```

1800-2841 FUNCTION TEST (PHASE B)

1365 0 0009	DC	/0009	81134020
1366 0 0003	T37A1 BSS	3 RD AREA	81134030
1369 0 4000	T37CS DC	/4000 EXPECTED CSW	81134040
136A 0 000E	DC	/000E	81134050
136B 1 1363	DC	T37CW+9	81134060
136C 0 0005	DC	5	81134070
136D 0 0020	T37SN DC	/0020 EXP SNS	81134080
136E 0 00C8	DC	/00C8	81134090

ROUTINE --B--CHECK SETTING OF THE NO RECORD			
FOUND SENSE BIT			

THIS ROUTINE CHECKS THE NO-RECORD-FOUND			
SENSE BIT. A SEARCH HOME-ADDRESS-EQUAL			
OPERATION IS PERFORMED WITH THE IN-CORE			
HOME ADDRESS NOT EQUAL TO THE TRACK HOME			
ADDRESS.			

136F 0	T3801 EQU	* TEST ENTRY POINT	81134320
136F 1 7401 0815	MDX L	TRID,1 BUMP RTN ID	81134330
1371 1 4C18 1376	BZ	T3802 BR IF TEST NUMBER ZERO	81134340
1373 0 9297	S	2 K1-TB DECREMENT BY ONE	81134350
1374 1 4C20 13C7	BNZ	T3901 BR IF NOT THIS TEST	81134360

1376 0 C283	T3802 LD	2 TSWO-TB GET OPTION SMS	81134390
1377 0 100A	SLA	T3802 OTTLE PRINT TITLES	81134400
1378 1 4C10 137C	BNN	T3803 BR IF NOT SET	81134410
137A 0 420C	BSI	2 TLGMS-TB GO TO PRINT ROUTINE	81134420
137B 1 139C	DC	TTL38 MESSAGE ADDRESS	81134430

137C 0 42EE	T3803 BSI	2 GETDV-TB GET CHANNEL FOR RTN	81134450
137D 0 1010	SLA	16 CLEAR ACC	81134460
137E 0 02C0	STO	2 ERRSW-TB RESET ERROR SWITCH	81134470
137F 1 6500 1392	T3804 LDX	L1 T38ER SET T/O RET ADDR	81134480
1381 1 6000 1711	STX	L1 WTADR	81134490
1383 0 42F7	BSI	2 SIO-TB CALL SIO ROUTINE	81134500
1384 1 1383	DC	T38CW CCW ADDRESS	81134510
1385 0 42F1	BSI	2 GETSN-TB GET SENSE DATA	81134520
1386 0 42E5	BSI	2 CKTV-TB CALL CHECK ROUTINE	81134530
1387 1 1388	DC	T3805 LIST ADDRESS	81134540
1388 1 4C18 1397	BZ	T38EN EXIT IF NO ERRS	81134550
138A 0 700A	MDX	T38TE GO TEST LOOP ON ERROR	81134560
138B 0 AF80	T3805 DC	/AF80	81134570
138C 1 13C1	DC	T38CS ADDR OF EXP CSW	81134580
138D 1 13C5	DC	T38SN ADDR OF EXP SNS	81134590
138E 0 0000	DC	0	81134600
138F 0 0000	DC	0	81134610
1390 0 0000	DC	0	81134620
1391 0 0000	DC	0	81134630
1392 0 42E8	T38ER BSI	2 ERDUT-TB CALL ERROR OUT ROUTINE	81134640
1393 0 8106	DC	/8106 FLAG BITS	81134650
1394 0 7807	DC	/7807 MSG NO OR ADDRESS	81134660
1395 0 420F	T38TE BSI	2 TLPER-TB GO TST LOOP ON ERR	81134670
1396 1 137F	DC	T3804 LOOP ADDRESS	81134680

81134690			

1800-2841 FUNCTION TEST (PHASE B)

1397 0 42EB	* GO TO NEXT ROUTINE IN SEQUENCE	81134700
1398 0 C28C	* 81134710	
1399 1 4C18 13C7	T38EN BSI 2 FREDV-TB FREE CHANNEL	81134720
139B 0 42DF	LD 2 TRTNN-TB GET RTN SNS	81134730
139C 0007	BZ T3901 GO TO NEXT RTN IN SEQ	81134740
	BSI 2 CNTRL-TB GO TO CONTROL RTN	81134750
	TTL38 PRNT . SECT 3,RT 8-	81134760
	* 81134770	
13A3 0015	* PRNT .TEST NO RECORD FOUND SENSE BIT.	81134780
13B2 0 FFFF	DC -1	81134790
	* 81134800	
13B3 0 0006	* T38CW DC 6 BYTE COUNT	81134810
13B4 0 4007	DC /40*256+SEEK FLAGS AND OP CODE	81134820
13B5 1 111E	DC GDTRK ADDRESS	81134830
	* 81134840	
	* 81134850	
13B6 0 0004	DC 4 BYTE COUNT	81134860
13B7 0 4039	DC /40*256+SRCHA FLAGS AND OP CODE	81134870
13B8 1 13BF	DC T38NR ADDRESS	81134880
	* 81134890	
	* 81134900	
13B9 0 0001	DC 1 BYTE COUNT	81134910
13BA 0 0008	DC 0*256+OPTIC FLAGS AND OP CODE	81134920
13BB 1 13BE	DC *-6 ADDRESS	81134930
	* 81134940	
	* 81134950	
13BC 0 0001	DC 1 BYTE COUNT	81134960
13BD 0 2003	DC /20*256+DPNOP FLAGS AND OP CODE	81134970
13BE 1 13BF	DC * ADDRESS	81134980
	* 81134990	
13BF 0 00C6	* T38NR DC /00C6 HA	81135000
13C0 0 0009	DC /0009	81135010
13C1 0 4000	T38CS DC /4000 EXPECTED CSW	81135020
13C2 0 000E	DC /000E	81135030
13C3 1 13B9	DC T38CW+6	81135040
13C4 0 0004	DC 4	81135050
13C5 0 0008	T38SN DC /0008 EXP SNS	81135060
13C6 0 00C8	DC /00C8	81135070
	*****	81135080
	* 81135090	
	*****	81135100
	* 81135110	
	* SECTION END	81135120
	* 81135130	
13C7 0 42DF	T3901 BSI 2 CNTRL-TB GO TO CONTROL RTN	81135140
	*****	81135150
	* 81135160	
	*****	81135170
	* 81135180	
	* SECTION PREFACE	81135190
	* 81135200	
13C8 0 0004	T40PR DC /0004 SECTION NUMBER	81135210
13C9 0 0000	DC 0	81135220
	* 81135230	
13CA 0 C28B	T40NT LD 2 TSCFN-TB	81135240
13CB 1 4C18 13D5	BZ T40EN	81135250
	* 81135260	
13CD 0 C28C	LD 2 TRTNN-TB SW FNC 1 BITS 12-15	81135270
13CE 1 4C18 13E7	BZ T4101 BR IF RUN ALL RTNS	81135280
13D0 0 90F8	S T40PR+1 TEST FOR VALID	81135290
13D1 1 4C30 0825	BP TCNER BR IF INVALID RTN NUMBER	81135300
13D3 0 80F5	A T40PR+1 RESTORE RTN NUMBER	81135310
13D4 0 7012	MDX T4101 GO TO FIRST RTN	81135320
13D5 0 420C	T40EN BSI 2 TLGMS-TB PRINT END OF TEST MSG	81135330
13D6 1 13DC	DC T40ER	81135340
13D7 1 7401 0852	MDX L PSCNT,1 BUMP PASS CNTR	81135350
13D9 0 1000	NOP IN CASE OF SKIP	81135360
13DA 0 4C80 012E	BSC I END GO TO MONITOR END	81135370

1800-2841 FUNCTION TEST (PHASE B)

```

*
13DC 0009 T40ER PRNT . ** END OF DFT **.
13E5 0 FFO0 DC /FFFF
13E6 0 FFFF DC /FFFF
*****
* 81135420
* 81135430
* 81135440
* 81135450
* 81135460
* 81135470
* 81135480
* 81135490
* 81135500
* SECTION END
* 81135510
* 81135520
* 81135530
* 81135540
* 81135550
*****
13E7 0 42DF T4101 BSI 2 CNTRL-TB GO TO CONTROL RTN
*****
* 81135560
* 81135570
* 81135580
* 81135590
* 81135600
* 81135610
* 81135620
* 81135630
* 81135640
* 81135650
* 81135660
* 81135670
* 81135680
* 81135690
* 81135700
* 81135710
* 81135720
* 81135730
* 81135740
* 81135750
* 81135760
* 81135770
* 81135780
* 81135790
* 81135800
* 81135810
* 81135820
* 81135830
* 81135840
* 81135850
* 81135860
* 81135870
* 81135880
* 81135890
* 81135900
* 81135910
* 81135920
* 81135930
* 81135940
* 81135950
* 81135960
* 81135970
* 81135980
* 81135990
* 81136000
* 81136010
* 81136020
* 81136030
* 81136040
* 81136050
*****
13E8 0
GTDVE EQU * GET DEVICE ROUTINE
*
13E8 0 42FA GTDVI BSI 2 STMLS-TB
13E9 0 4480 BSI 1 REQDV 0131
13EB 1 13E8 DC GTDVI BUSY RETURN
13EC 1 0814 DC TSCED SEL CHN EDIT
13ED 1 08FD DC TSCAC SEL CHN AREA CODE
13EE 1 080C DC TERM TERMINATOR
*
13EF 0 C2AC LD 2 H0400-TB BUILD HALT I/O IOCC
13F0 0 EA7E OR 2 TSCAC-TB OR IN AREA CODE
13F1 0 EAD0 OR 2 DVADR-TB ***
13F2 0 D230 STO 2 HIOXX+1-TB ***
*
13F3 0 EAAA OR 2 H0100-TB BUILD START I/O IOCC
13F4 0 D234 STO 2 SIOXX+1-TB ***
*
13F5 0 D22E STO 2 TIOXX+1-TB BUILD TEST I/O IOCC
*
13F6 0 D232 STO 2 SENSE+1-TB SET FOR SENSE IOCC
*
13F7 0 C2AE LD 2 H0700-TB BUILD SENSE CHANNEL
13F8 0 EA7E OR 2 TSCAC-TB * STATUS IOCC'S
13F9 0 1808 SRA 8
13FA 0 1008 SLA 8
13FB 0 829A A 2 K6-TB
13FC 0 D240 STO 2 SCSN5+1-TB = 06
13FD 0 8298 A 2 K2-TB
13FE 0 D236 STO 2 SCSN0+1-TB *** = 08
13FF 0 8297 A 2 K1-TB
1400 0 D238 STO 2 SCSN1+1-TB = 09
1401 0 8297 A 2 K1-TB
1402 0 D23A STO 2 SCSN2+1-TB = 0A
1403 0 8297 A 2 K1-TB
1404 0 D23C STO 2 SCSN3+1-TB = 0B
1405 0 8297 A 2 K1-TB
1406 0 D23E STO 2 SCSN4+1-TB = 0C
1407 0 D27D STO 2 SCISW-TB SET INT SW
*
1408 1 4C80 086D BSC I GETDV RETURN
*****
* 81135960
* 81135970
* 81135980
* 81135990
* 81136000
* 81136010
* 81136020
* 81136030
* 81136040
* 81136050
*****
140A 0 4480 0132 FRDVE BSI I RELDV RELEASE DEVICE
140C 1 0814 DC TSCED SEL CHN EDIT
140D 1 080C DC TERM TERMINATOR

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1800-2841 FUNCTION TEST (PHASE B)

```

140E 0 1010 SLA 16 RESET-
140F 0 D27D STO 2 SCISW-TB INTERRUPT SW
1410 1 4C80 086A BSC I FREDV RETURN
1412 0 TNT EQU * MAINLINE ENTRY
1412 0 0000 TMLNT DC *-* PRIMARY ENTRY
1413 0 D82A STD TMLT2 STORE AQ
1414 0 6927 STX 1 TMLT0 SAVE XR1
1415 0 2821 STS TMLST SAVE STATUS
1416 1 74FF 143A MDX L TMLCT,-1 DECREMENT TO SEE IF ROOM
1418 0 7008 MDX TMLOK BR IF YES
*
1419 0 6500 0064 LDX L1 100 SET NUMBER OF ENTRIES
141B 1 6D00 143A STX L1 TMLCT STORE FOR LATER
141D 1 6500 143A LDX L1 TMLTR-6 POINT TO START OF TABLE E
141F 1 6D00 143B STX L1 TMLPT STORE POINTER
*
1421 1 6580 143B TMLOK LDX I1 TMLPT GET POINTER TO TABLE
1423 0 7106 MDX 1 6 BUMP BY ENTRY LENGTH
1424 0 1000 NOP IN CASE 32K BOUNDARY
1425 1 6D00 143B STX L1 TMLPT RE-STORE POINTER
1427 0 D100 STO X1 TMLA SAVE A-REG IN TBL
1428 0 1090 SLT 16 Q TO A
1429 0 D101 STO X1 TMLQ SAVE Q-REG IN TBL
142A 0 C011 LD TMLT0 GET SAVE XR1
142B 0 D102 STO X1 TMLR1 SAVE IN TBL
142C 0 6A10 STX 2 TMLT1 SAVE XR2
142D 0 C00F LD TMLT1 **
142E 0 D103 STO X1 TMLR2 STORE IN TBL
142F 0 6B0D STX 3 TMLT1 SAVE XR3
1430 0 C00C LD TMLT1 **
1431 0 D104 STO X1 TMLR3 STORE IN TBL
1432 0 C0DF LD TMLNT GET ICNTR OF CALLING RTN
1433 0 D105 STO X1 TMLRX STORE IN TBL
1434 0 C809 LDD TMLT2 RESTORE AQ
1435 1 6580 143C LDX I1 TMLT0 RESTORE XR1
1437 0 2000 TMLST LDS I1 TMLT0 RESTORE STATUS
1438 1 4C80 1412 BSC I TMLNT EXIT
*
* POINTER AND CONSTANTS
*
143A 0 0065 TMLCT DC 100+1 NUMBER OF TBL ENTRIES + 1
143B 1 143A TMLPT DC TMLTB-6 POINTER TO LAST ENTRY
0000 0 TMLA EQU 0 OFFSET TO A-REG
0001 0 TMLQ EQU 1 OFFSET TO Q-REG
0002 0 TMLR1 EQU 2 OFFSET TO XR1
0003 0 TMLR2 EQU 3 OFFSET TO XR2
0004 0 TMLR3 EQU 4 OFFSET TO XR3
0005 0 TMLRX EQU 5 OFFSET TO ICNTR
143C 0 0000 TMLT0 DC *-* STORE FOR XR1 ON ENTRY
143D 0 0000 TMLT1 DC *-* TEMPORARY STORAGE
143E 0002 TMLT2 BSS E 2 STORAGE FOR AQ
1440 0258 TMLTB BSS 100*6 TRACE TABLE
*****
* 81136060
* 81136070
* 81136080
* 81136090
* 81136100
* 81136110
* 81136120
* 81136130
* 81136140
* 81136150
* 81136160
* 81136170
* 81136180
* 81136190
* 81136200
* 81136210
* 81136220
* 81136230
* 81136240
* 81136250
* 81136260
* 81136270
* 81136280
* 81136290
* 81136300
* 81136310
* 81136320
* 81136330
* 81136340
* 81136350
* 81136360
* 81136370
* 81136380
* 81136390
* 81136400
* 81136410
* 81136420
* 81136430
* 81136440
* 81136450
* 81136460
* 81136470
* 81136480
* 81136490
* 81136500
* 81136510
* 81136520
* 81136530
* 81136540
* 81136550
* 81136560
* 81136570
* 81136580
* 81136590
* 81136600
* 81136610
* 81136620
* 81136630
* 81136640
* 81136650
* 81136660
* 81136670
* 81136680
* 81136690
* 81136700
* 81136710
* 81136720
* 81136730
*****
1698 0 SIONT EQU * ENTRY POINT
1698 0 6920 STX 1 SIOX1+1 SAVE REGS
1699 0 6821 STX 3 SIOX1+3 ***

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1800-2841 FUNCTION TEST (PHASE B)

169A 1 6780 0876 LDX 13 SIO GET CALLING ADDRESS 81136740
169C 1 7401 0876 MDX L SIO,1 BUMP FOR RETURN 81136750
169E 0 1000 NOP 81136760
169F 0 C300 LD 3 0 GET CCW ADDRESS 81136770
16A0 0 D233 STO 2 SIOXX-TB SET FOR XIO 81136780
16A1 0 D2C1 STO 2 CAWSV-TB SAVE FOR POSSIBLE PRINTS 81136790
81136800
* SIO01 SLT 32 CLEAR CSW 81136810
16A2 0 10A0 STD 2 SCSX0-TB ** 81136820
16A3 0 DA41 STD 2 SCSX0+2-TB ** 81136830
16A4 0 DA43 STD 2 WIOSW-TB CLEAR WAIT SW 81136840
16A5 0 D27B * 81136850
* XIO 2 SIOXX-TB DO THE START I/O 81136860
81136870
* XIO 2 SCSNO-TB GET CHANNEL STATUS 81136880
16A7 0 0A35 STO 2 SCSNO-TB SAVE FOR LATER EXAM 81136890
16A8 0 D235 * 81136900
* MDX SIO03 GO TEST FOR ERRORS 81136910
16A9 0 7006 LOOP ON TIO UNTIL DEVICE END 81136920
* SIO02 BSI 2 TIO-TB GO DO A TIO 81136930
81136940
* LD 2 SCSX8+1-TB GET UNIT STATUS 81136950
16AB 0 C24A SLA UNBZY TEST FOR BUSY 81136960
16AC 0 100B BN SIO02 BR IF STILL BUSY 81136970
16AD 1 4C28 16AA MDX SIO01 GO DO THE SIO AGAIN 81136980
16AF 0 70F2 * 81136990
* SIO03 LD 2 SCSNO-TB GET CHAN STATUS 81137000
1680 0 C235 SLA SCABZ TEST FOR BUSY 81137010
1681 0 1007 BNN SIO05 BRANCH IF NOT NEG 81137020
1682 1 4C10 16C0 * CMD ACCEPTED 81137030
* SIO04 LD 2 SIOSW-TB GET SIO SW 81137040
1684 0 C2D1 BN SIOX1 BR IF SET 81137050
1685 1 4C28 1688 * 81137060
* BSI WAITT GO WAIT FOR DE OR UNIT CHK 81137070
81137080
* SIOX1 LDX L1 *- RESTORE REGS 81137090
1688 0 6500 0000 LDX L3 *- *** 81137100
168A 0 6700 0000 SLA 16 RESET SIO SW 81137110
168C 0 1010 STO 2 SIOSW-TB * 81137120
168D 0 D2D1 BSC I SIO THEN EXIT 81137130
168E 1 4C80 0876 * 81137140
* SIO05 LD 2 SIOSW-TB GET CNTRL SW 81137150
16C0 0 C2D1 SLA 1 TEST FOR EXIT EVEN IF ERR 81137160
16C1 0 1001 BN SIOX1 BR IF SET 81137170
16C2 1 4C28 1688 * 81137180
* LDD 2 TYP2-TB 'SIO ' 81137190
16C4 0 CAC5 STD 2 STSER+6-TB SET IN MSG 81137200
16C5 0 DA67 BSI L TCVSR GET SECT/RTN NUMBERS 81137210
16C6 1 4400 1E58 STO 2 STSER+10-TB 81137220
16C8 0 D268 SLT 16 81137230
16C9 0 1090 STO 2 STSER+13-TB SET IN MSG 81137240
16CA 0 D26E LD 2 SCSNO-TB GET CHAN STATUS 81137250
16CB 0 C235 BNN SIO06 BR IF NOT OPER IS NOT SET 81137260
16CC 1 4C10 16D6 * NOT OPERATIONAL 81137270
* LD 2 HO013-TB GET MSG NUMBER 81137280
16CE 0 C2A5 BSI 2 TCVBE-TB CONVERT TO PRNT CODE 81137290
16CF 0 42FD SLT 16 SAVE Q ONLY 81137300
16D0 0 1090 STO 2 STSER-TB SET IN MSG 81137310
16D1 0 D261 BSI 2 EROUT-TB PRINT ERROR MSG 81137320
16D2 0 42E8 DC /0108 TAGS AND OPTIONS 81137330
16D3 0 0108 DC STSER MSG ADDRESS 81137340
16D4 1 08E0 MDX SIO09 LOOP 81137350
16D5 0 7023 * 81137360
* SIO06 SLA SCABZ TEST FOR ADAPTER BUSY 81137370
16D6 0 1007 BNN SIO07 BR IF NOT 81137380
16D7 1 4C10 16E2 LD 2 HO011-TB SET MSG NUMBER 81137390
16D9 0 C2A4 A 2 K1-TB 81137400
16DA 0 8297 BSI 2 TCVBE-TB CONVERT 81137410
16DB 0 42FD

1800-2841 FUNCTION TEST (PHASE B)

16DC 0 1090 SLT 16 Q ONLY 81137420
16DD 0 D261 STO 2 STSER-TB SET IN MSG 81137430
16DE 0 42E8 BSI 2 EROUT-TB CALL ERROR PRINT RTN 81137440
16DF 0 010C DC /010C MESSAGE TAGS AND OPTIONS 81137450
16E0 1 08E0 DC STSER MSG ADDRESS 81137460
16E1 0 7017 MDX SIO09 * 81137470
81137480
* SIO07 LD 2 SCSNO-TB GET CHAN STATUS 81137490
16E2 0 C235 SLA SCUSP UNIT STATUS PENDING 81137500
16E3 0 1001 BNN SIO04 BR IF NOT SET 81137510
16E4 1 4C10 16B4 BSI 2 GETSN-TB ELSE GET SENSE INFO 81137520
16E6 0 42F1 LDD 2 SNWDS-TB GET SENSE WORDS 81137530
16E7 0 CA29 SLT FSKIN TEST FOR SEEK INCOMPLETE 81137540
16E8 0 109F BNN SIO08 BR IF NOT SET 81137550
16E9 1 4C10 16F2 LD 13 SIOXX GET CCW ADDRESS 81137560
16EB 1 6780 08B2 LD 3 1 GET FLAGS AND OP CODE 81137570
16ED 0 C301 EOR 2 HO013-TB TEST FOR RECALIBRATE 81137580
16EE 0 F2A5 SLA 8 81137590
16EF 0 1008 BZ SIO01 RETRY IF SO 81137600
16F0 1 4C18 16A2 * 81137610
* SIO08 LD 2 HO011-TB SET ERR NUMBER 81137620
16F2 0 C2A4 BSI 2 TCVBE-TB CONVERT 81137630
16F3 0 42FD SLT 16 Q ONLY 81137640
16F4 0 1090 STO 2 STSER-TB SET IN MSG 81137650
16F5 0 D261 BSI 2 EROUT-TB CALL MSG RTN 81137660
16F6 0 42E8 DC /010F TAGS AND OPTIONS 81137670
16F7 0 010F DC STSER MSG ADDRESS 81137680
16F8 1 08E0 * 81137690
* SIO09 LD 2 TSWO-TB GET SW FNC 0 81137700
16F9 0 C283 SLA ORTRY TEST FOR RETRY SIO 81137710
16FA 0 100B BN SIO02 BR IF YES 81137720
16FB 1 4C28 16AA * 81137730
* BSI 2 THALT-TB GO WAIT FOR OPERATOR 81137740
16FD 0 4203 MDX SIO02 LOOP 81137750
16FE 0 70AB ***** 81137760
* ***** 81137770
***** 81137780
* ***** 81137790
* ***** 81137800
* ***** 81137810
* ***** 81137820
* ***** 81137830
* ***** 81137840
* ***** 81137850
* ***** 81137860
* ***** 81137870
* ***** 81137880
* ***** 81137890
* ***** 81137900
* ***** 81137910
* ***** 81137920
* ***** 81137930
* ***** 81137940
* ***** 81137950
* ***** 81137960
* ***** 81137970
* ***** 81137980
* ***** 81137990
* ***** 81138000
* ***** 81138010
* ***** 81138020
* ***** 81138030
* ***** 81138040
* ***** 81138050
* ***** 81138060
* ***** 81138070
* ***** 81138080
* ***** 81138090
1700 0 C280
1701 0 D2BA
1702 0 4206
1703 0 C24A
1704 0 100B
1705 1 4C28 170B
1707 0 1010
1708 0 D2D5
1709 1 4C80 16FF
170B 0 42FA
170C 1 74CE 0839
170E 0 70F3
170F 1 4C80 1711
1711 0 0000
1712 0

1800-2841 FUNCTION TEST (PHASE B)

```

1712 0 1010          SLA    16      CLEAR-          81138100
1713 0 027C          STO    2 WATSW-TB *              81138110
1714 0 0237          STO    2 SCSN1-TB * LOOP COUNTER 81138120
*                   WAIT FOR ADAPTER NOT BUSY      81138130
1715 0 0A35          T1001 XIO    2 SCSNO-TB GET CHAN. STATUS WORD 81138140
1716 0 1007          SLA    SCABZ    TEST FOR ADAPTER BUSY 81138150
1717 1 4C10 172A    BNN    T1002    BR IF NOT          81138160
1719 0 0A3F          XIO    2 SCSN5-TB ALLOW POLLING 81138170
*                   *                          81138180
171A 0 42FA          BSI    2 STMLS-TB GO TO MONITOR 81138190
171B 1 7432 0886    MDX    L SCSN1,50 COUNT LOOPS 81138200
171D 0 70F7          MDX    T1001    LOOP UNTIL NOT BUSY 81138210
*                   *                          81138220
171E 0 0A37          XIO    2 SCSN1-TB GET CHANNEL STATUS 81138230
171F 0 024D          STO    2 SCSXC-TB * AND SAVE FOR ERROR 81138240
1720 0 0A38          XIO    2 SCSN3-TB * MESSAGE          81138250
1721 0 024E          STO    2 SCSXC+1-TB *              81138260
1722 0 0A3D          XIO    2 SCSN4-TB *              81138270
1723 0 024F          STO    2 SCSXC+2-TB *              81138280
1724 0 0A3F          XIO    2 SCSN5-TB *              81138290
1725 0 0250          STO    2 SCSXC+3-TB *              81138300
*                   *                          81138310
1726 0 42E8          BSI    2 ERDUT-TB TAGS AND OPTIONS 81138320
1727 0 110E          DC     /110E    ERROR MSG ADDRESS 81138330
1728 1 173E          DC     TIOM1    ERROR MSG ADDRESS 81138340
*                   *                          81138350
1729 0 70E8          MDX    T10NT    LOOP TO TRY AGAIN 81138360
*                   *                          81138370
172A 0 0A2D          T1002 XIO    2 TIOXX-TB EXECUTE TEST I/O 81138380
*                   *                          81138390
172B 1 6C00 0854    STX    L TIOSW    SET TIO SW          81138400
172D 0 0A3F          XIO    2 SCSN5-TB RELIEVE POLL 81138410
*                   *                          81138420
172E 1 4400 09A6    BSI    L TINTW    WAIT FOR INTERRUPT 81138430
1730 0 7006          MDX    T1003    BR IF DID NOT OCCUR 81138440
1731 0 C24A          LD     2 SCSX8+1-TB GET UNIT STATUS 81138450
1732 0 100A          SLA    UNCUE    TEST FOR CNTL UNIT END 81138460
1733 1 4C28 1712    BN     T10NT    RETRY IF YES        81138470
*                   *                          81138480
1735 1 4C80 0885    BSC    1 TIO     EXIT                81138490
*                   *                          81138500
1737 0 42E8          T1003 BSI    2 ERDUT-TB TAGS AND OPTIONS 81138510
1738 0 110E          DC     /110E    ERROR MSG ADDRESS 81138520
1739 1 174A          DC     TIOM2    ERROR MSG ADDRESS 81138530
*                   *                          81138540
173A 0 0A2F          XIO    2 HIOXX-TB ISSUE HALT I/O TO CLEAR CHANNEL 81138550
*                   *                          81138560
173B 0 420C          BSI    2 TLGMS-TB 81138570
173C 1 1758          DC     TIOMS    81138580
*                   *                          81138590
173D 0 70D4          MDX    T10NT    81138600
*                   *                          81138610
173E 0011          T10M1 PRNT . 02 ADAPTER HUNG BUSY. 81138620
1749 0 FFFF          DC     /FFFF    81138630
*                   *                          81138640
174A 0016          T10M2 PRNT . 06 CHANNEL HUNG AFTER TEST I/O. 81138650
175A 0 FFFF          DC     /FFFF    81138660
175B 0015          T10M3 PRNT . A HALT I/O HAS BEEN ISSUED TO. 81138670
176A 0 FF00          DC     /FF00    81138680
176B 0017          PRNT .TRY TO RESET THE CHANNEL CONDITION. 81138690
177C 0 FFFF          DC     /FFFF    81138700
*                   *                          81138710
***** 81138720
*                   *                          81138730
***** 81138740
*                   *                          81138750
***** 81138760
*                   *                          81138770

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81138780
*                   *                          81138790
*                   *                          81138800
*                   *                          81138810
*                   *                          81138820
*                   *                          81138830
***** 81138840
*                   *                          81138850
***** 81138860
GTSNS STX 1 GTSNX+1 SAVE REGS 81138870
*                   *                          81138880
*                   *                          81138890
*                   *                          81138900
*                   *                          81138910
*                   *                          81138920
*                   *                          81138930
*                   *                          81138940
*                   *                          81138950
*                   *                          81138960
*                   *                          81138970
*                   *                          81138980
*                   *                          81138990
*                   *                          81139000
*                   *                          81139010
*                   *                          81139020
*                   *                          81139030
*                   *                          81139040
*                   *                          81139050
*                   *                          81139060
*                   *                          81139070
*                   *                          81139080
*                   *                          81139090
*                   *                          81139100
*                   *                          81139110
*                   *                          81139120
*                   *                          81139130
*                   *                          81139140
*                   *                          81139150
*                   *                          81139160
*                   *                          81139170
*                   *                          81139180
*                   *                          81139190
*                   *                          81139200
*                   *                          81139210
*                   *                          81139220
*                   *                          81139230
*                   *                          81139240
*                   *                          81139250
*                   *                          81139260
*                   *                          81139270
*                   *                          81139280
*                   *                          81139290
*                   *                          81139300
*                   *                          81139310
*                   *                          81139320
*                   *                          81139330
*                   *                          81139340
*                   *                          81139350
*                   *                          81139360
*                   *                          81139370
*                   *                          81139380
*                   *                          81139390
*                   *                          81139400
*                   *                          81139410
*                   *                          81139420
*                   *                          81139430
*                   *                          81139440
*                   *                          81139450

```


1800-2841 FUNCTION TEST (PHASE B)

```

*
1820 0 C106      * LD 1 +6      ADDRESS OF USER MSG
1821 1 D400 18D6 * STO L $PH5A  HOLD FOR PHASE5
*
1823 1 7401 0864 * MDX L CKTV,+1 SET RETURN ADDRESS
1825 0 1000      * NOP          FOR END OF PHASE1
*
* SET ALL MESSAGE AREAS TO BLANKS OR XXXX
*
1826 1 6700 1A64 * LD  L3 $MID  SET POINTER TO MSG
*                 * THIS POINTER WILL BE
*                 * USER THROUGH ALL PHASES
*
1828 1 C400 18D7 * LD  L $XXXX  FETCH CHAR BCD XX
182A 0 D3CB      * STO 3 $CAW  SET CAW=XXXX
182B 0 D3CC      * STO 3 $CAW+1
*
182C 0 D3D0      * STO 3 $CSWC  SET CSW CHANNEL STATUS
182D 0 D3D1      * STO 3 $CSWC+1 TO XXXX
*
182E 0 D3D3      * STO 3 $CSWU  SET CSW UNIT STATUS
182F 0 D3D4      * STO 3 $CSWU+1 TO XXXX
*
1830 0 D3D6      * STO 3 $CSWA  SET CSW CHANNEL ADDRESS
1831 0 D3D7      * STO 3 $CSWA+1 TO XXXX
*
1832 0 D3D9      * STO 3 $CSWB  SET CSW BYTE CNTR
1833 0 D3DA      * STO 3 $CSWB+1 TO XXXX
*
1834 0 D3DE      * STO 3 $SNS1  SET SENSE BYTE1
1835 0 D3DF      * STO 3 $SNS1+1 TO XXXX
1836 0 D3E0      * STO 3 $SNS1+2 *
1837 0 D3E1      * STO 3 $SNS1+3 *
*
1838 0 D3E3      * STO 3 $SNS2  SET SENSE BYTE2
1839 0 D3E4      * STO 3 $SNS2+1 TO XXXX
183A 0 D3E5      * STO 3 $SNS2+2 *
183B 0 D3E6      * STO 3 $SNS2+3 *
*
183C 0 D3E8      * STO 3 $SNS3  SET SENSE BYTE3
183D 0 D3E9      * STO 3 $SNS3+1 TO XXXX
183E 0 D3EA      * STO 3 $SNS3+2 *
183F 0 D3EB      * STO 3 $SNS3+3 *
*
1840 0 D3ED      * STO 3 $SNS4  SET SENSE BYTE4
1841 0 D3EE      * STO 3 $SNS4+1 TO XXXX
1842 0 D3EF      * STO 3 $SNS4+2 *
1843 0 D3F0      * STO 3 $SNS4+3 *
*
1844 0 D3FC      * STO 3 $SCSC  SET S/B CSW CHANNEL STATUS
1845 0 D3FD      * STO 3 $SCSC+1 TO XXXX
*
1846 0 D3FF      * STO 3 $SCSU  SET S/B CSW UNIT STATUS
1847 0 D300      * STO 3 $SCSU+1 TO XXXX
*
1848 0 D302      * STO 3 $SCSA  SET S/B CSW ADDRESS
1849 0 D303      * STO 3 $SCSA+1 TO XXXX
*
184A 0 D305      * STO 3 $SCSB  SET S/B CSW BYTE CNTR
184B 0 D306      * STO 3 $SCSB+1 TO XXXX
*
184C 0 D30A      * STO 3 $SSS1  SET S/B SENSE BYTE1
184D 0 D30B      * STO 3 $SSS1+1 TO XXXX
184E 0 D30C      * STO 3 $SSS1+2 *
184F 0 D30D      * STO 3 $SSS1+3 *
*
1850 0 D30F      * STO 3 $SSS2  SET S/B SENSE BYTE2

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1800-2841 FUNCTION TEST (PHASE B)

```

1851 0 D310      * STO 3 $SSS2+1 TO XXXX
1852 0 D311      * STO 3 $SSS2+2 *
1853 0 D312      * STO 3 $SSS2+3 *
*
1854 0 D314      * STO 3 $SSS3  SET S/B SENSE BYTE3
1855 0 D315      * STO 3 $SSS3+1 TO XXXX
1856 0 D316      * STO 3 $SSS3+2 *
1857 0 D317      * STO 3 $SSS3+3 *
*
1858 0 D319      * STO 3 $SSS4  SET S/B SENSE BYTE4
1859 0 D31A      * STO 3 $SSS4+1 TO XXXX
185A 0 D31B      * STO 3 $SSS4+2 *
185B 0 D31C      * STO 3 $SSS4+3 *
*
* BLANK OUT USER MESSAGE
*
185C 0 61E2      * LD  1 -30    SET COUNTER FOR POSITIONS
*
185D 0 1010      * SLA 16       CLEAR ACC TO ZEROS
185E 1 D500 1A2B * STO L1 $UMSG+30 PLACE ZEROS IN AREA
1860 0 7101      * MDX 1 +1     DEC COUNTER
1861 0 70FC      * MDX *-4      LOOP BACK UNTIL CTR ZERO
*
* SET DATA PRINT SW OFF
*
1862 0 C28D      * LD  2 TERM-TB  FETCH /FFFF
1863 0 D31E      * STO 3 $NDPT
*
* CONVERT SECTION AND RTN NUMBERS
*
1864 1 4400 1E58 * BSI L TCVSR  CONVERT TO BCD
*
1866 0 D3A3      * STO 3 $SECT  PLACE IN MESSAGE
1867 0 18D0      * RTE 16       *
1868 0 D3A7      * STO 3 $RTN   *
*
* FETCH CAW AND CONVERT TO BCD
*
1869 0 C2C1      * LD  2 CAWSV-TB  FETCH CAW
186A 0 42FD      * BSI 2 TCVBE-TB  CALL CONVERT RTN
186B 0 D3CB      * STO 3 $CAW    PLACE IN MESSAGE
186C 0 18D0      * RTE 16       *
186D 0 D3CC      * STO 3 $CAW+1  *
*
*****
* 81141500
* 81141510
* 81141520
* 81141530
* 81141540
* 81141550
* 81141560
* 81141570
* 81141580
* 81141590
* 81141600
* 81141610
* 81141620
* 81141630
* 81141640
* 81141650
* 81141660
* 81141670
* 81141680
* 81141690
* 81141700
* 81141710
* 81141720
* 81141730
* 81141740
* 81141750
* 81141760
* 81141770
* 81141780
* 81141790
* 81141800
* 81141810
* 81141820
* 81141830
* 81141840
* 81141850
* 81141860
* 81141870
* 81141880
* 81141890
* 81141900
* 81141910
* 81141920
* 81141930
* 81141940
* 81141950
* 81141960
* 81141970
* 81141980
* 81141990
* 81142000
* 81142010
* 81142020
* 81142030
* 81142040
* 81142050
* 81142060
* 81142070
* 81142080
* 81142090
* 81142100
* 81142110
* 81142120
* 81142130
* 81142140
* 81142150
* 81142160
* 81142170
*
186E 0 1010      * $PH1 SLA 16   CLEAR ERROR FLAGS
186F 0 D065      * STO $PH1     *
1870 1 C400 18D1 * LD  L $PH1F  FETCH CONTROL FLAG WORD
1872 1 4428 18DA * BSI L $PH2,+Z  BRANCH TO PHASE 2 IF NEG
*
1874 1 C400 196A * LD  L $PH2S  FETCH CALLED ONCE SW
1876 1 4C20 1880 * BNZ $PH1    BRANCH IF SET
*
1878 1 C400 1919 * LD  L $PH2F  FETCH PHASE 2 FLAG
187A 1 E400 18D4 * AND L $PH1CR REMOVE ANY CHECK BITS
187C 1 D400 1919 * STO L $PH2F  REPLACE
*
187E 1 4400 18DA * BSI L $PH2  CALL PHASE 2 WITH NO CHK

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1800-2841 FUNCTION TEST (PHASE B)

```

* * * TO BE ABLE TO PRINT 81142180
* * * CSW WORDS 81142190
* * * 81142200
1880 0 1010 $P101 SLA 16 CLEAR ACC 81142210
1881 1 0400 196A STO L $PH2S RESET CALLED ONCE SW 81142220
* * * 81142230
1883 0 0040 LD $PH1F FETCH CONTROL FLAG 81142240
1884 0 1002 SLA 2 * 81142250
1885 1 4428 196B BSI L $PH3,+Z BRANCH TO PHASE 3 81142260
* * * 81142270
1887 1 0400 1995 LD L $P305 FETCH CALLED ONCE SW 81142280
1889 1 4C20 1890 BNZ $P102 BRANCH IF SW SET 81142290
* * * 81142300
1888 1 0400 18F7 LD L $P2WS+1 FETCH UNIT STATUS 81142310
1880 0 100E SLA UNCHK * TEST FOR UNIT CHECK 81142320
188E 1 4428 196B BSI L $PH3,+Z * GET SENSE BYTES ANYWAY 81142330
* * * 81142340
1890 0 1010 $P102 SLA 16 RESET PHASE3 CALLED 81142350
1891 1 0400 1995 STO L $P305 SW 81142360
* * * 81142370
1893 0 003D LD $PH1F FETCH CONTROL FLAG 81142380
1894 0 1003 SLA 3 * 81142390
1895 1 4428 19C1 BSI L $PH4,+Z CALL PHASE 4 81142400
* * * 81142410
1897 0 003E LD $PH5A FETCH MSG ADDR 81142420
1898 1 4C18 18AA BZ $PH05 BRANCH IF ZERO 81142430
* * * 81142440
189A 0 0001 STO *+1 PLACE IN LDX 81142450
189B 0 6500 0000 LDX L1 *-XRI=USER MSG 81142460
189D 1 6700 1A0D LDX L3 $UMSG 81142470
* * * 81142480
189F 0 0100 $PH04 LD 1 0 FETCH USER WORD 81142490
18A0 0 F28D EOR 2 TERM-TB LAST WORD 81142500
18A1 1 4C18 18AA BZ $PH05 BRANCH IF END 81142510
* * * 81142520
18A3 0 0100 LD 1 0 MOVE TO AREA 81142530
18A4 0 0300 STO 3 0 * 81142540
* * * 81142550
18A5 0 7101 MDX 1 +1 ADV POINTERS 81142560
18A6 0 1000 NOP * 81142570
18A7 0 7301 MDX 3 +1 * 81142580
18A8 0 1000 NOP * 81142590
18A9 0 70F5 MDX $PH04 CONTINUE 81142600
* * * 81142610
* * * TEST PRINT OPTIONS 81142620
* * * 81142630
18AA 1 0400 191A $PH05 LD L $P2EF FETCH CSW ERROR 81142640
18AC 1 4C20 18B9 BNZ $PH06 BRANCH IF ON 81142650
18AE 0 0026 LD $PH1E FETCH PHASE ERROR 81142660
18AF 1 4C20 18B9 BNZ $PH06 BRANCH IF ON 81142670
* * * 81142680
18B1 0 0286 LD 2 TSW3-TB FETCH SW FUNCTION 3 81142690
18B2 0 100F SLA 15 TEST SW 15 81142700
18B3 1 4C10 18BE BNN $PH08 * 81142710
* * * 81142720
18B5 0 0023 LD $OK SET OK IN MSG 81142730
18B6 1 0400 1A02 STO L $OKSP * 81142740
* * * 81142750
18B8 0 7003 B $PH07 81142760
* * * 81142770
18B9 0 001E $PH06 LD $ER SET ER IN MSG 81142780
18BA 1 0400 1A02 STO L $OKSP * 81142790
* * * 81142800
* * * MSG HAS BEEN SET GO PRINT 81142810
* * * 81142820
* * * 81142830
18BC 0 420C $PH07 BSI 2 TLGMS-TB GO PRINT MSG 81142840
* * * 81142850

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1800-2841 FUNCTION TEST (PHASE B)

```

1880 1 1A00 DC MSG MESSAGE ADDRESS 81142860
* * * 81142870
* * * COLLECT ERROR FLAGS FOR RETURN TO USER 81142880
* * * 81142890
18BE 1 0400 191A $PH08 LD L $P2EF FETCH PHASE2 ERROR FLAG 81142900
18C0 1 4C18 18C7 BZ $CKEB * 81142910
* * * 81142920
18C2 0 0012 LD $PH1E GET MASTER ERROR FLAG 81142930
18C3 0 EAB7 OR 2 H8000-TB PLACE CSW ERROR BIT 81142940
18C4 1 EC00 191A OR L $P2EF PLACE CSW DEFINERS 81142950
18C6 0 000E STO $PH1E SET MASTER ERROR FLAG 81142960
* * * 81142970
18C7 0 000D $CKEB LD $PH1E FETCH MASTER ERROR FLAG 81142980
18C8 0 4820 BSC 2 SKIP IF NOT SET 81142990
18C9 0 4203 BSI 2 THALT-TB ELSE GO TEST IF HALT 81143000
18CA 0 000A LD $PH1E RE-ESTABLISH ERROR FLAG 81143010
18CB 0 6500 0000 $CKEX LDX L1 *-X RESTORE XRS 81143020
18CD 0 6700 0000 LDX L3 *-X * 81143030
18CF 1 4C80 0864 BSC I CKTV RETURN TO USER 81143040
* * * 81143050
* * * 81143060
18D1 0 0000 $PH1F DC *-X * 81143070
18D2 0 F000 $F000 DC /F000 * 81143080
18D3 0 0FF0 $OFF0 DC /OFF0 * 81143090
18D4 0 F0FF $P1CR DC /F0FF * 81143100
18D5 0 0000 $PH1E DC *-X * 81143110
18D6 0 0000 $PH5A DC *-X * 81143120
18D7 0 0001 $XXXX PRNT .XX. * 81143130
18D8 0 0001 $ER PRNT .ER. * 81143140
18D9 0 0001 $OK PRNT .OK. * 81143150
* * * 81143160
* * * ASTERISK 81143170
* * * 81143180
* * * PHASE 2 (CSW PROCESSING) 81143190
* * * 81143200
***** 81143210
* * * 81143220
***** 81143230
* * * 81143240
18DA 0 0000 $PH2 DC *-X ENTRY POINT 81143250
* * * 81143260
* * * EXAM CONTROL FLAGS FOR CHECKS TO BE MADE 81143270
* * * 81143280
18DB 0 1010 SLA 16 ZERO ERROR FLAG 81143290
18DC 0 003D STO $P2EF * 81143300
18DD 0 003B LD $PH2F * 81143310
18DE 0 1008 SLA 8 * 81143320
18DF 1 4C20 18E2 BNZ $P201 BRANCH TO EST. WHICH CSW 81143330
***** 81143340
18E1 0 70FF MDX *-1 TRAP STOP 81143350
***** 81143360
* * * 81143370
18E2 0 6103 $P201 LDX 1 +3 TEST CNTR 81143380
18E3 0 1140 SLCA 1 COUNT 81143390
18E4 1 0500 18E8 LD L1 $P2PT FETCH POSITION TABLE 81143400
18E6 0 0009 STO $P2PS+1 PLACE IN STATUS LD INST 81143410
18E7 0 7004 B $P210 GO TO GET WAS CSW 81143420
* * * 81143430
* * * 81143440
18E8 1 08CC $P2PT DC SCSXC CSW LOCATIONS 81143450
18E9 1 08C8 DC SCSX8 * 81143460
18EA 1 08C4 DC SCSX4 * 81143470
18EB 1 08C0 DC SCSX0 * 81143480
* * * 81143490
* * * GET WAS CSW WORDS 81143500
* * * 81143510
18EC 0 61FC $P210 LDX 1 -4 SET XR 81143520
18ED 1 7404 18F0 MDX L $P2PS+1,+4 SET SCSX PTR 81143530

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1800-2841 FUNCTION TEST (PHASE B)

18EF 0 C500 0000	* \$P2PS LD L1 **	FETCH SCSXX	81143540
18F1 1 D500 18FA	STO L1 \$P2WS+4	MOVE UP TO OUR TABLE	81143550
18F3 0 7101	MDX 1 +1	DEC COUNTER	81143560
18F4 0 70FA	MDX \$P2PS		81143570
18F5 0 7004	B \$P220	BRANCH TO START CHECK	81143580
			81143590
			81143600
18F6 0 0000	* \$P2WS DC **	CHANNEL STATUS	81143610
18F7 0 0000	DC **	UNIT STATUS	81143620
18F8 0 0000	DC **	ADDRESS	81143630
18F9 0 0000	DC **	BVTE CTR	81143640
			81143650
			81143660
			81143670
			81143680
			81143690
18FA 1 6580 191B	* \$P220 LDX I1 \$PH2A	SET XR1=S/B CSW ADD	81143700
18FC 0 1010	SLA 16		81143710
18FD 0 D01C	STO \$P2EF	ZERD ERROR FLAG	81143720
18FE 0 C0F8	LD \$P2WS+1	FETCH STATUS WORD	81143730
	BSI 2 TCVBE-TB	CALL CONVERT RTN	81143740
			81143750
1900 0 D303	* STO 3 \$CSWU	PLACE IN MESSAGE	81143760
1901 0 1800	RTE 16	*	81143770
1902 0 D304	STO 3 \$CSWU+1	*	81143780
			81143790
1903 0 C015	LD \$PH2F	FETCH FLAG	81143800
1904 0 1004	SLA 4	*	81143810
1905 1 4C10 191C	BNN \$P230	BRANCH NO CHECK	81143820
			81143830
			81143840
			81143850
			81143860
			81143870
			81143880
			81143890
			81143900
			81143910
			81143920
			81143930
			81143940
			81143950
			81143960
			81143970
			81143980
			81143990
			81144000
			81144010
			81144020
			81144030
			81144040
			81144050
			81144060
			81144070
			81144080
			81144090
			81144100
			81144110
			81144120
			81144130
			81144140
			81144150
			81144160
			81144170
			81144180
			81144190
			81144200
			81144210

1800-2841 FUNCTION TEST (PHASE B)

1925 0 C100	LD 1 0	FETCH S/B STATUS	81144220
1926 0 42FD	BSI 2 TCVBE-TB	CALL CONVERT RTN	81144230
1927 0 D3FC	STO 3 \$SCSC	PLACE IN MESSAGE	81144240
1928 0 18D0	RTE 16	*	81144250
1929 0 D3FD	STO 3 \$SCSC+1	*	81144260
			81144270
			81144280
			81144290
			81144300
			81144310
			81144320
			81144330
			81144340
			81144350
			81144360
			81144370
			81144380
			81144390
			81144400
			81144410
			81144420
			81144430
			81144440
			81144450
			81144460
			81144470
			81144480
			81144490
			81144500
			81144510
			81144520
			81144530
			81144540
			81144550
			81144560
			81144570
			81144580
			81144590
			81144600
			81144610
			81144620
			81144630
			81144640
			81144650
			81144660
			81144670
			81144680
			81144690
			81144700
			81144710
			81144720
			81144730
			81144740
			81144750
			81144760
			81144770
			81144780
			81144790
			81144800
			81144810
			81144820
			81144830
			81144840
			81144850
			81144860
			81144870
			81144880
			81144890

1800-2841 FUNCTION TEST (PHASE B)

1959 0 42FD	BSI 2	TCVBE-TB	CALL CONVERT RTN	81144900
195A 0 D305	STO 3	\$SCSB	PLACE IN MESSAGE	81144910
195B 0 18D0	RTE	16	*	81144920
195C 0 D306	STO 3	\$SCSB+1	*	81144930
*				
195D 0 C103	LD 1	+3	FETCH BYTE COUNTER S/B	81144940
195E 0 F09A	EOR	\$P2WS+3	TEST WITH WAS	81144950
195F 1 4C18 1966	BZ	\$P2EN	GO TO EXIT RTN	81144960
*				
1961 0 C088	LD	\$P2EF	SET BYTE COUNTER FLAG	81144970
1962 0 E802	OR	\$P2BC	*	81144980
1963 0 D086	STO	\$P2EF	*	81144990
1964 0 7001	B	\$P2EN	GO TO EXIT	81145000
*				
1965 0 0100	\$P2BC DC	/0100	BYTE COUNTER ERROR BIT	81145010
*				
* EXIT PHASE 2				
*				
1966 0 C000	\$P2EN LD	*	SET CALLED	81145020
1967 0 D002	STO	\$PH2S	ONCE	81145030
1968 1 4C80 18DA	BSC I	\$PH2	RETURN TO PHASE 1	81145040
*				
196A 0 0000	\$PH2S DC	*--		81145050

* 81145060				
* 81145070				
* 81145080				
* 81145090				
* 81145100				
* 81145110				
* 81145120				
* 81145130				
* 81145140				
* 81145150				

* 81145160				
* 81145170				
* 81145180				
* 81145190				
* 81145200				
* 81145210				
* 81145220				
* 81145230				
* 81145240				
* 81145250				
* 81145260				
* 81145270				
* 81145280				
* 81145290				
* 81145300				
* 81145310				
* 81145320				
* 81145330				
* 81145340				
* 81145350				
* 81145360				
* 81145370				
* 81145380				
* 81145390				
* 81145400				
* 81145410				
* 81145420				
* 81145430				
* 81145440				
* 81145450				
* 81145460				
* 81145470				
* 81145480				
* 81145490				
* 81145500				
* 81145510				
* 81145520				
* 81145530				
* 81145540				
* 81145550				
* 81145560				
* 81145570				

1800-2841 FUNCTION TEST (PHASE B)

1980 0 C100	LD	1 0	*	81145580
198E 1 6500 1A6E	LX L1	\$SSSO	SET LINE PTR	81145590
1990 0 4007	BSI	\$P3CC	GO CONVERT	81145600
*				
1991 0 C000	\$P301 LD	*	SET CALLED ONCE SW	81145610
1992 0 D002	STO	\$P305	*	81145620
*				
1993 1 4C80 196B	BSC I	\$PH3	RETURN TO CONTROL	81145630
*				
1995 0 0000	\$P305 DC	*--		81145640
1996 0 2000	\$P306 DC	/2000	ERROR FLAG	81145650
1997 0 0000	\$PH3A DC	*--	S/B ADDRESS	81145660
*				
* CONVERT SENSE DATA TO BINARY				
*				
1998 0 0000	\$P3CC DC	*--	ENTRY POINT	81145670
*				
* 81145700				
* 81145710				
* 81145720				
* 81145730				
* 81145740				
* 81145750				
* 81145760				
* 81145770				
* 81145780				
* 81145790				
* 81145800				
* 81145810				
* 81145820				
* 81145830				
* 81145840				
* 81145850				
* 81145860				
* 81145870				
* 81145880				
* 81145890				
* 81145900				
* 81145910				
* 81145920				
* 81145930				
* 81145940				
* 81145950				
* 81145960				
* 81145970				
* 81145980				
* 81145990				
* 81146000				
* 81146010				
* 81146020				
* 81146030				
* 81146040				
* 81146050				
* 81146060				
* 81146070				
* 81146080				
* 81146090				
* 81146100				
* 81146110				
* 81146120				
* 81146130				
* 81146140				
* 81146150				
* 81146160				
* 81146170				
* 81146180				
* 81146190				
* 81146200				
* 81146210				
* 81146220				
* 81146230				
* 81146240				
* 81146250				

1800-2841 FUNCTION TEST (PHASE B)

```

* PHASE 4 (DATA CHECK ROUTINE)
*
*****
*
*****
19C1 0 0000
19C2 0 5A1F
19C3 1 6580 19FB
19C5 1 6680 19F9
19C7 1 6780 19FA
19C9 0 C200
19CA 0 F300
19CB 1 4C20 19D3
19CD 0 7201
19CE 0 1000
19CF 0 7301
19D0 0 1000
19D1 0 71FF
19D2 0 70F6
19D3 1 4C18 19DC
19D5 0 71FF
19D6 0 1000
19D7 1 C400 18D5
19D9 0 E825
19DA 1 0400 18D5
19DC 0 C300
19DD 0 D01E
19DE 0 C200
19DF 0 D01D
19E0 0 691D
19E1 0 6600 0000
19E3 1 6700 1A64
19E5 0 C016
19E6 0 42FD
19E7 0 D332
19E8 0 18D0
19E9 0 D333
19EA 0 C012
19EB 0 42FD
19EC 0 D327
19ED 0 18D0
19EE 0 D328
19EF 0 C00B
19F0 0 900D
19F1 0 42FD
19F2 0 D33D
19F3 0 18D0
19F4 0 D33E
19F5 0 C2A9
19F6 0 D31E

```

```

* PH4 UC *-- ENTRY POINT
*
* STX 2 $P4SV+1 SAVE XR2
*
* LDX I1 $PH4C SET WORD COUNTER
* LDX I2 $PH4A SET WAS ADDR
* LDX I3 $PH4B SET S/B ADDR
*
* $P401 LD 2 0 FETCH WAS DATA
* EOR 3 0 TEST WITH S/B DATA
* BNZ $P402 BRANCH IF ERROR
*
* MDX 2 +1 ADV ADDR
* NOP
* MDX 3 +1 ADV ADDR
* NOP
* MDX 1 -1 DEC WORD COUNTER
* MDX $P401
*
* $P402 BZ $P403 BRANCH NO ERROR
*
* MDX 1 -1 ADJUST THE WORD COUNTER
* NOP
*
* LD L $PH1E SET ERROR FLAG
* OR $P4EF
* STO L $PH1E
*
* $P403 LD 3 0 FETCH S/B DATA
* STO $P4D1 SAVE
* LD 2 0 FETCH WAS DATA
* STB $P4D2
* STX 1 $P4D3 SAVE WORD COUNTER
*
* $P4SV LDX L2 *-- RESTORE XR2
* LDX L3 $MID RESTORE XR3
*
* CONVERT DATA
*
* LD $P4D1 CONVERT S/B
* BSI 2 TCVBE-TB CALL CONVERT RTN
* STO 3 $DSB PLACE IN MSG
* RTE 16
* STO 3 $DSB+1
*
* LD $P4D2 CONVERT WAS
* BSI 2 TCVBE-TB CALL CONVERT RTN
* STO 3 $DWS PLACE IN MSG
* RTE 16
* STO 3 $DWS+1
*
* LD $PH4C FETCH INITIAL WCNT
* S $P4D3 SUB REMINDER
* BSI 2 TCVBE-TB CALL CONVERT RTN
* STO 3 $HWCT PLACE IN MESSAGE
* RTE 16
* STO 3 $HWCT+1
*
* LD 2 $HOFF-TB FETCH NEW LINE
* STO 3 $NDPT SET IN MESSAGE

```

1800-2841 FUNCTION TEST (PHASE B)

```

19F7 1 4C80 19C1 BSC I $PH4 RETURN TO CONTROL
19F9 0 0000 $PH4A DC *-- TEMP SAVE AREA
19FA 0 0000 $PH4B DC *--
19FB 0 0000 $PH4C DC *--
19FC 0 0000 $P4D1 DC *--
19FD 0 0000 $P4D2 DC *--
19FE 0 0000 $P4D3 DC *--
19FF 0 1000 $P4EF DC /1000
*
* OUTPUT MSG AREA
*
1A00 0002 $MSG PRNT . **
1A64 0 $MID EQU $MSG+100
FF9E 0 $OKER EQU *-$MID
1A02 0 0000 $OKSP DC *--
1A03 0001 PRNT .-
1A04 0003 PRNT .SECT-
FFA3 0 $SECT EQU *-$MID
1A07 0 0000 DC *--
1A08 0003 PRNT .,RTN-
FFA7 0 $RTN EQU *-$MID
1A0B 0 0000 DC *--
1A0C 0001 PRNT .
1A0D 0015 $UMSG PRNT .
1A1C 0015 PRNT .
1A2B 0 00FF DC /OOFF
1A2C 0003 PRNT . CAW
FFCB 0 $CAW EQU *-$MID
1A2F 0 0000 DC *--
1A30 0 0000 DC *--
1A31 0003 PRNT . CSW
FFD0 0 $CSWC EQU *-$MID
1A34 0 0000 DC *--
1A35 0 0000 DC *--
1A36 0001 PRNT .
FFD3 0 $CSWU EQU *-$MID
1A37 0 0000 DC *--
1A38 0 0000 DC *--
1A39 0001 PRNT .
FFD6 0 $CSWA EQU *-$MID
1A3A 0 0000 DC *--
1A3B 0 0000 DC *--
1A3C 0001 PRNT .
FFD9 0 $CSWB EQU *-$MID
1A3D 0 0000 DC *--
1A3E 0 0000 DC *--
FFDB 0 $NOS1 EQU *-$MID
1A3F 0003 PRNT . SNS
FFDE 0 $SNS1 EQU *-$MID
1A42 0 0000 DC *--
1A43 0 0000 DC *--
1A44 0 0000 DC *--
1A45 0 0000 DC *--
1A46 0 0000 DC *--
FFE3 0 $SNS2 EQU *-$MID
1A47 0 0000 DC *--
1A48 0 0000 DC *--
1A49 0 0000 DC *--
1A4A 0 0000 DC *--
1A4B 0 0000 DC *--
FFE8 0 $SNS3 EQU *-$MID
1A4C 0 0000 DC *--
1A4D 0 0000 DC *--
1A4E 0 0000 DC *--
1A4F 0 0000 DC *--
1A50 0 0000 DC *--
FFED 0 $SNS4 EQU *-$MID

```

1800-2841 FUNCTION TEST (PHASE B)

```

1A51 0 0000 DC *-- 81147620
1A52 0 0000 DC *-- 81147630
1A53 0 0000 DC *-- 81147640
1A54 0 0000 DC *-- 81147650
1A55 0 0000 DC *-- 81147660
1A56 0001 PRNT 81147670
1A57 0 00FF DC /00FF 81147680
1A58 0008 PRNT 81147690
FFFC 0 $SCSC EQU *-$MID S/B 81147700
1A60 0 0000 DC *-- 81147710
1A61 0 0000 DC *-- 81147720
1A62 0001 PRNT 81147730
FFFF 0 $SCSU EQU *-$MID 81147740
1A63 0 0000 DC *-- 81147750
1A64 0 0000 DC *-- 81147760
1A65 0001 PRNT 81147770
0002 0 $SCSA EQU *-$MID 81147780
1A66 0 0000 DC *-- 81147790
1A67 0 0000 DC *-- 81147800
1A68 0001 PRNT 81147810
0005 0 $SCSB EQU *-$MID 81147820
1A69 0 0000 DC *-- 81147830
1A6A 0 0000 DC *-- 81147840
1A6B 0003 PRNT 81147850
000A 0 $SSS1 EQU *-$MID S/B 81147860
1A6E 0 0000 $SSS0 DC *-- 81147870
1A6F 0 0000 DC *-- 81147880
1A70 0 0000 DC *-- 81147890
1A71 0 0000 DC *-- 81147900
1A72 0 0000 DC *-- 81147910
000F 0 $SSS2 EQU *-$MID 81147920
1A73 0 0000 DC *-- 81147930
1A74 0 0000 DC *-- 81147940
1A75 0 0000 DC *-- 81147950
1A76 0 0000 DC *-- 81147960
1A77 0 0000 DC *-- 81147970
0014 0 $SSS3 EQU *-$MID 81147980
1A78 0 0000 DC *-- 81147990
1A79 0 0000 DC *-- 81148000
1A7A 0 0000 DC *-- 81148010
1A7B 0 0000 DC *-- 81148020
1A7C 0 0000 DC *-- 81148030
0019 0 $SSS4 EQU *-$MID 81148040
1A7D 0 0000 DC *-- 81148050
1A7E 0 0000 DC *-- 81148060
1A7F 0 0000 DC *-- 81148070
1A80 0 0000 DC *-- 81148080
1A81 0 0000 DC *-- 81148090
001E 0 $NDPT EQU *-$MID 81148100
1A82 0 00FF DC /00FF 81148110
1A83 0008 PRNT 81148120
0027 0 $DWS EQU *-$MID 81148130
1A88 0 0000 DC *-- 81148140
1A8C 0 0000 DC *-- 81148150
1A8D 0 00FF DC /00FF NEW LINE 81148160
1A8E 0008 PRNT 81148170
0032 0 $DSB EQU *-$MID S/B 81148180
1A96 0 0000 DC *-- 81148190
1A97 0 0000 DC *-- 81148200
1A98 0 00FF DC /00FF 81148210
1A99 0008 PRNT 81148220
003D 0 $WWCT EQU *-$MID 81148230
1AA1 0 0000 DC *-- 81148240
1AA2 0 0000 DC *-- 81148250
1AA3 0 00FF DC /00FF 81148260
1AA4 0 FFFF DC /FFFF 81148270
* 81148280
* 81148290

```

1800-2841 FUNCTION TEST (PHASE B)

```

* 81148300
***** 81148310
* 81148320
***** 81148330
* 81148340
* 81148350
* 81148360
* 81148370
* 81148380
***** 81148390
* 81148400
***** 81148410
* 81148420
1AA5 0 C283 TERLP LD 2 TSWO-TB GET OPTION SWS 81148430
1AA6 0 100C SLA OLPER TEST LOOP ON ERROR 81148440
1AA7 1 4C28 1AAD BN TERO1 YES 81148450
* 81148460
* 81148470
* 81148480
1AA9 1 7401 088E MDX L TLPER,1 NO,BUMP RETURN 81148490
1AAB 1 4C80 088E BSC I TLPER CONTINUE 81148500
* 81148510
1AAD 1 C480 088E TERO1 LD I TLPER GET LOOP ADDRESS 81148520
1AAF 0 D001 STO TERO2+1 PUT IN RETURN 81148530
1AB0 0 4C00 0000 TERO2 BSC L *-* CONTINUE 81148540
* 81148550
***** 81148560
* 81148570
* 81148580
* 81148590
* 81148600
* 81148610
* 81148620
***** 81148630
* 81148640
***** 81148650
* 81148660
1AB2 0 C283 TSTLP LD 2 TSWO-TB GET OPTION SWS 81148670
1AB3 0 1008 SLA OLPST TEST LOOP SIO 81148680
1AB4 1 4C28 1ABA BN TST01 YES 81148690
* 81148700
* 81148710
* 81148720
1AB6 1 7401 0891 MDX L TLPST,1 NO,BUMP RETURN 81148730
1AB8 1 4C80 0891 BSC I TLPST CONTINUE 81148740
* 81148750
* 81148760
* 81148770
1ABA 1 C480 0891 TST01 LD I TLPST GET LOOP ADDRESS 81148780
1ABC 0 D001 STO TST02+1 PUT IN RETURN 81148790
1ABD 0 4C00 0000 TST02 BSC L *-* CONTINUE 81148800
* 81148810
1ABF 1 74FD 0891 TST03 MDX L TLPST,-3 GO BACK 81148820
1AC1 1 C400 0891 LD L TLPST 81148830
1AC3 0 D001 STO TST04+1 81148840
1AC4 0 4C00 0000 TST04 BSC L *-* 81148850
***** 81148860
* 81148870
* 81148880
* 81148890
* 81148900
***** 81148910
1AC6 0 THLTE EQU * 81148920
1AC6 0 C283 LD 2 TSWO-TB GET OPTION SWS 81148930
1AC7 0 100E SLA OHALT TEST FOR HALT ON ERROR 81148940
1AC8 1 4C10 1AD9 BNN THLTR BR IF NO 81148950
* 81148960
1ACA 0 C203 THLTG LD 2 THALT-TB GET CALLING ADDRESS 81148970

```

1800-2841 FUNCTION TEST (PHASE B)

1ACB 0 42FD	BSI 2 TCVBE-TB	CONVERT TO PRNT CODE	81148980	
1ACC 0 D020	STO	THLT2	SET IN MSG	81148990
1ACD 0 1090	SLT 16	Q TO A	81149000	
1ACE 0 D01F	STO	THLT2+1	SET IN MSG	81149010
1ACF 0 420C	BSI 2 TLGMS-TB	GO PRINT MSG	81149020	
1A00 1 1A0B	DC	THLTM	MESSAGE ADDRESS	81149030
			81149040	
1AD1 0 C297	LD 2 K1-TB	SET BIT 15	81149050	
1AD2 0 EA83	OR 2 TSWO-TB	*	81149060	
1AD3 0 D283	STO 2 TSWO-TB	*	81149070	
			81149080	
			81149090	
			81149100	
			81149110	
1AD4 0 42FA	THLTL BSI 2 STMLS-TB	GO TO MONITRR	81149120	
		RETURN HERE	81149130	
1AD5 0 C283	LD 2 TSWO-TB	GET SWITCH WORD	81149140	
1AD6 1 4C04 1AD4	BOD	THLTL	BR IF STILL ON	81149150
			81149160	
1AD8 0 42FA	BSI 2 STMLS-TB	GO TO MONITOR	81149170	
1AD9 1 4C80 0882	THLTR BSC 1 THALT	RETURN TO CALLER	81149180	
			81149190	
1ADB 0018	THLTM PRNT	. **HALT-- 2841 DIAGNOSTIC AT ADRS.	81149200	
1AED 0002	THLTL PRNT	.	81149210	
1AEF 0 00FF	DC	/00FF	81149220	
1AF0 0014	PRNT	. TO CLEAR HALT SET SWITCHES-	81149230	
1AFE 0 00FF	DC	/00FF	81149240	
1AFF 0011	PRNT	. S/P OOPP PPPP, P=PID.	81149250	
1B0A 0 00FF	DC	/00FF	81149260	
1B0B 0012	PRNT	. DES XXXX XXXX XXXX XXXO.	81149270	
1B17 0 00FF	DC	/00FF	81149280	
1B18 0012	PRNT	. PRESS CONSOLE INTERRUPT.	81149290	
1B24 0 FFFF	DC	/FFFF	81149300	
			81149310	
			81149320	
			81149330	
			81149340	
			81149350	
			81149360	
			81149370	
			81149380	
			81149390	
			81149400	
			81149410	
			81149420	
			81149430	
			81149440	
			81149450	
			81149460	
			81149470	
			81149480	
			81149490	
			81149500	
			81149510	
			81149520	
			81149530	
			81149540	
			81149550	
			81149560	
			81149570	
			81149580	
			81149590	
			81149600	
			81149610	
			81149620	
			81149630	
			81149640	
			81149650	
1B26 0000	ERMSG BSS E 0			
1B26 0006	PRNT	. **ER-XXXX .		

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1800-2841 FUNCTION TEST (PHASE B)

1B2C 003C	PRINT BSS E 60	PRINT BUFFER	81149660
1B68 0	ERTNE EQU *	ENTRY POINT	81149670
1B69 0 C2D4	LD 2 STKSW-TB	GET RE-ENTRY SWITCH	81149680
1B6B 1 4C20 1B7B	BNZ ERTN2	BR IF SET	81149690
1B6B 1 6000 1C38	STX L1 ERT17+1	SAVE REGS	81149700
1B6D 1 6F00 1C3A	STX L3 FRT17+3	**	81149710
1B6F 1 C480 0867	LD 1 EROUT	GET FLAGS	81149720
1B71 0 100A	SLA DEGSN	GET SENSE BYTES	81149730
1B72 1 4C10 1B7B	BNN ERTN2	BR IF NO	81149740
1B74 0 C2E8	LD 2 EROUT-TB	GET RETURN ADRES	81149750
1B75 0 D2D4	STO 2 STKSW-TB	SET SW	81149760
1B76 0 42F1	BSI 2 GETSN-TB	GET SENSE BYTES	81149770
1B77 0 C2D4	LD 2 STKSW-TB	GET SAVED ADDRESS	81149780
1B78 0 D2E8	STO 2 EROUT-TB	SET FOR RETURN	81149790
1B79 0 1010	SLA 16	CLEAR SWITCH	81149800
1B7A 0 D2D4	STO 2 STKSW-TB		81149810
			81149820
			81149830
			81149840
			81149850
			81149860
			81149870
			81149880
			81149890
			81149900
			81149910
			81149920
			81149930
			81149940
			81149950
			81149960
			81149970
			81149980
			81149990
			81150000
			81150010
			81150020
			81150030
			81150040
			81150050
			81150060
			81150070
			81150080
			81150090
			81150100
			81150110
			81150120
			81150130
			81150140
			81150150
			81150160
			81150170
			81150180
			81150190
			81150200
			81150210
			81150220
			81150230
			81150240
			81150250
			81150260
			81150270
			81150280
			81150290
			81150300
			81150310
			81150320
			81150330
1B80 1 C500 08F0	ERTN8 LD L1 UNADR	GET WORD TO MOVE	

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1800-2841 FUNCTION TEST (PHASE B)

1BB2 0 0500 0000	STO L1 *-*	STORE IN NEW LOC'N	81150340
1BB4 0 F28D	EOR 2 TERM-TB	TEST FOR END OF MSG	81150350
1BB5 1 4C18 1BB9	BZ ERTN9	BR IF YES	81150360
1BB7 0 7101	MDX 1 1	BUMP COUNT	81150370
1BB8 0 70F7	MDX ERTN8	LOOP	81150380
* ERTN9 BSI 2 TLGMS-TB GO PRINT MSG			
1BB9 0 420C	DC ERMMSG	ADDRESS OF MESSAGE	81150400
1BBA 1 1826	---CAW---	ADDRESS OF CCW CHAIN	81150410
* ERT10 LD 3 0 GET TAGS			
1BBB 0 C300	SLA OECAW	TEST FOR CAW,CSW,SNS	81150430
1BBC 0 100D	BZ ERT15	BR IF NONE	81150440
1BBD 1 4C18 1C30	LDX L1 PRINT	SET POINTER TO AREA	81150450
1BBF 1 6500 1B2C	BNN ERT11	BR IF NO CAW	81150460
1BC1 1 4C10 1BCD	SLT 32		81150470
1BC3 0 10A0	STD 1 0		81150480
1BC4 0 D900	MDX 1 2		81150490
1BC5 0 7102	LDD 2 PCAW-TB	GET HEADER	81150500
1BC6 0 CAC9	STD 1 0	STORE IN AREA	81150510
1BC7 0 D900	LD 2 CAWSV-TB	GET CCW ADDRESS FOR SIO	81150520
1BC8 0 C2C1	BSI 2 TCVBE-TB	CONVERT TO EBC	81150530
1BC9 0 42FD	STD 1 2	STORE IN AREA	81150540
1BCA 0 D902	MDX 1 4	BUMP POINTER	81150550
1BCB 0 7104	NOP		81150560
1BCC 0 1000	---CSW---	CHANNEL DSW WORDS	81150570
* ERT11 LD 3 0 GET TAGS			
1BCD 0 C300	SLA OECWSW	TEST FOR CSW TO BE PRINTED	81150580
1BCE 0 100E	BNN ERT12	BR IF NOT	81150590
1BCF 1 4C10 1BFF	LD 3 0	GET OPTION WORD	81150600
1BD1 0 C300	LDX L3 SCSXO	POINT TO CSW SAVE AREA 0	81150610
1BD2 1 6700 08C0	SRA 12	SAVE BITS 0-3	81150620
1BD4 0 180C	SLA 12	***	81150630
1BD5 0 100C	SKP Z-		81150640
1BD6 0 4830	MDX 3 4	BUMP TO NEXT SAVE AREA	81150650
1BD7 0 7304	SLA 1	TEST NEXT BIT	81150660
1BD8 0 1001	SKP Z-		81150670
1BD9 0 4830	MDX 3 4	BUMP TO NEXT SAVE AREA	81150680
1BDA 0 7304	SLA 1	TEST NEXT BIT	81150690
1BDB 0 1001	SKP Z-		81150700
1BDC 0 4830	MDX 3 4	BUMP TO NEXT SAVE AREA	81150710
1BDD 0 7304	SLA 1	TEST NEXT BIT	81150720
1BDE 0 1001	SKP Z-		81150730
1BDF 0 4830	MDX 3 4	BUMP TO NEXT SAVE AREA	81150740
1BE0 0 7304	LDD 2 PCSW-TB	GET 'CSW'	81150750
1BE1 0 CACB	STD 1 2	SET IN MSG	81150760
1BE2 0 D902	LD 3 0	GET CHANNEL STATUS WORD	81150770
1BE3 0 C300	BSI 2 TCVBE-TB	CONVERT	81150780
1BE4 0 42FD	STD 1 4	STORE	81150790
1BE5 0 D904	LD 3 1	GET UNIT STATUS WORD	81150800
1BE6 0 C301	BSI 2 TCVBE-TB	CONVERT	81150810
1BE7 0 42FD	STD 1 7	STORE	81150820
1BE8 0 D107	SLT 16		81150830
1BE9 0 1090	STO 1 8	STORE	81150840
1BEA 0 D108	LD 3 2	GET CSW ADDRESS WORD	81150850
1BEB 0 C302	BSI 2 TCVBE-TB	CONVERT	81150860
1BEC 0 42FD	STD 1 10	STORE	81150870
1BED 0 D90A	LD 3 3	GET BYTE COUNT	81150880
1BEE 0 C303	BSI 2 TCVBE-TB	CONVERT	81150890
1BEF 0 42FD	STD 1 13	STORE	81150900
1BF0 0 D10D	SLT 16	Q TO A	81150910
1BF1 0 1090	STO 1 14	STORE	81150920
1BF2 0 D10E	LD 2 SPACE-TB	GET SPACES	81150930
1BF3 0 C2CF	STD 1 0	**	81150940
1BF4 0 D100	STO 1 1	**	81150950
1BF5 0 D101	STO 1 6	SET IN BETWEEN	81150960
1BF6 0 D106	STO 1 9	SET IN BETWEEN	81150970
1BF7 0 D109	STO 1 12	SET IN BETWEEN	81150980
1BF8 0 D10C	STO 1 15	SET IN BETWEEN	81150990
1BF9 0 D10F			81151000
			81151010

1800-2841 FUNCTION TEST (PHASE B)

1BFA 0 D111	STO 1 17	CLEAR NEXT SLOT TOO	81151020
1BFB 0 710F	MDX 1 15	BUMP POINTER	81151030
1BFC 0 1000	NOP		81151040
1BFD 1 6780 0867	LDX I3 EROUT	RESTORE REG	81151050
* ---SNS--- GET 2311 SENSE INFORMATION			
1BFF 0 C300	ERT12 LD 3 0	GET TAGS	81151060
1C00 0 100F	SLA OESNS	TEST FOR SNS INFO	81151070
1C01 1 4C10 1C29	BNN ERT14	BR IF NO	81151080
1C03 0 CACD	LDD 2 PSNS-TB	GET HEADER WORDS	81151090
1C04 0 D100	STO 1 0	STORE	81151100
1C05 0 1090	SLT 16		81151110
1C06 0 D101	STO 1 1	STORE	81151120
1C07 0 7103	MDX 1 3	BUMP POINTER	81151130
1C08 0 1000	NOP		81151140
1C09 0 C29B	LD 2 K8-TB		81151150
1COA 0 D0A8	STO ERTN8+3	SAVE TEMPORARILY	81151160
1COB 0 CA29	LDD 2 SNWDS-TB	GET SENSE INFO	81151170
* ERT13 RTE 28 MOVE AROUND			
1C0C 0 180C	STD 2 ERTSV-TB	SAVE FOR LOOP	81151180
1C0D 0 DAG3	SLT 12		81151190
1C0E 0 108C	SLA 16		81151200
1C0F 0 1010	SLT 1		81151210
1C10 0 1081	SLA 3		81151220
1C11 0 1003	SLT 1		81151230
1C12 0 1081	SLA 3		81151240
1C13 0 1003	SLT 1		81151250
1C14 0 1081	SLA 3		81151260
1C15 0 1003	SLT 1		81151270
1C16 0 1081	SLA 3		81151280
1C17 0 42FD	BSI 2 TCVBE-TB	CONVERT TO HEX	81151290
1C18 0 D100	STO 1 0	STORE IN TBLE	81151300
1C19 0 1090	SLT 16	Q TO A	81151310
1C1A 0 D101	STO 1 1	STORE	81151320
1C1B 0 7102	MDX 1 2	BUMP POINTER	81151330
1C1C 0 1000	NGP		81151340
1C1D 0 C095	LD ERTN8+3	FETCH COUNTER	81151350
1C1E 0 8297	A 2 K1-TB	ADD ONE	81151360
1C1F 1 4C04 1C25	BOD **4	BRANCH IF ODD	81151370
1C21 0 C2CF	LD 2 SPACE-TB	FETCH SPACE CHARACTERS	81151380
1C22 0 D100	STO 1 0	PLACE IN PRINT LINE	81151390
1C23 0 7101	MDX 1 1	ADVANCE PRINT LINE POINTER	81151400
1C24 0 1000	NOP		81151410
1C25 0 CAC3	LDD 2 ERTSV-TB	GET SENSE INFO BACK	81151420
1C26 1 74FF 1BB3	MDX L ERTN8+3,-1	COUNT	81151430
1C28 0 70E3	MDX ERT13	LOOP UNTIL FINISHED	81151440
* ERT14 LD 2 TERM-TB SET /FFFF AT END			
1C29 0 C28D	STO 1 0	**	81151450
1C2A 0 D100	BSI 2 TLGMS-TB	PRINT MESSAGE	81151460
1C2B 0 420C	DC PRINT		81151470
1C2C 1 1B2C	LD 2 STKSW-TB	GET SWITCH	81151480
1C2D 0 C2D4	BNZ ERT18	EXIT IF SET	81151490
1C2E 1 4C20 1C3D			81151500
* ERT15 LD 3 0 GET TAGS			
1C30 0 C300	SLA OEBYP		81151510
1C31 0 1009	BN ERT16	BR IF NOT HALT	81151520
1C32 1 4C28 1C35	BSI 2 THALT-TB	WAIT FOR OPERATOR	81151530
1C34 0 4203			81151540
* ERT16 LD 3 0 GET TAGS			
1C35 0 C300	SLA OEXIT	TEST FOR OTHER EXIT	81151550
1C36 0 1006	ERT17 LDX L1 *-*	RELOAD REGS	81151560
1C37 0 6500 0000	LDX L3 *-*	***	81151570
1C39 0 6700 0000	BN I ERADR	BR IF YES	81151580
1C3B 1 4CAB 1C41			81151590
* ERT18 MDX L EROUT,2 BUMP RETURN BY TWO			
1C3D 1 7402 0867	BSC I EROUT	EXIT	81151600
1C3F 1 4C80 0867			81151610
1C41 0 0000	ERADR DC *-*	RETURN ADDRESS PUT HERE	81151620
			81151630
			81151640
			81151650
			81151660
			81151670
			81151680
			81151690

1800-2841 FUNCTION TEST (PHASE B)

```

* 81151700
*****
1C42 0          * 81151710
1C42 0 692D    * 81151720
                * 81151730
                * 81151740
                * 81151750
                * 81151760
                * 81151770
                * 81151780
                * 81151790
                * 81151800
                * 81151810
                * 81151820
                * 81151830
                * 81151840
                * 81151850
                * 81151860
                * 81151870
                * 81151880
                * 81151890
                * 81151900
                * 81151910
                * 81151920
                * 81151930
                * 81151940
                * 81151950
                * 81151960
                * 81151970
                * 81151980
                * 81151990
                * 81152000
                * 81152010
                * 81152020
                * 81152030
                * 81152040
                * 81152050
                * 81152060
                * 81152070
                * 81152080
                * 81152090
                * 81152100
                * 81152110
                * 81152120
                * 81152130
                * 81152140
                * 81152150
                * 81152160
                * 81152170
                * 81152180
                * 81152190
                * 81152200
                * 81152210
                * 81152220
                * 81152230
                * 81152240
                * 81152250
                * 81152260
                * 81152270
                * 81152280
                * 81152290
                * 81152300
                * 81152310
                * 81152320
                * 81152330
                * 81152340
                * 81152350
                * 81152360
                * 81152370

SEEKX EQU *      ENTRY POINT
      STX 1 IR1+1

LD 2 TERM-TB    SET HA AREA = ALL 1'S
SRT 16          *
STO L RAREA     BLANK RAREA
STO L RAREA+2   BLANK RAREA

BSI L TCVSR     GET SECT AND RTN NOS.
STO M6         EST SECT. NO.
SLT 16
STO M7         EST. RTN. NO.

LDX L1 ERR1
STX L1 WTADR   EST. TIMEOUT ADDR.

LDX 1 5
STX L1 LPCT1   EST. ERROR COUNTER

BR1 MDX L LPCT1,-1  DECR. LOOP COUNT
    MDX **1      CONTINUE
    MDX ERRX     TAKE HARD ERROR EXIT

BSI 2 SIO-TB    CALL SIO ROUTINE
DC SKCYL        CCW ADDRESS
                1. SEEK CYL 198 HD 0
                2. READ HA

GET HERE IF INTERRUPT RECEIVED

LDX L1 RAREA   FWA OF HOME ADDR.

LDD 1 +0
SLT 8          A = CYL, CYL
STO 2 HA+0-TB HA+0 = CYL, CYL

LD 1 +2
SRA 8
STO 2 TEMP1-TB
SLT 8
SLA 8
OR 2 TEMP1-TB  A = HD, HD
STO 2 HA+1-TB HA+1 = HD, HD

LD 2 SCSX0-TB  LOOK AT UNIT STATUS
SLA UNCHK      LOOK FOR UNIT CHECK
BN ERR2       PRINT ERROR

COMPARE ACTUAL AND EXPECTED HA

LDD 2 HA-TB    ACTUAL HA
SD SKARG+1     EXPECTED HA
BNZ ERR2

IR1 LDX L1 *-*  RESTORE IR1
    BSC I SKTV  RETURN TO CALLER

ERR2 LD 2 HA-TB  CYL NO
     BSI 2 TCVHD-TB  HEX TO DECIMAL
     BSI 2 TCVBE-TB  DECIMAL TO 1443
     STO M2+9
     SLT 16
     STO M2+10     EST. CYL NO.

LD 2 HA+1-TB   HEAD NO.

```

1800-2841 FUNCTION TEST (PHASE B)

```

1C7A 0 42FD    BSI 2 TCVBE-TB  HEX TO 1443
1C7B 0 1090    SLT 16
1C7C 0 D02E    STO M2+13  EST. HEAD NO.

