

CB11

LOGIC TEST
MD-11-DZCBA-B

EP-DZCBA-B-DL-A

OCT 1976

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FICHE 1 OF 1

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This microfiche card contains a grid of frames, each representing a frame of data. The frames are arranged in approximately 10 rows and 6 columns. Each frame contains a small table or list of data, likely representing logic test results. The data is too small to read clearly but appears to be organized in a structured format. The frames are separated by dark lines, and the overall card has a light beige background.

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ABSTRACT

THIS PROGRAM TESTS THE CB11 SYSTEM. SCAN MODULES ARE EXPLICITLY TESTED VIA MAINTENANCE MODE, (WHICH IS THEREFORE ALSO EXPLICITLY TESTED.) DISTRIBUTE MODULES ARE EXPLICITLY TESTED IN A DIRECT READ/WRITE MANNER.

IN ADDITION, BOTH SCAN AND DISTRIBUTE BOARDS MAY BE IMPLICITLY TESTED WHENEVER TWO DISTRIBUTE BOARDS ARE JUMPED IN SUCH A WAY AS TO DRIVE ONE SCAN BOARD AND WHEN THE PROGRAM IS CALLED TO RUN THIS TYPE OF TESTING.

REQUIREMENTS

- 1. ANY PDP-11 WITH 4K MEMORY, A TTY, AND A LINE CLOCK OR A REAL TIME CLOCK, ALL IN PROPER WORKING ORDER.
2. A CB11 DEVICE.
3. THE USER INPUTS TO SCAN AND DISTRIBUTE MODULES MUST BE DISCONNECTED.***
IF ITEM 3 IS NOT STRICTLY ADHERED TO, THE RESULTS TO THE PROGRAM OR TO THE HARDWARE IS UNSPECIFIED.

LOADING-STORAGE

LOADING PROCEDURE FOR NORMAL BINARY TAPES SHOULD BE FOLLOWED. MEMORY IS STORED AND UTILIZED FROM LOCATIONS 0 THRU 17776.

NOTES

- 1. WITH THE EXCEPTION OF LISTING PAGE NUMBERS, ALL OTHER NUMERICAL REFERENCES ARE STRICTLY IN OCTAL.
2. THE PROGRAM CAN BE HALTED AND STARTED, OR RESTARTED AT ANY TIME.
3. USER INPUTS TO THE SCAN AND DISTRIBUTE MODULES MUST BE DISCONNECTED BEFORE RUNNING THIS PROGRAM.

RUN TIMES

THE APPROXIMATE RUN TIMES GIVEN BELOW ARE FOR ONE PASS (BELL TO BELL) WITH ALL SWITCHES DOWN. TIMES GIVEN ARE IN SECONDS.

S & OR D DIAG (SA0200) MODE:

E01

CB11 MACY11 27(732) 30-MAR-76 09:32 PAGE 4
DZCBAB.P11

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ONE SCAN BOARD 2
N SCAN BOARDS N(2)
ONE DIST. BOARD 2
M DIST. BOARDS M(2)
ONE SCAN & ONE DIST. BOARD 2+2
N SCAN & M DIST. BOARDS N(2)+M(2)

S & D ACCEPT/EXERCISE (SA1010) MODE:

ONE SCAN BOARD 10
N SCAN BOARDS N(10)
ONE DIST. BOARD 17
M DIST. BOARDS M(17)
ONE SCAN & ONE DIST. BOARD 10+17
N SCAN & M DIST. BOARDS N(10)+M(17)

D JMPR S DIAG (SA1000) MODE:

TWO DIST. BOARDS JUMPERED TO ONE SCAN BOARD 55
N GROUPS OF TWO DIST. JUMPED TO ONE SCAN N(55)

D JMPR S ACCEPT/EXERCISE (SA1020) MODE:

TWO DIST. BOARDS JUMPERED TO ONE SCAN BOARD 225 (3MIN 45SECS)
N GROUPS OF TWO DIST. JUMPED TO ONE SCAN N(225)

POWER FAILURE

THIS PROGRAM MAY NOT RECOVER FROM A POWER FAILURE.
THEREFORE, THIS DIAGNOSTIC SHOULD NOT BE USED WHEN VERIFYING
THE SYSTEM CAPABILITY TO RECOVER FROM A POWER FAILURE.

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STARTING-OPERATION

THERE ARE FIVE MODES OF OPERATION IN THIS PROGRAM:

1. S &/OR D DIAG. (SA200 - W/ALL SWITCHES RESET.)
 TEST SCAN AND/OR DISTRIBUTE BOARDS. THE SWITCH REGISTER IS CONTROLLED ENTIRELY BY THE OPERATOR.
2. D JMPR S DIAG. (SA1000 - W/ALL SWITCHES RESET.)
 TEST ONE SCAN & TWO DISTRIBUTE BOARDS THAT ARE SPECIALLY JUMPERED TOGETHER. THE SWITCH REGISTER IS CONTROLLED ENTIRELY BY THE OPERATOR.
3. S &/OR D ACCEPT/EXERCISE (SA1010 - W/ALL SWITCHES RESET.)
 ACCEPT/EXERCISE SCAN AND/OR DISTRIBUTE BOARDS. SWITCHES SWR12, SWR11, SWR2 & SWR1 ARE CONTROLLED BY THE PROGRAM. TWELVE PASSES OF THE PROGRAM ARE MADE, EACH WITH THE FOUR SWITCHES (ABOVE) SET TO A DIFFERENT CONFIGURATION.
4. D JMPR S ACCEPT/EXERCISE (SA1020 - W/ALL SWITCHES RESET.)
 ACCEPT/EXERCISE ONE SCAN AND TWO DISTRIBUTE BOARDS THAT ARE SPECIALLY JUMPERED TOGETHER. SWITCHES SWR12, SWR11, SWR2 & SWR1 ARE CONTROLLED BY THE PROGRAM. TWELVE PASSES OF THE PROGRAM ARE MADE, EACH WITH THE FOUR SWITCHES (ABOVE) SET TO A DIFFERENT CONFIGURATION.
5. MODULE TEST. (SA1030 - W/ALL SWITCHES RESET.)
 REQUIREMENTS: ONLY ONE MODULE CAN BE ON THE BACKBOARD AT A TIME (EITHER SCAN OR DIST.)
 TESTS:
 - A. THAT THE BOARD RESPONDS ONLY TO ITS GIVEN ADDRESS.
 - B. SAME AS MODE 1 (ABOVE) FOR THIS ONE BOARD.

WHEN THE PROGRAM HAS BEEN STARTED, (IN ANY OF THE FIVE MODES ABOVE) THE ACTION IS AS FOLLOWS:

1. THE PROGRAM (MODE) WILL IDENTIFY ITSELF ON THE TTY.
2. THE PROGRAM WILL MAKE QUERIES OF THE OPERATOR VIA THE TTY. (OPTION AVAILABLE - SEE SWR03)
3. THE PROGRAM WILL RUN IN THE MODE SELECTED ACCORDING TO THE REPLIES GIVEN TO THE TTY QUERIES.
4. AT THE END OF EACH PASS THE TTY BELL WILL RING (OPTION AVAILABLE - SEE SWR05) AND ANOTHER PASS IS BEGUN (AT STEP 3 ABOVE).

TTY QUERIES

THE PROGRAM WILL QUERY THE OPERATOR FOR INFORMATION NECESSARY TO THE OPERATION OF THE PROGRAM. THE ONLY LEGAL CHARACTERS FOR ANY OF THE QUERIES ARE: 0 1 2 3 4 5 6 7 Y N

ANY ERRONEOUS REPLIES WILL RESULT IN A RE-QUERY FOR THAT PARTICULAR INFORMATION OR IN SOME CASES OF ALL INFORMATION. THE PROGRAM CAN ALWAYS BE RESTARTED. THE PROGRAM WILL NOT ALLOW ANY ERRORS IN ADDRESSES EXCEPT WHEN IT IS BEING TOLD IT HAS A SCAN (OR DIST.) BOARD AT AN ADDRESS WHICH IN FACT IS NOT PHYSICALLY THERE. ALLOWABLE ADDRESSES ARE IN THE RANGE 164000 THRU 167776.

THE FOLLOWING IS A LIST OF THE QUERIES (Q) AND DESCRIPTION OF THE REPLIES TO BE GIVEN (R).

- Q. LOSA? EXAMPLES: LOSA?164000 LOSA?N
R. THE LOWEST SCAN ADDRESS TO BE TESTED. THE LAST DIGIT OF THIS ADDRESS MUST ALWAYS BE 0. IF NO SCAN ADDRESSES ARE TO BE TESTED, TYPE N (NO).
- Q. HISA? EXAMPLE: HISA?164006
R. THE HIGHEST SCAN ADDRESS TO BE TESTED. THE LAST DIGIT OF THIS ADDRESS MUST ALWAYS BE 6. IF THE REPLY TO LOSA (ABOVE) WAS N (NO) THEN THIS QUERY WILL NOT BE MADE.
- Q. LODA? EXAMPLES: LODA?164010 LODA?N
R. THE LOWEST DISTRIBUTE ADDRESS TO BE TESTED. THE LAST DIGIT OF THIS ADDRESS MUST ALWAYS BE 0. IF NO DISTRIBUTE ADDRESS ARE TO BE TESTED, TYPE N (NO).
- Q. HIDA? EXAMPLES: HIDA?164012 HIDA?164016
R. THE HIGHEST DISTRIBUTE ADDRESS TO BE TESTED. THE LAST DIGIT OF THIS ADDRESS MUST ALWAYS BE EITHER 2 OR 6. IF THE REPLY TO LODA (ABOVE) WAS N (NO) THEN THIS QUERY WILL NOT BE MADE.
- Q. DATA? EXAMPLES: DATA?N DATA?123456
R. THIS QUERY IS MADE ONLY WHEN RUNNING THE PROGRAM IN DJMPRS MODES. NORMALLY REPLY N (NO). IF IT IS DESIRED TO RUN THIS TEST ON ONE, OPERATOR CHOSEN DATA WORD, AND NO OTHERS, THEN TYPE THE DATA WORD DESIRED.
- Q. DISTS JUMPED TO SCAN?
R. REPLY Y (YES) OR N (NO). THIS QUERY SERVES ONLY TO DOUBLE CHECK THAT THE PROPER JUMPERS ARE IN. THE PROGRAM WILL NOT EVEN TRY TO CONTINUE UNTIL THE REPLY IS Y. THIS QUERY IS ONLY MADE WHEN RUNNING DJMPRS MODES.
- Q. USER DISCONNECTED?
R. REPLY Y (YES) OR N (NO). THIS QUERY SERVES ONLY TO DOUBLE CHECK THAT THE USER INPUTS ARE DISCONNECTED. THE

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PROGRAM WILL NOT EVEN TRY TO RUN UNTIL THE REPLY IS Y.

COMPLETE EXAMPLES:

S &/OR D DIAG

LOSA? 164000
HISA? 164006
LODA? 164010
HIDA? 164012
TEL CO DISCONNECTED? Y
THANKS! NOW TESTING

D JMPR S ACCEPT/EXERCISE

LOSA? 164000
HISA? 164006
LODA? 164010
HIDA? 164016
DATA? N
DIST JUMPED TO SCAN? Y
USER DISCONNECTED? Y
THANKS! NOW TESTING

S &/OR D ACCEPT/EXERCISE

LOSA? N
LODA? 164100
HIDA? 164206
USER DISCONNECTED? Y
THANKS! NOW TESTING

D JMPR S DIAG

LOSA? 164000
HISA? 164006
LODA? 164010
HIDA? 164016
DATA? 123456
DIST JUMPED TO SCAN? Y
USER DISCONNECTED? Y
THANKS! NOW TESTING

THERE ARE TOO MANY POSSIBILITIES TO GIVE USEFUL ERRONEOUS EXAMPLES.
THE MORE OBVIOUS ERRORS ONLY CAUSE A RE-QUERY. LESS OBVIOUS
ERRORS WILL CAUSE A SHORT EXPLANATORY TIMEOUT AS TO WHY THE
REPLY IS NOT ACCEPTABLE. THE PROGRAM WILL NOT RUN UNTIL
ALL REPLIES ARE SATISFACTORY. THE PROGRAM HAS NO WAY OF TELLING
DURING THE QUERIES WHETHER OR NOT A BOARD ACTUALLY EXISTS AS
INDICATED. ERRORS OF THIS TYPE WILL CAUSE AN ERROR IN THE TESTS.

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405SWITCH REGISTER

FOR NORMAL OPERATION ALL SWITCHES ARE TO BE RESET.
RESET MEANS DOWN OR A "0", SET MEANS UP OR A "1".

SWR15 RESET DO NOT HALT ON ERROR. MAKE A SINGLE TYPEOUT
OF EACH ERROR THAT OCCURS AND GO ON TO THE
NEXT TEST OR LOOP OF A TEST IN SEQUENCE.

SET HALT ON ERROR. MAKE A TYPEOUT OF THE ERROR THEN HALT.

SWR14 RESET DO NOT SCOPE LOOP.

SET SCOPE LOOP ON CURRENT TEST OR TEST LOOP.

SWR13 RESET DURING A SCOPE LOOP, MAKE SUBSEQUENT ERROR TYPEOUTS.

SET DURING A SCOPE LOOP, MAKE NO SUBSEQUENT ERROR
TYPEOUTS.

SWR12 RESET ALLOW TRACE TRAPPING AFTER EVERY INSTRUCTION.

SET INHIBIT TRACE TRAPPING.

SWR11 RESET ALLOW ITERATIONS OF THE TESTS.

SET INHIBIT ITERATIONS.

SWR10 NOT USED.

SWR09 NOT USED.

SWR08 NOT USED.

SWR07 NOT USED.

SWR06 RESET IN THE EVENT OF INTERMITTANT ERRORS DURING
A SCOPE LOOP, A COUNT OF ERRORS AND OF "OK'S" WILL
BE TYPED.

SET INHIBIT THE ABOVE DESCRIBED TYPED.

SWR05 RESET THE TTY BELL WILL RING AT THE END OF EACH PASS.

SET THE BELL WILL RING AND A PASS COUNT WILL BE TYPED
AT THE END OF EACH PASS.

SWR04 RESET THE OPTION DESCRIBED AS FOLLOWS IS INHIBITED.

SET REPORT ON THE STATUS OF THE PROGRAM AFTER EACH
SUB-TEST OR TEST LOOP. THIS TYPEOUT WILL OCCUR
EACH TIME THE PSEUDO-OP CONTROL IS EXECUTED.
THE TYPEOUT IS THE SAME ONE USED FOR ERROR REPORTS.

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THE OCCURANCE OF AN ACTUAL ERROR WHILE THIS OPTION IS BEING UTILIZED WILL NOT AFFECT THE ERROR REPORTING MECHANISM, NOR WILL THE ERROR REPORTING MECHANISM EFFECT THIS OPTION. SWITCH SWR00 IS APPLICABLE TO THIS TYPEOUT. THE OBVIOUS DETECTABLE DIFFERENCE BETWEEN THIS TYPEOUT AND AN ACTUAL ERROR TYPEOUT IS THAT BIT 0 OF FLAGS (SEE ERROR SECTION) WILL BE SET ONLY FOR AN ACTUAL ERROR TYPEOUT.

| | | |
|-------|-------|--|
| SWR03 | RESET | ALLOW FULL TTY QUERIES OF THE OPERATOR. |
| | SET | INHIBIT TTY QUERIES OF THE OPERATOR AND USE THE REPLIES GIVEN BY THE OPERATOR THE LAST TIME QUERIES WERE MADE. |
| SWR02 | RESET | THE OPTION DESCRIBED AS FOLLOWS IN INHIBITED. |
| | SET | SHORTEN ALL TIME DELAYS BY 10%. |
| SWR01 | RESET | THE OPTION DESCRIBED AS FOLLOWS IS INHIBITED. |
| | SET | LENGTHEN ALL TIME DELAYS BY 10%. |
| SWR00 | RESET | ALLOW FULL ERROR REPORT TO BE MADE. |
| | SET | SHORTEN THE ERROR REPORT TO THE CONTENTS OF THE PROGRAM COUNTER ONLY (PC/), |

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488ERRORS

WHEN AN ERROR IS DETECTED THE ERROR MESSAGE DESCRIBED BELOW WILL BE TYPED. THEN, IF SWR15 IS RESET, TESTING WILL RESUME WITH THE NEXT ITERATION, TEST LOOP, OR TEST IN SEQUENCE. IF SWR15 IS SET THE PROGRAM WILL HALT AND AWAIT OPERATOR INTERVENTION. (SEE ERROR OPTIONS.) THE DECISION TO HALT ON ERROR CAN BE MADE AND SWR15 CAN BE SET AT ANY TIME BEFORE THE ERROR TYPEOUT IS COMPLETED.

THE FOLLOWING REPRESENTS THE ERROR MESSAGE:

PC/XXXXXX PS/XXXXXX CA/XXXXXX CX/XXXXXX CW/XXXXXX BT/XXXX F/XXXXXX
GWD/XXXXXX GMF/XXXXXX GWD/XXXXXX GW2/XXXXXX GW4/XXXXXX GW6/XXXXXX SWR/XXXXXX
TWD/XXXXXX TMF/XXXXXX TWD/XXXXXX TW2/XXXXXX TW4/XXXXXX TW6/XXXXXX AXSWR/XXXXXX

- - AND IT IS INTERPRETED AS FOLLOWS:

- PC/ PROGRAM COUNTER. THIS IS THE ADDRESS OF THE CALL (PSUEDO-OP ERROR) THAT CAUSED THE TRAP TO THE ERROR HANDLING ROUTINE AND WILL INDICATE IN THE PROGRAM LISTING, THE ERROR THAT OCCURRED. THIS IS ALWAYS RELEVANT.
- PS/ PROCESSOR STATUS WORD AT THE TIME OF THE ERROR. THIS IS ALWAYS RELEVANT.
- CA/ CONTROL ADDRESS. THIS IS THE ADDRESS OF THE BOARD IN ERROR. IT IS ALWAYS RELEVANT. THIS IS THE CONTENTS OF R2. IF THE BOARD UNDER TEST WAS A SCAN BOARD, THIS WILL BE THE CONTROL ADDRESS (MAINT. MODE CONTROL-WORD 0 ADRS.) OF THE BOARD IN ERROR. IF THE BOARD UNDER TEST WAS A DISTRIBUTE BOARD, THIS WILL BE THE ACTUAL WORD ADDRESS OF THE FAILING DISTRIBUTE WORD.
- CX/ CONTROL ADDRESS AUXILIARY. THIS IS RELEVANT ONLY WHEN BOTH SCAN AND DISTRIBUTE BOARDS ARE BEING TESTED TOGETHER (DJMPRS). AT ALL OTHER TIMES THIS WILL BE: CX/NR (NOT RELEVANT). WHEN BOTH TYPES OF BOARDS ARE BEING TESTED TOGETHER, THIS WILL CONTAIN THE ADDRESS OF THE SCAN BOARD AND THE CA/ (ABOVE) WILL CONTAIN THE ADDRESS OF THE DISTRIBUTE BOARD. IN SHORT, THE DIST. BOARD AT ADRS. (CA/) WAS DRIVING THE SCAN BOARD AT ADRS. (CX/). THIS IS THE CONTENTS OF R3.
- CW/ CONTROL WORD POINTER. THIS IS ALWAYS RELEVANT. IT IS THE ADDRESS OF THE SCAN CONTROL WORD OR THE DISTRIBUTE CONTROL WORD, DEPENDING ON THE TYPE OF BOARD UNDER TEST. THE WORD THIS ADDRESS POINTS AT (FOR THIS IS THE CONTENTS OF R4) IS THE WORD USED TO SET/CLR MAINT. FLOPS IN SCAN BOARDS OR SET/CLEAR THE DISTRIBUTE BOARD WORD DIRECTLY.
- BT/ BOARD TYPE. THIS IS THE TYPE OF BOARD THAT WAS UNDER TEST AT THE TIME OF THE ERROR. IT WILL ALWAYS BE: BT/SCAN; BT/DIST; OR BT/DJS (DIST JMPRD TO SCAN). THIS IS ALWAYS RELEVANT.
- F/ FLAGS. THESE ARE FLAG BITS USED BY THE PROGRAM FOR VARIOUS

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PURPOSES OF MAINTAINING PROGRAM STATUS. BECAUSE THEY MAY BE USEFUL IN GENERAL, THEY ARE TYPED OUT AND THEY MAY BE INTERPRETED AS FOLLOWS:

- BIT 0 AN ERROR CONDITION EXISTS THAT HAS NOT BEEN CLEARED (BY A RESTART OR A BYPASS ERROR)
- BIT 1 THE EXISTING ERROR CONDITION IS INTERMITTANT.
- BIT 2 THE LAST START/RESTART WAS FROM SA1030. (MODULE TEST MODE)
- BIT 3 THE LAST START/RESTART WAS FROM SA200. (S&ORD)
- BIT 4 THE LAST START/RESTART WAS FROM SA1000. (DJMPRS)
- BIT 5 THE LAST START/RESTART WAS FROM SA1010. (S&ORD/AC/EX)
- BIT 6 THE LAST START/RESTART WAS FROM SA1020. (DJMPRS/AC/EX)
- BIT 7 OPERATOR GIVEN DATA WAS BEING USED ON A DJS PASS.
- BIT 8 ERROR RELEVANCY FLAGS. (HOW THE PROG. DETERMINES THRU WHAT IS AND IS NOT RELEVANT TO BE TYPED IN AN ERROR TIMEOUT. THESE ARE SET AT THE BEGINNING OF EACH TEST.)
- BIT 15

THE FOLLOWING ERROR DATA IS NOT ALWAYS RELEVANT. THAT WHICH IS NOT RELEVANT WILL BE GIVEN AS NR (NOT RELEVANT). THAT WHICH IS RELEVANT WILL BE GIVEN A SIX DIGIT OCTAL VALUE. IN THE DEFINITIONS GIVEN BELOW "GOOD" IS WHAT SHOULD HAVE BEEN AND "TEST" IS WHAT ACTUALLY WAS. IF "TEST" DIFFERS FROM "GOOD", THEN "TEST" IS BAD.

- GWD/ GOOD WORD. - RELEVANT ONLY TO DISTRIBUTE BOARDS.
- TWD/ TEST (BAD?) WORD.
- GMF/ GOOD MAINTENANCE FLOPS. - RELEVANT ONLY TO SCAN BOARDS IN MAINT. MODE.
- TMF/ TEST (BAD?) MAINT. FLOPS.
- GW0/ GOOD SCAN WORD 0 (OF THE SCAN BOARD INDICATED BY CA/).
- TW0/ TEST (BAD?) SCAN WORD 0.
- GW2/ GOOD SCAN WORD 2 (OF THE SCAN BOARD INDICATED BY CA/).
- TW2/ TEST (BAD?) SCAN WORD 2.
- GW4/ GOOD SCAN WORD 4 (OF THE SCAN BOARD INDICATED BY CA/).
- TW4/ TEST (BAD?) SCAN WORD 4.
- GW6/ GOOD SCAN WORD 6 (OF THE SCAN BOARD INDICATED BY CA/).
- TW6/ TEST (BAD?) SCAN WORD 6.
- SWR/ SWITCH REGISTER AS IT WAS AT THE TIME OF THE ERROR.
- AXSWR/ SIMULATED SWITCH REGISTER FOR ACCEPT/EXERCISE MODES. THE PROGRAM WAS RUNNING AS IF THE SWITCHES REPRESENTED HERE WERE ACTUALLY SET. SEE STARTING-OPERATION, MODES 3 AND 4. (NR IS TYPED WHEN THIS IS NOT RELEVANT.)

