

DX11B

DIAGNOSTIC
MD-11-DZDXH-C
(ON-LINE EXERCISER)

EP DZDXH C DL

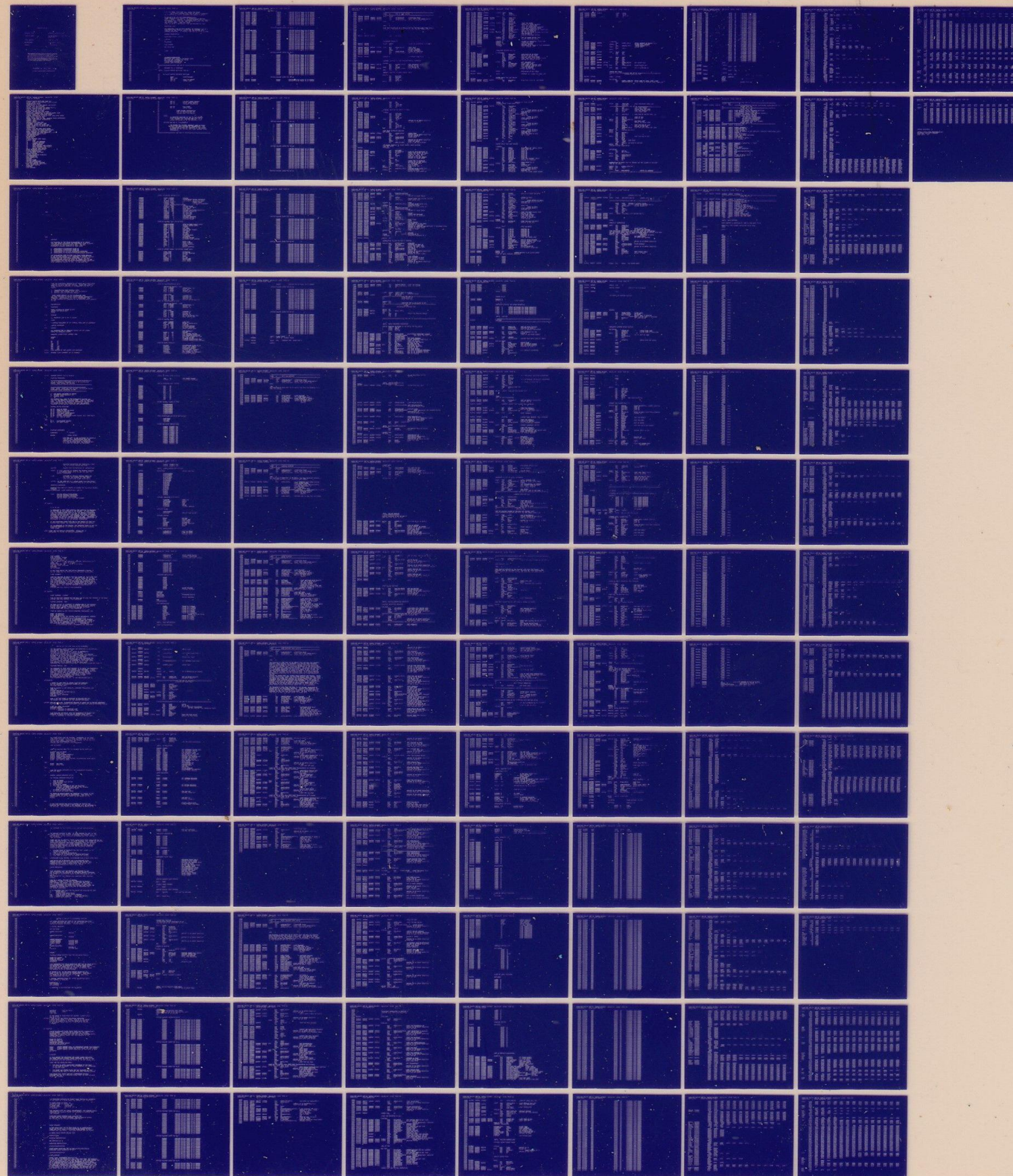
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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDXH-C-D
PRODUCT NAME: DX11B DIAGNOSTIC (ON LINE EXERCISER)
DATE CREATED: JUNE 21, 1974
MAINTAINER: DIAGNOSTIC GROUP
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DIGITAL EQUIPMENT CORPORATION

640	DYNAMIC SWITCH SETTINGS (SWR #1)
675	CLOCK, ISSUE N MAINTENANCE CLOCK PULSES
676	SS, SELECTION MACRO
677	SHORT, SHORT TT TRACE UPDATE AND SELECT
678	DEFINE, EMT DEFINITIONS
679	ESAVE, SAVE REGISTER FOR ERROR PRINT
680	ERSTOR, RESTOR ERROR REGISTERS
681	SAVE, SAVE ARG ON STACK
682	RESTOR, RESTOR ARG FROM STACK
683	SCOPELOOP, SUBROUTINE TO EXECUTE SCOPE CODE
684	CLEAR, CLEAR FROM ARG1, ARG2 WORDS
685	CLRSUB, SUBROUTINE TO CLEAR FROM ARG1, ARG2 WORDS
686	DUMP, OCTAL DUMP OF ARG
687	SDUMP, OCTAL DUMP OF ARG, LEADING ZEROS SUPPRESSED
688	NUMBER, TEST NUMBER INCREMENTER
689	SCOPEM, SCOPE
690	ERCALL, ERROR CALL EMT
691	STEPTSSF, SINGLE STEP TSSF
692	CHECKFOR, CHECK FOR PHASE ARG
693	CHECK, CHECK FOR PHASE, STATE ARG
694	SNAPSHOTPH, ?
695	LDNLK, LOAD AND LOOK MCLK MACRO
696	CLKCHK, CLOCK AND CHECK PHASE+STATE
697	LOAD, LOAD BIT IN REGISTER + MAP
698	REMOV, REMOVE BIT FROM REGISTER + MAP
863	MISCELLANEOUS DEFINITIONS
965	TRAP DEFINITIONS
1020	DX REGISTERS
1120	POWER FAIL
1182	STATUS POINTER WORD TABLE
1494	TUMBLE TABLE
1503	T1 TEST I/O COMMAND
1520	T2 ILLEGAL COMMAND
1556	T3 SENSE COMMAND
1630	T4 READ COMMAND (POP OUTPUT)
1736	T5 WRITE COMMAND (POP INPUT)
1864	T6 END OF TEST STRING
2057	SETUP SELECTED PARAMETERS
2207	STATUS PRESENTATION
2120	DATA TRANSFER ROUTINES
2172	ONLINE ROUTINE
2224	INITIAL SELECTION SEQUENCE
2301	HIO SUBROUTINE
2457	CUIB SUBROUTINE
2753	MONITOR
3222	MONITOR FILES
3245	MONITOR SUBROUTINES
3620	TTY ASCII OUTPUT ROUTINE
3663	SAVE AND RESTORE REGISTERS
3693	OCTAL DUMP ROUTINE
4220	MESSAGES
4320	DATA BUFFERS

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1: ABSTRACT

THE FUNCTION OF THE DX110 DIAGNOSTICS IS TO VERIFY
THAT THE DX110 IMPLEMENTS THE FUNCTIONAL FLOW DIAGRAMS
ILLUSTRATED IN THE DX110 PRINT SET. THE DX11
DIAGNOSTIC PACKAGE CONSISTS OF FOUR TAPES

1. DEDXA=(REV) MAINTENANCE CLOCK 01
2. DXDXF=(REV) MAINTENANCE CLOCK C2
3. DDXG=(REV) DX OFFLINE DIAGNOSTIC EXERCISER
4. DDXH=(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
 ADAPTION TO ACT11 AND ODP TESTING, THERE ARE ALSO TWO
 OTHER MAINDEC'S SUPPORTED BY DIAGNOSTICS THAT RUN THE
 DX11B1

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 V886A.00T 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 =500

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

 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 000200
 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 ODI TRAP ON ERROR

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 .REM 1
 SR 2 MULTIPLEXER CHANNEL
 SR 1 SEL BUSY ENABLE

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 .REM 1

4.2 STARTING ADDRESSES

ADDRESSES	COMMENT
000200	NORMAL START

WITH 200 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

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SELECTED PARAMETERS AND IMMEDIATELY ASKS
 FOR THE DYNAMIC SWITCH SETTINGS

MONITOR RELOAD TAPE FOR RETYPING OF INSTRUCTIONS

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

0.00T ENTRANCE TO 00T-11X VERSION V006A.00T
 MAY START THE PROGRAM BY TYPE 2001G
 <CR>.(MAINTENANCE CLOCK TESTS ONLY)

NOTICE: HE WHO USES 00T 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-DDXX-X00 (TEST DESCRIPTION) (APR 74)

TYPE: <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 176200, 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 "S" 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,

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TEST NUMBER: 1
BASE ADDRESS: 176200
VECTOR ADDRESS: 300
DX PRIORITY LEVEL: 4
TYPE CU ADRES'S IN HEX <CR><LF>| <CR><CR> TERMINATES LIST
ADRS: 10 (THIS IS IN HEX)
DEVICES PER CU: 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.
P1, 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 DXDS,
*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 DM'S, DMDB'S,
DR11'S, DR11A, DR11B, TYPESETTING AND BUS SWITCHES;
*TYPING <CR> WILL DEFAULT THIS PARAMETER

"TYPE CU ADRES'S IN HEX <CR><LF>| <CR><CR> TERMINATES LIST

ADRS: 10 <CR><LF>
ADRS: 20 <CR><CR>
THIS REQUEST IS FOR THE CONTROL UNIT'S HEXIDECIMAL ADDRESS
OR ADDRESS=8, 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

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NOT BE CUT FOR MORE THAN 16 CU ADDRESSES

THE IBM CONTROL UNITS ADDRESSES ARE SPECIFIED IN HEXADECIMAL.
FOR CONTROL UNIT 010(10) THE
RESPONSE TO ADRI1 IS 10(HEX) WHICH IS 00010000(2).
THE DX11 CAN EMULATE UP TO 128(10) CONTROL
UNITS WITH 1 DEVICE EACH OR 1 CONTROL UNIT WITH 128(10)
DEVICES OR AS IS THE DEFAULT CASE 1 CONTROL UNIT WITH 16(10)
DEVICES. THE ADRI1 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 ADRI1
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 ADRI'S IN HEX <CR><LF> <CR><CR> TERMINATES LIST
ADRI1 00
DEVICES PER CUI 0
ILLEGAL NUMBER OF DEVICES PER CU
DEVICES PER CUI 4
LIST ALL LEGAL COMMANDS
COMMAND1

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 TEST!! MULTIPLEXOR FUNCTIONS. THE M900 MUST ALSO BE STRAPPED FOR >1

"LIST ALL LEGAL COMMANDS"
COMMAND1 400<CR>
STATUS1 0 <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 COMMAND1 ASSUMES THE DEFAULT DST;

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THE FIRST ENTRY MUST BE NONZERO, THEREFORE IF YOU WISH
 YOUR FIRST COMMAND TO BE A TIO=0 YOU MUST TYPE IT IN WITH
 PARITY (E.G., 400), 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> OD. TRAP ON ERROR

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 .REM !

SW<2> MUX MODE
 SW<3> BSYEN MODE

!
 .REM !

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
 (S19=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;

!
 .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

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379 THE RESPONSE TO THE CONTROL C WILL NOT BE INSTANTANEOUS.
380 !
381 ,REM !
382
383 THE RESTART ADDRESS IS 200; IF THIS ADDRESS IS LEFT IN THE
384 CONSOLE SWITCH WHEN "START" IS PRESSED THE MONITOR WILL TYPE
385 OUT D,P,S,N? IF THE SWITCHES ARE RESET THE TYPE WILL BE
386 "SET SWITCHES".
387
388 THERE ARE TWO CALIBRATION TESTS (MAINT CLK1) THAT SHOULD BE RUN IN
389 SCOPE MODE (T19 & T16); IT IS QUITE POSSIBLE THAT USING THE STANDARD
390 OPERATIONS PROCEDURE PREVIOUSLY SUGGESTED THAT THE OPERATOR
391 WILL FALL NATURALLY INTO THESE CALIBRATION TESTS. IF THE
392 SYSTEM HAS BEEN BROUGHT UP ONCE BEFORE AND THE OPERATOR
393 WISHES TO CHECK THE CALIBRATION THE FOLLOWING PROCEDURE
394 SHOULD BE FOLLOWED:
395
396 1. EXAMINE TABLE OF CONTENTS FOR THE TEST NUMBER (N) OF
397 CALIBRATION ROUTINES.
398 2. TYPE N IN RESPONSE TO D,P,S,N?
399 3. PUT SW(14) UP IN RESPONSE TO "SWITCH SETTINGS"
400 4. TYPE <CR> IF ERROR TYPE OUT OCCURS SET SW(13).
401
402 5.2.1 MAINTENANCE CLOCK CONTROL (MAINTENANCE CLK1 & CLK2 DIAG. ONLY)
403
404 WHEN SWITCH 10 IS SELECTED AND A MAINTENANCE CLOCK
405 PROGRAM IS BEING RUN THE EXECUTION OF THE JSR PC, CLK
406 SUBROUTINE WILL CAUSE A BREAK POINT TRAP TO ODT AND A
407 TYPEOUT OF THE FOLLOWING FORMAT WILL OCCUR:
408
409 AAAAAA B01NNNNNN
410
411
412 THIS INDICATES THAT THE PROGRAM WAS TRAPPED TO ODT
413 AND IS AWAITING THE COMMAND TO "PROCEED BEFORE EXECUTING
414 THE NUMBER OF MAINTENANCE CLOCK PULSES SPECIFIED BY JSR PC,
415 CLK N.
416 UPON TYPING "P" THE PROGRAM WILL CONTINUE FROM LOCATION
417 AAAAAA;
418
419 THIS IS A USEFUL FEATURE IN SEVERAL
420 RESPECTS. FIRST, IT ALLOWS THE OPERATOR TO SINGLE
421 STEP THROUGH THE FLOWS; THE LISTING AIDS HERE ALSO IN
422 THAT IT HIGHLIGHTS THE PHASE AND STATE; IN ADDITION
423 TO WALKING THROUGH THE FLOWS THIS FEATURE ALSO ALLOWS THE
424 OPERATOR TO EXAMINE DONE DISPLAYED ON REGISTERS AND
425 KEY MEMORY LOCATIONS.
426
427 IT IS REQUIRED THAT ONLY THE FOLLOWING ODT COMMANDS BE USED
428 N/ OPENS WORD N
429 P PROCEED FROM BREAK POINT
430 N10 GOES TO WORD N AND STARTS PROGRAM
431 <CR> CLOSSES OPEN LOCATION (CARRIAGE RETURN)
432 <LF> OPENS NEXT LOCATION (LINE FEED)

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433 *C CONTROL C, RETURN TO DIAGNOSTIC MONITOR
 434
 435 ANY OTHER COMMANDS ARE USED AT THE OPERATORS OWN RISK.
 436 IF OTHER COMMANDS ARE USED THE DX AND THEREFORE THE DIAG-
 437 NOSTIC MAY BEHAVE STRANGELY, PLEASE RELOAD.

438
 439 A TYPICAL SEQUENCE

440 SET SWITCHES

441 005536 001017044
 442 OP PROCEED

443 005640 001017044
 444 OP PROCEED

445 006032 001017044
 446 0176204/000500 EXAMINE 0xCS
 447 176206 /000500 EXAMINE 0x08
 448 176210 /000500 EXAMINE 0x0A
 449 OP PROCEED

450 006504 001017044
 451 * CONTROL C
 452 D,P,S,N? MONITOR MODE

6. ERRORS

TYPICALLY ERROR REPORTS TAKE THE FOLLOWING FORMAT.

ERROR PCI 017274
 ERROR IN TEST: 17
 CUADRS/HOI 000020
 001020742

THIS INDICATES THAT WHILE EXECUTING TEST 017 ON ERROR STATE
 WAS DETECTED AND IS DOCUMENTED AT PROGRAM COUNT 017274;
 THE CONTRL UNIT UNDER TEST OF THE TIME OF ERROR WAS
 20(0) AND THE IBM COMMAND WAS A NOP. IN SEVERAL CASES
 THE COMMAND IS OF NO SIGNIFICANCE.

IF SWITCH 0 IS UP THE ERROR REPORT GENERATOR WILL
 BREAK TO ODT AS INDICATED BY "00JNNNNNN", 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

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SR<15>00 HALT ON ERROR
 SR<14>01 SCOPE
 TYPE <CR>

IF THE ERROR IS REPEATABLE SET SR<13>, INHIBIT PRINT
 AND GO AT IT.
 NOTICE: A TYPE OUT OF THE FORMAT BE;NNNNNN 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. ? BIT SET OR EXECUTE
 A 000003.

(6; CONT'D)

DURING MAINTENANCE CLOCK TESTS THERE EXISTS A SUBROUTINE
 CALLED CHKREG; THIS ROUTINE EXAMINES ALL THE DX11
 REGISTERS AND VERIFIES THAT THEY ARE IN THE EXPECTED STATE.
 CHKREG HAS A SPECIAL ERROR TRAP THAT RESULTS IN THE
 FOLLOWING TEXT:

ERROR PC: 017440
 ERROR IN TEST: 17
 CUADRS/MO: 000020
 ORIGIN OF MAP ERROR 017602
 REGISTER-CONTENTS-MAP

DXM: 176777 000400 (DXM: IS UNREADABLE IGNORE THIS COMPARE)
 DXCB: 174000 000000 (PHASE AND STATE FLOPS ARE NOT TRACED)
 DXES: 000014 000010 (ERROR CONDITION IS THAT BIT2 IS SET)
 001020742
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D.P.S.N?

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 DXM: IS OFTEN UNREADABLE THEREFORE IF THE DXM:
 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 DXM: OR BITS
 OTHER THAN 074000.

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

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 SMS01?"
THIS IS TO SIGNIFY THAT SMS MUST BE SET AT LEAST ONCE DURING THE
USE OF THIS DIAGNOSTIC; IT IS NOT NECESSARY TO LEAVE SMS01
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 CAUGH IT, IE, IF YOU ANSWERED THE DEVICES PER CU
WITH 10(0) AND IN ACTUALITY THE DEVICES PER CU ARE CUT TO

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4 ON THE M900, THIS TEST WILL CATCH THE ERROR,
 WHEN SW3=1 PROGRAM RUN TIME IS GREATLY INCREASED
 AS IT CHECKS ALL OTHER ADDRESSES FOR ADRECC & ADRECD.

DX ONLINE & DX OFFLINE EXERCISERS!!!!!!
 THESE PROGRAMS WILL DEFAULT TO AUTOMATICALLY SETTING
 SW1=1 & SW4=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/CU MUST BE STRAPPED ON M900

8.1 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;DZDXG=C;D
 COPYRIGHT 1974 DIGITAL EQUIPMENT CORP.
 146 MAIN ST, MAYNARD, MA, 01754
 MAINTAINER: DIAGNOSTICS
 AUTHOR: JOHN FRIEDRICH

***** MOD APR 74 *****

!*

!* REVISED BY W. ARMSTRONG

.SBTTL DYNAMIC SWITCH SETTINGS (SWR #1)

!*

!* DYNAMIC SWITCH REGISTER SETTINGS

!*

!* SWR# SIGNIFICANCE!

!* SET = ONE

!* SWR 15 "HALT ON ERROR"

!* SW 14 "SCOPE LOOP"

649	10	SWR 13	"INHIBIT ERROR REPORT"
650	10	SWR 12	"SHORT ERROR REPORT"
651	10	SWR 11	"INHIBIT ITERATIONS"
652	10		
653	10	SWR 02	"MUX MODE"
654	10	SWR 01	"BSYEN MODE"
655	10		
656	10		"USER CHANGE INFORMATION"
657	10		"DUE TO REVISION APR 74"
658	10		"PLEASE READ INFO BELOW"
659	10		
660	10	NOTE:	
661	10		AN OPERATOR RESPONSE OF "0" TO THE PROGRAM
662	10		"TTY" REQUEST FOR "DEVICES PER CUI" IS NO
663	10		LONGER DEFAULTED TO 20 (16 DECIMAL), I.E.
664	10		
665	10	DEVICES PER CUI 0	"ILLEGAL ?"
666	10		
667	10		THE HEADER "CU CHANNEL ADDRESS" USED ON ERROR
668	10		OUTPUT HAS BEEN CHANGED TO "CUADRS/MOI", I.E.
669	10		IT SIGNIFIES EITHER THE CONTENTS OF THE "DXMO"
670	10		REGISTER OR THE CONTROL UNIT BASE ADDRESS WHERE
671	10		MEANINGFULL,
672	10		
673	10	 MOD APR 74	

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IDXDS, DX DEVICE STATUS BITS

100000	PARER 4100000	IERHCRS
040000	YXM 0 40000	INONEXISTANT MEMORY REFERENCE
020000	SELNST 20'00	IIOM RESETS; SELECTIVE RESET
010000	SYSRST 10000	I SYSTEM RESET
004000	INFDSC 4000	I INTERFACE DISCONNECT
034000	IBMRST SELNST;SYSRST;INFDSC	
002000	UCHKS 0 2000	I STATUS FLAGS
001000	CHENDS 1000	ICHANNEL END SENT
000400	BSYS 0 100	IBUSY SENT
000200	CHIS 0 200	ICHANNEL INITIATED SELECTION
000100	ESND 0 100	IENDING STATUS END
000040	CHDEND 40	ICH DATA END
000020	CUDEND 20	ICU DATA END
000010	ISSREJP 10	ISS REJECT
000004	CHDCHN 4	ICOMMAND CHAINING
000002	STKSTB 2	ISTACKED STATUS 0
000001	CHDREJE 1	ICOMMAND REJECT

IDXCS,DX CONTROL UNIT STATUS BITS

100000	PARSTP 100000	I STOP ON BOSO PARITY ERROR
040000	CUPDM 0 40700	I SELECT FORCED BURST
020000	ENDEN 0 20000	I CUEND
010000	CS12 0 10000	INOT USED
004000	BSYEN 0 4000	IENABLE SET /CUBSY/
002000	CS10 0 2100	INOT USED
001000	ONLINE 1000	IONLINE A
000400	CUBSY 0 400	ICU BUSY
000200	DONE 0 200	IFUNCTION DONE
000100	INTEN 0 100	I INTERRUPT
000040	STKSTAP 40	I STACKED STATUS
000030	XBA 0 30	I EXTENDED BASE ADDRESS
000006	PCYN 0 6	
000001	DXPRS 0 1	I PCYN 0 60
000003	DXPI 0 3	I READ (INPUT)
000005	DXPO 0 5	I WRITE (OUTPUT)
000007	DXPST 0 7	I STATUS
000001	GO 0 1	I BEGIN FUNCTION

IDXOS DX OFFSET (CUOR) AND STATUS (CUSR) BITS

000200	ATTEN 0200	I ATTENTION
000100	STAMOD 0100	I STATUS MODIFIER
000040	CUEND 0 40	ICU END
000020	BSY 0 20	IBUSY
000010	CHEND 0 10	ICH END
000004	DEVEND 4	IDevice END
000002	UCHECK 2	I UNIT CHECK
000001	UENCP 1	I UNIT EXCEPT

720		1DXMO DX MAINTENANCE-OUT BITS	
729			
730		ISELECTION CONTROL LINES	
731	100000	OPLO = 0100000	1OPERATIONAL OUT
732	040000	MLDO = 40000	1HOLD OUT
733	020000	SELO = 20000	1SELECT OUT
734	010000	SUPO = 10000	1SUPPRESS OUT
735			
736		ITAG LINES	
737	004000	ADRO = 4000	1ADDRESS OUT
738	002000	CMDO = 2000	1COMMAND OUT
739	001000	SRVO = 1000	1SERVICE OUT
740	000400	PARO = 400	1PARITY OF/FOR BUS OUT
741		1DXMI DX MAINTENANCE-IN BITS	
742			
743		ISELECTION CONTROL LINES	
744	100000	OPLI = 0100000	1OPERATIONAL IN
745	040000	SELI = 40000	1SELECT IN
746	020000	REOI = 20000	1REQUEST IN
747			
748		ITAG LINES	
749	010000	ADRI = 10000	1ADDRESS IN
750	004000	STAI = 4000	1STATUS IN
751	002000	SRVI = 2000	1SERVICE IN
752	001000	CLMO = 1000	1OK TO GO ONLINE (RB)
753	000400	PARI = 400	1BUSI PARITY (RB)
754			
755		1DXCO DX CONTROL BITS	
756			
757	100000	LOCKO = 0100000	1LOCK OUT
758	074000	PHS = 0074000	1PHASE = STATE BITS
759	002000	PASTCU = 2000	1FAST CU
760	001000	SYNO = 1000	1SYNCHRONIZATION
761	000400	CUDX = 400	1CU DATA CONTROL
762	000200	IOD = 200	1INPUT OUTPUT DONE
763			
764			1NPR CONTROLS
765	000100	BYPAS = 100	1BYPASS
766	000040	NPRX = 40	1NPR CONTROL SWITCH
767	000020	NPRY = 20	1NPR TRANSFER DIRECTION
768	000010	BALF = 10	1BUFFERED ALTERNATOR FLOP
769	000004	ONLINE = 4	1ON LINE TO IBM
770	000002	ADRECO = 2	1ADDRESS RECOGNITION (CU)
771	000001	ADRECO = 1	1ADDRESS RECOGNITION (DEVICE)
772			
773		1DXES DX EXTRA SIGNALS	
774			
775	000001	MCLKP01	1MAINTENANCE CLOCK PULSE
776	000002	MCLKEN02	1MAINT; CLK ENABLE
777	000004	SOSIEN04	1SRVO=SRVI ENABLE
778	000010	TIMDIS010	1TIMER(5 SEC) DISABLE
779	000020	DXTO020	1DX TIMEOUT (5 SEC)
780	000040	NPRTO040	1NPR TIMEOUT (8 MICROSEC)
781	000200	INTREQ0200	1INTERRUPT REQUEST

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070000

004000
004000
000000

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

IDXES1 DX EXTRA EXTRA SIGNALS

IRS =1
DSCRSP =2

JIRM RESET STORED
JDISCONNECT RESPONSE

IDEFINE REGISTER MAP INDICES

DS= 00
CA= 02
CS= 04
OS= 06
BA= 10
BC= 12
MO= 14
MI= 16
CB= 20
ND= 22
ES= 24

IPHASE CONTROL FLOPS OF DXCB

PHASE000000
PHASE1010000
PHASE2020000
PHASE3030000
PHASE4040000
PHASE5050000
PHASE6060000
PHASE7070000

ITIME STATE FLOP AND STATE DEFINATION

T88F04000
T8I04000
T8200000

IPHASE AND STATE DEFINITIONS

PH0010	PHASE01	T81
PH0020	PHASE01	T82
PH0110	PHASE11	T81
PH0120	PHASE11	T82
PH0210	PHASE21	T81
PH0220	PHASE21	T82
PH0310	PHASE31	T81
PH0320	PHASE31	T82
PH0410	PHASE41	T81
PH0420	PHASE41	T82
PH0510	PHASE51	T81
PH0520	PHASE51	T82
PH0610	PHASE61	T81
PH0620	PHASE61	T82

836	PH74000	PH9714	PHASE71 TS1
837	PH70000	PH9720	PHASE71 TS2
838			
839		.SBTTL MISCELLANEOUS DEFINITIONS	
840			
841	104400	SCOPE=TRAP	ISCOPE LOOP TRAP
842			
843	100000	BIT15=100000	
844	040000	BIT14=40000	
845	020000	BIT13=20000	
846	010000	BIT12=10000	
847	004000	BIT11=4000	
848	002000	BIT10=2000	
849	001000	BIT9=1000	
850	000400	BIT8=400	
851	000200	BIT7=200	
852	000100	BIT6=100	
853	000040	BIT5=40	
854	000020	BIT4=20	
855	000010	BIT3=10	
856	000004	BIT2=4	
857	000002	BIT1=2	
858	000001	BIT0=1	
859	000000	HERE=0	
860			
861		ICHANNEL COMMANDS WITH PARITY	
862			
863	000400	TI0C=400	ITEST I/O
864	000001	WRITC=001	IWRITE
865	000002	READC=002	IREAD
866	000403	NOPC=403	INOP
867	000004	SENSEC=4	ISENSE
868	000405	ILLC=405	ILLEGAL COMMAND
869			
870		IUTILITY FLAGS	
871			
872	100000	INTOK=100000	
873	000002	DOPLIN=2	ISPW BIT FOR NO DST 1
874			
875		ICHANNEL STATUS	
876			
877	000010	CE=10	ICH END
878	000004	DE=4	IDevice END
879	000002	UC=2	IUNIT CHECK
880	000200	ATTN=200	IATTENTION
881	000100	SM=100	ISTATUS MODIFIER
882	000040	CUE=40	ICU END
883	000020	BSY=20	IBUSY
884			
885		ISWITCH DEFINITIONS	
886			
887	100000	HLTSH=BIT15	IHALT ON ERROR
888	040000	LOPSH=BIT14	ILOOP ON ERROR
889	020000	PNTSH=BIT13	IINHIBIT PRINT

890	R10000	SESH=BIT12	ISHORT ERROR SWITCH
891	R04000	IISH=BIT11	IINHIBIT ITERATIONS
892	R02000	MCCSH=BIT10	MAINTENANCE CLOCK CONTROL
893			
894		IPROCESSOR PRIORIT. LEVELS	
895			
896	000000	LEVEL00 000	
897	000040	LEVEL10 040	
898	000100	LEVEL20 100	
899	000140	LEVEL30 140	
900	000200	LEVEL40 200	
901	000240	LEVEL50 240	
902	000300	LEVEL60 300	
903	000340	LEVEL70 340	
904			
905		IREGISTER DEFINITIONS	
906			
907	000000	R0=X0	
908	000001	R1=X1	
909	000002	R2=X2	
910	000003	R3=X3	
911	000004	R4=X4	
912	000005	R5=X5	
913	000006	TYV=X6	
914	000007	R6=X6	
915	000008	SP=X6	ISTACK POINTER
916	000009	PC=X7	IPROGRAM COUNTER
917			
918	000054	TYPE=107	
919	000240	NOP=240	
920	177776	PS=177776	IPROCESSOR STATUS
921	177570	SHR=177570	
922	177570	SR=177570	ISWITCH REGISTER
923			
924	000000	E=0	
925	011620	EMTABLE=EMTAG	
926			
927		IEMT DEFINITIONS	
928			
929	001004 104000	ERROR	ITRAPS TO T,ERROR
930	001006 104001	HAPERR	ITRAPS TO T,HAPERR
931	001010 104002	TRACER	ITRAPS TO T,TRACER
932	001012 104003	SAVRG	ITRAPS TO T,SAVRG
933	001014 104004	RSTRG	ITRAPS TO T,RSTRG
934	001016 104005	ACCEPTO	ITRAPS TO T,ACCEPTO
935	001020 104006	KEY.TO;R0	ITRAPS TO T,KEY.TO;R0
936	001022 104007	PARITY	ITRAPS TO T,PARITY
937	001024 104010	PCH1	ITRAPS TO T,PCH1
938	001026 104011	PCH2	ITRAPS TO T,PCH2
939	001030 104012	PCH3	ITRAPS TO T,PCH3
940			
941		.SBTTL TRAP DEFINITIONS	
942			
943		ITRAP INITIALIZATION	

