

DIAGNOSTIC SERVICE GUIDE
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01.00.00 INTRODUCTION

THE 495X MAINTENANCE INFORMATION INCLUDES MDI (MAINTENANCE DIAGNOSTIC INTEGRATION), MIM (MAINTENANCE INFORMATION MANUAL), DCP (DIAGNOSTIC CONTROL PROGRAM), UTILITY PROGRAM(S), A SYSTEM TEST, FRIEND, ERAP, PROCESSING UNIT AND STORAGE DIAGNOSTIC(S), MLD'S (MACHINE LOGIC DIAGRAMS), PROGRAM LISTS AND THEORY DIAGRAMS MANUALS.

ALL PROGRAMS ARE ON 43FD (TWO SIDE) DISKETTES. A SYSTEM WITHOUT A DISKETTE DRIVE WILL BE SERVICED WITH A MAINTENANCE PROGRAM LOAD DEVICE.

THE MAINTENANCE INFORMATION IS INSTALLED IN BINDER(S), AS FOLLOWS:

BINDER MLD	LOGIC DIAGRAMS, ALL DEVICE(S).
BINDER MLM	DIAGNOSTIC SERVICE GUIDE. MAP PROLOG(S), ALL DEVICE(S). SYSTEM ENTRY MAP. CHECK MAP. CONFIGURATION ERROR MAPS. PROCESSING UNIT MAPS. POWER MAPS. PROCESSING UNIT MIM (RIGHT HALF OF BINDER). I/O MAPS (PRINTER, DISPLAY, DISK AND SO ON). I/O MIMS. SENSOR I/O MAPS. SENSOR I/O MIM. COMMUNICATIONS FEATURE MAPS.
BINDER PGM	PROGRAM LISTS, ALL DEVICE(S).
BINDER SYT	SYSTEM TEST DESCRIPTION AND PROGRAM LISTS. 'FRIEND' DESCRIPTION AND PROGRAM LISTS. 'ERAP' DESCRIPTION AND PROGRAM LISTS.
BINDER TDM	THEORY DIAGRAMS MANUALS, ALL DEVICE(S).

02.00.00 MAP/DEVICE ID FORMAT -- GO TO MAP 0012.

02.01.00 MAP/PROGRAM ID/DEVICE TABLE -- GO TO MAP 0012.

03.00.00 DIAGNOSTIC FLOW SUMMARY:

USE THE SYSTEM ENTRY MAP 0020, ENTRY POINT A. THE SYSTEM ENTRY MAP WILL HANDLE THE VARIABLES THAT RESULT FROM DIFFERENT SYSTEM CONFIGURATIONS.

AUTO MODE WITHOUT OPTIONS WILL:
LOAD THE DEVICE ENTRY DIAGNOSTIC PROGRAM FOR EACH DEVICE IN SEQUENCE BY DEVICE TYPE. MORE THAN ONE DIAGNOSTIC MAY BE NEEDED FOR A COMPLETE TEST OF THE DEVICE. THE DIAGNOSTIC WILL TEST EACH DEVICE OF THAT TYPE IN SEQUENCE BY ADDRESS AND LOG ANY ERROR MESSAGES TO THE CONSOLE. THEN TERMINATE THE PROGRAM AND SELECT THE NEXT DEVICE FOR TESTING.
IF NO ERROR IS FOUND BY THE AUTO MDI'S, THE C E MUST ENTER MANUAL MODE AND EXECUTE MANUAL MDI'S PER THE MAPS PROLOG FOR THE SUSPECT DEVICE. EACH PROGRAM MUST BE LOADED BY THE C E. IF YOUR ONLY CONSOLE DEVICE IS THE PROGRAMMER CONSOLE, DCP WILL HALT THE PROGRAM ON ANY ERROR AND DISPLAY THE MAP NUMBER IN THE INDICATORS.

04.00.00 DCP COMMANDS AND COMMAND OPTIONS:

04.01.00 DCP COMMANDS:

*0 ANSWER A MAP QUESTION 'NO'.

*1 ANSWER A MAP QUESTION 'YES'.

2 DCP WILL EXECUTE IN AUTO MODE

3 DCP WILL EXECUTE IN MANUAL MODE

4 LOOP AUTO SEQUENCE.

WHEN '4' IS SELECTED AND 'A' IS ENTERED IN AUTO MODE, THE AUTO SEQUENCE WILL LOOP UNTIL AN ERROR IS FOUND OR THE SYSTEM IS STOPPED AND YOU IPL THE SYSTEM. THE '4' OPTION WILL CHANGE MDI OPERATION WHEN AN ERROR IS INSTEAD OF LOGGING A MESSAGE AND TERMINATING THE TESTING OF THAT DEVICE, MDI WILL HALT AND DISPLAY THE REPAIR ACTION MESSAGE, OR IFA MANUAL MODE MAP IS NEEDED FOR MORE ANALYSIS, IT WILL LOAD AND EXECUTE THE MANUAL MAP. BEFORE EXECUTING THE MANUAL MODE MAP, MDI WILL FORCE MANUAL MODE AND RESET THE '4' OPTION.

5 ASSIGN THE CONSOLE FUNCTION TO THE PROGRAMMER OR C E CONSOLE.

IF THE ALTERNATE CONSOLE IS FAILING OR SUSPECT, COMMAND '5' WILL ASSIGN THE CONSOLE FUNCTION TO THE PROGRAMMER CONSOLE SO YOU CAN TEST THE ALTERNATE CONSOLE. THE PROGRAMMER CONSOLE WILL REMAIN ACTIVE UNTIL THE NEXT IPL.

6 CONTINUE THE EXECUTION AT THE NEXT SEQUENTIAL INSTRUCTION.

USE AFTER STOP ON ERROR, STOP ON NO LEG, AND SO ON..

7 STOP ON MESSAGE.

IN AUTO MODE '7' WILL CAUSE THE PROGRAM TO HALT AFTER A REPAIR ACTION MESSAGE, OR ANY OTHER MESSAGE SEEN BY THE PROGRAMMER TO BE IMPORTANT TO THE USER. THIS FUNCTION IS ACTIVE IN MANUAL MODE AND WHEN THE CONSOLE FUNCTION IS ASSIGNED TO THE PROGRAMMER OR C E CONSOLE. ENTER '6' TO CONTINUE.

8 RESET THE '7' OPTION.

9 TERMINATE THE PROGRAM.

IF THERE IS A QUESTION, (DIAGNOSTIC, EXERCISER OR UTILITY) ANSWER THE MAP QUESTION 'YES' OR 'NO'. THE PROGRAM WILL TEST THE TERMINATE BIT, FIND IT ON, AND TERMINATE.

A START EXECUTION.

WHEN OPTIONS HAVE BEEN SELECTED, 'A' CAUSES EXECUTION TO START AT PROGRAM ENTRY POINT, OR, IF 'AUTO' MODE (SEE COMMAND 2 BELOW) HAS BEEN SELECTED, USE COMMAND 'A' TO START THE AUTO SEQUENCE.

*B START THE PROGRAM.

IF NO OPTIONS ARE NEEDED, USE 'B' FOR LOAD AND GO. FOR EXAMPLE, 'B4401' WILL CAUSE MAP 4401 TO LOAD AND EXECUTE WITHOUT OPTIONS.

*C LOAD PROGRAM AND HALT BEFORE EXECUTION

DO THE OPTION SELECTION. ONLY THE MDI SUPERVISOR MODULE WILL LOAD. THE MAP PROGRAM WILL LOAD WHEN 'A' IS ENTERED.

*D SET BITS ON IN PROGRAM OPTION BYTE(S).

(SEE 'OPTION BYTES BITS').

*E SET BITS OFF IN PROGRAM OPTION BYTE(S).

*F REPLY TO PROGRAM.

IDENTIFY THE ENTRY AS A REPLY TO A PROGRAM REQUEST FOR DATA, NOT A DCP COMMAND.

S DUMP STORAGE. (PROGRAMMER AND ALTERNATE CONSOLE NEEDED)

TO DO A STORAGE DUMP, AT ANY 'ENTER', PRESS 'STOP' AND CHANGE STORAGE AT 0004 AND 0006 TO THE FIRST AND LAST ADDRESSES OF THE AREA YOU WANT TO DUMP. PRESS 'START' AND ENTER 'S'.

* COMMANDS 0,1,B,C,D,E,F ARE NOT VALID IN AUTO MODE.

NOTE: IF OPTION BITS HAVE BEEN SET ON, THEY REMAIN ON UNTIL SET OFF BY AN 'E' COMMAND OR UNTIL THE PROGRAM HAS TERMINATED (PT). OPTION BYTE 1 FUNCTIONS ARE DETERMINED BY DCP/MDI. OPTION BYTE 2 FUNCTIONS ARE DETERMINED BY THE USING PROGRAM.

