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FLOAT PT BASIC INST SET
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I D E N T I F I C A T I O N

PRODUCT CODE: MAINDEC-11-DQFPA-B-D
PRODUCT NAME: PDP-11/6X - FP11-E FLOATING POINT UNIT
 BASIC INSTRUCTION TESTS
DATE : MAY, 1977
MAINTAINER: DIAGNOSTIC GROUP
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1. ABSTRACT

THIS PROGRAM IS THE BASIC FUNCTIONAL TEST FOR THE PDP-11/6X FLOATING POINT PROCESSOR. FUNCTIONALITY TESTS OF ALL STATUS REGISTERS AND ACCUMULATORS ARE PERFORMED TO VERIFY THEIR OPERATION (EG, RIPPLING BIT TESTS, ALTERNATING BIT TESTS, UNIQUE REFERENCE TESTS). ALL ADDRESS MODES (SOURCE, DESTINATION, FLOATING SOURCE, FLOATING DESTINATION) ARE TESTED FOR CORRECT OPERAND REFERENCE, AND VERIFICATION OF SIDE AFFECTS. FINALLY, THE BASIC NO-OPERAND AND SINGLE OPERAND INSTRUCTIONS ARE TESTED TO INSURE THEIR FULL FUNCTIONALITY IN ALL PDP-11/6X FPU MODES. BOTH "HOT" (FP11-E OPTION) AND "WARM" (PDP-11/6X MICROCODE) FLOATING POINT UNITS CAN BE SELECTED FOR TESTING.

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-11/6X STANDARD COMPUTER WITH MINIMUM 16K OF MEMORY. OPTIONAL FP11-E FLOATING POINT UNIT, IF SELECTED.

2.2 STORAGE

THE PROGRAM USES MEMORY 0-34074(8). THE UPPER 2.0K WORDS ARE RESERVED FOR THE XXDP MONITOR, IF EMPLOYED.

2.3 PRELIMINARY PROGRAMS

THE CPU, CACHE, AND MEMORY TEST PROGRAMS MUST BE RUN FIRST TO VERIFY THE CORRECT OPERATION OF THE BASE MACHINE.

THE PDP-11/6X - FP11-E FLOATING POINT PROCESSOR INSTRUCTION SET TESTS SHOULD THEN BE RUN IN THE FOLLOWING ORDER:

- (1) DQFPA FPU BASIC INSTRUCTION TESTS
- (2) DQFPB FPU ADVANCED INSTRUCTION TESTS
- (3) DQFPC FPU INSTRUCTION EXERCISER
- (4) DQFPD FPU ADD/SUB/MUL/DIV RANDOM EXERCISER

3. LOADING PROCEDURE

USE THE STANDARD PROCEDURE FOR ABSOLUTE TAPES, OR LOAD VIA XXDP MEDIA.

4. STARTING PROCEDURE

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4.1 CONTROL SWITCH SETTINGS

SEE SECTION 5.1
SWITCH REGISTER (000000) IS WORST CASE TEST.

4.2 STARTING ADDRESS

THE PROGRAM MUST ALWAYS BE STARTED AT LOCATION 200(8).

4.3 PROGRAM/OPERATOR ACTION

LOADING VIA ABSOLUTE PAPERTAPE:

- (1) LOAD PROGRAM INTO MEMORY USING ABS LOADER.
- (2) LOAD ADDRESS 200 (8).
- (3) SET SWITCHES (SEE SECTION 5.1)
SR=(000000) IS WORST CASE TEST.
- (4) PRESS CONTROL/START TO BEGIN.
- (5) PROGRAM TYPES IDENTIFICATION HEADER (VERIFY THAT THE
CORRECT PROGRAM HAS BEEN LOADED!), AND EXECUTION BEGINS.

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

THE DEFINITION OF THE SPECIFIC BITS IN THE SWITCH REGISTER
(EITHER HARDWARE OR SOFTWARE) ARE AS FOLLOWS:

SW15=1	100000	HALT ON ERROR
SW14=1	040000	LOOP ON CURRENTLY EXECUTING TEST
SW13=1	020000	INHIBIT ERROR TYPEOUTS (WHICH IS AN "ERROR MESSAGE" RESULTING FROM AN ERROR DETECTED IN THE HARDWARE)
SW12=1	010000	INHIBIT STATUS TYPEOUTS (WHICH IS A NON-ERROR RELATED INFORMATIVE MESSAGE, SUCH AS "END PASS #XXX")
SW11=1	004000	INHIBIT ITERATIONS PER TEST
SW10	002000	SET=BELL ON ERROR/CLEAR=BELL ON PASS END
SW09=1	001000	LOOP ON ERROR
SW08=1	000400	LOOP ON TEST NUMBER IN "SLPTST" IF SET, THEN THE TEST SPECIFIED BY THE TEST NUMBER CONTAINED IN THE MEMORY WORD "SLPTST" (SEE PROGRAM LISTING) WILL SPECIFY THE DESIRED TEST ON WHICH TO LOOP.
SW01	000002	CLEAR=TEST HOT-FP/WARM-FP ALTERNATELY EACH PASS (IE, PASS#1 HFP, PASS#1 WFP, PASS#2 HFP, PASS#2 WFP, ETC)
SW00	000001	SET=TEST ONLY UNIT SPECIFIED IN SW00 SET=SELECT WARM FP, IF SW01=1 CLEAR=SELECT HOT FP, IF SW01=1

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NOTE FOR SW01, SW00 - IF NO HOT FP (FP11-E) IS PRESENT, THEN WARM FP (PDP-11/6X MICROCODE) IS AUTOMATICALLY SELECTED.

5.2 PROGRAM/OPERATOR ACTION

ONCE EXECUTION HAS BEGUN, MINIMAL OPERATOR INTERVENTION IS REQUIRED, UNLESS THE PROGRAM DETECTS AN ERROR IN THE HARDWARE.

IF ALL IS WELL, THE PROGRAM TYPES ITS NAME UPON BEGINNING; AND AT THE START OF EACH PASS, THE CURRENT PASS NUMBER (IN OCTAL) IS ECHOED. NOTE THAT SETTING SW<12>=1 WILL INHIBIT THE TYPEOUT OF THE BEGIN AND END PASS MESSAGES.

IF SW<10>=0, THE CONSOLE BELL WILL BE RUNG AT THE END OF EACH PASS. NOTE THAT ONLY SW<10> AFFECTS THE BELL RINGING AT END OF PASS - SW<12> HAS NO EFFECT ON THIS FUNCTION.

IF AN ERROR OCCURS DURING EXECUTION, MANY VARIATIONS IN ACTION ARE POSSIBLE DEPENDING UPON THE SWITCH SETTINGS.

SW<15>=1 WILL CAUSE THE CPU TO HALT AFTER AN ERROR.

SW<13>=1 WILL ALSO INHIBIT ANY ERROR MESSAGE TYPEOUT THAT WOULD OCCUR AT THIS TIME.

SW<10>=1 WILL CAUSE THE CONSOLE BELL TO BE RUNG ONLY WHEN AN ERROR IS DETECTED (AND NOT AT THE END OF A PASS).

SW<9>=1 CAUSES THE PROGRAM TO LOOP ON THE MOST RECENT ERROR, AS LONG AS IT CONTINUES TO OCCUR.

THERE ARE ALSO SEVERAL OTHER GENERAL USE FUNCTIONS DEFINED BY THE SWITCHES:

SW<11>=1 WILL INHIBIT THE ITERATIONS (=2000(10)) PERFORMED OF EACH TEST ON PASSES 2, 3, 4, ... THRU THE PROGRAM.

SW<14>=1 CAUSES THE PROGRAM TO LOOP INDEFINATELY ON THE CURRENTLY EXECUTING TEST.

SW<8>=1 CAUSES THE PROGRAM TO CONTINUE EXECUTION AS NORMAL, EXCEPT WHEN THE CONTENTS OF MEMORY WORD "SLPTST" MATCHES THE NUMBER OF THE TEST CURRENTLY EXECUTING. AT THIS POINT, THE TEST IS LOOPED ON INDEFINATELY, UNTIL EITHER SW<8>=0 OR "SLPTST" IS CHANGED. NOTE THAT IF "SLPTST" DOES NOT MATCH THE TEST NUMBER OF ANY TEST, THE CONTENTS OF "SLPTST" ARE EFFECTIVELY IGNORED, AND EXECUTION PROCEEDS NORMALLY.

5.3 HOT (FP11-E) / WARM (PDP-11/6X) SELECTION

WHEN THE PROGRAM IS STARTED (AT 200(8)), A MESSAGE IS OPTIONALLY PRINTED INDICATING THE PRESCENCE/ABSCENCE OF AN FP11-E HOT FLOATING POINT UNIT OPTION (BASED UPON WHETHER "WHAMI" BIT<04> IS 1/0 RESPECTIVELY).

IF NO FP11-E HOT FP OPTION IS PRESENT, THE MESSAGE IS TYPED, AND ANY ATTEMPTS TO SELECT IT FOR TESTING VIA SW01 AND SW00 ARE IGNORED. ONLY WARM FP (PDP-11/6X MICROCODE) FLOATING POINT CAN BE TESTED/SELECTED.

IF THE FP11-E IS PRESENT, TEST SELECTION IS AS FOLLOWS:

WHEN SW01=0, THE HOT AND WARM FLOATING POINT UNITS ARE TESTED ALTERNATELY, EACH PASS - IN THE ORDER (1) HOT, THEN (2) WARM. NOTE THAT EACH "PASS" NOW CONSISTS OF TWO SEPARATE SUB-PASSES.

WHEN SW01=1, THEN DEDICATED SELECTION OF A PARTICULAR UNIT IS SPECIFIED IN SW00:

SW00=0 --> TEST HFP FP11-E OPTION ONLY
SW00=1 --> TEST WFP PDP-11/6X MICROCODE ONLY

6. ERRORS

6.1 FORMAT OF MESSAGES

6.1.1 ALL ERROR MESSAGES CONSIST OF THREE LINES OF DATA:

THE FIRST LINE IS A BRIEF MESSAGE WHICH EXPLAINS WHAT ERROR WAS DETECTED (EG, THE RESULT OF THE "ABSF" INSTRUCTION WAS BAD).

THE PREFIX "HOT:" OR "WARM:" IS ALSO ATTACHED TO THE MESSAGE TO INDICATE THE SOURCE OF THE ERROR; THE FP11-E UNIT OR THE PDP-11/6X RESPECTIVELY.

THE SECOND LINE CONSISTS OF DATA HEADERS TO IDENTIFY THE VALUES TYPED OUT ON LINE THREE. THESE HEADERS WILL EITHER BE OF THE FORM "EXPECTED" AND "RECEIVED" DATA, OR WILL BE A MNEMONIC NAME OF A WORD LOCATION IN MEMORY OR REGISTERS.

THE THIRD LINE DISPLAYS THE CONTENTS OF THE LOCATIONS SPECIFIED BY LINE TWO AS SIX DIGIT OCTAL NUMBERS. NOTE THAT ALL DATA DISPLAYED IN ANY MESSAGES ARE OCTAL NUMBERS.

AS EXPLAINED IN SECTION 5.2, SETTING SW<13>=1 WILL SUPPRESS THE TYPING OF THESE MESSAGES.

6.1.2 FLOATING POINT UNIT DATA FORMATS:

FLOATING POINT STATUS WORD (FPS):

BIT#	OCTAL	FUNCTION
15	100000	FER - FLOATING ERROR FLAG SET WHEN EITHER FIUV, FIU, FIV, FIC ENABLED AND APPROPRIATE EXCEPTION OCCURRED.
14	040000	FID - FLOATING DISABLE INTERRUPTS NO FP INTERRUPTS TO VECTOR 244(8) IF SET.
13, 12		NOT USED
11	004000	FIUV - FLOATING UNDEFINED VARIABLE INTERRUPT IF SET, (-0) MEMORY DATA IS ERROR
10	002000	FIU - FLOATING INTR UNDERFLOW IF SET AND UNDERFLOW, SET FER, STORE ANSWER, EXPONENT WRONG BY +400(8) IF CLEAR AND UNDERFLOW, ANSWER <-- ZERO
9	001000	FIV - FLOATING OVERFLOW INTERRUPT IF SET AND OVERFLOW, SET FER, STORE ANSWER, EXPONENT WRONG BY -400(8) IF CLEAR AND OVERFLOW, ANSWER <-- ZERO
8	000400	FIC - FLOATING INTEGER CONVERSION INTERRUPT IF SET AND "STCFI" ERROR, ANSWER <-- ZERO, SET ERROR IF CLEAR AND "STCFI" ERROR, ANSWER <-- ZERO
7	000200	FD - FLOATING MODE 1=DOUBLE, 64 BIT OPERANDS (4W) 0=SINGLE, 32 BIT OPERANDS (2W)
6	000100	FL - INTEGER MODE 1=LONG, 32 BIT INTEGERS (2W) 0=SHORT, 16 BIT INTEGERS (1W)
5	000040	FT - ROUND/TRUNCATE MODE 1=TRUNCATE RESULTS 0=ROUND RESULTS
4	000020	FMM - PUT FP11-E ONLY IN MAINTENANCE MODE
3:0	000017	FN-FZ-FV-FC - FLOATING CONDITION CODES

FLOATING EXCEPTION CODES (FEC):

OCTAL	ENABLE	
00	(NONE)	(NOT USED)
02	(NONE)	FP OPCODE ERROR
04	(NONE)	FP DIVIDE-BY-ZERO ERROR
06	W/FIC	FP INTEGER CONVERSION ERROR
10	W/FIV	FP OVERFLOW ERROR
12	W/FIU	FP UNDERFLOW ERROR
14	W/FIUV	FP UNDEFINED-VARIABLE/(-0) ERROR
16	W/FMM	FP MAINTENANCE TRAP

NOTE - IN "FEC" CODE TYPEOUTS IN ERROR MESSAGES ONLY THE LOW ORDER BYTE IS USED - IGNORE THE PROGRAM FLAG BIT IN THE UPPER BYTE.

FLOATING POINT DATA:

IN FLOAT MODE (FD=0), IS 2-16. BIT WORDS, 32. BITS
 IN DOUBLE MODE (FD=1), IS 4-16. BIT WORDS, 64. BITS

FIRST WORD: (BOTH F, D MODES)

B15=SIGN OF NUMBER (1/-, 0/+)
 B14:07=EXPONENT, 8.BITS, FROM -128./+127.
 B06:00=FRACTION, 7.BITS

SECOND WORD: (BOTH F, D MODES)

B15:00=FRACTION, 16.BITS

THIRD, FOURTH WORDS: (ONLY D MODE)

B15:00, B15:00=FRACTION, 32. BITS

IN F MODE, THE COMPOSITE 24. BIT FRACTION
 IS FORMED BY:

.1#(WORD1-BIT<06:00>)#(WORD2-BIT<15:00>)

IN D MODE, THE COMPOSITE 56. BIT FRACTION
 IS FORMED BY:

.1#(WORD1-BIT<06:00>)#(WORD2-BIT<15:00>)
 # (WORD3-BIT<15:00>)#(WORD4-BIT<15:00>)

FOR A MORE DETAILED OPERATION/EXPLANATION OF FLOATING POINT
 DATA FORMATS AND OPERATIONS, SEE THE PDP-11/6X PROCESSOR
 HANDBOOK SECTION ON THE FLOATING POINT INSTRUCTION SET.

6.2 RECOVERY

RECOVERY FROM ERRORS HAS BEEN ATTEMPTED TO BE MADE AS
 AUTOMATIC AND EFFORTLESS AS POSSIBLE. HOWEVER, IN MANY CASES,
 DUE TO THE NATURE OF THE ERROR, THE PROGRAM MAY NOT EVEN BE
 ABLE TO BE RUN (EG, IF THE FLOATING POINT MODULE IS IN A HUNG
 STATE, AND CAN NEVER ENTER THE READY STATE TO ACCEPT A NEW FPP
 INSTRUCTION). AT THIS POINT, SOLVING THE PROBLEM IS A DIRECT
 FUNCTION OF THE OPERATORS' INGENUITY. THIS TEST SERIES HAS
 BEEN DESIGNED TO TEST THE FLOATING POINT PROCESSOR SO THAT
 THESE TYPES OF FAILURES TO RUN WILL BE MINIMAL. THE TESTS
 HAVE BEEN PLACED IN A SPECIFICALLY STRUCTURED SEQUENCE IN THE
 PROGRAM TO IMPLEMENT THIS STRATEGY: TESTING THE MOST BASIC
 ELEMENTS FIRST, PROCEEDING UPWARD IN COMPLEXITY AFTER
 ESTABLISHING THEIR CORRECT OPERATION. THIS IS WHY IT IS
 EXTREMELY IMPORTANT THAT THE FLOATING POINT TEST PROGRAMS BE
 (1) RUN IN THE PRESCRIBED ORDER, AND (2) ONLY BE STARTED AT
 THEIR BEGINNING ADDRESS (USUALLY 200(8)). THE PROGRAM WILL
 DISPLAY, AT AN ERROR, THE MOST PERTINENT INFORMATION RELATING
 TO THE ERROR, AND A BRIEF EXPLANATION OF THE FAILING FUNCTION.

6.3 CAUSES

THESE TEST PROGRAMS ARE NOT HARDWARE ORIENTED, AND AS SUCH IT IS NOT POSSIBLE TO CALL OUT PARTICULAR HARDWARE AREAS AND MODULES RELATING TO A GIVEN FUNCTIONAL FAILURE. HARDWARE DIAGNOSIS FOR A PARTICULAR MACHINE MUST BE DONE USING THE APPROPRIATE ENGINEERING ROM FLOWS AND PRINTS, ALONG WITH THE KNOWN FUNCTIONAL ERRORS (AS DETECTED BY THE PROGRAMS). THIS IS THE INTENT UNDER WHICH THESE INSTRUCTION TESTS WERE DESIGNED AND CODED.

7. RESTRICTIONS

7.1 STARTING

THE PROGRAM MUST BE STARTED AT LOCATION 200(8) ALWAYS.

7.2 OPERATIONAL

THERE ARE NO OPERATIONAL RESTRICTIONS.

8. MISCELLANEOUS

8.1 EXECUTION TIME

MODEL	AVERAGE EXECUTION TIME PER PASS	
	SHORTEST PASS	LONGEST PASS
PDP-11/6X MICROCODE	0:01	1:15
PDP-11/6X W/FP11-E	0:01	1:15

TIMES SPECIFIED AS (MINUTES):(SECONDS)

SHORTEST PASS ::= PASS=1, NO ITERATIONS, USING:
 SWR=(004003) FOR PDP-11/6X MICROCODE
 SWR=(004002) FOR PDP-11/6X W/FP11-E

LONGEST PASS ::= PASS>=2, 2000. ITERATIONS/TEST, USING:
 SWR=(000003) FOR PDP-11/6X MICROCODE
 SWR=(000002) FOR PDP-11/6X W/FP11-E

8.2 STACK POINTER

THE STACK POINTER IS SET TO 1100(8) AT THE START OF EACH PASS. IF ALL IS OPERATING CORRECTLY, IT SHOULD ALSO BE THIS VALUE AT

THE START OF EACH TEST, AND AT THE END OF A PASS.

8.3 POWER FAIL

THE TESTS MAY BE POWER FAILED AT ANY TIME. SPURIOUS ERROR MESSAGES MAY OCCUR IF THE FAILURE OCCURRED WHILE THE F.P.U. WAS EXECUTING A FUNCTION, AS NONE OF ITS REGISTERS (FPS, FEC, FEA, ACCUMULATORS) ARE SAVED IN THE EVENT OF A POWER FAILURE. HOWEVER, THESE MESSAGES SHOULD ONLY OCCUR ONCE (IF AT ALL) IMMEDIATELY AFTER POWER IS RESTORED. WHEN POWER IS RESTORED, "POWER" IS TYPED ON THE CONSOLE AND EXECUTION CONTINUES WHERE IT WAS INTERRUPTED.

NOTE THAT THE "VOLATILE" SWITCH REGISTER CONTENTS ARE SAVED AND RESTORED FROM THE STACK IN A POWER FAIL SEQUENCE; THEREFORE THE SWITCH REGISTER SETTINGS SHOULD NOT BE LOST OVER A POWER FAIL.

9. PROGRAM DESCRIPTION

9.1 ORGANIZATION

THESE PROGRAMS ARE ORGANIZED AS MUCH AS POSSIBLE IN A STRAIGHTFORWARD, LINEAR MANNER. THE MAIN BODY OF CODE IS STRUCTURED AS FOLLOWS:

- (1) INITIALIZATION ROUTINE
 - SETS UP VECTORS, TYPES HEADER, ETC.
- (2) MAIN BODY OF TESTS
 - INLINE TEST CODE, INLINE TEST CALLS
- (3) END OF PASS ROUTINE
 - END OF PASS PROCESSING
- (4) TEST SUBROUTINES
 - SUBROUTINES CONTAINING COMMON TEST CODE
- (5) OVERHEAD ROUTINES
 - SERVICE SUBROUTINES (TYPEOUT, ETC.)

WHEREVER FEASIBLE, COMMON SECTIONS OF CODE FOR WIDELY USED FUNCTIONS ARE CONDENSED INTO SUBROUTINES TO CONSERVE MEMORY. THIS INCLUDES NOT ONLY STANDARD SERVICE ROUTINES (SUCH AS SCOPE, ERROR, AND ASCII TYPEOUT), BUT ALSO TESTING ROUTINES WHICH PERFORM VERY SIMILAR FUNCTIONS. THUS IN MANY CASES (THE "ADDF" INSTRUCTION TESTING, FOR EXAMPLE) A SINGLE BODY OF CODE (A SUBROUTINE) IS USED TO PERFORM ALL THE FUNCTIONAL TESTS, WITH A VARIABLE PARAMETER LIST PASSED AT EACH CALL CONTAINING THE DATA OPERANDS AND EXPECTED RESULT FOR EACH INDIVIDUAL TEST. THIS CONSTRUCTION FACILITATES THE ADDITION/DELETION OF TESTS (SHOULD THAT EVER BE NECESSARY), AND ALSO GREATLY CONSERVES MEMORY SPACE REQUIREMENTS WHEN A LARGE NUMBER OF CALLS TO A GIVEN BODY OF CODE ARE REQUIRED.

THE INDIVIDUAL TESTS WITHIN EACH PROGRAM HAVE ALSO BEEN SEQUENCED IN A PARTICULAR ORDER TO FACILITATE THE DETECTION AND RESOLUTION OF ERRORS AS QUICKLY AS POSSIBLE. EACH OF THE TESTS BEGINS AS SIMPLY AS POSSIBLE, FIRST TESTING THE MOST BASIC ELEMENTS. MORE COMPLEX ELEMENTS ARE TESTED AFTERWARDS, EMPLOYING A PHILOSOPHY THAT THE SIMPLER THE TEST, THE BETTER THE RESOLUTION. ALL FUNCTIONS ARE EVENTUALLY TESTED, BUT HOPEFULLY MOST ERRORS WILL BE CAUGHT AND CORRECTED EARLY. A MUCH MORE DETAILED ANALYSIS OF THE SEQUENCE OF TESTS PERFORMED IS PRESENTED IN SECTION 9.2 .

9.2 TEST DESCRIPTION

THIS DIAGNOSTIC IS STRUCTURED TO SEQUENTIALLY PERFORM THE FOLLOWING SERIES OF TESTS:

- (1) FLOATING POINT STATUS REGISTER FUNCTIONALITY.
ALTERNATING ONES/ZEROS DATA PATTERNS WITH 'LDFPS/STFPS' INSTRUCTIONS IN DEFINED BIT POSITIONS OF REGISTER. 'SET-' MODE CHANGE INSTRUCTIONS (F-D/I-L) TO FPS REGISTER.
- (2) 16. BIT OPERAND FETCH/STORE.
USING 'LDFPS/STFPS' INSTRUCTION SEQUENCES, CHECK 16. BIT OPERAND FETCH AND STORE USING ALL PDP-11 ADDRESS MODES. VERIFY OPERAND REFERENCE, SIDE EFFECTS FOR AUTO INCREMENT AND DECREMENT OF REGISTERS.
- (3) 'CFCC' INSTRUCTION
VERIFY FLOATING POINT CONDITION CODES WITH ALTERNATING ONES/ZEROS DATA PATTERNS; 'CFCC' INSTRUCTION FUNCTIONALITY OF FLOATING C.C. -> BASE MACHINE C.C.
- (4) FLOATING POINT ACCUMULATORS
USING ALTERNATING ONES/ZEROS DATA PATTERNS AND 'LDD/STD' SEQUENCES VERIFY FLOATING POINT REGISTERS 64. BIT DATA AND 32. BIT DATA MODES.
- (5) 64. BIT OPERAND FETCH/STORE.
USING 'LDD/STD' INSTRUCTION SEQUENCES, CHECK 64. BIT OPERAND FETCH AND STORE USING ALL PDP-11 ADDRESS MODES. VERIFY OPERAND REFERENCE, SIDE EFFECTS FOR AUTO INCREMENT AND DECREMENT OF REGISTERS (2/8 CONSTANTS).
- (6) 32. BIT OPERAND FETCH/STORE.
USING 'LDF/STF' INSTRUCTION SEQUENCES, CHECK 32. BIT OPERAND FETCH AND STORE USING ALL PDP-11 ADDRESS MODES. VERIFY OPERAND REFERENCE, SIDE EFFECTS FOR AUTO INCREMENT AND DECREMENT OF REGISTERS (2/4 CONSTANTS).
- (7) FLOATING ACCUMULATOR ADDRESSING.
VERIFY FP ACCUMULATOR ADDRESSING BY WRITING ACCUMULATOR (- ADDRESS(ACCUMULATOR), CHECK

- ACO-5.
(8) SINGLE OPERAND FP INSTRUCTIONS.
VERIFY FUNCTIONALITY OF 'ABS-', 'NEG-',
'TST-', AND 'CLR-' FP INSTRUCTIONS IN F/D
MODES. CHECK FLOATING CC SETTINGS AND
EXCEPTION CONDITIONS, WHEN APPLICABLE (-0
ONLY). TESTED VIA SUBROUTINES.

9.3 SUBROUTINE ABSTRACTS

9.3.1 TRAPCATCHER

THE TRAPCATCHER IS A SERIES OF INSTRUCTIONS OCCUPYING THE INTERRUPT VECTOR AREA OF MEMORY. IT CONSISTS OF THE SEQUENCE:

```
.WORD +2 ;PC AFTER TRAP
.WORD 0 ;PS AFTER TRAP
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PLACED AT EACH VECTOR ADDRESS IN LOCATIONS 4-776(8) OF MEMORY. THE FIRST WORD OF EACH PAIR ("PC AFTER TRAP") POINTS TO THE SECOND WORD, WHICH SERVES A DUAL PURPOSE AS
(1) THE NEW LOADED PS (ALL ZEROS), AND (2) THE NEXT INSTRUCTION TO EXECUTE (0=HALT).

WHEN THE PROGRAM IS EXECUTING, ANY REQUIRED VECTORS ARE SET UP IN THE VECTOR AREA WITH APPROPRIATE VALUES; THE OTHERS BEING LEFT IN THE "TRAPCATCHER" STATE. THUS, IF AN UNEXPECTED TRAP EVER OCCURS IN THE MACHINE, IT WILL BE CAUGHT, AND THE MACHINE SUBSEQUENTLY HALTED, DISPLAYING THE VECTOR ADDRESS * PLUS FOUR * IN THE ADDRESS LIGHTS.

9.3.2 SCOPE ROUTINE - \$SCOPE

THE SCOPE ROUTINE IS ENTERED FROM THE FIRST INSTRUCTION OF EACH TEST IN THE PROGRAM. (NOTE THAT BY DEFINITION, A "TEST" WILL BE DESIGNATED AS THE SECTION OF CODE BETWEEN TWO "SCOPE" STATEMENTS.) THIS ROUTINE PROVIDES THE OVERHEAD CODE NECESSARY TO IMPLEMENT SEVERAL OF THE SWITCH REGISTER CONTROL OPTIONS. UPON ENTRANCE TO A TEST, THE SCOPE STATEMENT AT THE BEGINNING SETS UP CERTAIN LOCATIONS (SEE BELOW) TO SPECIFY THE CURRENT TEST NUMBER AND LOOPING ADDRESS (FOR ITERATIONS). CONTROL IS THEN PASSED TO THE ACTUAL TEST CODE, PERFORMING THE DESIRED TEST. UPON EXIT, THE SCOPE STATEMENT OF THE NEXT TEST IS ENTERED, WHICH DETERMINES WHETHER TO (1) LOOP BACK TO THE PREVIOUS TEST (EG, FOR ITERATIONS) OR (2) INITIALIZE FOR THE NEXT TEST (AS DESCRIBED EARLIER, ABOVE).

ENTRANCE TO THE SCOPE ROUTINE IS VIA AN "IOT" TRAP CALL THROUGH LOCATION 20(8). (FROM THE SCOPE=IOT EQUATE). DEPENDING UPON THE SWITCH SETTINGS (SEE 5.2), CODE IS PRESENT TO: LOAD THE FPII MICRO BREAK REGISTER, LOOP ON THE CURRENTLY EXECUTING TEST, LOOP ON A SPECIFIC TEST, PERFORM ITERATIONS OF

EACH TEST, AND SET UP ADDRESSES FOR POSSIBLE LOOPING ON ERRORS. IMPORTANT VALUES USED IN THIS ROUTINE ARE:

- SMXCNT - MAXIMUM NUMBER OF ITERATIONS PER TEST (GENERALLY WILL BE 2000(10))
- STSTNM - A COUNTER INDICATING THE NUMBER (1-377(8)) OF THE TEST CURRENTLY BEING EXECUTED
- SLPADR - CONTAINS THE ADDRESS TO WHICH THE SCOPE ROUTINE 10240 WILL LOOP, IF THE CURRENT TEST IS BEING LOOPED UPON
- SLPERR - CONTAINS THE ADDRESS TO WHICH THE ERROR ROUTINE (SEE 9.3.3) WILL LOOP, IF AN ERROR OCCURS AND THE LOOPING ON AN ERROR OPTION IS SPECIFIED IN THE SWITCHES. SET UP BY SCOPE, GENERALLY WILL BE THE SAME AS SLPADR, ABOVE.

9.3.3 ERROR ROUTINE - SERROR

THE ERROR ROUTINE IS ENTERED WHEN THE TEST CODE HAS DETERMINED THAT AN ERROR HAS OCCURRED AS PART OF A TEST. THROUGH USE OF THIS ROUTINE, THE TEST HAS A MEANS OF SIGNALING AN ERROR TO THE 10420 OPERATOR/MONITOR; AND IMPLEMENTING THE CONTROL FUNCTIONS FOR HALTING ON ERROR, BELL ON ERROR, AND LOOPING ON ERROR. IN ADDITION, THE ERROR ROUTINE HAS THE PROVISION TO TYPE OUT ON THE OPERATOR'S CONSOLE A MESSAGE BRIEFLY EXPLAINING THE ERROR, AND SOME OF THE MOST PERTINENT DATA VALUES TO HELP DIAGNOSE THE CAUSE (SEE SECTION 6.2).

THE CALLING MECHANISM IS SIMILAR TO THAT EMPLOYED FOR THE SCOPE ROUTINE (VIA A TRAP), EXCEPT IN THIS INSTANCE, THE "EMT" INSTRUCTION IS USED, TRAPPING THROUGH LOCATION 30(8). (NOTE THE EQUATE ERROR N=EMT N). THE LOWER BYTE OF THE EMT INSTRUCTION IS CAPABLE OF TRANSMITTING A NUMBER FROM 0-377(8), WHICH WILL BE TERMED THE "ERROR ITEM NUMBER." THIS NUMBER DETERMINES WHICH ERROR MESSAGE, AND ASSOCIATED DATA VALUES WILL BE TYPED OUT WHEN A PARTICULAR ERROR IS SIGNALLED. IF THIS NUMBER IS ZERO, JUST THE PC OF THE CALLING "ERROR" INSTRUCTION WILL BE TYPED, OTHERWISE, THE NUMBER IS USED AS AN INDEX THROUGH THE ERROR TABLE (SERRTB) TO FIND THE APPROPRIATE VALUES TO TYPE (SEE PROGRAM LISTING FOR FURTHER DETAILS).

IMPORTANT VALUES USED IN THIS ROUTINE ARE:

- EREG0 THRU EREG7 - CONTENTS OF GENERAL REGISTERS R0 THRU R7 JUST BEFORE ERROR CALL
- SERTTL - CUMULATIVE NUMBER OF ERRORS ENCOUNTERED TO DATE
- SERRPC - CONTAINS THE PC OF THE "ERROR" INSTRUCTION JUST EXECUTED
- SLPERR - CONTAINS THE ADDRESS WHICH WILL BE LOOPED UPON FOR THE ERROR LOOPING FACILITY

9.3.4 ERROR MESSAGE TYPEOUT ROUTINE - STYPERR

THIS ROUTINE (\$TYPEERR ENTRY POINT) IS CALLED BY THE ERROR PROCESSING ROUTINE DESCRIBED IN 9.3.3 ABOVE. ITS PURPOSE IS TO IMPLEMENT THE ERROR MESSAGE/DATA VALUE ERROR TYPEOUT FACILITY. THE SUBROUTINE WILL, GIVEN THE INDEXING BYTE FROM THE ERROR CALL INSTRUCTION, PICK UP THE CORRECT ERROR MESSAGE VECTOR FROM SEARTB (ERROR TABLE), AND TYPE OUT THE ERROR MESSAGE, DATA HEADER, AND DATA VALUES ON THE CONSOLE.

9.3.5 TYPE ROUTINE - \$TYPE

THIS ROUTINE IS THE STANDARD SYSTEM TYPEOUT ROUTINE FOR ASCII SINGLE-CHARACTER-PER-BYTE STRINGS. IT IS CALLED THROUGH A TRAP INSTRUCTION WITH THE NEXT WORD CONTAINING THE ADDRESS OF THE FIRST CHARACTER IN THE STRING. TYPING TERMINATES WHEN AN ALL-ZERO BYTE IS FOUND. HORIZONTAL TAB STOPS ARE ALSO AUTOMATICALLY PLACED.

9.3.6 OCTAL NUMBER TYPE ROUTINE - \$TYPOC

THIS ROUTINE CONVERTS THE TOP NUMBER ON THE STACK TO A 6-DIGIT OCTAL REPRESENTATION, AND TYPES IT ON THE CONSOLE USING THE TYPE ROUTINE \$TYPE. SEE LISTING FOR OPTIONS AND FURTHER DETAILS.

9.3.7 POWER UP AND DOWN ROUTINES - \$PWUP AND \$PWDRN

THESE TWO ROUTINES ARE ENTERED FOR THE POWER UP AND DOWN CONDITIONS, RESPECTIVELY. THE POWER DOWN ROUTINE (\$PWDRN) SAVES THE GENERAL REGISTERS AND STACK POINTER. THE POWER UP ROUTINE (\$PWUP) CORRESPONDINGLY RESTORES THE REGISTERS, STACK POINTER, AND TYPES THE MESSAGE "POWER" WHEN POWER IS RESTORED. THE VOLATILE INTERNAL SWITCH REGISTER IS ALSO SAVED/RESTORED BY THIS ROUTINE.

9.3.8 END OF PASS ROUTINE - \$EOP

THE END OF PASS ROUTINE COUNTS THE NUMBER OF PASSES PERFORMED, DINGS THE BELL/TYPES A MESSAGE (IF ENABLED), SETS/CLEARs THE T-BIT (IF ENABLED), AND ALSO INTERFACES TO THE MONITOR, IF PRESENT. IT ALSO OPTIONALLY LOOPS FOR A NUMBER OF SUBPASSES BEFORE SIGNALLING AN END OF PASS CONDITION.

10. ACT/APT/XXDP

10.1 ACT COMPATIBILITY

THIS PROGRAM WILL RUN UNDER THE ACT SYSTEM.

10.2 APT COMPATIBILITY

THIS PROGRAM WILL RUN UNDER THE APT SYSTEM MONITOR. ALL

MAINDEC-11-DQFPA-B

NECESSARY SOFTWARE COMMUNICATION HOOKS ARE PRESENT.

10.3 XXDP COMPATIBILITY

FOR XXDP MEDIA COMPATIBILITY, THE TOP 2K WORDS OF THE 16K WORD
MINIMUM MEMORY AREA ARE NOT DISTURBED DURING EXECUTION.

14	OPERATIONAL SWITCH SETTINGS
32	BASIC DEFINITIONS
188	TRAP CATCHER
197	STARTING ADDRESS(ES)
200	ACT11 HOOKS
211	APT PARAMETER BLOCK
234	COMMON TAGS
323	APT MAILBOX-ETABLE
350	ERROR POINTER TABLE
461	PROGRAM DEFINED COMMON TAGS
502	START OF PASS ROUTINE
510	INITIALIZE THE COMMON TAGS
536	T1 TEST OF FPS REGISTER BY RIPPLING A 1
559	T2 TEST OF FPS REGISTER BY RIPPLING A 0
678	T3 TEST OF SETF INSTRUCTION
695	T4 TEST OF SETD INSTRUCTION
712	T5 TEST OF SETI INSTRUCTION
729	T6 TEST OF SETL INSTRUCTION
747	T7 TEST OF LOAD-SRC MODE-0, STORE-DST MODE-7(PC)
770	T10 TEST OF LOAD-SRC MODE-1, STORE-DST MODE-3
799	T11 TEST OF LOAD-SRC MODE-2, STORE-DST MODE-5
833	T12 TEST OF LOAD-SRC MODE-3, STORE-DST MODE-6(PC)
861	T13 TEST OF LOAD-SRC MODE-4, STORE-DST MODE-0
889	T14 TEST OF LOAD-SRC MODE-5, STORE-DST MODE-3(PC)
917	T15 TEST OF LOAD-SRC MODE-6, STORE-DST MODE-7
941	T16 TEST OF LOAD-SRC MODE-7, STORE-DST MODE-2(PC)
971	T17 TEST OF LOAD-SRC MODE-2(PC), STORE-DST MODE-4
1004	T20 TEST OF LOAD-SRC MODE-3(PC), STORE-DST MODE-6
1026	T21 TEST OF LOAD-SRC MODE-6(PC), STORE-DST MODE-1
1048	T22 TEST OF LOAD-SRC MODE-7(PC), STORE-DST MODE-2
1081	T23 TEST OF CFCC INSTRUCTION
1112	T24 TEST FP AC0, D MODE, TEST PATTERN LDAD-1
1131	T25 TEST FP AC0, D MODE, TEST PATTERN LDAD-2
1150	T26 TEST FP AC0, D MODE, TEST PATTERN LDAD-3
1169	T27 TEST FP AC0, D MODE, TEST PATTERN LDAD-4
1188	T30 TEST FP AC0, D MODE, TEST PATTERN LDAD-5
1207	T31 TEST FP AC0, D MODE, TEST PATTERN LDAD-6
1226	T32 TEST FP AC1, D MODE, TEST PATTERN LDAD-1
1239	T33 TEST FP AC1, D MODE, TEST PATTERN LDAD-2
1252	T34 TEST FP AC1, D MODE, TEST PATTERN LDAD-3
1265	T35 TEST FP AC1, D MODE, TEST PATTERN LDAD-4
1278	T36 TEST FP AC1, D MODE, TEST PATTERN LDAD-5
1291	T37 TEST FP AC1, D MODE, TEST PATTERN LDAD-6
1305	T40 TEST FP AC2, D MODE, TEST PATTERN LDAD-1
1318	T41 TEST FP AC2, D MODE, TEST PATTERN LDAD-2
1331	T42 TEST FP AC2, D MODE, TEST PATTERN LDAD-3
1344	T43 TEST FP AC2, D MODE, TEST PATTERN LDAD-4
1357	T44 TEST FP AC2, D MODE, TEST PATTERN LDAD-5
1370	T45 TEST FP AC2, D MODE, TEST PATTERN LDAD-6
1384	T46 TEST FP AC3, D MODE, TEST PATTERN LDAD-1
1397	T47 TEST FP AC3, D MODE, TEST PATTERN LDAD-2
1410	T50 TEST FP AC3, D MODE, TEST PATTERN LDAD-3
1423	T51 TEST FP AC3, D MODE, TEST PATTERN LDAD-4
1436	T52 TEST FP AC3, D MODE, TEST PATTERN LDAD-5
1449	T53 TEST FP AC3, D MODE, TEST PATTERN LDAD-6
1463	T54 TEST FP AC4, D MODE, TEST PATTERN LDAD-1

1476	T55	TEST FP AC4, D MODE, TEST PATTERN LOAD-2
1489	T56	TEST FP AC4, D MODE, TEST PATTERN LOAD-3
1502	T57	TEST FP AC4, D MODE, TEST PATTERN LOAD-4
1515	T60	TEST FP AC4, D MODE, TEST PATTERN LOAD-5
1529	T61	TEST FP AC5, D MODE, TEST PATTERN LOAD-1
1542	T62	TEST FP AC5, D MODE, TEST PATTERN LOAD-2
1555	T63	TEST FP AC5, D MODE, TEST PATTERN LOAD-3
1568	T64	TEST FP AC5, D MODE, TEST PATTERN LOAD-4
1581	T65	TEST FP AC5, D MODE, TEST PATTERN LOAD-5
1596	T66	TEST FP AC0, F MODE, TEST PATTERN LDF-1
1616	T67	TEST FP AC0, F MODE, TEST PATTERN LDF-2
1636	T70	TEST FP AC0, F MODE, TEST PATTERN LDF-3
1656	T71	TEST FP AC0, F MODE, TEST PATTERN LDF-4
1676	T72	TEST FP AC0, F MODE, TEST PATTERN LDF-5
1696	T73	TEST FP AC0, F MODE, TEST PATTERN LDF-6
1717	T74	TEST FP AC1, F MODE, TEST PATTERN LDF-1
1730	T75	TEST FP AC1, F MODE, TEST PATTERN LDF-2
1743	T76	TEST FP AC1, F MODE, TEST PATTERN LDF-3
1756	T77	TEST FP AC1, F MODE, TEST PATTERN LDF-4
1769	T100	TEST FP AC1, F MODE, TEST PATTERN LDF-5
1782	T101	TEST FP AC1, F MODE, TEST PATTERN LDF-6
1796	T102	TEST FP AC2, F MODE, TEST PATTERN LDF-1
1809	T103	TEST FP AC2, F MODE, TEST PATTERN LDF-2
1822	T104	TEST FP AC2, F MODE, TEST PATTERN LDF-3
1835	T105	TEST FP AC2, F MODE, TEST PATTERN LDF-4
1848	T106	TEST FP AC2, F MODE, TEST PATTERN LDF-5
1861	T107	TEST FP AC2, F MODE, TEST PATTERN LDF-6
1875	T110	TEST FP AC3, F MODE, TEST PATTERN LDF-1
1888	T111	TEST FP AC3, F MODE, TEST PATTERN LDF-2
1901	T112	TEST FP AC3, F MODE, TEST PATTERN LDF-3
1914	T113	TEST FP AC3, F MODE, TEST PATTERN LDF-4
1927	T114	TEST FP AC3, F MODE, TEST PATTERN LDF-5
1940	T115	TEST FP AC3, F MODE, TEST PATTERN LDF-6
1954	T116	TEST FP AC4, F MODE, TEST PATTERN LDF-1
1967	T117	TEST FP AC4, F MODE, TEST PATTERN LDF-2
1980	T120	TEST FP AC4, F MODE, TEST PATTERN LDF-3
1993	T121	TEST FP AC4, F MODE, TEST PATTERN LDF-4
2006	T122	TEST FP AC4, F MODE, TEST PATTERN LDF-5
2020	T123	TEST FP AC5, F MODE, TEST PATTERN LDF-1
2033	T124	TEST FP AC5, F MODE, TEST PATTERN LDF-2
2046	T125	TEST FP AC5, F MODE, TEST PATTERN LDF-3
2059	T126	TEST FP AC5, F MODE, TEST PATTERN LDF-4
2072	T127	TEST FP AC5, F MODE, TEST PATTERN LDF-5
2092	T130	TEST OF LOAD-FSRC MODE-1, STORE-FDST MODE-6(PC), D MODE
2125	T131	TEST OF LOAD-FSRC MODE-4, STORE-FDST MODE-3(PC), D MODE
2163	T132	TEST OF LOAD-FSRC MODE-7, STORE-FDST MODE-3, D MODE
2204	T133	TEST OF LOAD-FSRC MODE-6(PC), STORE-FDST MODE-2, D MODE
2242	T134	TEST OF LOAD-FSRC MODE-2, STORE-FDST MODE-1, D MODE
2281	T135	TEST OF LOAD-FSRC MODE-5, STORE-FDST MODE-7(PC), D MODE
2321	T136	TEST OF LOAD-FSRC MODE-2(PC), STORE-FDST MODE-7, D MODE
2361	T137	TEST OF LOAD-FSRC MODE-7(PC), STORE-FDST MODE-6, D MODE
2395	T140	TEST OF LOAD-FSRC MODE-3, STORE-FDST MODE-2(PC), D MODE
2435	T141	TEST OF LOAD-FSRC MODE-6, STORE-FDST MODE-4, D MODE
2474	T142	TEST OF LOAD-FSRC MODE-3(PC), STORE-FDST MODE-0, D MODE
2507	T143	TEST OF LOAD-FSRC MODE-0, STORE-FDST MODE-5, D MODE
2547	T144	TEST OF LOAD-FSRC MODE-1, STORE-FDST MODE-4, F MODE

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2579	T145	TEST OF LOAD-FSRC MODE-3, STORE-FDST MODE-6, F MODE
2612	T146	TEST OF LOAD-FSRC MODE-5, STORE-FDST MODE-3, F MODE
2651	T147	TEST OF LOAD-FSRC MODE-7, STORE-FDST MODE-1, F MODE
2679	T150	TEST OF LOAD-FSRC MODE-3(PC), STORE-FDST MODE-2, F MODE
2710	T151	TEST OF LOAD-FSRC MODE-7(PC), STORE-FDST MODE-7, F MODE
2738	T152	TEST OF LOAD-FSRC MODE-2, STORE-FDST MODE-3(PC), F MODE
2769	T153	TEST OF LOAD-FSRC MODE-4, STORE-FDST MODE-5, F MODE
2807	T154	TEST OF LOAD-FSRC MODE-2(PC), STORE-FDST MODE-7(PC), F MODE
2839	T155	TEST OF LOAD-FSRC MODE-6(PC), STORE-FDST MODE-6(PC), F MODE
2864	T156	TEST OF LOAD-FSRC MODE-0, STORE-FDST MODE-2(PC), F MODE
2895	T157	TEST OF LOAD-FSRC MODE-6, STORE-FDST MODE-0, F MODE
2927	T160	TEST ALL FP-ACCUM ARE THERE
2994	T161	TEST OF ABSF INSTR, DATA SET ABSF-1
3012	T162	TEST OF ABSF INSTR, DATA SET ABSF-2
3030	T163	TEST OF ABSF INSTR, DATA SET ABSF-3
3048	T164	TEST OF ABSF INSTR, DATA SET ABSF-4
3066	T165	TEST OF ABSF INSTR, DATA SET ABSF-5
3084	T166	TEST OF ABSF INSTR, DATA SET ABSF-6
3102	T167	TEST OF ABSF INSTR, DATA SET ABSF-7
3120	T170	TEST OF ABSF INSTR, DATA SET ABSF-10
3138	T171	TEST OF ABSF INSTR, DATA SET ABSF-11
3156	T172	TEST OF ABSF INSTR, DATA SET ABSF-12
3174	T173	TEST OF ABSF INSTR, DATA SET ABSF-13
3193	T174	TEST OF ABSD INSTR, DATA SET ABSD-1
3213	T175	TEST OF ABSD INSTR, DATA SET ABSD-2
3233	T176	TEST OF ABSD INSTR, DATA SET ABSD-3
3253	T177	TEST OF ABSD INSTR, DATA SET ABSD-4
3273	T200	TEST OF ABSD INSTR, DATA SET ABSD-5
3293	T201	TEST OF ABSD INSTR, DATA SET ABSD-6
3313	T202	TEST OF ABSD INSTR, DATA SET ABSD-7
3333	T203	TEST OF ABSD INSTR, DATA SET ABSD-10
3353	T204	TEST OF ABSD INSTR, DATA SET ABSD-11
3373	T205	TEST OF ABSD INSTR, DATA SET ABSD-12
3393	T206	TEST OF ABSD INSTR, DATA SET ABSD-13
3414	T207	TEST OF NEGF INSTR, DATA SET NEGF-1
3432	T210	TEST OF NEGF INSTR, DATA SET NEGF-2
3450	T211	TEST OF NEGF INSTR, DATA SET NEGF-3
3468	T212	TEST OF NEGF INSTR, DATA SET NEGF-4
3486	T213	TEST OF NEGF INSTR, DATA SET NEGF-5
3504	T214	TEST OF NEGF INSTR, DATA SET NEGF-6
3522	T215	TEST OF NEGF INSTR, DATA SET NEGF-7
3540	T216	TEST OF NEGF INSTR, DATA SET NEGF-10
3558	T217	TEST OF NEGF INSTR, DATA SET NEGF-11
3576	T220	TEST OF NEGF INSTR, DATA SET NEGF-12
3594	T221	TEST OF NEGF INSTR, DATA SET NEGF-13
3613	T222	TEST OF NEGD INSTR, DATA SET NEGD-1
3633	T223	TEST OF NEGD INSTR, DATA SET NEGD-2
3653	T224	TEST OF NEGD INSTR, DATA SET NEGD-3
3673	T225	TEST OF NEGD INSTR, DATA SET NEGD-4
3693	T226	TEST OF NEGD INSTR, DATA SET NEGD-5
3713	T227	TEST OF NEGD INSTR, DATA SET NEGD-6
3733	T230	TEST OF NEGD INSTR, DATA SET NEGD-7
3753	T231	TEST OF NEGD INSTR, DATA SET NEGD-10
3773	T232	TEST OF NEGD INSTR, DATA SET NEGD-11
3793	T233	TEST OF NEGD INSTR, DATA SET NEGD-12
3813	T234	TEST OF NEGD INSTR, DATA SET NEGD-13

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3834	T235	TEST OF CLRF INSTR, DATA SET CLRF-1
3852	T236	TEST OF CLRF INSTR, DATA SET CLRF-2
3870	T237	TEST OF CLRF INSTR, DATA SET CLRF-3
3888	T240	TEST OF CLRF INSTR, DATA SET CLRF-4
3906	T241	TEST OF CLRF INSTR, DATA SET CLRF-5
3924	T242	TEST OF CLRF INSTR, DATA SET CLRF-6
3943	T243	TEST OF CLRD INSTR, DATA SET CLRD-1
3963	T244	TEST OF CLRD INSTR, DATA SET CLRD-2
3983	T245	TEST OF CLRD INSTR, DATA SET CLRD-3
4003	T246	TEST OF CLRD INSTR, DATA SET CLRD-4
4023	T247	TEST OF CLRD INSTR, DATA SET CLRD-5
4043	T250	TEST OF CLRD INSTR, DATA SET CLRD-6
4064	T251	TEST OF TSTF INSTR, DATA SET TSTF-1
4082	T252	TEST OF TSTF INSTR, DATA SET TSTF-2
4100	T253	TEST OF TSTF INSTR, DATA SET TSTF-3
4118	T254	TEST OF TSTF INSTR, DATA SET TSTF-4
4136	T255	TEST OF TSTF INSTR, DATA SET TSTF-5
4154	T256	TEST OF TSTF INSTR, DATA SET TSTF-6
4172	T257	TEST OF TSTF INSTR, DATA SET TSTF-7
4190	T260	TEST OF TSTF INSTR, DATA SET TSTF-10
4208	T261	TEST OF TSTF INSTR, DATA SET TSTF-11
4226	T262	TEST OF TSTF INSTR, DATA SET TSTF-12
4244	T263	TEST OF TSTF INSTR, DATA SET TSTF-13
4263	T264	TEST OF TSTD INSTR, DATA SET TSTD-1
4283	T265	TEST OF TSTD INSTR, DATA SET TSTD-2
4303	T266	TEST OF TSTD INSTR, DATA SET TSTD-3
4323	T267	TEST OF TSTD INSTR, DATA SET TSTD-4
4343	T270	TEST OF TSTD INSTR, DATA SET TSTD-5
4363	T271	TEST OF TSTD INSTR, DATA SET TSTD-6
4383	T272	TEST OF TSTD INSTR, DATA SET TSTD-7
4403	T273	TEST OF TSTD INSTR, DATA SET TSTD-10
4423	T274	TEST OF TSTD INSTR, DATA SET TSTD-11
4443	T275	TEST OF TSTD INSTR, DATA SET TSTD-12
4463	T276	TEST OF TSTD INSTR, DATA SET TSTD-13
4485		SUB PASS END CONTROL
4526		END OF PASS ROUTINE (MODIFIED SYSMAC)
4562		SUBR TO PERFORM TEST OF LDD/STD
4637		SUBR TO PERFORM TEST OF LDD/LDF/STD
4725		SUBR TO TEST THE ABSF INSTRUCTION
4768		SUBR TO TEST THE ABSD INSTRUCTION
4816		SUBR TO TEST THE NEGF INSTRUCTION
4859		SUBR TO TEST THE NEGD INSTRUCTION
4907		SUBR TO TEST THE CLRF INSTRUCTION
4950		SUBR TO TEST THE CLRD INSTRUCTION
4999		SUBR TO TEST THE TSTF INSTRUCTION
5042		SUBR TO TEST THE TSTD INSTRUCTION
5090		FPP TRAP CATCHER
5101		SCOPE HANDLER ROUTINE
5165		ERROR HANDLER ROUTINE
5228		ERROR MESSAGE TYPEOUT ROUTINE (MODIFIED SYSMAC)
5294		TYPE ROUTINE
5373		APT COMMUNICATIONS ROUTINE
5430		BINARY TO OCTAL (ASCII) AND TYPE
5507		TRAP DECODER
5530		TRAP TABLE
5544		POWER DOWN AND UP ROUTINES

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5591

ERROR MESSAGES, DATA HEADERS, DATA VECTORS, ETC


