

BDV11-AA

BOOTSTRAP DIAGNOSTIC
MD-11-DVM8A-A

EP-DVM8A-A-DL

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MADE IN USA



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TITLE USER DOCUMENTATION
SBTTL IDENTIFICATION

. PRODUCT CODE MAINDEC-11-DVM8A-A-D

. PRODUCT NAME BDV11-AA BOOTSTRAP DIAGNOSTIC

. MAINTAINER COST CENTER 301

. AUTHOR MARY McNALLY 18-AUG-77

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FUNCTIONAL DESCRIPTION

THE 8DV11-AA BOOTSTRAP/TERMINATOR/
DIAGNOSTIC MODULE PROVIDES THE
FOLLOWING FUNCTIONS.

- 1 ROM RESIDENT HARDWARE DIAGNOSTIC TESTS.
- 2 PADS FOR ROM RESIDENT BOOTSTRAP ROUTINES FOR THOSE DEVICES WHICH ARE SUPPORTED BY THE LSI-11 SYSTEM
- 3 A READ/WRITE STORAGE REGISTER FOR USE BY THE RESIDENT DIAGNOSTIC TESTS
- 4 TWELVE DIP ROCKER SWITCHES TO SELECT TESTING AND BOOTSTRAP OPTIONS AT POWER UP.
- 5 AN ARRAY OF FOUR LED'S TO PROVIDE STATUS INFORMATION
- 6 HALT AND REBOOT TOGGLE SWITCHES FOR USE IN SYSTEMS WITHOUT A CONSOLE
- 7 SOCKETS FOR 2K WORDS OF EPROM
- 8 OPTIONAL REPLACEMENT OF SYSTEM ROM BY 8K WORDS OF EPROM

VERSION 00

SBTTL GENERAL PROGRAM INFORMATION

PROGRAM PURPOSE

THIS DIAGNOSTIC WILL BE USED TO ESTABLISH CONFIDENCE THAT THE MODULE IS FUNCTIONING PROPERLY. IT WILL PROVIDE CHECKSUM VERIFICATION OF THE CONTENTS OF THE DIAGNOSTIC ROMS AND ANY ADDITIONAL ROM OR EPROM IN ADDITION, IT WILL VERIFY THAT THE PROPER DIAGNOSTIC ROMS ARE INSERTED IN THE MODULE BY COMPARING THE ACTUAL CHECKWORDS IN THE ROMS TO THOSE SPECIFIED IN THE DIAGNOSTIC PROGRAM IT WILL ALSO ACCEPT CHECKWORDS FROM AN OPERATOR FOR USE IN TESTING ANY ADDITIONAL ROM/EPROM. THE DIAGNOSTIC WILL ALSO TEST THE PROGRAMMABLE REGISTERS AND EXERCISE THE LED'S FOR OPERATOR INSPECTION

SYSTEM REQUIREMENTS

HARDWARE

LSI-11 PROCESSOR
16K WORDS OF MEMORY
CONSOLE TERMINAL
DIAGNOSTIC PROGRAM LOAD DEVICE

RELATED DOCUMENTS AND STANDARDS

DIAGNOSTIC SUPERVISOR FUNCTIONAL SPEC (176-681-001)
APT/DIAGNOSTIC SUPERVISOR INTERFACE SPEC (176-681-003)

DIAGNOSTIC HIERARCHY PREREQUISITES

NONE, ALTHOUGH IT IS ASSUMED THAT THE CPU IS FUNCTIONING PROPERLY

ASSUMPTIONS

- WHEN RUNNING UNDER APT, ALL ROCKER SWITCHES ARE IN THE "ON" POSITION THE EXCEPTION TO THIS OCCURS ONLY WHEN AN OPERATOR CHANGES THE HARDWARE P-TABLE TO CORRESPOND TO THE NEW SWITCH SETTINGS
- THE ADDRESS JUMPERS ARE CONFIGURED AND MEMORY CHIPS INSTALLED PROPERLY NO TWO CHIPS CAN RESPOND TO THE SAME ADDRESS
- THE MODULE UNDER TEST RESIDES IN THE SAME BACKPLANE AS THAT FROM WHICH THE LINE TIME CLOCK IS GENERATED
- THE CPU IS WORKING PROPERLY

SBTTL OPERATING INSTRUCTIONS

1 LOADING AND STARTING PROCEDURES
IN SYSTEMS OTHER THAN APT, BOTH THE DIAGNOSTIC PROGRAM
AND THE DIAGNOSTIC SUPERVISOR WILL BE LOADED BY EITHER PAPER
TAPE OR XXDP MEDIA THE COMBINED FILE WILL BE CALLED DUM8AA,
AND IS LOADED BY THE FOLLOWING COMMANDS.

I PAPER TAPE

TO LOAD, PLACE AN ABSOLUTE LOADER IN THE PAPER
TAPE READER, AND TYPE "177550L" THEN PLACE THE
DUM8AA TAPE IN THE READER AND TYPE "P"

TO CALL THE SUPERVISOR, TYPE "200G" THE SUPERVISOR
WILL RESPOND WITH A FEW QUESTIONS AND A PROMPT CHARACTER
SEE THE SUPERVISOR COMMANDS BELOW FOR FURTHER INSTRUCTIONS

II XXDP MEDIA

TO LOAD, TYPE "L DUM8AA" TO CALL THE
SUPERVISOR, TYPE "S 200" WHEN THE PROGRAM IS LOADED

III. SUPERVISOR COMMANDS

ONCE THE SUPERVISOR HAS BEEN INVOKED AT LOCATION 200,
THE FOLLOWING COMMANDS SHOULD BE USED SELECTIVELY TO
CONTROL THE RUNNING OF THE DIAGNOSTIC

2 TO START

START/TEST <TESTNOS>/PASS <PASSCNT>/UNIT <DEVN>/FLAG <CF> <CF>

WHERE

TEST = (DEFINES WHICH TESTS TO EXECUTE, IF NO
SPECIFICATION EXECUTE ALL TESTS)
PASS = (INDICATES HOW MANY PASSES TO RUN, IF NO SPEC-
IFICATION RUN UNTIL DIAGNOSTIC ESCAPE SEQUENCE)
UNIT = (SPECIFIES WHICH UNIT ENTRIES TO GET FROM THE
CONFIGURATION FILE, IF NO SPECIFICATION USE ALL
APPLICABLE UNIT ENTRIES)
FLAG = (SPECIFIES THE ERROR CONTROL/REPORT FLAG OPTIONS
TO BE USED)
<TESTNOS> = (LIST FOR UP TO 16 TESTS TO BE EXECUTED IN AN
ASCENDING ORDER)
<PASSCNT> = (NUMBER OF PROGRAM PASSES TO EXECUTE)
<DEVN> = (UNIQUE, DEC STANDARD, DEVICE SPECIFIER AND
UNIT NUMBER)
<CF> = (ANY OF THE FOLLOWING CONTROL FLAGS
HOE-HALT ON ERROR
LOE-LOOP ON ERROR AND ATTEMPT REPORT
IEP-INHIBIT ALL ERROR REPORTS
IBE-INHIBIT BASIC AND EXTENDED ERROR REPORTS
IEE-INHIBIT EXTENDED ERROR REPORTS
PRI-DIRECT ALL ERROR, PASS, AND STATISTICAL
REPORTS TO THE LINE PRINTER
BOE-AUDIO ERROR INDICATION
UAM-UNATTENDED MODE, NO OPERATOR INTERVENTION
PNT-PRINT NUMBER OF TEST BEING EXECUTED)

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.3 TO RESTART
THE RESTART COMMAND IS SIMILAR TO THE START COMMAND EXCEPT
THAT ALL PARAMETERS ARE ASSUMED TO BE ALREADY DEFINED, AND NO
OPERATOR DIALOGUE IS PERFORMED PRIOR TO RUNNING THE DIAGNOSTIC
IF THE OPERATOR WISHES TO ALTER THE TYPE OF ADDITIONAL MEMORY
TO TEST, OR CHANGE THE ADDRESSES, LOCATION "PASS" MUST BE
CLEARED MANUALLY PRIOR TO RESTARTING, SINCE THIS INFORMATION
IS SET UP ON THE FIRST PASS OF THE DIAGNOSTIC

RESTART/TEST <TESTNOS>/PASS <PASSCNT>/FLAG <CF> <CF>
.4 TO RETURN TO PROGRAM
TO RESUME EXECUTION OF THE DIAGNOSTIC AT THE FIRST INSTRUCTION
FOLLOWING THE CURRENT SUPERVISOR CALL, AT WHICH TIME NEW FLAGS
MAY BE ASSIGNED

CONTINUE/FLAG <CF> <CF>
.5 TO LOAD AND START THE DIAGNOSTIC
TO LOAD AND START THE DIAGNOSTIC USING DEFAULT PARAMETERS

RUN<FILESPEC>/TEST <TESTNOS>/PASS <PASSCNT>/UNIT <DEVN>/FLAG <CF>...
.6 TO RETURN TO SUPERVISOR

EXIT

NOTE TEST NUMBERS AND UNIT NUMBERS MAY BE SPECIFIED
AS SINGLE NUMBERS, RANGES OF NUMBERS (I.E. 1-6),
OR COMBINATIONS OF BOTH

SPECIAL ENVIRONMENTS APT
TEST 7. THE TEST OF ALL RESIDENT MEMORY, WILL NOT RUN
UNDER APT, AS IT REQUIRES USER INTERVENTION

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PROGRAM OPTIONS
THE HARDWARE PARAMETERS ARE STORED IN A PARAMETER TABLE WITH
DEFAULT VALUES THE OPERATOR WILL HAVE THE OPTION OF CHANGING
THESE PARAMETERS BY RESPONDING TO THE APPROPRIATE QUESTIONS
GENERATED BY THE DIAGNOSTIC SUPERVISOR. THESE PARAMETERS
INCLUDE THE UNIT NUMBER, INTERRUPT VECTOR, PRIORITY LEVEL, AND
ROCKER SWITCH SETTINGS THE DEFAULT VALUES WILL BE TYPED ALONG
WITH THE QUESTIONS
THE ROCKER SWITCH SETTINGS ARE EXAMINED IN THE FOLLOWING
ORDER
B4 B3 B2 B1 A8 A7 A6 A5 A4 A3 A2 A1
FOR EXAMPLE, IF SWITCHES A1, A2, A6, AND B1 WERE ON, THE SWITCH
SETTING WOULD BE
B4 B3 B2 B1 A8 A7 A6 A5 A4 A3 A2 A1
1 1 1 1
WHICH HAS AN OCTAL VALUE OF 0443
THE SOFTWARE P-TABLE CONTAINS THE CHECKWORDS FOR THE 2K
OF DIAGNOSTIC ROM WHICH IS RESIDENT ON THE BDV:1A TO CHANGE
THESE CHECKWORDS, THE OPERATOR MUST RESPOND WITH A YES TO THE
SUPERVISOR'S QUESTION "CHANGE SW (Y/N)?" THE DEFAULT VALUES WILL
THEN BE PRINTED AS THE QUESTIONS ARE ASKED
TEST 7 CHECKS ALL THE ADDITIONAL MEMORY THAT IT IS
INSTRUCTED TO TEST. THIS TEST IS SET UP BY THE OPERATOR ON THE
FIRST PASS OF THE DIAGNOSTIC THE DIAGNOSTIC WILL ASK IF THERE
IS ANY ADDITIONAL MEMORY TO TEST, AND IF SO WILL ASK WHICH
TYPE OF MEMORY IT IS (THE OPERATOR CAN ANSWER THESE QUESTIONS
WITH LOGICAL Y/N ANSWERS) IF ANY ADDITIONAL MEMORY IS TO BE
TESTED, THE OPERATOR MUST SUPPLY THE CHECKWORDS FOR THOSE
ROMS/EPROMS IN THE CASE OF SYSTEM ROM/EPROM, THE OPERATOR WILL
ALSO HAVE TO INDICATE HOW MANY CHECKWORDS WILL BE INPUT (IN DECIMAL)
NOTE THAT ONCE THIS DATA IS SET UP, THIS MEMORY WILL ALWAYS BE
TESTED, EVEN IF THE DIAGNOSTIC IS RESTARTED, UNLESS THE LOCATION
"PASS" IS CLEARED (SEE SEC 3 OF LOADING AND STARTING PROCEDURES)
EXECUTION TIMES A SINGLE ERROR-FREE PASS WILL REQUIRE
LESS THAN 1 SEC TO RUN UNDER APT WHEN RUN
IN STAND-ALONE MODE, IT WILL REQUIRE LESS
THAN 3 SECS TO RUN

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SBTTL ERROR INFORMATION

- , ERROR REPORTING PROCEDURES
, IN GENERAL, ALL ERROR REPORTS WILL CONTAIN THE FOLLOWING
, INFORMATION
- 1 A HEADER OF TEST IDENTIFICATION INFORMATION
THIS INCLUDES THE PROGRAM NAME, TYPE OF ERROR,
ERROR NUMBER, TEST AND SUBTEST NUMBERS, UNIT
NUMBER, AND AN OPTIONAL ADDITIONAL MESSAGE
 - 2 BASIC ERROR INFORMATION.
THIS IS A SPECIFIC STATEMENT OF WHAT THE ERROR
IS AND WHICH REGISTER OR ROM WAS INVOLVED
 - 3 EXTENDED ERROR INFORMATION
THIS IS OPTIONAL INFORMATION WHICH IS USED
PRIMARILY TO GIVE THE EXPECTED AND ACTUAL
CONTENTS OF THE APPROPRIATE DEVICE REGISTER
DURING REGISTEP TESTS

SBTTL SUBTEST SUMMARIES

	TEST NO	SUBTEST NO	PURPOSE
286	1	1	TO VERIFY THAT THE READ/WRITE REGISTER CAN HOLD ALL ZEROES
287		2	TO VERIFY THAT THE READ/WRITE REGISTER CAN HOLD ALL ONES.
288		3	TO VERIFY THAT THE READ/WRITE REGISTER CAN HOLD AN ALTERNATING 1'S AND 0'S BIT PATTERN
289		4	TO VERIFY THAT THE READ/WRITE REGISTER IS BYTE ADDRESSABLE
290		5	TO VERIFY THAT THE READ/WRITE REGISTER CAN SWAP BYTES.
291		6	TO VERIFY THAT THE READ/WRITE REGISTER CAN HOLD AN ALTERNATING 0' AND 1'S BIT PATTERN
292		7	TO VERIFY THAT THE READ/WRITE REGISTER IS BYTE ADDRESSABLE
293		8	TO VERIFY THAT THE READ/WRITE REGISTER CAN SWAP BYTES.
294		9	TO VERIFY THAT THE READ/WRITE REGISTER CAN ROTATE A SET BIT WITHOUT PICKING UP ANY BITS
295		10	TO VERIFY THAT THE READ/WRITE REGISTER CAN ROTATE A CLEAR BIT WITHOUT PICKING UP ANY BITS
296	2	1	TEST 2 IS THE SAME AS TEST 1 EXCEPT THAT THE PAGE CONTROL REGISTER IS THE REGISTER UNDER TEST
297		2	SAME AS TEST 1
298		3	SAME AS TEST 1
299		4	SAME AS TEST 1
300		5	SAME AS TEST 1
301		6	SAME AS TEST 1
302		7	SAME AS TEST 1
303		8	SAME AS TEST 1
304		9	SAME AS TEST 1
305		10	SAME AS TEST 1
306	3	1	TO VERIFY THAT THE BEVENT CLAMP DISABLE ALLOWS INTERRUPTS WHEN OFF
307		2	TO VERIFY THAT THE BEVENT CLAMP DISABLE INHIBITS INTERRUPTS WHEN ON
308			
309	6	1	TO VERIFY THAT THE LOW BYTE DIAGNOSTIC ROM HAS GOOD DATA
310		2	TO VERIFY THAT THE HIGH BYTE DIAGNOSTIC ROM HAS GOOD DATA
311		3	TO INSURE THAT THE DIAGNOSTIC ROMS HAVE NOT BEEN INTERCHANGED
312		4	TO DETERMINE IF THERE IS ANY ADDITIONAL MEMORY TO TEST
313	7	1	THIS INFORMATION IS OBTAINED
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344	:	2	THROUGH USER DIALOGUE.
345	:		TO TEST THE EXPANDED DIAGNOSTIC
346	:		ROM FIRST THE REQUIRED CHECK-
347	:		WORDS MUST BE INPUT, AND THE
348	:		STARTING LOCATION IN MEMORY.
349	:		CHECKSUMS AND CHECKWORD
350	:		VERIFICATION CONFIRMS GOOD
351	:	3	DATA IN ROMS.
352	:		TO TEST THE EPROM IN THE
353	:		SOCKETS. TEST PROCEDURE IS AS
354	:	4	IN SUBTEST 2.
355	:		TO TEST SYSTEM ROM. SAME
356	:	5	TEST PROCEDURE AS IN SUBTEST 2.
357	:		TO TEST SYSTEM EPROM SAME
358	:		TEST PROCEDURE AS IN SUBTEST 2.
359	:		
360	:		

358	002000		SVC
359		000000	SVCINS=0
360		000000	SVCGBL=0
361		000000	SVCTAG=0
362			TITLE PROGRAM HEADER AND TABLES
363			SBTTL IDENTIFICATION
364			
365			
366			SBTTL PROGRAM HEADER
367			
368	002000		BGNMOD MDHEDR
369	002000		MDHEDR
370			
371			,++
372			, THE PROGRAM HEADER IS THE INTERFACE BETWEEN
373			, THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR
374			,--
375			
376	002000		POINTER BGNSW,BGNSFT
377			
378			
379	002000		HEADER DUM8AA, A, O, S
380	002000		LSNAME
381	002000	104	ASCII 000
382	002001	126	ASCII 000
383	002002	115	ASCII 000
384	002003	070	ASCII 080
385	002004	101	ASCII 0A0
386	002005	101	ASCII 0A0
387	002006	000	BYTE 0
388	002007	000	BYTE 0
389	002010		LSPEV
390	002010	101	ASCII 0A0
391	002011		LSDEPO
392	002011	060	ASCII 000
393	002012		LSMREV
394	002012	001	BYTE CSREVISION
395	002013	006	BYTE CSREDIT
396	002014		LSUNIT
397	002014	000000	WORD 0
398	002016		LSTIM1
399	002016	000005	WORD 5
400	002020		LSTIMU
401	002020	000000	WORD
402	002022		LSTIML
403	002022	000000	WORD
404	002024		LSEF
405	002024	000000	WORD 0
406	002026	000000	WORD 0
407	002030		LSSPC
408	002030	000000	WORD 0
409	002032		LSEXP1
410	002032	000000	WORD 0
411	002034		LSEXP2
412	002034	000000	WORD 0
413	002036		LSEXP3

414	002036	000000		WORD	0
415	002040		LSDTP.		
416	002040	002102		WORD	LSDISPATC
417	002042		LSICP		
418	002042	005024		WORD	LSINIT
419	002044		LSCCP.		
420	002044	005170		WORD	LSCLEAN
421	002046		LSHPCP.		
422	002046	014322		WORD	LSHARD
423	002050		LSSPCP		
424	002050	014512		WORD	LSSOFT
425	002052		LSDEVP		
426	002052	003026		WORD	LSDVTYP
427	002054		LSREPP		
428	002054	000000		WORD	0
429	002056		LSHPTP		
430	002056	002122		WORD	LSHW
431	002060		LSSPTP.		
432	002060	002134		WORD	LSSW
433	002062		LSDRCT.		
434	002062	002476		WORD	LSDR
435	002064		LSDRS		
436	002064	002502		WORD	LSDRST
437	002066		LSSTA		
438	002066	000000		WORD	0
439	002070		LSAUT		
440	002070	000000		WORD	0
441	002072		LSOUT		
442	002072	000000		WORD	0
443	002074		LSTSTID		
444	002074	000000		WORD	0
445	002076		LSLADP		
446	002076	015054		WORD	LSLAST
447	002100			ENDMOD	
448					

```
449 .SBTTL DISPATCH TABLE
450
451 ;++
452 ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST
453 ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST
454 ;--
455
456 002100          BGNMOD  DSPCODE
457 002100          DSPCODE
458 002100          DISPATCH 7
459 002100 000007   WORD 7
460 002102          LDISPATCH
461 002102 005250   WORD T1
462 002104 006070   WORD T2
463 002106 006720   WORD T3
464 002110 007452   WORD T4
465 002112 007612   WORD T5
466 002114 010366   WORD T6
467 002116 011516   WORD T7
468 002120          ENDMOD
469
470 .SBTTL DEFAULT HARDWARE P-TABLE
471
472 ;++
473 ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
474 ; THE TEST-DEVICE PARAMETERS THE STRUCTURE OF THIS TABLE
475 ; IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE
476 ;--
477
478 002120          BGNHW  DFPTBL
479 002120 000004   WORD L10000-LSHW/2
480 002122          LSHW
481 002122          DFPTBL
482
483          DEFAULT VALUES FOR UP TO SIX UNITS
484 002122 000000   WORD 0          ; UNIT NUMBER 0
485 002124 000100   WORD 100       ; INTERRUPT VECTOR
486 002126 000007   WORD 7          ; PRIORITY LEVEL
487 002130 007777   WORD 7777      ; ROCKER SWITCH SETTINGS
488
489 002132          ENDMHW
490 002132          L10000
491
492 .SBTTL SOFTWARE P-TABLE
493
494 ;++
495 ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
496 ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR
497 ;--
498
499 002132          BGNSW  SFPTBL
500 002132 000010   WORD L10001-LSSW/2
501 002134          LSSW
502 002134          SFPTBL
503
504
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505 ; THE SOFTWARE P-TABLE IS USED TO STORE THE CHECKWORDS
506 ; FOR THE DIAGNOSTIC ROM WHICH IS TESTED IN TEST 6
507
508 002134 031547 . WORD 31547 ; PAGE 0,1
509 002136 014036 . WORD 14036 ; PAGE 2,3
510 002140 065162 . WORD 65162 ; PAGE 4,5
511 002142 124632 . WORD 124632 ; PAGE 6,7
512 002144 032040 . WORD 32040 ; PAGE 10,11
513 002146 167124 . WORD 167124 ; PAGE 12,13
514 002150 155461 . WORD 155461 ; PAGE 14,15
515 002152 032257 . WORD 32257 ; PAGE 16,17
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517 002154 L10001
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000400
000200
000100
000040
000020
000010
000004
000002
000001

001000
000400
000200
000100
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000020
000010
000004
000002
000001

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000035
000034

000020

TITLE GLOBAL AREAS
SBTTL IDENTIFICATION

SBTTL GLOBAL EQUATES SECTION

++
/ THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
/ ARE USED IN MORE THAN ONE TEST
--

BGNMOD GLBEQAT
GLBEQAT
EQUALS

/ BIT DEFINITIONS

BIT15== 100000
BIT14== 40000
BIT13== 20000
BIT12== 10000
BIT11== 4000
BIT10== 2000
BIT09== 1000
BIT08== 400
BIT07== 200
BIT06== 100
BIT05== 40
BIT04== 20
BIT03== 10
BIT02== 4
BIT01== 2
BIT00== 1

BIT9== BIT09
BIT8== BIT08
BIT7== BIT07
BIT6== BIT06
BIT5== BIT05
BIT4== BIT04
BIT3== BIT03
BIT2== BIT02
BIT1== BIT01
BIT0== BIT00

/ EVENT FLAG DEFINITIONS
/ EF32 EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
/ EF16 EF01 AVAILABLE FOR PROGRAM USE

EF START== 32
EF RESTART== 31
EF CONTINUE== 30
EF NEW== 29
EF PWR== 28

EF16== 16

/ START COMMAND WAS ISSUED
/ RESTART COMMAND WAS ISSUED
/ CONTINUE COMMAND WAS ISSUED
/ A NEW PASS HAS BEEN STARTED
/ A POWER-FAIL/POWER-UP OCCURRED

576	000017	EF15==	15
577	000016	EF14==	14
578	000015	EF13==	13
579	000014	EF12==	12
580	000013	EF11==	11
581	000012	EF10==	10
582	000011	EF09==	9
583	000010	EF08==	8
584	000007	EF07==	7
585	000006	EF06==	6
586	000005	EF05==	5
587	000004	EF04==	4
588	000003	EF03==	3
589	000002	EF02==	2
590	000001	EF01==	1

./ PRIORITY LEVEL DEFINITIONS

595	000340	PR107==	340
596	000300	PR106==	300
597	000240	PR105==	240
598	000200	PR104==	200
599	000140	PR103==	140
600	000100	PR102==	100
601	000040	PR101==	40
602	000000	PR100==	0
604	177520	PCP=	177520
605	177524	LSREG=	177524
606	002154		ENDMOD

SBTTL GLOBAL DATA SECTION

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THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
IN MORE THAN ONE TEST
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614 002154
615 002154
616 002154 000000
617 002156 000000
618 002160 000000
619 002162 000000
620 002164 000001
621 002166 000000
622 002170 000000
623 002172 000000
624 002174 000000
625 002176 000000
626 002200 000000
627 002202 000000
628 002204 000100
629 002206 000000
630 002210 000000
631 002212 000000
632 002214 000000
633 002216 000000
634 002220 000000
635 002222 000001
636 002224 000000
637 002226 000000
638 002230 000000
639 002232 000000
640 002234 000010
641 002254 000010
642 002274 000100
643 002474
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648 002474
649 002474 000001
650 002476
651 002476
652 002476 177777
653 002500 000004
654 002502
655 002502
656 002502 000004
657

GLBDAT	BGNMOD	GLBDAT	
	BCF	WORD	0
	REAL	WORD	0
	LOPAG	WORD	0
	COUNTR	WORD	0
	ANSR	WORD	1
	RFLAG	WORD	0
	EXPSUM	WORD	0
	ACTSUM	WORD	0
	PASS	WORD	0
	PASCT	WORD	0
	ULIMIT	WORD	0
	PAGE	WORD	0
	VECT	WORD	100
	SWSET	WORD	0
	STORE	WORD	0
	WORDCT	WORD	0
	PRIOR	WORD	0
	CKWD	WORD	0
	RESPND	WORD	0
	RSET	WORD	1
	LORANG	WORD	0
	HIRANG	WORD	0
	BYTLOC	WORD	0
	ERRFLG	WORD	0
	EXPDIAG	BLKW	10
	EPROM	BLKW	10
	SYSROM	BLKW	100
	ENDMOD		

.EXPANDED DIAG ROM CHECKWORDS
.EPROM CHECKWORDS
.SYSTEM ROM EPROM CHECKWORDS

STORAGE FOR DEVICE REGISTERS

DEVREG	4, 177777, DEVDAT, REGMSK
WORD	1
LSOR REGMSK	WORD 177777
	WORD 4
LSORST DEVDAT	BLKW 4

