

FP11

MAINTENANCE INSTRUCTION
MD-11-DCFPM-B
TESTS

EP-DCFPM-B-DL

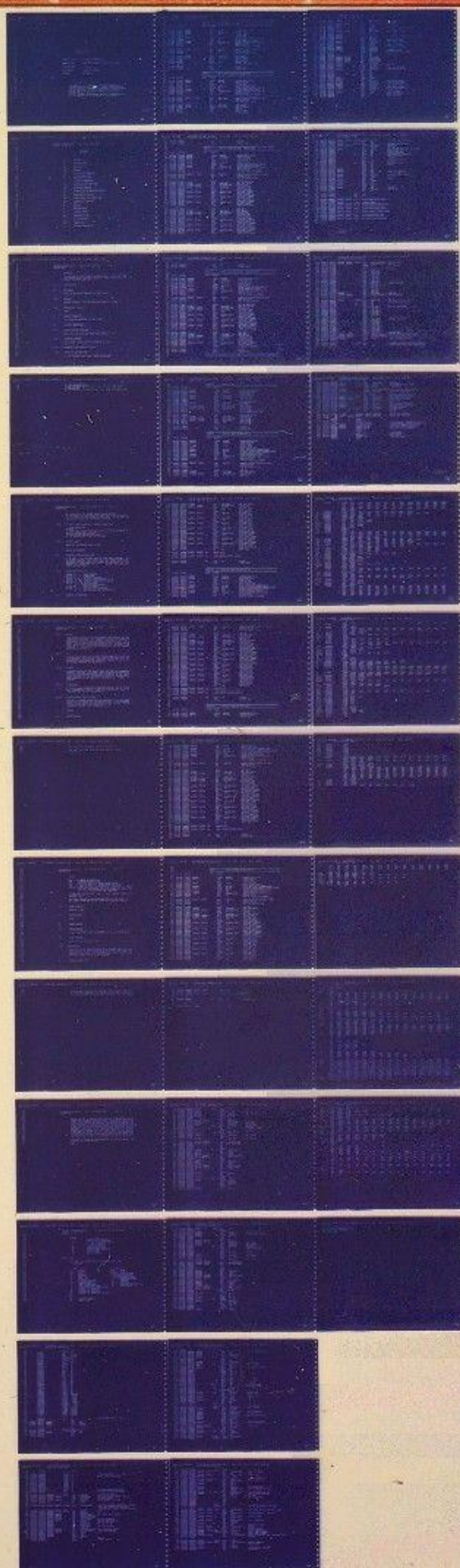
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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DCFM-B-D
PRODUCT NAME: FP11 MAINTENANCE INSTRUCTION TESTS
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MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: BOB BRAIN

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MAINDEC-11-DCFPM-B-D
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MAINDEC-11-DCFPN-B-D FP11 MAINTENANCE TEST PAGE 3
DESCRIPTION

1. ABSTRACT
THE PURPOSE OF THIS PROGRAM IS THREE FOLD. FIRST TO TEST THE MAINTENANCE FEATURES, SECOND TO TRACE MULD THROUGH ITS STEPS, THIRD TO TRACE DIVD.
2. REQUIREMENTS
 - 2.1 EQUIPMENT
POP11/45 STANDARD COMPUTER WITH FP11 OPTION
 - 2.2 STORAGE
PROGRAM STORAGE - THE ROUTINES USE MEMORY 8 - 17776
 - 2.3 PRELIMINARY PROGRAMS
NONE
3. LOADING PROCEDURE
USE STANDARD PROCEDURE FOR ABS TAPES.
4. STARTING PROCEDURE
 - 4.1 CONTROL SWITCH SETTINGS
SEE 5.1.1 (ALL DOWN FOR WORST CASE TESTING)
 - 4.2 STARTING ADDRESS
THE PROGRAM SHOULD ALWAYS BE STARTED AT 200.
 - 4.3 PROGRAM AND/OR OPERATOR ACTION
 - 4.3.1 BASIC MAINTENANCE TEST
1) LOAD PROGRAM INTO MEMORY USING ABS LOADER.

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- 2) LOAD ADDRESS 202.
- 3) SET SWITCHES (SEE SEC 5.1.1) ALL DOWN FOR WORST CASE
- 4) PRESS START.
- 9) THE PROGRAM WILL LOOP AND BELL WILL RING ONCE EVERY PASS

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MAINDEC-11-DCFPH-B-0 FP11 MAINTENANCE TEST PAGE 4
DESCRIPTION

6) A MINIMUM OF TWO PASSES SHOULD ALWAYS BE RUN.
7) THE DISPLAY ON THE 11.45 WILL SHOW THE ITERATION COUNT IN THE LEFT BYTE AND TEST NUMBER IN THE RIGHT. TO USE, SET THE DATA DISPLAY SWITCH TO THE DISPLAY POSITION.

4.3.2 MULTIPLY TRACE (MUST RUN 1 PASS OF BASIC TEST)

1) LOAD ADDRESS 204
2) START
3) TYPE FIRST NUMBER (MUST BE IN OCTAL, 4 WORDS SEPERATED BY SPACES, FOLLOWED BY A RETURN)
4) TYPE SECOND NUMBER (LIKE FIRST)
5) THE PROGRAM WILL TRACE THE 71 STEPS

4.3.3 DIVIDE TRACE

SAME AS 4.3.2 EXCEPT START AT 210

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

AT SA 200 .. ALL SWITCHES DOWN IS WORST CASE TESTING. IF AN ERROR OCCURS, THAT TEST WILL BE LOOPED UPON UNTIL COMPLETION OF 256 CONSECUTIVE PASSES WITH NO ERRORS OF THE SUBTEST IF SW<9> SET TO A 1. THE BELL WILL RING UPON COMPLETION OF A PASS.

5.1.1 SWITCH SETTINGS ARE:

SW<19> = 1 HALT ON ERROR
SW<14> = 1 SCOPE LOOP
SW<13> = 1 INHIBIT PRINTOUT
SW<12> = 1 INHIBIT TRACE TRAPPING
SW<11> = 1 INHIBIT ITERATIONS OF SUBTEST
SW<10> = 1 BELL ON ERROR
0 BELL ON PASS COMPLETE
SW<09> = 1 LOOP ON ERROR
SW<08> = 1 LOOP ON TEST IN SW<710>
0 LOAD SW<710> INTO UB REGISTER

5.2 SUBROUTINE ABSTRACTS

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MAINDEC-11-DCFPH-0-D FP11 MAINTENANCE TEST PAGE 5
DESCRIPTION

5.2.1 SCOPE

THIS SUBROUTINE CALL IS PLACED BETWEEN EACH SUBTEST IN THE INSTRUCTION SECTION. IT RECORDS THE STARTING ADDRESS OF EACH SUBTEST AS IT IS BEING ENTERED IN LOCATION "LAD". IF A SCOPE LOOP IS REQUESTED, THE CURRENT SUBTEST WILL BE LOOPED UPON. SW<11> ON A 1 INHIBITS ITERATION OF SUBTESTS. THE CONTENTS OF LAD MAY BE USED TO DETERMINE THE LAST SUBTEST SUCCESSFULLY COMPLETED.

5.2.2 HLT

THIS ROUTINE PRINTS OUT AN ERROR MESSAGE (SEE 6.1.) IF A HLT IS EXECUTED, THE SUBTEST WILL BE LOOPED UPON UNTIL 256 CONSECUTIVE GOOD PASSES ARE COMPLETED IF SW<9> IS ON A 1. TO INHIBIT TYPEOUTS, PUT SW<13> ON A 1.

5.2.3 TRTRAP

IF SW<12> IS ON A 0, THE T BIT WILL BE SET ON ALTERNATE PASSES. WHEN SET, IT CAUSES A TRAP AFTER EACH INSTRUCTION. THE FIRST INSTRUCTION EXECUTED UPON TRAPPING IS AN "RTT" WHICH RETURNS TO THE INTERRUPTED SEQUENCE OF INSTRUCTIONS. THIS SEQUENCE IS CONTINUED UNTIL THE END OF THE PROGRAM IS REACHED.

5.2.4 TRAPCATCHER

A ".+2" - "HALT" SEQUENCE IS REPEATED FROM 0 - 776 TO CATCH ANY UNEXPECTED TRAPS. THUS ANY UNEXPECTED TRAPS OR INTERRUPTS WILL HALT AT THE VECTOR + 2.

5.2.5 FLOATING POINT TRAP (TO 244)

THE FP11 INTERRUPT DISABLE BIT IS ALWAYS SET IN ALL OF THESE TESTS SO NO TRAPS TO 244 SHOULD OCCUR. IF AN INTERRUPT OCCURS, THE PROGRAM WILL HALT AT 766 IN THE ROUTINE CALLED FLTERR AND DISPLAY THE FPS REGISTER IN R0.

6. ERRORS

6.1 ERROR PRINTOUT

MAINDEC-11-DCPPM-B
DCPPM.P11

MAINTENANCE INSTRUCTION TEST MACY11.624 6-MAR-74 10115 PAGE 7

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THE FORMAT FOR THE BASIC TEST IS AS FOLLOWS:

ADR FPS ANS1 ANS2 ANS3 ANS4 ANS5 ANS6 ANS7 ANS8
FEC FEA

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MAINDEC-11-DCFPM-0-D FP11 MAINTENANCE TEST PAGE 6
DESCRIPTION

WHERE:

ADR = ADDRESS OF ERROR WLT
FPS = FLOATING POINT STATUS
FEC = FLOATING EXCEPTION CODES (ERROR CODES)
FEA = FLOATING EXCEPTION ADDRESS (ERROR ADDRESS)
ANS1-8 = ERROR DATA READ FROM THE FP11. FROM 8-8 OF THESE
MAY BE TYPED DEPENDING ON THE NUMBER FOLLOWING THE
WLT: I.E., WLT+3 WOULD TYPE ANS1-ANS3.

TO FIND THE FAILING TEST, LOOK AT THE LISTING ABOVE THE
ADDRESS TYPE.

THE TRACE TYPEOUT IS SIMILAR EXCEPT FPS IS THE COUNT (1 -
71), ANS1 - ANS4 ARE THE AR, AND ANS5 - ANS8 ARE THE CR.

6.2 ERROR RECOVERY

RESTART AT 200

7. RESTRICTIONS

NONE

8. MISCELLANEOUS

8.1 EXECUTION TIME

A BELL WILL RING WITHIN 15 SECONDS WITH ALL SWITCHES DOWN.

