

DX11B

DIAGNOSTIC (MAINTENANCE
MD-11-DZDXA-D
CLOCK #1)

EP-DZDXA-D-DL
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FICHE 1 OF 1

JUN 1978
digital
MADE IN USA

The microfiche contains 132 frames of technical data, organized into 12 rows and 11 columns. Each frame displays a page of text, likely diagnostic information for the MD-11 aircraft. The text is too small to read but appears to be organized into tables and lists.

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IDENTIFICATION

.REM :
: PRODUCT CODE: MAINDEC-11-DZDXA-D-D
: PRODUCT NAME: DX11B DIAGNOSTIC(MAINTENANCE CLOCK #1)
: .REM :
: DATE: OCTOBER 21, 1974
: MAINTAINER: DIAGNOSTIC GROUP
: AUTHOR: JOHN FRIEDRICH

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1. ABSTRACT

THE FUNCTION OF THE DX11B DIAGNOSTICS IS TO VERIFY THAT THE DX11B IMPLEMENTS THE FUNCTIONAL FLOW DIAGRAMS ILLUSTRATED IN THE DX11B PRINT SET. THE DX11B DIAGNOSTIC PACKAGE CONSISTS OF FOUR TAPES

- 1, DZDXA-(REV) MAINTENANCE CLOCK #1
- 2, DXDXF-(REV) MAINTENANCE CLOCK #2
- 3, DZDXG-(REV) DX OFFLINE DIAGNOSTIC EXERCISER
- 4, DZDXH-(REV) DX ONLINE-MAINTENANCE-CABLED EXERCISER

THE DIAGNOSTICS WERE DIVIDED INTO FOUR TAPES BECAUSE OF THE 8K WORD MEMORY LIMIT REQUIRED TO SUPPORT MINIMUM SYSTEMS AND FOR FUNCTIONAL SAFEGUARDS, IT WAS FELT THAT SAFEGUARDS SHOULD BE TAKEN TO INSURE THAT NO ONE INADVERTENTLY RAN THE ONLINE-MAINTENANCE-CABLE EXERCISER WHILE CONNECTED ONLINE TO IBM. IT WAS ALSO FELT THAT THE FUNCTIONAL SEPARATION OF TESTS WOULD FACILITATE

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677	DEFINE, EMT DEFINITIONS
678	ESAVE, SAVE REGISTER FOR ERROR PRINT
679	ERSTOR, RESTOR ERROR REGISTERS
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681	RESTOR, RESTOR ARG FROM STACK
682	SCOPELOOP, SUBROUTINE TO EXECUTE SCOPE CODE
683	CLEAR, CLEAR FROM ARG1, ARG2 WORDS
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686	SDUMP, OCTAL DUMP OF ARG, LEADING ZEROS SUPPRESSED
687	NUMBER, TEST NUMBER INCREMENTER
688	SCOPEM, SCOPE
689	ERCALL, ERROR CALL EMT
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693	SNAPSHOTPH, ?
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MCLK1 DZDXA-D AUGUST 1974 UPDATE 3,9. MACY11 27(655) 26-SEP-74 11:10
MCLK1.P11 TABLE OF CONTENTS

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ADAPTION TO ACT11 AND DDP TESTING; THERE ARE ALSO TWO OTHER MAINDEC'S SUPPORTED BY DIAGNOSTICS THAT RUN THE DX11B:

1. COMMUNICATION TEST PROGRAM (CTP)
2. GENERAL TEST PROGRAM (GTP) WITH DX OVERLAY
3. DEC/X11 WITH DX SOFTWARE MODULE

THESE TESTS OPERATE IN THE MAINTENANCE MODE AND WERE DESIGNED TO DETECT UNIBUS DEVICE INTERACTION PROBLEMS. ADDITIONALLY CTP HAS A "RESPONDER" MODE SO THAT INTERACTION PROBLEMS MAY BE DETECTED WHILE RUNNING ONLINE;

2. REQUIREMENTS

2.1 EQUIPMENT

PDP11 (MINIMUM 8K WORDS MEMORY)
ASR-33 (OR EQUIVALENT)
DX11B

2.2 STORAGE

ALL PROGRAMS LOAD IN 8K OF MEMORY

2.3 OTHER

A WORKING KNOWLEDGE OF ODT VERSION V806A, ODT IS NECESSARY

3. LOADING PROCEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND ARE LOADED USING THE ABSOLUTE LOADER,

ABSOLUTE LOADER START ADDRESS 0500

MEMORY •
SIZE

4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

3.1.1 LOAD ADDRESS OF ABS LOADER INTO SWITCHES

3.1.2 DEPRESS "LOAD ADDRESS" KEY ON CONSOLE

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3.1.3 DEPRESS "START" KEY ON CONSOLE

4. STARTING PROCEDURE

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ONLINE DIAGNOSTIC REQUIRES THAT IT BE MAINTENANCE
CABLED -SEE MANUAL FOR DETAILS
.....

.....
NEVER NEVER NEVER RUN THE ONLINE MAINTENANCE CABLED
EXERCISER WHILE CONNECTED TO IBM
.....

- A. SET SWITCH REGISTER TO #00200
- B. DEPRESS "LOAD ADDRESS" KEY
- C. DEPRESS START

THE PROGRAM WILL JUMP TO THE DIAGNOSTIC MONITOR AND
TYPE OUT THE OPERATING INSTRUCTIONS, THIS IS ONCE ONLY
CODE, TO RETYPE THE OPERATING INSTRUCTION THE OPERATOR
MAY EITHER RELOAD THE PROGRAM OR LOAD THE ADDRESS
"MONITOR" IN THE SWITCH REGISTER AND DEPRESS START;

4.1 CONTROL SWITCH SETTINGS

- SR 15 HALT ON ERROR
- SR 14 SCOPE ON TEST OR ERROR
- SR 13 INHIBIT PRINTING
- SR 12 TYPE SHORT ERROR REPORT
- SR 11 INHIBIT INTERACTIONS
- SR 10 CONTROL MAINTENANCE CLOCK (MAINT, CLK, TEST ONLY)
- SR 9 DDT TRAP ON ERROR

!
! REM !

SR 3 ADDRESS UNIQUENESS TEST

!
! REM !

4.2 STARTING ADDRESSES

ADDRESSES	COMMENT
000200	NORMAL START

WITH ZERO LEFT IN THE SWITCHES THE PROGRAMS
TYPE OUT FULL INSTRUCTIONS ONCE AND
ABBREVIATED INSTRUCTIONS THEREAFTER,
WITH THE SWITCHES ZERO THE PROGRAMS SET
UP EITHER THE DEFAULT OR PREVIOUSLY
SELECTED PARAMETERS AND IMMEDIATELY ASKS
FOR THE DYNAMIC SWITCH SETTINGS

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MONITOR RELOAD TAPE FOR RETYPING OF INSTRUCTIONS

200042 IF THIS LOCATION IS NONZERO THE PROGRAM ASSUMES
IT IS RUNNING UNDER ACT11 ON DDP AND USES THE
DEFAULT PARAMETERS

D,ODT ENTRANCE TO ODT=11X VERSION V006A,ODT
MAY START THE PROGRAM BY TYPE 2071G
<CR>, (MAINTENANCE CLOCK TESTS ONLY)

NOTICE! HE WHO USES ODT IN A MEANS OTHER THAN EXPLICITLY
DIRECTED BY THIS DOCUMENT DOES SO AT HIS OWN RISK.

5. OPERATING PROCEDURE

STARTING FROM 200 WITH SR<07> UP CAUSES THE FOLLOWING GENERAL
TYPEOUT:
MAINDEC-11-DEDXX-X-D (TEST DESCRIPTION) (APR 74)

TYPE1 <D>, FOR DEFAULT PARAMETERS
<P>, FOR PREVIOUS PARAMETERS
<S>, FOR SELECT PARAMETERS
<N>, FOR START WITH THIS TEST NUMBER

(5. CONT'D)

D, P, S, N?

IN RESPONSE TO THIS LAST QUESTION THE OPERATOR IS REQUIRED
TO TYPE ONE OF THE LETTERS IN THE STRING. AT AUTO START
TIME THE PROGRAM FIRST SETS UP ALL THE DEFAULT PARAMETERS
"DEFAULT PARAMETERS" MEANS THE SET OF OPERATING VARIABLES
SELECTED AT THE FACTORY. FOR EXAMPLE, THE DEFAULT ADDRESS
IS 170200, THE DEFAULT VECTOR ADDRESS IS 300. THEREFORE, AT
AUTO START TYPING "P" FOR PREVIOUSLY SELECTED PARAMETERS IS
EQUIVALENT TO TYPING "D" FOR DEFAULT PARAMETERS.

IF ANY CHARACTER OTHER THAN ONE IN THE STRING IS TYPE THE
MONITOR WILL REJECT THE CHARACTER AND RETYPE THE STRING.

IF, IN RESPONSE TO THE STRING, THE OPERATOR TYPES AN "N" THE
SELECTION SEQUENCE IS ENTERED AND THE FOLLOWING DIALOGUE
TAKES PLACE,

NOTE! THESE ARE THE DEFAULT PARAMETERS, TYPING <D> IS
EQUIVALENT TO TYPING THE DEFAULT PARAMETERS,

TEST NUMBER: 1

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BASE ADDRESS: 176200
VECTOR ADDRESS: 300
DX PRIORITY LEVEL: 4
TYPE CU ADRS'S IN HEX <CR><LF>; <CR><CR> TERMINATES LIST
ADRS: 1? (THIS IS IN HEX)
DEVICES PER CUI: 20 (THIS IS IN OCTAL)
LIST ALL LEGAL COMMANDS
COMMAND:
SET SWITCHES

AT ANY TIME DURING THE "SELECTION SEQUENCE A CONTROL C
MAY BE TYPED AND THE MONITOR WILL ASK AGAIN "D,P,S,N?";

"TEST NUMBER?"

HERE THE MONITOR IS ASKING FOR THE NUMBER OF THE FIRST TEST
IN THE CHAINING SEQUENCE, THE DEFAULT ANSWER IS "1" ONE,
THE FIRST TEST IN THE CHAIN, IT MAY BE THAT THE OPERATOR IS
ONLY INTERESTED IN THE LAST FEW TESTS AND THEREFORE WOULD
TYPE 22 OR WHATEVER, AT THIS WRITING THERE IS NO CHECK TO
SEE IF THE OPERATOR SELECTED A NONEXISTANT TEST NUMBER (E.G.
PI, 2,4 MEG), SEE TABLE OF CONTENTS IN BEGINNING OF
LISTING,
=TYPING <CR> WILL DEFAULT THIS PARAMETER

(5, CONT'D)

"BASE ADDRESS: 176200"

THIS IS THE BASE ADDRESS FOR THE DX11 AND IS ALSO THE ADDRESS OF THE DX05,
=TYPING <CR> WILL DEFAULT THIS PARAMETER

"VECTOR ADDRESS: 300"

THE DX11 IS CUT TO INTERRUPT TO ADDRESS 300 AT THE FACTORY,
ON SITE THE DX FOLLOWS, DC'S KL'S DP'S, DM'S DN'S, DM'B'S,
DR11'S, DR11A, DR11B, TYPESETTING AND BUS SWITCHES,
=TYPING <CR> WILL DEFAULT THIS PARAMETER

"TYPE CU ADRS'S IN HEX <CR><LF>; <CR><CR> TERMINATES LIST"

ADRS: 1? <CR><LF>

ADRS: 2? <CR><CR>

THIS REQUEST IS FOR THE CONTROL UNIT'S HEXIDECIMAL ADDRESS
OR ADDRESSES, CAUTION!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
DO NOT EXCEED 16 ENTRIES OF CU ADDRESSES, THE PROGRAM
MAY SELF DESTRUCT, IF THE SYSTEM REQUIRES THAT THERE BE
MORE THAN 16 CU ADDRESSES THEN THE DIAGNOSTICS MUST BE
RUN AGAIN FOR THOSE EXCEEDING 16 CAUTION!!!!
IN MAINTENANCE CLOCK 1 DIAGNOSTIC THE M900 MUST
NOT BE CUT FOR MORE THAN 16 CU ADDRESSES

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THE IBM CONTROL UNITS ADDRESSES ARE SPECIFIED IN HEXADECIMAL,
FOR CONTROL UNIT 010(16) THE
RESPONSE TO ADRS1 IS 1P(HEX) WHICH IS 00P10020(2),
THE DX11 CAN EMULATE UP TO 128(18) CONTROL
UNITS WITH 1 DEVICE EACH OR 1 CONTROL UNIT WITH 128(18)
DEVICES OR AS IS THE DEFAULT CASE 1 CONTROL UNIT WITH 16(10)
DEVICES, THE ADRS1 AND RESPONSE WILL CONTINUE
INDEFINITELY AS LONG AS <CR><LF> IS TYPED FOLLOWING THE
CU ADDRESS; THE LIST IS TERMINATED BY TYPING <CR><CR>;
NOTE!!!! TYPING <CR><CR> IN RESPONSE TO THE FIRST ADRS1
WILL DEFAULT THE CU ADDRESS TO 00 AND WILL ALSO
TERMINATE THE LIST; (DEFAULT=10 HEX), THE ACTUAL # MUST BE TYPED IN
"DEVICES PER CUI 20"

THE RESPONSE TO THIS INPUT REQUEST IS IN OCTAL AND REPRESENTS
THE NUMBER OF DEVICES THIS CONTROL UNIT SERVICES; A DX11
EMULATED CONTROL UNIT CAN SERVICE FROM 1 TO 200(8) DEVICES,
NOTE!!!! TYPING <CR> IN RESPONSE TO DEVICES PER CUI
WILL DEFAULT TO 0, THEREBY CAUSING AN ILLEGAL NUMBER
OF DEVICES PER CU MESSAGE;,, THE ACTUAL # MUST
BE TYPED IN, (DEFAULT=20 OCTAL)
THIS DIAGNOSTIC WILL REJECT <1 AND >20 DEVICES PER CU

(5; CONT'D)

A CHECK IS MADE HERE TO INSURE THAT THE OPERATOR
DID NOT ASSIGN AN IMPOSSIBLE NUMBER OF DEVICES
FOR EACH CONTROL UNIT;

TYPE CU ADRS'S IN HEX <CR><LF>; <CR><CR> TERMINATES LIST
ADRS1 F0
DEVICES PER CUI 0
ILLEGAL NUMBER OF DEVICES PER CU
DEVICES PER CUI 4
LIST ALL LEGAL COMMANDS
COMMAND;

WHEN A "4" WAS TYPED IN RESPONSE TO DEVICES PER CUI,
THE NUMBER WAS ACCEPTED AND THE MONITOR CONTINUED.

NOTICE! OFFLINE & ONLINE DIAGNOSTICS REQUIRE AT LEAST TWO CU DEVICE ADDRESSES
FOR TESTING MULTIPLEXOR FUNCTIONS;,, THE M908 MUST ALSO BE STRAPPED FOR >1

"LIST ALL LEGAL COMMANDS"
COMMAND; 400<CR>
STATUS; 2 <CR><LF> TO CONTINUE LIST
<CR><CR> TO TERMINATE LIST

THIS FACILITY WAS BUILT INTO THE DIAGNOSTIC TO ENABLE THE
OPERATOR TO BUILD HIS OWN DEVICE STATUS TABLE (DST),
A <CR> IN RESPONSE TO COMMAND; ASSUMES THE DEFAULT DST;
THE FIRST ENTRY MUST BE NONZERO, THEREFORE IF YOU WISH
YOUR FIRST COMMAND TO BE A TIO=0 YOU MUST TYPE IT IN WITH

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PARITY (E.G. 420). FOLLOWING THE COMMAND THE MONITOR WILL
ASK FOR THE CORRESPONDING STATUS.
-TYPING <CR> WILL DEFAULT THIS PARAMETER

"SET SWITCHES"

HERE THE MONITOR ASKS FOR THE CONSOLE SWITCH SETTINGS.

SW<15> HALT ON ERROR
SW<14> SCOPE LOOP
<SW13> INHIBIT ERROR PRINTOUT
SW<12> SHORT ERROR REPORT
SW<11> INHIBIT ITERATIONS
SW<10> MAINTENANCE CLOCK CONTROL (MAINTENANCE TESTS ONLY)
SW<9> ODT TRAP ON ERROR

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,REM !
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SW<3> ADRECU UNIQUENESS TEST

LOAD THE SWITCH REGISTER WITH THE APPROPRIATE FUNCTION
AND TYPE <CR>.

5.2 PROGRAM AND/OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

1. HALT ON ERROR
WHEN AN ERROR HALT OCCURS
2. CLEAR SW<15>
3. SET SW<14>, SCOPE
4. TYPE <P> FOR PROCEED IF ODT WAS SELECTED
(SW9=1), OR PRESS CONTINUE ON THE CONSOLE
IF ODT WAS NOT SELECTED SW9=0
IF ERROR IS REPETITIVE;
5. SET SW<13> AND SCOPE ERROR

THE ERROR PC SHOULD BRING THE OPERATOR TO A POINT IN THE
LISTING WHERE THE ERROR IS DOCUMENTED, THEN USING THE
PRINTS AND THE FLOWS THE ERROR CAN BE TRACED TO ITS
SOURCE;

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,REM !

AT ANY TIME DURING THE INITIALIZATION OR TESTING THE
OPERATOR CAN TYPE CONTROL C AND CONTROL WILL BE RETURNED TO
THE MONITOR, SOME TESTS ARE 5-10 SECONDS IN DURATION SO
THE RESPONSE TO THE CONTROL C WILL NOT BE INSTANTANEOUS.

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THE RESTART ADDRESS IS 200; IF THIS ADDRESS IS LEFT IN THE
CONSOLE SWITCH WHEN "START" IS PRESSED THE MONITOR WILL TYPE
OUT D,P,S,N? IF THE SWITCHES ARE ZEROED THE TYPE WILL BE
"SET SWITCHES";

THERE ARE TWO CALIBRATION TESTS (MAINT CLK1) THAT SHOULD BE RUN IN
SCOPE MODE(T15 & T16); IT IS QUITE POSSIBLE THAT USING THE STANDARD
OPERATIONS PROCEDURE PREVIOUSLY SUGGESTED THAT THE OPERATOR
WILL FALL NATURALLY INTO THESE CALIBRATION TESTS. IF THE
SYSTEM HAS BEEN BROUGHT UP ONCE BEFORE AND THE OPERATOR
WISHES TO CHECK THE CALIBRATION THE FOLLOWING PROCEDURE
SHOULD BE FOLLOWED:

1. EXAMINE TABLE OF CONTENTS FOR THE TEST NUMBER (N) OF
CALIBRATION ROUTINES.
2. TYPE N IN RESPONSE TO D,P,S,N?
3. PUT SW<14> UP IN RESPONSE TO "SWITCH SETTINGS"
4. TYPE <CR> IF ERROR TYPE OUT OCCURS SET SW<13>.

5.2.1 MAINTENANCE CLOCK CONTROL (MAINTENANCE CLK1 & CLK2 DIAG. ONLY)

WHEN SWITCH 10 IS SELECTED AND A MAINTENANCE CLOCK
PROGRAM IS BEING RUN THE EXECUTION OF THE JSR PC, CLK
SUBROUTINE WILL CAUSE A BREAK POINT TRAP TO ODT AND A
TYPEOUT OF THE FOLLOWING FORMAT WILL OCCUR:

AAAAAA B?JNNNNN
.

THIS INDICATES THAT THE PROGRAM WAS TRAPPED TO ODT
AND IS AWAITING THE COMMAND TO "PROCEED BEFORE EXECUTING
THE NUMBER OF MAINTENANCE CLOCK PULSES SPECIFIED BY JSR PC,
CLK N.
UPON TYPING "P" THE PROGRAM WILL CONTINUE FROM LOCATION
AAAAAA;

THIS IS A USEFUL FEATURE IN SEVERAL
RESPECTS. FIRST, IT ALLOWS THE OPERATOR TO SINGLE
STEP THROUGH THE FLOWS; THE LISTING AIDS HERE ALSO IN
THAT IT HIGHLIGHTS THE PHASE AND STATE; IN ADDITION
TO WALKING THROUGH THE FLOWS THIS FEATURE ALSO ALLOWS THE
OPERATOR TO EXAMINE DONE DISPLAYED DX REGISTERS AND
KEY MEMORY LOCATIONS.

IT IS REQUIRED THAT ONLY THE FOLLOWING ODT COMMANDS BE USED

N/	OPENS WORD N
P	PROCEED FROM BREAK POINT
N/C	GOES TO WORD N AND STARTS PROGRAM
<CR>	CLOSES OPEN LOCATION (CARRIAGE RETURN)
<LF>	OPENS NEXT LOCATION (LINE FEED)
0C	CONTROL C, RETURN TO DIAGNOSTIC MONITOR

ANY OTHER COMMANDS ARE USED AT THE OPERATORS OWN RISK.

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IF OTHER COMMANDS ARE USED THE DX AND THEREFORE THE DIAG-
NOSTIC MAY BEHAVE STRANGELY, PLEASE RELOAD.

A TYPICAL SEQUENCE

SET SWITCHES

#05536 B7:717044	
*P	PROCEED
#05640 B7:717044	
*P	PROCEED
#06032 B7:717044	
*176204/702570	EXAMINE DXCS
176206 /702070	EXAMINE DXOS
176210 /70307	EXAMINE DXBA
*P	PROCEED
#06504 B7:717044	
*	CONTROL C
D,P,S,N?	MONITOR MODE

6. ERRORS

TYPICALLY ERROR REPORTS TAKE THE FOLLOWING FORMAT.

ERROR PCI 817274
ERROR IN TEST: 17
CUADRS/M0: 070020
00102074?

THIS INDICATES THAT WHILE EXECUTING TEST #17 ON ERROR STATE
WAS DETECTED AND IS DOCUMENTED AT PROGRAM COUNT #17274;
THE CONTRL UNIT UNDER TEST OF THE TIME OF ERROR WAS
20(8) AND THE IBM COMMAND WAS A NOP, IN SEVERAL CASES
THE COMMAND IS OF NO SIGNIFICANCE;

IF SWITCH 9 IS UP THE ERROR REPORT GENERATOR WILL
BREAK TO ODT AS INDICATED BY "001NNNNN", HERE AGAIN
THE POWER OF ODT MAY BE USED TO COLLECT ADDITIONAL
DATA CONCERNING THE FAULT,

A TYPICAL APPROACH MIGHT BE (AFTER COLLECTING DATA):
TYPE CONTROL C, RESULTS:

D,P,S,N? N
TEST NUMBER: 17
SET SWITCHES

IN RESPONSE TO SWITCHES SET THE FOLLOWING

SR<15>=0	HALT ON ERROR
SR<14>=1	SCOPE

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TYPE <CR>

IF THE ERROR IS REPEATABLE SET SRC13, INHIBIT PRINT
AND GO AT IT.
NOTICE: A TYPE OUT OF THE FORMAT BEJNNNNN INDICATES
A BREAK POINT ERROR AT NNNNNN, THIS IS AN ODT ERROR
AND CAN BE CAUSED BY 1, PLAYING GAMES WITH ODT OR
2, AN ILLEGAL BREAK TRAP I.E. T BIT SET OR EXECUTE
A 000003,

(6: CONT'D)

DURING MAINTENANCE CLOCK TESTS THERE EXISTS A SUBROUTINE
CALLED CHKREG, THIS ROUTINE EXAMINES ALL THE DX12
REGISTERS AND VERIFIES THAT THEY ARE IN THE EXPECTED STATE,
CHKREG HAS A SPECIAL ERROR TRAP THAT RESULTS IN THE
FOLLOWING TEXT:

ERROR PCI 017446
ERROR IN TEST: 17
CUADRS/MO: 020220
ORIGIN OF MAP ERROR 0176P2
REGISTER=CONTENTS=MAP

DXM1: 176777 000400 (DXM1 IS UNREADABLE IGNORE THIS COMPARE)
DXCB1: 274020 000000 (PHASE AND STATE FLOPS ARE NOT TRACED)
DXES1: 002014 000010 (ERROR CONDITION IS THAT BIT2 IS SET)
001020742
.

D.P.S.N7

IN THIS REPORT THE REGISTERS ARE NAMED (UNDER REGISTER)
AND THEIR CONTENTS DUMPED (UNDER CONTENTS) SO THAT IT MAY
BE COMPARED WITH THE EXPECTED STATE IN THE MAP (UNDER MAP),

THERE ARE TWO ANOMALIES HERE:

1. THE DXM1 IS OFTEN UNREADABLE THEREFORE IF THE DXM1
IS ALL ONES OR ALMOST ALL ONES DISREGARD THE COMPARISON
IT WAS NOT MADE.
2. THE PHASE AND STATES FLOPS ARE NOT COMPARED SO THAT
CHKREG CAN BE USED IN ROUTINE WITH FREE RUNNING CLOCKS.

THIS MEANS THAT THERE MUST BE A DIFFERENCE BETWEEN
CONTENTS AND MAP IN A REGISTER OTHER THAN THE DXM1 OR BITS
OTHER THAN 074000.

THE EXERCISER PROGRAMS DO TUMBLE TABLE TRACING ON INTERRUPT,
IN THE EVENT OF A TRACE ERROR THE PROGRAM WILL TYPE OUT:

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TT TRACE ERROR IN TEST1 N1
ORIGIN OF LAST TT UPDATE1 N2
TT ENTRY WAS1 "WHATEVER"
EXPECTED ENTRY1 "WHATEVER +1"
TT POINTER N3

THEN PROCEED WITH THE NORMAL ERROR REPORT, THE ADDRESS XXXXXX
SPECIFIES THE LOCATION WHERE THE EXPECTED TT ENTRIES WERE
LAST UPDATED.

EXERCISER ERROR REPORTS ALSO INDICATE THE
DX MODE WHEN THE ERROR OCCURED: MULTIPLEXOR OR BUSYEN
(DX ONLINE AND DX OFFLINE EXERCISERS ONLY)

6.2 ERROR RECOVERY

IN THE EVENT THAT THE DX GETS STUCK IN AN UNRECOVERABLE
PHASE AND STATE WHILE MAINTENANCE CLOCK ENABLE IS SET,
DEPRESS HALT AND START, THEN LOAD ADDRESS 200 AND START.

ON BREAK POINT ERRORS RELOAD TAPE

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4.2

7.2 OPERATING RESTRICTIONS

NEVER NEVER NEVER RUN THE ONLINE-MAINTENANCE-CABLED
EXERCISER WHILE CONNECTED TO IBM

8. MISCELLANEOUS

MAINT. CLK1 DIAGNOSTIC ONLY!!!!!!
AT THE END OF THE PROGRAM IT WILL TYPE "END TEST SET SH3=1",
THIS IS TO SIGNIFY THAT SH3 MUST BE SET AT LEAST ONCE DURING THE
USE OF THIS DIAGNOSTIC; IT IS NOT NECESSARY TO LEAVE SH3=1
AS IT CONSUMES TOO MUCH DIAGNOSTIC TIME, BASICALLY THIS OPENS
THE TEST THAT CHECKS THAT YOU HAVE CORRECTLY ANSWERED ALL THE
CU ADDRESSES & DEVICES/CU QUESTIONS CORRECTLY, ... IF YOU LIED
IT WILL CATCH IT, IE, IF YOU ANSWERED THE DEVICES PER CU
WITH 10(8) AND IN ACTUALITY THE DEVICES PER CU ARE CUT TO
4 ON THE M900, THIS TEST WILL CATCH THE ERROR,
WHEN SH3=1 PROGRAM RUN TIME IS GREATLY INCREASED
AS IT CHECKS ALL OTHER ADDRESSES FOR ADRECC & ADRECO.

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ONLINE & OFFLINE EXERCISES!!!!!!
THESE PROGRAMS WILL DEFAULT TO AUTOMATICALLY SETTING
SW1=1 & SW2=1 ; HOWEVER, TO EXECUTE THEIR FUNCTIONS EARLY IN
THE PROGRAM RUN TIME= SET THEM BEFORE STRIKING <CR> WHEN
THE MONITOR ASKS "SET SWITCHES"
NOTE: AT LEAST 2 DEVICES/OU MUST BE STRAPPED ON #978

6.1 EXECUTION TIME

THE EXECUTION TIME OF EACH PROGRAM IS VARIABLE AND IS A
FUNCTION OF THE PROGRAM LENGTH AND THE CONTROL UNIT
ADDRESS STRUCTURE, IN GENERAL THEY RUN 10 TO 20 MINUTES,

9. PROGRAM DESCRIPTION

CONTAINED WITHIN LISTING.

10. LISTING

FOLLOWING

11. FLOW CHARTS

SEE PRINT SET

:
.LIST MD

.REM *

MAINDEC-11-DZDKA-D=0
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146 MAIN ST, MAYNARD, MA, 01754
MAINTAINER: DIAGNOSTICS
AUTHOR: JOHN FRIEDRICH

..... MOD APR 74

REVISION: BY J. ARMSTRONG

.SBTTL DYNAMIC SWITCH SETTINGS (SWH #1)

DYNAMIC SWITCH REGISTER SETTINGS

SWR#	SIGNIFICANCE
SET = ONE	
SWR 15	"HALT ON ERROR"
SWR 14	"SCOPE LOOP"
SWR 13	"INHIBIT ERROR REPORT"
SWR 12	"SHORT ERROR REPORT"

649 JO SWR 11 "INHIBIT ITERATIONS"
650 JO
651 JO SWR 10 "MAINTAINENCE CLOCK CONTROL"
652 JO SWR 29 "ODI TRAP ON ERROR"
653 JO SWR 23 "ADNECD UNIQUENESS TEST"
654 JO
655 JO "USER CHANGE INFORMATION"
656 JO "DUE TO REVISION APR 74"
657 JO "PLEASE READ INFO BELOW"
658 JO
659 JO

NOTE:

AN OPERATOR RESPONSE OF "0" TO THE PROGRAM
"TTY" REQUEST FOR "DEVICES PER CUI" IS NO
LONGER DEFAULTED TO 20 (16 DECIMAL), I.E.

DEVICES PER CUI 0 "ILLEGAL ?"

THE HEADER "CU CHANNEL ADDRESS" USED ON ERROR
OUTPUT HAS BEEN CHANGED TO "CUADRS/MO!", I.E.
IT SIGNIFIES EITHER THE CONTENTS OF THE "DXMO"
REGISTER OR THE CONTROL UNIT BASE ADDRESS WHERE
MEANINGFULL,

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..... MOD APR 74

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!DXDS, DX DEVICE STATUS BITS

100000	PARER = 10000	!ERRORS
040000	NXM = 40000	!NONEXISTANT MEMORY REFERENCE
020000	SELRST = 20000	!IRM RESETS; SELECTIVE RESET
010000	SYSRST = 10000	! SYSTEM RESET
004000	INFOSC = 4000	! INTERFACE DISCONNECT
034000	!BMRST = SELRST!SYSRST!INFOSC	
002000	UCHKS = 2000	!STATUS FLAGS
001000	CHENDS = 1000	!CHANNEL END SENT
000400	BSYS = 400	!BUSY SENT
000200	CHIS = 200	!CHANNEL INITIATED SELECTION
000100	ESEND = 100	!ENDING STATUS END
000040	CHDEND = 40	!CH DATA END
000020	CUDEND = 20	!CU DATA END
000010	ISSREJ = 10	!ISS REJECT
000004	CHDCHN = 4	!COMMAND CHAINING
000002	STKSTB = 2	!STACKED STATUS B
000001	CHDREJ = 1	!COMMAND REJECT

!DXCS, DX CONTROL UNIT STATUS BITS

100000	PARSTP = 100000	!STOP ON BUS0 PARITY ERROR
040000	CUPBM = 40000	!SELECT FORCED BURST
020000	ENDEN = 20000	!CUEND
010000	CS12 = 10000	!NOT USED
004000	BSYEN = 4000	!ENABLE SET !CUBSY
002000	CS10 = 2000	!NOT USED
001000	ONLINE = 1000	!ONLINE A
000400	CUBSY = 400	!CU BUSY
000200	DONE = 200	!FUNCTION DONE
000100	INTEN = 100	!INTERRUPT
000040	STKSTA = 40	!STACKED STATUS
000030	XBA = 30	!EXTENDED BASE ADDRESS
000006	FCYN = 6	
000001	DXPRS = 1	!FCYN + 60
000003	DXPI = 3	!READ (INPUT)
000005	DXPO = 5	!WRITE (OUTPUT)
000007	DXFST = 7	!STATUS
000001	GO = 1	!BEGIN FUNCTION

!DXOS, DX OFFSET (CUOR) AND STATUS (CUSR) BITS

000200	ATTEN = 200	!ATTENTION
000100	STAMOD = 100	!STATUS MODIFIER
000040	CUEND = 40	!CU END
000020	BSY = 20	!BUSY
000010	CHEND = 10	!CH END
000004	DEVEND = 4	!DEVICE END
000002	UCHECK = 2	!UNIT CHECK
000001	UEXCEP = 1	!UNIT EXCEPT

!DXMO, DX MAINTENANCE-OUT BITS

727			
728		ISELECTION CONTROL LINES	
729	100000	OPLO = 100000	IOPERATIONAL OUT
730	040000	HLDO = 40000	IHOLD OUT
731	020000	SELO = 20000	ISELECT OUT
732	010000	SUPO = 10000	ISUPPRESS OUT
733			
734		ITAG LINES	
735	004000	ADPO = 4000	IADDRESS OUT
736	002000	CMDO = 2000	ICOMMAND OUT
737	001000	SRVO = 1000	ISERVICE OUT
738	000400	PARO = 400	IPARITY OF/FOR BUS OUT
739		IDXMI DX MAINTENANCE-IN BITS	
740			
741		ISELECTION CONTROL LINES	
742	100000	OPLI = 100000	IOPERATIONAL IN
743	040000	SELI = 40000	ISELECT IN
744	020000	REQI = 20000	IREQUEST IN
745			
746		ITAG LINES	
747	010000	ADRI = 10000	IADDRESS IN
748	004000	STAI = 4000	ISTATUS IN
749	002000	SRVI = 2000	ISERVICE IN
750	001000	CLKO = 1000	IOK TO GO ONLINE (RB)
751	000400	PARI = 400	IBUSI PARITY (RB)
752			
753		IDXCB DX CONTROL BITS	
754			
755	100000	LOCKO = 100000	ILOCK OUT
756	074000	PHS = 074000	IPHASE = STATE BITS
757	002000	FASTCU = 2000	IFAST CU
758	001000	SYNC = 1000	ISYNCHRONIZATION
759	000400	CUDX = 400	ICU DATA CONTROL
760	000200	IOD = 200	IINPUT OUTPUT DONE
761			
762			
763	000100	BYPAS = 100	INPN CONTROLS
764	000040	NPRX = 40	IBYPASS
765	000020	NPRT = 20	INPN CONTROL SWITCH
766	000010	BALF = 10	INPN TRANSFER DIRECTION
767	000004	ONLINB = 4	IBUFFERED ALTERNATOR FLOP
768	000002	ADRECC = 2	ION LINE TO IBM
769	000001	ADRECD = 1	IADDRESS RECOGNITION (CU)
770			IADDRESS RECOGNITION (DEVICE)
771			
772		IDXES DX EXTRA SIGNALS	
773	000001	MCLKP=1	IMAINTENANCE CLOCK PULSE
774	000002	MCLKEN=2	IMAINT; CLK ENABLE
775	000004	SOSIEN=4	ISRVO=SRVI ENABLE
776	000010	TIMDIS=10	ITIMER(5 SEC) DISABLE
777	000020	DXTO=20	IDX TIMEOUT (5 SEC)
778	000040	NPRTO=40	INPN TIMEOUT (8 MICROSEC)
779	000200	INTREQ=200	IINTERRUPT REQUEST
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INDEX1 DX EXTRA EXTRA SIGNALS

000001
000002

IRS =1
DSCRSP =2

JIBM RESET STORED
JDISCONNECT RESPONSE

DEFINE REGISTER MAP INDICES

000000
000002
000004
000006
000010
000012
000014
000016
000020
000022
000024

DS= 20
CA= 22
CS= 24
OS= 26
BA= 10
BC= 12
MO= 14
MI= 16
CB= 20
ND= 22
ES= 24

PHASE CONTROL FLOPS OF DXCB

000000
010000
020000
030000
040000
050000
060000
070000

PHASE0=070000
PHASE1=170000
PHASE2=270000
PHASE3=370000
PHASE4=470000
PHASE5=570000
PHASE6=670000
PHASE7=770000

TIME STATE FLOP AND STATE DEFINATION

004000
004000
000000

TSSF=4000
TS1=4000
TS2=0000

PHASE AND STATE DEFINITIONS

004000
000000
014000
010000
024000
020000
034000
030000
044000
040000
054000
050000
064000
060000
074000

PHS01= PHASE01 TS1
PHS02= PHASE01 TS2
PHS11= PHASE11 TS1
PHS12= PHASE11 TS2
PHS21= PHASE21 TS1
PHS22= PHASE21 TS2
PHS31= PHASE31 TS1
PHS32= PHASE31 TS2
PHS41= PHASE41 TS1
PHS42= PHASE41 TS2
PHS51= PHASE51 TS1
PHS52= PHASE51 TS2
PHS61= PHASE61 TS1
PHS62= PHASE61 TS2
PHS71= PHASE71 TS1

```

835      070000      PH572= PHASE7: TS2
836
837      .SBTTL  MISCELLANEOUS DEFINITIONS
838
839      104400      SCOPE=TRAP      !SCOPE LOOP TRAP
840
841      100000      BIT15=100000
842      040000      BIT14=400000
843      020000      BIT13=200000
844      010000      BIT12=100000
845      004000      BIT11=400000
846      002000      BIT10=200000
847      001000      BIT9=100000
848      000400      BIT8=400000
849      000200      BIT7=200000
850      000100      BIT6=100000
851      000040      BIT5=400000
852      000020      BIT4=200000
853      000010      BIT3=100000
854      000004      BIT2=400000
855      000002      BIT1=200000
856      000001      BIT0=100000
857      000000      HERE=0
858
859      !CHANNEL COMMANDS WITH PARITY
860
861      000400      TIOC=400      !TEST I/O
862      000001      WRITEC=0001  !WRITE
863      000002      READC=0002   !READ
864      000403      NOPC=403     !NOP
865      000004      SENSEC=4     !SENSE
866      000405      ILLC=405     !ILLEGAL COMMAND
867
868      !UTILITY FLAGS
869
870      100000      INTOK=100000
871      000002      DOFLIN=2     !SPW BIT FOR NO DST !
872
873      !CHANNEL STATUS
874
875      000010      CE=10        !CH END
876      000004      DE=4        !DEVICE END
877      000002      UC=2        !UNIT CHECK
878      000200      ATTN=200    !ATTENTION
879      000100      SM=100      !STATUS MODIFIER
880      000040      CUE=40      !CU END
881      000020      BSY=20      !BUSY
882
883      !SWITCH DEFINITIONS
884
885      100000      HLTSH=BIT15   !HALT ON ERROR
886      040000      LOPSH=BIT14  !LOOP ON ERROR
887      020000      PNTSH=BIT13  !INHIBIT PRINT
888      010000      SESH=BIT12   !SHORT ERROR SWITCH

```


889	004000	IISW=BIT11	IINHIBIT ITERATIONS	
890	002000	MCCSW=BIT12	IMAINTEANCE CLOCK CONTROL	
891				
892		IPROCESSOR PRIORITY LEVELS		
893				
894	000000	LEVEL0= 000		
895	000040	LEVEL1= 040		
896	000100	LEVEL2= 100		
897	000140	LEVEL3= 140		
898	000200	LEVEL4= 200		
899	000240	LEVEL5= 240		
900	000300	LEVEL6= 300		
901	000340	LEVEL7= 340		
902				
903		IREGISTER DEFINITIONS		
904				
905	000000	R0=X0		
906	000001	R1=X1		
907	000002	R2=X2		
908	000003	R3=X3		
909	000004	R4=X4		
910	000005	R5=X5		
911	000005	TY=X5		
912	000006	R6=X6		
913	000006	SP=X6	ISTACK POINTER	
914	000007	PC=X7	IPROGRAM COUNTER	
915				
916	000004	TYPE=IOT		
917	000240	NOP=240		
918	177776	PS=177776	IPROCESSOR STATUS	
919	177570	SWR=177570		
920	177570	SR=177570	ISWITCH REGISTER	
921				
922	000000	E=0		
923	022220	EMTABLE=EMTAG		
924				
925		IEMT DEFINITIONS		
926				
927	001004	104000	ERROR	ITRAPS TO T, ERROR
928	001006	104001	MAPERR	ITRAPS TO T, MAPERR
929	001010	104002	TRACER	ITRAPS TO T, TRACER
930	001012	104003	SAVRG	ITRAPS TO T, SAVRG
931	001014	104004	RSTRG	ITRAPS TO T, RSTRG
932	001016	104005	ACCEPTO	ITRAPS TO T, ACCEPTO
933	001020	104006	KEY, TO, R?	ITRAPS TO T, KEY, TO, R?
934	001022	104007	PARITY	ITRAPS TO T, PARITY
935	001024	104010	PCH1	ITRAPS TO T, PCH1
936	001026	104011	PCH2	ITRAPS TO T, PCH2
937	001030	104012	PCH3	ITRAPS TO T, PCH3
938				
939		,SBTTL TRAP DEFINITIONS		
940				
941		ITRAP INITIALIZATION		
942				

```

943          000014 000014          ,=14
944 000014 033076 000340          0,RRK,LEVEL7          IBREAK TRAP
945
946          000020 000020          ,=20
947 000020 027376 000340          ,IOT,LEVEL7          ITTY OUTPUT TRAP,LEVEL 7
948
949          000024 000024          ,=24
950 000024 001634 000340          PFAIL,LEVEL7          IPOWER FAIL TRAP
951
952          000030 000030          ,=30
953 000030 022156 000340          EMYDECODER,LEVEL7     IEMT DECODER TRAP,LEVEL 7
954
955          000034 000034          ,=34
956 000034 022270 000340          SCOPEC,LEVEL7          ISCOPE TRAP
957          000046 000046          ,=46
958 000046 024600          LOGICAL                IACI11
959
960          000200 000200          ,=200
961
962 000200 000137 001100          START: JMP          000000          IGO TO BEGINNING OF PROGRAM
963
964          001100 001100          ,=1100
965
966 001100 012706 001100          BEGIN: MOV          000000          ISET UP STACK POINTER
967 001104 012737 000340 177776          MOV          000000          IPRIORITY LEVEL 7
968
969          |..... MOD APR 74 .....|
970          |..... 11/40,11/45 TRACE TRAP .....|
971
972 001112 012737 000002 032776          MOV          000000          #2,RTX
973 001120 012737 001154 000010          MOV          000000          #INITB,#010
974 001126 012737 000340 000012          MOV          000000          #340,#012
975 001134 005046          CLR          -(SP)
976 001136 012746 001144          MOV          000000          #INITZ,=(SP)
977 001142 000006          RTT
978 001144 012737 000006 032776          INITZ: MOV          000000          #6,RTX
979 001152 000402          BR          INITC
980 001154 062706 000010          INITBI: ADD          000000          #12,SP
981 001160 013737 032776 032774          INITCI: MOV          000000          RTX,YESHTI
982 001166 012737 000012 000010          MOV          000000          #12,#010
983 001174 005037 000012          CLR          #012
984
985          |..... MOD APR 74 .....|
986
987 001200 005737 000042          TST          000000          #42          IACI11
988 001204 001404          BEQ          000000          #0          IBR IF NO
989          |          JSR          PC,MONDFLT          IINSERT DEFAULT PARAMETERS
990 001206 005037 024766          CLR          000000          #0          IDO NOT EXECUTE TIME CONSUMING TESTS
991 001212 000137 024410          JMP          000000          #0          |
992 001216 005327 000001          BGN0: DEC          000000          #1
993 001222 001002          BNE          000000          #0          #GN1
994 001224 000137 023460          JMP          000000          #0          #MONITOR
995 001230 032737 000200 177570          BGN1: BIT          000000          #270,SR          ITEST FOR FAST START
996 001236 001402          BEQ          000000          #0          IBRANCH IF FAST START

```


997	001243	000137	023530		JMP	0040V1,0	
998	001244	012706	001100		RGV2I	#BEGIN,SP	
999	001250	012737	000340	177776	MOV	#LEVEL7,PS	
1000	001256	000137	024396		JMP	0040V1,0	USE PREVIOUS PARAMETERS
1001							
1002							
1003							
1004							
1005	001262	176200			DXBASEI	176200	
1006	001264	000300			DXIVI	300	IDX INTERRUPT VECTOR ADRS
1007	001266	000302			DXISI	302	IDX INTERRUPT STATUS
1008	001270	000200			DXPRI	LEVEL4	INI PRIORITY ADRS
1009	001272	000140			LESSI	LEVEL3	IDX PRIORITY MINUS ONE
1010	001274	176200			DXDSI	176200	IDEVICE STATUS =>TT
1011	001276	176202			DXCAI	176202	ICOMMAND AND ADDRESS =>TT
1012	001300	176204			DXCSI	176204	ICONTROL UNIT STATUS
1013	001302	176206			DXOSI	176206	IOFFSET AND STATUS
1014	001304	176210			DXBAI	176210	IBUS ADDRESS FOR NPR'S
1015	001306	176212			DXBCI	176212	IBYTE COUNT
1016	001310	176214			DXMOI	176214	IMAINTEANCE OUT
1017	001312	176216			DXMI	176216	IMAINTEANCE IN
1018	001314	176220			DXCBI	176220	ICONTROL BITS
1019	001316	176222			DXNDI	176222	INPK DATA
1020	001320	176224			DXESI	176224	IXTRA SIGNALS
1021	001322	176226			DXMOBI	176226	IMAINTEANCE OUT BUFFERED
1022	001324	176230			DXESI	176230	IXTRA EXTRA SIGNALS
1023							
1024							
1025							
1026							
1027							
1028	001326	176202			CUARI	176202	ICU ADDRESS REGISTER
1029	001330	176203			CUCRI	176203	ICU COMMAND REGISTER
1030							
1031							
1032							
1033	001332	176206			CUSRI	176206	ICU STATUS REGISTER
1034	001334	176207			CUORI	176207	ICU OFFSET REGISTER
1035							
1036							
1037							
1038	001336	176214			BUSOI	176214	IIM BUS OUT
1039	001340	176215			CONOI	176215	ICONTROL LINES OUT
1040							
1041							
1042							
1043	001342	176216			BUSII	176216	IIM BUS IN
1044	001344	176217			CONII	176217	ICONTROL LINES IN
1045							
1046							
1047	001346	176224			DXESI	176224	IMISCELLANEOUS BITS
1048	001350	176225			TTNDXI	176225	ITUMBLE TABLE INDEX REG
1049							
1050							

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1052 001352 176226
1053 001354 176227
1054
1055
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1057 001356 177700
1058 001360 177701
1059 001362 177702
1060 001364 177703
1061 001366 177704
1062 001370 177705
1063 001372 177706
1064 001374 177707
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1066
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1068 001376 177560
1069 001400 177562
1070 001402 177564
1071 001404 177566
1072
1073
1074
1075 001406
1076 001406 000000
1077 001410 000000
1078 001412 000000
1079 001414 000000
1080 001416 000000
1081 001420 000000
1082 001422 000000
1083 001424 000000
1084 001426 000000
1085 001430 000000
1086 001432 000000
1087 001434 000000
1088
1089
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1091
1092 001436 002000
1093
1094
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1096 001440 003000
1097
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1099
1100 001442 003000
1101
1102
1103
1104

RUSOB1 176226
CONOB1 176227

IBUS OUT BUFFERED
ICONTROL OUT BUFFERED

REGISTER ADDRESSES

REG01 177700
REG11 177701
REG21 177702
REG31 177703
REG41 177704
REG51 177705
REG61 177706
REG71 177707

TTY ADDRESSES

TKS1 177560
TKB1 177562
TPS1 177564
TPB1 177566

REGISTER TRACE TABLE

REGTT1
TDXDS1 0
TDXCA1 0
TDXCS1 0
TDXOS1 0
TDXBA1 0
TDXMO1 0
TDXM11 0
TDXCBI 0
TDXND1 0
TDXES1 0
TDXES11 0
TTYNDX1 0

REGISTER TRACE TABLE
DEVICE STATUS TRACE
COMMAND AND ADDRESS TRACE
ICU STATUS TRACE
IOFFSET AND STATUS TRACE
IBUS ADDRESS TRACE
MAINTENANCE OUT TRACE
MAINTENANCE IN TRACE
CONTROL BIT TRACE
INPK DATA TRACE
EXTRA SIGNAL TRACE
EXTRA SIGNAL TRACE 1
TTYNDX TRACE

STATUS POINTER WORD ADDRESS

SPW1 2000

TUMBLE TABLE ADDRESS

TT1 3000

DEVICE STATUS TABLE ADDRESS

DST1 DSTADRS IDST MUST BE MOD(400)

SBTTL LEGAL ADDRESS RESOLUTION SUBROUTINE LARS

..... MOD APR 74
THIS ROUTINE VERIFIES THAT THE CONTENTS OF THE "DXMO"


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1105      ; AND THE "CUAR" REGISTERS SATISFY THE "M900" MODULE
1106      ; SELECTION REQUIREMENTS FOR THE SETTING OF THE "DXCB"
1107      ; BITS 1 AND 0 "ADRECC + ADRECD",
1108      ;
1109      LARS1 CLR      CBMAPS      ;INITIALIZE VERIFICATION CONTROL
1110      MOV      R0,(PC)+      ;SAVE R0
1111      XXS11  #
1112      MOV      #LEGAL,ADRS,R0 ;FETCH TABLE SCAN BASE
1113      MOV      #DXMO,(PC)+
1114      LOCMD1 #
1115      BICB     #17,LOCMD      ;RECORDED DXMO CONTENTS
1116      W1S1    MOV      (R0)+,(PC)+
1117      ZXX1    #
1118      BIC      #17,ZXX        ;RECORDED SCAN ENTRY
1119      CMPB     LOCMD,ZXX      ;CHECK "DXMO" RANGE COMPARE
1120      BEQ      RANGE        ;(YES) BRANCHES
1121      CMP      #=1,(R0)      ;CHECK SCAN COMPLETED
1122      BNE     W1S           ;(NO) BRANCHES
1123      BR      OUTSS         ;(YES) EXIT
1124
1125      ;
1126      ; ENTRY AT RANGE BELOW SIGNIFIES "DXMO" IS WITHIN "M900"
1127      ; SELECTION RANGE AND IS CAPABLE OF GENERATING EITHER
1128      ; ADRECC OR ADRECD + ADRECC,
1129      ;
1129      RANGE1 MOV      PCJAR,(PC)+
1130      LOCAR1 #
1131      BICB     RDX,LOCAR      ;RECORDED CUAR CONTENTS
1132      CMPB     PCJAR,DXMO     ;TEST FOR ADRECC + ADRECD
1133      BNE     ZS             ;(NO) BRANCHES
1134      ; ADRECC+ADRECD COMPARE SET DXCB BITS 1 + 0
1135      BIS      #3,CBMAPS
1136      ZS1     MOV      #DXMO,LOCMD
1137      BICB     RDX,LOCMD
1138      BIC      #360,LOCMD
1139      BIC      #360,LOCAR
1140      CMPB     LOCMD,LOCAR   ;TEST FOR ADRECC
1141      BNE     OUTSS         ;(NO) BRANCHES
1142      ; ADDRESS COMPARE SET DXCB BIT 1
1143      BIS      #2,CBMAPS     ;(YES) SET DXCB BIT 1
1144      OUTSS1  MOV      XXS1,R0 ;RESTORE R0
1145      RTS      PC
1146      ;..... MOD APR 74 .....
1147
1148
1149
1150
1151
1152      ;SBTTL POWER FAIL
1153
1154
1155      ;POWER FAIL ROUTINE
1156      ;IF SELECTED VERIFY STATUS IN IS UP
1157      ;AND CE AND DE ARE PRESENTED AS STATUS
1158