944							
945		000014		,#14			
946	#00014	#00074	000340		0,BRK,LEVEL7		IBREAK TRAP
947							
948		000020		,#20			
949	#00020	#10214	000340		,IOT,LEVEL7		ITTY OUTPUT TRAP,LEVEL 7
950							
951		000024		,#24			
952	000024	#01444	000340		PFAIL,LEVEL7		POWER FAIL TRAP
953							
954		000030		,#30			
955	#00030	#11556	000340		EM7DECODER,LEVEL7		EMT DECODER TRAP,LEVEL 7
956							
957		000034		,#34			
958	000034	#11324	000340		SCOPE,LEVEL7		SCOPE TRAP
959							
960							
961		000200		,#200			
962							
963	#00200	000137	001100	START:	JMP	00BEGIN	GO TO BEGINNING OF PROGRAM
964							
965		001100		,#100			
966							
967	#01100	012706	001100	BEGIN:	MOV	00BEGIN,SP	SET UP STACK POINTER
968	#01104	012737	000340		MOV	0LEVEL7,PS	PRIORITY LEVEL 7
969							
970							
971							
972							
973	#01112	012737	000002		MOV	02RTX	
974	#01120	012737	001154		MOV	01 ITO,0010	
975	#01126	012737	000340		MOV	0340,0012	
976	001134	005040			CLR	-(SP)	
977	#01136	012746	001144		MOV	01 ITC,-(SP)	
978	#01142	000006			RTT		
979	#01144	012737	000006	INITE:	MOV	00RTX	
980	#01152	000402			OR	INITC	
981	#01154	002706	000010	INITB:	ADD	015,SP	
982	#01160	013737	006706	INITC:	MOV	RTX,YESRT	
983	#01166	012737	000012		MOV	015,0010	
984	#01174	005037	000012		CLR	0012	
985							
986							
987							
988	#01200	005737	000042		TSY	0042	IACT11
989	#01204	001404			BEQ	0GNO	IF NO
990					JSR	PCIMONDFLT	INSERT DEFAULT PARAMETERS
991	001206	005037	014002		CLR	000ESNOT	DO NOT EXECUTE TIME CONSUMING TESTS
992	001212	000137	013372		JMP	00MON11	
993	001216	005327	000001	BGNB:	DEC	01	
994	001222	001002			BNE	BGN1	
995	001224	000137	012450		JMP	00MONITOR	
996	001230	032737	000200	BGN1:	BIT	025,SR	TEST FOR FAST START
997	001236	001402			BEQ	BGN2	BRANCH IF FAST START

998 #01240 000137 012520
 999 #01244 #12706 #01100
 1000 #01250 #12737 000340 177776
 1001 #01256 000137 013340
 1002
 1003
 1004
 1005

BGN21 JMP 00MON1,B
 MOV 00BEGIN,SP
 MOV 00LEVEL7,PS
 JMP 00MON1B

USE PREVIOUS PARAMETERS

.SBTTL DX REGISTERS

1006 #01262 176200
 1007 #01264 000300
 1008 #01266 000302
 1009 #01270 000200
 1010 #01272 000140
 1011 #01274 176200
 1012 #01276 176202
 1013 #01300 176204
 1014 #01302 176206
 1015 #01304 176210
 1016 #01306 176212
 1017 #01310 176214
 1018 #01312 176216
 1019 #01314 176220
 1020 #01316 176222
 1021 #01320 176224
 1022 #01322 176226
 1023 #01324 176230
 1024
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 1029 #01326 176202
 1030 #01330 176203
 1031
 1032
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 1034 #01332 176206
 1035 #01334 176207
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 1039 #01336 176214
 1040 #01340 176215
 1041
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 1043
 1044 #01342 176216
 1045 #01344 176217
 1046
 1047
 1048 #01346 176224
 1049 #01350 176225
 1050
 1051

DXBASE1 176200
 DXIVI 300
 DXISI 302
 DXPRY1 LEVEL4
 LESS11 LEVEL3
 DXDSI 176200
 DXCAI 176202
 DXCSI 176204
 DXOSI 176206
 DXBAI 176210
 DXBCI 176212
 DXMOI 176214
 DXMI1 176216
 DXCOI 176220
 DXNDI 176222
 DXESI 176224
 DXMOB1 176226
 DXESI1 176230

IDX INTERRUPT VECTOR ADRS
 IDX INTERRUPT STATUS
 INT PRIORITY ADRS
 IDX PRIORITY MINUS ONE
 IDEVICE STATUS >TY
 ICOMMAND AND ADDRESS >TY
 ICONTROL UNIT STATUS
 IOFFSET AND STATUS
 IBUS ADDRESS FOR NPR'S
 IBYTE COUNT
 IMAINTENANCE OUT
 IMAINTENANCE IN
 ICONTROL BITS
 INPR DATA
 IEXTRA SIGNALS
 IMAINTENANCE OUT BUFFERED
 IEXTRA EXTRA SIGNALS

IBYTE REGISTERS

IDXCA

CUARI 176202
 CUCRI 176203

ICU ADDRESS REGISTER
 ICU COMMAND REGISTER

IDXOS

CUSRI 176206
 CUORI 176207

ICU STATUS REGISTER
 ICU OFFSET REGISTER

IDXMO

BUSOI 176214
 CONOI 176215

IIBM BUS OUT
 ICONTROL LINES OUT

IDXMI

BUSI1 176216
 CONI1 176217

IIBM BUS IN
 ICONTROL LINES IN

IDXES

MISCI 176224
 TTNDXI 176225

IMISCELLANEOUS BITS
 ITUMBLE TABLE INDEX REG

IDXMOB

1052
 1053 #01352 176226
 1054 #01354 176227
 1055
 1056
 1057
 1058 #01356 177700
 1059 #01360 177701
 1060 #01362 177702
 1061 #01364 177703
 1062 #01366 177704
 1063 #01370 177705
 1064 #01372 177706
 1065 #01374 177707
 1066
 1067
 1068
 1069 #01376 177560
 1070 #01400 177562
 1071 #01402 177564
 1072 #01404 177566
 1073
 1074
 1075
 1076 #01406 000000
 1077 #01408 000000
 1078 #01410 000000
 1079 #01412 000000
 1080 #01414 000000
 1081 #01416 000000
 1082 #01420 000000
 1083 #01422 000000
 1084 #01424 000000
 1085 #01426 000000
 1086 #01430 000000
 1087 #01432 000000
 1088 #01434 000000
 1089
 1090
 1091
 1092
 1093 #01436 002000
 1094
 1095
 1096
 1097 #01440 003000
 1098
 1099
 1100
 1101 #01442 017000
 1102
 1103
 1104
 1105

BUSOB1 176226
 CONOB1 176227

IBUS OUT BUFFERED
 ICONTROL OUT BUFFERED

IREGISTER ADDRESSES

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

ITTY ADDRESSES

TKS1 177560
 TKB1 177562
 TPS1 177564
 TPB1 177566

IREGISTER TRACE TABLE

REGTY1
 TDXDS1 0
 TDXCA1 0
 TDXCB1 0
 TDXDB1 0
 TDXDBA1 0
 TDXH01 0
 TDXH11 0
 TDXCB1 0
 TDXND1 0
 TDXES1 0
 TDXES11 0
 TTYNDX1 0

IREGISTER TRACE TABLE
 IDEVICE STATUS TRACE
 ICOMMAND AND ADDRESS TRACE
 ICU STATUS TRACE
 IOFFSET AND STATUS TRACE
 IBUS ADDRESS TRACE
 IMAINTENANCE-OUT TRACE
 IMAINTENANCE-IN TRACE
 ICONTROL BIT TRACE
 INPM DATA TRACE
 IEXTRA SIGNAL TRACE
 IEXTRA SIGNAL TRACE 1
 ITYNDX TRACE

ISTATUS POINTER WORD ADDRESS

SPW1 2000

ITUMBLE TABLE ADDRESS

TY1 3000

IDEVICE STATUS TABLE ADDRESS

DST1 DSTADRS IDST MUST BE MOD(400)

.SBTTL POWER FAIL

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1106
1107
1108
1109
1110
1111 001444 104003
1112 001446 010637 001000
1113 001452 012737 001530 000024
1114 001460 032777 020000 177622
1115 001466 001417
1116 001470 032777 100000 177614
1117 001476 001001
1118 001500 104000
1119 001502 032777 004000 177602
1120 001510 001001
1121 001512 104000
1122 001514 122777 000014 177620
1123 001522 001401
1124 001524 104000
1125 001526 000000
1126
1127
1128
1129 001530 000240
1130 001532 013706 001000
1131 001536 104004
1132 001540 012737 001444 000024
1133 001546 013777 001430 177526
1134 001554 004737 013376
1135 001560 005027
1136 001562 000000
1137 001564 005337 001562
1138 001570 001375
1139 001572 000004 001010
1140
1141
1142
1143
1144
1145
1146 001576 012637 177776
1147 001602 000177 007646
1148 001606 000000
1149 001610 050137 053517 051105
1150 001616 043040 044501 042514
1151 001624 057504 000
1152
1153
1154
1155
1156
1157
1158
1159 001630
  
```

POWER FAIL ROUTINE
 IF SELECTED VERIFY STATUS IN IS UP
 IAND CE AND DE ARE PRESENTED AS STATUS

PFALI SAVRG
 MOV R0,SAVR0
 MOV @PHRUP,24
 BIT @S:LO,ODXMO
 BEQ 13
 BIT @OPL1,ODXMI
 BNE ,+4 ;BRANCH IF NO ERROR CONDITION
 ERROR
 BIT @STAI,ODXMI
 BNE ,+1 ;BRANCH IF NO ERROR CONDITION
 ERROR
 CMPB @CE:DE,OBUSI
 BEQ ,+3 ;BRANCH IF NO ERROR CONDITION
 ERROR
 HALT

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POWER UP ROUTINE

PHRUP1 NOP ;PATCH ANYONE?
 MOV SAVR0,R0
 RSTRG
 MOV @PFALI,24 ;RESTORE POWER FAIL VECTOR
 MOV SPW,ODXOS ;RESTORE OFFSET REG
 JSR PC RESRES ;RESET AND RESTORE
 CLR (PC)+ ;STALL FOR MECHANICS
 B
 DEC ,+2
 BNE ,+4
 TYPE ,PFLD ;POWER FAILED

SAVR01
 PFLDI ,ASC12 "POWER FAILED"

.EVEN

.BUTL STATUS POINTER WORD TABLE
 ENDSTR,
 ;DEFINE END OF START CODE

1161

1163

1165

1169
1148 222515 216000

1189	WD2002	016000
1190	WD2004	016000

1171	WD2548	010000
1172	002010	010000

4173	002012	020000
4174	002014	016000

1176 002020 016000

1178 002024 016000

0100 002030 016000

1182 002034 016000

4184
4185

1187 052040 016000

1108	002042	010000
1109	002044	010000

1191 002028 016000

1198 002054 016000

1195 002060 016000

1197 002064 016000

1199	002070	016000
1200	002070	016000

1201	002074	020000
1202	002074	010000

1203
1204

1286 002100 016000

1207	002102	010000
1208	002104	010000

1210 002110 016000

1212 002114 016000

STATUS POINTER WORDS FOR CU 0

[illegible][illegible][illegible]

1214	002120	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1215	002122	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1216	002124	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1217	002126	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1218	002130	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1219	002132	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1220	002134	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1221	002136	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 3

1222									
1223									
1224									
1225	002140	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1226	002142	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1227	002144	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1228	002146	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1229	002150	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1230	002152	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1231	002154	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1232	002156	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1233	002160	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1234	002162	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1235	002164	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1236	002166	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1237	002170	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1238	002172	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1239	002174	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1240	002176	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 4

1241									
1242									
1243									
1244	002200	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1245	002202	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1246	002204	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1247	002206	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1248	002210	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1249	002212	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1250	002214	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1251	002216	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1252	002220	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1253	002222	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1254	002224	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1255	002226	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1256	002230	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1257	002232	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1258	002234	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1259	002236	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 5

1260									
1261									
1262									
1263	002240	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1264	002242	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1265	002244	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1266	002246	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1267	002250	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

1268	002252	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1269	002254	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1270	002256	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1271	002260	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1272	002262	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1273	002264	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1274	002266	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1275	002270	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1276	002272	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1277	002274	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1278	002276	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 6

1282	002300	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1283	002302	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1284	002304	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1285	002306	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1286	002310	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1287	002312	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1288	002314	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1289	002316	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1290	002320	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1291	002322	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1292	002324	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1293	002326	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1294	002330	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1295	002332	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1296	002334	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1297	002336	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 7

1301	002340	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1302	002342	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1303	002344	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1304	002346	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1305	002350	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1306	002352	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1307	002354	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1308	002356	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1309	002360	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1310	002362	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1311	002364	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1312	002366	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1313	002370	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1314	002372	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1315	002374	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1316	002376	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 10

1320	002400	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1321	002402	010000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

1322	002404	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1323	002406	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1324	002410	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1325	002412	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1326	002414	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1327	002416	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1328	002420	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1329	002422	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1330	002424	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1331	002426	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1332	002430	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1333	002432	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1334	002434	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1335	002436	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 11

1336									
1337									
1338									
1339	002440	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1340	002442	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1341	002444	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1342	002446	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1343	002450	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1344	002452	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1345	002454	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1346	002456	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1347	002460	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1348	002462	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1349	002464	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1350	002466	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1351	002470	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1352	002472	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1353	002474	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1354	002476	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 12

1355									
1356									
1357									
1358	002500	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1359	002502	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1360	002504	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1361	002506	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1362	002510	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1363	002512	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1364	002514	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1365	002516	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1366	002520	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1367	002522	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1368	002524	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1369	002526	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1370	002530	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1371	002532	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1372	002534	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST
1373	002536	016000	ERRDST	IDEVICE	STATUS	TABLE	IS	AT	ERRDST

STATUS POINTER WORDS FOR CU 13

1374
1375

OXONLINE: P11

STATUS POINTER WORD TABLE

1376

1393

1396

1412

1414

1430	002676	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1431				
1432			ISTATUS POINTER WORDS FOR CU 16	
1433				
1434	002700	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1435	002702	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1436	002704	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1437	002706	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1438	002710	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1439	002712	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1440	002714	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1441	002716	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1442	002720	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1443	002722	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1444	002724	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1445	002726	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1446	002730	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1447	002732	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1448	002734	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1449	002736	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1450				
1451			ISTATUS POINTER WORDS FOR CU 17	
1452				
1453	002740	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1454	002742	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1455	002744	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1456	002746	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1457	002750	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1458	002752	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1459	002754	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1460	002756	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1461	002760	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1462	002762	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1463	002764	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1464	002766	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1465	002770	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1466	002772	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1467	002774	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1468	002776	016000	ERRDST	IDEVICE STATUS TABLE IS AT ERRDST
1469				
1470			.SOTYL TUMBLE TABLE	
1471	003000		.S. START OF TUMBLE TABLE	
1472				
1473	003000	000400	.BLKW 256. IRESERVE 265, WORDS FOR IT	
1474				
1475	004000		ENDTYL	
1476				
1477				
1478				

```

1479      I .....
1480      ITEST 1      TEST I/O COMMAND
1481      I .....
1482      TS11  SCOPE
1483      MOV      #200,00ICOUNT      IITERATION COUNT
1484      MOV      #1,00ERTSTN      ISAVE TEST # FOR ERROR REPORT
1485      MOV      #SCP1,00RETURN      ISCOPE LOOP RETURN ADNS
1486      SCP11
1487
1488      .REM      *
1489      THE FUNCTION OF THIS TEST IS TO VERIFY THE DX11 CAN RESPOND TO A
1490      TEST I/O COMMAND.
1491
1492      *
1493
1494
1495      MOV      #04024,012737      000400      014012      MOV      #010C,00CMD      ILOAD COMMAND
1496      JSR      #04032,004737      000942      JSR      PC,00TRAIPT      ITT TRACE TRACE INIT
1497      MOV      #04036,012737      000200      000300      MOV      #CH18,00ENTRY1      ILOAD EXPECTED TT ENTRY 1
1498      MOV      #04044,013737      001272      177776      MOV      #0LES81,PS      ILOWER PROCESSOR STATUS
1499      MOV      #04052,012737      004052      011702      MOV      #,00TERPO      IORIGIN OF TRAP ERROR
1500      JSR      #04060,004737      007446      JSR      PC(188,SUB      ISELECT
1501
1502

```

```

1503      I .....
1504      ITEST 2      ILLEGAL COMMAND
1505      I .....
1506      TS921  SCOPE
1507      MOV      #200,00ICOUNT      IITERATION COUNT
1508      MOV      #200,00LRTSYN      ISAVE TEST # FOR ERROR REPORT
1509      MOV      #SCP2,00RETURN      ISCOPE LOOP RETURN ADNS
1510      SCP21
1511
1512      ,REM      .
1513      THE FUNCTION OF THIS TEST IS TO VERIFY THE DX11 RESPONDS CORRECTLY
1514      TO AN ILLEGAL COMMAND (I,E; PRESENTS UNIT CHECK),
1515      .
1516      BIC      #400,ISSCRJ      IILLC PRESENTS UNIT CHECK STATUS
1517      ITHIS CAUSES CMOREJ
1518      ITHREFORE CHANGE ISS DIAGNOSTIC
1519      ITO LOOK FOR CMOREJ UP
1520      MOV      #ILLC,00CMD      ILOAD COMMAND
1521      JSR      PC,00TRAPINT      IIT TRACE TRACE INIT
1522      MOV      #UCHK5,CHIS;CMOREJ,00ENTRYI      ILOAD EXPECTED TT ENTRY 1
1523      MOV      #0LESS1,PS      ILOWER PROCESSOR STATUS
1524      MOV      #,00TERPC      IORIGIN OF TRAP ERROR
1525      JSR      PC,ISS,SUB      ISELECT
1526
1527      BIS      #400,ISSCRJ      IRESTORE ISS TO LOOK FOR NOT CMOREJ
1528
1529
  
```

Address	Hex Data	Hex Data	Hex Data	Hex Data	Assembly	Comments
1530					I	
1531					TEST 3	SENSE COMMAND
1532					I	
1533	004164	104400			TS931	SCOPE
1534	004166	012737	000200	011490	MOV	#200,0#ICOUNT IITERATION COUNT
1535	004174	012737	000003	012432	MOV	#3#00ERTSTN ISAVE TEST # FOR ERROR REPORT
1536	004202	012737	004210	011494	MOV	#SCP3,0#RETURN ISCOPE LOOP RETURN ADRS
1537	004210				SCP31	
1538						
1539						
1540						
1541	004210	012737	000004	014012	MOV	#SENSEC,0#CMD ILOAD COMMAND
1542	004216	004737	006342		JSR	PC,0#TRAPNT IYT TRACE TRACE INIT
1543	004222	012737	000200	006366	MOV	#CHIS,0#ENTRY1 ILOAD EXPECTED YT ENTRY 1
1544	004230	013737	001272	177776	MOV	#LESS1,PS ILOWER PROCESSOR STATUS
1545	004236	012737	004236	011702	MOV	#,0#TERPC IORIGIN OF TRAP ERROR
1546	004244	004737	007440		JSR	PC,ISS,SUB ISELECT
1547						
1548						
1549	004250	012737	000001	014046	MOV	#1,COUNT IINIT SOFTWARE BYTE COUNTER
1550	004256	012777	177777	179022	MOV	#0E,0#DXBC ISET UP DX BYTE COUNT
1551	004264	012777	014034	179012	MOV	#STAT,0#DXBA IOX BASE ADDRESS
1552	004272	052777	000005	179000	BIS	#DXFO,GO,0#XCS IFUNCTION OUTPUT & GO
1553						ISERVICE-IN SHOULD RISE AND
1554						I(STAT?) SHOULD BE ON BUS-IN
1555	004300	012737	000200	006366	MOV	#CHIS,0#ENTRY1 ILOAD EXPECTED YT ENTRY 1
1556	004306	113737	014010	006426	MOVB	#DEV,0#ENTRY2 ISECOND YT ENTRY = DXCA
1557	004314	113737	014012	006427	MOVB	#CMD,0#ENTRY2+1 I
1558	004322	113777	014010	174776	MOVB	#DEV,0#CUAR ILOAD DEV ADRS
1559	004330	113777	014012	174772	MOVB	#CMD,0#CUCR ILOAD COMMAND IN CUCR
1560	004336	012737	004336	011702	MOV	#,0#TERPC IDEFINE ORIGIN OF TRACE ERROR
1561	004344	004737	010614		JSR	PC,CUIS,SUB IEXECUTE SELECTION
1562						
1563	004350	012737	000020	006366	MOV	#CUDEND,0#ENTRY1 ILOAD EXPECTED YT ENTRY 1
1564	004356	113737	014010	006426	MOVB	#DEV,0#ENTRY2 ISECOND YT ENTRY = DXCA
1565	004364	112737	000001	006427	MOVB	#1,0#ENTRY2+1 ICUCR OF DXCA YT ENTRY
1566	004372	113777	014010	174726	MOVB	#DEV,0#CUAR ILOAD DEV ADRS
1567	004400	012737	004400	011702	MOV	#,0#TERPC IDEFINE ORIGIN OF TRACE ERROR
1568	004406	004737	007142		JSR	PC,TRANSFER IDO TRANSFER IF REQUIRED
1569	004412	012737	001100	006366	MOV	#CHENDS,ESEND,0#ENTRY1 ILOAD EXPECTED YT ENTRY 1
1570	004420	113737	014010	006426	MOVB	#DEV,0#ENTRY2 ISECOND YT ENTRY = DXCA
1571	004426	032737	000004	013376	BIT	#BIT2,0#PARA ITEST FOR MUX
1572	004434	001404			BEO	15 IOR IF SELECTOR
1573	004436	112737	000000	006427	MOVB	#0,0#ENTRY2+1 IMUX YT CUCR
1574	004444	000403			OR	25 IGO
1575	004446	112737	000001	006427	MOVB	#1,0#ENTRY2+1 ICUCR OF DXCA YT ENTRY
1576	004454	113777	014010	174044	MOVB	#DEV,0#CUAR ILOAD DEV ADRS
1577	004462	012737	004462	011702	MOV	#,0#TERPC IDEFINE ORIGIN OF TRACE ERROR
1578	004470	004737	007064		JSR	PC,STATUSPRESENTATION IPRESENT STATUS
1579						
1580						

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1581 I .....
1582 ITEST 4 READ COMMAND (PDP OUTPUT)
1583 I .....
1584 R04474 104420 TS941 SCOPE
1585 R04476 012737 000100 011498 MOV 0100,00ICOUNT IITERATION COUNT
1586 R04504 012737 000004 012432 MOV 04,00ERTSTN ISAVE TEST # FOR ERROR REPORT
1587 R04512 012737 004520 011494 MOV 05,P4,00RETURN ISCOPE LOOP RETURN ADRS
1588 R04520 SCP41
1589
1590
1591 .REM *
1592
1593 THE FUNCTION OF THIS TEST IS TO VERIFY THAT THE DX11 CAN PROPERLY
1594 EXECUTE A READ COMMAND AND SUPPRESS DATA DURING THIS TRANSFER.
1595 THIS IS ACCOMPLISHED BY EXECUTING A CHANNEL INITIATED SELECTION
1596 FOLLOWED BY A CONTROL UNIT INITIATED SELECTION IF THE DX11'S SIM-
1597 ULATOR IS MIMICING A MULTIPLEXOR CHANNEL. FOLLOWING THE COMPLETION
1598 OF A SUCCESSFUL SELECTION THE DX'S BYTE COUNT IS SET TO 256, AND
1599 ITS BUS ADDRESS REGISTER IS LOADED TO POINT TO "DATA" A FILE OF
1600 128, WORD OF FLOATING 1'S AND FLOATING 0'S. THIS INITIALIZATION
1601 IS FOLLOWED BY SETTING THE DX FUNCTION BITS TO A FUNCTION=OUTPUT
1602 AND GO.
1603 DURING THE ENTIRE TEST ALL TUMBLE TABLE ENTRIES ARE TRACED. PRIOR
1604 TO EACH ANTICIPATED "DONE" THE EXPECTED TUMBLE TABLE ENTRIES (DXDS
1605 AND DXCA) ARE LOADED INTO ENTRY1 AND ENTRY2 RESPECTIVELY THEN UPON
1606 INTERRUPT THESE EXPECTED ENTRIES ARE COMPARED WITH THE ACTUAL TT
1607 ENTRIES ALONG WITH THE EXPECTED TTXOX CONTENTS. IF A DISCREPANCY
1608 OCCURS IT IS NOTED BY AN ERROR PC AND A TRACE ERROR ORIGIN PC.
1609 THE ORIGIN OF THE TRACE ERROR IS CONTAINED IN TERPC WHICH IS UP-
1610 DATED PRIOR TO EACH ANTICIPATED "DONE" BY A MOV 0,,00TERPC.
1611
1612 THE TRANSFER OF DATA FROM THE DX11 TO THE CHANNEL SIMULATOR IS
1613 CONTROLLED BY THE SRV0-SRV1 SEQUENCE. DURING THIS SEQUENCE DATA
1614 CHECKS ARE MADE AND SUPPRESS DATA IS CHECKED BY RAISING SUP0 IN
1615 RESPONSE TO SRV1 AND THEN RATTING SRV0. NO DATE TRANSFER SHOULD
1616 TAKE PLACE IF SUP0 IS RAISED AFTER THE FIRST BYTE.
1617
1618 *
1619 R04520 012737 000002 014012 MOV 0READC,00CMD ILOAD COMMAND
1620 R04526 004737 000542 JSR PC,00TRANT ITT TRACE TRACE INIT
1621 R04532 012737 000200 000306 MOV 0CH18,00ENTRY1 ILOAD EXPECTED TT ENTRY 1
1622 R04540 013737 001272 177776 MOV 00LESS1,PS ILOWER PROCESSOR STATUS
1623 R04546 012737 004946 011702 MOV 0, 00TERPC IORIGIN OF TRAP ERROR
1624 R04554 004737 007446 JSR PC,155,SUB ISELECT
1625
1626
1627 R04560 012737 000400 014046 MOV 0256,,COUNT ISOFTWARE BYTE COUNT
1628 R04566 012777 177400 174512 MOV 00256,,0DXBC IOX BYTE COUNT
1629 R04574 012701 021496 MOV 0DATA,R1 IBASE ADRS OF TEST DATA
1630 R04600 012777 021496 174476 MOV 0DATA,0DXBA IFLOAT 1'S, 0'S OUTPUT DATA
1631 R04606 052777 000005 174464 BIS 0DXF0,0DXCB IFUNCTION OUTPUT AND GO
1632 ISERVICE-IN SHOULD RAISE AND
1633 IDATA SHOULD BE ON BUS-IN
1634 R04614 012737 000200 000306 MOV 0CH18,00ENTRY1 ILOAD EXPECTED TT ENTRY 1

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1635	004622	113737	014010	000426	MOVB	00DEV,00ENTRY2	ISECOND TT ENTRY = DXCA
1636	004630	113737	014012	000427	MOVB	00CMD,00ENTRY2+1	
1637	004636	113777	014010	174462	MOVB	00DEV,00CUAR	ILOAD DEV ADRS
1638	004644	113777	014012	174456	MOVB	00CMD,00CUCR	ILOAD COMMAND IN CUCR
1639	004652	012737	004652	011702	MOV	0,100TERPC	IDEFINE ORIGIN OF TRACE ERROR
1640	004660	004737	010014		JSR	PC,CUIB,SUB	IEXECUTE SELECTION
1641							
1642	004664	112737	000001	000427	MOVB	01,00ENTRY2+1	
1643	004672	012737	000020	000366	MOV	00CUDEND,00ENTRY+1	ILOAD TT ENTRY
1644	004700	012737	004700	011702	MOV	0,100TERPC	IREAD DONE TT TRACE ERROR PC
1645	004706	032777	002000	174376	RC01	BIT	0SRV1,00DXM1
1646	004714	001001			BNE	,+1	IBRANCH IF NO ERROR CONDITION
1647	004716	104000			ERROR		ISRV1 NOT SET
1648	004720	127711	174416		CHPB	00BUS1,00R1	ICHECK DATA TRANSMITTED TO 360
1649	004724	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
1650	004726	104000			ERROR		IMEMORY TO BUS1 TRANSFER ERROR
1651	004730	105721			TSTB	(R1)+	IINC TO NEXT BYTE
1652	004732	052777	001000	174390	BIS	0SRV0,00DXMO	
1653	004740	032777	001000	174342	BIT	0SRV0,00DXMO	
1654	004746	001001			BNE	,+2	IBRANCH IF NO ERROR CONDITION
1655	004750	104000			ERROR		ISRV0 NOT SET
1656	004752	032737	000004	013376	BIT	0BIT2,PARA	ITEST FOR MUX MODE
1657	004760	001005			BNE	RC1	
1658							WHEN ON MUX CH OPL1 WILL DROP WHEN TRANSMISSION IS FINISHED
1659							THIS WILL CAUSE DXM1 TO BE UNREADABLE
1660	004762	032777	002000	174322	BIT	0SRV1,00DXM1	ISERVICE-IN SHOULD DROP
1661	004770	001401			BEO	,+2	IBRANCH IF NO ERROR CONDITION
1662	004772	104000			ERROR		ISRV1 STUCK HIGH
1663	004774	052777	010000	174306	BIS	0SUPO,00DXMO	ISSET SUPPRESS-OUT
1664	005002	032777	010000	174300	BIT	0SUPO,00DXMO	IVERIFY SUPO SET
1665	005010	001001			BNE	,+2	IBRANCH IF NO ERROR CONDITION
1666	005012	104000			ERROR		ISUPO NOT SET
1667	005014	012727	000010		MOV	010,(PC)+	ISRV0 COUNT
1668	005020	000000			B		ISRV0 COUNT
1669	005022	052777	001000	174260	BIS	0SRV0,00DXMO	IKEEP SRV0 CHANGING
1670	005030	032777	001000	174292	BIT	0SRV0,00DXMO	IVERIFY SRV0 SET
1671	005036	001001			BNE	,+2	IBRANCH IF NO ERROR CONDITION
1672	005040	104000			ERROR		ISRV0 DID NOT SET
1673	005042	042777	001000	174240	BIC	0SRV0,00DXMO	I - " "
1674	005050	032777	001000	174232	BIT	0SRV0,00DXMO	IVERIFY SRV0 CLEAR
1675	005056	001401			BEO	,+2	IBRANCH IF NO ERROR CONDITION
1676	005060	104000			ERROR		ISRV0 NOT 0
1677	005062	032737	000004	013376	BIT	0BIT2,PARA	ITEST FOR MUX MODE
1678	005070	001005			BNE	RC1	
1679							WHEN ON MUX CH OPL1 WILL DROP WHEN TRANSMISSION IS FINISHED
1680							THIS WILL CAUSE DXM1 TO BE UNREADABLE
1681	005072	032777	002000	174212	BIT	0SRV1,00DXM1	ISUPO SHOULD SUPPRESS SRV1 SETTING
1682	005100	001401			BEO	,+2	IBRANCH IF NO ERROR CONDITION
1683	005102	104000			ERROR		ISRV1 WAS NOT SUPPRESSED BY SUPO
1684	005104	005337	005020		RC41	DEC	RC2
1685	005110	001344			BNE	RC3	IBRANCH IF SRV0 NOT DONE
1686	005112	042777	010000	174170	BIC	0SUPO,00DXMO	IDROP SUPPRESS-OUT
1687	005120	032777	010000	174162	BIT	0SUPO,00DXMO	IVERIFY SUPO CLEAR
1688	005126	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION

1689	005130	104000			ERROR		ISUPC STUCK HIGH
1690	005132	032777	001000	174190	BIF	0SRVC,0DXMD	
1691	005140	001401			BEO	,+1	IBRANCH IF NO ERROR CONDITION
1692	005142	104000			ERROR		ISRVC STUCK HIGH
1693	005144	009337	014040		DEC	COUNT	
1694	005150	001256			RNE	RCE	
1695	005152	012737	001100	000306	MOV	0CHENDS,0SEND,0ENTRY1	ILOAD EXPECTED TT ENTRY 1
1696	005160	113737	014010	000426	MOVB	00DEV,0ENTRY2	ISECOND TT ENTRY 0 DXCA
1697	005166	032737	000004	013376	BIF	0BIT2,00PARA	ITEST FOR MUX
1698	005174	001404			BEO	15	IBR IF SELECTOR
1699	005176	112737	000000	000427	MOVB	00,0ENTRY2+1	IMUX TT CUCR
1700	005204	000403			BR	25	IGO
1701	005206	112737	000001	000427	MOVB	01,0ENTRY2+1	ICUCR OF DXCA TT ENTRY
1702	005214	113777	014010	174104	MOVB	00DEV,0CUAR	ILOAD DEV ADRS
1703	005222	012737	005222	011702	MOV	0,100TERPC	IOFFINE ORIGIN OF TRACE ERROR
1704	005230	004737	007064		JBR	PC,STATUSPRESENTATION	IPRESENT STATUS
1705							
1706							
1707							