```

658          SBTTL GLOBAL TEXT SECTION
659
660          ;++
661          ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
662          ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
663          ; MORE THAN ONE TEST
664          ;--
665
666          .GLOBAL MESSAGES
667
668          669 002512 042522 042101 053457 RWR      ASCIIZ "READ/WRITE REGISTER ADDRESS 177522"
669          670 002520 044522 042524 051040
670          671 002526 043505 051511 042524
671          672 002534 004522 042101 051104
672          673 002542 051505 035123 030440
673          674 002550 033467 031065 000062
674          675
675          676 002556 040520 042507 041440 PACR     ASCIIZ "PAGE CONTROL REGISTER ADDRESS 177520/"
676          677 002564 047117 051124 046117
677          678 002572 051040 043505 051511
678          679 002600 042524 004522 042101
679          680 002606 051104 051505 035123
680          681 002614 030440 033467 031065
681          682 002622 000060
682          683
683          684 002624 044103 041505 051513 CKERR    ASCIIZ "CHECKSUM ERROR/"
684          685 002632 046525 042440 051122
685          686 002640 051117      000
686          687
687          688 002643      111 041516 051117 CWDERR   ASCIIZ "INCORRECT CHECKWORD/"
688          689 002650 042522 052103 041440
689          690 002656 042510 045503 047527
690          691 002664 042122      000
691          692
692          693 002667      105 051122 051117 LOBYT    ASCIIZ "ERROR OCCURRED IN A LOW BYTE PAGE."
693          694 002674 047440 041503 051125
694          695 002702 042522 020104 047111
695          696 002710 040440 046040 053517
696          697 002716 041040 052131 020105
697          698 002724 040520 042507      000
698          699
699          700 002731      105 051122 051117 HIBYT    ASCIIZ "ERROR OCCURRED IN A HIGH BYTE PAGE."
700          701 002736 047440 041503 051125
701          702 002744 042522 020104 047111
702          703 002752 040440 044040 043511
703          704 002760 020110 054502 042524
704          705 002766 050040 043501 000105
705          706
706          707 002774 052123 051101 020124 LOADP    ASCIIZ "START OF MEMORY RANGE IN"
707          708 003002 043117 046440 046505
708          709 003010 051117 020131 040522
709          710 003016 043516 020105 045450
710          711 003024 000051
711          712
712          713          EHEN
    
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003026
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003026 042102 030526 040461
003034 000101

003036 040445 042522 044507
003044 052123 051105 041440
003052 047101 047516 020124
003060 047510 042114 040440
003066 046114 055040 051105
003074 042517 022523 000116

003102 040445 042522 044507
003110 052123 051105 041440
003116 047101 047516 020124
003124 047510 042114 040440
003132 046114 047440 042516
003140 022523 000116

003144 040445 042522 044507
003152 052123 051105 041440
003160 047101 047516 020124
003166 047510 042114 043440
003174 047517 020104 040504
003202 040524 047045 000

003207 045 051101 043505
003214 051511 042524 020122
003222 051511 047040 052117
003230 041040 052131 020105
003236 042101 051104 051505
003244 040523 046102 022505
003252 000116

003254 040445 042522 044507
003262 052123 051105 050040
003270 041511 042513 020104
003276 050125 040440 020116
003304 054105 051124 020101
003312 042523 020124 044502
003320 022524 000116

003324 040445 042522 044507
003332 052123 051105 050040

./ NAMES OF DEVICES SUPPORTED BY PROGRAM

./
DEV TYP <BDV11AA>
LSDVTYP
ASCIZ @BDV11AA@
EVEN

./ FORMAT STATEMENTS USED IN PRINT CALLS

ZERR ASCIZ '%AREGISTER CANNOT HOLD ALL ZEROES%N'

ONERR ASCIZ '%AREGISTER CANNOT HOLD ALL ONES%N'

BDDAT ASCIZ '%AREGISTER CANNOT HOLD GOOD DATA%N'

BYTINS ASCIZ '%AREGISTER IS NOT BYTE ADDRESSABLE%N'

ROTI ASCIZ '%AREGISTER PICKED UP AN EXTRA SET BIT%N'

ROTO ASCIZ '%AREGISTER PICKED UP AN EXTRA CLEAR BIT%N'

770	003340	041511	042513	020104			
771	003346	050125	040440	020116			
772	003354	054105	051124	020101			
773	003362	046103	040505	020122			
774	003370	044502	022524	000116			
775							
776	003376	040445	047125	041101	DIAGER	ASCIZ	/%AUNABLE TO LOCATE CORRECT MEMORY PAGE%/
777	003404	042514	052040	020117			
778	003412	047514	040503	042524			
779	003420	041440	051117	042522			
780	003426	052103	046440	046505			
781	003434	051117	020131	040520			
782	003442	042507	047045	000			
783							
784	003447	045	046501	046505	VIRMSG	ASCIZ	/%MEMORY RANGE %D2%A - %D2%AK%/
785	003454	051117	020131	040522			
786	003462	043516	035105	022440			
787	003470	031104	040445	026440			
788	003476	022440	031104	040445			
789	003504	022513	000116				
790							
791	003510	040445	054105	042520	REGDT	ASCIZ	/%EXPECTED %06%SS%RECEIVED %06%.N/
792	003516	052103	042105	020072			
793	003524	047445	022466	032523			
794	003532	040445	042522	042503			
795	003540	053111	042105	020072			
796	003546	047445	022466	000116			
797							
798					EVEN		

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809 003554
810 003554
811 003554
812 003554 012746 003036
813 003560 012746 000001
814 003564 010600
815 003566 104014
816 003570 062706 000004
817 003574
818 003574 010246
819 003576 010146
820 003600 012746 003510
821 003604 012746 000003
822 003610 010600
823 003612 104015
824 003614 062706 000010
825 003620
826 003620
827 003620 104023
828
829 003622
830 003622
831 003622
832 003622 012746 003102
833 003626 012746 000001
834 003632 010600
835 003634 104014
836 003636 062706 000004
837 003642
838 003642 010246
839 003644 010146
840 003646 012746 003510
841 003652 012746 000003
842 003656 010600
843 003660 104015
844 003662 062706 000010
845 003666
846 003666
847 003666 104023
848
849 003670
850 003670
851 003670
852 003670 012746 003144
853 003674 012746 000001
854 003700 010600

SBTTL GLOBAL ERROR REPORT SECTION

++
THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX CALLS
THAT ARE USED IN MORE THAN ONE TEST IT ALSO INCLUDES THE ASCII MESSAGES
THAT ARE USED BY THE PRINTB AND PRINTX CALLS
--

BGNMSG RERR1
RERR1
PRINTB #ZERR
MOV #ZERR, -(SP)
MOV #1, -(SP)
MOV SP, R0
EMT C\$PNTB
ADD #4, SP
PRINTX #REGDT, R1, R2
MOV R2, -(SP)
MOV R1, -(SP)
MOV #REGDT, -(SP)
MOV #3, -(SP)
MOV SP, R0
EMT C\$FNTX
ADD #10, SP

ENDMSG
L10002
EMT C\$MSG

BGNMSG RERR2
RERR2
PRINTB #ONEPR
MOV #ONEPR, -(SP)
MOV #1, -(SP)
MOV SP, R0
EMT C\$PNTB
ADD #4, SP
PRINTX #REGDT, R1, R2
MOV R2, -(SP)
MOV R1, -(SP)
MOV #REGDT, -(SP)
MOV #3, -(SP)
MOV SP, R0
EMT C\$PNTX
ADD #10, SP

ENDMSG
L10003
EMT C\$MSG

BGNMSG RERR3
RERR3
PRINTB #BDDAT
MOV #BDDAT, -(SP)
MOV #1, -(SP)
MOV SP, R0

855	003702	104014		EMT	C\$PNTB
856	003704	062706	000004	ADD	#4, SP
857	003710			PRINTX	#REGDT, R1, R2
858	003710	010246		MOV	R2, -(SP)
859	003712	010146		MOV	R1, -(SP)
860	003714	012746	003510	MOV	#REGDT, -(SP)
861	003720	012746	000003	MOV	#3, -(SP)
862	003724	010600		MOV	SP, R0
863	003726	104015		EMT	C\$PNTX
864	003730	062706	000010	ADD	#10, SP
865	003734			ENDMSG	
866	003734			L10004	
867	003734	104023		EMT	C\$MSG
868					
869	003736			BGNMSG	RERR4
870	003736			RERR4	
871	003736			PRINTE	#BYTINS
872	003736	012746	003507	MOV	#BYTINS, -(SP)
873	003742	012746	000001	MOV	#1, -(SP)
874	003746	010600		MOV	SP, R0
875	003750	104014		EMT	C\$PNTB
876	003752	062706	000004	ADD	#4, SP
877	003756			PRINTX	#REGDT, R1, R2
878	003756	010246		MOV	R2, -(SP)
879	003760	010146		MOV	R1, -(SP)
880	003762	012746	003510	MOV	#REGDT, -(SP)
881	003766	012746	000007	MOV	#3, -(SP)
882	003772	010600		MOV	SP, R0
883	003774	104015		EMT	C\$PNTX
884	003776	062706	000010	ADD	#10, SP
885	004002			ENDMSG	
886	004002			L10005	
887	004002	104023		EMT	C\$MSG
888					
889	004004			BGNMSG	REPR5
890	004004			RERR5	
891	004004			PRINTB	#PCT1
892	004004	012746	003254	MOV	#PCT1, -(SP)
893	004010	012746	000001	MOV	#1, -(SP)
894	004014	010600		MOV	SP, R0
895	004016	104014		EMT	C\$PNTB
896	004020	062706	000004	ADD	#4, SP
897	004024			ENDMSG	
898	004024			L10006	
899	004024	104023		EMT	C\$MSG
900					
901	004026			BGNMSG	REPR6
902	004026			REPR6	
903	004026			PRINTB	#ROTO
904	004026	012746	003324	MOV	#ROTO, -(SP)
905	004032	012746	000001	MOV	#1, -(SP)
906	004036	010600		MOV	SP, R0
907	004040	104014		EMT	C\$PNTB
908	004042	062706	000004	ADD	#4, SP
909	004046			ENDMSG	
910	004046			L10007	

911	004046	104023		EMT	C\$MSG
912					
913	004050			BGNMSG	PAGERR
914	004050			PAGERR	
915	004050			PRINTB	#DIAGER
916	004050	012746	003376	MOV	#DIAGER, -(SP)
917	004054	012746	000001	MOV	#1, -(SP)
918	004060	010600		MOV	SP, RO
919	004062	104014		EMT	C\$PNTB
920	004064	062706	000004	ADD	#4, SP
921	004070			ENDMSG	
922	004070			L10010	
923	004070	104023		EMT	C\$MSG
924					
925					
926					
927	004072			VIPRI	PRINTF #VIRMSG, LORANG, HIRANG
928	004072	013746	002226	MOV	HIRANG, -(SP)
929	004076	013746	002224	MOV	LORANG, -(SP)
930	004102	012746	003447	MOV	#VIRMSG, -(SP)
931	004106	012746	000003	MOV	#3, -(SP)
932	004112	010600		MOV	SP, RO
933	004114	104017		EMT	C\$PNTF
934	004116	062706	000010	ADD	#10, SP
935					
936				EVEN	
937					
938					
939					
940					
941					

SBTTL GLOBAL SUBROUTINES SECTION

++
THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
THAT ARE USED IN MORE THAN ONE TEST
--

++
FUNCTIONAL DESCRIPTION
SUBROUTINE TO COMPUTE A CHECKSUM IN A ROM/EPROM
INPUT CONTENTS OF BCF
IMPLICIT INPUTS CONTENTS OF PCR
OUTPUT A CHECKSUM VALUE STORED IN LOCAT ON ACTSUM
CALLING SEQUENCE JSR PC,CHKSUM
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958 004122 012701 173776
959 004126 063701 002154
960 004132 005037 002172
961 004136 012702 173000
962 004142 063702 002154
963 004146 111204
964 004150 060437 002172
965 004154 062702 000002
966 004160 020201
967 004162 002771
968 004164 000207
969

CHKSUM MOV #173776,R1 ; STORE THE HIGHEST ADDRESS IN THE ROM
ADD BCF,R1 ; FOR EITHER LOW OR HIGH BYTES
CLR ACTSUM ; CLEAR LOCATION WHICH WILL HOLD THE CHECKSUM
MOV #173000,R2 ; COMPUTE THE LOWEST ADDRESS IN THE ROM
ADD BCF,R2 ; WHERE THE DATA WILL START
15 MOVB (R2),R4 ; GET DATA IN BYTES
ADD R4,ACTSUM ; ADD CONTENTS OF EACH LOCATION TO THE CHECKSUM
ADD #2,R2 ; ADJUST ADDRESS
CMP R2,P1 ; COMPARE CURRENT ADDRESS WITH HIGHEST ADDRESS
BLT 15 ; BR IF LESS THAN
PFS PC ; RETURN


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970      ,++
971      ,SUBROUTINE TO INPUT CHECKWORDS FROM THE OPERATOR
972      ,INPUTS  NUMBER OF CHECKWORDS TO INPUT
973      ,        POINTER TO STORAGE AREA
974      ,OUTPUTS CHECKWORDS STORED IN PROPER TABLE
975      ,CALLING SEQUENCE. JSR PC, INPUT
976      ,---
977
978      INPUT  PRINTF  #INSTR          ,PRINT INSTRUCTIONS
979      004166 012746 004244      MOV      #INSTR, -(SP)
980      004172 012746 000001      MOV      #1, -(SP)
981      004176 010600              MOV      SP, R0
982      004200 104017              EMT     C$PNTF
983      004202 062706 000004      ADD      #4, SP
984      004206              INLP   G$MANID INWORD, STORE, 0, -1, 0, 177777, NO
985      004206 104043              EMT     C$GMAN
986      004210 000406              BR      10000$
987      004212 002210              WORD   STORE
988      004214 000022              WORD   T$CODE
989      004216 004332              WORD   INWORD
990      004220 177777              WORD   -1
991      004222 000000              WORD   T$LOLIM
992      004224 177777              WORD   T$HILIM
993      004226              10000$
994      004226 013722 002213      MOV      STORE, (R2)+          ,PUT CHECKWORD IN TABLE
995      004232 005337 002212      DEC     WORDCT                ,DECREMENT WORD COUNT
996      004236 001401              BEQ     1$                    ,BR IF FINISHED
997      004240 000762              BR      INLP                  ,LOOP UNTIL TABLE IS COMPLETE
998      004242 000207              1$     RTS     PC              RETURN
999
1000     004244 040445 054524 042520 INSTR  ASCII  %ATYPE IN THE CHECKWORDS AS LISTED IN THE PRINT SET%N/
1001     004252 044440 020116 044124
1002     004260 020105 044103 041505
1003     004266 053513 051117 051504
1004     004274 040440 020123 044514
1005     004302 052123 042105 044440
1006     004310 020116 044124 020105
1007     004316 051120 047111 020124
1008     004324 042523 022524 000116
1009
1010     004332 044103 041505 053513 INWORD  ASCII  CHECKWORD
1011     004340 051117 035104 000040
1012
1013     EVEN
1014

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1015      ,++
1016      ,SUBROUTINE TO COMPUTE THE VIRTUAL ADDRESS OF A BAD
1017      ,PAGE IN MEMORY
1018      ,INPUTS  PAGE IN PAGE CONTROL REGISTER
1019      ,          BYTE CONTROL FLAG (BCF)
1020      ,OUTPUTS MEMORY RANGE IN WHICH ERROR OCCURRED
1021      ,CALLING SEQUENCE: JSR PC,VIRTAD
1022      ,--
1023
1024      004346 005001      VIRTAD CLR      R1          , START AT BOTTOM OF RANGE
1025      004350 012737 000007 002200      MOV      #7,ULIMIT      , SET UPPER LIMIT OF PAGE
1026      004356 113737 177520 002202      MOVB    PCR,PAGE      , LOW PAGE ERROR
1027      004364 023737 002202 002200      LPADD   CMP      PAGE,ULIMIT      , IS PAGE <=ULIMIT
1028      004372 003427      BLE      OUTPUT      , BR IF YES
1029      004374 022737 000057 002200      CMP      #57,ULIMIT      , IS ULIMIT = 57
1030      004402 001006      BNE      1$          , BR IF NO
1031      004404 012737 000207 002200      MOV      #207,ULIMIT      , CHANGE UPPER LIMIT
1032      004412 012701 000020      MOV      #20,R1          , ADJUST MEMORY POINTER
1033      004416 000762      BR      LPADD      , CHECK PAGE AGAIN
1034      004420 062737 000010 002200      1$     ADD      #10,ULIMIT      , INCREASE UPPER LIMIT
1035      004426 022737 000377 002200      CMP      #377,ULIMIT      , HAS THE UPPER LIMIT EXCEEDED THE MAX PAGE
1036      004434 002003      BGE      2$          , BR IF NO
1037      004436      ERDF    40,,PAGERP      , COULD NOT FIND THE PAGE OF MEMORY
1038      004436 104442      TRAP    T$ERCODE
1039      004440 000050      WORD   40
1040      004442 004050      WORD   PAGERR
1041      004444      2$     CKLOOP
1042      004444 104006      EMT     C$CLP1
1043      004446 005201      INC     R1          , ADJUST POINTER
1044      004450 000745      BR     LPADD      , LOOP UNTIL UPPER LIMIT IS FOUND
1045      004452 010137 002224      OUTPUT MOV     R1,LORANG      , PULL THE LOW RANGE OUT OF THE TABLE
1046      004456 013737 002224 002226      MOV     LOPANG,HIPANG      , COPY THE DATA
1047      004464 005237 002226      INC     HIRANG      , INCREMENT TO OBTAIN 1K PANGE
1048      004470 005737 002166      TST    RFLAG      , IS IT ROM (2K SEGMENTS)
1049      004474 001402      BEQ    3$          , BR IF NO
1050      004476 005237 002226      INC     HIRANG      , OBTAIN 2K PANGE
1051      004502 000207      3$     RTS     PC      , RETURN
1052

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1053      ;++
1054      ; SUBROUTINE TO VERIFY THE CHECKSUM VALUE OF A PAGE
1055      ; OF EXISTENT MEMORY AND ALSO TEST FOR THE PROPER CHECKWORD
1056      ; INPUTS: PAGE CONTROL REGISTER, PAGE CHECKWORD
1057      ; OUTPUTS: ERROR FLAGS WHICH POINT TO THE PROPER ERROR MESSAGE
1058      ; SUBORDINATE ROUTINES USED: CHKSUM
1059      ; CALLING SEQUENCE: JSR PC,MENTST
1060      ;--
1061
1062      004504 005037 002156      MENTST CLR      REAL      ; CLEAR MEMORY INDICATOR
1063      004510 005037 002154      LOBYTE CLR      BCF      ; SIGNAL LOW BYTES ARE BEING CHECKED
1064      004514 122737 177777 173774  CMPB    #-1,@#173774 ; DOES THE ROM EXIST
1065      004522 001421              BEQ     HIBYTE    ; BR IF NO
1066      004524 005237 002156              INC     REAL      ; INDICATE THAT MEMORY EXISTS
1067      004530 004737 004122              JSR    PC,CHKSUM ; COMPUTE THE ACTUAL CHECKSUM
1068      004534 113737 173776 002170  MOVB   @#173776,EXPSUM ; GET THE STORED CHECKSUM
1069      004542 063737 002172 002170  ADD    ACTSUM,EXPSUM ; ADD THE EXPECTED AND ACTUAL CHECKSUMS
1070      004550 105737 002170              TSTB   EXPSUM      ; TEST RESULTING CHECKBYTE
1071      004554 001404              BEQ    1$         ; BR IF NO ERROR
1072      004556 012737 000001 002232  MOV    #1,ERRFLG ; SET CHECKSUM ERROR FLAG
1073      004564 000207              RTS     PC        ; RETURN
1074      004566              1$
1075
1076      004566 012737 000001 002154  HIBYTE MOV    #1 BCF ; SET BCF TO DENOTE HIGH BYTES
1077      004574 122737 177777 173775  CMPB   #-1,@#173775 ; DOES THE ROM EXIST
1078      004602 001427              BEQ    TSTCKW    ; BR IF NO
1079      004604 005737 002156              TST   REAL      ; WAS THERE A LOW ROM?
1080      004610 001003              BNE    2$         ; BR IF YES
1081      004612 005037 002156              CLR   REAL      ; DENOTE NON-EXISTENT LOW ROM
1082      004616 000207              RTS   PC        ; RETURN FOR ERROR MESSAGE
1083      004620 005237 002156 2$      INC    REAL      ; INDICATE MEMORY EXISTS
1084      004624 004737 004122              JSP   PC,CHKSUM ; COMPUTE CHECKSUM
1085      004630 113737 173777 002170  MOVB   @#173777,EXPSUM ; GET EXPECTED CHECKSUM
1086      004636 063737 002172 002170  ADD    ACTSUM,EXPSUM ; ADD THE EXPECTED AND ACTUAL CHECKSUMS
1087      004644 105737 002170              TSTB   EXPSUM      ; TEST RESULTING CHECKBYTE
1088      004650 001404              BEQ   TSTCKW    ; BR IF EQUAL
1089      004652 012737 000001 002232  MOV    #1,ERRFLG ; SET CHECKSUM ERROR FLAG
1090      004660 000207              RTS   PC        ; RETURN
1091
1092      004662 005737 002156              TSTCKW TST   REAL ; ANY MEMORY?
1093      004666 001420              BEQ   5$         ; BR IF NO
1094      004670 022737 000001 002156  CMP    #1,REAL   ; SINGLE ROM?
1095      004676 001005              BNE   3$         ; BR IF NO
1096      004700 123737 002216 173776  CMPB   CKWD,@#173776 ; COMPARE CHECKBYTE ONLY
1097      004706 001005              BNE   4$         ; BR IF ERROR
1098      004710 000207              RTS   PC        ; RETURN -- NO ERROR
1099      004712 023737 002216 173776 3$    CMP    CKWD,@#173776 ; COMPARE CHECKWORD
1100      004720 001403              BEQ   5$         ; BR IF NO ERROR
1101      004722 012737 000002 002232 4$    MOV    #2,ERRFLG ; DENOTE CHECKSUM ERROR
1102      004730 000207              RTS   PC        ; RETURN
1103

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1104      ;++
1105      ;SUBROUTINE TO COMPUTE THE ACTUAL STARTING PAGE
1106      ;OF MEMORY IN WHICH THE MEMORY CHIP IS TO BE
1107      ;ADDRESSED
1108      ;INPUTS  THE LOW NUMBER IN THE MEMORY RANGE
1109      ;        (I. E. X IN X-Y K)
1110      ;OUTPUT PAGE NUMBER IN PCR WHICH DENOTES WHERE TESTING
1111      ;        SHOULD BEGIN
1112      ;CALLING SEQUENCE: JSR PC,SETADR
1113      ;--

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1114
1115 004732 013701 002210      SETADR  MOV      STORE,R1      ; COPY DATA
1116 004736 020127 000005      CMP      R1,#5      ; IS THE NUMBER <=5?
1117 004742 003006      BGT      1$      ; BR IF NO
1118 004744 000241      CLC      ; CLEAR C-BIT FOR ROTATE
1119 004746 006101      ROL      R1      ; ROTATE TO MULTIPLY
1120 004750 006101      ROL      R1      ; BY 10 (8)
1121 004752 006101      ROL      R1
1122 004754 110104      MOVB     R1,R4      ; COPY DATA
1123 004756 000413      BR      LOAD      ; LOAD THE PCR
1124 004760 012704 000020      1$     MOV      #20,R4      ; START WITH 16 (10)
1125 004764 012705 000200      MOV      #200,R5     ; CORRESPONDIGE PAGE IS 200
1126 004770 020104      LOOP    CMP      R1,R4      ; PAGE FOUND?
1127 004772 001404      BEQ     2$      ; BR IF YES
1128 004774 005204      INC     R4      ; NEXT PAGE
1129 004776 062705 000010      ADD     #10,R5     ; NEXT PAGE
1130 005002 000772      BR      LOOP      ; LOOP UNTIL PAGE IS FOUND
1131 005004 010504      2$     MOV      R5,R4      ; GET PAGE FOR PCR
1132 005006 110437 002160      LOAD   MOVB     R4,LOPAG     ; LOW STARTING PAGE
1133 005012 005204      INC     R4      ; INCREMENT
1134 005014 110437 002161      MOVB     R4,LOPAG+1      ; HIGH STARTING PAGE
1135 005020 000207      RTS     PC

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005022 104025

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005024 012700 000000
005030 104042
005032 010001
005034 016137 000002 002204
005042 016137 000004 002214
005050 016137 000006 002206
005056
005056 012700 000340
005062 104041
005064
005064 104051
005066
005066 103010
005070
005070 012746 005114
005074 012746 000001
005100 010600
005102 104017
005104 062706 000004

005110
005110 104032
005112 000054

005114 040445 742102 030526
005122 026461 040501 041040
005130 047517 051524 051124
005136 050101 042040 040511
005144 047107 051517 044524
005152 020103 051120 043517
005160 040522 022515 000116

TITLE MISCELLANEOUS SECTIONS
 SBTTL IDENTIFICATION

SBTTL REPORT CODING SECTION

BGNRPT

LSRPT

ENRPT

L10011

EMT CSRPT

SBTTL INITIALIZE SECTION

++
 THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
 AT THE BEGINNING OF EACH PASS
 --

BGNINIT

LSINIT

GPHARD #0,R1 .GET POINTER TO BASE ADDRESS OF P-TABLE

MOV #0,R0

EMT CSGPHRD

MOV R0,R1

MOV 2(R1),VECT .GET INTERRUPT VECTOR

MOV 4(R1),PRIOR .GET PRIORITY LEVEL

MOV 6(R1),SWSET .GET ROCKER SWITCH SETTINGS

SETPRI #PRI07 .INHIBIT INTERRUPTS

MOV #PRI07,R0

EMT CSSPRI

MANUAL .MANUAL INTERVENTION OK?