1C7D 0 42E8    * BSI 2 EROUT-TB  CALL ERROR OUT ROUTINE
1C7E 0 0168    DC /016B  FLAG BITS
1C7F 1 1CAD    DC M5      MSG NO OR ADDRESS
1C80 0 420C    BSI 2 TLGMS-TB  CALL LOG ROUTINE
1C81 1 1C8E    DC M1
1C82 0 7005    MDX ERR6   GO WAIT FOR OPER ACTION

1C83 0 42E8    * ERR1 BSI 2 EROUT-TB  CALL ERROR OUT ROUTINE
1C84 0 0168    DC /016B  FLAG BITS
1C85 1 1CAD    DC M5      MSG NO OR ADDRESS
1C86 0 420C    BSI 2 TLGMS-TB  CALL LOG ROUTINE
1C87 1 1CBF    DC M8
1C88 0 4203    ERR6 BSI 2 THALT-TB  RETRY SIO
1C89 0 70CB    MDX BR1

1C8A 0 420C    * ERRX BSI 2 TLGMS-TB  CALL LOG ROUTINE
1C8B 1 1CCA    DC MX

1C8C 0 4C80 012E * BSC I END      TERMINATE

* PRINT HARD ERROR MESS. AND EXIT
*
*
*
*
M1 PRNT . HA EXPECTED= CYL 0198,HD 00 .
DC /FF00 NEW LINE
M2 PRNT .HA READ = CYL XXXX,HD XX.
DC -1
*
M5 PRNT .25 .
PRNT .SECT.
M6 PRNT . .
PRNT ., RTN.
M7 PRNT . .
PRNT ., ERROR ON SEEK.
DC -1
*
M8 PRNT .*** TIMEOUT ***.
DC -1
*
MX PRNT .***HARD ERROR** PROG TERM.
DC -1
*
*
*
SKCYL DC 6      BYTE COUNT
DC /40*256+SEEKX FLAGS AND OP CODE
DC SKARG      ADDRESS

*
*
DC 5      BYTE COUNT
DC 0*256+RDHA FLAGS AND OP CODE
DC RAREA    ADDRESS

*
*
BSS E 1      ALIGN TO ODD BOUNDARY
DC 0
DC 198      CYLINDER 198
DC 0        HEAD 0

*****
* 81153000
* 81153010
* 81153020
* 81153030
* 81153040
* 81153050

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81153060
* 81153070
***** 81153080
***** 81153090
1CE2 0 TLGME EQU * ENTRY POINT
1CE2 0 C206 LD 2 LGBSY-TB GET LOG BUSY SW
1CE3 1 4C18 1CE7 BZ TLGNB BR IF NOT BUSY
1CE5 0 42FA BSI 2 STMLS-TB GO VISIT MONITOR
1CE6 0 70FB B TLGME ELSE LOOP
*
1CE7 0 C20C TLGNB LD 2 TLGMS-TB GET CALLING ADDR
1CE8 0 D206 STO 2 LGBSY-TB SET LOG BUSY SW
1CE9 1 D400 1DD0 STO L LEXIT+1 SET RETURN ADDR
1CEB 1 6F00 1DCA STX L3 TLGX3+1 SAVE REG
1CED 1 6D00 1DCC STX L1 TLGX3+3 SAVE REG
1CEF 0 C283 LD 2 TSWO-TB GET OPTION SWS
1CF0 0 100D SLA OBYPR
1CF1 1 4C28 1DC7 BN TLGEN BR IF BYPASS PRNTOU
*
1CF3 0 C294 LD 2 TLGED-TB GET EDIT FOR PRINTER
1CF4 1 4C10 1CF7 BNN TLG01 BR IF NOT SELECTED
***** 81153260
MDX *-1 TRAP STOP
***** 81153270
* RELEASE SC IN CASE SHARED CHANNEL
1CF7 0 C295 TLG01 LD 2 TSCED-TB GET DDEF
1CF8 1 4C10 1D06 BNN TLG02 BR IF NOT SEL
*
1CFA 0 1010 SLA 16 CLEAR CHANNEL FREED SW
1CFB 1 D400 1DD1 STO L FRESW *
1CFD 0 C29E LD 2 K20-TB SET COUNTER FOR DELAY
1CFE 0 D237 STO 2 SCSN1-TB **
1CFF 0 42FA BSI 2 STMLS-TB GO TO MONITOR
1D00 1 74FF 08B6 MDX L SCSN1,-1 DECR. COUNTER
1D02 0 70FC MDX *-4 LOOP UNTIL FINISHED
*
1D03 0 42EB BSI 2 FREDV-TB FREE SEL CHNL
1D04 1 6C00 1DD1 STX L FRESW SET SC FREED SW
1D06 0 4480 0131 TLG02 BSI I REQDV REQUEST DEVICE
1D08 1 1D1F DC TLG03 BUSY RETURN
1D09 1 0813 DC TLGED EDIT FOR PRINTED
1D0A 1 1D93 DC TLG0A AREA CODE GIVEN BACK
1D0B 1 080C DC TERM TERMINATOR
*
1D0C 0 C20E LD 2 T45SW-TB GET 43/53 SW
1D0D 1 4C04 1D14 BOD TLG40 BR IF 1443
*
1D0F 0 C2AA LD 2 H0100-TB ELSE BUILD WRITE IOCC
1D10 1 EC00 1D93 OR L TLGDA *
1D12 0 D25A STO 2 TLGWR+1-TB *
1D13 0 7004 MDX TLGCM * GO TO COMMON RTN
*
1D14 0 C2AD TLG40 LD 2 H0500-TB CREATE WR IOCC
1D15 1 EC00 1093 OR L TLGDA OR IN AREA CODE
1D17 0 D25A STO 2 TLGWR+1-TB
1D18 0 C2AE TLGCM LD 2 H0700-TB CREATE SENSE IOCC
1D19 1 EC00 1093 OR L TLGDA OR IN AREA CODE
1D1B 0 D25C STO 2 TLGSN+1-TB
1D1C 0 EA97 OR 2 K1-TB SET RESET BIT
1D1D 0 D260 STO 2 TLGSR+1-TB ***
1D1E 0 7002 MDX TLG04 GO TO PRINT
*
1D1F 0 42FA TLG03 BSI 2 STMLS-TB GO TO MONITOR
1D20 0 70E5 MDX TLG02 LOOP TO TRY AGAIN
*
1D21 1 6580 1DD0 TLG04 LDX I1 LEXIT+1 GET CALLING RTN ADDR
1D23 0 C100 LD 1 0 GET MSG ADDRESS
1D24 0 D001 STO **1 SET FOR LOAD INDEX
1D25 0 6500 0000 LDX L1 *-** LOAD REG

```

1800-2841 FUNCTION TEST (PHASE B)

```

1027 1 6D00 1DD4 STX L1 TLGCH+2 SAVE IN 'GET CHAR' RTN
1029 1 6780 08DB LDX I3 TLGWR GET WRD COUNT ADDRESS
102B 0 6B16 STX 3 TLGBP+1 SET FOR BUMPING
*
102C 0 C100 LD 1 0 GET FIRST DATA WORD
102D 0 F28D EDR 2 TERM-TB COMPARE WITH /FFFF
102E 1 4C18 1D34 BZ TLG05 BR IF YES
*
1030 0 C280 LD 2 TPID-TB GET PID
1031 0 E286 AND 2 H7FFF-TB DROP SELECT BIT
1032 0 42FD BSI 2 TCVBE-TB CONVERT TO 1443 CODE
1033 0 DB02 STO 3 2 SET IN MSG
*
1034 0 1010 TLG05 SLA 16 CLEAR -
1035 0 D25E STO 2 TLGSW-TB * 1ST/2ND CHAR SW
1036 0 D25F STO 2 TLGSW+1-TB *
1037 0 D05A STO TLGIS * INTERRUPT SW
1038 0 C299 LD 2 K3-TB *
1039 0 D300 STO 3 0
103A 0 7301 MDX 3 1 BUMP TO PT TO BUFFER
*
103B 1 4400 1DD2 TLG06 BSI L TLGCH GET A CHARACTER
103D 0 700F MDX TLG07 COME HERE FOR HEX FF
103E 0 1008 SLA 8 PUT IN HIGH ORDER BYTE
103F 0 EA5B OR 2 TLGSP-TB SET LOW ORDER TO SP
1040 0 D303 MDX STX 3 3 STORE IN BUFFER
1041 0 7401 0000 TLGBP L *-*,1 BUMP WORD COUNT
1043 1 4400 1DD2 BSI L TLGCH GET ANOTHER CHARACTER
1045 0 7007 MDX TLG07 IF CHARACTER IS HEX FF
1046 0 1888 SRT 8 CHARACTER TO 0
1047 0 C303 LD 3 3 GET LAST CHARACTER
1048 0 1808 SRA 8 BYTE TO LOW POSITION
1049 0 1088 SLT 8 COMBINED BYTES IN A
104A 0 D303 STO 3 3 STORE IN BUFFER
104B 0 7301 MDX 3 1 BUMP SINK
104C 0 70EE MDX TLG06 LOOP UNTIL HEX FF
*
* TEST FOR 1443, IF YES GO TO X10
* IF 1053 DO A CARRIAGE RETURN
*
104D 0 C2DE TLG07 LD 2 T45SW-TB GET 43/53 SW
104E 1 4C04 1D7A BOD TLG42 BR IF 1443
*
1050 0 C25F LD 2 TLGSW+1-TB GET 1ST/2ND CHAR SW
1051 1 4C18 1D55 BZ TLG08 BR IF 2ND CHAR
1053 0 C289 LD 2 HFF00-TB ELSE GET TERMINATOR
1054 0 D303 STO 3 3 PUT IN MESSAGE
*
1055 0 C2A9 TLG08 LD 2 H00FF-TB GET TERMINATOR
1056 0 EB03 OR 3 3 PUT IN MESSAGE
1057 0 D303 STO 3 3 *
*
1058 1 6500 1Df1 LDX L1 TLGBA+1 SET UP BUFFER POINTER
105A 0 6936 STX 1 TLGSV SAVE
105B 0 1010 SLA 16 CLEAR-
105C 0 D25E STO 2 TLGSW-TB * SECOND CHAR SW
*
* START LINE WITH A **CARRIAGE RETURN**
*
105D 0 C032 LD TLGCR GET CR CHARACTER
105E 1 D400 1Df0 STO L TLGBA PUT IN OUTPUT AREA
1060 0 7023 MDX TLG43 GO PRINT
*
* COME HERE FROM INTERRUPT ROUTINE IF 1053
*
1061 1 6580 1D91 TLGPR LDX I1 TLGSV RESTORE POINTER
1063 0 C25E LD 2 TLGSW-TB GET 2ND CHAR SW
1064 1 4C18 1D6D BZ TLG09 BR IF 0 (CHAR 1)

```

1800-2841 FUNCTION TEST (PHASE B)

1D66 0 1010 SLA 16 ELSE RESET SW 81154420
1D67 0 025E STO 2 TLGSW-TB * 81154430
1D68 0 C100 LD 1 0 GET CHARACTERS 81154440
1D69 0 1008 SLA 8 SAVE 2ND CHAR 81154460
1D6A 0 7101 MDX 1 1 BUMP POINTER 81154470
1D6B 0 6925 STX 1 TLGSV SAVE POINTER 81154480
1D6C 0 7005 MDX TLG10 GO TO COMMON RTN 81154490
* GET HERE IF PRINTING CHARACTER 1 81154500
TLG09 LD 1 0 GET CHARACTERS 81154510
SRA 8 81154520
SLA 8 81154530
STX L TLGSW SET 2ND CHAR SW 81154540
* GET HERE IF PRINTING CHARACTER 2 81154550
TLG10 S 2 HFF00-TB TEST FOR END OF LINE 81154560
BZ TLGX2 BR IF YES 81154570
* A 2 HFF00-TB ELSE RESTORE CHAR 81154580
SRA 8 RIGHT JUSTIFY CHAR 81154590
BSI L TCV45 CONVERT TO 1816 CODE 81154600
STO TLGBA PUT IN OUTPUT AREA 81154620
81154630
***** 81154640
* 81154650
***** 81154660
* 81154670
* DO XIO WRITE- 81154680
PRINT A LINE (1443) 81154690
PRINT A CHARACTER (1053) 81154700
81154710
***** 81154720
* 81154730
***** 81154740
* 81154750
81154760
TLG42 XIO 2 TLGSN-TB SENSE DSW 81154770
RTE 16 SAVE 81154780
LD 2 T45SW-TB GET 43/53 SW 81154790
SKP E SKIP IF 53 81154800
SLT 10 SHIFT 31 FOR 43 81154810
SLT 21 SHIFT 21 FOR 53 81154820
BNN TLG43 BR IF READY 81154830
BSI 2 STMLS-TB ELSE GO TO MONITOR 81154840
MDX TLG42 LOOP UNTIL READY 81154850
* 81154860
TLG43 XIO 2 TLGWR-TB 81154870
* 81154880
STX TLGIS SET INT SW 81154890
LD 2 TERM-TB GET /FFFF 81154900
STO 2 TLGCT-TB SET LOOP COUNT 81154910
* 81154920
TLG11 BSI 2 STMLS-TB GO TO MONITOR 81154930
LD TLGIS TEST FOR INT 81154940
BZ TLGXR BR IF IT HAPPENED 81154950
MDX L TLGCT,-1 DECR COUNT 81154960
MDX TLG11 LOOP 81154970
***** 81154980
MDX *-1 TRAP STOP 81154990
***** 81155000
* 81155010
***** 81155020
* 81155030
***** 81155040
* 81155050
* PRINT INTERRUPT ROUTINE 81155060
* 81155070
TLGCR DC /8100 CARRIAGE*RETURN 81155070
TLGSV DC *-# SAVE BUFFER POINTER 81155080
TLGIS DC 0 INT SW 81155090

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1800-2841 FUNCTION TEST (PHASE B)

1D93 0 0000 TLGDA DC *-# AREA CODE PUT HERE BY MON 81155100
1D94 0 0000 TLGIN DC *-# INTERRUPT ENTRY POINT 81155110
1D95 0 C0FC LD TLGIS GET INT SWITCH 81155120
1D96 0 4818 SKP +- SKIP IF NONZERO 81155130
***** 81155140
1D97 0 70FF MDX *-1 TRAP STOP 81155150
***** 81155160
1D98 1 0C00 08DE XIO L TLGSR SENSE RESET DSW 81155170
1D9A 1 4C28 1DA0 BN TLG12 BR IF XFER COMPLETE (1443 81155180
* OR SVC RESPONSE (1053) 81155190
* SLA 2 TEST FOR PRINT COMPLETE 81155200
1D9C 0 1002 BN TLG13 BR IF YES 81155210
***** 81155220
1D9F 0 70FF MDX *-1 TRAP STOP 81155230
***** 81155240
1DA0 0 18D0 TLG12 RTE 16 SAVE DSW 81155250
1DA1 0 C2DE LD 2 T45SW-TB GET 43/53 SW 81155260
1DA2 0 F297 EOR 2 K1-TB TEST FOR 1443 81155270
1DA3 1 4C20 1DA8 BNZ TLG13 BR IF 1053 81155280
1DA5 0 1092 SLT 18 GET DSW (PRINT COMPLETE) 81155290
1DA6 1 4C10 1DAA BNN TLG13+2 81155300
* 81155310
1DA8 0 1010 TLG13 SLA 16 81155320
1DA9 0 D0E8 STO TLGIS CLEAR INT SWITCH 81155330
1DAA 1 4C80 1D94 BSC I TLGIN EXIT INT RTN 81155340
* 81155350
***** 81155360
* 81155370
***** 81155380
* 81155390
* MONITOR COMES HERE FROM INT RTN 81155400
* 81155410
1DAC 0 C043 TLGXR LD TLGBA GET WORD CNT 81155420
1DAD 0 1808 SRA 8 TEST FOR 1053 CHAR 81155430
1DAE 1 4C20 1D61 BNZ TLGPR BR IF 1053 81155440
* 81155450
1DB0 1 6780 0808 TLGX2 LDX 13 TLGWR GET BUFFER ADDRESS 81155460
1DB2 1 6F00 1042 STX L3 TLG8P+1 SET PTR TO WORD COUNT 81155470
1DB4 0 C299 LD 2 K3-TB SET WRD CNT=3 81155480
1DB5 0 0300 STO 3 0 *** 81155490
1DB6 0 7301 MDX 3 1 BUMP POINTER 81155500
1DB7 0 10A0 SLT 32 SET PID=BLANKS IN MESSAGE 81155510
1DB8 0 D801 STD 3 1 * 81155520
1DB9 0 D25E STO 2 TLGSW-TB RESET 1ST/2ND CHAR SW 81155530
1DBA 0 4017 BSI TLGCH GET A CHARACTER 81155540
1DBB 0 7002 MDX TLG15 HERE IF HEX /00FF 81155550
1DBC 1 4C00 1D3E BSC L TLG06+3 ELSE LOOP 81155560
* 81155570
1DBE 0 4480 0132 TLG15 BSI I RELDV GO RELEASE DVC 81155580
1DC0 1 0813 DC TLGED ADDR OF EDIT WRD 81155590
1DC1 1 080C DC TERM 81155600
1DC2 0 C00E LD FRESW GET CHNL RELS SW 81155610
1DC3 0 4820 BSC Z SKIP IF NOT SET 81155620
1DC4 0 42EE BSI 2 GETDV-TB ELSE GET CHNL 81155630
* 81155640
1DC5 0 1010 SLA 16 RESET- 81155650
1DC6 0 D00A STO FRESW * CHNL RELS SW 81155660
* 81155670
1DC7 1 7401 1DD0 TLGEN MDX L LEXIT+1,1 BUMP RETURN BY 1 81155680
1DC9 0 6700 0000 TLGX3 LDX L3 *-# RESTORE REG 81155690
1DCB 0 6500 0000 LDX L1 *-# RESTORE REG 81155700
1DCD 0 1010 SLA 16 RESET LOG BUSY SW 81155710
1DCE 0 D2D6 STO 2 LGBSY-TB * 81155720
1DCF 0 4C00 0000 LEXIT BSC L *-# EXIT PRINT RTN 81155730
* 81155740
1DD1 0 0000 FRESW DC 0 CHNL RELEASED SW 81155750
***** 81155760
* 81155770

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1800-2841 FUNCTION TEST (PHASE B)

```

***** 81155780
* 81155790
*   FETCH ONE CHARACTER FROM SOURCE MESSAGE 81155800
* 81155810
*   TLGCH DC *-* ENTRY POINT 81155820
*   LDX L1 *-* SET UP POINTER 81155830
*   LD 2 TLGSW+1-TB GET 1/2 CHAR SW 81155840
*   BNZ TLG16 BR IF SET 81155850
*   STX L TLGSW+1 SET 1/2 CHAR SW 81155860
*   LD 1 0 GET TWO CHARACTERS 81155870
*   SRA 8 KEEP HIGH ORDER ONE 81155880
*   MDX TLG17 GO TO CMN RTN 81155890
*   81155900
*   TLG16 SLA 16 CLEAR 1ST/2ND CHAR SWITCH 81155910
*   STO 2 TLGSW+1-TB *** 81155920
*   LD 1 0 GET TWO CHARACTERS 81155930
*   SLA 8 KEEP LOW ORDER ONE 81155940
*   SRA 8 *** 81155950
*   MDX 1 1 BUMP SOURCE POINTER 81155960
*   STX 1 TLGCH+2 SAVE 81155970
*   81155980
*   TLG17 BNZ TLG18 SET TO SPACE IF ZERO 81155990
*   LD 2 TLGSP-TB *** 81156000
*   TLG18 EOR 2 H00FF-TB TEST FOR HEX FF 81156010
*   BZ 1 TLGCH EXIT IF HEX FF 81156020
*   EOR 2 H00FF-TB RE-INVERT IT 81156030
*   MDX L TLGCH,1 BUMP RETURN ADDRESS 81156040
*   BSC I TLGCH EXIT THIS RTN 81156050
*   81156060
*   BSS E 0 81156070
*   TLGBA DC *-* WORD COUNT FOR PRNT LINE 81156080
*   PRNT . XXXX. PID GOES HERE 81156090
*   BSS 50 LENGTH OF BUFFER 81156100
***** 81156110
* 81156120
***** 81156130
* 81156140
* 81156150
* 81156160
* 81156170
*   CONVERT HEX WORD TO 1443 CODE 81156180
* 81156190
***** 81156200
* 81156210
***** 81156220
* 81156230
* 81156240
* 81156250
*   RTE 16 81156260
*   BSI TCVO1 GET NEXT CHARACTER 81156270
*   SLA 8 81156280
*   STO 2 TCVS1-TB 81156290
*   BSI TCVO1 GET NEXT CHARACTER 81156300
*   OR 2 TCVS1-TB 81156310
*   STO 2 TCVS1-TB 81156320
* 81156330
* 81156340
*   BSI TCVO1 GET NEXT CHARACTER 81156350
*   SLA 8 81156360
*   STO 2 TCVS2-TB 81156370
*   BSI TCVO1 GET NEXT CHARACTER 81156380
*   OR 2 TCVS2-TB 81156390
*   SRT 16 81156400
*   LD 2 TCVS1-TB 81156410
*   BSC I TCVBE 81156420
* 81156430
*   TCV01 DC *-* ENTRY 81156440
*   SLA 16 81156450
*   SLT 4

```

1800-2841 FUNCTION TEST (PHASE B)

```

1E39 1 4C20 1E3E BNZ TCVO2 BR IF NOT ZERO 81156460
1E3B 0 C2A3 LD 2 H000A-TB 0=/0A 81156470
1E3C 1 4C80 1E36 BSC I TCVO1 EXIT 81156480
* 81156490
*   TCVO2 S 2 K9-TB SUBTRACT 9 81156500
*   SKP Z- 81156510
*   A 2 H0027-TB ADD BACK A CONSTANT 81156520
*   A 2 K9-TB 81156530
* 81156540
*   BSC I TCVO1 EXIT 81156550
* 81156560
***** 81156570
* 81156580
***** 81156590
* 81156600
*   CONVERT HEX TO DECIMAL, A REG TO A REG 81156610
* 81156620
*   *** CALL - BSI 2 TCVHD-TB *** 81156630
***** 81156640
* 81156650
***** 81156660
* 81156670
*   THEXD BN I TCVHD EXIT IF NEG 81156680
*   SRT 16 81156690
*   D 2 K1000-TB MOST SIGNIFICANT DIGIT 81156700
*   SLA 12 POSITION DIGIT 81156710
*   STO THEXS 81156720
*   SLA 4 CLEAR A REG 81156730
* 81156740
*   D 2 K100-TB NEXT SIGNIFICANT DIGIT 81156750
*   SLA 8 POSITION DIGIT 81156760
*   OR THEXS 81156770
*   STO THEXS 81156780
*   SLA 8 CLEAR A REG 81156790
* 81156800
*   D 2 K10-TB NEXT SIGNIFICANT DIGIT 81156810
*   SLT 12 COMBINE LAST TWO DIGITS 81156820
*   SRA 12 *** 81156830
*   SLT 4 *** 81156840
*   OR THEXS 81156850
*   BSC I TCVHD 81156860
* 81156870
*   THEXS DC 0 TEMP STORAGE 81156880
* 81156890
***** 81156900
* 81156910
***** 81156920
***** 81156930
* 81156940
***** 81156950
* 81156960
*   CALL BSI L TCVSR 81156970
*   GET AQ = SPACE/SECT/SPACE/RTN 81156980
* 81156990
***** 81157000
* 81157010
***** 81157020
* 81157030
*   TCVSR DC *-* 81157040
*   STX 3 TCVSZ+1 SAVE REG 81157050
*   LDX I3 TRID GET ROUTINE NUMBER 81157060
*   LD L3 DIGIT GT PRINTABLE CODE 81157070
*   SRT 16 A TO 0 81157080
*   LDX I3 TSID GET SECT NUMBER 81157090
*   LD L3 DIGIT-1 GET PRINTABLE CODE 81157100
*   TCVSZ LDX L3 *-* RESTORE REG 81157110
*   BSC I TCVSR EXIT 81157120
* 81157130
*   DIGIT PRNT . 0 1 2 3 4 5 6 7 8 9 A B C D E F.

```

1800-2841 FUNCTION TEST (PHASE B)

```

***** 81157140
* 81157150
***** 81157160
* 81157170
* CONVERT 1443 CODE TO 1816/1053 CODE
***** 81157180
* 81157190
***** 81157200
* 81157210
* 81157220
***** 81157230
* 81157240
* 81157250
* 81157260
* 81157270
* 81157280
* 81157290
* 81157300
* 81157310
* 81157320
* 81157330
* 81157340
* 81157350
* 81157360
* 81157370
* 81157380
* 81157390
* 81157400
* 81157410
* 81157420
* 81157430
* 81157440
* 81157450
* 81157460
* 81157470
* 81157480
* 81157490
***** 81157500
* 81157510
* 81157520
* 81157530
* 81157540
* 81157550
* 81157560
* 81157570
* 81157580
* 81157590
* 81157600
* 81157610
* 81157620
* 81157630
* 81157640
* 81157650
* 81157660
* 81157670
* 81157680
* 81157690
* 81157700
* 81157710
* 81157720
* 81157730
* 81157740
* 81157750
* 81157760
* 81157770
* 81157780
* 81157790
* 81157800
* 81157810

TCV45 DC *-*
STX 3 TCVSV+1
STO TCVSV SAVE 1443 CHAR
LDX L3 TCVTB SET UP POINTER
SLT 32 CLEAR AQ
LD 3 0 PICK UP NEXT ENTRY IN TBL
RTE 8 DELETE TR CHAR
EOR TCVSV TEST CHAR
BZ TCV04 CHAR COMPARES

*
SLT 8 RESTORE Q REG=0
AND 2 HOOFF-TB SET UP TO TEST
EOR 2 HOOFF-TB * FOR TERMINATOR
BZ TCVEN GO TO END ROUTINE

*
MDX 3 1 INC POINTER
MDX TCV03 RETURN TO LOOP

*
TCV04 XCH SKP RESTORE TR CHAR
EXIT

*
TCVEN LD TCVSP SET UP SPACE
LDX L3 TCVSV+1 RESTORE XR3
BSC I TCV45 EXIT

*****
TCVTB DC /313E A(1443,TILT-ROTATE)
DC /321A B
DC /331E C
DC /3432 D
DC /3536 E
DC /3612 F
DC /3716 G
DC /3826 H
DC /3922 I
DC /217E J
DC /225A K
DC /235E L
DC /2472 M
DC /2576 N
DC /2652 O
DC /2756 P
DC /2866 Q
DC /2962 R
DC /129A S
DC /139E T
DC /1482 U
DC /1586 V
DC /1692 W
DC /1796 X
DC /18A6 Y
DC /19A2 Z

*
DC /01FC 1(1443,TILT-ROTATE)
DC /02D8 2
DC /03DC 3
DC /04F0 4
DC /05F4 5

```

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1800-2841 FUNCTION TEST (PHASE B)

```

1EAF 0 06D0 DC /06D0 6 81157820
1EB0 0 07D4 DC /07D4 7 81157830
1EB1 0 08E4 DC /08E4 8 81157840
1EB2 0 09E0 DC /09E0 9 81157850
1EB3 0 0AC4 DC /0AC4 0 81157860
* 81157870
1EB4 0 0021 DC /0021 SP(1443,TILT-ROTATE) 81157880
1EB5 0 2CD6 DC /2CD6 * 81157890
1EB6 0 1CFE DC /1CFE ( 81157900
1EB7 0 3CF6 DC /3CF6 ) 81157910
1EB8 0 11BC DC /11BC / 81157920
1EB9 0 2084 DC /2084 - 81157930
1EBA 0 08C2 DC /08C2 = 81157940
TCVTC DC /00FF TERM 81157950
TCVSP DC /2100 SPACE 81157960
TCVSV DC 0 TEMP STORAGE 81157970
DC 0 81157980
***** 81157990
* 81158000
***** 81158010
* WAIT FOR I/O INTERRUPT
***** 81158020
* 81158030
***** 81158040
* 81158050
* 81158060
* 81158070
* 81158080
* 81158090
* 81158100
* 81158110
* 81158120
* 81158130
* 81158140
* 81158150
* 81158160
* 81158170
* 81158180
* 81158190
* 81158200
* 81158210
* 81158220
* 81158230
* 81158240
* 81158250
* 81158260
* 81158270
* 81158280
* 81158290
* 81158300
* 81158310
* 81158320
* 81158330
* 81158340
* 81158350
* 81158360
* 81158370
* 81158380
* 81158390
* 81158400
* 81158410
* 81158420
* 81158430
* 81158440
* 81158450
* 81158460
* 81158470
* 81158480
* 81158490

1EBF 0
1EBF 0 C28D
1ECO 0 D237

1EC1 0 C27B
1EC2 1 4C20 1ED0

1EC4 1 74FF 08B6
1EC6 0 70FA

TINTS EQU * ENTRY POINT
LD 2 TERM-TB SET TIMEOUT COUNTER
STO 2 SCSN1-TB *

*
TINS2 LD 2 WIOSW-TB FETCH WAIT SWITCH
BNZ TINS3 BRANCH IF SET

*
MDX L SCSN1,-1 DEC WAIT COUNTER
MDX TINS2 LOOP BACK AND WAIT

*
COME HERE IF TIMEOUT
*
XIO 2 SCSN1-TB GET SELECTOR CHANNEL AND
STO 2 SCSXC-TB UNIT STATUS.
XIO 2 SCSN3-TB *
STO 2 SCSXC+1-TB *
XIO 2 SCSN4-TB *
STO 2 SCSXC+2-TB *
XIO 2 SCSN5-TB *
STO 2 SCSXC+3-TB *
MDX TINS4 GO TO ERROR RETURN

*
TINS3 MDX L WAITS,+1 BUMP RETURN
SLA 16 RESET WAIT I/O SW
STO 2 WIOSW-TB *

*
BSC I WAITS RETURN TO USER

*
TINS4 LD I WAITS SET-UP ERROR RETURN
STO **3 *
SLA 16 RESET-WAIT SW
STO 2 WIOSW-TB *
BSC L ** RETURN TO USER

*
SPECIAL TIO ROUTINE
*
WILL RETURN THE FOLLOWING CONDITIONS
VIA THE A REG WHEN USER RETURN IS ISSUED.
*

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1800-2841 FUNCTION TEST (PHASE B)

```

* /0000 DEVISE IS AVAILABLE--NO STATUS      81158500
* /8000 CSW STORED                          81158510
* /4000 ADAPTER BUSY                        81158520
* /2000 NOT OPERATIONAL                     81158530
*                                           81158540
*                                           81158550
*                                           81158560
*****
*                                           81158570
*                                           81158580
*                                           81158590
1EDD 0                                     81158600
*                                           81158610
*                                           81158620
*                                           81158630
*                                           81158640
*                                           81158650
*                                           81158660
*                                           81158670
*                                           81158680
*                                           81158690
*                                           81158700
*                                           81158710
*                                           81158720
*                                           81158730
*                                           81158740
*                                           81158750
*                                           81158760
*                                           81158770
*                                           81158780
*                                           81158790
*                                           81158800
*                                           81158810
*                                           81158820
*                                           81158830
*                                           81158840
*                                           81158850
*                                           81158860
*                                           81158870
*                                           81158880
*                                           81158890
*                                           81158900
*                                           81158910
*                                           81158920
*                                           81158930
*                                           81158940
*                                           81158950
*                                           81158960
*                                           81158970
*                                           81158980
*                                           81158990
*                                           81159000
*                                           81159010
*                                           81159020
*                                           81159030
*                                           81159040
*                                           81159050
*                                           81159060
*                                           81159070
*                                           81159080
*                                           81159090
*                                           81159100
*                                           81159110
*                                           81159120
*                                           81159130
*                                           81159140
*                                           81159150
*                                           81159160
*                                           81159170

/0000 DEVISE IS AVAILABLE--NO STATUS      81158500
/8000 CSW STORED                          81158510
/4000 ADAPTER BUSY                        81158520
/2000 NOT OPERATIONAL                     81158530
*****
TIOSE EQU * ENTRY POINT
*
* SLA 16 CLEAR-
* STO 2 SCSX8+2-TB * INTERRUPT SW
*
* TEST FOR ADAPTER BUSY
*
* XIO 2 SCSN0-TB GET CHANNEL STATUS WORD
* SLA SCABZ TEST FOR ADAPTER BUSY
* BNN TIOS1 BRANCH IF NOT BUSY
*
* XIO 2 SCSN5-TB
* LD 2 H4000-TB FETCH RETURN CODE
* MDX TIOS3 GO TO EXIT
*
* TIOS1 XIO 2 SCSN5-TB
* XIO 2 TIOXX-TB EXECUTE TIO
*
* TIOSF BSI 2 STMLS-TB GO VISIT MONITOR
* LD 2 SCSX8+2-TB FETCH INTERRUPT SW
* BZ TIOSF BRANCH IF NOT YET
*
* LD 2 SCSX8-TB FETCH CHANNEL STATUS
* BNN TIOS2 BRANCH IF OPERATIONAL
*
* LD 2 H2000-TB FETCH RETURN CODE
* MDX TIOS3 GO TO EXIT
*
* TIOS2 LD 2 SCSX8+1-TB FETCH UNIT STATUS
* SLA 8 CLEAR UNIT ADDRESS
* BZ TIOS4 BRANCH IF STATUS ZERO
*
* LD 2 H8000-TB FETCH RETURN CODE
* MDX TIOS3 GO TO EXIT
*
* TIOS4 SLA 16 SET RETURN CODE
*
* TIOS3 BSC I TIOSN RETURN TO USER
*****
*
* CONVERT HOME ADDRESS TO 1443 CODE
*****
*
* CVHAE EQU * ENTRY POINT
*
* STX 1 CVHA1+1 SAVE XR1
*
* LD I CVHA FETCH PARAMETER
* STO *+1 PLACE IN LDX
* LDX L1 *-* XR1=PARM
*
* CONVERT HEAD OR CYLINDER
*
* LD L1 RAREA+1 FETCH DATA
* RTE 16 PLACE IN Q
* LD L1 RAREA FETCH DATA

```

1800-2841 FUNCTION TEST (PHASE B)

```

1F05 0 1088 SLT 8 81159180
1F06 0 42FD BSI 2 TCVBE-TB CALL CONVERT RTN 81159190
* CVHA1 LDX L1 *-* RESTORE XR1 81159200
1F07 0 6500 0000 MDX L CVHA,+1 SET RETURN ADDRESS 81159210
1F09 1 7401 0861 BSC I CVHA RETURN TO USER 81159220
1F0B 1 4C80 0861 * 81159230
* 81159240
***** 81159250
* 81159260
***** 81159270
* HOME ADDRESS COMPARE ROUTINE 81159280
***** 81159290
* 81159300
***** 81159310
HACRT EQU * ENTRY POINT 81159320
* 81159330
* STX 1 HACR3+1 SAVE XR1 81159340
1F0D 0 6924 STX 3 HACR3+3 SAVE XR3 81159350
1F0E 0 6B25 * 81159360
* 81159370
1F0F 0 1010 SLA 16 CLEAR ACC 81159380
1F10 0 D027 STO HACR5 RESET PASS SWITCH 81159390
* 81159400
1F11 1 C480 0873 LD I HABL C FETCH WAS ADDRESS 81159410
1F13 0 D001 STO *+1 SET IN LDX 81159420
1F14 0 6500 0000 LDX L1 *-* XR1=WAS ADDRESS 81159430
* 81159440
1F16 1 7401 0873 MDX L HABL C,+1 ADVANCE PARM LIST 81159450
* 81159460
1F18 1 C480 0873 LD I HABL C FETCH S/B ADDRESS 81159470
1F1A 0 D001 STO *+1 SET IN LDX 81159480
1F1B 0 6700 0000 LDX L3 *-* XR3=S/B ADDRESS 81159490
1F1D 1 7401 0873 MDX L HABL C,+1 SET-UP RETURN ADDRESS 81159500
* 81159510
1F1F 0 C101 HACR1 LD 1 +1 FETCH WAS +1 81159520
1F20 0 18D0 RTE 16 PLACE IN Q REG 81159530
1F21 0 C100 LD 1 0 FETCH WAS +0 81159540
1F22 0 1088 SLT 8 SET-UP CYLINDER ONLY 81159550
1F23 0 D013 STO HACR4 SAVE 81159560
* 81159570
1F24 0 C301 LD 3 +1 FETCH S/B WORD 81159580
1F25 0 F011 EOR HACR4 TEST FOR MATCH WITH WAS 81159590
1F26 1 4C20 1F31 BNZ HACR3 BRANCH IF ERROR 81159600
* 81159610
1F28 0 C00F LD HACR5 FETCH SECOND PASS SW 81159620
1F29 1 4C20 1F30 BNZ HACR2 BRANCH IF SET 81159630
* 81159640
1F2B 0 C000 LD * FETCH A VALUE 81159650
1F2C 0 D00B STO HACR5 SET PASS SW 81159660
* 81159670
1F2D 0 7101 MDX 1 +1 ADV TO HEAD TEST 81159680
1F2E 0 7301 MDX 3 +1 * 81159690
1F2F 0 70EF MDX HACR1 CONTINUE 81159700
* 81159710
1F30 0 1010 HACR2 SLA 16 CLEAR ACC 81159720
1F31 0 6500 0000 HACR3 LDX L1 *-* RESTORE XR1 81159730
1F33 0 6700 0000 LDX L3 *-* RESTORE XR3 81159740
1F35 1 4C80 0873 BSC I HABL C RETURN TO USER 81159750
* 81159760
1F37 0 0000 HACR4 DC *-* SAVE AREA 81159770
1F38 0 0000 HACR5 DC *-* PASS SWITCH 81159780
* 81159790
1F3A 0 OAB8 PEND EQU *-1 END OF PGM 81159800
* END BGIN XFER ADDRESS
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY

```

1800-2841 FUNCTION TEST (PHASE B)

SCAW FFCB 182A 182B 186B 186D
 SCKEB 18C7 18C0
 SCKEX 18CB 17FE 1800
 SCSWA FFD6 1830 1831 1935 1937
 SCSWB FFD9 1832 1833 1951 1953
 SCSWC FFD0 182C 182D 191E 1920
 SCSWU FFD3 182E 182F 1900 1902
 SDSB 0032 19E7 19E9
 SDWS 0027 19EC 19EE
 SER 18D8 18E9
 SF000 18D2 1808
 SMID 1A64 1826 19E3
 MSG 1A00 18E0
 SNOPT 001E 1863 19F6
 SNOS1 FFD8
 SNSN1 FFDE 1834 1835 1836 1837
 SOK 18D9 18E5
 SOKER FF9E
 SOKSP 1A02 18B6 18BA
 SPH04 189F 18A9
 SPH05 18AA 1898 18A1
 SPH06 18B9 18AC 18AF
 SPH07 188C 18B8
 SPH08 18BE 18B3
 SPH1 186E
 SPH1E 18D5 186F 18AE 18C2 18C6 18C7 18CA 1986 1989 19D7 19DA
 SPH1F 1801 180A 1870 1883 1893 1971
 SPH2 18DA 1872 187E 1968
 SPH2A 191B 1812 18FA
 SPH2F 1919 180F 1878 187C 18DD 1903 1921 1938 1954
 SPH2S 196A 1874 1881 1967
 SPH3 196B 1885 188E 1993
 SPH3A 1997 1815 1976 197A
 SPH4 19C1 1895 19F7
 SPH4A 19F9 181B 19C5
 SPH4B 19FA 181E 19C7
 SPH4C 19FB 1818 19C3 19EF
 SPH5A 18D6 1821 1897
 SPICR 18D4 187A
 SP101 1880 1876
 SP102 1890 1889
 SP2AC 1949 1946
 SP2BC 1965 1962
 SP2CF 1932 192F
 SP2EF 191A 18AA 18BE 18C4 18DC 18FD 1914 1916 192E 1930 1945 1947 1961 1963
 SP2EN 1966 1956 195F 1964
 SP2PS 18EF 18E6 18ED 18F4
 SP2PT 18E8 18E4
 SP2UF 1918 1915
 SP2WS 18F6 189B 18F1 18FE 190E 191C 192B 1933 1942 194A 194E 194F 195E
 SP201 18E2 18DF
 SP210 18EC 18E7
 SP220 18FA 18F5
 SP230 191C 1905 1912 1917
 SP240 1933 1923 192C 1931
 SP250 194A 193A 1943 1948
 SP3CC 1998 1970 1990 198A
 SP3S1 198C 1999 199C
 SP3S2 19C0 1998 19AE 1987
 SP3S4 199D 1989
 SP3S5 19BE 199E 1986
 SP301 1991 1974 1978
 SP302 198B 1984
 SP303 1986 1980
 SP305 1995 1887 1891 1992
 SP306 1996 1988
 SP401 19FC 19DD 19E5
 SP402 19FD 19DF 19EA

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1800-2841 FUNCTION TEST (PHASE B)

SP403 19FE 19E0 19F0
 SP4EF 19FF 19D9
 SP4SV 19E1 19C2
 SP401 19C9 19D2
 SP402 19D3 19CB
 SP403 19DC 19D3
 SRTN FFA7 1868
 SSCSA 0002 1848 1849 193E 1940
 SSCSB 0005 184A 184B 195A 195C
 SSCSC FFFC 1844 1845 1927 1929
 SSCSU FFFF 1846 1847 190B 190D
 SECT FFA3 1866
 SNS1 1A42 196E
 SNS2 FFE3 1838 1839 183A 183B
 SNS3 FFE8 183C 183D 183E 183F
 SNS4 FFED 1840 1841 1842 1843
 SSS0 1A6E 198E
 SSS1 000A 184C 184D 184E 184F
 SSS2 000F 1850 1851 1852 1853
 SSS3 0014 1854 1855 1856 1857
 SSS4 0019 1858 1859 185A 185B
 UMSG 1A0D 185E 189D
 SHWCT 003D 19F2 19F4
 SXXX 18D7 1828
 SOFF0 18D3 18D0
 BEGIN 012C 0A8B
 BGIN 0A8B 1F3A
 BR1 1C55 1C89
 CAHSV 0840 16A1 1869 18C8
 CHECK 17FE 0865
 CKTV 0864 08B6 0E3F 100B 1143 1188 122C 127F 12CD 132D 1386 1802 1823 18CF
 CNTDN 0839 1701 170C
 CNTRL 085E 082D 08C1 0DF6 0E4E 1089 10F0 115A 11CF 1243 1294 12E2 1342 1398
 13C7 13E7
 CRCK 0133
 CRTRK 1121 1190 1208
 CUU11 0842 0AFC
 CVHA 0861 1EFB 1F09 1F0B
 CVHAE 1EFA 0862
 CVHA1 1F07 1EFA
 CO 085C 08E5
 DIGIT 1E67 1E5C 1E61
 DVADR 084F 090F 0AF9 13F1 1907 18A4
 END 012E 13DA 1C8C
 EPA 0808
 ERADR 1C41 1C3B
 ERASE 0011
 ERRMSG 1826 1893 1897 189D 189F 18A1 188A
 EROUT 0867 10E7 114F 11C4 1238 1288 12D9 1339 1392 16D2 16DE 16F6 1726 1737
 17AB 17B7 186F 1874 1878 187B 18A8 18FD 1C3D 1C3F 1C7D 1C83
 ERROR 0130
 ERRSW 083F 10D3 1139 11AE 1224 1277 12C2 1325 137E
 ERRX 1C8A 1C58
 ERR1 1C83 1C4E
 ERR2 1C73 1C69 1C6D
 ERR6 1C88 1C82
 ERTNE 1868 0868
 ERTN2 187B 1869 1872
 ERTN3 1883 187F
 ERTN4 188D 188C 1896
 ERTN5 1897 1890
 ERTN6 1898 1888
 ERTN7 18A4 189A
 ERTN8 18B0 18AE 1888 1C0A 1C1D 1C26
 ERTN9 18B9 18B5
 ERTSV 0842 1C0D 1C25
 ERT10 1888 1885
 ERT11 18C0 18C1

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ERT12 16FF 1BCF
ERT13 1C0C 1C28
ERT14 1C29 1C01
ERT15 1C30 186D
ERT16 1C35 1C32
ERT17 1C47 1868 186D
ERT18 1C3D 1C2E
FBRST 0004
FDRDY 0018
FECYL 001D
FEOCY 000A
FLCCH 0040
08E4 0BE7 0BED 0BF0 0BF3 0EBC 0EBF 0EC5 0EC8 0ECE 0ED4 0ED7 0EDD
0EE3 0EE6 0EEC 0EEF 0EF8 0EFB 0F01 0F04 0F0D 0F10 0F16 0F19 0F1F
0F22
FLDCH 0080
FLPCI 0010
FLSKP 0008
FLSLI 0020
FNORC 000C
FONLN 0019
FOVRN 0005
FROVE 140A 086B
FREDV 086A 0AFC 08BD 0E4A 10EC 1156 11CB 123F 1290 12DE 133E 1397 1410 1003
FRESW 1D01 0A94 1CFB 1004 1DC2 1DC6
FSERD 0012
FSKCK 0007
FSKIN 001F 16E8
FTROV 0009
FUNSF 0010
FUNSI 001A
FUNSL 0015
GDTRK 111E 1106 1175 118D 11EA 11F6 1205 12AC 12FB 13B5
GETDV 086D 0AEB 0B7F 0E0E 1001 1137 11AC 1222 1275 12C0 1323 137C 1408 1DC4
GETSN 0870 10DA 1142 1187 122B 127E 12C9 132C 1385 16E6 179B 196C 1876
GTDVE 13E8 086E
GTDV1 13E8 13EB
GTSNS 177D 0871
GTSNX 1793 177D 177E
GTSNO 1783 17AE 17BA
GTSN1 1789 178B
GTSN2 179D 1787 1791
GTSN3 17AF 17A6
GTSN4 1784 178C
GTSN5 178B 17B1
HA 08D4 0BE8 0EC9 1C5F 1C66 1C6B 1C73 1C79
HABLC 0873 1F11 1F16 1F18 1F1D 1F35
HACRT 1F0D 0874
HACR1 1F1F 1F2F
HACR2 1F30 1F29
HACR3 1F31 1F0D 1F0E 1F26
HACR4 1F37 1F23 1F25
HACR5 1F38 1F10 1F28 1F2C
HCCFF 0837
HFF00 0838 0A9F 1D53 1D72 1D75
HIOXX 08AE 0923 094E 13F2 173A
HOE00 082F
H00C8 0827
H00FF 0828 080B 19F5 1D55 1DE7 1DEA 1E83 1E84
H000A 0822 1E3B
H0011 0823 16D9 16F2
H0013 0824 16CE 16EE
H0020 0825
H0027 0826 1E40
H0100 0829 13F3 1783 1D0F
H0200 082A 178B
H0400 082B 13EF
H0500 082C 1D14
H0700 082D 13F7 1D18

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H0707 082E
H2000 0830 1EEF
H2100 0831 17A8 17B4
H3000 0832 0AE6
H4000 0833 1EE4
H5000 0834
H7FFF 0835 1D31
H8000 0836 18C3 1EF5
IPA 0806
IR1 1C6F 1C42
K1 0816 0AA1 0ARD 0AEB 0AE9 0B1D 0B76 0E05 10C8 112E 11A3 1219 126C 1287
131A 1373 13FF 1401 1403 1405 16DA 19AF 1AD1 18A9 1C1E 1D1C 1DA2
0884 0E1B 1E50
K10 081C
K100 081F 1E48
K1000 0821 1E47
K2 0817 13FD
K20 081D 1CFD
K256 0820
K3 0818 0929 0932 093C 1D38 1DB4
K50 081E
K6 0819 13FB
K8 081A 0946 199A 1C09
K9 081B 1E3E 1E41
LEXIT 10CF 1CE9 1D21 1DC7
LGBSY 0855 0A96 0ABC 1CE2 1CEB 1DCE
LOG 012F
LPA 0807
LPCNT 0858
LPCT1 0859 1C53 1C55
MATO 0134
MLSCF 0809
MLSCO 0809 095B
MLSC1 080A
MLSC2 080B 0AA7 17CF 17EB
MX 1CCA 1C8B
M1 1C8E 1C81
M2 1C9E 1C76 1C78 1C7C
M5 1CAD 1C7F 1C85
M6 1CB1 1C4B
M7 1CB5 1C4D
M8 1CBF 1C87
NOPCC 089A
OBYPR 000D 1CF0
OCHLT 000F
OEBYP 0009 1C31
OECAW 000D 188C
OEC5W 000E 18CE
OECXC 0003
OECX0 0000
OECX4 0001
OECX8 0002
OEERR 000C 1887
OEGSN 000A 1871
OEL1B 000B 1884 1887
OEPBL 0007 187E
OESNS 000F 1C00
OEXIT 0006 1C36
OHALT 000E 1AC7
OLPER 000C 1AA6
OLPST 0008 1AB3
OPNOP 0003 089B 1186 11FE 138D
OPRD 0002
OPRRS 000A
OPSNS 0004 08A5
OPTIC 0008 0BEA 0ECB 0EDA 0EE9 0EF2 0EFE 0F07 1183 1303 138A
OPTIO 0000 08A1
OPWR 0001
ORTRY 000B 16FA

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OSALC 0009
 OTTLE 000A 0B7A 0E09 10CC 1132 11A7 121D 1270 128B 131E 1377
 PASSW 0851
 PCAW 0848 18C6
 PCSW 084A 18E1
 PEND 1F38 080D
 PRINT 1B2C 1BA2 1BBF 1C2C
 PSCNT 0852 0AA2 0AFD 13D7
 PSNS 084C 1C03
 RAREA 09C0 0C34 0C48 0C5B 0C74 0C87 0CA0 0CB3 0CC6 0CDF 0CF2 0D0B 0D1E 0D37
 0D50 0D63 0D7C 0D8F 0DA8 0DC1 0DDA 0DF3 0E2F 0E31 0E33 0E35 0E37
 0E90 0EC3 0ED2 0EE1 0EF6 0F0B 0F14 0F1D 0F26 1C45 1C47 1C5B 1CDD
 1F00 1F03
 RCAL 0013 089E
 RDCKD 001E 0EE0
 RDCNT 0012
 RDDAT 0006 0F0A
 RDHA 001A 0EC2 0F13 0F1C 0F25 1108 11F8 135E 1C0C
 RDHMT 009A 11FB 1361
 RDKD 000E 0EF5
 RDRO 0016 0ED1
 RECAL 089D 125D
 RELDV 0132 0AAE 0AB5 0AC7 0ACE 0AE0 140A 1DBE
 REQDV 0131 0ADA 13E9 1D06
 SCABZ 0007 16B1 16D6 1716 1786 178A 1780 1EE0
 SCDCX 0004
 SCICC 0005
 SCILG 0006
 SCIMS 0988 0985
 SCIM2 0998 097C 097F
 SCINA 0973 0964
 SCINB 0968 0974
 SCINC 0918 0910
 SCINT 08FE 0971
 SCINX 092D 091D 0922
 SCINO 0923 0909 0919
 SCIN1 0931 0928
 SCIN2 093C 094C
 SCIN3 094D 0924 093F
 SCIN4 0959 0905 0913 0916 0948
 SCIN5 095F 0930 0938 0953 0956
 SCIN6 0961 0958
 SCIN7 096D 0900 0901
 SCIN8 0975 0959
 SCIN9 097A 0983
 SCISW 08FC 0904 1407 140F
 SCPCI 0002
 SCPCX 0003
 SCSN0 0884 0907 13FE 16A7 16A8 1680 16CB 16E2 1715 1784 1785 1789 17AF 1EDF
 SCSN1 0886 0961 09A8 09AD 0980 1400 1714 1718 171E 1CFE 1D00 1ECO 1EC4 1EC7
 SCSN2 0888 0908 0918 091F 1402
 SCSN3 088A 0966 0982 1404 1720 1EC9
 SCSN4 088C 0926 0927 092A 0933 093E 0969 0984 1406 1722 1ECB
 SCSN5 088E 0968 0986 13FC 1719 1724 172D 178D 1ECD 1EE3 1EE6
 SCSVS 08D0 1780 1782 1797 1799
 SCSXC 08CC 0936 0981 0983 0985 0987 171F 1721 1723 1725 177F 1781 178F 1798
 179A 17A4 18E8 1EC8 1ECA 1ECC 1ECE
 SCSX0 08C0 0920 0921 094F 12CA 12CC 16A3 16A4 18EB 18D2 1C67
 SCSX4 08C4 0950 0978 18EA
 SCSX8 08C8 092D 16AB 1703 1731 18E9 1EDE 1EE9 1EEC 1EF1
 SCUNO 0000
 SCUDP 0008
 SCUSP 0001 16E3 17A5
 SEEKB 0008 0F22
 SEEKC 0007 0F10 1105 1174 118C 11E9 11F5 1204 125A 12AB 12FA 135B 1384 1CD9
 SEEKX 1C42 0895
 SENSE 0880 0931 13F6 1783
 SETPR 1129 1178 118A 11ED 1202 12FE

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SFILM 001F 08E4 0EBC 0EC5 0ED4 0EE3 0EF8 0F0D 0F16 0F1F 1177 1189 11EC 1201
 12FD
 SIDHE 0071
 SIDHI 0051 0C41
 SID 0876 08B2 08DF 0E3B 10D8 113E 1140 1154 1183 1185 11C9 1229 123D 127C
 12C7 132A 1383 169A 169C 168E 1C59
 SIONT 1698 0877
 SIOSW 0850 0ABB 16B4 16BD 16C0
 SIOXX 08B2 0939 093A 13F4 16A0 16A6 16EB
 SIOX1 1688 1698 1699 1685 16C2
 SIO01 16A2 16AF 16F0
 SIO02 16AA 16AD 16FB 16FE
 SIO03 1680 16A9
 SIO04 1684 16E4
 SIO05 16C0 16B2
 SIO06 16D6 16CC
 SIO07 16E2 16D7
 SIO08 16F2 16E9
 SIO09 16F9 16D5 16E1
 SKARG 1CDF 1C6C 1CDA
 SKCYL 1CDB 1C5A
 SKHD 001B 0F19
 SKHE 0069
 SKTV 0894 08B0 0E0F 1C71
 SNCCW 08A4 08B0
 SNWDS 08A8 08A6 16E7 196D 197F 1983 1C0B
 SNWDO 08A8
 SNWD1 08A9
 SNWD2 08AA
 SNWD3 08AB
 SPACE 084E 1982 18F3 1C21
 SRCHA 0039 0BE7 0EC8 1300 13B7
 SRCID 0031 0ED7 0EE6 0EEF 0EFB 0F04 1180
 SRCKE 0029
 SRCKH 0049
 START 012D 0986 17D0
 STKSW 0853 0ABA 1868 1875 1877 187A 1C2D
 STMLE 178D 087A
 STMLL 17DB 17E0
 STMLS 0879 09AC 0AD9 0AF3 13E8 170B 171A 178D 17D5 17E8 1AD4 1AD8 1CE5 1CFF
 1D1F 1D82 1D88 1EE8
 STMLX 17D2 17F1
 STMPS 17EA 17E3
 STMPT 17F0 0A9D 17C1 17CD 17E1
 STMRT 17F1 17CE 17EA
 STMSA 17ED 17BE 17BF 17C0 17C3 17C6 17C9 17D7 17D9 17E4 17E6
 STMSE 17E4 17EC
 STMST 17F2 17C4 17C7 17CA 17D4 17D6 17D8 17D8 17DD
 STSER 08E0 16C5 16C8 16CA 16D1 16D4 16DD 16E0 16F5 16F8 179F 17A1 17A3 17AA
 17AD 17B6 17B9
 TB 087F 0902 0904 0907 0908 090F 0915 0918 0918 091F 0920 0921 0923 0926
 0927 0928 0929 092A 0931 0932 0933 0939 093C 093D 093E 0946 0948
 094E 0961 0966 0969 096B 0975 0978 0984 09A7 09A8 09A9 09AC 09B0
 09B1 09B2 09B3 09B4 09B5 09B6 09B7 09B8 0A91 0A96 0A97 0A98 0A99
 0A9A 0A9B 0A9C 0A9F 0AA0 0AA1 0AA2 0AA9 0AAB 0AB2 0ABA 0ABB 0ABC
 0ABD 0ABE 0AC2 0AC4 0ACB 0AD4 0AD6 0AD9 0AE6 0AE8 0AE9 0AEA 0AEB
 0AEC 0AED 0AF1 0AF3 0AF4 0AF8 0AF9 0AFA 0AFD 0AFE 0AFF 0B02 0B04
 0B06 0B09 0B0A 0B0B 0B0D 0B18 0B1A 0B1B 0B1C 0B1D 0B1E 0B21 0B25
 0B26 0B2A 0B2C 0B2D 0B6A 0B76 0B79 0B7D 0B7F 0B80 0B84 0B88 0BAE
 0BB2 0BB4 0BB6 0BB8 0BBE 0BC1 0BD3 0BDF 0DF6 0DF9 0E05 0E08 0E0C
 0E0E 0E0F 0E1B 0E21 0E3B 0E3D 0E3F 0E4A 0E4B 0E4E 0E60 0E65 10B9
 10BC 10C8 10CB 10CF 10D1 10D3 10D8 10DA 10DB 10E7 10EA 10EC 10ED
 10F0 112E 1131 1135 1137 1139 113E 1140 1142 1143 114F 1152 1154
 1156 1157 115A 11A3 11A6 11AA 11AC 11AE 11B3 11B5 11B7 1188 11C4
 11C7 11C9 11CB 11CC 11CF 1219 121C 1220 1222 1224 1229 122B 122C
 1238 123B 123D 123F 1240 1243 126C 126F 1273 1275 1277 127C 127E
 127F 1288 129E 1290 1291 1294 1287 12BA 12BE 12C0 12C2 12C7 12C9
 12CA 12CC 12CD 12D9 12DC 12DE 12DF 12E2 131A 131D 1321 1323 1325

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132A 132C 132D 1339 133C 133E 133F 1342 1373 1376 137A 137C 137E
 1383 1385 1386 1392 1395 1397 1398 1398 13C7 13CA 13CD 13D5 13E7
 13E8 13EF 13F0 13F1 13F2 13F3 13F4 13F5 13F6 13F7 13F8 13F8 13FC
 13FD 13FE 13FF 1400 1401 1402 1403 1404 1405 1406 1407 140F 16A0
 16A1 16A3 16A4 16A5 16A6 16A7 16A8 16AA 16AB 1680 1684 168D 16C0
 16C4 16C5 16C8 16CA 16CB 16CE 16CF 16D1 16D2 16D9 16DA 16D8 16DD
 16DE 16E2 16E6 16E7 16EE 16F2 16F3 16F5 16F6 16F9 16FD 1700 1701
 1702 1703 1708 170B 1713 1714 1715 1719 171A 171E 171F 1720 1721
 1722 1723 1724 1725 1726 172A 172D 1731 1737 173A 173B 177F 1780
 1781 1782 1783 1784 1785 1789 178D 178F 1797 1798 1799 179A 179F
 17A1 17A2 17A3 17A4 17A8 17A9 17AA 17AB 17AF 17B3 17B4 1785 1786
 1787 1788 178D 17CF 17D2 17D5 17EB 1862 1869 186A 18A0 18B1 18BC
 18C3 18C9 18FF 1907 190A 191D 1926 1934 193D 1950 1959 196C 196D
 1977 197F 1983 199A 19A8 19AF 19B2 19E6 19E8 19F1 19F5 1AA5 1AB2
 1AC6 1ACA 1ACB 1ACF 1AD1 1AD2 1AD3 1AD4 1AD5 1AD8 1B68 1B74 1B75
 1B76 1B77 1B78 1B7A 1B81 1B8F 1B92 1B9C 1BA4 1BA5 1BA7 1BA8 1BA9
 1BAA 1BAB 1BAD 1BB4 1BB9 1BC6 1BC8 1BC9 1BE1 1BE4 1BE7 1BEC 1BEF
 1BF3 1C03 1C09 1C0B 1C0D 1C17 1C1E 1C21 1C25 1C29 1C2B 1C2D 1C34
 1C43 1C59 1C5F 1C62 1C65 1C66 1C67 1C68 1C73 1C74 1C75 1C79 1C7A
 1C7D 1C80 1C83 1C86 1C88 1C8A 1CE2 1CE5 1CE7 1CE8 1CEF 1CF3 1CF7
 1CFD 1CFE 1CFF 1D03 1D0C 1D0F 1D12 1D14 1D17 1D18 1D1B 1D1C 1D1D
 1D1F 1D2D 1D30 1D31 1D32 1D35 1D36 1D38 1D3F 1D4D 1D50 1D53 1D55
 1D5C 1D63 1D67 1D72 1D75 1D7A 1D7C 1D82 1D84 1D86 1D87 1D88 1DA1
 1DA2 1DB4 1DB9 1DC4 1DCE 1DD5 1DDE 1DE6 1DE7 1DEA 1E29 1E28 1E2C
 1E2F 1E31 1E33 1E3B 1E3E 1E40 1E41 1E47 1E48 1E50 1E83 1E84 1EBF
 1ECO 1EC1 1EC7 1EC8 1EC9 1ECA 1ECB 1ECC 1ECD 1ECE 1ED3 1EDA 1EDE
 1EDF 1EE3 1EE4 1EE6 1EE7 1EE8 1EE9 1EEC 1EEF 1EF1 1EF5 1F06

TCNER 0B25 0B12 0B6E 0DFD 10C0 13D1
 TCNE2 0R5A 0AF2
 TCNPR 0AD4 0AA5
 TCNRQ 0AD9 0ADC
 TCNSW 0B3C 0B1A
 TCNTA 0B2E 0B16 0B22 0B2E
 TCNTE 0B04 0B5F
 TCNTZ 0B33 0B2E
 TCNO1 0AE8 0AD7
 TCNO2 0AF8 0AEF
 TCNO3 0B14 0B23
 TCNO4 0B21 0B0E
 TCVBE 0B7C 097B 0AFA 0AFF 0B26 0E21 16CF 16DB 16F3 17A9 17B5 186A 18FF 190A
 191D 1926 1934 193D 1950 1959 19A8 19E6 19EB 19F1 1ACB 1B9C 1BA5
 1BAA 1BC9 1BE4 1BE7 1BEC 1BEF 1C17 1C75 1C7A 1D32 1E34 1F06

TCVBN 1E26 0B7D
 TCVEN 1E8B 1E85
 TCVHD 0B7F 0AFE 1C74 1E44 1E55
 TCVSP 1E8C 1E8B
 TCVSR 1E58 16C6 179D 1864 1C49 1E65
 TCVSV 1E8D 1E78 1E79 1E7F 1E8C
 TCVSZ 1E63 1E59
 TCVS1 0B3D 1E29 1E2B 1E2C 1E33
 TCVS2 0B3E 1E2F 1E31
 TCVTB 1E90 1E7A
 TCVTC 1E8B
 TCV01 1E36 1E27 1E2A 1E2D 1E30 1E3C 1E42
 TCV02 1E3E 1E39
 TCV03 1E7D 1E88
 TCV04 1E89 1E80
 TCV45 1E77 1D77 1E8E
 TEMP1 0B5A 1C62 1C65
 TEMP2 0B5B
 TERLP 1AA5 0B8F
 TERM 0B0C 09A7 0AB1 0AB8 0ACA 0AD1 0ADF 0AE3 0BA8 0BAE 13EE 140D 1700 1862
 18A0 1977 1882 188F 1892 1884 1C29 1C43 1D08 1D2D 1D86 1DC1 1EBF

TER01 1AAD 1AA7
 TER02 1AB0 1AAF
 THALT 0B82 0B2C 16FD 18C9 1ACA 1AD9 1C34 1C88
 THEXD 1E44 0B80
 THEXS 1E57 1E49 1E4D 1E4E 1E54

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THLTE 1AC6 0883
 THLTG 1ACA
 THLTL 1AD4 1AD6
 THLTM 1ADB 1ADD
 THLTR 1AD9 1AC8
 THLT2 1AED 1ACC 1ACE
 TINS2 1EC1 1EC6
 TINS3 1ED0 1EC2
 TINS4 1ED6 1ECF
 TINTS 1EBF 0898
 TINTW 09A6 0988 098A 09BE 172E
 TINT2 09A9 09AF
 TINT3 09BA 09AA
 TIO 0885 16AA 1702 1735
 TIOMS 175B 173C
 TIOM1 173E 1728
 TIOM2 174A 1739
 TIONT 1712 0886 1729 1733 173D
 TIOSE 1E0D 0889
 TIOSF 1EE8 1EEA
 TIOSN 0888 1EF8
 TIOSW 0854 0915 0918 0A98 1708 1728
 TIOS1 1EE6 1EE1
 TIOS2 1EF1 1EED
 TIOS3 1EF8 1EE5 1EF0 1EF6
 TIOS4 1EF7 1EF3
 TIOXX 08AC 0928 13F5 172A 1EE7
 TIO01 1715 171D
 TIO02 172A 1717
 TIO03 1737 1730
 TLGBA 1DF0 08D8 1D58 1D5E 1D79 1D4C
 TLGBP 1D41 1D2B 1D82
 TLGCH 1DD2 1D27 1D3B 1D43 1D8A 1DE3 1DE8 1DEB 1DED
 TLGCM 1D18 1D13
 TLGCR 1D90 1D5D
 TLGCT 08DC 1D87 1D8C
 TLGDA 1D93 0ADE 0AE4 1D0A 1D10 1D15 1D19
 TLGED 0813 0AAB 0A80 0AC4 0AC9 0ADD 0AE2 1CF3 1D09 1D0C
 TLGEN 1DC7 1CF1
 TLGIN 1D94 1DAA
 TLGIS 1D92 1D37 1D85 1D89 1D95 1DA9
 TLGME 1CE2 088C 1CE6
 TLGMS 088B 0984 0AF1 0B02 0B2A 0B7D 0E0C 0E65 10CF 1135 11AA 1220 1273 12BE
 1321 137A 13D5 173B 188C 1ACF 1881 18B9 1C2B 1C80 1C86 1C8A 1CE7

TLGNB 1CE7 1CE3
 TLGPR 1D61 1DAE
 TLGSN 08DA 1D1B 1D7A
 TLGSP 08DA 1D3F 1DE6
 TLGSR 08DE 1D1D 1D98
 TLGSV 1D91 1D5A 1D61 1D68
 TLGSW 08DD 1D35 1D36 1D50 1D5C 1D63 1D67 1D70 1D89 1D05 1D08 1DDE
 TLGWR 08D8 1D12 1D17 1D29 1D84 1D80
 TLGXR 1DAC 1D8A
 TLGX2 1D80 1D73
 TLGX3 1DC9 1CEB 1CED
 TLG01 1CF7 1CF4
 TLG02 1D06 1CF8 1D20
 TLG03 1D1F 1D08
 TLG04 1D21 1D1E
 TLG05 1D34 1D2E
 TLG06 1D38 1D4C 1DBC
 TLG07 1D4D 1D3D 1D45
 TLG08 1D55 1D51
 TLG09 1D6D 1D64
 TLG10 1D72 1D6C
 TLG11 1D88 1D8E
 TLG12 1DA0 1D9A
 TLG13 1DA8 1D9D 1DA3 1DA6

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TLG15 109E 10EB
 TLG16 10DD 10D6
 TLG17 10E4 10DC
 TLG18 10E7 10E4
 TLG40 1014 10DD
 TLG42 107A 104E 1083
 TLG43 1084 1060 1080
 TLPER 088E 08D3 0E60 10EA 1152 11C7 123B 128E 12DC 133C 1395 1AA9 1AAB 1AAD
 TLPST 0891 08B4 0E3D 1AB6 1AB8 1ABA 1ABF 1AC1
 TMLA 0000 1427
 TMLCT 143A 1416 1418
 TMLNT 1412 1432 1438
 TMLOK 1421 1418
 TMLPT 143B 141F 1421 1425
 TMLQ 0001 1429
 TMLRX 0005 1433
 TMLR1 0002 1428
 TMLR2 0003 142E
 TMLR3 0004 1431
 TMLST 1437 1415
 TMLTB 1440 141D 143B
 TMLTO 143C 1414 142A 1435
 TMLT1 143D 142C 142D 142F 1430
 TMLT2 143E 1413 1434
 TNT 1412
 TPID 07FF 0A8D 1030
 TRID 0615 0R1B 0872 0E01 10C4 112A 119F 1215 1268 1283 1316 136F 1E5A
 TRTNN 0838 0B09 086A 08BE 0DF9 0E4B 10BC 10ED 1157 11CC 1240 1291 12DF 133F
 1398 13CD
 TSAD 0R01 0B18 0B1F
 TSCAC 08FD 13ED 13F0 13F8
 TSCCW 08A0 08AC
 TSCED 0814 0A82 0A87 0ACB 0A0D 13EC 140C 1CF7
 TSCTN 083A 0B0D 13CA
 TSID 0800 0A8E 0B14 0B1C 0B1E 0B21 1E5F
 TSTLP 1AB2 0892
 TST01 1ABA 1AB4
 TST02 1ABD 1ABC
 TST03 1ABF
 TST04 1AC4 1AC3
 TSWDS 08A3 08A2 093D 094B
 TSWO 0802 0A9A 0B79 0E08 10CB 1131 11A6 121C 126F 12BA 131D 1376 16F9 1AA5
 1A82 1AC6 1AD2 1AD3 1AD5 1CEF
 TSW1 0R03 0A9B 0B06 0B0A 0B25
 TSW2 0R04 0AA0 0AED 0AF4 0AF8
 TSW3 0R05 0A9C 18B1
 TTILER 084B 0B27 0B29 0B28
 TTL00 0R33 0B03
 TTL01 0B44 0B01
 TTL11 0B02 0B7E
 TTL21 0E4F 0E0D
 TTL31 10F1 10D0
 TTL32 115B 1136
 TTL33 11D0 11AB
 TTL34 1244 1221
 TTL35 1295 1274
 TTL36 12E3 12BF
 TTL37 1343 1322
 TTL38 139C 1378
 TYP2 0844 16C4
 TYP3 0846 17A2
 T10NT 0B6A 0E2F
 T10PR 0B68 0B6D 0B70
 T11CE 0BF9 0B85 0B05
 T11CK 0C30 0B8C 0B9D 0BA0 0BA3 0BB7
 T11EC 0C06 0BF1
 T11EN 0B8D 0B08
 T11ER 0B03 0B88

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T11EX 0RFB 08BF 0B91 0B93 0B95 0C31
 T11E2 0COE 0BF4
 T11E7 0C16 0BF7 0C55
 T11F0 0BDE 0B86 0BE1
 T11G0 0B82 0BA6 0BB5
 T11LP 0B8A
 T11NO 0BF8
 T11OF 0BDD 0B88
 T11ON 0BDC 0B9F
 T11SN 0BFF 0B97 0B99 0C32
 T11SV 0BFA 0B8A 0BD9
 T11TB 0C37 0B88
 T11T0 0C02 0C68 0C9A 0D2B 0D44 0D4A 0D5D
 T11T1 0C06 0C6E 0C81 0CD3 0CFF 0D31 0D9C 0DB5 0DCE
 T11T6 0C1E 0D76
 T11T8 0C21 0C42 0D18
 T11WR 0C02 0BEE
 T11XX 0BE3 0BE0
 T11YY 0C01 0B82 0B80 0B8A
 T11Y0 0C24
 T11Y1 0C26 0CD9 0CEC 0D05 0D26 0D3F 0D80 0DB8
 T11Y2 0C28 0C63 0CCE 0D70 0D97 0DA2 0DD4 0DE7
 T11Y3 0C2A 0DED
 T11Y7 0C2C 0CC0
 T11Y8 0C2E 0CAD 0D89
 T110A 0C72 0C5F
 T110B 0D4E 0D3B
 T1101 0B72 0B68 0B71
 T1102 0B79 0B74
 T1103 0B7F 0B78
 T1104 0B8A 0B8B 0B07 0BDB
 T1105 0BA2 0B9B
 T1106 0BA7 0BAC
 T1107 0BAD 0BA9
 T1108 0BD9 0BD4
 T1118 0C40 0C39
 T1119 0C53 0C4C
 T112A 0C98 0C88
 T1120 0C66
 T1121 0C7F 0C78
 T1122 0C92
 T1123 0CAB 0CA4
 T1124 0CBE 0CB7
 T1125 0CD1
 T1126 0CEA 0CE3
 T1127 0CFD
 T1128 0D16 0D0F
 T1129 0D29
 T113A 0D74 0D67
 T1130 0D42
 T1131 0D5B 0D54
 T1132 0D6E
 T1133 0D87 0D80
 T1134 0D9A
 T1135 0DB3
 T1136 0DCC 0DC5
 T1137 0DE5
 T114A 0DA6 0D93
 T115A 0CDD 0CCA
 T115B 0DBF 0DAC
 T117A 0D03 0CF6
 T117B 0DEB 0DDE
 T119A 0D35 0D22
 T1201 0DF6 0B77 0BBF
 T20NT 0DF9 0B30
 T20PR 0DF7 0DFC 0DFF
 T21AH 0E6E 0F11 0F23
 T21CG 0EC7 0ECC

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1800-2841 FUNCTION TEST (PHASE B)

T21CH OED6 OEDB
 T21CI OEE5 OEEA
 T21CJ OEEE OEF3
 T21CK OE8C OE2B OE2D OE40
 T21CL OEFA OEFF
 T21CM OF03 OF08
 T21CX OE85 OEDE OEE7 OEF0 OEFC OF05 OF80 OF9E
 T21C1 OE68 OF28 OF2C OF32 OF36 OF3C OF40 OF46 OF4A
 T21C2 OFC4 OF50 OF54 OF5A OF5E OF64 OF68 OF6E OF72
 T21C3 OED3 OF78 OF7C OF82 OF86 OF8C OF90 OF96 OF9A
 T21C4 OEE2 OFA0 OFA4 OFAA OFAE OFB4 OFB8 OFBE OFC2
 T21C5 OEF7 OFC8 OFCC OFD2 OFD6 OFDC OFE0 OFE6 OFEA
 T21C6 OF0C OFF0 OFF4 OFFA OFFE 1004 1008 100E 1012 1068 106C 1072 1076 107C
 1080 1086 108A 1090 1094 109A 109E 10A4 10A8 10AE 10B2
 T21C7 OF15 1018 101C 1022 1026 102C 1030 1036 103A
 T21C8 OF1E 1040 1044 104A 104E 1054 1058 105E 1062
 T21DT OE8B OFD0 OFE4 OFEE
 T21EC OE7F OE1C OE62
 T21EN OE4A OE67
 T21EX OE78 OE25 OE27 OE8D
 T21FM OE6A OE20 OE8D OEC6 OED5 OEE4 OEF9 OF0E OF17 OF20
 T21GO OE43 OE64
 T21HA OE6B OECO OF4E OFF8 1048 1052 1070 1098
 T21H5 OE71 OF1A
 T21KD OE8A OEEF OFA8 OFBC OFC6
 T21M1 OE94 OE66
 T21M2 OE82 OE22 OE92
 T21R0 OE80 OECF OED8 OF76
 T21SN OE7C OE29 OE8E
 T21SV OE7E OE44 OE45
 T21TB OF28 OE1D OE46
 T21WR OF49 OF02
 T2101 OF01 OF1A OE00
 T2102 OE08 OE03
 T2103 OE0E OE0A
 T2104 OE1F OE48 OE69
 T2106 OE3B OE3A OE3E
 T2107 OE60 OE41
 T2108 OE68 OE61
 T215H OE74 1020 102A 1034
 T2201 1089 OE06 OE4C
 T23LC 0856
 T23LH 0857
 T30NT 108C 0831
 T30PR 108A 108F 10C2
 T31A1 1113 1109
 T31A2 1115 110C 110F 1112
 T31CS 1118 10E1
 T31CW 1104 10D9 111A
 T31EN 10EC 10D0
 T31ER 10E7 10D4
 T31SN 111C 10E2
 T31TE 10EA 10DF
 T3101 10C4 10BD 10C3
 T3102 10CB 10C6
 T3103 10D1 10C0
 T3104 10D4 10EB
 T3105 10E0 10DC
 T32CS 1199 1149
 T32CW 1173 113F
 T32C2 117F 1141 1184 1198
 T32EN 1156
 T32ER 114F 113A
 T32EX 1154 1145
 T32HA 1191 1178
 T32R1 1194 1181
 T32SN 119D 114A
 T32TE 1152 1147

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1800-2841 FUNCTION TEST (PHASE B)

T32WH 1188 1155
 T3201 112A 10C9 10EE
 T3202 1131 112C
 T3203 1137 1133
 T3204 113A 1153
 T3205 1148 1144
 T33CS 120F 11BE
 T33CW 11E8 11B4
 T33EN 11CB
 T33ER 11C4 11AF
 T33EX 11C9 11BA
 T33HA 1209 11F0
 T33RA 120C 11F9 11FC
 T33SN 1213 11BF
 T33TE 11C7 11BC
 T33TT 11F4 11B6 1211
 T33WH 1200 11CA
 T3301 119F 112F 1158
 T3302 11A6 11A1
 T3303 11AC 11A8
 T3304 11AF 11C8
 T3305 11BD 11B9
 T34BD 125F 125B
 T34CS 1262 1232
 T34CW 1259 122A 123E 1264
 T34EN 123F 122E
 T34ER 1238 1225
 T34SN 1266 1233
 T34TE 1238 1230
 T3401 1215 11A4 11CD
 T3402 121C 1217
 T3403 1222 121E
 T3404 1225 123C
 T3405 1231 122D
 T35CS 12AD 1285
 T35CW 12AA 127D 12AF
 T35EN 1290 1281
 T35ER 1288 1278
 T35SN 1281 1286
 T35TE 128E 1283
 T3501 1268 121A 1241
 T3502 126F 126A
 T3503 1275 1271
 T3504 1278 128F
 T3505 1284 1280
 T36CK 130B 130A
 T36CS 1310 12D3
 T36CW 12F9 12C8 1312
 T36EN 12DE 12CF
 T36ER 12D9 12C3
 T36SN 1314 12D4
 T36TE 12DC 12D1
 T360F 130F 12C8
 T3601 1283 126D 1292
 T3602 128A 1285
 T3603 12C0 12BC
 T3604 12C3 12D0
 T3605 12D2 12CE
 T37A1 1366 135F 1362
 T37CS 1369 1333
 T37CW 135A 132B 1368
 T37EC 1363 135C
 T37EN 133E 132F
 T37ER 1339 1326
 T37SN 136D 1334
 T37TE 133C 1331
 T3701 1316 1288 12E0
 T3702 131D 1318

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1800-2841 FUNCTION TEST (PHASE B)

T3703 1323 131F
 T3704 1326 133D
 T3705 1332 132E
 T38CS 13C1 138C
 T38CW 13B3 1384 13C3
 T38EN 1397 1388
 T38ER 1392 137F
 T38NR 138F 1388
 T38SN 13C5 138D
 T38TE 1395 138A
 T3801 136F 1318 1340
 T3802 1376 1371
 T3803 137C 1378
 T3804 137F 1396
 T3805 1388 1387
 T3901 13C7 1374 1399
 T40EN 1305 13CB
 T40ER 130C 13D6
 T40NT 13CA 0832
 T40PR 13C8 13D0 13D3
 T4101 13E7 13CE 13D4
 T45SW 085D 0AD6 0AEA 1DOC 104D 1D7C 1DA1
 UNADR 08F0 1BA7 1BAB 1BAD 1880
 UNATN 0008
 UNBZY 000B 091C 16AC 1704
 UNCHE 000C
 UNCHK 000E 0955 1790 188D 1C68
 UNCUE 000A 0912 1732
 UNDOE 000D 0952 0955
 UNEXC 000F
 UNSMD 0009
 WAITS 0897 1ED0 1ED4 1ED6
 WAITT 16FF 1687 1709
 WAIT1 1702 170E
 WAIT2 170B 1705
 WAREA 0A26 0E11 0E13 0E15 0E17 0E19 0F30 0F3A 0F44 0F58 0F62 0F6C 0F8A 0F94
 0FB2 0FDA 1002 100C 1016 103E 105C 1066 107A 1084 108E 10A2 10AC
 10B6
 WATSW 08FB 092F 09A9 098D 0A99 1713
 WIOSW 08FA 08FF 0A97 16A5 1EC1 1ED3 1EDA
 WRCKD 001D 08F0 08F3 08F6 0EDD
 WRDAT 0005 0F01
 WRHA 0019 0EBF 117A 118F 11EF 1207
 WRKD 000D 0EEC
 WRRZ 1124 117E 11F3 1301 1307
 WRR0 0015 0BED 0ECE 117D 11F2 1306
 WTADR 1711 10D6 113C 1181 1227 127A 12C5 1328 1381 170F 1C50
 ZEPA 0AC1 0808 0AD2
 ZEPA1 0ACB 0AC5
 ZEPA2 0AD2 0ACC
 ZIPA 0A8E 0806 0A8F
 ZLPA 0AA4 0807 0A90 0AA3 0ABF
 ZLPA1 0AB2 0AAC
 ZLPA2 0AB9 0AB3
 END OF ASSEMBLY

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PHASE A

1. PURPOSE

1.1 INTENT - THIS PROGRAM IS DESIGNED TO (1) DETECT MALFUNCTIONS IN THE IBM 2311 DISK FILE, AND (2) AID IN THE ISOLATION OF FAILURES BY PROVIDING DIAGNOSTIC INFORMATION AND SCOPE LOOP FACILITIES.

1.2 BRIEF DESCRIPTION OF TEST ROUTINES -

SECTION	ROUTINE	
1	1	STATUS CHECK TEST THE CHANNEL STATUS FOR READY AND AVAILABLE.
	2	TEST I/O TESTS FOR CONDITION OF ACCESS. IF CONDITION CODE IS ZERO, ACCESS IS READY AND AVAILABLE .
	3	NO-OP CHECKS INITIAL SELECTION & ENDING PROCEDURE TO & FROM CONTROL UNIT.
	4	SENSE I/O VERIFIES THAT SENSE DATA CAN BE TRANSFERED FROM 2841 TO THE CHANNEL
	5	COMMAND EXIT CHECKS FOR HANG UP CONDITIONS ON START I/O COMMANDS.
	6	READ TEST READS HA FROM ALL HEADS
	7	RECALIBRATE EXECUTES RETURN TO 000 SEEK

SECTION	ROUTINE	
2	1	CAR AND DIFF CNTRS TESTS ALL COMBINATIONS OF BITS ON AND OFF IN CAR AND DIFF COUNTER.
	2	SEEK INCOMPLETE EXECUTES SEEK TO 255 AND CHECKS FOR SEEK INCOMPLETE.
	3	SEQUENTIAL INC/DEC SEEK EXECUTES SINGLE CYL. SEEKS FROM CYL 000 TO 001 ...TO 202, TO 201 TO 200 TO 199...TO 000.
	4	WORST CASE ACTUATOR LOOPS SEEKING BETWEEN CYL 006 AND CYLS 7,9,11,18,36,70,76 81, 86 AND 198 FOR 20 PASSES.
	5	RANDOM SEEK EXECUTES SERIES OF 500 RANDOM SEEKS CHECKING FOR CORRECT HA.

SECTION	ROUTINE	
3	1	WRITE TEST WRITES R0 RECORDS WITH ALL HEADS
	2	HAR ADVANCE CHECKS HAR AC HEAD ADVANCE
	3	END OF CYL CHECKS END OF CYLINDER
	4	RPM TEST CHECKS DISK RPM

PHASE B CONTAINS OPTIONAL ROUTINES WHICH CAN BE RUN ONLY WHEN THE SEPERATE DECK (PID 0812, PHASE B) HAS BEEN LOADED. (SEE LOADING PROCEDURE 3.1)

**NOTE- INSTRUCTIONS FOR RUNNING THE OPTIONAL ROUTINES IN PHASE B ARE TO BE FOUND IN 5.1 'DETAILED DESCRIPTION OF PROGRAM ROUTINES'

SECTION ROUTINE

1	1	-OPTIONAL POWER OFF-ON, CPU RUNNING	CHECKS FOR CORRECT STATUS ON POWER DOWN/POWER UP
	2	-OPTIONAL- METER SWITCH DISABLE-ENABLE	CHECKES FOR 'MANUAL INTERVENTION', 'READY' AND NOT ON LINE WITH METER SWITCH DISABLED
	3	-OPTIONAL- POWER ON/OFF STATUS.	CHECKS FOR CORRECT STATUS ON POWER DOWN/POWER UP WITH CPU STOPPED.
	4	-OPTIONAL- METER INTERLOCK.	CHECKS THAT METER OUT HOLDS DEVICE ENABLE
	5	-OPTIONAL- HEAD ALIGNMENT	BRINGS UP READ, ALLOWS USER TO SELECT HEAD, AND AIDS IN ALIGNING HEADS PER INSTRUCTIONS IN MAINTENANCE MANUAL
	6	-OPTIONAL- SPECIAL SEEK LOOP	ALLOWS USER TO SPECIFY 2 CYLINDERS FOR SEEK LOOP
	7	-OPTIONAL- WRITE HOME ADDRESS	ALLOWS USER TO WRITE HA ON ANY ONE CYLINDER

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS.

- 1800 DIAGNOSTIC MONITOR PROGRAM -AT LEAST 8K OF CORE
- SECTIONS SHOULD BE RUN IN SEQUENTIAL ORDER FOR CORRECT INDICATION

2.2 EQUIPMENT REQUIREMENTS.

- CPU WITH THE STANDARD INSTRUCTION SET, COMPLETELY OPERATIVE.
- HARD COPY OUTPUT DEVICE
- METHOD OF LOADING PROGRAM
- SELECTOR CHANNEL FEATURE (MUST BE FULLY OPERATIONAL)
- 2841 FILE CONTROL UNIT
- 2311 DISK FILE DRIVE WHICH WILL POWER-ON
- CE PACK OR SCRATCH PACK WITH HOME ADDRESSES

** NOTE- UTILITY PROGRAM 0814,CE PACK INITIALIZER, WRITES HOME ADDRESSES. DO NOT USE 0814 UNLESS SUBSYSTEM IS COMPLETELY OPERATIONAL, AND THEN ONLY WHEN HOME ADDRESSES ARE NOT ALREADY PRESENT. DO NOT USE 0814 TO INITIALIZE CUSTOMER PACKS BECAUSE CE CYLINDERS ARE BYPASSED AND ERRORS WILL BE DETECTED WHEN SEEKS ARE MADE TO INCORRECT OR NO HOME ADDRESS. IF A SCRATCH PACK IS USED, IT SHOULD BE INITIALIZED WITH A PROGRAMMING SYSTEMS DISK INITIALIZER.

3. USE PROCEDURE.

3.1 PROGRAM LOADING.

STANDARD LOADING PROCEDURES DO NOT APPLY TO THIS DFT. PHASE A, THE STANDARD 2311 DFT, MAY BE RUN IN OVERLAP WITH OTHER TESTS BUT MAY NOT BE LOADED WITH PID 0812 PHASE B.

TO RUN OPTIONAL ROUTINES (PHASE B) LOAD ONLY THE PHASE B DECK AND FOLLOW STANDARD MONITOR LOADING PROCEDURE. PHASES A & B ARE RUN ALIKE BUT MUST BE RUN SEPARATELY.

** NOTE - DO NOT INCLUDE DEVICE ADDRESS ON MONITOR EDIT. ENTER COMPLETE DEVICE ADDRESS IN BITS 8-15 OF SW FNC 2 WHEN PROGRAM COMES TO 'SELECT OPTIONS' HALT (SEE 3.3).

3.2 PROGRAM OPERATION.

PHASE B ONLY
** NOTE USE ONLY DRIVE ZERO WITH THIS TEST. USING ANOTHER DRIVE WILL RESULT IN CHANNEL STATUS ERROR MESSAGES.

1. THIS TEST SHOULD NOT BE RUN WITH BOTH 2841 CHANNELS WIRED TO THE SAME SELECTOR CHANNEL (AS IN THE 2 CHANNEL SWITCH TEST). WHILE USING ONE CHANNEL IT IS ADVISABLE TO SWITCH 'OFF' THE ALTERNATE CHANNEL.
2. INSTALL CE PACK OR SCRATCH PACK WITH HOME ADDRESSES ON ACCESS TO BE TESTED.
3. PROGRAM OPTION SWITCHES-SW FNC 0. (NORMAL RUN, WITH ALL SWITCHES OFF, GIVES ERROR PRINTOUTS, CONTINUE ON ERROR, AND BYPASS OPTIONAL ROUTINES.)

** NOTE - 'TURN ON' OPTION SWS IMPLIES SETTING THE SPECIFIED BITS ON IN THE INDICATED SWITCH FUNCTION BY SETTING UP THE S/P AND DE SWS AND DOING A 'CONSOLE INTERRUPT'.

1. LOAD MONITOR AND DESIRED DFT'S
2. EXECUTE PID 0812
3. SELECT OPTIONS (SEE TABLES 0 & 1 BELOW)
4. SELECT DEVICE (SEE TABLE 2 BELOW)

THE PROGRAM OPTION SWITCHES SHOWN BELOW ARE IN THE MONITOR INTERFACE TABLE IN THE PROGRAM. BITS ARE ZERO WHEN OFF AND ONE WHEN ON.

TABLE 0 2311 DFT FUNCTION 0

CONTROL FUNCTION

```

***** 1. SET FUNCTION 00 IN S/P SWITCHES 0
* AND 1.
* SENSE/PROGRAM * 2. SET PID IN S/P SWITCHES 2 THROUGH 7.
* 0 1 2 3 4 5 6 7 * 3. SET DESIRED CONTROL OPTIONS IN D/E
* SWITCHES 8-15 AS SHOWN.
* 0 0 0 1 0 0 1 0 * 4. PRESS CONSOLE INTERRUPT
*****
* DATA ENTRY SWITCHES * DESCRIPTION *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *
* 0..... EXIT ERROR HALT LOOP *
* 1..... HALT ON ERROR *
* 1..... BYPASS ALL PRINTOUTS *
* 1..... LOOP ON ERROR *
* 1..... RETRY START I/O *
* 1..... PRINT RESULTS AND RTN *
* TITLES *
* 1..... SEEK ALIGNMENT CYLINDERS*
* 1..... LOOP START I/O (TIGHT *
* SCOPE LOOP) *
*****

```

4. ROUTINE SELECTION SWITCHES - SW FNC 1. USED TO SELECT ROUTINES FOR EXECUTION. THE FORMAT OF THE SWITCHES IS 00SR WHERE S IS THE SELECTED SECTION AND R IS THE SELECTED ROUTINE WITHIN THAT SECTION. IF R=0 ALL ROUTINES IN THE SELECTED SECTION WILL BE RUN. IF S=0 ALL SECTIONS (1-3) WILL BE RUN.

TABLE 1 2311 DFT FUNCTION 1

ROUTINE SELECTION

```

***** 1. SET FUNCTION 01 IN S/P SWITCHES 0 AND 1.
* SENSE/PROGRAM * 2. SET PID IN S/P SWITCHES 2 THROUGH 7.
* 0 1 2 3 4 5 6 7 * 3. SET DESIRED SECTION/ROUTINE CONFIGURATION IN
* D/E SWITCHES 8-11/12-15 RESPECTIVELY.
* 0 1 0 1 0 0 1 0 * 4. PRESS CONSOLE INTERRUPT.
*****
* DATA ENTRY SWITCHES * DESCRIPTION *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *
* R R R R...ROUTINE NUMBER IN HEX (0=RUN*
* ALL ROUTINES) *
* S S S S...SECTION NUMBER IN HEX (0=RUN*
* ALL SECTIONS,) *
*****

```

5. DEVICE SELECTION. SWITCH FUNCTION 2 IS USED TO SELECT THE DEVICE UNDER TEST. THE UNIT ADDRESS IS PLACED IN THE 8 LOW ORDER BITS OF THE DE SWS (BITS 8-15).

TABLE 2 2311 DFT FUNCTION 2

DEVICE SELECTION

2841 address "A"

```

*****
* SENSE/PROGRAM * 1. SET FUNCTION 10 IN S/P SWITCHES 0 AND 1.
* 0 1 2 3 4 5 6 7 * 2. SET PID IN S/P SWITCHES 2 THROUGH 7.
* 1 0 0 1 0 0 1 0 * 3. SET 2841/2311 ADDRESS INTO D/E SWITCHES
* 8-15 AS SHOWN
* * 4. PRESS CONSOLE INTERRUPT
*****
* DATA ENTRY SWITCHES * DESCRIPTION *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *
* "A" U U U U...UNIT (2311) TO BE TESTED *
* C C C C...UNIT (2841) TO BE USED. *
*****

```

6. OPTIONAL ROUTINE SWITCHES. SWITCH FUNCTION 3 IS USED TO SELECT THE CYLINDERS TO BE USED IN SEEK OR WRITE LOOPS. SEE OPTIONAL ROUTINES 6 AND 7 (PHASE B).

3.3 PROGRAM HALTS.

1200 *****SELECT OPTIONS*****

THIS HALT OCCURS PRIOR TO PROGRAM EXECUTION TO ALLOW SETTING THE OPTION SWITCHES. IF OPTIONS ARE DESIRED THEY SHOULD BE ENTERED BEFORE SETTING OPTION SWITCH 2 (DEVICE) AS PROGRAM EXECUTION COMMENCES AT THIS TIME.

```

1200 ***HALT- 2311 DIAGNOSTIC AT ADRS XXXX
-TO CLEAR HALT SET SWITCHES
S/P OOPP PPPP, P=PID
DES XXXX XXXX XXXX XXXO
PRESS CONSOLE INTERRUPT

```

HALT AFTER ERROR, UNLESS BYPASSED, IS A LOOP THAT ALLOWS OPTION SELECTION AND LOOP EXIT USING THE SAME SWITCH FUNCTION (FNC 0). BESIDES THE NORMAL HALT AFTER ERROR DESCRIBED ABOVE, THERE ARE SEVERAL ERROR CONDITIONS IN WHICH THE PROGRAM CANNOT CONTINUE. (EXAMPLE, ACCESS NOT READY, HANG UP BUSY, ETC.) THE ERROR MESSAGE WILL IDENTIFY SUCH CONDITIONS. THE ADDRESS SPECIFIED IN LINE 1 IS THAT OF THE CALL ON THE WAIT ROUTINE.

NECESSARY INSTRUCTIONS TO EXIT THE ERROR HALT LOOP ACCOMPANY ENTRY TO THE LOOP VIA A PRINTOUT. WHILE IN THE LOOP VARIOUS SWITCH FUNCTION 0 OPTIONS CAN BE ENTERED ALONG WITH BIT 15=0 WHICH PROVIDES THE EXIT. BIT 15=0 ALONE WILL RESULT IN A NORMAL EXIT, IN MOST CASES THE ROUTINE WILL TERMINATE.

1. SETTING BIT 12 WILL EXIT TO THE FUNCTION THAT CAUSED THE ERROR.
2. SETTING BIT 8 WITH 12 WILL EXIT TO THE FAILING FUNCTION AND LOOP ON THE BRANCH TO SID ROUTINE (TIGHT SCOPE LOOP)
3. SETTING BIT 13 WITH 12 WILL EXIT TO THE FAILING FUNCTION AND LOOP THROUGH THE ROUTINE WITHOUT CHANGING ANY PARAMETERS, PRINTING ERRORS, OR HALTING ON THE ERROR. (LONG SCOPE LOOP) THESE OPTIONS SHOULD BE THE MOST USEFUL. SEE TABLE OF OPTIONS FOR OTHER APPLICATIONS.

2311 DIAGNOSTIC

2311 DIAGNOSTIC

** NOTE- THIS PROGRAM IS DESIGNED TO BE MOST EFFECTIVE WHEN RUNNING UNDER -HALT AFTER ERROR-. IF USER WISHES TO RUN IN THIS MODE SWITCH FUNCTION 0, BIT 14 MUST BE TURNED ON.

** NOTE - IF THE SELECTOR CHANNEL AND THE LOG DEVICE SHARE A DATA CHANNEL, CAUSING A CONSOLE INTERRUPT MAY RESULT IN MONITOR WAIT 9 (3009).

3.4 PROGRAM TERMINATION.

1. END OF NORMAL TEST.

'END OF DFT' MESSAGE IS PRINTED AT COMPLETION OF NORMAL TEST PROGRAM WILL TERMINATE UNLESS MONITOR FNC 0, SW 11 IS ON (LOOP PROGRAMS).

4.0 PRINTOUTS

4.1 MESSAGE FORMATS

A. ERROR MESSAGES

THE PRIMARY MESSAGE FROM THIS PROGRAM IS AN ERROR NUMBER. THE PURPOSE OF THE NUMBER IS TO REFER THE USER TO A DESCRIPTION OF THE ERROR CONDITION IN THIS DOCUMENT. (SECTION 4.2) THE ERROR DESCRIPTION PROVIDES DIAGNOSTIC INFORMATION ABOUT THE ERROR AND SCOPE LOOP OPTIONS.

ERROR NUMBER FORMAT

1. SIO,TIO,SENSE I/O,ERRORS--

1200 ** XX ERROR ON SIO, SECTION S, ROUTINE R, UNIT UU ADRS AAAA

2. ERROR NUMBER WITH MESSAGE.

1200 ** ER SRXXMESSAGE..... UNIT UU ADRS AAAA

3. NORMAL ERROR NUMBER PRINTOUT.

1200 ** ER SRXX UNIT UU ADRS AAAA

4. THE SECOND LINE OF AN ERROR PRINTOUT GIVES VARIABLE DATA ON MACHINE CONDITIONS.

CAW KKKK CSW YYYY UZZZ ADRS CNTR SNS B-B B-B B-B B-B

5. EXPLANATION OF CHARACTERS-

- S SECTION NUMBER
- R ROUTINE NUMBER
- XX SEQUENTIAL ERROR NUMBER WITHIN EACH ROUTINE
- UU CHANNEL AND DEVICE ADDRESS IN HEX
- AAAA ADDRESS OF ERROR BRANCH & STORE I-REG INSTRUCTION IN LISTING
- KKKK CHANNEL ADDRESS WORD FOR THE CCW CHAIN
- ADRS CHANNEL CCW ADDRESS REGISTER
- YYYY CHANNEL STATUS IN HEX
- UZZZ UNIT ADDRESS/UNIT STATUS IN HEX
- CNTR CHANNEL BYTE COUNT REGISTER
- B-B SENSE BYTES IN BINARY

4.2 ERROR NUMBER DESCRIPTIONS

00 - UNEXPECTED INTERRUPT.

AN INTERRUPT OCCURRED ON THE SELECTOR CHANNEL WHILE THIS PROGRAM DID NOT OWN THE CHANNEL OR THE INTERRUPT WAS NOT FROM THE UNIT UNDER TEST. SEE CSW FOR FURTHER INFORMATION.

02 - CONDITION CODE 2 ON TEST I/O (SECTION 'S' ROUTINE 'R').

A CONDITION CODE 2 (ADAPTER BUSY) WAS DETECTED ON THE TEST I/O AT THE BEGINNING OF THE START I/O SUBROUTINE. THE SECTION AND ROUTINE NUMBER OF ROUTINE BEING EXECUTED WHEN THIS TEST I/O WAS ISSUED IS PRINTED OUT.

- DIAGNOSTIC INFORMATION

CONDITION CODE 2 (ADAPTER BUSY) INDICATES CHANNEL OR SUBCHANNEL BUSY INDICATES MISSING DEVICE END ON PREVIOUS OPERATION. CAW PRINTOUT INDICATES PREVIOUSLY EXECUTED COMMAND CHAIN. RECOMMEND PLUGGING IN DISPLAY PORTION OF CE BOX.

- USER OPTIONS-

USER SHOULD DO A RESET-RESTART TO CLEAR BUSY CHANNEL.

06 - NO INTERRUPT AFTER TEST I/O

- DIAGNOSTIC INFORMATION -

THIS ERROR MAY OCCUR IN THE TEST I/O SUBROUTINE OR IN THE TEST I/O ROUTINE ITSELF (SECTION 1, ROUTINE 2). AN ERROR IN EITHER AREA IS DUE TO THE SAME CONDITION.

- USER OPTIONS -

- 1. RECOMMEND PLUGGING IN DISPLAY PORTION OF CE BOX.
- 2. IF CONTROL UNIT IS HUNG UP TRY RESET-RESTART.

11 - CONDITION CODE 1 ON START I/O (SECTION S, ROUTINE R)

CONDITION CODE 1 (UNIT STATUS PENDING) WAS DETECTED ON START I/O.

- DIAGNOSTIC INFORMATION-

- 1. MOST CONDITION CODE ERRORS SHOULD SHOW UP IN PID 0810 (SELECTOR CHANNEL TEST). THIS ERROR PRINT OUT, IF THE ONLY ERROR NUMBER, SUGGESTS COMMAND REJECT, OR INTERMITTENT CONTROL UNIT TROUBLE.
- 2. IF END OF CYLINDER BIT IS ON, CHECK FILE BUS. 7. (FD021)

- USER OPTIONS-

- 1. TRY RESET-RESTART
- 2. RUN SELECTOR CHANNEL TEST (PID 0810)

12 - CONDITION CODE 2 ON START I/O

CHANNEL OR SUBCHANNEL BUSY WAS DETECTED IN THE START I/O SUBROUTINE.

- DIAGNOSTIC INFORMATION-

SOLID CONDITION CODE 2 ERRORS SHOULD BE DETECTED IN ROUTINE 1, TEST CHANNEL STATUS, OR AT ERROR 02, TEST I/O. IF THIS ERROR OCCURS AT ANY OTHER TIME, SUSPECT INTERMITTENT ERROR. CC2 SUGGESTS PREVIOUS OPERATION WAS NOT COMPLETED. CAW PRINTOUT INDICATES PREVIOUSLY EXECUTED COMMAND CHAIN.

- USER OPTIONS-

SAME AS ERROR 11.

13 - CONDITION CODE 3 ON START I/O

NOT OPERATIONAL WAS DETECTED WHILE IN THE START I/O SUBROUTINE.

- DIAGNOSTIC INFORMATION-

SOLID CC 3 ERRORS SHOULD BE DETECTED IN ROUTINE 1, TEST CHANNEL, OR SHOW UP AS ERROR 03 IN TEST I/O. IF THIS ERROR OCCURS AT ANY OTHER ROUTINE, SUSPECT INTERMITTENT FAILURE.

- USER OPTIONS-

SAME AS ERROR 11.

21 - CONDITION CODE 1 ON SENSE I/O

PROGRAM DETECTED UNIT CHECK ON A SENSE I/O IN THE SENSE I/O SUBROUTINE. TEST I/O AND START I/O HAVE ALREADY BEEN TESTED. SHOULD NOT GET THIS ERROR EXCEPT ON INTERMITTENT FAILURES. THE SECTION AND ROUTINE BEING EXECUTED WHEN ERROR OCCURED IS PRINTED WITH ERROR NUMBER. EXAMINE ACCUMULATED STATUS DATA IN CSW FOR CLUES TO FAILURES.

- USER OPTIONS-

SAME AS ERROR 01

22 - CONDITION CODE 2 ON SENSE I/O.

PROGRAM EXECUTED A SENSE I/O AND GOT A BUSY CONDITION. PRINTOUT GIVES SECTION AND ROUTINE BEING EXECUTED WHEN THIS ERROR OCCURED.

- DIAGNOSTIC INFORMATION-

DETERMINE WHY CONTROL UNIT WENT BUSY. SHOULD BE RELATED TO ROUTINE BEING EXECUTED. CAW PRINTOUT INDICATES PREVIOUSLY EXECUTED COMMAND CHAIN.

- USER OPTIONS-

1. USER SHOULD DO A RESET-RESTART TO CLEAR BUSY CONDITION-
2. CONTROL UNIT HUNG UP - PROBABLY CAN'T LOOP, SO CONTINUE OFF LINE.
3. TRY LOOPING IN ROUTINE.

23 - CONDITION CODE 3 ON SENSE I/O

NOT OPERATIONAL ON SENSE I/O - SEE ERROR 13

1101 - CONDITION CODE 1 ON A TEST CHANNEL COMMAND

THE FIRST COMMAND IN THIS DIAGNOSTIC PROGRAM IS A TEST CHANNEL TO DETERMINE THAT THE CHANNEL IS AVAILABLE. A CONDITION CODE 1 (UNIT STATUS PENDING) WAS DETECTED ON THE FIRST TEST CHANNEL COMMAND. THE PROGRAM EXECUTED A TEST I/O TO CLEAR THE INTERRUPT CONDITIONS AND THEN RETRIED THE TEST CHANNEL COMMAND. THE CONDITION CODE 1 CONDITION WAS STILL PRESENT.

- DIAGNOSTIC INFORMATION -

THE CHANNEL MUST BE CLEARED OF PENDING INTERRUPTIONS BEFORE ANY OTHER COMMANDS MAY BE EXECUTED.

- USER OPTIONS -

SEE 3.3 ERROR HALTS

1102 - CONDITION CODE 2 ON TEST CHANNEL COMMAND

SAME AS ERROR 1101 EXCEPT CC 2, (CHANNEL OR SUBCHANNEL BUSY). NEVER RECEIVED DEVICE END FROM PREVIOUS COMMAND.

- USER OPTIONS -

SEE 3.3 ERROR HALTS

1103 - CONDITION CODE 3 ON A TEST CHANNEL COMMAND.