```

1708 ; .....
1709 ;TEST 5 WRITE COMMAND (POP INPUT)
1710 ; .....
1711 TS951 SCOPE
1712 MOV #100,00ICOUNT ;ITERATION COUNT
1713 MOV #5,00ERTSTN ;SAVE TEST # FOR ERROR REPORT
1714 MOV #SCP9,00RETURN ;SCOPE LOOP RETURN ADRS
1715 SCP91
1716
1717
1718 .REM
1719
1720 THE FUNCTION OF THIS TEST IS TO VERIFY THAT THE DX11 CAN EXECUTE
1721 WRITE COMMANDS FROM THE CHANNEL SIMULATOR. THIS TEST IS IMPLE-
1722 MENTED MUCH LIKE THE READ TEST IN THAT THE TRANSFER IS 256 BYTES,
1723 TT TRACING IS DONE AND SUPPRESS DATA IS ALSO CHECKED. IT DIFFERS
1724 IN THE DIRECTION AND TYPE OF DATA.
1725
1726
1727
1728 MOV #WRITEC,00CMD ;LOAD COMMAND
1729 JSR PC,00TRNT ;TT TRACE TRACE INIT
1730 MOV #CH18,00ENTRY1 ;LOAD EXPECTED TT ENTRY 1
1731 MOV #0LESS1,PS ;LOWER PROCESSOR STATUS
1732 MOV #,00TERPC ;ORIGIN OF TRAP ERROR
1733 JSR PC,188,SUB ;SELECT
1734
1735
1736 MOV #256,,COUNT ;SOFTWARE COUNTER
1737 MOV #0750,,00XBC ;DX BYTE COUNT
1738 MOV #NPRDATA,00XBA ;ADRS FOR DATA FROM 360 SIM
1739 MOV #NPRDATA,R2 ;INPUT FILE FOR NPR DATA
1740 MOV #WDATA,R1 ;WRITE DATA FOR 360 SIM
1741 BIS #04F1100,00XCS ;FUNCTION INPUT & 80 (360 WRITE)
1742 MOV #CH18,00ENTRY1 ;LOAD EXPECTED TT ENTRY 1
1743 MOV #00DEV,00ENTRY2 ;SECOND TT ENTRY & DXCA
1744 MOV #00LMD,00ENTRY2+1 ;
1745 MOV #00DEV,00CUAR ;LOAD DEV ADRS
1746 MOV #00CMD,00CUCR ;LOAD COMMAND IN CUCR
1747 MOV #,00TERPC ;DEFINE ORIGIN OF TRACE ERROR
1748 JSR PC,CUI8,SUB ;EXECUTE SELECTION
1749
1750
1751 WCB1 MOV #00UDEND,00ENTRY1 ;TT ENTRY 1
1752 MOV #001,00ENTRY2+1 ;FAKE CUCR OF ENTRY 2
1753 MOV #,00TERPC ;WRITE TRACE ERROR
1754 BIS #SRV1,00XMI ;WAIT FOR SERVICE-IN
1755 BNE ,+1 ;BRANCH IF NO ERROR CONDITION
1756 ERROR ;SRV1 NOT SET
1757 BIS #R1,00BUS0 ;PUT DATA ON BUS-OUT
1758 CHPB #R1,00BUS0 ;VERIFY LOAD
1759 REQ ,+2 ;BRANCH IF NO ERROR CONDITION
1760 ERROR ;BUS0 INTO MEMORY DATA TRANSFER ERROR
1761 BIS #SRV0,00XMO

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1762	005506	032777	001000	173374		BIF	SRVO,POXMO	
1763	005514	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
1764	005516	104000				ERROR		ISRVO NOT SET
1765	005520	032737	000004	013376		RIF	BIT2,PARA	ICAN'T LOOK AT SRV! ON MUX CH
1766	005526	001005				BNE	WC 0	
1767	005530	032777	002000	173394		BIF	SRV!,POXMI	
1768	005536	001401				BEO	,+4	IBRANCH IF NO ERROR CONDITION
1769	005540	104000				ERROR		ISRV! DID NOT DROP
1770	005542	005721			WC001	TSY	(R1)+	
1771	005544	105722				TSYB	(R2)+	
1772	005546	032702	000001			BIF	BIT0,R2	ITEST FOR EVEN BOUNDARY
1773	005552	001016				BNE	WC1	
1774								
1775	005554	162701	000004			SUB	#4,R1	
1776	005560	162702	000002			SUB	#2,R2	
1777	005564	121112				CHPB	OR1,OR2	IVERIFY 1ST DATA BYTE TRANSFER
1778	005566	001401				BEO	,+4	IBRANCH IF NO ERROR CONDITION
1779	005570	104000				ERROR		IBUSC INTO MEMORY DATA TRANSFER ERROR
1780	005572	005721				TSY	(R1)+	
1781	005574	105722				TSYB	(R2)+	
1782	005576	121112				CHPB	OR1,OR2	IVERIFY 2ND BYTE TRANSFER
1783	005600	001401				BEO	,+5	IBRANCH IF NO ERROR CONDITION
1784	005602	104000				ERROR		ISECOND DATA BYTE INTO MEMORY
1785								
1786	005604	005721				TSY	(R1)+	
1787	005606	105722				TSYB	(R2)+	
1788	005610	032777	010000	173472	WC11	BIS	SUPO,POXMO	ISSET SUPPRESS=OUT
1789	005616	032777	010000	173404		BIF	SUPO,POXMO	IVERIFY SUPO SET
1790	005624	001001				BNE	,+8	IBRANCH IF NO ERROR CONDITION
1791	005626	104000				ERROR		ISUPO NOT SET
1792	005630	012727	000010			MOV	#10,(PC)+	ISRVO COUNT
1793	005634	000000			WC21	B		ISRVO COUNT
1794	005636	032777	001000	173444	WC31	BIS	SRVO,POXMO	IKEEP SRVO CHANGING
1795	005644	032777	001000	173436		BIF	SRVO,POXMO	IVERIFY SRVO SET
1796	005652	001001				BNE	,+	IBRANCH IF NO ERROR CONDITION
1797	005654	104000				ERROR		ISRVO DID NOT SET
1798	005656	042777	001000	173424		BIC	SRVO,POXMO	ICLEAR SRVO
1799	005664	032777	001000	173416		BIF	SRVO,POXMO	IVERIFY SRVO CLEAR
1800	005672	001401				BEO	,+1	IBRANCH IF NO ERROR CONDITION
1801	005674	104000				ERROR		ISRVO NOT 0
1802	005676	032737	000004	013376		BIF	BIT2,PARA	ITEST FOR MUX MODE
1803	005704	001005				BNE	WC1	
1804								WHEN ON MUX CH OPLI WILL DROP WHEN TRANSMISSION IS FINISHED
1805								THIS WILL CAUSE OXMI TO BE UNREADABLE
1806	005706	032777	002000	173376		BIF	SRV!,POXMI	ISUPO SHOULD SUPPRESS SRV! SETTING
1807	005714	001401				BEO	,+2	IBRANCH IF NO ERROR CONDITION
1808	005716	104000				ERROR		ISRV! WAS NOT SUPPRESSED BY SUPO
1809	005720	005337	005634		WC41	DEC	WC2	IDEC SRVO COUNT
1810	005724	001344				BNE	WC3	IBRANCH IF SRVO NOT DONE
1811	005726	042777	010000	173394		BIC	SUPO,POXMO	IDROP SUPPRESS=OUT
1812	005734	032777	010000	173346		BIF	SUPO,POXMO	IVERIFY SUPO CLEAR
1813	005742	001401				BEO	,+1	IBRANCH IF NO ERROR CONDITION
1814	005744	104000				ERROR		ISUPO STUCK HIGH
1815	005746	032777	001000	173334		BIF	SRVO,POXMO	

ADDRESS	HEX	ASCII	OPERATION	OPERANDS	COMMENT
1816	005754	A42777	001777	173326	BIC SRVO, 1777, 0DXMO ;CLR SRVO AND BUS0 PARITY
1817	005762	A32777	001000	173320	BIT SRVO, 0DXMO
1818	005770	101401			, 04 ;BRANCH IF NO ERROR CONDITION
1819	005772	104000			;SRVO DIO NOT DROP
1820	005774	009337	014040		DEC COUNT
1821	006000	001213			ONE WC.
1822	006002	A12737	001100	006306	MOV SCHENDS, ESEND, 0ENTRYV1 ;LOAD EXPECTED TT ENTRY 1
1823	006010	113737	014010	006426	MOVB 00DEV, 0ENTRYV2 ;SECOND TT ENTRY = DXCA
1824	006016	032737	000004	013376	BIT 0BIT2, 0PARA ;TEST FOR MUX
1825	006024	001404			REQ 15 ;BR IF SELECTOR
1826	006026	112737	000000	006427	MOVB 0010ENTRYV2+1 ;MUX TT CUOR
1827	006034	000403			OR 25 ;GO
1828	006036	112737	177777	006427	MOVB 001, 0ENTRYV2+1 ;CUOR OF DXCA TT ENTRY
1829	006044	113777	014010	173294	MOVB 00DEV, 0CUOR ;LOAD DEV ADMS
1830	006052	012737	006052	011702	MOV 0, 0ENTERPC ;DEFINE ORIGIN OF TRACE ERROR
1831	006060	004737	007064		JSR PC, STATUSPRESENTATION ;PRESENT STATUS
1832					
1833					
1834					

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1035      I .....
1036      ITEST 6      END OF TEST STRING
1037      I .....
1038      TS961  SCPE
1039      MOV     01,00ICOUNT      IITERATION COUNT
1040      MOV     06,00ERTSTN      ISAVE TEST # FOR ERROR REPORT
1041      MOV     0SCP0,00RETURN  ISCOPE LOOP RETURN ADRS
1042      SCP61
1043
1044
1045      .REM  *
1046
1047      THIS TEST FUNCTIONS AS A TERMINATOR FOR THE CHAINABLE TEST STRING,
1048      AS SUCH IT TRANSFERS CONTROL TO THE LOOP CONTROL SUBROUTINE,
1049
1050      *
1051
1052
1053      JMP     00LPCNTL
1054
1055
1056
1057
1058      IINTERRUPT HANDLERS
1059      FALSEI  ERROR      IFALSE OR UNEXPECTED INTERRUPT
1060      RTI
1061
1062      INTRI  BIT      #DONE,00XCS      ITEST DONE
1063      BNE     ,+4      IBRANCH ON DONE
1064      ERROR      IFALSE INTERRUPT
1065      BIC     #DONE,00XCS      ICLEAR INT CONDITION
1066      BIS     0INTOK,INTPAS      ISET INT PASS FLAG
1067      RTI
1068
1069      INTPAS 0      IINTERRUPT PASS FLAG
1070
1071
1072      IINTERR, ROUTINE TO TEST FOR SUCCESSFUL INTERRUPT
1073
1074      INTERRI
1075      BIT     0INTOK,INTPAS      IDID INTERRUPT OCCUR
1076      BEO     IRR      IBRANCH IF NOT
1077      ADD     02,05P      IINC RETURN PC
1078      BIC     0INTOK,INTPAS      ICLEAR PASS FLAG
1079      RTS     PC
1080
1081      IZEROTT, ROUTINE TO ZERO TUMBLE TABLE
1082
1083      ZEROTTI
1084      MOV     R1,0(SP)
1085      MOV     R2,0(SP)
1086      MOV     TT,R1
1087      MOV     0250,,R2
1088      CLR     (R1)+
  
```

1089	006214	005302		DEC	R2	
1090	006216	001375		RNE	TYT1	
1091	006220	012602		MOV	(S)+,R2	
1092	006222	012601		MOV	(S)+,R1	
1093	006224	000207		RTS	PC	
1094						
1095						
1096						
1097	006226					
1098	006226	010140		MOV	R1,=(SP)	
1099	006230	010240		MOV	R2,=(SP)	
1100	006232	013701	001440	MOV	TY,R1	
1101	006236	012702	000400	MOV	0256,,R2	
1102	006242	005721		TYT1	TSY	
1103	006244	001401			(R1)+	
1104	006246	104000		BEQ	,+1	IBRANCH IF NO ERROR CONDITION
1105	006250	005302		ERROR		ILLEGAL TY ENTRY
1106	006252	001373		DEC	R2	
1107	006254	012602		RNE	TYT1	
1108	006256	012601		MOV	(S)+,R2	
1109	006260	000207		MOV	(SP)+,R1	
1110				RTS	PC	
1111						
1112	006262					
1113	006262	032777	000200 173010	ISS DONE INTERRUPT SERVICE		
1114	006270	001001		SEL,DONE1		
1115	006272	104000		BIT	0000,0DXCS	ICHECK DONE
1116	006274	042777	000200 172776	RNE	,+4	IBRANCH IF NO ERROR CONDITION
1117	006302	032777	000200 172770	ERROR		IFALSE INTERRUPT
1118	006310	001401		BIC	0000,0DXCS	ICLEAR DONE
1119	006312	104000		BIT	0000,0DXCS	
1120	006314	012740	000540	BEQ	,+4	IBRANCH IF NO ERROR CONDITION
1121				ERROR		IDONE NOT CLEAR
1122				MOV	0SEL,X,=(SP)	IFAKE A JSR PC,TY,TRACE
1123						
1124	006320					
1125						
1126	006320	010140				
1127	006322	013701	000520	MOV	R1,=(SP)	
1128	006326	020137	001440	MOV	00,TRACE,R1	ILOAD R1 WITH SOFTWARE IT
1129	006332	001005		CHP	R1,00TY	ICHECK FOR BOTTOM OF TABLE
1130	006334	005737	003776	RNE	15	IBRANCH IF NOT BOTTOM
1131	006340	001401		TSY	003776	LOOK AT TOP OF TY
1132	006342	104002		BEQ	,+4	IBRANCH IF NO RAP AROUND
1133	006344	000404		TRACER		IREPORT TY TRACE ERROR
1134	006346	005741		BR	25	
1135	006350	001401		15	TSY	ICHECK FOR TY OVERFLOW
1136	006352	104002		BEQ	,+1	IBRANCH IF NO RAP AROUND
1137	006354	005721		TRACER		ITY OVERFLOW ERROR
1138	006356	011127		TSY	(R1)+	ING TO ENTRY
1139	006360	000000		25	MOV	(R1),(PC)+
1140	006362	023727	000360	SENRY1	0	ISAVE ENTRY ONE
1141	006366	000000		ENTRY1	0	HERE
1142	006370	001407		CHP	00SENRY1,(PC)+	ICOMPARE SAVED ENTRY WITH
				ENTRY1	0	EXPECTED ENTRY
				BEQ	15	IBRANCH IF DXOS ENTRY OK

1943	006372	013737	006360	006534	MOV	00SENHY1,00TYTHAS	
1944	006400	013737	006366	006536	MOV	00ENTRY1,00TYSHOULD	
1945	006406	104002			TRACER		IREPORT TT TRACE ERROR
1946	006410	005037	006366		15) CLR	ENTRY1	
1947	006414	005021			CLR	(R1)+	ICLEAR ENTRY AND ADVANCE POINTER
1948	006416	011127			MOV	(R1),(PC)+	ISAVE ENTRY TWO
1949							
1950	006420	000000			SENRY21	0	HERE
1951	006422	023727	006420		CHP	00SENRY2,(PC)+	ICOMPARE SAVED ENTRY WITH
1952	006426	000000			ENTRY21	0	EXPECTED ENTRY
1953	006430	001411			TY:T01	BEO	25
1954	006432	013737	006420	006534	MOV	00SENRY2,00TYTHAS	IBRANCH IF DXCA ENTRY OK
1955	006440	013737	006426	006536	MOV	00SENHY2,00TYSHOULD	
1956	006446	104002			TRACER		IREPORT TT TRACE ERROR
1957	006450	005037	006426		CLR	ENTRY2	
1958	006454	005021			25) CLR	(R1)+	ICLEAR
1959	006456	022701	004000		CHP	0TST1,R1	ICHECK FOR SOFTWARE
1960	006462	001002			BNE	TY:T1	IBRANCH IF NO OVERFLOW
1961	006464	013701	001440		MOV	00TY,R1	
1962	006470	005037	006500		TY:T11 CLR	00TY,T2	
1963	006474	117727	172050		MOVB	0T:NDX,(PC)+	ISAVE TTNDX
1964	006500	000000			TY:T21	0	HERE
1965	006502	006337	006500		ASL	TY:T2	ISCALE MOD(2)
1966	006506	063737	001440	006500	ADD	00TY,00TY,T2	IADD BASE OF TT TO INDEX
1967	006514	123701	006500		CHPB	00TY,T2,R1	ICOMPARE TT POINTERS
1968	006520	001401			BEO	,00	IBRANCH IF HARDWARE AND SOFTWARE TT POINTERS MATCH
1969	006522	104002			TRACER		IREPORT TT TRACE ERROR
1970	006524	010127			MOV	R1,(PC)+	ISAVE TT TRACE
1971	006526	000000			TYTRACE1	0	HERE
1972	006530	012601			MOV	(SP)+,R1	
1973	006532	000207			RTS	PC	IRETURN
1974	006534	000000			TYTHAS1	0	IACUAL CONTENTS OF TT
1975	006536	000000			TYSHOULD1	0	EXPECTED CONTENTS OF TT
1976							
1977	006540	000002			SEL,X1	RTI	
1978							
1979							
1980							
1981	006542	042777	077777	172540	TRAI:NTI	BIC	077777,0DXMO
1982	006550	112777	000100	172604	MOVB	0SM,0DST	IRESELECT
1983	006556	032737	000002	013376	BIT	00TY1,00PARA	IRESPONSE TO TEST IO
1984	006564	001410			BEO	TY:0	ICHECK FOR CUBSY MODE
1985	006566	052777	004000	172504	BIS	00SYEN,0DXCS	IBRANCH IF NOT CU BUSY
1986	006574	032777	004000	172476	BIT	00SYEN,0DXCS	ISSET 0SYEN
1987	006602	001001			BNE	,02	IVERIFY SET
1988	006604	104000			ERROR		IBRANCH IF NO ERROR CONDITION
1989	006606	113737	014010	006426	TY:01	MOVB	00DEV,00ENTRY2
1990	006614	113737	014012	006427	MOVB	00CMD,00ENTRY2+1	IBSYEN NOT SET
1991	006622	113777	014012	172500	MOVB	00CMD,0CUCR	ISECOND TT ENTRY = DXCA
1992	006630	113777	014010	172470	MOVB	00DEV,0CUAR	ILoad COMMAND
1993	006636	052777	000100	172434	BIS	01TEN,0DXCS	ILoad COMMAND IN CUAR
1994	006644	032777	000100	172426	BIT	01TEN,0DXCS	ISSET INTERRUPT ENABLE
1995	006652	001001			BNE	,04	IVERIFY SET
1996	006654	104000			ERROR		IBRANCH IF NO ERROR CONDITION
							INTEN NOT SET

ISUBROUTINE TO INIT DX FOR TT TRACING

```

1997 006656 013777 001270 172402      MOV      @DXPHY,@DXIS      ILOAD INT STATUS
1998 006664 012777 000202 172372      MOV      @SEL,UONE,@DXIV ILOAD INT VECTOR
1999 006672 000207                      RTS      PC
2000
2001
2002
2003 006674 104000      0,0RK1  ERROR      IBREAK TRAP IS ILLEGAL
2004 006676 022620      CMP      (SP)+,(SP)+      IRESTORE STACK
2005 006700 000137 012520      JMP      ON1,0
2006      I.....MOD APR 74 .....
2007      I0      11/40,11/45 RTT
2008      I0      TRACE TRAP MOD
2009
2010 006704 000002      YESRT!! RT!
2011 006706 000002      RTX!      RT!      IMODIFIED FOR 11/40,11/45 TO RTT
2012      I.....MOD APR 74 .....
2013      I0      TIMING
2014      I0      MOS,BIPOLAR RESPONSE MOD
2015
2016 006710 000020      DELAY!  20
2017 006712 013727 006710      MDLAY!  MOV      DELAY,(PC)+
2018 006716 000000      15!      0
2019 006720 005337 006710      25!      DEC      15      IDELAY FOR BIPOLAR MEMORY
2020 006724 001375      BNE      25
2021 006726 000207      RTS      PC
2022
2023      I.....MOD APR 74 .....
2024      I
2025
2026
2027      .SETTL  SETUP SELECTED PARAMETERS
2028
2029      ISETUP: ROUTINE TO CLEAR DX AND SETUP THE FOLLOWING
2030      I      0172=  MUX CH
2031      I      0171=  BSYEN
2032      I      0170=  ON=LINE
2033
2034 006730 000240      SETUP!  NOP
2035 006732 042777 000200 172340      BIC      @DONE,@DXCS      ICLR@DONE=6 THEREFORE "LOCKO"
2036 006740 042777 060000 172342      BIC      @HLDO,SELO,@DXMO      IGET READY FOR NEXT ISS
2037 006746 042777 177000 172336      BIC      @1:7000,@DXHI      I
2038 006754 052777 000010 172336      BIS      @TMOIS,@DXES      ISET DXTO DISABLE
2039 006762 042737 100000 000190      BIC      @INTOK,INTPAS      ICLEAR INTERRUPT PASS FLAG
2040 006770 032737 000001 013376      BIT      @BIT0,PARA      ITEST FOR ONLINE
2041 006776 001402      BEQ      SP0      IBRANCH IF NOT ONLINE
2042 007000 004737 007414      JSR      PC,FOL      IDO FAST ONLINE
2043 007004 112777 000100 172430      SP1:  MOVB      @SM,@DST      IRESPONSE TO TIO
2044 007012 032737 000002 013376      BIT      @BIT1,PARA      Iwas BSYEN SELECTED
2045 007020 001405      BEQ      SP2      IBRANCH IF NOT
2046 007022 052777 004000 172290      BIS      @BSYEN,@DXCS      ISET BUSY ENABLE
2047 007030 105077 172400      CLRB      @DST      ITIO GETS STATUS BY HARDWARE
2048 007034 012777 000120 172222      SP2:  MOV      @INTR,@DXIV      ISET UP OX INTERRUPT VECTOR
2049 007042 013777 001270 172216      MOV      @DXPHY,@DXIS      ISET UP OX INTERRUPT STATUS
2050 007050 052777 000100 172222      BIS      @INTEN,@DXCS      ISET INT ENABLE

```

2251	007056	005037	177776		CLR	PS	ICLEAR PROCESSOR STATUS
2252	007062	000207		SP41	RTS	PC	IRETURN
2253							
2254							
2255							
2256							
2257							
2258	007064						
2259	007064	042777	000200	172206			
2260							
2261							
2262							
2263							
2264							
2265							
2266							
2267							
2268							
2269							
2270							
2271							
2272	007072	112777	000014	172232	MOV	#CE#DE,#CUSR	ILoad CE/DE STATUS
2273							
2274	007100	052777	000007	172172	BIS	#DAFST#GO,#DXCS	ISet FCTN/STATUS/GO
2275							ISTATUS-IN SHOULD RISE
2276							
2277	007106	004737	010014		JSR	X7,CUIB,SUB	IEXECUTE CUIB
2278	007112	042777	060000	172170	BIC	#H400#SELO,#DXMO	IDROP SELOIMLDO FOR NONZERO STATUS
2279	007120	052777	001000	172162	BIS	#SIVO,#DXMO	ISERVICE-OUT UP
2280							ISTATUS-IN SHOULD FALL
2281							
2282							
2283	007126	042777	001000	172194	BIC	#SRVO,#DXMO	IDROP SERVICE-OUT,
2284							IThis ends ES -- ESEND INT SHOULD
2285							ISE UP AND CUBSY CLEAR
2286							ICHECK FOR INTERRUPTS
2287	007134	005077	172152		CLR	#DXMI	ICLEAR DXMI
2288	007140	000207			RTS	X7	
2289							
2290							
2291	007142						
2292	007142	032737	000001	014012	BIF	#17CMD	IS COMMAND READ OR WRITE?
2293	007150	001012			BNE	TR,WRITE	IWRITE
2294							
2295							
2296	007152						
2297	007152	052777	001000	172130	BIS	#SRVO,#DXMO	ISERVICE-OUT UP
2298							ISERVICE-IN SHOULD FALL
2299	007160	042777	001000	172122	BIC	#SRVO,#DXMO	ISERVICE-OUT DOWN
2100							ISERVICE-IN UP AGAIN IF MORE
2101	007166	005337	014040		DEC	COUNT	ILoop till done
2102	007172	001367			BNE	TR,READ	!!!
2103	007174	000410			BR	TR,OUT	
2104							

ISBTL STATUS PRESENTATION
 STATUS PRESENTATION
 BIC #DONE,#DXCS

ICLEAR DONE AND LOCKO

MOV #CE#DE,#CUSR ILoad CE/DE STATUS

BIS #DAFST#GO,#DXCS ISet FCTN/STATUS/GO
 ISTATUS-IN SHOULD RISE

JSR X7,CUIB,SUB IEXECUTE CUIB
 BIC #H400#SELO,#DXMO IDROP SELOIMLDO FOR NONZERO STATUS
 BIS #SIVO,#DXMO ISERVICE-OUT UP
 ISTATUS-IN SHOULD FALL

BIC #SRVO,#DXMO IDROP SERVICE-OUT,
 IThis ends ES -- ESEND INT SHOULD
 ISE UP AND CUBSY CLEAR
 ICHECK FOR INTERRUPTS

CLR #DXMI ICLEAR DXMI
 RTS X7

ISBTL DATA TRANSFER ROUTINES
 TRANSFER

BIF #17CMD IIS COMMAND READ OR WRITE?
 BNE TR,WRITE IWRITE

IOUTPUT HERE
 TR,READ

BIS #SRVO,#DXMO ISERVICE-OUT UP
 ISERVICE-IN SHOULD FALL
 BIC #SRVO,#DXMO ISERVICE-OUT DOWN
 ISERVICE-IN UP AGAIN IF MORE
 DEC COUNT ILoop till done
 BNE TR,READ !!!
 BR TR,OUT

2105									
2106	007176								
2107	007176	052177	172134						
2108	007202	052777	001000	172100					
2109									
2110	007210	042777	001000	172072					
2111	007216	042777	000777	172112					
2112	007224	009337	014040						
2113	007230	001362							
2114									
2115	007232	000207							

```

INPUT HERE
TR,WRITEI
BIS (H1)+,0BUS0 IPLY DATA ON BUS
BIS 0SRV0,0DXM0 ISENVIC=OUT UP
BIC 0SRV0,0DXM0 ISENVIC=IN SHOULD FALL
BIC 0777,0BUS0 ISENVIC=OUT DOWN
DEC COJNT ITAKE DATA OFF BUS (SERVICE=IN UP)
RNE TR,WRITE
TR,OUTI RTS X7
  
```

2116
2117
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```

,SETTL ONLINE ROUTINE
; *****
IONLIN, ROUTINE TO SET DX ONLINE
;AND WAIT FOR RELAY TO PICK
;
  
```

2148	007234	012737	010000	007412	ONLINI	MOV	010000,CNT		
2149	007242	005337	007412		OL4I	DEC	CNT		
2150	007246	001370				BNE	OL4I		
2151	007250	013777	001430	172024		MOV	SPH,0DXOS		
2152	007256	023777	001430	172016		CHP	SPH,0DXOS		
2153	007264	001401				BEQ	,+1		
2154	007266	104000				ERROR			
2155	007270	052777	001000	172002		BIS	0ONLINA,0DXCS		
2156	007276	032777	001000	171774		BIF	0ONLINA,0DXCS		
2157	007304	001001				BNE	,+1		
2158	007306	104000				ERROR			

```

WAIT FOR RELAY TO SETTLE
;LOAD DX OFFSET
;VERIFY OFFSET IS LOADED
;BRANCH IF NO ERROR CONDITION
;DXOS LOAD ERROR
;SET ONLINE BIT
;ONLINE REQUEST SET
;BRANCH IF NO ERROR CONDITION
;ONLINA DID NOT SET
  