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580ERROR OPTIONS

WHEN AN ERROR OCCURS, IF SWR15 IS RESET, THE PROGRAM WILL CONTINUE TO THE NEXT ITERATION, SUB-TEST LOOP OR TEST IN SEQUENCE.

IF SWR15 IS SET AT THE TIME OF THE ERROR (SWR15 CAN BE SET DURING THE ERROR TYPEOUT) THE PROGRAM WILL HALT AFTER THE ERROR TYPEOUT IS COMPLETE, AT WHICH TIME THE OPERATOR HAS THE FOLLOWING OPTIONS.

1. DO NOT SCOPE LOOP, BUT CONTINUE AS IF SWR15 WAS NOT SET
 - A. DECIDE IF HALT IS DESIRED ON OCCURANCE OF ANOTHER ERROR AND SET SWR15 ACCORDINGLY.
 - B. PRESS CONTINUE.
2. SCOPE LOOP ON THIS ERROR CONDITION.
 - A. RESET SWR15.
 - B. SET SWR14.
 - C. PRESS CONTINUE.
 - D. SEE SCOPE LOOPS SECTION
3. EXAMINE MEMORY LOCATIONS, SPECIAL REGISTERS, ETC., WHICH IS USUALLY NOT NECESSARY BECAUSE OF THE DETAIL GIVEN IN THE ERROR TYPEOUT. IF HOWEVER THE OPERATOR CHOOSES TO EXAMINE MEMORY ET. AL. THEN ALL OTHER OPTIONS ARE INVALIDATED AND A PROGRAM RESTART IS NECESSARY.

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SCOPE LOOPS

SCOPE LOOP ON AN ERROR CONDITION IS EFFECTED AS DESCRIBED IN THE ERROR OPTIONS SECTION.

ONCE A SCOPE LOOP HAS BEEN EFFECTED IT WILL REMAIN IN EFFECT FOR AS LONG AS SWR15 IS RESET AND SWR14 IS SET.

THIS SCOPE LOOP IS LOCKED, THAT IS IT WILL LOOP ON THE FAILING TEST EVEN THOUGH IT IS NO LONGER FAILING. SEE INTERMITTANT ERRORS SECTION.

A SCOPE LOOP ON ANY GIVEN TEST CONSISTS OF A LOOP FROM THE PSUEDO-OP "ERROR" BACK TO THE LOCATION FOLLOWING THE PSUEDO-OP "SCOPE".

FORCED ERROR TYPEOUT

IN THE EVENT OF AN ILLEGAL TRAP TO THE TRAP CATCHER, AN ERROR TYPEOUT THAT WILL REFLECT THE STATUS OF THE PROGRAM AT THE TIME OF THE ILLEGAL TRAP CAN BE OBTAINED BY STARTING THE PROGRAM AT SA1040. SWITCH SETTINGS ARE IMMATERIAL. THE TYPEOUT WILL BE MADE, IN FULL, AND THE PROGRAM WILL HALT.

TRAP CATCHER

ANY ILLEGAL TRAPS THAT OCCUR WILL CAUSE A HALT SOMEWHERE BETWEEN LOCATIONS 000000 AND 000776. THE INITIALIZATION OF THE PROGRAM SET UP THESE LOCATIONS SUCH THAT ALL ILLEGAL TRAP VECTORS ("NEW" PC) POINT TO THE NEXT LOCATION ("NEW" PS) WHICH IS SET TO 000000, OR A HALT INSTRUCTION.

IN THE EVENT OF THIS TYPE OF HALT:

1. AN ILLEGAL TRAP OCCURRED TO THE LOCATION PRECEDING THE HALT LOC.
2. EXAMINE LOCATION 177706 (STACK POINTER - R6). THIS IS AN ADDRESS.
3. EXAMINE THE LOCATION THAT WAS SPECIFIED BY THE CONTENTS OF R6. THIS IS AN ADDRESS.
4. SUBTRACT 2 FROM THE ADDRESS OBTAINED BY STEP 3 ABOVE. THIS IS THE ADDRESS OF THE INSTRUCTION THAT CAUSED, OR THAT WAS IN PROGRESS AT THE TIME OF, THE ILLEGAL TRAP.
5. EXAMINE THE NEXT LOCATION (CONTENTS OF R6 + 2). THIS IS THE PROCESSOR STATUS WORD AS IT WAS AT THE TIME OF THE ILLEGAL TRAP.
6. SEE SECTION FORCED ERROR TYPEOUT.
.ENDR

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;EQUATES

000000      R0=%0      ;REGISTER 0 GENERAL USE.
000001      R1=%1      ;REGISTER 1 GENERAL USE.
000002      R2=%2      ;REGISTER 2 SPECIAL USE.
000003      R3=%3      ;REGISTER 3 SPECIAL USE.
000004      R4=%4      ;REGISTER 4 SPECIAL USE.
000005      R5=%5      ;REGISTER 5 SPECIAL USE.
000006      R6=%6      ;REGISTER 6 SPECIAL USE.
000007      R7=%7      ;REGISTER 7 SPECIAL USE.
000002      CADR=R2    ;REGISTER 2 CONTROL ADDRESS POINTER.
000003      CADRX=R3   ;REGISTER 3 AUXILIARY CONTROL ADDRESS POINTER.
000004      CWP=R4     ;REGISTER 4 CONTROL WORD POINTER.
000005      $=R5       ;REGISTER 5 SUBROUTINE POINTER.
000006      STP=R6     ;REGISTER 6 STACK POINTER.
000007      PC=R7     ;REGISTER 7 PROGRAM COUNTER.

177560      TKS=177560 ;TTY KEY BOARD STATUS.
177562      TKB=177562 ;TTY KEYBOARD BUFFER.
177564      TPS=177564 ;TTY PRINTER STATUS.
177566      TPB=177566 ;TTY PRINTER BUFFER.
177546      KMLS=177546 ;LINE CLOCK STATUS.
172540      KWPS=172540 ;REAL TIME CLOCK STATUS.
172542      KWPB=172542 ;REAL TIME CLOCK BUFFER.
172544      KWPC=172544 ;REAL TIME CLOCK COUNTER.
177776      PS=177776  ;PROCESSOR STATUS
001143      RFLGS=FLAGS+1 ;ERROR TYPEOUT RELEVANCY FLAGS..

000240      NOP=240    ;PSUEDO-OP NO OPERATION.
000006      RTT=6      ;RETURN FROM "T" TRAP INTERRUPT.
104400      SCOPE=TRAP ;PSUEDO-OP TRAP.
104000      ERROR=EMT  ;PSUEDO-OP EMT.
104777      CONTROL=104777 ;PSEUDO-OP TRAP.

100000      HES=100000 ;SWR15 HALT ON ERROR.
040000      SLS=40000  ;SWR14 SCOPE LOOP.
020000      STS=20000  ;SWR13 SUBSEQUENT ERROR TYPEOUTS.
010000      TTS=10000  ;SWR12 TRACE TRAP.
004000      ITS=4000   ;SWR11 ITERATE.

000100      IMS=100    ;SWR06 INHIBIT INTERMITTANT TYPEOUTS.
000040      PCS=40     ;SWR05 TYPE PASS COUNT AT END OF PASSES.
000020      TSS=20     ;SWR04 TYPE PROGRAM STATUS.
000010      IQS=10     ;SWR03 INHIBIT TTY QUERIES.
000004      SDS=4      ;SWR02 SHORTEN TIME DELAYS BY -10%.
000002      LDS=2      ;SWR01 LENGTHEN TIME DELAYS BY +10%.
000001      SES=1      ;SWR00 SHORT ERROR MESSAGES (PC ONLY).

000001      ECF=1      ;FLAG ERROR CONDITION.
000002      IMF=2      ;FLAG ERROR CONDITION IS INTERMITTANT.
000004      MOD=4      ;FLAG MODULE MODE START.
000010      BF=10      ;FLAG S &OR D DIAG. START.

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E02

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|-----|--------|----------|---|
| 736 | 000020 | JF=20 | : FLAG DJMPRS DIAG. START. |
| 737 | 000040 | BXF=40 | : FLAG S &OR D ACCEPT/EXERCISE START. |
| 738 | 000100 | JXF=100 | : FLAG DJMPRS ACCEPT/EXERCISE START. |
| 739 | 000200 | DATF=200 | : FLAG DATA IN USE ON DJMPRS/ |
| 740 | 000001 | AXF=1 | : FLAG CAX RELEVANT. |
| 741 | 000002 | CWF=2 | : FLAG CWORD RELEVANT. |
| 742 | 000004 | WDF=4 | : FLAG GWD & TWD RELEVANT. |
| 743 | 000010 | MFF=10 | : FLAG GMF & TMF RELEVANT. |
| 744 | 000020 | WOF=20 | : FLAG GWO & TWO RELEVANT. |
| 745 | 000040 | W26F=40 | : FLAG GW2, GW4, GW6, TW2, TW4 & TW6 RELEVANT |
| 746 | 000100 | SF=100 | : FLAG "SCAN" RELEVANT. |
| 747 | 000200 | DF=200 | : FLAG "DIST" RELEVANT. |
| 748 | 000172 | SRF=172 | : FLAGS ALL THAT IS RELEVANT TO SCAN BDS. |
| 749 | 000206 | DRF=206 | : FLAGS ALL TYPEOUTS ARE RELEVANT TO DIST. BDS. |
| 750 | 000327 | DSRF=327 | : FLAGS ALL THAT IS RELEVANT TO DJS. |
| 751 | 000377 | ALRF=377 | : FLAGS ALL TYPEOUTS ARE RELEVANT. |
| 752 | | | |

F02

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753
754      ;START - SA200
755      ;NORMAL PROGRAM START TO TEST SCAN BOARDS AND/OR DISTRIBUTE BOARDS
756      ;WHILE DISCONNECTED FROM ALL TELEPHONE CO. INPUTS.
757
758      000200 000200 007462      S.ORD:  =200      @#INIT
759
760
761      ;START - SA1000
762      ;SPECIAL START FOR SUB-PROGRAM "DJMPRS" TO TEST "DISTRIBUTE BOARDS
763      ;JUMPERED TO SCAN BOARD" WHILE DISCONNECTED FROM ALL TELEPHONE INPUTS.
764
765
766      001000 001000 006476      DJMPRS: =1000      INITA
767
768
769
770      ;START - SA1010
771      ;SPECIAL START TO RUN ACCEPTANCE/EXERCISE OF SCAN BOARDS AND/OR DISTRIBUTE
772      ;BOARDS WHILE DISCONNECTED FROM ALL TELEPHONE CO. INPUTS.
773
774      001010 001010 006504      S.ORDAX: =1010      JMP      INITA2
775
776
777
778      ;START - SA1020
779      ;SPECIAL START TO RUN ACCEPTANCE/EXERCISE OF SUB-PROGRAM "DJMPRS" TO
780      ;TEST TWO CONTIGUOUS DISTRIBUTE BOARDS WHOSE OUTPUTS ARE JUMPERED TO
781      ;THE INPUTS OF ONE SCAN BOARD WHILE DISCONNECTED FROM ALL TELEPHONE CO. INPUTS.
782
783      001020 001020 006504      DJSAX:  =1020      INITA3
784
785
786
787      ;START - SA1030
788      ;SPECIAL START FOR MODULE TEST MODE.
789
790      001030 001030 006436      MODMOD: =1030      INITA5
791
792
793
794      ;START - SA1040
795      ;SPECIAL START TO FORCE AN ERROR TYPEOUT AFTER AN ILLEGAL TRAP HAS OCCURRED.
796
797      001040      =1040
798
799      001040 010667 000226      FORCER: MOV      STP,FESAV
800      001044 012706 001000      MOV      #1000,STP
801      001050 004567 011100      JSR      $,TYPEA
802      001054 043136 051117      .ASCII  "↑FORCED TYPEOUT."
803      001062 020104 054524      042503
804      001070 052517 027124      042520
805      001074 004567 005114      JSR      $,TYPERR
806      001100 016706 000166      MOV      FESAV,STP
807      001104 000000      FORCEA: HALT
808      001106 000776      BR      FORCEA
  
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G02

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809
810
811 001110 000010
812 001112 000001
813 001114 000007

;CONSTANTS.

ITNO: 10
DMS1: 1
DMS2: 7

; ITERATION NUMBER.
; NO. OF MS FOR DELAY.
; NO. OF MS FOR DELAY.

H02

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| | | | | |
|-----|--------|--------|---------|---|
| 814 | | | | |
| 815 | | | | |
| 816 | 001116 | 000000 | LOSA: | 0 |
| 817 | 001120 | 000000 | HISA: | 0 |
| 818 | 001122 | 000000 | LODA: | 0 |
| 819 | 001124 | 000000 | HIDA: | 0 |
| 820 | 001126 | 000000 | LOSAX: | 0 |
| 821 | 001130 | 000000 | HISAX: | 0 |
| 822 | 001132 | 000000 | LODAX: | 0 |
| 823 | 001134 | 000000 | HIDAX: | 0 |
| 824 | 001136 | 000000 | SWR: | 0 |
| 825 | 001140 | 000000 | DATAWD: | 0 |
| 826 | 001142 | 000000 | FLAGS: | 0 |
| 827 | 001144 | 000000 | FX: | 0 |
| 828 | | | | |
| 829 | | | | |
| 830 | | | | |
| 831 | 001146 | 000000 | BEGV: | 0 |
| 832 | 001150 | 000000 | PASCTR: | 0 |
| 833 | 001152 | 000000 | ITCNT: | 0 |
| 834 | 001154 | 000000 | SCORTN: | 0 |
| 835 | 001156 | 000000 | IMCNT: | 0 |
| 836 | 001160 | 000000 | SAVPC: | 0 |
| 837 | 001162 | 000000 | SAVPS: | 0 |
| 838 | 001164 | 000000 | SAVSWR: | 0 |
| 839 | 001166 | 000000 | SAVCAD: | 0 |
| 840 | 001170 | 000000 | SAVCAX: | 0 |
| 841 | 001172 | 000000 | SAVCWP: | 0 |
| 842 | 001174 | 000000 | SAVITC: | 0 |
| 843 | 001176 | 000000 | SAVOKC: | 0 |
| 844 | 001200 | 000000 | SAVR0: | 0 |
| 845 | 001202 | 000000 | SAVR1: | 0 |
| 846 | 001204 | 000000 | SAVSTP: | 0 |
| 847 | 001206 | 000000 | SAVFLG: | 0 |
| 848 | 001210 | 000000 | AXSWR: | 0 |
| 849 | 001212 | 000000 | AXRTN: | 0 |
| 850 | 001214 | 000000 | GMF: | 0 |
| 851 | 001216 | 000000 | GWD: | 0 |
| 852 | 001220 | 000000 | GW0: | 0 |
| 853 | 001222 | 000000 | GW2: | 0 |
| 854 | 001224 | 000000 | GW4: | 0 |
| 855 | 001226 | 000000 | GW6: | 0 |
| 856 | 001230 | 000000 | TMF: | 0 |
| 857 | 001232 | 000000 | TWD: | 0 |
| 858 | 001234 | 000000 | TW0: | 0 |
| 859 | 001236 | 000000 | TW2: | 0 |
| 860 | 001240 | 000000 | TW4: | 0 |
| 861 | 001242 | 000000 | TW6: | 0 |
| 862 | 001244 | 000000 | TLMT: | 0 |
| 863 | 001246 | 000000 | TYPSRC: | 0 |
| 864 | 001250 | 000000 | QSRC: | 0 |
| 865 | 001252 | 000000 | KCTR: | 0 |
| 866 | 001254 | 000000 | DLAN01: | 0 |
| 867 | 001256 | 000000 | DLAN02: | 0 |
| 868 | 001260 | 000000 | DLAOF1: | 0 |
| 869 | 001262 | 000000 | DLAOF2: | 0 |

;VARIABLES - NOT CLEARED ON START OR RESTART.

;LOWEST SCAN ADDRESS (GIVEN BY OPERATOR).
 ;HIGHEST SCAN ADDRESS (GIVEN BY OPERATOR).
 ;LOWEST DISTRIBUTE ADDRESS (GIVEN BY OPERATOR).
 ;HIGHEST DISTRIBUTE ADDRESS (GIVEN BY OPERATOR).
 ;LO SCAN ADRS. AUXILIARY.
 ;HI SCAN ADRS. AUXILIARY.
 ;LO DIST. ADRS. AUXILIARY.
 ;HI DIST. ADRS. AUXILIARY.
 ;SWITCH REGISTER POINTER.
 ;DATA WORD.
 ;PROGRAM FLAGS.
 ;PROGRAM FLAGS AUXILIARY.

;VARIABLES - CLEARED ON START OR RESTART.

;PASS COUNTER 0
 ;ITERATION COUNTER.
 ;SCOPE LOOP RETURN POINTER.
 ;INTERMITTANT ERROR COUNTER.
 ;SAVED PC.
 ;SAVED PS.
 ;SAVED SWR.
 ;SAVED CONTROL ADDRESS POINTER. (R2)
 ;SAVED CONTROL ADDRESS AUXILIARY POINTER. (R3)
 ;SAVED CONTROL WORD POINTER. (R4)
 ;SAVED ITERATION COUNTER.
 ;SAVED INTERMITTENT ERROR "OK" COUNTER.
 ;SAVED R0.
 ;SAVED R1.
 ;SAVED STACK POINTER.
 ;SAVED FLAGS.
 ;SWITCH REG. USED WITH ACCEPT/EXERCISE.
 ;RETURN POINTER USED WITH ACCEPT/EXERCISE
 ;GOOD MAINT. FLAGS.
 ;GOOD WORD.
 ;GOOD WORD 0
 ;GOOD WORD 2.
 ;GOOD WORD 4.
 ;GOOD WORD 6.
 ;TEST MAINT. FLOP
 ;TEST WORD
 ;TEST WORD 0.
 ;TEST WORD 2.
 ;TEST WORD 4.
 ;TEST WORD 6.
 ;TIME LIMIT FOR SUBR. TIME.
 ;ORIG. TYPE CALL SOURCE.
 ;QUERY SOURCE
 ;KEY IN CHARACTER COUNTER.
 ;DELAY NUMBER TYPE 1.
 ;DELAY NUMBER TYPE 2.
 ;DELAY OFFSET TYPE 1.
 ;DELAY OFFSET TYPE 2.

870 001264 000000
871 001266 000000
872 001270 000000
873 001272 000000
874 001274 000000
875 001276 000000
876 001300 000000

SAVERC: 0
DLACTR: 0
KCSR: 0
FESAV: 0
ERCTR: 0
OKCTR: 0
ENDV: 0

; SAVED INTERMITTENT ERROR "ER" COUNTER.
; DELAY COUNTER.
; CLOCK CSR (ACTUAL).
; FORCED ERROR TYPEOUT STP STORAGE.
; INTERMITTENT COUNTER - ERRORS.
; INTERMITTENT COUNTER - OK'S.

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881
882
883
884
885
886 001302 000000
887 001304 000001
888 001306 000002
889 001310 000003
890 001312 000004
891 001314 000005
892 001316 000006
893 001320 000007
894 001322 000010
895 001324 000011
896 001326 000012
897 001330 000013
898 001332 000014
899 001334 000015
900 001336 000016
901 001340 000017
902 001342 000000
903 001344 000016
904 001346 000001
905 001350 000015
906 001352 000002
907 001354 000014
908 001356 000003
909 001360 000013
910 001362 000004
911 001364 000012
912 001366 000005
913 001370 000011
914 001372 000006
915 001374 000010
916 001376 000007
917 001400 000000
918 001402 000007
919 001404 000010
920 001406 000006
921 001410 000011
922 001412 000005
923 001414 000012
924 001416 000004
925 001420 000013
926 001422 000003
927 001424 000014
928 001426 000002
929 001430 000015
930 001432 000001
931 001434 000016
932 001436 000000

```

;SCAN CONTROL WORD TABLE.

```

;CONTROL WORDS USED TO SET AND CLEAR THE MAINTENANCE FLOPS AND SCAN WORDS.
;THE MAINT. FLOPS AND SCAN WORDS SET OR CLEARED ARE GIVEN BELOW IN
;REFERENCE TO WORD 0, WORD 2, WORD 4 & WORD 6 OF A SCAN MODULE.
;THESE BITS, WHEN USED IN BYTE INSTRUCTIONS CORRESPOND TO BITS 8, 9, 10 & 11.

```