EMT CSMANI

BNCOMPLETE OUT BR IF NO

BCC OUT

PRINTF #IDENT .PRINT PROGRAM I D

MOV #IDENT,-(SP)

MOV #1,-(SP)

MOV SP,R0

EMT CSPNTF

ADD #4,SP

OUT

EXIT INIT

EMT CSEXIT

WORD L10012-

IDENT ASCIZ "'ABDV11-AA BOOTSTRAP DIAGNOSTIC PROGRAM'N"

EVEN

1210
1211 005166
1212 005166
1213 005166 104011

L10012 ENDINIT
EMT CSINIT

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005170
005170

005170 005037 177520
005174 005037 177522
005200 012737 000001 002222
005206 005037 002220
005212 005037 013530
005216 012737 000001 002164
005224 005237 002174
005230 005237 002176
005234
005234 013700 002204
005240 104036

005242
005242 104032
005244 000002

005246
005246
005246 104012

SBTTL CLEANUP CODING SECTION

++
THE CLEANUP CODING SECTION CONTAINS THE CODING THPT IS PERFORMED
AT THE END OF EACH PASS
--

BGNCLN
LSCLEAN

CLR PCR ; CLEAR PAGE CONTROL REGISTER
CLR RWREG ; CLEAR READ/WRITE REGISTER
MOV #1, RSET ; RESTORE DEFAULT VALUE
CLR RESPND ; RESTORE DEFAULT
CLR ADDON ; RESTORE DEFAULT
MOV #1, ANSR ; RESTORE DEFAULT
INC PASS ; INCREMENT PASS COUNT
INC PASCT ; INCREMENT TEST 4 PASS COUNT
CLRVEC VECT ; CLEAR INTERRUPT VECTOR
MOV VECT, RD
EMT CSCVEC

EXIT CLN
EMT CSEXIT
WORD L10013-

ENDCLN
L10013
EMT CSCLEAN

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005250
005250 104002
005250 005037 177522
005256 001411
005260 005001
005262 013702 177522
005266 104562
005270 000001
005272 002512
005274 003554
005276 104032
005300 000566
005302 104006
005304
005304 104003
005306
005306 104002
005310 012737 177777 177522
005316 022737 177777 177522
005324 001412
005326 012701 177777
005332 013702 177522
005336 104562
005340 000002
005342 002512
005344 003622
005346 104032
005350 000516
005352 104006
005354
005354 104003
005356

177522
177522
177522

TITLE HARDWARE TESTS
SBTTL IDENTIFICATION

SBTTL TEST 1 READ/WRITE REGISTER TEST

++
TEST TO VERIFY THAT THE READ/WRITE REGISTER AT ADDRESS 177522
IS WORD AND BYTE ADDRESSABLE
--

RWREG=177522

BGNTST

BGNSUB

EMT CSBSUB
CLR RWREG
BEQ 15
CLR R1
MOV RWREG,R2
ERRDF 1,RWR,REPR1,CYLOOP
TRAP TSERCODE
WORD 1
WORD RWR
WORD REPR1
EXIT TST
EMT CSEXIT
WORD L10014-
15 CKLOOP
EMT CSCLP1
ENDSUB
L10015 EMT CSESUB

.LOAD ALL ZEROS
.BR IF CLEAR
.EXPECTED DATA
.COPY CONTENTS
REG STEP CANNOT HOLD ALL ZEROS

ABORT TEST IF LOOP ON ERROR NOT SELECTED

LOOP ON ERROR IF SELECTED

BGNSUB

EMT CSBSUB
MOV #-1,RWREG
CMP #177777,RWREG
BEQ 25
MOV #-1,R1
MOV RWREG,R2
ERRDF 2,RWR,REPR2,CYLOOP
TRAP TSERCODE
WORD 2
WORD RWR
WORD REPR2
EXIT TST
EMT CSEXIT
WORD L10014-
25 CKLOOP
EMT CSCLP1
ENDSUB
L10016 EMT CSESUB

.LOAD ALL ONES
.CHECK THE REGISTER
.BR IF HOLDING GOOD DATA
.EXPECTED DATA
.COPY CONTENTS
REGISTER CANNOT HOLD ALL ONES

ABORT TEST IF ERROR AND NO LOOPING

LOOP ON ERROR IF SELECTED

BGNSUB

1302	005356	104002			EMT	C\$BSUB	
1303	005360	012737	125252	177522	MOV	#125252, RWREG	, LOAD ALTERNATING 1'S AND 0'S BIT PATTERN
1304	005366	022737	125252	177522	CMP	#125252, RWREG	, CHECK DATA
1305	005374	001412			BEQ	3\$	, BR IF GOOD
1306	005376	012701	125252		MOV	#125252, R1	, EXPECTED DATA
1307	005402	013702	177522		MOV	RWREG, R2	, COPY CONTENTS
1308	005406				ERRDF	3, RWR, RERR3, CKLOOP	, CANNOT HOLD GOOD DATA
1309	005406	104562			TRAP	T\$ERCODE	
1310	005410	000003			WORD	3	
1311	005412	002512			WORD	RWR	
1312	005414	003670			WORD	RERR3	
1313	005416				EXIT	T\$T	, ABORT TEST IF ERROR DETECTED
1314	005416	104032			EMT	C\$EXIT	
1315	005420	000446			WORD	L10014-	
1316	005422			3\$	CKLOOP		, CHECK FOR LOOP ON ERROR AGAIN
1317	005422	104006			EMT	C\$CLP1	
1318	005424				ENDSUB		
1319	005424			L10017			
1320	005424	104003			EMT	C\$ESUB	
1321							
1322	005426				BGNSUB		
1323	005426	104002			EMT	C\$BSUB	
1324	005430	105037	177522		CLRB	RWREG	, CLEAR THE REGISTER'S LOW BYTE
1325	005434	022737	125000	177522	CMP	#125000, RWREG	, DID IT CLEAR PROPERLY?
1326	005442	001412			BEQ	4\$	, BR IF YES
1327	005444	012701	125000		MOV	#125000, R1	, EXPECTED DATA
1328	005450	013702	177522		MOV	RWREG, R2	, COPY CONTENTS
1329	005454				ERRDF	4, RWR, RERR4, CKLOOP	, DID NOT RESPOND PROPERLY TO BYTE INSTRUCTION
1330	005454	104562			TRAP	T\$ERCODE	
1331	005456	000004			WORD	4	
1332	005460	002512			WORD	RWR	
1333	005462	003736			WORD	RERR4	
1334	005464				EXIT	T\$T	ABORT TEST IF ERROR DETECTED
1335	005464	104032			EMT	C\$EXIT	
1336	005466	000400			WORD	L10014-	
1337	005470			4\$	CKLOOP		CHECK FOR LOOP ON ERROR AGAIN
1338	005470	104006			EMT	C\$CLP1	
1339	005472				ENDSUB		
1340	005472			L10020			
1341	005472	104003			EMT	C\$ESUB	
1342							
1343	005474				BGNSUB		
1344	005474	104002			EMT	C\$BSUB	
1345	005476	000337	177522		SWAB	RWREG	SWAP BYTES IN THE REGISTER
1346	005502	022737	000252	177522	CMP	#252, RWREG	GOOD DATA?
1347	005510	001406			BEQ	5\$	, BR IF YES
1348	005512				ERRDF	5, RWR, RERR4, CKLOOP	, BYTE INSTRUCTION ERROR
1349	005512	104562			TRAP	T\$ERCODE	
1350	005514	000005			WORD	5	
1351	005516	002512			WORD	RWR	
1352	005520	003736			WORD	RERR4	
1353	005522				EXIT	T\$T	ABORT TEST IF ERROR DETECTED
1354	005522	104032			EMT	C\$EXIT	
1355	005524	000342			WORD	L10014-	
1356	005526			5\$	CKLOOP		CHECK FOR LOOP ON ERROR AGAIN
1357	005526	104006			EMT	C\$CLP1	

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1358 005530          ENDSUB
1359 005530          L10021
1360 005530 104003  EMT      CSESUB
1361
1362 005532          BGNSUB
1363 005532 104002  EMT      CSBSUB
1364 005534 012737 052525 177522  MOV      #052525,RWREG  ;LOAD AN ALTERNATING 0'S AND 1'S BIT PATTERN
1365 005542 022737 052525 177522  CMP      #052525,RWREG  ;CHECK IT
1366 005550 001412          BEQ      6$           ;BR IF GOOD DATA
1367 005552 012701 052525          MOV      #052525,R1    ;EXPECTED DATA
1368 005556 013702 177522          MOV      RWREG,R2     ;COPY CONTENTS
1369 005562          ERDF    6,RWR,RERR3,CKLOOP ;CANNOT HOLD GOOD DATA
1370 005562 104562          TRAP    T$ERCODE
1371 005564 000006          WORD    6
1372 005566 002512          WORD    RWR
1373 005570 003670          WORD    RERR3
1374 005572          EXIT    T$           ;ABORT TEST IF ERROR DETECTED
1375 005572 104032          EMT      C$EXIT
1376 005574 000272          WORD    L10014-
1377 005576          6$      CKLOOP    ;CHECK FOR LOOP ON ERROR AGAIN
1378 005576 104006          EMT      C$CLP1
1379 005600          ENDSUB
1380 005600          L10022
1381 005600 104000  EMT      CSESUB
1382
1383 005602          BGNSUB
1384 005602 104002  EMT      CSBSUB
1385 005604 105037 177522  CLRB    RWREG+1     ;CLEAR HIGH BYTE OF REGISTER
1386 005610 022737 000125 177522  CMP      #125,RWREG  ;CHECK THE RESULTING CONTENTS OF THE REGISTER
1387 005616 001412          BEQ      7$           ;BR IF GOOD DATA
1388 005620 012701 000125          MOV      #125,R1     ;EXPECTED DATA
1389 005624 013702 177522          MOV      RWREG,R2     ;COPY CONTENTS
1390 005630          ERDF    7,RWR,PEPP4,CKLOOP ;BYTE INSTRUCTION ERROR
1391 005630 104562          TRAP    T$ERCODE
1392 005632 000007          WORD    7
1393 005634 002512          WORD    RWR
1394 005636 003736          WORD    RERR4
1395 005640          EXIT    T$           ;ABORT TEST IF ERROR DETECTED
1396 005640 104032          EMT      C$EXIT
1397 005642 000224          WORD    L10014-
1398 005644          7$      CKLOOP    ;CHECK FOR LOOP ON ERROR AGAIN
1399 005644 104006          EMT      C$CLP1
1400 005646          ENDSUB
1401 005646          L10022
1402 005646 104000  EMT      CSESUB
1403
1404 005650          BGNSUB
1405 005650 104002  EMT      CSBSUB
1406 005652 000337 177522  SWAB    RWREG        ;SWAP BYTES
1407 005656 022737 052400 177522  CMP      #052400,RWREG ;DATA GOOD?
1408 005664 001412          BEQ      10$          ;BR IF YES
1409 005666 012701 052400          MOV      #52400,R1   ;EXPECTED DATA
1410 005672 013702 177522          MOV      RWREG,R2     ;COPY CONTENTS
1411 005676          ERDF    10,RWR,REPP4,CKLOOP ;BYTE INSTRUCTION ERROR
1412 005676 104562          TRAP    T$ERCODE
1413 005700 000012          WORD    10

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1414	005702	002512			WORD	RWR	
1415	005704	003736			WORD	RERR4	
1416	005706				EXIT	TST	.ABORT TEST IF ERROR DETECTED
1417	005706	104032			EMT	CSEXIT	
1418	005710	000156			WORD	L10014-	
1419	005712		105		CKLOOP		.CHECK FOR LOOP ON ERROR AGAIN
1420	005712	104006			EMT	C\$CLP1	
1421	005714				ENDSUB		
1422	005714			L10024			
1423	005714	104003			EMT	C\$ESUB	
1424							
1425	005716				BGNSUB		
1426	005716	104002			EMT	C\$BSUB	
1427	005720	005037	177522		CLR	RWREG	.MAKE SURE THE C-BIT IS CLEAR
1428	005724	052737	100000	177522	BIS	#BIT15, RWREG	.SET MSB
1429	005732	013703	177522		MOV	RWREG, R3	.COPY DATA IN RWREG
1430	005736	023703	177522		ROTLP1	CMP	RWREG, R3
1431	005742	001005			BNE	115	.ARE THEY THE SAME?
1432	005744	006003			ROR	R3	.BR IF NO
1433	005746	001411			BEQ	125	.ROTATE THE SET BIT
1434	005750	006037	177522		ROR	RWREG	.BR WHEN FINISHED
1435	005754	000770			BR	ROTLP1	.REPEAT ROTATE
1436	005756			115	ERRDF	11, RWR, REPR5, CKLOOP	.LOOP UNTIL ROTATE IS COMPLETE
1437	005756	104562			TRAP	TSERCODE	
1438	005760	000013			WORD	11	
1439	005762	002512			WORD	RWR	
1440	005764	004004			WORD	RERR5	
1441	005766				EXIT	TST	.START REST OF TEST
1442	005766	104032			EMT	CSEXIT	
1443	005770	000076			WORD	L10014-	
1444	005772			125	CKLOOP		.CHECK FOR LOOP ON ERROR
1445	005772	104006			EMT	C\$CLP1	
1446	005774				ENDSUB		
1447	005774			L10025			
1448	005774	104003			EMT	C\$ESUB	
1449							
1450	005776				BGNSUB		
1451	005776	104002			EMT	C\$BSUB	
1452	006000	012737	177777	177522	MOV	#-1, RWREG	SET ALL ONES
1453	006006	042737	100000	177522	BIC	#BIT15, RWREG	CLEAR MSB
1454	006014	013703	177522		MOV	RWREG, R3	COPY DATA
1455	006020	023703	177522		ROTLP2	CMP	RWREG, R3
1456	006024	001010			BNE	135	ARE THEY THE SAME?
1457	006026	000261			SEC		BR IF NO
1458	006030	006037	177522		POP	RWREG	SET C-BIT FOR ROTATE
1459	006034	006003			ROR	R3	ROTATE CLEAR BIT
1460	006036	022703	077777		CMP	#077777, R3	REPEAT
1461	006042	001366			BNE	ROTLP2	FINISHED?
1462	006044	000406			BR	145	.BR IF NOT YET
1463	006046			125	ERRDF	12, RWR, REPR6, CKLOOP	SUBTEST FINISHED
1464	006046	104562			TRAP	TSERCODE	
1465	006050	000014			WORD	12	
1466	006052	002512			WORD	RWR	
1467	006054	004026			WORD	REPR6	
1468	006056				EXIT	TST	
1469	006056	104002			EMT	CSEXIT	

1470	006060	000006		WORD	L10014-
1471	006062		149	CKLOOP	
1472	006062	104006		EMT	C\$CLP1
1473	006064			ENDSUB	
1474	006064		L10026		
1475	006064	104003		EMT	C\$ESUB
1476					
1477	006066			ENDTST	
1478	006066		L10014		
1479	006066	104001		EMT	C\$ETST

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1480 . SBTTL TEST 2 PAGE CONTROL REGISTER TEST
1481 . ++
1482 . TEST TO VERIFY THAT THE PAGE CONTROL REGISTER IS WORD
1483 . AND BYTE ADDRESSABLE.
1484 . --
1485
1486 006070 BGNTST
1487
1488 006070 BGNSUB
1489 006070 104002 EMT CSBSUB
1490 006072 005037 177520 CLR PCR . LOAD ALL ZEROS
1491 006076 001411 BEQ 15 . BR IF CLEARED
1492 006100 005001 CLR R1 . EXPECTED DATA
1493 006102 013702 177520 MOV PCR,R2 . COPY CONTENTS
1494 006106 ERRDF 13,PACR,RERR1,CKLOOP . REGISTER CANNOT HOLD ALL ZEROS
1495 006106 104562 TRAP T$ERCODE
1496 006110 000015 WORD 13
1497 006112 002556 WORD PACR
1498 006114 003554 . WORD RERR1
1499 006116 EXIT TST . ABORT TEST IF ERROR DETECTED
1500 006116 104032 EMT C$EXIT
1501 006120 000576 WORD L10027-
1502 006122 15 CKLOOP . CHECK FOR LOOP ON ERROR AGAIN
1503 006122 104006 EMT C$CLP1
1504 006124 ENDSUB
1505 006124 L10030
1506 006124 104003 EMT C$ESUB
1507
1508 006126 BGNSUB
1509 006126 104002 EMT CSBSUB
1510 006130 012737 177777 177520 MOV #-1,PCR . LOAD ALL ONES
1511 006136 022737 177777 177520 CMP #177777,PCR . CHECK FOR GOOD DATA
1512 006144 001412 BEQ 25 . BR IF GOOD
1513 006146 012701 177777 MOV #-1,R1 . EXPECTED DATA
1514 006152 013702 177520 MOV PCR,R2 . COPY CONTENTS
1515 006156 ERRDF 14,PACR,PEPP2,CKLOOP . REGISTER CANNOT HOLD ALL ONES
1516 006156 104562 TRAP T$ERCODE
1517 006160 000016 WORD 14
1518 006162 002556 WORD PACP
1519 006164 003622 WORD RERR2
1520 006166 EXIT TST . ABORT TEST IF ERROR DETECTED
1521 006166 104032 EMT C$EXIT
1522 006170 000526 WORD L10027-
1523 006172 25 CKLOOP . CHECK FOR LOOP ON ERROR AGAIN
1524 006172 104006 EMT C$CLP1
1525 006174 ENDSUB
1526 006174 L10031
1527 006174 104003 EMT C$ESUB
1528
1529
1530 006176 BGNSUB
1531 006176 104002 EMT CSBSUB
1532 006200 012737 125252 177520 MOV #125252,PCR . LOAD AN ALTERNATING 1'S AND 0'S BIT PATTERN
1533 006206 022737 125252 177520 CMP #125252,PCR . CHECK THE RESULTS
1534 006214 001412 BEQ 35 . BR IF GOOD DATA
1535 006216 012701 125252 MOV #125252,P1 . EXPECTED DATA

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HARDWARE TESTS MACY11 30(1046) 16-NOV-77 16 04 PAGE 39
 DVM88A P11 07-NOV-77 10 41 TEST 2 PAGE CONTROL REGISTER TEST

SEQ 0037

1536	006222	013702	177520		MOV	PCR, R2	, COPY CONTENTS
1537	006226				ERRDF	15, PACR, RERR3, CKLOOP	, REGISTER CANNOT HOLD GOOD DATA
1538	006226	104562			TRAP	T\$ERCODE	
1539	006230	000017			WORD	15	
1540	006232	002556			WORD	PACR	
1541	006234	003670			WORD	RERR3	
1542	006236				EXIT	TST	, ABORT TEST IF ERROR DETECTED
1543	006236	104032			EMT	C\$EXIT	
1544	006240	000456			WORD	L10027-	
1545	006242			3\$	CKLOOP		, CHECK FOR LOOP ON ERROR AGAIN
1546	006242	104006			EMT	C\$CLP1	
1547	006244				ENDSUB		
1548	006244			L10032			
1549	006244	104003			EMT	C\$ESUB	
1550							
1551	006246				BGNSUB		
1552	006246	104002			EMT	C\$BSUB	
1553	006250	105037	177520		CLRB	PCR	, CLEAR THE REGISTER'S LOW BYTE
1554	006254	022737	125000	177520	CMP	#125000, PCR	, COMPARE THE RESULTS
1555	006262	001412			BEQ	4\$	, BR IF GOOD DATA
1556	006264	012701	125000		MOV	#125000, R1	, EXPECTED DATA
1557	006270	013702	177520		MOV	PCR, R2	, COPY CONTENTS
1558	006274				ERRDF	16, PACR, RERR4, CKLOOP	, BYTE INSTRUCTION ERROR
1559	006274	104562			TRAP	T\$ERCODE	
1560	006276	000020			WORD	16	
1561	006300	002556			WORD	PACR	
1562	006302	003736			WORD	RERR4	
1563	006304				EXIT	TST	, ABORT TEST IF ERROR DETECTED
1564	006304	104032			EMT	C\$EXIT	
1565	006306	000410			WORD	L10027-	
1566	006310			4\$	CKLOOP		CHECK FOR LOOP ON ERROR
1567	006310	104006			EMT	C\$CLP1	
1568	006312				ENDSUB		
1569	006312			L10033			
1570	006312	104003			EMT	C\$ESUB	
1571							
1572	006314				BGNSUB		
1573	006314	104002			EMT	C\$BSUB	
1574	006316	000337	177520		SWAB	PCR	SWAP BYTES
1575	006322	022737	000252	177520	CMP	#252, PCR	CHECK THE RESULTS
1576	006330	001412			BEQ	5\$	BR IF GOOD DATA
1577	006332	012701	000252		MOV	#252, R1	, EXPECTED DATA
1578	006336	013702	177520		MOV	PCR, R2	COPY CONTENTS
1579	006342				ERRDF	17, PACR, RERR4, CKLOOP	BYTE INSTRUCTION ERROR
1580	006342	104562			TRAP	T\$ERCODE	
1581	006344	000021			WORD	17	
1582	006346	002556			WORD	PACR	
1583	006350	003736			WORD	RERR4	
1584	006352				EXIT	TST	ABORT TEST IF ERROR DETECTED
1585	006352	104032			EMT	C\$EXIT	
1586	006354	000342			WORD	L10027-	
1587	006356			5\$	CKLOOP		CHECK FOR LOOP ON ERROR
1588	006356	104006			EMT	C\$CLP1	
1589	006360				ENDSUB		
1590	006360			L10034			
1591	006360	104003			EMT	C\$ESUB	

1592	006362				BGNSUB		
1593	006362	104002			EMT	CSBSUB	
1594	006364	012737	052525	177520	MOV	#052525,PCR	.LOAD AN ALTERNATING 0'S AND 1'S BIT PATTERN
1595	006372	022737	052525	177520	CMP	#052525,PCR	.CHECK THE RESULTS
1596	006400	001412			BEQ	65	.BR IF GOOD DATA
1597	006402	012701	052525		MOV	#052525,R1	.EXPECTED DATA
1598	006406	013702	177520		MOV	PCR,R2	.COPY CONTENTS
1599	006412				ERRDF	20,PCR,RERR3,CKLOOP	.REGISTER CANNOT HOLD GOOD DATA
1600	006412	104562			TRAP	TSERCODE	
1601	006414	000024			WORD	20	
1602	006416	002556			WORD	PCR	
1603	006420	003670			WORD	RERR3	
1604	006422				EXIT	TST	.ABORT TEST IF ERROR DETECTED
1605	006422	104032			EMT	CSEXIT	
1606	006424	000272			WORD	L10027-	
1607	006426			65	CKLOOP		.CHECK FOR LOOP ON ERROR
1608	006426	104006			EMT	CSCLP1	
1609	006430				ENDSUB		
1610	006430			L10035			
1611	006430	104003			EMT	CSESUB	
1612	006432				BGNSUB		
1613	006432	104002			EMT	CSBSUB	
1614	006434	105037	177521		CLRB	PCR+1	.CLEAR THE HIGH BYTE
1615	006440	022737	000125	177520	CMP	#125,PCR	.CHECK THE REGISTER CONTENTS
1616	006446	001412			BEQ	75	.BR IF GOOD DATA
1617	006450	012701	000125		MOV	#125,R1	.EXPECTED DATA
1618	006454	013702	177520		MOV	PCR,R2	.COPY CONTENTS
1619	006460				ERRDF	21,PCR,RERR4,CKLOOP	.BYTE INSTRUCTION ERROR
1620	006460	104562			TRAP	TSERCODE	
1621	006462	000025			WORD	21	
1622	006464	002556			WORD	PCR	
1623	006466	003736			WORD	RERR4	
1624	006470				EXIT	TST	.ABORT TEST IF ERROR DETECTED
1625	006470	104032			EMT	CSEXIT	
1626	006472	000224			WORD	L10027-	
1627	006474			75	CKLOOP		.CHECK FOR LOOP ON ERROR
1628	006474	104006			EMT	CSCLP1	
1629	006476				ENDSUB		
1630	006476			L10036			
1631	006476	104003			EMT	CSESUB	
1632							
1633	006500				BGNSUB		
1634	006500	104002			EMT	CSBSUB	
1635	006502	000337	177520		SWAB	PCR	.SWAP BYTES
1636	006506	022737	052400	177520	CMP	#052400,PCR	.CHECK RESULTING CONTENTS
1637	006514	001412			BEQ	105	.BR IF GOOD DATA
1638	006516	012701	052400		MOV	#52400,R1	.EXPECTED DATA
1639	006522	013702	177520		MOV	PCR,R2	.COPY CONTENTS
1640	006526				ERRDF	22,PCR,RERR4,CKLOOP	.BYTE INSTRUCTION ERROR
1641	006526	104562			TRAP	TSERCODE	
1642	006530	000026			WORD	22	
1643	006532	002556			WORD	PCR	
1644	006534	003736			WORD	RERR4	
1645	006536				EXIT	TST	.ABORT TEST IF ERROR DETECTED
1646	006536	104032			EMT	CSEXIT	
1647	006540	000156			WORD	L10027-	