THE MDI DESCRIPTIONS ARE GIVEN HERE. FOR OTHER PROGRAMS THE BYTE 2 BITS WILL BE DESCRIBED IN THE DESCRIPTION FOR THAT PROGRAM. TO SET OPTION WORDS BITS, ENTER 'CXXXX' (LOAD AND WAIT), 'DXXXX' (SET OPTION BITS PER MASK XXXX) AND THEN 'A' (START EXECUTION).

04.02.00 COMMAND OPTION BYTE(S) BITS:

BIT 0 TERMINATE BIT. SET ON WITH THE 'D' OR '9' COMMAND. SEE SECTION 04.01.00.

1 PROGRAM WILL REQUEST DEVICE ADDRESS BEFORE EXECUTION.

2 STOP ON ERROR (REPAIR ACTION MESSAGE).

USED WITH LOOP ON MAP, LOOP STEP TO STEP OPTIONS.

*3 LOOP ON ERROR

SEE THIS MAP, SECTION 05.02.02, \$FIXT.
 MDI WILL EXECUTE A REPAIR ACTION STEP, SET THE LOOP ON MAP BIT ON (BIT 08) AND BRANCH TO STEP ONE (1) OF THE MAP NOW IN STORAGE AND LOOP ON THAT MAP UNTIL THE LOOP ON MAP BIT IS SET OFF. IF NO REPAIR STEP IS FOUND THE MAP WILL EXECUTE TO THE END AND TERMINATE.
 OTHER PROGRAMS: THE LOOP FUNCTION WILL BE SEEN IN THE DIAGNOSTIC DESCRIPTION.

BIT 4 DO NOT DISPLAY STATUS MESSAGE.

5 DO NOT DISPLAY ERROR OR TERMINATE MESSAGE (USED WITH LOOP OPTIONS).

6 REQUEST ROUTINE NUMBER (FOR STAND ALONE - NO MDI PROGRAM).

7 NOT USED

*8 LOOP ON MAP.

SEE THIS MAP, SECTION 05.02.02, \$GOTO.
 IF AN MDI REPAIR ACTION STEP IS EXECUTED, THE LOOP IS STARTED AGAIN IN THE MAP, STEP NUMBER 0001. IF NO ERROR IS FOUND, THE MAP WILL LOOP.

*9 LOOP STEP TO STEP.

WHEN THE 'START PROGRAM' COMMAND IS ENTERED, MDI WILL LOAD THE PROGRAM. IT WILL HALT ASKING THE 'FROM' STEP NUMBER. ENTER FOUR (4) DIGITS. WHEN THE 'FROM' STEP NUMBER HAS BEEN ENTERED, MDI WILL HALT ASKING THE 'TO' STEP NUMBER. ENTER FOUR (4) DIGITS. WHEN THE 'TO' NUMBER IS ENTERED, MDI WILL START EXECUTION AT THE 'FROM' STEP AND LOOP ON THE MAP LOGIC BETWEEN THE TWO STEPS.

BIT 10 PROGRAMMER TRACE.

THIS OPTION WILL GENERATE TWO LINES OF DISPLAY PER MAP STEP EXECUTED:

I3COF MAP=XXXX STEP=YYYY

WH - WW ZZ - ZZ
 XXXX IS 'NOT' THE MAP NUMBER. IT IS THE STORAGE ADDRESS OF THE ENTRY POINT OF THE ROUTINE WHICH IS EXECUTED BY THAT MAP STEP.
 YYYY IS THE MAP STEP NUMBER WHICH WILL EXECUTE WHEN THIS MESSAGE HAS BEEN DISPLAYED.
 WH - WW IS THE RESULT WHICH MDI SUPERVISOR EXPECTED TO RECEIVE FROM THE ROUTINE AND ZZ - ZZ IS THE RECEIVED RESULTS. THIS TRACE OPTION IS NOT VALID WHEN THE PROGRAMMER OR C E CONSOLE IS THE ACTIVE CONSOLE.

11 TRACE MODE.

THIS OPTION WILL CAUSE MDI TO LOG THE MAP ID AND STEP NUMBER FOR EACH STEP BEFORE EXECUTION. THIS TRACE OPTION IS NOT VALID WHEN THE PROGRAMMER OR C E CONSOLE IS THE ACTIVE CONSOLE.

12 STOP ON NO LEG.

MDI WILL HALT BEFORE TAKING ANY 'NO' LEG AND DISPLAY THE MAP ID AND NEXT STEP NUMBER. ENTER '6' TO CONTINUE.

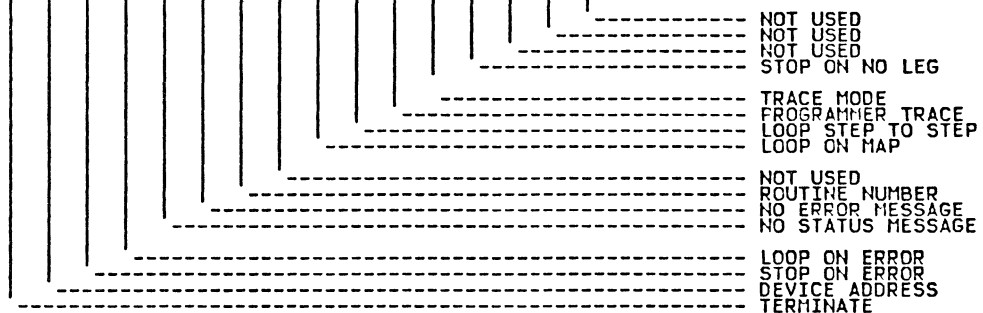
13 NOT USED.

14 NOT USED

15 NOT USED

* TO TERMINATE A PROGRAM OR MAP EXECUTING IN ONE OF THE THREE MODES, STOP AND CHANGE THE OPTION BYTES IN STORAGE HEXADECIMAL 180E. USE DCP COMMAND 'E' TO SET OFF THE LOOP BITS OR SET ON THE TERMINATE BIT. THE TWO OPTION BYTES DESCRIBED ABOVE MUST BE SELECTED AGAIN AFTER ANY 'C' OR 'B' COMMAND.

BIT 1001011021031041051061071081091101111121131141151



PAPER ONLY MAP

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05.00.00 INTEGRATED MAP PROGRAMS:

THE SERIES 1 USES 'AUTO MODE' MAPS (MDI MAPS), 'MANUAL MODE' MAPS (MDI MAPS), AND PAPER ONLY MAPS (NO MDI MAPS). MAP DIAGNOSTIC INTEGRATION (MDI) COMBINES YES/NO MAP LOGIC AND TEST UNITS INTO PROGRAMS. AN 'AUTO RUN' CAN TEST APPROXIMATELY 75% OF THE LOGIC OF ALL INSTALLED DEVICES WITHOUT CE ACTION. A MANUAL MODE MAP USES ROUTINE(S), WHERE POSSIBLE, TO ANSWER MAP QUESTIONS OR DO A FUNCTION AS YOU PROBE, OBSERVE, AND SO ON. CE ACTION IS NEEDED TO ANSWER MAP QUESTIONS, INSTALL JUMPERS, INPUT DATA, AND SO ON.

PAPER ONLY MAPS HAVE NO MAP PROGRAM. THEY INCLUDE MAPS FOR POWER, CONSOLE, PROCESSING UNIT AND STORAGE, MCK, PCK AND CONFIGURATION, AND DEVICE PROBLEM MAPS THAT NEED NO PROGRAM EXECUTING.

05.01.00 MAP PROGRAM FLOW:

DCP CONTROLS LOADING OF PROGRAMS, SELECTION OF OPTIONS, CE COMMUNICATION, AND I/O. MDI CONTROLS LOGIC FLOW IN THE MAP PROGRAM BY SELECTING THE QUESTIONS AND EXECUTING THE ROUTINE(S) AND/OR REQUESTING DCP TO DISPLAY MESSAGES.

05.02.00 USING THE MAPS:

THERE ARE TWO TYPES OF MAPS: MDI AND PAPER ONLY. THEY CAN BE DETERMINED AS FOLLOWS:

MAP NUMBER = XYZ
 XX = DEVICE TYPE (SEE MAP 0012, ID FORMAT)
 Y = 0-6 MDI MAP (LOAD AND EXECUTE THE MAP PROGRAM)
 7-9 PAPER ONLY MAP (NO MAP PROGRAM)
 Z = SEQUENCE ONLY

WHEN YOU SEE A STATEMENT 'GO TO MAP XYZ, ENTRY POINT X', SEE THE MAP NUMBER. IF Y = 0 - 6, IT IS A MDI MAP AND YOU MUST LOAD AND EXECUTE THE MAP PROGRAM (BXYZ). IF THE PROGRAM FINDS AN ERROR IT WILL HALT, AND DCP WILL DISPLAY MAP NUMBER AND STEP NUMBER. SEE THE PAPER MAP AND STEP FOR THE NECESSARY ACTION. IF Y = 7 - 9, IT IS A PAPER ONLY MAP (NO MAP PROGRAM). SEE THE MAP AND ENTRY POINT FOR THE NECESSARY ACTION. ALL MAPS ARE IN THE IBM YES/NO FORMAT. MANUAL MAPS CAN BE LOADED ONLY IF THE DCP MODE IS SET TO MANUAL MODE.