8.2 STACK POINTER

STACK IS INITIALLY SET TO 600

8.3 POWER FAIL

EACH TEST CAN BE POWER FAILED WITH NO ERRORS EXCEPT ON THE
FEC AND FEA. TO USE, START THE TEST AS USUAL AND POWER DOWN
THEN UP AT ANY TIME. THE PROGRAM SHOULD TYPE "POWER" AND
CONTINUE TO RUN WITH NO OTHER TYPEOUTS.

9. PROGRAM DESCRIPTION

MAINDEC-11-DCFPN-B
DCFPN.P11

MAINTENANCE INSTRUCTION TEST

MACY11.624 6-MAR-74 18115 PAGE 9

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THIS PROGRAM TESTS THE MAINTENANCE INSTRUCTIONS OF THE FP11.
IT HAS MANY SUBTESTS (THE CODE BETWEEN 2 SCOPE STATEMENTS)
WHICH ARE RUN 256 TIMES BEFORE CONTINUING TO THE NEXT.

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MAINDEC-11-DCFPM-B-D FP11 MAINTENANCE TEST PAGE 7
DESCRIPTION

SW<11> ON A 1 CAUSES EACH SUBTEST TO BE RUN ONLY ONCE.
SW<9> ON A 1 ENABLES LOOP ON ERROR. THE ADDRESS ICNT (LOC
1800) AND DISPLAY REGISTER ON THE 11/45 EACH CONTAIN THE
ITERATION COUNT IN THE LEFT BYTE AND THE TEST NUMBER IN THE
RIGHT BYTE. ALL THE SUBTESTS SHOULD BE RUN SEQUENTIALLY BY
STARTING AT 204 NOT BY STARTING AT THE BEGINNING OF THE
SUBTEST. TO LOOP ON A PARTICULAR SUBTEST, PUT THE TEST
NUMBER (SEE LISTING) IN THE RIGHT BYTE OF THE SWITCH
REGISTER AND SW<8> ON A 1. THIS TEST WILL BE LOOPED UPON
UNTIL SW<8> IS PUT ON A 0 OR THE RIGHT BYTE IS CHANGED. IF
THE TEST IS NON-EXISTANT, THE PROGRAM WILL BE RUN AS USUAL.

STARTING AT 204 OR 218 WILL TRACE THE AR AND OR THROUGH THE
MULD OR DIVD INSTRUCTIONS.
.ENDR

.TITLE MAINDEC-11-DCFPH-B MAINTENANCE INSTRUCTION TEST
PROGRAM BY BOB BRAIN
.REM

SWITCH	USE
8	LOOP ON TEST IN SWK718>
10	2 - BELL ON PASS COMPLETE
	1 - BELL ON ERROR
11	INHIBIT ITERATIONS
12	INHIBIT TRACE TRAP
13	INHIBIT ERROR TYPEOUTS
14	LOOP ON TEST
15	HALT ON ERROR

OUTPUT FORM:

ADR FPS ANS1 ANS2 ANS3 ANS4 ANS5 ANS6 ANS7 ANS8
FEC FEA

FPS		FEC	
BIT	REASON	CODE	ERROR
0	CARRY	0	ADDRESS ERROR
1	OVERFLOW	2	OPCODE ERROR
2	ZERO	4	DIVIDE BY ZERO
3	NEGATIVE	6	CONVERSION ERROR
4	MAINTAINANCE MODE	10	OVERFLOW
5	TRUNCATE MODE	12	UNDERFLOW
6	LONG INTEGER MODE	14	UNDEFINED VARIABLE (-0)
7	DOUBLE PRECISION MODE	16	UBREAK TRAP
8	INTERUPT ON CONVERSION ERROR		
9	INTERUPT ON OVERFLOW		
10	INTERUPT ON UNDERFLOW		
11	INTERUPT ON UNDEFINED VARIABLE		
12			
13			
14	INTERUPT DISABLE		
15	ERROR FLAG		

334				.ENABL	ABS	
335	000001			N=	1	
336	177776			PS=	177776	
337	177570			SWR=	177570	
338	177570			DISPLAY=	SWR	
339	104400			SCOPE=	TRAP	
338	104000			HLT=	EMT	
371	000004			TYPE=	10T	
392	000007			BELL=	7	
393	000000			FPS=	X0	
394	000000			R0=	X0	
395	000001			R1=	X1	
396	000002			R2=	X2	
397	000003			R3=	X3	
398	000004			R4=	X4	
399	000005			R5=	X5	
400	000005			TTY=	X5	
401	000006			SP=	X6	
402	000007			PC=	X7	
403	000000			AC0=	X0	
404	000001			AC1=	X1	
405	000002			AC2=	X2	
406	000003			AC3=	X3	
407	000004			AC4=	X4	
408	000005			AC5=	X5	
409	100000			SW15=	100000	
410	040000			SW14=	400000	
411	020000			SW13=	200000	
412	010000			SW12=	100000	
413	004000			SW11=	400000	
414	002000			SW10=	200000	
415	001000			SW09=	100000	
416	000400			SW08=	400000	
417	170003			LDUB=	170003	
418	170005			STAB=	170005	
419	170007			STOB=	170007	
420	170006			MRS=	170006	
421	170004			LOSC=	170004	
422						
423	000000			.B	0	
424	000200			.B	200	
425	000200	000167	000622	JMP	BEG	
426	000204	000167	003234	JMP	TSTMUL	
427	000210	000167	003464	JMP	TSTDIV	
428						
429	000760			.B	760	
430	000760	170200		FLTRRI	STFPS	FPS
431	000762	170367	000034		STST	FEC
432	000766	000000			HALT	
433	000770	000002			RTI	

!TRAP CATCHER FROM B - 776

434		201000		.	1000		
435							
436	P21000	000000		ICNT:	0		; ITERATION COUNT = LM TEST NO. * RM
437	P21002	000000		ANS1:	0		; FIRST ANSWER (SEE CODE)
438	P21004	000000		ANS2:	0		
439	P21006	000000		ANS3:	0		
440	P21010	000000		ANS4:	0		
441	P21012	000000		ANS5:	0		
442	P21014	000000		ANS6:	0		
443	P21016	000000		ANS7:	0		
444	P21020	000000		ANS8:	0		
445	P21022	000000		FEC:	0		; FLOATING EXCEPTION CODES
446	P21024	000000		FEA:	0		; FLOATING EXCEPTION ADDRESS
447							
448	P21026	012736	000000	BEG:	MOV	0000,SP	; 000 STACK AT 000 00
449	P21032	012737	001054		MOV	0M1120,004	; FIND OUT WHICH MACHINE THIS IS
450	P21040	005737	177772		TST	00177772	; IS PIRQ THERE?
451	P21044	012767	000006		MOV	06,YE8RT	; FUDGE IN RTT IF 11/45
452	P21052	000403			OR	BEG:N	
453							
454	P21054	016737	004012	000010	M1120:	MOV	FPTADR,0010
455							; LOAD THE ILLEGAL INSTRUCTION VECTOR
456							; WITH THE ADDRESS OF THE FPU,
457	P21062	012737	000006	000004	BEGIN:	MOV	06,004
458	P21070	012706	000000			MOV	0600,SP
459	P21074	012737	004550	000014		MOV	0YESRT,0014
460	P21102	012777	005870	004570		MOV	0PODOWN,0DOWNVEC
461	P21110	012777	000340	004564		MOV	0340,0DOWNVEC+2
462	P21116	012737	005570	000020		MOV	0,IOT,0020
463	P21124	012700	000030			MOV	030,R0
464	P21130	012720	004704			MOV	0,TRP,(0)+
465	P21134	012720	000340			MOV	0340,(0)+
466	P21140	012720	004552			MOV	0,ENT,(0)+
467	P21144	012710	000340			MOV	0340,(0)
468	P21150	012777	000760	004516		MOV	0FLTERR,0FPVECT
469	P21156	012777	000340	004512		MOV	0340,0FPVECT+2
470	P21164	005067	177610			CLR	ICNT
471	P21170	005067	004520			CLR	LAD
472	P21174	170127	040000			LDPPS	040000
473	P21200	005003				CLR	R3
474	P21202	170003				LCUB	

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475
476
477
478 7J1224 134478
479
480 7J1220 177127 240220      LD FPS 04J220      ;DOUBLE/MAINT BITS
481 7J1212 172467 304366      LDD  ALT1A,AC3    ;LOAD ALT 1'S
482 7J1210 112733 000005      MOV  05,R3        ;LOAD 5 INTO
483 7J1222 173003              LCUB              ;JMPFAR REG.
484 7J1224 172467 304364      LDD  ALT1B,AC7    ;LOAD OTHER 1'S
485 7J1230 173270              ST FPS              ;STORE FLOATING POINT STATUS
486 7J1232 173367 177564      STST  FEC         ;STORE EXCEPTION CODES
487 7J1236 322730 140230      CMP  #140230,FPS ;CHECK FLOATING POINT STATUS
488 7J1242 301401              BEQ  .+4             ;BRANCH IF OK
489 7J1244 134070              HLT                    ;FPS NOT EQUAL TO 140230
490
491 7J1246 322767 000016 177546  CMP  #16,FEC        ;CHECK FLOATING EXCEPTION CODE
492 7J1254 301401              BEQ  .+4             ;BRANCH IF OK
493 7J1256 104000              HLT                    ;FEC NOT EQUAL TO 16
494
495 7J1260 174067 177516      STD  AC0,ANS1     ;GET RESULT
496 7J1264 173467 004314      CMPD  ALT1A,AC0   ;CHECK RESULT
497 7J1270 173070              CFCC              ;GET CC BITS
498 7J1272 301401              BEQ  .+4             ;SKIP IF OK
499 7J1274 104004              HLT+4              ;SECOND LDD DIDN'T TRAP
500
501 7J1276 305003              CLR  R3              ;CLEAR
502 7J1320 173003              LCUB              ;JMPFAR REG
503
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506
507 7J1302 104400
508
509 7J1304 173127 040220      LD FPS 040220      ;DOUBLE/MAINT BITS
510 7J1310 312733 000021      MOV  #21,R3      ;LOAD 21 INTO
511 7J1314 173003              LCUB              ;JMPFAR REG.
512 7J1316 172467 003772      LDD  ALT1B,AC0    ;LOAD FIRST 32 BITS
513 7J1322 173270              ST FPS              ;STORE FLOATING POINT STATUS
514 7J1324 173367 177472      STST  FEC         ;STORE EXCEPTION CODES
515 7J1330 322700 140230      CMP  #140230,FPS ;CHECK FLOATING POINT STATUS
516 7J1334 301401              BEQ  .+4             ;BRANCH IF OK
517 7J1336 104000              HLT                    ;FPS NOT EQUAL TO 140230
518
519 7J1340 322767 000016 177454  CMP  #16,FEC        ;CHECK FLOATING EXCEPTION CODE
520 7J1346 301401              BEQ  .+4             ;BRANCH IF OK
521 7J1350 104000              HLT                    ;FEC NOT EQUAL TO 16
522
523 7J1352 174067 177424      STD  AC0,ANS1     ;GET ANSWER
524 7J1356 173467 003736      CMPD  ALT1C,AC0   ;RESULT RIGHT?
525 7J1362 173000              CFCC              ;GET CC
526 7J1364 301401              BEQ  .+4             ;SKIP IF OK
527 7J1366 104004              HLT+4              ;WEIRD ANSWER
528