```

1  .TITLE FPU BASIC INSTR TESTS
2  ;*COPYRIGHT (C) 1976
3  ;*DIGITAL EQUIPMENT CORP.
4  ;*MAYNARD, MASS. 01754
5  ;*
6  ;*PROGRAM BY DONALD NORTH
7  ;*
8  ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
9  ;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
10 ;*

```

```

11 .SBTTL OPERATIONAL SWITCH SETTINGS

```

SWITCH	OCTAL	USE
15	100000	HALT ON ERROR
14	040000	LOOP ON CURRENTLY EXECUTING TEST
13	020000	INHIBIT ERROR TYPEOUTS
12	010000	INHIBIT STATUS TYPEOUTS
11	004000	INHIBIT ITERATIONS
10	000000	0=BELL ON PASS END
	002000	1=BELL ON ERROR
9	001000	LOOP ON ERROR
8	000400	LOOP ON TEST NUMBER IN "SLPTST"
1	000000	0=TEST HFP/WFP ALTERNATELY EACH PASS
	000002	1=TEST ONLY UNIT SPECIFIED IN SW<00>
0	000002	0=SELECT HFP, IF SW<01>=1
	000003	1=SELECT WFP, IF SW<01>=1

```

12 .SBTTL BASIC DEFINITIONS

```

```

13 ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***

```

```

14 001100

```

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15 STACK= 1100
16 .EQUIV EMT,ERROR ;:BASIC DEFINITION OF ERROR CALL
17 .EQUIV IOT,SCOPE ;:BASIC DEFINITION OF SCOPE CALL

```

```

18 ;*MISCELLANEOUS DEFINITIONS

```

HT=	11	;;CODE FOR HORIZONTAL TAB
LF=	12	;;CODE FOR LINE FEED
CR=	15	;;CODE FOR CARRIAGE RETURN
CRLF=	200	;;CODE FOR CARRIAGE RETURN-LINE FEED
PS=	177776	;;PROCESSOR STATUS WORD
.EQUIV PS,PSW		
STKLMT=	177774	;;STACK LIMIT REGISTER
PIRQ=	177772	;;PROGRAM INTERRUPT REQUEST REGISTER
DSWR=	177570	;;HARDWARE SWITCH REGISTER
DDISP=	177570	;;HARDWARE DISPLAY REGISTER

```

19 ;*GENERAL PURPOSE REGISTER DEFINITIONS

```

R0=	%0	;;GENERAL REGISTER
R1=	%1	;;GENERAL REGISTER
R2=	%2	;;GENERAL REGISTER
R3=	%3	;;GENERAL REGISTER
R4=	%4	;;GENERAL REGISTER
R5=	%5	;;GENERAL REGISTER

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57	000006	R6=	%6	:: GENERAL REGISTER
58	000007	R7=	%7	:: GENERAL REGISTER
59	000006	SP=	%6	:: STACK POINTER
60	000007	PC=	%7	:: PROGRAM COUNTER
61				
62		.*PRIORITY LEVEL DEFINITIONS		
63	000000	PR0=	0	:: PRIORITY LEVEL 0
64	000040	PR1=	40	:: PRIORITY LEVEL 1
65	000100	PR2=	100	:: PRIORITY LEVEL 2
66	000140	PR3=	140	:: PRIORITY LEVEL 3
67	000200	PR4=	200	:: PRIORITY LEVEL 4
68	000240	PR5=	240	:: PRIORITY LEVEL 5
69	000300	PR6=	300	:: PRIORITY LEVEL 6
70	000340	PR7=	340	:: PRIORITY LEVEL 7
71				
72		.*"SWITCH REGISTER" SWITCH DEFINITIONS		
73	100000	SW15=	100000	
74	040000	SW14=	40000	
75	020000	SW13=	20000	
76	010000	SW12=	10000	
77	004000	SW11=	4000	
78	002000	SW10=	2000	
79	001000	SW09=	1000	
80	000400	SW08=	400	
81	000200	SW07=	200	
82	000100	SW06=	100	
83	000040	SW05=	40	
84	000020	SW04=	20	
85	000010	SW03=	10	
86	000004	SW02=	4	
87	000002	SW01=	2	
88	000001	SW00=	1	
89		.EQUIV	SW09, SW9	
90		.EQUIV	SW08, SW8	
91		.EQUIV	SW07, SW7	
92		.EQUIV	SW06, SW6	
93		.EQUIV	SW05, SW5	
94		.EQUIV	SW04, SW4	
95		.EQUIV	SW03, SW3	
96		.EQUIV	SW02, SW2	
97		.EQUIV	SW01, SW1	
98		.EQUIV	SW00, SW0	
99				
100		.*DATA BIT DEFINITIONS (BIT00 TO BIT15)		
101	100000	BIT15=	100000	
102	040000	BIT14=	40000	
103	020000	BIT13=	20000	
104	010000	BIT12=	10000	
105	004000	BIT11=	4000	
106	002000	BIT10=	2000	
107	001000	BIT09=	1000	
108	000400	BIT08=	400	
109	000200	BIT07=	200	
110	000100	BIT06=	100	
111	000040	BIT05=	40	
112	000020	BIT04=	20	

K02

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SEQ 0008

```

113      000010      BIT03= 10
114      000004      BIT02= 4
115      000002      BIT01= 2
116      000001      BIT00= 1
117      .EQUIV      BIT09,BIT9
118      .EQUIV      BIT08,BIT8
119      .EQUIV      BIT07,BIT7
120      .EQUIV      BIT06,BIT6
121      .EQUIV      BIT05,BIT5
122      .EQUIV      BIT04,BIT4
123      .EQUIV      BIT03,BIT3
124      .EQUIV      BIT02,BIT2
125      .EQUIV      BIT01,BIT1
126      .EQUIV      BIT00,BIT0
127
128      ;*BASIC "CPU" TRAP VECTOR ADDRESSES
129      000004      ERRVEC= 4      ; TIME OUT AND OTHER ERRORS
130      000010      RESVEC= 10     ; RESERVED AND ILLEGAL INSTRUCTIONS
131      000014      TBITVEC= 14    ; "T" BIT
132      000014      TRTVEC= 14     ; TRACE TRAP
133      000014      BPTVEC= 14     ; BREAKPOINT TRAP (BPT)
134      000020      IOTVEC= 20     ; INPUT/OUTPUT TRAP (IOT) **SCOPE**
135      000024      PWRVEC= 24     ; POWER FAIL
136      000030      EMTVEC= 30     ; EMULATOR TRAP (EMT) **ERROR**
137      000034      TRAPVEC= 34    ; "TRAP" TRAP
138      000060      TKVEC= 60      ; TTY KEYBOARD VECTOR
139      000064      TPVEC= 64      ; TTY PRINTER VECTOR
140      000240      PIRGVEC= 240   ; PROGRAM INTERRUPT REQUEST VECTOR
141
142      ;*MED INSTR CODES
143      076600      MED= 076600    ; OPCODE
144
145      000022      RWHAMI= 022     ; READ WHAMI
146
147      000144      RFLAG= 144     ; READ FLAGS
148      000344      WFLAG= 344     ; WRITE FLAGS
149
150      ;*FLOATING POINT INTERRUPT VECTOR
151      000244      FPPVEC= 244
152
153      ;*FLOATING POINT REGISTER DEFINITIONS
154      000000      AC0= %0
155      000001      AC1= %1
156      000002      AC2= %2
157      000003      AC3= %3
158      000004      AC4= %4
159      000005      AC5= %5
160
161      ;*BIT PATTERNS FOR TESTS
162      052525      ALTP= 052525    ; 0101...01
163      125252      ALTN= 125252    ; 1010...10
164      007417      ALT4P= 007417   ; 0000111100001111
165      170360      ALT4N= 170360   ; 1111000011110000
166      177777      M1= 177777      ; 1111...11 MINUS ONE, ALL 1'S
167      100000      M0= 100000      ; 1000...00 MINUS ZERO
168      077777      LGP= 077777     ; 0111...11 LGST + NUM (1ST WD FLT )

```

```

169      177777      LGN=      17777      ; 1111...11 LGST - NUM (1ST WD FLT)
170      000200      SMP=      000200      ; +1*2**-128, SMLT + NUM (1ST WD FLT)
171      100200      SMN=      100200      ; -1*2**-128, SMLT - NUM (1ST WD FLT)
172      000177      ZXIMP=    000177      ; ZERO EXP, ALL 1-S MANT (1ST WD FLT)
173      100177      ZXIMN=    100177      ; ZERO EXP, ALL 1-S MANT (1ST WD FLT)
174      040200      FIP=      040200      ; +1.0E+0, 1ST WD FLT
175      140200      FIN=      140200      ; -1.0E+0, 1ST WD FLT
176
177      ;*FPS BIT PATTERNS
178      147757      FPS1=      147757      ; ALL BITS ON (READABLE)
179      000000      FPS0=      000000      ; ALL BITS OFF
180
181      ;*PSW BIT PATTERNS
182      177760      CCONLY=    177760      ; FOR BIC TO GET CC BITS ONLY
183
184      ;MISC
185      104117      ERROR117=    ERROR!117      ; FOR USE AS A LITERAL
186
187      .SBTTL TRAP CATCHER
188
189      .=0
190      ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
191      ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
192      ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
193      .=174
194      000174      000000      DISPREG: .WORD 0      ;; SOFTWARE DISPLAY REGISTER
195      000176      000000      SWREG: .WORD 0      ;; SOFTWARE SWITCH REGISTER
196      .SBTTL STARTING ADDRESS(ES)
197      000200      000137      003000      JMP 0#START ;; JUMP TO STARTING ADDRESS OF PROGRAM
198
199      .SBTTL ACT11 HOOKS
200
201      ;*****
202      ;HOOKS REQUIRED BY ACT11
203      .SSVPC=.      ;SAVE PC
204      .=46      SENDAD      ;;1)SET LOC.46 TO ADDRESS OF SENDAD IN .SEOP
205      000046      021016
206      .=52      .WORD 0      ;;2)SET LOC.52 TO ZERO
207      000052      000000
208      .SSVPC      ;RESTORE PC
209      .=1000
210      .SBTTL APT PARAMETER BLOCK
211
212      ;*****
213      ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
214      ;*****
215      .SX=.      ;SAVE CURRENT LOCATION
216      .=24      ;SET POWER FAIL TO POINT TO START OF PROGRAM
217      000024      000200      200      ;FOR APT START UP
218      .=44      ;POINT TO APT INDIRECT ADDRESS PNTR.
219      000044      001000      $APTHDR ;POINT TO APT HEADER BLOCK
220      .=.SX      ;RESET LOCATION COUNTER
221      ;*****
222      ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
223      ;INTERFACE SPEC.
224

```


M02

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SEQ 0010

225 001000
 226 001000 000000
 227 001002 001324
 228 001004 000001
 229 001006 000001
 230 001010 000000
 231 001012 000014
 232

SAPTHD:
 SHIBTS: .WORD 0
 SMAIL: .WORD 0
 STSTM: .WORD 1
 SPSTM: .WORD 1
 SUNITH: .WORD 0
 .WORD SETEND-SMAIL/2 ; ; LENGTH MAILBOX-ETABLE(WORDS)

;; TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
 ;; ADDRESS OF APT MAILBOX (BITS 0-15)
 ;; RUN TIM OF LONGEST TEST
 ;; RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
 ;; ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT

.SBTTL COMMON TAGS

```

*****
;THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
;USED IN THE PROGRAM.

```

.=1100

SCMTAG: ;:START OF COMMON TAGS

;:-----START OF CLEAR COMMON TAGS-----

```

;:-----START OF CLEAR COMMON TAGS-----
;:
;:WORD 0
;:CONTAINS THE TEST NUMBER
;:WORD 0
;:CONTAINS ERROR FLAG
;:WORD 0
;:CONTAINS SUBTEST ITERATION COUNT
;:WORD 0
;:CONTAINS SCOPE LOOP ADDRESS
;:WORD 0
;:CONTAINS SCOPE RETURN FOR ERRORS
;:WORD 0
;:CONTAINS TOTAL ERRORS DETECTED
;:WORD 0
;:CONTAINS ITEM CONTROL BYTE
;:WORD 1
;:CONTAINS MAX. ERRORS PER TEST
;:WORD 0
;:CONTAINS PC OF LAST ERROR INSTRUCTION
;:WORD 0
;:CONTAINS ADDRESS OF 'GOOD' DATA
;:WORD 0
;:CONTAINS ADDRESS OF 'BAD' DATA
;:WORD 0
;:CONTAINS 'GOOD' DATA
;:WORD 0
;:CONTAINS 'BAD' DATA
;:WORD 0
;:RESERVED--NOT TO BE USED
;:
;:WORD 0
;:AUTOMATIC MODE INDICATOR
;:BYTE 0
;:INTERRUPT MODE INDICATOR
;:
;:WORD 0

```

;:-----END OF CLEAR COMMON TAGS-----

```

;:-----END OF CLEAR COMMON TAGS-----
;:
;:WORD DSWR
;:ADDRESS OF SWITCH REGISTER
;:WORD DOISP
;:ADDRESS OF DISPLAY REGISTER
;:WORD 0
;:CONTAINS TEST NUMBER TO LOOP UPON
;:177560
;:TTY KBD STATUS
;:177562
;:TTY KBD BUFFER
;:177564
;:TTY PRINTER STATUS REG. ADDRESS
;:177566
;:TTY PRINTER BUFFER REG. ADDRESS
;:
;:BYTE 0
;:CONTAINS NULL CHARACTER FOR FILLS
;:BYTE 2
;:CONTAINS # OF FILLER CHARACTERS REQUIRED
;:BYTE 12
;:INSERT FILL CHARS. AFTER A "LINE FEED"
;:BYTE 0
;:"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
;:WORD 0
;:CONTAINS THE ADDRESS FROM
;:WHICH ($REG0) WAS OBTAINED
;:WORD 0
;:CONTAINS (($REGAD)+0)
;:WORD 0
;:CONTAINS (($REGAD)+2)
;:WORD 0
;:CONTAINS (($REGAD)+4)
;:WORD 0
;:CONTAINS (($REGAD)+6)
;:WORD 0
;:CONTAINS (($REGAD)+10)
;:WORD 0
;:CONTAINS (($REGAD)+12)
;:WORD 0
;:CONTAINS (($REGAD)+14)
;:WORD 0
;:CONTAINS (($REGAD)+16)
;:WORD 0
;:CONTAINS (($REGAD)+20)
;:WORD 0
;:CONTAINS (($REGAD)+22)
;:WORD 0
;:CONTAINS (($REGAD)+24)
;:WORD 0
;:CONTAINS (($REGAD)+26)
;:WORD 0
;:CONTAINS (($REGAD)+30)
;:WORD 0
;:CONTAINS (($REGAD)+32)

```



```

289 001224 000000 $REG16: .WORD 0 ::CONTAINS ((SREGAD)+34)
290 001226 000000 $REG17: .WORD 0 ::CONTAINS ((SREGAD)+36)
291 001230 000000 STMP0: .WORD 0 ::USER DEFINED
292 001232 000000 STMP1: .WORD 0 ::USER DEFINED
293 001234 000000 STMP2: .WORD 0 ::USER DEFINED
294 001236 000000 STMP3: .WORD 0 ::USER DEFINED
295 001240 000000 STMP4: .WORD 0 ::USER DEFINED
296 001242 000000 STMP5: .WORD 0 ::USER DEFINED
297 001244 000000 STMP6: .WORD 0 ::USER DEFINED
298 001246 000000 STMP7: .WORD 0 ::USER DEFINED
299 001250 000000 STMP10: .WORD 0 ::USER DEFINED
300 001252 000000 STMP11: .WORD 0 ::USER DEFINED
301 001254 000000 STMP12: .WORD 0 ::USER DEFINED
302 001256 000000 STMP13: .WORD 0 ::USER DEFINED
303 001260 000000 STMP14: .WORD 0 ::USER DEFINED
304 001262 000000 STMP15: .WORD 0 ::USER DEFINED
305 001264 000000 STMP16: .WORD 0 ::USER DEFINED
306 001266 000000 STMP17: .WORD 0 ::USER DEFINED
307 001270 000000 STMP20: .WORD 0 ::USER DEFINED
308 001272 000000 STMP21: .WORD 0 ::USER DEFINED
309 001274 000000 STMP22: .WORD 0 ::USER DEFINED
310 001276 000000 STMP23: .WORD 0 ::USER DEFINED
311 001300 000000 STMP24: .WORD 0 ::USER DEFINED
312 001302 000000 STMP25: .WORD 0 ::USER DEFINED
313 001304 000000 STMP26: .WORD 0 ::USER DEFINED
314 001306 000000 STMP27: .WORD 0 ::USER DEFINED
315 001310 000000 STIMES: 0 ::MAX. NUMBER OF ITERATIONS
316 001312 000000 SESCAPE: 0 ::ESCAPE ON ERROR ADDRESS
317 001314 177607 000377 $BELL: .ASCIIZ <207><377><377> ::CODE FOR BELL
318 001320 077 $QUES: .ASCII /?/ ::QUESTION MARK
319 001321 015 $CRLF: .ASCII <15> ::CARRIAGE RETURN
320 001322 000012 $LF: .ASCIIZ <12> ::LINE FEED
321 ::*****
322 .SBTTL APT MAILBOX-ETABLE
323 ::*****
324 ::*****
325 .EVEN
326 001324 $MAIL: .WORD 0 ::APT MAILBOX
327 001324 000000 $MSGTY: .WORD 0 ::MESSAGE TYPE CODE
328 001326 000000 $FATAL: .WORD 0 ::FATAL ERROR NUMBER
329 001330 000000 $TESTN: .WORD 0 ::TEST NUMBER
330 001332 000000 $PASS: .WORD 0 ::PASS COUNT
331 001334 000000 $DEVCT: .WORD 0 ::DEVICE COUNT
332 001336 000000 $UNIT: .WORD 0 ::I/O UNIT NUMBER
333 001340 000000 $MSGAD: .WORD 0 ::MESSAGE ADDRESS
334 001342 000000 $MSGLG: .WORD 0 ::MESSAGE LENGTH
335 001344 $ETABLE: .WORD 0 ::APT ENVIRONMENT TABLE
336 001344 000 $ENV: .BYTE 0 ::ENVIRONMENT BYTE
337 001345 000 $ENVN: .BYTE 0 ::ENVIRONMENT MODE BITS
338 001346 000000 $SWREG: .WORD 0 ::APT SWITCH REGISTER
339 001350 000000 $USWR: .WORD 0 ::USER SWITCHES
340 001352 000000 $CPUOP: .WORD 0 ::CPU TYPE, OPTIONS
341 ::
342 ::
343 ::
344 ::

```

BITS 15-11=CPU TYPE
 11/04=01, 11/05=02, 11/20=03, 11/40=04, 11/45=05
 11/70=06, PDQ=07, Q=10
 BIT 10=REAL TIME CLOCK

C03

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SEQ 0013

345
346
347 001354
348

;*
;*
\$ETEND:
.MEXIT

BIT 9=FLOATING POINT PROCESSOR
BIT 8=MEMORY MANAGEMENT

.SBTTL ERROR POINTER TABLE

SERRTB:

;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
 ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
 ;*LOCATION SITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
 ;*NOTE1: IF SITEMB IS 0 THE ONLY PERTINENT DATA IS (\$ERRPC).
 ;*NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

;* EM ::POINTS TO THE ERROR MESSAGE
 ;* DH ::POINTS TO THE DATA HEADER
 ;* DT ::POINTS TO THE DATA
 ;* DF ::POINTS TO THE DATA FORMAT
 ;*NOTE: ERROR VECTOR TABLE (SERRTB) HAS BEEN MODIFIED,
 ;* ELIMINATING UNUSED VALUE FOR DATA FORMAT POINTER.
 ;* ERROR TYPING ROUTINE HAS ALSO BEEN MODIFIED
 ;* ACCORDINGLY.

***** SPECIFIC TEST VECTORS *****

368	001354	026331	030523	033126	EMV001:	.WORD	EMF,DHA,DTB	:	FPS RIPPLE 1
369	001362	026366	030523	033126	EMV002:	.WORD	EMG,DHA,DTB	:	FPS RIPPLE 0
370	001370	026423	030541	033122	EMV003:	.WORD	EMH,DHB,DTA	:	SETF
371	001376	026462	030541	033122	EMV004:	.WORD	EMI,DHB,DTA	:	SETD
372	001404	026517	030541	033122	EMV005:	.WORD	EMJ,DHB,DTA	:	SETI
373	001412	026556	030541	033122	EMV006:	.WORD	EMK,DHB,DTA	:	SETL
374					*****		SRC/DST ADDR MODES VECTORS	*****	
375	001420	026613	031273	033412	EMV007:	.WORD	EML,DHO,DTT	:	M05-M77 RESULT
376	001426	027005	031362	033440	EMV010:	.WORD	EMN,DHO,DTV	:	M13-M35 DSTREG
377	001434	026613	031362	033440	EMV011:	.WORD	EML,DHO,DTV	:	M13-M35 RESULT
378	001442	026703	031324	033424	EMV012:	.WORD	EMM,DHP,DTU	:	M21-M53 SRCREG
379	001450	027005	031324	033424	EMV013:	.WORD	EMN,DHP,DTU	:	M21-M53 DSTREG
380	001456	026613	031324	033424	EMV014:	.WORD	EML,DHP,DTU	:	M21-M53 RESULT, M63-M71 RESULT
381	001464	026703	031160	033354	EMV015:	.WORD	EMM,DHL,DTQ	:	M30-M67 SRCREG
382	001472	026613	031160	033354	EMV016:	.WORD	EML,DHL,DTQ	:	M30-M67 RESULT
383	001500	026703	031130	033342	EMV017:	.WORD	EMM,DHK,DTP	:	M42-M00 SRCREG
384	001506	026613	031130	033342	EMV020:	.WORD	EML,DHK,DTP	:	M42-M00 RESULT
385	001514	026703	031242	033400	EMV021:	.WORD	EMM,DHN,DTS	:	M54-M37 SRCREG
386	001522	026613	031242	033400	EMV022:	.WORD	EML,DHN,DTS	:	M54-M37 RESULT, M77-M24 RESULT
387	001530	026613	031211	033366	EMV023:	.WORD	EML,DHM,DTR	:	M72-M27 RESULT
388	001536	027005	031105	033332	EMV024:	.WORD	EMN,DHJ,DTO	:	M27-M43 DSTREG
389	001544	026613	031105	033332	EMV025:	.WORD	EML,DHJ,DTO	:	M27-M43 RESULT
390	001552	026613	031062	033322	EMV026:	.WORD	EML,DHI,DTN	:	M37-M62 RESULT, M67-M12 RESULT
391	001560	027005	031242	033400	EMV027:	.WORD	EMN,DHI,DTN	:	M77-M24 DSTREG

***** VECTOR FOR CFCC TEST *****

392					*****		EMO,DHA,DTB	:	CFCC INSTR
393	001566	027107	030523	033126	EMV030:	.WORD	EMO,DHA,DTB	:	CFCC INSTR
394					*****		FSRC/FDST D ADDR MODES VECTORS	*****	
395	001574	027165	031523	033502	EMV031:	.WORD	EMP,DHT,DTY	:	M15-M67 RESULT, M67-M25 RESULT
396	001602	027261	031457	033466	EMV032:	.WORD	EMQ,DHS,DTX	:	M44-M37 SRCREG
397	001610	027165	031457	033466	EMV033:	.WORD	EMP,DHS,DTX	:	M44-M37 RESULT
398	001616	027370	032174	033644	EMV034:	.WORD	EMR,DHAA,DTAF	:	M75-M34 DSTREG
399	001624	027165	032174	033644	EMV035:	.WORD	EMP,DHAA,DTAF	:	M75-M34 RESULT
400	001632	027370	031523	033502	EMV036:	.WORD	EMR,DHT,DTY	:	M67-M25 DSTREG
401	001640	027261	031567	033516	EMV037:	.WORD	EMQ,DHU,DTZ	:	M20-M13 SRCREG
402	001646	027165	031567	033516	EMV040:	.WORD	EMP,DHU,DTZ	:	M20-M13 RESULT
403	001654	027261	032112	033624	EMV041:	.WORD	EMQ,DHZ,DTAE	:	M51-M77 SRCREG
404	001662	027165	032112	033624	EMV042:	.WORD	EMP,DHZ,DTAE	:	M51-M77 RESULT

405	001670	027165	031711	033552	EMV043: .WORD	EMP, DHM, DTAB	: M27-M70 RESULT
406	001676	027165	032037	033606	EMV044: .WORD	EMP, DHY, DTAD	: M77-M64 RESULT
407	001704	027261	031764	033570	EMV045: .WORD	EMQ, DHX, DTAC	: M32-M27 SACREG
408	001712	027165	031764	033570	EMV046: .WORD	EMP, DHX, DTAC	: M32-M27 RESULT, M00-M52 RESULT
409	001720	027370	031640	033534	EMV047: .WORD	EMR, DHV, DTAA	: M63-M41 DSTREG
410	001726	027165	031640	033534	EMV050: .WORD	EMP, DHV, DTAA	: M63-M41 RESULT
411	001734	027165	031420	033454	EMV051: .WORD	EMP, DHR, DTH	: M37-M03 RESULT
412	001742	027370	031764	033570	EMV052: .WORD	EMR, DHX, DTAC	: M00-M52 DSTREG
413					*****	FSRC/FDST F ADDR	MODES VECTORS *****
414	001750	027702	032371	033716	EMV053: .WORD	EMU, DHAD, DTAI	: M12-M45 DSTREG
415	001756	027477	032371	033716	EMV054: .WORD	EMS, DHAD, DTAI	: M12-M45 RESULT
416	001764	027573	032505	033750	EMV055: .WORD	ENT, DHAF, DTAK	: M34-M60 SACREG
417	001772	027477	032505	033750	EMV056: .WORD	EMS, DHAF, DTAK	: M34-M60 RESULT
418	002000	027573	032776	034050	EMV057: .WORD	ENT, DHAI, DTAO	: M50-M32 SACREG
419	002006	027702	032776	034050	EMV060: .WORD	EMU, DHAI, DTAO	: M50-M32 DSTREG
420	002014	027477	032776	034050	EMV061: .WORD	EMS, DHAI, DTAO	: M50-M32 RESULT
421	002022	027477	032563	033770	EMV062: .WORD	EMS, DHAG, DTAL	: M72-M11 RESULT
422	002030	027702	032326	033702	EMV063: .WORD	EMU, DHAC, DTAH	: M37-M23 DSTREG
423	002036	027477	032326	033702	EMV064: .WORD	EMS, DHAC, DTAH	: M37-M23 RESULT, M23-M37 RESULT
424	002044	027477	032717	034030	EMV065: .WORD	EMS, DHAI, DTAN	: M77-M75 RESULT
425	002052	027573	032326	033702	EMV066: .WORD	ENT, DHAC, DTAH	: M23-M37 SACREG
426	002060	027573	032641	034010	EMV067: .WORD	ENT, DHAN, DTAN	: M45-M54 SACREG
427	002066	027702	032641	034010	EMV070: .WORD	EMU, DHAN, DTAN	: M45-M54 DSTREG
428	002074	027477	032641	034010	EMV071: .WORD	EMS, DHAN, DTAN	: M45-M54 RESULT
429	002102	027477	032441	033734	EMV072: .WORD	EMS, DHAE, DTAJ	: M27-M77 RESULT
430	002110	027477	033062	033134	EMV073: .WORD	EMS, DHAK, DTC	: M67-M67 RESULT, M02-M27 RESULT
431	002116	027477	032263	033666	EMV074: .WORD	EMS, DHAB, DTAG	: M61-M01 RESULT
432					*****	FP ACC ALL THERE ?	VECTOR *****
433	002124	026260	030550	033134	EMV075: .WORD	EME, DHC, DTC	: FP AC ALL THERE ?
434					*****	FPS ERROR VECTORS	*****
435	002132	026051	030606	033146	EMV076: .WORD	EMA, DHG, DTD	: FPS - ABS, NEG, CLR, TST F
436	002140	026051	030606	033154	EMV077: .WORD	EMA, DHG, DTE	: FPS - LDD/STD, ABS, NEG, CLR, TST D
437	002146	026051	030606	033162	EMV100: .WORD	EMA, DHG, DTF	: FPS - LDD/LDF/STD
438					*****	FEC/FEA ERROR VECTORS	*****
439	002154	026075	030622	033170	EMV101: .WORD	EMB, DHE, DTG	: FEC/FEA - ABS, NEG, CLR, TST F
440	002162	026075	030622	033202	EMV102: .WORD	EMB, DHE, DTH	: FEC/FEA - LDD/STD, ABS, ..., CLR D
441	002170	026075	030622	033214	EMV103: .WORD	EMB, DHE, DTI	: FEC/FEA - LDD/LDF/STD
442					*****	RESULT VECTORS	*****
443	002176	030011	030720	033240	EMV104: .WORD	EMV, DHG, DTK	: RESULT - LDD/STD
444	002204	030047	030720	033262	EMV105: .WORD	EMW, DHG, DTL	: RESULT - LDD/LDF/STD
445	002212	026125	030662	033226	EMV106: .WORD	EMC, DHF, DTJ	: RESULT - ABSF
446	002220	026125	030720	033240	EMV107: .WORD	EMC, DHG, DTK	: RESULT - ABSD
447	002226	030111	030662	033226	EMV110: .WORD	EMX, DHF, DTJ	: RESULT - NEGF
448	002234	030111	030720	033240	EMV111: .WORD	EMX, DHG, DTK	: RESULT - NEG0
449	002242	030245	030662	033226	EMV112: .WORD	EMZ, DHF, DTJ	: RESULT - CLRF
450	002250	030245	030720	033240	EMV113: .WORD	EMZ, DHG, DTK	: RESULT - CLRD
451	002256	030157	030662	033226	EMV114: .WORD	EMY, DHF, DTJ	: RESULT - TSTF
452	002264	030157	030720	033240	EMV115: .WORD	EMY, DHG, DTK	: RESULT - TSTD
453					*****	ILLEGAL TRAP CATCHER VECTOR	*****
454	002272	026173	031016	033304	EMV116: .WORD	EMD, DHM, DTM	: ILLEGAL TRAP CATCHER
455					*****	PC MODE 2 WRONG INCRE VECTORS	*****
456	002300	030313	033120	034072	EMV117: .WORD	EMAA, DHAL, DTAP	: +0
457	002306	030350	033120	034072	EMV120: .WORD	EMAB, DHAL, DTAP	: +4
458	002314	030421	033120	034072	EMV121: .WORD	EMAC, DHAL, DTAP	: +6
459	002322	030465	033120	034072	EMV122: .WORD	EMAD, DHAL, DTAP	: +10

F03

FPU BASIC INSTR TESTS MACY11 27(1006)
 DQFPA8.P11 19-APR-77 13:36

25-APR-77 09:12 PAGE 12
 PROGRAM DEFINED COMMON TAGS

SEQ 0016

```

460      .SBTTL PROGRAM DEFINED COMMON TAGS
461      :*VARIABLES
462      FPS: .WORD 0      ; FPS STORED HERE AFTER STFPS
463      FEC: .WORD 0      ; FEC STORED HERE AFTER STST
464      FEA: .WORD 0      ; FEA STORED HERE AFTER STST
465      FPP0PC: .WORD 0    ; OLD PC SAVED HERE AFTER TRAP
466      FPP0PS: .WORD 0    ; OLD PS SAVED HERE AFTER TRAP
467      FPP0SP: .WORD 0    ; SP AFTER TRAP
468      EXPFEA: .WORD 0    ; EXPECTED FEA
469
470      :*REGISTER CONTENTS, AT ERROR, STORED HERE
471      EREG0: .WORD 0
472      EREG1: .WORD 0
473      EREG2: .WORD 0
474      EREG3: .WORD 0
475      EREG4: .WORD 0
476      EREG5: .WORD 0
477      EREG6: .WORD 0
478      EREG7: .WORD 0
479
480      :*CONSTANTS
481      002366 052525 177777 125252 PREVAC: .WORD ALTP,M1,ALTN,0 ; PREV CONTENTS OF FLOAT AC
482      002374 000000
483
484
485      :*MESSAGES FOR BEGIN PROGRAM/START OF PASS/ETC
486      002376 005015 005012 042115 BGNMES: .ASCII <CR><LF><LF><LF>"MD-11-DQFPA-"
487      002404 030455 026461 050504
488      002412 050106 026501
489      002416 027102      .ASCII "B."
490      002420 027056      .ASCII "..."
491      002422 042120 026520 030461      .ASCIIZ "PDP-11/6X F.P.U. BASIC INSTRUCTION TESTS"<CR><LF>
492      002430 033057 020130 027106
493      002436 027120 027125 041040
494      002444 051501 041511 044440
495      002452 051516 051124 041525
496      002460 044524 047117 052040
497      002466 051505 051524 005015
498      002474      000
499      002475      015 050012 051501 NWPAS1: .ASCIIZ <CR><LF>"PASS #"
500      002502 020123 000043
  
```

```

501 .SBTTL START OF PASS ROUTINE
502
503
504 ;;*****
505 .ENABL AMA ; BEGIN ASSEMBLING RELATIVE REFERENCES AS ABSOLUTE
506 ;;*****
507
508 003000 START:
509 .SBTTL INITIALIZE THE COMMON TAGS
510 ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
511 003000 012706 001100 MOV $CMTAG,R6 ; FIRST LOCATION TO BE CLEARED
512 003004 005026 CLR (R6)+ ; CLEAR MEMORY LOCATION
513 003006 022706 001144 CMP $SWR,R6 ; DONE?
514 003012 001374 BNE -6 ; LOOP BACK IF NO
515 003014 012706 001100 MOV $STACK,SP ; SETUP THE STACK POINTER
516 ;;INITIALIZE A FEW VECTORS
517 003020 012737 023664 000020 MOV $SCOPE,$IOTVEC ; IOT VECTOR FOR SCOPE ROUTINE
518 003026 012737 000340 000022 MOV $340,$IOTVEC+2 ; LEVEL 7
519 003034 012737 024142 000030 MOV $ERROR,$EMTVEC ; EMT VECTOR FOR ERROR ROUTINE
520 003042 012737 000340 000032 MOV $340,$EMTVEC+2 ; LEVEL 7
521 003050 012737 025576 000034 MOV $TRAP,$TRAPVEC ; TRAP VECTOR FOR TRAP CALLS
522 003056 012737 000340 000036 MOV $340,$TRAPVEC+2 ; LEVEL 7
523 003064 012737 025644 000024 MOV $SPWRON,$PWVEC ; POWER FAILURE VECTOR
524 003072 012737 000340 000026 MOV $340,$PWVEC+2 ; LEVEL 7
525 003100 013737 020766 02076J MOV $ENDCT,$EOPCT ; SETUP END-OF-PROGRAM COUNTER
526 003106 005037 001310 CLR $TIMES ; INITIALIZE NUMBER OF ITERATIONS
527 003112 005037 001312 CLR $ESCAPE ; CLEAR THE ESCAPE ON ERROR ADDRESS
528 003116 012737 000001 001120 MOV $1,$SERMAX ; ALLOW ONE ERROR PER TEST
529 003124 012737 003124 00111J MOV $.,$LPADR ; INITIALIZE THE LOOP ADDRESS FOR SCOPE
530 003132 012737 003132 001112 MOV $.,$LPERR ; SETUP THE ERROR LOOP ADDRESS
531 ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
532 ;;EQUAL TO A "-1" SETUP FOR A SOFTWARE SWITCH REGISTER.
533 003140 013746 000004 MOV $ERRVEC,-(SP) ; SAVE ERROR VECTOR
534 003144 012737 003200 000004 MOV $64,$ERRVEC ; SET UP ERROR VECTOR
535 003152 012737 177570 001144 MOV $DSWR,$SWR ; SETUP FOR A HARDWARE SWICH REGISTER
536 003160 012737 177570 001146 MOV $DDISP,$DISPLAY ; AND A HARDWARE DISPLAY REGISTER
537 003166 022777 177777 175750 CMP $-1,$SWR ; TRY TO REFERENCE HARDWARE SWR
538 003174 001012 BNE 66$ ; BRANCH IF NO TIMEOUT TRAP OCCURRED
539 ; AND THE HARDWARE SWR IS NOT = -1
540 003176 000403 BR 65$ ; BRANCH IF NO TIMEOUT
541 003200 012716 003206 64$: MOV $65$,(SP) ; SET UP FOR TRAP RETURN
542 003204 000002 RTI
543 003206 012737 000176 001144 65$: MOV $SWREG,$SWR ; POINT TO SOFTWARE SWR
544 003214 012737 000174 001146 MOV $DISPREG,$DISPLAY
545 003222 012637 000004 66$: MOV (SP)+,$ERRVEC ; RESTORE ERROR VECTOR
546
547 003226 005037 001332 CLR $PASS ; CLEAR PASS COUNT
548 003232 132737 000200 001345 BITB $APTSIZE,$ENVM ; TEST USER SIZE UNDER APT
549 003240 001403 BEQ 67$ ; YES,USE NON-APT SWITCH
550 003242 012737 001346 001144 MOV $SSWREG,$SWR ; NO,USE APT SWITCH REGISTER
551 003250 67$:
552
553 ; SET UP FPP UNEXPECTED TRAP CATCHER - - - - -
554 003250 012737 023624 000244 MOV $FPPILT,$FPPVEC ; NEW PC AT FPP TRAP
555 003256 005037 000246 CLR $FPPVEC+2 ; NEW PS AT FPP TRAP
556

```


H03

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 14
 DQFPAB.P11 19-APR-77 13:36 INITIALIZE THE COMMON TAGS

SEQ 0018

```

557 003262 104401 002376          TYPE      ,BGNMES          ; ID MESSAGE AT START
558
559 ;////////////////////////////////////
560 ; MESSAGE ON WHETHER OR NOT HFP UNIT IS PRESENT
561
562 003266 076600 000022          MED      ,RWHAMI          ;WHAMI INTO RO
563 003272 032700 000020          BIT      ,BIT04,RO          ;IS THERE A HFP UNIT ?
564 003276 001403              BEQ      70$              ;NO, BR
565 003300 104401 003314          TYPE      ,68$              ;INDICATE FP11-E PRESENT
566 003304 000453              BR      NEWPAS              ;GO FOR SUBPASS INIT
567 003306 104401 003354          70$: TYPE      ,69$              ;INDICATE NO FP11-E
568 003312 000450              BR      NEWPAS              ;GO FOR SUBPASS INIT
569
570 003314 005015 020052 050106 68$: .ASCIZ  <15><12>""* FP11-E HFP UNIT PRESENT *""<15><12>
571 003322 030461 042455 044040
572 003330 050106 052440 044516
573 003336 020124 051120 051505
574 003344 047105 020124 006452
575 003352 000012
576 003354 005015 020052 047516 69$: .ASCIZ  <15><12>""* NO FP11-E HFP UNIT - ALL TESTS WFP ONLY *""<15><12>
577 003362 043040 030520 026461
578 003370 020105 043110 020120
579 003376 047125 052111 026440
580 003404 040440 046114 052040
581 003412 051505 051524 053440
582 003420 050106 047440 046116
583 003426 020131 006452 000012
584
585 .EVEN
586 ;////////////////////////////////////
587
588 ;*****
589 ;NEW PASS ENTERS HERE
590 ;*****
591
592 003434 012706 001100          NEWPAS: MOV      #STACK,SP          ;RESET STACK PTR
593
594 003440 032777 010000 175476          BIT      #BIT12,SWR          ;INHIBIT STATUS TYPEOUTS ?
595 003446 001011              BNE      SUBPAS              ;BR IF YES
596
597 003450 104401 002475          TYPE      ,NWPAS1          ;"PASS #"
598 003454 013746 001332          MOV      $PASS,-(SP)          ;PASS COUNT INTO ...
599 003460 005216              INC      (SP)              ;1-N RANGE
600 003462 104403              TYP0S          ;TYPE OCTAL
601 003464 006 000              .BYTE      6,0              ;6 DIGITS, NO LEADING ZEROS
602 003466 104401 001321          TYPE      ,$CRLF          ;END THE LINE
603
604
605 ;*****
606 ;NEW SUBPASS ENTERS HERE
607 ;*****
608
609 003472 012706 001100          SUBPAS: MOV      #STACK,SP          ;RESET SP FOR INSURANCE
610
611 003476 076600 000022          MED      ,RWHAMI          ;GET WHAMI INTO RO
612

```

613	003502	032700	000020		BIT	#BIT04,RO	;I=HFP PRESENT, O=NO
614	003506	001430			BEQ	20\$	;IF NO HFP, TEST WARM ONLY
615							
616	003510	076600	000144		MED	,RFLAG	;GET FLAGS INTO RO
617							
618	003514	032777	000002	175422	BIT	#SW01,JSWR	;SW01: I=HFP OR WFP TEST ONLY
619	003522	001413			BEQ	1\$	;O=ALTERNATE HFP/WFP PER PASS
620							
621	003524	032777	000001	175412	BIT	#SW00,JSWR	;SW00: I=HFP ONLY
622	003532	001403			BEQ	2\$	;O=HFP ONLY
623	003534	042700	010000		BIC	#BIT12,RO	;CLEAR HFP ENABLE FLAG<5> FOR WFP
624	003540	000402			BR	3\$	
625	003542	052700	010000	2\$:	BIS	#BIT12,RO	;SET HFP ENABLE FLAG<5> FOR HFP
626	003546	076600	000344	3\$:	MED	,WFLAG	;REWRITE FLAGS
627							
628	003552	032700	010000	1\$:	BIT	#BIT12,RO	;TEST WHO'S ENABLED: HOT, WARM
629	003556	001404			BEQ	20\$	;SET APPROPRIATE HEADER:
630							
631	003560	012737	026034	024406	19\$: MOV	#ASCHOT,HOTWARM	; "HOT: "
632	003566	000403			BR	21\$	
633	003570	012737	026042	024406	20\$: MOV	#ASCWARM,HOTWARM	; "WARM: "
634	003576				21\$:		

J03

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T1 TEST OF FPS REGISTER BY RIPPLING A 1

SEQ 0020

```

635
636
637
638 003576 000004
639 003600 012700 000001
640 003604 012737 003612 001112
641
642 003612 010037 001170
643 003616 042737 000020 001170
644 003624 170137 001170
645 003630 042737 030000 001170
646 003636 170237 001172
647 003642 023737 001170 001172
648 003650 001401
649 003652 104001
650 003654 000241
651 003656 006100
652 003660 103354
653
654
655
656
657
658
659
660 003662 000004
661 003664 012700 177776
662 003670 012737 003676 001112
663
664 003676 010037 001170
665 003702 042737 000020 001170
666 003710 170137 001170
667 003714 042737 030000 001170
668 003722 170237 001172
669 003726 023737 001170 001172
670 003734 001401
671 003736 104002
672 003740 000261
673 003742 006100
674 003744 103754

;*****
;TEST 1 TEST OF FPS REGISTER BY RIPPLING A 1
;*****
TST1: SCOPE
      MOV #BIT00,RO ; INITIAL PATTERN
      MOV #1$,SLPERR ; ERROR LOOPING RETURN
1$:   MOV RO,$REG0 ; EDIT PATTERN SO BIT 4 OF FPS ( FMM )
      BIC #BIT04,$REG0 ; WILL ALWAYS BE OFF DURING TEST
      LDFPS $REG0 ; LOAD FPS
      BIC #BIT13!BIT12,$REG0 ; BITS 13 AND 12 ALWAYS READ 0
      STFPS $REG1 ; STORE FPS
      CMP $REG0,$REG1 ; LOAD/STORE WORK ?
      BEQ 2$ ; YES
      ERROR 1 ; NO - ERROR RETURN
2$:   CLC ; ROTATE IN A 0
      ROL RO ; SHIFT PATTERN 1 POSITION LEFT
      BCC 1$ ; CONT IF NOT YET FINISHED

;*****
;TEST 2 TEST OF FPS REGISTER BY RIPPLING A 0
;*****
TST2: SCOPE
      MOV #1CBIT00,RO ; INITIAL PATTERN
      MOV #1$,SLPERR ; ERROR LOOPING RETURN
1$:   MOV RO,$REG0 ; EDIT PATTERN SO BIT 4 OF FPS ( FMM )
      BIC #BIT04,$REG0 ; WILL ALWAYS BE OFF DURING TEST
      LDFPS $REG0 ; LOAD FPS
      BIC #BIT13!BIT12,$REG0 ; BITS 13 AND 12 ALWAYS READ 0
      STFPS $REG1 ; STORE FPS
      CMP $REG0,$REG1 ; LOAD/STORE WORK ?
      BEQ 2$ ; YES
      ERROR 2 ; NO - ERROR RETURN
2$:   SEC ; ROTATE IN A 1
      ROL RO ; SHIFT PATTERN 1 POSITION LEFT
      BCS 1$ ; CONT IF NOT YET FINISHED

```

K03

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 17
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T3 TEST OF SETF INSTRUCTION

SEQ 0021

675
676
677
678 003746 000004
679 003750 170127 147757
680 003754 170001
681 003756 170237 001170
682 003762 022737 147557 001170
683 003770 001401
684 003772 104003
685 003774

```

*****
:TEST 3      TEST OF SETF INSTRUCTION
*****
TST3:  SCOPE          ; INITIAL PATTERN
        LDFPS         #FPS1      ; TEST IT
        SETF          ; GET NEW FPS
        STFPS         $REG0      ; DID SETF CLEAR FPS BIT 7 ?
        CMP           #FPS1&CBIT07,$REG0
        BEQ           1$
        ERROR         3
1$:      NO - ERROR
        YES - NEXT TEST

```

686
687
688
689
690
691
692
693
694 003774 000004
695 003776 170127 000000
696 004002 170011
697 004004 170237 001170
698 004010 022737 000200 001170
699 004016 001401
700 004020 104004
701 004022

```

*****
:TEST 4      TEST OF SETD INSTRUCTION
*****
TST4:  SCOPE          ; INITIAL PATTERN
        LDFPS         #FPS0      ; TEST IT
        SETD          ; GET NEW FPS
        STFPS         $REG0      ; DID SETD SET FPS BIT 7 ?
        CMP           #FPS0!BIT07,$REG0
        BEQ           1$
        ERROR         4
1$:      NO - ERROR
        YES - NEXT TEST

```

702
703
704
705
706
707
708
709
710 004022 000004
711 004024 170127 147757
712 004030 170002
713 004032 170237 001170
714 004036 022737 147657 001170
715 004044 001401
716 004046 104005
717 004050

```

*****
:TEST 5      TEST OF SETI INSTRUCTION
*****
TST5:  SCOPE          ; INITIAL PATTERN
        LDFPS         #FPS1      ; TEST IT
        SETI          ; GET NEW FPS
        STFPS         $REG0      ; DID SETI CLEAR FPS BIT 6 ?
        CMP           #FPS1&CBIT06,$REG0
        BEQ           1$
        ERROR         5
1$:      NO - ERROR
        YES - NEXT TEST

```

718
719
720
721
722
723
724
725
726 004050 000004
727 004052 170127 000000
728 004056 170012
729 004060 170237 001170
730 004064 022737 000100 001170

```

*****
:TEST 6      TEST OF SETL INSTRUCTION
*****
TST6:  SCOPE          ; INITIAL PATTERN
        LDFPS         #FPS0      ; TEST IT
        SETL          ; GET NEW FPS
        STFPS         $REG0      ; DID SETL SET FPS BIT 6 ?
        CMP           #FPS0!BIT06,$REG0

```


L03

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 18
DQFPAB.P11 19-APR-77 13:36 T6 TEST OF SETL INSTRUCTION

SEQ 0022

731 004072 001401
732 004074 104006
733 004076
734

15: BEQ 15
ERROR 6

: NO - ERROR
: YES - NEXT TEST
:

M03

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 19
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T6 TEST OF SETL INSTRUCTION

SEQ 0023

```

735
736
737
738
739
740
741
742
743 004076 000004
744 004100 016767 000036 175062
745
746 004106 016705 175056
747 004112 170105
748
749 004114 012767 001172 175052
750 004122 170277 175046
751
752 004126 026767 175036 175036
753 004134 001401
754 004136 104007
755 004140
756
757 004140 000401
758
759 004142 105252
760
761
762
763
764
765 004144 000004
766 004146 016767 000050 175014
767
768 004154 012703 001170
769 004160 170113
770
771 004162 012767 001172 175004
772 004170 012705 001174
773 004174 170235
774
775 004176 020527 001176
776 004202 001401
777 004204 104010
778 004206
779
780 004206 026767 174756 174756
781 004214 001401
782 004216 104011
783 004220
784
785 004220 000401
786
787 004222 042505
788
789
790

```

```

;;*****
;.DSABL AMA ; ASSEMBLE ALL REFERENCES AS THEY ARE PRINTED
;;*****

;;*****
;TEST 7 TEST OF LOAD-SRC MODE-0, STORE-DST MODE-7(PC)
;;*****
TST7: SCOPE
      MOV ADDR1,$REG0 ; GET TEST PATTERN
      MOV $REG0,R5 ; DATA
      LDFPS R5 ; M0-R5
      MOV #$REG1,$REG2 ; ADDR(DEST)
      STFPS @($REG2) ; M7-R7
      CMP $REG0,$REG1 ; LOAD/STORE WORK?
      BEQ 64$ ;
      ERROR 7 ; NOT EQUAL, SIGNAL ERROR
64$:
      BR TST10 ;;
ADDR1: .WORD 105252 ; TEST PATTERN

;;*****
;TEST 10 TEST OF LOAD-SRC MODE-1, STORE-DST MODE-3
;;*****
TST10: SCOPE
      MOV ADDR2,$REG0 ; GET TEST PATTERN
      MOV #$REG0,R3 ; ADDR(DATA)
      LDFPS (R3) ; M1-R3
      MOV #$REG1,$REG2 ; ADDR(DEST)
      MOV #$REG2,R5 ; ADDR(ADDR(DEST))
      STFPS @($R5)+ ; M3-R5
      CMP R5,$REG2+2 ; WAS DST ADDR REG INCRE RIGHT AMOUNT?
      BEQ 64$ ;
      ERROR 10 ; NOT EQUAL, SIGNAL ERROR
64$:
      CMP $REG0,$REG1 ; LOAD/STORE WORK?
      BEQ 65$ ;
      ERROR 11 ; NOT EQUAL, SIGNAL ERROR
65$:
      BR TST11 ;;
ADDR2: .WORD 042505 ; TEST PATTERN

;;*****

```


N03

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 20
 DQFPAB.P11 19-APR-77 13:36