SAME AS ERROR 1101 EXCEPT CC 3, (CHANNEL NOT OPERATIONAL). SW FNC 2 MAY SPECIFY WRONG DEVICE.

- USER OPTIONS -

SEE 3.3 ERROR HALTS

1201 - CONDITION CODE 1 ON TEST I/O BUT NO UNIT CHECK

PROGRAM ATTEMPTED A TEST I/O AND RECEIVED A CONDITION CODE 1. UNIT CHECK WAS NOT SET, BUT CHANNEL STATUS WAS STORED.

- DIAGNOSTIC INFORMATION -

EXAMINE CHANNEL STATUS DATA TO DETERMINE WHICH STATUS BIT CAUSED THE CONDITION CODE 1. SUSPECT 2841 IN CE MODE.

- USER OPTIONS -

SEE 3.3 ERROR HALTS

1202 - CHANNEL OR SUBCHANNELS BUSY ON TEST I/O

PROGRAM RECEIVED A CONDITION CODE 2 ON A TEST I/O COMMAND.

- DIAGNOSTIC INFORMATION -

SUSPECT SOME PREVIOUS OPERATION WAS NOT COMPLETED.
SOLID CONDITION CODE ERRORS SHOULD NOT SHOW UP HERE. SUSPECT
INTERMITTENT ERROR. (UNLESS OTHER ERROR NUMBERS ARE ALSO PRINTED)

- USER OPTIONS-

SEE 3.3

1203 - ACCESS NOT OPERATIONAL

PROGRAM RECEIVED A CONDITION CODE 3 ON A TEST I/O, INDICATING
ADDRESS ON CHANNEL WAS NOT RECOGNIZED. CHANNEL RECEIVED-SELECT
IN- IN RESPONSE TO -SELECT OUT-.

- DIAGNOSTIC INFORMATION -

1. SUSPECT WRONG CONTROL UNIT ADDRESS.
2. CONTROL UNIT C.E. SWITCH ON -CE-
3. CONTROL UNIT METER SWITCH ON DISABLE.
4. COVER INTERLOCK SWITCH.

- USER OPTIONS -

SEE 3.3

1204 - UNSAFE CONDITION -

PROGRAM ATTEMPTED A TEST I/O COMMAND AND RECEIVED A CONDITION
CODE OF 1 AND UNIT CHECK ON. PROGRAM THEN ISSUED A SENSE COMMAND
AND DETERMINED THAT UNSAFE BIT WAS ON.

- DIAGNOSTIC INFORMATION -

MUST DETERMINE WHAT UNSAFE CONDITION EXISTS. SEE SAFETY CIRCUITS
OR TROUBLE SHOOTING PROCEDURE IN MAINTENANCE MANUAL (PG. 31)
SUSPECT SOLID FILE BUS 4 BIT (FD020)

- USER OPTIONS -

1. GO OFF LINE AND DETERMINE CAUSE OF UNSAFE CONDITION.
2. JUMPER OFF SELECT LOCK AND LOOP. (SEE 3.3 ERROR HALTS)
3. JUMPER OFF SELECT LOCK AND RESTART SECTION.

1205 - FILE NOT ON LINE

PROGRAM ATTEMPTED A TEST I/O COMMAND AND RECEIVED A CONDITION
CODE 1 WITH UNIT CHECK ON.
PROGRAM THEN PERFORMED A SENSE I/O AND FOUND THAT -ON LINE-
BIT IS OFF AND INTERVENTION REQUIRED BIT IS ON.

- DIAGNOSTIC INFORMATION -

1. SUSPECT POWER ON SEQUENCE IS NOT FUNCTIONING CORRECTLY. SEE
POWER ON SEEK FLOW CHART.
- NOTE- HEADS EXTENDED SWITCH TRANSFER GENERATES ON LINE SIGNAL TO

2841.

2. CHECK FILE METER SWITCHES NOT ON DISABLE
3. NOT GETTING MOD SELECT TO FILE (FD021)
4. NO CYL PULSES (FD056)

- USER OPTIONS -

SEE 3.3

1206 - FILE NOT READY -

PROGRAM ATTEMPTED A TEST I/O COMMAND AND RECEIVED A CONDITION
CODE 1 WITH UNIT CHECK ON. SENSE DATA INDICATES THAT FILE IS ON
LINE BUT NOT READY.

- DIAGNOSTIC INFORMATION -

SUSPECT POWER ON SEEK SEQUENCE
1. DETENT IN SIGNAL (FD056)
REFER TO POWER ON SEEK FLOW CHART

- USER OPTIONS -

SEE 3.3

1207 - UNSELECTED FILE STATUS -

PROGRAM ATTEMPTED A TEST I/O COMMAND AND RECEIVED A CONDITION
CODE 1 WITH UNIT CHECK ON. PROGRAM THEN ISSUED A SENSE I/O AND
SENSE DATA INDICATES THAT FILE IS ON LINE, READY, BUT UNSELECTED
STATUS BIT IS ON.

- DIAGNOSTIC INFORMATION -

SOME UNSELECTED ACCESS HAS A FILE SAFETY (FS) LINE - UP - TO THE
2841.

1. SOLID MOD SELECT (FD021)
2. SOLID SELECTED READY (FD025)
3. SOLID SELECTED END OF CYL. (FD025)
4. SOLID UNSAFE (FD025)

- USERS OPTIONS -

1. SYSTEM RESET AND EXAMINE -FS- LINES TO DETERMINE WHICH ACCESS
LINE IS INCORRECT.
2. SEE 3.3 FOR ERROR EXIT OPTIONS

1208 - UNIT CHECK ON TEST I/O

PROGRAM RECEIVED A UNIT CHECK ON A TEST I/O COMMAND AND ISSUED A SENSE COMMAND. PROGRAM HAS DETERMINED THAT UNIT CHECK WAS NOT CAUSED BY UNSAFE, NOT ON LINE, NOT READY, OR UNSELECTED STATUS. THUS, SOME OTHER CONDITION CAUSED THE UNIT CHECK.

- DIAGNOSTIC INFORMATION -

1. SUSPECT SEEK INCOMPLETE, BUSS OUT PARITY, OR SEEK CHECK. BIT SHOULD SHOW UP IN SENSE DATA PRINTED WITH ERROR TYPEOUT.

- USER OPTIONS -

1. SEE 3.3
2. TRY TURNING FILE DRIVE OFF -ON AND RESET-RESTART

1209 - CONDITION CODE 1 BUT NO CHANNEL STATUS.

PROGRAM RECEIVED A CONDITION CODE 1 ON A TEST I/O, BUT NO CHANNEL STATUS WAS STORED, NO UNIT CHECK OCCURED, AND CONTROL UNIT IS NOT BUSY.

- DIAGNOSTIC INFORMATION -

1. SOLID SELECTED SEEK START
2. POSSIBLY LOSING READY AT FILE DRIVE WITH A SOLID FILE BUS 6 (FD021)
3. SOLID RESTORE (FD021)
4. COULD HAVE GOTTEN AN UNEXPECTED DEVICE END, IF USER POWERED OFF-ON THE FILE. (DETENT CAUSES DEVICE END)

- USER OPTIONS -

1. TRY STARTING TEST OVER, LEAVE FILE DRIVE ON. IF SAME FAILURE OCCURS, DETERMINE WHY 2841 IS HANGING IN LOOP OR WHY DRIVE IS LOSING READY.
2. OPTIONAL SCOPE LOOPS, SEE 3.3

1210 - UNEXPECTED END OF CYLINDER -

PROGRAM RECEIVED A UNIT CHECK ON A TEST I/O COMMAND AND DETERMINED THAT END OF CYL. BIT IS ON.

- DIAGNOSTIC INFORMATION -

1. SUSPECT ERRONEOUS END OF CYLINDER FROM FILE BUS 4 (FD020)
2. NO HAR RESET IF THIS ERROR OCCURS ON 2ND TIME THROUGH THIS SECTION (FD065)
3. NO FILE BUS 2

- USER OPTIONS -

SEE 3.3

1211 - CONTROL UNIT HUNG UP BUSY

PROGRAM RECEIVED A CONDITION CODE 1 ON A TEST I/O WITH CONTROL UNIT BUSY, (STATUS MODIFIER AND BUSY IN CSW.)

- DIAGNOSTIC INFORMATION -

1. NO MOD SELECT (FD021)
2. ATTENTION LATCH (FD053) ALWAYS ON.
3. DELTA ATTENTION LATCH (FD053) ALWAYS ON.
4. SOLID FILE BUS 2 (FD020)
5. SOLID CONTROL UNIT BUSY

- USER OPTIONS -

SEE 3.3

1301 - CHANL. STATUS OR UNIT CHECK ON NO OP COMMAND

PROGRAM EXECUTED A NO OP COMMAND AND DETECTED ERROR STATUS OR UNIT CHECK

- DIAGNOSTIC INFORMATION -

1. IF END OF CYLINDER BIT ON, CHECK FOR SOLID FILE BUS 7.(FD021)
2. OTHERWISE, EXAMINE SENSE DATA TO DETERMINE CAUSE OF STATUS OR UNIT CHECK.

- USERS OPTIONS -

SEE 3.3

1302 - NO CHANL OR DEVICE END ON NO OP. COMMAND

PROGRAM ATTEMPTED A NO OP COMMAND BUT DID NOT RECEIVE CHNL AND DEVICE END IN THE CHANNEL STATUS WORD.

- DIAGNOSTIC INFORMATION -

1. 2841 TROUBLE POSSIBLE

- USER OPTIONS -

SEE 3.3

1303 - CONDITION 0, 2, OR 3 ON NO OP COMMAND.

PROGRAM EXECUTED A NO OP COMMAND AND DETECTED INCORRECT CONDITION CODE. (SHOULD GET CC1)

- DIAGNOSTIC INFORMATION -

1. POSSIBLE SOLID FILE BUS 7 (FD021)

- USER OPTIONS -

SEE 3.3

1401 - CHANNEL STATUS OR UNIT CHECK ON SENSE COMMAND

PROGRAM ISSUED A SENSE COMMAND AND SOME CHANNEL STATUS BIT OR UNIT CHECK WAS SET.

- DIAGNOSTIC INFORMATION -

EXAMINE CHANNEL STATUS TO DETERMINE WHICH CHECK BIT IS ON. (DEFINITION CHART AT PARAGRAPH 6.1) IF THIS IS THE ONLY ERROR NUMBER PRINTED, SUSPECT INTERMITTENT TROUBLE.

- USER OPTIONS -

1. TO LOOP ON SENSE I/O COMMAND, SEE 3.3, ERROR HALT

1403 - NO CHANL OR DEVICE END ON SENSE COMMAND

COULD BE A CHANNEL PROBLEM. (SERVICE IN, SERVICE OUT AREA) THIS COMMAND IS THE FIRST ATTEMPT TO TRANSFER BYTES FROM 2841 ON SERVICE IN/SERVICE OUT BASIS.

- USERS OPTIONS-

1. TRY RUNNING SELECTOR CHANNEL DFT (PID 0810)
2. SEE 3.3

1404 - INCORRECT SENSE ON SENSE COMMAND

PROGRAM ISSUED A SENSE COMMAND AND SENSE DATA RECEIVED WAS INCORRECT. SENSE DATA SHOULD BE 0-0, 0-0, 0-0, 11001000. UNIT CHECK AND CHANL STATUS WERE NOT SET.

- DIAGNOSTIC INFORMATION -

ONLY DRIVE READ AND, ON LINE, BITS SHOULD BE ON IN THE SENSE DATA. ANY BITS ON IN THE FIRST 3 SENSE BYTES SHOULD HAVE TURNED ON UNIT CHECK IN DEVICE STATUS. SUSPECT FAULTY INDICATION OF ERROR IN SENSE DATA.

- USER OPTIONS -

SEE 3.3

1501 - HANG UP CONDITION ON READ H A COMMAND

PROGRAM ATTEMPTED A READ H A COMMAND WHICH CAUSED A HANG UP CONDITION IN THE CONTROL UNIT. NO CHECK IS MADE ON THE READ OPERATION. CONTROL UNIT AND FILE WERE NOT AVAILABLE TO CHANNEL AFTER 2 SECONDS, SO A HANG UP CONDITION IS ASSUMED.

- DIAGNOSTIC INFORMATION -

1. NO PULSES ON INDEX LINE FROM FILE TO 2841 (FD056)
2. SOLID SELECTED INDEX (FD025)
3. LOOKS LIKE CONTROL UNIT NOT GETTING TO ENDING PROCEDURE IN THE MICRO PROGRAM (I.E. NOT SETTING CHANNEL AND DEVICE END.)

- USER OPTIONS -

SEE 3.3

1502 - HANG UP CONDITION ON A CONTROL HEAD SEEK -

PROGRAM ATTEMPTED A HEAD SEEK COMMAND. BUT CONTROL UNIT AND FILE DID NOT BECOME AVAILABLE WITHIN 2 SECONDS. NO CHECKING IS MADE ON THE SEEK OPERATION ITSELF.

- DIAGNOSTIC INFORMATION -

LOOKS LIKE CONTROL UNIT IS NOT GETTING TO ENDING PROCEDURE IN THE MICRO PROGRAM. NOT GETTING CONTROL UNIT END AND DEVICE END FROM 2841.

- USER OPTIONS -

SEE 3.3

1503 - NO DEVICE END ON FIRST CONTROL CYL SEEK

ON THE FIRST ATTEMPTED CONTROL SEEK, HANG UP CONDITION OCCURED IN 2841.

- DIAGNOSTIC INFORMATION -

1. FAILED TO GET DEVICE END AFTER A SEEK OP - I.E.. NO SELECTED SEEK START (FD020)
2. SOLID RESET TO GATED ATTENTION LATCH (FD053)
3. SUSPECT NO GATED ATTENTION - (FD053)
4. NO SELECTED CONTROL TAG (FD021).

- USER OPTIONS -

SEE 3.3

1504 - HANG UP ON RECALIBRATE COMMAND -

PROGRAM ATTEMPTED A RETURN TO ZERO SEEK AND CPU DID NOT GET DEVICE END WITH-IN 2 SECONDS.

- DIAGNOSTIC INFORMATION -

1. SUSPECT NO RESTORE (FD021)
2. DELTA ATTENTION LATCH (FD053) ALWAYS OFF.
3. NO FILE BUS 6 (FD021)
4. LOST FILE READY (NO DETENT MAYBE)

- USER OPTIONS -

1. TRY RUNNING SEEK TEST, (SECTION2) IF 1 AND 2 ABOVE DO NOT CORRECT FAILURE.
2. SEE 3.3 FOR ERROR EXIT OPTIONS

1505 - LOST READY ON A HEAD SEEK

PROGRAM DETECTED LOSS OF READY ON FIRST CONTROL HEAD SEEK.

- DIAGNOSTIC INFORMATION

1. SUSPECT NO SET DIFFERENCE OR NO FILE BUS 6 (RESET D2) (FD030)
2. SOLID CONTROL TAG (FD021) (SHOULD GIVE SELECT LOCK)

- USER OPTIONS -

SEE 3.3

1600 - READ HEAD MAP DESCRIPTION -

READ HEAD MAP ERRORS ARE THE RESULT OF THE PROGRAM'S ATTEMPT TO READ HA WITH ALL 10 HEADS. IF ANY ERRORS OCCUR, AN ERROR NUMBER IS PRINTED OUT FOLLOWED BY THE HEAD MAP. PROGRAM HALTS TO ALLOW USER TO EXAMINE THE MAP AND CHOOSE AN OPTION TO CONTINUE.

- EXAMPLE OF HEAD MAP PRINT OUT

```
** ER 16XX UU AAAAAA
READ HEAD MAP -
HEAD NUMBER---00 01 02 03 04 05 06 07 08 09
RD HA RESULT--00 01 02 0X NF TX SD US BC SE
HD 04 HA READ FFFFFFFFFF
CSW ADRS YYYY UZZZ CNTR SNS B-B B-B B-B B-B
HD 05 ...
. ...
. ...
. ...
. ...
HD 09 ...
CSW ...
```

- EXPLANATION OF MAP SYMBOLS-

OX - ACTUAL HEAD NUMBER FROM HA READ, (WILL EQUAL HEAD NUMBER IF CORRECT)
NF - NO RECORD FOUND ON THIS HEAD
TX - NO DATA BEING TRANSFERED
SD - SER/DES CHECK ON THIS HEAD
US - UNSAFE ON THIS HEAD
BC - DATA CHECK (BURST CHECK) ON THIS HEAD
SE - SOME OTHER SENSE ERROR (LIKE SEEK CHECK, OR END OF CYLINDER)

THE LINES FOLLOWING THE HEAD MAP PROVIDE THE ACTUAL HOME ADDRESS BYTES RECEIVED BY THE CPU, AND THE CSW AND SENSE DATA FOR EACH FAILING HEAD. IF ALL HEADS FAIL, ONLY DATA ON HEAD 00 IS PRINTED.

- READ IN AREA IN CORE STORAGE IS SET TO HEX FF'S BEFORE READ IS PERFORMED, THUS, FF'S AS DATA READ INDICATES NO DATA WAS TRANSFERED

- USER OPTIONS - (FOR ALL READ TEST ERRORS, 16XX)

1. SCOPE LOOP
TURN ON OPTION SWS 8&12 TO LOOP IN SID READING HA ON THE FAILING HEAD.
2. TO LOOP IN ROUTINE, READING HA ON ALL 10 HEADS CHECKING FOR ERRORS, TURN ON S1,R6 (FNC 1), THEN EXIT HALT (FNC 0).

3. TO LOOP IN ROUTINE, READING HA WITH ALL -10- HEADS WITHOUT CHECKING ERRORS TURN ON S1,R6, (FNC 1), THEN EXIT HALT WITH BIT 12, 13 & 14 ON (FNC 0)
4. TO CONTINUE PROGRAM - EXIT HALT (FNC 0), PROGRAM WILL PROCEED TO NEXT ROUTINE.

1601 - ERROR ON READ HA, NO RECORD FOUND ON ALL HEADS

PROGRAM WAS UNABLE TO READ HA FROM ANY HEAD, AND THE SENSE DATA INDICATES NO RECORD FOUND ON ALL HEADS.
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. NO DATA GETTING TO 2841 FROM 2311
2. FILE NOT GETTING READ GATE
3. OPEN READ COAX.
4. SOLID SELECTED INDEX (FD025)

- USER OPTIONS -

SEE ER. NO. 1600 FOR DESCRIPTION OF READ HEAD MAP AND OPTIONAL SCOPE LOOPS

1602 - ERROR ON READ HA, DATA CHECK (BURST CHECKS) ON ALL HEADS -

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS AND DETECTED BURST CHECK ERRORS ON ALL HEADS. (INDICATES ALL READ DATA IS BAD)
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. CHECK THAT HEADS ARE LOADED AND FLYING AGAINST DISK SURFACE
2. NO HEAD SELECT (FD021) OR SOLID HEAD DESELECT (FD065)
3. DETENT LATCH ON SOLID, OR ACCESS TROUBLE CAUSES ACCESS TO LOCATE AT CYL. MINUS 1 (FD050), DETENT LATCH (SEE OPTION 2)
4. BURST CHECK ERRORS SUGGEST 2841 S/D CLOCKING TROUBLE. (VFD)

- USER OPTIONS -

1. SEE ERROR NO. 1600 FOR HEAD MAP DESCRIPTION AND SCOPE LOOPS.
2. MANUALLY POSITION ACCESS AT LEGITIMATE CYLINDER 0 OR 1 AND SET S1,R6 (FNC1) THEN SET SW 12 AND EXIT HALT. IF NO ERRORS, CONTINUE TO SEEK TEST. DO NOT RESTART THE TEST BECAUSE ACCESS WILL PROBABLY RETURN TO CYLINDER -1.

1603 - ERROR ON READ HA, S/D CHECK ON ALL HEADS -

VERY SIMILAR TO ERROR 1602
POSSIBLE VFD ADJUSTMENT PROBLEM
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

1604 - READ HA ERROR, UNSAFE ON ALL HEADS

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS AND DETECTED UNSAFE ON ALL HEADS.
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

SUSPECT -

SOLID WRITE GATE
SOLID SEEK READY

- USER OPTIONS -

SEE ER NO. 1600 FOR EXPLANATION OF HEAD MAP AND SCOPE LOOPS.

1605 - ERROR ON READ HA, DATA CHECK AND NRF ON ALL HEADS.

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS AND RECEIVED NRF AND/OR DATA CHECKS ON ALL HEADS
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. POSSIBLE NO READ DATA LINE
2. SUSPECT NO HOME ADDRESSES ON THIS TRACK
3. SER-DES IN CONTROL UNIT

- USER OPTIONS -

SEE ERROR 1600 FOR HEAD MAP DESCRIPTION AND SCOPE LOOPS

1607 - ERROR ON READ HA, UNSAFE ON 9 HEADS -

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS AND DETECTED UNSAFE CONDITION ON ALL BUT ONE HEAD
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

NINE UNSAFE CONDITIONS INDICATE SOLID Y SELECT. THE HEAD WHICH READ CORRECTLY IS THE HEAD SOLIDLY SELECTED.
HAR DECODE - A1J2 - FD065

- USER OPTIONS -

SEE ER. NO. 1600 FOR HEAD MAP DESCRIPTION AND SCOPE LOOPS.

1608 - ERROR ON READ HA - WRONG HEAD SELECTED

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS. NO MACHINE ERROR CONDITIONS WERE DETECTED, BUT HA READ INDICATES THAT HEADS WERE NOT SELECTED CORRECTLY. HEAD MAP PRINTED OUT WILL SHOW HEAD NUMBERS THAT WERE READ DO NOT ALL EQUAL HEAD NUMBER SELECTED. EXAMINE PATTERN FOR CLUES TO FAILURE.
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

LOOKS LIKE SOME ADDRESS REGISTER BIT FAILING. (SOLID ON OR SOLID OFF)

1. SUSPECT HAR - A1G2 (FD060) AND BUS LINES INTO HAR (SUCH AS NO FILE BUS 4 OR 7) (FD020), (FD021).
2. IF SAME HEAD NUMBER LISTED IN ALL 10 HEAD POSITIONS, SUSPECT NO SET HEAD LINE (FD021)

3. SOLID HAR RESET (IF HEAD MAP ALL ZEROS). (FILE BUS 3 AND SELECTED CNTRL FD060).

- USER OPTIONS -

SEE ERROR NO 1600 FOR HEAD MAP DESCRIPTION AND SCOPE LOOPS

1609 - ERROR ON READ HA

PROGRAM ATTEMPTED TO READ HA FROM ALL HEADS, AND DETECTED ERRORS ON SEVERAL HEADS OR 'SE' ERRORS. EXAMINE HEAD MAP AND DETAILED PRINTOUT FOR ANALYSIS OF TROUBLE.
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. FAILING HAR RESET LINE WILL CAUSE THIS ERROR.(EXAMPLE - NO FILE BUS 3) (FD060)
2. SUSPECT ONE HEAD SELECTED SOLID
EXAMPLE - HEAD MAP 4 5 6 7 4 5 6 7 TX TX
INDICATES SOLID HEAD 4 SELECTED.
(CARD A1G2) PAGE FD060

- USER OPTIONS -

SAME AS ERROR 1608

1610 - ERROR ON READ HA, NO RECORD FOUND ON ONE HEAD

PROGRAM READ HA'S FROM ALL HEADS AND DETECTED A NRF ON ONE HEAD. HEAD MAP WILL SHOW WHICH HEAD WAS IN ERROR. A SINGLE ERROR LIKE THIS SUGGESTS A PROBLEM COMMON TO THE PARTICULAR HEAD
SEE ERROR 0600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. BAD HEAD OR OPEN LINE ON THE FAILING HEAD INDICATED IN MAP
2. HEAD OUT OF ADJUSTMENT OR LOOSE

- USER OPTIONS -

1. SEE ER. NO. 1600 FOR DESCRIPTION OF HEAD MAP AND SCOPE LOOPS.
2. FOR HEAD ALIGNMENT PROBLEMS, RUN OPTIONAL ROUTINE 7 IN SECTION 4

1611 - ERROR ON READ HA, DATA (BURST) CHECK ON ONE HEAD

PROGRAM READ HA FROM ALL HEADS AND DETECTED A BURST CHECK ON ONE HEAD. THE READ HEAD MAP PRINTED OUT WILL SHOW WHICH HEAD WAS IN ERROR. THIS ERROR SUGGESTS SOMETHING COMMON TO THE PARTICULAR HEAD.
SEE ERROR 1600 FOR DESCRIPTION OF HEAD MAP

- DIAGNOSTIC INFORMATION -

1. NO HEAD SELECT FOR THIS HEAD
2. ONE HEAD OUT OF ADJUSTMENT
3. LOOSE OR OPEN HEAD PLUG
4. INTERMITTENT READ ERROR ON THIS HEAD
5. BAD HEAD (R/W COIL)

- USER OPTIONS -

1. SEE ER. NO. 1600 FOR DESCRIPTION OF HEAD MAP AND SCOPE LOOPS
2. NOTE - OPTIONAL ROUTINE 7 IN SECTION 4 IS TRACKING ADJUSTMENT ROUTINE.

1701 - UNIT CHECK ON RETURN TO 000 SEEK

PROGRAM ATTEMPTED A RESTORE TO 00 FOLLOWED BY A TEST I/O AND DETECTED A UNIT CHECK.

- DIAGNOSTIC INFORMATION -

IF THIS IS THE FIRST ERROR NUMBER PRINTED, ASSUME POWER-ON SEEK WORKED PROPERLY. PROBLEM IS THEN RELATED TO RETURN TO 000 SEEK. EXAMINE SENSE DATA TO DETERMINE WHAT SET UNIT CHECK.

1. LOSING-ON LINE-DURING THE RECALIBRATE COMMAND.

- USER OPTIONS -

1. SEE 3.3

1702 - NOT BUSY ON RETURN TO 000 SEEK

PROGRAM ATTEMPTED A RETURN TO 000 COMMAND, BUT FILE NEVER WENT BUSY SEEKING. PROGRAM FAILED TO GET BUSY BIT IN CSW ON TIO AFTER RECALIBRATE.

- DIAGNOSTIC INFORMATION -

1. SUSPECT NO SEEK START
2. SUSPECT SOLID SEEK READY (FD053)
3. SOLID SELECTED FILE READY (FD025)

- USER OPTIONS -

1. SEE 3.3

1703 - HANG UP CONDITION ON RECALIBRATE COMMAND

PROGRAM ATTEMPTED A RETURN TO ZERO SEEK. THE OPERATION WAS NOT COMPLETED WITHIN 2 SECONDS, CAUSING A TIME OUT ERROR FROM THE START I/O SUBROUTINE. UNIT CHECK WAS NOT SET.

- DIAGNOSTIC INFORMATION -

LOOKS LIKE 2841 HANG UP CONDITION. MICRO-PROGRAM IS NOT GETTING TO ENDING SEQUENCE (NO DEVICE AND CHANNEL END SIGNAL)

- USER OPTIONS -

1. USER SHOULD DO A RESET-RESTART TO CLEAR CHANNEL AND CONTROL UNIT.
2. SEE 3.3

1704 - SEEK INCOMPLETE ON RECALIBRATE COMMAND

PROGRAM EXECUTED RECALIBRATE COMMAND AND ACCESS WENT TO INNER OR OUTER CRASH STOP.

- USER OPTIONS -

SAME AS ER. 1703.

1706 - FAILED TO RETURN TO 000 ON RESTORE OP.

PROGRAM ATTEMPTED A RECALIBRATE COMMAND FOLLOWED BY A READ HA. THE HOME ADDRESS READ WAS NOT FOR CYLINDER 000, HEAD 00. NO UNIT CHECK ERRORS OCCURED.

- DIAGNOSTIC INFORMATION -

1. SOLID ON-LINE SIGNAL (FD050)
2. CONTROL TAG TAG LINE OR FILE BUS 6 (FD021)

- USER OPTIONS -

SEE 3.3

1707 - UNIT CHECK ON READ HA

PROGRAM EXECUTED A RECALIBRATE COMMAND AND THEN READ HA TO CHECK FOR CYL. 000 AND UNIT CHECK WAS DETECTED ON THE READ HA COMMAND.

- DIAGNOSTIC INFORMATION -

NOTE - ROUTINE 6 TESTS READ HA - (ALREADY COMPLETED) COULD BE THAT ACCESS DETENTED AT CYLINDER MINUS 1.

- USER OPTIONS -

SEE 3.3

2000 - CONTROL UNIT PARITY CHECK

AN UNEXPECTED 2841 PARITY ERROR OCCURED, CAUSING HANG UP CONDITION WITH CHANNEL NOT CLEARED. PROGRAM PRINTS ERROR, CAW AND CSW.

- DIAGNOSTIC INFORMATION -

SUGGESTS TROUBLE IS IN 2841.

- USER OPTIONS -

1. TRY RESTART (LOOP SECTION 2)
2. LOOK FOR PARITY ERROR IN 2841

2100 - EXPLANATION OF SEEK MAP -

THE PROGRAM EXECUTES A SERIES OF SELECTIVE CYLINDER SEEKS

DESIGNED TO TEST ALL-CAR- AND DIFF. COUNTER BIT POSITIONS FOR ON AND OFF CONDITIONS. THE PARTICULAR HA READ AT THE DETENTED CYLINDER IS ANALYZED BY THE PROGRAM, AND PARTICULAR ERROR CONDITIONS ARE DEDUCED AND IDENTIFIED BY ERROR NUMBER. EACH ERROR NUMBER IS ACCOMPANIED BY A SEEK MAP.

- EXAMPLE OF SEEK MAP ERROR PRINT-OUT-

```
** ER 21XX UNIT CUU, ADRS. AAAAAA.
SEEK MAP --
BIT POSITION-1  2  4  8  16 32 64 128
SEEK RESULTS-OK  CON COF DON DOF ERR +1  XXX
```

(EXAMPLE SHOWS ALL POSSIBLE MAP CHARACTERS)

- DEFINITION OF MAP CHARACTERS -

1. OK CAR AND DIF. CNTR. FUNCTIONED PROPERLY, THIS POSITION.
2. CON THIS BIT ON SOLID IN CAR.
3. COF THIS BIT OFF SOLID IN CAR.
4. DON THIS BIT ON SOLID IN DIF. CNTR.
5. DOF THIS BIT OFF SOLID IN DIF. CNTR.
6. ERR SOME OTHER ER. SUCH AS BURST CHECK OR CAN'T READ HA
7. +1 ACCESS SEEKED TO WRONG CYL BY +1 (OVERSHOOT)
8. -1 ACCESS SEEKED TO WRONG CYL BY -1 (UNDERSHOOT)
9. XXX CYL ADDRESS SEEKED - OCCURS WHEN ACCESS WENT TO THE WRONG CYLINDER, OR WHEN WRONG HA EXISTS AT A SEEKED TO CYL.

- USER OPTIONS -

1. FOR SCOPE LOOP ON ERROR CONDITION TURN ON BIT 12 (FNC 0) (RECALIBRATE, SEEK TO FIRST FAILING CYL., SEEK SAME CYL AGAIN, RECALIBRATE, SEEK, SEEK....) THE RECALIBRATE CCW COMMAND CAN BE CHANGED TO A SEEK CYL 000, BY CHANGING COMMAND CODE -13- TO -07- AT LABEL -T21C5- IN S2,R1 ROUTINE 1.
2. TO LOOP IN THIS ROUTINE SEE 3.3

2101 - SPECIAL UNIQUE MAP

PROGRAM DETECTED ERRORS DURING TEST OF CAR AND DIFF. COUNTER. EXAMINE MAP FOR UNIQUE PATTERNS LISTED BELOW.

- DIAGNOSTIC INFORMATION -

- SUSPECT INCORRECT GATED CAR OUTPUT
1. IF LAST TWO CODES IN MAP # 032 64 THEN INITIAL SEEK LATCH IS NOT TURNING ON. (FD026), CARD A1G6
 2. IF LAST TWO MAP CODES # 032 OK THEN THE INITIAL SK LATCH BLOCK TO CAR BITS 1,4,16, AND 64 IS FAILING. (FD026) CARD A1H6
 3. IF LAST TWO MAP CODES # OK 064 THEN THE INITIAL SK LATCH BLOCK TO CAR BITS. 2,8,32, AND 128 IS FAILING. (FD026) CARD A1E6

- USER OPTIONS -

SEE ER. 2100 FOR MAP DISCRIPTION AND SCOPE LOOPS

2110 - DIFFERENCE COUNTER BIT ON OR OFF SOLID.

SEEK CHECK AND SEEK INCOMPLETE ON CYLINDER SEEK COMMAND SUGGESTS ACCESS WENT TO INNER OR OUTER CRASH STOP, LIKE COUNTER CANOT COUNT TO ZERO BECAUSE SOME DIFF. COUNTER BIT IS SOLID ON.

- DIAGNOSTIC INFORMATION -

1. DIFF. CNTR. -A1J4 - (SOME BIT ON OR OFF SOLID)-(FD040)
2. SOLID SET DIFFERENCE - (FD02) NO STOP SIGNAL TO DETENT
3. SOLID RESET TO A DIFF CNTR TRIGGER FD030
4. COUNTER ZERO - (FD050) NO STOP SIGNAL TO DETENT
5. CAR OUTPUT BUS LINE 'ON' (FD026) - 2841 WILL THEN COMPUTE WRONG DIFFERENCE (ONE 'DOF' INDICATES FAILING BUS LINE 6)
6. SOLID SELECTED SET CYLINDER (FD030)

- USER OPTIONS -

SEE ER. NO. 2100 FOR SEEK MAP DESCRIPTION AND SCOPE LOOP OPTIONS.

2111 - ALL DIFF. COUNTERS ON SOLID -

GOING TO INNER CE CYLINDER ON ALL SEEKS, (DIFF. COUNTER NOT COUNTING DOWN) THEREFORE, NOT GETTING COUNTER ZERO.

- DIAGNOSTIC INFORMATION -

1. NO SET DIFFERENCE (DIFF CNTR TRIGGERS ALL LEFT ON) ALL 'DON'S (FD021)
2. SUSPECT NOT GETTING CORRECT DETENT BECAUSE OF FAILING SLOW OR INTERMEDIATE (FD050)
3. NO GATED CYL. PULSES (FD053)
4. NO FILE BUS SIGNALS (FD020)
5. SOLID INHIBIT (FD053)

- USER OPTIONS -

SEE ERROR 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS.

2170 - DIFFERENCE COUNTER BIT OFF SOLID -

PROGRAM EXECUTED CYL SEEKS TO CYLINDERS 1, 2, 4, 8, 16, 32, 64, AND 128, AND ON AT LEAST ONE SEEK, ACCESS FAILED TO MOVE, INDICATING THAT THAT BIT DID NOT GET SET ON IN DIF. CNTR.

- DIAGNOSTIC INFORMATION -

- SUSPECT.
1. DIFF. COUNTER - A1J4 (SOME BIT OFF SOLID)
 2. COUNTER RESET - A1K4 (SOME BIT NOT RESET ON)
 3. LINE DRIVERS - A1K6 -(FD026)

- USER OPTIONS -

SEE ER. NO 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS.

2311 DIAGNOSTIC

2311 DIAGNOSTIC

2121 - ALL DIFF CNTRS OFF SOLID

PROGRAM EXECUTED SERIES OF CYL. SEEKS DESIGNED TO TEST CAR AND DIFF. COUNTERS. THIS ERROR SAYS ALL DIF. COUNTERS ARE OFF.

- DIAGNOSTIC INFORMATION -

1. GETTING CONSTANT DIFFERENCE RESET (FD040) (MODULE SELECTED AND SET CYLINDER TAG TURNS ON ALL DIFF. COUNTERS).
2. NOT GETTING SET CYLINDER (FD021)
3. SOLID COUNTER ZERO (-L STOP)(ED040)
4. SOLID SET DIFFERENCE TAG (FD021)

- USER OPTIONS -

SEE ERROR NUMBER 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS.

2130 - CYL. ADDRESS. REG. BITS ON SOLID -

PROGRAM ATTEMPTED A SERIES OF PAIRS OF CYLINDER SEEKS AND ACCESS DETENTED AT WRONG CYLINDER OR WAS GOING TO POSITIVE STOP. PROGRAM CALCULATIONS INDICATE SOME CAR BIT IS ON SOLID.

- DIAGNOSTIC INFORMATION -

SUSPECT.

1. CAR BIT ON SOLID FD030
2. CAR - A1K4 - (FD030)
3. LINE DRIVERS - A1K6
4. SOLID OHA BIT CON (PRECEDED BY 'DON'S) INDICATES FAILING BIT (2841-HA051)

- USER OPTIONS -

SEE ERROR NO. 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS.

2140 - CYL ADDRESS REG BITS OFF SOLID -

AFTER PROGRAM CHECKS THAT ALL CAR BITS TURN OFF, A TEST IS MADE FOR ALL CAR BITS TURNING ON BY ATTEMPTING SELECTIVE CYLINDER SEEKS FOLLOWED BY SEEK TO CYL 16. IF ACCESS FAILS TO RETURN TO CYL 16, SOME CAR BIT IS PROBABLY FAILING TO TURN ON. THAT IS, THE ADDRESS IN CAR WAS INCORRECT.

- DIAGNOSTIC INFORMATION -

1. CAR - A1K4- SOME BIT OFF SOLID (FD030)
2. INITIAL SEEK LATCH ON SOLID (FD026)
3. NO OUTPUT FROM OHA IN 2841 (HA051 IN 2841 LOGICS)

- USER OPTIONS -

SEE ERROR NUMBER 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS.

1. 'COF' UNDER 32,64, AND OR 128 CHECK FOR LOOSE CABLES BETWEEN 2311,S AND 2841

2150 - ACCESS OVERSHOOT BY PLUS 1

A READ HA FOLLOWING A SEEK COMMAND INDICATES THAT ACCESS DETENTED ONE CYLINDER TOO FAR ON AT LEAST 3 SEEKS.

- DIAGNOSTIC INFORMATION -

1. SUSPECT NO SLOW SIGNAL (FD040)
2. SUSPECT - CYLINDER PULSES FAILING

- USER OPTIONS -

SEE ERROR NO. 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS

2160 - ACCESS UNDERSHOT BY MINUS 1 CYLINDER

A READ HA FOLLOWING A SEEK COMMAND INDICATES THAT ACCESS DETENTED ONE CYLINDER TOO SHORT ON AT LEAST 3 SEEKS

- DIAGNOSTIC INFORMATION -

1. SLOW AT 3 SOLENOID PICKED SOLID.
2. CYL. TRANSDUCER ADJUSTMENT - SUGGESTS TRANSDUCER SET TOO HIGH
3. IF DOF UNDER BIT 1 - SOLID OUTPUT FROM CAR BIT 1 (FD026 IN 2311) OR OHA BIT 1 (HA051 IN 2841)

- USER OPTIONS -

SEE ERROR NUMBER 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS

2190 - SOME OTHER SEEK ERROR -

PROGRAM HAS DETECTED SEEK ERRORS WHICH CANNOT BE CLASSIFIED INTO THE SEEK MAP CHARACTERS.

- DIAGNOSTIC INFORMATION -

1. SUSPECT HAVING TROUBLE READING HA IF ANY ERR MESSAGES ARE PRINTED IN MAP.
2. EXAMINE MAP AND DETAILED PRINTOUT FOR CLUES TO FAILURE

- USER OPTIONS -

SEE ERROR NUMBER 2100 FOR DESCRIPTION OF SEEK MAP AND SCOPE LOOPS

2201 - NO UNIT CHECK ON SEEK TO CYL 255

NO SEEK INCOMPLETE OR SEEK INCOMPLETE IS NOT GIVING GATED ATTENTION

- DIAGNOSTIC INFORMATION -

600 MS SINGLE SHOT IS NOT TIMING OUT (FD053).

1202 - DID NOT GENERATE SEEK INCOMPLETE, SEEK CHECK, AND NOT READY.

PROGRAM ATTEMPTED A SEEK TO CYL 255 AND EXPECTED SEEK INCOMPLETE, SEEK CHECK AND NOT READY.

- DIAGNOSTIC INFORMATION -

1. SEEK INCOMPLETE LATCH NOT TURNING ON (FD053)
2. USER SHOULD CHECK SENSE INFORMATION FOR FAILING BITS.

2203 - FAILED TO GET TO CYL. 000 ON RECALIBRATE

SHOULD NOT FAIL HERE - THIS COMMAND WORKED BEFORE, SECTION 1 ROUTINE 7.

2301 - SEEK INCOMPLETE DURING SINGLE CYL SEEKS

ACCESS WENT TO INNER OR OUTER CRASH STOP. (SHOULDN'T GET THIS ERROR EXCEPT ON INTERMITTENT FAILURES SUCH AS CYL. TRANSDUCER ADJUSTMENTS OR DETENT ADJUSTMENT.

2302 - UNIT CHECK ON CYL. SEEK

SHOULDN'T GET THIS ERROR EXCEPT ON INTERMITTENT TROUBLE. TRY TO CONTINUE (EXIT ERROR HALT)
NOTE. CANNOT ALWAYS DETERMINE THE WENT TO CYLINDER BECAUSE OF TROUBLE READING HOME ADDRESS AS INDICATED BY UNIT CHECK

2303 - FAILED ON SINGLE CYLINDER SEEKS, OVERSHOOT

PROGRAM WAS ATTEMPTING TO SINGLE CYLINDER SEEK FROM CYLINDER 000, 001, 002, ..., 199, 198, 197, ..., 000. THE SEQUENCE WAS BROKEN AT SOME POINT AND ERROR PRINT OUT GIVES -
1. 'WAS AT' CYL -XXXX, HD -XX
2. 'SEEK TO' CYL- XXXX, HD -XX
3. 'HA READ' CYL - XXXX, HD - XX

- DIAGNOSTIC INFORMATION -

SUSPECT

1. CYL. TRANSDUCER ADJUSTMENT
2. INCORRECT HOME ADDRESS AT FAILING CYL.

- USER OPTIONS -

SEE 3.3

2304 - ERROR ON SINGLE CYL SEEKS

PROGRAM DETECTED AN INCORRECT HA DURING SINGLE CYL. SEEK ROUTINE. HA READ INDICATES ACCESS WENT TO WRONG CYLINDER. ERROR PRINTOUT INDICATES CYLINDERS AND HEADS INVOLVED.

- DIAGNOSTIC INFORMATION -

IF HA'S ARE ALL CORRECT, STRONGLY SUGGESTS CYL. TRANSDUCER OUT OF ADJUSTMENT, ESPECIALLY IF ACCESS IS FAILING ONLY ON SINGLE CYL SEEKS.

- USER OPTIONS -

SEE 3.3

2401 -

-OR-

2402 - UNIT CHECK ON CYL SEEK TO CYL 6 OR CYL 7, 9, 11, 18, 36, 70, 76, 81, 86 AND 198.
PROGRAM ATTEMPTS A SERIES OF 20 SEEKS BETWEEN CYLINDER 6 AND 7, 9, 11, 18, 36, 70, 76, 81, 86 AND 198. A UNIT CHECK OCCURRED, CAUSING THIS ERROR PRINTOUT.

- DIAGNOSTIC INFORMATION -

1. LOOKS LIKE INTERMITTENT SEEK TROUBLE. ACCESS PROBABLY WENT TO INNER OR OUTER CRASH STOP.
2. POSSIBLY INTERMITTENT ERROR ON READ HA IF NRF OR DATA CHECK

- USER OPTIONS -

SEE 3.3

2403 -

-OR-

2404 - INCORRECT SEEK.

PROGRAM WAS TESTING FOR WORSE CASE SEEKS BY ATTEMPTING TO SEEK BETWEEN CYL. 6 AND CYL. 7, 9, 11, 18, 36, 70, 76, 81, 86 AND 198, 20 TIMES. AN INCORRECT SEEK OCCURED, AND PRINT OUT GIVES INFORMATION ON FAILURE. PROGRAM WILL EXECUTE A -RECALIBRATE- OPERATION IF CONTINUED AFTER AN ERROR.

- DIAGNOSTIC INFORMATION -

1. DETENT TIMING, ADJUSTMENT, ETC.
2. SOLID SLOW AT 3 (FD050)
3. CYL. TRANSDUCER ADJUSTMENT
4. INTERMITTENT CYL. PULSES, CAR, DIFF CNTR.

- USER OPTIONS -

SEE 3.3

2501 - UNIT CHECK ON RANDOM SEEK TEST

THIS ERROR SHOULD ONLY OCCUR ON INTERMITTENT FAILURES

- USER OPTIONS -

SEE 3.3

2502 - INCORRECT SEEK DURING RANDOM SEEK TEST

THE RANDOM SEEK ROUTINE EXECUTES A SERIES OF 500 RANDOMLY COMPUTED CYLINDER SEEKS, READING HA AFTER EACH TO VERIFY CORRECT ACCESS POSITION. THE SEQUENCE WAS BROKEN BECAUSE PROGRAM DETECTED A SEEK ERROR. (UNEQUAL HA)

- DIAGNOSTIC INFORMATION -

IF THIS IS ONLY ERROR, SUSPECT INTERMITTENT FAILURE LOOK FOR FAILURE PATTERNS IN PRINTOUTS

- USER OPTIONS -

SEE 3.3

3000 - CONTROL UNIT HANG UP

A CONTROL UNIT FAILURE OCCURED CAUSING A CONTROL UNIT HANG UP WITH CHANNEL NOT CLEARED

- DIAGNOSTIC INFORMATION -

LOOKS LIKE CONTROL UNIT TROUBLE. COULD BE PARITY ERROR

- USER OPTIONS -

1. RESTART PROGRAM AT BEGINNING OF THIS SECTION.
2. PRINT ROUTINE TITLES TO FIND OUT WHICH ROUTINE IS CAUSING PROBLEM. THIS WILL BE LAST ROUTINE TITLE PRINTOUT BEFORE ERROR OCCURS.

3100 - WRITE HEAD MAP DESCRIPTION

THE WRITE HEAD MAP IS PRINTED OUT WITH ALL WRITE TEST ERROR NUMBERS. DURING THE WRITE TEST, SEVERAL WRITE PATTERNS ARE WRITTEN ON CYLINDER 198 AND READ BACK FOR CPU COMPARISON. IF AN ERROR OCCURS, A CODE CHARACTER IS PLACED IN THE HEAD MAP AT THAT HEAD POSITION. WHEN ALL HEADS HAVE BEEN CHECKED, AN ERROR NUMBER IS PRINTED OUT, FOLLOWED BY THE WRITE HEAD MAP. PROGRAM STOPS TO ALLOW USER TO EXAMINE PRINTOUT AND CHOOSE AN OPTION TO CONTINUE.

- EXAMPLE OF WRITE HEAD MAP PRINTOUTS

(SHOWING ALL POSSIBLE MAP CHARACTERS)

```
** ER 21XX UU AAAAAA
WRITE HEAD MAP --
HEAD NUMBER ---- 00 01 02 03 04 05 06 07 08 09
WR RD RD RESULT ---- OK WX WU WS RN WW DS BC NX SE
HD 01 WR DATA XX RD DATA XX ...XX
CAW X...X CSW X...X SNS BBB...B (STATUS AND SENSE AFTER WRITE)
CAW X...X CSW X...X SNS BBB...B (STATUS AND SENSE AFTER READ)
```

- EXPLANATION OF MAP CHARACTERS -

OK - DATA READ COMPARES WITH DATA WRITTEN AND NOT UNIT CHECK
WX - NO RECORD FOUND WITH THIS HEAD ON WRITE RD (COULDN'T FIND HA)
WU - UNSAFE ON THIS HEAD DURING WRITE RD
WS - SER/DES CHECK WITH THIS HEAD ON WRITE RD
RN - READ DATA DID NOT EQUAL WRITE DATA
WW - SOME OTHER UNIT CHECK CONDITION DURING WRITE
SD - SER/DES CHECK ON ATTEMPT TO READ RD JUST WRITTEN
BC - BURST CHECK ON ATTEMPT TO READ RD JUST WRITTEN
NX - NRF ON ATTEMPT TO READ RD JUST WRITTEN
SE - SOME OTHER UNIT CHECK ON ATTEMPT TO READ RD

FOLLOWING THE HEAD MAP, SPECIFIC INFORMATION FOR EACH FAILING HEAD IS PRINTED OUT.

WR DATA WAS XX (HEX)

THE RD WRITE DATA PATTERNS USED ARE (HEX)

1. 00 (FIRST PATTERN WRITTEN)
2. FF
3. 13
4. E5 (LAST PATTERN WRITTEN) SHOULD REMAIN ON WRITE TEST CYLINDER UNTIL NEXT TEST RUN.

DATA READ WAS XX XX

(READ AREA PRESET TO FF'S)
THE HEX PATTERN ACTUALLY READ WHEN ATTEMPTING TO VERIFY THAT DATA WAS WRITTEN CORRECTLY.

CSW AND SENSE DATA (AFTER WRITE AND AFTER READ)

THE CSW IS PRINTED IN HEX
THE SENSE DATA IS PRINTED IN BINARY
READ AREA IN CORE IS SET TO FF BEFORE WRITE DATA IS READ BACK

- USER OPTIONS -

1. SCOPE LOOP
TURN ON OPTION SW 8 (FNC 0). PROGRAM WILL LOOP ON SIO WRITING WITH THE FIRST FAILING HEAD. WRITE DATA WILL BE THE PATTERN INDICATED IN PRINTOUT. (SIO SEQUENCE # SEEK HH, SEARCH-HA, WRITE RO)
2. TO LOOP IN ROUTINE, WRITING R 0 WITH ALL TEN HEADS WITHOUT CHECKING FOR ERRORS, TURN ON
3. LOOP IN ROUTINE - TURN ON S3, R1 (FNC1) AND EXIT ERROR LOOP

3101 - WRITE FAILURES ON ALL HEADS

PROGRAM ATTEMPTED TO WRITE A TEST PATTERN WITH ALL 10 HEADS. SOME COMBINATION OF ERRORS OCCURED ON ALL HEADS. THE FAILING WRITE PATTERN IS PRINTED ALONG WITH HEAD MAP

- DIAGNOSTIC INFORMATION -

1. SUSPECT NOT WRITING AT ALL AS ALL HEADS ARE FAILING. COULD BE NO SELECTED WRITE GATE (FD070)
2. TYPICAL ERROR WOULD SHOW AS-
-WROTE 00, READ XX -
INDICATING NOTHING WAS WRITTEN OVER THE OLD XX DATA PATTERN ON CYL 005

- USER OPTIONS - (SEE ERROR NO. 3100 FOR DESCRIPTION OF WRITE HEAD MAP AND SCOPE LOOPS.

3102 - UNSAFE ON ALL HEADS

PROGRAM ATTEMPTED TO WRITE RO RECORDS WITH ALL HEADS BUT DETECTED UNSAFE CONDITION ON ALL HEADS. THE RO RECORD INVOLVED IS SHOWN AS PART OF ERROR PRINTOUTS.

- DIAGNOSTIC INFORMATION -

WRITE UNSAFE - FD090 (SEE PAGE 1.3 IN MAINTENANCE MANUAL)

- USER OPTIONS -

SEE ER. NO. 3100 FOR DESCRIPTION OF WRITE HEAD MAP AND SCOPE LOOPS.

3103 - BURST CHECKS ON ALL HEADS

PROGRAM ATTEMPTED TO WRITE RO RECORDS WITH ALL HEADS AND DETECTED BURST CHECKS ERRORS ON ALL HEADS. PRINT OUT INCLUDES HEAD MAP AND RO TEST RECORD

- DIAGNOSTIC INFORMATION -

1. FAULTY WRITE DRIVER (CAUSING BURST CHECKS WHEN ATTEMPTING TO READ BACK)
2. WRITE DATA A AND B AT BASE PLATE.
3. SUSPECT SERIALIZER IN 2841 (THIS IS THE FIRST ATTEMPT TO WRITE IN THIS TEST.)

- USER OPTIONS -

SEE ERROR NO 3100 FOR DESCRIPTION OF WRITE HEAD MAP AND SCOPE LOOPS.

3104 - NO RECORD FOUND ON ALL HEADS - (READ RO)

PROGRAM ATTEMPTED TO WRITE RO RECORDS WITH ALL HEADS. WHEN ATTEMPTING TO READ THE RECORDS BACK (READ RO), NRF OCCURED ON ALL HEADS

- DIAGNOSTIC INFORMATION -

NO RECORD FOUND INDICATES NO DATA GETTING TO S/D IN 2841. HOWEVER, WE WERE ABLE TO READ HA BEFORE (MAYBE READ RO COMMAND NOT WORKING)

- USER OPTIONS.

SEE ERROR NO. 3100 FOR DESCRIPTION OF HEAD MAP AND SCOPE LOOPS.

3105 - 10 NO RECORD FOUNDS ON SEARCH HA

- DIAGNOSTIC INFORMATION -

PROGRAM CAN'T FIND HOME ADDRESS OR CYLINDER 198 HOME ADDRESSES MAY BE MISSING

- USER OPTIONS -

SEE ERROR 3100

3106 - READ DATA NOT EQUAL WRITE DATA ON ALL HEADS

LOOKS LIKE NOT ACTUALLY WRITING, THEREFORE, RO DATA THAT WAS ON THE DISC WILL NOT BE DESTROYED. AFTER WRITING IS COMPLETED, PROGRAM WILL READ THE DATA CORRECTLY. BUT SINCE THE NEW DATA WAS NOT ACTUALLY WRITTEN, THIS ERROR WILL RESULT.

- DIAGNOSTIC INFORMATION -

LOOKS LIKE NO WRITE CURRENT
CHECK WRITE DRIVER
(HEADS 1,2,5,6,9, INDICATES A SIDE WRITE DRIVER, HEADS 0,3,4,7,8 B SIDE DRIVER)

- USER OPTIONS -

SEE ERROR 3100 FOR READ HEAD MAP AND SCOPE LOOPS

3107 - SER/DES CHECKS ON ALL HEADS

INDICATES 2841 PROBLEM

- DIAGNOSTIC INFORMATION -

SER/DES IN 2841

- USER OPTIONS -

SEE ERROR NUMBER 3100 FOR MAP DESCRIPTION AND SCOPE LOOPS

3108 - WRITE ERROR ON ONE HEAD

PROGRAM WENT THROUGH WRITE TEST, WRITING RO RECORDS FROM ALL HEADS. SOME ERROR OCCURED ON ONE HEAD WHILE ALL OTHER HEADS WROTE CORRECTLY. HEAD MAP SHOULD SHOW WHICH HEAD AND TYPE OF ERROR.

- DIAGNOSTIC INFORMATION -

1. ALL HEADS READ HA OK (IF THIS IS ONLY ERROR TYPEOUT)
2. TROUBLE MUST BE IN WRITE OR ERASE COIL IN FAILING HEAD (BAD HEAD OR LINES FROM THAT HEAD (WRITE ONLY))
3. POSSIBLE INTERMITTENT WRITE OR READ TROUBLE OR DISC SURFACE WITH THIS HEAD AT CYL 005

- USER OPTIONS -

SEE ERROR NO. 3100 FOR WRITE HEAD MAP DESCRIPTION AND SCOPE LOOPS

3109 - TWO OR MORE BURST CHECKS OR NO. REC. FOUND.

- DIAGNOSTIC INFORMATION -

DATA CLOCKING IN 2841

3110 - MORE THAN ONE HEAD WITH WRITE ERRORS

3111 - CAN'T READ CORRECT HA AFTER TRY TO SEEK TO CYL. L98

(THIS SHOULDNT HAPPEN HERE - READ HA HAS BEEN TESTED AND SEEK HAS BEEN TESTED)
EITHER NO HA ON CYL 198 OR INTERMITTENT READ OR SEEK.

- USER OPTIONS -

RE-RUN SECTION 1, RTN 6 AND SECTION 2, ALL RTNS.

3112 - TIME OUT ON SEEK HH, SEARCH HA, WR. RO

HANG UP CONDITION IN 2841
THIS CONDITION IS CHECKED OUT AT BEGINNING OF THIS ROUTINE TO INSURE AGAINST HANGUP DURING WRITE TEST
A HANG UP AT THIS TIME SUGGESTS PROBLEM UNIQUE TO WRITE RO COMMAND

- USER OPTIONS -

-DETERMINE IF CONTROL UNIT IS HUNG UP IN A LOOP, THIS LOOP SHOULD INDICATE ERROR
SEE ERROR 3100 FOR SCOPE LOOP OPTIONS

3113 - UNIT CHECK ON SEEK TO CYL. 198 AND READ HA

(THIS SHOULDNT HAPPEN AT THIS POINT IN PROGRAM)
SEEK AND READ HA WERE CHECKED IN SECTIONS 0 AND 1.
RERUN TEST FROM BEGINNING.

3201 - UNIT CHECK ON MULTI - TRACK OPERATION

PROGRAM WAS TESTING HEAD ADVANCE BY ATTEMPTING A MULTI-TRACK READ HA. UNIT CHECK OCCURED, GIVING THIS ERROR NUMBER.

- DIAGNOSTIC INFORMATION -

EXAMINE CSW DATA TO DETERMINE WHERE CHAIN WAS BROKEN

- USER OPTIONS -

1. LOOP ON SID - PROGRAM WILL LOOP ON MULTI-TRACK READ CHAIN.
2. LOOP ON ERROR. PROGRAM WILL LOOP ON MULTI TRACK OPERATION (WITH ERROR PRINTOUTS)
3. SEE 3.3 FOR ERROR EXIT OPTIONS

3202 - HAR ADVANCE FAILURE

HOME ADDRESSES READ ON THE MULTIPLE-TRACK READ HOME ADDRESS WERE INCORRECT.

- DIAGNOSTIC INFORMATION -

HAR ADV. MAP XX XX ... XX XX
THE HAR ADVANCE MAP INDICATES THE HOME ADDRESSES THAT WERE READ (HH PORTION ONLY)
SUSPECT -
1. HAR AC ADVANCE (FD060)
2. HAR ADVANCE SIGNAL (FD060)
3. HAR CARD

- USER OPTIONS -

SAME AS ERROR 3201

3301 - FAILED TO SELECT HEAD 9

PROGRAM WAS ATTEMPTING TO SET UP FOR CHECKING END OF CYLINDER BUT COULD NOT GET HEAD 9 SELECTED.

- DIAGNOSITC INFORMATION -

MUST BE INTERMITTENT ERROR BECAUSE HEAD SELECT WAS TESTED IN ROUTINE 6, SECTION 0. READ HA FROM ALL HEADS.
RERUN SECTION 0.

3302 - UNIT CHECK WITH NOT END OF CYLINDER

CHAIN WAS BROKEN ON SET UP FOR CHECKING END OF CYL. SUSPECT INTERMITTENT ERROR.

- USERS OPTIONS -

SEE 3.3

3303 - NO END OF CYLINDER

WHEN HEAD ADVANCED FROM HEAD 9 TO HEAD 10, NO END OF CYL. WAS GENERATED.

- DIAGNOSTIC INFORMATION -

SUSPECT END OF CYL. AND CIRCUIT (FD060)

- USERS OPTIONS -

SEE 3.3

3304 - NO HEAD ADVANCE

SEE 3303 FOR DESCRIPTION OF OPERATION

- DIAGNOSTIC INFORMATION -

SUSPECT NO HAR ADVANCE (FROM HEAD 9 TO HEAD 10)

- USER OPTIONS -

SEE 3.3

3401 - NO TRACK OVERRUN BIT

PROGRAM ATTEMPTED TO WRITE A 4500 BYTE RECORD AS PART OF DISK RPM TEST LOOKS LIKE ALL 4500 BYTES WERE WRITTEN - OR OVER RUN IS NOT WORKING. 4500 BYTES SHOULD NOT BE WRITTEN UNLESS DISK IS RUNNING VERY SLOW.

3402 - DISK RPM IS BELOW SPEC.

DISK ROTATION SHOULD BE 2400 RPM.
TOLERANCE AT 1 PERCENT SAYS ANY RPM LOWER THAN 2376 IS BELOW SPEC.
CHECK - BELT SLIPPING
BRAKE DRAG
SPINDLE BEARINGS, ETC.

PHASE B

1101 - CC 1 ON TEST I/O

DO NOT HAVE UNIT CHECK, DVC. END, OR BUSY. EXAMINE STATUS AND SENSE DATA FOR INDICATION OF FAILURE.
- TEST I/O AFTER POWER OFF/ON -

1102 - CC 2 OR 3 ON TEST I/O

SUBCHANNEL OR CHAN. BUSY OR UNIT ADDRESS NOT RECOGNIZED.

1103 - NOT READY OR NOT ON LINE AFTER POWER OFF - ON.

PROGRAM HANGS IN A TEST I/O LOOP WAITING FOR READY AND ON LINE. AFTER 2 MINUTES, PROGRAM TIMES OUT AND GIVES THIS ERROR NUMBER. PROGRAM ALLOWS USER A MAXIMUM OF 1 MIN. TO POWER DOWN AND BACK UP. THIS NUMBER MAY OCCUR IF THIS REQUIREMENT IS NOT MET. BE SURE YOU FOLLOWED DIRECTIONS IN REF.A.

- DIAGNOSTIC INFORMATION -

SUSPECT SWITCH EFFECTIVE LATCH HOLDING FILE IN DISABLE CONDITION. DETERMINE CAUSE OF NOT READY OR NOT ON LINE.
1. TURN SECTION SENSE SWITCH 1 ON TO LOOP ON ERROR.

1104 - UNIT CHECK ON POWER OFF TEST.

PROGRAM IS LOOKING FOR UNIT CHECK WHEN USER TURNS FILE DRIVE MOTOR OFF PER REF. A.
SUSPECT USER DID NOT TURN DRIVE SWITCH OFF-ON WITH-IN THE ONE MINUTE TIME LIMIT, OR DID NOT LEAVE PROCESSOR RUNNING WHILE TURNING DRIVE OFF-ON.

1105 - FAILED ON POWER UP SEEK TO CYL. 00. DURING POWER OFF-ON TEST. PROGRAM DETECTED THAT ACCESS DID NOT POWER UP SEEK TO CYL 00. PROGRAM PRINTS HA FROM CYLINDER ACCESS WENT TO.

1201 - SOME CHANNEL STATUS OTHER THAN UNIT STATUS PENDING AFTER START I/O

FILE METER SW ON DISABLE SO SHOULD GET UNIT STATUS PENDING
DISABLE SWITCH IS NOT CAUSING DISABLE CONDITION (FD097)

1202 - NO UNIT CHECK OR WRONG SENSE DATA FOR DISABLE CONDITION

PROGRAM EXPECTS SENSE DATA - READY, INTERVENTION REQUIRED, AND NOT ON LINE).

1203 - CONDITION CODE 2 OR 3 AFTER METER SWITCH RETURNED TO ENABLE.

1204 - UNIT STATUS PENDING ON TEST I/O AFTER ENABLING METER SWITCH

1301 - SOME STATUS OTHER THAN UNIT STATUS PENDING AFTER DISK DRIVE STOP BUTTON PRESSED.

(DID YOU POWER DOWN WITH CPU STOPPED)

1302 - UNIT CHECK OFF OR WRONG SENSE ON START I/O (DISK DRIVE STOPPED)

SHOULD HAVE INTERVENTION REQUIRED ONLY.

1303 - SOME STATUS OTHER THAN UNIT STATUS PENDING ON TEST I/O AFTER POWER UP.

1304 - UNIT CHECK OR NO DEVICE END AFTER POWER UP AT DISK DRIVE

1305 - WRONG SENSE ON POWER UP -

PROGRAM EXPECTS INTERVENTION REQUIRED,
READY, AND ON LINE

1401 - FAILED TO HOLD ENABLE CONDITION

PROGRAM DETECTED UNIT CHECK OR WRONG SENSE INFORMATION WHILE TESTING
METER OUT CIRCUITS.
METER OUT SHOULD HOLD DEVICE IN THE ENABLE CONDITION EVEN THOUGH
METER SWITCH IS IN DISABLE POSITION.
(LOGIC PAGE FD097)

1402 - FAILED TO ENABLE (SHOULD NOT HAVE DISABLED)

1601 - CHANNEL NOT OPERATIONAL ON START I/O

- USER OPTIONS-
TRY RESET-RESTART

1602 - NO INTERRUPT RECEIVED FROM START I/O

1701 - TIMEOUT ERROR OCCURED

- USER OPTIONS-

1. TRY RUNNING ROUTINE AGAIN
2. RE-RUN COMPLETE 2311 TEST TO FIND ERROR

1702 - CHANNEL NOT OPERATIONAL

- USER OPTIONS-

1. SEE 1701 OPTIONS
2. RUN SELECTOR CHANNEL DFT (PID 0810)

1703 - UNIT CHECK ON WRITE HA SID

- USER OPTIONS-

SEE 1701 OPTIONS

5. COMMENTS

5.1 DETAILED DESCRIPTION OF PROGRAM ROUTINES

PHASE A

SECTION 1.

ROUTINE 1. STATUS CHECK

THIS ROUTINE INTERROGATES THE CHANNEL STATUS BEFORE AND AFTER DO-
ING A SENSE WITH RESET ERROR PRINTOUTS RESULT FROM CC 263 OR CC1
AFTER ATTEMPTING TO RESET THE STATUS.

ROUTINE 2. TEST I/O.

THIS ROUTINE WILL EXECUTE A TEST I/O TO DETERMINE THE STATUS OF
THE ACCESS. THIS IS THE FIRST -START I/O- INSTRUCTION THAT IS
EXECUTED AND WILL USE A NOP CCW. THIS COMMAND SHOULD GO THROUGH
THE 284L INITIAL SELECTION SEQUENCE, THE INITIAL STATUS PRESENTA-
TION AND THE ENDING PROCEDURE. IF PROGRAM RECEIVES CONDITION CODE
-0- ON TEST I/O, THEN THE DEVICE IS READY AND AVAILABLE. IF
CONDITION CODE IS -1- AND UNIT CHECK IS ON IN CSW, THEN THE
ROUTINE WILL ISSUE A SENSE COMMAND AND EXAMINE THE SENSE BYTES
FOR UNUSUAL CONDITIONS.
CONDITIONS CHECKED--
NO SELECT LOCKS
FILES ON-LINE
READY (DETENTED AT SOME CYLINDER)

ROUTINE 3. NO-OP.

THIS ROUTINE WILL EXECUTE A NO-OPERATION COMMAND. MODULE SELECT
AND HEAD SELECT ARE THE ONLY FILE LINES ACTIVATED.
NOP --- IS AN IMMEDIATE COMMAND
CONDITIONS CHECKED--
START I/O COMMAND SEQUENCE
2841 INITIAL SELECTION AND ENDING PROCEDURE

ROUTINE 4. SENSE I/O.

THIS ROUTINE WILL PERFORM A SENSE I-O OPERATION. THIS CHECKS THAT
WE CAN TRANSFER DATA FROM THE 2841 TO THE CHANNEL AND PROCESSOR.
THE PROGRAM WILL REQUEST THAT -6- BYTES BE SENT.
CONDITIONS CHECKED--
DATA TRANSFER FROM 2841 TO PROCESSOR

ROUTINE 5. COMMAND EXIT.

THIS ROUTINE WILL PERFORM THE FOLLOWING FILE COMMANDS TO CHECK
THAT THEY CAN BE EXECUTED WITHOUT THE CONTROL UNIT -HANGING UP-.
NO CHECK IS MADE TO DETERMINE IF THE COMMANDS FUNCTIONED
PROPERLY. THE ONLY THING EXPECTED IS THAT THE CONTROL UNIT AND
FILE BECOME AVAILABLE (CC 0 ON TIO) WITHIN 2 SECONDS AFTER GIVING
THE COMMAND.
CONDITIONS CHECKED--
CONTROL UNIT HANG-UPS
SET DIFFERENCE
ATTENTION FROM 2311
COMMANDS USED--
READ HOME ADDRESS
CONTROL HEAD SEEK
CONTROL CYLINDER SEEK
RECALIBRATE

ROUTINE 6, READ HEAD MAP.

THIS ROUTINE WILL CONSTRUCT A MAP USING EACH HEAD FROM 00 TO 09. THE RESULT OF A READ HOME ADDRESS IS CODED AND STORED IN A MAP (ARRAY). AFTER THE MAP IS CONSTRUCTED (ALL HEADS USED), THE PROGRAM DETERMINES IF AN ERROR OCCURRED AND IF SO ATTEMPTS TO BREAK THE ERROR DOWN INTO LOGICAL AREAS. THE MAP IS PRINTED OUT IF ANY ERRORS ARE DETECTED ALONG WITH AN APPROPRIATE ERROR NUMBER.

EQUIPMENT CHECKED--
 READ AMPLIFIER
 HEAD ADRS REG
 HAR DECODE
 HEAD SELECTION
 READ HEAD
 DATA TRANSFER
 SOME BUS AND TAG LINES
 2841 SER/DES CLOCK (VF0)
 HEAD ADJUSTMENT

ROUTINE 7, RECALIBRATE

THIS ROUTINE WILL EXECUTE THE RECALIBRATE COMMAND AND CHECK FOR THE FOLLOWING---ACCESS IS OPERATIVE WHILE CARRIAGE IS IN MOTION--THE DETENT IS BEING PULLED (LOSS OF READY)--SEEK COMPLETE AFTER RECEIVING DEVICE END, THE ROUTINE WILL PERFORM A READ HOME ADDRESS TO CHECK THE CARRIAGE POSITION AFTER RECALIBRATE.

CIRCUITS CHECKED--
 FILE BUS 6
 CONTROL TAG
 ON LINE
 RETURN TO ZERO
 SEEK START
 SEEK READY

SECTION 2

ROUTINE 1, DIFFERENCE COUNTER AND CAR.

THIS ROUTINE WILL PERFORM SEVERAL COMMAND CHAINS OF THE TYPE--
 RECALIBRATE
 CONTROL CYLINDER SEEK
 READ HOME ADDRESS

BY USING DIFFERENT COMBINATIONS OF CYLINDERS MALFUNCTIONS IN THE DIFFERENCE COUNTER, CYLINDER ADDRESS REGISTER, INITIAL SEEK LATCH, AND COUNTER DECODE LOGIC CAN BE ANALYZED AS TO THE CAUSE OF THE FAILURE. A SEEK HEAD MAP IS PRINTED IF AN ERROR IS DETECTED.

DIFFERENCE CNTR
 CAR
 BUS LINES
 DIFF CNTR DECODE
 INITIAL SEEK LATCH
 DETENT
 LINE DRIVERS
 CYLINDER TRANSDUCER

ROUTINE 2, SEEK INCOMPLETE.

THIS ROUTINE WILL PERFORM A SEEK TO CYLINDER 255 TO FORCE ACCESS CARRIAGE TO GO TO INNER POSITIVE STOP. THE CONTROL UNIT SHOULD INDICATE THAT THE FILE HAS LOST READY, SEEK CHECK, AND SEEK INCOMPLETE. AFTER THE CORRECT STATUS HAS BEEN RECEIVED, THE PROGRAM WILL PERFORM A RESTORE AND CHECK THAT IT FUNCTIONED CORRECTLY.

ROUTINE 3, SEQUENTIAL INCREMENT/DECREMENT SEEK.

THIS ROUTINE CHECKS THE CYLINDER AND DETENT TRANSDUCER ADJUSTMENTS BY PERFORMING SEQUENTIAL SEEK COMMANDS AND CHECKING CORRECT POSITION BY READING HOME ADDRESS. EACH SEEK COMMAND WILL SEEK TO THE NEXT HIGHER CYLINDER. SUCH AS, CYLINDER 1, 2, 3, 4, ... ETC. THIS IS ALSO CHECKED IN THE REVERSE DIRECTION. IF THE USER IS USING THE CE DISK PACK, WHEN THE PROGRAM SEEKS TO ONE OF THE ALIGNMENT CYLINDERS (2, 3, 4, 71, 72, 73, 74, 75, 200, 201, AND 202) AND TRIES TO READ HA. IF AN ERROR IS DETECTED (NRF, BURST CHK) THE CYLINDER COMPARE WILL BE BYPASSED.

CIRCUITS CHECKED--
 CYLINDER AND DETENT TRANSDUCER

ROUTINE 4, WORST CASE ACTUATOR.

THIS ROUTINE WILL CONTINUOUSLY SEEK BETWEEN CYLINDER 006 AND CYLINDERS 7, 9, 11, 18, 36, 70, 76, 81, 86 AND 198 FOR APPROXIMATELY 20 SEEKS.

THIS IS A STRESS TEST ON THE ACTUATOR AND FAILURES WILL SHOW UP AS OVERSHOTS BY 1 OR MORE CYLINDERS.

COMPONENTS CHECKED--
 FORWARD SOLENOID
 REVERSE SOLENOID
 INTERMEDIATE, SLOW, AND STOP
 CYLINDER TRANSDUCER
 CAR
 DIFF CNTR

ROUTINE 6, RANDOM SEEKS.

THIS ROUTINE WILL PERFORM CONTINUOUS RANDOM SEEKS FOR APPROXIMATELY 500 CYLINDERS. AFTER DETENTING AT EACH RANDOM CYLINDER, THE HOME ADDRESS IS READ WITH A RANDOM HEAD TO CHECK ACCESS LOCATION. THE POWER RESIDUE METHOD IS USED TO GENERATE RANDOM NUMBERS. THE INITIAL STARTING NUMBER INTO THE RANDOM GENERATOR IS ALSO RANDOMIZED. BY USING A PROGRAM COUNTER TO WAIT FOR THE FIRST BYTE TO TRANSFER IN A - RECALIBRATE, READ HA CHAIN. THIS COUNTER IS USED AS THE STARTING NUMBER.

SECTION 3

ROUTINE 1, WRITE TEST.

THIS ROUTINE WILL CONSTRUCT A MAP USING EACH HEAD FROM 00 TO 09. THE RESULTS OF A WRITE RECORD 0 FOLLOWED BY READ RECORD 0 ARE CODED AND STORED IN A MAP (ARRAY). AFTER THE MAP IS CONSTRUCTED (ALL HEADS USED), THE PROGRAM DETERMINES IF AN ERROR OCCURRED AND IF SO ATTEMPTS TO BREAK THE FAILURE INTO A LOGICAL AREA. THE MAP IS PRINTED OUT IF ANY ERRORS WERE DETECTED ALONG WITH AN APPROPRIATE ERROR NUMBER. THE CHANNEL WILL SEND -100- BYTES OF R-0 DATA TO THE 2841, BUT THE DATA LENGTH IN THE R-0 COUNT IS

3600 BYTES. SO THE 2841 WILL WRITE AND READ BACK A FULL TRACK RECORD.

RECORD 0 DATA PATTERNS-----

HEX-
00
FF
13
E5

EQUIPMENT CHECKED--

WRITE DRIVER
ERASE DRIVER METER SWITCH TO ENABLE
2841 SERIALIZER/DESERIALIZER
HEADS
DATA TRANSFER
SOME BUS & TAG LINES

ROUTINE 2, HAR AC ADVANCE

THIS ROUTINE WILL CHECK THE AC CONDITIONS OF THE HEAD ADDRESS REGISTER. THIS AC CONDITION IS USED TO ADVANCE HAR TO THE NEXT HEAD. TEN READ HOME ADDRESS COMMAND ARE CHAINED WITH THE MULTIPLE TRACK BIT ON. THE CPU WILL THEN CHECK THE HA-S READ.

EQUIPMENT CHECKED

HAR
HAR CARD

ROUTINE 3, END OF CYLINDER.

THIS ROUTINE WILL CHECK THE END OF CYLINDER SIGNAL. THE PROGRAM WILL SELECT HEAD 9 OF CYLINDER 000 THEN READS THE HOME ADDRESS TO INSURE THE CORRECT CYLINDER AND HEAD WERE SELECTED. THEN TWO CHAINED READ HOME ADDRESS COMMANDS, WITH MULTIPLE TRACK BIT ON FOR SECOND COMMAND, ARE EXECUTED. THIS SHOULD FORCE HAR TO ADVANCE FROM HEAD 9 TO HEAD 10 THUS TURNING ON END OF CYLINDER.

ROUTINE 4, RPM TEST

THIS ROUTINE IS DESIGNED TO TEST FILE ROTATION SPEED. CALCULATIONS ARE BASED ON A WRITE TIME OF 800 NANO-SECONDS PER BIT AND ASSUMES THE VFO IS OPERATING WITHIN ITS SPECIFIED TOLERANCE.

A TRACK OVERRUN CONDITION IS FORCED BY WRITING A 4000 BYTE RECORD 128 TIMES AND TAKING AN AVERAGE OF THE RESIDUAL COUNTS. FROM THIS THE PROGRAM CALCULATES THE NUMBER OF BYTES ACTUALLY WRITTEN AND CONVERTS IT TO RPM. THIS CALCULATED RPM IS THEN CHECKED FOR A TOLERANCE LIMIT AND THE RESULTS ARE PRINTED OUT. NO CHECK IS MADE FOR A DRIVE BEING TOO FAST SINCE THIS CONDITION IS HIGHLY IMPROBABLE.

EQUIPMENT CHECKED

BELT SLIPPING
BRAKE DRAG
SPINDLE BEARINGS

PHASE B

SECTION 1

ROUTINE 1, POWER OFF-ON, CPU RUNNING (OPTIONAL)

THIS ROUTINE CHECKS THE CAPABILITY OF A 2311 TO BE POWERED DOWN AND POWERED UP WHILE THE CPU IS ATTEMPTING TO COMMUNICATE WITH IT. ALSO POWER-UP SEEK TO CYLINDER 00, HEAD 00 IS CHECKED.

RUNNING THE ROUTINE--

WHEN 'POWER DOWN THEN POWER UP UNIT XX' MESSAGE IS PRINTED, PERFORM THE FOLLOWING-

1-DO NOT STOP CPU FROM RUNNING
2-PRESS DISK DRIVE STOP-START BUTTON TO STOP DISK DRIVE MOTOR
3-PRESS DISK DRIVE STOP-START BUTTON TO START DISK DRIVE MOTOR

PROGRAM WILL AUTOMATICALLY PROCEED UPON RECEIVING COND CODE 0 ON TEST I/O AFTER DISK DRIVE BECOMES READY. PROGRAM WILL READ HA AND VERIFY POWER-UP SEQUENCE.

ROUTINE 2, METER SWITCH DISABLE-ENABLE. (OPTIONAL)

THIS ROUTINE MAKES CERTAIN THAT THE DEVICE METER SWITCH IS FUNCTIONING PROPERLY. THAT IS WHEN THE DEVICE METER SW IS IN THE DISABLE POSITION THE 2311-2841 SHOULD INDICATE MANUAL INTERVENTION, READY, AND NOT ON-LINE. WHEN SWITCH IS PUT BACK IN THE ENABLE POSITION SHOULD INDICATE READY AND ON-LINE.

** NOTE ROUTINE 2 INITIATES A DELAY IN THE START I/O SUBROUTINE. THIS DELAY IS NECESSARY BECAUSE OF THE 15 MS DELAY OF CHANNEL END WHEN USING THE RECALIBRATE ARM COMMAND.

RUNNING THE ROUTINE--

WHEN THE 'STOP CPU, DISABLE FILE XX THEN START CPU' MESSAGE IS PRINTED, PERFORM THE FOLLOWING-

1-PRESS CPU STOP KEY
2-SET DEVICE METER SWITCH OF DISK TO DISABLE
3-PRESS CPU START KEY
4-EXIT HALT LOOP

ROUTINE WILL NOW CHECK DISABLE STATUS

WHEN THE 'STOP CPU ENABLE FILE XX THEN START CPU' MESSAGE IS PRINTED, PERFORM THE FOLLOWING-

1-PRESS CPU STOP KEY

2-SET DEVICE METER SWITCH TO ENABLE
3-PRESS CPU START KEY
4-EXIT HALT LOOP

ROUTINE NOW CHECKS ENABLE STATUS

ROUTINE 3, POWER OFF/ON STATUS (OPTIONAL)
THIS ROUTINE WILL CHECK INTERVENTION REQUIRED AND NOT-READY TO
READY STATUS VIA THE 2311 START/STOP SWITCH.

** NOTE ROUTINE 3 INITIATES A DELAY IN THE START I/O SUBROUTINE.
THIS DELAY IS NECESSARY BECAUSE OF THE 15 MS DELAY OF
CHANNEL END WHEN USING THE RECALIBRATE ARM COMMAND.

RUNNING THE ROUTINE--

WHEN THE 'STOP CPU-POWER DOWN UNIT XX' MESSAGE IS
PRINTED, PERFORM THE FOLLOWING-

- 1-PRESS THE CPU STOP KEY
- 2-PRESS DISK START/STOP KEY TO STOP DISK DRIVE MOTOR.
- 3-PRESS CPU START KEY, THEN EXIT WAIT LOOP

ROUTINE NOW CHECKS THE NOT READY STATUS OF THE 2311

WHEN THE 'STOP CPU-POWER UP UNIT XX' MESSAGE IS PRINTED

PERFORM THE FOLLOWING-

- 1-PRESS THE CPU STOP KEY
- 2-PRESS DISK START/STOP KEY TO START DISK DRIVE MOTOR.
- 3-AFTER 2311 BECOMES READY-DEPRESS CPU START KEY, THEN
EXIT WAIT LOOP.

ROUTINE WILL NOW CHECK THAT 2311 HAS BECOME READY

ROUTINE 4, METER INTERLOCK (OPTIONAL)

THIS ROUTINE WILL CHECK THE INTERLOCK STATUS OF
DEVICE METER SWITCH WHILE CPU IS IN RUN STATE.
IF THE CPU METER IS RUNNING, TURNING THE FILE METER SW TO
DISABLE SHOULD HAVE NO EFFECT ON THE FILE METER.

SINCE THE OBJECTIVE IS TO CHANGE THE FILE METER SW
WHILE THE CPU IS RUNNING, PERFORM THE FOLLOWING-

1. DISABLE METER SWITCH
2. EXIT WAIT LOOP
3. ENABLE METER SWITCH
4. EXIT WAIT LOOP

IF METER INTERLOCK FAILS A MESSAGE INDICATING FAILURE
WILL BE PRINTED.

ROUTINE 5, TRACKING ADJUSTMENT

THIS ROUTINE IS DESIGNED TO ASSIST THE FIELD ENGINEER
IN MAKING THE TRACKING ADJUSTMENT AS OUTLINED IN THE FIELD
ENGINEERING MAINTENANCE MANUAL. THE ROUTINE USES THE
FOLLOWING HEAD SELECTION SEQUENCE 1,2,5,6,9,0,3,4,7,8.
THIS SEQUENCE WILL FACILITATE ADJUSTMENT BY SEPARATING THE
HEADS ACCORDING TO THEIR TERMINAL BLOCK LOCATION. THE
PROGRAM WILL SELECT THE NEXT HEAD IN THE SEQUENCE EACH
TIME CE LEVEL INTERRUPT IS GENERATED, AT WHICH TIME A
SEEK TO CYLINDER 73 IS EXECUTED FOR THE SELECTED HEAD AND
THE PROGRAM GOES INTO A READ LOOP FOR SCOPING AND ADJUSTMENT
PURPOSES. AFTER EACH OF THE TEN READ-WRITE HEADS HAS BEEN
SELECTED, THE NEXT CE INTERRUPT WILL RESULT IN TEN SEEKS
TO CYLINDERS 0 AND 201 AND THEN A SEEK BACK TO CYLINDER 73
SO THAT THE SELECTION SEQUENCE CAN BE REPEATED TO ALLOW
ALIGNMENT TO BE RECHECKED.

**CAUTION- THIS ROUTINE MODIFIES LOCATIONS 1 AND 2
SO THAT HEADS CAN BE SWITCHED REMOTELY
VIA CE LEVEL INTERRUPTS. LOCATIONS 1
AND 2 WILL BE RESTORED IF THE ROUTINE

ENDS NORMALLY. IF AN ABNORMAL END OCCURS
RELOAD THIS DFT OR RESTORE LOCATIONS 1
AND 2 FROM LOCATION 'T455V'.

OPERATING PROCEDURES FOR TRACKING ADJUSTMENT ROUTINE.

1. PROGRAM SEEKS TO CYL 073 AND BEGINS BY SELECTING
HEAD 1 AND CPU RUNNING WITH CONTINUOUS READ GATE ON.
2. ADJUST HEAD 1 PER INSTRUCTIONS IN MAINTENANCE MANUAL,
(PAGE 4.24)
3. TO ADVANCE TO NEXT HEAD, PRESS CE INTERRUPT BUTTON.
HEAD PRINTS OUT AND CPU STARTS RUNNING WITH
CONTINUOUS READ GATE AND HEAD 2 SELECTED.
4. HEADS ARE SELECTED IN THE FOLLOWING ORDER-
SIDE A 1,2,5,6,9. SIDE B 0,3,4,7,8.
5. WHEN ALL HEADS HAVE BEEN ADJUSTED, PROGRAM EXECUTES 10
SEEKS AFTER WHICH ALL HEADS CAN BE CYCLED AGAIN
AND ADJUSTMENTS CAN BE RECHECKED.

ROUTINE 6, SEEK BETWEEN ANY 2 CYLINDERS.

THIS ROUTINE WILL ISSUE SEEK COMMANDS TO A 2311 DISK FILE.
THE ARGUMENTS OF THESE SEEK COMMANDS ARE SET UP BY THE
USER VIA THE DATA ENTRY SWITCHES, USING PROGRAM FUNCTION 3.
BITS 0-7 SPECIFY THE FIRST CYLINDER AND BITS 8-15 SPECIFY
THE SECOND CYLINDER. THE CYLINDERS CAN BE CHANGED AT ANY
TIME DURING TEST BY USING OPTION SWITCH 3 AND THE DATA
ENTRY SWITCHES.

THIS ROUTINE SERVES AS A SCOPING LOOP, AND THE HOME ADDRESS
AT THE DETENTED CYLINDER IS NOT VERIFIED AFTER A SEEK.

TO RUN ROUTINE--

1. SELECT RTN 16
2. SELECT DEVICE (SW FUNCTION 2)
3. SELECT DESIRED SEEK CYLINDERS (SW FUNCTION 3)
4. EXIT WAIT LOOP WITH BIT 9 ON

TO EXIT ROUTINE--

TURN OFF BIT 9, SWO

COMMAND SEQUENCE--

START I/O - SEEK CYL IN BITS 0-7
START I/O - SEEK CYL IN BITS 8-15

IF SIO ERROR IS DETECTED, THE ROUTINE WILL PERFORM
A RECALIBRATE AND RETRY THE SEQUENCE.

IF 10 ERRORS ARE DETECTED DURING AN ATTEMPT TO EXECUTE
A SEQUENCE OF SEEKS, A 'HARD ERROR' MESSAGE IS PRINTED
AND THE ROUTINE IS EXITED.

ROUTINE 7, WRITE HOME ADDRESSES ON ANY ONE CYLINDER.

THIS ROUTINE WILL WRITE HOME ADDRESSES ON ANY DESIRED
CYLINDER.

THE CYLINDER ARGUMENT IS SET UP BY THE USER VIA THE DATA
ENTRY SWITCHES, USING OPTION SWITCH 3. BITS 8-15
OF THE SWITCHES CONTAIN THE CYLINDER TO BE USED BY
THE ROUTINE.

HOME ADDRESSES WRITTEN ARE READ BACK AND VERIFIED. IF AN
ERROR IS DETECTED, THE HA WRITTEN AND READ IS PRINTED.

OPTION SWITCH 3 AND THE DATA ENTRY SWITCHES CAN BE USED TO CHANGE THE SPECIFIED CYLINDER AT ANY TIME DURING TESTING.

THE ROUTINE DOES NOT CHECK THE CYLINDER SPECIFIED TO DETERMINE IF IT'S AN ALIGNMENT CYLINDER, SO THE USER SHOULD BE CAREFUL AS TO WHICH CYLINDER HE SELECTS.

TO RUN ROUTINE--

1. SELECT RTN 17
2. SELECT DEVICE ADDRS (SW FUNCTION 2)
3. SELECT DESIRED CYLINDER IN BITS 8-15 OF FUNCTION SW 3
4. EXIT HALT LOOP WITH BIT 9 ON

TO EXIT ROUTINE--

TURN OFF BIT 9, SW0

COMMON SUBROUTINES

1. GET SENSE

THIS SUBROUTINE IS USED BY MOST ROUTINES TO GET FOUR -4- SENSE BYTES OF ACCESS STATUS. AFTER THE SUBROUTINE HAS DONE THE START I/O AND CHECKED THE SENSE COMMAND HAS BEEN ACCEPTED, IT WILL WAIT IN A TEST I/O - BRANCH CONDITION CODE 2 LOOP FOR THE 4 BYTES TO TRANSFER. THE PROGRAM WILL HANG-UP IF IT FOREVER RECEIVES CONDITION CODE 2.

2. START I/O.

THIS SUBROUTINE IS USED BY ALL ROUTINES TO START A CHAIN OF CCW-S (CHANNEL COMMAND WORDS). BEFORE THE START I/O IS EXECUTED, THE SUBROUTINE PERFORMS A TEST I/O TO CHECK THAT THE ACCESS IS AVAILABLE (COND CODE 0). PROGRAM THEN SETS UP THE CAW, DOES A START I/O AND CHECKS THAT THE COMMAND WAS ACCEPTED. THE -WAIT- SUBROUTINE IS USED TO WAIT FOR COMPLETION OF THE CHAIN OF COMMANDS BEFORE RETURNING TO THE CALLING ROUTINE.

3. ERROUT.

THIS SUBROUTINE IS USED BY ALL ROUTINES TO PRINT OUT AN ERROR NUMBER OR ERROR MESSAGE, THE CAW, CSW, AND/OR SENSE INFORMATION. THE ROUTINE ALSO PROVIDES FOR PRINTING A BLANK LINE AS A SEPARATOR, WILL GET THE SENSE BYTES, STOP AFTER PRINTING ERROR, RETURN TO PROGRAM VIA A OPTIONAL REG, AND/OR EXIT TO NEXT ROUTINE.