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529	001370	005003		CLR	R3	:CLEAR
530	001372	170003		LDUB		:UBREAK REG
531						
532				:.....		
533				:TEST 3 TEST OF STAB AND STOP DOUBLE MODE		
534				:.....		
535	001374	104400		TST3: SCOPE		
536						
537	001376	170127	040220	LOFPS	#40220	:DOUBLE/MAINT BITS
538	001402	172467	003722	LDD	ALTA,AC0	:LOAD ALT 1'S
539	001406	012703	000115	MOV	#115,R3	:LOAD 115 INTO
540	001412	170003		LDUB		:UBREAK REG,
541	001414	172067	003720	ADD	ALTB,AC0	:ADD ALT 1'S
542	001420	170200		STFPS	FPS	:STORE FLOATING POINT STATUS
543	001422	170367	177374	STST	FEC	:STORE EXCEPTION CODES
544	001426	022700	140220	CMF	#140220,FPS	:CHECK FLOATING POINT STATUS
545	001432	001401		BEQ	,+4	:BRANCH IF OK
546	001434	104000		HLT		:FPS NOT EQUAL TO 140220
547						
548	001436	022767	000016 177356	CMF	#16,FEC	:CHECK FLOATING EXCEPTION CODE
549	001444	001401		BEQ	,+4	:BRANCH IF OK
550	001446	104000		HLT		:FEC NOT EQUAL TO 16
551						
552	001450	170003		STAB		:GET AR INTO AC0
553	001452	174067	177324	STD	AC0,ANS1	:GET FOR TYPING
554	001456	042767	177000 177316	BIC	#177000,ANS1	:CLEAR JUNK
555	001464	022767	000125 177310	CMF	#125,ANS1	:IS ANS1 = 125
556	001472	001401		BEQ	,+4	:SKIP IF SAME
557	001474	104004		HLT+4		:ANS1 NOT = 125
558	001476	022767	052525 177300	CMF	#52525,ANS2	:IS ANS2 = 52525
559	001504	001401		BEQ	,+4	:SKIP IF SAME
560	001506	104004		HLT+4		:ANS2 NOT = 52525
561	001510	022767	052525 177270	CMF	#52525,ANS3	:IS ANS3 = 52525
562	001516	001401		BEQ	,+4	:SKIP IF SAME
563	001520	104004		HLT+4		:ANS3 NOT = 52525
564	001522	022767	052525 177260	CMF	#52525,ANS4	:IS ANS4 = 52525
565	001530	001401		BEQ	,+4	:SKIP IF SAME
566	001532	104004		HLT+4		:ANS4 NOT = 52525
567						
568	001534	170007		STOB		:GET OR
569	001536	174067	177240	STD	AC0,ANS1	:GET RESULT
570	001542	042767	177000 177232	BIC	#177000,ANS1	:CLEAR JUNK
571	001550	022767	000052 177224	CMF	#52,ANS1	:IS ANS1 = 52
572	001556	001401		BEQ	,+4	:SKIP IF SAME
573	001560	104004		HLT+4		:ANS1 NOT = 52
574	001562	022767	125252 177214	CMF	#125252,ANS2	:IS ANS2 = 125252
575	001570	001401		BEQ	,+4	:SKIP IF SAME
576	001572	104004		HLT+4		:ANS2 NOT = 125252
577	001574	022767	125252 177204	CMF	#125252,ANS3	:IS ANS3 = 125252
578	001602	001401		BEQ	,+4	:SKIP IF SAME
579	001604	104004		HLT+4		:ANS3 NOT = 125252
580	001606	022767	125252 177174	CMF	#125252,ANS4	:IS ANS4 = 125252
581	001614	001401		BEQ	,+4	:SKIP IF SAME
582	001616	104004		HLT+4		:ANS4 NOT = 125252

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583
584 001620 005003          CLR    R3          ;CLEAR
585 001622 170003          LOUB          ;UBREAK REG.
586
587
588
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590 001624 104400          ;.....
591
592 001626 170127 040020    ;TEST 4          TEST OF STAB AND STOB  FLOATING MODE
593 001632 172467 003502    ;.....
594 001636 012703 000115    TST4:  SCOPE
595 001642 170003          LD FPS    040020    ;FLOATING/MAINT BITS
596 001644 172067 003460    LDF     ALT0,AC0    ;LOAD ALT 1'S
597 001650 170200          MOV     0115,R3    ;LOAD 115 INTO
598 001652 170367 177144    LOUB          ;UBREAK REG.
599 001656 022700 140020    ADD     ALTA,AC0    ;ADD ALT 1'S
600 001662 001401          ST FPS    FPS        ;STORE FLOATING POINT STATUS
601 001664 104000          ST ST     FEC        ;STORE EXCEPTION CODES
602
603 001666 022767 000016 177126  CMP     016,FEC    ;CHECK FLOATING EXCEPTION CODE
604 001674 001401          BEQ     ,+4        ;BRANCH IF OK
605 001676 104000          HLT              ;FEC NOT EQUAL TO 140020
606
607 001700 170007          ;CHECK FLOATING EXCEPTION CODE
608 001702 174067 177074    BEQ     ,+4        ;BRANCH IF OK
609 001706 042767 177000 177066  HLT              ;FEC NOT EQUAL TO 16
610 001714 022767 000125 177060    ;GET OR INTO AC0
611 001722 001401          STF     AC0,ANS1    ;GET FOR TYPING
612 001724 104004          BIC     0177000,ANS1  ;CLEAR JUNK
613 001726 022767 052525 177050    ;IS ANS1 = 125
614 001734 001401          CMP     0125,ANS1   ;SKIP IF SAME
615 001736 104004          BEQ     ,+4        ;ANS1 NOT = 125
616 001740 022767 125252 177040    ;IS ANS2 = 52525
617 001746 001401          HLT+4          ;SKIP IF SAME
618 001750 104004          CMP     0125252,ANS2  ;ANS2 NOT = 52525
619 001752 022767 125252 177030    ;IS ANS3 = 125252
620 001760 001401          BEQ     ,+4        ;SKIP IF SAME
621 001762 104004          HLT+4          ;ANS3 NOT = 125252
622
623 001764 170005          ;IS ANS4 = 125252
624 001766 174067 177010 177002    ;GET AR
625 001772 042767 177000 177002    ;GET RESULT
626 002000 022767 000052 176774    ;CLEAR JUNK
627 002006 001401          CMP     052,ANS1    ;IS ANS1 = 52
628 002010 104002          BEQ     ,+4        ;SKIP IF SAME
629 002012 022767 125252 176764    ;ANS1 NOT = 52
630 002020 001401          CMP     0125252,ANS2  ;IS ANS2 = 125252
631 002022 104002          BEQ     ,+4        ;SKIP IF SAME
632
633 002024 005003          ;ANS2 NOT = 125252
634 002026 170003          CLR     R3          ;CLEAR
635
636

```

```

TEST 5          TEST OF MRS
.....
TST5:  SCOPE

      LDFPS      #40220          ;DOUBLE/MAINT BITS
      MOV        #115,R3         ;LOAD 115 INTO
      LOUB                      ;UBREAK REG.
      LOD        ALTA,AC0        ;LOAD ALT 1'S
      ADD        ALTB,AC0        ;ADD ALT 1'S
      MRS
      ST00
      STD        AC0,ANS1        ;GET OR INTO AC0
      STFPS      FPS            ;GET RESULT
      BIC        #177600,ANS1    ;GET FPS
      CMP        #125,ANS1       ;CLEAR JUNK
      BEQ        ,+4             ;IS IT 125?
      HLT+4          ;SKIP IF OK
                        ;FIRST WORD IS NOT 125

      STAB
      STD        AC0,ANS1        ;GET AR INTO A^0
      BIC        #177600,ANS1    ;GET RESULT
      CMP        #152,ANS1       ;CLEAR JUNK
      BEQ        ,+4             ;CHECK RESULT
      HLT+4          ;SKIP IF OK
                        ;AR NOT 152

      CLR        R3              ;CLEAR
      LOUB                      ;UBREAK REG

.....
TEST 6          TEST OF LOFC FOR MULD OF 1
.....
TST6:  SCOPE

      LDFPS      #40220          ;DOUBLE/MAINT BITS
      MOV        #230,R3         ;LOAD 230 INTO
      LOUB                      ;UBREAK REG.
      MOV        #1,R4           ;LOAD 1 INTO
      LOFC                      ;SHIFT COUNT REG.
      LOD        15,AC0          ;LOAD INTO AC0 = 40000,0,0,0
      MULD       28,AC0          ;MULD BY 40252,125252,125252,125252
      STFPS      FPS            ;STORE FLOATING POINT STATUS
      SYST       FEC            ;STORE EXCEPTION CODES
      CMP        #140220,FPS     ;CHECK FLOATING POINT STATUS
      BEQ        ,+4             ;BRANCH IF OK
      HLT          ;FPS NOT EQUAL TO 140220

      CMP        #16,FEC         ;CHECK FLOATING EXCEPTION CODE
      BEQ        ,+4             ;BRANCH IF OK
      HLT          ;FEC NOT EQUAL TO 16

      STAB
      STD        AC0,ANS1        ;GET AR
      BIC        #177600,ANS1    ;GET FOR TYPING
      ST00          ;CLEAR JUNK
                        ;GET OR

```