1648	006542			105	CKLOOP		.CHECK FOR LOOP ON ERROR
1649	006542	104006			EMT	C\$CLP1	
1650	006544				ENDSUB		
1651	006544			L10037			
1652	006544	104003			EMT	C\$ESUB	
1653							
1654	006546				BGNSUB		
1655	006546	104002			EMT	C\$BSUB	
1656	006550	005037	177520		CLR	PCR	.MAKE SURE THE C-BIT IS CLEAR
1657	006554	052737	100000	177520	BIS	#BIT15,PCR	.SET MSB
1658	006562	013703	177520		MOV	PCR,R3	.COPY DATA IN PCR
1659	006566	023703	177520	ROTLP3	CMP	PCR,R3	.ARE THEY THE SAME?
1660	006572	001005			BNE	115	.BR IF NO
1661	006574	006003			ROR	R3	.ROTATE THE SET BIT
1662	006576	001411			BEG	125	.BR IF FINISHED
1663	006600	006037	177520		ROR	PCR	.REPEAT ROTATE
1664	006604	000770			BR	ROTLP3	.LOOP UNTIL ROTATE IS COMPLETE
1665	006606			115	ERRDF	23,PACP,RERR5,CKLOOP	
1666	006606	104562			TRAP	T\$ERCODE	
1667	006610	000027			WORD	23	
1668	006612	002556			WORD	PACP	
1669	006614	004004			WORD	RERR5	
1670	006616				EXIT	TST	.SKIP REST OF TEST
1671	006616	104032			EMT	C\$EXIT	
1672	006620	000076			WORD	L10027-	
1673	006622			125	CKLOOP		.CHECK FOR LOOP ON ERROR
1674	006622	104006			EMT	C\$CLP1	
1675	006624				ENDSUB		
1676	006624			L10040			
1677	006624	104003			EMT	C\$ESUB	
1678							
1679	006626				BGNSUB		
1680	006626	104002			EMT	C\$BSUB	
1681	006630	012737	177777	177520	MOV	#-1,PCR	.SET ALL ONES
1682	006636	042737	100000	177520	BIC	#BIT15,PCR	.CLEAR MSB
1683	006644	013703	177520		MOV	PCR,R3	.COPY DATA
1684	006650	023703	177520	ROTLP4	CMP	PCR,R3	.ARE THEY THE SAME?
1685	006654	001010			BNE	135	.BR IF NO
1686	006656	000261			SEC		.SET C-BIT FOR ROTATE
1687	006660	006037	177520		ROR	PCR	.ROTATE CLEAR BIT
1688	006664	006003			ROR	R3	.REPEAT
1689	006666	022703	077777		CMP	#077777,R3	.ALL ONES?
1690	006672	001366			BNE	ROTLP4	.BR IF NOT YET
1691	006674	000406			BR	145	.SUBTEST FINISHED
1692	006676			135	ERRDF	24,PACP,PEPP6,CKLOOP	
1693	006676	104562			TRAP	T\$ERCODE	
1694	006700	000030			WORD	24	
1695	006702	002556			WORD	PACP	
1696	006704	004026			WORD	PEPP6	
1697	006706				EXIT	TST	
1698	006706	104032			EMT	C\$EXIT	
1699	006710	000006			WORD	L10027-	
1700	006712			145	CKLOOP		
1701	006712	104006			EMT	C\$CLP1	
1702	006714				ENDSUB		
1703	006714			L10041			

1704	006714	104003	EMT	CSESUB
1705	006716		ENDTST	
1706	006716		L10027	
1707	006716	104001	EMT	CSETST
1708				

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1709 . SBTTL TEST 3. BEVENT CLAMP ENABLE TEST
1710 . ++
1711 . TEST TO VERIFY THAT THE BEVENT CLAMP CAN BE ENABLED THIS TEST
1712 . ASSUMES THAT SWITCH #5 OF E21 IS IN THE ON POSITION, AND THE M8012
1713 . MODULE IS LOCATED IN THE SAME BACKPLANE THAT THE L NE TIME CLOCK
1714 . IS GENERATED FROM
1715 . --
1716
1717 006720 BGNTST
1718
1719 177546 BEVREG=177546
1720
1721 006720 005737 002174 TST PASS . IF THIS IS FIRST PASS
1722 006724 001402 BEQ 1$ . THEN DO THE TEST
1723 006726 EXIT TST . ELSE DON'T
1724 006726 104032 EMT C$EXIT
1725 006730 000520 WORD L10042-
1726 006732 1$ BGNSUB
1727 006732 104002 EMT C$SUB
1728 006734 SETVEC VECT, #INTSR, #PR107 . SET INTERRUPT VECTOR, INHIBIT INTERRUPTS
1729 006734 012746 000340 MOV #PR107, -(SP)
1730 006740 012746 007124 MOV #INTSR, -(SP)
1731 006744 013746 002204 MOV VECT, -(SP)
1732 006750 012746 000003 MOV #3, -(SP)
1733 006754 104037 EMT C$SVEC
1734 006756 062706 000010 ADD #10, SP
1735 006762 052737 000100 177546 BIS #BIT06, BEVREG . REMOVE BEVENT CLAMP
1736 006770 SETPRI #PR100 . ALLOW INTERRUPTS
1737 006770 012700 000000 MOV #PR100, RO
1738 006774 104041 EMT C$SPRI
1739 006776 WAITUS #400 . DELAY 40 MSECS
1740 006776 012700 000620 MOV #400, RO
1741 007002 104027 EMT C$WTU
1742 007004 SETPRI #PR107 . INHIBIT FUPTHEP INTERRUPTS
1743 007004 012700 000340 MOV #PR107, RO
1744 007010 104041 EMT C$SPRI
1745 007012 022737 000002 007132 CMP #2, ICOUNT . DID THE MINIMUM OF TWO INTERRUPTS OCCUR?
1746 007020 003403 BLE 2$ . BP IF YES
1747 007022 ERROF 2$, BVERR1, C$LOOP . BEVENT CLAMP ENABLE FAILED
1748 007022 104542 TRAP T$ERCODE
1749 007024 000031 WORD 25
1750 007026 007134 WORD BVERR1
1751 007030 2$ C$LOOP . CHECK FOR LOOP ON ERROR
1752 007030 104006 EMT C$CLP1
1753 007032 005037 007132 CLR ICOUNT . CLEAR INTERRUPT COUNT
1754 007036 ENDSUB
1755 007036 10043 EMT C$ESUB
1756 007036 104003
1757
1758 007040 BGNSUB
1759 007040 104002 EMT C$SUB
1760 007042 042737 000100 177546 BIC #BIT06, BEVREG . SET BEVENT CLAMP
1761 007050 SETPRI #PR100 . ALLOW INTEPPTS
1762 007050 012700 000000 MOV #PR100, RO
1763 007054 104041 EMT C$SPRI
1764 007056 WAITUS #400 . DELAY 40 MEE'E
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1765 007056 012700 000620      MOV      #400 ,R0
1766 007062 104027              EMT      C$WTU
1767 007064                    SETPRI   #PRI07          .SET HIGHEST PRIORITY
1768 007064 012700 000340      MOV      #PRI07,R0
1769 007070 104041              EMT      C$SPR1
1770 007072 022737 000001 007132  CMP      #1,ICOUNT      ;CHECK INTERRUPT COUNT
1771 007100 002003              BGE      4$            ;BR IF NO INTERRUPTS OCCURRED
1772 007102                    ERRDF    26, ,BVERR2,CKLOOP ;BEVENT CLAMP DID NOT PREVENT INTERRUPTS
1773 007102 104542              TRAP    T$ERCODE
1774 007104 000032              WORD    26
1775 007106 007202              WORD    BVERR2
1776 007110                    4$          CKLOOP          .CHECK FOR LOOP ON ERROR
1777 007110 104006              EMT      C$CLP1
1778 007112 005037 007132      CLR      ICOUNT        .CLEAR INTERRUPT COUNT
1779 007116                    ENDSUB
1780 007116                    L10044
1781 007116 104003              EMT      C$ESUB
1782 007120                    EXIT    T$T
1783 007120 104032              EMT      C$EXIT
1784 007122 000326              WORD    L10042-
1785 007124                    INTSR
1786 007124                    BGNSRV  BEVENT          .INTERRUPT SERVICE ROUTINE
1787 007124                    BEVENT
1788 007124 005237 007132      INC      ICOUNT        .INCREMENT COUNTER
1789 007130                    ENDSRV
1790 007130                    L10045
1791 007130 000002              RTI
1792
1793 007132 000000      ICOUNT  WORD    0
1794
1795 007134                    BGNMSG  BVERR1
1796 007134                    BVERR1
1797 007134                    PRINTB #MSG1
1798 007134 012746 007250      MOV      #MSG1, -(SP)
1799 007140 012746 000001      MOV      #1, -(SP)
1800 007144 010600              MOV      SP,R0
1801 007146 104014              EMT      C$PNTB
1802 007150 062706 000004      ADD      #4, SP
1803 007154                    PRINTB #INTCT, ICOUNT
1804 007154 013746 007132      MOV      ICOUNT, -(SP)
1805 007160 012746 007324      MOV      #INTCT, -(SP)
1806 007164 012746 000002      MOV      #2, -(SP)
1807 007170 010600              MOV      SP,R0
1808 007172 104014              EMT      C$PNTB
1809 007174 062706 000006      ADD      #6, SP
1810 007200                    ENDMMSG
1811 007200                    L10046
1812 007200 104023              EMT      C$MSG
1813
1814 007202                    BGNMSG  BVERR2
1815 007202                    BVERR2
1816 007202                    PRINTB #MSG2
1817 007202 012746 007373      MOV      #MSG2, -(SP)
1818 007206 012746 000001      MOV      #1, -(SP)
1819 007212 010600              MOV      SP,R0
1820 007214 104014              EMT      C$PNTB

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1821	007216	062706	000004			ADD	#4, SP
1822	007222					PRINTB	#INTCT, ICOUNT
1823	007222	013746	007132			MOV	ICOUNT, -(SP)
1824	007226	012746	007324			MOV	#INTCT, -(SP)
1825	007232	012746	000002			MOV	#2, -(SP)
1826	007236	010600				MOV	SP, R0
1827	007240	104014				EMT	C\$PNTB
1828	007242	062706	000006			ADD	#6, SP
1829	007246					ENDMSG	
1830	007246			L10047			
1831	007246	104023				EMT	C\$MSG
1832							
1833	007250	040445	042502	042526	MSG1	ASCIZ	/%BEVENT CLAMP FAILED TO ALLOW INTERRUPTS%/
1834	007256	052116	041440	040514			
1835	007264	050115	043040	044501			
1836	007272	042514	020104	047524			
1837	007300	040440	046114	053517			
1838	007306	044440	052116	051105			
1839	007314	052522	052120	022523			
1840	007322	000116					
1841	007324	040445	052516	041115	INTCT	ASCIZ	%.ANUMBER OF INTERRUPTS RECEIVED %03%/
1842	007332	051105	047440	020106			
1843	007340	047111	042524	051122			
1844	007346	050125	051524	051040			
1845	007354	041505	044505	042526			
1846	007362	035104	022440	031517			
1847	007370	047045	000				
1848	007373	045	041101	053105	MSG2	ASCIZ	%.BEVENT CLAMP DID NOT PREVENT INTERRUPTS%/
1849	007400	047105	020124	046103			
1850	007406	046501	020120	044504			
1851	007414	020104	047516	020124			
1852	007422	051120	053105	047105			
1853	007430	020124	047111	042524			
1854	007436	051122	050125	051524			
1855	007444	047045	000				
1856		007450				EVEN	
1857	007450					ENDTST	
1858	007450			L10042			
1859	007450	104001				EMT	C\$ETST

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1860          SBTTL TEST 4. LIGHT DISPLAY TEST
1861          ,++
1862          ,TEST TO VERIFY THAT THE FOUR RED LED'S ARE WORKING AND CAN BE
1863          ,TURNED ON INDIVIDUALLY
1864          ,--
1865
1866          007452          BGNTST
1867
1868          007452 005037 177524          CLR          LSREG          ,TURN ON ALL FOUR LED'S
1869          007456          WAITMS #2          ,DELAY APPROX 0 2 SEC
1870          007456 012700 000002          MOV          #2 ,RO
1871          007462 104026          EMT          CSWTM
1872          007464 012737 000017 177524          MOV          #17,LSREG          ,TURN OFF ALL FOUR LED'S
1873          007472          WAITMS #2          ,DELAY APPROX 0 2 SEC
1874          007472 012700 000002          MOV          #2 ,RO
1875          007476 104026          EMT          CSWTM
1876          007500          MANUAL          ,IS MANUAL INTERVENTION ALLOWED?
1877          007500 104051          EMT          CSMANI
1878          007502          BCOMPLETE 25          ,BR IF YES
1879          007502 103410          BCS          25
1880          007504 022737 000030 002176          CMP          #30,PASCT          ,S PASS COUNT >= 30?
1881          007512 003402          BLE          15          ,BR IF YES
1882          007514          EXIT          TST
1883          007514 104032          EMT          CSEXIT
1884          007516 000072          WORD          L10050-
1885          007520 005037 002176 15          CLR          PASCT          ,EXIT TEST
1886          007524 012737 000016 177524 25          MOV          #16,LSREG          ,TURN ON THE LED CORRESPONDING TO THE LSB
1887          007532          WAITMS #2          ,DELAY APPROX 0 2 SEC
1888          007532 012700 000002          MOV          #2 ,RO
1889          007536 104026          EMT          CSWTM
1890          007540 012737 000015 177524          MOV          #15,LSREG          ,TURN ON 2ND LED
1891          007546          WAITMS #2          ,DELAY APPROX 0 2 SEC
1892          007546 012700 000002          MOV          #2 ,RO
1893          007552 104026          EMT          CSWTM
1894          007554 012737 000013 177524          MOV          #13,LSREG          ,TURN ON 3RD LED
1895          007562          WAITMS #2          ,DELAY APPROX 0 2 SEC
1896          007562 012700 000002          MOV          #2 ,RO
1897          007566 104026          EMT          CSWTM
1898          007570 012737 000007 177524          MOV          #7,LSREG          ,TURN ON LED CORRESPONDING TO MSB
1899          007576          WAITMS #2          ,DELAY APPROX 0 2 SEC
1900          007576 012700 000002          MOV          #2 ,RO
1901          007602 104026          EMT          CSWTM
1902          007604          EXIT          TST          EXIT
1903          007604 104032          EMT          CSEXIT
1904          007606 000002          WORD          L10050-
1905
1906          007610          ENDTST
1907          007610          L10050
1908          007610 104001          EMT          CSETST
1909

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1910 .SBTTL TEST 5 ROCKER SWITCHES TEST
1911 .TEST TO CONFIRM THE ROCKER SWITCH SETTINGS THIS TEST ASSUMES THAT,
1912 .IN MANUFACTURING, THE ROCKER SWITCHES ARE ALL IN THE ON POSITION
1913 .THIS INCLUDES BOTH E21 AND E15. IN MANUFACTURING, THIS TEST WILL
1914 .VERIFY THAT ALL SWITCHES CAN BE READ AS ON. IN OTHER ENVIRONMENTS,
1915 .THE OPERATOR MAY SPECIFY WHAT THE SWITCH SETTINGS ARE BEFORE
1916 .THE DIAGNOSTIC IS STARTED (SEE PROGRAM OPTIONS UNDER OPERATING
1917 .INSTRUCTIONS) SWITCHES A1-A8 CORRESPOND TO E15 AND SWITCHES
1918 .B1-B4 TO E21
1919 007612 BGNTST
1920
1921 007612 MANUAL .IS MANUAL INTERVENTION ALLOWED?
1922 007612 104051 EMT C$MANI
1923 007614 BCOMPLETE PRTSW .BR IF YES
1924 007614 103412 BCS PRTSW
1925 007616 023737 002206 177524 CMP SWSET,LSREG .ALL SWITCHES SHOULD BE ON AND BITS 0-11 SET
1926 007624 001403 BEQ 1$ .BR IF SWITCH READINGS ARE OK
1927 007626 ERRDF 27,,SWERR .CANNOT READ SWITCHES PROPERLY
1928 007626 104442 TRAP T$ERCODE
1929 007630 000033 WORD 27
1930 007632 010134 WORD SWERR
1931 007634 15 CKLOOP .CHECK FOR LOOP ON ERROR
1932 007634 104006 EMT C$CLP1
1933 007636 EXIT TST .EXIT
1934 007636 104032 EMT C$EXIT
1935 007640 000524 WORD L10051-
1936 007642 013737 177524 010130 PRTSW MOV LSREG,TEMP .COPY CONTENTS OF LSREG
1937 007650 005037 010132 CLR SWCHON .CLEAR MASK
1938 007654 012737 000014 010126 MOV #14,SWCNT .SET SWITCH COUNT
1939 007662 032737 000001 010130 LP BIT #BIT0,TEMP .TEST FOR SWITCH SET
1940 007670 001403 BEQ 2$ .BR IF NOT SET
1941 007672 052737 100000 010132 BIS #BIT15,SWCHON .IF SET, THEN SET CORRESPNDING BIT IN MASK
1942 007700 000241 2$ CLC .CLEAR C-BIT FOR ROTATE
1943 007702 006037 010132 ROR SWCHON .ROTATE SWSET
1944 007706 006037 010130 ROR TEMP .GET READY TO TEST NEXT SWITCH
1945 007712 005337 010126 DEC SWCNT .DECREMENT SWITCH COUNT
1946 007716 001361 BNE LP .LOOP UNTIL ALL SWITCHES HAVE BEEN CHECKED
1947 007720 000241 CLC .CLEAR C-BIT FOR ROTATE
1948 007722 006037 010132 ROR SWCHON .ROTATE DATA
1949 007726 006037 010132 ROR SWCHON .ROTATE DATA
1950 007732 006037 010132 ROR SWCHON .ROTATE DATA
1951 007736 PRINTF #READN,SWCHON .PRINT SWITCH SETTINGS
1952 007736 013746 010132 MOV SWCHON,-(SP)
1953 007742 012746 010166 MOV #READN,-(SP)
1954 007746 012746 000002 MOV #2,-(SP)
1955 007752 010600 MOV SP,R0
1956 007754 104017 EMT C$PNTF
1957 007756 062706 000006 ADD #6,SP
1958
1959 007762 013702 010132 MOV SWCHON,R2 .COPY SWITCH SETTINGS
1960 007766 012701 000001 MOV #1,R1 .SET SWITCH NUMBER = 1
1961 007772 032702 000001 TAG1 BIT #BIT0,R2 .IS THIS SWITCH ON?
1962 007776 001411 BEQ TAG2 .BR IF NO
1963 010000 PRINTF #MESSG1,R1 .PRINT SWITCH NUMBER
1964 010000 010146 MOV R1,-(SP)
1965 010002 012746 010217 MOV #MESSG1,-(SP)

```

1966	010006	012746	000002		MOV	#2, -(SP)	
1967	010012	010600			MOV	SP, R0	
1968	010014	104017			EMT	CSPNTF	
1969	010016	062706	000006		ADD	#6, SP	
1970	010022	005201		TAG2	INC	R1	, INCREMENT SWITCH NUMBER
1971	010024	006002			ROR	R2	, ROTATE SWITCH REGISTER
1972	010026	022701	000010		CMP	#10, R1	, FINISHED WITH E15?
1973	010032	002357			BGE	TAG1	, BR IF NO
1974	010034	012701	000001		MOV	#1, R1	, RESET SWITCH NUMBER FOR E21
1975	010040	032702	000001	TAG3	BIT	#BIT0, R2	, IS THIS SWITCH SET?
1976	010044	001411			BEQ	TAG4	, BR IF NO
1977	010046				PRINTF	#MESSG2, R1	, PRINT SWITCH NUMBER
1978	010046	010146			MOV	R1, -(SP)	
1979	010050	012746	010232		MOV	#MESSG2, -(SP)	
1980	010054	012746	000002		MOV	#2, -(SP)	
1981	010060	010600			MOV	SP, R0	
1982	010062	104017			EMT	CSPNTF	
1983	010064	062706	000006		ADD	#6, SP	
1984	010070	005201		TAG4	INC	R1	, INCREMENT SWITCH NUMBER
1985	010072	006002			ROR	R2	, ROTATE SWITCH REGISTER
1986	010074	022701	000004		CMP	#4, R1	FINISHED?
1987	010100	002357			BGE	TAG3	, BR IF NO
1988	010102				PRINTF	#NEWLIN	
1989	010102	012746	010245		MOV	#NEWLIN, -(SP)	
1990	010106	012746	000001		MOV	#1, -(SP)	
1991	010112	010600			MOV	SP, R0	
1992	010114	104017			EMT	CSPNTF	
1993	010116	062706	000004		ADD	#4, SP	
1994							
1995	010122				EXIT TST		
1996	010122	104032			EMT	CSEXIT	
1997	010124	000240			WORD	L10051-	
1998							
1999	010126	000000		SWCNT	WORD	0	
2000	010130	000000		TEMP	WORD	0	
2001	010132	000000		SWCHON	WORD	0	
2002							
2003	010134				BGNMSG	SWERR	
2004	010134			SWERR			
2005	010134				PRINTB	#SERR1, SWSET, LSPEG	
2006	010134	013746	177524		MOV	LSPEG, -(SP)	
2007	010140	013746	002206		MOV	SWSET, -(SP)	
2008	010144	012746	010250		MOV	#SERR1, -(SP)	
2009	010150	012746	000003		MOV	#3, -(SP)	
2010	010154	010600			MOV	SP, R0	
2011	010156	104014			EMT	CSPNTB	
2012	010160	062706	000010		ADD	#10, SP	
2013	010164				ENDMSG		
2014	010164			L10052			
2015	010164	104023			EMT	CMSG	
2016							
2017	010166	040445	053523	052111	PEADN	ASCII	SWITCHES ON 106'A
2018	010174	044103	051505	047440			
2019	010202	020116	020072	047445			
2020	010210	022466	020101	020072			
2021	010216	000					

2022	010217	045	040501	042045	MESSG1	ASCIZ	/%AA%D1%A, /
2023	010224	022461	026101	000040			
2024	010232	040445	022502	030504	MESSG2	ASCIZ	/%AB%D1%A, /
2025	010240	040445	020054	000			
2026	010245	045	000116		NEWLIN	ASCIZ	/%N/
2027	010250	040445	044504	020104	SERR1	ASCIZ	/%ADID NOT RECOGNIZE ALL SWITCHES AS ON%N/
2028	010256	047516	020124	042522			
2029	010264	047503	047107	055111			
2030	010272	020105	046101	020114			
2031	010300	053523	052111	044103			
2032	010306	051505	040440	020123			
2033	010314	047117	047045				
2034	010320	040445	054105	042520		ASCIZ	/%AEXPECTED %06%S5%RECEIVED %06%.N/
2035	010326	052103	042105	020072			
2036	010334	047445	022466	032523			
2037	010342	040445	042522	042503			
2038	010350	053111	042105	022472			
2039	010356	033117	047045	000			
2040		010364				EVEN	
2041	010364					ENDTST	
2042	010364				L10051		
2043	010364	104 01			EMT	CSETST	
2044							