6. APPENDIX

6.1 CHANNEL STATUS WORDS DEVICE AND CHANNEL STATUS BIT BREAKDOWN IN HEX

CSW ADRS YYYY UZZZ CNTR
8000 ---UNIT NOT OPERATIONAL
4000 ---UNIT STATUS PENDING
2000 ---PROGRAM CONTROL INTERRUPT
1000 ---PROGRAM CHECK
0800 ---DATA CHECK
0400 ---CONTROL CHECK
0200 ---INCORRECT LENGTH
0100 ---ADAPTER BUSY
0080 ---UNIT OPERATIONAL
80 ---ATTENTION
40 ---STATUS MODIFIER
20 ---CONTROL UNIT END
10 ---BUSY
08 ---CHANNEL END
04 ---DEVICE END
02 ---UNIT CHECK
01 ---UNIT EXCEPTION

ADRS - CHANNEL CCW ADDRESS REGISTER

YYYY - CHANNEL STATUS IN HEX

UZZZ - UNIT ADDRESS/UNIT STATUS IN HEX

CNTR - CHANNEL BYTE COUNT REGISTER

134

2nd
3rd

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM
 2311 DISK FILE
 6.2 TABLE OF SENSE BYTES

BIT	SENSE BYTE 0	SENSE BYTE 1	SENSE BYTE 2	SENSE BYTE 3
BIT 0	COMMAND REJECT	DATA CHECK IN COUNT AREA	UNSAFE	READY
BIT 1	INTERVENTION REQUIRED	TRACK OVERRUN		ON LINE
BIT 2	BUS - OUT PARITY	END OF CYLINDER	SERIALIZER CHECK	UNSAFE
BIT 3	EQUIPMENT CHECK	INVALID SEQUENCE		
BIT 4	DATA CHECK	NO RECORD FOUND	ALU CHECK	ON LINE
BIT 5	OVERRUN	FILE PROTECTED	UNSELECTED FILE STATUS	END OF CYLINDER
BIT 6	TRACK CONDITION CHECK	MISSING ADDRESS MARKER		
BIT 7	SEEK CHECK	OVERFLOW INCOMPLETE		SEEK INCOMPLETE

* BLANK POSITIONS ARE 'NOT USED'

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
***** 81200020
* 81200030
* 81200040
***** 81200050
*
1800 MONITOR INTERFACE
***** 81200060
* 81200070
* 81200080
***** 81200090
* 81200100
***** 81200110
012C 0 BEGIN EQU 300
012D 0 START EQU BEGIN+1
012E 0 END EQU START+1
012F 0 LOG EQU END+1
0130 0 ERROR EQU LOG+1
0131 0 REQDV EQU ERROR+1
0132 0 RELDV EQU REQDV+1
0133 0 CRCK EQU RELDV+1
0134 0 MATO EQU CRCK+1
*
07FF ORG **/07FF ORIGIN OF PGM
*
***** 81200120
* 81200130
* 81200140
* 81200150
* 81200160
* 81200170
* 81200180
* 81200190
* 81200200
* 81200210
* 81200220
* 81200230
* 81200240
* 81200250
* 81200260
* 81200270
* 81200280
* 81200290
* 81200300
* 81200310
* 81200320
* 81200330
* 81200340
* 81200350
* 81200360
* 81200370
* 81200380
* 81200390
* 81200400
* 81200410
* 81200420
* 81200430
* 81200440
* 81200450
* 81200460
* 81200470
* 81200480
* 81200490
* 81200500
* 81200510
* 81200520
* 81200530
* 81200540
* 81200550
* 81200560
* 81200570
* 81200580
* 81200590
* 81200600
***** 81200610
* 81200620
* 81200630
* 81200640
* 81200650
* 81200660
* 81200670
* 81200680
***** 81200690

```

```

07FF 0 1200
0800 0 0001
0801 0 0000

```

```

0008 0
0009 0
000A 0
000A 0
000B 0
000C 0
000D 0
000E 0
000F 0

```

```

0802 0 0000
0803 0 0000
0804 0 FF00
0805 0 0000
0806 1 09B7
0807 1 09CD
0808 1 09EA
0809 0
0809 0 0000
080A 0 0000
080B 0 0000
080C 0 FFFF
080D 1 1E5C
080E 0 0000
080F 0 0000
0810 0 0000
0811 0 0000
0812 0 0000
0813 0 0000
0814 0 0000
0815 0 0000

```

TABLE OF CONSTANTS

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
087F 0 TB EQU TPID+128 SO TBL CAN REACH PST TBL 81200700
0816 0 0001 K1 DC 1 CONSTANT ONE 81200710
0817 0 0002 K2 DC 2 CONSTANT 81200720
0818 0 0003 K3 DC 3 CONSTANT 81200730
0819 0 0004 K4 DC 4 CONSTANT 81200740
081A 0 0006 K6 DC 6 CONSTANT 81200750
081B 0 0007 K7 DC 7 CONSTANT 81200760
081C 0 0008 K8 DC 8 CONSTANT 81200770
081D 0 0009 K9 DC 9 CONSTANT 81200780
081E 0 000A K10 DC 10 CONSTANT 81200790
081F 0 0014 K20 DC 20 CONSTANT 81200800
0820 0 0064 K100 DC 100 CONSTANT 81200810
0821 0 007F K127 DC 127 CONSTANT 81200820
0822 0 0080 K128 DC 128 CONSTANT 81200830
0823 0 01F4 K500 DC 500 CONSTANT 81200840
0824 0 03E8 K1000 DC 1000 CONSTANT 81200850
0825 0 000A H000A DC /000A CONSTANT 81200860
0826 0 0011 H0011 DC /0011 CONSTANT 81200870
0827 0 0013 H0013 DC /0013 CONSTANT 81200880
0828 0 0020 H0020 DC /0020 CONSTANT 81200890
0829 0 0027 H0027 DC /0027 CONSTANT 81200900
082A 0 0080 H0080 DC /0080 CONSTANT 81200910
082B 0 000C H000C DC /000C CONSTANT 81200920
082C 0 00C6 H00C6 DC /00C6 CONSTANT 81200930
082D 0 00C8 H00C8 DC /00C8 CONSTANT 81200940
082E 0 00FF H00FF DC /00FF LINE TERMINATOR 81200950
082F 0 0100 H0100 DC /0100 CONSTANT 81200960
0830 0 0200 H0200 DC /0200 CONSTANT 81200970
0831 0 0400 H0400 DC /0400 CONSTANT 81200980
0832 0 0500 H0500 DC /0500 CONSTANT FOR WRITE IOCC 81200990
0833 0 0700 H0700 DC /0700 CONSTANT FOR SENSE DSW IOC 81201000
0834 0 0A00 H0A00 DC /0A00 81201010
0835 0 2000 H2000 DC /2000 81201020
0836 0 2100 H2100 DC /2100 81201030
0837 0 3000 H3000 DC /3000 81201040
0838 0 4000 H4000 DC /4000 CONSTANT 81201050
0839 0 5000 H5000 DC /5000 CONSTANT 81201060
083A 0 7FFF H7FFF DC /7FFF 81201070
083B 0 8000 H8000 DC /8000 81201080
083C 0 F000 HF000 DC /F000 81201090
083D 0 FF00 HFF00 DC /FF00 81201100
083E 0 0000 CNTDN DC 0 81201110
083F 0 0000 TSCTN DC *-* SECTION NUMBER 81201120
0840 0 0000 TRTNN DC *-* ROUTINE NUMBER 81201130
0841 0 0000 TCNSW DC 0 ERROR SWITCH FOR RTNS 81201140
0842 0 0000 TCVS1 DC 0 81201150
0843 0 0000 TCVS2 DC 0 81201160
0844 0 0000 CAWSV DC *-* CCW ADDRESS SAVE AREA 81201170
0846 0 0002 ERTSV BSS E 2 SENSE INFO SAVE 81201180
0848 0 0002 TYP2 PRNT .SID.. 81201190
084A 0 0002 TYP3 PRNT .SNS.. 81201200
084C 0 0002 PCAW PRNT .CAW. 81201210
084E 0 0002 PCSW PRNT .CSW. 81201220
0850 0 0002 PSNS PRNT .SNS. 81201230
0852 0 0001 SPACE PRNT . 81201240
0853 0 0000 DVADR DC *-* SPACES IN 43 CODE 81201250
0854 0 0000 LGBSY DC *-* DEVICE ADDRESS TO BE TESTED 81201260
0855 0 0000 SIOSW DC *-* LOG ROUTINE BUSY SWITCH 81201270
0856 0 0000 PASSW DC *-* FOR SIO RTN 81201280
0857 0 0001 PSCNT DC 1 USED TO TEST FOR ERROR 81201290
0858 0 0000 STKSW DC 0 PASS COUNTER 81201300
0859 0 0000 TIOSW DC 0 SWITCH FOR RE-ENTRANCE 81201310
085A 0 0000 T23LC DC *-* TEST IO SW 81201320
085B 0 0000 T23LH DC *-* LAST CYLINDER 81201330
085C 0 0000 LPCNT DC *-* LAST HEAD 81201340
085D 0 0000 T4SSW DC 0 LOOP CNTR 81201350
* 0= NOT CALLED 81201360
1=1443 81201370

```

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
* 2=1053/1816
*
085E 0 0000 CNTRL DC *-* CONTROL ROUTINE 81201380
085F 1 4C00 0A2D BSC L TCNTE GO TO ROUTINE 81201390
*
0861 0 0000 ERDUT DC *-* ERROR PRINTOUT ROUTINE 81201400
0862 1 4C00 1B64 BSC L ERTNE GO TO RTN 81201410
*
0864 0 0000 FREDV DC *-* RELEASE CHANNEL ROUTINE 81201420
0865 1 4C00 1931 BSC L FRDVE GO TO ROUTINE 81201430
*
0867 0 0000 GETDV DC *-* CHANNEL ROUTINE 81201440
0868 1 4C00 190F BSC L GTDVE GO TO ROUTINE 81201450
*
086A 0 0000 GETSN DC *-* GET DEVICE SENSE INFO 81201460
086B 1 4C00 1A1E BSC L GTSNS GO TO ROUTINE 81201470
*
086D 0 0000 SIO DC *-* START I/O ROUTINE 81201480
086E 1 4C00 1939 BSC L SIONT GO TO RTN 81201490
*
0870 0 0000 STMLS DC *-* SET MLSCF ROUTINE 81201500
0871 1 4C00 1A5E BSC L STMLE GO TO RTN 81201510
*
0873 0 0000 TCVBE DC *-* CONVERT HEX TO 1443 81201520
0874 1 4C00 1D88 BSC L TCVBN GO TO RTN 81201530
*
0876 0 0000 TCVHD DC *-* CONVERT HEX TO DEC 81201540
0877 1 4C00 1DC4 BSC L THEXD GO TO RTN 81201550
*
0879 0 0000 THALT DC *-* HALT ON ERROR 81201560
087A 1 4C00 1AC3 BSC L THLTE GO TO RTN 81201570
*
087C 0 0000 THLT DC *-* WAIT FOR OPERATOR ACTION 81201580
087D 1 4C00 1AC0 BSC L THLTX GO TO RTN 81201590
*
087F 0 0000 TIO DC *-* TEST I/O 81201600
0880 1 4C00 19B3 BSC L TIONT GO TO RTN 81201610
*
0882 0 0000 TLGMS DC *-* PRINT RTN 81201620
0883 1 4C00 1C3E BSC L TLGME GO TO RTN 81201630
*
0885 0 0000 TLPER DC *-* TEST LOOP ON ERROR 81201640
0886 1 4C00 1A9F BSC L TERLP GO TO RTN 81201650
*
0888 0 0000 TLPST DC *-* TEST LOOP START I/O 81201660
0889 1 4C00 1AAC BSC L TSTLP GO TO RTN 81201670
*
088B 0 0000 WAITS DC *-* WAIT I/O RTN 81201680
088C 1 4C00 1DA6 BSC L TINTS GO TO RTN 81201690
*
*****
*
* EQUATES AND CONSTANTS FOR CCW'S
*
*****
*
* FLAGS
*
0080 0 FLDCH EQU /80 DATA CHAINING 81201700
0040 0 FLCCH EQU /40 COMMAND CHAINING 81201710
0020 0 FLSLI EQU /20 SUPPRESS INCORRECT LNG 81201720
0008 0 FLSKP EQU /08 SKIP BIT 81201730
0010 0 FLPCI EQU /10 PGM CONTROLLED INTERRUPT 81201740
*

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

* OP CODES
*
0000 0 OPTIO EQU /00 TEST I/O 81202060
0001 0 OPWR EQU /01 WRITE OP CODE 81202070
0002 0 OPRD EQU /02 READ OP CODE 81202080
0003 0 OPNOP EQU /03 NO-OP 81202090
0005 0 WRDAT EQU /05 WRITE DATA 81202100
0006 0 RDDAT EQU /06 READ DATA 81202110
0004 0 OPSNS EQU /04 SENSE I/O 81202120
0007 0 SEEKC EQU /07 SEEK CYLINDER 81202130
0011 0 ERASE EQU /11 ERASE RECORD 81202140
0008 0 OPTIC EQU /08 TRANSFER IN CHANNEL 81202150
000B 0 SEEKB EQU /0B SEEK BIN 81202160
0013 0 RCAL EQU /13 RECALIBRATE 81202170
0012 0 RDCNT EQU /12 RD COUNT 81202180
001A 0 RDHA EQU /1A READ HOME ADDRESS 81202190
001E 0 RDCKD EQU /1E RD COUNT KEY DATA 81202200
0029 0 SRCKE EQU /29 SEARCH KEY EQUAL 81202210
000E 0 RDKD EQU /0E RD KEY DATA 81202220
000D 0 WRKD EQU /0D WR KEY DATA 81202230
0016 0 RDRO EQU /16 READ RECORD ZERO 81202240
009A 0 RDHMT EQU /9A READ HA MULTI TRACK 81202250
001B 0 SKHD EQU /1B SEEK HEAD 81202260
0039 0 SRCHA EQU /39 SEARCH HA 81202270
0049 0 SRCKH EQU /49 SEARCH KEY HI 81202280
0051 0 SIDHI EQU /51 SEARCH ID HI 81202290
0069 0 SKHE EQU /69 SEARCH KEY HI/EQ 81202300
0071 0 SIDHE EQU /71 SEARCH ID HI/EQ 81202310
0031 0 SRCID EQU /31 SEARCH ID 81202320
001F 0 SFILM EQU /1F SET FILE MASK 81202330
001D 0 WRCKD EQU /1D WRT CNT,KEY,DATA 81202340
0019 0 WRHA EQU /19 WRITE HA 81202350
0015 0 WRRO EQU /15 WRITE RECORD 0 81202360
*
*****
*
* EQUATES FOR CHANNEL STATUS DSW'S
*
0000 0 SCUND EQU 0 UNIT NOT OPERATIONAL 81202370
0001 0 SCUSP EQU 1 UNIT STATUS PENDING 81202380
0002 0 SCPCI EQU 2 PGM CNTRL INT. 81202390
0003 0 SCPCCK EQU 3 PGM CHECK 81202400
0004 0 SCDCK EQU 4 DATA CHECK 81202410
0005 0 SCICC EQU 5 INTERFACE CNTRL CHECK 81202420
0006 0 SCILG EQU 6 INCORRECT LENGTH INDICATOR 81202430
0007 0 SCABZ EQU 7 ADAPTER BUSY 81202440
0008 0 SCUOP EQU 8 UNIT OPERATIONAL 81202450
*
*****
*
* EQUATES FOR UNIT STATUS DSW
*
0008 0 UNATN EQU 8 UNIT STATUS-ATTENTION 81202460
0009 0 UNSMD EQU 9 STATUS MODIFIER 81202470
000A 0 UNCUE EQU 10 CONTROL UNIT END 81202480
000B 0 UNBZY EQU 11 UNIT BUSY 81202490
000C 0 UNCHE EQU 12 CHANNEL END 81202500
000D 0 UNVE EQU 13 DEVICE END 81202510
000E 0 UNCHK EQU 14 UNIT CHECK 81202520
000F 0 UNEXC EQU 15 UNIT EXCEPTION 81202530
*****

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
*****
* EQUATES FOR 2311 SENSE BYTES
*
0004 0 FBRST EQU 4 (BURST) DATA CK 81202740
0005 0 FOVRN EQU 5 CHANNEL/2841 OVERRUN 81202750
0007 0 FSKCK EQU 7 SEEK CK 81202760
0009 0 FTROV EQU 9 81202770
000A 0 FEQCY EQU 10 END OF CYLINDER 81202780
000C 0 FNORC EQU 12 NO RECORD FOUND 81202790
0010 0 FUNSF EQU 16 81202800
0012 0 FSERD EQU 18 SERDES CHECK 81202810
0015 0 FUNSL EQU 21 81202820
0018 0 FDRDY EQU 24 DRIVE READY 81202830
0019 0 FONLN EQU 25 81202840
001A 0 FUNSI EQU 26 UNSAFE 81202850
001D 0 FECYL EQU 29 END OF CYLINDER 81202860
001F 0 FSKIN EQU 31 SEEK INCOMPLETE 81202870
*
* 81202880
* 81202890
* 81202900
* 81202910
* 81202920
* 81202930
* 81202940
* 81202950
* 81202960
* 81202970
* 81202980
* 81202990
* 81203000
* 81203010
* 81203020
* 81203030
* 81203040
* 81203050
* 81203060
* 81203070
* 81203080
* 81203090
* 81203100
* 81203110
* 81203120
* 81203130
* 81203140
* 81203150
* 81203160
* 81203170
* 81203180
* 81203190
* 81203200
* 81203210
* 81203220
* 81203230
* 81203240
* 81203250
* 81203260
* 81203270
* 81203280
* 81203290
* 81203300
* 81203310
* 81203320
* 81203330
* 81203340
* 81203350
* 81203360
* 81203370
* 81203380
* 81203390
* 81203400
* 81203410
*
088E 0 0001 NOPCC DC 1 BYTE COUNT
088F 0 2003 DC /20*256+OPNOP FLAGS AND OP CODE
0890 1 0891 DC * ADDRESS
*
*
0891 0 0001 RECAL DC 1 BYTE COUNT
0892 0 2013 DC /20*256+RCAL FLAGS AND OP CODE
0893 1 0894 DC * ADDRESS
*
*
0894 0 0001 TSCCW DC 1 BYTE COUNT
0895 0 2000 DC /20*256+OPTIO FLAGS AND OP CODE
0896 1 0897 DC TSWDS ADDRESS
*
*
0897 0 0000 TSWDS DC *-*
*
0898 0 0006 SNCCW DC 6 BYTE COUNT
0899 0 0004 DC 0*256+OPSNS FLAGS AND OP CODE
089A 1 089C DC SNWDS ADDRESS
*
*
089C 0004 SNWDS BSS E 4 SENSE BYTES
089C 0 SNWD0 EQU SNWDS
089D 0 SNWD1 EQU SNWDS+1
089E 0 SNWD2 EQU SNWDS+2
089F 0 SNWD3 EQU SNWDS+3
08A0 1 0894 TIOXX DC TSCCW TIO CCW
08A1 0 0000 DC *-* TO BE FILLED IN
08A2 0 0000 HIOXX DC *-*
08A3 0 0000 DC *-*
08A4 1 0898 SENSE DC SNCCW SENSE IO W/SUPPRESS POLL
08A5 0 0000 DC *-* TO BE FILLED IN
08A6 0 0000 SIOXX DC *-* TO BE FILLED WITH CCW ADDR
08A7 0 0000 DC *-* TO BE FILLED IN
08A8 0 0000 SCSN0 DC *-*
08A9 0 0000 DC *-* = 08
08AA 0 0000 SCSN1 DC *-*
08AB 0 0000 DC *-* = 09
08AC 0 0000 SCSN2 DC *-*
08AD 0 0000 DC *-* = 0A
08AE 0 0000 SCSN3 DC *-*
08AF 0 0000 DC *-* = 0B
08B0 0 0000 SCSN4 DC *-*
08B1 0 0000 DC *-* = 0C
08B2 0 0000 SCSN5 DC *-*
08B3 0 0000 DC *-* = 06
08B4 0004 SCSX0 BSS E 4 START I/O SAVE AREA
08B8 0004 SCSX4 BSS E 4 START I/O SAVE AREA 2

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

08BC 0004 SCSX8 BSS E 4 TIO SAVE AREA 81203420
08C0 0004 SCSXC BSS E 4 SENSE I/O SAVE AREA 81203430
08C4 0004 SCSVS BSS E 4 SAVE AREA FOR SENSE INFO 81203440
08C8 0003 HA BSS E 3 81203450
08CC 0000 BSS E 0 81203460
08CC 1 1D52 TLGWR DC TLGBA IOAREA ADDRESS 81203470
08CD 0 0000 DC *-* TO BE FILLED IN 81203480
08CE 0 0000 TLGSP DC /0000 SPACE IN 1443 CODE 81203490
08CE 0 TLGSN EQU TLGSP SENSE DSW IOCC 81203500
08CF 0 0000 DC *-* TO BE FILLED IN 81203510
08D0 0 0000 TLGCT DC 0 LOOP COUNT FOR PRNTR INT 81203520
08D1 0 0000 TLGSW DC 0 1ST/2ND CHAR SW (1053) 81203530
08D2 0 0000 TLGSR DC 0 1ST/2ND CHAR SW (TLGCH) 81203540
08D3 0 0000 DC *-* SENSE/RESET DSW 81203550
*
08D4 0008 STSER PRNT .XX ERROR ON XXX . 81203560
08DC 0007 PRNT .SECT X,RTN X . 81203570
08E3 0 FFFF DC /FFFF 81203580
08E4 0009 UNADR PRNT . UNIT XX,ADRS XXXX. 81203590
08ED 0 FFFF DC /FFFF 81203600
*
* SELECTOR CHANNEL INT ROUTINE
*
08EE 0 0000 WIOSW DC *-* WAIT FOR USER INTERUPT 81203650
08EF 0 0000 WATSW DC *-* WAIT FOR SYST TIO INT. 81203660
08F0 0 0000 SCISW DC *-* INTERRUPT SWITCH 81203670
08F1 0 0000 TSCAC DC *-* SEL.CHAN AREA CODE 81203680
08F2 0 0000 SCINT DC *-* INT. RTN ENTRY 81203690
08F3 0 68FA STX WIOSW SET INTERRUPT SWITCH 81203700
08F4 0 6A6D STX 2 SCIN7+1 SAVE REG 81203710
08F5 0 696E STX 1 SCIN7+3 81203720
08F6 1 6600 087F LDX L2 TB SET UP POINTER TO TBL 81203730
08F8 0 C271 LD 2 SCISW-TB GET INT SWITCH 81203740
08F9 1 4C18 094D BZ SCIN4 BR IF NOT SET 81203750
*
08FB 0 0A29 XIO 2 SCSN0-TB FETCH CHANNEL STATUS 81203760
08FC 0 1001 SLA 1 TEST FOR USP 81203770
08FD 1 4C10 0917 BNN SCIN0 BRANCH IF NOT USP 81203780
*
08FF 0 0A2D XIO 2 SCSN2-TB GET UNIT STATUS 81203800
0900 0 18D0 XCH SAVE STATUS 81203810
0901 0 1010 SLA 16 CLEAR A REG 81203820
0902 0 1088 SLT 8 GET DEVICE ADDR 81203830
0903 0 F2D4 EOR 2 DVADR-TB TEST FOR MY DEVICE 81203840
0904 1 4C18 090C BZ SCINC BRANCH IF MINE 81203850
0906 0 1092 SLT 8+UNCUE TEST FOR CONTROL UNIT END 81203870
0907 1 4C10 094D BNN SCIN4 BRANCH IF NOT CU END 81203880
*
0909 0 C2DA LD 2 TIOSW-TB GET TIO SW 81203890
090A 1 4C18 094D BZ SCIN4 BR IF INT NOT DUE TO TIO 81203900
*
090C 0 C2DA SCINC LD 2 TIOSW-TB FETCH TIO SW 81203920
090D 1 4C18 0917 BZ SCIN0 BRANCH IF USER TIO 81203930
*
* GET HERE IF INTERRUPT FROM TIO AFTER SIO
* IF STATUS IS NON BUSY THEN PLACE IN SCSX0
* AND SCSX8
*
090F 0 0A2D XIO 2 SCSN2-TB FETCH UNIT STATUS 81203990
0910 0 100B SLA UNBZY TEST FOR UNIT OR CU BUSY 81204000
0911 1 4C28 0921 BN SCINX BR TO SET POINTER TO SCSX8 81204020
*
0913 0 0A2D XIO 2 SCSN2-TB FETCH UNIT STATUS 81204030
0914 0 EA36 OR 2 SCSX0+1-TB MERGE WITH OLD STATUS 81204040
0915 0 D236 STO 2 SCSX0+1-TB * 81204050
*
0916 0 700A B SCINX BR SET POINTER TO SCSX0 81204060
*

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

* GET HERE IF TIOSW WAS NOT ON AND TEST 81204100
* FOR USER TIO IF SO PLACE STATUS IN SCSX8, 81204110
* ELSE GO TEST FOR SENSE OPERATION INTERRUPT 81204120
* 81204130
0917 0 C223 SCIN0 LD 2 HIOXX-TB GET HIO SW 81204140
0918 1 4C20 0941 BNZ SCIN3 BR IF SET 81204150
* 81204160
091A 0 0A31 XIO 2 SCSN4-TB ELSE GET CCW ADPRS REG 81204170
091B 0 D231 STO 2 SCSN4-TB SAVE FOR LATER USE 81204180
091C 0 C221 LD 2 TIOXX-TB GET TEST I/O ADDRESS 81204190
091D 0 8299 A 2 K3-TB ADD THREE 81204200
091E 0 F231 EOR 2 SCSN4-TB COMPARE WITH CCW ADPRS REG 81204210
091F 1 4C20 0925 BNZ SCIN1 BR IF NOT THE SAME 81204220
* 81204230
* GET HERE IF USER TIO OR SYSTEM TIO 81204240
* FOUND THAT THE UNIT OR CU WAS BUSY 81204250
* AFTER A TEST I/O. 81204260
* 81204270
0921 1 6700 08BC SCINX LDX L3 SCSX8 ELSE POINT TO SAVE AREA 81204280
0923 0 68CB STX WATSW SET TIO INTERRUPT SW 81204290
0924 0 702E MDX SCIN5 GO TO COMMON RTN 81204300
* 81204310
* GET HERE IF NO TEST I/O WAS INDICATED 81204320
* BY THE PRIOR ROUTINES 81204330
* 81204340
0925 0 C225 SCIN1 LD 2 SENSE-TB GET CCW ADDRESS FOR SENSE 81204350
0926 0 8299 A 2 K3-TB POINT TO FOLLOWING 81204360
0927 0 F231 EOR 2 SCSN4-TB COMPARE 81204370
0928 1 4C20 092D BNZ *+3 BR IF NOT 81204380
092A 1 6700 08C0 LDX L3 SCSXC POINT TO SAVE AREA 81204390
092C 0 702E MDX SCIN5 GO TO COMMON RTN 81204400
* 81204410
* GET HERE IF SENSE WAS FOUND NOT TO 81204420
* BE THE CAUSE OF THE INTERRUPT AND TEST 81204430
* FOR START I/O TO BE THE CAUSE, IF NOT 81204440
* THEN SET THE INTERRUPT TO THE UNEXPECTED. 81204450
* 81204460
092D 0 C227 LD 2 SIOXX-TB GET START I/O CCW ADDRESS 81204470
092E 1 6780 08A6 LDX I3 SIOXX SET IN REG TOO 81204480
* 81204490
0930 0 8299 SCIN2 A 2 K3-TB POINT TO NEXT ADPRS AFTER 81204500
0931 0 D218 STO 2 TSWDS-TB SAVE IN TEMP STORAGE 81204510
0932 0 F231 EOR 2 SCSN4-TB COMPARE 81204520
0933 1 4C18 0941 BZ SCIN3 BR IF SAME 81204530
0935 0 C301 LD 3 1 GET OPDCODE/FLAGS 81204540
0936 0 180E SRA 14 SAVE CMD CHAIN/DATA CHAIN 81204550
0937 1 4C20 093E BNZ *+5 BR IF SET 81204560
0939 0 C301 LD 3 1 GET IT AGAIN 81204570
093A 0 F29D EOR 2 K8-TB TEST FOR TIC 81204580
093B 0 1008 SLA 8 SAVE OPDCODE ONLY 81204590
093C 1 4C20 094D BNZ SCIN4 BR IF NOT TIC 81204600
093E 0 7303 MDX 3 3 POINT TO NEXT CCW IN CHAIN 81204610
093F 0 C218 LD 2 TSWDS-TB GET ADDRESS 81204620
0940 0 70EF MDX SCIN2 LOOP 81204630
* 81204640
0941 0 1010 SCIN3 SLA 16 CLEAR HIO SW 81204650
0942 0 D223 STO 2 HIOXX-TB * 81204660
0943 1 6700 08B4 LDX L3 SCSX0 POINT TO SIO SAVE AREA 81204670
0945 0 C301 LD 3 1 GET LAST UNIT STATUS 81204680
0946 0 100D SLA UNQVE TEST FOR DEVICE END 81204690
0947 1 4C28 0953 BN SCIN5 BR IF SET 81204700
0949 0 1001 SLA UNCHK-UNQVE TEST FOR UCHK 81204710
094A 1 4C28 0953 BN SCIN5 BR IF SET 81204720
094C 0 7008 MDX SCIN6 ELSE 'OR' IN STATUS 81204730
* 81204740
094D 1 6700 0969 SCIN4 LDX L3 SCIN8 SET MLSCF ENTRY FOR RETURN 81204750
094F 1 6F00 0809 STX L3 MLSC0 *** 81204760
0951 1 6700 08B8 LDX L3 SCSX4 POINT O SAVE AREA 81204770

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0953 0 1010 * SCIN5 SLA 16 CLEAR WORD TO ZERO 81204780
0954 0 D301 STO 3 1 FOR DR'ING IN STATUS 81204790
* 81204800
0955 0 0A2B * SCIN6 XIO 2 SCSN1-TB GET CHAN. STATUS 81204810
0956 0 D300 STO 3 0 SAVE 81204820
0957 0 1001 SLA 1 TEST FOR USP 81204830
0958 1 4C10 0967 BNN SCINA BRANCH IF NOT ON 81204840
* 81204850
095A 0 0A2F XIO 2 SCSN3-TB GET UNIT STATUS 81204860
095B 0 EB01 OR 3 1 COMBINE WITH EXISTING 81204870
095C 0 D301 SCINB STO 3 1 SAVE 81204880
095D 0 0A31 XIO 2 SCSN4-TB GET CCW ADDRESS REG. 81204890
095E 0 D302 STO 3 2 SAVE 81204900
095F 0 0A33 XIO 2 SCSN5-TB GET BYTE COUNTER 81204910
0960 0 D303 STO 3 3 SAVE 81204920
* 81204930
0961 0 6600 0000 SCIN7 LDX L2 *- RELOAD REG 2 81204940
0963 0 6500 0000 LDX L1 *- REG 1 81204950
* 81204960
0965 1 4C80 08F2 BSC I SCINT EXT INT. RTN 81204970
* 81204980
* GET HERE IF USP WAS NOT THE CAUSE OF 81204990
* THE INTERRUPT AND SET US TO 0000 81205000
* 81205010
* 81205020
0967 0 1010 SCINA SLA 16 CLEAR ACC 81205030
0968 0 70F3 MDX SCINB RETURN 81205040
* 81205050
* RETURN HERE AFTER UNEXPECTED INT 81205060
* 81205070
0969 1 6600 087F SCIN8 LDX L2 TB SET UP TABLE POINTER 81205080
096B 0 610C LDX 1 12 SET UP POINTER 81205090
096C 1 6700 08BB LDX L3 SCSX4+3 SET UP CSW POINTER 81205100
* 81205110
096E 0 C300 SCIN9 LD 3 0 GET CHNL STATUS 81205120
096F 0 42F4 BSI 2 TCVBE-TB CONVERT TO 1443 CODE 81205130
0970 1 D500 098B STO L1 SCIM2-1 PUT IN MESSAGE 81205140
0972 0 18D0 XCH * 81205150
0973 1 D500 098C STO L1 SCIM2 * 81205160
0975 0 73FF MDX 3 -1 81205170
0976 0 71FD MDX 1 -3 81205180
0977 0 70F6 MDX SCIN9 81205190
* 81205200
0978 0 4203 BSI 2 TLGMS-TB 81205210
0979 1 097C DC SCIMS 81205220
097A 0 4C80 012D BSC I START 81205230
* 81205240
097C 0015 SCIMS PRNT ** ER 00 UNEXPECTED INTERRUPT. 81205250
098B 0 FF00 DC /FF00 81205260
098C 0013 SCIM2 PRNT .CSW XXXX. XXXX. XXXX. XXXX. 81205270
0999 0 FFFF DC /FFFF 81205280
***** 81205290
* 81205300
***** 81205310
* WAIT FOR INTERRUPT 81205320
***** 81205330
* 81205340
***** 81205350
099A 0 0000 TINTW DC *- ENTRY POINT 81205360
099B 0 C28D LD 2 TERM-TB FETCH TIME OUT CONSTANT 81205370
099C 0 D22B STO 2 SCSN1-TB 81205380
* 81205390
099D 0 C270 TINT2 LD 2 WATSW-TB 81205400
099E 1 4C20 09AE BNZ TINT3 81205410
09A0 0 42F1 BSI 2 STMLS-TB GO VISIT MONITOR 81205420
09A1 1 74F6 08AA MDX L SCSN1,-10 81205430
09A3 0 70F9 MDX TINT2 81205440
* 81205450

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

09A4 0 0A2B      XIO  2 SCSN1-TB  GET CHANNEL STATUS      81205460
09A5 0 0241      STO  2 SCSXC-TB   * AND SAVE FOR ERR      81205470
09A6 0 0A2F      XIO  2 SCSN3-TB   * MESSAGE                 81205480
09A7 0 0242      STO  2 SCSXC+1-TB *                   81205490
09A8 0 0A31      XIO  2 SCSN4-TB   *                   81205500
09A9 0 0243      STO  2 SCSXC+2-TB *                   81205510
09AA 0 0A33      XIO  2 SCSN5-TB   *                   81205520
09AB 0 0244      STO  2 SCSXC+3-TB *                   81205530
*
09AC 1 4C80 099A BSC  1 TINTW      EXIT RTN                 81205540
*
09AE 1 7401 099A TINT3 MDX L TINTW.1  81205550
09B0 0 1010      SLA  16           81205560
09B1 0 0270      STO  2 WATSW-TB   81205570
09B2 1 4C80 099A BSC  1 TINTW      EXIT RTN                 81205580
*
09B4 0 4480 012C BGIN BSI I BEGIN   GO TO MONITOR BEGIN RTN 81205590
09B6 1 07FF      DC    TPID        ADDRESS OF PID          81205600
*
09B7 0 0000      ZIPA DC *-*      ENTRY POINT            81205610
09B8 0 C0FE      LD    ZIPA        MOVE RETURN ADDRS 81205620
09B9 0 D013      STO  ZLPA        *                   81205630
09BA 1 6600 087F LDX  L2 TB       SET UP POINTER        81205640
*
09BC 0 1010      SLA  16          RESET-                  81205650
09BD 1 D400 1D33 STO  L FRESW     RESET CONTROL SWS     81205660
09BF 0 D2D5      STO  2 LGBSY-TB *                   81205670
09C0 0 D26F      STO  2 WIOSW-TB *                   81205680
09C1 0 D2DA      STO  2 TIOSW-TB *                   81205690
09C2 0 D270      STO  2 WATSW-TB *                   81205700
09C3 0 D283      STO  2 TSW0-TB  * SW 0          81205710
09C4 0 D284      STO  2 TSW1-TB  * SW 1          81205720
09C5 0 D286      STO  2 TSW3-TB  * SW 3          81205730
09C6 1 D400 1A91 STO  L STMP     RESET STMLS POINTER    81205740
09C8 0 C2BE      LD    2 HFF00-TB 81205750
09C9 0 D285      STO  2 TSW2-TB 81205760
09CA 0 C297      LD    2 K1-TB   81205770
09CB 0 D2D8      STO  2 PSCNT-TB 81205780
09CC 0 7001      MDX  ZLPA+1     CONTINUE          81205790
*
09CD 0 0000      ZLPA DC *-*     LOOP PGM RTN           81205800
09CE 1 6700 09FD LDX  L3 TCNPR   GET MLSCF ADDRESS     81205810
09D0 1 6F00 080B STX  L3 MLSC2   SET IN TBL            81205820
09D2 1 6600 087F LDX  L2 TB     SET UP TBL POINTER 81205830
09D4 0 C294      LD    2 TLGED-TB 81205840
09D5 1 4C10 09DB BNN  ZLPA1     BR IF RELEASED       81205850
09D7 0 4480 0132 BSI  I RELDV   ELSE RELEASE DEVICE 81205860
09D9 1 0813      DC    TLGED     ADDR OF EDIT WORD 81205870
09DA 1 080C      DC    TERM      TERMINATOR        81205880
09DB 0 C295      ZLPA1 LD  2 TSCED-TB SEL. CHAN. EDIT 81205890
09DC 1 4C10 09E2 BNN  ZLPA2     81205900
09DE 0 4480 0132 BSI  I RELDV   RELEASE DEVICE     81205910
09E0 1 0814      DC    TSCED     81205920
09E1 1 080C      DC    TERM      81205930
09E2 0          ZLPA2 EQU *          81205940
09E2 0 1010      SLA  16          81205950
09E3 0 D2D9      STO  2 STKSW-TB * STACK SW      81205960
09E4 0 D2D6      STO  2 SIOSW-TB * SID SW        81205970
09E5 0 D2D5      STO  2 LGBSY-TB * LOG BUSY SW     81205980

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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09E6 0 C297      LD    2 K1-TB    FETCH CONSTANT OF 1 81206140
09E7 0 D281      STO  2 TSID-TB  SET SECTION ID = 1      81206150
09E8 1 4C80 09CD BSC  1 ZLPA     EXIT                 81206160
*
*****
*
*****
09EA 0 0000      ZEPA DC *-*     END PGM RTN          81206170
09EB 1 6600 087F LDX  L2 TB     SET UP TBL POINTER    81206180
09ED 0 C294      LD    2 TLGED-TB 81206190
09EE 1 4C10 09F4 BNN  ZEPA1     BR IF RELEASED       81206200
09F0 0 4480 0132 BSI  I RELDV   ELSE RELEASE DEVICE 81206210
09F2 1 0813      DC    TLGED     ADDR OF EDIT WORD 81206220
09F3 1 080C      DC    TERM      TERMINATOR        81206230
*
09F4 0 C295      ZEPA1 LD  2 TSCED-TB SEL CHANNEL EDIT 81206240
09F5 1 4C10 09FB BNN  ZEPA2     BR IF RELEASED       81206250
*
09F7 0 4480 0132 BSI  I RELDV   RELEASE DEVICE     81206260
09F9 1 0814      DC    TSCED     ADDRS OF EDIT WORD 81206270
09FA 1 080C      DC    TERM      81206280
09FB 1 4C80 09EA ZEPA2 BSC  I ZEPA  EXIT BACK TO MONITOR 81206290
*****
*
*****
*
PRE-CONTROL ROUTINE
*****
*
*****
09FD 1 6600 087F TCNPR LDX  L2 TB  SET UP TABLE POINTER 81206300
09FF 0 C2DE      LD    2 T45SW-TB 81206310
0A00 1 4C20 0A14 BNZ  TCN01     GET 43/53 SWITCH     81206320
0A02 0 42F1      TCNRQ BSI  2 STMLS-TB 81206330
0A03 0 4480 0131 BSI  I RELDV   REQUEST DEVICE     81206340
0A05 1 0A02      DC    TCNRQ     BUSY RETURN       81206350
0A06 1 0813      DC    TLGED     EDIT FOR PRINTER 81206360
0A07 1 1CEF      DC    TLGDA     AREA CODE GIVEN BACK 81206370
0A08 1 080C      DC    TERM      TERMINATOR        81206380
0A09 0 4480 0132 BSI  I RELDV   RELEASE DEVICE     81206390
0A0B 1 0813      DC    TLGED     EDIT FOR PRINTER 81206400
0A0C 1 080C      DC    TERM      TERMINATOR        81206410
0A0D 1 C400 1CEF LD    L TLGDA     GET PRINTER AREA CODE 81206420
0A0F 0 F2B8      EOR  2 H3000-TB 81206430
0A10 0 4820      SKP  Z          81206440
0A11 0 C297      LD    2 K1-TB   81206450
0A12 0 8297      A    2 K1-TB   ADD ONE          81206460
0A13 0 D2DE      STO  2 T45SW-TB 81206470
*
0A14 0          TCN01 EQU *          81206480
0A14 0 42E8      BSI  2 GETDV-TB 81206490
0A15 0 42E5      BSI  2 FREDV-TB 81206500
0A16 0 C285      LD    2 TSW2-TB 81206510
0A17 0 1808      SRA  8          GET SW FNC 2 (DEV ADDR) 81206520
0A18 1 4C18 0A21 BZ    TCN02     BR IF ZERO          81206530
0A1A 0 4203      BSI  2 TLGMS-TB 81206540
0A1B 1 0A83      DC    TCNE2     PRINT MESSAGE         81206550
*
0A1C 0 42F1      BSI  2 STMLS-TB 81206560
0A1D 0 C285      LD    2 TSW2-TB 81206570
0A1E 0 1808      SRA  8          GO TO MONITOR          81206580
0A1F 0 4820      SKP  Z          GET SW FNC 2          81206590
0A20 0 70FB      MDX  *-5       SKIP IF ZERO          81206600
*
0A21 0 C285      TCN02 LD  2 TSW2-TB 81206610
0A22 0 D2D4      STO  2 DVADR-TB 81206620
0A23 0 42F4      BSI  2 TCVBE-TB 81206630

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
OAAF 0 0A29      *
OAB0 0 D229      T1105 XIO  2 SCSN0-TB  GET CHAN STATUS      81208180
OAB1 0 4209      STO  2 SCSN0-TB  STORE FOR LATER USE  81208190
OAB2 1 0AAF      BSI  2 TLPST-TB  TEST LOOP SIO       81208200
                  DC    T1105  LOOP ADDR      81208210
                  *                               81208220
                  CHECK CHANNEL STATUS          81208230
OAB3 0 C229      LD    2 SCSN0-TB  GET CHAN STATUS      81208240
OAB4 0 1888      SRT    8          SAVE BITS 0-7      81208250
OAB5 1 4C20 OACC BNZ   T1107  BR IF NON ZERO      81208260
                  *                               81208270
                  T1106 BSI  2 TLPST-TB  TEST LOOP SIO       81208280
                  DC    T1105  LOOP ADDR      81208290
                  *                               81208300
                  GO TO NEXT ROUTINE IN SEQUENCE 81208310
                  *                               81208320
OAB9 0 42E5      T11EN BSI  2 FREDV-TB  FREE CHANNEL          81208330
OABA 0 C2C1      LD    2 TRTNN-TB  GET RTN SWS          81208340
OABB 1 4C18 OAE5 BZ    T1201  GO TO NEXT RTN IN SEQ 81208350
OABD 0 42DF      BSI  2 CNTRL-TB  GO TO CONTROL RTN  81208360
OABE 0007      TTL11 PRNT . SECT 1,RT 1- .
                  *
OAC5 0006      PRNT .TEST CHANNEL.
OACB 0 FFFF      DC    /FFFF
                  *
OACC 0 1088      T1107 SLT    8          REPOSITION STATUS      81208420
OACD 1 4C28 OADF BN    T1110  BR IF NOT OPERATIONAL 81208430
OACF 0 1001      SLA    SCUSP  TEST FOR UNIT STATUS PEND 81208440
OAD0 1 4C10 OADC BNN    T1109  BR IF NOT SET -ERR-   81208450
OAD2 0 C2D7      LD    2 PASSW-TB  GET PASS SWITCH      81208460
OAD3 1 4C20 OAD9 BNZ   T1108  BR IF SET            81208470
OAD5 0 0A2F      XIO  2 SCSN3-TB  CLEAR STATUS      81208480
OAD6 0 C28D      LD    2 TERM-TB  SET SW TO NONZERO  81208490
OAD7 0 D2D7      STO  2 PASSW-TB  **                81208500
OAD8 0 70D6      MDX   T1105  LOOP                81208510
                  *                               81208520
OAD9 0 42E2      T1108 BSI  2 EROUT-TB  81208530
OADA 0 0300      DC    /0300  RETURN TO ADRS IN ERADR 81208540
OADB 0 1101      DC    /1101  ERR NUMBER          81208550
                  *                               81208560
OADC 0 42E2      T1109 BSI  2 EROUT-TB  81208570
OADD 0 0300      DC    /0300  RETURN TO ADRS IN ERADRZ 81208580
OADE 0 1102      DC    /1102  ERR NUMBER          81208590
                  *                               81208600
OADF 0 42E2      T1110 BSI  2 EROUT-TB  81208610
OAE0 0 0300      DC    /0300  TAGS AND OPTIONS      81208620
OAE1 0 1103      DC    /1103  ERR NUMBER          81208630
                  *                               81208640
OAE2 0 4206      T1111 BSI  2 TLPST-TB  TEST LOOP ERROR      81208650
OAE3 1 0AAD      DC    T1104  LOOP ADDR      81208660
OAE4 0 70D4      MDX   T11EN  END RTN          81208670
                  *                               81208680
                  *                               81208690
                  *                               81208700
                  *                               81208710
*****
ROUTINE --2-- TEST I/O
*****
THIS ROUTINE WILL EXECUTE A TEST I/O TO DE-
TERMINE THE STATUS OF THE ACCESS. THIS IS
THE FIRST START I/O COMMAND TO BE EXECUTED.
THIS COMMAND SHOULD GO THRU THE 2841 INIT-
IAL STATUS PRESENTATION AND THE ENDING PRO-
CEDURE. IF THE ROUTINE DETECTS A UNIT CHECK
THE SENSE BYTES ARE ANALYZED.
*

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

* CONDITIONS CHECKED, 81208860
* NO SELECT LOCKS 81208870
* FILES ONLINE 81208880
* READY (DETENTED AT SOME CYLINDER) 81208890
* 81208900
* 81208910
***** 81208920
* 81208930
***** 81208940
* 81208950
***** 81208960
* 81208970
***** 81208980
OAE5 0 T1201 EQU * TEST ENTRY POINT 81208990
OAE5 1 7401 0815 MDX L TRID.1 BUMP RTN ID 81209000
OAE7 1 4C18 OAE C BZ T1202 BR IF TEST NUMBER ZERO 81209010
OAE9 0 9297 S 2 K1-TB DECREMENT BY ONE 81209020
OAEA 1 4C20 0B81 BNZ T1301 BR IF NOT THIS TEST 81209030
                  *                               81209040
OAE C 0 C283 T1202 LD 2 TSW0-TB GET OPTION SWS 81209050
OAE D 0 100A SLA OTTLE PRINT TITLES 81209060
OAE E 1 4C10 OAF2 BNN T1203 BR IF NOT SET 81209070
OAF 0 4203 BSI 2 T1203 T1203 BR IF NOT SET 81209080
OAF 1 1 0B0E DC TTL12 GO TO PRINT ROUTINE 81209090
                  *                               81209100
OAF 2 0 42E8 T1203 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81209110
OAF 3 1 6500 0B64 LDX L1 T1217 SET ERADR FOR RETURN 81209120
OAF 5 1 6D00 1C3D STX L1 ERADR ** 81209130
                  *                               81209140
OAF 7 0 10A0 T1204 SLT 32 CLEAR AQ 81209150
OAF 8 0 DA3D STD 2 SCSX8-TB CLEAR SAVE ARE A 81209160
OAF 9 0 DA3F STD 2 SCSX8+2-TB *** 81209170
OAF A 0 D270 STO 2 WATSW-TB CLEAR INT. SWITCH 81209180
                  *                               81209190
OAF B 0 0A21 XIO 2 T10XX-TB TEST I/O 81209200
OAF C 1 4400 099A BSI L TINTW WAIT FOR INTERRUPT 81209210
OAF E 0 7068 MDX T1218 COME HERE IF NONE 81209220
                  *                               81209230
OAF F 0 4209 BSI 2 TLPST-TB TEST LOOP SIO 81209240
OB 00 1 OAF7 DC T1204 LOOP ADDR 81209250
                  *                               81209260
OB 01 0 C23D LD 2 SCSX8-TB GET CHAN STATUS WORD 81209270
OB 02 0 F2B9 EOR 2 H4000-TB TEST FOR UNIT STATUS PEND 81209280
OB 03 1 4C20 0B1A BNZ T1206 BR IF NONZERO STATUS 81209290
OB 05 0 C23E LD 2 SCSX8+1-TB GET UNIT STATUS 81209300
OB 06 0 1008 SLA 8 CLEAR UNIT ADDRESS 81209310
OB 07 1 4C20 0B1A BNZ T1206 BR IF NON ZERO STATUS 81209320
                  *                               81209330
                  *                               81209340
                  *                               81209350
                  *                               81209360
OBF 9 0 42E5 T12EN BSI 2 FREDV-TB FREE CHANNEL 81209370
OB 0A 0 C2C1 LD 2 TRTNN-TB GET RTN SWS 81209380
OB 0B 1 4C18 0B81 BZ T1301 GO TO NEXT RTN IN SEQ 81209390
OB 0D 0 42DF BSI 2 CNTRL-TB GO TO CONTROL RTN 81209400
OB 0E 0007 TTL12 PRNT . SECT 1,RT 2- . 81209410
                  *                               81209420
OBF 15 0004 PRNT .TEST I/O. 81209430
OBF 19 0 FFFF DC /FFFF 81209440
                  *                               81209450
                  *                               81209460
OB 1A 0 C23D T1206 LD 2 SCSX8-TB GET STATUS 81209470
OB 1B 1 4C28 0B23 BN T1207 BR IF NOT OPERATIONAL 81209480
OB 1D 0 1001 SLA SCUSP TEST FOR UNIT STATUS PEND 81209490
OB 1E 1 4C28 0B26 BN T1208 BR IF SET 81209500
OB 20 0 42E2 BSI 2 EROUT-TB 81209510
OB 21 0 2302 DC /2302 TAGS AND OPTIONS 81209520
OB 22 0 1202 DC /1202 ERR NUMBER 81209530
                  *

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0B23 0 42E2      T1207 BSI   2  EROUT-TB      81209540
0B24 0 2302      DC       /2302      TAGS AND OPTIONS      81209550
0B25 0 1203      DC       /1203      ERR NUMBER            81209560
*
0B26 0 C23E      T1208 LD    2  SCSX8+1-TB    GET UNIT STATUS      81209570
0B27 0 100E      SLA      UNCHK      TEST FOR UNIT CHECK  81209580
0B28 1 4C28 0B3C BN      T1211      BR IF YES             81209590
*
UNIT CHECK IS OFF     81209600
LD      2  SCSX8-TB    GET CHAN STATUS      81209610
SRA      8           SAVE BITS 0-7      81209620
BZ      T1209      BR IFNONE          81209630
*
GET HERE IF SOME CHAN. STATUS BITS ON 81209640
BSI   2  EROUT-TB    81209650
DC   /2302      TAGS AND OPTIONS      81209660
DC   /1201      ERR NUMBER            81209670
*
CHECK FOR CNTRL UNIT BUSY          81209680
T1209 LD    2  SCSX8+1-TB    GET UNIT STATUS      81209690
SLA      8           SAVE BITS 8-15     81209700
EOR   2  H5000-TB    TEST FOR CNTL BUSY AND 81209710
BNZ   T1210      BR IF NOT             81209720
*
BSI   2  EROUT-TB    81209730
DC   /2302      TAGS AND OPTIONS      81209740
DC   /1211      ERR NUMBER            81209750
*
UNIT CHECK AND NO CHANNEL STATUS    81209760
T1210 BSI   2  EROUT-TB    81209770
DC   /2302      TAGS AND OPTIONS      81209780
DC   /1209      ERR NUMBER            81209790
*
T1211 BSI   L  GETSN      GET SENSE INFO        81209800
LDD   2  SNWDS-TB    GET BYTES TO A REG  81209810
SLT   FUNSI      TEST FOR FILE UNSAFE  81209820
BNN   T1212      BR IF NOT UNSAFE     81209830
BSI   2  EROUT-TB    81209840
DC   /2303      TAGS AND OPTIONS      81209850
DC   /1204      ERR NUMBER            81209860
*
CHECK FOR ONLINE                    81209870
T1212 LDD   2  SNWDS-TB    GET SENSE INFO        81209880
SLT   FONLN      TEST FOR ONLINE      81209890
BNN   T1213      BR IF NOT             81209900
BSI   2  EROUT-TB    81209910
DC   /2303      TAGS AND OPTIONS      81209920
DC   /1206      ERR NUMBER            81209930
*
CHECK FOR FILE READY                81209940
T1213 LDD   2  SNWDS-TB    GET SENSE INFO        81209950
SLT   FDRDY      TEST FOR READY        81209960
BNN   T1214      BR IF NOT SET        81209970
BSI   2  EROUT-TB    81209980
DC   /2303      TAGS AND OPTIONS      81209990
DC   /1205      ERR NUMBER            81210000
*
CHECK FOR UNSELECTED FILE STATUS     81210010
T1214 LDD   2  SNWDS-TB    GET SENSE INFO        81210020
SLT   FUNSL      TEST FOR READY        81210030
BNN   T1215      BR IF NOT             81210040
BSI   2  EROUT-TB    81210050
DC   /2303      TAGS AND OPTIONS      81210060
DC   /1207      ERR NUMBER            81210070
*
CHECK FOR END OF CYLINDER            81210080
T1215 LDD   2  SNWDS-TB    GET SENSE INFO        81210090
SLT   FECYL      END OF CYLINDER      81210100
BNN   T1216      BR IF NOT             81210110
BSI   2  EROUT-TB    81210120
DC   /2303      TAGS AND OPTIONS      81210130
DC   /1210      ERR NUMBER            81210140
*
OTHER SENSE INFO                     81210150
T1216 BSI   2  EROUT-TB    81210160
DC   /2303      TAGS AND OPTIONS      81210170
DC   /1208      ERR NUMBER            81210180
0B61 0 42E2      DC       /2303      TAGS AND OPTIONS      81210190
0B62 0 2303      DC       /1208      ERR NUMBER            81210200
0B63 0 1208      DC

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0B64 0 4206      *
0B65 1 0AF7      T1217 BSI   2  TLPER-TB    TEST LOOP ON ERROR  81210220
0B66 0 70A2      DC       T1204      LOOP ADDRESS          81210230
*
MDX      T12EN      END ROUTINE          81210240
0B67 0 42E2      *
0B68 0 130E      T1218 BSI   2  EROUT-TB    ERROR MSG RTN        81210260
0B69 1 0B6A      DC       /130E      OPTIONS AND TAGS     81210270
*
DC       T12M2      ERROR MSG ADDRESS    81210280
T12M2 PRNT      . 06 CHANNEL HUNG AFTER TEST I/O. 81210290
PRNT      ..SECT 1,RT 2.
DC       /FFFF
*
*
*****
ROUTINE --3-- NO OPERATION
*****
THIS ROUTINE WILL EXECUTE A NO-OPERATION
COMMAND. MODULE SELECT AND HEAD SELECT ARE
THE ONLY FILE LINES ACTIVATED.
*
NOTE. NO-OP IS AN IMMEDIATE COMMAND.
*
CONDITIONS CHECKED.
START I/O COMMAND SEQUENCE
2841 INITIAL SELECTION AND ENDING PROC.
*****
0B81 0
0B81 1 7401 0815
0B83 1 4C18 0888
0B85 0 9297
0B86 1 4C20 0BF5
*
0B88 0 C283
0B89 0 100A
0B8A 1 4C10 088E
0B8C 0 4203
0B8D 1 0BC0
*
0B8E 0 42E8
0B8F 1 6500 0BD4
0B91 1 6D00 1C3D
*
0B93 0 C289
0B94 0 D2D6
*
0B95 0 42EE
0B96 1 088E
*
0B97 0 1010
0B98 0 D2D6
*
0B99 0 C235
0B9A 1 4C20 0BA7
*
T1301 EQU      *
MDX L TRID.1   TEST ENTRY POINT  81210550
BZ      T1302   BUMP RTN ID      81210560
S      2 K1-TB  BR IF TEST NUMBER ZERO 81210570
BNZ     T1401   DECREMENT BY ONE  81210580
*
T1302 LD      2  TSW0-TB    GET OPTION SWS      81210590
SLA     OTTLE   PRINT TITLES      81210600
BNN     T1303   BR IF NOT SET      81210610
BSI     2  TLGMS-TB GO TO PRINT ROUTINE 81210620
DC     TTL13   MESSAGE ADDRESS     81210630
*
T1303 BSI     2  GETDV-TB   GET CHANNEL FOR RTN 81210640
LDX L1 T1309   SET RETURN ADDRESS  81210650
STX L1 ERADR   81210660
*
T1304 LD      2  H4000-TB  SET SW TO EXIT SIO  81210670
STO     2  SIOSW-TB * RTN ON ERROR  81210680
*
BSI     2  SIO-TB   GO TO START IO RTN  81210690
DC     NOPCC     NOP CCW           81210700
*
SLA     16       CLEAR SW          81210710
STO     2  SIOSW-TB 81210720
*
LD      2  SCSX0-TB GET CHAN STATUS  81210730
BNZ     T130K     BR IF NOT 0       81210740

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OB9C 0 0A2B      XIO 2 SCSN1-TB  ELSE GET CSW AND PUT IN  81210900
OB9D 0 D241      STO 2 SCSXC-TB  * SAVE AREA                81210910
OB9E 0 0A2F      XIO 2 SCSN3-TB  *                          81210920
OB9F 0 D242      STO 2 SCSXC+1-TB *                          81210930
OBA0 0 0A31      XIO 2 SCSN4-TB  *                          81210940
OBA1 0 D243      STO 2 SCSXC+2-TB *                          81210950
OBA2 0 0A33      XIO 2 SCSN5-TB  *                          81210960
OBA3 0 D244      STO 2 SCSXC+3-TB *                          81210970
OBA4 0 42E2      BSI 2 EROUT-TB  *                          81210980
OBA5 0 130A      DC   /130A                81210990
OBA6 1 0BD7      DC   T13M2                81211000
                    *                          81211010
OBA7 0 1001      * T130K SLA   SCUSP   TEST FOR STATUS PENDING  81211020
OBA8 1 4C10 OBD1 BNN   T1308                81211030
OBA9 0 C235      LD   2 SCSX0-TB  GET CHAN STATUS        81211040
OBAB 0 F2B9      EOR 2 H4000-TB  TEST FOR UNIT STATUS PEND 81211050
OBAC 1 4C20 OBCB BNZ   T1306   BR IF ANY STATUS    81211060
OBAE 0 C236      LD   2 SCSX0+1-TB GET UNIT STATUS      81211070
OBAF 0 100E      SLA   UNCHK   TEST FOR UNIT CHECK      81211080
OB80 1 4C28 OBCB BN   T1306   BR IF UNIT CHECK    81211090
OB82 0 C236      LD   2 SCSX0+1-TB GET UNIT STATUS      81211100
OB83 0 100C      SLA   UNCHE   TEST FOR CHANNEL END  81211110
OB84 1 4C10 OBCE BNN   T1307   BR IF NOT -ERR-        81211120
OB86 0 1001      SLA   UNVE-UNCHE TEST FOR DEVICE END  81211130
OB87 1 4C10 OBCE BNN   T1307   BR IF NOT SET -ERR-  81211140
                    * GET HERE IF NOP APPEARED TO WORK PROPERLY 81211150
OB89 0 4209      * T1305 BSI 2 TLPST-TB  TEST LOOP SID        81211160
OB8A 1 0B93      DC   T1304   LOOP ADDRS                81211170
                    *                          81211180
                    * GO TO NEXT ROUTINE IN SEQUENCE          81211190
                    *                          81211200
OB8B 0 42E5      * T13EN BSI 2 FREDV-TB  FREE CHANNEL          81211210
OB8C 0 C2C1      LD   2 TRTNN-TB  GET RTN SWS            81211220
OB8D 1 4C18 OBF5 BZ   T1401   GO TO NEXT RTN IN SEQ  81211230
OB8F 0 42DF      BSI 2 CNTRL-TB  GO TO CONTROL RTN      81211240
OBC0 0007      TTL13 PRNT . SECT 1,RT 3- .          81211250
                    *                          81211260
OBC7 0003      * PRNT  .NO-OP.                81211270
OBCA 0 FFFF      DC   /FFFF                81211280
                    *                          81211290
OBCB 0 42E2      * T1306 BSI 2 EROUT-TB  *                          81211300
OBC 0 0327      DC   /0327                81211310
OBCD 0 1301      DC   /1301   ERR NUMBER          81211320
                    *                          81211330
OBCE 0 42E2      * T1307 BSI 2 EROUT-TB  *                          81211340
OBCF 0 0306      DC   /0306                81211350
OBD0 0 1302      DC   /1302   ERR NUMBER          81211360
                    *                          81211370
OBD1 0 42E2      * T1308 BSI 2 EROUT-TB  *                          81211380
OBD2 0 0306      DC   /0306                81211390
OBD3 0 1303      DC   /1303                81211400
                    *                          81211410
OBD4 0 4206      * T1309 BSI 2 TLPER-TB  TEST LOOP ERROR      81211420
OBD5 1 0B93      DC   T1304   LOOP ADDRS                81211430
OBD6 0 70E2      MDX  T1305   HERE IF NOT            81211440
                    *                          81211450
OBD7 0018      * T13M2 PRNT . 06 CHANNEL HUNG BUSY, NO INTERRUPT. 81211460
OBE9 0011      PRNT . OCCURRED, SECT1,RT 3.          81211470
OBF4 0 FFFF      DC   /FFFF                81211480
                    *                          81211490
                    *                          81211500
                    * *****                               81211510
                    * ROUTINE --4-- SENSE I/O          81211520
                    * *****                               81211530
                    * *****                               81211540
                    * *****                               81211550
                    * *****                               81211560
                    * *****                               81211570

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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* THIS ROUTINE WILL PERFORM A SENSE I/O 81211580
* OPERATION. IT VERIFIES THAT DATA TRANSFER 81211590
* OCCURS BETWEEN THE 2841, THE CHANNEL AND 81211600
* THE PROCESSOR. 81211610
* 81211620
* CONDITIONS CHECKED. 81211630
* DATA TRANSFER FROM 2841 TO PROCESSOR 81211640
* 81211650
* 81211660
***** 81211670
* 81211680
***** 81211690
* 81211700
***** 81211710
* 81211720
***** 81211730
OBF5 0          * T1401 EQU   * TEST ENTRY POINT 81211740
OBF5 1 7401 0815 MDX L TRID,1 BUMP RTN ID 81211750
OBF7 1 4C18 0BFC BZ   T1402 BR IF TEST NUMBER ZERO 81211760
OBF9 0 9297      S   2 K1-TB DECREMENT BY ONE 81211770
OBFA 1 4C20 0C49 BNZ  T1501 BR IF NOT THIS TEST 81211780
                    *                          81211790
OBF 0 C283      * T1402 LD   2 TSW0-TB  GET OPTION SWS 81211800
OBFD 0 100A      SLA   OTTLE  PRINT TITLES 81211810
OBFE 1 4C10 0C02 BNN   T1403 BR IF NOT SET 81211820
OC00 0 4203      BSI 2 TLMGS-TB GO TO PRINT ROUTINE 81211830
OC01 1 0C30      DC   TTL14  MESSAGE ADDRESS 81211840
                    *                          81211850
OC02 0 42E8      * T1403 BSI 2 GETDV-TB  GET CHANNEL FOR RTN 81211860
OC03 1 6500 0C46 LDX  L1 T1409 SET RETURN ADDRESS 81211870
OC05 1 6D00 1C3D STX  L1 ERADR ** 81211880
                    *                          81211890
OC07 0 C28D      * T1404 LD   2 TERM-TB  SET BYTES TO /FFFF INIT. 81211900
OC08 0 D21D      STO 2 SNWDS-TB ** 81211910
OC09 0 D21E      STO 2 SNWDS+1-TB ** 81211920
OC0A 0 D21F      STO 2 SNWDS+2-TB ** 81211930
OC0B 0 10A0      SLT   32 81211940
OC0C 0 DA41      STD 2 SCSXC-TB 81211950
OC0D 0 DA43      STD 2 SCSXC+2-TB 81211960
                    *                          81211970
OC0E 0 42EE -0877 * BSI 2 SIO-TB  START I/O FOR SENSE 81211980
OC0F 1 0898 -1983 1979 * DC   SNCCW 81211990
                    *                          81212000
OC10 0 C241      * LD   2 SCSXC-TB  GET CHAN STATUS 81212010
OC11 0 F2B9      EOR 2 H4000-TB  TEST FOR UNIT STAU PEND 81212020
OC12 1 4C20 0C3D BNZ  T1406 BR IF NONZERO STATUS 81212030
                    *                          81212040
OC14 0 C242      * LD   2 SCSXC+1-TB GET UNIT STATUS 81212050
OC15 0 100E      SLA   UNCHK   TEST FOR UNIT CHECK 81212060
OC16 1 4C28 0C3D BN   T1406 BR IF YES 81212070
                    *                          81212080
OC18 0 C242      * LD   2 SCSXC+1-TB GET UNIT STATUS 81212090
OC19 0 100C      SLA   UNCHE   TEST FOR CHANNEL END 81212100
OC1A 1 4C10 0C40 BNN   T1407 BR IF NOT 81212110
OC1C 0 1001      SLA   UNVE-UNCHE 81212120
OC1D 1 4C10 0C40 BNN   T1407 BR IF NOT DEVICE END TOO 81212130
                    *                          81212140
OC1F 0 C21D      * LD   2 SNWDS-TB  GET BYTES 0 AND 1 81212150
OC20 1 4C20 0C43 BNZ  T1408 BR IF NOT ZERO 81212160
OC22 0 C21E      LD   2 SNWDS+1-TB GET BYTES 2 AND 3 81212170
OC23 0 F2AE      EOR 2 H00C8-TB  TEST FOR CORRECT 81212180
OC24 1 4C20 0C43 BNZ  T1408 BR IF NOT 81212190
OC26 0 C21F      LD   2 SNWDS+2-TB GET BYTES 4 AND 5 81212200
OC27 1 4C20 0C43 BNZ  T1408 BR IF NOT ZERO 81212210
                    *                          81212220
OC29 0 4209      * T1405 BSI 2 TLPST-TB  TEST LOOP SIOS 81212230
OC2A 1 0C07      DC   T1494  LOOP ADDRS 81212240
                    *                          81212250

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*      GO TO NEXT ROUTINE IN SEQUENCE
*
OC2B 0 42E5      *
OC2C 0 C2C1      *
OC2D 1 4C18  OC49  BZ      T1501      GO TO NEXT RTN IN SEQ
OC2F 0 42DF      BSI      2 CNTRL-TB  GO TO CONTROL RTN
OC30  0007      TTL14 PRNT  . SECT 1,RT 4-
*
OC37  0005      *
OC3C 0 FFFF      PRNT      .SENSE I/O.
*
OC3D 0 42E2      DC      /FFFF
OC3E 0 1302      *
OC3F 0 1401      T1406 BSI      2 EROUT-TB
*
OC40 0 42E2      DC      /1302      TAGS AND OPTIONS
OC41 0 1302      DC      /1401
OC42 0 1403      *
OC43 0 42E2      T1407 BSI      2 EROUT-TB
OC44 0 1347      DC      /1302      TAGS AND OPTIONS
OC45 0 1404      DC      /1403      ERR NUMBER
*
OC46 0 4206      T1408 BSI      2 EROUT-TB
OC47 1 0C07      DC      /1347      TAGS AND OPTIONS
OC48 0 70E0      DC      /1404      ERR NUMBER
*
OC49 0           *
OC49 1 7401 0815  T1409 BSI      2 TLPER-TB  TEST LOOP ERROR
OC4B 1 4C18 0C50  DC      T1404      LOOP ADDRS
OC4D 0 9297      MDX      T1405      ELSE HERE
OC4E 1 4C20 0CAC  *
*
*****
*      ROUTINE --5--  COMMAND EXIT
*****
*
*      THIS ROUTINE WILL PERFORM THE FOLLWING FILE
*      COMMANDS TO CHECK THAT THEY CAN BE EXECUTED
*      WITHOUT HANGNG UP THE CONTROL UNIT. NO
*      CHECK IS MADE TO DETERMINE IF THE COMMANDS
*      FUNCTIONED PROPERLY. THE ONLY REQUIREMENT
*      IS THAT THE CONTROL UNIT AND FILE BECOME
*      AVAILABLE WITHIN 2 SECONDS AFTER INITIATION
*      OF THE COMMAND.
*
*      CONDITIONS CHECKED.
*      CONTROL UNIT HANG-UPS
*      SET DIFFERENCE
*      ATTENTION FROM 2311
*
*****
*
*****
*
*****
*
OC49 0           *
OC49 1 7401 0815  T1501 EQU      *      TEST ENTRY POINT
OC4B 1 4C18 0C50  MDX      L TRID.1  BUMP RTN ID
OC4D 0 9297      BZ      T1502      BR IF TEST NUMBER ZERO
OC4E 1 4C20 0CAC  S      2 K1-TB  DECREMENT BY ONE
*
OC50 0 C283      BNZ      T1601      BR IF NOT THIS TEST
*
OC51 0 100A      *
OC52 1 4C10 0C56  T1502 LD      2 TSW0-TB  GET OPTION SWS
OC54 0 4203      SLA      OTTLE      PRINT TITLES
*
*      BNN      T1503      BR IF NOT SET
*      BSI      2 TLGMS-TB  GO TO PRINT ROUTINE

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OC55 1 0C6E      *      DC      TTL15      MESSAGE ADDRESS
OC56 0 42E8      *      T1503 BSI      2 GETDV-TB  GET CHANNEL FOR RTN
OC57 1 6500 0C86  LD      L1 T1509  SET RETURN ADDRESS
OC59 1 6000 19B2  STX      L1 WTADR  SET RETURN ADDRESS
OC5B 0 61FC      LD      1 -4      SET COUNT
*
OC5C 1 C500 0C9D  T1505 LD      L1 T15LS+4  GET CCW ADDRESS
OC5E 0 D001      STO      T1506+1  SET IN LD INSTRUCTION
*
OC5F 0 42EE      *      T1506 BSI      2 SIO-TB  GO TO SIO RTN
OC60 0 0000      DC      **      CCW ADDRESS SET HERE
*
OC61 0 C0FE      *      LD      T1506+1  GET ADDRESS
OC62 0 F037      EOR      T15LS+1  TEST FOR SEEK
OC63 1 4C18 0C7C  BZ      T1508      BR IF YES
*
OC65 0 4209      *      T1507 BSI      2 TLPST-TB  TEST LOOP SIO
OC66 1 0C5F      DC      T1506      LOOP ADDRS
OC67 0 7101      MDX      1 1      BUMP COUNT
OC68 0 70F3      MDX      T1505      LOOP UNTIL FINISHED
*
*      GO TO NEXT ROUTINE IN SEQUENCE
*
OC69 0 42E5      *
OC6A 0 C2C1      LD      2 TRTNN-TB  GET RTN SWS
OC6B 1 4C18 0CAC  BZ      T1601      GO TO NEXT RTN IN SEQ
OC6D 0 42DF      BSI      2 CNTRL-TB  GO TO CONTROL RTN
OC6E  0007      TTL15 PRNT  . SECT 1,RT 5-
*
OC75  0006      *      PRNT      .COMMAND EXIT.
OC7B 0 FFFF      DC      /FFFF
*
OC7C 0 42EB      *      T1508 BSI      2 GETSN-TB  GET SENSE INFO
OC7D 0 C21E      LD      2 SNWDS+1-TB
OC7E 0 E2AE      AND      2 H00C8-TB  SAVE BITS THAT SHOULD BE ON
OC7F 0 F2AE      EOR      2 H00C8-TB  CLEAR THEN
OC80 1 4C18 0C65  BZ      T1507      BR IF SENSE CORRECT
*
OC82 0 42E2      *      BSI      2 EROUT-TB
OC83 0 0107      DC      /0107
OC84 0 1505      DC      /1505      ERR NUMBER
OC85 0 7010      MDX      T1510
*
OC86 0 7500 1505  T1509 MDX      L1 /1501+4  COME HERE IF TIMEOUT
OC88 0 1000      NOP
OC89 0 6905      STX      1 T15ER  SET ERROR MSG NUMBER
OC8A 0 7500 EAFB  MDX      L1 -/1501-4  DECR BACK
OC8C 0 1000      NOP
OC8D 0 42E2      BSI      2 EROUT-TB
OC8E 0 0106      DC      /Q106
OC8F 0 0000      T15ER DC      **      ERR NUMBER
*
OC90 1 4400 086A  *      BSI      L GETSN  GET SENSE INFO
OC92 0 CA1D      LDD      2 SNWDS-TB  GET SENSE BYTES
OC93 0 109F      SLT      FSKIN  TEST FOR SEEK INCOMPLETE
OC94 1 4C10 0C65  BNN      T1507      BR IF NOT
*
OC96 0 42EE      *      T1510 BSI      2 SIO-TB  GO TO START IO RTN
OC97 1 0891      DC      RECAL      CCW ADDRESS
*
OC98 0 70CC      *      MDX      T1507      GO TO LOOP
*
*      LIST OF CCW ADDRESSES
*
OC99 1 0C9D      T15LS DC      T15C1
OC9A 1 0CA0      DC      T15C2

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OC9B 1 OCA3          DC      T15C3          81213620
OC9C 1 0891          DC      RECAL           81213630
*                               81213640
* CCW'S USED IN RTN          81213650
*                               81213660
*                               81213670
OC9D 0 0005          T15C1 DC      5          BYTE COUNT 81213680
OC9E 0 001A          DC      0*256+RDHA  FLAGS AND OP CODE 81213690
OC9F 1 08C8          DC      HA          ADDRESS      81213700
*                               81213710
*                               81213720
OCA0 0 0006          T15C2 DC      6          BYTE COUNT 81213730
OCA1 0 001B          DC      0*256+SKHD  FLAGS AND OP CODE 81213740
OCA2 1 OCA6          DC      SEEK1         ADDRESS      81213750
*                               81213760
*                               81213770
OCA3 0 0006          T15C3 DC      6          BYTE COUNT 81213780
OCA4 0 0007          DC      0*256+SEEKC  FLAGS AND OP CODE 81213790
OCA5 1 OCA9          DC      SEEK2         ADDRESS      81213800
*                               81213810
*                               81213820
* SEEK ARGUMENTS          81213830
*                               81213840
SEEK1 DC      0          SKARG1          81213850
DC      0                               81213860
DC      0                               81213870
SEEK2 DC      0          SKARG2          81213880
DC      /F                               81213890
DC      0                               81213900
*                               81213910
*                               81213920
***** 81213930
*                               81213940
* ROUTINE --6-- READ HEAD MAP 81213950
*                               81213960
***** 81213970
*                               81213980
*                               81213990
* THIS ROUTINE WILL CONSTRUCT A MAP USING EACH HEAD FROM 0 TO 9. THE RESULT OF A READ HOME ADDRESS IS CODED AND STORED IN A MAP (ARRAY). AFTER THE MAP IS CONSTRUCTED (ALL HEADS USED), THE PROGRAM DETERMINES IF AN ERROR OCCURRED AND IF SO ATTEMPTS TO ISOLATE THE ERROR.
*                               81214000
*                               81214010
*                               81214020
*                               81214030
*                               81214040
*                               81214050
*                               81214060
*                               81214070
*                               81214080
*                               81214090
* EQUIPMENT CHECKED,
* READ AMPLIFIER          81214100
* HEAD ADDRESS REGISTER 81214110
* HAR DECODE              81214120
* HEAD SELECTION          81214130
* HEAD ADJUSTMENT        81214140
* READ HEAD               81214150
* DATA TRANSFER          81214160
* SOME BUS AND TAG LINES 81214170
* 2841 SERIALIZER-DESERIALIZER CLOCK VFO 81214180
*                               81214190
*                               81214200
***** 81214210
*                               81214220
***** 81214230
*                               81214240
***** 81214250
*                               81214260
***** 81214270
*                               81214280
OCA6 0 0000          DC      0          SKARG1          81214290
OCA7 0 0000          DC      0                               81214300
OCA8 0 0000          DC      0                               81214310
OCA9 0 0000          DC      0          SKARG2          81214320
OCAA 0 000F          DC      /F                               81214330
OCAB 0 0000          DC      0                               81214340
*                               81214350
*                               81214360
*                               81214370
*                               81214380
*                               81214390
*                               81214400
*                               81214410
*                               81214420
*                               81214430
*                               81214440
*                               81214450
*                               81214460
*                               81214470
*                               81214480
*                               81214490
*                               81214500
*                               81214510
*                               81214520
*                               81214530
*                               81214540
*                               81214550
*                               81214560
*                               81214570
*                               81214580
*                               81214590
*                               81214600
*                               81214610
*                               81214620
*                               81214630
*                               81214640
*                               81214650
*                               81214660
*                               81214670
*                               81214680
*                               81214690
*                               81214700
*                               81214710
*                               81214720
*                               81214730
*                               81214740
*                               81214750
*                               81214760
*                               81214770
*                               81214780
*                               81214790
*                               81214800
*                               81214810
*                               81214820
*                               81214830
*                               81214840
*                               81214850
*                               81214860
*                               81214870
*                               81214880
*                               81214890
*                               81214900
*                               81214910
*                               81214920
*                               81214930
*                               81214940
*                               81214950
*                               81214960
*                               81214970
OCAC 0
OCAC 1 7401 0815
T1601 EQU *          TEST ENTRY POINT
MDX L TRID.1        BUMP RTN ID

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OCAE 1 4C18 OCB3     BZ      T1602     BR IF TEST NUMBER ZERO 81214300
OCB0 0 9297         S      2 K1-TB   DECREMENT BY ONE      81214310
OCB1 1 4C20 0E54    BNZ     T1701     BR IF NOT THIS TEST   81214320
*                               81214330
OCB3 0 C283         T1602 LD     2.TSW0-TB  GET OPTION SWS        81214340
OCB4 0 100A         SLA     OTTLE     PRINT TITLES          81214350
OCB5 1 4C10 OCB9    BNN     T1603     BR IF NOT SET         81214360
OCB7 0 4203         BSI     2 TLGMS-TB GO TO PRINT ROUTINE 81214370
OCB8 1 0D0E         DC      TTL16     MESSAGE ADDRESS       81214380
*                               81214390
OCB9 0 42E8         T1603 BSI     2 GETDV-TB  GET CHANNEL FOR RTN   81214400
OCBA 1 6500 OCE1    LDX     L1 T16ER  SET TIMEOUT RETURN    81214410
OCBC 1 6D00 19B2    STX     L1 WTADR  ***                    81214420
OCBE 0 C29F         LD      2 K10-TB   SETUP PASS COUNTER    81214430
OCBF 0 D2DD         STO     2 LPCNT-TB *                       81214440
OCC0 0 10A0         T1604 SLT     32                    81214450
OCC1 1 DC00 ODEA    STD     L T16H1   * HD NO. AND ER SW    81214460
OCC3 1 DC00 ODEC    STD     L T16T1   * COUNTERS            81214470
OCC5 1 DC00 ODEE    STD     L T16T3   *                      81214480
OCC7 1 DC00 ODF0    STD     L T16T5   *                      81214490
*                               81214500
OCC9 0 63F6         LDX     3 -10      SET UP MAP TABL POINTER 81214510
OCCA 1 6500 177E    LDX     L1 T32HA   SET POINTER           81214520
OCCC 0 C28D         T1605 LD      2 TERM-TB *                      81214530
OCCD 0 D249         STO     2 HA-TB   CLEAR HA ARG          81214540
OCCE 0 D24A         STO     2 HA+1-TB ***                    81214550
OCCF 0 D248         STO     2 HA+2-TB ***                    81214560
OCD0 1 C400 ODEA    LD      L T16H1   GET HEAD NUMBER       81214570
OCD2 1 D400 ODF4    STD     L T16HD+2 PUT INTO SK ARGUMENT 81214580
OCD4 0 C2B9         LD      2 H4000-TB RETURN IF NOT CC 0    81214590
OCD5 0 D2D6         STO     2 SIDSW-TB *                      81214600
*                               81214610
OCD6 0 42EE         T1606 BSI     2 SIO-TB   EXEC CHNL PGRM        81214620
OCD7 1 0E00         DC      T16C1     READ HA CCW          81214630
*                               81214640
OCD8 0 4209         BSI     2 TLPST-TB  TEST LOOP SIO         81214650
OCD9 1 0CD6         DC      T1606     LOOP ADDRS          81214660
*                               81214670
OCDA 0 C249         LD      2 HA-TB   GET HA READ          81214680
OCDB 0 D100         STO     1 0       SAVE IN TABLE       81214690
OCDC 0 C24A         LD      2 HA+1-TB ***                    81214700
OCDD 0 D101         STO     1 1       ***                    81214710
OCDE 0 C24B         LD      2 HA+2-TB ***                    81214720
OCDF 0 D102         STO     1 2       ***                    81214730
OCE0 0 7103         MDX    1 3       BUMP POINTER          81214740
*                               81214750
OCE1 0 C236         T16ER LD     2 SCSX0+1-TB TEST FOR UNIT CHECK 81214760
OCE2 0 100E         SLA     UNCHK     ***                    81214770
OCE3 1 4C28 0D1D    BN      T1608     BRANCH IF ON         81214780
*                               81214790
OCE5 0 C24B         LD      2 HA+2-TB  TEST IF 5 CHAR OF HA 81214800
OCE6 0 1808         SRA     8          81214810
OCE7 0 F2AF         EOR     2 H00FF-TB ***                    81214820
OCE8 1 4C18 0D3E    BZ      T1609     BRANCH IF NOT        81214830
*                               81214840
OCEA 0 C24B         LD      2 HA+2-TB  GET LAST TWO BYTES   81214850
OCEB 0 1008         SLA     8          TEST FOR 6 CHARS XFERR 81214860
OCEC 1 4C20 0D3E    BNZ     T1609     BRANCH IF YES        81214870
*                               81214880
OCEE 0 C24B         LD      2 HA+2-TB  GET HEAD NUMBER       81214890
OCEF 0 1808         SRA     8          SAVE BITS 8-15       81214900
OCF0 1 F400 ODF4    EOR     L T16HD+2 TEST SAME HEAD       81214910
OCF2 1 4C20 0D41    BNZ     T1610     NO                    81214920
*                               81214930
OCF4 1 C400 ODF4    LD      L T16HD+2 GET HEAD NUMBER       81214940
OCF6 0 42F4         BSI     2 TCVBE-TB CONVERT TO PRNT CODE 81214950
OCF7 0 18D0         XCH                      Q TO A          81214960
OCF8 1 D700 0DFF    STD     L3 T16MP+10 STOR IN MAP          81214970

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

OCFA 1 7401 ODEA	T1607 MDX L	T16H1,1	BUMP HEAD COUNTER	81214980
OCFC 0 7301	MDX 3 1		BUMP MAP POINTER	81214990
OCFD 0 70CE	MDX	T1605	RETURN	81215000
*				
OCFE 1 C400 ODEB	LD L	T16ES	TEST FOR ERROR	81215010
OD00 1 4C20 OD58	BNZ	T16TT	BR IF ERROR OCCURED	81215020
*				
OD02 1 74FF 085C	MDX L	LPCNT,-1	DECR PASS CNTR	81215030
OD04 0 70BB	MDX	T1604		81215040
*				
OD05 0 C283	LD 2	TSW0-TB	GET OPTION SWITCHES	81215050
OD06 0 100A	SLA	OPRRS	RESULTS TO BE PRINTED	81215060
OD07 1 4C28 ODAF	BN	T16PR	BR IF YES	81215070
*				
* GO TO NEXT ROUTINE IN SEQUENCE				
*				
OD09 0 42E5	T16EN BSI 2	FREDV-TB	FREE CHANNEL	81215080
OD0A 0 C2C1	LD 2	TRTNN-TB	GET RTN SWS	81215090
OD0B 1 4C18 OE54	BZ	T1701	GO TO NEXT RTN IN SEQ	81215100
OD0D 0 42DF	BSI 2	CNTRL-TB	GO TO CONTROL RTN	81215110
OD0E 0007	TTL16 PRNT	. SECT 1,RT 6-		81215120
*				
OD15 0007	PRNT	.READ HEAD MAP.		81215130
OD1C 0 FFFF	DC	/FFFF		81215140
*				
* UNIT CHECK ON				
*				
OD1D 1 4400 086A	T1608 BSI L	GETSN	GET SENSE INFO	81215150
*				
OD1F 0 CA1D	T16NF LDD 2	SNWDS-TB	GET SENSE BYTES	81215160
OD20 0 108C	SLT	FNORC	TEST NO REC FOUND	81215170
OD21 1 4C10 OD26	BNN	T16BC		81215180
OD23 0 4023	BSI	T16MB	GO BUILD MAP	81215190
OD24 1 ODED	DC	T16T2		81215200
OD25 0001	PRNT	.NF.		81215210
*				
OD26 0 CA1D	T16BC LDD 2	SNWDS-TB	GET SENSE BYTE	81215220
OD27 0 1084	SLT	FBRST	TEST BURST CHECK	81215230
OD28 1 4C10 OD2D	BNN	T16SD		81215240
OD2A 0 401C	BSI	T16MB	GO BUILD MAP	81215250
OD2B 1 ODEE	DC	T16T3		81215260
OD2C 0001	PRNT	.BC.		81215270
*				
OD2D 0 CA1D	T16SD LDD 2	SNWDS-TB	GET SENSE BYTES	81215280
OD2E 0 1092	SLT	FSERD	TEST SERIALIZER/	81215290
OD2F 1 4C10 OD34	BNN	T16US	* DESERIALIZER	81215300
OD31 0 4015	BSI	T16MB	GO BUILD MAP	81215310
OD32 1 ODEF	DC	T16T4		81215320
OD33 0001	PRNT	.SD.		81215330
*				
OD34 0 CA1D	T16US LDD 2	SNWDS-TB	GET SENSE BYTES	81215340
OD35 0 109A	SLT	FUNSI	TEST UNSAFE	81215350
OD36 1 4C10 OD3B	BNN	T16SE		81215360
OD38 0 400E	BSI	T16MB	GO BUILD MAP	81215370
OD39 1 ODFO	DC	T16T5		81215380
OD3A 0001	PRNT	.US.		81215390
*				
OD3B 0 400B	T16SE BSI	T16MB	GO BUILD MAP	81215400
OD3C 1 ODF1	DC	T16T6		81215410
OD3D 0001	PRNT	.SE.		81215420
*				
* TRANSFER FAILURE				
*				
OD3E 0 4008	T1609 BSI	T16MB	GO BUILD MAP	81215430
OD3F 1 ODF1	DC	T16T6		81215440
OD40 0001	PRNT	.TX.		81215450
*				

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

* WRONG HEAD				
*				
OD41 0 C24B	T1610 LD	2 HA+2-TB	GET HA READ	81215660
OD42 0 42F4	BSI 2	TCVBE-TB	CVT TO 1443 CODE	81215670
OD43 0 D002	STO	T16WH		81215680
OD44 0 4002	BSI	T16MB	PRINT MAP	81215690
OD45 1 ODF1	DC	T16T6		81215700
OD46 0 0000	T16WH DC	**		81215710
*				
* BUILD MAP ROUTINE				
*				
OD47 0 0000	T16MB DC	**	ENTRY	81215720
OD48 1 6C00 ODEB	STX L	T16ES	SET ERROR SW	81215730
OD4A 1 7401 ODEC	MDX L	T16T1,1	BUMP TOTAL COUNTER	81215740
OD4C 1 C480 OD47	LD	I T16MB		81215750
OD4E 0 D001	STO	**1		81215760
OD4F 0 7401 0000	MDX L	**+,1		81215770
OD51 1 7401 OD47	MDX L	T16MB,1		81215780
OD53 1 C480 OD47	LD	I T16MB		81215790
OD55 1 D700 ODFF	STO	L3 T16MP+10	STOR IN MAP	81215800
OD57 0 70A2	MDX	T1607		81215810
*				
* T16TT - ERROR OCCURED, DETERMINE SEVERITY				
*				
OD58 1 C400 ODEC	T16TT LD	L T16T1		81215820
OD5A 0 9297	S	2 K1-TB	WAS THERE 1 ERROR	81215830
OD5B 1 4C20 OD6B	BNZ	T1615	MORE THAN 1 ERROR	81215840
*				
OD5D 1 C400 ODED	LD	L T16T2	WAS THERE 1 NRF ERROR	81215850
OD5F 1 4C18 OD63	BZ	T1613	NO	81215860
OD61 0 4046	BSI	T16PM	YES,GO PRINT MAP	81215870
OD62 0 1610	DC	/1610		81215880
*				
OD63 1 C400 ODEE	T1613 LD	L T16T3	WAS THERE 1 BC ERROR	81215890
OD65 1 4C18 OD69	BZ	T1614	NO	81215900
OD67 0 4040	BSI	T16PM	YES,GO PRINT MAP	81215910
OD68 0 1611	DC	/1611		81215920
*				
* PROGRAM CANT DECODE FAILURE				
*				
OD69 0 403E	T1614 BSI	T16PM	GO PRINT MAP	81215930
OD6A 0 1609	DC	/1609		81215940
*				
OD6B 1 C400 ODEC	T1615 LD	L T16T1	GET TOTAL ERRORS	81215950
OD6D 0 929F	S	2 K10-TB	WERE THERE 10 ERRORS	81215960
OD6E 1 4C20 OD95	BNZ	T1620	NO	81215970
OD70 1 C400 ODED	LD	L T16T2	YES	81215980
OD72 0 929F	S	2 K10-TB	* WERE THERE 10 NRF	81215990
OD73 1 4C20 OD77	BNZ	T1616	NO	81216000
OD75 0 4032	BSI	T16PM	YES,PRINT MAP	81216010
OD76 0 1601	DC	/1601		81216020
*				
OD77 1 C400 ODEE	T1616 LD	L T16T3		81216030
OD79 0 929F	S	2 K10-TB	WERE THERE 10 BURST CK	81216040
OD7A 1 4C20 OD7E	BNZ	T1617	NO	81216050
OD7C 0 402B	BSI	T16PM	YES,PRINT MAP	81216060
OD7D 0 1602	DC	/1602		81216070
*				
OD7E 1 C400 ODEF	T1617 LD	L T16T4		81216080
OD80 0 929F	S	2 K10-TB	WERE THERE 10 S/D	81216090
OD81 1 4C20 OD85	BNZ	T1618	NO	81216100
OD83 0 4024	BSI	T16PM	YES,PRINT MAP	81216110
OD84 0 1603	DC	/1603		81216120
*				
OD85 1 C400 ODFO	T1618 LD	L T16T5		81216130
OD87 0 929F	S	2 K10-TB	WERE THERE 10 UNSAFE	81216140
OD88 1 4C20 OD8C	BNZ	T1619	NO	81216150
OD8A 0 401D	BSI	T16PM	YES,GO PRINT MAP	81216160

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

0D8B 0 1604          DC      /1604          81216340
*
0D8C 1 C400 0DED    T1619 LD  L  T16T2    GET TOTAL NRF AND 81216350
0D8E 1 8400 0DEE    A      L  T16T3    * BURST CK ERRORS 81216360
0D90 0 929F        S      2  K10-TB   WERE THERE 10     81216370
0D91 1 4C20 0D69   BNZ    T1614    NO                81216380
0D93 0 4014        BSI    T16PM    YES                81216390
0D94 0 1605        DC      /1605    ERR NUMBER        81216400
*
* ERROR COUNT NOT 1 OR 10 81216410
*
0D95 1 C400 0DF0    T1620 LD  L  T16T5    WERE THERE 9 UNSAFES 81216420
0D97 0 929E        S      2  K9-TB     NO                81216430
0D98 1 4C20 0D9C   BNZ    T1621    YES,GO PRINT MAP 81216440
0D9A 0 4000        BSI    T16PM    YES                81216450
0D9B 0 1607        DC      /1607    YES                81216460
*
0D9C 1 C400 0DEC    T1621 LD  L  T16T1    WERE THERE ANY     81216470
0D9E 1 4C20 0DA2   BNZ    T1623    * UNIT CK ERRORS 81216480
0DA0 0 4007        BSI    T16PM    NO                81216490
0DA1 0 1608        DC      /1608    NO                81216500
*
0DA2 1 C400 0DF0    T1623 LD  L  T16T5    WERE THERE 2 OR    81216510
0DA4 0 9297        S      2  K1-TB     * MORE UNSAFES    81216520
0DA5 1 4C30 0DA0   BP     T1622    YES                81216530
0DA7 0 70C1        MDX   T1614    YES                81216540
*
* PRINT ERROR AND HEAD MAP 81216550
*
0DA8 0 0000        T16PM DC  *-*
0DA9 1 C480 0DA8   LD      I  T16PM    GET ERROR NUMBER 81216560
0DAB 0 D002        STO    T1624    STORE FOR CALL    81216570
*
0DAC 0 42E2        BSI    2  ER0UT-TB  GO PRINT ERROR    81216580
0DAD 0 0140        DC     /0140    * MESSAGE         81216590
0DAE 0 0000        T1624 DC  *-*
*
0DAF 0 63F6        T16PR LD  X  3 -10    SET LOOP COUNT    81216600
0DB0 0 6100        LDX   1  0
0DB1 1 C700 0DFF   T1625 LD  L3 T16MP+10 GET MAP CHARACTERS 81216610
0DB3 1 D500 0E3F   STO   L1 TRHAR+7   STOR IN PRINT ARG 81216620
0DB5 0 7102        MDX   1  2
0DB6 0 7301        MDX   3  1
0DB7 0 70F9        MDX   T1625
*
0DB8 0 4203        BSI    2  TLGMS-TB  PRINT HEADING     81216630
0DB9 1 0E14        DC     TH0NG
*
0DBA 0 C030        LD     T16ES    TEST ERROR SWITCH 81216640
0DBB 1 4C18 0D09   BZ     T16EN    BRANCH IF OFF     81216650
*
* SCAN MAP,PRINT CSW SENSE AND DATA FOR 81216660
* * EACH FAILING HEAD,IF 10 HEADS 81216670
* * FAILED PRINT HEAD 00 DATA ONLY 81216680
*
0DBD 1 6500 177E   T16SM LD  X  L1 T32HA  SET UP HA POINTER 81216690
0DBF 0 63F6        LDX   3  -10    SET COUNTER       81216700
0DC0 0 1010        SLA   16      CLEAR A REG       81216710
0DC1 0 D030        STO   T16HD    SAVE HD NUMBER TO ZERO 81216720
*
0DC2 0 C02F        T1626 LD  T16HD    GET HEAD NUMBER   81216730
0DC3 0 42F4        BSI    2  TCVBE-TB  CONVERT TO PRNT CODE 81216740
0DC4 0 1800        XCH   Q TO A
0DC5 1 F700 0DFF   EOR   L3 T16MP+10 COMPARE WITH MAP 81216750
0DC7 1 4C20 0DD3   BNZ    T1628    FOUND A FAILING HEAD 81216760
*
0DC9 1 7401 0DF2   T1629 MD  X  L  T16HD,1 BUMP HEAD          81216770
0DCB 0 7103        MDX   1  3      BUMP TABLE       81216780

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0DCC 0 7301        MDX   3  1      BUMP MAP POINTER 81217020
0DCD 0 70F4        MDX   T1626    LOOP              81217030
*
*
0DCE 0 42FA        T1627 BSI  2  THALT-TB  WAIT FOR OPERATOR 81217040
0DCF 0 4206        BSI    2  TLPER-TB  TEST LOOP ERROR   81217050
0DD0 1 0CC0        DC     T1604    LOOP ADDR        81217060
*
0DD1 1 4C00 0D09   *      BSC  L  T16EN  END ROUTINE       81217070
*
0DD3 0 C01E        T1628 LD  T16HD    GET HEAD NUMBER   81217080
0DD4 0 42F4        BSI    2  TCVBE-TB  CONVERT TO PRNT CODE 81217090
0DD5 0 1800        XCH   Q TO A
0DD6 0 D031        STO   THRD+2    STORE IN MESSAGE 81217100
*
0DD7 0 C100        LD     1  0      GET HOME ADDRESS READ 81217110
0DD8 0 42F4        BSI    2  TCVBE-TB  CONVERT TO PRNT CODE 81217120
0DD9 0 D834        STD   THRD+8    SET IN MESSAGE    81217130
*
0DDA 0 C101        LD     1  1      GET NEXT TWO BYTES   81217140
0DDB 0 42F4        BSI    2  TCVBE-TB  CONVERT TO PRNT CODE 81217150
0DDC 0 D833        STD   THRD+10   SET IN MSG        81217160
*
0DDD 0 C102        LD     1  2      GET LAST BYTES      81217170
0DDE 0 42F4        BSI    2  TCVBE-TB  CONVERT TO PRNT CODE 81217180
0DDF 0 D032        STO   THRD+12   SET IN MSG        81217190
*
*
0DE0 0 4203        BSI    2  TLGMS-TB  PRINT CSW AND SENSE 81217200
0DE1 1 0E06        DC     THRD
*
0DE2 0 42E2        BSI    2  ER0UT-TB  PRINT CSW AND SENSE 81217210
0DE3 0 0013        DC     /0013
0DE4 0 1699        DC     /1699
*
0DE5 0 C006        LD     T16T1    DID ALL HEADS FAIL 81217220
0DE6 0 929F        BSI    2  K10-TB   NO                81217230
0DE7 1 4C20 0DC9   BNZ    T1629    YES,WAIT         81217240
0DE9 0 70E4        MDX   T1627
*
0DEA 0 0000        BSS   E  0
0DEA 0 0000        T16H1 DC  0      HEAD COUNTER       81217250
0DEB 0 0000        T16ES DC  0      ERROR SWITCH       81217260
0DEC 0 0000        T16T1 DC  0      TOTAL              81217270
0DED 0 0000        T16T2 DC  0      NRF                81217280
0DEE 0 0000        T16T3 DC  0      BURST CK BC       81217290
0DEF 0 0000        T16T4 DC  0      SID                81217300
0DF0 0 0000        T16T5 DC  0      UNSAFE US         81217310
0DF1 0 0000        T16T6 DC  0      MISC SE,TX,XX    81217320
0DF2 0 0000        T16HD DC  /0000
0DF3 0 00C6        DC     /00C6    CYL 198           81217330
0DF4 0 0000        DC     /0000
0DF5 0 000A        T16MP BSS 10     HEAD MAP TABLE   81217340
0DF6 0 0000        T16PS DC  0      PASS COUNT        81217350
*
*
0E00 0 0006        T16C1 DC  6      BYTE COUNT         81217360
0E01 0 4007        DC     /40*256+SEEKC FLAGS AND OP CODE 81217370
0E02 1 0DF2        DC     T16HD    ADDRESS            81217380
*
*
0E03 0 0005        DC     5        BYTE COUNT         81217390
0E04 0 001A        DC     0*256+RDHA FLAGS AND OP CODE 81217400
0E05 1 08C8        DC     HA       ADDRESS            81217410
*
*
0E06 0 0000        BSS   E  0
0E06 0 0013        THRD  PRNT . HD XX HA READ XXXXXXXXXXXX. 81217420