T11 TEST OF LOAD-SRC MODE-2, STORE-DST MODE-5

SEQ 0024

```

791 ;*TEST 11 TEST OF LOAD-SRC MODE-2, STORE-DST MODE-5
792 ;*****
793 004224 000004 000060 174734 TST11: SCOPE
794 004226 016767 000060 174734 MOV ADDR3,$REG0 ; GET TEST PATTERN
795 004234 012701 001170 MOV $REG0,R1 ; ADDR(DATA)
796 004240 170121 001170 LDFPS (R1)+ ; M2-R1
797 004242 012767 001172 174724 MOV $REG1,$REG2 ; ADDR(DEST)
798 004250 012703 001176 174724 MOV $REG2+2,R3 ; ADDR(ADDR(DEST)+2)
799 004254 170253 001176 174724 STFPS 2-(R3) ; M5-R3
800 004256 020127 001172 CMP R1,$REG0+2 ; WAS SRC ADDR REG INCRE RIGHT AMOUNT?
801 004262 001401 001172 BEQ 64$ ; NOT EQUAL, SIGNAL ERROR
802 004264 104012 001172 ERROR 12 ; NOT EQUAL, SIGNAL ERROR
803 004266 020327 001174 CMP R3,$REG2 ; WAS DST ADDR REG DECRE RIGHT AMOUNT?
804 004272 001401 001174 BEQ 65$ ; NOT EQUAL, SIGNAL ERROR
805 004274 104013 001174 ERROR 13 ; NOT EQUAL, SIGNAL ERROR
806 004276 026767 174666 174666 CMP $REG0,$REG1 ; LOAD/STORE WORK?
807 004304 001401 174666 174666 BEQ 66$ ; NOT EQUAL, SIGNAL ERROR
808 004306 104014 174666 174666 ERROR 14 ; NOT EQUAL, SIGNAL ERROR
809 004310 000401 174666 174666 BR TST12 ;;
810 004312 105252 174666 174666 ADDR3: .WORD 105252 ; TEST PATTERN
811
812
813 ;*****
814 ;*TEST 12 TEST OF LOAD-SRC MODE-3, STORE-DST MODE-6(PC)
815 ;*****
816 TST12: SCOPE
817 004314 000004 000046 174644 MOV ADDR4,$REG0 ; GET TEST PATTERN
818 004316 016767 000046 174644 MOV $REG0,$REG2 ; ADDR(DATA)
819 004324 012767 001170 174642 MOV $REG2,R0 ; ADDR(ADDR(DATA))
820 004332 012700 001174 174642 LDFPS 2(R0)+ ; M3-R0
821 004336 170130 001174 174642 STFPS $REG1 ; M6-R7
822 004340 170267 174626 174642 CMP R0,$REG2+2 ; WAS SRC ADDR REG INCRE RIGHT AMOUNT?
823 004344 020027 001176 174642 BEQ 64$ ; NOT EQUAL, SIGNAL ERROR
824 004350 001401 001176 174642 ERROR 15 ; NOT EQUAL, SIGNAL ERROR
825 004352 104015 001176 174642 CMP $REG0,$REG1 ; LOAD/STORE WORK?
826 004354 026767 174610 174610 BEQ 65$ ; NOT EQUAL, SIGNAL ERROR
827 004356 001401 174610 174610 ERROR 16 ; NOT EQUAL, SIGNAL ERROR
828 004358 104016 174610 174610 BR TST13 ;;
829 004360 000401 174610 174610
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
  
```

B04

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 21
 DOFPAG.P11 19-APR-77 13:36 T12 TEST OF LOAD-SRC MODE-3, STORE-DST MODE-6(PC)

SEQ 0025

```

847 004370 042505 ADDR4: .WORD 042505 ; TEST PATTERN
848
849
850
851
852
853 004372 000004
854 004374 016767 000042 174566
855
856 004402 012702 001172
857 004406 170142
858
859 004410 170200
860 004412 010067 174554
861
862 004416 020227 001170
863 004422 001401
864 004424 104017
865 004426
866
867 004426 026767 174536 174536
868 004434 001401
869 004436 104020
870 004440
871
872 004440 000401
873
874 004442 105252 ADDR5: .WORD 105252 ; TEST PATTERN
875
876
877
878
879
880 004444 000004
881 004446 016767 000046 174514
882
883 004454 012767 001170 174512
884 004462 012704 001176
885 004466 170154
886
887 004470 170237 001172
888
889 004474 020427 001174
890 004500 001401
891 004502 104021
892 004504
893
894 004504 026767 174460 174460
895 004512 001401
896 004514 104022
897 004516
898
899 004516 000401
900
901 004520 042505 ADDR6: .WORD 042505 ; TEST PATTERN
902

```

;*****
 ;*TEST 13 TEST OF LOAD-SRC MODE-4, STORE-DST MODE-0
 ;*****
 TST13: SCOPE
 MOV ADDR5,\$REG0 ; GET TEST PATTERN
 MOV #\$REG0+2,R2 ; ADDR(DATA+2)
 LDFPS -(R2) ; M4-R2
 STFPS R0 ; M0-R0
 MOV R0,\$REG1 ; DEST
 CMP R2,\$REG0 ; WAS SRC ADDR REG DECRE RIGHT AMOUNT?
 BEQ 64\$;
 ERROR 17 ; NOT EQUAL, SIGNAL ERROR
 64\$:
 CMP \$REG0,\$REG1 ; LOAD/STORE WORK?
 BEQ 65\$;
 ERROR 20 ; NOT EQUAL, SIGNAL ERROR
 65\$:
 BR TST14 ;;
 ADDR5: .WORD 105252 ; TEST PATTERN
 ;*****
 ;*TEST 14 TEST OF LOAD-SRC MODE-5, STORE-DST MODE-3(PC)
 ;*****
 TST14: SCOPE
 MOV ADDR6,\$REG0 ; GET TEST PATTERN
 MOV #\$REG0,\$REG2 ; ADDR(DATA)
 MOV #\$REG2+2,R4 ; ADDR(ADDR(DATA)+2)
 LDFPS 2-(R4) ; M5-R4
 STFPS 2,\$REG1 ; M3-R7
 CMP R4,\$REG2 ; WAS SRC ADDR REG DECRE RIGHT AMOUNT?
 BEQ 64\$;
 ERROR 21 ; NOT EQUAL, SIGNAL ERROR
 64\$:
 CMP \$REG0,\$REG1 ; LOAD/STORE WORK?
 BEQ 65\$;
 ERROR 22 ; NOT EQUAL, SIGNAL ERROR
 65\$:
 BR TST15 ;;
 ADDR6: .WORD 042505 ; TEST PATTERN

C04

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 22
 DQFPAB.P11 19-APR-77 13:36 T14 TEST OF LOAD-SRC MODE-5, STORE-DST MODE-3(PC)

SEQ 0026

```

903
904
905
906
907 004522 000004
908 004524 016767 000044 174436
909
910 004532 012703 001254
911 004536 170163 177714
912
913 004542 012767 001172 174424
914 004550 012701 001134
915 004554 170271 000040
916
917 004560 026767 174404 174404
918 004566 001401
919 004570 104014
920 004572
921
922 004572 000401
923
924 004574 105252
925
926
927
928
929
930 004576 000004
931 004600 016767 000064 174362
932
933 004606 012767 001170 174360
934 004614 012702 001216
935 004620 170172 177756
936
937 004624 012767 104117 000002
938 004632 170227
939 004634 000000
940 004636 000403
941 004640 104120
942 004642 104121
943 004644 104122
944 004646 016767 177762 174316
945
946 004654 026767 174310 174310
947 004662 001401
948 004664 104023
949 004666
950
951 004666 000401
952
953 004670 042505
954
955
956
957
958

;*****
;TEST 15      TEST OF LOAD-SRC MODE-6, STORE-DST MODE-7
;*****
TST15: SCOPE
        MOV     ADDR7,$REG0      ; GET TEST PATTERN
        MOV     #$REG0+64,R3     ; ADDR(DATA)+64
        LDFPS   -64(R3)         ; M6-R3
        MOV     #$REG1,$REG2     ; ADDR(DEST)
        MOV     #$REG2-40,R1     ; ADDR(ADDR(DEST))-40
        STFPS   240(R1)         ; M7-R1
        CMP     $REG0,$REG1      ; LOAD/STORE WORK?
        BEQ     64$             ;
        ERROR   14              ; NOT EQUAL, SIGNAL ERROR
64$:
        BR      TST16           ;;
ADDR7:  .WORD   105252          ; TEST PATTERN

;*****
;TEST 16      TEST OF LOAD-SRC MODE-7, STORE-DST MODE-2(PC)
;*****
TST16: SCOPE
        MOV     ADDR10,$REG0     ; GET TEST PATTERN
        MOV     #$REG0,$REG2     ; ADDR(DATA)
        MOV     #$REG2+22,R2     ; ADDR(ADDR(DATA))+22
        LDFPS   2-22(R2)        ; M7-R2
        MOV     $ERROR117,1$     ; SETUP ERROR CALL FOR WRONG INCREMENT
        STFPS   (PC)+           ; M2-R7
        .WORD   0                ; DEST
        BR      2$              ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
        ERROR   120             ; NOT HERE (+4 INCRE)
        ERROR   121             ; OR HERE (+6 INCRE)
        ERROR   122             ; OR HERE (+10 INCRE)
        MOV     1$,$REG1        ; GET DEST
        CMP     $REG0,$REG1      ; LOAD/STORE WORK?
        BEQ     64$             ;
        ERROR   23              ; NOT EQUAL, SIGNAL ERROR
64$:
        BR      TST17           ;;
ADDR10: .WORD   042505          ; TEST PATTERN

;*****
;TEST 17      TEST OF LOAD-SRC MODE-2(PC), STORE-DST MODE-4
;*****

```

D04

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 23
 DQFPAB.P11 19-APR-77 13:36 T17 TEST OF LOAD-SRC MODE-2(PC), STORE-DST MODE-4

SEQ 0027

```

959 004672 000004 TST17: SCOPE
960 004674 016767 000056 174266 MOV ADDR11,$REG0 ; GET TEST PATTERN
961
962 004702 016767 174262 000002 MOV $REG0,15 ; PUT DATA
963 004710 170127 LDFPS (PC)+ ; M2-R7
964 004712 000000 1S: .WORD 0 ; DATA
965 004714 000403 BR 25 ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
966 004716 104120 ERROR 120 ; NOT HERE (+4 INCRE)
967 004720 104121 ERROR 121 ; OR HERE (+6 INCRE)
968 004722 104122 ERROR 122 ; OR HERE (+10 INCRE)
969
970 004724 012703 001174 2S: MOV #SREG1+2,R3 ; ADDR(DEST+2)
971 004730 170243 STFPS -(R3) ; M4-R3
972
973 004732 020327 001172 CMP R3,$SREG1 ; WAS DST ADDR REG DECREASE RIGHT AMOUNT?
974 004736 001401 BEQ 64$ ;
975 004740 104024 ERROR 24 ; NOT EQUAL, SIGNAL ERROR
976 004742 64$:
977
978 004742 026767 174222 174222 CMP $REG0,$SREG1 ; LOAD/STORE WORK?
979 004750 001401 BEQ 65$ ;
980 004752 104025 ERROR 25 ; NOT EQUAL, SIGNAL ERROR
981 004754 65$:
982
983 004754 000401 BR TST20 ;;
984
985 004756 104117 ADDR11: .WORD ERROR117 ; TEST PATTERN
986
987
988
989
990
991 004760 000004
992 004762 016767 000032 174200
993
994 004770 170137 001170 LDFPS 2#$REG0 ; M3-R7
995
996 004774 012702 001144 MOV #SREG1-26,R2 ; ADDR(DEST)-26
997 005000 170262 000026 STFPS 26(R2) ; M6-R2
998
999 005004 026767 174160 174160 CMP $REG0,$SREG1 ; LOAD/STORE WORK?
1000 005012 001401 BEQ 64$ ;
1001 005014 104026 ERROR 26 ; NOT EQUAL, SIGNAL ERROR
1002 005016 64$:
1003
1004 005016 000401 BR TST21 ;;
1005
1006 005020 042505 ADDR12: .WORD 042505 ; TEST PATTERN
1007
1008
1009
1010
1011
1012 005022 000004
1013 005024 016767 000030 174136
1014

```

 *TEST 20 TEST OF LOAD-SRC MODE-3(PC), STORE-DST MODE-6

 *TEST 21 TEST OF LOAD-SRC MODE-6(PC), STORE-DST MODE-1

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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 24
 DQFPAB.P11 19-APR-77 13:36 T21 TEST OF LOAD-SRC MODE-6(PC), STORE-DST MODE-1

SEQ 0028

```

1015 005032 170167 174132      LDFPS $REG0      ; M6-R7
1016
1017 005036 012702 001172      MOV  $REG1,R2    ; ADDR(DEST)
1018 005042 170212      STFPS (R2)      ; M1-R2
1019
1020 005044 026767 174120 174120  CMP  $REG0,$REG1  ; LOAD/STORE WORK?
1021 005052 001401      BEQ  64$      ;
1022 005054 104026      ERROR 26      ; NOT EQUAL, SIGNAL ERROR
1023 005056      64$:
1024
1025 005056 000401      BR    TST22      ;;
1026
1027 005060 105252      ADDR13: .WORD 105252 ; TEST PATTERN
1028
1029
1030      ;*****
1031      ;*TEST 22      TEST OF LOAD-SRC MODE-7(PC), STORE-DST MODE-2
1032      ;*****
1033 005062 000004      TST22: SCOPE
1034 005064 016767 000046 174076  MOV  ADDR14,$REG0 ; GET TEST PATTERN
1035
1036 005072 012767 001170 174074  MOV  $REG0,$REG2  ; ADDR(DATA)
1037 005100 170177 174070      LDFPS 2$REG2      ; M7-R7
1038
1039 005104 012704 001172      MOV  $REG1,R4      ; ADDR(DEST)
1040 005110 170224      STFPS (R4)+      ; M2-R4
1041
1042 005112 020427 001174      CMP  R4,$REG1+2    ; WAS DST ADDR REG INCRE RIGHT AMOUNT?
1043 005116 001401      BEQ  64$      ;
1044 005120 104027      ERROR 27      ; NOT EQUAL, SIGNAL ERROR
1045 005122      64$:
1046
1047 005122 026767 174042 174042  CMP  $REG0,$REG1  ; LOAD/STORE WORK?
1048 005130 001401      BEQ  65$      ;
1049 005132 104022      ERROR 22      ; NOT EQUAL, SIGNAL ERROR
1050 005134      65$:
1051
1052 005134 000401      BR    TST23      ;;
1053
1054 005136 042505      ADDR14: .WORD 042505 ; TEST PATTERN
1055
1056

```

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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 25
 DQFPAB.P11 19-APR-77 13:36 T22 TEST OF LOAD-SRC MODE-7(PC), STORE-DST MODE-2

SEQ 0029

```

1057
1058
1059      ;;*****
1060      .ENABL AMA      ; BEGIN ASSEMBLING RELATIVE REFERENCES AS ABSOLUTE
1061      ;;*****
1062      ;;*****
1063      *TEST 23      TEST OF CFCC INSTRUCTION
1064      ;;*****
1065      TST23: SCOPE
1066      MOV      #10,R0      ; NUMBER OF ENTRIES IN TABLE
1067      MOV      #OFCC,R1      ; START OF TABLE
1068      MOV      #1$,SLPERR      ; ERROR LOOPING RETURN
1069
1070      1$: MOV      (R1),SREG0      ; GET FIRST FCC PATTERN
1071      BIC      #CCONLY,SREG0      ; BITS IN FCC POSITIONS ONLY
1072      LDFPS    SREG0      ; STORE IN FPS REGISTER
1073      BIT      #BIT05,(R1)      ; TEST WHETHER FLOATING A 1 OR 0
1074      BNE      2$
1075      CCC      3$      ; FOR FLOAT A 1, START W/ CC = 0000
1076      BR
1077      2$: SCC
1078      3$: CFCC      ; FOR FLOAT A 0, START W/ CC = 1111
1079      MOV      @#PSW,SREG1      ; COPY THE CONDITION CODES
1080      BIC      #CCONLY,SREG1      ; GET CPU CC BITS
1081      CMP      SREG0,SREG1      ; CLEAR EXTRANEIOUS BITS
1082      BEQ      4$      ; WERE THEY COPIED OK ?
1083      ERROR    30      ; NO - SIGNAL ERROR
1084      4$: ADD      #2,R1      ; INCRE R1 OUT OF ERROR LOOP
1085      SOB      R0,1$      ; LOOP CONTROL
1086      BR      TST24
1087
1088      OFCC: .WORD    000001,000002,000004,000010      ; TABLE OF CC
1089      .WORD    000010
1090      .WORD    000056,000055,000053,000047      ; TEST PATTERNS
1091      .WORD    000047

```


G04

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 26
 DQFPAB.P11 19-APR-77 13:36 T24 TEST FP ACO, D MODE, TEST PATTERN LOAD-1

SEQ 0030

```

1092
1093
1094
1095 005272 000004
1096 005274 012704 021214
1097 005300 012705 005312
1098 005304 004737 021032
1099
1100 005310 000413
1101
1102 005312
1103 005312 000000 000000 000000
1104 005320 000000
1105 005322 000000 000000 000000
1106 005330 000000
1107 005332 047653 047644
1108 005336 000000
1109
1110
1111
1112
1113 005340 000004
1114 005342 012704 021214
1115 005346 012705 005360
1116 005352 004737 021032
1117
1118 005356 000413
1119
1120 005360
1121 005360 177777 177777 177777
1122 005366 177777
1123 005370 177777 177777 177777
1124 005376 177777
1125 005400 047745 047750
1126 005404 000000
1127
1128
1129
1130
1131 005406 000004
1132 005410 012704 021214
1133 005414 012705 005426
1134 005420 004737 021032
1135
1136 005424 000413
1137
1138 005426
1139 005426 052525 052525 052525
1140 005434 052525
1141 005436 052525 052525 052525
1142 005444 052525
1143 005446 047652 047640
1144 005452 000000
1145
1146
1147

```

```

*****
;TEST 24 TEST FP ACO, D MODE, TEST PATTERN LOAD-1
*****
TST24: SCOPE
        MOV     #LDARDO,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD1,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LOADT      ; GO TEST
        BR      TST25          ;;

LOAD1:  ; TEST DATA SET LOAD-1:
        .WORD   0, 0, 0, 0      ; PATTERN 1
        .WORD   0, 0, 0, 0      ; PATTERN EXPECTED AFTER
        .WORD   047653,047644   ; FPS: BEFORE, AFTER
        .WORD   000000          ; FEC AFTER ( 0 = N/A )

*****
;TEST 25 TEST FP ACO, D MODE, TEST PATTERN LOAD-2
*****
TST25: SCOPE
        MOV     #LDARDO,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD2,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LOADT      ; GO TEST
        BR      TST26          ;;

LOAD2:  ; TEST DATA SET LOAD-2:
        .WORD   M1, M1, M1, M1  ; PATTERN 2
        .WORD   M1, M1, M1, M1  ; PATTERN EXPECTED AFTER
        .WORD   047745,047750   ; FPS: BEFORE, AFTER
        .WORD   000000          ; FEC AFTER ( 0 = N/A )

*****
;TEST 26 TEST FP ACO, D MODE, TEST PATTERN LOAD-3
*****
TST26: SCOPE
        MOV     #LDARDO,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD3,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LOADT      ; GO TEST
        BR      TST27          ;;

LOAD3:  ; TEST DATA SET LOAD-3:
        .WORD   ALTP,ALTP,ALTP,ALTP ; PATTERN 3
        .WORD   ALTP,ALTP,ALTP,ALTP ; PATTERN EXPECTED AFTER
        .WORD   047652,047640   ; FPS: BEFORE, AFTER
        .WORD   000000          ; FEC AFTER ( 0 = N/A )

*****
;TEST 27 TEST FP ACO, D MODE, TEST PATTERN LOAD-4
*****

```

H04

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 27
 DQFPAB.P11 19-APR-77 13:36 T27 TEST FP ACO, D MODE, TEST PATTERN LOAD-4

SEQ 0031

```

1148
1149 005454 000004
1150 005456 012704 021214
1151 005462 012705 005474
1152 005466 004737 021032
1153
1154 005472 000413
1155
1156 005474
1157 005474 125252 125252 125252
1158 005502 125252
1159 005504 125252 125252 125252
1160 005512 125252
1161 005514 047704 047710
1162 005520 000000
1163
1164
1165
1166
1167 005522 000004
1168 005524 012704 021214
1169 005530 012705 005542
1170 005534 004737 021032
1171
1172 005540 000413
1173
1174 005542
1175 005542 100177 177777 177777
1176 005550 177777
1177 005552 100177 177777 177777
1178 005560 177777
1179 005562 043743 043754
1180 005566 000000
1181
1182
1183
1184
1185 005570 000004
1186 005572 012704 021214
1187 005576 012705 005610
1188 005602 004737 021032
1189
1190 005606 000413
1191
1192 005610
1193 005610 100000 000000 000000
1194 005616 000000
1195 005620 052525 177777 125252
1196 005626 000000
1197 005630 047602 147614
1198 005634 100014
1199
1200
1201
1202
1203 005636 000004

```

```

*****
TST27: SCOPE
MOV #LDARDO,R4 ; PTR TO TESTING ROUTINE
MOV #LDAD4,R5 ; PTR TO TEST DATA SET
JSR PC,2#LOADT ; GO TEST
BR TST30 ;;
LDAD4: ; TEST DATA SET LOAD-4:
.WORD ALTN,ALTN,ALTN,ALTN ; PATTERN 4
.WORD ALTN,ALTN,ALTN,ALTN ; PATTERN EXPECTED AFTER
.WORD 047704,047710 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )
*****
TEST 30 TEST FP ACO, D MODE, TEST PATTERN LOAD-5
*****
TST30: SCOPE
MOV #LDARDO,R4 ; PTR TO TESTING ROUTINE
MOV #LDAD5,R5 ; PTR TO TEST DATA SET
JSR PC,2#LOADT ; GO TEST
BR TST31 ;;
LDAD5: ; TEST DATA SET LOAD-5:
.WORD ZX1MN,M1,M1,M1 ; PATTERN 5
.WORD ZX1MN,M1,M1,M1 ; PATTERN EXPECTED AFTER
.WORD 043743,043754 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )
*****
TEST 31 TEST FP ACO, D MODE, TEST PATTERN LOAD-6
*****
TST31: SCOPE
MOV #LDARDO,R4 ; PTR TO TESTING ROUTINE
MOV #LDAD6,R5 ; PTR TO TEST DATA SET
JSR PC,2#LOADT ; GO TEST
BR TST32 ;;
LDAD6: ; TEST DATA SET LOAD-6:
.WORD MO, 0, 0, 0 ; PATTERN 6
.WORD ALTP,M1, ALTN,0 ; PATTERN EXPECTED AFTER
.WORD 047602,147614 ; FPS: BEFORE, AFTER
.WORD 100014 ; FEC AFTER ( 0 = N/A )
*****
TEST 32 TEST FP AC1, D MODE, TEST PATTERN LOAD-1
*****
TST32: SCOPE

```


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 DQFPAB.P11 19-APR-77 13:36 T32 TEST FP AC1, D MODE, TEST PATTERN LDAD-1

SEQ 0032

```

1204 005640 012704 021230      MOV    #LDARD1,R4      ; PTR TO TESTING ROUTINE
1205 005644 012705 005312      MOV    #LDAD1,R5      ; PTR TO TEST DATA SET
1206 005650 004737 021032      JSR    PC,@#LDADT      ; GO TEST
1207
1208 005654 000400              BR     TST33              ;;
1209
1210      ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-1, ABOVE )
1211
1212      ; *****
1213      ; *TEST 33      TEST FP AC1, D MODE, TEST PATTERN LDAD-2
1214      ; *****
1215 005656 000004              TST33: SCOPE
1216 005660 012704 021230      MOV    #LDARD1,R4      ; PTR TO TESTING ROUTINE
1217 005664 012705 005360      MOV    #LDAD2,R5      ; PTR TO TEST DATA SET
1218 005670 004737 021032      JSR    PC,@#LDADT      ; GO TEST
1219
1220 005674 000400              BR     TST34              ;;
1221
1222      ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-2, ABOVE )
1223
1224      ; *****
1225      ; *TEST 34      TEST FP AC1, D MODE, TEST PATTERN LDAD-3
1226      ; *****
1227 005676 000004              TST34: SCOPE
1228 005700 012704 021230      MOV    #LDARD1,R4      ; PTR TO TESTING ROUTINE
1229 005704 012705 005426      MOV    #LDAD3,R5      ; PTR TO TEST DATA SET
1230 005710 004737 021032      JSR    PC,@#LDADT      ; GO TEST
1231
1232 005714 000400              BR     TST35              ;;
1233
1234      ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-3, ABOVE )
1235
1236      ; *****
1237      ; *TEST 35      TEST FP AC1, D MODE, TEST PATTERN LDAD-4
1238      ; *****
1239 005716 000004              TST35: SCOPE
1240 005720 012704 021230      MOV    #LDARD1,R4      ; PTR TO TESTING ROUTINE
1241 005724 012705 005474      MOV    #LDAD4,R5      ; PTR TO TEST DATA SET
1242 005730 004737 021032      JSR    PC,@#LDADT      ; GO TEST
1243
1244 005734 000400              BR     TST36              ;;
1245
1246      ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-4, ABOVE )
1247
1248      ; *****
1249      ; *TEST 36      TEST FP AC1, D MODE, TEST PATTERN LDAD-5
1250      ; *****
1251 005736 000004              TST36: SCOPE
1252 005740 012704 021230      MOV    #LDARD1,R4      ; PTR TO TESTING ROUTINE
1253 005744 012705 005542      MOV    #LDAD5,R5      ; PTR TO TEST DATA SET
1254 005750 004737 021032      JSR    PC,@#LDADT      ; GO TEST
1255
1256 005754 000400              BR     TST37              ;;
1257
1258      ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-5, ABOVE )
1259

```

J04

FPU BASIC INSTR TESTS MACY11 27(1006)
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T37 TEST FP AC1, D MODE, TEST PATTERN LOAD-6

SEQ 0033

```

1260
1261
1262
1263 005756 000004
1264 005760 012704 021230
1265 005764 012705 005610
1266 005770 004737 021032
1267
1268 005774 000400
1269
1270
1271
1272
1273
1274
1275
1276 005776 000004
1277 006000 012704 021244
1278 006004 012705 005312
1279 006010 004737 021032
1280
1281 006014 000400
1282
1283
1284
1285
1286
1287
1288 006016 000004
1289 006020 012704 021244
1290 006024 012705 005360
1291 006030 004737 021032
1292
1293 006034 000400
1294
1295
1296
1297
1298
1299
1300 006036 000004
1301 006040 012704 021244
1302 006044 012705 005426
1303 006050 004737 021032
1304
1305 006054 000400
1306
1307
1308
1309
1310
1311
1312 006056 000004
1313 006060 012704 021244
1314 006064 012705 005474
1315 006070 004737 021032

```

```

*****
; *TEST 37      TEST FP AC1, D MODE, TEST PATTERN LOAD-6
*****
TST37:  SCOPE
        MOV     #LDAD1,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD6,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT      ; GO TEST
        BR      TST40          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-6, ABOVE )

*****
; *TEST 40      TEST FP AC2, D MODE, TEST PATTERN LOAD-1
*****
TST40:  SCOPE
        MOV     #LDAD2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT      ; GO TEST
        BR      TST41          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-1, ABOVE )

*****
; *TEST 41      TEST FP AC2, D MODE, TEST PATTERN LOAD-2
*****
TST41:  SCOPE
        MOV     #LDAD2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD2,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT      ; GO TEST
        BR      TST42          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-2, ABOVE )

*****
; *TEST 42      TEST FP AC2, D MODE, TEST PATTERN LOAD-3
*****
TST42:  SCOPE
        MOV     #LDAD2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD3,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT      ; GO TEST
        BR      TST43          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-3, ABOVE )

*****
; *TEST 43      TEST FP AC2, D MODE, TEST PATTERN LOAD-4
*****
TST43:  SCOPE
        MOV     #LDAD2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD4,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT      ; GO TEST

```


K04

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T43 TEST FP AC2, D MODE, TEST PATTERN LDAD-4

SEQ 0034

```

1316
1317 006074 000400          BR      TST44          ;;
1318
1319 ; ( FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LDAD-4, ABOVE )
1320
1321 ;*****
1322 ;*TEST 44      TEST FP AC2, D MODE, TEST PATTERN LDAD-5
1323 ;*****
1324 006076 000004          TST44:  SCOPE
1325 006100 012704 021244      MOV      #LDAD2,R4          ; PTR TO TESTING ROUTINE
1326 006104 012705 005542      MOV      #LDAD5,R5          ; PTR TO TEST DATA SET
1327 006110 004737 021032      JSR      PC,@#LDADT          ; GO TEST
1328
1329 006114 000400          BR      TST45          ;;
1330
1331 ; ( FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LDAD-5, ABOVE )
1332
1333 ;*****
1334 ;*TEST 45      TEST FP AC2, D MODE, TEST PATTERN LDAD-6
1335 ;*****
1336 006116 000004          TST45:  SCOPE
1337 006120 012704 021244      MOV      #LDAD2,R4          ; PTR TO TESTING ROUTINE
1338 006124 012705 005610      MOV      #LDAD6,R5          ; PTR TO TEST DATA SET
1339 006130 004737 021032      JSR      PC,@#LDADT          ; GO TEST
1340
1341 006134 000400          BR      TST46          ;;
1342
1343 ; ( FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LDAD-6, ABOVE )
1344
1345 ;*****
1346 ;*TEST 46      TEST FP AC3, D MODE, TEST PATTERN LDAD-1
1347 ;*****
1348 006136 000004          TST46:  SCOPE
1349 006140 012704 021260      MOV      #LDAD3,R4          ; PTR TO TESTING ROUTINE
1350 006144 012705 005312      MOV      #LDAD1,R5          ; PTR TO TEST DATA SET
1351 006150 004737 021032      JSR      PC,@#LDADT          ; GO TEST
1352
1353 006154 000400          BR      TST47          ;;
1354
1355 ; ( FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LDAD-1, ABOVE )
1356
1357 ;*****
1358 ;*TEST 47      TEST FP AC3, D MODE, TEST PATTERN LDAD-2
1359 ;*****
1360 006156 000004          TST47:  SCOPE
1361 006160 012704 021260      MOV      #LDAD3,R4          ; PTR TO TESTING ROUTINE
1362 006164 012705 005360      MOV      #LDAD2,R5          ; PTR TO TEST DATA SET
1363 006170 004737 021032      JSR      PC,@#LDADT          ; GO TEST
1364
1365 006174 000400          BR      TST50          ;;
1366
1367 ; ( FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LDAD-2, ABOVE )
1368
1369 ;*****
1370 ;*TEST 50      TEST FP AC3, D MODE, TEST PATTERN LDAD-3
1371

```

L04

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T50 TEST FP AC3, D MODE, TEST PATTERN LDAD-3

SEQ 0035

```

1372
1373 006176 000004
1374 006200 012704 021260
1375 006204 012705 005426
1376 006210 004737 021032
1377
1378 006214 000400
1379
1380
1381
1382
1383
1384
1385 006216 000004
1386 006220 012704 021260
1387 006224 012705 005474
1388 006230 004737 021032
1389
1390 006234 000400
1391
1392
1393
1394
1395
1396
1397 006236 000004
1398 006240 012704 021260
1399 006244 012705 005542
1400 006250 004737 021032
1401
1402 006254 000400
1403
1404
1405
1406
1407
1408
1409 006256 000004
1410 006260 012704 021260
1411 006264 012705 005610
1412 006270 004737 021032
1413
1414 006274 000400
1415
1416
1417
1418
1419
1420
1421
1422 006276 000004
1423 006300 012704 021274
1424 006304 012705 005312
1425 006310 004737 021032
1426
1427 006314 000400

```

```

*****
TST50: SCOPE
        MOV     #LDARD3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD3,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT     ; GO TEST
        BR      TST51          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-3, ABOVE )
*****
; TEST 51      TEST FP AC3, D MODE, TEST PATTERN LDAD-4
*****
TST51: SCOPE
        MOV     #LDARD3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD4,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT     ; GO TEST
        BR      TST52          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-4, ABOVE )
*****
; TEST 52      TEST FP AC3, D MODE, TEST PATTERN LDAD-5
*****
TST52: SCOPE
        MOV     #LDARD3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD5,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT     ; GO TEST
        BR      TST53          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-5, ABOVE )
*****
; TEST 53      TEST FP AC3, D MODE, TEST PATTERN LDAD-6
*****
TST53: SCOPE
        MOV     #LDARD3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD6,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT     ; GO TEST
        BR      TST54          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAD-6, ABOVE )
*****
; TEST 54      TEST FP AC4, D MODE, TEST PATTERN LDAD-1
*****
TST54: SCOPE
        MOV     #LDARD4,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDADT     ; GO TEST
        BR      TST55          ;;

```


M04

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T54 TEST FP AC4, D MODE, TEST PATTERN LOAD-1

SEQ 0036

```

1428
1429
1430
1431
1432
1433
1434 006316 000004
1435 006320 012704 021274
1436 006324 012705 005360
1437 006330 004737 021032
1438
1439 006334 000400
1440
1441
1442
1443
1444
1445
1446 006336 000004
1447 006340 012704 021274
1448 006344 012705 005426
1449 006350 004737 021032
1450
1451 006354 000400
1452
1453
1454
1455
1456
1457
1458 006356 000004
1459 006360 012704 021274
1460 006364 012705 005474
1461 006370 004737 021032
1462
1463 006374 000400
1464
1465
1466
1467
1468
1469
1470 006376 000004
1471 006400 012704 021274
1472 006404 012705 005542
1473 006410 004737 021032
1474
1475 006414 000400
1476
1477
1478
1479
1480
1481
1482
1483 006416 000004

```

; (FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LOAD-1, ABOVE)

```

*****
; *TEST 55      TEST FP AC4, D MODE, TEST PATTERN LOAD-2
*****

```

```

TST55: SCOPE
        MOV     #LDAD04,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD02,R5      ; PTR TO TEST DATA SET
        JSR     PC,#LDADT       ; GO TEST

```

BR TST56 ;;

; (FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LOAD-2, ABOVE)

```

*****
; *TEST 56      TEST FP AC4, D MODE, TEST PATTERN LOAD-3
*****

```

```

TST56: SCOPE
        MOV     #LDAD04,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD03,R5      ; PTR TO TEST DATA SET
        JSR     PC,#LDADT       ; GO TEST

```

BR TST57 ;;

; (FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LOAD-3, ABOVE)

```

*****
; *TEST 57      TEST FP AC4, D MODE, TEST PATTERN LOAD-4
*****

```

```

TST57: SCOPE
        MOV     #LDAD04,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD04,R5      ; PTR TO TEST DATA SET
        JSR     PC,#LDADT       ; GO TEST

```

BR TST60 ;;

; (FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LOAD-4, ABOVE)

```

*****
; *TEST 60      TEST FP AC4, D MODE, TEST PATTERN LOAD-5
*****

```

```

TST60: SCOPE
        MOV     #LDAD04,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAD05,R5      ; PTR TO TEST DATA SET
        JSR     PC,#LDADT       ; GO TEST

```

BR TST61 ;;

; (FOR DATA SEE TEST OF FP REG AC0 WITH TEST PATTERN LOAD-5, ABOVE)

```

*****
; *TEST 61      TEST FP AC5, D MODE, TEST PATTERN LOAD-1
*****

```

TST61: SCOPE

N04

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T61 TEST FP ACS, D MODE, TEST PATTERN LOAD-1

SEQ 0037

1484 006420 012704 021314
1485 006424 012705 005312
1486 006430 004737 021032
1487
1488 006434 000400
1489
1490
1491
1492
1493
1494
1495 006436 000004
1496 006440 012704 021314
1497 006444 012705 005360
1498 006450 004737 021032
1499
1500 006454 000400
1501
1502
1503
1504
1505
1506
1507 006456 000004
1508 006460 012704 021314
1509 006464 012705 005426
1510 006470 004737 021032
1511
1512 006474 000400
1513
1514
1515
1516
1517
1518
1519 006476 000004
1520 006500 012704 021314
1521 006504 012705 005474
1522 006510 004737 021032
1523
1524 006514 000400
1525
1526
1527
1528
1529
1530
1531 006516 000004
1532 006520 012704 021314
1533 006524 012705 005542
1534 006530 004737 021032
1535
1536 006534 000400
1537
1538
1539

```

MOV    #LDARD5,R4      ; PTR TO TESTING ROUTINE
MOV    #LDAD1,R5       ; PTR TO TEST DATA SET
JSR    PC,2#LDADT      ; GO TEST

BR      TST62          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-1, ABOVE )

;*****
;TEST 62      TEST FP ACS, D MODE, TEST PATTERN LOAD-2
;*****
TST62:  SCOPE
        MOV    #LDARD5,R4      ; PTR TO TESTING ROUTINE
        MOV    #LDAD2,R5       ; PTR TO TEST DATA SET
        JSR    PC,2#LDADT      ; GO TEST

BR      TST63          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-2, ABOVE )

;*****
;TEST 63      TEST FP ACS, D MODE, TEST PATTERN LOAD-3
;*****
TST63:  SCOPE
        MOV    #LDARD5,R4      ; PTR TO TESTING ROUTINE
        MOV    #LDAD3,R5       ; PTR TO TEST DATA SET
        JSR    PC,2#LDADT      ; GO TEST

BR      TST64          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-3, ABOVE )

;*****
;TEST 64      TEST FP ACS, D MODE, TEST PATTERN LOAD-4
;*****
TST64:  SCOPE
        MOV    #LDARD5,R4      ; PTR TO TESTING ROUTINE
        MOV    #LDAD4,R5       ; PTR TO TEST DATA SET
        JSR    PC,2#LDADT      ; GO TEST

BR      TST65          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-4, ABOVE )

;*****
;TEST 65      TEST FP ACS, D MODE, TEST PATTERN LOAD-5
;*****
TST65:  SCOPE
        MOV    #LDARD5,R4      ; PTR TO TESTING ROUTINE
        MOV    #LDAD5,R5       ; PTR TO TEST DATA SET
        JSR    PC,2#LDADT      ; GO TEST

BR      TST66          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LOAD-5, ABOVE )

```


B05

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DOFPAB.P11 19-APR-77 13:36 T65 TEST FP ACS, D MODE, TEST PATTERN LOAD-5

SEQ 0038

1540
1541

```

1542
1543
1544
1545 006536 000004
1546 006540 012704 021514
1547 006544 012705 006556
1548 006550 004737 021334
1549
1550 006554 000415
1551
1552 006556
1553 006556 000000 000000 000000
1554 006564 000000
1555 006566 177777 177777
1556 006572 177777 177777 000000
1557 006600 000000
1558 006602 047547 047750
1559 006606 000000
1560
1561
1562
1563
1564 006610 000004
1565 006612 012704 021514
1566 006616 012705 006630
1567 006622 004737 021334
1568
1569 006626 000415
1570
1571 006630
1572 006630 177777 177777 177777
1573 006636 177777
1574 006640 000000 000000
1575 006644 000000 000000 177777
1576 006652 177777
1577 006654 047413 047604
1578 006660 000000
1579
1580
1581
1582
1583 006662 000004
1584 006664 012704 021514
1585 006670 012705 006702
1586 006674 004737 021334
1587
1588 006700 000415
1589
1590 006702
1591 006702 052525 052525 052525
1592 006710 052525
1593 006712 125252 125252
1594 006716 125252 125252 052525
1595 006724 052525
1596 006726 047547 047750
1597 006732 000000

*****
*TEST 66 TEST FP ACO, F MODE, TEST PATTERN LDAF-1
*****
TST66: SCOPE
        MOV     #LDAF0,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF1,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT     ; GO TEST
        BR      TST67         ;;

LDAF1:  ; TEST DATA SET LDAF-1:
        .WORD   0,0,0,0      ; LDD PATTERN
        .WORD   M1,M1        ; LDF PATTERN
        .WORD   M1,M1,0,0    ; STD EXPECTED PATTERN
        .WORD   047547,047750 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
*TEST 67 TEST FP ACO, F MODE, TEST PATTERN LDAF-2
*****
TST67: SCOPE
        MOV     #LDAF0,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF2,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT     ; GO TEST
        BR      TST70         ;;

LDAF2:  ; TEST DATA SET LDAF-2:
        .WORD   M1,M1,M1,M1    ; LDD PATTERN
        .WORD   0,0           ; LDF PATTERN
        .WORD   0,0,M1,M1     ; STD EXPECTED PATTERN
        .WORD   047413,047604 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
*TEST 70 TEST FP ACO, F MODE, TEST PATTERN LDAF-3
*****
TST70: SCOPE
        MOV     #LDAF0,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF3,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT     ; GO TEST
        BR      TST71         ;;

LDAF3:  ; TEST DATA SET LDAF-3:
        .WORD   ALTP,ALTP,ALTP,ALTP ; LDD PATTERN
        .WORD   ALTN,ALTN        ; LDF PATTERN
        .WORD   ALTN,ALTN,ALTP,ALTP ; STD EXPECTED PATTERN
        .WORD   047547,047750 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

```


1654 007130 100014

.WORD 100014

; FEC AFTER (0 = N/A)

1655
1656
1657
1658
1659
1660 007132 000004
1661 007134 012704 021536
1662 007140 012705 006556
1663 007144 004737 021334
1664
1665 007150 000400
1666
1667
1668
1669
1670
1671
1672 007152 000004
1673 007154 012704 021536
1674 007160 012705 006630
1675 007164 004737 021334
1676
1677 007170 000400
1678
1679
1680
1681
1682
1683
1684 007172 000004
1685 007174 012704 021536
1686 007200 012705 006702
1687 007204 004737 021334
1688
1689 007210 000400
1690
1691
1692
1693
1694
1695
1696 007212 000004
1697 007214 012704 021536
1698 007220 012705 006754
1699 007224 004737 021334
1700
1701 007230 000400
1702
1703
1704
1705
1706
1707
1708 007232 000004
1709 007234 012704 021536

; *TEST 74 TEST FP AC1, F MODE, TEST PATTERN LDAF-1

TST74: SCOPE
MOV #LDAF1,R4 ; PTR TO TESTING ROUTINE
MOV #LDAF1,R5 ; PTR TO TEST DATA SET
JSR PC,2#LDAFT ; GO TEST

BR TST75 ;;

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-1, ABOVE)

; *TEST 75 TEST FP AC1, F MODE, TEST PATTERN LDAF-2

TST75: SCOPE
MOV #LDAF1,R4 ; PTR TO TESTING ROUTINE
MOV #LDAF2,R5 ; PTR TO TEST DATA SET
JSR PC,2#LDAFT ; GO TEST

BR TST76 ;;

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-2, ABOVE)

; *TEST 76 TEST FP AC1, F MODE, TEST PATTERN LDAF-3

TST76: SCOPE
MOV #LDAF1,R4 ; PTR TO TESTING ROUTINE
MOV #LDAF3,R5 ; PTR TO TEST DATA SET
JSR PC,2#LDAFT ; GO TEST

BR TST77 ;;

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-3, ABOVE)

; *TEST 77 TEST FP AC1, F MODE, TEST PATTERN LDAF-4

TST77: SCOPE
MOV #LDAF1,R4 ; PTR TO TESTING ROUTINE
MOV #LDAF4,R5 ; PTR TO TEST DATA SET
JSR PC,2#LDAFT ; GO TEST

BR TST100 ;;

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-4, ABOVE)

; *TEST 100 TEST FP AC1, F MODE, TEST PATTERN LDAF-5

TST100: SCOPE
MOV #LDAF1,R4 ; PTR TO TESTING ROUTINE

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T100 TEST FP AC1, F MODE, TEST PATTERN LDAF-5

SEQ 0042

1710 007240 012705 007026
 1711 007244 004737 021334
 1712
 1713 007250 000400
 1714
 1715
 1716
 1717
 1718
 1719
 1720 007252 000004
 1721 007254 012704 021536
 1722 007260 012705 007100
 1723 007264 004737 021334
 1724
 1725 007270 000400
 1726
 1727
 1728
 1729
 1730
 1731
 1732
 1733 007272 000004
 1734 007274 012704 021560
 1735 007300 012705 006556
 1736 007304 004737 021334
 1737
 1738 007310 000400
 1739
 1740
 1741
 1742
 1743
 1744
 1745 007312 000004
 1746 007314 012704 021560
 1747 007320 012705 006630
 1748 007324 004737 021334
 1749
 1750 007330 000400
 1751
 1752
 1753
 1754
 1755
 1756
 1757 007332 000004
 1758 007334 012704 021560
 1759 007340 012705 006702
 1760 007344 004737 021334
 1761
 1762 007350 000400
 1763
 1764
 1765

```

MOV    #LDAF5,R5      ; PTR TO TEST DATA SET
JSR    PC,3#LDAFT      ; GO TEST

BR      TST101          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-5, ABOVE )

;*****
;TEST 101      TEST FP AC1, F MODE, TEST PATTERN LDAF-6
;*****
TST101: SCOPE
MOV     #LDAF1,R4      ; PTR TO TESTING ROUTINE
MOV     #LDAF6,R5      ; PTR TO TEST DATA SET
JSR     PC,3#LDAFT      ; GO TEST

BR      TST102          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-6, ABOVE )

;*****
;TEST 102      TEST FP AC2, F MODE, TEST PATTERN LDAF-1
;*****
TST102: SCOPE
MOV     #LDAF2,R4      ; PTR TO TESTING ROUTINE
MOV     #LDAF1,R5      ; PTR TO TEST DATA SET
JSR     PC,3#LDAFT      ; GO TEST

BR      TST103          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-1, ABOVE )

;*****
;TEST 103      TEST FP AC2, F MODE, TEST PATTERN LDAF-2
;*****
TST103: SCOPE
MOV     #LDAF2,R4      ; PTR TO TESTING ROUTINE
MOV     #LDAF2,R5      ; PTR TO TEST DATA SET
JSR     PC,3#LDAFT      ; GO TEST

BR      TST104          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-2, ABOVE )

;*****
;TEST 104      TEST FP AC2, F MODE, TEST PATTERN LDAF-3
;*****
TST104: SCOPE
MOV     #LDAF2,R4      ; PTR TO TESTING ROUTINE
MOV     #LDAF3,R5      ; PTR TO TEST DATA SET
JSR     PC,3#LDAFT      ; GO TEST

BR      TST105          ;;

; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-3, ABOVE )

```

```

1766
1767
1768
1769 007352 000004
1770 007354 012704 021560
1771 007360 012705 006754
1772 007364 004737 021334
1773
1774 007370 000400
1775
1776
1777
1778
1779
1780
1781 007372 000004
1782 007374 012704 021560
1783 007400 012705 007026
1784 007404 004737 021334
1785
1786 007410 000400
1787
1788
1789
1790
1791
1792
1793 007412 000004
1794 007414 012704 021560
1795 007420 012705 007100
1796 007424 004737 021334
1797
1798 007430 000400
1799
1800
1801
1802
1803
1804
1805
1806 007432 000004
1807 007434 012704 021602
1808 007440 012705 006556
1809 007444 004737 021334
1810
1811 007450 000400
1812
1813
1814
1815
1816
1817
1818 007452 000004
1819 007454 012704 021602
1820 007460 012705 006630
1821 007464 004737 021334

```

```

*****
; TEST 105      TEST FP AC2, F MODE, TEST PATTERN LDAF-4
*****
TST105: SCOPE
        MOV     #LDARF2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF4,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDAFT      ; GO TEST
        BR      TST106         ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-4, ABOVE )
*****
; TEST 106      TEST FP AC2, F MODE, TEST PATTERN LDAF-5
*****
TST106: SCOPE
        MOV     #LDARF2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF5,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDAFT      ; GO TEST
        BR      TST107         ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-5, ABOVE )
*****
; TEST 107      TEST FP AC2, F MODE, TEST PATTERN LDAF-6
*****
TST107: SCOPE
        MOV     #LDARF2,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF6,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDAFT      ; GO TEST
        BR      TST110         ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-6, ABOVE )
*****
; TEST 110      TEST FP AC3, F MODE, TEST PATTERN LDAF-1
*****
TST110: SCOPE
        MOV     #LDARF3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDAFT      ; GO TEST
        BR      TST111         ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-1, ABOVE )
*****
; TEST 111      TEST FP AC3, F MODE, TEST PATTERN LDAF-2
*****
TST111: SCOPE
        MOV     #LDARF3,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF2,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#LDAFT      ; GO TEST

```


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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 40
 DQFPAB.P11 19-APR-77 13:36 T111 TEST FP AC3, F MODE, TEST PATTERN LDAF-2

SEQ 0044

```

1822
1823 007470 000400          BR      TST112          ;;
1824
1825          ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-2, ABOVE )
1826
1827          ;*****
1828          ;*TEST 112      TEST FP AC3, F MODE, TEST PATTERN LDAF-3
1829          ;*****
1830 007472 000004          TST112: SCOPE
1831 007474 012704 021602      MOV      #LDAF3,R4          ; PTR TO TESTING ROUTINE
1832 007500 012705 006702      MOV      #LDAF3,R5          ; PTR TO TEST DATA SET
1833 007504 004737 021334      JSR      PC,@#LDAFT          ; GO TEST
1834
1835 007510 000400          BR      TST113          ;;
1836
1837          ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-3, ABOVE )
1838
1839          ;*****
1840          ;*TEST 113      TEST FP AC3, F MODE, TEST PATTERN LDAF-4
1841          ;*****
1842 007512 000004          TST113: SCOPE
1843 007514 012704 021602      MOV      #LDAF3,R4          ; PTR TO TESTING ROUTINE
1844 007520 012705 006754      MOV      #LDAF4,R5          ; PTR TO TEST DATA SET
1845 007524 004737 021334      JSR      PC,@#LDAFT          ; GO TEST
1846
1847 007530 000400          BR      TST114          ;;
1848
1849          ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-4, ABOVE )
1850
1851          ;*****
1852          ;*TEST 114      TEST FP AC3, F MODE, TEST PATTERN LDAF-5
1853          ;*****
1854 007532 000004          TST114: SCOPE
1855 007534 012704 021602      MOV      #LDAF3,R4          ; PTR TO TESTING ROUTINE
1856 007540 012705 007026      MOV      #LDAF5,R5          ; PTR TO TEST DATA SET
1857 007544 004737 021334      JSR      PC,@#LDAFT          ; GO TEST
1858
1859 007550 000400          BR      TST115          ;;
1860
1861          ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-5, ABOVE )
1862
1863          ;*****
1864          ;*TEST 115      TEST FP AC3, F MODE, TEST PATTERN LDAF-6
1865          ;*****
1866 007552 000004          TST115: SCOPE
1867 007554 012704 021602      MOV      #LDAF3,R4          ; PTR TO TESTING ROUTINE
1868 007560 012705 007100      MOV      #LDAF6,R5          ; PTR TO TEST DATA SET
1869 007564 004737 021334      JSR      PC,@#LDAFT          ; GO TEST
1870
1871 007570 000400          BR      TST116          ;;
1872
1873          ; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-6, ABOVE )
1874
1875          ;*****
1876          ;*TEST 116      TEST FP AC4, F MODE, TEST PATTERN LDAF-1
1877

```

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 41
 DQFPAB.P11 19-APR-77 13:36 T116 TEST FP AC4, F MODE, TEST PATTERN LDAF-1

SEQ 0045

```

1878
1879 007572 000004
1880 007574 012704 021624
1881 007600 012705 006556
1882 007604 004737 021334
1883
1884 007610 000400
1885
1886
1887
1888
1889
1890
1891 007612 000004
1892 007614 012704 021624
1893 007620 012705 006630
1894 007624 004737 021334
1895
1896 007630 000400
1897
1898
1899
1900
1901
1902
1903 007632 000004
1904 007634 012704 021624
1905 007640 012705 006702
1906 007644 004737 021334
1907
1908 007650 000400
1909
1910
1911
1912
1913
1914
1915 007652 000004
1916 007654 012704 021624
1917 007660 012705 006754
1918 007664 004737 021334
1919
1920 007670 000400
1921
1922
1923
1924
1925
1926
1927 007672 000004
1928 007674 012704 021624
1929 007700 012705 007026
1930 007704 004737 021334
1931
1932 007710 000400
1933

```

```

*****
TST116: SCOPE
      MOV      #LDAF4,R4      ; PTR TO TESTING ROUTINE
      MOV      #LDAF1,R5      ; PTR TO TEST DATA SET
      JSR      PC,@#LDAFT      ; GO TEST
      BR       TST117          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-1, ABOVE )
*****
; *TEST 117      TEST FP AC4, F MODE, TEST PATTERN LDAF-2
*****
TST117: SCOPE
      MOV      #LDAF4,R4      ; PTR TO TESTING ROUTINE
      MOV      #LDAF2,R5      ; PTR TO TEST DATA SET
      JSR      PC,@#LDAFT      ; GO TEST
      BR       TST120          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-2, ABOVE )
*****
; *TEST 120      TEST FP AC4, F MODE, TEST PATTERN LDAF-3
*****
TST120: SCOPE
      MOV      #LDAF4,R4      ; PTR TO TESTING ROUTINE
      MOV      #LDAF3,R5      ; PTR TO TEST DATA SET
      JSR      PC,@#LDAFT      ; GO TEST
      BR       TST121          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-3, ABOVE )
*****
; *TEST 121      TEST FP AC4, F MODE, TEST PATTERN LDAF-4
*****
TST121: SCOPE
      MOV      #LDAF4,R4      ; PTR TO TESTING ROUTINE
      MOV      #LDAF4,R5      ; PTR TO TEST DATA SET
      JSR      PC,@#LDAFT      ; GO TEST
      BR       TST122          ;;
; ( FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-4, ABOVE )
*****
; *TEST 122      TEST FP AC4, F MODE, TEST PATTERN LDAF-5
*****
TST122: SCOPE
      MOV      #LDAF4,R4      ; PTR TO TESTING ROUTINE
      MOV      #LDAF5,R5      ; PTR TO TEST DATA SET
      JSR      PC,@#LDAFT      ; GO TEST
      BR       TST123          ;;

```


; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-5, ABOVE)

```

*****
; *TEST 123      TEST FP AC5, F MODE, TEST PATTERN LDAF-1
*****

```

```

TST123: SCOPE
        MOV     #LDARF5,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF1,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT      ; GO TEST
        BR      TST124          ;;

```

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-1, ABOVE)

```

*****
; *TEST 124      TEST FP AC5, F MODE, TEST PATTERN LDAF-2
*****

```

```

TST124: SCOPE
        MOV     #LDARF5,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF2,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT      ; GO TEST
        BR      TST125          ;;