```

2045          SBTTL TEST 6 2K DIAGNOSTIC ROM
2046          ,++
2047          ,TEST TO PERFORM CHECKSUM AND CHECKWORD VERIFICATION ON THE 2K
2048          ,OF DIAGNOSTIC ROM IN UNATTENDED MODE, THE ROM WILL BE ADDRESSED
2049          ,FROM 0-2K IN STAND-ALONE MODE, THE OPERATOR MAY CHANGE THE
2050          ,ADDRESS BY RESPONDING TO QUESTIONS GENERATED ON THE FIRST PASS
2051          ,--
2052 010366          BGNTST
2053
2054 010366          BGNSUB
2055 010366 104002    EMT      C$BSUB
2056 010370          MANUAL          ,MANUAL INTERVENTION OK?
2057 010370 104051    EMT      C$MANI
2058 010372          BNCOMPLETE     STRT      ,BR IF NO
2059 010372 103014    BCC     STRT
2060 010374 005737 002174 TST     PASS          ,FIRST PASS?
2061 010400 001032    BNE     RSTRT        ,BR IF NO
2062 010402          GMANIL     DADDR RSET, 1, YES
2063 010402 104043    EMT      C$GMAN
2064 010404 000404    BR      10000$
2065 010406 002222          WORD     RSET
2066 010410 000130          WORD     T$CODE
2067 010412 011473          WORD     DADDR
2068 010414 000001          WORD     1
2069 010416          10000$
2070 010416 005737 002222 TST     RSET          ,STANDARD-JUMPERS?
2071 010422 001404    BEQ     GETAD        ,BR IF NO
2072 010424 012737 000400 012746 STRT    MOV     #400, DRLP    ,STORE STARTING ADDRESS
2073 010432 000415          BR      RSTRT        GO PERFORM TEST
2074 010434          GETAD     GMANID   LOADR, STORE, D, -1 0 24 NO
2075 010434 104043    EMT      C$GMAN
2076 010436 000406    BR      10001$
2077 010440 002210          WORD     STORE
2078 010442 000042          WORD     T$CODE
2079 010444 002774          WORD     LOADR
2080 010446 177777          WORD     -1
2081 010450 000000          WORD     T$LOLIM
2082 010452 000024          WORD     T$HILIM
2083 010454          10001$
2084 010454 004737 004732 JSR     PC, SETADR    GET STARTING ADDRESS
2085 010460 013737 002160 010746 MOV     LOPAG, DRLP    STORE STARTING ADDRESS
2086 010466 013737 010746 177520 RSTRT  MOV     DRLP, PCR    SET UP PCR
2087 010474 012737 000010 002162 DRSTST MOV     #10, COUNTR  SET NUMBER OF CHECKWORDS TO CHECK
2088 010502 012705 002134          MOV     #SFPTBL, R5   LOCATION OF CHECKWORDS
2089 010506 012737 000001 002166          MOV     #1, RFLAG     INDICATE ROM
2090 010514 005037 002154          CLR     BCF           SIGNAL LOW BYTES ARE BEING CHECKED
2091 010520 122737 177777 173774          CMPB   #-1, 0#173774 , DOES THE ROM EXIST?
2092 010526 001005          BNE     1$           BR IF YES
2093 010530          ERDF     30, , DERR1, CKLOOP ,DIAGNOSTIC ROM E48 NOT FOUND
2094 010530 104542    TRAP   T$ERCODE
2095 010532 000036          WORD     30
2096 010534 010750          WORD     DERR1
2097 010536          EXIT     TST           EXIT TEST, ROM NOT FOUND
2098 010536 104032    EMT      C$EXIT
2099 010540 000754          WORD     L10053-
2100 010542          1$      CKLOOP    ,CHECK FOR LOOP ON ERR 1P

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2101	010542	104006			EMT	C\$CLP1	
2102	010544	004737	004122		JSR	PC,CHKSUM	. COMPUTE THE ACTUAL CHECKSUM
2103	010550	113737	173776	002170	MOVB	@#173776,EXPSUM	. GET THE STORED CHECKSUM
2104	010556	063737	002172	002170	ADD	ACTSUM,EXPSUM	. ADD THE EXPECTED AND ACTUAL CHECKSUMS
2105	010564	105737	002170		TSTB	EXPSUM	. BYTE RESULT = 0?
2106	010570	001403			BEQ	2\$	. BR IF YES
2107	010572				ERRDF	31, DERR2,CKLOOP	. CHECKSUM ERROR IN DIAGNOSTIC ROM
2108	010572	104542			TRAP	T\$ERCODE	
2109	010574	000037			WORD	31	
2110	010576	010776			WORD	DERR2	
2111	010600			2\$	CKLOOP		. CHECK FOR LOOP ON ERROR
2112	010600	104006			EMT	C\$CLP1	
2113	010602				ENDSUB		
2114	010602			L10054			
2115	010602	104003			EMT	C\$ESUB	
2116							
2117							
2118	010604				BGNSUB		
2119	010604	104002			EMT	C\$BSUB	
2120	010606	012737	000C01	002154	MOV	#1,BCF	. SET BCF TO DENOTE HIGH BYTES
2121	010614	122737	177777	173775	CMPB	#-1,@#173775	. DOES THE ROM EXIST?
2122	010622	001005			BNE	3\$	. BR IF YES
2123	010624				ERRDF	32, DERR3,CKLOOP	. DIAGNOSTIC ROM E53 NOT FOUND
2124	010624	104542			TRAP	T\$ERCODE	
2125	010626	000040			WORD	32	
2126	010630	011024			WORD	DERR3	
2127	010632				EXIT	T\$T	. EXIT TEST, ROM NOT FOUND
2128	010632	104032			EMT	C\$EXIT	
2129	010634	000660			WORD	L10053-	
2130	010636			3\$	CKLOOP		. CHECK FOR LOOP ON ERROR
2131	010636	104006			EMT	C\$CLP1	
2132	010640	004737	004122		JSR	PC,CHKSUM	. COMPUTE THE ACTUAL CHECKSUM
2133	010644	113737	173777	002170	MOVB	@#173777,EXPSUM	. GET EXPECTED CHECKSUM
2134	010652	063737	002172	002170	ADD	ACTSUM,EXPSUM	. ADD THE EXPECTED AND ACTUAL CHECKSUMS
2135	010660	105737	002170		TSTB	EXPSUM	. BYTE RESULT = 0?
2136	010664	001403			BEQ	4\$	. BR IF YES
2137	010666				ERRDF	33, DERR4,CKLOOP	. CHECKSUM ERROR IN DIAGNOSTIC ROM
2138	010666	104542			TRAP	T\$ERCODE	
2139	010670	000041			WORD	33	
2140	010672	011052			WORD	DERR4	
2141	010674			4\$	CKLOOP		
2142	010674	104006			EMT	C\$CLP1	
2143	010676				ENDSUB		
2144	010676			L10055			
2145	010676	104003			EMT	C\$ESUB	
2146							
2147	010700				BGNSUB		
2148	010700	104002			EMT	C\$BSUB	
2149	010702	022537	173776		CMPL	(R5)+,@#173776	VERIFY THE CHECKWORD FOR THIS PAGE
2150	010706	001403			BEQ	5\$	BR IF THE SAME
2151	010710				ERRDF	34, DERR5,CKLOOP	CHECKWORD ERROR
2152	010710	104542			TRAP	T\$ERCODE	
2153	010712	000042			WORD	34	
2154	010714	011100			WORD	DERR5	
2155	010716			5\$	CKLOOP		
2156	010716	104006			EMT	C\$CLP1	

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2157 010720          ENDSUB
2158 010720          L10056
2159 010720 104003   EMT      C$ESUB
2160
2161
2162 010722          BGN SUB
2163 010722 104002   EMT      C$BSUB
2164 010724 062737 001002 177520  ADD     #1002,PCR
2165 010732 005337 002162   DEC     COUNTR
2166 010736 001266   BNE     DLOOP
2167 010740          ENDSUB
2168 010740          L10057
2169 010740 104003   EMT      C$ESUB
2170
2171 010742          EXIT     TST
2172 010742 104032   EMT      C$EXIT
2173 010744 000550   WORD   L10053-
2174
2175 010746 000000   DRLP    WORD    0
2176
2177 010750          BGNMSG  DERR1
2178 010750          DEPR1
2179 010750          PRINTB  #LRAERR, #NODR
2180 010750 012746 011447   MOV     #NODR, -(SP)
2181 010754 012746 011126   MOV     #LRAERR, -(SP)
2182 010760 012746 000002   MOV     #2, -(SP)
2183 010764 010600   MOV     SP, RO
2184 010766 104014   EMT     C$PNTB
2185 010770 062706 000006   ADD     #6, SP
2186 010774          ENDMSG
2187 010774          L10060
2188 010774 104023   EMT     C$MSG
2189
2190 010776          BGNMSG  DERR2
2191 010776          DEPR2
2192 010776          PRINTB  #LOWROM, #CKERR
2193 010776 012746 002624   MOV     #CKERR, -1SF
2194 011002 012746 011202   MOV     #LOWROM, -1SP
2195 011006 012746 000002   MOV     #2, -1SP
2196 011012 010600   MOV     SP, RO
2197 011014 104014   EMT     C$PNTB
2198 011016 062706 000006   ADD     #6, SP
2199 011022          ENDMSG
2200 011022          L10061
2201 011022 104023   EMT     C$MSG
2202
2203 011024          BGNMSG  DERR3
2204 011024          DEPR3
2205 011024          PRINTB  #HRAERR, #NODR
2206 011024 012746 011447   MOV     #NODR, -1SP
2207 011030 012746 011251   MOV     #HRAERR, -1SP
2208 011034 012746 000002   MOV     #2, -1SP
2209 011040 010600   MOV     SP, RO
2210 011042 104014   EMT     C$PNTB
2211 011044 062706 000006   ADD     #6, SP
2212 011050          ENDMSG

```

```

, NEXT PAGE IN PCR
, DECREMENT CHECKWORD COUNT
, LOOP UNTIL ALL 20 PAGES HAVE BEEN CHECKED

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2213	011050				L10062				
2214	011050	104023				EMT	C\$MSG		
2215									
2216	011052				BGNMSG	DERR4			
2217	011052				DERR4				
2218	011052				PRINTB	#HIROM, #CKERR			
2219	011052	012746	002624		MOV	#CKERR, -(SP)			
2220	011056	012746	011325		MOV	#HIROM, -(SP)			
2221	011062	012746	000002		MOV	#2, -(SP)			
2222	011066	010600			MOV	SP, RO			
2223	011070	104014			EMT	C\$PNTB			
2224	011072	062706	000006		ADD	#6, SP			
2225	011076				ENDMSG				
2226	011076				L10063				
2227	011076	104023				EMT	C\$MSG		
2228									
2229	011100				BGNMSG	DERR5			
2230	011100				DERR5				
2231	011100				PRINTB	#MISTAK			
2232	011100	012746	011375		MOV	#MISTAK, -(SP)			
2233	011104	012746	000001		MOV	#1, -(SP)			
2234	011110	010600			MOV	SP, RO			
2235	011112	104014			EMT	C\$PNTB			
2236	011114	062706	000004		ADD	#4, SP			
2237	011120	004737	004246		SP	PC, VIRTAD			
2238	011124				ENDMSG				
2239	011124				L10064				
2240	011124	104023				EMT	C\$MSG		
2241									
2242	011126	052045	047045	040445	LRAEPR	ASCIZ	'T:N:ACANNOT ACCESS DIAGNOSTIC ROM IN E48:N/		
2243	011134	040503	047116	052117					
2244	011142	040440	041503	051505					
2245	011150	020123	044504	043501					
2246	011156	047516	052123	041511					
2247	011164	051040	046517	044440					
2248	011172	020116	032105	022470					
2249	011200	000116							
2250									
2251	011202	052045	047045	040445	LOWROM	ASCIZ	'T:N:ALOW BYTE D AGNOSTIC ROM IN E48:N/		
2252	011210	047514	020127	054502					
2253	011216	042524	042040	040511					
2254	011224	047107	051517	044524					
2255	011232	020103	047522	020115					
2256	011240	047111	042440	034064					
2257	011246	047045	000						
2258									
2259	011251	045	022524	022516	HRAEPR	ASCIZ	'T:N:ACANNOT ACCESS DIAGNOSTIC ROM IN E53:N/		
2260	011256	041501	047101	047516					
2261	011264	020124	041501	042503					
2262	011272	051523	042040	040511					
2263	011300	047107	051517	044524					
2264	011306	020103	047522	020115					
2265	011314	047111	042440	031465					
2266	011322	047045	000						
2267									
2268	011325	045	022524	022516	HIROM	ASCIZ	'T:N:HIGH BYTE DIAGNOSTIC ROM IN E53:N/		

2269	011332	044101	043511	020110			
2270	011340	054502	042524	042040			
2271	011346	040511	047107	051517			
2272	011354	044524	020103	047522			
2273	011362	020115	047111	042440			
2274	011370	031465	047045	000			
2275							
2276	011375	045	044501	041516	MISTAK	ASCIZ	/%AINCORRECT CHECKWORD IN DIAGNOSTIC ROM%/
2277	011402	051117	042522	052103			
2278	011410	041440	042510	045503			
2279	011416	047527	042122	044440			
2280	011424	020116	044504	043501			
2281	011432	047516	052123	041511			
2282	011440	051040	046517	047045			
2283	011446	000					
2284							
2285	011447	116	047117	042455	NODR	ASCIZ	/NON-EXISTENT MEMORY/
2286	011454	044530	052123	047105			
2287	011462	020124	042515	047515			
2288	011470	054522	000				
2289							
2290	011473	123	040524	042116	DADDR	ASCIZ	/STANDARD JUMPERS/
2291	011500	051101	020104	052512			
2292	011506	050115	051105	000123			
2293							
2294							
2295	011514						
2296	011514				L10053		
2297	011514	104001			EMT	CSETST	

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011516 104002
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011520 104051
011522
011522 103112
011524 005037 013530
011530 005737 002174
011534 001422
011536 005737 013534
011542 001153
011544 005737 013536
011550 001402
011552 000137 012420
011556 005737 013540
011562 001402
011564 000137 012766
011570 005737 013542
011574 001465
011576 000137 013324
011602
011602 104043
011604 000404
011606 013530
011610 000130
011612 014037
011614 000001
011616
011616 005737 013530
011622 001452

.SBTTL TEST 7 TEST ALL ADDITIONAL MEMORY
++
.TEST TO LOCATE AND VERIFY CHECKSUMS IN ALL RESIDENT MEMORY
.ON A PAGE BASIS THERE ARE FOUR STORAGE AREAS ASSOCIATED
.WITH THIS TEST WHICH HOLD THE CHECKWORDS OF ALL THE MEMORY
.THAT IS TO BE TESTED THESE TABLES WILL HAVE DEFAULT VALUES
.ONLY IF THE ASSOCIATED MEMORY CHIP IS A STANDARD COMPONENT
.ON THE BOARD IF NO DEFAULT VALUES EXIST, THE OPERATOR MUST
.INPUT THE CHECKWORDS AS LISTED ON THE PRINT SET THE MEMORY
.WILL BE TESTED IN THE FOLLOWING LOCATIONS BY DEFAULT

EXPANDABLE DIAGNOSTIC ROM 2-4K
EPROM IN SOCKETS 4-6K
SYSTEM ROM 16-32K
SYSTEM EPROM 16-24K

.THE TEST WILL FIRST VERIFY THE CHECKSUMS IN ALL RESIDENT ROM,
.THEN COMPARE THE ACTUAL CHECKWORDS ERROR INFORMATION WILL
.INCLUDE THE SPECIFIC TYPE OF ERROR THAT OCCURS, THE VIRTUAL
.ADDRESS, AND WHETHER IT WAS THE HIGH BYTE OR LOW BYTE ROM/EPROM
.THIS INFORMATION SHOULD ALLOW A KNOWLEDGEABLE OPERATOR TO ISOLATE
.THE ERROR DOWN TO A SINGLE ROM/EPROM WITH THE AID OF THE
.ADDRESS MAP IN THE PRINT SET
--

BGNTST
BGNSUB
EMT CSBSUB
MANUAL UNDER APT?
EMT CSMANI
BNCOMPLETE DFLTST .SKIP TEST IF YES
BCC DFLTST
CLR ADDON .RESTORE DEFAULT
TST PASS .FIRST PASS?
BEQ GET .BR IF YES
TST LOD1 .EXPANDED DIAGNOSTIC ROM?
BNE LD1 .BR IF YES
TST LOD2 .EPROM IN SOCKETS?
BEQ P1 .BR IF NO
JMP LD2 .TEST EPROM
TST LOD3 .SYSTEM ROM ?
BEQ P2 .BR IF NO
JMP LD3 .TEST ROM
TST LOD4 .SYSTEM EPROM?
BEQ DFLTST .EXIT IF NO
JMP LD4 .TEST EPROM
GET GMANIL EXEC, ADDON, 1 YES
EMT CSMAN
BR 10000\$
WORD ADDON
WORD TSCODE
WORD EXEC
WORD 1
10000\$
TST ADDON .ADDITIONAL MEMORY?
BEQ DFLTST .BR IF NO

2354	011624			DIAIN	GMANIL	EXPND, RESPND, 1, NO	
2355	011624	104043			EMT	C\$GMAN	
2356	011626	000404			BR	10001\$	
2357	011630	002220			WORD	RESPND	
2358	011632	000120			WORD	T\$CODE	
2359	011634	014066			WORD	EXPND	
2360	011636	000001			WORD	1	
2361	011640			10001\$			
2362	011640	005737	002220		TST	RESPND	. EXPANDED DIAGNOSTIC ROM?
2363	011644	001045			BNE	EXPROM	. BR IF YES
2364	011646			EPRIN	GMANIL	EPRM, RESPND, 1, NO	
2365	011646	104043			EMT	C\$GMAN	
2366	011650	000404			BR	10002\$	
2367	011652	002220			WORD	RESPND	
2368	011654	000120			WORD	T\$CODE	
2369	011656	014116			WORD	EPRM	
2370	011660	000001			WORD	1	
2371	011662			10002\$			
2372	011662	005737	002220		TST	RESPND	. EPROM IN SOCKETS?
2373	011666	001402			BEQ	SYSRIN	. BR IF NO
2374	011670	000137	012306		JMP	EPRMT	. JUMP TO ACCEPT INPUT
2375	011674			SYSRIN	GMANIL	SYSR, RESPND, 1, NO	
2376	011674	104043			EMT	C\$GMAN	
2377	011676	000404			BR	10003\$	
2378	011700	002220			WORD	RESPND	
2379	011702	000120			WORD	T\$CODE	
2380	011704	014137			WORD	SYSR	
2381	011706	000001			WORD	1	
2382	011710			10003\$			
2383	011710	005737	002220		TST	RESPND	. SYSTEM ROM?
2384	011714	001402			BEQ	SYSEIN	. BR IF NO
2385	011716	000137	012626		JMP	SYSRT	. INPUT CHECKWORDS
2386	011722			SYSEIN	GMANIL	SYSE, RESPND, 1, NO	
2387	011722	104043			EMT	C\$GMAN	
2388	011724	000404			BR	10004\$	
2389	011726	002220			WORD	RESPND	
2390	011730	000120			WORD	T\$CODE	
2391	011732	014152			WORD	SYSE	
2392	011734	000001			WORD	1	
2393	011736			10004\$			
2394	011736	005737	002220		TST	RESPND	. SYSTEM EPROM?
2395	011742	001402			BEQ	DFLTST	. BR IF NO
2396	011744	000137	013164		JMP	SYSET	. INPUT CHECKWORDS
2397	011750			DFLTST	EXIT	TST	. NO ADCTL MEMORY -- EXIT
2398	011750	104032			EMT	C\$EXIT	
2399	011752	002344			WORD	L10065-	
2400	011754				ENDSUB		
2401	011754			L10066			
2402	011754	104003			EMT	C\$ESUB	
2403							
2404							
2405	011756				BGNSUB		
2406	011756	104002			EMT	C\$SUB	
2407	011760	005037	002232	EXPPOM	CLR	ERRFLG	. CLEAR EPROP FLAG
2408	011764	012737	000010	002212	MOV	#10, WORDCT	. COUNT 8 CHECKWORDS
2409	011772	012702	002234		MOV	#EXPDIA, P2	. POINTER TO STORAGE TABLE

2410	011776	004737	004166			JSR	PC, INPUT	, INPUT CHECKWORDS
2411	012002					GMANIL	EXADD, ANSR, 1, YES	
2412	012002	104043				EMT	C\$GMAN	
2413	012004	000404				BR	10000\$	
2414	012006	002164				WORD	ANSR	
2415	012010	000130				WORD	T\$CODE	
2416	012012	014167				WORD	EXADD	
2417	012014	000001				WORD	1	
2418	012016				10000\$			
2419	012016	005737	002164			TST	ANSR	, STANDARD MEMORY RANGE?
2420	012022	001020				BNE	1\$	, BR IF YES
2421	012024	005237	002164			INC	ANSR	, RESTORE DEFAULT VALUE
2422	012030					GMANID	LOADR, STORE, D, -1, D, 30, NO	
2423	012030	104043				EMT	C\$GMAN	
2424	012032	000406				BR	10001\$	
2425	012034	002210				WORD	STORE	
2426	012036	000042				WORD	T\$CODE	
2427	012040	002774				WORD	LOADR	
2428	012042	177777				WORD	-1	
2429	012044	000000				WORD	T\$LOLIM	
2430	012046	000030				WORD	T\$HILIM	
2431	012050				10001\$			
2432	012050	004737	004732			JSR	PC, SETADR	, GET FIRST PAGE ADDRESS
2433	012054	013737	002160	013534		MOV	LOPAG, LOD1	, STORE LOW PAGE NO
2434	012062	000403				BR	LD1	, SKIP NEXT INSTRUCTION
2435	012064	012737	010420	013534	1\$	MOV	#010420, LOD1	, STANDARD PAGE = 20, 21 2-4K RANGE
2436	012072	013737	013534	177520	LD1	MOV	LOD1, PCR	, LOAD STARTING PAGE
2437	012100	012737	000001	002166		MOV	#1, RFLAG	, INDICATE ROM
2438	012106	012703	002234			MOV	#EXPDIA, R3	, POINTER TO CHECKWORDS
2439	012112	012737	000010	002162		MOV	#10, COUNTR	, PAGE COUNT
2440	012120	012337	002216		EXPTST	MOV	(R3)+, CKWD	, GET CHECKWORD FOR THIS PAGE
2441	012124	004737	004504			JSR	PC, MEMTST	, TEST MEMORY
2442	012130	005737	002156			TST	REAL	, DOES THE MEMORY EXIST?
2443	012134	001455				BEQ	E3	, BR IF NO
2444	012136	005737	002232			TST	ERRFLG	, ANY OTHER ERRORS?
2445	012142	001421				BEQ	NOERR	, BR IF NO
2446	012144	004737	004346			JSR	PC, VIRTAD	, GET ADDRESS OF ERROR
2447	012150	005737	002154			TST	BCF	, LOW BYTE PAGE?
2448	012154	001004				BNE	HIGH	, BR IF NO
2449	012156	012737	002667	002230		MOV	#LOBYT, BYTLOC	, SET POINTER FOR ERROR MSG
2450	012164	000403				BR	DATOUT	, PRINT ERROR MESSAGE
2451	012166	012737	002731	002230	HIGH	MOV	#HIBYT, BYTLOC	, POINTER FOR ERROR MSG
2452	012174	022737	000001	002232	DATOUT	CMP	#1, ERPFLG	, CHECKSUM ERROR?
2453	012202	001420				BEQ	E1	, BR IF YES
2454	012204	000424				BR	E2	, ELSE CHECKWORD ERROR
2455	012206	062737	001002	177520	NOERR	ADD	#1002, PCR	, ADJUST PCR
2456	012214	005337	002162			DEC	CJUNTR	, DEC PAGE COUNT
2457	012220	001337				BNE	EXPTST	, LOOP UNTIL ALL PAGES ARE TESTED
2458	012222	005737	002174		MORE	TST	PASS	, FIRST PASS?
2459	012226	001002				BNE	1\$	, BR IF NO
2460	012230	000137	011646			JMP	EPRIN	, TEST ANY ADDITIONAL MEMORY
2461	012234	000137	011556		1\$	JMP	P1	, FIND ANY ADDITIONAL MEMORY
2462	012240					EXIT	SUB	, END OF SUBTEST
2463	012240	104032				EMT	C\$EXIT	
2464	012242	000040				WORD	L10067-	
2465	012244				E1	ERRDF	35, EXPND C\$SME C\$LOOP	

2466	012244	104562				TRAP	T\$ERCODE	
2467	012246	000043				WORD	35	
2468	012250	014066				WORD	EXPND	
2469	012252	013544				WORD	CKSME	
2470	012254	000762				BR	MORE	
2471	012256			E2		ERRDF	36, EXPND, CWKDE, CKLOOP	
2472	012256	104562				TRAP	T\$ERCODE	
2473	012260	000044				WORD	36	
2474	012262	014066				WORD	EXPND	
2475	012264	013602				WORD	CWKDE	
2476	012266	000755				BR	MORE	
2477	012270			E3		ERRDF	37, EXPND, NONXT, CKLOOP	
2478	012270	104562				TRAP	T\$ERCODE	
2479	012272	000045				WORD	37	
2480	012274	014066				WORD	EXPND	
2481	012276	013634				WORD	NONXT	
2482	012300	000750				BR	MORE	
2483	012302					ENDSUB		
2484	012302			L10067				
2485	012302	104003				EMT	C\$ESUB	
2486								
2487	012304					BGN\$SUB		
2488	012304	104002				EMT	C\$B\$SUB	
2489	012306	005037	002232		EPPMT	CLR	ERRFLG	. CLEAR ERROR FLAG
2490	012312	012737	000010	002212		MOV	#10, WORDCT	. INPUT 8 CHECKWORDS
2491	012320	012702	002254			MOV	#EPROM, R2	. POINTER TO STORAGE TABLE
2492	012324	004737	004166			JSR	PC, INPUT	. INPUT CHECKWORDS
2493	012330					G\$MANIL	EPADD, ANSR, 1, YES	
2494	012330	104043				EMT	C\$G\$MAN	
2495	012332	000404				BR	10000\$	
2496	012334	002164				WORD	ANSR	
2497	012336	000130				WORD	T\$CODE	
2498	012340	014215				WORD	EPADD	
2499	012342	000001				WORD	1	
2500	012344			10000\$				
2501	012344	005737	002164			TST	ANSR	. STANDARD MEMORY RANGE?
2502	012350	001020				BNE	1\$	. BP IF YES
2503	012352	005237	002164			INC	ANSR	. PESTOPE DEFAULT
2504	012356					G\$MANID	LOADR, STORE D - 1, D, 30, NC	
2505	012356	104043				EMT	C\$G\$MAN	
2506	012360	000406				BR	10001\$	
2507	012362	002210				WORD	STORE	
2508	012364	000042				WORD	T\$CODE	
2509	012366	002774				WORD	LOADR	
2510	012370	177777				WORD	-1	
2511	012372	000000				WORD	T\$LOLIM	
2512	012374	000030				WORD	T\$HILIM	
2513	012376			10001\$				
2514	012376	004737	004732			JSR	PC, SETADR	. GET FIRST PAGE ADDRESS
2515	012402	013737	002160	013536		MOV	OPAG, LOD2	. STORE LOW PAGE NO
2516	012410	000403				BR	LD2	. SKIP NEXT INSTRUCTION
2517	012412	012737	020440	013536	1\$	MOV	#020440, LOD2	. STANDARD PAGE = 40, 41 4-6K RANGE
2518	012420	013737	013536	177520	LOD	MOV	LOD2, PCP	. LOAD STARTING ADDRESS
2519	012426	005037	002166			CLR	RFLAG	. INDICATE EPROM
2520	012432	012703	002254			MOV	#EPROM, R3	. POINT TO CHECKWORDS
2521	012436	012737	000010	002162		MOV	#10, COUNT	. PAGE COUNT