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OE13 0 FFFF          DC      /FFFF          81217700
*
*
*
OE14 0008          THDNG PRNT  . READ HEAD MAP-. 81217710
OE1C 0 00FF          DC      /00FF          81217720
*
*
OE1D 0016          THNUM PRNT  . HEAD NUMBER 00 01 02 03 04. 81217730
OE2D 0010          PRNT      . 05 06 07 08 09. 81217740
OE37 0 00FF          DC      /00FF          81217750
*
*
OE38 0016          TRHAR PRNT  . RD HA RESULT XX XX XX XX XX. 81217760
OE48 0010          PRNT      . XX XX XX XX XX. 81217770
OE52 0 FF00          DC      /FF00          81217780
OE53 0 FFFF          DC      /FFFF          81217790
*
*
*****
*
ROUTINE --7-- RECALIBRATE
*****
*
THIS ROUTINE WILL EXECUTE THE RECALIBRATE
COMMAND AND CHECK FOR THE FOLLOWING,
*
1. ACCESS IS OPERATIVE WHILE CARRIAGE IS IN
MOTION,
*
2. THE DETENT IS BEING PULLED (LOSS OF
READY),
*
3. SEEK COMPLETE.
*
AFTER RECEIVING DEVICE END, THE ROUTINE WILL
PERFORM A READ HOME ADDRESS TO CHECK THE
CARRIAGE POSITION AFTER RECALIBRATE.
*
CIRCUITS CHECKED.
*
FILE ADDRESS BUS 6
CONTROL TAG
SEEK START
RETURN TO ZERO
ONLINE
SEEK READY
*
*****
*
OE54 0
OE54 1 7401 0815
OE56 1 4C18 0E5B
OE58 0 9297
OE59 1 4C20 0EDA
*
OE5B 0 C283
OE5C 0 100A
OE5D 1 4C10 0E61
OE5F 0 4203
OE60 1 0E9C
*
OE61 0 42E8
OE62 1 6500 0ECA
OE64 1 6D00 1C3D
OE66 1 6500 0EAA
OE68 1 6D00 19B2
OE6A 0 C29F
OE6B 0 D2DD

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
*
*
OE6C 0 C2BC          T1704 LD  2 H8000-TB  SET SW TO DO SIO AND RE- 81218380
OE6D 0 D2D6          STO  2 SIOSW-TB  TURN AFTER CMD ACCEPTED 81218390
*
*
OE6E 0 42EE          BSI  2 SIO-TB  RECALIBRATE 2311 81218400
OE6F 1 0891          DC  RECAL  CCW ADDRESS 81218410
*
*
OE70 0 4200          BSI  2 TIO-TB  GO TEST I/O 81218420
*
*
OE71 0 C23E          LD  2 SCSX8+1-TB GET UNIT STATUS 81218430
OE72 0 100E          SLA  UNCHK  TEST FOR UNIT CHECK 81218440
OE73 1 4C28 0EB5     BN  T1709 81218450
*
*
TEST THAT ACCESS IS BUSY MOVING
*
*
OE75 0 C23E          LD  2 SCSX8+1-TB GET UNIT STATUS 81218460
OE76 0 100B          SLA  UNBZY 81218470
OE77 1 4C10 0EB8     BNN  T1710 81218480
*
*
OE79 1 4400 19A0     BSI  L  WAITT  WAIT FOR DE OR UNIT CHECK 81218490
*
*
OE7B 0 C236          LD  2 SCSX0+1-TB GET UNIT STATUS 81218500
OE7C 0 100E          SLA  UNCHK 81218510
OE7D 1 4C28 0EB1     BN  T1708  BR IF SET 81218520
*
*
READ HOME ADDRESS AND CK CARRIAGE POSITION
*
*
OE7F 0 C28D          LD  2 TERM-TB 81218530
OE80 0 D249          STO  2 HA-TB 81218540
OE81 0 D24A          STO  2 HA+1-TB 81218550
OE82 0 D24B          STO  2 HA+2-TB 81218560
*
*
OE83 0 42EE          BSI  2 SIO-TB 81218570
OE84 1 0E03          DC  T16C1+3  CCW ADDR 81218580
*
*
CHECK FOR ERROR
*
*
OE85 0 C236          LD  2 SCSX0+1-TB GET UNIT STATUS 81218590
OE86 0 100E          SLA  UNCHK 81218600
OE87 1 4C28 0EBB     BN  T1711 81218610
*
*
CHECK FOR CORRECT HOME ADDRESS
*
*
OE89 0 C249          LD  2 HA-TB 81218620
OE8A 1 4C20 0EBE     BNZ  T1712 81218630
OE8C 0 C24A          LD  2 HA+1-TB 81218640
OE8D 1 4C20 0EBE     BNZ  T1712 81218650
OE8F 0 C24B          LD  2 HA+2-TB 81218660
OE90 1 4C20 0EBE     BNZ  T1712 81218670
*
*
OE92 1 74FF 085C     MDX  L  LPCNT,-1  DECR LOOP COUNT 81218680
OE94 0 70D7          MDX  T1704 81218690
*
*
OE95 0 4209          T1706 BSI  2 TLPST-TB  TEST LOOP SIO 81218700
OE96 1 0E6C          DC  T1704  LOOP ADDR 81218710
*
*
GO TO NEXT ROUTINE IN SEQUENCE
*
*
OE97 0 42E5          T17EN BSI  2 FREDV-TB  FREE CHANNEL 81218720
OE98 0 C2C1          LD  2 TRTNN-TB  GET RTN SWS 81218730
OE99 1 4C18 0EDA     BZ  T1801  GO TO NEXT RTN IN SEQ 81218740
OE9B 0 42DF          BSI  2 CNTRL-TB  GO TO CONTROL RTN 81218750
OE9C 0007          TTL17 PRNT  . SECT 1,RT 7- . 81218760
*
*
OE9A 0006          PRNT  .RECALIBRATE. 81218770
OE9A 0 FFFF          DC  /FFFF 81218780
*
*

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OEA0 0 C235      T1707 LD      2 SCSX0-TB  GET CHAN STATUS      81219060
OEA1 0 100E      SLA      UNCHK      81219070
OEA2 1 4C28 0EB1  BN      T1708      81219080
OEA3 0 42E2      BSI      2 EROUT-TB  81219090
OEA4 0 0306      DC      /0306      81219100
OEA5 0 1703      DC      /1703      81219110
*
OEB1 0 42EB      T1708 BSI      2 GETSN-TB  GET SENSE .INFO      81219120
OEB2 0 42E2      BSI      2 EROUT-TB  81219130
OEB3 0 0307      DC      /0307      81219140
OEB4 0 1704      DC      /1704      81219150
*
OEB5 0 42E2      T1709 BSI      2 EROUT-TB  TAGS AND OPTIONS     81219160
OEB6 0 2327      DC      /2327      81219170
OEB7 0 1701      DC      /1701      81219180
*
OEB8 0 42E2      T1710 BSI      2 EROUT-TB  TAGS AND OPTIONS     81219190
OEB9 0 2306      DC      /2306      81219200
OEB0 0 1702      DC      /1702      81219210
*
OEB1 0 42E2      T1711 BSI      2 EROUT-TB  81219220
OEB2 0 0327      DC      /0327      81219230
OEB3 0 1707      DC      /1707      81219240
*
OEB4 0 C249      T1712 LD      2 HA-TB      81219250
OEB5 0 42F4      BSI      2 TCVBE-TB  81219260
OEB6 0 D813      STD      T12ER+6     81219270
OEB7 0 C24A      LD      2 HA+1-TB  81219280
OEB8 0 42F4      BSI      2 TCVBE-TB  81219290
OEB9 0 D812      STD      T12ER+8     81219300
OEB0 0 C24B      LD      2 HA+2-TB  81219310
OEB1 0 42F4      BSI      2 TCVBE-TB  CONVERT TO PRNT CODE 81219320
OEB2 0 D011      STO      T12ER+10  81219330
*
OEC7 0 42E2      BSI      2 EROUT-TB  81219340
OEC8 0 0308      DC      /0308      81219350
OEC9 1 0ECE      DC      T12ER      81219360
*
OEA0 0 4206      T1713 BSI      2 TLPER-TB  TEST LOOP ERROR      81219370
OEA1 1 0E6C      DC      T1704     LOOP ADDR            81219380
OEA2 0 70CB      MDX     T1706     ELSE GO HERE        81219390
*
OEE0 0000      BSS     E 0      81219400
OEE1 0006      T12ER PRNT . 1706 HA RD . 81219410
OEA4 0005      PRNT    .XXXXXXX. 81219420
OEA9 0 FFFF      DC      /FFFF      81219430
*****
*
SECTION END
*
OEDA 0 42DF      T1801 BSI      2 CNTRL-TB  GO TO CONTROL RTN    81219440
*****
*
SECTION PREFACE
*
OEDB 0 0002      T20PR DC      /0002  SECTION NUMBER      81219450
OEDC 0 0005      DC      5          81219460
*
OEDD 0 C2C1      T20NT LD      2 TRTNN-TB  SW FNC 1 BITS 12-15 81219470
OEE0 1 4C18 0EE5 BZ      T2101  BR IF RUN ALL RTNS 81219480
OEE1 0 90FB      S      T20PR+1  TEST FOR VALID      81219490
OEE2 1 4C30 0A4E BP      T1CNER  BR IF INVALID RTN NUMBER 81219500
OEE3 0 80F8      A      T20PR+1  RESTORE RTN NUMBER   81219510
OEE4 0 7000      MDX    T2101  GO TO FIRST RTN   81219520

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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***** 81219740
* 81219750
***** 81219760
* 81219770
* 81219780
* 81219790
***** 81219800
* 81219810
* ROUTINE --1-- DIFFERENCE COUNTER AND CAR 81219820
* 81219830
***** 81219840
* 81219850
* 81219860
* THIS ROUTINE WILL PERFORM SEVERAL COMMAND 81219870
* CHAINS OF THE TYPE. 81219880
* 81219890
* 1. RECALIBRATE, 81219900
* 2. CONTROL CYLINDER SEEK, 81219910
* 3. READ HOME ADDRESS. 81219920
* 81219930
* BY USING DIFFERENT COMBINATIONS OF CYLINDERS, 81219940
* MALFUNCTIONS IN THE DIFFERENCE COUNTER, 81219950
* CYLINDER ADDRESS REGISTER, INITIAL SEEK LATCH 81219960
* AND COUNTER DECODE LOGIC CAN BE ANALYZED FOR 81219970
* THE CAUSE OF THE FAILURE. 81219980
* 81219990
* CIRCUITS CHECKED. 81220000
* DIFFERENCE COUNTER 81220010
* CAR 81220020
* BUS LINES 81220030
* LINE DRIVERS 81220040
* DIFFERENCE COUNTER DECODE 81220050
* INITIAL SEEK LATCH 81220060
* DETENT 81220070
* CYLINDER TRANSDUCER 81220080
* 81220090
* 81220100
***** 81220110
* 81220120
***** 81220130
***** 81220140
* 81220150
***** 81220160
OEE5 0 T2101 EQU * TEST ENTRY POINT 81220170
OEE6 1 7401 0815 MDX L TRID,1 BUMP RTN ID 81220180
OEE7 1 4C18 0EEC BZ T2102 BR IF TEST NUMBER ZERO 81220190
OEE8 0 9297 S 2 K1-TB DECREMENT BY ONE 81220200
OEE9 1 4C20 1172 BNZ T2201 BR IF NOT THIS TEST 81220210
*
OEE0 0 C283 T2102 LD 2 TSW0-TB GET OPTION SWS 81220220
OEE1 0 100A SLA OTTLE PRINT TITLES 81220230
OEE2 1 4C10 0EF2 BNN T2103 BR IF NOT SET 81220240
OEE3 0 4203 BSI 2 T1GMS-TB GO TO PRINT ROUTINE 81220250
OEE4 1 100D DC TTL21 MESSAGE ADDRESS 81220260
*
OEE5 0 42E8 T2103 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81220270
OEE6 0 C298 T2104 LD 2 K2-TB 81220280
OEE7 0 D2DD STO 2 LPCNT-TB 81220290
*
* PART A CHECK FOR DIFFERENCE CNTR BITS ON/OFF 81220300
* 81220310
* 81220320
* 81220330
* 81220340
* 81220350
* 81220360
* 81220370
* 81220380
* 81220390
* 81220400
* 81220410
OEF5 1 6500 0F2A T2105 LDX L1 T2108
OEF6 1 6000 1C3D STX L1 ERADR
OEF7 1 6500 1132 LDX L1 T21E3+6
OEF8 1 6000 0F91 STX L1 T2121+1
OEF9 1 6500 10D1 LDX L1 T21LS SET POINT TO ADDRESS LIST
OEF0 0 6911 STX 1 T2106+1
OEF1 0 6108 LDX 1 8

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OF01 1 6000 110E      *   STX  L1 T21CT          81220420
                        *   LDX  1 9            81220430
OF03 0 6109           *   SLA  16            81220440
OF04 0 1010           *   STO  L1 T21C0-1        81220450
OF05 1 D500 1145     *   MDX  1 -1          81220460
OF07 0 71FF           *   MDX  *-4          81220470
OF08 0 70FC           *   LDX  1 16          81220480
                        *   LDD  L T21OK          SET LOOP COUNT 81220490
OF09 0 6110           *   LDD  L T21OK          81220500
OF0A 1 CC00 1144     *   STO  L1 T21E3+6-2 SET IN TBL 81220510
OF0C 1 DD00 1130     *   MDX  1 -2          DECREMENT LOOP COUNT 81220520
OF0E 0 71FE           *   MDX  *-4          81220530
OF0F 0 70FC           *   T2106 LD  L *-*          81220540
                        *   STO  L T21A1+1        81220550
OF10 0 C400 0000     *   LD  2 TERM-TB          81220560
OF12 1 D400 10DA     *   STO  2 HA-TB          81220570
OF14 0 C28D           *   STO  2 HA+1-TB         81220580
OF15 0 D249           *   STO  2 HA+2-TB         81220590
OF16 0 D24A           *   DC  T2106          LOOP ADDRS 81220600
OF17 0 D248           *   DC  T2106          LOOP ADDRS 81220610
                        *   BSI  2 S10-TB          81220620
OF18 0 42EE           *   DC  T21C1          81220630
OF19 1 1151           *   DC  T21C1          81220640
                        *   BSI  2 TLPST-TB TEST LOOP S10 81220650
OF1A 0 4209           *   DC  T2106          LOOP ADDRS 81220660
OF1B 1 0F10           *   TEST FOR POSITIVE STOP 81220670
                        *   LD  2 SCSX0+1-TB 81220680
OF1C 0 C236           *   SLA  UNCHK          81220690
OF1D 0 100E           *   BN  T2109          81220700
OF1E 1 4C28 0F38     *   CHECK FOR DIFF CNTR BITS TURNING ON 81220710
                        *   LD  2 HA+1-TB          81220720
OF20 0 C24A           *   SRA  8            81220730
OF21 0 1808           *   BZ  T2115          81220740
OF22 1 4C18 0F60     *   CHECK FOR CORRECT HOME ADDRESS 81220750
                        *   LDD  2 HA-TB          81220760
OF24 0 CA49           *   SLT  8            81220770
OF25 0 1088           *   EOR  L T21A1+1        81220780
OF26 1 F400 10DA     *   BNZ  T2117          81220790
OF28 1 4C20 0F6B     *   INCREMENT POINTER AND CHECK IF FINISHED 81220800
                        *   MDX  L T2106+1,1        81220810
OF2A 1 7401 0F11     *   T2108 MDX L T2121+1,2 81220820
OF2C 0 1000           *   NOP  8            81220830
OF2D 1 7402 0F91     *   MDX  L T21CT,-1      81220840
OF2F 0 1000           *   MDX  T2106          81220850
OF30 1 74FF 110E     *   MDX  L T2106          81220860
OF32 0 70DD           *   CHECK FOR ANY DIFFERENCE CNTR ERRS 81220870
                        *   LD  L T21C0          81220880
OF33 1 C400 1146     *   BNZ  T2138          81220890
OF35 1 4C20 1030     *   MDX  T21B          81220900
OF37 0 7067           *   GET HERE IF UNIT CHECK ON COMMAND CHAIN 81220910
                        *   T2109 BSI L GETSN          81220920
OF38 1 4400 086A     *   TEST FOR POSITIVE STOP 81220930
                        *   LDD  2 SNWDS-TB          81220940
OF3A 0 CA1D           *   SLT  FSKIN          81220950
OF3B 0 109F           *   BN  T2114          81220960
OF3C 1 4C28 0F5A     *   CHECK IF READ ERROR ON READ HA 81220970
                        *   LDD  2 SNWDS-TB          81220980
OF3E 0 CA1D           *   LDD  2 SNWDS-TB          81220990
OF3F 0 1084           *   SLT  FBRST          81221000
OF40 1 4C28 0F49     *   BN  T2110          81221010
OF42 0 1081           *   SLT  FOVRN-FBRST     81221020
OF43 1 4C28 0F49     *   BN  T2110          81221030
                        *   CHECK FOR NO RECORD FOUND 81221040
OF45 0 CA1D           *   LDD  2 SNWDS-TB          81221050
OF46 0 108C           *   SLT  FNORC          81221060
OF47 1 4C10 0F56     *   BNN  T2113          81221070
                        *   CHECK IF SEEKING TO CYL 2 OF 4 81221080
                        *   81221090

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OF49 1 C400 10DA     T2110 LD  L T21A1+1        81221100
OF4B 0 9298           S  2 K2-TB          81221110
OF4C 1 4C18 0F51     BZ  T2111          81221120
OF4E 0 929A           S  2 K4-TB          81221130
OF4F 1 4C20 0F56     BNZ  T2113          81221140
                        *   COME HERE IF ROHA ERR ON CYL 2 OR 4 81221150
OF51 1 C400 10DA     T2111 LD  L T21A1+1        81221160
OF53 0 1008           SLA  8            81221170
OF54 0 D24A           STO  2 HA+1-TB     81221180
OF55 0 70CA           MDX  T2107          81221190
                        *   GET HERE IF AN ERROR NOT EXPECTED OCCURRED 81221200
                        *   81221210
OF56 0 4033           T2113 BSI  T21SS          81221220
OF57 0002             PRNT  . ERR.        81221230
OF59 0 0007           DC  /07          81221240
                        *   81221250
OF5A 1 7401 114E     T2114 MDX L T21MK,1 SET MARK 81221260
OF5C 0 402D           BSI  T21SS          81221270
OF5D 0002             PRNT  . DON.        81221280
OF5F 0 0001           DC  1            81221290
                        *   81221300
OF60 1 7400 114E     T2115 MDX L T21MK,0        81221310
OF62 0 7004           MDX  T2116          81221320
OF63 0 4026           BSI  T21SS          81221330
OF64 0002             PRNT  . DOF.        81221340
OF66 0 0002           DC  2            81221350
                        *   81221360
OF67 0 4022           T2116 BSI  T21SS          81221370
OF68 0002             PRNT  . CON.        81221380
OF6A 0 0001           DC  1            81221390
                        *   81221400
                        *   GET HERE IF ACCESS FAILED TO DETENT 81221410
                        *   AT CORRECT CYLINDER 81221420
                        *   81221430
OF6B 0 CA49           T2117 LDD  2 HA-TB          81221440
OF6C 0 1088           SLT  8            81221450
OF6D 1 9400 10DA     S  L T21A1+1        81221460
OF6F 0 8297           A  2 K1-TB          81221470
OF70 1 4C20 0F76     BNZ  T2118          81221480
OF72 0 4017           BSI  T21SS          81221490
OF73 0002             PRNT  . -1.        81221500
OF75 0 0006           DC  6            81221510
                        *   81221520
OF76 0 9298           T2118 S  2 K2-TB          81221530
OF77 1 4C20 0F7D     BNZ  T2119          81221540
OF79 0 4010           BSI  T21SS          81221550
OF7A 0002             PRNT  . +1.        81221560
OF7C 0 0005           DC  5            81221570
                        *   81221580
OF7D 0 CA49           T2119 LDD  2 HA-TB          81221590
OF7E 0 1088           SLT  8            81221600
OF7F 0 42F7           BSI  2 TCVHD-TB SAVE CYLINDER NUMBER 81221610
OF80 0 42F4           BSI  2 TCVBE-TB CONVERT TO DEC 81221620
OF81 0 1008           SLA  8            81221630
OF82 0 1808           SRA  8            CLEAR HI ORDER BYTE TO BLK 81221640
OF83 0 D003           STO  T2120          * 81221650
OF84 0 18D0           XCH  8            GET SECOND WORD 81221660
OF85 0 D002           STO  T2120+1 SAVE 81221670
                        *   81221680
OF86 0 4003           T2120 BSI  T21SS          PUT IN MAP 81221690
OF87 0002             PRNT  . .          81221700
OF89 0 0007           DC  7            81221710
                        *   81221720
                        *   COME HERE TO-PUT MAP CHARACTER CODE IN MAP 81221730
                        *   -ADD -1- TO TOTAL ERROR COUNT 81221740
                        *   -ADD -1- TO ERROR TYPE CODE 81221750
                        *   81221760
                        *   81221770

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0F8A 0 0000      T21SS DC    *-*      ENTRY POINT      81221780
0F8B 1 6580 0F8A LD X  I1 T21SS      81221790
0F8D 0 C101      LD      1 1          81221800
0F8E 0 1890      SRT     16          A TO Q      81221810
0F8F 0 C100      LD      1 0          81221820
0F90 0 DC00 0000 T2121 STD  L *-*      81221830
0F92 0 C102      LD      1 2          81221840
0F93 0 D001      STO     *+1         81221850
0F94 0 6500 0000 LD X  L1 *-*         81221860
0F96 1 C500 1146 LD      L1 T21C0     81221870
0F98 0 8297      A       2 K1-TB     81221880
0F99 1 D500 1146 STO     L1 T21C0     81221890
0F9B 1 7401 1146 MDX  L  T21C0,1     BUMP TOTAL ERROR COUNT 81221900
0F9D 1 4C80 1C3D BSC  I  ERADR      RETURN VIA ADDRESS 81221910
*
* PART B - CHECK FOR CAR BITS TURNING ON 81221920
*
0F9F 1 6700 10D1 T21B LD X  L3 T21LS     81221930
0FA1 1 6500 0F8F LD X  L1 T2126     81221940
0FA3 1 6D00 1C3D STX  L1 ERADR      81221950
0FA5 0 6108      LD X  1 8          81221960
0FA6 1 6D00 110E STX  L1 T21CT      81221970
0FA8 1 6500 1132 LD X  L1 T21E3+6   81221980
0FAA 0 69E6      STX  1 T2121+1     81221990
*
0FAB 0 C300      T2125 LD      3 0     81222000
0FAC 1 D400 10DA STO  L  T21A1+1     81222010
0FAE 0 C28D      LD      2 TERM-TB  81222020
0FAF 0 D249      STO     2 HA-TB    81222030
0FB0 0 D24A      STO     2 HA+1-TB  81222040
0FB1 0 D24B      STO     2 HA+2-TB  81222050
*
0FB2 0 42EE      BSI     2 S10-TB   81222060
0FB3 1 10ED      DC      T21C2     81222070
*
0FB4 0 4209      BSI     2 TLPST-TB TEST LOOP S10 81222080
0FB5 1 0FAB      DC      T2125     LOOP ADDR 81222090
*
0FB6 0 C236      LD      2 SCSX0+1-TB GET UNIT STATUS 81222100
0FB7 0 100E      SLA     UNCHK     81222110
0FB8 1 4C28 0FCC BN      T2127     81222120
*
0FBA 0 CA49      LDD     2 HA-TB    81222130
0FBB 0 1088      SLT     8          81222140
0FBC 0 9314      S       3 T210F-T21LS 81222150
0FBD 1 4C18 0FD4 BZ      T2128     81222160
*
0FBF 0 7301      T2126 MDX  3 1     INCREMENT POINTERS 81222170
0FC0 0 1000      NOP     81222180
0FC1 1 7402 0F91 MDX  L  T2121+1,2  81222190
0FC3 0 1000      NOP     81222200
0FC4 1 74FF 110E MDX  L  T21CT,-1   81222210
0FC6 0 70E4      MDX     T2125     81222220
0FC7 1 C400 1146 LD      L  T21C0   81222230
0FC9 1 4C20 1030 BNZ    T2138     81222240
0FCB 0 700C      MDX     T21C      81222250
*
0FCC 1 4400 086A T2127 BSI  L  GETSN   GET HERE IF UNIT CHECK ON CCW CHAIN 81222260
*
0FCE 0 CA1D      LDD     2 SNWDS-TB 81222270
0FCF 0 109F      SLT     FSKIN     TEST FOR SEEK INCOMPLETE (PROB. CAR BIT ON) 81222280
0FD0 1 4C90 1C3D BNN  I  ERADR     81222290
0FD2 1 4C00 0F56 BSC  L  T2113     81222300
*
0FD4 0 40B5      T2128 BSI  T21SS   81222310
0FD5 0 0002      PRNT   . COF.    81222320
81222330
81222340
81222350
81222360
81222370
81222380
81222390
81222400
81222410
81222420
81222430
81222440
81222450

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0FD7 0 0003      DC      3          81222460
*
* PART C- CHECK FOR CAR BITS TURNING OFF 81222470
*
0FD8 1 6500 1030 T21C LD X  L1 T2138     81222480
0FDA 1 6000 1C3D STX  L1 ERADR      81222490
0FDC 1 6500 10D1 LD X  L1 T21LS     81222500
0FDE 1 6D00 0FE5 STX  L1 T2130+1   81222510
0FE0 0 6108      LD X  1 8          81222520
0FE1 1 6D00 110E STX  L1 T21CT     81222530
0FE3 0 6300      LD X  3 0          81222540
*
0FE4 0 C400 0000 T2130 LD  L *-*     81222550
0FE6 1 D400 10DA STO  L  T21A1+1     81222560
0FE8 0 C28D      LD      2 TERM-TB  81222570
0FE9 0 D249      STO     2 HA-TB    81222580
0FEA 0 D24A      STO     2 HA+1-TB  81222590
0FEB 0 D24B      STO     2 HA+2-TB  81222600
*
0FEC 0 42EE      BSI     2 S10-TB   81222610
0FED 1 10F9      DC      T21C3     CCW ADDRESS 81222620
*
0FEE 0 C236      LD      2 SCSX0+1-TB GET UNIT STSTUS 81222630
0FEF 0 100E      SLA     UNCHK     81222640
0FF0 1 4C28 101E BN      T2133     81222650
*
0FF2 1 7401 0FE5 T2131 MDX  L  T2130+1,1 81222660
0FF4 0 1000      NOP     81222670
0FF5 1 74FF 110E MDX  L  T21CT,-1   81222680
0FF7 0 70EC      MDX     T2130     81222690
*
0FF8 0 7300      WERE THERE ANY POSITIVE STOPS 81222700
0FF9 0 702C      MDX     3 0       81222710
*
0FFA 0 C24A      MDX     T2134     HERE IF YES 81222720
0FFB 0 1808      LD      2 HA+1-TB  IS CAR BIT 7 ON 81222730
0FFC 0 92A2      SRA     8          81222740
0FFD 1 4C18 1026 S       2 K127-TB  WAS LAST CYL 127 81222750
0FFE 0 7301      BZ      T2134     81222760
1000 0 8297      MDX     3 1       81222770
1001 1 4C18 1026 A       2 K1-TB    WAS LAST CYL 126 81222780
*
1003 0 C2DD      LD      2 LPCNT-TB 81222790
1004 0 9297      S       2 K1-TB   81222800
1005 0 D2DD      STO     2 LPCNT-TB 81222810
1006 1 4C20 0EF5 BNZ    T2105     81222820
*
1008 0           T2132 EQU  *      81222830
*
* GO TO NEXT ROUTINE IN SEQUENCE 81222840
*
1008 0 42E5      T21EN BSI  2 FREDV-TB  FREE CHANNEL 81222850
1009 0 C2C1      LD      2 TRTN-TB  GET RTN SWS 81222860
100A 1 4C18 1172 BZ      T2201     GO TO NEXT RTN IN SEQ 81222870
100C 0 42DF      BSI     2 CNTRL-TB GO TO CONTROL RTN 81222880
100D 0 0007      TTL21 PRNT . SECT 2,RT 1- . 81222890
*
1014 0 0009      PRNT   .DIFF CNTR AND CAR. 81222900
101D 0 FFFF      DC      /FFFF    81222910
*
101E 1 4400 086A T2133 BSI  L  GETSN   81222920
1020 0 CA1D      LDD     2 SNWDS-TB 81222930
1021 0 109F      SLT     FSKIN     81222940
1022 1 4C10 0FF2 BNN  I  T2131     81222950
1024 0 7301      MDX     3 1       81222960
1025 0 70CC      MDX     T2131     81222970
*
81222980
81222990
81223000
81223010
81223020
81223030
81223040
81223050
81223060
81223070
81223080
81223090
81223100
81223110
81223120
81223130

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1026 1 7700 1132	T2134 MDX L3 T21E3+6	81223140
1028 0 1000	NOP	81223150
1029 1 6F00 0F91	STX L3 T2121+1	81223160
102B 1 4400 0F8A	BSI L T21SS SET IN MAP	81223170
102D 0002	PRNT . CON.	81223180
102F 0 0004	DC 4	81223190
* DECODE SEEK ERROR COUNTERS		
* * * * *		
1030 1 6500 113E	T2138 LD X L1 T21E3+18 SET UP POINTER	81223220
1032 0 C900	LDD 1 0 GET ENTRY IN TBL	81223230
1033 1 9C00 1144	SD L T210K TEST FOR . OK .	81223240
1035 1 4C20 1044	BNZ T2140	81223250
1037 0 1090	SLT 16 Q TO A	81223260
1038 1 4C20 1044	BNZ T2140 BR IF N OT EQUAL	81223270
103A 0 C902	LDD 1 2 GET NEXT ENTRY IN TBL	81223280
103B 1 9C00 115C	SD L T21P2 TEST FOR . 064.	81223290
103D 1 4C20 105C	BNZ T2141	81223300
103F 0 1090	SLT 16 Q TO A	81223310
1040 1 4C20 105C	BNZ T2141 BR IF NOT EQUAL	81223320
* * * * *		
1042 0 404B	T2139 BSI T21PS	81223330
1043 0 2101	DC /2101	81223340
* * * * *		
1044 0 C900	T2140 LDD 1 0 GET ENTRY IN TBL	81223350
1045 1 9C00 115A	SD L T21P1 TEST FOR . 032.	81223360
1047 1 4C20 105C	BNZ T2141	81223370
1049 0 1090	SLT 16 Q TO A	81223380
104A 1 4C20 105C	BNZ T2141 BR IF NOT	81223390
104C 0 C902	LDD 1 2 GET NEXT ENTRY	81223400
104D 1 9C00 1144	SD L T210K TEST FOR . OK .	81223410
104F 1 4C20 105A	BNZ ++3 BR IF NOT	81223420
1051 0 1090	SLT 16 Q TO A	81223430
1052 1 4C18 1042	BZ T2139	81223440
1054 0 C902	LDD 1 2 GET ENTRY	81223450
1055 1 9C00 115C	SD L T21P2 TEST FOR . 064.	81223460
1057 1 4C20 105C	BNZ ++3 BR IF NOT	81223470
1059 0 1090	SLT 16 Q TO A	81223480
105A 1 4C18 1042	BZ T2139	81223490
* * * * *		
105C 1 C400 114C	T2141 LD L T21C0+6	81223500
105E 0 9299	S 2 K3-TB	81223510
105F 1 4C28 1063	BN T2142	81223520
1061 0 402C	BSI T21PS	81223530
1062 0 2160	DC /2160	81223540
* * * * *		
1063 1 C400 114A	T2142 LD L T21C0+4	81223550
1065 1 4C18 1069	BZ T2143	81223560
1067 0 4026	BSI T21PS	81223570
1068 0 2130	DC /2130	81223580
* * * * *		
1069 1 C400 1147	T2143 LD L T21C0+1	81223590
106B 1 4C18 1074	BZ T2145	81223600
106D 0 929D	S 2 K8-TB	81223610
106E 1 4C18 1072	BZ T2144	81223620
1070 0 401D	BSI T21PS	81223630
1071 0 2110	DC /2110	81223640
* * * * *		
1072 0 401B	T2144 BSI T21PS	81223650
1073 0 2111	DC /2111	81223660
* * * * *		
1074 1 C400 1148	T2145 LD L T21C0+2	81223670
1076 1 4C18 107F	BZ T2147	81223680
1078 0 929D	S 2 K8-TB	81223690
1079 1 4C18 107D	BZ T2146	81223700
107B 0 4012	BSI T21PS	81223710
107C 0 2120	DC /2120	81223720
* * * * *		

1800 DIAGNOSTIC MAINTENANCE PROGRAM

107D 0 4010	T2146 BSI T21PS	81223820
107E 0 2121	DC /2121	81223830
* * * * *		
107F 1 C400 1149	T2147 LD L T21C0+3	81223840
1081 1 4C18 1085	BZ T2148	81223850
1083 0 400A	BSI T21PS	81223860
1084 0 2140	DC /2140	81223870
* * * * *		
1085 1 C400 114B	T2148 LD L T21C0+5	81223880
1087 0 9299	S 2 K3-TB	81223890
1088 1 4C28 108C	BN T2149	81223900
108A 0 4003	BSI T21PS	81223910
108B 0 2150	DC /2150	81223920
* * * * *		
108C 0 4001	T2149 BSI T21PS	81223930
108D 0 2190	DC /2190	81223940
* * * * *		
PRINT SEEK MAP AND ERROR NUMBER		
* * * * *		
108E 0 0000	T21PS DC **	81223950
108F 1 C480 108E	LD I T21PS	81223960
1091 0 D002	STO **2	81223970
1092 0 42E2	BSI 2 ERDUT-TB	81223980
1093 0 0140	DC /0140	81223990
1094 0 0000	DC **	81224000
* * * * *		
1095 0 4203	BSI 2 TLGMS-TB	81224010
1096 1 110F	DC T21E1	81224020
* * * * *		
1097 0 42FA	T2152 BSI 2 THALT-TB WAIT FOR INTERVENTION	81224030
* * * * *		
1098 0 C283	T2153 LD 2 TSW0-TB	81224040
1099 0 100C	SLA OLPER	81224050
109A 1 4C10 100B	BNN T2132	81224060
* * * * *		
109C 1 6700 1132	SCAN SEEK MAP FOR FAILING CYLINDER	81224070
109E 0 6108	LDX L3 T21E3+6	81224080
109F 0 C297	LDX 1 8	81224090
10A0 1 D400 10DA	LD 2 K1-TB	81224100
* * * * *		
10A2 0 42F7	T2154 BSI 2 TCVHD-TB	81224110
10A3 0 42F4	BSI 2 TCVBE-TB	81224120
10A4 0 E2AF	AND 2 H00FF-TB	81224130
10A5 0 EA4F	OR 2 TLGSP-TB	81224140
10A6 1 D400 116B	STO L T21SC+13	81224150
10A8 1 D400 116F	STO L T21SC+17	81224160
10AA 0 18D0	RTE 16	81224170
10AB 1 D400 116C	STO L T21SC+14	81224180
10AD 1 D400 1170	STO L T21SC+18	81224190
10AF 0 CB00	LDD 3 0 GET TBL ENTRY	81224200
10B0 1 9C00 1144	SD L T21OK TEST FOR . OK .	81224210
10B2 1 4C20 10C1	BNZ T2155	81224220
10B4 0 1090	SLT 16 Q TO A	81224230
10B5 1 4C20 10C1	BNZ T2155 BR IF NOT	81224240
* * * * *		
10B7 1 C400 10DA	LD L T21A1+1	81224250
10B9 0 1001	SLA 1	81224260
10BA 1 D400 10DA	STO L T21A1+1	81224270
10BC 0 7302	MDX 3 2	81224280
10BD 0 1000	NOP	81224290
10BE 0 71FF	MDX 1 -1	81224300
10BF 0 70E2	MDX T2154	81224310
10C0 0 70D7	MDX T2153	81224320
* * * * *		
10C1 0 4203	T2155 BSI 2 TLGMS-TB	81224330
10C2 1 115E	DC T21SC	81224340
* * * * *		
10C3 0 C283	T2156 LD 2 TSW0-TB	81224350

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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10C4 0 100C      SLA      OLPER      81224500
10C5 1 4C10 1008 BNN      T2132      81224510
* RECALIBRATE (SEEK CYL 00 IF CCW CODE CHANGED
* TO 0B) 81224520
10C7 0 42EE      BSI      2 SIO-TB    81224530
10C8 1 1105      DC       T21C5      CCW ADDRESS 81224540
* 81224550
10C9 0 42EE      BSI      2 SIO-TB    81224560
10CA 1 1108      DC       T21C6      CCW ADDRESS 81224570
* 81224580
10CB 0 70F7      MDX      T2156      81224590
* 81224600
* GET HERE IF TIMEOUT 81224610
* 81224620
* 81224630
* 81224640
10CC 0 42E2      T21TD BSI      2 ER0UT-TB 81224650
10CD 0 0106      DC       /0106      81224660
10CE 0 2000      DC       /2000      81224670
10CF 1 4C00 1008 BSC      L T21EN      END ROUTINE 81224680
* 81224690
* CONSTANTS,DATA 81224700
* 81224710
T21LS DC /0001 1 81224720
DC /0006 6 81224730
DC /0006 6 81224740
DC /0008 8 81224750
DC /0010 16 81224760
DC /0020 32 81224770
DC /0040 64 81224780
DC /0080 128 81224790
T21A1 DC /0000 81224800
DC /00FF CYL XX 81224810
DC /0000 HD 00 81224820
T21A2 DC /0000 81224830
DC /0010 CYL 16 81224840
DC /0000 81224850
T21A4 DC /0000 81224860
DC /0001 CYL 01 81224870
DC /0000 81224880
T21A5 DC /0000 81224890
DC /0000 CYL 00 81224900
DC /0000 81224910
* 81224920
T210F DC /0011* 81224930
DC /0012 81224940
DC /0014 81224950
DC /0018 81224960
DC /0020 81224970
DC /0030 81224980
DC /0050 81224990
DC /0090 81225000
* 81225010
* 81225020
T21C2 DC 1 BYTE COUNT 81225030
DC /60*256+RCAL FLAGS AND OP CODE 81225040
DC * ADDRESS 81225050
* 81225060
* 81225070
DC 6 BYTE COUNT 81225080
DC /40*256+SEEKB FLAGS AND OP CODE 81225090
DC T21A1 ADDRESS 81225100
* 81225110
* 81225120
DC 6 BYTE COUNT 81225130
DC /40*256+SEEKB FLAGS AND OP CODE 81225140
DC T21A2 ADDRESS 81225150
* 81225160
* 81225170