```

2159	007310	012737	010000	007412		MOV	#10000,CNT	ISSET UP STALL FOR ONLINE RELAY
2160	007316	005337	007412		OL21	DEC	CNT	
2161	007322	001375				RNE	OL2	
2162	007324	032777	000004	171702		BIT	#ONLINE,0DXCH	IS IS DX ONLINE
2163	007332	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
2164	007334	104000				ERROR		IONLINE DID NOT SET
2165	007336	032777	100000	171744		BIT	#OPLO,0DXHO	
2166	007344	001001				BNE	,+4	IBRANCH IF NO ERROR CONDITION
2167	007346	104000				ERROR		ARE YOU REALLY MAINTENANCED CABLED?
2168	007350	032777	001000	171732	OL31	BIS	#SRVO,0DXHO	
2169	007356	032777	001000	171724		BIT	#S'VO,0DXHO	ICHECK SERVICE OUT
2170	007364	001001				BNE	,+2	IBRANCH IF NO ERROR CONDITION
2171	007366	104000				ERROR		ISRVO NOT SET
2172	007370	042777	001000	171712		BIC	#SRVO,0DXHO	
2173	007376	032777	001000	171704		BIT	#S'VO,0DXHO	ICHECK SERVICE OUT
2174	007404	001401				BEO	,+2	IBRANCH IF NO ERROR CONDITION
2175	007406	104000				ERROR		ISRVO NOT ZERO
2176								
2177	007410	000207				RTS	PC	
2178	007412	000000			CNT1	B		ISTALL
2179								
2180								
2181								
2182								
2183								IFAST ONLINE ROUTINE
2184	007414	032777	001000	171696	FOL1	BIS	#ONLINE,0DXCS	ISSET ONLINE BIT
2185	007422	032777	001000	171690		BIT	#ONLINE,0DXCS	IONLINE REQUEST SET
2186	007430	001001				BNE	,+1	IBRANCH IF NO ERROR CONDITION
2187	007432	104000				ERROR		IONLINE NOT SET
2188	007434	032777	000004	171682	FOL11	BIT	#ONLINE,0DXCS	IS IS DX ONLINE
2189	007442	001774				BEO	FOL1	WAIT FOR RELAY TO PICK
2190	007444	000207				RTS	PC	
2191								
2192								
2193								
2194								
2195								
2196								
2197								
2198	007446							
2199	007446	033777	014010	171634		BIS	DEV,0DXHO	ILoad BUS0 WITH DEVICE ADRS
2200	007454	123777	014010	171694		CMPS	DEV,0BUS0	ITEST BUS0 FOR CORRECT ADRS
2201	007462	001401				BEO	,+4	IBRANCH IF NO ERROR CONDITION
2202	007464	104000				ERROR		IBUS0 DID NOT LOAD
2203								
2204								MOD APR 74
2205	007466	113777	014010	171632				INITIAL SELECTION CLEANUP MOD
2206	007474	123777	014010	171624		MOVB	DE',0CUAR	
2207	007502	001401				CMPS	DE',0CUAR	
2208	007504	104000				BEO	,+4	IBRANCH IF NO ERROR CONDITION
2209						ERROR		ICUAR BITS 7 THRU 0 FAILURE
2210								MOD APR 74
2211	007506	032777	004000	171574		BIS	#ADRO,0DXHO	ISSET ADRO OUT
2212	007514	132777	000010	171616		BIT	#10,0CONO	ITEST ADRO UP

2213	007522	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2214	007524	104000			ERROR		IADNO DID NOT SET
2215							
2216	007526	032777	040000	171534	BIS	0HLD0,0DXHO	ISET HOLD=OUT
2217	007534	032777	040000	171546	BIT	0HLD0,0DXHO	ITEST FOR HOLD=OUT UP
2218	007542	001001			BNE	,+6	IBRANCH IF NO ERROR CONDITION
2219	007544	104000			ERROR		IHOLD OUT DID NOT SET
2220							
2221	007546	032777	020000	171534	BIS	0SELO,0DXHO	ISET SELECT=OUT
2222	007554	132777	000040	171536	BITB	040,0CONO	ITEST FOR SELECT=OUT
2223	007562	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2224	007564	104000			ERROR		ISELECT=OUT DID NOT SET
2225							
2226							
2227	007566	032777	000002	171520	BIT	0ADRECC,0DXCB	IWAS CU ADRS RECOGNISED
2228							IIS DEV A VALID CU ADRS
2229	007574	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2230	007576	104000			ERROR		IDX DID NOT RECOGNISE CU ADRS
2231							IIF YES CHECK JUMPERS
2232							IADRECC LOGIC
2233							
2234							
2235	007600	032777	000010	171406	BIT	0ISSREJ,0DXDS	ITEST FOR ISS REJECT
2236	007606	001401			BEQ	,+4	IBRANCH IF NO ERROR CONDITION
2237	007610	104000			ERROR		IISS REJECT SET
2238	007612	032777	100000	171472	BIT	0OPLI,0DXMI	IOPLI SHOULD BE UP
2239	007620	001001			BNE	,+2	IBRANCH IF NO ERROR CONDITION
2240	007622	104000			ERROR		IOPLI DID NOT SET
2241							IIS DEV A VALID DEVICE ON CU?
2242							
2243	007624	042777	004000	171456	BIC	0ADRO,0DXHO	IDROP ADRS=OUT
2244	007632	132777	000010	171500	BITB	010,0CONO	IIS ADRO DOWN
2245	007640	001401			BEQ	,+2	IBRANCH IF NO ERROR CONDITION
2246	007642	104000			ERROR		IADRO DID NOT DROP
2247	007644	032737	000004	013376	BIT	00172,PARA	ITEST FOR MUX CH
2248	007652	001415			BEQ	1313	IBRANCH IF NOT MUX
2249	007654	042777	060000	171426	BIC	0SELO,HLD0,0DXHO	ICLEAR SELECT=OUT, HOLD=OUT
2250	007662	032777	020000	171420	BIT	0SELO,0DXHO	IDID SELO CLEAR
2251	007670	001401			BEQ	,+2	IBRANCH IF NO ERROR CONDITION
2252	007672	104000			ERROR		IREPORT SELO NOT CLEAR
2253	007674	032777	040000	171406	BIT	0HLD0,0DXHO	IDID HLD0 CLEAR
2254	007702	001401			BEQ	,+2	IBRANCH IF NO ERROR CONDITION
2255	007704	104000			ERROR		IHLD0 DID NOT CLEAR
2256	007706	032777	010000	171376	BIT	0ADR1,0DXMI	IADDRESS-IN SHOULD BE UP
2257	007714	001001			BNE	,+6	IBRANCH IF NO ERROR CONDITION
2258	007716	104000			ERROR		IADR1 DID NOT COME UP
2259							
2260	007720	123777	014010	171414	CHPB	DEV,0BUSI	IADRS SHOULD BE ON BUSI
2261	007726	001401			BEQ	,+2	IBRANCH IF NO ERROR CONDITION
2262	007730	104000			ERROR		IBUSI DOES NOT CONTAIN
2263							ICORRECT ADRS
2264							
2265	007732	043777	014010	171376	BIC	DEV,0BUS0	IREMOVE ADRS FROM BUS=OUT
2266	007740	103777	171372		TSFB	0BUS0	IADRS REMOVED

2267	007744	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2268	007746	104000			ERROR		IBUSC DID NOT CLEAR
2269							
2270	007750	053777	014012	171300	BIS	CMO,00USO	IBUT COMMAND ON BUSO
2271	007756	123777	014012	171392	CMPS	CMO,00USO	IDID COMMAND LOAD OK
2272	007764	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2273	007766	104000			ERROR		ICMD DID NOT LOAD PROPERLY
2274							
2275	007770	052777	002000	171312	BIS	0CHDO,0DXMO	ISEY COMMAND OUT
2276	007776	132777	000004	171334	BITB	04,0CONO	IDID CMDO SET
2277	010004	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2278	010006	104000			ERROR		ICMDO DID NOT SET
2279							
2280	010010	032777	000001	171296	BIT	0CHDREJ,0DXDS	ITEST FOR COMMAND REJECT
2281	010016						
2282	010016	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2283	010020	104000			ERROR		ICOMMAND REJECTED
2284							
2285	010022	032777	010000	171202	BIT	0ADRI,0DXMI	IADRI SHOULD FALL
2286	010030	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2287	010032	104000			ERROR		IADRI DID NOT DROP
2288							
2289	010034	043777	014012	171246	BIC	CMO,0DXMO	IREMOVE CMD FROM BUSO
2290	010042	105777	171270		TSYB	00USO	IHAS CMD REMOVED
2291	010046	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2292	010050	104000			ERROR		ICMD DID NOT CLEAR
2293	010052	042777	002000	171230	BIC	0CHDO,0DXMO	
2294	010060	032777	002000	171222	BIT	0CHDO,0DXMO	
2295	010066	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2296	010070	104000			ERROR		ICMDO STUCK HIGH
2297							
2298							
2299	010072	032737	004000	001312	BIT	0STAI,DXMI	ITEST FOR STATUS=IN
2300	010100	001001			BNE	,+4	IBRANCH IF NO ERROR CONDITION
2301	010102	104000			ERROR		ISTATUS=IN DID NOT RISE
2302	010104	010146			MOV	R1,0(SP)	
2303	010106	113701	014012		MOVB	00YMD,R1	
2304	010112	042701	177400		BIC	0177400,R1	
2305	010116	063701	001442		ADD	00EST,R1	
2306	010122	121177	171204		CMPS	0RE,0CUSR	
2307	010126	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2308	010130	104000			ERROR		ISTATUS FROM DST TRANSFER ERROR
2309	010132	121177	171204		CMPS	0RE,0BUSI	
2310	010136	001401			BEO	,+4	IBRANCH IF NO ERROR CONDITION
2311	010140	104000			ERROR		ICUSR TO BUSI TRANSFER ERROR
2312	010142	012601			MOV	(SP)+,R1	
2313							
2314							
2315							
2316	010144	032737	000004	013376	BIT	0BIT2,PARA	ITEST FOR MUX CH
2317	010152	001023			BNE	IS02	IBRANCH IF MUX
2318	010154	105737	014012		TSYB	CMY	ITEST FOR "TEST I/O" COMMAND
2319	010160	001403			BEO	IS01	ICLEAR SEL0,HLDO IF T10 CMD
2320	010162	105777	171154		TSYB	0BUSI	ITEST BUSI FOR ZERO STATUS

2321	F10166	001415				BEO	ISS2		IDON'T CLEAR SEL0,HL00 ON 0 STATUS
2322	010170	042777	060000	171112	ISS11	BIC	0SELO,HL00,0DXMO		ICLEAR SELECT-OUT, HOLD-OUT
2323	010176	032777	020000	171104		BIT	0SELO,0DXMO		IDID SEL0 CLEAR
2324	010204	001401				BEO	,+3		IBRANCH IF NO ERROR CONDITION
2325	010206	104000				ERROR			IREPORT SEL0 NOT CLEAR
2326	010210	032777	040000	171072		BIT	0HL00,0DXMO		IDID HL00 CLEAR
2327	010216	001401				BEO	,+3		IBRANCH IF NO ERROR CONDITION
2328	010220	104000				ERROR			HL00 DID NOT CLEAR
2329									
2330	010222	032777	001000	171000	ISS21	BIS	0SRV0,0DXMO		ISSET SERVICE-OUT
2331	010230	032777	001000	171092		BIT	0SRV0,0DXMO		ITEST SERVICE OUT
2332	010236	001001				BNE	,+6		IBRANCH IF NO ERROR CONDITION
2333	010240	104000				ERROR			ISERVICE-OUT DID NOT SET
2334									
2335									
2336									
2337									
2338									
2339	010242	042777	001000	171040		BIC	0S VO,0DXMO		IDROP SERVICE-OUT
2340	010250	032777	001000	171032		BIT	0SRV0,0DXMO		ITEST SERVICE-OUT
2341	010256	001401				BEO	,+4		IBRANCH IF NO ERROR CONDITION
2342	010260	104000				ERROR			ISERVICE-OUT DID NOT CLEAR
2343									
2344	010262	043777	014012	171020		BIC	0CMD,0DXMO		ICLEAR COMMAND FROM BUS0
2345	010270	109777	171042			TSYB	0BUS0		ITEST FOR BUS0 CLEAR
2346	010274	001401				BEO	,+4		IBRANCH IF NO ERROR CONDITION
2347	010276	104000				ERROR			BUS0 DID NOT CLEAR
2348									
2349	010300	000207				RTA	PC		
2350									
2351									
2352									
2353	010302	032777	070000	171004	H10.SUB1	BIT	070000,0DXCB		ITEST FOR PHASE ZERO
2354	010310	001103				BNE	H10,0		IBRANCH IF SELECTED
2355									
2356									
2357									
2358	010312	053777	014010	173770		BIS	0DEV,0DXMO		IPUT ADRS ON BUS0
2359	010320	123777	014010	171010		CHPB	0DEV,0BUS0		IADRS LOAD OK
2360	010326	001401				BEO	,+2		IBRANCH IF NO ERROR CONDITION
2361	010330	104000				ERROR			IADRS LOAD ERROR
2362									
2363	010332	052777	004000	170750		BIS	0ADRO,0DXMO		ISSET & CHECK ADRS-OUT
2364	010340	032777	004000	170742		BIT	0ADRO,0DXMO		
2365	010346	001001				BNE	,+2		IBRANCH IF NO ERROR CONDITION
2366	010350	104000				ERROR			ADRO NOT SET
2367	010352	052777	040000	170730		BIS	0HL00,0DXMO		ISSET & CHECK HL00
2368	010360	032777	040000	170722		BIT	0HL00,0DXMO		
2369	010366	001001				BNE	,+3		IBRANCH IF NO ERROR CONDITION
2370	010370	104000				ERROR			HL00 NOT SET
2371									
2372	010372	052777	020000	170710		BIS	0SELO,0DXMO		ISSET & CHECK SELECT-OUT
2373	010400	032777	020000	170702		BIT	0SELO,0DXMO		
2374	010406	001001				BNE	,+3		IBRANCH IF NO ERROR CONDITION

2375	010410	104000			ERROR	ISELC NOT SET
2376						
2377	010412	032737	000002	013376	B1Y	0BIT1,PARA
2378	010420	001406			BEQ	H1'S,0
2379	010422	122777	000120	170712	CMPS	0STAMOD,BSV,0BUSI
2380	010430	001401			BEQ	,+4
2381	010432	104000			ERROR	ICHECK STATUS
2382	010434	000431			BR	IBRANCH IF NO ERROR CONDITION
2383	010436					IBUSI STATUS ERROR
2384	010436	123777	014010	170602	CMPS	H10,0
2385	010444	001401			BEQ	DEV,0CUAR
2386	010446	104000			ERROR	,+4
2387						IBRANCH IF NO ERROR CONDITION
2388	010450	042777	004000	170632	BIC	IBUSO TO CUAR TRANSFER ERROR
2389	010456	032777	004000	170624	B1Y	ICLEAR & CHECK
2390	010464	001401			BEQ	I
2391	010466	104000			ERROR	IBRANCH IF NO ERROR CONDITION
2392						IADRO SET
2393	010470	123777	014010	170644	CMPS	IBRANCH IF NO ERROR CONDITION
2394	010476	001401			BEQ	IBUSI LOAD ERROR
2395	010500	104000			ERROR	ICHECK ADRECE,0
2396						
2397						
2398	010502	043777	014010	170600	BIC	IREMOVE ADRS FROM BUSO
2399	010510	105737	001310		TSYB	IBRANCH IF CLEAR
2400	010514	001401			BEQ	IBRANCH IF NO ERROR CONDITION
2401	010516	104000			ERROR	IBUSO D10 NOT CLEAR
2402						
2403						
2404						
2405	010520					
2406	010520	042777	000000	170502	BIC	IINTERFACE DISCONNECT
2407	010526	032777	040000	170534	B1Y	0H100,SELO,0DXMO
2408	010534	001401			BEQ	0H100,0DXMO
2409	010536	104000			ERROR	,+3
2410						IBRANCH IF NO ERROR CONDITION
2411	010540	032777	020000	170542	B1Y	IHLDO SET
2412	010546	001401			BEQ	
2413	010550	104000			ERROR	IBRANCH IF NO ERROR CONDITION
2414						ISELO SET
2415	010552	032777	004000	170530	B1B	
2416						
2417	010560	032777	004000	170522	B1Y	
2418	010566	001401			ONE	IBRANCH IF NO ERROR CONDITION
2419	010570	104000			ERROR	IADRO NOT SET
2420						
2421	010572	042777	004000	170510	B1B	
2422						
2423	010600	032777	004000	170502	B1Y	
2424	010606	001401			BEQ	IBRANCH IF NO ERROR CONDITION
2425	010610	104000			ERROR	IADRO SET
2426	010612	000207			RTB	
2427					CUIS	
2428						

H10,2i
 ,001TL
 PC
 CUIS SUBROUTINE

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2429      |
2430      |CUIS.SUB, SUBROUTINE TO EXECUTE A
2431      |CONTROL UNIT INITIATED SELECTION
2432      |
2433      |
2434      |CUIS.SUBI
2435      |
2436      |B1P614      032737      000004      013376      B1P      0B1T2,PARA
2437      |B1P622      001510                      BEQ      CUISE
2438      |
2439      |B1P624                      CUIS.GOI
2440      |
2441      |B1P624      032777      020000      173460      B1P      0REQI,POXMI      ;TEST FOR REQUEST=IN OP
2442      |B1P632      001001                      BNE      ,+3      ;BRANCH IF NO ERROR CONDITION
2443      |B1P634      104000                      ERROR     ;REQI NOT SET
2444      |
2445      |B1P636      052777      060000      173444      B1S      0SELOIHLDO,POXMO      ;SET SELECT=OUT & HOLD=OUT
2446      |B1P644      032777      020000      173436      B1P      0SELO,POXMO      ;TEST FOR SELECT=OUT
2447      |B1P652      001001                      BNE      ,+3      ;BRANCH IF NO ERROR CONDITION
2448      |B1P654      104000                      ERROR     ;SELO NOT SET
2449      |
2450      |B1P656      032777      040000      173424      B1P      0HLDO,POXMO      ;TEST FOR HOLD=OUT
2451      |B1P664      001001                      BNE      ,+3      ;BRANCH IF NO ERROR CONDITION
2452      |B1P666      104000                      ERROR     ;HLDO NOT SET
2453      |
2454      |B1P670      032777      101000      173414      B1P      0OPLI,POXMI      ;TEST FOR OPERATIONAL=IN
2455      |B1P676      001001                      BNE      ,+4      ;BRANCH IF NO ERROR CONDITION
2456      |B1P680      104000                      ERROR     ;OPLI NOT SET
2457      |
2458      |B1P682      032777      020000      173402      B1P      0REQI,POXMI      ;TEST FOR REQI
2459      |B1P690      001401                      BEQ      ,+3      ;BRANCH IF NO ERROR CONDITION
2460      |B1P692      104000                      ERROR     ;REQI DID NOT DROP
2461      |
2462      |B1P694      032777      010000      173370      B1P      0ADRI,POXMI      ;TEST FOR ADDRESS IN
2463      |B1P696      001001                      BNE      ,+4      ;BRANCH IF NO ERROR CONDITION
2464      |B1P698      104000                      ERROR     ;ADRI NOT SET
2465      |
2466      |B1P700      123777      014010      173406      CHPB     DEV,0BUSI      ;ADDRESS ON BUSI
2467      |B1P702      001401                      BEQ      ,+4      ;BRANCH IF NO ERROR CONDITION
2468      |B1P704      104000                      ERROR     ;BUSI LOAD ERROR
2469      |
2470      |B1P706      052777      002000      173342      B1S      0CHDO,POXMO      ;SET COMMAND=OUT
2471      |B1P708      032777      002000      173334      B1P      0CHDO,POXMO      ;BRANCH IF NO ERROR CONDITION
2472      |B1P710      001001                      BNE      ,+3      ;CHDO DID NOT SET
2473      |B1P712      104000                      ERROR     ;
2474      |
2475      |B1P714      032777      010000      173324      B1P      0ADRI,POXMI      ;ADRI SHOULD DROP
2476      |B1P716      001401                      BEQ      ,+4      ;BRANCH IF NO ERROR CONDITION
2477      |B1P718      104000                      ERROR     ;ADRI DID NOT DROPS
2478      |
2479      |B1P720      042777      060000      173310      B1C      0SELOIHLDO,POXMO
2480      |B1P722      032777      040000      173302      B1P      0HLDO,POXMO      ;TEST HOLD=OUT
2481      |B1P724      001401                      BEQ      ,+3      ;BRANCH IF NO ERROR CONDITION
2482      |B1P726      104000                      ERROR     ;HLDO SET
  
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2483
2484 011012 032777 020000 170270      B1? 0SELO,0DXMO      ITEST SELECT=OUT
2485 011020 001401      BEO      ,+4      IBRANCH IF NO ERROR CONDITION
2486 011022 104000      ERROR      ISELO SET
2487
2488 011024 042777 002000 170296      B10 0CHDO,0DXMO      ICLEAR COMMAND=OUT
2489 011032 032777 002000 170290      B1? 0CHDO,0DXMO      ITEST FOR CHDO CLEAR
2490 011040 001401      BEO      ,+2      IBRANCH IF NO ERROR CONDITION
2491 011042 104000      ERROR      ICHDO SET
2492
2493 011044 000207      CUISS: RTS      PC
2494
2495      IFAST ISS SELECTOR CM ONLY
2496
2497 011046      FASTISS:
2498 011046 053777 014010 170234      B10 DEV,0DXMO      IPUT DEVICE AORS ON OUT TAGS
2499 011054 052777 004000 170226      B10 0AERO,0DXMO      IRAISE AORS=OUT
2500 011062 052777 060000 170220      B10 0HDO,SELO,0DXMO      IRAISE SELECT=OUT, HOLD=OUT
2501 011070 042777 004000 170212      B10 0AERO,0DXMO      IREMOVE AORS=OUT
2502 011076 043777 014010 170204      B10 DEV,0DXMO      IREMOVE AORS
2503 011104 053777 014012 170176      B10 CME,0DXMO      IPUT COMMAND ON OUT TAGS
2504 011112 052777 002000 170170      B10 0CHDO,0DXMO      IRAISE CHD=OUT
2505 011120 043777 014012 170162      B10 CMY,0DXMO      IREMOVE CHD
2506 011126 042777 002000 170154      B10 0C'DO,0DXMO      IREMOVE CHD=OUT
2507 011134 032737 000004 013376      B1? 0BIT2,PARA      ITEST FOR MUX CM
2508 011142 001006      BNE F18S1      IBRANCH P1 MUX
2509 011144 105737 014012      TS90 CMO      ITEST FOR *TEST I/O* COMMAND
2510 011150 001403      BEO F18S1      ICLEAR SELO,HLDO IF TIO CMO
2511 011152 105777 170104      TS90 0BDS:      ITEST BDS: FOR ZERO STATUS
2512 011156 001403      BEO F18S2      I DON'T CLEAR SELO,HLDO ON 0 STATUS
2513 011160 042777 060000 170122 F18S1: B10 0HDO,SELO,0DXMO      ICLEAR SELO AND HLDO
2514 011166 052777 001000 170114 F18S2: B10 0SRVO,0DXMO      IRELEASE STATUS
2515 011174 042777 001000 170106      B10 0SRVO,0DXMO      I
2516 011202 000207      RTS      PC
2517
2518      ISEL CM ISS
2519
2520 011204      SEL:ISS:
2521 011204 053777 014010 170114      B10 DEV,0CUAR      IPRESET COM/ADD REG DEV ADDRESS
2522 011212 042777 000400 170106      B10 04.0,0CUAR      IPARITY RESET
2523 011220 053777 014010 170062      B10 DEV,0DXMO      IPUT DEVICE AORS ON OUT TAGS
2524 011226 052777 004000 170054      B10 0AERO,0DXMO      IRAISE AORS=OUT
2525 011234 052777 060000 170046      B10 0HDO,SELO,0DXMO      IRAISE SELECT=OUT, HOLD=OUT
2526 011242 042777 004000 170040      B10 0AERO,0DXMO      IREMOVE AORS=OUT
2527 011250 043777 014010 170032      B10 DEV,0DXMO      IREMOVE AORS
2528 011256 053777 014012 170024      B10 CMO,0DXMO      IPUT COMMAND ON OUT TAGS
2529 011264 052777 002000 170016      B10 0CHDO,0DXMO      IRAISE CHD=OUT
2530 011272 043777 014012 170010      B10 CME,0DXMO      IREMOVE CHD
2531 011300 042777 002000 170002      B10 0CHDO,0DXMO      IREMOVE CHD=OUT
2532 011306 052777 001000 167774      B10 0SRVO,0DXMO      IRELEASE STATUS
2533 011314 042777 001000 167766      B10 0SRVO,0DXMO      I
2534 011322 000207      RTS      PC
2535      ISCOPE LOOP AND CONTROL SUBROUTINE
2536

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2537	P11324	105777	170046	SCOPECI	TSTB	0TKS	
2538	P11330	100014			BPL	SCOPEH	
2539	P11332	017727	170042		MOV	0TKB,(PC)+	
2540	P11336	000000		DTMPI	P		
2541	P11340	042737	000200		BIC	0200,DTMP	
2542	P11346	123727	011336		CMPS	DTMP,03	
2543	P11354	P01002			BNE	SCOPEH	
2544	P11356	000137	012520		JMP	00MON1,0	
2545	P11362	032737	P40000	177570	SCOPEH	0BIT14,SR	ITEST FOR SCOPE
2546	P11370	001012			BNE	SCOPEH	IBRANCH IF SCOPE SELECTED
2547	P11372	032737	004000	177570	BIT	0B T11,SR	ITEST FOR ITERATIONS
2548	P11400	001020			BNE	SCOPEH	IENT IF ITERATIONS INHIBITED
2549	P11402	005237	011452		INC	SCOPEH	INCREMENT ITERATION COUNT
2550	P11406	023737	011452	011450	CMPS	SCOPEH,ICOUNT	ITEST FOR COMPLETION OF ITERATIONS
2551	P11414	001410			BEO	SCOPEH	IBRANCH IF COMPLETE
2552	P11416	012737	177777	014002	SCOPEH	MOV 00,ONESHOT	ISD YOU CAN SCOPE ON ONCE ONLY CODE
2553	P11424	005720			TST	(SP)+	IPOP RETURN PC
2554	P11426	012637	177770		MOV	(SP)+,PS	IRESTOR PROCESSOR STATUS
2555	P11432	000177	000010		JMP	0RETURN	I
2556	P11436	011637	011454		SCOPECI	MOV 0SP,RETURN	ISSET UP SCOPE RETURN ADRS
2557	P11442	005037	011452		SCOPEAI	CLR SCOPEH	ICLEAR ITERATION COUNT
2558	P11446	000002			RTI		
2559	P11450	000001			ICOUNT	1	INUMBER OF REQUESTED ITERATIONS
2560	P11452	000000			SCOPEFI	0	ITERATION COUNT
2561	P11454	004000			RETURN	TST1	IDEFAULT RETURN
2562	P11456				TSTABLE		IBEGINNING OF TABLE OF TEST ADDRESSES
2563		011556			,0,0100		ITEST ADDRESS LIST

EMULATOR DECODER ROUTINE

2568	P11556			ENTDECODER			
2569	P11556	011646			MOV	0R0,0(R0)	IDUPLICATE PC ON STACK
2570	P11560	102710	000002		SUB	02,0R0	IPPOINT PC TO ENT INST,
2571	P11564	017610	000000		MOV	0(R0),0R0	IMOV ENT INST ONTO STACK
2572	P11570	121627	000024		CMPS	0R2,020,	ITEST THAT CALL IS WITHIN LIMITS
2573	P11574	101401			BLOS	ENTOK	IBRANCH IF WITHIN LIMITS
2574	P11576	104000			ERROR		
2575	P11600	006111		ENTOK	ROL	0R0	IENT ARGUMENT X 2,
2576	P11602	042710	177001		BIC	0177001,0R0	ICLEAR HIGH BYTE
2577	P11606	062710	011620		ADD	0ENTAG,0R0	IFORM ADRS OF ROUTINE ADRS
2578	P11612	017610	000000		MOV	0(R0),0R0	IPUT ROUTINE ADRS ON STACK
2579	P11616	000130			JMP	0(10)+	IJUMP TO ROUTINE
2580							ITAGS FOR ENT CALL
2581							
2582	P11620			ENTAG			IBEGINNING OF ENT TABLE
2583							
2584	P11620	000024		,BLKW	20,		IRESERVE 16, WORDS FOR ADRS LIST
2585							
2586							
2587							
2588	P11670			IENTRY POINT FOR MAP ERRORS			
2589	P11670	012737	177777	012376	MOV	001,ENTFLC	IFLAG THAT THIS IS MAP ERROR
2590	P11676	000137	012040		JMP	00DEF	

2591	F11702	000000			TERPCI 2	ORIGIN OF TRACE ERROR
2592					ITUMBLE TABLE TRACE ERROR TRAP	
2593	F11704				T,TRACER1	
2594	011704	012737	177770	012376	MOV	B=2,ENFLG
2595	011712	000004	021205		TYPE	,TRCH1
2596	011716	010540			MOV	TTY,=(SP)
2597	011720	013703	012432		MOV	EN-STN,TTY
2598	011724	004737	010470		JSR	27,PRINTS
2599	011730	012605			MOV	(S)+,TTY
2600	011732	000004	021237		TYPE	,T2CH
2601	011736	010540			MOV	TTY,=(SP)
2602	011740	013703	011702		MOV	TEJPC,TTY
2603	011744	004737	010460		JSR	PC,PRINTR
2604	011750	012605			MOV	(SP)+,TTY
2605	011752	000004	021337		TYPE	,TRC1
2606	011756	010540			MOV	TTY,=(SP)
2607	011760	013703	006334		MOV	TTAS,TTY
2608	011764	004737	010460		JSR	PC,PRINTR
2609	011770	012605			MOV	(SP)+,TTY
2610	011772	000004	021361		TYPE	,TMC2
2611	011776	010540			MOV	TTY,=(SP)
2612	012000	013703	006336		MOV	TTSHOULD,TTY
2613	012004	004737	010460		JSR	PC,PRINTR
2614	012010	012605			MOV	(SP)+,TTY
2615	012012	032701	000002		BIT	0011,RI
2616	012016	001003			BNE	18
2617	012020	000004	021403		TYPE	,TVDS
2618	012024	000402			BR	28
2619	012026	000004	021430		TYPE	,TVCA
2620	012032				18)	
2621	012032	000402			28)	
2622					BR	0EP
2623						
2624						
2625	012034					
2626	012034	005037	012370		T,ERROR1	
2627	012040	005237	012430		OEPI	
2628	012044	010037	012434		CLR	ERPLG
2629	012050	010137	012430		INC	ERRCNT
2630	012054	010237	012440		MOV	R0,E,R0
2631	012060	010337	012442		MOV	R1,E,R1
2632	012064	010437	012444		MOV	R2,E,R2
2633	012070	010537	012446		MOV	R3,E,R3
2634	012074	032737	020000	177570	MOV	R4,E,R4
2635	012102	001063			MOV	R5,E,R5
2636	012104	000004	020721		BIT	00113,SR
2637	012110	011627			BNE	PERRPC
2638	012112	000000			TYPE	,ENPC
2639	012114	102737	000002	012112	MOV	08E,(PC)+
2640	012122	010540			ETMP01	
2641	012124	013703	012112		0	
2642	012130	004737	010460		SUB	02,ETMP0
2643	012134	012605			MOV	TTY,=(SP)
2644	012136	032737	010000	177570	MOV	08ETMP0,TTY
					JSR	PC,PRINTR
					MOV	(S)+,TTY
					BIT	00112,SR