2522	012444	012337	002216		EPRTST	MOV	(R3)+,CKWD	,GET CHECKWORD FOR THIS PAGE
2523	012450	004737	004504			JSR	PC,MENTST	,TEST MEMORY
2524	012454	005737	002156			TST	REAL	,DOES THE MEMORY EXIST?
2525	012460	001453				BEQ	E6	,BR IF NO
2526	012462	005737	002232			TST	ERRFLG	,ANY OTHER ERRORS?
2527	012466	001421				BEQ	NONE	,BR IF NO
2528	012470	004737	004346			JSR	PC,VIRTAD	,GET ADDRESS OF ERROR
2529	012474	005737	002154			TST	BCF	,LOW BYTE PAGE?
2530	012500	001004				BNE	HIADD	,BR IF NO
2531	012502	012737	002667	002230		MOV	#LOBYT,BYTLOC	,SET POINTER FOR ERROR MSG
2532	012510	000403				BR	PRIOUT	,PRINT ERROR MESSAGE
2533	012512	012737	002731	002230	HIADD	MOV	#HIBYT,BYTLOC	,POINTER FOR ERROR MSG
2534	012520	022737	000001	002232	PRIOUT	CMP	#1,ERRFLG	,CHECKSUM ERROR?
2535	012526	001416				BEQ	E4	,BR IF YES
2536	012530	000422				BR	E5	,ELSE CHECKWORD ERROR
2537	012532	062737	001002	177520	NONE	ADD	#1002,PCR	,ADJUST PAGE IN PCR
2538	012540	005337	002162			DEC	COUNTR	,DEC PAGE COUNT
2539	012544	001337				BNE	EPRTST	,LOOP UNTIL FINISHED
2540	012546	005737	002174		ADDTL	TST	PASS	,FIRST PASS?
2541	012552	001002				BNE	1\$	,BR IF NO
2542	012554	000137	011674			JMP	SYSRIN	,TEST ANY ADDITIONAL MEMORY
2543	012560	000137	011570		1\$	JMP	P2	,FIND ANY ADDITIONAL MEMORY
2544	012564				E4	ERRDF	40,EPRM,CKSME,CKLOOP	
2545	012564	104562				TRAP	T\$ERCODE	
2546	012566	000050				WORD	40	
2547	012570	014116				WORD	EPRM	
2548	012572	013544				WORD	CKSME	
2549	012574	000764				BR	ADDTL	
2550	012576				E5	ERRDF	41,EPRM,CHKDE,CKLOOP	
2551	012576	104562				TRAP	T\$ERCODE	
2552	012600	000051				WORD	41	
2553	012602	014116				WORD	EPRM	
2554	012604	013602				WORD	CHKDE	
2555	012606	000757				BR	ADDTL	
2556	012610				E6	ERRDF	42,EPRM,NONXT,CKLOOP	
2557	012610	104562				TRAP	T\$ERCODE	
2558	012612	000052				WORD	42	
2559	012614	014116				WORD	EPRM	
2560	012616	013634				WORD	NONXT	
2561	012620	000752				BR	ADDTL	
2562	012622					ENDSUB		
2563	012622				L10070			
2564	012622	104003				EMT	C\$ESUB	
2565								
2566	012624					BGNSUB		
2567	012624	104002				EMT	C\$BSUB	
2568	012626	005037	002232		STRT	CLP	ERRFLG	,CLEAR ERROR FLAG
2569	012632					GMANID	RWDCT,RESPND,-1,10,100 NO	
2570	012632	104043				EMT	C\$GMAN	
2571	012634	000406				BR	10000\$	
2572	012636	002220				WORD	RESPND	
2573	012640	000042				WORD	T\$CODE	
2574	012642	013775				WORD	RWDCT	
2575	012644	177777				WORD	-1	
2576	012646	000010				WORD	T\$LOLIM	
2577	012650	000100				WORD	T\$HILIM	

HARDWARE TESTS MACY11 30(1046) 16-NOV-77 16 04 PAGE 60
 DUMBRA P11 07-NOV-77 10 41 TEST 7 TEST ALL ADDITIONAL MEMORY

SEQ 0058

2578	012652					10000\$					
2579	012652	013737	002220	013532		MOV	RESPND, PGCT			. STORE PAGE COUNT	
2580	012660	013737	002220	002212		MOV	RESPND, WORDCT			. COPY WORD COUNT	
2581	012666	012702	002274			MOV	#SYSROM, R2			. POINTER TO STORAGE TABLE	
2582	012672	004737	004166			JSR	PC, INPUT			. INPUT CHECKWORDS	
2583	012676					GMANIL	SRR, ANSR, 1, YES				
2584	012676	104043				EMT	CSGMAN				
2585	012700	000404				BR	10001\$				
2586	012702	002164				WORD	ANSR				
2587	012704	000130				WORD	T\$CODE				
2588	012706	014234				WORD	SRR				
2589	012710	000001				WORD	1				
2590	012712							10001\$			
2591	012712	005737	002164			TST	ANSR			. STANDARD MEMORY RANGE?	
2592	012716	001020				BNE	1\$			. BR IF YES	
2593	012720	005237	002164			INC	ANSR			. RESTORE DEFAULT VALUE	
2594	012724					GMANID	LOADR, STORE, D, -1.0 30.NO				
2595	012724	104043				EMT	CSGMAN				
2596	012726	000406				BR	10002\$				
2597	012730	002210				WORD	STORE				
2598	012732	000042				WORD	T\$CODE				
2599	012734	002774				WORD	LOADR				
2600	012736	177777				WORD	-1				
2601	012740	000000				WORD	T\$LOLIM				
2602	012742	000030				WORD	T\$HILIM				
2603	012744							10002\$			
2604	012744	004737	004732			JSR	PC, SETADR			. GET FIRST PAGE ADDRESS	
2605	012750	013737	002160	013540		MOV	LOPAG, LOD3			. STORE LOW PAGE NO	
2606	012756	000403				BR	LD3			. SKIP NEXT INSTRUCTION	
2607	012760	012737	100600	013540	1\$	MOV	#100600, LOD3			. STANDARD PAGE = 200, 201 16-32K RANGE	
2608	012766	013737	013540	177520	LD3	MOV	LOD3, PCR			. LOAD STARTING ADDRESS	
2609	012774	012737	000001	002166		MOV	#1, RFLAG			. INDICATE ROM	
2610	013002	012703	002274			MOV	#SYSROM, R3			. POINT TO CHECKWORDS	
2611	013006	013737	013532	002162		MOV	PGCT, COUNTR			. PAGE COUNT	
2612	013014	012337	002216			MOV	(R3)+, CKWD			. GET CHECKWORD FOR THIS PAGE	
2613	013020	004737	004504			JSR	PC, MEMTST			. TEST MEMORY	
2614	013024	005737	002156			TST	REAL			. DOES THE MEMORY EXIST?	
2615	013030	001446				BEQ	E11			. BR IF NO	
2616	013032	005737	002232			TST	ERRFLG			. ANY OTHER ERRORS?	
2617	013036	001421				BEQ	PASSED			. BR IF NO	
2618	013040	004737	004346			JSR	PC, VIRTAD			. GET ADDRESS OF ERROR	
2619	013044	005737	002154			TST	BCF			. LOW BYTE PAGE?	
2620	013050	001004				BNE	HIGHB			. BR IF NO	
2621	013052	012737	002667	002230		MOV	#LOBYT, BYTLCC			. SET POINTER FOR ERROR MSG	
2622	013060	000403				BR	MSGOUT			. PRINT ERROR MESSAGE	
2623	013062	012737	002731	002230	H GMB	MOV	#HIBYT, BYTLCC			. POINTER FOR ERROR MSG	
2624	013070	022737	000001	002232	MSGOUT	CMP	#1, ERRFLG			. CHECKSUM ERROR?	
2625	013076	001411				BEQ	E7			. BR IF YES	
2626	013100	000415				BR	E10			. ELSE CHECKWORD ERROR	
2627	013102	062737	001002	177520	PASSED	ADD	#1002, PCP			. ADJUST PAGE IN PCP	
2628	013110	005337	002162			DEC	COUNTR			. DEC PAGE COUNT	
2629	013114	001337				BNE	SYRTST			. LOOP UNTIL FINISHED	
2630	013116					EXIT	TST			. TEST IS FINISHED	
2631	013116	104032				EMT	C\$EXIT				
2632	013120	001176				WORD	L10065-				
2633	013122					ERRDF	43. SYSP C\$SME INLCDF				

2634	013122	104562			TRAP	T\$ERCODE		
2635	013124	000053			WORD	43		
2636	013126	014137			WORD	SYSR		
2637	013130	013544			WORD	CKSME		
2638	013132	000771			BR	NEXT		
2639	013134		E10		ERRDF	44, SYSR, CWKDE, CKLOOP		
2640	013134	104562			TRAP	T\$ERCODE		
2641	013136	000054			WORD	44		
2642	013140	014137			WORD	SYSR		
2643	013142	013602			WORD	CWKDE		
2644	013144	000764			BR	NEXT		
2645	013146		E11		ERRDF	45, SYSR, NONXT, CKLOOP		
2646	013146	104562			TRAP	T\$ERCODE		
2647	013150	000055			WORD	45		
2648	013152	014137			WORD	SYSR		
2649	013154	013634			WORD	NONXT		
2650	013156	000757			BR	NEXT		
2651	013160				ENDSUB			
2652	013160		L10071					
2653	013160	104003			EMT	CS\$SUB		
2654								
2655	013162				BGNSUB			
2656	013162	104002			EMT	CS\$SUB		
2657	013164	005037	002222		SYSET	CLR	ERRFLG	CLEAR ERROR FLAG
2658	013170				G\$MANID	RWDCT, RESPND, D, -1 10.40 NC		
2659	013170	104043			EMT	CS\$MAN		
2660	013172	000406			BR	10000\$		
2661	013174	002220			WORD	RESPND		
2662	013176	000042			WORD	T\$CODE		
2663	013200	013775			WORD	RWDCT		
2664	013202	177777			WORD	-1		
2665	013204	000010			WORD	T\$LOLIM		
2666	013206	000040			WORD	T\$HILIM		
2667	013210							
2668	013210	013737	002220	013532	10000\$	MOV	RESPND, PGCT	STORE PAGE COUNT
2669	013216	013737	002220	002212		MOV	RESPND, WOPDCT	COPY WORD COUNT
2670	013224	012702	002274			MOV	#SYSTRM, R2	POINTER TO STORAGE TABLE
2671	013230	004737	004166			JSR	PC, INPUT	INPUT CHECKWORDS
2672	013234					G\$MANIL	SYEE, ANSR, 1, YES	
2673	013234	104043			EMT	CS\$MAN		
2674	013236	000404			BR	10001\$		
2675	013240	002164			WORD	ANSR		
2676	013242	000130			WORD	T\$CODE		
2677	013244	014264			WORD	SYEE		
2678	013246	000001			WORD	1		
2679	013250							
2680	013250	005737	002164		10001\$	TST	ANSR	STANDARD MEMORY RANGE
2681	013254	001020				BNE	1\$	BP, F, YES
2682	013256	005237	002164			INC	ANSR	RESTORE DEFAULT VALUE
2683	013262					G\$MANID	LOADR, STORE, D, -1 0 20 NC	
2684	013262	104043			EMT	CS\$MAN		
2685	013264	000406			BR	10002\$		
2686	013266	002210			WORD	STORE		
2687	013270	000342			WORD	T\$CODE		
2688	013272	002774			WORD	LOADR		
2689	013274	177777			WORD	-1		

2690	013276	000000				WORD	T\$LOLIM	
2691	013300	000030				WORD	T\$HILIM	
2692	013302		100025					
2693	013302	004737	004732			JSR	PC, SETADR	, GET FIRST PAGE ADDRESS
2694	013306	013737	002160	013542		MOV	LOPAG, LOD4	, STORE LOW PAGE NO
2695	013314	000403				BR	LD4	, SKIP NEXT INSTRUCTION
2696	013316	012737	100600	013542	15	MOV	#100600, LOD4	, STANDARD PAGE = 200, 201 16-24K RANGE
2697	013324	013737	013542	177520	LD4	MOV	LOD4, PCR	, LOAD STARTING ADDRESS
2698	013332	005037	002166			CLR	RFLAG	, INDICATE EPROM
2699	013336	012703	002274			MOV	#SYSROM, R3	, POINT TO CHECKWORDS
2700	013342	013737	013532	002162		MOV	PGCT, COUNTR	, PAGE COUNT
2701	013350	012337	002216		SYETST	MOV	(R3)+, CKWD	, GET CHECKWORD FOR THIS PAGE
2702	013354	004737	004504			JSR	PC, MEMTST	, TEST MEMORY
2703	013360	005737	002156			TST	REAL	, DOES THIS MEMORY EXIST?
2704	013364	001450				BEQ	E14	, BR IF NO
2705	013366	005737	002232			TST	ERRFLG	, ANY ERRORS?
2706	013372	001421				BEQ	CONT	, BR IF NO
2707	013374	004737	004346			JSR	PC, VIRTAD	, GET ADDRESS OF ERROR
2708	013400	005737	002154			TST	BCF	, LOW BYTE PAGE?
2709	013404	001004				BNE	HBYTE	, BR IF NO
2710	013406	012737	002667	002230		MOV	#LOBYT BYTLOC	, SET POINTER FOR ERROR MSG
2711	013414	000403				BR	PRIN	, PRINT ERROR MESSAGE
2712	013416	012737	002731	002230	HBYTE	MOV	#HIBYT, BYTLOC	, POINTER FOR ERROR MSG
2713	013424	022737	000001	002232	PRIN	CMP	#1 ERRFLG	, CHECKSUM ERROR?
2714	013432	001411				BEQ	E12	, BR IF YES
2715	013434	000416				OR	E13	, ELSE CHECKWORD ERROR
2716	013436	062737	001002	177520	CONT	ADD	#1002, PCR	, ADJUST PAGE IN PCR
2717	013444	005337	002162			DEC	COUNTR	, DEC PAGE COUNT
2718	013450	001337				BNE	SYETST	, LOOP UNTIL FINISHED
2719	013452					EXIT	TST	, TEST IS FINISHED
2720	013452	104032				EMT	C\$EXIT	
2721	013454	000642				WORD	L10065-	
2722	013456				E12	ERRDF	46, SYSE, CKSME, C\$LOOP	
2723	013456	104562				TRAP	T\$ERCODE	
2724	013460	000056				WORD	46	
2725	013462	014152				WORD	SYSE	
2726	013464	013544				WORD	CKSME	
2727	013466					EXIT	TST	
2728	013466	104032				EMT	C\$EXIT	
2729	013470	000626				WORD	L10065-	
2730	013472				E13	ERRDF	47, SYSE, CWIDE, C\$LOOP	
2731	013472	104562				TRAP	T\$ERCODE	
2732	013474	000057				WORD	47	
2733	013476	014152				WORD	SYSE	
2734	013500	013602				WORD	CWIDE	
2735	013502					EXIT	TST	
2736	013502	104032				EMT	C\$EXIT	
2737	013504	000612				WORD	L10065-	
2738	013506				E14	ERRDF	50, SYSE, NONXT, C\$LOOP	
2739	013506	104562				TRAP	T\$ERCODE	
2740	013510	000062				WORD	50	
2741	013512	014152				WORD	SYSE	
2742	013514	013634				WORD	NONXT	
2743	013516					EXIT	TST	
2744	013516	104032				EMT	C\$EXIT	
2745	013520	000576				WORD	L10065-	

2746	013522			ENDSUB
2747	013522			L10072
2748	013522	104003		EMT C\$ESUB
2749				
2750	013524			EXIT TST
2751	013524	104032		EMT C\$EXIT
2752	013526	000570		WORD L10065-
2753				
2754	013530	000000		ADDON WORD 0
2755	013532	000000		PGCT WORD 0
2756	013534	000000		LOD1 WORD 0
2757	013536	000000		LOD2 WORD 0
2758	013540	000000		LOD3 WORD 0
2759	013542	000000		LOD4 WORD 0
2760				
2761				
2762	013544			BGNMSG CKSME
2763	013544			CKSME
2764	013544			PRINTB #ERM6, BYTLOC
2765	013544	013746	002230	MOV BYTLOC, -(SP)
2766	013550	012746	013716	MOV #ERM6, -(SP)
2767	013554	012746	000002	MOV #2, -(SP)
2768	013560	010600		MOV SP, R0
2769	013562	104014		EMT C\$PNTB
2770	013564	062706	000006	ADD #6, SP
2771	013570	004737	004346	JSR PC, VIPTAD
2772	013574	004737	004072	JSR PC, VIPRI
2773	013600			ENDMSG
2774	013600			L10073
2775	013600	104023		EMT C\$MSG
2776				
2777	013602			BGNMSG CWIDE
2778	013602			CWIDE
2779	013602			PRINTB #ERMS
2780	013602	012746	013666	MOV #ERMS, -(SP)
2781	013606	012746	000001	MOV #1, -(SP)
2782	013612	010600		MOV SP, R0
2783	013614	104014		EMT C\$PNTB
2784	013616	062706	000004	ADD #4, SP
2785	013622	004737	004346	JSR PC, VIPTAD
2786	013626	004737	004072	JSR PC, VIPRI
2787	013632			ENDMSG
2788	013632			L10074
2789	013632	104023		EMT C\$MSG
2790				
2791	013634			BGNMSG NONXT
2792	013634			NONXT
2793	013634			PRINTB #LOST
2794	013634	012746	013745	MOV #LOST, -(SP)
2795	013640	012746	000001	MOV #1, -(SP)
2796	013644	010600		MOV SP, R0
2797	013646	104014		EMT C\$PNTB
2798	013650	062706	000004	ADD #4, SP
2799	013654	004737	004346	JSR PC, VIPTAD
2800	013660	004737	004072	JSR PC, VIPRI
2801	013664			ENDMSG

HARDWARE TESTS MACY11 30(1046) 16-NOV-77 16 04 PAGE 64
 DUMBAR P11 07-NOV-77 10 41 TEST 7 TEST ALL ADDITIONAL MEMORY

SEQ 0062

2802	013664				L10075		
2803	013664	104023			EMT	CSMSG	
2804							
2805	013666	040445	047111	047503	ERM5	ASCIZ	/%AINCORRECT CHECKWORD%/
2806	013674	051122	041505	020124			
2807	013702	044103	041505	053513			
2808	013710	051117	022504	000116			
2809							
2810	013716	040445	044103	041505	ERM6:	ASCIZ	/%ACHECKSUM ERROR%N%T%/
2811	013724	051513	046525	042440			
2812	013732	051122	051117	047045			
2813	013740	052045	047045	000			
2814							
2815	013745	045	047101	047117	LOST	ASCIZ	/%ANON-EXISTENT MEMORY%/
2816	013752	042455	044530	052123			
2817	013760	047105	020124	042515			
2818	013766	047515	054522	047045			
2819	013774	000					
2820							
2821	013775	110	053517	046440	PWDCT	ASCIZ	HOW MANY CHECKWORDS WILL BE INPUT/
2822	014002	047101	020131	044103			
2823	014010	041505	053513	051117			
2824	014016	051504	053440	046111			
2825	014024	020114	042502	044440			
2826	014032	050116	052125	000			
2827							
2828	014037	101	054516	040440	EXEC	ASCIZ	ANY ADDITIONAL MEMORY /
2829	014044	042104	052111	047511			
2830	014052	040516	020114	042515			
2831	014060	047515	054522	000040			
2832							
2833	014066	054105	040520	042116	EXPND	ASCIZ	EXPANDED DIAGNOSTIC ROM/
2834	014074	042105	042040	040511			
2835	014102	047107	051517	044524			
2836	014110	020103	047522	000115			
2837							
2838	014116	050105	047522	020115	EPROM	ASCIZ	EPROM IN SOCKETS
2839	014124	047111	051440	041517			
2840	014132	042513	051524	000			
2841							
2842	014137	123	051531	042524	SYSR	ASCIZ	SYSTEM ROM/
2843	014144	020115	047522	000115			
2844							
2845	014152	054523	052123	046505	SYSE	ASCIZ	SYSTEM EPROM/
2846	014160	042440	051120	046517			
2847	014166	000					
2848							
2849	014167	105	050130	047101	EXADD	ASCIZ	EXPANDED ROM IN 2-4P
2850	014174	042504	020104	047522			
2851	014202	020115	047111	031040			
2852	014210	032055	020113	000			
2853							
2854	014215	105	051120	046517	EPADD	ASCIZ	EPROM IN 4-6P
2855	014222	044440	020116	026464			
2856	014230	045466	000040				
2857							

2858	014234	054523	052123	046505	SRR	ASCIZ	/SYSTEM ROM START AT 16K/
2859	014242	051040	046517	051440			
2860	014250	040524	052122	040440			
2861	014256	020124	033061	000113			
2862							
2863	014264	054523	052123	046505	SYEE	ASCIZ	/SYSTEM EPROM START AT 16K/
2864	014272	042440	051120	046517			
2865	014300	051440	040524	052122			
2866	014306	040440	020124	033061			
2867	014314	000113					
2868							
2869							
2870							
2871	014316					EVEN	
2872	014316				L10065	ENDTST	
2873	014316	104001				EMT	CSETST
2874							
2875							
2876							
2877							
2878							
2879							
2880							
2881							
2882							

PARAMETER CODING MACY11 30(1046) 16-NOV-77 16.04 PAGE 66
DUMBAR P11 07-NOV-77 10 41 TEST 7: TEST ALL ADDITIONAL MEMORY

SEQ 0064

2883
2884
2885
2886

TITLE PARAMETER CODING
SBTTL IDENTIFICATION

.SBTTL HARDWARE PARAMETER CODING SECTION

++
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WITH THE OPERATOR
--

2887
2888
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2899 014320
2900 014320 000073
2901 014322
2902
2903 014322
2904 014322 000032
2905 014324 014374
2906 014326 160000
2907 014330 000000
2908 014332 000016
2909 014334
2910 014334 001032
2911 014336 014410
2912 014340 177777
2913 014342 000066
2914 014344 000100
2915 014346
2916 014346 002032
2917 014350 014441
2918 014352 177777
2919 014354 000000
2920 014356 000007
2921 014360
2922 014360 003032
2923 014362 014461
2924 014364 177777
2925 014366 000000
2926 014370 007777
2927
2928 014372
2929 014372 047004
2930
2931 014374 047125 052111 047040
2932 014402 046525 042502 000122
2933 014410 047111 042524 051122
2934 014416 050125 020124 042526
2935 014424 052103 051117 040440
2936 014432 042104 042522 051523
2937 014440 000
2938 014441 111 052116 051105
2939 014446 052522 052120 046040
2940 014454 053105 046105 000
2941 014461 122 041517 042513
2942 014466 020122 053523 052111

BGNHRD
WORD L10076-LSHARD/2
LSHARD
GPRMD UNIT, 0, 0, 160000, 0, 16, YES
WORD TSCODE
WORD UNIT
WORD 160000
WORD TSLOLIM
WORD TSHILIM
GPRMD INTVEC, 2, 0, -1, 66, 100, YES
WORD TSCODE
WORD INTVEC
WORD -1
WORD TSLOLIM
WORD TSHILIM
GPRMD PRI, 4, 0, -1, 0 7, YES
WORD TSCODE
WORD PRI
WORD -1
WORD TSLOLIM
WORD TSHILIM
GPRMD RKSW, 6, 0, -1 0 7777 YES
WORD TSCODE
WORD RKSW
WORD -1
WORD TSLOLIM
WORD TSHILIM
EXIT HRD
WORD TSCODE
UNIT ASCIZ /UNIT NUMBER/
INTVEC ASCIZ /INTERUPT VECTOR ADDRESS/
PRI ASCIZ /INTERRUPT LEVEL/
RKSW ASCIZ /ROCKER SWITCH SETTINGS/

2943 014474 044103 051440 052105
2944 014502 044524 043516 000123
2945
2946
2947 014510
2948
2949 014510

EVEN
ENDHRD
EVEN
L10076

2950
2951
2952
2953
2954
2955
2956
2957
2958
2959
2960
2961 014510
2962 014510 000161
2963 014512
2964 014512
2965 014512 000032
2966 014514 014634
2967 014516 177777
2968 014520 000000
2969 014522 177777
2970 014524
2971 014524 001032
2972 014526 014711
2973 014530 177777
2974 014532 000000
2975 014534 177777
2976 014536
2977 014536 002032
2978 014540 014727
2979 014542 177777
2980 014544 000000
2981 014546 177777
2982 014550
2983 014550 003032
2984 014552 014745
2985 014554 177777
2986 014556 000000
2987 014560 177777
2988 014562
2989 014562 004032
2990 014564 014763
2991 014566 177777
2992 014570 000000
2993 014572 177777
2994 014574
2995 014574 005032
2996 014576 015001
2997 014600 177777
2998 014602 000000
2999 014604 177777
3000 014606
3001 014606 006032
3002 014610 015017
3003 014612 177777
3004 014614 000000
3005 014616 177777