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1159	001634	104003			PFAILI	SAVRG		
1160	001636	010637	026960			MOV	R6,SAVR6	
1161	001642	012737	001720	000024		MOV	#PWRJP,24	
1162	001650	032777	020000	177432		BIT	#SEL0,PUXMO	
1163	001656	001417				BEQ	15	
1164	001660	032777	100000	177424		BIT	#OPLI,PUXMI	
1165	001666	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
1166	001670	104000				ERROR		I
1167	001672	032777	004000	177412		BIT	#STAI,PUXMI	
1168	001700	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
1169	001702	104000				ERROR		I
1170	001704	122777	000014	177430		CMPB	#CEI,DE,0BUSI	
1171	001712	001401				BEQ	,+4	IBRANCH IF NO ERROR CONDITION
1172	001714	104000				ERROR		I
1173	001716	000000			151	HALT		

POWER UP ROUTINE

1174								
1175								
1176								
1177	001720	000240			PWRUP:	NOP		IPATCH ANYONE?
1178	001722	013706	026960			MOV	SAVR6,R6	
1179	001726	104004				RSTRG		
1180	001730	012737	001034	000024		MOV	#PFAIL,24	IRESTORE POWER FAIL VECTOR
1181	001736	013777	001436	177336		MOV	SPW,PUXUS	IRESTORE OFFSET REG
1182	001744	004737	026426			JSR	PC,RESRES	IRESET AND RESTORE
1183	001750	005027				CLR	(PC)+	INSTALL FOR MECHANICS
1184	001752	000000				B		
1185	001754	005337	001752			DEC	,+2	
1186	001760	001375				BNE	,+4	
1187	001762	000004	026962			TYPE	,PFL0	POWER FAILED
1188								
1189								
1190								
1191								
1192								
1193								
1194	001766	012637	177776			MOV	(SP)+,PS	
1195	001772	000177	020422			JMP	0RETJRN	
1196								
1197								
1198								
1199								

1200								
1201								
1202		001776						
1203		002000						
1204								
1205								
1206								
1207		000000						
1208								
1209								
1210								
1211	002000	027000				ERRDST		IDEVICE STATUS TABLE IS AT ERRDST
1212	002002	027000				ERRDST		IDEVICE STATUS TABLE IS AT ERRDST

1213	002004	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1214	002006	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1215	002010	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1216	002012	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1217	002014	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1218	002016	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1219	002020	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1220	002022	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1221	002024	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1222	002026	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1223	002030	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1224	002032	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1225	002034	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1226	002036	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 1

1230	002040	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1231	002042	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1232	002044	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1233	002046	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1234	002050	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1235	002052	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1236	002054	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1237	002056	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1238	002060	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1239	002062	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1240	002064	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1241	002066	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1242	002070	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1243	002072	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1244	002074	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1245	002076	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 2

1249	002100	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1250	002102	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1251	002104	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1252	002106	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1253	002110	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1254	002112	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1255	002114	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1256	002116	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1257	002120	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1258	002122	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1259	002124	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1260	002126	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1261	002130	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1262	002132	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1263	002134	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1264	002136	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 3

1265
1266

1267									
1268	0J2140	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1269	0J2142	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1270	0J2144	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1271	0J2146	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1272	0J2150	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1273	0J2152	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1274	0J2154	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1275	0J2156	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1276	0J2160	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1277	0J2162	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1278	0J2164	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1279	0J2166	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1280	0J2170	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1281	0J2172	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1282	0J2174	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1283	0J2176	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 4

1284									
1285									
1286									
1287	0J2200	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1288	0J2202	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1289	0J2204	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1290	0J2206	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1291	0J2210	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1292	0J2212	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1293	0J2214	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1294	0J2216	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1295	0J2220	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1296	0J2222	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1297	0J2224	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1298	0J2226	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1299	0J2230	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1300	0J2232	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1301	0J2234	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1302	0J2236	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 5

1303									
1304									
1305									
1306	0J2240	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1307	0J2242	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1308	0J2244	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1309	0J2246	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1310	0J2250	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1311	0J2252	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1312	0J2254	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1313	0J2256	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1314	0J2260	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1315	0J2262	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1316	0J2264	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1317	0J2266	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1318	0J2270	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1319	0J2272	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1320	0J2274	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

Address	Device	Status	Pointer	Word	Table	IS	AT	ERRDST
1321	#02276	027000						ERRDST
1322								
1323								
1324								
I STATUS POINTER WORDS FOR CU 6								
1325	#02300	027000						ERRDST
1326	#02302	027000						ERRDST
1327	#02304	027000						ERRDST
1328	#02306	027000						ERRDST
1329	#02310	027000						ERRDST
1330	#02312	027000						ERRDST
1331	#02314	027000						ERRDST
1332	#02316	027000						ERRDST
1333	#02320	027000						ERRDST
1334	#02322	027000						ERRDST
1335	#02324	027000						ERRDST
1336	#02326	027000						ERRDST
1337	#02330	027000						ERRDST
1338	#02332	027000						ERRDST
1339	#02334	027000						ERRDST
1340	#02336	027000						ERRDST
1341								
1342								
1343								
I STATUS POINTER WORDS FOR CU 7								
1344	#02340	027000						ERRDST
1345	#02342	027000						ERRDST
1346	#02344	027000						ERRDST
1347	#02346	027000						ERRDST
1348	#02350	027000						ERRDST
1349	#02352	027000						ERRDST
1350	#02354	027000						ERRDST
1351	#02356	027000						ERRDST
1352	#02360	027000						ERRDST
1353	#02362	027000						ERRDST
1354	#02364	027000						ERRDST
1355	#02366	027000						ERRDST
1356	#02370	027000						ERRDST
1357	#02372	027000						ERRDST
1358	#02374	027000						ERRDST
1359	#02376	027000						ERRDST
1360								
1361								
1362								
I STATUS POINTER WORDS FOR CU 10								
1363	#02400	027000						ERRDST
1364	#02402	027000						ERRDST
1365	#02404	027000						ERRDST
1366	#02406	027000						ERRDST
1367	#02410	027000						ERRDST
1368	#02412	027000						ERRDST
1369	#02414	027000						ERRDST
1370	#02416	027000						ERRDST
1371	#02420	027000						ERRDST
1372	#02422	027000						ERRDST
1373	#02424	027000						ERRDST
1374	#02426	027000						ERRDST

1375	002433	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1376	002432	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1377	002434	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1378	002436	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 11

1381									
1382	002440	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1383	002442	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1384	002444	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1385	002446	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1386	002450	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1387	002452	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1388	002454	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1389	002456	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1390	002460	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1391	002462	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1392	002464	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1393	002466	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1394	002470	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1395	002472	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1396	002474	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1397	002476	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 12

1400									
1401	002500	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1402	002502	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1403	002504	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1404	002506	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1405	002510	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1406	002512	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1407	002514	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1408	002516	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1409	002520	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1410	002522	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1411	002524	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1412	002526	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1413	002530	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1414	002532	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1415	002534	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1416	002536	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 13

1417									
1418									
1419									
1420	002540	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1421	002542	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1422	002544	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1423	002546	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1424	002550	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1425	002552	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1426	002554	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1427	002556	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1428	002560	027000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

1429	002562	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1430	002564	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1431	002566	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1432	002570	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1433	002572	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1434	002574	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1435	002576	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 14

1436									
1437									
1438									
1439	002600	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1440	002602	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1441	002604	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1442	002606	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1443	002610	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1444	002612	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1445	002614	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1446	002616	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1447	002620	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1448	002622	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1449	002624	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1450	002626	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1451	002630	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1452	002632	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1453	002634	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1454	002636	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 15

1455									
1456									
1457									
1458	002640	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1459	002642	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1460	002644	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1461	002646	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1462	002650	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1463	002652	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1464	002654	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1465	002656	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1466	002660	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1467	002662	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1468	002664	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1469	002666	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1470	002670	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1471	002672	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1472	002674	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1473	002676	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 16

1474									
1475									
1476									
1477	002700	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1478	002702	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1479	002704	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1480	002706	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1481	002710	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1482	002712	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

1483	002714	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1484	002716	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1485	002720	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1486	002722	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1487	002724	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1488	002726	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1489	002730	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1490	002732	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1491	002734	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1492	002736	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 17

1493									
1494									
1495									
1496	002740	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1497	002742	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1498	002744	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1499	002746	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1500	002750	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1501	002752	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1502	002754	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1503	002756	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1504	002760	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1505	002762	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1506	002764	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1507	002766	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1508	002770	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1509	002772	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1510	002774	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST
1511	002776	027000	ERRDST	IDevice	STATUS	TABLE	IS	AT	ERRDST

,SBTTL TUMBLE TABLE
,=, ISTART OF TUMBLE TABLE
,BLKW 256, IRESERVE 265, WORDS FOR TT
ENDTT=,

1512
1513
1514 003000
1515
1516 003000 000400
1517
1518 004000
1519
1520
1521


```

1522 | .....
1523 | TEST 1 BYTE REFERENCE TEST
1524 | .....
1525 004000 104400 TST11 SCOPE
1526 004002 012737 000001 022414 MOV #1,0#ICOUNT ITERATION COUNT
1527 004010 012737 000001 023442 MOV #1,0#ERTSTN ISAVE TEST # FOR ERROR REPORT
1528 004016 012737 004024 022420 MOV #SCP1,0#RETURN ISCOPE LOOP RETURN ADRS
1529 004024 SCP11
1530
1531
1532 004024 012737 004124 000004 MOV #RFR3,4 IPDINT TIMEOUT TRAP TO REF ERROR
1533 004032 012737 000340 000006 MOV #LEVEL7,0 ITIMEOUT AT LEVEL 7
1534
1535 004040 013701 001320 MOV CUAN,R1 ILOW BYTE OF CUCA
1536 004044 105711 TSTB R1 IREF CUADRS REGISTER
1537 004046 005201 INC R1 IINC TO CMD REG
1538 004050 105711 TSTB R1 IREF CU CMD REG
1539
1540 004052 013701 001330 MOV CUCH,R1 ILOW BYTE OF OXOS
1541 004056 105711 TSTB R1 IREF CU STATUS REG
1542 004060 005201 INC R1 IINC TO OFFSET REG
1543 004062 105711 TSTB R1 IREF CU OFFSET REGISTER
1544
1545 004064 013701 001330 MOV BUS0,R1 ILOW BYTE OF OXMO
1546 004070 105711 TSTB R1 IREFERENCE BUS0
1547 004072 005201 INC R1 IINC TO CON0
1548 004074 105711 TSTB R1 IREFERENCE CON0
1549
1550 004076 013701 001342 MOV BUS1,R1 ILOW BYTE OF OXM1
1551 004102 105711 TSTB R1 IREF BUS1
1552 004104 005201 INC R1 IINC TO CON1
1553 004106 105711 TSTB R1 IREF CON1
1554
1555 004110 013701 001340 MOV #ISC,R1 ILOW BYTE OF OXES
1556 004114 105711 TSTB R1 IREF MISCELLANEOUS BITS
1557 004116 005201 INC R1 IINC TO YNDX
1558
1559 004120 105711 TSTB R1 IREF TUN9LF TABLE INDEX
1560 004122 000402 BR RR6
1561
1562 004124 104000 RFR31 ERROR IMEMORY REFERENCE ERROR
1563 004126 000002 RTI
1564 004130 012737 000000 000024 RR61 MOV #0,4 ILOAD TIMEOUT TRAP WITH
1565 004136 012737 000000 000006 MOV #0,0 I,02, HALT
1566
1567

```

```

1568      | .....
1569      | TEST 2      BUSO BINARY COUNT TEST
1570      | .....
1571      | TST21  SCOPE
1572      |         MOV   #17,#ICOUNT      | ITERATION COUNT
1573      |         MOV   #2,#ERTSTN      | SAVE TEST # FOR ERROR REPORT
1574      |         MOV   #SCP2,#RETURN    | SCOPE LOOP RETURN ADRS
1575      | SCP21
1576
1577
1578      | ,REM  *
1579
1580      | THE FUNCTION OF THIS TEST IS TO VERIFY THE CORRECT OPERATION OF BUS-OUT,
1581      | THIS IS ACCOMPLISHED BY DRIVING A BINARY COUNT THROUGH BUSO, THE
1582      | SOURCE OF THE BINARY COUNT RESIDES IN THE HIGH BYTE OF A MEMORY SCRATCH
1583      | PAD LOCATION SRCNT, THIS ALSO VERIFIES THAT THE BYTE SELECTION LOGIC
1584      | OF THE DXMO WORKS CORRECTLY (I.E. HIGH BYTE DATA DOES NOT GET LOADED INTO
1585      | THE HIGH BYTE IF ONLY THE LOW BYTE IS SELECTED),
1586      | ALSO THE DX RESET FUNCTION IS PARTIALLY CHECKED OUT HERE,
1587
1588      | *
1589
1590      | BIS      #DXFRS,#DXCS      | ISSUE DX RESET
1591      | CMP      #OPLD,#DXMO      | VERIFY MO
1592      | BEQ      ,+4              | BRANCH IF NO ERROR CONDITION
1593      | ERROR    | DXMO=DX RESET MALFUNCTION
1594      | MOV      #480,SRCNT      | START BIN COUNT IN HIGH BYTE
1595      | MOV      #OPLD+1,DSTCNT  | COMPARE ON WORD
1596
1597      | ROT11   MOVB   SRCNT+1,#BUSO | MOVE HIGH BYTE TO LOW BYTE
1598      |         CMP   #DXMO,DSTCNT | COMPARE WORD
1599      |         BEQ   ,+4          | BRANCH IF NO ERROR CONDITION
1600      |         ERROR | BUSO DID NOT LOAD CORRECTLY
1601
1602      | ADD      #480,SRCNT      | INCREMENT SOURCE DATA
1603      | INCB     DSTCNT         | INC DESTINATION DATA
1604      | BNE      ROT11          | BRANCH IF NOT END
1605
1606      | CLRB    #BUSO
1607      | TSTB    #BUSO          | TEST BUSO
1608      | BEQ     ,+4            | BRANCH IF NO ERROR CONDITION
1609      | ERROR   | BUSO DID NOT CLEAR
1610
1611      | IVERIFY DX RESET CLEARS
1612
1613      | MOVB    #=1,#BUSO      | LOAD BUS=OUT
1614      | CMPB    #=1,#BUSO      | VERIFY LOAD
1615      | BEQ     ,+4            | BRANCH IF NO ERROR CONDITION
1616      | ERROR   | BUSO LOAD ERROR
1617      | BIS     #DXFRS,#DXCS   | DX RESET
1618      | TSTB    #BUSO          | VERIFY BUSO 0
1619      | BEQ     ,+4            | BRANCH IF NO ERROR CONDITION
1620      | ERROR   | DX RESET DID NOT CLEAR BUSO
1621

```



```

1622 |..... MOD APR 74 .....
1623 |*                               PHS02 LOCKO MUNG RESET
1624
1625 004332 012777 010000 174750      MOV      #SJP0,0DXMO      ICLEAR OPLO & SET SUPD SO THAT
1626                                     JIT INHIBITS A SYSTEM RESET
1627 004340 012777 077777 174742      MOV      #77777,0DXMO    ILOAD 0XMO
1628 004346 022777 077777 174734      CMP      #77777,0DXMO    IVERIFY LOAD
1629 004354 001401                      BEQ      ,+4             IBRANCH IF NO ERROR CONDITION
1630 004356 104000                      ERROR                                IOXMO LOAD ERROR
1631 004360 042777 000200 174712      BIC      #00NE,0UXCS     IRESET LOCKO
1632 |..... MOD APR 74 .....
1633
1634 004366 052777 000001 174704      BIS      #DXFRS,0DXCS    IISSUE DX RESET
1635 004374 022777 100000 174706      CMP      #0PLO,0DXMO    IVERIFY DX RESET
1636 004402 001401                      BEQ      ,+4             IBRANCH IF NO ERROR CONDITION
1637 004404 104000                      ERROR                                IOXMO-DX RESET MALFUNCTION
1638
1639

```

```

1640 | .....
1641 | JTEST 3 DX BYTE COUNT REG TEST
1642 | .....
1643 | 004406 104400 TST31 SC0PE
1644 | 004410 012737 000001 022414 MOV #1,001COUNT IITERATION COUNT
1645 | 004416 012737 000003 023442 MOV #3,00ERTSTN ISAVE TEST # FOR ERROR REPORT
1646 | 004424 012737 004432 022420 MOV #SCP3,00RETURN ISCOPE LOOP RETURN ADRS
1647 | 004432 SCP31
1648 |
1649 | ,REM *
1650 |

```

THE FUNCTION OF THIS TEST IS TO VERIFY THE READ/WRITE CAPABILITY OF THE DX BYTE COUNT REGISTER AND THAT A DX RESET HAS THE CAPACITY TO ZERO THE DXBC. THIS IS ACCOMPLISHED BY DRIVING A SIMPLE BINARY COUNT THROUGH THE DXBC FROM A SCRATCH-PAD LOCATION (SHCCNT) IN MEMORY. THE TEST ALSO VERIFIES THAT THE DXBC CAN ALSO BE CLEARED BY A CLEAR INSTRUCTION.

```

1659 |
1660 | 004432 005037 025022 CLR SHCCNT
1661 | 004436 013777 025022 174642 BCBC1 MOV SHCCNT,0DXBC
1662 | 004444 023777 025022 174634 CMP SHCCNT,0DXBC
1663 | 004452 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1664 | 004454 104000 ERROR IDXBC DID NOT LOAD CORRECTLY
1665 | 004456 005237 025022 INC SHCCNT
1666 | 004462 022737 177777 025022 CMP #=1,SHCCNT IEND OF TEST COUNT?
1667 | 004470 001362 BNE BCBC ICLR HIGH BYTE
1668 | 004472 005077 174610 CLR 0DXBC IVERIFY 2
1669 | 004476 005777 174604 TST 0DXBC IBRANCH IF NO ERROR CONDITION
1670 | 004502 001401 BEQ ,+4 IDXBC CLEAR MALFUNCTION
1671 | 004504 104000 ERROR ILOAD DX BYTE COUNT
1672 | 004506 012777 177777 174572 MOV #=1,0DXBC IVERIFY LOAD
1673 | 004514 022777 177777 174504 CMP #=1,0DXBC IBRANCH IF NO ERROR CONDITION
1674 | 004522 001401 BEQ ,+4 IDXBC LOAD ERROR
1675 | 004524 104000 ERROR IISSUE DX RESET
1676 | 004526 052777 000001 174544 BIS 0DXFRS,0DXCS IVERIFY DXBC=0
1677 | 004534 005777 174546 TST 0DXBC IBRANCH IF NO ERROR CONDITION
1678 | 004540 001401 BEQ ,+4 IDXBC=DX RESET MALFUNCTION
1679 | 004542 104000 ERROR
1680 |
1681 |

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1721

004544 104400
004546 012737 000001 022414
004554 012737 000004 023442
004562 012737 004570 022420
004573
005037 025022
004574 013777 025022 174502
004602 023777 025022 174474
004610 001401
004612 104000
004614 062737 000002 025022
004622 001364
004624 005077 174454
004630 001401
004632 104000
004634 012777 177777 174442
004642 022777 177770 174434
004650 001401
004652 104000
004654 052777 000001 174416
004662 005777 174410
004666 001401
004670 104000

```

) .....
)TEST 4 DX BASE ADRS REG TEST
) .....
TST41 SCOPE
MOV #1,00ICOUNT ;ITERATION COUNT.
MOV #4,00ERTSTN ;SAVE TEST # FOR ERROR REPORT
MOV #SCP4,00RETURN ;SCOPE LOOP RETURN ADRS
SCP41
.REM *

THE FUNCTION OF THIS TEST IS TO VERIFY THE READ/WRITE CAPABILITY OF THE
DX BUS ADDRESS REGISTER, THIS IS ACCOMPLISHED BY DRIVING A BINARY COUNT
THROUGH THE DXBA FROM A MEMORY SCRATCH-PAD LOCATION CALLED SRCENT, THE
DX RESET FUNCTION IS ALSO VERIFIED AT THIS POINT,

*

BABC1 CLR SRCENT
MOV SRCENT,0DXBA
CMP SRCENT,0DXBA
BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
ERROR ;DXBA LOAD ERROR
ADD #2,SRCENT ;ONLY WORD BOUNDARIES
BNE BABC
CLR 0DXBA
BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
ERROR ;DXBA DID NOT CLEAR
MOV #01,0DXBA ;LOAD DXBA
CMP #02,0DXBA ;WORD BOUNDARIES ONLY
BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
ERROR ;DXBA LOAD ERROR
BIS #DXFRS,0DXCS ;ISSUE DX RESET
TST 0DXBA ;VERIFY DX RESET DXBA
BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
ERROR ;DX RESET & DXBA MALFUNCTION
    
```

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1722 | .....
1723 | ITEST 5 MAINTENANCE CLOCK INIT CHECK
1724 | .....
1725 004672 104400 TST51 SCOPE
1726 004674 012737 000002 022414 MOV #2,00ICOUNT IITERATION COUNT
1727 004702 012737 000005 023442 MOV #5,00ERTSTN ISAVE TEST # FOR ERROR REPORT
1728 004710 012737 004716 022420 MOV #SCP5,00RETURN ISCOPE LOOP RETURN ADNS
1729 004716 SCP51
1730
1731
1732 ,REM *
1733
1734 THE FUNCTION OF THIS EXERCISE IS TO CHECK THE MAINTENANCE CLOCK
1735 FEATURES AND TO ENSURE THAT THE OX11 IS IN PHASE 0 TIME STATE 1.
1736 THIS TEST ALSO VERIFIES THAT DX RESET CLEARS TIMER DISABLE AND
1737 MAINTENANCE CLOCK ENABLE,
1738
1739 *
1740
1741 004716 052777 000010 174374 BIS #TIMDIS,0DXES ISET TIMER DISABLE (9 SEC OPL1)
1742 004724 032777 000010 174306 BIT #TIMDIS,0DXES IVERIFY TIMER DISABLE SET
1743 004732 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1744 004734 104000 ERROR ITIMDIS DID NOT SET
1745 004736 032777 000002 174394 BIT #MCKEN,0DXES IIS MAINTENANCE CLOCK ENABLE STUCK
1746 004744 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1747 004746 104000 ERROR IMCKEN IS NOT CLEAR
1748 004750 052777 000002 174342 BIS #MCKEN,0DXES ISET MAIN CLK ENABLE
1749 004756 032777 000002 174334 BIT #MCKEN,0DXES IVERIFY MCKEN SET
1750 004764 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1751 004766 104000 ERROR IMCKEN IS NOT SET
1752 004770 042777 000002 174322 BIC #MCKEN,0DXES IDOES MCKEN CLEAR
1753 004776 032777 000002 174314 BIT #MCKEN,0DXES
1754 005004 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1755 005006 104000 ERROR IMCKEN STUCK HIGH
1756 005010 052777 000002 174302 BIS #MCKEN,0DXES ISET MAINT. CLOCK
1757 005016 032777 000002 174274 BIT #MCKEN,0DXES IVERIFY SET
1758 005024 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1759 005026 104000 ERROR IMCKEN NOT SET
1760 005030 000005 RESET IISSUE RESET
1761 005032 032777 000002 174200 BIT #MCKEN,0DXES IVERIFY DX RESET CLEARED SAME
1762 005040 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1763 005042 104000 ERROR IDX RESET DID NOT CLEAR MCKEN
1764 005044 032777 000010 174246 BIT #TIMDIS,0DXES IVERIFY TIMER-DISABLE CLEARED
1765 005052 105777 174242 TSTB 0DXES IVERIFY ALL MISC. CLEARED
1766 005056 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1767 005060 104000 ERROR IMISC BITS OF ES NOT CLEARED
1768 005062 005777 174232 TST 0DXES IVERIFY ENTIRE OXES 0
1769 005066 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1770 005070 104000 ERROR ITYNDX NOT ZERO
1771
1772

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1773 | .....
1774 |TEST 6 VERIFY PHASE, STATE AND MAINT CLK PULSE
1775 | .....
1776 005072 104400 TST61 SCOPE
1777 005074 012737 000020 022414 MOV #20,00ICOUNT IITERATION COUNT
1778 005102 012737 000006 023442 MOV #6,00ERTSTN ISAVE TEST # FOR ERROR REPORT
1779 005112 012737 005116 022420 MOV #SCP6,00RETURN ISCOPE LOOP RETURN ADRS
1780 005116 SCP61
1781
1782
1783 ,REM *
1784
1785 VERIFY THAT MCLKP MAINTENACE CLOCK PULSE, CHANGES
1786 STATE OF TSSF FLIP-FLOP AND DX REMAINS IN PHASE 0
1787
1788 *
1789
1790 005116 052777 000002 174174 BIS #MCLKEN,0DXES ISET MAINT CLK ENABLE
1791 005124 032777 000002 174106 BIT #MCLKEN,0DXES I
1792 005132 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1793 005134 104000 ERROR IMCLKEN NOT SET
1794 005136 017727 174152 MOV #DXC9,(PC)+ ISAVE CONTROL BITS
1795 005142 000000 SCRTCH1 * IHENE
1796 005144 042737 107777 005142 BIC #107777,00SCRTCH ICLEAR ALL BUT CONTROL FLOPS
1797 005152 005737 005142 TST #00SCRTCH ICHECK FOR PHASE 0
1798 005156 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1799 005160 104000 ERROR IDX NOT IN PHASE ZERO
1800
1801
1802 |TRACE TSSF
1803
1804
1805
1806
1807 005162 017737 174126 005142 MOV #DXC9,00SCRTCH ISAVE CONTROL BITS
1808 005170 042737 173777 005142 BIC #173777,00SCRTCH ICLEAR ALL BUT TSSF BIT
1809 005176 013737 005142 025030 MOV #00SCRTCH,00TSSF ISAVE TSSF IN TSSF TRACE
1810 005204 032777 000001 174106 BIT #MCLKP,0DXES IIS MCLKP STUCK HIGH
1811 005212 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1812 005214 104000 ERROR IMCLKP STUCK HIGH
1813 005216 052777 000001 174074 BIS #MCLKP,0DXES ISETP MAINT CLK
1814 005224 033777 025030 174002 BIT TSSF,0DXC9 IMAK TSSF COMPLIMENTED
1815 005232 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1816 005234 104000 ERROR ITSSF DID NOT COMPLIMENT
1817 005236 032777 000001 174054 BIT #MCLKP,0DXES IIS MCLKP STUCK HIGH
1818 005244 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1819 005246 104000 ERROR IMCLKP STUCK HIGH
1820 005250 052777 000001 174042 BIS #MCLKP,0DXES ITRY IT AGAIN
1821 005256 005137 025030 COM #00TSSF
1822 005262 042737 173777 025030 BIC #173777,00TSSF ICLEAR ALL BUT TSSF
1823 005270 033777 025030 174016 BIT TSSF,0DXC9 IVERIFY TSSF COMPLIMENTED
1824 005276 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1825 005300 104000 ERROR ITSSF DID NOT COMPLIMENT
1826
ILEAVE DX IN PHASE 0 TS1

```

1827								
1828	035302	032777	004000	174004	VPS11	BIT	0TSSF,0UXCR	ICHECK TIME STATE
1829	035310	001010				RNE	VPS2	IBRANCH IF TS1
1830	035312	052777	000001	174000		RIS	0MCLKP,0DXES	IADVANCE TO TS1
1831	035320	032777	004000	173706		BIT	0TSSF,0UXCR	ITS1?
1832	035326	001001				RNE	,+4	IBRANCH IF NO ERROR CONDITION
1833	035333	104000				ERROR		IWRONG TIME STATE
1834	035332	017737	173756	009142	VPS21	MOV	0DXC3,00SCRTCH	ISAVE CONTROL BITS
1835	035340	042737	107777	009142		BIC	0107777,00SCRTCH	ICLEAR ALL BUT PHASE CONTROL BITS
1836	035346	001401				REQ	,+4	IBRANCH IF NO ERROR CONDITION
1837	035350	104000				ERROR		IPHASE ERROR
1838	035352	042777	000002	173740		BIC	0MCLKEN,0DXES	ICLEAR MAINT CLK ENABLE
1839								
1840								


```

1841 | .....
1842 | TEST 7 SYSTEM RESET AND TT ENTRY
1843 | .....
1844 005360 104400 TST71 SCOPE
1845 005362 012737 000020 022414 MOV #27,0#ICOUNT ;ITERATION COUNT
1846 005373 012737 000007 023442 MOV #7,0#ERTSTM ;SAVE TEST # FOR ERROR REPORT
1847 005376 012737 005404 022420 MOV #SCP7,0#RETURN ;SCOPE LOOP RETURN ADRS
1848 005404 SCP71
1849
1850 005404 024737 021060 JSR PC,DXRES
1851
1852 ,REM *
1853
1854 THE FUNCTION OF THIS TEST IS TO VERIFY THAT THE DX11 CAN DO A SYSTEM
1855 RESET AND RECORD THE OCCURANCE OF THIS EVENT IN THE TUMBLE TABLE,
1856 A SYSTEM RESET OCCJMS WHEN OPERATION-OUT CONTROL LINE DROPS, WHEN
1857 THIS HAPPENS THE DX IS REQUIRED TO DESELECT WITHIN SIX MICRO-SECONDS
1858 AND RECORD THE EVENT BY STORING THE CONTENTS OF THE DXCA AND DXDS
1859 IN THE TUMBLE TABLE,
1860 THIS TEST IS EXECUTED IN THE MAINTENANCE CLOCK MODE IN ORDER THAT
1861 KEY TRANSIENTS MAY BE CHECKED,
1862
1863 *
1864
1865
1866 005410 022777 100000 173672 CMP #0PL0,0#DXMD ;CHECK MAINTENANCE OUT REQ
1867 005416 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1868 005420 104000 ERROR ;ILLEGAL MO BIT SET
1869 005422 105777 173700 TSTB #CUAR ;VERIFY CU ADRS REG ZERO
1870 005426 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1871 005430 104000 ERROR ;CUAR NOT ZERO
1872 005432 112777 177777 173606 MOVB #-1,0#CUAR ;FILL CUAR WITH ONES
1873 005440 122777 177777 173600 CMPB #-1,0#CUAR ;AND VERIFY LOAD
1874 005446 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1875 005450 104000 ERROR ;CUAR LOAD ERROR
1876 005452 117737 173600 021404 MOVB #CJAR,0#CAMAP ;UPDATE MAP
1877 005460 032777 010000 173606 BIT #SYRSY,0#DXDS ;CHECK SYRSY NOT SET
1878 005466 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1879 005470 104000 ERROR ;PREMATURE SYRSY
1880 005472 032777 001000 173606 BIT #SYNC,0#DXBC ;PHASE-STATE SYNC SHOULD BE 0
1881 005500 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1882 005502 104000 ERROR ;SYNC FLOP NOT ZERO
1883 005504 032777 000200 173506 BIT #DONE,0#DXCS ;DONE SHOULD BE ZERO
1884 005512 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
1885 005514 104000 ERROR ;DONE NOT ZERO
1886 005516 012777 007000 173540 MOV #SRTTC,0#DXIV ;SET UP INTERRUPT VECTOR
1887 005524 013777 001270 173534 MOV #XPRT,0#DXIS ;SET UP INTERRUPT STATUS
1888 005532 012737 000340 177776 MOV #LEVEL7,PS ;LOCK OUT INTERRUPTS
1889 005540 052777 000100 173532 BIS #INTEN,0#DXCS ;SET INTERRUPT ENABLE
1890 005546 032777 000100 173524 BIT #INTEN,0#DXCS ;VERIFY INTEN SET
1891 005554 001001 BNE ,+4 ;BRANCH IF NO ERROR CONDITION
1892 005556 104000 ERROR ;INTEN NOT SET
1893 005560 017737 173514 021416 MOV #DXCS,0#CSMAP ;UPDATE MAP
1894 005566 052777 000012 173524 BIS #MCLKEN;TMDIS,0#DXES ;SET MCLKEN

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1895 005574 022777 000012 173516      CMP      #MCLKEN;TIMDIS,0DXES      |
1896 005602 001401                      BEQ      ,+4                      |BRANCH IF NO ERROR CONDITION
1897 005604 104000                      ERROR   |ILLEGAL ES BIT SET
1898 005606 052737 000012 021504      BIS      #MCLKEN;TIMDIS,0ESMAP
1899
1900
1901                                     |ENTER PHASE ZERO, TIMESTATE ONE
1902
1903 005614 032777 004000 173472      BIT      #TSSF,0DXCB      |TEST FOR TSI
1904 005622 001003                      BNE     VPSX      |BRANCH IF TIMESTATE ONE
1905 005624 052777 000001 173466      BIS      #MCLKP,0DXES      |ISSUE CLOCK PULSE
1906 005632 022777 004000 173494      VPSXI   CMP      #TSSF,0DXCB      |VERIFY TSI
1907 005640 001401                      BEQ      ,+4                      |BRANCH IF NO ERROR CONDITION
1908 005642 104000                      ERROR   |ILLEGAL CB BIT SET
1909 005644 042777 100000 173436      BIC      #OPLO,0DXMO      |OPLO=0, CAUSES SYSRST
1910 005652 004737 021366                      JSR     PC,CHKREG
1911 005656 004537 021074                      JSR     R5,00CLK      |ROUTINE TO ISSUE CLOCK PULSES
1912 005662 000001                      1                                     |
1913 005664 004737 020744                      JSR     PC,PHST      |CHECK CONTROL BITS FOR
1914 005670 000000                      PHS02      |THIS PHASE AND STATE      PHS02
1915 005672 005777 173412                      TST     0DXMO
1916 005676 001401                      BEQ      ,+4                      |BRANCH IF NO ERROR CONDITION
1917 005700 104000                      ERROR   |OPLO DID NOT CLEAR
1918 005702 005037 021466                      CLR     00MOMAP      |UPDATE MO MAP
1919
1920                                     |SYSTEM RESET BIT MUST BE SET FOR ENTRY
1921                                     |INTO THE TUMBLE TABLE
1922
1923 005706 032777 010000 173300      BIT      #SYSRST,0DXDS      |SYSTEM RESET=1
1924 005714 001001                      BNE     ,+4                      |BRANCH IF NO ERROR CONDITION
1925 005716 104000                      ERROR   |SYSRST DID NOT SET
1926 005720 052737 010000 021372      BIS      #SYSRST,00DSMAP      |UPDATE MAP
1927
1928                                     |IN THE EVENT THAT THE DX IS PROCESSING A
1929                                     |READ OR WRITE COMMAND IOD IS SET FOR
1930                                     |IMMEDIATE EXIT
1931
1932 005726 032777 000200 173360      BIT      #IOD,0DXCB      |I/O DONE = 1
1933 005734 001001                      BNE     ,+4                      |BRANCH IF NO ERROR CONDITION
1934 005736 104000                      ERROR   |IOD NOT SET
1935 005740 052737 000200 021544      BIS      #IOD,00CBMAP      |UPDATE MAP
1936 005746 004737 021366                      JSR     PC,CHKREG
1937
1938 005752 052777 100000 173330      BIS      #OPLO,0DXMO      |RESTORE OPLO
1939 005760 004537 021074                      JSR     R5,00CLK      |ROUTINE TO ISSUE CLOCK PULSES
1940 005764 000001                      1                                     |
1941 005766 004737 020744                      JSR     PC,PHST      |CHECK CONTROL BITS FOR
1942 005772 044000                      PHS41      |THIS PHASE AND STATE      PHS41
1943 005774 022777 100000 173306      CMP      #OPLO,0DXMO      |VERIFY OPLO SET
1944 006002 001401                      BEQ      ,+4                      |BRANCH IF NO ERROR CONDITION
1945 006004 104000                      ERROR   |OPLO DID NOT SET
1946 006006 012737 100000 021466      MOV     #OPLO,0MOMAP      |UPDATE MAP
1947
1948                                     |IN THE EVENT THAT IBM DOES AN IMMEDIATE

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1949
1950
1951
1952
1953 000014 032777 000400 173296 BIT #CUBSY,#DXCS ICUBSY=1
1954 000022 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1955 000024 104000 ERROR ICUBSY DID NOT SET
1956 000026 052737 000400 021416 BIS #CUBSY,#CSMAP
1957 000034 023777 001440 173242 CMP TT,#DXBA IVERIFY BA LOAD
1958 000042 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1959 000044 104000 ERROR ITT TO DXBA TRANSFER ERROR
1960 000046 013737 001440 021442 MOV TT,#BAMAP IUPDATE MAP
1961
1962
1963 000054 105777 173270 TSTB #TTNDX ICHECK FOR PREMATURE INCREMENT
1964 000060 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1965 000062 104000 ERROR ITTNDX INCREMENT ERROR
1966
1967 000064 004737 021332 JSR #C,TTZERO IPREMATURE TT ENTRY
1968
1969 000070 022777 010000 173176 CMP #SYSRST,#DXDS ICHECK FOR SYSTEM RESET
1970 000076 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1971 000100 104000 ERROR IILLEGAL DXDS STATUS
1972
1973 000102 032777 000040 173204 BIT #NPRX,#DXCB INPHX SHOULD BE ZERO
1974 000110 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1975 000112 104000 ERROR INPHX NOT ZERO
1976
1977 000114 032777 001000 173172 BIT #SYNC,#DXCB IPHASE-STATE SYNC SHOULD BE ZERO
1978 000122 001401 BEQ ,+4 IBRANCH IF NO ERROR CONDITION
1979 000124 104000 ERROR ISYNC NOT ZERO
1980 000126 032777 100000 173100 BIT #LOCKO,#DXCB ICHECK FOR LOCKO
1981 000134 001001 BNE ,+4 IBRANCH IF NO ERROR CONDITION
1982 000136 104000 ERROR ILOCKO NOT SET
1983 000140 052737 100000 021544 BIS #LOCKO,#CBMAP IUPDATE MAP
1984
1985
1986
1987 000146 004737 021366 JSR #C,CHKREG
1988 000152 004537 021074 JSR #5,#CLK IROUTINE TO ISSUE CLOCK PULSES
1989 000156 000001 1 I 1 CLOCK PULSE(S)
1990
1991 000160 004737 020744 JSR #C,PHS4 ICHECK CONTROL BITS FOR
1992 000164 040000 PHS42 ITHIS PHASE AND STATE PHS42
1993
1994
1995
1996
1997 000166 017727 173112 MOV #DXBA,(PC)+ ISAVE DX BUS ADDRESS
1998
1999
2000 000172 000000 SBA11 0
2001 000174 032737 000001 000172 BIT #BIT2,#SBA1 IHERE
2002 000176 001401 BEQ ,+4 IBUS ADRS MUST BE EVEN
2003 000178 104000 ERROR IDXBA ADRS ERROR

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2003	006206	032737	001000	006172	BIT	#BIT9, #SBA1	ITT IS OFFSEY BY 1000(0)
2004	006214	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2005	006216	104000			ERROR		IDXBA(09) NOT SET
2006	006220	042737	000777	006172	BIC	#777, #SBA1	ICLEAR ALL BUT CUOR BITS
2007	006226	017727	173050		MOV	#DXUS, (PC)+	ISAVE OFFSET AND STATUS
2008	006232	000000					IHERE
2009	006234	042737	000777	006232	BIC	#777, #SOS1	ICLEAR ALL BUT OFFSET
2010	006242	052737	001000	006232	BIS	#BIT9, SOS1	ISET TT INDEX BIT
2011	006250	023737	006172	006232	CMP	#SBA1, #SOS1	ICHECK OFFSEY TRANSFER
2012	006256	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2013	006260	104000			ERROR		IDXUS TO DXBA TRANSFER ERROR
2014							
2015							
2016							
2017	006262	122777	000001	173060	CMPB	#1, #TTNDX	ITTNDX SHOULD BE 1
2018	006270	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2019	006272	104000			ERROR		ITTNDX INCREMENT ERROR
2020	006274	117737	173050	021565	MOV	#TTNDX, #ESMAP+1	
2021	006302	017737	172776	006172	MOV	#DXBA, #SBA1	ISAVE BUS ADDRESS
2022	006310	042737	177001	006172	BIC	#177001, #SBA1	ICLEAR ALL BUT TTNDX BITS
2023	006316	006237	006172		ASR	#SBA1	IDIVIDE BY TWO
2024	006322	122737	000000	006172	CMPB	#0, #SBA1	IVERIFY DXBA=TTNDX
2025	006330	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2026	006332	104000			ERROR		ITTNDX TO DXBA TRANSFER ERROR
2027	006334	022777	010000	172794	CMP	#SYSRST, #DXND	IVERIFY NPR DATA
2028	006342	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2029	006344	104000			ERROR		IDXUS TO DXND TRANSFER ERROR
2030	006346	052737	010000	021606	BIS	#SYSRST, #NDMAP	
2031	006354	032777	001000	172732	BIT	#SYNC, #DXCB	IPHASE + STATE SYNC=1
2032	006362	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2033	006364	104000			ERROR		ISYNC NOT SET
2034	006366	052737	001000	021544	BIS	#SYNC, #CBMAP	IUPDATE MAP
2035	006374	022777	010000	173036	CMP	#SYSRST, #TT	IVERIFY TT ENTRY
2036	006402	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2037	006404	104000			ERROR		IDXND TO TT TRANSFER ERROR
2038	006406	032777	000200	172664	BIT	#D0NE, #DXCS	IDONE MUST BE ZERO
2039	006414	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2040	006416	104000			ERROR		IDONE NOT CLEAR
2041	006420	032777	000100	172666	BIT	#BYPAS, #DXCB	IBYPAS MUST BE ZERO
2042	006426	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2043	006430	104000			ERROR		IBYPAS NOT ZERO
2044	006432	032777	100000	172694	BIT	#LOCKO, #DXCB	ILOCKOUT MUST BE SET
2045	006440	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2046	006442	104000			ERROR		ILOCKO NOT SET
2047	006444	032777	000001	172692	BIT	#IRS, #DXES1	I"IBM RESET STORED" SET?
2048	006452	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2049	006454	104000			ERROR		IIBM-RESET-STORED NOT SET
2050	006456	032777	000040	172630	BIT	#NPRX, #DXCS	INPRX=1
2051	006464	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2052	006466	104000			ERROR		INPRX NOT SET
2053	006470	052737	000040	021544	BIS	#NPRX, #CBMAP	
2054	006476	032777	000020	172610	BIT	#NPT, #DXCB	INPNT=1
2055	006504	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2056	006506	104000			ERROR		INPNT NOT SET


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2057 006510 052737 000020 021544      BIS      #NPRX, #PCBMAP      IUPDATE MAP
2058
2059
2060
2061      ILOCKOUT SHOULD WRITE PROTECT
2062      I      DXCA = COMMAND + ADDRESS
2063      I      DXCS = CONTROL + STATUS (EXCEPT DONE + INTEN)
2064      I      DXOS = OFFSET + STATUS
2065      I      DXBA = BUS ADDRESS
2066
2067 006516 017727 172554      MOV      @DXCA, (PC)+      ISAVE DXCA
2068      SCA21 000000      IHERE
2069 006524 012777 177777 172544      MOV      #=1, @DXCA      IATTEMPT TO WRITE DXCA
2070 006532 027737 172540 005522      CMP      @DXCA, @SCA2      ICHECK FOR WRITE PROTECTION
2071 006540 001401      BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2072 006542 104000      ERROR      IWRITE PROTECT ERROR
2073 006544 017727 172530      MOV      @DXCS, (PC)+      ISAVE CONTROL AND STATUS BITS
2074 006550 000000      SCS21 0      IHERE
2075 006552 012777 177477 172520      MOV      @177477, @DXCS      IATTEMPT TO WRITE ALL BUT DONE + INTEN
2076 006560 027737 172514 005550      CMP      @DXCS, @SCS2      ICHECK FOR WRITE PROTECTION
2077 006566 001401      BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2078 006570 104000      ERROR      IDXCS WRITE PROTECT ERROR
2079 006572 017727 172500      MOV      @DXBA, (PC)+      ISAVE BUS ADDRESS
2080 006576 000000      SBA21 0      IHERE
2081 006600 012777 177777 172476      MOV      #=1, @DXBA      IATTEMPT TO WRITE ALL ONES
2082 006606 027737 172472 005576      CMP      @DXBA, @SBA2      ICHECK WRITE PROTECTION
2083 006614 001401      BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2084 006616 104000      ERROR      IDXBA WRITE PROTECT ERROR
2085
2086
2087 006620 004737 021366      JSR      PC, CHKREG
2088 006624 004537 021074      JSR      R5, @CLK      IROUTINE TO ISSUE CLOCK PULSES
2089 006630 000001      I      I      1 CLOCK PULSE(S)
2090 006632 004737 020744      JSR      PC, P45T      ICHECK CONTROL BITS FOR
2091 006636 044000      PHS41      ITHIS PHASE AND STATE      PHS41
2092
2093 006640 032777 000040 172446      BIT      #NPRX, @DXCR      INPRX READY FOR NEXT NPR
2094 006646 001401      BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2095 006650 104000      ERROR      INPRX SET
2096 006652 042737 000040 021544      BIC      #NPRX, @PCBMAP      IUPDATE MAP
2097 006660 004537 021074      JSR      R5, @CLK      IROUTINE TO ISSUE CLOCK PULSES
2098 006664 000001      I      I      1 CLOCK PULSE(S)
2099 006666 004737 020744      JSR      PC, P45T      ICHECK CONTROL BITS FOR
2100 006672 040000      PHS42      ITHIS PHASE AND STATE      PHS42
2101 006674 022777 003002 172402      CMP      #3002, @DXBA      IVERIFY BA LOAD
2102 006702 001401      BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2103 006704 104000      ERROR      IDXBA INCREMENT ERROR
2104 006706 017737 172372 021442      MOV      @DXBA, @BAMAP
2105 006714 004737 021366      JSR      PC, CHKREG
2106
2107 006720 004537 021074      JSR      R5, @CLK      IROUTINE TO ISSUE CLOCK PULSES
2108 006724 000001      I      I      1 CLOCK PULSE(S)
2109 006726 004737 020744      JSR      PC, P45T      ICHECK CONTROL BITS FOR
2110 006732 074000      PHS71      ITHIS PHASE AND STATE      PHS71

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2111
2112 006734 032777 000200 172336      BIT      #DONE,#DXCS      IVERIFY DONE SET
2113 006742 001001                    BNE      ,+4             IBRANCH IF NO ERROR CONDITION
2114 006744 104000                    ERROR
2115 006746 052737 000200 021416      BIS      #DONE,#CSMAP    IUPDATE MAP
2116 006754 032777 000200 172342      BIT      #INTREQ,#DXES1 ITEST INTERRUPT REQUEST SET
2117 006762 001001                    BNE      ,+4             IBRANCH IF NO ERROR CONDITION
2118 006764 104000                    ERROR                    IINTREQ NOT SET
2119
2120 006766 012777 007040 172270      MOV      #ILLEG1,#DXIV   ITEMPORILY SET FALSE VECTOR
2121 006774 013737 001270 177776      MOV      DXPR1,PS        ISET PRIORITY SO AS NOT TO INTERRUPT
2122 007002 000240                    NOP
2123 007004 000240                    NOP                    IDITTO
2124 007006 012777 007056 172290      MOV      #SRTTC,#DXIV    IRESTORE
2125
2126 007014 013737 001272 177776      MOV      #LESS1,PS      IALLOW INTERRUPTS(SHOULD CLEAR INTREQ)
2127 007022 005027                    CLR      (PC)+
2128 007024 000000                    151      0
2129 007026 005337 007024      251      DEC      15             IWAIT FOR INTERRUPT
2130 007032 001375                    BNE      25
2131 007034 104000                    ERROR
2132 007036 000424                    BR       OVR1SH
2133
2134 007040 104000                    ILLEG1  ERROR          IDX SHOULD NOT INTERRUPT;;;CHECK PRIORITY CHIP
2135 007042 012716 007110                    MOV      #OVRISR,(SP)   IRTI RETURN ADDRESS
2136 007046 012777 007056 172210      MOV      #SRTTC,#DXIV   IRESTORE
2137 007054 000002                    RTI
2138
2139 007056 032777 000200 172214      SRTTC1  BIT      #DONE,#DXCS ITEST FOR VALID INTERRUPT
2140 007064 001001                    BNE      ,+4             IBRANCH IF NO ERROR CONDITION
2141 007066 104000                    ERROR                    IWEIRD INTERRUPT
2142 007070 032777 000200 172222      BIT      #INTREQ,#DXES IVERIFY INTERRUPT GRANT CLEARED INTREQ
2143 007076 001401                    BEQ      ,+4             IBRANCH IF NO ERROR CONDITION
2144 007100 104000                    ERROR                    IINTREQ NOT ZERO
2145 007102 012716 007110                    MOV      #OVRISR,(SP)   IRTI RETURN ADDRESS
2146 007106 000002                    RTI
2147 007110                    OVR1SR1
2148
2149
2150
2151
2152                    IVERIFY DXND-DXCA
2153 007110 027777 172102 172200      CMP      #DXCA,#DXND    ICOMPARE 2ND TT ENTRY
2154 007116 001401                    BEQ      ,+4             IBRANCH IF NO ERROR CONDITION
2155 007120 104000                    ERROR                    ICA TO NO TRANSFER ERROR
2156 007122 013727 001440                    MOV      TT,(PC)+
2157 007126 000000                    STT21  0
2158 007130 062737 000002 007126      ADD      #2,STT2        IINCREMENT TO 2ND ENTRY
2159 007136 027777 177764 172132      CMP      #STT2,#DXCA    IVALIDATE ENTRY
2160 007144 001401                    BEQ      ,+4             IBRANCH IF NO ERROR CONDITION
2161 007146 104000                    ERROR                    IEND INTO TT TRANSFER ERROR
2162
2163                    IVERIFY PHASE AND STATE SYNC FLOP IS CLEARED
2164

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2165	007150	032777	001000	172136	BIT	#SYNC, #DXCB	ITEST SYNC FLOP
2166	007156	001401			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2167	007160	104000			ERROR		ISYNC NOT ZERO
2168	007162	052737	001000	021544	BIS	#SYNC, #CBMAP	IUPDATE MAP
2169							
2170							
2171							
2172	007170	122777	000002	172192	CHPB	#2, #TTNDX	IREADY FOR 3RD ENTRY
2173	007176	001401			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2174	007200	104000			ERROR		ITTNDX INCREMENT ERROR
2175	007202	117737	172142	021505	MOVB	#TTNDX, #ESHAP+1	
2176							
2177							
2178	007210	032777	001000	172006	IVERIFY	DXBA(15:10)+DXON(15:10)	
2179	007216	001001			BIT	#BIT9, #DXBA	IVERIFY TT OFFSET TO SPW
2180	007220	104000			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2181	007222	017727	172054		ERROR		IDXBA(29) NOT SET
2182	007226	000000			MOV	#DXOS, (PC)+	ISAVE OFFSET + STATUS
2183	007230	042737	001777	007226	SOS3I	0	IHERE
2184	007236	017727	172042		BIC	#1777, #SOS3	ICLEAR ALL BUT OFFSET
2185	007242	000000			MOV	#DXBA, (PC)+	ISAVE BUS ADRES
2186	007244	042737	001777	007242	SBA3I	0	IHERE
2187	007252	023737	007226	007242	BIC	#1777, #SBA3	ICLEAR ALL BUT OFFSET
2188	007260	001401			CHP	#SOS3, #SBA3	ICOMPARE BA + OS
2189	007262	104000			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2190					ERROR		IOS TO DXBA TRANSFER ERROR
2191							
2192	007264	032777	000001	172012	BIT	#BIT7, #DXBA	
2193	007272	001401			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2194	007274	104000			ERROR		IDXBA ADRES ODD
2195							
2196							
2197							
2198							
2199	007276	032777	000040	171774	IVERIFY	SIG14 (PHS71)	
2200	007304	001401			BIT	#STKSTA, #DXCS	ISTACKED STATUS A
2201	007306	104000			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2202	007310	032777	020000	171772	ERROR		ISTACKED STATUS SET
2203	007316	001401			BIT	#SEL0, #DXMO	ISELECT-OUT
2204	007320	104000			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2205	007322	032777	000040	171704	ERROR		ISELECT-OUT SET
2206	007330	001001			BIT	#NPRX, #DXCB	INPH TRANSFER READY
2207	007332	104000			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2208	007334	052737	000040	021544	ERROR		INPHX NOT SET
2209	007342	032777	001000	171744	BIS	#NPRX, #CBMAP	
2210	007350	001401			BIT	#SYNC, #DXCB	IPHASE + STATE SYNC
2211	007352	104000			BEC	,+4	IBRANCH IF NO ERROR CONDITION
2212	007354	042737	001000	021544	ERROR		ISYNC NOT ZERO
2213	007362	004737	021366		BIC	#SYNC, #CBMAP	
2214	007366	004537	021074		JSR	PC, CHKREG	
2215	007372	000001			JSR	R5, #CLK	IROUTINE TO ISSUE CLOCK PULSES
2216	007374	004737	020744		1		I
2217	007400	070000			JSR	PC, P4ST	ICHECK CONTROL BITS FOR
2218					PHS72		ITHIS PHASE AND STATE

1 CLOCK PULSE(S)
PHS72

2273	007614	022737	004000	007604	CMF	#PHASE0,TS1,#SBC6	IVERIFY PHS01
2274	007622	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2275	007624	104000			ERROR		INOT PHASE0 TS1
2276							
2277	007626	032777	000200	171444	BIT	#DONE,#DXCS	I
2278	007634	001401			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2279	007636	104000			ERROR		IDONE NOT SET
2280	007643	032777	100000	171446	BIT	#LOCK0,#DXCB	ILOCK0 MUST BE SET
2281	007646	001401			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2282	007650	104000			ERROR		ILOCK0 NOT SET
2283							
2284	007652	042777	000002	171440	BIC	#MCLKEN,#DXES	ICLEAR MAINTENANCE CLOCK ENABLE
2285							
2286	007660	042777	000200	171412	BIC	#DONE,#DXCS	ICLEAR DONE
2287	007666	032777	000200	171424	BIT	#DONE,#DXCS	IIS DONE CLEARED
2288	007674	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2289	007676	104000			ERROR		IDONE NOT ZERO
2290	007700	032777	100000	171400	BIT	#LOCK0,#DXCB	ILOCK0 MUST BE CLEARED
2291	007706	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2292	007710	104000			ERROR		ILOCK0 NOT CLEARED
2293	007712	032777	001000	171306	BIT	#SYNC,#DXBC	IPHASE AND STATE SYNC
2294	007720	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2295	007722	104000			ERROR		ISYNC NOT ZERO
2296	007724	032777	070000	171302	BIT	#PHASE7,#DXCB	ICHECK FOR PHASE7
2297	007732	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2298	007734	104000			ERROR		INOT PHASE ZERO
2299	007736	032777	100000	171390	BIT	#LOCK0,#DXCB	IVERIFY LOCK000
2300	007744	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2301	007746	104000			ERROR		ILOCK0 SET
2302							
2303	007750	052777	000001	171322	BIS	#DXFRS,#DXCS	IKEEP TTNDX NEAR ZERO
2304	007756	105777	171306		TSYB	#TTNDX	IVERIFY 0X RESET TTNDX
2305	007762	001401			BEG	,+4	IBRANCH IF NO ERROR CONDITION
2306	007764	104000			ERROR		IDX RESET DID NOT CLEAR TTNDX
2307	007766	012737	026414	020314	MOV	#CLR40,#PRE1,1+2	IALLOW SYSRST FOR SCOPE LOOPS
2308							
2309							