2645	012144	001042			BNE	PERRPC	IBRANCH IF SHORT SELECTED
2646	012146	022737	177770	012376	CMF	002,ENFLG	
2647	012154	001410			BEO	15	
2648	012156	000004	021135		TYPE	,HSG35	IERMOR IN TESTI
2649	012162	010540			MOV	TTY,=(SP)	ISAVE TTY
2650	012164	013705	012432		MOV	ERTSTN,TTY	ITYPE ERTSTN IN OCTAL
2651	012170	004737	016470		JSR	RTPRINTS	IAND SUPPRESS LEADING ZERO'S
2652	012174	012609			MOV	(SP)+,TTY	IRESTORE TTY
2653	012176	000004	021064	151	TYPE	,HSG20	
2654	012202	010540			MOV	TTY,=(SP)	ISAVE TTY
2655	012204	013705	014020		MOV	CUTDRS,TTY	ITYPE IN OCTAL
2656	012210	004737	016400		JSR	PCPRINTR	ITYPE LEADING ZERO'S
2657	012214	012609			MOV	(SP)+,TTY	IRESTORE TTY
2658	012216	000004	020070		TYPE	,C-LF	
2659	012222	032737	000002	013376	BIT	00171,00PARA	ITEST FOR BUSY ENABLE MODE
2660	012230	001402			BEO	EM'D1	IBRANCH IF NOT
2661	012232	000004	021300		TYPE	,ABSYN	ITYPE BUSY ENABLE
2662	012236	032737	000004	013376	BIT	00172,00PARA	ITEST FOR MUX CH
2663	012244	001402			BEO	EM'D2	IBRANCH IF SELECTOR
2664	012246	000004	021317		TYPE	,AMUXH	ITYPE MUX CH
2665	012252			EMOD21			
2666	012252	032737	100000	177570	PERRPC	BIT	00175,SR
2667	012260	001401			BEO	ERRLOP	ITEST FOR HALT ON ERROR
2668							IBRANCH IF NO HALT
2669							
2670	012262	000000			HALT		IMALT ON ERROR
2671	012264			ERRLOP1			
2672	012264	013700	012434		MOV	E,R0,R0	IRESTORE R0
2673	012270	013701	012430		MOV	E,R1,R1	IRESTORE R1
2674	012274	013702	012440		MOV	E,R2,R2	IRESTORE R2
2675	012300	013703	012442		MOV	E,R3,R3	IRESTORE R3
2676	012304	013704	012444		MOV	E,R4,R4	IRESTORE R4
2677	012310	013705	012446		MOV	E,R5,R5	IRESTORE R5
2678	012314	032737	040000	177570	BIT	00176,SR	ITEST FOR SCOPE LOOP
2679	012322	001424			BEO	EXJRI	
2680	012324	012706	001100		MOV	0000IN,SP	IREINIT STACK POINTER
2681	012330	012737	177777	014002	MOV	001,ONESHOT	IREINIT ONESHOT TEST FLAGS
2682	012336	042777	000002	166754	BIC	00177EN,00XES	ICLEAR MAINT CLOCK
2683	012344	005077	166740		CLR	00170	ISYSTEM RESET
2684	012350	052777	000001	166722	BIS	00178,00XCS	IOX RESET
2685	012356	004737	019230		JSR	PCIPREI	IREINITIALIZE OX
2686	012362	013737	001272	177776	MOV	LESS1,PS	IOX PRIORITY MINUS ONE
2687	012370	000177	177060		JMP	00RTURN	
2688							
2689	012374	000002		EXPR11	RTI		
2690	012376	000000		ERPLG1	0		IERMOR CONTROL FLAG 010MAP ERROR
2691							ILIST OF ASCII M1 SAGE ADDRESSES
2692							
2693	012400	020736		ADRA1	ADXDS		
2694	012402	020745			ADxCA		
2695	012404	020754			ADXCS		
2696	012406	020763			ADXOS		
2697	012410	020772			ADXBA		
2698	012412	021001			ADXBC		

2699	012414	021010			ADXM0	
2700	012416	021017			ADXM1	
2701	012420	021026			ADXCB	
2702	012422	021035			ADXND	
2703	012424	021044			ADXES	
2704	012426	021053			ADRAE1	ADXES1
2705						
2706						
2707						
2708						
2709						
2710	012430	000000			ERRCNT1 0	
2711	012432	000000			ERTSTN1 0	ITEST NUMBER
2712						
2713						
2714						
2715						
2716	012434	000000			E,R01 0	ISAVED REGISTERS FOR ERROR REPORTING
2717	012436	000000			E,R11 0	ISAVED REGISTERS FOR ERROR REPORTING
2718	012440	000000			E,R21 0	ISAVED REGISTERS FOR ERROR REPORTING
2719	012442	000000			E,R31 0	ISAVED REGISTERS FOR ERROR REPORTING
2720	012444	000000			E,R41 0	ISAVED REGISTERS FOR ERROR REPORTING
2721	012446	000000			E,R51 0	ISAVED REGISTERS FOR ERROR REPORTING
2722						
2723						
2724						
2725						
2726	012450					
2727						
2728						
2729						
2730						
2731	012450	012700	001100		MOV	0BEGIN,SP
2732	012454	012737	000340	177776	MOV	0LEVEL7,PS
2733	012462	004737	014314		JSR	PC000MONDFLT
2734						
2735	012466	012737	010024	000000	MOV	0TTY1,0000
2736	012474	012737	000200	000002	MOV	0LEVEL4,0002
2737	012502	000004	020011		TYPE	,HOME
2738						
2739	012506	000004	017474		MI	TYPE
2740	012512	012737	012634	012510	MOV	0RELOD,00H02
2741						
2742	012520	000005			MON1,01	RESET
2743	012522	005777	166652		TSF	0TKB
2744	012526	052777	000100	166642	0IS	0IITEN,0TKB
2745	012534	012700	001100		MOV	0BEGIN,SP
2746	012540	012737	000340	177776	MOV	0LEVEL7,PS
2747	012546	000004	020231		TYPE	,FSTART
2748	012552	104006			KEY,TO,R0	
2749	012554	122700	000104		CHPB	0ID,R0
2750	012560	001003			BNE	15
2751	012562	004737	014314		JSR	PC000MONDFLT
2752	012566	000403			BR	25

IERROR COUNT
 ERRCNT1 0
 ERTSTN1 0
 ITEST NUMBER
 IREGISTER STORAGE FOR ERROR REPORTING
 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
 .SBTTL MONITOR
 I
 MONITOR!
 I

ISET UP STACK POINTER
 I MONITOR AT LEVEL 7
 ISET UP DEFAULT PARAMETERS
 ITTY KEYBOARD INT VEC
 ILEVEL 4
 IHOME UP AND ERASE SCREEN
 IHEADER TEXT GETS WIPEO BY NPRIS
 I CLEAR FLAG
 ISET INTERRUPT ENABLE
 ISET UP STACK POINTER
 I MONITOR AT LEVEL 7
 ID = DEFAULT PARAMETERS

2753	012570	122700	000120	181	CHPB	#IP,R0	IP = PREVIOUSLY SELECTED PARAMETERS
2754	012574	001002			BNE	33	
2755	012576	000137	013340	281	JMP	00MON10	
2756	012602	122700	000123	381	CHPB	#IP,R0	IS = GO THROUGH AND SELECT PARAMETERS
2757	012606	001420			BEO	MO31	
2758	012610	122700	000110		CHPB	#IN,R0	IN = START AT THIS TEST #
2759	012614	001341			BNE	MON1,0	
2760	012616	000004	020307		TYPE	,MSG9	
2761	012622	104005			ACCEPTO		
2762	012624	013737	014026	014030	MOV	OCYNUM,FIRST,TST	
2763	012632	000701			BR	25	
2764							
2765	012634	051137	040105	040517	RELODI	,ASCIZ "RELOAD FOR HEADER TEXT"	
2766	012642	020104	047506	020122			
2767	012650	042510	042101	051105			
2768	012656	052040	054105	000124			
2769							
2770							
2771							
2772	012664	004737	014314		MON11	JSR	PGTHONDFLT
2773	012670	000004	020307		TYPE	,MSG9	ISSET UP DEFAULT PARAMETERS
2774							IFIRST TEST #
2775	012674	104005					
2776							
2777							
2778	012676	005737	014026		TST	OCYNUM	ITEST FOR DEFAULT
2779	012702	001403			BEO	MON3	IBRANCH ON DEFAULT
2780	012704	013737	014026	014030	MOV	OCYNUM,FIRST,TST	ILOAD FIRST TEST #
2781							
2782	012712	000004	020245		MON31	TYPE	,MSG2
2783							IBASE ADDRESS:
2784							
2785	012716	104005			ACCEPTO		IACCEPT BASE ADDRESS FROM KEYBOARD
2786							
2787	012720	005737	014026		TST	OCYNUM	ITEST FOR DEFAULT
2788	012724	001403			BEO	MON4	IBRANCH IF DEFAULT
2789	012726	013737	014026	001202	MOV	OCYNUM,DXBASE	ILOAD NON-DEFAULT ADDRESS
2790							
2791	012734	000004	021101		MON41	TYPE	,MSG20
2792	012740	104005			ACCEPTO		IACCEPT INTERRUPT VECTOR
2793	012742	005737	014026		TST	OCYNUM	ITEST FOR DEFAULT
2794	012746	001411			BEO	MO34,1	IBRANCH IF DEFAULT
2795	012750	013737	014026	001204	MOV	OCYNUM,DXIV	ILOAD NON-DEFAULT INT VECTOR ADRS
2796	012756	002737	000002	014026	ADD	02,00OCYNUM	IFORM INT STATUS ADRS
2797	012764	013737	014026	001206	MOV	00OCYNUM,00DXIS	IINT STATUS ADDRESS
2798							
2799							
2800	012772	000004	020512		MON4.11	TYPE	,MSG12
2801	012776	104005			ACCEPTO		IACCEPT
2802	013000	005737	014026		TST	OCYNUM	IPRIORITY
2803	013004	001425			BEO	MON6	OX PRIORITY LEVEL
2804	013006	006337	014026		ASL	OCYNUM	ITEST FOR DEFAULT
2805	013012	006337	014026		ASL	OCYNUM	IBRANCH ON DEFAULT
2806	013016	006337	014026		ASL	OCYNUM	ISHIFT PRIORITY
							IINTO PROCESSOR
							IPRIORITY BITS OF

```

2827 013022 006337 014026
2828 013026 006337 014026
2829 013032 013737 014026 001270
2830 013040 005337 014026
2831 013044 042737 000037 014026
2832 013052 013737 014026 001272
2833
2834
2835
2836
2837
2838 013060 000004 020320
2839 013064 012703 014050
2840 013070 000004 020420
2841 013074 004737 015534
2842 013100 104007 010010
2843 013104 013723 010010
2844 013110 104000
2845 013112 122700 000015
2846 013116 001364
2847
2848
2849
2850
2851 013120 013727 010010
2852 013124 000000
2853 013126 042737 000400 013124
2854 013134 023727 013124 000376
2855 013142 003403
2856 013144 000004 020537
2857 013150 000747
2858 013152 012723 177777
2859
2860
2861
2862
2863
2864
2865
2866
  
```

```

      ASL      OCTNUM      ;PROCESSOR STATUS WORD
      ASL      OCINUM
      MOV      OCTNUM,DXPRY ;LOAD PRIORITY
      DEC      OCTNUM
      BIC      03!,0OCTNUM ;CLEAR TNEVC
      MOV      OCTNUM,LESS1 ;PRIORITY TO ALLOW DX INTERRUPTS

;GENERATE A LIST OF LEGAL ADDRESSES
MON6I  TYPE      ,MSG4      ;LEGAL ADDRESS LIST
      MOV      0LEGAL,ADRS,R3 ;START OF LEGAL ADRS TABLE
MON7I  TYPE      ,MSG6      ;ADRSI
      JSR      PCGETHEX      ;GET HEXADECIMAL CU ADDRESS
      PARITY    ,HEXNUM      ;PUT PARITY (ODD) ON ADRS
      MOV      HEXNUM,(R3)+   ;SAVE LEGAL ADDRESS
      KEY,TO,R0
      CMPB     0CR,R0        ;ALL DONE?
      BNE      MON7          ;CONTINUE LIST IF NOT <CR>
;.....MOD APR 74 .....
;
; ADDRESS RESPONSE MOD
;
      MOV      HEXNUM,(PC)+
VLUMEXI0
      BIC      0400,VLUMEX
      CMP      VLUMEX,0370    ;TEST FOR > FF
      BLE      15             ;(OK) BRANCHES
      TYPE,    MSG13          ;OUTPUT "ILLEGAL ?" I.E. > "FF"
      BR       MON7          ;TRY AGAIN
18I    MOV      0=1,(R3)+     ;MARK END OF LIST
;.....MOD APR 74 .....
;
; 0DEV/CU MOD
;
;SET UP MAXIMUM NUMBER OF DEVICES PER CONTROL UNIT
;THIS INFORMATION DETERMINES WHAT THE SPW TABLE LOOKS LIKE
MON5I  TYPE      ,MSG3      ;MAX # DEVICES/CU
      ACCEPT0
      TST      OCTNUM        ;ACCEPT NUMBER OF DEVICES/CU
      BNE      X1!           ;USE 16 ON DEPAULT
      TYPE,    MSG13          ;OUTPUT "ILLEGAL ?" I.E. = "00"
      BR       MON5          ;TRY AGAIN
X18I   MOV      OCTNUM,(PC)+
RDXXI  0
      DEC      RDXX           ;RANGE MODULO 1
      MOV      VLUMEX,(PC)+
MDXXI  0
      ADD      RDXX,MDXX      ;RANGE MASK
      COMB     MDXX           ;SCALE
      BIC      0177400,MDXX   ;FORM FINAL
      ;CU PORTION CLR
  
```

```

2861 | ..... MOD APR 74 .....
2862 |
2863 |      MOV      OCTNUM,MAX,DEV,CU
2864 |      JSR      PC,CKCUA      |CHECK FOR LEGAL NUMBER OF DEV PER CU
2865 |
2866 |
2867 | GET COMMAND LIST
2868 |
2869 | .REM      *
2870 |
2871 | THIS ROUTINE ACCEPTS AN IBM COMMAND LIST FROM THE CONSOL. ALL
2872 | COMMANDS MUST BE NON ZERO (I.E. 710 MUST BE TYPED WITH PARITY
2873 | 400). WITH EACH COMMAND THE MONITOR ASKS FOR ITS ASSOCIATED DST
2874 | STATUS.
2875 |
2876 |
2877 |
2878 |      MOV      @CMD,STAT,R4
2879 |      MOV      @CMD,ADRS,R3
2880 |      TYPE     ,MSG9      |LEGAL CMD LIST
2881 |      TYPE     ,MSG10     |CMD1
2882 |      ACCEPTO  |ACCEPT LEGAL COMMANDS FROM KEYBOARD
2883 |      TSF      OCTNUM
2884 |      BEO      NO.10
2885 |      PARITY   ,OCTNUM
2886 |      MOV      @C,NUM,(R3)+
2887 |      TYPE     ,MSG31     |"STATUS: "
2888 |      ACCEPTO
2889 |      MOV      OCTNUM,(R4)+
2890 |      KEY,TO,R0
2891 |      CHPB     R0,0CH
2892 |      BNE      MON9
2893 |      MOV      @=1,(R3)+  |LOAD TERMINATOR
2894 |
2895 |
2896 |
2897 |
2898 |      ASK FOR DYNAMIC SWITCH SETTINGS ON CONSOL SWITCHES
2899 |
2900 |      MON10:  MOV      @=1,ONESHOT
2901 |      CLR      ENRCNT
2902 |      TYPE     ,MSG7      |SET DYNAMIC SWITCHES
2903 |      KEY,TO,R0          |TYPE ANYTHING
2904 |      CHPB     @3,R0      |TEST FOR CONTROL C
2905 |      BNE      MON11      |GO IF NO C
2906 |      JMP      @MON1,0
2907 |
2908 |
2909 |
2910 |      ISET UP TABLES
2911 |
2912 |      MON11:  MOVB     SWR,(PC)+  |SAVE MODE CONTROL SWITCH SETTINGS
2913 |      PARA:   B        |HERE
2914 |      BIS      @BIT0,@PARA      |SET ONLINE SELECT FLAG
2915 |      JSR      PC,CKCUA          |CMP ADRS VS MAX DEV PER CU
2916 |      JSR      PC,SPW,SETUP      |SET UP STATUS POINTER WORDS

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2915 013416 004737 014560      JSR    PC,TTY,CLR      ;CLEAR TTYBLE TABLE
2916 013422 004737 015100      JSR    PC,DST,SETUP    ;SETUP DEVICE STATUS TABLE
2917 013426 004737 014604      JSR    PC,ODAT          ;SET 360 SIM OUTPUT DATA FILE
2918 013432 004737 015430      JSR    PC,REG,SETUP    ;SCALE ADDRESSES
2919
2920 013436      LPCSUI
2921 013436 012737 000001 014022  MOV    #1,DEV CNT      ;INIT DEVICE COUNT
2922 013444 012737 014050 014016  MOV    @LEGAL,ADRS,ACUA ;ADRS OF CU ADRS
2923 013452 117737 000340 014020  MOV    @ACUA,CUADRS    ;CU ADDRESS
2924 013460 000472      BR      LPC1
2925
2926 013462 000004 020014      LPCNTLI TYPE ,BELL
2927
2928 013466 002737 000001 014020  ADD    #1,CUADRS        ;
2929 013474 009237 014022      INC    DEV CNT          ;INC DEVICE COUNT
2930 013500 023737 014022 014032  CMP    DEV CNT,MAX,DEV,CU
2931 013506 003457      BLE    LPC1
2932 013510 012737 000001 014022  MOV    #1,DEV CNT      ;INIT DEVICE COUNT
2933 013516 027727 000274 177777  CMP    @ACUA,#=1
2934 013524 001042      BNE    LPC2
2935 013526 002737 000002 013376  ADD    #2,PARA          ;INC TO NEXT PARA COMBINATION
2936 013534 022737 000014 013376  CMP    #10,PARA         ;HAVE ALL PARA COMBS BEEN TESTED?
2937 013542 002030      BGE    LPC3
2938 013544 042737 177776 013376  BIC    #1,7776,@PARA    ;ALL BUT ONLINE IF SET
2939
2940      ;..... MOD APR 74 .....
2941      ;
2942      ;
2943      ;
2944 013552 012777 000001 109520  MOV    #1,0DXCS        ;DX RESE* SPLI
2945
2946      ;..... MOD APR 74 .....
2947      ;
2948 013560 000004 020016      TYPE    ,ENDTST
2949 013564 000004 020030      TYPE    ,EYM          ;ERROR COUNT MESSAGE
2950 013570 010540      MOV    TTY,=(SP)      ;SAVE TTY
2951 013572 013705 012430      MOV    ERR CNT,TTY          ;TYPE IN OCTAL
2952 013576 004737 016400      JSR    PC,PRINTR        ;TYPE LEADING ZERO'S
2953 013602 012605      MOV    (SP)+,TTY      ;RESTORE TTY
2954
2955      ;THE FOLLOWING CODE IS FOR INTERFACE WITH DDP AND ACT11
2956
2957 013604 013700 000042      MOV    #042,H0          ;IF 42 = 0 REMAIN IN DX DIAGNOSTIC
2958 013610 001405      BEO    LPD5
2959 013612 000005      RESET          ;LINK TO DDP OR ACT11
2960 013614      LOGICALI
2961 013614 004710      JSR    PC,OR0
2962 013616 000240      NOP
2963 013620 000240      NOP
2964 013622 000240      NOP
2965 013624 012737 014050 014016  LPC51  MOV    @LEGAL,ADRS,ACUA
2966 013632 017737 000100 014020  LPC21  MOV    @ACUA,CUADRS
2967 013640 002737 000002 014016      ADD    #2,ACUA
2968 013646 104007 014020      LPC11  PARITY ,CUADRS

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2969	013052	013737	014020	014010	MOV	CUADRS,DEV	
2970	013060	013737	014010	014014	MOV	DEV,DEV,A	MULTI THREAD
2971	013066	023737	014022	014032	CHP	DEV CNT,MAX,DEV,CU	
2972	013074	001404			BEG	LPX3	
2973	013076	062737	000001	014014	ADD	01,DEV,A	
2974	013704	000403			BR	LPC4	
2975	013706	162737	000001	014014	LPC31 SUB	01,DEV,A	
2976	013714	104007	014014		LPC41 PARITY	,DEV,A	
2977							
2978							
2979	013720	004737	015230		MON121 JSR	PG,PREI	IDO PRE INIT
2980	013724	012777	000114	169332	MOV	FALSE,ODXIV	SET UP FALSE INTERRUPT VECTOR TRAP
2981	013732	013777	001270	169326	MOV	DXRT,ODXIS	SET UP INTERRUPT PRIORITY
2982	013740	013700	014030		MOV	FIRST,TST,RO	TEST FOR DEFAULT
2983	013744	001002			BNE	NO,IS	BRANCH IF NOT DEFAULT
2984	013746	005237	014030		INC	FIRST,TST	DEFAULT TEST NUMBER IS ONE
2985	013752	013737	014030	012432	MON131 MOV	FIRST,TST,ERTSYN	
2986	013760	000300			ASL	RO	
2987	013762	010037	011454	011454	MOV	TSTABLE=2(RO),00RETURN	
2988	013770	062737	000024	011454	ADD	021,00RETURN	
2989	013776	000170	011454		MON141 JMP	OTSTABLE=2(RO)	JUMP TO SELECTED TEST
2990							
2991							
2992							
2993							
2994							
2995							
2996		000001					IS SEC OPLI TIMER TEST
2997	014002	177777					ONE PASS FLAGS
2998	014004	000000					CARRY COUNT
2999	014006	000000					TEMPORARY STORAGE
3000	014010	000020					DEVICE ADDRESS TO SELECT - MUST INCLUDE PARITY
3001							(I.E. 441 IS DEV=1, CU=2)
3002	014012	000403					COMMAND TO PRESET - MUST INCLUDE PARITY
3003							(403 IS BASIC NOP COMMAND)
3004							
3005	014014	000421					SECOND DEVICE FOR DUAL TESTS
3006							
3007							
3008	014016	000000					ADRS OF CU ADRS
3009							
3010							
3011	014020	000000					CU ADRS
3012	014022	000000					DEVICE COUNT
3013							
3014	014024	002000					OFFSET TO ADDRESS REGISTER
3015	014026	000000					OCTAL INPUT FROM TTY
3016	014030	000000					FIRST TEST TO RUN
3017	014032	000000					MAXIMUM # OF DEVICES/CU
3018							
3019							
3020							
3021	014034	000777					SAVED STATUS
3022	014036	000000					SOURCE DATA

.SOTTL MONITOR FILES

ONE PASS FLAGS

FIVESEC=1
 ONESHOT=1
 CARRY=0
 THPI=0
 DEVI=20
 CM01=403
 DEV.A1=421
 ACUAI=0
 CUADRS=0
 DEVCNT=0
 OFFSET=2000
 OCTNUM=0
 FIRST,TST=0
 MAX,DEV,CU=0

DIAGNOSTIC VARIABLES

SSYAT=777
 SRCNT=0

3023 014040 000000
 3024 014042 000000
 3025 014044 000000
 3026 014046 000000

DSYCNFI 0
 SAVDEVI 0
 YSSFTI 0
 COUNTI 0

DESTINATION DATA
 ISAVED DEVICE ADDRESS
 ITSSF TRACE
 IUSED BY CH SIM TO COUNT BYTES TRANSFERRED

3027
 3028
 3029

LEGAL ADDRESS LIST

3030
 3031 014050
 3032

LEGAL ADRESI

3033 014050 000000
 3034 014052 000000
 3035 014054 000000
 3036 014056 000000
 3037 014060 000000
 3038 014062 000000
 3039 014064 000000
 3040 014066 000000
 3041 014070 000000
 3042 014072 000000
 3043 014074 000000
 3044 014076 000000
 3045 014100 000000
 3046 014102 000000
 3047 014104 000000
 3048 014106 000000
 3049 014110 000000

,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0

3050
 3051 014112

SCALD ADRESI

3052
 3053 014112 000000
 3054 014114 000000
 3055 014116 000000
 3056 014120 000000
 3057 014122 000000
 3058 014124 000000
 3059 014126 000000
 3060 014130 000000
 3061 014132 000000
 3062 014134 000000
 3063 014136 000000
 3064 014140 000000
 3065 014142 000000
 3066 014144 000000
 3067 014146 000000
 3068 014150 000000
 3069 014152 000000

,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0

3070
 3071

LIST OF DEFAULT COMMANDS

3072
 3073
 3074 014154
 3075

DFLT.CMDI

3076 014154 000400

Y10C

ITEST I/O COMMAND

3077	014156	000001	WRITEC	WRITE COMMAND
3078	014160	000002	READC	READ COMMAND
3079	014162	000403	NOPC	NOP COMMAND
3080	014164	000004	SENSEC	SENSE COMMAND
3081	014166	000405	ILLC	ILLGAL COMMAND
3082	014170	177777	-1	ILIST TERMINATOR
3083	014172	177777	-1	ILIST TERMINATOR
3084	014174	177777	-1	ILIST TERMINATOR
3085	014176	177777	-1	ILIST TERMINATOR
3086	014200	177777	-1	ILIST TERMINATOR
3087	014202	177777	-1	ILIST TERMINATOR
3088	014204	177777	-1	ILIST TERMINATOR
3089	014206	177777	-1	ILIST TERMINATOR
3090	014210	177777	-1	ILIST TERMINATOR
3091	014212	177777	-1	ILIST TERMINATOR

IDEFAULT STATUS LIST

DFLT,STAT:	
,BYTE	0
,BYTE	0
,BYTE	0
,BYTE	CEIDE
,BYTE	0
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC
,BYTE	UC

ILIST OF LEGAL COMMANDS

CMO,ADRS:

3121	014234		,WORD	0
3122			,WORD	0
3123	014234	000000	,WORD	0
3124	014236	000000	,WORD	0
3125	014240	000000	,WORD	0
3126	014242	000000	,WORD	0
3127	014244	000000	,WORD	0
3128	014246	000000	,WORD	0
3129	014250	000000	,WORD	0
3130	014252	000000	,WORD	0

3131 014254 000000
 3132 014256 000000
 3133 014260 000000
 3134 014262 000000
 3135 014264 000000
 3136 014266 000000
 3137 014270 000000
 3138 014272 000000

,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0
 ,WORD 0

!COMMAND STATUS

3139
 3140

CH0,STAT1

3141
 3142 014274
 3143

3144 014274 000
 3145 014275 000
 3146 014276 000
 3147 014277 000
 3148 014300 000
 3149 014301 000
 3150 014302 000
 3151 014303 000
 3152 014304 000
 3153 014305 000
 3154 014306 000
 3155 014307 000
 3156 014310 000
 3157 014311 000
 3158 014312 000
 3159 014313 000

,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0
 ,BYTE 0

3160
 3161

3162
 3163

!SET UP DEFAULT PARAMETERS

3164
 3165

MONOPLY:

3166 014314
 3167 014314 005037 006366
 3168 014320 005037 006426
 3169 014324 013737 001440 000526
 3170 014332 012737 177777 014002
 3171 014340 005037 014030
 3172 014344 005037 012432
 3173 014350 005037 012430
 3174 014354 013737 014546 011404
 3175 014362 013737 014550 001262
 3176 014370 013737 014552 001264
 3177 014376 013737 014564 001266
 3178 014404 013737 014594 001270
 3179 014412 013737 014596 014032
 3180 014420 013737 014562 014014
 3181 014426 013737 014560 014050
 3182 014434 012737 177777 014052
 3183 014442 012737 017000 001442
 3184 014450 012700 014154

CLR 00ENTRY1 !TT TRACE ENTRY1
 CLR 00ENTRY2 !TT TRACE ENTRY2
 MOV 00TY,00TRACE !INIT TT TRACE
 MOV 001,00ESHOT !ONE PASS FLAG
 CLR FIRST,TST !DEFAULT TEST 0
 CLR ERISTN !ERROR TEST NUMBER
 CLR ERRCNT !ERROR COUNT
 MOV 00Y,FIRST,TST,00RETURN !FIRST TEST
 MOV 00Z,00BASE,000BASE !BASE ADDRESS
 MOV 00X,00XIV,000XIV !INT VECTOR ADRS
 MOV 00D,00XIS,000XIS !INT STATUS ADRS
 MOV 001,00XPRT,000XPRT !PRIORITY LEVEL
 MOV 00D,00MAX,DEV,CU,00MAX,DEV,CO !MAX DEVICES
 MOV 00X,DEV,A,00DEV,A !SECOND DEVICE
 MOV 00D,LEGAL,ADRS,00LEGAL,ADRS !CU ADRS
 MOV 001,LEGAL,ADRS,02
 MOV 00STADRS,00DST !INIT DST ADRS
 MOV 00FLT,CH0,RS !ADRS OF DEFAULT CH0 LIST

3185	014454	012701	014234	MOV	#CMD,ADRS,R1	ADRS OF LEGAL CMD LIST
3186						
3187	014460	012021		MON21	MOV (R0)+,(R1)+	LOAD DEFAULT CMD LIST
3188	014462	022710	177777		CHP #01,PHB	TEST FOR TERMINATOR
3189	014466	001374			BNE MON2	
3190	014470	012721	177777		MOV #01,(R1)+	LOAD TERMINATOR
3191	014474	012727	000020		MOV #12,(PC)+	
3192	014500	000000		MON2.01	#	
3193	014502	012700	014214		MOV #DFLT,STAT,R0	DEFAULT STATUS
3194	014506	012701	014274		MOV #CMD,STAT,R1	STATUS FOR EACH COMMAND
3195	014512	112021		MON2.11	MOVB (R0)+,(R1)+	
3196	014514	009337	014900		DEC MON2.0	
3197	014520	001374			BNE MON2.1	
3198						
3199	014522	013737	014024 001436	MOV	OFFSET,SPH	LOAD ADRS OF SPH
3200	014530	013737	014024 001440	MOV	OFFSET,TT	LOAD ADRS OF TT
3201	014536	062737	001000 001440	ADD	#1200,TT	" " " "
3202	014544	000207		MON2.31	RTS PC	
3203					DEFAULT PARAMETERS	
3204						
3205	014546	004000		D,P,IRST,TSY1	TSY1	IFIRST TEST
3206	014550	176200		D,0XBASE1	176200	BASE ADDRESS
3207	014552	000300		D,0XIVI	301	INT VECTOR ADRS
3208	014554	000200		D,0XPRY1	LEVEL4	IOX PRIORITY LEVEL
3209	014556	000020		D,MAX,DEV,CU1	20	MAX # DEVICES PER CU
3210	014560	000020		D,LEGAL,ADRS1	020	DEFAULT CO ADRS
3211	014562	000421		D,DEV,A1	421	
3212	014564	000302		D,0XISI	302	INT STATUS ADRS
3213						
3214						
3215					.SBTTL MONITOR SUBROUTINES	
3216						
3217					TTY,CLR, CLEAR TUMBLE TABLE	
3218						
3219						
3220	014566			TTY,CLR1		
3221	014566	013701	001440	MOV	TTY,R1	BOTTOM OF TT
3222	014572	009021		CLR1	CLR (R0)+	CLEAR TT
3223	014574	020137	004000	CHP	R1,ENDTT	TEST FOR END OF TT
3224	014600	001374		BNE	CLR1	BRANCH IF NOT END
3225	014602	000207		RTS	PC	
3226						
3227						
3228					IREINIT OUTPUT DATA	
3229						
3230						
3231	014604			ODAT1		
3232	014604	010046		MOV	R0+(SP)	
3233	014606	012700	022050	MOV	#DATA,R0	
3234	014612	009027		CLR	(P1)+	
3235	014614	000000		ODAT11	#	
3236	014616	104007	014614	ODAT21	PARITY ,ODAT1	
3237	014622	013720	014614	MOV	ODAT1,(R0)+	
3238	014626	042737	000400 014614	BIC	#PARO,ODAT1	

3239 R14634 105237 014614
 3240 R14640 001366
 3241 R14642 012620
 3242 R14644 000207

INCB 0DAT1
 B'IE 0DAT2
 MOV (SP)+,R0
 RTS PC

3243
 3244
 3245
 3246
 3247
 3248
 3249
 3250
 3251
 3252
 3253
 3254
 3255
 3256
 3257
 3258
 3259

3260
 3261 R14646
 3262 014646 017627 000000
 3263 014652 000000
 3264 R14654 017727 177772
 3265 014660 000000
 3266 014662 005027
 3267 014664 000000

T,PARITYI
 MOV 0(SP),(PC)+ ;FETCH ADDRESS OF SOURCE DATA
 SDAPG: 0 ;SOURCE DATA ADDRESS
 MOV 0SDAPG,(PC)+ ; FETCH SOURCE DATA
 TDAT: 0 ;SOURCE DATA
 CLR (PC)+
 PRTY: 0

3268
 3269 014666 106337 014660
 3270 014672 102002
 3271 014674 005137 014664

PG2: ASLB TDAT
 SVC PG+
 COM PRTY

3272
 3273 014700 106337 014660
 3274 014704 001370
 3275 014706 005737 014664
 3276 014712 100404
 3277 014714 052777 000400 177730
 3278 014722 000403
 3279 014724 042777 000400 177720

PG3: ASLB TDAT
 BNE PG4
 TST PRTY
 BMI PG3
 BIS 0PAR0,0SDAPG ;SET PARITY BIT
 BR PG3
 BIC 0PAR0,0SDAPG ;CLEAR PARITY BIT

3280
 3281 014732 062716 000002
 3282 014736 000002

PG4: ADD 02,0SP ;ADD 2 TO RETURN PC
 RTI

3283
 3284
 3285
 3286
 3287

ISSETUP SPW TABLE
 ;***** MOD APR 74 *****
 ; ADDRESS RESOLUTION MOD

3288 014740 177400
 3289

MARKI 177400

3290 014742
 3291 R14742 012700 014050
 3292 014746 012701 014112

SPW.SETUP:
 MOV 0LEGAL,ADRS,R0 ;FETCH ADDR OF LEGAL ADRS LIST
 MOV 0SCALD,ADRS,R1 ;FETCH ADDRS OF SCALED LEGAL ADRS LIST

Address	Offset	Hex Data	Hex Data	Assembly	Comment
3293	014752	012011		SP',01	MOV (R0)+,R1
3294	014752	012011			IMAKE DUPLICATE ADRS LIST
3295	014754	043711	014740		BIC MARK,R1
3296					1..... MOD APR 74
3297	014760	006311			ASL R1
3298	014762	003721	001430		ADD SPW,(R1)+
3299	014766	021027	177777		CHP R1,R=1
3300	014772	001367			BNE SP'0
3301					IFETCH NEXT ADRS
3302	014774	012721	177777		MOV R0,(R1)+
3303					IMARK END OF SCALED ADRS LIST
3304	015000	013701	001430		MOV SPW,R1
3305	015004	013702	001442		MOV DST,R2
3306	015010	012700	014112	SP',11	MOV SCALED,ADRS,R0
3307	015014	020110		SP',21	CHP R1,R0
3308	015016	001407			DEC SP',3
3309	015020	003720			TSY (R0)+
3310	015022	022710	177777		CHP R=1,R0
3311	015026	001372			BNE SP',2
3312	015030	012721	016000		MOV GENRST,(R1)+
3313	015034	000407			OR SP'0
3314	015036	013727	014032	SP',31	MOV MAX,DEV,CU,(PC)+
3315	015042	000000		SP',41	0
3316	015044	010221		SP',51	MOV R2,(R1)+
3317	015046	003337	015042		DEC SP',4
3318	015052	001374			BNE SP',5
3319	015054	020137	001440	SP',61	CHP R1,TT
3320	015060	002753			BLT SP',1
3321	015062	001405			DEC SP',7
3322	015064	003720			TSY (SP)+
3323	015066	000004	019200		TYPE ,IQVN
3324	015072	000137	018520		JMP MON1,0
3325	015076	000207		SP',71	RTS PC
3326					IDEVICE STATUS TABLE SETUP
3327					
3328					
3329	015100			DST',SETUP1	
3330	015100	013701	001442		MOV DST,R1
3331	015104	012727	000020		MOV R1,,(PC)+
3332	015110	000000		DS',11	0
3333	015112	012702	014274		MOV SCHO,STAT,R2
3334	015116	112221		DS',21	MOVB (R2)+,(R1)+
3335	015120	003337	015110		DEC DS',1
3336	015124	001374			BNE DS',2
3337	015126	000207			RTS PC
3338					
3339					ISUBROUTINE TO CHECK THAT CU ADDRESS AND THE NUMBER OF DEVICES
3340					PER CU IS LEGAL
3341					
3342	015130	012700	014050	CKCUA1	MOV SLEGAL,ADRS,R0
3343	015134	003027		CK011	CLR (PC)+
3344	015136	000000		CK021	0
3345	015140	111037	015130		MOVB R0,0
3346					IFETCH CU ADDRESS
					1..... MOD APR 74