SBTTL SOFTWARE PARAMETER CODING SECTION

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--

BGNSFT
WORD L10077-L\$SOFT/2
L\$SOFT
GPRMD CKW1,0,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW1
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW2,2,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW2
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW3,4,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW3
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW4,6,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW4
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW5,10,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW5
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW6,12,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW6
WORD -1
WORD T\$LOLIM
WORD T\$HILIM
GPRMD CKW7,14,0,-1,0,177777,YES
WORD T\$CODE
WORD CKW7
WORD -1
WORD T\$LOLIM
WORD T\$HILIM

3006	014620					GPRMO	CKW8, 16, 0, -1, 0, 177777, YES
3007	014620	007032				WORD	TSCODE
3008	014622	015035				WORD	CKW8
3009	014624	177777				WORD	-1
3010	014626	000000				WORD	TSLOLIM
3011	014630	177777				WORD	TSHILIM
3012							
3013	014632					EXIT SFT	
3014	014632	111004				WORD	TSCODE
3015							
3016	014634	044103	041505	053513	CKW1	ASCIZ	/CHECKWORDS FOR DIAGNOSTIC ROM CHECKWORD 1 /
3017	014642	051117	051504	043040			
3018	014650	051117	042040	040511			
3019	014656	047107	051517	044524			
3020	014664	020103	047522	027115			
3021	014672	041440	042510	045503			
3022	014700	047527	042122	030440			
3023	014706	020072	000				
3024	014711	103	042510	045503	CKW2	ASCIZ	/CHECKWORD 2 /
3025	014716	047527	042122	031040			
3026	014724	020072	000				
3027	014727	103	042510	045503	CKW3	ASCIZ	/CHECKWORD 3 /
3028	014734	047527	042122	031440			
3029	014742	020072	000				
3030	014745	103	042510	045503	CKW4	ASCIZ	/CHECKWORD 4 /
3031	014752	047527	042122	032040			
3032	014760	020072	000				
3033	014763	103	042510	045503	CKW5	ASCIZ	/CHECKWORD 5 /
3034	014770	047527	042122	032440			
3035	014776	020072	000				
3036	015001	103	042510	045503	CKW6	ASCIZ	/CHECKWORD 6 /
3037	015006	047527	042122	033040			
3038	015014	020072	000				
3039	015017	103	042510	045503	CKW7	ASCIZ	/CHECKWORD 7 /
3040	015024	047527	042122	033440			
3041	015032	020072	000				
3042	015035	103	042510	045503	CKW8	ASCIZ	/CHECKWORD 8 /
3043	015042	047527	042122	034040			
3044	015050	020072	000				
3045		015054				EVEN	
3046							
3047							
3048	015054					ENDSFT	
3049						EVEN	
3050	015054				L10077		
3051							
3052	015054					LASTAD	
3053						EVEN	
3054	015054				L5LAST		

PDP-11 DIAGNOSTIC SUPERVISOR
DOCTOP P11 07-OCT-77 13:48

MACY11 30(1046) 16-NOV-77 16:04 PAGE 72
SOFTWARE PARAMETER CODING SECTION

E 6

SEQ 0069

3055
3056
071776 045754
071776 071776
000000
072000
000200

TITLE PDP-11 DIAGNOSTIC SUPERVISOR
END. SUPV= +2
=71776
WORD 0
X1X1=
END 200

CALLSP=	000026	3056#*																		
CALLTC=	000030	3056#*																		
CAL CL	042510	3056#*																		
CAL TI	042546	G	3056#																	
CHKLUP	024410		3056#																	
CHKSTR	036334		3056#																	
CHKSUM	004122		958#	1067	1084	2102	2132													
CHKTTY	034422		3056#																	
CHK FO	016620		3056#																	
CHK MA	022550		3056#																	
CHK PC	027636		3056#*																	
CHK SH	016342		3056#																	
CHKCNT	035654		3056#*																	
CHK FLA	022252		3056#																	
CHK PAS	022274		3056#																	
CHK ERP	002624		684#	2193	2219															
CHK SME	013544	G	2469	2548	2637	2726	2763#													
CHK WD	002216		633#	1096	1099	2440#	2522#	2612#	2701#											
CHK W1	014634		2966	3016#																
CHK W2	014711		2972	3024#																
CHK W3	014727		2978	3027#																
CHK W4	014745		2984	3030#																
CHK W5	014763		2990	3033#																
CHK W6	015001		2996	3036#																
CHK W7	015017		3002	3039#																
CHK W8	015035		3008	3042#																
CLEAR	023672		3056#																	
CLKACC	015236	G	3056#*																	
CLKBFR	042512		3056#*																	
CLKCNT	015234	G	3056#*																	
CLKRES	044110	G	3056#																	
CLKSER	044410	G	3056#																	
CLKSON	015300	G	3056#*																	
CLK SE	022352		3056#																	
CLR MA	022626		3056#																	
CNVT	040566		3056#																	
COMMTA	040406		3056#																	
CONT	013436		2706	2716#																
CONTCL	044170	G	3056#																	
COUNTP	002162		619#	2087#	2165#	2439#	2456#	2521#	2538#	2611#	2628#	2700#	2717#							
CRLF	034504		3056#																	
CURR T	015254	G	3056#*																	
CWDERR	002643		688#																	
CHKDE	013602	G	2475	2554	2643	2734	2775#													
CSAAD	027610		3056#																	
CSAAE	027622		3056#																	
CSAAK	030440		3056#																	
CSAAL	030550		3056#																	
CSABRT=	000021		359#																	
CSADR =	000020		359#	1267	1286	1309	1330	1349	1370	1391	1412	1437	1464	1495	1516					
			1538	1559	1580	1600	1620	1641	1666	1693	2466	2472	2478	2545	2551					
			2557	2634	2640	2646	2723	2731	2739											
CSAU =	000054		359#																	
CSBR =	000022		359#																	
CSBSEG=	000004		359#																	
CSBSUB=	000002		359#	1261	1281	1302	1323	1344	1363	1384	1405	1426	1451	1489	1509					

CSQ10 = 000377	359#						
CSRDBU= 000007	359#						
CSREFG= 000050	359#						
CSREQT= 000045	359#						
CSRESE= 000033	359#						
CSREVI= 000001	359#	394					
CSRPT = 000025	359#	1164					
CSSEFG= 000047	359#						
CSSPRI= 000041	359#	1185	1738	1744	1763	1769	
CSSVEC= 000037	359#	1733					
CSTPRI= 000013	359#						
SUNBU= 000031	359#						
CSWTM = 000026	359#	1871	1875	1889	1893	1897	1901
CSWTU = 000027	359#	1741	1766				
CADDR 011473	2067	2290#					
CATOUT 012174	2450	2452#					
DECM5G 034316	3056#						
DERR1 010750 G	2096	2178#					
DERR2 010776 G	2110	2191#					
DERR3 011024 G	2126	2204#					
DERR4 011052 G	2140	2217#					
DERR5 011100 G	2154	2230#					
DEV DAT 002502 G	655#						
DFLTST 011750	2329	2342	2353	2395	2397#		
DFPTBL 002122 G	481#						
DIAGER 003376	776#	916					
DIAG T 015334 G	3056#*						
DIAIN 011624	2354#						
DLOOP 010514	2090#	2166					
DPOVD 045120 G	3056#						
DPMUL 045006 G	3056#						
DRLP 010746	2072#	2085#	2086	2175#			
DRTST 010474	2087#						
DSPCOD 002100 G	457#						
DUNIT 015244 G	3056#*						
DVC FT 030410	3056#						
DSARG 031260	3056#						
DSAAH 031276	3056#						
DSAAI 034050	3056#						
DSAAJ 034054	3056#						
DSAAK 034072	3056#						
DSAAL 034110	3056#						
DSAAH 034120	3056#						
EF CON= 000036 G	571#						
EF NEW= 000035 G	572#						
EF PWR= 000034 G	573#						
EF RES= 000037 G	570#						
EF STA= 000040 G	569#						
EF01 = 000001 G	590#						
EF02 = 000002 G	589#						
EF03 = 000003 G	588#						
EF04 = 000004 G	587#						
EF05 = 000005 G	586#						
EF06 = 000006 G	585#						
EF07 = 000007 G	584#						
EF08 = 000010 G	583#						

GARBAG	035656	3056#												
GET	011602	2332	2344#											
GETAD	010434	2071	2074#											
GETCHR	034362	3056#												
GETCMN	J37746	3056#												
GETPAR	031440	3056#												
GETSWI	036742	3056#												
GET TH	036512	3056#												
GLBDAT	002154 G	615#												
GLBEQA	002154 G	532#												
GSEXCP=	000400	359#												
GSHILI=	000002	359#												
GSLOLI=	000001	359#												
GANO =	000000	359#	988	2078	2358	2368	2379	2390	2426	2508	2573	2598	2662	2687
GSOFFS=	000400	359#	988	2066	2078	2348	2358	2368	2379	2390	2415	2426	2497	2508
		2573	2587	2598	2662	2676	2687	2904	2910	2916	2922	2965	2971	2977
		2983	2989	2995	3001	3007								
GSOFSI=	000376	359#	988	2066	2078	2348	2358	2368	2379	2390	2415	2426	2497	2508
		2573	2587	2598	2662	2676	2687	2904	2910	2916	2922	2965	2971	2977
		2983	2989	2995	3001	3007								
GSPRMA=	000001	359#												
GSPRMD=	000002	359#	988	2078	2426	2508	2573	2598	2662	2687	2904	2910	2916	2922
		2965	2971	2977	2983	2989	2995	3001	3007					
GSPRML=	000000	359#	2066	2348	2358	2368	2379	2390	2415	2497	2587	2676		
GSRADA=	000140	359#												
GSRADB=	000000	359#												
GSRADD=	000040	359#	2078	2426	2508	2573	2598	2662	2687					
GSRADF=	000200	359#												
GSRADL=	000120	359#	2066	2348	2358	2368	2379	2390	2415	2497	2587	2676		
GSRADO=	000020	359#	988	2904	2910	2916	2922	2965	2971	2977	2983	2989	2995	3001
		3007												
GSRADT=	000100	359#												
GXFER=	000004	359#	2929	3014										
GYES =	000010	359#	2066	2348	2415	2497	2587	2676	2904	2910	2916	2922	2965	2971
		2977	2983	2989	2995	3001	3007							
HBYTE	013416	2709	2712#											
HCORED	022034	3056#												
HCOREQ	021714	3056#												
HCORET	015266 G	3056#*												
HELP =	000000	6#	15	19	22	25	76	81	98	106	111	115	134	221
		225	261	266	285	358	364#	378	449	469	483	504	522#	604
		658	725	799	938	1138	1140	1142	1144	1146	1148	1150	1152	1153
		1154	1156#	1197	1209	1235	1240	1248#	2974	2876	2877	2879	2881	2883
		2885#	2903	2931	3015	3046								
HERTZ	021654	3056#												
HIADD	012512	2530	2533#											
HIBYT	002731	700#	2451	2533	2623	2712								
HIBYTE	004566	1065	1076#											
HIGH	012166	2448	2451#											
HIGHB	013062	2620	2623#											
HIRANG	002226	637#	928	1046#	1047#	1050#								
HIROM	011325	2220	2268#											
HOLDSP=	000020	3056#												
HRAERR	011251	2207	2259#											
HSAAB	041114	3056#												
ICOUNT	007132	1745	1753#	1770	1778#	1788#	1793#	180#	1823					

CROSS REFERENCE TABLE -- USER SYMBOLS

SUNIT 022256
 SUPERV 020234
 SUPFLA 015242 G
 SUPV T 015420 G
 SUP PR 016266
 SUCCNT= 177777

3056#	370	448	458	469	479	490	500	517	533	607	616	644
3056#	810	826	830	846	850	866	870	886	890	898	902	910
3056#*	922	994	1161	1163	1175	1212	1222	1243	1259	1261	1277	1281
3056#*	1302	1319	1323	1340	1344	1359	1363	1380	1384	1401	1405	1422
3056#	1447	1451	1474	1478	1487	1489	1505	1509	1526	1531	1548	1552
	1573	1590	1593	1610	1613	1630	1634	1651	1655	1676	1680	1703
	1718	1727	1755	1759	1780	1787	1790	1796	1811	1815	1830	1858
	1907	1920	2004	2014	2042	2053	2055	2070	2084	2114	2119	2144
	2158	2163	2168	2178	2187	2191	2200	2204	2213	2217	2226	2230
	2296	2323	2325	2352	2362	2372	2383	2394	2401	2406	2419	2432
	2488	2501	2514	2563	2567	2579	2591	2604	2652	2656	2668	2680
	2747	2763	2774	2778	2788	2792	2802	2872	2900	2948	2962	3049
	359#	360#	369	370	380	381	389	390	391	392	393	394
	397	398	399	400	401	402	403	404	405	407	408	409
	411	412	413	414	415	416	417	418	419	420	421	422
	424	425	426	427	428	429	430	431	432	433	434	435
	437	438	439	440	441	442	443	444	445	446	457	458
	461	480	481	482	501	502	503	532	533	615	616	650
	652	654	655	656	720	721	810	811	830	831	850	851
	871	890	891	902	903	914	915	1161	1162	1175	1176	1222
	1787	1788	1796	1797	1815	1816	2004	2005	2178	2179	2191	2192
	2205	2217	2218	2230	2231	2763	2764	2778	2779	2792	2793	2901
	2963	2964	3054#	3055								

SUCGBL= 000000

SUCHAN 024566
 SVCINS= 000000

3056#	381	382	383	384	385	386	387	388	389	390	391	392
359#	393	394	395	396	397	398	399	400	401	402	403	405
	406	407	408	409	410	411	412	413	414	415	416	418
	419	420	421	422	423	424	425	426	427	428	429	431
	432	433	434	435	436	437	438	439	440	441	442	444
	445	446	447	459	460	461	462	463	464	465	466	468
	479	480	500	501	649	650	652	653	654	656	657	721
	724	812	813	814	815	816	817	818	819	820	821	822
	824	825	827	828	832	833	834	835	836	837	838	839
	841	842	843	844	845	847	848	852	853	854	855	856
	858	859	860	861	862	863	864	865	867	868	872	873
	875	876	877	878	879	880	881	882	883	884	885	887
	892	893	894	895	896	897	899	900	904	905	906	907
	909	911	912	916	917	918	919	920	921	923	924	928
	930	931	932	933	934	935	979	980	981	982	983	984
	986	987	988	989	990	991	992	993	1038	1039	1040	1041
	1043	1164	1165	1177	1178	1179	1180	1184	1185	1186	1187	1188
	1190	1191	1192	1193	1194	1195	1196	1198	1199	1200	1213	1214
	1234	1235	1237	1238	1239	1244	1245	1261	1262	1267	1268	1269
	1271	1272	1273	1274	1275	1276	1278	1279	1281	1282	1288	1289
	1291	1292	1293	1294	1295	1296	1297	1299	1300	1302	1303	1309
	1311	1312	1313	1314	1315	1316	1317	1318	1320	1321	1323	1324
	1331	1332	1333	1334	1335	1336	1337	1338	1339	1341	1342	1344
	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1360	1361
	1364	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1381
	1384	1385	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400
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CROSS REFERENCE TABLE -- USER SYMBOLS

1423	1424	1426	1427	1437	1438	1439	1440	1441	1442	1443	1444	1445
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1472	1473	1475	1476	1479	1480	1489	1490	1495	1496	1497	1498	1499
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1520	1521	1522	1523	1524	1525	1527	1528	1531	1532	1538	1539	1540
1541	1542	1543	1544	1545	1546	1547	1549	1550	1552	1553	1559	1560
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1581	1582	1583	1584	1585	1586	1587	1588	1589	1591	1592	1593	1594
1600	1601	1602	1603	1604	1605	1606	1607	1608	1609	1611	1612	1613
1614	1620	1621	1622	1623	1624	1625	1626	1627	1628	1629	1631	1632
1634	1635	1641	1642	1643	1644	1645	1646	1647	1648	1649	1650	1652
1653	1655	1656	1666	1667	1668	1669	1670	1671	1672	1673	1674	1675
1677	1678	1680	1681	1693	1694	1695	1696	1697	1698	1699	1700	1701
1702	1704	1705	1707	1708	1724	1725	1726	1727	1728	1729	1730	1731
1732	1733	1734	1735	1737	1738	1739	1740	1741	1742	1743	1744	1745
1748	1749	1750	1751	1752	1753	1756	1757	1759	1760	1762	1763	1764
1765	1766	1767	1768	1769	1770	1773	1774	1775	1776	1777	1778	1781
1782	1783	1784	1785	1791	1792	1798	1799	1800	1801	1802	1803	1804
1805	1806	1807	1808	1809	1810	1812	1813	1817	1818	1819	1820	1821
1822	1823	1824	1825	1826	1827	1828	1829	1831	1832	1859	1860	1870
1871	1872	1874	1875	1876	1877	1878	1879	1880	1883	1884	1885	1888
1889	1890	1892	1893	1894	1896	1897	1898	1900	1901	1902	1903	1904
1905	1908	1909	1922	1923	1924	1925	1928	1929	1930	1931	1932	1933
1934	1935	1936	1952	1953	1954	1955	1956	1957	1958	1964	1965	1966
1967	1968	1969	1970	1978	1979	1980	1981	1982	1983	1984	1989	1990
1991	1992	1993	1994	1996	1997	1998	2006	2007	2008	2009	2010	2011
2012	2013	2015	2016	2043	2044	2055	2056	2057	2058	2059	2060	2063
2064	2065	2066	2067	2068	2069	2075	2076	2077	2078	2079	2080	2081
2082	2083	2094	2095	2096	2097	2098	2099	2100	2101	2102	2108	2109
2110	2111	2112	2113	2115	2116	2119	2120	2124	2125	2126	2127	2128
2129	2130	2131	2132	2138	2139	2140	2141	2142	2143	2145	2146	2148
2149	2152	2153	2154	2155	2156	2157	2159	2160	2163	2164	2169	2170
2172	2173	2174	2180	2181	2182	2183	2184	2185	2186	2188	2189	2193
2194	2195	2196	2197	2198	2199	2201	2202	2206	2207	2208	2209	2210
2211	2212	2214	2215	2219	2220	2221	2222	2223	2224	2225	2227	2228
2232	2233	2234	2235	2236	2237	2240	2241	2297	2298	2325	2326	2327
2328	2329	2330	2345	2346	2347	2348	2349	2350	2351	2355	2356	2357
2358	2359	2360	2361	2365	2366	2367	2368	2369	2370	2371	2376	2377
2378	2379	2380	2381	2382	2387	2388	2389	2390	2391	2392	2393	2398
2399	2400	2402	2403	2406	2407	2412	2413	2414	2415	2416	2417	2418
2423	2424	2425	2426	2427	2428	2429	2430	2431	2463	2464	2465	2466
2467	2468	2469	2470	2472	2473	2474	2475	2476	2478	2479	2480	2481
2482	2485	2486	2488	2489	2494	2495	2496	2497	2498	2499	2500	2505
2506	2507	2508	2509	2510	2511	2512	2513	2545	2546	2547	2548	2549
2551	2552	2553	2554	2555	2557	2558	2559	2560	2561	2564	2565	2567
2568	2570	2571	2572	2573	2574	2575	2576	2577	2578	2584	2585	2586
2587	2588	2589	2590	2595	2596	2597	2598	2599	2600	2601	2602	2603
2631	2632	2633	2634	2635	2636	2637	2638	2640	2641	2642	2643	2644
2646	2647	2648	2649	2650	2653	2654	2656	2657	2659	2660	2661	2662
2663	2664	2665	2666	2667	2673	2674	2675	2676	2677	2678	2679	2684
2685	2686	2687	2688	2689	2690	2691	2692	2720	2721	2722	2723	2724
2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737
2738	2739	2740	2741	2742	2743	2744	2745	2746	2748	2749	2751	2752
2753	2765	2766	2767	2768	2769	2770	2771	2775	2776	2780	2781	2782
2783	2784	2785	2789	2790	2794	2795	2796	2797	2798	2799	2803	2804
2873	2874	2900	2901	2904	2905	2906	2907	2908	2909	2910	2911	2912

CROSS REFERENCE TABLE -- USER SYMBOLS

	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925
	2926	2927	2929	2930	2948	2949	2962	2963	2965	2966	2967	2968	2969
	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982
	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995
	2996	2997	2998	2999	3000	3001	3002	3003	3004	3005	3006	3007	3008
	3009	3010	3011	3012	3014	3015	3049	3050	3053	3054			
SICSTA= 177777	359#	370	448	458	469	479	490	500	517	533	607	616	644
	810	826	830	846	850	866	870	886	890	898	902	910	914
	922	1161	1163	1175	1212	1222	1243	1259	1261	1277	1281	1298	1302
	1319	1323	1340	1344	1359	1363	1380	1384	1401	1405	1422	1426	1447
	1451	1474	1478	1487	1489	1505	1509	1526	1531	1548	1552	1569	1573
	1590	1593	1610	1613	1630	1634	1651	1655	1676	1680	1703	1706	1718
	1727	1755	1759	1780	1787	1790	1796	1811	1815	1830	1858	1867	1907
	1920	2004	2014	2042	2053	2055	2114	2119	2144	2148	2158	2163	2168
	2178	2187	2191	2200	2204	2213	2217	2226	2230	2239	2296	2323	2325
	2401	2406	2484	2488	2563	2567	2652	2656	2747	2763	2774	2778	2788
	2792	2802	2872	2900	2929	2948	2962	3014	3049				
SUCSUB= 177777	359#	1261	1281	1302	1323	1344	1363	1384	1405	1426	1451	1489	1509
	1531	1552	1573	1593	1613	1634	1655	1680	1727	1759	2055	2119	2148
	2163	2325	2406	2488	2567	2656							
SVCTAG= 000000	359#	361#	490	491	517	518	826	827	846	847	866	867	886
	887	898	899	910	911	922	923	993	994	1163	1164	1212	1213
	1243	1244	1277	1278	1298	1299	1319	1320	1340	1341	1359	1360	1380
	1381	1401	1402	1422	1423	1447	1448	1474	1475	1478	1479	1505	1506
	1526	1527	1548	1549	1569	1570	1590	1591	1610	1611	1630	1631	1651
	1652	1676	1677	1703	1704	1706	1707	1755	1756	1780	1781	1790	1791
	1811	1812	1830	1831	1858	1859	1907	1908	2014	2015	2042	2043	2069
	2070	2083	2084	2114	2115	2144	2145	2158	2159	2168	2169	2187	2188
	2200	2201	2213	2214	2226	2227	2239	2240	2296	2297	2351	2352	2361
	2362	2371	2372	2382	2383	2393	2394	2401	2402	2418	2419	2431	2432
	2484	2485	2500	2501	2513	2514	2563	2564	2578	2579	2590	2591	2603
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	2788	2789	2802	2803	2872	2873	2949	2950	3050	3051			
SVCTST= 177777	359#	1259	1487	1718	1867	1920	2053	2323					
SWCHAN 022074	3056#												
SWCHON 010132	1937#	1941#	1943#	1948#	1949#	1950#	1952	1959	2001#				
SWCNT 010126	1938#	1945#	1999#										
SWERR 010134 G	1930	2004#											
SWITCH 040464	3056#												
SWSET 002206	629#	1182#	1925	2007									
SW PTA 022060	3056#												
SYEE 014264	2677	2863#											
SYETST 013350	2701#	2718											
SYRTST 013014	2612#	2629											
SYSE 014152	2391	2725	2733	2741	2845#								
SYSE IN 011722	2384	2386#											
SYSET 013164	2396	2657#											
SYSR 014137	2380	2636	2642	2648	2842#								
SYSR IN 011674	2373	2375#	2542										
SYSROM 002274	642#	2581	2610	2670	2699								
SYSRT 012626	2385	2568#											
SYS FT 030400	3056#												
SLSYM= 010000	359#	491#	518#	827#	847#	867#	887#	899#	911#	923#	986	993	994#
	1164#	1213#	1244#	1278#	1299#	1320#	1341#	1360#	1381#	1402#	1423#	1448#	1475#
	1479#	1506#	1527#	1549#	1570#	1591#	1611#	1631#	1652#	1677#	1704#	1707#	1756#
	1781#	1791#	1812#	1831#	1859#	1908#	2015#	2043#	2064	2069	2070#	2076	2083