NOTE: WHEN A MAP IS LOADED, IN EITHER MANUAL OR AUTO MODE, IT WILL EXECUTE ON ALL DEVICES OF THAT TYPE IN SEQUENCE BY DEVICE ADDRESS. TO EXECUTE A MAP ON ONE DEVICE ONLY, SET OPTION BIT '01' (REQUEST DEVICE ADDRESS). SEE THIS MAP, SECTION 04.02.00.

05.02.01 RECOMMENDED PROBLEM SOLVING PROCEDURE:

THE 'SYSTEM ENTRY MAP 0020' IS THE HIGHEST LEVEL MAP. IT IS THE STARTING POINT FOR ALL ENTRIES INTO THE MAPS. IF THE MAP FAILS AND THE REPAIR DOES NOT CORRECT THE FAILURE, REPEAT THE ANALYSIS BY STARTING AT THE 'SYSTEM ENTRY MAP', AT LEAST ONE MORE TIME. IF MORE THAN ONE SYMPTOM IS PRESENT, USE THE ONE THAT OCCURS FIRST IN THE MAINLINE OF THE MAP. FOLLOW THIS FAILURE TO THE END, BEFORE STARTING ON ANOTHER SYMPTOM. IF THERE IS MORE THAN ONE SYMPTOM, IT INDICATES A CHANNEL PROBLEM, SO FOLLOW THE FIRST SYMPTOM THROUGH THE MAPS. IF THERE IS NO REPAIR, CONTINUE TO MAP 0070. ANALYZE THE FAILURE SYMPTOMS BEFORE USING MAP 0070. IT CANNOT ISOLATE A FAILURE THAT IS OUTBOARD OF THE DEVICE ATTACHMENT LOGIC. IF THERE IS NO REPAIR IN MAP 0070, START OVER WITH THE NEXT SYMPTOM.

IF TESTING THE ASSIGNED ALTERNATE CONSOLE, DCP WILL ASSIGN THE CONSOLE FUNCTION TO THE PROGRAMMER CONSOLE.

WHEN ALL DEVICE(S) HAVE BEEN TESTED DCP WILL DISPLAY:
 PT 3805 IN THE DATA LEDS, PROGRAM TERMINATED.
 ENTER

NOTE: AN AUTO RUN MAY USE MORE THAN ONE DISKETTE. AT EACH 'PROGRAM TERMINATED' DISPLAY, INSERT ANOTHER DISKETTE AS NEEDED AND ENTER 'A' TO EXECUTE THE 'AUTO' MAPS ON THAT DISKETTE. SEE MAP 0020.
 *** RPQ DEVICES ARE NOT TESTED BY AN AUTO RUN ***
 SEE THE RPQ MAP PROLOG FOR THE TEST PROCEDURE FOR ANY RPQ DEVICE.

IF NO FAILURE OCCURS IN THE AUTO SEQUENCE, SEE THE MAPS PROLOG FOR THE SUSPECT DEVICE. THE PROLOG WILL LIST THE MANUAL MAPS FOR THAT DEVICE AND THE FUNCTIONS TESTED, A DESCRIPTION AND INSTRUCTIONS FOR DEVICE EXERCISERS AND A UTILITY, IF AVAILABLE. (4962 FORMAT UTILITY, COMMUNICATION DOWN LINE TESTS.)

AFTER ANY REPAIR ACTION, ALWAYS VERIFY THE REPAIR. TO 'VERIFY THE REPAIR', DO THE OPERATION THAT DISPLAYED THE FAILURE. IF A TEST IS NEEDED FOR THIS, THE INSTRUCTIONS ARE GIVEN. WHEN COMPLETED, 'MAKE THE SYSTEM READY TO USE' IS ASSUMED.

MAPS CANNOT ISOLATE AN INTERMITTENT FAILURE, BUT THE LOGIC OF THE TEST (WHAT FUNCTION(S) ARE TESTED IN WHAT SEQUENCE) IS AVAILABLE IN THE PAPER MAP. THIS LOGIC USED WITH SUCH OPTIONS AS LOOP, (MAP OR STEP TO STEP), STOP ON 'NO' LEG AND TRACE, WILL MAKE THE MAPS USEFUL ON THE INTERMITTENT FAILURES. (SEE COMMANDS AND OPTIONS, THIS MAP, SECTION 04.00.00.)

IF NO FAILURE OCCURS IN THE MAPS, SYSTEM TEST WILL OPERATE THE SYSTEM IN OVERLAP MODE. IT DOES NOT ISOLATE TO A FAILING FIELD REPLACEMENT UNIT AND MUST BE USED ONLY AFTER THE MAPS HAVE FAILED TO FIND AN ERROR. (SEE BINDER SYT 01). MAP 0070 CAN BE USED WITH THIS TEST TO ISOLATE A FAILURE.

FRIEND TEST (SEE BINDER SYT) WILL LET YOU ASSEMBLE YOUR OWN I/O ROUTINE(S). FRIEND ALSO DOES SOME OVERLAP EXECUTION AND LOOPING. SEE MAP 0015.

MAP 0072 IS A MAP WHICH WILL AID TO INTERPRET SYMPTOMS ON INTERMITTENT FAILURES AND FAILURES GENERATED BY FRIEND ROUTINE(S) OR CUSTOMER PROGRAMS.

23FEB81 PN1635010

EC987889 PEC375475

MAP 0010-5

05.02.02 CAUTIONS, NOTES, COMMON TERMS.

***** CAUTION *****
* IF A 4974 WIRE MATRIX PRINTER IS PRESENT ON THE SYSTEM, INSTALL A ONE *
* PART FORM BEFORE RUNNING DIAGNOSTICS. PRINTING ACROSS THE PERFORATION *
* ON MORE THAN ONE PART PAPER WILL CAUSE DAMAGE TO THE PRINT HEAD. *

IF THE CONSOLE LEDS FLASH 'EEEE' AND THE SYSTEM STOPS AT '006A', YOU CANNOT IPL THIS DISKETTE. BASIC DISKETTE NUMBER 1635001 AND SYSTEM TEST DISKETTE PART NUMBER 1635003 ARE IPL DISKETTES.

ALL LOGIC CARD(S) AND CABLE(S) MUST BE REMOVED AND INSTALLED WITH POWER DOWN EXCEPT IF THE MAP INSTRUCTION IS 'WITH POWER ON'.

LOGIC CARD(S) HAVE MINIMUM CARD TO CARD AREA. USE CAUTION IF INSTALLING OR REMOVING CARDS.

RESET/START WILL START A MAP PROGRAM AT STEP 0001 WHEN THE MAP HAS NOT TERMINATED.

WHEN THE MAP IDENTIFIES A CARD AS FAILING, IT IS RECOMMENDED THAT YOU RESEAT THE CARD AND DO THE FAILING OPERATION AGAIN BEFORE EXCHANGING THE CARD.

SOME CARD(S) HAVE TOP CARD CONNECTOR(S) WHICH CANNOT BE PROBED. ALWAYS CHECK FOR LOOSE, WORN OR DAMAGED CABLE(S) WHEN A CARD IS IDENTIFIED AS THE FAILING FIELD REPLACEMENT UNIT.

WHEN MORE THAN ONE FIELD REPLACEMENT UNIT IS IDENTIFIED, EXCHANGE THEM IN SEQUENCE AND TEST AFTER EACH EXCHANGE.

THE 'STOP ON ADDRESS' FUNCTION WILL INCREASE INSTRUCTION EXECUTION TIME AND WILL CAUSE FAILURES IN ANY MAP THAT MEASURES TIME.

WHEN SOME FAILURES OCCUR, DCP CANNOT DISPLAY A MESSAGE TO THE ALTERNATE CONSOLE. IF EXECUTION HAS STOPPED, BUT NO ERROR IS INDICATED ON THE ALTERNATE CONSOLE, NOTE THE DATA LAMPS AND SEE THE COMMON HALT LIST MAP 0013, SECTION 06.00.00.