```

3347
3348
3349
3350 P15144 122737 000020 014032 CKC31 CMPB 020,00MAX,DEV,CU ICHECK LIMIT 10.
3351
3352
3353
3354 015152 103009
3355 015154 000004 019200
3356 015160 012716 013150
3357 015164 000207
3358 015166 005720
3359 015170 021027 177777
3360 015174 001357
3361 015176 000207
3362 019200 044537 040114 043505
3363 019206 046101 021440 047440
3364 019214 020106 042504 044526
3365 019222 042503 020123 042520
3366 019230 020122 052503 000040
3367
3368
3369
3370
3371 015236 012737 019372 000004
3372 015244 012737 000340 000006
3373 015252 005077 164042
3374 015256 004737 019376
3375
3376
3377
3378 015262 004737 019370
3379 015266 005077 164006
3380 015272 004737 019376
3381 015276 013777 001436 163776
3382 015304 023777 001436 163770
3383 015312 001401
3384 015314 104000
3385 015316 052777 000010 163774
3386 015324 032777 000010 163706
3387 015332 001001
3388 015334 104000
3389 015336 012737 000006 000004
3390 015344 012737 000000 000006
3391 015352 004737 006176
3392 015356 004737 006220
3393 015362 000207
3394
3395
3396
3397
3398
3399
3400 015364 005077 163720
  
```

10
 10 ADDRESS RANGE MOD
 1
 CKC31 CMPB 020,00MAX,DEV,CU ICHECK LIMIT 10.
 1
 1
 CKC4 IBRANCH IF WITHIN LIMITS
 TYPE ,IXVN IILLEGAL NUMBER OF DEVICES PER CU
 MOV 00XNS,(SP) ICHANGE RETURN PC
 RTS PC
 CKC41 TST (R0)+
 CMP 00XNS,0
 BNE CKC1
 RTS PC
 IDVNI ,ASCIZ "ILLEGAL # OF DEVICES PER CU"
 ,EVEN
 IPRE=INIT SUBROUTINE
 PRE11 MOV 0PRE1TO,4
 MOV 0LEVEL,6
 CLR 0DXES ICLR MAINT CLK
 JSR PC,RESRES IDX RESET AND RESTORE
 I THE FOLLOWING INSTRUCTION GET MODIFIED UPON THE COMPLETION
 I OF THE SYSTEM RESET TEST, IF SCOPE PROBLEMS DEVELOP BEFORE THIS TEST
 I PASSES THIS INST, CAN BE PATCHED TO A TEST, NOP,
 PRE1,11 JSR PC,00NOCLR I MODIFIED TO CLRMO
 CLR 0DXCS ICLM DONE, LOCKO
 JSR PC,RESRES IDX RESET AND RESTORE
 MOV 0PM,0DXOS
 CMP 0P1,0DXOS
 BEQ .03 I BRANCH IF NO ERROR CONDITION
 ERROR
 BIS 0YMDIS,0DXES ITIMER DISABLE
 BIT 0YMDIS,0DXES
 BNE .04 I BRANCH IF NO ERROR CONDITION
 ERROR
 MOV 0074
 MOV 0HMLT,0
 JSR PC,ZEROTZ I ZERO TUMBLE TABLE
 JSR PC,TTZERO I VERIFY TT ZERO
 RTS PC
 CLRM01 CLR 00XMO IDO SYSTEM RESET

3401 015370 000207 NOCLR: RTS PC
 3402
 3403 015372 104000 PRE:TOI ERROR IPRE:INIT TIME OUT ERROR
 3404
 3405
 3406 015374 000002 RTI
 3407
 3408
 3409
 3410
 3411
 3412
 3413
 3414
 3415
 3416
 3417
 3418
 3419

IDX RESET AND RESTORE ROUTINE

3420 015376
 3421
 3422 015376 042777 000200 163674 BIC 00000,0DXCS ICLEAR LOCKO
 3423 015404 012777 000001 163606 MOV 0DXFRS,0DXCS IDX RESET
 3424 015412 013737 001440 000526 MOV 00.T,TTRACE IRELOAD SOFT TT POINTER
 3425 015420 000240 NOP IINSERT RESET I,P,RS" HERE IF REQUIRED
 3426 015422 004737 007234 JSR PC,ONLIN IGET BACK ONLINE
 3427 015426 000207 RTS PC
 3428
 3429
 3430
 3431
 3432
 3433

IREGISTER ADDRESS SETUP ROUTINE

3434
 3435 015430
 3436 015430 013700 001202
 3437 015434 012701 001274
 3438 015440 010021
 3439 015442 002700 000002
 3440 015446 020127 001326
 3441 015452 001372
 3442
 3443 015454 004537 015510
 3444
 3445 015460 001276
 3446 015462 001326
 3447
 3448 015464 001302
 3449 015466 001332
 3450
 3451 015470 001310
 3452 015472 001336
 3453
 3454 015474 001312

3455 015476 001342
 3456
 3457 015500 001320
 3458 015502 001346
 3459
 3460 015504 177777
 3461
 3462 015506 000207
 3463
 3464 015510
 3465 015510 012500
 3466 015512 012501
 3467 015514 011021
 3468 015516 011011
 3469 015520 005221
 3470 015522 021527 177777
 3471 015526 001370
 3472 015530 005725
 3473 015532 000205
 3474
 3475
 3476
 3477
 3478 015534 005037 010010
 3479 015540 010246
 3480 015542 010146
 3481 015544 010046
 3482 015546 005001
 3483 015550 104006
 3484 015552 120027 000003
 3485 015556 001002
 3486 015560 000137 012520
 3487 015564 122700 000177
 3488 015570 001424
 3489 015572 122700 000015
 3490 015576 001424
 3491 015600 120027 000040
 3492 015604 001421
 3493 015606 120027 000000
 3494 015612 002413
 3495 015614 120027 000071
 3496 015620 003021
 3497 015622 042700 177760
 3498 015626 006301
 3499 015630 006301
 3500 015632 006301
 3501 015634 006301
 3502 015636 050001
 3503 015640 000743
 3504
 3505 015642 000004 020654
 3506 015646 000737
 3507 015650 010137 010010
 3508 015654 012600

BUSI
 OXES
 MISC
 =1
 RTS PC
 SBYTE:
 MOV (R5)+,R0
 MOV (R1)+,R1
 MOV OR0,(R1)+
 MOV OR,OR1
 INC (R1)+
 CMP OR0,0=1
 BNE SBYTE
 TST (R1)+ IPOP OVER TERMINATOR
 RTS R5

IACCEPT HEX NUMBER FROM TTY

GETHEX: CLR HEXNUM I CLEAR HEXADECIMAL NUMBER LOCATION
 MOV R27=(SP) I SAVE R2
 MOV R1=(SP) I SAVE R1
 MOV R07=(SP) I SAVE R0
 ACPTH: CLR R1
 ACPTH,1: KEY,TO,R0 I FETCH AN ASCII CHAR FROM KEYBOARD
 CMPB R07#3 I CONTROL C?
 BNE AH,2
 JMP 00H0N1,0
 AH,2: CMPB 0197,R0 I TEST FOR RUBOUT
 BEQ RUBOUH
 CMPB 019,R0 I TEST FOR <CR>
 BEQ CARGH I EXIT IF SPACE
 CMPB R0,040 I TEST FOR VALID HEX NUMBER
 BEQ CARGH
 CMPB R0,09
 BGT AH,3
 AH,3: BIC 0177700,R0 I CONVERT ASCII TO HEX
 ASL R1
 ASL R1
 ASL R1
 ASL R1
 BIC R0,R1 I CHALK/IN UP
 BR ACPTH,1 I FETCH NEXT CHAR
 RUBOUH: TYPE , ,QUE3 I TYPE?
 BR ACPTH
 CARGH: MOV R1,HEXNUM I PLACE HEX NUMBER HERE
 MOV (SP)+,R0 I RESTORE R0

3509	015056	012601			MOV	(SP)+,R1	IRESTOR R1
3510	015060	012602			MOV	(SP)+,R2	IRESTORE R2
3511	015062	000207			RTS	PC	
3512							
3513	015064	005002			AMEXI	CLR R2	
3514	015066	120002	010012		AMEX01	CMPS R0,TATBL(R2)	LOOK THRU ASCII TABLE
3515	015072	001406			BEO	AMX1	BRANCH ON MATCH
3516	015074	005202			INC	R2	
3517	015076	120227	010012	000000	CMPS	ATBL(R2),00	LOOK FOR END OF TABLE
3518	015704	001370			BNE	AMX0	BRANCH IF NOT END
3519	015706	000755			BR	RUBOUT	ERROR ON NO MATCH
3520	015710	110200	010022		AMEX11	MOVB HTJL(R2),R0	LOAD BINARY OF FIND
3521	015714	000742			BR	AMJ3	
3522							
3523							
3524							
3525							
3526							
3527							
3528		010000					
3529							
3530							
3531							
3532	010000						
3533	010000	002					
3534	010001	002					
3535	010002	002					
3536	010003	002					
3537	010004	002					
3538	010005	002					
3539	010006	002					
3540	010007	002					
3541							
3542	010010	000000			HEXNUM1	0	HEX NUMBER
3543	010012	041101	042103	043105	ATBL1	,ASCII 'ABCDEF'	
3544	010020	000000			,WORD	0	
3545	010022	012	013	014	HTBL1	,BYTE 10',11',12',13',14',15'	
3546	010025	015	016	017			
3547							
3548							
3549	010030						
3550	010030	005037	014020				
3551	010034	010140					
3552	010036	010046					
3553	010040	005001			ACPT01	CLR R1	
3554	010042	104006			ACPT0,11	KEY,T0,R0	FETCH AN ASCII CHAR FROM KEYBOARD
3555	010044	120027	000003		CMPS	R0,03	CONTROL C?
3556	010050	001002			BNE	A0,2	
3557	010052	000137	012520		JMP	00MON1,0	
3558	010056	122700	000177		CMPS	0177,R0	TEST FOR RUBOUT
3559	010062	001423			BEO	RUBOUT	
3560	010064	122700	000015		CMPS	015,R0	TEST FOR <CR>
3561	010070	001423			BEO	CARG	
3562	010072	120027	000040		CMPS	R0,040	EXIT IF SPACE

;..... MOD APR 74
 ;
 ;0.1377+1
 ; ILLEGAL OR MALFUNCTIONING GUAR ERROR STATUS TABLE MODULO 8
 ERRORS!
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;BYTE UC UNIT CHECK ENTRIES
 ;HEX NUMBER
 ;ACCEPT OCTAL NUMBER FROM TTY
 T,ACCEPT01
 CLR OCTNUM
 ;CLEAR OCTAL NUMBER LOCATION
 MOV R1,=(SP)
 ;SAVE R1
 MOV R0,=(SP)
 ;SAVE R0
 ACPT01 CLR R1
 ;
 ACPT0,11 KEY,T0,R0
 ;FETCH AN ASCII CHAR FROM KEYBOARD
 CMPS R0,03
 ;CONTROL C?
 BNE A0,2
 JMP 00MON1,0
 ;
 A0,21 CMPS 0177,R0
 ;TEST FOR RUBOUT
 BEO RUBOUT
 ;
 CMPS 015,R0
 ;TEST FOR <CR>
 BEO CARG
 ;
 CMPS R0,040
 ;EXIT IF SPACE

3563	016076	001420			BEG	CARG	
3564	016100	120027	000000		CHPB	R0100	TEST FOR VALID OCTAL NUMBER
3565	016104	002412			BLT	RUBOUT	
3566	016106	120027	000067		CHPB	R0107	
3567	016112	003007			BGT	RUBOUT	
3568	016114	042700	177770		BIC	0177770,R0	CONVERT ASCII TO OCTAL
3569	016120	006301			ASL	R1	
3570	016122	006301			ASL	R1	
3571	016124	006301			ASL	R1	
3572	016126	050001			BIS	R0,R1	CHALK'N UP
3573	016130	000744			BR	ACPT0,1	FETCH NEXT CHAR
3574							
3575	016132	000004	020654		RUBOUTI	TYPE	TYPE?
3576	016136	000740			BR	ACPT0	
3577	016140	010137	014020		CARGI	MOV	PLACE OCTAL NUMBER HERE
3578	016144	012600			MOV	R1,OCTNUM	RESTORE R0
3579	016146	012601			MOV	(R0)+,R0	RESTOR R1
3580	016150	000002			RTI	(R1)+,R1	RETURN
3581							
3582							FETCH AN ASCII CHARACTER FROM KEYBOARD
3583							
3584	016152				T,KEY,TO,R01		
3585	016152	105777	163220		TSYB	OTKS	TEST FOR DONE
3586	016156	100375			BPL	02	WAIT FOR KEYBOARD
3587	016160	117700	163214		MOVB	OTKB,R0	FETCH CHAR
3588	016164	117777	163210	163212	MOVB	OTCB,OTPB	ECHO
3589	016172	004737	016204		JSR	PC,TTYFLG	WAIT FOR DONE
3590	016176	042700	177600		BIC	0177000,R0	7 BIT ASCII
3591	016202	000002			RTI		
3592							TEST FOR TRANSMITTER DONE
3593							
3594	016204				TTYFLGI		
3595	016204	105777	163172		TSYB	OTPS	
3596	016210	100375			BPL	25	
3597	016212	000207			RTS	PC	
3598					.SOTTL	TTY ASCII OUTPUT ROUTINE	
3599							
3600							
3601	016214	032737	020000	177570	.IOTI	BIF	00113,SR
3602	016222	001040			BNE	.IUTE	TEST FOR INHIBIT PRINT
3603	016224	010537	016332		MOV	TTY,.SAV	SAVE TTY
3604	016230	017605	000000		MOV	0(L),TTY	GET ADDRESS TO BE TYPED
3605	016234	122715	000044		.MOREI	CHPB	01',(TTY)
3606	016240	001425			BEG	.TERM	TERMINATOR?
3607	016242	105715			TSYB	(TTY)	TERMINATOR?
3608	016244	001423			BEG	.TERM	
3609	016246	122715	000001		CHPB	01,(TTY)	RESTORE OLD SEQUENCE
3610	016252	001416			BEG	.REST	
3611	016254	122715	000137		CHPB	010,(TTY)	SET UP CR LF
3612	016260	001406			BEG	.CRLF	
3613	016262	105777	163114		TSYB	OTPS	
3614	016266	100375			BPL	04	
3615	016270	112577	163110		MOVB	(TTY)+,OTPB	
3616	016274	000757			BR	.MORE	

3617	016276	005205			.CRLF:	INC	TTY	
3618	016302	010546				MOV	TTY,=(0)	
3619	016302	012705	016334			MOV	0,AR,TTY	
3620	016306	000792				OR	,MORE	
3621	016310	012605			.REST:	MOV	(0)+,TTY	
3622	016312	000790				OR	,MORE	
3623	016314	004737	016284		.TERM:	JSR	PC,TTYPLG	WAIT FOR DONE
3624	016320	013705	016332			MOV	,SAV,TTY	
3625	016324	002716	000002		.NOTE:	ADD	02?(0) IPOP	
3626	016330	000002				RTI		
3627								
3628	016332	000000			.SAVI	0		
3629	016334	005015	001002	001002	.CARI	,ASCII	<CR><LF><2><2><2><2><2><2><1>	
3630	016342	001002	001					
3631		016346			.EVEN			
3632	016346	000000			.TYPEI	0		
3633					.SBTTL	SAVE AND RESTORE REGISTERS		
3634					.SAVE REGS 0 TO 4 SUBROUTINE,			
3635	016350	012637	016400		T,SAVRCI	MOV	(0)+,SVRPC	SAVE PC AND PSW,
3636	016354	012637	016410			MOV	(0)+,SVRPSW	
3637	016360	010546				MOV	X5(=(0)	
3638	016362	010446				MOV	X4,=(0)	SAVE REGS 0 - 4
3639	016364	010346				MOV	X3,=(0)	IN STACK,
3640	016366	010246				MOV	X2,=(0)	
3641	016370	010146				MOV	X1,=(0)	
3642	016372	010046				MOV	X0,=(0)	
3643	016374	013746	016410			MOV	SVRPSW,=(0)	RESTORE PC AND PSW,
3644	016400	013746	016400			MOV	SVRPC,=(0)	
3645	016404	000002				RTI		EXIT,
3646	016406	000000			SVRPC:	0		
3647	016410	000000			SVRPSW:	0		
3648					.RESTORE REGS 0 TO 4 SUBROUTINE,			
3649	016412	012637	016450		T,ASTRCI	MOV	(0)+,RSTPC	SAVE PC AND PSW,
3650	016416	012637	016452			MOV	(0)+,RSTPSW	
3651	016422	012600				MOV	(0)+,X0	RESTORE REGS 0 - 4
3652	016424	012601				MOV	(0)+,X1	FROM STACK,
3653	016426	012602				MOV	(0)+,X2	
3654	016430	012603				MOV	(0)+,X3	
3655	016432	012604				MOV	(0)+,X4	
3656	016434	012605				MOV	(0)+,X5	
3657								
3658	016436	013746	016452			MOV	RSTPSW,=(0)	RESTORE PC AND PSW,
3659	016442	013746	016450			MOV	RSTPC,=(0)	
3660	016446	000002				RTI		EXIT
3661	016450	000000			RSTPC:	0		
3662	016452	000000			RSTPSW:	0		
3663					.SBTTL	OCTAL DUMP ROUTINE		
3664								
3665	016454	000000	000000	000000	PRINT2:	,WORD	0,0,0,0	
3666	016462	000000						
3667	016464	000	000		PRINT3:	,BYTE	0,0	
3668								
3669	016466	112737	000001	016464	PRINT4:	MOVB	01,PRINT3	SET ZERO FILL SWITCH
3670	016474	000402				BR	,00	

3671	016476	005037	016464	PRINTSI	CLR	PHINT3	ISUPRESS LEADING ZEROIS
3672	016502	112737	177772		MOVB	0=0,PHINT3+1	ISSET COUNV
3673	016510	032737	020000		BIT	00113,SR	
3674	016516	001041			BNE	PRVE	
3675	016520	010446			MOV	X4=0(0)	ISAVE R4
3676	016522	012704	016454		MOV	0PRINT2,X4	ISSET POINTER TO FIRST ASCII CHAR,
3677	016526	105014			CLRB	(4)	ICLEAR FIRST BYTE
3678	016530	000409			BR	PRINTF	IRotate FIRST BIT
3679	016532	105014		PRINTLI	CLRB	(4)	ICLEAR BYTE OF CHARACTER
3680	016534	006105			ROL	TTY	IRotate BIT INTO C
3681	016536	106114			ROLB	(4)	IPACK IT
3682	016540	006105			ROL	TTY	IRotate BIT INTO C
3683	016542	106114			ROLB	(4)	IPACK IT
3684	016544	006105		PRINTFI	ROL	TTY	IRotate BIT INTO C
3685	016546	106114			ROLB	(4)	IPACK IT
3686	016550	105714			TSYB	(4)	
3687	016552	001402			BEQ	,0	
3688	016554	105237	016464		INCB	PRINT3	
3689	016560	105737	016464		TSYB	PRINT3	ICHECK FILL SWITCH
3690	016564	001402			BEQ	,0	
3691	016566	152724	000060		DISB	010,(4)+	IMAKE INTO ASCII CHAR
3692	016572	105237	016465		INCB	PRINT3+1	
3693	016576	001355			BNE	PRINTL	IREPEAT
3694	016600	022704	016454		CHP	0PRINT2,X4	
3695	016604	001002			BNE	,0	
3696	016606	112724	000060		MOVB	010,(4)+	
3697	016612	105014			CLRB	(4)	
3698	016614	000004	016454		TYPE	,PRINT2	ITYPE IT
3699	016620	012604			MOV	(0 +,X4	IRESTORE R5
3700	016622	000207		PRPEI	RTS	X7	
3701					ITTY MATCH DOG FOR CONTROL C		
3702		000003			CNPLC=3		IASCII CONTROL C
3703							
3704	016624	117727	162550	TTYII	MOVB	0TKB,(PC)+	ISAVE CHAR
3705	016630	000000		SCHAR:	B		IMERE
3706	016632	042737	000200		BIC	0200,00SCHAR	ISEVEN LEVEL ASCII
3707	016640	122737	000003		CHPB	0CITLC,00SCHAR	ICHECK FOR CONTROL C
3708	016646	001004			BNE	TTYIB	
3709	016650	000004	016674		TYPE	,ALC ITYPE CONTROL C	
3710	016654	000137	012520		JMP	00MON1,0	
3711	016660	004737	016204	TTYI0:	JSR	PC TTYPLG	
3712	016664	113777	016630		MOVB	00SCHAR,0TPB	IECHO CHARACTER
3713	016672	000002			RTI		
3714							
3715	016674	041536	000	ACLCI	,ASCIZ	<136><103>	
3716		016700		,EVEN			
3717							
3718		017000		,0,1377+1			IFORM MOD(400) BOUNDRY
3719							
3720		017000		DSYADRS=,			IDEFAULT DST
3721							
3722	017000	000			,BYTE	0	ITIO
3723	017001	000			,BYTE	0	IWRITE
3724	017002	000			,BYTE	0	IREAD

3725	017003	014	,BYTE	CEIDE	INOP		
3726	017004	000	,BYTE	B	ISENSE		
3727							
3728	017005	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3729	017006	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3730	017007	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3731	017010	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3732	017011	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3733	017012	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3734	017013	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3735	017014	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3736	017015	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3737	017016	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3738	017017	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3739	017020	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3740	017021	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3741	017022	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3742	017023	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3743	017024	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3744	017025	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3745	017026	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3746	017027	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3747	017030	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3748	017031	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3749	017032	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3750	017033	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3751	017034	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3752	017035	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3753	017036	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3754	017037	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3755	017040	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3756	017041	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3757	017042	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3758	017043	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3759	017044	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3760	017045	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3761	017046	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3762	017047	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3763	017050	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3764	017051	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3765	017052	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3766	017053	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3767	017054	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3768	017055	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3769	017056	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3770	017057	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3771	017060	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3772	017061	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3773	017062	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3774	017063	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3775	017064	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3776	017065	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3777	017066	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3778	017067	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK

3779	017070	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3780	017071	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3781	017072	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3782	017073	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3783	017074	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3784	017075	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3785	017076	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3786	017077	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3787	017100	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3788	017101	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3789	017102	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3790	017103	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3791	017104	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3792	017105	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3793	017106	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3794	017107	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3795	017110	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3796	017111	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3797	017112	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3798	017113	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3799	017114	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3800	017115	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3801	017116	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3802	017117	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3803	017120	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3804	017121	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3805	017122	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3806	017123	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3807	017124	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3808	017125	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3809	017126	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3810	017127	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3811	017130	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3812	017131	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3813	017132	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3814	017133	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3815	017134	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3816	017135	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3817	017136	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3818	017137	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3819	017140	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3820	017141	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3821	017142	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3822	017143	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3823	017144	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3824	017145	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3825	017146	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3826	017147	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3827	017150	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3828	017151	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3829	017152	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3830	017153	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3831	017154	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3832	017155	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK

3833	017156	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3834	017157	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3835	017160	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3836	017161	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3837	017162	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3838	017163	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3839	017164	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3840	017169	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3841	017166	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3842	017167	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3843	017170	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3844	017171	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3845	017172	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3846	017173	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3847	017174	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3848	017175	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3849	017176	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3850	017177	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3851	017200	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3852	017201	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3853	017202	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3854	017203	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3855	017204	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3856	017205	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3857	017206	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3858	017207	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3859	017210	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3860	017211	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3861	017212	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3862	017213	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3863	017214	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3864	017215	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3865	017216	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3866	017217	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3867	017220	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3868	017221	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3869	017222	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3870	017223	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3871	017224	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3872	017225	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3873	017226	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3874	017227	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3875	017230	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3876	017231	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3877	017232	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3878	017233	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3879	017234	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3880	017235	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3881	017236	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3882	017237	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3883	017240	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3884	017241	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3885	017242	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3886	017243	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK

3887	017244	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3888	017245	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3889	017246	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3890	017247	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3891	017250	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3892	017251	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3893	017252	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3894	017253	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3895	017254	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3896	017255	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3897	017256	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3898	017257	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3899	017260	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3900	017261	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3901	017262	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3902	017263	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3903	017264	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3904	017265	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3905	017266	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3906	017267	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3907	017270	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3908	017271	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3909	017272	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3910	017273	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3911	017274	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3912	017275	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3913	017276	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3914	017277	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3915	017300	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3916	017301	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3917	017302	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3918	017303	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3919	017304	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3920	017305	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3921	017306	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3922	017307	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3923	017310	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3924	017311	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3925	017312	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3926	017313	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3927	017314	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3928	017315	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3929	017316	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3930	017317	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3931	017320	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3932	017321	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3933	017322	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3934	017323	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3935	017324	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3936	017325	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3937	017326	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3938	017327	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3939	017330	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK
3940	017331	002	,BYTE	UC	ILLEGAL	,UNIT	CHECK

3941	#17332	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3942	#17333	072	.BYTE	UC	ILLEGAL	UNIT	CHECK
3943	#17334	0F2	.BYTE	UC	ILLEGAL	UNIT	CHECK
3944	#17335	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3945	#17336	072	.BYTE	UC	ILLEGAL	UNIT	CHECK
3946	#17337	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3947	#17343	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3948	#17341	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3949	#17342	072	.BYTE	UC	ILLEGAL	UNIT	CHECK
3950	#17343	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3951	#17344	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3952	#17345	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3953	#17346	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3954	#17347	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3955	#17350	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3956	#17351	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3957	#17352	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3958	#17353	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3959	#17354	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3960	#17355	0F2	.BYTE	UC	ILLEGAL	UNIT	CHECK
3961	#17356	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3962	#17357	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3963	#17360	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3964	#17361	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3965	#17362	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3966	#17363	0F2	.BYTE	UC	ILLEGAL	UNIT	CHECK
3967	#17364	072	.BYTE	UC	ILLEGAL	UNIT	CHECK
3968	#17365	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3969	#17366	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3970	#17367	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3971	#17370	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3972	#17371	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3973	#17372	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3974	#17373	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3975	#17374	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3976	#17375	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3977	#17376	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3978	#17377	002	.BYTE	UC	ILLEGAL	UNIT	CHECK
3979			.EVEN				
3980							
3981	#17400		T,PCW11				
3982	#17400	000012	.BLKW	10'			
3983							
3984	#17424		T,PCW21				
3985	#17424	000012	.BLKW	10'			
3986							
3987	#17450		T,PCW31				
3988	#17450	000012	.BLKW	10'			
3989							
3990			.SOFTL	MESSAGES			
3991		000012	LF=12				
3992		000015	CR=15				
3993	#17474		HEADER1				
3994			10	HEADER TEXT MOD			

3995
 3996

(1) 017474 046537 044501 042116
 (1)
 (1)
 (1)
 (1) 017567 137 047506 020122
 (1) 017634 051537 042505 050040
 (1) 017670 057537 044504 041523
 (1) 017741 137 047503 047116
 (1) 017774 052137 051110 053517
 (1) 020027 137 052137 050131
 (1) 020069 137 020040 020040
 (1) 020127 137 020040 020040
 (1) 020165 137 020040 020040
 (1)
 (1)
 (1) 020231 137 042137 050094
 (1)
 (1) 020245 137 040502 042523
 (1) 020265 137 042504 044526
 (1) 020307 137 042524 052123
 (1) 020326 052137 050131 020105
 (1) 020420 040537 051104 035123
 (1) 020430 051537 052105 051440
 (1) 020449 137 044514 052123
 (1) 020500 041537 040517 040515
 (1) 020512 042137 020130 051120
 (1) 020537 137 036440 044440
 (1)
 (1)
 (1) 020555 137 042522 051507
 (1) 020611 035 000037
 (1) 020614 000207
 (1) 020616 042537 042116 052040
 (1) 020630 020137 051105 047522
 (1) 020654 057477 000
 (1) 020657 040 020040 020040
 (1) 020666 000040
 (1) 020670 000137
 (1) 020672 052137 050131 020105
 (1) 020721 137 042537 051122
 (1)
 (1) 020736 042137 042130 035123
 (1) 020748 137 054104 040503
 (1) 020754 042137 041530 035123
 (1) 020763 137 054104 051517
 (1) 020772 042137 041135 035101
 (1) 021001 137 054104 041502
 (1) 021010 042137 040530 035117
 (1) 021019 137 054104 044515
 (1) 021026 042137 041530 035102
 (1) 021035 137 054104 042116
 (1) 021044 042137 042530 035123

MOD APR 74
 NLIST BEX
 ,ASCII "MAINDEC-11-D2DXH-C-D ONLINE MAINTENANCE EXERCISER (APR 74) "
 ,ASCII "FOR DYNAMIC SWITCH REGISTER SETTINGS"
 ,ASCII "SEE PROGRAM LISTING PAGE 01"
 ,ASCII "DISCONNECT 'DX11' FROM 300/370 CHANNEL"
 ,ASCII "CONNECT MAINTENANCE CABLES"
 ,ASCII "THROW ENABLE SWITCH ONLINE"
 ,ASCII "TYPE: <D>, DEFAULT PARAMETERS"
 ,ASCII " <P>, PREVIOUS PARAMETERS"
 ,ASCII " <S>, SELECT PARAMETERS"
 ,ASCII " <N>, START THIS TEST NUMBER"
 ,ASCII "MOD, P, S, N"
 ,ASCII "BASE ADDRESS"
 ,ASCII "DEVICES PER CUI"
 ,ASCII "TEST NUMBER"
 ,ASCII "TYPE CU ADRES IN HEX <CR><LF>; <CR><CR> TERMINATES LIST"
 ,ASCII "ADRS"
 ,ASCII "SET SWITCHES"
 ,ASCII "LIST ALL LEGAL COMMANDS"
 ,ASCII "COMMAND"
 ,ASCII "DX PRIORITY LEVEL"
 ,ASCII "ILLEGAL ?"
 ,ASCII "REGSTR - SHOULD BE - WAS"
 ,ASCII "<3><37>"
 ,ASCII "<217>"
 ,ASCII "END TEST"
 ,ASCII "ERRORS DETECTED"
 ,ASCII "70"
 ,ASCII "<4><40><40><40><40><40>"
 ,ASCII "<40>"
 ,ASCII "TYPE IN STALL COUNT"
 ,ASCII "ERROR PCI"
 ,ASCII "DXDS"
 ,ASCII "DXCA"
 ,ASCII "DXCS"
 ,ASCII "DXOS"
 ,ASCII "DXOA"
 ,ASCII "DXOC"
 ,ASCII "DXMO"
 ,ASCII "DXMI"
 ,ASCII "DXCB"
 ,ASCII "DXND"
 ,ASCII "DXES"

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(1) F21053      137 054104 051505 ADXES11 ,ASCIZ "ADXES11 "
(1)                                     )..... MOD APR 74 .....
(1)                                     )..... ERROR TEXT MOD
(1)
(1) F21064      020137 052303 042101 MSG201 ,ASCIZ "CUADRS/HOI"
(1)                                     )..... MOD APR 74 .....
(1) F21101      137 042320 052103 MSG201 ,ASCIZ "VECTOR ADDRESSI "
(1) F21123      137 052123 052101 MSG311 ,ASCIZ "STATUSI "
(1) F21135      137 051105 047522 MSG351 ,ASCIZ "ERROR IN TESTI "
(1) F21156      047537 044522 044507 MSG301 ,ASCIZ "ORIGIN OF MAP ERRORI "
(1) F21205      137 052124 052040 TRCH11 ,ASCIZ "IT TRACE ERROR IN TESTI "
(1) F21237      137 051117 043511 TRCH11 ,ASCIZ "ORIGIN OF LAST TT TRACE UPDATEI "
(1) F21300      041040 051525 020131 ABSYM1 ,ASCIZ "BUSY ENABLE "
(1) F21317      115 040125 044524 AMUXM1 ,ASCIZ "MULTIPLEXER CH"
(1) F21337      137 047105 051124 TRC11 ,ASCIZ "ENTRY WAS I"
(1) F21361      137 047105 051124 TRC21 ,ASCIZ "ENTRY SHOULD BEI"
(1) F21403      137 047105 051124 TTDS1 ,ASCIZ "ENTRY WAS FROM DXDS"
(1) F21430      042537 052110 054522 TTCA1 ,ASCIZ "ENTRY WAS FROM DXCA"
(1)                                     ,LIST BEX
3997
3998                                     ,SBTTL DATA BUFFERS
3999
4000                                     IDATA BUFFER == CONTAINS 0 - 255 IN ONE BYTE ITEMS
4001
4002                                     IDATA FILE FOR CHANNEL SIMULATOR WRITE CHDS
4003                                     ,EVEN
4004
4005 F21456
4006
4007
4008
4009
4010 F21456 000001 NoI
4011        000002 ,WORD N
4012 F21460 000002 ,WORD N
4013        000004 NoN#2
4014 F21462 000004 ,WORD N
4015        000010 NoN#2
4016 F21464 000010 ,WORD N
4017        000020 NoN#2
4018 F21466 000020 ,WORD N
4019        000040 NoN#2
4020 F21470 000040 ,WORD N
4021        000100 NoN#2
4022 F21472 000100 ,WORD N
4023        000200 NoN#2
4024 F21474 000200 ,WORD N
4025        000400 NoN#2
4026 F21476 000400 ,WORD N
4027        001000 NoN#2
4028 F21500 001000 ,WORD N
4029        002000 NoN#2
4030 F21502 002000 ,WORD N
4031        004000 NoN#2