```

691 702240 174067 176546
692 702244 042767 177600 176540
693 002252 022767 000000 176522
694 002260 001401
695 002262 104010
696 002264 022767 000000 176512
697 002272 001401
698 002274 104010
699 002276 022767 000000 176502
700 002304 001401
701 002306 104010
702 002310 022767 000000 176472
703 002316 001401
704 002320 104010
705 002322 022767 000125 176462
706 002330 001401
707 002332 104010
708 002334 022767 052525 176452
709 002342 001401
710 002344 104010
711 002346 022767 052525 176442
712 002354 001401
713 002356 104010
714 002360 022767 052525 176432
715 002366 001401
716 002370 104010
717 002372 000410
718
719 002374 040000 000000 000000 15:
720 002402 000000
721 002404 040252 125252 125252 25:
722 002412 125252
723
724 002414 005003 55:
725 002416 170003
726
727
728
729
730
731 002420 104400
732
733 002422 170127 040220
734 002424 012703 000230
735 002432 170003
736 002434 012704 000071
737 002440 170004
738 002442 172467 000206
739 002446 171067 000212
740 002452 170200
741 002454 170367 176342
742 002460 022700 140220
743 002464 001401
744 002466 104000

```

```

STD AC0,ANS5
BIC #177600,ANS5
CMP #0,ANS1
BEQ ,+4
HLT+0.
CMP #0,ANS2
BEQ ,+4
HLT+0.
CMP #0,ANS3
BEQ ,+4
HLT+0.
CMP #0,ANS4
BEQ ,+4
HLT+0.
CMP #125,ANS5
BEQ ,+4
HLT+0.
CMP #52525,ANS6
BEQ ,+4
HLT+0.
CMP #52525,ANS7
BEQ ,+4
HLT+0.
CMP #52525,ANS8
BEQ ,+4
HLT+0.
BR 55

```

```

;GET FOR TYPING
;CLEAR JUNK
;IS ANS1 = 0
;SKIP IF SAME
;ANS1 NOT = 0
;IS ANS2 = 0
;SKIP IF SAME
;ANS2 NOT = 0
;IS ANS3 = 0
;SKIP IF SAME
;ANS3 NOT = 0
;IS ANS4 = 0
;SKIP IF SAME
;ANS4 NOT = 0
;IS ANS5 = 125
;SKIP IF SAME
;ANS5 NOT = 125
;IS ANS6 = 52525
;SKIP IF SAME
;ANS6 NOT = 52525
;IS ANS7 = 52525
;SKIP IF SAME
;ANS7 NOT = 52525
;IS ANS8 = 52525
;SKIP IF SAME
;ANS8 NOT = 52525
;SKIP JUNK

```

```

40000,0,0,0
40252,125252,125252,125252

```

```

CLR R3
LOUB
;CLEAR
;UBREAK REG.

```

```

;.....
;TEST 7 TEST OF LQSC FOR MULD OF 71
;.....
;TST7: SCOPE

```

```

LOFPS #40220
MOV #230,R3
LOUB
MOV #71,R4
LQSC
LDD 15,AC0
MULD 25,AC0
STFPS FPS
STST FEC
CMP #140220,FPS
BEQ ,+4
HLT

```

```

;DOUBLE/MAINT BITS
;LOAD 230 INTO
;UBREAK REG.
;LOAD 71 INTO
;SHIFT COUNT REG.
;LOAD INTO AC0 = 40000,0,0,0
;MULD BY 40252,125252,125252,125252
;STORE FLOATING POINT STATUS
;STORE EXCEPTION CODES
;CHECK FLOATING POINT STATUS
;BRANCH IF OK
;FPS NOT EQUAL TO 140220

```

745							
746	002470	022767	000016	176324	CMP	#16,FEC	;CHECK FLOATING EXCEPTION CODE
747	002476	001401			BEO	,+4	;BRANCH IF CM
748	002500	104000			HLT		;FEC NOT EQUAL TO 16
749							
750	002502	170005			STAB		;GET AR
751	002504	174067	176272		STD	AC0,ANS1	;GET FOR TYPING
752	002510	042767	177600	176264	BIC	#177600,ANS1	;CLEAR JUNK
753	002516	170007			STQB		;GET OR
754	002520	174067	176266		STD	AC0,ANS5	;GET FOR TYPING
755	002524	042767	177600	176268	BIC	#177600,ANS5	;CLEAR JUNK
756	002532	022767	000125	176242	CMP	#125,ANS1	;IS ANS1 = 125
757	002540	001401			BEO	,+4	;SKIP IF SAME
758	002542	104010			HLT+0.		;ANS1 NOT = 125
759	002544	022767	052525	176232	CMP	#52525,ANS2	;IS ANS2 = 52525
760	002552	001401			BEO	,+4	;SKIP IF SAME
761	002554	104010			HLT+0.		;ANS2 NOT = 52525
762	002556	022767	052525	176222	CMP	#52525,ANS3	;IS ANS3 = 52525
763	002564	001401			BEO	,+4	;SKIP IF SAME
764	002566	104010			HLT+0.		;ANS3 NOT = 52525
765	002570	022767	052525	176212	CMP	#52525,ANS4	;IS ANS4 = 52525
766	002576	001401			BEO	,+4	;SKIP IF SAME
767	002600	104010			HLT+0.		;ANS4 NOT = 52525
768	002602	022767	000000	176202	CMP	#0,ANS5	;IS ANS5 = 0
769	002610	001401			BEO	,+4	;SKIP IF SAME
770	002612	104010			HLT+0.		;ANS5 NOT = 0
771	002614	022767	000000	176172	CMP	#0,ANS6	;IS ANS6 = 0
772	002622	001401			BEO	,+4	;SKIP IF SAME
773	002624	104010			HLT+0.		;ANS6 NOT = 0
774	002626	022767	000000	176162	CMP	#0,ANS7	;IS ANS7 = 0
775	002634	001401			BEO	,+4	;SKIP IF SAME
776	002636	104010			HLT+0.		;ANS7 NOT = 0
777	002640	022767	000000	176152	CMP	#0,ANS8	;IS ANS8 = 0
778	002646	001401			BEO	,+4	;SKIP IF SAME
779	002650	104010			HLT+0.		;ANS8 NOT = 0
780	002652	000410			BR	55	;SKIP JUNK
781							
782	002654	040000	000000	000000	15:	40000,0,0,0	
783	002662	000000					
784	002664	040252	125252	125252	25:	40252,125252,125252,125252	
785	002672	125252					
786							
787	002674	005003			55:	CLR R3	;CLEAR
788	002676	170003				LDUB	;UBREAK REG.
789							
790							
791							
792							
793							
794	002700	104400					
795							
796	002702	170127	040220		LDPPS	#40220	;DOUBLE/MAINT BITS
797	002706	012703	000314		MOV	#314,R3	;LOAD 314 INTO
798	002712	170003			LDUB		;UBREAK REG.

.....
;TEST 10 TEST OF LDSC FOR DIVD OF 1
;.....
TST10: SCOPE

799	002714	012704	000001		MOV	01,R4	;LOAD 1 INTC
800	002720	170004			LOSC		;SHIFT COUNT REG.
801	002722	172467	000206		LDD	15,AC0	;LOAD INTO AC0 = 40000,0,0,0
802	002726	174467	000212		DIVD	25,AC0	;DIVD BY 40252,125252,125252,125252
803	002732	170200			STFPS	FPS	;STORE FLOATING POINT STATUS
804	002734	170367	176062		STST	FEC	;STORE EXCEPTION CODES
805	002740	022700	140220		CMP	0140220,FPS	;CHECK FLOATING POINT STATUS
806	002744	001401			BEQ	,+4	;BRANCH IF CK
807	002746	104000			HLT		;FPS NOT EQUAL TO 140220
808							
809	002750	022767	000016	176044	CMP	016,FEC	;CHECK FLOATING EXCEPTION CODE
810	002756	001401			BEQ	,+4	;BRANCH IF CK
811	002760	104000			HLT		;FEC NOT EQUAL TO 16
812							
813	002762	170005			STAB		;GET AR
814	002764	174067	176012		STD	AC0,ANS1	;GET FOR TYPING
815	002770	042767	177600	176004	BIC	0177600,ANS1	;CLEAR JUNK
816	002776	170007			STOB		;GET OR
817	003000	174067	176006		STD	AC0,ANS5	;GET FOR TYPING
818	003004	042767	177600	176000	BIC	0177600,ANS5	;CLEAR JUNK
819	003012	022767	000052	175762	CMP	052,ANS1	;IS ANS1 = 52
820	003020	001401			BEQ	,+4	;SKIP IF SAME
821	003022	104010			HLT+0.		;ANS1 NOT = 52
822	003024	022767	125252	175752	CMP	0125252,ANS2	;IS ANS2 = 125252
823	003032	001401			BEQ	,+4	;SKIP IF SAME
824	003034	104010			HLT+0.		;ANS2 NOT = 125252
825	003036	022767	125252	175742	CMP	0125252,ANS3	;IS ANS3 = 125252
826	003044	001401			BEQ	,+4	;SKIP IF SAME
827	003046	104010			HLT+0.		;ANS3 NOT = 125252
828	003050	022767	125254	175732	CMP	0125254,ANS4	;IS ANS4 = 125254
829	003056	001401			BEQ	,+4	;SKIP IF SAME
830	003060	104010			HLT+0.		;ANS4 NOT = 125254
831	003062	022767	000125	175722	CMP	0125,ANS5	;IS ANS5 = 125
832	003070	001401			BEQ	,+4	;SKIP IF SAME
833	003072	104010			HLT+0.		;ANS5 NOT = 125
834	003074	022767	052525	175712	CMP	052525,ANS6	;IS ANS6 = 52525
835	003102	001401			BEQ	,+4	;SKIP IF SAME
836	003104	104010			HLT+0.		;ANS6 NOT = 52525
837	003106	022767	052525	175702	CMP	052525,ANS7	;IS ANS7 = 52525
838	003114	001401			BEQ	,+4	;SKIP IF SAME
839	003116	104010			HLT+0.		;ANS7 NOT = 52525
840	003120	022767	052524	175672	CMP	052524,ANS8	;IS ANS8 = 52524
841	003126	001401			BEQ	,+4	;SKIP IF SAME
842	003130	104010			HLT+0.		;ANS8 NOT = 52524
843	003132	000410			BR	55	;SKIP JUNK
844							
845	003134	040000	000000	000000	15:	40000,0,0,0	
846	003142	000000					
847	003144	040252	125252	125252	25:	40252,125252,125252,125252	
848	003152	125252					
849							
850	003154	005003		55:	CLR	R3	;CLEAR
851	003156	170003			LOUB		;UBREAK REG.
852							