```

; CLEARS:      SETS:
SCW00: 0      : NONE      ALL
SCW01: 1      : 0          2,4,6
SCW02: 2      : 0          0,4,6
SCW03: 3      : 0,2       4,6,6
SCW04: 4      : 0,2       0,2,6
SCW05: 5      : 0,4       0,6,6
SCW06: 6      : 0,4       0,6
SCW07: 7      : 0,2,4    0,2,4
SCW10: 10     : 0,6      0,2,4
SCW11: 11     : 0,6      0,4,4
SCW12: 12     : 0,2,6    0,4
SCW13: 13     : 0,2,6    4,6,6
SCW14: 14     : 4,6,6    0,2
SCW15: 15     : 0,4,6    2
SCW16: 16     : 2,4,6    0
SCW17: 17     : ALL      NONE
SCW20: 0      : SCW20 THRU SCW77 SETS & CLEARS WORDS AS
SCW21: 16     : GIVEN ABOVE FOR THE SAME CONSTANTS. (SCW21 IS
SCW22: 1      : THE SAME AS FOR SCW16.)
SCW23: 15
SCW24: 2
SCW25: 14
SCW26: 3
SCW27: 13
SCW30: 4
SCW31: 12
SCW32: 5
SCW33: 11
SCW34: 6
SCW35: 10
SCW36: 7
SCW37: 0
SCW40: 7
SCW41: 10
SCW42: 6
SCW43: 11
SCW44: 5
SCW45: 12
SCW46: 4
SCW47: 13
SCW50: 3
SCW51: 14
SCW52: 2
SCW53: 15
SCW54: 1
SCW55: 16
SCW56: 0

```

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| | | | | |
|-----|--------|--------|--------|----|
| 933 | 001440 | 000017 | SCW57: | 17 |
| 934 | 001442 | 000005 | SCW60: | 5 |
| 935 | 001444 | 000012 | SCW61: | 12 |
| 936 | 001446 | 000005 | SCW62: | 5 |
| 937 | 001450 | 000012 | SCW63: | 12 |
| 938 | 001452 | 000005 | SCW64: | 5 |
| 939 | 001454 | 000012 | SCW65: | 12 |
| 940 | 001456 | 000005 | SCW66: | 5 |
| 941 | 001460 | 000012 | SCW67: | 12 |
| 942 | 001462 | 000000 | SCW70: | 0 |
| 943 | 001464 | 000017 | SCW71: | 17 |
| 944 | 001466 | 000000 | SCW72: | 0 |
| 945 | 001470 | 000017 | SCW73: | 17 |
| 946 | 001472 | 000000 | SCW74: | 0 |
| 947 | 001474 | 000017 | SCW75: | 17 |
| 948 | 001476 | 000000 | SCW76: | 0 |
| 949 | 001500 | 000017 | SCW77: | 17 |
| 950 | | | | |

| | | | |
|------|--------|--------|--|
| 951 | | | |
| 952 | | | :DISTRIBUTE CONTROL WORD TABLE. |
| 953 | | | :WORDS USED TO DIRECTLY SET DISTRIBUTE BOARDS IN BOTH THE DISTRIBUTE |
| 954 | | | :TESTS AND IN THE DISTRIBUTE-JUMPERED-TO-SCAN-TEST. |
| 955 | | | |
| 956 | 001502 | 000000 | DCW00: 0 |
| 957 | 001504 | 000001 | DCW01: 1 |
| 958 | 001506 | 000002 | DCW02: 2 |
| 959 | 001510 | 000004 | DCW03: 4 |
| 960 | 001512 | 000010 | DCW04: 10 |
| 961 | 001514 | 000020 | DCW05: 20 |
| 962 | 001516 | 000040 | DCW06: 40 |
| 963 | 001520 | 000100 | DCW07: 100 |
| 964 | 001522 | 000200 | DCW10: 200 |
| 965 | 001524 | 000400 | DCW11: 400 |
| 966 | 001526 | 001000 | DCW12: 1000 |
| 967 | 001530 | 002000 | DCW13: 2000 |
| 968 | 001532 | 004000 | DCW14: 4000 |
| 969 | 001534 | 010000 | DCW15: 10000 |
| 970 | 001536 | 020000 | DCW16: 20000 |
| 971 | 001540 | 040000 | DCW17: 40000 |
| 972 | 001542 | 100000 | DCW20: 100000 |
| 973 | 001544 | 177776 | DCW21: 177776 |
| 974 | 001546 | 177775 | DCW22: 177775 |
| 975 | 001550 | 177773 | DCW23: 177773 |
| 976 | 001552 | 177767 | DCW24: 177767 |
| 977 | 001554 | 177757 | DCW25: 177757 |
| 978 | 001556 | 177737 | DCW26: 177737 |
| 979 | 001560 | 177677 | DCW27: 177677 |
| 980 | 001562 | 177577 | DCW30: 177577 |
| 981 | 001564 | 177377 | DCW31: 177377 |
| 982 | 001566 | 176777 | DCW32: 176777 |
| 983 | 001570 | 175777 | DCW33: 175777 |
| 984 | 001572 | 173777 | DCW34: 173777 |
| 985 | 001574 | 167777 | DCW35: 167777 |
| 986 | 001576 | 157777 | DCW36: 157777 |
| 987 | 001600 | 137777 | DCW37: 137777 |
| 988 | 001602 | 077777 | DCW40: 077777 |
| 989 | 001604 | 052525 | DCW41: 052525 |
| 990 | 001606 | 125252 | DCW42: 125252 |
| 991 | 001610 | 034163 | DCW43: 034163 |
| 992 | 001612 | 146314 | DCW44: 146314 |
| 993 | 001614 | 070707 | DCW45: 070707 |
| 994 | 001616 | 107070 | DCW46: 107070 |
| 995 | 001620 | 007417 | DCW47: 007417 |
| 996 | 001622 | 170360 | DCW50: 170360 |
| 997 | 001624 | 041045 | DCW51: 041045 |
| 998 | 001626 | 136732 | DCW52: 136732 |
| 999 | 001630 | 154321 | DCW53: 154321 |
| 1000 | 001632 | 023456 | DCW54: 023456 |
| 1001 | 001634 | 133333 | DCW55: 133333 |
| 1002 | 001636 | 044444 | DCW56: 044444 |
| 1003 | 001640 | 000000 | DCW57: 000000 |
| 1004 | 001642 | 177777 | DCW60: 177777 |
| 1005 | 001644 | 000000 | DCW61: 000000 |
| 1006 | 001646 | 111111 | DCW62: 111111 |

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| | | | | |
|------|--------|--------|--------|--------|
| 1007 | 001650 | 022222 | DCW63: | 022222 |
| 1008 | 001652 | 133333 | DCW64: | 133333 |
| 1009 | 001654 | 044444 | DCW65: | 044444 |
| 1010 | 001656 | 155555 | DCW66: | 155555 |
| 1011 | 001660 | 066666 | DCE67: | 066666 |
| 1012 | 001662 | 177777 | DCW70: | 177777 |
| 1013 | 001664 | 101010 | DCW71: | 101010 |
| 1014 | 001666 | 111111 | DCW72: | 111111 |
| 1015 | 001670 | 121212 | DCW73: | 121212 |
| 1016 | 001672 | 131313 | DCW74: | 131313 |
| 1017 | 001674 | 141414 | DCW75: | 141414 |
| 1018 | 001676 | 151515 | DCW76: | 151515 |
| 1019 | 001700 | 177777 | DCW77: | 177777 |