```

4032	F21504	004000	,WORD	N
4033		010000	N=N+2	
4234	021506	010000	,WORD	N
4035		020000	N=N+2	
4036	F21510	020000	,WORD	N
4037		040000	N=N+2	
4238	F21512	040000	,WORD	N
4039		100000	N=N+2	
4040	F21514	100000	,WORD	N
4241		000000	N=N+2	
4242		000002	W+2	
4043	021516	177775	,WORD	=W+1
4244		000004	W+W+W	
4045	021520	177773	,WORD	=W+1
4046		000010	W+W+W	
4247	F21522	177767	,WORD	=W+1
4248		000020	W+W+W	
4049	F21524	177757	,WORD	=W+1
4250		000040	W+W+W	
4251	021526	177737	,WORD	=W+1
4252		000100	W+W+W	
4253	F21530	177677	,WORD	=W+1
4254		000200	W+W+W	
4255	F21532	177577	,WORD	=W+1
4256		000400	W+W+W	
4257	021534	177377	,WORD	=W+1
4258		001000	W+W+W	
4259	F21536	176777	,WORD	=W+1
4260		002000	W+W+W	
4261	021540	175777	,WORD	=W+1
4262		004000	W+W+W	
4263	021542	173777	,WORD	=W+1
4264		010000	W+W+W	
4265	F21544	167777	,WORD	=W+1
4266		020000	W+W+W	
4267	F21546	157777	,WORD	=W+1
4268		040000	W+W+W	
4269	021550	137777	,WORD	=W+1
4270		100000	W+W+W	
4271	021552	077777	,WORD	=W+1
4272		000000	W+W+W	
4273	F21554	177777	,WORD	=W+1
4274		000000	W+W+W	
4275		000001	N+1	
4276	F21556	000001	,WORD	N
4277		000002	N=N+2	
4278	021560	000002	,WORD	N
4279		000004	N=N+2	
4280	F21562	000004	,WORD	N
4281		000010	N=N+2	
4282	F21564	000010	,WORD	N
4283		000020	N=N+2	
4284	F21566	000020	,WORD	N
4285		000040	N=N+2	

4086	F21570	000040	,WORD	N
4087		000100	N=N+2	
4088	F21572	000100	,WORD	N
4089		000200	N=N+2	
4090	F21574	000200	,WORD	N
4091		000400	N=N+2	
4092	F21576	000400	,WORD	N
4093		001000	N=N+2	
4094	F21600	001000	,WORD	N
4095		002000	N=N+2	
4096	F21602	002000	,WORD	N
4097		004000	N=N+2	
4098	F21604	004000	,WORD	N
4099		010000	N=N+2	
4100	F21606	010000	,WORD	N
4101		020000	N=N+2	
4102	F21610	020000	,WORD	N
4103		040000	N=N+2	
4104	F21612	040000	,WORD	N
4105		100000	N=N+2	
4106	F21614	100000	,WORD	N
4107		000000	N=N+2	
4108		000002	W+2	
4109	F21616	177775	,WORD	W+1
4110		000004	W+W+W	
4111	F21620	177773	,WORD	W+1
4112		000010	W+W+W	
4113	F21622	177767	,WORD	W+1
4114		000020	W+W+W	
4115	F21624	177757	,WORD	W+1
4116		000040	W+W+W	
4117	F21626	177737	,WORD	W+1
4118		000100	W+W+W	
4119	F21630	177677	,WORD	W+1
4120		000200	W+W+W	
4121	F21632	177577	,WORD	W+1
4122		000400	W+W+W	
4123	F21634	177377	,WORD	W+1
4124		001000	W+W+W	
4125	F21636	176777	,WORD	W+1
4126		002000	W+W+W	
4127	F21640	175777	,WORD	W+1
4128		004000	W+W+W	
4129	F21642	173777	,WORD	W+1
4130		010000	W+W+W	
4131	F21644	167777	,WORD	W+1
4132		020000	W+W+W	
4133	F21646	157777	,WORD	W+1
4134		040000	W+W+W	
4135	F21650	137777	,WORD	W+1
4136		100000	W+W+W	
4137	F21652	077777	,WORD	W+1
4138		000000	W+W+W	
4139	F21654	177777	,WORD	W+1

4140		000000	W=H+W	
4141		000001	N=1	
4142	021656	000001	,WORD	N
4143		000002	N=N+2	
4144	021660	000002	,WORD	N
4145		000004	N=N+2	
4146	021662	000004	,WORD	N
4147		000010	N=N+2	
4148	021664	000010	,WORD	N
4149		000020	N=N+2	
4150	021666	000020	,WORD	N
4151		000040	N=N+2	
4152	021670	000040	,WORD	N
4153		000100	N=N+2	
4154	021672	000100	,WORD	N
4155		000200	N=N+2	
4156	021674	000200	,WORD	N
4157		000400	N=N+2	
4158	021676	000400	,WORD	N
4159		001000	N=N+2	
4160	021700	001000	,WORD	N
4161		002000	N=N+2	
4162	021702	002000	,WORD	N
4163		004000	N=N+2	
4164	021704	004000	,WORD	N
4165		010000	N=N+2	
4166	021706	010000	,WORD	N
4167		020000	N=N+2	
4168	021710	020000	,WORD	N
4169		040000	N=N+2	
4170	021712	040000	,WORD	N
4171		100000	N=N+2	
4172	021714	100000	,WORD	N
4173		000000	N=N+2	
4174		000002	W=2	
4175	021716	177775	,WORD	W=1
4176		000004	W=H+W	
4177	021720	177773	,WORD	W=1
4178		000010	W=H+W	
4179	021722	177767	,WORD	W=1
4180		000020	W=H+W	
4181	021724	177757	,WORD	W=1
4182		000040	W=H+W	
4183	021726	177737	,WORD	W=1
4184		000100	W=H+W	
4185	021730	177677	,WORD	W=1
4186		000200	W=H+W	
4187	021732	177577	,WORD	W=1
4188		000400	W=H+W	
4189	021734	177377	,WORD	W=1
4190		001000	W=H+W	
4191	021736	176777	,WORD	W=1
4192		002000	W=H+W	
4193	021740	175777	,WORD	W=1

4194		004000	W+W+W	
4195	P21742	173777	,WORD	=W=1
4196		010000	W+W+W	
4197	P21744	107777	,WORD	=W=1
4198		P20000	W+W+W	
4199	P21746	197777	,WORD	=W=1
4200		040000	W+W+W	
4201	P21750	137777	,WORD	=W=1
4202		100000	W+W+W	
4203	P21752	077777	,WORD	=W=1
4204		000000	W+W+W	
4205	P21754	177777	,WORD	=W=1
4206		000000	W+W+W	
4207		000001	N=1	
4208	P21756	000001	,WORD	N
4209		000002	N=N=2	
4210	P21760	000002	,WORD	N
4211		000004	N=N=2	
4212	P21762	000004	,WORD	N
4213		000010	N=N=2	
4214	P21764	000010	,WORD	N
4215		000020	N=N=2	
4216	P21766	000020	,WORD	N
4217		000040	N=N=2	
4218	P21770	000040	,WORD	N
4219		000100	N=N=2	
4220	P21772	000100	,WORD	N
4221		000200	N=N=2	
4222	P21774	000200	,WORD	N
4223		000400	N=N=2	
4224	P21776	000400	,WORD	N
4225		001000	N=N=2	
4226	P22000	001000	,WORD	N
4227		002000	N=N=2	
4228	P22002	002000	,WORD	N
4229		004000	N=N=2	
4230	P22004	004000	,WORD	N
4231		010000	N=N=2	
4232	P22006	010000	,WORD	N
4233		020000	N=N=2	
4234	P22010	020000	,WORD	N
4235		040000	N=N=2	
4236	P22012	040000	,WORD	N
4237		100000	N=N=2	
4238	P22014	100000	,WORD	N
4239		000000	N=N=2	
4240		000002	W=2	
4241	P22016	177775	,WORD	=W=1
4242		000004	W+W+W	
4243	P22020	177773	,WORD	=W=1
4244		000010	W+W+W	
4245	P22022	177767	,WORD	=W=1
4246		000020	W+W+W	
4247	P22024	177757	,WORD	=W=1

4248		000040	W=H+W	
4249	022026	177737	,WORD	=W=1
4250		000100	W=H+W	
4251	022030	177677	,WORD	=W=1
4252		000200	W=H+W	
4253	022032	177577	,WORD	=W=1
4254		000400	W=H+W	
4255	022034	177377	,WORD	=W=1
4256		001000	W=H+W	
4257	022036	176777	,WORD	=W=1
4258		002000	W=H+W	
4259	022040	175777	,WORD	=W=1
4260		004000	W=H+W	
4261	022042	173777	,WORD	=W=1
4262		010000	W=H+W	
4263	022044	167777	,WORD	=W=1
4264		020000	W=H+W	
4265	022046	157777	,WORD	=W=1
4266		040000	W=H+W	
4267	022050	137777	,WORD	=W=1
4268		100000	W=H+W	
4269	022052	077777	,WORD	=W=1
4270		000000	W=H+W	
4271	022054	177777	,WORD	=W=1
4272		000000	W=H+W	
4273				
4274		022056		
4275	022056	000000		
4276		023056		
4277				
4278		000001		

,B: INDICATE ADDRESS OF END OF BUFFER
 WDATA: B BEGINNING OF WRITE DATA FILE
 NPRODATA=WDATA+512, INPR INPUT DATA FILE
 ,WDATA AND NPRODATA OVER WRITE ASCII TEXT
 ,END

[illegible]

0193	=	000010	8550												
0194	=	000020	8540												
0195	=	000040	8530												
0196	=	000100	8520												
0197	=	000200	8510												
0198	=	000400	8500												
0199	=	001000	8490												
BSY	=	000020	7220	0030	2379										
BSVEN	=	004000	7020	1909	1906	2046									
BSYS	=	000400	6060												
BUSI	=	001342	10440	1122	1648	2260	2309	2327	2379	2393	2466	2511	3455		
BUS0	=	001336	10390	17570	1750	21070	21110	2207	22650	2266	22700	2271	2290	2345	2359
			3452												
BUS00	=	001352	10530												
BYPAS	=	000100	7650												
CA	=	000002	7920												
CARG	=	016140	3561	3963	39770										
CARGH	=	015650	3490	3492	39070										
CARRY	=	014004	29900												
CB	=	000020	7990												
CE	=	000010	8770	1122	2072	3103	3729								
CHDEND	=	000040	6090												
CHEND	=	000010	7230												
CHENDS	=	001000	6090	1909	1695	1023									
CHIS	=	000200	6070	1497	1922	1943	1559	1021	1034	1730	1742				
CKCUA	=	015130	2004	2913	33420										
CKC1	=	015134	33430	3360											
CKC2	=	015136	33440	33490											
CKC3	=	015144	33500												
CKC4	=	015166	3354	33500											
CLK0	=	001000	7520												
CLAMO	=	015364	34000												
CL1	=	014972	32220	3224											
CMD	=	014012	14950	19200	19410	1957	1959	16190	1636	1630	17200	1744	1746	1990	1991
			2092	2270	2271	2209	2203	2310	2344	2503	2505	2509	2520	2530	30020
CMOCHN	=	000004	6920												
CMDO	=	002000	7300	2279	2293	2294	2470	2471	2400	2409	2504	2506	2529	2531	
CMOREJ	=	000001	6940	1922	2200										
CMD,AD	=	014234	2079	31010	3105										
CMD,ST	=	014274	2070	31420	3194	3333									
CNT	=	007412	21400	21490	21590	21600	21700								
CNTLC	=	000003	37020	3707											
CONI	=	001344	10450												
CONO	=	001340	10400	2212	2222	2244	2270								
CONOB	=	001354	10540												
COUNT	=	014046	15490	16270	16930	17360	18210	21010	21120	30260					
CR	=	000015	2025	2091	3629	39920									
CRLF	=	020670	2650	39960											
CS	=	000004	7930												
CS10	=	002000	7030												
CS12	=	010000	7010												
CUADRS	=	014020	2655	29230	20200	29060	2960	2969	30110						
CUAR	=	001326	10290	19500	19600	19760	14370	17020	17450	10300	19920	22050	2206	2304	25210
			25220	3440											

CUBSY	000400	7050																		
CUCR	001330	10300	19590	16300	17460	19910														
CUBEND	000020	6900	1903	1643	1751															
CUDX	000400	7010																		
CUE	000040	8020																		
CUEND	000040	7210																		
CUPDM	040000	6990																		
CUIS,G	010024	24390																		
CUIS,S	010014	1501	1040	1740	2077	24340														
CUIS0	011044	2437	24930																	
CUOR	001334	10350																		
CUSR	001332	10340	20720	2306	3449															
DATA	021456	1629	1630	40050																
DE	000004	0700	1122	2072	3103	3729														
DELAY	006710	20100	2017																	
DEV	014010	1550	1950	1964	1966	1970	1976	1635	1637	1696	1702	1743	1745	1024						
		1030	1909	1992	2199	2200	2205	2206	2208	2265	2350	2359	2304	2393						
		2390	2460	2490	2502	2521	2523	2527	29600	2970	30000									
DEV CNT	014022	29210	29290	2930	29320	2971	30120													
DEVEND	000004	7240																		
DEV,A	014014	29700	29730	29750	2976	30050	31000													
DFLT,C	014154	30740	3104																	
DFLT,S	014214	30990	3193																	
DOPLIN	000002	0730																		
DONE	000200	7060	1062	1065	1913	1910	1917	2035	2059	3422										
DS	000000	7910																		
DSCRSP	000002	7060																		
DSY	001442	11010	19020	20430	20470	2309	31030	3305	3330											
DSYADR	017000	1101	3103	37200																
DSY CNT	014040	30230																		
DSY,SE	015100	2910	33290																	
DS,1	015110	33320	33350																	
DS,2	015116	33340	3330																	
DTMP	011336	25400	29410	2942																
DXBA	001304	10150	19510	16300	19380															
DXBASE	001262	10000	27090	31750	3436															
DXBC	001306	10100	19500	16200	19370															
DXCA	001276	10120	3449																	
DXC9	001314	10190	2102	2100	2227	2353														
DXCS	001300	10130	19520	16310	19410	1902	18650	1913	19160	1917	19050	1906	19930	1994						
		20350	20400	20500	20590	20740	21550	2156	21040	2105	20040	29440	33790	34220						
		34230																		
DXDS	001274	10110	2230	2200	3437															
DXES	001320	10210	20300	26020	33730	33050	3306	3457												
DXES1	001324	10230	3440																	
DXFI	000003	7120	1741																	
DXFO	000009	7130	1952	1631																
DXFRS	000001	7110	2604	3423																
DXFST	000007	7140	2074																	
DXIS	001266	10000	19970	20490	29970	29010	31770													
DXIV	001264	10070	19900	20400	29950	29000	31760													
DXMI	001312	10100	1110	1119	1645	1600	1001	1754	1767	1006	20370	20070	2230	2256						
		2205	2299	2441	2454	2750	2402	2475	3454											
DXMO	001310	10170	1114	16520	1653	10030	1004	16690	1670	16730	1674	16000	1007	1690						

		17610	1762	17880	1789	17940	1795	17990	1799	18110	1812	1815	18170	1818
		19810	20360	20700	20790	21030	20970	21490	21080	21100	2165	21680	2169	21720
		2173	21990	22110	22160	2217	22210	22430	22490	2250	2253	22750	22890	22930
		2294	23220	2323	2326	23300	2331	23390	2349	23440	23580	23630	2364	23670
		2368	23720	2373	23800	2389	23980	2399	24060	2407	2411	24150	2417	24210
		2423	24490	2446	2450	24700	2471	24790	2489	2484	24880	2489	24980	24990
		25000	25010	25020	25030	25040	25050	25060	25130	25140	25150	25230	25240	25250
		25260	25270	25280	25290	25300	25310	25320	25330	26030	34890	3451		
		10220												
		10200												
DXMJB	F01322	10140	11330	21510	2152	33810	3382	3448						
DXND	F01316	10090	1997	2049	20890	2101	31700							
DXOS	001302	7790												
DXPRY	001270	3100	32110											
DXTO	000020	3175	32000											
D,DEV	014562	3177	32120											
D,DXBA	014550	3176	32070											
D,DXIS	014564	3170	32080											
D,DXIV	014552	3170	32080											
D,DXPR	014554	3174	32090											
D,FINS	014546	3174	32090											
D,LEGA	014560	3181	32100											
D,MAX	014556	3179	32090											
E	000013	9240	9290	9300	9310	9320	9330	9340	9390	9360	9370	9380	9390	
EC	000001	14700												
ECM	F20630	2949	39900											
EMOD1	012236	2600	26620											
EMOD2	F12252	2603	26690											
EMTABL	011646	9250	9290	9300	9310	9320	9330	9340	9390	9360	9370	9380	9390	
EMTAG	011620	925	2977	29820										
EMTDEC	011556	959	29900											
EMTOK	011600	2973	29790											
ENDEN	020000	7000												
ENDSTR	001630	11590												
ENDTSY	020616	2940	39900											
ENDTY	F04000	14750	3223											
ENTRY1	006366	14970	15220	15430	15550	15630	15690	16210	16340	16430	16950	17380	17420	17510
		18230	19410	1944	19460	31670								
ENTRY2	006426	19560	19570	19640	19650	19700	19730	19750	16350	16360	16420	16960	16990	17010
		17430	17440	17520	18240	18270	18290	19520	1959	19570	19890	19900	31600	
		25090	25940	26260	2646	26900								
ERPLG	012376	2636	39900											
ERPC	F20721	26270	27100	20000	2051	31730								
ERRCNT	012430	1100	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180
ERRDST	016000	1101	1102	1103	1107	1108	1109	1190	1191	1192	1193	1194	1195	1196
		1197	1198	1199	1200	1201	1202	1206	1207	1208	1209	1210	1211	1212
		1213	1214	1215	1216	1217	1218	1219	1220	1221	1229	1226	1227	1228
		1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1244
		1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257
		1258	1259	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273
		1274	1279	1276	1277	1278	1282	1283	1284	1285	1286	1287	1288	1289
		1290	1291	1292	1293	1294	1295	1296	1297	1301	1302	1303	1304	1305
		1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1320	1321
		1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334
		1335	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350
		1351	1352	1353	1354	1355	1359	1360	1361	1362	1363	1364	1365	1366

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MC2,SM=	000000	20	9	144	344	1903	2907	3233	3720	3979	3993	3996		
MDXX	013216	20560	20570	20580	20590									
MEM,SM=	000000	20	10	374	381	930	1003	1101	1476	2507	3233	3234	3996	
MI	000016	7900												
MISC	001346	10400	3450											
MO	000014	7970												
MONDFL	014314	2733	2751	2772	31660									
MON170	012450	995	27200											
MON1	012664	2757	27720											
MON1,0	012520	990	2009	2944	27420	2759	2905	3324	3406	3557	3710			
MON10	013340	1001	2759	2804	20900									
MON11	013372	992	2904	29100										
MON12	013720	29790												
MON13	013752	2903	29090											
MON14	013776	29090												
MON2	014460	31070	3109											
MON2,0	014500	31920	31900											
MON2,1	014512	31950	3197											
MON2,3	014544	32020												
MON3	012712	2779	27020											
MON4	012734	2700	27910											
MON4,1	012772	2794	20000											
MON5	013156	20450	2050	3356										
MON5,1	013246	20040												
MON6	013060	2003	20100											
MON7	013070	20200	2020	2037										
MON8	013252	20700												
MON9	013266	20010	2092											
MSG10	020500	2001	39900											
MSG12	020512	2000	39900											
MSG13	020537	2036	2049	39960										
MSG2	020245	2702	39900											
MSG26	021064	2053	39900											
MSG20	021101	2791	39900											
MSG3	020265	2049	39900											
MSG31	021123	2007	39900											
MSG35	021135	2040	39900											
MSG36	021156	39960												
MSG4	020326	2010	39900											
MSG5	020307	2700	2773	39960										
MSG6	020420	2020	39900											
MSG7	020430	2001	39900											
MSG9	020447	2000	39900											
N	000000	11040	1109	11040	12030	12220	12410	12000	12700	12900	13170	13360	13550	13740
		13930	14120	10310	14500	14690	14760	1479	14090	1503	15110	1530	15300	1501
		15090	1700	17100	1035	10430	40090	4010	40110	4012	40130	4014	40150	4010
		40170	4010	40190	4020	40210	4022	40230	4024	40250	4026	40270	4020	40290
		4030	40310	4032	40330	4034	40350	4036	40370	4038	40390	4040	40410	40750
		4076	40770	4070	40790	4080	40810	4082	40830	4084	40850	4086	40870	4000
		40890	4090	40910	4092	40930	4094	40950	4096	40970	4098	40990	4100	41010
		4102	41030	4104	41050	4106	41070	4108	4109	4110	41110	4112	41130	4114
		4140	41490	4150	41510	4152	41530	4154	41550	4156	41570	4158	41590	4160
		41610	4162	41630	4164	41650	4166	41670	4168	41690	4170	41710	4172	41730
		42070	4200	42090	4210	42110	4212	42130	4214	42150	4216	42170	4218	42190