```

853
854
855
856
857 233162 124400
858
859 033162 170127 040220
860 233166 012703 000314
861 233172 170003
862 233174 012704 000071
863 033200 170004
864 233202 172467 000206
865 233206 174467 000212
866 033212 170200
867 033214 170367 175002
868 033220 022700 140220
869 033224 001401
870 033226 104000
871
872 033230 022767 000016 175564
873 233236 001401
874 033240 104000
875
876 033242 170005
877 033244 174067 175532
878 233250 042767 177600 175524
879 233256 170007
880 033260 174067 175526
881 233264 042767 177600 175520
882 033272 022767 000052 175502
883 033300 001401
884 233302 104010
885 033304 022767 125252 175472
886 233312 001401
887 033314 104010
888 033316 022767 125252 175462
889 233324 001401
890 233326 104010
891 033330 022767 125254 175452
892 033336 001401
893 033340 104010
894 033342 022767 000014 175442
895 033350 001401
896 033352 104010
897 033354 022767 000000 175432
898 233362 001401
899 033364 104010
900 233366 022767 000000 175422
901 233374 001401
902 233376 104010
903 033400 022767 000000 175412
904 033406 001401
905 033410 104010
906 233412 000410

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;.....
;TEST 11      TEST OF LDSC FOR DIVD OF 71
;.....
TST11:  SCOPE

LCFPS 040220      ;DOUBLE/MAINT BITS
MOV 0314,R3      ;LOAD 314 INTO
LDUB      ;SUBTRACT REG.
MOV 071,R4      ;LOAD 71 INTO
LDSC      ;SHIFT COUNT REG.
LDD 15,ACB      ;LOAD INTO ACD - 40000,0,0,0
DIVD 25,ACB      ;DIVD BY 40252,125252,125252,125252
STFPS FPS      ;STORE FLOATING POINT STATUS
STST FEC      ;STORE EXCEPTION CODES
CMP 0140220,FPS ;CHECK FLOATING POINT STATUS
BEQ .+4          ;BRANCH IF OK
HLT      ;FPS NOT EQUAL TO 140220