```

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-2, ABOVE)

```

*****
; *TEST 125      TEST FP AC5, F MODE, TEST PATTERN LDAF-3
*****

```

```

TST125: SCOPE
        MOV     #LDARF5,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF3,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT      ; GO TEST
        BR      TST126          ;;

```

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-3, ABOVE)

```

*****
; *TEST 126      TEST FP AC5, F MODE, TEST PATTERN LDAF-4
*****

```

```

TST126: SCOPE
        MOV     #LDARF5,R4      ; PTR TO TESTING ROUTINE
        MOV     #LDAF4,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#LDAFT      ; GO TEST
        BR      TST127          ;;

```

; (FOR DATA SEE TEST OF FP REG ACO WITH TEST PATTERN LDAF-4, ABOVE)

```

*****
; *TEST 127      TEST FP AC5, F MODE, TEST PATTERN LDAF-5
*****

```

```

TST127: SCOPE
        MOV     #LDARF5,R4      ; PTR TO TESTING ROUTINE

```

```

1934
1935
1936
1937
1938
1939
1940 007712 000004
1941 007714 012704 021654
1942 007720 012705 006556
1943 007724 004737 021334
1944
1945 007730 000400
1946
1947
1948
1949
1950
1951
1952 007732 000004
1953 007734 012704 021654
1954 007740 012705 006630
1955 007744 004737 021334
1956
1957 007750 000400
1958
1959
1960
1961
1962
1963
1964 007752 000004
1965 007754 012704 021654
1966 007760 012705 006702
1967 007764 004737 021334
1968
1969 007770 000400
1970
1971
1972
1973
1974
1975
1976 007772 000004
1977 007774 012704 021654
1978 010000 012705 006754
1979 010004 004737 021334
1980
1981 010010 000400
1982
1983
1984
1985
1986
1987
1988 010012 000004
1989 010014 012704 021654

```

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DQFPAB.P11 19-APR-77 13:36 T127 TEST FP ACS, F MODE, TEST PATTERN LDAF-5

SEQ 0047

1990 010020 012705 007026
1991 010024 004737 021334
1992

MOV #LDAF5,RS ; PTR TO TEST DATA SET
JSR PC,3#LDAF7 ; GO TEST

1993 010030 000400
1994

BR TST130 ;

; (FOR DATA SEE TEST OF FP REG ACD WITH TEST PATTERN LDAF-5, ABOVE)

1995
1996
1997
1998


```

1999
2000
2001
2002
2003
2004
2005
2006
2007 010032 000004
2008 010034 170127 047600
2009 010040 016767 000102 171122
2010 010046 016767 000076 171116
2011 010054 016767 000072 171112
2012 010062 016767 000066 171106
2013
2014 010070 012705 001170
2015 010074 172415
2016
2017 010076 174067 171076
2018
2019 010102 026767 171062 171070
2020 010110 001014
2021 010112 026767 171054 171062
2022 010120 001010
2023 010122 026767 171046 171054
2024 010130 001004
2025 010132 026767 171040 171046
2026 010140 001401
2027 010142 104031
2028
2029 010144
2030 010144 000404
2031
2032 010146 052525 052525 052525
2033 010154 052525
2034
2035
2036
2037
2038
2039 010156 000004
2040 010160 170127 047600
2041 010164 016767 000112 170776
2042 010172 016767 000106 170772
2043 010200 016767 000102 170766
2044 010206 016767 000076 170762
2045
2046 010214 012704 001200
2047 010220 172544
2048
2049 010222 174137 001200
2050
2051 010226 020427 001170
2052 010232 001401
2053 010234 104032
2054 010236

;;*****
; .DSABL AMA ; ASSEMBLE ALL REFERENCES AS THEY ARE PRINTED
;;*****

;;*****
; *TEST 130 TEST OF LOAD-FSRC MODE-1, STORE-FDST MODE-6(PC), D MODE
; *****
; *TST130: SCOPE
; LDFPS #047600 ; D MODE FPS
; MOV ADDR1+0,$REG0 ; MOVE PATTERN
; MOV ADDR1+2,$REG1
; MOV ADDR1+4,$REG2
; MOV ADDR1+6,$REG3
;
; MOV #$REG0,R5 ; ADDR(DATA)
; LDD (R5),AC0 ; M1-R5
;
; STD AC0,$REG4 ; M6-R7
;
; CMP $REG0,$REG4 ; 1ST WORD PATTERN CHECK?
; BNE 64$
; CMP $REG1,$REG5 ; 2ND WORD PATTERN CHECK?
; BNE 64$
; CMP $REG2,$REG6 ; 3RD WORD PATTERN CHECK?
; BNE 64$
; CMP $REG3,$REG7 ; 4TH WORD PATTERN CHECK?
; BEQ 65$
; 64$: ERROR 31 ; PATTERN DOESNT MATCH
; 65$:
; BR TST131 ;;
; ADDR1: .WORD ALTP,ALTP,ALTP,ALTP ; TEST PATTERN

;;*****
; *TEST 131 TEST OF LOAD-FSRC MODE-4, STORE-FDST MODE-3(PC), D MODE
; *****
; *TST131: SCOPE
; LDFPS #047600 ; D MODE FPS
; MOV ADDR2+0,$REG0 ; MOVE PATTERN
; MOV ADDR2+2,$REG1
; MOV ADDR2+4,$REG2
; MOV ADDR2+6,$REG3
;
; MOV #$REG0+10,R4 ; ADDR(DATA+10)
; LDD -(R4),AC1 ; M4-R4
;
; STD AC1,2*$REG4 ; M3-R7
;
; CMP R4,$REG0 ; WAS FSRC ADDR REG DECRE RIGHT AMOUNT?
; BEQ 66$
; 66$: ERROR 32 ; NOT EQUAL, SIGNAL ERROR
; 66$:

```

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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 45
 DQFPAB.P11 19-APR-77 13:36 T131 TEST OF LOAD-FSRC MODE-4, STORE-FDST MODE-3(PC), D MODE

SEQ 0049

```

2055 010236 026767 170726 170734      CMP    $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2056 010244 001014      BNE     64$              ;
2057 010246 026767 170720 170726      CMP    $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2058 010254 001010      BNE     64$              ;
2059 010256 026767 170712 170720      CMP    $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2060 010264 001004      BNE     64$              ;
2061 010266 026767 170704 170712      CMP    $REG3,$REG7      ; 4TH WORD PATTERN CHECK?
2062 010274 001401      BEQ     65$              ;
2063 010276 104033      64$:  ERROR    33              ; PATTERN DOESNT MATCH
2064
2065
2066 010300      65$:
2067 010300 000404      BR      TST132              ;;
2068
2069 010302 170360 170360 170360  ADDR2: .WORD  ALT4N,ALT4N,ALT4N,ALT4N ; TEST PATTERN
2070 010310 170360
2071
2072
2073
2074
2075
2076 010312 000004      ;*****
2077 010314 170127 047600      ;*TEST 132      TEST OF LOAD-FSRC MODE-7, STORE-FDST MODE-3, D MODE
2078 010320 016767 000132 170642      ;*****
2079 010326 016767 000126 170636      TST132: SCOPE
2080 010334 016767 000122 170632      LDFPS    #047600      ; D MODE FPS
2081 010342 016767 000116 170626      MOV     ADDR3+0,$REG0  ; MOVE PATTERN
2082
2083 010350 012767 001170 170632      MOV     ADDR3+2,$REG1  ;
2084 010356 012705 001214      MOV     ADDR3+4,$REG2  ;
2085 010362 172675 177774      MOV     ADDR3+6,$REG3  ;
2086
2087 010366 012767 001200 170616      MOV     #$REG0,$REG10  ; ADDR(DATA)
2088 010374 012704 001212      MOV     #$REG10+4,R5   ; ADDR(ADDR(DATA))+4
2089 010400 174234      LDD     2-4(R5),AC2     ; M7-R5
2090
2091 010402 020427 001214      MOV     #$REG4,$REG11  ; ADDR(DEST)
2092 010406 001401      MOV     #$REG11,R4     ; ADDR(ADDR(DEST))
2093 010410 104034      STD     AC2,2(R4)+     ; M3-R4
2094 010412
2095
2096 010412 026767 170552 170560      CMP     R4,$REG11+2    ; WAS FDST ADDR REG INCRE RIGHT AMOUNT?
2097 010420 001014      BEQ     66$            ;
2098 010422 026767 170544 170552      66$:  ERROR    34      ; NOT EQUAL, SIGNAL ERROR
2099 010430 001010
2100 010432 026767 170536 170544      CMP     $REG0,$REG4    ; 1ST WORD PATTERN CHECK?
2101 010440 001004      BNE     64$            ;
2102 010442 026767 170530 170536      CMP     $REG1,$REG5    ; 2ND WORD PATTERN CHECK?
2103 010450 001401      BNE     64$            ;
2104 010452 104035      CMP     $REG2,$REG6    ; 3RD WORD PATTERN CHECK?
2105
2106 010454      64$:  ERROR    35      ; 4TH WORD PATTERN CHECK?
2107 010454 000404      65$:
2108
2109 010456 125252 125252 125252  ADDR3: .WORD  ALTN,ALTN,ALTN,ALTN ; TEST PATTERN
2110 010464 125252

```


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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 46
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T132 TEST OF LOAD-FSRC MODE-7, STORE-FDST MODE-3, D MODE

SEQ 0050

```

2111
2112
2113
2114
2115
2116 010466 000004
2117 010470 170127 047600
2118 010474 016767 000112 170466
2119 010502 016767 000106 170462
2120 010510 016767 000102 170456
2121 010516 016767 000076 170452
2122
2123 010524 172767 170440
2124
2125 010530 012705 001200
2126 010534 174325
2127
2128 010536 020527 001210
2129 010542 001401
2130 010544 104036
2131 010546
2132
2133 010546 026767 170416 170424
2134 010554 001014
2135 010556 026767 170410 170416
2136 010564 001010
2137 010566 026767 170402 170410
2138 010574 001004
2139 010576 026767 170374 170402
2140 010604 001401
2141 010606 104031
2142
2143 010610
2144 010610 000404
2145
2146 010612 007417 007417 007417
2147 010620 007417
2148
2149
2150
2151
2152
2153 010622 000004
2154 010624 170127 047600
2155 010630 016767 000114 170332
2156 010636 016767 000110 170326
2157 010644 016767 000104 170322
2158 010652 016767 000100 170316
2159
2160 010660 012700 001170
2161 010664 172420
2162
2163 010666 012703 001200
2164 010672 174013
2165
2166 010674 020027 001200

```

```

*****
; TEST 133 TEST OF LOAD-FSRC MODE-6(PC), STORE-FDST MODE-2, D MODE
*****
TST133: SCOPE
LDFPS #047600 ; D MODE FPS
MOV ADDR4+0, $REG0 ; MOVE PATTERN
MOV ADDR4+2, $REG1
MOV ADDR4+4, $REG2
MOV ADDR4+6, $REG3
LDD $REG0, AC3 ; M6-R7
MOV # $REG4, R5 ; ADDR(DEST)
STD AC3, (R5)+ ; M2-R5
CMP R5, # $REG4+10 ; WAS FDST ADDR REG INCRE RIGHT AMOUNT?
BEQ 66$ ; NOT EQUAL, SIGNAL ERROR
ERROR 36
66$:
CMP $REG0, $REG4 ; 1ST WORD PATTERN CHECK?
BNE 64$
CMP $REG1, $REG5 ; 2ND WORD PATTERN CHECK?
BNE 64$
CMP $REG2, $REG6 ; 3RD WORD PATTERN CHECK?
BNE 64$
CMP $REG3, $REG7 ; 4TH WORD PATTERN CHECK?
BEQ 65$
ERROR 31 ; PATTERN DOESNT MATCH
64$:
65$: BR TST134 ;;
ADDR4: .WORD ALT4P, ALT4P, ALT4P, ALT4P ; TEST PATTERN

```

```

*****
; TEST 134 TEST OF LOAD-FSRC MODE-2, STORE-FDST MODE-1, D MODE
*****
TST134: SCOPE
LDFPS #047600 ; D MODE FPS
MOV ADDR5+0, $REG0 ; MOVE PATTERN
MOV ADDR5+2, $REG1
MOV ADDR5+4, $REG2
MOV ADDR5+6, $REG3
MOV # $REG0, R0 ; ADDR(DATA)
LDD (R0)+, AC0 ; M2-R0
MOV # $REG4, R3 ; ADDR(DEST)
STD AC0, (R3) ; M1-R3
CMP R0, # $REG0+10 ; WAS FSRC ADDR REG INCRE RIGHT AMOUNT?

```

```

2167 010700 001401      BEQ      66$      ;
2168 010702 104037      ERROR    37      ; NOT EQUAL, SIGNAL ERROR
2169 010704      66$:
2170
2171 010704 026767 170260 170266      CMP      $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2172 010712 001014      BNE      64$      ;
2173 010714 026767 170252 170260      CMP      $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2174 010722 001010      BNE      64$      ;
2175 010724 026767 170244 170252      CMP      $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2176 010732 001004      BNE      64$      ;
2177 010734 026767 170236 170244      CMP      $REG3,$REG7      ; 4TH WORD PATTERN CHECK?
2178 010742 001401      BEQ      65$      ;
2179 010744 104040      ERROR    40      ; PATTERN DOESNT MATCH
2180
2181      65$:
2182 010746      BR      TST135      ;;
2183
2184 010750 125252 125252 125252 ADDR5: .WORD  ALTN,ALTN,ALTN,ALTN      ; TEST PATTERN
2185 010756 125252
2186
2187
2188      ;*****
2189      ;*TEST 135      TEST OF LOAD-FSRC MODE-5, STORE-FDST MODE-7(PC), D MODE
2190      ;*****
2191 010760 000004      TST135: SCOPE
2192 010762 170127 047600      LDAPS   #047600      ; D MODE FPS
2193 010766 016767 000126 170174      MOV     ADDR6+0,$REG0      ; MOVE PATTERN
2194 010774 016767 000122 170170      MOV     ADDR6+2,$REG1      ;
2195 011002 016767 000116 170164      MOV     ADDR6+4,$REG2      ;
2196 011010 016767 000112 170160      MOV     ADDR6+6,$REG3      ;
2197
2198 011016 012767 001170 170164      MOV     #$REG0,$REG10      ; ADDR(DATA)
2199 011024 012701 001212      MOV     #$REG10+2,R1      ; ADDR(ADDR(DATA)+2)
2200 011030 172551      LDD      2-(R1),AC1      ; M5-R1
2201
2202 011032 012767 001200 170152      MOV     #$REG4,$REG11      ; ADDR(DEST)
2203 011040 174177 170146      STD      AC1,$REG11      ; M7-R7
2204
2205 011044 020127 001210      CMP      R1,$REG10      ; WAS FSRC ADDR REG DECRE RIGHT AMOUNT?
2206 011050 001401      BEQ      66$      ;
2207 011052 104041      ERROR    41      ; NOT EQUAL, SIGNAL ERROR
2208      66$:
2209
2210 011054 026767 170110 170116      CMP      $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2211 011062 001014      BNE      64$      ;
2212 011064 026767 170102 170110      CMP      $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2213 011072 001010      BNE      64$      ;
2214 011074 026767 170074 170102      CMP      $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2215 011102 001004      BNE      64$      ;
2216 011104 026767 170066 170074      CMP      $REG3,$REG7      ; 4TH WORD PATTERN CHECK?
2217 011112 001401      BEQ      65$      ;
2218 011114 104042      ERROR    42      ; PATTERN DOESNT MATCH
2219      64$:
2220      65$:
2221 011116      BR      TST136      ;;
2222 011116 000404

```


C06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 48
 DQFPAB.P11 19-APR-77 13:36 T135 TEST OF LOAD-FSRC MODE-5, STORE-FDST MODE-7(PC), D MODE

SEQ 0052

```

2223 011120 007417 007417 007417 ADDR6: .WORD ALT4P,ALT4P,ALT4P,ALT4P ; TEST PATTERN
2224 011126 007417
2225
2226
2227
2228 ;*****
2229 ;*TEST 136 TEST OF LOAD-FSRC MODE-2(PC), STORE-FDST MODE-7, D MODE
2230 ;*****
2230 011130 000004 TST136: SCOPE
2231 011132 170127 047600 LDFPS #047600 ; D MODE FPS
2232 011136 016767 000130 170024 MOV ADDR7+0,$REG0 ; MOVE PATTERN
2233 011144 016767 000124 170020 MOV ADDR7+2,$REG1 ;
2234 011152 016767 000120 170014 MOV ADDR7+4,$REG2 ;
2235 011160 016767 000114 170010 MOV ADDR7+6,$REG3 ;
2236
2237 011166 016767 167776 000002 MOV $REG0,1$ ; PUT DATA
2238 011174 172627 LDD (PC)+,AC2 ; M2-R7
2239 011176 000000 1$: .WORD 0 ; DATA
2240 011200 000403 BR 2$ ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
2241 011202 104120 ERROR 120 ; NOT HERE (+4 INCR)
2242 011204 104121 ERROR 121 ; OR HERE (+6 INCR)
2243 011206 104122 ERROR 122 ; OR HERE (+10 INCR)
2244
2245 011210 012767 001200 167772 2$: MOV #$REG4,$REG10 ; ADDR(DEST)
2246 011216 012700 001152 MOV #$REG10-36,R0 ; ADDR(ADDR(DEST))-36
2247 011222 174270 000036 STD AC2,336(R0) ; M7-R0
2248
2249 011226 026767 167736 167744 CMP $REG0,$REG4 ; 1ST WORD PATTERN CHECK?
2250 011234 001014 BNE 64$ ;
2251 011236 026767 167730 167736 CMP $REG1,$REG5 ; 2ND WORD PATTERN CHECK?
2252 011244 001010 BNE 64$ ;
2253 011246 026767 167722 167730 CMP $REG2,$REG6 ; 3RD WORD PATTERN CHECK?
2254 011254 001004 BNE 64$ ;
2255 011256 026767 167714 167722 CMP $REG3,$REG7 ; 4TH WORD PATTERN CHECK?
2256 011264 001401 BEQ 65$ ;
2257 011266 104043 64$: ERROR 43 ; PATTERN DOESNT MATCH
2258
2259 011270 65$: BR TST137 ;
2260 011270 000404
2261
2262 011272 104117 000000 000000 ADDR7: .WORD ERROR117,0,0,0 ; TEST PATTERN
2263 011300 000000
2264
2265
2266 ;*****
2267 ;*TEST 137 TEST OF LOAD-FSRC MODE-7(PC), STORE-FDST MODE-6, D MODE
2268 ;*****
2269 011302 000004 TST137: SCOPE
2270 011304 170127 047600 LDFPS #047600 ; D MODE FPS
2271 011310 016767 000112 167652 MOV ADDR10+0,$REG0 ; MOVE PATTERN
2272 011316 016767 000106 167646 MOV ADDR10+2,$REG1 ;
2273 011324 016767 000102 167642 MOV ADDR10+4,$REG2 ;
2274 011332 016767 000076 167636 MOV ADDR10+6,$REG3 ;
2275
2276 011340 012767 001170 167642 MOV #$REG0,$REG10 ; ADDR(DATA)
2277 011346 172777 167636 LDD 3$REG10,AC3 ; M7-R7
2278

```

D06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 49
 D0FPAB.P11 19-APR-77 13:36 T137 TEST OF LOAD-FSRC MODE-7(PC), STORE-FDST MODE-6, D MODE

SEQ 0053

```

2279 011352 012704 001212      MOV      $SREG4+12,R4      ; ADDR(DEST)+12
2280 011356 174364 177766      STD      AC3,-12(R4)      ; M6-R4
2281
2282 011362 026767 167602 167610      CMP      $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2283 011370 001014 64$      BNE      64$
2284 011372 026767 167574 167602      CMP      $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2285 011400 001010 64$      BNE      64$
2286 011402 026767 167566 167574      CMP      $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2287 011410 001004 64$      BNE      64$
2288 011412 026767 167560 167566      CMP      $REG3,$REG7      ; 4TH WORD PATTERN CHECK?
2289 011420 001401 65$      BEQ      65$
2290 011422 104044 64$:      ERROR      44      ; PATTERN DOESNT MATCH
2291
2292 011424 65$:
2293 011424 000404      BR      TST140      ;;
2294
2295 011426 170360 170360 170360      ADDR10: .WORD      ALT4N,ALT4N,ALT4N,ALT4N ; TEST PATTERN
2296 011434 170360
2297
2298
2299
2300
2301
2302 011436 000004
2303 011440 170127 047600
2304 011444 016767 000114 167516      MOV      ADDR11+0,$REG0      ; D MODE FPS
2305 011452 016767 000110 167512      MOV      ADDR11+2,$REG1      ; MOVE PATTERN
2306 011460 016767 000104 167506      MOV      ADDR11+4,$REG2
2307 011466 016767 000100 167502      MOV      ADDR11+6,$REG3
2308
2309 011474 012767 001170 167506      MOV      $SREG0,$REG10      ; ADDR(DATA)
2310 011502 012702 001210      MOV      $SREG10,R2      ; ADDR(ADDR(DATA))
2311 011506 172432      LDD      3(R2)+,AC0      ; M3-R2
2312
2313 011510 012767 104117 000002      MOV      $ERROR117,1$      ; SETUP ERROR CALL FOR WRONG INCREMENT
2314 011516 174027      STD      AC0,(PC)+      ; M2-R7
2315 011520 000000 1$:      .WORD      0      ; DEST
2316 011522 000403      BR      2$      ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
2317 011524 104120      ERROR      120      ; NOT HERE (+4 INCRE)
2318 011526 104121      ERROR      121      ; OR HERE (+6 INCRE)
2319 011530 104122      ERROR      122      ; OR HERE (+10 INCRE)
2320 011532 016767 177762 167440 2$:      MOV      1$, $SREG4      ; STORE DEST
2321
2322 011540 020227 001212      CMP      R2,$SREG10+2      ; WAS FSRC ADDR REG INCRE BY RIGHT AMOUNT?
2323 011544 001401 64$      BEQ      64$
2324 011546 104045      ERROR      45      ; NOT EQUAL, SIGNAL ERROR
2325 011550 64$:
2326
2327 011550 026767 167414 167422      CMP      $REG0,$REG4      ; WAS 1 WORD STORED OK?
2328 011556 001401 65$      BEQ      65$
2329 011560 104046      ERROR      46      ; NOT EQUAL, SIGNAL ERROR
2330 011562 65$:
2331
2332 011562 000404      BR      TST141      ;;
2333
2334 011564 052525 000000 000000      ADDR11: .WORD      ALTP,0,0,0 ; TEST PATTERN

```


E06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 50
DOFPAB.P11 19-APR-77 13:36

T140 TEST OF LOAD-FSRC MODE-3, STORE-FDST MODE-2(PC), D MODE

SEQ 0054

2335 011572 000000

2336
23372338 ;*****
2339 ;*TEST 141 TEST OF LOAD-FSRC MODE-6, STORE-FDST MODE-4, D MODE
2340 ;*****

2341 011574 000004

2342 011576 170127 047600

2343 011602 016767 000116 167360

2344 011610 016767 000112 167354

2345 011616 016767 000106 167350

2346 011624 016767 000102 167344

2347

2348 011632 012703 001262

2349 011636 172563 177706

2350

2351 011642 012701 001210

2352 011646 174141

2353

2354 011650 020127 001200

2355 011654 001401

2356 011656 104047

2357 011660

2358

2359 011660 026767 167304 167312

2360 011666 001014

2361 011670 026767 167276 167304

2362 011676 001010

2363 011700 026767 167270 167276

2364 011706 001004

2365 011710 026767 167262 167270

2366 011716 001401

2367 011720 104050

2368

2369 011722

2370 011722 000404

2371

2372 011724 170360 170360 170360

2373 011732 170360

2374

2375

2376

2377

2378

2379 011734 000004

2380 011736 170127 047600

2381 011742 016767 000102 167220

2382 011750 016767 000076 167214

2383 011756 016767 000072 167210

2384 011764 016767 000066 167204

2385

2386 011772 172637 001170

2387

2388 011776 174203

2389 012000 174367 167174

2390

TST141: SCOPE

LDFPS

#047600

; D MODE FPS

MOV ADRD12+0,\$REG0

; MOVE PATTERN

MOV ADRD12+2,\$REG1

MOV ADRD12+4,\$REG2

MOV ADRD12+6,\$REG3

MOV #\$REG0+72,R3

; ADDR(DATA)+72

LDD -72(R3),AC1

; M6-R3

MOV #\$REG4+10,R1

; ADDR(DEST+10)

STD AC1,-(R1)

; M4-R1

CMP R1,\$REG4

; WAS FDST ADDR REG DECRE RIGHT AMOUNT?

BEQ 66\$

ERROR 47

; NOT EQUAL, SIGNAL ERROR

66\$:

CMP \$REG0,\$REG4

; 1ST WORD PATTERN CHECK?

BNE 64\$

CMP \$REG1,\$REG5

; 2ND WORD PATTERN CHECK?

BNE 64\$

CMP \$REG2,\$REG6

; 3RD WORD PATTERN CHECK?

BNE 64\$

CMP \$REG3,\$REG7

; 4TH WORD PATTERN CHECK?

BEQ 65\$

ERROR 50

; PATTERN DOESNT MATCH

64\$:

65\$:

BR TST142

;;

ADR12: .WORD ALT4N,ALT4N,ALT4N,ALT4N ; TEST PATTERN

;*****
;*TEST 142 TEST OF LOAD-FSRC MODE-3(PC), STORE-FDST MODE-0, D MODE
;*****

TST142: SCOPE

LDFPS

#047600

; D MODE FPS

MOV ADRD13+0,\$REG0

; MOVE PATTERN

MOV ADRD13+2,\$REG1

MOV ADRD13+4,\$REG2

MOV ADRD13+6,\$REG3

LDD 2#\$REG0,AC2

; M3-R7

STD AC2,AC3

; M0-R3

STD AC3,\$REG4

; M6-R7 WORKS

F06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 51
 DQFPAB.P11 19-APR-77 13:36 T142 TEST OF LOAD-FSRC MODE-3(PC), STORE-FDST MODE-0, D MODE

SEQ 0055

```

2391 012004 026767 167160 167166      CMP      $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2392 012012 001014      BNE      64$              ;
2393 012014 026767 167152 167160      CMP      $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2394 012022 001010      BNE      64$              ;
2395 012024 026767 167144 167152      CMP      $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2396 012032 001004      BNE      64$              ;
2397 012034 026767 167136 167144      CMP      $REG3,$REG7      ; 4TH WORD PATTERN CHECK?
2398 012042 001401      BEQ      65$              ;
2399 012044 104051      64$:      ERROR      51      ; PATTERN DOESNT MATCH
2400
2401 012046      65$:
2402 012046 000404      BR      TST143      ;;
2403
2404 012050 125252 125252 125252  ADDR13: .WORD  ALTN,ALTN,ALTN,ALTN      ; TEST PATTERN
2405 012056 125252
2406
2407
2408
2409
2410
2411 012060 000004      ;*****
2412 012062 170127 047600      ;*TEST 143      TEST OF LOAD-FSRC MODE-0, STORE-FDST MODE-5, D MODE
2413 012066 016767 000122 167074      ;*****
2414 012074 016767 000116 167070      ;*****
2415 012102 016767 000112 167064      TST143: SCOPE
2416 012110 016767 000106 167060      LDFPS      #047600      ; D MODE FPS
2417
2418 012116 172467 167046      MOV      ADDR14+0,$REG0      ; MOVE PATTERN
2419 012122 172500      MOV      ADDR14+2,$REG1
2420
2421 012124 012767 001200 167056      MOV      ADDR14+4,$REG2
2422 012132 012702 001212      MOV      ADDR14+6,$REG3
2423 012136 174152      LDO      $REG0,AC0      ; M6-R7 WORKS
2424
2425 012140 020227 001210      LDO      AC0,AC1      ; M0-R0
2426 012144 001401      MOV      #$REG4,$REG10      ; ADDR(DEST)
2427 012146 104052      MOV      #$REG10+2,R2      ; ADDR(ADDR(DEST)+2)
2428 012150      STD      AC1,R-(R2)      ; M5-R2
2429
2430 012150 026767 167014 167022      CMP      R2,$REG10      ; WAS FDST ADDR REG DECRE RIGHT AMOUNT?
2431 012156 001014      BEQ      66$              ;
2432 012160 026767 167006 167014      66$:      ERROR      52      ; NOT EQUAL, SIGNAL ERROR
2433 012166 001010
2434 012170 026767 167000 167006      CMP      $REG0,$REG4      ; 1ST WORD PATTERN CHECK?
2435 012176 001004      BNE      64$              ;
2436 012200 026767 166772 167000      CMP      $REG1,$REG5      ; 2ND WORD PATTERN CHECK?
2437 012206 001401      BNE      64$              ;
2438 012210 104046      CMP      $REG2,$REG6      ; 3RD WORD PATTERN CHECK?
2439
2440      64$:      ERROR      46      ; 4TH WORD PATTERN CHECK?
2441 012212      65$:      PATTERN DOESNT MATCH
2442 012212 000404      BR      TST144      ;;
2443 012214 125252 125252 125252  ADDR14: .WORD  ALTN,ALTN,ALTN,ALTN      ; TEST PATTERN
2444 012222 125252
2445
2446

```


G06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 52
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T144 TEST OF LOAD-FSRC MODE-1, STORE-FDST MODE-4, F MODE

SEQ 0056

```

2447
2448
2449
2450 012224 000004
2451 012226 170127 047400
2452 012232 016767 000060 166730
2453 012240 016767 000054 166724
2454
2455 012246 012702 001170
2456 012252 172412
2457
2458 012254 012705 001200
2459 012260 174045
2460
2461 012262 020527 001174
2462 012266 001401
2463 012270 104053
2464 012272
2465
2466 012272 026767 166672 166674
2467 012300 001004
2468 012302 026767 166664 166666
2469 012310 001401
2470 012312 104054
2471
2472 012314
2473 012314 000402
2474
2475 012316 170360 170360
2476
2477
2478
2479
2480
2481 012322 000004
2482 012324 170127 047400
2483 012330 016767 000070 166632
2484 012336 016767 000064 166626
2485
2486 012344 012767 001170 166626
2487 012352 012704 001200
2488 012356 172534
2489
2490 012360 012700 001166
2491 012364 174160 000006
2492
2493 012370 020427 001202
2494 012374 001401
2495 012376 104055
2496 012400
2497
2498 012400 026767 166564 166566
2499 012406 001004
2500 012410 026767 166556 166560
2501 012416 001401
2502 012420 104056

*****
;TEST 144 TEST OF LOAD-FSRC MODE-1, STORE-FDST MODE-4, F MODE
*****
TST144: SCOPE
LDFPS #047400 ; F MODE FPS
MOV ADRF1+0,$REG0 ; MOVE PATTERN
MOV ADRF1+2,$REG1 ;
;
MOV #SREG0,R2 ; ADDR(DATA)
LDF (R2),AC0 ; M1-R2
;
MOV #SREG2+4,R5 ; ADDR(DEST+4)
STF AC0,-(R5) ; M4-R5
;
CMP R5,$SREG2 ; WAS FDST ADDR REG DECREASE RIGHT AMOUNT?
BEQ 66$ ;
ERROR 53 ; NOT EQUAL, SIGNAL ERROR
66$:
;
CMP $REG0,$REG2 ; 1ST WORD PATTERN CHECK?
BNE 64$ ;
CMP $REG1,$REG3 ; 2ND WORD PATTERN CHECK?
BEQ 65$ ;
ERROR 54 ; PATTERN DOESNT MATCH
64$:
65$: BR TST145 ;;
;
ADRF1: .WORD ALT4N,ALT4N ; TEST PATTERN

*****
;TEST 145 TEST OF LOAD-FSRC MODE-3, STORE-FDST MODE-6, F MODE
*****
TST145: SCOPE
LDFPS #047400 ; F MODE FPS
MOV ADRF2+0,$REG0 ; MOVE PATTERN
MOV ADRF2+2,$REG1 ;
;
MOV #SREG0,$REG4 ; ADDR(DATA)
MOV #SREG4,R4 ; ADDR(ADDR(DATA))
LDF 2(R4)+,AC1 ; M3-R4
;
MOV #SREG2-6,R0 ; ADDR(DEST)-6
STF AC1,6(R0) ; M6-R0
;
CMP R4,$SREG4+2 ; WAS FSRC ADDR REG INCREASE RIGHT AMOUNT?
BEQ 66$ ;
ERROR 55 ; NOT EQUAL, SIGNAL ERROR
66$:
;
CMP $REG0,$REG2 ; 1ST WORD PATTERN CHECK?
BNE 64$ ;
CMP $REG1,$REG3 ; 2ND WORD PATTERN CHECK?
BEQ 65$ ;
ERROR 56 ; PATTERN DOESNT MATCH
64$:

```

H06

FPU BASIC INSTR TESTS MACY11 27(1006)
DQFPAB.P11 19-APR-77 13:3625-APR-77 09:12 PAGE 53
T145 TEST OF LOAD-FSRC MODE-3, STORE-FDST MODE-6, F MODE

SEQ 0057

```

2503
2504 012422
2505 012422 000402
2506
2507 012424 052525 052525
2508
2509
2510
2511
2512
2513 012430 000004
2514 012432 170127 047400
2515 012436 016767 000104 166524
2516 012444 016767 000100 166520
2517
2518 012452 012767 001170 166520
2519 012460 012700 001202
2520 012464 172650
2521
2522 012466 012767 001174 166506
2523 012474 012702 001202
2524 012500 174232
2525
2526 012502 020027 001200
2527 012506 001401
2528 012510 104057
2529 012512
2530
2531 012512 020227 001204
2532 012516 001401
2533 012520 104060
2534 012522
2535
2536 012522 026767 166442 166444
2537 012530 001004
2538 012532 026767 166434 166436
2539 012540 001401
2540 012542 104061
2541
2542 012544
2543 012544 000402
2544
2545 012546 007417 007417
2546
2547
2548
2549
2550
2551 012552 000004
2552 012554 170127 047400
2553 012560 016767 000060 166402
2554 012566 016767 000054 166376
2555
2556 012574 012767 001170 166376
2557 012602 012702 001162
2558 012606 172772 000016

65$: BR TST146 ;;
ADRF2: .WORD ALTP,ALTP ; TEST PATTERN

*****
; TEST 146 TEST OF LOAD-FSRC MODE-5, STORE-FDST MODE-3, F MODE
*****
TST146: SCOPE
LDFPS #047400 ; F MODE FPS
MOV ADRF3+0,$REG0 ; MOVE PATTERN
MOV ADRF3+2,$REG1 ;
;
MOV #$REG0,$REG4 ; ADDR(DATA)
MOV #$REG4+2,R0 ; ADDR(ADDR(DATA)+2)
LDF 2-(R0),AC2 ; M5-R0
;
MOV #$REG2,$REG5 ; ADDR(DEST)
MOV #$REG5,R2 ; ADDR(ADDR(DEST))
STF AC2,2(R2)+ ; M3-R2
;
CMP R0,$REG4 ; WAS FSRC ADDR REG DECREASE RIGHT AMOUNT?
BEQ 66$ ;
ERROR 57 ; NOT EQUAL, SIGNAL ERROR
66$:
;
CMP R2,$REG5+2 ; WAS FDST ADDR REG INCREASE RIGHT AMOUNT?
BEQ 67$ ;
ERROR 60 ; NOT EQUAL, SIGNAL ERROR
67$:
;
CMP $REG0,$REG2 ; 1ST WORD PATTERN CHECK?
BNE 64$ ;
CMP $REG1,$REG3 ; 2ND WORD PATTERN CHECK?
BEQ 65$ ;
ERROR 61 ; PATTERN DOESNT MATCH
64$:
65$: BR TST147 ;;
ADRF3: .WORD ALT4P,ALT4P ; TEST PATTERN

*****
; TEST 147 TEST OF LOAD-FSRC MODE-7, STORE-FDST MODE-1, F MODE
*****
TST147: SCOPE
LDFPS #047400 ; F MODE FPS
MOV ADRF4+0,$REG0 ; MOVE PATTERN
MOV ADRF4+2,$REG1 ;
;
MOV #$REG0,$REG4 ; ADDR(DATA)
MOV #$REG4-16,R2 ; ADDR(ADDR(DATA))-16
LDF 216(R2),AC3 ; M7-R2

```



```

2559
2560 012612 012701 001174      MOV    #SREG2,R1      ; ADDR(DEST)
2561 012616 174311      STF    AC3,(R1)      ; M1-R1
2562
2563 012620 026767 166344 166346  CMP    SREG0,SREG2      ; 1ST WORD PATTERN CHECK?
2564 012626 001004      BNE    64$              ;
2565 012630 026767 166336 166340  CMP    SREG1,SREG3      ; 2ND WORD PATTERN CHECK?
2566 012636 001401      BEQ    65$              ;
2567 012640 104062      64$:  ERROR    62              ; PATTERN DOESNT MATCH
2568
2569 012642      65$:
2570 012642 000402      BR      TST150          ;;
2571
2572 012644 125252 125252  ADRF4: .WORD  ALTN,ALTN      ; TEST PATTERN
2573
2574
2575 ;*****
2576 ;*TEST 150      TEST OF LOAD-FSRC MODE-3(PC), STORE-FDST MODE-2, F MODE
2577 ;*****
2578 012650 000004      TST150: SCOPE
2579 012652 170127 047400  LDFPS   #047400      ; F MODE FPS
2580 012656 016767 000056 166304  MOV    ADRF5+0,SREG0    ; MOVE PATTERN
2581 012664 016767 000052 166300  MOV    ADRF5+2,SREG1    ;
2582
2583 012672 172437 001170  LDF     2*SREG0,AC0      ; M3-R7
2584
2585 012676 012703 001174  MOV    #SREG2,R3      ; ADDR(DEST)
2586 012702 174023      STF    AC0,(R3)+      ; M2-R3
2587
2588 012704 020327 001200  CMP     R3,#SREG2+4      ; WAS FDST ADDR REG INCRE RIGHT AMOUNT?
2589 012710 001401      BEQ    66$              ;
2590 012712 104063      ERROR    63              ; NOT EQUAL, SIGNAL ERROR
2591 012714      66$:
2592
2593 012714 026767 166250 166252  CMP    SREG0,SREG2      ; 1ST WORD PATTERN CHECK?
2594 012722 001004      BNE    64$              ;
2595 012724 026767 166242 166244  CMP    SREG1,SREG3      ; 2ND WORD PATTERN CHECK?
2596 012732 001401      BEQ    65$              ;
2597 012734 104064      64$:  ERROR    64              ; PATTERN DOESNT MATCH
2598
2599 012736      65$:
2600 012736 000402      BR      TST151          ;;
2601
2602 012740 007417 007417  ADRF5: .WORD  ALT4P,ALT4P      ; TEST PATTERN
2603
2604
2605 ;*****
2606 ;*TEST 151      TEST OF LOAD-FSRC MODE-7(PC), STORE-FDST MODE-7, F MODE
2607 ;*****
2608 012744 000004      TST151: SCOPE
2609 012746 170127 047400  LDFPS   #047400      ; F MODE FPS
2610 012752 016767 000064 166210  MOV    ADRF6+0,SREG0    ; MOVE PATTERN
2611 012760 016767 000060 166204  MOV    ADRF6+2,SREG1    ;
2612
2613 012766 012767 001170 166204  MOV    #SREG0,SREG4      ; ADDR(DATA)
2614 012774 172577      LDF     2*SREG4,AC1      ; M7-R7

```

```

2615
2616 013000 012767 001174 166174      MOV    #SREG2,SREG5      ; ADDR(DEST)
2617 013006 012705 001226      MOV    #SREG5+24,R5      ; ADDR(ADDR(DEST))+24
2618 013012 174175 177754      STF     AC1,2-24(R5)      ; M7-R5
2619
2620 013016 026767 166146 166150      CMP     $REG0,$REG2      ; 1ST WORD PATTERN CHECK?
2621 013024 001004 64$          BNE     64$                      ;
2622 013026 026767 166140 166142      CMP     $REG1,$REG3      ; 2ND WORD PATTERN CHECK?
2623 013034 001401 65$          BEQ     65$                      ;
2624 013036 104065 64$:          ERROR  65$                      ; PATTERN DOESNT MATCH
2625
2626 013040 65$:                      BR      TST152                  ;;
2627 013040 000402
2628
2629 013042 125252 125252      ADRF6:  .WORD  ALTN,ALTN      ; TEST PATTERN
2630
2631
2632
2633
2634
2635
2636 013046 000004
2637 013050 170127 047400      LDFPS   #047400          ; F MODE FPS
2638 013054 016767 000056 166106      MOV     ADRF7+0,$REG0      ; MOVE PATTERN
2639 013062 016767 000052 166102      MOV     ADRF7+2,$REG1      ;
2640
2641 013070 012703 001170      MOV     #SREG0,R3          ; ADDR(DATA)
2642 013074 172623      LDF     (R3)+,AC2          ; M2-R3
2643
2644 013076 174237 001174      STF     AC2,2#$SREG2      ; M3-R7
2645
2646 013102 020327 001174      CMP     R3,$SREG0+4        ; WAS FSRC ADDR REG INCRE RIGHT AMOUNT?
2647 013106 001401 66$          BEQ     66$                      ;
2648 013110 104066 66$:          ERROR  66$                      ; NOT EQUAL, SIGNAL ERROR
2649
2650 013112 026767 166052 166054      CMP     $REG0,$REG2      ; 1ST WORD PATTERN CHECK?
2651 013120 001004 64$          BNE     64$                      ;
2652 013122 026767 166044 166046      CMP     $REG1,$REG3      ; 2ND WORD PATTERN CHECK?
2653 013130 001401 65$          BEQ     65$                      ;
2654 013132 104064 64$:          ERROR  64$                      ; PATTERN DOESNT MATCH
2655
2656 013134 65$:                      BR      TST153                  ;;
2657 013134 000402
2658
2659 013136 170360 170360      ADRF7:  .WORD  ALT4N,ALT4N      ; TEST PATTERN
2660
2661
2662
2663
2664
2665
2666 013142 000004
2667 013144 170127 047400      LDFPS   #047400          ; F MODE FPS
2668 013150 016767 000076 166012      MOV     ADRF10+0,$REG0      ; MOVE PATTERN
2669 013156 016767 000072 166006      MOV     ADRF10+2,$REG1      ;
2670 013164 012705 001174      MOV     #SREG0+4,R5        ; ADDR(DATA+4)

```


K06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 56
 DQFPAB.P11 19-APR-77 13:36 T153 TEST OF LOAD-FSRC MODE-4, STORE-FDST MODE-5, F MODE

SEQ 0060

```

2671 013170 172745          LDF      -(R5),AC3          ; M4-R5
2672
2673 013172 012767 001174 166000      MOV      #SREG2,SREG4          ; ADDR(DEST)
2674 013200 012704 001202          MOV      #SREG4+2,R4          ; ADDR(ADDR(DEST)+2)
2675 013204 174354          STF      AC3,2-(R4)          ; M5-R4
2676
2677 013206 020527 001170          CMP      R5,#SREG0          ; WAS FSRC ADDR REG DECRE RIGHT AMOUNT?
2678 013212 001401          BEQ      66$          ;
2679 013214 104067          ERROR    67          ; NOT EQUAL, SIGNAL ERROR
2680 013216          66$:
2681
2682 013216 020427 001200          CMP      R4,#SREG4          ; WAS FDST ADDR REG DECRE RIGHT AMOUNT?
2683 013222 001401          BEQ      67$          ;
2684 013224 104070          ERROR    70          ; NOT EQUAL, SIGNAL ERROR
2685 013226          67$:
2686
2687 013226 026767 165736 165740      CMP      $REG0,$REG2          ; 1ST WORD PATTERN CHECK?
2688 013234 001004          BNE      64$          ;
2689 013236 026767 165730 165732      CMP      $REG1,$REG3          ; 2ND WORD PATTERN CHECK?
2690 013244 001401          BEQ      65$          ;
2691 013246 104071          ERROR    71          ; PATTERN DOESNT MATCH
2692
2693 013250          64$:
2694 013250 000402          65$:      BR      TST154          ;;
2695
2696 013252 052525 052525          ADRF10: .WORD  ALTP,ALTP          ; TEST PATTERN
2697
2698
2699
2700
2701
2702 013256 000004          ;*****
2703 013260 170127 047400          ;*TEST 154      TEST OF LOAD-FSRC MODE-2(PC), STORE-FDST MODE-7(PC), F MODE
2704 013264 016767 000070 165676          ;*****
2705 013272 016767 000064 165672          TST154: SCOPE
2706
2707 013300 016767 165664 000002          LDFPS    #047400          ; F MODE FPS
2708 013306 172427          MOV      ADRF11+0,$REG0          ; MOVE PATTERN
2709 013310 000000          MOV      ADRF11+2,$REG1          ;
2710 013312 000403          MOV      $REG0,1$          ; PUT DATA
2711 013314 104120          LDF      (PC)+,AC0          ; M2-R7
2712 013316 104121          .WORD    0          ; DATA
2713 013320 104122          BR      2$          ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
2714
2715 013322 012767 001174 165650 2$:      MOV      #SREG2,SREG4          ; ADDR(DEST)
2716 013330 174077 165644          STF      AC0,2$SREG4          ; M7-R7
2717
2718 013334 026767 165630 165632      CMP      $REG0,$REG2          ; 1ST WORD PATTERN CHECK?
2719 013342 001004          BNE      64$          ;
2720 013344 026767 165622 165624      CMP      $REG1,$REG3          ; 2ND WORD PATTERN CHECK?
2721 013352 001401          BEQ      65$          ;
2722 013354 104072          ERROR    72          ; PATTERN DOESNT MATCH
2723
2724 013356          64$:
2725 013356 000402          65$:      BR      TST155          ;;
2726

```

L06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 57
 DQFPAB.P11 19-APR-77 13:36 T154 TEST OF LOAD-FSRC MODE-2(PC), STORE-FDST MODE-7(PC), F MODE

SEQ 0061

```

2727 013360 104117 000000 ADRF11: .WORD ERROR117,0 ; TEST PATTERN
2728
2729
2730 ;*****
2731 ;*TEST 155 TEST OF LOAD-FSRC MODE-6(PC), STORE-FDST MODE-6(PC), F MODE
2732 ;*****
2733 TST155: SCOPE
2734 013364 000004 LD FPS #047400 ; F MODE FPS
2735 013366 170127 047400 MOV ADRF12+0,$REG0 ; MOVE PATTERN
2736 013372 016767 000044 165570 MOV ADRF12+2,$REG1 ;
2737 013400 016767 000040 165564
2738 013406 172567 165556 LDF $REG0,AC1 ; M6-R7
2739
2740 013412 174167 165556 STF AC1,$REG2 ; M6-R7
2741
2742 013416 026767 165546 165550 CMP $REG0,$REG2 ; 1ST WORD PATTERN CHECK?
2743 013424 001004 BNE 64$ ;
2744 013426 026767 165540 165542 CMP $REG1,$REG3 ; 2ND WORD PATTERN CHECK?
2745 013434 001401 BEQ 65$ ;
2746 013436 104073 64$: ERROR 73 ; PATTERN DOESNT MATCH
2747
2748 013440 65$:
2749 013440 000402 BR TST156 ;;
2750
2751 013442 052525 052525 ADRF12: .WORD ALTP,ALTP ; TEST PATTERN
2752
2753 ;*****
2754 ;*TEST 156 TEST OF LOAD-FSRC MODE-0, STORE-FDST MODE-2(PC), F MODE
2755 ;*****
2756 TST156: SCOPE
2757 013446 000004 LD FPS #047400 ; F MODE FPS
2758 013450 170127 047400 MOV ADRF13+0,$REG0 ; MOVE PATTERN
2759 013454 016767 000062 165506 MOV ADRF13+2,$REG1 ;
2760 013462 016767 000056 165502
2761
2762 013470 172667 165474 LDF $REG0,AC2 ; M6-R7 WORKS
2763 013474 172702 LDF AC2,AC3 ; M0-R2
2764
2765 013476 012767 104117 000002 MOV #ERROR117,1$ ; SETUP ERROR CALL FOR WRONG INCREMENT
2766 013504 174327 STF AC3,(PC)+ ; M2-R7
2767 013506 000000 1$: .WORD 0 ; DEST
2768 013510 000403 BR 2$ ; THIS SHOULD BE NEXT INSTR AFTER FPP PC MODE 2
2769 013512 104120 ERROR 120 ; NOT HERE (+4 INCRE)
2770 013514 104121 ERROR 121 ; OR HERE (+6 INCRE)
2771 013516 104122 ERROR 122 ; OR HERE (+10 INCRE)
2772 013520 016767 177762 165446 2$: MOV 1$,$REG2 ; GET DEST
2773
2774 013526 026767 165436 165440 CMP $REG0,$REG2 ; WAS 1 WORD STORED OK?
2775 013534 001401 BEQ 64$ ;
2776 013536 104073 64$: ERROR 73 ; NOT EQUAL, SIGNAL ERROR
2777 013540
2778
2779 013540 000402 BR TST157 ;;
2780
2781 013542 007417 000000 ADRF13: .WORD ALT4P,0 ; TEST PATTERN
2782

```


M06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 58
DQFPAB.P11 19-APR-77 13:36 T156 TEST OF LOAD-FSRC MODE-0, STORE-FDST MODE-2(PC), F MODE

SEQ 0062

```

2783
2784
2785
2786
2787 013546 000004
2788 013550 170127 047400
2789 013554 016767 000052 165406
2790 013562 016767 000046 165402
2791
2792 013570 012701 001200
2793 013574 172461 177770
2794
2795 013600 174001
2796 013602 174167 165366
2797
2798 013606 026767 165356 165360
2799 013614 001004
2800 013616 026767 165350 165352
2801 013624 001401
2802 013626 104074
2803
2804 013630
2805 013630 000402
2806
2807 013632 007417 007417
2808
2809

```

```

*****
;TEST 157 TEST OF LOAD-FSRC MODE-6, STORE-FDST MODE-0, F MODE
*****
TST157: SCOPE
LDFPS #047400 ; F MODE FPS
MOV ADRF14+0,$REG0 ; MOVE PATTERN
MOV ADRF14+2,$REG1 ;
MOV #$REG0+10,R1 ; ADDR(DATA)+10
LDF -10(R1),AC0 ; M6-R1
STF AC0,AC1 ; M0-R1
STF AC1,$REG2 ; M6-R7 WORKS
CMP $REG0,$REG2 ; 1ST WORD PATTERN CHECK?
BNE 64$ ;
CMP $REG1,$REG3 ; 2ND WORD PATTERN CHECK?
BEQ 65$ ;
64$: ERROR 74 ; PATTERN DOESNT MATCH
65$:
BR TST160 ;;
ADRF14: .WORD ALT4P,ALT4P ; TEST PATTERN

```

N06

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 59
DQFPAB.P11 19-APR-77 13:36

T157 TEST OF LOAD-FSRC MODE-6, STORE-FDST MODE-0, F MODE

SEQ 0063

```

2810
2811 ;*****
2812 .ENABL AMA ; BEGIN ASSEMBLING RELATIVE REFERENCES AS ABSOLUTE
2813 ;*****
2814
2815 ;*****
2816 ;*TEST 160 TEST ALL FP-ACCUM ARE THERE
2817 ;*****
2818 TST160: SCOPE
2819 LDFPS #047400 ; INITIAL FPS (SINGLE FLOAT, INTEGER)
2820 CLR SREG0 ; SET ACO = 0,
2821 MOV #5,SREG1 ; AC1 = 1,
2822 LDF SREG0,ACO ; AC2 = 2,
2823 STF ACO,AC5 ; AC3 = 3,
2824 DEC SREG1 ; AC4 = 4,
2825 LDF SREG0,ACO ; AC5 = 5
2826 STF ACO,AC4
2827 DEC SREG1
2828 LDF SREG0,AC3
2829 DEC SREG1
2830 LDF SREG0,AC2
2831 DEC SREG1
2832 LDF SREG0,AC1
2833 DEC SREG1
2834 LDF SREG0,ACO
2835 CLR SREG0
2836 CLR SREG1
2837 STF ACO,SREG2
2838 TST SREG2
2839 BNE 1$
2840 CMP SREG1,SREG3
2841 BEQ 11$
2842 1$: ERROR 7$
2843 11$: INC SREG1
2844 STF AC1,SREG2
2845 TST SREG2
2846 BNE 2$
2847 CMP SREG1,SREG3
2848 BEQ 21$
2849 2$: ERROR 7$
2850 21$: INC SREG1
2851 STF AC2,SREG2
2852 TST SREG2
2853 BNE 3$
2854 CMP SREG1,SREG3
2855 BEQ 31$
2856 3$: ERROR 7$
2857 31$: INC SREG1
2858 STF AC3,SREG2
2859 TST SREG2
2860 BNE 4$
2861 CMP SREG1,SREG3
2862 BEQ 41$
2863 4$: ERROR 7$
2864 41$: INC SREG1
2865 LDF AC4,ACO ; DOES AC4 = 4 ?