```

1020      ;SUBROUTINE TO INITIALIZE GOOD WORDS FOR SCAN CONTROL TESTS.
1021      ;(SIMULATE THE ACTION OF SCAN BOARDS IN MAINT. MODE.)
1022
1023 001702 011467 177306      IZGSW: MOV      (CWP),GMF      ;INIT. GOOD MAINT. FLOP.
1024 001706 005067 177306      CLR      GWO      ;INIT. GOOD WORD 0.
1025 001712 032767 000001 177274 BIT      #1,GMF
1026 001720 001002      BNE      IZGSWA
1027 001722 005167 177272      COM      GWO
1028 001726 005067 177270      IZGSWA: CLR      GW2      ;INIT. GOOD WORD 2.
1029 001732 032767 000002 177254 BIT      #2,GMF
1030 001740 001002      BNE      IZGSWB
1031 001742 005167 177254      COM      GW2
1032 001746 005067 177252      IZGSWB: CLR      GW4      ;INIT. GOOD WORD 4.
1033 001752 032767 000004 177234 BIT      #4,GMF
1034 001760 001002      BNE      IZGSWC
1035 001762 005167 177236      COM      GW4
1036 001766 005067 177234      IZGSWC: CLR      GW6      ;INIT. GOOD WORD 6.
1037 001772 032767 000010 177214 BIT      #10,GMF
1038 002000 001002      BNE      IZGSWD
1039 002002 005167 177220      COM      GW6
1040 002006 000205      IZGSWD: RTS      $
  
```

; SUBROUTINES TO DELAY

| | | | | | | | |
|-------|--------|--------|--------|--------|-------------|------------|--|
| 10000 | 002010 | 016700 | 177240 | | DELAY1: MOV | DLA#01, R0 | : TEMP. STORE DELAY NO. 1 |
| 10001 | 002014 | 016701 | 177240 | | MOV | DLA#01, R1 | : TEMP. STORE DELAY OFFSET 1. |
| 10002 | 002020 | 000167 | 000010 | | JMP | DELAY | : BRANCH. |
| 10003 | 002024 | 016700 | 177226 | | DELAY2: MOV | DLA#02, R0 | : TEMP. STORE DELAY NO. 2 |
| 10004 | 002030 | 016701 | 177226 | | MOV | DLA#02, R1 | : TEMP. STORE DELAY OFFSET 2. |
| 10005 | 002034 | 010067 | 177226 | | DELAY: MOV | R0, DLACTR | : INIT. DELAY COUNTER |
| 10006 | 002040 | 032777 | 000004 | 177070 | BIT | #SDS, #SWR | : SHORTEN DELAY? |
| 10007 | 002046 | 001402 | | | BEQ | DLAA | : NO. - BRANCH. |
| 10008 | 002050 | 160167 | 177212 | | SUB | R1, DLACTR | : YES. - SHORTEN DELAY BY 10%. |
| 10009 | 002054 | 032777 | 000002 | 177054 | DLAA: BIT | #LDS, #SWR | : LENGTHEN DELAY? |
| 10010 | 002062 | 001402 | | | BEQ | DLAB | : NO. - BRANCH. |
| 10011 | 002064 | 060167 | | | ADD | R1, DLACTR | : YES. - LENGTHEN DELAY BY 10%. |
| 10012 | 002070 | 005367 | 1 | | DLAB: DEC | DLACTR | : DECREMENT DELAY COUNTER. IS IT ZERO? |
| 10013 | 002074 | 001375 | | | BNE | DLAB | : NO. - BRANCH. |
| 10014 | 002076 | 000205 | | | RTS | \$ | : YES. - RETURN. |

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1061                                     ;ARE THERE SCAN BOARDS TO BE TESTED AND/OR IS TESTING REQUESTED?
1062
1063 002100 032767 000120 177034 PREST: BIT      #JF+JXF,FLAGS ;TEST DJMPRS WHERE DATA HAS
1064 002106 001406          PRESTA          ;REFN SPECIFIED?
1065 002110 032767 000200 177024 BIT      #DATE,FLAGS
1066 002116 001402          BEQ          PRESTA          ;NO. - BRANCH.
1067 002120 000167 002526          JMP          IDJ          ;YES. - GO DIRECTLY TO DJMPRS TESTS.
1068 002124 026727 176766 000116 PRESTA: CMP      LOSA,#'N ;TEST SCAN BOARDS?
1069 002132 001002          BNE          PRESTB         ;YES. - BRANCH.
1070 002134 000167 001570          JMP          PREDT        ;NO. - BRANCH.
1071 002140 032767 000004 176774 PRESTB: BIT     #MOD,FLAGS ;MODULE TEST MODE?
1072 002146 001002          BNE          STMBEG         ;YES. - BRANCH.
1073 002150 000167 000074          JMP          STOBEG        ;NO. - BRANCH.
1074
1075                                     ;SCAN TEST M
1076                                     ;CHECK THAT ALL SCAN BOARD ADDRESSES NOT GIVEN BY THE OPERATOR
1077                                     ;DO NOT RESPOND TO A TEST INST. AN ERROR INDICATES THAT
1078                                     ;THE BOARD IS RESPONDING TO ADDRESS(ES) OTHER THAN ITS OWN
1079                                     ;AND IS BAD.
1080
1081 002154 016702 176736          STMBEG: MOV     LOSA,CADR ;INIT. CONTROL ADRS. POINTER.
1082 002160 042702 003777          BIC     #3777,CADR ;FORCE IT TO 164000.
1083 002164 012767 002214 175612 MOV     #STMTS,4 ;INIT. TIMEOUT-ERROR TRAP VECTOR.
1084 002172 112767 000100 176743 MOVB   #SF,RFLGS ;INIT. ERROR RELEVANCY FLAGS.
1085 002200 104400          SCOPE ;SCOPE TRAP.
1086 002202 020267 176710          STMLOP: CMP   CADR,LOSA ;EXCLUDE TESTING THIS ADDRESS.
1087 002206 001410          BEQ     STMADV ;YES. - BRANCH. (IT'S WHERE THE BOARD IS.)
1088 002210 005712          TST   (CADR) ;TEST SCAN ADRS.
1089 002212 000402          BR    STMERR ;IF NO TRAP OCCURS, GO TO "STMERR" -
1090 002214 022626          STMTS: CMP   (STP)+,(STP)+ ;IF A TRAP OCCURS IT RETURNS HERE AS "OK".
1091 002216 104777          STMOK: CONTROL ;CONTROL TRAP.
1092 002220 104000          STMERR: ERROR ;ERROR TRAP.
1093 002222 020227 167770          CMP     CADR,#167770 ;ALL ADRS. CONFIGURATIONS TESTED?
1094 002226 001403          BEQ     STMEND ;YES.
1095 002230 062702 000010          STMADV: ADD  #10,CADR ;NO. - ADVANCE CONTROL ADRS. PTR.
1096 002234 000762          BR    STMLOP ;BRANCH.
1097 002236 012767 000006 175540 STMEND: MOV  #6,4 ;INIT. (CLOSE) TIMEOUT-ERROR TRAP VECTOR.
1098 002244 000167 000000          JMP     STOBEG ;BRANCH.

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1099          ;SCAN TEST 0
1100          ;CHECK THAT ALL SCAN ADDRESSES GIVEN BY THE OPERATOR AT LEAST RESPOND
1101          ;TO A TST INST.  AN ERROR (VIA TIME OUT-ERROR TRAP) INDICATES EITHER
1102          ;A BAD ADDRESS OR A NON-EXISTANT ADDRESS WAS GIVEN BY THE OPERATOR.
1103
1104 002250 016702 176642          STOBEG: MOV      LOSA,CADR          ;INIT. CONTROL ADRS. POINTER.
1105 002254 012767 002276 175522      MOV      #STOTS,4          ;INIT. TIME OUT-ERROR TRAP VECTOR.
1106 002262 112767 000100 176653      MOVB    #SF,RFLGS        ;INIT. ERROR RELEVANCY FLAGS.
1107 002270 104400          SCOPE          ;SCOPE TRAP.
1108 002272 005712          STOLOP: TST    (CADR)        ;TEST A SCAN ADDRESS.
1109 002274 000402          BR      STOOK            ;IF NO TRAP OCCURS, GO TO "STOOK".-
1110 002276 022626          STOTS:  CMP    (STP)+,(STP)+ ;IF A TRAP OCCURS, GO TO "STOERR" VIA-
1111 002300 000401          BR      STOERR          ;A TIME OUT-ERROR TRAP TO VECTOR 4.
1112 002302 104777          STOOK:  CONTROL        ;CONTROL TRAP.
1113 002304 104000          STOERR: ERROR         ;ERROR TRAP.
1114 002306 020267 176606          CMP     CADR,HISA        ;ALL GIVEN ADDRESSES TESTED?
1115 002312 001403          BEQ     STOEND          ;YES. - BRANCH.
1116 002314 062702 000002          ADD     #2,CADR         ;NO. - ADVANCE CONTROL ADRS. PTR.
1117 002320 000764          BR     STOLOP          ;BRANCH.
1118 002322 012767 000006 175454      STOEND: MOV   #6,4        ;INIT. (CLOSE) TIMEOUT-ERROR TRAP VECTOR.
1119 002330 000167 000000          JMP     STIBEG         ;BRANCH.

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1120
1121
1122      ;SCAN TEST 1
1123      ;CHECK THAT MAINTENANCE FLOP ACCESS OF ALL SCAN ADDRESSES GIVEN
1124      ;BY THE OPERATOR AT LEAST RESPOND PROPERLY TO A TST INST.
1125 002334 016702 176556 ST1BEG: MOV      LOSA,CADR      ;INIT. CONTROL ADDRESS POINTER.
1126 002340 012767 002364 175436      MOV      #ST1TS,4      ;INIT. TIME OUT-ERROR TRAP VECTOR.
1127 002346 112767 000100 176567      MOVVB   #SF,RFLGS      ;INIT. ERROR RELEVANCY FLAGS.
1128 002354 104400      SCOPE      ;SCOPE TRAP.
1129 002356 105762 000001 ST1LOP: TSTB   +1(CADR) ;TEST ACCESS TO MAINT. FLOPS.
1130 002362 000402      BR      ST1OK          ;IF NO TRAP OCCURS, GO TO "ST1OK".-
1131 002364 022626      ST1TS: CMP    (STP)+,(STP)+ ;IF A TRAP OCCURS, GO TO "ST1ERR" VIA-
1132 002366 000401      BR      ST1ERR        ;A TIME OUT-ERROR TRAP TO VECTOR 4.
1133 002370 104777      ST1OK: CONTROL ;CONTROL TRAP.
1134 002372 104000      ST1ERR: ERROR  ;ERROR TRAP.
1135 002374 020267 176530      CMP     CADR,HISAX     ;ALL MAINT. FLOP ACCESSES TESTED?
1136 002400 001403      BEQ     ST1END        ;YES. - BRANCH.
1137 002402 062702 000010      ADD    #10,CADR       ;NO. - ADVANCE CONTROL ADRS. PTR.
1138 002406 000763      BR      ST1LOP        ;BRANCH. (NEXT SUB-TEST LOOP)
1139 002410 012767 000006 175366 ST1END: MOV    #6,4      ;INIT. TIME OUT-ERROR TRAP VECTOR.
1140 002416 000167 000000      JMP     ST2BEG        ;BRANCH.

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| | | | | | | | |
|------|--------|--------|--------|---|---------------|---|--|
| 1141 | | | | :SCAN TEST 2 | | | |
| 1142 | | | | :CHECK THAT ALL MAINTENANCE FLOPS ARE RESET AND THAT ALL SCAN | | | |
| 1143 | | | | :WORD BITS ARE SET BY THE ACTION OF THE RESET INSTRUCTION | | | |
| 1144 | | | | | | | |
| 1145 | 002422 | 016702 | 176470 | ST2BEG: MOV | LOSA, CADR | :INIT. CONTROL ADDRESS POINTER. | |
| 1146 | 002426 | 012704 | 001302 | MOV | #SCW00, CWP | :INIT. CONTROL WORD POINTER. | |
| 1147 | 002432 | 004567 | 177244 | JSR | \$, IZGSW | :INIT. "GOOD" WORDS. | |
| 1148 | 002436 | 112767 | 000172 | MOV | #SRF, RFLGS | :INIT. ERROR RELEVANCY FLAGS. | |
| 1149 | 002444 | 104400 | | SCOPE | | :SCOPE TRAP. | |
| 1150 | 002446 | 000005 | | ST2LOP: RESET | | :CLEAR ALL MAINT. FLOPS, SET ALL SCAN BITS. | |
| 1151 | 002450 | 116267 | 000001 | MOV | +1(CADR), TMF | :READ MAINT. FLOPS. | |
| 1152 | 002456 | 004567 | 177326 | JSR | \$, DELAY1 | :WAIT. | |
| 1153 | 002462 | 016267 | 000000 | MOV | +0(CADR), TW0 | :READ SCAN WORD 0. | |
| 1154 | 002470 | 016267 | 000002 | MOV | +2(CADR), TW2 | :READ SCAN WORD 2. | |
| 1155 | 002476 | 016267 | 000004 | MOV | +4(CADR), TW4 | :READ SCAN WORD 4. | |
| 1156 | 002504 | 016267 | 000006 | MOV | +6(CADR), TW6 | :READ SCAN WORD 6. | |
| 1157 | 002512 | 026767 | 176512 | CMP | TMF, GMF | :MAINT. FLOPS CLEARED? | |
| 1158 | 002520 | 001021 | | BNE | ST2ERR | :NO. - BRANCH. | |
| 1159 | 002522 | 026767 | 176506 | CMP | TW0, GW0 | :YES. - SCAN WORD 0, ALL BITS SET? | |
| 1160 | 002530 | 001015 | | BNE | ST2ERR | :NO. - BRANCH. | |
| 1161 | 002532 | 026767 | 176500 | CMP | TW2, GW2 | :YES. - SCAN WORD 2, ALL BITS SET? | |
| 1162 | 002540 | 001011 | | BNE | ST2ERR | :NO. - BRANCH. | |
| 1163 | 002542 | 026767 | 176472 | CMP | TW4, GW4 | :YES. - SCAN WORD 4, ALL BITS SET? | |
| 1164 | 002550 | 001005 | | BNE | ST2ERR | :NO. - BRANCH. | |
| 1165 | 002552 | 026767 | 176464 | CMP | TW6, GW6 | :YES. - SCAN WORD 6, ALL BITS SET? | |
| 1166 | 002560 | 001001 | | BNE | ST2ERR | :NO. - BRANCH. | |
| 1167 | 002562 | 104777 | | ST2OK: CONTROL | | :CONTROL TRAP. | |
| 1168 | 002564 | 104000 | | ST2ERR: ERROR | | :ERROR TRAP. | |
| 1169 | 002566 | 020267 | 176336 | CMP | CADR, HISAX | :ALL MAINT. FLOPS & SCAN WORDS TESTED? | |
| 1170 | 002572 | 001403 | | BEQ | ST2END | :YES. - BRANCH. | |
| 1171 | 002574 | 062702 | 000010 | ADD | #10, CADR | :NO. - ADVANCE CONTROL ADRS. PTR. | |
| 1172 | 002600 | 000722 | | BR | ST2LOP | :BRANCH. (NEXT SUB-TEST LOOP) | |
| 1173 | 002602 | 000167 | 000000 | ST2END: JMP | ST3BEG | :BRANCH | |

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| | | | | | | | | | | |
|------|--------|--------|--------|--------|--|--|--|--|--|--|
| 1174 | | | | | | | | | | |
| 1175 | | | | | | | | | | |
| 1176 | | | | | | | | | | |
| 1177 | | | | | | | | | | |
| 1178 | | | | | | | | | | |
| 1179 | 002606 | 016702 | 176304 | | | | | | | |
| 1180 | 002612 | 012704 | 001340 | | | | | | | |
| 1181 | 002615 | 004567 | 177060 | | | | | | | |
| 1182 | 002622 | 112767 | 000172 | 176313 | | | | | | |
| 1183 | 002630 | 104400 | | | | | | | | |
| 1184 | 002632 | 111462 | 000001 | | | | | | | |
| 1185 | 002636 | 116267 | 000001 | 176364 | | | | | | |
| 1186 | 002644 | 004567 | 177140 | | | | | | | |
| 1187 | 002650 | 016267 | 000000 | 176356 | | | | | | |
| 1188 | 002656 | 016267 | 000002 | 176352 | | | | | | |
| 1189 | 002664 | 016267 | 000004 | 176346 | | | | | | |
| 1190 | 002672 | 016267 | 000006 | 176342 | | | | | | |
| 1191 | 002700 | 026767 | 176324 | 176306 | | | | | | |
| 1192 | 002706 | 001021 | | | | | | | | |
| 1193 | 002710 | 026767 | 176320 | 176302 | | | | | | |
| 1194 | 002716 | 001015 | | | | | | | | |
| 1195 | 002720 | 026767 | 176312 | 176274 | | | | | | |
| 1196 | 002726 | 001011 | | | | | | | | |
| 1197 | 002730 | 026767 | 176304 | 176266 | | | | | | |
| 1198 | 002736 | 001005 | | | | | | | | |
| 1199 | 002740 | 026767 | 176276 | 176260 | | | | | | |
| 1200 | 002746 | 001001 | | | | | | | | |
| 1201 | 002750 | 104777 | | | | | | | | |
| 1202 | 002752 | 104000 | | | | | | | | |
| 1203 | 002754 | 020267 | 176150 | | | | | | | |
| 1204 | 002760 | 001403 | | | | | | | | |
| 1205 | 002762 | 062702 | 000010 | | | | | | | |
| 1206 | 002766 | 000721 | | | | | | | | |
| 1207 | 002770 | 000167 | 000000 | | | | | | | |

| | | |
|---------|---|---|
| | ; SCAN TEST 3 | |
| | ; CHECK THAT ALL MAINTENANCE FLOPS CAN BE SET AND THAT ALL SCAN | |
| | ; WORDS CAN BE CLEARED. | |
| ST3BEG: | MOV LOSA, CADR | ; INIT. CONTROL ADDRESS POINTER. |
| | MOV #SCW17, CWP | ; INIT. CONTROL WORD POINTER. |
| | JSR \$, IZGSW | ; INIT. "GOOD" WORDS. |
| | MOV #SRF, RFLGS | ; INIT. ERROR RELEVANCY FLAGS. |
| | SCOPE | ; SCOPE TRAP. |
| ST3LOP: | MOV (CWP), +1(CADR) | ; SET ALL MAINT FLOPS, CLEAR ALL SCAN BITS. |
| | MOV +1(CADR), TMF | ; READ MAINT. FLOPS |
| | JSR \$, DELAY1 | ; WAIT |
| | MOV +0(CADR), TW0 | ; READ SCAN WORD 0. |
| | MOV +2(CADR), TW2 | ; READ SCAN WORD 2. |
| | MOV +4(CADR), TW4 | ; READ SCAN WORD 4. |
| | MOV +6(CADR), TW6 | ; READ SCAN WORD 6. |
| | CMP TMF, GMF | ; MAINT. FLOPS SET? |
| | BNE ST3ERR | ; NO. - BRANCH. |
| | CMP TW0, GW0 | ; YES. - SCAN WORD 0 CLEARED? |
| | BNE ST3ERR | ; NO. - BRANCH. |
| | CMP TW2, GW2 | ; YES. - SCAN WORD 2 CLEARED? |
| | BNE ST3ERR | ; NO. - BRANCH. |
| | CMP TW4, GW4 | ; YES. - SCAN WORD 4 CLEARED? |
| | BNE ST3ERR | ; NO. - BRANCH. |
| | CMP TW6, GW6 | ; YES. - SCAN WORD 6 CLEARED? |
| | BNE ST3ERR | ; NO. - BRANCH. |
| ST3OK: | CONTROL | ; YES. - CONTROL TRAP. |
| ST3ERR: | ERROR | ; ERROR TRAP. |
| | CMP CADR, HISAX | ; ALL GIVEN ADDRESSES TESTED? |
| | BEQ ST3END | ; YES. - BRANCH. |
| | ADD #10, CADR | ; NO. - ADVANCE CONTROL ADRS. PTR. |
| | BR ST3LOP | ; BRANCH (NEXT SUB-TEST LOOP) |
| ST3END: | JMP ST4BEG | ; BRANCH. |

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| 1208 | | | | ;SCAN TEST 4 | | |
| 1209 | | | | ;CHECK THAT ALL MAINTENANCE FLOPS ARE RESET AND THAT ALL SCAN | | |
| 1210 | | | | ;WORD BITS ARE SET BY THE ACTION OF THE RESET INSTRUCTION. | | |
| 1211 | | | | | | |
| 1212 | 002774 | 016702 | 176116 | ST4BEG: MOV | LOSA, CADR | ;INIT. CONTROL ADDRESS POINTER. |
| 1213 | 003000 | 012704 | 001302 | MOV | #SCW00, CWP | ;INIT. CONTROL WORD POINTER. |
| 1214 | 003004 | 004567 | 176672 | JSR | \$, IZGSW | ;INIT. "GOOD" WORDS. |
| 1215 | 003010 | 112767 | 000172 | MOVB | #SRF, RFLGS | ;INIT. ERROR RELEVANCY FLAGS. |
| 1216 | 003016 | 104400 | | SCOPE | | ;SCOPE TRAP. |
| 1217 | 003020 | 000005 | | ST4LOP: RESET | | ;CLEAR ALL MAINT. FLOPS, SET ALL SCAN BITS. |
| 1218 | 003022 | 116267 | 000001 | MOVB | +1(CADR), TMF | ;READ MAINT. FLOPS |
| 1219 | 003030 | 004567 | 176754 | JSR | \$, DELAY1 | ;WAIT |
| 1220 | 003034 | 016267 | 000000 | MOV | +0(CADR), TW0 | ;READ SCAN WORD 0. |
| 1221 | 003042 | 016267 | 000002 | MOV | +2(CADR), TW2 | ;READ SCAN WORD 2. |
| 1222 | 003050 | 016267 | 000004 | MOV | +4(CADR), TW4 | ;READ SCAN WORD 4. |
| 1223 | 003056 | 016267 | 000006 | MOV | +6(CADR), TW6 | ;READ SCAN WORD 6. |
| 1224 | 003064 | 026767 | 176140 | CMP | TMF, GMF | ;MAINT. FLOPS CLEARED? |
| 1225 | 003072 | 001021 | | BNE | ST4ERR | ;NO. - BRANCH. |
| 1226 | 003074 | 026767 | 176134 | CMP | TW0, GW0 | ;YES. - SCAN WORD 0, ALL BITS SET? |
| 1227 | 003102 | 001015 | | BNE | ST4ERR | ;NO. - BRANCH. |
| 1228 | 003104 | 026767 | 176126 | CMP | TW2, GW2 | ;YES. - SCAN WORD 2, ALL BITS SET? |
| 1229 | 003112 | 001011 | | BNE | ST4ERR | ;NO. - BRANCH. |
| 1230 | 003114 | 026767 | 176120 | CMP | TW4, GW4 | ;YES. - SCAN WORD 4, ALL BITS SET? |
| 1231 | 003122 | 001005 | | BNE | ST4ERR | ;NO. - BRANCH. |
| 1232 | 003124 | 026767 | 176112 | CMP | TW6, GW6 | ;YES. - SCAN WORD 6, ALL BITS SET? |
| 1233 | 003132 | 001001 | | BNE | ST4ERR | ;NO. - BRANCH. |
| 1234 | 003134 | 104777 | | ST4OK: CONTROL | | ;CONTROL TRAP. |
| 1235 | 003136 | 104000 | | ST4ERR: ERROR | | ;ERROR TRAP. |
| 1236 | 003140 | 020267 | 175764 | CMP | CADR, HISAX | ;ALL MAINT. FLOPS & SCAN WORDS TESTED |
| 1237 | 003144 | 001403 | | BEQ | ST4END | ;YES. - BRANCH. |
| 1238 | 003146 | 062702 | 000010 | ADD | #10, CADR | ;NO. - ADVANCE CONTROL ADRS. PTR. |
| 1239 | 003152 | 000722 | | BR | ST4LOP | ;BRANCH. (NEXT SUB-TEST LOOP) |
| 1240 | 003154 | 000167 | 000000 | ST4END: JMP | ST5BEG | ;BRANCH. |

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1241                                     ;SCAN TEST 5
1242                                     ;CHECK THAT ALL MAINTENANCE FLOPS CAN BE SET AND THAT ALL SCAN
1243                                     ;WORDS CAN BE CLEARED.
1244
1245 003160 016702 175732 STSBEG: MOV LOSA,CADR ;INIT. CONTROL ADDRESS POINTER.
1246 003164 012704 001340      MOV #SCW17,CWP ;INIT. CONTROL WORD POINTER.
1247 003170 004567 176506      JSR $,IZGSW ;INIT. "GOOD" WORDS.
1248 003174 112767 000172 175741  MOVB #SRF,RFLGS ;INIT. ERROR RELEVANCY FLAGS.
1249 003202 104400      SCOPE ;SCOPE TRAP.
1250 003204 111462 000001 STSLOP: MOVB (CWP),+1(CADR) ;SET ALL MAINT FLOPS, CLEAR ALL SCAN BITS.
1251
1252 003210 116267 000001 176012      MOVB +1(CADR),TMF ;READ MAINT. FLOPS
1253 003216 004567 176566      JSR $,DELAY1 ;WAIT
1254 003222 016267 000000 176004      MOV +0(CADR),TW0 ;READ SCAN WORD 0.
1255 003230 016267 000002 176000      MOV +2(CADR),TW2 ;READ SCAN WORD 2.
1256 003236 016267 000004 175774      MOV +4(CADR),TW4 ;READ SCAN WORD 4.
1257 003244 016267 000006 175770      MOV +6(CADR),TW6 ;READ SCAN WORD 6.
1258 003252 026767 175752 175734      CMP TMF,GMF ;MAINT. FLOPS SET?
1259 003260 001021      BNE ST5ERR ;NO. - BRANCH.
1260 003262 026767 175746 175730      CMP TW0,GW0 ;YES. - SCAN WORD 0 CLEARED?
1261 003270 001015      BNE ST5ERR ;NO. - BRANCH.
1262 003272 026767 175740 175722      CMP TW2,GW2 ;YES. - SCAN WORD 2 CLEARED?
1263 003300 001011      BNE ST5ERR ;NO. - BRANCH.
1264 003302 026767 175732 175714      CMP TW4,GW4 ;YES. - SCAN WORD 4 CLEARED?
1265 003310 001005      BNE ST5ERR ;NO. - BRANCH.
1266 003312 026767 175724 175706      CMP TW6,GW6 ;YES. - SCAN WORD 6 CLEARED?
1267 003320 001001      BNE ST5ERR ;NO. - BRANCH.
1268 003322 104777      ST5OK: CONTROL ;YES. - CONTROL TRAP.
1269 003324 104000      ST5ERR: ERROR ;ERROR TRAP.
1270 003326 020267 175575      CMP CADR,HISAX ;ALL GIVEN ADDRESSES TESTED?
1271 003332 001403      BEQ ST5END ;YES. - BRANCH.
1272 003334 062702 000010      ADD #10,CADR ;NO. - ADVANCE CONTROL ADRS. PTR.
1273 003340 000721      BR ST5LOP ;BRANCH (NEXT SUB-TEST LOOP)
1274 003342 000167 000000      ST5END: JMP ST6BEG ;BRANCH.

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| 1275 | | | | | | | | | |
| 1276 | | | | | | | | | |
| 1277 | | | | | | | | | |
| 1278 | 003346 | 016702 | 175544 | | | | | | |
| 1279 | 003352 | 012704 | 001302 | | | | | | |
| 1280 | 003356 | 004567 | 176320 | | | | | | |
| 1281 | 003362 | 112767 | 000172 | 175553 | | | | | |
| 1282 | 003370 | 104400 | | | | | | | |
| 1283 | 003372 | 111462 | 000001 | | | | | | |
| 1284 | 003376 | 116267 | 000001 | 175624 | | | | | |
| 1285 | 003404 | 004567 | 176400 | | | | | | |
| 1286 | 003410 | 016267 | 000000 | 175616 | | | | | |
| 1287 | 003416 | 016267 | 000002 | 175612 | | | | | |
| 1288 | 003424 | 016267 | 000004 | 175606 | | | | | |
| 1289 | 003432 | 016267 | 000006 | 175602 | | | | | |
| 1290 | 003440 | 026767 | 175564 | 175546 | | | | | |
| 1291 | 003446 | 001021 | | | | | | | |
| 1292 | 003450 | 026767 | 175560 | 175542 | | | | | |
| 1293 | 003456 | 001015 | | | | | | | |
| 1294 | 003460 | 026767 | 175552 | 175534 | | | | | |
| 1295 | 003466 | 001011 | | | | | | | |
| 1296 | 003470 | 026767 | 175544 | 175526 | | | | | |
| 1297 | 003476 | 001005 | | | | | | | |
| 1298 | 003500 | 026767 | 175536 | 175520 | | | | | |
| 1299 | 003506 | 001001 | | | | | | | |