CMP 016,FEC      ;CHECK FLOATING EXCEPTION CODE
BEQ .+4          ;BRANCH IF OK
HLT      ;FEC NOT EQUAL TO 16

STAB
STD ACD,ANS1      ;GET AN
BIC 0177600,ANS1 ;GET FOR TYPING
STOB      ;CLEAR JUNK
STD ACD,ANS5      ;GET OR
BIC 0177600,ANS5 ;GET FOR TYPING
CMP 052,ANS1      ;CLEAR JUNK
BEQ .+4          ;IS ANS1 = 52
HLT+0.      ;SKIP IF SAME
CMP 0125252,ANS2 ;ANS1 NOT = 52
BEQ .+4          ;IS ANS2 = 125252
HLT+0.      ;SKIP IF SAME
CMP 0125252,ANS3 ;ANS2 NOT = 125252
BEQ .+4          ;IS ANS3 = 125252
HLT+0.      ;SKIP IF SAME
CMP 0125254,ANS4 ;ANS3 NOT = 125252
BEQ .+4          ;IS ANS4 = 125254
HLT+0.      ;SKIP IF SAME
CMP 014,ANS5      ;ANS4 NOT = 125254
BEQ .+4          ;IS ANS5 = 14
HLT+0.      ;SKIP IF SAME
CMP 00,ANS6      ;ANS5 NOT = 14
BEQ .+4          ;IS ANS6 = 0
HLT+0.      ;SKIP IF SAME
CMP 00,ANS7      ;ANS6 NOT = 0
BEQ .+4          ;IS ANS7 = 0
HLT+0.      ;SKIP IF SAME
CMP 00,ANS8      ;ANS7 NOT = 0
BEQ .+4          ;IS ANS8 = 0
BR 55          ;SKIP IF SAME
;SKIP JUNK

```

MAINDEC-11-DCFPH-B
DCFPH.P11 T11

MAINTENANCE INSTRUCTION TEST
TEST OF LDSC FOR DIVD OF 71

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907											
908	003414	040000	000000	000000	18:					40300.0.0.0	
909	003422	000000									
910	003424	040252	125252	125252	28:					40252.125252.125252.125252	
911	003432	125252									
912											
913	003434	005003			58:	CLR	R3			ICLEAR	
914	003436	170003				LDUB				JBREAK REG.	
915											
916											
917	003440	000167	001002			JMP	DONE				

918	003444	005067	175330		TSTMUL: CLR	ICNT	
919	003450	104400			SCOPE		
920	003452	004767	000456		JSR	PC,GETTY	;GET TTY INPUT
921	003456	170127	040220		LDFPS	040220	;DOUBLE/MAINT MODES
922	003462	012703	000230		MOV	0230,R3	
923	003466	170003			LDUB		
924	003470	005004			CLR	R4	
925	003472	012767	003510	002214	MOV	015,LAD	
926	003500	172767	175276		LDD	ANS1,AC3	;GET FIRST
927	003504	172567	175302		LDD	ANS5,AC1	;GET SECOND
928	003510	172603		15:	LDD	AC3,AC2	;RESTORE
929	003512	005204			INC	R4	;INC SHIFT COUNT
930	003514	170004			LOSC		
931	003516	171201			MULD	AC1,AC2	;MULTIPLY
932	003520	170005			STAB		
933	003522	174067	175254		STD	AC0,ANS1	;GET RESULT
934	003526	170007			STOB		
935	003530	174067	175256		STD	AC0,ANS5	;GET RESULT
936							
937	003534	042767	177600	175240	BIC	0177600,ANS1	
938	003542	042767	177600	175242	BIC	0177600,ANS5	
939	003550	170006			MRS		
940	003552	170006			MRS		
941	003554	170005			STAB		
942	003556	174067	000004		STD	AC0,INPUT	
943	003562	006167	000000		ROL	INPUT	
944	003566	006167	000574		ROL	INPUT	
945	003572	042767	177477	000566	BIC	0177477,INPUT	
946	003600	056767	000562	175174	BIS	INPUT,ANS1	
947	003606	170007			STOB		
948	003610	174067	000552		STD	AC0,INPUT	
949	003614	006167	000546		ROL	INPUT	
950	003620	006167	000542		ROL	INPUT	
951	003624	042767	177477	000534	BIC	0177477,INPUT	
952	003632	056767	000530	175152	BIS	INPUT,ANS5	
953	003640	010400			MOV	R4,R0	
954	003642	104010			HLT+0.		
955	003644	022704	000071		CHP	071,R4	
956	003650	001002			BNE	35	
957	003652	105067	175123		CLRB	ICNT+1	
958	003656	104400		35:	SCOPE		
959	003660	170127	040200		LDFPS	040220	
960	003664	172603			LDD	AC3,AC2	
961	003666	171201			MULD	AC1,AC2	
962	003670	170200			STFPS	FPS	
963	003672	104010			HLT+0.		
964	003674	000167	177544		JMP	TSTMUL	

965	003700	005067	175074		TSTDIV: CLR	ICNT	
966	003704	104400			SCOPE		
967	003706	004767	000222		JSR	PC,GETTY	;GET TTY INPUT
968	003712	170127	040220		LDFPS	040220	;DOUBLE/MAINT MODES
969	003716	012703	000314		MOV	0314,R3	
970	003722	170003			LDUB		
971	003724	005004			CLR	R4	
972	003726	012767	003744	001760	MOV	018,LAD	
973	003734	172767	175042		LOD	ANS1,AC3	;GET FIRST
974	003740	172567	175046		LOD	ANS5,AC1	;GET SECOND
975	003744	172603			LOD	AC3,AC2	;RESTORE
976	003746	005204			INC	R4	;INC SHIFT COUNT
977	003750	170004			LDSC		
978	003752	174601			DIVD	AC1,AC2	;DIVIDE
979	003754	170005			STAB		
980	003756	174067	175020		STD	AC0,ANS1	;GET RESULT
981	003762	170007			STOB		
982	003764	174067	175022		STD	AC0,ANS5	;GET RESULT
983							
984	003770	042767	177600	175004	BIC	0177600,ANS1	
985	003776	042767	177600	175006	BIC	0177600,ANS5	
986	004004	170006			MRS		
987	004006	170006			MRS		
988	004010	170005			STAB		
989	004012	174067	000350		STD	AC0,INPUT	
990	004016	006167	000344		ROL	INPUT	
991	004022	006167	000340		RCL	INPUT	
992	004026	042767	177477	000332	BIC	0177477,INPUT	
993	004034	056767	000326	174740	BIS	INPUT,ANS1	
994	004042	170007			STOB		
995	004044	174067	000316		STD	AC0,INPUT	
996	004050	006167	000312		ROL	INPUT	
997	004054	006167	000306		ROL	INPUT	
998	004060	042767	177477	000300	BIC	0177477,INPUT	
999	004066	056767	000274	174716	BIS	INPUT,ANS5	
1000	004074	010400			MOV	R4,R0	
1001	004076	104010			HLT+0.		
1002	004100	022704	000071		CHP	071,R4	
1003	004104	001002			BNE	38	
1004	004106	105067	174067		CLRB	ICNT+1	
1005	004112	104400			SCOPE		
1006	004114	170127	040200		LDFPS	040200	
1007	004120	172603			LOD	AC3,AC2	
1008	004122	174601			DIVD	AC1,AC2	
1009	004124	170200			STFPS	FPS	
1010	004126	104010			HLT+0.		
1011	004130	000167	177544		JMP	TSTDIV	

1012 004134
1013 004134 000004 004140
1014 004140 005027 000000
1015 004152 012702 001002
1016 004150 004567 000100
1017 004162 004366
1018 004164 005012
1019 004166 012701 004366
1020 004172 122711 000015
1021 004176 001420
1022 004200 122711 000040
1023 004204 001411
1024 004206 106011
1025 004210 106011
1026 004212 106011
1027 004214 006112
1028 004216 106111
1029 004220 006112
1030 004222 106121
1031 004224 006112
1032 004226 000761
1033 004230 105721
1034 004232 005722
1035 004234 005012
1036 004236 000755
1037 004240 005767 177704
1038 004244 001010
1039 004246 000004 004252
1040 004250 005722
1041 004260 005167 177664
1042 004264 000734
1043 004266 000207
1044
1045 004270 012503
1046 004272 105767 173262
1047 004276 100375
1048 004300 116713 173256
1049 004304 142713 000200
1050 004310 111367 001374
1051 004314 000004 005710
1052 004320 122713 000177
1053 004324 001411
1054 004326 122723 000015
1055 004332 001357
1056 004334 012707 000012 001340
1057 004342 000004 005710
1058 004346 000205
1059 004350 000004 004362
1060 004354 016503 177776
1061 004360 000744
1062 004362 006477 000012
1063 004366 000030

GETTY: TYPE ,,+2 ;.ASCIZ <15><12>"1" "
FLAG: CLR 00
MOV 0ANS1,R2
58: JSR R5,GOGET
INPUT
CLR (2)
MOV 0INPUT,R1
38: CMPB 015,(1) ;IS IT A CR?
BEO 15 ;HOW ABOUT A SPACE
CMPB 040,(1)
BEO 25
RCRB (1)
MORB (1)
RCRB (1)
ROL (2)
ROLB (1)
ROL (2)
ROLB (1)+
ROL (2)
BR 35
28: TSTB (1)+ ;TRY NEXT BYTE
TST (2)+
CLR (2)
BR 35
18: TST FLAG+2 ;FIRST TIME?
BNE 65 ;.ASCIZ "2" "
TYPE ,,+2
TST (2)+
COM FLAG+2
BR 55
68: RTS PC
GOGET: MOV (5)+,R3 ;GET ADDRESS
18: TSTB 177560
BPL ,+4
MOVB 177562,(3) ;GET CHARACTER
BICB 0200,(3)
MOVB (3),,TYPE ;SET UP FOR TYPING
TYPE ,,TYPE
CMPB 0177,(3)
BEO 25
CMPB 015,(3)+ ;CHECK FOR RETURN
BNE 15
MOV 012,,TYPE ;TYPE A 12
TYPE ,,TYPE
RTS R5
28: TYPE ,QUES
MOV -2(5),R3
BR 15
QUES: ,ASCIZ "1"<15><12>
INPUT: ,BLKW 30

1264	R34446	104400		DONE1	SCOPE			
1265	R34450	032737	002000	177570	BIT	03H12,00SHR		IRING THE BELL?
1266	R34456	001005			BNE	15		INOI
1267	R34460	012767	000007	001222	MOV	0BELL,,TYPE		ITYPE A BELL
1268	R34466	000004	005710		TYPE	,,TYPE		
1269	R34472	005046			CLR	-(6)		ICLEAR TRACE TRAP
1270	R34474	032737	010000	177570	BIT	03H12,00SHR		IRUN WITH TRY?
1271	R34502	001010			BNE	25		
1272	R34504	005167	001202		COM	TRPB		
1273	R34510	100005			BPL	25		
1274	R34512	052716	000020		BIS	020,(6)		ISSET TRACE TRAP
1275	R34516	012746	001062		MOV	0BEGIN,-(6)		IJUMP TO START OF TEST
1276	R34522	000412			BR	YESRT		
1277	R34524	012746	001062		MOV	0BEGIN,-(6)		IJUMP TO START OF TEST
1278	R34530	013700	000042		MOV	0042,R0		IGET MONITOR ADDRESS
1279	R34534	001404			BEO	35		IF NONE
1280	R34536	004710			JSR	7,(0)		IGO TO MONITOR
1281	R34540	000240			NOP			
1282	R34542	000240			NOP			
1283	R34544	000240			NOP			
1284	R34546	000002			RTI			
1285	R34550	000002		35:	YESRT:	RTI		IRETURN TO PROGRAM FROM TRAP
1286								
1287	R34552	032737	000400	177570	.ENT:	03H00,00SHR		IKILL LOUD OR LOOP ON SPEC. TEST
1288	R34560	001404			BEO	15		
1289	R34562	123767	177570	174210	CHPB	00SHR,ICNT		ION RIGHT TEST? 0SH7-00
1290	R34570	001434			BEO	OVER		
1291	R34572	032737	040000	177570	15:	03H14,00SHR		ILOOP ON TEST
1292	R34600	001026			BNE	KIT		
1293	R34602	032737	004000	177570	BIT	03H11,00SHR		IKILL ITERATIONS
1294	R34610	001012			BNE	SAVLAD		
1295	R34612	105767	174163		TSTB	ICNT+1		
1296	R34616	001404			BEO	25		IBRANCH IF FIRST
1297	R34620	126767	001074	174153	CHPB	TIMES,ICNT+1		IDONE?
1298	R34626	001013			BNE	KIT		IBRANCH IF NOT
1299	R34630	112767	000001	174143	25:	01,ICNT+1		IFIRST ITERATION
1300	R34636	105267	174136		SAVLAD:	ICNT		ICOUNT TEST NUMBERS
1301	R34642	011667	001046		MOV	(0),LAD		ISAVE LOOP ADDRESS
1302	R34646	016737	174126	177570	MOV	ICNT,00DISPLAY		IDISPLAY TEST NO. AND ITERATION COUNT
1303	R34654	000002			RTI			IRETURN
1304								
1305	R34656	105267	174117		KIT:	ICNT+1		
1306	R34662	016737	174112	177570	OVER:	ICNT,00DISPLAY		ISSET UP DISPLAY
1307	R34670	005767	001020		TST	LAD		IFIRST ONE?
1308	R34674	001760			BEO	SAVLAD		
1309	R34676	016716	001012		MOV	LAD,(6)		IFUDGE RETURN ADDRESS
1310	R34702	000002			RTI			IFIXES PS

1101	714724	32737	222000	177570	TRP1	HIT	05H17.0054H	:3ELL ON ERROR?
1102	714712	301405				REC	18	:NO - SKIP
1103	714714	312767	200007	200760		MCV	09ELL. TYPE	:TYPE A RELL
1104	714722	307014	205710			TYPE	.TYPE	