```


B07

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 60
 DQFPAB.P11 19-APR-77 13:36 T160 TEST ALL FP-ACCUM ARE THERE

SEQ 0064

2866	014110	174037	001174		STF	AC0, SREG2	:	...	
2867	014114	005737	001174		TST	SREG2	:	...	
2868	014120	001004			BNE	5S	:	...	
2869	014122	023737	001172	001176	CMP	SREG1, SREG3	:	...	
2870	014130	001401			BEQ	51S	:	...	
2871	014132	104075			ERROR	7S	:	...	NO, ERROR
2872	014134	005237	001172		INC	SREG1	:	...	YES, INC FOR NEXT TEST
2873	014140	172405			LDF	ACS, AC0	:	...	DOES ACS = 5 ?
2874	014142	174037	001174		STF	AC0, SREG2	:	...	
2875	014146	005737	001174		TST	SREG2	:	...	
2876	014152	001004			BNE	6S	:	...	
2877	014154	023737	001172	001176	CMP	SREG1, SREG3	:	...	
2878	014162	001401			BEQ	61S	:	...	
2879	014164	104075			ERROR	7S	:	...	NO, ERROR
2880	014166						:	...	YES, GO FOR NEXT TEST

```

2881
2882
2883
2884
2885 014166 000004
2886 014170 012705 014202
2887 014174 004737 021704
2888
2889 014200 000407
2890
2891 014202
2892 014202 000000 000000
2893 014206 000000 000000
2894 014212 047453 047444
2895 014216 000000
2896
2897
2898
2899
2900
2901
2902 014220 000004
2903 014222 012705 014234
2904 014226 004737 021704
2905
2906 014232 000407
2907
2908 014234
2909 014234 052525 052525
2910 014240 052525 052525
2911 014244 047557 047540
2912 014250 000000
2913
2914
2915
2916
2917
2918
2919 014252 000004
2920 014254 012705 014266
2921 014260 004737 021704
2922
2923 014264 000407
2924
2925 014266
2926 014266 125252 125252
2927 014272 025252 125252
2928 014276 047417 047400
2929 014302 000000
2930
2931
2932
2933
2934
2935
2936 014304 000004

*****
;TEST 161 TEST OF ABSF INSTR, DATA SET ABSF-1
;*
;TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST161: SCOPE
MOV #ABSF1,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSFT ; GO TEST
BR TST162 ;;

ABSF1: ; TEST DATA SET ABSF-1:
.WORD 0,0 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0 ; EXPECTED FLOAT RESULT
.WORD 047453,047444 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 162 TEST OF ABSF INSTR, DATA SET ABSF-2
;*
;TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST162: SCOPE
MOV #ABSF2,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSFT ; GO TEST
BR TST163 ;;

ABSF2: ; TEST DATA SET ABSF-2:
.WORD ALTP,ALTP ; INITIAL MEM FLOAT NUMBER
.WORD ALTP,ALTP ; EXPECTED FLOAT RESULT
.WORD 047557,047540 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 163 TEST OF ABSF INSTR, DATA SET ABSF-3
;*
;ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST163: SCOPE
MOV #ABSF3,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSFT ; GO TEST
BR TST164 ;;

ABSF3: ; TEST DATA SET ABSF-3:
.WORD ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
.WORD 025252,ALTN ; EXPECTED FLOAT RESULT
.WORD 047417,047400 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 164 TEST OF ABSF INSTR, DATA SET ABSF-4
;*
;ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST164: SCOPE

```


D07

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 62
 DQFPAB.P11 19-APR-77 13:36 T164 TEST OF ABSF INSTR, DATA SET ABSF-4

SEQ 0066

2937 014306 012705 014320
 2938 014312 004737 021704
 2939
 2940 014316 000407
 2941
 2942 014320
 2943 014320 177777 177777
 2944 014324 077777 177777
 2945 014330 047517 047500
 2946 014334 000000
 2947
 2948
 2949
 2950
 2951
 2952
 2953 014336 000004
 2954 014340 012705 014352
 2955 014344 004737 021704
 2956
 2957 014350 000407
 2958
 2959 014352
 2960 014352 000200 000000
 2961 014356 000200 000000
 2962 014362 047457 047440
 2963 014366 000000
 2964
 2965
 2966
 2967
 2968
 2969
 2970 014370 000004
 2971 014372 012705 014404
 2972 014376 004737 021704
 2973
 2974 014402 000407
 2975
 2976 014404
 2977 014404 077777 177777
 2978 014410 077777 177777
 2979 014414 047557 047540
 2980 014420 000000
 2981
 2982
 2983
 2984
 2985
 2986
 2987 014422 000004
 2988 014424 012705 014436
 2989 014430 004737 021704
 2990
 2991 014434 000407
 2992

MOV #ABSF4,R5 ; PTR TO TEST DATA SET
 JSR PC, @ABSF4 ; GO TEST
 BR TST165 ;;
 ABSF4: ; TEST DATA SET ABSF-4:
 .WORD LGN,M1 ; INITIAL MEM FLOAT NUMBER
 .WORD LGP,M1 ; EXPECTED FLOAT RESULT
 .WORD 047517,047500 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ;*TEST 165 TEST OF ABSF INSTR, DATA SET ABSF-5
 ;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
 ;*****

TST165: SCOPE
 MOV #ABSF5,R5 ; PTR TO TEST DATA SET
 JSR PC, @ABSF5 ; GO TEST
 BR TST166 ;;

ABSF5: ; TEST DATA SET ABSF-5:
 .WORD SMP,0 ; INITIAL MEM FLOAT NUMBER
 .WORD SMP,0 ; EXPECTED FLOAT RESULT
 .WORD 047457,047440 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ;*TEST 166 TEST OF ABSF INSTR, DATA SET ABSF-6
 ;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
 ;*****

TST166: SCOPE
 MOV #ABSF6,R5 ; PTR TO TEST DATA SET
 JSR PC, @ABSF6 ; GO TEST
 BR TST167 ;;

ABSF6: ; TEST DATA SET ABSF-6:
 .WORD LGP,M1 ; INITIAL MEM FLOAT NUMBER
 .WORD LGP,M1 ; EXPECTED FLOAT RESULT
 .WORD 047557,047540 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ;*TEST 167 TEST OF ABSF INSTR, DATA SET ABSF-7
 ;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
 ;*****

TST167: SCOPE
 MOV #ABSF7,R5 ; PTR TO TEST DATA SET
 JSR PC, @ABSF7 ; GO TEST
 BR TST170 ;;

E07

FPU BASIC INSTR TESTS MACY11 27(1006)
DQFPAB.P11 19-APR-77 13:3625-APR-77 09:12 PAGE 63
T167 TEST OF ABSF INSTR, DATA SET ABSF-7

SEQ 0067

```

2993 014436
2994 014436 100200 000000
2995 014442 000200 000000
2996 014446 047417 047400
2997 014452 000000
2998
2999
3000
3001
3002
3003
3004 014454 000004
3005 014456 012705 014470
3006 014462 004737 021704
3007
3008 014466 000407
3009
3010 014470
3011 014470 000177 177777
3012 014474 000000 000000
3013 014500 047513 047504
3014 014504 000000
3015
3016
3017
3018
3019
3020
3021 014506 000004
3022 014510 012705 014522
3023 014514 004737 021704
3024
3025 014520 000407
3026
3027 014522
3028 014522 100000 000000
3029 014526 000000 000000
3030 014532 047453 147444
3031 014536 100014
3032
3033
3034
3035
3036
3037
3038 014540 000004
3039 014542 012705 014554
3040 014546 004737 021704
3041
3042 014552 000407
3043
3044 014554
3045 014554 100000 000001
3046 014560 000000 000000
3047 014564 047553 147544
3048 014570 100014

```

```

ABSF7: ; TEST DATA SET ABSF-7:
        .WORD SMN,0 ; INITIAL MEM FLOAT NUMBER
        .WORD SMP,0 ; EXPECTED FLOAT RESULT
        .WORD 047417,047400 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
; TEST 170 TEST OF ABSF INSTR, DATA SET ABSF-10
; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST170: SCOPE
        MOV #ABSF10,RS ; PTR TO TEST DATA SET
        JSR PC,2#ABSFT ; GO TEST
        BR TST171 ;;

```

```

ABSF10: ; TEST DATA SET ABSF-10:
        .WORD ZXIMP,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047513,047504 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
; TEST 171 TEST OF ABSF INSTR, DATA SET ABSF-11
; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST171: SCOPE
        MOV #ABSF11,RS ; PTR TO TEST DATA SET
        JSR PC,2#ABSFT ; GO TEST
        BR TST172 ;;

```

```

ABSF11: ; TEST DATA SET ABSF-11:
        .WORD MO,0 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047453,147444 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```

```

*****
; TEST 172 TEST OF ABSF INSTR, DATA SET ABSF-12
; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST172: SCOPE
        MOV #ABSF12,RS ; PTR TO TEST DATA SET
        JSR PC,2#ABSFT ; GO TEST
        BR TST173 ;;

```

```

ABSF12: ; TEST DATA SET ABSF-12:
        .WORD MO,1 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047553,147544 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```


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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 64
 DQFPAB.P11 19-APR-77 13:36 T172 TEST OF ABSF INSTR, DATA SET ABSF-12

SEQ 0068

3049
 3050
 3051
 3052
 3053
 3054
 3055 014572 000004
 3056 014574 012705 014606
 3057 014600 004737 021704
 3058
 3059 014604 000407
 3060
 3061 014606
 3062 014606 100177 177777
 3063 014612 000000 000000
 3064 014616 043413 043404
 3065 014622 000000
 3066
 3067
 3068

```

*****
:TEST 173      TEST OF ABSF INSTR, DATA SET ABSF-13
:              ROUNDING MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
:*****
TST173: SCOPE
        MOV     @ABSF13,R5      ; PTR TO TEST DATA SET
        JSR     PC,@ABSF13     ; GO TEST
        BR      TST174        ;;

ABSF13: ; TEST DATA SET ABSF-13:
        .WORD   ZX1MN,M1      ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0           ; EXPECTED FLOAT RESULT
        .WORD   043413,043404 ; FPS: BEFORE AFTER
        .WORD   000000        ; FEC AFTER ( 0 = N/A )
  
```

G07

FPU BASIC INSTR TESTS MACY11 27(1006)
DQFPAB.P11 19-APR-77 13:3625-APR-77 09:12 PAGE 65
T174 TEST OF ABSD INSTR, DATA SET ABSD-1

SEQ 0069

```

3069
3070
3071
3072
3073 014624 000004
3074 014626 012705 014640
3075 014632 004737 022060
3076
3077 014636 000413
3078
3079 014640
3080 014640 000000 000000 000000
3081 014646 000000
3082 014650 000000 000000 000000
3083 014656 000000
3084 014660 047713 047704
3085 014664 000000
3086
3087
3088
3089
3090
3091
3092 014666 000004
3093 014670 012705 014702
3094 014674 004737 022060
3095
3096 014700 000413
3097
3098 014702
3099 014702 052525 052525 052525
3100 014710 052525
3101 014712 052525 052525 052525
3102 014720 052525
3103 014722 047657 047640
3104 014726 000000
3105
3106
3107
3108
3109
3110
3111 014730 000004
3112 014732 012705 014744
3113 014736 004737 022060
3114
3115 014742 000413
3116
3117 014744
3118 014744 125252 125252 125252
3119 014752 125252
3120 014754 025252 125252 125252
3121 014762 125252
3122 014764 047757 047740
3123 014770 000000
3124

```

```

*****
;TEST 174 TEST OF ABSD INSTR, DATA SET ABSD-1
;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST174: SCOPE
MOV #ABSD1,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSDT ; GO TEST
BR TST175 ;;

ABSD1: ; TEST DATA SET ABSD-1:
.WORD 0,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047713,047704 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 175 TEST OF ABSD INSTR, DATA SET ABSD-2
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST175: SCOPE
MOV #ABSD2,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSDT ; GO TEST
BR TST176 ;;

ABSD2: ; TEST DATA SET ABSD-2:
.WORD ALTP,ALTP,ALTP,ALTP ; INITIAL MEM FLOAT NUMBER
.WORD ALTP,ALTP,ALTP,ALTP ; EXPECTED FLOAT RESULT
.WORD 047657,047640 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 176 TEST OF ABSD INSTR, DATA SET ABSD-3
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST176: SCOPE
MOV #ABSD3,R5 ; PTR TO TEST DATA SET
JSR PC,2#ABSDT ; GO TEST
BR TST177 ;;

ABSD3: ; TEST DATA SET ABSD-3:
.WORD ALTN,ALTN,ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
.WORD 025252,ALTN,ALTN,ALTN ; EXPECTED FLOAT RESULT
.WORD 047757,047740 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

```


H07

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 66
DQFPAB.P11 19-APR-77 13:36

T176 TEST OF ABSD INSTR, DATA SET ABSD-3

SEQ 0070

```

3125
3126
3127
3128
3129
3130 014772 000004
3131 014774 012705 015006
3132 015000 004737 022060
3133
3134 015004 000413
3135
3136 015006
3137 015006 177777 177777 177777
3138 015014 177777
3139 015016 077777 177777 177777
3140 015024 177777
3141 015026 047617 047600
3142 015032 000000
3143
3144
3145
3146
3147
3148
3149 015034 000004
3150 015036 012705 015050
3151 015042 004737 022060
3152
3153 015046 000413
3154
3155 015050
3156 015050 000200 000000 000000
3157 015056 000000
3158 015060 000200 000000 000000
3159 015066 000000
3160 015070 047717 047700
3161 015074 000000
3162
3163
3164
3165
3166
3167
3168 015076 000004
3169 015100 012705 015112
3170 015104 004737 022060
3171
3172 015110 000413
3173
3174 015112
3175 015112 077777 177777 177777
3176 015120 177777
3177 015122 077777 177777 177777
3178 015130 177777
3179 015132 047657 047640
3180 015136 000000

```

```

*****
*TEST 177      TEST OF ABSD INSTR, DATA SET ABSD-4
*              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST177: SCOPE
        MOV     #ABSD4,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#ABSDT     ; GO TEST
        BR      TST200        ;;
ABSD4:  ; TEST DATA SET ABSD-4:
        .WORD   LGN,M1,M1,M1   ; INITIAL MEM FLOAT NUMBER
        .WORD   LGP,M1,M1,M1   ; EXPECTED FLOAT RESULT
        .WORD   047617,047600  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )
*****
*TEST 200      TEST OF ABSD INSTR, DATA SET ABSD-5
*              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST200: SCOPE
        MOV     #ABSD5,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#ABSDT     ; GO TEST
        BR      TST201        ;;
ABSD5:  ; TEST DATA SET ABSD-5:
        .WORD   SMP,0,0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD   SMP,0,0,0      ; EXPECTED FLOAT RESULT
        .WORD   047717,047700  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )
*****
*TEST 201      TEST OF ABSD INSTR, DATA SET ABSD-6
*              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST201: SCOPE
        MOV     #ABSD6,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#ABSDT     ; GO TEST
        BR      TST202        ;;
ABSD6:  ; TEST DATA SET ABSD-6:
        .WORD   LGP,M1,M1,M1   ; INITIAL MEM FLOAT NUMBER
        .WORD   LGP,M1,M1,M1   ; EXPECTED FLOAT RESULT
        .WORD   047657,047640  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

```

```

3181
3182
3183
3184
3185
3186
3187 015140 000004
3188 015142 012705 015154
3189 015146 004737 022060
3190
3191 015152 000413
3192
3193 015154
3194 015154 100200 000000 000000
3195 015162 000000
3196 015164 000200 000000 000000
3197 015172 000000
3198 015174 047757 047740
3199 015200 000000
3200
3201
3202
3203
3204
3205
3206 015202 000004
3207 015204 012705 015216
3208 015210 004737 022060
3209
3210 015214 000413
3211
3212 015216
3213 015216 000177 177777 177777
3214 015224 177777
3215 015226 000000 000000 000000
3216 015234 000000
3217 015236 047613 047604
3218 015242 000000
3219
3220
3221
3222
3223
3224
3225 015244 000004
3226 015246 012705 015260
3227 015252 004737 022060
3228
3229 015256 000413
3230
3231 015260
3232 015260 100000 000000 000000
3233 015266 000000
3234 015270 000000 000000 000000
3235 015276 000000
3236 015300 047713 147704

;*****
;TEST 202 TEST OF ABSD INSTR, DATA SET ABSD-7
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
;*****
TST202: SCOPE
MOV #ABSD7,R5 ; PTR TO TEST DATA SET
JSR PC,@ABSDT ; GO TEST
BR TST203 ;;
ABSD7: ; TEST DATA SET ABSD-7:
.WORD SMN,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD SMP,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047757,047740 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

;*****
;TEST 203 TEST OF ABSD INSTR, DATA SET ABSD-10
;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****
TST203: SCOPE
MOV #ABSD10,R5 ; PTR TO TEST DATA SET
JSR PC,@ABSDT ; GO TEST
BR TST204 ;;
ABSD10: ; TEST DATA SET ABSD-10:
.WORD ZXIMP,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047613,047604 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

;*****
;TEST 204 TEST OF ABSD INSTR, DATA SET ABSD-11
;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****
TST204: SCOPE
MOV #ABSD11,R5 ; PTR TO TEST DATA SET
JSR PC,@ABSDT ; GO TEST
BR TST205 ;;
ABSD11: ; TEST DATA SET ABSD-11:
.WORD MO,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047713,147704 ; FPS: BEFORE, AFTER

```


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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 68
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SEQ 0072

```

3237 015304 100014 .WORD 100014 ; FEC AFTER ( 0 = N/A )
3238
3239
3240 ;*****
3241 ;*TEST 205 TEST OF ABSD INSTR, DATA SET ABSD-12
3242 ;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
3243 ;*****
3244 TST205: SCOPE
3245 015306 000004 MOV #ABSD12,R5 ; PTR TO TEST DATA SET
3246 015310 012705 015322 JSR PC,#ABSDT ; GO TEST
3247 015314 004737 022060
3248 015320 000413 BR TST206 ;;
3249
3250 ABSD12: ; TEST DATA SET ABSD-12:
3251 015322 100000 000000 000000 .WORD M0,0,0,1 ; INITIAL MEM FLOAT NUMBER
3252 015330 000001 .WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
3253 015332 000000 000000 000000
3254 015340 000000 .WORD 047653,147644 ; FPS: BEFORE, AFTER
3255 015342 047653 147644 .WORD 100014 ; FEC AFTER ( 0 = N/A )
3256 015346 100014
3257
3258 ;*****
3259 ;*TEST 206 TEST OF ABSD INSTR, DATA SET ABSD-13
3260 ;* TRUNCATE MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
3261 ;*****
3262 TST206: SCOPE
3263 015350 000004 MOV #ABSD13,R5 ; PTR TO TEST DATA SET
3264 015352 012705 015364 JSR PC,#ABSDT ; GO TEST
3265 015356 004737 022060
3266 015362 000413 BR TST207 ;;
3267
3268 ABSD13: ; TEST DATA SET ABSD-13:
3269 015364 100177 177777 177777 .WORD ZX1MN,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
3270 015364 100177 177777 177777
3271 015372 177777 .WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
3272 015374 000000 000000 000000
3273 015402 000000 .WORD 043653,043644 ; FPS: BEFORE, AFTER
3274 015404 043653 043644 .WORD 000000 ; FEC AFTER ( 0 = N/A )
3275 015410 000000
3276
3277
3278

```

K07

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SEQ 0073

T207 TEST OF NEGF INSTR, DATA SET NEGF-1

```

3279
3280
3281
3282
3283 015412 000004
3284 015414 012705 015426
3285 015420 004737 022270
3286
3287 015424 000407
3288
3289 015426
3290 015426 000000 000000
3291 015432 000000 000000
3292 015436 047413 047404
3293 015442 000000
3294
3295
3296
3297
3298
3299
3300 015444 000004
3301 015446 012705 015460
3302 015452 004737 022270
3303
3304 015456 000407
3305
3306 015460
3307 015460 052525 052525
3308 015464 152525 052525
3309 015470 047547 047550
3310 015474 000000
3311
3312
3313
3314
3315
3316
3317 015476 000004
3318 015500 012705 015512
3319 015504 004737 022270
3320
3321 015510 000407
3322
3323 015512
3324 015512 125252 125252
3325 015516 025252 125252
3326 015522 047517 047500
3327 015526 000000
3328
3329
3330
3331
3332
3333
3334 015530 000004

```

```

*****
;TEST 207 TEST OF NEGF INSTR, DATA SET NEGF-1
;
; ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST207: SCOPE
        MOV     #NEGF1,R5      ; PTR TO TEST DATA SET
        JSR     PC, @#NEGF1    ; GO TEST
        BR      TST210        ;;

NEGF1:  ; TEST DATA SET NEGF-1:
        .WORD   0,0           ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0           ; EXPECTED FLOAT RESULT
        .WORD   047413,047404 ; FPS: BEFORE, AFTER
        .WORD   000000        ; FEC AFTER ( 0 = N/A )

*****
;TEST 210 TEST OF NEGF INSTR, DATA SET NEGF-2
;
; TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST210: SCOPE
        MOV     #NEGF2,R5      ; PTR TO TEST DATA SET
        JSR     PC, @#NEGF2    ; GO TEST
        BR      TST211        ;;

NEGF2:  ; TEST DATA SET NEGF-2:
        .WORD   ALTP,ALTP      ; INITIAL MEM FLOAT NUMBER
        .WORD   152525,ALTP    ; EXPECTED FLOAT RESULT
        .WORD   047547,047550 ; FPS: BEFORE, AFTER
        .WORD   000000        ; FEC AFTER ( 0 = N/A )

*****
;TEST 211 TEST OF NEGF INSTR, DATA SET NEGF-3
;
; ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST211: SCOPE
        MOV     #NEGF3,R5      ; PTR TO TEST DATA SET
        JSR     PC, @#NEGF3    ; GO TEST
        BR      TST212        ;;

NEGF3:  ; TEST DATA SET NEGF-3:
        .WORD   ALTN,ALTN      ; INITIAL MEM FLOAT NUMBER
        .WORD   025252,ALTN    ; EXPECTED FLOAT RESULT
        .WORD   047517,047500 ; FPS: BEFORE, AFTER
        .WORD   000000        ; FEC AFTER ( 0 = N/A )

*****
;TEST 212 TEST OF NEGF INSTR, DATA SET NEGF-4
;
; TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST212: SCOPE

```


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T212 TEST OF NEGF INSTR, DATA SET NEGF-4

SEQ 0074

3335 015532 012705 015544
3336 015536 004737 022270MOV #NEGF4.R5 ; PTR TO TEST DATA SET
JSR PC, J#NEGFT ; GO TEST3337
3338 015542 000407

BR TST213 ;;

3339
3340 015544
3341 015544 177777 177777
3342 015550 077777 177777
3343 015554 047457 047440
3344 015560 000000NEGF4: ; TEST DATA SET NEGF-4:
; .WORD LGN, M1 ; INITIAL MEM FLOAT NUMBER
; .WORD LGP, M1 ; EXPECTED FLOAT RESULT
; .WORD 047457, 047440 ; FPS: BEFORE, AFTER
; .WORD 000000 ; FEC AFTER (0 = N/A)3345
3346
3347; *****
; *TEST 213 TEST OF NEGF INSTR, DATA SET NEGF-5
; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
; *****3348
33493350
3351 015562 000004TST213: SCOPE
MOV #NEGF5.R5 ; PTR TO TEST DATA SET
JSR PC, J#NEGFT ; GO TEST3352 015564 012705 015576
3353 015570 004737 022270

BR TST214 ;;

3354
3355 015574 0004073356
3357 015576NEGF5: ; TEST DATA SET NEGF-5:
; .WORD SMP, 0 ; INITIAL MEM FLOAT NUMBER
; .WORD SMN, 0 ; EXPECTED FLOAT RESULT
; .WORD 047407, 047410 ; FPS: BEFORE, AFTER
; .WORD 000000 ; FEC AFTER (0 = N/A)3358 015576 000200 000000
3359 015602 100200 000000
3360 015606 047407 047410
3361 015612 0000003362
3363; *****
; *TEST 214 TEST OF NEGF INSTR, DATA SET NEGF-6
; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
; *****3364
3365
33663367
3368 015614 000004TST214: SCOPE
MOV #NEGF6.R5 ; PTR TO TEST DATA SET
JSR PC, J#NEGFT ; GO TEST3369 015616 012705 015630
3370 015622 004737 022270

BR TST215 ;;

3371
3372 015626 0004073373
3374 015630NEGF6: ; TEST DATA SET NEGF-6:
; .WORD LGP, M1 ; INITIAL MEM FLOAT NUMBER
; .WORD LGN, M1 ; EXPECTED FLOAT RESULT
; .WORD 047547, 047550 ; FPS: BEFORE, AFTER
; .WORD 000000 ; FEC AFTER (0 = N/A)3375 015630 077777 177777
3376 015634 177777 177777
3377 015640 047547 047550
3378 015644 0000003379
3380; *****
; *TEST 215 TEST OF NEGF INSTR, DATA SET NEGF-7
; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
; *****3381
33823383
3384TST215: SCOPE
MOV #NEGF7.R5 ; PTR TO TEST DATA SET
JSR PC, J#NEGFT ; GO TEST

3385 015646 000004

3386 015650 012705 015662
3387 015654 004737 022270

BR TST216 ;;

3388
3389 015660 000407

3390

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T215 TEST OF NEGF INSTR, DATA SET NEGF-7

SEQ 0075

```

3391 015662
3392 015662 100200 000000
3393 015666 000200 000000
3394 015672 047517 047500
3395 015676 000000
3396
3397
3398
3399
3400
3401
3402 015700 000004
3403 015702 012705 015714
3404 015706 004737 022270
3405
3406 015712 000407
3407
3408 015714
3409 015714 000177 177777
3410 015720 000000 000000
3411 015724 047453 047444
3412 015730 000000
3413
3414
3415
3416
3417
3418
3419 015732 000004
3420 015734 012705 015746
3421 015740 004737 022270
3422
3423 015744 000407
3424
3425 015746
3426 015746 100000 000000
3427 015752 000000 000000
3428 015756 047453 147444
3429 015762 100014
3430
3431
3432
3433
3434
3435
3436 015764 000004
3437 015766 012705 016000
3438 015772 004737 022270
3439
3440 015776 000407
3441
3442 016000
3443 016000 100000 000001
3444 016004 000000 000000
3445 016010 047553 147544
3446 016014 100014

```

```

NEGF7: ; TEST DATA SET NEGF-7:
        .WORD SMN,0 ; INITIAL MEM FLOAT NUMBER
        .WORD SMP,0 ; EXPECTED FLOAT RESULT
        .WORD 047517,047500 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
;TEST 216 TEST OF NEGF INSTR, DATA SET NEGF-10
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST216: SCOPE
        MOV #NEGF10,R5 ; PTR TO TEST DATA SET
        JSR PC,#NEGF1 ; GO TEST
        BR TST217 ;;

```

```

NEGF10: ; TEST DATA SET NEGF-10:
        .WORD ZXIMP,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047453,047444 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
;TEST 217 TEST OF NEGF INSTR, DATA SET NEGF-11
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST217: SCOPE
        MOV #NEGF11,R5 ; PTR TO TEST DATA SET
        JSR PC,#NEGF1 ; GO TEST
        BR TST220 ;;

```

```

NEGF11: ; TEST DATA SET NEGF-11:
        .WORD MO,0 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047453,147444 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```

```

*****
;TEST 220 TEST OF NEGF INSTR, DATA SET NEGF-12
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST220: SCOPE
        MOV #NEGF12,R5 ; PTR TO TEST DATA SET
        JSR PC,#NEGF1 ; GO TEST
        BR TST221 ;;

```

```

NEGF12: ; TEST DATA SET NEGF-12:
        .WORD MO,1 ; INITIAL MEM FLOAT NUMBER
        .WORD 0,0 ; EXPECTED FLOAT RESULT
        .WORD 047553,147544 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```


NO7

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T220 TEST OF NEGF INSTR, DATA SET NEGF-12

SEQ 0076

3447
3448
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3466

016016	000004		
016020	012705	016032	
016024	004737	022270	
016030	000407		
016032			
016032	100177	177777	
016036	000000	000000	
016042	043513	043504	
016046	000000		

```

*****
:TEST 221      TEST OF NEGF INSTR, DATA SET NEGF-13
:             ROUNDING MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
:             *****
TST221: SCOPE
        MOV     #NEGF13,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#NEGF1     ; GO TEST
        BR      TST222         ;;

NEGF13:  ; TEST DATA SET NEGF-13:
        .WORD   ZX1MN,M1      ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0           ; EXPECTED FLOAT RESULT
        .WORD   043513,043504 ; FPS: BEFORE, AFTER
        .WORD   000000        ; FEC AFTER ( 0 = N/A )

```

```

3467
3468
3469
3470
3471 016050 000004
3472 016052 012705 016064
3473 016056 004737 022444
3474
3475 016062 000413
3476
3477 016064
3478 016064 000000 000000 000000
3479 016072 000000
3480 016074 000000 000000 000000
3481 016102 000000
3482 016104 047753 047744
3483 016110 000000
3484
3485
3486
3487
3488
3489
3490 016112 000004
3491 016114 012705 016126
3492 016120 004737 022444
3493
3494 016124 000413
3495
3496 016126
3497 016126 052525 052525 052525
3498 016134 052525
3499 016136 152525 052525 052525
3500 016144 052525
3501 016146 047607 047610
3502 016152 000000
3503
3504
3505
3506
3507
3508
3509 016154 000004
3510 016156 012705 016170
3511 016162 004737 022444
3512
3513 016166 000413
3514
3515 016170
3516 016170 125252 125252 125252
3517 016176 125252
3518 016200 025252 125252 125252
3519 016206 125252
3520 016210 047657 047640
3521 016214 000000
3522

```

```

*****
;TEST 222      TEST OF NEG0 INSTR, DATA SET NEG0-1
;              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST222: SCOPE
        MOV     #NEG01,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#NEG0T     ; GO TEST
        BR      TST223        ;;

NEG01:  ; TEST DATA SET NEG0-1:
        .WORD   0,0,0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0,0,0      ; EXPECTED FLOAT RESULT
        .WORD   047753,047744 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 223      TEST OF NEG0 INSTR, DATA SET NEG0-2
;              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST223: SCOPE
        MOV     #NEG02,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#NEG0T     ; GO TEST
        BR      TST224        ;;

NEG02:  ; TEST DATA SET NEG0-2:
        .WORD   ALTP,ALTP,ALTP,ALTP ; INITIAL MEM FLOAT NUMBER
        .WORD   152525,ALTP,ALTP,ALTP ; EXPECTED FLOAT RESULT
        .WORD   047607,047610 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 224      TEST OF NEG0 INSTR, DATA SET NEG0-3
;              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST224: SCOPE
        MOV     #NEG03,R5      ; PTR TO TEST DATA SET
        JSR     PC,2#NEG0T     ; GO TEST
        BR      TST225        ;;

NEG03:  ; TEST DATA SET NEG0-3:
        .WORD   ALTN,ALTN,ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
        .WORD   025252,ALTN,ALTN,ALTN ; EXPECTED FLOAT RESULT
        .WORD   047657,047640 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

```



```

3523
3524
3525
3526
3527
3528 016216 000004
3529 016220 012705 016232
3530 016224 004737 022444
3531
3532 016230 000413
3533
3534 016232
3535 016232 177777 177777 177777
3536 016240 177777
3537 016242 077777 177777 177777
3538 016250 177777
3539 016252 047717 047700
3540 016256 000000
3541
3542
3543
3544
3545
3546
3547 016260 000004
3548 016262 012705 016274
3549 016266 004737 022444
3550
3551 016272 000413
3552
3553 016274
3554 016274 000200 000000 000000
3555 016302 000000
3556 016304 100200 000000 000000
3557 016312 000000
3558 016314 047747 047750
3559 016320 000000
3560
3561
3562
3563
3564
3565
3566 016322 000004
3567 016324 012705 016336
3568 016330 004737 022444
3569
3570 016334 000413
3571
3572 016336
3573 016336 077777 177777 177777
3574 016344 177777
3575 016346 177777 177777 177777
3576 016354 177777
3577 016356 047607 047610
3578 016362 000000

```

```

*****
;TEST 225 TEST OF NEG0 INSTR, DATA SET NEG0-4
;
; ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
†ST225: SCOPE
MOV #NEG04,R5 ; PTR TO TEST DATA SET
JSR PC,2#NEG0T ; GO TEST
BR TST226 ;;
NEG04: ; TEST DATA SET NEG0-4:
.WORD LGN,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
.WORD LGP,M1,M1,M1 ; EXPECTED FLOAT RESULT
.WORD 047717,047700 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )
*****
;TEST 226 TEST OF NEG0 INSTR, DATA SET NEG0-5
;
; TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
†ST226: SCOPE
MOV #NEG05,R5 ; PTR TO TEST DATA SET
JSR PC,2#NEG0T ; GO TEST
BR TST227 ;;
NEG05: ; TEST DATA SET NEG0-5:
.WORD SMP,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD SMN,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047747,047750 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )
*****
;TEST 227 TEST OF NEG0 INSTR, DATA SET NEG0-6
;
; ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
†ST227: SCOPE
MOV #NEG06,R5 ; PTR TO TEST DATA SET
JSR PC,2#NEG0T ; GO TEST
BR TST230 ;;
NEG06: ; TEST DATA SET NEG0-6:
.WORD LGP,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
.WORD LGN,M1,M1,M1 ; EXPECTED FLOAT RESULT
.WORD 047607,047610 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

3579
3580
3581
3582
3583
3584
3585 016364 000004
3586 016366 012705 016400
3587 016372 004737 022444
3588
3589 016376 000413
3590
3591 016400
3592 016400 100200 000000 000000
3593 016406 000000
3594 016410 000200 000000 000000
3595 016416 000000
3596 016420 047657 047640
3597 016424 000000
3598
3599
3600
3601
3602
3603
3604 016426 000004
3605 016430 012705 016442
3606 016434 004737 022444
3607
3608 016440 000413
3609
3610 016442
3611 016442 000177 177777 177777
3612 016450 177777
3613 016452 000000 000000 000000
3614 016460 000000
3615 016462 047713 047704
3616 016466 000000
3617
3618
3619
3620
3621
3622
3623 016470 000004
3624 016472 012705 016504
3625 016476 004737 022444
3626
3627 016502 000413
3628
3629 016504
3630 016504 100000 000000 000000
3631 016512 000000
3632 016514 000000 000000 000000
3633 016522 000000
3634 016524 047713 147704

;*****
;TEST 230 TEST OF NEG0 INSTR, DATA SET NEG0-7
;*
;TRUNCATE MODE, ALL INTERRUPT ENABLES ON
;*****
TST230: SCOPE
MOV #NEG07,R5 ; PTR TO TEST DATA SET
JSR PC,@#NEG0T ; GO TEST
BR TST231 ;;

NEG07: ; TEST DATA SET NEG0-7:
.WORD SMN,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD SMP,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047657,047640 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

;*****
;TEST 231 TEST OF NEG0 INSTR, DATA SET NEG0-10
;*
;ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****
TST231: SCOPE
MOV #NEG010,R5 ; PTR TO TEST DATA SET
JSR PC,@#NEG0T ; GO TEST
BR TST232 ;;

NEG010: ; TEST DATA SET NEG0-10:
.WORD ZX1MP,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047713,047704 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

;*****
;TEST 232 TEST OF NEG0 INSTR, DATA SET NEG0-11
;*
;ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****
TST232: SCOPE
MOV #NEG011,R5 ; PTR TO TEST DATA SET
JSR PC,@#NEG0T ; GO TEST
BR TST233 ;;

NEG011: ; TEST DATA SET NEG0-11:
.WORD MO,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047713,147704 ; FPS: BEFORE, AFTER

```



```

3635 016530 100014 .WORD 100014 ; FEC AFTER ( 0 = N/A )
3636
3637
3638 ;*****
3639 ;*TEST 233 TEST OF NEG0 INSTR, DATA SET NEG0-12
3640 ;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
3641 ;*****
3642 016532 000004 TST233: SCOPE
3643 016534 012705 016546 MOV #NEG012,R5 ; PTR TO TEST DATA SET
3644 016540 004737 022444 JSR PC, @#NEG0T ; GO TEST
3645
3646 016544 000413 BR TST234 ;;
3647
3648 016546 NEG012: ; TEST DATA SET NEG0-12:
3649 016546 100000 000000 000000 .WORD MO,0,0,1 ; INITIAL MEM FLOAT NUMBER
3650 016554 000001
3651 016556 000000 000000 000000 .WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
3652 016564 000000
3653 016566 047613 147604 .WORD 047613,147604 ; FPS: BEFORE, AFTER
3654 016572 100014 .WORD 100014 ; FEC AFTER ( 0 = N/A )
3655
3656 ;*****
3657 ;*TEST 234 TEST OF NEG0 INSTR, DATA SET NEG0-13
3658 ;* TRUNCATE MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
3659 ;*****
3660
3661 016574 000004 TST234: SCOPE
3662 016576 012705 016610 MOV #NEG013,R5 ; PTR TO TEST DATA SET
3663 016602 004737 022444 JSR PC, @#NEG0T ; GO TEST
3664
3665 016606 000413 BR TST235 ;;
3666
3667 016610 NEG013: ; TEST DATA SET NEG0-13:
3668 016610 100177 177777 177777 .WORD ZX1MN,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
3669 016616 177777
3670 016620 000000 000000 000000 .WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
3671 016626 000000
3672 016630 043753 043744 .WORD 043753,043744 ; FPS: BEFORE, AFTER
3673 016634 000000 .WORD 000000 ; FEC AFTER ( 0 = N/A )
3674
3675
3676

```

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3677
3678
3679
3680
3681 016636 000004
3682 016640 012705 016652
3683 016644 004737 022654
3684
3685 016650 000407
3686
3687 016652
3688 016652 000000 000000
3689 016656 000000 000000
3690 016662 047553 047544
3691 016666 000000
3692
3693
3694
3695
3696
3697
3698 016670 000004
3699 016672 012705 016704
3700 016676 004737 022654
3701
3702 016702 000407
3703
3704 016704
3705 016704 177777 177777
3706 016710 000000 000000
3707 016714 047413 047404
3708 016720 000000
3709
3710
3711
3712
3713
3714
3715 016722 000004
3716 016724 012705 016736
3717 016730 004737 022654
3718
3719 016734 000407
3720
3721 016736
3722 016736 052525 052525
3723 016742 000000 000000
3724 016746 047453 047444
3725 016752 000000
3726
3727
3728
3729
3730
3731
3732 016754 000004

```

```

*****
*TEST 235      TEST OF CLRF INSTR, DATA SET CLRF-1
*              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
†ST235: SCOPE
        MOV      #CLRF1,R5      ; PTR TO TEST DATA SET
        JSR      PC,@#CLRFT     ; GO TEST

        BR       TST236        ;;

CLRF1:  ; TEST DATA SET CLRF-1:
        .WORD    0,0            ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0            ; EXPECTED FLOAT RESULT
        .WORD    047553,047544  ; FPS: BEFORE, AFTER
        .WORD    000000        ; FEC AFTER ( 0 = N/A )

*****
*TEST 236      TEST OF CLRF INSTR, DATA SET CLRF-2
*              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
†ST236: SCOPE
        MOV      #CLRF2,R5      ; PTR TO TEST DATA SET
        JSR      PC,@#CLRFT     ; GO TEST

        BR       TST237        ;;

CLRF2:  ; TEST DATA SET CLRF-2:
        .WORD    M1,M1          ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0            ; EXPECTED FLOAT RESULT
        .WORD    047413,047404  ; FPS: BEFORE, AFTER
        .WORD    000000        ; FEC AFTER ( 0 = N/A )

*****
*TEST 237      TEST OF CLRF INSTR, DATA SET CLRF-3
*              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
†ST237: SCOPE
        MOV      #CLRF3,R5      ; PTR TO TEST DATA SET
        JSR      PC,@#CLRFT     ; GO TEST

        BR       TST240        ;;

CLRF3:  ; TEST DATA SET CLRF-3:
        .WORD    ALTP,ALTP      ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0            ; EXPECTED FLOAT RESULT
        .WORD    047453,047444  ; FPS: BEFORE, AFTER
        .WORD    000000        ; FEC AFTER ( 0 = N/A )

*****
*TEST 240      TEST OF CLRF INSTR, DATA SET CLRF-4
*              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
†ST240: SCOPE

```


G08

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T240 TEST OF CLRF INSTR, DATA SET CLRF-4

SEQ 0082

```

3733 016756 012705 016770
3734 016762 004737 022654
3735
3736 016766 000407
3737
3738 016770
3739 016770 125252 125252
3740 016774 000000 000000
3741 017000 047513 047504
3742 017004 000000
3743
3744
3745
3746
3747
3748
3749 017006 000004
3750 017010 012705 017022
3751 017014 004737 022654
3752
3753 017020 000407
3754
3755 017022
3756 017022 100000 000000
3757 017026 000000 000000
3758 017032 047553 047544
3759 017036 000000
3760
3761
3762
3763
3764
3765
3766 017040 000004
3767 017042 012705 017054
3768 017046 004737 022654
3769
3770 017052 000407
3771
3772 017054
3773 017054 000177 177777
3774 017060 000000 000000
3775 017064 047413 047404
3776 017070 000000
3777
3778
3779

```

```

MOV    #CLRF4,R5      ; PTR TO TEST DATA SET
JSR    PC,@#CLRFT      ; GO TEST

BR      TST241          ;;

CLRF4: ; TEST DATA SET CLRF-4:
        .WORD    ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0      ; EXPECTED FLOAT RESULT
        .WORD    047513,047504 ; FPS: BEFORE, AFTER
        .WORD    000000    ; FEC AFTER ( 0 = N/A )

```

```

;*****
;TEST 241      TEST OF CLRF INSTR, DATA SET CLRF-5
;*            TRUNCATE MODE, ALL INTERRUPT ENABLES ON
;*****

```

```

TST241: SCOPE
MOV     #CLRF5,R5      ; PTR TO TEST DATA SET
JSR     PC,@#CLRFT      ; GO TEST

BR      TST242          ;;

```

```

CLRF5: ; TEST DATA SET CLRF-5:
        .WORD    0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0      ; EXPECTED FLOAT RESULT
        .WORD    047553,047544 ; FPS: BEFORE, AFTER
        .WORD    000000    ; FEC AFTER ( 0 = N/A )

```

```

;*****
;TEST 242      TEST OF CLRF INSTR, DATA SET CLRF-6
;*            ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****

```

```

TST242: SCOPE
MOV     #CLRF6,R5      ; PTR TO TEST DATA SET
JSR     PC,@#CLRFT      ; GO TEST

BR      TST243          ;;

```

```

CLRF6: ; TEST DATA SET CLRF-6:
        .WORD    ZX1MP,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD    0,0      ; EXPECTED FLOAT RESULT
        .WORD    047413,047404 ; FPS: BEFORE, AFTER
        .WORD    000000    ; FEC AFTER ( 0 = N/A )

```

H08

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T243 TEST OF CLRD INSTR, DATA SET CLRD-1

SEQ 0083

```

3780
3781
3782
3783
3784 017072 000004
3785 017074 012705 017106
3786 017100 004737 023030
3787
3788 017104 000413
3789
3790 017106
3791 017106 000000 000000 000000
3792 017114 000000
3793 017116 000000 000000 000000
3794 017124 000000
3795 017126 047613 047604
3796 017132 000000
3797
3798
3799
3800
3801
3802
3803 017134 000004
3804 017136 012705 017150
3805 017142 004737 023030
3806
3807 017146 000413
3808
3809 017150
3810 017150 177777 177777 177777
3811 017156 177777
3812 017160 000000 000000 000000
3813 017166 000000
3814 017170 047753 047744
3815 017174 000000
3816
3817
3818
3819
3820
3821
3822 017176 000004
3823 017200 012705 017212
3824 017204 004737 023030
3825
3826 017210 000413
3827
3828 017212
3829 017212 052525 052525 052525
3830 017220 052525
3831 017222 000000 000000 000000
3832 017230 000000
3833 017232 047653 047644
3834 017236 000000
3835

```

```

*****
;TEST 243      TEST OF CLRD INSTR, DATA SET CLRD-1
;*
;ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST243: SCOPE
        MOV     #CLRD1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#CLRDT     ; GO TEST
        BR      TST244        ;;

CLRD1:  ; TEST DATA SET CLRD-1:
        .WORD   0,0,0,0 ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0,0,0 ; EXPECTED FLOAT RESULT
        .WORD   047613,047604 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 244      TEST OF CLRD INSTR, DATA SET CLRD-2
;*
;TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST244: SCOPE
        MOV     #CLRD2,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#CLRDT     ; GO TEST
        BR      TST245        ;;

CLRD2:  ; TEST DATA SET CLRD-2:
        .WORD   M1,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0,0,0 ; EXPECTED FLOAT RESULT
        .WORD   047753,047744 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 245      TEST OF CLRD INSTR, DATA SET CLRD-3
;*
;TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST245: SCOPE
        MOV     #CLRD3,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#CLRDT     ; GO TEST
        BR      TST246        ;;

CLRD3:  ; TEST DATA SET CLRD-3:
        .WORD   ALTP,ALTP,ALTP,ALTP ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0,0,0 ; EXPECTED FLOAT RESULT
        .WORD   047653,047644 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

```



```

3836
3837
3838
3839
3840
3841 017240 000004
3842 017242 012705 017254
3843 017246 004737 023030
3844
3845 017252 000413
3846
3847 017254
3848 017254 125252 125252 125252
3849 017262 125252
3850 017264 000000 000000 000000
3851 017272 000000
3852 017274 047713 047704
3853 017300 000000
3854
3855
3856
3857
3858
3859
3860 017302 000004
3861 017304 012705 017316
3862 017310 004737 023030
3863
3864 017314 000413
3865
3866 017316
3867 017316 100000 000000 000000
3868 017324 000000
3869 017326 000000 000000 000000
3870 017334 000000
3871 017336 047613 047604
3872 017342 000000
3873
3874
3875
3876
3877
3878
3879 017344 000004
3880 017346 012705 017360
3881 017352 004737 023030
3882
3883 017356 000413
3884
3885 017360
3886 017360 000177 177777 177777
3887 017366 177777
3888 017370 000000 000000 000000
3889 017376 000000
3890 017400 047753 047744
3891 017404 000000

*****
;TEST 246 TEST OF CLRD INSTR, DATA SET CLRD-4
;* ROUNING MODE, ALL INTERRUPT ENABLES ON
*****
TST246: SCOPE
MOV #CLRD4,R5 ; PTR TO TEST DATA SET
JSR PC,2#CLRDT ; GO TEST
BR TST247 ;;
CLRD4: ; TEST DATA SET CLRD-4:
.WORD ALTN,ALTN,ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047713,047704 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 247 TEST OF CLRD INSTR, DATA SET CLRD-5
;* ROUNING MODE, ALL INTERRUPT ENABLES ON
*****
TST247: SCOPE
MOV #CLRD5,R5 ; PTR TO TEST DATA SET
JSR PC,2#CLRDT ; GO TEST
BR TST250 ;;
CLRD5: ; TEST DATA SET CLRD-5:
.WORD MO,0,0,0 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047613,047604 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

*****
;TEST 250 TEST OF CLRD INSTR, DATA SET CLRD-6
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST250: SCOPE
MOV #CLRD6,R5 ; PTR TO TEST DATA SET
JSR PC,2#CLRDT ; GO TEST
BR TST251 ;;
CLRD6: ; TEST DATA SET CLRD-6:
.WORD ZX1MP,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
.WORD 0,0,0,0 ; EXPECTED FLOAT RESULT
.WORD 047753,047744 ; FPS: BEFORE, AFTER
.WORD 000000 ; FEC AFTER ( 0 = N/A )

```

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SEQ 0085

3892
3893
3894

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T251 TEST OF TSTF INSTR, DATA SET TSTF-1

SEQ 0086

```

3895
3896
3897
3898
3899 017406 000004
3900 017410 012705 017422
3901 017414 004737 023240
3902
3903 017420 000407
3904
3905 017422
3906 017422 000000 000000
3907 017426 000000 000000
3908 017432 047513 047504
3909 017436 000000
3910
3911
3912
3913
3914
3915
3916 017440 000004
3917 017442 012705 017454
3918 017446 004737 023240
3919
3920 017452 000407
3921
3922 017454
3923 017454 052525 052525
3924 017460 052525 052525
3925 017464 047557 047540
3926 017470 000000
3927
3928
3929
3930
3931
3932
3933 017472 000004
3934 017474 012705 017506
3935 017500 004737 023240
3936
3937 017504 000407
3938
3939 017506
3940 017506 125252 125252
3941 017512 125252 125252
3942 017516 047407 047410
3943 017522 000000
3944
3945
3946
3947
3948
3949
3950 017524 000004

```

```

*****
; TEST 251      TEST OF TSTF INSTR, DATA SET TSTF-1
; *            ROUNDING MODE, ALL INTERRUPT ENABLES ON
; *****
TST251: SCOPE
        MOV     #TSTF1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTFT      ; GO TEST
        BR      TST252        ;;

TSTF1:  ; TEST DATA SET TSTF-1:
        .WORD   0,0            ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0            ; EXPECTED FLOAT RESULT
        .WORD   047513,047504  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

*****
; TEST 252      TEST OF TSTF INSTR, DATA SET TSTF-2
; *            TRUNCATE MODE, ALL INTERRUPT ENABLES ON
; *****
TST252: SCOPE
        MOV     #TSTF2,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTFT      ; GO TEST
        BR      TST253        ;;

TSTF2:  ; TEST DATA SET TSTF-2:
        .WORD   ALTP,ALTP      ; INITIAL MEM FLOAT NUMBER
        .WORD   ALTP,ALTP      ; EXPECTED FLOAT RESULT
        .WORD   047557,047540  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

*****
; TEST 253      TEST OF TSTF INSTR, DATA SET TSTF-3
; *            ROUNDING MODE, ALL INTERRUPT ENABLES ON
; *****
TST253: SCOPE
        MOV     #TSTF3,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTFT      ; GO TEST
        BR      TST254        ;;

TSTF3:  ; TEST DATA SET TSTF-3:
        .WORD   ALTN,ALTN      ; INITIAL MEM FLOAT NUMBER
        .WORD   ALTN,ALTN      ; EXPECTED FLOAT RESULT
        .WORD   047407,047410  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

*****
; TEST 254      TEST OF TSTF INSTR, DATA SET TSTF-4
; *            TRUNCATE MODE, ALL INTERRUPT ENABLES ON
; *****
TST254: SCOPE

```

T254 TEST OF TSTF INSTR, DATA SET TSTF-4

3951 017526 012705 017540
 3952 017532 004737 023240
 3953
 3954 017536 000407
 3955
 3956 017540
 3957 017540 177777 177777
 3958 017544 177777 177777
 3959 017550 047447 047450
 3960 017554 000000
 3961
 3962
 3963
 3964
 3965
 3966
 3967 017556 000004
 3968 017560 012705 017572
 3969 017564 004737 023240
 3970
 3971 017570 000407
 3972
 3973 017572
 3974 017572 000200 000000
 3975 017576 000200 000000
 3976 017602 047517 047500
 3977 017606 000000
 3978
 3979
 3980
 3981
 3982
 3983
 3984 017610 000004
 3985 017612 012705 017624
 3986 017616 004737 023240
 3987
 3988 017622 000407
 3989
 3990 017624
 3991 017624 077777 177777
 3992 017630 077777 177777
 3993 017634 047557 047540
 3994 017640 000000
 3995
 3996
 3997
 3998
 3999
 4000
 4001 017642 000004
 4002 017644 012705 017656
 4003 017650 004737 023240
 4004
 4005 017654 000407
 4006

MOV #TSTF4,R5 ; PTR TO TEST DATA SET
 JSR PC,@TSTFT ; GO TEST
 BR TST255 ;;
 TSTF4: ; TEST DATA SET TSTF-4:
 .WORD LGN,M1 ; INITIAL MEM FLOAT NUMBER
 .WORD LGN,M1 ; EXPECTED FLOAT RESULT
 .WORD 047447,047450 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ; TEST 255 TEST OF TSTF INSTR, DATA SET TSTF-5
 ; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
 ; *****

TST255: SCOPE
 MOV #TSTF5,R5 ; PTR TO TEST DATA SET
 JSR PC,@TSTFT ; GO TEST
 BR TST256 ;;

TSTF5: ; TEST DATA SET TSTF-5:
 .WORD SMP,0 ; INITIAL MEM FLOAT NUMBER
 .WORD SMP,0 ; EXPECTED FLOAT RESULT
 .WORD 047517,047500 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ; TEST 256 TEST OF TSTF INSTR, DATA SET TSTF-6
 ; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
 ; *****

TST256: SCOPE
 MOV #TSTF6,R5 ; PTR TO TEST DATA SET
 JSR PC,@TSTFT ; GO TEST
 BR TST257 ;;

TSTF6: ; TEST DATA SET TSTF-6:
 .WORD LGP,M1 ; INITIAL MEM FLOAT NUMBER
 .WORD LGP,M1 ; EXPECTED FLOAT RESULT
 .WORD 047557,047540 ; FPS: BEFORE, AFTER
 .WORD 000000 ; FEC AFTER (0 = N/A)

 ; TEST 257 TEST OF TSTF INSTR, DATA SET TSTF-7
 ; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
 ; *****

TST257: SCOPE
 MOV #TSTF7,R5 ; PTR TO TEST DATA SET
 JSR PC,@TSTFT ; GO TEST
 BR TST260 ;;

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T257 TEST OF TSTF INSTR, DATA SET TSTF-7

SEQ 0088