| 1300 | 003510 | 104777 | | | | | | | |
| 1301 | 003512 | 104000 | | | | | | | |
| 1302 | 003514 | 020267 | 175410 | | | | | | |
| 1303 | 003520 | 001403 | | | | | | | |
| 1304 | 003522 | 062702 | 000010 | | | | | | |
| 1305 | 003526 | 000721 | | | | | | | |
| 1306 | 003530 | 000167 | 000000 | | | | | | |

| | | |
|---------|--|---|
| | ;SCAN TEST 6 | |
| | ;CHECK THAT ALL MAINTENANCE FLOPS CAN BE RESET AND THAT ALL SCAN | |
| | WORD BITS CAN BE SET. | |
| ST6BEG: | MOV LOSA,CADR | ;INIT. CONTROL ADDRESS POINTER. |
| | MOV #SCW00,CWP | ;INIT. CONTROL WORD POINTER. |
| | JSR \$,IZGSW | ;INIT. "GOOD" WORDS. |
| | MOVB #SRF,RFLGS | ;INIT. ERROR RELEVANCY FLAGS. |
| | SCOPE | ;SCOPE TRAP. |
| ST6LOP: | MOVB (CWP),+1(CADR) | ;CLEAR ALL MAINT. FLOPS, SET ALL SCAN BIT |
| | MOVB +1(CADR),TMF | ;READ MAINT. FLOPS |
| | JSR \$,DELAY1 | ;WAIT |
| | MOV +0(CADR),TW0 | ;READ SCAN WORD 0. |
| | MOV +2(CADR),TW2 | ;READ SCAN WORD 2. |
| | MOV +4(CADR),TW4 | ;READ SCAN WORD 4. |
| | MOV +6(CADR),TW6 | ;READ SCAN WORD 6. |
| | CMP TMF,GMF | ;MAINT. FLOPS CLEARED? |
| | BNE ST6ERR | ;NO. - BRANCH. |
| | CMP TW0,GW0 | ;YES. - SCAN WORD 0, ALL BITS SET? |
| | BNE ST6ERR | ;NO. - BRANCH. |
| | CMP TW2,GW2 | ;YES. - SCAN WORD 2, ALL BITS SET? |
| | BNE ST6ERR | ;NO. - BRANCH. |
| | CMP TW4,GW4 | ;YES. - SCAN WORD 4, ALL BITS SET? |
| | BNE ST6ERR | ;NO. - BRANCH. |
| | CMP TW6,GW6 | ;YES. - SCAN WORD 6, ALL BITS SET? |
| | BNE ST6ERR | ;NO. - BRANCH. |
| ST6OK: | CONTROL | ;CONTROL TRAP. |
| ST6ERR: | ERROR | ;ERROR TRAP. |
| | CMP CADR,HISAX | ;ALL MAINT. FLOPS & SCAN WORDS TEST. |
| | BEQ ST6END | ;YES. - BRANCH. |
| | ADD #10,CADR | ;NO. - ADVANCE CONTROL ADRS. PTR. |
| | BR ST6LOP | ;BRANCH. (NEXT SUB-TEST LOOP). |
| ST6END: | JMP ST7BEG | ;BRANCH. |

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1307
1308
1309
1310
1311
1312 003534 016702 175356
1313 003540 112767 000172 175375
1314 003546 012704 001302
1315 003552 104400
1316 003554 004567 176122
1317 003560 111462 000001
1318 003564 116267 000001 175436
1319 003572 004567 176212
1320 003576 016267 000000 175430
1321 003604 016267 000002 175424
1322 003612 016267 000004 175420
1323 003620 016267 000006 175414
1324 003626 026767 175376 175360
1325 003634 001021
1326 003636 026767 175372 175354
1327 003644 001015
1328 003646 026767 175364 175346
1329 003654 001011
1330 003656 026767 175356 175340
1331 003664 001005
1332 003666 026767 175350 175332
1333 003674 001001
1334 003676 104777
1335 003700 104000
1336 003702 022467 175572
1337 003706 001322
1338 003710 020267 175214
1339 003714 001403
1340 003716 062702 000010
1341 003722 000711
1342 003724 000167 000000

;SCAN TEST 7
;CHECK THAT ALL MAINTENANCE FLOPS AND SCAN WORDS WILL SET TO ALL POSSIBLE CONFIGURATIONS

ST7BEG: MOV LOSA,CADR ;INIT. CONTROL ADDRESS POINTER.
        MOVB #SRF,RFLGS ;INIT. ERROR RELEVANCY FLAGS.
ST7L2: MOV #SCW00,CWP ;INIT. CONTROL WORD POINTER.
        SCOPE ;SCOPE TRAP.
ST7L1: JSR $,IZGSW ;INIT. "GOOD" WORDS.
        MOVB (CWP),+1(CADR) ;SET MAINT. FLOPS AS PER CONTROL WORD PTR.
        MOVB +1(CADR),TMF ;READ MAINT. FLOPS
        JSR $,DELAY1 ;WAIT.
        MOV +0(CADR),TWO ;READ SCAN WORD 0.
        MOV +2(CADR),TW2 ;READ SCAN WORD 2.
        MOV +4(CADR),TW4 ;READ SCAN WORD 4.
        MOV +6(CADR),TW6 ;READ SCAN WORD 6.
        CMP TMF,GMF ;MAINT. FLOPS OK?
        BNE ST7ERR ;NO. - BRANCH.
        CMP TWO,GW0 ;YES. - SCAN WORD 0 OK?
        BNE ST7ERR ;NO. - BRANCH.
        CMP TW2,GW2 ;YES. - SCAN WORD 2 OK?
        BNE ST7ERR ;NO. - BRANCH.
        CMP TW4,GW4 ;YES. - SCAN WORD 4 OK?
        BNE ST7ERR ;NO. - BRANCH.
        CMP TW6,GW6 ;YES. - SCAN WORD 6 OK?
        BNE ST7ERR ;NO. - BRANCH.
ST7OK: CONTROL ;YES. - CONTROL TRAP.
ST7ERR: ERROR ;ERROR TRAP.
        CMP (CWP)+,SCW77 ;ALL CONTROL WORDS TESTED ON THIS WORD?
        BNE ST7L1 ;NO. - BRANCH.
        CMP CADR,HISAX ;YES. - ALL SCAN BOARDS TESTED.
        BEQ ST7END ;YES. - BRANCH.
        ADD #10,CADR ;NO. - ADVANCE CONTROL ADRS. PTR.
        BR ST7L2 ;BRANCH.
ST7END: JMP PREDT ;BRANCH.
  
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1343
1344           ;ARE THERE DISTRIBUTE BOARDS TO BE TESTED AND/OR IS TESTING REQUESTED?
1345
1346 003730 026727 175166 000116 PREDT:  CMP      LODA,#'M;      ;TEST DISTRIBUTE BOARDS?
1347 003736 001002                BNE      PREDTA      ;YES. - BRANCH.
1348 003740 000167 006376                JMP      PEND       ;NO. - BRANCH.
1349 003744 032767 000004 175170 PREDTA: BIT      #MOD_FLAGS ;MODULE TEST MODE?
1350 003752 001002                BNE      DTMBEG     ;YES. - BRANCH.
1351 003754 000167 000074                JMP      DTOBEG     ;NO. - BRANCH.
1352
1353           ;DIST. TEST M
1354           ;CHECK THAT ALL DIST. BOARD ADDRESSES NOT GIVEN BY THE OPERATOR
1355           ;DO NOT RESPOND TO A TEST INST. AN ERROR INDICATES THAT
1356           ;THE DIST. BOARD IS RESPONDING TO ADDRESS(ES) OTHER THAN ITS OWN
1357           ;AND IS BAD.
1358
1359 003760 016702 175136                DTMBEG: MOV      LODA,CADR      ;INIT. CONTROL ADRS. POINTER.
1360 003764 042702 003777                BIC      #3777,CADR      ;FORCE IT TO 164000.
1361 003770 012767 004020 174006                MOV      #DTMTS,4        ;INIT. TIMEOUT-ERROR TRAP VECTOR.
1362 003776 112767 000200 175137                MOV      #DF,RFLGS      ;INIT. ERROR RELEVANCY FLAGS.
1363 004004 104400                SCOPE                ;SCOPE TRAP.
1364 004006 020267 175110                DTMLOP: CMP      CADR,LODA    ;EXCLUDE TESTING THIS ADDRESS.
1365 004012 001410                BEQ      DTMADV        ;YES. - BRANCH. (IT'S WHERE THE BOARD IS.)
1366 004014 005712                TST      (CADR)        ;TEST DIST. ADRS.
1367 004016 000402                BR       DTMERR        ;IF NO TRAP OCCURS, GO TO "DTMERR" -
1368 004020 022626                DTMTS:  CMP      (S1P)+,(STP)+ ;IF A TRAP OCCURS IT RETURNS HERE AS "OK".
1369 004022 104777                DTMOK:  CONTROL      ;CONTROL TRAP.
1370 004024 104000                DTMERR: ERROR        ;ERROR TRAP.
1371 004026 020227 167770                CMP      CADR,#167770   ;ALL ADRS. CONFIGURATIONS TESTED?
1372 004032 001403                BEQ      DTMEND        ;YES.
1373 004034 062702 000010                DTMADV: ADD     #10,CADR  ;NO. - ADVANCE CONTROL ADRS. PTR.
1374 004040 000762                BR       DTMLOP        ;BRANCH.
1375 004042 012767 000006 173734                DTMEND: MOV     #6,4     ;INIT. (CLOSE) TIMEOUT-ERROR TRAP VECTOR.
1376 004050 000167 000000                JMP      DTOBEG        ;BRANCH.

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| 1377 | | | | | | | | | | |
| 1378 | | | | | | | | | | |
| 1379 | | | | | | | | | | |
| 1380 | | | | | | | | | | |
| 1381 | | | | | | | | | | |
| 1382 | | | | | | | | | | |
| 1383 | | | | | | | | | | |
| 1384 | | | | | | | | | | |
| 1385 | | | | | | | | | | |
| 1386 | 004054 | 016702 | 175042 | | | DTOBEG: | MOV | LODA,CADR | | ;INIT. CONTROL ADDRESS POINTER. |
| 1387 | 004060 | 012767 | 004102 | 173716 | | | MOV | #DTOTS,4 | | ;INIT. TIMEOUT-ERROR TRAP VECTOR. |
| 1388 | 004066 | 112767 | 000200 | 175047 | | | MOVB | #DF,RFLGS | | ;INIT. ERROR RELEVANCY FLAGS. |
| 1389 | 004074 | 104400 | | | | | SCOPE | | | ;SCOPE TRAP. |
| 1390 | 004076 | 005712 | | | | DTOLOP: | TST | (CADR) | | ;TEST A DISTRIBUTE ADDRESS. |
| 1391 | 004100 | 000402 | | | | | BR | DTOOK | | ;IF NO TRAP OCCURS, GO TO "DTOOK".- |
| 1392 | 004102 | 022626 | | | | DTOTS: | CMP | (STP)+,(STP)+ | | ;IF A TRAP OCCURS, GO TO "DTOERR VIA- |
| 1393 | 004104 | 000401 | | | | | BR | DTOERR | | ;A TIMEOUT-ERROR TRAP TO VECTOR 4. |
| 1394 | 004106 | 104777 | | | | DTOOK: | CONTROL | | | ;CONTROL TRAP. |
| 1395 | 004110 | 104000 | | | | DTOERR: | ERROR | | | ;ERROR TRAP. |
| 1396 | 004112 | 020267 | 175006 | | | | CMP | CADR,HIDA | | ;ALL GIVEN ADDRESSES TESTED? |
| 1397 | 004116 | 001403 | | | | | BEQ | DTOEND | | ;YES. - BRANCH. |
| 1398 | 004120 | 062702 | 000002 | | | | ADD | #2,CADR | | ;NO. - ADVANCE CONTROL ADRS. PTR. |
| 1399 | 004124 | 000764 | | | | | BR | DTOLOP | | ;BRANCH. |
| 1400 | 004126 | 012767 | 000006 | 173650 | | DTOEND: | MOV | #6,4 | | ;INIT. (CLOSE) TIMEOUT-ERROR TRAP VECTOR. |
| 1401 | 004134 | 000167 | 000000 | | | | JMP | DTIBEG | | ;BRANCH. |

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| | | | | | | |
|------|--------|--------|--------|---|-------------|-----------------------------------|
| 1402 | | | | ;DIST. TEST 1 | | |
| 1403 | | | | ;CHECK THAT ALL DISTRIBUTE WORDS ARE RESET BY THE ACTION OF THE | | |
| 1404 | | | | ;RESET INSTRUCTION. | | |
| 1405 | | | | | | |
| 1406 | 004140 | 016702 | 174756 | DT1BEG: MOV | LODA, CADR | ;INIT. CONTROL ADDRESS POINTER. |
| 1407 | 004144 | 012704 | 001502 | MOV | #DCW00, CWP | ;INIT. CONTROL WORD POINTER. |
| 1408 | 004150 | 011467 | 175042 | MOV | (CWP), GWD | ;INIT "GOOD" WORD. |
| 1409 | 004154 | 112767 | 000206 | MOVB | #DRF, RFLGS | ;INIT ERROR RELEVANCY FLAGS. |
| 1410 | 004162 | 104400 | 174761 | SCOPE | | ;SCOPE TRAP. |
| 1411 | 004164 | 000005 | | DT1LOP: RESET | | ;CLEAR ALL DISTRIBUTE WORDS. |
| 1412 | 004166 | 011267 | 175040 | MOV | (CADR), TWD | ;READ DIST. WORD. IS IT ZEROS? |
| 1413 | 004172 | 001001 | | BNE | DT1ERR | ;NO. - BRANCH. |
| 1414 | 004174 | 104777 | | DT1OK: CONTROL | | ;YES. - CONTROL TRAP. |
| 1415 | 004176 | 104000 | | DT1ERR: ERROR | | ;ERROR TRAP. |
| 1416 | 004200 | 020267 | 174720 | CMP | CADR, HIDA | ;ALL DIST. WORDS TESTED? |
| 1417 | 004204 | 001403 | | BEQ | DT1END | ;YES. - BRANCH. |
| 1418 | 004206 | 062702 | 000002 | ADD | #2, CADR | ;NO. - ADVANCE CONTROL ADRS. PTR. |
| 1419 | 004212 | 000764 | | BR | DT1LOP | ;BRANCH. |
| 1420 | 004214 | 000167 | 000000 | DT1END: JMP | DT2BEG | ;BRANCH. |

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| | | | | | | | |
| 1444 | | | | :DIST. TEST 3 | | | |
| 1445 | | | | :CHECK THAT ALL | DISTRIBUTE WORDS | ARE RESET BY THE ACTION | OF THE RESET INSTRUCTION. |
| 1446 | | | | | | | |
| 1447 | 004306 | 016702 | 174610 | DT3BEG: | MOV | LODA, CADR | :INIT. CONTROL ADDRESS POINTER. |
| 1448 | 004312 | 012704 | 001502 | | MOV | #OCW00, CWP | :INIT. CONTROL WORD POINTER. |
| 1449 | 004316 | 011467 | 174674 | | MOV | (CWP), GWD | :INIT. "GOOD" WORD. |
| 1450 | 004322 | 112767 | 000206 | | MOVB | #DRF, RFLGS | :INIT. ERROR RELEVANCY FLAGS. |
| 1451 | 004330 | 104400 | 174613 | | SCOPE | | :SCOPE TRAP |
| 1452 | 004332 | 000005 | | DT3LOP: | RESET | | :CLEAR ALL DISTRIBUTE WORDS. |
| 1453 | 004334 | 011267 | 174672 | | MOV | (CADR), TWD | :READ DIST. WORD. IS IT ZEROS? |
| 1454 | 004340 | 001001 | | | BNE | DT3ERR | :NO. - BRANCH. |
| 1455 | 004342 | 104777 | | DT3OK: | CONTROL | | :YES. - CONTROL TRAP. |
| 1456 | 004344 | 104000 | | DT3ERR: | ERROR | | :ERROR TRAP. |
| 1457 | 004346 | 020267 | 174552 | | CMP | CADR, HIDA | :ALL DIST. WORD TESTED? |
| 1458 | 004352 | 001403 | | | BEQ | DT3END | :YES. - BRANCH. |
| 1459 | 004354 | 062702 | 000002 | | ADD | #2, CADR | :NO. - ADVANCE CONTROL ADRS. PTR. |
| 1460 | 004360 | 000764 | | | BR | DT3LOP | :BRANCH. |
| 1461 | 004362 | 000167 | 000000 | DT3END: | JMP | DT4BEG | :BRANCH. |

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| | | | | | |
|------|--------|--------|--------|--------|--|
| 1460 | | | | | |
| 1461 | | | | | :DIST. TEST 4 |
| 1462 | | | | | :CHECK THAT ALL DISTRIBUTE WORDS CAN BE SET TO ALL ONES. |
| 1463 | | | | | |
| 1464 | 004366 | 016702 | 174530 | | DT4BEG: MOV LODA,CADR ;INIT. CONTROL ADDRESS POINTER. |
| 1465 | 004372 | 012704 | 001700 | | MOV #DCW77,CWP ;INIT. CONTROL WORD POINTER. |
| 1466 | 004376 | 011467 | 174614 | | MOV (CWP),GWD ;INIT. "GOOD" WORD. |
| 1467 | 004402 | 112767 | 000206 | 174533 | MOVB #DRF,RFLGS ;INIT. ERROR RELEVANCY FLAGS. |
| 1468 | 004410 | 104400 | | | SCOPE ;SCOPE TRAP. |
| 1469 | 004412 | 011412 | | | DT4LOP: MOV (CWP),(CADR) ;SET DISTRIBUTE WORD TO ALL ONES. |
| 1470 | 004414 | 011267 | 174612 | | MOV (CADR),TWD ;READ DIST. WORD. |
| 1471 | 004420 | 026767 | 174606 | 174570 | CMP TWD,GWD ;IS DIST. WORD ALL ONES? |
| 1472 | 004426 | 001001 | | | BNE DT4ERR ;NO. - BRANCH. |
| 1473 | 004430 | 104777 | | | DT4OK: CONTROL ;YES. - CONTROL TRAP. |
| 1474 | 004432 | 104000 | | | DT4ERR: ERROR ;ERROR TRAP. |
| 1475 | 004434 | 020267 | 174464 | | CMP CADR,HIDA ;ALL DISTRIBUTE WORDS TESTED? |
| 1476 | 004440 | 001403 | | | BEG DT4END ;YES. - BRANCH. |
| 1477 | 004442 | 062702 | 000002 | | ADD #2,CADR ;NO. - ADVANCE CONTROL ADRS. PTR. |
| 1478 | 004446 | 000761 | | | BR DT4LOP ;BRANCH. |
| 1479 | 004450 | 000167 | 000000 | | DT4END: JMF DT5BEG ;BRANCH. |

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| | | | | | | |
|------|--------|--------|--------|--------|---|---|
| 1501 | | | | | ;DIST. TEST 6 | |
| 1502 | | | | | ;CHECK THAT ALL DISTRIBUTE WORDS CAN BE SET TO ALL CONFIGURATIONS | |
| 1503 | | | | | ;GIVEN IN THE DISTRIBUTE WORD TABLE OF CONSTANTS. | |
| 1504 | | | | | | |
| 1505 | | | | | | |
| 1506 | 004542 | 016702 | 174354 | | DT6BEG: MOV LODA,CADR | ;INIT. CONTROL ADDRESS POINTER. |
| 1507 | 004546 | 112767 | 000206 | 174367 | MOV #DRF,RFLGS | ;INIT. ERROR RELEVANCY FLAGS. |
| 1508 | 004554 | 012704 | 001502 | | DT6L2: MOV #DCW00,CWP | ;INIT. CONTROL WORD POINTER. |
| 1509 | 004560 | 011467 | 174432 | | DT6L1: MOV (CWP),GWD | ;INIT. "GOOD" WORD. |
| 1510 | 004564 | 104400 | | | SCOPE | ;SCOPE TRAP. |
| 1511 | 004566 | 011412 | | | MOV (CWP),(CADR) | ;WRITE DISTRIBUTE WORD. |
| 1512 | 004570 | 011267 | 174436 | | MOV (CADR),TWD | ;READ DISTRIBUTE WORD. |
| 1513 | 004574 | 026767 | 174432 | 174414 | CMP TWD,GWD | ;DISTRIBUTE WORD OK? |
| 1514 | 004602 | 001001 | | | BNE DT6ERR | ;NO. - BRANCH. |
| 1515 | 004604 | 104777 | | | DT6OK: CONTROL | ;YES. - CONTROL TRAP. |
| 1516 | 004606 | 104000 | | | DT6ERR: ERROR | ;ERROR TRAP. |
| 1517 | 004610 | 022467 | 175064 | | CMP (CWP)+,DCW77 | ;ALL CONTROL WORDS TESTED ON THIS WORD? |
| 1518 | 004614 | 001361 | | | BNE DT6L1 | ;NO. - BRANCH. |
| 1519 | 004616 | 020267 | 174302 | | CMP CADR,HIDA | ;YES. ALL DISTRIBUTE WORDS TESTED? |
| 1520 | 004622 | 001403 | | | BEQ DT6END | ;YES. - BRANCH. |
| 1521 | 004624 | 062702 | 000002 | | ADD #2,CADR | ;NO. - ADVANCE CONTROL ADRS. PTR. |
| 1522 | 004630 | 000751 | | | BR DT6L2 | ;BRANCH. |
| 1523 | 004632 | 000167 | 000000 | | DT6END: JMP PREDJS | ;BRANCH. |

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1524
1525
1526
1527
1528
1529

004636 032767 000120 174276
004644 001002
004646 000167 005470

;ARE DISTRIBUTE BOARDS THAT ARE JUMPERED TO SCAN BOARDS BEING TESTED?

PREDJS: BIT #JF+JXF,FLAGS ;TEST DJS?
BNE IDJ ;YES. - BRANCH.
JMP PEND ;NO. - BRANCH.


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1543
1544
1545      ;TEST DJS1
1546      ;CHECK THAT SCAN WORDS CAN BE DRIVEN BY DISTRIBUTE WORDS.
1547      ;THE DATA WORDS USED ARE THOSE OF THE DISTRIBUTE CONTROL WORD TABLE,
1548      ;OR SOLELY THE DATA WORD GIVEN BY THE OPERATOR AT QUERY TIME, IF ANY.
1549 004710 112767 000327 174225 DJS1BG: MOVB   #DSRF,RFLGS      ;INIT. ERROR RELEVANCY FLAGS.
1550 004716 016702 174200          MOV    LODA,CADR      ;INIT. CONTROL ADRS. PTR. (DIST.)
1551 004722 016703 174170          MOV    LOSA,CADRX     ;INIT. CONTROL ADRS. PTR. AUX. (SCAN)
1552 004726 012704 001502          DJS1L2: MOV   #DCW00,CWP ;INIT. CONTROL WORD POINTER.
1553 004732 032767 000200 174202  BIT    #DATF,FLAGS   ;USE OPERATOR GIVEN DATA?
1554 004740 001402          BEQ    DJS1A         ;NO. - BRANCH.
1555 004742 012704 001140          MOV    #DATAWD,CWP  ;YES - RE-INIT. CONTROL WORD PTR.
1556 004746 104400          DJS1A: SCOPE        ;SCOPE TRAP
1557 004750 011467 174242          DJS1L1: MOV   (CWP),GWD ;INIT "GOOD" DIST. WORD.
1558 004754 011467 174240          MOV   (CWP),GWD     ;INIT "GOOD" SCAN WORD.
1559 004760 011412          MOV   (CWP),(CADR)  ;WRITE DIST. WORD AND, VIA JUMPER, SCAN WORD.
1560 004762 011267 174244          MOV   (CADR),TWD    ;READ DIST. WORD.
1561 004766 004567 175032          JSR   $,DELAY2     ;WAIT.
1562 004772 011367 174236          MOV   (CADRX),TWO   ;READ SCAN WORD.
1563 004776 026767 174230 174212  CMP    TWD,GWD      ;DIST. WORD OK?
1564 005004 001005          BNE   DJS1ER       ;NO. - BRANCH.
1565 005006 026767 174222 174204  CMP    TWO,GWO      ;YES. - SCAN WORD OK?
1566
1567 005014 001001          BNE   DJS1ER       ;NO. - BRANCH.
1568 005016 104777          DJS1OK: CONTROL    ;YES. - CONTROL TRAP.
1569 005020 104000          DJS1ER: ERROR      ;ERROR TRAP.
1570 005022 032767 000200 174112  BIT    #DATF,FLAGS   ;USING OPERATOR GIVEN DATA?
1571 005030 001003          BNE   DJS1B        ;YES. - BRANCH.
1572 005032 022467 174642          CMP   (CWP)+,DCW77  ;NO. - ALL CONTROL WORDS USED?
1573 005036 001344          BNE   DJS1L1       ;NO. - BRANCH.
1574 005040 020267 174060          DJS1B: CMP    CADR,HIDA ;YES. - ALL ADDRESSES TESTED?
1575 005044 001405          BEQ   DJS1ND       ;YES. - BRANCH.
1576 005046 062702 000002          ADD   #2,CADR      ;NO. - ADVANCE CONTROL ADRS. PTR. (DIST.)
1577 005052 062703 000002          ADD   #2,CADRX     ;ADVANCE CONTROL ADRS. PTR. AUX. (SCAN)
1578 005056 000723          BR    DJS1L2       ;BRANCH.
1579 005060 000167 005256          DJS1ND: JMP    PEND  ;BRANCH.
1580

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1581
1582           ;SUB-PROGRAM TO CONTROL ACCEPT/EXERCISE PASSES OF EITHER
1583           ;BTCL OR DJMPRS.
1584
1585 005064 012767 005104 174120 AXCTL: MOV   #AXCA,AXRTN ;RUN ONE PASS WITH:
1586 005072 012767 014000 174110      MOV   #TTS+ITS,AXSWR ;NO OPTIONS.
1587 005100 000167 174774      JMP   PREST
1588
1589 005104 012767 005124 174100 AXCA:  MOV   #AXCB,AXRTN ;RUN ONE PASS WITH:
1590 005112 012767 014002 174070      MOV   #TTS+ITS+LDS,AXSWR ;LONGER DELAYS.
1591 005120 000167 174754      JMP   PREST
1592
1593 005124 012767 005144 174060 AXCB:  MOV   #AXCC,AXRTN ;RUN ONE PASS WITH:
1594 005132 012767 014004 174050      MOV   #TTS+ITS+SDS,AXSWR ;SHORTER DELAYS.
1595 005140 000167 174734      JMP   PREST
1596
1597 005144 012767 005164 174040 AXCC:  MOV   #AXCD,AXRTN
1598 005152 012767 010000 174030      MOV   #TTS,AXSWR
1599 005160 000167 174714      JMP   PREST
1600
1601 005164 012767 005204 174020 AXCD:  MOV   #AXCE,AXRTN ;RUN ONE PASS WITH:
1602 005172 012767 010002 174010      MOV   #TTS+LDS,AXSWR ;ITERATIONS & LONGER DELAYS
1603 005200 000167 174674      JMP   PREST
1604
1605 005204 012767 005224 174000 AXCE:  MOV   #AXCF,AXRTN ;RUN ONE PASS WITH:
1606 005212 012767 010004 173770      MOV   #TTS+SDS,AXSWR ;ITERATIONS & SHORTER DELAYS
1607 005220 000167 174654      JMP   PREST
1608
1609 005224 012767 005244 173760 AXCF:  MOV   #AXCG,AXRTN ;RUN ONE PASS WITH:
1610 005232 012767 004000 173750      MOV   #ITS,AXSWR ;TRACE TRAPS
1611 005240 000167 174634      JMP   PREST
1612
1613 005244 012767 005264 173740 AXCG:  MOV   #AXCH,AXRTN ;RUN ONE PASS WITH:
1614 005252 012767 004002 173730      MOV   #ITS+LDS,AXSWR ;TRACE TRAPS & LONGER DELAYS.
1615 005260 000167 174614      JMP   PREST
1616
1617 005264 012767 005304 173720 AXCH:  MOV   #AXCI,AXRTN ;RUN ONE PASS WITH:
1618 005272 012767 004004 173710      MOV   #ITS+SDS,AXSWR ;TRACE TRAPS & SHORTER DELAYS
1619 005300 000167 174574      JMP   PREST
1620
1621 005304 012767 005324 173700 AXCI:  MOV   #AXCJ,AXRTN ;RUN ONE PASS WITH:
1622 005312 012767 000000 173670      MOV   #0,AXSWR ;ITERATIONS & TRACE TRAPS
1623 005320 000167 174554      JMP   PREST
1624
1625 005324 012767 005344 173660 AXCJ:  MOV   #AXCK,AXRTN ;RUN ONE PASS WITH:
1626 005332 012767 000002 173650      MOV   #LDS,AXSWR ;ITERATIONS, TRACE TRAPS,
1627 005340 000167 174534      JMP   PREST ;& LONGER DELAYS
1628
1629 005344 012767 005364 173640 AXCK:  MOV   #AXCL,AXRTN ;RUN ONE PASS WITH:
1630 005352 012767 000004 173630      MOV   #SDS,AXSWR ;ITERATIONS, TRACE TRAPS,
1631 005360 000167 174514      JMP   PREST ;& SHORTER DELAYS
1632
1633 005364 000167 004766      AXCL:  JMP   PASEND
  
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K04

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1634
1635 ;SCOPE TRAP (TRAP) SERVICE ROUTINE TO RECORD THE PC FOR REFERENCE BY EITHER