```

2310 | .....
2311 |TEST 10 TUMBLE TABLE TRACE TEST
2312 | .....
2313 007774 104400 TST101 SCOPE
2314 007776 012737 002000 022414 MOV #1024,,#N|COUNT |ITERATION COUNT
2315 010004 012737 000010 023442 MOV #10,,#N|ENTSYN |SAVE TEST # FOR ERROR REPORT
2316 010012 012737 010020 022420 MOV #SCP10,,#RETURN |SCOPE LOOP RETURN ADRS
2317 010020 SCP101
2318
2319
2320 ,REM *
2321
2322 THIS TEST SETS UP THE DX INTERRUPT VECTOR TO POINT TO
2323 A ROUTINE THAT TRACES THE TUMBLE TABLE INDEX REGISTER TO
2324 VERIFY INCREMENTING AND RAP AROUND; THE TUMBLE TABLE ITSELF
2325 IS ALSO CHECKED FOR VALID ENTRIES,
2326 *
2327
2328 010020 042777 000200 171292 BIC #DONE,#DXCS |CLM LOCK0 IF SET
2329 010026 001401 BEQ ,+4 |BRANCH IF NO ERROR CONDITION
2330 010030 104000 ERROR |ILLEGAL CS BIT SET
2331 010032 052777 000001 171200 BIS #DXFRS,#DXCS |ISSUE DX RESET TO ZERO TTNDX
2332 010040 105777 171304 TSTB #TTNDX |
2333 010044 001401 BEQ ,+4 |BRANCH IF NO ERROR CONDITION
2334 010046 104000 ERROR |TTNDX NOT ZERO
2335 010050 005037 010232 CLR #STRANDX |CLEAR TTNDX TRACE
2336 010054 013737 001440 010230 MOV TT,#STRATT |INIT SOFTWARE TT POINTER
2337 010062 012777 022074 171174 MOV #FALSE,#DXIV |SET UP FALSE INTERRUPT VECTOR
2338 010070 032777 000200 171202 BIT #DONE,#DXCS |DONE MUST=0
2339 010076 001401 BEQ ,+4 |BRANCH IF NO ERROR CONDITION
2340 010100 104000 ERROR |DONE NOT ZERO
2341 010102 052777 000100 171170 BIS #INTEN,#DXCS |SET INTERRUPT ENABLE
2342 010110 032777 000100 171102 BIT #INTEN,#DXCS |VERIFY INTEN SET
2343 010116 001001 BNE ,+4 |BRANCH IF NO ERROR CONDITION
2344 010120 104000 ERROR |INTEN NOT SET
2345 010122 012777 177777 171106 MOV #=1,#DXCA |ATTMP TO LOAD DXCA WITH ALL ONES
2346 010130 022777 000377 171100 CMP #377,#DXCA |ONLY CUAR SHOULD BE LOADED
2347 010136 001401 BEQ ,+4 |BRANCH IF NO ERROR CONDITION
2348 010140 104000 ERROR |DXCA LOAD ERROR
2349 010142 013737 001272 177776 MOV #LESS1,PS |SET PS TO DX PRIORITY=1
2350 010150 012737 010172 022420 MOV #TTTST,#RETURN |SET UP SCOPE RETURN ADRS
2351 010156 013777 001270 171102 MOV #DXPRY,#DXIS |LOAD INTERRUPT STATUS
2352 010164 012777 010234 171072 MOV #TRASHV,#DXIV |SET UP VALID INTERRUPT VECTOR
2353 010172 032777 100000 171110 TTTST1 BIT #OPLO,#DXMO |OPERATIONAL=OUT MUST BE UP
2354 010200 001001 BNE ,+4 |BRANCH IF NO ERROR CONDITION
2355 010202 104000 ERROR |OPLO NOT SET
2356
2357 ;DROP OPLO; THIS SHOULD CAUSE AN IBM RESET, THE
2358 IDX MUST RECORD THIS EVENT BY ENTERING THE DXDS AND
2359 IDXCA INTO THE TUMBLE TABLE, DONE SIGNIFIES COMPLETION
2360
2361 010204 042777 100000 171076 BIC #OPLO,#DXMO |CAUSE AN IBM RESET
2362 010212 005027 CLR (PC)+ |DELAY
2363 010214 000000 SRSTL 0 |FOR INTERRUPT

```


2364	010216	005237	010214		INC	SRSTL		
2365	010222	001375			BNE	SRSTL+2		
2366	010224	104000			ERROR			IOX FAILED TO INTERRUPT
2367	010226	000466			BR	OVRTRA		
2368								
2369								
2370								
2371	010230	000000			TRATT	0		ITUMBLE TABLE TRACE
2372	010232	000000			TRANDX	0		ITYNDX TRACE
2373								
2374	010234	062737	000002	010232	TRASRV	ADD	#2,0#TRANDX	IINCREMENT TYNDX TRACE
2375	010242	123777	010232	171100		CMPS	0#TRANDX,0#TTNDX	IOID TYNDX GET INCREMENTED
2376	010250	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION
2377	010252	104000				ERROR		ITYNDX INCREMENT ERROR
2378	010254	022777	010000	177746		CMPS	0#SYSRST,0#TRATT	IVALIDATE DXDS ENTRY
2379	010262	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION
2380	010264	104000				ERROR		IOXDS TO TY TRANSFER ERROR
2381	010266	062737	000002	010230		ADD	#2,0#TRATT	IINCREMENT TY TRACE TO NEXT ENTRY
2382	010274	022777	000377	177726		CMPS	0377,0#TRATT	IVALIDATE DXCA ENTRY
2383	010302	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION
2384	010304	104000				ERROR		IOXCA TO TY TRANSFER ERROR
2385	010306	062737	000002	010230		ADD	#2,0#TRATT	
2386	010314	032777	100000	170772		BIT	0#LOCKU,0#DXCB	ILOCKO MUST BE SET
2387	010322	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
2388	010324	104000				ERROR		ILOCKO NOT SET
2389	010326	042777	000200	170744		BIC	0#DONE,0#DXCB	ICLEAR DONE, LOCKO
2390	010334	032777	000200	170736		BIT	0#DONE,0#DXCB	ITEST DONE BIT
2391	010342	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION
2392	010344	104000				ERROR		IOONE SET
2393	010346	023727	010230	004000		CMPS	0#TRATT,0#TST1	ICHECK FOR END OF TY
2394	010354	001003				BNE	TRAT	
2395	010356	013737	001440	010230		MOV	0#TY,0#TRATT	IRESTOR TY TRACE
2396	010364	032777	100000	170722	TRAT	BIT	0#LOCKU,0#DXCB	IVERIFY LOCKO CLEARED
2397	010372	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION
2398	010374	104000				ERROR		
2399								
2400	010376	012716	010404			MOV	0#OVRTA,(SP)	IMODIFY RETURN ADDRESS
2401	010402	000002				RTI		
2402								
2403								
2404	010404	052777	100000	170676	OVRTA	BIS	0#PLO,0#XMO	IRESTOR OPERATIONAL=OUT
2405	010412	032777	100000	170670		BIT	0#PLO,0#XMO	
2406	010420	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
2407	010422	104000				ERROR		IOPLO NOT SET
2408								
2409								
2410								
2411								
2412								
2413								
2414								

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2415 | .....
2416 |TEST 11 MAINTENANCE CLOCK [SS SPW(15100)=0
2417 | .....
2418 TST111 SCOPE
2419 #10424 104400 MOV #420,00;COUNT ;ITERATION COUNT
2420 #10426 #12737 #00400 #22414 MOV #11,00ERTSYN ;SAVE TEST # FOR ERROR REPORT
2421 #10434 #12737 #00011 #23442 MOV #SCP11,00RETURN ;SCOPE LOOP RETURN ADRS
2422 #10442 #12737 #10450 #22420 SCP111
2423 #10450
2424 ,REN *
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THE FUNCTION OF THIS TEST IS TO VERIFY THAT THE DX11 CAN EXECUTE
A CHANNEL INITIATED SELECTION AND BYPASS ITS OWN DEVICE STATUS
TABLE FETCH BY PRESENTING THE NON ZERO STATUS CONTAINED IN SPW(07100)
WHILE SPW (15100) IS EQUAL TO ZERO;

INITIALIZE SPW TO BYPASS DST FETCH
BY SETING SPW(15100)=0 AND SPW(07100)=377

```

2458 #10450 #13701 #01430 MOV SPW,R1 ;LOAD SPW ADRS IN R1
2459 #10454 #12702 #00377 MOV #377,R2 ;LOAD R2 WITH CONTENTS OF SPW
2460 #10460 #04737 #26040 JSR PC,S^,1 ;BUILD SPW
2461
2462 #10464 #04737 #21660 JSR PC,00UXHES ;RESET DX AND TT TRACE
2463 #10470 15377 #24774 170630 BLSB #0DEV,0CUAR ;LOAD CUAR/ADDRESS
2464 #10476 12377 #24774 170622 CMPB #0DEV,0CUAR ;VERIFY LOAD
2465 #10504 #01401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
2466 #10506 104000 ERROR ;CUAR LOAD ERROR
2467 #10510 15377 #24774 #21404 BLSB #0DEV,0CANAP ;UPDATE MAP
2468 #10516 #52777 #00002 170574 BIS #MCLKEN,0DXES ;SET MCLKEN IN REGISTER ES

```


2469	010524	052737	000002	021504	BIS	0MCLKEN,00ESMAP	ISEI MCLKEN IN MAP OF ES	
2470	010532	004737	021366		JSR	PC,CHKREG		
2471								
2472							ISTART SEQUENCE OFF IN PHS01	
2473								
2474	010536	032777	004000	170550	BIT	0TSSP,0UXCR	I	
2475	010544	001010			BNE	IS		
2476	010546	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2477	010552	000001			I			1 CLOCK PULSE(S)
2478	010554	032777	004000	170532	BIT	0TSSP,0UXCR	I	
2479	010562	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2480	010564	104000			ERROR		ITIME STATE ERROR	
2481	010566	004737	021366		JSR	PC,CHKREG		
2482								
2483							IESTABLISH CONFIDENCE IN DX STABILITY	
2484								
2485	010572	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2486	010576	000144			100,			100, CLOCK PULSE(S)
2487	010600	004737	021366		JSR	PC,CHKREG		
2488	010604	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2489	010610	004000			PHS01		ITHIS PHASE AND STATE	PHS01
2490							IPUI DEVICE ADRS ON BUS0	
2491							ICLOCK ADRS ONTO BUS0	
2492							ISEI ADRS IN MAP	
2493	010612	053777	024774	170470	BIS	00DEV,00XMO	ILOAD DEVICE ADRS ON BUS0	
2494	010620	123777	024774	170510	CHPB	00DEV,00BUS0	IND BUFFER FLOPS FOR BUS0	
2495	010626	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION	
2496	010630	104000			ERROR		IDXMO LOAD ERROR	
2497	010632	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2498	010636	000002			2			2 CLOCK PULSE(S)
2499	010640	053737	024774	021406	BIS	00DEV,00MOMAP	IUPDATE REGISTER MAP	
2500	010646	004737	021234		JSR	PC,COPARO	ICOPY PARO INTO CLK0 IMAGE	
2501	010652	004737	021366		JSR	PC,CHKREG		
2502	010656	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2503	010662	000010			10			10 CLOCK PULSE(S)
2504	010664	004737	021366		JSR	PC,CHKREG		
2505	010670	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2506	010674	004000			PHS01		ITHIS PHASE AND STATE	PHS01
2507							IRaise ADDRESS OUT	
2508								
2509	010676	052777	004000	170404	BIS	0ADRS,00XMO	ISEI ADRS OUT	
2510	010704	032777	004000	170376	BIT	0ADRS,00XMO	INOT WITHOUT CLOCK	
2511	010712	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION	
2512	010714	104000			ERROR		IADNO NO ZERO	
2513	010716	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2514	010722	000002			2			2 CLOCK PULSE(S)
2515	010724	032777	004000	170356	BIT	0ADRS,00XMO	IVERIFY SET AFTER CLOCK	
2516	010732	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2517	010734	104000			ERROR		IADNO NOT SET	
2518	010736	052737	004000	021406	BIS	0ADRS,00MOMAP	IUPDATE REG MAP	
2519	010744	032777	000002	170342	BIT	0ADRECC,00XCB	ITEST FOR ADRECC	
2520	010752	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2521	010754	104000			ERROR		IADRECC NOT SET	
2522	010756	052737	000002	021544	BIS	0ADRECC,00CBMAP	IUPDATE MAP	

2523	010764	032777	000001	170322	BIF	#ADRECD,0DXCR	ITEST FOR ADRECD	
2524	010772	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2525	010774	104000			ERROR		IADRECD NOT SET	
2526	010776	052737	000001	021544	BIS	#ADRECD,0DCBMAP	IUPDATE MAP	
2527	011004	004737	021366		JSR	PC,CHKREG		
2528	011010	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2529	011014	000010			10		I	10 CLOCK PULSE(S)
2530	011016	004737	021366		JSR	PC,CHKREG		
2531	011022	004737	020744		JSR	PC,P4ST	ICHECK CONTROL BITS FOR	
2532	011026	004000			PHS01		ITHS PHASE AND STATE	PHS01
2533								
2534								
2535	011030	052777	040000	170292			I RAISE HOLD-OUT	
2536	011036	032777	040000	170244	BIS	#HLDD,0UXMO	I RAISE HOLD-OUT	
2537	011044	001401			BIF	#HLDD,0UXMO	INDI WITHOUT CLOCK	
2538	011046	104000			BED	,+4	IBRANCH IF NO ERROR CONDITION	
2539	011050	004537	021074		ERROR		IHLDD NOT BUFFERED	
2540	011054	000002			JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2541	011056	032777	040000	170224	2		I	2 CLOCK PULSE(S)
2542	011064	001001			BIF	#HLDD,0UXMO	IVERIFY HLDD CLOCKED	
2543	011066	104000			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2544	011070	052737	040000	021406	ERROR		IHLDD NOT SET	
2545	011076	004737	021366		BIS	#HLDD,0MOMAP	IUPDATE REG MAP	
2546	011102	004537	021074		JSR	PC,CHKREG		
2547	011106	000010			JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2548	011110	004737	021366		10		I	10 CLOCK PULSE(S)
2549					JSR	PC,CHKREG		
2550								
2551								
2552								
2553								
2554								
2555	011114	052777	020000	170106			I RAISE SELECT-OUT	
2556	011122	032777	020000	170100	BIS	#SELO,0UXMO	INDI WITHOUT CLOCK	
2557	011130	001401			BIF	#SELO,0UXMO	IBRANCH IF NO ERROR CONDITION	
2558	011132	104000			BED	,+4	ISELECT NOT BUFFERED	
2559	011134	004537	021074		ERROR		ISELECT NOT SET	
2560	011140	000002			JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES	
2561	011142	032777	020000	170140	2		I	2 CLOCK PULSE(S)
2562	011144	001001			BIF	#SELO,0UXMO	IVERIFY SELO CLOCKED	
2563	011152	104000			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2564	011154	052737	020000	021406	ERROR		ISELECT NOT SET	
2565					BIS	#SELO,0MOMAP	IUPDATE MAP	
2566								
2567								
2568								
2569								
2570	011162	022777	176777	170122			IADDRESS IS RECOGNIZED	
2571	011170	001405			ICHECK FOR ERRONEOUS PROPOGATION OF SELECT-IN			
2572	011172	022777	177777	170112	IOR PRESENTATION OF STATUS-IN			
2573	011200	001401			CHP	#176777,0DXMI	IDXMI SHOULD BE UNREADABLE	
2574	011202	104000			BED	UNREAD	IDXMI MAY HAVE CLK0	
2575					CHP	#177777,0DXMI	IBRANCH IF NO ERROR CONDITION	
2576					BED	,+4	IDXMI STATE ERROR	
2577					ERROR			
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2577
2578 011204 032777 000400 170006 UNREADI BIT  #CUBSY,#DXCS  ICUBSY SHOULD NOT BE SET
2579 011212 001401          BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2580 011214 104000          ERROR          ICUBSY NOT ZERO
2581 011216 004737 020744          JSR      PC,PHST  ICHECK CONTROL BITS FOR
2582 011222 004000          PHS01          ITHIS PHASE AND STATE          PHS01
2583
2584          ISEE IF ANYTHING UNEXPECTED HAPPENED
2585
2586 011224 032777 004000 170046          BIT  #BSYEN,#DXCS  IBSYEN ENABLE SHOULD NOT BE SET
2587 011232 001401          BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2588 011234 104000          ERROR          IBSYEN SET
2589 011236 004737 021366          JSR      PC,CHKREG
2590
2591          IADVANCE TO PHASE ZERO TIME STATE 2 (PHS02)
2592
2593 011242 004537 021074          JSR      R5,#CLK  IROUTINE TO ISSUE CLOCK PULSES
2594 011246 000001          1          I          1 CLOCK PULSE(S)
2595 011250 004737 020744          JSR      PC,PHST  ICHECK CONTROL BITS FOR
2596 011254 000000          PHS02          ITHIS PHASE AND STATE          PHS02
2597
2598          ILOCKOUT AND SYNC SHOULD = "1"
2599
2600 011256 032777 100000 170030          BIT  #LOCKO,#DXCB  ICHECK LOCKO SET
2601 011264 001001          BNE      ,+4      IBRANCH IF NO ERROR CONDITION
2602 011266 104000          ERROR          ILOCKO NOT SET
2603 011270 052737 100000 021544          BIS  #LOCKO,#CBMAP IUPDATE MAP
2604
2605 011276 032777 001000 170010          BIT  #SYNC,#DXCB  IVERIFY SYNC IN PROGRESS
2606 011304 001001          BNE      ,+4      IBRANCH IF NO ERROR CONDITION
2607 011306 104000          ERROR          ISYNC NOT SET
2608 011310 052737 001000 021544          BIS  #SYNC,#CBMAP IUPDATE MAP
2609
2610          IBYPAS MUST NOT BE SET
2611
2612 011316 032777 000100 167770          BIT  #BYPAS,#DXCB  IVERIFY ISS IN PROGRESS
2613 011324 001401          BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2614 011326 104000          ERROR          IBYPAS SET
2615 011330 004737 021366          JSR      PC,CHKREG
2616
2617          INEXT CLOCK TICK SHOULD FORCE THE BX
2618          IINTO THE ADDRESS RESPONSE PHASE ONE TIME STATE 1
2619 011334 004537 021074          JSR      R5,#CLK  IROUTINE TO ISSUE CLOCK PULSES
2620 011340 000001          1          I          1 CLOCK PULSE(S)
2621 011342 004737 020744          JSR      PC,PHST  ICHECK CONTROL BITS FOR
2622 011346 014000          PHS11          ITHIS PHASE AND STATE          PHS11
2623
2624          ISYNC SHOULD BE CLEARED
2625
2626 011350 032777 001000 167736          BIT  #SYNC,#DXCB  IVERIFY SYNC CLEARED
2627 011356 001401          BEQ      ,+4      IBRANCH IF NO ERROR CONDITION
2628 011360 104000          ERROR          ISYNC SET
2629 011362 042737 001000 021544          BIC  #SYNC,#CBMAP IUPDATE MAP
2630 011370 032777 000400 167702          BIT  #CUBSY,#DXCS  ICU BUSY SHOULD NOT BE SET

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2631 011376 001401          BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2632 011400 104000          ERROR                    ICBUSY SET
2633 011402 127777 167730 167716  CMPB    @BUS0,@CUAR    IVERIFY DEVICE ADRS IN ADRS REG
2634 011413 001401          BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2635 011412 104000          ERROR                    ICUAR TO BUS0 TRANSFER ERROR
2636 011414 113737 024774 021424  MOVB    @DEV,@CAMAP    IUPDATE MAP
2637
2638
2639          IADRS=OUT SHOULD COPY INTO CHIS IF ADRECC=1"
2640          ITHIS INDICATES A CHANNEL INITIATED SELECTION IS IN
2641          IPROGRESS
2642 011422 032777 000200 167644  BIT     @CHIS,@DXDS    ICHIS SET IN DEVICE STATUS REG
2643 011433 001001          BNE     ,+4          IBRANCH IF NO ERROR CONDITION
2644 011432 104000          ERROR                    ITHIS NOT SET
2645 011434 052737 000200 021372  BIS     @CHIS,@DSMAP    IUPDATE MAP
2646
2647          IOPERATIONAL-IN SHOULD BE SET
2648
2649 011442 032777 100000 167642  BIT     @PLI,@DXMI    IVERIFY PLI SET
2650 011450 001001          BNE     ,+4          IBRANCH IF NO ERROR CONDITION
2651 011452 104000          ERROR                    IOPLI NOT SET
2652 011454 052737 100000 021510  BIS     @PLI,@MIMAP    IUPDATE MAP
2653 011462 032777 000400 167622  BIT     @PARI,@DXMI    ICHECK FOR PARITY IN
2654 011470 001001          BNE     ,+4          IBRANCH IF NO ERROR CONDITION
2655 011472 104000          ERROR                    IPARI NOT SET
2656 011474 052737 000400 021510  BIS     @PARI,@MIMAP    IUPDATE MAP
2657
2658          IDXBA LOAD USES ITS OWN CLOCK
2659
2660          IBUS ADDRESS (15110) EQUALS OFFSET REG
2661          IBUS ADDRESS (001001) EQUALS CUAR (07100)
2662
2663 011502 117727 167620          MOVB    @CUAR,(PC)+    ISAVE CUAR(07100)
2664 011506 000000          IMAGBAI 0             IHERE, IMAGE OF EXPECTED BA
2665 011513 006337 011506          ASL     @MAGBA         IMAKE DEV ADRS MOD(2)
2666 011514 042737 177001 011506          BIC     @177001,@MAGBA ICLEAR ALL BUT SHIFTED ADRS
2667 011522 017727 167554          MOV     @DXOS,(PC)+    ISAVE OFFSET AND STATUS
2668 011526 000000          IMAGOSI 0             IHERE, OFFSET IMAGE
2669 011533 042737 001777 011526          BIC     @1777,@MAGOS  ICLEAR ALL BUT OFFSET
2670 011536 053737 011526 011526          BIS     @MAGOS,@MAGBA ICREATE BA IMAGE
2671
2672          IVERIFY BUS ADDRESS REGISTER WAS LOADED CORRECTLY
2673 011544 023777 011506 167532          CMP     @MAGBA,@DXBA  IBA EQUALS EXPECTED BA?
2674 011552 001401          BEQ     ,+4          IBRANCH IF NO ERROR CONDITION
2675 011554 104000          ERROR                    ICUAR TO DXBA TRANSFER ERROR
2676 011556 053737 011506 021442          BIS     @MAGBA,@BAMAP IUPDATE MAP
2677
2678 011564 004737 021366          JSR     PC,CHKREG
2679
2680          IPHASE ONE ADDRESS RESPONSE
2681          IADVANCE DX TO PHASE ONE TIME STATE 2
2682          ISYNC IS ZERO QUALIFYING THE SIGNAL"BAAR"
2683
2684 011570 004537 021074          JSR     R5,@CLK      IROUTINE TO ISSUE CLOCK PULSES

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2685	011574	000001			1				1	1 CLOCK PULSE(S)
2686	011576	004737	020744		JSR	PC,PHST		ICHECK CONTROL BITS FOR		
2687	011602	010000			PHS12			ITHIS PHASE AND STATE		PHS12
2688										
2689										
2690	011604	032777	000040	167502	BIT	#NPRX,0DXCB		INPRX??		
2691	011612	001001			BNE	,+4		IBRANCH IF NO ERROR CONDITION		
2692	011614	104000			ERROR			INPRX NOT ZERO		
2693	011616	052737	000040	021544	BIS	#NPRX,0DCBMAP		IKEEP MAP UP TO DATE		
2694										
2695	011624	032777	001000	167402	BIT	#SYNC,0DXCB		IVENIFY SYNC="1"		
2696	011632	001001			BNE	,+4		IBRANCH IF NO ERROR CONDITION		
2697	011634	104000			ERROR			ISYNC NOT SET		
2698	011636	052737	001000	021544	BIS	#SYNC,0DCBMAP		IUPDATE MAP		
2699										
2700	011644	032777	031000	167422	BIT	#31000,0DXDS		ICHECK FOR NO IBM RESET		
2701	011652	001401			BEO	,+4		IBRANCH IF NO ERROR CONDITION		
2702	011654	104000			ERROR			IBM RESET		
2703										
2704										
2705								IVERIFY BUS ADDRESS DATA WAS TRANSFERRED INTO DXND		
2706	011656	027777	177024	167432	CHP	#14ASBA,0DXND		ICHECK NPR DATA		
2707	011664	001401			BEO	,+4		IBRANCH IF NO ERROR CONDITION		
2708	011666	104000			ERROR			ISPW TO DXND TRANSFER ERROR		
2709	011670	057737	177012	021000	BIS	#14ASBA,0DNDMAP		IUPDATE MAP		
2710										
2711	011676	004737	021366		TEYAGI JSR	PC,CHKREG				
2712	011702	004537	021074		JSR	R5,00CLK		IROUTINE TO ISSUE CLOCK PULSES		
2713	011706	000001			1					1 CLOCK PULSE(S)
2714										
2715	011710	032777	000040	167376	BIT	#NPRX,0DXCB		ITEST FOR NPRX		
2716	011716	001401			BEO	,+4		IBRANCH IF NO ERROR CONDITION		
2717	011720	104000			ERROR			INPRX SET		
2718	011722	042737	000040	021544	BIC	#NPRX,0DCBMAP		IUPDATE MAP		
2719	011730	032777	000040	167302	BIT	#NPRX0,0DXES		ITEST FOR NPR TIME OUT		
2720	011736	001401			BEO	,+4		IBRANCH IF NO ERROR CONDITION		
2721	011740	104000			ERROR			INPRX0 SET		
2722										
2723	011742	004737	021366		JSR	PC,CHKREG				
2724										
2725	011746	004737	020744		JSR	PC,PHST		ICHECK CONTROL BITS FOR		
2726	011752	014000			PHS11			ITHIS PHASE AND STATE		PHS11
2727										
2728	011754	004537	021074		JSR	R5,00CLK		IROUTINE TO ISSUE CLOCK PULSES		
2729	011760	000001			1					1 CLOCK PULSE(S)
2730	011762	004737	020744		JSR	PC,PHST		ICHECK CONTROL BITS FOR		
2731	011766	010000			PHS12			ITHIS PHASE AND STATE		PHS12
2732	011770	004737	021366		JSR	PC,CHKREG				
2733	011774	004537	021074		JSR	R5,00CLK		IROUTINE TO ISSUE CLOCK PULSES		
2734	012000	000001			1					1 CLOCK PULSE(S)
2735	012002	004737	020744		JSR	PC,PHST		ICHECK CONTROL BITS FOR		
2736	012006	024000			PHS21			ITHIS PHASE AND STATE		PHS21
2737										
2738										

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2739          IADVANCE TO STATUS PREPARATION (PHASE TWO TIME STATE ONE)
2740          IVERIFY SIG3 EVENTS TRANSFERRED
2741          ICOPY A ONE INTO BYPAS IF DXND(15100)=0 (NO DSY)
2742
2743 012010 032777 000100 167276          BIT      0BYPAS,0DXCB      IVERIFY DXND(15100)=0 SET BYPAS
2744 012016 001001                      BNE      ,+4          IBRANCH IF NO ERROR CONDITION
2745 012020 104000                      ERROR                      IBYPAS NOT SET
2746 012022 052737 000100 021544          BIS      0BYPAS,00CBMAP  IUPDATE REG MAP
2747
2748          IVERIFY THE LOW (NONZERO) BYTE OF SPW WAS PRESENTED
2749          IAS STATUS BY LOADING DXND(07100) INTO CUSR
2750
2751
2752 012030 127777 177492 167274          CMPB     01MAGBA,0CUSR  IVERIFY SPW(07100) STATUS PRESENT
2753 012036 001401                      BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2754 012040 104000                      ERROR                      ISPW TO CUSH TRANSFER ERROR
2755 012042 117737 167264 021430          MOVB     0CUSR,000SMAP  IUPDATE REG MAP
2756 012050 127777 167292 167204          CMPB     0CJAR,0BUSI   IVERIFY ADRS ON BUSI FOR ECHO
2757 012056 001401                      BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2758 012060 104000                      ERROR                      ICUAR TO BUSI TRANSFER ERROR
2759 012062 017727 167224                      MOV      0DXMI,(PC)+   ISAVE DXMI
2760 012066 000000                      SHIP1  0              IHERE
2761 012070 042737 177000 012006          BIC      017700,00SHIP  ICLEAR ALL BUT ADRS+PARITY
2762 012076 023737 024774 012006          CMP      00DEV,00SHIP  ICOMPARE DEV ADRS+PARITY
2763 012104 001401                      BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2764 012106 104000                      ERROR                      IMI LOAD ERROR
2765 012110 042737 000777 021510          BIC      0777,00MINAP
2766 012116 053737 012006 021510          BIS      SHIP,00MINAP  IUPDATE MAP
2767 012124 032777 001000 167102          BIT      0SYNC,0UXCR   ISYNC ZERO?
2768 012132 001401                      BEQ      ,+4          IBRANCH IF NO ERROR CONDITION
2769 012134 104000                      ERROR                      ISYNC SET
2770 012136 042737 001000 021544          BIC      0SYNC,00CBMAP  IUPDATE MAP
2771
2772          IWAITING FOR ADRI(ADRO DROP) TO COME UP
2773
2774 012144 004737 021366          JSR      PC,CHKREG
2775 012150 004537 021074          JSR      R5,00CLK      IROUTINE TO ISSUE CLOCK PULSES
2776 012154 000001                      1          I
2777 012156 004737 020744          JSR      PC,PHST       ICHECK CONTROL BITS FOR
2778 012162 020000          PHS22          ITHIS PHASE AND STATE          PH22
2779 012164 004537 021074          JSR      R5,00CLK      IROUTINE TO ISSUE CLOCK PULSES
2780 012170 000011                      11         I
2781 012172 004737 020744          JSR      PC,PHST       ICHECK CONTROL BITS FOR
2782 012176 024000          PHS21          ITHIS PHASE AND STATE          PH21
2783 012200 004737 021366          JSR      PC,CHKREG
2784
2785          IDROPPING OF ADRO SHOULD RAISE ADRI
2786
2787 012204 042777 004000 167076          BIC      0ADRO,0UXMO   IDROP ADRO
2788 012212 032777 004000 167070          BIT      0ADRO,0UXMO   INOT WITHOUT CLOCK
2789 012220 001001                      BNE      ,+4          IBRANCH IF NO ERROR CONDITION
2790 012222 104000                      ERROR                      IADRO NOT SET
2791 012224 004537 021074          JSR      R5,00CLK      IROUTINE TO ISSUE CLOCK PULSES
2792 012230 000002                      2          I

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2793	012232	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2794	012236	024000			PHS21		THIS PHASE AND STATE	PHS21
2795	012240	032777	004000	167042	BIT	#ADR0,#DXHD	IADR0 SHOULD DROP	
2796	012246	001401			REQ	,+4	IBRANCH IF NO ERROR CONDITION	
2797	012250	104000			ERROR		IADR0 SET	
2798	012252	042737	004000	021406	BIC	#ADR0,#MM0MAP	IUPDATE MAP	
2799								
2800								
2801								
2802	012260	032777	000002	167026	BIT	#ADRECC,#DXCB	ITEST FOR NO ADRECC	
2803	012266	001401			REQ	,+4	IBRANCH IF NO ERROR CONDITION	
2804	012270	104000			ERROR		IADRECC SET	
2805	012272	042737	000002	021544	BIC	#ADRECC,#CBMAP	IUPDATE CB MAP	
2806	012300	032777	000001	167006	BIT	#ADRECD,#DXCB	ITEST FOR NO ADRECD	
2807	012306	001401			REQ	,+4	IBRANCH IF NO ERROR CONDITION	
2808	012310	104000			ERROR		IADRECD SET	
2809	012312	042737	000001	021544	BIC	#ADRECD,#CBMAP	IUPDATE CB MAP	
2810	012320	004737	021366		JSR	PC,CHKREG		
2811	012324	004537	021074		JSR	R5,#CLK	ROUTINE TO ISSUE CLOCK PULSES	
2812	012330	000001			1			1 CLOCK PULSE(S)
2813	012332	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2814	012336	020000			PHS22		THIS PHASE AND STATE	PHS22
2815	012340	032777	010000	166744	BIT	#ADRI,#DXHI	IADRI IN SHOULD BE UP	
2816	012346	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2817	012350	104000			ERROR		IADRI NOT SET	
2818	012352	052737	010000	021510	BIS	#ADRI,#MM1MAP	IUPDATE MAP	
2819	012360	004737	021366		JSR	PC,CHKREG		
2820	012364	004537	021074		JSR	R5,#CLK	ROUTINE TO ISSUE CLOCK PULSES	
2821	012370	000010			10			10 CLOCK PULSE(S)
2822	012372	112777	000000	166710	MOVB	#0,#DXHD	REMOVE ADRI FROM BUS0	
2823	012400	112737	000000	021406	MOVB	#0,#MM0MAP	IUPDATE MAP	
2824	012406	004537	021074		JSR	R5,#CLK	ROUTINE TO ISSUE CLOCK PULSES	
2825	012412	000002			2			2 CLOCK PULSE(S)
2826	012414	004737	021366		JSR	PC,CHKREG		
2827								
2828	012420	012737	000400	024776	MOV	#TIOC,CMD	LOAD COMMAND	
2829	012426	053777	024776	166694	BIS	CMD,#DXHD	LOAD CMD + PARITY ON BUS0	
2830	012434	053737	024776	021406	BIS	CMD,#MM0MAP	IUPDATE MAP	
2831	012442	004537	021074		JSR	R5,#CLK	ROUTINE TO ISSUE CLOCK PULSES	
2832	012446	000002			2			2 CLOCK PULSE(S)
2833	012450	032777	001000	166634	BIT	#CLK0,#DXHI	ITEST FOR CLOCK-OUT	
2834	012456	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2835	012460	104000			ERROR		ICLK0 NOT SET	
2836	012462	052737	001000	021510	BIS	#CLK0,#MM1MAP	IUPDATE HI MAP	
2837	012470	004737	021366		JSR	PC,CHKREG		
2838								
2839	012474	052777	002300	166606	BIS	#CMD0,#DXHD	RAISE COMMAND-OUT	
2840	012502	032777	002000	166600	BIT	#CMD0,#DXHD	INDI WITHOUT CLOCK	
2841	012510	001401			REQ	,+4	IBRANCH IF NO ERROR CONDITION	
2842	012512	104000			ERROR		ICMD0 NOT BUFFERED	
2843	012514	004537	021074		JSR	R5,#CLK	ROUTINE TO ISSUE CLOCK PULSES	
2844	012520	000001			1			1 CLOCK PULSE(S)
2845	012522	032777	002000	166500	BIT	#CMD0,#DXHD	ICMD0 SHOULD BE UP	
2846	012530	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	

2847	012532	104000			ERROR		ICMD NOT SET	
2848	012534	052737	022000	021406	BIS	#CMD0,0#MOMAP	IUPDATE MAP	
2849	012542	004537	021074		JSR	R5,0#CLK	IROUTINE TO ISSUE CLOCK PULSES	
2850	012546	000001			1		I	1 CLOCK PULSE(S)
2851	012550	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2852	012554	020000			PHS22		ITWIS PHASE AND STATE	PHS22
2853	012556	032777	010000	166526	BIT	#ADHI,0DXMI	IADNS-IN SHOULD BE DOWN	
2854	012564	001401			BEQ	,+4	IBRANCH IF NO ERROR CONDITION	
2855	012566	104000			ERROR		IADHI DID NOT DROP	
2856	012570	042737	010000	021510	RIC	#ADHI,0#MIMAP	IUPDATE MAP	
2857	012576	123777	024776	166524	CHPB	CMD,0#CUCR	ICMD SHOULD BE IN CUCR	
2858	012604	001401			BEQ	,+4	IBRANCH IF NO ERROR CONDITION	
2859	012606	104000			ERROR		ICMD LOAD ERROR	
2860	012610	113737	024776	021405	MOVB	CMD,0#CAMAP+1	IUPDATE CMD SIDE OF CA MAP	
2861	012616	004737	021366		JSR	PC,CHKREG		
2862								
2863								
2864	012622	004537	021074		JSR	R5,0#CLK	IROUTINE TO ISSUE CLOCK PULSES	
2865	012626	000001			1		I	1 CLOCK PULSE(S)
2866	012630	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2867	012634	034000			PHS31		ITWIS PHASE AND STATE	PHS31
2868	012636	032777	004000	166446	BIT	#STAI,0DXMI	ISTATUS-IN=0	
2869	012644	001401			BEQ	,+4	IBRANCH IF NO ERROR CONDITION	
2870	012646	104000			ERROR		IATAI SET	
2871	012650	032777	000200	166416	BIT	#CHIS,0DXUS	IMUST BE CHANNEL INITIATED SELECTION	
2872	012656	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2873	012660	104000			ERROR		ITWIS NOT SET	
2874	012662	032777	000100	166424	BIT	#BYPAS,0DXCB	IPANITY OF CMD OK	
2875	012670	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2876	012672	104000			ERROR		IBYPAS NOT SET	
2877								
2878	012674	004737	021366		JSR	PC,CHKREG		
2879								
2880	012700	004537	021074		JSR	R5,0#CLK	IROUTINE TO ISSUE CLOCK PULSES	
2881	012704	000002			2		I	2 CLOCK PULSE(S)
2882	012706	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR	
2883	012712	034000			PHS31		ITWIS PHASE AND STATE	PHS31
2884								
2885								
2886	012714	032777	000001	166392	BIT	#CMDREJ,0DXDS	IUCHECK COPIED INTO CMDREJ	
2887	012722	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION	
2888	012724	104000			ERROR		ICMDREJ NOT SET	
2889	012726	052737	000001	021372	BIS	#CMDREJ,0#DSMAP	IUPDATE DS MAP	
2890								
2891								
2892								
2893								
2894								
2895	012734	127777	176546	166400	CHPB	0#MAGBA,0BUSI	ISPW (07100)0BUS-IN	
2896	012742	001401			BEQ	,+4	IBRANCH IF NO ERROR CONDITION	
2897	012744	104000			ERROR		ISPW (07100) TO BUSI TRANSFER ERROR	
2898	012746	117737	176534	021510	MOVB	0#MAGBA,0#MIMAP	IUPDATE MAP	
2899	012754	117737	176526	021430	MOVB	0#MAGBA,0#DSMAP	IUPDATE STATUS MAP	
2900	012762	032777	000400	166322	BIT	#PARI,0DXMI	IPANITY IN=1	

2921	212773	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2922	212772	104000			ERROR		IPANI NOT SET
2923	212774	052737	000400	021510	BIS	#PANI, #MIMAP	IUPDATE MAP
2924	213002	004737	021366		JSR	PC,CHKREG	
2925	213006	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES
2926	213012	000010			10		10 CLOCK PULSE(S)
2927							
2928							
2929							
2930							
2931							
2932	213014	032777	001000	166206	BIT	#SRV0, #DXMO	ISRVC007
2933	213022	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2934	213024	104000			ERROR		ISRVC SET
2935	213026	032777	034000	166240	BIT	#IMRST, #DXDS	IIM RESET
2936	213034	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2937	213036	104000			ERROR		
2938	213040	042777	002000	166242	BIC	#CMD0, #DXMO	IDROP COMMAND=OUT
2939	213046	032777	002000	166234	BIT	#CMD0, #DXMO	INOT WITHOUT CLOCK
2940	213054	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2941	213056	104000			ERROR		ICMD0 NOT BUFFERED
2942	213060	004537	021074		JSR	R5,00CLK	IROUTINE TO ISSUE CLOCK PULSES
2943	213064	000002			2		2 CLOCK PULSE(S)
2944	213066	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR
2945	213072	034000			PHS31		IINIS PHASE AND STATE
2946	213074	032777	002000	166206	BIT	#CMD0, #DXMO	ICMD0 SHOULD BE ZERO
2947	213102	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2948	213104	104000			ERROR		ICMD0 STUCK HIGH
2949	213106	042737	002000	021406	BIC	#CMD0, #MOMAP	IUPDATE MAP
2950							
2951							
2952							
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2986							
2987							
2988							
2989							
2990							
2991							
2992							
2993							
2994							
2995							
2996							
2997							
2998							
2999							
3000							

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2955                                IWAIT FOR SIG6 QUALIFIER SRVD,STAI
2956 013226 004737 021366          JSR    PC,CHKREG
2957 013232 004737 020744          JSR    PC,PHST          ICHECK CONTROL BITS FOR
2958 013236 034000                    PHS31                    ITHIS PHASE AND STATE          PHS31
2959 013243 017737 166030 020536    MOV    0DXDS,0BENTRY1    ILOAD IT ENTRY ONE
2960 013246 017737 166024 020576    MOV    0DXCA,0BENTRY2    ILOAD IT ENTRY TWO
2961 013254 012777 022074 166002    MOV    0FALSE,0DXIV     IPOINT INTER VECTOR TO TRAP
2962 013262 013777 001272 169774    MOV    LESS1,0DXIV      I0X PRY MINUS ONE
2963 013273 052777 000100 166002    RIS    0INTEN,0DXCS     ISET INTERRUPT ENABLE
2964 013276 032737 000100 021416    BIT    0INTEN,0BCSMAP   IUPDATE MAP
2965
2966 013304 004737 021366          JSR    PC,CHKREG
2967 013313 052777 001000 169772    RIS    0SRVD,0DXMO     IENABLE SIG6
2968                                IADVANCE TO MARK (PHASE FOUR TIME STATE 1)
2969
2970 013316 004537 021074          JSR    R5,00CLK        IROUTINE TO ISSUE CLOCK PULSES
2971 013322 000002                    2                            I          2 CLOCK PULSE(S)
2972 013324 032777 001000 169796    BIT    0SRVD,0DXMO     ISRVD IS UP
2973 013332 001001                    BNE    ,+4              IBRANCH IF NO ERROR CONDITION
2974 013334 104000                    ERROR                    ISRVD NOT SET
2975 013336 052737 001000 021406    RIS    0SRVD,0BMONMAP   IUPDATE MAP
2976 013344 032777 004000 169740    BIT    0STAI,0DXMI     ISTATUS-IN SHOULD DROP
2977 013352 001401                    BEQ    ,+4              IBRANCH IF NO ERROR CONDITION
2978 013354 104000                    ERROR                    ISTAI STUCK HIGH
2979 013356 042737 004000 021510    BIC    0STAI,0BMINMAP   IUPDATE MI MAP
2980 013364 004737 020744          JSR    PC,PHST          ICHECK CONTROL BITS FOR
2981 013373 044000                    PHS41                    ITHIS PHASE AND STATE          PHS41
2982                                IBA LOAD IS ASYNC
2983
2984 013372 032777 001000 169704    BIT    0BIT9,0DXBA     IITNOX OFFSET
2985 013403 001001                    BNE    ,+4              IBRANCH IF NO ERROR CONDITION
2986 013402 104000                    ERROR                    I0XBA(P9) NOT SET
2987 013404 052737 001000 021442    BIS    0BIT9,0BBAMAP   IUPDATE MAP
2988 013412 105777 165666    TSTB  0DXBA           ISET UP FOR TT ENTRY
2989 013416 001401                    BEQ    ,+4              IBRANCH IF NO ERROR CONDITION
2990 013420 104000                    ERROR                    I0XBA LOAD ERROR
2991 013422 105037 021442    CLRB  0BBAMAP         IUPDATE BAMAP
2992 013426 023777 001440 169650    CMP    0BITT,0DXBA     I0XBA MUST POINT TO TT
2993 013434 001401                    BEQ    ,+4              IBRANCH IF NO ERROR CONDITION
2994 013436 104000                    ERROR                    I0XBA LOAD ERROR
2995 013443 017737 165640 021442    MOV    0DXBA,0BBAMAP   IUPDATE MAP
2996 013446 004737 021366          JSR    PC,CHKREG
2997
2998                                IVERIFY SIG7
2998 013452 032777 000040 169634    BIT    0NPRX,0DXCB     IINPRX MUST BE ZERO
2999 013463 001401                    BEQ    ,+4              IBRANCH IF NO ERROR CONDITION
3000 013462 104000                    ERROR                    IINPRX SET
3001 013464 032777 001000 169622    BIT    0SYNC,0DXCB     ISYNC MUST BE ZERO
3002 013472 001401                    BEQ    ,+4              IBRANCH IF NO ERROR CONDITION
3003 013474 104000                    ERROR                    ISYNC SET
3004 013476 004537 021074          JSR    R5,00CLK        IROUTINE TO ISSUE CLOCK PULSES
3005 013502 000001                    1                            I          1 CLOCK PULSE(S)
3006 013504 004737 020744          JSR    PC,PHST          ICHECK CONTROL BITS FOR
3007 013510 040000                    PHS42                    ITHIS PHASE AND STATE          PHS42
3008                                IVERIFY BUS ADDRESS

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3009	013512	017727	165564		MOV	0DX05,(PC)+	ISAVE OFFSET
3010	013516	000000		IBA2I	0		IHERE, BA IMAGE #2
3011	013520	042737	001777	013516	BIC	#1777,0#IBA2	ICLEAR ALL BUT OFFSET
3012	013526	117727	165616		MOVB	0TTNDX,(PC)+	ISAVE TTNDX
3013	013532	000000		INDXI	0		IHERE
3014	013534	005337	013532		DEC	0#INDX	ILOOK BACK TO SEE WHERE DATA WENT
3015	013540	006337	013532		ASL	0#INDX	IHOWD BOUNDARIES
3016	013544	042737	177001	013532	BIC	#177001,0#INDX	ICLEAR ALL BUT TTNDX BITS
3017	013552	053737	013532	013516	BIS	0#INDX,0#IBA2	IBUILD BA IMAGE
3018	013560	052737	001000	013516	BIS	#BIT0,0#IBA2	ITT OFFSETS SPW BY 1200
3019					IVERIFY	DXBA CONTAINS PROPER TT	ADRS
3020	013566	023777	013516	165510	CMF	0#IBA2,0DXBA	IIMAGE BA=BA
3021	013574	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
3022	013576	104000			ERROR		I0XBA LOAD ERROR
3023					IVERIFY	DS MADE IT TO NO	
3024	013600	027777	165470	165510	CMF	0DX05,0UXND	I0NTENTS OF DS MADE IT TO NO
3025	013606	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
3026	013610	104000			ERROR		I0S INTO NO TRANSFER ERROR
3027	013612	057737	165456	021606	BIS	0DX05,0#NDMAP	IUPDATE NO MAP
3028							
3029					IVERIFY	NO DATA MADE IT TO TUMBLE TABLE	
3030	013620	027777	165450	177670	CMF	0DX05,0#IBA2	I0S MADE IT TO TT?
3031	013626	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
3032	013630	104000			ERROR		I0S INTO TT TRANSFER ERROR
3033	013632	013737	013516	021442	MOV	0#IBA2,0#BAMAP	IUPDATE
3034	013640	032777	001000	165446	BIT	#SYNC,0DXCB	ISIG0
3035	013646	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
3036	013650	104000			ERROR		ISYNC NOT SET
3037	013652	052737	001000	021544	BIS	#SYNC,0#CBMAP	IUPDATE MAP
3038	013660	117737	165464	021565	MOVB	0TTNDX,0#ESMAP+1	IUPDATE ES MAP
3039	013666	032777	000100	165420	BIT	#BYPAS,0DXCB	IBYPAS SHOULD DROP
3040	013674	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
3041	013676	104000			ERROR		IBYPAS SET
3042	013700	042737	000100	021544	BIC	#BYPAS,0#CBMAP	IUPDATE MAP
3043	013706	032777	000040	165400	BIT	#NPRX,0DXCB	INPRX SHOULD BE UP
3044	013714	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
3045	013716	104000			ERROR		INPRX NOT SET
3046	013720	052737	000040	021544	BIS	#NPRX,0#CBMAP	IUPDATE MAP
3047	013726	032777	000020	165300	BIT	#NPRY,0DXCB	INPRY SHOULD BE UP
3048	013734	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
3049	013736	104000			ERROR		INPRY NOT SET
3050	013740	052737	000020	021544	BIS	#NPRY,0#CBMAP	IUPDATE MAP
3051	013746	004737	021366		JSR	PC,CHKREG	
3052	013752	042777	001000	165330	BIC	#SRVD,0DXMO	IGET REID OF SRVD ON NEXT CLOCK
3053	013760	042737	001000	021496	BIC	#SRVD,0#MOMAP	IUPDATE MAP
3054							
3055	013766	004537	021074		JSR	R5,0#CLK	IROUTINE TO ISSUE CLOCK PULSES
3056	013772	000001			I		1 CLOCK PULSE(S)
3057	013774	004737	020744		JSR	PC,PHST	ICHECK CONTROL BITS FOR
3058	014000	044000			PHS41		IThis PHASE AND STATE
3059	014002	032777	000040	165304	BIT	#NPRX,0DXCB	ITEST FOR NPRX=0
3060	014010	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
3061	014012	104000			ERROR		INPRX DID NOT DROP
3062	014014	042737	000040	021544	BIC	#NPRX,0#CBMAP	IUPDATE MAP

3063											
3064	014022	004537	021074			JSR	R5,00CLK		ROUTINE TO ISSUE CLOCK PULSES		
3065	014026	000001				1				1	CLOCK PULSE(S)
3066	014030	004737	020744			JSR	PC,PHST		CHECK CONTROL BITS FOR		
3067	014034	040000				PHS42			THIS PHASE AND STATE		PHS42
3068	014036	013727	001440			MOV	TT,(PC)+				
3069	014042	000000				STT11			SAVE TT ADNS		
3070	014044	062737	000002	014042		ADD	#2,STT1		CREATE BA IMAGE		
3071	014052	023777	014042	169224		CHP	STT1,0DXBA		VERIFY CORRECT BUS ADDRESS		
3072	014060	001401				BEO	,+4		BRANCH IF NO ERROR CONDITION		
3073	014062	104000				ERROR			DXBA LOAD ERROR		
3074	014064	013737	014042	021442		MOV	STT1,BAMAP		UPDATE MAP		
3075	014072	004737	021366			JSR	PC,C4KREG				
3076											
3077											
3078											
3079											
3080											
3081											
3082											
3083											
3084											
3085	014076	004537	021074			JSR	R5,00CLK		ROUTINE TO ISSUE CLOCK PULSES		
3086	014102	000001				1				1	CLOCK PULSE(S)
3087	014104	004737	020744			JSR	PC,PHST		CHECK CONTROL BITS FOR		
3088	014110	074000				PHS71			THIS PHASE AND STATE		PHS71
3089	014112	027777	165200	169196		CHP	0DXND,0DXCA		ND SHOULD CONTAIN CA		
3090	014120	001401				BEO	,+4		BRANCH IF NO ERROR CONDITION		
3091	014122	104000				ERROR			CA INTO NO TRANSFER ERROR		
3092	014124	017737	165166	021686		MOV	0DXND,NUMAP		UPDATE MAP		
3093	014132	032777	001000	169194		BIT	0SYNC,0DXCB				
3094	014140	001401				BEO	,+4		BRANCH IF NO ERROR CONDITION		
3095	014142	104000				ERROR			SYNC SET		
3096	014144	042737	001000	021544		BIC	0SYNC,0DCBMAP		UPDATE CB MAP		
3097	014152	032777	000040	169134		BIT	0NPRX,0DXCB		NPRX MUST BE ONE		
3098	014160	001001				BNE	,+4		BRANCH IF NO ERROR CONDITION		
3099	014162	104000				ERROR			NPRX NOT SET		
3100	014164	052737	000040	021544		BIS	0NPRX,0DCBMAP		UPDATE CB MAP		
3101	014172	032777	000200	169100		BIT	0DONE,0DXCS		DONE MUST BE SET		
3102	014200	001001				BNE	,+4		BRANCH IF NO ERROR CONDITION		
3103	014202	104000				ERROR			DONE NOT SET		
3104	014204	052737	000200	021416		BIS	0DONE,0DCSMAP		UPDATE MAP		
3105	014212	032777	000200	169100		BIT	0INTREQ,0DXES		TEST FOR INTREQ		
3106	014220	001001				BNE	,+4		BRANCH IF NO ERROR CONDITION		
3107	014222	104000				ERROR			INTREQ NOT SET		
3108	014224	052737	000200	021504		BIS	0INTREQ,0DESMAP		UPDATE MAP		
3109	014232	062737	000400	021504		ADD	0400,ESMAP		UPDATE TTNDX MAP		
3110	014240	004737	021366			JSR	PC,C4KREG				
3111											
3112											
3113	014244	004537	021074			JSR	R5,00CLK		ROUTINE TO ISSUE CLOCK PULSES		
3114	014250	000001				1				1	CLOCK PULSE(S)
3115	014252	004737	020744			JSR	PC,PHST		CHECK CONTROL BITS FOR		
3116	014256	070000				PHS72			THIS PHASE AND STATE		PHS72

3117	014260	032777	000040	169026	BIT	#NPRX, #DXCB	INPHX SHOULD = ZERO	
3118	014266	001401			BEO	, +4	IBRANCH IF NO ERROR CONDITION	
3119	014270	104000			ERROR		INPHX SET	
3120	014272	042737	000040	021544	BIC	#NPRX, CBMAP	IUPDATE MAP	
3121	014300	004737	021366		JSR	PC, CHKREG		
3122								
3123								
3124	014304	004537	021074		JSR	R5, @CLK	ROUTINE TO ISSUE CLOCK PULSES	1 CLOCK PULSE(S)
3125	014310	000001			1		I	
3126	014312	004737	020744		JSR	PC, PHS7	ICHECK CONTROL BITS FOR	
3127	014316	074000			PHS71		ITHIS PHASE AND STATE	PHS71
3128	014320	004737	021366		JSR	PC, CHKREG		
3129								
3130								
3131								
3132								
3133								
3134	014324	004537	021074		JSR	R5, @CLK	ROUTINE TO ISSUE CLOCK PULSES	1 CLOCK PULSE(S)
3135	014330	000001			1		I	
3136	014332	004737	020744		JSR	PC, PHS7	ICHECK CONTROL BITS FOR	
3137	014336	070000			PHS72		ITHIS PHASE AND STATE	PHS72
3138	014340	032777	001000	164746	BIT	#SYNC, #DXCB	ISYNC IS UP	
3139	014346	001001			BNE	, +4	IBRANCH IF NO ERROR CONDITION	
3140	014350	104000			ERROR		ISYNC NOT SET	
3141	014352	052737	001000	021544	BIS	#SYNC, #CBMAP	IUPDATE MAP	
3142	014360	032777	000040	164726	BIT	#NPRX, #DXCB	INPHX IS ZERO	
3143	014366	001401			BEO	, +4	IBRANCH IF NO ERROR CONDITION	
3144	014370	104000			ERROR		INPHX NOT ZERO	
3145	014372	042737	000040	021544	BIC	#NPRX, CBMAP	IUPDATE MAP	
3146	014400	032777	000020	164706	BIT	#NPRY, #DXCB	INPHY IS ZERO	
3147	014406	001401			BEO	, +4	IBRANCH IF NO ERROR CONDITION	
3148	014410	104000			ERROR		INPHY NOT ZERO	
3149	014412	042737	000020	021544	BIC	#NPRY, CBMAP	IUPDATE MAP	
3150	014420	005777	164690		TSY	#DXDS	IDevice STATUS REG MUST BE ZERO	
3151	014424	001401			BEO	, +4	IBRANCH IF NO ERROR CONDITION	
3152	014426	104000			ERROR		IDS	
3153	014430	005037	021372		CLR	#DSMAP	IUPDATE MAP	
3154	014434	004737	021366		JSR	PC, CHKREG		
3155								
3156	014440			YESI	JSR	R5, @CLK	ROUTINE TO ISSUE CLOCK PULSES	1 CLOCK PULSE(S)
3157	014440	004537	021074		JSR	R5, @CLK	ROUTINE TO ISSUE CLOCK PULSES	1 CLOCK PULSE(S)
3158	014444	000001			1		I	
3159	014446	004737	020744		JSR	PC, PHS7	ICHECK CONTROL BITS FOR	
3160	014452	074000			PHS71		ITHIS PHASE AND STATE	PHS71
3161	014454	004737	021366		JSR	PC, CHKREG		
3162	014460	004537	021074		JSR	R5, @CLK	ROUTINE TO ISSUE CLOCK PULSES	10 CLOCK PULSE(S)
3163	014464	000010			10		I	
3164	014466	004737	021366		JSR	PC, CHKREG		
3165	014472	042777	000002	164620	BIC	#MCLKEN, #DXES	ICLEAR MAINT CLK EN	
3166	014500	032777	000002	164612	BIT	#MCLKEN, #DXES		
3167	014506	001401			BEO	, +4	IBRANCH IF NO ERROR CONDITION	
3168	014510	104000			ERROR		IMCLKEN STUCK HIGH	
3169	014512	042777	000200	164500	BIC	#DONE, #DXCS	ICLEAR DONE AND LOCKO	
3170	014520	032777	000200	164592	BIT	#DONE, #DXCS		

3171	#14526	#21401			BED	,+4	I BRANCH IF NO ERROR CONDITION
3172	#14533	104000			ERROR		I DONE STUCK
3173	#14532	#32777	100000	104554	BIT	#LOCKU, #DXCB	I LOGKO MUST BE ZERO
3174	#14540	#21401			BED	,+4	I BRANCH IF NO ERROR CONDITION
3175	#14542	104000			ERROR		I LOGKO STUCK HIGH
3176	#14544	#52777	#00001	104526	RIS	#DXFRS, #DXCS	I RETURN TO PHASE ZERO
3177	#14552	#17727	104530		MOV	#DXCB, (PC)+	I SAVE CB
3178	#14556	#00000			B		I HERE
3179	#14560	#42737	#04000	#14556	BIC	#TSSP, SCB0	I CLEAR TIME STATE FLOP
3180	#14566	#05737	#14556		TST	SCB0	
3181	#14572	#21401			BED	,+4	I BRANCH IF NO ERROR CONDITION
3182	#14574	104000			ERROR		I NOT PHASE ZERO
3183					I EXIT IN PHASE ZERO		
3184							
3185	#14576	#04737	#25772		JSR	PC, SPW, SETUP	I REBUILD SPW
3186							
3187							