CROSS REFERENCE TABLE -- USER SYMBOLS

		2084#	2115#	2145#	2159#	2169#	2188#	2201#	2214#	2227#	2240#	2297#	2346	2351
		2352#	2356	2361	2362#	2366	2371	2372#	2377	2382	2383#	2388	2393	2394#
		2402#	2413	2418	2419#	2424	2431	2432#	2485#	2495	2500	2501#	2506	2513
		2514#	2564#	2571	2578	2579#	2585	2590	2591#	2596	2603	2604#	2653#	2660
		2667	2668#	2674	2679	2680#	2685	2692	2693#	2748#	2775#	2789#	2803#	2873#
		2950#	3051#											
TAG1	007772	1961#	1973											
TAG2	010022	1962	1970#											
TAG3	010040	1975#	1987											
TAG4	010070	1976	1984#											
TEMP	010130	1936*	1939	1944*	2000#									
TERMI	042504	3056#												
TERML1	040312	3056#												
TERMTA	034274	3056#												
TEST M	022204	3056#*												
TIMFLG	015232 G	3056#*												
TIM CO	015064 G	3056#*												
TIM OP	030720	3056#*												
TOO MA	034254	3056#												
TSTCKW	004662	1078	1088	1092#										
TST AB	024520	3056#												
TST TO	016324	3056#												
TYPEC	034650	3056#												
TYPEPC	030544	3056#												
TYPFLA	040166	3056#												
TYPLIN	034546	3056#												
TYPNUM	034134	3056#												
TYPSTR	034566	3056#												
TYP ER	030430	3056#												
TY UNI	023664	3056#												
TSARGC=	000001	381#	382#	383#	384#	385#	386#	387#	812#	816	818#	824	832#	836
		838#	844	852#	856	858#	864	872#	876	878#	884	892#	896	904#
		908	916#	920	928#	934	979#	983	1191#	1195	1798#	1802	1804#	1809
		1817#	1821	1823#	1828	1952#	1957	1964#	1969	1978#	1983	1989#	1993	2006#
		2012	2180#	2185	2193#	2198	2206#	2211	2219#	2224	2232#	2236	2765#	2770
		2780#	2784	2794#	2798									
TSCODE=	111004	988#	2066#	2078#	2348#	2358#	2368#	2379#	2390#	2415#	2426#	2497#	2508#	2573#
		2587#	2598#	2662#	2676#	2687#	2904#	2910#	2916#	2922#	2929#	2965#	2971#	2977#
		2983#	2989#	2995#	3001#	3007#	3014#							
TSEPCO=	000162	1038#	1267#	1288#	1309#	1330#	1349#	1370#	1391#	1412#	1437#	1464#	1495#	1516#
		1538#	1559#	1580#	1600#	1620#	1641#	1666#	1693#	1748#	1773#	1928#	2094#	2108#
		2124#	2138#	2152#	2466#	2472#	2478#	2545#	2551#	2557#	2634#	2640#	2646#	2723#
		2731#	2739#											
TSERPN=	000062	359#	1039#	1268#	1289#	1310#	1331#	1350#	1371#	1392#	1413#	1438#	1465#	1496#
		1517#	1539#	1560#	1581#	1601#	1621#	1642#	1667#	1694#	1749#	1774#	1929#	2095#
		2109#	2125#	2139#	2153#	2467#	2473#	2479#	2546#	2552#	2558#	2635#	2641#	2647#
		2724#	2732#	2740#										
TSEXCP=	000000	988#	993	2078#	2083	2426#	2431	2508#	2513	2573#	2578	2598#	2603	2662#
		2667	2687#	2692	2904#	2909	2910#	2915	2916#	2921	2922#	2927	2965#	2970
		2971#	2976	2977#	2982	2983#	2988	2989#	2994	2995#	3000	3001#	3006	3007#
		3012												
TSFLAG=	000041	1198#	1237#	1272#	1293#	1314#	1335#	1354#	1375#	1396#	1417#	1442#	1469#	1500#
		1521#	1543#	1564#	1585#	1605#	1625#	1646#	1671#	1698#	1724#	1783#	1883#	1903#
		1934#	1996#	2098#	2128#	2172#	2398#	2463#	2631#	2720#	2728#	2736#	2744#	2751#
		2929#	3014#											
TSHILI=	177777	988#	992	2078#	208?	2426#	2430	2508#	2512	2573#	2577	2598#	2602	2662#

CROSS REFERENCE TABLE -- USER SYMBOLS

	2666	2687#	2691	2904#	2908	2910#	2914	2916#	2920	2922#	2926	2965#	2969
	2971#	2975	2977#	2981	2983#	2987	2989#	2993	2995#	2999	3001#	3005	3007#
	3011												
TSLOLI= 000000	988#	991	2078#	2081	2426#	2429	2508#	2511	2573#	2576	2598#	2601	2662#
	2665	2687#	2690	2904#	2907	2910#	2913	2916#	2919	2922#	2925	2965#	2968
	2971#	2974	2977#	2980	2983#	2986	2989#	2992	2995#	2998	3001#	3004	3007#
	3010												
TLSYM= 010000	359#	491	518	827	847	867	887	899	911	923	1164	1213	1244
	1278	1299	1320	1341	1360	1381	1402	1423	1448	1475	1479	1506	1527
	1549	1570	1591	1611	1631	1652	1677	1704	1707	1756	1781	1791	1812
	1831	1859	1908	2015	2043	2115	2145	2159	2169	2188	2201	2214	2227
	2240	2297	2402	2485	2564	2653	2748	2775	2789	2803	2873	2950	3051
TSMCAL= 177777	1#	359											
TSMEST= 177777	359#	370#	448#	458#	469#	479#	490#	500#	517#	533#	607#	616#	644#
	810#	826#	830#	846#	850#	866#	870#	886#	890#	898#	902#	910#	914#
	922#	1161#	1163#	1175#	1212#	1222#	1243#	1259#	1261#	1277#	1281#	1298#	1302#
	1319#	1323#	1340#	1344#	1359#	1363#	1380#	1384#	1401#	1405#	1422#	1426#	1447#
	1451#	1474#	1478#	1487#	1489#	1505#	1509#	1526#	1531#	1548#	1552#	1569#	1573#
	1590#	1593#	1610#	1613#	1630#	1634#	1651#	1655#	1676#	1680#	1703#	1706#	1718#
	1727#	1755#	1759#	1780#	1787#	1790#	1796#	1811#	1815#	1830#	1858#	1867#	1907#
	1920#	2004#	2014#	2042#	2053#	2055#	2114#	2119#	2144#	2148#	2158#	2163#	2168#
	2178#	2187#	2191#	2200#	2204#	2213#	2217#	2226#	2230#	2239#	2296#	2323#	2325#
	2401#	2406#	2484#	2488#	2563#	2567#	2652#	2656#	2747#	2763#	2774#	2778#	2788#
	2792#	2802#	2872#	2900#	2929	2948#	2962#	3014	3049#				
TNSKO= 000005	370#	448	458#	469	479#	490	500#	517	533#	607	616#	644	810#
	826	830#	846	850#	866	870#	886	890#	898	902#	910	914#	922
	1161#	1163	1175#	1212	1222#	1243	1259#	1478	1487#	1706	1718#	1858	1867#
	1907	1920#	2042	2053#	2296	2323#	2872	2900#	2929	2948	2962#	3014	3049
TNSKI= 000011	1261#	1277	1281#	1298	1302#	1319	1323#	1340	1344#	1359	1363#	1380	1384#
	1401	1405#	1422	1426#	1447	1451#	1474	1489#	1505	1509#	1526	1531#	1548
	1552#	1569	1573#	1590	1593#	1610	1613#	1630	1634#	1651	1655#	1676	1680#
	1703	1727#	1755	1759#	1780	1787#	1790	1796#	1811	1815#	1830	2004#	2014
	2055#	2114	2119#	2144	2148#	2158	2163#	2168	2178#	2187	2191#	2200	2204#
	2213	2217#	2226	2230#	2239	2325#	2401	2406#	2484	2488#	2563	2567#	2652
	2656#	2747	2763#	2774	2778#	2788	2792#	2802					
TSSAUL= 177777	359#												
TSS EGL= 177777	359#												
TSSUBN= 000005	359#	1259#	1261#	1281#	1302#	1323#	1344#	1363#	1384#	1405#	1426#	1451#	1487#
	1489#	1509#	1531#	1552#	1573#	1593#	1613#	1634#	1655#	1680#	1718#	1727#	1759#
	1867#	1920#	2053#	2055#	2119#	2148#	2163#	2323#	2325#	2406#	2488#	2567#	2656#
TSTAGL= 177777	359#												
TSTAGN= 010100	359#	479#	500#	810#	830#	850#	870#	890#	902#	914#	1161#	1175#	1222#
	1259#	1261#	1281#	1302#	1323#	1344#	1363#	1384#	1405#	1426#	1451#	1487#	1489#
	1509#	1531#	1552#	1573#	1593#	1613#	1634#	1655#	1680#	1718#	1727#	1759#	1787#
	1796#	1815#	1867#	1920#	2004#	2053#	2055#	2119#	2148#	2163#	2178#	2191#	2204#
	2217#	2230#	2323#	2325#	2406#	2488#	2567#	2656#	2763#	2778#	2792#	2900#	2962#
TSTEMP= 000005	448#	461#	462#	463#	464#	465#	466#	467#	468#	469#	490#	517#	607#
	644#	826#	846#	866#	886#	898#	910#	922#	988#	1163#	1198#	1199	1212#
	1237#	1238	1243#	1272#	1273	1277#	1293#	1294	1298#	1314#	1315	1319#	1335#
	1336	1340#	1354#	1355	1359#	1375#	1376	1380#	1396#	1397	1401#	1417#	1418
	1422#	1442#	1443	1447#	1469#	1470	1474#	1478#	1500#	1501	1505#	1521#	1522
	1526#	1543#	1544	1548#	1564#	1565	1569#	1585#	1586	1590#	1605#	1606	1610#
	1625#	1626	1630#	1646#	1647	1651#	1671#	1672	1676#	1698#	1699	1703#	1706#
	1724#	1725	1755#	1780#	1783#	1784	1790#	1811#	1830#	1858#	1883#	1884	1903#
	1904	1907#	1934#	1935	1996#	1997	2014#	2042#	2066#	2078#	2098#	2099	2114#
	2128#	2129	2144#	2158#	2168#	2172#	2173	2187#	2200#	2213#	2226#	2239#	2296#

XTIMEN	044020	3056#																	
XTIMST	043216	3056#*																	
XXDP D	022042	3056#																	
XSALWA=	000000	359#	2929		3014														
XSALS=	000040	359#																	
XSOFFS=	000400	359#	2929		3014														
XSTRUE=	000020	359#																	
X1X1 =	072000	3056#																	
ZERR	003036	731#	812																
SBREG	022350	3056#*																	
SENDAD	044440 G	3056#																	
SSAV2	045504 G	3056#																	
SSAV3	045520 G	3056#																	
SSAV4	045536 G	3056#																	
SSAV5	045556 G	3056#																	
=	072000	2#	640#	641#	642#	656#	1199	1232	1273	1294	1315	1336	1355	1376					
		1397	1418	1443	1470	1501	1522	1544	1565	1586	1606	1626	1647	1672					
		1699	1725	1784	1856#	1884	1904	1935	1997	2040#	2099	2129	2173	2399					
		2464	2632	2721	2729	2737	2745	2752	2929	3014	3045#	3056#							

ENDSW	1#	516													
ENDTST	1#	1477	1705	1857	1906	2041	2295	2871							
EQUALS	1#	533													
ERRDF	1#	1037	1266	1287	1308	1329	1348	1369	1390	1411	1436	1463	1494	1515	1537
		1558	1579	1599	1619	1640	1665	1692	1747	1772	1927	2093	2107	2123	2137
		2465	2471	2477	2544	2550	2556	2633	2639	2645	2722	2730	2738		
ERRHRD	1#														
ERRSF	1#														
ERRSOF	1#														
ESCAPE	1#														
EYIT	1#	1197	1236	1271	1292	1313	1334	1353	1374	1395	1416	1441	1468	1499	1520
		1542	1563	1584	1604	1624	1645	1670	1697	1723	1782	1882	1902	1933	1995
		2127	2171	2397	2462	2630	2719	2727	2735	2743	2750	2928	3013		2097
FEQUAL	1#														
GETPPI	1#														
GETTIM	1#														
GMANIA	1#														
GMANID	1#	984	2074	2422	2504	2569	2594	2658	2683						
GMANIL	1#	2062	2344	2354	2364	2375	2386	2411	2493	2583	2672				
GPHARD	1#	1176													
GPRMA	1#														
GPRMD	1#	988	2078	2426	2508	2573	2598	2662	2687	2903	2909	2915	2921	2964	2970
		2976	2982	2988	2994	3000	3006								
GPRML	1#	2066	2345	2358	2368	2379	2390	2415	2497	2587	2676				
HEADER	1#	379													
INLOOP	1#														
IOSETU	1#														
IOSTAR	1#														
LASTAD	1#	3052													
MANUAL	1#	1186	1876	1921	2056	2326									
MSASCI	1#	380#	381	382	383	384	385	386							
MSBRAN	1#														
MSBYTE	1#	380#	387	388											
MSCHEC	1#	1198#	1237#	1272#	1293#	1314#	1335#	1354#	1375#	1396#	1417#	1442#	1469#	1500#	1521#
		1543#	1564#	1585#	1605#	1625#	1646#	1671#	1698#	1724#	1783#	1883#	1903#	1934#	1996#
		2128#	2172#	2398#	2463#	2631#	2720#	2728#	2736#	2744#	2751#	2929#	3014#		
MSCKID	1#	415#													
MSCOUN	1#	812#	818#	832#	838#	852#	858#	872#	878#	892#	904#	916#	928#	979#	1191#
		1798#	1804#	1817#	1823#	1952#	1964#	1978#	1989#	2006#	2180#	2193#	2206#	2219#	2232#
		2780#	2794#												
MSDATA	1#	380#	389	391	393	396	398	400	402	404#	407	409	411	413	415#
		417	419	421	423	425	427	431	433	435	437	439	441	443	445
		720#													
MSDECR	1#	448#	469#	490#	517#	607#	644#	826#	846#	866#	886#	898#	910#	922#	1163#
		1212#	1243#	1277#	1298#	1319#	1340#	1359#	1380#	1401#	1422#	1447#	1474#	1478#	1505#
		1548#	1569#	1590#	1610#	1630#	1651#	1676#	1703#	1706#	1755#	1780#	1790#	1811#	1830#
		1907#	2014#	2042#	2114#	2144#	2158#	2168#	2187#	2200#	2213#	2226#	2239#	2296#	2401#
		2563#	2652#	2747#	2774#	2788#	2802#	2822#	2948#	3049#					
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		2598#	2662#	2676#	2687#	2904#	2910#	2916#	2922#	2965#	2971#	2977#	2983#	2989#	2995#
		3007#													
MSENDE	1#	448#	469#	490#	517#	607#	644#	826#	846#	866#	886#	898#	910#	922#	1163#
		1212#	1243#	1277#	1298#	1319#	1340#	1359#	1380#	1401#	1422#	1447#	1474#	1478#	1505#
		1548#	1569#	1590#	1610#	1630#	1651#	1676#	1703#	1706#	1755#	1780#	1790#	1811#	1830#
		1907#	2014#	2042#	2114#	2144#	2158#	2168#	2187#	2200#	2213#	2226#	2239#	2296#	2401#
		2563#	2652#	2747#	2774#	2788#	2802#	2822#	2948#	3049#					

MSSTAR	1#														
MSSMC	1#	812#	815	818#	823	826#	827	832#	835	838#	843	846#	847	852#	855
	858#	863	866#	867	872#	875	878#	883	886#	887	892#	895	898#	899	904#
	907	910#	911	916#	919	922#	923	928#	933	979#	982	985#	1042#	1163#	1164
	1177#	1178	1184#	1185	1187#	1191#	1194	1198#	1212#	1213	1233#	1234	1237#	1243#	1244
	1261#	1272#	1275#	1277#	1278	1281#	1293#	1296#	1298#	1299	1302#	1314#	1317#	1319#	1320
	1323#	1335#	1338#	1340#	1341	1344#	1354#	1357#	1359#	1360	1363#	1375#	1378#	1380#	1381
	1384#	1396#	1399#	1401#	1402	1405#	1417#	1420#	1422#	1423	1426#	1442#	1445#	1447#	1448
	1451#	1469#	1472#	1474#	1475	1478#	1479	1489#	1500#	1503#	1505#	1506	1509#	1521#	1524#
	1526#	1527	1531#	1543#	1546#	1548#	1549	1552#	1564#	1567#	1569#	1570	1573#	1585#	1588#
	1590#	1591	1593#	1605#	1608#	1610#	1611	1613#	1625#	1628#	1630#	1631	1634#	1646#	1649#
	1651#	1652	1655#	1671#	1674#	1676#	1677	1680#	1698#	1701#	1703#	1704	1706#	1707	1724#
	1727#	1729#	1733	1737#	1738	1740#	1741	1743#	1744	1752#	1755#	1756	1759#	1762#	1763
	1765#	1766	1768#	1769	1777#	1780#	1781	1783#	1798#	1801	1804#	1808	1811#	1812	1817#
	1820	1823#	1827	1830#	1831	1858#	1859	1870#	1871	1874#	1875	1877#	1883#	1888#	1889
	1892#	1893	1896#	1897	1900#	1901	1903#	1907#	1908	1922#	1932#	1934#	1952#	1956	1964#
	1968	1978#	1982	1989#	1992	1996#	2006#	2011	2014#	2015	2042#	2043	2055#	2057#	2063#
	2075#	2098#	2101#	2112#	2114#	2115	2119#	2128#	2131#	2142#	2144#	2145	2148#	2156#	2158#
	2159	2163#	2168#	2169	2172#	2180#	2184	2187#	2188	2193#	2197	2200#	2201	2206#	2210
	2213#	2214	2219#	2223	2226#	2227	2232#	2235	2239#	2240	2296#	2297	2325#	2327#	2345#
	2355#	2365#	2376#	2387#	2398#	2401#	2402	2406#	2412#	2423#	2463#	2484#	2485	2488#	2494#
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	2797	2802#	2803	2872#	2873	2929#	3014#								
MSTLAB	1#	815#	823#	827#	835#	843#	847#	855#	863#	867#	875#	883#	887#	895#	899#
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	1309#	1314#	1317#	1320#	1323#	1330#	1335#	1338#	1341#	1344#	1349#	1354#	1357#	1360#	1363#
	1370#	1375#	1378#	1381#	1384#	1391#	1396#	1399#	1402#	1405#	1412#	1417#	1420#	1423#	1426#
	1437#	1442#	1445#	1448#	1451#	1464#	1469#	1472#	1475#	1479#	1489#	1495#	1500#	1503#	1506#
	1509#	1516#	1521#	1524#	1527#	1531#	1538#	1543#	1546#	1549#	1552#	1559#	1564#	1567#	1570#
	1573#	1580#	1585#	1588#	1591#	1593#	1600#	1605#	1608#	1611#	1613#	1620#	1625#	1628#	1631#
	1634#	1641#	1646#	1649#	1652#	1655#	1666#	1671#	1674#	1677#	1680#	1693#	1698#	1701#	1704#
	1707#	1724#	1727#	1733#	1738#	1741#	1744#	1748#	1752#	1756#	1759#	1763#	1766#	1769#	1773#
	1777#	1781#	1783#	1801#	1808#	1812#	1820#	1827#	1831#	1859#	1871#	1875#	1877#	1883#	1889#
	1893#	1897#	1901#	1903#	1908#	1922#	1928#	1932#	1934#	1956#	1968#	1982#	1992#	1996#	2011#
	2015#	2043#	2055#	2057#	2063#	2075#	2094#	2098#	2101#	2108#	2112#	2115#	2119#	2124#	2128#
	2131#	2138#	2142#	2145#	2148#	2152#	2156#	2159#	2163#	2169#	2172#	2184#	2188#	2197#	2201#
	2210#	2214#	2223#	2227#	2235#	2240#	2297#	2325#	2327#	2345#	2355#	2365#	2376#	2387#	2398#
	2402#	2406#	2412#	2423#	2463#	2466#	2472#	2478#	2485#	2488#	2494#	2505#	2545#	2551#	2557#
	2564#	2567#	2570#	2584#	2595#	2631#	2634#	2640#	2646#	2653#	2656#	2659#	2673#	2684#	2720#
	2723#	2728#	2731#	2736#	2739#	2744#	2748#	2751#	2769#	2775#	2783#	2789#	2797#	2803#	2873#
MSTSTL	1#	815#	823#	827#	835#	843#	847#	855#	863#	867#	875#	883#	887#	895#	899#
	907#	911#	919#	923#	933#	982#	985#	1038#	1042#	1164#	1178#	1185#	1187#	1194#	1198#
	1213#	1234#	1237#	1244#	1261#	1267#	1272#	1275#	1278#	1281#	1288#	1293#	1296#	1299#	1302#
	1309#	1314#	1317#	1320#	1323#	1330#	1335#	1338#	1341#	1344#	1349#	1354#	1357#	1360#	1363#
	1370#	1375#	1378#	1381#	1384#	1391#	1396#	1399#	1402#	1405#	1412#	1417#	1420#	1423#	1426#
	1437#	1442#	1445#	1448#	1451#	1464#	1469#	1472#	1475#	1479#	1489#	1495#	1500#	1503#	1506#
	1509#	1516#	1521#	1524#	1527#	1531#	1538#	1543#	1546#	1549#	1552#	1559#	1564#	1567#	1570#
	1573#	1580#	1585#	1588#	1591#	1593#	1600#	1605#	1608#	1611#	1613#	1620#	1625#	1628#	1631#
	1634#	1641#	1646#	1649#	1652#	1655#	1666#	1671#	1674#	1677#	1680#	1693#	1698#	1701#	1704#
	1707#	1724#	1727#	1733#	1738#	1741#	1744#	1748#	1752#	1756#	1759#	1763#	1766#	1769#	1773#
	1777#	1781#	1783#	1801#	1808#	1812#	1820#	1827#	1831#	1859#	1871#	1875#	1877#	1883#	1889#
	1893#	1897#	1901#	1903#	1908#	1922#	1928#	1932#	1934#	1956#	1968#	1982#	1992#	1996#	2011#
	2015#	2043#	2055#	2057#	2063#	2075#	2094#	2098#	2101#	2108#	2112#	2115#	2119#	2124#	2128#
	2131#	2138#	2142#	2145#	2148#	2152#	2156#	2159#	2163#	2169#	2172#	2184#	2188#	2197#	2201#

CROSS REFERENCE TABLE -- MACRO NAMES

	2210#	2214#	2223#	2227#	2235#	2240#	2297#	2325#	2327#	2345#	2355#	2365#	2376#	2387#	2398#
	2402#	2406#	2412#	2423#	2463#	2466#	2472#	2478#	2485#	2488#	2494#	2505#	2545#	2551#	2557#
	2564#	2567#	2570#	2584#	2595#	2631#	2634#	2640#	2646#	2653#	2656#	2659#	2673#	2684#	2720#
	2723#	2728#	2731#	2736#	2739#	2744#	2748#	2751#	2769#	2775#	2783#	2789#	2797#	2803#	2873#
MSWCPD	1#	404#	406	459#	461	462	463	464	465	466	467	649#	652#	653	985#
	987	988#	1038#	1039	1040	1198#	1237#	1267#	1268	1269	1270	1272#	1288#	1289	1290
	1291	1293#	1309#	1310	1311	1312	1314#	1330#	1331	1332	1333	1335#	1349#	1350	1351
	1352	1354#	1370#	1371	1372	1373	1375#	1391#	1392	1393	1394	1396#	1412#	1413	1414
	1415	1417#	1437#	1438	1439	1440	1442#	1464#	1465	1466	1467	1469#	1495#	1496	1497
	1498	1500#	1516#	1517	1518	1519	1521#	1538#	1539	1540	1541	1543#	1559#	1560	1561
	1562	1564#	1580#	1581	1582	1583	1585#	1600#	1601	1602	1603	1605#	1620#	1621	1622
	1623	1625#	1641#	1642	1643	1644	1646#	1666#	1667	1668	1669	1671#	1693#	1694	1695
	1696	1698#	1724#	1748#	1749	1750	1773#	1774	1775	1783#	1883#	1903#	1928#	1929	1930
	1934#	1996#	2063#	2065	2066#	2075#	2077	2078#	2094#	2095	2096	2098#	2108#	2109	2110
	2124#	2125	2126	2128#	2138#	2139	2140	2152#	2153	2154	2172#	2345#	2347	2348#	2355#
	2357	2358#	2365#	2367	2368#	2376#	2378	2379#	2387#	2389	2390#	2398#	2412#	2414	2415#
	2423#	2425	2426#	2463#	2466#	2467	2468	2469	2472#	2473	2474	2475	2478#	2479	2480
	2481	2494#	2496	2497#	2505#	2507	2508#	2545#	2546	2547	2548	2551#	2552	2553	2554
	2557#	2558	2559	2560	2570#	2572	2573#	2584#	2586	2587#	2595#	2597	2598#	2631#	2634#
	2635	2636	2637	2640#	2641	2642	2643	2646#	2647	2648	2649	2659#	2661	2662#	2673#
	2675	2676#	2684#	2686	2687#	2720#	2723#	2724	2725	2726	2728#	2731#	2732	2733	2734
	2736#	2739#	2740	2741	2742	2744#	2751#	2904#	2910#	2916#	2922#	2929#	2965#	2971#	2977#
	2983#	2989#	2995#	3001#	3007#	3014#									
MSXFER	1#	2929#	3014#												
POINTE	1#	376													
PRINTB	1#	811	831	851	871	891	903	915	1797	1803	1816	1822	2005	2179	2192
	2205	2218	2231	2764	2779	2793									
PRINTF	1#	927	978	1190	1951	1967	1977	1988							
PRINTN	1#														
PRINTS	1#														
PRINTX	1#	817	837	857	877										
READBU	1#														
READEF	1#														
REQTIM	1#														
SETEF	1#														
SETPPI	1#	1183	1736	1742	1761	1767									
SETVEC	1#	1728													
SLASH	1#														
STARS	1#														
SIC	1#	358#													
TRAPPF	1#														
UNBUFF	1#														
WAITMS	1#	1869	1873	1887	1891	1895	1899								
WAITUS	1#	1739	1764												
XFER	1#	2929	3014												
XFERF	1#														
XFERT	1#														

ABS 072000 000

EPROPS DETECTED 0

DUMSRA BIN, DUMSRA SEQ SOL CFF NL TOC=3 : SML, DUMSRA P11, DOCTOR P11
RUN-TIME 36 39 4 SECONDS

OUTERR MACY11 30(1046) 16-NOV-77 16 04 PAGE 103
DOCTOR P11 07-OCT-77 13 48 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0098

RUN-TIME RATIO 1193/81=14 6
CORE USED 18K (35 PAGES)