```

4007 017656
4008 017656 100200 000000
4009 017662 100200 000000
4010 017666 047407 047410
4011 017672 000000
4012
4013
4014
4015
4016
4017
4018 017674 000004
4019 017676 012705 017710
4020 017702 004737 023240
4021
4022 017706 000407
4023
4024 017710
4025 017710 000177 177777
4026 017714 000177 177777
4027 017720 047453 047444
4028 017724 000000
4029
4030
4031
4032
4033
4034
4035 017726 000004
4036 017730 012705 017742
4037 017734 004737 023240
4038
4039 017740 000407
4040
4041 017742
4042 017742 100000 000000
4043 017746 100000 000000
4044 017752 047503 147514
4045 017756 100014
4046
4047
4048
4049
4050
4051
4052 017760 000004
4053 017762 012705 017774
4054 017766 004737 023240
4055
4056 017772 000407
4057
4058 017774
4059 017774 100000 000001
4060 020000 100000 000001
4061 020004 047543 147554
4062 020010 100014

```

```

TSTF7: ; TEST DATA SET TSTF-7:
        .WORD SMN,0 ; INITIAL MEM FLOAT NUMBER
        .WORD SMN,0 ; EXPECTED FLOAT RESULT
        .WORD 047407,047410 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
; *TEST 260 TEST OF TSTF INSTR, DATA SET TSTF-10
; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST260: SCOPE
        MOV #TSTF10,R5 ; PTR TO TEST DATA SET
        JSR PC,@TSTFT ; GO TEST
        BR TST261 ;;

```

```

TSTF10: ; TEST DATA SET TSTF-10:
        .WORD ZXIMP,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD ZXIMP,M1 ; EXPECTED FLOAT RESULT
        .WORD 047453,047444 ; FPS: BEFORE, AFTER
        .WORD 000000 ; FEC AFTER ( 0 = N/A )

```

```

*****
; *TEST 261 TEST OF TSTF INSTR, DATA SET TSTF-11
; * ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST261: SCOPE
        MOV #TSTF11,R5 ; PTR TO TEST DATA SET
        JSR PC,@TSTFT ; GO TEST
        BR TST262 ;;

```

```

TSTF11: ; TEST DATA SET TSTF-11:
        .WORD M0,0 ; INITIAL MEM FLOAT NUMBER
        .WORD M0,0 ; EXPECTED FLOAT RESULT
        .WORD 047503,147514 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```

```

*****
; *TEST 262 TEST OF TSTF INSTR, DATA SET TSTF-12
; * TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****

```

```

TST262: SCOPE
        MOV #TSTF12,R5 ; PTR TO TEST DATA SET
        JSR PC,@TSTFT ; GO TEST
        BR TST263 ;;

```

```

TSTF12: ; TEST DATA SET TSTF-12:
        .WORD M0,1 ; INITIAL MEM FLOAT NUMBER
        .WORD M0,1 ; EXPECTED FLOAT RESULT
        .WORD 047543,147554 ; FPS: BEFORE, AFTER
        .WORD 100014 ; FEC AFTER ( 0 = N/A )

```

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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 85
 DCFAB.P11 19-APR-77 13:36 T262 TEST OF TSTF INSTR, DATA SET TSTF-12

SEQ 0089

4063
 4064
 4065
 4066
 4067
 4068
 4069
 4070
 4071
 4072
 4073
 4074
 4075
 4076
 4077
 4078
 4079
 4080
 4081
 4082

020012	000004	
020014	012705	020026
020020	004737	023240
020024	000407	
020026		
020026	100177	177777
020032	100177	177777
020036	043403	043414
020042	000000	

```

*****
:TEST 263      TEST OF TSTF INSTR, DATA SET TSTF-13
:              ROUNDING MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
:              *****
TST263: SCOPE
        MOV     #TSTF13,R5      ; PTR TO TEST DATA SET
        JSR     PC,#TSTFT      ; GO TEST
        BR      TST264         ;;

TSTF13: ; TEST DATA SET TSTF-13:
        .WORD   ZX1MN,M1       ; INITIAL MEM FLOAT NUMBER
        .WORD   ZX1MN,M1       ; EXPECTED FLOAT RESULT
        .WORD   043403,043414  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )
  
```



```

4083
4084
4085
4086
4087 020044 000004
4088 020046 012705 020060
4089 020052 004737 023414
4090
4091 020056 000413
4092
4093 020060
4094 020060 000000 000000 000000
4095 020066 000000
4096 020070 003000 000000 000000
4097 020076 000000
4098 020100 047653 047644
4099 020104 000000
4100
4101
4102
4103
4104
4105
4106 020106 000004
4107 020110 012705 020122
4108 020114 004737 023414
4109
4110 020120 000413
4111
4112 020122
4113 020122 052525 052525 052525
4114 020130 052525
4115 020132 052525 052525 052525
4116 020140 052525
4117 020142 047717 047700
4118 020146 000000
4119
4120
4121
4122
4123
4124
4125 020150 000004
4126 020152 012705 020164
4127 020156 004737 023414
4128
4129 020162 000413
4130
4131 020164
4132 020164 125252 125252 125252
4133 020172 125252
4134 020174 125252 125252 125252
4135 020202 125252
4136 020204 047747 047750
4137 020210 000000
4138

```

```

*****
;TEST 264      TEST OF TSTD INSTR, DATA SET TSTD-1
;              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST264: SCOPE
        MOV     #TSTD1,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD1      ; GO TEST
        BR      TST265        ;;

TSTD1:  ; TEST DATA SET TSTD-1:
        .WORD   0,0,0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD   0,0,0,0      ; EXPECTED FLOAT RESULT
        .WORD   047653,047644 ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 265      TEST OF TSTD INSTR, DATA SET TSTD-2
;              ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST265: SCOPE
        MOV     #TSTD2,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD2      ; GO TEST
        BR      TST266        ;;

TSTD2:  ; TEST DATA SET TSTD-2:
        .WORD   ALTP,ALTP,ALTP,ALTP ; INITIAL MEM FLOAT NUMBER
        .WORD   ALTP,ALTP,ALTP,ALTP ; EXPECTED FLOAT RESULT
        .WORD   047717,047700      ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

*****
;TEST 266      TEST OF TSTD INSTR, DATA SET TSTD-3
;              TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST266: SCOPE
        MOV     #TSTD3,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD3      ; GO TEST
        BR      TST267        ;;

TSTD3:  ; TEST DATA SET TSTD-3:
        .WORD   ALTN,ALTN,ALTN,ALTN ; INITIAL MEM FLOAT NUMBER
        .WORD   ALTN,ALTN,ALTN,ALTN ; EXPECTED FLOAT RESULT
        .WORD   047747,047750      ; FPS: BEFORE, AFTER
        .WORD   000000      ; FEC AFTER ( 0 = N/A )

```

```

4139
4140
4141
4142
4143
4144 020212 000004
4145 020214 012705 020226
4146 020220 004737 023414
4147
4148 020224 000413
4149
4150 020226
4151 020226 177777 177777 177777
4152 020234 177777
4153 020236 177777 177777 177777
4154 020244 177777
4155 020246 047607 047610
4156 020252 000000
4157
4158
4159
4160
4161
4162
4163 020254 000004
4164 020256 012705 020270
4165 020262 004737 023414
4166
4167 020266 000413
4168
4169 020270
4170 020270 000200 000000 000000
4171 020276 000000
4172 020300 000200 000000 000000
4173 020306 000000
4174 020310 047657 047640
4175 020314 000000
4176
4177
4178
4179
4180
4181
4182 020316 000004
4183 020320 012705 020332
4184 020324 004737 023414
4185
4186 020330 000413
4187
4188 020332
4189 020332 077777 177777 177777
4190 020340 177777
4191 020342 077777 177777 177777
4192 020350 177777
4193 020352 047717 047700
4194 020356 000000

```

```

*****
;TEST 267      TEST OF TSTD INSTR, DATA SET TSTD-4
;*            ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST267: SCOPE
        MOV     #TSTD4,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD7      ; GO TEST
        BR      TST270        ;;

TSTD4:  ; TEST DATA SET TSTD-4:
        .WORD   LGN,M1,M1,M1   ; INITIAL MEM FLOAT NUMBER
        .WORD   LGN,M1,M1,M1   ; EXPECTED FLOAT RESULT
        .WORD   047607,047610  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

*****
;TEST 270      TEST OF TSTD INSTR, DATA SET TSTD-5
;*            TRUNCATE MODE, ALL INTERRUPT ENABLES ON
*****
TST270: SCOPE
        MOV     #TSTD5,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD7      ; GO TEST
        BR      TST271        ;;

TSTD5:  ; TEST DATA SET TSTD-5:
        .WORD   SMP,0,0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD   SMP,0,0,0      ; EXPECTED FLOAT RESULT
        .WORD   047657,047640  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

*****
;TEST 271      TEST OF TSTD INSTR, DATA SET TSTD-6
;*            ROUNDING MODE, ALL INTERRUPT ENABLES ON
*****
TST271: SCOPE
        MOV     #TSTD6,R5      ; PTR TO TEST DATA SET
        JSR     PC,@TSTD7      ; GO TEST
        BR      TST272        ;;

TSTD6:  ; TEST DATA SET TSTD-6:
        .WORD   LGP,M1,M1,M1   ; INITIAL MEM FLOAT NUMBER
        .WORD   LGP,M1,M1,M1   ; EXPECTED FLOAT RESULT
        .WORD   047717,047700  ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

```



```

4195
4196
4197
4198
4199
4200
4201 020360 000004
4202 020362 012705 020374
4203 020366 004737 023414
4204
4205 020372 000413
4206
4207 020374
4208 020374 100200 000000 000000
4209 020402 000000
4210 020404 100200 000000 000000
4211 020412 000000
4212 020414 047747 047750
4213 020420 000000
4214
4215
4216
4217
4218
4219
4220 020422 000004
4221 020424 012705 020436
4222 020430 004737 023414
4223
4224 020434 000413
4225
4226 020436
4227 020436 000177 177777 177777
4228 020444 177777
4229 020446 000177 177777 177777
4230 020454 177777
4231 020456 047613 047604
4232 020462 000000
4233
4234
4235
4236
4237
4238
4239 020464 000004
4240 020466 012705 020500
4241 020472 004737 023414
4242
4243 020476 000413
4244
4245 020500
4246 020500 100000 000000 000000
4247 020506 000000
4248 020510 100000 000000 000000
4249 020516 000000
4250 020520 047643 147654

;*****
;TEST 272 TEST OF TSTD INSTR, DATA SET TSTD-7
;*
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
;*****
TST272: SCOPE
        MOV     #TSTD7,R5      ; PTR TO TEST DATA SET
        JSR     PC,@#TSTD7    ; GO TEST
        BR      TST273        ;;

TSTD7:  ; TEST DATA SET TSTD-7:
        .WORD   SMN,0,0,0      ; INITIAL MEM FLOAT NUMBER
        .WORD   SMN,0,0,0      ; EXPECTED FLOAT RESULT
        .WORD   047747,047750 ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

;*****
;TEST 273 TEST OF TSTD INSTR, DATA SET TSTD-10
;*
;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
;*****
TST273: SCOPE
        MOV     #TSTD10,R5     ; PTR TO TEST DATA SET
        JSR     PC,@#TSTD10    ; GO TEST
        BR      TST274        ;;

TSTD10: ; TEST DATA SET TSTD-10:
        .WORD   ZXIMP,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
        .WORD   ZXIMP,M1,M1,M1 ; EXPECTED FLOAT RESULT
        .WORD   047613,047604 ; FPS: BEFORE, AFTER
        .WORD   000000         ; FEC AFTER ( 0 = N/A )

;*****
;TEST 274 TEST OF TSTD INSTR, DATA SET TSTD-11
;*
;* TRUNCATE MODE, ALL INTERRUPT ENABLES ON
;*****
TST274: SCOPE
        MOV     #TSTD11,R5     ; PTR TO TEST DATA SET
        JSR     PC,@#TSTD11    ; GO TEST
        BR      TST275        ;;

TSTD11: ; TEST DATA SET TSTD-11:
        .WORD   M0,0,0,0       ; INITIAL MEM FLOAT NUMBER
        .WORD   M0,0,0,0       ; EXPECTED FLOAT RESULT
        .WORD   047643,147654 ; FPS: BEFORE, AFTER

```

```

4251 020524 100014 .WORD 100014 ; FEC AFTER ( 0 = N/A )
4252
4253
4254 ;*****
4255 ;*TEST 275 TEST OF TSTD INSTR, DATA SET TSTD-12
4256 ;* ROUNDING MODE, ALL INTERRUPT ENABLES ON
4257 ;*****
4258 020526 000004
4259 020530 012705 020542
4260 020534 004737 023414
4261
4262 020540 000413 BR TST276 ;;
4263
4264 020542 TSTD12: ; TEST DATA SET TSTD-12:
4265 020542 100000 000000 000000 .WORD MO,0,0,1 ; INITIAL MEM FLOAT NUMBER
4266 020550 000001
4267 020552 100000 000000 000000 .WORD MO,0,0,1 ; EXPECTED FLOAT RESULT
4268 020560 000001
4269 020562 047703 147714 .WORD 047703,147714 ; FPS: BEFORE, AFTER
4270 020566 100014 .WORD 100014 ; FEC AFTER ( 0 = N/A )
4271
4272
4273 ;*****
4274 ;*TEST 276 TEST OF TSTD INSTR, DATA SET TSTD-13
4275 ;* TRUNCATE MODE, -0 INTERRUPT ENABLE OFF, ALL OTHERS ON
4276 ;*****
4277 020570 000004
4278 020572 012705 020604
4279 020576 004737 023414
4280
4281 020602 000413 BR TST277 ;;
4282
4283 020604 TSTD13: ; TEST DATA SET TSTD-13:
4284 020604 100177 177777 177777 .WORD ZX1MN,M1,M1,M1 ; INITIAL MEM FLOAT NUMBER
4285 020612 177777
4286 020614 100177 177777 177777 .WORD ZX1MN,M1,M1,M1 ; EXPECTED FLOAT RESULT
4287 020622 177777
4288 020624 043643 043654 .WORD 043643,043654 ; FPS: BEFORE, AFTER
4289 020630 000000 .WORD 000000 ; FEC AFTER ( 0 = N/A )
4290
4291
4292

```



```

4293
4294
4295
4296 020632
4297 020632 000004
4298 020634 005037 001310
4299 020640 005037 001104
4300 020644 005037 001102
4301
4302
4303
4304
4305
4306
4307
4308
4309
4310
4311
4312 020650 076600 000022
4313 020654 032700 000020
4314 020660 001423
4315
4316 020662 032777 000002 160254
4317 020670 001017
4318
4319 020672 012701 010000
4320 020676 076600 000144
4321 020702 030100
4322 020704 001402
4323 020706 040100
4324 020710 000401
4325 020712 050100
4326 020714 076600 000344
4327
4328 020720 030100
4329 020722 001002
4330 020724 000137 003472
4331
4332
4333
4334
4335
4336
4337
4338
4339
4340
4341
4342
4343 020730
4344 020730 005037 001104
4345 020734 005037 001102
4346 020740 005037 001310
4347 020744 005237 001332
4348 020750 042737 100000 001332

;*****
.SBTTL SUB PASS END CONTROL

TST277: .FORCE LAST TEST NUMBER
        SCOPE      ;CHECK FOR TEST ITERATIONS HERE
        CLR        $TIMES      ;DONT ITERATE THIS "TEST"
        CLR        $ERFLG      ;NO ERRORS HERE
        CLR        $TSTNM      ;ZAP TEST ## WHEN DONE WITH A PASS

        ;IF TEST ONLY EITHER HFP OR WFP, ENTER "EOP" ROUTINE DIRECTLY

        ; IF IN ALTERNATE HFP/WFP MODE,
        ; COMPLEMENT FLAG<5>, HFP ENABLE BIT,
        ; ENTER EOP ROUTINE ONLY IF ABOUT TO TEST HFP NEXT,
        ; TESTING SEQUENCE IS: PASS#1 HFP SUB-PASS
        ; PASS#1 WFP SUB-PASS
        ; PASS#2 HFP SUB-PASS
        ; ...

        MED        $WHAMI      ;GET WHAMI INTO RO
        BIT        $BIT04,RO    ;1=HFP PRESENT, 0=NONE
        BEQ        $EOP        ;EXIT IF NONE

        BIT        $SW01,$SWR    ;1=HFP OR WFP TEST ONLY
        BNE        $EOP        ;0=ALTERNATE HFP AND WFP TESTS

        MOV        $BIT12,R1    ;HFP PRESENT, AND IN ALTERNATE MODE;
        MED        $FLAG        ;SO READ FLAGS
        BIT        R1,RO        ;COMPLEMENT FLAG<5>=BIT12=HFP ENABLE FLAG
        BEQ        1$          ;
        BIC        R1,RO        ;CLEAR BIT 12
        BR         2$          ;
        BIS        R1,RO        ;SET BIT 12
        MED        $FLAG        ;REWRITE FLAGS

        BIT        R1,RO        ;HFP OR WFP NEXT ?
        BNE        $EOP        ;IF HFP AGAIN, START NEW PASS
        JMP        $SUBPAS      ;IF WFP, NEXT SUBPASS

;*****
.SBTTL END OF PASS ROUTINE (MODIFIED SYSMAC)

;*INCREMENT THE PASS NUMBER ($PASS)
;*IF SW<10>=0, DING BELL ON PASS END
;*IF THERE'S A MONITOR, GO TO IT
;* ELSE JUMP TO NEWPAS

$EOP:   CLR        $ERFLG      ;ZERO ERROR COUNT
        CLR        $TSTNM      ;ZERO TEST NUMBER
        CLR        $TIMES      ;ZERO NUMBER OF ITERATIONS
        INC        $PASS      ;INCREMENT PASS COUNT,
        BIC        $100000,$PASS ; BUT NEVER LET IN GO NEGATIVE

```

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FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 91
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SEQ 0095

4349	020756	005327			DEC	(PC)+	;PASS LOOP ?
4350	020760	000001			SEOPCT: .WORD	1	;YES
4351	020762	003021			BGT	\$DOAGN	;RESTORE COUNTER
4352	020764	012737			MOV	(PC)+,2(PC)+	
4353	020766	000001			SENDCT: .WORD	1	
4354	020770	020760			SEOPCT		
4355	020772	032777	002000	160144	BIT	#SW10,2SWR	;BELL ON PASS END ?
4356	021000	001002			BNE	\$GET42	;NO
4357	021002	104401	001314		TYPE	,SBELL	;YES
4358							
4359	021006	013700	000042		\$GET42: MOV	2#42,RO	;GET MONITOR ADDRESS
4360	021012	001405			BEQ	\$DOAGN	;NO MONITOR
4361	021014	000005			RESET		;CLEAR WORLD
4362							
4363	021016	004710			SENDAD: JSR	PC,(RO)	;GO TO MONITOR
4364	021020	000240			NOP		
4365	021022	000240			NOP		;RESERVED FOR ACT11
4366	021024	000240			NOP		
4367							
4368	021026	000137	003434		\$DOAGN: JMP	2#NEWPAS	;RETURN
4369							
4370							

H09

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SUBR TO PERFORM TEST OF LDD/STD

SEQ 0096

```

4371 .SBTTL SUBR TO PERFORM TEST OF LDD/STD
4372
4373 LDADT:
4374 MOV #13,R0 ; LOAD STMP0-12
4375 MOV R5,R1 ; WITH TEST DATA SETS
4376 MOV #STMP0,R2 ; FOR DISPLAY LATER
4377 MOV (R1)+,(R2)+
4378 SOB R0,-2
4379 MOV #LDADL,$LPERR ; ERROR LOOPING ADDRESS
4380
4381 LDADL: LDFPS 20(R5) ; INITIAL FPS
4382
4383 JSR PC,(R4) ; GO PERFORM LDD/STD SEQUENCE
4384
4385 STFPS FPS ; STORE FPS AFTER
4386 STST FEC ; STORE FEC/FEA AFTER
4387
4388 CMP FPS,22(R5) ; CHECK FPS
4389 BEQ 65$ ; FPS IS OK
4390 ERROR 77 ; FPS BAD
4391 65$: TST 24(R5) ; DOES FEC/FEA APPLY?
4392 BPL 66$ ; NO - SKIP TEST
4393 MOV R4,EXPFEA ; GET EXPECTED FEA
4394 ADD #4,EXPFEA ; AND ADJUST
4395 CMPB FEC,24(R5) ; COMPARE FEC-S
4396 BNE 64$ ; NOT EQUAL
4397 CMP FEA,EXPFEA ; COMPARE FEA-S
4398 BEQ 66$ ; FEC, FEA OK
4399 64$: ERROR 102 ; FEC OR FEA ARE BAD
4400 66$:
4401
4402 CMP $REG0,10(R5) ; 1ST WORD OF RESULT CHECK?
4403 BNE 67$ ; NO
4404 CMP $REG1,12(R5) ; 2ND WORD OF RESULT CHECK?
4405 BNE 67$ ; NO
4406 CMP $REG2,14(R5) ; 3RD WORD OF RESULT CHECK?
4407 BNE 67$ ; NO
4408 CMP $REG3,16(R5) ; 4TH WORD OF RESULT CHECK?
4409 BEQ 68$ ; ALL WORDS OK
4410 67$: ERROR 104 ; NUMBERS NOT EQUAL
4411 68$:
4412
4413 RTS PC ; RETURN TO TEST CALLER
4414
4415 ; * * * LDD/STD SEQUENCE SUBR * * * * *
4416
4417 LDARDO: LDD PREVAC,AC0 ; PREV AC0 CONTENTS
4418 LDD (R5),AC0 ; LOAD AC0
4419 STD AC0,$REG0 ; STORE AC0
4420 RTS PC
4421 LDARD1: LDD PREVAC,AC1 ; PREV AC1 CONTENTS
4422 LDD (R5),AC1 ; LOAD AC1
4423 STD AC1,$REG0 ; STORE AC1
4424 RTS PC
4425 LDARD2: LDD PREVAC,AC2 ; PREV AC2 CONTENTS
4426 LDD (R5),AC2 ; LOAD AC2

```


SUBR TO PERFORM TEST OF LDD/LDF/STD

.SBTTL SUBR TO PERFORM TEST OF LDD/LDF/STD

```

4446
4447
4448 021334 012700 000015
4449 021334 010501
4450 021340 012702 001230
4451 021342 012122
4452 021346 077002
4453 021350 012737 021360 001112
4454 021352 170011
4455
4456 021360 004714
4457
4458 021362 170237 002330
4459 021370 170337 002332
4460
4461 021374 023765 002330 000026
4462 021402 001401
4463 021404 104100
4464 021406 005765 000030
4465 021412 100016
4466 021414 010437 002344
4467 021420 062737 000006 002344
4468 021426 123765 002332 000030
4469 021434 001004
4470 021436 023737 002334 002344
4471 021444 001401
4472 021446 104103
4473 021450
4474
4475 021450 023765 001170 000014
4476 021456 001014
4477 021460 023765 001172 000016
4478 021466 001010
4479 021470 023765 001174 000020
4480 021476 001004
4481 021500 023765 001176 000022
4482 021506 001401
4483 021510 104105
4484 021512
4485
4486 021512 000207
4487
4488
4489
4490
4491
4492 021514 172415
4493 021516 170165 000024
4494 021522 172465 000010
4495 021526 170011
4496 021530 174037 001170
4497 021534 000207
4498 021536 172515
4499 021540 170165 000024
4500 021544 172565 000010
4501 021550 170011

LDAFT:
MOV #15,R0 ; LOAD STMPD-14
MOV R5,R1 ; WITH TEST DATA SETS
MOV #STMPD,R2 ; FOR DISPLAY LATER
MOV (R1)+(R2)+
SOB R0,-2
MOV #LDAFL,$LPERR ; ERROR LOOPING ADDRESS

LDAFL: SETD ; D MODE FOR INITIAL LOAD
JSR PC,(R4) ; GO PERFORM LDD/LDF/STD SEQUENCE

STFPS FPS ; STORE FPS AFTER
STST FEC ; STORE FEC/FEA AFTER

CMP FPS,26(R5) ; CHECK FPS
BEQ 65$ ; FPS IS OK
ERROR 100 ; FPS BAD
TST 30(R5) ; DOES FEC/FEA APPLY?
BPL 66$ ; NO - SKIP TEST
MOV R4,EXPFEA ; GET EXPECTED FEA
ADD #6,EXPFEA ; AND ADJUST
CMPB FEC,30(R5) ; COMPARE FEC-S
BNE 64$ ; NOT EQUAL
CMP FEA,EXPFEA ; COMPARE FEA-S
BEQ 66$ ; FEC, FEA OK
ERROR 103 ; FEC OR FEA ARE BAD
65$:
66$:

CMP $REG0,14(R5) ; 1ST WORD OF RESULT CHECK?
BNE 67$ ; NO
CMP $REG1,16(R5) ; 2ND WORD OF RESULT CHECK?
BNE 67$ ; NO
CMP $REG2,20(R5) ; 3RD WORD OF RESULT CHECK?
BNE 67$ ; NO
CMP $REG3,22(R5) ; 4TH WORD OF RESULT CHECK?
BEQ 68$ ; ALL WORDS OK
ERROR 105 ; NUMBERS NOT EQUAL
67$:
68$:

RTS PC ; RETURN TO TEST CALLER

; * * * LDD/LDF/STD SEQUENCE SUBR * * * * *

LDARF0: LDD (R5),AC0 ; PREV AC0 CONTENTS
LDFPS 24(R5) ; INITIAL FPS
LDF 10(R5),AC0 ; LOAD NEW HALF OF AC0
SETD ; D MODE FOR STORE
STD AC0,$REG0 ; STORE ALL OF RESULT
RTS PC

LDARF1: LDD (R5),AC1 ; PREV AC1 CONTENTS
LDFPS 24(R5) ; INITIAL FPS
LDF 10(R5),AC1 ; LOAD NEW HALF OF AC1
SETD ; D MODE FOR STORE

```

K09

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 95
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SEQ 0099

4502	021552	174137	001170		STD	AC1,\$REGO	:	STORE ALL OF RESULT
4503	021556	000207			RTS	PC	:	
4504	021560	172615		LDARF2:	LDD	(R5),AC2	:	PREV AC2 CONTENTS
4505	021562	170165	000024		LDFPS	24(R5)	:	INITIAL FPS
4506	021566	172665	000010		LDF	10(R5),AC2	:	LOAD NEW HALF OF AC2
4507	021572	170011			SETD		:	D MODE FOR STORE
4508	021574	174237	001170		STD	AC2,\$REGO	:	STORE ALL OF RESULT
4509	021600	000207			RTS	PC	:	
4510	021602	172715		LDARF3:	LDD	(R5),AC3	:	PREV AC3 CONTENTS
4511	021604	170165	000024		LDFPS	24(R5)	:	INITIAL FPS
4512	021610	172765	000010		LDF	10(R5),AC3	:	LOAD NEW HALF OF AC3
4513	021614	170011			SETD		:	D MODE FOR STORE
4514	021616	174337	001170		STD	AC3,\$REGO	:	STORE ALL OF RESULT
4515	021622	000207			RTS	PC	:	
4516	021624	172415		LDARF4:	LDD	(R5),AC0	:	INTERMEDIATE
4517	021626	174004			STD	AC0,AC4	:	PREV AC4 CONTENTS
4518	021630	170165	000024		LDFPS	24(R5)	:	INITIAL FPS
4519	021634	172465	000010		LDF	10(R5),AC0	:	INTERMEDIATE
4520	021640	174004			STF	AC0,AC4	:	LOAD NEW HALF OF AC4
4521	021642	170011			SETD		:	D MODE FOR STORE
4522	021644	172404			LDD	AC4,AC0	:	STORE ALL OF RESULT
4523	021646	174037	001170		STD	AC0,\$REGO	:	INTERMEDIATE
4524	021652	000207			RTS	PC	:	
4525	021654	172515		LDARF5:	LDD	(R5),AC1	:	INTERMEDIATE
4526	021656	174105			STD	AC1,AC5	:	PREV AC5 CONTENTS
4527	021660	170165	000024		LDFPS	24(R5)	:	INITIAL FPS
4528	021664	172565	000010		LDF	10(R5),AC1	:	INTERMEDIATE
4529	021670	174105			STF	AC1,AC5	:	LOAD NEW HALF OF AC5
4530	021672	170011			SETD		:	D MODE FOR STORE
4531	021674	172505			LDD	AC5,AC1	:	STORE ALL OF RESULT
4532	021676	174137	001170		STD	AC1,\$REGO	:	INTERMEDIATE
4533	021702	000207			RTS	PC	:	

.SBTTL SUBR TO TEST THE ABSF INSTRUCTION

```

4534
4535
4536 021704 012700 000007
4537 021704 010501
4538 021710 012702 001230
4539 021712 012122
4540 021716 077002
4541 021720 012737 021730 001112
4542 021722 170001
4543 021730 011537 001170
4544 021732 016537 000002 001172
4545 021736 170165 000010
4546 021744
4547 021750 170637 001170
4548
4549 021754 170237 002330
4550 021760 170337 002332
4551
4552 021764 023765 002330 000012
4553 021772 001401
4554 021774 104076
4555 021776 005765 000014
4556 022002 100014
4557 022004 012737 021750 002344
4558 022012 123765 002332 000014
4559 022020 001004
4560 022022 023737 002334 002344
4561 022030 001401
4562 022032 104101
4563 022034
4564
4565 022034 023765 001170 000004
4566 022042 001004
4567 022044 023765 001172 000006
4568 022052 001401
4569 022054 104106
4570 022056
4571
4572 022056 000207
4573
4574
4575
4576
4577
4578
4579 022060 012700 000013
4580 022060 010501
4581 022064 012702 001230
4582 022066 012122
4583 022072 077002
4584 022074 012737 022104 001112
4585 022076 170011
4586 022104 011537 001170
4587 022106 016537 000002 001172
4588
4589

```

```

ABSFT:  MOV    #7,R0          ; LOAD $TMP0-6
        MOV    R5,R1          ; WITH TEST DATA SETS
        MOV    #TMP0,R2       ; FOR DISPLAY LATER
        MOV    (R1)+(R2)+
        SOB    R0,-2
        MOV    #ABSFL,$LPERR  ; ERROR LOOPING ADDRESS

ABSFL:  SETF    (R5),$REG0     ; F MODE
        MOV    2(R5),$REG1    ; INITIAL FLOAT NUMBER
        LDFPS  10(R5)         ; INTO OPERATING ROOM
        ; INITIAL FPS

ABSFI:  ABSF    $REG0          ; ABS(($REG0))->$REG0

        STFPS  FPS            ; STORE FPS AFTER
        STST   FEC            ; STORE FEC/FEA AFTER

        CMP    FPS,12(R5)     ; CHECK FPS
        BEQ    65$           ; FPS IS OK
        ERROR  76            ; FPS BAD
        TST    14(R5)         ; DOES FEC/FEA APPLY?
        BPL    66$           ; NO - SKIP TEST
        MOV    #ABSFI,EXPFEA  ; GET EXPECTED FEA
        CMPB   FEC,14(R5)     ; COMPARE FEC-S
        BNE    64$           ; NOT EQUAL
        CMP    FEA,EXPFEA     ; COMPARE FEA-S
        BEQ    66$           ; FEC, FEA OK
        ERROR  101           ; FEC OR FEA ARE BAD
        64$:
        66$:

        CMP    $REG0,4(R5)    ; 1ST WORD OF RESULT CHECK?
        BNE    67$           ; NO
        CMP    $REG1,6(R5)    ; 2ND WORD OF RESULT CHECK?
        BEQ    68$           ; ALL WORDS OK
        ERROR  106           ; NUMBERS NOT EQUAL
        67$:
        68$:

        RTS     PC            ; RETURN TO TEST CALLER

```

```

;*****
.SBTTL SUBR TO TEST THE ABSD INSTRUCTION

```

```

4579
4580 022060 012700 000013
4581 022064 010501
4582 022066 012702 001230
4583 022072 012122
4584 022074 077002
4585 022076 012737 022104 001112
4586 022104 170011
4587 022106 011537 001170
4588 022112 016537 000002 001172
4589

```

```

ABSDT:  MOV    #13,R0         ; LOAD $TMP0-12
        MOV    R5,R1         ; WITH TEST DATA SETS
        MOV    #TMP0,R2      ; FOR DISPLAY LATER
        MOV    (R1)+(R2)+
        SOB    R0,-2
        MOV    #ABSDL,$LPERR ; ERROR LOOPING ADDRESS

ABSDL:  SETD    (R5),$REG0     ; D MODE
        MOV    2(R5),$REG1    ; INITIAL FLOAT NUMBER
        ; INTO OPERATING ROOM

```

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SEQ 0101

```

4590 022120 016537 000004 001174      MOV      4(R5), $REG2      ;
4591 022126 016537 000006 001176      MOV      6(R5), $REG3      ;
4592 022134 170165 000020                LD FPS      20(R5)      ; INITIAL FPS
4593
4594 022140 170637 001170      ABSDI:  ABSD      $REG0      ; ABS(($REG0)) -> $REG0
4595
4596 022144 170237 002330      ST FPS      FPS      ; STORE FPS AFTER
4597 022150 170337 002332      ST ST      FEC      ; STORE FEC/FEA AFTER
4598
4599 022154 023765 002330 000022      CMP      FPS, 22(R5)      ; CHECK FPS
4600 022162 001401                BEQ      65$      ; FPS IS OK
4601 022164 104077                ERROR      77      ; FPS BAD
4602 022166 005765 000024      65$:  TST      24(R5)      ; DOES FEC/FEA APPLY?
4603 022172 100014                BPL      66$      ; NO - SKIP TEST
4604 022174 012737 022140 002344      MOV      $ABSDI, EXPFEA      ; GET EXPECTED FEA
4605 022202 123765 002332 000024      CMPB     FEC, 24(R5)      ; COMPARE FEC-S
4606 022210 001004                BNE      64$      ; NOT EQUAL
4607 022212 023737 002334 002344      CMP      FEA, EXPFEA      ; COMPARE FEA-S
4608 022220 001401                BEQ      66$      ; FEC, FEA OK
4609 022222 104102                64$:  ERROR      102      ; FEC OR FEA ARE BAD
4610 022224      66$:
4611
4612 022224 023765 001170 000010      CMP      $REG0, 10(R5)      ; 1ST WORD OF RESULT CHECK?
4613 022232 001014                BNE      67$      ; NO
4614 022234 023765 001172 000012      CMP      $REG1, 12(R5)      ; 2ND WORD OF RESULT CHECK?
4615 022242 001010                BNE      67$      ; NO
4616 022244 023765 001174 000014      CMP      $REG2, 14(R5)      ; 3RD WORD OF RESULT CHECK?
4617 022252 001004                BNE      67$      ; NO
4618 022254 023765 001176 000016      CMP      $REG3, 16(R5)      ; 4TH WORD OF RESULT CHECK?
4619 022262 001401                BEQ      68$      ; ALL WORDS OK
4620 022264 104107                67$:  ERROR      107      ; NUMBERS NOT EQUAL
4621 022266      68$:
4622
4623 022266 000207                RTS      PC      ; RETURN TO TEST CALLER
4624

```


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SEQ 0102

SUBR TO TEST THE NEGF INSTRUCTION

.SBTTL SUBR TO TEST THE NEGF INSTRUCTION

```

4625
4626
4627 022270
4628 022270 012700 000007
4629 022274 010501
4630 022276 012702 001230
4631 022302 012122
4632 022304 077002
4633 022306 012737 022314 001112
4634
4635 022314 170001
4636 022316 011537 001170
4637 022322 016537 000002 001172
4638 022330 170165 000010
4639
4640 022334 170737 001170
4641
4642 022340 170237 002330
4643 022344 170337 002332
4644
4645 022350 023765 002330 000012
4646 022356 001401
4647 022360 104076
4648 022362 005765 000014
4649 022366 100014
4650 022370 012737 022334 002344
4651 022376 123765 002332 000014
4652 022404 001004
4653 022406 023737 002334 002344
4654 022414 001401
4655 022416 104101
4656 022420
4657
4658 022420 023765 001170 000004
4659 022426 001004
4660 022430 023765 001172 000006
4661 022436 001401
4662 022440 104110
4663 022442
4664
4665 022442 000207
4666
4667
4668
4669
4670 022444
4671 022444 012700 000013
4672 022450 010501
4673 022452 012702 001230
4674 022456 012122
4675 022460 077002
4676 022462 012737 022470 001112
4677
4678 022470 170011
4679 022472 011537 001170
4680 022476 016537 000002 001172

NEGFT:  MOV      #7,R0      ; LOAD STMP0-6
        MOV      R5,R1      ; WITH TEST DATA SETS
        MOV      #STMP0,R2   ; FOR DISPLAY LATER
        MOV      (R1)+,(R2)+
        SOB      R0,-2
        MOV      #NEGFL,$LPERR ; ERROR LOOPING ADDRESS

NEGFL:  SETF      (R5),$REG0   ; F MODE
        MOV      2(R5),$REG1  ; INITIAL FLOAT NUMBER
        LDFPS    10(R5)       ; INTO OPERATING ROOM
        ; INITIAL FPS

NEGFI:  NEGF      $REG0       ; -($REG0)->$REG0

        STFPS    FPS         ; STORE FPS AFTER
        STST     FEC         ; STORE FEC/FEA AFTER

        CMP      FPS,12(R5)   ; CHECK FPS
        BEQ      65$         ; FPS IS OK
        ERROR    76          ; FPS BAD
        TST      14(R5)      ; DOES FEC/FEA APPLY?
        BPL      66$         ; NO - SKIP TEST
        MOV      #NEGFI,EXPFEA ; GET EXPECTED FEA
        CMPB     FEC,14(R5)   ; COMPARE FEC-S
        BNE      64$         ; NOT EQUAL
        CMP      FEA,EXPFEA   ; COMPARE FEA-S
        BEQ      66$         ; FEC, FEA OK
        ERROR    101         ; FEC OR FEA ARE BAD
        64$:
        66$:

        CMP      $REG0,4(R5)  ; 1ST WORD OF RESULT CHECK?
        BNE      67$         ; NO
        CMP      $REG1,6(R5)  ; 2ND WORD OF RESULT CHECK?
        BEQ      68$         ; ALL WORDS OK
        ERROR    110         ; NUMBERS NOT EQUAL
        67$:
        68$:

        RTS      PC          ; RETURN TO TEST CALLER

;*****
.SBTTL SUBR TO TEST THE NEG0 INSTRUCTION

NEGDT:  MOV      #13,R0      ; LOAD STMP0-12
        MOV      R5,R1      ; WITH TEST DATA SETS
        MOV      #STMP0,R2   ; FOR DISPLAY LATER
        MOV      (R1)+,(R2)+
        SOB      R0,-2
        MOV      #NEGDL,$LPERR ; ERROR LOOPING ADDRESS

NEGDL:  SETD      (R5),$REG0   ; D MODE
        MOV      2(R5),$REG1  ; INITIAL FLOAT NUMBER
        MOV      2(R5),$REG1  ; INTO OPERATING ROOM

```

Address	Op Code	Byte 1	Byte 2	Byte 3	Byte 4	Instruction	Comments
4681	022504	016537	000004	001174		MOV 4(R5), \$REG2	
4682	022512	016537	000006	001176		MOV 6(R5), \$REG3	
4683	022520	170165	000020			LDFPS 20(R5)	INITIAL FPS
4684							
4685	022524	170737	001170		NEGDI:	NEGO \$REG0	-(\$REG0) -> \$REG0
4686							
4687	022530	170237	002330			STFPS FPS	STORE FPS AFTER
4688	022534	170337	002332			STST FEC	STORE FEC/FEA AFTER
4689							
4690	022540	023765	002330	000022		CMP FPS, 22(R5)	CHECK FPS
4691	022546	001401				BEQ 65\$	FPS IS OK
4692	022550	104077				ERROR 77	FPS BAD
4693	022552	005765	000024		65\$:	TST 24(R5)	DOES FEC/FEA APPLY?
4694	022556	100014				BPL 66\$	NO - SKIP TEST
4695	022560	012737	022524	002344		MOV #NEGDI, EXPFEA	GET EXPECTED FEA
4696	022566	123765	002332	000024		CMPB FEC, 24(R5)	COMPARE FEC-S
4697	022574	001004				BNE 64\$	NOT EQUAL
4698	022576	023737	002334	002344		CMP FEA, EXPFEA	COMPARE FEA-S
4699	022604	001401				BEQ 66\$	FEC, FEA OK
4700	022606	104102			64\$:	ERROR 102	FEC OR FEA ARE BAD
4701	022610				66\$:		
4702							
4703	022610	023765	001170	000010		CMP \$REG0, 10(R5)	1ST WORD OF RESULT CHECK?
4704	022616	001014				BNE 67\$	NO
4705	022620	023765	001172	000012		CMP \$REG1, 12(R5)	2ND WORD OF RESULT CHECK?
4706	022626	001010				BNE 67\$	NO
4707	022630	023765	001174	000014		CMP \$REG2, 14(R5)	3RD WORD OF RESULT CHECK?
4708	022636	001004				BNE 67\$	NO
4709	022640	023765	001176	000016		CMP \$REG3, 16(R5)	4TH WORD OF RESULT CHECK?
4710	022646	001401				BEQ 68\$	ALL WORDS OK
4711	022650	104111			67\$:	ERROR 111	NUMBERS NOT EQUAL
4712	022652				68\$:		
4713							
4714	022652	000207				RTS PC	RETURN TO TEST CALLER
4715							

.SBTTL SUBR TO TEST THE CLRF INSTRUCTION

```

4716
4717
4718 022654 012700 000007
4719 022654 010501
4720 022660 012702 001230
4721 022662 012122
4722 022666 077002
4723 022670 012737 022700 001112
4724 022672
4725
4726 022700 170001
4727 022702 011537 001170
4728 022706 016537 000002 001172
4729 022714 170165 000010
4730
4731 022720 170437 001170
4732
4733 022724 170237 002330
4734 022730 170337 002332
4735
4736 022734 023765 002330 000012
4737 022742 001401
4738 022744 104076
4739 022746 005765 000014
4740 022752 100014
4741 022754 012737 022720 002344
4742 022762 123765 002332 000014
4743 022770 001004
4744 022772 023737 002334 002344
4745 023000 001401
4746 023002 104101
4747 023004
4748
4749 023004 023765 001170 000004
4750 023012 001004
4751 023014 023765 001172 000006
4752 023022 001401
4753 023024 104112
4754 023026
4755
4756 023026 000207
4757
4758
4759
4760
4761 023030
4762 023030 012700 000013
4763 023034 010501
4764 023036 012702 001230
4765 023042 012122
4766 023044 077002
4767 023046 012737 023054 001112
4768
4769 023054 170011
4770 023056 011537 001170
4771 023062 016537 000002 001172

CLRFT: MOV #7,R0 ; LOAD STMP0-6
        MOV R5,R1 ; WITH TEST DATA SETS
        MOV #STMP0,R2 ; FOR DISPLAY LATER
        MOV (R1)+(R2)+
        SOB RO,-2 ;
        MOV #CLRFL,$LPERR ; ERROR LOOPING ADDRESS

CLRFL: SETF ; F MODE
        MOV (R5),$REG0 ; INITIAL FLOAT NUMBER
        MOV 2(R5),$REG1 ; INTO OPERATING ROOM
        LD FPS 10(R5) ; INITIAL FPS

CLRFI: CLRF $REG0 ; 0->$REG0

STFPS FPS ; STORE FPS AFTER
STST FEC ; STORE FEC/FEA AFTER

CMP FPS,12(R5) ; CHECK FPS
BEQ 65$ ; FPS IS OK
ERROR 76 ; FPS BAD
TST 14(R5) ; DOES FEC/FEA APPLY?
BPL 66$ ; NO - SKIP TEST
MOV #CLRFI,EXPFEA ; GET EXPECTED FEA
CMPB FEC,14(R5) ; COMPARE FEC-S
BNE 64$ ; NOT EQUAL
CMP FEA,EXPFEA ; COMPARE FEA-S
BEQ 66$ ; FEC, FEA OK
ERROR 101 ; FEC OR FEA ARE BAD
64$:
66$:

CMP $REG0,4(R5) ; 1ST WORD OF RESULT CHECK?
BNE 67$ ; NO
CMP $REG1,6(R5) ; 2ND WORD OF RESULT CHECK?
BEQ 68$ ; ALL WORDS OK
ERROR 112 ; NUMBERS NOT EQUAL
67$:
68$:

RTS PC ; RETURN TO TEST CALLER

;*****
.SBTTL SUBR TO TEST THE CLRD INSTRUCTION

CLRDT: MOV #13,R0 ; LOAD STMP0-12
        MOV R5,R1 ; WITH TEST DATA SETS
        MOV #STMP0,R2 ; FOR DISPLAY LATER
        MOV (R1)+(R2)+
        SOB RO,-2 ;
        MOV #CLRD,$LPERR ; ERROR LOOPING ADDRESS

CLRD: SETD ; D MODE
        MOV (R5),$REG0 ; INITIAL FLOAT NUMBER
        MOV 2(R5),$REG1 ; INTO OPERATING ROOM

```

```

4772 023070 016537 000004 001174      MOV 4(R5),SREG2
4773 023076 016537 000006 001176      MOV 6(R5),SREG3
4774 023104 170165 000020              LDFPS 20(R5)      ; INITIAL FPS
4775
4776 023110 170437 001170      CLRDI: CLRD SREG0      ; 0->SREG0
4777
4778 023114 170237 002330      STFPS FPS          ; STORE FPS AFTER
4779 023120 170337 002332      STST FEC          ; STORE FEC/FEA AFTER
4780
4781 023124 023765 002330 000022      CMP FPS,22(R5)    ; CHECK FPS
4782 023132 001401              BEQ 65$              ; FPS IS OK
4783 023134 104077              ERROR 77              ; FPS BAD
4784 023136 005765 000024      65$: TST 24(R5)        ; DOES FEC/FEA APPLY?
4785 023142 100014              BPL 66$              ; NO - SKIP TEST
4786 023144 012737 023110 002344      MOV #CLRDI,EXPFEA ; GET EXPECTED FEA
4787 023152 123765 002332 000024      CMPB FEC,24(R5)   ; COMPARE FEC-S
4788 023160 001004              BNE 64$              ; NOT EQUAL
4789 023162 023737 002334 002344      CMP FEA,EXPFEA    ; COMPARE FEA-S
4790 023170 001401              BEQ 66$              ; FEC, FEA OK
4791 023172 104102              64$: ERROR 102          ; FEC OR FEA ARE BAD
4792 023174
4793
4794 023174 023765 001170 000010      CMP SREG0,10(R5)  ; 1ST WORD OF RESULT CHECK?
4795 023202 001014              BNE 67$              ; NO
4796 023204 023765 001172 000012      CMP SREG1,12(R5)  ; 2ND WORD OF RESULT CHECK?
4797 023212 001010              BNE 67$              ; NO
4798 023214 023765 001174 000014      CMP SREG2,14(R5)  ; 3RD WORD OF RESULT CHECK?
4799 023222 001004              BNE 67$              ; NO
4800 023224 023765 001176 000016      CMP SREG3,16(R5)  ; 4TH WORD OF RESULT CHECK?
4801 023232 001401              BEQ 68$              ; ALL WORDS OK
4802 023234 104113              67$: ERROR 113          ; NUMBERS NOT EQUAL
4803 023236
4804
4805 023236 000207              RTS PC          ; RETURN TO TEST CALLER
4806
4807

```



```

TSTFT:  MOV      #7,R0          ; LOAD $TMP0-6
        MOV      R5,R1          ; WITH TEST DATA SETS
        MOV      #TMP0,R2       ; FOR DISPLAY LATER
        MOV      (R1)+,(R2)+
        SOB      R0,-2
        MOV      #TSTFL,$LPERR ; ERROR LOOPING ADDRESS

TSTFL:  SETF      F MODE        ; F MODE
        MOV      (R5),$REG0     ; INITIAL FLOAT NUMBER
        MOV      2(R5),$REG1    ; INTO OPERATING ROOM
        LDFPS    10(R5)         ; INITIAL FPS

TSTFI:  TSTF      $REG0         ; ($REG0)->$REG0

        STFPS    FPS           ; STORE FPS AFTER
        STST     FEC           ; STORE FEC/FEA AFTER

        CMP      FPS,12(R5)     ; CHECK FPS
        BEQ      65$           ; FPS IS OK
        ERROR    76            ; FPS BAD
65$:    TST       14(R5)         ; DOES FEC/FEA APPLY?
        BPL      66$           ; NO - SKIP TEST
        MOV      #TSTFI,EXPFEA ; GET EXPECTED FEA
        CMPB     FEC,14(R5)     ; COMPARE FEC-S
        BNE      64$           ; NOT EQUAL
        CMP      FEA,EXPFEA     ; COMPARE FEA-S
        BEQ      66$           ; FEC, FEA OK
64$:    ERROR    101            ; FEC OR FEA ARE BAD
66$:

        CMP      $REG0,4(R5)    ; 1ST WORD OF RESULT CHECK?
        BNE      67$           ; NO
        CMP      $REG1,6(R5)    ; 2ND WORD OF RESULT CHECK?
        BEQ      68$           ; ALL WORDS OK
67$:    ERROR    114            ; NUMBERS NOT EQUAL
68$:

        RTS       PC           ; RETURN TO TEST CALLER

;*****
.SBTTL  SUBR TO TEST THE TSTD INSTRUCTION

TSTD:   MOV      #13,R0         ; LOAD $TMP0-12
        MOV      R5,R1         ; WITH TEST DATA SETS
        MOV      #TMP0,R2      ; FOR DISPLAY LATER
        MOV      (R1)+,(R2)+
        SOB      R0,-2
        MOV      #TSTD, $LPERR ; ERROR LOOPING ADDRESS

TSTD:   SETD      D MODE        ; D MODE
        MOV      (R5),$REG0     ; INITIAL FLOAT NUMBER
        MOV      2(R5),$REG1    ; INTO OPERATING ROOM

```

[illegible]

G10

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 104
 DQFPAB.P11 19-APR-77 13:36 FPP TRAP CATCHER

SEQ 0108

4899

.SBTTL FPP TRAP CATCHER

4900

4901	023624	010637	002342	FPPILT: MOV	SP, FPPOSP	:	GET NEW SP
4902	023630	012637	002336		(SP)+, FPPOPC	:	POP OLD PC FOR DISPLAY
4903	023634	012637	002340		(SP)+, FPPOPS	:	POP OLD PS FOR DISPLAY
4904	023640	170237	002330		STFPS	:	GET FPS
4905	023644	170337	002332		STST	:	GET FEC/FEA
4906	023650	104116			ERROR	:	SIGNAL UNEXPECTED FPP TRAP
4907	023652	013746	002340		MOV	:	PUSH PSW
4908	023656	013746	002336		MOV	:	PUSH PC
4909	023662	000002			RTI	:	CONTINUE, RECOVER AT LAST TRAP ONLY

.SBTTL SCOPE HANDLER ROUTINE

```

*****
;THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
;AND LOAD THE TEST NUMBER($STNM) INTO THE DISPLAY REG.(DISPLAY<15:0>)
;THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
;SW14=1      LOOP ON TEST
;SW11=1      INHIBIT ITERATIONS
;SW09=1      LOOP ON ERROR
;SW08=1      LOOP ON TEST IN "$LPTST"
;CALL
;          SCOPE          ;;SCOPE=IOT

```

```

$SCOPE:

```

```

64$:

```

```

1$:      BIT      #BIT14,$SWR      ;;LOOP ON PRESENT TEST?

```

```

        BNE      $OVER      ;;YES IF SW14=1

```

```

;*****START OF CODE FOR THE XOR TESTER*****

```

```

$XTSTR: BR      6$      ;;IF RUNNING ON THE "XOR" TESTER CHANGE

```

```

        MOV      2#ERRVEC, -(SP)      ;;THIS INSTRUCTION TO A "NOP" (NOP=240)

```

```

        MOV      #55, 2#ERRVEC      ;;SAVE THE CONTENTS OF THE ERROR VECTOR

```

```

        TST      2#177060      ;;SET FOR TIMEOUT

```

```

        MOV      (SP)+, 2#ERRVEC      ;;TIME OUT ON XOR?

```

```

        BR      $SVLAD      ;;RESTORE THE ERROR VECTOR

```

```

        BR      5$      ;;GO TO THE NEXT TEST

```

```

5$:      CMP      (SP)+, (SP)+      ;;CLEAR THE STACK AFTER A TIME OUT

```

```

        MOV      (SP)+, 2#ERRVEC      ;;RESTORE THE ERROR VECTOR

```

```

        BR      7$      ;;LOOP ON THE PRESENT TEST

```

```

6$:; *****END OF CODE FOR THE XOR TESTER*****

```

```

        BIT      #BIT08,$SWR      ;;LOOP ON SPEC. TEST?