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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10F6 0 0005      DC       5      BYTE COUNT 81225180
10F7 0 001A      DC       0*256+RDHA FLAGS AND OP CODE 81225190
10F8 1 08C8      DC       HA      ADDRESS 81225200
* 81225210
* 81225220
* 81225230
10F9 0 0001      T21C3 DC 1      BYTE COUNT 81225240
10FA 0 6013      DC       /60*256+RCAL FLAGS AND OP CODE 81225250
10FB 1 10FC      DC       *      ADDRESS 81225260
* 81225270
* 81225280
10FC 0 0006      DC       6      BYTE COUNT 81225290
10FD 0 400B      DC       /40*256+SEEKB FLAGS AND OP CODE 81225300
10FE 1 10D9      DC       T21A1      ADDRESS 81225310
* 81225320
* 81225330
10FF 0 0006      DC       6      BYTE COUNT 81225340
1100 0 400B      DC       /40*256+SEEKB FLAGS AND OP CODE 81225350
1101 1 10D9      DC       T21A1      ADDRESS 81225360
* 81225370
* 81225380
1102 0 0005      DC       5      BYTE COUNT 81225390
1103 0 001A      DC       0*256+RDHA FLAGS AND OP CODE 81225400
1104 1 08C8      DC       HA      ADDRESS 81225410
* 81225420
* 81225430
* 81225440
1105 0 0006      T21C5 DC 6      BYTE COUNT 81225450
1106 0 2013      DC       /20*256+RCAL FLAGS AND OP CODE 81225460
1107 1 10E2      DC       T21A5      ADDRESS 81225470
* 81225480
* 81225490
1108 0 0006      T21C6 DC 6      BYTE COUNT 81225500
1109 0 400B      DC       /40*256+SEEKB FLAGS AND OP CODE 81225510
110A 1 10D9      DC       T21A1      ADDRESS 81225520
* 81225530
* 81225540
110B 0 0006      DC       6      BYTE COUNT 81225550
110C 0 000B      DC       0*256+SEEKB FLAGS AND OP CODE 81225560
110D 1 10D9      DC       T21A1      ADDRESS 81225570
* 81225580
* 81225590
* 81225600
110E 0000      BSS      E 0 81225610
110E 0 0000      T21CT DC *-* 81225620
110F 0005      T21E1 PRNT . SEEK MAP-. 81225630
1114 0 00FF      DC /00FF TERMINATOR 81225640
1115 0007      T21E2 PRNT . BIT POSITION-. 81225650
111C 0015      PRNT .1 2 4 8 16 32 64 128 . 81225660
112B 0 00FF      DC /00FF TERMINATOR 81225670
112C 0007      T21E3 PRNT . SK RESULTS- X. 81225680
1133 0015      PRNT .XX XXX XXX XXX XXX XXX XXX XXX. 81225690
1142 0 FFFF      DC /FFFF 81225700
1144 0000      BSS      E 0 81225710
1144 0002      T210K PRNT . OK . 81225720
1146 0008      T21C0 BSS 8 81225730
114E 0 0000      T21MK DC *-* 81225740
114F 0 0040      T21S1 DC /0040 ZERO-BLANK 81225750
1150 0 4000      T21S2 DC /4000 BLANK-ZERO 81225760
* 81225770
1151 0 0001      T21C1 DC 1      BYTE COUNT 81225780
1152 0 6013      DC       /60*256+RCAL FLAGS AND OP CODE 81225790
1153 1 1154      DC       *      ADDRESS 81225800
* 81225810
* 81225820
1154 0 0006      DC       6      BYTE COUNT 81225830
1155 0 400B      DC       /40*256+/0B FLAGS AND OP CODE 81225840
1156 1 10D9      DC       T21A1      ADDRESS 81225850

```


2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

122A 0 1088	SLT	8	*	81228580
122B 0 F30D	EOR	3 T23CN-T23	EQUAL 'SEEK TO' CYL	81228590
122C 1 4C20 1281	BNZ	T2313	BRANCH IF NO	81228600
*				
122E 0 C24B	LD	2 HA+2-TB	GET 'WENT TO' HEAD	81228610
122F 0 1888	SRT	8	*	81228620
1230 0 F315	EOR	3 T23SA+2-T23	EQUAL 'SEEK TO' HEAD	81228630
1231 1 4C20 1281	BNZ	T2313	BRANCH IF NO	81228640
*				
1233 0 CA49	T2307 LDD	2 HA-TB	YES	81228650
1234 0 1088	SLT	8	GET 'WENT TO' CYL	81228660
1235 0 D2DB	STO	2 T23LC-TB		81228670
1236 0 C24B	LD	2 HA+2-TB		81228680
1237 0 1808	SRA	8	GET 'WENT TO' HEAD	81228690
1238 0 D2DC	STO	2 T23LH-TB		81228700
1239 1 7401 12DE	MDX L	T23SA+2,1		81228710
123B 0 C315	LD	3 T23SA+2-T23		81228720
123C 0 929F	S	2 K10-TB		81228730
123D 0 4818	SKP	+-	SKP IF NONZERO	81228740
123E 0 D315	STO	3 T23SA+2-T23		81228750
*				
123F 0 C30E	T2308 LD	3 T23DR-T23	GET DIRECTION SW	81228760
1240 1 4C20 124A	BNZ	T2309	IN REVERSE	81228770
*				
FORWARD				
*				
1242 1 7401 12D6	MDX L	T23CN,1	BUMP 'SEEK TO' CYL	81228780
1244 0 C301	LD	3 T23CA-T23	IS CYL = 203	81228790
1245 0 930D	S	3 T23CN-T23		81228800
1246 1 4C30 120E	BP	T2305	BRANCH IF NO	81228810
*				
REVERSE				
*				
1248 1 6F00 12D7	STX L3	T23DR	SET DIRECTION SW	81228820
124A 1 74FF 12D6	T2309 MDX L	T23CN,-1	DECREMENT 'SEEK TO' CYL	81228830
124C 0 70C1	MDX	T2305	LOOP UNTIL ZERO	81228840
*				
124D 1 74FF 085C	MDX L	LPCNT,-1	DECREMENT	81228850
124F 0 70B8	MDX	T2304		81228860
*				
GO TO NEXT ROUTINE IN SEQUENCE				
*				
1250 0 42E5	T23EN BSI	2 FREDV-TB	FREE CHANNEL	81228870
1251 0 C2C1	LD	2 TRTNN-TB	GET RTN SWS	81228880
1252 1 4C18 1316	BZ	T2401	GO TO NEXT RTN IN SEQ	81228890
1254 0 42DF	BSI	2 CNTRL-TB	GO TO CONTROL RTN	81228900
1255 0007	TTL23 PRNT	. SECT 2,RT 3-		81228910
*				
125C 0013	PRNT	.SEQUENTIAL INCR/DECR SEEKS.		81228920
1269 0 FFFF	DC	/FFFF		81228930
*				
COME HERE ON UNIT CHECK				
*				
126A-0-4051	T2310 BSI	T2319	GO CK FOR ALIGNMENT CYL	81228940
126B 0 7009	MDX	T2311	RETURN HERE IF YES	81228950
*				
ERROR				
*				
126C 0 42EB	BSI	2 GETSN-TB	GET SENSE INFO	81228960
126D 0 CA1D	LDD	2 SNWDS-TB	*	81228970
126E 0 109F	SLT	FSKIN	TEST FOR SK INCOMPLETE	81228980
126F 1 4C28 127A	BN	T2312	YES	81228990
*				
1271 0 42E2	BSI	2 ER0UT-TB	NO	81229000
1272 0 0147	DC	/0147		81229010
1273 0 2302	DC	/2302		81229020
*				
1274 0 4023	BSI	T2318	GO PRINT 'AT,SK,WENT'	81229030

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1275 0 C30D	*			81229260
1276 0 1008	T2311 LD	3 T23CN-T23	MOVE 'SEEK TO'	81229270
1277 0 EA4A	SLA	8	* TO 'WENT TO'	81229280
1278 0 D24A	OR	2 HA+1-TB	***	81229290
1279 0 70B9	STO	2 HA+1-TB	***	81229300
*				
ACCESS WENT TO POSITIVE STOP				
*				
127A 0 42E2	T2312 BSI	2 ER0UT-TB		81229310
127B 0 0147	DC	/0147		81229320
127C 0 2301	DC	/2301		81229330
*				
127D 0 401A	BSI	T2318	GO PRINT 'AT,SK,WENT'	81229340
*				
127E 0 10A0	SLT	32	CHANGE 'WENT TO' TO ZERO	81229350
127F 0 DA49	STD	2 HA-TB	***	81229360
1280 0 70B2	MDX	T2307		81229370
*				
ACCESS DETENTED TO WRONG CYLINDER				
*				
1281 0 C30E	T2313 LD	3 T23DR-T23	GET DIR SW	81229380
1282 1 4C18 1287	BZ	T2314	BRANCH IF FORWARD	81229390
*				
1284 0 C30D	LD	3 T23CN-T23	GET 'SEEK TO' CYL	81229400
1285 0 929F	S	2 K1-TB	REVERSE+1	81229410
1286 0 7002	MDX	T2315		81229420
*				
1287 0 C30D	T2314 LD	3 T23CN-T23		81229430
1288 0 8297	A	2 K1-TB	FORWARD+1	81229440
1289 0 D300	T2315 STO	3 T23AT-T23		81229450
128A 0 CA49	LDD	2 HA-TB	TEST FOR OVERSHOOT	81229460
128B 0 1088	SLT	8		81229470
128C 0 F300	EOR	3 T23AT-T23		81229480
128D 1 4C20 1293	BNZ	T2316	BRANCH IF NOT	81229490
*				
128F 0 42E2	BSI	2 ER0UT-TB		81229500
1290 0 0163	DC	/0163		81229510
1291 0 2303	DC	/2303		81229520
1292 0 7003	MDX	T2317		81229530
*				
1293 0 42E2	T2316 BSI	2 ER0UT-TB		81229540
1294 0 0163	DC	/0163		81229550
1295 0 2304	DC	/2304		81229560
*				
1296 0 4001	T2317 BSI	T2318	GO PRINT 'AT,SK,WENT'	81229570
1297 0 709B	MDX	T2307	CONTINUE	81229580
*				
PRINT 'AT,SK,WENT' MESSAGE				
*				
ACCESS, 'WAS AT' - 'SEEK TO' - 'WENT TO'				
*				
1298 0 0000	T2318 DC	**	ENTRY	81229590
1299 0 C2DB	LD	2 T23LC-TB	GET 'WAS AT' CYL	81229600
129A 0 42F7	BSI	2 TCVHD-TB	CONVERT TO DECIMAL	81229610
129B 0 42F4	BSI	2 TCVBE-TB	CONVERT TO 1443 CODE	81229620
129C 0 DB25	STD	3 T23MS+8-T23		81229630
129D 0 C2DC	LD	2 T23LH-TB	GET 'WAS AT' HD	81229640
129E 0 42F4	BSI	2 TCVBE-TB		81229650
129F 0 18D0	XCH			81229660
12A0 0 D32A	STO	3 T23MS+13-T23		81229670
*				
12A1 0 C314	LD	3 T23SA+1-T23	GET 'SEEK TO' CYL	81229680
12A2 0 E2AF	AND	2 H00FF-TB		81229690
12A3 0 42F7	BSI	2 TCVHD-TB		81229700
12A4 0 42F4	BSI	2 TCVBE-TB		81229710
12A5 0 DB35	STD	3 T23MS+24-T23	SET IN MSG	81229720
*				
12A6 0 C315	LD	3 T23SA+2-T23	GET 'SEEK TO' HD	81229730

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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132E 0 CA49      T2404 LDD  2 HA-TB      81231300
132C 0 18D8      RTE      24          81231310
132D 0 D2DB      STO  2 T23LC-TB  ***      81231320
*
132E 0 C28D      LD      2 TERM-TB  RESET READ AREA.  81231330
132F 0 D249      STO  2 HA-TB      ***      81231340
1330 0 D24A      STO  2 HA+1-TB    ***      81231350
1331 0 D24B      STO  2 HA+2-TB    ***      81231360
*
1332 0 C0A3      LD      T23CN      SET UP SEEK ARG   81231370
1333 0 D0A9      STO  T23SA+1      * FOR CYL 6      81231380
*
1334 0 42EE      BSI  2 S10-TB     EXEC CHNL PGM     81231390
1335 1 12DF      DC    T23SK       81231400
*
1336 0 C236      LD      2 SCSX0+1-TB TEST FOR UNIT CK  81231410
1337 0 100E      SLA   UNCHK       ***      81231420
1338 1 4C10 133C BNN   T2405       BRANCH IF OFF    81231430
*
133A 0 4049      BSI  T24E1        PRINT ERROR IF ON 81231440
133B 0 2401      DC    /2401       ***      81231450
133C 0 CA49      T2405 LDD  2 HA-TB  GET 'WENT TO' CYL 81231460
133D 0 18D8      RTE      24          81231470
133E 0 F097      EOR   T23CN       EQUAL 'SEEK TO' CYL 81231480
133F 1 4C18 1343 BZ    T2409       BRANCH IF EQUAL   81231490
*
1341 0 404D      BSI  T24E2        PRINT ERROR IF    81231500
1342 0 2403      DC    /2403       * WRONG CYL      81231510
*
1343 0 CA49      T2409 LDD  2 HA-TB  SAVE 'WENT TO' CYL 81231520
1344 0 18D8      RTE      24          * FOR 'WAS AT' CYL 81231530
1345 0 D2DB      STO  2 T23LC-TB  ***      81231540
1346 0 C24B      LD      2 HA+2-TB  SAVE 'WENT TO' HD 81231550
1347 0 1808      SRA      8          * FOR 'WAS AT' HD 81231560
1348 0 D2DC      STO  2 T23LH-TB  ***      81231570
1349 0 C28D      LD      2 TERM-TB  RESET READ AREA   81231580
134A 0 D249      STO  2 HA-TB      81231590
134B 0 D24A      STO  2 HA+1-TB    81231600
134C 0 D24B      STO  2 HA+2-TB    81231610
*
134D 1 C500 13A0 LD  L1 T24CY-1    GET NEXT CYL      81231620
134F 1 D400 12DD STO  L T23SA+1    STOR IN 'SEEK TO' LOC 81231630
1351 1 D400 12D6 STO  L T23CN      81231640
*
1353 0 42EE      BSI  2 S10-TB     EXEC CHNL PGM     81231650
1354 1 12DF      DC    T23SK       81231660
*
1355 0 C236      LD      2 SCSX0+1-TB TEST FOR UNIT CK  81231670
1356 0 100E      SLA   UNCHK       ***      81231680
1357 1 4C10 135B BNN   T2406       BRANCH IF OFF    81231690
*
1359 0 402A      BSI  T24E1        PRINT ERROR IF    81231700
135A 0 2402      DC    /2402       81231710
*
135B 0 CA49      T2406 LDD  2 HA-TB  GET NEXT CYL      81231720
135C 0 18D8      RTE      24          81231730
135D 1 F400 12D6 EOR   L T23CN     STOR IN 'SEEK TO' LOC 81231740
135F 1 4C18 1368 BZ    T2410       BRANCH IF EQUAL   81231750
*
1361 0 402D      BSI  T24E2        PRINT ERROR IF    81231760
1362 0 2404      DC    /2404       81231770
*
1363 0 C283      LD      2 TSW0-TB  TEST LOOP ON ERROR 81231780
1364 0 100C      SLA   OLPER       ***      81231790
1365 1 4C28 132B BN    T2404       YES      81231800
*
1367 0 7005      MDX  T24EN        END ROUTINE      81231810
*

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1368 0 71FF      T2410 MDX  1 -1    DECREMENT CYL TBL PTR 81231980
1369 0 70BF      MDX    T2408      DO ALL CYLINDERS     81231990
*
136A 1 74FF 085C MDX  L LPCNT,-1    TEST 20 PASSES      81232000
136C 0 70BB      MDX    T2407      NO RETURN            81232010
*
* GO TO NEXT ROUTINE IN SEQUENCE 81232020
*
136D 0 42E5      T24EN BSI  2 FREDV-TB  FREE CHANNEL        81232030
136E 0 C2C1      LD      2 TRTNN-TB   GET RTN SWS         81232040
136F 1 4C18 13AB BZ    T2501         GO TO NEXT RTN IN SEQ 81232050
1371 0 42DF      BSI  2 CNTRL-TB     GO TO CONTROL RTN   81232060
1372 0007      TTL24 PRNT  . SECT 2,RT 4- . 81232070
*
1379 0010      PRNT  .WORST CASE ACTUATOR. 81232080
1383 0 FFFF      DC    /FFFF       81232090
*
* UNIT CHECK ON SEEK/READ HA CHAIN 81232100
*
1384 0 0000      T24E1 DC    *-*      ENTRY                81232110
1385 1 C480 1384 LD  I T24E1        81232120
1387 0 D002      STO  T24E5        81232130
1388 0 42E2      BSI  2 EROUT-TB   81232140
1389 0 0167      DC    /0167       81232150
138A 0 0000      T24E5 DC    *-*      81232160
*
138B 1 7401 1384 MDX  L T24E1,1    81232170
138D 1 4C80 1384 BSC  I T24E1      81232180
*
* WRONG CYLINDER AFTER DETENTING 81232190
*
138F 0 0000      T24E2 DC    *-*      SAVE XR3             81232200
1390 0 680D      STX  3 T24EA+1    81232210
1391 1 C480 138F LD  I T24E2        81232220
1393 0 D002      STO  T24E6        81232230
1394 0 42E2      BSI  2 EROUT-TB   81232240
1395 0 0163      DC    /0163       81232250
1396 0 0000      T24E6 DC    *-*      81232260
*
1397 1 6700 12C9 LDX  L3 T23        SET UP POINTER      81232270
1399 1 4400 1298 BSI  L T2318      PRNT 'AT,SK,WENT'  81232280
139B 1 7401 138F MDX  L T24E2,+1   INCREMENT RETURN    81232290
139D 0 6700 0000 T24EA LDX  L3 *-*  RESTORE XR3        81232300
139F 1 4C80 138F BSC  I T24E2      81232310
*
* TABLES AND CONSTANTS 81232320
*
13A1 0 00C6      T24CY DC    198    **** CYLINDER TABLE **** 81232330
13A2 0 0056      DC    86          81232340
13A3 0 0051      DC    81          81232350
13A4 0 004C      DC    76          81232360
13A5 0 0046      DC    70          81232370
13A6 0 0024      DC    36          81232380
13A7 0 0012      DC    18          81232390
13A8 0 0008      DC    11          81232400
13A9 0 0009      DC    9           81232410
13AA 0 0007      DC    7           81232420
*
* ROUTINE --5-- RANDOM SEEKS 81232430
*
*****
81232440
81232450
81232460
81232470
81232480
81232490
81232500
81232510
81232520
81232530
81232540
81232550
81232560
81232570
81232580
81232590
81232600
81232610
81232620
81232630
81232640
81232650

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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* THIS ROUTINE WILL PERFORM CONTINUOUS RANDOM 81232660
* SEEKS FOR APPROXIMATELY 500 CYLINDERS. AFTER 81232670
* DETENTING AT EACH RANDOM CYLINDER, THE HOME 81232680
* ADDRESS IS READ WITH A RANDOM HEAD TO CHECK 81232690
* ACCESS LOCATION. 81232700
* 81232710
* THE POWER RESIDUE METHOD IS USED TO GENERATE 81232720
* THE RANDOM NUMBERS UTILIZED. THE INITIAL 81232730
* STARTING NUMBER USED AS INPUT TO THE RANDOM 81232740
* NUMBER GENERATOR IS ALSO RANDOMIZED BY USING 81232750
* A PROGRAM COUNTER TO WAIT FOR THE FIRST BYTE 81232760
* TO TRANSFER INTO CORE DURING A RECALIBRATE, 81232770
* RHA CHAIN. THIS COUNT IS USED FOR THE START- 81232780
* ING NUMBER. 81232790
* 81232800
* 81232810
*****
* 81232820
* 81232830
*****
* 81232840
* 81232850
*****
* 81232860
* 81232870
*****
* 81232880
* 81232890
* 81232900
* 81232910
* 81232920
* 81232930
* 81232940
* 81232950
* 81232960
* 81232970
* 81232980
* 81232990
* 81233000
* 81233010
* 81233020
* 81233030
* 81233040
* 81233050
* 81233060
* 81233070
* 81233080
* 81233090
* 81233100
* 81233110
* 81233120
* 81233130
* 81233140
* 81233150
* 81233160
* 81233170
* 81233180
* 81233190
* 81233200
* 81233210
* 81233220
* 81233230
* 81233240
* 81233250
* 81233260
* 81233270
* 81233280
* 81233290
* 81233300
* 81233310
* 81233320
* 81233330

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```

13AB 0
13AB 1 7401 0815
13AD 1 4C18 13B2
13AF 0 9297
13B0 1 4C20 1454

13B2 0 C283
13B3 0 100A
13B4 1 4C10 13B8
13B6 0 4203
13B7 1 1422

13B8 0 42E8
13B9 1 6700 1448
13BB 1 6C00 1448
13BD 0 C2AF
13BE 0 D302

13BF 0 C2BC
13C0 0 D2D6

13C1 0 42EE
13C2 1 144B

13C3 0 1010
13C4 0 D2D6

13C5 1 7401 1448
13C7 0 1000
13C8 0 C302
13C9 0 F2AF
13CA 0 4818
13CB 0 70F9

13CC 0 1006
13CD 0 1806
13CE 0 EA97
13CF 0 D300
13D0 0 1020
13D1 0 DA49
13D2 0 C2A4
13D3 0 D2DD

13D4 0 CB0A
13D5 1 DC00 12DD

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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13D7 0 C300
13D8 0 A301
13D9 0 18D0
13DA 0 D300
13DB 0 E2BE
13DC 0 1808
13DD 1 D400 12DD
13DF 1 D400 12D6
13E1 0 930A
13E2 0 4810
13E3 0 70F3

13E4 0 C300
13E5 0 180C
13E6 1 D400 12DE
13E8 0 930B
13E9 0 4810
13EA 0 70EC

13EB 0 C283
13EC 0 1009
13ED 1 4C28 13F2

13EF 1 4400 12BC
13F1 0 70E2

13F2 0 CA49
13F3 0 1088
13F4 0 D2DB
13F5 0 C24B
13F6 0 1808
13F7 0 D2DC

13F8 0 C28D
13F9 0 D249
13FA 0 D24A
13FB 0 D24B

13FC 0 42EE
13FD 1 12DF

13FE 0 4209
13FF 1 13FC

1400 0 C236
1401 0 100E
1402 1 4C10 140A

1404 1 4400 12BC
1406 0 702D

1407 1 4400 1384
1409 0 2501

140A 0 CA49
140B 0 1088
140C 1 F400 12DD
140E 0 4820
140F 0 7006
1410 0 C24B
1411 0 1808
1412 1 F400 12DE
1414 1 4C18 1430

1416 1 4400 138F
1418 0 2502
1419 1 4400 1298

* T2507 LD 3 T25RN-T25 GET NUMBER 81233340
* M 3 T25XX-T25 MULT BY X-FACTOR 81233350
* XCH GET LO ORDER 81233360
* STO 3 T25RN-T25 SAVE NUMBER 81233370
* AND 2 HFF00-TB * 81233380
* SRA 8 * 81233390
* STO L T23SA+1 SET UP 'SEEK TO' CYL 81233400
* STO L T23CN SAVE FOR ALIGN CK 81233410
* S 3 T25IN-T25 CYL LT OR EQ TO 202 81233420
* SKP - YES 81233430
* MDX T2507 NO 81233440
* 81233450
* 81233460
* LD 3 T25RN-T25 GET NEW NUMBER 81233470
* SRA 12 * HD NUMBER 81233480
* STO L T23SA+2 81233490
* S 3 T25IN+1-T25 HD LT OR EQ TO 9 81233500
* SKP - YES 81233510
* MDX T2507 NO 81233520
* 81233530
* T2508 LD 2 TSW0-TB GET OPTION SWS 81233540
* SLA OSALC TEST SEEK ALIGN CYLS 81233550
* BN T2509 BRANCH IF ON 81233560
* 81233570
* BSI L T2319 GO CK FOR ALIGNMENT CYL 81233580
* MDX T2506 RETURN HERE IF YES 81233590
* 81233600
* T2509 LDD 2 HA-TB RETURN HERE IF NO 81233610
* SLT 8 SAVE 'WENT TO' CYL 81233620
* STO 2 T23LC-TB * FOR 'WAS AT' CYL 81233630
* LD 2 HA+2-TB 81233640
* SRA 8 SAVE 'WENT TO' HD 81233650
* STO 2 T23LH-TB * FOR 'WAS AT' HD 81233660
* 81233670
* LD 2 TERM-TB RESET READ AREA 81233680
* STO 2 HA-TB *** 81233690
* STO 2 HA+1-TB *** 81233700
* STO 2 HA+2-TB *** 81233710
* 81233720
* T2510 BSI 2 S10-TB EXEC CHNL PGM 81233730
* DC T23SK 81233740
* 81233750
* BSI 2 TLPST-TB TEST LOOP S10 81233760
* DC T2510 LOOP ADDRS 81233770
* 81233780
* LD 2 SCSX0+1-TB TEST FOR UNIT CK 81233790
* SLA UNCHK *** 81233800
* BNN T2511 BRANCH IF OFF 81233810
* 81233820
* BSI L T2319 GO CK FOR ALIGNMENT CYL 81233830
* MDX T2514 RETURN HERE IF YES 81233840
* 81233850
* BSI L T24E1 GO PRINT ERROR IF UNIT 81233860
* DC /2501 * CK AND NOT ALIGN. CYL 81233870
* 81233880
* T2511 LDD 2 HA-TB TEST 'SEEK TO' AND 81233890
* SLT 8 * 'WENT TO' HD AND 81233900
* EOR L T23SA+1 * CYL 81233910
* SKP Z *** 81233920
* MDX T2512 *** 81233930
* LD 2 HA+2-TB *** 81233940
* SRA 8 *** 81233950
* EOR L T23SA+2 *** 81233960
* BZ T2513 BRANCH IF CORRECT 81233970
* 81233980
* T2512 BSI L T24E2 GO PRINT ERROR 81233990
* DC /2502 81234000
* BSI L T2318 GO PRINT 'AT,SEEK,WENT' 81234010

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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141B 0 4206      *      BSI  2  TLPER-TB  TEST FOR LOOP ON ERROR  81234020
141C 1 13FC      *      DC    T2510  LOOP ADDRS                81234030
*
*      81234040
*      81234050
*      81234060
*      GO TO NEXT ROUTINE IN SEQUENCE  81234070
*      81234080
T25EN BSI  2  FREDV-TB  FREE CHANNEL  81234090
LD      2  TRTNN-TB  GET RTN SWS      81234100
BZ      T2601  GO TO NEXT RTN IN SEQ  81234110
BSI     2  CNTRL-TB  GO TO CONTROL RTN 81234120
TTL25 PRNT  .  SECT 2,RT 5- .         81234130
*
*      81234140
*      PRNT  .RANDOM SEEKS.           81234150
*      DC    /FFFF                    81234160
*      81234170
T2513 MDX  L  LPCNT,-1  DECREMENT LOOP CNTR 81234180
*      MDX  T2507  RETURN                81234190
*      MDX  T25EN  ELSE END ROUTINE      81234200
*      81234210
T2514 LD  L  T23SA+1  MOVE 'SEEK TO' CYL INTO 81234220
*      SLT  8  * 'WENT TO' CYL          81234230
*      STO  2  HA+1-TB  *                81234240
*      LD  L  T23SA+2  MOVE 'SEEK TO' HD INTO 81234250
*      SLT  8  * 'WENT TO' HD          81234260
*      STO  2  HA+2-TB  *                81234270
*      MDX  T2513  *                    81234280
*      81234290
*      T2515 LD  L  T23LC  SWAP 'WAS AT' AND 81234300
*      STO  3  T25HA-T25 * 'SEEK TO' CYL'S 81234310
*      LD  L  T23SA+1  81234320
*      STO  L  T23LC  81234330
*      LD  3  T25HA-T25 81234340
*      STO  L  T23SA+1 81234350
*      MDX  T2508 81234360
*      81234370
*      DATA AND CONSTANTS 81234380
*      81234390
T25 EQU * 81234400
T25RN DC ** STARTING NUMBER 81234410
T25XX DC 259 MULTIPLIER 81234420
T25HA DC ** READ HA COMP SW 81234430
*      81234440
*      81234450
T25RR DC 1 BYTE COUNT 81234460
*      DC /60*256+RCAL FLAGS AND OP CODE 81234470
*      DC * ADDRESS 81234480
*      81234490
*      81234500
*      DC 2 BYTE COUNT 81234510
*      DC /20*256+RDHA FLAGS AND OP CODE 81234520
*      DC T25HA ADDRESS 81234530
*      81234540
*      81234550
*      BSS E 0 INITIAL SEEK ARG - 81234560
*      T25IN DC /00CB CYL=203 81234570
*      DC /000A HD=10 81234580
*      81234590
*      81234600
*      81234610
*      * 81234620
*      * 81234630
*      * 81234640
*      * 81234650
*      * 81234660
*      * 81234670
*      * 81234680
*      * 81234690
SECTION END
*
T2601 BSI  2  CNTRL-TB  GO TO CONTROL RTN 81234670
***** 81234680
* 81234690

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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***** 81234700
*
* SECTION PREFACE 81234710
*      81234720
*      81234730
T30PR DC /0003 SECTION NUMBER 81234740
*      DC 4 81234750
*      81234760
*      81234770
T30NT LD 2 TRTNN-TB SW FNC 1 BITS 12-15 81234780
*      BZ T3101 BR IF RUN ALL RTNS 81234790
*      S T30PR+1 TEST FOR VALID 81234800
*      BP TCNER BR IF INVALID RTN NUMBER 81234810
*      A T30PR+1 RESTORE RTN NUMBER 81234820
*      MDX T3101 GO TO FIRST RTN 81234830
***** 81234840
*
* 81234850
*      81234860
*      81234870
*      81234880
***** 81234890
*
* ROUTINE --1-- WRITE 81234900
*      81234910
*      81234920
***** 81234930
*
*      81234940
*      81234950
*      THIS ROUTINE WILL CONSTRUCT A MAP USING EACH 81234960
*      HEAD FROM 0 TO 9. THE RESULTS OF A WRITE R0 81234970
*      FOLLOWED BY A READ R0 ARE CODED AND STORED IN 81234980
*      A MAP (ARRAY). AFTER THE MAP IS CONSTRUCTED 81234990
*      (ALL HEADS USED), THE ROUTINE DETERMINES IF 81235000
*      AN ERROR OCCURRED AND IF SO ATTEMPTS TO ISO- 81235010
*      LATE THE CAUSE OF THE ERROR. 81235020
*      81235030
*      THE CHANNEL WILL SEND 100 BYTES OF R0 DATA TO 81235040
*      THE 2841, BUT THE DATA LENGTH IN THE R0 COUNT 81235050
*      IS 3600 BYTES. CONSEQUENTLY, THE 2841 WILL 81235060
*      WRITE AND READ BACK A FULL TRACK RECORD. 81235070
*      81235080
*      R0 DATA PATTERNS USED ARE 0000,FFFF,1313, AND 81235090
*      ESES. 81235100
*      81235110
*      MAP CODES-- 81235120
*      WX...NO RECORD FND ON WRITE(HA NOT FND) 81235130
*      WU...UNSAFE ON WRITE 81235140
*      WS...SERIALIZER/DERSERIALIZER CK ON WRITE 81235150
*      WW...SOME OTHER SENSE BIT ON WRITE 81235160
*      SD...SERIALIZER/DERSERIALIZER CK ON READ 81235170
*      BC...BURST (DATA) CHECK ON READ 81235180
*      NX...NO RECORD FOUND ON READ 81235190
*      SE...SOME OTHER SENSE BIT ON READ 81235200
*      RN...READ DATA DOES NOT EQUAL WRITE DATA 81235210
*      OK...HEAD FUNCTIONED CORRECTLY 81235220
*      81235230
*      EQUIPMENT CHECKED-- 81235240
*      WRITE DRIVER DATA TRANSFER 81235250
*      ERASE DRIVER SOME BUS AND TAG LINES 81235260
*      HEADS 2841 SER/DES 81235270
*      81235280
***** 81235290
*
* 81235300
***** 81235310
*
* 81235320
***** 81235330
*
* 81235340
***** 81235350
*
* 81235360
145F 0 T3101 EQU * TEST ENTRY POINT
145F 1 7401 0815 MDX L TRID,1 BUMP RTN ID 81235370

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1461 1 4C18 1466	BZ	T3102	BR IF TEST NUMBER ZERO	81235380
1463 0 9297	S	2 K1-TB	DECREMENT BY ONE	81235390
1464 1 4C20 170A	BNZ	T3201	BR IF NOT THIS TEST	81235400
*				
1466 0 C283	T3102 LD	2 TSW0-TB	GET OPTION SWS	81235410
1467 0 100A	SLA	OTTLE	PRINT TITLES	81235420
1468 1 4C10 146C	BNN	T3103	BR IF NOT SET	81235430
146A 0 4203	BSI	2 TLGMS-TB	GO TO PRINT ROUTINE	81235440
146B 1 15AE	DC	TTL31	MESSAGE ADDRESS	81235450
*				
146C 0 42E8	T3103 BSI	2 GETDV-TB	GET CHANNEL FOR RTN	81235470
146D 1 6700 1496	T3104 LD	L3 T3108		81235480
146F 1 6F00 19B2	STX	L3 WTADR		81235490
*				
* POSITION AND CHECK IF ACCESS IS AT CYL-198-				
*				
1471 0 42EE	T3105 BSI	2 SIO-TB	CALL START I/O RTN	81235530
1472 1 1631	DC	T3155		81235540
*				
1473 0 C236	LD	2 SCSX0+1-TB	GET UNIT STATUS	81235560
1474 0 100E	SLA	UNCHK	CHECK FOR UNIT CHECK	81235570
1475 1 4C10 147B	BNN	T3106		81235580
*				
1477 0 42E2	BSI	2 EROUT-TB	PRINT ERROR MESSAGE	81235600
1478 0 0127	DC	/0127	TAGS AND OPTIONS	81235610
1479 0 3110	DC	/3110	MSG NUMBER	81235620
147A 0 70F6	MDX	T3105		81235630
*				
* CHECK THAT ACCESS IS DETENTED AT CYL -198-				
147B 0 CA49	T3106 LDD	2 HA-TB	GET HA READ	81235650
147C 0 1088	SLT	8	SAVE CYL	81235660
147D 1 F400 164A	EOR	L T31A1+1	COMPARE W/SB	81235670
147F 1 4C18 1493	BZ	T3107	BR IF OK	81235680
*				
1481 0 C249	LD	2 HA-TB	ELSE PRNT HA READ	81235700
1482 0 42F4	BSI	2 TCVBE-TB	**	81235710
1483 1 DC00 1698	STD	L T31E5+6	**	81235720
1485 0 C24A	LD	2 HA+1-TB	**	81235730
1486 0 42F4	BSI	2 TCVBE-TB	**	81235740
1487 1 DC00 169A	STD	L T31E5+8	**	81235750
1489 0 C24B	LD	2 HA+2-TB	**	81235760
148A 0 42F4	BSI	2 TCVBE-TB	**	81235770
148B 1 D400 169C	STO	L T31E5+10	**	81235780
148D 0 42E2	BSI	2 EROUT-TB	PRINT ERROR MSG	81235790
148E 0 0108	DC	/0108	TAGS	81235800
148F 1 1692	DC	T31E5	MSG ADDRESS	81235810
*				
1490 0 4206	BSI	2 TLPER-TB	TEST LOOP ERROR	81235820
1491 1 1471	DC	T3105	LOOP ADDRS	81235830
1492 0 7065	MDX	T3118	ELSE END RTN	81235840
*				
* GO DO THE WRITE				
*				
1493 0 42EE	T3107 BSI	2 SIO-TB	GO TO SIO RTN	81235860
1494 1 163A	DC	T31WR	CCW ADDRESS	81235870
*				
1495 0 7004	MDX	T3109		81235880
*				
* TIMEOUT RETURN WITH UNIT OR 2841 HUNG				
1496 0 42E2	T3108 BSI	2 EROUT-TB		81235890
1497 0 0106	DC	/0106		81235900
1498 0 3112	DC	/3112		81235910
1499 0 70F9	MDX	T3107		81235920
*				
149A 1 6700 1486	T3109 LD	L3 T3112	SET TIMEOUT RETURN	81235930
149C 1 6F00 19B2	STX	L3 WTADR	**	81235940
149E 0 C29F	LD	2 K10-TB	SET LOOP COUNT	81235950
149F 0 D2DD	STO	2 LPCNT-TB	**	81235960
14A0 1 6500 1628	LDX	L1 T31DA	SET PATTERN POINTER	81235970
14A2 0 690D	STX	1 T3111+1		81235980

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14A3 1 6700 167C	T3110 LD	X L3 T31MP		81236060
14A5 0 1010	SLA	16	CLEAR A-REG	81236070
14A6 1 D400 164E	STO	L T31A2+2	SET HD NUMBER TO ZERO	81236080
14A8 1 D400 169F	STO	L T31W1+1	SET HD NO. IN RO COUNT	81236090
14AA 0 6108	LDX	1 8		81236100
14AB 1 D500 161F	STO	L1 T31C0-1	CLEAR COUNTERS	81236110
14AD 0 71FF	MDX	1 -1		81236120
14AE 0 70FC	MDX	*-4	LOOP	81236130
*				
* GENERATE WRITE RECORD 0 DATA				
14AF 0 C400 0000	T3111 LD	L *-*	GET DATA	81236140
14B1 0 6132	LDX	1 50		81236150
14B2 1 D500 16A1	STO	L1 T31W2-1	SET IN TBL	81236160
14B4 0 71FF	MDX	1 -1		81236170
14B5 0 70FC	MDX	*-4	LOOP	81236180
*				
* RESET READ AREA				
14B6 1 C400 161F	T3112 LD	L T31C5		81236190
14B8 0 6132	LDX	1 50		81236200
14B9 1 D500 16D7	STO	L1 T31R2-1		81236210
14BB 0 71FF	MDX	1 -1		81236220
14BC 0 70FC	MDX	*-4		81236230
*				
* SEEK HEAD XX / WRITE RECORD 0				
*				
14BD 0 42EE	BSI	2 SIO-TB		81236240
14BE 1 1637	DC	T31WR-3	CCW ADDRESS	81236250
*				
* CHECK FOR AN ERROR				
14BF 0 C236	LD	2 SCSX0+1-TB	GET UNIT STATUS	81236260
14C0 0 100E	SLA	UNCHK	TEST FOR UNIT CHK	81236270
14C1 1 4C28 14FA	BN	T3119		81236280
*				
* READ RECORD 0				
*				
14C3 0 42EE	BSI	2 SIO-TB		81236290
14C4 1 1646	DC	T31RD		81236300
*				
14C5 0 C236	T3113 LD	2 SCSX0+1-TB		81236310
14C6 0 100E	SLA	UNCHK		81236320
14C7 1 4C28 1511	BN	T3124		81236330
*				
* COMPARE RD/WR DATA				
14C9 0 6132	LDX	1 50		81236340
14CA 1 C500 16A1	T3114 LD	L1 T31W2-1		81236350
14CC 1 F500 16D7	EOR	L1 T31R2-1		81236360
14CE 1 4C20 1528	BNZ	T3130		81236370
14D0 0 71FF	MDX	1 -1		81236380
14D1 0 70F8	MDX	T3114		81236390
*				
* DATA GOOD				
14D2 1 C400 161E	LD	L T31OK	.OK. IN A-REG	81236400
14D4 0 D300	STO	3 0		81236410
*				
* INCR. POINTERS AND HD				
*				
14D5 0 7302	T3115 MDX	3 2		81236420
14D6 1 7401 164E	MDX	L T31A2+2.1	BUMP HD NUMBER	81236430
14D8 1 C400 164E	LD	L T31A2+2		81236440
14DA 1 D400 169F	STO	L T31W1+1		81236450
14DC 0 929F	S	2 K10-TB		81236460
14DD 1 4C28 14B6	BN	T3112		81236470
*				
* TEST FOR LOOP SIO				
14DF 0 C283	LD	2 TSW0-TB		81236480
14E0 0 1008	SLA	OLPST		81236490
14E1 1 4C28 14AF	BN	T3111		81236500
*				
* CHECK FOR ANY ERRORS LAST PASS				
14E3 1 C400 1620	LD	L T31C0		81236510
14E5 1 4C20 153E	BNZ	T31DC		81236520
*				
* BUMP PATTERN POINTER AND LOOP				
14E7 1 7401 14B0	MDX	L T3111+1.1		81236530
14E9 1 C480 1480	LD	I T3111+1	GET PATTERN	81236540
14EB 1 F400 162C	EOR	L T31TM	TEST FOR END OF TABLE	81236550

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

14ED 1 4C20 14A3	BNZ	T3110	BR IF NOT END	81236740
	*			81236750
14EF 1 74FF 085C	MDX L	LPCNT,-1	COUNT LOOP	81236760
14F1 0 70AE	MDX	T3110-3	LOOP IF NOT END	81236770
	*			81236780
14F2 0 C283	LD	2 TSW0-TB	CHECK PRINT RESULTS SW	81236790
14F3 0 100A	SLA	OPRRS	**	81236800
14F4 1 4C10 14F8	BNN	T3118	BR IF NOT SET	81236810
	*			81236820
14F6 0 4203	BSI	2 TLGMS-TB	GO PRINT RESULTS	81236830
14F7 1 164F	DC	T31WH	MESSAGE ADDRESS	81236840
	*			81236850
14F8 1 4C00 15A9	T3118 BSC L	T31EN	END ROUTINE	81236860
	*			81236870
	*		GET HERE IF UNIT CHECK ON WRITE CHAIN	81236880
	*			81236890
14FA 0 42EB	T3119 BSI	2 GETSN-TB	GET SENSE INFO	81236900
	*			81236910
14FB 0 CA1D	LDD	2 SNWDS-TB	LOAD WORDS TO AQ	81236920
14FC 0 108C	SLT	FNORC	TEST FOR NO RECORD FOUND	81236930
14FD 1 4C10 1502	BNN	T3120	BR IF NOT	81236940
14FF 0 402B	BSI	T31SM	GO SET MAP	81236950
1500 0001	PRNT	.WX.	MAP CHAR	81236960
1501 0 0002	DC	2	CNTR INDEX	81236970
	*			81236980
1502 0 1084	T3120 SLT	FUNSF-FNORC	TEST FOR -UNSAFE-	81236990
1503 1 4C10 1508	BNN	T3121	BR IF NOT	81237000
1505 0 4025	BSI	T31SM		81237010
1506 0001	PRNT	.WU.	MAP CHARS	81237020
1507 0 0002	DC	2	INDEX	81237030
	*			81237040
1508 0 1082	T3121 SLT	FSERD-FUNSF	TEST FOR SERIALIZER/DES.	81237050
1509 1 4C10 150E	BNN	T3122	BR IF NOT	81237060
150B 0 401F	BSI	T31SM		81237070
150C 0001	PRNT	.WS.	MAP CHARS	81237080
150D 0 0005	DC	5	INDEX	81237090
	*		SOME OTHER SENSE BIT	81237100
150E 0 401C	T3122 BSI	T31SM		81237110
150F 0001	PRNT	.WW.	MAP CHARS	81237120
1510 0 0007	DC	7	COUNTER INDEX	81237130
	*			81237140
	*			81237150
1511 0 42EB	T3124 BSI	2 GETSN-TB	GET 2841 SENSE INFO	81237160
1512 0 CA1D	LDD	2 SNWDS-TB	LOAD TO AQ	81237170
1513 0 1084	SLT	FBRST	TEST BURST (DATA CHECK)	81237180
1514 1 4C10 1519	BNN	T3125	BR IF NOT	81237190
1516 0 4014	BSI	T31SM		81237200
1517 0001	PRNT	.BC.	MAP CHARS	81237210
1518 0 0006	DC	6	INDEX	81237220
	*			81237230
1519 0 1088	T3125 SLT	FNORC-FBRST	TEST NO RECORD FOUND	81237240
151A 1 4C10 151F	BNN	T3126	BR IF NOT	81237250
151C 0 400E	BSI	T31SM		81237260
151D 0001	PRNT	.NX.	MAP CHARS	81237270
151E 0 0003	DC	3	INDEX	81237280
	*			81237290
151F 0 1086	T3126 SLT	FSERD-FNORC	TEST SER/DES CHECK	81237300
1520 1 4C10 1525	BNN	T3127	BR IF NOT	81237310
1522 0 4008	BSI	T31SM		81237320
1523 0001	PRNT	.SD.	MAP CHARS	81237330
1524 0 0005	DC	5	INDEX	81237340
	*			81237350
1525 0 4005	T3127 BSI	T31SM		81237360
1526 0001	PRNT	.SE.	MAP CHARS	81237370
1527 0 0007	DC	7	INDEX	81237380
	*			81237390
	*		GET HERE IF READ DATA DOES NOT AGREE W/WRITE	81237400
	*			81237410

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1528 0 4002	T3130 BSI	T31SM		81237420
1529 0001	PRNT	.RN.		81237430
152A 0 0004	DC	4		81237440
	*			81237450
	*	T31SM--	BUMP TOTAL CNTR	81237460
	*		BUMP INDEXED CNTR	81237470
	*		MOVE MAP CHARS TO MAP	81237480
	*			81237490
152B 0 0000	T31SM DC	**		81237500
152C 1 C480 152B	LD	I T31SM	GET MAP CODE	81237510
152E 0 D300	STO	3 0	SET IN TABLE	81237520
152F 1 7401 1620	MDX L	T31C0,1	BUMP TOTAL COUNT BY ONE	81237530
1531 1 7401 152B	MDX L	T31SM,1	BUMP ADDR TO PNTR	81237540
1533 1 C480 152B	LD	I T31SM	GET ERROR CNTR NUMBER	81237550
1535 0 D001	STO	**1	SET FOR POINTING	81237560
1536 0 6500 0000	LDX	L1 **	SET PNTR REG	81237570
1538 1 C500 1620	LD	L1 T31C0	GET CNTR	81237580
153A 0 8297	A	2 K1-TB	BUMP BY ONE	81237590
153B 1 D500 1620	STO	L1 T31C0	RE-STORE	81237600
153D 0 7097	MDX	T3115		81237610
	*			81237620
	*		DECODE ERROR COUNTERS	81237630
	*			81237640
153E 1 C400 1620	T31DC LD	L T31C0	GET TOTAL ERRORS	81237650
1540 0 9297	S	2 K1-TB	TEST FOR ONE ERROR	81237660
1541 1 4C20 1545	BNZ	T3133	BR IF NOT	81237670
1543 0 403D	BSI	T31PR	PRINT MAP- ONE BAD HEAD-	81237680
1544 0 3108	DC	/3108	ERROR NUMBER	81237690
	*			81237700
1545 0 929E	T3133 S	2 K9-TB	TEST FOR ALL HDS BAD	81237710
1546 1 4C18 1555	BZ	T3135	BR IF YES	81237720
	*			81237730
1548 1 C400 1623	LD	L T31C0+3	GET NRF CNTR	81237740
154A 1 8400 1626	A	L T31C0+6	ADD CNT OF DATA CK	81237750
154C 1 D400 1627	STO	L T31C0+7	STORE	81237760
154E 0 9298	S	2 K2-TB	ARE THERE 2 OR MORE	81237770
154F 1 4C28 1553	BN	T3134	BR IF NOT	81237780
1551 0 402F	BSI	T31PR	GO PRINT MAP -CLKING PROB-	81237790
1552 0 3109	DC	/3109	ERROR NUMBER	81237800
	*			81237810
1553 0 402D	T3134 BSI	T31PR	GO PRINT MAP-UNKNOWN PROB-	81237820
1554 0 3110	DC	/3110	ERROR NUMBER	81237830
	*			81237840
1555 1 C400 1621	T3135 LD	L T31C0+1	TEST FOR 10 UNSAFES	81237850
1557 0 929F	S	2 K10-TB	**	81237860
1558 1 4C20 155C	BNZ	T3136	BR IF NO	81237870
155A 0 4026	BSI	T31PR	GO PRINT MAP -SAFETY ERR-	81237880
155B 0 3102	DC	/3102	ERROR NUMBER	81237890
	*			81237900
155C 1 C400 1626	T3136 LD	L T31C0+6	WERE THERE 10 BURST CKS	81237910
155E 0 929F	S	2 K10-TB	**	81237920
155F 1 4C20 1563	BNZ	T3137	BR IF NO	81237930
1561 0 401F	BSI	T31PR	GO PRINT MAP -SICK WRT	81237940
1562 0 3103	DC	/3103	ERROR NUMBER	81237950
	*			81237960
1563 1 C400 1623	T3137 LD	L T31C0+3	WERE THER 10 NRF ON RD	81237970
1565 0 929F	S	2 K10-TB	*	81237980
1566 1 4C20 156A	BNZ	T3138	BR IF NO	81237990
1568 0 4018	BSI	T31PR	GO PRINT MAP -NOT WRITING	81238000
1569 0 3104	DC	/3104	ERROR NUMBER	81238010
	*			81238020
156A 1 C400 1622	T3138 LD	L T31C0+2	WERE THER 10 NRFS ON WR	81238030
156C 0 929F	S	2 K10-TB	**	81238040
156D 1 4C20 1578	BNZ	T3140	BR IF NO	81238050
156F 0 4011	BSI	T31PR	GO PRINT MAP -HA NOT FND-	81238060
1570 0 3105	DC	/3105	ERROR NUMBER	81238070
	*			81238080
1571 1 C400 1624	T3139 LD	L T31C0+4	WERE THER 10 NOT EQUAL DAT	81238090

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1573 0 929F          S      2 K10-TB  **          81238100
1574 1 4C20 1578    BNZ     T3140      BR IF NO     81238110
1576 0 400A         BSI     T31PR      GO PRINT MAP 81238120
1577 0 3106         DC      /3106      ERROR NO.-DROPPING BITS- 81238130
*
1578 1 C400 1625    T3140 LD  L  T31C0+5  WERE THER 10 S/D 81238140
157A 0 929F         S      2 K10-TB  **          81238150
157B 1 4C20 157F    BNZ     T3141      BR IF NO     81238160
157D 0 4003         BSI     T31PR      GO PRINT MAP -SER/DES- 81238170
157E 0 3107         DC      /3107      ERROR NUMBER 81238180
*
157F 0 4001         T3141 BSI     T31PR      GO PRINT MAP -SOME OTHER 81238190
1580 0 3101         DC      /3101      ERROR NO. COMBO OF 10 81238200
*
* PRINT HEAD MAP AND ERROR NO. 81238210
*          81238220
*          81238230
*          81238240
*          81238250
T31PR DC  *--      ENTRY          81238260
LD  I  T31PR          81238270
STO  T3144          81238280
BSI  2  ER0UT-TB     GO TO PRINT ER MSG 81238290
DC  /0140          TAGS AND OPTIONS 81238300
T3144 DC  *--      ERROR NUMBER-SET IN 81238310
*
BSI  2  TLGMS-TB     GO PRINT MAP          81238320
DC  T31WH          MSG ADDRESS          81238330
*
LD  L  T31C0         GET TOTAL ERRORS 81238340
BZ  T3118          BR IF NONE          81238350
*
* SCAN HEAD MAP AND FOR EACH FAILING HEAD PRINT 81238360
* OUT THE HEAD NUMBER,WRITE DATA,AND CAW,CSW, 81238370
* SENSE FOR WRITE, AND THEN PRINT OUT READ DATA 81238380
* CAW,CSW, AND SENSE FOR READ. 81238390
*
* IF ALL 10 HEADS FAILED, THEN INFORMATION FOR 81238400
* HEAD 00 ONLY IS PRINTED OUT 81238410
*
* T31SC SLA  16          81238420
*          81238430
*          81238440
*          81238450
*          81238460
*          81238470
*          81238480
*          81238490
*          81238500
*          81238510
*          81238520
*          81238530
*          81238540
*          81238550
*          81238560
*          81238570
*          81238580
*          81238590
*          81238600
*          81238610
*          81238620
*          81238630
*          81238640
*          81238650
*          81238660
*          81238670
*          81238680
*          81238690
*          81238700
*          81238710
*          81238720
*          81238730
*          81238740
*          81238750
*          81238760
*          81238770
T31SC SLA  16          GET MAP CODE
STO  L  T31A2+2      COMPARE WITH .OK.
LDX  L3 T31MP        BR IF NOT
LD  2  K10-TB        BUMP HEAD NUMBER BY ONE
STO  2  LPCNT-TB     BUMP MAP POINTER
T3147 LD  3  0          DECREMENT LOOP COUNT
EOR  L  T310K        LOOP
BNZ  T3150          GET MAP CODE
T3148 MDX  L  T31A2+2,1 BUMP HEAD NUMBER BY ONE
MDX  3  2          BUMP MAP POINTER
MDX  L  LPCNT,-1     DECREMENT LOOP COUNT
MDX  T3147          LOOP
* MAP HAS BEEN SCANNED-STOP AND LET FE ANALYZE
T3149 BSI  2  THALT-TB
*
LD  2  TSW0-TB
SLA  OLPST
BN  T31SC
*
LD  2  TSW0-TB
SLA  OLPER
BN  T3109
*
* GO TO NEXT ROUTINE IN SEQUENCE
*
T31EN BSI  2  FREDV-TB  FREE CHANNEL
LD  2  TRTNN-TB      GET RTN SWS
BZ  T3201          GO TO NEXT RTN IN SEQ
BSI  2  CNTRL-TB     GO TO CONTROL RTN
TTL31 PRNT . SECT 3,RT 1- .

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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15B5 0003          *          81238780
15B8 0 FFFF        PRNT  .WRITE. 81238790
DC /FFFF          DC /FFFF 81238800
*
15B9 1 C400 164E    T3150 LD  L  T31A2+2  GET HEAD NUMBER 81238810
15BB 1 D400 169F    STO  L  T31W1+1  SET IN R0 RECORD 81238820
15BD 0 42F4         BSI  2  TCVBE-TB  CONVERT TO PRINT CODE 81238830
15BE 0 1090         SLT  16          SAVE BITS 8-15 FOR PRINT 81238840
15BF 0 D050         STO  T31HW+2     *** 81238850
15C0 0 C05E        LD  T31C5        SET I/O AREA TO 'C5' 81238860
15C1 0 6132        LDX  1 50        100 BYTES 81238870
15C2 1 D500 16D7    STO  L1 T31R2-1 *** 81238880
15C4 0 71FF        MDX  1 -1        LOOP FOR 100 BYTES 81238890
15C5 0 70FC        MDX  *-4        *** 81238910
*
15C6 0 42EE        *          81238920
15C7 1 1637        BSI  2  SIO-TB   DO THE WRITE 81238930
DC T31WR-3        DC T31WR-3     SKHD,SFM,SRCHA,TIC,WRR0 81238940
*
15C8 1 C480 14B0    LD  I  T3111+1   GET WRITE DATA 81238950
15CA 0 42F4        BSI  2  TCVBE-TB  CONVERT TO DECIMAL 81238960
15CB 0 D04A        STO  T31HW+8     SET IN MSG 81238970
15CC 0 4203        BSI  2  TLGMS-TB  PRINT MSG 81238980
15CD 1 160E        DC  T31HW        MSG ADDRESS 81238990
*
15CE 0 42E2        *          81239000
15CF 0 0077        BSI  2  ER0UT-TB  PRINT CAW,CSW,SNS 81239010
15D0 0 FFFF        DC /0077        TAGS AND OPTIONS 81239020
DC /FFFF          DC /FFFF 81239030
*
15D1 0 42EE        *          81239040
15D2 1 1646        BSI  2  SIO-TB   GO TO SIO TO READ 81239050
DC T31RD          DC T31RD        RDR0 81239060
*
15D3 1 6500 15EE    LDX  L1 T31DT+4  SET MSG AREA ADDRESS 81239070
15D5 0 6905        STX  1 T3152+1  SET IN INSTRUCTION 81239080
*
15D6 0 61F1        *          81239090
15D7 1 C500 16E3    T3151 LD  L1 T31R1+15 SET LOOP COUNT 81239100
15D9 0 42F4        BSI  2  TCVBE-TB  PRINT R0 AND DATA 81239110
15DA 0 DC00 0000    T3152 STD  L  *-*  CONVERT TO PRINT CODE 81239120
15DC 1 7402 15DB    MDX  L  T3152+1,2 SET IN MSG 81239130
15DE 0 7101        MDX  1 1          BUMP SINK BY TWO 81239140
15DF 0 70F7        MDX  T3151       COUNT LOOPS 81239150
*
15E0 0 4203        *          81239160
15E1 1 15EA        BSI  2  TLGMS-TB  LOOP 81239170
DC T31DT          DC T31DT        81239180
*
15E2 0 42E2        *          81239190
15E3 0 0077        BSI  2  ER0UT-TB  81239200
15E4 0 FFFF        DC /0077        81239210
DC /FFFF          DC /FFFF 81239220
*
15E5 0 C03A        *          81239230
15E6 0 929F        LD  T31C0        81239240
S  2  K10-TB       S  2  K10-TB     81239250
15E7 1 4C20 159A    BNZ  T3148       81239260
15E9 0 70B6        MDX  T3149       81239270
15EA 0000          BSS  E  0        81239280
15EA 0004          T31DT PRNT . RD DATA. 81239290
15EE 001E          BSS  30          81239300
160C 0 00FF        DC /00FF        81239310
160D 0 FFFF        DC /FFFF        81239320
*
160E 0009          *          81239330
1617 0 FF00        T31HW PRNT . HD XX WR DATA XX. 81239340
1618 0 FFFF        DC /FF00        81239350
DC /FFFF          DC /FFFF 81239360
*
* GET HERE IF TIMEOUT OCCURS 81239370
* CAUSES-- 2841 HANG UP 81239380
* NO CHANNEL OR DEVICE END 81239390
*
1619 0 42E2        T31TD BSI  2  ER0UT-TB 81239400

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2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

161A 0 0100	DC	/0100	81239460
161B 0 3000	DC	/3000	81239470
161C 0 4C80 012E	BSC I	END	81239480
161E 0001	T310K PRNT	.OK.	81239490
161F 0 C5C5	T31C5 DC	/C5C5	81239500
1620 0008	T31C0 BSS	8	81239510
1628 0 E5E5	T31DA DC	/E5E5	81239520
1629 0 1313	DC	/1313	81239530
162A 0 FFFF	DC	/FFFF	81239540
162B 0 0000	DC	/0000	81239550
162C 0 FEDC	T31TM DC	/FEDC	81239560
162D 0004	BSS	4	81239570
* 81239580			
1631 0 0006	T31S5 DC	6	81239590
1632 0 400B	DC	/40*256+SEEKB FLAGS AND OP CODE	81239600
1633 1 1649	DC	T31A1	81239610
* 81239620			
* 81239630			
1634 0 0005	DC	5	81239640
1635 0 001A	DC	0*256+RDHA FLAGS AND OP CODE	81239650
1636 1 08C8	DC	HA	81239660
* 81239670			
* 81239680			
1637 0 0006	DC	6	81239690
1638 0 401B	DC	/40*256+SKHD FLAGS AND OP CODE	81239700
1639 1 164C	DC	T31A2	81239710
* 81239720			
* 81239730			
163A 0 0001	T31WR DC	1	81239740
163B 0 401F	DC	/40*256+SFILM FLAGS AND OP CODE	81239750
163C 1 18CD	DC	SFLM1	81239760
* 81239770			
* 81239780			
163D 0 0004	DC	4	81239790
163E 0 4039	DC	/40*256+SRCHA FLAGS AND OP CODE	81239800
163F 1 169E	DC	T31W1	81239810
* 81239820			
* 81239830			
1640 0 0001	DC	1	81239840
1641 0 0008	DC	0*256+OPTIC FLAGS AND OP CODE	81239850
1642 1 163D	DC	*-6	81239860
* 81239870			
* 81239880			
1643 0 006C	DC	108	81239890
1644 0 2015	DC	/20*256+WRR0 FLAGS AND OP CODE	81239900
1645 1 169E	DC	T31W1	81239910
* 81239920			
* 81239930			
1646 0 006C	T31RD DC	108	81239940
1647 0 2016	DC	/20*256+RDRO FLAGS AND OP CODE	81239950
1648 1 16D4	DC	T31R1	81239960
* 81239970			
1649 0 0000	T31A1 DC	/0000	81239980
164A 0 00C6	DC	/00C6	81239990
164B 0 0000	DC	/0000	81240000
* 81240010			
164C 0 0000	T31A2 DC	/0000	81240020
164D 0 0000	DC	/0000	81240030
164E 0 0000	DC	/0000	81240040
164F 0008	T31WH PRNT	. WRITE HEAD MAP-. .	81240050
1657 0 00FF	DC	/00FF	81240060
1658 0008	PRNT	. HEAD NUMBER----.	81240070
1660 0010	PRNT	.00 01 02 03 04 .	81240080
166A 0009	PRNT	.05 06 07 08 09.	81240090
1673 0 00FF	DC	/00FF	81240100
1674 0008	PRNT	. WR/RD.R0 RSLT- .	81240110
167C 0010	T31MP PRNT	.XX XX XX XX XX .	81240120
1686 0009	PRNT	.XX XX XX XX XX.	81240130

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

168F 0 00FF	DC	/00FF	81240140
1690 0 FFFF	DC	/FFFF	81240150
1692 0000	BSS E	0	81240160
1692 0011	T31E5 PRNT	. 3111 HA RD XXXXXXXXXX.	81240170
169D 0 FFFF	DC	/FFFF	81240180
169E 0 00C6	T31W1 DC	/00C6	81240190
169F 0 0000	DC	/0000	81240200
16A0 0 0000	DC	/0000	81240210
16A1 0 0E18	DC	/0E18	81240220
16A2 0032	T31W2 BSS	50	81240230
16D4 0036	T31R1 BSS	54	81240240
16D8 0	T31R2 EQU	T31R1+4	81240250
* 81240260			
* 81240270			
***** 81240280			
* 81240290			
* ROUTINE --2-- HAR AC ADVANCE 81240300			
* 81240310			
***** 81240320			
* 81240330			
* 81240340			
* THIS ROUTINE WILL CHECK THE AC CONDITIONS 81240350			
* OF THE HEAD ADDRESS REGISTER. THIS AC 81240360			
* CONDITION IS USED TO ADVANCE HAR TO THE 81240370			
* NEXT HEAD. TEN READ-HOME-ADDRESS COM- 81240380			
* MANDS ARE CHAINED WITH THE M/T BIT ON. THE 81240390			
* CPU WILL THEN CHECK THE HOME ADDRESSES READ. 81240400			
* 81240410			
* EQUIPMENT CHECKED. 81240420			
* HAR 81240430			
* HAR CARD 81240440			
* 81240450			
* 81240460			
***** 81240470			
* 81240480			
***** 81240490			
* 81240500			
***** 81240510			
* 81240520			
***** 81240530			
170A 0	T3201 EQU	* TEST ENTRY POINT	81240540
170A 1 7401 0815	MDX L	TRID.1	81240550
170C 1 4C18 1711	BZ	T3202	81240560
170E 0 9297	S	2 K1-TB	81240570
170F 1 4C20 17DC	BNZ	T3301	81240580
* 81240590			
1711 0 C283	T3202 LD	2 TSW0-TB	81240600
1712 0 100A	SLA	OTTLE	81240610
1713 1 4C10 1717	BNN	T3203	81240620
1715 0 4203	BSI	2 TLGMS-TB	81240630
1716 1 175A	DC	TTL32	81240640
* 81240650			
1717 0 42E8	T3203 BSI	2 GETDV-TB	81240660
1718 1 6500 1769	LDX	L1 T3208	81240670
171A 1 6000 19B2	STX	L1 WTADR	81240680
171C 0 C29F	LD	2 K10-TB	81240690
171D 0 D2DD	STO	2 LPCNT-TB	81240700
171E 0 C29F	T3204 LD	2 K10-TB	81240710
171F 0 D05D	STO	T32CT	81240720
1720 0 1010	SLA	16	81240730
1721 0 D059	STO	T32SA+2	81240740
1722 1 6500 177E	LDX	L1 T32HA	81240750
1724 0 C851	T3205 LDD	T3298	81240760
1725 0 D900	STD	1 0	81240770
1726 0 C051	LD	T3299	81240780
1727 0 D102	STO	1 2	81240790
1728 0 7103	MDX	1 3	81240800
1729 1 74FF 177D	MDX L	T32CT,-1	81240810

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

172B 0 70F8	MDX	T3205	*	81240820
172C 0 42EE	T3210 BSI	2 S10-TB	EXECUTE CHNL PGM	81240830
172D 1 179C	DC	T32CC		81240840
172E 0 C236	*	LD	2 SCSX0+1-TB TEST FOR UNIT CK	81240850
172F 0 100E	SLA	UNCHK	*	81240860
1730 1 4C28 1769	BN	T3208	BRANCH IF ON	81240870
1732 0 1010	SLA	16	CLEAR ERROR SWITCH	81240880
1733 0 D048	STO	T32ER	*	81240890
1734 1 6500 17BD	LDX	L1 T32MP	MAP POINTER	81240900
1736 1 6700 177E	LDX	L3 T32HA	HA POINTER	81240910
1738 0 C29F	LD	2 K10-TB		81240920
1739 0 D043	STO	T32CT		81240930
173A 0 C302	T3206 LD	3 2	GET 'WENT' TO' HD	81240940
173B 0 1808	SRA	8	TEST ONLY BITS 0-7	81240950
173C 0 F03E	EOR	T32SA+2	COMPARE WITH 'SEEK TO' HD	81240960
173D 0 4820	SKP	Z	SKIP IF CORRECT HEAD	81240970
173E 0 683D	STX	T32ER	SET ERROR SW	81240980
173F 0 C302	*	LD	3 2 GET 'WENT TO' HD	81240990
1740 0 1808	SRA	8	TEST ONLY BITS 0-7	81241000
1741 0 42F7	BSI	2 TCVHD-TB	CONVERT TO DEC	81241010
1742 0 42F4	BSI	2 TCVBE-TB	CONVERT TO 1443 CODE	81241020
1743 0 18D0	XCH			81241030
1744 0 D10A	STO	1 10	PUT IN MAP	81241040
1745 0 7102	MDX	1 2	INCREMENT POINTERS	81241050
1746 0 7303	MDX	3 3	*	81241060
1747 1 7401 177B	MDX	L T32SA+2,1		81241070
1749 1 74FF 177D	MDX	L T32CT,-1	LAST HEAD	81241080
174B 0 70EE	MDX	T3206	NO,RETURN	81241090
174C 0 C02F	LD	T32ER	YES,TEST ERROR SW	81241100
174D 1 4C20 176D	BNZ	T3209	BRANCH IF ON	81241110
174F 1 74FF 085C	MDX	L LPCNT,-1	TEST FOR 10 LOOPS	81241120
1751 0 70CC	MDX	T3204	BRANCH IF NOT FINISHED	81241130
1752 0 1010	T3207 SLA	16		81241140
1753 1 D400 19B2	STO	L WTADR		81241150
	*			81241160
	*	GO TO NEXT ROUTINE IN SEQUENCE		81241170
1755 0 42E5	T32EN BSI	2 FREDV-TB	FREE CHANNEL	81241180
1756 0 C2C1	LD	2 TRTNN-TB	GET RTN SWS	81241190
1757 1 4C18 17DC	BZ	T3301	GO TO NEXT RTN IN SEQ	81241200
1759 0 42DF	BSI	2 CNTRL-TB	GO TO CONTROL RTN	81241210
175A 0007	TTL32 PRNT		. SECT 3,RT 2-	81241220
1761 0007	PRNT		.HAR AC ADVANCE.	81241230
1768 0 FFFF	DC	/FFFF		81241240
1769 0 42E2	T3208 BSI	2 EROUT-TB	PRINT UNIT CK ERROR	81241250
176A 0 0127	DC	/0127		81241260
176B 0 3201	DC	/3201		81241270
176C 0 7003	MDX	T3211		81241280
176D 0 42E2	T3209 BSI	2 EROUT-TB	PRINT HEAD MAP	81241290
176E 0 0108	DC	/0108	* AND ERROR MESSAGE	81241300
176F 1 17BD	DC	T32MP		81241310
1770 0 C283	T3211 LD	2 TSW0-TB	GET SW FNC 0	81241320
1771 0 100C	SLA	OLPER	TEST FOR LOOP ON ERROR	81241330
1772 1 4C28 172C	BN	T3210	BR IF SET	81241340
1774 0 70DD	MDX	T3207	ELSE END ROUTINE	81241350

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1776 0000	*	BSS	E	0	81241500
1776 0 0000	T3298 DC			/0000	81241510
1777 0 0000	DC			/0000	81241520
1778 0 6300	T3299 DC			/6300	81241530
1779 0 0000	*				81241540
177A 0 0000	T32SA DC	0		SEEK ARG-HD 00,CYL 00	81241550
177B 0 0000	DC	0			81241560
177C 0 0000	DC	0			81241570
177D 0 0000	*				81241580
177E 0 0000	T32ER DC	0		ERROR SW	81241590
177F 0 0000	T32CT DC	0			81241600
1780 0 0000	*				81241610
1781 0 0000	T32HA DC	0			81241620
1782 0 0000	DC	0			81241630
1783 0 0000	DC	0			81241640
1784 0 0000	T32H1 DC	0			81241650
1785 0 0000	DC	0			81241660
1786 0 0000	DC	0			81241670
1787 0 0000	DC	0			81241680
1788 0 0000	T32H2 DC	0			81241690
1789 0 0000	DC	0			81241700
178A 0 0000	DC	0			81241710
178B 0 0000	T32H3 DC	0			81241720
178C 0 0000	DC	0			81241730
178D 0 0000	DC	0			81241740
178E 0 0000	T32H4 DC	0			81241750
178F 0 0000	DC	0			81241760
1790 0 0000	DC	0			81241770
1791 0 0000	T32H5 DC	0			81241780
1792 0 0000	DC	0			81241790
1793 0 0000	DC	0			81241800
1794 0 0000	T32H6 DC	0			81241810
1795 0 0000	DC	0			81241820
1796 0 0000	DC	0			81241830
1797 0 0000	T32H7 DC	0			81241840
1798 0 0000	DC	0			81241850
1799 0 0000	DC	0			81241860
179A 0 0000	T32H8 DC	0			81241870
179B 0 0000	DC	0			81241880
179C 0 0006	DC	0			81241890
179D 0 4007	T32H9 DC	0			81241900
179E 1 1779	DC	0			81241910
179F 0 0005	*				81241920
17A0 0 401A	*				81241930
17A1 1 177E	T32CC DC	6		BYTE COUNT	81241940
17A2 0 0005	DC			/40*256+SEEK FLAGS AND OP CODE	81241950
17A3 0 409A	DC			T32SA ADDRESS	81241960
17A4 1 1781	DC				81241970
17A5 0 0005	*				81241980
17A6 0 409A	DC	5		BYTE COUNT	81241990
17A7 1 1784	DC			/40*256+RDHA FLAGS AND OP CODE	81242000
17A8 0 0005	DC			T32HA ADDRESS	81242010
17A9 0 409A	DC				81242020
	*				81242030
	*				81242040
	*				81242050
	*				81242060
	*				81242070
	*				81242080
	*				81242090
	*				81242100
	*				81242110
	*				81242120
	*				81242130
	*				81242140
	*				81242150
	*				81242160
	*				81242170

2841 DIAGNOSTIC - PHASE A

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

17AA 1 1787      DC      T32H3      ADDRESS      81242180
*
*
17AB 0 0005      DC      5          BYTE COUNT   81242190
17AC 0 409A      DC      /40*256+RDHMT  FLAGS AND  81242200
17AD 1 178A      DC      T32H4      ADDRESS      81242210
*
*
17AE 0 0005      DC      5          BYTE COUNT   81242220
17AF 0 409A      DC      /40*256+RDHMT  FLAGS AND  81242230
17B0 1 178D      DC      T32H5      ADDRESS      81242240
*
*
17B1 0 0005      DC      5          BYTE COUNT   81242250
17B2 0 409A      DC      /40*256+RDHMT  FLAGS AND  81242260
17B3 1 1790      DC      T32H6      ADDRESS      81242270
*
*
17B4 0 0005      DC      5          BYTE COUNT   81242280
17B5 0 409A      DC      /40*256+RDHMT  FLAGS AND  81242290
17B6 1 1793      DC      T32H7      ADDRESS      81242300
*
*
17B7 0 0005      DC      5          BYTE COUNT   81242310
17B8 0 409A      DC      /40*256+RDHMT  FLAGS AND  81242320
17B9 1 1796      DC      T32H8      ADDRESS      81242330
*
*
17BA 0 0005      DC      5          BYTE COUNT   81242340
17BB 0 009A      DC      0*256+RDHMT  FLAGS AND  81242350
17BC 1 1799      DC      T32H9      ADDRESS      81242360
*
*
17BD 0017      T32MP PRNT . 3202 HAR ADV MAP -XX XX XX XX. 81242370
17CE 0012      PRNT . XX XX XX XX XX XX. 81242380
17DA 0 00FF      DC /00FF 81242390
17DB 0 FFFF      DC /FFFF 81242400
*
*
*****
ROUTINE --3-- END OF CYLINDER
*****
THIS ROUTINE WILL CHECK THE END-OF-CYLINDER
SIGNAL. THE PROGRAM WILL SELECT HEAD 9 OF
CYLINDER 000 AND RHA TO VERIFY THAT THE COR-
RECT CYLINDER AND HEAD WERE SELECTED. THEN,
TWO CHAINED RHA COMMANDS, WITH M/T BIT ON FOR
THE SECOND COMMAND, ARE EXECUTED. THIS
SHOULD FORCE HAR TO ADVANCE FROM HEAD 9 TO
HEAD 10 THUS TURNING ON END-OF-CYLINDER.
*****
17DC 0          T3301 EQU * TEST ENTRY POINT 81242450
17DC 1 7401 0815 MDX L TRID.1 BUMP RTN ID 81242460
17DE 1 4C18 17E3 BZ T3302 BR IF TEST NUMBER ZERO 81242470
17E0 0 9297      S 2 K1-TB DECREMENT BY ONE 81242480
17E1 1 4C20 1850 BNZ T3401 BR IF NOT THIS TEST 81242490

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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17E3 0 C283      *
17E4 0 100A      T3302 LD 2 TSW0-TB GET OPTION SWS 81242860
17E5 1 4C10 17E9 SLA OTTLE PRINT TITLES 81242870
17E7 0 4203      BNN T3303 BR IF NOT SET 81242880
17E8 1 1802      BSI 2 TLGMS-TB. GO TO PRINT ROUTINE 81242890
*
*
17E9 0 42E8      DC TTL33 MESSAGE ADDRESS 81242900
*
*
17EA 0 C29F      T3303 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81242920
17EB 0 D2DD      LD 2 K10-TB SET UP LOOP COUNTER 81242930
17EC 0 10A0      STO 2 LPCNT-TB * 81242940
17ED 0 DA49      T3304 SLT 32 CLEAR AQ 81242950
17EE 0 D24B      STD 2 HA-TB SET HA ARGUMENT EQUAL 81242960
*
*
17EF 0 42EE      STO 2 HA+2-TB * TO ZERO'S 81242970
17F0 1 1838      *
*
17F1 0 C236      BSI 2 SID-TB EXEC CHNL PGM 81242980
17F2 0 100E      DC T33CC 81242990
17F3 1 4C10 1812 LD 2 SCSX0+1-TB TEST FOR UNIT CK 81243000
*
*
17F5 0 42EB      SLA UNCHK * 81243010
17F6 0 CA1D      BNN T3306 BRANCH IF OFF 81243020
17F7 0 108A      *
17F8 1 4C10 1828 BSI 2 GETSN-TB UNIT CK SHOULD BE ON 81243030
*
*
17FA 1 74FF 085C LDD 2 SNWDS-TB * DO SENSE I/O 81243040
17FC 0 70EF      SLT FEOCY TEST FOR 'END OF CYLINDER' 81243050
*
*
MDX L LPCNT,-1 TEST FOR 10 PASSES 81243060
MDX T3304 NO,RETURN 81243070
*
*
GO TO NEXT ROUTINE IN SEQUENCE 81243080
*
*
17FD 0 42E5      T33EN BSI 2 FREDV-TB FREE CHANNEL 81243090
17FE 0 C2C1      LD 2 TRTNN-TB GET RTN SWS 81243100
17FF 1 4C18 1850 BZ T3401 GO TO NEXT RTN IN SEQ 81243110
1801 0 42DF      BSI 2 CNTRL-TB GO TO CONTROL RTN 81243120
1802 0007      TTL33 PRNT . SECT 3,RT 3- . 81243130
*
*
1809 0008      PRNT .END OF CYLINDER. 81243140
1811 0 FFFF      DC /FFFF 81243150
*
*
1812 0 C24B      T3306 LD 2 HA+2-TB GET 'WENT TO' HEAD 81243160
1813 0 1808      SRA 8 81243170
1814 0 F02E      EOR T33SA+2 COMPARE 'SEEK TO' HD 81243180
1815 1 4C20 181B BNZ T3307 BRANCH IF NOT HD 9 81243190
*
*
1817 0 42E2      BSI 2 EROUT-TB PRINT 'NOT END OF CYL' 81243200
1818 0 0306      DC /0306 ERROR 81243210
1819 0 3304      DC /3304 81243220
181A 0 7018      MDX T3310 81243230
*
*
181B 0 C249      T3307 LD 2 HA-TB GET HA 81243240
181C 0 42F4      BSI 2 TCVBE-TB * AND PUT INTO 81243250
181D 0 D82C      STD T33N9+6 * ERROR MESSAGE 81243260
*
*
181E 0 C24A      LD 2 HA+1-TB GET CYL 81243270
181F 0 42F4      BSI 2 TCVBE-TB 81243280
1820 0 D82B      STD T33N9+8 81243290
*
*
1821 0 C24B      LD 2 HA+2-TB HEAD NUMBER 81243300
1822 0 42F4      BSI 2 TCVBE-TB 81243310
1823 0 D02A      STO T33N9+10 81243320
*
*
1824 0 42E2      BSI 2 EROUT-TB PRINT 'HD 9 NOT SELECT' 81243330
1825 0 0108      DC /0108 ERROR 81243340
1826 1 1844      DC T33N9 81243350
1827 0 700B      MDX T3310 81243360
*

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1828 0 CA1D	T3308 LDD	2 SNWDS-TB	TEST FOR NRF	81243540
1829 0 108C	SLT	FNORC		81243550
182A 1 4C10 1830	BNN	T3309	BRANCH IF OFF	81243560
*				
182C 0 42E2	BSI	2 ER0UT-TB	PRINT 'NRF' ERROR	81243570
182D 0 0107	DC	/0107		81243580
182E 0 3303	DC	/3303		81243590
182F 0 7003	MDX	T3310		81243600
*				
1830 0 42E2	T3309 BSI	2 ER0UT-TB	PRINT 'SOME OTHER' ERROR	81243610
1831 0 0107	DC	/0107		81243620
1832 0 3302	DC	/3302		81243630
*				
1833 0 C283	T3310 LD	2 TSW0-TB	GET SW FNC 0	81243640
1834 0 100C	SLA	OLPER	TEST FOR LOOP ON ERROR	81243650
1835 1 4C28 17EC	BN	T3304	BR IF SET	81243660
1837 0 70C5	MDX	T33EN	ELSE LOOP	81243670
*				
1838 0 0006	T33CC DC	6	BYTE COUNT	81243710
1839 0 4007	DC	/40*256+SEEK	FLAGS AND OP CODE	81243720
183A 1 1841	DC	T33SA	ADDRESS	81243730
*				
183B 0 0005	DC	5	BYTE COUNT	81243740
183C 0 401A	DC	/40*256+RDHA	FLAGS AND OP CODE	81243750
183D 1 08C8	DC	HA	ADDRESS	81243760
*				
183E 0 0005	DC	5	BYTE COUNT	81243770
183F 0 009A	DC	0*256+RDHMT	FLAGS AND OP CODE	81243780
1840 1 1781	DC	T32H1	ADDRESS	81243790
*				
1841 0 0000	T33SA DC	0000	SEEK HD 9,TRK 00 ARG	81243800
1842 0 0000	DC	0000	*	81243810
1843 0 0009	DC	0009	*	81243820
1844 0000	BSS E	0		81243830
1844 0011	T33N9 PRNT	.3301	HA EQ XXXXXXXXXXXX.	81243840
184F 0 FFFF	DC	/FFFF		81243850
*				

* ROUTINE --4-- RPM TEST				

* THIS ROUTINE IS DESIGNED TO TEST FILE				
* ROTATION SPEED. CALCULATIONS ARE BASED ON				
* A WRITE TIME OF 800 NSEC/BIT AND ASSUMES				
* THE VFO IS OPERATING WITHIN ITS SPECIFIED				
* TOLERANCE.				
* A TRACK OVERRUN CONDITION IS FORCED BY WRIT-				
* ING A 4000 BYTE RECORD 128 TIMES AND TAKING				
* AN AVERAGE OF THE RESIDUAL COUNTS. FROM				
* THIS, THE ROUTINE CALCULATES THE NUMBER OF				
* BYTES WRITTEN AND THROUGH PROPER CON-				
* VERSION EXPRESSES THE RESULTS IN RPM. THIS				
* RPM IS SUBJECTED TO A TOLERANCE TEST (MIN				
* RPM ONLY) AND THE RESULTS PRINTED. NO CHECK				
* IS MADE FOR A DRIVE BEING TOO FAST SINCE				
* THIS CONDITION IS HIGHLY IMPROBABLE.				
*				
*				

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

* EQUIPMENT CHECKED.		81244220		
* BELT SLIPPING		81244230		
* BRAKE DRAG		81244240		
* SPINDLE BEARINGS		81244250		
*		81244260		
*		81244270		
*****		81244280		
*		81244290		
*****		81244300		
*		81244310		
*****		81244320		
*		81244330		
1850 0	T3401 EQU	* TEST ENTRY POINT	81244340	
1850 1 7401 0815	MDX L	TRID.1	BUMP RTN ID	81244350
1852 1 4C18 1857	BZ	T3402	BR IF TEST NUMBER ZERO	81244360
1854 0 9297	S	2 K1-TB	DECREMENT BY ONE	81244370
1855 1 4C20 18EE	BNZ	T3501	BR IF NOT THIS TEST	81244380
*				
1857 0 C283	T3402 LD	2 TSW0-TB	GET OPTION SWS	81244390
1858 0 100A	SLA	OTTLE	PRINT TITLES	81244400
1859 1 4C10 185D	BNN	T3403	BR IF NOT SET	81244410
185B 0 4203	BSI	2 TLGMS-TB	GO TO PRINT ROUTINE	81244420
185C 1 1894	DC	TTL34	MESSAGE ADDRESS	81244430
*				
185D 0 42E8	T3403 BSI	2 GETDV-TB	GET CHANNEL FOR RTN	81244440
185E 0 1010	T3404 SLA	16	CLEAR RESIDUAL	81244450
185F 0 D06C	STO	T34TC	* BYTE COUNTER	81244460
1860 0 C2A3	LD	2 K128-TB		81244470
1861 0 D2DD	STO	2 LPCNT-TB		81244480
1862 0 42EE	T3405 BSI	2 SIO-TB	EXECUTE CHNL PGM	81244490
1863 1 18B2	DC	T34SK	*	81244500
*				
1864 0 C067	LD	T34TC	CALCULATE TOTAL	81244510
1865 0 8238	A	2 SCSX0+3-TB	*	81244520
1866 0 D065	STO	T34TC	*	81244530
*				
1867 0 42EB	BSI	2 GETSN-TB	GET SENSE BYTES	81244540
1868 0 CA1D	LDD	2 SNWDS-TB	*	81244550
1869 0 1089	SLT	FTROV	TEST FOR TRACK OVERFLOW	81244560
186A 1 4C10 18A0	BNN	T3408	NO	81244570
*				
186C 1 74FF 085C	MDX L	LPCNT,-1	YES,TEST 128 PASSES	81244580
186E 0 70F3	MDX	T3405	LOOP IF NOT FINISHED	81244590
*				
186F 0 C05C	LD	T34TC	CONVERT RESIDUAL BYTE	81244600
1870 0 F28D	EOR	2 TERM-TB		81244610
1871 0 8297	A	2 K1-TB	* VALUE	81244620
1872 0 1807	SRA	7	DIVIDE BY 128	81244630
1873 0 D058	STO	T34TC		81244640
1874 0 C056	LD	T34TT	GET NUM BYTES WRITTEN	81244650
1875 0 9056	S	T34TC	SUBT AVERAGE OVERRUN	81244660
1876 0 D055	STO	T34TC		81244670
*				
1877 0 C850	LDD	T34FC	CALCULATE RPM	81244680
1878 0 A853	D	T34TC	*	81244690
1879 0 D052	STO	T34TC	*	81244700
187A 0 42F7	BSI	2 TCVHD-TB	SET UP RPM MESSAGE	81244710
187B 0 42F4	BSI	2 TCVBE-TB	*	81244720
187C 0 D05A	STO	T34RV+3		81244730
187D 0 18D0	XCH			81244740
187E 0 D059	STO	T34RV+4		81244750
*				
187F 0 C04C	LD	T34TC	TEST ACTUAL VS MINIMUM	81244760
1880 0 9049	S	T34MN	* RPM	81244770
1881 1 4C28 18A4	BN	T3409	BRANCH IF OUT OF TOLERANCE	81244780
*				
1883 0 C04A	LD	T34WT	SET 'WITHIN TOLERANCE'	81244790

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1884 0 D056	STO	T34RV+7	81244900
1885 0 C049	LD	T34WT+1	81244910
1886 0 D055	STO	T34RV+8	81244920
1887 0 C048	LD	T34WT+2	81244930
1888 0 D054	STO	T34RV+9	81244940
*			
1889 0 C283	LD	2 TSW0-TB	81244950
188A 0 100A	SLA	OPRRS	81244960
188B 1 4C28 18AD	BN	T3410	81244970
TEST FOR 'PRNT RESULTS' ***			
BR IF YES			
*			
*			
188D 0	T34EX	EQU	81244980
188D 0 42EE	BSI	2 S10-TB	81244990
188E 1 0891	DC	RECAL	81245000
EXECUTE CHNL PGM			
*			
*			
GO TO NEXT ROUTINE IN SEQUENCE			
*			
188F 0 42E5	T34EN	BSI	81245010
1890 0 C2C1	LD	2 FREDV-TB	81245020
1891 1 4C18 18EE	BZ	T3501	81245030
1893 0 42DF	BSI	2 CNTRL-TB	81245040
1894 0007	TTL34	PRNT	81245050
. SECT 3,RT 4-			
*			
189B 0004	PRNT	.RPM TEST.	81245060
189F 0 FFFF	DC	/FFFF	81245070
*			
18A0 0 42E2	T3408	BSI	81245080
18A1 0 0127	DC	2 EROUT-TB	81245090
18A2 0 3401	DC	/0127	81245090
18A3 0 700B	MDX	T3411	81245100
GO PRINT 'OVERRUN NOT ON'			
*			
18A4 0 C02C	T3409	LD	81245110
18A5 0 D035	STO	T348L	81245120
18A6 0 C02B	LD	T34RV+7	81245130
18A7 0 D034	LD	T348L+1	81245140
18A8 0 C02A	STO	T34RV+8	81245150
18A9 0 D033	STO	T348L+2	81245160
SET 'BELOW TOLERANCE'			
*			
18AA 0 42E2	BSI	2 EROUT-TB	81245170
18AB 0 0140	DC	/0140	81245180
18AC 0 3402	DC	/3402	81245190
*			
18AD 0 4203	T3410	BSI	81245200
18AE 1 18D4	DC	2 TLGMS-TB	81245210
T34RV			
*			
18AF 0 4206	T3411	BSI	81245220
1880 1 185E	DC	2 TLPER-TB	81245230
1881 0 70DB	MDX	T3404	81245240
TEST LOOP ERROR			
LOOP ADDRS			
ELSE END RTN			
*			
1882 0 0006	T34SK	DC	81245250
1883 0 4007	DC	6	81245260
1884 1 18E4	DC	/40*256+SEEKC	81245270
FLAGS AND OP CODE			
T34SA			
ADDRESS			
*			
1885 0 0004	T34SR	DC	81245280
1886 0 4039	DC	4	81245290
1887 1 18E7	DC	/40*256+SRCHA	81245300
FLAGS AND OP CODE			
T34HA			
ADDRESS			
*			
1888 0 0001	DC	1	81245310
1889 0 0008	DC	0*256+OPTIC	81245320
188A 1 18B5	DC	T34SR	81245330
FLAGS AND OP CODE			
T34SR			
ADDRESS			
*			
188B 0 0001	DC	1	81245340
188C 0 401F	DC	/40*256+SFILM	81245350
FLAGS AND OP CODE			

1800 DIAGNOSTIC MAINTENANCE PROGRAM

18BD 1 18CD	DC	SFLM1	ADDRESS	81245580
*				
*				
18BE 0 0005	DC	5	BYTE COUNT	81245590
18BF 0 4019	DC	/40*256+WRHA	FLAGS AND OP CODE	81245600
18C0 1 18EB	DC	T34WA	ADDRESS	81245610
*				
*				
18C1 0 0008	DC	8	BYTE COUNT	81245620
18C2 0 8015	DC	FLDCH*256+WRRO	FLAGS AND OP CODE	81245630
18C3 1 18E7	DC	T34HA	ADDRESS	81245640
*				
*				
18C4 0 0FA0	DC	4000	BYTE COUNT	81245650
18C5 0 0000	DC	0*256+0	FLAGS AND OP CODE	81245660
18C6 1 07FF	DC	TPID	ADDRESS	81245670
*				
*				
18C8 000Q	BSS	E 0		81245680
18C8 0 008F	T34FC	DC	/008F	81245690
18C9 0 00F2	DC	/00F2	RPM FACTOR	81245700
18CA 0 0948	T34MN	DC	2376	81245710
18CB 0 0FEC	T34TT	DC	4076	81245720
18CC 0 0000	T34TC	DC	0	81245730
18CD 0 C000	SFLM1	DC	/C000	81245740
TEMPORARY STORAGE				
ALLOW ALL WRITES				
*				
*				
18CE 0000	BSS	E 0		81245750
18CE 0003	T34WT	PRNT	.WITHIN.	81245760
18D1 0003	T34BL	PRNT	.BELOW.	81245770
18D4 0015	T34RV	PRNT	.RPM- XXXX IS XXXXXX TOLERANCE.	81245780
18E3 0 FFFF	DC	/FFFF		81245790
*				
18E4 0 0000	T34SA	DC	/0000	81245790
18E5 0 00C6	DC	/00C6	SEEK -	81245800
18E6 0 0000	DC	/0000	* CYL 198	81245810
* HD 00				
*				
18E7 0 00C6	T34HA	DC	/00C6	81245820
18E8 0 0000	DC	/0000	SEARCH HA FOR -	81245830
18E9 0 0000	DC	/0000	* CYL 198	81245840
18EA 0 0F98	DC	/0F98	* HD 00	81245850
*				
18EB 0 0000	T34WA	DC	/0000	81245860
18EC 0 C600	DC	/C600		81245870
18ED 0 0000	DC	/0000		81245880
*				
*				
18EE 0 42DF	T3501	BSI	2 CNTRL-TB	81245890
GO TO CONTROL RTN				

* 81246030				

* 81246040				

* 81246050				

* 81246060				

* 81246070				

* 81246080				

* 81246090				

* 81246100				

* 81246110				

* 81246120				

* 81246130				

* 81246140				

* 81246150				

18EF 0 0004	T40PR	DC	/0004	81246160
18F0 0 0000	DC	0	SECTION NUMBER	81246170
*				
18F1 0 C2C0	T40NT	LD	2 TSCTN-TB	81246180
18F2 1 4C18 18FC	BZ	T40EN		81246190
*				
18F4 0 C2C1	LD	2 TRTNN-TB	SW FNC 1 BITS 12-15	81246200
18F5 1 4C18 190E	BZ	T4101	BR IF RUN ALL RTNS	81246210
18F7 0 90F8	S	T40PR+1	TEST FOR VALID	81246220
18F8 1 4C30 0A4E	SP	TCNER	BR IF INVALID RTN NUMBER	81246230

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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18FA 0 80F5      A      T40PR+1  RESTORE RTN NUMBER      81246260
18FB 0 7012      MX      T4101    GO TO FIRST RTN        81246270
18FC 0 4203      T40EN BSI  2  TLGMS-TB  PRINT END OF TEST MSG  81246280
18FD 1 1903      DC      T40ER                    81246290
18FE 1 7401 0857 MDX L  PSCNT.1  BUMP PASS CNTR      81246300
1900 0 1000      NOP                                81246310
1901 0 4C80 012E BSC I  END      GO TO MONITOR END  81246320
*
1903 0009      T40ER PRNT . ** END OF DFT **.  81246330
190C 0 FF00      DC      /FFF                    81246340
190D 0 FFFF      DC      /FFFF                   81246350
*****
* 81246360
* 81246370
* 81246380
* 81246390
* 81246400
* 81246410
* 81246420
* 81246430
* 81246440
* 81246450
* 81246460
* SECTION END 81246470
*
190E 0 42DF      T4101 BSI  2  CNTRL-TB  GO TO CONTROL RTN  81246480
*****
* 81246490
* 81246500
* 81246510
* 81246520
* 81246530
* 81246540
* 81246550
* 81246560
* 81246570
* 81246580
* 81246590
* 81246600
* 81246610
* 81246620
* 81246630
* 81246640
* 81246650
* 81246660
* 81246670
* 81246680
* 81246690
* 81246700
* 81246710
* 81246720
* 81246730
* 81246740
* 81246750
* 81246760
* 81246770
* 81246780
* 81246790
* 81246800
* 81246810
* 81246820
* 81246830
* 81246840
* 81246850
* 81246860
* 81246870
* 81246880
* 81246890
* 81246900
* 81246910
* 81246920
* 81246930
*****

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

***** 81246940
* 81246950
***** 81246960
* 81246970
FRDVE BSI  I  RELDV  RELEASE DEVICE  81246980
DC  TSCED  SEL CHN EDIT  81246990
DC  TERM  TERMINATOR  81247000
*
SLA  16  RESET-  81247010
STO  2  SCISW-TB  INTERRUPT SW  81247020
BSC  I  FREDV  RETURN  81247030
***** 81247040
* 81247050
* 81247060
***** 81247070
* 81247080
* CALL ***** 81247090
* * BSI 2 SIO-TB * 81247100
* * DC CCWADR * 81247110
* ***** 81247120
* 81247130
***** 81247140
* 81247150
***** 81247160
SIO1 EQU * ENTRY POINT 81247170
STX  1  SIOX1+1  SAVE REGS  81247180
STX  3  SIOX1+3  ***  81247190
LDX  13  SIO  GET CALLING ADDRESS  81247200
MDX  L  SIO.1  BUMP FOR RETURN  81247210
NOP  81247220
LD  3  0  GET CCW ADDRESS  81247230
STO  2  SIOXX-TB  SET FOR XIO  81247240
STO  2  CAWSV-TB  SAVE FOR POSSIBLE PRINTS  81247250
* 81247260
SIO01 SLT  32  CLEAR CSW  81247270
STD  2  SCSX0-TB  **  81247280
STD  2  SCSX0+2-TB  **  81247290
STO  2  WIOSW-TB  CLEAR WAIT SW  81247300
* 81247310
XIO  2  SIOXX-TB  DO THE START I/O  81247320
* 81247330
XIO  2  SCSN0-TB  GET CHANNEL STATUS  81247340
STO  2  SCSN0-TB  SAVE FOR LATER EXAM  81247350
* 81247360
MDX  SIO03  GO TEST FOR ERRORS  81247370
* LOOP ON TIO UNTIL DEVICE END  81247380
SIO02 BSI  2  TIO-TB  GO DO A TIO  81247390
* 81247400
LD  2  SCSX8+1-TB  GET UNIT STATUS  81247410
SLA  UNBZY  TEST FOR BUSY  81247420
BN  SIO02  BR IF STILL BUSY  81247430
MDX  SIO01  GO DO THE SIO AGAIN  81247440
* 81247450
SIO03 LD  2  SCSN0-TB  GET CHAN STATUS  81247460
SLA  SCABZ  TEST FOR BUSY  81247470
BNN  SIO05  BRANCH IF NOT NEG  81247480
* CMD ACCEPTED  81247490
SIO04 LD  2  SIOSW-TB  GET SIO SW  81247500
BN  SIOX1  -BR IF SET  81247510
* 81247520
BSI  WAITT  GO WAIT FOR DE OR UNIT CHK  81247530
* 81247540
SIOX1 LDX  L1  *-  RESTORE REGS  81247550
LDX  L3  *-  ***  81247560
SLA  16  RESET SIO SW  81247570
STO  2  SIOSW-TB  *  81247580
BSC  I  SIO  THEN EXIT  81247590
* 81247600
SIO05 LD  2  SIOSW-TB  GET CNTRL SW  81247610

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1962 0 1001	SLA	1	TEST FOR EXIT EVEN IF ERR	81247620	
1963 1 4C28 1959	BN	SIOX1	BR IF SET	81247630	
	*			81247640	
1965 0 CAC9	LDD	2 TYP2-TB	'SIO'	81247650	
1966 0 DA5B	STD	2 STSER+6-TB	SET IN MSG	81247660	
1967 1 4400 1DD8	BSI	L TCVSR	GET SECT/RTN NUMBERS	81247670	
1969 0 D25F	STO	2 STSER+10-TB		81247680	
196A 0 1090	SLT	16		81247690	
196B 0 D262	STO	2 STSER+13-TB	SET IN MSG	81247700	
196C 0 C229	LD	2 SCSN0-TB	GET CHAN STATUS	81247710	
196D 1 4C10 1977	BNN	SIO06	BR IF NOT OPER IS NOT SET	81247720	
	*			81247730	
196F 0 C2A8	LD	2 H0013-TB	GET MSG NUMBER	81247740	
1970 0 42F4	BSI	2 TCVBE-TB	CONVERT TO PRNT CODE	81247750	
1971 0 1090	SLT	16	SAVE Q ONLY	81247760	
1972 0 D255	STO	2 STSER-TB	SET IN MSG	81247770	
1973 0 42E2	BSI	2 EROUT-TB	PRINT ERROR MSG	81247780	
1974 0 0108	DC	/0108	TAGS AND OPTIONS	81247790	
1975 1 08D4	DC	STSER	MSG ADDRESS	81247800	
1976 0 7023	MDX	SIO09	LOOP	81247810	
	*			81247820	
1977 0 1007	SIO06	SLA	SCABZ	TEST FOR ADAPTER BUSY	81247830
1978 1 4C10 1983	BNN	SIO07	BR IF NOT	81247840	
197A 0 C2A7	LD	2 H0011-TB	SET MSG NUMBER	81247850	
197B 0 8297	A	2 K1-TB		81247860	
197C 0 42F4	BSI	2 TCVBE-TB	CONVERT	81247870	
197D 0 1090	SLT	16	Q ONLY	81247880	
197E 0 D255	STO	2 STSER-TB	SET IN MSG	81247890	
197F 0 42E2	BSI	2 EROUT-TB	CALL ERROR PRINT RTN	81247900	
1980 0 010C	DC	/010C	MESSAGE TAGS AND OPTIONS	81247910	
1981 1 08D4	DC	STSER	MSG ADDRESS	81247920	
1982 0 7017	MDX	SIO09	*	81247930	
	*			81247940	
1983 0 C229	SIO07	LD	2 SCSN0-TB	GET CHAN STATUS	81247950
1984 0 1001	SLA	SCUSP	UNIT STATUS PENDING	81247960	
1985 1 4C10 1955	BNN	SIO04	BR IF NOT SET	81247970	
1987 0 42EB	BSI	2 GETSN-TB	ELSE GET SENSE INFO	81247980	
1988 0 CA1D	LDD	2 SNWDS-TB	GET SENSE WORDS	81247990	
1989 0 109F	SLT	FSKIN	TEST FOR SEEK INCOMPLETE	81248000	
198A 1 4C10 1993	BNN	SIO08	BR IF NOT SET	81248010	
198C 1 6780 08A6	LDX	13 SIOXX	GET CCW ADDRESS	81248020	
198E 0 C301	LD	3 1	GET FLAGS AND OP CODE	81248030	
198F 0 F2A8	EOR	2 H0013-TB	TEST FOR RECALIBRATE	81248040	
1990 0 1008	SLA	8		81248050	
1991 1 4C18 1943	BZ	SIO01	RETRY IF SO	81248060	
	*			81248070	
1993 0 C2A7	SIO08	LD	2 H0011-TB	SET ERR NUMBER	81248080
1994 0 42F4	BSI	2 TCVBE-TB	CONVERT	81248090	
1995 0 1090	SLT	16	Q ONLY	81248100	
1996 0 D255	STO	2 STSER-TB	SET IN MSG	81248110	
1997 0 42E2	BSI	2 EROUT-TB	CALL MSG RTN	81248120	
1998 0 010F	DC	/010F	TAGS AND OPTIONS	81248130	
1999 1 08D4	DC	STSER	MSG ADDRESS	81248140	
	*			81248150	
199A 0 C283	SIO09	LD	2 TSW0-TB	GET SW FNC 0	81248160
199B 0 100B	SLA	ORTRY	TEST FOR RETRY SIO	81248170	
199C 1 4C28 194B	BN	SIO02	BR IF YES	81248180	
	*			81248190	
199E 0 42FA	BSI	2 THALT-TB	GO WAIT FOR OPERATOR	81248200	
199F 0 70AB	MDX	SIO02	LOOP	81248210	
	*			81248220	
	*			81248230	
	*			81248240	
	*			81248250	
	*			81248260	
	*			81248270	
	*			81248280	
	*			81248290	
19A0 0 0000	WAITT	DC	*--		
19A1 0 C28D	LD	2 TERM-TB	GET COUNTER FOR LOOP		

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

19A2 0 D2BF	STO	2 CNTDN-TB	SET FOR LOOP	81248300	
	*			81248310	
19A3 0 4200	WAIT1	BSI	2 TIO-TB	GO DO A TEST I/O	81248320
	*			81248330	
19A4 0 C23E	LD	2 SCSX8+1-TB	GET UNIT STATUS	81248340	
19A5 0 100B	SLA	UNBZY	TEST FOR UNIT BUSY	81248350	
19A6 1 4C28 19AC	BN	WAIT2	BR TO WAIT IF ON	81248360	
19A8 0 1010	SLA	16	ELSE CLEAR TIO SW	81248370	
19A9 0 D2DA	STO	2 TIOSW-TB	*	81248380	
19AA 1 4C80 19A0	BSC	I WAITT	EXIT IF NOT BUSY	81248390	
	*			81248400	
19AC 0 42F1	WAIT2	BSI	2 STMLS-TB	GO TO MONITOR	81248410
19AD 1 74CE 083E	MDX	L CNTDN,-50	COUNT TIME	81248420	
19AF 0 70F3	MDX	WAIT1	LOOP	81248430	
19B0 1 4C80 19B2	BSC	I WTADR	GO TO TIMEOUT ADDRESS	81248440	
19B2 0 0000	WTADR	DC	*--	TIMEOUT ADDRESS	81248450
	*			81248460	
	*			81248470	
	*			81248480	
	*			81248490	
	*			81248500	
	*			81248510	
	*			81248520	
	*			81248530	
	*			81248540	
19B3 0	TIONT	EQU	*	ENTRY FOR XFER VECTOR	81248550
19B3 0 1010	SLA	16	CLEAR-	81248560	
19B4 0 D270	STO	2 WATSW-TB	*	81248570	
19B5 0 D22B	STO	2 SCSN1-TB	* LOOP COUNTER	81248580	
	*			81248590	
19B6 0 0A29	WAIT	FOR ADAPTER	NOT BUSY	81248600	
19B7 0 1007	TIO01	XIO	2 SCSN0-TB	GET CHAN. STATUS WORD	81248610
19B8 1 4C10 19CB	SLA	SCABZ	TEST FOR ADAPTER BUSY	81248620	
19BA 0 0A33	BNN	TIO02	BR IF NOT	81248630	
	*			81248640	
19BB 0 42F1	XIO	2 SCSN5-TB	ALLOW POLLING	81248650	
19BC 1 7432 08AA	BSI	2 STMLS-TB	GO TO MONITOR	81248660	
19BE 0 70F7	MDX	L SCSN1,50	COUNT LOOPS	81248670	
	*			81248680	
19BF 0 0A2B	MDX	TIO01	LOOP UNTIL NOT BUSY	81248690	
19C0 0 D241	XIO	2 SCSN1-TB	GET CHANNEL STATUS	81248700	
19C1 0 0A2F	STO	2 SCSXC-TB	* AND SAVE FOR ERROR	81248710	
19C2 0 D242	XIO	2 SCSN3-TB	* MESSAGE	81248720	
19C3 0 0A31	STO	2 SCSXC+1-TB	*	81248730	
19C4 0 D243	XIO	2 SCSN4-TB	*	81248740	
19C5 0 0A33	STO	2 SCSXC+2-TB	*	81248750	
19C6 0 D244	XIO	2 SCSN5-TB	*	81248760	
	*			81248770	
19C7 0 42E2	BSI	2 EROUT-TB		81248780	
19C8 0 110E	DC	/110E	TAGS AND OPTIONS	81248790	
19C9 1 190F	DC	TIO01	ERROR MSG ADDRESS	81248800	
	*			81248810	
19CA 0 70E8	MDX	TIONT	LOOP TO TRY AGAIN	81248820	
	*			81248830	
19CB 0 0A21	TIO02	XIO	2 TIOXX-TB	EXECUTE TEST I/O	81248840
	*			81248850	
19CC 1 6C00 0859	STX	L TIOSW	SET TIO SW	81248860	
19CE 0 0A33	XIO	2 SCSN5-TB	RELIEVE POLL	81248870	
	*			81248880	
19CF 1 4400 099A	BSI	L TINTW	WAIT FOR INTERRUPT	81248890	
19D1 0 7006	MDX	TIO03	BR IF DID NOT OCCUR	81248900	
19D2 0 C23E	LD	2 SCSX8+1-TB	GET UNIT STATUS	81248910	
19D3 0 100A	SLA	UNCUE	TEST FOR CNTL UNIT END	81248920	
19D4 1 4C28 19B3	BN	TIONT	RETRY IF YES	81248930	
	*			81248940	
19D6 1 4C80 087F	BSC	I TIO	EXIT	81248950	
	*			81248960	
19D8 0 42E2	TIO03	BSI	2 EROUT-TB	81248970	

XR2=
87F
27
8A8
87F
28
8AA

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1A79 0 C01B      LD      STMST+2      GET XR2      81250340
1A7A 0 D015      STO      STMSA+2      PUT IN TEMP SAVE 81250350
*
1A7B 0 61F7      LDX     1 -9          81250360
*
1A7C 1 C500 1A9F STMLL  LD  L1 STMST+12  MOVE ALL SAVED  81250380
1A7E 1 D500 1A9C STO  L1 STMST+9      * PARAMETERS UP 3 81250390
1A80 0 7101      MDX     1 +1          * PLACES IN Q    81250400
1A81 0 70FA      MDX     STMMLL       *                81250420
*
1A82 1 74FD 1A91 MDX  L  STMPT,-3     DECREMENT Q POINTER 81250440
1A84 0 7006      MDX     STMP5        IF NOT 0,CONTINUE  81250450
*
1A85 1 6580 1A8F STMSE  LDX  I1 STMSA+1 ELSE RESTORE PARAMETERS 81250460
1A87 1 6780 1A90 LDX  I3 STMSA+2      *                81250480
1A89 1 4C80 0870 BSC  I  STMLS       RETURN                81250490
*
1A8B 0 C006      GET HERE IF ENTRYS NEED SERVICING 81250500
1A8C 0 D28C      STMP5  LD  STMR5     SET UP RETURN TO    81250510
1A8D 0 70F7      STO  2 MLSC2-TB    * STMLS ROUTINE  81250520
*
*                MDX  STMSE     EXIT                81250530
*
*                81250540
*                81250550
*                81250560
*                81250570
*                81250580
*                81250590
*                81250600
*                81250610
*                81250620
*                81250630
*                81250640
*                81250650
*                81250660
*                81250670
*                81250680
*                81250690
*                81250700
*                81250710
*                81250720
*                81250730
*                81250740
*                81250750
*                81250760
*                81250770
*                81250780
*                81250790
*                81250800
*                81250810
*                81250820
*                81250830
*                81250840
*                81250850
*                81250860
*                81250870
*                81250880
*                81250890
*                81250900
*                81250910
*                81250920
*                81250930
*                81250940
*                81250950
*                81250960
*                81250970
*                81250980
*                81250990
*                81251000
*                81251010
1A9F 0 C283      TERLP  LD  2 TSW0-TB  GET OPTION SWS  81250940
1AA0 0 100C      SLA     OLPER       TEST LOOP ON ERROR 81250950
1AA1 1 4C28 1AA7 BN     TER01       YES                81250960
*
1AA3 1 7401 0885 MDX  L  TLP5R,+1    NO,BUMP RETURN    81250980
1AA5 1 4C80 0885 BSC  I  TLP5R      CONTINUE                81250990
*
1AA7 1 C480 0885 TER01 LD  I  TLP5R    GET LOOP ADDRESS  81251000

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1AA9 0 D001      STO     TER02+1     PUT IN RETURN     81251020
1AAA 0 4C00 0000 TER02 BSC L *--    CONTINUE          81251030
*
*                81251040
*****          81251050
*                81251060
*****          81251070
*                81251080
*                81251090
*                81251100
*                81251110
*                81251120
*                81251130
*****          81251140
*                81251150
*****          81251160
*                81251170
1AAC 0 C283      TSTLP  LD  2 TSW0-TB  GET OPTION SWS  81251180
1AAD 0 1008      SLA     OLP5T       TEST LOOP SIO    81251190
1AAE 1 4C28 1AB4 BN     T5T01       YES                81251200
*
1AB0 1 7401 0888 MDX  L  TLP5T,+1    NO,BUMP RETURN    81251210
1AB2 1 4C80 0888 BSC  I  TLP5T      CONTINUE          81251220
*
1AB4 1 C480 0888 T5T01 LD  I  TLP5T   GET LOOP ADDRESS  81251250
1AB6 0 D001      STO     T5T02+1     PUT IN RETURN     81251260
1AB7 0 4C00 0000 T5T02 BSC L *--    CONTINUE          81251270
*
1AB9 1 74FD 0888 T5T03 MDX L  TLP5T,-3 GO BACK          81251290
1ABB 1 C400 0888 LD  L  TLP5T          81251300
1ABD 0 D001      STO     T5T04+1     81251310
1ABE 0 4C00 0000 T5T04 BSC L *--    81251320
*****          81251330
*                81251340
*****          81251350
*                81251360
*                81251370
*                81251380
*                81251390
*****          81251400
*                81251410
*****          81251420
*                81251430
1AC0 0 C2FD      THLT5  LD  2 THLT-TB  GET ENTRY VECTOR  81251440
1AC1 0 D2FA      STO  2 THALT-TB    PUT IN RETURN     81251450
1AC2 0 7004      MDX  THLT5        GO TO LOOP        81251460
*
1AC3 0           ENTER HERE FOR 'WAIT ON ERROR' 81251470
1AC3 0           THL5E  EQU  *                81251480
1AC3 0 C283      LD  2 TSW0-TB     GET OPTION SWS  81251490
1AC4 0 100E      SLA     OHALT      TEST FOR HALT ON ERROR 81251500
1AC5 1 4C10 1AD6 BNN   THL5R       BR IF NO          81251510
*
1AC7 0 C2FA      THLT5  LD  2 THALT-TB  GET CALLING ADDRESS 81251530
1AC8 0 42F4      B5I  2 TCV5E-TB    CONVERT TO PRNT CODE 81251540
1AC9 0 D01F      STO  THLT2        SET IN MSG        81251550
1ACA 0 1090      SLT  16          Q TO A          81251560
1ACB 0 D01E      STO  THLT2+1      SET IN MSG        81251570
1ACC 0 4203      B5I  2 TLGMS-TB    GO PRINT MSG      81251580
1ACD 1 1AD8      DC  THL5M       MESSAGE ADDRESS    81251590
*
1ACE 0 C297      LD  2 K1-TB       SET BIT 15        81251600
1ACF 0 EA83      OR  2 TSW0-TB     *                81251620
1AD0 0 D283      STO  2 TSW0-TB     *                81251630
*
*                81251640
*                81251650
*                81251660
1AD1 0 42F1      THL5L  B5I  2 STMLS-TB GO TO MONITRR    81251670
*
1AD2 0 C283      LD  2 TSW0-TB     GET SWITCH WORD    81251690

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

1BC1 0 7102	MDX 1 2		81253060
1BC2 0 CACD	LDD 2 PCAW-TB	GET HEADER	81253070
1BC3 0 D900	STD 1 0	STORE IN AREA	81253080
1BC4 0 C2C5	LD 2 CAWSV-TB	GET CCW ADDRESS FOR SID	81253090
1BC5 0 42F4	BSI 2 TCVBE-TB	CONVERT TO EBC	81253100
1BC6 0 D902	STD 1 2	STORE IN AREA	81253110
1BC7 0 7104	MDX 1 4	BUMP POINTER	81253120
1BC8 0 1000	NOP		81253130
	* --CSW--	CHANNEL DSW WORDS	81253140
1BC9 0 C300	ERT11 LD 3 0	GET TAGS	81253150
1BCA 0 100E	SLA 0ECSW	TEST FOR CSW TO BE PRINTED	81253160
1BCB 1 4C10 1BFB	BNN ERT12	BR IF NOT	81253170
1BCD 0 C300	LD 3 0	GET OPTION WORD	81253180
1BCE 1 6700 08B4	LDX L3 SCSX0	POINT TO CSW SAVE AREA 0	81253190
1BD0 0 180C	SRA 12	SAVE BITS 0-3	81253200
1BD1 0 100C	SLA 12	***	81253210
1BD2 0 4830	SKP Z-		81253220
1BD3 0 7304	MDX 3 4	BUMP TO NEXT SAVE AREA	81253230
1BD4 0 1001	SLA 1	TEST NEXT BIT	81253240
1BD5 0 4830	SKP Z-		81253250
1BD6 0 7304	MDX 3 4	BUMP TO NEXT SAVE AREA	81253260
1BD7 0 1001	SLA 1	TEST NEXT BIT	81253270
1BD8 0 4830	SKP Z-		81253280
1BD9 0 7304	MDX 3 4	BUMP TO NEXT SAVE AREA	81253290
1BDA 0 1001	SLA 1	TEST NEXT BIT	81253300
1BDB 0 4830	SKP Z-		81253310
1BDC 0 7304	MDX 3 4	BUMP TO NEXT SAVE AREA	81253320
1BDD 0 CACF	LDD 2 PCSW-TB	GET 'CSW'	81253330
1BDE 0 D902	STD 1 2	SET IN MSG	81253340
1BDF 0 C300	LD 3 0	GET CHANNEL STATUS WORD	81253350
1BE0 0 42F4	BSI 2 TCVBE-TB	CONVERT	81253360
1BE1 0 D904	STD 1 4	STORE	81253370
1BE2 0 C301	LD 3 1	GET UNIT STATUS WORD	81253380
1BE3 0 42F4	BSI 2 TCVBE-TB	CONVERT	81253390
1BE4 0 D107	STD 1 7	STORE	81253400
1BE5 0 1090	SLT 16		81253410
1BE6 0 D108	STD 1 8	STORE	81253420
1BE7 0 C302	LD 3 2	GET CSW ADDRESS WORD	81253430
1BE8 0 42F4	BSI 2 TCVBE-TB	CONVERT	81253440
1BE9 0 D90A	STD 1 10	STORE	81253450
1BEA 0 C303	LD 3 3	GET BYTE COUNT	81253460
1BEB 0 42F4	BSI 2 TCVBE-TB	CONVERT	81253470
1BEC 0 D10D	STD 1 13	STORE	81253480
1BED 0 1090	SLT 16	Q TO A	81253490
1BEE 0 D10E	STD 1 14	STORE	81253500
1BEF 0 C2D3	LD 2 SPACE-TB	GET SPACES	81253510
1BF0 0 D100	STD 1 0	**	81253520
1BF1 0 D101	STD 1 1	**	81253530
1BF2 0 D106	STD 1 6	SET IN BETWEEN	81253540
1BF3 0 D109	STD 1 9	SET IN BETWEEN	81253550
1BF4 0 D10C	STD 1 12	SET IN BETWEEN	81253560
1BF5 0 D10F	STD 1 15		81253570
1BF6 0 D111	STD 1 17	CLEAR NEXT SLOT TOO	81253580
1BF7 0 710F	MDX 1 15	BUMP POINTER	81253590
1BF8 0 1000	NOP		81253600
1BF9 1 6780 0861	LDX 13 EROUT	RESTORE REG	81253610
	* --SNS--	GET 2311 SENSE INFORMATION	81253620
1BFB 0 C300	ERT12 LD 3 0	GET TAGS	81253630
1BFC 0 100F	SLA 0ESNS	TEST FOR SNS INFO	81253640
1BFD 1 4C10 1C25	BNN ERT14	BR IF NO	81253650
1BFF 0 CAD1	LDD 2 PSNS-TB	GET HEADER WORDS	81253660
1C00 0 D100	STD 1 0	STORE	81253670
1C01 0 1090	SLT 16		81253680
1C02 0 D101	STD 1 1	STORE	81253690
1C03 0 7103	MDX 1 3	BUMP POINTER	81253700
1C04 0 1000	NOP		81253710
1C05 0 C29D	LD 2 K8-TB		81253720
1C06 0 D0A8	STD ERTN8+3	SAVE TEMPORARILY	81253730

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1C07 0 CA1D	LDD 2 SNWDS-TB	GET SENSE INFO	81253740
	*		81253750
1C08 0 18DC	ERT13 RTE 28	MOVE AROUND	81253760
1C09 0 DAC7	STD 2 ERTSV-TB	SAVE FOR LOOP	81253770
1C0A 0 108C	SLT 12		81253780
1C0B 0 1010	SLA 16		81253790
1C0C 0 1081	SLT 1		81253800
1C0D 0 1003	SLA 3		81253810
1C0E 0 1081	SLT 1		81253820
1C0F 0 1003	SLA 3		81253830
1C10 0 1081	SLT 1		81253840
1C11 0 1003	SLA 3		81253850
1C12 0 1081	SLT 1		81253860
1C13 0 42F4	BSI 2 TCVBE-TB	CONVERT TO HEX	81253870
1C14 0 D100	STD 1 0	STORE IN TBLE	81253880
1C15 0 1090	SLT 16	Q TO A	81253890
1C16 0 D101	STD 1 1	STORE	81253900
1C17 0 7102	MDX 1 2	BUMP POINTER	81253910
1C18 0 1000	NOP		81253920
1C19 0 C095	LD ERTN8+3	FETCH COUNTER	81253930
1C1A 0 8297	A 2 K1-TB	ADD ONE	81253940
1C1B 1 4C04 1C21	BOD **4	BRANCH IF ODD	81253950
1C1D 0 C2D3	LD 2 SPACE-TB	FETCH SPACE CHARACTERS	81253960
1C1E 0 D100	STD 1 0	PLACE IN PRINT LINE	81253970
1C1F 0 7101	MDX 1 1	ADVANCE PRINT LINE POINTER	81253980
1C20 0 1000	NOP		81253990
1C21 0 CAC7	LDD 2 ERTSV-TB	GET SENSE INFO BACK	81254000
1C22 1 74FF 1BAF	MDX L ERTN8+3,-1	COUNT	81254010
1C24 0 70E3	MDX ERT13	LOOP UNTIL FINISHED	81254020
	*		81254030
1C25 0 C28D	ERT14 LD 2 TERM-TB	SET /FFFF AT END	81254040
1C26 0 D100	STD 1 0	**	81254050
1C27 0 4203	BSI 2 TLGMS-TB	PRINT MESSAGE	81254060
1C28 1 1B28	DC PRINT		81254070
1C29 0 C2D9	LD 2 STKSW-TB	GET SWITCH	81254080
1C2A 1 4C20 1C39	BNZ ERT18	EXIT IF SET	81254090
	*		81254100
1C2C 0 C300	ERT15 LD 3 0	GET TAGS	81254110
1C2D 0 1009	SLA 0EBYP		81254120
1C2E 1 4C28 1C31	BN ERT16	BR IF NOT HALT	81254130
1C30 0 42FA	BSI 2 THALT-TB	WAIT FOR OPERATOR	81254140
	*		81254150
1C31 0 C300	ERT16 LD 3 0	GET TAGS	81254160
1C32 0 1006	SLA 0EXIT	TEST FOR OTHER EXIT	81254170
1C33 0 6500 0000	ERT17 LDX L1 *-*	RELOAD REGS	81254180
1C35 0 6700 0000	LDX L3 *-*	***	81254190
1C37 1 4CAB 1C3D	BN I ERADR	BR IF YES	81254200
	*		81254210
1C39 1 7402 0861	ERT18 MDX L EROUT,2	BUMP RETURN BY TWO	81254220
1C3B 1 4C80 0861	BSC I EROUT	EXIT	81254230
1C3D 0 0000	ERADR DC *-*	RETURN ADDRESS PUT HERE	81254240
	*****		81254250
	*		81254260
	*****		81254270
	*		81254280
	*****		81254290
	*		81254300
	*****		81254310
	*		81254320
	*****		81254330
	*		81254340
	*****		81254350
1C3E 0	TLGME EQU *	ENTRY POINT	81254360
1C3E 0 C2D5	LD 2 LGBSY-TB	GET LOG BUSY SW	81254370
1C3F 1 4C18 1C43	BZ TLGNB	BR IF NOT BUSY	81254380
1C41 0 42F1	BSI 2 STMLS-TB	GO VISIT MONITOR	81254390
1C42 0 70FB	B TLGME	ELSE LOOP	81254400
	*		81254410

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1C43 0 C203	TLGNB LD	2	TLGMS-TB	GET CALLING ADDR	81254420
1C44 0 D2D5	STO	2	LGBSY-TB	SET LOG BUSY SW	81254430
1C45 1 D400 1D32	STO L		LEXIT+1	SET RETURN ADDR	81254440
1C47 1 6F00 1D2C	STX	L3	TLGX3+1	SAVE REG	81254450
1C49 1 6D00 1D2E	STX	L1	TLGX3+3	SAVE REG	81254460
1C4B 0 C283	LD	2	TSW0-TB	GET OPTION SWS	81254470
1C4C 0 100D	SLA		OBYPR		81254480
1C4D 1 4C28 1D29	BN		TLGEN	BR IF BYPASS PRNTQUT	81254490
*					
1C4F 0 C294	LD	2	TLGED-TB	GET EDIT FOR PRINTER	81254510
1C50 1 4C10 1C53	BNN		TLG01	BR IF NOT SELECTED	81254520

1C52 0 70FF	MDX	*-1		TRAP STOP	81254540

* RELEASE SC IN CASE SHARED CHANNEL					
1C53 0 C295	TLG01 LD	2	TSCED-TB	GET DDEF	81254570
1C54 1 4C10 1C62	BNN		TLG02	BR IF NOT SEL	81254580
*					
1C56 0 1010	SLA	16		CLEAR CHANNEL FREED SW	81254600
1C57 1 D400 1D33	STO L		FRESW	*	81254610
1C59 0 C2A0	LD	2	K20-TB	SET COUNTER FOR DELAY	81254620
1C5A 0 D22B	STO	2	SCSN1-TB	**	81254630
1C5B 0 42F1	BSI	2	STMLS-TB	GO TO MONITOR	81254640
1C5C 1 74FF 08AA	MDX L		SCSN1,-1	DECR. COUNTER	81254650
1C5E 0 70FC	MDX	*-4		LOOP UNTIL FINISHED	81254660
*					
1C5F 0 42E5	BSI	2	FREDV-TB	FREE SEL CHNL	81254680
1C60 1 6C00 1D33	STX L		FRESW	SET SC FREED SW	81254690
1C62 0 4480 0131	TLG02 BSI	I	REQDV	REQUEST DEVICE	81254700
1C64 1 1C7B	DC		TLG03	BUSY RETURN	81254710
1C65 1 0813	DC		TLGED	EDIT FOR PRINTED	81254720
1C66 1 1CEF	DC		TLG0A	AREA CODE GIVEN BACK	81254730
1C67 1 080C	DC		TERM	TERMINATOR	81254740
*					
1C68 0 C2DE	LD	2	T45SW-TB	GET 43/53 SW	81254760
1C69 1 4C04 1C70	BOD		TLG40	BR IF 1443	81254770
*					
1C6B 0 C2B0	LD	2	H0100-TB	ELSE BUILD WRITE IOCC	81254790
1C6C 1 EC00 1CEF	OR L		TLG0A	*	81254800
1C6E 0 D24E	STO	2	TLGWR+1-TB	*	81254810
1C6F 0 7004	MDX		TLGCM	* GO TO COMMON RTN	81254820
*					
1C70 0 C2B3	TLG40 LD	2	H0500-TB	CREATE WR IOCC	81254840
1C71 1 EC00 1CEF	OR L		TLG0A	OR IN AREA CODE	81254850
1C73 0 D24E	STO	2	TLGWR+1-TB		81254860
1C74 0 C2B4	TLGCM LD	2	H0700-TB	CREATE SENSE IOCC	81254870
1C75 1 EC00 1CEF	OR L		TLG0A	OR IN AREA CODE	81254880
1C77 0 D250	STO	2	TLGSN+1-TB		81254890
1C78 0 EA97	OR	2	K1-TB	SET RESET BIT	81254900
1C79 0 D254	STO	2	TLGSR+1-TB	***	81254910
1C7A 0 7002	MDX		TLG04	GO TO PRINT	81254920
*					
1C7B 0 42F1	TLG03 BSI	2	STMLS-TB	GO TO MONITOR	81254940
1C7C 0 70E5	MDX		TLG02	LOOP TO TRY AGAIN	81254950
*					
1C7D 1 6580 1D32	TLG04 LDX	I1	LEXIT+1	GET CALLING RTN ADDR	81254970
1C7F 0 C100	LD	1	0	GET MSG ADDRESS	81254980
1C80 0 D001	STO		**+1	SET FOR LOAD INDEX	81254990
1C81 0 6500 0000	LDX L1	**		LOAD REG	81255000
1C83 1 6D00 1D36	STX L1		TLGCH+2	SAVE IN 'GET CHAR' RTN	81255010
1C85 1 6780 08CC	LDX I3		TLGWR	GET WRD COUNT ADDRESS	81255020
1C87 0 6B16	STX	3	TLGBP+1	SET FOR BUMPING	81255030
*					
1C88 0 C100	LD	1	0	GET FIRST DATA WORD	81255050
1C89 0 F28D	EOR	2	TERM-TB	COMPARE WITH /FFFF	81255060
1C8A 1 4C18 1C90	BZ		TLG05	BR IF YES	81255070
*					
1C8C 0 C280	LD	2	TPID-TB	GET PID	81255090

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1C8D 0 E2BB	AND	2	H7FFF-TB	DROP SELECT BIT	81255100
1C8E 0 42F4	BSI	2	TCVBE-TB	CONVERT TO 1443 CODE	81255110
1C8F 0 DB02	STD	3	2	SET IN MSG	81255120
*					
1C90 0 1010	TLG05 SLA	16		CLEAR -	81255130
1C91 0 D252	STO	2	TLGSW-TB	* 1ST/2ND CHAR SW	81255140
1C92 0 D253	STO	2	TLGSW+1-TB	*	81255150
1C93 0 D05A	STO		TLGIS	* INTERRUPT SW	81255160
1C94 0 C299	LD	2	K3-TB	*	81255170
1C95 0 D300	STO	3	0		81255180
1C96 0 7301	MDX	3	1	BUMP TO PT TO BUFFER	81255190
*					
1C97 1 4400 1D34	TLG06 BSI L		TLGCH	GET A CHARACTER	81255210
1C99 0 700F	MDX		TLG07	COME HERE FOR HEX FF	81255220
1C9A 0 1008	SLA	8		PUT IN HIGH ORDER BYTE	81255230
1C9B 0 EA4F	OR	2	TLGSP-TB	SET LOW ORDER TO SP	81255240
1C9C 0 D303	STO	3	3	STORE IN BUFFER	81255250
1C9D 0 7401 0000	TLGBP MDX L	**+,1		BUMP WORD COUNT	81255260
1C9F 1 4400 1D34	BSI L		TLGCH	GET ANOTHER CHARACTER	81255270
1CA1 0 7007	MDX		TLG07	IF CHARACTER IS HEX FF	81255280
1CA2 0 1888	SRT	8		CHARACTER TO 0	81255290
1CA3 0 C303	LD	3	3	GET LAST CHARACTER	81255300
1CA4 0 1808	SRA	8		BYTE TO LOW POSITION	81255310
1CA5 0 1088	SLT	8		COMBINED BYTES IN A	81255320
1CA6 0 D303	STO	3	3	STORE IN BUFFER	81255330
1CA7 0 7301	MDX	3	1	BUMP SINK	81255340
1CAB 0 70EE	MDX		TLG06	LOOP UNTIL HEX FF	81255350
*					
* TEST FOR 1443, IF YES GO TO X10					
* IF 1053 DO A CARRIAGE RETURN					
*					
1CA9 0 C2DE	TLG07 LD	2	T45SW-TB	GET 43/53 SW	81255410
1CAA 1 4C04 1CD6	BOD		TLG42	BR IF 1443	81255420
*					
* PUT TERMINATOR IN MESSAGE					
1CAC 0 C253	LD	2	TLGSW+1-TB	GET 1ST/2ND CHAR SW	81255430
1CAD 1 4C18 1CB1	BZ		TLG08	BR IF 2ND CHAR	81255440
1CAF 0 C2BE	LD	2	HFF00-TB	ELSE GET TERMINATOR	81255450
1CB0 0 D303	STO	3	3	PUT IN MESSAGE	81255460
*					
1CB1 0 C2AF	TLG08 LD	2	H00FF-TB	GET TERMINATOR	81255480
1CB2 0 EB03	OR	3	3	PUT IN MESSAGE	81255490
1CB3 0 D303	STO	3	3	*	81255500
*					
1CB4 1 6500 1D53	LDX L1		TLGBA+1	SET UP BUFFER POINTER	81255510
1CB6 0 6936	STX	1	TLGSV	SAVE	81255520
1CB7 0 1010	SLA	16		CLEAR-	81255530
1CB8 0 D252	STO	2	TLGSW-TB	* SECOND CHAR SW	81255540
*					
* START LINE WITH A **CARRIAGE RETURN**					
*					
1CB9 0 C032	LD		TLGCR	GET CR CHARACTER	81255570
1CBA 1 D400 1D52	STO L		TLGBA	PUT IN OUTPUT AREA	81255600
1CBC 0 7023	MDX		TLG43	GO PRINT	81255610
*					
* COME HERE FROM INTERRUPT ROUTINE IF 1053					
*					
1CBD 1 6580 1CED	TLGPR LDX	I1	TLGSV	RESTORE POINTER	81255630
1CBF 0 C252	LD	2	TLGSW-TB	GET 2ND CHAR SW	81255640
1CC0 1 4C18 1CC9	BZ		TLG09	BR IF 0 (CHAR 1)	81255650
*					
1CC2 0 1010	SLA	16		ELSE RESET SW	81255660
1CC3 0 D252	STO	2	TLGSW-TB	*	81255670
1CC4 0 C100	LD	1	0	GET CHARACTERS	81255680
1CC5 0 1008	SLA	8		SAVE 2ND CHAR	81255690
1CC6 0 7101	MDX	1	1	BUMP POINTER	81255700
1CC7 0 6925	STX	1	TLGSV	SAVE POINTER	81255710
1CC8 0 7005	MDX		TLG10	GO TO COMMON RTN	81255720
*					
* GET HERE IF PRINTING CHARACTER 1					

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

ICC9 0 C100      TLG09 LD 1 0      GET CHARACTERS      81255780
ICCA 0 1808      SRA      8      81255790
ICCB 0 1008      SLA      8      81255800
ICCC 1 6C00 08D1 STX L TLGSW  SET 2ND CHAR SW 81255810
* GET HERE IF PRINTING CHARACTER 2 81255820
ICCE 0 92BE      TLG10 S 2 HFF00-TB TEST FOR END OF LINE 81255830
ICCF 1 4C18 1D12 BZ TLGX2 BR IF YES 81255840
* 81255850
ICD1 0 82BE      A 2 HFF00-TB ELSE RESTORE CHAR 81255860
ICD2 0 1808      SRA      8      81255870
ICD3 1 4400 1DF7 BSI L TCV45 CONVERT TO 1816 CODE 81255880
ICD5 0 D07C      STO TLGBA PUT IN OUTPUT AREA 81255890
* 81255900
***** 81255910
* 81255920
* 81255930
* 81255940
* DO XIO WRITE- 81255950
* PRINT A LINE (1443) 81255960
* PRINT A CHARACTER (1053) 81255970
* 81255980
***** 81255990
* 81256000
***** 81256010
* 81256020
TLG42 XIO 2 TLGSN-TB SENSE DSW 81256030
RTE 16 SAVE 81256040
LD 2 T45SW-TB GET 43/53 SW 81256050
SKP E SKIP IF 53 81256060
SLT 10 SHIFT 31 FOR 43 81256070
SLT 21 SHIFT 21 FOR 53 81256080
BNN TLG43 BR IF READY 81256090
BSI 2 STMLS-TB ELSE GO TO MONITOR 81256100
MDX TLG42 LOOP UNTIL READY 81256110
* 81256120
TLG43 XIO 2 TLGWR-TB 81256130
* 81256140
STX TLGIS SET INT SW 81256150
LD 2 TERM-TB GET /FFFF 81256160
STO 2 TLGCT-TB SET LOOP COUNT 81256170
* 81256180
TLG11 BSI 2 STMLS-TB GO TO MONITOR 81256190
LD TLGIS TEST FOR INT 81256200
BZ TLGXR BR IF IT HAPPENED 81256210
MDX L TLGCT,-1 DECR COUNT 81256220
MDX TLG11 LOOP 81256230
***** 81256240
MDX *-1 TRAP STOP 81256250
***** 81256260
* 81256270
***** 81256280
* 81256290
***** 81256300
* 81256310
* PRINT INTERRUPT ROUTINE 81256320
* 81256330
TLGCR DC /8100 CARRIAGE*RETURN 81256340
TLGSV DC *- SAVE BUFFER POINTER 81256350
TLGIS DC 0 INT SW 81256360
TLGDA DC *- AREA CODE PUT HERE BY MON 81256370
TLGIN DC *- INTERRUPT ENTRY POINT 81256380
STX L2 TLG13&3 SAVE X2 81256390
LDX L2 TB SET X2 81256400
LD TLGIS GET INT SWITCH 81256410
SKP +- SKIP IF NONZERO 81256420
***** 81256430
MDX *-1 TRAP STOP 81256440
***** 81256450

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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ICFB 1 0C00 08D2 XIO L TLGSR SENSE RESET DSW 81256460
ICFA 1 4C28 1D00 BN TLG12 BR IF XFER COMPLETE (1443 81256470
* * OR SVC RESPONSE (1053) 81256480
ICFC 0 1002 SLA 2 TEST FOR PRINT COMPLETE 81256490
ICFD 1 4C28 1D08 BN TLG13 BR IF YES 81256500
***** 81256510
ICFF 0 70FF MDX *-1 TRAP STOP 81256520
***** 81256530
1D00 0 18D0 TLG12 RTE 16 SAVE DSW 81256540
1D01 0 C2DE LD 2 T45SW-TB GET 43/53 SW 81256550
1D02 0 F297 EOR 2 K1-TB TEST FOR 1443 81256560
1D03 1 4C20 1D08 BNZ TLG13 BR IF 1053 81256570
1D05 0 1092 SLT 18 GET DSW (PRINT COMPLETE) 81256580
1D06 1 4C10 1D0A BNN TLG13+2 81256590
* 81256600
1D08 0 1010 TLG13 SLA 16 81256610
1D09 0 D0E4 STO TLGIS CLEAR INT SWITCH 81256620
1D0A 0 6600 0000 LDX L2 *- RESET X2 81256630
1D0C 1 4C80 1CF0 BSC I TLGIN EXIT INT RTN 81256640
* 81256650
***** 81256660
* 81256670
***** 81256680
* 81256690
* MONITOR COMES HERE FROM INT RTN 81256700
* 81256710
1D0E 0 C043 TLGXRD LD TLGBA GET WORD CNT 81256720
1D0F 0 1808 SRA 8 TEST FOR 1053 CHAR 81256730
1D10 1 4C20 1CBD BNZ TLGPR BR IF 1053 81256740
* 81256750
1D12 1 6780 08CC TLGX2 LDX I3 TLGWR GET BUFFER ADDRESS 81256760
1D14 1 6F00 1C9E STX L3 TLGBP+1 SET PTR TO WORD COUNT 81256770
1D16 0 C299 LD 2 K3-TB SET WRD CNT=3 81256780
1D17 0 D300 STO 3 0 *** 81256790
1D18 0 7301 MDX 3 1 BUMP POINTER 81256800
1D19 0 10A0 SLT 32 SET PID=BLANKS IN MESSAGE 81256810
1D1A 0 DB01 STD 3 1 * 81256820
1D1B 0 D252 STO 2 TLGSW-TB RESET 1ST/2ND CHAR SW 81256830
1D1C 0 4017 BSI TLGCH GET A CHARACTER 81256840
1D1D 0 7002 MDX TLG15 HERE IF HEX /00FF 81256850
1D1E 1 4C00 1C9A BSC L TLG06+3 ELSE LOOP 81256860
* 81256870
1D20 0 4480 0132 TLG15 BSI I RELDV GO RELEASE DVC 81256880
1D22 1 0813 DC TLGDV ADDR OF EDIT WRD 81256890
1D23 1 080C DC TERM 81256900
1D24 0 C00E LD FRESW GET CHNL RELS SW 81256910
1D25 0 4820 BSC Z SKIP IF NOT SET 81256920
1D26 0 42E8 BSI 2 GETDV-TB ELSE GET CHNL 81256930
* 81256940
SLA 16 RESET- 81256950
STO FRESW * CHNL RELS SW 81256960
* 81256970
1D29 1 7401 1D32 TLGEN MDX L LEXIT+1,1 BUMP RETURN BY 1 81256980
1D2B 0 6700 0000 TLGX3 LDX L3 *- RESTORE REG 81256990
1D2D 0 6500 0000 LDX L1 *- RESTORE REG 81257000
1D2F 0 1010 SLA 16 RESET LOG BUSY SW 81257010
1D30 0 D2D5 STO 2 LGBSY-TB * 81257020
1D31 0 4C00 0000 LEXIT BSC L *- EXIT PRINT RTN 81257030
* 81257040
1D33 0 0000 FRESW DC 0 CHNL RELEASED SW 81257050
***** 81257060
* 81257070
***** 81257080
* 81257090
* FETCH ONE CHARACTER FROM SOURCE MESSAGE 81257100
* 81257110
1D34 0 0000 TLGCH DC *- ENTRY POINT 81257120
1D35 0 6500 0000 LDX L1 *- SET UP POINTER 81257130

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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1DCE 0 D008      STO  THEXS      81258500
1DCF 0 1008      SLA   8          CLEAR A REG 81258510
*
1DD0 0 AA9F      D    2 K10-TB   NEXT SIGNIFICANT DIGIT 81258520
1DD1 0 108C      SLT   12         COMBINE LAST TWO DIGITS 81258530
1DD2 0 180C      SRA   12         *** 81258540
1DD3 0 1084      SLT   4          *** 81258550
1DD4 0 E802      DR    THEXS      81258560
1DD5 1 4C80 0876 BSC  I  TCVDH      81258570
*
1DD7 0 0000      THEXS DC  0          TEMP STORAGE 81258580
*
*****
* 81258610
* 81258620
* 81258630
* 81258640
* 81258650
* 81258660
* 81258670
* 81258680
* CALL BSI L TCVSR 81258690
* GET AQ = SPACE/SECT/SPACE/RTN 81258700
*
*****
* 81258710
* 81258720
* 81258730
* 81258740
* 81258750
* 81258760
* 81258770
* 81258780
* 81258790
* 81258800
* 81258810
* 81258820
* 81258830
* 81258840
* 81258850
* 81258860
* 81258870
* 81258880
* 81258890
* 81258900
* 81258910
* 81258920
* 81258930
* 81258940
* 81258950
* 81258960
* 81258970
* 81258980
* 81258990
* 81259000
* 81259010
* 81259020
* 81259030
* 81259040
* 81259050
* 81259060
* 81259070
* 81259080
* 81259090
* 81259100
* 81259110
* 81259120
* 81259130
* 81259140
* 81259150
* 81259160
* 81259170

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1E0E 1 4C80 IDF7 BSC  I  TCV45  EXIT 81259180
***** 81259190
* 81259200
***** 81259210
TCVTB DC /313E A(1443,TILT-ROTATE) 81259220
1E10 0 313E DC /321A B 81259230
1E11 0 321A DC /331E C 81259240
1E12 0 331E DC /3432 D 81259250
1E13 0 3432 DC /3536 E 81259260
1E14 0 3536 DC /3612 F 81259270
1E15 0 3612 DC /3716 G 81259280
1E16 0 3716 DC /3826 H 81259290
1E17 0 3826 DC /3922 I 81259300
1E18 0 3922 DC /217E J 81259310
1E19 0 217E DC /225A K 81259320
1E1A 0 225A DC /235E L 81259330
1E1B 0 235E DC /2472 M 81259340
1E1C 0 2472 DC /2576 N 81259350
1E1D 0 2576 DC /2652 O 81259360
1E1E 0 2652 DC /2756 P 81259370
1E1F 0 2756 DC /2866 Q 81259380
1E20 0 2866 DC /2962 R 81259390
1E21 0 2962 DC /129A S 81259400
1E22 0 129A DC /139E T 81259410
1E23 0 139E DC /14B2 U 81259420
1E24 0 14B2 DC /15B6 V 81259430
1E25 0 15B6 DC /1692 W 81259440
1E26 0 1692 DC /1796 X 81259450
1E27 0 1796 DC /18A6 Y 81259460
1E28 0 18A6 DC /19A2 Z 81259470
1E29 0 19A2 DC /01FC 1(1443,TILT-ROTATE) 81259480
* DC /02D8 2 81259490
DC /03D8 3 81259500
DC /04F0 4 81259510
DC /05F4 5 81259520
DC /06D0 6 81259530
DC /07D4 7 81259540
DC /08E4 8 81259550
DC /09E0 9 81259560
DC /0AC4 0 81259570
* DC /0021 SP(1443,TILT-ROTATE) 81259580
DC /2CD6 * 81259590
DC /1CFE ( 81259600
DC /3CF6 ) 81259610
DC /11BC / 81259620
DC /2084 - 81259630
DC /0BC2 = 81259640
TCVTC DC /00FF TERM 81259650
TCVSP DC /2100 SPACE 81259660
TCVSV DC 0 TEMP STORAGE 81259670
DC 0 81259680
BSS 30 PATCH AREA 81259690
1E5C 0 PEND EQU *-1 END OF PGM 81259700
1E5E 09B4 END BGIN XFER ADDRESS 81259710
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY 81259720
81259730

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

BEGIN 012C 09B4
BGIN 09B4 1E5E
CAWSV 0844 1942 1BC4
CNTDN 083E 19A2 19AD
CNTRL 085E 0A56 0ABD 0B0D 0BBF 0C2F 0C6D 0D0D 0E9B 0EDA 100C 11AF 1254 1371
      1421 1454 15AD 1759 1801 1893 18EE 190E
CRCK 0133
CUU11 0A6B 0A25
DIGIT 1DE7 1DDC 1DE1
DVADR 0853 0903 0A22 1918 1BA0
END 012E 161C 1901
EPA 0808
ERADR 1C3D 0AAB 0AF5 0B91 0C05 0E64 0EF7 0F9D 0FA3 0FD0 0FDA 1C37
ERASE 0011
ERMSG 1B22 1B8F 1B93 1B99 1B9B 1B9D 1BB6
EROUT 0861 0AD9 0ADC 0ADF 0B20 0B23 0B2E 0B36 0B39 0B42 0B49 0B50 0B57 0B5E
      0B61 0B67 0BA4 0BCB 0BCE 0BD1 0C3D 0C40 0C43 0C82 0C8D 0DAC 0DE2
      0EAE 0EB2 0EB5 0EB8 0EBB 0EC7 1092 10CC 11C0 11C4 11D7 1271 127A
      128F 1293 1388 1394 1477 148D 1496 1585 15CE 15E2 1619 1769 176D
      1817 1824 182C 1830 18A0 18AA 1973 197F 1997 19C7 19D8 1A4C 1A58
      1B6B 1B70 1B74 1B77 1BA4 1BF9 1C39 1C3B
ERROR 0130
ERTNE 1B64 0862
ERTN2 1B77 1B65 1B6E
ERTN3 1B7F 1B7B
ERTN4 1B89 1B88 1B92
ERTN5 1B93 1B8C
ERTN6 1B97 1B84
ERTN7 1BA0 1B96
ERTN8 1BAC 1BAA 1BB4 1C06 1C19 1C22
ERTN9 1B85 1BB1
ERTSV 0846 1C09 1C21
ERT10 1BB7 1BB1
ERT11 1BC9 1BB0
ERT12 1BFB 1BCB
ERT13 1C08 1C24
ERT14 1C25 1BFD
ERT15 1C2C 1BB9
ERT16 1C31 1C2E
ERT17 1C33 1B67 1B69
ERT18 1C39 1C2A
FBRST 0004 0D27 0F3F 0F42 1513 1519
FDRDY 0018 0B4D
FECYL 001D 0B5B
FEOCY 000A 17F7
FLCCH 0040
FLDCH 0080 18C2
FLPCI 0010
FLSKP 0008
FLSLI 0020
FNORC 000C 0D20 0F46 14FC 1502 1519 151F 1829
FONLN 0019 0B46
FOVRN 0005 0F42
FRDVE 1931 0865
FREDV 0864 0A15 0AB9 0B09 0BBB 0C2B 0C69 0D09 0E97 1008 11AB 1250 136D 141D
      15A9 1755 17FD 188F 1937 1C5F
FRESW 1D33 09BD 1C57 1C60 1D24 1D28
FSERD 0012 0D2E 1508 151F
FSKCK 0007 118E
FSKIN 001F 0C93 0F3B 0FCF 1021 126E 1989
FTROV 0009 1869
FUNSF 0010 1502 1508
FUNSI 001A 0B3F 0D35
FUNSL 0015 0B54
GETDV 0867 0A14 0AAB 0AF2 0B8E 0C02 0C56 0CB9 0E61 0EF2 117F 1203 1323 1388
      146C 1717 17E9 185D 192F 1D26
GETSN 086A 0B3C 0C7C 0C90 0D1D 0EB1 0F38 0FCC 101E 118C 126C 14FA 1511 17F5
      1867 1987 1A3C 1B72
    
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GTDVE 190F 0868
GTDV1 190F 1912
GTSNS 1A1E 086B
GTSNX 1A34 1A1E 1A1F
GTSN0 1A24 1A4F 1A5B
GTSN1 1A2A 1A2C
GTSN2 1A3E 1A28 1A32
GTSN3 1A50 1A47
GTSN4 1A55 1A5D
GTSN5 1A5C 1A52
HA 08C8 0C9F 0CCD 0CCE 0CCF 0CDA 0CDC 0CDE 0CE5 0CEA 0CEE 0D41 0E05 0E80
      0E81 0E82 0E89 0E8C 0E8F 0EBE 0EC1 0EC4 0F15 0F16 0F17 0F20 0F24
      0F54 0F6B 0F7D 0FAF 0FB0 0FB1 0FBA 0FE9 0FEA 0FEB 0FFA 10F8 1104
      1159 1199 119A 119B 11A0 11A4 11CA 11CF 11D4 11E6 1210 1213 1217
      1218 1219 1229 122E 1233 1236 1277 1278 127F 128A 12AB 12B0 12E4
      1327 132B 132F 1330 1331 133C 1343 1346 134A 134B 134C 135B 13D1
      13F2 13F5 13F9 13FA 13FB 140A 1410 1437 143B 147B 1481 1485 1489
      1636 17ED 17EE 1812 181B 181E 1821 183D
HFF00 083D 09C8 13DB 1CAF 1CCE 1CD1
HF000 083C
HIOXX 08A2 0917 0942 1919 19DB
HOA00 0834
H00C6 082C
H00C8 082D 0C23 0C7E 0C7F
H00FF 082E 0A34 0CE7 10A4 12A2 12A7 13BD 13C9 1CB1 1D49 1D4C 1E03 1E04
H000A 0825 1D9D
H000C 082B
H0011 0826 197A 1993
H0013 0827 196F 198F
H0020 0828
H0027 0829 1DA2
H0080 082A
H0100 082F 191A 1A54 1C6B
H0200 0830 1A5C
H0400 0831 1916
H0500 0832 1C70
H0700 0833 191E 1C74
H2000 0835
H2100 0836 1A49 1A55
H3000 0837 0A0F
H4000 0838 0B02 0B93 0BAB 0C11 0CD4
H5000 0839 0B33
H7FFF 083A 1C8D
H8000 083B 0E6C 13BF
IPA 0806
K1 0816 09CA 09E6 0A11 0A12 0A46 0A9F 0AE9 0B85 0BF9 0C4D 0CB0 0D5A 0DA4
      0E58 0EE9 0F6F 0F98 1000 1004 109F 1176 11FA 1285 1288 131A 13AF
      13CE 1463 153A 1540 170E 17E0 1854 1871 1926 1928 192A 192C 197B
      1ACE 1BA5 1C1A 1C78 1D02
K10 081E 0CBE 0D6D 0D72 0D79 0D80 0D87 0D90 0DE6 0E6A 123C 149E 14DC 1557
      155E 1565 156C 1573 157A 1593 15E6 171C 171E 1738 17EA 1DD0
K100 0820 1DCB
K1000 0824 1DC7
K127 0821 0FFC
K128 0822 1860
K2 0817 0EF3 0F4B 0F76 154E 1924
K20 081F 1324 1C59
K3 0818 091D 0926 0930 105E 1087 1180 1C94 1D16
K4 0819 0F4E 1206
K500 0823 13D2
K6 081A 1329 1922
K7 081B
K8 081C 093A 106D 1078 1C05
K9 081D 0D97 1545 1DA0 1DA3
LEXIT 1D31 1C45 1C7D 1D29
LGBSY 0854 09BF 09E5 1C3E 1C44 1D30
LOG 012F
LPA 0807
    
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LPCNT 085C 0CBF 0D02 0E6B 0E92 0EF4 1003 1005 1181 11A8 1207 124D 1325 136A
13D3 1430 149F 14EF 1594 159D 171D 174F 17EB 17FA 1861 186C

MAT0 0134
MLSCF 0809
MLSC0 0809 094F
MLSC1 080A
MLSC2 080B 09D0 1A70 1A8C
NOPCC 088E 0B96
OBYPR 000D 1C4C
OCHLT 000F
OEBYP 0009 1C2D
OECAM 000D 1BB8
OEC5W 000E 1BCA
OECXC 0003
OECX0 0000
OECX4 0001
OECX8 0002
OEERR 000C 1B83
OEGSN 000A 1B6D
OEL1B 000B 1B80 1B83
OEPBL 0007 1B7A
OESNS 000F 1BFC
OEXIT 000E 1C32
OHALT 000E 1AC4
OLPER 000C 1099 10C4 1364 15A6 1771 1834 1AA0
OLPST 0008 14E0 15A2 1AAD
OPNDP 0003 088F
OPRD 0002
OPRRS 000A 0D06 14F3 188A
OPSNS 0004 0899
OPTIC 0008 1641 18B9
OPTID 0000 0895
OPWR 0001
ORTRY 000B 199B
OSALC 0009 121B 13EC
OTTLE 000A 0AA3 0AED 0B89 0BFD 0C51 0CB4 0E5C 0EED 117A 11FE 131E 13B3 1467
1712 17E4 1858

PASSW 0856 0AAE 0AD2 0AD7
PCAW 084C 1BC2
PCSW 084E 1BDD
PEND 1E5C 080D
PRINT 1B28 1B9E 1BBB 1C28
PSCNT 0857 09CB 0A26 18FE
PSNS 0850 1BFF
RCAL 0013 0892 10EE 10FA 1106 1152 11E2 144C
RDCKD 001E
RDCNT 0012
RDDAT 0006
RDHA 001A 0C9E 0E04 10F7 1103 1158 11E5 12E3 144F 1635 17A0 183C
RDHMT 009A 17A3 17A6 17A9 17AC 17AF 17B2 17B5 17B8 17BB 183F
RDKD 000E
RDR0 0016 1647
RECAL 0891 0C97 0C9C 0E6F 1183 12B9 188E
RELDV 0132 09D7 09DE 09F0 09F7 0A09 1931 1D20
REQDV 0131 0A03 1910 1C62
SCABZ 0007 1952 1977 19B7 1A27 1A2B 1A51
SCDCK 0004
SCICC 0005
SCILG 0006
SCIMS 097C 0979
SCIM2 098C 0970 0973
SCINA 0967 0958
SCINB 095C 0968
SCINC 090C 0904
SCINT 08F2 0965
SCINX 0921 0911 0916
SCINO 0917 08FD 090D
SCINI 0925 091F

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SCIN2 0930 0940
SCIN3 0941 0918 0933
SCIN4 094D 08F9 0907 090A 093C
SCIN5 0953 0924 092C 0947 094A
SCIN6 0955 094C
SCIN7 0961 08F4 08F5
SCIN8 0969 094D
SCIN9 096E 0977
SCISW 08F0 08F8 192E 1936
SCPCI 0002
SCPCK 0003
SCSN0 08A8 08FB 0AAF 0AB0 0AB3 1925 1948 1949 1951 196C 1983 1986 1A25 1A26
1A2A 1A50
SCSN1 08AA 0955 099C 09A1 09A4 0B9C 1927 19B5 19BC 19BF 1C5A 1C5C 1DA7 1DAB
1DAE
SCSN2 08AC 08FF 090F 0913 1929
SCSN3 08AE 095A 09A6 0AD5 0B9E 192B 19C1 1DB0
SCSN4 08B0 091A 091B 091E 0927 0932 095D 09A8 0BA0 192D 19C3 1DB2
SCSN5 08B2 095F 09AA 0BA2 1923 19BA 19C5 19CE 1A2E 1DB4
SCSVS 08C4 1A21 1A23 1A38 1A3A
SCSXC 08C0 092A 09A5 09A7 09A9 09AB 0B9D 0B9F 0BA1 0BA3 0C0C 0C0D 0C10 0C14
0C18 19C0 19C2 19C4 19C6 1A20 1A22 1A30 1A39 1A3B 1A45 1DAF 1DB1
1DB3 1DB5
SCSX0 08B4 0914 0915 0943 0B99 0BAA 0BAE 0BB2 0CE1 0E7B 0E85 0EAA 0F1C 0FB6
0FEE 1225 1336 1355 1400 1473 14BF 14C5 172E 17F1 1865 1944 1945
1BCE
SCSX4 08B8 0951 096C
SCSX8 08BC 0921 0AF8 0AF9 0B01 0B05 0B1A 0B26 0B2A 0B31 0E71 0E75 1188 194C
19A4 19D2

SCUNO 0000
SCUOP 0008
SCUSP 0001 0ACF 0B1D 0BA7 1984 1A46
SEEKB 000B 10F1 10F4 10FD 1100 1109 110C 11DF 1632
SEEK 0007 0CA4 0E01 12E0 179D 1839 18B3
SEEK1 0CA6 0CA2
SEEK2 0CA9 0CA5
SENSE 08A4 0925 191D 1A24
SFILM 001F 163B 18BC
SFLM1 18CD 163C 18BD
SIDHE 0071
SIDHI 0051
SIO 086D 0B95 0C0E 0C5F 0C96 0CD6 0E6E 0E83 0F18 0FB2 0FEC 10C7 10C9 1182
1184 119C 1221 12B8 1334 1353 13C1 13FC 1471 1493 14BD 14C3 15C6
15D1 172C 17EF 1862 188D 193B 193D 195F

SIONT 1939 086E
SIOSW 0855 09E4 0B94 0B98 0CD5 0E6D 13C0 13C4 1955 195E 1961
SIOXX 08A6 092D 092E 191B 1941 1947 198C
SIOX1 1959 1939 193A 1956 1963
SIO01 1943 1950 1991
SIO02 194B 194E 199C 199F
SIO03 1951 194A
SIO04 1955 1985
SIO05 1961 1953
SIO06 1977 196D
SIO07 1983 1978
SIO08 1993 198A
SIO09 199A 1976 1982
SKHD 001B 0CA1 1638
SKHE 0069
SNCCW 0898 08A4 0C0F
SNWDS 089C 089A 0B3E 0B45 0B4C 0B53 0B5A 0C08 0C09 0C0A 0C1F 0C22 0C26 0C7D
0C92 0D1F 0D26 0D2D 0D34 0F3A 0F3E 0F45 0FCE 1020 118D 126D 14FB
1512 17F6 1828 1868 1988 1C07

SNWD0 089C
SNWD1 089D
SNWD2 089E
SNWD3 089F
SPACE 0852 1BEF 1C1D

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SRCHA 0039 163E 1886
SRCID 0031
SRCKE 0029
SRCKH 0049
START 012D 097A 1A71
STKSW 0858 09E3 1B64 1B71 1B73 1B76 1C29
STMLE 1A5E 0871
STMLL 1A7C 1A81
STMLS 0870 09A0 0A02 0A1C 190F 19AC 19BB 1A5E 1A76 1A89 1AD1 1AD5 1C41 1C5B
1C7B 1CDE 1CE4
STMLX 1A73 1A92
STMPS 1A8B 1A84
STMPT 1A91 09C6 1A62 1A6E 1A82
STMRT 1A92 1A6F 1A8B
STMSA 1A8E 1A5F 1A60 1A61 1A64 1A67 1A6A 1A78 1A7A 1A85 1A87
STMSE 1A85 1A8D
STMST 1A93 1A65 1A68 1A6B 1A75 1A77 1A79 1A7C 1A7E
STSER 08D4 1966 1969 196B 1972 1975 197E 1981 1996 1999 1A40 1A42 1A44 1A4B
1A4E 1A57 1A5A
TB 087F 08F6 08F8 08FB 08FF 0903 0909 090C 090F 0913 0914 0915 0917 091A
091B 091C 091D 091E 0925 0926 0927 092D 0930 0931 0932 093A 093F
0942 0955 095A 095D 095F 0969 096F 0978 099B 099C 099D 09A0 09A4
09A5 09A6 09A7 09A8 09A9 09AA 09AB 09B1 09BA 09BF 09C0 09C1 09C2
09C3 09C4 09C5 09C8 09C9 09CA 09CB 09D2 09D4 09DB 09E3 09E4 09E5
09E6 09E7 09EB 09ED 09F4 09FD 09FF 0A02 0A0F 0A11 0A12 0A13 0A14
0A15 0A16 0A1A 0A1C 0A1D 0A21 0A22 0A23 0A26 0A27 0A28 0A2B 0A2D
0A2F 0A32 0A33 0A34 0A36 0A41 0A43 0A44 0A45 0A46 0A47 0A4A 0A4E
0A4F 0A53 0A55 0A56 0A93 0A9F 0AA2 0AA6 0AAB 0AAE 0AAF 0AB0 0AB1
0AB3 0AB7 0AB9 0ABA 0ABD 0AD2 0AD5 0AD6 0AD7 0AD9 0ADC 0ADF 0AE2
0AE9 0AEC 0AF0 0AF2 0AF8 0AF9 0AFA 0AFB 0AFF 0B01 0B02 0B05 0B09
0B0A 0B0D 0B1A 0B20 0B23 0B26 0B2A 0B2E 0B31 0B33 0B36 0B39 0B3E
0B42 0B45 0B49 0B4C 0B50 0B53 0B57 0B5A 0B5E 0B61 0B64 0B67 0B85
0B88 0B8C 0B8E 0B93 0B94 0B95 0B98 0B99 0B9C 0B9D 0B9E 0B9F 0BA0
0BA1 0BA2 0BA3 0BA4 0BA8 0BAE 0BB2 0BB9 0BBB 0BBC 0BBF 0BCB
0BCE 0BD1 0BD4 0BF9 0BFC 0C00 0C02 0C07 0C08 0C09 0C0A 0C0C 0C0D
0C0E 0C10 0C11 0C14 0C18 0C1F 0C22 0C23 0C26 0C29 0C2B 0C2C 0C2F
0C3D 0C40 0C43 0C46 0C4D 0C50 0C54 0C56 0C5F 0C65 0C69 0C6A 0C6D
0C7C 0C7D 0C7E 0C7F 0C82 0C8D 0C92 0C96 0CB0 0CB3 0CB7 0CB9 0CBE
0CBF 0CCC 0CCD 0CCE 0CCF 0CD4 0CD5 0CD6 0CD8 0CDA 0CDC 0CDE 0CE1
0CE5 0CE7 0CEA 0CEE 0CF6 0D05 0D09 0D0A 0D0D 0D1F 0D26 0D2D 0D34
0D41 0D42 0D5A 0D6D 0D72 0D79 0D80 0D87 0D90 0D97 0DA4 0DAC 0DB8
0DC3 0DCE 0DCF 0DD4 0DD8 0DDB 0DDE 0DE0 0DE2 0DE6 0E58 0E5B 0E5F
0E61 0E6A 0E6B 0E6C 0E6D 0E6E 0E70 0E71 0E75 0E7B 0E7F 0E80 0E81
0E82 0E83 0E85 0E89 0E8C 0E8F 0E95 0E97 0E98 0E9B 0EAA 0EAE 0EB1
0EB2 0EB5 0EB8 0EBB 0EBE 0EBF 0EC1 0EC2 0EC4 0EC5 0EC7 0ECA 0EDA
0EDD 0EE9 0EEC 0EF0 0EF2 0EF3 0EF4 0F14 0F15 0F16 0F17 0F18 0F1A
0F1C 0F20 0F24 0F3A 0F3E 0F45 0F4B 0F4E 0F54 0F6B 0F6F 0F76 0F7D
0F7F 0F80 0F98 0FAE 0FAF 0FB0 0FB1 0FB2 0FB4 0FB6 0FBA 0FCE 0FE8
0FE9 0FEA 0FEB 0FEC 0FEE 0FFA 0FFC 1000 1003 1004 1005 1008 1009
100C 1020 105E 106D 1078 1087 1092 1095 1097 1098 109F 10A2 10A3
10A4 10A5 10C1 10C3 10C7 10C9 10CC 1176 1179 117D 117F 1180 1181
1182 1184 1186 1188 118C 118D 1198 1199 119A 119B 119C 119E 11A0
11A4 11AB 11AC 11AF 11C0 11C4 11C7 11CA 11CB 11CF 11D0 11D4 11D5
11D7 11DA 11FA 11FD 1201 1203 1206 1207 120C 120D 1210 1212 1213
1215 1216 1217 1218 1219 121A 1221 1223 1225 1229 122E 1233 1235
1236 1238 123C 1250 1251 1254 126C 126D 1271 1277 1278 127A 127F
1285 1288 128A 128F 1293 1299 129A 129B 129D 129E 12A2 12A3 12A4
12A7 12A8 12AB 12AD 12AE 12B0 12B2 12B5 12B7 12B8 131A 131D 1321
1323 1324 1325 1327 1329 132B 132D 132E 132F 1330 1331 1334 1336
133C 1343 1345 1346 1348 1349 134A 134B 134C 1353 1355 135B 1363
136D 136E 1371 1388 1394 13AF 13B2 13B6 1388 138D 13BF 13C0 13C1
13C4 13C9 13CE 13D1 13D2 13D3 13DB 13EB 13F2 13F4 13F5 13F7 13F8
13F9 13FA 13FB 13FC 13FE 1400 140A 1410 141B 141D 141E 1421 1437
143B 1454 1457 1463 1466 146A 146C 1471 1473 1477 147B 1481 1482
1485 1486 1489 148A 148D 1490 1493 1496 149E 149F 14BD 14BF 14C3
14C5 14DC 14DF 14F2 14F6 14FA 14FB 1511 1512 153A 1540 1545 154E
1557 155E 1565 156C 1573 157A 1585 1588 1593 1594 15A0 15A1 15A5
15A9 15AA 15AD 15BD 15C6 15CA 15CC 15CE 15D1 15D9 15E0 15E2 15E6

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1619 170E 1711 1715 1717 171C 171D 171E 172C 172E 1738 1741 1742
1755 1756 1759 1769 176D 1770 17E0 17E3 17E7 17E9 17EA 17EB 17ED
17EE 17EF 17F1 17F5 17F6 17FD 17FE 1801 1812 1817 181B 181C 181E
181F 1821 1822 1824 1828 182C 1830 1833 1854 1857 185B 185D 1860
1861 1862 1865 1867 1868 1870 1871 187A 187B 1889 188D 188F 1890
1893 18A0 18AA 18AD 18AF 18EE 18F1 18F4 18FC 190E 190F 1916 1917
1918 1919 191A 191B 191C 191D 191E 191F 1922 1923 1924 1925 1926
1927 1928 1929 192A 192B 192C 192D 192E 1936 1941 1942 1944 1945
1946 1947 1948 1949 194B 194C 1951 1955 195E 1961 1965 1966 1969
196B 196C 196F 1970 1972 1973 197A 197B 197C 197E 197F 1983 1987
1988 198F 1993 1994 1996 1997 199A 199E 19A1 19A2 19A3 19A4 19A9
19AC 19B4 19B5 19B6 19BA 19BB 19BF 19C0 19C1 19C2 19C3 19C4 19C5
19C6 19C7 19CB 19CE 19D2 19D8 19DB 19DC 1A20 1A21 1A22 1A23 1A24
1A25 1A26 1A2A 1A2E 1A30 1A38 1A39 1A3A 1A3B 1A40 1A42 1A43 1A44
1A45 1A49 1A4A 1A4B 1A4C 1A50 1A54 1A55 1A56 1A57 1A58 1A5C 1A5E
1A70 1A73 1A76 1A8C 1A9F 1AAC 1AC0 1AC1 1AC3 1AC7 1AC8 1ACC 1ACE
1ACF 1AD0 1AD1 1AD2 1AD5 1B64 1B70 1B71 1B72 1B73 1B74 1B76 1B7D
1B8B 1B8E 1B98 1BA0 1BA1 1BA3 1BA4 1BA5 1BA6 1BA7 1BA9 1BB0 1BB5
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1C4F 1C53 1C59 1C5A 1C5B 1C5F 1C68 1C6E 1C70 1C73 1C74 1C77
1C78 1C79 1C7B 1C89 1C8C 1C8D 1C8E 1C91 1C92 1C94 1C9B 1CA9 1CAC
1CAF 1CB1 1CB8 1CBF 1CC3 1CCE 1CD1 1CD6 1CD8 1CDE 1CE0 1CE2 1CE3
1CE4 1CF3 1D01 1D02 1D16 1D1B 1D26 1D30 1D37 1D40 1D48 1D49 1D4C
1D8B 1D8D 1D8E 1D91 1D93 1D95 1D9D 1DA0 1DA2 1DA3 1DA6 1DA7 1DA8
1DAE 1DAF 1DB0 1DB1 1DB2 1DB3 1DB4 1DB5 1DBA 1DC1 1DC7 1DCB 1DD0
1E03 1E04
TCNER 0A4E 0A3B 0A97 0EE1 145B 18F8
TCNE2 0A83 0A1B
TCNPR 09FD 09CE
TCNRQ 0A02 0A05
TCNSW 0841 0A43
TCNTA 0A57 0A3F 0A4B 0A57
TCNTE 0A2D 085F
TCNTZ 0A5C 0A57
TCN01 0A14 0A00
TCN02 0A21 0A18
TCN03 0A3D 0A4C
TCN04 0A4A 0A37
TCVBE 0873 096F 0A23 0A28 0A4F 0CF6 0D42 0DC3 0DD4 0DD8 0DDB 0DDE 0EBF 0EC2
0EC5 0F80 10A3 11CB 11D0 11D5 129B 129E 12A4 12A8 12AE 12B2 1482
1486 148A 15BD 15CA 15D9 1742 181C 181F 1822 187B 1970 197C 1994
1A4A 1A56 1AC8 1B98 1BA1 1BA6 1BC5 1BE0 1BE3 1BE8 1BEB 1C13 1C8E
1D96
TCVBN 1D88 0874
TCVEN 1E0B 1E05
TCVHD 0876 0A27 0F7F 10A2 129A 12A3 12AD 1741 187A 1DC4 1DD5
TCVSP 1E3C 1E0B
TCVSR 1DD8 1967 1A3E 1DE5
TCVSV 1E3D 1DF8 1DF9 1DFF 1E0C
TCVSZ 1DE3 1DD9
TCVS1 0842 1D8B 1D8D 1D8E 1D95
TCVS2 0843 1D91 1D93
TCVTB 1E10 1DFA
TCVTC 1E3B
TCV01 1D98 1D89 1D8C 1D8F 1D92 1D9E 1DA4
TCV02 1DA0 1D9B
TCV03 1DFD 1E08
TCV04 1E09 1E00
TCV45 1DF7 1CD3 1E0E
TERLP 1A9F 0886
TERM 080C 099B 09DA 09E1 09F3 09FA 0A08 0A0C 0AD6 0C07 0CCC 0E7F 0F14 0FAE
0FEB 1198 1216 132E 1349 13F8 1870 1915 1934 19A1 1B7E 188B 188E
18B0 1C25 1C67 1C89 1CE2 1D23 1DA6
TER01 1AA7 1AA1
TER02 1AAA 1AA9
THALT 0879 0A55 0DCE 1097 12B7 15A0 199E 1AC1 1AC7 1AD6 1C30
THDNG 0E14 0DB9

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THDRD	0E06	0DD6	0DD9	0DDC	0DDF	0DE1
THEXD	1DC4	0877				
THEXS	1DD7	1DC9	1DCD	1DCE	1DD4	
THLT	087C	1AC0				
THLTE	1AC3	087A				
THLTG	1AC7	1AC2				
THLTL	1AD1	1AD3				
THLTM	1AD8	1ACD				
THLTR	1AD6	1AC5				
THLTX	1AC0	087D				
THLT2	1AE9	1AC9	1ACB			
THNUM	0E1D					
TINS2	1DA8	1DAD				
TINS3	1DB7	1DA9				
TINS4	1DBD	1DB6				
TINTS	1DA6	088C				
TINTW	099A	09AC	09AE	09B2	0AFC	19CF
TINT2	099D	09A3				
TINT3	09AE	099E				
TIO	087F	0E70	194B	19A3	19D6	
TIOMS	19FC	19DD				
TIOM1	19DF	19C9				
TIOM2	19EB	19DA				
TIONT	19B3	0880	19CA	19D4	19DE	
TIOSW	0859	0909	090C	09C1	19A9	19CC
TIOXX	08A0	091C	0AFB	191C	19CB	
TIO01	19B6	19BE				
TIO02	19CB	1988				
TIO03	19D8	19D1				
TLGBA	1D52	08CC	1CB4	1CBA	1CD5	1D0E
TLGBP	1C9D	1C87	1D14			
TLGCH	1D34	1C83	1C97	1C9F	1D1C	1D45 1D4A 1D4D 1D4F
TLGCM	1C74	1C6F				
TLGCR	1CEC	1CB9				
TLGCT	08D0	1CE3	1CE8			
TLGDA	1CEF	0A07	0A0D	1C66	1C6C	1C71 1C75
TLGED	0813	09D4	09D9	09ED	09F2	0A06 0A0B 1C4F 1C65 1D22
TLGEN	1D29	1C4D				
TLGIN	1CF0	1D0C				
TLGIS	1CEE	1C93	1CE1	1CE5	1CF5	1D09
TLGME	1C3E	0883	1C42			
TLGMS	0882	0978	0A1A	0A2B	0A53	0AA6 0AF0 0B8C 0C00 0C54 0CB7 0DB8 0DE0 0ESF 0EF0 1095 10C1 117D 1201 12B5 1321 13B6 146A 14F6 1588 15CC 15E0 1715 17E7 185B 18AD 18FC 19DC 1ACC 1B7D 18B5 1C27 1C43
TLGNB	1C43	1C3F				
TLGPR	1CBD	1D10				
TLGSN	08CE	1C77	1CD6			
TLGSP	08CE	10A5	1C9B	1D48		
TLGSR	08D2	1C79	1CF8			
TLGSV	1CED	1CB6	1CBD	1CC7		
TLGSW	08D1	1C91	1C92	1CAC	1CB8	1CBF 1CC3 1CCC 1D1B 1D37 1D3A 1D40
TLGWR	08CC	1C6E	1C73	1C85	1CE0	1D12
TLGXR	1D0E	1CE6				
TLGX2	1D12	1CCF				
TLGX3	1D2B	1C47	1C49			
TLG01	1C53	1C50				
TLG02	1C62	1C54	1C7C			
TLG03	1C7B	1C64				
TLG04	1C7D	1C7A				
TLG05	1C90	1C8A				
TLG06	1C97	1CA8	1D1E			
TLG07	1CA9	1C99	1CA1			
TLG08	1CB1	1CAD				
TLG09	1CC9	1CC0				
TLG10	1CCE	1CC8				
TLG11	1CE4	1CEA				
TLG12	1D00	1CFA				
TLG13	1D08	1CF1	1CFD	1D03	1D06	

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TLG15	1D20	1D1D				
TLG16	1D3F	1D38				
TLG17	1D46	1D3E				
TLG18	1D49	1D46				
TLG40	1C70	1C69				
TLG42	1CD6	1CAA	1CDF			
TLG43	1CE0	1CBC	1CDC			
TLPER	0885	0AE2	0B64	0BD4	0C46	0DCF 0ECA 11C7 11DA 141B 1490 18AF 1AA3 1AA5 1AA7
TLPST	0888	0AB1	0AB7	0AFF	0BB9	0C29 0C65 0CD8 0E95 0F1A 0FB4 1186 119E 1223 13FE 1AB0 1AB2 1AB4 1AB9 1ABB
TPID	07FF	09B6	18C6	1C8C		
TRHAR	0E38	0DB3				
TRID	0815	0A44	0A9B	0AE5	0B81	0BF5 0C49 0CAC 0E54 0EE5 1172 11F6 1316 13AB 145F 170A 17DC 1850 1DDA
TRTNN	0840	0A32	0A93	0ABA	0B0A	0BBC 0C2C 0C6A 0D0A 0E98 0EDD 1009 11AC 1251 136E 141E 1457 15AA 1756 17FE 1890 18F4
TSAD	0801	0A41	0A48			
TSCAC	08F1	1914	1917	191F		
TSCCW	0894	08A0				
TSCED	0814	09DB	09E0	09F4	09F9	1913 1933 1C53
TSCTN	083F	0A36	18F1			
TSID	0800	09E7	0A3D	0A45	0A47	0A4A 1DDF
TSTLP	1AAC	0889				
TST01	1AB4	1AAE				
TST02	1AB7	1AB6				
TST03	1AB9					
TST04	1ABE	1ABD				
TSWDS	0897	0896	0931	093F		
TSW0	0802	09C3	0AA2	0AEC	0B88	0BFC 0C50 0CB3 0D05 0E5B 0EEC 1098 10C3 1179 11FD 121A 131D 1363 13B2 13EB 1466 14DF 14F2 15A1 15A5 1711 1770 17E3 1833 1857 1889 199A 1A9F 1AAC 1AC3 1ACF 1AD0 1AD2 1C4B
TSW1	0803	09C4	0A2F	0A33	0A4E	
TSW2	0804	09C9	0A16	0A1D	0A21	
TSW3	0805	09C5				
TTLER	0A74	0A50	0A52	0A54		
TTL00	0A5C	0A2C				
TTL01	0A6D	0A2A				
TTL11	0ABE	0AA7				
TTL12	0B0E	0AF1				
TTL13	0B0C	0B8D				
TTL14	0C30	0C01				
TTL15	0C6E	0C55				
TTL16	0D0E	0CB8				
TTL17	0E9C	0E60				
TTL21	100D	0EF1				
TTL22	11B0	117E				
TTL23	1255	1202				
TTL24	1372	1322				
TTL25	1422	13B7				
TTL31	15AE	146B				
TTL32	175A	1716				
TTL33	1802	17E8				
TTL34	1894	185C				
TYP2	0848	1965				
TYP3	084A	1A43				
TIONT	0A93	0A58				
T10PR	0A91	0A96	0A99			
T11EN	0AB9	0AE4				
T1101	0A9B	0A94	0A9A			
T1102	0AA2	0A9D				
T1103	0AA8	0AA4				
T1104	0AAD	0AE3				
T1105	0AAF	0AB2	0ABB	0AD8		
T1106	0AB7					
T1107	0ACC	0AB5				
T1108	0AD9	0AD3				
T1109	0ADC	0AD0				

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T1110 0ADF 0ACD
T1111 0AE2 0AA9
T12EN 0B09 0B66
T12ER 0ECE 0EC0 0EC3 0EC6 0EC9
T12M2 0B6A 0B69
T1201 0AE5 0AA0 0ABB
T1202 0AEC 0AE7
T1203 0AF2 0AEE
T1204 0AF7 0B00 0B65
T1206 0B1A 0B03 0B07
T1207 0B23 0B1B
T1208 0B26 0B1E
T1209 0B31 0B2C
T1210 0B39 0B34
T1211 0B3C 0B28
T1212 0B45 0B40
T1213 0B4C 0B47
T1214 0B53 0B4E
T1215 0B5A 0B55
T1216 0B61 0B5C
T1217 0B64 0AF3
T1218 0B67 0AFE
T13EN 0BBB
T13M2 0BD7 0BA6
T130K 0BA7 0B9A
T1301 0B81 0AEA 0B0B
T1302 0B88 0B83
T1303 0B8E 0B8A
T1304 0B93 0BBA 0BD5
T1305 0BB9 0BD6
T1306 0BCB 0BAC 0BB0
T1307 0BCE 0BB4 0BB7
T1308 0BD1 0BA8
T1309 0BD4 0B8F
T14EN 0C2B
T1401 0BF5 0B86 0BBD
T1402 0BFC 0BF7
T1403 0C02 0BFE
T1404 0C07 0C2A 0C47
T1405 0C29 0C48
T1406 0C3D 0C12 0C16
T1407 0C40 0C1A 0C1D
T1408 0C43 0C20 0C24 0C27
T1409 0C46 0C03
T15C1 0C9D 0C99
T15C2 0CA0 0C9A
T15C3 0CA3 0C9B
T15EN 0C69
T15ER 0C8F 0C89
T15LS 0C99 0C5C 0C62
T1501 0C49 0BFA 0C2D
T1502 0C50 0C4B
T1503 0C56 0C52
T1505 0C5C 0C68
T1506 0C5F 0C5E 0C61 0C66
T1507 0C65 0C80 0C94 0C98
T1508 0C7C 0C63
T1509 0C86 0C57
T1510 0C96 0C85
T16BC 0D26 0D21
T16C1 0E00 0CD7 0E84
T16EN 0D09 0DBB 0DD1
T16ER 0CE1 0CBA
T16ES 0DEB 0CFE 0D48 0DBA
T16HD 0DF2 0CD2 0CF0 0CF4 0DC1 0DC2 0DC9 0DD3 0E02
T16H1 0DEA 0CC1 0CD0 0CFA
T16MB 0D47 0D23 0D2A 0D31 0D38 0D3B 0D3E 0D44 0D4C 0D51 0D53
T16MP 0DF5 0CF8 0D55 0DB1 0DC5

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T16NF 0D1F
T16PM 0DA8 0D61 0D67 0D69 0D75 0D7C 0D83 0D8A 0D93 0D9A 0DA0 0DA9
T16PR 0DAF 0D07
T16PS 0DFF
T16SD 0D2D 0D28
T16SE 0D3B 0D36
T16SM 0DBD
T16TT 0D58 0D00
T16T1 0DEC 0CC3 0D4A 0D58 0D6B 0D9C 0DE5
T16T2 0DED 0D24 0D5D 0D70 0D8C
T16T3 0DEE 0CC5 0D2B 0D63 0D77 0D8E
T16T4 0DEF 0D32 0D7E
T16T5 0DF0 0CC7 0D39 0D85 0D95 0DA2
T16T6 0DF1 0D3C 0D3F 0D45
T16US 0D34 0D2F
T16WH 0D46 0D43
T1601 0CAC 0C4E 0C6B
T1602 0CB3 0CAE
T1603 0CB9 0CB5
T1604 0CC0 0D04 0DD0
T1605 0CCC 0CFD
T1606 0CD6 0CD9
T1607 0CFA 0D57
T1608 0D1D 0CE3
T1609 0D3E 0CE8 0CEC
T1610 0D41 0CF2
T1613 0D63 0D5F
T1614 0D69 0D65 0D91 0DA7
T1615 0D6B 0D5B
T1616 0D77 0D73
T1617 0D7E 0D7A
T1618 0D85 0D81
T1619 0D8C 0D88
T1620 0D95 0D6E
T1621 0D9C 0D98
T1622 0DA0 0DA5
T1623 0DA2 0D9E
T1624 0DAE 0DAB
T1625 0DB1 0DB7
T1626 0DC2 0DCD
T1627 0DCE 0DE9
T1628 0DD3 0DC7
T1629 0DC9 0DE7
T17EN 0E97
T1701 0E54 0CB1 0D0B
T1702 0E5B 0E56
T1703 0E61 0E5D
T1704 0E6C 0E94 0E96 0ECB
T1706 0E95 0ECC
T1707 0EAA 0E66
T1708 0EB1 0E7D 0EAC
T1709 0EB5 0E73
T1710 0EB8 0E77
T1711 0EBB 0E87
T1712 0EBE 0E8A 0E8D 0E90
T1713 0ECA 0E62
T1801 0EDA 0E59 0E99
T20NT 0EDD 0A59
T20PR 0EDB 0EE0 0EE3
T21A1 10D9 0F12 0F26 0F49 0F51 0F6D 0FAC 0FE6 10A0 10B7 10BA 10F2 10FE 1101
110A 110D 1156
T21A2 10DC 10F5
T21A4 10DF
T21A5 10E2 1107
T21B 0F9F 0F37
T21C 0FD8 0FCB
T21CT 110E 0F01 0F30 0FA6 0FC4 0FE1 0FF5
T21C0 1146 0F05 0F33 0F96 0F99 0F9B 0FC7 105C 1063 1069 1074 107F 1085

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T21C1 1151 0F19
 T21C2 10ED 0FB3
 T21C3 10F9 0FED
 T21C5 1105 10C8
 T21C6 1108 10CA
 T21EN 1008 10CF
 T21E1 110F 1096
 T21E2 1115
 T21E3 112C 0EF9 0F0C 0FA8 1026 1030 109C
 T21LS 10D1 0EFD 0F9F 0FBC 0FDC
 T21MK 114E 0F5A 0F60
 T21OF 10E5 0FBC
 T21OK 1144 0FOA 1033 104D 10B0
 T21PS 108E 1042 1061 1067 1070 1072 107B 107D 1083 108A 108C 108F
 T21P1 115A 1045
 T21P2 115C 103B 1055
 T21SC 115E 10A6 10A8 10AB 10AD 10C2
 T21SS 0F8A 0F56 0F5C 0F63 0F67 0F72 0F79 0F86 0F8B 0FD4 102B
 T21S1 114F
 T21S2 1150
 T21T0 10CC
 T2101 0EE5 0EDE 0EE4
 T2102 0EEC 0EE7
 T2103 0EF2 0EEE
 T2104 0EF3
 T2105 0EF5 1006
 T2106 0F10 0EFF 0F1B 0F2A 0F32
 T2107 0F20 0F55
 T2108 0F2A 0EF5
 T2109 0F38 0F1E
 T2110 0F49 0F40 0F43
 T2111 0F51 0F4C
 T2113 0F56 0F47 0F4F 0FD2
 T2114 0F5A 0F3C
 T2115 0F60 0F22
 T2116 0F67 0F62
 T2117 0F6B 0F2B
 T2118 0F76 0F70
 T2119 0F7D 0F77
 T2120 0F87 0F83 0F85
 T2121 0F90 0EFB 0F2D 0FAA 0FC1 1029
 T2125 0FAB 0FB5 0FC6
 T2126 0FBF 0FA1
 T2127 0FCC 0FB8
 T2128 0FD4 0FBD
 T2130 0FE4 0FDE 0FF2 0FF7
 T2131 0FF2 1022 1025
 T2132 1008 109A 10C5
 T2133 101E 0FF0
 T2134 1026 0FF9 0FFD 1001
 T2138 1030 0F35 0FC9 0FD8
 T2139 1042 1052 105A
 T2140 1044 1035 1038
 T2141 105C 103D 1040 1047 104A
 T2142 1063 105F
 T2143 1069 1065
 T2144 1072 106E
 T2145 1074 106B
 T2146 107D 1079
 T2147 107F 1076
 T2148 1085 1081
 T2149 108C 1088
 T2152 1097
 T2153 1098 10C0
 T2154 10A2 10BF
 T2155 10C1 10B2 10B5
 T2156 10C3 10CB
 T22EN 11AB 11DC

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T22ER 11C7 11C3
 T2210 119C 119F 11DB
 T22IS 11DD 1195
 T22MG 11E7 11CC 11CE 11D1 11D3 11D6 11D9
 T22RE 11E1 119D
 T22SA 11F3 11E0
 T22SK 11DE 1185
 T2201 1172 0EEA 100A
 T2202 1179 117A
 T2203 117F 117B
 T2204 1184 1187 11AA 11CB
 T2205 1198 11C9
 T2206 11C0 118A
 T2207 11C4 118F 1192 1196
 T2208 11CA 11A2 11A6
 T23 12C9 1204 1209 120A 120B 120E 120F 122B 1230 123B 123E 123F 1244 1245
 1275 1281 1284 1287 1289 128C 129C 12A0 12A1 12A5 12A6 12AA 12AF
 12B4 1397
 T23AT 12C9 1289 128C
 T23CA 12CA 1244
 T23CK 12CB 12BF
 T23CN 12D6 120A 120E 122B 1242 1245 124A 1275 1284 1287 12BE 132A 1332 133E
 1351 135D 13DF
 T23DR 12D7 120B 123F 1248 1281
 T23EN 1250
 T23LC 085A 120C 1212 1235 1299 132D 1345 13F4 143D 1442
 T23LH 085B 120D 1215 1238 129D 1348 13F7
 T23MS 12E6 129C 12A0 12A5 12AA 12AF 12B4 12B6
 T23RT 12D9
 T23SA 12DC 1209 120F 1230 1239 123B 123E 12A1 12A6 12E1 1333 134F 13D5 13DD
 13E6 140C 1412 1434 1438 1440 1445
 1222 1335 1354 13FD
 T23SK 12DF
 T23SV 12D8
 T2301 11F6 1177 11AD
 T2302 11FD 11F8
 T2303 1203 11FF
 T2304 1208 124F
 T2305 120E 1246 124C
 T2306 1221 121C 1224
 T2307 1233 1279 1280 1297
 T2308 123F 1220
 T2309 124A 1240
 T2310 126A 1227
 T2311 1275 126B
 T2312 127A 126F
 T2313 1281 122C 1231
 T2314 1287 1282
 T2315 1289 1286
 T2316 1293 128D
 T2317 1296 1292
 T2318 1298 1274 127D 1296 12BA 1399 1419
 T2319 128C 121E 126A 12C1 12C5 12C7 13EF 1404
 T2320 12BE 12C4
 T24CY 13A1 134D
 T24EA 139D 1390
 T24EN 136D 1367
 T24E1 1384 133A 1359 1385 138B 138D 1407
 T24E2 138F 1341 1361 1391 139B 139F 1416
 T24E5 138A 1387
 T24E6 1396 1393
 T2401 1316 11FB 1252
 T2402 131D 1318
 T2403 1323 131F
 T2404 132B 1365
 T2405 133C 1338
 T2406 135B 1357
 T2407 1328 136C
 T2408 1329 1369

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T2409 1343 133F
T2410 1368 135F
T25 1448 13B9 13BE 13C8 13CF 13D4 13D7 13D8 13DA 13E1 13E4 13E8 143F 1444
T25EN 141D 1433
T25HA 144A 13BE 13C8 143F 1444 1450
T25IN 1452 13D4 13E1 13E8
T25RN 1448 13BB 13C5 13CF 13D7 13DA 13E4
T25RR 144B 13C2
T25XX 1449 13D8
T2501 13AB 131B 136F
T2502 13B2 13AD
T2503 13B8 13B4
T2504 13C5 13CB
T2505 13D2
T2506 13D4 13F1
T2507 13D7 13E3 13EA 1432
T2508 13EB 1447
T2509 13F2 13ED
T2510 13FC 13FF 141C
T2511 140A 1402
T2512 1416 140F
T2513 1430 1414 143C
T2514 1434 1406
T2515 143D
T2601 1454 13B0 141F
T30NT 1457 0A5A
T30PR 1455 145A 145D
T31A1 1649 147D 1633
T31A2 164C 14A6 14D6 14D8 158F 159A 15B9 1639
T31C0 1620 14AB 14E3 152F 1538 153B 153E 1548 154A 154C 1555 155C 1563 156A
1571 1578 158A 15E5
T31C5 161F 14B6 15C0
T31DA 1628 14A0
T31DC 153E 14E5
T31DT 15EA 15D3 15E1
T31EN 15A9 14F8
T31E5 1692 1483 1487 148B 148F
T31HW 160E 15BF 15CB 15CD
T31MP 167C 14A3 1591
T31OK 161E 14D2 1596
T31PR 1581 1543 1551 1553 155A 1561 1568 156F 1576 157D 157F 1582
T31RD 1646 14C4 15D2
T31R1 16D4 15D7 1648
T31R2 16D8 14B9 14CC 15C2
T31SC 158E 15A3
T31SM 152B 14FF 1505 150B 150E 1516 151C 1522 1525 1528 152C 1531 1533
T31S5 1631 1472
T31TM 162C 14EB
T31TO 1619
T31WH 164F 14F7 1589
T31WR 163A 1494 14BE 15C7
T31W1 169E 14A8 14DA 15BB 163F 1645
T31W2 16A2 14B2 14CA
T3101 145F 1458 145E
T3102 1466 1461
T3103 146C 1468
T3104 146D
T3105 1471 147A 1491
T3106 147B 1475
T3107 1493 147F 1499
T3108 1496 146D
T3109 149A 1495 15A7
T3110 14A3 14ED 14F1
T3111 14AF 14A2 14E1 14E7 14E9 15C8
T3112 14B6 149A 14DD
T3113 14C5
T3114 14CA 14D1
T3115 14D5 153D

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T3118 14F8 1492 14F4 158C
T3119 14FA 14C1
T3120 1502 14FD
T3121 1508 1503
T3122 150E 1509
T3124 1511 14C7
T3125 1519 1514
T3126 151F 151A
T3127 1525 1520
T3130 1528 14CE
T3133 1545 1541
T3134 1553 154F
T3135 1555 1546
T3136 155C 1558
T3137 1563 155F
T3138 156A 1566
T3139 1571
T3140 1578 156D 1574
T3141 157F 157B
T3144 1587 1584
T3147 1595 159F
T3148 159A 15E7
T3149 15A0 15E9
T3150 15B9 1598
T3151 15D7 15DF
T3152 15DA 15D5 15DC
T32CC 179C 172D
T32CT 177D 171F 1729 1739 1749
T32EN 1755
T32ER 177C 1733 173E 174C
T32HA 177E OCCA 0DBD 1722 1736 17A1
T32H1 1781 17A4 1840
T32H2 1784 17A7
T32H3 1787 17AA
T32H4 178A 17AD
T32H5 178D 17B0
T32H6 1790 17B3
T32H7 1793 17B6
T32H8 1796 17B9
T32H9 1799 17BC
T32MP 17BD 1734 176F
T32SA 1779 1721 173C 1747 179E
T3201 170A 1464 15AB
T3202 1711 170C
T3203 1717 1713
T3204 171E 1751
T3205 1724 172B
T3206 173A 174B
T3207 1752 1774
T3208 1769 1718 1730
T3209 176D 174D
T3210 172C 1772
T3211 1770 176C
T3298 1776 1724
T3299 1778 1726
T33CC 1838 17F0
T33EN 17FD 1837
T33N9 1844 181D 1820 1823 1826
T33SA 1841 1814 183A
T3301 17DC 170F 1757
T3302 17E3 17DE
T3303 17E9 17E5
T3304 17EC 17FC 1835
T3306 1812 17F3
T3307 181B 1815
T3308 1828 17F8
T3309 1830 182A
T3310 1833 181A 1827 182F

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T34BL 18D1 18A4 18A6 18A8
T34EN 188F
T34EX 188D 18B1
T34FC 18C8 1877
T34HA 18E7 18B7 18C3
T34MN 18CA 1880
T34RV 18D4 187C 187E 1884 1886 1888 18A5 18A7 18A9 18AE
T34SA 18E4 18B4
T34SK 18B2 1863
T34SR 18B5 18BA
T34TC 18CC 185F 1864 1866 186F 1873 1875 1876 1878 1879 187F
T34TT 18CB 1874
T34WA 18EB 18C0
T34WT 18CE 1883 1885 1887
T3401 1850 17E1 17FF
T3402 1857 1852
T3403 185D 1859
T3404 185E 18B0
T3405 1862 186E
T3408 18A0 186A
T3409 18A4 1881
T3410 18AD 188B
T3411 18AF 18A3
T3501 18EE 1855 1891
T40EN 18FC 18F2
T40ER 1903 18FD
T40NT 18F1 0A5B
T40PR 18EF 18F7 18FA
T4101 190E 18F5 18FB
T45SW 085D 09FF 0A13 1C68 1CA9 1D8 1D01
UNADR 08E4 1BA3 1BA7 1BA9 1BAC
UNATN 0008
UNBZY 000B 0910 0E76 194D 19A5
UNCHE 000C 0BB3 0BB6 0C19 0C1C
UNCHK 000E 0949 0B27 0BAF 0C15 0CE2 0E72 0E7C 0E86 0EAB 0F1D 0FB7 0FEF 1189
1226 1337 1356 1401 1474 14C0 14C6 172F 17F2 1A31
UNCUE 000A 0906 19D3
UNDVE 000D 0946 0949 0BB6 0C1C
UNEXC 000F
UNSMO 0009
WAITS 088B 1DB7 1DBB 1DBD
WAITT 19A0 0E79 1958 19AA
WAIT1 19A3 19AF
WAIT2 19AC 19A6
WATSW 08EF 0923 099D 09B1 09C2 0AFA 19B4
WIOSW 08EE 08F3 09C0 1946 1DA8 1DBA 1DC1
WRCKD 001D
WRDAT 0005
WRHA 0019 18BF
WRKD 000D
WRR0 0015 1644 18C2
WTADR 19B2 0C59 0CBC 0E68 146F 149C 171A 1753 19B0
ZEP A 09EA 0808 09FB
ZEP A1 09F4 09EE
ZEP A2 09FB 09F5
ZIP A 09B7 0806 09B8
ZLPA 09CD 0807 09B9 09CC 09E8
ZLPA1 09DB 09D5
ZLPA2 09E2 09DC
END OF ASSEMBLY

----- LAST PAGE -----

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
*****
*
*****
*
*           1800 MONITOR INTERFACE
*
*****
*
*****
012C 0  BEGIN EQU      300
012D 0  START EQU     BEGIN+1
012E 0  END EQU       START+1
012F 0  LOG EQU       END+1
0130 0  ERROR EQU    LOG+1
0131 0  REQDV EQU     ERROR+1
0132 0  RELDV EQU    REQDV+1
0133 0  CRCK EQU     RELDV+1
0134 0  MATO EQU     CRCK+1

*
*           ORG      **/07FF  ORIGIN OF PGM
*
*           MONITOR INTERFACE TABLES
*
*
07FF 0 1200  TPID DC      /1200
0800 0 0001  TSID DC      1          SECTION ID
0801 0 0000  TSAD DC      0          SECTION PREFACE ADDRESS
*
*           EQUATES FOR TSWO SWITCH OPTIONS
0008 0  OLPST EQU     8          LOOP SID,TIO
0009 0  OSALC EQU     9          SEEK ALIGNMENT CYLINDER
000A 0  OPRRS EQU    10          PRINT RESULTS
000A 0  OTTLE EQU    10          PRINT RTN TITLES
000B 0  ORTRY EQU    11          RETRY SID
000C 0  OLPER EQU    12          LOOP ERROR
000D 0  OBYPR EQU    13          BYPASS ALL PRINTOUTS
000E 0  OHALT EQU    14          HALT ON ERROR
000F 0  OCHLT EQU    15          CLEAR ERROR HALT

*
0802 0 0000  TSW0 DC      0          SELECT OPTIONS
0803 0 0000  TSW1 DC      0          SELECT SECT AND RTN
0804 0 FF00  TSW2 DC     /FF00       UNIT ADDRESS
0805 0 0000  TSW3 DC      0
0806 1 09B9  IPA DC      ZIPA        INIT PRGM ADDRESS
0807 1 09CF  LPA DC      ZLPA        LOOP PRGM ADDR
0808 1 09EC  EPA DC      ZEPA        END PRG ADDR
0809 0  MLSCF EQU     *          MONITOR CONTROL FIELD
0809 0 0000  MLSC0 DC     0          ENTRY ZERO
080A 0 0000  MLSC1 DC     0          ONE
080B 0 0000  MLSC2 DC     0          TWO
080C 0 FFFF  TERM DC     /FFFF
080D 1 1522  DC          PEND        LAST ADDR
080E 0 0000  DC          0          WORDS FOR MONITOR USE
080F 0 0000  DC          0
0810 0 0000  DC          0
0811 0 0000  DC          0
0812 0 0000  DC          0
0813 0 0000  TLGED DC     0          LOG EDIT
0814 0 0000  TSCED DC     0          SEL CHANNEL EDIT
0815 0 0000  TRID DC      0          ROUTINE ID
*****
*
*****
*
*           TABLE OF CONSTANTS
*
*****
*
*****