```

3188
3189
3190
3191 014672 104420
3192 014674 012737 000001 022414
3193 014612 012737 000012 023442
3194 014620 012737 014626 022420
3195 014626
3196
3197
3198
3199
3200
3201 014626 032737 000010 177570
3202 014634 001002
3203 014636 000137 015076
3204 014642 005037 014662
3205 014646 005027
3206 014650 000000
3207 014652 104007 014650
3208 014656 113727 014650
3209 014662 000000
3210 014664 105237 014662
3211 014670 004737 021060
3212 014674 113777 014662 164424
3213 014702 123777 014662 164416
3214 014710 001401
3215 014712 104000
3216 014714 113737 014662 021404
3217 014722 052777 000002 164370
3218 014730 052737 000002 021504
3219 014736 004737 021202
3220 014742 004737 021366
3221 014746 004537 021074
3222 014752 000010
3223 014754 004737 021366
3224 014760 004737 020744
3225 014764 004000
3226 014766 053777 014650 164314
3227 014774 123777 014650 164306
3228 015002 001401
3229 015004 104000
3230 015006 053737 014650 021466
3231 015014 004737 021234
3232 015020 004737 021366
3233
3234
3235 015024 052777 064000 164296
3236 015032 004537 021074
3237 015036 000001
3238 015040 017727 164244
3239 015044 000000
3240 015046 042737 000777 015044
3241 015054 022737 164000 015044

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I .....
ITEST 12 ADRECD TEST
I .....
TST121 SCOPE
MOV #1, #ICOUNT IITERATION COUNT
MOV #12, #ERTSTN ISAVE TEST # FOR ERROR REPORT
MOV #SCP12, #RETURN ISCOPE LOOP RETURN ADRS
SCP121
,REM
*
VERIFY THE PROPER OPERATION OF THE ADDRESS RECOGNITION
AND SELECT-IN, SELECT-OUT LOGIC
*
BIT #BITS, #SWR ITEST IF SELECTED
BNE 15 IBR IF NOT DONE ONCE
JMP #SCT11 IEXIT IF DONE ONCE
151 CLR #ANYB
CLR (PC)+ ISTART WITH ADRS 00
TADRS1I 0 ITEST ADDRESS
PARITY ,TADRS1 IPUT PARITY ON ADRS
MOVB TADRS1, (PC)+ IANYTHING BUT
ANYBI 0 IADDRESS
INCB #ANYB IMAKE IT ANYTHING BUT
JSR PC, DXRES IRESET DX AND Y
MOVB #ANYB, #CUAR ILOAD CUAR FOR NO ADRECD
CMPB #ANYB, #CUAR IVERIFY LOAD
BEQ ,+4 IBRANCH IF NO ERROR CONDITION
ERROR ICUAR LOAD ERROR
MOVB #ANYB, #CAMAP IUPDATA CA MAP
BIS #MCKEN, #DXES ISET MCKEN IN REGISTER ES
BIS #MCKEN, #ESMAP ISET MCKEN IN MAP OF ES
JSR PC, TMS1 IGET INTO TIME STATE 1
JSR PC, CHKREG ILOOK AROUND THE REGISTERS
JSR R5, #CLK IROUTINE TO ISSUE CLOCK PULSES
10 I 10 CLOCK PULSE(S)
JSR PC, CHKREG IAND DO IT AGAIN
JSR PC, PHST ICHECK CONTROL BITS FOR
PHS01 ITHIS PHASE AND STATE PHS01
BIS #TADRS1, #DXMO IPUT ADRS ON BUS-OUT
CMPB #TADRS1, #DXMO INO BUFFER FLOPS FOR DXMO
BEQ ,+4 IBRANCH IF NO ERROR CONDITION
ERROR IDXMO LOAD ERROR
BIS #TADRS1, #MOMAP IUPDATE MAP
JSR PC, #COPARO ICOPY PARITY-OUT
JSR PC, CHKREG
IRaise ADDRESS-OUT, SELECT-OUT AND HOLD-OUT
IAND VERIFY THAT THOSE FUNCTIONS ARE SET
BIS #HLD0, #SELO, #ADRO, #DXMO
JSR R5, #CLK IROUTINE TO ISSUE CLOCK PULSES
1 I 1 CLOCK PULSE(S)
MOV #DXMO, (PC)+ ISAVE DXMO
TASMO1I 0 IHERE
RJC #777, #TASMO1 IREMOVE #USO+PARO
CMP #OPLD, #HLD0, #SELO, #ADRO, #TASMO1

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3242 015062 001401 BEQ ,+4 I BRANCH IF NO ERROR CONDITION
3243 015064 104000 ERROR I COND LOAD ERROR
3244 015066 052737 064000 021406 BIS #HLDD;SELOIADRO,#0MOMAP;UPDATE MAP
3245 015074 004737 020744 JSR PC,PHST I CHECK CONTROL BITS FOR
3246 015100 000000 PHS02 I THIS PHASE AND STATE PHS02
3247 ,REM *
3248 USE TEST ADDRESS (TADRS1) AS INDEX TO SPW
3249 TO DETERMINE IF ADMS IS LEGAL AND THEREFORE
3250 SHOULD SET ADRECC, ALSO SEL1 SHOULD
3251 NOT BE PROPOGATED IF ADMS IS RECOGNIZED
3252 *
3253
3254 015102 113701 014050 MOVB TADRS1,R1 I LOAD DEVICE ADDRESS
3255 015106 042701 177400 BIC #177400,R1 I CLEAR EXTENDED SIGN BITS
3256 015112 006301 ASL R1 I SCALE MOD (2)
3257 015114 022761 030400 002000 CMP #DSTADRS,2000(R1) I LOOK FOR LEGAL SPW
3258 015122 001067 BNE PSEL1 I PASS SELECT-IN IF NOT RECOGNIZED
3259
3260 I ADDRESS IS A LEGAL ADDRESS AND THEREFORE MUST BE RECOGNIZED
3261 I (RAISE ADRECC AND BECAUSE CUAR CONTAINES DEVICE ADMS ADRECO)
3262 I SELECT-IN SHOULD NOT BE PROPOGATED
3263 I ***** MOD APR 74 *****
3264 I * ADDRESS VERIFICATION MOD
3265
3266 015124 004737 001444 JSR PC,LAHS I VERIFY ADDRESS RANGE
3267 015130 032737 000001 021096 BIT #ADRECO,CBMAPS I VERIFY ADDRESS RANGE
3268 015136 001473 BEQ PXX1 I (NO) CUAR+DXMO+LEGAL ADD DID NOT COMPARE
3269 I ***** MOD APR 74 *****
3270
3271 015140 032777 000002 104146 ZZZI BIT #ADRECC,#DXCB I ADMS-RECOGNITION-CONTROL UNIT
3272 015146 001001 BNE ,+4 I BRANCH IF NO ERROR CONDITION
3273 015150 104000 ERROR I ADRECC NOT SET
3274 015152 052737 000002 021544 BIS #ADRECC,#CBMAP I UPDATE MAP
3275 015160 032777 000001 104126 BIT #ADRECO,#DXCB I ADMS-RECOGNITION-DEVICE
3276 015166 001001 BNE ,+4 I BRANCH IF NO ERROR CONDITION
3277 015170 104000 ERROR I ADRECO FAILURE TO SET
3278 015172 052737 000001 021544 BIS #ADRECO,#CBMAP I UPDATE MAP
3279
3280 015200 032777 001000 104106 BIT #SYNC,#DXCB I
3281 015206 001401 BEQ ,+4 I BRANCH IF NO ERROR CONDITION
3282 015210 104000 ERROR I SYNC SET
3283 015212 032777 100000 104074 BIT #LOCK0,#DXCB I
3284 015220 001401 BEQ ,+4 I BRANCH IF NO ERROR CONDITION
3285 015222 104000 ERROR I
3286 I DXMI IS UNREADABLE
3287 I BIT #SEL1,#DXMI I SELECT IN SHOULD NOT BE PROPOGATED
3288 I ERCALL BEQ,<SELECT IN ERROR>
3289 015224 004737 021366 JSR PC,CHKREG I
3290
3291 015230 052777 000001 104042 BIS #DXFRS,#DXCS I ISSUE OX RESET
3292 015236 042777 000002 104094 BIC #MCLKEN,#DXES I CLEAR MAINTENANCE
3293 015244 052777 000001 104046 BIS #DXFRS,#DXES I ISSUE DX RESET
3294 015252 022777 100000 104030 CMP #UPLD,#DXMO I DXNESET SHOULD CLEAR MO
3295 015260 001401 BEQ ,+4 I BRANCH IF NO ERROR CONDITION

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3350	015542	123737	014662	014650		CHPB	00ANYB,00TADRS1	
3351	015550	001402				BEQ	NXT11	
3352	015552	000137	014664			JMP	00ANYB+2	
3353	015556	105237	014650		NXT111	INCB	TADRS1	IING TO NEXT ADRESS
3354	015562	122737	000000	014650		CHPB	00,00TADRS1	
3355	015570	001402				BEQ	SCY11	I BRANCH IF FINISHED
3356	015572	000137	014652			JMP	00TADRS1+2	I CONTINUE TEST
3357	015574				SCY111			
3358								
3359								


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3360 | .....
3361 |TEST 13 SELECTION CONTROL TEST
3362 | .....
3363 015576 104400 TST13: SCOPE
3364 015600 012737 000002 022414 MOV #2,001COUNT ;ITERATION COUNT
3365 015606 012737 000013 023442 MOV #13,00ERTSYN ;SAVE TEST # FOR ERROR REPORT
3366 015614 012737 015622 022420 MOV #SCP13,00RETURN ;SCOPE LOOP RETURN ADRS
3367 015622 SCP13:
3368
3369 .REM *
3370 * VERIFY THE PROPER OPERATION OF THE ADDRESS RECOGNITION
3371 * AND SELECT-IN, SELECT-OUT LOGIC
3372 *
3373
3374 015622 032737 000004 024706 BIT #BIT2,00ONESHOT
3375 015630 001002 BNE 15
3376 015632 000137 016464 JMP #SCT1
3377 015636 042737 000004 024706 15: BIC #BIT2,00ONESHOT ;DO THIS TEST ONCE
3378 015644 005027 CLR (PC)+ ;START WITH ADRS 00
3379 015646 000000 TAORS: 0 ;TEST ADDRESS
3380 015650 104007 015646 PARITY ,TADRS ;PUT PARITY ON ADRS
3381 015654 004737 021660 JSR PC,DXRES ;RESET DX AND TT
3382 015660 113777 015646 163440 MOVB #BTACHS,00CUAR ;LOAD CUAR TO SET ADRECD
3383 015666 123777 015646 163432 CMPB #BTACHS,00CUAR ;VERIFY LOAD
3384 015674 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
3385 015676 104000 ERROR ;CUAR LOAD ERROR
3386 015700 113737 015646 021404 MOVB #BTACHS,00CAMAP ;UPDATE CA MAP
3387 015706 052777 000002 163404 BIS #MCLKEN,00DXS ;SET MCLKEN IN REGISTER ES
3388 015714 052737 000002 021504 BIS #MCLKEN,00ESMAP ;SET MCLKEN IN MAP OF ES
3389 015722 004737 021202 JSR PC,TIMS1 ;GET INTO TIME STATE 1
3390 015726 004737 021366 JSR PC,CHKREG ;LOOK AROUND THE REGISTERS
3391 015732 004537 021074 JSR R5,00CLK ;ROUTINE TO ISSUE CLOCK PULSES
3392 015736 000010 10 ; 10 CLOCK PULSE(S)
3393 015740 004737 021366 JSR PC,CHKREG ;AND DO IT AGAIN
3394 015744 004737 020744 JSR PC,P4ST ;CHECK CONTROL BITS FOR
3395 015750 004000 PHS01 ;THIS PHASE AND STATE PHS01
3396 015752 053777 015646 163330 BIS #BTACHS,00DXMO ;PUT ADRS ON BUS-OUT
3397 015760 123777 015646 163322 CMPB #BTACHS,00DXMO ;NO BUFFER FLOPS FOR DXMO
3398 015766 001401 BEQ ,+4 ;BRANCH IF NO ERROR CONDITION
3399 015770 104000 ERROR ;DXMO LOAD ERROR
3400 015772 053737 015646 021406 BIS #BTACHS,00MOMAP ;COPY PARITY-OUT
3401 016000 004737 021234 JSR PC,00COPAR
3402
3403
3404
3405
3406
3407
3408
3409
3410
3411
3412
3413

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3414 716004 024737 021366          JSR      PC,CHKREG
3415                                ;RAISE ADDRESS=OUT,SELECT=OUT AND HOLD=OUT
3416                                ;AND VERIFY THAT THOSE FUNCTIONS ARE SET
3417 716010 052777 064000 163272      BIS      @HLD0,SELOIADRO,@DXMO
3418 716016 024537 021074          JSR      R5,@CLK          ;ROUTINE TO ISSUE CLOCK PULSES
3419 716022 000001                    1                                ;
3420 716024 017727 163260          MOV      @DXMO,(PC)+        ;SAVE DXMO
3421 716030 000000          TASMO1  ?                    ;HERE
3422 716032 042737 000777 016030      BIC      #777,@TASMO      ;REMOVE BUSO+PARO
3423 716040 022737 164000 016030      CMP      @OPL0,HLD0ISELOIADRO,@TASMO
3424 716046 001401                    BEQ      ,+4                ;BRANCH IF NO ERROR CONDITION
3425 716050 104000                    ERROR                          ;CONO LOAD ERROR
3426 716052 052737 064000 021406      BIS      @HLD0,SELOIADRO,@MOMAP,UPDATE MAP
3427 716060 004737 020744          JSR      PC,P4ST          ;CHECK CONTROL BITS FOR
3428 716064 000000          PHS02                    ;THIS PHASE AND STATE
3429                                ;
3430                                .REM
3431                                *
3432                                USE TEST ADDRESS (TADRS) AS INDEX TO SPW
3433                                TO DETERMINE IF ADRS IS LEGAL AND THEREFORE
3434                                SHOULD SET ADRECC AND ADRECO, ALSO SELI
3435                                SHOULD NOT BE PROPOGATED IF ADRS IS RECOGNIZED
3436                                *
3436 716066 113701 015640          MOVB    TADRS,R1          ;LOAD DEVICE ADDRESS
3437 716072 042701 177400          BIC      #177400,R1      ;CLEAR EXTENDED SIGN BITS
3438 716076 006301                    ASL      R1                ;SCALE MOD (2)
3439 716100 022701 030400 002000      CMP      @DSTAURS,2000(P1) ;LOOK FOR LEGAL SPW
3440 716106 001056                    BNE     PSEL1             ;PASS SELECT-IN IF NOT RECOGNIZED
3441
3442                                ;ADRS IS A LEGAL ADDRESS AND THEREFORE MUST BE RECOGNIZED
3443                                ;(RAISE ADRECC AND BECAUSE CUAR CONTAINES DEVICE ADDS ADRECO)
3444                                ;SELECT-IN SHOULD NOT BE PROPOGATED
3445
3446 716110 032777 000002 163176      BIT      @ADRECC,@DXCB    ;ADRS-RECOGNITION-CONTROL UNIT
3447 716116 001001                    BNE     ,+4                ;BRANCH IF NO ERROR CONDITION
3448 716120 104000                    ERROR                          ;ADRECC NOT SET
3449 716122 052737 000002 021544      BIS      @ADRECC,@CBMAP   ;UPDATE MAP
3450 716130 032777 000001 163196      BIT      @ADRECO,@DXCB    ;ADRS-RECOGNITION-DEVICE
3451 716136 001001                    BNE     ,+4                ;BRANCH IF NO ERROR CONDITION
3452 716140 104000                    ERROR                          ;ADRECO NOT SET
3453 716142 052737 000001 021544      BIS      @ADRECO,@CBMAP   ;UPDATE MAP
3454
3455 716150 032777 001000 163136      BIT      @SYNC,@DXCB      ;
3456 716156 001401                    BEQ      ,+4                ;BRANCH IF NO ERROR CONDITION
3457 716160 104000                    ERROR                          ;SYNC SET
3458 716162 032777 100000 163124      BIT      @LOCK0,@DXCB     ;
3459 716170 001401                    BEQ      ,+4                ;BRANCH IF NO ERROR CONDITION
3460 716172 104000                    ERROR                          ;
3461                                ;DXMI IS UNREADABLE
3462                                ;
3463                                ;
3464 716174 024737 021366          JSR      PC,CHKREG
3465
3466 716200 052777 000001 163072      BIS      @DXFRS,@DXCS     ;ISSUE DX RESEY
3467 716206 042777 000002 163104      BIC      @MCLKEN,@DXES    ;CLEAR MAINTENANCE

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3468	016214	052777	000001	163076		BIS	#DXFRS,#DXES	ISSUE DX RESET	
3469	016222	022777	100000	163000		CHP	#OPLO,#DXMO	DXRESET SHOULD CLEAR MO	
3470	016230	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION	
3471	016232	104000				ERROR		DXMO DXRESET ERROR	
3472	016234	012737	100000	021406		MOV	#OPLO,#MOMAP	IUPDATE MAP	
3473	016242	000500				RR	NXTADRS	IDO NEXT ADRS	
3474									
3475								ADDRESS NOT RECOGNIZED BY DX	
3476									
3477	016244	032777	000002	163042	PSEL11	BIT	#ADRECC,#DXCB	ADRECC SHOULD NOT BE SET	
3478	016252	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION	
3479	016254	104000				ERROR		IFALSE ADDRESS RECOGNITION	
3480	016256	042737	000002	021096		BIC	#ADRECC,CBMAPS		
3481	016264	032777	000001	163022		BIT	#ADRECC,#DXCB	ADRECC SHOULD NOT BE SET	
3482	016272	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION	
3483	016274	104000				ERROR		IFALSE DEVICE RECOGNITION	
3484	016276	032777	040000	163026	PXI	BIT	#SELI,#DXMI	ISELECT-IN MUST BE PROPOGATED	
3485	016304	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION	
3486	016306	104000				ERROR		ISELECT-IN WAS NOT PASSED	
3487	016310	052737	040000	021510		BIS	#SELI,#MIMAP	IUPDATE MAP	
3488	016316	004737	021366			JSR	PC,C4KREG		
3489	016322	042777	020000	162700		BIC	#SELO,#DXMO	IDROP SELECT-OUT	
3490	016330	004537	021074			JSR	R5,#CLK	IROUTINE TO ISSUE CLOCK PULSES	
3491	016334	000001				1			1 CLOCK PULSE(S)
3492									
3493	016336	004737	020744			JSR	PC,PHST	ICHECK CONTROL BITS FOR	
3494	016342	004000				PHS01		THIS PHASE AND STATE	PHS01
3495	016344	032777	020000	162736		BIT	#SELO,#DXMO	ISELO MUST DROP	
3496	016352	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION	
3497	016354	104000				ERROR		ISELO DID NOT DROP	
3498	016356	042737	020000	021406		BIC	#SELO,#MOMAP	IUPDATE MAP	
3499						BIT	#SELI,#DXMI	ISELI MUST DROP	
3500						ERCALL	BEG,<SELI DID NOT DROP>		
3501	016364	042737	040000	021510		BIC	#SELI,#MIMAP	IUPDATE MAP	
3502	016372	042777	077777	162710		BIC	077777,#DXMO	ICLEAR ALL BUT OPLO	
3503	016400	004537	021074			JSR	R5,#CLK	IROUTINE TO ISSUE CLOCK PULSES	
3504	016404	000002				2			2 CLOCK PULSE(S)
3505	016406	022777	100000	162674		CHP	#OPLO,#DXMO	ICHECK MAINTENANCE-OUT	
3506	016414	001401				BEG	,+4	IBRANCH IF NO ERROR CONDITION	
3507	016416	104000				ERROR		DXMO ILLEGAL STATE	
3508	016422	012737	100000	021406		MOV	#OPLO,#MOMAP	IUPDATE MAP	
3509	016426	004737	021234			JSR	PC,COPAND		
3510	016432	004737	021366			JSR	PC,C4KREG		
3511	016436	042777	000002	162694		BIC	#MCLKEN,#DXES		
3512	016444	105237	015646		NXTADRS	INCB	TADRS	IING TO NEXT ADDRESS	
3513	016450	122737	000000	015646		CHPB	#0,#TADRS		
3514	016456	001402				BEG	SCT1	IBRANCH IF FINISHED	
3515	016460	000137	015650			JMP	00TADRS+2	ICONTINUE TEST	
3516	016464				SCT11				
3517									
3518									

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3519 | .....
3520 | TEST 14 DX TIMEOUT, 9 SEC OPLI
3521 | .....
3522 | TST14| SCOPE
3523 | #16464 124400 | #00001 022414 | MOV #1,#ICOUNT | ITERATION COUNT
3524 | #16474 #12737 #00010 023442 | MOV #14,#ERTSTN | SAVE TEST # FOR ERROR REPORT
3525 | #16502 #12737 #16510 022420 | MOV #SCP14,#RETURN | SCOPE LOOP RETURN ADRS
3526 | #16510 | SCP14|
3527 |
3528 | ..... MOD APR 74 .....
3529 | | SCAN CONTROL RESTORATION
3530 | | FOR ADDRESS RESOLUTION MOD
3531 |
3532 | #16510 #04737 025772 | JSR PC,SPW,SETUP | RESTORE SCAN CONTROL
3533 | ..... MOD APR 74 .....
3534 | #16514 #32737 #00001 024706 | BIT #FIVESEC,ONESHOT
3535 | #16522 #01544 | BEQ DXTO,0
3536 | #16524 #05037 025032 | CLR COUNT
3537 | #16530 #05037 024770 | CLR CARRY
3538 | #16534 #04737 021660 | JSR PC,DXRES | RESET AND RESTORE
3539 | #16540 #42777 #00010 162592 | BIC #TIMDIS,DXES
3540 | #16546 #32777 #00010 162544 | BIT #TIMDIS,DXES
3541 | #16554 #01401 | BEQ ,+4 | BRANCH IF NO ERROR CONDITION
3542 | #16556 104000 | ERROR | TIMDIS STUCK HIGH
3543 | #16560 #12737 #00403 024776 | MOV #NOPC,CMD | LOAD NOP COMMAND
3544 | #16566 #04737 020390 | JSR PC,SEL,ISS
3545 | #16572 #32777 100000 162512 | BIT #OPLI,DXMI
3546 | #16600 #01001 | BNE ,+4 | BRANCH IF NO ERROR CONDITION
3547 | #16602 104000 | ERROR | SELECTION FAILED?
3548 | #16604 #62737 #00001 025032 | DXTO,1| ADD #1,COUNT
3549 | #16612 103011 | BCC DXTO,2
3550 | #16614 105537 024770 | ADCB CARRY
3551 | #16620 122737 #00050 024770 | CMPB #50,CARRY
3552 | #16626 #01001 | BNE ,+4 | BRANCH IF NO ERROR CONDITION
3553 | #16630 104000 | ERROR | SECOND TIMEOUT FAILED
3554 | #16632 #05037 025032 | DXTO,3| CLR COUNT
3555 | #16636 #32777 #00020 162494 | DXTO,2| BIT #DXTO,DXES
3556 | #16644 #01757 | BEQ DXTO,1
3557 | #16646 #22777 104010 162436 | CMP #OPLI,STATICHEND:DEVEND:UCHECK,DXMI
3558 | #16654 #01401 | BEQ ,+4 | BRANCH IF NO ERROR CONDITION
3559 | #16656 104000 | ERROR | COND LOAD ERROR
3560 | #16660 #42777 #00000 162422 | BIC #SEL;HLDD,DXMO | DESELECT
3561 | #16666 #52777 #01000 162414 | BIS #SRV0,DXMO | RELEASE STATUS
3562 | #16674 #42777 #01000 162406 | BIC #SRV0,DXMO
3563 | #16702 #04737 021660 | JSR PC,DXRES | RESET AND RESTORE
3564 | #16706 #42777 #00020 162404 | BIC #DXTO,DXES
3565 | #16714 #32777 #00020 162376 | BIT #DXTO,DXES | CHECK DXTO
3566 | #16722 #01401 | BEQ ,+4 | BRANCH IF NO ERROR CONDITION
3567 | #16724 104000 | ERROR | DXTO STUCK HIGH
3568 |
3569 |
3570 |
3571 |
3572 | #16726 #52777 #00010 162304 | BIS #TIMDIS,DXES

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3573	016734	032777	000010	162396		BIF	#TIMDIS, #DXES	
3574	016742	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
3575	016744	104000				ERROR		ITIMDIS NOT SET
3576	016746	004737	020222			JSR	PC,FASTISS	
3577	016752	006337	025032			ASL	COUNT	1+/- FUDGE
3578	016756	005337	025032		DXTO,4	DEC	COUNT	
3579	016762	001375				BNE	DXTO,4	
3580	016764	105737	024770			TSTB	CARRY	
3581	016770	001406				BEO	DXTO,5	
3582	016772	006237	024770			ASR	CARRY	
3583	016776	012737	077777	029032		MOV	077777,COUNT	
3584	017004	000764				BR	DXTO,4	
3585	017006	032777	000020	162304	DXTO,5	BIF	#DXTO, #DXES	
3586	017014	001401				BEO	,+4	IBRANCH IF NO ERROR CONDITION
3587	017016	104000				ERROR		IDXTO SET
3588								
3589	017020	042777	000200	162292		BIC	#DONE, #DXCS	
3590	017026	052777	000001	162294		BIS	#DXFRS, #DXCS	
3591	017034	042737	000001	024706	DXTO,6	BIC	#FIVESEC, ONESHOT	
3592								
3593								

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3594
3595
3596
3597 017042 124400
3598 017044 012737 000010 022414
3599 017052 012737 000015 023442
3600 017060 012737 017066 022420
3601 017066
3602
3603
3604
3605
3606
3607 017066
3608
3609
3610
3611
3612 017066 013727 000004
3613 017072 000000
3614 017074 013727 000000
3615 017100 000000
3616 017102 005027
3617 017104 000000
3618 017106 012737 017144 000004
3619 017114 012737 000340 000006
3620 017122 013727 177770
3621 017126 000000
3622 017130 005777 000270
3623 017134 013737 017020 017104
3624 017142 000401
3625 017144 022626
3626
3627 017146 000240
3628
3629
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3636
3637
3638 017150 013737 001440 017436
3639 017156 012777 017392 162100
3640 017164 013777 001270 162074
3641 017172 013777 001436 162102
3642 017200 052777 000001 162072
3643 017206 005037 177770
3644 017212 012737 000001 024776
3645 017220 052777 000100 162092
3646 017226 004737 020350
3647

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) .....
)TEST 15 NXM TEST, NPR TIMEOUT CALIBRATION ROUTINE
) .....
TST15: SCOPE
MOV #10,00ICOUNT ;ITERATION COUNT
MOV #15,00ENTSTN ;SAVE TEST # FOR ERROR REPORT
MOV #SCP15,00RETURN ;SCOPE LOOP RETURN ADDR
SCP15:

)IF OTHER THAN NPR TIMEOUT ERRORS ARE DETECTED IN THIS TEST
)RUN MAINTENANCE CLOCK 2

NPR,CAL: INPM TIMEOUT CALIBRATION

)..... MOD APR 74 .....
)..... MEMORY MANAGEMENT MOD
).....
L4: MOV #4,(PC)+
)
L6: MOV #6,(PC)+
)
FLGMM: CLR (PC)+
)
PSWS: MOV @LINK,004
MOV @LEVEL7,006
MOV PS,(PC)+
)
PAST: TST @KIPANX ;KENNAL PAGE ADDRESS REGISTER
MOV @EABITS,FLGMM ;PERIPHERAL PAGE XBA BITS
BR PAST
LINK: CMP (SP)+,(SP)+
)
PAST: NOP

)..... MOD APR 74 .....
)NOTE:
) FOR SYSTEMS WITH KY11 OPTIONS THE TUMBLE TABLE
) ASSOCIATED NXM BIT 14 IS NOT VERIFIED DUE TO THE
) POSSIBILITY OF NOT HAVING THE ASSOCIATED 32K MEMORY BANK
) AVAILABLE, ON THESE SYSTEMS THE PDP-90 BIT 14 OF THE DXDS
) REGISTER IS VERIFIED AS FUNCTIONAL
)
)..... MOD APR 74 .....
MOV TT,S0FTT ;LOAD SOFTWARE TT POINTER
MOV #FISSD,0DXIV ;INTERRUPT ON FAST ISS DONE
MOV 0XPRT,0DXIS ;SELECTOR CHANNEL ONLY
MOV SPW,0DXOS ;LOAD LEGAL OFFSET
BIS #DXFRS,0DXCS ;DX RESET, ZERO TTNDX
CLR PS ;CLEAR PROCESSOR STATUS
MOV #WRITEC,CMD ;SET UP FOR 300 WHITE
BIS #INTEN,0DXCS ;SET INTERRUPT ENABLE
JSR PC,SEL,ISS ;DUE FAST ISS

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3702 017450 104000          ERROR          IFALSE INTERRUPT
3703 017452 042777 000200 161020      BIC          #D0NE,#DXCS      ICLEAR DONE
3704 017460 032777 000200 161012      BIT          #D0NE,#DXCS      I
3705 017466 001401          BEQ          ,+4             IBRANCH IF NO ERROR CONDITION
3706 017470 104000          ERROR          IDONE SET
3707
3708
3709
3710
3711
3712
3713 017472 005737 017104          TST          FLGM4          ITEST KT11 OPTION PRESENT
3714 017476 001421          BEQ          NPRCW          I(NO) BRANCHES
3715 017500 017727 161574          MOV          #DXCS,(PC)+
3716 017504 000000          SEABITS:    BIC          #17747,SEABITS IMASK OUT OTHER THAN 4,3
3717 017506 042737 177747 017504          CMP          SEABITS,(PC)+
3718 017514 023727 017504          EABITS:    J0
3719 017520 000030          BEQ          ,+4             IBITS 4,3
3720 017522 001401          ERROR          IBRANCH IF NO ERROR CONDITION
3721 017524 104000          BIT          #NXM,#DXDS      IXBA BITS 4,3 FAILED TO REMAIN SET
3722 017526 032777 040000 161540      BNE          ,+4             ITEST PDP TO BIT 14 SHOULD BE SET
3723 017534 001001          ERROR          IBRANCH IF NO ERROR CONDITION
3724 017536 104000          BR          NPRCX
3725 017540 000417          MOV          TT,R1
3726 017542 013701 001440          BIT          #NXM,4(R1)
3727 017546 032761 040000 000004      BNE          ,+4             IBRANCH IF NO ERROR CONDITION
3728 017554 001001          ERROR          INXM DID NOT COPY INTO TT
3729 017556 104000          BIC          #NXM,4(R1)      IWELL MEMORY WORKS
3730 017560 042761 040000 000004      BIT          #NXM,4(R1)
3731 017566 032761 040000 000004      BEQ          ,+4             IBRANCH IF NO ERROR CONDITION
3732 017574 001401          ERROR          I
3733 017576 104000          MOV          #NPRC1,OSP
3734 017600 012716 017600          RTI
3735 017604 000002          BIS          #DXFRS,#DXCS    ILOAD RETURN PC
3736 017606 052777 000001 161404          MOV          L4,004
3737
3738 017614 013737 017072 000004          MOV          L6,006
3739 017622 013737 017100 000006          MOV          PSWS,PS
3740 017630 013737 017120 177776
3741
3742
3743
3744
3745

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3746 | .....
3747 | TEST 16 FAST NPR DATA TEST
3748 | .....
3749 017636 104402 | TST161 SCOPE
3750 017640 012737 000010 022414 | MOV #10,00ICOUNT IITERATION COUNT
3751 017646 012737 000010 023442 | MOV #16,00ERTSTN ISAVE TEST # FOR ERROR REPORT
3752 017654 012737 017662 022420 | MOV #SCP10,00RETURN ISCOPE LOOP RETURN ADRS
3753 017662 | SCP161
3754
3755
3756 017662 004737 021060 | JSR PC,DXNES IRESET AND RESTORE
3757 017666 004737 020050 | JSR PC,CLHDXD ICLEAR DX DATA FILE
3758 017672 012777 017740 161304 | MOV #SOS,ISH,0DXIV ILOAD SOSIEN INT VECTOR
3759 017700 013777 001270 161300 | MOV DXPRY,0DXIS ILOAD INT STATUS
3760 017706 012777 100525 161374 | MOV #100525,0DXHO ILOAD BUS0 WITH DATA PATTERN
3761 017714 005037 177770 | CLR PS ILOWER PROCESSOR STATUS
3762 017720 052777 000100 161392 | BIS #INTEN,0DXCS ISET INTERRUPT ENABLE
3763 017726 004737 020070 | JSR PC,DXGO
3764 017732 000001 | WAIT IFOH NPR/S TO FINISH
3765 017734 000776 | BR ,+2
3766 017736 104000 | ERROR IRETURN FROM INTERRUPT FAILED
3767 | IFAST NPR DATA TEST INTERRUPT SERVICE ROUTINE
3768
3769 017740 | SOS,ISRI
3770 017740 010146 | MOV #1, -(6) ISAVE REGISTERS
3771 017742 010246 | MOV #2, -(6)
3772 017744 032777 000200 161326 | BIT #DONE,0DXCS IVERIFY DONE SET
3773 017752 001001 | BNE ,+4 IBRANCH IF NO ERROR CONDITION
3774 017754 104000 | ERROR IINVALID INTERRUPT
3775 017756 032777 000040 161334 | BIT #NPRTO,0DXES ITEST FOR NPRTO ERROR
3776 017764 001401 | BEQ ,+4 IBRANCH IF NO ERROR CONDITION
3777 017766 104000 | ERROR INPRTO SET
3778 017770 005777 161312 | TST 0DXBC IVERIFY BYTE COUNT ZERO
3779 017774 001401 | BEQ ,+4 IBRANCH IF NO ERROR CONDITION
3780 017776 104000 | ERROR IBYTE COUNT NOT ZERO
3781 020000 012701 037426 | MOV #NPRDATA, X1
3782 020004 012702 000012 | MOV #10,, X2
3783 020010 122721 000125 | DXDCKI CMPB #125, (1)+ ICHECK DATA
3784 020014 001401 | BEQ ,+4 IBRANCH IF NO ERROR CONDITION
3785 020016 104000 | ERROR IDATA TRANSFER ERROR
3786 020020 005302 | DXOTEI DEC X2
3787 020022 001372 | BNE DXDCK IVERIFY
3788 020024 042777 000200 161246 | BIC #DONE,0DXCS ICLEAR DONE
3789 020032 004737 020050 | JSR PC,CLHDXD ICLEAR DX DATA FILE
3790 020036 012602 | DXOUTI MOV (SP)+,R2
3791 020040 012601 | MOV (SP)+,R1
3792 020042 012716 020164 | MOV #SOSDONE,0SP IFUDGE RETURN PC
3793 020046 000002 | RTI
3794
3795 020050 012701 037426 | CLRDxDI MOV #NPRDATA,R1
3796 020054 012702 000012 | MOV #10,,R2
3797 020060 105021 | DS,3I CLRB (R1)+
3798 020062 005302 | DEC R2
3799 020064 001375 | BNE DS,3

```

```

3800 020066 000207          RTS      PC
3801
3802
3803 020070 012777 037426 161246 DXGOI  MOV      #NPRDATA,DXRA      ISET UP BASE ADRS REG
3804 020076 012777 177766 161242          MOV      #-10,,DXBC      ISET DXBC
3805 020104 052777 000003 161106          RIS      #DXFI,DXCS      IDEX FUNCTION INPUT (360 WRITE)
3806 020112 052777 060000 161170          RIS      #SELO;HLDO,DXMO  ICUI = SELO, HLDO
3807 020120 042777 060000 161192          RIC      #SELO;HLDO,DXMO
3808 020126 052777 002000 161194          RIS      #CMD0,DXMO      ICMD0
3809 020134 042777 002000 161146          RIC      #CMD0,DXMO      I
3810 020142 052777 000004 161192          RIS      #SOSIEN,DXES    ISOSIEN FOR FAST NPR
3811 020150 032777 000004 161142          RIT      #SOSIEN,DXES    IVERIFY SOSIEN CLEARED
3812 020156 001001          BNE      ,+4             IBRANCH IF NO ERROR CONDITION
3813 020160 104000          ERROR
3814 020162 000207          RTS      PC             IRETURN
3815 020164 042777 000004 161126 SOSDONE:  RIC      #SOSIEN,DXES    ICLEAR SRVO-SRVI ENABLE
3816
3817
3818
3819

```



```
3820 ; .....  
3821 ;TEST 17 END OF TEST STRING  
3822 ; .....  
3823 020172 124400 TST17: SCOPE  
3824 020174 012737 000031 022414 MOV #1,00;COUNT ;ITERATION COUNT  
3825 026202 012737 000017 023442 MOV #17,00ENTSTN ;SAVE TEST # FOR ERROR REPORT  
3826 020210 012737 020210 022420 MOV #SCP17,00RETURN ;SCOPE LOOP RETURN ADRS  
3827 020216 SCP17:  
3828  
3829  
3830 ,REM *  
3831  
3832 THIS TEST FUNCTIONS AS A TERMINATOR FOR THE CHAINABLE TEST STRING,  
3833 AS SUCH IT TRANSFERS CONTROL TO THE LOOP CONTROL SUBROUTINE,  
3834  
3835 *  
3836  
3837  
3838 020216 000137 024472 JMP 00LPCNTL
```

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3892

 #20222
 #20222 #53777 #24774 161000
 #20230 #52777 #04000 161092
 #20236 #52777 #60000 161044
 #20244 #42777 #04000 161036
 #20252 #43777 #24774 161030
 #20260 #53777 #24776 161022
 #20266 #52777 #02000 161014
 #20274 #43777 #24776 161006
 #20302 #42777 #02000 161000
 #20310 105737 #24776
 #20314 #01403
 #20316 105777 161020
 #20322 #01403
 #20324 #42777 #60000 160796
 #20332 #52777 #01000 160790
 #20340 #42777 #01000 160742
 #20346 #00207

 #20350
 #20350 #53777 #24774 160790
 #20356 #42777 #00400 160742
 #20364 #53777 #24774 160716
 #20372 #52777 #04000 160710
 #20400 #52777 #60000 160702
 #20406 #42777 #04000 160674
 #20414 #43777 #24774 160666
 #20422 #53777 #24776 160660
 #20430 #52777 #02000 160692
 #20436 #43777 #24776 160644
 #20444 #42777 #02000 160636
 #20452 #52777 #01000 160630
 #20460 #42777 #01000 160622
 #20466 #00207

 #20470
 #20470 #10146
 #20472 #13701 #20076
 #20476 #20137 #01440
 #20502 #01005
 #20504 #05737 #03776
 #20510 #01401
 #20512 104002
 #20514 #00404
 #20516 #05741
 #20520 #01401

IFAST ISS SELECTOR CH ONLY

FASTISSI

```

BIS   DEV, #UXMO        ;PUT DEVICE AORS ON OUT TAGS
BIS   #ADRS, #UXMO     ;RAISE AORS=OUT
BIS   #HLDO, SELO, #UXMO   ;RAISE SELECT=OUT, HOLD=OUT
BIC   #ADRS, #UXMO     ;REMOVE AORS=OUT
BIC   DEV, #UXMO        ;REMOVE AORS
BIS   CMD, #UXMO        ;PUT COMMAND ON OUT TAGS
BIS   #CMD0, #UXMO     ;RAISE CMD=OUT
BIC   CMD, #UXMO        ;REMOVE CMD
BIC   #CMD0, #UXMO     ;REMOVE CMD=OUT
TSTB  CMD               ;TEST FOR "TEST I/O" COMMAND
BEQ   FISS1             ;CLEAR SELO, HLDO IF TIO CMD
TSTB  #BUS1             ;TEST BUS1 FOR ZERO STATUS
BEQ   FISS2             ;DON'T CLEAR SELO, HLDO ON 0 STATUS
BIC   #HLDO, SELO, #UXMO   ;CLEAR SELO AND HLDO
BIS   #SRVD, #UXMO     ;RELEASE STATUS
BIC   #SRVD, #UXMO     ;
RTS   PC

```

ISEL CH ISS

SEL.ISSI