1636 ;SCOPE LOOPS OR ITERATIONS, (BOTH SCOPE & CONTROL TRAPS ENTER HERE FIRST)
1637
1638 005370 011600 SCOSVC: MOV (STP),R0 ;DETERMINE THE TYPE OF CALL MADE
1639 005372 105760 177776 TSTB -2(R0) ;(SCOPE OR CONTROL TRAP).
1640 005376 100403 BMI CTLSVC ;CONTROL. - BRANCH.
1641 005400 011667 173550 MOV (STP),SCORTN ;SCOPE. - RECORD THE PC.
1642 005404 000002 RTI ;RETURN.
1643
1644
1645
1646 ;CONTROL TRAP (IOT) SERVICE ROUTINE TO CONTROL INTERMITTANT ERROR CONDITIONS
1647 ;AND TRACE TRAP, NON-ERROR SCOPE LOOP, & ITERATE SWITCH OPTIONS.
1648
1649 005406 032767 000001 173526 CTLSVC: BIT #ECF,FLAGS ;DOES AN ERROR CONDITION EXIST?
1650 005414 001402 BEQ CTSVCA ;NO. - BRANCH.
1651 005416 004567 000346 JSR $,IMCTL ;YES. - GO TO INTERMITTANT CONTROL.
1652 005422 032767 000020 172140 CTSVCA: BIT #TSS,177570 ;TYPE PROGRAM STATUS?
1653 005430 001402 BEQ CSVCAI ;NO. - BRANCH.
1654 005432 004567 000556 JSR $,TYPERR ;YES. - GO TYPE PROGRAM STATUS.
1655 005436 004567 000054 CSVCAI: JSR $,TTCTL ;GO SEE ABOUT TRACE TRAPPING.
1656 005442 032767 040000 172120 BIT #SLS,177570 ;NON-ERROR SCOPE LOOP?
1657 005450 001403 BEQ CTSVCC ;NO. - BRANCH.
1658 005452 022626 CTSVCB: CMP (STP)+,(STP)+ ;YES. - POP STACK ONE TRAP.
1659 005454 000177 173474 JMP @SCORTN ;RETURN TO SCOPE LOOP (OR ITERATION).
1660 005460 032777 004000 173450 CTSVCC: BIT #ITS,@SWR ;ITERATE?
1661 005466 001006 BNE CTSVCD ;NO. - BRANCH.
1662 005470 005267 173456 INC ITCNT ;YES. - INCREMENT ITERATION COUNTER.
1663 005474 026767 173452 173406 CMP ITCNT,ITNO ;ITERATE THIS TEST OR TEST LOOP AGAIN?
1664 005502 001363 BNE CTSVCB ;YES. - BRANCH.
1665 005504 005067 173442 CTSVCD: CLR ITCNT ;NO. - CLEAR ITERATION COUNTER.
1666 005510 062716 000002 ADD #2,(STP) ;ADVANCE RETURN POINT (SKIP THE ERROR CALL).
1667 005514 000002 RTI ;RETURN TO NEXT TEST OR TEST LOOP.

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1668
1669 ;SUBROUTINE TO CONTROL THE TRACE TRAP SWITCH OPTION.
1670
1671 005516 016746 172254 TTCTL: MOV PS, -(STP) ;PUT PS ON STACK.
1672 005522 042716 000020 BIC #20, (STP) ;CLEAR "T" BIT (PROVISIONALLY).
1673 005526 032777 010000 173402 BIT #TTS, JSWR ;TRACE TRAPS?
1674 005534 001002 BNE TTCTLA ;NO. - BRANCH.
1675 005536 052716 000020 BIS #20, (STP) ;YES. - SET "T" BIT (FINALLY).
1676 005542 012746 005550 TTCTLA: MOV #TTCTLB, -(STP) ;PUT RETURN LOC. ON STACK.
1677 005546 000002 RTI ;RETURN (TO NEXT INST.) AND SET/CLEAR "T" BIT.
1678 005550 000205 TTCTLB: RTS $ ;RETURN.
1679
1680
1681 ;TRACE TRAP SERVICE ROUTINE
1682 ;IF THE PROCESSOR IS AN 11/45, PROGRAM INITIALIZATION HAS CHANGED
1683 ;THE FOLLOWING INSTRUCTION TO RTT (000006). OTHERWISE IT IS AS SHOWN.
1684
1685
1686 005552 000002 TT SVC: RTI ;RETURN. (THIS INST. WILL BE RTT IF A 11/25 OR 11/45.)
1687
1688 ;POWER DOWN SEQUENCE.
1689
1690
1691 005554 010046 PDOWN: MOV R0, -(STP) ;PUSH R0-R5 ON STACK.
1692 005556 010146 MOV R1, -(STP)
1693 005560 010246 MOV R2, -(STP)
1694 005562 010346 MOV R3, -(STP)
1695 005564 010446 MOV R4, -(STP)
1696 005566 010546 MOV R5, -(STP)
1697 005570 010667 000026 MOV STP, PDSTP ;SAVE STACK PTR IN CORE.
1698 005574 012767 005624 172222 MOV #PUP, 24 ;INIT. POWER FAIL VECTOR FOR POWER UP.
1699 005602 016746 172170 MOV PS, -(STP) ;ENSURE THAT TRACE TRAP IS OFF.
1700 005606 042716 000020 BIC #20, (STP)
1701 005612 004567 177724 JSR $, TTCTLA
1702 005616 000240 PDOWNA: NOP ;WAIT FOR POWER UP INTERRUPT.
1703 005620 000776 BR PDOWNA
1704 005622 000000 PDSTP: 0
1705
1706 ;POWER UP SEQUENCE.
1707
1708 005624 016706 177772 PUP: MOV PDSTP, STP ;RESTORE STACK PTR.
1709 005630 012605 MOV (STP)+, R5 ;POP R0-R5 FROM STACK.
1710 005632 012604 MOV (STP)+, R4
1711 005634 012603 MOV (STP)+, R3
1712 005636 012602 MOV (STP)+, R2
1713 005640 012601 MOV (STP)+, R1
1714 005642 012600 MOV (STP)+, R0
1715 005644 012767 005554 172152 MOV #PDOWN, 24 ;INIT. POWER FAIL VECTOR FOR POWER DOWN.
1716 005652 005726 TST (STP)+ ;POP STACK.
1717 005654 000167 002724 JMP INITP ;RESTART.
1718

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NO4

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1742
1743
1744
1745 005770 032767 000002 173144 IMCTL: BIT #IMF,FLAGS ;DOES INTERMITTENT COND. ALREADY EXIST?
1746 005776 001015 BNE IMCTLA ;YES. - BRANCH.
1747 006000 052767 000002 173134 BIS #IMF,FLAGS ;NO. - SET INTERMITTENT FLAG.
1748 006006 004567 004142 JSR $,TYPEA ;NOTIFY OPERATOR OF INTERMITTENT.
1749 006012 044536 052116 051105 .ASCII "↑INTERMITTENT!."
1750 006020 044515 052124 047105
1751 006026 020524 020056
1752 006032 020527 005422 IMCTLA: CMP $,#CTSVCA ;DID THE TEST PASS THIS LOOP OK?
1753 006036 001016 BNE IMCTLB ;NO. - BRANCH.
1754 006040 005267 173232 INC OKCTR ;YES. - MC. OKCTR. HAS IT OVERFLOWED?
1755 006044 001030 BNE IMCTLC ;NO. - BRANCH.
1756 006046 004567 004102 JSR $,TYPEA ;YES. - NOTIFY OPERATOR.
1757 006052 047536 041513 047440 .ASCII "↑OKC OVERFLOW.↑"
1758 006060 042526 043122 047514
1759 006066 027127 020136
1760 006072 000415
1761 006074 005267 173174 IMCTLB: BR IMCTLC ;BRANCH.
1762 006100 001012 INC ERCTR ;INC. ERCTR. HAS IT OVERFLOWED?
1763 006102 004567 004046 BNE IMCTLC ;NO. - BRANCH.
1764 006106 042536 041522 047440 JSR $,TYPEA ;YES. - NOTIFY OPERATOR.
1765 006114 042526 043122 047514 .ASCII "↑ERC OVERFLOW.↑"
1766 006122 057127 020056
1767 006126 032767 000100 171434 IMCTLC: BIT #IMS,177570 ;TYPE "OK" AND "ERR" COUNTERS?
1768 006134 001020 BNE IMCTLD ;NO. - BRANCH.
1769 006136 004567 004012 JSR $,TYPEA ;YES. - TYPE THE COUNTERS.
1770 006142 042536 041522 027057 .ASCII "↑ERC/."
1771 006150 004567 004072 JSR $,TYPE0
1772 006154 001274 ERCTR
1773 006156 004567 003772 JSR $,TYPEA
1774 006162 047440 041513 027057 .ASCII "↑OKC/."
1775 006170 004567 004052 JSR $,TYPE0
1776 006174 001276 OKCTR
1777 006176 020527 005422 IMCTLD: CMP $,#CTSVCA ;DID THE TEST PASS THIS LOOP OK?
1778 006202 001401 BEQ IMCTLE ;YES. - BRANCH.
1779 006204 000205 RTS $ ;NO. - RETURN TO CONTINUE ERROR REPORTING.
1780 006206 005726 IMCTLE: TST (STP)+ ;POP STACK ONE JSR.
1781 006210 000167 177470 JMP ESVCA1 ;BRANCH TO CONTINUE ERROR REPORTING.
  
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;SUBROUTINE TO TYPE ERROR MESSAGES.

| | | | | | | |
|------|--------|--------|--------|--------|---------|-----------------|
| 1782 | | | | | | |
| 1783 | | | | | | |
| 1784 | 006214 | 004567 | 001122 | | TYPERR: | JSR \$,SAVE |
| 1785 | 006220 | 004567 | 003730 | | TPC: | JSR \$,TYPEA |
| 1786 | 006224 | 050136 | 027503 | 020056 | | .ASCII "TPC/" |
| 1787 | 006232 | 004567 | 004010 | | | JSR \$,TYPE0 |
| 1788 | 006236 | 001160 | | | | SAVPC |
| 1789 | | | | | | |
| 1790 | 006240 | 032767 | 000001 | 171322 | | BIT #SES,177570 |
| 1791 | 006246 | 001402 | | | | BEQ TPST |
| 1792 | 006250 | 000167 | 001040 | | | JMP TEX |
| 1793 | | | | | | |
| 1794 | 006254 | 004567 | 003674 | | TPST: | JSR \$,TYPEA |
| 1795 | 006260 | 050040 | 027523 | 020056 | | .ASCII "PS/" |
| 1796 | 006266 | 004567 | 003754 | | | JSR \$,TYPE0 |
| 1797 | 006272 | 001162 | | | | SAVPS |
| 1798 | | | | | | |
| 1799 | 006274 | 004567 | 003654 | | TCAD: | JSR \$,TYPEA |
| 1800 | 006300 | 041440 | 042101 | 027057 | | .ASCII "CAD/" |
| 1801 | 006306 | 004567 | 003734 | | | JSR \$,TYPE0 |
| 1802 | 006312 | 001166 | | | | SAVCAD |
| 1803 | | | | | | |
| 1804 | 006314 | 004567 | 003634 | | TCAX: | JSR \$,TYPEA |
| 1805 | 006320 | 041440 | 054101 | 027057 | | .ASCII "CAX/" |
| 1806 | 006326 | 132767 | 000001 | 172607 | | BITB #AXF,RFLGS |
| 1807 | 006334 | 001002 | | | | BNE TCAXA |
| 1808 | 006336 | 004567 | 000762 | | | JSR \$,TYPEA |
| 1809 | 006342 | 004567 | 003700 | | TCAXA: | JSR \$,TYPE0 |
| 1810 | 006346 | 001170 | | | | SAVCAX |
| 1811 | | | | | | |
| 1812 | 006350 | 004567 | 003600 | | TCWP: | JSR \$,TYPEA |
| 1813 | 006354 | 041440 | 050127 | 027057 | | .ASCII "CWP/" |
| 1814 | 006362 | 132767 | 000002 | 172553 | | BITB #CWF,RFLGS |
| 1815 | 006370 | 001002 | | | | BNE TCWPA |
| 1816 | 006372 | 004567 | 000726 | | | JSR \$,TYPEA |
| 1817 | 006376 | 004567 | 003644 | | TCWPA: | JSR \$,TYPE0 |
| 1818 | 006402 | 001172 | | | | SAVCWP |
| 1819 | | | | | | |
| 1820 | 006404 | 004567 | 003544 | | TBD: | JSR \$,TYPEA |
| 1821 | 006410 | 041040 | 027524 | 020056 | | .ASCII "BT/" |
| 1822 | 006416 | 132767 | 000100 | 172517 | | BITB #SF,RFLGS |
| 1823 | 006424 | 001412 | | | | BEQ TBDA |
| 1824 | 006426 | 132767 | 000200 | 172507 | | BITB #DF,RFLGS |
| 1825 | 006434 | 001014 | | | | BNE TBDB |
| 1826 | 006436 | 004567 | 003512 | | | JSR \$,TYPEA |
| 1827 | 006442 | 041523 | 047101 | 020056 | | .ASCII "SCAN." |
| 1828 | 006450 | 000412 | | | | BR TDBC |
| 1829 | 006452 | 004567 | 003476 | | TBDA: | JSR \$,TYPEA |
| 1830 | 006456 | 044504 | 052123 | 020056 | | .ASCII "DIST." |
| 1831 | 006464 | 000404 | | | | BR TDBC |
| 1832 | 006470 | 004567 | 003462 | | TBDB: | JSR \$,TYPEA |
| 1833 | 006476 | 045104 | 027123 | | TDBC: | .ASCII "DJS." |
| 1834 | | 000240 | | | | NOP |
| 1835 | | | | | | |
| 1836 | 006500 | 004567 | 003450 | | TFLGS: | JSR \$,TYPEA |
| 1837 | 006504 | 043040 | 027057 | | | .ASCII "F/" |

| | | | | | | |
|------|--------|--------|--------|--------|--------|-------------|
| 1838 | 006510 | 004567 | 003532 | | JSR | \$,TYPE0 |
| 1839 | 006514 | 001142 | | | FLAGS | |
| 1840 | | | | | | |
| 1841 | | | | | | |
| 1842 | | | | | | |
| 1843 | 006516 | 004567 | 003432 | | TGWD: | JSR |
| 1844 | 006522 | 043536 | 042127 | 027057 | .ASCII | \$,TYPEA |
| 1845 | 006530 | 132767 | 000004 | 172405 | BITB | "GW0/." |
| 1846 | 006536 | 001002 | | | BNE | #WDF,RFLGS |
| 1847 | 006540 | 004567 | 000560 | | JSR | TGWDA |
| 1848 | 006544 | 004567 | 003476 | | TGWDA: | \$,TYPENR |
| 1849 | 006550 | 001216 | | | GWD | \$,TYPE0 |
| 1850 | | | | | | |
| 1851 | 006552 | 004567 | 003376 | | TGMF: | JSR |
| 1852 | 006556 | 043447 | 043115 | 027057 | .ASCII | \$,TYPEA |
| 1853 | 006564 | 132767 | 000010 | 172351 | BITB | "GMF/." |
| 1854 | 006572 | 001002 | | | BNE | #MFF,RFLGS |
| 1855 | 006574 | 004567 | 000524 | | JSR | TGMFA |
| 1856 | 006600 | 004567 | 003442 | | TGMFA: | \$,TYPENR |
| 1857 | 006604 | 001214 | | | GMF | \$,TYPE0 |
| 1858 | | | | | | |
| 1859 | 006606 | 004567 | 003342 | | TGWN: | JSR |
| 1860 | 006612 | 043440 | 030127 | 027057 | .ASCII | \$,TYPEA |
| 1861 | 006620 | 132767 | 000020 | 172315 | BITB | "GW0/." |
| 1862 | 006626 | 001002 | | | BNE | #WDF,RFLGS |
| 1863 | 006630 | 004567 | 000470 | | JSR | TGWDA |
| 1864 | 006634 | 004567 | 003406 | | TGWDA: | \$,TYPENR |
| 1865 | 006640 | 001220 | | | GWD | \$,TYPE0 |
| 1866 | | | | | | |
| 1867 | 006642 | 004567 | 003306 | | TGW2: | JSR |
| 1868 | 006646 | 043440 | 031127 | 027057 | .ASCII | \$,TYPEA |
| 1869 | 006654 | 132767 | 000040 | 172261 | BITB | "GW2/." |
| 1870 | 006662 | 001002 | | | BNE | #W26F,RFLGS |
| 1871 | 006664 | 004567 | 000434 | | JSR | TGW2A |
| 1872 | 006670 | 004567 | 003352 | | TGW2A: | \$,TYPENR |
| 1873 | 006674 | 001222 | | | GW2 | \$,TYPE0 |
| 1874 | | | | | | |
| 1875 | 006676 | 004567 | 003252 | | TGW4: | JSR |
| 1876 | 006702 | 043440 | 032127 | 027057 | .ASCII | \$,TYPEA |
| 1877 | 006710 | 132767 | 000040 | 172225 | BITB | "GW4/." |
| 1878 | 006716 | 001002 | | | BNE | #W26F,RFLGS |
| 1879 | 006720 | 004567 | 000400 | | JSR | TGW4A |
| 1880 | 006724 | 004567 | 003316 | | TGW4A: | \$,TYPENR |
| 1881 | 006730 | 001224 | | | GW4 | \$,TYPE0 |
| 1882 | | | | | | |
| 1883 | 006732 | 004567 | 003216 | | TGW6: | JSR |
| 1884 | 006736 | 043440 | 033127 | 027057 | .ASCII | \$,TYPEA |
| 1885 | 006744 | 132767 | 000040 | 172171 | BITB | "GW6/." |
| 1886 | 006752 | 001002 | | | BNE | #W26F,RFLGS |
| 1887 | 006754 | 004567 | 000344 | | JSR | TGW6A |
| 1888 | 006760 | 004567 | 003262 | | TGW6A: | \$,TYPENR |
| 1889 | 006764 | 001226 | | | GW6 | \$,TYPE0 |

| | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|----------------|
| 1890 | 006766 | 004567 | 003162 | | TSWR: | JSR | \$,TYPEA |
| 1891 | 006772 | 051440 | 051127 | 027057 | | .ASCII | "SMD/." |
| 1892 | 007000 | 004567 | 003242 | | | JSR | \$,TYPE0 |
| 1893 | 007004 | 001164 | | | | SAVSWR | |
| 1894 | 007006 | 004567 | 003142 | | TTWD: | JSR | \$,TYPEA |
| 1895 | 007012 | 052136 | 042127 | 027057 | | .ASCII | "TTWD/." |
| 1896 | 007020 | 132767 | 000004 | 172115 | | BITB | #WDF,RFLGS |
| 1897 | 007026 | 001002 | | | | BNE | TTWDA |
| 1898 | 007030 | 004567 | 000270 | | | JSR | \$,TYPENR |
| 1899 | 007034 | 004567 | 003206 | | TTWDA: | JSR | \$,TYPE0 |
| 1900 | 007040 | 001232 | | | | TWD | |
| 1901 | | | | | | | |
| 1902 | 007042 | 004567 | 003106 | | TTMF: | JSR | \$,TYPEA |
| 1903 | 007046 | 052040 | 043115 | 027057 | | .ASCII | "TMF/." |
| 1904 | 007054 | 132767 | 000010 | 172061 | | BITB | #MFF,RFLGS |
| 1905 | 007062 | 001002 | | | | BNE | TTMFA |
| 1906 | 007064 | 004567 | 000234 | | | JSR | \$,TYPENR |
| 1907 | 007070 | 004567 | 003152 | | TTMFA: | JSR | \$,TYPE0 |
| 1908 | 007074 | 001230 | | | | TMF | |
| 1909 | | | | | | | |
| 1910 | 007076 | 004567 | 003052 | | TTWO: | JSR | \$,TYPEA |
| 1911 | 007102 | 052040 | 030127 | 027057 | | .ASCII | "TWO/." |
| 1912 | 007110 | 132767 | 000020 | 172025 | | BITB | #WOF,RFLGS |
| 1913 | 007116 | 001002 | | | | BNE | TTWOA |
| 1914 | 007120 | 004567 | 000200 | | | JSR | \$,TYPENR |
| 1915 | 007124 | 004567 | 003116 | | TTWOA: | JSR | \$,TYPE0 |
| 1916 | 007130 | 001234 | | | | TWO | |
| 1917 | | | | | | | |
| 1918 | 007132 | 004567 | 003016 | | TTW2: | JSR | \$,TYPEA |
| 1919 | 007136 | 052040 | 031127 | 027057 | | .ASCII | "TW2/." |
| 1920 | 007144 | 132767 | 000040 | 171771 | | BITB | #W26F,RFLGS |
| 1921 | 007152 | 001002 | | | | BNE | TTW2A |
| 1922 | 007154 | 004567 | 000144 | | | JSR | \$,TYPENR |
| 1923 | 007160 | 004567 | 003062 | | TTW2A: | JSR | \$,TYPE0 |
| 1924 | 007164 | 001236 | | | | TW2 | |
| 1925 | | | | | | | |
| 1926 | 007166 | 004567 | 002762 | | TTW4: | JSR | \$,TYPEA |
| 1927 | 007172 | 052040 | 032127 | 027057 | | .ASCII | "TW4/." |
| 1928 | 007200 | 132767 | 000040 | 171735 | | BITB | #W26F,RFLGS |
| 1929 | 007206 | 001002 | | | | BNE | TTW4A |
| 1930 | 007210 | 004567 | 000110 | | | JSR | \$,TYPENR |
| 1931 | 007214 | 004567 | 003026 | | TTW4A: | JSR | \$,TYPE0 |
| 1932 | 007220 | 001240 | | | | TW4 | |
| 1933 | | | | | | | |
| 1934 | 007222 | 004567 | 002726 | | TTW6: | JSR | \$,TYPEA |
| 1935 | 007226 | 052040 | 033127 | 027057 | | .ASCII | "TW6/." |
| 1936 | 007234 | 132767 | 000040 | 171701 | | BITB | #W26F,RFLGS |
| 1937 | 007242 | 001002 | | | | BNE | TTW6A |
| 1938 | 007244 | 004567 | 000054 | | | JSR | \$,TYPENR |
| 1939 | 007250 | 004567 | 002772 | | TTW6A: | JSR | \$,TYPE0 |
| 1940 | 007254 | 001242 | | | | TW6 | |
| 1941 | | | | | | | |
| 1942 | 007256 | 004567 | 002672 | | TAXS: | JSR | \$,TYPEA |
| 1943 | 007262 | 040440 | 051530 | 051127 | | .ASCII | "AXSWR/." |
| 1944 | 007270 | 027057 | | | | | |
| 1945 | 007272 | 032767 | 000140 | 171642 | | BIT | #BXF+JXF,FLAGS |

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| | | | |
|------|--------|--------|--------|
| 1946 | 007300 | 001002 | |
| 1947 | 007302 | 004567 | 000016 |
| 1948 | 007306 | 004567 | 002734 |
| 1949 | 007312 | 001210 | |
| 1950 | | | |
| 1951 | 007314 | 004567 | 002634 |
| 1952 | 007320 | 027136 | |
| 1953 | 007322 | 000205 | |

| | | |
|--------|-------|------------|
| | BNE | TAXSA |
| | JSR | \$,TYPE NR |
| TAXSA: | JSR | \$,TYPE O |
| | AXSWR | |
| TEX: | JSR | \$,TYPE A |
| | ASCII | "↑." |
| | RTS | \$ |

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| | | | | | |
|------|--------|--------|--------|--------|---|
| 1954 | | | | | |
| 1955 | | | | | ;SUBROUTINE TO TYPE "NR" (NOT RELEVANT). |
| 1956 | | | | | |
| 1957 | 007324 | 004567 | 002624 | | TYPENR: JSR \$,TYPEA |
| 1958 | 007330 | 051116 | 020056 | | .ASCII #NR. |
| 1959 | 007334 | 062705 | 000006 | | ADD #6,\$ |
| 1960 | 007340 | 000205 | | | RTS \$ |
| 1961 | | | | | |
| 1962 | | | | | |
| 1963 | | | | | |
| 1964 | | | | | ;SUBROUTINE TO SAVE PERTINENT DATA AS IT WAS AT THE TIME OF THE ERROR CALL. |
| 1965 | | | | | |
| 1966 | 007342 | 016767 | 171574 | 171636 | SAVE: MOV FLAGS,SAVFLG |
| 1967 | 007350 | 016667 | 000004 | 171602 | MOV +4(STP),SAVPC |
| 1968 | 007356 | 162767 | 000002 | 171574 | SUB #2,SAVPC |
| 1969 | 007364 | 016667 | 000006 | 171570 | MOV +6(STP),SAVPS |
| 1970 | 007372 | 016767 | 170172 | 171564 | MOV 177570,SAVSWR |
| 1971 | 007400 | 010267 | 171567 | | MOV CADR,SAVCAD |
| 1972 | 007404 | 010367 | 171560 | | MOV CADRX,SAVCAX |
| 1973 | 007410 | 010467 | 171556 | | MOV CWP,SAVCWP |
| 1974 | 007414 | 016767 | 171532 | 171552 | MOV ITCNT,SAVITC |
| 1975 | 007422 | 016767 | 171650 | 171546 | MOV OKCTR,SAVOKC |
| 1976 | 007430 | 016767 | 171640 | 171626 | MOV ERCTR,SAVERC |
| 1977 | 007436 | 010067 | 171536 | | MOV RO,SAVRO |
| 1978 | 007442 | 010167 | 171534 | | MOV R1,SAVR1 |
| 1979 | 007446 | 010667 | 171532 | | MOV STP,SAVSTP |
| 1980 | 007452 | 062767 | 000010 | 171524 | ADD #10,SAVSTP |
| 1981 | 007460 | 000205 | | | RTS \$ |

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1982
1983
1984
1985 007462 012767 000010 171452 INIT:  MOV    #BF, FLAGS      ;INIT. FOR S&ORD DIAG.
1986 007470 000407                BR      INITA1
1987 007472 012767 000004 171442 INITA5: MOV    #MOD, FLAGS   ;INIT. FOR MODULE TEST MODE.
1988 007500 000403                BR      INITA1
1989 007502 012767 000020 171432 INITA:  MOV    #JF, FLAGS     ;INIT. FOR DJMRS DIAG.
1990 007510 012767 177570 171420 INITA1: MOV    #177570, SWR
1991 007516 000412                BR      INITB
1992 007520 012767 000000 171414 INITA2: MOV    #BXF, FLAGS   ;INIT. FOR BTEL ACCEPT/EXERCISE.
1993 007526 000403                BR      INITA4
1994 007530 012767 000000 171404 INITA3: MOV    #JXF, FLAGS   ;INIT. FOR DJMPRS ACCEPT/EXERCISE.
1995 007536 012767 001210 171372 INITA4: MOV    #AXSWR, SWR
1996 007544 012706 001000                INITB:  MOV    #1000, STP
1997 007550 005067 171374                CLR    PASCTR
1998 007554 012700 000002                MOV    #2, R0
1999 007560 005001                CLR    R1
2000 007562 010021                INITB1: MOV    R0, (R1)+
2001 007564 005021                CLR    (R1)+
2002 007566 062700 000004                ADD    #4, R0
2003 007572 020127 001000                CMP    R1, #1000
2004 007576 001371                BNE    INITB1
2005 007600 012767 000137 170372                MOV    #137, 200
2006 007606 012767 007462 170366                MOV    #INIT, 202
2007 007614 012767 005552 170172                MOV    #TTSVC, 14
2008 007622 012767 005406 170170                MOV    #CTLSVC, 20
2009 007630 012767 005554 170166                MOV    #PDOWN, 24
2010 007636 012767 005660 170164                MOV    #ERRSVC, 30
2011 007644 012767 005370 170162                MOV    #SCOSVC, 34
2012 007652 012700 001146                MOV    #BEGV, R0
2013 007656 005020                INITB2: CLR    (R0)+
2014 007660 020027 001300                CMP    R0, #ENDV
2015 007664 001374                BNE    INITB2
2016 007666 005002                CLR    R2
2017 007670 005003                CLR    R3
2018 007672 005004                CLR    R4
2019 007674 012767 007714 170106                MOV    #INITC, 10
2020 007702 006700                SXT    R0
2021 007704 012767 000006 175640                MOV    #RTT, TTSVC
2022 007712 000401                BR     INITC1
2023 007714 022626                INITC:  CMP    (STP)+, (STP)+
2024 007716 012767 000012 170064                INITC1: MOV    #12, 10
2025 007724 012767 007754 170052                MOV    #INITD, 4
2026 007732 005767 167610                TST    KWLS
2027 007736 012767 177546 171324                MOV    #KWLS, KCSR
2028 007744 012767 010040 170126                MOV    #INITG, 100
2029 007752 000421                BR     INITF
2030 007754 012767 010012 170022                INITD:  MOV    #INITE, 4
2031 007762 005767 162552                TST    KWPS
2032 007766 012767 172540 171274                MOV    #KWPS, KCSR
2033 007774 012767 010040 170102                MOV    #INITG, 104
2034 010002 012767 000001 162532                MOV    #1, KWPB
2035 010010 000402                BR     INITF
2036 010012 000000                INITE:  HALT
2037 010014 000776                BR     INITE
  