```

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
087F 0  TB EQU      TPID+128  SO TBL CAN REACH PST TBL
0816 0 0001  K1 DC      1          CONSTANT ONE
0817 0 0002  K2 DC      2          CONSTANT
0818 0 0003  K3 DC      3          CONSTANT
0819 0 0004  K4 DC      4          CONSTANT
081A 0 0006  K6 DC      6          CONSTANT
081B 0 0007  K7 DC      7          CONSTANT
081C 0 0008  K8 DC      8          CONSTANT
081D 0 0009  K9 DC      9          CONSTANT
081E 0 000A  K10 DC     10         CONSTANT
081F 0 0014  K20 DC     20         CONSTANT
0820 0 0064  K100 DC    100        CONSTANT
0821 0 007F  K127 DC    127        CONSTANT
0822 0 0080  K128 DC    128        CONSTANT
0823 0 01F4  K500 DC    500        CONSTANT
0824 0 03E8  K1000 DC   1000       CONSTANT
0825 0 000A  H000A DC   /000A      CONSTANT
0826 0 0011  H0011 DC   /0011      CONSTANT
0827 0 0013  H0013 DC   /0013      CONSTANT
0828 0 0020  H0020 DC   /0020      CONSTANT
0829 0 0027  H0027 DC   /0027      CONSTANT
082A 0 0080  H0080 DC   /0080      CONSTANT
082B 0 000C  H000C DC   /000C      CONSTANT
082C 0 00A4  H00A4 DC   /00A4      CONSTANT
082D 0 00C6  H00C6 DC   /00C6      CONSTANT
082E 0 00C8  H00C8 DC   /00C8      CONSTANT
082F 0 00FF  H00FF DC   /00FF      LINE TERMINATOR
0830 0 0100  H0100 DC   /0100      CONSTANT
0831 0 0200  H0200 DC   /0200      CONSTANT
0832 0 0400  H0400 DC   /0400      CONSTANT
0833 0 0500  H0500 DC   /0500      CONSTANT FOR WRITE IOCC
0834 0 0700  H0700 DC   /0700      CONSTANT FOR SENSE DSW IOC
0835 0 0A00  H0A00 DC   /0A00      CONSTANT
0836 0 2000  H2000 DC   /2000      CONSTANT
0837 0 2100  H2100 DC   /2100      CONSTANT
0838 0 3000  H3000 DC   /3000      CONSTANT
0839 0 4000  H4000 DC   /4000      CONSTANT
083A 0 5000  H5000 DC   /5000      CONSTANT
083B 0 7FFF  H7FFF DC   /7FFF      CONSTANT
083C 0 8000  H8000 DC   /8000      CONSTANT
083D 0 F000  HF000 DC   /F000      CONSTANT
083E 0 FF00  HFF00 DC   /FF00      CONSTANT
083F 0 0000  CNTDN DC     0
0840 0 0000  TSCTN DC     *--      SECTION NUMBER
0841 0 0000  TRTNN DC     *--      ROUTINE NUMBER
0842 0 0000  TCNSW DC     0          ERROR SWITCH FOR RTNS
0843 0 0000  TCVS1 DC     0
0844 0 0000  TCVS2 DC     0
0845 0 0000  CAWSV DC     *--      CCW ADDRESS SAVE AREA
0846 0002  ERTSV BSS E 2  SENSE INFO SAVE
0848 0002  TYP2 PRNT  .SID..
084A 0002  TYP3 PRNT  .SNS..
084C 0002  PCAW PRNT  .CAW..
084E 0002  PCSW PRNT  .CSW..
0850 0002  PSNS PRNT  .SNS..
0852 0001  SPACE PRNT  . . .
0853 0 0000  DVADR DC     *--      DEVICES ADDRESS TO BE TESTED
0854 0 0000  LGBSY DC     *--      LOG ROUTINE BUSY SWITCH
0855 0 0000  SIOSW DC     *--      FOR SID RTN
0856 0 0000  PASSW DC     *--      USED TO TEST FOR ERROR
0857 0 0001  PSCNT DC     1          PASS COUNTER
0858 0 0000  STKSW DC     0          SWITCH FOR RE-ENTRANCE
0859 0 0000  TIOSW DC     0          TEST IO SW
085A 0 0000  T23LC DC     *--      LAST CYLINDER
085B 0 0000  T23LH DC     *--      LAST HEAD
085C 0 0000  LPCNT DC     *--      LOOP CNTR
085D 0 0000  LPCT1 DC     *--      LOOP CNTR

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

085E 0 0000 T45SW DC 0 0= NOT CALLED 81201380
* 1=1443 81201390
* 2=1053/1816 81201400
* 81201410
085F 0 0000 CNTRL DC ** CONTROL ROUTINE 81201420
0860 1 4C00 0A2F BSC L TCNTE GO TO ROUTINE 81201430
* 81201440
0862 0 0000 EROUT DC ** ERROR PRINTOUT ROUTINE 81201450
0863 1 4C00 122A BSC L ERTNE GO TO RTN 81201460
* 81201470
0865 0 0000 FREDV DC ** RELEASE CHANNEL ROUTINE 81201480
0866 1 4C00 0FE4 BSC L FRDVE GO TO ROUTINE 81201490
* 81201500
0868 0 0000 GETDV DC ** CHANNEL ROUTINE 81201510
0869 1 4C00 0FC2 BSC L GTDVE GO TO ROUTINE 81201520
* 81201530
086B 0 0000 GETSN DC ** GET DEVICE SENSE INFO 81201540
086C 1 4C00 10E4 BSC L GTSNS GO TO ROUTINE 81201550
* 81201560
086E 0 0000 SIO DC ** START I/O ROUTINE 81201570
086F 1 4C00 0FEC BSC L SIONT GO TO RTN 81201580
* 81201590
0871 0 0000 STMLS DC ** SET MLSCF ROUTINE 81201600
0872 1 4C00 1124 BSC L STMLE GO TO RTN 81201610
* 81201620
0874 0 0000 TCVBE DC ** CONVERT HEX TO 1443 81201630
0875 1 4C00 144E BSC L TCVBN GO TO RTN 81201640
* 81201650
0877 0 0000 TCVHD DC ** CONVERT HEX TO DEC 81201660
0878 1 4C00 148A BSC L THEXD GO TO RTN 81201670
* 81201680
087A 0 0000 THALT DC ** HALT ON ERROR 81201690
087B 1 4C00 1189 BSC L THLTE GO TO RTN 81201700
* 81201710
087D 0 0000 THLT DC ** WAIT FOR OPERATOR ACTION 81201720
087E 1 4C00 1186 BSC L THLTX GO TO RTN 81201730
* 81201740
0880 0 0000 TIO DC ** TEST I/O 81201750
0881 1 4C00 1079 BSC L TIONT GO TO RTN 81201760
* 81201770
0883 0 0000 TLGMS DC ** PRINT RTN 81201780
0884 1 4C00 1304 BSC L TLGME GO TO RTN 81201790
* 81201800
0886 0 0000 TLPER DC ** TEST LOOP ON ERROR 81201810
0887 1 4C00 1165 BSC L TERLP GO TO RTN 81201820
* 81201830
0889 0 0000 TLPST DC ** TEST LOOP START I/O 81201840
088A 1 4C00 1172 BSC L TSTLP GO TO RTN 81201850
* 81201860
088C 0 0000 WAITS DC ** WAIT I/O RTN 81201870
088D 1 4C00 146C BSC L TINTS GO TO RTN 81201880
* 81201890
***** 81201900
* 81201910
***** 81201920
* 81201930
* EQUATES AND CONSTANTS FOR CCW'S 81201940
* 81201950
***** 81201960
* 81201970
***** 81201980
* 81201990
* FLAGS 81202000
* 81202010
0080 0 FLDCH EQU /80 DATA CHAINING 81202020
0040 0 FLCCH EQU /40 COMMAND CHAINING 81202030
0020 0 FLCLI EQU /20 SUPPRESS INCORRECT LNG 81202040
0008 0 FLSKP EQU /08 SKIP BIT 81202050

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0010 0 FLPCI EQU /10 PGM CONTROLLED INTERRUPT 81202060
* 81202070
* OP CODES 81202080
* 81202090
0000 0 OPTIO EQU /00 TEST I/O 81202100
0001 0 OPWR EQU /01 WRITE OP CODE 81202110
0002 0 OPRD EQU /02 READ OP CODE 81202120
0003 0 OPNOP EQU /03 NO-OP 81202130
0005 0 WRDAT EQU /05 WRITE DATA 81202140
0006 0 RDDAT EQU /06 READ DATA 81202150
0004 0 OPSNS EQU /04 SENSE I/O 81202160
0007 0 SEEKC EQU /07 SEEK CYLINDER 81202170
0011 0 ERASE EQU /11 ERASE RECORD 81202180
0008 0 OPTIC EQU /08 TRANSFER IN CHANNEL 81202190
000B 0 SEEKB EQU /0B SEEK BIN 81202200
0013 0 RCAL EQU /13 RECALIBRATE 81202210
0012 0 RDCNT EQU /12 RD COUNT 81202220
001A 0 RDHA EQU /1A READ HOME ADDRESS 81202230
001E 0 RDCKD EQU /1E RD COUNT KEY DATA 81202240
0029 0 SRCKE EQU /29 SEARCH KEY EQUAL 81202250
000E 0 RDKD EQU /0E RD KEY DATA 81202260
000D 0 WRKD EQU /0D WR KEY DATA 81202270
0016 0 RDRD EQU /16 READ RECORD ZERO 81202280
009A 0 RDHMT EQU /9A READ HA MULTI TRACK 81202290
001B 0 SKHD EQU /1B SEEK HEAD 81202300
0039 0 SRCHA EQU /39 SEARCH HA 81202310
0049 0 SRKH EQU /49 SEARCH KEY HI 81202320
0051 0 SIDHI EQU /51 SEARCH ID HI 81202330
0069 0 SKHE EQU /69 SEARCH KEY HI/EQ 81202340
0071 0 SIDHE EQU /71 SEARCH ID HI/EQ 81202350
0031 0 SRCID EQU /31 SEARCH ID 81202360
001F 0 SFILM EQU /1F SET FILE MASK 81202370
001D 0 WRCKD EQU /1D WRT CNT,KEY,DATA 81202380
0019 0 WRHA EQU /19 WRITE HA 81202390
0015 0 WRRD EQU /15 WRITE RECORD 0 81202400
* 81202410
***** 81202420
* 81202430
***** 81202440
* 81202450
* EQUATES FOR CHANNEL STATUS DSW'S 81202460
* 81202470
0000 0 SCUNO EQU 0 UNIT NOT OPERATIONAL 81202480
0001 0 SCUSP EQU 1 UNIT STATUS PENDING 81202490
0002 0 SCPCI EQU 2 PGM CNTRL INT. 81202500
0003 0 SCPCCK EQU 3 PGM CHECK 81202510
0004 0 SCDCCK EQU 4 DATA CHECK 81202520
0005 0 SCICC EQU 5 INTERFACE CNTRL CHECK 81202530
0006 0 SCILG EQU 6 INCORRECT LENGTH INDICATOR 81202540
0007 0 SCABZ EQU 7 ADAPTER BUSY 81202550
0008 0 SCUOP EQU 8 UNIT OPERATIONAL 81202560
* 81202570
***** 81202580
* 81202590
***** 81202600
***** 81202610
* 81202620
***** 81202630
* 81202640
* EQUATES FOR UNIT STATUS DSW 81202650
* 81202660
0008 0 UNATN EQU 8 UNIT STATUS-ATTENTION 81202670
0009 0 UNSMD EQU 9 STATUS MODIFIER 81202680
000A 0 UNCBZ EQU 10 CONTROL UNIT END 81202690
000B 0 UNBZY EQU 11 UNIT BUSY 81202700
000C 0 UNCHE EQU 12 CHANNEL END 81202710
000D 0 UNVE EQU 13 DEVICE END 81202720
000E 0 UNCHK EQU 14 UNIT CHECK 81202730

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

000F 0 UNEXC EQU 15 UNIT EXCEPTION 81202740
***** 81202750
* 81202760
***** 81202770
* 81202780
* EQUATES FOR 2311 SENSE BYTES 81202790
* 81202800
0004 0 FBRST EQU 4 (BURST) DATA CK 81202810
0005 0 FOVRN EQU 5 CHANNEL/2841 OVERRUN 81202820
0007 0 FSKCK EQU 7 SEEK CK 81202830
0009 0 FTROV EQU 9 81202840
000A 0 FECY EQU 10 END OF CYLINDER 81202850
000C 0 FNORC EQU 12 NO RECORD FOUND 81202860
0010 0 FUNSF EQU 16 81202870
0012 0 FSERD EQU 18 SERDES CHECK 81202880
0015 0 FUNSL EQU 21 81202890
0018 0 FDRDY EQU 24 DRIVE READY 81202900
0019 0 FONLN EQU 25 81202910
001A 0 FUNSI EQU 26 UNSAFE 81202920
001D 0 FECYL EQU 29 END OF CYLINDER 81202930
001F 0 FSKIN EQU 31 SEEK INCOMPLETE 81202940
* 81202950
* 81202960
* 81202970
088F 0 0001 NOPCC DC 1 BYTE COUNT 81202980
0890 0 2003 DC /20*256+OPNOP FLAGS AND OP CODE 81202990
0891 1 0892 DC * ADDRESS 81202990
* 81203000
* 81203010
0892 0 0001 RECAL DC 1 BYTE COUNT 81203020
0893 0 2013 DC /20*256+RCAL FLAGS AND OP CODE 81203030
0894 1 0895 DC * ADDRESS 81203040
* 81203050
* 81203060
0895 0 0001 TSCCW DC 1 BYTE COUNT 81203070
0896 0 2000 DC /20*256+OPTIO FLAGS AND OP CODE 81203080
0897 1 0898 DC TSWDS ADDRESS 81203090
* 81203100
* 81203110
0898 0 0000 TSWDS DC *-- 81203120
* 81203130
0899 0 0006 SNCCW DC 6 BYTE COUNT 81203140
089A 0 0004 DC 0*256+OPSNS FLAGS AND OP CODE 81203150
089B 1 089C DC SNWDS ADDRESS 81203160
* 81203170
089C 0004 SNWDS BSS E 4 SENSE BYTES 81203180
089C 0 SNWD0 EQU SNWDS 81203190
089D 0 SNWD1 EQU SNWDS+1 81203200
089E 0 SNWD2 EQU SNWDS+2 81203210
089F 0 SNWD3 EQU SNWDS+3 81203220
08A0 1 0895 TIOXX DC TSCCW TIO CCW 81203230
08A1 0 0000 DC *-- TO BE FILLED IN 81203240
08A2 0 0000 HIOXX DC *-- 81203250
08A3 0 0000 DC *-- 81203260
08A4 1 0899 SENSE DC SNCCW SENSE IO W/SUPPRESS POLL 81203270
08A5 0 0000 DC *-- TO BE FILLED IN 81203280
08A6 0 0000 SIOXX DC *-- TO BE FILLED WITH CCW ADDR 81203290
08A7 0 0000 DC *-- TO BE FILLED IN 81203300
08A8 0 0000 SCSN0 DC *-- = 08 81203310
08A9 0 0000 DC *-- 81203320
08AA 0 0000 SCSN1 DC *-- = 09 81203330
08AB 0 0000 DC *-- 81203340
08AC 0 0000 SCSN2 DC *-- = 0A 81203350
08AD 0 0000 DC *-- 81203360
08AE 0 0000 SCSN3 DC *-- = 0B 81203370
08AF 0 0000 DC *-- 81203380
08B0 0 0000 SCSN4 DC *-- = 0C 81203390
08B1 0 0000 DC *-- 81203400
08B2 0 0000 SCSN5 DC *-- = 06 81203410
08B3 0 0000 DC *--

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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08B4 0004 SCSX0 BSS E 4 START I/O SAVE AREA 81203420
08B8 0004 SCSX4 BSS E 4 START I/O SAVE AREA 2 81203430
08BC 0004 SCSX8 BSS E 4 TIO SAVE AREA 81203440
08C0 0004 SCSXC BSS E 4 SENSE I/O SAVE AREA 81203450
08C4 0004 SCSVS BSS E 4 SAVE AREA FOR SENSE INFO 81203460
08C8 0003 HA BSS E 3 81203470
08CC 0000 BSS E 0 81203480
08CC 1 1418 TLGWR DC TLGBA IOAREA ADDRESS 81203490
08CD 0 0000 DC *-- TO BE FILLED IN 81203500
08CE 0 0000 TLGSP DC /0000 SPACE IN 1443 CODE 81203510
08CE 0 TLGSN EQU TLGSP SENSE DSW IOCC 81203520
08CF 0 0000 DC *-- TO BE FILLED IN 81203530
08D0 0 0000 TLGCT DC 0 LOOP COUNT FOR PRNTR INT 81203540
08D1 0 0000 TLGSW DC 0 1ST/2ND CHAR SW (1053) 81203550
08D2 0 0000 TLGSR DC 0 1ST/2ND CHAR SW (TLGCH) 81203560
08D3 0 0000 DC *-- SENSE/RESET DSW 81203570
* 81203580
08D4 0008 STSER PRNT .XX ERROR ON XXX . 81203590
08DC 0007 PRNT .SECT X,RTN X . 81203600
08E3 0 FFFF DC /FFFF 81203610
08E4 0009 UNADR PRNT . UNIT XX,ADRS XXXX. 81203620
08ED 0 FFFF DC /FFFF 81203630
* 81203640
* SELECTOR CHANNEL INT ROUTINE 81203650
* 81203660
08EE 0 0000 WIOSW DC *-- WAIT FOR USER INTERRUPT 81203670
08EF 0 0000 WATSW DC *-- WAIT FOR SYST TIO INT. 81203680
08F0 0 0000 SCISW DC *-- INTERRUPT SWITCH 81203690
08F1 0 0000 TSCAC DC *-- SEL.CHAN AREA CODE 81203700
08F2 0 0000 SCINT DC *-- INT. RTN ENTRY 81203710
08F3 0 68FA STX WIOSW SET INTERRUPT SWITCH 81203720
08F4 0 6A6F STX 2 SCIN7+1 SAVE REG 81203730
08F5 0 6970 STX 1 SCIN7+3 81203740
08F6 1 6600 087F LD L2 TB SET UP POINTER TO TBL 81203750
08F8 0 C271 LD 2 SCISW-TB GET INT SWITCH 81203760
08F9 1 4C18 094F BZ SCIN4 BR IF NOT SET 81203770
* 81203780
08FB 0 0A29 XIO 2 SCSN0-TB FETCH CHANNEL STATUS 81203790
08FC 0 1001 SLA 1 TEST FOR USP 81203800
08FD 1 4C10 0919 BNN SCIN0 BRANCH IF NOT USP 81203810
* 81203820
08FF 0 0A2D XIO 2 SCSN2-TB GET UNIT STATUS 81203830
0900 0 18D0 XCH SAVE STATUS 81203840
0901 0 1010 SLA 16 CLEAR A REG 81203850
0902 0 1088 SLT 8 GET DEVICE ADDRS 81203860
0903 0 F2D4 EOR 2 DVADR-TB TEST FOR MY DEVICE 81203870
0904 1 4C18 090C BZ SCINC BRANCH IF MINE 81203880
0906 0 1092 SLT 8+UNCUE TEST FOR CONTROL UNIT END 81203890
0907 1 4C10 094F BNN SCIN4 BRANCH IF NOT CU END 81203900
* 81203910
0909 0 C2DA LD 2 TIOSW-TB GET TIO SW 81203920
090A 1 4C18 094F BZ SCIN4 BR IF INT NOT DUE TO TIO 81203930
* 81203940
090C 0 C2DA SCINC LD 2 TIOSW-TB FETCH TIO SW 81203950
090D 1 4C18 0919 BZ SCIN0 BRANCH IF USER TIO 81203960
* 81203970
090F 0 1010 SLA 16 ELSE CLEAR TIO SW 81203980
0910 0 D2DA STO 2 TIOSW-TB * 81203990
* 81204000
* GET HERE IF INTERRUPT FROM TIO AFTER SIO 81204010
* IF STATUS IS NON BUSY THEN PLACE IN SCSX0 81204020
* AND SCSX8 81204030
* 81204040
0911 0 0A2D XIO 2 SCSN2-TB FETCH UNIT STATUS 81204050
0912 0 100B SLA UNBZY TEST FOR UNIT OR CU BUSY 81204060
0913 1 4C28 0923 BN SCINX BR TO SET POINTER TO SCSX8 81204070
* 81204080
0915 0 0A2D XIO 2 SCSN2-TB FETCH UNIT STATUS 81204090

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0916 0 EA36      OR      2 SCSX0+1-TB MERGE WITH OLD STATUS      81204100
0917 0 D236      STO      2 SCSX0+1-TB *                                81204110
*
*
0918 0 700A      B          SCINX      BR & SET POINTER TO SCSX8  81204130
*
*
* GET HERE IF TIOSW WAS NOT ON AND TEST
* FOR USER TIO IF SO PLACE STATUS IN SCSX8,
* ELSE GO TEST FOR SENSE OPERATION INTERRUPT
*
0919 0 C223      SCIN0 LD      2 HIOXX-TB      GET HIO SW              81204180
091A 1 4C20 0943  BNZ      SCIN3      BR IF SET                    81204190
*
*
091C 0 0A31      XIO      2 SCSN4-TB      ELSE GET CCW ADPRS REG  81204220
091D 0 D231      STO      2 SCSN4-TB      SAVE FOR LATER USE      81204230
091E 0 C221      LD       2 TIOXX-TB      GET TEST I/O ADDRESS   81204240
091F 0 8299      A        2 K3-TB        ADD THREE              81204250
0920 0 F231      EOR      2 SCSN4-TB      COMPARE WITH CCW ADRS REG 81204260
0921 1 4C20 0927  BNZ      SCIN1      BR IF NOT THE SAME    81204270
*
*
* GET HERE IF USER TIO OR SYSTEM TIO
* FOUND THAT THE UNIT OR CU WAS BUSY
* AFTER A TEST I/O.
*
0923 1 6700 08BC SCINX LDX L3 SCSX8      ELSE POINT TO SAVE AREA 81204320
0925 0 68C9      STX      WATSW      SET TIO INTERRUPT SW    81204330
0926 0 702E      MDX      SCIN5      GO TO COMMON RTN      81204340
*
*
* GET HERE IF NO TEST I/O WAS INDICATED
* BY THE PRIOR ROUTINES
*
0927 0 C225      SCIN1 LD      2 SENSE-TB      GET CCW ADDRESS FOR SENSE 81204400
0928 0 8299      A        2 K3-TB        POINT TO FOLLOWING      81204410
0929 0 F231      EOR      2 SCSN4-TB      COMPARE                81204420
092A 1 4C20 092F  BNZ      *+3         BR IF NOT              81204430
092C 1 6700 08C0 LDX L3 SCSXC      POINT TO SAVE AREA     81204440
092E 0 7026      MDX      SCIN5      GO TO COMMON RTN      81204450
*
*
* GET HERE IF SENSE WAS FOUND NOT TO
* BE THE CAUSE OF THE INTERRUPT AND TEST
* FOR START I/O TO BE THE CAUSE, IF NOT
* THEN SET THE INTERRUPT TO THE UNEXPECTED.
*
092F 0 C227      LD       2 SIOXX-TB      GET START I/O CCW ADDRESS 81204520
0930 1 6780 08A6  LDX I3 SIOXX      SET IN REG TOO        81204530
*
*
0932 0 8299      SCIN2 A        2 K3-TB        POINT TO NEXT ADRS AFTER 81204550
0933 0 D219      STO      2 TSWDS-TB      SAVE IN TEMP STORAGE    81204560
0934 0 F231      EOR      2 SCSN4-TB      COMPARE                81204570
0935 1 4C18 0943  BZ       SCIN3      BR IF SAME            81204580
0937 0 C301      LD       3 1         GET OP CODE/FLAGS      81204590
0938 0 180E      SRA      14         SAVE CMD CHAIN/DATA CHAIN 81204600
0939 1 4C20 0940  BNZ      *+5         BR IF SET              81204610
093B 0 C301      LD       3 1         GET IT AGAIN          81204620
093C 0 F29D      EOR      2 K8-TB        TEST FOR TIC           81204630
093D 0 1008      SLA      8          SAVE OP CODE ONLY     81204640
093E 1 4C20 094F  BNZ      SCIN4      BR IF NOT TIC         81204650
0940 0 7303      MDX      3 3         POINT TO NEXT CCW IN CHAIN 81204660
0941 0 C219      LD       2 TSWDS-TB      GET ADDRESS            81204670
0942 0 70EF      MDX      SCIN2      LOOP                  81204680
*
*
0943 0 1010      SCIN3 SLA      16         CLEAR HIO SW          81204700
0944 0 D223      STO      2 HIOXX-TB      *                      81204710
0945 1 6700 08B4  LDX L3 SCSX0      POINT TO SIO SAVE AREA 81204720
0947 0 C301      LD       3 1         GET LAST UNIT STATUS   81204730
0948 0 100D      SLA      UNDFE      TEST FOR DEVICE END    81204740
0949 1 4C28 0955  BN       SCIN5      BR IF SET              81204750
094B 0 1001      SLA      UNCHK-UNDFE  TEST FOR UCHK         81204760
094C 1 4C28 0955  BN       SCIN5      BR IF SET              81204770

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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094E 0 7008      MDX      SCIN6      ELSE 'OR' IN STATUS    81204780
*
*
094F 1 6700 096B SCIN4 LDX L3 SCIN8      SET MLSCF ENTRY FOR RETURN 81204790
0951 1 6F00 0809 STX L3 MLSC0      ***                      81204800
0953 1 6700 08B8 LDX L3 SCSX4      POINT 0 SAVE AREA        81204810
*
*
0955 0 1010      SCIN5 SLA      16         CLEAR WORD TO ZERO      81204830
0956 0 D301      STO      3 1         FOR OR'ING IN STATUS    81204840
*
*
0957 0 0A2B      SCIN6 XIO      2 SCSN1-TB GET CHAN. STATUS        81204860
0958 0 D300      STO      3 0         SAVE                    81204870
0959 0 1001      SLA      1          TEST FOR USP            81204880
095A 1 4C10 0969 BNN      SCINA      BRANCH IF NOT ON      81204890
*
*
095C 0 0A2F      XIO      2 SCSN3-TB      GET UNIT STATUS        81204910
095D 0 EB01      OR       3 1         COMBINE WITH EXISTING  81204920
095E 0 D301      SCINB STO      3 1         SAVE                    81204930
095F 0 0A31      XIO      2 SCSN4-TB      GET CCW ADDRESS REG.   81204940
0960 0 D302      STO      3 2         SAVE                    81204950
0961 0 0A33      XIO      2 SCSN5-TB      GET BYTE COUNTER      81204970
0962 0 D303      STO      3 3         SAVE                    81204980
*
*
0963 0 6600 0000 SCIN7 LDX L2 *-*      RELOAD REG 2          81204990
0965 0 6500 0000 LDX L1 *-*          REG 1                  81205000
*
*
0967 1 4C80 08F2 BSC I SCINT      LOG EXT INT. RTN 81205020
*
*
* GET HERE IF USP WAS NOT THE CAUSE OF
* THE INTERRUPT AND SET US TO 0000
*
0969 0 1010      SCINA SLA      16         CLEAR ACC              81205070
096A 0 70F3      MDX      SCINB      RETURN                    81205080
*
*
* RETURN HERE AFTER UNEXPECTED INT
*
096B 1 6600 087F SCIN8 LDX L2 TB      SET UP TABLE POINTER  81205120
096D 0 610C      LDX L1 12         SET UP POINTER          81205130
096E 1 6700 08BB LDX L3 SCSX4+3     SET UP CSW POINTER     81205140
*
*
0970 0 C300      SCIN9 LD       3 0         GET CHNL STATUS        81205160
0971 0 42F5      BSI      2 TCVBE-TB      CONVERT TO 1443 CODE   81205170
0972 1 D500 098D STO L1 SCIM2-1     PUT IN MESSAGE         81205180
0974 0 18D0      XCH      *          *                      81205190
0975 1 D500 098E STO L1 SCIM2      *                      81205200
0977 0 73FF      MDX      3 -1        *                      81205210
0978 0 71FD      MDX      1 -3        *                      81205220
0979 0 70F6      MDX      SCIN9      *                      81205230
*
*
097A 0 4204      BSI      2 TLGMS-TB      GET CHNL STATUS        81205250
097B 1 097E      DC       SCIMS      *                      81205260
097C 0 4C80 012D BSC I START      *                      81205270
*
*
097E 0 0015      SCIMS PRNT      ** ER 00 UNEXPECTED INTERRUPT. 81205280
098D 0 FF00      DC       /FF00      *                      81205290
098E 0 0013      SCIM2 PRNT      CSW XXXX, XXXX, XXXX, XXXX. 81205310
099B 0 FFFF      DC       /FFFF      *                      81205320
*****
*
* WAIT FOR INTERRUPT
*****
*
*
099C 0 0000      TINTW DC      *-*      ENTRY POINT            81205400
099D 0 C28D      LD       2 TERM-TB      FETCH TIME OUT CONSTANT 81205410
099E 0 D22B      STO      2 SCSN1-TB      *                      81205420
*
*
099F 0 C270      TINT2 LD      2 WATSW-TB *                      81205440

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

09A0 1 4C20 09B0      BNZ   TINT3      81205460
09A2 0 42F2           BSI   2 STMLS-TB   GO VISIT MONITOR 81205470
09A3 1 74F6 08AA     MDX  L  SCSN1,-10 81205480
09A5 0 70F9           MDX   TINT2      81205490
*
09A6 0 0A2B          XIO  2 SCSN1-TB   GET CHANNEL STATUS 81205510
09A7 0 D241          STO  2 SCSXC-TB   * AND SAVE FOR ERR 81205520
09A8 0 0A2F          XIO  2 SCSN3-TB   * MESSAGE           81205530
09A9 0 D242          STO  2 SCSXC+1-TB *                81205540
09AA 0 0A31          XIO  2 SCSN4-TB   *                81205550
09AB 0 D243          STO  2 SCSXC+2-TB 81205560
09AC 0 0A33          XIO  2 SCSN5-TB   81205570
09AD 0 D244          STO  2 SCSXC+3-TB 81205580
*
09AE 1 4C80 099C     BSC  I  TINTW     EXIT RTN           81205590
*
09B0 1 7401 099C     TINT3 MDX L TINTW,1 81205610
09B2 0 1010          SLA  16           81205620
09B3 0 D270          STO  2 WATSW-TB   81205630
09B4 1 4C80 099C     BSC  I  TINTW     EXIT RTN           81205640
*
*****
*****
*****
09B6 0 4480 012C     BGIN BSI I BEGIN   GO TO MONITOR BEGIN RTN 81205710
09B8 1 07FF          DC   TPID         ADDRESS OF PID      81205720
*****
*****
*****
09B9 0 0000          ZIPA DC *-*       ENTRY POINT        81205760
09BA 0 C0FE          LD   ZIPA         MOVE RETURN ADDRS  81205770
09BB 0 D013          STO  ZLPA         *                   81205780
09BC 1 6600 087F     LDX  L2 TB        SET UP POINTER     81205790
*
09BE 0 1010          SLA  16           RESET-              81205800
09BF 1 D400 13F9     STO  L  FRESW     RESET CONTROL SWS  81205820
09C1 0 D2D5          STO  2 LGBSY-TB  *                   81205830
09C2 0 D26F          STO  2 WIOSW-TB  *                   81205840
09C3 0 D2DA          STO  2 TIOSW-TB  *                   81205850
09C4 0 D270          STO  2 WATSW-TB  *                   81205860
09C5 0 D283          STO  2 TSW0-TB   * SW 0              81205870
09C6 0 D284          STO  2 TSW1-TB   * SW 1              81205880
09C7 0 D286          STO  2 TSW3-TB   * SW 3              81205890
09C8 1 D400 1157     STO  L  STMP     RESET STMLS POINTER 81205900
09CA 0 C2BF          LD   2 HFF00-TB  FETCH CONSTANT     81205910
09CB 0 D285          STO  2 TSW2-TB   PLACE IN SW 2      81205920
09CC 0 C297          LD   2 K1-TB     FETCH CONSTANT OF 1 81205930
09CD 0 D2D8          STO  2 PSCNT-TB  SET PASS COUNT=1   81205940
09CE 0 7001          MDX  ZLPA+1      CONTINUE            81205950
*****
*****
*****
09CF 0 0000          ZLPA DC *-*       LOOP PGM RTN       81206000
09D0 1 6700 09FF     LDX  L3 TCNPR    GET MLSCF ADDRESS  81206010
09D2 1 6F00 080B     STX  L3 MLSC2    SET IN TBL         81206020
09D4 1 6600 087F     LDX  L2 TB       SET UP TBL POINTER 81206030
09D6 0 C294          LD   2 TLGED-TB  LOOK AT LOG EDIT   81206040
09D7 1 4C10 09DD     BNN  ZLPA1       BR IF RELEASED     81206050
09D9 0 4480 0132     BSI  I  RELDV    ELSE RELEASE DEVICE 81206060
09DB 1 0813          DC   TLGED       ADDR OF EDIT WORD  81206070
09DC 1 080C          DC   TERM        TERMINATOR         81206080
09DD 0 C295          ZLPA1 LD 2 TSCED-TB SEL. CHAN. EDIT 81206090
09DE 1 4C10 09E4     BNN  ZLPA2       81206100
09E0 0 4480 0132     BSI  I  RELDV    RELEASE DEVICE      81206110
09E2 1 0814          DC   TSCED       81206120
09E3 1 080C          DC   TERM        81206130

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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09E4 0              ZLPA2 EQU *          81206140
09E4 0 1010         SLA  16           RESET-              81206150
09E5 0 D2D9         STO  2 STKSW-TB   * STACK SW         81206160
09E6 0 D2D6         STO  2 SIOSW-TB   * SIO SW           81206170
09E7 0 D2D5         STO  2 LGBSY-TB   * LOG BUSY SW      81206180
09E8 0 C297         LD   2 K1-TB     FETCH CONSTANT OF 1 81206190
09E9 0 D281         STO  2 TSID-TB   SET SECTION ID = 1 81206200
09EA 1 4C80 09CF     BSC  I  ZLPA     EXIT                81206210
*
*****
*****
09EC 0 0000         ZEPA DC *-*       END PGM RTN        81206260
09ED 1 6600 087F     LDX  L2 TB       SET UP TBL POINTER 81206270
09EF 0 C294         LD   2 TLGED-TB  LOOK AT LOG EDIT   81206280
09F0 1 4C10 09F6     BNN  ZEPA1       BR IF RELEASED     81206290
09F2 0 4480 0132     BSI  I  RELDV    ELSE RELEASE DEVICE 81206300
09F4 1 0813         DC   TLGED       ADDR OF EDIT WORD  81206310
09F5 1 080C         DC   TERM        TERMINATOR         81206320
*
09F6 0 C295         ZEPA1 LD 2 TSCED-TB SEL CHANNEL EDIT 81206340
09F7 1 4C10 09FD     BNN  ZEPA2       BR IF RELEASED     81206350
*
09F9 0 4480 0132     BSI  I  RELDV    RELEASE DEVICE      81206370
09FB 1 0814         DC   TSCED       ADDRS OF EDIT WORD 81206380
09FC 1 080C         DC   TERM        81206390
09FD 1 4C80 09EC     ZEPA2 BSC I ZEPA  EXIT BACK TO MONITOR 81206400
*****
*****
*****
09FF 1 6600 087F     TCNPR LDX L2 TB   SET UP TABLE POINTER 81206500
0A01 0 C2DF         LD   2 T45SW-TB  GET 43/53-SWITCH   81206510
0A02 1 4C20 0A16     BNZ  TCN01       81206520
0A04 0 42F2         BSI  2 STMLS-TB  81206530
0A05 0 4480 0131     BSI  I  REQDV    REQUEST DEVICE      81206540
0A07 1 0A04         DC   TCNRQ       BUSY RETURN        81206550
0A08 1 0813         DC   TLGED       EDIT FOR PRINTER   81206560
0A09 1 13B5         DC   TLGDA       AREA CODE GIVEN BACK 81206570
0A0A 1 080C         DC   TERM        TERMINATOR         81206580
0A0B 0 4480 0132     BSI  I  RELDV    RELEASE DEVICE      81206590
0A0D 1 0813         DC   TLGED       EDIT FOR PRINTER   81206600
0A0E 1 080C         DC   TERM        TERMINATOR         81206610
0A0F 1 C400 13B5     LD   L  TLGDA    GET PRINTER AREA CODE 81206620
0A11 0 F2B9         EOR  2 H3000-TB  81206630
0A12 0 4820         SKP  Z           81206640
0A13 0 C297         LD   2 K1-TB     81206650
0A14 0 8297         A    2 K1-TB    ADD ONE          81206660
0A15 0 D2DF         STO  2 T45SW-TB  SET SW FOR 43 OR 53 81206670
*
0A16 0              TCN01 EQU *          81206680
0A16 0 42E9         BSI  2 GETDV-TB  GET DEVICE FOR USE  81206690
0A17 0 42E6         BSI  2 FREDV-TB  RELEASE DEVICE      81206710
0A18 0 C285         LD   2 TSW2-TB   GET SW FNC 2 (DEV ADDR) 81206720
0A19 0 1808         SRA  8           SAVE BITS 0-7      81206730
0A1A 1 4C13 0A23     BZ   TCN02       BR IF ZERO          81206740
0A1C 0 4204         BSI  2 TLGMS-TB  PRINT MESSAGE       81206750
0A1D 1 0A83         DC   TCNE2       'ENTER DEV ADDRESS' 81206760
*
0A1E 0 42F2         BSI  2 STMLS-TB  GO TO MONITOR       81206780
0A1F 0 C285         LD   2 TSW2-TB   GET SW FNC 2        81206790
0A20 0 1808         SRA  8           SAVE BITS 0-7      81206800
0A21 0 4820         SKP  Z           SKIP IF ZERO        81206810

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0AA0 1 4C20 0B5F      BNZ      T1201      BR IF NOT THIS TEST      81208180
*
0AA2 0 C283          T1102 LD      2 TSW0-TB      GET OPTION SWS          81208190
0AA3 0 100A          SLA      OTTLE      PRINT TITLES            81208200
0AA4 1 4C10 0AA8      BNN      T1103      BR IF NOT SET          81208210
0AA6 0 4204          BSI      2 TLGMS-TB      GO TO PRINT ROUTINE    81208220
0AA7 1 0AE6          DC      TTL11      MESSAGE ADDRESS        81208230
*
0AA8 0 42E9          T1103 BSI      2 GETDV-TB      GET CHANNEL FOR RTN    81208240
0AA9 1 6500 0AE0      LDX      L1 T11EN      *                      81208250
0AAB 1 6000 1303      STX      L1 ERADR      *                      81208260
0AAD 0 C2D4          LD      2 DVADR-TB      GET UNIT ADDRESS       81208270
0AAE 0 42F5          BSI      2 TCVBE-TB      CONVERT TO 1443 CODE   81208280
0AAF 0 18D0          XCH      *                      *                      81208290
0AB0 1 D400 0B37      STO      L T41IN+9      PUT INTO MESSAGE       81208300
*
0AB2 0 C2AE          LD      2 H00C6-TB      SET SEEK ARG TO CYL 198 81208310
0AB3 1 D400 0B48      STO      L T41SA+1      *                      81208320
*
0AB5 0 42EF          BSI      2 S10-TB       EXEC CHNL PRGM         81208330
0AB6 1 0B44          DC      T41SK      *                      81208340
*
0AB7 0 4204          BSI      2 TLGMS-TB      GO PRINT INSTRUCTIONS  81208350
0AB8 1 0B2E          DC      T41IN      *                      81208360
*
0AB9 0 1010          SLA      16          RESET-                 81208370
0ABA 1 D400 0B51      STO      L T41NR      * NOT READY SW        81208380
*
0ABC 0 C2BC          T4104 LD      2 H7FFF-TB      GET CONSTANT            81208390
0ABD 0 D2DD          STO      2 LPCNT-TB      *                      81208400
*
0ABE 0 42EC          T4105 BSI      2 GETSN-TB      GET SENSE WORDS        81208410
0ABF 0 CA1D          LDD      2 SNWDS-TB      *                      81208420
0AC0 0 1098          SLT      FDRDY      TEST FOR READY         81208430
0AC1 1 4C28 0AC9      BN      T4107      YES,BRANCH             81208440
0AC3 0 7036          MDX      T4108      NO                     81208450
*
0AC4 0 42F2          T4106 BSI      2 STMLS-TB      GO TO MONITOR          81208460
0AC5 1 74FF 0B5C      MDX      L LPCNT,-1      DECREMENT LOOP CNT     81208470
0AC7 0 70F6          MDX      T4105      LOOP                   81208480
*
0AC8 0 704C          MDX      T4111      TIMEOUT                81208490
*
0AC9 0 C2B3          T4107 LD      2 H0400-TB      GET LOOP COUNT         81208500
0ACA 0 D2DE          STO      2 LPCT1-TB      PUT IN COUNTER         81208510
*
0ACB 0 42F2          T41LP BSI      2 STMLS-TB      GO TO MONITOR          81208520
0ACC 1 74FF 0B5D      MDX      L LPCT1,-1      DECREMENT COUNT        81208530
0ACE 0 70FC          MDX      T41LP      LOOP FOR 600 MSEC      81208540
*
0ACF 1 C400 0B51      LD      L T41NR      TEST FOR LOSS OF READY 81208550
0AD1 1 4C18 0ABE      BZ      T4105      * BR IF STILL READY   81208560
*
* FILE LOST READY AND IS NOW READY AGAIN
*
0AD3 0 C28D          LD      2 TERM-TB       RESET READ HA          81208570
0AD4 0 D079          STO      T41AR      * ARGUMENT             81208580
0AD5 0 D079          STO      T41AR+1      *                      81208590
0AD6 0 D079          STO      T41AR+2      *                      81208600
*
0AD7 0 42EF          BSI      2 S10-TB       EXEC CHNL PGRM         81208610
0ADB 1 0B4A          DC      T41RH      *                      81208620
*
0AD9 0 C075          LD      T41AR+1      GET HA                 81208630
0ADA 1 4C20 0B1E      BNZ      T4113      CHECK FOR CYL 000     81208640
0ADC 0 C073          LD      T41AR+2      *                      81208650
0ADD 0 1808          SRA      8          CLEAR UNWANTED BITS   81208660
0ADE 1 4C20 0B1E      BNZ      T4113      CHECK FOR MD 00       81208670

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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*
* GO TO NEXT ROUTINE IN SEQUENCE
*
0AE0 0 42E6          T11EN BSI      2 FREDV-TB      FREE CHANNEL           81208860
0AE1 0 C2C2          LD      2 TRTN-TB      GET RTN SWS           81208870
0AE2 1 4C18 0B5F      BZ      T1201      GO TO NEXT RTN IN SEQ 81208880
0AE4 1 4C00 0FAF      BSC      L T20EN      ELSE END DFT          81208890
0AE6 0007          TTL11 PRNT      * SECT 1,RT 1-      *                      81208900
*
0AED 0012          PRNT      *DISK OFF/ON CPU RUNNING. 81208910
0AF9 0 FFFF          DC      /FFFF      *                      81208920
0AFA 0 C056          T4108 LD      T41NR      GET LOST RDY SW       81208930
0AFB 1 4C20 0AC4      BNZ      T4106      BR IF ON              81208940
*
0AFD 0 4201          BSI      2 T10-TB       *                      81208950
0AFE 0 C23D          LD      2 SCSX8-TB      GET CHANNEL STATUS     81208960
0AFF 1 4C28 0B12      BN      T4110      BR IF NOT OPERATIONAL 81208970
*
0B01 0 1006          SLA      SCABZ-SCUSP TEST FOR BUSY 81209000
0B02 1 4C28 0B12      BN      T4110      BR IF YES             81209010
*
0B04 0 C23E          LD      2 SCSX8+1-TB    GET UNIT STATUS        81209020
0B05 0 8298          A      2 K2-TB       TEST FOR UNIT CK       81209030
0B06 1 4C18 0B0B      BZ      T4109      BRANCH IF OFF         81209040
*
* UNIT CK ON DISK NOT READY-SET SWITCH
*
0B08 1 6C00 0B51      STX      L T41NR      SET NOT RDY SW        81209050
0B0A 0 70B3          MDX      T4105      GO TO LOOP            81209060
*
0B0B 0 C23A          T4109 LD      2 SCSX4+1-TB    TEST FOR DEVICE END    81209070
0B0C 0 100D          SLA      UNDEVE      * (DETENT)            81209080
0B0D 1 4C28 0ABE      BN      T4105      BRANCH IF ON          81209090
*
0B0F 0 42E3          BSI      2 ER0UT-TB     *                      81209100
0B10 0 0323          DC      /0323      *                      81209110
0B11 0 1101          DC      /1101      *                      81209120
*
0B12 0 42E3          T4110 BSI      2 ER0UT-TB     *                      81209130
0B13 0 0321          DC      /0321      *                      81209140
0B14 0 1102          DC      /1102      *                      81209150
*
* FILE IS NOT AVAILABLE AFTER 100 SECONDS
*
0B15 0 C03B          T4111 LD      T41NR      TEST FOR UNIT CK       81209160
0B16 1 4C18 0B1B      BZ      T4112      BRANCH IF NO          81209170
*
0B18 0 42E3          BSI      2 ER0UT-TB     *                      81209180
0B19 0 0323          DC      /0323      *                      81209190
0B1A 0 1103          DC      /1103      *                      81209200
*
0B1B 0 42E3          T4112 BSI      2 ER0UT-TB     *                      81209210
0B1C 0 0322          DC      /0322      *                      81209220
0B1D 0 1104          DC      /1104      *                      81209230
*
0B1E 0 C02F          T4113 LD      T41AR      GET THE HOME ADDRESS  81209240
0B1F 0 42F5          BSI      2 TCVBE-TB     * READ AND STOR IT    81209250
0B20 0 D038          STO      T41EM+7      * INTO THE ERROR MSG  81209260
0B21 0 18D0          XCH      * SWAP A & Q    81209270
0B22 0 D037          STO      T41EM+8      *                      81209280
0B23 0 C02B          LD      T41AR+1      *                      81209290
0B24 0 42F5          BSI      2 TCVBE-TB     *                      81209300
0B25 0 D035          STO      T41EM+9      *                      81209310
0B26 0 18D0          XCH      * SWAP A & Q    81209320
0B27 0 D034          STO      T41EM+10     INTO THE ERROR MSG    81209330
0B28 0 C027          LD      T41AR+2      *                      81209340
0B29 0 42F5          BSI      2 TCVBE-TB     *                      81209350