COMMON TERMS USED IN MAPS

CAUTION - DAMAGE TO A PROGRAM, DEVICE, OR SYSTEM MAY RESULT.
CONTINUITY - ZERO RESISTANCE FROM POINT TO POINT.
DANGER - MAY BE DANGEROUS TO PERSONNEL.
DISCONNECT - PHYSICALLY/ELECTRICALLY TAKE APART.
EXCHANGE - PUT NEW PART IN PLACE OF ORIGINAL PART.
FAIL - RESULTS ARE NOT CORRECT.
GROUND - CONTINUITY FROM A CIRCUIT TO FRAME GROUND OR LOGIC GROUND.
JUMPER - A WIRE CONNECTED BETWEEN TWO PINS.
MEASURE - (AS USED IN VOLTAGE OR RESISTANCE) USE IBM CE MULTIMETER
P/N 452796, OR OTHER MULTIMETER.
OK - RESULTS ARE CORRECT.
OPEN - OPEN CIRCUIT FROM POINT TO POINT.
ORIGINAL - THE PART IN THE MACHINE AT START OF CALL.
PROBE - USE IBM GENERAL LOGIC PROBE.
RECONNECT - PHYSICALLY/ELECTRICALLY CONNECT AGAIN.
REMOVE - TAKE A PART OFF THE MACHINE.
REINSTALL - PUT ORIGINAL PART ON THAT WAS REMOVED.
RESEAT - REMOVE AND THEN REINSTALL IN POSITION.
SCOPE - USE OSCILLOSCOPE.
SHORT - ZERO RESISTANCE BETWEEN CIRCUIT(S).

A HEXADECIMAL VALUE IS INDICATED BY AN 'X', FOR EXAMPLE:
'DISPLAY STORAGE LOCATION X1800.'

05.02.03 MDI STATEMENTS.

ALL SERIES/1 MDI MAPS WHICH WERE GENERATED OR REVISED AFTER 01MAR77 WILL INCLUDE THE MDI STATEMENT WITH EACH MAP STEP. THIS INFORMATION IS OF NO VALUE WHEN THE MAPS IDENTIFY THE FAILING FIELD REPLACEMENT UNIT. IT MAY BE USEFUL IN 'FREELANCE'. A DESCRIPTION OF EACH STATEMENT FOLLOWS:

MDI=\$QUES - PROGRAM EXECUTION HAS STOPPED.

MDI IS WAITING FOR AN ANSWER TO THE MAP QUESTION (IN THE PAPER MAP).

ANSWER ON THE ASSIGNED CONSOLE: DCP COMMAND '0' FOR 'NO', '1' FOR 'YES'.

MDI=\$FIXT - PROGRAM EXECUTION HAS STOPPED.

THE PAPER MAP HAS THE REPAIR. IF AN ALTERNATE CONSOLE IS ASSIGNED, THE REPAIR TEXT WILL BE PRINTED OR DISPLAYED. IT MAY BE USEFUL IN 'FREELANCE' MODE. THE REPAIR MAY BE ADJUST/EXCHANGE OR A 'GOTO' ANOTHER MAP.

MDI=\$NVLD - TERMINATES THE 'NO' LEG.

THE SETUP TU WILL GENERATE NO RESULTS AND THE MDI SUPERVISOR WILL CONTINUE IN THE NEXT SEQUENTIAL STEP NUMBER. AN 'NVLD' STEP IS NEVER DISPLAYED TO THE C E.

MDI=\$STOP - STOP EXECUTION OF THE CURRENT DEVICE.

THE 'NO ERROR FOUND' WILL TERMINATE A MAP PROGRAM OR SERIES OF MAP PROGRAMS CONNECTED BY 'GOTO'S'.

MDI=\$GOTO - LOAD AND GO OF A MAP PROGRAM.

7K OF STORAGE IS AVAILABLE FOR A MAP PROGRAM. IF THIS IS NOT ENOUGH STORAGE FOR A COMPLETE TEST, THE TEST IS IN TWO OR MORE MAP PROGRAMS CONNECTED BY 'GOTO'S', USED TO CONNECT TWO OR MORE MAP PROGRAMS FOR A COMPLETE 'AUTO' TEST OR TO CONNECT 'MANUAL' MAPS. IT IS NEVER USED TO GO FROM AN 'AUTO' MAP TO A 'MANUAL' MAP. (SEE MDI=\$CALL, BELOW).

MDI=\$CALL - LOAD AND GO TO ANOTHER PROGRAM.

ONLY IF DCP IS IN 'MANUAL' MODE, OR DCP IS IN 'AUTO' MODE AND DCP OPTION '4' HAS BEEN SET. WHEN DCP IS IN 'AUTO' MODE WITHOUT OPTION '4', 'CALL' IS A 'FIXT'. TESTING OF THE CURRENT DEVICE IS TERMINATED.

MDI=\$INPT - PROGRAM EXECUTION HAS STOPPED.

DATA = (HEXADECIMAL/EBCDIC), FIELD = (DA/UA/TUINPT), LNG=XX, LOW = YY, HIGH = ZZ. THE PROGRAM EXECUTION HAS STOPPED. THE MDI SUPERVISOR IS WAITING FOR AN INPUT FROM THE CE. MDI WILL TAKE 'XX' CHARACTERS (LNG PARAMETER), WITH A VALUE THE SAME AS OR MORE THAN 'YY' (LOW PARAMETER), AND THE SAME AS OR LESS THAN 'ZZ' (HIGH PARAMETER). MDI WILL TAKE CHARACTERS '00' - 'FF' AND WILL USE THEM AS A HEXADECIMAL VALUE OR CHANGE THEM TO EBCDIC (DATA PARAMETER). THE INPUT DATA WILL BE PLACED IN THE AREA RESERVED FOR CURRENT DEVICE ADDRESS (TUDA AND DEVADD), THE FIELD RESERVED FOR UNIT ADDRESS (TUUA), OR A WORK AREA AT THE LABEL TUINPT (FIELD PARAMETER). IF MDI RECEIVES MORE OR LESS CHARACTERS, OR IF THE INPUT CHARACTERS ARE NOT BETWEEN THE VALUES ASSIGNED BY THE 'HIGH' AND 'LOW', MDI WILL SELECT THE 'NO' LEG FOR THE NEXT MAP STEP. WHEN THE CORRECT NUMBER OF CHARACTERS OF THE EXPECTED VALUE HAVE BEEN ENTERED, MDI WILL CONTINUE EXECUTION ON THE 'YES' LEG.

MDI=\$TUXX

TXXX, YY, ZZ-ZZ, (EQ/HI/LO/NE/NH/NL/GT/LT/GE/LE/ON/OF/MX), PLNG = AA, PARM = BB/CC - CC, DCBL = LLLL. MDI SUPERVISOR WILL EXECUTE THE TEST UNIT AT LABEL 'TXXX', COMPARE 'YY' BYTE(S) OF RESULTS TO MASK 'ZZ-ZZ' AND SEE IF THERE IS A COMPARE OF EQ (EQUAL), HI (HIGH), LO (LOW), NE (NOT EQUAL), AND SO ON. IF THE COMPARE RESULTS ARE AS EXPECTED, MDI WILL CONTINUE ON THE 'YES' LEG. TO LIMIT THE NUMBER OF DIFFERENT TU'S NEEDED, THE PROGRAMMER CAN PASS UP TO 64 BYTE(S) OF TU INFORMATION. A SINGLE TU CAN EXECUTE SEVERAL COMMANDS (RESET, READ ID, READ STATUS) IF THE PROGRAMMER WILL GIVE THE 'FUNCTION' TO THE TU AS A PARAMETER. 'AA' IS THE TOTAL NUMBER OF BYTE(S) OF INFORMATION PASSED (PLNG PARAMETER). 'BB AND CC - CC' REPRESENTS THE PARAMETER DATA. THE '//' WILL DIVIDE THE DATA INTO TWO, WHICH MDI WILL STORE AT THE LABELS 'TUPARM1' AND 'TUPARM2'. MDI WILL TAKE FROM 0 TO 16 PARAMETER(S), DIVIDED BY '//', WITH FROM 1 TO 64 BYTE(S) IN EACH PARAMETER. BUT THE TOTAL BYTE COUNT OF ALL PARAMETER(S) CANNOT BE MORE THAN 64. IF THE PROGRAMMER WANTS MDI TO MOVE THE FIRST EIGHT WORDS OF THE PARM FIELD INTO A TU WORK AREA THEN THE DCBL OPTION IS USED. MDI WILL THEN TAKE THE FIRST EIGHT WORDS OF THE PARAMETER FIELD AND MOVE THEM TO THE FIELD IDENTIFIED BY LABEL 'LLLL'. 'PLNG =', 'PARM =' AND 'DCBL =' ARE OPTIONAL.