```

BIS   DEV, #CUAR        ;PRESET COM/ADD REG DEV ADDRESS
BIC   #400, #CUAR     ;PANITY RESET
BIS   DEV, #UXMO        ;PUT DEVICE AORS ON OUT TAGS
BIS   #ADRS, #UXMO     ;RAISE AORS=OUT
BIS   #HLDO, SELO, #UXMO   ;RAISE SELECT=OUT, HOLD=OUT
BIC   #ADRS, #UXMO     ;REMOVE AORS=OUT
BIC   DEV, #UXMO        ;REMOVE AORS
BIS   CMD, #UXMO        ;PUT COMMAND ON OUT TAGS
BIS   #CMD0, #UXMO     ;RAISE CMD=OUT
BIC   CMD, #UXMO        ;REMOVE CMD
BIC   #CMD0, #UXMO     ;REMOVE CMD=OUT
BIS   #SRVD, #UXMO     ;RELEASE STATUS
BIC   #SRVD, #UXMO     ;
RTS   PC

```

ITT, TRACE, ROUTINE TO TRACE TUMBLE TABLE ENTRIES

AND THE TYNDX
TT, TRACEI

```

MOV   R1, -(SP)
MOV   #0TTTRACE, R1   ;LOAD R1 WITH SOFTWARE IT
CMP   R1, #0TT        ;CHECK FOR BOTTOM OF TABLE
BNE   15              ;BRANCH IF NOT BOTTOM
TST   #03776          ;LOOK AT TOP OF TT
BEQ   ,+4             ;BRANCH IF NO RAP AROUND
TRACER                ;REPORT TT TRACE ERROR
BR    25
15)  TST   -(R1)
      BEQ   ,+4        ;CHECK FOR TT OVERFLOW
          ;BRANCH IF NO RAP AROUND

```



```

3947          JPHST, CHECK PHASE AND STATE CONTROL BITS
3948
3949  220744  017627  200020  PHST1  MOV      0(SP), (PC)+  ;SAVE EXPECTED PHASE AND STATE
3950  220750  200020  SPHST1  0                ;HERE
3951  220752  262716  000022  ADD     #2, 0SP          ;INC RETURN PC
3952  220756  217727  100332  MOV     @DXCB, (PC)+    ;SAVE CONTROL BITS
3953  220762  200000  SCB11  0                ;HERE
3954  220764  042737  103777  020762  BIC     @103777, SCB1   ;CLEAR ALL BUT PHASE & STATE
3955  220772  023737  020750  020762  CMP     SPHST, SCB1    ;EXPECTED VS ACTUAL
3956  221000  001416  BEQ     PHST1           ;EXIT IF OK
3957  221002  000024  021040  TYPE   ,PHSTER
3958  221006  011627  MOV     @SP, (PC)+     ;SAVE ERROR ORIGIN
3959  221010  000000  PSTMP1  0                ;HERE
3960  221012  162737  000002  021010  SUB     #2, @PSTMP
3961  221020  010546  MOV     TTY, -(SP)     ;SAVE TTY
3962  221022  013705  021010  MOV     PSTMP, TTY     ;TYPE IN OCTAL
3963  221026  004737  027650  JSR     PC, PRINTR     ;TYPE LEADING ZERO'S
3964  221032  012605  MOV     (SP)+, TTY     ;RESTORE TTY
3965  221034  104000  ERROR
3966  221036  000207  PHST1  RTS      PC          ;RETURN
3967  221040  050137  040510  042523  PHSTER1 ,ASCIZ  "PHASE OR STATE ERROR AT: "
3968  221046  047440  020122  052123
3969  221054  052101  020105  051105
3970  221062  047522  020122  052101
3971  221070  020072  000
3972  221074  021074
3973          ;EVEN
3974          ;ROUTINE TO ISSUE N MAINT, CLOCK PULSES
3975  221074  012527  CLK1  MOV     (R5)+, (PC)+  ;SAVE
3976  221076  000000  CLKC1  0                ;CLOCK COUNT HERE
3977  221100  005737  021076  TST     CLKC          ;TEST FOR ZERO COUNT
3978  221104  001435  BEQ     CLKE          ;BRANCH IF COUNT EMPTY
3979  221106  032737  002000  177570  BIT     @BIT10, SWR    ;TEST FOR SINGLE STEP
3980  221114  001423  BEQ     CLK1          ;BRANCH IF AUTO CLOCK
3981  221116  000004  035240  TYPE   ,CRLF
3982  221122  010546  MOV     TTY, -(SP)     ;SAVE TTY
3983  221124  010505  MOV     R5, TTY        ;TYPE IN OCTAL
3984  221126  004737  027650  JSR     PC, PRINTR     ;TYPE LEADING ZERO'S
3985  221132  012605  MOV     (SP)+, TTY     ;RESTORE TTY
3986  221134  000004  035236  TYPE   ,SPACE
3987  221140  012737  000003  021162  MOV     @BPT, B       ;RESTORE BREAK POINT TRAP
3988  221146  012737  000240  031172  MOV     @NDP, 0, UIN   ;CODE FOR ODT RESTORE
3989  221154  012737  021162  031126  MOV     @B, 0, ADR1    ;TELL ODT BREAK LEGAL
3990  221162  000003  BPT     ;BREAK TO ODT
3991  221164  052777  000001  100126  CLK11  BIS     @MCLKP, @DXES ;ISSUE MAINT CLK PULSE
3992  221172  005337  021076  DEC     CLKC          ;DEC CLOCK COUNT
3993  221176  001372  BNE     CLK1          ;CONTINUE IF COUNT NOT ZERO
3994  221200  000205  CLKE1  RTS      R5          ;RETURN
3995
3996          ;ROUTINE TO FORCE DX INTO TIME STATE 1
3997
3998  221202  032777  004000  100104  TMS11  BIT     @TSSP, @DXCB  ;CHECK TIME STATE
3999  221210  001010  BNE     B1            ;BRANCH IF TMS1
4000  221212  052777  000001  100100  BIS     @MCLKP, @DXES ;ADVANCE TO TMS1

```



```

4881 221223 232777 204000 162006      BIT      #TSSP, #UXCH      JTS1?
4882 221226 201001                BNE      ,+4          JBRANCH IF NO ERROR CONDITION
4883 221233 104000                ERROR
4884 221232 200207                RTS      PC          JTIME STATE MALFUNCTION
4885
4886
4887
4888
4889 221234 232777 200400 162006  JROUTINE TO COPY PHAS BIT INTO CLK0
4890 221242 201407  COPAR01 BIT      #PHAS, #UXMO
4891 221244 252737 201000 221510      BEQ      1$
4892 221252 252737 201000 221300      BIS      #CLK0, #MMINAP
4893 221260 200406                BIS      #CLK0, #NOMI      JNO MI MAP
4894 221262 242737 201000 221510      BR       3$
4895 221270 242737 201000 221300      BIC      #CLK0, #MMINAP
4896 221276 200207                BIC      #CLK0, #NOMI      ]
4897 221300 200000                JSI      RTS      PC
4898                                NOMI: 0          JMASK TO SEE IF MI IS UNREADABLE
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4921 221302
4922 221302 210146
4923 221304 210246
4924 221306 213701 201440
4925 221312 212702 200400
4926 221316 205021
4927 221320 205302
4928 221322 201375
4929 221324 212602
4930 221326 212601
4931 221330 200207
4932
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4935 221332
4936 221332 210146
4937 221334 210246
4938 221336 213701 201440
4939 221342 212702 200400
4940 221346 205701
4941 221350 201401
4942 221352 104000
4943 221354 205302
4944 221356 201373
4945 221360 212602
4946 221362 212601
4947 221364 200207
4948
4949
4950
4951
4952
4953
4954

```

ZEROTTI
MOV R1,=(SP)
MOV R2,=(SP)
MOV TT,R1
MOV #256,,R2
ZTT1: CLR (R1)+
DEC R2
BNE ZTT1
MOV (SP)+,R2
MOV (SP)+,R1
RTS PC

JTTZERO, ROUTINE TO VERIFY TT ZERO
TTZERO: MOV R1,=(SP)
MOV R2,=(SP)
MOV TT,R1
MOV #256,,R2
TTZ1: TST (R1)+
BEQ ,+4 JBRANCH IF NO ERROR CONDITION
ERROR JILLEGAL TT ENTRY
DEC R2
BNE TTZ1
MOV (SP)+,R2
MOV (SP)+,R1
RTS PC

JROUTINE TO VERIFY THAT NO UNEXPECTED CHANGE
JHAS OCCURRED IN ANY REGISTER
JTHIS ROUTINE DOES NOT LOOK AT THE PHASE CONTROL OR
JTIME STATE FLIP FLOP SO THAT THIS ROUTINE
JMAY BE USED IN EITHER THE MAINTENANCE OF

```

IFREE RUNNING CLOCK MODE
4255
4256
4257 021366 027727 157732 CHKREG1 CMP 0DXUS,(PC)+ ICOMPARE DXDS WITH
4258 021372 000000 DSMAP1 0 JDS MAP
4259 021374 001401 BEQ ,+4 IBRANCH IF NO ERROR
4260 021376 104001 MAPERR IREPORT MAP ERROR
4261 021400 027727 157672 CMP 0DXCA,(PC)+ ICOMPARE DXCA WITH
4262 021404 000000 CANAP1 0 JCA MAP
4263 021406 001401 BEQ ,+4 IBRANCH IF NO ERROR
4264 021410 104001 MAPERR IREPORT MAP ERROR
4265 021412 027727 157662 CMP 0DXCS,(PC)+ ICOMPARE DXCS WITH
4266 021416 000000 CSNAP1 0 JCS MAP
4267 021420 001401 BEQ ,+4 IBRANCH IF NO ERROR
4268 021422 104001 MAPERR IREPORT MAP ERROR
4269 021424 027727 157652 CMP 0DXOS,(PC)+ ICOMPARE DXOS WITH
4270 021430 000000 DSMAP1 0
4271 021432 001401 BEQ ,+4 IBRANCH IF NO ERROR
4272 021434 104001 MAPERR IREPORT MAP ERROR
4273 021436 027727 157642 CMP 0DXBA,(PC)+ ICOMPARE BUS ADNS WITH
4274 021442 000000 BANAP1 0 IBUS ADNS MAP
4275 021444 001401 BEQ ,+4 IBRANCH IF NO ERROR
4276 021446 104001 MAPERR IREPORT MAP ERROR
4277 021450 027727 157632 CMP 0DXBC,(PC)+ ICOMPARE BYTE COUNT WITH
4278 021454 000000 BCNAP1 0 IBYTE COUNT MAP
4279 021456 001401 BEQ ,+4 IBRANCH IF NO ERROR
4280 021460 104001 MAPERR IREPORT MAP ERROR
4281 021462 027727 157622 CMP 0DXMD,(PC)+ ICOMPARE MAINTENANCE-OUT WITH
4282 021466 000000 MDMAP1 0 MAINTENANCE-OUT MAP
4283 021470 001401 BEQ ,+4 IBRANCH IF NO ERROR
4284 021472 104001 MAPERR IREPORT MAP ERROR
4285
4286 021474 023777 021300 157610 CMP 0#NOI,0DXMI ITEST FOR UNREADABILITY
4287 021502 001401 BEQ CKRG1 IBRANCH IF UNREADABLE
4288 021504 027727 157602 CMP 0DXMI,(PC)+ ICOMPARE MAINTENANCE-IN WITH
4289 021510 000000 MINAP1 0 MAINTENANCE-IN MAP
4290 021512 001401 BEQ ,+4 IBRANCH IF NO ERROR
4291 021514 104001 MAPERR IREPORT MAP ERROR
4292 021516 017727 157572 CKRG11 MOV 0DXCB,(PC)+ ISAVE DXCB
4293 021522 000000 SDXCB1 0 IHERE
4294
4295
4296 021524 053737 021096 021544
4297
4298 021532 042737 074000 021522
4299 021540 023727 021522
4300 021544 000000 CBMAP1 0
4301 021546 001401 BEQ ,+4
4302 021550 104001 MAPERR IREPORT MAP ERROR
4303 021552 017727 157542 MOV 0DXES,(PC)+ ISAVE DX EXTRA SIGNAL
4304 021556 000000 SDXES1 0 IHERE
4305 021560 023727 021556 CMP 0#SUXES,(PC)+ ICOMPARE SAVED ES WITH MAP
4306 021564 000000 ESNAP1 0 IES MAP
4307 021566 001401 BEQ ,+4 IBRANCH IF NO ERROR
4308 021570 104001 MAPERR IREPORT MAP ERROR

```



```

4109
4110 *21572 *32777 *80882 157520      BIT      #MCLKEN,#DXES      JCHECK FOR MAINTENANCE MODE
4111 *21600 *82185                       BNE      CHKENDU        JBRANCH IF MAINT MODE
4112 *21602 *27727 157510      CMP      #DXND,(PC)+    JCOMPARE NPR DATA WITH
4113 *21606 *80888                       NDMAPI  *                JNPR DATA MAP
4114 *21610 *821401                     BEQ     ,+4             JBRANCH IF NO ERROR
4115 *21612 124801                     MAPERR *                JREPORT MAP ERROR
4116
4117 J..... MOD APR 74 .....
4118 *21614 *43737 *21656 *21544      J*      MODULO ADDRESS MODIFICATION
4119 *21622 *85837 *21656      CHKENDI BIC      CBMAPS,CBMAP
4120 *21626 *80287                       CLR     CBMAPS
4121 RTS      PC                IRETURN
4122 JADDRESS OF MAPS
4123 *21630 *21372      ADDRSHI DSHAP
4124 *21632 *21404      ADRCAMI CAMAP
4125 *21634 *21416      ADRCAMI CSMAP
4126 *21636 *21438      ADDRSHI DSHAP
4127 *21640 *21442      ADRBAMI BAMAP
4128 *21642 *21454      ADRBAMI RCMAP
4129 *21644 *21466      ADRMAMI MCMAP
4130 *21646 *21518      ADRMAMI MIMAP
4131 *21650 *21544      ADRCAMI CBMAP
4132 *21652 *21606      ADRNDMI NDMAP
4133 *21654 *21564      ADRESHI ESHAP
4134 J..... MOD APR 74 .....
4135 *21656 *80888      J*      MODULO ADDRESS MODIFICATION
4136 CBMAPSI *
4137 J..... MOD APR 74 .....
4138 JDXRES, ROUTINE TO ISSUE DX RESEY AND SETUP TABLES
4139 JTO TRACE THE TTNDX AND THE TUMBLE TABLE ENTRIES
4140 *21660 *42777 *80882 157432      DXRESI BIC      #MCLKEN,#DXES      JCLEAR MAINT CLK
4141 *21666 *42777 *80288 157404      BIC     #DONE,#DXCS      JCLEAR DONE & LOCKO
4142 *21674 *32777 *80888 157376      BIT     #DONE,#DXCS      JVERIFY DONE CLEAR
4143 *21702 *821401                     BEQ     ,+4             JBRANCH IF NO ERROR CONDITION
4144 *21704 124808                       ERROR *                IDONE NOT ZERO
4145 *21706 *52777 *80881 157364      BIS     #DXFRS,#DXCS      JISSUE DX RESEY
4146 *21714 *84737 *21382      JSR     PC,ZEHOTT        JCLEAR TT
4147 *21720 *84737 *21776      JSR     PC,RESMAP        JCLEAR REG MAP(EXCEPT OPLO)
4148 *21724 *52777 *80818 157366      BIS     #TIMDIS,#DXES    JSET TIMER DISABLE
4149 *21732 *84737 *21234      JSR     PC,COPARO        JCOPY PARO INTO CLKO MAP
4150 *21736 *84737 *21366      JSR     PC,CHKREG        JVERIFY NO UNEXPECTED REG CHANGE
4151 *21742 *84737 *21332      JSR     PC,TTZERO        JVERIFY NO TT ENTRIES
4152 *21746 *13737 *81442 *22676      MOV     #TT,TTTRACE      JINIT SOFTWARE TT POINTER
4153 *21754 185777 157378      TSTB   #TTNDX           JVERIFY TTNDX ZERO
4154 *21760 *821401                     BEQ     ,+4             JBRANCH IF NO ERROR CONDITION
4155 *21762 124808                       ERROR *                JTTNDX NOT ZERO
4156 *21764 *85837 *28536      CLR     #BENTHY1
4157 *21770 *85837 *28576      CLR     #BENTHY2
4158 *21774 *80287      RTS     PC
4159
4160
4161 ,REM *
4162

```

4163
4164
4165
4166
4167
4168
4169
4170 721776 705037 021372
4171 722002 705037 721404
4172 722006 705037 021410
4173 722012 753737 701430 021430
4174 722020 705037 721430
4175 722024 705037 721442
4176 722030 705037 721454
4177
4178 722034 712737 100000 021456
4179 722042 712737 000400 021510
4180
4181 722050 705037 721544
4182 722054 705037 721600
4183 722060 705037 721650
4184 722064 712737 000010 021504
4185 722072 000207
4186
4187
4188
4189
4190
4191
4192
4193 722074 104000
4194 722076 000002
4195
4196 722100 032777 000200 157172
4197 722106 701001
4198 722110 104000
4199 722112 042777 000200 157100
4200 722120 052737 100000 022130
4201 722126 000002
4202
4203 722130 000000
4204
4205
4206
4207
4208 722132
4209 722132 032737 100000 022130
4210 722140 001405
4211 722142 062716 000002
4212 722146 042737 100000 022130
4213 722154 000207
4214
4215
4216

THIS SUBROUTINE RESTORES THE TRACE MAP TO THE STATE THE REGISTERS SHOULD BE IN FOLLOWING A DX RESET,

```

*
|..... MOD APN 74 .....
| STORAGE REDUCTION MOD
RESMAP1 CLR 00DSMAP
          CLR 00CAVAP
          CLR 00CSMAP
          RIS SPW,DSMAP
          CLR0 00DSMAP
          CLR 00BAVAP
          CLR 00BCMAP
|..... MOD APN 74 .....
          MOV 00PLD,00HOMAP
          MOV 00PARI,00MINMAP
|..... MOD APN 74 .....
          CLR 00CBMAP
          CLR 00NDMAP
          CLR 00CBMAPS
          MOV 00TIMDIS,00ESMAP
          RTS PC

```

INTERRUPT HANDLERS

```

FALSEI  ERROR          IFALSE OR UNEXPECTED INTERRUPT
RTI
INTRI   BIT 00DONE,00XCS  ITEST DONE
          BNE ,+4         IBRANCH ON DONE
          ERROR          IFALSE INTERRUPT
          BIC 00DONE,00XCS ICLR INT CONDITION
          BIS 00INTOK,INTPAS ISEI INT PASS FLAG
RTI

```

INTPASI 0 INTERRUP PASS FLAG

INTERR, ROUTINE TO TEST FOR SUCCESSFUL INTERRUPT

```

INTERRI
          BIT 00INTOK,INTPAS IIDI INTERRUPT OCCUR
          BEQ IRR         IBRANCH IF NOT
          ADD 02,0SP      IINC RETURN PC
          BIC 00INTOK,INTPAS ICLR PASS FLAG
          RTS PC

```

EMULATOR DECODER ROUTINE

4217	022156				EMTDECODER:				
4218	022156	011646			MOV	0R6, -(R6)			!DUPLICATE PC ON STACK
4219	022160	162716	000002		SUB	#2, 0R6			!POINT PC TO EMT INST,
4220	022164	017616	000000		MOV	0(R6), 0R6			!MOV EMT INST ONTO STACK
4221	022170	121627	000024		CMPEB	0R6, #2R,			!TEST THAT CALL IS WITHIN LIMITS
4222	022174	101471			BLOS	EMTOK			!BRANCH IF WITHIN LIMITS
4223	022176	104000			ERROR				
4224	022200	006116			EMTOK:	0R6			!EMT ARGUMENT X 2,
4225	022202	042716	177001		BIC	#177001, 0R6			!CLEAR HIGH BYTE
4226	022206	062716	022220		ADD	0EMTAG, 0R6			!FORM ADRS OF ROUTINE ADRS
4227	022212	017616	000000		MOV	0(R6), 0R6			!PUT ROUTINE ADRS ON STACK
4228	022216	000136			JMP	0(R6)+			!JUMP TO ROUTINE
4229									!TAGS FOR EMT CALL
4230									
4231	022220				EMTAG:				!BEGINNING OF EMT TABLE
4232									
4233	022220	000024			.BLKW	20,			!RESERVE 16, WORDS FOR ADRS LIST
4234					!SCOPE	LOOP AND CONTROL SUBROUTINE			
4235									
4236	022270	105777	157102		SCOPECI	YSTB	0TKS		
4237	022274	100014			BPL	SCOPEH			
4238	022276	017727	157076		MOV	0TKB, (PC)+			
4239	022302	000000			DTMP:	0			
4240	022304	042737	000200	022302	BIC	#200, DTMP			
4241	022312	123727	022302	000003	CMPEB	DTMP, #3			
4242	022320	001002			BNE	SCOPEH			
4243	022322	000137	023530		JMP	004041, 0			
4244	022326	032737	040000	177970	SCOPEHI	BIT	#BIT14, SR		!TEST FOR SCOPE
4245	022334	001012			BNE	SCOPEB			!BRANCH IF SCOPE SELECTED
4246	022336	032737	004000	177970	BIT	#BIT11, SR			!TEST FOR ITERATIONS
4247	022344	001020			BNE	SCOPEA			!EXIT IF ITERATIONS INHIBITED
4248	022346	005237	022416		!INC	SCOPEF			!INCREMENT ITERATION COUNT
4249	022352	023737	022416	022414	CMPEB	SCOPEF, !COUNT			!TEST FOR COMPLETION OF ITERATIONS
4250	022360	001410			BEC	SCOPEG			!BRANCH IF COMPLETE
4251	022362	012737	177777	024706	SCOPEBI	MOV	#-1, !ONESHOT		!SO YOU CAN SCOPE ON ONCE ONLY CODE
4252	022370	005726			TSY	(SP)+			!POP RETURN PC
4253	022372	012637	177776		MOV	(SP)+, PS			!RESTOR PROCESSOR STATUS
4254	022376	000177	000016		JMP	0RETJRN			!
4255	022402	011637	022420		SCOPEGI	MOV	0SP, RETURN		!SET UP SCOPE RETURN ADRS
4256	022406	005037	022416		SCOPEAI	CLR	SCOPEF		!CLEAR ITERATION COUNT
4257	022412	000002			RTI				
4258	022414	000001			!COUNT:	1			!NUMBER OF REQUESTED ITERATIONS
4259	022416	000000			SCOPEFI	0			!ITERATION COUNT
4260	022420	004000			RETURN:	TSY1			!DEFAULT RETURN
4261	022422				!YTABLE:				!BEGINNING OF TABLE OF TEST ADDRESSES
4262		022522			, #'+100				!TEST ADDRESS LIST
4263									
4264									
4265									
4266					!ENTRY POINT FOR MAP ERRORS				
4267	022522				Y, MAPERR:				
4268	022522	012737	177777	023406	MOV	#-1, ENFLG			!FLAG THAT THIS IS MAP ERROR
4269	022530	000137	022072		JMP	000EF			
4270	022534	000000			YERPC:	0			!ORIGIN OF TRACE ERROR

```

4271
4272 022536          JUMBLE TABLE TRACE ERROR TRAP
          T,TRACER1
4273 022536 012737 177776 023406 MOV    #2,ERFLG
4274 022544 000004 035555 TYPE   ,TRC#1
4275 022550 010546 MOV    TTY,-(SP)          ISAVE TTY
4276 022552 013705 023442 MOV    ERTSTN,TTY        ITYPE ERTSTN IN OCTAL
4277 022556 004737 027060 JSR    R7,PRINTS        IAND SUPPRESS LEADING ZERO'S
4278 022562 012605 MOV    (SP)+,TTY        IRESTORE TTY
4279 022564 000004 035007 TYPE   ,TRC#1 ITRACE ERROR AT:
4280 022570 010546 MOV    TTY,-(SP)          ISAVE TTY
4281 022572 013705 022534 MOV    TERPC,TTY        ITYPE IN OCTAL
4282 022576 004737 027050 JSR    PC,PRINTR        ITYPE LEADING ZERO'S
4283 022602 012605 MOV    (SP)+,TTY        IRESTORE TTY
4284 022604 000004 035707 TYPE   ,TRC1
4285 022610 010546 MOV    TTY,-(SP)          ISAVE TTY
4286 022612 013705 020704 MOV    TTHAS,TTY        ITYPE IN OCTAL
4287 022616 004737 027050 JSR    PC,PRINTR        ITYPE LEADING ZERO'S
4288 022622 012605 MOV    (SP)+,TTY        IRESTORE TTY
4289 022624 000004 035731 TYPE   ,TRC2
4290 022630 010546 MOV    TTY,-(SP)          ISAVE TTY
4291 022632 013705 020706 MOV    TTSOULD,TTY      ITYPE IN OCTAL
4292 022636 004737 027050 JSR    PC,PRINTR        ITYPE LEADING ZERO'S
4293 022642 012605 MOV    (SP)+,TTY        IRESTORE TTY
4294 022644 032701 000002 BIT    #BIT1,R1         ITEST FOR DXDS OR DXCA
4295 022650 001003 BNE    IS
4296 022652 000004 035753 TYPE   ,TTDS
4297 022656 000402 BR     2S
4298 022660 000004 036000 15)   TYPE   ,TTCA
4299 022664 000402 25)
4300 022664 000402 BR     DEF
4301
4302          JENTRY POINT FOR MOST ERRORS
4303
4304 022666          T,ERROR1
4305 022666 005037 023406 CLR    ERFLG           IFLAG THIS AS NORMAL ERROR
4306 022672 005237 023440 DEF:   INC    ERRCNT        IINC ERROR COUNT
4307 022676 010037 023444 MOV    R0,E,R0         ISAVE R0
4308 022702 010137 023446 MOV    R1,E,R1         ISAVE R1
4309 022706 010237 023450 MOV    R2,E,R2         ISAVE R2
4310 022712 010337 023452 MOV    R3,E,R3         ISAVE R3
4311 022716 010437 023454 MOV    R4,E,R4         ISAVE R4
4312 022722 010537 023456 MOV    R5,E,R5         ISAVE R5
4313 022726 032737 020000 177570 BIT    #BIT13,SR        ITEST FOR INHIBIT PRINT
4314 022734 001131 BNE    PERRPC          IBRANCH IF INHIBIED
4315 022736 000004 035271 TYPE   ,ERPC
4316 022742 011627 MOV    @SP,(PC)+        ISAVE ERROR PC +2
4317 022744 000000 ETMP0: 0
4318 022746 162737 000002 022744 SUB    #2,ETMP0        ICORRECT PC
4319 022754 010546 MOV    TTY,-(SP)        ISAVE TTY
4320 022756 013705 022744 MOV    @ETMP0,TTY      ITYPE IN OCTAL
4321 022762 004737 027050 JSR    PC,PRINTR        ITYPE LEADING ZERO'S
4322 022766 012605 MOV    (SP)+,TTY        IRESTORE TTY
4323 022770 032737 010000 177570 BIT    #BIT12,SR        ITEST FOR SHORT ERROR REPORT
4324 022776 001110 BNE    PERHPC          IBRANCH IF SHORT SELECTED

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4325	023000	022737	177776	023406		CMP	#-2,ERFLG	
4326	023006	021410				REQ	15	
4327	023010	000004	035505			TYPE	,MSG35	!ERROR IN TEST!
4328	023014	010546				MOV	TTY,-(SP)	!SAVE TTY
4329	023016	013705	023442			MOV	ERTSTN,TTY	!TYPE ERTSTN IN OCTAL
4330	023022	004737	027660			JSR	#7,PRINTS	!AND SUPPRESS LEADING ZERO'S
4331	023026	012605				MOV	(SP)+,TTY	!RESTORE TTY
4332	023030	000004	035434		151	TYPE	,MSG20	
4333	023034	042737	177400	021406		BIC	#177400,MOHAP	!MASK OUT CU+DEV ADDRESS
4334	023042	010546				MOV	TTY,-(SP)	!SAVE TTY
4335	023044	013705	021466			MOV	MOHAP,TTY	!TYPE IN OCTAL
4336	023050	004737	027650			JSR	PC,PRINTR	!TYPE LEADING ZERO'S
4337	023054	012605				MOV	(SP)+,TTY	!RESTORE TTY
4338								!REGISTER DUMP ROUTINE
4339								
4340	023056	005737	023400			TSY	ERFLG	
4341	023062	001456				REQ	PERHPC	!BRANCH IF NOT MAP ERROR
4342	023064	000004	035526			TYPE	,MSG30	!MAP ERROR ORIGIN
4343	023070	016627	000004			MOV	4(SP),(PC)+	!SAVE ERROR PC +2
4344	023074	000000			ETMP11	B		!HERE
4345	023076	162737	000004	023074		SUB	#4,00ETMP1	!CORRECT PC
4346	023104	010546				MOV	TTY,-(SP)	!SAVE TTY
4347	023106	013705	023074			MOV	ETMP1,TTY	!TYPE IN OCTAL
4348	023112	004737	027650			JSR	PC,PRINTR	!TYPE LEADING ZERO'S
4349	023116	012605				MOV	(SP)+,TTY	!RESTORE TTY
4350	023120	000004	035112			TYPE	,R0H	
4351	023124	012701	023410			MOV	#ADR1,R1	
4352	023130	012702	001274			MOV	#DXDS,R2	
4353	023134	012703	021630			MOV	#ADR0SH,R3	
4354	023140	012137	023156		RDMP21	MOV	(R1)+,RDMP1	
4355	023144	027273	000000	000000		CMP	0(R2),0(R3)	!COMP MAP VS REGISTER
4356	023152	001416				REQ	RDMP2	!DUMP ONLY ON DISCREPANCY
4357	023154	000004				TYPE		
4358	023156	000000			RDMP11	B		
4359	023160	000004	035227			TYPE	,SPACE	
4360	023164	017205	000000			MOV	0(R2),TTY	!DUMP CONTENTS OF REGISTER
4361	023170	004737	027650			JSR	PC,PRINTR	
4362	023174	000004	035230			TYPE	,SPACE	
4363	023200	017305	000000			MOV	0(R3),TTY	!DUMP CONTENTS OF MAP
4364	023204	004737	027650			JSR	PC,PRINTR	
4365	023210	023233			RDMP21	CMP	0(R2)+,0(R3)+	!INC R2,R3
4366	023212	020127	023436			CMP	R1,#ADRAE	
4367	023216	001350				RNE	RDMP2	
4368	023220	032737	100000	177570	PERRPC1	BIT	#HLTSH,SR	!TEST FOR HALT ON ERROR
4369	023226	001422				REQ	ERRLOP	!BRANCH IF NO HALT
4370	023230	032737	001000	177570		BIT	#BIT9,SR	!TEST FOR INHIBIT ODT
4371	023236	001415				REQ	25	!BR IF ODT NOT SELECTED
4372	023240	000004	035240			TYPE	,CRLF	
4373	023244	012737	000003	023206		MOV	#BPT,15	!RESTORE BREAK POINT TRAP
4374	023252	012737	000240	031172		MOV	#NOP,0,UIH	!CODE FOR ODT RESTORE
4375	023260	012737	023266	031126		MOV	#15,0,ADR1	!TELL ODT BREAK LEGAL
4376	023266	000003			151	BPT		!BREAK TO ODT
4377	023270	000401				BR	ERRLOP	
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223272 000000
223274 013700 023444
223300 013701 023446
223304 013702 023450
223310 013703 023452
223314 013704 023454
223320 013705 023456
223324 032737 040000 177570
223332 001424
223334 012706 001100
223340 012737 177777 024706
223346 042777 000002 155744
223354 005077 155730
223360 052777 000001 155712
223366 004737 026266
223372 013737 001272 177776
223400 000177 177014
223404 000002
223406 000000
223410 035306
223412 035315
223414 035324
223416 035333

2SI HALT

IHALT ON ERROR

ERRLOPI

MOV E,R0,H0 IRESTORE R0
MOV E,R1,H1 IRESTORE R1
MOV E,R2,H2 IRESTORE R2
MOV E,R3,H3 IRESTORE R3
MOV E,R4,H4 IRESTORE R4
MOV E,R5,H5 IRESTORE R5
BIT #LOPSW,SR ITEST FOR SCOPE LOOP
BEQ EXTR1
MOV #BEGIN,SP IREINIT STACK POINTER
MOV #-1,ONESHOT IREINIT ONESHOT TEST FLAGS
BIC #MCLKEN,0DXES ICLEAR MAINT CLOCK
CLR 0DXMS ISYSTEM RESET
BIS #DXFRS,0DXCS IDX RESET
JSR PC,PREI IREINITIALIZE DX
MOV LESS1,PS IDX PRIORITY MINUS ONE
JMP 0RETJMN

EXTR1: RTI

ERFLG: 0 IERROR CONTROL FLAG #1=MAP ERROR
ILIST OF ACCII MESSAGE ADDRESSES

ADRAI ADXDS
ADXCA
ADXCS
ADXOS

4433	023420	035342		ADYBA
4434	023422	035351		ADYBC
4435	023424	035362		ADYMO
4436	023426	035367		ADYMI
4437	023430	035376		ADYCR
4438	023432	035415		ADYND
4439	023434	035414		ADYES
4440	023436	035423	ADRAE1	ADYES1

4441
4442
4443

ERROR COUNT

4444
4445
4446 023440 000000
4447 023442 000000

ERRCNT: 0
ERTSTN: 0 ITEST NUMBER

4448
4449
4450

REGISTER STORAGE FOR ERROR REPORTING

4451
4452 023444 000000
4453 023446 000000
4454 023450 000000
4455 023452 000000
4456 023454 000000
4457 023456 000000

E,R01 0 ISAVED REGISTERS FOR ERROR REPORTING
E,R11 0 ISAVED REGISTERS FOR ERROR REPORTING
E,R21 0 ISAVED REGISTERS FOR ERROR REPORTING
E,R31 0 ISAVED REGISTERS FOR ERROR REPORTING
E,R41 0 ISAVED REGISTERS FOR ERROR REPORTING
E,R51 0 ISAVED REGISTERS FOR ERROR REPORTING

4458
4459
4460

,SBTTL MONITOR

4461
4462 023460
4463

.....
MONITOR:
.....

4464
4465
4466

4467 023460 012706 001100
4468 023464 012737 000340 177776
4469 023472 004737 025300

MOV #BEGIN,SP ISET UP STACK POINTER
MOV #LEVEL7,PS IMONITOR AT LEVEL 7
JSR PC,#MONDFLT ISET UP DEFAULT PARAMETERS

4470
4471 023476 012737 030006 000000
4472 023504 012737 000200 000002
4473 023512 000004 035146

MOV #TTY!,#00 ITTY KEYBOARD INT VEC
MOV #LEVEL4,#02 ILEVEL 4
TYPE ,HOME IHOME UP AND ERASE SCREEN

4474
4475 023516 000004 034200
4476 023522 012737 023652 023520

HI TYPE ,HEADER
MOV #RELOU,#H+2 IHEADER TEXT GETS WIPED BY NPRIS

4477
4478 023530 000005

MON1,01 RESET

4479 023532 005777 155642
4480 023536 052777 000100 155632
4481 023544 012706 001100

TST #TKB ICLEAR FLAG
BIS #INTEN,#TKS ISET INTERRUPT ENABLE
MOV #BEGIN,SP ISET UP STACK POINTER
MOV #LEVEL7,PS IMONITOR AT LEVEL 7
TYPE ,FSTART

4482 023550 012737 000340 177776
4483 023556 000004 034566
4484 023562 124006
4485 023564 122700 000104
4486 023570 001006

KEY,TO,R? ID = DEFAULT PARAMETERS
CMPB #D,R0
BNE 15

MCLK1.P11 MONITOR

4487	023572	012737	000017	024222		MOV	#17,R0XX	ISET UP FOR LATER CALC
4488	023600	004737	025300			JSR	PC,0#MONDFLT	
4489	023604	000403				RR	25	
4490	023606	122700	000120		151	CMPB	#IP,R0	IP = PREVIOUSLY SELECTED PARAMETERS
4491	023612	001002				BNE	35	
4492	023614	000137	024356		251	JMP	0#MON10	
4493	023620	122700	000123		351	CMPB	#IS,R0	IS = GO THROUGH AND SELECT PARAMETERS
4494	023624	001426				BEQ	MON1	
4495	023626	122700	000116			CMPB	#IN,R0	IN = START AT THIS TEST #
4496	023632	001336				BNE	MON1,0	
4497	023634	000004	034644			TYPE	,MSG5	
4498	023643	104005				ACCEPTO		
4499	023642	013737	025012	025014		MOV	0CTNJM,FIRST,TST	
4500	023650	000761				RR	25	
4501								
4502	023652	051137	046105	040517	RELOAD1	,ASCIZ	"RELOAD FOR HEADER TEXT"	
4503	023660	020104	047000	020122				
4504	023666	042510	042101	051105				
4505	023674	052040	054105	000124				
4506								
4507								
4508								
4509	023702	004737	025300		MON11	JSR	PC,MONDFLT	ISET UP DEFAULT PARAMETERS
4510	023706	000004	034644			TYPE	,MSG5	IFIRST TEST #
4511								
4512	023712	104005				ACCEPTO		IACCEPT TEST NUMBER FROM KEYBOARD
4513								
4514								
4515	023714	005737	025012			TST	0CTNJM	ITEST FOR DEFAULT
4516	023720	001403				BEQ	MON3	IBRANCH ON DEFAULT
4517	023722	013737	025012	025014		MOV	0CTNJM,FIRST,TST	ILOAD FIRST TEST #
4518								
4519	023730	000004	034602		MON31	TYPE	,MSG2	IBASE ADDRESSI
4520								
4521								
4522	023734	104005				ACCEPTO		IACCEPT BASE ADDRESS FROM KEYBOARD
4523								
4524	023736	005737	025012			TST	0CTNJM	ITEST FOR DEFAULT
4525	023742	001403				BEQ	MON4	IBRANCH IF DEFAULT
4526	023744	013737	025012	001202		MOV	0CTNJM,DXBASE	ILOAD NON-DEFAULT ADDRESS
4527								
4528	023752	000004	035451		MON41	TYPE	,MSG20	IACCEPT INTERRUPT VECTOR
4529	023756	104005				ACCEPTO		
4530	023760	005737	025012			TST	0CTNJM	ITEST FOR DEFAULT
4531	023764	001411				BEQ	MON4,1	IBRANCH IF DEFAULT
4532	023766	013737	025012	001204		MOV	0CTNJM,DXIV	ILOAD NON-DEFAULT INT VECTOR ADRS
4533	023774	062737	000002	025012		ADD	02,0#0CTNJM	IFORM INT STATUS ADRS
4534	024002	013737	025012	001206		MOV	0#0CTNJM,0#DXIS	IINT STATUS ADDRESS
4535								
4536								
4537	024010	000004	035047		MON4,11	TYPE	,MSG12	IPRIORITY
4538	024014	104005				ACCEPTO		IACCEPT DX PRIORITY LEVEL
4539	024016	005737	025012			TST	0CTNJM	ITEST FOR DEFAULT
4540	024022	001425				BEQ	MON6	IBRANCH ON DEFAULT


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4541 024024 006337 025012
4542 024030 006337 025012
4543 024034 006337 025012
4544 024040 006337 025012
4545 024044 006337 025012
4546 024050 013737 025012 001270
4547 024056 005337 025012
4548 024062 042737 000037 029012
4549 024070 013737 025012 001272
4550
4551
4552
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4555 024076 000004 034063
4556 024102 012703 025034
4557 024106 000004 034755
4558 024112 004737 027010
4559 024116 104007 027172
4560 024122 013723 027172
4561 024126 104006
4562 024130 122700 000015
4563 024134 001364
4564
4565
4566
4567
4568 024136 013727 027172
4569 024142 000000
4570 024144 042737 000400 024142
4571 024152 023727 024142 000376
4572 024160 003403
4573 024162 000004 035074
4574 024166 000747
4575 024170 012723 177777
4576
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4578
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4580
4581
4582 024174 000004 034022
4583 024200 104005
4584 024202 005737 025012
4585 024206 001003
4586 024210 000004 035074
4587 024214 000767
4588
4589 024216 013727 025012
4590 024222 000017
4591 024224 005337 024222
4592 024230 013727 024142
4593 024234 000000
4594 024236 063737 024222 024234

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ASL 0CTNJM ISHIFT PRIORITY
ASL 0CTNJM IINIC PROCESSOR
ASL 0CTNJM IPRIORITY BITS OF
ASL 0CTNJM IPROCESSOR STATUS WORD
MOV 0CTNJM,DXPRT ILOAD PRIORITY
DEC 0CTNJM
BIC #37,00CTNUM ICLEAR TNZVC
MOV 0CTNJM,LESS1 IPRIORITY TO ALLOW DX INTERRUPTS

IGENERATE A LIST OF LEGAL ADDRESSES

MON61 TYPE ,MSG4 ILEGAL ADDRESS LIST
MOV #LEGAL,ADRS,R3 ISTART OF LEGAL ADRS TABLE
MON71 TYPE ,MSG5 IADMSI
JSR PC,GETHEX IGET HEXADECIMAL CU ADDRESS
PARITY ,HEXNUM IPU PARITY (ODD) ON ADRS
MOV HEXNJM,(R3)+ ISAVE LEGAL ADDRESS
KEY,TO,R0
CMPB #CR,R0 IALL DONE?
BNE MON7 ICONTINUE LIST IF NOT <CR>

..... MOD APR 74 .....
I0
I0 ADDRESS RESPONSE MOD
I
MOV HEXNJM,(PC)+
VLUHEX10 BIC #400,VLUHEX
CMP VLUHEX,#376 ITEST FOR > FF
BLE IS I(OK) BRANCHES
TYPE, MSG13 IOUTPUT " ILLEGAL ?" I.E. > "FF"
BR MON7 ITRY AGAIN
151 MOV #1,(R3)+ IMARK END OF LIST
..... MOD APR 74 .....
I0 #DEV/CU MOD

ISET UP MAXIMUM NUMBER OF DEVICES PER CONTROL UNIT
IThis INFORMATION DETERMINES WHAT THE SPW TABLE LOOKS LIKE

MON51 TYPE ,MSG3 IMAX # DEVICES/CU
ACCEPTO IACCEPT NUMBER OF DEVICES/CU
TST 0CTNJM IUSE 16- ON DEFAULT
BNE X15
TYPE, MSG13 IOUTPUT " ILLEGAL ?" I.E. = "00"
BR MON5 ITRY AGAIN

X151 MOV 0CTNJM,(PC)+
RDXX1 17 ITHIS IS THE DEFAULT VALUE, GETS WIPED BY CONVERSATION
DEC RDXX I RANGE MODULO 1
MOV VLUHEX,(PC)+
MDXX1 0 I RANGE MASK
ADD RDXX,MDXX ISCALE

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4595 024244 105137 024234          COMB      MOXX      IFORM FINAL
4596 024250 042737 177400 024234      BIC      #177400,MOXX    ICU PORTION CLR
4597
4598 ;..... MOD APR 74 .....
4599 ;
4600 024256 013737 025012 025016      MOV      OCTNJM,MAX,DEV,CU
4601 024264 004737 026160      MON5,11 JSR      PC,CCKUA      ICHECK FOR LEGAL NUMBER OF DEV PER CU
4602
4603
4604 IGET COMMAND LIST
4605
4606 ,REM      *
4607
4608 THIS ROUTINE ACCEPTS AN IBM COMMAND LIST FROM THE CONSOL. ALL
4609 COMMANDS MUST BE NON ZERO (I.E. T10 MUST BE TYPED WITH PARITY
4610 400), WITH EACH COMMAND THE MONITOR ASKS FOR ITS ASSOCIATED DST
4611 STATUS;
4612
4613 *
4614
4615 024270 012704 025200      MON8:    MOV      #CMD,STAT,R4
4616 024274 012703 025220      MOV      #CMD,ADRS,R3
4617 024300 000004 035004      TYPE     ,MSG0          ILEGAL CMD LIST
4618 024304 000004 035035      MON9:    TYPE     ,MSG10      ICM01
4619 024310 104005          ACCEPT0      IACCEPT LEGAL COMMANDS FROM KEYBOARD
4620 024312 005737 025012      TST      OCTNJM
4621 024316 001417          BEQ      MON10
4622 024320 104007 025012      PARITY   ,OCTNUM
4623 024324 013723 025012      MOV      OCTNJM,(R3)+
4624 024330 000004 035473      TYPE     ,MSG31      I"STATUS: "
4625 024334 104005          ACCEPT0
4626 024336 113724 025012      MOV      OCTNJM,(R4)+
4627 024342 104006          KEY,TO,R2
4628 024344 120027 000015      CMPB     R0,#CH
4629 024350 001355          BNE     MON9
4630 024352 012723 177777      MOV      #1,(R3)+      ILOAD TERMINATOR
4631
4632
4633 IASK FOR DYNAMIC SWITCH SETTINGS ON CONSOL SWITCHES
4634
4635 024356          MON10:
4636 024356 012737 177777 024706      MOV      #1,ONESHOT
4637 024364 005037 023440      CLR      ERRCNT
4638 024370 000004 034765      TYPE     ,MSG7          ISET DYNAMIC SWITCHES
4639 024374 104006          KEY,TO,R2      ITYPE ANYTHING
4640 024376 122700 000003      CMPB     #3,R2      ITEST FOR CONTROL C
4641 024402 001002          BNE     MON11      IGO IF NO 'C'
4642 024404 000137 023530      JMP      #MON11,0
4643
4644
4645 ISET UP TABLES
4646
4647 024410 113727 177570      MON11:  MOV      SWR,(PC)+      ISAVE MODE CONTROL SWITCH SETTINGS
4648 024414 000000          PARA:    *      IHERE

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4649 024416 004737 026160      JSR      PC,CACUA      ICMF ADRS VS MAX DEV PER CU
4650 024422 004737 025772      JSR      PC,SPW,SETUP  ISET UP STATUS POINTER WORDS
4651 024426 004737 025010      JSR      PC,TT,CLR     ICLEAR TUMBLE TABLE
4652 024432 004737 026130      JSR      PC,DST,SETUP  ISETUP DEVICE STATUS TABLE
4653 024436 004737 025034      JSR      PC,OJAT      ISET 360 SIM OUTPUT DATA FILE
4654 024442 004737 026454      JSR      PC,REG,SETUP  ISCALE ADDRESSES
4655
4656 024446                                LPCSUI
4657 024446 012737 000001 025006      MOV      #1,DEV CNT      IINIT DEVICE COUNT
4658 024454 012737 025034 025002      MOV      #LEGAL,ADRS,ACUA IADRS OF CU ADRS
4659 024462 117737 000314 025004      MOV      PACUA,CUADRS    ICU ADDRESS
4660 024470 000460      BR
4661
4662 024472 000004 035191                                LPCNTLI TYPE ,BELL
4663
4664 024476 062737 000001 025004      ADD      #1,CJADRS      I
4665 024504 005237 025006      INC      DEV CNT        IINC DEVICE COUNT
4666 024510 023737 025006 025016      CMP      DEV CNT,MAX,DEV,CU
4667 024516 003445      BLE     LPC1
4668 024520 012737 000001 025006      MOV      #1,DEV CNT      IINIT DEVICE COUNT
4669 024526 027727 000250 177777      CMP      PACUA,#=1
4670 024534 001030      BNE     LPC2
4671
4672                                I..... MOD APR 74 .....
4673                                I
4674                                I
4675                                I
4676 024536 012777 000001 154534      MOV      #1,OJXCS      IOX RESET OPLI
4677
4678                                I..... MOD APR 74 .....
4679                                I
4680 024544 000004 035193      TYPE     ,ENDTST
4681 024550 000004 035200      TYPE     ,ECH          IERROR COUNT MESSAGE
4682 024554 010546      MOV      TTY,-(SP)     ISAVE TTY
4683 024556 013705 023440      MOV      ERR CNT,TTY   ITYPE IN OCTAL
4684 024562 004737 027050      JSR      PC,PRINTR     ITYPE LEADING ZEROS
4685 024566 012605      MOV      (SP)+,TTY     IRESTORE TTY
4686
4687                                ITHE FOLLOWING CODE IS FOR INTERFACE WITH DDP AND ACT11
4688
4689 024570 013700 000042      MOV      #42,N0        IIF 42 = 0 REMAIN IN DX DIAGNOSTIC
4690 024574 001405      BEQ     LPC5
4691 024576 000005      RESET
4692                                ILINK TO DDP OR ACT11
4693 024600      LOGICALI
4694 024602 000240      JSR      PC,OR0
4695 024604 000240      NOP
4696 024606 000240      NOP
4697 024610 012737 025034 025002      LPC5I  MOV      #LEGAL,ADRS,ACUA
4698 024616 017737 000160 025004      LPC2I  MOV      PACUA,CUADRS
4699 024624 062737 000002 025002      ADD      #2,ACUA
4700 024632 104007 025004      LPC1I  PARITY ,CUADRS
4701 024636 013737 025004 024774      MOV      CUADRS,DEV
4702 024644 013737 024774 025000      MOV      DEV,DEV,A     IMULTI THREAD

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4703 024652 023737 025000 025016      CMP      DEVCNT,MAX;DEV,CU
4704 024660 001404      BEQ      LPC3
4705 024662 062737 000001 025000      ADD      #1,DEV,A
4706 024670 000403      RR      LPC4
4707 024672 162737 000001 025000  LPC3I   SUR      #1,DEV,A
4708 024700 104007 025000  LPC4I   PARITY  ,DEV,A
4709
4710
4711 024704 004737 026266      MON12I  JSR      PC,PREI      ;DO PRE INIT
4712 024710 012777 022074 154346      MOV      #FALSE,ODXIV  ;SET UP FALSE INTERRUPT VECTOR TRAP
4713 024716 013777 001270 154342      MOV      OXPNT,ODXIS  ;SET UP INTERRUPT PRIORITY
4714 024724 013700 025014      MOV      FIRST,TST,R0 ;TEST FOR DEFAULT
4715 024730 001002      BNE     MON13        ;BRANCH IF NOT DEFAULT
4716 024732 005237 025014      INC     FIRST,TST    ;DEFAULT TEST NUMBER IS ONE
4717 024736 013737 025014 023442  MON13I  MOV      FIRST,TST,ERTSTN
4718 024744 006300      ASL     R0
4719 024746 016037 022420 022420      MOV     TSTABLE-2(R0),#RETURN
4720 024754 062737 000024 022420      ADD     #24,#RETURN
4721 024762 000170 022420  MON14I  JMP      TSTABLE-2(R#) ;JUMP TO SELECTED TEST
4722
4723
4724      ,SBTTL  MONITOR FILES
4725
4726      ; ONE PASS FLAGS
4727
4728      FIVESEC=1      ;5 SEC OPLI TIMER TEST
4729 024766 177777      ONESHOT=1        ;ONE PASS FLAGS
4730 024770 000000      CARRY=0         ;CARRY COUNT
4731 024772 000000      TMP=0          ;TEMPORARY STORAGE
4732 024774 000020      DEVI=20        ;DEVICE ADDRESS TO SELECT - MUST INCLUDE PARITY
4733      ; ( I.E, 441 IS DEV=1, CU=2)
4734 024776 000403      CMDI=403      ;COMMAND TO PRESET - MUST INCLUDE PARITY
4735      ; (403 IS BASIC NOP COMMAND)
4736
4737 025000 000421      DEV,AI=421    ;SECOND DEVICE FOR DUAL TESTS
4738
4739
4740 025002 000000      ACUAI=0       ;ADRS OF CU ADRS
4741
4742
4743 025004 000000      CUADRS=0     ;CU ADRS
4744 025006 000000      DEVCNT=0    ;DEVICE COUNT
4745
4746 025010 002000      OFFSET=2000 ;OFFSET TO ADDRESS REGISTER
4747 025012 000000      OCTNUM=0    ;OCTAL INPUT FROM TTY
4748 025014 000000      FIRST,TST=0 ;FIRST TEST TO RUN
4749 025016 000000      MAX,DEV,CU=0 ;MAXIMUM # OF DEVICES/CU
4750
4751      ;DIAGNOSTIC VARIABLES
4752
4753 025020 000777      SSTAT=777   ;SAVED STATUS
4754 025022 000000      SRCNT=0    ;SOURCE DATA
4755 025024 000000      DSTCNT=0   ;DESTINATION DATA
4756 025026 000000      SAVDEVI=0  ;SAVED DEVICE ADDRESS