```

;INITIALIZATION.

```

;INIT. FOR S&ORD DIAG.
;INIT. FOR MODULE TEST MODE.
;INIT. FOR DJMRS DIAG.
;INIT. FOR BTEL ACCEPT/EXERCISE.
;INIT. FOR DJMPRS ACCEPT/EXERCISE.
;INIT. TRAP CATCHER SO THAT ANY
;ILLEGAL TRAPS WILL HALT AT
;THE LOCATION FOLLOWING THE
;LOCATION TO WHICH THE ILLEGAL
;TRAP WAS MADE.
;INIT. TRACE TRAP VECTOR.
;INIT CONTROL TRAP VECTOR.
;INIT POWER FAIL TRAP VECTOR.
;INIT. ERROR TRAP VECTOR.
;INIT. SCOPE TRAP VECTOR.
;CLEAR ASSORTED VARIABLES.
;DETERMINE THE TYPE OF PROCESSOR
;(11/45) TYPES OR 11/20 TYPES) AND
;INIT. THE TRACE SERVICE ROUTINE
;ACCORDINGLY
;INIT. TIMEOUT-ERROR TRAP VECTOR.
;IS THERE A KW11L? (NO IF TRAP.)
;(YES IF NO TRAP.) - INIT CLOCK CSR.
;INIT. KW11L TRAP VECTOR.
;BRANCH.
;INIT. TIMEOUT-ERROR TRAP VECTOR.
;IS THERE A KW11P? (NO IF TRAP.)
;(YES IF NO TRAP.) - INIT CLOCK CSR.
;INIT. KW11P TRAP VECTOR.
;INIT. KW11P COUNT BUFFER.
;BRANCH.
;***CATASTROPHIC ERROR. THERE IS NO CLOCK, AS REQUIRED.
  
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H05

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| | | | | | | | | |
|------|--------|--------|--------|--------|---------|------|---|---|
| 2038 | 010016 | 012767 | 000006 | 167760 | INITF: | MOV | #6,4 | ;INIT. (CLOSE OUT) TIMEOUT-ERROR TRAP VECTOR. |
| 2039 | 010024 | 005067 | 171236 | | | CLR | DLACTR | ;INIT DELAY NUMBER. |
| 2040 | 010030 | 012777 | 000115 | 171232 | | MOV | #115,@KCSR | ;ENABLE INTERRUPT FROM CLOCK (EITHER ONE) |
| 2041 | 010036 | 000001 | | | | WAIT | | ;WAIT FOR FIRST INTERRUPT |
| 2042 | 010040 | 022626 | | | INITG: | CMP | (STP)+,(STP)+ | ;POP STACK. |
| 2043 | 010042 | 005767 | 171220 | | | TST | DLACTR | ;FIRST INTERRUPT? |
| 2044 | 010046 | 001010 | | | | BNE | INITH | ;NO. - BRANCH. |
| 2045 | 010050 | 012767 | 000002 | 171210 | | MOV | #2,DLACTR | ;YES. - ADJUST DELAY COUNTER. |
| 2046 | 010056 | 005267 | 171204 | | INITG1: | INC | DLACTR | ;COUNT UNTIL SECOND INTERRUPT. |
| 2047 | 010062 | 001375 | | | | BNE | INITG1 | |
| 2048 | 010064 | 000000 | | | INITG2: | HALT | ***CATASTROPHIC ERROR. COUNTER SHOULD NOT OVER RUN. | |
| 2049 | 010066 | 000776 | | | | BR | INITG2 | |
| 2050 | | | | | | | | |
| 2051 | 010070 | 005077 | 171174 | | INITH: | CLR | @KCSR | ;DISABLE CLOCK INTERRUPTS. (DLACTR=16.7MS) |
| 2052 | 010074 | 012767 | 000102 | 167776 | | MOV | #102,100 | ;INIT (CLOSE OUT) CLOCK VECTOR. |
| 2053 | 010102 | 012767 | 000106 | 167774 | | MOV | #106,104 | ;INIT (CLOSE OUT) CLOCK VECTOR. |
| 2054 | 010110 | 005067 | 171140 | | | CLR | DLAN01 | ;CALIBRATE FOR THIS PARTICULAR |
| 2055 | 010114 | 162767 | 000021 | 171144 | INITI: | SUB | #21,DLACTR | ;PROCESSOR 2 DELAY NUMBERS AND |
| 2056 | 010122 | 005267 | 171126 | | | INC | DLAN01 | ;DELAY OFFSETS OF 10% OF THE |
| 2057 | 010126 | 022767 | 000021 | 171132 | | CMP | #21,DLACTR | ;DELAY NUMBERS. |
| 2058 | 010134 | 101767 | | | | BLOS | INITI | |
| 2059 | 010136 | 026727 | 171124 | 000011 | | CMP | DLACTR,#11 | |
| 2060 | 010144 | 103402 | | | | BLO | INITJ | |
| 2061 | 010146 | 005267 | 171102 | | | INC | DLAN01 | |
| 2062 | 010152 | 016767 | 171076 | 171106 | INITJ: | MOV | DLAN01,DLACTR | ; (DLAN01=1MS) |
| 2063 | 010160 | 005067 | 171074 | | | CLR | DLAOF1 | |
| 2064 | 010164 | 005067 | 171072 | | | CLR | DLAOF2 | |
| 2065 | 010170 | 005067 | 171060 | | | CLR | DLAN01 | |
| 2066 | 010174 | 005067 | 171056 | | | CLR | DLAN02 | |
| 2067 | 010200 | 066767 | 171062 | 171046 | INITJ1: | ADD | DLACTR,DLAN01 | |
| 2068 | 010206 | 005267 | 171046 | | | INC | DLAOF1 | |
| 2069 | 010212 | 026767 | 171042 | 170672 | | CMP | DLAOF1,DMS1 | |
| 2070 | 010220 | 001367 | | | | BNE | INITJ1 | |
| 2071 | 010222 | 066767 | 171040 | 171026 | INITJ2: | ADD | DLACTR,DLAN02 | ; (DLAN01=1MSXDMS1) |
| 2072 | 010230 | 005267 | 171026 | | | INC | DLAOF2 | |
| 2073 | 010234 | 026767 | 171022 | 170652 | | CMP | DLAOF2,DMS2 | |
| 2074 | 010242 | 001367 | | | | BNE | INITJ2 | |
| 2075 | 010244 | 005067 | 171010 | | INITK: | CLR | DLAOF1 | ; (DLAN02=1MSXDMS2) |
| 2076 | 010250 | 005067 | 171006 | | | CLR | DLAOF2 | |
| 2077 | 010254 | 016767 | 170774 | 171004 | | MOV | DLAN01,DLACTR | |
| 2078 | 010262 | 162767 | 000012 | 170776 | INITK1: | SUB | #12,DLACTR | |
| 2079 | 010270 | 005267 | 170764 | | | INC | DLAOF1 | |
| 2080 | 010274 | 022767 | 000012 | 170764 | | CMP | #12,DLACTR | |
| 2081 | 010302 | 101767 | | | | BLOS | INITK1 | |
| 2082 | 010304 | 026727 | 170756 | 000007 | | CMP | DLACTR,#7 | |
| 2083 | 010312 | 103402 | | | | BLO | INITK2 | |
| 2084 | 010314 | 005267 | 170740 | | | INC | DLAOF1 | |
| 2085 | 010320 | 016767 | 170732 | 170740 | INITK2: | MOV | DLAN02,DLACTR | ; (DLAOF1=10% DLAN01) |
| 2086 | 010326 | 162767 | 000012 | 170732 | INITK3: | SUB | #12,DLACTR | |
| 2087 | 010334 | 005267 | 170722 | | | INC | DLAOF2 | |
| 2088 | 010340 | 022767 | 000012 | 170720 | | CMP | #12,DLACTR | |
| 2089 | 010346 | 101767 | | | | BLOS | INITK3 | |
| 2090 | 010350 | 026727 | 170712 | 000007 | | CMP | DLACTR,#7 | |
| 2091 | 010356 | 103402 | | | | BLO | INITK4 | |
| 2092 | 010360 | 005267 | 170676 | | | INC | DLAOF2 | |
| 2093 | 010364 | 000240 | | | INITK4: | NOP | | ; (DLAOF2=10% DLAN02) |

| | | | | | | | | |
|------|--------|--------|--------|--------|---------|--------|--------------------------|---|
| 2094 | 010366 | 000240 | | | | NOP | | |
| 2095 | 010370 | 032767 | 000004 | 170544 | | BIT | #MOD,FLAGS | |
| 2096 | 010376 | 001416 | | | | BEQ | INITL | |
| 2097 | 010400 | 004567 | 001550 | | | JSR | \$.TYPEA | |
| 2098 | 010404 | 020136 | 051536 | 047440 | | .ASCII | "↑ ↑S OR D MODULE TEST." | |
| 2099 | 010412 | 020122 | 020104 | 047515 | | | | |
| 2100 | 010420 | 052504 | 042514 | 052040 | | | | |
| 2101 | 010426 | 051505 | 027124 | | | | | |
| 2102 | 010432 | 000425 | | | | BR | INITM | |
| 2103 | 010434 | 032767 | 000050 | 170500 | INITL: | BIT | #BF+BXF,FLAGS | |
| 2104 | 010442 | 001411 | | | | BEQ | INITLI | |
| 2105 | 010444 | 004567 | 001504 | | | JSR | \$.TYPEA | |
| 2106 | 010450 | 020136 | 051536 | 023040 | | .ASCII | "↑ ↑S &/OR D." | |
| 2107 | 010456 | 047457 | 020122 | 027104 | | | | |
| 2108 | 010464 | 000410 | | | | BR | INITM | |
| 2109 | 010466 | 004567 | 001462 | | INITLI: | JSR | \$.TYPEA | |
| 2110 | 010472 | 020136 | 042136 | 045040 | | .ASCII | "↑ ↑D JMPR S." | |
| 2111 | 010500 | 050115 | 020122 | 027123 | | | | |
| 2112 | 010506 | 032767 | 000034 | 170426 | INITM: | BIT | #BF+JF+MOD,FLAGS | |
| 2113 | 010514 | 001407 | | | | BEQ | INITMI | |
| 2114 | 010516 | 004567 | 001432 | | | JSR | \$.TYPEA | |
| 2115 | 010522 | 042040 | 040511 | 057107 | | .ASCII | "DIAG↑. " | |
| 2116 | 010530 | 020056 | | | | | | |
| 2117 | 010532 | 000413 | | | | BR | INITN | |
| 2118 | 010534 | 004567 | 001414 | | INITMI: | JSR | \$.TYPEA | |
| 2119 | 010540 | 040440 | 041503 | 050105 | | .ASCII | "ACCEPT/EXERCISE↑." | |
| 2120 | 010546 | 027524 | 054105 | 051105 | | | | |
| 2121 | 010554 | 044503 | 042523 | 027136 | | | | |
| 2122 | | | | | | | | |
| 2123 | 010562 | 005767 | 170330 | | INITN: | TST | LOSA | ;HAVE TTY QUERIES EVER BEEN MADE? |
| 2124 | 010566 | 001404 | | | | BEQ | INITO | ;NO. - BRANCH. |
| 2125 | 010570 | 032767 | 000010 | 166772 | | BIT | #IQS,177570 | ;YES. - INHIBIT SUBSEQUENT TTY QUERIES? |
| 2126 | 010576 | 001002 | | | | BNE | INITP | ;YES. - BRANCH. |
| 2127 | 010600 | 004567 | 000026 | | INITO: | JSR | \$.QBEG | ;NO. - MAKE TTY QUERIES. |
| 2128 | 010604 | 056767 | 170334 | 170330 | INITP: | BIS | FX,FLAGS | ;CARRY FLAGS FROM PREVIOUS PASS (IF ANY). |
| 2129 | 010612 | 032767 | 000140 | 170322 | | BIT | #BXF+JXF,FLAGS | ;ACCEPT/EXERCISE? |
| 2130 | 010620 | 001002 | | | | BNE | INITR | ;YES. - BRANCH |
| 2131 | 010622 | 000167 | 171252 | | INITQ: | JMP | PREST | ;NO. - BRANCH. (DIAG.) |
| 2132 | 010626 | 000167 | 174232 | | INITR: | JMP | AXCTL | ;BRANCH. |
| 2133 | | | | | | | | |

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2134
2135 ;SUBROUTINE TO MAKE INITIAL TTY INQUIRIES.
2136
2137 010632 000240 QBEG: NOP
2138 010634 004567 001314 QLOSA: JSR $,TYPEA
2139 010640 046136 051517 037501 .ASCII "¿LOSA? ."
2140 010646 027040
2141 010650 004567 001032 QLOSAA: JSR $,KADRS
2142 010654 010067 170236 MOV RO,LOSA
2143 010660 010067 170234 MOV RO,HISA
2144 010664 020027 000116 CMP RO,#'N
2145 010670 001432 BEQ QLODA
2146 010672 032700 000007 BIT #7,RO
2147 010676 001142 BNE QERA
2148
2149 010700 004567 001250 QHISA: JSR $,TYPEA
2150 010704 044136 051511 037501 .ASCII "¿HISA? ."
2151 010712 027040
2152 010714 004567 000766 QHISAA: JSR $,KADRS
2153 010720 010067 170174 MOV RO,HISA
2154 010724 020027 000116 CMP RO,#'N
2155 010730 001525 BEQ QERA
2156 010732 010067 170172 MOV RO,HISAX
2157 010736 042767 000007 170164 BIC #7,HISAX
2158 010744 042700 177770 BIC #177770,RO
2159 010750 020027 000006 CMP RO,#6
2160 010754 001113 BNE QERA
2161
2162 010756 004567 001172 QLODA: JSR $,TYPEA
2163 010762 046136 042117 037501 .ASCII "¿LODA? ."
2164 010770 027040
2165 010772 004567 000710 QLODAA: JSR $,KADRS
2166 010776 010067 170120 MOV RO,LODA
2167 011002 010067 170116 MOV RO,HIDA
2168 011006 020027 000116 CMP RO,#'N
2169 011012 001426 BEQ QADCK
2170 011014 032700 000007 BIT #7,RO
2171 011020 001071 BNE QERA
2172
2173 011022 004567 001126 QHIDA: JSR $,TYPEA
2174 011026 044136 042111 037501 .ASCII "¿HIDA? ."
2175 011034 027040
2176 011036 004567 000644 QHIDAA: JSR $,KADRS
2177 011042 010067 170056 MOV RO,HIDA
2178 011046 020027 000116 CMP RO,#'N
2179 011052 001454 BEQ QERA
2180 011054 042700 177770 BIC #177770,RO
2181 011060 001451 BEQ QERA
2182 011062 020027 000004 CMP RO,#4
2183 011066 001446 BEQ QERA
2184
2185 011070 026727 170022 000116 QADCK: CMP LOSA,#'N
2186 011076 001004 BNE QADCKA
2187 011100 026727 170016 000116 CMP LODA,#'N
2188 011106 001545 BEQ QERD
2189 011110 026767 170002 170002 QADCKA: CMP LOSA,HISA
  
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K05

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| | | | | | | |
|------|--------|--------|--------|--------|-------------|---|
| 2190 | 011116 | 101115 | | | BHI | QERC |
| 2191 | 011120 | 026767 | 167776 | 167776 | CMP | LODA,HIDA |
| 2192 | 011126 | 101111 | | | BHI | QERC |
| 2193 | 011130 | 016701 | 167762 | | MOV | LOSA,R1 |
| 2194 | 011134 | 020167 | 167762 | | QADCKB: CMP | R1,LODA |
| 2195 | 011140 | 001461 | | | BEQ | QERB |
| 2196 | 011142 | 020167 | 167752 | | CMP | R1,HISA |
| 2197 | 011146 | 001403 | | | BEQ | QADCKC |
| 2198 | 011150 | 062701 | 000002 | | ADD | #2,R1 |
| 2199 | 011154 | 000767 | | | BR | QADCKB |
| 2200 | 011156 | 016701 | 167740 | | QADCKC: MOV | LODA,R1 |
| 2201 | 011162 | 020167 | 167730 | | QADCKD: CMP | R1,LOSA |
| 2202 | 011166 | 001446 | | | BEQ | QERB |
| 2203 | 011170 | 020167 | 167730 | | CMP | R1,HIDA |
| 2204 | 011174 | 001531 | | | BEQ | QDATA |
| 2205 | 011176 | 062701 | 000002 | | ADD | #2,R1 |
| 2206 | 011202 | 000767 | | | BR | QADCKD |
| 2207 | | | | | | |
| 2208 | 011204 | 016767 | 170036 | 170036 | QERA: MOV | TYP SRC,QSRC |
| 2209 | 011212 | 004567 | 000736 | | JSR | \$,TYPEA |
| 2210 | 011216 | 037477 | 044136 | 051511 | .ASCII | "??↑HISA=XXXXX6 ONLY, HIDA=XXXXX2 OR XXXXX6 ONLY↑." " |
| 2211 | 011224 | 036501 | 054130 | 054130 | | |
| 2212 | 011232 | 033130 | 047440 | 046116 | | |
| 2213 | 011240 | 026131 | 044040 | 042111 | | |
| 2214 | 011246 | 036501 | 054130 | 054130 | | |
| 2215 | 011254 | 031130 | 047440 | 020122 | | |
| 2216 | 011262 | 054130 | 054130 | 033130 | | |
| 2217 | 011270 | 047440 | 046116 | 057131 | | |
| 2218 | 011276 | 020056 | | | | |
| 2219 | 011300 | 000177 | 167744 | | JMP | QSRC |
| 2220 | | | | | | |
| 2221 | 011304 | 004567 | 000644 | | QERB: JSR | \$,TYPEA |
| 2222 | 011310 | 037477 | 051536 | 046501 | .ASCII | "??↑SAME SCAN & DIST ADDRESS?↑." " |
| 2223 | 011316 | 020105 | 041523 | 047101 | | |
| 2224 | 011324 | 023040 | 042040 | 051511 | | |
| 2225 | 011332 | 020124 | 042101 | 051104 | | |
| 2226 | 011340 | 051505 | 037523 | 027136 | | |
| 2227 | 011346 | 000167 | 177260 | | JMP | QBEG |
| 2228 | | | | | | |
| 2229 | 011352 | 004567 | 000576 | | QERC: JSR | \$,TYPEA |
| 2230 | 011356 | 046136 | 020117 | 042101 | .ASCII | "↑LO ADRS HIGHER THAN HI ADRS?↑." " |
| 2231 | 011364 | 051522 | 044040 | 043511 | | |
| 2232 | 011372 | 042510 | 020122 | 044124 | | |
| 2233 | 011400 | 047101 | 044040 | 020111 | | |
| 2234 | 011406 | 042101 | 051522 | 057077 | | |
| 2235 | 011414 | 020056 | | | | |
| 2236 | 011416 | 000167 | 177210 | | JMP | QBEG |
| 2237 | | | | | | |
| 2238 | | | | | | |
| 2239 | 011422 | 004567 | 000526 | | QERD: JSR | \$,TYPEA |
| 2240 | 011426 | 047136 | 020117 | 047502 | .ASCII | "↑NO BOARDS, NO TEST↑." " |
| 2241 | 011434 | 051101 | 051504 | 020054 | | |
| 2242 | 011442 | 047516 | 052040 | 051505 | | |
| 2243 | 011450 | 057124 | 020056 | | | |
| 2244 | 011454 | 000167 | 177152 | | JMP | QBEG |
| 2245 | | | | | | |

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| | | | | | | | |
|------|--------|--------|--------|--------|---------|--------|----------------------------|
| 2246 | 011460 | 032767 | 000120 | 167454 | QDATA: | BIT | #JF+JXF,FLAGS |
| 2247 | 011466 | 001447 | | | | BEQ | QDCON |
| 2248 | 011470 | 004567 | 000460 | | | JSR | \$.TYPEA |
| 2249 | 011474 | 042136 | 052101 | 037501 | | .ASCII | "↑DATA? ." |
| 2250 | 011502 | 027040 | | | | | |
| 2251 | 011504 | 004567 | 000202 | | | JSR | \$.KDATA |
| 2252 | 011510 | 010067 | 167424 | | | MOV | R0,DATAWD |
| 2253 | 011514 | 042767 | 000200 | 167422 | | BIC | #DATF,FX |
| 2254 | 011522 | 022767 | 000006 | 167522 | | CMP | #6,KCTR |
| 2255 | 011530 | 001403 | | | | BEQ | QJMPD |
| 2256 | 011532 | 052767 | 000200 | 167404 | | BIS | #DATF,FX |
| 2257 | | | | | | | |
| 2258 | 011540 | 004567 | 000410 | | QJMPD: | JSR | \$.TYPEA |
| 2259 | 011544 | 042136 | 051511 | 051524 | | .ASCII | "↑DISTS JUMPED TO SCAN? ." |
| 2260 | 011552 | 045040 | 046525 | 042520 | | | |
| 2261 | 011560 | 020104 | 047524 | 051440 | | | |
| 2262 | 011566 | 040503 | 037516 | 027040 | | | |
| 2263 | 011574 | 004567 | 000116 | | | JSR | \$.KYORN |
| 2264 | 011600 | 020027 | 000116 | | | CMP | R0,#'N |
| 2265 | 011604 | 001755 | | | | BEQ | QJMPD |
| 2266 | | | | | | | |
| 2267 | 011606 | 004567 | 000342 | | QDCON: | JSR | \$.TYPEA |
| 2268 | 011612 | 052536 | 042523 | 020122 | | .ASCII | "↑USER DISCONNECTED? ." |
| 2269 | 011620 | 044504 | 041523 | 047117 | | | |
| 2270 | 011626 | 042516 | 052103 | 042105 | | | |
| 2271 | 011634 | 020077 | 020056 | | | | |
| 2272 | 011640 | 004567 | 000052 | | | JSR | \$.KYORN |
| 2273 | 011644 | 020027 | 000116 | | | CMP | R0,#'N |
| 2274 | 011650 | 001756 | | | | BEQ | QDCON |
| 2275 | | | | | | | |
| 2276 | 011652 | 004567 | 000276 | | QTSTNG: | JSR | \$.TYPEA |
| 2277 | 011656 | 052136 | 040510 | 045516 | | .ASCII | "↑THANKS! NOW TESTING↑." |
| 2278 | 011664 | 020523 | 047040 | 053517 | | | |
| 2279 | 011672 | 052040 | 051505 | 044524 | | | |
| 2280 | 011700 | 043516 | 027136 | | | | |
| 2281 | | | | | | | |
| 2282 | | | | | | | |
| 2283 | 011704 | 000205 | | | QEND: | RTS | \$ |

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2284
2285
2286
2287
2288
2289
2290 011706 004567 000010      KADRS: JSR    $,KIN      ;ENTRY TO KEY IN AN ADDRESS.
2291 011712 004567 000004      KDATA: JSR    $,KIN      ;ENTRY TO KEY IN DATA.
2292 011716 004567 000000      KYORN: JSR    $,KIN      ;ENTRY TO KEY IN A Y OR AN N.
2293 011722 005001 000000      KIN:   CLR    R1         ;INIT. & PREPARE TO INPUT A
2294 011724 012767 000006      167320 MOV    #6,KCTR          ;MAXIMUM OF SIX CHARACTERS.
2295 011732 005267 165622      KINA:  INC    TKS        ;ENABLE CHAR. READ.
2296 011736 105767 165616      KINB:  TSTB   TKS        ;CHAR. READY?
2297 011742 100375 165612      BPL    KINB            ;NO. - BRANCH.
2298 011744 116700 177600      MOVB   TKB,R0         ;YES. - READ CHAR.
2299 011750 042700 177600      BIC    #177600,R0     ;CONVERT CHAR. FROM 8 TO 7 BIT ASCII.
2300 011754 105767 165604      KINB1: TSTB   TPS        ;ECHO THE CHAR.
2301 011760 100375 165600      BPL    KINB1
2302 011762 010067 011722      MOV    R0,TPB
2303 011766 020527 000060      CMP    $,#KIN        ;WAS REPLY TO BE Y OR N ONLY?
2304 011772 001436 000060      BEQ    KINC           ;YES. - BRANCH
2305 011774 020027 000060      CMP    R0,#'0        ;NO. - CHAR. LESS THAN A CHAR. 0?
2306 012000 103452 000067      BLO    KINE          ;YES. - BRANCH.
2307 012002 020027 000067      CMP    R0,#'7        ;NO. - CHAR. GREATER THAN A CHAR. 7?
2308 012006 101030 177770      BHI    KINC           ;YES. - BRANCH.
2309 012010 042700 177770      BIC    #177770,R0    ;NO. - CONVERT ASCII TO OCTAL.
2310 012014 050001 167230      BIS    R0,R1         ;TRANSFER CHAR. TO R1.
2311 012016 005367 167230      DEC    KCTR          ;WAS THIS THE SIXTH CHARACTER?
2312 012022 001404 000060      BEQ    KINB2         ;YES. - BRANCH.
2313 012024 006301 000060      ASL    R1            ;NO. - POSITION CHARS.
2314 012026 006301 000060      ASL    R1            ;POSITION CHARS.
2315 012030 006301 000060      ASL    R1            ;POSITION CHARS.
2316 012032 006737 000060      BR     KINA          ;BRANCH.
2317 012034 010100 011712      KINB2: MOV    R1,R0     ;YES. - TRANSFER THE SIX CHARS. TO R0.
2318 012036 020527 000001      CMP    $,#KDATA      ;SHOULD THIS REPLY BE AN ADDRESS?
2319 012042 001027 000001      BNE    KINC           ;NO. - BRANCH
2320 012044 032700 000001      BIT    #1,R0         ;YES. - IS ADRS. EVEN?
2321 012050 001026 164000      BNE    KINE          ;NO. - BRANCH.
2322 012052 020027 164000      CMP    R0,#164000    ;YES. - IS ADRS. LESS THAN 164000?
2323 012056 103423 167776      BLO    KINE          ;YES. - BRANCH.
2324 012060 020027 167776      CMP    R0,#167776    ;NO. - IS ADRS. GREATER THAN 167776?
2325 012064 101020 000006      BHI    KINE          ;YES. - BRANCH.
2326 012066 000415 000006      BR     KINC           ;NO. - BRANCH.
2327 012070 022767 000006      167154 KINC: CMP    #6,KCTR          ;IS THIS THE FIRST CHAR?