MDI=\$QUXX

TXXX, PLNG = AA, PARM = BB/CC - CC, DCBL = LLLL, REPT = TYYY. MDI SUPERVISOR IS LOOPING ON TU 'TXXX' OR 'TYYY' AS THE CE USES THE PROBE, OBSERVES, AND SO ON. 'TYYY' IS A SECONDARY ADDRESS THAT \$QUXX WILL BRANCH TO AFTER THE FIRST BRANCH TO 'TXXX'. THIS OPTION IS NOT NEEDED AND IF NOT USED, 'TXXX' IS ASSUMED TO BE THE SECONDARY BRANCH POINT. THE PAPER MAP STEP DESCRIBES THE EXPECTED RESULTS OF THE CE ACTION. WHEN THE CE HAS COMPLETED THE ACTION HE WILL ANSWER THE QUESTION WITH DCP COMMAND '1' FOR 'YES' OR DCP COMMAND '0' FOR 'NO'. WHEN MDI RECEIVES THE CE ANSWER, THE LOOP IS TERMINATED AND EXECUTION WILL CONTINUE ON THE 'YES' OR 'NO' LEG. 'PLNG =', 'PARM =' AND 'DCBL =' ARE DESCRIBED IN MDI=\$TUXX ABOVE.

05.02.04 HALT/MESSAGE FORMATS

THE MAP MESSAGE IS FORMATTED AS FOLLOWS:

I3CXX MAP = YYYY STEP = ZZZZ
 WHERE I3CXX IDENTIFIES THE HALT AS A MDI/MAP HALT.
 YYYY = MAP NUMBER.
 ZZZZ = STEP NUMBER.

IF MAP=3CXX, THE HALT IS THE RESULT OF AN MDI SUPERVISOR DECISION, NOT A MAP DECISION.
 A MESSAGE THAT IS NOT IN THIS FORMAT IS A DCP MESSAGE. (SEE MAP 0013, SECTION 06.01.00,
 DCP HALT).

NOTE: SOME DEVICE(S) HAVE UTILITY/EXERCISER PROGRAM(S)
 (78F0 DISK FORMAT, E8E5 ACCA OVER THE LINE TEST).

OPERATING INSTRUCTION(S) AND A HALT LIST FOR THESE PROGRAMS WILL BE FOUND IN THE DEVICE
 PROLOG FOR THE DEVICE.

WHEN SOME FAILURES OCCUR, DCP CANNOT DISPLAY A MESSAGE TO THE ALTERNATE CONSOLE. IF IT
 SEEMS THAT EXECUTION HAS STOPPED, BUT NO ERROR IS INDICATED ON THE ALTERNATE CONSOLE, NOTE
 THE DATA LAMPS AND SEE THE COMMON HALT LIST, MAP 0013, SECTION 06.00.00.

IF THE PROGRAMMER CONSOLE IS THE ACTIVE CONSOLE, THE DISPLAY WILL EQUAL:

'WAIT' LAMP 'ON',
 38XX DCP HALT ----- SEE DCP HALT LIST - MAP 0013, SECTION 06.01.00
 38XX CONFIGURATION HALT -- SEE CONFIGURATION - MAP 0013, SECTION 06.02.00
 3CXX MDI HALT ----- SEE MDI HALT LIST - MAP 0013, SECTION 06.03.00
 3CFF TO FXXX ----- SEE THE PAPER MAP.

WHEN THE DISPLAY IS A MAP NUMBER THE LEVEL THREE (3) REGISTERS WILL CONTAIN:

REGISTER ZERO (0) = STEP NUMBER
 REGISTER ONE (1) = DEVICE ADDRESS AND TYPE (AATT)
 REGISTER TWO (2) = UNIT ADDRESS (IF USED)
 REGISTER THREE (3) = ADDRESS TO MORE INFORMATION.

05.03.00 'EXPECTED'/'RECEIVED' DATA

SOMETIMES ERROR DATA IS DISPLAYED BEFORE THE FAILURE IS IDENTIFIED. IF EXCHANGING THE
 FIELD REPLACEMENT UNIT DOES NOT CORRECT THE ERROR, THIS DATA WILL BE USEFUL IN FREELANCE.
 SEE THE MAP NUMBER, STEP NUMBER AND TEXT FOR INSTRUCTION(S) FOR DECODING THE DISPLAY.
 IF THE PROGRAMMER CONSOLE IS THE ACTIVE CONSOLE SOME MESSAGES ARE BYPASSED (SEE THE NOTE
 BELOW). WHEN THE C E MUST HAVE THE INFORMATION (IF WORKING WITH THE PROGRAMMER CONSOLE), THE
 MAP TEXT WILL DESCRIBE THE INFORMATION AVAILABLE AND HOW IT IS FORMATTED. REGISTER THREE (3)
 LEVEL THREE (3) WILL POINT TO THE INFORMATION IN STORAGE.

ENTER '6' AND MDI WILL HALT AGAIN AT THE REPAIR STEP. ENTER '6' AGAIN AND THE MAP WILL
 TERMINATE.

NOTE: WHEN THE MESSAGE IS BYPASSED (PROGRAMMER CONSOLE ASSIGNED),
 IT IS AVAILABLE WHEN THE REPAIR STEP IS DISPLAYED.

GETTING THE INFORMATION IS DIFFICULT AND MUST BE DONE WHEN NECESSARY.

- (1) WORK THROUGH THE MAP FROM THE REPAIR STEP TO FIND THE NAME OF
 THE ROUTINE THAT FOUND THE FAILURE (MDI=\$TUXX, TXXXX....).
- (2) FIND THE LABEL TXXX IN THE PROGRAM LIST.
- (3) IMMEDIATELY ABOVE THE LABEL IS THE ROUTINE HEADER. THE HEADER WILL
 DESCRIBE THE 'EXPECTED/RECEIVED' DATA (IF ANY) THAT IS STORED.
- (4) IF THE MAP IS FOR A TELEPROCESSING DEVICE, THE INFORMATION WILL
 BE IN STORAGE, STARTING AT THE LABEL 'CEBFR'.
- (5) IF THE MAP IS FOR A SENSOR I/O DEVICE, THE INFORMATION WILL
 BE IN STORAGE AT THE LABEL 'BUFF01'.
- (6) THE FIRST WORD OF DATA IS THE LAST FOUR CHARACTERS OF THE ROUTINE NAME.

PAPER ONLY MAP

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05.04.00 ROUTINE ABORT

MAP LOGIC CANNOT ISOLATE AN INTERMITTENT FAILURE, FOR EXAMPLE: THE 'DEVICE RESET' FUNCTION WAS TESTED AT MAP STEP TWO (0002) AND IT WORKED. AT STEP FIFTEEN (0015) DEVICE RESET WAS EXECUTED AS PART OF ANOTHER TEST AND A COMMAND REJECT WAS RETURNED. THE MAP IS NO LONGER VALID BECAUSE THE LOGIC FOR A RESET FAILURE IS AT STEP THREE (0003). WHEN A ROUTINE CAN RECOGNIZE THIS, IT SIGNALS MDI TO ABORT THE MAP. BECAUSE THIS PROBLEM CANNOT BE IDENTIFIED WITH A MAP STEP, THERE WILL BE NO TEXT. THE ALTERNATE CONSOLE DISPLAY WILL BE AS FOLLOWS:

```
TUID IOIN ISB  INST DEV1 DEV2 DEV3 DEV4
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX
CNTL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADPS
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX
RSID CS 2 CS 3 CS 4 CS 5 CS 6 CS 7 CS 8
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX
```

TUID = NAME OF THE THE ROUTINE EXECUTING AT TIME OF ABORT
 IOIN = LEFT BYTE IS THE OIO CONDITION CODE, RIGHT BYTE IS THE INTERRUPT CONDITION CODE
 ISB = THE INTERRUPT STATUS BYTE RETURNED, IF ANY
 INST = THE ADDRESS OF AN INSTRUCTION IN THE ROUTINE FROM WHICH YOU CAN START TO TRACE THE PROGRAM FLOW THAT GOES TO THE FAILURE
 DEV1 - DEV4 = DEVICE TYPE DATA AS DESCRIBED IN THE ROUTINE HEADER.
 CNTL - ADPS = THE DCB FOR THE FAILING INSTRUCTION.
 RSID - CS 8 = THE CYCLE STEAL STATUS DATA IF AVAILABLE.

BECAUSE SOME DEVICE(S) RETURN LESS THAN 8 WORDS OF CYCLE STEAL STATUS, CHECK THE ROUTINE HEADER FOR SPECIAL USE OF CS 6 - CS 8.

IF A PROGRAMMER CONSOLE IS THE ACTIVE CONSOLE, AN ABORT MAY BE DIFFICULT TO RECOGNIZE. TO VERIFY AN ABORT, DISPLAY STORAGE LOCATION HEXADECIMAL 1818. IF LOCATION 1818 = 8000, ABORT HAS OCCURRED. REGISTER THREE (3) LEVEL THREE (3) WILL CONTAIN THE ADDRESS OF THE HEXADECIMAL DATA BUFFER IN STORAGE. THE FIRST WORD AT THIS ADDRESS IS THE ROUTINE NAME AND THE OTHER TWENTY THREE (23) WORDS IN THE TABLE ABOVE FOLLOW IN SEQUENCE.