		4220	4221#	4222	4223#	4224	4225#	4226	4227#	4228	4229#	423#	4231#	4232
		4233#	4234	4235#	4236	4237#	4238	4239#						
ND	#	000022												
NOCLR	#	015373												
VOP	#	000240												
NOPC	#	000403												
NPRDAT#		023056												
NPRY	#	000020												
NPRYO	#	000040												
NPRX	#	000040												
NXM	#	040000												
OCTNUM		014026												
		2702	2770	2700	2707	2709	2793	2795	2796#	2797	2802	2804#	2805#	2806#
		2807#	2900#	2809	2810#	2811#	2812	2847	2852	2863	2803	2805	2806	2809
		3015#	3950#	3577#										
ODAT	#	014004												
ODAT1	#	014014												
ODAT2	#	014016												
DEF	#	012040												
OFFSET	#	014024												
OLE,SH#		000001												
OL2	#	007316												
OL3	#	007350												
OL4	#	007242												
ONESHO	#	014002												
ONLIN	#	007234												
ONLINA#		001000												
ONLINB#		000004												
OPLI	#	100000												
OPL0	#	100000												
OS	#	000006												
O,ORR	#	006674												
PARA		013376												
		1971	1050	1677	1697	1769	1802	1825	1903	2040	2044	2247	2316	2377
		2436	2907	2659	2602	2011#	2912#	2935#	2936	2938#				
PARER	#	100000												
PARI	#	000400												
PARITY#		104007												
PAR0	#	000400												
PARSTP#		100000												
PC	#	0000007												
		916#	1134#	1135#	1496#	1500#	1521#	1525#	1542#	1546#	1561#	1560#	1570#	1620#
		1624#	1640#	1667#	1704#	1729#	1733#	1740#	1792#	1832#	1879#	1893#	1909#	1930#
		1940	1940#	1951	1963#	1970#	1973#	1999#	2017#	2021#	2042#	2092#	2177#	2190#
		2349#	2420#	2493#	2916#	2834#	2939#	2003#	2600#	2613#	2637#	2642#	2656#	2685#
		2733#	2751#	2772#	2821#	2831#	2852#	2859#	2864#	2910#	2913#	2914#	2915#	2916#
		2917#	2910#	2952#	2061#	2979#	3191#	3202#	3229#	3234#	3242#	3262#	3264#	3266#
		3314#	3329#	3331#	3337#	3343#	3357#	3361#	3374#	3378#	3380#	3391#	3392#	3393#
		3401#	3420#	3427#	3462#	3511#	3509#	3597#	3623#	3704#	3711#			
PCW1	#	104010												
PCW2	#	104011												
PCW3	#	104012												
PERRPC	#	012252												
PFAIL	#	001444												
PFLD	#	001010												
PG2	#	014066												
PG3	#	014700												

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REG1	#01360	10390												
REG2	#01362	10600												
REG3	#01364	10610												
REG4	#01366	10620												
REG5	#01370	10630												
REG6	#01372	10640												
REG7	#01374	10650												
RELOD	#12634	2740	27690											
REQ1	#20000	7400	2441	2450										
RESRES	#15376	1134	3374	3300	34200									
RETURN	#11454	1147	14090	15090	15360	15070	17140	10410	2559	25560	25610	2007	25070	25000
		31740												
RSTPC	#16450	36490	3059	36610										
RSTPSW	#16452	36500	3050	36620										
RSTRG	#104004	9330	1131											
RS'1	#15440	34300	3441											
RTX	#06706	9730	9790	902	20110									
RUBOUM	#15642	3400	3494	35050	3519									
RUBOUT	#16132	3559	3569	3567	35750									
R0	#X000000	9070	2020	26720	2749	2753	2756	2750	2029	2091	2903	29570	2961	29020
		29060	2907	2909	31040	3107	3100	31930	3199	3232	32330	32370	32410	32910
		3294	3299	33060	3307	3309	3310	33420	3349	3350	3359	34360	3430	34390
		34050	3467	3460	3401	3404	3407	3409	3491	3493	3495	34970	3502	35000
		3514	35200	3552	3555	3550	3560	3562	3564	3566	35600	3572	35700	35070
		35900												
R1	#X000001	9000	10290	1640	1651	17400	1757	1750	1770	17750	1777	1700	1702	1700
		1004	10000	10000	10920	1090	19000	1907	19000	1926	19270	1920	1934	1937
		1930	19470	1940	19500	1959	19610	1967	1970	19720	2107	2302	23030	23040
		23050	2300	2309	23120	2615	2629	26730	31090	31070	31400	31940	31950	32210
		32220	3223	32920	32940	34950	32970	32900	33020	33040	3307	33120	33100	3319
		33300	33340	34370	34300	3440	34060	34670	34600	34690	3400	34020	34900	34990
		35000	35010	35020	3507	35090	3551	35530	35690	35700	35710	35720	3577	35790
R2	#X000002	9090	17390	1771	1772	17760	1777	1701	1902	1907	1005	10070	10090	10910
		1099	19010	19050	19070	2630	26740	33050	3316	33330	3334	3479	35100	35130
		3514	35100	3517	3520									
R3	#X000003	9100	2031	26750	20190	20230	20300	20790	20060	20930				
R4	#X000004	9110	2032	26760	20700	22090								
R5	#X000005	9120	2033	26770	34430	3265	3406	3470	3472	34730				

SCP2	F04110	1509	1510#														
SCP3	F04210	1530	1937#														
SCP4	004520	1507	1500#														
SCP5	005260	1714	1715#														
SCP6	006110	1041	1042#														
SDAPG	014052	3203#	3264	3277#	3279#												
SEL1	■ F40000	7450															
SEL0	■ F20000	733#	1114	2030	2070	2221	2249	2257	2322	2323	2372	2373	2400	2411			
		2445	2440	2479	2484	2500	2513	2525									
SELRSY	F20000	000#	003														
SEL'DO	006262	1912#	1990														
SEL'IS	011204	2520#															
SEL'X	006540	1920	1977#														
SENRY1	006360	1939#	1940	1943													
SENRY2	006420	1950#	1951	1954													
SENSEC	000004	007#	1941	3000													
SESW	■ F10000	0900															
SETUP	006730	2034#															
SH	■ 000100	0010	1902	2043													
SOSIEN	000004	777#															
SP	■ F000000	0150	967#	976#	977#	981#	990#	1146	1077#	1004#	1005#	1091	1092	1098#			
		1099#	1907	1900	1920#	1920#	1972	2004	2302#	2312	2553	2554	2550	2596#			
		2599	2001#	2604	2606#	2609	2011#	2014	2039	2040#	2043	2049#	2092	2094#			
		2657	2000#	2931#	2945#	2950#	2953	3232#	3241	3262	3201#	3322	3350#	3479#			
		3400#	3401#	3500	3509	3510	3551#	3552#	3570	3579							
SPACE	020666	3990#															
SPAC4	020697	3990#															
SPW	001436	1093#	1133	2151	2152	3199#	3290	3304	3301	3302							
SPW,SE	014742	2914	3290#														
SP',0	014752	3294#	3300														
SP',1	015010	3300#	3320														
SP',2	015014	3307#	3311														
SP',3	015036	3300	3310#														
SP',4	015042	3315#	3317#														
SP',5	F15044	3310#	3310														
SP',6	015054	3313	3319#														
SP',7	015076	3321	3329#														
SP1	007004	2041	2043#														
SP2	007034	2045	2040#														
SP4	007062	2052#															
SR	■ 177570	922#	996	2545	2547	2634	2644	2666	2670	3001	3673						
SRCCNY	014036	3022#															
SRV1	■ 002000	791#	1049	1660	1681	1954	1967	1006									
SRVJ	■ 001000	739#	1052	1653	1669	1070	1073	1074	1690	1761	1762	1794	1795	1798			
		1799	1019	1017	1010	2079	2083	2097	2099	2100	2110	2100	2109	2172			
		2173	2330	2331	2339	2340	2514	2515	2532	2533							
SSVAT	014034	1551	3021#														
STAI	■ 004000	750#	1119	2299													
STALL	020672	3990#															
STAMOD	000100	720#	2370														
START	000200	0030															
STATUS	007064	1570	1704	1032	2050#												
STKSTA	000040	700#															
STKSTB	000002	6930															

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TYNDX	001353	18490	1963											
TYRACE	006526	1927	19710	31690	34240									
TYSHOU	006536	19440	19550	19750	2612									
TYTNDX	001434	18880												
TYWAS	006534	19430	19540	19740	2607									
TTY	006534	9130	2590	25970	25990	2601	26020	26040	2606	26070	26090	2611	26120	26140
		2640	26410	26430	2649	2650	26520	2654	26550	26570	2658	26510	26530	3603
		36040	3609	3607	3609	3611	3615	36170	3618	36190	36210	36240	36000	36020
		36040												
TYVFLG	016204	3509	35940	3623	3711									
TYVI	016624	2735	37040											
TYVIE	016660	3700	37110											
TYZERO	006226	18970	3392											
TYZ1	006242	19020	1900											
TYCLR	014566	2915	32200											
TYTRA	006320	19240												
TYTP	006430	19530												
TYT1	006470	1900	19620											
TYT2	006500	19020	19640	19650	19660	1967								
TYPE	006004	9100	1139	2595	2600	2605	2610	2617	2619	2636	2640	2653	2658	2661
		2664	2737	2739	2747	2760	2773	2782	2791	2800	2810	2820	2836	2845
		2849	2880	2881	2887	2901	2926	2948	2949	3323	3355	3505	3575	3690
		3709												
YACCE	016030	934	39490											
YERRO	012034	920	26250											
YKEY	016152	935	35040											
YMAPE	011670	930	25000											
YPARI	014646	936	32610											
YPCW1	017400	937	37010											
YPCW2	017424	938	37040											
YPCW3	017450	939	37070											
YRSTR	016412	933	36490											
YSAVR	016350	932	36390											
YTRAC	011704	931	25930											
UC	006002	8700	3109	3106	3107	3108	3109	3110	3111	3112	3113	3114	3115	3933
		3534	3535	3536	3537	3538	3539	3540	3720	3729	3730	3731	3732	3733
		3734	3735	3736	3737	3738	3739	3740	3741	3742	3743	3744	3745	3746
		3747	3748	3749	3750	3751	3752	3753	3754	3755	3756	3757	3758	3759
		3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770	3771	3772
		3773	3774	3775	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785
		3786	3787	3788	3789	3790	3791	3792	3793	3794	3795	3796	3797	3798
		3799	3800	3801	3802	3803	3804	3805	3806	3807	3808	3809	3810	3811
		3812	3813	3814	3815	3816	3817	3818	3819	3820	3821	3822	3823	3824
		3825	3826	3827	3828	3829	3830	3831	3832	3833	3834	3835	3836	3837
		3838	3839	3840	3841	3842	3843	3844	3845	3846	3847	3848	3849	3850
		3851	3852	3853	3854	3855	3856	3857	3858	3859	3860	3861	3862	3863
		3864	3865	3866	3867	3868	3869	3870	3871	3872	3873	3874	3875	3876
		3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887	3888	3889
		3890	3891	3892	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902
		3903	3904	3905	3906	3907	3908	3909	3910	3911	3912	3913	3914	3915
		3916	3917	3918	3919	3920	3921	3922	3923	3924	3925	3926	3927	3928
		3929	3930	3931	3932	3933	3934	3935	3936	3937	3938	3939	3940	3941
		3942	3943	3944	3945	3946	3947	3948	3949	3950	3951	3952	3953	3954
		3955	3956	3957	3958	3959	3960	3961	3962	3963	3964	3965	3966	3967

		3968	3969	3970	3971	3972	3973	3974	3975	3976	3977	3978		
UCHECK=	03F0F2	725#												
UCMKS =	F020F3	684#	1522											
UEXCEP=	F00J01	726#												
VLUMEX	013124	2032#	2033#	2034	2055									
W	= F0F000	4042#	4043	4044#	4045	4046#	4047	4048#	4049	4050#	4051	4052#	4053	4054#
		4055	4056#	4057	4058#	4059	4060#	4061	4062#	4063	4064#	4065	4066#	4067
		4068#	4069	4070#	4071	4072#	4073	4074#	4075	4076#	4077	4078#	4079	4080#
		4114#	4115	4116#	4117	4118#	4119	4120#	4121	4122#	4123	4124#	4125	4126#
		4127	4128#	4129	4130#	4131	4132#	4133	4134#	4135	4136#	4137	4138#	4139
		4140#	4141	4142#	4143	4144#	4145	4146#	4147	4148#	4149	4150#	4151	4152#
		4153	4154#	4155	4156#	4157	4158#	4159	4160#	4161	4162#	4163	4164#	4165
		4166#	4167	4168#	4169	4170#	4171	4172#	4173	4174#	4175	4176#	4177	4178#
		4179	4180#	4181	4182#	4183	4184#	4185	4186#	4187	4188#	4189	4190#	4191
		4192	4193#	4194	4195#	4196	4197#	4198	4199#	4200	4201#	4202	4203#	4204
		4205	4206#	4207	4208#	4209	4210#	4211	4212#	4213	4214#	4215	4216#	4217
		4218	4219#	4220	4221#	4222	4223#	4224	4225#	4226	4227#	4228	4229#	4230
		4231	4232#	4233	4234#	4235	4236#	4237	4238#	4239	4240#	4241	4242#	4243
		4244	4245#	4246	4247#	4248	4249#	4250	4251#	4252	4253#	4254	4255#	4256
		4257	4258#	4259	4260#	4261	4262#	4263	4264#	4265	4266#	4267	4268#	4269
		4270	4271#	4272	4273#	4274	4275#	4276	4277	4278#	4279	4280#	4281	4282#
		4283	4284#	4285	4286#	4287	4288#	4289	4290#	4291	4292#	4293	4294#	4295
		4296	4297#	4298	4299#	4300	4301#	4302	4303#	4304	4305#	4306	4307#	4308
		4309	4310#	4311	4312#	4313	4314#	4315	4316#	4317	4318#	4319	4320#	4321
		4322	4323#	4324	4325#	4326	4327#	4328	4329#	4330	4331#	4332	4333#	4334
		4335	4336#	4337	4338#	4339	4340#	4341	4342#	4343	4344#	4345	4346#	4347
		4348	4349#	4350	4351#	4352	4353#	4354	4355#	4356	4357#	4358	4359#	4360
		4361	4362#	4363	4364#	4365	4366#	4367	4368#	4369	4370#	4371	4372#	4373
		4374	4375#	4376	4377#	4378	4379#	4380	4381#	4382	4383#	4384	4385#	4386
		4387	4388#	4389	4390#	4391	4392#	4393	4394#	4395	4396#	4397	4398#	4399
		4400	4401#	4402	4403#	4404	4405#	4406	4407#	4408	4409#	4410	4411#	4412
		4413	4414#	4415	4416#	4417	4418#	4419	4420#	4421	4422#	442		

CROSS REFERENCE TABLE

[illegible]

ADD	981	1877	1966	2389	2977	2796	2857	2928	2939	2967	2973	2988	3281	3281	3298
	3439	3629													
ASL	1965	2884	2885	2886	2887	2888	2986	3297	3498	3499	3582	3581	3589	3578	3571
ASLB	3269	3273													
BEQ	989	997	1115	1123	1972	1649	1661	1675	1682	1688	1691	1698	1759	1768	1778
	1783	1802	1807	1813	1819	1826	1870	1903	1918	1931	1935	1942	1953	1968	1984
	2041	2045	2153	2174	2189	2281	2287	2236	2245	2248	2251	2254	2261	2267	2272
	2282	2286	2291	2299	2387	2318	2319	2321	2324	2327	2341	2346	2368	2378	2388
	2385	2398	2394	2408	2408	2412	2424	2437	2459	2467	2476	2481	2485	2498	2518
	2512	2551	2647	2668	2663	2667	2779	2757	2779	2788	2794	2883	2884	2958	2972
	3388	3321	3383	3488	3498	3492	3515	3559	3561	3563	3686	3688	3618	3612	3687
	3698														
BGE	2937														
BGF	3496	3567													
BHIS	3354														
BIC	1516	1673	1686	1798	1811	1817	1869	1878	1916	1981	2035	2036	2037	2039	2059
	2078	2883	2899	2118	2111	2172	2443	2249	2265	2269	2293	2384	2322	2339	2344
	2388	2398	2486	2421	2479	2488	2501	2582	2585	2586	2513	2515	2522	2526	2527
	2538	2531	2533	2941	2976	2882	2811	2833	2859	2938	3238	3279	3295	3422	3497
	3568	3598	3786												
BIS	1527	1552	1631	1852	1663	1669	1741	1757	1761	1788	1794	1866	1985	1993	2038
	2046	2858	2874	2379	2897	2187	2188	2155	2188	2184	2199	2211	2216	2221	2278
	2275	2338	2358	2363	2367	2372	2415	2445	2478	2498	2499	2588	2583	2584	2514
	2521	2523	2524	2525	2528	2529	2532	2684	2744	2812	3277	3385	3582	3572	
BISB	3691														
BIT	996	1114	1116	1119	1971	1645	1653	1656	1688	1664	1678	1674	1677	1681	1687
	1698	1697	1754	1762	1765	1767	1772	1789	1795	1799	1882	1886	1812	1815	1818
	1825	1862	1875	1913	1917	1983	1988	1994	2048	2044	2092	2156	2162	2165	2169
	2173	2185	2188	2217	2227	2235	2238	2247	2258	2253	2256	2288	2285	2294	2299
	2316	2323	2326	2331	2348	2353	2364	2368	2373	2377	2389	2487	2411	2417	2423
	2436	2441	2446	2458	2454	2458	2482	2471	2475	2488	2484	2489	2587	2545	2547
	2615	2634	2644	2659	2662	2666	2878	3386	3681	3673					
BIBB	2212	2222	2244	2278											
BLE	2835	2931													
BLOS	2573														
BLP	3328	3494	3565												
BMI	3276														
BNE	994	1117	1128	1138	1646	1654	1657	1665	1671	1678	1685	1694	1755	1763	1766
	1773	1798	1796	1883	1818	1822	1863	1898	1988	1914	1929	1968	1987	1995	2028
	2093	2182	2113	2158	2157	2161	2163	2166	2178	2186	2213	2218	2223	2229	2239
	2257	2277	2388	2317	2332	2354	2369	2369	2374	2418	2442	2447	2451	2455	2463
	2472	2588	2543	2548	2548	2616	2635	2645	2758	2754	2759	2826	2848	2892	2984
	2934	2983	3189	3197	3224	3248	3274	3388	3311	3318	3336	3368	3387	3441	3471
	3485	3518	3556	3682	3674	3693	3695	3788							
BPL	2538	3586	3596	3614											
BR	988	1574	1788	1828	1933	2183	2382	2618	2621	2752	2763	2837	2858	2924	2974
	3278	3313	3583	3988	3919	3921	3973	3976	3616	3628	3622	3678	3678		
BVC	3278														
CLR	976	984	991	1139	1888	1946	1947	1957	1958	1962	2051	2087	2557	2626	2683
	2988	3167	3168	3171	3172	3173	3222	3234	3266	3343	3373	3379	3488	3478	3482
	3513	3558	3553	3671											
CLRB	2847	3677	3679	3697											
CHP	1928	1948	1951	1959	2884	2152	2558	2646	2834	2938	2933	2936	2971	3188	3223
	3299	3387	3318	3319	3359	3382	3448	3478	3684						

CMPB	1122	1648	1758	1777	1782	1967	2288	2286	2267	2271	2386	2389	2359	2379	2384
	2393	2466	2542	2572	2749	2753	2756	2758	2825	2891	2983	3358	3484	3487	3489
	3491	3493	3495	3514	3817	3555	3558	3568	3582	3584	3566	3685	3689	3611	3787
COM	3271														
COMB	2858														
DEC	993	1137	1684	1693	1889	1821	1889	1985	2019	2181	2112	2149	2188	2818	2854
	3196	3317	3335												
EMT	929	938	931	932	933	934	935	936	937	938	939				
HALT	675	1125	2678	3398											
INC	2549	2627	2929	2984	3469	3516	3617								
INCB	3239	3688	3692												
IOF	918														
JMP	963	992	995	998	1881	1147	1853	2885	2544	2555	2579	2598	2687	2755	2985
	2989	3324	3486	3557	3718										
JSR	1134	1496	1588	1921	1925	1542	1546	1561	1588	1578	1628	1624	1648	1784	1729
	1733	1748	1832	2842	2877	2598	2883	2688	2613	2642	2651	2656	2685	2733	2751
	2772	2821	2884	2913	2914	2915	2116	2917	2918	2952	2961	2979	3374	3378	3388
	3391	3392	3426	3443	3589	3623	3711								
MOV	967	968	973	974	975	977	979	982	983	999	1888	1112	1113	1138	1132
	1133	1148	1483	1484	1485	1495	1797	1498	1499	1587	1588	1589	1528	1522	1523
	1524	1534	1535	1538	1841	1543	1544	1545	1549	1558	1551	1555	1588	1583	1587
	1569	1577	1585	1588	1887	1619	1821	1822	1823	1827	1828	1829	1838	1834	1839
	1843	1844	1867	1899	1783	1712	1713	1714	1728	1738	1731	1732	1736	1737	1738
	1739	1748	1742	1747	1751	1753	1792	1823	1831	1839	1848	1841	1884	1885	1886
	1887	1891	1892	1898	1899	1888	1781	1987	1988	1928	1926	1927	1938	1943	1944
	1948	1954	1955	1961	1978	1972	1997	1998	2817	2848	2849	2148	2151	2159	2382
	2312	2539	2552	2554	2556	2869	2571	2578	2589	2594	2596	2597	2599	2681	2682
	2684	2686	2687	2689	2611	2612	2614	2628	2629	2638	2631	2632	2633	2637	2648
	2641	2643	2649	2658	2652	2654	2655	2657	2672	2673	2674	2675	2676	2677	2688
	2681	2686	2731	2732	2735	2736	2148	2745	2746	2768	2788	2789	2795	2797	2889
	2812	2819	2823	2831	2838	2852	2855	2863	2878	2879	2886	2893	2899	2921	2922
	2932	2944	2958	2951	2953	2957	2165	2966	2969	2978	2988	2981	2982	2985	2987
	3169	3178	3174	3175	3176	3177	3178	3179	3188	3181	3182	3183	3184	3185	3187
	3198	3191	3193	3194	3199	3288	3221	3232	3233	3239	3241	3262	3264	3291	3292
	3294	3382	3384	3389	3386	3312	3314	3316	3338	3331	3333	3342	3386	3371	3372
	3381	3389	3398	3423	3424	3436	3437	3438	3465	3466	3467	3468	3479	3488	3481
	3587	3588	3589	3518	3551	3552	3577	3578	3579	3683	3684	3618	3619	3621	3624
	3625	3636	3637	3638	3639	3648	3641	3642	3643	3644	3649	3658	3651	3652	3653
	3654	3655	3656	3658	3659	3675	3876	3699							
MOVB	1556	1557	1558	1559	1564	1565	1568	1578	1573	1575	1576	1635	1636	1637	1638
	1642	1696	1699	1781	1782	1743	1744	1745	1746	1758	1824	1827	1829	1838	1963
	1982	1989	1998	1991	1992	2843	2872	2285	2383	2889	2918	2823	3195	3334	3345
	3528	3587	3588	3615	3669	3672	3896	3784	3712						
NOP	1129	2834	2982	2963	2961	3425									
RESET	2742	2959													
ROL	2575	3688	3682	3684											
ROLB	3681	3683	3685												
RTI	1868	1867	1977	2818	2811	2558	2689	3282	3486	3588	3591	3626	3645	3668	3713
RTS	1879	1893	1989	1973	1999	2821	2852	2888	2115	2179	2198	2349	2426	2493	2516
	2534	3282	3225	3242	3325	3337	3357	3361	3393	3481	3427	3462	3473	3511	3597
	3788														
RTT	978														
SUB	1775	1776	2578	2639	2875										
TRAP	841														

TSY	988	1777	1788	1789	1932	1938	1934	1937	2551	2743	2778	2787	2793	2882	2847
	2883	3275	3309	3322	3358	3472									
TSYB	1651	1771	1781	1787	2266	2298	2318	2327	2345	2349	2589	2511	2537	3585	3595
	3607	3613	3686	3689											
.ABS	2														
.ASCII	3543	3629	3996												
.ASCII2	1149	2765	3362	3719	3996										
.BLK	1473	2584	3982	3989	3988										
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	3115	3144	3145	3146	3147	3148	3149	3150	3151	3152	3153	3154	3155	3156	3157
	3158	3159	3533	3934	3535	3536	3537	3538	3539	3540	3545	3667	3722	3723	3724
	3725	3726	3728	3729	3730	3731	3732	3733	3734	3735	3736	3737	3738	3739	3740
	3741	3742	3743	3744	3745	3746	3747	3748	3749	3750	3751	3752	3753	3754	3755
	3756	3757	3758	3759	3760	3761	3762	3763	3764	3765	3766	3767	3768	3769	3770
	3771	3772	3773	3774	3775	3776	3777	3778	3779	3780	3781	3782	3783	3784	3785
	3786	3787	3788	3789	3790	3791	3792	3793	3794	3795	3796	3797	3798	3799	3800
	3801	3802	3803	3804	3805	3806	3807	3808	3809	3810	3811	3812	3813	3814	3815
	3816	3817	3818	3819	3820	3821	3822	3823	3824	3825	3826	3827	3828	3829	3830
	3831	3832	3833	3834	3835	3836	3837	3838	3839	3840	3841	3842	3843	3844	3845
	3846	3847	3848	3849	3850	3851	3852	3853	3854	3855	3856	3857	3858	3859	3860
	3861	3862	3863	3864	3865	3866	3867	3868	3869	3870	3871	3872	3873	3874	3875
	3876	3877	3878	3879	3880	3881	3882	3883	3884	3885	3886	3887	3888	3889	3890
	3891	3892	3893	3894	3895	3896	3897	3898	3899	3900	3901	3902	3903	3904	3905
	3906	3907	3908	3909	3910	3911	3912	3913	3914	3915	3916	3917	3918	3919	3920
	3921	3922	3923	3924	3925	3926	3927	3928	3929	3930	3931	3932	3933	3934	3935
	3936	3937	3938	3939	3940	3941	3942	3943	3944	3945	3946	3947	3948	3949	3950
	3951	3952	3953	3954	3955	3956	3957	3958	3959	3960	3961	3962	3963	3964	3965
	3966	3967	3968	3969	3970	3971	3972	3973	3974	3975	3976	3977	3978		
.ENABL	2														
.END	4278														
.ENDC	9	16	144	148	344	348	381	653	655	932	1883	1183	1153	1181	1476
	1989	2843	2191	2589	2625	2666	2988	2671	2913	2939	3178	3282	3234	3241	3427
	3475	3541	3979	3993	3996										
.EVEN	1152	2769	3367	3831	3916	3979	4283								
.IF	9	16	144	344	374	381	653	932	1883	1183	1148	1181	1476	1983	2848
	2148	2587	2587	2854	2666	2668	2978	2912	2935	3178	3282	3233	3234	3428	3475
	3523	3728	3979	3993	3996										
.IFF	3996														
.IFT	3996														
.IRP	1884	1891	1898	1987	1926	1972	2382	2312	2628	2672	3232	3241			
.LIST	2	35	625	675	676	929	938	931	932	933	934	935	936	937	938
	939	1184	1283	1222	1241	1268	1279	1298	1317	1336	1355	1374	1393	1412	1431
	1458	1469	1476	1479	1487	1983	1511	1538	1538	1581	1589	1788	1716	1835	1843
	3996														
.MACRO	675														
.MCALL	2														
.NLIST	2	35	675	676	929	938	931	932	933	934	935	936	937	938	939
	1184	1283	1222	1241	1268	1279	1298	1317	1336	1355	1374	1393	1412	1431	1458
	1469	1476	1479	1487	1983	1511	1538	1538	1581	1589	1788	1716	1835	1843	3996
.PAGE	2	35	674	1479	1983	1538	1281	1788	1835						
.REM	2	9	16	35	144	148	144	348	374	381	628	1488	1512	1591	1718
	1845	2869													
.REPT	675	1165	1168	1187	1286	1225	1244	1263	1282	1381	1328	1339	1358	1377	1396
	1415	1434	1453	3833	3853	3882	3123	3144	3533	3928	4089	4018	4043	4076	4189

	4142	4175	4208	4241											
.SBTYL	640	675	839	941	1004	1104	1150	1470	1479	1503	1530	1501	1700	1035	2027
	2057	2090	2142	2194	2351	2427	2723	2992	3215	3590	3033	3663	3990	3990	
.TITLE	2														
.WORD	3053	3034	3035	3030	3037	3030	3039	3040	3041	3042	3043	3044	3045	3046	3047
	3040	3049	3053	3054	3055	3056	3057	3050	3059	3060	3061	3062	3063	3064	3065
	3066	3067	3060	3069	3123	3124	3125	3126	3127	3120	3129	3130	3131	3132	3133
	3134	3135	3136	3137	3130	3544	3609	4010	4012	4014	4016	4010	4020	4022	4024
	4026	4020	4030	4032	4034	4036	4030	4040	4043	4045	4047	4049	4051	4053	4055
	4057	4059	4061	4063	4065	4067	4069	4071	4073	4076	4070	4080	4082	4084	4086
	4088	4090	4092	4094	4096	4098	4100	4102	4104	4106	4109	4111	4113	4115	4117
	4119	4121	4123	4125	4127	4129	4131	4133	4135	4137	4139	4142	4144	4146	4148
	4150	4152	4154	4150	4150	4160	4162	4164	4166	4160	4170	4172	4175	4177	4179
	4101	4103	4105	4107	4109	4101	4103	4105	4107	4109	4201	4203	4205	4200	4210
	4212	4214	4216	4210	4220	4222	4224	4226	4220	4230	4232	4234	4236	4230	4241
	4243	4245	4247	4249	4251	4253	4255	4257	4259	4261	4263	4265	4267	4269	4271

ERRORS DETECTED: 0

*DXONLI,DXONLI/SOL/CRP=DXONLI,P11
 RUN=TIME: 144 30 6 SECONDS
 CORE USED: 33K