2328 012076 001013 000116      BNE    KINE          ;NO. - BRANCH.
2329 012100 020027 000116      CMP    R0,#'N        ;YES. - IS CHAR. AN N?
2330 012104 001406 011722      BEQ    KINC           ;YES. - BRANCH.
2331 012106 020527 000131      CMP    $,#KIN        ;NO. - WAS REPLY TO BE AN ADRS. OR DATA?
2332 012112 001005 000131      BNE    KINE          ;YES. - BRANCH.
2333 012114 020027 000131      CMP    R0,#'Y        ;NO. - IS CHAR. A Y?
2334 012120 001002 000131      BNE    KINE          ;NO. - BRANCH.
2335 012122 012605 167114      KIND:  MOV    (STP)+,$  ;YES. - POP STACK ONE JSR.
2336 012124 000205 167114      RTS    $              ;RETURN. - REPLY IS IN R0.
2337 012126 016767 000014      167114 KINE: MOV    TYPsrc,QSRC     ;GET ANOTHER TRY AT IT.
2338 012134 004567 020056      JSR    $,TYPEA
2339 012140 037477 020056      .ASCII "??."

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| | | | | | | | |
|------|--------|--------|--------|-----|----------|--|-----------------------|
| 2340 | 012144 | 005726 | | TST | (STP)+ | | ;POP STACK TWO JSR'S. |
| 2341 | 012146 | 012605 | | MOV | (STP)+,S | | |
| 2342 | 012150 | 000177 | 167074 | JMP | @QSRC | | ;RETURN TO RE-QUERY |

| | | | | | | | |
|--------|--------|-------|-------|------|------|------|-----------|
| DCW11 | 001524 | 965# | | | | | |
| DCW12 | 001526 | 966# | | | | | |
| DCW13 | 001530 | 967# | | | | | |
| DCW14 | 001532 | 968# | | | | | |
| DCW15 | 001534 | 969# | | | | | |
| DCW16 | 001536 | 970# | | | | | |
| DCW17 | 001540 | 971# | | | | | |
| DCW20 | 001542 | 972# | | | | | |
| DCW21 | 001544 | 973# | | | | | |
| DCW22 | 001546 | 974# | | | | | |
| DCW23 | 001550 | 975# | | | | | |
| DCW24 | 001552 | 976# | | | | | |
| DCW25 | 001554 | 977# | | | | | |
| DCW26 | 001556 | 978# | | | | | |
| DCW27 | 001560 | 979# | | | | | |
| DCW30 | 001562 | 980# | | | | | |
| DCW31 | 001564 | 981# | | | | | |
| DCW32 | 001566 | 982# | | | | | |
| DCW33 | 001570 | 983# | | | | | |
| DCW34 | 001572 | 984# | | | | | |
| DCW35 | 001574 | 985# | | | | | |
| DCW36 | 001576 | 986# | | | | | |
| DCW37 | 001600 | 987# | | | | | |
| DCW40 | 001602 | 988# | | | | | |
| DCW41 | 001604 | 989# | | | | | |
| DCW42 | 001606 | 990# | | | | | |
| DCW43 | 001610 | 991# | | | | | |
| DCW44 | 001612 | 992# | | | | | |
| DCW45 | 001614 | 993# | | | | | |
| DCW46 | 001616 | 994# | | | | | |
| DCW47 | 001620 | 995# | | | | | |
| DCW50 | 001622 | 996# | | | | | |
| DCW51 | 001624 | 997# | | | | | |
| DCW52 | 001626 | 998# | | | | | |
| DCW53 | 001630 | 999# | | | | | |
| DCW54 | 001632 | 1000# | | | | | |
| DCW55 | 001634 | 1001# | | | | | |
| DCW56 | 001636 | 1002# | | | | | |
| DCW57 | 001640 | 1003# | | | | | |
| DCW60 | 001642 | 1004# | | | | | |
| DCW61 | 001644 | 1005# | | | | | |
| DCW62 | 001646 | 1006# | | | | | |
| DCW63 | 001650 | 1007# | | | | | |
| DCW64 | 001652 | 1008# | | | | | |
| DCW65 | 001654 | 1009# | | | | | |
| DCW66 | 001656 | 1010# | | | | | |
| DCW70 | 001662 | 1012# | | | | | |
| DCW71 | 001664 | 1013# | | | | | |
| DCW72 | 001666 | 1014# | | | | | |
| DCW73 | 001670 | 1015# | | | | | |
| DCW74 | 001672 | 1016# | | | | | |
| DCW75 | 001674 | 1017# | | | | | |
| DCW76 | 001676 | 1018# | | | | | |
| DCW77 | 001700 | 1019# | 1426 | 1465 | 1517 | 1572 | |
| DELAY | 002034 | 1045 | 1050# | | | | |
| DELAY1 | 002010 | 1043# | 1152 | 1186 | 1219 | 1253 | 1285 1319 |

| | | | | | | | | | |
|--------|--------|-------|-------|-------|-------|-------|------|------|------|
| INIT | 007462 | 759 | 1985# | 2006 | | | | | |
| INITA | 007502 | 767 | 1989# | | | | | | |
| INITA1 | 007510 | 1986 | 1988 | 1990# | | | | | |
| INITA2 | 007520 | 775 | 1992# | | | | | | |
| INITA3 | 007530 | 784 | 1994# | | | | | | |
| INITA4 | 007536 | 1993 | 1995# | | | | | | |
| INITA5 | 007472 | 791 | 1987# | | | | | | |
| INITB | 007544 | 1991 | 1996# | | | | | | |
| INITB1 | 007562 | 2000# | 2004 | | | | | | |
| INITB2 | 007656 | 2013# | 2015 | | | | | | |
| INITC | 007714 | 2019 | 2023# | | | | | | |
| INITC1 | 007716 | 2022 | 2024# | | | | | | |
| INITD | 007754 | 2025 | 2030# | | | | | | |
| INITE | 010012 | 2030 | 2036# | 2037 | | | | | |
| INITF | 010016 | 2029 | 2035 | 2038# | | | | | |
| INITG | 010047 | 2028 | 2033 | 2042# | | | | | |
| INITG1 | 010050 | 2046# | 2047 | | | | | | |
| INITG2 | 010064 | 2048# | 2049 | | | | | | |
| INITH | 010070 | 2044 | 2051# | | | | | | |
| INITI | 010114 | 2055# | 2058 | | | | | | |
| INITJ | 010152 | 2060 | 2062# | | | | | | |
| INITJ1 | 010200 | 2067# | 2070 | | | | | | |
| INITJ2 | 010222 | 2071# | 2074 | | | | | | |
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| INITK2 | 010320 | 2083 | 2085# | | | | | | |
| INITK3 | 010326 | 2086# | 2089 | | | | | | |
| INITK4 | 010364 | 2091 | 2093# | | | | | | |
| INITL | 010434 | 2096 | 2103# | | | | | | |
| INITL1 | 010466 | 2104 | 2109# | | | | | | |
| INITM | 010506 | 2102 | 2108 | 2112# | | | | | |
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| INITO | 010600 | 2124 | 2127# | | | | | | |
| INITP | 010604 | 1717 | 2126 | 2128# | 2417 | | | | |
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| ITNO | 001110 | 811# | 1663 | | | | | | |
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| IZGSWA | 001726 | 1026 | 1028# | | | | | | |
| IZGSWB | 001746 | 1030 | 1032# | | | | | | |
| IZGSWC | 001766 | 1034 | 1036# | | | | | | |
| IZGSWD | 002006 | 1038 | 1040# | | | | | | |
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| JXF = | 000100 | 738# | 1063 | 1527 | 1945 | 1994 | 2129 | 2246 | |
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| KIN | 011722 | 2290 | 2291 | 2292 | 2293# | 2303 | 2331 | | |
| KINA | 011732 | 2295# | 2316 | | | | | | |
| KINB | 011736 | 2296# | 2297 | | | | | | |
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| SCW16 | 001336 | 900# | | | | | | |
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| SCW20 | 001342 | 902# | | | | | | |
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| SCW30 | 001362 | 910# | | | | | | |
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| SCW35 | 001374 | 915# | | | | | | |
| SCW36 | 001376 | 916# | | | | | | |
| SCW37 | 001400 | 917# | | | | | | |
| SCW40 | 001402 | 918# | | | | | | |
| SCW41 | 001404 | 919# | | | | | | |
| SCW42 | 001406 | 920# | | | | | | |
| SCW43 | 001410 | 921# | | | | | | |
| SCW44 | 001412 | 922# | | | | | | |
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| SCW46 | 001416 | 924# | | | | | | |
| SCW47 | 001420 | 925# | | | | | | |
| SCW50 | 001422 | 926# | | | | | | |
| SCW51 | 001424 | 927# | | | | | | |
| SCW52 | 001426 | 928# | | | | | | |
| SCW53 | 001430 | 929# | | | | | | |
| SCW54 | 001432 | 930# | | | | | | |
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| SCW56 | 001436 | 932# | | | | | | |
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| SCW64 | 001452 | 938# | | | | | | |
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| SCW67 | 001460 | 941# | | | | | | |
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| SLS | = 040000 | 719# | 1656 | 1733 | | | | |
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| S.ORD | 000200 | 759# | | | | | | | | | | | | | | | | | | |
| S.ORDA | 001010 | 775# | | | | | | | | | | | | | | | | | | |
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| TAXSA | 007306 | 1946 | 1948# | | | | | | | | | | | | | | | | | |
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| TBDB | 006466 | 1825 | 1832# | | | | | | | | | | | | | | | | | |
| TCAD | 006274 | 1799# | | | | | | | | | | | | | | | | | | |
| TCAX | 006314 | 1804# | | | | | | | | | | | | | | | | | | |
| TCAXA | 006342 | 1807 | 1809# | | | | | | | | | | | | | | | | | |
| TCWP | 006350 | 1812# | | | | | | | | | | | | | | | | | | |
| TCWPA | 006376 | 1815 | 1817# | | | | | | | | | | | | | | | | | |
| TDBC | 006476 | 1828 | 1831 | 1834# | | | | | | | | | | | | | | | | |
| TEX | 007314 | 1792 | 1951# | | | | | | | | | | | | | | | | | |
| TFLGS | 006500 | 1836# | | | | | | | | | | | | | | | | | | |
| TGMF | 006552 | 1851# | | | | | | | | | | | | | | | | | | |
| TGMFA | 006600 | 1854 | 1856# | | | | | | | | | | | | | | | | | |
| TGWD | 006516 | 1843# | | | | | | | | | | | | | | | | | | |
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| TGWO | 006606 | 1859# | | | | | | | | | | | | | | | | | | |
| TGWDA | 006634 | 1862 | 1864# | | | | | | | | | | | | | | | | | |
| TGW2 | 006642 | 1867# | | | | | | | | | | | | | | | | | | |
| TGW2A | 006670 | 1870 | 1872# | | | | | | | | | | | | | | | | | |
| TGW4 | 006676 | 1875# | | | | | | | | | | | | | | | | | | |
| TGW4A | 006724 | 1878 | 1880# | | | | | | | | | | | | | | | | | |
| TGW6 | 006732 | 1883# | | | | | | | | | | | | | | | | | | |
| TGW6A | 006760 | 1886 | 1888# | | | | | | | | | | | | | | | | | |
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| TKS = | 177560 | 701# | 2295* | 2296 | | | | | | | | | | | | | | | | |
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| TMF | 001230 | 856# | 1151* | 1157 | 1185* | 1191 | 1218* | 1224 | 1252* | 1258 | 1284* | 1290 | 1318* | 1324 | | | | | | |
| | | 1908 | | | | | | | | | | | | | | | | | | |
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| TPC | 006220 | 1785# | | | | | | | | | | | | | | | | | | |
| TPS = | 177564 | 703# | 2300 | 2349 | | | | | | | | | | | | | | | | |
| TPST | 006254 | 1791 | 1794# | | | | | | | | | | | | | | | | | |
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| TTMF | 007042 | 1902# | | | | | | | | | | | | | | | | | | |
| TTMFA | 007070 | 1905 | 1907# | | | | | | | | | | | | | | | | | |
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| TTWD | 007006 | 1894# | | | | | | | | | | | | | | | | | | |
| TTWDA | 007034 | 1897 | 1899# | | | | | | | | | | | | | | | | | |
| TTWO | 007076 | 1910# | | | | | | | | | | | | | | | | | | |
| TTWOA | 007124 | 1913 | 1915# | | | | | | | | | | | | | | | | | |
| TTW2 | 007132 | 1918# | | | | | | | | | | | | | | | | | | |
| TTW2A | 007160 | 1921 | 1923# | | | | | | | | | | | | | | | | | |
| TTW4 | 007166 | 1926# | | | | | | | | | | | | | | | | | | |
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| TTW6 | 007222 | 1934# | | | | | | | | | | | | | | | | | | |
| TTW6A | 007250 | 1937 | 1939# | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
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| BEG | 2313 | 2314 | 2315 | 2375 | 2380 | 2382 | 2384 | | | | | | | | |
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| | 1372 | 1397 | 1417 | 1437 | 1456 | 1476 | 1497 | 1520 | 1538 | 1554 | 1575 | 1650 | 1653 | 1657 | 1724 |
| | 1726 | 1729 | 1731 | 1734 | 1778 | 1791 | 1823 | 2096 | 2104 | 2113 | 2124 | 2145 | 2155 | 2169 | 2179 |
| | 2181 | 2183 | 2188 | 2195 | 2197 | 2202 | 2204 | 2247 | 2255 | 2265 | 2274 | 2304 | 2312 | 2330 | 2358 |
| | 2363 | 2402 | 2412 | | | | | | | | | | | | |
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| BUDIC | 1082 | 1360 | 1672 | 1700 | 1740 | 2157 | 2158 | 2180 | 2253 | 2299 | 2309 | | | | |
| BUS | 1675 | 1737 | 1747 | 2128 | 2256 | 2310 | 2386 | | | | | | | | |
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| | 1656 | 1660 | 1673 | 1723 | 1725 | 1728 | 1730 | 1733 | 1745 | 1767 | 1790 | 1945 | 2095 | 2103 | 2112 |
| | 2125 | 2129 | 2146 | 2170 | 2246 | 2320 | 2362 | 2394 | 2401 | | | | | | |
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| | 1936 | | | | | | | | | | | | | | |
| BLO | 2060 | 2083 | 2091 | 2306 | 2323 | | | | | | | | | | |
| BLOS | 2058 | 2081 | 2089 | | | | | | | | | | | | |
| BMI | 1640 | | | | | | | | | | | | | | |
| BNE | 1026 | 1030 | 1034 | 1038 | 1058 | 1069 | 1072 | 1158 | 1160 | 1162 | 1164 | 1166 | 1192 | 1194 | 1196 |
| | 1198 | 1200 | 1225 | 1227 | 1229 | 1231 | 1233 | 1259 | 1261 | 1263 | 1265 | 1267 | 1291 | 1293 | 1295 |
| | 1297 | 1299 | 1325 | 1327 | 1329 | 1331 | 1333 | 1337 | 1347 | 1350 | 1413 | 1433 | 1452 | 1472 | 1493 |
| | 1514 | 1518 | 1528 | 1564 | 1567 | 1571 | 1573 | 1661 | 1664 | 1674 | 1746 | 1753 | 1755 | 1762 | 1768 |
| | 1807 | 1815 | 1825 | 1846 | 1854 | 1862 | 1870 | 1878 | 1886 | 1897 | 1905 | 1913 | 1921 | 1929 | 1937 |
| | 1946 | 2004 | 2015 | 2044 | 2047 | 2070 | 2074 | 2126 | 2130 | 2147 | 2160 | 2171 | 2186 | 2319 | 2321 |
| | 2328 | 2332 | 2334 | 2352 | 2390 | 2395 | | | | | | | | | |
| BPL | 2297 | 2301 | 2350 | | | | | | | | | | | | |
| BR | 808 | 1089 | 1096 | 1109 | 1111 | 1117 | 1130 | 1132 | 1138 | 1173 | 1206 | 1239 | 1273 | 1305 | 1341 |
| | 1367 | 1374 | 1391 | 1393 | 1399 | 1419 | 1439 | 1458 | 1478 | 1478 | 1522 | 1540 | 1578 | 1703 | 1739 |
| | 1760 | 1828 | 1831 | 1986 | 1988 | 1991 | 1993 | 2022 | 2029 | 2025 | 2037 | 2049 | 2102 | 2108 | 2117 |
| | 2199 | 2206 | 2316 | 2326 | 2360 | 2378 | | | | | | | | | |
| CLR | 1024 | 1028 | 1032 | 1036 | 1665 | 1997 | 1999 | 2001 | 2013 | 2016 | 2017 | 2018 | 2039 | 2051 | 2054 |
| CMP | 2063 | 2064 | 2065 | 2066 | 2075 | 2076 | 2293 | 2372 | 2379 | | | | | | |
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| | 1193 | 1195 | 1197 | 1199 | 1203 | 1224 | 1226 | 1228 | 1230 | 1232 | 1236 | 1258 | 1260 | 1262 | 1264 |
| | 1266 | 1270 | 1290 | 1292 | 1294 | 1296 | 1298 | 1302 | 1324 | 1326 | 1328 | 1330 | 1332 | 1336 | 1338 |
| | 1346 | 1364 | 1368 | 1371 | 1392 | 1396 | 1416 | 1432 | 1436 | 1455 | 1471 | 1475 | 1492 | 1496 | 1513 |
| | 1517 | 1519 | 1537 | 1563 | 1565 | 1572 | 1574 | 1658 | 1663 | 1735 | 1752 | 1777 | 2003 | 2014 | 2023 |
| | 2042 | 2057 | 2059 | 2069 | 2073 | 2080 | 2082 | 2088 | 2090 | 2144 | 2154 | 2159 | 2168 | 2178 | 2182 |
| | 2185 | 2187 | 2189 | 2191 | 2194 | 2196 | 2201 | 2203 | 2254 | 2264 | 2273 | 2303 | 2305 | 2307 | 2318 |
| | 2322 | 2324 | 2327 | 2329 | 2331 | 2333 | 2389 | 2411 | | | | | | | |
| CMPB | 2351 | 2357 | | | | | | | | | | | | | |
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| DEC | 1057 | 2311 | | | | | | | | | | | | | |
| EMT | 715 | | | | | | | | | | | | | | |
| HALT | 807 | 1732 | 2036 | 2048 | | | | | | | | | | | |
| INC | 1662 | 1754 | 1761 | 2046 | 2056 | 2061 | 2068 | 2072 | 2079 | 2084 | 2087 | 2092 | 2295 | 2364 | 2377 |
| | 2398 | | | | | | | | | | | | | | |
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| | 1579 | 1587 | 1591 | 1595 | 1599 | 1603 | 1607 | 1611 | 1615 | 1619 | 1623 | 1627 | 1631 | 1633 | 1659 |
| | 1717 | 1736 | 1781 | 1792 | 2131 | 2132 | 2219 | 2227 | 2236 | 2244 | 2342 | 2396 | 2417 | | |
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| | 1787 | 1794 | 1796 | 1799 | 1801 | 1804 | 1808 | 1809 | 1812 | 1816 | 1817 | 1820 | 1826 | 1829 | 1832 |
| | 1836 | 1838 | 1843 | 1847 | 1848 | 1851 | 1855 | 1856 | 1859 | 1863 | 1864 | 1867 | 1871 | 1872 | 1875 |

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 DZCBAB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

| | | | | | | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
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| | 1915 | 1918 | 1922 | 1923 | 1926 | 1930 | 1931 | 1934 | 1938 | 1939 | 1942 | 1947 | 1948 | 1951 | 1957 |
| | 2097 | 2105 | 2109 | 2114 | 2118 | 2127 | 2138 | 2141 | 2149 | 2152 | 2162 | 2165 | 2173 | 2176 | 2209 |
| | 2221 | 2229 | 2239 | 2248 | 2251 | 2258 | 2263 | 2267 | 2272 | 2276 | 2290 | 2291 | 2292 | 2338 | 2354 |
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| | 1287 | 1288 | 1289 | 1312 | 1314 | 1320 | 1321 | 1322 | 1323 | 1359 | 1361 | 1375 | 1386 | 1387 | 1400 |
| | 1406 | 1407 | 1408 | 1412 | 1425 | 1426 | 1427 | 1430 | 1431 | 1445 | 1446 | 1447 | 1451 | 1464 | 1465 |
| | 1466 | 1469 | 1470 | 1485 | 1486 | 1487 | 1490 | 1491 | 1506 | 1508 | 1509 | 1511 | 1512 | 1534 | 1535 |
| | 1550 | 1551 | 1552 | 1555 | 1557 | 1558 | 1559 | 1560 | 1562 | 1585 | 1586 | 1589 | 1590 | 1593 | 1594 |
| | 1597 | 1598 | 1601 | 1602 | 1605 | 1606 | 1609 | 1610 | 1613 | 1614 | 1617 | 1618 | 1621 | 1622 | 1625 |
| | 1626 | 1629 | 1630 | 1638 | 1641 | 1671 | 1676 | 1691 | 1692 | 1693 | 1694 | 1695 | 1696 | 1697 | 1698 |
| | 1699 | 1708 | 1709 | 1710 | 1711 | 1712 | 1713 | 1714 | 1715 | 1966 | 1967 | 1969 | 1970 | 1971 | 1972 |
| | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1985 | 1987 | 1989 | 1990 | 1992 | 1994 | 1995 | 1996 |
| | 1998 | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2019 | 2021 | 2024 | 2025 | 2027 |
| | 2028 | 2030 | 2032 | 2033 | 2034 | 2038 | 2040 | 2045 | 2052 | 2053 | 2062 | 2077 | 2085 | 2142 | 2143 |
| | 2153 | 2156 | 2166 | 2167 | 2177 | 2193 | 2200 | 2208 | 2252 | 2294 | 2302 | 2317 | 2335 | 2337 | 2341 |
| | 2347 | 2373 | 2374 | | | | | | | | | | | | |
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| | 1284 | 1313 | 1317 | 1318 | 1362 | 1388 | 1409 | 1428 | 1448 | 1467 | 1488 | 1507 | 1536 | 1549 | 2298 |
| | 2359 | | | | | | | | | | | | | | |
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| SUB | 1053 | 1968 | 2055 | 2078 | 2086 | 2348 | | | | | | | | | |
| SXT | 2020 | | | | | | | | | | | | | | |
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| TST | 1088 | 1108 | 1366 | 1390 | 1716 | 1780 | 2026 | 2031 | 2043 | 2123 | 2340 | | | | |
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| WAIT | 2041 | | | | | | | | | | | | | | |
| .ABS | 682 | | | | | | | | | | | | | | |
| .ASCII | 802 | 1749 | 1757 | 1764 | 1770 | 1774 | 1786 | 1795 | 1800 | 1805 | 1813 | 1821 | 1827 | 1830 | 1833 |
| | 1837 | 1844 | 1852 | 1860 | 1868 | 1876 | 1884 | 1891 | 1895 | 1903 | 1911 | 1919 | 1927 | 1935 | 1943 |
| | 1952 | 1958 | 2098 | 2106 | 2110 | 2115 | 2119 | 2139 | 2150 | 2163 | 2174 | 2210 | 2222 | 2230 | 2240 |
| | 2249 | 2259 | 2268 | 2277 | 2339 | 2388 | 2404 | 2408 | 2414 | | | | | | |
| .END | 2418 | | | | | | | | | | | | | | |
| .REPT | 1 | | | | | | | | | | | | | | |
| .TITLE | 681 | | | | | | | | | | | | | | |

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DZCBAB.DZCBAB.SEG/SOL/CRF=DZCBAB.P11
 RUN-TIME: 7 14 4 SECONDS
 RUN-TIME RATIO: 83/26=3.1
 CORE USED: 13K (25 PAGES)