1105	714726	305267	200764		18:	INC	ERRORS	:COUNT THE NUMBER OF ERRORS
1106	714732	313440				MCV	R4, -(6)	
1107	714734	332737	222000	177570		RIT	05H13.0054H	:SKIP TYPEOUT IF SET
1108	714742	301072				RKE	48	
1109	714744	303024	205656			TYPE	.METJH	
1110	714752	316646	200022			MCV	2(6), -(6)	:PUT ADDRESS OF INSTRUCTION ON STACK
1111	714754	302716	200002			SLB	02, (6)	
1112	714762	311605				MCV	(6), TTY	:TYPE (6) IN OCTAL
1113	714762	204767	200156			JSR	X7, PRINTR	:TYPE LEADING ZERO'S
1114	714766	200004	205664			TYPE	.SPACE+3	
1115	714772	313025				MCV	R0, TTY	:TYPE R0 IN OCTAL
1116	714774	204767	200144			JSR	X7, PRINTR	:TYPE LEADING ZERO'S
1117	715000	203004	205665			TYPE	.SPACE+4	
1118	715004	212723	201002			MCV	0ANS1, R3	:ADDRESS OF DATA
1119	715010	113624				MCVB	0(6)+, R4	:AMOUNT OF DATA IN TABLE
1120	715012	201426				BE2	38	
1121	715014	100010				RPL	28	:TYPE STACK?
1122	715016	216667	200006	173756		MCV	6(6), ANS1	
1123	715024	216667	200010	173752		MCV	10(6), ANS2	
1124	715032	216667	200012	173746		MCV	12(6), ANS3	
1125	715040	216667	200014	173742		MCV	14(6), ANS4	
1126	715046	242734	177600			BIC	0177600, R4	:CLEAR SIGN
1127	715052	200004	205665		28:	TYPE	.SPACE+4	
1128	715056	212305				MCV	(3)+, TTY	:TYPE (3)+ IN OCTAL
1129	715060	204767	200060			JSR	X7, PRINTR	:TYPE LEADING ZERO'S
1130	715064	205304				DEC	R4	
1131	715066	201371				RKE	28	
1132	715070	205700			38:	TST	FPS	
1133	715072	100016				BPL	48	
1134	715074	200004	205661			TYPE	.SPACE	
1135	715100	170367	173716			STST	FEC	
1136	715104	216705	173712			MCV	FEC, TTY	:TYPE FEC IN OCTAL
1137	715110	204767	200030			JSR	X7, PRINTR	:TYPE LEADING ZERO'S
1138	715114	200004	205664			TYPE	.SPACE+3	
1139	715120	216705	173700			MCV	FEA, TTY	:TYPE FEA IN OCTAL
1140	715124	204767	200014			JSR	X7, PRINTR	:TYPE LEADING ZERO'S
1141	715130	212604			48:	MCV	(6)+, R4	
1142	715132	205737	177570			TST	00SHR	:HALT ON ERROR
1143	715136	100001				BPL	.+4	:SKIP IF CONTINUE
1144	715140	200000				HALT		:HALT ON ERROR!
1145	715142	200002				RTI		

1156	005144	112767	000001	000130	PRINTR:	MOVW	#1,A45		;SET ZERO FILL SWITCH
1157	005152	000402				BR	,+6		
1158	005154	005067	000122		PRINTS:	CLR	A45		;SUPPRESS LEADING ZERO'S
1159	005160	112767	177772	000115		MOVW	#-6,A45+1		;SET COUNT
1160	005166	010446				MOV	R4,-(6)		;SAVE R4
1161	005170	012704	005272			MOV	#35,R4		;SET POINTER TO FIRST ASCII CHAR.
1162	005174	105014				CLRW	(4)		;CLEAR FIRST BYTE
1163	005176	000405				BR	25		;ROTATE FIRST BIT
1164	005200	105014		15:		CLRW	(4)		;CLEAR BYTE OF CHARACTER
1165	005202	006105				ROL	TTY		;ROTATE BIT INTO C
1166	005204	106114				ROLB	(4)		;PACK IT
1167	005206	006105				ROL	TTY		;ROTATE BIT INTO C
1168	005210	106114				ROLB	(4)		;PACK IT
1169	005212	006105		25:		ROL	TTY		;ROTATE BIT INTO C
1170	005214	106114				ROLB	(4)		;PACK IT
1171	005216	105714				TSTB	(4)		
1172	005220	001402				BEQ	,+6		
1173	005222	105267	000054			INCB	A45		
1174	005226	105767	000050			TSTB	A45		;CHECK FILL SWITCH
1175	005232	001402				BEQ	,+6		
1176	005234	152724	000060			B15B	#'0,(4)+		;MAKE INTO ASCII CHAR
1177	005240	105267	000037			INCB	A45+1		
1178	005244	001355				BNC	15		;REPEAT
1179	005246	022704	005272			CHP	#35,R4		
1180	005252	001002				BNE	,+6		
1181	005254	112724	000060			MOVW	#'0,(4)+		
1182	005260	105014				CLRW	(4)		
1183	005262	000004	005272			TYPE	,35		;TYPE IT
1184	005266	012604				MOV	(6)+,R4		;RESTORE R4
1185	005270	000207				RTS	PC		
1186									
1187	005272	000004		35:		,BLKW	4		
1188	005302	000000		A45:		0			
1189									
1190	005304	052525	052525	052525	ALT1A:	52525,52525,52525,52525			
1191	005312	052525							
1192	005314	125252	125252		ALT1B:	125252,125252			
1193	005320	125252	125252	052525	ALT1C:	125252,125252,52525,52525			
1194	005326	052525							
1195	005330	040125	052525	052525	ALTA:	40125,52525,52525,52525			
1196	005336	052525							
1197	005340	040052	125252	125252	ALTB:	40052,125252,125252,125252			
1198	005346	125252							
1199	005350	000125	052525	052525	ANSA:	125,52525,52525,52525			
1200	005356	052525							
1201	005360	000052	125252	125252	ANSB:	52,125252,125252,125252			
1202	005366	125252							
1203									

1204	005370	012777	005364	000306	POWDN1	MOV	#ILLUP,0UPVEC	;SET FOR FAST UP
1205	005376	012777	000340	000302		MOV	#340,0UPVEC+2	;PRIO:7
1206	005404	170246				STFPS	-(6)	;GET THE FPS
1207	005406	170011				SETD		
1208	005410	174046				STD	AC0,-(6)	;SAVE AC'S
1209	005412	174146				STD	AC1,-(6)	
1210	005414	174246				STD	AC2,-(6)	
1211	005416	174346				STD	AC3,-(6)	
1212	005420	172404				LDD	AC4,AC0	
1213	005422	174046				STD	AC0,-(6)	
1214	005424	172405				LDD	AC5,AC0	
1215	005426	174046				STD	AC0,-(6)	
1216	005430	010046				MCV	R0,-(6)	;SAVE REGISTERS
1217	005432	010146				MOV	R1,-(6)	
1218	005434	010246				MOV	R2,-(6)	
1219	005436	010346				MOV	R3,-(6)	
1220	005440	010446				MOV	R4,-(6)	
1221	005442	010546				MOV	R5,-(6)	
1222	005444	010667	000220			MOV	SP,SAVE6	;SAVE SP
1223	005450	012777	005460	000226		MOV	#POWUP,0UPVEC	;SET UP VECTOR
1224	005456	000000				HALT		
1225								
1226	005460	016706	000204		POWUP:	MOV	SAVE6,SP	;GET SP
1227	005464	005001				CLR	R1	;WAIT LOOP FOR THE TTY
1228	005466	005201			15:	INC	R1	
1229	005470	001376				BNE	15	
1230	005472	012605				MOV	(6)+,R5	;GET THE REGISTERS
1231	005474	012604				MOV	(6)+,R4	
1232	005476	012603				MOV	(6)+,R3	
1233	005500	012602				MOV	(6)+,R2	
1234	005502	012601				MOV	(6)+,R1	
1235	005504	012600				MOV	(6)+,R0	
1236	005506	170011				SETD		
1237	005510	172426				LDD	(6)+,AC0	;RESTORE THE AC'S
1238	005512	174005				STD	AC0,AC5	
1239	005514	172426				LDD	(6)+,AC0	
1240	005516	174004				STD	AC0,AC4	
1241	005520	172726				LDD	(6)+,AC3	
1242	005522	172626				LDD	(6)+,AC2	
1243	005524	172526				LDD	(6)+,AC1	
1244	005526	172426				LDD	(6)+,AC0	
1245	005530	170126				LOFPS	(6)+	;RESTORE FPS
1246	005532	012777	005370	000140		MOV	#POWDN,0DOWNVEC	;SET UP THE POWER DOWN VECTOR
1247	005540	012777	000340	000134		MOV	#340,0DOWNVEC+2	
1248	005546	000004	005552			TYPE	,,+2	;ASCIZ <15><12>"POWER"
1249	005562	000002				RTI		
1250								
1251	005564	000000			ILLUP:	HALT		;THE POWER UP SEQUENCE WAS STARTED
1252	005566	000776				OR	,=2	;BEFORE THE POWER DOWN WAS COMPLETE

1253	005570	010546			.IOT:	MOV	TTY,-(6)	;SAVE TTY
1254	005572	017605	000002			MOV	02(6),TTY	;GET ADDRESS TO BE TYPED
1255	005576	105715			1S:	TSTB	(TTY)	;TERMINATOR?
1256	005600	001400				BEO	2S	
1257	005602	112537	177566			MOV	(TTY)+,0#177566	;LOAD AND TYPE THE CHARACTER
1258	005606	105737	177564			TSTB	00177564	;IS THE PRINTER READY
1259	005612	100375				BPL	,=4	
1260	005614	000770				BR	1S	;GET THE NEXT CHARACTER
1261	005616	017646	000002		2S:	MOV	02(6),-(6)	;GET ADDRESS TO BE TYPED
1262	005622	062766	000002	000004		ADD	#2,4(6)	;ADD 2 TO THE ADDRESS
1263	005630	022666	000002			CHP	(6)+,2(6)	;IS IT ,+2?
1264	005634	001000				BNE	3S	INO
1265	005636	062705	000002			ADD	#2,TTY	;ADD 2 TO THE ADDRESS
1266	005642	042705	000001			BIC	#1,TTY	;BACK UP TO AN EVEN BYTE
1267	005646	010566	000002			MOV	TTY,2(6)	;RESTORE ADDRESS
1268	005652	012605			3S:	MOV	(6)+,TTY	;RESTORE TTY
1269	005654	000002				RTI		;RETURN
1270								
1271	005656	005015	000		RETURN:	.ASCIZ	<15><12>	;RETURN AND LINEFEED
1272	005661	015	020012	020040	SPACE:	.ASCIZ	<15><12>"	;RETURN AND 3 SPACES
1273	005666	000						
1274		005670			.EVEN			
1275	005670	000000			SAVE6:	0		
1276	005672	172160			FPTADR:	172160		;FLOATING POINT ADDRESS ON THE 11/20
1277	005674	000244	000246		FPVECT:	244,246		;FLOATING POINT VECTOR ADDRESS
1278	005700	000024	000026		DOWNVEC:	24,26		;POWER DOWN VECTOR ADDRESS
1279	005704	000024	000026		UPVEC:	24,26		;POWER UP VECTOR ADDRESS
1280	005710	000000			.TYPE:	0		
1281	005712	000000			TRPB:	0		
1282	005714	000000			LADI:	0		;LOOP ADDRESS
1283	005716	000000			ERRORS:	0		;ERROR COUNT
1284	005720	000377			TIMES:	377		;ITERATION COUNT
1285		000001			.END			

AC0	=X000000	4830	4810	4840	495	496	5120	523	524	5380	5410	553	560	5530
		5960	608	624	6440	6450	648	656	6750	6760	688	691	7380	7190
		751	754	8010	8820	814	817	8640	8650	877	880	933	935	942
		948	988	982	989	995	1208	12120	1213	12140	1215	12370	1238	12390
		1240	12440											
AC1	=X000001	4840	9270	931	961	9740	978	1008	1209	12430				
AC2	=X000002	4850	9280	9310	9680	9610	9750	9780	10070	10080	1210	12420		
AC3	=X000003	4860	9260	928	960	9730	975	1007	1211	12410				
AC4	=X000004	4870	1212	12480										
AC5	=X000005	4880	1214	12380										
ALTA	005330	538	596	644	11950									
ALTB	005340	541	593	645	11970									
ALT1A	005304	481	496	11980										
ALT1B	005314	484	512	11920										
ALT1C	005320	524	11930											
ANSA	005350	11990												
ANSB	005360	12010												
ANS1	001002	4370	4950	5230	5530	5540	555	5690	5780	571	6880	6890	610	6240
		6250	626	6480	6580	651	6560	6570	658	6880	6890	693	7510	7520
		756	8140	8150	819	8770	8780	882	924	9330	9370	9460	973	9800
		9840	9930	1015	1128	11320								
ANS2	001004	4380	558	574	613	629	696	759	822	885	11330			
ANS3	001006	4390	561	577	616	699	762	825	888	11340				
ANS4	001010	4400	564	580	619	702	765	828	891	11350				
ANS5	001012	4410	6910	6920	705	7540	7550	768	8170	8180	831	8800	8810	854
		927	9350	9380	9520	974	9820	9850	9990					
ANS6	001014	4420	708	771	834	897								
ANS7	001016	4430	711	774	837	900								
ANS8	001020	4440	714	777	840	903								
A4S	005302	11560	11580	11590	11730	1174	11770	11800						
BEG	001026	425	4480											
BEGIN	001062	452	4570	1075	1077									
BELL	= 000007	3920	1067	1113										