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4811	025146	000403	NOPC	JNOP COMMAND
4812	025150	000004	SENSEC	ISENSE COMMAND
4813	025152	000405	ILLC	ILLGAL COMMAND
4814	025154	177777	-1	ILIST TERMINATOR
4815	025156	177777	-1	ILIST TERMINATOR
4816	025160	177777	-1	ILIST TERMINATOR
4817	025162	177777	-1	ILIST TERMINATOR
4818	025164	177777	-1	ILIST TERMINATOR
4819	025166	177777	-1	ILIST TERMINATOR
4820	025170	177777	-1	ILIST TERMINATOR
4821	025172	177777	-1	ILIST TERMINATOR
4822	025174	177777	-1	ILIST TERMINATOR
4823	025176	177777	-1	ILIST TERMINATOR

4824
4825
4826
4827
4828
4829

IDEFAULT STATUS LIST

4831	025200		DFLT,STAT:	
4832	025200	000	,BYTE	0
4833	025201	000	,BYTE	0
4834	025202	000	,BYTE	0
4835	025203	014	,BYTE	CE!DE
4836	025204	000	,BYTE	0
4837	025205	002	,BYTE	JC
4838	025206	002	,BYTE	JC
4839	025207	002	,BYTE	JC
4840	025210	002	,BYTE	JC
4841	025211	002	,BYTE	JC
4842	025212	002	,BYTE	JC
4843	025213	002	,BYTE	JC
4844	025214	002	,BYTE	JC
4845	025215	002	,BYTE	JC
4846	025216	002	,BYTE	JC
4847	025217	002	,BYTE	JC

4848
4849
4850
4851

ILIST OF LEGAL COMMANDS

4852				
4853	025220		CMD,ADRS:	
4854				
4855	025220	000000	,WORD	0
4856	025222	000000	,WORD	0
4857	025224	000000	,WORD	0
4858	025226	000000	,WORD	0
4859	025230	000000	,WORD	0
4860	025232	000000	,WORD	0
4861	025234	000000	,WORD	0
4862	025236	000000	,WORD	0
4863	025240	000000	,WORD	0
4864	025242	000000	,WORD	0

4919									
4920	025452	012021				MON21	MOV	(R0)+,(R1)+	ILOAD DEFAULT CMD LIST
4921	025454	022710	177777				CMP	#-1,0H2	I TEST FOR TERMINATOR
4922	025460	001374					BNE	MON2	
4923	025462	012721	177777				MOV	#-1,(R1)+	ILOAD TERMINATOR
4924	025466	012727	000020				MOV	#16,,(PC)+	
4925	025472	000000				MON2,01			
4926	025474	012700	025200				MOV	#DFLT,STAT,R0	I DEFAULT STATUS
4927	025503	012701	025200				MOV	#CMD,STAT,R1	I STATUS FOR EACH COMMAND
4928	025504	112021				MON2,11	MOV	(R0)+,(R1)+	
4929	025506	005337	025472				DEC	MON2,0	
4930	025512	001374					BNE	MON2,1	
4931									
4932	025514	013737	025010	001436			MOV	OFFSET,SPH	ILOAD ADRS OF SPH
4933	025522	013737	025010	001440			MOV	OFFSET,TT	ILOAD ADRS OF TT
4934	025530	062737	001000	001440			ADD	#1200,TT	I " " " "
4935	025536	005004					CLR	R4	
4936	025540	012700	034176				MOV	#0,TRTC,R0	
4937	025544	020427	000020			MON2,21	CMP	R4,#0,BKP+2	I ALL DONE?
4938	025550	101011					BHI	MON2,3	I JUMP IF YES
4939	025552	010004	031126				MOV	R0,0,ADR1(R4)	I RESET BKPT
4940	025556	012764	000003	031172			MOV	#TRT,0,UIR(R4)	I RESET CONTENTS OF TABLE
4941	025564	005004	031190				CLR	0,CT(R4)	I CLEAR COUNT
4942	025570	005724					TST	(R4)+	I INCREMENT BY TWO
4943	025572	000764					BR	MON2,2	
4944	025574	000207				MON2,31	RTS	PC	
4945									I DEFAULT PARAMETERS
4946									
4947	025576	004000				D,FIRST,TST1	TST1		I FIRST TEST
4948	025600	176200				D,DXBASE1	176200		I BASE ADDRESS
4949	025602	000300				D,DXIVI	300		I INIT VECTOR ADRS
4950	025604	000200				D,DXPRI1	LEVEL4		I DX PRIORITY LEVEL
4951	025606	000020				D,MAX,DEV,CUI	20		I MAX # DEVICES PER CU
4952	025610	000020				D,LEGAL,ADR1	020		I DEFAULT CU ADRS
4953	025612	000421				D,DEV,AI	421		
4954	025614	000302				D,DXISI	302		I INIT STATUS ADRS
4955									
4956									
4957									
4958									
4959									
4960									
4961									
4962	025616					TT,CLR1			
4963	025616	013701	001440				MOV	TT,R1	I BOTTOM OF TT
4964	025622	005021				CL1:	CLR	(R1)+	I CLEAR TT
4965	025624	020127	004000				CMP	R1,#ENDTT	I TEST FOR END OF TT
4966	025630	001374					BNE	CL1	I BRANCH IF NOT END
4967	025632	000207					RTS	PC	
4968									
4969									
4970									
4971									
4972									

4973	025634			0DAT1			
4974	025634	010046			MOV	R0, -(SP)	
4975	025636	012700	036426		MOV	#WDATA, R0	
4976	025642	005027			CLR	(PC)+	
4977	025644	000000		0DAT1:	#		
4978	025646	104007	025644	0DAT2:	PARITY	, 0DAT1	
4979	025652	013720	025644		MOV	0DAT1, (R0)+	
4980	025656	042737	000400	025644	BIC	#PAR0, 0DAT1	
4981	025664	105237	025644		INCB	0DAT1	
4982	025670	001366			BNE	0DAT2	
4983	025672	012600			MOV	(SP)+, R0	
4984	025674	000207			RTS	PC	
4985							
4986							
4987							
4988							
4989							
4990							
4991							
4992							
4993							
4994							
4995							
4996							
4997							
4998							
4999							
5000							
5001							
5002							
5003	025676			T, PARITY:			
5004	025676	017627	000000		MOV	0(SP), (PC)+	IFETCH ADDRESS OF SOURCE DATA
5005	025702	000000		SDAPG:	#		ISOURCE DATA ADDRESS
5006	025704	017727	177772		MOV	0SDAPG, (PC)+	IFETCH SOURCE DATA
5007	025710	000000		YDAT:	#		ISOURCE DATA
5008	025712	005027			CLR	(PC)+	
5009	025714	000000		PRTY:	#		
5010							
5011	025716	106337	025710	PG2:	ASLB	YDAT	
5012	025722	102002			BVC	PG3	
5013	025724	005137	025714		COM	PRTY	
5014							
5015	025730	106337	025710	PG3:	ASLB	YDAT	
5016	025734	001370			BNE	PG2	
5017	025736	005737	025714		TSY	PRTY	
5018	025742	100404			BMI	PG4	
5019	025744	052777	000400	177730	BIS	#PAR0, 0SDAPG	IFSET PARITY BIT
5020	025752	000403			BR	PG5	
5021	025754	042777	000400	177720	PG4:	BIC	#PAR0, 0SDAPG
5022							ICLEAR PARITY BIT
5023	025762	062716	000002	PG5:	ADD	#2, 0SP	IFADD 2 TO RETURN PC
5024	025766	000002			RTI		
5025							
5026							

IFSETUP SPW TABLE

```

5027      ;..... MOD APR 74 .....
5028      ; ADDRESS RESOLUTION MOD
5029
5030      MARK1 177400
5031
5032      SPW,SETUP:
5033      MOV     #LEGAL,ADRS,R0 ;FETCH ADRS OF LEGAL ADRS LIST
5034      MOV     #SCALU,ADRS,R1 ;FETCH ADRS OF SCALED LEGAL ADRS LIST
5035
5036      SP,01  MOV     (R0)+,R1 ;MAKE DUPLICATE ADRS LIST
5037      BIC     MARK,R1 ;
5038      ;..... MOD APR 74 .....
5039      ASL     R1 ;MAKE INDX MOD(2)
5040      ADD     SPW,(R1)+ ;EQUALS REAL SPW ADRS
5041      CMP     R0,#0 ;TEST FOR TERMINATION
5042      BNE     SP,0 ;FETCH NEXT ADRS
5043
5044      MOV     #0,(R1)+ ;MARK END OF SCALED ADRS LIST
5045
5046      MOV     SPW,R1 ;ADRS OF SPW
5047      MOV     DST,R2 ;ADRS OF DST
5048      SP,11  MOV     #SCALU,ADRS,R0
5049      SP,21  CMP     R1,R0 ;RUN THRU LIST
5050      BEQ     SP,3 ;BRANCH ON LEGAL ADRS
5051      TST     (R0)+
5052      CMP     #0,R0 ;TEST FOR END OF LIST
5053      BNE     SP,2 ;BRANCH IF NOT ENT
5054      MOV     #ERRDST,(R1)+ ;LOAD SPW WITH ERROR DST ADRS
5055      BR     SP,0
5056      SP,31  MOV     MAX,DEV,CU,(PC)+
5057      SP,41  0
5058      SP,51  MOV     R2,(R1)+
5059      DEC     SP,4
5060      BNE     SP,5
5061      SP,61  CMP     R1,TT ;TEST FOR END OF SPW
5062      BLT     SP,1
5063      BEQ     SP,7
5064      TST     (SP)+ ;POP STACK
5065      TYPE     ,10VV
5066      JMP     MON1,0 ;GO BACK TO MONITOR
5067      SP,71  RTS     PC
5068      ;DEVICE STATUS TABLE SETUP
5069
5070
5071      DST,SETUP:
5072      MOV     DST,R1
5073      MOV     #16,(PC)+
5074      DS,11  0
5075      DS,21  MOV     #CMD,STAT,R2
5076      MOV     (R2)+,(R1)+
5077      DEC     DS,1
5078      BNE     DS,2
5079      RTS     PC
5080

```



```

5081      ;SUBROUTINE TO CHECK THAT CU ADDRESS AND THE NUMBER OF DEVICES
5082      ;PER CU IS LEGAL
5083
5084      226163  212700  225034      CKCJAI  MOV      @LEGAL,ADRS,R0      ;
5085      226164  225027                      CKC1I  CLR      (PC)+
5086      226166  200000                      CKC2I  ?
5087      226170  111037  226166      MOV      @R0,@CKC2      ;FETCH CU ADDRESS
5088      ;..... MOD APR 74 .....
5089      ;
5090      ;
5091      ;
5092      226174  122737  200020  225016  CKC3I  CMpB   @20,@MAX,DEV,CU      ;CHECK LIMIT 10,
5093
5094      ;..... MOD APR 74 .....
5095      ;
5096      226202  103005                      RMIS   CKC4   ;BRANCH IF WITHIN LIMITS
5097      226204  200004  226230      TYPE   ,IDVN  ;ILLEGAL NUMBER OF DEVICES PER CU
5098      226210  212710  224174      MOV    @MON5,(SP)      ;CHANGE RETURN PC
5099      226214  200207                      RTS    PC
5100      226216  205720                      CKC4I  TST   (R0)+
5101      226220  221027  177777      CMP    @R0,@=1
5102      226224  201357                      BNE   CKC1
5103      226226  200207                      RTS    PC
5104      226230  244537  246114  243505  IDVNI  ,ASCIZ  "ILLEGAL # OF DEVICES PER CU "
5105      226236  246101  221440  247440
5106      226244  220106  242504  244526
5107      226252  242503  220123  242520
5108      226260  220122  252503  200040
5109
5110      ,EVEN
5111
5112      ;PRE-INIT SUBROUTINE
5113
5114      226266  212737  226422  200004  PREI1  MOV    @PREI0,4
5115      226274  212737  200340  200006      MOV    @LEVEL7,6
5116      226302  205077  153012      CLR    @UXES
5117      226306  204737  226426      JSR   PC,RESRES      ;CLEAR MAINT CLK
5118      ;THE FOLLOWING INSTRUCTION GET MODIFIED UPON THE COMPLETION
5119      ;OF THE SYSTEM RESET TEST,IF SCOPE PROBLEMS DEVELOP BEFORE THIS TEST
5120      ;PASSES THIS INST, CAN BE PATCHED TO A YASET,NOP,
5121      PREI,11 JSR   PC,@NOCLR      ;MODIFIED TO CLRMO
5122      CLR    @UXCS      ;CLM DONE,LOCKO
5123      JSR   PC,RESRES      ;CX RESET AND RESTORE
5124      MOV    @PW,@UXOS
5125      CMP    @PW,@UXOS
5126      BEQ   ,+4      ;BRANCH IF NO ERROR CONDITION
5127      ERROR
5128      BIS   @TIMDIS,@UXES      ;TIMER DISABLE
5129      BIF   @TIMDIS,@UXES
5130      BNE   ,+4      ;BRANCH IF NO ERROR CONDITION
5131      ERROR
5132      MOV    @6,4
5133      MOV    @HALT,6
5134      JSR   PC,ZENDTT      ;ZEND TUMBLE TABLE
5135      JSR   PC,TTZEND      ;VERIFY TT ZERO

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```

5135 026412 000207          RTS      PC
5136
5137
5138
5139
5140
5141
5142 026414 005077 152070    CLRMOI CLR      0DXMO  I00 SYSTEM RESET
5143 026420 000207          NOCLRI RTS      PC
5144
5145 026422 124070          PREI0I ERROR      IPREINIT TIME OUT ERROR
5146
5147
5148 026424 000002          RTI
5149
5150
5151          I0X RESET AND RESTORE ROUTINE
5152
5153
5154
5155
5156
5157
5158
5159
5160
5161
5162 026426          RESRESI
5163
5164 026426 042777 000200 152644    BIC      0D0NE,0DXCS  ICLEAR LOCKO
5165 026434 012777 000001 152636    MOV      0DXFRS,0DXCS I0X RESET
5166 026442 013737 001440 020076    MOV      00TT,TTNACE  IRELOAD SOFT TT POINTER
5167 026450 000240          NOP      IINSERT RESET I,E,"9" HERE IF REQUIRED
5168 026452 000207          RTS      PC
5169
5170
5171
5172
5173
5174          IREGISTER ADDRESS SETUP ROUTINE
5175
5176 026454          REG,SETUP:
5177 026454 013700 001262          MOV      DXBASE,R0      IFETCH BASE ADRS
5178 026460 012701 001274          MOV      0DXDS,R1      IFETCH ADRS OF DXDS ADRS
5179 026464 010021          RS,1: MOV      R0,(R1)+
5180 026466 062700 000002          ADD      #2,R0          IING TO NEXT DX ADRS
5181 026472 020127 001326          CMP      R1,0DXES1+2
5182 026476 001372          BNE     RS,1
5183
5184 026500 004537 026034          JSP     R5,S0YTE      ISETUP BYTE REF REG'S
5185
5186 026504 001276          DXCA
5187 026506 001326          CUAR
5188

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5189 026510 001302
5190 026512 001332
5191
5192 026514 001310
5193 026516 001336
5194
5195 026520 001312
5196 026522 001342
5197
5198 026524 001320
5199 026526 001346
5200
5201 026530 177777
5202
5203 026532 000207
5204
5205 026534
5206 026534 012500
5207 026536 012501
5208 026540 011021
5209 026542 011011
5210 026544 005221
5211 026546 021527 177777
5212 026552 001370
5213 026554 005725
5214 026556 000205
5215
5216
5217
5218 026560 000000
5219 026562 050137 053517 051105
5220 026570 043040 044501 042514
5221 026576 057504 000
5222 026602
5223
5224
5225
5226
5227 027000
5228
5229
5230
5231 027000
5232 027000 002
5233 027001 002
5234 027002 002
5235 027003 002
5236 027004 002
5237 027005 002
5238 027006 002
5239 027007 002
5240
5241
5242

DXOS
CUSH
DX40
BUS0
DX41
BUS1
DXES
MISC
=1
RTS PC
SBYTE1
MOV (R5)+,R0
MOV (R5)+,R1
MOV 0R0,(R1)+
MOV 0R0,0R1
INC (R1)+
CMP 0R0,0=1
BNE SBYTE
TST (R5)+ IPOP OVER TERMINATOR
RTS R5

..... MOD APR 74

IO STORAGE RELOCATION MOD
SAVR01 0
PFLDI ,ASCIZ "POWER FAILED"

,EVEN

..... MOD APR 74

IO RELOCATION MOD
I
,=1377+1

ILLEGAL OR MALFUNCTIONING GUAR ERROR STATUS TABLE MODULO 0

ERRDST:
, BYTE JC UNIT CHECK ENTRIES
, BYTE JC UNIT CHECK ENTRIES
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, BYTE JC UNIT CHECK ENTRIES
, BYTE JC UNIT CHECK ENTRIES

IACCEPT HEX NUMBER FROM TTY

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5243 027010 005037 027172      GETHEX: CLR      HEXNUM
5244 027014 010246              MOV      R2,=(SP)
5245 027016 010146              MOV      R1,=(SP)
5246 027020 010046              MOV      R0,=(SP)
5247 027022 005001      ACPTH: CLR      R1
5248 027024 104006      ACPTH,1: KEY,TO,R0
5249 027026 120027 000003      CMPB    R0,#3
5250 027032 001002              BNE     AH,2
5251 027034 000137 023530      JMP     @R0V1,0
5252 027040 122700 000177      AH,2:  CMPB    #177,R0
5253 027044 001424              BEQ     RUBOJH
5254 027046 122700 000015      CMPB    #15,R0
5255 027052 001424              BEQ     CARGH
5256 027054 120027 000040      CMPB    R0,#40
5257 027060 001421              BEQ     CARGH
5258 027062 120027 000000      CMPB    R0,#0
5259 027066 002413              BLT     RUBOJH
5260 027070 120027 000071      CMPB    R0,#19
5261 027074 003021              BGT     AH,3
5262 027076 042700 177700      AH,3:  BIC     #177700,R0
5263 027102 006301              ASL     R1
5264 027104 006301              ASL     R1
5265 027106 006301              ASL     R1
5266 027110 006301              ASL     R1
5267 027112 050001              BIS     R0,R1
5268 027114 000743              BR      ACPTH,1
5269
5270 027116 000004 035224      RUBOJH: TYPE    , ,QUES
5271 027122 000737              BR      ACPTH
5272 027124 010137 027172      CARGH: MOV      R1,HEXNUM
5273 027130 012600              MOV      (SP)+,R0
5274 027132 012601              MOV      (SP)+,R1
5275 027134 012602              MOV      (SP)+,R2
5276 027136 000207              RTS     PC
5277
5278 027140 005002      AH,1:  CLR      R2
5279 027142 120002 027174      AH,2:  CMPB    R0,ATBL(R2)
5280 027146 001406              BEQ     AH,1
5281 027150 005202              INC     R2
5282 027152 126227 027174 000000      CMPB    ATBL(R2),#0
5283 027160 001370              BNE     AH,2
5284 027162 000755              BR      RUBOJH
5285 027164 116200 027207      AH,1:  MOVB    ATBL(R2),R0
5286 027170 000742              BR      AH,3
5287
5288
5289 027172 000000      HEXNUM: #
5290 027174 041101 042103 043105      ATBL:  ,ASCII 'ABCDEF'
5291 027202 000000      ,WORD #
5292 027204 012 013 014      HTBL:  ,BYTE 10',11',12',13',14',15'
5293 027207 015 016 017
5294
5295
5296 027212      ,ACCEPT OCTAL NUMBER FROM TTY
T,ACCEPTD:

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5297 027212 005037 025012          CLR      OCTNJM          ICLEAR OCTAL NUMBER LOCATION
5298 027216 010146          MOV      R1,0(SP)      ISAVE R1
5299 027220 010046          MOV      R0,0(SP)      ISAVE R0
5300 027222 005001          ACPT01 CLR      R1          I
5301 027224 104006          ACPT0,11 KEY,TO,R0        IFETCH AN ASCII CHAR FROM KEYBOARD
5302 027226 120027 000003          CMPB    R0,#3          ICONTROL C?
5303 027232 001002          BNE     AO,2           I
5304 027234 000137 023530          JMP     0040V1,0       I
5305 027240 122700 000177          AO,21  CMPB    #177,R0        ITEST FOR RUBOUT
5306 027244 001423          BEQ     RUBOJT         I
5307 027246 122700 000019          CMPB    #19,R0        ITEST FOR <CR>
5308 027252 001423          BEQ     CARG          I
5309 027254 120027 000040          CMPB    R0,#40        IEXIT IF SPACE
5310 027260 001420          BEQ     CARG          I
5311 027262 120027 000000          CMPB    R0,#0         ITEST FOR VALID OCTAL NUMBER
5312 027266 002412          BLY     RUBOJT         I
5313 027270 120027 000007          CMPB    R0,#7         I
5314 027274 003007          BGT     RUBOJT         I
5315 027276 042700 177770          BIC     #177770,R0    ICONVERT ASCII TO OCTAL
5316 027302 006301          ASL     R1             I
5317 027304 006301          ASL     R1             I
5318 027306 006301          ASL     R1             I
5319 027310 050001          BIS     R0,R1         ICWALK'N UP
5320 027312 000744          BR      ACPT0,1       IFETCH NEXT CHAR
5321
5322 027314 000004 035224          RUBOUT: TYPE ,QUES     ITYPE?
5323 027320 000740          BR      ACPT0         I
5324 027322 010137 025012          CARG:  MOV     R1,OCTNUM  IPLACE OCTAL NUMBER HERE
5325 027326 012600          MOV     (SP)+,R0      IRESTORE R0
5326 027330 012601          MOV     (SP)+,R1      IRESTOR R1
5327 027332 000002          RTI          IRETURN
5328
5329          IFETCH AN ASCII CHARACTER FROM KEYBOARD
5330
5331 027334          T,KEY,TO,R0I
5332 027334 105777 152030          TSTB   BTKS          ITEST FOR DONE
5333 027340 100375          BPL     ,=4          IWAIT FOR KEYBOARD
5334 027342 117700 152032          MOVB   BTKB,R0      IFETCH CHAR
5335 027346 117777 152026 152030          MOVB   BTKB,0TPB    IECHO
5336 027354 004737 027366          JSR    PC,TTYFLG    IWAIT FOR DONE
5337 027360 042700 177000          BIC     #177000,R0  I7 BIT ASCII
5338 027364 000002          RTI
5339          ITEST FOR TRANSMITTER DONE
5340
5341 027366          TTYFLGI
5342 027366 105777 152010          25:   TSTB   BTPS          I
5343 027372 100375          BPL     25           I
5344 027374 000227          RTS     PC           I
5345          ,SBTTL TTY ASCII OUTPUT ROUTINE
5346
5347
5348 027376 032737 020000 177570          ,IOT:  BIT    #BIT13,SR  ITEST FOR INHIBIT PRINT
5349 027404 001040          BNE     ,IOTE        I
5350 027406 010537 027514          MOV     TTY,,SAV     ISAVE TTY

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5351 027412 017605 000000      MOV      0(6),TTY      ;GET ADDRESS TO BE TYPED
5352 027416 122715 000044      ,MOREI  CMPB     #19,(TTY)  ;TERMINATOR?
5353 027422 001425      BEQ      ,TERM
5354 027424 105715      TSTB     (TTY)        ;TERMINATOR?
5355 027426 001423      BEQ      ,TERM
5356 027430 122715 000001      CMPB     #1,(TTY)    ;RESTORE OLD SEQUENCE
5357 027434 001416      BEQ      ,REST
5358 027436 122715 000137      CMPB     #10,(TTY)   ;SET UP CR LF
5359 027442 001406      BEQ      ,CRLF
5360 027444 105777 151732      TSTB     #TPS
5361 027450 100375      BPL      ,=4
5362 027452 112577 151720      MOVB     (TTY)+,#TPS
5363 027456 000757      BR       ,MORE
5364 027460 005205      ,CRLF:  INC      TTY
5365 027462 010546      MOV      TTY,-(6)
5366 027464 012705 027516      MOV      #,CAR,TTY
5367 027470 000752      BR       ,MORE
5368 027472 012605      ,REST:  MOV      (6)+,TTY
5369 027474 000750      BR       ,MORE
5370 027476 004737 027366      ,TERM:  JSR     PC,TTYFLG  ;WAIT FOR DONE
5371 027502 013705 027514      MOV      ,SAV,TTY
5372 027506 062716 000002      ,IOTE:  ADD     #2,(6) ;POP
5373 027512 000002      RTI
5374
5375 027514 000000      ,SAVI  0
5376 027516 005015 001002 001002  ,CARI  ,ASCII <CR><LF><2><2><2><2><2><2><2><1>
5377 027524 001002 001      ,EVEN
5378 027530 027530      ,TYPE:  0
5379 027530 000000      ,SBTTL SAVE AND RESTORE REGISTERS
5380
5381      ,SAVE REGS 0 TO 4 SUBROUTINE,
5382 027532 012637 027570      T,SAVRG: MOV     (6)+,SVRPC      ;SAVE PC AND PSW,
5383 027536 012637 027572      MOV     (6)+,SVRPSW
5384 027542 010546      MOV     X5,#(6)
5385 027544 010446      MOV     X4,#(6) ;SAVE REGS 0 - 4
5386 027546 010346      MOV     X3,#(6) ;IN STACK,
5387 027550 010246      MOV     X2,#(6)
5388 027552 010146      MOV     X1,#(6)
5389 027554 010046      MOV     X0,#(6)
5390 027556 013746 027572      MOV     SVRPSW,#(6) ;RESTORE PC AND PSW,
5391 027562 013746 027570      MOV     SVRPC,#(6)
5392 027566 000002      RTI      ;EXIT,
5393 027570 000000      SVRPC:  0
5394 027572 000000      SVRPSW: 0
5395      ,RESTORE REGS 0 TO 4 SUBROUTINE,
5396 027574 012637 027632      T,RSTRG: MOV    (6)+,RSTPC      ;SAVE PC AND PSW,
5397 027600 012637 027634      MOV    (6)+,RSTPSW
5398 027604 012600      MOV    (6)+,X0 ;RESTORE REGS 0 - 4
5399 027606 012601      MOV    (6)+,X1 ;FROM STACK,
5400 027610 012602      MOV    (6)+,X2
5401 027612 012603      MOV    (6)+,X3
5402 027614 012604      MOV    (6)+,X4
5403 027616 012605      MOV    (6)+,X5
5404

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5405	027620	013746	027634		MOV	RSTPSW,=(6)	IRESTORE PC AND PSW.
5406	027624	013746	027632		MOV	RSTPC,=(6)	
5407	027630	000002			RTI		EXIT
5408	027632	000000			RSTPCI	?	
5409	027634	000000			RSTPSWI	?	
5410					,SBTTL	OCTAL DUMP ROUTINE	
5411							
5412	027636	000000	000000	000000	PRINT2I	,WORD	?,?,?,?
5413	027644	000000					
5414	027646	000	000		PRINT3I	,BYTE	?,?
5415							
5416	027650	112737	000001	027646	PRINTRI	MOVW	#1,PRINT3
5417	027656	000402				BR	,+6
5418	027660	005037	027646		PRINTSI	CLR	PRINT3
5419	027664	112737	177772	027647		MOVW	#-6,PRINT3+1
5420	027672	032737	020000	177570		BIT	#BIT13,SH
5421	027700	001041				BNE	ORTE
5422	027702	010446				MOV	X4,=(6)
5423	027704	012704	027636			MOV	#PRINT2,X4
5424	027710	105014				CLRB	(4)
5425	027712	000405				BR	PRINTF
5426	027714	105014			PRINTLI	CLRB	(4)
5427	027716	006105				ROL	TTY
5428	027720	106114				ROLB	(4)
5429	027722	006105				ROL	TTY
5430	027724	106114				ROLB	(4)
5431	027726	006105			PRINTFI	ROL	TTY
5432	027730	106114				ROLB	(4)
5433	027732	105714				TSTB	(4)
5434	027734	001402				BEQ	,+6
5435	027736	105237	027646			INCB	PRINT3
5436	027742	105737	027646			TSTB	PRINT3
5437	027746	001402				BEQ	,+6
5438	027750	152724	000000			BISB	#1?,(4)+
5439	027754	105237	027647			INCB	PRINT3+1
5440	027760	001355				BNE	PRINTL
5441	027762	022704	027636			CMP	#PRINT2,X4
5442	027766	001002				BNE	,+6
5443	027770	112724	000000			MOVW	#1?,(4)+
5444	027774	105014				CLRB	(4)
5445	027776	000004	027636			TYPE	,PRINT2
5446	030002	012604				MOV	(6)+,X4
5447	030004	000207			PRTEI	RTS	X7
5448							
5449		000003					
5450							
5451	030006	117727	151366		TTYI	MOVW	#TAB,(PC)+
5452	030012	000000			SCHARI		
5453	030014	042737	000200	030012		BIC	#220,#SCHAR
5454	030022	122737	000003	030012		CMPB	#CNTLC,#SCHAR
5455	030030	001004				BNE	TTYI?
5456	030032	000004	030056			TYPE	,ALC
5457	030036	000137	023530			JMP	#MON1,0
5458	030042	004737	027366		TTYI0I	JSR	PC,TTYFLG

Address	Hex	Dec	Label	Char	TPB	ECHO CHARACTER
5459	730046	113777	730012	151330	MOV B	
5460	730054	200002			RTI	
5461						
5462	730056	241536	000		ACLGI	<130><103>
5463		730062			,EVEN	
5464						
5465		730400			,=1377+1	IFORM MOD(400) BOUNDRY
5466						
5467		730400			DSTADRS=,	IDEFAULT DST
5468						
5469	730400	000			,BYTE	ITIO
5470	730401	000			,BYTE	IWRITE
5471	730402	000			,BYTE	IREAD
5472	730403	014			,BYTE	CEIDE
5473	730404	000			,BYTE	ISENSE
5474						
5475	730405	002			,BYTE	JC
5476	730406	002			,BYTE	JC
5477	730407	002			,BYTE	JC
5478	730410	002			,BYTE	JC
5479	730411	002			,BYTE	JC
5480	730412	002			,BYTE	JC
5481	730413	002			,BYTE	JC
5482	730414	002			,BYTE	JC
5483	730415	002			,BYTE	JC
5484	730416	002			,BYTE	JC
5485	730417	002			,BYTE	JC
5486	730420	002			,BYTE	JC
5487	730421	002			,BYTE	JC
5488	730422	002			,BYTE	JC
5489	730423	002			,BYTE	JC
5490	730424	002			,BYTE	JC
5491	730425	002			,BYTE	JC
5492	730426	002			,BYTE	JC
5493	730427	002			,BYTE	JC
5494	730430	002			,BYTE	JC
5495	730431	002			,BYTE	JC
5496	730432	002			,BYTE	JC
5497	730433	002			,BYTE	JC
5498	730434	002			,BYTE	JC
5499	730435	002			,BYTE	JC
5500	730436	002			,BYTE	JC
5501	730437	002			,BYTE	JC
5502	730440	002			,BYTE	JC
5503	730441	002			,BYTE	JC
5504	730442	002			,BYTE	JC
5505	730443	002			,BYTE	JC
5506	730444	002			,BYTE	JC
5507	730445	002			,BYTE	JC
5508	730446	002			,BYTE	JC
5509	730447	002			,BYTE	JC
5510	730450	002			,BYTE	JC
5511	730451	002			,BYTE	JC
5512	730452	002			,BYTE	JC

5513	030453	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5514	030454	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5515	030455	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5516	030456	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5517	030457	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5518	030460	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5519	030461	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5520	030462	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5521	030463	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5522	030464	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5523	030465	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5524	030466	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5525	030467	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5526	030470	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5527	030471	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5528	030472	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5529	030473	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5530	030474	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5531	030475	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5532	030476	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5533	030477	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5534	030500	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5535	030501	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5536	030502	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5537	030503	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5538	030504	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5539	030505	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5540	030506	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5541	030507	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5542	030510	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5543	030511	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5544	030512	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5545	030513	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5546	030514	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5547	030515	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5548	030516	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5549	030517	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5550	030520	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5551	030521	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5552	030522	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5553	030523	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5554	030524	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5555	030525	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5556	030526	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5557	030527	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5558	030530	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5559	030531	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5560	030532	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5561	030533	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5562	030534	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5563	030535	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5564	030536	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5565	030537	002	,BYTE	JC	ILLEGAL	UNIT	CHECK
5566	030540	002	,BYTE	JC	ILLEGAL	UNIT	CHECK

5567	030541	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5568	030542	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5569	030543	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5570	030544	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5571	030545	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5572	030546	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5573	030547	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5574	030550	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5575	030551	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5576	030552	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5577	030553	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5578	030554	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5579	030555	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5580	030556	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5581	030557	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5582	030560	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5583	030561	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5584	030562	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5585	030563	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5586	030564	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5587	030565	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5588	030566	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5589	030567	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5590	030570	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5591	030571	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5592	030572	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5593	030573	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5594	030574	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5595	030575	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5596	030576	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5597	030577	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5598	030600	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5599	030601	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5600	030602	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5601	030603	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5602	030604	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5603	030605	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5604	030606	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5605	030607	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5606	030610	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5607	030611	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5608	030612	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5609	030613	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5610	030614	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5611	030615	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5612	030616	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5613	030617	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5614	030620	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5615	030621	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5616	030622	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5617	030623	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5618	030624	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5619	030625	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5620	030626	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK

5621	30627	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5622	30630	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5623	30631	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5624	30632	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5625	30633	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5626	30634	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5627	30635	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5628	30636	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5629	30637	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5630	30640	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5631	30641	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5632	30642	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5633	30643	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5634	30644	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5635	30645	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5636	30646	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5637	30647	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5638	30650	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5639	30651	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5640	30652	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5641	30653	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5642	30654	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5643	30655	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5644	30656	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5645	30657	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5646	30660	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5647	30661	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5648	30662	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5649	30663	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5650	30664	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5651	30665	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5652	30666	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5653	30667	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5654	30670	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5655	30671	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5656	30672	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5657	30673	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5658	30674	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5659	30675	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5660	30676	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5661	30677	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5662	30700	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5663	30701	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5664	30702	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5665	30703	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5666	30704	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5667	30705	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5668	30706	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5669	30707	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5670	30710	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5671	30711	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5672	30712	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5673	30713	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5674	30714	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK

5675	030715	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5676	030716	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5677	030717	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5678	030720	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5679	030721	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5680	030722	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5681	030723	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5682	030724	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5683	030725	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5684	030726	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5685	030727	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5686	030730	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5687	030731	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5688	030732	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5689	030733	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5690	030734	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5691	030735	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5692	030736	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5693	030737	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5694	030740	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5695	030741	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5696	030742	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5697	030743	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5698	030744	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5699	030745	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5700	030746	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5701	030747	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5702	030750	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5703	030751	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5704	030752	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5705	030753	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5706	030754	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5707	030755	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5708	030756	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5709	030757	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5710	030760	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5711	030761	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5712	030762	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5713	030763	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5714	030764	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5715	030765	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5716	030766	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5717	030767	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5718	030770	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5719	030771	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5720	030772	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5721	030773	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5722	030774	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5723	030775	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5724	030776	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5725	030777	002	,BYTE	JC	ILLEGAL	,UNIT	CHECK
5726							
5727							
5728	031000						

,EVEN

T,PCN11


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5729 031000 000012          ,BLKW 10,
5730
5731 031024          T,PCH2:
5732 031024 000012          ,BLKW 10,
5733
5734 031050          T,PCH3:
5735 031050 000012          ,BLKW 10,
5736
5737          ,SBTTL ODT
5738
5739          I ODT-11X -- V806A
5740
5741          I COPYRIGHT 1969,1972, DIGITAL EQUIPMENT CORPORATION
5742
5743          000000          R0      #      X0      I REGISTER
5744          000001          R1      #      X1      I NAMING
5745          000002          R2      #      X2      I CONVENTIONS
5746          000003          R3      #      X3
5747          000004          R4      #      X4
5748          000005          R5      #      X5
5749          000006          SP     #      X6
5750          000007          PC     #      X7
5751          177776          ST     #      177776          ISTATUS REGISTER
5752          031074          O,TMP  #
5753          031074          ,      #      O,TMP
5754
5755          000016          O,BKP  #      16          INUMBER OF BREAKPOINTS=1 MULT. BY 2
5756          000014          O,TVEC #      14          ITRI VECTOR LOCATION
5757          000340          O,STM  #      340         IPRIORITY MASK = STATUS REGISTER
5758          000020          O,TBT  #      20          ITRIT MASK = STATUS REGISTER
5759          000023          TRY   #      000023         ITRI INSTRUCTION
5760
5761
5762          177562          O,RDB  #      177562         IR DATA BUFFER
5763          177560          O,RCSR #      177560         IR C/SR
5764          177566          O,TDB  #      177566         IT DATA BUFFER
5765          177564          O,TCSR #      177564         IT C/SR
5766
5767          I INITIALIZE ODT
5768          I USE O,ODT FOR A NORMAL ENTRY
5769          I USE O,ODT+2 TO RESTART ODT = WIPING OUT ALL BREAKPOINTS
5770          I USE O,ODT+4 TO RE-ENTER (I.E. = FAKE A BREAKPOINT)
5771
5772          031214          ,=,+120          ISAVE ROOM FOR ODT STACK
5773 031214 012777 000010 150076 O,ODT: MOV #TIMOIS,ODXES IDISABLE TIMER
5774 031222 000421          BR      O,STRT INORMAL ENTRY
5775 031224 000425          BR      O,RST IRESTART
5776 031226 013737 177776 031114 O,ENTRI: MOV ST,O,UST IRE-ENTER = SAVE STATUS
5777 031234 013737 000016 177776          MOV   O,TVEC+2,ST ISET UP LOCAL STATUS
5778 031242 012737 031214 031112          MOV   #O,ODT,O,UPC IFAKE THE PC
5779 031250 112737 177777 030133          MOVB #-1,O,P IDISALLOW PROCEED
5780 031256 105037 034131          CLRB O,S
5781 031262 000137 033114          JMP   O,BK1
5782

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5783	031266	012706	031074	O,STRT:	MOV	#0,UR0,SP	ISET UP STACK
5784	031272	010637	031110		MOV	SP,0,USP	IFAKE THE SAVED STACK
5785	031276	000413			BR	0,RST1	
5786	031303	004037	033410	O,RST:	JSR	0,0,SVR	ISAVE REGISTERS
5787	031304	004537	033624		JSR	0,0,REN	IREMOVE ALL BREAKPOINTS
5788	031310	113704	031110		MOV	0,PRI,R4	IGET ODT PRIORITY
5789	031314	106004			RORB	R4	ISHIFT
5790	031316	106004			RORB	R4	I INTO
5791	031320	106004			RORB	R4	I POSITION
5792	031322	110437	177776		MOV	R4,ST	ISTORE IN STATUS
5793	031326	105037	034131	O,RST1:	CLRB	0,S	IDISABLE SINGLE INSTRUCTION FOR NOW
5794	031332	112737	177777		MOV	#0,0,P	IDISALLOW PROCEED
5795	031340	012737	000340		MOV	#0,STM,0,TVEC+2	I STATUS WORD TO TRY VECTOR+2
5796	031346	012737	033076		MOV	#0,BRK,0,TVEC	IPC TO TRY VECTOR
5797	031354	000137	032332		JMP	0,RALL	ICLEAR BREAKPOINT TABLES
5798							
5799							
5800							
5801							
5802							
5803	031360	004537	033704	O,REGT:	JSR	0,0,GET	ISPECIAL NAME, GET ONE MORE CHARACTER
5804	031364	012704	034170		MOV	#0,TL,R4	ITABLE START ADDRESS
5805	031370	120024		O,RSP:	CMPB	R0,(R4)+	IS IS THIS THE CORRECT CHARACTER?
5806	031372	001413			BEQ	0,SP	I JUMP IF YES
5807	031374	022704	034170		CMP	#0,TL+0,LG,R4	IS THE SEARCH DONE?
5808	031400	101373			BHI	0,RSP	IBRANCH IF NOT
5809	031402	042700	177770		BIC	#177770,R0	IMASK OFF OCTAL
5810	031406	010004			MOV	R0,R4	
5811	031410	006304		O,SP1:	ASL	R4	
5812	031412	062704	031074		ADD	#0,UR0,R4	IGENERATE ADDRESS
5813	031416	005202			INC	R2	ISET FOUND FLAG
5814	031420	000471			BR	0,SCAN	IGO FIND NEXT CHARACTER
5815	031422	162704	034161	O,SP1	SUB	#0,TL-7,R4	IGO FIND NEXT CHARACTER
5816	031426	000770			BR	0,SP1	
5817							
5818							
5819							
5820	031430	004537	031504	O,ORPC:	JSR	0,0,TCLS	ITEST WORD MODE AND CLOSE
5821	031434	061202			ADD	R2,R2	ICOMPUTE
5822	031436	005202			INC	R2	
5823	031440	005202			INC	R2	I NEW ADDRESS
5824	031442	010237	034122	O,PCS:	MOV	R2,0,CAD	IUPDATE CAD
5825	031446	000137	032124		JMP	0,0P2A	IGO FINISH UP
5826	031452	004537	031504	O,ORAB:	JSR	0,0,TCLS	ITEST WORD MODE AND CLOSE
5827	031456	011202			MOV	R2,R2	IGET ABSOLUTE ADDRESS
5828	031460	000770			BR	0,PCS	
5829	031462	004537	031504	O,ORRB:	JSR	0,0,TCLS	ITEST AND CLOSE
5830	031466	011201			MOV	R2,R1	ICOMPUTE NEW ADDRESS
5831	031470	110101			MOV	R1,R1	IEXTEND THE SIGN
5832	031472	006301			ASL	R1	IR2=2(R2)
5833	031474	005201			INC	R1	I +2
5834	031476	005201			INC	R1	
5835	031500	060102			ADD	R1,R2	I +PC
5836	031502	000757			BR	0,PCS	


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5837 031504 024737 034042 0.TCLSI JSR 00,0,CLSE I CLOSE CURRENT CELL
5838 031510 022737 020002 034120 CMP 02,0,BW I ONLY WORD MODE ALLOWED
5839 031516 001003 BNE 0,TCL1 I BRANCH IF ERROR
5840 031520 013702 034122 MOV 0,CAD,R2 I CURRENT ADDRESS IN R2
5841 031524 000205 RTS R5
5842 031526 025726 0.TCL1I TST (SP)+
5843 031530 000411 BR 0,ERR I POP A WORD AND SHOW THE ERROR
5844
5845 I PROCESS S = SINGLE INSTRUCTION MODE
5846
5847 031532 005702 0,SINGLI TST R2 I SEE IF TURN ON OR TURN OFF
5848 031534 001003 BNE 0,S11 I BRANCH IF TURNING IT ON
5849 031536 105037 034131 CLR 0,S I CLEAR THE FLAG
5850 031542 000410 BR 0,DCD I CONTINUE THE SCAN
5851 031544 112737 177777 0,S11I MOV 0,S I SET THE FLAG
5852 031552 000404 BR 0,DCD
5853 I COMMAND DECODER = OUT11X
5854
5855 I ALL REGISTERS MAY BE USED (R0-R5),
5856
5857 031554 012700 000077 0,ERRI MOV #17,R0 I 7 TO BE TYPED
5858 031560 024537 033750 JSR 5,0,FTYP I OUTPUT ?
5859 031564 005037 034120 0,DCD1 CLR 0,BW I CLOSE ALL
5860 031570 024537 034102 JSR 5,0,CHLS I TYPE <CR><LF>
5861 031574 005003 0,DCD2I CLR R3 I R3 IS A SAVE REGISTER FOR R2
5862 031576 005005 CLR R5 I R5 IS A SAVE REGISTER FOR R4
5863 031600 005004 0,DCD1I CLR R4 I R4 CONTAINS THE CONVERTED OCTAL
5864 031602 005002 CLR R2 I R2 IS THE NUMBER FOUND FLAG
5865 031604 024537 033764 0,SCANI JSR 5,0,GET I GET A CHAR, RETURN IN R2
5866 031610 022700 000000 CMP #10,R0 I COMPARE WITH ASCII 0
5867 031614 101013 RHI 0,CLGL I CHECK LEGALITY IF NON-NUMERIC
5868 031616 022700 000007 CMP #17,R0 I COMPARE WITH ASCII 7
5869 031622 103410 BLO 0,CLGL I CHECK LEGALITY IF NOT OCTAL
5870 031624 042700 177770 RIC #177770,R0 I CONVERT TO BCD
5871 031630 006304 ASL R4 I MAKE ROOM
5872 031632 006304 ASL R4 I IN
5873 031634 006304 ASL R4 I R4
5874 031636 060004 ADD R0,R4 I PACK THREE BITS IN R4
5875 031640 005202 INC R2 I R2 HAS NUMERIC FLAG
5876 031642 000700 BR 0,SCAN I AND TRY AGAIN
5877 031644 005001 0,CLGLI CLR R1 I CLEAR INDEX
5878 031646 120001 034145 0,LGL1I CMPB R0,0,LGCH(R1) I DO THE CODES MATCH?
5879 031652 001405 BEQ 0,LGL2 I JUMP IF YES
5880 031654 025201 INC R1 I SET INDEX FOR NEXT SEARCH
5881 031656 020127 000023 CMP R1,0,CLGT I IS THE SEARCH DONE?
5882 031662 103334 BHIS 0,ERR I OOPS!
5883 031664 000770 BR 0,LGL1 I RE-LOOP
5884 031666 006301 0,LGL2I ASL R1 I MULTIPLY BY TWO
5885 031670 000171 031674 JMP 00,LGUR(R1) I GO TO PROPER ROUTINE
5886
5887 031674 031742 0,LGDR I 0,SEMI I
5888 031676 031750 0,WRD I / OPEN WORD
5889 031700 031762 0,BYT I \ OPEN BYTE
5890 031702 032044 0,CRET I CARRIAGE RETURN CLOSE

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5891	031704	031360			O,REGT		S	REGISTER OPS	
5892	031706	032670			O,GO		G	GO TO ADDRESS W	
5893	031710	032056			O,OP1		<LF>	MODIFY, CLOSE, OPEN NEXT	
5894	031712	031430			O,ORPC		*	OPEN RELATED, INDEX * PC	
5895	031714	032052			O,OLD		<	RETURN TO OLD SEQUENCE AND OPEN	
5896	031716	032204			O,BACK		*	OPEN PREVIOUS	
5897	031720	032370			O,OFST		O	OFFSET	
5898	031722	032504			O,WSCH		W	SEARCH WORD	
5899	031724	032500			O,EFF		E	SEARCH EFFECTIVE ADDRESS	
5900	031726	032226			O,BKPT		B	BREAKPOINTS	
5901	031730	033000			O,PROC		P	PROCEED	
5902	031732	031452			O,ORAB		*	OPEN RELATED, ABSOLUTE	
5903	031734	031462			O,ORRB		>	OPEN RELATED, REL, BRANCH	
5904	031736	031532			O,SNGL		S	SINGLE INSTRUCTION MODE	
5905	031740	023530			MON1,0			RETURN TO DIAGNOSTIC MONITOR	
5906		000046			O,LGL	=	,=O,LGDR	LGGL MUST EQUAL 2X CHLGT ALWAYS	
5907									
5908									
5909									
5910	031742	010203			O,SEMI1	MOV	R2,R3	IA SEMI-COLON HAS BEEN RECEIVED	
5911	031744	010405				MOV	R4,R5	INUMERIC FLAG TO R3, CONTENTS TO R5	
5912	031746	000714				BR	O,DCD1	GO BACK FOR MORE	
5913									
5914									
5915									
5916	031750	012737	000002	034120	O,WRD1	MOV	#2,O,BW	IOPEN WORD	
5917	031756	000404				BR	O,WB1		
5918	031760	006104			O,BYT1	ROL	R4	IGET THE ADDRESS BACK	
5919	031762	012737	000001	034120	O,BYT1	MOV	#1,O,BW	IOPEN BYTE	
5920	031770	005702			O,WB1	TST	R2	IGET VALUE IF R2 IS NON-ZERO	
5921	031772	001404				BEQ	O,WRD1	ISKIP OTHERWISE	
5922	031774	010437	034124			MOV	R4,O,DOT	IPUT VALUE IN DOT	
5923	032000	010437	034122			MOV	R4,O,CAD	I ALSO IN CAD	
5924	032004	022737	000001	034120	O,WRD1	CMP	#1,O,BW	ICHECK BYTE MODE	
5925	032012	001407				BEQ	O,WRD2	IJUMP IF BYTE	
5926	032014	013704	034122			MOV	O,CAD,R4		
5927	032020	006204				ASR	R4	IMOVE ONE BIT TO CARRY	
5928	032022	103756				BCS	O,BYT1	IJUMP IF ODD ADDRESS	
5929	032024	017700	002072			MOV	R0,CAD,R0	IGET CONTENTS OF WORD	
5930	032030	000402				BR	O,WRD3		
5931	032032	117700	002064		O,WRD2	MOV	R0,CAD,R0	IGET CONTENTS OF BYTE	
5932	032036	004537	033056		O,WRD3	JSR	5,O,CADV	IGO GET AND TYPE OUT @CAD	
5933	032042	000654				BR	O,DCD2	IGO BACK TO DECODER	
5934									
5935									
5936									
5937	032044	004737	034042		O,CRET1	JSR	PC,O,CLSE	ICLOSE LOCATION	
5938	032050	000645			O,DCDA1	BR	O,DCD	IRETURN TO DECODER	
5939									
5940									
5941									
5942	032052	105237	034130		O,OLD1	INCB	O,SEC	ISET NEED O,DOT TO O,CAD MOVE	
5943	032056	005737	034120		O,OP1	TST	O,BW	I<LF> RECEIVED	
5944	032062	001634			O,ERR2	BEQ	O,ERR	IERROR IF NOTHING IS OPEN	

5945	032064	004737	034042		JSR	0C,0,CLSE	I CLOSE PRESENT CELL
5946	032070	005737	034136		TSTB	0,SE3	I SEE IF < COMMAND
5947	032074	001403			BEQ	0,OP5	I BRANCH IF NOT
5948	032076	013737	034124	034122	MOV	0,DOY,0,CAD	I GO TO THE FORMER STREAM
5949	032104	005037	034136		0,OP51 CLR	0,SE3	I CLEAR THE FLAG
5950	032110	0063737	034120	034122	ADD	0,BW,0,CAD	I GENERATE NEW ADDRESS
5951	032116	013737	034122	034124	0,OP21 MOV	0,CAD,0,DOY	I INITIALIZE DOY
5952	032124	004537	034074		0,OP2A1 JSR	5,0,CHLF	I <CH><LF>
5953	032130	013746	034120		MOV	0,BW,*(SP)	I SAVE RW
5954	032134	012737	000002	034120	MOV	#2,0,BW	I SET TO TYPE FULL WORD ADDRESS
5955	032142	013700	034122		MOV	0,CAD,R0	I NUMBER TO TYPE
5956	032146	004537	033656		JSR	5,0,CADV	I TYPE OUT ADDRESS
5957	032152	011637	034120		MOV	0,SP,0,BW	I RESTORE BW
5958	032156	022726	000001		CMP	#1,(SP)+	I IS IT BYTE MODE?
5959	032162	001405			BEQ	0,OP3	I JUMP IF YES
5960	032164	012700	000097		MOV	#1/,R0	I TYPE A /
5961	032170	004537	033790		0,OP41 JSR	5,0,FTVP	
5962	032174	000703			BR	0,WR01	I GO PROCESS IT
5963	032176	012700	000134		0,OP31 MOV	#1/,R0	I TYPE A \
5964	032202	000772			BR	0,OP4	
5965							
5966							
5967							
5968	032204	005737	034120		0,BACK1 TST	0,BW	I * RECEIVED
5969	032210	001724			BEQ	0,ERR2	I ERROR IF NOTHING OPEN
5970	032212	004737	034042		JSR	0C,0,CLSE	
5971	032216	0063737	034120	034122	SUB	0,BW,0,CAD	I GENERATE NEW ADDRESS
5972	032224	000734			BR	0,OP2	I GO DO THE REST
5973							
5974							
5975							
5976	032226	012700	034176		0,BKPT1 MOV	#0,TRIC,R0	
5977	032232	006304			ASL	R4	I MULTIPLY NUMBER BY TWO
5978	032234	005703			TST	R3	
5979	032236	001423			BEQ	0,REMB	I IF R3 IS ZERO GO REMOVE BREAKPOINT
5980	032240	006205			ASR	R5	I GET ONE BIT TO CARRY
5981	032242	003514			BCS	0,ERR1	I BOUNCE IF ODD ADDRESS
5982	032244	006305			ASL	R5	I RESTORE ONE BIT
5983	032246	0062704	031126		ADD	#0,ADR1,R4	
5984	032252	005702			TST	R2	
5985	032254	001007			BNE	0,SET1	I JUMP IF SPECIFIC CELL
5986	032256	020014			0,SET1 CMP	R0,0R4	I IS THIS CELL FREE?
5987	032260	001405			BEQ	0,SET1	I JUMP IF YES
5988	032262	020427	031144		CMP	R4,#0,BKP+0,ADR1	I ARE WE AT THE END OF OUR ROPE
5989	032266	003102			RHIS	0,ERR1	I YES, THERE IS NOTHING FREE
5990	032270	005724			TST	(R4)+	I INCREMENT BY TWO
5991	032272	000771			BR	0,SET	
5992	032274	020427	031144		0,SET11 CMP	R4,#0,BKP+0,ADR1	
5993	032300	001075			RHI	0,ERR1	I ERROR IF TOO LARGE
5994	032302	010514			MOV	R5,0R4	I SET BREAKPOINT
5995	032304	000661			BR	0,OCJA	I RETURN
5996							
5997	032306	005702			0,REMB1 TST	R2	
5998	032310	001410			BEQ	0,RALL	I GO REMOVE ALL

5999	032312	020427	000010			CMP	R4,0,BKP	
6000	032316	101066				BHI	0,ERR1	I JUMP IF NUMBER TOO LARGE
6001	032320	010064	031126			MOV	R0,0,ADR1(R4)	I CLEAR BREAKPOINT
6002	032324	005064	031190			CLR	0,CT(R4)	I CLEAR COUNT ALSO
6003	032330	000647			0,DCDB1	BR	0,DCDA	
6004	032332	005004			0,RALL1	CLR	R4	
6005	032334	012700	034176			MOV	00,TRTC,R0	
6006	032340	020427	000020		0,RM11	CMP	R4,0,BKP+2	I ALL DONE?
6007	032344	101241				BHI	0,DCDA	I JUMP IF YES
6008	032346	010064	031126			MOV	R0,0,ADR1(R4)	I RESET BKPT
6009	032352	012764	000003	031172		MOV	0TRT,0,WIN(R4)	I RESET CONTENTS OF TABLE
6010	032360	005064	031190			CLR	0,CT(R4)	I CLEAR COUNT
6011	032364	005724				TST	(R4)+	I INCREMENT BY TWO
6012	032366	000764				BR	0,RM1	
6013								
6014								
6015								I PROCESS 0, COMPUTE OFFSET
6016	032370	022737	000002	034120	0,OFST1	CMP	02,0,BW	I CHECK WORD MODE
6017	032376	001036				BNE	0,ERR1	I ERROR IF NOT CORRECT MODE
6018	032400	012700	000040			MOV	01,R0	I TYPE ONE BLANK
6019	032404	004537	033790			JSR	5,0,FTYP	I AS A SEPARATOR
6020	032410	005703				TST	R3	I WAS SEMI-COLON TYPED?
6021	032412	001430				BEO	0,ERR1	I NO, CALL IT AN ERROR
6022	032414	163705	034122		0,OF21	SUB	0,CAD,R5	I COMPUTE
6023	032420	005305				DEC	R5	
6024	032422	005305				DEC	R5	I 16 BIT OFFSET
6025	032424	010500				MOV	R5,R2	
6026	032426	004537	033690			JSR	5,0,CADV	I NUMBER IN R0 + WORD MODE
6027	032432	010500				MOV	R5,R2	
6028	032434	006200				ASR	R0	I DIVIDE BY TWO
6029	032436	103414				BCS	0,OF1	I ERROR IF ODD
6030	032440	022700	177600			CMP	0-200,R0	I COMPARE WITH +200
6031	032444	003011				BGT	0,OF1	I DO NOT TYPE IF OUT OF RANGE
6032	032446	022700	000177			CMP	0177,R0	I COMPARE WITH +177
6033	032452	002406				BLT	0,OF1	I DO NOT TYPE IF OUT OF RANGE
6034	032454	005337	034120			DEC	0,RW	I SET TEMPORARY BYTE MODE
6035	032460	004537	033690			JSR	5,0,CADV	I NUMBER IN R0 + BYTE MODE
6036	032464	005237	034120			INC	0,RW	I RESTORE WORD MODE
6037	032470	000137	031574		0,OF11	JMP	0,DCD2	I ALL DONE
6038								
6039	032474	000137	031554		0,ERR11	JMP	0,ERR	I INTERMEDIATE HELP
6040								
6041								I SEARCHES = SMSK HAS THE MASK
6042								I SMSK+2 HAS THE FWA
6043								I SMSK+4 HAS THE LWA
6044								
6045	032500	005201			0,EFF1	INC	R1	I SET EFFECTIVE SEARCH
6046	032502	000401				BR	0,WDS	
6047	032504	005001			0,WSCH1	CLR	R1	I SET WORD SEARCH
6048	032506	005703			0,WDS1	TST	R3	I CHECK FOR OBJECT FOUND
6049	032510	001771				BEO	0,ERR1	I ERROR IF NO OBJECT
6050	032512	012737	000002	034120		MOV	02,0,BW	I SET WORD MODE
6051	032520	013702	031122			MOV	0,MSK+2,R2	I SET ORIGIN
6052	032524	013704	031120			MOV	0,MSK,R4	I SET MASK

6053	032533	005104			COM	R4	
6054	032532	020237	031124	0,WDS21	CMF	R2,0,MSK+4	I IS THE SEARCH ALL DONE?
6055	032536	101274			BHI	0,DCDB	I YES
6056	032540	011200			MOV	R2,R0	I GET OBJECT
6057	032542	005701			TST	R1	I NO
6058	032544	001027			BNE	0,EFF1	I BRANCH IF EFFECTIVE SEARCH
6059	032546	010046			MOV	R0,(SP)	
6060	032550	010503			MOV	R5,R3	I EXCLUSIVE OR
6061	032552	040500			BIC	R5,R2	I IS DONE
6062	032554	042603			BIC	(SP)+,R3	I IN A VERY
6063	032556	050003			BIS	R0,R3	I FANCY MANNER HERE
6064	032560	040403			BIC	R4,R3	I AND RESULT WITH MASK
6065	032562	001016		0,WDS31	BNE	0,WDS4	I RE-LOOP IF NO MATCH
6066	032564	010446			MOV	R4,(SP)	I REGISTERS R2,R4, AND R5 ARE SAFE
6067	032566	004537	034074		JSR	5,0,CHLF	
6068	032572	010200			MOV	R2,R2	I GET READY TO TYPE
6069	032574	004537	033656		JSR	5,0,CADV	I TYPE ADDRESS
6070	032600	012700	000057		MOV	R1,R0	I SLASH TO R0
6071	032604	004537	033750		JSR	5,0,FTYP	I TYPE IT
6072	032610	011200			MOV	R2,R0	I GET CONTENTS
6073	032612	004537	033656		JSR	5,0,CADV	I TYPE CONTENTS
6074	032616	012604			MOV	(SP)+,R4	I RESTORE R4
6075	032620	005722		0,WDS41	TST	(R2)+	I INCREMENT TO NEXT CELL AND
6076	032622	000743			BR	0,WDS2	I RETURN
6077	032624	020005		0,EFF11	CMF	R0,R5	I IS (X)=K?
6078	032626	001755			BEQ	0,WDS3	I TYPE IF EQUAL
6079	032630	010003			MOV	R0,R3	I (X) TO R3
6080	032632	060203			ADD	R2,R3	I (X)+X
6081	032634	005203			INC	R3	
6082	032636	005203			INC	R3	I (X)+X+2
6083	032640	020305			CMF	R3,R5	I IS (X)+X+2=K?
6084	032642	001747			BEQ	0,WDS3	I BRANCH IF EQUAL
6085	032644	042700	177400		BIC	#177400,R0	I WIPE OUT EXTRANEOUS BITS
6086	032650	110000			MOVB	R0,R2	
6087	032652	000257			CCC		
6088	032654	006300			ASL	R0	I MULTIPLY BY TWO
6089	032656	005200			INC	R0	
6090	032660	005200			INC	R0	
6091	032662	060200			ADD	R2,R2	I ADJ PC
6092	032664	020005			CMF	R0,R5	I IS THE RESULT A PROPER REL. BRANCH?
6093	032666	000735			BR	0,WDS3	
6094							
6095							
6096							
6097	032670	005703					
6098	032672	001700					
6099	032674	112737	000021 034133	0,GO1	TST	R3	I WAS KI TYPED?
6100	032702	006205			BEQ	0,ERR1	I TYPE ?(CR,LF) IF NOT
6101	032704	103673			MOVB	#0,B4P+3,0,P	I CLEAR PROCEED
6102	032706	006305			ASR	R5	I CHECK LOW ORDER BIT
6103	032710	010537	031112		BCS	0,ERR1	I ERROR IF ODD NUMBER
6104	032714	112737	000340 177776		ASL	R5	I RESTORE WORD
6105	032722	004537	033556		MOV	R5,0,UPC	I SET UP NEW PC
6106	032726	105037	034132	0,TBIT1	MOVB	#0,STM,ST	I SET HIGH PRIORITY
					JSR	5,0,RSTT	I RESTORE TELETYPE
					CLRB	0,T	I CLEAR

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6107 032732 052737 000020 031114      BIS      #0,TBT,0,UST      I      BOTH T-BIT FLAGS
6108 032740 105737 034131      TSTB     0,S           ISEE IF WE NEED A T BIT
6109 032744 001005      BNE      0,G02        IIF NOT GO NOW
6110 032746 042737 000020 031114      BIC      #0,TBT,0,UST      ISET TM T BIT
6111 032754 004537 033900      O,G01: JSR      5,0,RSR      IRESTORE BREAKPOINTS
6112 032760 004037 033446      O,G02: JSR      7,0,RSR      IRESTORE REGISTERS
6113 032764 013746 031114      MOV      0,UST,-(SP)      I      AND STATUS
6114 032770 013746 031112      MOV      0,UPC,-(SP)      I      AND PC
6115
6116
6117
6118 032774 000002      YESRT: RTI
6119 032776 000002      RTX:      RTI      IMODIFIED FOR 11/40,11/45 TO RTT
6120
6121
6122
6123
6124
6125
6126
6127 033000 113700 034133      O,PROCI MOVB     0,P,R0
6128 033004 105700      TSTB     R0           ICHECK LEGALITY OF PROCEED
6129 033006 002632      BLY      0,ERR1      INOT LEGAL
6130 033010 005702      TST      R2           ICHECK FOR ILLEGAL COUNT
6131 033012 001230      BNE      0,ERR1      IJUMP IF ILLEGAL
6132 033014 005703      TST      R3           IHAS COUNT SPECIFIED?
6133 033016 001402      BEQ      0,PR1      INO
6134 033020 010560 031150      MOV      R5,0,CT(R0)      IYES, PUT AWAY COUNT
6135 033024 112737 000340 177776      O,PR1: MOVB     #0,STM,ST      IFORCE HIGH PRIORITY
6136 033032 004537 033956      JSR      5,0,RSRT      IRESTORE TTY
6137 033036 123727 034133 000016      O,C1:  CMPB     0,P,#0,BKP      ISEE IF A REAL ONE OR A FAKE
6138 033044 003330      BGT      0,TBIT      IBRANCH IF FAKE
6139 033046 105737 034131      TSTB     0,S           ISEE IF SINGLE INSTRUCTION MODE
6140 033052 001325      BNE      0,TBIT      IIF SO EXIT NOW
6141 033054 112737 000340 177776      MOVB     #0,STM,ST      ISET HIGH PRIORITY
6142 033062 105237 034132      INCB     0,T           ISET T-BIT FLAG
6143 033066 052737 000020 031114      BIS      #0,TBT,0,UST      ISET T-BIT
6144 033074 000731      BR       0,G02
6145
6146
6147 033076 012637 031112      I BREAKPOINT HANDLER
6148 033102 012637 031114      O,BRK1: MOV      (SP)+,0,UPC      IPRIORITY IS 7 UPON ENTRY
6149 033106 112737 000021 034133      MOV      (SP)+,0,UST      ISAVE STATUS AND PC
6150 033114 004037 033410      O,BRK1: MOVB     #0,BKP+3,0,P      ITELL JP THAT WE CAN CONTINUE
6151 033120 105737 034132      JSR      7,0,SVR      ISAVE VARIOUS REGISTERS
6152 033124 001300      TSTB     0,T           ICHECK FOR T-BIT SET
6153 033126 004537 033624      BNE      0,TBIT      IJUMP IF SET
6154 033132 105737 031116      JSR      5,0,REM      IREMOVE BREAKPOINTS
6155 033136 100003      TSTB     0,PR1      ICHECK IF PRIORITY
6156 033140 113705 031114      BPL      0,BK2      IIS AS SAME AS USER PGM
6157 033144 000407      MOVB     0,UST,R5      IPICK UP USER UST IF SO
6158 033146 113705 031116      BR       0,BK3
6159 033152 000257      O,BK2: MOVB     0,PR1,R5      IOTHERWISE PICK UP ACTUAL PRIORITY
6160 033154 106005      CCC      R5           ICLEAR CARRY
        NORB     R5           ISHIFT LOW ORDER BITS

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6161	033156	106005		RORB	R5	I INTO
6162	033160	106005		RORB	R5	I HIGH ORDER
6163	033162	106005		RORB	R5	I POSITION
6164	033164	110537	177770	0,BK31	MOVB R5,ST	INPUT THE STATUS AWAY WHERE IT BELONGS
6165	033170	113705	031112		MOV 0,JPC,R5	IGET PC, IT POINTS TO THE TMT
6166	033174	105737	034131		TSTB 0,S	ISEE IF IT WAS SINGLE INSTRUCTION FUN
6167	033200	100432			RMI 0,R4	IF SO HANDLE THERE
6168	033202	005745			TST -(R5)	
6169	033204	010537	031112		MOV R5,0,UPC	
6170	033210	012704	000016		MOV 00,BKP,R4	IGET A COUNTER
6171	033214	020564	031126	0,B11	CHP R5,0,ADR1(R4)	ICOMPARE WITH LIST
6172	033220	001427			BEO 0,R2	IJUMP IF FOUND
6173	033222	005304			DEC R4	
6174	033224	005304			DEC R4	
6175	033226	002372			BGE 0,B1	IRE-LOOP UNTIL FOUND
6176	033230	004537	033530		JSR 5,0,SVTT	ISAVE TELETYPE STATUS
6177	033234	004537	034074		JSR 5,0,CHLF	
6178	033240	012704	034140		MOV 00,B0,R4	IERMOR, NOTHING FOUND
6179	033244	012703	034141		MOV 00,B0+1,R3	
6180	033250	004537	034020		JSR 5,0,TYPE	IOUPUT "BE" FOR BAD ENTRY
6181	033254	010500			MOV R5,R0	
6182	033256	062737	000002	031112	ADD 02,0,UPC	IPOP OVER THE ADJUSTMENT ABOVE
6183	033264	000445			BR 0,B3	I ON CONTINUE
6184	033266	112704	000020	0,B41	MOVB 00,BKP+2,R4	ISET BREAK POINT HIGH + 1
6185	033272	010564	031126		MOV R5,0,ADR1(R4)	ISTORE NEXT PC VALUE FOR TYPE OUT
6186	033276	000400			BR 0,R2	
6187	033300	110437	034133	0,B21	MOVB R4,0,P	IALLOW PROCEED
6188	033304	005364	031150		DEC 0,CT(R4)	
6189	033310	003252			BGT 0,C1	IJUMP IF REPEAT
6190	033312	012764	000001	031150	MOV 01,0,CT(R4)	IRESET COUNT TO 1
6191	033320	004537	033530		JSR 5,0,SVTT	ISAVE TELETYPE STATUS, R4 IS SAFE
6192	033324	012700	000102		MOV 019,R0	
6193	033330	004537	033750		JSR 5,0,FTYP	ITYPE "B"
6194	033334	113700	034133		MOVB 0,P,R0	ICONVERT BREAKPOINT NUMBER TO ASCII
6195	033340	062700	000140		ADD 0140,R0	
6196	033344	006200			ASR R0	
6197	033346	004537	033750		JSR 5,0,FTYP	
6198	033352	012700	000073		MOV 011,R0	
6199	033356	004537	033750		JSR 5,0,FTYP	I TYPE
6200	033362	012737	000002	034120	MOV 02,0,BW	I SET WORD MODE
6201	033370	113704	034133		MOVB 0,P,R4	
6202	033374	016400	031126		MOV 0,ADR1(R4),R0	IGET ADDRESS OF BREAK
6203	033400	004537	033656	0,B31	JSR 5,0,CADV	ITYPE ADDRESS
6204	033404	000137	031564		JMP 0,DC0	IGO TO DECODER
6205					I SAVE REGISTERS R0-R6	
6206					I INTERNAL STACK	
6207						
6208	033410	012637	034126	0,SVR1	MOV (SP)+,0,XXX	IPICK REGISTER FROM STACK AND SAVE
6209	033414	010637	031110		MOV SP,0,USP	ISAVE USER STACK ADDRESS
6210	033420	012706	031110		MOV 00,USP,SP	ISET TO INTERNAL STACK
6211	033424	010546			MOV R5,=(SP)	ISAVE
6212	033426	010446			MOV R4,=(SP)	I REGISTERS
6213	033430	010346			MOV R3,=(SP)	I1
6214	033432	010246			MOV R2,=(SP)	I THRU

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6215 033434 010146          MOV      R1,=(SP)          |      5
6216 033436 013746 034126    MOV      0,XXX,=(SP)      |PUT SAVED REGISTER ON STACK
6217 033442 005746          TST      =(SP)
6218 033444 000200          RTS      R0
6219
6220          | RESTORE REGISTERS R0-R6
6221
6222 033446 005726          O,RSR1  TST      (SP)+          |POP THE EXTRA CELL
6223 033450 012637 034126    MOV      (SP)+,0,XXX      |GET RP FROM STACK
6224 033454 012601          MOV      (SP)+,R1         |RESTORE
6225 033456 012602          MOV      (SP)+,R2         | REGISTERS
6226 033460 012603          MOV      (SP)+,R3         | 1
6227 033462 012604          MOV      (SP)+,R4         | THRU
6228 033464 012605          MOV      (SP)+,R5         | 5
6229 033466 013706 031110    MOV      0,USP,SP         |RESTORE USER STACK
6230 033472 013746 034126    MOV      0,XXX,=(SP)      |PUT RP ON USER STACK
6231 033476 000200          RTS      R0
6232
6233          | RESTORE BREAKPOINTS 0-7
6234
6235 033500 012704 000010    O,RSB1  MOV      00,BKP,R4          |RESTORE ALL BREAKPOINTS
6236 033504 017464 031126 031172  O,RS11  MOV      00,ADR1(R4),0,UIN(R4) |SAVE CONTENTS
6237 033512 013774 034176 031126    MOV      0,TRTC,00,ADR1(R4) |REPLACE WITH TRAP
6238 033520 005304          DEC      R4
6239 033522 005304          DEC      R4
6240 033524 002367          BGE      0,RS1            |RE-LOOP UNTIL DONE
6241 033526 000205          RTS      R5              | THEN QUIT
6242
6243          | SAVE TELETYPE STATUS
6244
6245 033530 113737 177560 034134  O,SVTT1 MOVB     0,RCSH,0,CSR1          |SAVE R C/SR
6246 033536 113737 177564 034135    MOVB     0,YCSH,0,CSR2          |SAVE Y C/SR
6247 033544 105037 177560          CLRB     0,RCSH                |CLEAR ENABLE AND MAINTENANCE
6248 033550 105037 177564          CLRB     0,YCSH                | BITS IN BOTH C/SR
6249 033554 000205          RTS      R5
6250
6251          | RESTORE TELETYPE STATUS
6252
6253 033556 004537 034074          O,RSTY1 JSR      5,0,CHLF          |
6254 033562 105737 177564          TSTB     0,YCSH                |WAIT READY
6255 033566 100375          BPL      ,=4                    | ON PRINTER
6256 033570 032737 004000 177560    BIT      #4007,0,RCSR          |CHECK BUSY FLAG
6257 033576 001403          BEQ      0,RSE1                |SKIP READY LOOP IF NOT BUSY
6258 033600 105737 177560          TSTB     0,RCSH                |WAIT READY
6259 033604 100375          BPL      ,=4                    | ON READER
6260 033606 113737 034134 177560    O,RSE11 MOVB     0,CSR1,0,RCSR          |RESTORE
6261 033614 113737 034135 177564    MOVB     0,CSR2,0,TCSR          | THE STATUS REGISTERS
6262 033622 000205          RTS      R5
6263
6264          | REMOVE BREAKPOINTS 0-7
6265          | IN THE OPPOSITE ORDER OF SETTING
6266
6267 033624 105737 034131          O,REM1  TSTB     0,S            |SEE IF SINGLE INSTRUCTION IS GOING
6268 033630 001011          BNE      0,R2                |EXIT IF SO

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6269 233632 205004          CLR      R4          ;REMOVE ALL BREAKPOINTS
6270 233634 216474 231172 231126 0,R11  MOV     0,JIN(R4),R0,ADR1(R4) ;CLEAR BREAKPOINT
6271 233642 205204          INC     R4
6272 233644 205204          INC     R4
6273 233646 220427 200016  CMP     R4,R0,BKP
6274 233652 203770          BLE     0,R1          ;RE-LOOP UNTIL DONE
6275 233654 200205          0,R21  RTS      R5          ;THEN QUIT
6276
6277          ; TYPE OUT CONTENTS OF WORD OR BYTE WITH ONE TRAILING SPACE
6278          ; WORD IS IN R0
6279
6280 233656 212703 200000 0,CADV1 MOV     #6,R3          ;# OF DIGITS
6281 233662 212704 177776          MOV     #2,R4          ;# OF BITS FIRST-3
6282 233666 222737 200001 234120  CMP     #1,0,BW          ;SEE IF WORD MODE
6283 233674 201004          BNE     0,SPC          ;BRANCH IF SO
6284 233676 162703 200003  SUB     #3,R3          ;ONLY DO 3 DIGITS
6285 233702 205204          INC     R4          ;DO 2 BITS FIRST
6286 233704 200300          SWAB   R0          ;AND TURN R0 AROUND
6287 233706 210046          0,SPC1 MOV     R0,(SP)          ;SAVE R0
6288 233710 262704 200003 0,V01  ADD     #3,R4          ;COMPUTE THE NUMBER OF BITS TO DO
6289 233714 205000          CLR     R0
6290 233716 206116          0,V11  ROL     (SP)          ;GET A BIT
6291 233720 206100          ROL     R0          ;STORE IT AWAY
6292 233722 205304          DEC     R4          ;DECREMENT COUNTER
6293 233724 203374          BGT     0,V1          ;LOOP IF MORE BITS NEEDED
6294 233726 262700 200060  ADD     #1,R0          ;CONVERT TO ASCII
6295 233732 204537 233790  JSR     R5,0,FTYP          ;TYPE IT
6296 233736 205303          DEC     R3          ;SEE IF MORE DIGITS TO DO
6297 233740 203363          BGT     0,V0          ;LOOP IF SO
6298 233742 112700 200040  MOVB   #1,R0          ;SET UP FOR TRAILING SPACE
6299 233746 205726          TST    (SP)+          ;GET RID OF JUNK AND FALL THRU TO FTYP
6300
6301          ; TYPE ONLY ONE CHARACTER (CONTAINED IN R0)
6302
6303 233750 105737 177964 0,FTYP1 TSTB   0,TCSH          ;
6304 233754 100375          BPL     ,=4          ;
6305 233756 110037 177966          MOVB   R0,0,TDB          ;
6306 233762 200205          0,TYP11 RTS      R5          ;
6307          ; GENERAL CHARACTER INPUT ROUTINE -- ODT11X
6308          ; CHARACTER INPUT GOES TO R0
6309
6310 233764 105737 177960 0,GET1  TSTB   0,RCSH          ;WAIT FOR
6311 233770 100375          BPL     ,=4          ; INPUT FROM KBD
6312 233772 113700 177962          MOVB   0,R09,R0          ;GET CHARACTER - STRIP OFF PARITY
6313 233776 242700 177600          BIC     #177600,R0          ;STRIP OFF PARITY FROM CHARACTER
6314 234002 120027 200012  CMPB   R0,#212          ;SEE IF A <LF>
6315 234006 201406          BEQ     0,GET1          ;IF SO SAVE THE PAPER
6316 234010 204537 233790  JSR     5,0,FTYP          ;ECHO CHARACTER
6317 234014 201763          BEQ     0,GET          ;IGNORE NULLS
6318 234016 122700 200040  CMPB   #40,R0          ;CHECK FOR SPACES
6319 234022 201760          BEQ     0,GET          ;IGNORE SPACES
6320 234024 200205          0,GET11 RTS      R5          ;
6321
6322          ; GENERAL CHARACTER OUTPUT ROUTINE - ODT11X

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6323          I ADDRESS OF FIRST BYTE IN R4,
6324          I ADDRESS OF LAST BYTE IN R3, (R3)>(R4)
6325
6326 034026 020304          O,TYPE1 CMP      R3,R4          I CHECK FOR COMPLETION
6327 034030 103754          BLD      0,TYPE1          I EXIT WHEN DONE
6328 034032 112400          MOV8     (R4)+,R0          I GET A CHARACTER
6329 034034 004537 033750          JSR      5,0,FTYP        I TYPE ONE CHARACTER
6330 034040 000772          BR       0,TYPE          I LOOP UNTIL DONE
6331
6332          I CLOSE WORD OR BYTE AND EXIT,
6333          I UPON ENTERING, R2 HAS NUMERIC FLAG, R4 HAS CONTENTS
6334
6335 034042 005702          O,CLSE1 TST      R2          I IF NO NUMBER WAS TYPED THERE IS
6336 034044 001412          BEQ     0,CLS1          I NO CHANGE TO THE OPEN CELL
6337 034046 022737 000001 034120          CMP     #1,0,BW
6338 034054 001404          BEQ     0,CLS2          I JUMP IF BYTE MODE
6339 034056 101005          BHI     0,CLS1          I JUMP IF ALREADY CLOSED
6340 034060 010477 000036          MOV     R4,0,CAD
6341 034064 000402          BR      0,CLS1
6342 034066 110477 000030          O,CLS21 MOV8     R4,0,CAD          I STORE WORD
6343 034072 000207          O,CLS11 RTS      PC
6344
6345 034074 012703 034143          O,CRLF1 MOV     #0,CR+1,R3          I LWA <CR,LF>
6346 034100 000402          BR      0,CNS
6347 034102 012703 034144          O,CRLS1 MOV     #0,CR+2,R3          I LWA <CR,LF>
6348 034106 012704 034142          O,CRS1  MOV     #0,CR,R4          I FWA
6349 034112 004537 034020          JSR     5,0,TYPE
6350 034116 000205          RTS     R5          I TYPE SOMETHING
6351
6352 034120 000000          O,BW1  ?
6353
6354
6355 034122 000000          O,CAD1  ?
6356 034124 000000          O,DOT1  ?
6357 034126 000000          O,XXX1  ,WORD  ?
6358 034130 000          O,WDFG1 ,BYTE  ?
6359
6360 034131 000          O,S1   ,BYTE  ?
6361
6362
6363
6364
6365 034132 000          O,T1   ,BYTE  ?
6366 034133 000          O,P1   ,BYTE  ?
6367
6368
6369 034134 000          O,CSR11 ,BYTE  ?
6370 034135 000          O,CSR21 ,BYTE  ?
6371 034136 000          O,SE01 ,BYTE  ?
6372
6373          ,EVEN
6374 034140 042502          O,BD1  ,WORD  "BE
6375
6376 034142 010          O,CR1  ,BYTE  #15          I <CR>