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

OB2A 0 D032      STO      T41EM+11  *      81209540
*
OB2B 0 42E3      BSI      2 ER0UT-TB  LOG ERROR MSG 81209550
OB2C 0 0308      DC        /0308      81209560
OB2D 1 0B52      DC        T41EM      81209570
*
* DATA AND CONSTANTS 81209580
*
* T41IN PRNT      . POWER DOWN UNIT XX, THEN POWER. 81209590
* PRNT          . UP UNIT. 81209600
OB2E 0016      DC        /FF00      81209610
OB3E 0004      DC        /FFFF      81209620
OB42 0 FF00      DC        /FFFF      81209630
OB43 0 FFFF      DC        /FFFF      81209640
*
* T41SK DC        6          BYTE COUNT 81209650
OB44 0 0006      DC        0*256+SEEKC FLAGS AND OP CODE 81209660
OB45 0 0007      DC        T41SA      ADDRESS 81209670
OB46 1 0B47      DC        T41SA      ADDRESS 81209680
*
* T41SA DC        /0000      SEEK ARGUMENT 81209690
OB47 0 0000      DC        /0000      * 81209700
OB48 0 0000      DC        /0000      * 81209710
OB49 0 0000      DC        /0000      * 81209720
*
* T41RH DC        5          BYTE COUNT 81209730
OB4A 0 0005      DC        0*256+RDHA FLAGS AND OP CODE 81209740
OB4B 0 001A      DC        T41AR      ADDRESS 81209750
OB4C 1 0B4E      DC        T41AR      ADDRESS 81209760
*
* BSS E 0 81209770
OB4E 0000      DC        /FFFF      81209780
OB4F 0 FFFF      DC        /FFFF      81209790
OB50 0 FFFF      DC        /FFFF      81209800
*
* T41NR DC        **          NOT READY SW 81209810
OB51 0 0000      DC        /FFFF      81209820
OB52 0012      DC        /FFFF      81209830
OB5E 0 FFFF      DC        /FFFF      81209840
*
* ROUTINE --2-- METER SW DISABLE/ENABLE 81209850
*
* *****
*
* THIS ROUTINE TESTS THE DEVICE METER SWITCH. 81209860
* WHEN THE METER SWITCH IS IN THE DISABLE 81209870
* POSITION THE 2311/2841 SHOULD INDICATE- 81209880
* 'MANUAL INTERVENTION,READY,AND NOT ON-LINE' 81209890
* WHEN THE METER SWITCH IS RETURNED TO THE 81209900
* ENABLE POSITION THE 2311/2841 SHOULD INDICATE- 81209910
* 'READY AND ON-LINE' 81209920
*
* INSTRUCTIONAL PRINTOUTS ARE PROVIDED AT 81209930
* STOP/START CPU AND DISABLE/ENABLE FILE TIME 81209940
*
* *****
*
* T1201 EQU      *          TEST ENTRY POINT 81209950
OB5F 0          MDX L TRID,1      BUMP RTN ID 81209960
OB5F 1 7401 0B15 BZ T1202      BR IF TEST NUMBER ZERO 81209970
OB61 1 4C18 0B66 S 2 K1-TB      DECREMENT BY ONE 81209980
OB63 0 9297      BNZ T1301      BR IF NOT THIS TEST 81209990
OB64 1 4C20 0C12

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OB66 0 C283      T1202 LD 2 TSW0-TB  GET OPTION SWS 81210220
OB67 0 100A      SLA      OTTLE      PRINT TITLES 81210230
OB68 1 4C10 0B6C BNN      T1203      BR IF NOT SET 81210240
OB6A 0 4204      BSI      2 TLGMS-TB GO TO PRINT ROUTINE 81210250
OB6B 1 0BAD      DC        TTL12      MESSAGE ADDRESS 81210260
*
* T1203 BSI      2 GETDV-TB  GET CHANNEL FOR RTN 81210270
LDX L1 T420B      SET UP RECAL ERROR 81210280
OB6C 0 42E9      STX L1 ERADR      * RETURN 81210290
OB6D 1 6500 0BD2 LD 2 DVADR-TB  GET DEVICE UNDER TEST 81210300
OB6F 1 6D00 1303 BSI      2 TCVBE-TB  CONVERT TO 1443 CODE 81210310
OB71 0 C2D4      XCH      * 81210320
OB72 0 42F5      STO L T42IN+12  PUT IN INSTRUCTIONS 81210330
OB73 0 18D0      STO T42I2+11    * 81210340
OB74 1 D400 0BFF * 81210350
OB76 0 D069      * HAVE OPERATOR DISABLE FILE 81210360
* BSI      2 TLGMS-TB  GO PRINT INSTRUCTIONS 81210370
DC T42IN          * TO DISABLE 2311 81210380
BSI      2 THLT-TB  WAIT FOR OPERATOR ACTION 81210390
*
* T4204 LD 2 H4000-TB  SET RETURN ON ERROR SW 81210400
STO 2 SIOSW-TB  * 81210410
BSI      2 SIO-TB  GO DO START I/O 81210420
DC RECAL 81210430
*
* LD 2 SCSX0-TB  GET CHANNEL STATUS 81210440
EOR 2 H4000-TB  TEST FOR UNIT STATUS PEND 81210450
BNZ T4206      BR IF NOT SET 81210460
*
* BSI      2 GETSN-TB  GO GET SENSE BYTES 81210470
*
* LD 2 SCSX0+1-TB  GET UNIT STATUS 81210480
SLA UNCHK      TEST FOR UNIT CHECK 81210490
BNN T4207      BR IF NOT SET 81210500
*
* LD 2 SNWD0-TB  GET SENSE WORD ONE 81210510
EOR 2 H4000-TB  TEST FOR INT REQUIRED 81210520
BNZ T4207      BR IF NOT SET 81210530
*
* LD 2 SNWD1-TB  GET SENSE WORD TWO 81210540
EOR 2 H0080-TB  TEST FOR READY/NOT ON-LINE 81210550
BNZ T4207      BR IF NOT 81210560
*
* HAVE OPERATOR ENABLE FILE 81210570
*
* T42LP LDX L1 T420A      SET UP TIO ERROR RETURN 81210580
STX L1 ERADR      * 81210590
OB88 0 C21E      BSI      2 TLGMS-TB  GO PRINT INSTRUCTIONS 81210600
OB88 0 F2BA      DC T42I2      * TO ENABLE FILE 81210610
OB89 1 4C20 0BC6 BSI      2 THLT-TB  WAIT FOR OPERATOR ACTION 81210620
*
* T4205 BSI      2 SIO-TB  GO DO START I/O 81210630
DC RECAL 81210640
*
* LD 2 SCSX0-TB  GET CHANNEL STATUS 81210650
EOR 2 H4000-TB  TEST FOR UNIT STATUS PND 81210660
BNZ T4208      BR IF ANY OTHER BITS SET 81210670
*
* BSI      2 GETSN-TB  GO GET SENSE BYTES 81210680
LD 2 SCSX0+1-TB  GET UNIT STATUS 81210690
AND 2 H00FF-TB  DELETE ADDRS 81210700
EOR 2 H000C-TB  TEST FOR CHNL/DVC END 81210710
BNZ T4209      BR IF ANY OTHER BITS SET 81210720
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210730
SD L T43SB      TEST FOR 'SHOULD BE' 81210740
BNZ T4209 81210750
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210760
SD L T43SB      TEST FOR 'SHOULD BE' 81210770
BNZ T4209 81210780
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210790
SD L T43SB      TEST FOR 'SHOULD BE' 81210800
BNZ T4209 81210810
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210820
SD L T43SB      TEST FOR 'SHOULD BE' 81210830
BNZ T4209 81210840
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210850
SD L T43SB      TEST FOR 'SHOULD BE' 81210860
BNZ T4209 81210870
*
* LD 2 SNWD0-TB  GET SENSE BYTES 81210880
SD L T43SB      TEST FOR 'SHOULD BE' 81210890
BNZ T4209 81210900

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0C4C 1 4C20 0C7C      *      BNZ      T4308      BR IF NOT SET      81212260
                                GET HERE IF USP IS SET,LOOK FOR DVC/CHNL END 81212270
0C4E 0 42EC          *      BSI      2 GETSN-TB  GO GET SENSE BYTES 81212280
0C4F 0 C236          *      LD      2 SCSX0+1-TB GET UNIT STATUS 81212290
0C50 0 E2B0          *      AND     2 H00FF-TB  DROP UNIT ADDR 81212300
0C51 0 F2AC          *      EDR     2 H000C-TB  TEST FOR DVC/CHNL END 81212310
0C52 1 4C20 0C7F    *      BNZ      T4309      BR IF STATUS NOT = 000C 81212320
                                81212330
0C54 0 CA1D          *      LDD     2 SNWD0-TB  GET BOTH SENSE WORDS 81212340
0C55 0 9836          *      SD      T43SB      TEST FOR RDY AND ON-LINE 81212350
0C56 1 4C20 0C82    *      BNZ      T430A      BR IF WRONG SENSE      81212360
                                81212370
                                81212380
                                81212390
                                81212400
                                *      GO TO NEXT ROUTINE IN SEQUENCE
0C58 0 42E6          *      T13EN BSI  2 FREDV-TB  FREE CHANNEL      81212410
0C59 0 C2C2          *      LD      2 TRTNN-TB  GET RTN SWS      81212420
0C5A 1 4C18 0CD7    *      BZ      T1401      GO TO NEXT RTN IN SEQ 81212430
0C5C 1 4C00 0FAF    *      BSC     L T20EN      ELSE END DFT      81212440
0C5E 0007          *      TTL13 PRNT . SECT 1,RT 3- . 81212450
                                81212460
                                81212470
                                81212480
                                81212490
                                81212500
                                *      ERROR CALLS
                                *      GET HERE IF NO UNIT STATUS PEND ON PWR DOWN
0C76 0 42E3          *      T4306 BSI  2 EROUT-TB 81212510
0C77 0 0306          *      DC      /0306      81212520
0C78 0 1301          *      DC      /1301      81212530
                                81212540
                                *      GET HERE IF NO UNIT CHECK ON POWER DOWN
0C79 0 42E3          *      T4307 BSI  2 EROUT-TB 81212550
0C7A 0 0307          *      DC      /0307      81212560
0C7B 0 1302          *      DC      /1302      81212570
                                81212580
                                *      GET HERE IF NO UNIT STATUS PEND ON PWR UP
0C7C 0 42E3          *      T4308 BSI  2 EROUT-TB 81212590
0C7D 0 0302          *      DC      /0302      81212600
0C7E 0 1303          *      DC      /1303      81212610
                                81212620
                                *      GET HERE IF UNIT CK IS ON OR NO DVC/CHNL END
0C7F 0 42E3          *      T4309 BSI  2 EROUT-TB 81212630
0C80 0 0303          *      DC      /0303      81212640
0C81 0 1304          *      DC      /1304      81212650
                                81212660
                                *      GET HERE IF SENSE BYTES WRONG DN POWER UP
0C82 0 42E3          *      T430A BSI  2 EROUT-TB 81212670
0C83 0 0303          *      DC      /0303      81212680
0C84 0 1305          *      DC      /1305      81212690
                                81212700
                                81212710
                                81212720
                                81212730
                                *      ERROR RETURN
                                *      POWER DOWN-
0C85 0 4207          *      T430B BSI  2 TLPER-TB  GO TEST LOOP ON ERROR 81212740
0C86 1 0C2D          *      DC      T4304      LOOP ADDR      81212750
0C87 0 70B9          *      MDX     T43LP      ELSE POWER UP UNIT 81212760
                                81212770
                                *      POWER UP-
0C88 0 4207          *      T430C BSI  2 TLPER-TB  GO TEST LOOP ON ERROR 81212780
0C89 1 0C48          *      DC      T4305      LOOP ADDR      81212790
0C8A 0 70CD          *      MDX     T13EN      ELSE END ROUTINE 81212800
                                81212810
                                81212820
                                81212830
                                81212840
                                81212850
                                81212860
                                81212870
                                81212880
                                81212890
                                81212900
                                81212910
                                81212920
                                81212930
                                *      BSS E 0
0C8C 0 0000          *      T43SB DC      /0000      SENSE BYTES 'SHOULD BE' 81212830
0C8D 0 00C8          *      DC      /00C8      * AFTER POWER UP      81212840
                                81212850
                                *      STOP CPU, POWER DOWN UNIT XX .
0C8E 0016          *      T43IN PRNT . STOP CPU, POWER DOWN UNIT XX . 81212860
0C9E 0 FF00          *      DC      /FF00      81212870
0C9F 0013          *      PRNT     .START CPU, EXIT WAIT LDDP. 81212880
0CAC 0 FFFF          *      DC      /FFFF      81212890
                                81212900
                                81212910
                                81212920
                                81212930
                                *      STOP CPU, POWER UP UNIT XX .
0CAD 0015          *      T4312 PRNT . STOP CPU, POWER UP UNIT XX . 81212920
0CBC 0 FF00          *      DC      /FF00      81212930

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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0C8D 0011          *      PRNT     .WHEN DRIVE COMES RDY-. 81212940
0CC8 0 FF00          *      DC      /FF00      81212950
0CC9 0013          *      PRNT     .START CPU, EXIT WAIT LOOP. 81212960
0CD6 0 FFFF          *      DC      /FFFF      81212970
                                ***** 81212980
                                * 81212990
                                ***** 81213000
                                * 81213010
                                *      ROUTINE 4 -METER INTERLOCK 81213020
                                * 81213030
                                ***** 81213040
                                * 81213050
                                ***** 81213060
                                * 81213070
                                *      THIS ROUTINE WILL CHECK THE INTERLOCK 81213080
                                *      STATUS OF DEVICE METER SWITCH WHILE 81213090
                                *      CPU IS IN RUN STATE. 81213100
                                *      IF THE CPU METER IS RUNNING, TURNING 81213110
                                *      THE FILE METER SW TO DISABLE SHOULD 81213120
                                *      HAVE NO EFFECT ON THE FILE METER. 81213130
                                81213140
                                *      SINCE THE OBJECTIVE IS TO CHANGE THE 81213150
                                *      FILE METER SW WHILE THE CPU IS 81213160
                                *      RUNNING, PERFORM THE FOLLOWING 81213170
                                81213180
                                *      1. DISABLE METER SWITCH 81213190
                                *      2. EXIT HALT ROUTINE 81213200
                                *      3. ENABLE METER SWITCH 81213210
                                *      4. EXIT HALT ROUTINE 81213220
                                81213230
                                *      IF METER INTERLOCK FAILS A MESSAGE 81213240
                                *      INDICATING FAILURE WILL BE PRINTED 81213250
                                ***** 81213260
                                * 81213270
                                ***** 81213280
                                * 81213290
                                *      T1401 EQU * TEST ENTRY POINT 81213300
                                *      MDX L TRID,1 BUMP RTN ID 81213310
                                *      BZ T1402 BR IF TEST NUMBER ZERO 81213320
                                *      S 2 K1-TB DECREMENT BY ONE 81213330
                                *      BNZ T1501 BR IF NOT THIS TEST 81213340
                                81213350
                                *      T1402 LD 2 TSW0-TB GET OPTION SWS 81213360
                                *      SLA OTTLE PRINT TITLES 81213370
                                *      BNN T1403 BR IF NOT SET 81213380
                                *      BSI 2 TLGMS-TB GO TO PRINT ROUTINE 81213390
                                *      DC TTL14 MESSAGE ADDRESS 81213400
                                81213410
                                *      T1403 BSI 2 GETDV-TB GET CHANNEL FOR RTN 81213420
                                *      T4404 BSI 2 TLGMS-TB * PRINT DISABLE METER 81213430
                                *      DC T44M1 * MESSAGE 81213440
                                *      BSI 2 THLT-TB WAIT FOR OPERATOR ACTION 81213450
                                81213460
                                *      T4405 BSI 2 TIO-TB GO DO TEST 1/0 81213470
                                *      LD 2 SCSX8+1-TB GET UNIT STATUS 81213480
                                *      SLA UNCHK TEST FOR UNIT CHECK 81213490
                                *      BNN T4406 BR IF NOT SET 81213500
                                81213510
                                *      BSI 2 EROUT-TB 81213520
                                *      DC /2108 81213530
                                *      DC T44M3 81213540
                                81213550
                                *      BSI 2 TLPER-TB GO TEST LOOP ERROR 81213560
                                *      DC T4405 LOOP ADDR 81213570
                                81213580
                                *      T4406 BSI 2 TLGMS-TB * PRINT ENABLE METER 81213590
                                *      DC T44M2 * MESSAGE 81213600
                                *      BSI 2 THLT-TB WAIT FOR OPERATOR ACTION 81213610
                                *      BSI 2 TIO-TB

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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OD7B 0 C2C2          LD      2 TRNN-TB  GET RTN SWS      81214980
OD7C 1 4C18 0DE1     BZ      T1601      GO TO NEXT RTN IN SEQ  81214990
OD7E 1 4C00 0FAF     BSC L  T20EN      ELSE END DFT      81215000
OD80 0007           TTL15 PRNT  . SECT 1,RT 5- .      81215010
*                   *                   *                   *
OD87 0016           PRNT      .TRACKING ADJUSTMENT USING CYL 73. 81215030
OD97 0 FFFF         DC        /FFFF      81215040
OD98 0              T4509 EQU      *          81215050
OD98 1 6C00 0DAA     STX L0 T45PC  SET SW TO SIGNAL 2ND PASS 81215060
OD9A 0 630A         LDX      3 10      PREPARE LOOP COUNT 81215070
OD9B 0              T450A EQU      *          81215080
OD9B 1 6C00 1078     STX L0 WTADR  SETUP TIMEOUT ADDR      81215090
OD9D 0 42EF         BSI      2 S10-TB  EXECUTE SEEK TO CYL 0 81215100
OD9E 1 0DCA         DC        T45S0     CCW ADR      81215110
OD9F 1 6C00 1078     STX L0 WTADR  SETUP TIMEOUT ADDR      81215120
ODA1 0 42EF         BSI      2 S10-TB  EXECUTE SEEK TO CYL 201 81215130
ODA2 1 00CD         DC        T45S2     CCW ADDR      81215140
ODA3 0 73FF         MDX      3 -1      LOOP      81215150
ODA4 0 70F6         B        T450A     YES-BRANCH      81215160
ODA5 0 70AD         B        T4504     NO- REPEAT SELECTION SEQ. 81215170
*                   *                   *                   *
* ROUTINE TO RECEIVE CE LEVEL INTERRUPTS
*                   *                   *                   *
ODA6 0              T451R EQU      *          81215210
ODA6 0 6802         STX      0 T45CH  SET CHANGE HEAD SWITCH 81215220
ODA7 0 4CC0 000A     BOSC I /000A  RELEASE I/R LEVEL & RETURN 81215230
*                   *                   *                   *
* DATA, CONSTANTS, MSGS, ETC.
*                   *                   *                   *
ODA9 0              T45TB EQU      *          81215270
ODA9 0 0000         T45CH DC      *-+     CHANGE HEAD NO. SWITCH 81215280
ODAA 0 0000         T45PC DC      *-+     81215290
* PASS SWITCH IS ZERO IF PASS 1, NOT ZERO IF PASS 2 81215300
*****
*                   *                   *                   *
ODAB 0 0000         T45SV DC      *-+     SYSTEM CE I/R TV      81215340
ODAC 0 0000         DC        *-+     * SAVE AREA      81215350
*****
*                   *                   *                   *
ODAD 1 4C00 0DA6     T45BR B L T451R  CE INTRPT TRANSFER VECTOR 81215390
ODAF 0 0001         T45HD DC      1      HEAD NO'S - SIDE A 81215400
ODB0 0 0002         DC        2      *          81215410
ODB1 0 0005         DC        5      *          81215420
ODB2 0 0006         DC        6      *          81215430
ODB3 0 0009         DC        9      *          81215440
ODB4 0 0000         DC        0      HEAD NO'S - SIDE B 81215450
ODB5 0 0003         DC        3      *          81215460
ODB6 0 0004         DC        4      *          81215470
ODB7 0 0007         DC        7      *          81215480
ODB8 0 0008         DC        8      *          81215490
ODB9 0006          T45M1 PRNT  . USING HEAD.      81215500
ODBF 0001          T45M2 PRNT  . . .      81215510
ODC0 0 FFFF         DC        /FFFF      81215520
*                   *                   *                   *
ODC1 0 0006         T45SK DC      6      BYTE COUNT      81215540
ODC2 0 2007         DC        /20*256+SEEKC FLAGS AND OP CODE 81215550
ODC3 1 0DD0         DC        T45A1     ADDRESS      81215560
*                   *                   *                   *
ODC4 0 0008         T45RC DC      8      BYTE COUNT      81215590
ODC5 0 6812         DC        /68*256+RDCNT FLAGS AND OP CODE 81215600
ODC6 1 0DD3         DC        T45A2     ADDRESS      81215610
*                   *                   *                   *
ODC7 0 0008         DC        8      BYTE COUNT      81215640
ODC8 0 0008         DC        /00*256+OPTIC FLAGS AND OP CODE 81215650

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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ODC9 1 0DC4         DC        T45RC     ADDRESS      81215660
*                   *                   *                   *
*                   *                   *                   *
ODCA 0 0006         T45S0 DC      6      BYTE COUNT      81215690
ODCB 0 2007         DC        /20*256+SEEKC FLAGS AND OP CODE 81215700
ODCC 1 0DDB         DC        T45A3     ADDRESS      81215710
*                   *                   *                   *
*                   *                   *                   *
ODCD 0 0006         T45S2 DC      6      BYTE COUNT      81215740
ODCE 0 2007         DC        /20*256+SEEKC FLAGS AND OP CODE 81215750
ODCF 1 0DDE         DC        T45A4     ADDRESS      81215760
*                   *                   *                   *
*                   *                   *                   *
ODD0 0 0000         T45A1 DC      0      SEEK ARGUMENT      81215780
ODD1 0 0049         DC        73      CYLINDER 73      81215790
ODD2 0 0000         DC        *-+     HEAD NO. STORED BY PROG. 81215800
ODD3 0008          T45A2 BSS     8      READ COUNT BUFFER 81215810
ODDB 0 0000         T45A3 DC      0      SEEK ARGUMENT      81215820
ODDC 0 0000         DC        0      CYLINDER 0      81215830
ODDD 0 0000         DC        0      HEAD 0      81215840
ODDE 0 0000         T45A4 DC      0      SEEK ARGUMENT      81215850
ODDF 0 00C9         DC        201     CYLINDER 201     81215860
ODE0 0 0000         DC        0      HEAD 0      81215870
*                   *                   *                   *
*                   *                   *                   *
*****
ROUTINE --6-- SEEK BETWEEN ANY TWO 81215930
CYLINDERS 81215940
*****
THIS ROUTINE WILL ISSUE SEEK COMMANDS TO A 81215990
2311 DISK FILE. THE ARGUMENTS OF THESE SEEK 81216000
COMMANDS ARE SET UP BY THE USER VIA THE DATA 81216010
ENTRY SWITCHES, USING PROGRAM FUNCTION 3. 81216020
BITS 0-7 SPECIFY THE FIRST CYLINDER AND 81216030
BITS 8-15 SPECIFY THE SECOND CYLINDER. 81216040
THE CYLINDERS CAN BE CHANGED AT ANY TIME 81216050
DURING TEST BY USING OPTION SW 3 AND THE 81216060
DATA ENTRY SWITCHES. 81216070
*                   *                   *                   *
THIS ROUTINE SERVES AS A SCOPING LOOP, AND 81216090
THE HOME ADDRESS AT THE DETENTED CYLINDER IS 81216100
NOT VERIFIED AFTER A SEEK. 81216110
*                   *                   *                   *
TO RUN ROUTINE- 81216130
*                   *                   *                   *
1. EXECUTE RTN 16 81216140
2. SET DESIRED SEEK CYL,SW3(OPTION SW 3) 81216150
3. EXIT WAIT LOOP WITH BIT 9(SW0) ON 81216170
*                   *                   *                   *
TO EXIT ROUTINE- 81216190
*                   *                   *                   *
TURN OFF BIT 9, SW0 81216200
*                   *                   *                   *
COMMAND SEQUENCE- 81216230
START I/O - SEEK CYL IN BITS 0-7 81216240
START I/O - SEEK CYL IN BITS 8-15 81216250
IF SID ERROR IS DETECTED, THE ROUTINE WILL 81216260
PERFORM A RECALIBRATE AND RETRY THE SEQ. 81216270
*                   *                   *                   *
*****
ODE1 0              T1601 EQU      *          TEST ENTRY POINT 81216320
ODE1 1 7401 0815     MDX L TRID,1  BUMP RTN ID 81216330

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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*
0EF5 1 D400 0F8D      *   STO L T47M6      81219060
0EF7 0 1090          *   SLT             81219070
0EF8 1 D400 0F8E      *   STO L T47M6+1   81219080
                        *   EST. HEAD IN MESSAGE 81219090
                        *   81219100
                        *   81219110
0EFA 0 C24A          *   LD             2 HA+1-TB 81219120
0EFB 0 1890          *   SRT             16      81219130
0EFC 0 C249          *   LD             2 HA-TB  81219140
0EFD 0 1088          *   SLT             8      81219150
0EFE 0 401B          *   BSI            T47C2   A = CYLINDER READ 81219160
                        *   CONVERT TO PRINTER CODE 81219170
                        *   81219180
0EFF 1 D400 0F97      *   STO L T47M9      81219180
0F01 0 1090          *   SLT             16      81219190
0F02 1 D400 0F98      *   STO L T47M9+1   81219200
                        *   EST. CYL. IN MESSAGE 81219210
                        *   81219220
                        *   81219230
0F04 0 C24B          *   LD             2 HA+2-TB 81219240
0F05 0 1890          *   SRT             16      81219250
0F06 0 C24A          *   LD             2 HA+1-TB 81219260
0F07 0 1088          *   SLT             8      A = HEAD READ 81219270
0F08 0 4011          *   BSI            T47C2   CONVERT TO PRINTER CODE 81219280
                        *   81219290
0F09 1 D400 0F9A      *   STO L T47MA      81219290
0F0B 0 1090          *   SLT             16      81219300
0F0C 1 D400 0F9B      *   STO L T47MA+1   81219310
                        *   EST. HEAD IN MESSAGE 81219320
                        *   81219330
0F0E 0 4204          *   BSI            2 TLGMS-TB PRINT ERROR MESSAGE 81219340
0F0F 1 0F6A          *   DC             T47M2   81219350
                        *   81219360
0F10 0 4204          *   BSI            2 TLGMS-TB 81219370
0F11 1 0F83          *   DC             T47M3   81219380
                        *   81219390
0F12 0 70AA          *   MDX            T47E1   CONTINUE ROUTINE 81219400
                        *   81219410
0F13 0 0000          *   T47C1 DC      *-*   ENTRY POINT 81219420
                        *   CONVERT FLAG TO PRINTER CODE (HEX) 81219430
                        *   SRA             8      FLAG = LOWER 8 BITS 81219440
0F14 0 1808          *   BSI            2 TCVBE-TB CONVERT TO 1443 81219450
0F15 0 42F5          *   SLT             16      81219460
0F16 0 1090          *   AND            2 H00FF-TB INSERT BLANK 81219470
0F17 0 E2B0          *   BSC            I T47C1 RETURN 81219480
0F18 1 4C80 0F13      *   81219490
                        *   81219500
                        *   81219510
0F1A 0 0000          *   T47C2 DC      *-*   ENTRY POINT 81219520
                        *   CONVERT CYLINDER OR HEAD TO PRINTER (DEC) 81219530
0F1B 0 42F8          *   BSI            2 TCVHD-TB HEX TO DECIMAL 81219540
0F1C 0 42F5          *   BSI            2 TCVBE-TB DEC TO 1443 81219550
0F1D 1 4C80 0F1A      *   BSC            I T47C2 RETURN 81219560
                        *   81219570
0F1F 0 0000          *   T47S1 DC        0      CYL. SEEK ARGUMENT 81219580
0F20 0 0000          *   DC             *-*   CYLINDER 81219590
0F21 0 0000          *   DC             *-*   HEAD 81219600
                        *   81219610
0F22 0 0000          *   T47H1 DC        0      CYL. HOME ADDRESS WRITTEN 81219620
0F23 0 0000          *   DC             *-*   81219630
0F24 0 0000          *   DC             *-*   81219640
                        *   81219650
0F25 0 0000          *   T47KT DC       *-*   HEAD COUNTER 81219660
                        *   81219670
0F26 0 42E3          *   T47T1 BSI      2 ER0UT-TB CALL ERROR OUT ROUTINE 81219680
0F27 0 8306          *   DC             /8306   FLAG BITS 81219690
0F28 0 1701          *   DC             /1701   MSG NO OR ADDRESS 81219700
                        *   PRINT TIMEOUT ERROR MESSAGE 81219710
                        *   81219720
0F29 0 C000          *   T47C0 DC       /C000   FILE MASK FOR ALL OPS 81219730

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

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*
*
0F2A 0 0001          *   T47CW DC        1      BYTE COUNT 81219740
0F2B 0 401F          *   DC             /40*256+SFILM FLAGS AND OP CODE 81219750
0F2C 1 0F29          *   DC             T47C0   ADDRESS 81219760
                        *   81219770
                        *   81219780
                        *   81219790
                        *   81219800
                        *   81219810
0F2D 0 0006          *   DC             6      BYTE COUNT 81219820
0F2E 0 4007          *   DC             /40*256+SEEK FLAGS AND OP CODE 81219830
0F2F 1 0F1F          *   DC             T47S1   ADDRESS 81219840
                        *   81219850
                        *   81219860
                        *   81219870
0F30 0 0005          *   DC             5      BYTE COUNT 81219880
0F31 0 4019          *   DC             /40*256+WRHA FLAGS AND OP CODE 81219890
0F32 1 0F22          *   DC             T47H1   ADDRESS 81219900
                        *   81219910
                        *   81219920
                        *   81219930
0F33 0 0005          *   DC             5      BYTE COUNT 81219940
0F34 0 001A          *   DC             0*256+RDHA FLAGS AND OP CODE 81219950
0F35 1 08C8          *   DC             HA     ADDRESS 81219960
                        *   81219970
                        *   81219980
0F36 0016           *   T47M1 PRNT     . SPECIFY CYLINDER FOR WRITE HOME. 81219990
0F46 0018           *   PRNT          .ADDRESS IN D/E SWS 8-15(OPTION SW3). 81220000
0F58 0 FF00         *   DC            /FF00 81220010
0F59 0016           *   PRNT          .AND EXIT WAIT LOOP WITH BIT 9 ON. 81220020
0F69 0 FFFF         *   DC            -1 81220030
                        *   81220040
0F6A 0010           *   T47M2 PRNT     .HA COMPARISON ERROR,. 81220050
0F74 0 FF00         *   DC            /FF00 81220060
0F75 0012           *   PRNT          . FLAG CYL. HEAD. 81220070
0F81 0 FF00         *   DC            /FF00 81220080
0F82 0 FFFF         *   DC            -1 81220090
0F83 0004           *   T47M3 PRNT     .WRITTEN . 81220100
0F87 0001           *   T47M4 PRNT     .XX. .FLAG WRITTEN 81220110
0F88 0002           *   PRNT          . 81220120
0F8A 0002           *   T47M5 PRNT     .XXXX. CYLINDER WRITTEN 81220130
0F8C 0001           *   PRNT          . 81220140
0F8D 0002           *   T47M6 PRNT     .XXXX. HEAD WRITTEN 81220150
0F8F 0 FF00         *   DC            /FF00 81220160
0F90 0004           *   T47M7 PRNT     .READ . 81220170
0F94 0001           *   T47M8 PRNT     .XX. FLAG READ 81220180
0F95 0002           *   PRNT          . 81220190
0F97 0002           *   T47M9 PRNT     .XXXX. CYLINDER READ 81220200
0F99 0001           *   PRNT          . 81220210
0F9A 0002           *   T47MA PRNT     .XXXX. HEAD READ 81220220
0F9C 0 FF00         *   DC            /FF00 81220230
0F9D 0 FFFF         *   DC            -1 81220240
                        *   81220250
0F9E 0 FF27         *   T47K1 DC       /FF27 81220260
0F9F 0 0F27         *   T47K2 DC       /0F27 81220270
0FA0 0 0F00         *   T47K3 DC       /0F00 81220280
                        *   81220290
                        *   81220300
                        *   81220310
                        *   81220320
                        *   81220330
                        *   SECTION END 81220340
                        *   81220350
0FA1 0 42E0         *   T1801 BSI      2 CNTRL-TB GO TO CONTROL RTN 81220360
                        *   81220370
                        *   81220380
                        *   81220390
                        *   81220400
                        *   SECTION PREFACE 81220410

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

***** 81224500
*
*   SAVE INDEX REGISTERS AND GO TO MONITOR
*   81224510
*   81224520
*   81224530
***** 81224540
*
*   ***** 81224550
*   ***** 81224560
*   ***** 81224570
*   ***** 81224580
*   ***** 81224590
*   ***** 81224600
*   ***** 81224610
*   ***** 81224620
*   ***** 81224630
*   ***** 81224640
*   ***** 81224650
*   ***** 81224660
*   ***** 81224670
*   ***** 81224680
*   ***** 81224690
*   ***** 81224700
*   ***** 81224710
*   ***** 81224720
*   ***** 81224730
*   ***** 81224740
*   ***** 81224750
*   ***** 81224760
*   ***** 81224770
*   ***** 81224780
*   ***** 81224790
*   ***** 81224800
*   ***** 81224810
*   ***** 81224820
*   ***** 81224830
*   ***** 81224840
*   ***** 81224850
*   ***** 81224860
*   ***** 81224870
*   ***** 81224880
*   ***** 81224890
*   ***** 81224900
*   ***** 81224910
*   ***** 81224920
*   ***** 81224930
*   ***** 81224940
*   ***** 81224950
*   ***** 81224960
*   ***** 81224970
*   ***** 81224980
*   ***** 81224990
*   ***** 81225000
*   ***** 81225010
*   ***** 81225020
*   ***** 81225030
*   ***** 81225040
*   ***** 81225050
*   ***** 81225060
*   ***** 81225070
*   ***** 81225080
*   ***** 81225090
*   ***** 81225100
*   ***** 81225110
*   ***** 81225120
*   ***** 81225130
*   ***** 81225140
*   ***** 81225150
*   ***** 81225160
*   ***** 81225170

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

1159 0 0000 STMST DC *-- I 1 81225180
115A 0 0000 DC *-- XR1 1 81225190
115B 0 0000 DC *-- XR3 1 81225200
* 81225210
* 81225220
115C 0 0000 DC *-- I 2 81225230
115D 0 0000 DC *-- XR1 2 81225240
115E 0 0000 DC *-- XR3 2 81225250
* 81225260
* 81225270
* 81225280
* 81225290
* 81225300
* 81225310
* 81225320
* 81225330
* 81225340
* 81225350
* 81225360
* 81225370
* 81225380
* 81225390
* 81225400
* 81225410
* 81225420
* 81225430
* 81225440
* 81225450
* 81225460
* 81225470
* 81225480
* 81225490
* 81225500
* 81225510
* 81225520
* 81225530
* 81225540
* 81225550
* 81225560
* 81225570
* 81225580
* 81225590
* 81225600
* 81225610
* 81225620
* 81225630
* 81225640
* 81225650
* 81225660
* 81225670
* 81225680
* 81225690
* 81225700
* 81225710
* 81225720
* 81225730
* 81225740
* 81225750
* 81225760
* 81225770
* 81225780
* 81225790
* 81225800
* 81225810
* 81225820
* 81225830
* 81225840
* 81225850

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

*
***** 81225860
* HALT ROUTINE 81225880
* SETS BIT 15 IN TSW0 ON AND LOOPS 81225890
* THRU MONITOR UNTIL BIT IS CLEARED. 81225900
* 81225910
***** 81225920
* 81225930
***** 81225940
* ENTER HERE FOR 'WAIT FOR OPERATOR ACTION' 81225950
THLTX LD 2 THLT-TB GET ENTRY VECTOR 81225960
STO 2 THALT-TB PUT IN RETURN 81225970
MDX THLTG GO TO LOOP 81225980
* ENTER HERE FOR 'WAIT ON ERROR' 81225990
* 81226000
THLTE EQU * 81226010
LD 2 TSW0-TB GET OPTION SWS 81226020
SLA QHALT TEST FOR HALT ON ERROR 81226030
BNN THLTR BR IF NO 81226040
* 81226050
THLTG LD 2 THALT-TB GET CALLING ADDRESS 81226060
BSI 2 TCVBE-TB CONVERT TO PRNT CODE 81226070
STO THLT2 SET IN MSG 81226080
SLT 16 Q TO A 81226090
STO THLT2+1 SET IN MSG 81226100
BSI 2 TLGMS-TB GO PRINT MSG 81226110
DC THLTM MESSAGE ADDRESS 81226120
* 81226130
LD 2 K1-TB SET BIT 15 81226140
OR 2 TSW0-TB * 81226150
STO 2 TSW0-TB * 81226160
* 81226170
* LOOP THRU MONITOR UNTIL READY 81226180
* 81226190
THLTL BSI 2 STMLS-TB GO TO MONITRR 81226200
* RETURN HERE 81226210
LD 2 TSW0-TB GET SWITCH WORD 81226220
BOD THLTL BR IF STILL ON 81226230
* 81226240
BSI 2 STMLS-TB GO TO MONITOR 81226250
THLTR BSC I THALT RETURN TO CALLER 81226260
* 81226270
THLTM PRNT . ***HALT--2311 DIAGNOSTIC AT ADRS . 81226280
THLT2 PRNT . * 81226290
DC /00FF 81226300
PRNT . TO CLEAR HALT SET SWITCHES-. 81226310
DC /00FF 81226320
PRNT . S/P 00PP PPPP, P=PID. 81226330
DC /00FF 81226340
PRNT . DES XXXX XXXX XXXX XXX0. 81226350
DC /00FF 81226360
PRNT . PRESS CONSOLE INTERUPT. 81226370
DC /FFFF 81226380
* 81226390
***** 81226400
***** 81226410
* 81226420
* CALL ***** 81226430
* * BSI 2 EROUT-TB * 81226440
* * DC /0127 CNTRL TAGS * 81226450
* * DC /ABCD ERR NUMBER * 81226460
* * (SECT,RT,ER) * 81226470
* ***** 81226480
* 81226490
***** 81226500
* 81226510
***** 81226520
* 81226530

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

```

* EQUATES FOR EROUT TAGS 81226540
* 81226550
0000 0 OECX0 EQU 0 CSW=SCSX0 81226560
0001 0 OECX4 EQU 1 CSW=SCSX4 81226570
0002 0 OECX8 EQU 2 CSW=SCSX8 81226580
0003 0 OECXC EQU 3 CSW=SCSXC 81226590
0006 0 OEXIT EQU 6 EXIT TO ERADR 81226600
0007 0 OEPBL EQU 7 PRINT A BLANK LINE 81226610
0009 0 OEBYP EQU 9 BYPASS HALT LOOP 81226620
000A 0 OEGSN EQU 10 GET SENSE BYTES 81226630
000B 0 OEL1B EQU 11 BYPASS LINE 1 81226640
000C 0 OEERR EQU 12 PRINT ERROR MSG 81226650
000D 0 OECAW EQU 13 PRINT CAW 81226660
000E 0 OECSW EQU 14 * CSW 81226670
000F 0 OESNS EQU 15 * SNS 81226680
***** 81226690
* 81226700
***** 81226710
ERMSG BSS E 0 81226720
PRNT . **ER-XXXX . 81226730
PRINT BSS E 60 PRINT BUFFER 81226740
ERTNE EQU * ENTRY POINT 81226750
LD 2 STKSW-TB GET RE-ENTRY SWITCH 81226760
BNZ ERTN2 BR IF SET 81226770
STX L1 ERT17+1 SAVE REGS 81226780
STX L3 ERT17+3 ** 81226790
LD 1 EROUT GET FLAGS 81226800
SLA OEGSN GET SENSE BYTES 81226810
BNN ERTN2 BR IF NO 81226820
LD 2 EROUT-TB GET RETURN ADDR 81226830
STO 2 STKSW-TB SET SW 81226840
BSI 2 GETSN-TB GET SENSE BYTES 81226850
LD 2 STKSW-TB GET SAVED ADDRESS 81226860
STO 2 EROUT-TB SET FOR RETURN 81226870
SLA 16 CLEAR SWITCH 81226880
STO 2 STKSW-TB 81226890
* 81226900
ERTN2 LDX 13 EROUT SET REG CODE ERTN2 LDX 81226910
LD 3 0 GET OPTIONS/FLAGS 81226920
SLA OEPBL PRINT BLANK LINE FIRST 81226930
BNN ERTN3 BR IF NOT 81226940
BSI 2 TLGMS-TB PRINT BLANK LINE 81226950
DC TERM /FFFF 81226960
* 81226970
ERTN3 LD 3 0 GET TAGS 81226980
SLA OEL1B BYPASS LINE 1 PRINT 81226990
BN ERT10 BR IF YES 81227000
SLA OEERR-OEL1B ERROR MSG 81227010
BNN ERTN6 BR IF NOT 81227020
* 81227030
LDX 1 0 SET COUNT TO ZERO 81227040
LD 3 1 GET MSG ADDRESS 81227050
STO ERTN4+1 SET FOR LOAD INSTRUCTION 81227060
ERTN4 LD L1 *-# GET WORD TO MOVE 81227070
EOR 2 TERM-TB IS IT END OF MSG 81227080
BZ ERTN5 BR YES 81227090
EOR 2 TERM-TB RESTORE DATA WORD 81227100
STO L1 ERMSG+3 STORE IN TABLE 81227110
MDX 1 1 COUNT 81227120
MOX ERTN4 LOOP 81227130
* 81227140
ERTN5 MOX L1 ERMSG+3 POINT TO NEXT WORD 81227150
NOP 81227160
MOX ERTN7 81227170
* 81227180
ERTN6 LD 3 1 GET MSG NUMBER 81227190
BSI 2 TCVSE-TB CONVERT TO 43 CODE 81227200
STO ERMSG+3 STORE 81227210

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2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

1260 0 18D0	XCH		SWAP A-Q	81227220
1261 0 D08A	STO	ERMSG+4		81227230
1262 0 1010	SLA	16	SET IN TWO BLANKS	81227240
1263 0 D089	STO	ERMSG+5	**	81227250
1264 1 6500 11EE	LDX	L1 PRINT	SET POINTER	81227260
*				
1266 0 C2D4	ERTN7 LD	2 DVADR-TB	GET DEVICE ADDRESS	81227270
1267 0 42F5	BSI	2 TCVBE-TB	CONVERT TO 43 CODE	81227280
1268 0 1090	SLT	16	LOW ORDER TWO BYTES ONLY	81227290
1269 0 D268	STO	2 UNADR+3-TB	STORE FOR PRINT	81227300
126A 0 C2E3	LD	2 EROUT-TB	GET CALLING ADDRESS	81227310
126B 0 9297	S	2 K1-TB	POINT TO CALLING INSTRUCTN	81227320
126C 0 42F5	BSI	2 TCVBE-TB	CONVERT TO HEX	81227330
126D 0 D26C	STO	2 UNADR+7-TB		81227340
126E 0 1090	SLT	16		81227350
126F 0 D26D	STO	2 UNADR+8-TB		81227360
1270 0 6904	STX	1 ERTN8+3	SAVE REG IN INSTRUCTION	81227370
1271 0 6100	LDX	1 0	SET COUNT	81227380
*				
1272 1 C500 08E4	ERTN8 LD	L1 UNADR	GET WORD TO MOVE	81227390
1274 0 D500 0000	STO	L1 *-*	STORE IN NEW LOC'N	81227400
1276 0 F28D	EOR	2 TERM-TB	TEST FOR END OF MSG	81227410
1277 1 4C18 127B	BZ	ERTN9	BR IF YES	81227420
1279 0 7101	MDX	1 1	BUMP COUNT	81227430
127A 0 70F7	MDX	ERTN8	LOOP	81227440
*				
127B 0 4204	ERTN9 BSI	2 TLGMS-TB	GO PRINT MSG	81227450
127C 1 11E8	DC	ERMSG	ADDRESS OF MESSAGE	81227460
*				
127D 0 C300	ERT10 LD	3 0	GET TAGS	81227470
127E 0 100D	SLA	DECAW	TEST FOR CAW,CSW,SNS	81227480
127F 1 4C18 12F2	BZ	ERT15	BR IF NONE	81227490
1281 1 6500 11EE	LDX	L1 PRINT	SET POINTER TO AREA	81227500
1283 1 4C10 128F	BNN	ERT11	BR IF NO CAW	81227510
1285 0 10A0	SLT	32		81227520
1286 0 D900	STD	1 0		81227530
1287 0 7102	MDX	1 2		81227540
1288 0 CACD	LDD	2 PCAW-TB	GET HEADER	81227550
1289 0 D900	STD	1 0	STORE IN AREA	81227560
128A 0 C2C6	LD	2 CAWSV-TB	GET CCW ADDRESS FOR SID	81227570
128B 0 42F5	BSI	2 TCVBE-TB	CONVERT TO EBC	81227580
128C 0 D902	STD	1 2	STORE IN AREA	81227590
128D 0 7104	MDX	1 4	BUMP POINTER	81227600
128E 0 1000	NOP			81227610
*				
128F 0 C300	ERT11 LD	3 0	GET TAGS	81227620
1290 0 100E	SLA	OECSW	TEST FOR CSW TO BE PRINTED	81227630
1291 1 4C10 12C1	BNN	ERT12	BR IF NOT	81227640
1293 0 C300	LD	3 0	GET OPTION WORD	81227650
1294 1 6700 08B4	LDX	L3 SCSX0	POINT TO CSW SAVE AREA 0	81227660
1296 0 180C	SRA	12	SAVE BITS 0-3	81227670
1297 0 100C	SLA	12	***	81227680
1298 0 4830	SKP	Z-		81227690
1299 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81227700
129A 0 1001	SLA	1	TEST NEXT BIT	81227710
129B 0 4830	SKP	Z-		81227720
129C 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81227730
129D 0 1001	SLA	1	TEST NEXT BIT	81227740
129E 0 4830	SKP	Z-		81227750
129F 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81227760
12A0 0 1001	SLA	1	TEST NEXT BIT	81227770
12A1 0 4830	SKP	Z-		81227780
12A2 0 7304	MDX	3 4	BUMP TO NEXT SAVE AREA	81227790
12A3 0 CACF	LDD	2 PCSW-TB	GET 'CSW'	81227800
12A4 0 D902	STD	1 2	SET IN MSG	81227810
12A5 0 C300	LD	3 0	GET CHANNEL STATUS WORD	81227820
12A6 0 42F5	BSI	2 TCVBE-TB	CONVERT	81227830
12A7 0 D904	STD	1 4	STORE	81227840

2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

12A8 0 C301	LD	3 1	GET UNIT STATUS WORD	81227900
12A9 0 42F5	BSI	2 TCVBE-TB	CONVERT	81227910
12AA 0 D107	STO	1 7	STORE	81227920
12AB 0 1090	SLT	16		81227930
12AC 0 D108	STO	1 8	STORE	81227940
12AD 0 C302	LD	3 2	GET CSW ADDRESS WORD	81227950
12AE 0 42F5	BSI	2 TCVBE-TB	CONVERT	81227960
12AF 0 D90A	STD	1 10	STORE	81227970
12B0 0 C303	LD	3 3	GET BYTE COUNT	81227980
12B1 0 42F5	BSI	2 TCVBE-TB	CONVERT	81227990
12B2 0 D10D	STO	1 13	STORE	81228000
12B3 0 1090	SLT	16	Q TO A	81228010
12B4 0 D10E	STO	1 14	STORE	81228020
12B5 0 C2D3	LD	2 SPACE-TB	GET SPACES	81228030
12B6 0 D100	STO	1 0	**	81228040
12B7 0 D101	STO	1 1	**	81228050
12B8 0 D106	STO	1 6	SET IN BETWEEN	81228060
12B9 0 D109	STO	1 9	SET IN BETWEEN	81228070
12BA 0 D10C	STO	1 12	SET IN BETWEEN	81228080
12BB 0 D10F	STO	1 15		81228090
12BC 0 D111	STO	1 17	CLEAR NEXT SLOT TOO	81228100
12BD 0 710F	MDX	1 15	BUMP POINTER	81228110
12BE 0 1000	NOP			81228120
12BF 1 6780 0862	LDX	13 EROUT	RESTORE REG	81228130
*				
12C1 0 C300	ERT12 LD	3 0	GET TAGS	81228140
12C2 0 100F	SLA	OESNS	TEST FOR SNS INFO	81228150
12C3 1 4C10 12EB	BNN	ERT14	BR IF NO	81228160
12C5 0 CAD1	LDD	2 PSNS-TB	GET HEADER WORDS	81228170
12C6 0 D100	STO	1 0	STORE	81228180
12C7 0 1090	SLT	16		81228190
12C8 0 D101	STO	1 1	STORE	81228200
12C9 0 7103	MDX	1 3	BUMP POINTER	81228210
12CA 0 1000	NOP			81228220
12CB 0 C29D	LD	2 K8-TB		81228230
12CC 0 D0A8	STO	ERTN8+3	SAVE TEMPORARILY	81228240
12CD 0 CA1D	LDD	2 SNWDS-TB	GET SENSE INFO	81228250
*				
12CE 0 180C	ERT13 RTE	28	MOVE AROUND	81228260
12CF 0 DAC7	STD	2 ERTSV-TB	SAVE FOR LOOP	81228270
12D0 0 108C	SLT	12		81228280
12D1 0 1010	SLA	16		81228290
12D2 0 1081	SLT	1		81228300
12D3 0 1003	SLA	3		81228310
12D4 0 1081	SLT	1		81228320
12D5 0 1003	SLA	3		81228330
12D6 0 1081	SLT	1		81228340
12D7 0 1003	SLA	3		81228350
12D8 0 1081	SLT	1		81228360
12D9 0 42F5	BSI	2 TCVBE-TB	CONVERT TO HEX	81228370
12DA 0 D100	STO	1 0	STORE IN TBLE	81228380
12DB 0 1090	SLT	16	Q TO A	81228390
12DC 0 D101	STO	1 1	STORE	81228400
12DD 0 7102	MDX	1 2	BUMP POINTER	81228410
12DE 0 1000	NOP			81228420
12DF 0 C095	LD	ERTN8+3	FETCH COUNTER	81228430
12E0 0 8297	A	2 K1-TB	ADD ONE	81228440
12E1 1 4C04 12E7	BDD	**4	BRANCH IF ODD	81228450
12E3 0 C2D3	LD	2 SPACE-TB	FETCH SPACE CHARACTERS	81228460
12E4 0 D100	STO	1 0	PLACE IN PRINT LINE	81228470
12E5 0 7101	MDX	1 1	ADVANCE PRINT LINE POINTER	81228480
12E6 0 1000	NOP			81228490
12E7 0 CAC7	LDD	2 ERTSV-TB	GET SENSE INFO BACK	81228500
12E8 1 74FF 1275	MDX	L ERTN8+3,-1	COUNT	81228510
12EA 0 70E3	MDX	ERT13	LOOP UNTIL FINISHED	81228520
*				
12EB 0 C28D	ERT14 LD	2 TERM-TB	SET /FFFF AT END	81228530
12EC 0 D100	STO	1 0	**	81228540

2841 DIAGNOSTIC - PHASE B

1800 DIAGNOSTIC MAINTENANCE PROGRAM

12ED 0 4204	BSI	2	TLGMS-TB	PRINT MESSAGE	81228580
12EE 1 11EE	DC		PRINT		81228590
12EF 0 C2D9	LD	2	STKSW-TB	GET SWITCH	81228600
12F0 1 4C20 12FF	BNZ		ERT18	EXIT IF SET	81228610
	*				81228620
12F2 0 C300	ERT15 LD	3	0	GET TAGS	81228630
12F3 0 1009	SLA		OEBYP		81228640
12F4 1 4C28 12F7	BN		ERT16	BR IF NOT HALT	81228650
12F6 0 42FB	BSI	2	THALT-TB	WAIT FOR OPERATOR	81228660
	*				81228670
12F7 0 C300	ERT16 LD	3	0	GET TAGS	81228680
12F8 0 1006	SLA		OEXIT	TEST FOR OTHER EXIT	81228690
12F9 0 6500 0000	ERT17 LDX	L1	*-*	RELOAD REGS	81228700
12FB 0 6700 0000	LDX	L3	*-*	***	81228710
12FD 1 4CAB 1303	BN	I	ERADR	BR IF YES	81228720
	*				81228730
12FF 1 7402 0862	ERT18 MDX	L	EROUT,2	BUMP RETURN BY TWO	81228740
1301 1 4C80 0862	BSC	I	EROUT	EXIT	81228750
1303 0 0000	ERADR DC		*-*	RETURN ADDRESS PUT HERE	81228760
	*****				81228770
	*				81228780
	*****				81228790
	*				81228800
	*****				81228810
	*				81228820
	*****				81228830
	*				81228840
	*****				81228850
	*				81228860
	*****				81228870
1304 0	TLGME EQU	*		ENTRY POINT	81228880
1304 0 C2D5	LD	2	LGBSY-TB	GET LOG BUSY SW	81228890
1305 1 4C18 1309	BZ		TLGNB	BR IF NOT BUSY	81228900
1307 0 42F2	BSI	2	STMLS-TB	GO VISIT MONITOR	81228910
1308 0 70FB	B		TLGME	ELSE LOOP	81228920
	*				81228930
1309 0 C204	TLGNB LD	2	TLGMS-TB	GET CALLING ADDR	81228940
130A 0 D2D5	STO	2	LGBSY-TB	SET LOG BUSY SW	81228950
130B 1 D400 13F8	STO	L	LEXIT+1	SET RETURN ADDR	81228960
130D 1 6F00 13F2	STX	L3	TLGX3+1	SAVE REG	81228970
130F 1 6D00 13F4	STX	L1	TLGX3+3	SAVE REG	81228980
1311 0 C283	LD	2	TSW0-TB	GET OPTION SWS	81228990
1312 0 100D	SLA		OBYPR		81229000
1313 1 4C28 13EF	BN		TLGEN	BR IF BYPASS PRNTOUT	81229010
	*				81229020
1315 0 C294	LD	2	TLGED-TB	GET EDIT FOR PRINTER	81229030
1316 1 4C10 1319	BNN		TLG01	BR IF NOT SELECTED	81229040
	*****				81229050
1318 0 70FF	MDX	*-1		TRAP STOP	81229060
	*****				81229070
	*				81229080
1319 0 C295	TLG01 LD	2	TSCD-TB	GET DDEF	81229090
131A 1 4C10 1328	BNN		TLG02	BR IF NOT SEL	81229100
	*				81229110
131C 0 1010	SLA	16		CLEAR CHANNEL FREED SW	81229120
131D 1 D400 13F9	STO	L	FRESW	*	81229130
131F 0 C2A0	LD	2	K20-TB	SET COUNTER FOR DELAY	81229140
1320 0 D22B	STO	2	SCSN1-TB	**	81229150
1321 0 42F2	BSI	2	STMLS-TB	GO TO MONITOR	81229160
1322 1 74FF 08AA	MDX	L	SCSN1,-1	DECR. COUNTER	81229170
1324 0 70FC	MDX	*-4		LOOP UNTIL FINISHED	81229180
	*				81229190
1325 0 42E6	BSI	2	FREDV-TB	FREE SEL CHNL	81229200
1326 1 6C00 13F9	STX	L	FRESW	SET SC FREED SW	81229210
1328 0 4480 0131	TLG02 BSI	I	REQDV	REQUEST DEVICE	81229220
132A 1 1341	DC		TLG03	BUSY RETURN	81229230
132B 1 0813	DC		TLGED	EDIT FOR PRINTED	81229240
132C 1 13B5	DC		TLGDA	AREA CODE GIVEN BACK	81229250

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

132D 1 080C	DC		TERM	TERMINATOR	81229260
	*				81229270
132E 0 C2DF	LD	2	T45SW-TB	GET 43/53 SW	81229280
132F 1 4C04 1336	BDD		TLG40	BR IF 1443	81229290
	*				81229300
1331 0 C2B1	LD	2	H0100-TB	ELSE BUILD WRITE IOCC	81229310
1332 1 EC00 13B5	OR	L	TLGDA	*	81229320
1334 0 D24E	STO	2	TLGWR+1-TB	*	81229330
1335 0 7004	MDX		TLGCM	* GO TO COMMON RTN	81229340
	*				81229350
1336 0 C2B4	TLG40 LD	2	H0500-TB	CREATE WR IOCC	81229360
1337 1 EC00 13B5	OR	L	TLGDA	OR IN AREA CODE	81229370
1339 0 D24E	STO	2	TLGWR+1-TB		81229380
133A 0 C2B5	TLGCM LD	2	H0700-TB	CREATE SENSE IOCC	81229390
133B 1 EC00 13B5	OR	L	TLGDA	OR IN AREA CODE	81229400
133D 0 D250	STO	2	TLGSN+1-TB		81229410
133E 0 EA97	OR	2	K1-TB	SET RESET BIT	81229420
133F 0 D254	STO	2	TLGSR+1-TB	***	81229430
1340 0 7002	MDX		TLG04	GO TO PRINT	81229440
	*				81229450
1341 0 42F2	TLG03 BSI	2	STMLS-TB	GO TO MONITOR	81229460
1342 0 70E5	MDX		TLG02	LOOP TO TRY AGAIN	81229470
	*				81229480
1343 1 6580 13F8	TLG04 LDX	I1	LEXIT+1	GET CALLING RTN ADDR	81229490
1345 0 C100	LD	1	0	GET MSG ADDRESS	81229500
1346 0 D001	STO	**1		LOAD SET FOR LOAD INDEX	81229510
1347 0 6500 0000	LDX	L1	*-*	LOAD REG	81229520
1349 1 6D00 13FC	STX	L1	TLGCH+2	SAVE IN 'GET CHAR' RTN	81229530
134B 1 6780 08CC	LDX	I3	TLGWR	GET WRD COUNT ADDRESS	81229540
134D 0 6B16	STX	3	TLGBP+1	SET FOR BUMPING	81229550
	*				81229560
134E 0 C100	LD	1	0	GET FIRST DATA WORD	81229570
134F 0 F28D	EOR	2	TERM-TB	COMPARE WITH /FFFF	81229580
1350 1 4C18 1356	BZ		TLG05	BR IF YES	81229590
	*				81229600
1352 0 C280	LD	2	TPID-TB	GET PID	81229610
1353 0 E2BC	AND	2	H7FFF-TB	DROP SELECT BIT	81229620
1354 0 42F5	BSI	2	TCVBE-TB	CONVERT TO 1443 CODE	81229630
1355 0 DB02	STD	3	2	SET IN MSG	81229640
	*				81229650
1356 0 1010	TLG05 SLA	16		CLEAR -	81229660
1357 0 D252	STO	2	TLGSW-TB	* 1ST/2ND CHAR SW	81229670
1358 0 D253	STO	2	TLGSW+1-TB	*	81229680
1359 0 D05A	STO		TLGIS	* INTERRUPT SW	81229690
135A 0 C299	LD	2	K3-TB	*	81229700
135B 0 D300	STO	3	0		81229710
135C 0 7301	MDX	3	1	BUMP TO PT TO BUFFER	81229720
	*				81229730
135D 1 4400 13FA	TLG06 BSI	L	TLGCH	GET A CHARACTER	81229740
135F 0 700F	MDX		TLG07	COME HERE FOR HEX FF	81229750
1360 0 1008	SLA	8		PUT IN HIGH ORDER BYTE	81229760
1361 0 EA4F	OR	2	TLGSP-TB	SET LOW ORDER TO SP	81229770
1362 0 D303	STO	3	3	STORE IN BUFFER	81229780
1363 0 7401-0000	TLGBP MDX	L	*-* ,1	BUMP WORD COUNT	81229790
1365 1 4400 13FA	BSI	L	TLGCH	GET ANOTHER CHARACTER	81229800
1367 0 7007	MDX		TLG07	IF CHARACTER IS HEX FF	81229810
1368 0 1888	SRT	8		CHARACTER TO 0	81229820
1369 0 C303	LD	3	3	GET LAST CHARACTER	81229830
136A 0 1808	SRA	8		BYTE TO LOW POSITION	81229840
136B 0 1088	SLT	8		COMBINED BYTES IN A	81229850
136C 0 D303	STO	3	3	STORE IN BUFFER	81229860
136D 0 7301	MDX	3	1	BUMP SINK	81229870
136E 0 70EE	MDX		TLG06	LOOP UNTIL HEX FF	81229880
	*				81229890
	*			TEST FOR 1443, IF YES GO TO X10	81229900
	*			IF 1053 DO A CARRIAGE RETURN	81229910
	*				81229920
136F 0 C2DF	TLG07 LD	2	T45SW-TB	GET 43/53 SW	81229930

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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13DC 0 C299      LD      2 K3-TB      SET WRD CNT=3      81231300
13DD 0 D300      STO      3 0          ***                81231310
13DE 0 7301      MDX     3 1          BUMP POINTER      81231320
13DF 0 10A0      SLT     32          SET PID=BLANKS IN MESSAGE 81231330
13E0 0 DB01      STD     3 1          *                81231340
13E1 0 D252      STO     2 TLGSW-TB  RESET 1ST/2ND CHAR SW 81231350
13E2 0 4017      BSI     TLGCH      GET A CHARACTER    81231360
13E3 0 7002      MDX     TLG15      HERE IF HEX /00FF 81231370
13E4 1 4C00 1360 BSC     L TLG06+3  ELSE LOOP      81231380
*
13E6 0 4480 0132 *      TLG15 BSI     I RELDV  GO RELEASE DVC    81231390
13E8 1 0813      DC      TLGED     ADDR OF EDIT WRD 81231400
13E9 1 080C      DC      TERM      81231410
13EA 0 C00E      LD      FRESW     GET CHNL RELS SW 81231420
13EB 0 4820      BSC     Z         SKIP IF NOT SET 81231430
13EC 0 42E9      BSI     2 GETDV-TB ELSE GET CHNL 81231440
*
13ED 0 1010      SLA     16        RESET-            81231450
13EE 0 D00A      STO     FRESW     * CHNL RELS SW 81231460
*
13EF 1 7401 13F8 *      TLGEN MDX     L LEXIT+1,1 BUMP RETURN BY 1 81231470
13F1 0 6700 0000 *      TLGX3 LDX     L3 *-*  RESTORE REG      81231480
13F3 0 6500 0000 *      LDX     L1 *-*  RESTORE REG      81231490
13F5 0 1010      SLA     16        RESET LOG BUSY SW 81231500
13F6 0 D2D5      STO     2 LGBSY-TB *                81231510
13F7 0 4C00 0000 *      LEXIT BSC     L *-*  EXIT PRINT RTN 81231520
*
13F9 0 0000      FRESW DC      0          CHNL RELEASED SW 81231530
*****
*
*      81231590
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*
*      81231600
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*      81231610
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*      81231620
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1800 DIAGNOSTIC MAINTENANCE PROGRAM

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*      81231980
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1800 DIAGNOSTIC MAINTENANCE PROGRAM

14F1 0 02D8	DC	/02D8	2	81234020
14F2 0 03DC	DC	/03DC	3	81234030
14F3 0 04F0	DC	/04F0	4	81234040
14F4 0 05F4	DC	/05F4	5	81234050
14F5 0 06D0	DC	/06D0	6	81234060
14F6 0 07D4	DC	/07D4	7	81234070
14F7 0 08E4	DC	/08E4	8	81234080
14F8 0 09E0	DC	/09E0	9	81234090
14F9 0 0AC4	DC	/0AC4	0	81234100
14FA 0 0021	DC	/0021	SP(1443,TILT-ROTATE)	81234110
14FB 0 2CD6	DC	/2CD6	*	81234120
14FC 0 1CFE	DC	/1CFE	(81234130
14FD 0 3CF6	DC	/3CF6)	81234140
14FE 0 11BC	DC	/11BC	/	81234150
14FF 0 2084	DC	/2084	-	81234160
1500 0 0BC2	DC	/0BC2	=	81234170
1501 0 00FF	TCVTC DC	/00FF	TERM	81234180
1502 0 2100	TCVSP DC	/2100	SPACE	81234190
1503 0 0000	TCVSV DC	0	TEMP STORAGE	81234200
1504 0 0000	DC	0		81234210
1505 001E	BSS	30	PATCH AREA	81234220
1522 0	PEND EQU	*-1	END OF PGM	81234230
1524 09B6	END	BGIN	XFER ADDRESS	81234240

NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY

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BEGIN	012C	09B6	
BGIN	09B6	1524	
CAWSV	0845	0FF5	128A
CNTDN	083F	1068	1073
CNTRL	085F	0A58	0FA1 0FC1
CRCK	0133		
CUU11	0A6B	0A27	
DIGIT	14AD	14A2	14A7
DVADR	0853	0903	0A24 0AAD 0B71 0C24 0FCB 1266
END	012E	0FB4	
EPA	0808		
ERADR	1303	0AAB	0B6F 0B91 0C22 0C46 0E89 12FD
ERASE	0011		
ERMSG	11E8	1255	1259 125F 1261 1263 127C
EROUT	0862	0B0F	0B12 0B18 0B1B 0B2B 0BC3 0BC6 0BC9 0BCC 0C76 0C79 0C7C 0C7F 0C82 0CED 0CFA 0E02 0E3B 0EAA 0EB1 0F26 1039 1045 105D 108D 109E 1112 111E 1231 1236 123A 123D 126A 12BF 12FF 1301
ERROR	0130		
ERTNE	122A	0863	
ERTN2	1230	122B	1234
ERTN3	1245	1241	
ERTN4	124F	124E	1258
ERTN5	1259	1252	
ERTN6	125D	124A	
ERTN7	1266	125C	
ERTN8	1272	1270	127A 12CC 12DF 12E8
ERTN9	127B	1277	
ERTSV	0846	12CF	12E7
ERT10	127D	1247	
ERT11	128F	1283	
ERT12	12C1	1291	
ERT13	12CE	12EA	
ERT14	12EB	12C3	
ERT15	12F2	127F	
ERT16	12F7	12F4	
ERT17	12F9	122D	122F
ERT18	12FF	12F0	
FBRST	0004		
FDRDY	0018	0AC0	
FECYL	001D		
FEOCY	000A		
FLCCH	0040		
FLDCH	0080		
FLPCI	0010		
FLSKP	0008		
FLSLI	0020		
FNORC	000C		
FONLN	0019		
FOVRN	0005		
FRDVE	0FE4	0866	
FREDV	0865	0A17	0AE0 0BA7 0C58 0CFD 0D7A 0E18 0EC6 0FEA 1325
FRESW	13F9	09BF	131D 1326 13EA 13EE
FSERD	0012		
FSKCK	0007		
FSKIN	001F	104F	
FTROV	0009		
FUNSF	0010		
FUNSI	001A		
FUNSL	0015		
GETDV	0868	0A16	0AA8 0B6C 0C1F 0CE4 0D44 0DEE 0E7F 0FE2 13EC
GETSN	086B	0ABE	0B82 0B9C 0C39 0C4E 104D 1102 1238
GTDVE	0FC2	0869	
GTDV1	0FC2	0FC5	
GTSNS	10E4	086C	
GTSNX	10FA	10E4	10E5
GTSNO	10EA	1115	1121
GTSN1	10F0	10F2	
GTSN2	1104	10EE	10F8

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GTSN3 1116 110D
 GTSN4 111B 1123
 GTSN5 1122 1118
 HA 08C8 0EA1 0EB5 0EE2 0EFA 0EFC 0F04 0F06 0F35
 HFF00 083E 09CA 1375 1394 1397
 HF000 083D
 HIOXX 08A2 0919 0944 0FCC 10A1
 H0A00 0835
 H00A4 082C
 H00C6 082D 0AB2
 H00C8 082E
 H00FF 082F 0A36 0B9E 0C50 0DF4 0F17 1377 140F 1412 14C9 14CA
 H000A 0825 1463
 H000C 082B 0B9F 0C51
 H0011 0826 1040 1059
 H0013 0827 1035 1055
 H0020 0828
 H0027 0829 1468
 H0080 082A 0B8C
 H0100 0830 0FCD 111A 1331
 H0200 0831 1122
 H0400 0832 0AC9 0FC9
 H0500 0833 1336
 H0700 0834 0FD1 133A
 H2000 0836
 H2100 0837 110F 111B
 H3000 0838 0A11
 H4000 0839 0B7A 0B7F 0B88 0B99 0C2D 0C32 0C3B 0C4B
 H5000 083A
 H7FFF 083B 0ABC 1353
 H8000 083C
 IPA 0806
 K1 0816 09CC 09E8 0A13 0A14 0A48 0A9F 0B63 0C16 0CDB 0D3B 0DE5 0E76 0FD9
 K10 081E 0E8B 1496
 K100 0820 1491
 K1000 0824 148D
 K127 0821
 K128 0822
 K2 0817 0B05 0FD7
 K20 081F 131F
 K3 0818 091F 0928 0932 100D 135A 13DC
 K4 0819
 K500 0823
 K6 081A 0FD5
 K7 081B
 K8 081C 093C 12CB
 K9 081D 1466 1469
 LEXIT 13F7 130B 1343 13EF
 LGBSY 0854 09C1 09E7 1304 130A 13F6
 LOG 012F
 LPA 0807
 LPCNT 085C 0ABD 0AC5
 LPCT1 085D 0ACA 0ACC
 MAT0 0134
 MLSCF 0809
 MLSC0 0809 0951
 MLSC1 080A
 MLSC2 080B 09D2 1136 1152
 NOPCC 088F
 OBYPR 000D 1312
 OCHLT 000F
 OEBYP 0009 12F3
 DECAW 000D 127E
 DECSW 000E 1290
 DECCX 0003
 DECX0 0000
 DECX4 0001

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DECX8 0002
 DEERR 000C 1249
 DEGSN 000A 1233
 DEL1B 000B 1246 1249
 DEPBL 0007 1240
 DESNS 000F 12C2
 DEXIT 0006 12F8
 QHALT 000E 118A
 OLPER 000C 1166
 OLPST 0008 1173
 OPNOP 0003 0890
 OPRD 0002
 OPRRS 000A
 OPSNS 0004 089A
 OPTIC 0008 0DC8
 OPTIO 0000 0896
 OPWR 0001
 ORTRY 000B 1061
 OSALC 0009 0E15 0EC3
 OTTLE 000A 0AA3 0B67 0C1A 0CDF 0D3F 0DE9 0E7A
 PASSW 0856
 PCAW 084C 1288
 PCSW 084E 12A3
 PEND 1522 080D
 PRINT 11EE 1264 1281 12EE
 PSCNT 0857 09CD 0A28 0FB1
 PSNS 0850 12C5
 RCAL 0013 0893
 RDCKD 001E
 RDCNT 0012 0DC5
 RDDAT 0006
 RDHA 001A 0B4B 0F34
 RDHMT 009A
 RDKD 000E
 RDRO 0016
 RECAL 0892 0B7D 0B97 0C30 0C49 0E0B
 RELDV 0132 09D9 09E0 09F2 09F9 0A0B 0FE4 13E6
 REQDV 0131 0A05 0FC3 1328
 SCABZ 0007 0B01 1005 103D 107D 10ED 10F1 1117
 SCDCK 0004
 SCICC 0005
 SCILG 0006
 SCIMS 097E 097B
 SCIM2 098E 0972 0975
 SCINA 0969 095A
 SCINB 095E 096A
 SCINC 090C 0904
 SCINT 08F2 0967
 SCINX 0923 0913 0918
 SCIN0 0919 08FD 090D
 SCIN1 0927 0921
 SCIN2 0932 0942
 SCIN3 0943 091A 0935
 SCIN4 094F 08F9 0907 090A 093E
 SCIN5 0955 0926 092E 0949 094C
 SCIN6 0957 094E
 SCIN7 0963 08F4 08F5
 SCIN8 096B 094F
 SCIN9 0970 0979
 SCISW 08F0 08F8 0FE1 0FE9
 SCPCI 0002
 SCPCK 0003
 SCSN0 08A8 08FB 0FD8 0FFB 0FFC 1004 1032 1049 107C 10EB 10EC 10F0 1116
 SCSN1 08AA 0957 099E 09A3 09A6 0FDA 107B 1082 1085 1320 1322 146D 1471 147A
 SCSN2 08AC 08FF 0911 0915 0FDC
 SCSN3 08AE 095C 09A8 0FDE 1087 1476
 SCSN4 08B0 091C 091D 0920 0929 0934 095F 09AA 0FE0 1089 1478
 SCSN5 08B2 0961 09AC 0FD6 1080 108B 1094 10F4 147A

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

SCSVS 08C4 10E7 10E9 10FE 1100
SCSXC 08C0 092C 09A7 09A9 09AB 09AD 1086 1088 108A 108C 10E6 10E8 10F6 10FF
1101 110B 1475 1477 1479 147B
SCSX0 08B4 0916 0917 0945 0B7E 0B83 0B98 0B9D 0C31 0C35 0C4A 0C4F 0DFF 0E06
0E0F 0EA7 0EAD 0FF7 0FF8 1294
SCSX4 08B8 0953 096E 0B0B
SCSX8 08B8 0923 0AFE 0B04 0CE9 0CF6 0FFF 106A 1098
SCUN0 0000
SCUOP 0008
SCUSP 0001 0B01 104A 110C
SEEKB 000B
SEEKC 0007 0B45 0DC2 0DCB 0DCE 0E6D 0E70 0F2E
SENSE 08A4 0927 0FD0 10EA
SFILM 001F 0F2B
SIDHE 0071
SIDH1 0051
SID 086E 0A85 0AD7 0B7C 0B96 0C2F 0C48 0D5F 0D63 0D9D 0DA1 0DFD 0E0A 0E0D
0EA5 0FEE 0FF0 1025
SIOLA 1012
SIOLP 1014 1018
SIOLZ 101E 1010 101A
SIOL1 101B 1013 1014 1016
SIOL2 101C 1015
SIOL3 101D 1017
SIONT 0FEC 086F
SIOSW 0855 09E6 0B7B 0C2E 1008 1024 1027
SIOXX 08A6 092F 0930 0FCE 0FF4 0FFA 1052
SIOX1 101F 0FEC 0FED 1009 1029
SIO01 0FF6 1003 1057
SIO02 0FFE 1001 1062 1065
SIO03 1004 0FFD
SIO04 1008 104B
SIO05 1027 1006
SIO06 103D 1033
SIO07 1049 103E
SIO08 1059 1050
SIO09 1060 103C 1048
SKHD 001B
SKHE 0069
SNCCW 0899 08A4
SNWDS 089C 089B 0ABF 104E 12CD
SNWD0 089C 0B87 0BA2 0C3A 0C54
SNWD1 089D 0B8B 0C3E
SNWD2 089E
SNWD3 089F
SPACE 0852 12B5 12E3
SRCHA 0039
SRCID 0031
SRCKE 0029
SRCKH 0049
START 012D 097C 1137
STKSW 0858 09E5 122A 1237 1239 123C 12EF
STMLE 1124 0872
STMLL 1142 1147
STMLS 0871 09A2 0A04 0A1E 0AC4 0ACB 0FC2 1072 1081 1124 113C 114F 1197 119B
1307 1321 1341 13A4 13AA
STMLX 1139 1158
STMP5 1151 114A
STMP7 1157 09C8 1128 1134 1148
STMRT 1158 1135 1151
STMSA 1154 1125 1126 1127 112A 112D 1130 113E 1140 114B 114D
STMSE 114B 1153
STMST 1159 112B 112E 1131 113B 113D 113F 1142 1144
STSER 08D4 102C 102F 1031 1038 103B 1044 1047 105C 105F 1106 1108 110A 1111
1114 111D 1120
TB 087F 08F6 08F8 08FB 08FF 0903 0909 090C 0910 0911 0915 0916 0917 0919
091C 091D 091E 091F 0920 0927 0928 0929 092F 0932 0933 0934 093C
0941 0944 0957 095C 095F 0961 096B 0971 097A 099D 099E 099F 09A2

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09A6 09A7 09A8 09A9 09AA 09AB 09AC 09AD 09B3 09BC 09C1 09C2 09C3
09C4 09C5 09C6 09C7 09CA 09CB 09CC 09CD 09D4 09D6 09DD 09E5 09E6
09E7 09E8 09E9 09ED 09EF 09F6 09FF 0A01 0A04 0A11 0A13 0A14 0A15
0A16 0A17 0A18 0A1C 0A1E 0A1F 0A23 0A24 0A25 0A28 0A29 0A2A 0A2D
0A2F 0A31 0A34 0A35 0A36 0A38 0A43 0A45 0A46 0A47 0A48 0A49 0A4C
0A50 0A51 0A55 0A57 0A58 0A93 0A9F 0AA2 0AA6 0AAB 0AAD 0AAE 0AB2
0AB5 0AB7 0ABC 0ABD 0ABE 0ABF 0AC4 0AC9 0ACA 0ACB 0AD3 0AD7 0AE0
0AE1 0AFD 0AFE 0B04 0B05 0B0B 0B0F 0B12 0B18 0B1B 0B1F 0B24 0B29
0B2B 0B63 0B66 0B6A 0B6C 0B71 0B72 0B77 0B79 0B7A 0B7B 0B7C 0B7E
0B7F 0B82 0B83 0B87 0B88 0B8B 0B8C 0B93 0B95 0B96 0B98 0B99 0B9C
0B9D 0B9E 0B9F 0BA2 0BA7 0BA8 0BC3 0BC6 0BC9 0BCC 0BCF 0BD2 0C16
0C19 0C1D 0C1F 0C24 0C25 0C2A 0C2C 0C2D 0C2E 0C2F 0C31 0C32 0C35
0C39 0C3A 0C3B 0C3E 0C41 0C43 0C48 0C4A 0C4B 0C4E 0C4F 0C50 0C51
0C54 0C58 0C59 0C76 0C79 0C7C 0C7F 0C82 0C85 0C88 0CDB 0CDE 0CE2
0CE4 0CE5 0CE7 0CE8 0CE9 0CED 0CF0 0CF2 0CF4 0CF5 0CF6 0CFA 0CFD
0D3B 0D3E 0D42 0D44 0D56 0D59 0D5F 0D63 0D7A 0D7B 0D9D 0DA1 0DE5
0DE8 0DEC 0DEE 0DEF 0DF1 0DF2 0DF4 0DFD 0DFF 0E02 0E06 0E0A 0E0D
0E0F 0E14 0E18 0E19 0E3B 0E76 0E79 0E7D 0E7F 0E80 0E82 0E8B 0E8F
0EA5 0EA7 0EAA 0EAD 0EB1 0EC2 0EC6 0EC7 0EE2 0EFA 0EFC 0F04 0F06
0F0E 0F10 0F15 0F17 0F1B 0F1C 0F26 0FA1 0FA4 0FA7 0FAF 0FC1 0FC2
0FC9 0FCA 0FCB 0FCC 0FCD 0FCE 0FCF 0FD0 0FD1 0FD2 0FD5 0FD6 0FD7
0FD8 0FD9 0FDA 0FDB 0FDC 0FDD 0FDE 0FDF 0FE0 0FE1 0FE9 0FF4 0FF5
0FF7 0FF8 0FF9 0FFA 0FFB 0FFC 0FFE 0FFF 1004 1008 1024 1027 102B
102C 102F 1031 1032 1035 1036 1038 1039 1040 1041 1042 1044 1045
1049 104D 104E 1055 1059 105A 105C 105D 1060 1064 1067 1068 1069
106A 106F 1072 107A 107B 107C 1080 1081 1085 1086 1087 1088 1089
108A 108B 108C 108D 1091 1094 1098 109E 10A1 10A2 10E6 10E7 10E8
10E9 10EA 10EB 10EC 10F0 10F4 10F6 10FE 10FF 1100 1101 1106 1108
1109 110A 110B 110F 1110 1111 1112 1116 111A 111B 111C 111D 111E
1122 1124 1136 1139 113C 1152 1165 1172 1186 1187 1189 118D 118E
1192 1194 1195 1196 1197 1198 119B 122A 1236 1237 1238 1239 123A
123C 1243 1251 1254 125E 1266 1267 1269 126A 126B 126C 126D 126F
1276 127B 1288 128A 128B 12A3 12A6 12A9 12AE 12B1 12B5 12C5 12CB
12CD 12CF 12D9 12E0 12E3 12E7 12EB 12ED 12EF 12F6 1304 1307 1309
130A 1311 1315 1319 131F 1320 1321 1325 132E 1331 1334 1336 1339
133A 133D 133E 133F 1341 134F 1352 1353 1354 1357 1358 135A 1361
136F 1372 1375 1377 137E 1385 1389 1394 1397 139C 139E 13A4 13A6
13A8 13A9 13AA 13B9 13C7 13C8 13DC 13E1 13EC 13F6 13FD 1406 140E
140F 1412 1451 1453 1454 1457 1459 145B 1463 1466 1468 1469 146C
146D 146E 1474 1475 1476 1477 1478 1479 147A 147B 1480 1487 148D
1491 1496 14C9 14CA
TCNER 0A50 0A3D 0A97 0FAB
TCNE2 0A83 0A1D
TCNPR 09FF 09D0
TCNRQ 0A04 0A07
TCNSW 0842 0A45
TCNTA 0A59 0A41 0A4D 0A59
TCNTE 0A2F 0860
TCNTZ 0A5C 0A59
TCN01 0A16 0A02
TCN02 0A23 0A1A
TCN03 0A3F 0A4E
TCN04 0A4C 0A39
TCVBE 0874 0971 0A25 0A2A 0A51 0AAE 0B1F 0B24 0B29 0B72 0C25 0D56 0F15 0F1C
1036 1042 105A 1110 111C 118E 125E 1267 126C 128B 12A6 12A9 12AE
12B1 12D9 1354 145C
TCVBN 144E 0875
TCVEN 14D1 14CB
TCVHD 0877 0A29 0F1B 148A 149B
TCVSP 1502 14D1
TCVSR 149E 102D 1104 14AB
TCVSV 1503 14BE 14BF 14C5 14D2
TCVSZ 14A9 149F
TCVS1 0843 1451 1453 1454 145B
TCVS2 0844 1457 1459
TCVTB 14D6 14C0
TCVTC 1501
TCV01 145E 144F 1452 1455 1458 1464 146A

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

TCV02 1466 1461
 TCV03 14C3 14CE
 TCV04 14CF 14C6
 TCV45 14BD 1399 14D4
 TERLP 1165 0887
 TERM 080C 099D 09DC 09E3 09F5 09FC 0A0A 0A0E 0AD3 0FC8 0FE7 1067 1244 1251
 1254 1276 12EB 132D 134F 13A8 13E9 146C
 TER01 116D 1167
 TER02 1170 116F
 THALT 087A 0A57 1064 1187 118D 119C 12F6
 THEXD 148A 0878
 THEXS 149D 148F 1493 1494 149A
 THLT 087D 0B79 0B95 0C2C 0C43 0CE7 0CF4 0DF1 0E82 1186
 THLTE 1189 087B
 THLTG 118D 1188
 THLTL 1197 1199
 THLTM 119E 1193
 THLTR 119C 118B
 THLTX 1186 087E
 THLT2 11AF 118F 1191
 TINS2 146E 1473
 TINS3 147D 146F
 TINS4 1483 147C
 TINTS 146C 088D
 TINTW 099C 09AE 09B0 09B4 1095
 TINT2 099F 09A5
 TINT3 09B0 09A0
 TID 0880 0AFD 0CE8 0CF5 0FFE 1069 109C
 TIOMS 10C2 10A3
 TIOM1 10A5 108F
 TIOM2 10B1 10A0
 TIONT 1079 0881 1090 109A 10A4
 TIOSW 0859 0909 090C 0910 09C3 106F 1092
 TIOXX 08A0 091E 0FCF 1091
 TIO01 107C 1084
 TIO02 1091 107E
 TIO03 109E 1097
 TLGBA 1418 08CC 137A 1380 1398 13D4
 TLGBP 1363 134D 13DA
 TLGCH 13FA 1349 135D 1365 13E2 140B 1410 1413 1415
 TLGCM 133A 1335
 TLGCR 13B2 137F
 TLGCT 08D0 13A9 13AE
 TLGDA 13B5 0A09 0A0F 132C 1332 1337 133B
 TLGED 0813 09D6 09DB 09EF 09F4 0A08 0A0D 1315 132B 13E8
 TLGEN 13EF 1313
 TLGIN 13B6 13D2
 TLGIS 13B4 1359 13A7 13AB 13BB 13CF
 TLGME 1304 0884 1308
 TLGMS 0883 097A 0A1C 0A2D 0A55 0AA6 0AB7 0B6A 0B77 0B93 0C1D 0C2A 0C41 0CE2
 0CE5 0CF2 0D42 0D59 0DEC 0DEF 0E7D 0E80 0F0E 0F10 0FAF 10A2 1192
 1243 127B 12ED 1309
 TLGNB 1309 1305
 TLGPR 1383 13D6
 TLGSN 08CE 133D 139C
 TLGSP 08CE 1361 140E
 TLGSR 08D2 133F 13BE
 TLGSV 13B3 137C 1383 138D
 TLGSW 08D1 1357 1358 1372 137E 1385 1389 1392 13E1 13FD 1400 1406
 TLGWR 08CC 1334 1339 134B 13A6 13D8
 TLGXR 13D4 13AC
 TLGX2 13D8 1395
 TLGX3 13F1 130D 130F
 TLG01 1319 1316
 TLG02 1328 131A 1342
 TLG03 1341 132A
 TLG04 1343 1340
 TLG05 1356 1350

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

TLG06 135D 136E 13E4
 TLG07 136F 135F 1367
 TLG08 1377 1373
 TLG09 138F 1386
 TLG10 1394 138E
 TLG11 13AA 1380
 TLG12 13C6 13C0
 TLG13 13CE 1387 13C3 13C9 13CC
 TLG15 13E6 13E3
 TLG16 1405 13FE
 TLG17 140C 1404
 TLG18 140F 140C
 TLG40 1336 132F
 TLG42 139C 1370 13A5
 TLG43 13A6 1382 13A2
 TLPER 0886 0BCF 0BD2 0C85 0C88 0CF0 1169 116B 116D
 TLPST 0889 1176 1178 117A 117F 1181
 TPID 07FF 09B8 1352
 TRID 0815 0A46 0A9B 0B5F 0C12 0CD7 0D37 0DE1 0E72 14A0
 TRTNN 0841 0A34 0A93 0AE1 0BA8 0C59 0D7B 0E19 0EC7 0FA7
 TSAD 0801 0A43 0A4A
 TSCAC 08F1 0FC7 0FCA 0FD2
 TSCCW 0895 08A0
 TSCED 0814 09DD 09E2 09F6 09FB 0FC6 0FE6 1319
 TSCTN 0840 0A38 0FA4
 TSD 0800 09E9 0A3F 0A47 0A49 0A4C 14A5
 TSTLP 1172 088A
 TST01 117A 1174
 TST02 117D 117C
 TST03 117F
 TST04 1184 1183
 TSWDS 0898 0897 0933 0941
 TSW0 0802 09C5 0AA2 0B66 0C19 0CDE 0D3E 0DE8 0E14 0E79 0EC2 1060 1165 1172
 1189 1195 1196 1198 1311
 TSW1 0803 09C6 0A31 0A35 0A50 100B
 TSW2 0804 09CB 0A18 0A1F 0A23
 TSW3 0805 09C7 0DF2 0E8F
 TTLER 0A74 0A52 0A54 0A56
 TTL00 0A5C 0A2E
 TTL01 0A6D 0A2C
 TTL11 0AE6 0AA7
 TTL12 0BAD 0B6B
 TTL13 0C5E 0C1E
 TTL14 0D00 0CE3
 TTL15 0D80 0D43
 TTL16 0E1E 0DED
 TTL17 0ECC 0E7E
 TYP2 0848 102B
 TYP3 084A 1109
 T10NT 0A93 0A5A
 T10PR 0A91 0A96 0A99
 T11EN 0AE0 0AA9
 T1101 0A9B 0A94 0A9A
 T1102 0AA2 0A9D
 T1103 0AA8 0AA4
 T12EN 0BA7 0BD1
 T1201 0B5F 0AA0 0AE2
 T1202 0B66 0B61
 T1203 0B6C 0B68
 T13EN 0C58 0C8A
 T1301 0C12 0B64 0BA9
 T1302 0C19 0C14
 T1303 0C1F 0C1B
 T14EN 0CFD 0CF8
 T1401 0CD7 0C17 0C5A
 T1402 0CDE 0CD9
 T1403 0CE4 0CE0
 T15EN 0D7A

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T1501 0D37 0CDC
 T1502 0D3E 0D39
 T1503 0D44 0D40
 T16EN 0E18
 T1601 0DE1 0D3C 0D7C
 T1602 0DE8 0DE3
 T1603 0DEE 0DEA
 T17EN 0EC6
 T1701 0E72 0DE6 0E1A
 T1702 0E79 0E74
 T1703 0E7F 0E7B
 T1801 0FA1 0E77 0EC8
 T20EN 0FAF 0AE4 0BAB 0C5C 0CFE 0D7E 0E1C 0ECA 0FA5
 T20ER 0FB6 0FB0
 T20NT 0FA4 0A5B
 T20PR 0FA2 0FAA 0FAD
 T2101 0FC1 0FA8 0FAE
 T23LC 085A
 T23LH 085B
 T41AR 0B4E 0AD4 0AD5 0AD6 0AD9 0ADC 0B1E 0B23 0B28 0B4C
 T41EM 0B52 0B20 0B22 0B25 0B27 0B2A 0B2D
 T41IN 0B2E 0AB0 0AB8
 T41LP 0ACB 0ACE
 T41NR 0B51 0ABA 0ACF 0AFA 0B08 0B15
 T41RH 0B4A 0AD8
 T41SA 0B47 0AB3 0B46
 T41SK 0B44 0AB6
 T4104 0ABC
 T4105 0ABE 0AC7 0AD1 0B0A 0B0D
 T4106 0AC4 0AFB
 T4107 0AC9 0AC1
 T4108 0AFA 0AC3
 T4109 0B0B 0B06
 T4110 0B12 0AFF 0B02
 T4111 0B15 0AC8
 T4112 0B1B 0B16
 T4113 0B1E 0ADA 0ADE
 T42IN 0BF3 0B74 0B78
 T42I2 0BD5 0B76 0B94
 T42LP 0B8F 0BD4
 T420A 0BCF 0B8F
 T420B 0BD2 0B6D
 T4204 0B7A 0BD3
 T4205 0B96 0BD0
 T4206 0BC3 0B80
 T4207 0BC6 0B85 0B89 0B8D
 T4208 0BC9 0B9A
 T4209 0BCC 0BA0 0BA5
 T43IN 0C8E 0C27 0C2B
 T43I2 0CAD 0C28 0C42
 T43LP 0C41 0C87
 T43SB 0C8C 0BA3 0C55
 T430A 0C82 0C56
 T430B 0C85 0C20
 T430C 0C88 0C44
 T4304 0C2D 0C86
 T4305 0C48 0C89
 T4306 0C76 0C33
 T4307 0C79 0C37 0C3C 0C3F
 T4308 0C7C 0C4C
 T4309 0C7F 0C52
 T44M1 0D10 0CE6
 T44M2 0D1C 0CF3
 T44M3 0D28 0CEF
 T4404 0CE5
 T4405 0CE8 0CF1
 T4406 0CF2 0CEB
 T45A1 0DD0 0D5C 0DC3

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

T45A2 0DD3 0DC6
 T45A3 0DD8 0DCC
 T45A4 0DDE 0DCF
 T45BR 0DAD 0D4F 0D51
 T45CH 0DA9 0D48 0D65 0D69 0DA6
 T45HD 0DAF 0D53 0D6B
 T45IR 0DA6 0DAD
 T45M1 0DB9 0D5A
 T45M2 0DBF 0D58
 T45PC 0DAA 0D49 0D71 0D98
 T45RC 0DC4 0D64 0DC9
 T45SK 0DC1 0D60
 T45SV 0DAB 0D4C 0D4E 0D74 0D77
 T45SW 085E 0A01 0A15 132E 136F 139E 13C7
 T45S0 0DCA 0D9E
 T45S2 0DCD 0DA2
 T45TB 0DA9 0D45 0D48 0D49 0D4C 0D4E 0D4F 0D51 0D58 0D5C 0D65 0D69 0D6B 0D71
 0D74 0D77
 T450A 0D9B 0DA4
 T4504 0D53 0DA5
 T4505 0D55 0D70
 T4506 0D5D
 T4507 0D63 0D66
 T4508 0D71 0D6C
 T4509 0D98 0D72
 T46C1 0E6C 0DFE
 T46C2 0E6F 0E0E
 T46I0 0DFD 0E0C
 T46LP 0E14 0E11
 T46M1 0E3E 0DF0
 T46S1 0E35 0DF5 0E6E
 T46S2 0E38 0DF8 0E71
 T46T1 0E3B 0DF9
 T4605 0DF2 0E16
 T4606 0E06 0E00
 T4607 0E0A 0E05 0E13
 T4608 0E00 0E08
 T47CW 0F2A 0EA6
 T47C0 0F29 0F2C
 T47C1 0F13 0EDF 0EE3 0F18
 T47C2 0F1A 0EEA 0EF4 0EFE 0F08 0F1D
 T47E1 0EBD 0E87 0F12
 T47H1 0F22 0E95 0E97 0E99 0E9C 0EB7 0EDE 0EE6 0EE8 0EF0 0EF2 0F32
 T47KT 0F25 0E8C 0EBF
 T47K1 0F9E 0E9F
 T47K2 0F9F
 T47K3 0FA0
 T47MA 0F9A 0F09 0F0C
 T47M1 0F36 0E81
 T47M2 0F6A 0F0F
 T47M3 0F83 0F11
 T47M4 0F87 0EE0
 T47M5 0F8A 0EEB 0EEE
 T47M6 0F8D 0EF5 0EF8
 T47M7 0F90
 T47M8 0F94 0EE4
 T47M9 0F97 0EFF 0F02
 T47S1 0F1F 0E92 0F2F
 T47T1 0F26 0E83
 T4704 0E8B 0EC4
 T4705 0E97 0EC1
 T4706 0EAD 0EA8
 T4707 0EB4 0EAF
 T4708 0EB5 0EBC
 T4709 0EDE 0EB9
 T4710 0E9F 0EA4
 UNADR 0BE4 1269 126D 126F 1272
 UNATN 0008

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1800 DIAGNOSTIC MAINTENANCE PROGRAM

UNBZY 000B 0912 1000 106B
UNCHE 000C
UNCHK 000E 094B 0B84 0C36 0CEA 0CF7 0E07 0E10 0EAE 10F7
UNCUE 000A 0906 1099
UNDOVE 000D 0948 094B 0B0C
UNEXC 000F
UNSMO 0009
WAITS 088C 147D 1481 1483
WAITT 1066 101E 1070
WAIT1 1069 1075
WAIT2 1072 106C
WATSW 08EF 0925 099F 09B3 09C4 107A
WIOSW 08EE 08F3 09C2 0FF9 146E 1480 1487
WRCKD 001D
WRDAT 0005
WRHA 0019 0F31
WRKD 000D
WRR0 0015
WTADR 1078 0D5D 0D61 0D9B 0D9F 0DFB 0E85 1076
ZEPA 09EC 0808 09FD
ZEPA1 09F6 09F0
ZEPA2 09FD 09F7
ZIPA 09B9 0806 09BA
ZLPA 09CF 0807 09BB 09CE 09EA
ZLPA1 09DD 09D7
ZLPA2 09E4 09DE
END OF ASSEMBLY

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