```

```

        BEQ      2$      ;;BR IF NO

```

```

        CMP      $LPTST, $STNM      ;;ON THE RIGHT TEST?

```

```

        BEQ      $OVER      ;;BR IF YES

```

```

2$:      TST      $ERFLG      ;;HAS AN ERROR OCCURRED?

```

```

        BEQ      3$      ;;BR IF NO

```

```

        CMP      $ERMAX, $ERFLG      ;;MAX. ERRORS FOR THIS TEST OCCURRED?

```

```

        BHI      3$      ;;BR IF NO

```

```

        BIT      #BIT09,$SWR      ;;LOOP ON ERROR?

```

```

        BEQ      4$      ;;BR IF NO

```

```

7$:      MOV      $LPERR, $LPADR      ;;SET LOOP ADDRESS TO LAST SCOPE

```

```

        BR      $OVER

```

```

4$:      CLR      $ERFLG      ;;ZERO THE ERROR FLAG

```

```

        CLR      $TIMES      ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE

```

```

        BR      1$      ;;ESCAPE TO THE NEXT TEST

```

```

3$:      BIT      #BIT11,$SWR      ;;INHIBIT ITERATIONS?

```

```

        BNE      1$      ;;BR IF YES

```

```

        TST      $PASS      ;;IF FIRST PASS OF PROGRAM

```

```

        BEQ      1$      ;;INHIBIT ITERATIONS

```

```

        INC      $ICNT      ;;INCREMENT ITERATION COUNT

```

```

        INC      $TIMES, $ICNT      ;;CHECK THE NUMBER OF ITERATIONS MADE

```

```

        CMP      $TIMES, $ICNT      ;;BR IF MORE ITERATION REQUIRED

```

```

        BGE      $OVER      ;;REINITIALIZE THE ITERATION COUNTER

```

```

1$:      MOV      #1, $ICNT      ;;SET NUMBER OF ITERATIONS TO DO

```

```

        MOV      $MXCNT, $TIMES      ;;COUNT TEST NUMBERS

```

```

$SVLAD: INC      $STNM      ;;SET TEST NUMBER IN APT MAILBOX

```

```

        MOV      $STNM, $TESTN      ;;SAVE SCOPE LOOP ADDRESS

```

```

        MOV      (SP), $LPADR

```

```

4910
4911
4912
4913
4914
4915
4916
4917
4918
4919
4920
4921
4922
4923 023664
4924 023664
4925 023664 032777 040000 155252
4926 023672 001114
4927
4928 023674 000416
4929
4930 023676 013746 000004
4931 023702 012737 023722 000004
4932 023710 005737 177060
4933 023714 012637 000004
4934 023720 000463
4935 023722 022626
4936 023724 012637 000004
4937 023730 000423
4938 023732
4939 023732 032777 000400 155204
4940 023740 001404
4941 023742 023737 001150 001102
4942 023750 001465
4943 023752 005737 001104
4944 023756 001421
4945 023760 023737 001120 001104
4946 023766 101015
4947 023770 032777 001000 155146
4948 023776 001404
4949 024000 013737 001112 001110
4950 024006 000446
4951 024010 005037 001104
4952 024014 005037 001310
4953 024020 000415
4954 024022 032777 004000 155114
4955 024030 001011
4956 024032 005737 001332
4957 024036 001406
4958 024040 005237 001106
4959 024044 023737 001310 001106
4960 024052 002024
4961 024054 012737 000001 001106
4962 024062 013737 024140 001310
4963 024070 005237 001102
4964 024074 013737 001102 001330
4965 024102 011637 001110

```


I10

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 106
 DQFPAB.P11 19-APR-77 13:36 SCOPE HANDLER ROUTINE

SEQ 0110

4966	024106	011637	001112		MOV	(SP) \$LPERR	:: SAVE ERROR LOOP ADDRESS
4967	024112	005037	001312		CLR	\$ESCAPE	:: CLEAR THE ESCAPE FROM ERROR ADDRESS
4968	024116	012737	000001	001120	MOV	#1, \$ERMAX	:: ONLY ALLOW ONE(1) ERROR ON NEXT TEST
4969	024124	013777	001102	155014	SOVER: MOV	\$TSTNM, \$DISPLAY	:: DISPLAY TEST NUMBER
4970	024132	013716	001110		MOV	\$LPADR, (SP)	:: FUDGE RETURN ADDRESS
4971	024136	000002			RTI		:: FIXES PS
4972	024140	003720			\$MXCNT: 2000.		:: MAX. NUMBER OF ITERATIONS

J10

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 107
 DQFPAB.P11 19-APR-77 13:36 ERROR HANDLER ROUTINE

SEQ 0111

```

4973 .SBTTL ERROR HANDLER ROUTINE
4974
4975 ;*****
4976 ;THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
4977 ;SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
4978 ;AND GO TO STYPERR ON ERROR
4979 ;THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
4980 ;SW15=1 HALT ON ERROR
4981 ;SW13=1 INHIBIT ERROR TYPEOUTS
4982 ;SW10=1 BELL ON ERROR
4983 ;SW09=1 LOOP ON ERROR
4984 ;CALL
4985 ;* ERROR N ;;ERROR=EMT AND N=ERROR ITEM NUMBER
4986
4987 $ERROR:
4988 MOV R0, EREG0 ; DISPLAY R0
4989 MOV R1, EREG1 ; R1
4990 MOV R2, EREG2 ; R2
4991 MOV R3, EREG3 ; R3
4992 MOV R4, EREG4 ; R4
4993 MOV R5, EREG5 ; R5
4994 MOV R6, EREG6 ; GET R6(SP) BEFORE TRAP
4995 ADD #4, EREG6
4996 MOV (SP), EREG7 ; PC -> ERROR CALL INSTR
4997 7$: INC $ERFLG ; SET THE ERROR FLAG
4998 BEQ 7$ ; DON'T LET THE FLAG GO TO ZERO
4999 MOV $TSTNM, @DISPLAY ; DISPLAY TEST NUMBER
5000 BIT #BIT10, @SWR ; BELL ON ERROR?
5001 BEQ 1$ ; NO - SKIP
5002 TYPE $BELL ; RING BELL
5003 1$: INC $ERTTL ; COUNT THE NUMBER OF ERRORS
5004 MOV (SP), $ERRPC ; GET ADDRESS OF ERROR INSTRUCTION
5005 SUB #2, $ERRPC
5006 MOV $ERRPC, $ITEMB ; STRIP AND SAVE THE ERROR ITEM CODE
5007 BIT #BIT13, @SWR ; SKIP TYPEOUT IF SET
5008 BNE 20$ ; SKIP TYPEOUTS
5009 JSR PC, STYPERR ; GO TO USER ERROR ROUTINE
5010 TYPE $, $CLF
5011 20$:
5012 CMPB #APTENV, $ENV ; RUNNING IN APT MODE
5013 BNE 2$ ; NO, SKIP APT ERROR REPORT
5014 MOV $ITEMB, 21$ ; SET ITEM NUMBER AS ERROR NUMBER
5015 JSR PC, SATY4 ; REPORT FATAL ERROR TO APT
5016 21$: .BYTE 0
5017 .BYTE 0
5018 22$: BR 22$ ; APT ERROR LOOP
5019 2$: TST @SWR ; HALT ON ERROR
5020 BPL 3$ ; SKIP IF CONTINUE
5021 HALT ; HALT ON ERROR!
5022 3$: BIT #BIT09, @SWR ; LOOP ON ERROR SWITCH SET?
5023 BEQ 4$ ; BR IF NO
5024 MOV $LPERR, (SP) ; FUDGE RETURN FOR LOOPING
5025 TST $ESCAPE ; CHECK FOR AN ESCAPE ADDRESS
5026 BEQ 5$ ; BR IF NONE
5027 MOV $ESCAPE, (SP) ; FUDGE RETURN ADDRESS FOR ESCAPE
5028 5$:

```


K10

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 108
DQFPAB.P11 19-APR-77 13:36 ERROR HANDLER ROUTINE

SEQ 0112

5029	024370	022737	021016	000042	CMP	#SENDAD, 0#42	::ACT-11 AUTO-ACCEPT?
5030	024376	001001			BNE	6\$	:::BRANCH IF NO
5031	024400	000000			HALT		:::YES
5032	024402				6\$:		
5033	024402	000002			64\$:	RTI	;RETURN

```

5034 ;*****
5035
5036 .SBTTL  ERROR MESSAGE TYPEOUT ROUTINE (MODIFIED SYSMAC)
5037
5038 ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
5039 ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE",
5040 ;*(SERRTB) THE ERROR MESSAGE, DATA HEADER, AND DATA VALUES TO PRINT.
5041 ;*THIS ROUTINE IS IDENTICAL TO THE SYSMAC ROUTINE SERRTYP, EXCEPT THIS
5042 ;*ROUTINE PUTS A <HT> BETWEEN OCTAL TYPED DATA VALUES, SO THAT EACH
5043 ;*VALUE STARTS AT A HORIZONTAL TAB STOP. ALSO, THE DATA FORMAT
5044 ;*POINTER HAS BEEN ELIMINATED FROM THE ERROR VECTOR. THIS ROUTINE
5045 ;*ALSO ALWAYS PRINTS $TESTN AND $ERRPC AS THE FIRST TWO DATA ELEMENTS
5046 ;*(WITH APPROPRIATE HEADERS).
5047
5048 STYPERR:
5049 HOTWRM:  TYPE      $CRLF
5050          .WORD      PTR TO MESSAGE
5051          MOV        SAVE RO
5052          MOV        SAVE R1
5053          CLR        PICKUP ITEM INDEX
5054          BISB       IF ITEM NUMBER FROM ERROR 0,
5055          BNE        JUST TYPE PC OF ERROR
5056
5057          MOV        GET ERROR PC FOR TYPEOUT
5058          TYPEOC     TYPE OCTAL, ALL DIGITS
5059          BR         EXIT
5060          1$: DEC     ADJUST ERROR # FOR TABLE INDEX
5061          ASL        OF 6 BYTES/ENTRY
5062          MOV        R0,R1
5063          ASL        R0
5064          ADD        R1,R0
5065          ADD        $SERRTB,R0
5066          MOV        FORM TABLE PTR
5067          BEQ        PICKUP "ERROR MESSAGE" PTR
5068          TYPE       SKIP TYPEOUT IF NULL
5069          2$: TYPE   TYPE "ERROR MESSAGE"
5070          .WORD      "ERROR MESSAGE" PTR HERE
5071          TYPE       CR & LF
5072          3$: TYPE   "TEST #   ERR PC" HEADER
5073          MOV        PICKUP "DATA HEADER" PTR
5074          BEQ        SKIP TYPEOUT IF NULL
5075          TYPE       TYPE "DATA HEADER"
5076          4$: .WORD  "DATA HEADER" PTR HERE
5077          5$: TYPE   CR & LF
5078          MOV        ($TESTN)
5079          TYPEOC     OCTAL W/ LEADING ZEROS
5080          MOV        <HT>
5081          TYPEOC     ($ERRPC)
5082          TYPE       OCTAL W/ LEADING ZEROS
5083          MOV        <HT>
5084          BEQ        PICKUP "DATA TABLE" PTR
5085          6$: MOV    EXIT IF NULL
5086          TYPEOC     SAVE ... FOR TYPEOUT
5087          TST        TYPE OCTAL, ALL DIGITS
5088          BEQ        ANOTHER NUMBER ?
5089          TYPE       NO - EXIT
                    TAB BETWEEN ELEMENTS

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M10

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 110
 DQFPAB.P11 19-APR-77 13:36 ERROR MESSAGE TYPEOUT ROUTINE (MODIFIED SYSMAC)

SEQ 0114

5090	024556	000771				BR	6\$	:	LOOP ON DATA TABLE VECTOR
5091	024560	012601			7\$:	MOV	(SP)+,R1	:	RESTORE R1
5092	024562	012600				MOV	(SP)+,R0	:	RESTORE R0
5093	024564	104401	001321			TYPE	\$CRLF	:	CR & LF
5094	024570	000207				RTS	PC	:	RETURN
5095	024572	001330			8\$:	.WORD	\$TESTN	:	
5096	024574	001122			9\$:	.WORD	\$ERRPC	:	
5097	024576	000011			10\$:	.ASCIZ	<11>	:	<HT>
5098	024600	042524	052123	021440	11\$:	.ASCIZ	"TEST # ERR PC	:	
5099	024606	042411	051122	050040				:	
5100	024614	004503	000					:	
5101	024620					.EVEN		:	

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.SBTTL  TYPE ROUTINE

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*****
:ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
:THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
:NOTE1:          $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
:NOTE2:          $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
:NOTE3:          $FILLC CONTAINS THE CHARACTER TO FILL AFTER.

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; *CALL:
; *1) USING A TRAP INSTRUCTION
; *      TYPE      ,MESADR      ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
; *OR
; *      TYPE
; *      MESADR
; *

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024620	105737	001165
024624	100002	
024626	000000	
024630	000430	
024632	010046	
024634	017600	000002
024640	122737	000001
024646	001011	
024650	132737	000100
024656	001405	
024660	010037	024670
024664	004737	025110
024670	000000	
024672	132737	000040
024700	001003	
024702	112046	
024704	001005	
024706	005726	
024710	012600	
024712	062716	000002
024716	000002	
024720	122716	000011
024724	001430	
024726	122716	000200
024732	001006	
024734	005726	
024736	104401	
024740	001321	
024742	105037	025076
024746	000755	
024750	004737	025032
024754	123726	001164
024760	001350	
024762	013746	001162
024766	105366	000001
024772	002770	
024774	004737	025032
025000	105337	025076

```

STYPE:  TSTB      $TPFLG      ;; IS THERE A TERMINAL?
        BPL       1$          ;; BR IF YES
        HALT      3$          ;; HALT HERE IF NO TERMINAL
        BR        3$          ;; LEAVE
1$:      MOV       RO, -(SP)    ;; SAVE RO
        MOV       22(SP), RO   ;; GET ADDRESS OF ASCIZ STRING
        CMPB      #APTENV, $ENV ;; RUNNING IN APT MODE
        BNE       62$         ;; NO GO CHECK FOR APT CONSOLE
        BITB      #APTSPool, $ENVM ;; SPOOL MESSAGE TO APT
        BEQ       62$         ;; NO GO CHECK FOR CONSOLE
        MOV       RO, 61$      ;; SETUP MESSAGE ADDRESS FOR APT
        JSR       PC, $ATY3    ;; SPOOL MESSAGE TO APT
61$:     .WORD     0           ;; MESSAGE ADDRESS
62$:     BITB      #APTCsup, $ENVM ;; APT CONSOLE SUPPRESSED
        BNE       60$         ;; YES, SKIP TYPE OUT
2$:      MOVB      (RO)+, -(SP) ;; PUSH CHARACTER TO BE TYPED ONTO STACK
        BNE       4$          ;; BR IF IT ISN'T THE TERMINATOR
        TST       (SP)+        ;; IF TERMINATOR POP IT OFF THE STACK
60$:     MOV       (SP)+, RO    ;; RESTORE RO
3$:      ADD       #2, (SP)     ;; ADJUST RETURN PC
        RTI                    ;; RETURN
4$:      CMPB      #HT, (SP)    ;; BRANCH IF <HT>
        BEQ       8$          ;;
        CMPB      #CRLF, (SP)  ;; BRANCH IF NOT <CRLF>
        BNE       5$          ;;
        TST       (SP)+        ;; POP <CR><LF> EQUIV
        TYPE      $CRLF        ;; TYPE A CR AND LF
        $CRLF      $CHARCNT    ;; CLEAR CHARACTER COUNT
        CLRB      2$          ;; GET NEXT CHARACTER
5$:      JSR       PC, $TYPEC    ;; GO TYPE THIS CHARACTER
6$:      CMPB      $FILLC, (SP)+ ;; IS IT TIME FOR FILLER CHARS.?
        BNE       2$          ;; IF NO GO GET NEXT CHAR.
        MOV       $NULL, -(SP) ;; GET # OF FILLER CHARS. NEEDED
                                ;; AND THE NULL CHAR.
7$:      DECB      1(SP)        ;; DOES A NULL NEED TO BE TYPED?
        BLT       6$          ;; BR IF NO--GO POP THE NULL OFF OF STACK
        JSR       PC, $TYPEC    ;; GO TYPE A NULL
        DECB      $CHARCNT     ;; DO NOT COUNT AS A COUNT

```



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5158 025004 000770          BR      7$          ;;LOOP
5159
5160          ;HORIZONTAL TAB PROCESSOR
5161
5162 025006 112716 000040      8$:  MOVB      #' (SP)          ;; REPLACE TAB WITH SPACE
5163 025012 004737 025032      9$:  JSR      PC,$TYPEC          ;; TYPE A SPACE
5164 025016 132737 000007 025076  BITB      #7,$CHARCNT          ;; BRANCH IF NOT AT
5165 025024 001372          BNE      9$          ;; TAB STOP
5166 025026 005726          TST      (SP)+          ;; POP SPACE OFF STACK
5167 025030 000724          BR      2$          ;; GET NEXT CHARACTER
5168 025032 105777 154120      $TYPEC: TSTB      $STPS          ;; WAIT UNTIL PRINTER IS READY
5169 025036 100375          BPL      $TYPEC
5170 025040 116677 000002 154112  MOVB      2(SP), $STPB          ;; LOAD CHAR TO BE TYPED INTO DATA REG.
5171 025046 122766 000015 000002  CMPB      #CR, 2(SP)          ;; IS CHARACTER A CARRIAGE RETURN?
5172 025054 001003          BNE      1$          ;; BRANCH IF NO
5173 025056 105037 025076          CLRB      $CHARCNT          ;; YES--CLEAR CHARACTER COUNT
5174 025062 000406          BR      $TYPEX          ;; EXIT
5175 025064 122766 000012 000002 1$:  CMPB      #LF, 2(SP)          ;; IS CHARACTER A LINE FEED?
5176 025072 001402          BEQ      $TYPEX          ;; BRANCH IF YES
5177 025074 105227          INCB      (PC)+          ;; COUNT THE CHARACTER
5178 025076 000000          $CHARCNT: .WORD      0          ;; CHARACTER COUNT STORAGE
5179 025100 000207          $TYPEX: RTS      PC
5180

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5181 .SBTTL APT COMMUNICATIONS ROUTINE
5182
5183 *****
5184 025102 112737 000001 025346 SATY1: MOVB #1,$FFLG ;;TO REPORT FATAL ERROR
5185 025110 112737 000001 025344 SATY3: MOVB #1,$MFLG ;;TO TYPE A MESSAGE
5186 025116 000403 SATYC: BR SATYC
5187 025120 112737 000001 025346 SATY4: MOVB #1,$FFLG ;;TO ONLY REPORT FATAL ERROR
5188 025126 SATYC:
5189 025126 010046 MOV RO,-(SP) ;;PUSH RO ON STACK
5190 025130 010146 MOV R1,-(SP) ;;PUSH R1 ON STACK
5191 025132 105737 025344 TSTB $MFLG ;;SHOULD TYPE A MESSAGE?
5192 025136 001450 BEQ 5$ ;;IF NOT: BR
5193 025140 122737 000001 001344 CMPB #APTENV,$ENV ;;OPERATING UNDER APT?
5194 025146 001031 BNE 3$ ;;IF NOT: BR
5195 025150 132737 000100 001345 BITB #APTSPool,$ENVM ;;SHOULD SPOOL MESSAGES?
5196 025156 001425 BEQ 3$ ;;IF NOT: BR
5197 025160 017600 000004 MOV #4(SP),RO ;;GET MESSAGE ADDR.
5198 025164 062766 000002 000004 ADD #2,4(SP) ;;BUMP RETURN ADDR.
5199 025172 005737 001324 1$: TST $MSGTYPE ;;SEE IF DONE W/ LAST XMISSION?
5200 025176 001375 BNE 1$ ;;IF NOT: WAIT
5201 025200 010037 001340 MOV RO,$MSGAD ;;PUT ADDR IN MAILBOX
5202 025204 105720 2$: TSTB (RO)+ ;;FIND END OF MESSAGE
5203 025206 001376 BNE 2$
5204 025210 163700 001340 SUB $MSGAD,RO ;;SUB START OF MESSAGE
5205 025214 006200 ASR RO ;;GET MESSAGE LNTH IN WORDS
5206 025216 010037 001342 MOV RO,$MSGLGTH ;;PUT LENGTH IN MAILBOX
5207 025222 012737 000004 001324 MOV #4,$MSGTYPE ;;TELL APT TO TAKE MSG.
5208 025230 000413 BR 5$
5209 025232 017637 000004 025256 3$: MOV #4(SP),4$ ;;PUT MSG ADDR IN JSR LINKAGE
5210 025240 062766 000002 000004 ADD #2,4(SP) ;;BUMP RETURN ADDRESS
5211 025246 013746 177776 MOV 177776,-(SP) ;;PUSH 177776 ON STACK
5212 025252 004737 024620 JSR PC,$TYPE ;;CALL TYPE MACRO
5213 025256 000000 4$: .WORD 0
5214 025260 5$:
5215 025260 105737 025346 10$: TSTB $FFLG ;;SHOULD REPORT FATAL ERROR?
5216 025264 001416 BEQ 12$ ;;IF NOT: BR
5217 025266 005737 001344 TST $ENV ;;RUNNING UNDER APT?
5218 025272 001413 BEQ 12$ ;;IF NOT: BR
5219 025274 005737 001324 11$: TST $MSGTYPE ;;FINISHED LAST MESSAGE?
5220 025300 001375 BNE 11$ ;;IF NOT: WAIT
5221 025302 017637 000004 001326 MOV #4(SP),$FATAL ;;GET ERROR #
5222 025310 062766 000002 000004 ADD #2,4(SP) ;;BUMP RETURN ADDR.
5223 025316 005237 001324 INC $MSGTYPE ;;TELL APT TO TAKE ERROR
5224 025322 105037 025346 12$: CLRB $FFLG ;;CLEAR FATAL FLAG
5225 025326 105037 025345 CLRB $LFLG ;;CLEAR LOG FLAG
5226 025332 105037 025344 CLRB $MFLG ;;CLEAR MESSAGE FLAG
5227 025336 012601 MOV (SP)+,R1 ;;POP STACK INTO R1
5228 025340 012600 MOV (SP)+,RO ;;POP STACK INTO RO
5229 025342 000207 RTS PC ;;RETURN
5230 025344 000 $MFLG: .BYTE 0 ;;MESSG. FLAG
5231 025345 000 $LFLG: .BYTE 0 ;;LOG FLAG
5232 025346 000 $FFLG: .BYTE 0 ;;FATAL FLAG
5233 025350 .EVEN
5234 000200 APTSIZE=200
5235 000001 APTENV=001
5236 000100 APTSPool=100

```


D11

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 114
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SEQ 0118

5237

000040

APTC SUP=040

E11

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 115
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SEQ 0119

.SBTTL BINARY TO OCTAL (ASCII) AND TYPE

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5263 025350 017646 000000
5264 025354 116637 000001 025573
5265 025362 112637 025575
5266 025366 062716 000002
5267 025372 000406
5268 025374 112737 000001 025573
5269 025402 112737 000006 025575
5270 025410 112737 000005 025572
5271 025416 010346
5272 025420 010446
5273 025422 010546
5274 025424 113704 025575
5275 025430 005404
5276 025432 062704 000006
5277 025436 110437 025574
5278 025442 113704 025573
5279 025446 016605 000012
5280 025452 005003
5281 025454 006105
5282 025456 000404
5283 025460 006105
5284 025462 006105
5285 025464 006105
5286 025466 010503
5287 025470 006103
5288 025472 105337 025574
5289 025476 100016
5290 025500 042703 177770
5291 025504 001002
5292 025506 005704
5293 025510 001403

;*****
;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
;OCTAL (ASCII) NUMBER AND TYPE IT.
;STYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
;CALL:
;      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
;      TYPOS      ;;CALL FOR TYPEOUT
;      .BYTE     N      ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
;      .BYTE     M      ;;M=1 OR 0
;                        ;;1=TYPE LEADING ZEROS
;                        ;;0=SUPPRESS LEADING ZEROS
;STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
;STYPOS OR STYPOC
;CALL:
;      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
;      TYPON      ;;CALL FOR TYPEOUT
;STYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
;CALL:
;      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
;      TYPOC      ;;CALL FOR TYPEOUT
;STYPOS: MOV      2(SP),-(SP)      ;;PICKUP THE MODE
;        MOV      1(SP),SOFILL    ;;LOAD ZERO FILL SWITCH
;        MOV      (SP)+,SOMODE+1  ;;NUMBER OF DIGITS TO TYPE
;        ADD      #2,(SP)        ;;ADJUST RETURN ADDRESS
;        BR       STYPON
;STYPOC: MOV      #1,SOFILL      ;;SET THE ZERO FILL SWITCH
;        MOV      #6,SOMODE+1    ;;SET FOR SIX(6) DIGITS
;STYPON: MOV      #5,SOCNT      ;;SET THE ITERATION COUNT
;        MOV      R3,-(SP)      ;;SAVE R3
;        MOV      R4,-(SP)      ;;SAVE R4
;        MOV      R5,-(SP)      ;;SAVE R5
;        MOV      SOMODE+1,R4    ;;GET THE NUMBER OF DIGITS TO TYPE
;        NEG      R4
;        ADD      #6,R4          ;;SUBTRACT IT FOR MAX. ALLOWED
;        MOV      R4,SOMODE      ;;SAVE IT FOR USE
;        MOV      SOFILL,R4      ;;GET THE ZERO FILL SWITCH
;        MOV      12(SP),R5     ;;PICKUP THE INPUT NUMBER
;        CLR      R3            ;;CLEAR THE OUTPUT WORD
;1$:     ROL      R5            ;;ROTATE MSB INTO "C"
;        BR       3$           ;;GO DO MSB
;2$:     ROL      R5            ;;FORM THIS DIGIT
;        ROL      R5
;        ROL      R5
;        MOV      R5,R3
;3$:     ROL      R3            ;;GET LSB OF THIS DIGIT
;        DECB     SOMODE        ;;TYPE THIS DIGIT?
;        BPL      7$           ;;BR IF NO
;        BIC      #177770,R3    ;;GET RID OF JUNK
;        BNE      4$           ;;TEST FOR 0
;        TST      R4           ;;SUPPRESS THIS 0?
;        BEQ      5$           ;;BR IF YES

```


F11

FPU BASIC INSTR TESTS MACY11 27(1006) 25-APR-77 09:12 PAGE 116
 DQFPAB.P11 19-APR-77 13:36 BINARY TO OCTAL (ASCII) AND TYPE

SEQ 0120

5294	025512	005204		4\$:	INC	R4	:: DON'T SUPPRESS ANYMORE D'S
5295	025514	052703	000060		BIS	#'0,R3	:: MAKE THIS DIGIT ASCII
5296	025520	052703	000040	5\$:	BIS	#',R3	:: MAKE ASCII IF NOT ALREADY
5297	025524	110337	025570		MOVB	R3,8\$	:: SAVE FOR TYPING
5298	025530	104401	025570		TYPE	8\$	:: GO TYPE THIS DIGIT
5299	025534	105337	025572	7\$:	DECB	\$OCNT	:: COUNT BY 1
5300	025540	003347			BGT	2\$	:: BR IF MORE TO DO
5301	025542	002402			BLT	6\$	:: BR IF DONE
5302	025544	005204			INC	R4	:: INSURE LAST DIGIT ISN'T A BLANK
5303	025546	000744			BR	2\$	:: GO DO THE LAST DIGIT
5304	025550	012605		6\$:	MOV	(SP)+,R5	:: RESTORE R5
5305	025552	012604			MOV	(SP)+,R4	:: RESTORE R4
5306	025554	012603			MOV	(SP)+,R3	:: RESTORE R3
5307	025556	016666	000002 000004		MOV	2(SP),4(SP)	:: SET THE STACK FOR RETURNING
5308	025564	012616			MOV	(SP)+,(SP)	
5309	025566	000002			RTI		:: RETURN
5310	025570	000		8\$:	.BYTE	0	:: STORAGE FOR ASCII DIGIT
5311	025571	000			.BYTE	0	:: TERMINATOR FOR TYPE ROUTINE
5312	025572	000		\$OCNT:	.BYTE	0	:: OCTAL DIGIT COUNTER
5313	025573	000		\$OFILL:	.BYTE	0	:: ZERO FILL SWITCH
5314	025574	000000		\$OMODE:	.WORD	0	:: NUMBER OF DIGITS TO TYPE

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5315 .SBTTL TRAP DECODER
5316
5317 ;*****
5318 ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
5319 ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
5320 ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
5321 ;*GO TO THAT ROUTINE.
5322
5323 $TRAP: MOV      RO, -(SP)          ;; SAVE RO
5324        MOV      2(SP), RO        ;; GET TRAP ADDRESS
5325        TST      -(RO)            ;; BACKUP BY 2
5326        MOVB     (RO), RO         ;; GET RIGHT BYTE OF TRAP
5327        ASL      RO              ;; POSITION FOR INDEXING
5328        MOV      $TRPAD(RO), RO   ;; INDEX TO TABLE
5329        RTS      RO              ;; GO TO ROUTINE
5330
5331
5332 ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
5333
5334 $TRAP2: MOV      (SP), -(SP)      ;; MOVE THE PC DOWN
5335        MOV      4(SP), 2(SP)     ;; MOVE THE PSW DOWN
5336        RTI                      ;; RESTORE THE PSW
5337
5338 .SBTTL TRAP TABLE
5339
5340 ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
5341 ;*BY THE "TRAP" INSTRUCTION.
5342
5343 ; ROUTINE
5344 ; -----
5345 $TRPAD: .WORD    $TRAP2          TRAP+1(104401) TTY TYPEOUT ROUTINE
5346        $TYPE    ;; CALL=TYPE
5347        $TYPOC   ;; CALL=TYPOC   TRAP+2(104402) TYPE OCTAL NUMBER (WITH LEADING ZEROS)
5348        $TYPOS   ;; CALL=TYPOS   TRAP+3(104403) TYPE OCTAL NUMBER (NO LEADING ZEROS)
5349        $TYPON   ;; CALL=TYPON   TRAP+4(104404) TYPE OCTAL NUMBER (AS PER LAST CALL)
5350
5351

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.SBTTL POWER DOWN AND UP ROUTINES

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5352
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5355
5356 025644 012737 026016 000024 $PWRDN: MOV $SILLUP, 2#PWRVEC ;; SET FOR FAST UP
5357 025652 012737 000340 000026 MOV #340, 2#PWRVEC+2 ;; PRI0:7
5358 025660 010046 MOV R0, -(SP) ;; PUSH R0 ON STACK
5359 025662 010146 MOV R1, -(SP) ;; PUSH R1 ON STACK
5360 025664 010246 MOV R2, -(SP) ;; PUSH R2 ON STACK
5361 025666 010346 MOV R3, -(SP) ;; PUSH R3 ON STACK
5362 025670 010446 MOV R4, -(SP) ;; PUSH R4 ON STACK
5363 025672 010546 MOV R5, -(SP) ;; PUSH R5 ON STACK
5364 025674 017746 153244 MOV 2SWR, -(SP) ;; PUSH 2SWR ON STACK
5365 025700 010637 026022 MOV SP, $SAVR6 ;; SAVE SP
5366 025704 012737 025716 000024 MOV $PWRUP, 2#PWRVEC ;; SET UP VECTOR
5367 025712 000000 HALT
5368 025714 000776 BR .-2 ;; HANG UP
5369
5370
5371
5372 025716 012737 026016 000024 $PWRUP: MOV $SILLUP, 2#PWRVEC ;; SET FOR FAST DOWN
5373 025724 013706 026022 MOV $SAVR6, SP ;; GET SP
5374 025730 005037 026022 CLR $SAVR6 ;; WAIT LOOP FOR THE TTY
5375 025734 005237 026022 15: INC $SAVR6 ;; WAIT FOR THE INC
5376 025740 001375 BNE 15 ;; OF WORD
5377 025742 011600 MOV (SP), R0 ;; GET SAVED SWR OFF STACK
5378 025744 076600 000226 MED 226 ;; RESTORE SWR CONTENTS
5379 025750 012677 153170 MOV (SP)+, 2SWR ;; POP STACK INTO 2SWR
5380 025754 012605 MOV (SP)+, R5 ;; POP STACK INTO R5
5381 025756 012604 MOV (SP)+, R4 ;; POP STACK INTO R4
5382 025760 012603 MOV (SP)+, R3 ;; POP STACK INTO R3
5383 025762 012602 MOV (SP)+, R2 ;; POP STACK INTO R2
5384 025764 012601 MOV (SP)+, R1 ;; POP STACK INTO R1
5385 025766 012600 MOV (SP)+, R0 ;; POP STACK INTO R0
5386 025770 012737 025644 000024 MOV $PWRDN, 2#PWRVEC ;; SET UP THE POWER DOWN VECTOR
5387 025776 012737 000340 000026 MOV #340, 2#PWRVEC+2 ;; PRI0:7
5388 026004 104401 TYPE REPORT THE POWER FAILURE
5389 026006 026024 $PWRMG: .WORD $POWER ;; POWER FAIL MESSAGE POINTER
5390 026010 012716 MOV (PC)+, (SP) ;; RESTART AT START
5391 026012 003000 $PWRAD: .WORD START ;; RESTART ADDRESS
5392 026014 000002 RTI
5393 026016 000000 $ILLUP: HALT ;; THE POWER UP SEQUENCE WAS STARTED
5394 026020 000776 BR .-2 ;; BEFORE THE POWER DOWN WAS COMPLETE
5395 026022 000000 $SAVR6: 0 ;; PUT THE SP HERE
5396 026024 005015 047520 042527 $POWER: .ASCIZ <15><12>"POWER"
5397 026032 000122
5398
.EVEN

```

FPU BASIC INSTR TESTS MACY11 27(1006)
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25-APR-77 09:12 PAGE 119
 ERROR MESSAGES, DATA HEADERS, DATA VECTORS, ETC

SEQ 0123

.SBTTL ERROR MESSAGES, DATA HEADERS, DATA VECTORS, ETC

; MESSAGE PREFIXES

ASCHOT: .ASCIZ "HOT: "
 ASCWRM: .ASCIZ "WARM: "

; ERROR MESSAGES HERE

EMA: .ASCIZ "RECEIVED FPS IS BAD"

EMB: .ASCIZ "RECEIVED FEC/FEA IS BAD"

EMC: .ASCIZ "ABS(F/D) OPERATION - RESULT INCORRECT"

EMD: .ASCIZ "UNEXPECTED FLOATING POINT TRAP, IGNORED & CONTINUING"

EME: .ASCIZ "UNABLE TO REFERENCE FLOATING ACCUMULATOR"

EMF: .ASCIZ "RIPPLING A 1 THRU FPS FAILED"

EMG: .ASCIZ "RIPPLING A 0 THRU FPS FAILED"

EMH: .ASCIZ "SETF FAILED TO CLEAR FPS BIT 7"

5399
 5400
 5401
 5402 026034 047510 035124 000040
 5403 026042 040527 046522 020072
 5404 026050 000
 5405
 5406
 5407 026051 122 041505 044505
 5408 026056 042526 020104 050106
 5409 026064 020123 051511 041040
 5410 026072 042101 000
 5411 026075 122 041505 044505
 5412 026102 042526 020104 042506
 5413 026110 027503 042506 020101
 5414 026116 051511 041040 042101
 5415 026124 000
 5416 026125 101 051502 043050
 5417 026132 042057 020051 050117
 5418 026140 051105 052101 047511
 5419 026146 020116 020055 042522
 5420 026154 052523 052114 044440
 5421 026162 041516 051117 042522
 5422 026170 052103 000
 5423 026173 125 042516 050130
 5424 026200 041505 042524 020104
 5425 026206 046106 040517 044524
 5426 026214 043516 050040 044517
 5427 026222 052116 052040 040522
 5428 026230 026120 044440 047107
 5429 026236 051117 042105 023040
 5430 026244 041440 047117 044524
 5431 026252 052516 047111 000107
 5432 026260 047125 041101 042514
 5433 026266 052040 020117 042522
 5434 026274 042506 042522 041516
 5435 026302 020105 046106 040517
 5436 026310 044524 043516 040440
 5437 026316 041503 046525 046125
 5438 026324 052101 051117 000
 5439 026331 122 050111 046120
 5440 026336 047111 020107 020101
 5441 026344 020061 044124 052522
 5442 026352 043040 051520 043040
 5443 026360 044501 042514 000104
 5444 026366 044522 050120 044514
 5445 026374 043516 040440 030040
 5446 026402 052040 051110 020125
 5447 026410 050106 020123 040506
 5448 026416 046111 042105 000
 5449 026423 123 052105 020106
 5450 026430 040506 046111 042105
 5451 026436 052040 020117 046103
 5452 026444 040505 020122 050106
 5453 026452 020123 044502 020124
 5454 026460 000067

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SEQ 0124

5455	026462	042523	042124	043040	EMI:	.ASCIZ	"SETD FAILED TO SET FPS BIT 7"
5456	026470	044501	042514	020104			
5457	026476	047524	051440	052105			
5458	026504	043040	051520	041040			
5459	026512	052111	033440	000			
5460	026517	123	052105	020111	EMJ:	.ASCIZ	"SETI FAILED TO CLEAR FPS BIT 6"
5461	026524	040506	046111	042105			
5462	026532	052040	020117	046103			
5463	026540	040505	020122	050106			
5464	026546	020123	044502	020124			
5465	026554	000066					
5466	026556	042523	046124	043040	EMK:	.ASCIZ	"SETL FAILED TO SET FPS BIT 6"
5467	026564	044501	042514	020104			
5468	026572	047524	051440	052105			
5469	026600	043040	051520	041040			
5470	026606	052111	033040	000			
5471	026613	124	051505	020124	EML:	.ASCII	"TEST OF SRC/DST ADDR MODE FAILED - "
5472	026620	043117	051440	041522			
5473	026626	042057	052123	040440			
5474	026634	042104	020122	047515			
5475	026642	042504	043040	044501			
5476	026650	042514	020104	020055			
5477	026656	042522	052523	052114		.ASCIZ	"RESULT DOESN'T CHECK"
5478	026664	042040	042517	047123			
5479	026672	052047	041440	042510			
5480	026700	045503	000				
5481	026703	124	051505	020124	EMM:	.ASCII	"TEST OF SRC/DST ADDR MODE FAILED - "
5482	026710	043117	051440	041522			
5483	026716	042057	052123	040440			
5484	026724	042104	020122	047515			
5485	026732	042504	043040	044501			
5486	026740	042514	020104	020055			
5487	026746	051123	020103	042101		.ASCIZ	"SRC ADDR REG WRONG INCRE/DECRE"
5488	026754	051104	051040	043505			
5489	026762	053440	047522	043516			
5490	026770	044440	041516	042522			
5491	026776	042057	041505	042522			
5492	027004	000					
5493	027005	124	051505	020124	EMN:	.ASCII	"TEST OF SRC/DST ADDR MODE FAILED - "
5494	027012	043117	051440	041522			
5495	027020	042057	052123	040440			
5496	027026	042104	020122	047515			
5497	027034	042504	043040	044501			
5498	027042	042514	020104	020055			
5499	027050	051504	020124	042101		.ASCIZ	"DST ADDR REG WRONG INCRE/DECRE"
5500	027056	051104	051040	043505			
5501	027064	053440	047522	043516			
5502	027072	044440	041516	042522			
5503	027100	042057	041505	042522			
5504	027106	000					
5505	027107	103	041506	020103	EMO:	.ASCIZ	"CFCC FAILED TO COPY CONDITION CODES CORRECTLY"
5506	027114	040506	046111	042105			
5507	027122	052040	020117	047503			
5508	027130	054520	041440	047117			
5509	027136	044504	044524	047117			
5510	027144	041440	042117	051505			

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SEQ 0125

5511	027152	041440	051117	042522	
5512	027160	052103	054514	000	
5513	027165	124	051505	020124	EMP: .ASCII "TEST OF FSRC/FDST D ADDR MODE FAILED - "
5514	027172	043117	043040	051123	
5515	027200	027503	042106	052123	
5516	027206	042040	040440	042104	
5517	027214	020122	047515	042504	
5518	027222	043040	044501	042514	
5519	027230	020104	020055		
5520	027234	042522	052523	052114	.ASCIZ "RESULT DOESN'T CHECK"
5521	027242	042040	042517	047123	
5522	027250	052047	041440	042510	
5523	027256	045503	000		
5524	027261	124	051505	020124	EMQ: .ASCII "TEST OF FSRC/FDST D ADDR MODE FAILED - "
5525	027266	043117	043040	051123	
5526	027274	027503	042106	052123	
5527	027302	042040	040440	042104	
5528	027310	020122	047515	042504	
5529	027316	043040	044501	042514	
5530	027324	020104	020055		
5531	027330	051506	041522	040440	.ASCIZ "FSRC ADDR REG WRONG INCRE/DECRE"
5532	027336	042104	020122	042522	
5533	027344	020107	051127	047117	
5534	027352	020107	047111	051103	
5535	027360	027505	042504	051103	
5536	027366	000105			
5537	027370	042524	052123	047440	EMR: .ASCII "TEST OF FSRC/FDST D ADDR MODE FAILED - "
5538	027376	020106	051506	041522	
5539	027404	043057	051504	020124	
5540	027412	020104	042101	051104	
5541	027420	046440	042117	020105	
5542	027426	040506	046111	042105	
5543	027434	026440	040		
5544	027437	106	051504	020124	.ASCIZ "FDST ADDR REG WRONG INCRE/DECRE"
5545	027444	042101	051104	051040	
5546	027452	043505	053440	047522	
5547	027460	043516	044440	041516	
5548	027466	042522	042057	041505	
5549	027474	042522	000		
5550	027477	124	051505	020124	EMS: .ASCII "TEST OF FSRC/FDST F ADDR MODE FAILED - "
5551	027504	043117	043040	051123	
5552	027512	027503	042106	052123	
5553	027520	043040	040440	042104	
5554	027526	020122	047515	042504	
5555	027534	043040	044501	042514	
5556	027542	020104	020055		
5557	027546	042522	052523	052114	.ASCIZ "RESULT DOESN'T CHECK"
5558	027554	042040	042517	047123	
5559	027562	052047	041440	042510	
5560	027570	045503	000		
5561	027573	124	051505	020124	EMT: .ASCII "TEST OF FSRC/FDST F ADDR MODE FAILED - "
5562	027600	043117	043040	051123	
5563	027606	027503	042106	052123	
5564	027614	043040	040440	042104	
5565	027622	020122	047515	042504	
5566	027630	043040	044501	042514	

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SEQ 0126

5567	027636	020104	020055		
5568	027642	051506	041522	040440	.ASCIZ "FSRC ADDR REG WRONG INCRE/DECRE"
5569	027650	042104	020122	042522	
5570	027656	020107	051127	047117	
5571	027664	020107	047111	051103	
5572	027672	027505	042504	051103	
5573	027700	000105			
5574	027702	042524	052123	047440	EMU: .ASCII "TEST OF FSRC/FDST F ADDR MODE FAILED - "
5575	027710	020106	051506	041522	
5576	027716	043057	051504	020124	
5577	027724	020106	042101	051104	
5578	027732	046440	042117	020105	
5579	027740	040506	046111	042105	
5580	027746	026440	040		
5581	027751	106	051504	020124	.ASCIZ "FDST ADDR REG WRONG INCRE/DECRE"
5582	027756	042101	051104	051040	
5583	027764	043505	053440	047522	
5584	027772	043516	044440	041516	
5585	030000	042522	042057	041505	
5586	030006	042522	000		
5587	030011	114	042104	051457	EMV: .ASCIZ "LDD/STD PATTERN IN FPP AC BAD"
5588	030016	042124	050040	052101	
5589	030024	042524	047122	044440	
5590	030032	020116	050106	020120	
5591	030040	041501	041040	042101	
5592	030046	000			
5593	030047	114	042104	046057	EMW: .ASCIZ "LDD/LDF/STD PATTERN IN FPP AC BAD"
5594	030054	043104	051457	042124	
5595	030062	050040	052101	042524	
5596	030070	047122	044440	020116	
5597	030076	050106	020120	041501	
5598	030104	041040	042101	000	
5599	030111	116	043505	043050	EMX: .ASCIZ "NEG(F/D) OPERATION - RESULT INCORRECT"
5600	030116	042057	020051	050117	
5601	030124	051105	052101	047511	
5602	030132	020116	020055	042522	
5603	030140	052523	052114	044440	
5604	030146	041516	051117	042522	
5605	030154	052103	000		
5606	030157	124	052123	043050	EMY: .ASCIZ "TST(F/D) OPERATION - OPERAND MODIFIED AFTER EXECUTION"
5607	030164	042057	020051	050117	
5608	030172	051105	052101	047511	
5609	030200	020116	020055	050117	
5610	030206	051105	047101	020104	
5611	030214	047515	044504	044506	
5612	030222	042105	040440	052106	
5613	030230	051105	042440	042530	
5614	030236	052503	044524	047117	
5615	030244	000			
5616	030245	103	051114	043050	EMZ: .ASCIZ "CLR(F/D) OPERATION - RESULT INCORRECT"
5617	030252	042057	020051	050117	
5618	030260	051105	052101	047511	
5619	030266	020116	020055	042522	
5620	030274	052523	052114	044440	
5621	030302	041516	051117	042522	
5622	030310	052103	000		

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SEQ 0127

5623	030313	120	020103	047515
5624	030320	042504	031040	040440
5625	030326	042104	020122	020055
5626	030334	047111	051103	020105
5627	030342	043117	025440	000060
5628	030350	041520	046440	042117
5629	030356	020105	020062	042101
5630	030364	051104	026440	044440
5631	030372	041516	042522	047440
5632	030400	020106	032053	020054
5633	030406	033053	020054	051117
5634	030414	025440	030061	000
5635	030421	120	020103	047515
5636	030426	042504	031040	040440
5637	030434	042104	020122	020055
5638	030442	047111	051103	020105
5639	030450	043117	025440	020066
5640	030456	051117	025440	030061
5641	030464	000		
5642	030465	120	020103	047515
5643	030472	042504	031040	040440
5644	030500	042104	020122	020055
5645	030506	047111	051103	020105
5646	030514	043117	025440	030061
5647	030522	000		
5648				
5649				

EMAA: .ASCIZ "PC MODE 2 ADDR - INCRE OF +0"

EMAB: .ASCIZ "PC MODE 2 ADDR - INCRE OF +4, +6, OR +10"

EMAC: .ASCIZ "PC MODE 2 ADDR - INCRE OF +6 OR +10"

EMAD: .ASCIZ "PC MODE 2 ADDR - INCRE OF +10"

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SEQ 0128

ERROR MESSAGES, DATA HEADERS, DATA VECTORS, ETC

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5650      : DATA HEADERS HERE
5651 030523 114 040517 042504 DHA: .ASCIZ "LOADED STORED"
5652 030530 004504 052123 051117
5653 030536 042105 000
5654 030541 123 047524 042522 DHB: .ASCIZ "STORED"
5655 030546 000104
5656 030550 026455 026455 047514 DHC: .ASCIZ "----LOADED---- ----STORED----"
5657 030556 042101 042105 026455
5658 030564 026455 026411 026455
5659 030572 051455 047524 042522
5660 030600 026504 026455 000055
5661 030606 054105 023520 004504 DHD: .ASCIZ "EXP'D RCV'D"
5662 030614 041522 023526 000104
5663 030622 054105 023520 026504 DHE: .ASCIZ "EXP'D-FEC-RCV'D" EXP'D-FEA-RCV'D"
5664 030630 042506 026503 041522
5665 030636 023526 004504 054105
5666 030644 023520 026504 042506
5667 030652 026501 041522 023526
5668 030660 000104
5669 030662 026455 042455 050130 DHF: .ASCIZ "----EXPECTED--- ---RECEIVED---"
5670 030670 041505 042524 026504
5671 030676 026455 026411 026455
5672 030704 042522 042503 053111
5673 030712 042105 026455 000055
5674 030720 026455 026455 026455 DHG: .ASCII "-----EXPECTED-----"
5675 030726 026455 026455 042455
5676 030734 050130 041505 042524
5677 030742 026504 026455 026455
5678 030750 026455 026455 026455
5679 030756 011
5680 030757 055 026455 026455 .ASCIZ "-----RECEIVED-----"
5681 030764 026455 026455 026455
5682 030772 042522 042503 053111
5683 031000 042105 026455 026455
5684 031006 026455 026455 026455
5685 031014 000055
5686 031016 046117 020104 041520 DHH: .ASCIZ "OLD PC OLD PS NEW SP FPS FEC FEA"
5687 031024 047411 042114 050040
5688 031032 004523 042516 020127
5689 031040 050123 020011 050106
5690 031046 004523 043040 041505
5691 031054 020011 042506 000101
5692 031062 047514 042101 042105 DHI: .ASCIZ "LOADED STORED R2"
5693 031070 051411 047524 042522
5694 031076 004504 020040 031122
5695 031104 000
5696 031105 114 040517 042504 DHJ: .ASCIZ "LOADED STORED R3"
5697 031112 004504 052123 051117
5698 031120 042105 020011 051040
5699 031126 000063
5700 031130 047514 042101 042105 DHK: .ASCIZ "LOADED STORED R0 R2"
5701 031136 051411 047524 042522
5702 031144 004504 020040 030122
5703 031152 020011 051040 000062
5704 031160 047514 042101 042105 DHL: .ASCIZ "LOADED STORED $REG2 R0"
5705 031166 051411 047524 042522

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5706	031174	004504	051044	043505					
5707	031202	004462	020040	030122					
5708	031210	000							
5709	031211	114	040517	042504	DHM:	.ASCIZ	"LOADED STORED \$REG2	R2"	
5710	031216	004504	052123	051117					
5711	031224	042105	022011	042522					
5712	031232	031107	020011	051040					
5713	031240	000062							
5714	031242	047514	042101	042105	DHN:	.ASCIZ	"LOADED STORED \$REG2	R4"	
5715	031250	051411	047524	042522					
5716	031256	004504	051044	043505					
5717	031264	004462	020040	032122					
5718	031272	000							
5719	031273	114	040517	042504	DHO:	.ASCIZ	"LOADED STORED \$REG2	R5"	
5720	031300	004504	052123	051117					
5721	031306	042105	022011	042522					
5722	031314	031107	020011	051040					
5723	031322	000065							
5724	031324	047514	042101	042105	DHP:	.ASCIZ	"LOADED STORED \$REG2	R1	R3"
5725	031332	051411	047524	042522					
5726	031340	004504	051044	043505					
5727	031346	004462	020040	030522					
5728	031354	020011	051040	000063					
5729	031362	047514	042101	042105	DHQ:	.ASCIZ	"LOADED STORED \$REG2	R3	R5"
5730	031370	051411	047524	042522					
5731	031376	004504	051044	043505					
5732	031404	004462	020040	031522					
5733	031412	020011	051040	000065					
5734	031420	026455	026455	026455	DHR:	.ASCIZ	"-----STORED-----"		
5735	031426	026455	026455	026455					
5736	031434	052123	051117	042105					
5737	031442	026455	026455	026455					
5738	031450	026455	026455	026455					
5739	031456	000							
5740	031457	055	026455	026455	DHS:	.ASCIZ	"-----STORED-----"	R4"	
5741	031464	026455	026455	026455					
5742	031472	051455	047524	042522					
5743	031500	026504	026455	026455					
5744	031506	026455	026455	026455					
5745	031514	004455	020040	032122					
5746	031522	000							
5747	031523	055	026455	026455	DHT:	.ASCIZ	"-----STORED-----"	R5"	
5748	031530	026455	026455	026455					
5749	031536	051455	047524	042522					
5750	031544	026504	026455	026455					
5751	031552	026455	026455	026455					
5752	031560	004455	020040	032522					
5753	031566	000							
5754	031567	055	026455	026455	DHU:	.ASCII	"-----STORED-----"	R0"	
5755	031574	026455	026455	026455					
5756	031602	051455	047524	042522					
5757	031610	026504	026455	026455					
5758	031616	026455	026455	026455					
5759	031624	004455	020040	030122					
5760	031632	020011	051040	000063	DHV:	.ASCIZ	"-----R3-----"		
5761	031640	026455	026455	026455		.ASCII	"-----STORED-----"	R1"	