```


6377 234143 012
6378 234144 052
6379
6380 234145 073
6381 234146 057
6382 234147 134
6383 234150 015
6384 234151 044
6385 234152 107
6386 234153 012
6387 234154 137
6388 234155 074
6389 234156 136
6390 234157 117
6391 234160 127
6392 234161 105
6393 234162 102
6394 234163 120
6395 234164 100
6396 234165 076
6397 234166 123
6398 234167 003
6399 000023
6400
6401 234170 123
6402 234171 120
6403 234172 115
6404 234173 000
6405 234174 000
6406 234175 102
6407 000006
6408
6409 234176 000003
6410
6411
6412
6413 034200
6414 031074
6415
6416 031074 000000
6417 031076 000000
6418 031100 000000
6419 031102 000000
6420 031104 000000
6421 031106 000000
6422 031110 000000
6423 031112 000000
6424 031114 000000
6425 031116 000007
6426 031120 000000
6427 031122 000000
6428 031124 000000
6429
6430

```

, BYTE 212 | <LF>
, BYTE '0 | 0
O, LGCHI , BYTE '/' | /
, BYTE '\ | \
, BYTE 215 | CARRIAGE RETURN
, BYTE 'S | S
, BYTE 'G | G
, BYTE 212 | <LF>
, BYTE '< | <
, BYTE '9 | 9
, BYTE '0 | 0
, BYTE 'W | W
, BYTE 'E | E
, BYTE 'B | B
, BYTE 'P | P
, BYTE '0 | 0
, BYTE '> | >
, BYTE 'S | S
O, CLGT = ,=O, LGCH |CONTROL C
|TABLE LENGTH
O, TLI , BYTE 'S |DO 1
, BYTE 'P |INOT 2
, BYTE 'M |ICHANGE 3
, BYTE ? |ITHE 4
, BYTE ? |IORDER 5
, BYTE 'B |HERE 6
O, LG = ,=O, TLI
, EVEN
O, TRTCI TRY |TRACE TRAP PROTOTYPE
|THE ORDER OF THE FOLLOWING ENTRIES IS CRITICAL
O, ASMB = |SAVE PC
, = ,=O, ODT=120 |ODT'S STACK IMMEDIATELY PRECEDES ODT
O, URBI ? |USER R0
? |R1
? |R2
? |R3
? |R4
? |R5
O, USPI ? |USER SP
O, UPCI ? |USER PC
O, USTI ? |USER ST
O, PRII 7 |ODT PRIORITY
O, MSKI ? |IMASK
? |LOW LIMIT
? |HIGH LIMIT