06.00.00 COMMON HALT LIST ----- GO TO MAP 0013

06.01.00 DCP HALT(S) ----- 3800 TO 3817 - GO TO MAP 0013

06.02.00 CONFIGURATION HALT(S) 3820 TO 386F - GO TO MAP 0013

06.03.00 MDI HALT(S) ----- 3C01 TO 3C0E - GO TO MAP 0013

07.00.00 OPERATING THE SYSTEM:

IF THE ONLY INPUT DEVICE IS THE PROGRAMMER OR C E CONSOLE OR A PRINTER, NO KEYBOARD, SEE PROGRAMMER OR C E CONSOLE OPERATION, THIS MAP, SECTION 07.01.00, FOR MESSAGE(S) AND COMMAND ENTRY. IF A SUPPORTED KEYBOARD CONSOLE IS AVAILABLE, COMMANDS WILL HAVE TO BE ENTERED WITH THE PROGRAMMER CONSOLE IF:
 (1) THE DISKETTE HAS NEVER BEEN CONFIGURED.
 (2) THE KEYBOARD CONSOLE HAS BEEN ASSIGNED A NEW ADDRESS.
 (3) THE ASSIGNED KEYBOARD CONSOLE IS KNOWN TO BE FAILING.
 SEE MAP 0013, SECTION 06.02.00 FOR MESSAGE AND ANSWER(S) TO CONFIGURATION MESSAGE(S).

WHEN THE CONFIGURATION IS CORRECT AND AN ALTERNATE CONSOLE (OTHER THAN A PRINTER) HAS BEEN ASSIGNED, YOU CAN COMMUNICATE WITH THE CONSOLE KEYBOARD EXCEPT AS THE CONSOLE DEVICE IS TESTED. IF TESTING THE ASSIGNED ALTERNATE CONSOLE, DCP WILL COMMUNICATE USING THE PROGRAMMER CONSOLE. SEE THIS MAP, SECTION 07.01.00.

KEYBOARD COMMUNICATION IS AS FOLLOWS: AT ANY 'ENTER', KEY THE DCP COMMAND/OPTION CHARACTER, FOLLOWED BY DATA (IF NEEDED) AND END THE SEQUENCE WITH 'RETURN/ENTER', AS FOLLOWS:

```
'7 RETURN' WILL ENABLE THE STOP ON ERROR MESSAGE OPTION.
'B4800 RETURN' CAUSES MAP PROGRAM '4800' TO LOAD AND EXECUTE.
'2 RETURN' WILL ENABLE DCP TO 'AUTO' MODE.
'A RETURN' CAUSES THE 'AUTO' SEQUENCE TO START IF DCP IS IN 'AUTO' MODE.
IF DCP IS IN 'MANUAL' MODE, THE PROGRAM JUST LOADED WILL START EXECUTION.
'C4400 RETURN' WILL LOAD PROGRAM 4400 AND WILL WAIT FOR OPTIONS.
'FXXX RETURN' IS THE ANSWER TO A PROGRAM'S REQUEST FOR FOUR (4) CHARACTERS OF INFORMATION.
A PROGRAM MAY REQUEST UP TO SIXTY FOUR (64) CHARACTERS.
'1 RETURN' - WILL ANSWER A MAP QUESTION 'YES'.
'0 RETURN' - WILL ANSWER A MAP QUESTION 'NO'.
'D0088 RETURN' INSTRUCTS MDI TO LOOP ON MAP AND STOP ON ANY 'NO' ANSWER (SEE 'OPTION BYTE(S)' THIS MAP, SECTION 04.02.00).
```

THE 4978 IS AN RPO DEVICE, BUT BECAUSE IT IS A SUPPORTED ALTERNATE CONSOLE, IT IS TESTED BY THE BASIC DISKETTE. IT IS AVAILABLE WITH MORE THAN ONE KEYBOARD, SO ANY KEY MAY GENERATE ANY CODE; DCP MUST BE INSTRUCTED AS TO WHAT CODE(S) TO USE WITH THE FUNCTION(S) AND CHARACTER(S) USED IN THE ALTERNATE CONSOLE ROUTINE(S). SYSTEM ENTRY MAP 0020 WILL HANDLE THE HALTS IN THE 'KEYBOARD DESCRIPTION'. (SEE MAP 0013, SECTION 06.01.00 - HALT 3817, THIS MAP, SECTION 02.01.00 - PROGRAMS 380C - 380F, AND MLD VOLUME 01, PAGE(S) S08XX, FOR MORE DETAILS).

IF YOUR ALTERNATE CONSOLE IS A 4978, 4979 OR 5251 DISPLAY, 'PAGE' CONTROL IS SET ON AT IPL TIME. PAGE CONTROL CAN SET OFF AT ANY ENTER BY PRESSING ANY 'PF' KEY (WAIT FOR THE 'ENTER' MESSAGE). IF A 'PF' INTERRUPT IS RECEIVED DURING PROGRAM EXECUTION, THE RESULTS MAY NOT BE CORRECT. WHEN PAGE CONTROL IS ON, A MESSAGE WILL BE DISPLAYED; DCP WILL COUNT EACH 'NEW LINE'. WHEN A FULL PAGE HAS BEEN DISPLAYED DCP WILL WRITE 'PAGE' TO THE LOWER RIGHT OF THE SCREEN. NOTE ANY INFORMATION THAT YOU WANT TO KEEP, THEN PRESS THE 'ATTN' KEY. THE LINE COUNTER WILL BE RESET AND DCP WILL TAKE COMMANDS AND/OR DISPLAY DATA UNTIL THE SCREEN HAS BEEN FILLED WITH NEW DATA. PRESS ANY 'PF' KEY TO SET PAGE CONTROL OFF.

NOTE: THIS FUNCTION IS NOT SUPPORTED FOR ANY DEVICE DRIVEN BY THE TTY ATTACHMENT. THE STOP KEY MUST BE USED TO CONTROL THE PAGE

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MAP 0010-9

07.01.00 PROGRAMMER CONSOLE OPERATION:

THERE ARE FOUR (4) SEQUENCES OF COMMAND/OPTION/REPLY ENTRY WITH THE PROGRAMMER CONSOLE.

(B) = PRESS THE DATA BUFFER KEY (I) = PRESS THE CONSOLE INTERRUPT KEY.

1. SINGLE CHARACTER COMMANDS (NO DATA).

COMMANDS 2, 3, 4, 5, 6, 7, 8, 9 AND A ARE ENTERED AS FOLLOWS:

ENTER ON THE CONSOLE:

(B) 2 (I) (I) = SET AUTO MODE

- SECOND INTERRUPT CAUSES DCP TO EXECUTE THE COMMAND.
IF YOU WANT TO CHANGE THE ENTRY, SELECT THE DATA BUFFER (B),
CHANGE THE VALUE OF THE RIGHT HEXADECIMAL CHARACTER (BITS 12 - 15)
AND PRESS INTERRUPT (I). START THE COMMAND SEQUENCE AGAIN.
ENTER THE COMMAND CHARACTER '2' IN BITS 12 - 15 OF THE DATA BUFFER.

SELECTS THE DATA BUFFER FOR COMMAND/OPTION ENTRY.

- 2 = SET AUTO MODE.
- 3 = SET MANUAL MODE.
- 4 = LOOP AUTO SEQUENCE.
- 5 = ASSIGN THE PROGRAMMER CONSOLE.
- 6 = CONTINUE EXECUTION (RESUME).
- 7 = STOP ON MESSAGE.
- 8 = RESET STOP ON MESSAGE.
- 9 = TERMINATE PROGRAM.
- A = START EXECUTION.

WHEN THE CONSOLE FUNCTION IS ASSIGNED TO A PRINTER (NO KEYBOARD) AND COMMAND/OPTION(S) 3, 4, 7, 8, D OR E HAVE BEEN ENTERED, THE LAMPS WILL CONTAIN 'FFFF' UNTIL YOU SELECT THE DATA BUFFER FOR THE NEXT COMMAND/OPTION.

2. COMMANDS THAT USE A PROGRAM NAME.

COMMANDS 'B' AND 'C' CAUSE DCP TO LOAD A PROGRAM, THEREFORE THE FOUR DIGIT PROGRAM ID MUST BE SUPPLIED WITH THE COMMAND CHARACTER.

ENTER ON THE CONSOLE:

(B) B (I) (I) = LOAD AND GO (PROGRAM ID TO FOLLOW).
(B) XYZ (I) (I) = PROGRAM ID.