DISPLA	= 177570	3880	11020	11060										
DONE	004446	917	10640											
DWNEC	005700	4600	4610	12460	12470	12780								
ERRORS	005716	11150	12030											
FEA	001024	4460	1149											
FEC	001022	4310	4450	4860	491	5140	519	5430	548	5980	683	6780	683	7410
		746	8840	889	8670	872	11450	1146						
FLAG	004146	10140	1037	10410										
FLTRR	000760	4380	468											
FPS	=X000000	3930	4380	4850	487	5130	515	5420	544	5970	599	6490	6770	679
		7400	742	8030	805	8660	868	9620	10090	1142				
FPTAJR	005672	454	12760											
FPVECT	005674	4680	4690	12770										
GETTY	004134	928	967	10120										
GOGET	004270	1016	10450											
HLT	= 104000	3900	489	493	499	517	521	527	546	558	557	560	563	566
		573	576	579	582	601	605	612	615	618	621	628	631	633
		660	681	685	695	698	701	704	707	710	713	716	744	748
		758	761	764	767	770	773	776	779	807	811	821	824	827
		838	833	836	839	842	878	874	884	887	890	893	896	899
		982	985	954	963	1001	1010							

ICNT	001000	4360	4700	9180	9570	9650	10040	1009	1095	1097	10990	11000	1102	11050
		1106												
ILLUP	005564	1204	12510											
INPUT	004366	9420	9430	9440	9450	9460	9480	9490	9520	9510	952	9890	9900	9510
		9920	993	9950	9960	9570	9980	999	1017	1019	10030			
KIT	004656	1092	1098	11050										
LAD	005714	4710	9250	9720	11010	1107	1109	12020						
LDSC	= 170004	4210												
LDUB	= 170003	4170												
MRS	= 170006	4200	646	939	940	986	987							
M1120	001054	449	4540											
Y	= 000012	3050	475	4790	504	5000	532	5360	507	5910	636	6400	665	6690
		720	7320	791	7950	854	8500							
OVER	004662	1090	11060											
PC	=X000007	4020	9200	9670	10430	11050								
POWDN	005370	400	12040	1246										
POWJF	005460	1223	12260											
PRINTR	005144	1123	1126	1139	1147	1150	11560							
PRINTS	005154	11500												
PS	= 177776	3060												
QUES	004362	1059	10620											
RETURN	005656	1119	12710											
R0	=X000000	3940	4630	9530	10000	10780	1125	1216	12350					
R1	=X000001	3950	10190	1217	12270	12280	12340							
R2	=X000002	3960	10150	1210	12330									
R3	=X000003	3970	4730	4820	5010	5100	5290	5390	5840	5940	6330	6420	6620	6710
		7240	7340	7870	7970	8500	8600	9130	9220	9690	10450	10600	11200	1219
		12320												
R4	=X000004	3980	6730	7360	7990	8620	9240	9290	953	955	9710	9760	1000	1002
		1116	11290	11360	11400	11510	1160	11610	1179	11840	1220	12310		
R5	=X000005	3990	10160	10500	1221	12300								
SAVE6	005670	12220	1226	12750										
SAVLAD	004636	1094	11000	1100										
SCOPE	= 104409	3090	470	507	535	590	639	660	731	794	857	919	950	966
		1005	1064											
SP	=X000006	4010	4400	4500	1222	12260								
SPACE	005661	1124	1127	1137	1144	1140	12720							
STA2	= 170005	4100												
STQ2	= 170007	4190												
SWR	= 177570	3070	300	1065	1070	1007	1009	1091	1093	1111	1117	1152		
SW00	= 000400	4160	1007											
SW09	= 001000	4150												
SW10	= 002000	4140	1065	1111										
SW11	= 004000	4130	1093											
SW12	= 010000	4120	1070											
SW13	= 020000	4110	1117											
SW14	= 040000	4100	1091											
SW15	= 100000	4090												
TIMES	005720	1097	12040											
TRPB	005712	10720	12010											
TSTDIV	003700	427	9650	1011										
TSTMUL	003444	426	9100	964										
TST1	001204	4700												
TST1A	002700	7940												

TST11	J03160	8570												
TST2	J01302	9070												
TST3	J01374	9350												
TST4	J01624	9900												
TST5	J02030	6390												
TST6	J02140	6680												
TST7	J02420	7310												
TTY	=XJ00005	4000	11220	11250	11380	11460	11490	11650	11670	11690	1253	12540	1255	1257
		12650	12660	1267	12680									
TYPE	= J000004	3910	1013	1039	1051	1057	1059	1060	1114	1119	1124	1127	1137	1144
		1140	1183	1248										
UPVEC	J05704	12040	12050	12230	12790									
YESR	J04550	4510	459	1076	10850									
	= J05722	4230	4240	4290	4340	488	492	498	516	528	526	545	540	556
		559	562	565	572	575	578	581	600	604	611	614	617	620
		627	630	652	659	680	684	694	697	700	703	706	709	712
		715	743	747	757	760	763	766	769	772	775	778	806	810
		820	823	826	829	832	835	838	841	869	873	883	886	889
		892	895	898	901	904	1013	1039	1047	10630	1153	1157	1172	1175
		1100	11070	1240	1252	1259	12740							
.EMT	J04552	466	10070											
.IOT	J05570	462	12530											
.TRP	J04704	464	11110											
.TYPE	J05710	10500	1051	10560	1057	10670	1068	11130	1114	12000				

CHECK	3848	555	558	561	564	571	574	577	580	610	613	616	619	626	629
	693	696	699	702	705	708	711	714	756	759	762	765	768	771	774
	777	819	822	825	828	831	834	837	840	882	885	888	891	894	897
	988	983													
DUMP	3848	1122	1125	1138	1146	1149									
NUMBER	3848	475	504	532	587	636	665	728	791	854					
PRINT	3848	1012	1039	1248											
SCOPEX	3848	475	504	532	587	636	665	728	791	854					
SDUMP	3848														
STATUS	3848	405	513	542	597	677	742	803	866						
YSTSC	3848	665	728	791	854										
TYPEH	3848	1056	1067	1113											

ADD	1262	1265													
ADDD	541	645													
ADDF	596														
BEO	488	492	498	516	528	526	545	549	556	559	562	565	572	575	578
	581	608	604	611	614	617	627	627	637	652	659	687	684	694	657
	788	783	786	789	712	715	743	747	757	769	763	766	769	772	775
	778	806	818	828	823	826	829	832	835	838	841	869	873	883	886
	889	892	895	898	901	904	1021	1023	1053	1079	1088	1097	1096	1108	1112
	1138	1172	1175	1256											
BIC	554	578	689	625	658	657	689	692	752	759	815	818	878	881	937
	938	945	951	984	985	992	998	1136	1266						
BICB	1049														
BIS	946	952	993	999	1074										
BISB	1176														
BIT	1065	1070	1087	1091	1093	1111	1117								
BNE	956	1003	1038	1055	1066	1071	1092	1094	1098	1110	1141	1178	118	1229	1264
BPL	1047	1073	1131	1143	1153	1259									
BR	452	717	788	843	986	1032	1036	1042	1061	1076	1157	1163	1252	1264	
CFCC	497	525													
CLR	472	471	473	581	529	584	633	662	724	787	858	913	918	924	965
	971	1014	1018	1035	1069	1158	1227								
CLRB	957	1084	1102	1164	1182										
CMP	487	491	515	519	544	548	555	558	561	564	571	574	577	588	599
	603	618	513	616	619	626	629	651	658	679	683	693	696	699	702
	785	788	711	714	742	746	756	759	762	765	768	771	774	777	805
	829	819	822	825	828	831	834	837	847	868	872	882	885	888	851
	894	897	988	983	955	1082	1179	1263							
CMPB	1028	1022	1052	1054	1089	1097									
CMPD	496	524													
COM	1041	1072													
DEC	1148														
DIVJ	882	865	978	1088											
EMT	398														
HALT	424	432	1154	1224	1251										
INC	929	976	1115	1228											
INCB	1138	1185	1173	1177											
LOT	391														
JMP	425	426	427	917	964	1011									
JSR	928	967	1016	1088	1123	1126	1139	1147	1157						
LDD	481	484	512	538	644	675	738	881	864	926	927	928	96	973	974
	975	1087	1212	1214	1237	1239	1241	1242	1243	1244					
LDF	593														
LDFPS	472	488	589	537	592	641	678	733	796	859	921	959	968	1086	1245
LJSC	674	737	888	863	938	977									
LJUB	474	483	582	511	538	548	585	595	634	643	663	672	725	735	788
	798	851	861	914	923	978									
MOV	448	449	451	454	457	458	459	468	461	462	463	464	465	466	467
	468	469	482	518	539	594	642	671	673	734	736	797	799	868	862
	922	925	953	969	972	1088	1015	1019	1045	1056	1068	1067	1075	1077	1078
	1181	1182	1186	1189	1113	1116	1128	1122	1125	1128	1132	1133	1134	1135	1138
	1146	1149	1151	1168	1161	1184	1204	1205	1216	1217	1218	1219	122	1221	1222
	1223	1226	1238	1231	1232	1233	1234	1235	1246	1247	1253	1254	1261	1267	1268
MOVB	1048	1058	1099	1129	1156	1159	1181	1257							
MULD	676	739	931	961											

NOP	1281	1082	1083												
ROL	943	944	949	952	998	991	996	997	1027	1029	1031	1165	1167	1169	
ROLB	1028	1030	1106	1108	1170										
RORB	1024	1025	1026												
RTI	433	1084	1085	1103	1110	1155	1249	1269							
RTS	1043	1050	1105												
SETJ	1207	1236													
STAB	552	623	655	687	758	813	876	932	941	979	988				
STD	495	523	553	569	648	656	688	691	751	754	814	817	877	880	923
	935	942	948	988	982	989	995	1208	1289	1210	1211	1213	1215	1238	1242
STF	608	624													
STFPS	438	485	513	542	597	649	677	748	803	866	962	1009	1206		
STQB	568	607	647	698	753	816	879	934	947	981	994				
STST	431	486	514	543	598	678	741	884	887	1145					
SUB	1121														
TRAP	389														
TST	458	1034	1037	1048	1107	1142	1152								
TSTB	1033	1046	1095	1171	1174	1255	1258								
.ASCIZ	1014	1048	1062	1249	1271	1272									
.BLKW	1063	1187													
.ENABL	384														
.END	1205														
.ENDC	487	495	515	523	544	552	599	607	672	679	687	735	742	758	768
	885	813	861	868	876										
.EVEN	1014	1048	1249	1274											
.IF	486	514	543	598	671	678	734	741	797	884	862	867			
.IFF	672	735	797	868											
.IFNZ	491	495	519	523	548	552	603	607	683	687	746	758	809	813	872
	876														
.LIST	344	384	424	434	475	479	504	508	532	536	587	591	636	648	665
	669	728	732	791	795	854	858	1014	1048	1054	1111	1156	1204	1249	1253
.MACR	384														
.MACRO	384														
.NLIST	344	384	424	434	475	479	504	508	532	536	587	591	636	648	665
	669	728	732	791	795	854	858	1014	1048	1054	1111	1156	1204	1249	1253
.REM	345														
.REPT	2	424													
.SBTTL	344	384	434	475	504	532	587	636	665	728	791	854	1064	1111	1256
	1204	1253													
.TITLE	343														

ERRORS DETECTED: 0

MAINDEC-11-DCFPH-B
DCFPH.P11

MAINTENANCE INSTRUCTION TEST

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•DCFPH,DCFPH/SOL/CRF-DCFPH.P11
RUN-TIME: 6 10 1 SECONDS
CORE USED: 7K