```

| BREAK POINT LISTS, ADDR = ADDRESS OF BREAKPOINT, CT = COUNT,


```

(1)
(1) 035306 042137 042138 039123 ADXDSI ,ASCIZ "0XDSI"
(1) 035315 137 054104 040903 ADXCAI ,ASCIZ "0XCAI"
(1) 035324 042137 041938 039123 ADXCSI ,ASCIZ "0XCSI"
(1) 035333 137 054104 051917 ADXDSI ,ASCIZ "0XDSI"
(1) 035342 042137 041138 039101 ADXBAI ,ASCIZ "0XBAI"
(1) 035351 137 054104 041902 ADXBCI ,ASCIZ "0XBCI"
(1) 035360 042137 040938 039117 ADXMOI ,ASCIZ "0XMOI"
(1) 035367 137 054104 044915 ADXMI ,ASCIZ "0XMI"
(1) 035376 042137 041938 039102 ADXCB ,ASCIZ "0XCB"
(1) 035405 137 054104 042116 ADXNDI ,ASCIZ "0XNDI"
(1) 035414 042137 042538 039123 ADXESI ,ASCIZ "0XESI"
(1) 035423 137 054104 051905 ADXESI ,ASCIZ "0XESI"
(1)
(1)
(1)
(1) 035434 020137 052903 042101 MSG201 ,ASCIZ "0 CJADHS/MOI"
(1)
(1) 035441 137 042926 052103 MSG201 ,ASCIZ "0 VECTOR ADDRESSI"
(1) 035473 137 052123 052101 MSG311 ,ASCIZ "0 STATUSI"
(1) 035505 137 051105 047522 MSG351 ,ASCIZ "0 ERROR IN TESTI"
(1) 035526 047537 044922 044907 MSG361 ,ASCIZ "0 ORIGIN OF MAP ERRORI"
(1) 035555 137 052124 052000 TRCM1 ,ASCIZ "0 TT TRACE ERROR IN TESTI"
(1) 035607 137 051117 043511 TRCM ,ASCIZ "0 ORIGIN OF LAST TT TRACE UPDATEI"
(1) 035650 041040 051925 020131 ABSYMI ,ASCIZ "0 BUSY ENABLE"
(1) 035667 115 046125 044524 AMUXMI ,ASCIZ "0 MULTIPLEXER CH"
(1) 035707 137 047105 051124 TRC1 ,ASCIZ "0 ENTRY WAS"
(1) 035731 137 047105 051124 TRC2 ,ASCIZ "0 ENTRY SHOULD BE"
(1) 035753 137 047105 051124 TYDSI ,ASCIZ "0 ENTRY WAS FROM DXDS"
(1) 036000 042537 052116 054922 TYCAI ,ASCIZ "0 ENTRY WAS FROM DXCA"
(1)
6448
6449
6450
6451
6452
6453
6454 036026
6455
6456 036026
6457
6458
6459
6460
6461 036026 000001 N#1
6462 000001 ,WORD N
6463 036030 000002 N#02
6464 000002 ,WORD N
6465 036032 000004 N#02
6466 000004 ,WORD N
6467 036034 000010 N#02
6468 000010 ,WORD N
6469 036036 000020 N#02
6470 000020 N#02

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6471	736040	700040	,WORD	N
6472		700100	NAME2	
6473	736042	700100	,WORD	N
6474		700200	NAME2	
6475	736044	700200	,WORD	N
6476		700400	NAME2	
6477	736046	700400	,WORD	N
6478		701000	NAME2	
6479	736050	701000	,WORD	N
6480		702000	NAME2	
6481	736052	702000	,WORD	N
6482		704000	NAME2	
6483	736054	704000	,WORD	N
6484		710000	NAME2	
6485	736056	710000	,WORD	N
6486		720000	NAME2	
6487	736060	720000	,WORD	N
6488		740000	NAME2	
6489	736062	740000	,WORD	N
6490		100000	NAME2	
6491	736064	100000	,WORD	N
6492		200000	NAME2	
6493		300000	NAME2	
6494	736066	177775	,WORD	W=1
6495		200004	WWW+W	
6496	736070	177773	,WORD	W=1
6497		200010	WWW+W	
6498	736072	177767	,WORD	W=1
6499		200020	WWW+W	
6500	736074	177757	,WORD	W=1
6501		200040	WWW+W	
6502	736076	177737	,WORD	W=1
6503		200100	WWW+W	
6504	736100	177677	,WORD	W=1
6505		200200	WWW+W	
6506	736102	177577	,WORD	W=1
6507		200400	WWW+W	
6508	736104	177377	,WORD	W=1
6509		201000	WWW+W	
6510	736106	176777	,WORD	W=1
6511		202000	WWW+W	
6512	736110	175777	,WORD	W=1
6513		204000	WWW+W	
6514	736112	173777	,WORD	W=1
6515		210000	WWW+W	
6516	736114	167777	,WORD	W=1
6517		220000	WWW+W	
6518	736116	157777	,WORD	W=1
6519		240000	WWW+W	
6520	736120	137777	,WORD	W=1
6521		100000	WWW+W	
6522	736122	077777	,WORD	W=1
6523		200000	WWW+W	
6524	736124	177777	,WORD	W=1

6525		000000	W+W+W	
6526		000001	N#1	
6527	036126	000001	,WORD	N
6528		000002	N#N#2	
6529	036130	000002	,WORD	N
6530		000004	N#N#2	
6531	036132	000004	,WORD	N
6532		000010	N#N#2	
6533	036134	000010	,WORD	N
6534		000020	N#N#2	
6535	036136	000020	,WORD	N
6536		000040	N#N#2	
6537	036140	000040	,WORD	N
6538		000100	N#N#2	
6539	036142	000100	,WORD	N
6540		000200	N#N#2	
6541	036144	000200	,WORD	N
6542		000400	N#N#2	
6543	036146	000400	,WORD	N
6544		001000	N#N#2	
6545	036150	001000	,WORD	N
6546		002000	N#N#2	
6547	036152	002000	,WORD	N
6548		004000	N#N#2	
6549	036154	004000	,WORD	N
6550		010000	N#N#2	
6551	036156	010000	,WORD	N
6552		020000	N#N#2	
6553	036160	020000	,WORD	N
6554		040000	N#N#2	
6555	036162	040000	,WORD	N
6556		100000	N#N#2	
6557	036164	100000	,WORD	N
6558		000000	N#N#2	
6559		000002	W#2	
6560	036166	177775	,WORD	#W#1
6561		000004	W+W+W	
6562	036170	177773	,WORD	#W#1
6563		000010	W+W+W	
6564	036172	177767	,WORD	#W#1
6565		000020	W+W+W	
6566	036174	177757	,WORD	#W#1
6567		000040	W+W+W	
6568	036176	177737	,WORD	#W#1
6569		000100	W+W+W	
6570	036200	177677	,WORD	#W#1
6571		000200	W+W+W	
6572	036202	177577	,WORD	#W#1
6573		000400	W+W+W	
6574	036204	177377	,WORD	#W#1
6575		001000	W+W+W	
6576	036206	176777	,WORD	#W#1
6577		002000	W+W+W	
6578	036210	175777	,WORD	#W#1

6579		004000	W+W+W	
6580	736212	173777	,WORD	=W=1
6581		010000	W+W+W	
6582	736214	167777	,WORD	=W=1
6583		020000	W+W+W	
6584	736216	157777	,WORD	=W=1
6585		040000	W+W+W	
6586	736220	137777	,WORD	=W=1
6587		100000	W+W+W	
6588	736222	077777	,WORD	=W=1
6589		000000	W+W+W	
6590	736224	177777	,WORD	=W=1
6591		000000	W+W+W	
6592		000001	N#1	
6593	736226	000001	,WORD	N
6594		000002	N#N#2	
6595	736230	000002	,WORD	N
6596		000004	N#N#2	
6597	736232	000004	,WORD	N
6598		000010	N#N#2	
6599	736234	000010	,WORD	N
6600		000020	N#N#2	
6601	736236	000020	,WORD	N
6602		000040	N#N#2	
6603	736240	000040	,WORD	N
6604		000100	N#N#2	
6605	736242	000100	,WORD	N
6606		000200	N#N#2	
6607	736244	000200	,WORD	N
6608		000400	N#N#2	
6609	736246	000400	,WORD	N
6610		001000	N#N#2	
6611	736250	001000	,WORD	N
6612		002000	N#N#2	
6613	736252	002000	,WORD	N
6614		004000	N#N#2	
6615	736254	004000	,WORD	N
6616		010000	N#N#2	
6617	736256	010000	,WORD	N
6618		020000	N#N#2	
6619	736260	020000	,WORD	N
6620		040000	N#N#2	
6621	736262	040000	,WORD	N
6622		100000	N#N#2	
6623	736264	100000	,WORD	N
6624		000000	N#N#2	
6625		000002	W#2	
6626	736266	177775	,WORD	=W=1
6627		000004	W+W+W	
6628	736270	177773	,WORD	=W=1
6629		000010	W+W+W	
6630	736272	177767	,WORD	=W=1
6631		000020	W+W+W	
6632	736274	177757	,WORD	=W=1

MCLK1.P11 DATA BUFFERS

6633		000040	W+W+W	
6634	036276	177737	,WORD	=W=1
6635		000100	W+W+W	
6636	036300	177677	,WORD	=W=1
6637		000200	W+W+W	
6638	036302	177577	,WORD	=W=1
6639		000400	W+W+W	
6640	036304	177377	,WORD	=W=1
6641		001000	W+W+W	
6642	036306	176777	,WORD	=W=1
6643		002000	W+W+W	
6644	036310	175777	,WORD	=W=1
6645		004000	W+W+W	
6646	036312	173777	,WORD	=W=1
6647		010000	W+W+W	
6648	036314	167777	,WORD	=W=1
6649		020000	W+W+W	
6650	036316	157777	,WORD	=W=1
6651		040000	W+W+W	
6652	036320	137777	,WORD	=W=1
6653		100000	W+W+W	
6654	036322	077777	,WORD	=W=1
6655		000000	W+W+W	
6656	036324	177777	,WORD	=W=1
6657		000000	W+W+W	
6658		000001	N#1	
6659	036326	000001	,WORD	N
6660		000002	N#N#2	
6661	036330	000002	,WORD	N
6662		000004	N#N#2	
6663	036332	000004	,WORD	N
6664		000010	N#N#2	
6665	036334	000010	,WORD	N
6666		000020	N#N#2	
6667	036336	000020	,WORD	N
6668		000040	N#N#2	
6669	036340	000040	,WORD	N
6670		000100	N#N#2	
6671	036342	000100	,WORD	N
6672		000200	N#N#2	
6673	036344	000200	,WORD	N
6674		000400	N#N#2	
6675	036346	000400	,WORD	N
6676		001000	N#N#2	
6677	036350	001000	,WORD	N
6678		002000	N#N#2	
6679	036352	002000	,WORD	N
6680		004000	N#N#2	
6681	036354	004000	,WORD	N
6682		010000	N#N#2	
6683	036356	010000	,WORD	N
6684		020000	N#N#2	
6685	036360	020000	,WORD	N
6686		040000	N#N#2	

6687	336362	140000	,WORD	N
6688		100000	,W+2	
6689	336364	100000	,WORD	N
6690		020000	,W+2	
6691		000002	,W+2	
6692	336366	177775	,WORD	=W-1
6693		000004	,W+W	
6694	336370	177773	,WORD	=W-1
6695		000010	,W+W	
6696	336372	177767	,WORD	=W-1
6697		000020	,W+W	
6698	336374	177757	,WORD	=W-1
6699		000040	,W+W	
6700	336376	177737	,WORD	=W-1
6701		000100	,W+W	
6702	336400	177677	,WORD	=W-1
6703		000200	,W+W	
6704	336402	177577	,WORD	=W-1
6705		000400	,W+W	
6706	336404	177377	,WORD	=W-1
6707		001000	,W+W	
6708	336406	176777	,WORD	=W-1
6709		002000	,W+W	
6710	336410	175777	,WORD	=W-1
6711		004000	,W+W	
6712	336412	173777	,WORD	=W-1
6713		010000	,W+W	
6714	336414	167777	,WORD	=W-1
6715		020000	,W+W	
6716	336416	157777	,WORD	=W-1
6717		040000	,W+W	
6718	336420	137777	,WORD	=W-1
6719		100000	,W+W	
6720	336422	077777	,WORD	=W-1
6721		000000	,W+W	
6722	336424	177777	,WORD	=W-1
6723		000000	,W+W	
6724				
6725		336426	,@:	INDICATE ADDRESS OF END OF BUFFER
6726	336426	000000	,WDATA	IBEGINNING OF WRITE DATA FILE
6727		037426	,NPRDATA=WDATA+512,	INPR INPUT DATA FILE
6728			,WDATA AND NPRDAT	OVER WRITE ASCII TEXT
6729		000001	,END	

ABSYM	#35650	6447#																		
ACCEPT#	#34005	932#	449#	4512	4522	4529	4538	4583	4619	4625										
ACLC	#30056	5456	5462#																	
ACPTH	#27022	5247#	5271																	
ACPTH,	#27024	5248#	5268																	
ACPTD	#27222	5300#	5323																	
ACPTD,	#27224	5301#	5320																	
ACUA	#25002	4658#	4659	4669	4697#	4698	4699#	4740#												
ADRA	#23410	4351	4429#																	
ADRAE	#23436	4366	4440#																	
ADREAM	#21640	4126#																		
ADRECM	#21642	4127#																		
ADRCAM	#21632	4123#																		
ADRCBM	#21650	4130#																		
ADRCSM	#21634	4124#																		
ADRCSM	#21630	4122#	4353																	
ADRECC#	#00002	768#	2519	2522	2802	2805	3271	3274	3308	3312	3312	3316	3446	3449						
		3477	3480																	
ADRECC#	#00001	769#	2523	2526	2806	2809	3267	3275	3278	3308	3319	3452	3453	3481						
ADRESM	#21654	4132#																		
ADRI	#10000	747#	2819	2818	2853	2856														
ADRMIM	#21646	4129#																		
ADRMOM	#21644	4128#																		
ADRNOM	#21652	4131#																		
ADRO	#04000	735#	2509	2512	2515	2518	2787	2788	2795	2798	3239	3241	3244	3417						
		3423	3426	3844	3846	3867	3869													
ADROSM	#21636	4125#																		
ADxBA	#35342	4433	6447#																	
ADxBC	#35351	4434	6447#																	
ADxCA	#35315	4430	6447#																	
ADxCB	#35376	4437	6447#																	
ADxCS	#35324	4431	6447#																	
ADxDS	#35306	4429	6447#																	
ADxES	#35414	4439	6447#																	
ADxES1	#35423	4440	6447#																	
ADxMI	#35367	4436	6447#																	
ADxMO	#35360	4435	6447#																	
ADxND	#35405	4438	6447#																	
ADxOS	#35333	4432	6447#																	
AHEX	#27140	5261	5278#																	
AHEX	#27142	5279#	5283																	
AHEX1	#27164	5280	5289#																	
AH,2	#27040	5258	5252#																	
AH,3	#27076	5262#	5286																	
AMUXM	#35667	6447#																		
ANVB	#14662	3204#	3209#	3210#	3212	3213	3216	3359	3352											
AO,2	#27240	5303	5309#																	
ATBL	#27174	5279	5282	5292#																
ATTEN	#00200	717#																		
ATTN	#00200	878#																		
BA	#00010	793#																		
BABC	#04574	1702#	1707																	
BALF	#00010	766#																		
BAHAP	#21442	1960#	2104#	2676#	2987#	2991#	2995#	3033#	3074#	4074#	4126	4175#								

BC	= 700012	7940																			
BCBC	704436	16610	1567																		
BCMAP	721454	40780	4127	41760																	
BCNT	717434	36620	35680	36950																	
BEGIN	701100	962	9600	998	4416	4467	4481														
BELL	735151	4662	64470																		
BGN0	701216	980	9920																		
BGN1	701233	993	9990																		
BGN2	701244	996	9980																		
BIT0	= 700001	8560	2000	2192																	
BIT1	= 700002	8590	4294																		
BIT17	= 702000	8460	890	3979																	
BIT11	= 704000	8490	889	4246																	
BIT12	= 710000	8440	880	4323																	
BIT13	= 720000	8430	887	4313	5348	5427															
BIT14	= 740000	8420	880	4244																	
BIT15	= 100000	8410	889																		
BIT2	= 700004	8540	3374	3377																	
BIT3	= 700013	8530	3201																		
BIT4	= 700020	8520																			
BIT5	= 700040	8510																			
BIT6	= 700100	8500																			
BIT7	= 700200	8490																			
BIT8	= 700400	8480																			
BIT9	= 701000	8470	2003	2010	2178	2964	2987	3018	4370												
BOY1	704224	15070	1004																		
BSY	= 700000	7200	8010																		
BSYEN	= 704000	7000	2980																		
BSYS	= 700400	6040	2932	2935																	
BUS1	701342	10430	1170	1550	2756	2995	3054	5196													
BUS0	701336	10380	1949	15970	16060	1607	16130	1614	1618	2494	2633	36640	5193								
BUS0B	701352	10520																			
BYPAS	= 700100	7630	2041	2612	2743	2745	2874	3039	3042												
CA	= 700002	7900																			
CAMAP	721404	18760	24670	26360	28600	32150	33860	40020	4123	41710											
CARG	727322	5300	5310	53240																	
CARGH	727124	5255	5257	52720																	
CARRY	724773	35370	39500	3551	3580	35020	47300														
CB	= 700000	7970																			
CBMAP	721544	19350	19830	20340	20530	20570	20960	21000	22000	22120	22220	25220	25200	26830							
		26000	26290	26930	26980	27190	27460	27700	28050	28090	30370	30420	30400	30500							
		30620	30960	31800	31200	31410	31450	31490	32740	32780	34490	34530	40900	41000							
		41180	4130	41810																	
CBMAPS	721656	11090	11390	11430	3267	32900	3300	3310	33490	34800	4096	4110	41100	41350							
		41030																			
CE	= 700010	8790	1170	4835	5472																
CHDEND	= 700040	6870																			
CHEND	= 700010	7210	3957																		
CHENDS	= 701000	6830	2936	2939																	
CHIS	= 700200	6850	2642	2645	2871	3680															
CHKEND	721614	4111	41100																		
CHKPHS	720710	39370																			
CHKREG	721366	1910	1930	1987	2087	2105	2213	2231	2472	2481	2487	2501	2504	2527							
		2530	2549	2548	2589	2615	2670	2711	2723	2732	2774	2783	2810	2810							

		2826	2837	2861	2878	2904	2952	2956	2966	2996	3051	3079	3117	3121
		3128	3154	3161	3164	3227	3223	3237	3289	3397	3393	3414	3464	3488
		3518	4057#	4157										
CKCJA	726163	4681	4549	5084#										
CKC1	726164	5085#	5182											
CKC2	726166	5086#	5087#											
CKC3	726174	5092#												
CKC4	726216	5096	5103#											
CKRC1	721516	4087	4092#											
CLK	721074	1911	1939	1988	2088	2097	2107	2214	2232	2246	2267	2476	2489	2497
		2502	2513	2528	2539	2546	2559	2593	2619	2684	2712	272#	2733	2779
		2779	2791	2811	282#	2824	2831	2843	2849	2864	288#	2905	2927	2953
		2978	3004	3055	3064	3085	3113	3124	3134	3157	3162	3221	3236	3328
		3341	3391	3418	349#	3503	3975#							
CLKC	721076	3976#	3977	3992#										
CLKE	7212#	3978	3994#											
CLKD	7210#	758#	2833	2836	4011	4012	4014	4015						
CLK1	721164	3988	3991#	3993										
CLROXD	720050	3757	3789	3795#										
CLRO	726414	2307	5142#											
CL1	725622	4964#	4968											
CMD	724776	2828#	2829	2838	2857	2867	3543#	3644#	3848	385#	3892	3871	3873	4734#
CMDCHN	700004	698#												
CMD0	702000	736#	2839	284#	2845	2849	2918	2919	2926	2929	388#	3889	3849	3891
		3872	3874											
CMDREJ	700001	692#	2888	2889										
CMD,AD	725220	4616	4953#	4918										
CMD,ST	725260	4615	4874#	4927	5075									
CNTLC	700003	5449#	5454											
CONI	701344	1044#												
CONO	701340	1039#												
CONOB	701354	1053#												
COPARO	721234	2500	3231	3347	3401	3509	4009#	4149						
COUNT	725032	3536#	3948#	3554#	3577#	357#	3983#	4758#						
CR	700015	4562	4628	5376	6443#									
CRLF	735240	3981	4372	6447#										
CS	700004	791#												
CSMAP	721416	1893#	1950#	2115#	2964	3104#	4066#	4124	4172#					
CS10	702000	701#												
CS12	710000	699#												
CUADRS	725004	4659#	4664#	4698#	4700	4701	4743#							
CUAR	701326	1028#	1129	1132	1535	1869	1872#	1873	1876	2463#	2464	2633	2662	2756
		3212#	3213	3382#	3383	3864#	3865#	5107						
CUBSY	700400	703#	1953	1956	2578	2637								
CUCR	701330	1029#	1940	2857										
CUDEND	700020	688#												
CUDX	700400	759#												
CUE	700040	888#												
CUEND	700040	719#												
CUFEM	740000	697#												
CUOR	701334	1034#												
CUSR	701332	1033#	2752	2755	519#									
DATA	736026	6456#												
DE	700004	876#	1170	4835	5472									

DEV	#24774	2463	2464	2467	2493	2494	2499	2634	2702	3843	3847	3864	3866	3877
		4781	4782	4732										
DEVONT	#25306	4637	4669	4666	4668	4703	4744							
DEVEND	#25304	722	3957											
DEV,A	#25300	4782	4789	4787	4788	4757	4913							
DFLT,C	#25143	4866	4917											
DFLT,S	#25203	4831	4926											
DOFLIN	#25002	871												
DONE	#25020	704	1631	1883	2038	2112	2119	2139	2277	2286	2287	2328	2338	2389
		239	3101	3184	3169	3177	3589	368	3683	3684	378	3783	3784	3772
		3788	4141	4142	4196	4199	5164							
DS	#25000	789												
DSCHSP	#25002	784												
DSHAP	#21372	1926	2649	2889	2935	2939	2946	3153	4058	4122	417			
DST	#21442	115	4916	5047	5072									
DSTADR	#23040	118	3257	3439	4916	5467								
DSTCNT	#25024	1595	1598	1683	4755									
DST,SE	#26133	4652	5871											
DS,1	#26140	5874	5877											
DS,2	#26146	5876	5878											
DS,3	#22068	3797	3799											
DTMP	#22302	4239	4240	4241										
DXBA	#21304	1014	1782	1783	1788	1711	1712	1716	1957	1997	2021	2079	2081	2082
		2101	2184	2178	2184	2192	2673	2984	2988	2992	2995	302	3071	3653
		3883	4873											
DXBASE	#21262	1005	4926	4988	5177									
DXBC	#21306	1019	1661	1662	1668	1669	1672	1673	1677	1888	2293	3661	3778	3884
		4877												
DXCA	#21276	1011	2867	2869	2878	2153	2159	2345	2346	2968	3889	4861	5186	
DXCB	#21314	1018	1794	1887	1814	1823	1828	1831	1834	1923	1986	1932	1973	1977
		1988	2031	2041	2044	2052	2054	2093	2165	2285	2289	2219	2237	224
		2251	2254	2278	2288	2292	2296	2299	2386	2396	2474	2478	2519	2523
		2600	2609	2612	2626	2692	2695	2715	2743	2767	2882	2886	2874	2898
		3001	3034	3039	3043	3047	3059	3093	3097	3117	3138	3142	3146	3173
		3177	3271	3275	3288	3283	3312	3316	3319	3446	3458	3455	3458	3477
		3481	3939	3952	3998	4001	4092							
DXCS	#21300	1012	1990	1617	1631	1634	1676	1715	1883	1889	189	1893	1953	2038
		2073	2079	2076	2112	2139	2199	2277	2286	2287	2303	2328	2331	2338
		2341	2342	2389	2398	2579	2586	2637	2963	3101	3169	317	3176	3291
		3466	3589	3598	3642	3645	3652	3663	368	3683	3684	378	3783	3784
		3715	3730	3762	3772	3789	3885	4065	4141	4142	4145	4196	4198	442
		4676	5121	5164	5165									
DXDC	#20010	3783	3787											
DXDS	#21274	1010	1877	1923	1969	2243	2257	2262	2642	2788	2871	2886	2919	2932
		2936	2943	2959	3024	3027	303	315	3722	4057	4352	5178		
DXDTE	#20020	3786												
DXES	#21320	1020	1741	1742	1745	1748	1749	1752	1753	1756	1757	1761	1764	1769
		1768	1798	1791	1818	1813	1817	1827	1838	1838	1894	1895	1989	2142
		2284	2468	2719	3185	3165	3166	3217	3292	3293	3348	3387	3467	3468
		3511	3539	3548	3555	3564	3565	3572	3573	3585	3775	381	3811	3815
		3991	4088	4183	4118	4147	4148	4418	5115	5127	5128	5198	5773	
DXES1	#21324	1022	2047	2116	5181									
DXFI	#20003	718	3663	3885										
DXFO	#20005	711												

DXFRS = 020001	709#	199#	1617	1634	1675	1719	2303	2331	3176	3291	3293	3400	3400
	3597	3542	3736	4145	4427	5105							
DXFST = 020007	712#												
DXGO = 020070	3763	3903#											
DXIS = 021266	1007#	1987#	2351#	364#	3759#	4934#	4713#	491#					
DXIV = 021264	1006#	198#	212#	2124#	213#	2337#	2352#	2961#	2962#	3639#	3691#	375#	4532#
	4712#	490#											
DXMI = 021312	1017#	1164	1167	257#	2572	2649	2653	2759	2815	2833	2853	2860	292#
	2947	297#	3323	3484	3545	3557	4004	4209	5195				
DXMO = 021310	1016#	1113	1132	1136	1167	1591	159#	1625#	1627#	162#	1635	1660	1909#
	1915	1939#	1943	2202	2353	2361#	2404#	2405	2493#	2509#	2517	2519	2535#
	2536	2941	2555#	2556	2561	2787#	2788	2795	2822#	2829#	2839#	284#	2845
	2912	291#	2919	2926	2967#	2972	3052#	3226#	3227	3235#	323#	3294	3327#
	3333	334#	3343	3396#	3397	3417#	3427	3469	3489#	3495	3502#	3509	356#
	3561#	3562#	3665#	3666#	3767#	3806#	3807#	3808#	3809#	3843#	3844#	3845#	3846#
	3847#	384#	3849#	385#	3851#	3856#	3857#	3859#	3860#	3867#	3868#	3869#	387#
	3871#	3872#	3873#	3874#	3875#	3876#	4009	4001	4419#	5142#	5192		
DXMOB = 021322	1021#												
DXND = 021316	1019#	2027	2153	2706	3224	3089	3092	4112					
DXOS = 021302	1013#	1101#	2007	2101	2665	3009	3641#	4009	5123#	5124	5109		
DXOUT = 020036	3790#												
DXPRY = 021273	1000#	1987	2121	2351	3647	3759	4546#	4713	4911#				
DXRES = 021663	1850	2462	3211	3381	3539	3563	3756	4140#					
DXTO = 020023	777#	3555	3564	3565	3585								
DXTO,1 = 016604	3548#	3556											
DXTO,2 = 016636	3549	3559#											
DXTO,3 = 016632	3554#												
DXTO,4 = 016756	3570#	397#	3584										
DXTO,5 = 017006	3581	398#											
DXTO,6 = 017034	3535	3991#											
D,DEV = 025612	4913	4953#											
D,DXBA = 025600	4908	4948#											
D,DXIS = 025614	4910	4954#											
D,DXIV = 025602	4909	4949#											
D,DXPR = 025604	4911	4950#											
D,FIRS = 025576	4907	4947#											
D,LEGA = 025610	4914	4952#											
D,MAX = 025606	4912	4951#											
E = 020013	922#	927#	928#	929#	938#	931#	932#	933#	934#	935#	936#	937#	
EAB1YS = 017520	3623	3719#											
EC = 020001	1519#												
ECH = 035203	4681	6447#											
EMTABL = 022246	923#	927#	928#	929#	938#	931#	932#	933#	934#	935#	936#	937#	
EMTAG = 022220	923	4220	4231#										
EMTDEC = 022156	953	4217#											
EMTOK = 022203	4222	4224#											
ENDEM = 020000	648#												
ENDSTR = 021776	1202#												
ENDTST = 035153	4680	6447#											
ENDTT = 020000	1518#	496#											
ENTRY1 = 020536	2959#	399#	3901	3903#	4155#	4099#							
ENTRY2 = 020576	2960#	3909#	3912	3914#	4157#	4000#							
ERFLG = 023406	4200#	4273#	4305#	4325	4347	4426#							
ERPC = 035271	4315	6447#											

ERRCNT #23442	43000	44400	46370	4683	49050									
ERRDST #27373	1211	1212	1213	1214	1215	1216	1217	1218	1219	1227	1221	1222	1223	
	1224	1229	1226	1237	1231	1232	1233	1234	1235	1236	1237	1238	1239	
	1247	1241	1242	1243	1244	1245	1249	1257	1251	1257	1253	1254	1255	
	1256	1257	1258	1259	1267	1261	1262	1263	1264	1268	1269	1270	1271	
	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1287	
	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	
	1301	1302	1306	1307	1308	1309	1317	1311	1312	1313	1314	1315	1316	
	1317	1318	1319	1320	1321	1325	1326	1327	1328	1329	1330	1331	1332	
	1333	1334	1335	1336	1337	1338	1339	1340	1344	1345	1346	1347	1348	
	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1363	1364	
	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	
	1378	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	
	1394	1399	1396	1397	1401	1402	1403	1404	1405	1406	1407	1408	1409	
	1410	1411	1412	1413	1414	1415	1416	1427	1421	1422	1423	1424	1425	
	1426	1427	1428	1429	1437	1431	1432	1433	1434	1435	1439	1440	1441	
	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	
	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	
	1471	1472	1473	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	
	1487	1488	1489	1490	1491	1492	1496	1497	1498	1499	1500	1501	1502	
	1503	1504	1505	1506	1507	1508	1509	1510	1511	5054	52310			
ERRLOP #23274	4369	4377	44070											
ERROR = 104003	9270	1160	1169	1172	1502	1593	1600	1609	1616	1620	1630	1637	1664	
	1671	1679	1679	1705	1717	1714	1718	1744	1747	1751	1755	1759	1763	
	1767	1770	1793	1799	1812	1816	1819	1825	1833	1837	1860	1871	1875	
	1879	1882	1885	1892	1897	1908	1917	1925	1934	1945	1955	1959	1965	
	1971	1979	1979	1982	2002	2005	2013	2019	2020	2029	2033	2037	2040	
	2043	2046	2049	2052	2056	2072	2078	2084	2095	2103	2114	2118	2131	
	2134	2141	2144	2155	2161	2167	2174	2180	2189	2194	2201	2204	2207	
	2211	2221	2239	2242	2245	2253	2256	2259	2264	2275	2279	2282	2289	
	2292	2299	2298	2301	2306	2330	2334	2349	2344	2348	2355	2366	2377	
	2380	2384	2388	2392	2399	2407	2406	2409	2496	2512	2517	2521	2525	
	2530	2543	2558	2563	2574	2580	2589	2602	2607	2614	2628	2632	2635	
	2644	2651	2655	2675	2692	2697	2702	2708	2717	2721	2745	2754	2758	
	2764	2769	2790	2797	2804	2808	2817	2835	2842	2847	2855	2859	2870	
	2873	2876	2888	2897	2902	2914	2917	2921	2928	2934	2938	2949	2949	
	2974	2978	2986	2990	2994	3000	3003	3022	3026	3032	3036	3041	3045	
	3049	3061	3073	3091	3095	3099	3103	3107	3119	3140	3144	3148	3152	
	3160	3172	3175	3182	3215	3229	3243	3273	3277	3282	3285	3290	3314	
	3318	3322	3325	3335	3345	3385	3399	3425	3448	3452	3457	3460	3471	
	3479	3483	3486	3497	3507	3542	3547	3553	3559	3567	3575	3587	3673	
	3682	3686	3690	3702	3706	3721	3724	3729	3733	3766	3774	3777	3780	
	3785	3813	3944	3965	4003	4042	4144	4155	4193	4198	4223	5120	5130	
	5145													
ERTSTN #23442	15270	15730	16450	16870	17270	17780	18460	23150	24200	31930	33050	35240	35990	
	37510	38250	4276	4329	44470	47170	49050							
ES = 001030	7990	9270	9280	9290	9370	9310	9320	9330	9340	9350	9360	9370		
ESEND = 000100	6060													
ESHAP #21564	18980	20200	21750	24690	30390	31080	31090	32180	33880	41000	4132	41840		
ETMP# #22744	43170	43180	4320											
ETMP1 #23074	43440	43450	4347											
EXR, SM# 000000	20	10	651	654	4333	4370	4407	4671	4902	4935	6447			
EXTR1 #23404	4415	44250												
E, R0 #23444	43070	4400	44520											

E,R1	023446	4300#	4409	4453#															
E,R2	023450	4309#	4410	4454#															
E,R3	023452	4310#	4411	4455#															
E,R4	023454	4311#	4412	4456#															
E,R5	023456	4312#	4413	4457#															
FALSE	022074	2337	2961	4193#	4712														
FASTCU#	002000	797#																	
FASTIS	020222	3976	3942#																
FCT#	000006	708#																	
FIRST,	025014	4499#	4917#	4714	4716#	4717	4748#	4904#											
FISSD	017352	3639	3679#																
FISS1	020324	3853	3856#																
FISS2	020332	3855	3857#																
FIVESE#	000001	3534	3991	4728#															
FLGMM	017104	3617#	3923#	3652	3713														
FSTART	034566	4483	6447#																
GETHEX	027010	4558	5243#																
GO	000001	713#	3863																
H	023516	4475#	4476#																
HEADER	034200	4475	6448#																
HERE	000000	857#																	
HEXNUM	027172	4559	4960	4568	5243#	5272#	5289#												
HLDO	040000	730#	2939	2536	2541	2544	3239	3241	3244	3417	3423	3426	396#	3660					
		3886	3887	3845	3856	3869													
		889#	4360																
HLTSM	100000																		
HOME	035146	4473	6447#																
HTBL	027204	5285	5292#																
IBA2	013516	3010#	3011#	3017#	3018#	3027	3030	3033											
IBMRST	034000	681#	2919																
ICOUNT	022414	1926#	1972#	1644#	1686#	1726#	1777#	1845#	2314#	2419#	3192#	3364#	3923#	3990#					
		3790#	3824#	4249	4258#														
		5069	5097	5104#															
IDVN	026233																		
IISW	004000	869#																	
ILLC	000405	866#	4813																
ILLEGI	007040	2120	2134#																
IMAGRA	011506	2663#	2664#	2665#	2669#	2673	2676	2706	2709	2752	2895	2898	2899						
IMAGOS	011526	2667#	2668#	2669															
INDX	013532	3013#	3014#	3015#	3016#	3017													
INFOSC	004000	680#	681																
INITB	001154	973	980#																
INITC	001160	979	981#																
INITZ	001144	976	975#																
INTEN	000100	709#	1889	1890	2341	2342	2963	2964	3645	3762	448#								
INTEPR	022132	4208#																	
INTOK	100000	878#	4208	4209	4212														
INTPAS	022130	4208#	4203#	4209	4212#														
INTR	022100	4196#																	
INTREQ	000200	779#	2110	2142	3105	3109													
IOD	000200	760#	1932	1935	2237	2251													
IRR	022154	4210	4213#																
IRR2	022142	4211#																	
IRS	000001	783#	2847																
ISSREJ	000010	689#																	
KEY,TD	104006	933#	4484	4561	4627	4639	5248	5301											

KIPARK	#17432	3622	3693											
LARS	#01444	1109	3265	3337	4487									
LEGAL	#25034	1112	4995	4658	4697	4763	4914	4915	5833	5884				
LESS1	#01272	1009	2129	2349	2962	4422	4549							
LEVEL0	#00000	894												
LEVEL1	#00040	895												
LEVEL2	#00100	896												
LEVEL3	#00140	897	1089											
LEVEL4	#00200	898	1089	4472	4958									
LEVEL5	#00240	899												
LEVEL6	#00300	900												
LEVEL7	#00340	901	944	947	952	953	956	967	999	1533	1888	3619	4468	4482
		5114												
LF	#00012	5376	6442											
LINK	#17144	3618	3629											
LOCAR	#01532	1130	1131	1139	1140									
LOCKO	#10000	759	1983	1983	2044	2287	2297	2299	2386	2396	2687	2683	3173	3283
		3498												
LOCMO	#01464	1114	1119	1119	1136	1137	1138	1147						
LOGICA	#24600	958	4692											
LOPSW	#40000	886	4414											
LPCNTL	#24472	3838	4062											
LPCSU	#24446	4656												
LPC1	#24632	4660	4667	4708										
LPC2	#24616	4670	4690											
LPC3	#24672	4704	4707											
LPC4	#24700	4706	4708											
LPC5	#24610	4690	4697											
L4	#17072	3613	3738											
L6	#17100	3615	3739											
MAPERR	#04001	928	4060	4064	4068	4272	4076	4080	4084	4091	4102	4100	4119	
MARK	#25770	5030	5037											
MAX,DE	#25016	3305	4000	4666	4703	4749	4912	5056	5092					
MCCSK	#00200	890												
MCLKEN	#00002	774	1749	1748	1749	1752	1753	1756	1757	1761	1790	1791	1838	1894
		1895	1898	2284	2468	2469	3165	3166	3217	3218	3292	3348	3367	3388
		3467	3911	4110	4140	4418								
MCLKP	#00001	773	1810	1813	1817	1827	1830	1905	3991	4000				
MC1,SM	#00001	20	9	143	146	342	345	653	1102	1196	2410	2741	2820	3052
		5216	5223	5288	6447									
MC2,SM	#00000	20	19	146	345	2461	2747	2829	2849	2861	2932	3052	4079	5479
		5726	6444	6447										
MDXX	#24234	4593	4594	4595	4596									
MEM,SM	#00000	20	19	371	378	929	1002	1204	1519	4266	4075	4976	6447	
MJ	#00016	796												
MIMAP	#21510	2652	2656	2765	2766	2818	2836	2856	2898	2903	2950	2979	3320	3330
		3487	3501	4011	4014	4289	4129	4179						
MISC	#01346	1047	1959	5199										
MO	#00014	795												
MOHAP	#21466	1918	1946	2499	2518	2544	2564	2798	2823	2838	2848	2929	2979	3053
		3238	3244	3297	3336	3346	3480	3426	3472	3498	3508	4082	4128	4178
		4333	4339											
MONDFL	#25300	4469	4488	4539	4898									
MONITO	#23460	994	4462											

NOP	= 000240	917#	3988	4374										
NOPC	= 000403	864#	3943	4811										
NPRCW	= 017542	3714	3720#											
NPRCX	= 017600	3725	3734#											
NPRC1	= 017606	3674	3734	3736#										
NPRC2	= 017304	3664#	366V											
NPRDAT	= 037426	3781	3799	3803	6727#									
NPRINT	= 017440	3691	369V#											
NPRT	= 000020	765#	2054	2057	2240	2254	3047	3050	3146	3149				
NPRT0	= 000040	778#	2719	3775										
NPRX	= 000040	764#	1973	2050	2053	2093	2096	2205	2208	2219	2222	2690	2693	2715
		2710	2990	3043	3046	3059	3062	3097	3100	3117	3120	3142	3149	
NPR,CA	= 017066	3607#												
NXM	= 040000	677#	3722	3727	3730	3731								
NXTADR	= 016444	3473	3912#											
NXT11	= 015556	3299	3351	3353#										
OCTNUM	= 025012	4499	4919	4917	4524	4526	4530	4532	4533#	4534	4539	4541#	4542#	4543#
		4544#	4545#	4546	4547#	4549#	4549	4504	4509	4600	4620	4622	4623	4626
		4747#	5297#	5324#										
ODAT	= 025634	4653	4973#											
ODAT1	= 025644	4977#	4970	4979	4980#	4981#								
ODAT2	= 025646	4978#	4982											
DEF	= 022672	4209	4300	4306#										
OFFSET	= 025010	4746#	4932	4933										
OLE,SM	= 000000	20	19	1520	4649	5160	6447							
ONESH0	= 024766	990#	3374	3377#	3534	3591#	4251#	4417#	4636#	4720#	4903#			
ONLINA	= 001000	702#												
ONLINE	= 000004	767#												
OPLI	= 100000	742#	1164	2649	2652	3545	3557							
OPLO	= 100000	729#	1591	1595	1635	1866	1909	1938	1943	1946	2353	2361	2404	2405
		3241	3294	3297	3343	3346	3423	3409	3472	3505	3500	4170		
OS	= 000006	792#												
OSMAP	= 021430	2795#	2899#	4070#	4125	4173#	4174#							
OUTST	= 001626	1123	1141	1144#										
OVRISR	= 007110	2132	2139	2145	2147#									
OVRTRA	= 010404	2307	2400	2404#										
O,ADR1	= 031126	3989#	4379#	4939#	5983	5989	5992	6001#	6000#	6171	6100#	6202	6230	6237#
		6270#	6433#											
O,ASMB	= 034200	6413#	6439											
O,BACK	= 032204	5896	5960#											
O,BD	= 034140	6170	6179	6374#										
O,BKP	= 000016	4937	5759#	5980	5992	5999	6000	6099	6137	6149	6170	6104	6239	6273
		6434	6430	6430										
O,BKPT	= 032226	5900	5970#											
O,BK1	= 033114	5701	6150#											
O,BK2	= 033146	6155	6150#											
O,BK3	= 033164	6157	6164#											
O,BRK	= 033076	944	5790	6147#										
O,BN	= 034120	5830	5859#	5916#	5919#	5924	5943	5950	5953	5954#	5957#	5900	5971	6010
		6034#	6036#	6050#	6200#	6202	6337	6352#						
O,BYT	= 031762	5809	5919#											
O,BYT1	= 031760	5910#	5920											
O,B1	= 033214	6171#	6179											
O,B2	= 033300	6172	6180	6187#										

O.B3	#33403	6183	6203#											
O.B4	#33266	6167	6184#											
O.CAD	#34122	5824#	5842	5923#	5926	5929	5931	5948#	5958#	5951	5959	5971#	6022	6347#
		6342#	6359#											
O.CADV	#33656	5932	5958	6026	6035	6069	6073	6203	6287#					
O.CLGL	#31644	5867	5869	5877#										
O.CLGT	#00023	5881	6399#											
O.CLSE	#34042	5837	5937	5945	5977	6335#								
O.CLS1	#34072	6336	6339	6341	6343#									
O.CLS2	#34066	6338	6342#											
O.CR	#34142	6345	6347	6348	6376#									
O.CRET	#32044	5890	5937#											
O.CRLF	#34074	5952	6067	6177	6253	6345#								
O.CRLS	#34102	5860	6347#											
O.CRS	#34106	6346	6348#											
O.CSR1	#34134	6249#	6260	6369#										
O.CSR2	#34135	6246#	6261	6378#										
O.CT	#31150	4941#	6002#	6010#	6134#	6188#	6197#	6435#						
O.C1	#33036	6137#	6189											
O.DCD	#31564	5850	5852	5859#	5938	6204								
O.DCDA	#32050	5938#	5999	6003	6007									
O.DCDB	#32330	6003#	6059											
O.DCD1	#31600	5803#	5912											
O.DCD2	#31574	5801#	5933	6037										
O.DDY	#34124	5922#	5940	5951#	6356#									
O.EFF	#32503	5899	6049#											
O.EFF1	#32624	6058	6077#											
O.ELYR	#31226	5770#												
O.ERR	#31554	5843	5857#	5882	5944	6039								
O.ERR1	#32474	5901	5989	5993	6000	6017	6021	6039#	6049	6098	6101	6129	6131	
O.ERR2	#32062	5944#	5969											
O.FTYP	#33750	5858	5961	6019	6071	6193	6197	6199	6295	6303#	6316	6329		
O.GET	#33764	5803	5869	6310#	6317	6319								
O.GET1	#34024	6319	6320#											
O.GO	#32670	5892	6097#											
O.G01	#32754	6111#												
O.G02	#32760	6109	6112#	6144										
O.LG	#00006	5807	6407#											
O.LGCH	#34145	5878	6380#	6399										
O.LGDR	#31674	5885	5887#	5906										
O.LGL	#00046	5906#												
O.LGL1	#31646	5878#	5903											
O.LGL2	#31666	5879	5884#											
O.MSK	#31120	6051	6052	6054	6426#									
O.OOT	#31214	5773#	5778	6414										
O.OFST	#32370	5897	6016#											
O.OF1	#32470	6029	6031	6033	6037#									
O.OF2	#32414	6022#												
O.OLD	#32052	5895	5942#											
O.OP1	#32056	5893	5943#											
O.OP2	#32116	5951#	5972											
O.OP2A	#32124	5825	5952#											
O.OP3	#32176	5959	5963#											
O.OP4	#32170	5961#	5964											

O,OP5	232174	5947	5949#								
O,ORAB	231452	5826#	5902								
O,ORPC	231438	5827#	5894								
O,ORRB	231462	5829#	5903								
O,P	234133	5779#	5794#	6399#	6127	6137	6149#	6187#	6194	6221	6366#
O,PCS	231442	5824#	5920	5836							
O,PRI	231116	5788	6154	6158	6425#						
O,PRCC	233800	5901	6127#								
O,PR1	233824	6133	6139#								
O,RALL	232332	5797	5998	6084#							
O,RCSR#	177563	5763#	6249	6247#	6256	6259	6267#	6317			
O,RDB =	177562	5762#	6312								
O,REGT	231368	5803#	5991								
O,REM	233624	5787	6153	6267#							
O,REMB	232386	5979	5997#								
O,RM1	232348	6086#	6012								
O,RSB	233500	6111	6239#								
O,RSE1	233686	6257	6268#								
O,RSP	231378	5805#	5888								
O,RSR	233446	6112	6222#								
O,RST	231388	5775	5788#								
O,RSTT	233556	6105	6138	6253#							
O,RST1	231326	5785	5793#								
O,RS1	233584	6236#	6248								
O,R1	233634	6278#	6274								
O,R2	233654	6268	6279#								
O,S	234131	5780#	5793#	5849#	5851#	6109	6139	6166	6267	6368#	
O,SCAN	231684	5814	5869#	5876							
O,SEMI	231742	5887	5918#								
O,SEO	234136	5942#	5946	5949#	6371#						
O,SET	232256	5986#	5991								
O,SET1	232274	5989	5987	5992#							
O,S11	231544	5848	5851#								
O,SNGL	231532	5847#	5904								
O,SP	231422	5806	5819#								
O,SPC	233786	6283	6287#								
O,SP1	231418	5811#	5810								
O,STM =	230348	5757#	5799	6184	6135	6141					
O,STRT	231266	5774	5783#								
O,SVP	233418	5786	6158	6288#							
O,SVTT	233538	6176	6191	6245#							
O,T	234132	6106#	6142#	6151	6365#						
O,TBIT	232726	6106#	6138	6148	6152						
O,TBT =	230828	5798#	6107	6118	6143						
O,TCLS	231584	5820	5826	5829	5837#						
O,TCL1	231526	5839	5842#								
O,TCSR#	177564	5765#	6246	6248#	6254	6261#	6303				
O,TDB =	177566	5764#	6305#								
O,TL	234178	5804	5807	5815	6401#	6407					
O,TMP =	231874	5752#	5753								
O,TRTC	234176	4936	5976	6085	6237	6409#					
O,TVEC#	230814	5756#	5777	5795#	5796#						
O,TYPE	234826	6188	6329#	6338	6349						
O,TYP1	233762	6306#	6327								

O.UIN	331172	39880	43740	49480	60090	62360	6270	64370						
O.UPC	331112	57780	61030	6114	61470	6165	61690	61820	64230					
O.URP	331074	5783	5812	64160										
O.USP	331113	57840	62090	6210	6229	64220								
O.UST	331114	57760	61070	61100	6113	61430	61480	6156	64240					
O.V0	333710	62080	6297											
O.V1	333716	62900	6293											
O.WB1	331770	5917	59200											
O.WDFG	334130	63580												
O.WDS	332506	6046	60480											
O.WDS2	332532	60540	6070											
O.WDS3	332562	60650	6070	6084	6093									
O.WDS4	332620	6065	60700											
O.WRD	331750	5888	59100											
O.WRD1	332004	5921	59240	5962										
O.WRD2	332032	5925	59310											
O.WRD3	332036	5930	59320											
O.WSCH	332504	5898	60470											
O.XXX	334126	62080	6210	62230	6230	63570								
PARA	224414	46480												
PARER =	100000	6760												
PARI =	200400	7510	2653	2656	2900	2903	4179							
PARITY =	104007	9340	3207	3380	4559	4622	4700	4700	4970					
PARO =	200400	7300	4000	4980	5019	5021								
PARSTP =	100000	6960												
PAST	317146	3624	36270											
PC =	X000007	9140	11100	11130	11160	11290	11450	11020	11030	17940	18500	19100	19130	19300
		19410	19670	19870	19910	19970	20070	20070	20730	20790	20870	20900	20990	21050
		21090	21270	21560	21810	21840	22130	22160	22230	22310	22340	22480	22700	23620
		24000	24620	24700	24810	24870	24880	25000	25010	25040	25050	25270	25300	25310
		25450	25480	25810	25890	25950	26150	26210	26620	26660	26780	26860	27110	27230
		27250	27300	27320	27350	27590	27740	27770	27810	27830	27930	28100	28130	28190
		28260	28370	28510	28610	28660	28780	28820	29040	29240	29520	29560	29570	29660
		29800	29900	30000	30090	30120	30510	30570	30660	30680	30750	30870	31100	31150
		31210	31200	31280	31360	31540	31590	31610	31640	31770	31850	32050	32000	32110
		32190	32200	32230	32240	32310	32320	32380	32450	32660	32890	33070	33310	33470
		33780	33810	33890	33900	33930	33940	34010	34140	34200	34270	34640	34800	34930
		35090	35100	35320	35380	35440	35630	35760	36120	36140	36160	36200	36400	37150
		3710	37500	37570	37630	37890	38000	38140	38590	38770	38950	3897	39050	3900
		39200	39270	39300	39370	39390	39490	39520	39580	39630	39660	39750	39840	40040
		40100	40310	40470	4057	4061	4065	4069	4073	4077	4081	4088	40920	4099
		41030	4100	4112	41200	41460	41470	41490	41500	41510	41580	41650	42130	42300
		42020	42070	42920	43100	43210	43360	43430	43480	43610	43640	44210	44000	44000
		45090	45580	45680	45890	45920	46010	46470	46490	46580	46510	46520	46530	46540
		46840	46930	47110	49240	49440	49670	49760	49840	50040	50060	50080	50500	50670
		50730	50790	50850	50990	51030	51160	51200	51220	51330	51340	51350	51430	51600
		52030	52760	53360	53440	53700	54510	54500	57500	58370	59370	59450	59700	63430
PCH1 =	104010	9350												
PCH2 =	104011	9360												
PCH3 =	104012	9370												
PERRPC	223220	4314	4324	4341	43600									
PFAIL	001634	950	11500	1180										
PFLD	226562	1187	52100											
PG2	225716	50110	5010											

PG3	025733	5012	5019#																	
PG4	025754	5018	5021#																	
PG5	025762	5020	5023#																	
PHASE0#	030000	803#	820	821	2273															
PHASE1#	010000	804#	822	823																
PHASE2#	020000	805#	824	825																
PHASE3#	030000	806#	826	827																
PHASE4#	040000	807#	828	829																
PHASE5#	050000	808#	830	831																
PHASE6#	060000	809#	832	833																
PHASE7#	070000	810#	834	835	2296															
PHS	074000	796#																		
PHST	020744	1913	1941	1991	2090	2799	2109	2216	2223	2234	2240	2400	2509	2531						
		2501	2599	2621	2686	2725	2730	2735	2777	2781	2793	2813	2891	2866						
		2802	2924	2957	2980	3005	3057	3066	3087	3115	3126	3136	3159	3224						
		3215	3331	3394	3427	3493	3949#													
		3936	3960#																	
PHSTC	021036	3957	3967#																	
PHSTER	021042																			
PHS01	030000	820#	2400	2506	2532	2587	3225	3332	3399	3494										
PHS02	030000	821#	1914	2596	3246	3429														
PHS11	014000	822#	2622	2726																
PHS12	010000	823#	2607	2731																
PHS21	024000	824#	2736	2782	2794															
PHS22	020000	825#	2770	2814	2852															
PHS31	034000	826#	2967	2883	2925	2958														
PHS32	030000	827#																		
PHS41	044000	828#	1942	2091	2981	3059														
PHS42	040000	829#	1992	2100	3007	3067														
PHS51	054000	830#																		
PHS52	050000	831#																		
PHS61	064000	832#																		
PHS62	060000	833#																		
PHS71	074000	834#	2110	2235	3088	3127	3160	4098												
PHS72	070000	835#	2217	2224	2249	3116	3137													
PNTSM	020000	807#																		
PP1	015352	3306	3311	3316#																
PRE1	026266	4421	4711	5113#																
PRE10	026422	5113	5149#																	
PRE1,1	026312	2307#	5120#																	
PRINTF	027726	5425	5431#																	
PRINTL	027714	5426#	5440																	
PRINTR	027653	3963	3984	4282	4287	4292	4321	4336	4348	4361	4364	4604	5410#							
PRINTS	027663	4277	4330	5418#																
PRINT2	027636	5412#	5423	5441	5445															
PRINT3	027646	5414#	5416#	5418#	5419#	5435#	5436	5439#												
PRTE	030004	5421	5447#																	
PRTY	025714	5009#	5013#	5017																
PS	017776	918#	967#	999#	1194#	1809#	2121#	2126#	2349#	3620	3643#	3740#	3761#	4253#						
		4422#	4468#	4482#																
PSELI	016244	3440	3477#																	
PSELI1	015302	3298	3309#																	
PSTMP	021010	3959#	3960#	3962																
PSWS	017126	3621#	3740																	
PWRUP	001723	1161	1177#																	

PX	210276	34040												
PXX1	215326	3208	33100											
PX1	215364	3315	33190											
P1X	215316	33080												
RANGE	201526	1120	11200											
RDH	235112	4350	64470											
RDMP0	223143	43540	4367											
RDMP1	223156	43540	43500											
RDMP2	223213	4356	43650											
RDXX	224222	1131	1137	44870	45900	45910	4594							
REACC =	220002	8630	4910											
REGTT	201406	10750												
REG,SE	226454	4654	51700											
REG0	201356	10570												
REG1	201363	10580												
REG2	201362	10590												
REG3	201364	10600												
REG4	201366	10610												
REG5	201373	10620												
REG6	201372	10630												
REG7	201374	10640												
RELOD	223652	4476	49020											
REQI =	220000	7440												
RESMAP	221776	4147	41700											
RESRES	226426	1102	5110	5122	51620									
RETURN	222420	1195	19200	15740	16460	16800	17200	17790	18470	23160	23500	24210	31940	33600
		35250	30000	37520	38260	4254	42550	42000	4423	47190	47200	49070		
RFR3	204124	1532	19020											
RR6	204130	1500	19040											
RSTPC	227632	53900	5400	54000										
RSTPSW	227634	53970	5400	54090										
RSTRG =	104004	9310	1170											
RS,1	226464	51790	5182											
RTX	232776	9720	9700	981	3651	61190								
RURQUH	227116	5253	5250	52700	5284									
RURQUT	227314	5300	5312	5314	53220									
RD	=X000000	9050	1110	11120	1116	1121	11440	36700	36710	4307	44000	4405	4400	4493
		4495	4502	4620	4640	46000	4693	47140	47180	4719	4721	49170	4920	4921
		49260	4920	49360	4939	4974	49750	49790	49830	50330	5030	5041	50400	5040
		5051	5052	50840	5087	5100	5101	51770	5179	51800	52060	5208	5200	5246
		5249	5252	5254	5256	5250	5260	52620	5267	52730	5270	52850	5200	5302
		5309	5307	5309	5311	5313	53150	5319	53250	53340	53370	57430	5805	5800
		5810	58570	5866	5868	58700	5874	5878	59290	59310	59550	59600	59630	59760
		5906	6001	60050	6008	60100	60250	60270	60200	6030	6032	60560	6050	60610
		6063	60600	60700	60720	6077	6079	60850	60860	60880	60800	60900	60910	6092
		61270	6120	61340	61810	61920	61940	61950	61960	61980	62020	62180	62310	62800
		6207	62000	62910	62940	62900	6305	63120	63130	6314	6310	63200		
R1	=X000001	9000	19300	1536	15370	1530	15400	1541	15420	1543	15450	1546	15470	1548
		15500	1551	15520	1553	15550	1556	15570	1559	24580	32540	32550	32500	3257
		34360	34370	34380	3439	36870	3688	37260	3727	37300	3731	37010	37050	37070
		3803	38040	3805	3801	3804	3805	39040	3905	39150	3916	39100	3924	3927
		39290	4022	40240	40260	40370	4036	40380	4040	40460	4204	4308	43510	4354
		4366	44000	49180	49200	49230	49270	49200	49630	49640	4965	50340	50300	50370
		50390	50400	50440	50460	5049	50540	50500	5061	50720	50760	51700	51700	5181

		52070	52080	52090	52100	5245	52470	52630	52640	52650	52660	52670	5272	52740
		5298	53080	53160	53170	53180	53190	5324	53260	57440	58300	58310	58320	58330
R2	=X700J02	58340	5935	58770	5878	58870	5881	58840	5885	60450	60470	6057	6215	62240
		9078	24500	37900	37960	37990	4023	40250	40270	40290	4037	40390	40430	40450
		4309	43520	4355	4360	4365	44100	50470	5058	50750	5078	5244	52750	52780
		5279	52810	5282	5285	57450	58130	58210	58220	58230	5824	58270	5830	58350
		58400	5947	58640	58750	5910	5920	5904	5997	60510	6054	6056	6060	6072
		6075	6080	6091	6130	6214	62250	6335						
R3	=X700J03	9080	4310	43530	4355	4363	4365	44110	45560	45600	45750	46160	46230	46300
		57460	59610	59100	5978	6020	6040	60600	60620	60630	60640	60790	60800	60810
		60820	6083	6097	6132	61790	6213	62260	62800	62840	62960	6326	63400	63470
R4	=X700J04	9090	4311	44120	46150	46250	49350	4937	49390	49400	49410	4942	57470	57800
		57890	57900	57910	5792	58040	5805	5807	58100	58110	58120	58150	58030	58710
		58720	58730	58740	5911	59100	5922	5923	59260	59270	59770	59830	5986	5988
		5990	5992	59940	5999	60010	60020	60040	6006	60080	60090	60100	6011	60520
		60530	6064	6066	60740	61700	6171	61730	61740	61780	61840	61850	6187	61880
		61900	62010	6202	6212	62270	62350	62360	62370	62380	62390	62690	62700	62710
R5	=X700J05	62720	6273	62810	62850	62880	62920	6326	6328	6340	6342	63480		
		9100	19110	19390	19880	20800	20970	21070	22140	22320	22460	22670	24700	24850
		24970	25020	25130	25280	25390	25460	25590	25930	26190	26840	27120	27200	27330
		27750	27790	27910	28110	28200	28240	28310	28430	28490	28640	28800	29050	29220
		29530	29700	30040	30550	30640	30850	31130	31240	31340	31570	31620	32210	32360
		33280	33410	33910	34180	34900	35030	3937	39450	3975	3983	39940	4312	44130
		51040	5200	5207	5211	5213	52140	57400	58410	58620	59110	59000	59000	5994
		60220	60230	60240	6025	6027	6060	6061	6077	6083	6092	61000	61020	6103
		6134	61500	61580	61600	61610	61620	61630	6164	61650	6168	6169	6171	6181
		6185	6211	62280	62410	62490	62620	62750	62950	63060	63200	63500		
R6	=X000006	9120	1160	11780	42180	42190	42200	4221	42240	42250	42260	42270	4228	
S	= 000001	15190												
SAVDEV	025026	47560												
SAVRG	104003	9300	1159											
SAVR6	026560	11600	1170	52180										
SBA1	006172	19990	2000	2003	20060	2011	20210	20220	20230	2024				
SBA2	006576	20000	2002											
SBA3	007242	21050	21000	2107										
SBC6	007604	22710	22720	2273										
SBYTE	026534	5104	52050	5212										
SCALD	025076	47030	5030	5048										
SCA2	006522	20000	2070											
SCB	020720	39400	39410	3942										
SCB1	020762	39530	39540	3955										
SCB8	014556	31780	31790	3180										
SCHAR	030012	54520	54530	5454	5459									
SCOPE	104400	8390	1929	1571	1643	1685	1725	1776	1844	2313	2410	3191	3303	3922
		3597	3749	3823										
SCOPEA	022406	4247	42500											
SCOPEB	022362	4249	42510											
SCOPEC	022273	996	42300											
SCOPEF	022416	42480	4249	42500	42590									
SCOPEG	022402	4250	42550											
SCOPEH	022326	4237	4242	42440										
SCP1	004024	1528	19290											
SCP10	010020	2316	23170											
SCP11	010453	2421	24220											

SP:2	226044	50490	5053											
SP:3	226066	5050	5050#											
SP:4	226072	5057#	5059#											
SP:5	226074	5058#	506#											
SP:6	226104	5059	5061#											
SP:7	226126	5063	5067#											
SR	= 177573	920#	999	4244	4246	4313	4323	436#	437#	4414	534#	542#		
SRCONT	225022	1594#	1597	1602#	1607#	1601	1602	1605#	1606	1701#	1702	1703	1706#	4754#
SRSTL	210214	2363#	236#	2365										
SRTTC	207056	1886	212#	2136	2139#									
SRVI	= 202000	749#												
SRVO	= 201000	737#	2912	2967	2972	2975	3052	3053	3501	3562	3605	3666	3657	3658
		3875	3970											
SSTAT	225020	4753#												
ST	= 177776	5751#	5770	5777#	5792#	6104#	6135#	6141#	616#					
STAI	= 204000	748#	1167	2868	2947	2957	2976	2979	3557					
STALL	235242	6447#												
STAMOD	= 200100	718#												
START	200200	962#												
STKSTA	= 200040	706#	2199											
STKSTB	= 200002	691#												
STT1	214042	3009#	3070#	3071	3074									
STT2	207126	2157#	2158#	2159										
SUPC	= 210000	732#	1029											
SVRPC	227570	5302#	5391	5393#										
SVRPSW	227572	5303#	5390	5394#										
SWR	= 177570	919#	3201	3979	4647									
SYNC	= 201000	758#	1888	1977	2031	2034	2165	216#	2209	2212	2293	2605	2608	2626
		2629	2699	2698	2767	2772	3001	3034	3037	3093	3096	3138	3141	320#
		3459												
YSRST	= 210000	679#	681	1877	1923	1925	1969	2027	2038	2039	2243	2257	2378	
S1	= 220216	1530#	1570#	1648#	1690#	1737#	1781#	1849#	2318#	2423#	3196#	3368#	3527#	3682#
		3754#	3928#											
TADRS	215646	3379#	3380	3382	3383	3385	3396	3397	340#	3436	3512#	3513	3519	
TADRS1	214650	3206#	3207	3208	3226	3227	3230	3254	335#	3353#	3354	3356		
TASMO	216030	3421#	3422#	3423										
TASMO1	215044	3239#	3240#	3241										
TDAT	225710	5007#	5011#	5015#										
TDXBA	201416	1000#												
TDXCA	201410	1077#												
TDXCB	201424	1083#												
TDXCS	201412	1078#												
TDXDS	201406	1076#												
TDXES	201430	1085#												
TDXES1	201432	1086#												
TDXMI	201422	1082#												
TDXMO	201420	1081#												
TDXND	201426	1084#												
TDXOS	201414	1079#												
TERPC	222534	4270#	4281											
TESTAB	= 222460	1519#	1530#	1576#	1648#	1697#	1737#	1781#	1849#	2318#	2423#	3196#	3368#	3527#
		3602#	3754#	3828#										
TETAG	211676	2711#												
TE3	214440	3156#												

YIMDIS# 000013	7760	1741	1742	1764	1894	1895	1898	3539	3542	3572	3573	4140	4184
	5127	5129	5773										
YIMS1 021202	3219	3389	39980										
YIOC# 000400	8610	2829	4828										
YKB 001400	10090	4239	4479	5334	5335	5451							
YKS 001376	10080	4230	4480	5332									
YMP 024772	47310												
YPB 001404	10710	53390	53620	54590									
YPS 001402	10700	5342	5360										
YRACER# 104002	9290	3989	3893	3902	3913	3926							
YRANX 010232	23350	23720	23740	2375									
YRASPV 010234	2352	23740											
YRATT 010233	23360	23710	2378	23810	2382	23850	2393	23950					
YRA1 010364	2394	23900											
YRCM 035607	4279	64470											
YRCM1 035555	4274	64470											
YRC1 035707	4284	64470											
YRC2 035731	4289	64470											
YRT# 000003	4940	57590	6029	6409									
YSSF# 004000	8140	1920	1831	1903	1906	2474	2478	3179	3998	4001			
YSSFT 025030	18090	1814	18210	18220	1823	47570							
YSTABL 022422	1519	42610	4719	4721									
YST1 004000	15250	1530	2393	3916	4267	4947							
YST10 007774	23130	2318											
YST11 010424	24180	2423											
YST12 014602	31910	3190											
YST13 015576	33030	3300											
YST14 016464	35220	3527											
YST15 017042	35970	3602											
YST16 017636	37490	3754											
YST17 020172	38230	3828											
YST2 004144	15710	1570											
YST3 004406	16430	1648											
YST4 004544	16850	1690											
YST5 004672	17250	1730											
YST6 005072	17760	1781											
YST7 005360	18440	1849											
YS1# 004000	8150	820	822	824	826	828	830	832	834	2273			
YS2# 000000	8160	821	823	825	827	829	831	833	835				
YT 001440	10960	1997	1960	2035	2156	2336	2395	2992	3068	3638	3607	3720	3885
	3910	3923	4024	4038	4152	4901	49330	49340	4963	5001	5100		
YTCA 036000	4298	64470											
YTDS 035753	4290	64470											
YTNDX 001350	10400	1963	2017	2020	2172	2175	2304	2332	2375	3012	3038	3920	4153
YTRACE 020676	3804	39200	41520	49010	51660								
YTSNOU 020706	39010	39120	39320	4291									
YTTNDX 001434	10070												
YTTST 010172	2350	23530											
YTWAS 020704	39000	39110	39310	4286									
YTY# 000000	9110	3961	39620	39640	3982	39830	39850	4275	42760	42780	4280	42810	42830
	4285	42860	42880	4290	42910	42930	4319	43200	43220	4328	43290	43310	4334
	43350	43370	4340	43470	43490	43600	43670	4682	46830	46850	5350	53510	5352
	5354	5356	5358	5362	53640	5365	53660	53680	53710	54270	54290	54310	
YTYFLG 027366	5336	53410	5370	5458									

	6500	6507#	6520	6529#	6517	6511#	6517	6513#	6514	6515#	6516	6517#	6518
	6519#	6527	6521#	6522	6523#	6524	6525#	6559#	6508	6501#	6502	6503#	6504
	6505#	6500	6507#	6508	6509#	6577	6571#	6572	6573#	6574	6575#	6576	6577#
	6578	6579#	6587	6581#	6582	6583#	6584	6585#	6586	6587#	6588	6589#	6597
	6591#	6529#	6626	6627#	6629	6629#	6637	6631#	6632	6633#	6634	6635#	6636
	6637#	6639	6639#	6648	6641#	6642	6643#	6644	6645#	6646	6647#	6648	6649#
	6657	6651#	6652	6653#	6654	6655#	6656	6657#	6691#	6692	6693#	6694	6695#
	6696	6697#	6698	6699#	6707	6701#	6702	6703#	6704	6705#	6706	6707#	6708
	6709#	6717	6711#	6712	6713#	6714	6715#	6716	6717#	6718	6719#	6720	6721#
	6722	6723#											
	4975	6720#	6727										
	862#	3544	4829										
	1116#	1122											
	707#												
	1111#	1144											
	4505	4509#											
	981#	6118#											
	4021#	4140	5133										
	4026#	4020											
	1117#	1110#	1119										
	3271#	3309											
	674#	927#	928#	929#	937#	931#	932#	933#	934#	935#	936#	937#	943#
	946#	949#	952#	955#	957#	965#	964#	1105	1168	1171	1185#	1180	1202
	1203#	1314#	1516#	1518	1537#	1576#	1592	1599	1608	1615	1619	1629	1636
	1648#	1663	1678	1674	1679	1698#	1704	1709	1713	1717	1730#	1743	1746
	1750	1754	1758	1762	1766	1769	1781#	1792	1798	1811	1815	1820	1824
	1832	1836	1849#	1867	1877	1874	1878	1881	1884	1891	1896	1907	1916
	1924	1933	1944	1954	1959	1964	1970	1974	1978	1981	2001	2004	2012
	2010	2029	2028	2032	2035	2039	2042	2045	2048	2051	2059	2071	2077
	2083	2094	2102	2113	2117	2140	2143	2154	2160	2166	2173	2179	2188
	2193	2200	2203	2206	2217	2220	2238	2241	2244	2257	2259	2250	2263
	2274	2275	2281	2288	2291	2294	2297	2308	2305	2310#	2329	2333	2339
	2343	2347	2354	2376	2379	2383	2397	2391	2397	2406	2423#	2409	2479
	2495	2511	2516	2520	2524	2537	2542	2559	2562	2573	2579	2587	2601
	2606	2613	2627	2631	2634	2643	2657	2654	2674	2691	2696	2701	2707
	2716	2720	2744	2753	2757	2763	2768	2789	2796	2803	2807	2810	2834
	2841	2846	2854	2858	2869	2872	2875	2887	2896	2901	2913	2916	2920
	2927	2933	2937	2944	2948	2973	2977	2985	2989	2993	2999	3002	3021
	3029	3031	3035	3040	3044	3048	3060	3072	3090	3094	3098	3102	3106
	3110	3139	3143	3147	3151	3167	3171	3174	3181	3196#	3214	3220	3242
	3272	3276	3281	3284	3295	3313	3317	3321	3324	3334	3344	3300#	3304
	3398	3424	3447	3451	3456	3459	3470	3478	3482	3485	3496	3500	3527#
	3541	3546	3552	3558	3566	3574	3586	3602#	3601	3605	3609	3701	3705
	3720	3723	3728	3732	3754#	3765	3773	3776	3779	3784	3812	3820#	3800
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MCLM.P11 CROSS REFERENCE TABLE

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BCS	5928	5981	6029	6101											
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TRAP	839														
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ERRORS DETECTED: 0

*MCLK1, MCLK1/SOL/CRF=MCLK1
RUN-TIME: 150 51 12 SECONDS
CORE USED: 49K