- SECOND INTERRUPT CAUSES DCP TO EXECUTE THE COMMAND.
SEE COMMAND '2' ABOVE.
MAP PROGRAM XX = DEVICE TYPE CODE.
YZ = 00 = ENTRY MAP.

SELECTS THE DATA BUFFER.

ENTER ON THE CONSOLE:

(B) C (I) (I) = LOAD PROGRAM AND WAIT FOR OPTION SELECTION.
(B) XYZ (I) (I) = PROGRAM.

3. COMMANDS THAT ENTER A VARIABLE AMOUNT OF DATA.

(B) = PRESS DATA BUFFER KEY, (I) = PRESS CONSOLE INTERRUPT KEY, < > = OPTIONAL ENTRY.

COMMANDS 'D' AND 'E' CAN BE FOLLOWED BY ONE OR TWO 'WORDS' OF OPTION BIT MASK.
COMMAND 'F' CAN ENTER FROM ONE TO FIFTEEN 'WORDS' OF REPLY DATA.

COMMAND 'D' - SET OPTION BITS ON (SEE 04.02.00).

ENTER ON THE CONSOLE:

(B) XD (I) = SET OPTION BIT(S) ON (X = NUMBER OF WORDS YOU WILL ENTER).
(B) XXXX (I) = OPTION WORD MASK

<(B) XXXX (I)>(I) = OPTIONAL SECOND WORD OF MASK (NOT USED BY PROGRAM).

- THIS INTERRUPT CAUSES DCP TO EXECUTE.
SEE COMMAND '2' ABOVE.
OPTION WORD MASK.

SELECTS THE DATA BUFFER.

COMMAND 'E' - SET OPTION BITS OFF.

ENTER ON THE CONSOLE:

(B) XE (I) = SET OPTION BIT(S) OFF (X = NUMBER OF WORDS YOU WILL ENTER).
(B) XXXX (I) = OPTION WORD MASK

<(B) XXXX (I)>(I) = OPTIONAL SECOND WORD OF MASK.

COMMAND 'F', REPLY TO PROGRAM.
ENTER ON THE CONSOLE:

(B) XF (I) = ENTER X NUMBER OF WORDS OF DATA. A MAXIMUM OF FIFTEEN (15).
(B) XXXX (I) = FIRST WORD (IF TWO CHARACTERS, ENTER XX00).

<(B) XXXX (I)>(I) = OPTIONAL SECOND WORD OF DATA.

- THIS INTERRUPT CAUSES DCP TO EXECUTE.
SEE COMMAND '2' ABOVE.
WORD(S) OF DATA, MASK AND SO FORTH. A MAXIMUM OF FIFTEEN (15).

SELECTS THE DATA BUFFER.

ALL UTILITY AND CONTROL PROGRAMS AND SOME MAPS MAY REQUEST 'REPLY DATA' (DEVICE ADDRESS, TEST DATA, FUNCTION SELECTION AND SO ON). THIS IS ENTERED USING THE 'F' COMMAND.

4. COMMANDS USED TO ANSWER MAP QUESTIONS.

COMMAND '0' WILL ANSWER A MAP QUESTION 'NO'.
COMMAND '1' WILL ANSWER A MAP QUESTION 'YES'.

ENTER ON THE KEYBOARD:	OR	ENTER ON THE PROGRAMMER CONSOLE:
-----		-----
X ENTER OR RETURN	(B)	X (I) (I)
0 = NO		0 = NO
1 = YES		1 = YES

COMMAND 'S' DUMP STORAGE.

IF THE CONSOLE FUNCTION IS ASSIGNED TO A PRINTER, NO KEYBOARD, THE STORAGE DUMP COMMAND (SEE THIS MAP, SECTION 04.01.00) CAN BE EXECUTED AS FOLLOWS; AT ANY 'ENTER' DISPLAY: STOP THE PROCESSING UNIT AND CHANGE STORAGE AT LOCATION(S) 0004 AND 0006 TO THE 'START AND END ADDRESSES OF THE STORAGE AREA YOU WANT TO DUMP. PRESS 'START'. IN THE FOLLOWING, NOTE THERE IS ONLY ONE (1) INTERRUPT FOR THIS COMMAND.

ENTER ON THE PROGRAMMER CONSOLE:

(B) E2 (I)
E2 = STORAGE DUMP.

NOTE: WHEN AN ALTERNATE CONSOLE IS ASSIGNED, BUT NOT WORKING, ASSIGN THE PROGRAMMER CONSOLE AS FOLLOWS:

ENTER ON THE CONSOLE:

(B) 5 (I) (I)
5 = ASSIGN THE PROGRAMMER CONSOLE.

THE CONSOLE/PROCESSING UNIT HARDWARE INTERFACE IS SUCH THAT YOU MAY FIND IT DIFFICULT TO CAUSE AN INTERRUPT FROM THE PROGRAMMER CONSOLE WHEN THE LOOP IS 'TIGHT'. PRESS THE INTERRUPT KEY -- SLOWLY --. WHEN THE INTERRUPT IS TAKEN THE CONSOLE TONE WILL SOUND.

MDI CANNOT DISPLAY A REPAIR MESSAGE AND TERMINATE AS IT WOULD WITH A KEYBOARD CONSOLE, BECAUSE IT MUST DISPLAY MAP AND STEP NUMBER. WHEN YOU HAVE IDENTIFIED THE MAP AND STEP, ENTER '6'. THE PROGRAM WILL TERMINATE.

SEE THE SYSTEM ENTRY MAP 0020 FOR A STOP BEFORE HALT '3800 WITH WAIT LAMP ON' (RDY ENTER).

WHEN THE CONSOLE FUNCTION IS ASSIGNED TO THE PROGRAMMER CONSOLE, ANY ERROR FOUND BY THE MAPS WILL CAUSE A HALT. THE DATA LEDS WILL DISPLAY THE MAP NUMBER. THE LEVEL THREE (3) REGISTERS CONTAIN THE STEP NUMBER, DEVICE ADDRESS, AND SO ON. (SEE THIS MAP, SECTION 05.02.00). TO MAINTAIN THE REGISTER DATA FOR A MAP QUESTION THAT RUNS A ROUTINE LOOP, THE ROUTINE CANNOT EXECUTE UNTIL THE REGISTER INFORMATION HAS BEEN NOTED. THEREFORE, IF THE MAP STEP IN REGISTER ZERO (0) HAS TEXT, AND THE PROGRAMMER CONSOLE IS THE ACTIVE CONSOLE:

SEE THE MAP NUMBER IN THE LEDS AND THE STEP NUMBER IN LEVEL THREE (3) REGISTER ZERO (0).

ENTER ON THE PROGRAMMER CONSOLE:

(B) 6 (I) (I)
6 = RESUME (START THE LOOP).

TAKE THE REQUESTED ACTION AND ANSWER THE QUESTION WITH COMMAND '1' (YES) OR '0' (NO).

WHEN SOME FAILURES OCCUR, DCP CANNOT DISPLAY A MESSAGE TO THE ALTERNATE CONSOLE. IF IT SEEMS THAT EXECUTION HAS STOPPED, BUT NO ERROR IS INDICATED ON THE ALTERNATE CONSOLE, NOTE THE DATA LAMPS AND SEE THE COMMON HALT LIST MAP 0013, SECTION 06.00.00.

IF YOU ARE USING THE CE MAINTENANCE CONSOLE, VERIFY THE SYSTEM AFTER REMOVING THE CONSOLE AS FOLLOWS:

SEE THE LOAD LED AS YOU IPL THE BASIC DIAGNOSTIC DISKETTE, PART NUMBER 1635001.

THE LOAD LED WILL GO 'ON' THEN 'OFF' AND THE RUN LED WILL REMAIN ON FOR SEVERAL SECONDS. AFTER THIS DELAY, THE SYSTEM WILL ALTERNATE BETWEEN 'RUN' AND 'WAIT' AND THE DISKETTE DRIVE WILL SEEK AND READ AS THE PROCESSING UNIT TESTS COMPLETE AND LOAD DCP. DCP WILL LOAD THE CONFIGURATION PROGRAM, THE CONFIGURATION PROGRAM WILL LOAD THE CONFIGURATION RECORD, AND THE AUTO CONFIGURATION ROUTINE IS EXECUTED. THE SYSTEM WILL THEN GO INTO A SOLID 'WAIT' AND IF THIS SEQUENCE DOES NOT OCCUR, CHECK FOR CARD(S) AND CABLE(S) WHICH ARE LOOSE AFTER YOU REMOVED THE MAINTENANCE CONSOLE.