5762	031646	026455	026455	026455		
5763	031654	052123	051117	042105		
5764	031662	026455	026455	026455		
5765	031670	026455	026455	026455		
5766	031676	020011	051040	061		
5767	031703	040	004440	031522	.ASCIZ	" R3"
5768	031710	000				
5769	031711	055	026455	026455	DHW:	.ASCII "-----STORED----- \$REG10"
5770	031716	026455	026455	026455		
5771	031724	051455	047524	042522		
5772	031732	026504	026455	026455		
5773	031740	026455	026455	026455		
5774	031746	004455	051044	043505		
5775	031754	030061				
5776	031756	020040	051011	000060	DHX:	.ASCIZ " R0"
5777	031764	026455	026455	026455	.ASCII	"-----STORED----- \$REG10"
5778	031772	026455	026455	026455		
5779	032000	052123	051117	042105		
5780	032006	026455	026455	026455		
5781	032014	026455	026455	026455		
5782	032022	022011	042522	030507		
5783	032030	060				
5784	032031	040	004440	031122	.ASCIZ	" R2"
5785	032036	000				
5786	032037	055	026455	026455	DHY:	.ASCII "-----STORED----- \$REG10"
5787	032044	026455	026455	026455		
5788	032052	051455	047524	042522		
5789	032060	026504	026455	026455		
5790	032066	026455	026455	026455		
5791	032074	004455	051044	043505		
5792	032102	030061				
5793	032104	020040	051011	000064	DHZ:	.ASCIZ " R4"
5794	032112	026455	026455	026455	.ASCII	"-----STORED----- \$REG10"
5795	032120	026455	026455	026455		
5796	032126	052123	051117	042105		
5797	032134	026455	026455	026455		
5798	032142	026455	026455	026455		
5799	032150	022011	042522	030507		
5800	032156	060				
5801	032157	011	051044	043505	.ASCIZ	" \$REG11 R1"
5802	032164	030461	020011	051040		
5803	032172	000061				
5804	032174	026455	026455	026455	DHAA:	.ASCII "-----STORED----- \$REG10"
5805	032202	026455	026455	026455		
5806	032210	052123	051117	042105		
5807	032216	026455	026455	026455		
5808	032224	026455	026455	026455		
5809	032232	022011	042522	030507		
5810	032240	060				
5811	032241	011	051044	043505	.ASCIZ	" \$REG11 R4 R5"
5812	032246	030461	020011	051040		
5813	032254	004464	020040	032522		
5814	032262	000				
5815	032263	055	026455	046055	DHAB:	.ASCIZ "----LOADED---- --STORED---- R1"
5816	032270	040517	042504	026504		
5817	032276	026455	004455	026455		

5818	032304	026455	052123	051117				
5819	032312	042105	026455	026455				
5820	032320	020011	051040	000061				
5821	032326	026455	026455	047514	DHAC:	.ASCIZ	"-----LOADED-----	-----STORED----- R3"
5822	032334	042101	042105	026455				
5823	032342	026455	026411	026455				
5824	032350	051455	047524	042522				
5825	032356	026504	026455	004455				
5826	032364	020040	031522	000				
5827	032371	055	026455	046055	DHAD:	.ASCII	"-----LOADED-----	-----STORED----- R2"
5828	032376	040517	042504	026504				
5829	032404	026455	004455	026455				
5830	032412	026455	052123	051117				
5831	032420	042105	026455	026455				
5832	032426	020011	051040	062				
5833	032433	011	020040	032522		.ASCIZ	"	R5"
5834	032440	000						
5835	032441	055	026455	046055	DHAE:	.ASCIZ	"-----LOADED-----	-----STORED----- \$REG4"
5836	032446	040517	042504	026504				
5837	032454	026455	004455	026455				
5838	032462	026455	052123	051117				
5839	032470	042105	026455	026455				
5840	032476	022011	042522	032107				
5841	032504	000						
5842	032505	055	026455	046055	DHAF:	.ASCII	"-----LOADED-----	-----STORED----- \$REG4"
5843	032512	040517	042504	026504				
5844	032520	026455	004455	026455				
5845	032526	026455	052123	051117				
5846	032534	042105	026455	026455				
5847	032542	022011	042522	032107				
5848	032550	020011	051040	004460		.ASCIZ	"	R0 R4"
5849	032556	020040	032122	000				
5850	032563	055	026455	046055	DHAG:	.ASCII	"-----LOADED-----	-----STORED----- \$REG4"
5851	032570	040517	042504	026504				
5852	032576	026455	004455	026455				
5853	032604	026455	052123	051117				
5854	032612	042105	026455	026455				
5855	032620	022011	042522	032107				
5856	032626	020011	051040	004461		.ASCIZ	"	R1 R2"
5857	032634	020040	031122	000				
5858	032641	055	026455	046055	DHAH:	.ASCII	"-----LOADED-----	-----STORED----- \$REG4"
5859	032646	040517	042504	026504				
5860	032654	026455	004455	026455				
5861	032662	026455	052123	051117				
5862	032670	042105	026455	026455				
5863	032676	022011	042522	032107				
5864	032704	020011	051040	004464		.ASCIZ	"	R4 R5"
5865	032712	020040	032522	000				
5866	032717	055	026455	046055	DHAI:	.ASCII	"-----LOADED-----	-----STORED----- \$REG4"
5867	032724	040517	042504	026504				
5868	032732	026455	004455	026455				
5869	032740	026455	052123	051117				
5870	032746	042105	026455	026455				
5871	032754	022011	042522	032107				
5872	032762	022011	042522	032507		.ASCIZ	"	\$REG5 R5"
5873	032770	020011	051040	000065				

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SEQ 0132

5874	032776	026455	026455	047514
5875	033004	042101	042105	026455
5876	033012	026455	026411	026455
5877	033020	051455	047524	042522
5878	033026	026504	026455	004455
5879	033034	051044	043505	064
5880	033041	011	051044	043505
5881	033046	004465	020040	030122
5882	033054	020011	051040	000062
5883	033062	026455	026455	047514
5884	033070	042101	042105	026455
5885	033076	026455	026411	026455
5886	033104	051455	047524	042522
5887	033112	026504	026455	000055
5888	033120	000040		
5889				
5890				

DHAI: .ASCII "----LOADED---- ----STORED---- \$REG4"

.ASCIZ " \$REG5 R0 R2"

DHAK: .ASCIZ "----LOADED---- ----STORED----"

DHAL: .ASCIZ " "

```

5891 ; DATA ADDRESS VECTOR
5892 .EVEN
5893 033122 001170 000000 DTA: .WORD $REG0,0
5894 033126 001170 001172 000000 DTB: .WORD $REG0,$REG1,0
5895 033134 001170 001172 001174 DTC: .WORD $REG0,$REG1,$REG2,$REG3,0
5896 033142 001176 000000
5897 033146 001242 002330 000000 DTD: .WORD $TMP5,FPS,0
5898 033154 001252 002330 000000 DTE: .WORD $TMP11,FPS,0
5899 033162 001256 002330 000000 DTF: .WORD $TMP13,FPS,0
5900 033170 001244 002332 002344 DTG: .WORD $TMP6,FEC,EXPFEA,FEA,0
5901 033176 002334 000000
5902 033202 001254 002332 002344 DTH: .WORD $TMP12,FEC,EXPFEA,FEA,0
5903 033210 002334 000000
5904 033214 001260 002332 002344 DTI: .WORD $TMP14,FEC,EXPFEA,FEA,0
5905 033222 002334 000000
5906 033226 001234 001236 001170 DTJ: .WORD $TMP2,$TMP3,$REG0,$REG1,0
5907 033234 001172 000000
5908 033240 001240 001242 001244 DTK: .WORD $TMP4,$TMP5,$TMP6,$TMP7
5909 033246 001246
5910 033250 001170 001172 001174 .WORD $REG0,$REG1,$REG2,$REG3,0
5911 033256 001176 000000
5912 033262 001244 001246 001250 DTL: .WORD $TMP6,$TMP7,$TMP10,$TMP11
5913 033270 001252
5914 033272 001170 001172 001174 .WORD $REG0,$REG1,$REG2,$REG3,0
5915 033300 001176 000000
5916 033304 002336 002340 002342 DTM: .WORD FPPOPC,FPPOPS,FPPOSP,FPS,FEC,FEA,0
5917 033312 002330 002332 002334
5918 033320 000000
5919 033322 001170 001172 002352 DTN: .WORD $REG0,$REG1,EREG2,0
5920 033330 000000
5921 033332 001170 001172 002354 DTO: .WORD $REG0,$REG1,EREG3,0
5922 033340 000000
5923 033342 001170 001172 002346 DTP: .WORD $REG0,$REG1,EREG0,EREG2,0
5924 033350 002352 000000
5925 033354 001170 001172 001174 DTQ: .WORD $REG0,$REG1,$REG2,EREG0,0
5926 033362 002346 000000
5927 033366 001170 001172 001174 DTR: .WORD $REG0,$REG1,$REG2,EREG2,0
5928 033374 002352 000000
5929 033400 001170 001172 001174 DTS: .WORD $REG0,$REG1,$REG2,EREG4,0
5930 033406 002356 000000
5931 033412 001170 001172 001174 DTT: .WORD $REG0,$REG1,$REG2,EREG5,0
5932 033420 002360 000000
5933 033424 001170 001172 001174 DTU: .WORD $REG0,$REG1,$REG2,EREG1,EREG3,0
5934 033432 002350 002354 000000
5935 033440 001170 001172 001174 DTV: .WORD $REG0,$REG1,$REG2,EREG3,EREG5,0
5936 033446 002354 002360 000000
5937 033454 001200 001202 001204 DTW: .WORD $REG4,$REG5,$REG6,$REG7,0
5938 033462 001206 000000
5939 033466 001200 001202 001204 DTX: .WORD $REG4,$REG5,$REG6,$REG7,EREG4,0
5940 033474 001206 002356 000000
5941 033502 001200 001202 001204 DTY: .WORD $REG4,$REG5,$REG6,$REG7,EREG5,0
5942 033510 001206 002360 000000
5943 033516 001200 001202 001204 DTZ: .WORD $REG4,$REG5,$REG6,$REG7,EREG0,EREG3,0
5944 033524 001206 002346 002354
5945 033532 000000
5946 033534 001200 001202 001204 DTAA: .WORD $REG4,$REG5,$REG6,$REG7,EREG1,EREG3,0

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SEQ 0134

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5947 033542 001206 002350 002354
5948 033550 000000
5949 033552 001200 001202 001204 DTAB: .WORD $REG4,$REG5,$REG6,$REG7,$REG10,EREG0,0
5950 033560 001206 001210 002346
5951 033566 000000
5952 033570 001200 001202 001204 DTAC: .WORD $REG4,$REG5,$REG6,$REG7,$REG10,EREG2,0
5953 033576 001206 001210 002352
5954 033604 000000
5955 033606 001200 001202 001204 DTAD: .WORD $REG4,$REG5,$REG6,$REG7,$REG10,EREG4,0
5956 033614 001206 001210 002356
5957 033622 000000
5958 033624 001200 001202 001204 DTAE: .WORD $REG4,$REG5,$REG6,$REG7
5959 033632 001206
5960 033634 001210 001212 002350 .WORD $REG10,$REG11,EREG1,0
5961 033642 000000
5962 033644 001200 001202 001204 DTAF: .WORD $REG4,$REG5,$REG6,$REG7
5963 033652 001206
5964 033654 001210 001212 002356 .WORD $REG10,$REG11,EREG4,EREG5,0
5965 033662 002360 000000
5966 033666 001170 001172 001174 DTAG: .WORD $REG0,$REG1,$REG2,$REG3,EREG1,0
5967 033674 001176 002350 000000
5968 033702 001170 001172 001174 DTAH: .WORD $REG0,$REG1,$REG2,$REG3,EREG3,0
5969 033710 001176 002354 000000
5970 033716 001170 001172 001174 DTAI: .WORD $REG0,$REG1,$REG2,$REG3,EREG2,EREG5,0
5971 033724 001176 002352 002360
5972 033732 000000
5973 033734 001170 001172 001174 DTAJ: .WORD $REG0,$REG1,$REG2,$REG3,$REG4,0
5974 033742 001176 001200 000000
5975 033750 001170 001172 001174 DTAK: .WORD $REG0,$REG1,$REG2,$REG3
5976 033756 001176
5977 033760 001200 002346 002356 .WORD $REG4,EREG0,EREG4,0
5978 033766 000000
5979 033770 001170 001172 001174 DTAL: .WORD $REG0,$REG1,$REG2,$REG3
5980 033776 001176
5981 034000 001200 002350 002352 .WORD $REG4,EREG1,EREG2,0
5982 034006 000000
5983 034010 001170 001172 001174 DTAM: .WORD $REG0,$REG1,$REG2,$REG3
5984 034016 001176
5985 034020 001200 002356 002360 .WORD $REG4,EREG4,EREG5,0
5986 034026 000000
5987 034030 001170 001172 001174 DTAN: .WORD $REG0,$REG1,$REG2,$REG3
5988 034036 001176
5989 034040 001200 001202 002360 .WORD $REG4,$REG5,EREG5,0
5990 034046 000000
5991 034050 001170 001172 001174 DTAO: .WORD $REG0,$REG1,$REG2,$REG3
5992 034056 001176
5993 034060 001200 001202 002346 .WORD $REG4,$REG5,EREG0,EREG2,0
5994 034066 002352 000000
5995 034072 000000 DTAP: .WORD 0
5996
5997
5998 ; THE END
5999 .END
000001

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ABASE =	000000	325	4604														
ABSD1	022140	4594#	4587#														
ABSD1	022104	4585	3094	3113	3132	3151	3170	3189	3208	3227	3246	3265	4579#				
ABSD7	022060	3075	3079#														
ABSD1	014640	3074	3212#														
ABSD10	015216	3207	3231#														
ABSD11	015260	3226	3250#														
ABSD12	015322	3245	3269#														
ABSD13	015364	3264	3098#														
ABSD2	014702	3093	3117#														
ABSD3	014744	3112	3136#														
ABSD4	015006	3131	3155#														
ABSD5	015050	3150	3174#														
ABSD6	015112	3169	3193#														
ABSD7	015154	3188	4559														
ABSF1	021750	4549#	4544#														
ABSF1	021730	4542	2904	2921	2938	2955	2972	2989	3006	3023	3040	3057	4536#				
ABSF1	021704	2887	2891#														
ABSF1	014202	2886	3010#														
ABSF10	014470	3005	3027#														
ABSF11	014522	3022	3044#														
ABSF12	014554	3039	3061#														
ABSF13	014606	3056	2908#														
ABSF2	014234	2903	2925#														
ABSF3	014266	2920	2942#														
ABSF4	014320	2937	2959#														
ABSF5	014352	2954	2976#														
ABSF6	014404	2971	2993#														
ABSF7	014436	2988															
ACDW1 =	000000	325															
ACDW2 =	000000	325															
ACPUOP=	000000	325	340														
ADDR1	004142	744	759#														
ADDR10	004670	931	953#														

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SEQ 0137

APASS = 000000	325	330							
APRIOR= 000000	325								
APTCSU= 000040	5132	5237#							
APTENV= 000001	5012	5125	5193	5235#					
APTSIZ= 000200	548	5234#							
APTSP0= 000100	5127	5195	5236#						
ASCHOT 026034	631	5402#							
ASCMRN 026042	633	5403#							
ASWREG= 000000	325	338							
ATESTN= 000000	325	329							
AUNIT = 000000	325	332							
AUSMR = 000000	325	339							
AVECT1= 000000	325								
AVECT2= 000000	325								
BGNMES 002376	486#	557							
BIT0 = 000001	126#								
BIT00 = 000001	116#	126	639	661					
BIT01 = 000002	115#	125							
BIT02 = 000004	114#	124							
BIT03 = 000010	113#	123							
BIT04 = 000020	112#	122	563	613	643	665	4313		
BIT05 = 000040	111#	121	1073						
BIT06 = 000100	110#	120	714	730					
BIT07 = 000200	109#	119	682	698					
BIT08 = 000400	108#	118	4939						
BIT09 = 001000	107#	117	4947	5022					
BIT1 = 000002	125#								
BIT10 = 002000	106#	5000							
BIT11 = 004000	105#	4954							
BIT12 = 010000	104#	595	623	625	628	645	667	4319	
BIT13 = 020000	103#	645	667	5007					
BIT14 = 040000	102#	4925							
BIT15 = 100000	101#								
BIT2 = 000004	124#								
BIT3 = 000010	123#								
BIT4 = 000020	122#								
BIT5 = 000040	121#								
BIT6 = 000100	120#								
BIT7 = 000200	119#								
BIT8 = 000400	118#								
BIT9 = 001000	117#								
BPTVEC= 000014	133#								
CCONLY= 177760	182#	1071	1080						
CLRD1 023110	4776#	4786							
CLRD1 023054	4767	4769#							
CLRD1 023030	3786	3805	3824	3843	3862	3881	4761#		
CLRD1 017106	3785	3790#							
CLRD2 017150	3804	3809#							
CLRD3 017212	3823	3828#							
CLRD4 017254	3842	3847#							
CLRD5 017316	3861	3866#							
CLRD6 017360	3880	3885#							
CLRF1 022720	4731#	4741							
CLRF1 022700	4724	4726#							
CLRF1 022654	3683	3700	3717	3734	3751	3768	4718#		
CLRF1 016652	3682	3687#							

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SEQ 0138

CLRF2	016704	3699	3704#					
CLRF3	016736	3716	3721#					
CLRF4	016770	3733	3738#					
CLRF5	017022	3750	3755#					
CLRF6	017054	3767	3772#					
CR	= 000015	41#	486	491	499	5171	5181	
CRLF	= 000200	42#	5142	5181				
DOISP	= 177570	48#	263	536				
DHA	030523	368	369	393	5651#			
DHAA	032174	398	399	5804#				
DHAB	032263	431	5815#					
DHAC	032326	422	423	425	5821#			
DHAD	032371	414	415	5827#				
DHAE	032441	429	5835#					
DHAF	032505	416	417	5842#				
DHAG	032563	421	5850#					
DHAH	032641	426	427	428	5858#			
DHAI	032717	424	5866#					
DHAJ	032776	418	419	420	5874#			
DHAK	033062	430	5883#					
DHAL	033120	456	457	458	459	5888#		
DHB	030541	370	371	372	373	5654#		
DHC	030550	433	5656#					
DHD	030606	435	436	437	5661#			
DHE	030622	439	440	441	5663#			
DHF	030662	445	447	449	451	5669#		
DHG	030720	443	444	446	448	450	452	5674#
DHH	031016	454	5686#					
DHI	031062	390	5692#					
DHJ	031105	388	389	5696#				
DHK	031130	383	384	5700#				
DHL	031160	381	382	5704#				
DHM	031211	387	5709#					
DHN	031242	385	386	391	5714#			
DHO	031273	375	5719#					
DHP	031324	378	379	380	5724#			
DHQ	031362	376	377	5729#				
DHR	031420	411	5734#					
DHS	031457	396	397	5740#				
DHT	031523	395	400	5747#				
DHU	031567	401	402	5754#				
DHV	031640	409	410	5761#				
DHW	031711	405	5769#					
DHX	031764	407	408	412	5777#			
DHY	032037	406	5786#					
DHZ	032112	403	404	5794#				
DISPLA	001146	263#	536#	544#	4969#	4999#		
DISPRE	000174	194#	544					
DSMR	= 177570	47#	262	535				
DTA	033122	370	371	372	373	5893#		
DTAA	033534	409	410	5946#				
DTAB	033552	405	5949#					
DTAC	033570	407	408	412	5952#			
DTAD	033606	406	5955#					
DTAE	033624	403	404	5958#				
DTAF	033644	398	399	5962#				

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[illegible]

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EMR	027370	398	400	409	412	5537#	424	428	429	430	431	5550#
EMS	027477	415	417	420	421	423						
EMT	027573	416	418	425	426	5561#						
EMTVEC=	000030	136#	519#	520#								
EMU	027702	414	419	422	427	5574#						
EMV	030011	443	5587#									
EMV001	001354	368#										
EMV002	001362	369#										
EMV003	001370	370#										
EMV004	001376	371#										
EMV005	001404	372#										
EMV006	001412	373#										
EMV007	001420	375#										
EMV010	001426	376#										
EMV011	001434	377#										
EMV012	001442	378#										
EMV013	001450	379#										
EMV014	001456	380#										
EMV015	001464	381#										
EMV016	001472	382#										
EMV017	001500	383#										
EMV020	001506	384#										
EMV021	001514	385#										
EMV022	001522	386#										
EMV023	001530	387#										
EMV024	001536	388#										
EMV025	001544	389#										
EMV026	001552	390#										
EMV027	001560	391#										
EMV030	001566	393#										
EMV031	001574	395#										
EMV032	001602	396#										
EMV033	001610	397#										
EMV034	001616	398#										
EMV035	001624	399#										
EMV036	001632	400#										
EMV037	001640	401#										
EMV040	001646	402#										
EMV041	001654	403#										
EMV042	001662	404#										
EMV043	001670	405#										
EMV044	001676	406#										
EMV045	001704	407#										
EMV046	001712	408#										
EMV047	001720	409#										
EMV050	001726	410#										
EMV051	001734	411#										
EMV052	001742	412#										
EMV053	001750	414#										
EMV054	001756	415#										
EMV055	001764	416#										
EMV056	001772	417#										
EMV057	002000	418#		</								

[illegible]

TSTF4	017540	3951	3956#
TSTF5	017572	3968	3973#
TSTF6	017624	3985	3990#
TSTF7	017656	4002	4007#
TST1	003576	638#	
TST10	004144	757	765#
TST100	007232	1701	1708#
TST101	007252	1713	1720#
TST102	007272	1725	1733#
TST103	007312	1738	1745#
TST104	007332	1750	1757#
TST105	007352	1762	1769#
TST106	007372	1774	1781#
TST107	007412	1786	1793#
TST11	004224	785	793#
TST110	007432	1798	1806#
TST111	007452	1811	1818#
TST112	007472	1823	1830#
TST113	007512	1835	1842#
TST114	007532	1847	1854#
TST115	007552	1859	1866#
TST116	007572	1871	1879#
TST117	007612	1884	1891#
TST12	004314	818	826#
TST120	007632	1896	1903#
TST121	007652	1908	1915#
TST122	007672	1920	1927#
TST123	007712	1932	1940#
TST124	007732	1945	1952#
TST125	007752	1957	1964#
TST126	007772	1969	1976#
TST127	010012	1981	1988#
TST13	004372	845	853#
TST130	010032	1993	2007#
TST131	010156	2030	2039#
TST132	010312	2067	2076#
TST133	010466	2107	2116#
TST134	010622	2144	2153#
TST135	010760	2182	2191#
TST136	011130	2221	2230#
TST137	011302	2260	2269#
TST14	004444	872	880#
TST140	011436	2293	2302#
TST141	011574	2332	2341#
TST142	011734	2370	2379#
TST143	012060	2402	2411#
TST144	012224	2441	2450#
TST145	012322	2473	2481#
TST146	012430	2505	2513#
TST147	012552	2543	2551#
TST15	004522	899	907#
TST150	012650	2570	2578#
TST151	012744	2600	2608#
TST152	013046	2627	2635#
TST153	013142	2657	2665#
TST154	013256	2694	2702#

TST155	013364	2725	2733#
TST156	013446	2749	2757#
TST157	013546	2779	2787#
TST16	004576	922	930#
TST160	013636	2805	2818#
TST161	014166	2885#	
TST162	014220	2889	2902#
TST163	014252	2906	2919#
TST164	014304	2923	2936#
TST165	014336	2940	2953#
TST166	014370	2957	2970#
TST167	014422	2974	2987#
TST17	004672	951	959#
TST170	014454	2991	3004#
TST171	014506	3008	3021#
TST172	014540	3025	3038#
TST173	014572	3042	3055#
TST174	014624	3059	3073#
TST175	014666	3077	3092#
TST176	014730	3096	3111#
TST177	014772	3115	3130#
TST2	003662	660#	
TST20	004760	983	991#
TST200	015034	3134	3149#
TST201	015076	3153	3168#
TST202	015140	3172	3187#
TST203	015202	3191	3206#
TST204	015244	3210	3225#
TST205	015306	3229	3244#
TST206	015350	3248	3263#
TST207	015412	3267	3283#
TST21	005022	1004	1012#
TST210	015444	3287	3300#
TST211	015476	3304	3317#
TST212	015530	3321	3334#
TST213	015562	3338	3351#
TST214	015614	3355	3368#
TST215	015646	3372	3385#
TST216	015700	3389	3402#
TST217	015732	3406	3419#
TST22	005062	1025	1033#
TST220	015764	3423	3436#
TST221	016016	3440	3453#
TST222	016050	3457	3471#
TST223	016112	3475	3490#
TST224	016154	3494	3509#
TST225	016216	3513	3528#
TST226	016260	3532	3547#
TST227	016322	3551	3566#
TST23	005140	1052	1065#
TST230	016364	3570	3585#
TST231	016426	3589	3604#
TST232	016470	3608	3623#
TST233	016532	3627	3642#
TST234	016574	3646	3661#
TST235	016636	3665	3681#

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0147

TST236	016670	3685	3698#
TST237	016722	3702	3715#
TST24	005272	1086	1095#
TST240	016754	3719	3732#
TST241	017006	3736	3749#
TST242	017040	3753	3766#
TST243	017072	3770	3784#
TST244	017134	3788	3803#
TST245	017176	3807	3822#
TST246	017240	3826	3841#
TST247	017302	3845	3860#
TST25	005340	1100	1113#
TST250	017344	3864	3879#
TST251	017406	3883	3899#
TST252	017440	3903	3916#
TST253	017472	3920	3933#
TST254	017524	3937	3950#
TST255	017556	3954	3967#
TST256	017610	3971	3984#
TST257	017642	3988	4001#
TST26	005406	1118	1131#
TST260	017674	4005	4018#
TST261	017726	4022	4035#
TST262	017760	4039	4052#
TST263	020012	4056	4069#
TST264	020044	4073	4087#
TST265	020106	4091	4106#
TST266	020150	4110	4125#
TST267	020212	4129	4144#
TST27	005454	1136	1149#
TST270	020254	4148	4163#
TST271	020316	4167	4182#
TST272	020360	4186	4201#
TST273	020422	4205	4220#
TST274	020464	4224	4239#
TST275	020526	4243	4258#
TST276	020570	4262	4277#
TST277	020632	4281	4296#
TST3	003746	678#	
TST30	005522	1154	1167#
TST31	005570	1172	1185#
TST32	005636	1190	1203#
TST33	005656	1208	1215#
TST34	005676	1220	1227#
TST35	005716	1232	1239#
TST36	005736	1244	1251#
TST37	005756	1256	1263#
TST4	003774	694#	
TST40	005776	1268	1276#
TST41	006016	1281	1288#
TST42	006036	1293	1300#
TST43	006056	1305	1312#
TST44	006076	1317	1324#
TST45	006116	1329	1336#
TST46	006136	1341	1349#
TST47	006156	1354	1361#

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[illegible]

SCBLF = 001321	319#	603	5010	5034	5050	5070	5076	5093	5146	5181			
SECTR = 000006	1200#	1212#	1224#	1236#	1248#	1260#	1272#	1273#	1285#	1297#	1309#	1321#	1333#
	1345#	1346#	1358#	1370#	1382#	1394#	1406#	1418#	1419#	1431#	1443#	1455#	1467#
	1479#	1480#	1492#	1504#	1516#	1528#	1540#	1657#	1669#	1681#	1693#	1705#	1717#
	1729#	1730#	1742#	1754#	1766#	1778#	1790#	1802#	1803#	1815#	1827#	1839#	1851#
	1863#	1875#	1876#	1888#	1900#	1912#	1924#	1936#	1937#	1949#	1961#	1973#	1985#
	1997#												
SDEVCT 001334	331#												
SDOAGN 021026	4351	4360	4368#										
SENDAD 021016	205	4363#	5029										
SENDCT 020766	525	4353#											
SENV 001344	336#	5012	5125	5193	5217								
SENVN 001345	337#	548	5127	5132	5195								
SEOP 020730	4314	4317	4329	4343#									
SEOPCT 020760	525#	4350#	4354										
SERFLG 001104	244#	4299#	4344#	4943	4945	4951*	4973	4997*	5034				
SERMAX 001120	250#	528#	4945	4968#	4973								
SERROR 024142	519	4987#											
SERRPC 001122	251#	5004#	5005*	5006	5034	5057	5096						
SERRTB 001354	351#	5065											
SERTTL 001114	248#	5003#	5034										
SESCAP 001312	316#	527#	4967*	5025	5027	5034							
SETABL 001344	335#												
SETEND 001354	231	347#											
SFATAL 001326	328#	5221#											
SFFLG 025346	5184#	5187#	5215	5224*	5232#								
SFILLC 001164	271#	5150	5181										
SFILLS 001163	270#	5181											
SGADR 001124	252#												
SGOAT 001130	254#												
SGET42 021006	4356	4359#											
SGTSMR= ***** U	5351												
SHD = 000000	12												
SHIBTS 001000	226#												
SICNT 001106	245#	4958*	4959	4961*	4972								
SILLUP 026016	5356	5372	5393#										
SINTAG 001141	259#												
SITEMB 001116	249#	5006*	5014	5034	5054								
SLF 001322	320#	5034	5181										
SLFLG 025345	5225#	5231#											
SLPADR 001110	246#	529#	4949*	4965*	4970	4972							
SLPERR 001112	247#	530#	640#	662#	1068*	4379*	4454*	4542*	4585*	4633*	4676*	4724*	4767*
	4816#	4859#	4949	4966#	4972	5024							
SLPTST 001150	264#	4941											
SMAIL 001324	227	231	326#	547	4964	5012	5125						
SMBADR 001002	227#												
SMFLG 025344	5185#	5191	5226*	5230#									
SMSGAD 001340	333#	5201*	5204										
SMSGLG 001342	334#	5206*											
SMSGTY 001324	327#	5199	5207*	5219	5223*								
SMXCNT 024140	4962	4972#											
SNLL 001162	269#	5152	5181										
SNWTST= 000001	635#	657#	675#	691#	707#	723#	740#	762#	790#	823#	850#	877#	904#
	927#	956#	988#	1009#	1030#	1062#	1092#	1110#	1128#	1146#	1164#	1182#	1200#
	1212#	1224#	1236#	1248#	1260#	1273#	1285#	1297#	1309#	1321#	1333#	1346#	1358#
	1370#	1382#	1394#	1406#	1419#	1431#	1443#	1455#	1467#	1480#	1492#	1504#	1516#

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SEQ 0150

	1528#	1542#	1561#	1580#	1599#	1618#	1637#	1657#	1669#	1681#	1693#	1705#	1717#
	1730#	1742#	1754#	1766#	1778#	1790#	1803#	1815#	1827#	1839#	1851#	1863#	1876#
	1888#	1900#	1912#	1924#	1937#	1949#	1961#	1973#	1985#	2004#	2036#	2073#	2113#
	2150#	2188#	2227#	2266#	2299#	2338#	2376#	2408#	2447#	2478#	2510#	2548#	2575#
	2605#	2632#	2662#	2699#	2730#	2754#	2784#	2815#	2881#	2883#	2898#	2900#	2915#
	2917#	2932#	2934#	2949#	2951#	2966#	2968#	2983#	2985#	3000#	3002#	3017#	3019#
	3034#	3036#	3051#	3053#	3069#	3071#	3088#	3090#	3107#	3109#	3126#	3128#	3145#
	3147#	3164#	3166#	3183#	3185#	3202#	3204#	3221#	3223#	3240#	3242#	3259#	3261#
	3279#	3281#	3296#	3298#	3313#	3315#	3330#	3332#	3347#	3349#	3364#	3366#	3381#
	3383#	3398#	3400#	3415#	3417#	3432#	3434#	3449#	3451#	3467#	3469#	3486#	3488#
	3505#	3507#	3524#	3526#	3543#	3545#	3562#	3564#	3581#	3583#	3600#	3602#	3619#
	3621#	3638#	3640#	3657#	3659#	3677#	3679#	3694#	3696#	3711#	3713#	3728#	3730#
	3745#	3747#	3762#	3764#	3780#	3782#	3799#	3801#	3818#	3820#	3837#	3839#	3856#
	3858#	3875#	3877#	3895#	3897#	3912#	3914#	3929#	3931#	3946#	3948#	3963#	3965#
	3980#	3982#	3997#	3999#	4014#	4016#	4031#	4033#	4048#	4050#	4065#	4067#	4083#
	4085#	4102#	4104#	4121#	4123#	4140#	4142#	4159#	4161#	4178#	4180#	4197#	4199#
	4216#	4218#	4235#	4237#	4254#	4256#	4273#	4275#					
	5270#	5299#	5312#										
	5265#	5269#	5274#	5277#	5288#	5314#							
	4926#	4942#	4950#	4960#	4969#								
	330#	547#	599#	4347#	4348#	4956#	4973#						
	229#												
	5389#	5396#											
	5391#												
	523#	5356#	5386#										
	5389#												
	5366#	5372#											
	318#	5034#	5181#										
	5352#												
	5352#												
	5352#												
	5352#												
	273#												
	275#	642#	643#	644#	645#	647#	664#	665#	666#	667#	669#	681#	682#
	697#	698#	713#	714#	729#	730#	744#	746#	752#	766#	768#	780#	794#
	796#	803#	813#	827#	829#	840#	854#	856#	862#	867#	881#	883#	894#
	908#	910#	917#	931#	933#	946#	960#	962#	978#	992#	994#	999#	1013#
	1015#	1020#	1034#	1036#	1047#	1070#	1071#	1072#	1081#	2009#	2014#	2019#	2041#
	2046#	2051#	2056#	2078#	2083#	2096#	2118#	2123#	2133#	2155#	2160#	2166#	2171#
	2193#	2198#	2210#	2232#	2237#	2249#	2271#	2276#	2282#	2304#	2309#	2327#	2343#
	2348#	2359#	2381#	2386#	2391#	2413#	2418#	2430#	2452#	2455#	2466#	2483#	2486#
	2498#	2515#	2518#	2536#	2553#	2556#	2563#	2580#	2583#	2593#	2610#	2613#	2620#
	2637#	2640#	2645#	2650#	2667#	2670#	2677#	2687#	2704#	2707#	2718#	2735#	2738#
	2742#	2759#	2762#	2774#	2789#	2792#	2798#	2820#	2822#	2825#	2828#	2830#	2832#
	2834#	2835#	4402#	4419#	4423#	4427#	4431#	4437#	4443#	4477#	4496#	4502#	4508#
	4514#	4523#	4532#	4545#	4549#	4567#	4588#	4594#	4612#	4636#	4640#	4658#	4679#
	4685#	4703#	4727#	4731#	4749#	4770#	4776#	4794#	4819#	4823#	4841#	4852#	4868#
	4886#	5893#	5894#	5895#	5906#	5910#	5914#	5919#	5921#	5923#	5925#	5927#	5929#
	5931#	5933#	5935#	5966#	5968#	5970#	5973#	5975#	5979#	5983#	5987#	5991#	
	276#	646#	647#	668#	669#	749#	752#	771#	780#	799#	813#	833#	840#
	860#	867#	887#	894#	913#	917#	944#	946#	970#	973#	978#	996#	999#
	1017#	1020#	1039#	1042#	1047#	1079#	1080#	1081#	2010#	2021#	2042#	2058#	2079#
	2098#	2119#	2135#	2156#	2173#	2194#	2212#	2233#	2251#	2272#	2284#	2305#	2344#
	2361#	2382#	2393#	2414#	2432#	2453#	2468#	2484#	2500#	2516#	2538#	2554#	2565#
	2581#	2595#	2611#	2622#	2638#	2652#	2668#	2689#	2705#	2720#	2736#	2744#	2760#
	2790#	2800#	2821#	2824#	2827#	2829#	2831#	2833#	2836#	2840#	2843#	2847#	2850#

\$OCNT 025572
 \$OMODE 025574
 \$OVER 024124
 \$PASS 001332
 \$PASTM 001006
 \$POWER 026024
 \$PWAD 026012
 \$PWADN 025644
 \$PWADG 026006
 \$PWADP 025716
 \$QUES 001320
 \$ROCHR= *****
 \$RDOEC= *****
 \$RDLIN= *****
 \$RDOCT= *****
 \$REGAD 001166
 \$REGO 001170

U
 U
 U
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\$REG1 001172

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SEQ 0151

\$REG10	001210	2854	2857*	2861	2864*	2869	2872*	2877	4404	4479	4546*	4569	4589*	4614
		4637*	4660	4680*	4705	4728*	4751	4771*	4796	4820*	4843	4863*	4888	5894
		5895	5906	5910	5914	5919	5921	5923	5925	5927	5929	5931	5933	5935
		5966	5968	5970	5973	5975	5979	5983	5987	5991				
		283*	2083*	2084	2198*	2199	2205	2245*	2246	2276*	2277	2309*	2310	2322
		2421*	2422	2425	5949	5952	5955	5960	5964					
\$REG11	001212	284*	2087*	2088	2091	2202*	2203*	5960	5964					
\$REG12	001214	285*												
\$REG13	001216	286*												
\$REG14	001220	287*												
\$REG15	001222	288*												
\$REG16	001224	289*												
\$REG17	001226	290*												
\$REG2	001174	277*	749*	750*	771*	772	775	799*	800	808	829*	830	835	883*
		884	889	913*	914	933*	934	1036*	1037	2011*	2023	2043*	2060	2080*
		2100	2120*	2137	2157*	2175	2195*	2214	2234*	2253	2273*	2286	2306*	2345*
		2363	2383*	2395	2415*	2434	2458	2461	2466	2490	2498	2522	2536	2560
		2563	2585	2588	2593	2616	2620	2643*	2650	2673	2687	2715	2718	2740*
		2742	2772*	2774	2796*	2798	2837*	2838	2844*	2845	2851*	2852	2858*	2859
		2866*	2867	2874*	2875	4406	4481	4590*	4616	4681*	4707	4772*	4798	4864*
		4890	5895	5910	5914	5925	5927	5929	5931	5933	5935	5966	5968	5970
		5973	5975	5979	5983	5987	5991							
\$REG3	001176	278*	2012*	2025	2044*	2062	2081*	2102	2121*	2139	2158*	2177	2196*	2216
		2235*	2255	2274*	2288	2307*	2346*	2365	2384*	2397	2416*	2436	2468	2500
		2538	2565	2595	2622	2652	2689	2720	2744	2800	2840	2847	2854	2861
		2869	2877	4408	4483	4591*	4618	4682*	4709	4773*	4800	4865*	4892	5895
		5910	5914	5966	5968	5970	5973	5975	5979	5983	5987	5991		
\$REG4	001200	279*	2017*	2019	2049*	2056	2087	2096	2125	2128	2133	2163	2171	2202
		2210	2245	2249	2279	2282	2320*	2327	2351	2354	2359	2389*	2391	2421
		2430	2486*	2487	2493	2518*	2519	2526	2556*	2557	2613*	2614	2673*	2674
		2682	2715*	2716*	5937	5939	5941	5943	5946	5949	5952	5955	5958	5962
		5973	5977	5981	5985	5989	5993							
\$REG5	001202	280*	2021	2058	2098	2135	2173	2212	2251	2284	2361	2393	2432	2522*
		2523	2531	2616*	2617	5937	5939	5941	5943	5946	5949	5952	5955	5958
		5962	5989	5993										
\$REG6	001204	281*	2023	2060	2100	2137	2175	2214	2253	2286	2363	2395	2434	5937
		5939	5941	5943	5946	5949	5952	5955	5958	5962				
\$REG7	001206	282*	2025	2062	2102	2139	2177	2216	2255	2288	2365	2397	2436	5937
		5939	5941	5943	5946	5949	5952	5955	5958	5962				
\$R2A =	***** U	5352												
\$SAVRE =	***** U	5352												
\$SAVR6	026022	5365*	5373	5374*	5375*	5395*								
\$SCOPE	023664	517	4923*											
\$SETUP =	000037	502*	516	517	519	521	523	525	526	527	529	4924	4988	5022
		5029												
\$STUP =	177777	502*												
\$SVLAD	024070	4934	4963*											
\$SVPC =	000204	203*	208											
\$SWR =	167400	1*	12	315	316	317	526	527	529	530	639	661	679	695
		711	727	744	766	794	827	854	881	908	931	960	992	1013
		1034	1066	1096	1114	1132	1150	1168	1186	1204	1216	1228	1240	1252
		1264	1277	1289	1301	1313	1325	1337	1350	1362	1374	1386	1398	1410
		1423	1435	1447	1459	1471	1484	1496	1508	1520	1532	1546	1565	1584
		1603	1622	1641	1661	1673	1685	1697	1709	1721	1734	1746	1758	1770
		1782	1794	1807	1819	1831	1843	1855	1867	1880	1892	1904	1916	1928
		1941	1953	1965	1977	1989	2008	2040	2077	2117	2154	2192	2231	2270

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SEQ 0152

SSWREG	001346	2303	2342	2380	2412	2451	2482	2514	2552	2579	2609	2636	2666	2703
SSWRMK=	000000	2734	2758	2788	2819	2886	2903	2920	2937	2954	2971	2988	3005	3022
\$TESTN	001330	3039	3056	3074	3093	3112	3131	3150	3169	3188	3207	3226	3245	3264
\$TIMES	001310	3284	3301	3318	3335	3352	3369	3386	3403	3420	3437	3454	3472	3491
\$TKB	001154	3510	3529	3548	3567	3586	3605	3624	3643	3662	3682	3699	3716	3733
\$TKS	001152	3750	3767	3785	3804	3823	3842	3861	3880	3900	3917	3934	3951	3968
\$TMP0	001230	3985	4002	4019	4036	4053	4070	4088	4107	4126	4145	4164	4183	4202
\$TMP1	001232	4221	4240	4259	4278	4297	4316	4335	4354	4373	4392	4411	4430	4449
\$TMP10	001250	4468	4487	4506	4525	4544	4563	4582	4601	4620	4639	4658	4677	4696
\$TMP11	001252	4715	4734	4753	4772	4791	4810	4829	4848	4867	4886	4905	4924	4943
\$TMP12	001254	4962	4981	5000	5019	5038	5057	5076	5095	5114	5133	5152	5171	5190
\$TMP13	001256	5209	5228	5247	5266	5285	5304	5323	5342	5361	5380	5399	5418	5437
\$TMP14	001260	5456	5475	5494	5513	5532	5551	5570	5589	5608	5627	5646	5665	5684
\$TMP15	001262	5703	5722	5741	5760	5779	5798	5817	5836	5855	5874	5893	5912	5931
\$TMP16	001264	5950	5969	5988	6007	6026	6045	6064	6083	6102	6121	6140	6159	6178
\$TMP17	001266	6197	6216	6235	6254	6273	6292	6311	6330	6349	6368	6387	6406	6425
\$TMP2	001234	6444	6463	6482	6501	6520	6539	6558	6577	6596	6615	6634	6653	6672
\$TMP20	001270	6691	6710	6729	6748	6767	6786	6805	6824	6843	6862	6881	6900	6919
\$TMP21	001272	6938	6957	6976	6995	7014	7033	7052	7071	7090	7109	7128	7147	7166
\$TMP22	001274	7185	7204	7223	7242	7261	7280	7299	7318	7337	7356	7375	7394	7413
\$TMP23	001276	7432	7451	7470	7489	7508	7527	7546	7565	7584	7603	7622	7641	7660
\$TMP24	001300	7679	7698	7717	7736	7755	7774	7793	7812	7831	7850	7869	7888	7907
\$TMP25	001302	7926	7945	7964	7983	8002	8021	8040	8059	8078	8097	8116	8135	8154
\$TMP26	001304	8173	8192	8211	8230	8249	8268	8287	8306	8325	8344	8363	8382	8401
\$TMP27	001306	8420	8439	8458	8477	8496	8515	8534	8553	8572	8591	8610	8629	8648
\$TMP3	001236	8667	8686	8705	8724	8743	8762	8781	8800	8819	8838	8857	8876	8895
\$TMP4	001240	8914	8933	8952	8971	8990	9009	9028	9047	9066	9085	9104	9123	9142
\$TMP5	001242	9161	9180	9199	9218	9237	9256	9275	9294	9313	9332	9351	9370	9389
\$TMP6	001244	9408	9427	9446	9465	9484	9503	9522	9541	9560	9579	9598	9617	9636
\$TMP7	001246	9655	9674	9693	9712	9731	9750	9769	9788	9807	9826	9845	9864	9883
\$TN =	000277	9902	9921	9940	9959	9978	9997	10016	10035	10054	10073	10092	10111	10130
		10149	10168	10187	10206	10225	10244	10263	10282	10301	10320	10339	10358	10377
		10396	10415	10434	10453	10472	10491	10510	10529	10548	10567	10586	10605	10624
		10643	10662	10681	10700	10719	10738	10757	10776	10795	10814	10833	10852	10871
		10890	10909	10928	10947	10966	10985	11004	11023	11042	11061	11080	11099	11118
		11137	11156	11175	11194	11213	11232	11251	11270	11289	11308	11327	11346	11365
		11384	11403	11422	11441	11460	11479	11498	11517	11536	11555	11574	11593	11612
		11631	11650	11669	11688	11707	11726	11745	11764	11783	11802	11821	11840	11859
		11878	11897	11916	11935	11954	11973	11992	12011	12030	12049	12068	12087	12106
		12125	12144	12163	12182	12201	12220	12239	12258	12277	12296	12315	12334	12353
		12372	12391	12410	12429	12448	12467	12486	12505	12524	12543	12562	12581	12600
		12619	12638	12657	12676	12695	12714	12733	12752	12771	12790	12809	12828	12847
		12866	12885	12904	12923	12942	12961	12980	13000	13019	13038	13057	13076	13095
		13114	13133	13152	13171	13190	13209	13228	13247	13266	13285	13304	13323	13342
		13361	13380	13399	13418	13437	13456	13475	13494	13513	13532	13551	13570	13589
		13608	13627	13646	13665	13684	13703	13722	13741	13760	13779	13798	13817	13836
		13855	13874	13893	13912	13931	13950	13969	13988	14007	14026	14045	14064	14083
		14102	14121	14140	14159	14178	14197	14216	14235	14254	14273	14292	14311	14330
		14349	14368	14387	14406	14425	14444	14463	14482	14501	14520	14539	14558	14577
		14596	14615	14634	14653	14672	14691	14710	14729	14748	14767	14786	14805	14824
		14843	14862	14881	14900	14919	14938	14957	14976	14995	15014	15033	15052	15071
		15090	15109	15128	15147	15166	15185	15204	15223	15242	15261	15280	15299	15318
		15337	15356	15375	15394	15413	15432	15451	15470	15489	15508	15527	15546	15565
		15584	15603	15622	15641	15660	15679	15698	15717	15736	15755	15774	15793	15812
		15831	15850	15869	15888	15907	15926	15945	15964	15983	16002	16021	16040	16059
		16078	16097	16116	16135	16154	16173	16192	16211	16230	16249	16268	16287	16306
		16325	16344	16363	16382	16401	16420	16439	16458	16477	16496	16515	16534	16553
		16572	16591	16610	16629	16648	16667	16686	16705	16724	16743	16762	16781	16800
		16819	16838	16857	16876	16895	16914	16933	16952	16971	16990	17009	17028	17047
		17066	17085	17104	17123	17142	17161	17180	17199	17218	17237	17256	17275	17294
		17313	17332	17351	17370	17389	17408	17427	17446	17465	17484	17503	17522	17541
		17560	17579	17598	17617	17636	17655	17674	17693	17712	17731	17750	17769	17788

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0153

1798	1803	1807#	1811	1815	1819#	1823	1827	1831#	1835	1839	1843#	1847
1851	1855#	1859	1863	1867#	1871	1876	1880#	1884	1888	1892#	1896	1900
1904#	1908	1912	1916#	1920	1924	1928#	1932	1937	1941#	1945	1949	1953#
1957	1961	1965#	1969	1973	1977#	1981	1985	1989#	1993	2004	2008#	2030
2036	2040#	2067	2073	2077#	2107	2113	2117#	2144	2150	2154#	2182	2188
2192#	2221	2227	2231#	2260	2266	2270#	2293	2299	2303#	2332	2338	2342#
2370	2376	2380#	2402	2408	2412#	2441	2447	2451#	2473	2478	2482#	2505
2510	2514#	2543	2548	2552#	2570	2575	2579#	2600	2605	2609#	2627	2632
2636#	2657	2662	2666#	2694	2699	2703#	2725	2730	2734#	2749	2754	2758#
2779	2784	2788#	2805	2815	2819#	2881	2886	2889	2898	2903#	2906	2915
2920#	2923	2932	2937#	2940	2949	2954#	2957	2966	2971#	2974	2983	2988#
2991	3000	3005#	3008	3017	3022#	3025	3034	3039#	3042	3051	3056#	3059
3069	3074#	3077	3088	3093#	3096	3107	3112#	3115	3126	3131#	3134	3145
3150#	3153	3164	3169#	3172	3183	3188#	3191	3202	3207#	3210	3221	3226#
3229	3240	3245#	3248	3259	3264#	3267	3279	3284#	3287	3296	3301#	3304
3313	3318#	3321	3330	3335#	3338	3347	3352#	3355	3364	3369#	3372	3381
3386#	3389	3398	3403#	3406	3415	3420#	3423	3432	3437#	3440	3449	3454#
3457	3467	3472#	3475	3486	3491#	3494	3505	3510#	3513	3524	3529#	3532
3543	3548#	3551	3562	3567#	3570	3581	3586#	3589	3600	3605#	3608	3619
3624#	3627	3638	3643#	3646	3657	3662#	3665	3677	3682#	3685	3694	3699#
3702	3711	3716#	3719	3728	3733#	3736	3745	3750#	3753	3762	3767#	3770
3780	3785#	3788	3799	3804#	3807	3818	3823#	3826	3837	3842#	3845	3856
3861#	3864	3875	3880#	3883	3895	3900#	3903	3912	3917#	3920	3929	3934#
3937	3946	3951#	3954	3963	3968#	3971	3980	3985#	3988	3997	4002#	4005
4014	4019#	4022	4031	4036#	4039	4048	4053#	4056	4065	4070#	4073	4083
4088#	4091	4102	4107#	4110	4121	4126#	4129	4140	4145#	4148	4159	4164#
4167	4178	4183#	4186	4197	4202#	4205	4216	4221#	4224	4235	4240#	4243
4254	4259#	4262	4273	4278#	4281	4293						
268#	5170#	5181										
272#	5119	5181										
267#	5168	5181										
521	5323#											
5334#	5345											
5338#	5347#	5348#	5349#	5350#								
5328	5345#											
228#												
243#	4300#	4345#	4941	4963#	4964	4969	4973	4999	5034			
5350												
5350												
5119#	5212	5338	5346									
5149	5156	5163	5168#	5169								
5009	5048#											
5174	5176	5179#										
5268#	5347											
5267	5270#	5349										
5263#	5348											
332#												
230#												
339#												
4928#												
5264#	5268#	5278	5313#									
4925	5009											
189#	193#	203	204#	206#	208#	209#	215	216#	218#	220#	239#	321
503#	514	529	530	4378	4453	4541	4584	4632	4675	4723	4766	4815
4858	4972	4973	5034	5101#	5181	5233#	5368	5394				
5185	5188											

STPB 001160
STPFLG 001165
STPS 001156
STRAP 025576
STRAP2 025620
STRP = 000005
STRPAD 025632
STSTM 001004
STSTM 001102
STYPBN= ***** U
STYPDS= ***** U
STYPE 024620
STYPEC 025032
STYPER 024404
STYPEX 025100
STYPOC 025374
STYPON 025410
STYPOS 025350
SUNIT 001336
SUNITM 001010
SUSWR 001350
SXTSTR 023674
SOFILL 025573
\$DOCAT= ***** U
= 034074
\$ASTA= ***** U

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SEQ 0154

.SX = 001000 215# 220

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SEQ 0155

CMPLT	18	4402	4477	4567	4612	4658	4703	4749	4794	4841	4886				
COMMEN	1418														
COMM00	18														
COMM01	18														
COMM02	18														
COMM03	18														
COMM04	18														
COMM05	18														
COMM06	18														
COMM07	18														
COMM1	18	2917	2934	2985	3002	3071	3128	3147	3204	3223	3281	3315	3349	3383	3488
	3526	3564	3602	3621	3640	3696	3730	3764	3782	3839	3858	3897	3931	3965	3999
	4033	4104	4142	4180	4218	4256									
COMM10	18														
COMM11	18														
COMM12	18														
COMM13	18														
COMM14	18														
COMM15	18														
COMM16	18														
COMM17	18														
COMM2	18	3053	3451	4067											
COMM20	18														
COMM21	18														
COMM22	18														
COMM23	18														
COMM24	18														
COMM25	18														
COMM26	18														
COMM27	18														
COMM3	18	2883	2900	2951	2968	3019	3036	3090	3109	3166	3185	3242	3298	3332	3366
	3400	3417	3434	3469	3507	3545	3583	3679	3713	3747	3801	3820	3877	3914	3948
	3982	4016	4050	4085	4123	4161	4199	4237							
COMM30	18														
COMM31	18														
COMM32	18														
COMM33	18														
COMM34	18														
COMM35	18														
COMM36	18														
COMM37	18														
COMM4	18	3261	3659	4275											
COMM40	18														
COMM41	18														
COMM42	18														
COMM43	18														
COMM44	18														
COMM45	18														
COMM46	18														
COMM47	18														
ENDCOM	1418														
ERRCMP	18	752	775	780	803	808	813	835	840	862	867	889	894	917	946
	973	978	999	1020	1042	1047	2051	2091	2128	2166	2205	2322	2327	2354	2425
	2461	2493	2526	2531	2588	2645	2677	2682	2774						
ERRLUR	18	5033													
ERROR	358	185	649	671	684	700	716	732	754	777	792	805	810	815	837