***** CAUTION *****
* IT IS RECOMMENDED THAT THE CE MAINTENANCE CONSOLE NOT *
* BE INSTALLED WHEN THE CUSTOMER PROGRAM IS EXECUTING. *

A CONSOLE INTERRUPT IS A 'CLASS INTERRUPT', WHICH WILL START HARDWARE ACTION TO STORE THE LEVEL CONTROL BLOCK AND BRANCH TO AN INTERRUPT ROUTINE. IF THE CUSTOMER PROGRAM DOES NOT WRITE STORAGE, AS NECESSARY FOR A CONSOLE INTERRUPT, THE RESULTS MAY NOT BE CORRECT.

08.00.00 CONFIGURATION PROGRAM DESCRIPTION - ID 38F0 -- GO TO MAP 3880.

09.00.00 GENERAL UTILITY PROGRAM (ID 38F9) -- GO TO MAP 0014.

11.00.00 GENERAL LOGIC PROBE SUMMARY:

LATCH SWITCH:
WILL HOLD THE UP OR THE DOWN LAMP IN THAT CONDITION IF THE INPUT MATCHES THE SWITCH POSITION. IS NOT ACTIVE WHEN THE SWITCH IS SET IN THE NONE POSITION. CAN BE USED TO 'WAIT' FOR AN INTERMITTENT ERROR CONDITION OR TO VERIFY THAT A PULSE OCCURRED.

GATE REFERENCE SWITCH:
CONTROLS THE VOLTAGES FOR THE LOGIC TYPES TO BE CONNECTED TO THE PROBE GATE PINS. THE +1.4V POSITION LETS TTL (VTL), SOLID LOGIC TECHNOLOGY -3V, SOLID LOGIC DENSE 6V AND 12V LOGIC TYPES TO BE GATED. FETS CANNOT BE GATED. THE GATE INPUTS WILL CLAMP THE SOLID LOGIC TECHNOLOGY AND SOLID LOGIC DENSE 6V AND 12V TECHNOLOGY TO A MAXIMUM OF 5V IF THAT PROBE POINT IS LOGICAL '1'. IT DOES NOT CHANGE THE LOGICAL '0'. INCLUDED WITH THE ACCESSORIES IS A 12V SOLID LOGIC TECHNOLOGY GATE RESISTOR 5.1K (P/N 2728259). THIS CAN BE USED IN SERIES WITH THE GATE INPUTS IF A CLAMP CAUSES ANY PROBLEMS.

GATE PINS:
THE GATE INPUTS (+ AND -) ARE SOLID LOGIC TECHNOLOGY TYPE PINS. A 12-INCH SOLID LOGIC TECHNOLOGY JUMPER (P/N 2588263) IS AVAILABLE FOR USE WITH THE GATE.

POWER CABLE:
POWER IS THROUGH A SIX (6) FOOT CABLE. IT CAN BE CONNECTED TO ANY DC SOURCE WITH A VOLTAGE DIFFERENCE OF 9 VOLTS TO 12 VOLTS (MAXIMUM = 14 VOLTS). +5V IS AVAILABLE AT ANY I/O ATTACHMENT CARD POSITION ON PINS D03, J03, P03, U03. LOGIC GROUND IS ON D08, J08, P08, U08. IF YOU DO NOT KNOW WHERE THE POWER PINS ARE ON THE BOARD, USE THE CE MULTIMETER TO VERIFY VOLTAGES BEFORE AND AFTER YOU CONNECT THE GENERAL LOGIC PROBE. AT 4 VOLTS, ONLY 150MA IS NEEDED. BECAUSE THE POWER CABLE IS ISOLATED FROM THE MAIN INPUT PROBE GROUND, THE MAIN INPUT PROBE GROUND MUST BE CONNECTED TO THE LOGIC'S GROUND. REVERSE POWER LEAD DAMAGE IS SUPPLIED, UP TO 15 VOLTS DIFFERENCE.

MULTI:
WHEN THE TECHNOLOGY SWITCH IS SET TO THE MULTI POSITION TO PROBE VTL (TTL), SOLID LOGIC TECHNOLOGY, SOLID LOGIC DENSE, AND FET, THE INDICATIONS WILL BE AS FOLLOWS:

RANGE	UP	LAMP	DOWN
2.16V + OR -.180V TO .60V	ON		OFF
.32V + OR -.180V TO -.60V	OFF		ON
.32V TO 2.16V	OFF		OFF
INPUT NOT CONNECTED	OFF		OFF

16.00.00 SYSTEM INSTALLATION TEST PROCEDURE

IF NEEDED AND AVAILABLE, AN OTHER EQUIPMENT MANUFACTURE DEVICE CAN BE USED TO INSTALL THE SYSTEM. IF THE ONLY SUPPORTED ALTERNATE CONSOLE IS A TTY TYPE, YOU CAN USE IT OR USE THE PROGRAMMER OR CE CONSOLE. SEE THIS MAP SECTION 07.01.00, FOR THE MESSAGE ANSWER PROCEDURE FOR THE PROGRAMMER OR CE CONSOLE OPERATION.

IF THE CONSOLE LEDS FLASH 'EEEE' AND THE SYSTEM STOPS AT '006A', YOU CANNOT IPL THIS DISKETTE. BASIC DISKETTE NUMBER 1635001 AND SYSTEM TEST DISKETTE PART NUMBER 1635003 ARE IPL DISKETTES.

ENTER THE SYSTEM ENTRY MAP, MAP 0020, ENTRY POINT A, AND EXECUTE THE PROCESSING UNIT AND STORAGE TESTS. IF CONFIGURATION ERRORS OCCUR DURING THE CONFIGURATION PROGRAM AUTO VERIFY, FOLLOW THE MAPS AND SEE:

SECTION 08.00.00 THIS DOCUMENT (CONFIGURATION PROGRAM)
INSTALLATION INSTRUCTIONS, 2-1 (FEATURE LOCATION(S)/PRIORITY ASSIGNED)
INSTALLATION INSTRUCTIONS, 3-2 (ADDRESSES ASSIGNED SUMMARY)
MLD VOLUME 01 (ADDRESS AND OPTION JUMPERING)

NOTE: THE CONFIGURATION PROGRAM AUTO VERIFY FUNCTION DOES NOT VERIFY DEVICE DATA IN ENTRY 01 - XX. ERRORS IN THIS DATA WILL CAUSE MAP ERRORS. IT DOES NOT VERIFY THE DEVICE TYPE BYTE IS CORRECT FOR THE ID WORD IF THE DEVICE TYPE IS 80 OR 90. THESE ARE RPQ DEVICES. IT DOES NOT VERIFY ANY PART OF ENTRIES WITH DEVICE TYPES:
3D FLOATING POINT
A3 OTHER EQUIPMENT MANUFACTURER - DPC ATTACHMENT,
A4 4982 SUBSYSTEM

WHEN THE BASIC DISKETTE HAS BEEN CONFIGURED, USE THE CONFIGURATION PROGRAM (ID 38F0), OPTION '00' TO WRITE THE CONFIGURATION RECORD TO THE SYSTEM TEST DISKETTE AND ANY OTHER DIAGNOSTIC DISKETTES. WHEN THE DISKETTE HAS BEEN CORRECTLY CONFIGURED SELECT AUTO MODE WITHOUT OPTIONS. WHEN A GOOD AUTO RUN HAS BEEN COMPLETED, SEE THE MAP PROLOG, PARAGRAPH(S) 0.0 AND 3.2, FOR EACH OF THE INSTALLED DEVICES AND RUN WRAP TESTS WHEN AVAILABLE.

RPQ DEVICES ARE NOT TESTED BY AN AUTO RUN. SEE THE RPQ MAPS PROLOG PARAGRAPH 0.0.

IF A TTY IS AVAILABLE IT CAN NOW BE ASSIGNED THE ALTERNATE CONSOLE FUNCTION (SEE MAP 3882).

SEE SYSTEM TEST USER'S GUIDE, VOLUME SYT.
EXECUTE THE SYSTEM TEST START AND STOP DEVICE ADDRESSES UNTIL ALL DEVICES WHICH ARE SUPPORTED BY SYSTEM TEST HAVE BEEN TESTED WITH ALL OTHER DEVICES ON THE SYSTEM. RUN EACH DEVICE FOR AT LEAST TWO (2) MINUTES.

IF THERE IS NO ALTERNATE CONSOLE, OR IF THE ALTERNATE CONSOLE IS A CATHODE-RAY TUBE DISPLAY RECORD THE CONFIGURATION RECORD IN THE TABLE IN MAP 3880, SECTION 08.01.04.

IF THERE IS NO ALTERNATE CONSOLE, IPL THE DISKETTE AT EITHER HALT 382A OR 382E, THE CONFIGURATION RECORD IS IN STORAGE AT LOCATION X3000.

SYSTEM INSTALLATION TESTING IS COMPLETE.

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MAP 0010-12